



Application Type:

<input type="checkbox"/> Conceptual Review	<input type="checkbox"/> Preliminary PUD	<input type="checkbox"/> Temporary Use
<input type="checkbox"/> Subdivision, Preliminary	<input type="checkbox"/> Final PUD	<input type="checkbox"/> Variance
<input type="checkbox"/> Subdivision, Final	<input checked="" type="checkbox"/> Rezone	<input type="checkbox"/> Conditional Use
<input type="checkbox"/> Plat Correction/ Vacation	<input type="checkbox"/> Special Use	<input type="checkbox"/> Other: _____

PROJECT NAME:

APPLICANT

Name(s): Phone #:

Address:

City, State, Zip:

2nd Phone #: Email:

OWNER

Name(s): Phone #:

Address:

City, State, Zip:

2nd Phone #: Email:

TECHNICAL REPRESENTATIVE (Consultant, Engineer, Surveyor, Architect, etc.)

Name: Phone #:

Address:

City, State, Zip:

2nd Phone #: Email:

DESCRIPTION OF SITE

Address:

City, State, Zip:

Area (acres or square feet):

Tax Assessor Parcel Number:

Existing Zoning:

Existing Land Use:

Proposed Land Use:

Have you attended a Conceptual Review? YES NO

If Yes, please list PRE#:

I hereby certify that I am making this application as owner of the above described property or acting under the authority of the owner (attached authorization, if not owner). I am familiar with all pertinent requirements, procedures, and fees of the County. I understand that the Application Review Fee is non-refundable. All statements made on this form and additional application materials are true to the best of my knowledge and belief.

Name: Date:

Owner's Printed Name

Name:

Owner's Signature



TODD CREEK

PUD MAJOR AMENDMENT
REZONE OF POND AREA



PREPARED BY
John Prestwich
President
PCS Group

PREPARED FOR
Adams County
Jennifer Rutter

DATE ISSUE
D July, 2023



July, 2023

Jennifer Rutter | Planning & Development Manager
Adams County
4430 South Adams County Parkway | Brighton, CO 80601
| O | 720-523-6841
| E | jrutter@adcogov.com

Dear Jennifer,

It is our pleasure to submit an application for the rezone of 80.1 acres of Reservoir Ponds to be added to the Todd Creek PUD, in Adams County, Colorado. We are excited with the prospect of working with Adams County and the entire project team to produce high quality, diverse master plan for the combined properties that will be consistent with the Advancing Adams County Comprehensive Plan.



In conjunction with the Todd Creek Major PUD Amendment, we are requesting the rezone for the inclusion of the reservoir ponds which will be a part of the infrastructure and management of water resources for the community. As well as, an activation of open space with perimeter trail corridors. Responsible water management, providing more interconnected trails and opportunities for open space are all goals of the this PUD Amendment and are in alignment with the Advancing Adams County Comprehensive Plan Amendment.

We look forward to a partnership with Adams County in the creation of these new and exciting neighborhoods as we continue to refine the design and add more detail as part of the full entitlement process.

Sincerely,

John Prestwich

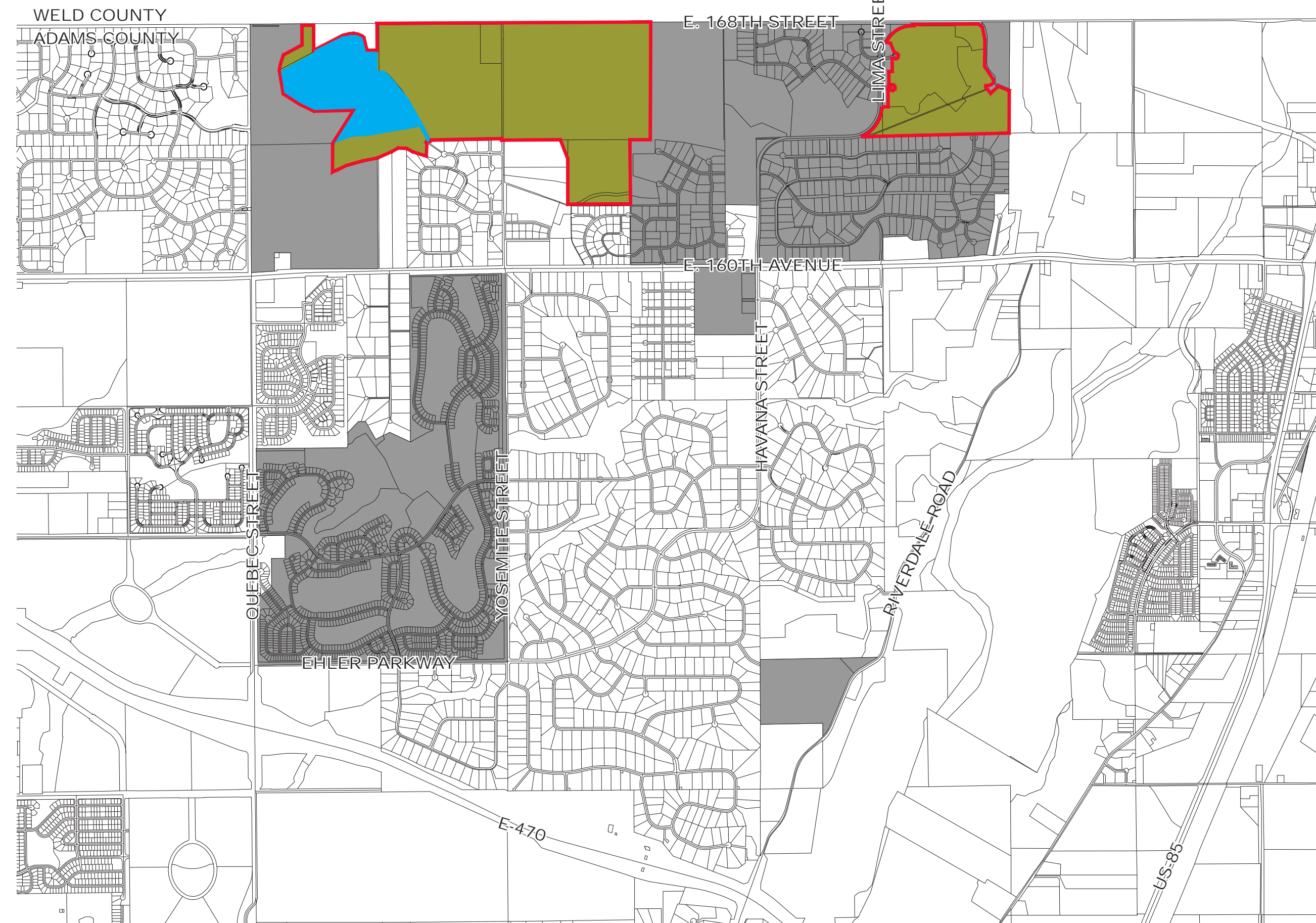
John Prestwich
President, RLA
PCS Group

TODD CREEK VILLAGE

REZONE OF POND AREA

COVER SHEET

VICINITY MAP



CERTIFICATE OF OWNERSHIP

(TODD CREEK VILLAGE, LLC), BEING THE OWNER OR REPRESENTATIVE OF THE TODD CREEK VILLAGE PUD LOCATED IN THE COUNTY OF ADAMS, STATE OF COLORADO, HEREBY SUBMITS THIS PRELIMINARY PLANNED UNIT DEVELOPMENT MAJOR AMENDMENT AND AGREES TO PERFORM UNDER THE TERMS NOTED HEREON.

(OWNERS SIGNATURE)

THE OWNERS SIGNATURE(S) SHALL BE ACKNOWLEDGED AS FOLLOWS:

STATE) _____

COUNTY)SS _____

CITY) _____

THE FOREGOING OWNERSHIP CERTIFICATE WAS ACKNOWLEDGED BEFORE ME THIS _____, DAY OF _____, 20____.

NOTARY PUBLIC _____

MY COMMISSION EXPIRES: _____

PLANNING COMMISSION APPROVAL:

APPROVED BY THE ADAMS COUNTY PLANNING COMMISSION THIS _____, DAY OF _____, 20____.

CHAIRMAN

BOARD OF COUNTY COMMISSIONERS APPROVAL:

APPROVED BY THE ADAMS COUNTY BOARD OF COMMISSIONERS THIS _____, DAY OF _____, 20____.

CHAIRMAN

CERTIFICATE OF THE CLERK AND RECORDER:

THIS MAJOR PUD AMENDMENT WAS FILED FOR RECORD IN THE OFFICE OF THE ADAMS COUNTY CLERK AND RECORDER IN THE STATE OF COLORADO AT ____M.

ON THE _____, DAY OF _____, 20____.

COUNTY CLERK AND RECORDER

ADDITIONS AND DELETIONS BLOCK

THE FOLLOWING ADDITIONS AND DELETIONS IN THE P.U.D. WERE MADE BY THE BOARD OF COUNTY COMMISSIONERS AT THE TIME OF APPROVAL.

STAFF REVIEW:

APPROVED AS TO FORM BY:

DIRECTOR OF PLANNING AND DEVELOPMENT

COUNTY ATTORNEY

SHEET INDEX

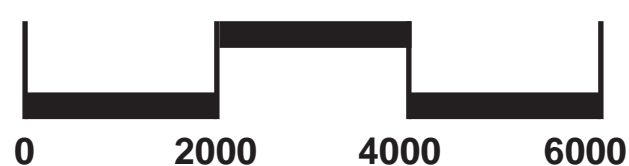
Sheet Title	Sheet Numbers
COVER SHEET	- 1
PUD AMENDMENT SUMMARY	- 2
EXISTING CONDITIONS	- 3
SITE PLAN	- 4

LEGEND

- AREAS WITHIN ORIGINAL TODD CREEK VILLAGE P.U.D.
- AREAS SUBJECT TO TODD CREEK VILLAGE MAJOR P.U.D. AMENDMENT
- SITE - POND AREAS



SCALE: 1" = 2,000'



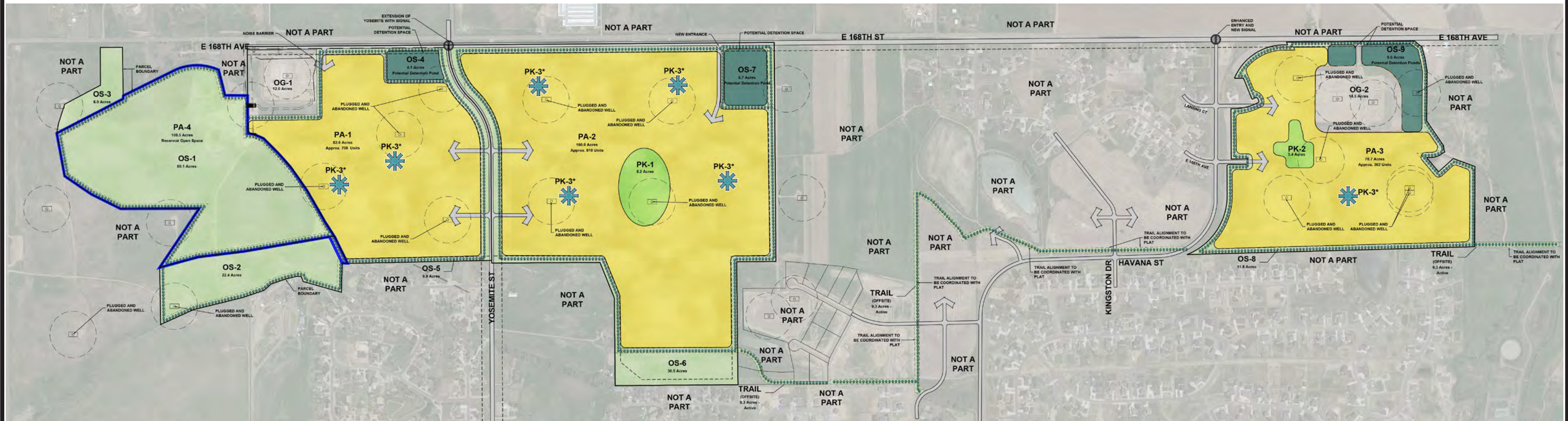
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REV-1	

TODD CREEK VILLAGE

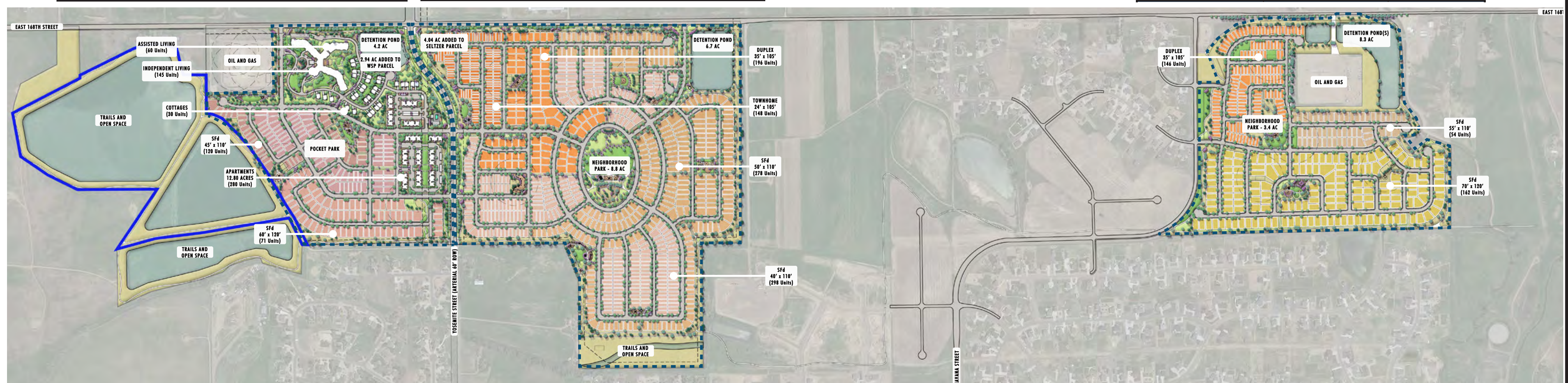
REZONE OF POND AREA

OVERALL TODD CREEK PUD MAJOR AMENDMENT PLAN

PROPOSED LAND USE PLAN



PROPOSED CONCEPT PLAN



POND AREA PARCELS

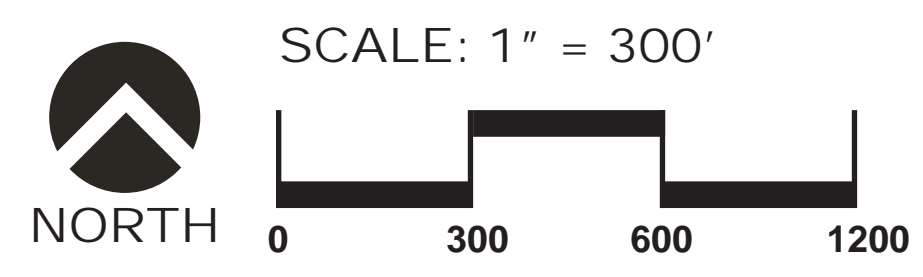
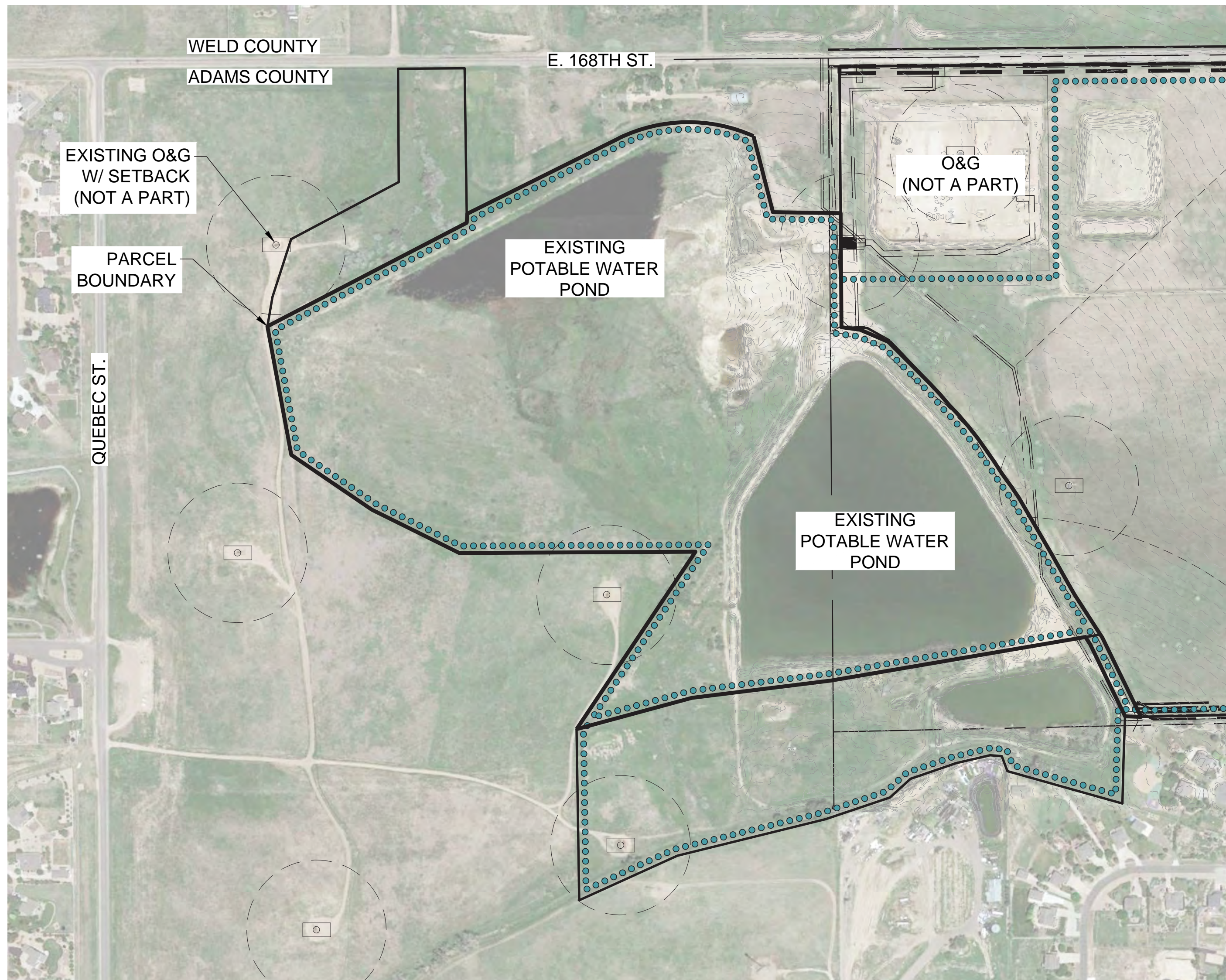
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TODD CREEK VILLAGE

REZONE OF POND AREA

SITE - EXISTING CONDITIONS

3 OF 4
CASE NO. _____



pcs group
LAND PLANNING / LANDSCAPE ARCHITECTURE
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(303) 531-4905
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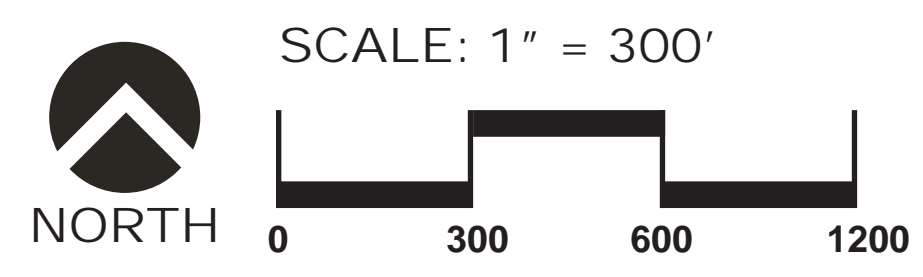
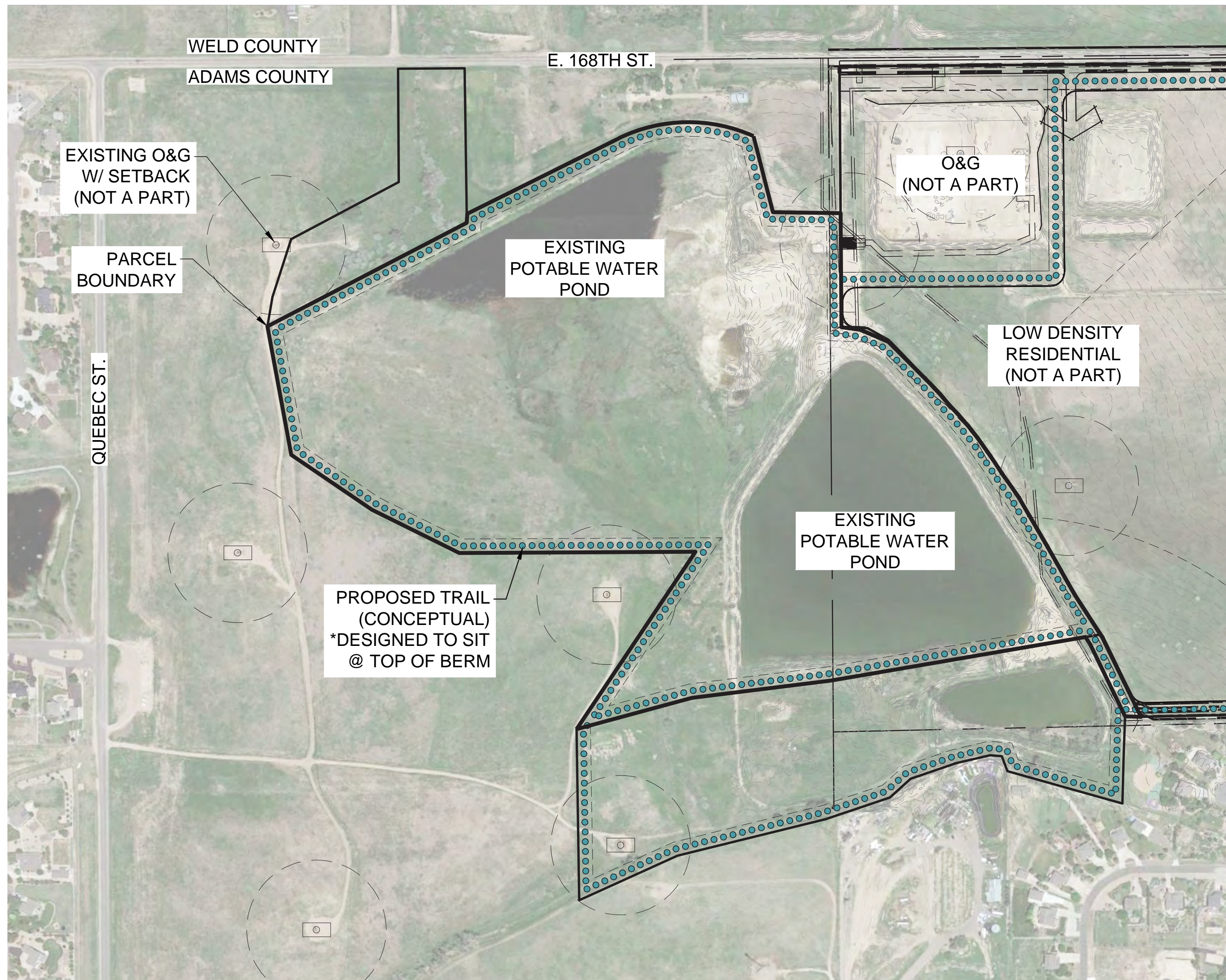
DATE	7-31-2023
REV-1	

TODD CREEK VILLAGE

REZONE OF POND AREA

PROPOSED SITE PLAN

4 OF 4
CASE NO. _____



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REV-1	



LSC TRANSPORTATION CONSULTANTS, INC.

1889 York Street
Denver, CO 80206
(303) 333-1105
FAX (303) 333-1107
E-mail: lsc@lscdenver.com

May 11, 2023

Mr. Matthew Cavanaugh
Seltzer Farms Investments, LLC
c/o Remington Homes
5740 Wadsworth Boulevard
Arvada, CO 80401

Re: Todd Creek Farms
Traffic Impact Analysis
Adams County, CO
LSC #221150

Dear Mr. Cavanaugh:

In response to your request, LSC Transportation Consultants, Inc. has prepared this traffic impact analysis for the proposed Todd Creek Farms development. As shown on Figure 1, the site is comprised of three separate properties located generally south of E. 160th Avenue, east of Quebec Street, and north of E. 160th Avenue in Adams County, Colorado.

REPORT CONTENTS

The report contains the following: the existing roadway and traffic conditions in the vicinity of the site including the lane geometries, traffic controls, posted speed limits, etc.; the existing weekday peak-hour traffic volumes; the existing daily traffic volumes in the area; the typical weekday site-generated traffic volume projections for the site; the assignment of the projected traffic volumes to the area roadways; the projected short-term and long-term background and resulting total traffic volumes on the area roadways; the site's projected traffic impacts; and any recommended roadway improvements to mitigate the site's traffic impacts.

LAND USE AND ACCESS

Figure 2a shows the conceptual site plan for the WSP Property. The WSP property is located south of E. 168th Avenue and west of Yosemite Drive. It is planned to include 191 single-family homes, 280 apartment dwelling units, and an assisted living campus with 145 independent living units, 60 assisted living units, and 30 cottages. Access is proposed to E. 168th Avenue just west of Yosemite Drive and at two full-movement access points to Yosemite Drive.

Figure 2b shows the conceptual site plan for the Remington Property. The Remington Property is located south of E. 168th Avenue and east of Yosemite Drive. It is proposed to include about 576 single-family dwelling units, 186 duplex dwelling units, and 148 townhomes. Access is proposed to E. 168th Avenue just east of Yosemite Drive and at two full-movement access points to Yosemite Drive that will align with the access points for the WSP property.

Figure 2c shows the conceptual site plan for the Carlson Property. The Carlson Property is located south of E. 168th Avenue and east of Lima Street. It is proposed to include 216 single-family dwelling units and 146 duplex dwelling units. Access is proposed to Lima Street via an existing full-movement intersection that aligns with Lansing Court and at a new full-movement intersection that will align with E. 166th Avenue.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The major roadways in the site's vicinity are shown on Figure 1 and are described below.

- **E. 160th Avenue (SH 7)** is an east-west, two-lane state highway south of the site. It is classified by CDOT as Regional Highway (R-A). The intersections Quebec Street, Yosemite Street, and Havana Street are signalized with auxiliary turn lanes. The posted speed limit in the vicinity of the site is 60 mph. Adams County plans for a four-lane roadway in the future.
- **E. 168th Avenue** is an east-west, two-lane arterial roadway north of the site. The intersections with CR 17, Quebec Street, CR 19, Yosemite Street, CR 23½, and Lima Street are stop-sign controlled. The posted speed limit is 45 mph in the vicinity of the site. This roadway will likely be widened to four lanes in the long term.
- **Quebec Street** is a two-lane, north-south roadway west of the site. The *City of Thornton Transportation and Mobility Master Plan* shows Quebec as a six-lane Major Arterial south of E. 160th Avenue (SH 7), a four-lane Minor Arterial north of E. 160th Avenue (SH 7), and a two-lane Minor Arterial just south of E. 168th Avenue. The intersection of Quebec Street and E. 160th Avenue (SH 7) is currently traffic signal controlled with auxiliary turn lanes. The intersection of Quebec Street and E. 168th Avenue is currently stop-sign controlled with no auxiliary turn lanes.
- **Yosemite Street** is a north-south, two-lane collector roadway that extends through the site. The posted speed limit in the vicinity of the site is 40 mph. The intersection with E. 160th Avenue (SH 7) is signalized with auxiliary turn lanes and the intersection with E. 168th Avenue is stop-sign controlled with auxiliary turn lanes. Yosemite Street is planned to be realigned as part of this development to align with Weld County Road 19 at E. 168th Avenue.
- **Havana Street/Lima Street** is a north-south, two-lane collector roadway east of the site. The intersection with E. 160th Avenue (SH 7) is signalized with auxiliary turn lanes and the intersection with E. 168th Avenue is stop-sign controlled with auxiliary turn lanes. The posted speed limit in the vicinity of the site is 40 mph.

Existing Traffic Conditions

Figure 3a shows the existing traffic volumes in the vicinity of the site on a typical weekday. The weekday peak-hour traffic and daily traffic volumes are from the attached traffic counts con-

ducted by Counter Measures in December, 2022 and January, February, and March 2023. Figure 3b shows the existing lane geometries, traffic controls, and posted speed limits.

2028 and 2043 Background Traffic

Figure 4a shows the estimated 2028 background traffic and Figure 5a shows the estimated 2043 background traffic. The 2028 background traffic is based on an annual growth rate of 3 percent for traffic on E. 168th Avenue and E. 160th Avenue (SH 7) plus traffic projected to be generated by buildout of the Baseline Lakes development located west of Havana Street/ Lima Street. The 2043 background traffic for intersections along E. 168th Avenue is based on an annual growth rate of 3 percent. The 2043 background traffic for intersections along E. 160th Avenue (SH 7) are estimates by LSC based on previous traffic reports completed in the vicinity of the site including the *Holly Village Updated Traffic Impact Analysis* by LSC Transportation Consultants, dated August 31, 2022 and the *Sack Farms Development Traffic Impact and Access Study* by Rick Engineering Company, dated April 9, 2020.

Figures 4b and 5b show the estimated lane geometry and traffic control.

Existing, 2028, and 2043 Background Levels of Service

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from “A” to “F.” LOS A is indicative of little congestion or delay and LOS F is indicative of a high level of congestion or delay. Attached are specific level of service definitions for signalized and unsignalized intersections.

The intersections in the study area were analyzed to determine the existing, 2028, and 2043 background levels of service using Synchro. Table 1 shows the level of service analysis results. The level of service reports are attached.

- 1. E. 168th Avenue/CR 17:** All movements at this unsignalized intersection currently operate at LOS “B” or better and are expected to do so through 2043.
- 2. E. 168th Avenue/Quebec Street:** All movements at this unsignalized intersection currently operate at LOS “B” or better and are expected to operate at LOS “C” or better through 2043.
- 3. E. 168th Avenue/West WSP Access:** This intersection was analyzed only in the total traffic scenarios.
- 4. E. 168th Avenue/CR 19:** All movements at this unsignalized intersection currently operate at LOS “B” or better and are expected to operate at LOS “C” or better through 2043.
- 5. E. 168th Avenue/Yosemite Street:** All movements at this unsignalized intersection currently operate at LOS “B” or better. Yosemite Street is planned to be realigned to align with CR 19 (Intersection #4) as part of the Todd Creek Farms development. This realignment will result in the existing Yosemite Street intersection being removed.
- 6. E. 168th Avenue/East Remington Access:** This intersection was analyzed only in the total traffic scenarios.

7. **E. 168th Avenue/Lima Street:** All movements at this unsignalized intersection currently operate at LOS “B” or better and are expected to operate at LOS “C” or better through 2043.
8. **E. 168th Avenue/CR 23½:** All movements at this unsignalized intersection currently operate at LOS “B” or better and are expected to do so through 2043.
9. **E. 168th Avenue/Tucson Street:** All movements at this unsignalized intersection currently operate at LOS “B” or better and are expected to do so through 2043.
10. **E. 160th Avenue (SH 7)/Quebec Street:** This signalized intersection currently operates at an overall LOS “C” during both morning and afternoon peak-hours. By 2028 it is expected to operate at an overall LOS “D” with no improvements. By 2043 it was assumed that E. 160th Avenue (SH 7) will be widened to a four-lane roadway. This intersection is expected to operate at an overall LOS “C” during both morning and afternoon peak-hours with two eastbound and two westbound through lanes.
11. **E. 160th Avenue (SH 7)/Yosemite Street:** This signalized intersection currently operates at an overall LOS “B” during both morning and afternoon peak-hours through 2028 with no improvements. By 2043 it was assumed that E. 160th Avenue (SH 7) will be widened to a four-lane roadway. This intersection is expected to operate at LOS “A” through 2043 with two eastbound and two westbound through lanes.
12. **E. 160th Avenue (SH 7)/Havana Street:** This signalized intersection currently operates at an overall LOS “A” during the morning peak-hour and LOS “B” during the afternoon peak-hour. In 2028, both peak-hours are expected to operate at LOS “B” with no improvements. By 2043 it was assumed that E. 160th Avenue (SH 7) will be widened to a four-lane roadway. This intersection is expected to operate at LOS “A” through 2043 with two eastbound and two westbound through lanes.
13. **E. 160th Avenue (SH 7)/Riverdale Road:** All movements at this unsignalized intersection currently operate at LOS “C” or better and are expected to operate at LOS “D” or better through 2028. By 2043, northbound and westbound left-turn movements are expected to operate at LOS “E” or “F” in one or both peak-hours if the intersection remains a full-movement stop-sign controlled intersection.
14. **E. 160th Avenue (SH 7)/Tucson Street:** All movements at this unsignalized intersection currently operate at LOS “D” or better and are expected to operate at LOS “E” or better by 2028. By 2043, this intersection is expected to be signalized and operate at an overall LOS “A”.
15. **Quebec Street/Eagle Shadow Avenue:** All movements at this unsignalized intersection currently operate at LOS “A” and are expected to do so through 2043.
16. **Quebec Street/E. 162nd Avenue:** All movements at this unsignalized intersection currently operate at LOS “A” and are expected to do so through 2043.

17. **Yosemite Street/N. Site Access:** This intersection was analyzed only in the total traffic scenarios.
18. **Yosemite Street/S. Site Access:** This intersection was analyzed only in the total traffic scenarios.
19. **Yosemite Street/E. 163rd Place:** All movements at this unsignalized intersection are expected to operate at LOS “A” through 2043.
20. **Yosemite Street/E. 162nd Avenue:** All movements at this unsignalized intersection currently operate at LOS “A” and are expected to do so through 2043.
21. **Lima Street/Lansing Court:** All movements at this unsignalized intersection currently operate at LOS “A” and are expected to do so through 2043.
22. **Lima Street/E. 166th Avenue:** All movements at this unsignalized intersection currently operate at LOS “A” and are expected to do so through 2043.

TRIP GENERATION

Table 2 shows the estimated average weekday trip generation for the proposed site based on the rates from *Trip Generation, 11th Edition, 2021* by the Institute of Transportation Engineers (ITE).

The site is projected to generate about 15,426 vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 296 vehicles would enter and about 781 vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:00 p.m., about 859 vehicles would enter and about 541 vehicles would exit.

TRIP DISTRIBUTION

Figure 6 shows the estimated directional distribution of the site-generated traffic volumes on the area roadways. The estimates were based on the location of the site with respect to the regional population, employment, and activity centers; the site’s proposed land use; and the traffic counts.

TRIP ASSIGNMENT

Figure 7 shows the estimated site-generated traffic volumes based on the directional distribution percentages (from Figure 6) and the trip generation estimate (from Table 2).

2028 AND 2043 TOTAL TRAFFIC

Figure 8a shows the 2028 total traffic which is the sum of the 2028 background traffic volumes (from Figure 4a) and the site-generated traffic volumes (from Figure 7). Figure 8b shows the recommended 2028 lane geometry and traffic control.

Figure 9a shows the 2043 total traffic which is the sum of 2043 background traffic volumes (from Figure 5a) and the site-generated traffic volumes (from Figure 7). Figure 9b shows the recommended 2043 lane geometry and traffic control.

PROJECTED LEVELS OF SERVICE

The intersections in the study area were analyzed to determine the 2028 and 2043 total levels of service. Table 1 shows the level of service analysis results. The level of service reports are attached.

1. **E. 168th Avenue/CR 17:** All movements at this unsignalized intersection are expected to operate at LOS “C” or better through 2043.
2. **E. 168th Avenue/Quebec Street:** All movements at this unsignalized intersection are expected to operate at LOS “C” or better through 2043.
3. **E. 168th Avenue/West WSP Access:** All movements at this unsignalized intersection are expected to operate at LOS “C” or better through 2043.
4. **E. 168th Avenue/CR 19:** All movements at this unsignalized intersection are expected to operate at LOS “D” or better through 2043.
5. **E. 168th Avenue/Yosemite Street:** Yosemite Street is planned to be realigned to align with CR 19 (Intersection #4) as part of the Todd Creek Farms development. This realignment will result in the existing Yosemite Street intersection being removed.
6. **E. 168th Avenue/East Remington Access:** All movements at this unsignalized intersection are expected to operate at LOS “B” or better through 2043.
7. **E. 168th Avenue/Lima Street:** All movements at this unsignalized intersection are expected to operate at LOS “C” or better through 2043.
8. **E. 168th Avenue/CR 23½:** All movements at this unsignalized intersection are expected to operate at LOS “C” or better through 2043.
9. **E. 168th Avenue/Tucson Street:** All movements at this unsignalized intersection are expected to operate at LOS “C” or better through 2043.
10. **E. 160th Avenue (SH 7)/Quebec Street:** This signalized intersection is expected to operate “D” during the morning peak-hour and at LOS “E” during the afternoon peak-hour in 2028 if E. 160th Avenue (SH 7) remains a two-lane roadway. If E. 160th Avenue (SH 7) is widened to provide two eastbound and two westbound through lanes, both peak-hours are expected to operate at an overall LOS “C” during both morning and afternoon peak-hours through 2043.
11. **E. 160th Avenue (SH 7)/Yosemite Street:** This signalized intersection is expected to operate at an overall LOS “D” during the morning peak-hour and LOS “C” during the afternoon peak-hour through 2028. By 2043 it was assumed that E. 160th Avenue (SH 7) will be widened to a four-lane roadway. This intersection is expected to operate at LOS “C”

during the morning peak-hour and LOS “B” during the afternoon peak-hour through 2043 with two eastbound and two westbound through lanes.

12. **E. 160th Avenue (SH 7)/Havana Street:** This signalized intersection is expected to operate at an overall LOS “B” during both morning and afternoon peak-hours through 2028. By 2043 it was assumed that E. 160th Avenue (SH 7) will be widened to a four-lane roadway.
13. **E. 160th Avenue (SH 7)/Riverdale Road:** The northbound and westbound left-turn movements at this unsignalized intersection are expected to operate at “E” or “F” in one or both peak-hours through 2043 if this intersections remains a stop-sign controlled full-movement intersection. Potential mitigation would be conversion to three-quarter movement.
14. **E. 160th Avenue (SH 7)/Tucson Street:** This signalized intersection is expected to operate at an overall LOS “B” during both peak-hours through 2028. By 2043 it was assumed that E. 160th Avenue (SH 7) will be widened to a four-lane roadway. This intersection is expected to operate at LOS “A” through 2043 with two eastbound and two westbound through lanes.
15. **Quebec Street/Eagle Shadow Avenue:** All movements at this unsignalized intersection are expected to operate at LOS “A” through 2043.
16. **Quebec Street/E. 162nd Avenue:** All movements at this unsignalized intersection are expected to operate at LOS “A” through 2043.
17. **Yosemite Street/N. Site Access:** All movements at this unsignalized intersection are expected to operate at LOS “C” or better through 2043.
18. **Yosemite Street/S. Site Access:** All movements at this unsignalized intersection are expected to operate at LOS “C” or better through 2043.
19. **Yosemite Street/E. 163rd Place:** All movements at this unsignalized intersection are expected to operate at LOS “B” or better through 2043.
20. **Yosemite Street/E. 162nd Avenue:** All movements at this unsignalized intersection are expected to operate at LOS “B” or better through 2043.
21. **Lima Street/Lansing Court:** All movements at this unsignalized intersection are expected to operate at LOS “A” through 2043.
22. **Lima Street/E. 166th Avenue:** All movements at this unsignalized intersection are expected to operate at LOS “B” or better through 2043.

QUEUING ANALYSIS

Table 3 shows the estimated 95th percentile queue lengths at the signalized intersections. Table 3 also shows the existing and recommended turn lane lengths.

TRAFFIC SIGNAL WARRANT ANALYSIS

The intersection of E. 160th Avenue (SH 7)/Tuscon Street (#14) was analyzed to determine if and when Eight-Hour, Four-Hour, and Peak-Hour Vehicular Volume Traffic Signal Warrants would be met based on the projected 2028 traffic volumes. Table 4 shows the results of the analysis.

The intersection of E. 160th Avenue (SH 7)/Tuscon Street (#14) is expected to meet the four-hour and peak-hour vehicular volume traffic signal warrants based on the projected 2028 total traffic volumes.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

1. The site is projected to generate about 15,426 vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, about 296 vehicles would enter and about 781 vehicles would exit the site. During the afternoon peak-hour, about 859 vehicles would enter and about 541 vehicles would exit.

Projected Levels of Service

2. The existing signalized intersection of E. 160th Avenue (SH 7) is expected to operate at LOS "E" during the afternoon peak hour by 2028 if E. 160th Avenue (SH 7) remains a two-lane roadway. If E. 160th Avenue (SH 7) is widened to provide two eastbound and two westbound through lanes in the short-term, both peak-hours are expected to operate at an overall LOS "C" during both morning and afternoon peak-hours through 2043.
3. All of the other existing signalized intersections analyzed are expected to operate at an overall LOS "D" or better during both peak-hours through 2043 with the recommended improvements.
4. The northbound and westbound left-turn movements at the unsignalized intersection of E. 160th Avenue (SH 7)/Riverdale Road are expected to operate at LOS "E" or "F" in one or both peak-hours by 2043 with or without the proposed Todd Creek Farms development if this intersections remains a stop-sign controlled full-movement intersection. This intersection will not likely meet any of the traffic signal warrants based on vehicular traffic volumes. However, signalization may be possible based on maintaining a coordinated roadway network. If a traffic signal is not allowed it may be appropriate to restrict this intersection to three-quarter movement (left-in/right-in/right-out-only) in the future.
5. The southbound approach at the intersection of E. 160th Avenue (SH 7)/Tuscon Street is expected to operate at LOS "F" during the peak-hours by 2028 with the proposed Todd Creek Farms development. This intersection is anticipated to meet multiple traffic signal warrants based on the 2028 total traffic volumes. If signalized it is expected to operate at LOS "B" or better through 2043.

- 6. All movements at all of the other unsignalized intersections analyzed are expected to operate at LOS "D" or better through 2043.

Conclusions

- 7. The impact of the proposed Todd Creek Farms development can be accommodated by the existing roadway network with the recommended improvements.

Recommendations

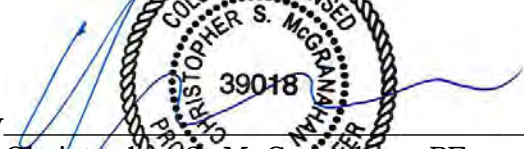
- 8. The 2028 and 2043 recommended improvements are shown in Figures 8b and 9b and are detailed in Tables 3 and 5.

* * * * *

We trust our findings will assist you in gaining approval of the proposed Todd Creek Farms development. Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By  _____
 Christopher S. McGranahan, PE
 Principal/President



5-11-23

CSM/wc

- Enclosures: Tables 1 - 5
 Figures 1 - 9b
 Traffic Count Reports
 Key Pages from Holly Village TIA and Sack Farms TIA
 Level of Service Definitions
 Level of Service Reports
 Queuing Reports

Table 1 (Page 1 of 5)
Intersection Levels of Service Analysis
Todd Creek Farm
Adams County, CO
LSC #221150; May, 2023

Intersection No. & Location	Traffic Control	Existing Traffic		2028 Background Traffic		2028 Total Traffic		2028 Total Traffic Additional Mitigation		2043 Background Traffic		2043 Total Traffic	
		Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1) <u>E. 168th Avenue/CR 17</u>	TWSC												
EB Left/Through		A	A	A	A	A	A			A	A	A	A
SB Approach		A	B	A	B	B	C			B	B	B	B
Critical Movement Delay		9.6	10.5	9.9	11.1	11.6	15.3			10.0	11.2	11.3	14.1
2) <u>E. 168th Avenue/Quebec Street</u>	TWSC												
NB Approach		A	B	A	B	--	--			--	--	--	--
NB Left		--	--	--	--	B	C			B	C	B	C
NB Right		--	--	--	--	A	B			A	B	A	B
WB Left/Through		A	A	A	A	A	A			A	A	A	A
Critical Movement Delay		9.4	10.6	9.6	11.1	13.7	18.7			11.3	16.2	13.4	21.9
3) <u>E. 168th Avenue/West WSP Access</u>	TWSC												
NB Left		--	--	--	--	B	C			--	--	B	C
NB Right		--	--	--	--	A	B			--	--	A	B
WB Left		--	--	--	--	A	A			--	--	A	A
Critical Movement Delay		--	--	--	--	13.8	17.1			--	--	12.8	19.4
4) <u>E. 168th Avenue/CR 19</u>	TWSC												
NB Left		--	--	--	--	C	C			B	C	B	D
NB Through/Right		--	--	--	--	B	B			A	A	B	B
EB Left/Through or Left		A	A	A	A	A	A			A	A	A	A
WB Left		--	--	--	--	A	A			A	A	A	A
SB Approach		B	B	B	B	--	--			--	--	--	--
SB Left		--	--	--	--	B	C			B	C	B	C
SB Through/Right		--	--	--	--	B	B			A	A	A	B
Critical Movement Delay		10.4	11.0	10.8	11.7	15.8	21.8			12.8	18.3	14.8	29.4
5) <u>E. 168th Avenue/Yosemite Street</u>	TWSC												
NB Approach		B	B	B	B	--	--			--	--	--	--
WB Left/Through		A	A	A	A	--	--			--	--	--	--
Critical Movement Delay		10.5	10.9	10.9	11.6	--	--			--	--	--	--
6) <u>E. 168th Avenue/East Remington Access</u>	TWSC												
NB Approach		--	--	--	--	B	B			--	--	B	B
WB Left		--	--	--	--	A	A			--	--	A	A
Critical Movement Delay		--	--	--	--	10.9	13.1			--	--	10.4	13.2

Table 1 (Page 2 of 5)
Intersection Levels of Service Analysis
Todd Creek Farm
Adams County, CO
LSC #221150; May, 2023

Intersection No. & Location	Traffic Control	Existing Traffic		2028 Background Traffic		2028 Total Traffic		2028 Total Traffic Additional Mitigation		2043 Background Traffic		2043 Total Traffic	
		Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
7) <u>E. 168th Avenue/Lima Street</u>	TWSC												
NB Left		B	B	B	B	B	C			B	C	B	C
NB Right		A	A	A	B	B	B			A	A	A	B
WB Left		A	A	A	A	A	A			A	A	A	A
Critical Movement Delay		10.5	12.2	11.0	13.3	13.6	20.0			11.1	15.5	13.4	22.8
8) <u>E. 168th Avenue/CR 23 1/2</u>	TWSC												
EB Left/Through or Left		A	A	A	A	A	A			A	A	A	A
SB Approach		A	B	B	B	B	B			B	B	B	C
Critical Movement Delay		9.8	11.0	10.0	11.6	11.2	14.4			10.4	12.4	11.3	15.0
9) <u>E. 168th Avenue/Tucson Street</u>	TWSC												
NB Approach		A	B	A	B	B	C			B	B	B	C
WB Left/Through or Left		A	A	A	A	A	A			A	A	A	A
Critical Movement Delay		9.6	10.3	9.7	10.7	11.9	15.3			10.2	12.1	12.4	18.3
10) <u>E. 160th Avenue (SH 7)/Quebec Street</u>	Signalized												
EB Left		D	D	D	E	E	E	E	D	E	D	E	E
EB Through		B	C	B	D	C	F	B	B	C	C	C	C
EB Right		B	B	B	B	B	A	B	B	A	A	A	A
WB Left		D	D	E	E	E	F	E	D	D	D	D	D
WB Through		B	B	C	B	D	B	B	B	B	B	C	B
WB Right		A	A	A	A	A	A	A	A	A	B	B	B
NB Left		D	D	D	E	E	F	E	D	D	D	D	D
NB Through		C	C	C	D	D	D	D	C	C	C	C	C
NB Right		C	C	C	D	D	D	D	C	A	A	A	A
SB Left		D	D	D	E	E	E	E	D	E	D	E	D
SB Through/Right		C	D	D	D	--	--	--	--	--	--	--	--
SB Through		--	--	--	--	D	D	D	D	D	D	D	D
SB Right		--	--	--	--	D	D	D	D	D	D	D	D
Entire Intersection Delay (sec /veh)		21.4	24.0	27.2	35.3	41.8	67.6	23.2	21.1	28.4	25.1	31.1	30.5
Entire Intersection LOS		C	C	C	D	D	E	C	C	C	C	C	C

Table 1 (Page 3 of 5)
Intersection Levels of Service Analysis
Todd Creek Farm
Adams County, CO
LSC #221150; May, 2023

Intersection No. & Location	Traffic Control	Existing Traffic		2028 Background Traffic		2028 Total Traffic		2028 Additional Mitigation		2043 Background Traffic		2043 Total Traffic	
		Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service	Level of Service
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
11) <u>E. 160th Avenue (SH 7)/Yosemite Street</u>	Signalized												
EB Left		A	A	B	A	D	B			A	A	C	D
EB Through		A	B	A	B	B	C			A	A	B	B
EB Right		A	A	A	A	A	A			A	A	A	A
WB Left		A	A	A	A	A	B			A	A	B	A
WB Through		B	A	B	A	D	B			A	A	B	B
WB Right		A	A	A	A	A	A			A	A	A	B
NB Left		C	C	C	C	D	C			C	C	C	C
NB Through/Right		C	C	C	C	D	C			C	C	C	C
SB Left		C	C	C	C	E	D			C	C	D	D
SB Through/Right		C	C	C	C	--	--			--	--	--	--
SB Through		--	--	--	--	D	C			C	C	C	C
SB Right		--	--	--	--	D	D			C	C	D	C
Entire Intersection Delay (sec /veh)		10.1	10.2	10.9	10.5	36.4	21.1			8.9	9.0	20.1	17.7
Entire Intersection LOS		B	B	B	B	D	C			A	A	C	B
12) <u>E. 160th Avenue (SH 7)/Havana Street</u>	Signalized												
EB Left		A	A	A	A	A	A			A	A	A	B
EB Through		A	B	A	B	A	B			A	A	A	A
EB Right		A	A	A	A	A	A			A	A	A	A
WB Left		A	A	A	B	A	B			A	A	A	A
WB Through		B	A	B	A	B	B			A	A	A	A
WB Right		A	A	A	A	A	A			A	A	A	A
NB Left		B	C	C	C	C	C			C	C	C	C
NB Through/Right		B	C	C	C	C	C			C	C	C	C
SB Left		B	C	C	C	C	C			C	C	C	C
SB Through/Right		B	C	C	C	--	--			--	--	--	--
SB Through		--	--	--	--	C	C			C	C	C	C
SB Right		--	--	--	--	C	C			C	C	C	C
Entire Intersection Delay (sec /veh)		9.8	10.4	10.1	10.9	11.9	13.0			9.1	9.2	10.4	10.5
Entire Intersection LOS		A	B	B	B	B	B			A	A	B	B
13) <u>E. 160th Avenue (SH 7)/Riverdale Road</u>	TWSC												
NB Left		C	C	D	D	D	E			F	F	F	F
NB Right		A	A	A	A	A	A			A	A	A	A
WB Left		A	B	B	B	B	B			E	C	F	C
Critical Movement Delay		22.8	24.5	29.0	31.5	32.5	39.0			>240	137.8	>240	201.4

Table 2
Trip Generation Estimate
Todd Creek Farms
Adams County, CO
LSC #220150; May, 2023

Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾					Total Trips Generated				
		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour	
			In	Out	In	Out		In	Out		
WSP Property											
Assisted Living ⁽²⁾	60 Beds	2.60	0.108	0.072	0.094	0.146	156	6	4	6	9
Senior Adult Housing - Multifamily ⁽³⁾	145 DU ⁽⁴⁾	3.06	0.068	0.132	0.140	0.110	444	10	19	20	16
Senior Adult Housing - Single Family ⁽⁵⁾	30 DU	7.10	0.079	0.161	0.183	0.117	213	2	5	5	4
Single Family Detached Housing ⁽⁶⁾	191 DU	9.43	0.182	0.518	0.592	0.348	1,801	35	99	113	66
Multifamily Housing ⁽⁷⁾	280 DU	6.74	0.10	0.30	0.32	0.19	1,887	27	85	90	53
	706 DU						813	18	28	31	29
Remington											
Single Family Detached Housing ⁽⁶⁾	576 DU	9.43	0.182	0.518	0.592	0.348	5,432	105	298	341	200
Single Family Attached Housing ⁽⁸⁾	334 DU	7.20	0.149	0.331	0.325	0.245	2,405	50	111	109	82
	910 DU						7,837	155	409	450	282
Carlson											
Single Family Detached Housing ⁽⁶⁾	216 DU	9.43	0.182	0.518	0.592	0.348	2,037	39	112	128	75
Single Family Attached Housing ⁽⁸⁾	146 DU	7.20	0.149	0.331	0.325	0.245	1,051	22	48	47	36
	362 DU						3,088	61	160	175	111
Todd Creek Farms Total	1,978 DU						15,426	296	781	859	541

Notes:

(1) Source: *Trip Generation, Institute of Transportation Engineers*, 11th Edition, 2021.

(2) ITE Land Use No. 254 - Assisted Living

(3) ITE Land Use No. 220 - Senior Adult Housing - Multifamily

(4) DU = dwelling unit

(5) ITE Land Use No. 251 - Senior Adult Housing - Single-Family

(6) ITE Land Use No. 210 - Single-Family Detached Housing

(7) ITE Land Use No. 220 - Multifamily Housing (Low-Rise)

(8) ITE Land Use No. 215 - Single-Family Attached Housing

Source: LSC Transportation Consultants, Inc.

Table 3
95th Percentile Queue Lengths
Todd Creek Farm
Adams County, CO
LSC #221150; May, 2023

Intersection No. & Location	Existing Lane Lengths (feet)	Proposed Lane Lengths (feet)	95th Percentile Queue Length	
			2043 Total	
			AM Peak (feet)	PM Peak (feet)
10) <u>E. 160th Avenue (SH 7)/Quebec Street</u>				
EB Left	550	550	56	140
EB Through	---	---	398	495
EB Right	415	415	40	0
WB Left	1 @ 525	2 @ 525	201	255
WB Through	---	---	578	401
WB Right	415	415	0	0
NB Left	1 @ 250	2 @ 250	237	248
NB Through	---	---	48	104
NB Right	570	570	70	0
SB Left	230	230	57	60
SB Through	---	---	77	72
SB Right	---	200	0	0
11) <u>E. 160th Avenue (SH 7)/Yosemite Street</u>				
EB Left	440	440	58	300
EB Through	---	---	331	334
EB Right	615	615	5	19
WB Left	800	800	25	25
WB Through	---	---	592	416
WB Right	700	700	19	28
NB Left	lane drop	lane drop	90	85
NB Through/Right	---	---	62	94
SB Left	140	140	258	154
SB Through	---	---	56	46
SB Right	---	200	148	64
12) <u>E. 160th Avenue (SH 7)/Havana Street</u>				
EB Left	515	515	12	64
EB Through	---	---	282	274
EB Right	430	430	8	15
WB Left	550	550	11	46
WB Through	---	---	378	426
WB Right	420	420	0	3
NB Left	200	200	58	69
NB Through/Right	---	---	53	60
SB Left	275	275	30	23
SB Through	---	---	29	27
SB Right	---	200	48	39
14) <u>E. 160th Avenue (SH 7)/Tucson Street</u>				
EB Left	450	450	22	68
EB Through	---	---	270	232
WB Through	---	---	604	653
WB Right	325	325	10	14
SB Left	---	---	96	72
SB Right	---	200	44	37

Table 4
Intersection #14 - E. 160th Avenue (SH 7)/Tuscon Street
Todd Creek Farms
Adams County, CO
LSC #221150; May, 2023

Warrant Analysis⁽¹⁾

Hour	Traffic Volumes (vehicles per hour)		Warrant 1: Eight Hour Vehicular Volume Evaluation						Warrant 2: Four Hour Vehicular Volume		Warrant 3: Peak Hour Vehicular Volume	
			Warrant Thresholds				Warrant Threshold Met?		70% Warrant Threshold Minor Minimum	Warrant Threshold Met?	70% Warrant Threshold Minor Minimum	Warrant Threshold Met?
	Major ⁽²⁾	Minor Leg ⁽³⁾	Condition A (70%)		Condition B (70%)		A	B				
			Major	Minor	Major	Minor						

2028 Background Traffic

6-7 AM	1647	20	350	105	525	53	No	No	60	No	75	No
7-8 AM	1927	22	350	105	525	53	No	No	60	No	75	No
8-9 AM	1667	28	350	105	525	53	No	No	60	No	75	No
9-10 AM	1576	55	350	105	525	53	No	Yes	60	No	75	No
10-11 AM	1524	48	350	105	525	53	No	No	60	No	75	No
11-12 PM	1785	38	350	105	525	53	No	No	60	No	75	No
12-1 PM	1838	18	350	105	525	53	No	No	60	No	75	No
1-2 PM	1814	19	350	105	525	53	No	No	60	No	75	No
2-3 PM	1916	12	350	105	525	53	No	No	60	No	75	No
3-4 PM	2195	14	350	105	525	53	No	No	60	No	75	No
4-5 PM	2312	13	350	105	525	53	No	No	60	No	75	No
5-6 PM	2374	18	350	105	525	53	No	No	60	No	75	No
6-7 PM	1688	25	350	105	525	53	No	No	60	No	75	No
7-8 PM	1085	21	350	105	525	53	No	No	60	No	80	No
8-9 PM	662	16	350	105	525	53	No	No	90	No	175	No
9-10 PM	429	11	350	105	525	53	No	No	165	No	270	No

Numbers of Hours the Warrant Thresholds Are Met	0	1	0	0
Warrant Met?	No		No	No

2028 Total Traffic

6-7 AM	1814	57	350	105	525	53	No	Yes	60	No	75	No
7-8 AM	2142	65	350	105	525	53	No	Yes	60	Yes	75	No
8-9 AM	1865	82	350	105	525	53	No	Yes	60	Yes	75	Yes
9-10 AM	1748	160	350	105	525	53	Yes	Yes	60	Yes	75	Yes
10-11 AM	1690	139	350	105	525	53	Yes	Yes	60	Yes	75	Yes
11-12 PM	1980	111	350	105	525	53	Yes	Yes	60	Yes	75	Yes
12-1 PM	2075	56	350	105	525	53	No	Yes	60	No	75	No
1-2 PM	2052	60	350	105	525	53	No	Yes	60	Yes	75	No
2-3 PM	2160	38	350	105	525	53	No	No	60	No	75	No
3-4 PM	2478	43	350	105	525	53	No	No	60	No	75	No
4-5 PM	2623	39	350	105	525	53	No	No	60	No	75	No
5-6 PM	2707	56	350	105	525	53	No	Yes	60	No	75	No
6-7 PM	1916	77	350	105	525	53	No	Yes	60	Yes	75	Yes
7-8 PM	1226	65	350	105	525	53	No	Yes	60	Yes	75	No
8-9 PM	749	49	350	105	525	53	No	No	65	No	145	No
9-10 PM	488	35	350	105	525	53	No	No	165	No	270	No

Numbers of Hours the Warrant Thresholds Are Met	3	11	8	5
Warrant Met?	Yes		Yes	Yes

Notes:

- (1) Thresholds are based on 1 lane on the major approach and 1 lane on the minor approach with the 70% factor applied for a posted speed limit above 40 mph
- (2) The major street traffic includes all movements (left, through, and right)
- (3) The minor street traffic includes left, through, and half of right-turn volumes from the minor street

Source: LSC Transportation Consultants, Inc.

Table 5 (Page 1 of 2)
Recommended Improvements to Public Street Network
Todd Creek Farms
Adams County, CO
LSC #221150; May, 2023

Inter-section No.	Intersection Location	Recommended Improvements by 2028 ⁽¹⁾	Responsibility	Recommended Improvements by 2043 ⁽¹⁾	Responsibility
	Yosemite Street	Realign to align with WCR 19 at E. 168th Avenue	Applicant		Others
	Quebec Street			Widen to 4 Lanes	Others
	E. 168th Avenue			Widen to 4 Lanes	Others
	E. 160th Avenue (SH 7)			Widen to 4 Lanes plus 2 transit lanes	Others
#1	E. 168th Avenue/WCR 17			EB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Others
#2	E. 168th Avenue/ Quebec Street	WB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant	EB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Others
		NB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
#3	E. 168th Avenue/ West WSP Access	WB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
		EB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
		NB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
#4	E. 168th Avenue/ Yosemite Street (realigned)/ WCR 19	EB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
		EB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
		WB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
		WB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
		NB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
		SB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
#5	E. 168th Avenue/ Yosemite Street (existing)	To be closed when Yosemite Street is realigned south of E. 168th Avenue	Applicant		
#6	E. 168th Avenue/ East Remington Access	WB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
		EB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
#7	E. 168th Avenue/Lima Street	No improvements recommended			
#8	E. 168th Avenue/WCR 23 1/2			EB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Others
#9	E. 168th Avenue/Tucson Street	EB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant	WB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Others
#10	E. 160th Avenue (SH 7)/ Quebec Street	SB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant	WB LT - construct 2nd lane - 2 @ 525 feet and 300-foot transition taper for each	Others
				NB LT - construct 2nd lane - 2 @ 250 feet and 200-foot transition taper	Others

(1) A transition taper of 25:1 was used for E. 160th Avenue (SH 7) based on a posted speed limit of 60 mph (300 feet). Dual left-turn lanes have transition taper lengths of 600 feet. An appropriate redirect taper for 60 mph is 60:1

Table 5 (Page 2 of 2)
Recommended Improvements to Public Street Network
Todd Creek Farms
Adams County, CO
LSC #221150; May, 2023

Inter-section	No.	Intersection Location	Recommended Improvements by 2025 ⁽¹⁾	Responsibility	Recommended Improvements by 2042 ⁽¹⁾	Responsibility
	#11	E. 160th Avenue (SH 7)/ Yosemite Street	SB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
	#12	E. 160th Avenue (SH 7)/ Lima Street	SB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
	#13	E. 160th Avenue (SH 7)/ Riverdale Road			This intersection may need to be restricted to three-quarter movement (left-in/right-in/right-out only) over time	
	#14	E. 160th Avenue (SH 7)/ Lima Street	SB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
			Traffic signalization when warranted	Applicant/Others		
	#15	Quebec Street/ Eagle Shadow Avenue	No improvements recommended			
	#16	Quebec Street/E. 162nd Avenue			NB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Others
	#17	Yosemite Street/ North Site Access	EB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
			WB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
			NB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
			NB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
			SB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
			SB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
	#18	Yosemite Street/ South Site Access	EB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
			WB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
			NB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
			NB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
			SB LT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
			SB RT - construct lane - 1 @ 200 feet and 100-foot transition taper	Applicant		
	#19	Yosemite Street/ E. 163rd Avenue	No improvements recommended			
	#20	Quebec Street/ E. 162nd Avenue	No improvements recommended			
	#21	Lima Street/ Lansing Court	No improvements recommended			
	#22	Lima Street/ E. 166th Avenue	Construct east leg of the intersection	Applicant		

(1) A transition taper of 25:1 was used for E. 160th Avenue (SH 7) based on a posted speed limit of 60 mph (300 feet). Dual left-turn lanes have transition taper lengths of 600 feet. An appropriate redirect taper for 60 mph is 60:1

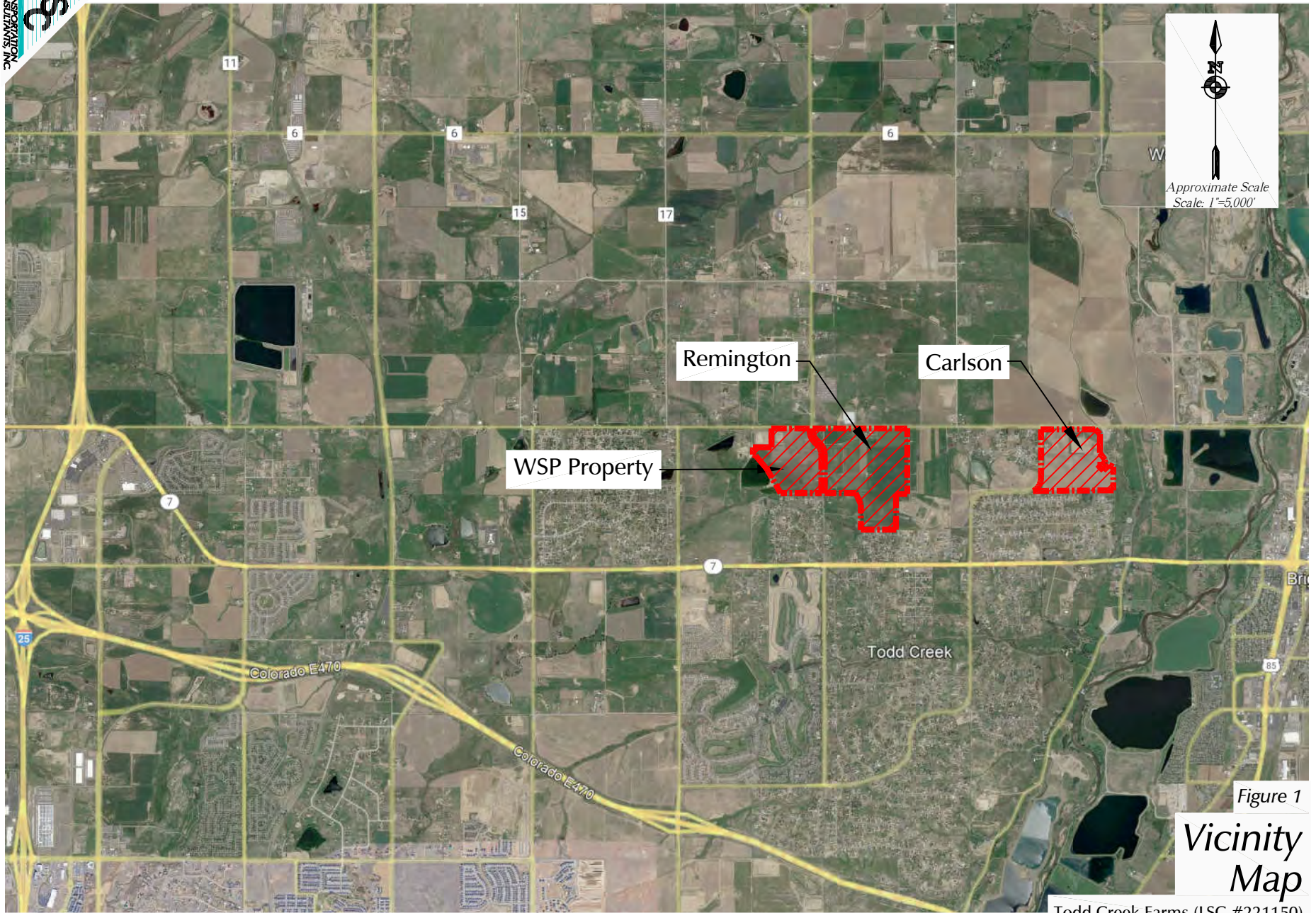


Figure 1
**Vicinity
Map**

Todd Creek Farms (LSC #221150)



Figure 2a

WSP Property Site Plan

Todd Creek Farms (LSC #221150)



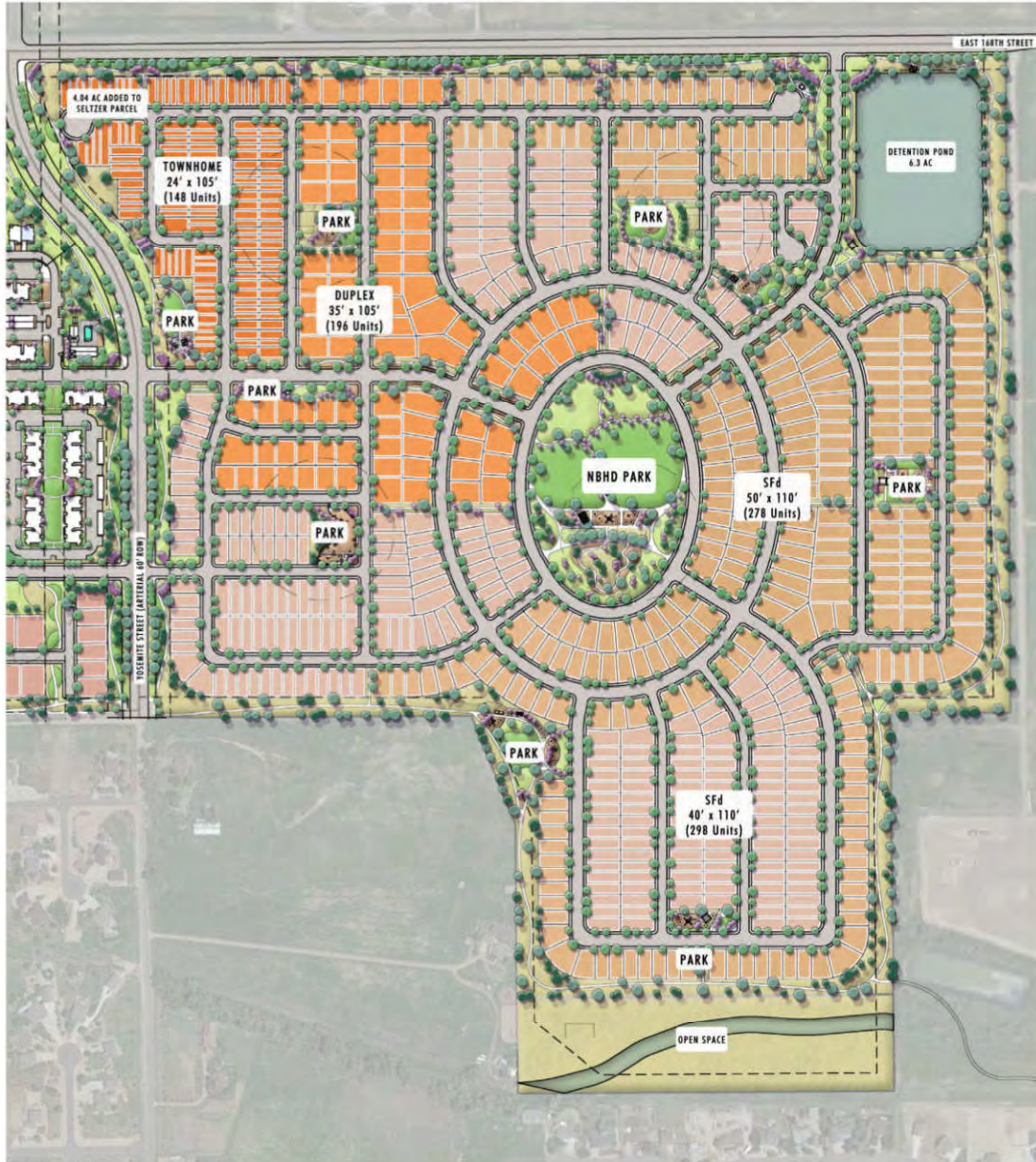


Figure 2b

Remington Site Plan

Todd Creek Farms (LSC #221150)





Figure 2c

Carlson Site Plan

Todd Creek Farms (LSC #221150)



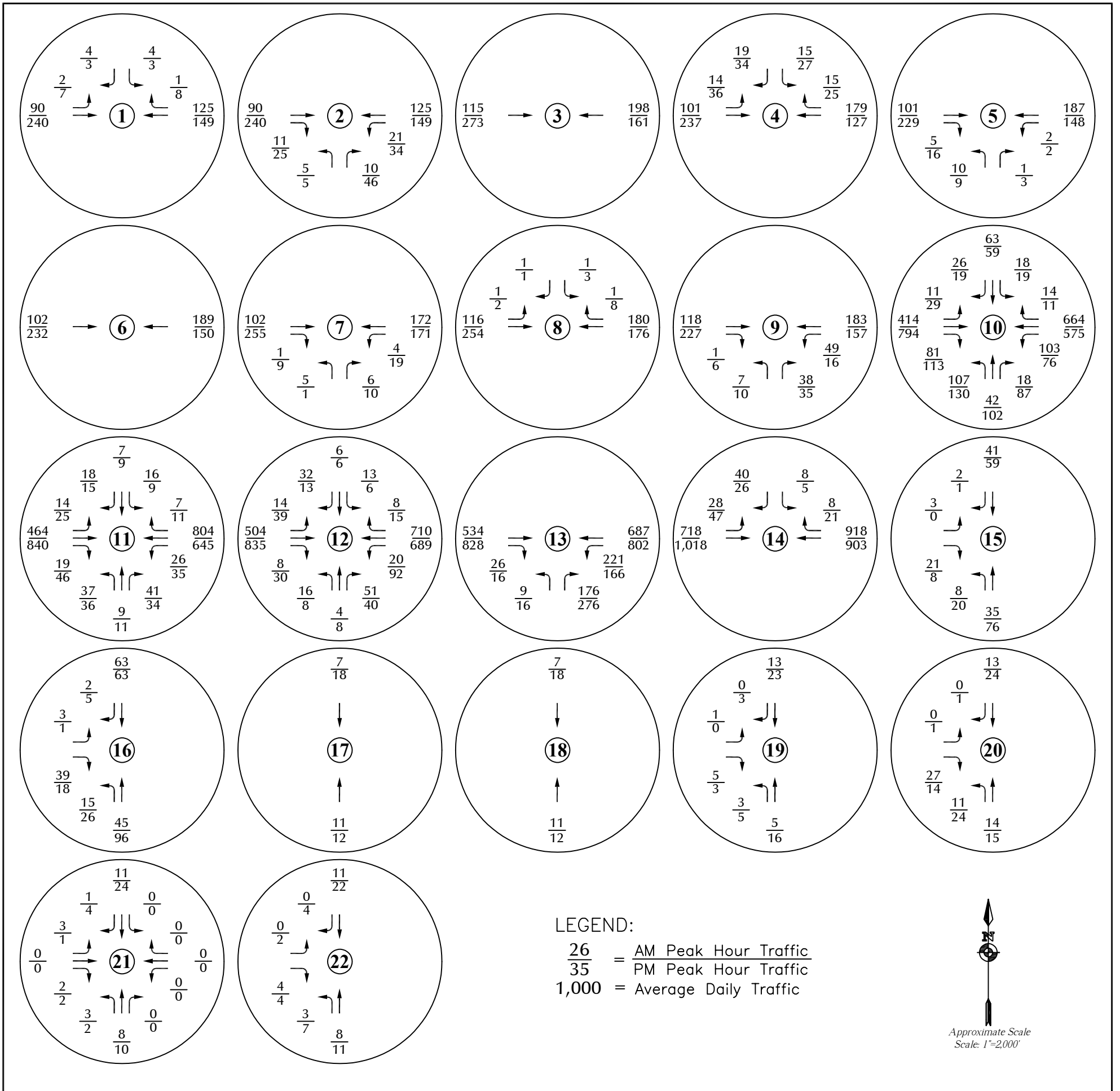


Figure 3a

Existing Traffic

Todd Creek Farms (LSC #221150)

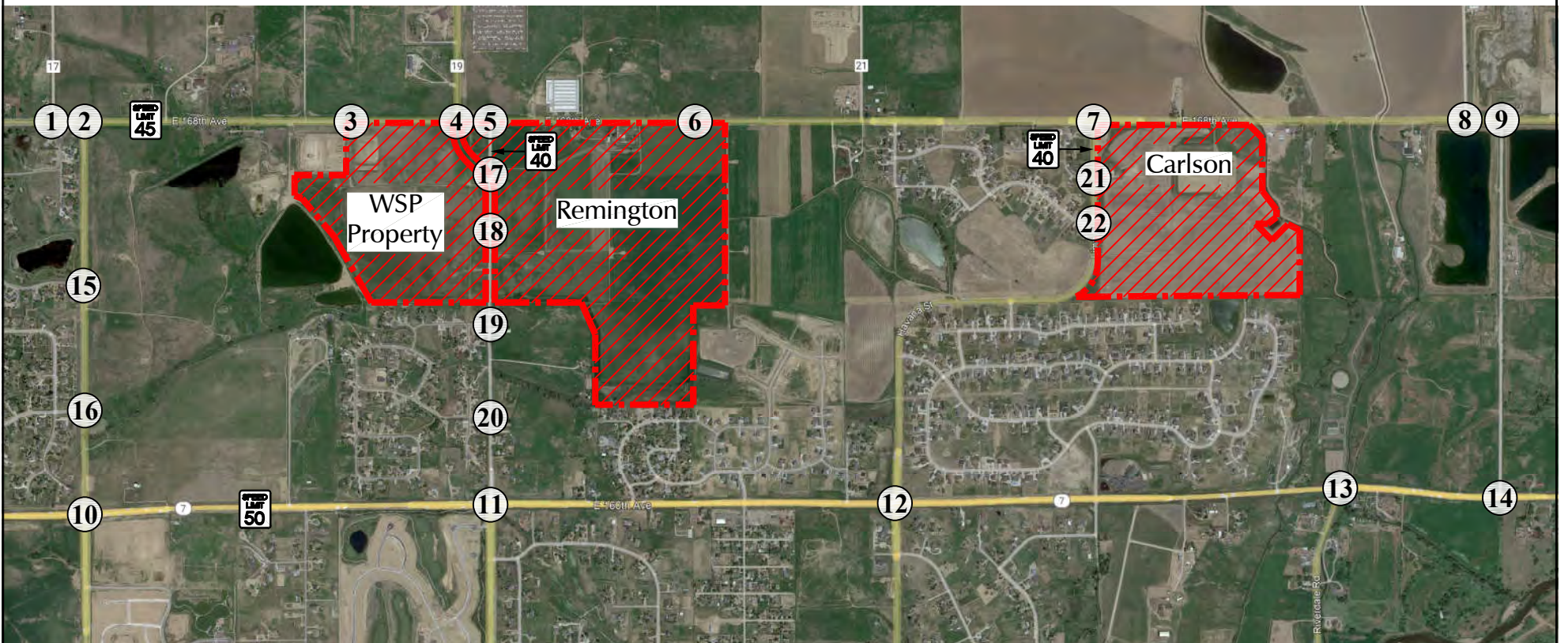
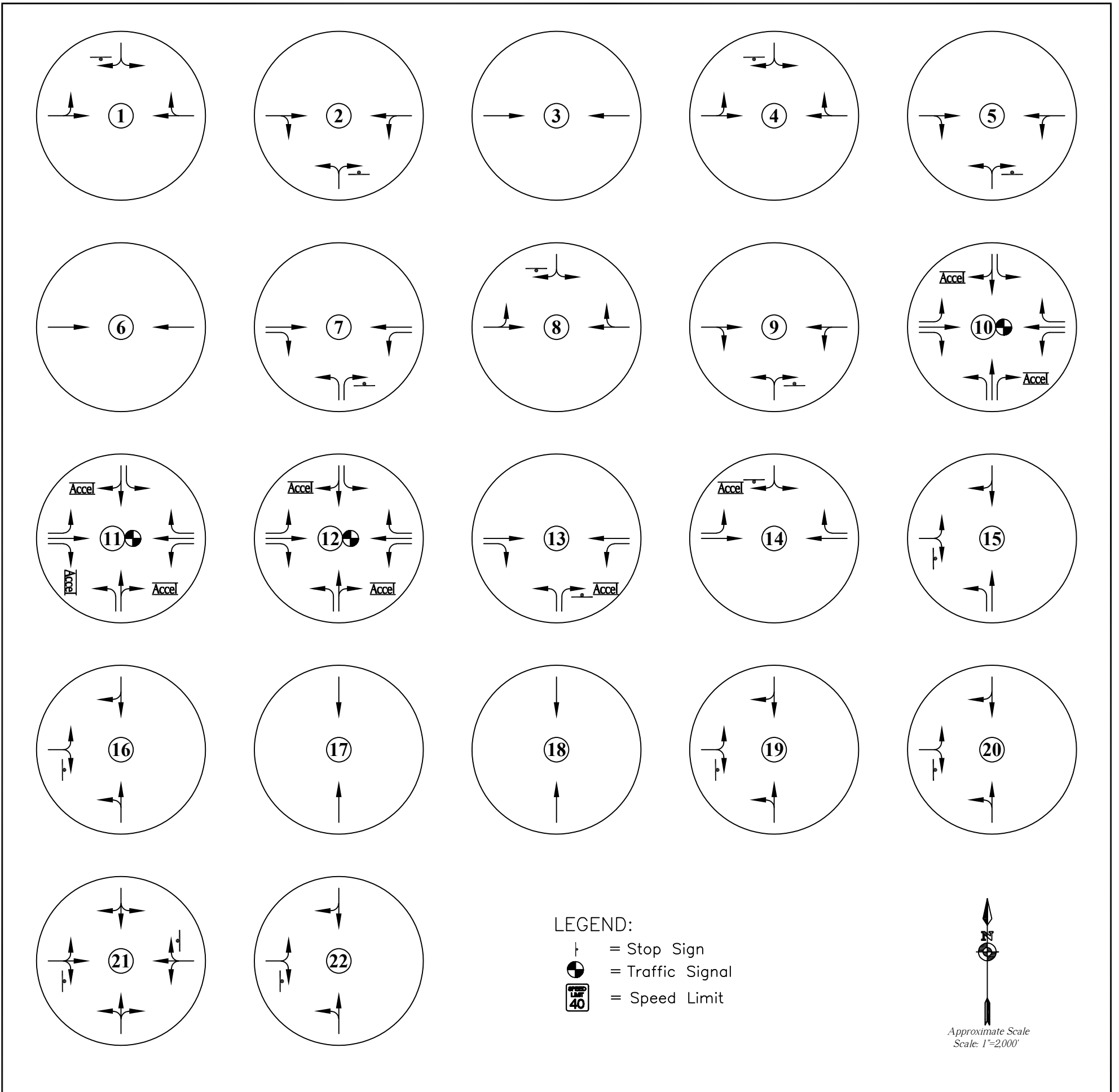
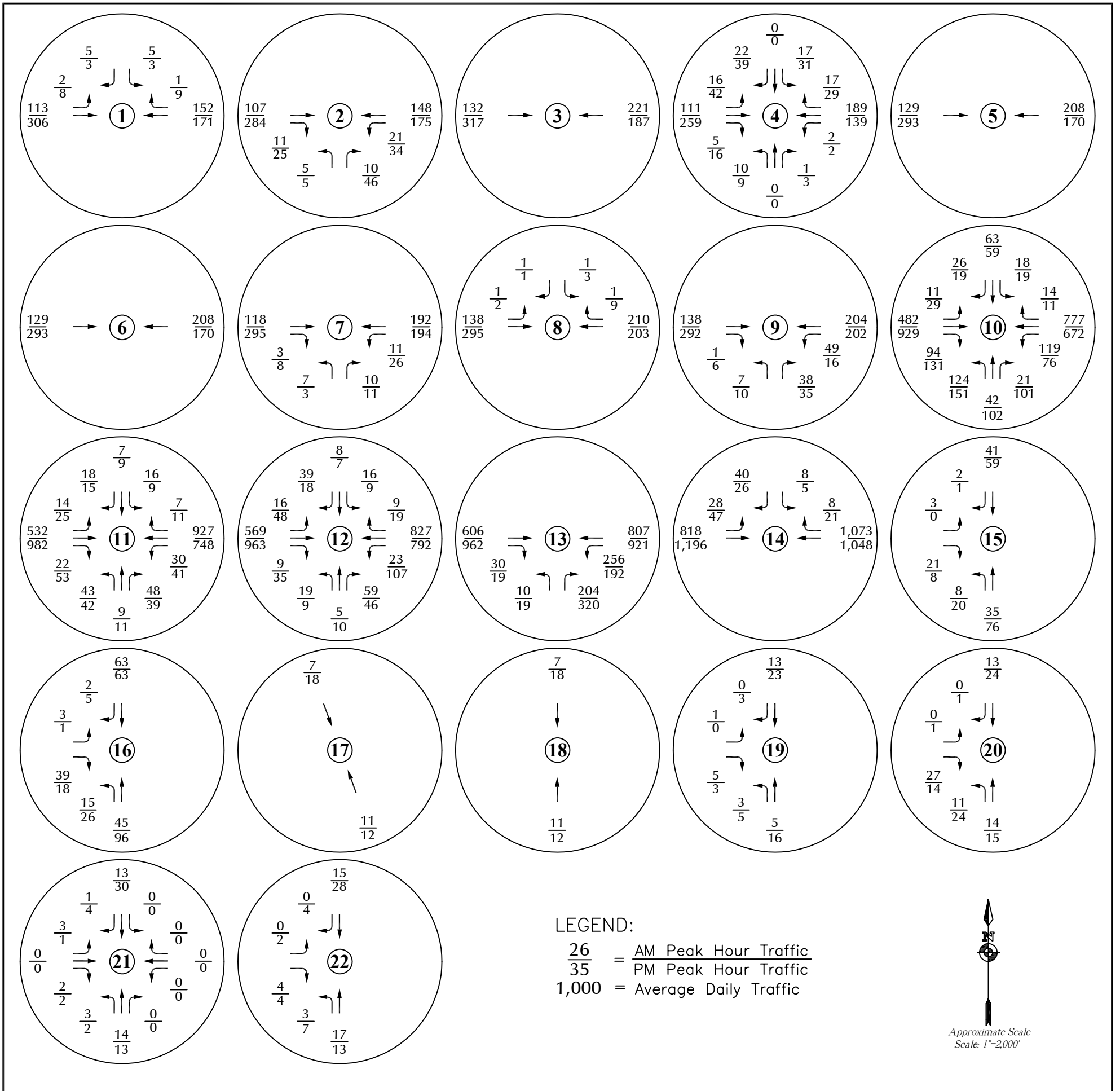


Figure 3b

Existing Lane Geometry and Traffic Control

Todd Creek Farms (LSC #221150)





Note: Based on annual growth rate of three percent on E. 160th Avenue (SH 7) and E. 168th Avenue plus trips from the nearby Baseline Lakes development.

Figure 4a
Year 2028
Background Traffic
 Todd Creek Farms (LSC #221150)



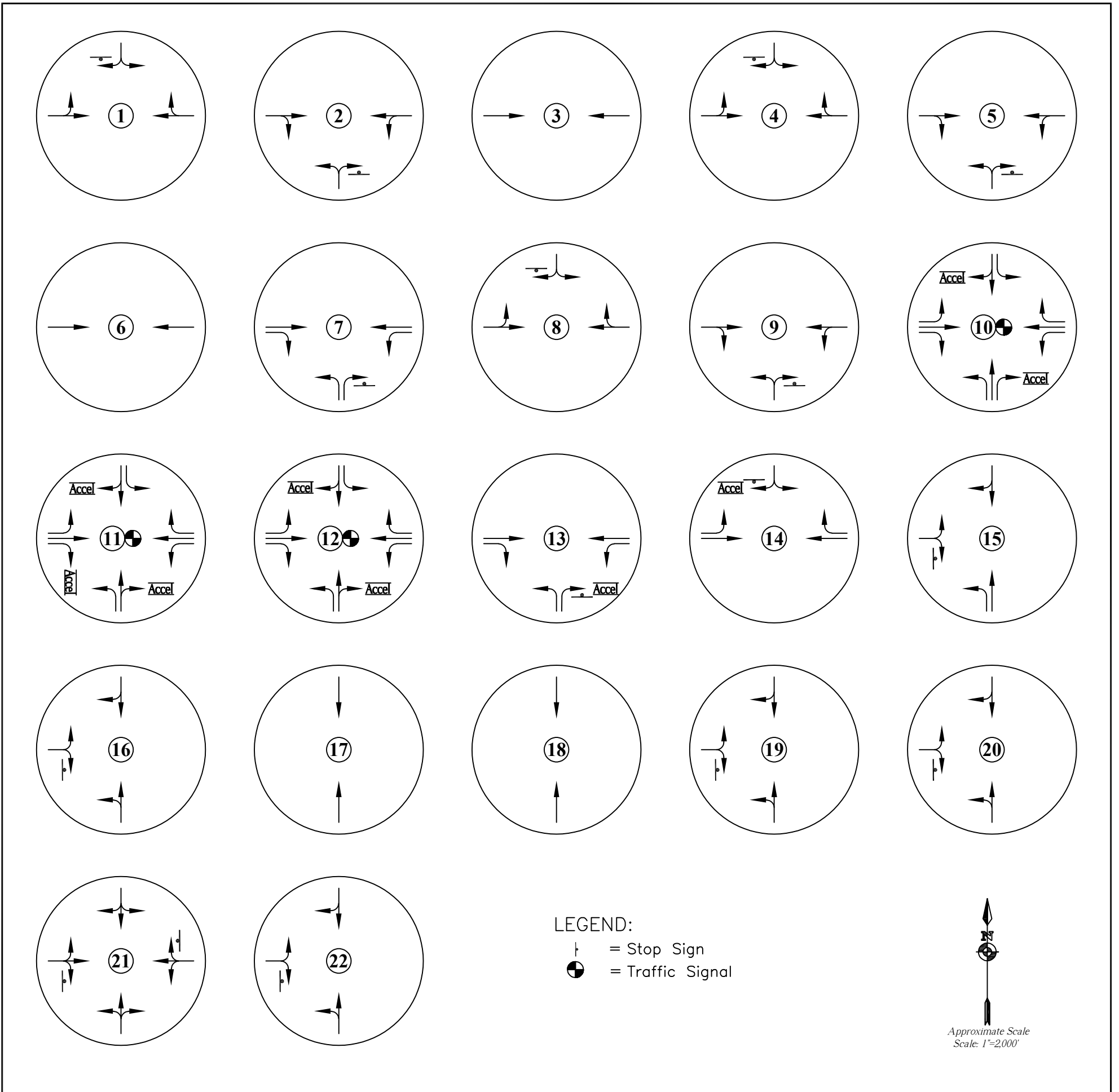
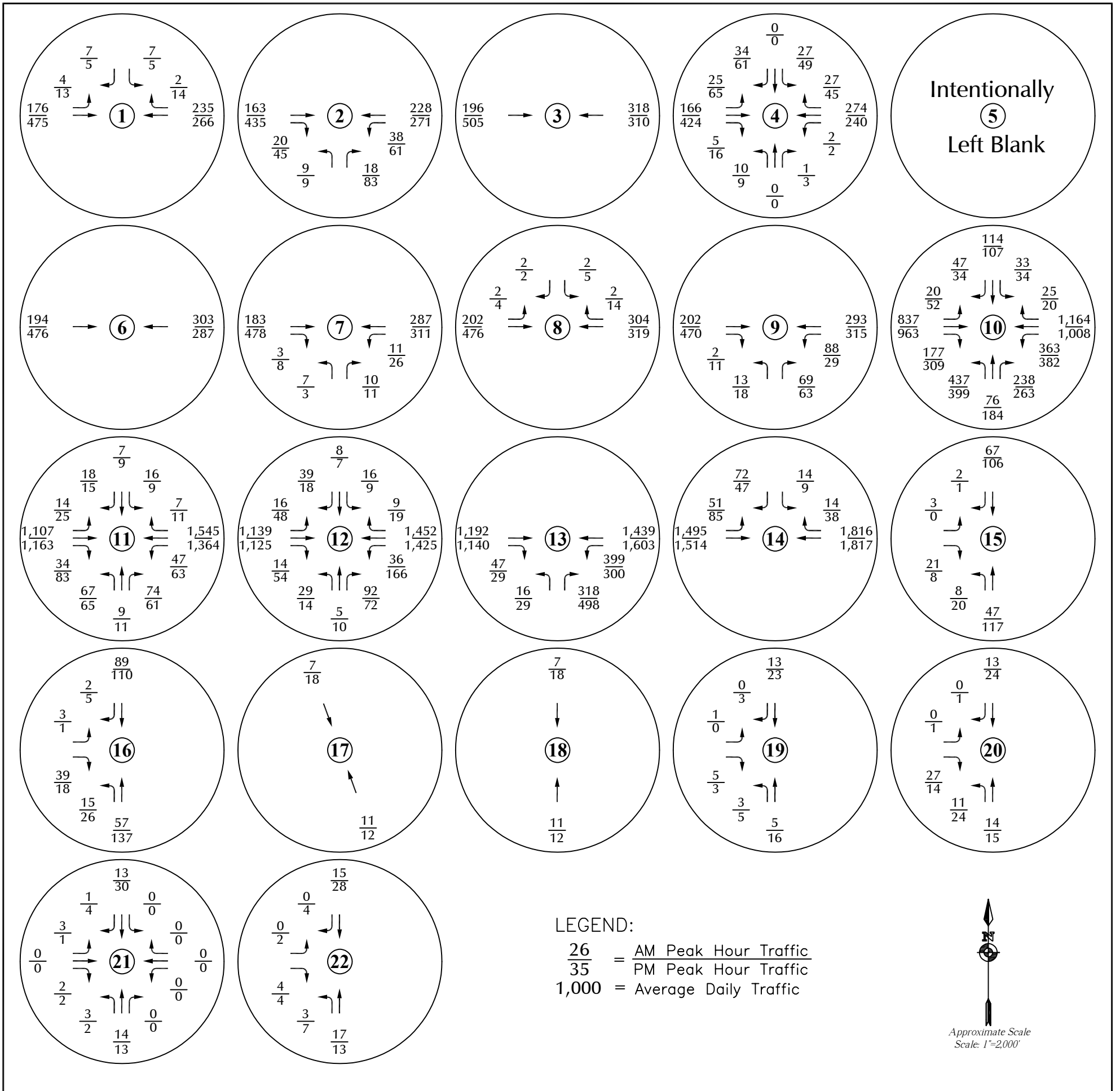


Figure 4b

Year 2028 Background Lane Geometry and Traffic Control

Todd Creek Farms (LSC #221150)





Note: Based on annual growth rate of three percent and projections from the Holly Village Updated TIA by LSC and the Sack Farms TIA by Rick Engineering Company.

Figure 5a
Year 2043
Background Traffic
 Todd Creek Farms (LSC #221150)



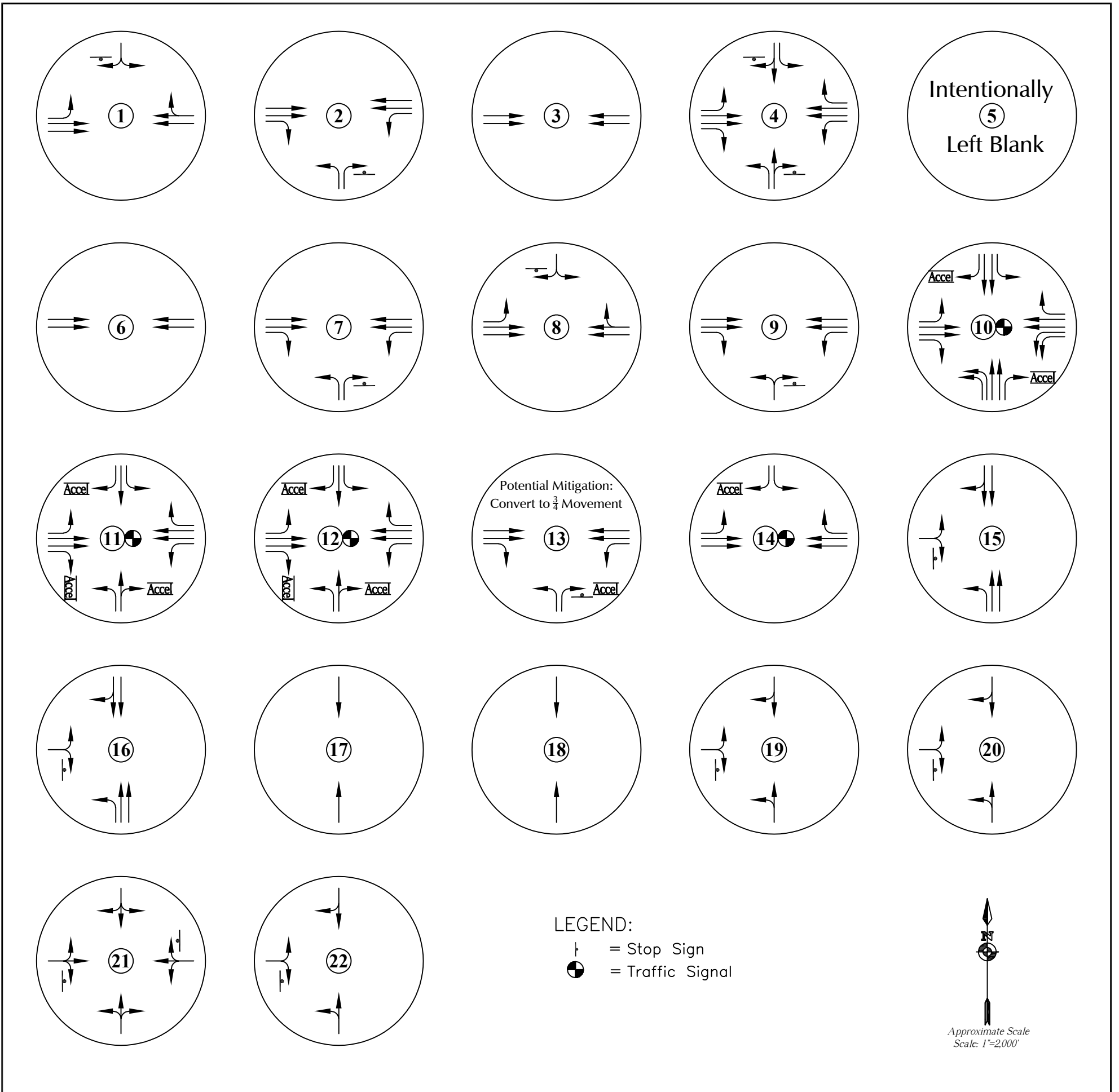
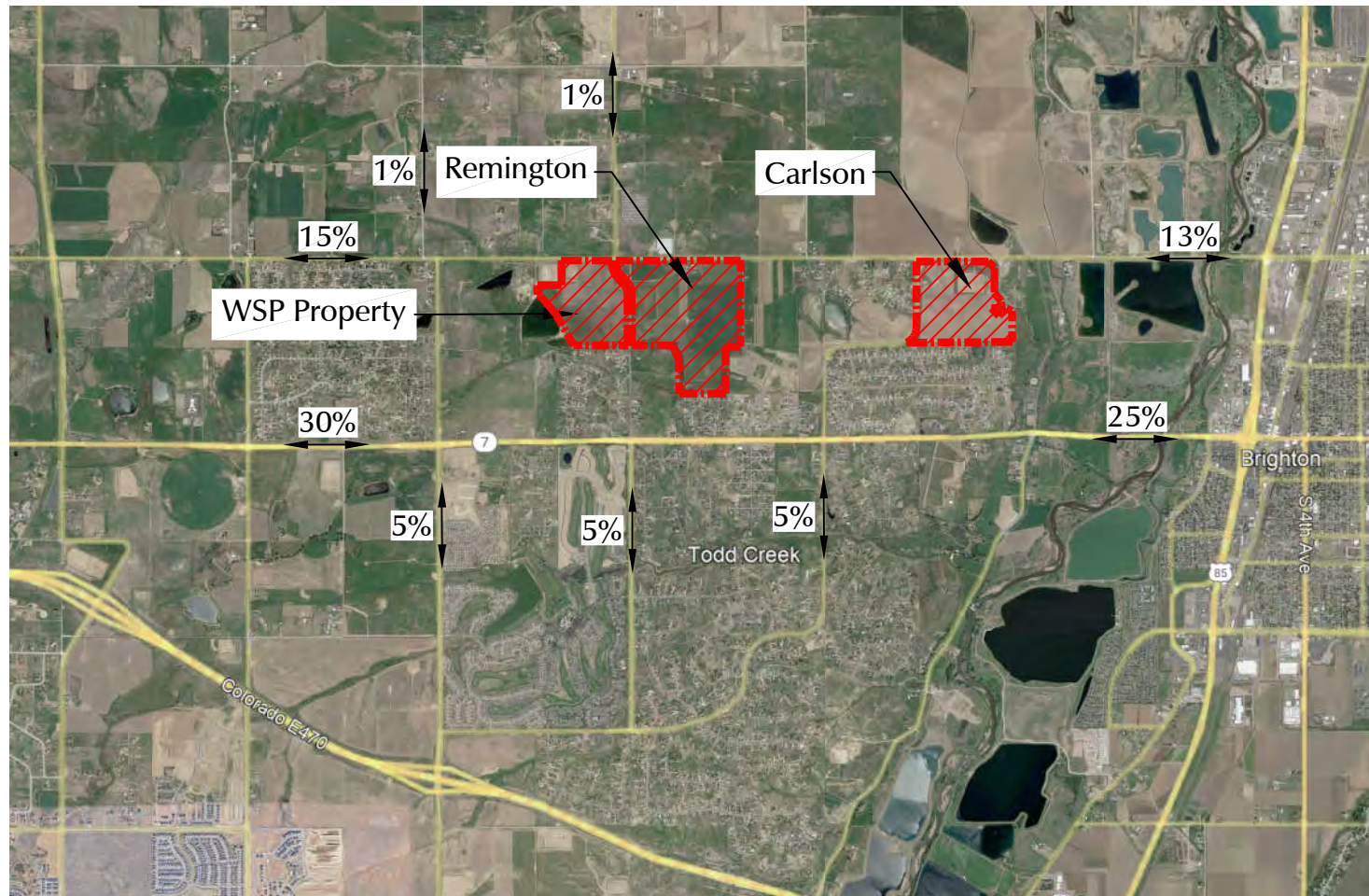


Figure 5b

Year 2043 Background Lane Geometry and Traffic Control

Todd Creek Farms (LSC #221150)





Approximate Scale
Scale: 1"=5,000'

LEGEND:

← 65% → = Percent Directional Distribution

Figure 6
Directional Distribution of Site-Generated Traffic

Todd Creek Farms (LSC #221150)

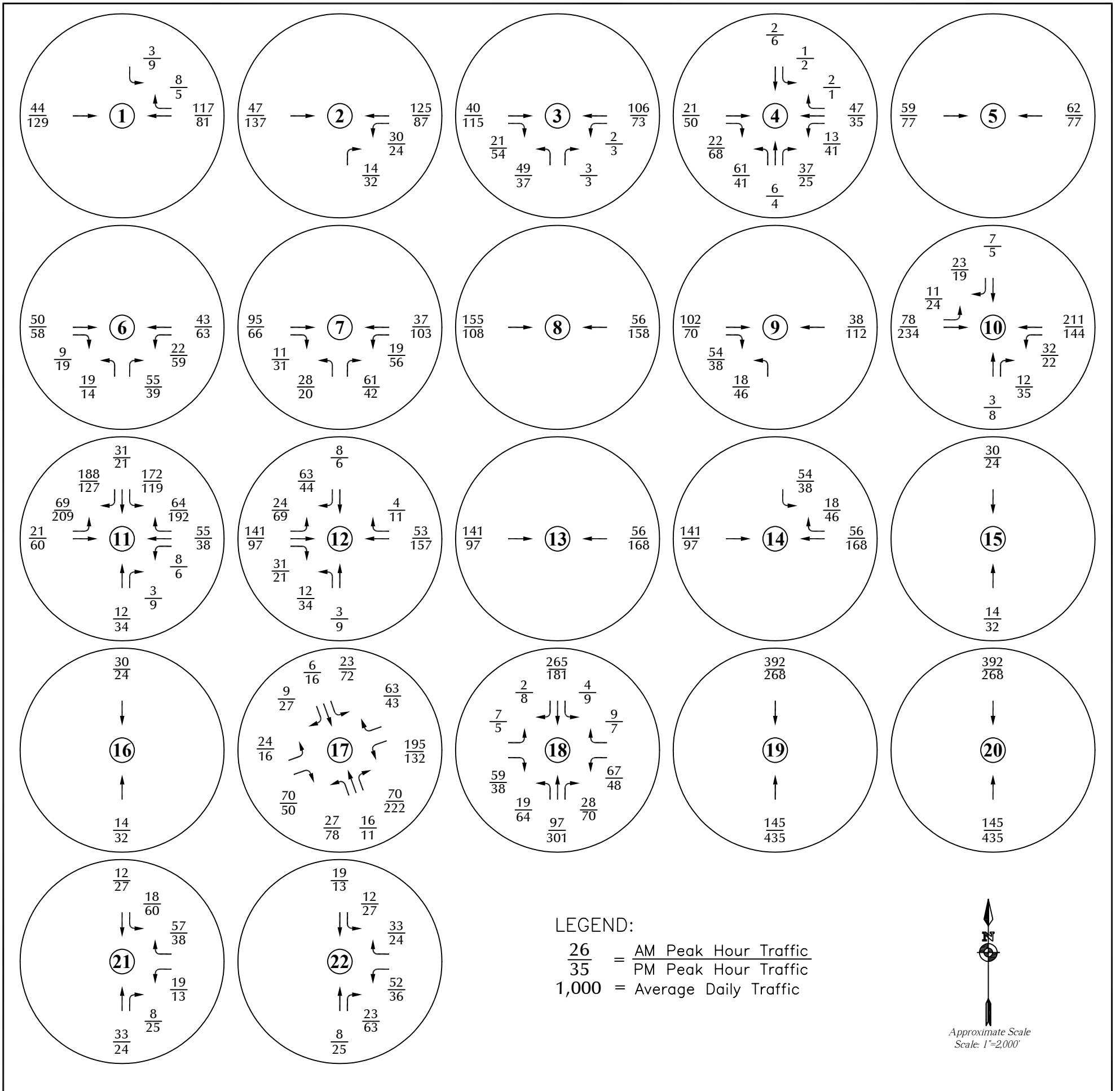
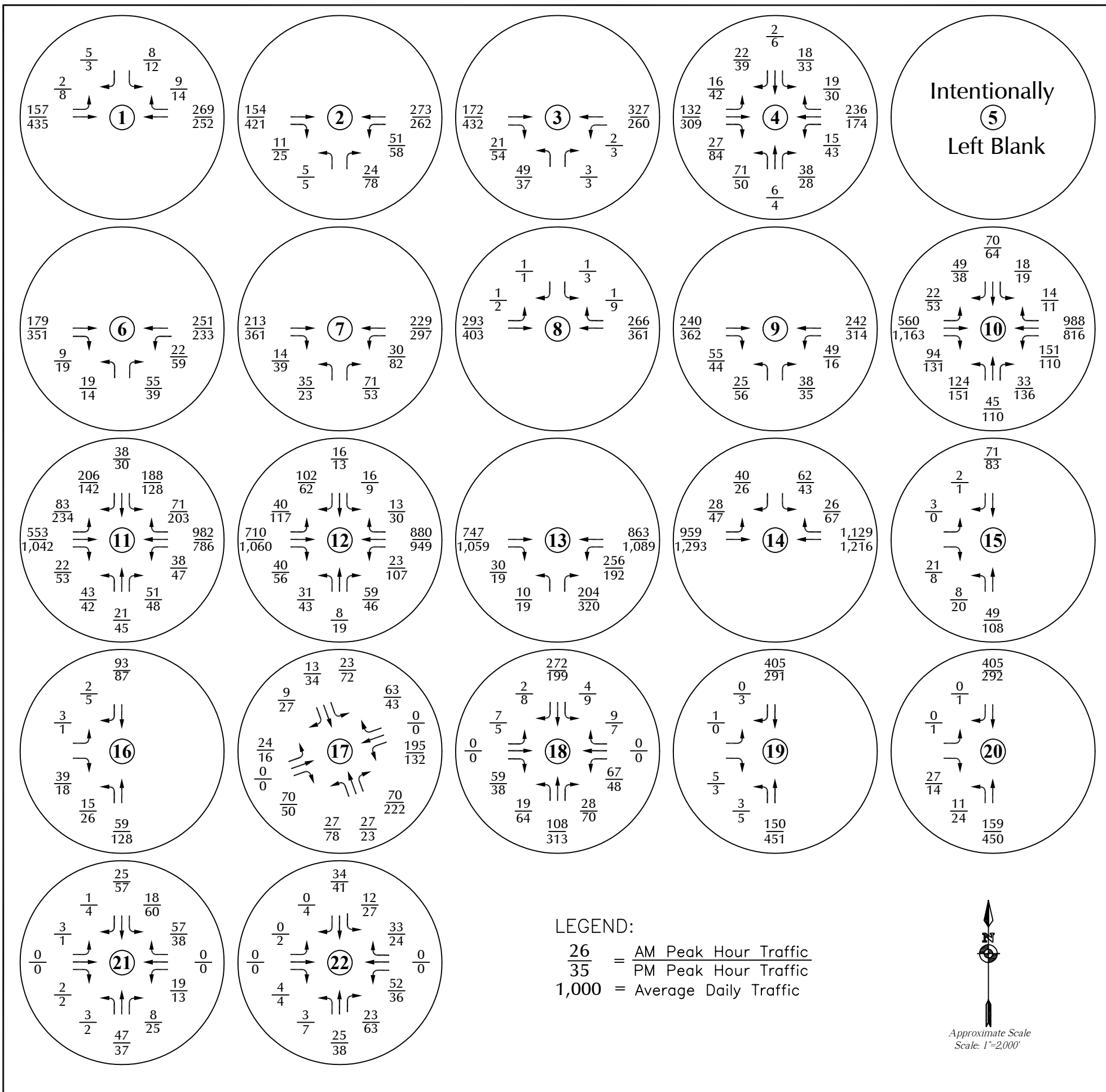


Figure 7

Assignment of Site-Generated Traffic

Todd Creek Farms (LSC #221150)





Note: These volumes are the sum of the volumes in Figures 4a and 7.

Figure 8a

Year 2028 Total Traffic

Todd Creek Farms (LSC #221150)



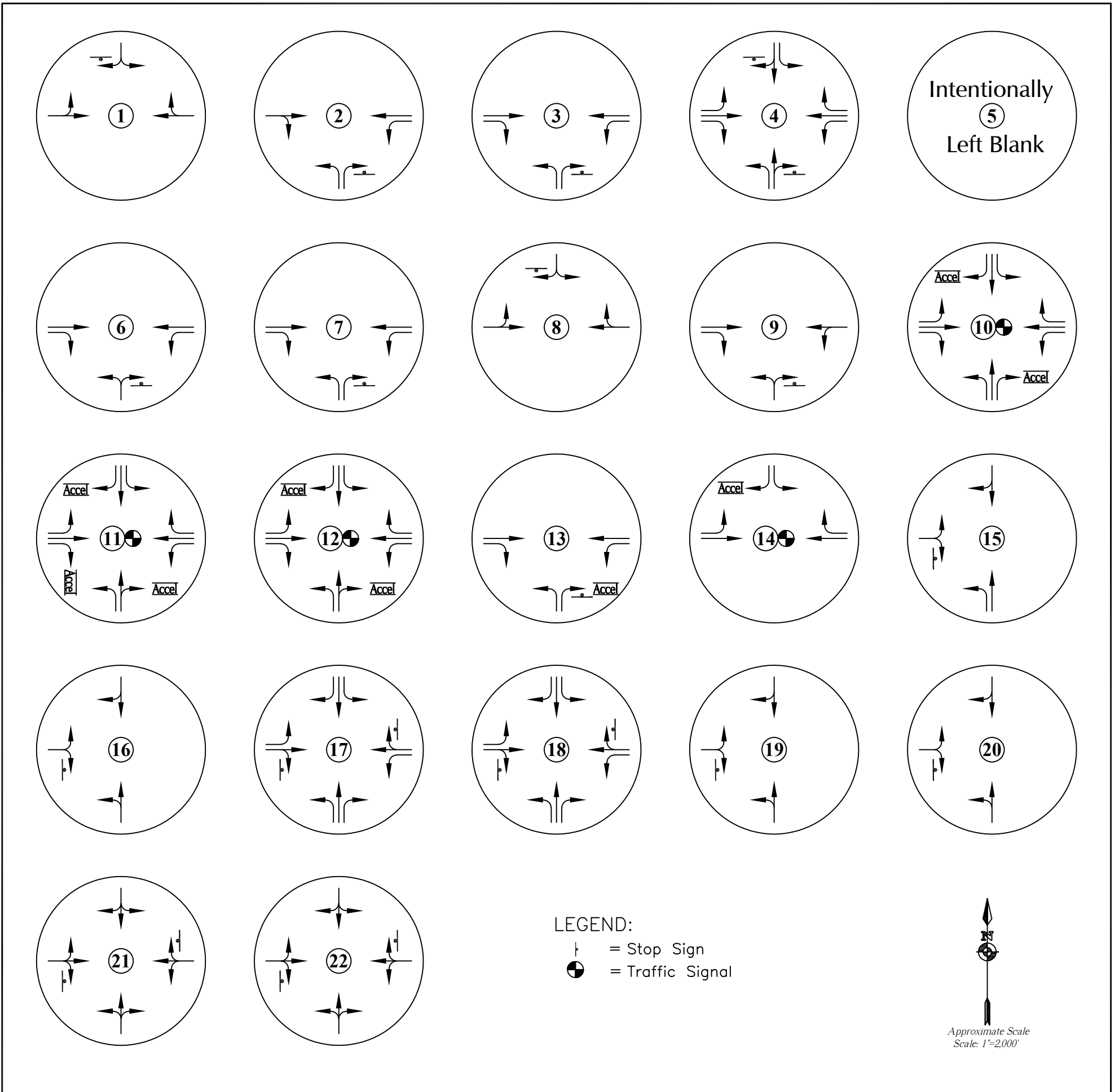
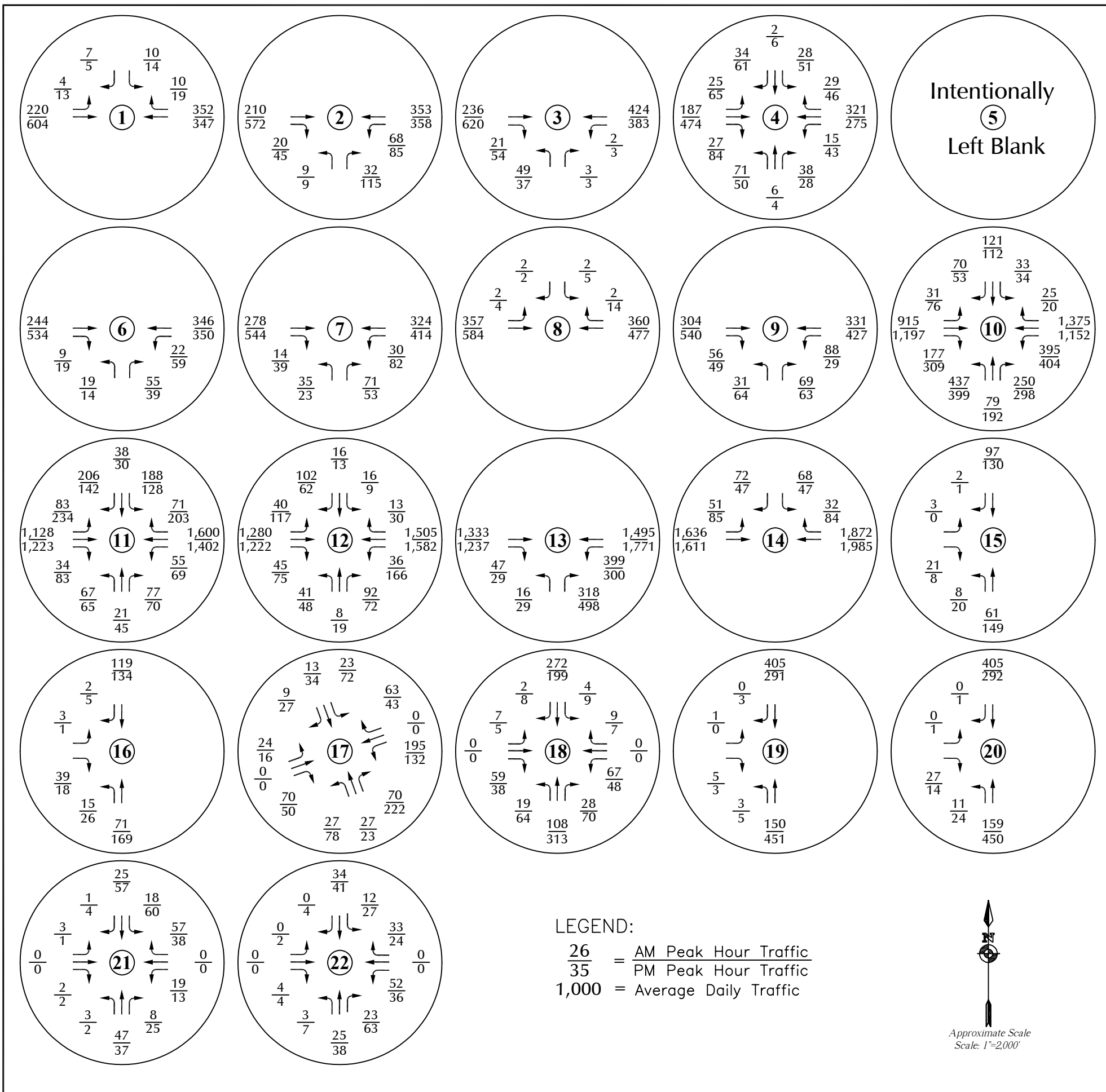


Figure 8b

**Year 2028 Total
Lane Geometry and Traffic Control**
 Todd Creek Farms (LSC #221150)



Note: These volumes are the sum of the volumes in Figures 5a and 7.

Figure 9a

Year 2043 Total Traffic

Todd Creek Farms (LSC #221150)



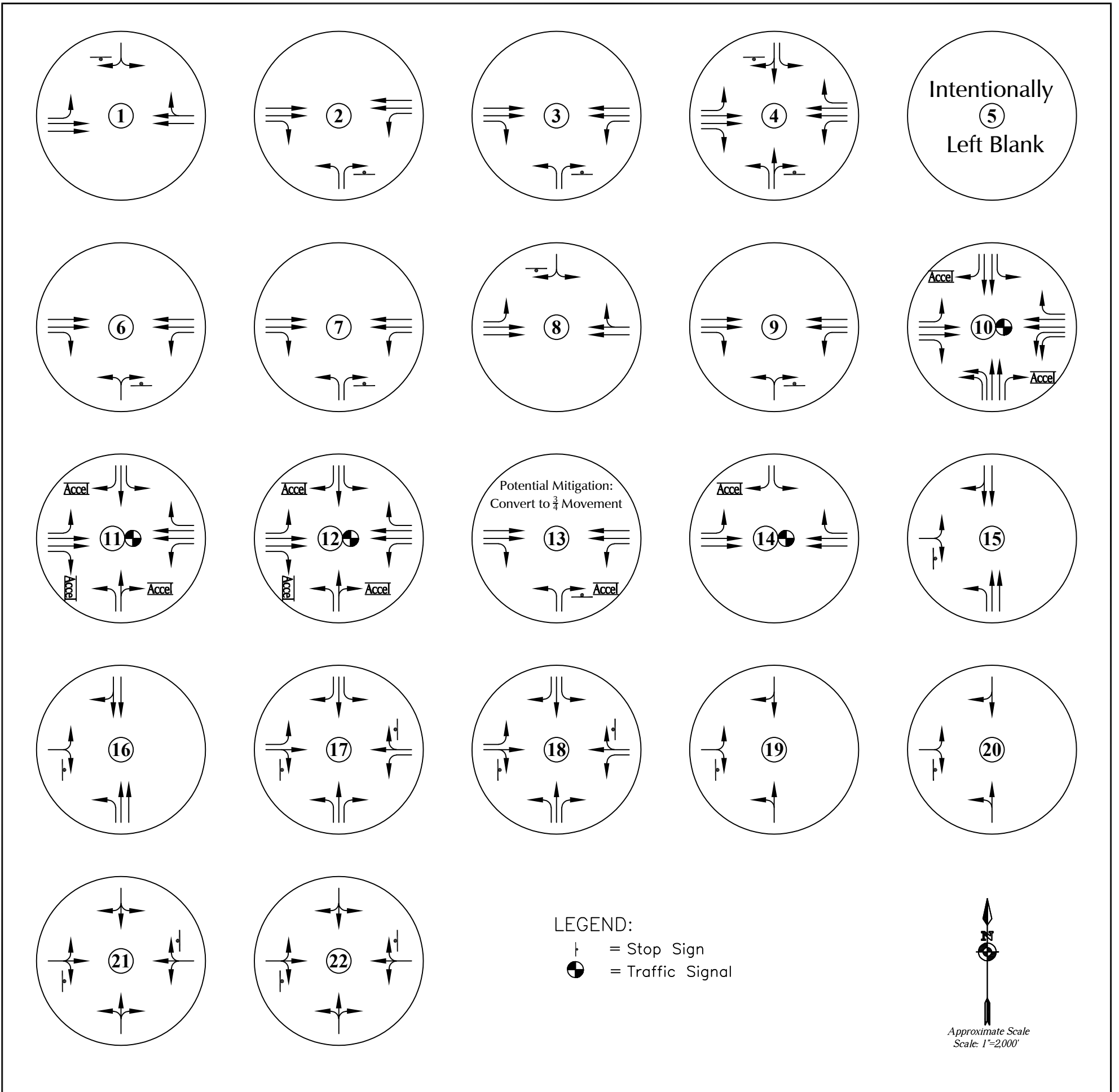


Figure 9b

Year 2043 Total Lane Geometry and Traffic Control

Todd Creek Farms (LSC #221150)

Traffic Counts

COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: CR 17
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : CR17168TH
Site Code : 00000005
Start Date : 2/9/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	CR 17 Southbound			E. 168TH AVE Westbound			NO ACCESS Northbound			E. 168TH AVE Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	0	0	26	0	0	0	0	0	17	0	43
06:45 AM	0	0	1	0	27	0	0	0	0	0	23	0	51
Total	0	0	1	0	53	0	0	0	0	0	40	0	94
07:00 AM	1	0	0	0	18	0	0	0	0	0	26	0	45
07:15 AM	0	0	1	0	43	1	0	0	0	0	27	0	72
07:30 AM	1	0	2	0	44	0	0	0	0	1	23	0	71
07:45 AM	2	0	1	0	32	1	0	0	0	0	19	0	55
Total	4	0	4	0	137	2	0	0	0	1	95	0	243
08:00 AM	1	0	0	0	31	0	0	0	0	1	27	0	60
08:15 AM	0	0	1	0	18	0	0	0	0	0	21	0	40
Total	1	0	1	0	49	0	0	0	0	1	48	0	100
04:00 PM	0	0	1	0	33	2	0	0	0	0	66	0	102
04:15 PM	1	0	0	0	28	1	0	0	0	2	58	0	90
04:30 PM	0	0	1	0	43	1	0	0	0	1	47	0	93
04:45 PM	2	0	1	0	26	3	0	0	0	1	49	0	82
Total	3	0	3	0	130	7	0	0	0	4	220	0	367
05:00 PM	0	0	0	0	45	2	0	0	0	2	73	0	122
05:15 PM	1	0	1	0	35	2	0	0	0	3	71	0	113
05:30 PM	1	0	1	0	38	1	0	0	0	1	79	0	121
05:45 PM	0	0	0	0	35	1	0	0	0	0	65	0	101
Total	2	0	2	0	153	6	0	0	0	6	288	0	457
Grand Total	10	0	11	0	522	15	0	0	0	12	691	0	1261
Apprch %	47.6	0.0	52.4	0.0	97.2	2.8	0.0	0.0	0.0	1.7	98.3	0.0	
Total %	0.8	0.0	0.9	0.0	41.4	1.2	0.0	0.0	0.0	1.0	54.8	0.0	

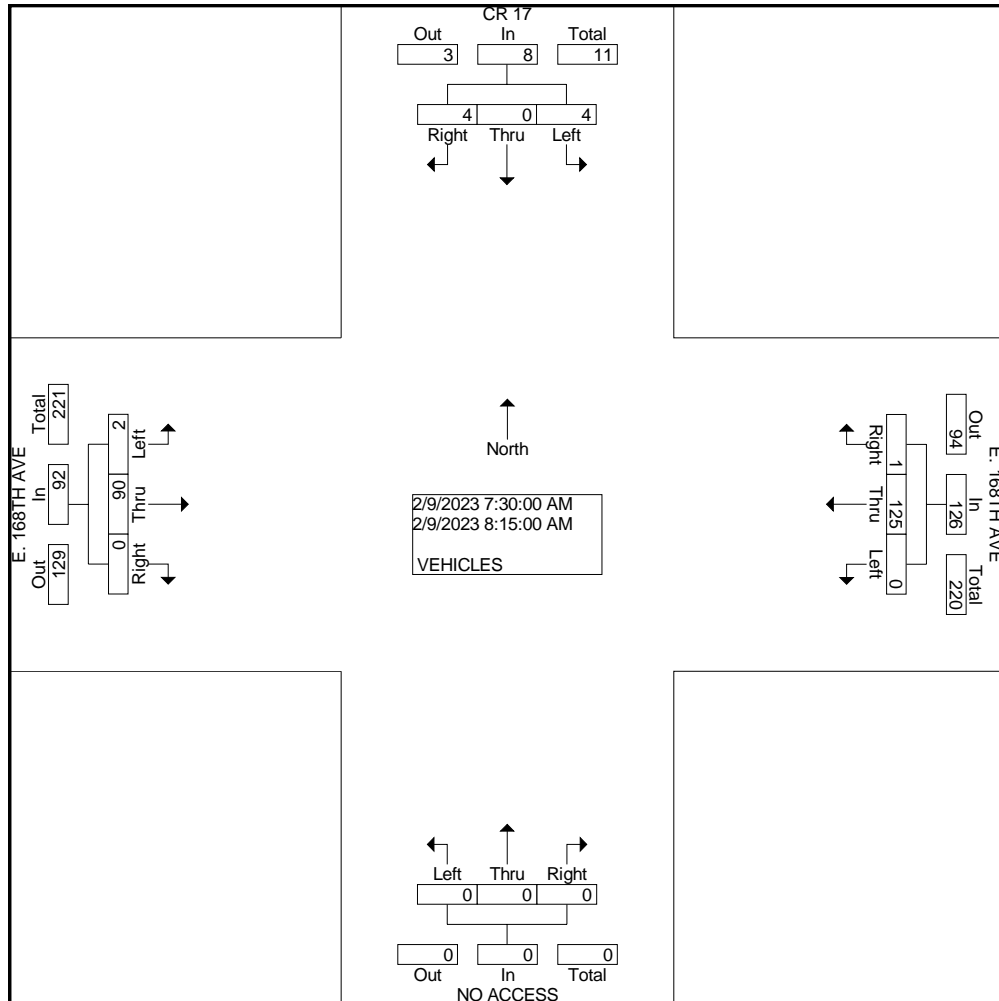
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: CR 17
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : CR17168TH
Site Code : 00000005
Start Date : 2/9/2023
Page No : 2

Start Time	CR 17 Southbound				E. 168TH AVE Westbound				NO ACCESS Northbound				E. 168TH AVE Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	4	0	4	8	0	125	1	126	0	0	0	0	2	90	0	92	226
Percent	50.0	0.0	50.0		0.0	99.2	0.8		0.0	0.0	0.0		2.2	97.8	0.0		
07:30 Volume	1	0	2	3	0	44	0	44	0	0	0	0	1	23	0	24	71
Peak Factor	0.796																
High Int.	07:30 AM																
Volume	1	0	2	3	0	44	0	44	0	0	0	0	1	27	0	28	
Peak Factor	0.667				0.716								0.821				



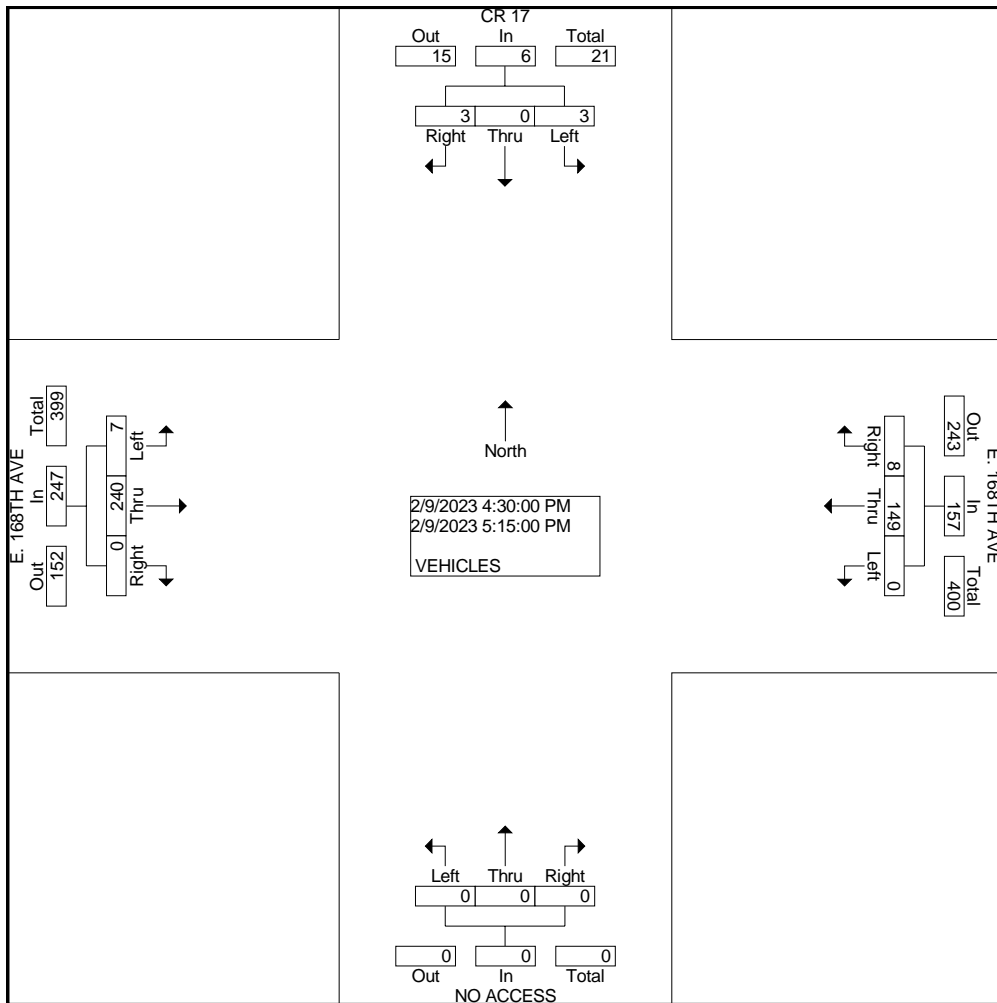
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: CR 17
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : CR17168TH
Site Code : 00000005
Start Date : 2/9/2023
Page No : 3

Start Time	CR 17 Southbound				E. 168TH AVE Westbound				NO ACCESS Northbound				E. 168TH AVE Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Intersection	04:30 PM																
Volume	3	0	3	6	0	149	8	157	0	0	0	0	7	240	0	247	410
Percent	50.0	0.0	50.0		0.0	94.9	5.1		0.0	0.0	0.0		2.8	97.2	0.0		
05:00																	
Volume	0	0	0	0	0	45	2	47	0	0	0	0	2	73	0	75	122
Peak Factor	0.840																
High Int.	04:45 PM																
Volume	2	0	1	3	0	45	2	47	0	0	0	0	2	73	0	75	
Peak Factor	0.500				0.835								0.823				



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: CR 19
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : CR19168TH
Site Code : 00000005
Start Date : 1/26/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	CR 19 Southbound				E. 168TH AVE Westbound				NO ACCESS Northbound				E. 168TH AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	3	0	0	0	0	34	6	0	0	0	0	0	2	19	0	0	64
06:45 AM	2	0	7	0	0	49	1	0	0	0	0	0	4	22	0	0	85
Total	5	0	7	0	0	83	7	0	0	0	0	0	6	41	0	0	149
07:00 AM	0	0	5	0	0	64	5	0	0	0	0	0	6	24	0	0	104
07:15 AM	5	0	5	0	0	69	0	0	0	0	0	0	2	26	0	0	107
07:30 AM	4	0	9	0	0	53	7	0	0	0	0	0	5	27	0	0	105
07:45 AM	4	0	4	0	0	46	5	0	0	0	0	0	4	25	0	0	88
Total	13	0	23	0	0	232	17	0	0	0	0	0	17	102	0	0	404
08:00 AM	4	0	2	0	0	39	1	0	0	0	0	0	3	31	0	0	80
08:15 AM	3	0	4	0	0	41	2	0	0	0	0	0	2	18	0	0	70
Total	7	0	6	0	0	80	3	0	0	0	0	0	5	49	0	0	150
04:00 PM	4	0	2	0	0	33	3	0	0	0	0	0	6	70	0	0	118
04:15 PM	4	0	8	0	0	38	3	0	0	0	0	0	5	61	0	0	119
04:30 PM	6	0	7	0	0	30	9	0	0	0	0	0	9	53	0	0	114
04:45 PM	7	0	12	0	0	37	4	0	0	0	0	0	9	64	0	0	133
Total	21	0	29	0	0	138	19	0	0	0	0	0	29	248	0	0	484
05:00 PM	6	0	8	0	0	32	8	0	0	0	0	0	8	75	0	0	137
05:15 PM	8	0	7	0	0	28	4	0	0	0	0	0	10	45	0	0	102
05:30 PM	3	0	3	0	0	38	4	0	0	0	0	0	4	59	0	0	111
05:45 PM	4	0	9	0	0	22	2	0	0	0	0	0	7	52	0	0	96
Total	21	0	27	0	0	120	18	0	0	0	0	0	29	231	0	0	446
Grand Total	67	0	92	0	0	653	64	0	0	0	0	0	86	671	0	0	1633
Apprch %	42.1	0.0	57.9	0.0	0.0	91.1	8.9	0.0	0.0	0.0	0.0	0.0	11.4	88.6	0.0	0.0	
Total %	4.1	0.0	5.6	0.0	0.0	40.0	3.9	0.0	0.0	0.0	0.0	0.0	5.3	41.1	0.0	0.0	

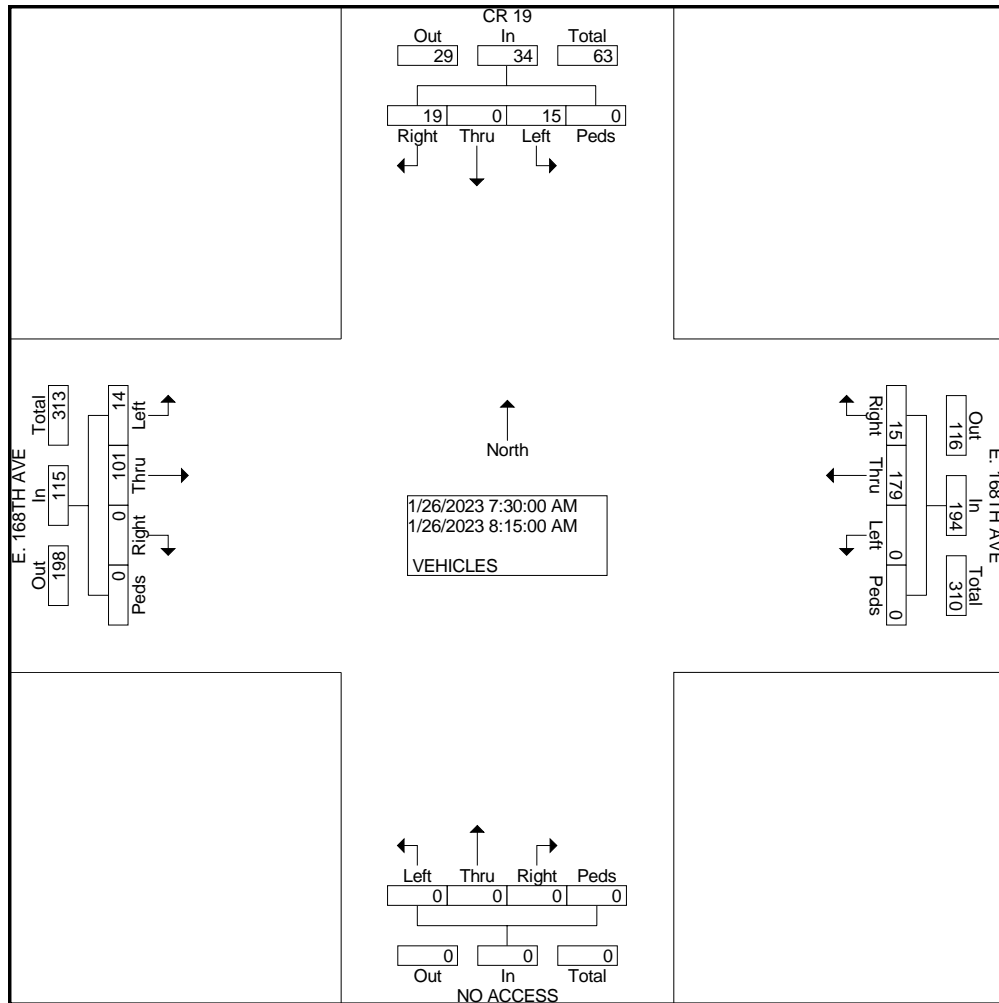
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: CR 19
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : CR19168TH
Site Code : 00000005
Start Date : 1/26/2023
Page No : 2

Start Time	CR 19 Southbound					E. 168TH AVE Westbound					NO ACCESS Northbound					E. 168TH AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	15	0	19	0	34	0	179	15	0	194	0	0	0	0	0	14	101	0	0	115	343
Percent	44.1	0.0	55.9	0.0		0.0	92.3	7.7	0.0		0.0	0.0	0.0	0.0		12.2	87.8	0.0	0.0		
07:30 Volume Peak Factor	4	0	9	0	13	0	53	7	0	60	0	0	0	0	0	5	27	0	0	32	105
High Int. Volume Peak Factor	07:30 AM					07:30 AM					08:00 AM										
	4	0	9	0	13	0	53	7	0	60	0	0	0	0	0	3	31	0	0	34	0.817
						0.65					0.80					0.84					6
						4					8										



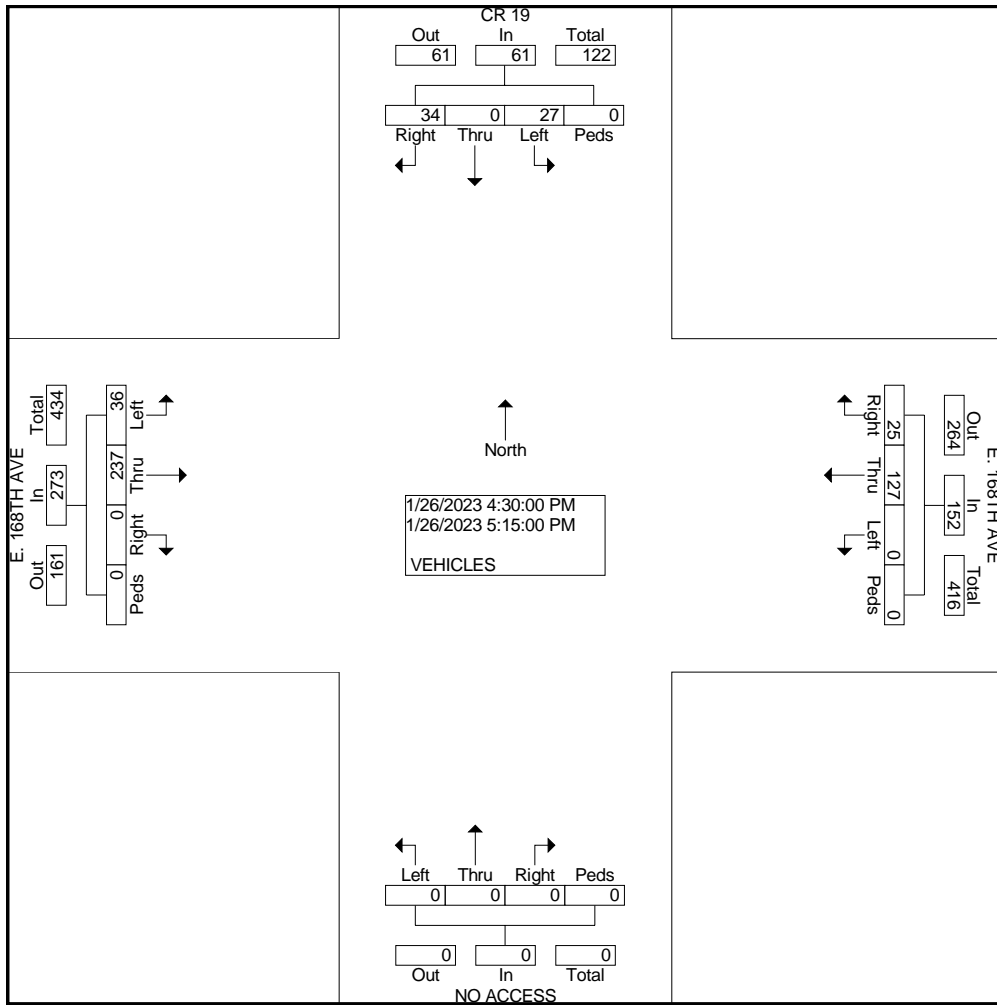
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: CR 19
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : CR19168TH
Site Code : 00000005
Start Date : 1/26/2023
Page No : 3

Start Time	CR 19 Southbound					E. 168TH AVE Westbound					NO ACCESS Northbound					E. 168TH AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Intersect on	04:30 PM																				
Volume	27	0	34	0	61	0	127	25	0	152	0	0	0	0	0	36	237	0	0	273	486
Percent	44.3	0.0	55.7	0.0		0.0	83.6	16.4	0.0		0.0	0.0	0.0	0.0		13.2	86.8	0.0	0.0		
05:00 Volume	6	0	8	0	14	0	32	8	0	40	0	0	0	0	0	8	75	0	0	83	137
Peak Factor	0.887																				
High Int.	04:45 PM																				
Volume	7	0	12	0	19	0	37	4	0	41	0	0	0	0	0	8	75	0	0	83	137
Peak Factor	0.80					0.92										0.82					2



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: CR 23.5
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : CR23.5168TH
Site Code : 00000015
Start Date : 2/9/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	CR 23 1/2 Southbound			E. 168TH AVE Westbound			NO ACCESS Northbound			E. 168TH AVE Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	2	0	1	0	46	0	0	0	0	0	29	0	78
06:45 AM	2	0	2	0	40	1	0	0	0	0	20	0	65
Total	4	0	3	0	86	1	0	0	0	0	49	0	143
07:00 AM	1	0	0	0	64	0	0	0	0	0	25	0	90
07:15 AM	2	0	0	0	61	0	0	0	0	0	23	0	86
07:30 AM	0	0	0	0	54	0	0	0	0	0	26	0	80
07:45 AM	0	0	1	0	46	1	0	0	0	0	33	0	81
Total	3	0	1	0	225	1	0	0	0	0	107	0	337
08:00 AM	0	0	0	0	38	0	0	0	0	0	26	0	64
08:15 AM	1	0	0	0	42	0	0	0	0	1	31	0	75
Total	1	0	0	0	80	0	0	0	0	1	57	0	139
04:00 PM	4	0	0	0	33	3	0	0	0	0	66	0	106
04:15 PM	1	0	1	0	49	1	0	0	0	1	49	0	102
04:30 PM	1	0	0	0	46	0	0	0	0	1	66	0	114
04:45 PM	0	0	1	0	39	0	0	0	0	0	63	0	103
Total	6	0	2	0	167	4	0	0	0	2	244	0	425
05:00 PM	0	0	0	0	45	5	0	1	0	1	68	0	120
05:15 PM	2	0	0	0	46	3	0	0	0	0	57	0	108
05:30 PM	0	0	1	0	34	2	0	0	0	0	47	0	84
05:45 PM	1	0	0	0	36	1	0	0	0	0	58	0	96
Total	3	0	1	0	161	11	0	1	0	1	230	0	408
Grand Total	17	0	7	0	719	17	0	1	0	4	687	0	1452
Apprch %	70.8	0.0	29.2	0.0	97.7	2.3	0.0	100.0	0.0	0.6	99.4	0.0	
Total %	1.2	0.0	0.5	0.0	49.5	1.2	0.0	0.1	0.0	0.3	47.3	0.0	

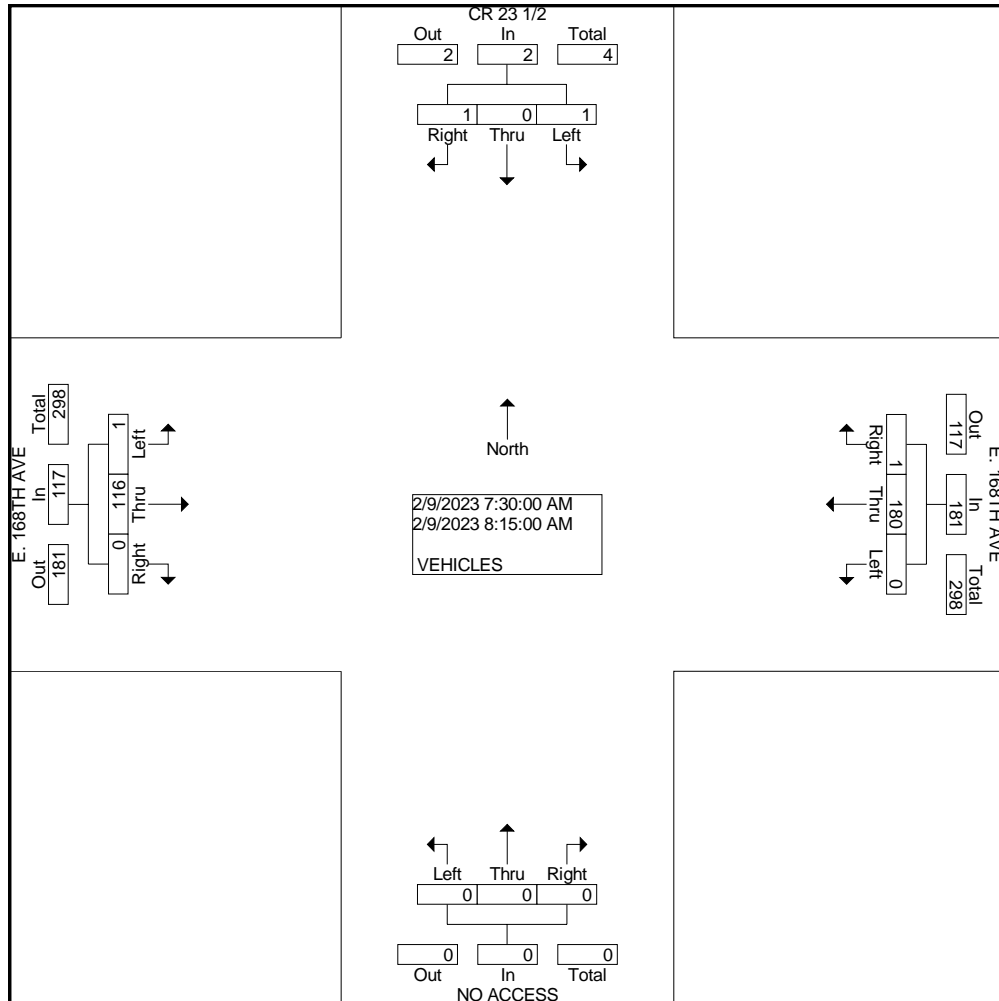
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: CR 23.5
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : CR23.5168TH
Site Code : 00000015
Start Date : 2/9/2023
Page No : 2

Start Time	CR 23 1/2 Southbound				E. 168TH AVE Westbound				NO ACCESS Northbound				E. 168TH AVE Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	1	0	1	2	0	180	1	181	0	0	0	0	1	116	0	117	300
Percent	50.0	0.0	50.0		0.0	99.4	0.6		0.0	0.0	0.0		0.9	99.1	0.0		
07:45																	
Volume	0	0	1	1	0	46	1	47	0	0	0	0	0	33	0	33	81
Peak Factor	0.926																
High Int.	07:45 AM																
Volume	0	0	1	1	0	54	0	54	0	0	0	0	0	33	0	33	
Peak Factor	0.500				0.838								0.886				



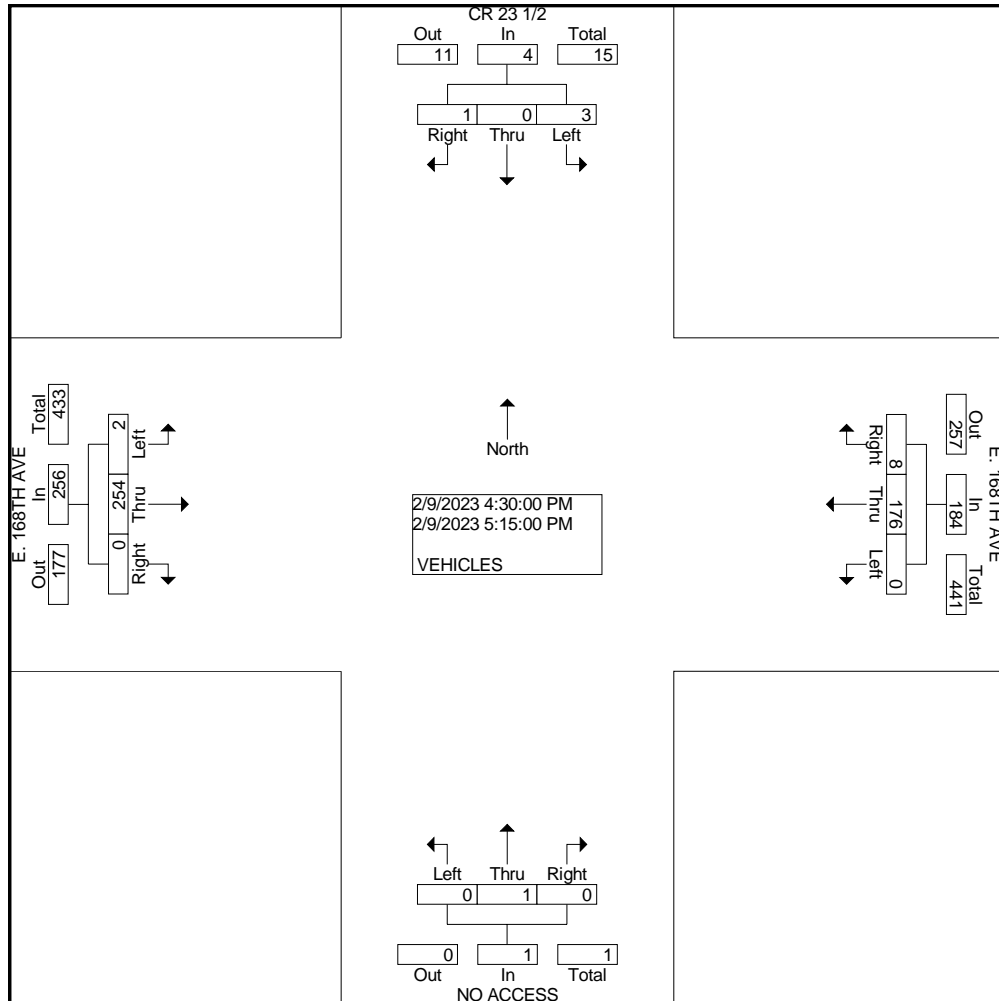
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: CR 23.5
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : CR23.5168TH
Site Code : 0000015
Start Date : 2/9/2023
Page No : 3

Start Time	CR 23 1/2 Southbound				E. 168TH AVE Westbound				NO ACCESS Northbound				E. 168TH AVE Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Intersection	04:30 PM																
Volume	3	0	1	4	0	176	8	184	0	1	0	1	2	254	0	256	445
Percent	75.0	0.0	25.0		0.0	95.7	4.3		0.0	100.0	0.0		0.8	99.2	0.0		
05:00 Volume	0	0	0	0	0	45	5	50	0	1	0	1	1	68	0	69	120
Peak Factor	0.927																
High Int.	05:15 PM																
Volume	2	0	0	2	0	45	5	50	0	1	0	1	1	68	0	69	
Peak Factor	0.500				0.920				0.250				0.928				



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: HAVANA ST
E/W STREET: HWY 7
CITY: BRIGHTON
COUNTY: ADAMS

File Name : HAVAHWY7
Site Code : 00000005
Start Date : 1/17/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	HAVANA ST Southbound				HWY 7 Westbound				HAVANA ST Northbound				HWY 7 Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	2	0	8	0	3	181	0	0	5	0	6	0	0	102	0	0	307
06:45 AM	1	1	4	0	12	147	0	0	3	0	10	0	2	114	2	0	296
Total	3	1	12	0	15	328	0	0	8	0	16	0	2	216	2	0	603
07:00 AM	2	2	7	0	3	196	1	0	7	1	13	0	3	110	0	0	345
07:15 AM	4	2	17	0	3	185	1	0	11	0	8	0	1	137	1	0	370
07:30 AM	7	5	7	0	3	184	0	0	2	0	12	0	0	143	0	0	363
07:45 AM	2	0	9	0	2	154	3	0	3	1	15	0	4	125	2	0	320
Total	15	9	40	0	11	719	5	0	23	2	48	0	8	515	3	0	1398
08:00 AM	2	1	5	0	5	187	4	0	4	2	10	0	3	114	1	0	338
08:15 AM	2	0	11	0	10	185	1	0	7	1	14	0	7	122	5	0	365
Total	4	1	16	0	15	372	5	0	11	3	24	0	10	236	6	0	703
04:00 PM	1	2	1	0	12	175	1	0	4	4	12	0	2	183	5	0	402
04:15 PM	2	1	2	0	11	162	5	0	3	0	11	0	3	171	6	0	377
04:30 PM	1	1	1	0	16	178	3	0	0	1	12	0	8	216	6	0	443
04:45 PM	1	2	8	0	35	167	4	0	2	0	15	0	16	196	5	0	451
Total	5	6	12	0	74	682	13	0	9	5	50	0	29	766	22	0	1673
05:00 PM	1	2	2	0	16	173	7	0	3	3	8	0	9	210	11	0	445
05:15 PM	3	1	2	0	25	171	1	0	3	4	5	0	6	213	8	0	442
05:30 PM	0	2	2	0	5	123	1	0	3	3	4	0	3	166	6	0	318
05:45 PM	0	0	3	0	8	107	1	0	3	2	13	0	6	163	5	0	311
Total	4	5	9	0	54	574	10	0	12	12	30	0	24	752	30	0	1516
Grand Total	31	22	89	0	169	2675	33	0	63	22	168	0	73	2485	63	0	5893
Apprch %	21.8	15.5	62.7	0.0	5.9	93.0	1.1	0.0	24.9	8.7	66.4	0.0	2.8	94.8	2.4	0.0	
Total %	0.5	0.4	1.5	0.0	2.9	45.4	0.6	0.0	1.1	0.4	2.9	0.0	1.2	42.2	1.1	0.0	

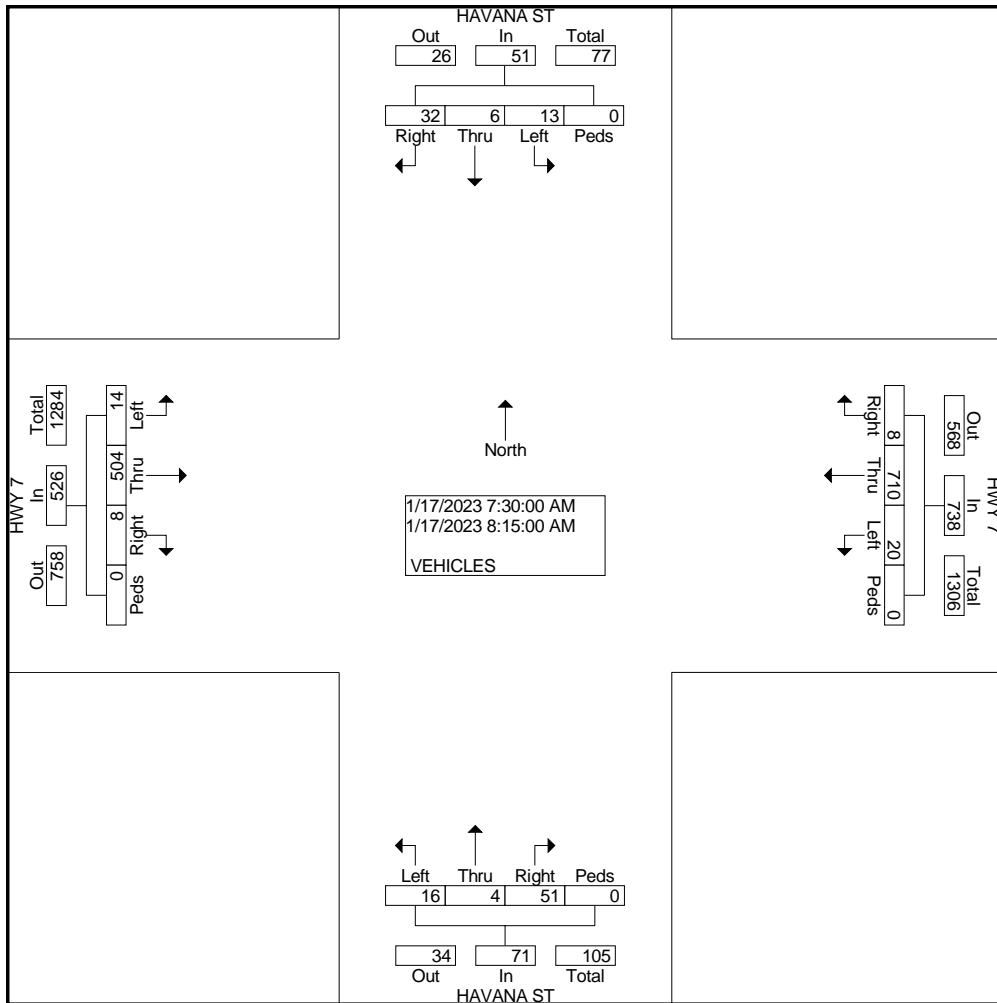
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: HAVANA ST
E/W STREET: HWY 7
CITY: BRIGHTON
COUNTY: ADAMS

File Name : HAVAHWY7
Site Code : 0000005
Start Date : 1/17/2023
Page No : 2

Start Time	HAVANA ST Southbound					HWY 7 Westbound					HAVANA ST Northbound					HWY 7 Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Intersection	07:30 AM																				
Volume	13	6	32	0	51	20	710	8	0	738	16	4	51	0	71	14	504	8	0	526	1386
Percent	25.5	11.8	62.7	0.0		2.7	96.2	1.1	0.0		22.5	5.6	71.8	0.0		2.7	95.8	1.5	0.0		
08:15 Peak Factor	0.949																				
High Int. Volume	07:30 AM					08:00 AM					08:15 AM					07:30 AM					
Peak Factor	0.67					0.94					0.80					0.92					
	1					1					7					0					



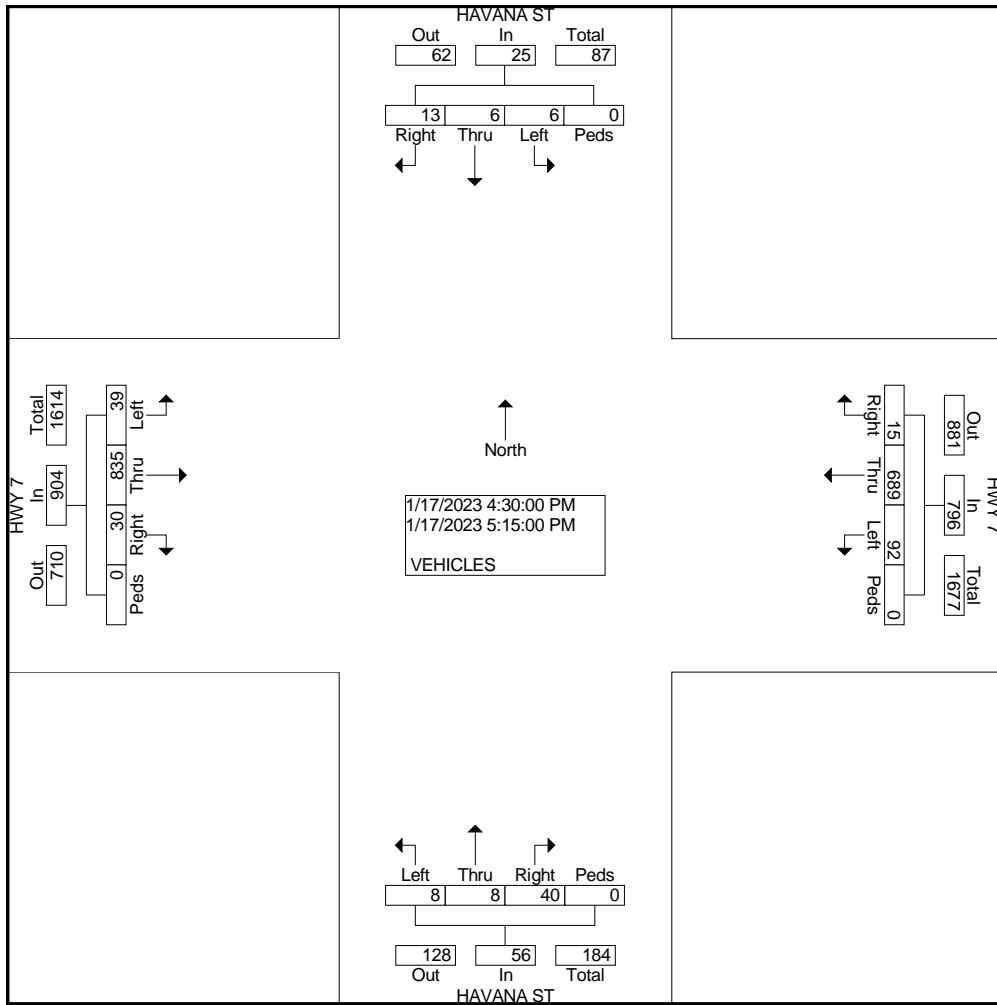
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: HAVANA ST
E/W STREET: HWY 7
CITY: BRIGHTON
COUNTY: ADAMS

File Name : HAVAHWY7
Site Code : 0000005
Start Date : 1/17/2023
Page No : 3

Start Time	HAVANA ST Southbound					HWY 7 Westbound					HAVANA ST Northbound					HWY 7 Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Intersect on	04:30 PM																				
Volume	6	6	13	0	25	92	689	15	0	796	8	8	40	0	56	39	835	30	0	904	1781
Percent	24.	24.	52.	0.0		11.	86.	1.9	0.0		14.	14.	71.	0.0		4.3	92.	3.3	0.0		
	0	0	0			6	6				3	3	4				4				
04:45 Volume	1	2	8	0	11	35	167	4	0	206	2	0	15	0	17	16	196	5	0	217	451
Peak Factor																					
High Int.	0.987																				
Volume	04:45 PM					04:45 PM					04:45 PM					04:30 PM					
Peak Factor	1	2	8	0	11	35	167	4	0	206	2	0	15	0	17	8	216	6	0	230	
	0.56					0.96					0.82					0.98					
	8					6					4					3					



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: LIMA ST
E/W STREET: E. 166TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : LIMA166TH
Site Code : 00000005
Start Date : 2/2/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	LIMA ST Southbound			NO ACCESS Westbound			LIMA ST Northbound			E. 166TH AVE Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	2	1	0	0	0	0	0	0	0	0	2	5
06:45 AM	0	1	1	0	0	0	2	3	0	1	0	2	10
Total	0	3	2	0	0	0	2	3	0	1	0	4	15
07:00 AM	0	3	0	0	0	0	0	5	0	1	0	0	9
07:15 AM	0	2	0	0	0	0	1	6	0	0	0	0	9
07:30 AM	0	2	0	0	0	0	1	1	0	0	0	1	5
07:45 AM	0	5	0	0	0	0	0	1	0	0	0	1	7
Total	0	12	0	0	0	0	2	13	0	1	0	2	30
08:00 AM	0	2	0	0	0	0	2	3	0	0	0	0	7
08:15 AM	0	2	0	0	0	0	0	3	0	0	0	2	7
Total	0	4	0	0	0	0	2	6	0	0	0	2	14
04:00 PM	0	3	2	0	0	0	0	6	0	1	0	1	13
04:15 PM	0	3	0	0	0	0	1	2	0	0	0	2	8
04:30 PM	0	0	0	0	0	0	1	2	0	0	0	2	5
04:45 PM	0	11	0	0	0	0	0	2	0	2	0	0	15
Total	0	17	2	0	0	0	2	12	0	3	0	5	41
05:00 PM	0	6	3	0	0	0	5	5	0	0	0	1	20
05:15 PM	0	5	1	0	0	0	1	2	0	0	0	1	10
05:30 PM	0	9	0	0	0	0	1	3	0	1	0	0	14
05:45 PM	0	4	0	0	0	0	0	2	0	1	0	0	7
Total	0	24	4	0	0	0	7	12	0	2	0	2	51
Grand Total	0	60	8	0	0	0	15	46	0	7	0	15	151
Apprch %	0.0	88.2	11.8	0.0	0.0	0.0	24.6	75.4	0.0	31.8	0.0	68.2	
Total %	0.0	39.7	5.3	0.0	0.0	0.0	9.9	30.5	0.0	4.6	0.0	9.9	

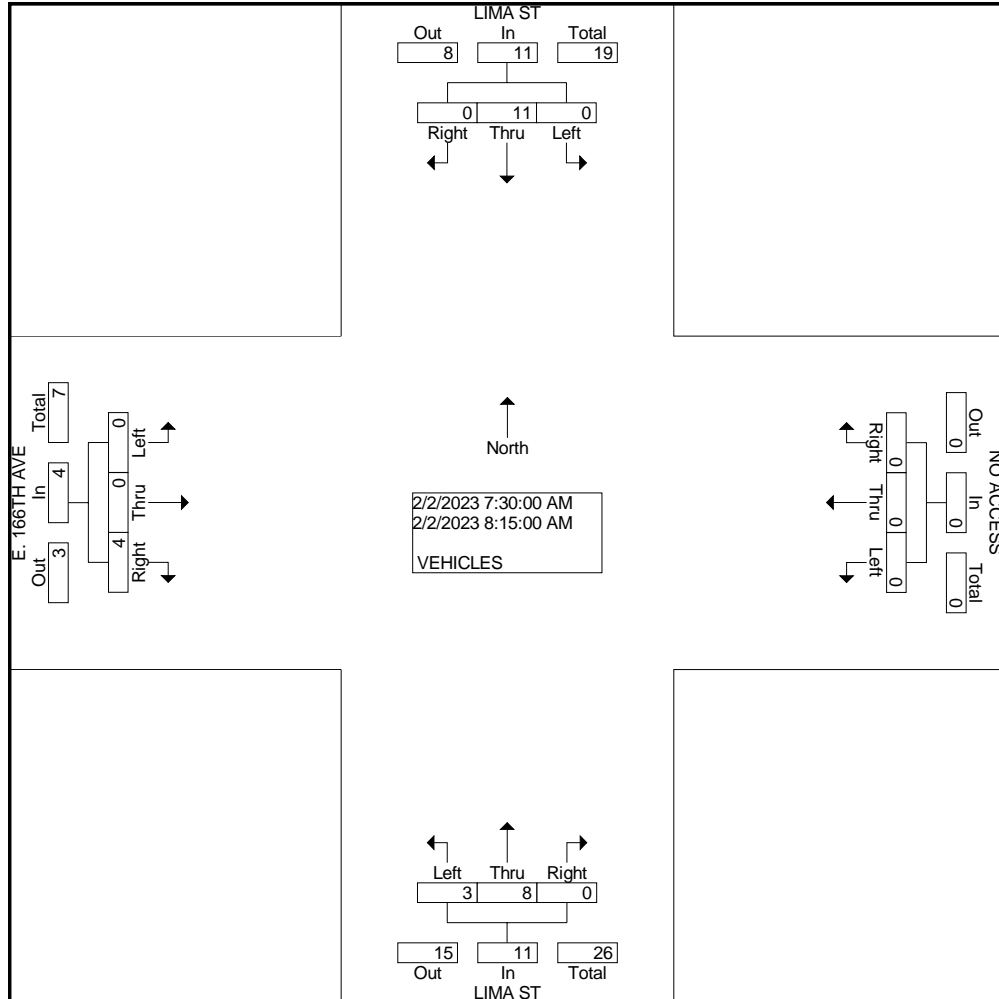
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: LIMA ST
E/W STREET: E. 166TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : LIMA166TH
Site Code : 00000005
Start Date : 2/2/2023
Page No : 2

Start Time	LIMA ST Southbound				NO ACCESS Westbound				LIMA ST Northbound				E. 166TH AVE Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	0	11	0	11	0	0	0	0	3	8	0	11	0	0	4	4	26
Percent	0.0	100.0	0.0		0.0	0.0	0.0		27.3	72.7	0.0		0.0	0.0	100.0		
		0												0			
08:15 Volume	0	2	0	2	0	0	0	0	0	3	0	3	0	0	2	2	7
Peak Factor	0.929																
High Int.	07:45 AM																
Volume	0	5	0	5	0	0	0	0	08:00 AM				08:15 AM				
Peak Factor				0.550					2	3	0	5	0	0	2	2	0.500
									0.550				0.500				



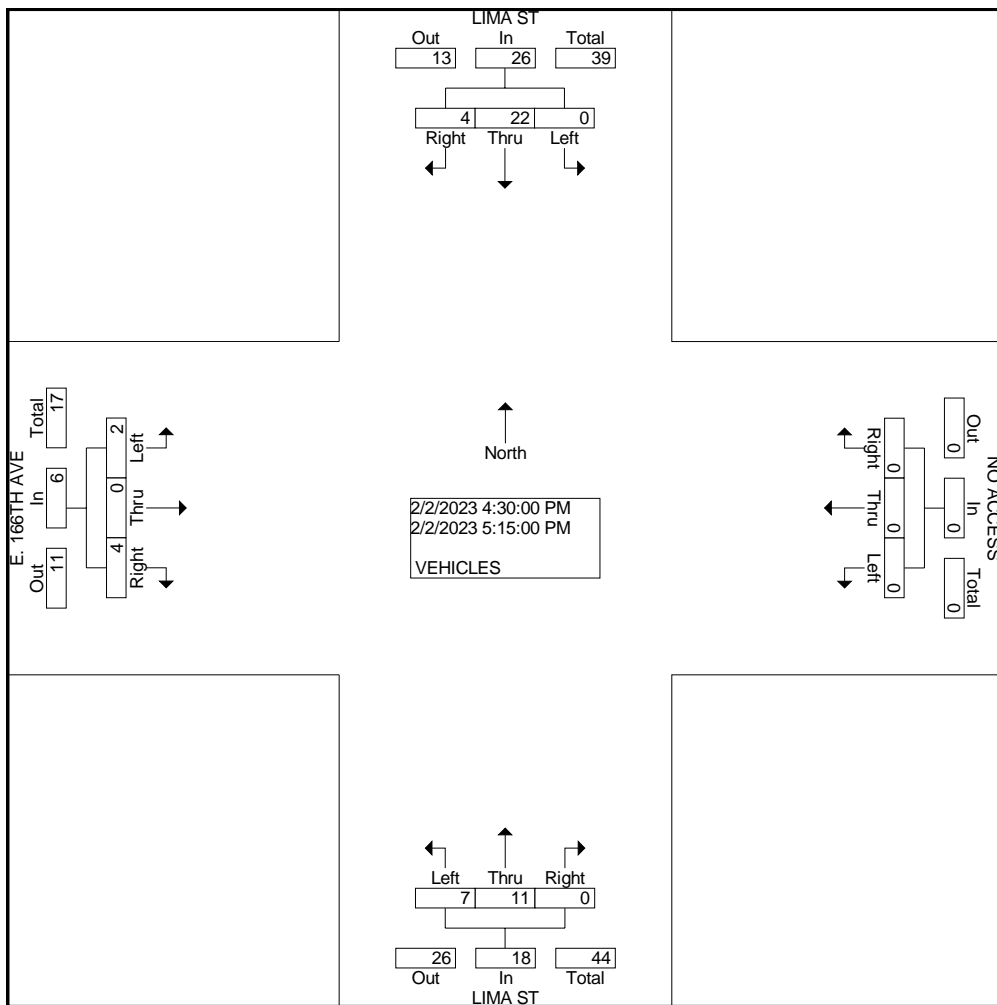
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: LIMA ST
E/W STREET: E. 166TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : LIMA166TH
Site Code : 00000005
Start Date : 2/2/2023
Page No : 3

Start Time	LIMA ST Southbound				NO ACCESS Westbound				LIMA ST Northbound				E. 166TH AVE Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Intersection	04:30 PM																
Volume	0	22	4	26	0	0	0	0	7	11	0	18	2	0	4	6	50
Percent	0.0	84.6	15.4		0.0	0.0	0.0		38.9	61.1	0.0		33.3	0.0	66.7		
05:00	05:00 PM																
Volume	0	6	3	9	0	0	0	0	5	5	0	10	0	0	1	1	20
Peak Factor	0.625																
High Int.	04:45 PM																
Volume	0	11	0	11	0	0	0	0	5	5	0	10	0	0	2	2	
Peak Factor	0.591								0.450				0.750				



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: LIMA ST
E/W STREET: E. 168TH AVE (HWY 7)
CITY: BRIGHTON
COUNTY: ADAMS

File Name : LIMA168THAVE
Site Code : 00000015
Start Date : 2/2/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	NO ACCESS Southbound			E. 168TH AVE Westbound			LIMA ST Northbound			E. 168TH AVE Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	0	1	29	0	0	0	1	0	19	0	50
06:45 AM	0	0	0	0	31	0	1	0	0	0	25	1	58
Total	0	0	0	1	60	0	1	0	1	0	44	1	108
07:00 AM	0	0	0	2	26	0	4	0	7	0	28	0	67
07:15 AM	0	0	0	0	41	0	3	0	1	0	29	0	74
07:30 AM	0	0	0	0	58	0	2	0	0	0	21	0	81
07:45 AM	0	0	0	3	39	0	1	0	1	0	21	1	66
Total	0	0	0	5	164	0	10	0	9	0	99	1	288
08:00 AM	0	0	0	0	45	0	2	0	2	0	35	0	84
08:15 AM	0	0	0	1	30	0	0	0	3	0	25	0	59
Total	0	0	0	1	75	0	2	0	5	0	60	0	143
04:00 PM	0	0	0	4	45	0	3	0	5	0	65	2	124
04:15 PM	0	0	0	1	32	0	1	0	1	0	51	3	89
04:30 PM	0	0	0	1	47	0	0	0	0	4	51	0	103
04:45 PM	0	0	0	10	30	0	0	0	4	0	53	3	100
Total	0	0	0	16	154	0	4	0	10	4	220	8	416
05:00 PM	0	0	0	5	52	0	0	0	4	0	72	2	135
05:15 PM	0	0	0	3	42	0	1	0	2	0	79	4	131
05:30 PM	0	0	0	4	35	0	0	0	4	0	85	6	134
05:45 PM	0	0	0	1	30	1	1	0	2	0	71	3	109
Total	0	0	0	13	159	1	2	0	12	0	307	15	509
Grand Total	0	0	0	36	612	1	19	0	37	4	730	25	1464
Apprch %	0.0	0.0	0.0	5.5	94.3	0.2	33.9	0.0	66.1	0.5	96.2	3.3	
Total %	0.0	0.0	0.0	2.5	41.8	0.1	1.3	0.0	2.5	0.3	49.9	1.7	

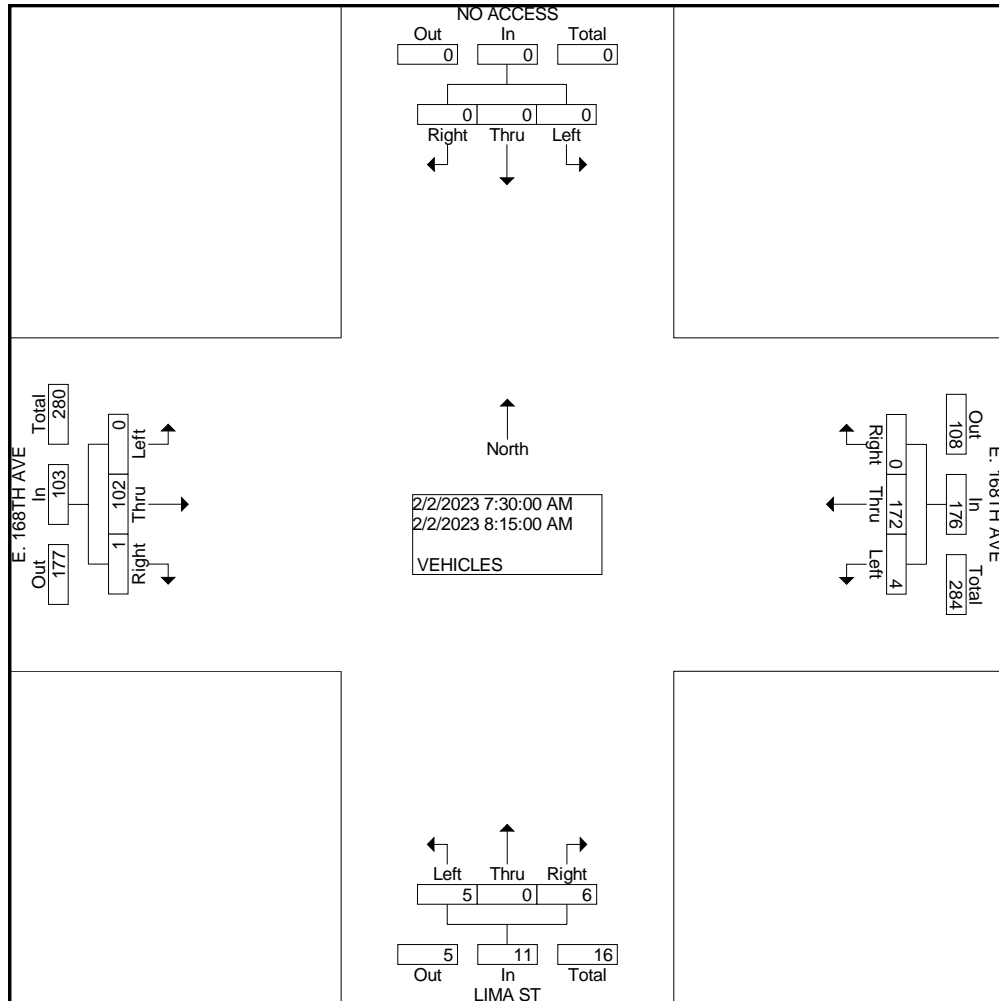
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: LIMA ST
E/W STREET: E. 168TH AVE (HWY 7)
CITY: BRIGHTON
COUNTY: ADAMS

File Name : LIMA168THAVE
Site Code : 00000015
Start Date : 2/2/2023
Page No : 2

Start Time	NO ACCESS Southbound				E. 168TH AVE Westbound				LIMA ST Northbound				E. 168TH AVE Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	0	0	0	0	4	172	0	176	5	0	6	11	0	102	1	103	290
Percent	0.0	0.0	0.0	0.0	2.3	97.7	0.0		45.5	0.0	54.5		0.0	99.0	1.0		
08:00 Volume	0	0	0	0	0	45	0	45	2	0	2	4	0	35	0	35	84
Peak Factor	0.863																
High Int.																	
08:00 Volume	0	0	0	0	0	58	0	58	2	0	2	4	0	35	0	35	
Peak Factor					0.759				0.688				0.736				



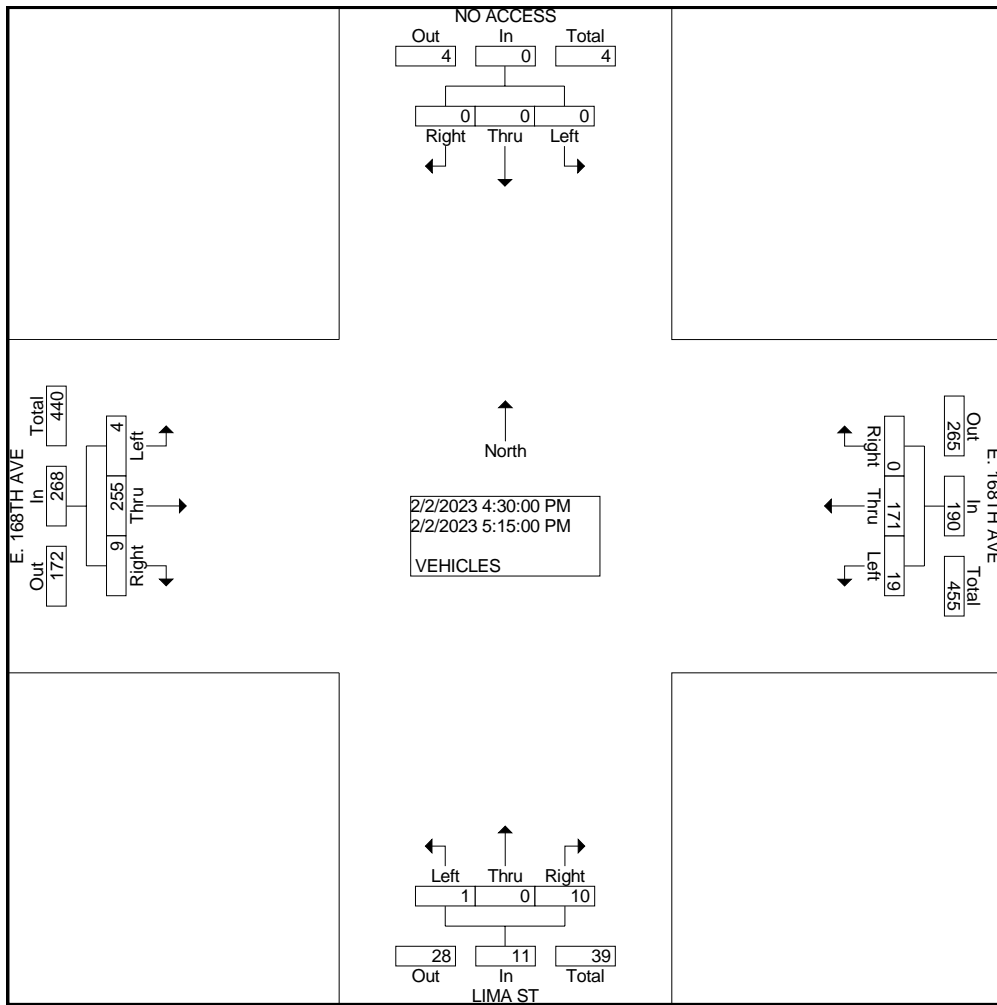
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: LIMA ST
E/W STREET: E. 168TH AVE (HWY 7)
CITY: BRIGHTON
COUNTY: ADAMS

File Name : LIMA168THAVE
Site Code : 00000015
Start Date : 2/2/2023
Page No : 3

Start Time	NO ACCESS Southbound				E. 168TH AVE Westbound				LIMA ST Northbound				E. 168TH AVE Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Intersection	04:30 PM																
Volume	0	0	0	0	19	171	0	190	1	0	10	11	4	255	9	268	469
Percent	0.0	0.0	0.0	0	10.0	90.0	0.0	190	9.1	0.0	90.9	11	1.5	95.1	3.4	268	
05:00	05:00 PM																
Volume	0	0	0	0	5	52	0	57	0	0	4	4	0	72	2	74	135
Peak Factor	0.869																
High Int.	05:00 PM																
Volume	0	0	0	0	5	52	0	57	0	0	4	4	0	79	4	83	83
Peak Factor	0.807																



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: LIMA ST
E/W STREET: LANSING CT
CITY: BRIGHTON
COUNTY: ADAMS

File Name : LIMALANSING
Site Code : 00000005
Start Date : 2/2/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	LIMA ST Southbound			NO ACCESS Westbound			LIMA ST Northbound			LANSING CT Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	2	0	0	0	0	0	0	0	0	0	1	3
06:45 AM	0	1	0	0	0	0	0	3	0	0	0	1	5
Total	0	3	0	0	0	0	0	3	0	0	0	2	8
07:00 AM	0	3	0	0	0	0	0	5	0	1	0	0	9
07:15 AM	0	2	1	0	0	0	1	6	0	2	0	0	12
07:30 AM	0	2	0	0	0	0	0	1	0	0	0	1	4
07:45 AM	0	5	0	0	0	0	1	1	0	1	0	0	8
Total	0	12	1	0	0	0	2	13	0	4	0	1	33
08:00 AM	0	2	1	0	0	0	1	3	0	1	0	0	8
08:15 AM	0	2	0	0	0	0	1	3	0	1	0	1	8
Total	0	4	1	0	0	0	2	6	0	2	0	1	16
04:00 PM	0	6	0	0	0	0	1	5	0	1	0	0	13
04:15 PM	0	3	1	0	0	0	0	2	0	0	0	0	6
04:30 PM	0	0	1	0	0	0	1	1	0	0	0	0	3
04:45 PM	0	11	2	0	0	0	0	3	0	0	0	0	16
Total	0	20	4	0	0	0	2	11	0	1	0	0	38
05:00 PM	0	7	0	0	0	0	1	4	0	0	0	2	14
05:15 PM	0	6	1	0	0	0	0	2	0	1	0	0	10
05:30 PM	0	9	0	0	0	0	0	4	0	0	0	0	13
05:45 PM	0	4	0	0	0	0	0	3	0	0	0	0	7
Total	0	26	1	0	0	0	1	13	0	1	0	2	44
Grand Total	0	65	7	0	0	0	7	46	0	8	0	6	139
Apprch %	0.0	90.3	9.7	0.0	0.0	0.0	13.2	86.8	0.0	57.1	0.0	42.9	
Total %	0.0	46.8	5.0	0.0	0.0	0.0	5.0	33.1	0.0	5.8	0.0	4.3	

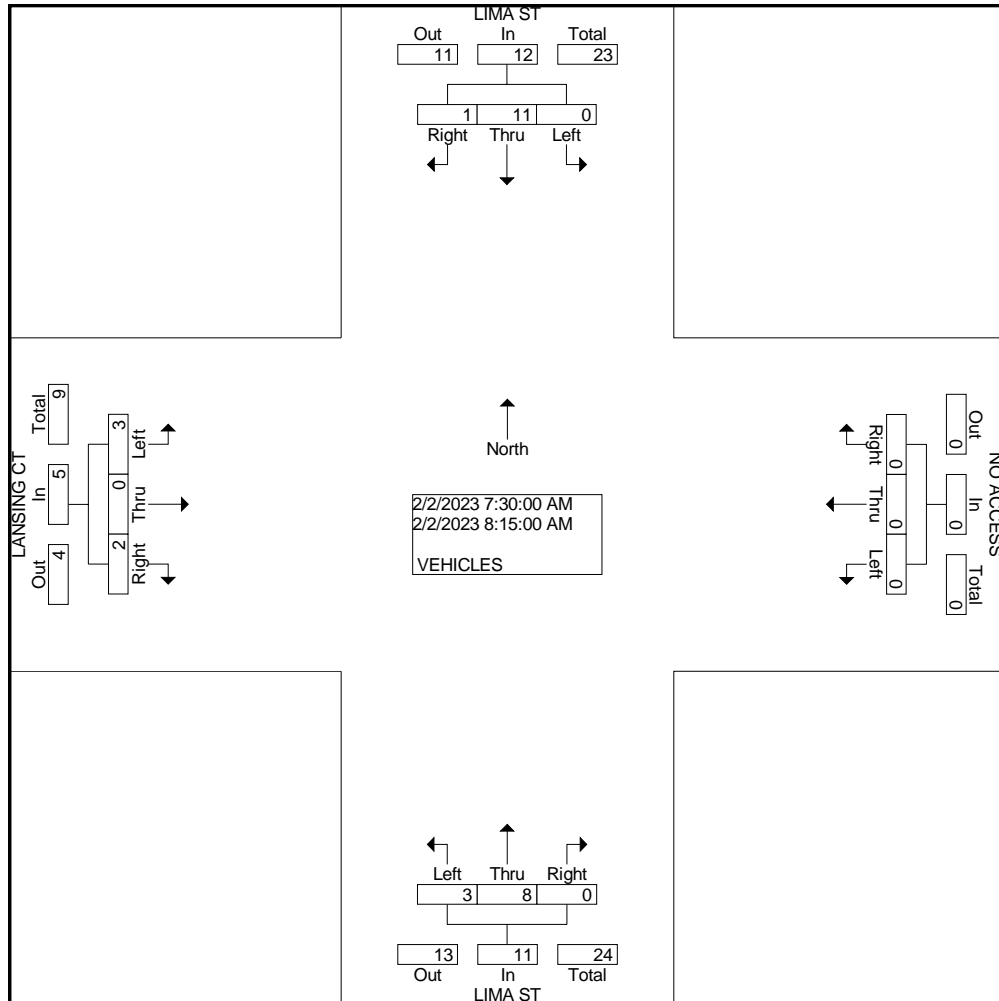
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: LIMA ST
E/W STREET: LANSING CT
CITY: BRIGHTON
COUNTY: ADAMS

File Name : LIMALANSING
Site Code : 00000005
Start Date : 2/2/2023
Page No : 2

Start Time	LIMA ST Southbound				NO ACCESS Westbound				LIMA ST Northbound				LANSING CT Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	0	11	1	12	0	0	0	0	3	8	0	11	3	0	2	5	28
Percent	0.0	91.7	8.3		0.0	0.0	0.0		27.3	72.7	0.0		60.0	0.0	40.0		
08:15	08:15 AM																
Volume	0	2	0	2	0	0	0	0	1	3	0	4	1	0	1	2	8
Peak Factor	0.875																
High Int.	07:45 AM																
Volume	0	5	0	5	0	0	0	0	1	3	0	4	1	0	1	2	
Peak Factor	0.600								0.688				0.625				



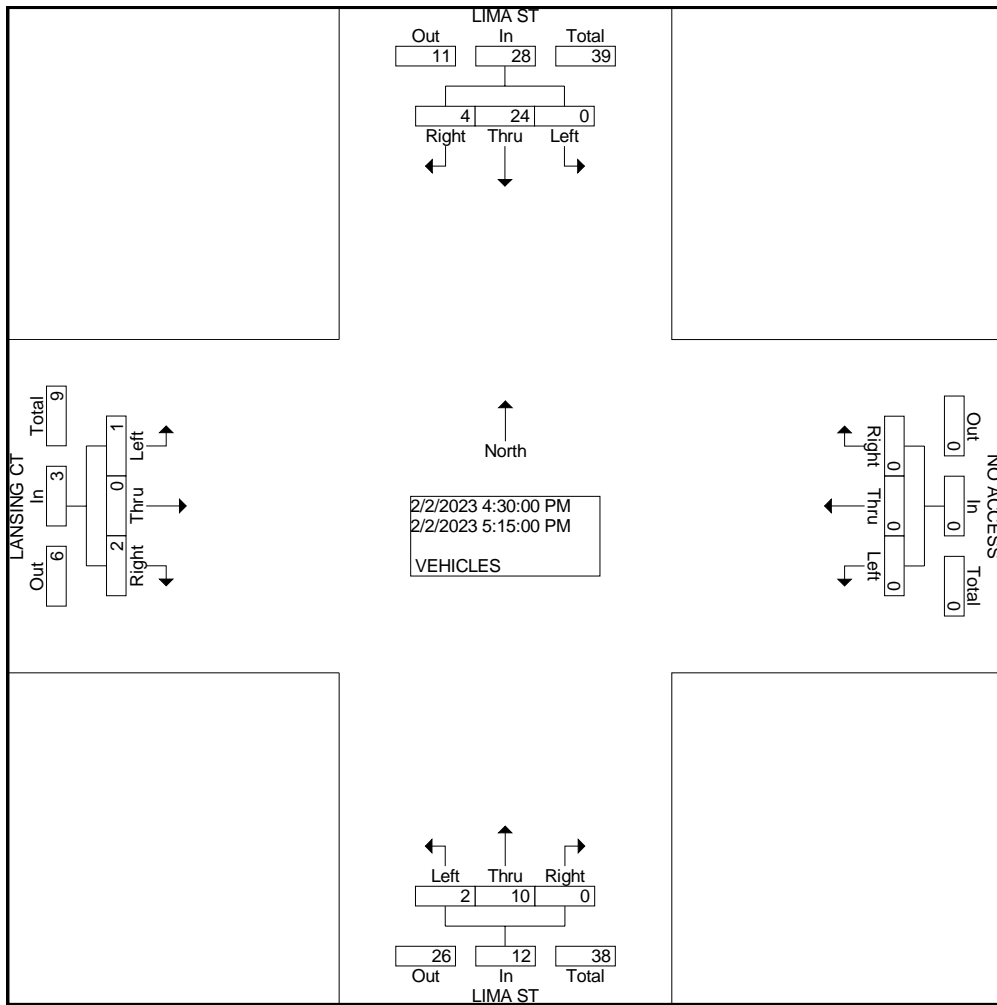
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: LIMA ST
E/W STREET: LANSING CT
CITY: BRIGHTON
COUNTY: ADAMS

File Name : LIMALANSING
Site Code : 00000005
Start Date : 2/2/2023
Page No : 3

Start Time	LIMA ST Southbound				NO ACCESS Westbound				LIMA ST Northbound				LANSING CT Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Intersection	04:30 PM																
Volume	0	24	4	28	0	0	0	0	2	10	0	12	1	0	2	3	43
Percent	0.0	85.7	14.3		0.0	0.0	0.0		16.7	83.3	0.0		33.3	0.0	66.7		
04:45																	
Volume	0	11	2	13	0	0	0	0	0	3	0	3	0	0	0	0	16
Peak Factor	0.672																
High Int.	04:45 PM																
Volume	0	11	2	13	0	0	0	0	1	4	0	5	0	0	2	2	
Peak Factor	0.538								0.600				0.375				



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: E. 160TH AVE (HWY 7)
CITY: BRIGHTON
COUNTY: ADAMS

File Name : QUEB160TH
Site Code : 00000013
Start Date : 1/25/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	QUEBEC ST Southbound				E. 160TH AVE Westbound				QUEBEC ST Northbound				E. 160TH AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	5	18	6	0	14	182	0	1	23	4	3	0	2	92	8	0	358
06:45 AM	2	12	10	0	11	176	3	0	14	5	2	0	2	95	22	0	354
Total	7	30	16	0	25	358	3	1	37	9	5	0	4	187	30	0	712
07:00 AM	2	14	4	0	18	183	1	0	23	8	5	0	0	94	15	0	367
07:15 AM	1	12	6	0	28	197	3	0	23	10	6	0	2	122	29	0	439
07:30 AM	6	25	13	0	27	206	6	0	24	16	4	0	1	107	23	0	458
07:45 AM	2	18	4	0	28	186	3	0	29	16	5	0	6	105	22	4	428
Total	11	69	27	0	101	772	13	0	99	50	20	0	9	428	89	4	1692
08:00 AM	8	12	6	0	32	117	3	0	26	6	0	0	1	98	20	0	329
08:15 AM	2	8	3	0	16	155	2	0	28	4	9	0	3	104	16	0	350
Total	10	20	9	0	48	272	5	0	54	10	9	0	4	202	36	0	679
04:00 PM	3	14	5	0	9	156	8	0	17	7	3	0	7	151	45	0	425
04:15 PM	2	15	4	0	32	126	3	0	26	19	8	0	7	178	41	0	461
04:30 PM	2	13	2	0	25	145	4	0	30	15	15	0	8	208	19	0	486
04:45 PM	3	13	10	0	15	144	4	0	43	24	26	0	5	206	26	0	519
Total	10	55	21	0	81	571	19	0	116	65	52	0	27	743	131	0	1891
05:00 PM	8	12	2	0	19	134	0	0	38	31	18	0	8	164	30	0	464
05:15 PM	6	21	5	0	17	152	3	0	19	32	28	0	8	216	38	0	545
05:30 PM	5	13	2	0	20	123	4	0	25	37	15	0	4	182	39	0	469
05:45 PM	3	7	8	0	16	119	1	0	19	13	19	0	4	178	31	0	418
Total	22	53	17	0	72	528	8	0	101	113	80	0	24	740	138	0	1896
Grand Total	60	227	90	0	327	2501	48	1	407	247	166	0	68	2300	424	4	6870
Apprch %	15.9	60.2	23.9	0.0	11.4	86.9	1.7	0.0	49.6	30.1	20.2	0.0	2.4	82.3	15.2	0.1	
Total %	0.9	3.3	1.3	0.0	4.8	36.4	0.7	0.0	5.9	3.6	2.4	0.0	1.0	33.5	6.2	0.1	

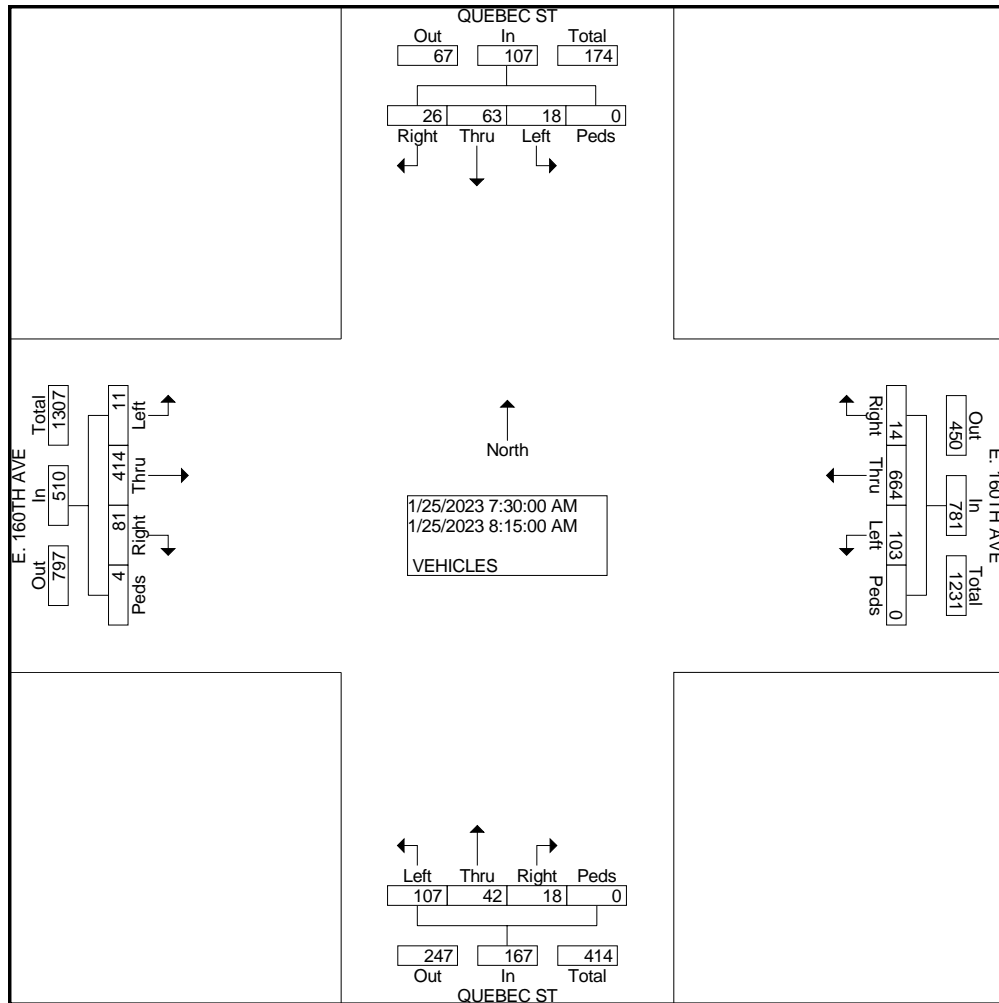
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: E. 160TH AVE (HWY 7)
CITY: BRIGHTON
COUNTY: ADAMS

File Name : QUEB160TH
Site Code : 0000013
Start Date : 1/25/2023
Page No : 2

Start Time	QUEBEC ST Southbound					E. 160TH AVE Westbound					QUEBEC ST Northbound					E. 160TH AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	18	63	26	0	107	103	664	14	0	781	107	42	18	0	167	11	414	81	4	510	1565
Percent	16.8	58.9	24.3	0.0		13.2	85.0	1.8	0.0		64.1	25.1	10.8	0.0		2.2	81.2	15.9	0.8		
07:30 Volume	6	25	13	0	44	27	206	6	0	239	24	16	4	0	44	1	107	23	0	131	458
Peak Factor																					
High Int. Volume	07:30 AM					07:30 AM					07:45 AM					07:45 AM					
Peak Factor	0.608					0.817					0.835					0.931					



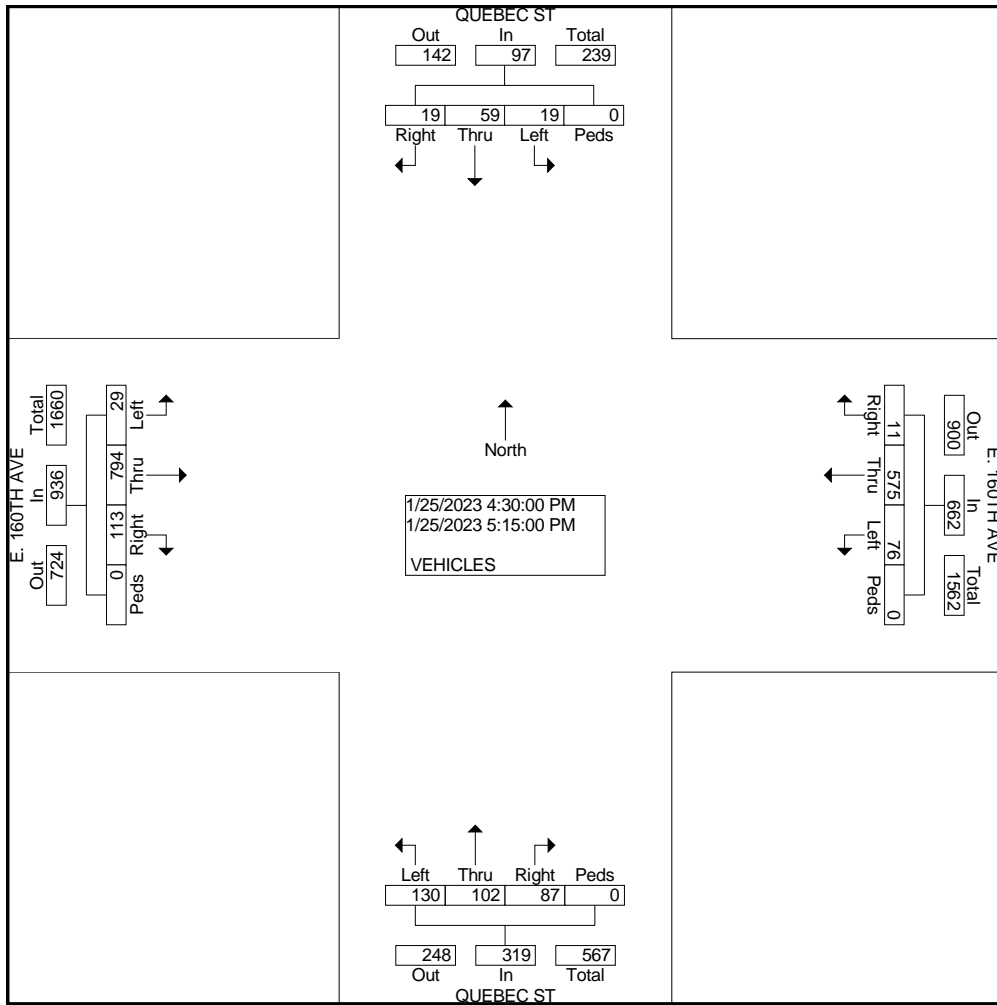
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: E. 160TH AVE (HWY 7)
CITY: BRIGHTON
COUNTY: ADAMS

File Name : QUEB160TH
Site Code : 00000013
Start Date : 1/25/2023
Page No : 3

Start Time	QUEBEC ST Southbound					E. 160TH AVE Westbound					QUEBEC ST Northbound					E. 160TH AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Intersect on	04:30 PM																				
Volume	19	59	19	0	97	76	575	11	0	662	130	102	87	0	319	29	794	113	0	936	2014
Percent	19.6	60.8	19.6	0.0		11.5	86.9	1.7	0.0		40.8	32.0	27.3	0.0		3.1	84.8	12.1	0.0		
05:15 Volume	6	21	5	0	32	17	152	3	0	172	19	32	28	0	79	8	216	38	0	262	545
Peak Factor																					0.924
High Int.	05:15 PM																				
Volume	6	21	5	0	32	04:30 PM 25	145	4	0	174	04:45 PM 43	24	26	0	93	05:15 PM 8	216	38	0	262	
Peak Factor																					0.893



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : QUEB168TH
Site Code : 00000015
Start Date : 2/9/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	NO ACCESS Southbound			E. 168TH AVE Westbound			QUEBEC ST Northbound			E. 168TH AVE Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	0	1	26	0	0	0	2	0	17	0	46
06:45 AM	0	0	0	2	27	0	1	0	3	0	23	1	57
Total	0	0	0	3	53	0	1	0	5	0	40	1	103
07:00 AM	0	0	0	3	18	0	2	0	7	0	26	1	57
07:15 AM	0	0	0	2	43	0	3	0	3	0	27	2	80
07:30 AM	0	0	0	4	44	0	2	0	2	0	23	3	78
07:45 AM	0	0	0	5	32	0	2	0	1	0	19	3	62
Total	0	0	0	14	137	0	9	0	13	0	95	9	277
08:00 AM	0	0	0	6	31	0	1	0	2	0	27	3	70
08:15 AM	0	0	0	6	18	0	0	0	5	0	21	2	52
Total	0	0	0	12	49	0	1	0	7	0	48	5	122
04:00 PM	0	0	0	4	33	0	2	0	7	0	66	2	114
04:15 PM	0	0	0	5	28	0	1	0	8	0	58	4	104
04:30 PM	0	0	0	6	43	0	1	0	11	4	47	5	117
04:45 PM	0	0	0	8	26	0	2	0	12	0	49	5	102
Total	0	0	0	23	130	0	6	0	38	4	220	16	437
05:00 PM	0	0	0	9	45	0	0	0	14	0	73	7	148
05:15 PM	0	0	0	11	35	0	2	0	9	0	71	8	136
05:30 PM	0	0	0	6	38	0	1	0	11	0	79	5	140
05:45 PM	0	0	0	4	35	0	1	0	13	0	65	6	124
Total	0	0	0	30	153	0	4	0	47	0	288	26	548
Grand Total	0	0	0	82	522	0	21	0	110	4	691	57	1487
Apprch %	0.0	0.0	0.0	13.6	86.4	0.0	16.0	0.0	84.0	0.5	91.9	7.6	
Total %	0.0	0.0	0.0	5.5	35.1	0.0	1.4	0.0	7.4	0.3	46.5	3.8	

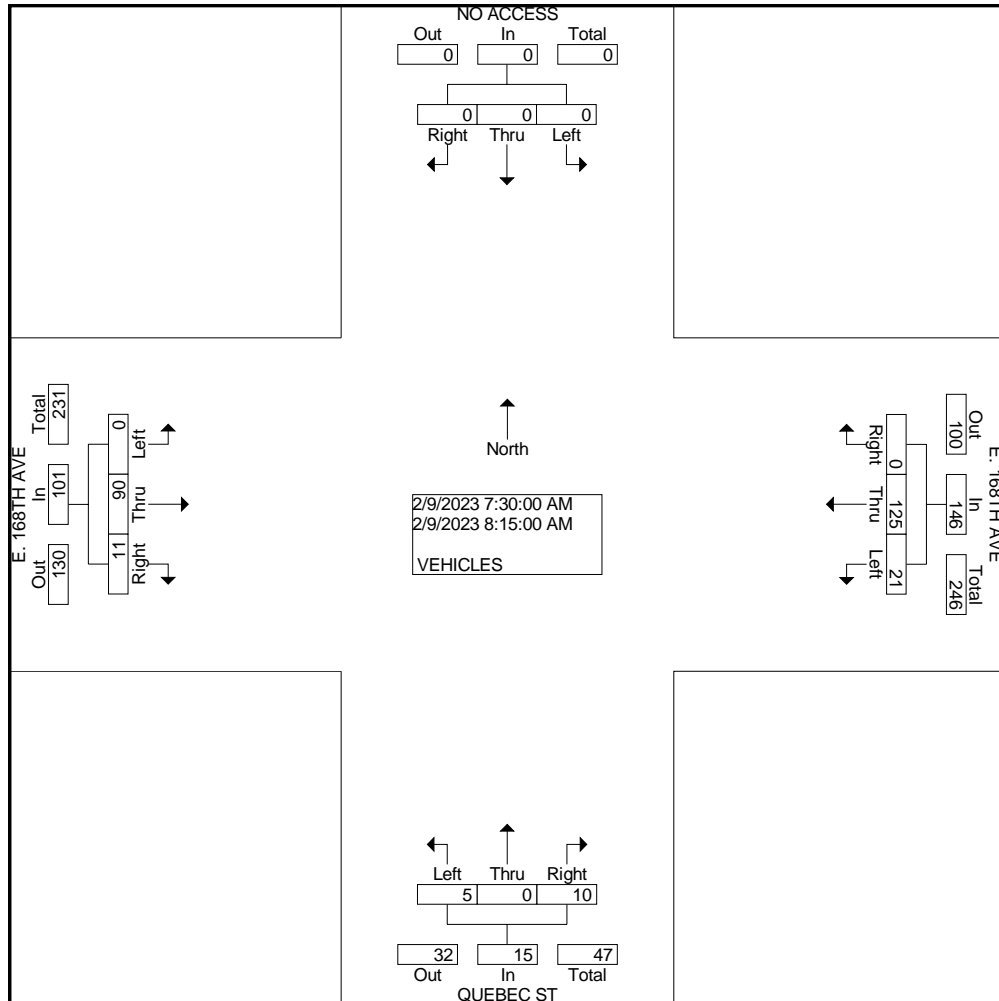
COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : QUEB168TH
Site Code : 0000015
Start Date : 2/9/2023
Page No : 2

Start Time	NO ACCESS Southbound				E. 168TH AVE Westbound				QUEBEC ST Northbound				E. 168TH AVE Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	0	0	0	0	21	125	0	146	5	0	10	15	0	90	11	101	262
Percent	0.0	0.0	0.0	0.0	14.4	85.6	0.0		33.3	0.0	66.7		0.0	89.1	10.9		
07:30 Volume	0	0	0	0	4	44	0	48	2	0	2	4	0	23	3	26	78
Peak Factor	0.840																
High Int.																	
08:00 AM Volume	0	0	0	0	4	44	0	48	0	0	5	5	0	27	3	30	
Peak Factor	0.760 0.750 0.842																



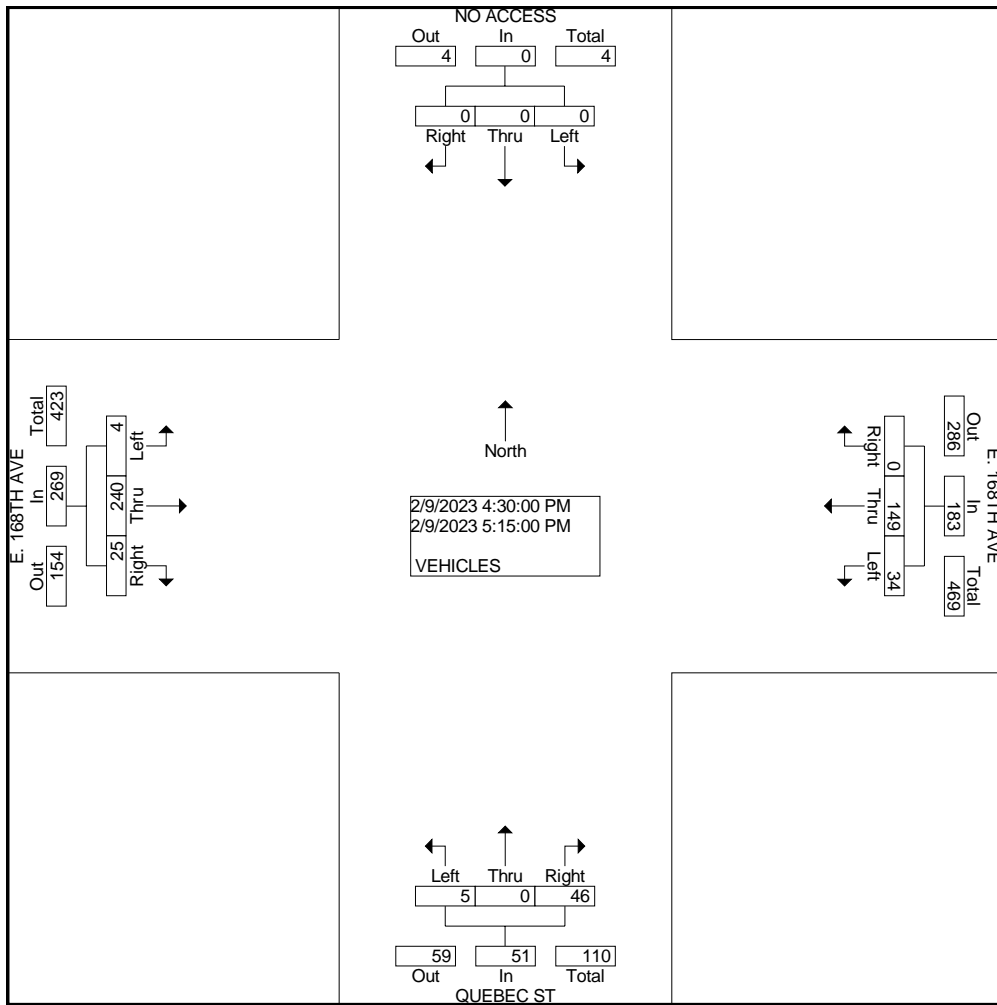
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : QUEB168TH
Site Code : 0000015
Start Date : 2/9/2023
Page No : 3

Start Time	NO ACCESS Southbound				E. 168TH AVE Westbound				QUEBEC ST Northbound				E. 168TH AVE Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Intersection	04:30 PM																
Volume	0	0	0	0	34	149	0	183	5	0	46	51	4	240	25	269	503
Percent	0.0	0.0	0.0	0	18.6	81.4	0.0	183	9.8	0.0	90.2	51	1.5	89.2	9.3	269	
05:00	05:00 PM																
Volume	0	0	0	0	9	45	0	54	0	0	14	14	0	73	7	80	148
Peak Factor	0.850																
High Int.	05:00 PM																
Volume	0	0	0	0	9	45	0	54	2	0	12	14	0	73	7	80	80
Peak Factor	0.841																



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: E 162ND AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : QUEBEAGLES
Site Code : 00000005
Start Date : 1/24/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	QUEBEC ST Southbound				NO ACCESS Westbound				QUEBEC ST Northbound				E. 162ND AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	14	0	0	2	0	0	0	1	9	0	0	1	0	5	1	33
06:45 AM	0	19	0	0	0	0	0	0	1	7	0	0	0	0	3	0	30
Total	0	33	0	0	2	0	0	0	2	16	0	0	1	0	8	1	63
07:00 AM	0	13	0	0	0	0	0	0	2	10	0	0	2	0	6	0	33
07:15 AM	0	10	0	0	0	0	0	0	0	7	0	0	0	0	14	0	31
07:30 AM	0	20	1	0	0	0	0	0	1	11	0	0	1	0	19	0	53
07:45 AM	0	17	0	0	0	0	0	0	7	10	0	0	1	0	12	0	47
Total	0	60	1	0	0	0	0	0	10	38	0	0	4	0	51	0	164
08:00 AM	0	16	1	0	0	0	0	0	3	15	0	0	1	0	4	0	40
08:15 AM	0	10	0	0	0	0	0	0	4	9	0	0	0	0	4	0	27
Total	0	26	1	0	0	0	0	0	7	24	0	0	1	0	8	0	67
04:00 PM	0	19	1	0	0	0	0	0	12	14	0	0	2	0	3	0	51
04:15 PM	0	21	0	0	0	0	0	0	5	19	0	0	0	0	5	0	50
04:30 PM	0	17	2	0	0	0	0	0	5	17	0	0	1	0	4	0	46
04:45 PM	0	19	1	0	0	0	0	0	6	29	0	0	0	0	5	0	60
Total	0	76	4	0	0	0	0	0	28	79	0	0	3	0	17	0	207
05:00 PM	0	11	2	0	0	0	0	0	10	30	0	0	0	0	3	0	56
05:15 PM	0	16	0	0	0	0	0	0	5	20	0	0	0	0	6	0	47
05:30 PM	0	10	1	0	0	0	0	0	4	21	0	0	0	0	6	0	42
05:45 PM	0	21	2	0	0	0	0	0	6	14	0	0	0	0	4	0	47
Total	0	58	5	0	0	0	0	0	25	85	0	0	0	0	19	0	192
Grand Total	0	253	11	0	2	0	0	0	72	242	0	0	9	0	103	1	693
Apprch %	0.0	95.8	4.2	0.0	100.0	0.0	0.0	0.0	22.9	77.1	0.0	0.0	8.0	0.0	91.2	0.9	
Total %	0.0	36.5	1.6	0.0	0.3	0.0	0.0	0.0	10.4	34.9	0.0	0.0	1.3	0.0	14.9	0.1	

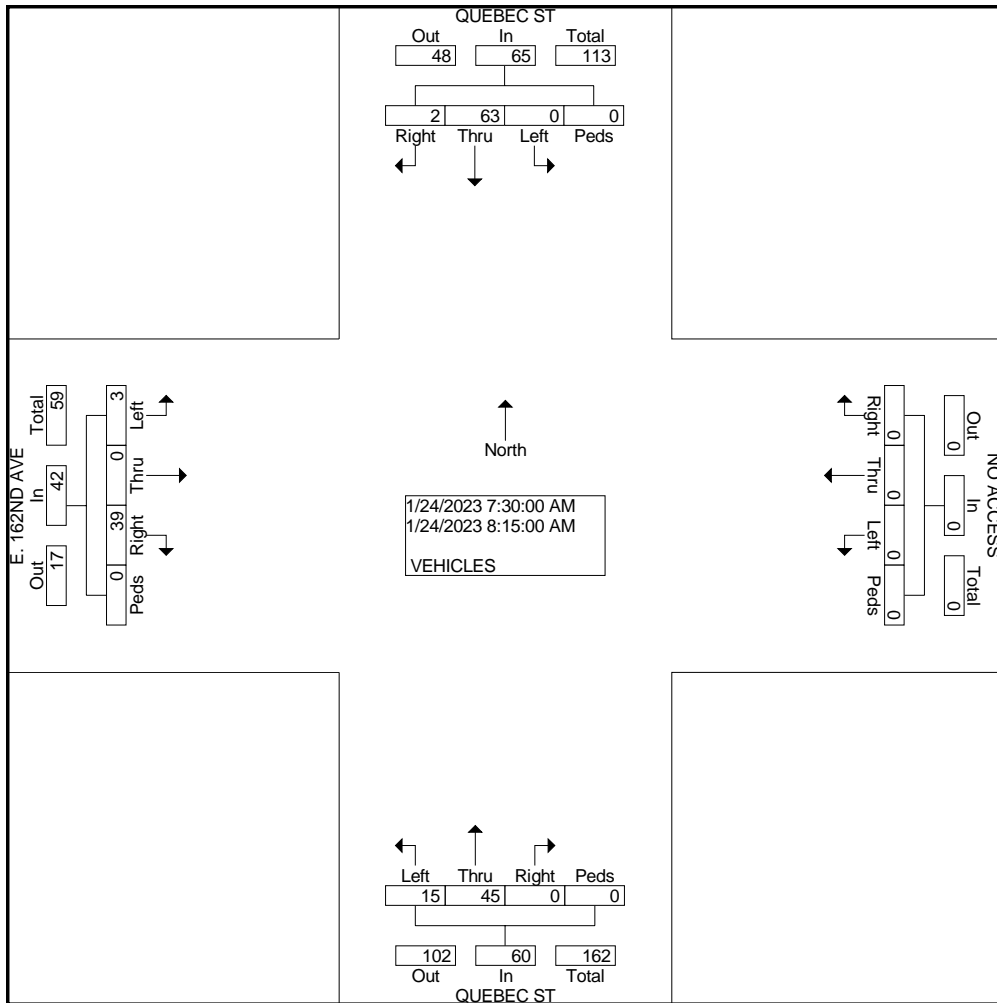
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: E 162ND AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : QUEBEAGLES
Site Code : 00000005
Start Date : 1/24/2023
Page No : 2

Start Time	QUEBEC ST Southbound					NO ACCESS Westbound					QUEBEC ST Northbound					E. 162ND AVE Eastbound					Int. Total
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Intersecti on	07:30 AM																				
Volume	0	63	2	0	65	0	0	0	0	0	15	45	0	0	60	3	0	39	0	42	167
Percent	0.0	96.9	3.1	0.0		0.0	0.0	0.0	0.0		25.0	75.0	0.0	0.0		7.1	0.0	92.9	0.0		
07:30 Volume	0	20	1	0	21	0	0	0	0	0	1	11	0	0	12	1	0	19	0	20	53
Peak Factor																					
High Int. Volume	07:30 AM																				
Peak Factor	0	20	1	0	21	0	0	0	0	0	08:00 AM					07:30 AM					0.77
					4						3	15	0	0	18	1	0	19	0	20	5
															0.83					0.52	
															3					5	



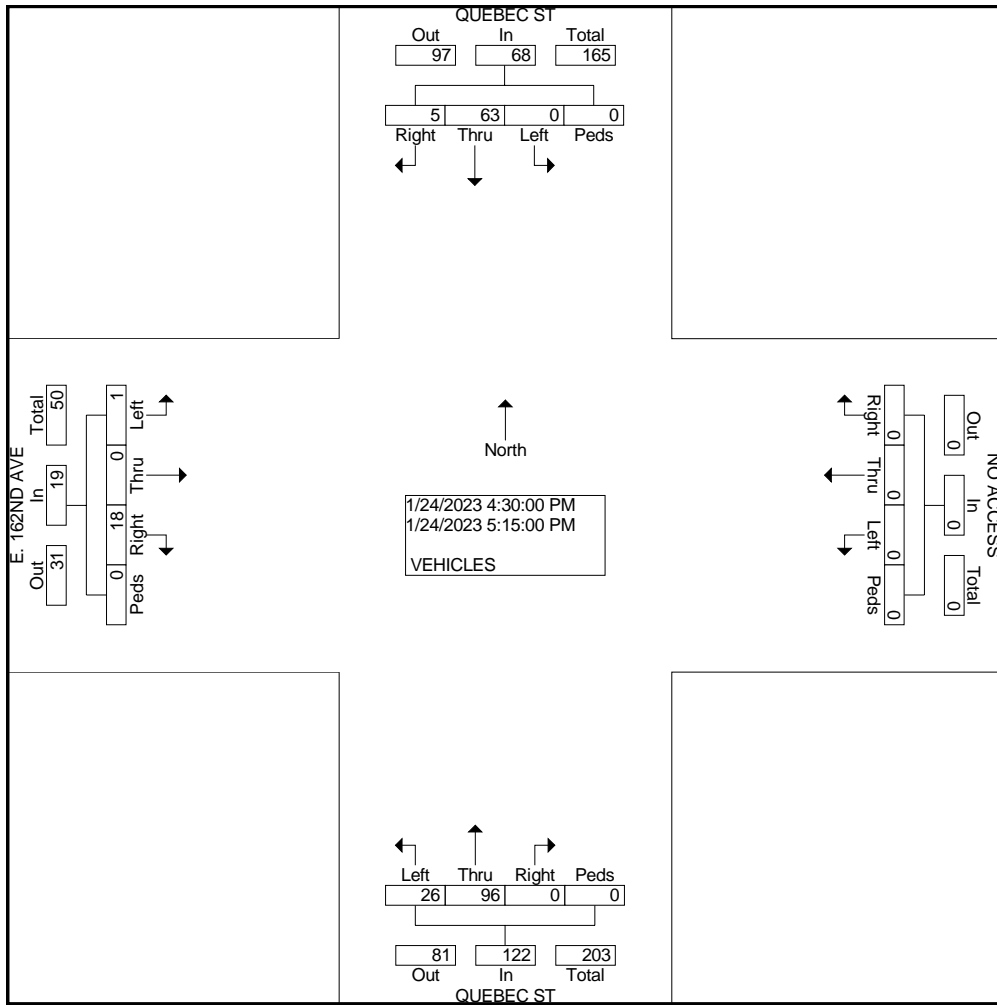
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: E 162ND AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : QUEBEAGLES
Site Code : 00000005
Start Date : 1/24/2023
Page No : 3

Start Time	QUEBEC ST Southbound					NO ACCESS Westbound					QUEBEC ST Northbound					E. 162ND AVE Eastbound					Int. Total
	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Intersect on	04:30 PM																				
Volume	0	63	5	0	68	0	0	0	0	0	26	96	0	0	122	1	0	18	0	19	209
Percent	0.0	92.6	7.4	0.0		0.0	0.0	0.0	0.0		21.3	78.7	0.0	0.0		5.3	0.0	94.7	0.0		
04:45 Volume	0	19	1	0	20	0	0	0	0	0	6	29	0	0	35	0	0	5	0	5	60
Peak Factor																					
High Int.	04:45 PM																				
Volume	0	19	1	0	20	0	0	0	0	0	05:00 PM					05:15 PM					0.871
Peak Factor	0.85										0.76					0.79					2
	0										3					2					



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: EAGLE SHADOW AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : QUEBEAGLEN
Site Code : 00000011
Start Date : 1/24/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	QUEBEC ST Southbound				EAGLE SHADOW AVE Westbound				QUEBEC ST Northbound				EAGLE SHADOW AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	12	0	0	0	0	0	0	1	8	0	0	1	0	7	0	29
06:45 AM	0	12	0	0	0	0	0	0	1	6	0	0	2	0	6	0	27
Total	0	24	0	0	0	0	0	0	2	14	0	0	3	0	13	0	56
07:00 AM	0	12	1	0	0	0	0	0	0	11	0	0	1	0	3	0	28
07:15 AM	0	7	0	0	0	0	0	0	1	6	0	0	0	0	2	0	16
07:30 AM	0	10	1	0	0	0	0	0	1	10	0	0	2	0	9	0	33
07:45 AM	0	13	1	0	0	0	0	0	1	8	0	0	0	0	3	0	26
Total	0	42	3	0	0	0	0	0	3	35	0	0	3	0	17	0	103
08:00 AM	0	10	0	0	0	0	0	0	4	10	0	0	0	0	7	0	31
08:15 AM	0	8	0	0	0	0	0	0	2	7	0	0	1	0	2	0	20
Total	0	18	0	0	0	0	0	0	6	17	0	0	1	0	9	0	51
04:00 PM	0	18	0	0	0	0	0	0	3	13	0	0	1	0	2	0	37
04:15 PM	0	17	0	0	0	0	0	0	2	18	0	0	1	0	6	0	44
04:30 PM	0	15	1	0	0	0	0	0	2	16	0	0	0	0	3	0	37
04:45 PM	0	19	0	0	0	0	0	0	7	21	0	0	0	0	0	0	47
Total	0	69	1	0	0	0	0	0	14	68	0	0	2	0	11	0	165
05:00 PM	0	10	0	0	0	0	0	0	8	23	0	0	0	0	3	0	44
05:15 PM	0	15	0	0	0	0	0	0	3	16	0	0	0	0	2	0	36
05:30 PM	0	11	0	0	0	0	0	0	8	14	0	0	0	0	1	0	34
05:45 PM	0	13	1	0	0	0	0	0	3	11	0	0	1	0	8	0	37
Total	0	49	1	0	0	0	0	0	22	64	0	0	1	0	14	0	151
Grand Total	0	202	5	0	0	0	0	0	47	198	0	0	10	0	64	0	526
Apprch %	0.0	97.6	2.4	0.0	0.0	0.0	0.0	0.0	19.2	80.8	0.0	0.0	13.5	0.0	86.5	0.0	
Total %	0.0	38.4	1.0	0.0	0.0	0.0	0.0	0.0	8.9	37.6	0.0	0.0	1.9	0.0	12.2	0.0	

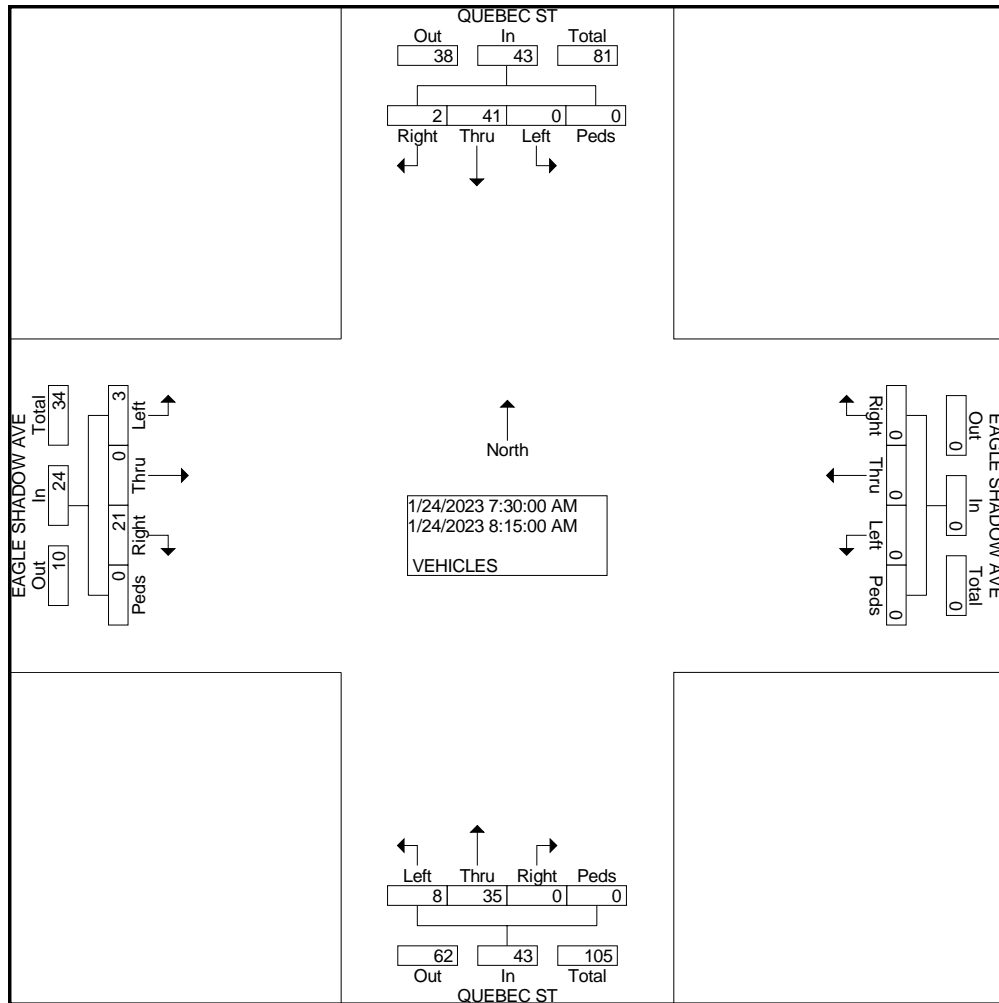
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: EAGLE SHADOW AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : QUEBEAGLEN
Site Code : 00000011
Start Date : 1/24/2023
Page No : 2

Start Time	QUEBEC ST Southbound					EAGLE SHADOW AVE Westbound					QUEBEC ST Northbound					EAGLE SHADOW AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	0	41	2	0	43	0	0	0	0	0	8	35	0	0	43	3	0	21	0	24	110
Percent	0.0	95.3	4.7	0.0		0.0	0.0	0.0	0.0		18.6	81.4	0.0	0.0		12.5	0.0	87.5	0.0		
07:30 Volume	0	10	1	0	11	0	0	0	0	0	1	10	0	0	11	2	0	9	0	11	33
Peak Factor	0.833																				
High Int. Volume	07:45 AM																				
Peak Factor	0	13	1	0	14	0	0	0	0	0	08:00 AM 4	10	0	0	14	07:30 AM 2	0	9	0	11	0.768
Peak Factor	0.545																				



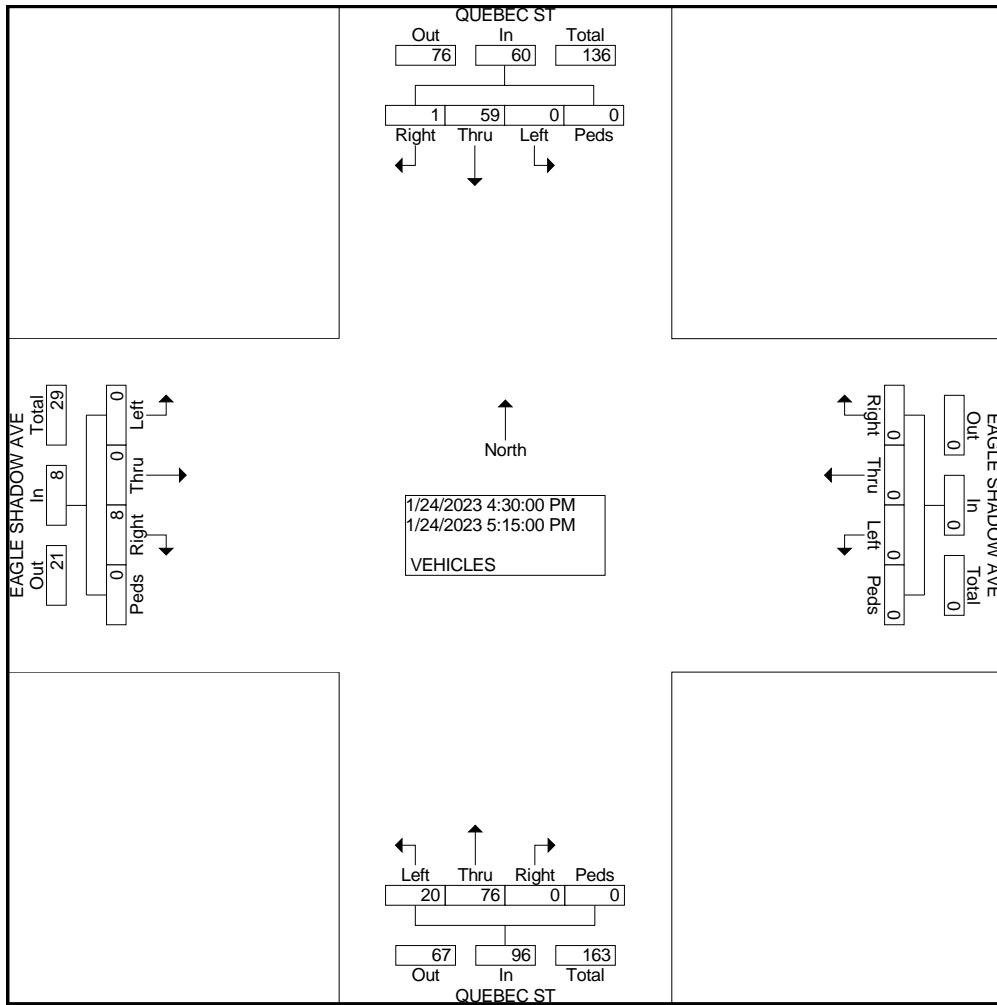
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: QUEBEC ST
E/W STREET: EAGLE SHADOW AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : QUEBEAGLEN
Site Code : 00000011
Start Date : 1/24/2023
Page No : 3

Start Time	QUEBEC ST Southbound					EAGLE SHADOW AVE Westbound					QUEBEC ST Northbound					EAGLE SHADOW AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Intersection	04:30 PM																				
Volume	0	59	1	0	60	0	0	0	0	0	20	76	0	0	96	0	0	8	0	8	164
Percent	0.0	98.3	1.7	0.0		0.0	0.0	0.0	0.0		20.8	79.2	0.0	0.0		0.0	0.0	100.0	0.0		
04:45 Volume	0	19	0	0	19	0	0	0	0	0	7	21	0	0	28	0	0	0	0	0	47
Peak Factor																					
High Int.	04:45 PM																				
Volume	0	19	0	0	19	0	0	0	0	0	05:00 PM					04:30 PM					
Peak Factor	0.789										0.774					0.667					



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: RIVERDALE RD
E/W STREET: HWY 7
CITY: BRIGHTON
COUNTY: ADAMS

File Name : RIVERHWY7
Site Code : 00000013
Start Date : 12/7/2022
Page No : 1

Groups Printed- VEHICLES

Start Time	CONST. ACCESS Southbound				HWY 7 Westbound				RIVERDALE RD Northbound				HWY 7 Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	0	0	20	179	1	0	1	0	24	0	1	111	0	0	337
06:45 AM	0	0	0	0	24	159	1	0	2	0	17	0	0	113	2	0	318
Total	0	0	0	0	44	338	2	0	3	0	41	0	1	224	2	0	655
07:00 AM	0	0	0	0	39	189	0	0	1	0	26	0	0	136	2	0	393
07:15 AM	0	0	0	0	35	159	0	0	0	0	28	0	0	138	4	0	364
07:30 AM	0	0	1	0	57	190	0	0	1	1	35	0	0	132	5	0	422
07:45 AM	0	0	0	0	72	168	0	0	0	0	26	0	0	128	7	0	401
Total	0	0	1	0	203	706	0	0	2	1	115	0	0	534	18	0	1580
08:00 AM	0	0	0	0	63	165	0	0	1	0	41	0	0	136	9	0	415
08:15 AM	0	0	0	0	29	164	0	0	7	0	74	0	0	138	5	0	417
Total	0	0	0	0	92	329	0	0	8	0	115	0	0	274	14	0	832
04:00 PM	0	0	0	0	52	179	0	0	2	0	34	0	0	179	7	0	453
04:15 PM	0	0	2	0	56	212	0	0	2	0	32	0	0	217	1	0	522
04:30 PM	0	0	0	0	49	181	0	0	6	0	75	0	0	215	6	0	532
04:45 PM	0	0	2	0	29	203	0	0	7	0	97	0	0	185	5	0	528
Total	0	0	4	0	186	775	0	0	17	0	238	0	0	796	19	0	2035
05:00 PM	1	0	1	0	47	195	0	0	2	0	53	0	0	216	4	0	519
05:15 PM	0	0	0	0	41	223	0	0	1	0	51	0	0	212	1	0	529
05:30 PM	0	0	0	0	31	196	0	0	1	0	54	0	0	167	1	0	450
05:45 PM	0	0	0	0	35	187	0	0	8	0	56	0	0	193	0	0	479
Total	1	0	1	0	154	801	0	0	12	0	214	0	0	788	6	0	1977
Grand Total	1	0	6	0	679	2949	2	0	42	1	723	0	1	2616	59	0	7079
Apprch %	14.3	0.0	85.7	0.0	18.7	81.2	0.1	0.0	5.5	0.1	94.4	0.0	0.0	97.8	2.2	0.0	
Total %	0.0	0.0	0.1	0.0	9.6	41.7	0.0	0.0	0.6	0.0	10.2	0.0	0.0	37.0	0.8	0.0	

COUNTER MEASURES INC.

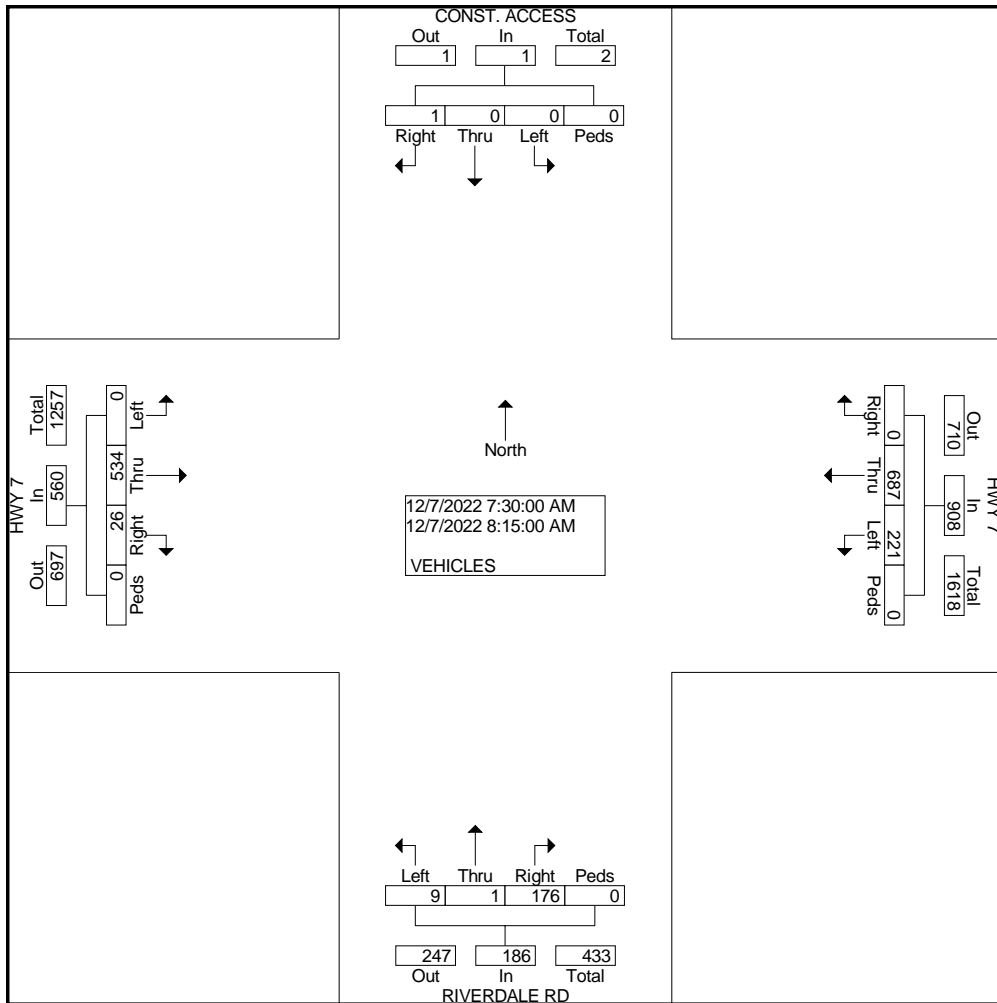
1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: RIVERDALE RD
E/W STREET: HWY 7
CITY: BRIGHTON
COUNTY: ADAMS

File Name : RIVERHWY7
Site Code : 00000013
Start Date : 12/7/2022
Page No : 2

Start Time	CONST. ACCESS Southbound					HWY 7 Westbound					RIVERDALE RD Northbound					HWY 7 Eastbound					Int. Total
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	
Intersecti on	07:30 AM																				
Volume	0	0	1	0	1	221	687	0	0	908	9	1	176	0	186	0	534	26	0	560	1655
Percent	0.0	0.0	100.0	0.0		24.3	75.7	0.0	0.0		4.8	0.5	94.6	0.0		0.0	95.4	4.6	0.0		
07:30 Volume	0	0	1	0	1	57	190	0	0	247	1	1	35	0	37	0	132	5	0	137	422
Peak Factor																					
High Int. Volume	07:30 AM																				
Peak Factor	0.25					0.91					0.57					0.96					
	0					9					4					6					

Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1



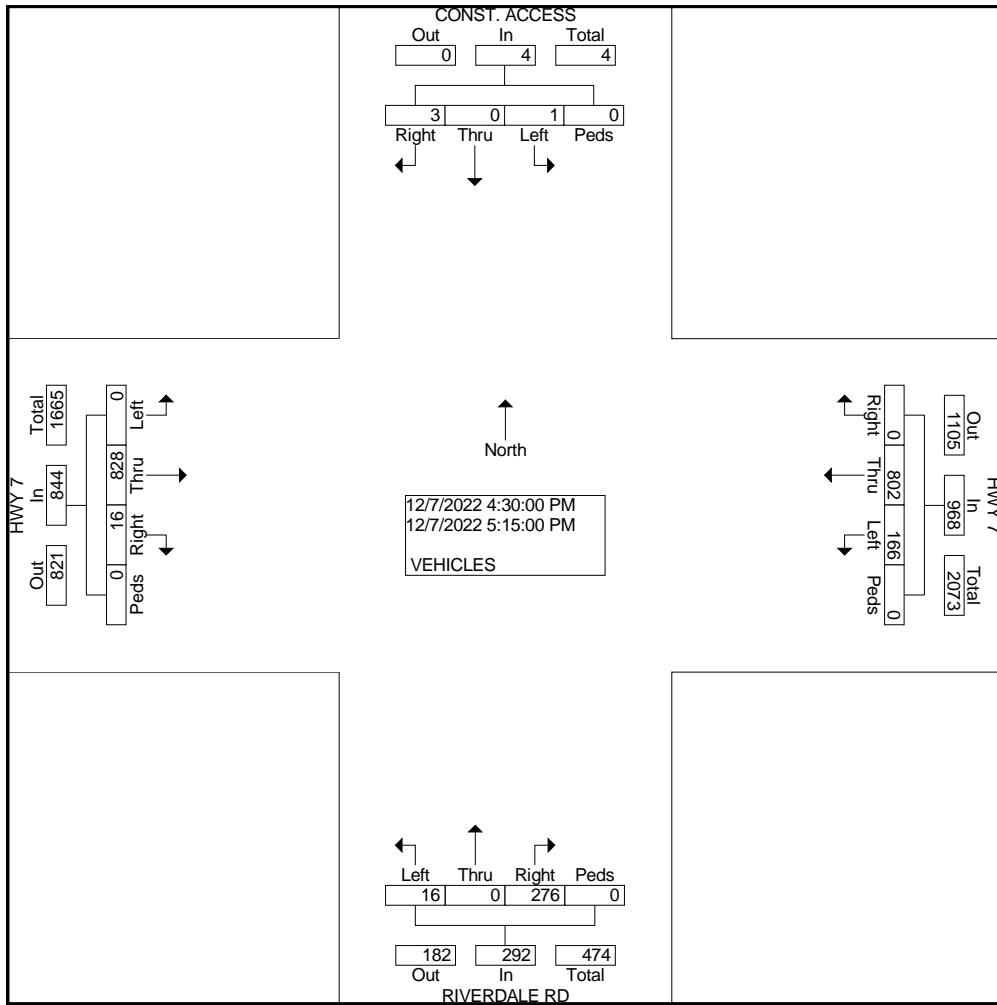
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: RIVERDALE RD
E/W STREET: HWY 7
CITY: BRIGHTON
COUNTY: ADAMS

File Name : RIVERHWY7
Site Code : 00000013
Start Date : 12/7/2022
Page No : 3

Start Time	CONST. ACCESS Southbound					HWY 7 Westbound					RIVERDALE RD Northbound					HWY 7 Eastbound					Int. Total	
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total		
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																						
Intersect on	04:30 PM																					
Volume	1	0	3	0	4	166	802	0	0	968	16	0	276	0	292	0	828	16	0	844	2108	
Percent	25.0	0.0	75.0	0.0		17.1	82.9	0.0	0.0		5.5	0.0	94.5	0.0		0.0	98.1	1.9	0.0			
04:30 Volume	0	0	0	0	0	49	181	0	0	230	6	0	75	0	81	0	215	6	0	221	532	
Peak Factor																						0.991
High Int.	04:45 PM																					
Volume	0	0	2	0	2	41	223	0	0	264	7	0	97	0	104	0	215	6	0	221		
Peak Factor	0.50					0.91					0.70					0.95						
	0					7					2					5						



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: TUCSON ST
E/W STREET: HWY 7
CITY: BRIGHTON
COUNTY: ADAMS

File Name : TUCSONHWY7
Site Code : 00000052
Start Date : 12/7/2022
Page No : 1

Groups Printed- VEHICLES

Start Time	TUCSON ST Southbound				HWY 7 Westbound				NO ACCESS Northbound				HWY 7 Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	8	0	0	208	1	0	0	0	0	0	6	130	0	0	353
06:45 AM	0	0	13	0	0	173	2	0	0	0	0	0	6	151	0	0	345
Total	0	0	21	0	0	381	3	0	0	0	0	0	12	281	0	0	698
07:00 AM	0	0	8	0	0	231	3	0	0	0	0	0	5	157	0	0	404
07:15 AM	2	0	8	0	0	165	2	0	0	0	0	0	5	169	0	0	351
07:30 AM	1	0	11	0	0	273	2	0	0	0	0	0	2	181	0	0	470
07:45 AM	2	0	12	0	0	244	3	0	0	0	0	0	4	169	0	0	434
Total	5	0	39	0	0	913	10	0	0	0	0	0	16	676	0	0	1659
08:00 AM	3	0	10	0	0	216	1	0	0	0	0	0	11	168	0	0	409
08:15 AM	2	0	7	0	0	185	2	0	0	0	0	0	11	200	0	0	407
Total	5	0	17	0	0	401	3	0	0	0	0	0	22	368	0	0	816
04:00 PM	1	0	13	0	0	231	6	0	0	0	0	0	3	212	0	0	466
04:15 PM	3	0	11	0	0	209	34	0	0	0	0	0	10	224	0	0	491
04:30 PM	1	0	4	0	0	206	4	0	0	0	0	0	9	250	0	0	474
04:45 PM	1	0	6	0	0	214	5	0	0	0	0	0	12	258	0	0	496
Total	6	0	34	0	0	860	49	0	0	0	0	0	34	944	0	0	1927
05:00 PM	1	0	8	0	0	239	6	0	0	0	0	0	13	257	0	0	524
05:15 PM	2	0	8	0	0	244	6	0	0	0	0	0	13	253	0	0	526
05:30 PM	1	0	4	0	0	210	1	0	0	0	0	0	8	215	0	0	439
05:45 PM	2	0	7	0	0	215	2	0	0	0	0	0	11	229	0	0	466
Total	6	0	27	0	0	908	15	0	0	0	0	0	45	954	0	0	1955
Grand Total	22	0	138	0	0	3463	80	0	0	0	0	0	129	3223	0	0	7055
Apprch %	13.8	0.0	86.3	0.0	0.0	97.7	2.3	0.0	0.0	0.0	0.0	0.0	3.8	96.2	0.0	0.0	
Total %	0.3	0.0	2.0	0.0	0.0	49.1	1.1	0.0	0.0	0.0	0.0	0.0	1.8	45.7	0.0	0.0	

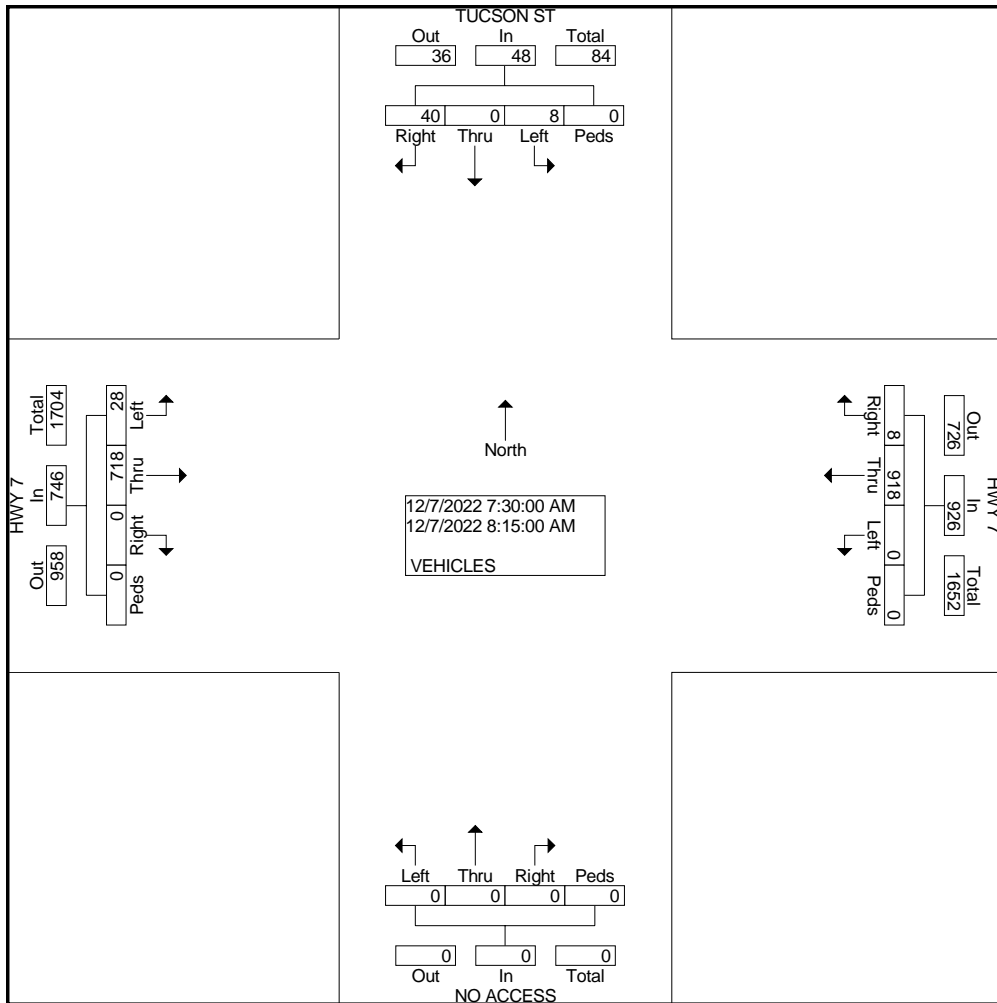
COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: TUCSON ST
E/W STREET: HWY 7
CITY: BRIGHTON
COUNTY: ADAMS

File Name : TUCSONHWY7
Site Code : 0000052
Start Date : 12/7/2022
Page No : 2

Start Time	TUCSON ST Southbound					HWY 7 Westbound					NO ACCESS Northbound					HWY 7 Eastbound					Int. Total
	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Intersecti on	07:30 AM																				
Volume	8	0	40	0	48	0	918	8	0	926	0	0	0	0	0	28	718	0	0	746	1720
Percent	16.7	0.0	83.3	0.0		0.0	99.1	0.9	0.0		0.0	0.0	0.0	0.0		3.8	96.2	0.0	0.0		
07:30 Volume	1	0	11	0	12	0	273	2	0	275	0	0	0	0	0	2	181	0	0	183	470
Peak Factor																					
High Int. Volume	07:45 AM					07:30 AM					08:15 AM										
Peak Factor	2	0	12	0	14	0	273	2	0	275	0	0	0	0	0	11	200	0	0	211	0.915
						0.85					0.84					0.88					4
						7					2										



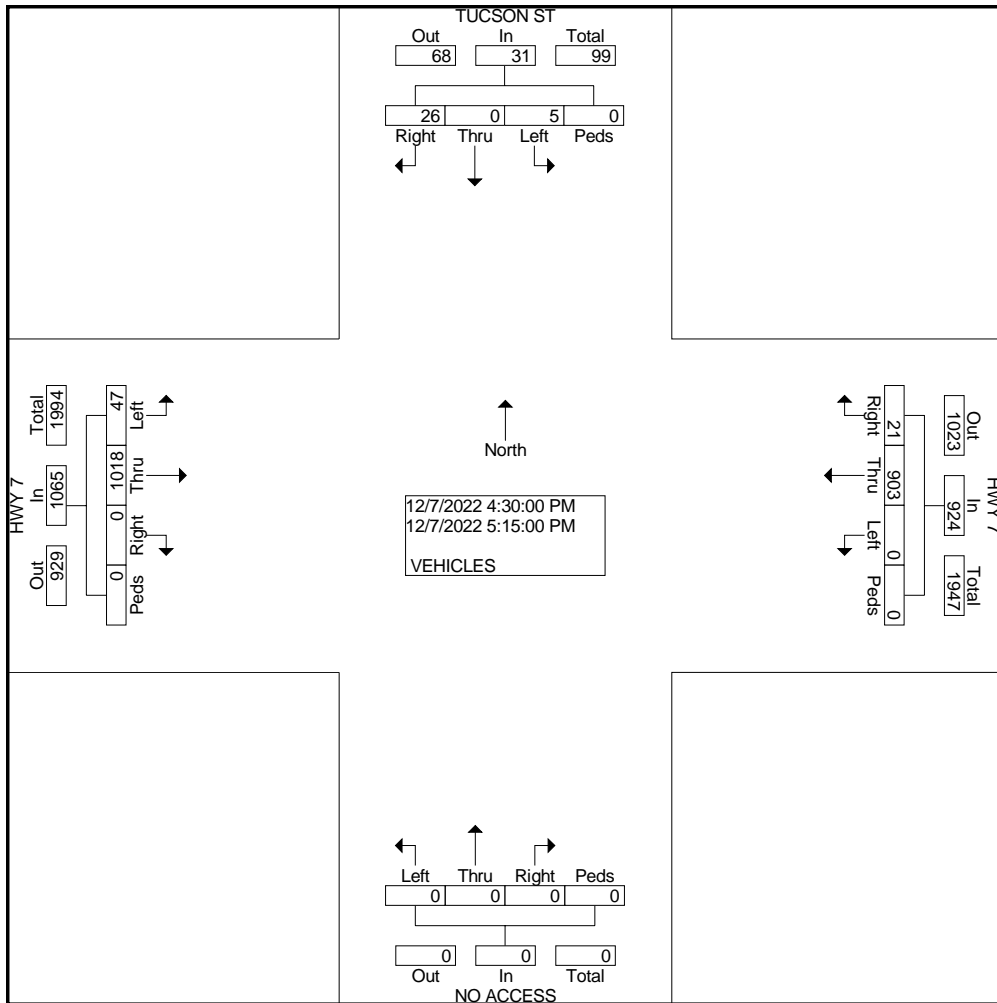
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: TUCSON ST
E/W STREET: HWY 7
CITY: BRIGHTON
COUNTY: ADAMS

File Name : TUCSONHWY7
Site Code : 0000052
Start Date : 12/7/2022
Page No : 3

Start Time	TUCSON ST Southbound					HWY 7 Westbound					NO ACCESS Northbound					HWY 7 Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Intersecti on	04:30 PM																				
Volume	5	0	26	0	31	0	903	21	0	924	0	0	0	0	0	47	1018	0	0	1065	2020
Percent	16.1	0.0	83.9	0.0		0.0	97.7	2.3	0.0		0.0	0.0	0.0	0.0		4.4	95.6	0.0	0.0		
05:15 Volume	2	0	8	0	10	0	244	6	0	250	0	0	0	0	0	13	253	0	0	266	526
Peak Factor																					0.960
High Int. Volume	05:15 PM																				
Peak Factor	0.77					05:15 PM					04:45 PM					0.98					
	2	0	8	0	10	0	244	6	0	250	0	0	0	0	0	12	258	0	0	270	6
	5					4					6										



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: TUCSON ST
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : TUCS168TH
Site Code : 0000013
Start Date : 2/9/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	NO ACCESS Southbound			E. 168TH AVE Westbound			TUCSON ST Northbound			E. 168TH AVE Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:00 AM	0	0	0	3	37	0	0	0	4	0	15	1	60
06:15 AM	0	0	0	5	54	0	0	0	7	0	11	1	78
06:30 AM	0	0	0	7	47	0	0	0	5	0	33	0	92
06:45 AM	0	0	0	8	40	0	1	0	4	0	22	2	77
Total	0	0	0	23	178	0	1	0	20	0	81	4	307
07:00 AM	0	0	0	5	59	0	2	0	4	0	31	1	102
07:15 AM	0	0	0	5	64	0	1	0	0	0	26	1	97
07:30 AM	0	0	0	18	54	0	1	0	7	0	27	0	107
07:45 AM	0	0	0	14	48	0	4	0	6	0	31	0	103
Total	0	0	0	42	225	0	8	0	17	0	115	2	409
08:00 AM	0	0	0	11	36	0	1	0	12	0	28	1	89
08:15 AM	0	0	0	6	45	0	1	0	13	0	32	0	97
Total	0	0	0	17	81	0	2	0	25	0	60	1	186
04:00 PM	0	0	0	10	35	0	1	0	5	0	63	1	115
04:15 PM	0	0	0	5	41	0	2	0	7	0	43	2	100
04:30 PM	0	0	0	8	39	0	4	0	9	0	58	2	120
04:45 PM	0	0	0	5	35	0	1	0	10	0	52	0	103
Total	0	0	0	28	150	0	8	0	31	0	216	5	438
05:00 PM	0	0	0	0	35	0	4	0	10	0	61	1	111
05:15 PM	0	0	0	3	48	0	1	0	6	0	56	3	117
05:30 PM	0	0	0	5	37	0	2	0	11	0	41	2	98
05:45 PM	0	0	0	6	35	0	0	0	0	0	55	2	98
Total	0	0	0	14	155	0	7	0	27	0	213	8	424
Grand Total	0	0	0	124	789	0	26	0	120	0	685	20	1764
Apprch %	0.0	0.0	0.0	13.6	86.4	0.0	17.8	0.0	82.2	0.0	97.2	2.8	
Total %	0.0	0.0	0.0	7.0	44.7	0.0	1.5	0.0	6.8	0.0	38.8	1.1	

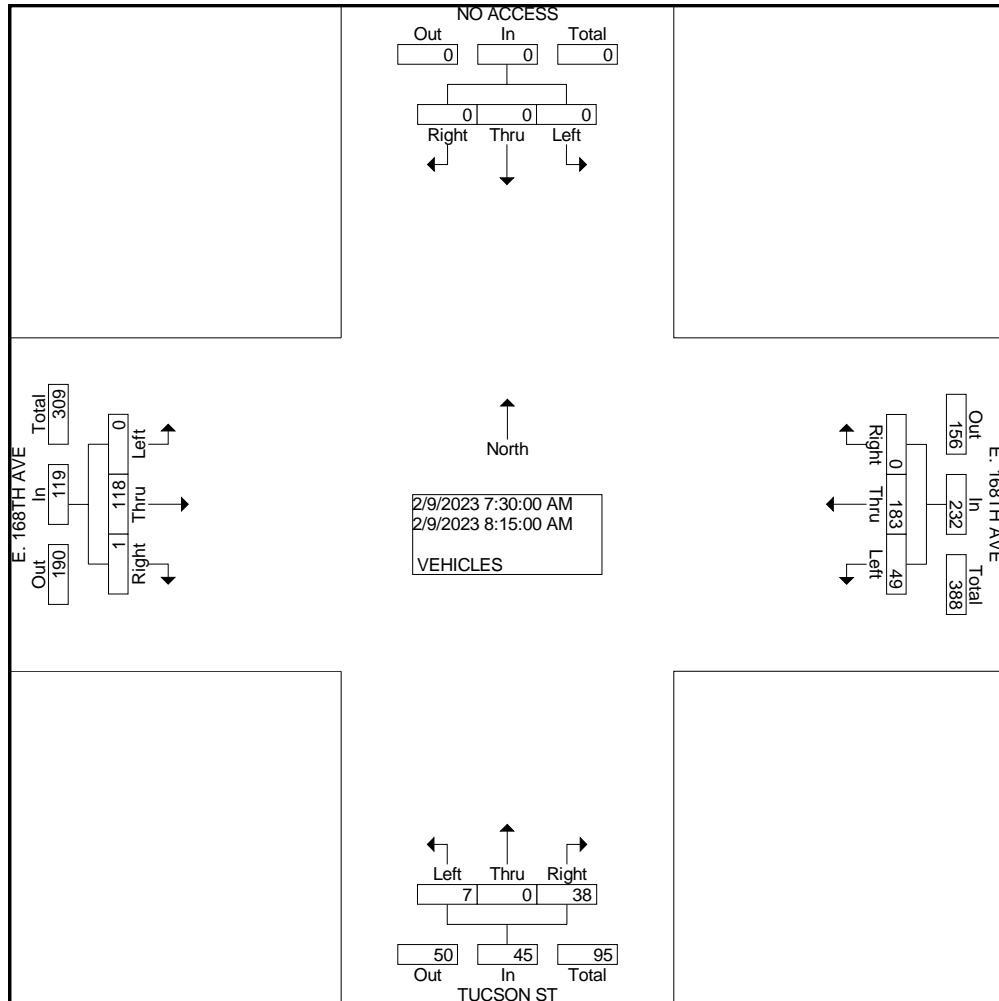
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: TUCSON ST
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : TUCS168TH
Site Code : 0000013
Start Date : 2/9/2023
Page No : 2

Start Time	NO ACCESS Southbound				E. 168TH AVE Westbound				TUCSON ST Northbound				E. 168TH AVE Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Intersection 07:30 AM																	
Volume	0	0	0	0	49	183	0	232	7	0	38	45	0	118	1	119	396
Percent	0.0	0.0	0.0		21.1	78.9	0.0		15.6	0.0	84.4		0.0	99.2	0.8		
07:30 Volume	0	0	0	0	18	54	0	72	1	0	7	8	0	27	0	27	107
Peak Factor	0.925																
High Int.																	
08:15 Volume	0	0	0	0	18	54	0	72	1	0	13	14	0	32	0	32	
Peak Factor					0.806				0.804				0.930				



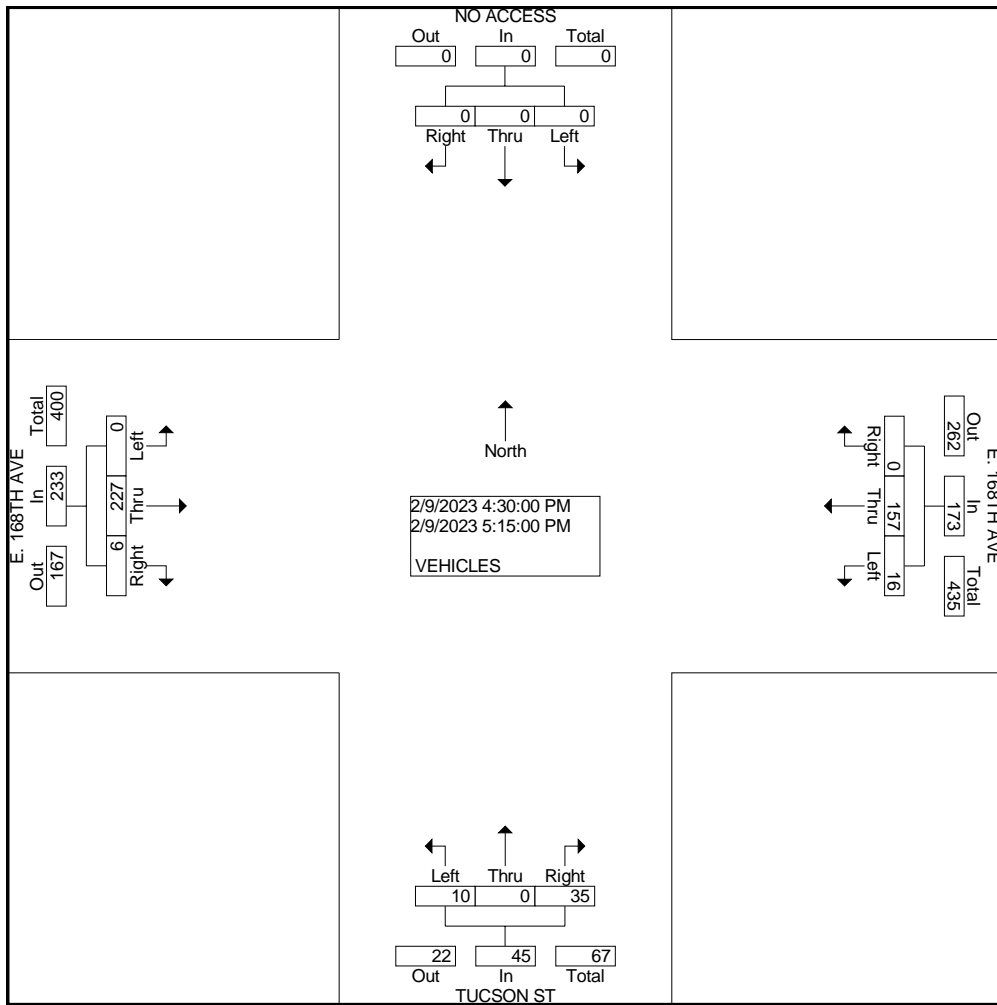
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: TUCSON ST
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : TUCS168TH
Site Code : 0000013
Start Date : 2/9/2023
Page No : 3

Start Time	NO ACCESS Southbound				E. 168TH AVE Westbound				TUCSON ST Northbound				E. 168TH AVE Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Intersection	04:30 PM																
Volume	0	0	0	0	16	157	0	173	10	0	35	45	0	227	6	233	451
Percent	0.0	0.0	0.0	0.0	9.2	90.8	0.0		22.2	0.0	77.8		0.0	97.4	2.6		
04:30 Volume	0	0	0	0	8	39	0	47	4	0	9	13	0	58	2	60	120
Peak Factor	0.940																
High Int.	05:15 PM																
Volume	0	0	0	0	3	48	0	51	4	0	10	14	0	61	1	62	0.940
Peak Factor	0.848																



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: YOSEMITE ST
E/W STREET: E. 160TH AVE (HWY 7)
CITY: BRIGHTON
COUNTY: ADAMS

File Name : YOSE160TH
Site Code : 00000025
Start Date : 1/24/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	YOSEMITE ST Southbound				E. 160TH AVE Westbound				YOSEMITE ST Northbound				E. 160TH AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	1	1	4	0	1	184	1	0	10	1	6	0	1	86	5	0	301
06:45 AM	2	2	5	0	5	158	1	0	5	2	7	0	2	88	1	0	278
Total	3	3	9	0	6	342	2	0	15	3	13	0	3	174	6	0	579
07:00 AM	0	1	4	0	5	196	2	0	14	1	11	0	3	113	6	0	356
07:15 AM	5	3	11	1	2	209	3	0	19	0	4	0	1	118	7	0	383
07:30 AM	3	1	11	0	5	258	1	0	12	3	7	0	1	123	1	0	426
07:45 AM	3	4	1	0	5	172	3	0	10	3	14	0	5	112	4	0	336
Total	11	9	27	1	17	835	9	0	55	7	36	0	10	466	18	0	1501
08:00 AM	6	2	5	0	8	179	2	0	7	3	10	0	7	112	5	0	346
08:15 AM	4	0	1	0	8	195	1	0	8	0	10	0	1	117	9	0	354
Total	10	2	6	0	16	374	3	0	15	3	20	0	8	229	14	0	700
04:00 PM	5	4	1	0	10	143	3	0	3	1	8	0	5	198	12	0	393
04:15 PM	1	3	1	0	15	143	4	0	9	0	3	0	2	190	8	0	379
04:30 PM	2	3	1	0	15	157	2	0	11	1	10	0	9	199	16	0	426
04:45 PM	1	2	5	0	9	150	5	0	11	6	7	0	8	207	15	0	426
Total	9	12	8	0	49	593	14	0	34	8	28	0	24	794	51	0	1624
05:00 PM	3	1	3	0	7	179	1	0	10	3	8	0	2	220	4	0	441
05:15 PM	3	3	6	0	4	159	3	0	4	1	9	0	6	214	11	0	423
05:30 PM	2	1	2	0	10	141	1	0	11	1	12	0	5	194	12	0	392
05:45 PM	1	2	1	0	7	119	7	1	2	0	1	0	5	172	9	0	327
Total	9	7	12	0	28	598	12	1	27	5	30	0	18	800	36	0	1583
Grand Total	42	33	62	1	116	2742	40	1	146	26	127	0	63	2463	125	0	5987
Apprch %	30.4	23.9	44.9	0.7	4.0	94.6	1.4	0.0	48.8	8.7	42.5	0.0	2.4	92.9	4.7	0.0	
Total %	0.7	0.6	1.0	0.0	1.9	45.8	0.7	0.0	2.4	0.4	2.1	0.0	1.1	41.1	2.1	0.0	

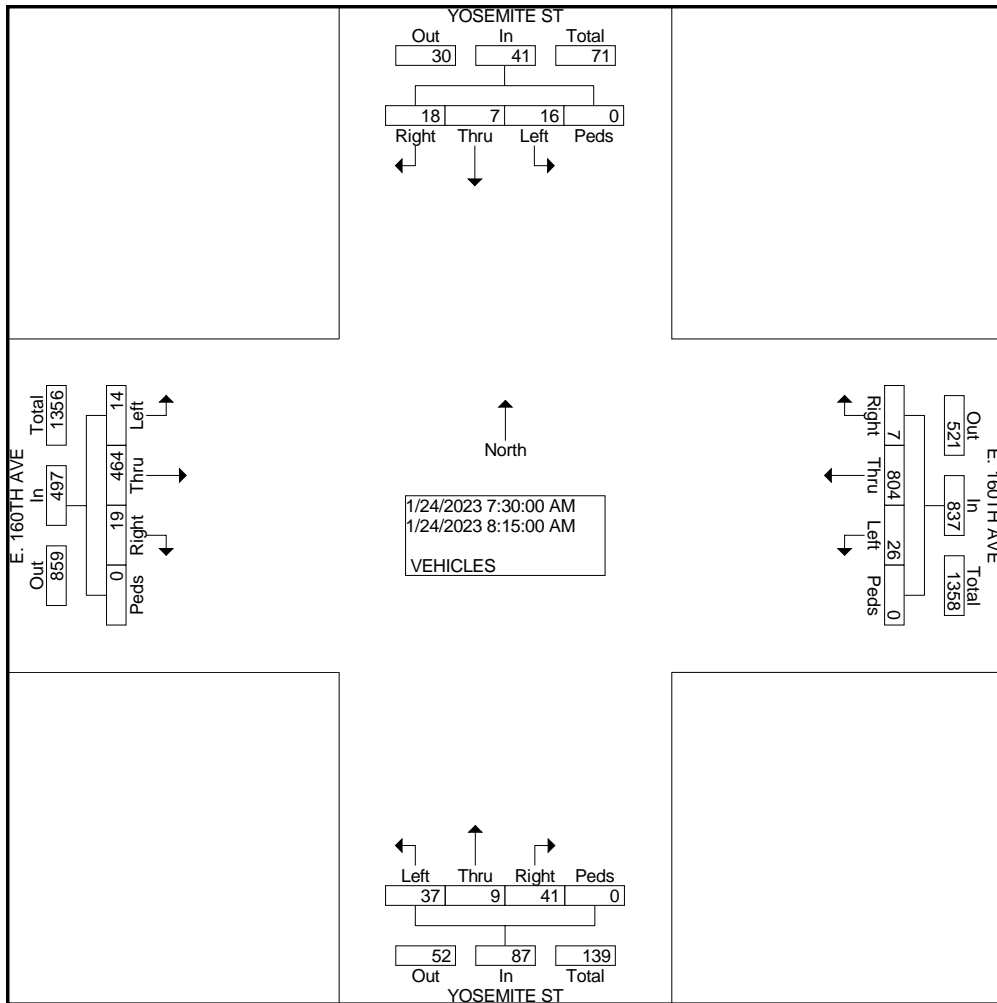
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: YOSEMITE ST
E/W STREET: E. 160TH AVE (HWY 7)
CITY: BRIGHTON
COUNTY: ADAMS

File Name : YOSE160TH
Site Code : 0000025
Start Date : 1/24/2023
Page No : 2

Start Time	YOSEMITE ST Southbound					E. 160TH AVE Westbound					YOSEMITE ST Northbound					E. 160TH AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection 07:30 AM																					
Volume	16	7	18	0	41	26	804	7	0	837	37	9	41	0	87	14	464	19	0	497	1462
Percent	39.0	17.1	43.9	0.0		3.1	96.1	0.8	0.0		42.5	10.3	47.1	0.0		2.8	93.4	3.8	0.0		
07:30 Volume	3	1	11	0	15	5	258	1	0	264	12	3	7	0	22	1	123	1	0	125	426
Peak Factor																					
High Int. Volume	07:30 AM					07:30 AM					07:45 AM					08:15 AM					
Peak Factor																					0.858
	3	1	11	0	15	5	258	1	0	264	10	3	14	0	27	1	117	9	0	127	
						0.68					0.79					0.80					0.978



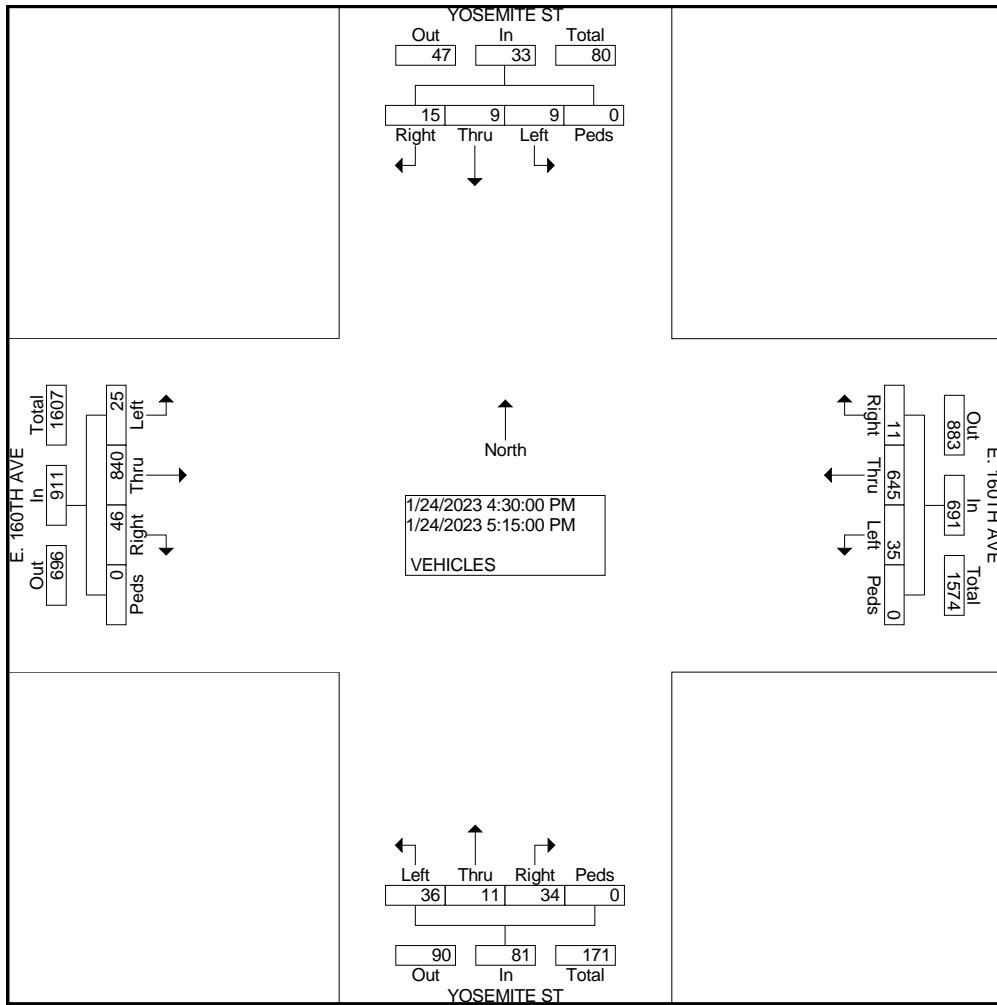
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: YOSEMITE ST
E/W STREET: E. 160TH AVE (HWY 7)
CITY: BRIGHTON
COUNTY: ADAMS

File Name : YOSE160TH
Site Code : 0000025
Start Date : 1/24/2023
Page No : 3

Start Time	YOSEMITE ST Southbound					E. 160TH AVE Westbound					YOSEMITE ST Northbound					E. 160TH AVE Eastbound					Int. Total	
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total		
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																						
Intersect on	04:30 PM																					
Volume	9	9	15	0	33	35	645	11	0	691	36	11	34	0	81	25	840	46	0	911	1716	
Percent	27.3	27.3	45.5	0.0		5.1	93.3	1.6	0.0		44.4	13.6	42.0	0.0		2.7	92.2	5.0	0.0			
05:00 Volume	3	1	3	0	7	7	179	1	0	187	10	3	8	0	21	2	220	4	0	226	441	
Peak Factor																						0.973
High Int.	05:15 PM																					
Volume	3	3	6	0	12	7	179	1	0	187	11	6	7	0	24	6	214	11	0	231		
Peak Factor	0.688										0.844					0.986						



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: YOSEMITE ST
E/W STREET: E. 162ND AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : YOSE162ND
Site Code : 00000008
Start Date : 1/26/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	YOSEMITE ST Southbound				PRIVATE DRIVE Westbound				YOSEMITE ST Northbound				E. 162ND AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
06:30 AM	0	1	0	0	0	0	0	0	1	1	0	0	0	0	3	0	6
06:45 AM	0	1	0	0	0	0	0	0	1	2	0	0	0	0	2	0	6
Total	0	2	0	0	0	0	0	0	2	3	0	0	0	0	5	0	12
07:00 AM	0	3	0	0	0	0	0	0	0	3	0	0	0	0	3	0	9
07:15 AM	0	4	0	0	0	0	0	0	3	2	0	0	2	0	10	0	21
07:30 AM	0	1	0	0	1	0	0	0	2	5	0	0	0	1	14	0	24
07:45 AM	0	6	0	0	0	0	0	0	0	3	0	0	0	0	5	1	15
Total	0	14	0	0	1	0	0	0	5	13	0	0	2	1	32	1	69
08:00 AM	0	2	0	0	0	0	0	0	6	1	0	0	0	0	5	0	14
08:15 AM	0	4	0	0	0	0	0	0	3	5	0	0	0	0	3	0	15
Total	0	6	0	0	0	0	0	0	9	6	0	0	0	0	8	0	29
04:00 PM	0	3	0	0	0	0	0	0	6	3	0	2	0	0	3	0	17
04:15 PM	0	4	0	0	0	0	0	0	4	4	0	0	0	0	4	0	16
04:30 PM	0	6	1	0	0	0	0	0	5	6	0	0	0	0	3	0	21
04:45 PM	0	4	0	0	0	0	0	0	3	5	0	0	0	0	1	0	13
Total	0	17	1	0	0	0	0	0	18	18	0	2	0	0	11	0	67
05:00 PM	0	6	0	0	0	0	0	0	9	2	0	0	0	0	5	0	22
05:15 PM	0	8	0	0	0	0	0	0	7	2	0	0	1	0	5	0	23
05:30 PM	0	3	0	0	0	0	0	0	1	2	0	1	0	0	5	1	13
05:45 PM	0	2	0	0	0	0	0	0	2	3	0	0	0	0	0	0	7
Total	0	19	0	0	0	0	0	0	19	9	0	1	1	0	15	1	65
Grand Total	0	58	1	0	1	0	0	0	53	49	0	3	3	1	71	2	242
Apprch %	0.0	98.3	1.7	0.0	100.0	0.0	0.0	0.0	50.5	46.7	0.0	2.9	3.9	1.3	92.2	2.6	
Total %	0.0	24.0	0.4	0.0	0.4	0.0	0.0	0.0	21.9	20.2	0.0	1.2	1.2	0.4	29.3	0.8	

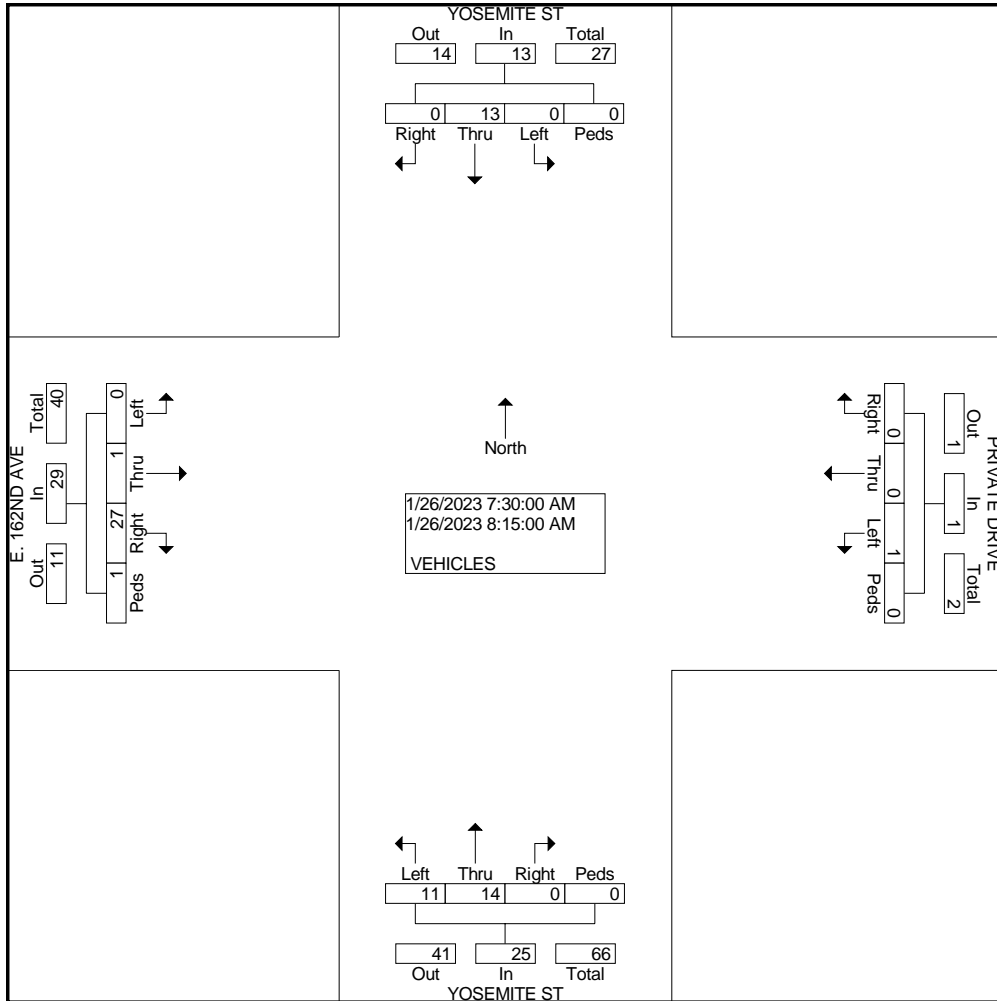
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: YOSEMITE ST
E/W STREET: E. 162ND AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : YOSE162ND
Site Code : 00000008
Start Date : 1/26/2023
Page No : 2

Start Time	YOSEMITE ST Southbound					PRIVATE DRIVE Westbound					YOSEMITE ST Northbound					E. 162ND AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	0	13	0	0	13	1	0	0	0	1	11	14	0	0	25	0	1	27	1	29	68
Percent	0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		44.0	56.0	0.0	0.0		0.0	3.4	93.1	3.4		
07:30 Volume	0	1	0	0	1	1	0	0	0	1	2	5	0	0	7	0	1	14	0	15	24
Peak Factor	0.708																				
High Int. Volume	07:45 AM					07:30 AM					08:15 AM					07:30 AM					
Peak Factor	0.54					0.25					0.78					0.48					
	2					0					1					3					



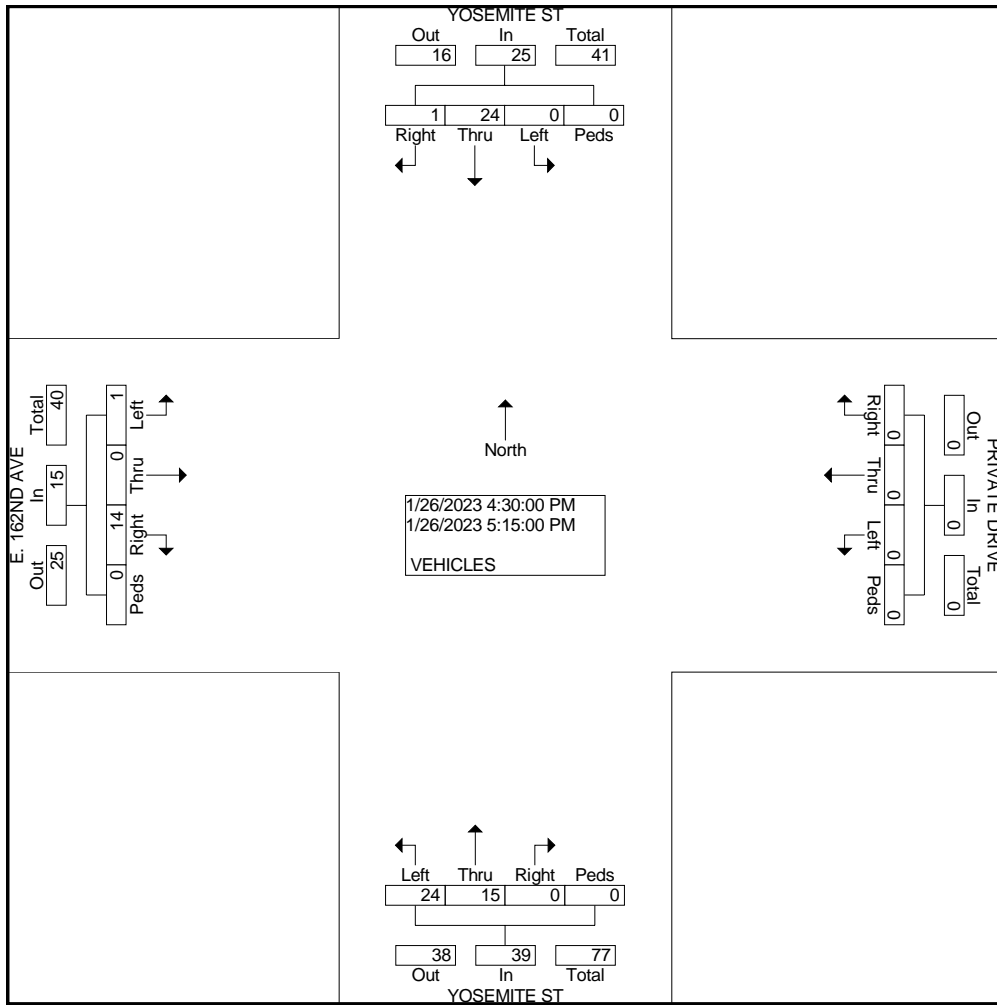
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: YOSEMITE ST
E/W STREET: E. 162ND AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : YOSE162ND
Site Code : 00000008
Start Date : 1/26/2023
Page No : 3

Start Time	YOSEMITE ST Southbound					PRIVATE DRIVE Westbound					YOSEMITE ST Northbound					E. 162ND AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Intersect on	04:30 PM																				
Volume	0	24	1	0	25	0	0	0	0	0	24	15	0	0	39	1	0	14	0	15	79
Percent	0.0	96.0	4.0	0.0		0.0	0.0	0.0	0.0		61.5	38.5	0.0	0.0		6.7	0.0	93.3	0.0		
05:15	05:15 PM																				
Volume	0	8	0	0	8	0	0	0	0	0	7	2	0	0	9	1	0	5	0	6	23
Peak Factor	0.859																				
High Int.	04:30 PM																				
Volume	0	8	0	0	8	0	0	0	0	0	5	6	0	0	11	1	0	5	0	6	6
Peak Factor	0.625																				



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: YOSEMITE ST
E/W STREET: E. 163RD AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : YOSE163RD
Site Code : 00000005
Start Date : 1/26/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	YOSEMITE ST Southbound			NO ACCESS Westbound			YOSEMITE ST Northbound			E. 163RD AVE Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	1	0	0	0	0	0	1	0	0	0	1	3
06:45 AM	0	1	0	0	0	0	0	2	0	0	0	0	3
Total	0	2	0	0	0	0	0	3	0	0	0	1	6
07:00 AM	0	2	1	0	0	0	1	3	0	0	0	2	9
07:15 AM	0	4	0	0	0	0	1	1	0	1	0	0	7
07:30 AM	0	2	0	0	0	0	0	3	0	0	0	1	6
07:45 AM	0	5	0	0	0	0	1	1	0	0	0	3	10
Total	0	13	1	0	0	0	3	8	0	1	0	6	32
08:00 AM	0	2	0	0	0	0	2	1	0	1	0	1	7
08:15 AM	0	4	0	0	0	0	0	0	0	0	0	0	4
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	0	6	0	0	0	0	2	1	0	1	0	2	12
04:00 PM	0	3	0	0	0	0	1	3	0	0	0	1	8
04:15 PM	0	3	1	0	0	0	1	4	0	0	0	1	10
04:30 PM	0	6	0	0	0	0	0	6	0	0	0	0	12
04:45 PM	0	4	2	0	0	0	2	5	0	0	0	2	15
Total	0	16	3	0	0	0	4	18	0	0	0	4	45
05:00 PM	0	5	1	0	0	0	2	3	0	0	0	0	11
05:15 PM	0	8	0	0	0	0	1	2	0	0	0	1	12
05:30 PM	0	3	1	0	0	0	1	2	0	0	0	1	8
05:45 PM	0	2	1	0	0	0	0	3	0	0	0	2	8
Total	0	18	3	0	0	0	4	10	0	0	0	4	39
Grand Total	0	55	7	0	0	0	13	40	0	2	0	17	134
Apprch %	0.0	88.7	11.3	0.0	0.0	0.0	24.5	75.5	0.0	10.5	0.0	89.5	
Total %	0.0	41.0	5.2	0.0	0.0	0.0	9.7	29.9	0.0	1.5	0.0	12.7	

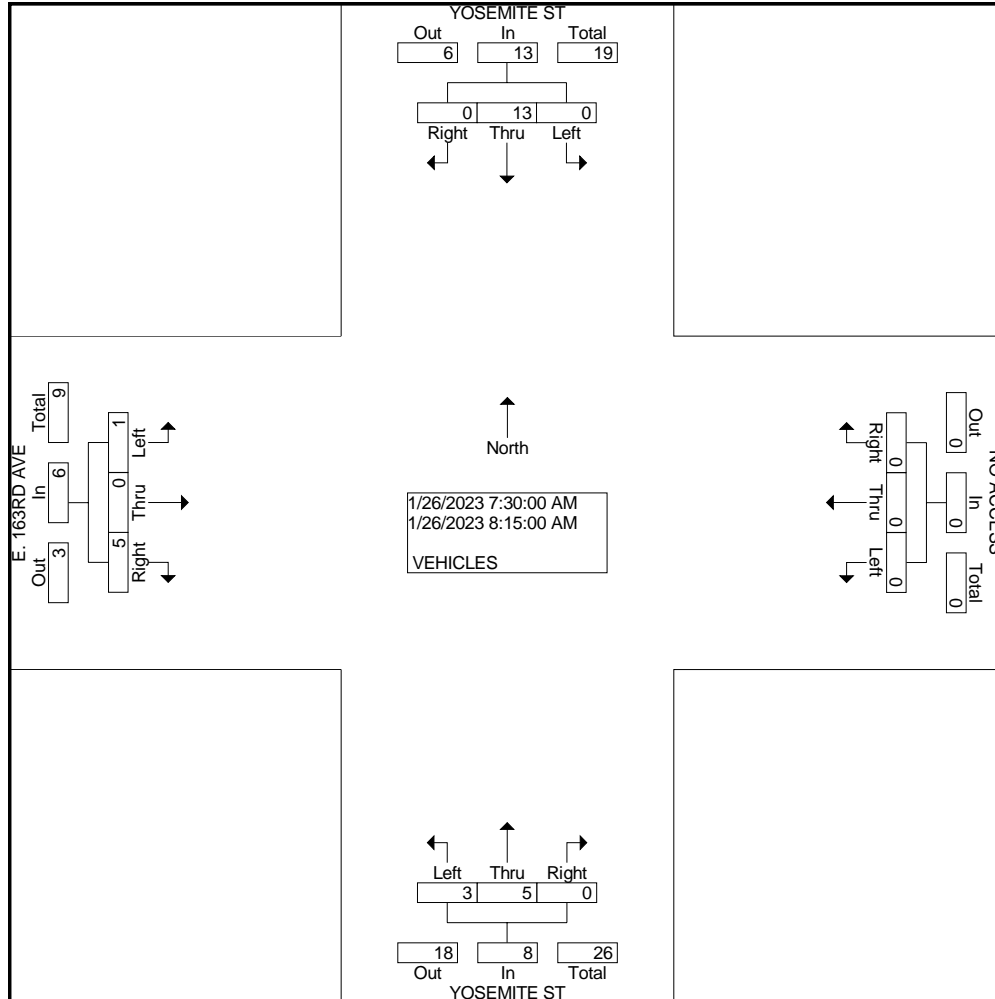
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: YOSEMITE ST
E/W STREET: E. 163RD AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : YOSE163RD
Site Code : 00000005
Start Date : 1/26/2023
Page No : 2

Start Time	YOSEMITE ST Southbound				NO ACCESS Westbound				YOSEMITE ST Northbound				E. 163RD AVE Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Intersection 07:30 AM																	
Volume	0	13	0	13	0	0	0	0	3	5	0	8	1	0	5	6	27
Percent	0.0	100.0	0.0		0.0	0.0	0.0		37.5	62.5	0.0		16.7	0.0	83.3		
07:45 Volume	0	5	0	5	0	0	0	0	1	1	0	2	0	0	3	3	10
Peak Factor																	
High Int. 07:45 AM																	
Volume	0	5	0	5	0	0	0	0	0	3	0	3	0	0	3	3	0.675
Peak Factor	0.650								0.667				0.500				



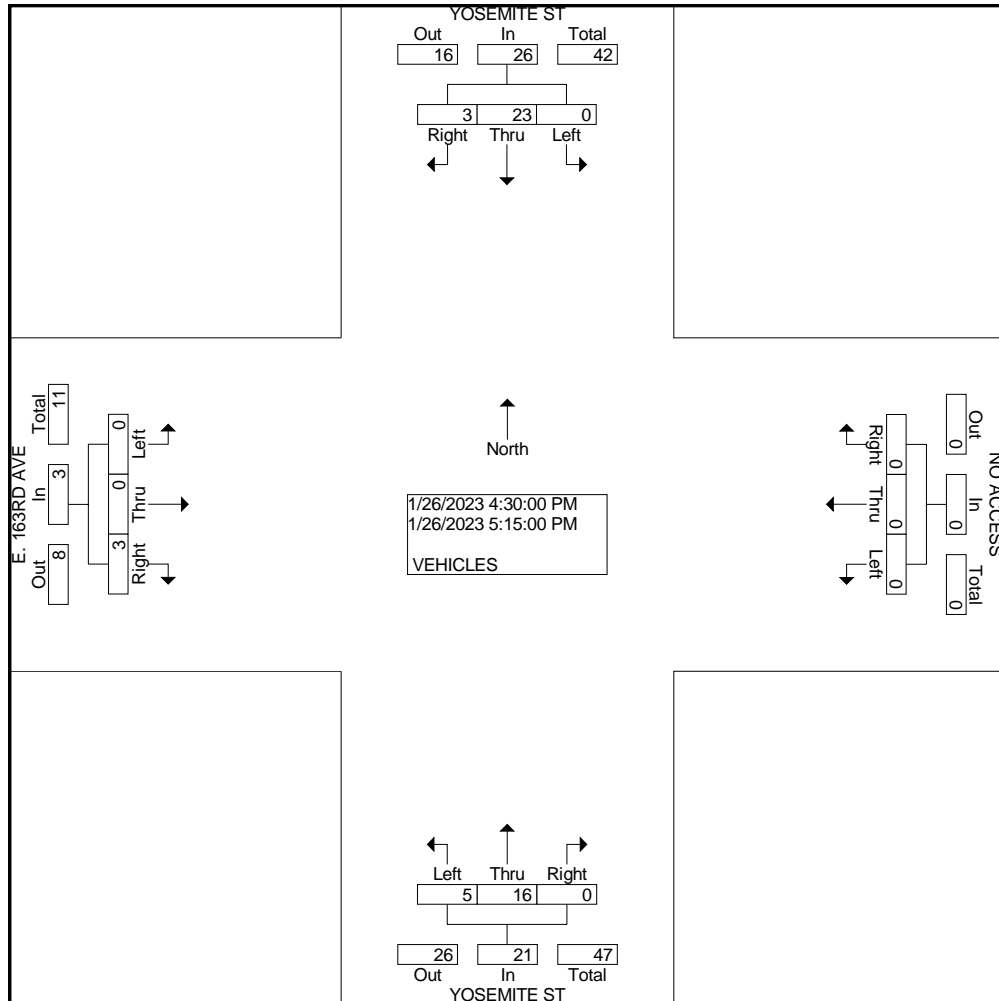
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: YOSEMITE ST
E/W STREET: E. 163RD AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : YOSE163RD
Site Code : 00000005
Start Date : 1/26/2023
Page No : 3

Start Time	YOSEMITE ST Southbound				NO ACCESS Westbound				YOSEMITE ST Northbound				E. 163RD AVE Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Intersection	04:30 PM																
Volume	0	23	3	26	0	0	0	0	5	16	0	21	0	0	3	3	50
Percent	0.0	88.5	11.5		0.0	0.0	0.0		23.8	76.2	0.0		0.0	0.0	100.0		
04:45																	
Volume	0	4	2	6	0	0	0	0	2	5	0	7	0	0	2	2	15
Peak Factor	0.833																
High Int.	05:15 PM																
Volume	0	8	0	8	0	0	0	0	2	5	0	7	0	0	2	2	
Peak Factor	0.813								0.750				0.375				



COUNTER MEASURES INC.

1889 YORK STREET
DENVER.COLORADO
303-333-7409

N/S STREET: YOSEMITE ST
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : YOSE168TH
Site Code : 0000011
Start Date : 1/26/2023
Page No : 1

Groups Printed- VEHICLES

Start Time	NO ACCESS Southbound				E. 168TH AVE Westbound				YOSEMITE ST Northbound				E. 168TH AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	0	0	1	35	0	0	1	0	0	0	0	25	0	0	62
06:45 AM	0	0	0	0	1	50	0	0	2	0	1	0	0	20	1	0	75
Total	0	0	0	0	2	85	0	0	3	0	1	0	0	45	1	0	137
07:00 AM	0	0	0	0	0	64	0	0	3	0	0	0	0	23	0	0	90
07:15 AM	0	0	0	0	0	63	0	0	3	0	0	0	0	28	0	0	94
07:30 AM	0	0	0	0	0	55	0	0	5	0	0	0	0	29	0	0	89
07:45 AM	0	0	0	0	1	49	0	0	2	0	0	0	0	22	2	0	76
Total	0	0	0	0	1	231	0	0	13	0	0	0	0	102	2	0	349
08:00 AM	0	0	0	0	0	41	0	0	2	0	0	0	0	32	1	0	76
08:15 AM	0	0	0	0	1	42	0	0	1	0	1	0	0	18	2	0	65
Total	0	0	0	0	1	83	0	0	3	0	1	0	0	50	3	0	141
04:00 PM	0	0	0	0	0	34	0	0	4	0	0	0	0	64	3	0	105
04:15 PM	0	0	0	0	2	35	0	0	3	0	0	0	0	59	0	0	99
04:30 PM	0	0	0	0	0	37	0	0	3	0	1	0	0	54	5	0	100
04:45 PM	0	0	0	0	1	45	0	0	3	0	1	0	0	58	4	0	112
Total	0	0	0	0	3	151	0	0	13	0	2	0	0	235	12	0	416
05:00 PM	0	0	0	0	0	34	0	0	1	0	0	0	0	72	3	0	110
05:15 PM	0	0	0	0	1	32	1	0	2	0	1	0	0	45	4	0	86
05:30 PM	0	0	0	0	1	41	0	0	1	0	1	0	0	63	2	0	109
05:45 PM	0	0	0	0	1	23	0	0	0	0	1	0	0	47	1	0	73
Total	0	0	0	0	3	130	1	0	4	0	3	0	0	227	10	0	378
Grand Total	0	0	0	0	10	680	1	0	36	0	7	0	0	659	28	0	1421
Apprch %	0.0	0.0	0.0	0.0	1.4	98.4	0.1	0.0	83.7	0.0	16.3	0.0	0.0	95.9	4.1	0.0	
Total %	0.0	0.0	0.0	0.0	0.7	47.9	0.1	0.0	2.5	0.0	0.5	0.0	0.0	46.4	2.0	0.0	

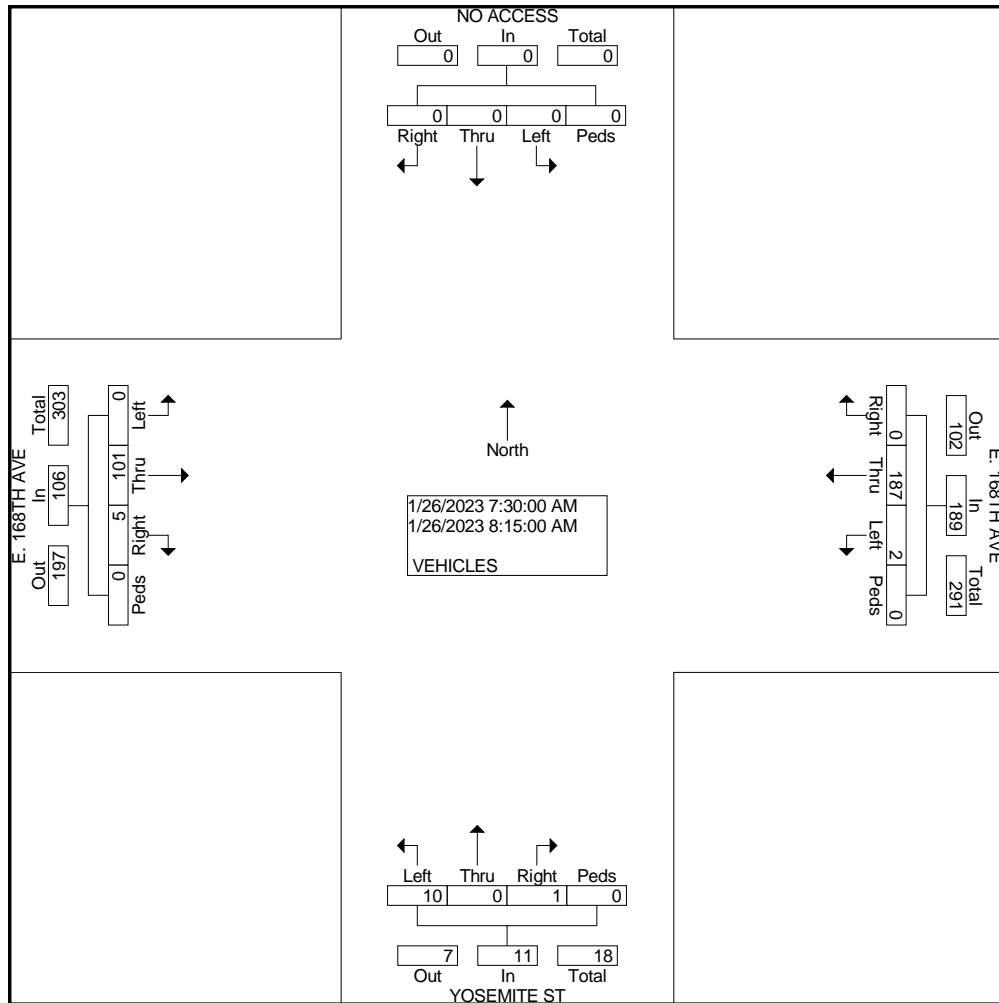
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: YOSEMITE ST
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : YOSE168TH
Site Code : 0000011
Start Date : 1/26/2023
Page No : 2

Start Time	NO ACCESS Southbound					E. 168TH AVE Westbound					YOSEMITE ST Northbound					E. 168TH AVE Eastbound					Int. Total		
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total			
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																							
Intersection 07:30 AM																							
Volume	0	0	0	0	0	2	187	0	0	189	10	0	1	0	11	0	101	5	0	106	306		
Percent	0.0	0.0	0.0	0.0		1.1	98.9	0.0	0.0		90.9	0.0	9.1	0.0		0.0	95.3	4.7	0.0				
07:30 Volume	0	0	0	0	0	0	55	0	0	55	5	0	0	0	5	0	29	0	0	29	89		
Peak Factor																							
High Int. Volume																							
Peak Factor																							
						07:30 AM						07:30 AM						08:00 AM					
	0	0	0	0	0	0	55	0	0	55	5	0	0	0	5	0	32	1	0	33			
							0.85					0.55					0.80						
							9					0					3						



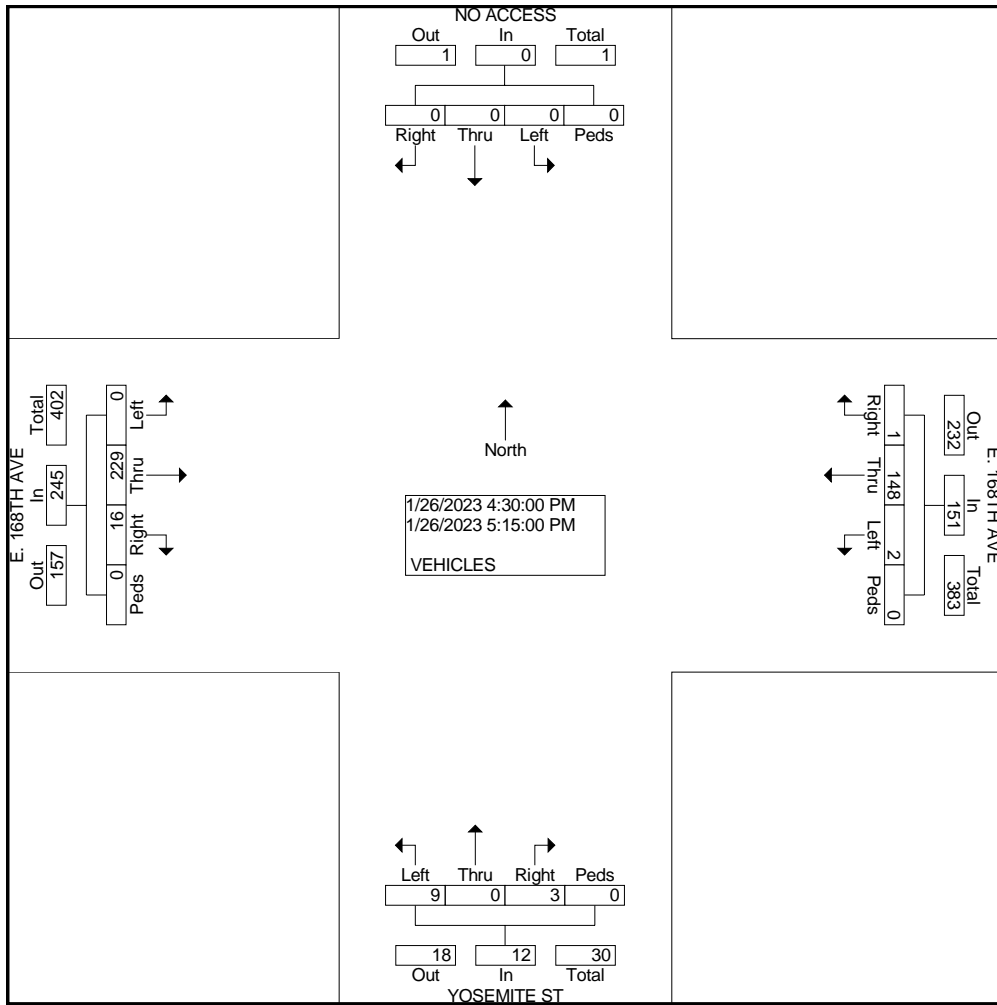
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: YOSEMITE ST
E/W STREET: E. 168TH AVE
CITY: BRIGHTON
COUNTY: ADAMS

File Name : YOSE168TH
Site Code : 0000011
Start Date : 1/26/2023
Page No : 3

Start Time	NO ACCESS Southbound					E. 168TH AVE Westbound					YOSEMITE ST Northbound					E. 168TH AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Intersect on	04:30 PM																				
Volume	0	0	0	0	0	2	148	1	0	151	9	0	3	0	12	0	229	16	0	245	408
Percent	0.0	0.0	0.0	0.0		1.3	98.0	0.7	0.0		75.0	0.0	25.0	0.0		0.0	93.5	6.5	0.0		
04:45 Volume	0	0	0	0	0	1	45	0	0	46	3	0	1	0	4	0	58	4	0	62	112
Peak Factor																					
High Int.																					
Volume	04:45 PM					04:30 PM					05:00 PM										
Peak Factor	0	0	0	0	0	1	45	0	0	0.82	3	0	1	0	0.75	0	72	3	0	0.81	7



COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Location: TUCSON ST N-O HWY7
 City: BRIGHTON
 County: ADAMS
 Direction: NORTH/SOUTH

Site Code: 232820
 Station ID: 232820

Start Time	28-Mar-23 Tue	NORTH	SOUTH							Total
12:00 AM		*	*							*
01:00		*	*							*
02:00		*	*							*
03:00		*	*							*
04:00		*	*							*
05:00		*	*							*
06:00		*	*							*
07:00		*	*							*
08:00		*	*							*
09:00		*	*							*
10:00		*	*							*
11:00		21	26							47
12:00 PM		19	31							50
01:00		21	24							45
02:00		23	23							46
03:00		37	21							58
04:00		51	30							81
05:00		80	41							121
06:00		61	35							96
07:00		41	26							67
08:00		25	19							44
09:00		21	14							35
10:00		11	9							20
11:00		6	5							11
Total		417	304							721
Percent		57.8%	42.2%							
AM Peak	-	11:00	11:00	-	-	-	-	-	-	11:00
Vol.	-	21	26	-	-	-	-	-	-	47
PM Peak	-	17:00	17:00	-	-	-	-	-	-	17:00
Vol.	-	80	41	-	-	-	-	-	-	121

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Location: TUCSON ST N-O HWY7
 City: BRIGHTON
 County: ADAMS
 Direction: NORTH/SOUTH

Site Code: 232820
 Station ID: 232820

Start Time	29-Mar-23 Wed	NORTH	SOUTH							Total
12:00 AM		4	4							8
01:00		3	4							7
02:00		4	3							7
03:00		6	3							9
04:00		12	11							23
05:00		15	16							31
06:00		21	18							39
07:00		26	23							49
08:00		28	45							73
09:00		32	39							71
10:00		26	31							57
11:00		21	26							47
12:00 PM		19	33							52
01:00		21	16							37
02:00		*	*							*
03:00		*	*							*
04:00		*	*							*
05:00		*	*							*
06:00		*	*							*
07:00		*	*							*
08:00		*	*							*
09:00		*	*							*
10:00		*	*							*
11:00		*	*							*
Total		238	272							510
Percent		46.7%	53.3%							
AM Peak	-	09:00	08:00	-	-	-	-	-	-	08:00
Vol.	-	32	45	-	-	-	-	-	-	73
PM Peak	-	13:00	12:00	-	-	-	-	-	-	12:00
Vol.	-	21	33	-	-	-	-	-	-	52
Grand Total		655	576							1231
Percent		53.2%	46.8%							
ADT		ADT 1,092	AADT 1,092							

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Location: RIVERDALE RD S-O HWY 7
 City: BRIGHTON
 County: ADAMS
 Direction: NORTH/SOUTH

Site Code: 232819
 Station ID: 232819

Start Time	28-Mar-23 Tue	NB	SB							Total
12:00 AM		*	*							*
01:00		*	*							*
02:00		*	*							*
03:00		*	*							*
04:00		*	*							*
05:00		*	*							*
06:00		*	*							*
07:00		*	*							*
08:00		*	*							*
09:00		*	*							*
10:00		131	128							259
11:00		126	112							238
12:00 PM		128	121							249
01:00		119	109							228
02:00		122	101							223
03:00		121	98							219
04:00		189	145							334
05:00		251	211							462
06:00		231	165							396
07:00		149	120							269
08:00		121	108							229
09:00		89	77							166
10:00		43	51							94
11:00		23	41							64
Total		1843	1587							3430
Percent		53.7%	46.3%							
AM Peak	-	10:00	10:00	-	-	-	-	-	-	10:00
Vol.	-	131	128	-	-	-	-	-	-	259
PM Peak	-	17:00	17:00	-	-	-	-	-	-	17:00
Vol.	-	251	211	-	-	-	-	-	-	462

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Location: RIVERDALE RD S-O HWY 7
 City: BRIGHTON
 County: ADAMS
 Direction: NORTH/SOUTH

Site Code: 232819
 Station ID: 232819

Start Time	29-Mar-23 Wed	NB	SB	Total
12:00 AM		19	32	51
01:00		16	21	37
02:00		11	13	24
03:00		10	14	24
04:00		16	21	37
05:00		19	31	50
06:00		26	40	66
07:00		47	77	124
08:00		118	231	349
09:00		142	140	282
10:00		*	*	*
11:00		*	*	*
12:00 PM		*	*	*
01:00		*	*	*
02:00		*	*	*
03:00		*	*	*
04:00		*	*	*
05:00		*	*	*
06:00		*	*	*
07:00		*	*	*
08:00		*	*	*
09:00		*	*	*
10:00		*	*	*
11:00		*	*	*
Total		424	620	1044
Percent		40.6%	59.4%	
AM Peak	-	09:00	08:00	08:00
Vol.	-	142	231	349
PM Peak	-	-	-	-
Vol.	-	-	-	-
Grand Total		2267	2207	4474
Percent		50.7%	49.3%	
ADT		ADT 3,267	AADT 3,267	

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Location: HAVANA ST N-O HWY 7
 City: BRIGHTON
 County: ADAMS
 Direction: NORTH/SOUTH

Site Code: 232808
 Station ID: 232808

Start Time	29-Mar-23 Wed	NB	SB	Total						
12:00 AM		1	2	3						
01:00		3	0	3						
02:00		2	1	3						
03:00		5	2	7						
04:00		4	9	13						
05:00		9	21	30						
06:00		16	51	67						
07:00		21	24	45						
08:00		24	23	47						
09:00		19	17	36						
10:00		17	18	35						
11:00		16	20	36						
12:00 PM		19	14	33						
01:00		20	13	33						
02:00		21	19	40						
03:00		37	24	61						
04:00		49	24	73						
05:00		48	32	80						
06:00		21	24	45						
07:00		19	14	33						
08:00		16	9	25						
09:00		12	7	19						
10:00		11	5	16						
11:00		9	4	13						
Total		419	377	796						
Percent		52.6%	47.4%							
AM Peak	-	08:00	06:00	-	-	-	-	-	-	06:00
Vol.	-	24	51	-	-	-	-	-	-	67
PM Peak	-	16:00	17:00	-	-	-	-	-	-	17:00
Vol.	-	49	32	-	-	-	-	-	-	80

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Location: HAVANA ST N-O HWY 7
 City: BRIGHTON
 County: ADAMS
 Direction: NORTH/SOUTH

Site Code: 232808
 Station ID: 232808

Start Time	30-Mar-23 Thu	NB	SB							Total
12:00 AM		3	3							6
01:00		*	*							*
02:00		*	*							*
03:00		*	*							*
04:00		*	*							*
05:00		*	*							*
06:00		*	*							*
07:00		*	*							*
08:00		*	*							*
09:00		*	*							*
10:00		*	*							*
11:00		*	*							*
12:00 PM		*	*							*
01:00		*	*							*
02:00		*	*							*
03:00		*	*							*
04:00		*	*							*
05:00		*	*							*
06:00		*	*							*
07:00		*	*							*
08:00		*	*							*
09:00		*	*							*
10:00		*	*							*
11:00		*	*							*
Total		3	3							6
Percent		50.0%	50.0%							
AM Peak	-	00:00	00:00	-	-	-	-	-	-	00:00
Vol.	-	3	3	-	-	-	-	-	-	6
PM Peak	-	-	-	-	-	-	-	-	-	-
Vol.	-	-	-	-	-	-	-	-	-	-
Grand Total		422	380							802
Percent		52.6%	47.4%							
ADT		ADT 521	AADT 521							

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Location: YOSEMITE ST N-O HWY 7
 City: BRIGHTON
 County: ADAMS
 Direction: NORTH/SOUTH

Site Code: 232803
 Station ID: 232803

Start Time	29-Mar-23 Wed	NB	SB	Total						
12:00 AM		2	3	5						
01:00		0	2	2						
02:00		0	0	0						
03:00		1	1	2						
04:00		1	2	3						
05:00		5	9	14						
06:00		9	21	30						
07:00		11	51	62						
08:00		26	24	50						
09:00		16	23	39						
10:00		12	17	29						
11:00		13	18	31						
12:00 PM		18	20	38						
01:00		13	14	27						
02:00		16	13	29						
03:00		21	19	40						
04:00		27	24	51						
05:00		48	24	72						
06:00		39	32	71						
07:00		25	24	49						
08:00		17	14	31						
09:00		11	9	20						
10:00		8	7	15						
11:00		4	5	9						
Total		343	376	719						
Percent		47.7%	52.3%							
AM Peak	-	08:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	26	51	-	-	-	-	-	-	62
PM Peak	-	17:00	18:00	-	-	-	-	-	-	17:00
Vol.	-	48	32	-	-	-	-	-	-	72

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Location: YOSEMITE ST N-O HWY 7
 City: BRIGHTON
 County: ADAMS
 Direction: NORTH/SOUTH

Site Code: 232803
 Station ID: 232803

Start Time	30-Mar-23 Thu	NB	SB							Total
12:00 AM		3	4							7
01:00		*	*							*
02:00		*	*							*
03:00		*	*							*
04:00		*	*							*
05:00		*	*							*
06:00		*	*							*
07:00		*	*							*
08:00		*	*							*
09:00		*	*							*
10:00		*	*							*
11:00		*	*							*
12:00 PM		*	*							*
01:00		*	*							*
02:00		*	*							*
03:00		*	*							*
04:00		*	*							*
05:00		*	*							*
06:00		*	*							*
07:00		*	*							*
08:00		*	*							*
09:00		*	*							*
10:00		*	*							*
11:00		*	*							*
Total		3	4							7
Percent		42.9%	57.1%							
AM Peak	-	00:00	00:00	-	-	-	-	-	-	00:00
Vol.	-	3	4	-	-	-	-	-	-	7
PM Peak	-	-	-	-	-	-	-	-	-	-
Vol.	-	-	-	-	-	-	-	-	-	-
Grand Total		346	380							726
Percent		47.7%	52.3%							
ADT		ADT 373	AADT 373							

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Location: YOSEMITE ST S-O 168TH AVE
 City: BRIGHTON
 County: ADAMS
 Direction: NORTH/SOUTH

Site Code: 232903
 Station ID: 232903

Start Time	29-Mar-23 Wed	NB	SB	Total						
12:00 AM		1	1	2						
01:00		0	0	0						
02:00		0	1	1						
03:00		1	1	2						
04:00		1	2	3						
05:00		4	3	7						
06:00		5	3	8						
07:00		14	4	18						
08:00		6	8	14						
09:00		5	5	10						
10:00		5	4	9						
11:00		5	4	9						
12:00 PM		5	3	8						
01:00		7	4	11						
02:00		7	5	12						
03:00		9	7	16						
04:00		12	9	21						
05:00		8	16	24						
06:00		9	12	21						
07:00		9	9	18						
08:00		7	7	14						
09:00		5	5	10						
10:00		4	5	9						
11:00		2	2	4						
Total		131	120	251						
Percent		52.2%	47.8%							
AM Peak	-	07:00	08:00	-	-	-	-	-	-	07:00
Vol.	-	14	8	-	-	-	-	-	-	18
PM Peak	-	16:00	17:00	-	-	-	-	-	-	17:00
Vol.	-	12	16	-	-	-	-	-	-	24

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Location: YOSEMITE ST S-O 168TH AVE
 City: BRIGHTON
 County: ADAMS
 Direction: NORTH/SOUTH

Site Code: 232903
 Station ID: 232903

Start Time	30-Mar-23 Thu	NB	SB							Total
12:00 AM		2	2							4
01:00		*	*							*
02:00		*	*							*
03:00		*	*							*
04:00		*	*							*
05:00		*	*							*
06:00		*	*							*
07:00		*	*							*
08:00		*	*							*
09:00		*	*							*
10:00		*	*							*
11:00		*	*							*
12:00 PM		*	*							*
01:00		*	*							*
02:00		*	*							*
03:00		*	*							*
04:00		*	*							*
05:00		*	*							*
06:00		*	*							*
07:00		*	*							*
08:00		*	*							*
09:00		*	*							*
10:00		*	*							*
11:00		*	*							*
Total		2	2							4
Percent		50.0%	50.0%							
AM Peak	-	00:00	00:00	-	-	-	-	-	-	00:00
Vol.	-	2	2	-	-	-	-	-	-	4
PM Peak	-	-	-	-	-	-	-	-	-	-
Vol.	-	-	-	-	-	-	-	-	-	-
Grand Total		133	122							255
Percent		52.2%	47.8%							
ADT		ADT 293	AADT 293							

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Location: LIMA ST S-O 168TH AVE
 City: BRIGHTON
 County: ADAMS
 Direction: NORTH/SOUTH

Site Code: 232920
 Station ID: 232920

Start Time	29-Mar-23 Wed	NB	SB	Total						
12:00 AM		1	2	3						
01:00		1	4	5						
02:00		0	0	0						
03:00		0	0	0						
04:00		1	1	2						
05:00		2	6	8						
06:00		2	4	6						
07:00		6	5	11						
08:00		17	14	31						
09:00		11	8	19						
10:00		7	4	11						
11:00		4	5	9						
12:00 PM		3	5	8						
01:00		4	5	9						
02:00		6	8	14						
03:00		5	10	15						
04:00		7	18	25						
05:00		4	24	28						
06:00		14	30	44						
07:00		16	21	37						
08:00		9	14	23						
09:00		8	11	19						
10:00		6	9	15						
11:00		4	8	12						
Total		138	216	354						
Percent		39.0%	61.0%							
AM Peak	-	08:00	08:00	-	-	-	-	-	-	08:00
Vol.	-	17	14	-	-	-	-	-	-	31
PM Peak	-	19:00	18:00	-	-	-	-	-	-	18:00
Vol.	-	16	30	-	-	-	-	-	-	44

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Location: LIMA ST S-O 168TH AVE
 City: BRIGHTON
 County: ADAMS
 Direction: NORTH/SOUTH

Site Code: 232920
 Station ID: 232920

Start Time	30-Mar-23 Thu	NB	SB	Total
12:00 AM		3	9	12
01:00		*	*	*
02:00		*	*	*
03:00		*	*	*
04:00		*	*	*
05:00		*	*	*
06:00		*	*	*
07:00		*	*	*
08:00		*	*	*
09:00		*	*	*
10:00		*	*	*
11:00		*	*	*
12:00 PM		*	*	*
01:00		*	*	*
02:00		*	*	*
03:00		*	*	*
04:00		*	*	*
05:00		*	*	*
06:00		*	*	*
07:00		*	*	*
08:00		*	*	*
09:00		*	*	*
10:00		*	*	*
11:00		*	*	*
Total		3	9	12
Percent		25.0%	75.0%	
AM Peak	-	00:00	00:00	00:00
Vol.	-	3	9	12
PM Peak	-	-	-	-
Vol.	-	-	-	-
Grand Total		141	225	366
Percent		38.5%	61.5%	
ADT		ADT 306	AADT 306	

Key Pages

1889 York Street
Denver, CO 80206
(303) 333-1105
FAX (303) 333-1107
E-mail: lsc@lscdenver.com



August 31, 2022

Mr. Mike Cooper
Boulder Creek Neighborhoods
712 Main Street
Louisville, CO 80027

Re: Holly Village - Updated
Traffic Impact Analysis
Thornton, CO
LSC #200760

Dear Mr. Cooper:

In response to your request, LSC Transportation Consultants, Inc. has prepared this updated traffic impact analysis for the proposed Holly Village development to address City and CDOT comments. As shown on Figure 1, the site is located north of E. 160th Avenue (State Highway 7) and west of Holly Street in Thornton, Colorado.

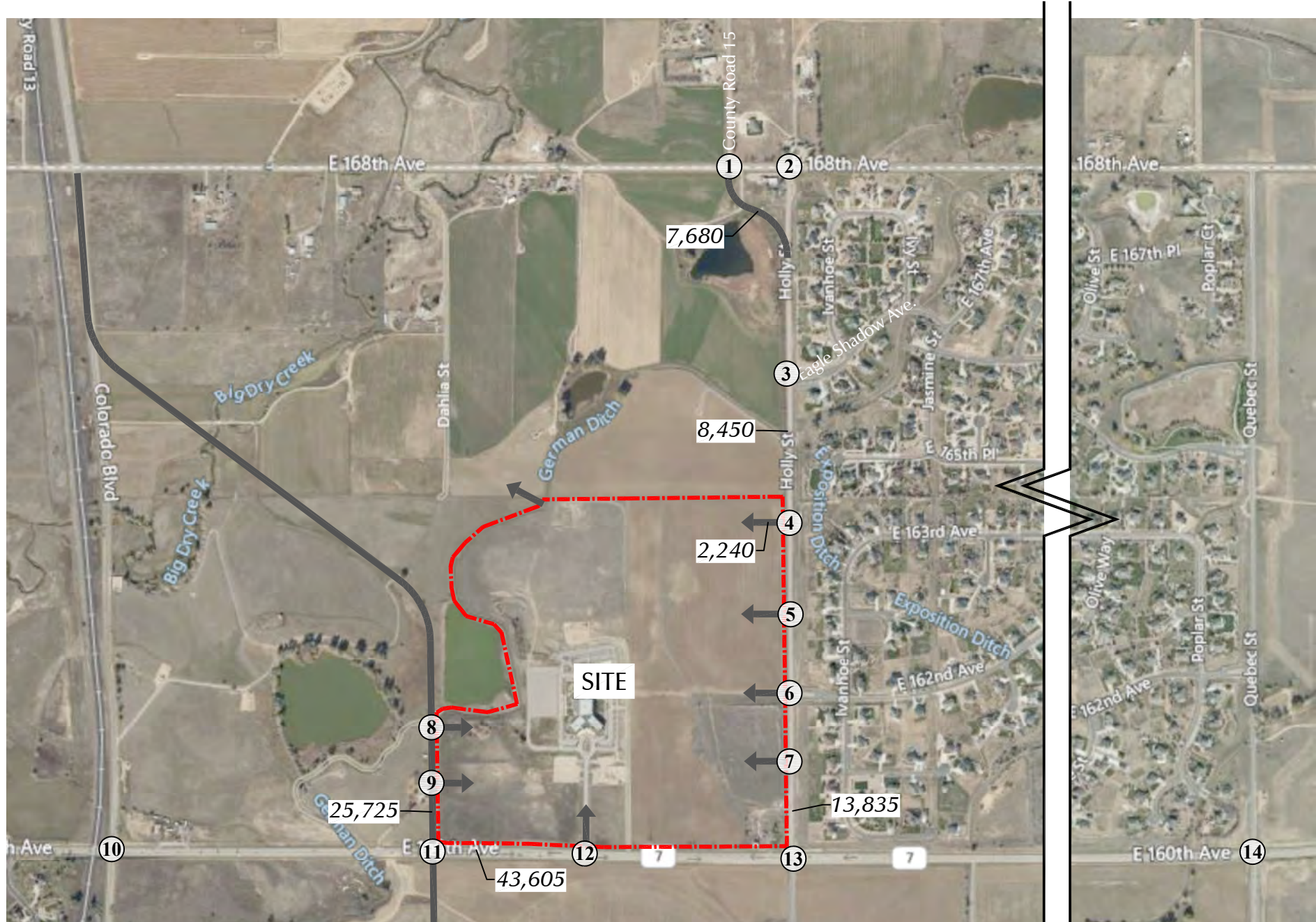
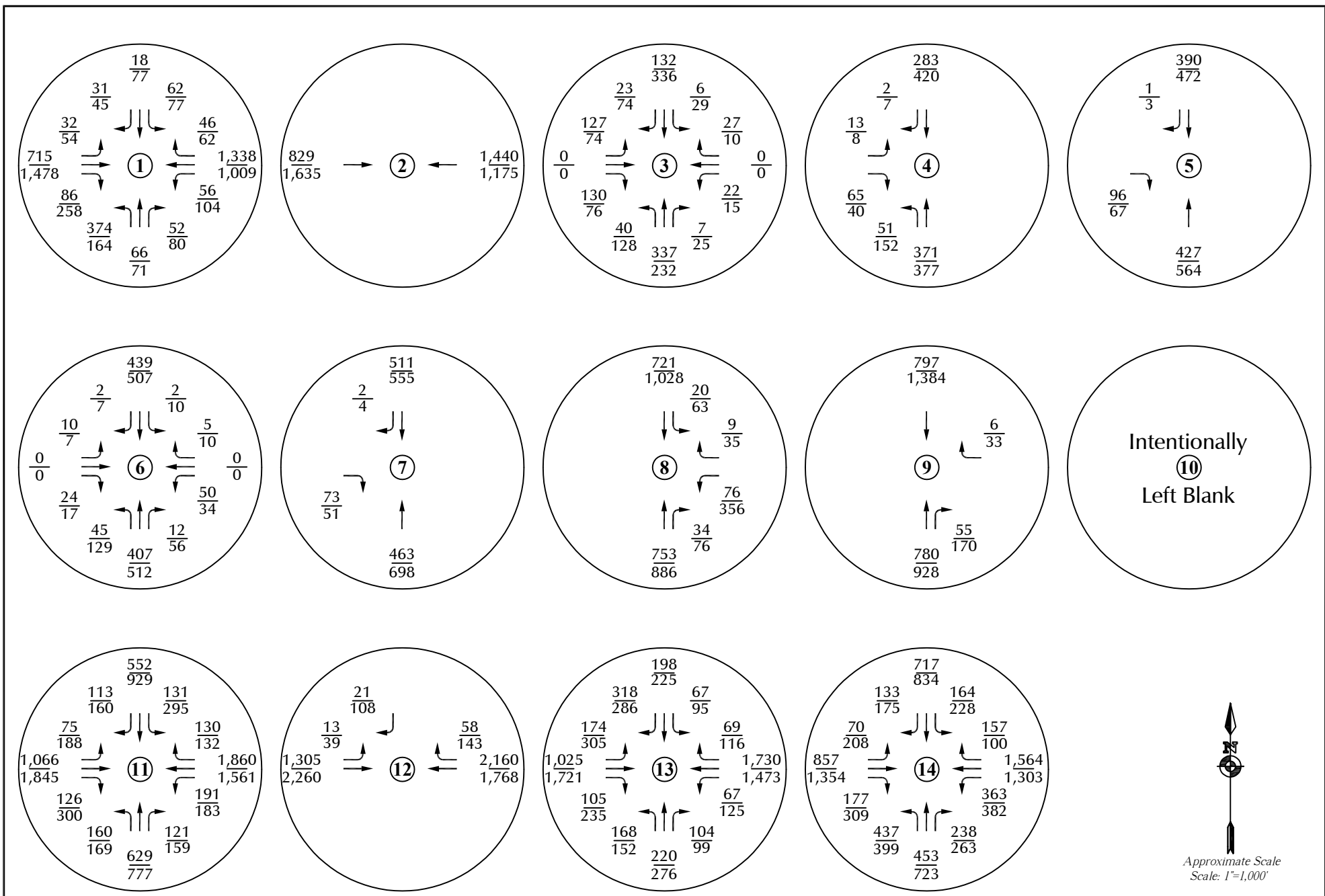
REPORT CONTENTS

The report contains the following: the existing roadway and traffic conditions in the vicinity of the site including the lane geometries, traffic controls, posted speed limits, etc.; the existing weekday peak-hour traffic volumes; the existing daily traffic volumes in the area; the typical weekday site-generated traffic volume projections for the site; the assignment of the projected traffic volumes to the area roadways; the projected short-term and long-term background and resulting total traffic volumes on the area roadways; the site's projected traffic impacts; and any recommended roadway improvements to mitigate growth in background traffic or the impacts of the site.

LAND USE AND ACCESS

The existing 141-acre site includes an existing 77,230 square-foot church. The church has an existing full movement access to E. 160th Avenue (SH 7) about 1,535 feet west of Holly Street. There are existing single-family homes east of the site. The area north of the site is planned to be developed with about 810 single-family homes by 2025 as part of the Sack Farms development.

In the short-term the areas east and north of the church are planned to be developed with 565 residential dwelling units. These dwelling units are planned to include a mix of single-family homes, duplexes, patio homes, and "wee cottages". Two full movement and two right-in/right-out access points are proposed to Holly Street. The southern full movement access aligns with E. 162nd Avenue and the northern full movement access will be located about 1,270 feet to the



LEGEND:
 $\frac{26}{35}$ = AM Peak Hour Traffic
 = PM Peak Hour Traffic
 1,000 = Average Daily Traffic

Figure 9a
Year 2042
Total Traffic
 Holly Village (LSC #200760)



**SACK FARMS DEVELOPMENT
TRAFFIC IMPACT AND ACCESS STUDY (TIAS)**

CITY OF THORNTON, CO

APRIL 9, 2020

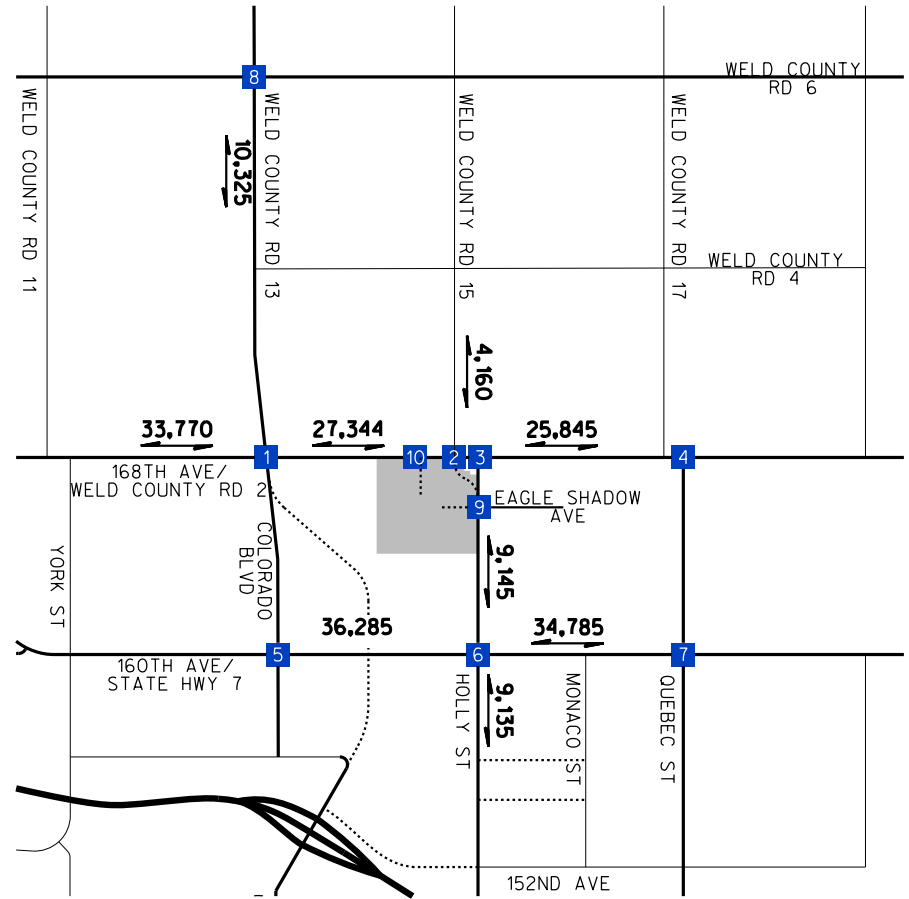
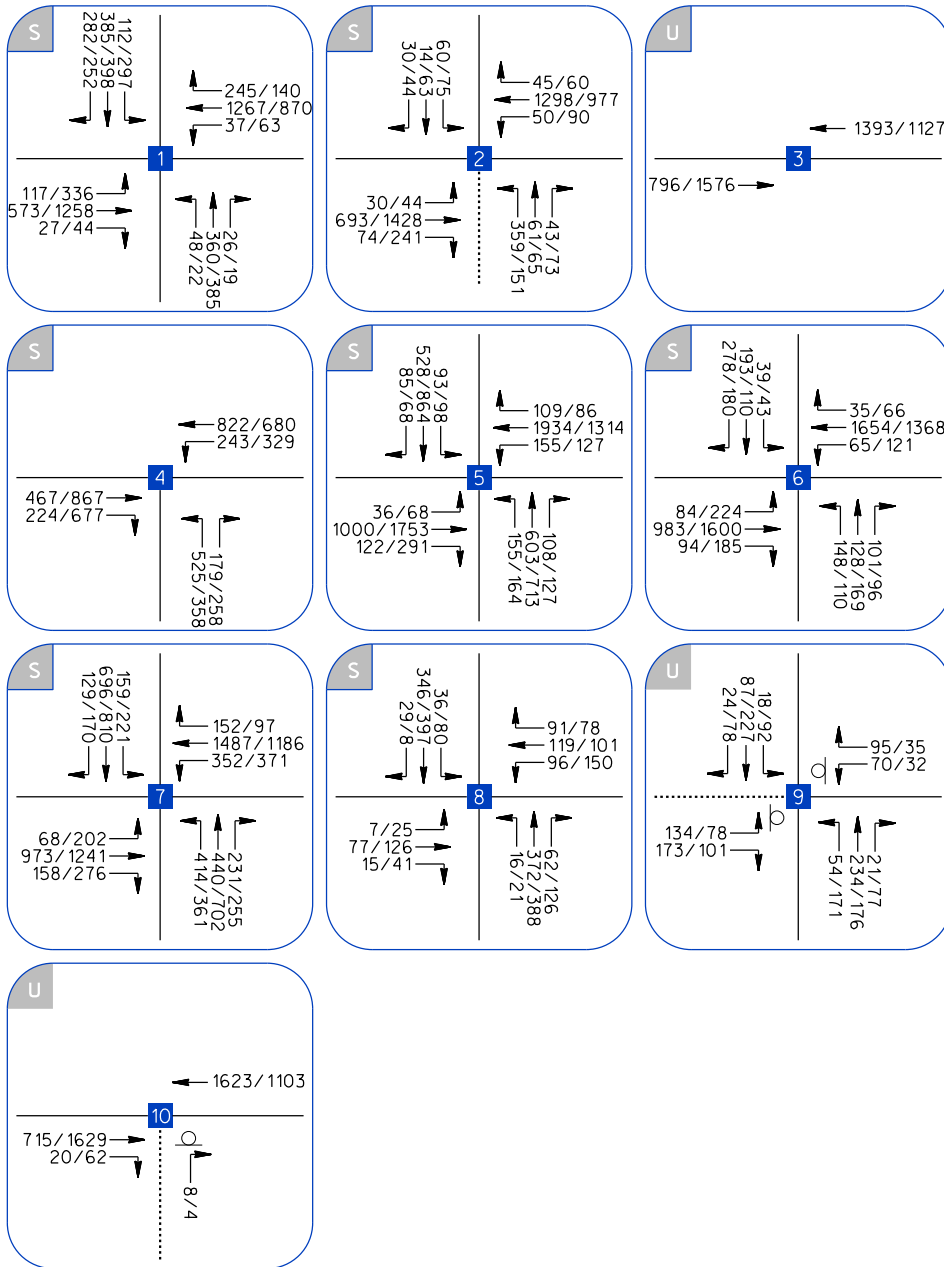
JOB NUMBER: 18464-T

RICK

RICK ENGINEERING COMPANY



rickengineering.com



NOT TO SCALE



EXHIBIT 16
LONG-TERM (2040) TOTAL TRAFFIC VOLUMES
SACK FARMS DEVELOPMENT

LEGEND

- AM/PM=PEAK HOUR VOLUMES
- X,XXX =TWO-WAY ADT
- 1 =INTERSECTION NUMBER
- [Shaded Area] =PROJECT SITE
- [Dotted Line] =FUTURE ROADWAY

Level of Service Definitions

LEVEL OF SERVICE DEFINITIONS

From *Highway Capacity Manual*, Transportation Research Board, 2016, 6th Edition

SIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

<u>LOS</u>	<u>Average Vehicle Delay</u> sec/vehicle	<u>Operational Characteristics</u>
A	<10 seconds	Describes operations with low control delay, up to 10 sec/veh. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
B	10 to 20 seconds	Describes operations with control delay greater than 10 seconds and up to 20 sec/veh. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.
C	20 to 35 seconds	Describes operations with control delay greater than 20 and up to 35 sec/veh. These higher delays may result from only fair progression, longer cycle length, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	35 to 55 seconds	Describes operations with control delay greater than 35 and up to 55 sec/veh. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	55 to 80 seconds	Describes operations with control delay greater than 55 and up to 80 sec/veh. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.
F	>80 seconds	Describes operations with control delay in excess of 80 sec/veh. This level, considered unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

LEVEL OF SERVICE DEFINITIONS

From *Highway Capacity Manual*, Transportation Research Board, 2016, 6th Edition

UNSIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

Applicable to Two-Way Stop Control, All-Way Stop Control, and Roundabouts

LOS	Average Vehicle Control Delay	<u>Operational Characteristics</u>
A	<10 seconds	Normally, vehicles on the stop-controlled approach only have to wait up to 10 seconds before being able to clear the intersection. Left-turning vehicles on the uncontrolled street do not have to wait to make their turn.
B	10 to 15 seconds	Vehicles on the stop-controlled approach will experience delays before being able to clear the intersection. <u>The delay could be up to 15 seconds.</u> Left-turning vehicles on the uncontrolled street may have to wait to make their turn.
C	15 to 25 seconds	Vehicles on the stop-controlled approach can expect delays in the range of 15 to 25 seconds before clearing the intersection. Motorists may begin to take chances due to the long delays, thereby posing a safety risk to through traffic. <u>Left-turning vehicles on the uncontrolled street will now be required to wait to make their turn causing a queue to be created in the turn lane.</u>
D	25 to 35 seconds	<u>This is the point at which a traffic signal may be warranted for this intersection.</u> The delays for the stop-controlled intersection are not considered to be excessive. The length of the queue may begin to block other public and private access points.
E	35 to 50 seconds	The delays for all critical traffic movements are considered to be unacceptable. The length of the queues for the stop-controlled approaches as well as the left-turn movements are extremely long. <u>There is a high probability that this intersection will meet traffic signal warrants.</u> The ability to install a traffic signal is affected by the location of other existing traffic signals. Consideration may be given to restricting the accesses by eliminating the left-turn movements from and to the stop-controlled approach.
F	>50 seconds	The delay for the critical traffic movements are probably in excess of 100 seconds. The length of the queues are extremely long. Motorists are selecting alternative routes due to the long delays. <u>The only remedy for these long delays is installing a traffic signal or restricting the accesses.</u> The potential for accidents at this intersection are extremely high due to motorist taking more risky chances. If the median permits, motorists begin making two-stage left-turns.

Level of Service Reports

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	2	90	125	1	4	4
Future Vol, veh/h	2	90	125	1	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	113	156	1	5	5

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	157	0	0	276	157
Stage 1	-	-	-	157	-
Stage 2	-	-	-	119	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1423	-	-	714	889
Stage 1	-	-	-	871	-
Stage 2	-	-	-	906	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1423	-	-	713	889
Mov Cap-2 Maneuver	-	-	-	713	-
Stage 1	-	-	-	869	-
Stage 2	-	-	-	906	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1423	-	-	-	791
HCM Lane V/C Ratio	0.002	-	-	-	0.013
HCM Control Delay (s)	7.5	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	90	11	21	125	5	10
Future Vol, veh/h	90	11	21	125	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	107	13	25	149	6	12

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	120	0	313
Stage 1	-	-	-	-	114
Stage 2	-	-	-	-	199
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1468	-	680
Stage 1	-	-	-	-	911
Stage 2	-	-	-	-	835
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1468	-	667
Mov Cap-2 Maneuver	-	-	-	-	667
Stage 1	-	-	-	-	911
Stage 2	-	-	-	-	819

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	827	-	-	1468	-
HCM Lane V/C Ratio	0.022	-	-	0.017	-
HCM Control Delay (s)	9.4	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	14	101	179	15	15	19
Future Vol, veh/h	14	101	179	15	15	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	125	221	19	19	23

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	240	0	-	0	390 231
Stage 1	-	-	-	-	231 -
Stage 2	-	-	-	-	159 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1327	-	-	-	614 808
Stage 1	-	-	-	-	807 -
Stage 2	-	-	-	-	870 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1327	-	-	-	605 808
Mov Cap-2 Maneuver	-	-	-	-	605 -
Stage 1	-	-	-	-	796 -
Stage 2	-	-	-	-	870 -

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1327	-	-	-	704
HCM Lane V/C Ratio	0.013	-	-	-	0.06
HCM Control Delay (s)	7.7	0	-	-	10.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	101	5	2	187	10	1
Future Vol, veh/h	101	5	2	187	10	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	117	6	2	217	12	1

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	123	0	341
Stage 1	-	-	-	-	120
Stage 2	-	-	-	-	221
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1464	-	655
Stage 1	-	-	-	-	905
Stage 2	-	-	-	-	816
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1464	-	654
Mov Cap-2 Maneuver	-	-	-	-	654
Stage 1	-	-	-	-	905
Stage 2	-	-	-	-	814

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	672	-	-	1464	-
HCM Lane V/C Ratio	0.019	-	-	0.002	-
HCM Control Delay (s)	10.5	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	102	1	4	172	5	6
Future Vol, veh/h	102	1	4	172	5	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	170	250	-	0	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	119	1	5	200	6	7

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	120	0	329
Stage 1	-	-	-	-	119
Stage 2	-	-	-	-	210
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1468	-	665
Stage 1	-	-	-	-	906
Stage 2	-	-	-	-	825
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1468	-	663
Mov Cap-2 Maneuver	-	-	-	-	663
Stage 1	-	-	-	-	906
Stage 2	-	-	-	-	823

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	663	933	-	-	1468	-
HCM Lane V/C Ratio	0.009	0.007	-	-	0.003	-
HCM Control Delay (s)	10.5	8.9	-	-	7.5	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0	-	-	0	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	1	116	180	1	1	1
Future Vol, veh/h	1	116	180	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	125	194	1	1	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	195	0	-	0	322 195
Stage 1	-	-	-	-	195 -
Stage 2	-	-	-	-	127 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1378	-	-	-	672 846
Stage 1	-	-	-	-	838 -
Stage 2	-	-	-	-	899 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1378	-	-	-	671 846
Mov Cap-2 Maneuver	-	-	-	-	671 -
Stage 1	-	-	-	-	837 -
Stage 2	-	-	-	-	899 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1378	-	-	-	748
HCM Lane V/C Ratio	0.001	-	-	-	0.003
HCM Control Delay (s)	7.6	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	118	1	49	183	7	38
Future Vol, veh/h	118	1	49	183	7	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	127	1	53	197	8	41

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	128	0	431
Stage 1	-	-	-	-	128
Stage 2	-	-	-	-	303
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1458	-	581
Stage 1	-	-	-	-	898
Stage 2	-	-	-	-	749
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1458	-	557
Mov Cap-2 Maneuver	-	-	-	-	557
Stage 1	-	-	-	-	898
Stage 2	-	-	-	-	718

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	837	-	-	1458	-
HCM Lane V/C Ratio	0.058	-	-	0.036	-
HCM Control Delay (s)	9.6	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Timings
10: Quebec St & E. 160th Ave (SH 7)

Existing Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	11	414	81	103	664	14	107	42	18	18	63
Future Volume (vph)	11	414	81	103	664	14	107	42	18	18	63
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	2		1	6		3	8		7	4
Permitted Phases			2			6			8		
Detector Phase	5	2	2	1	6	6	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0
Total Split (s)	12.0	71.0	71.0	12.0	71.0	71.0	12.0	25.0	25.0	12.0	25.0
Total Split (%)	10.0%	59.2%	59.2%	10.0%	59.2%	59.2%	10.0%	20.8%	20.8%	10.0%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effect Green (s)	6.4	30.7	30.7	7.5	41.9	41.9	7.5	19.1	19.1	6.6	10.1
Actuated g/C Ratio	0.08	0.40	0.40	0.10	0.54	0.54	0.10	0.25	0.25	0.09	0.13
v/c Ratio	0.09	0.70	0.14	0.71	0.77	0.02	0.74	0.11	0.04	0.14	0.43
Control Delay	44.2	23.4	2.4	63.3	20.3	0.0	66.0	33.4	0.2	44.1	37.2
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	44.2	23.4	2.4	63.3	20.3	0.0	66.0	33.4	0.2	44.1	37.2
LOS	D	C	A	E	C	A	E	C	A	D	D
Approach Delay		20.7			25.6			50.8			38.3
Approach LOS		C			C			D			D

Intersection Summary

























Cycle Length: 120
 Actuated Cycle Length: 77.1
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 27.4
 Intersection LOS: C
 Intersection Capacity Utilization 64.2%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 10: Quebec St & E. 160th Ave (SH 7)



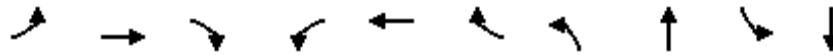
HCM 6th Signalized Intersection Summary
 10: Quebec St & E. 160th Ave (SH 7)

Existing Traffic
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	414	81	103	664	14	107	42	18	18	63	26
Future Volume (veh/h)	11	414	81	103	664	14	107	42	18	18	63	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	13	518	95	121	781	16	126	49	21	21	74	31
Peak Hour Factor	0.85	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	29	780	661	154	912	773	160	298	253	43	117	49
Arrive On Green	0.02	0.42	0.42	0.09	0.49	0.49	0.09	0.16	0.16	0.02	0.09	0.09
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1252	524
Grp Volume(v), veh/h	13	518	95	121	781	16	126	49	21	21	0	105
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	0	1776
Q Serve(g_s), s	0.5	14.3	2.4	4.3	23.5	0.3	4.4	1.4	0.7	0.7	0.0	3.6
Cycle Q Clear(g_c), s	0.5	14.3	2.4	4.3	23.5	0.3	4.4	1.4	0.7	0.7	0.0	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	29	780	661	154	912	773	160	298	253	43	0	166
V/C Ratio(X)	0.45	0.66	0.14	0.78	0.86	0.02	0.79	0.16	0.08	0.48	0.00	0.63
Avail Cap(c_a), veh/h	195	1928	1634	195	1928	1634	195	584	495	195	0	555
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.2	15.0	11.6	28.7	14.4	8.5	28.5	23.2	22.9	30.8	0.0	28.0
Incr Delay (d2), s/veh	10.7	1.0	0.1	14.9	2.4	0.0	15.8	0.3	0.1	8.1	0.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.9	0.7	2.3	7.7	0.1	2.4	0.6	0.3	0.4	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.0	16.0	11.7	43.5	16.9	8.5	44.3	23.5	23.1	39.0	0.0	31.9
LnGrp LOS	D	B	B	D	B	A	D	C	C	D	A	C
Approach Vol, veh/h		626			918			196			126	
Approach Delay, s/veh		15.9			20.2			36.8			33.0	
Approach LOS		B			C			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.6	31.7	10.8	11.0	6.0	36.2	6.6	15.2				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	66.0	7.0	20.0	7.0	66.0	7.0	20.0				
Max Q Clear Time (g_c+I1), s	6.3	16.3	6.4	5.6	2.5	25.5	2.7	3.4				
Green Ext Time (p_c), s	0.0	3.5	0.0	0.4	0.0	5.7	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay			21.4									
HCM 6th LOS			C									

Timings
11: Yosemite St & E. 160th Ave (SH 7)

Existing Traffic
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↙	↑	↗	↙	↑	↗	↙	↗	↙	↗
Traffic Volume (vph)	14	464	19	26	804	7	37	9	16	7
Future Volume (vph)	14	464	19	26	804	7	37	9	16	7
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min
Act Effect Green (s)	36.6	34.7	34.7	37.2	36.5	36.5	8.7	8.7	8.7	8.7
Actuated g/C Ratio	0.63	0.60	0.60	0.64	0.63	0.63	0.15	0.15	0.15	0.15
v/c Ratio	0.05	0.49	0.02	0.05	0.80	0.01	0.21	0.20	0.10	0.11
Control Delay	3.1	8.7	0.1	3.1	14.4	0.0	33.2	15.8	32.7	19.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.1	8.7	0.1	3.1	14.4	0.0	33.2	15.8	32.7	19.8
LOS	A	A	A	A	B	A	C	B	C	B
Approach Delay		8.2			13.9			23.2		24.9
Approach LOS		A			B			C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 58.3
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 12.8
 Intersection LOS: B
 Intersection Capacity Utilization 59.4%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 11: Yosemite St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 11: Yosemite St & E. 160th Ave (SH 7)

Existing Traffic
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	464	19	26	804	7	37	9	41	16	7	18
Future Volume (veh/h)	14	464	19	26	804	7	37	9	41	16	7	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	540	0	30	935	8	43	10	48	19	8	21
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	1089		556	1115	945	248	27	129	222	44	115
Arrive On Green	0.02	0.58	0.00	0.03	0.60	0.60	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1381	281	1347	1345	456	1198
Grp Volume(v), veh/h	16	540	0	30	935	8	43	0	58	19	0	29
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1381	0	1628	1345	0	1655
Q Serve(g_s), s	0.2	8.8	0.0	0.3	21.0	0.1	1.5	0.0	1.7	0.7	0.0	0.8
Cycle Q Clear(g_c), s	0.2	8.8	0.0	0.3	21.0	0.1	2.4	0.0	1.7	2.4	0.0	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.83	1.00		0.72
Lane Grp Cap(c), veh/h	288	1089		556	1115	945	248	0	156	222	0	159
V/C Ratio(X)	0.06	0.50		0.05	0.84	0.01	0.17	0.00	0.37	0.09	0.00	0.18
Avail Cap(c_a), veh/h	492	2799		735	2799	2372	646	0	625	609	0	635
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.2	6.4	0.0	4.7	8.5	4.3	22.8	0.0	22.1	23.2	0.0	21.7
Incr Delay (d2), s/veh	0.1	0.4	0.0	0.0	1.8	0.0	0.3	0.0	1.5	0.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.8	0.0	0.1	4.4	0.0	0.5	0.0	0.6	0.2	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.3	6.7	0.0	4.7	10.3	4.3	23.1	0.0	23.5	23.4	0.0	22.2
LnGrp LOS	A	A		A	B	A	C	A	C	C	A	C
Approach Vol, veh/h		556			973			101				48
Approach Delay, s/veh		6.8			10.0			23.4				22.7
Approach LOS		A			B			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.8	35.4		10.0	6.0	36.1		10.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	2.3	10.8		4.4	2.2	23.0		4.4				
Green Ext Time (p_c), s	0.0	3.3		0.1	0.0	8.1		0.3				

Intersection Summary

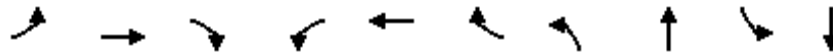
HCM 6th Ctrl Delay	10.1
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Timings
12: Havana St & E. 160th Ave (SH 7)

Existing Traffic
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	14	504	8	20	710	8	16	4	13	6
Future Volume (vph)	14	504	8	20	710	8	16	4	13	6
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min
Act Effct Green (s)	25.2	24.4	24.4	25.0	24.3	24.3	6.9	6.9	6.9	6.9
Actuated g/C Ratio	0.58	0.56	0.56	0.57	0.55	0.55	0.16	0.16	0.16	0.16
v/c Ratio	0.04	0.52	0.01	0.04	0.73	0.01	0.08	0.19	0.07	0.14
Control Delay	3.0	8.1	0.0	3.0	12.3	0.0	24.0	11.3	23.9	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	8.1	0.0	3.0	12.3	0.0	24.0	11.3	23.9	13.1
LOS	A	A	A	A	B	A	C	B	C	B
Approach Delay		7.8			11.9			14.2		15.9
Approach LOS		A			B			B		B

Intersection Summary

























Cycle Length: 120
 Actuated Cycle Length: 43.8
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 10.6
 Intersection Capacity Utilization 53.3%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 12: Havana St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 12: Havana St & E. 160th Ave (SH 7)

Existing Traffic
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	504	8	20	710	8	16	4	51	13	6	32
Future Volume (veh/h)	14	504	8	20	710	8	16	4	51	13	6	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	536	9	21	755	9	17	4	54	14	6	34
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	940	797	477	952	807	301	13	176	284	29	163
Arrive On Green	0.02	0.50	0.50	0.03	0.51	0.51	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1367	110	1491	1345	243	1379
Grp Volume(v), veh/h	15	536	9	21	755	9	17	0	58	14	0	40
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1367	0	1602	1345	0	1622
Q Serve(g_s), s	0.2	8.5	0.1	0.2	14.1	0.1	0.5	0.0	1.4	0.4	0.0	0.9
Cycle Q Clear(g_c), s	0.2	8.5	0.1	0.2	14.1	0.1	1.4	0.0	1.4	1.8	0.0	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.93	1.00		0.85
Lane Grp Cap(c), veh/h	328	940	797	477	952	807	301	0	189	284	0	191
V/C Ratio(X)	0.05	0.57	0.01	0.04	0.79	0.01	0.06	0.00	0.31	0.05	0.00	0.21
Avail Cap(c_a), veh/h	588	3440	2916	725	3440	2916	784	0	756	760	0	765
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.2	7.4	5.3	5.6	8.6	5.1	17.6	0.0	17.1	17.9	0.0	16.9
Incr Delay (d2), s/veh	0.1	0.5	0.0	0.0	1.5	0.0	0.1	0.0	0.9	0.1	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.7	0.0	0.0	2.9	0.0	0.1	0.0	0.5	0.1	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.2	7.9	5.3	5.7	10.1	5.1	17.6	0.0	18.0	18.0	0.0	17.5
LnGrp LOS	A	A	A	A	B	A	B	A	B	B	A	B
Approach Vol, veh/h		560			785			75				54
Approach Delay, s/veh		7.8			9.9			17.9				17.6
Approach LOS		A			A			B				B
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.1	26.3		10.0	5.8	26.6		10.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	2.2	10.5		3.8	2.2	16.1		3.4				
Green Ext Time (p_c), s	0.0	3.3		0.1	0.0	5.5		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			9.8									
HCM 6th LOS			A									

HCM 6th TWSC
13: Riverdale Rd & E. 160th Ave (SH 7)

Existing Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	534	26	221	687	9	176
Future Vol, veh/h	534	26	221	687	9	176
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	475	475	-	0	85
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	545	27	226	701	9	180

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	572
Stage 1	-	-	545
Stage 2	-	-	1153
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.518
Pot Cap-1 Maneuver	-	1001	102
Stage 1	-	-	581
Stage 2	-	-	301
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1001	79
Mov Cap-2 Maneuver	-	-	211
Stage 1	-	-	581
Stage 2	-	-	233

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	22.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	-	-	-	1001	-
HCM Lane V/C Ratio	0.044	-	-	-	0.225	-
HCM Control Delay (s)	22.8	0	-	-	9.6	-
HCM Lane LOS	C	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9	-

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	718	918	8	8	40
Future Vol, veh/h	28	718	918	8	8	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	450	-	-	325	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	780	998	9	9	43

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1007	0	-	0	1838 998
Stage 1	-	-	-	-	998 -
Stage 2	-	-	-	-	840 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	688	-	-	-	83 296
Stage 1	-	-	-	-	357 -
Stage 2	-	-	-	-	424 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	688	-	-	-	79 296
Mov Cap-2 Maneuver	-	-	-	-	79 -
Stage 1	-	-	-	-	341 -
Stage 2	-	-	-	-	424 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	28.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	688	-	-	-	203
HCM Lane V/C Ratio	0.044	-	-	-	0.257
HCM Control Delay (s)	10.5	-	-	-	28.8
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	1

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	21	8	35	41	2
Future Vol, veh/h	3	21	8	35	41	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	155	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	25	10	42	49	2

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	112	50	51	0	0
Stage 1	50	-	-	-	-
Stage 2	62	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	885	1018	1555	-	-
Stage 1	972	-	-	-	-
Stage 2	961	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	880	1018	1555	-	-
Mov Cap-2 Maneuver	880	-	-	-	-
Stage 1	966	-	-	-	-
Stage 2	961	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	1.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1555	-	998	-	-
HCM Lane V/C Ratio	0.006	-	0.029	-	-
HCM Control Delay (s)	7.3	-	8.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	3	39	15	45	63	2
Future Vol, veh/h	3	39	15	45	63	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	49	19	57	80	3

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	177	82	83	0	0
Stage 1	82	-	-	-	-
Stage 2	95	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	813	978	1514	-	-
Stage 1	941	-	-	-	-
Stage 2	929	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	802	978	1514	-	-
Mov Cap-2 Maneuver	802	-	-	-	-
Stage 1	929	-	-	-	-
Stage 2	929	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	1.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1514	-	963	-	-
HCM Lane V/C Ratio	0.013	-	0.055	-	-
HCM Control Delay (s)	7.4	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	1	5	3	5	13	0
Future Vol, veh/h	1	5	3	5	13	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	66	66	66	66	66	66
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	8	5	8	20	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	38	20	20	0	0
Stage 1	20	-	-	-	-
Stage 2	18	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	974	1058	1596	-	-
Stage 1	1003	-	-	-	-
Stage 2	1005	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	971	1058	1596	-	-
Mov Cap-2 Maneuver	971	-	-	-	-
Stage 1	1000	-	-	-	-
Stage 2	1005	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	2.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1596	-	1042	-	-
HCM Lane V/C Ratio	0.003	-	0.009	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	27	11	14	13	0
Future Vol, veh/h	0	27	11	14	13	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	38	15	20	18	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	68	18	18	0	0
Stage 1	18	-	-	-	-
Stage 2	50	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	937	1061	1599	-	-
Stage 1	1005	-	-	-	-
Stage 2	972	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	929	1061	1599	-	-
Mov Cap-2 Maneuver	929	-	-	-	-
Stage 1	996	-	-	-	-
Stage 2	972	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	3.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1599	-	1061	-	-
HCM Lane V/C Ratio	0.01	-	0.036	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	2	0	1	0	3	8	0	0	11	1
Future Vol, veh/h	3	0	2	0	1	0	3	8	0	0	11	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	2	0	1	0	3	9	0	0	13	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	30	29	14	30	29	9	14	0	0	9	0	0
Stage 1	14	14	-	15	15	-	-	-	-	-	-	-
Stage 2	16	15	-	15	14	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	979	864	1066	979	864	1073	1604	-	-	1611	-	-
Stage 1	1006	884	-	1005	883	-	-	-	-	-	-	-
Stage 2	1004	883	-	1005	884	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	976	862	1066	975	862	1073	1604	-	-	1611	-	-
Mov Cap-2 Maneuver	976	862	-	975	862	-	-	-	-	-	-	-
Stage 1	1004	884	-	1003	881	-	-	-	-	-	-	-
Stage 2	1001	881	-	1003	884	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.6		9.2		2		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1604	-	-	1010	862	1611	-
HCM Lane V/C Ratio	0.002	-	-	0.006	0.001	-	-
HCM Control Delay (s)	7.2	0	-	8.6	9.2	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	0	4	3	8	11	0
Future Vol, veh/h	0	4	3	8	11	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	4	11	15	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	34	15	15	0	0
Stage 1	15	-	-	-	-
Stage 2	19	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	979	1065	1603	-	-
Stage 1	1008	-	-	-	-
Stage 2	1004	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	976	1065	1603	-	-
Mov Cap-2 Maneuver	976	-	-	-	-
Stage 1	1005	-	-	-	-
Stage 2	1004	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1603	-	1065	-	-
HCM Lane V/C Ratio	0.003	-	0.005	-	-
HCM Control Delay (s)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	7	240	149	8	3	3
Future Vol, veh/h	7	240	149	8	3	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	286	177	10	4	4

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	187	0	-	0	484 182
Stage 1	-	-	-	-	182 -
Stage 2	-	-	-	-	302 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1387	-	-	-	542 861
Stage 1	-	-	-	-	849 -
Stage 2	-	-	-	-	750 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1387	-	-	-	538 861
Mov Cap-2 Maneuver	-	-	-	-	538 -
Stage 1	-	-	-	-	843 -
Stage 2	-	-	-	-	750 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1387	-	-	-	662
HCM Lane V/C Ratio	0.006	-	-	-	0.011
HCM Control Delay (s)	7.6	0	-	-	10.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	240	25	34	149	5	46
Future Vol, veh/h	240	25	34	149	5	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	282	29	40	175	6	54

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	311	0	552 297
Stage 1	-	-	-	-	297 -
Stage 2	-	-	-	-	255 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1249	-	495 742
Stage 1	-	-	-	-	754 -
Stage 2	-	-	-	-	788 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1249	-	478 742
Mov Cap-2 Maneuver	-	-	-	-	478 -
Stage 1	-	-	-	-	754 -
Stage 2	-	-	-	-	760 -

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	704	-	-	1249	-
HCM Lane V/C Ratio	0.085	-	-	0.032	-
HCM Control Delay (s)	10.6	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	36	237	127	25	27	34
Future Vol, veh/h	36	237	127	25	27	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	266	143	28	30	38

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	171	0	-	0	503 157
Stage 1	-	-	-	-	157 -
Stage 2	-	-	-	-	346 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1406	-	-	-	528 889
Stage 1	-	-	-	-	871 -
Stage 2	-	-	-	-	716 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1406	-	-	-	511 889
Mov Cap-2 Maneuver	-	-	-	-	511 -
Stage 1	-	-	-	-	842 -
Stage 2	-	-	-	-	716 -

Approach	EB	WB	SB
HCM Control Delay, s	1	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1406	-	-	-	670
HCM Lane V/C Ratio	0.029	-	-	-	0.102
HCM Control Delay (s)	7.6	0	-	-	11
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	229	16	2	148	9	3
Future Vol, veh/h	229	16	2	148	9	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	252	18	2	163	10	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	270	0	428
Stage 1	-	-	-	-	261
Stage 2	-	-	-	-	167
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1293	-	584
Stage 1	-	-	-	-	783
Stage 2	-	-	-	-	863
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1293	-	583
Mov Cap-2 Maneuver	-	-	-	-	583
Stage 1	-	-	-	-	783
Stage 2	-	-	-	-	861

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	622	-	-	1293	-
HCM Lane V/C Ratio	0.021	-	-	0.002	-
HCM Control Delay (s)	10.9	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	255	9	19	171	1	10
Future Vol, veh/h	255	9	19	171	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	170	250	-	0	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	293	10	22	197	1	11

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	303	0	534 293
Stage 1	-	-	-	-	293 -
Stage 2	-	-	-	-	241 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1258	-	507 746
Stage 1	-	-	-	-	757 -
Stage 2	-	-	-	-	799 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1258	-	498 746
Mov Cap-2 Maneuver	-	-	-	-	498 -
Stage 1	-	-	-	-	757 -
Stage 2	-	-	-	-	785 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	498	746	-	-	1258	-
HCM Lane V/C Ratio	0.002	0.015	-	-	0.017	-
HCM Control Delay (s)	12.2	9.9	-	-	7.9	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	254	176	8	3	1
Future Vol, veh/h	2	254	176	8	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	273	189	9	3	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	198	0	-	0	471 194
Stage 1	-	-	-	-	194 -
Stage 2	-	-	-	-	277 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1375	-	-	-	551 847
Stage 1	-	-	-	-	839 -
Stage 2	-	-	-	-	770 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1375	-	-	-	550 847
Mov Cap-2 Maneuver	-	-	-	-	550 -
Stage 1	-	-	-	-	837 -
Stage 2	-	-	-	-	770 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1375	-	-	-	603
HCM Lane V/C Ratio	0.002	-	-	-	0.007
HCM Control Delay (s)	7.6	0	-	-	11
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	227	6	16	157	10	35
Future Vol, veh/h	227	6	16	157	10	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	241	6	17	167	11	37

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	247	0	445 244
Stage 1	-	-	-	-	244 -
Stage 2	-	-	-	-	201 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1319	-	571 795
Stage 1	-	-	-	-	797 -
Stage 2	-	-	-	-	833 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1319	-	563 795
Mov Cap-2 Maneuver	-	-	-	-	563 -
Stage 1	-	-	-	-	797 -
Stage 2	-	-	-	-	821 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	728	-	-	1319	-
HCM Lane V/C Ratio	0.066	-	-	0.013	-
HCM Control Delay (s)	10.3	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Timings
10: Quebec St & E. 160th Ave (SH 7)

Existing Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	29	794	113	76	575	11	130	102	87	19	59
Future Volume (vph)	29	794	113	76	575	11	130	102	87	19	59
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	2		1	6		3	8		7	4
Permitted Phases			2			6			8		
Detector Phase	5	2	2	1	6	6	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0
Total Split (s)	12.0	68.0	68.0	12.0	68.0	68.0	15.0	25.0	25.0	15.0	25.0
Total Split (%)	10.0%	56.7%	56.7%	10.0%	56.7%	56.7%	12.5%	20.8%	20.8%	12.5%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effect Green (s)	6.6	50.8	50.8	7.2	56.6	56.6	10.2	20.6	20.6	6.9	9.8
Actuated g/C Ratio	0.07	0.52	0.52	0.07	0.57	0.57	0.10	0.21	0.21	0.07	0.10
v/c Ratio	0.27	0.90	0.14	0.65	0.58	0.01	0.77	0.29	0.23	0.17	0.45
Control Delay	55.0	34.8	2.6	72.7	17.5	0.0	74.0	41.2	8.1	51.6	46.9
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	55.0	34.8	2.6	72.7	17.5	0.0	74.0	41.2	8.1	51.6	46.9
LOS	D	C	A	E	B	A	E	D	A	D	D
Approach Delay		31.6			23.6			45.5			47.8
Approach LOS		C			C			D			D

Intersection Summary

























Cycle Length: 120	
Actuated Cycle Length: 98.5	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 31.9	Intersection LOS: C
Intersection Capacity Utilization 72.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 10: Quebec St & E. 160th Ave (SH 7)



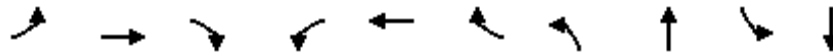
HCM 6th Signalized Intersection Summary
 10: Quebec St & E. 160th Ave (SH 7)

Existing Traffic
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	794	113	76	575	11	130	102	87	19	59	19
Future Volume (veh/h)	29	794	113	76	575	11	130	102	87	19	59	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	32	863	123	83	625	12	141	111	95	21	64	21
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	972	824	107	1025	868	176	280	237	41	100	33
Arrive On Green	0.03	0.52	0.52	0.06	0.55	0.55	0.10	0.15	0.15	0.02	0.07	0.07
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1348	442
Grp Volume(v), veh/h	32	863	123	83	625	12	141	111	95	21	0	85
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	0	1791
Q Serve(g_s), s	1.4	33.2	3.3	3.7	18.3	0.3	6.3	4.3	4.4	0.9	0.0	3.7
Cycle Q Clear(g_c), s	1.4	33.2	3.3	3.7	18.3	0.3	6.3	4.3	4.4	0.9	0.0	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	56	972	824	107	1025	868	176	280	237	41	0	133
V/C Ratio(X)	0.57	0.89	0.15	0.78	0.61	0.01	0.80	0.40	0.40	0.51	0.00	0.64
Avail Cap(c_a), veh/h	154	1459	1236	154	1459	1236	221	463	393	221	0	443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.6	17.3	10.1	37.4	12.4	8.3	35.6	31.1	31.1	39.0	0.0	36.3
Incr Delay (d2), s/veh	8.6	4.8	0.1	14.2	0.6	0.0	15.5	0.9	1.1	9.3	0.0	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	12.5	1.0	1.9	6.1	0.1	3.3	1.9	1.7	0.5	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.2	22.1	10.2	51.7	13.0	8.3	51.1	32.0	32.2	48.2	0.0	41.4
LnGrp LOS	D	C	B	D	B	A	D	C	C	D	A	D
Approach Vol, veh/h		1018			720			347			106	
Approach Delay, s/veh		21.4			17.4			39.8			42.8	
Approach LOS		C			B			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.8	47.0	13.0	11.0	7.6	49.3	6.9	17.1				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	63.0	10.0	20.0	7.0	63.0	10.0	20.0				
Max Q Clear Time (g_c+I1), s	5.7	35.2	8.3	5.7	3.4	20.3	2.9	6.4				
Green Ext Time (p_c), s	0.0	6.7	0.1	0.3	0.0	4.1	0.0	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			24.0									
HCM 6th LOS			C									

Timings
11: Yosemite St & E. 160th Ave (SH 7)

Existing Traffic
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↗
Traffic Volume (vph)	25	840	46	35	645	11	36	11	9	9
Future Volume (vph)	25	840	46	35	645	11	36	11	9	9
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min
Act Effct Green (s)	37.1	34.1	34.1	37.9	36.1	36.1	8.3	8.3	8.3	8.3
Actuated g/C Ratio	0.62	0.57	0.57	0.64	0.61	0.61	0.14	0.14	0.14	0.14
v/c Ratio	0.05	0.81	0.05	0.10	0.59	0.01	0.19	0.18	0.05	0.10
Control Delay	2.9	17.5	1.3	3.3	9.9	0.0	33.9	17.7	32.4	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	17.5	1.3	3.3	9.9	0.0	33.9	17.7	32.4	22.1
LOS	A	B	A	A	A	A	C	B	C	C
Approach Delay		16.2			9.4			24.9		24.9
Approach LOS		B			A			C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 59.4
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 14.1
 Intersection LOS: B
 Intersection Capacity Utilization 61.2%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 11: Yosemite St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 11: Yosemite St & E. 160th Ave (SH 7)

Existing Traffic
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	840	46	35	645	11	36	11	34	9	9	15
Future Volume (veh/h)	25	840	46	35	645	11	36	11	34	9	9	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	866	0	36	665	11	37	11	35	9	9	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	450	1046		329	1063	901	266	39	126	246	63	105
Arrive On Green	0.03	0.56	0.00	0.04	0.57	0.57	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1387	393	1252	1360	630	1051
Grp Volume(v), veh/h	26	866	0	36	665	11	37	0	46	9	0	24
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1387	0	1645	1360	0	1681
Q Serve(g_s), s	0.3	18.9	0.0	0.4	11.9	0.2	1.2	0.0	1.3	0.3	0.0	0.6
Cycle Q Clear(g_c), s	0.3	18.9	0.0	0.4	11.9	0.2	1.9	0.0	1.3	1.6	0.0	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.76	1.00		0.63
Lane Grp Cap(c), veh/h	450	1046		329	1063	901	266	0	165	246	0	169
V/C Ratio(X)	0.06	0.83		0.11	0.63	0.01	0.14	0.00	0.28	0.04	0.00	0.14
Avail Cap(c_a), veh/h	647	2927		509	2927	2481	683	0	660	655	0	675
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.6	9.0	0.0	7.9	7.2	4.7	21.3	0.0	20.7	21.5	0.0	20.5
Incr Delay (d2), s/veh	0.1	1.7	0.0	0.1	0.6	0.0	0.2	0.0	0.9	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.2	0.0	0.1	2.5	0.0	0.4	0.0	0.5	0.1	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.7	10.8	0.0	8.1	7.8	4.7	21.6	0.0	21.7	21.5	0.0	20.8
LnGrp LOS	A	B		A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		892			712			83				33
Approach Delay, s/veh		10.6			7.8			21.6				21.0
Approach LOS		B			A			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	32.9		10.0	6.5	33.3		10.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	2.4	20.9		3.6	2.3	13.9		3.9				
Green Ext Time (p_c), s	0.0	6.9		0.1	0.0	4.5		0.2				

Intersection Summary

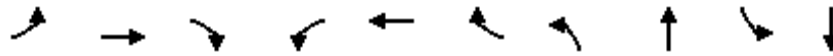
HCM 6th Ctrl Delay	10.2
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Timings
12: Havana St & E. 160th Ave (SH 7)

Existing Traffic
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↗
Traffic Volume (vph)	39	835	30	92	689	15	8	8	6	6
Future Volume (vph)	39	835	30	92	689	15	8	8	6	6
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min
Act Effect Green (s)	39.3	34.6	34.6	40.6	37.1	37.1	6.7	6.7	6.7	6.7
Actuated g/C Ratio	0.65	0.57	0.57	0.67	0.61	0.61	0.11	0.11	0.11	0.11
v/c Ratio	0.08	0.79	0.03	0.25	0.61	0.02	0.05	0.22	0.04	0.10
Control Delay	2.7	17.2	0.5	4.2	10.9	0.0	31.6	16.5	31.5	21.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.7	17.2	0.5	4.2	10.9	0.0	31.6	16.5	31.5	21.4
LOS	A	B	A	A	B	A	C	B	C	C
Approach Delay		16.1			9.9			18.6		23.8
Approach LOS		B			A			B		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 60.6
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 13.5
 Intersection LOS: B
 Intersection Capacity Utilization 68.2%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 12: Havana St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 12: Havana St & E. 160th Ave (SH 7)

Existing Traffic
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↗		↖	↗	
Traffic Volume (veh/h)	39	835	30	92	689	15	8	8	40	6	6	13
Future Volume (veh/h)	39	835	30	92	689	15	8	8	40	6	6	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	39	843	30	93	696	15	8	8	40	6	6	13
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	449	1016	861	372	1071	908	259	26	131	232	51	110
Arrive On Green	0.04	0.54	0.54	0.07	0.57	0.57	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1393	271	1355	1357	526	1139
Grp Volume(v), veh/h	39	843	30	93	696	15	8	0	48	6	0	19
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1393	0	1626	1357	0	1665
Q Serve(g_s), s	0.5	19.4	0.5	1.1	13.1	0.2	0.3	0.0	1.4	0.2	0.0	0.5
Cycle Q Clear(g_c), s	0.5	19.4	0.5	1.1	13.1	0.2	0.8	0.0	1.4	1.6	0.0	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.83	1.00		0.68
Lane Grp Cap(c), veh/h	449	1016	861	372	1071	908	259	0	157	232	0	161
V/C Ratio(X)	0.09	0.83	0.03	0.25	0.65	0.02	0.03	0.00	0.31	0.03	0.00	0.12
Avail Cap(c_a), veh/h	615	2814	2385	486	2814	2385	662	0	627	625	0	642
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	9.9	5.5	8.3	7.5	4.8	21.8	0.0	21.8	22.6	0.0	21.4
Incr Delay (d2), s/veh	0.1	1.8	0.0	0.3	0.7	0.0	0.0	0.0	1.1	0.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.8	0.1	0.2	2.8	0.0	0.1	0.0	0.5	0.1	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.0	11.7	5.5	8.7	8.2	4.8	21.8	0.0	22.9	22.6	0.0	21.7
LnGrp LOS	A	B	A	A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		912			804			56				25
Approach Delay, s/veh		11.2			8.2			22.7				21.9
Approach LOS		B			A			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.7	33.2		10.0	7.1	34.7		10.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	3.1	21.4		3.6	2.5	15.1		3.4				
Green Ext Time (p_c), s	0.1	6.7		0.0	0.0	4.9		0.2				

Intersection Summary

HCM 6th Ctrl Delay	10.4
HCM 6th LOS	B

HCM 6th TWSC
 13: Riverdale Rd & E. 160th Ave (SH 7)

Existing Traffic
 PM Peak Hour

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	828	16	166	802	16	276
Future Vol, veh/h	828	16	166	802	16	276
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	475	475	-	0	85
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	836	16	168	810	16	279

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	852	0	1982
Stage 1	-	-	-	-	836
Stage 2	-	-	-	-	1146
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	787	-	68
Stage 1	-	-	-	-	425
Stage 2	-	-	-	-	303
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	787	-	54
Mov Cap-2 Maneuver	-	-	-	-	201
Stage 1	-	-	-	-	425
Stage 2	-	-	-	-	238

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	24.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	201	-	-	-	787	-
HCM Lane V/C Ratio	0.08	-	-	-	0.213	-
HCM Control Delay (s)	24.5	0	-	-	10.8	-
HCM Lane LOS	C	A	-	-	B	-
HCM 95th %tile Q(veh)	0.3	-	-	-	0.8	-

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	47	1018	903	21	5	26
Future Vol, veh/h	47	1018	903	21	5	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	450	-	-	325	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	1060	941	22	5	27

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	963	0	-	0	2099 941
Stage 1	-	-	-	-	941 -
Stage 2	-	-	-	-	1158 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	715	-	-	-	57 319
Stage 1	-	-	-	-	380 -
Stage 2	-	-	-	-	299 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	715	-	-	-	53 319
Mov Cap-2 Maneuver	-	-	-	-	53 -
Stage 1	-	-	-	-	354 -
Stage 2	-	-	-	-	299 -

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	30
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	715	-	-	-	176
HCM Lane V/C Ratio	0.068	-	-	-	0.183
HCM Control Delay (s)	10.4	-	-	-	30
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	0.7

HCM 6th TWSC
15: Quebec St & Eagle Shadow Ave

Existing Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	20	76	59	1
Future Vol, veh/h	0	8	20	76	59	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	155	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	23	87	68	1

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	202	69	69	0	0
Stage 1	69	-	-	-	-
Stage 2	133	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	787	994	1532	-	-
Stage 1	954	-	-	-	-
Stage 2	893	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	775	994	1532	-	-
Mov Cap-2 Maneuver	775	-	-	-	-
Stage 1	940	-	-	-	-
Stage 2	893	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	1.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1532	-	994	-	-
HCM Lane V/C Ratio	0.015	-	0.009	-	-
HCM Control Delay (s)	7.4	-	8.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	18	26	96	63	5
Future Vol, veh/h	1	18	26	96	63	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	21	30	110	72	6

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	245	75	78	0	0
Stage 1	75	-	-	-	-
Stage 2	170	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	743	986	1520	-	-
Stage 1	948	-	-	-	-
Stage 2	860	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	727	986	1520	-	-
Mov Cap-2 Maneuver	727	-	-	-	-
Stage 1	928	-	-	-	-
Stage 2	860	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1520	-	968	-	-
HCM Lane V/C Ratio	0.02	-	0.023	-	-
HCM Control Delay (s)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	0	3	5	16	23	3
Future Vol, veh/h	0	3	5	16	23	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	6	19	28	4

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	61	30	32	0	0
Stage 1	30	-	-	-	-
Stage 2	31	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	945	1044	1580	-	-
Stage 1	993	-	-	-	-
Stage 2	992	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	941	1044	1580	-	-
Mov Cap-2 Maneuver	941	-	-	-	-
Stage 1	989	-	-	-	-
Stage 2	992	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	1.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1580	-	1044	-	-
HCM Lane V/C Ratio	0.004	-	0.003	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	1	14	24	15	24	1
Future Vol, veh/h	1	14	24	15	24	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	16	28	17	28	1

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	102	29	29	0	0
Stage 1	29	-	-	-	-
Stage 2	73	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	896	1046	1584	-	-
Stage 1	994	-	-	-	-
Stage 2	950	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	880	1046	1584	-	-
Mov Cap-2 Maneuver	880	-	-	-	-
Stage 1	976	-	-	-	-
Stage 2	950	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	4.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1584	-	1033	-	-
HCM Lane V/C Ratio	0.018	-	0.017	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	2	0	1	0	2	10	0	0	24	4
Future Vol, veh/h	1	0	2	0	1	0	2	10	0	0	24	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	3	0	1	0	3	15	0	0	36	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	61	60	39	62	63	15	42	0	0	15	0	0
Stage 1	39	39	-	21	21	-	-	-	-	-	-	-
Stage 2	22	21	-	41	42	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	934	831	1033	933	828	1065	1567	-	-	1603	-	-
Stage 1	976	862	-	998	878	-	-	-	-	-	-	-
Stage 2	996	878	-	974	860	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	931	829	1033	929	826	1065	1567	-	-	1603	-	-
Mov Cap-2 Maneuver	931	829	-	929	826	-	-	-	-	-	-	-
Stage 1	974	862	-	996	876	-	-	-	-	-	-	-
Stage 2	992	876	-	971	860	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.6		9.4		1.2		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1567	-	-	997	826	1603	-
HCM Lane V/C Ratio	0.002	-	-	0.004	0.002	-	-
HCM Control Delay (s)	7.3	0	-	8.6	9.4	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	2	4	7	11	22	4
Future Vol, veh/h	2	4	7	11	22	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	63	63	63	63
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	6	11	17	35	6

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	77	38	41	0	0
Stage 1	38	-	-	-	-
Stage 2	39	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	926	1034	1568	-	-
Stage 1	984	-	-	-	-
Stage 2	983	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	920	1034	1568	-	-
Mov Cap-2 Maneuver	920	-	-	-	-
Stage 1	977	-	-	-	-
Stage 2	983	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	2.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1568	-	993	-	-
HCM Lane V/C Ratio	0.007	-	0.01	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	113	152	1	5	5
Future Vol, veh/h	2	113	152	1	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	141	190	1	6	6

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	191	0	-	0	338
Stage 1	-	-	-	-	191
Stage 2	-	-	-	-	147
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1383	-	-	-	658
Stage 1	-	-	-	-	841
Stage 2	-	-	-	-	880
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1383	-	-	-	657
Mov Cap-2 Maneuver	-	-	-	-	657
Stage 1	-	-	-	-	839
Stage 2	-	-	-	-	880

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1383	-	-	-	742
HCM Lane V/C Ratio	0.002	-	-	-	0.017
HCM Control Delay (s)	7.6	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	107	11	21	148	5	10
Future Vol, veh/h	107	11	21	148	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	127	13	25	176	6	12

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	140	0	360
Stage 1	-	-	-	-	134
Stage 2	-	-	-	-	226
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1443	-	639
Stage 1	-	-	-	-	892
Stage 2	-	-	-	-	812
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1443	-	627
Mov Cap-2 Maneuver	-	-	-	-	627
Stage 1	-	-	-	-	892
Stage 2	-	-	-	-	797

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	794	-	-	1443	-
HCM Lane V/C Ratio	0.022	-	-	0.017	-
HCM Control Delay (s)	9.6	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Traffic Vol, veh/h	16	116	199	17	17	22
Future Vol, veh/h	16	116	199	17	17	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	143	246	21	21	27

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	267	0	-	0	440 257
Stage 1	-	-	-	-	257 -
Stage 2	-	-	-	-	183 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1297	-	-	-	574 782
Stage 1	-	-	-	-	786 -
Stage 2	-	-	-	-	848 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1297	-	-	-	564 782
Mov Cap-2 Maneuver	-	-	-	-	564 -
Stage 1	-	-	-	-	773 -
Stage 2	-	-	-	-	848 -

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1297	-	-	-	669
HCM Lane V/C Ratio	0.015	-	-	-	0.072
HCM Control Delay (s)	7.8	0	-	-	10.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	128	5	2	206	10	1
Future Vol, veh/h	128	5	2	206	10	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	149	6	2	240	12	1

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	155	0	396
Stage 1	-	-	-	-	152
Stage 2	-	-	-	-	244
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1425	-	609
Stage 1	-	-	-	-	876
Stage 2	-	-	-	-	797
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1425	-	608
Mov Cap-2 Maneuver	-	-	-	-	608
Stage 1	-	-	-	-	876
Stage 2	-	-	-	-	795

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	626	-	-	1425	-
HCM Lane V/C Ratio	0.02	-	-	0.002	-
HCM Control Delay (s)	10.9	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	118	3	11	192	7	10
Future Vol, veh/h	118	3	11	192	7	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	170	250	-	0	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	137	3	13	223	8	12

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	140	0	386
Stage 1	-	-	-	-	137
Stage 2	-	-	-	-	249
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1443	-	617
Stage 1	-	-	-	-	890
Stage 2	-	-	-	-	792
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1443	-	611
Mov Cap-2 Maneuver	-	-	-	-	611
Stage 1	-	-	-	-	890
Stage 2	-	-	-	-	785

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	611	911	-	-	1443	-
HCM Lane V/C Ratio	0.013	0.013	-	-	0.009	-
HCM Control Delay (s)	11	9	-	-	7.5	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0	-	-	0	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	136	201	1	1	1
Future Vol, veh/h	1	136	201	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	146	216	1	1	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	217	0	-	0	365
Stage 1	-	-	-	-	217
Stage 2	-	-	-	-	148
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1353	-	-	-	635
Stage 1	-	-	-	-	819
Stage 2	-	-	-	-	880
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1353	-	-	-	634
Mov Cap-2 Maneuver	-	-	-	-	634
Stage 1	-	-	-	-	818
Stage 2	-	-	-	-	880

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1353	-	-	-	716
HCM Lane V/C Ratio	0.001	-	-	-	0.003
HCM Control Delay (s)	7.7	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	138	1	49	204	7	38
Future Vol, veh/h	138	1	49	204	7	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	148	1	53	219	8	41

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	149	0	474
Stage 1	-	-	-	-	149
Stage 2	-	-	-	-	325
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1432	-	549
Stage 1	-	-	-	-	879
Stage 2	-	-	-	-	732
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1432	-	526
Mov Cap-2 Maneuver	-	-	-	-	526
Stage 1	-	-	-	-	879
Stage 2	-	-	-	-	701

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	809	-	-	1432	-
HCM Lane V/C Ratio	0.06	-	-	0.037	-
HCM Control Delay (s)	9.7	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Timings
10: Quebec St & E. 160th Ave (SH 7)

2028 Background Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	11	482	94	119	777	14	124	42	21	18	63
Future Volume (vph)	11	482	94	119	777	14	124	42	21	18	63
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	2		1	6		3	8		7	4
Permitted Phases			2			6			8		
Detector Phase	5	2	2	1	6	6	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0
Total Split (s)	12.0	68.0	68.0	12.0	68.0	68.0	15.0	28.0	28.0	12.0	25.0
Total Split (%)	10.0%	56.7%	56.7%	10.0%	56.7%	56.7%	12.5%	23.3%	23.3%	10.0%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effect Green (s)	6.4	39.8	39.8	7.3	50.5	50.5	10.4	22.2	22.2	6.5	10.5
Actuated g/C Ratio	0.07	0.45	0.45	0.08	0.57	0.57	0.12	0.25	0.25	0.07	0.12
v/c Ratio	0.10	0.72	0.14	0.97	0.86	0.02	0.71	0.11	0.05	0.16	0.47
Control Delay	48.9	24.8	3.0	113.7	27.2	0.0	62.3	35.2	0.2	49.3	42.6
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	48.9	24.8	3.0	113.7	27.2	0.0	62.3	35.2	0.2	49.3	42.6
LOS	D	C	A	F	C	A	E	D	A	D	D
Approach Delay		21.9			38.1			49.2			43.7
Approach LOS		C			D			D			D

Intersection Summary

























Cycle Length: 120
 Actuated Cycle Length: 88.9
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 34.1
 Intersection LOS: C
 Intersection Capacity Utilization 71.1%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 10: Quebec St & E. 160th Ave (SH 7)



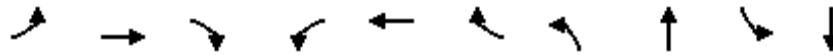
HCM 6th Signalized Intersection Summary
 10: Quebec St & E. 160th Ave (SH 7)

2028 Background Traffic
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	482	94	119	777	14	124	42	21	18	63	26
Future Volume (veh/h)	11	482	94	119	777	14	124	42	21	18	63	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	13	602	111	140	914	16	146	49	25	21	74	31
Peak Hour Factor	0.85	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	28	886	751	156	1020	865	181	309	262	42	108	45
Arrive On Green	0.02	0.47	0.47	0.09	0.55	0.55	0.10	0.17	0.17	0.02	0.09	0.09
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1252	524
Grp Volume(v), veh/h	13	602	111	140	914	16	146	49	25	21	0	105
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	0	1776
Q Serve(g_s), s	0.6	20.0	3.2	6.2	34.7	0.4	6.4	1.8	1.1	0.9	0.0	4.6
Cycle Q Clear(g_c), s	0.6	20.0	3.2	6.2	34.7	0.4	6.4	1.8	1.1	0.9	0.0	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	28	886	751	156	1020	865	181	309	262	42	0	154
V/C Ratio(X)	0.47	0.68	0.15	0.90	0.90	0.02	0.81	0.16	0.10	0.51	0.00	0.68
Avail Cap(c_a), veh/h	156	1475	1250	156	1475	1250	223	539	456	156	0	445
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.0	16.3	11.9	36.1	16.1	8.3	35.1	28.6	28.3	38.6	0.0	35.4
Incr Delay (d2), s/veh	11.6	0.9	0.1	43.4	5.5	0.0	16.0	0.2	0.2	9.2	0.0	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	7.2	1.0	4.4	12.8	0.1	3.4	0.8	0.4	0.5	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.5	17.2	12.0	79.5	21.6	8.3	51.1	28.8	28.4	47.8	0.0	40.6
LnGrp LOS	D	B	B	E	C	A	D	C	C	D	A	D
Approach Vol, veh/h		726			1070			220			126	
Approach Delay, s/veh		17.0			29.0			43.5			41.8	
Approach LOS		B			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	42.8	13.1	11.9	6.3	48.6	6.9	18.2				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	63.0	10.0	20.0	7.0	63.0	7.0	23.0				
Max Q Clear Time (g_c+I1), s	8.2	22.0	8.4	6.6	2.6	36.7	2.9	3.8				
Green Ext Time (p_c), s	0.0	4.2	0.1	0.3	0.0	6.9	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay				27.2								
HCM 6th LOS				C								

Timings
11: Yosemite St & E. 160th Ave (SH 7)

2028 Background Traffic
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	14	532	22	30	927	7	43	9	16	7
Future Volume (vph)	14	532	22	30	927	7	43	9	16	7
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min
Act Effect Green (s)	50.7	47.3	47.3	51.6	49.8	49.8	9.5	9.5	9.5	9.5
Actuated g/C Ratio	0.68	0.64	0.64	0.70	0.67	0.67	0.13	0.13	0.13	0.13
v/c Ratio	0.06	0.52	0.03	0.06	0.86	0.01	0.29	0.26	0.11	0.13
Control Delay	3.0	9.3	0.0	2.8	18.9	0.0	43.4	18.1	41.9	23.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	9.3	0.0	2.8	18.9	0.0	43.4	18.1	41.9	23.9
LOS	A	A	A	A	B	A	D	B	D	C
Approach Delay		8.8			18.3			29.0		31.0
Approach LOS		A			B			C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 74.2
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 16.0
 Intersection LOS: B
 Intersection Capacity Utilization 66.2%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 11: Yosemite St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 11: Yosemite St & E. 160th Ave (SH 7)

2028 Background Traffic
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	532	22	30	927	7	43	9	48	16	7	18
Future Volume (veh/h)	14	532	22	30	927	7	43	9	48	16	7	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	619	0	35	1078	8	50	10	56	19	8	21
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	249	1203		552	1235	1046	210	22	120	177	40	105
Arrive On Green	0.02	0.64	0.00	0.04	0.66	0.66	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1381	246	1377	1335	456	1198
Grp Volume(v), veh/h	16	619	0	35	1078	8	50	0	66	19	0	29
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1381	0	1623	1335	0	1655
Q Serve(g_s), s	0.2	11.4	0.0	0.4	29.8	0.1	2.2	0.0	2.5	0.9	0.0	1.0
Cycle Q Clear(g_c), s	0.2	11.4	0.0	0.4	29.8	0.1	3.3	0.0	2.5	3.4	0.0	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.72
Lane Grp Cap(c), veh/h	249	1203		552	1235	1046	210	0	142	177	0	145
V/C Ratio(X)	0.06	0.51		0.06	0.87	0.01	0.24	0.00	0.47	0.11	0.00	0.20
Avail Cap(c_a), veh/h	408	2267		681	2267	1921	519	0	504	475	0	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.3	6.1	0.0	4.4	8.8	3.7	28.8	0.0	27.9	29.5	0.0	27.3
Incr Delay (d2), s/veh	0.1	0.3	0.0	0.0	2.1	0.0	0.6	0.0	2.4	0.3	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.5	0.0	0.1	6.5	0.0	0.7	0.0	1.0	0.3	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.4	6.5	0.0	4.5	10.9	3.7	29.4	0.0	30.3	29.8	0.0	27.9
LnGrp LOS	B	A		A	B	A	C	A	C	C	A	C
Approach Vol, veh/h		635			1121			116				48
Approach Delay, s/veh		6.6			10.6			29.9				28.7
Approach LOS		A			B			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	46.4		10.6	6.2	47.5		10.6				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	2.4	13.4		5.4	2.2	31.8		5.3				
Green Ext Time (p_c), s	0.0	4.0		0.1	0.0	10.7		0.3				

Intersection Summary

HCM 6th Ctrl Delay	10.9
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Timings
12: Havana St & E. 160th Ave (SH 7)

2028 Background Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	16	569	9	23	827	9	19	5	16	8
Future Volume (vph)	16	569	9	23	827	9	19	5	16	8
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min
Act Effect Green (s)	31.6	29.7	29.7	32.2	31.4	31.4	7.3	7.3	7.3	7.3
Actuated g/C Ratio	0.61	0.58	0.58	0.62	0.61	0.61	0.14	0.14	0.14	0.14
v/c Ratio	0.05	0.56	0.01	0.05	0.78	0.01	0.10	0.24	0.09	0.19
Control Delay	2.9	9.6	0.0	2.8	13.1	0.0	29.6	13.1	29.5	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	9.6	0.0	2.8	13.1	0.0	29.6	13.1	29.5	15.3
LOS	A	A	A	A	B	A	C	B	C	B
Approach Delay		9.2			12.7			16.8		18.9
Approach LOS		A			B			B		B

Intersection Summary























Cycle Length: 120
 Actuated Cycle Length: 51.6
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 11.9
 Intersection Capacity Utilization 59.6%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 12: Havana St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 12: Havana St & E. 160th Ave (SH 7)

2028 Background Traffic
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	569	9	23	827	9	19	5	59	16	8	39
Future Volume (veh/h)	16	569	9	23	827	9	19	5	59	16	8	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	605	10	24	880	10	20	5	63	17	9	41
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	302	1052	892	483	1066	903	247	12	152	230	30	137
Arrive On Green	0.02	0.56	0.56	0.03	0.57	0.57	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1355	118	1485	1333	293	1336
Grp Volume(v), veh/h	17	605	10	24	880	10	20	0	68	17	0	50
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1355	0	1603	1333	0	1630
Q Serve(g_s), s	0.2	10.2	0.1	0.3	18.7	0.1	0.7	0.0	1.9	0.6	0.0	1.4
Cycle Q Clear(g_c), s	0.2	10.2	0.1	0.3	18.7	0.1	2.1	0.0	1.9	2.5	0.0	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.93	1.00		0.82
Lane Grp Cap(c), veh/h	302	1052	892	483	1066	903	247	0	164	230	0	167
V/C Ratio(X)	0.06	0.57	0.01	0.05	0.83	0.01	0.08	0.00	0.41	0.07	0.00	0.30
Avail Cap(c_a), veh/h	520	2983	2528	688	2983	2528	663	0	656	639	0	666
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.8	6.9	4.7	5.2	8.5	4.6	21.3	0.0	20.6	21.8	0.0	20.3
Incr Delay (d2), s/veh	0.1	0.5	0.0	0.0	1.7	0.0	0.1	0.0	1.7	0.1	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.1	0.0	0.0	3.9	0.0	0.2	0.0	0.7	0.2	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.9	7.4	4.7	5.3	10.2	4.6	21.4	0.0	22.3	21.9	0.0	21.3
LnGrp LOS	A	A	A	A	B	A	C	A	C	C	A	C
Approach Vol, veh/h		632			914			88				67
Approach Delay, s/veh		7.4			10.0			22.1				21.5
Approach LOS		A			B			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	32.5		10.0	6.0	32.9		10.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	2.3	12.2		4.5	2.2	20.7		4.1				
Green Ext Time (p_c), s	0.0	3.9		0.2	0.0	7.2		0.3				
Intersection Summary												
HCM 6th Ctrl Delay				10.1								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	606	30	256	807	10	204
Future Vol, veh/h	606	30	256	807	10	204
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	475	475	-	0	85
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	618	31	261	823	10	208

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	649	0	1963
Stage 1	-	-	-	-	618
Stage 2	-	-	-	-	1345
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	937	-	69
Stage 1	-	-	-	-	538
Stage 2	-	-	-	-	243
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	937	-	50
Mov Cap-2 Maneuver	-	-	-	-	160
Stage 1	-	-	-	-	538
Stage 2	-	-	-	-	175

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	29
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	160	-	-	-	937	-
HCM Lane V/C Ratio	0.064	-	-	-	0.279	-
HCM Control Delay (s)	29	0	-	-	10.3	-
HCM Lane LOS	D	A	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	-	1.1	-

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↑	↗	↘	
Traffic Vol, veh/h	28	818	1073	8	8	40
Future Vol, veh/h	28	818	1073	8	8	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	450	-	-	325	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	889	1166	9	9	43

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1175	0	-	0	2115 1166
Stage 1	-	-	-	-	1166 -
Stage 2	-	-	-	-	949 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	594	-	-	-	56 236
Stage 1	-	-	-	-	296 -
Stage 2	-	-	-	-	376 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	594	-	-	-	53 236
Mov Cap-2 Maneuver	-	-	-	-	53 -
Stage 1	-	-	-	-	281 -
Stage 2	-	-	-	-	376 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	41.3
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	594	-	-	-	150
HCM Lane V/C Ratio	0.051	-	-	-	0.348
HCM Control Delay (s)	11.4	-	-	-	41.3
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	1.4

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Traffic Vol, veh/h	3	21	8	35	41	2
Future Vol, veh/h	3	21	8	35	41	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	155	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	25	10	42	49	2

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	112	50	51	0	0
Stage 1	50	-	-	-	-
Stage 2	62	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	885	1018	1555	-	-
Stage 1	972	-	-	-	-
Stage 2	961	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	880	1018	1555	-	-
Mov Cap-2 Maneuver	880	-	-	-	-
Stage 1	966	-	-	-	-
Stage 2	961	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	1.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1555	-	998	-	-
HCM Lane V/C Ratio	0.006	-	0.029	-	-
HCM Control Delay (s)	7.3	-	8.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	3	39	15	45	63	2
Future Vol, veh/h	3	39	15	45	63	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	49	19	57	80	3

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	177	82	83	0	0
Stage 1	82	-	-	-	-
Stage 2	95	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	813	978	1514	-	-
Stage 1	941	-	-	-	-
Stage 2	929	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	802	978	1514	-	-
Mov Cap-2 Maneuver	802	-	-	-	-
Stage 1	929	-	-	-	-
Stage 2	929	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	1.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1514	-	963	-	-
HCM Lane V/C Ratio	0.013	-	0.055	-	-
HCM Control Delay (s)	7.4	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	1	5	3	5	13	0
Future Vol, veh/h	1	5	3	5	13	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	66	66	66	66	66	66
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	8	5	8	20	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	38	20	20	0	0
Stage 1	20	-	-	-	-
Stage 2	18	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	974	1058	1596	-	-
Stage 1	1003	-	-	-	-
Stage 2	1005	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	971	1058	1596	-	-
Mov Cap-2 Maneuver	971	-	-	-	-
Stage 1	1000	-	-	-	-
Stage 2	1005	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	2.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1596	-	1042	-	-
HCM Lane V/C Ratio	0.003	-	0.009	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	0	27	11	14	13	0
Future Vol, veh/h	0	27	11	14	13	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	38	15	20	18	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	68	18	18	0	0
Stage 1	18	-	-	-	-
Stage 2	50	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	937	1061	1599	-	-
Stage 1	1005	-	-	-	-
Stage 2	972	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	929	1061	1599	-	-
Mov Cap-2 Maneuver	929	-	-	-	-
Stage 1	996	-	-	-	-
Stage 2	972	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	3.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1599	-	1061	-	-
HCM Lane V/C Ratio	0.01	-	0.036	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	2	0	0	0	3	14	0	0	13	1
Future Vol, veh/h	3	0	2	0	0	0	3	14	0	0	13	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	2	0	0	0	3	16	0	0	15	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	38	38	16	39	38	16	16	0	0	16	0	0
Stage 1	16	16	-	22	22	-	-	-	-	-	-	-
Stage 2	22	22	-	17	16	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	967	854	1063	966	854	1063	1602	-	-	1602	-	-
Stage 1	1004	882	-	996	877	-	-	-	-	-	-	-
Stage 2	996	877	-	1002	882	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	965	852	1063	962	852	1063	1602	-	-	1602	-	-
Mov Cap-2 Maneuver	965	852	-	962	852	-	-	-	-	-	-	-
Stage 1	1002	882	-	994	875	-	-	-	-	-	-	-
Stage 2	994	875	-	1000	882	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.6		0		1.3		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1602	-	-	1002	-	1602	-	-
HCM Lane V/C Ratio	0.002	-	-	0.006	-	-	-	-
HCM Control Delay (s)	7.3	0	-	8.6	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	4	3	17	15	0
Future Vol, veh/h	0	4	3	17	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	4	23	21	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	52	21	21	0	0
Stage 1	21	-	-	-	-
Stage 2	31	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	957	1056	1595	-	-
Stage 1	1002	-	-	-	-
Stage 2	992	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	954	1056	1595	-	-
Mov Cap-2 Maneuver	954	-	-	-	-
Stage 1	999	-	-	-	-
Stage 2	992	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1595	-	1056	-	-
HCM Lane V/C Ratio	0.003	-	0.005	-	-
HCM Control Delay (s)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	8	306	171	9	3	3
Future Vol, veh/h	8	306	171	9	3	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	364	204	11	4	4

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	215	0	-	0	594 210
Stage 1	-	-	-	-	210 -
Stage 2	-	-	-	-	384 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1355	-	-	-	468 830
Stage 1	-	-	-	-	825 -
Stage 2	-	-	-	-	688 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1355	-	-	-	464 830
Mov Cap-2 Maneuver	-	-	-	-	464 -
Stage 1	-	-	-	-	818 -
Stage 2	-	-	-	-	688 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1355	-	-	-	595
HCM Lane V/C Ratio	0.007	-	-	-	0.012
HCM Control Delay (s)	7.7	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	1.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	284	25	34	175	5	46
Future Vol, veh/h	284	25	34	175	5	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	334	29	40	206	6	54

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	363	0	635	349
Stage 1	-	-	-	-	349	-
Stage 2	-	-	-	-	286	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1196	-	443	694
Stage 1	-	-	-	-	714	-
Stage 2	-	-	-	-	763	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1196	-	426	694
Mov Cap-2 Maneuver	-	-	-	-	426	-
Stage 1	-	-	-	-	714	-
Stage 2	-	-	-	-	734	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	654	-	-	1196	-
HCM Lane V/C Ratio	0.092	-	-	0.033	-
HCM Control Delay (s)	11.1	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	42	275	148	29	31	39
Future Vol, veh/h	42	275	148	29	31	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	309	166	33	35	44

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	199	0	-	0	586 183
Stage 1	-	-	-	-	183 -
Stage 2	-	-	-	-	403 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1373	-	-	-	473 859
Stage 1	-	-	-	-	848 -
Stage 2	-	-	-	-	675 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1373	-	-	-	454 859
Mov Cap-2 Maneuver	-	-	-	-	454 -
Stage 1	-	-	-	-	813 -
Stage 2	-	-	-	-	675 -

Approach	EB	WB	SB
HCM Control Delay, s	1	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1373	-	-	-	616
HCM Lane V/C Ratio	0.034	-	-	-	0.128
HCM Control Delay (s)	7.7	0	-	-	11.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	290	16	2	168	9	3
Future Vol, veh/h	290	16	2	168	9	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	319	18	2	185	10	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	337	0	517 328
Stage 1	-	-	-	-	328 -
Stage 2	-	-	-	-	189 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1222	-	518 713
Stage 1	-	-	-	-	730 -
Stage 2	-	-	-	-	843 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1222	-	517 713
Mov Cap-2 Maneuver	-	-	-	-	517 -
Stage 1	-	-	-	-	730 -
Stage 2	-	-	-	-	841 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	555	-	-	1222	-
HCM Lane V/C Ratio	0.024	-	-	0.002	-
HCM Control Delay (s)	11.6	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	295	8	26	194	3	11
Future Vol, veh/h	295	8	26	194	3	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	170	250	-	0	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	339	9	30	223	3	13

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	348	0	622	339
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	283	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1211	-	450	703
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	765	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1211	-	439	703
Mov Cap-2 Maneuver	-	-	-	-	439	-
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	746	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	439	703	-	-	1211	-
HCM Lane V/C Ratio	0.008	0.018	-	-	0.025	-
HCM Control Delay (s)	13.3	10.2	-	-	8	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0	0.1	-	-	0.1	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	295	203	9	3	1
Future Vol, veh/h	2	295	203	9	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	317	218	10	3	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	228	0	-	0	544 223
Stage 1	-	-	-	-	223 -
Stage 2	-	-	-	-	321 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1340	-	-	-	500 817
Stage 1	-	-	-	-	814 -
Stage 2	-	-	-	-	735 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1340	-	-	-	499 817
Mov Cap-2 Maneuver	-	-	-	-	499 -
Stage 1	-	-	-	-	812 -
Stage 2	-	-	-	-	735 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1340	-	-	-	553
HCM Lane V/C Ratio	0.002	-	-	-	0.008
HCM Control Delay (s)	7.7	0	-	-	11.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	268	6	16	185	10	35
Future Vol, veh/h	268	6	16	185	10	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	285	6	17	197	11	37

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	291	0	519 288
Stage 1	-	-	-	-	288 -
Stage 2	-	-	-	-	231 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1271	-	517 751
Stage 1	-	-	-	-	761 -
Stage 2	-	-	-	-	807 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1271	-	509 751
Mov Cap-2 Maneuver	-	-	-	-	509 -
Stage 1	-	-	-	-	761 -
Stage 2	-	-	-	-	795 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	679	-	-	1271	-
HCM Lane V/C Ratio	0.071	-	-	0.013	-
HCM Control Delay (s)	10.7	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Timings
10: Quebec St & E. 160th Ave (SH 7)

2028 Background Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	29	929	131	88	672	11	151	102	101	19	59
Future Volume (vph)	29	929	131	88	672	11	151	102	101	19	59
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	2		1	6		3	8		7	4
Permitted Phases			2			6			8		
Detector Phase	5	2	2	1	6	6	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0
Total Split (s)	12.0	63.0	63.0	12.0	63.0	63.0	20.0	33.0	33.0	12.0	25.0
Total Split (%)	10.0%	52.5%	52.5%	10.0%	52.5%	52.5%	16.7%	27.5%	27.5%	10.0%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min
Act Effect Green (s)	6.6	58.1	58.1	7.0	63.1	63.1	13.6	23.8	23.8	6.4	9.8
Actuated g/C Ratio	0.06	0.53	0.53	0.06	0.58	0.58	0.13	0.22	0.22	0.06	0.09
v/c Ratio	0.30	1.01	0.15	0.84	0.67	0.01	0.74	0.27	0.25	0.20	0.49
Control Delay	57.8	58.8	2.3	102.4	22.1	0.0	66.5	38.8	9.1	54.8	50.3
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	57.8	58.8	2.3	102.4	22.1	0.0	66.5	38.8	9.1	54.8	50.3
LOS	E	E	A	F	C	A	E	D	A	D	D
Approach Delay		52.0			31.0			42.1			51.2
Approach LOS		D			C			D			D

Intersection Summary

























Cycle Length: 120
 Actuated Cycle Length: 108.6
 Natural Cycle: 100
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.01
 Intersection Signal Delay: 43.4
 Intersection LOS: D
 Intersection Capacity Utilization 81.3%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 10: Quebec St & E. 160th Ave (SH 7)



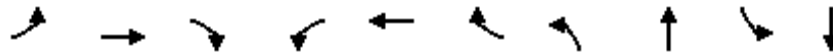
HCM 6th Signalized Intersection Summary
 10: Quebec St & E. 160th Ave (SH 7)

2028 Background Traffic
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	929	131	88	672	11	151	102	101	19	59	19
Future Volume (veh/h)	29	929	131	88	672	11	151	102	101	19	59	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	32	1010	142	96	730	12	164	111	110	21	64	21
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	52	1043	884	121	1116	945	196	293	248	39	92	30
Arrive On Green	0.03	0.56	0.56	0.07	0.60	0.60	0.11	0.16	0.16	0.02	0.07	0.07
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1348	442
Grp Volume(v), veh/h	32	1010	142	96	730	12	164	111	110	21	0	85
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	0	1791
Q Serve(g_s), s	1.8	53.0	4.4	5.4	26.4	0.3	9.2	5.4	6.4	1.2	0.0	4.7
Cycle Q Clear(g_c), s	1.8	53.0	4.4	5.4	26.4	0.3	9.2	5.4	6.4	1.2	0.0	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	52	1043	884	121	1116	945	196	293	248	39	0	123
V/C Ratio(X)	0.62	0.97	0.16	0.79	0.65	0.01	0.84	0.38	0.44	0.54	0.00	0.69
Avail Cap(c_a), veh/h	122	1062	900	122	1116	945	262	513	435	122	0	351
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.0	21.7	11.0	46.9	13.6	8.4	44.5	38.6	39.0	49.4	0.0	46.5
Incr Delay (d2), s/veh	11.2	20.1	0.1	29.0	1.4	0.0	16.0	0.8	1.2	10.9	0.0	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	25.1	1.5	3.3	9.6	0.1	4.8	2.5	2.5	0.6	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.2	41.9	11.1	75.9	15.0	8.4	60.5	39.4	40.3	60.4	0.0	53.4
LnGrp LOS	E	D	B	E	B	A	E	D	D	E	A	D
Approach Vol, veh/h		1184			838			385			106	
Approach Delay, s/veh		38.7			21.9			48.7			54.7	
Approach LOS		D			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.9	62.0	16.2	12.0	8.0	65.9	7.2	21.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	58.0	15.0	20.0	7.0	58.0	7.0	28.0				
Max Q Clear Time (g_c+I1), s	7.4	55.0	11.2	6.7	3.8	28.4	3.2	8.4				
Green Ext Time (p_c), s	0.0	1.9	0.1	0.2	0.0	4.9	0.0	0.8				
Intersection Summary												
HCM 6th Ctrl Delay			35.3									
HCM 6th LOS			D									

Timings
11: Yosemite St & E. 160th Ave (SH 7)

2028 Background Traffic
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	25	982	53	41	748	11	42	11	9	9
Future Volume (vph)	25	982	53	41	748	11	42	11	9	9
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min
Act Effect Green (s)	51.7	48.6	48.6	52.7	50.8	50.8	8.9	8.9	8.9	8.9
Actuated g/C Ratio	0.69	0.65	0.65	0.71	0.68	0.68	0.12	0.12	0.12	0.12
v/c Ratio	0.06	0.83	0.05	0.14	0.61	0.01	0.26	0.22	0.06	0.11
Control Delay	2.6	17.9	1.3	3.5	9.3	0.0	43.4	20.3	41.0	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.6	17.9	1.3	3.5	9.3	0.0	43.4	20.3	41.0	26.6
LOS	A	B	A	A	A	A	D	C	D	C
Approach Delay		16.7			8.9			30.9		30.5
Approach LOS		B			A			C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 74.7
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 14.4
 Intersection LOS: B
 Intersection Capacity Utilization 69.0%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 11: Yosemite St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 11: Yosemite St & E. 160th Ave (SH 7)

2028 Background Traffic
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	982	53	41	748	11	42	11	39	9	9	15
Future Volume (veh/h)	25	982	53	41	748	11	42	11	39	9	9	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	1012	0	42	771	11	43	11	40	9	9	15
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	439	1173		298	1197	1014	215	29	106	191	52	87
Arrive On Green	0.03	0.63	0.00	0.04	0.64	0.64	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1387	354	1285	1354	630	1051
Grp Volume(v), veh/h	26	1012	0	42	771	11	43	0	51	9	0	24
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1387	0	1639	1354	0	1681
Q Serve(g_s), s	0.3	26.6	0.0	0.5	15.3	0.2	1.8	0.0	1.8	0.4	0.0	0.8
Cycle Q Clear(g_c), s	0.3	26.6	0.0	0.5	15.3	0.2	2.6	0.0	1.8	2.2	0.0	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.78	1.00		0.63
Lane Grp Cap(c), veh/h	439	1173		298	1197	1014	215	0	136	191	0	139
V/C Ratio(X)	0.06	0.86		0.14	0.64	0.01	0.20	0.00	0.38	0.05	0.00	0.17
Avail Cap(c_a), veh/h	593	2413		430	2413	2045	559	0	542	527	0	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.4	9.1	0.0	9.7	6.7	3.9	27.0	0.0	26.3	27.3	0.0	25.8
Incr Delay (d2), s/veh	0.1	2.0	0.0	0.2	0.6	0.0	0.4	0.0	1.7	0.1	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	6.1	0.0	0.2	3.2	0.0	0.6	0.0	0.7	0.1	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.5	11.2	0.0	9.9	7.3	4.0	27.5	0.0	28.0	27.4	0.0	26.4
LnGrp LOS	A	B		A	A	A	C	A	C	C	A	C
Approach Vol, veh/h		1038			824			94				33
Approach Delay, s/veh		11.0			7.3			27.7				26.7
Approach LOS		B			A			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	42.9		10.0	6.8	43.7		10.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	2.5	28.6		4.2	2.3	17.3		4.6				
Green Ext Time (p_c), s	0.0	9.4		0.1	0.0	5.7		0.3				

Intersection Summary

HCM 6th Ctrl Delay	10.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Timings
12: Havana St & E. 160th Ave (SH 7)

2028 Background Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	48	963	35	107	792	19	9	10	9	7
Future Volume (vph)	48	963	35	107	792	19	9	10	9	7
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min
Act Effect Green (s)	49.4	44.6	44.6	50.8	47.3	47.3	7.0	7.0	7.0	7.0
Actuated g/C Ratio	0.69	0.63	0.63	0.71	0.66	0.66	0.10	0.10	0.10	0.10
v/c Ratio	0.11	0.84	0.03	0.34	0.65	0.02	0.07	0.28	0.07	0.14
Control Delay	2.6	18.4	0.5	5.4	10.8	0.1	39.1	19.5	39.2	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.6	18.4	0.5	5.4	10.8	0.1	39.1	19.5	39.2	23.6
LOS	A	B	A	A	B	A	D	B	D	C
Approach Delay		17.1			9.9			22.3		27.8
Approach LOS		B			A			C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 71.3
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 14.3
 Intersection LOS: B
 Intersection Capacity Utilization 76.3%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 12: Havana St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 12: Havana St & E. 160th Ave (SH 7)

2028 Background Traffic
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	963	35	107	792	19	9	10	46	9	7	18
Future Volume (veh/h)	48	963	35	107	792	19	9	10	46	9	7	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	973	35	108	800	19	9	10	46	9	7	18
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	432	1131	958	338	1174	995	211	24	109	184	38	97
Arrive On Green	0.05	0.60	0.60	0.07	0.63	0.63	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1386	291	1338	1348	464	1192
Grp Volume(v), veh/h	48	973	35	108	800	19	9	0	56	9	0	25
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1386	0	1629	1348	0	1656
Q Serve(g_s), s	0.6	26.2	0.5	1.3	17.0	0.3	0.4	0.0	2.0	0.4	0.0	0.9
Cycle Q Clear(g_c), s	0.6	26.2	0.5	1.3	17.0	0.3	1.2	0.0	2.0	2.4	0.0	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.82	1.00		0.72
Lane Grp Cap(c), veh/h	432	1131	958	338	1174	995	211	0	133	184	0	135
V/C Ratio(X)	0.11	0.86	0.04	0.32	0.68	0.02	0.04	0.00	0.42	0.05	0.00	0.18
Avail Cap(c_a), veh/h	555	2383	2019	420	2383	2019	551	0	532	514	0	541
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.0	10.0	4.9	10.4	7.4	4.3	26.8	0.0	26.7	27.9	0.0	26.2
Incr Delay (d2), s/veh	0.1	2.1	0.0	0.5	0.7	0.0	0.1	0.0	2.1	0.1	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	6.6	0.1	0.5	3.8	0.1	0.1	0.0	0.8	0.1	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.1	12.0	4.9	11.0	8.1	4.3	26.9	0.0	28.8	28.0	0.0	26.9
LnGrp LOS	A	B	A	B	A	A	C	A	C	C	A	C
Approach Vol, veh/h		1056			927			65				34
Approach Delay, s/veh		11.5			8.4			28.6				27.2
Approach LOS		B			A			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	42.0		10.0	7.8	43.4		10.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	3.3	28.2		4.4	2.6	19.0		4.0				
Green Ext Time (p_c), s	0.1	8.8		0.1	0.0	6.1		0.2				

Intersection Summary

HCM 6th Ctrl Delay	10.9
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	962	19	192	921	19	320
Future Vol, veh/h	962	19	192	921	19	320
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	475	475	-	0	85
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	972	19	194	930	19	323

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	991	0	2290
Stage 1	-	-	-	-	972
Stage 2	-	-	-	-	1318
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	698	-	43
Stage 1	-	-	-	-	367
Stage 2	-	-	-	-	250
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	698	-	31
Mov Cap-2 Maneuver	-	-	-	-	155
Stage 1	-	-	-	-	367
Stage 2	-	-	-	-	181

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	31.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	155	-	-	-	698	-
HCM Lane V/C Ratio	0.124	-	-	-	0.278	-
HCM Control Delay (s)	31.5	0	-	-	12.1	-
HCM Lane LOS	D	A	-	-	B	-
HCM 95th %tile Q(veh)	0.4	-	-	-	1.1	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↑	↗	↘	↘
Traffic Vol, veh/h	47	1196	1048	21	5	26
Future Vol, veh/h	47	1196	1048	21	5	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	450	-	-	325	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	1246	1092	22	5	27

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1114	0	-	0	2436 1092
Stage 1	-	-	-	-	1092 -
Stage 2	-	-	-	-	1344 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	627	-	-	-	35 261
Stage 1	-	-	-	-	322 -
Stage 2	-	-	-	-	243 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	627	-	-	-	32 261
Mov Cap-2 Maneuver	-	-	-	-	32 -
Stage 1	-	-	-	-	297 -
Stage 2	-	-	-	-	243 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	45.2
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	627	-	-	-	121
HCM Lane V/C Ratio	0.078	-	-	-	0.267
HCM Control Delay (s)	11.2	-	-	-	45.2
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0.3	-	-	-	1

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	20	76	59	1
Future Vol, veh/h	0	8	20	76	59	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	155	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	23	87	68	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	202	69	69	0	-	0
Stage 1	69	-	-	-	-	-
Stage 2	133	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	787	994	1532	-	-	-
Stage 1	954	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	775	994	1532	-	-	-
Mov Cap-2 Maneuver	775	-	-	-	-	-
Stage 1	940	-	-	-	-	-
Stage 2	893	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	1.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1532	-	994	-	-
HCM Lane V/C Ratio	0.015	-	0.009	-	-
HCM Control Delay (s)	7.4	-	8.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	18	26	96	63	5
Future Vol, veh/h	1	18	26	96	63	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	21	30	110	72	6

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	245	75	78	0	0
Stage 1	75	-	-	-	-
Stage 2	170	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	743	986	1520	-	-
Stage 1	948	-	-	-	-
Stage 2	860	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	727	986	1520	-	-
Mov Cap-2 Maneuver	727	-	-	-	-
Stage 1	928	-	-	-	-
Stage 2	860	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1520	-	968	-	-
HCM Lane V/C Ratio	0.02	-	0.023	-	-
HCM Control Delay (s)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	5	16	23	3
Future Vol, veh/h	0	3	5	16	23	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	6	19	28	4

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	61	30	32	0	0
Stage 1	30	-	-	-	-
Stage 2	31	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	945	1044	1580	-	-
Stage 1	993	-	-	-	-
Stage 2	992	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	941	1044	1580	-	-
Mov Cap-2 Maneuver	941	-	-	-	-
Stage 1	989	-	-	-	-
Stage 2	992	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	1.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1580	-	1044	-	-
HCM Lane V/C Ratio	0.004	-	0.003	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	1	14	24	15	24	1
Future Vol, veh/h	1	14	24	15	24	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	16	28	17	28	1

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	102	29	29	0	0
Stage 1	29	-	-	-	-
Stage 2	73	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	896	1046	1584	-	-
Stage 1	994	-	-	-	-
Stage 2	950	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	880	1046	1584	-	-
Mov Cap-2 Maneuver	880	-	-	-	-
Stage 1	976	-	-	-	-
Stage 2	950	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	4.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1584	-	1033	-	-
HCM Lane V/C Ratio	0.018	-	0.017	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	2	0	0	0	2	13	0	0	30	4
Future Vol, veh/h	1	0	2	0	0	0	2	13	0	0	30	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	3	0	0	0	3	19	0	0	45	6

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	73	73	48	75	76	19	51	0	0	19	0	0
Stage 1	48	48	-	25	25	-	-	-	-	-	-	-
Stage 2	25	25	-	50	51	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	918	817	1021	915	814	1059	1555	-	-	1597	-	-
Stage 1	965	855	-	993	874	-	-	-	-	-	-	-
Stage 2	993	874	-	963	852	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	916	815	1021	911	812	1059	1555	-	-	1597	-	-
Mov Cap-2 Maneuver	916	815	-	911	812	-	-	-	-	-	-	-
Stage 1	963	855	-	991	872	-	-	-	-	-	-	-
Stage 2	991	872	-	960	852	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.7		0		1		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1555	-	-	983	-	1597	-
HCM Lane V/C Ratio	0.002	-	-	0.005	-	-	-
HCM Control Delay (s)	7.3	0	-	8.7	0	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	2	4	7	13	28	4
Future Vol, veh/h	2	4	7	13	28	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	63	63	63	63
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	6	11	21	44	6

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	90	47	50	0	0
Stage 1	47	-	-	-	-
Stage 2	43	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	910	1022	1557	-	-
Stage 1	975	-	-	-	-
Stage 2	979	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	904	1022	1557	-	-
Mov Cap-2 Maneuver	904	-	-	-	-
Stage 1	968	-	-	-	-
Stage 2	979	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	2.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1557	-	979	-	-
HCM Lane V/C Ratio	0.007	-	0.01	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	2	157	269	9	8	5
Future Vol, veh/h	2	157	269	9	8	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	196	336	11	10	6

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	347	0	-	0	544 342
Stage 1	-	-	-	-	342 -
Stage 2	-	-	-	-	202 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1212	-	-	-	500 701
Stage 1	-	-	-	-	719 -
Stage 2	-	-	-	-	832 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1212	-	-	-	499 701
Mov Cap-2 Maneuver	-	-	-	-	499 -
Stage 1	-	-	-	-	717 -
Stage 2	-	-	-	-	832 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1212	-	-	-	561
HCM Lane V/C Ratio	0.002	-	-	-	0.029
HCM Control Delay (s)	8	0	-	-	11.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	154	11	51	273	5	24
Future Vol, veh/h	154	11	51	273	5	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	183	13	61	325	6	29

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	196	0	637 190
Stage 1	-	-	-	-	190 -
Stage 2	-	-	-	-	447 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1377	-	441 852
Stage 1	-	-	-	-	842 -
Stage 2	-	-	-	-	644 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1377	-	422 852
Mov Cap-2 Maneuver	-	-	-	-	422 -
Stage 1	-	-	-	-	842 -
Stage 2	-	-	-	-	616 -

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	422	852	-	-	1377	-
HCM Lane V/C Ratio	0.014	0.034	-	-	0.044	-
HCM Control Delay (s)	13.7	9.4	-	-	7.7	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0.1	-	-	0.1	-

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	173	21	2	327	49	3
Future Vol, veh/h	173	21	2	327	49	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	250	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	204	25	2	385	58	4

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	229	0	593	204
Stage 1	-	-	-	-	204	-
Stage 2	-	-	-	-	389	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1339	-	468	837
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	685	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1339	-	468	837
Mov Cap-2 Maneuver	-	-	-	-	468	-
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	684	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	468	837	-	-	1339	-
HCM Lane V/C Ratio	0.123	0.004	-	-	0.002	-
HCM Control Delay (s)	13.8	9.3	-	-	7.7	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	132	27	15	236	19	71	6	38	18	2	22
Future Vol, veh/h	16	132	27	15	236	19	71	6	38	18	2	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	250	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	85	85	81	81	85	85	85	81	85	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	163	32	18	291	23	84	7	45	22	2	27

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	314	0	0	195	0	0	556	553	163	572	562	291
Stage 1	-	-	-	-	-	-	203	203	-	327	327	-
Stage 2	-	-	-	-	-	-	353	350	-	245	235	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1246	-	-	1378	-	-	442	441	882	431	436	748
Stage 1	-	-	-	-	-	-	799	733	-	686	648	-
Stage 2	-	-	-	-	-	-	664	633	-	759	710	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1246	-	-	1378	-	-	415	428	882	395	423	748
Mov Cap-2 Maneuver	-	-	-	-	-	-	415	428	-	395	423	-
Stage 1	-	-	-	-	-	-	786	721	-	675	640	-
Stage 2	-	-	-	-	-	-	629	625	-	702	699	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0.7		0.4		13.6		12.2	
HCM LOS					B		B	

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	415	771	1246	-	-	1378	-	-	395	705
HCM Lane V/C Ratio	0.201	0.067	0.016	-	-	0.013	-	-	0.056	0.042
HCM Control Delay (s)	15.8	10	7.9	-	-	7.6	-	-	14.7	10.3
HCM Lane LOS	C	B	A	-	-	A	-	-	B	B
HCM 95th %tile Q(veh)	0.7	0.2	0	-	-	0	-	-	0.2	0.1

Intersection						
Int Delay, s/veh	1.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	↙
Traffic Vol, veh/h	179	9	22	251	19	55
Future Vol, veh/h	179	9	22	251	19	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	250	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	211	11	26	295	22	65

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	222	0	558	211
Stage 1	-	-	-	-	211	-
Stage 2	-	-	-	-	347	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1347	-	491	829
Stage 1	-	-	-	-	824	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1347	-	482	829
Mov Cap-2 Maneuver	-	-	-	-	482	-
Stage 1	-	-	-	-	824	-
Stage 2	-	-	-	-	702	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	700	-	-	1347	-
HCM Lane V/C Ratio	0.124	-	-	0.019	-
HCM Control Delay (s)	10.9	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	213	14	30	229	35	71
Future Vol, veh/h	213	14	30	229	35	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	170	250	-	0	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	248	16	35	266	41	83

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	264	0	584 248
Stage 1	-	-	-	-	248 -
Stage 2	-	-	-	-	336 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1300	-	474 791
Stage 1	-	-	-	-	793 -
Stage 2	-	-	-	-	724 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1300	-	461 791
Mov Cap-2 Maneuver	-	-	-	-	461 -
Stage 1	-	-	-	-	793 -
Stage 2	-	-	-	-	704 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	461	791	-	-	1300	-
HCM Lane V/C Ratio	0.088	0.104	-	-	0.027	-
HCM Control Delay (s)	13.6	10.1	-	-	7.8	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.3	-	-	0.1	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	1	291	257	1	1	1
Future Vol, veh/h	1	291	257	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	313	276	1	1	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	277	0	0	592	277
Stage 1	-	-	-	277	-
Stage 2	-	-	-	315	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1286	-	-	469	762
Stage 1	-	-	-	770	-
Stage 2	-	-	-	740	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1286	-	-	469	762
Mov Cap-2 Maneuver	-	-	-	469	-
Stage 1	-	-	-	769	-
Stage 2	-	-	-	740	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1286	-	-	-	581
HCM Lane V/C Ratio	0.001	-	-	-	0.004
HCM Control Delay (s)	7.8	0	-	-	11.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	1.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	240	55	49	242	25	38
Future Vol, veh/h	240	55	49	242	25	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	258	59	53	260	27	41

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	317	0	624 258
Stage 1	-	-	-	-	258 -
Stage 2	-	-	-	-	366 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1243	-	449 781
Stage 1	-	-	-	-	785 -
Stage 2	-	-	-	-	702 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1243	-	427 781
Mov Cap-2 Maneuver	-	-	-	-	427 -
Stage 1	-	-	-	-	785 -
Stage 2	-	-	-	-	667 -

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	588	-	-	1243	-
HCM Lane V/C Ratio	0.115	-	-	0.042	-
HCM Control Delay (s)	11.9	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Timings
10: Quebec St & E. 160th Ave (SH 7)

2028 Total Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	560	94	151	988	14	124	45	33	18	70	49
Future Volume (vph)	22	560	94	151	988	14	124	45	33	18	70	49
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	12.0	61.0	61.0	18.0	67.0	67.0	17.0	28.0	28.0	13.0	24.0	24.0
Total Split (%)	10.0%	50.8%	50.8%	15.0%	55.8%	55.8%	14.2%	23.3%	23.3%	10.8%	20.0%	20.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	Min	Min	None	Min	Min
Act Effect Green (s)	6.5	56.0	56.0	13.0	67.0	67.0	11.6	21.9	21.9	6.7	10.2	10.2
Actuated g/C Ratio	0.06	0.50	0.50	0.12	0.60	0.60	0.10	0.20	0.20	0.06	0.09	0.09
v/c Ratio	0.25	0.74	0.13	0.86	1.03	0.02	0.78	0.14	0.09	0.20	0.48	0.20
Control Delay	57.0	28.4	1.2	84.3	60.3	0.0	77.5	40.6	0.4	54.7	57.3	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.0	28.4	1.2	84.3	60.3	0.0	77.5	40.6	0.4	54.7	57.3	1.6
LOS	E	C	A	F	E	A	E	D	A	D	E	A
Approach Delay		25.7			62.8			56.7			36.9	
Approach LOS		C			E			E			D	

Intersection Summary

























Cycle Length: 120	
Actuated Cycle Length: 110.9	
Natural Cycle: 130	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 48.6	Intersection LOS: D
Intersection Capacity Utilization 82.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 10: Quebec St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 10: Quebec St & E. 160th Ave (SH 7)

2028 Total Traffic
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	560	94	151	988	14	124	45	33	18	70	49
Future Volume (veh/h)	22	560	94	151	988	14	124	45	33	18	70	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	700	111	178	1162	16	146	53	39	21	82	58
Peak Hour Factor	0.85	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	45	991	840	208	1162	985	175	266	225	39	122	104
Arrive On Green	0.03	0.53	0.53	0.12	0.62	0.62	0.10	0.14	0.14	0.02	0.07	0.07
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	26	700	111	178	1162	16	146	53	39	21	82	58
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.5	29.7	3.7	10.4	65.6	0.4	8.5	2.6	2.3	1.2	4.5	3.7
Cycle Q Clear(g_c), s	1.5	29.7	3.7	10.4	65.6	0.4	8.5	2.6	2.3	1.2	4.5	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	45	991	840	208	1162	985	175	266	225	39	122	104
V/C Ratio(X)	0.58	0.71	0.13	0.86	1.00	0.02	0.83	0.20	0.17	0.54	0.67	0.56
Avail Cap(c_a), veh/h	118	991	840	219	1162	985	202	407	345	135	336	285
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.9	18.6	12.5	45.8	20.0	7.6	46.8	40.0	39.9	51.1	48.3	47.9
Incr Delay (d2), s/veh	11.2	4.2	0.3	26.0	26.3	0.0	22.1	0.4	0.4	11.2	6.2	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	12.3	1.3	5.9	31.0	0.1	4.8	1.2	0.9	0.7	2.3	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.1	22.9	12.9	71.8	46.3	7.7	68.9	40.4	40.2	62.4	54.5	52.5
LnGrp LOS	E	C	B	E	D	A	E	D	D	E	D	D
Approach Vol, veh/h		837			1356			238			161	
Approach Delay, s/veh		22.8			49.2			57.8			54.8	
Approach LOS		C			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.3	61.0	15.4	11.9	7.7	70.7	7.3	20.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	13.0	56.0	12.0	19.0	7.0	62.0	8.0	23.0				
Max Q Clear Time (g_c+I1), s	12.4	31.7	10.5	6.5	3.5	67.6	3.2	4.6				
Green Ext Time (p_c), s	0.0	4.8	0.0	0.4	0.0	0.0	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			41.8									
HCM 6th LOS			D									

Timings

2028 Total Traffic

10: Quebec St & E. 160th Ave (SH 7) W/ 2 EB/WB TH

AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	560	94	151	988	14	124	45	33	18	70	49
Future Volume (vph)	22	560	94	151	988	14	124	45	33	18	70	49
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	12.0	57.0	57.0	18.0	63.0	63.0	20.0	33.0	33.0	12.0	25.0	25.0
Total Split (%)	10.0%	47.5%	47.5%	15.0%	52.5%	52.5%	16.7%	27.5%	27.5%	10.0%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	Min	Min	None	Min	Min
Act Effect Green (s)	6.5	52.1	52.1	13.0	63.1	63.1	13.0	23.6	23.6	6.4	10.1	10.1
Actuated g/C Ratio	0.06	0.48	0.48	0.12	0.58	0.58	0.12	0.22	0.22	0.06	0.09	0.09
v/c Ratio	0.25	0.41	0.13	0.84	0.56	0.02	0.69	0.13	0.08	0.20	0.47	0.18
Control Delay	56.0	19.7	0.3	79.5	17.2	0.0	63.3	37.1	0.4	54.8	56.0	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	19.7	0.3	79.5	17.2	0.0	63.3	37.1	0.4	54.8	56.0	1.2
LOS	E	B	A	E	B	A	E	D	A	D	E	A
Approach Delay		18.3			25.2			47.2			36.1	
Approach LOS		B			C			D			D	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 108.3	
Natural Cycle: 70	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 25.7	Intersection LOS: C
Intersection Capacity Utilization 57.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 10: Quebec St & E. 160th Ave (SH 7) W/ 2 EB/WB TH



HCM 6th Signalized Intersection Summary
 10: Quebec St & E. 160th Ave (SH 7) W/ 2 EB/WB TH

2028 Total Traffic
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↑	↗	↘	↑	↗
Traffic Volume (veh/h)	22	560	94	151	988	14	124	45	33	18	70	49
Future Volume (veh/h)	22	560	94	151	988	14	124	45	33	18	70	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	700	111	178	1162	16	146	53	39	21	82	58
Peak Hour Factor	0.85	0.80	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	46	1837	819	209	2164	965	178	270	229	39	125	106
Arrive On Green	0.03	0.52	0.52	0.12	0.61	0.61	0.10	0.14	0.14	0.02	0.07	0.07
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	26	700	111	178	1162	16	146	53	39	21	82	58
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.5	11.9	3.7	9.9	19.1	0.4	8.1	2.5	2.2	1.2	4.3	3.6
Cycle Q Clear(g_c), s	1.5	11.9	3.7	9.9	19.1	0.4	8.1	2.5	2.2	1.2	4.3	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	46	1837	819	209	2164	965	178	270	229	39	125	106
V/C Ratio(X)	0.57	0.38	0.14	0.85	0.54	0.02	0.82	0.20	0.17	0.53	0.66	0.55
Avail Cap(c_a), veh/h	124	1837	819	230	2164	965	266	521	441	124	372	315
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.5	14.6	12.6	43.5	11.4	7.8	44.4	37.9	37.7	48.7	45.8	45.5
Incr Delay (d2), s/veh	10.6	0.6	0.3	23.3	1.0	0.0	11.8	0.4	0.3	10.8	5.8	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	4.4	1.3	5.5	6.5	0.1	4.1	1.1	0.8	0.6	2.1	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.1	15.2	13.0	66.9	12.4	7.8	56.2	38.2	38.1	59.5	51.6	49.8
LnGrp LOS	E	B	B	E	B	A	E	D	D	E	D	D
Approach Vol, veh/h		837			1356			238			161	
Approach Delay, s/veh		16.3			19.5			49.2			52.0	
Approach LOS		B			B			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.8	57.0	15.1	11.7	7.6	66.2	7.2	19.5				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	13.0	52.0	15.0	20.0	7.0	58.0	7.0	28.0				
Max Q Clear Time (g_c+I1), s	11.9	13.9	10.1	6.3	3.5	21.1	3.2	4.5				
Green Ext Time (p_c), s	0.1	5.1	0.1	0.4	0.0	9.3	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay											23.2	
HCM 6th LOS											C	

Timings
11: Yosemite St & E. 160th Ave (SH 7)

2028 Total Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	83	553	22	38	982	71	43	21	188	38	206
Future Volume (vph)	83	553	22	38	982	71	43	21	188	38	206
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		1	6			8		4	
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	6	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	78.0	78.0	12.0	78.0	78.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min	Min
Act Effct Green (s)	81.5	76.0	76.0	79.3	73.1	73.1	22.5	22.5	22.5	22.5	22.5
Actuated g/C Ratio	0.69	0.65	0.65	0.67	0.62	0.62	0.19	0.19	0.19	0.19	0.19
v/c Ratio	0.58	0.53	0.02	0.09	0.99	0.08	0.19	0.23	0.88	0.12	0.54
Control Delay	31.4	14.5	0.0	5.7	46.8	2.2	41.5	16.9	78.8	39.8	16.9
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	31.4	14.5	0.0	5.7	46.8	2.2	41.5	16.9	78.8	39.8	16.9
LOS	C	B	A	A	D	A	D	B	E	D	B
Approach Delay		16.2			42.4			26.1		45.9	
Approach LOS		B			D			C		D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 117.6
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 34.7
 Intersection LOS: C
 Intersection Capacity Utilization 85.9%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 11: Yosemite St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 11: Yosemite St & E. 160th Ave (SH 7)

2028 Total Traffic
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	553	22	38	982	71	43	21	51	188	38	206
Future Volume (veh/h)	83	553	22	38	982	71	43	21	51	188	38	206
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	97	643	0	44	1142	83	50	24	59	219	44	240
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	144	1174		459	1158	981	273	102	251	286	398	337
Arrive On Green	0.04	0.63	0.00	0.03	0.62	0.62	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1095	479	1179	1315	1870	1585
Grp Volume(v), veh/h	97	643	0	44	1142	83	50	0	83	219	44	240
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1095	0	1658	1315	1870	1585
Q Serve(g_s), s	2.3	23.0	0.0	1.0	70.2	2.5	4.5	0.0	4.9	19.5	2.2	16.5
Cycle Q Clear(g_c), s	2.3	23.0	0.0	1.0	70.2	2.5	6.8	0.0	4.9	24.4	2.2	16.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.71	1.00		1.00
Lane Grp Cap(c), veh/h	144	1174		459	1158	981	273	0	352	286	398	337
V/C Ratio(X)	0.67	0.55		0.10	0.99	0.08	0.18	0.00	0.24	0.77	0.11	0.71
Avail Cap(c_a), veh/h	177	1174		507	1161	984	273	0	352	286	398	337
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.6	12.4	0.0	9.5	21.9	9.0	40.1	0.0	38.4	48.5	37.3	43.0
Incr Delay (d2), s/veh	7.2	0.5	0.0	0.1	23.0	0.0	0.3	0.0	0.3	11.7	0.1	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	8.4	0.0	0.4	32.8	0.8	1.2	0.0	2.0	7.2	1.0	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.8	13.0	0.0	9.6	44.9	9.0	40.4	0.0	38.7	60.1	37.5	49.9
LnGrp LOS	D	B		A	D	A	D	A	D	E	D	D
Approach Vol, veh/h		740			1269			133			503	
Approach Delay, s/veh		16.1			41.3			39.3			53.2	
Approach LOS		B			D			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	78.8		30.0	9.8	77.8		30.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	73.0		25.0	7.0	73.0		25.0				
Max Q Clear Time (g_c+I1), s	3.0	25.0		26.4	4.3	72.2		8.8				
Green Ext Time (p_c), s	0.0	4.2		0.0	0.0	0.6		0.5				

Intersection Summary

HCM 6th Ctrl Delay	36.4
HCM 6th LOS	D

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Timings
12: Havana St & E. 160th Ave (SH 7)

2028 Total Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	40	710	40	23	880	13	31	8	16	16	102	
Future Volume (vph)	40	710	40	23	880	13	31	8	16	16	102	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	
Protected Phases	5	2		1	6			8		4		
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0	25.0	
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%	20.8%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min	Min	
Act Effect Green (s)	45.3	43.2	43.2	43.6	40.7	40.7	8.2	8.2	8.2	8.2	8.2	
Actuated g/C Ratio	0.68	0.65	0.65	0.66	0.61	0.61	0.12	0.12	0.12	0.12	0.12	
v/c Ratio	0.13	0.62	0.04	0.05	0.82	0.01	0.19	0.28	0.10	0.07	0.38	
Control Delay	3.2	9.7	0.8	2.7	17.6	0.0	38.0	16.1	37.3	36.3	12.7	
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	3.2	9.7	0.8	2.7	17.6	0.0	38.0	16.1	37.3	36.3	12.7	
LOS	A	A	A	A	B	A	D	B	D	D	B	
Approach Delay		8.9			16.9			23.0		18.4		
Approach LOS		A			B			C		B		

Intersection Summary
























Cycle Length: 120
 Actuated Cycle Length: 66.3
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 14.1
 Intersection LOS: B
 Intersection Capacity Utilization 69.3%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 12: Havana St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 12: Havana St & E. 160th Ave (SH 7)

2028 Total Traffic
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	710	40	23	880	13	31	8	59	16	16	102
Future Volume (veh/h)	40	710	40	23	880	13	31	8	59	16	16	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	755	43	24	936	14	33	9	63	17	17	109
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	306	1129	957	404	1100	932	250	22	151	212	200	169
Arrive On Green	0.04	0.60	0.60	0.03	0.59	0.59	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1265	202	1414	1328	1870	1585
Grp Volume(v), veh/h	43	755	43	24	936	14	33	0	72	17	17	109
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1265	0	1616	1328	1870	1585
Q Serve(g_s), s	0.5	15.4	0.6	0.3	23.6	0.2	1.4	0.0	2.4	0.7	0.5	3.8
Cycle Q Clear(g_c), s	0.5	15.4	0.6	0.3	23.6	0.2	1.9	0.0	2.4	3.1	0.5	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.88	1.00		1.00
Lane Grp Cap(c), veh/h	306	1129	957	404	1100	932	250	0	173	212	200	169
V/C Ratio(X)	0.14	0.67	0.04	0.06	0.85	0.02	0.13	0.00	0.42	0.08	0.09	0.64
Avail Cap(c_a), veh/h	447	2546	2157	572	2546	2157	557	0	564	534	653	553
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.2	7.5	4.6	6.2	9.7	4.9	23.9	0.0	23.9	25.4	23.1	24.6
Incr Delay (d2), s/veh	0.2	0.7	0.0	0.1	2.0	0.0	0.2	0.0	1.6	0.2	0.2	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.4	0.1	0.1	5.8	0.0	0.4	0.0	0.9	0.2	0.2	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.5	8.2	4.6	6.2	11.7	4.9	24.1	0.0	25.5	25.5	23.3	28.6
LnGrp LOS	A	A	A	A	B	A	C	A	C	C	C	C
Approach Vol, veh/h		841			974			105				143
Approach Delay, s/veh		8.1			11.5			25.1				27.6
Approach LOS		A			B			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	39.6		11.1	7.5	38.7		11.1				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	2.3	17.4		5.8	2.5	25.6		4.4				
Green Ext Time (p_c), s	0.0	5.6		0.3	0.0	8.1		0.3				
Intersection Summary												
HCM 6th Ctrl Delay				11.9								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	747	30	256	863	10	204
Future Vol, veh/h	747	30	256	863	10	204
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	475	475	-	0	85
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	762	31	261	881	10	208

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	793	0	2165
Stage 1	-	-	-	-	762
Stage 2	-	-	-	-	1403
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	828	-	52
Stage 1	-	-	-	-	461
Stage 2	-	-	-	-	227
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	828	-	36
Mov Cap-2 Maneuver	-	-	-	-	141
Stage 1	-	-	-	-	461
Stage 2	-	-	-	-	155

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	32.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	141	-	-	-	828	-
HCM Lane V/C Ratio	0.072	-	-	-	0.315	-
HCM Control Delay (s)	32.5	0	-	-	11.3	-
HCM Lane LOS	D	A	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	-	1.4	-

HCM 6th TWSC
 14: E. 160th Ave (SH 7) & Tuscon St

2028 Total Traffic
 AM Peak Hour

Intersection						
Int Delay, s/veh	16.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	28	959	1129	26	62	40
Future Vol, veh/h	28	959	1129	26	62	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	450	-	-	325	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	1042	1227	28	67	43

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1255	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	554	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	554	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	\$ 359.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	554	-	-	-	39	217
HCM Lane V/C Ratio	0.055	-	-	-	1.728	0.2
HCM Control Delay (s)	11.9	-	-	-	\$ 575.1	25.7
HCM Lane LOS	B	-	-	-	F	D
HCM 95th %tile Q(veh)	0.2	-	-	-	7.1	0.7

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Timings
 14: E. 160th Ave (SH 7) & Tuscon St

2028 Total Traffic
 AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↶	↷	↶	↷
Traffic Volume (vph)	28	959	1129	26	62	40
Future Volume (vph)	28	959	1129	26	62	40
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	10.0	10.0
Minimum Split (s)	10.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	95.0	83.0	83.0	25.0	25.0
Total Split (%)	10.0%	79.2%	69.2%	69.2%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Max	Max	Max	None	None
Act Effect Green (s)	93.0	94.0	87.4	87.4	10.8	10.8
Actuated g/C Ratio	0.84	0.85	0.79	0.79	0.10	0.10
v/c Ratio	0.14	0.66	0.84	0.02	0.39	0.22
Control Delay	3.5	6.6	18.1	2.0	53.8	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.5	6.6	18.1	2.0	53.8	16.6
LOS	A	A	B	A	D	B
Approach Delay		6.5	17.8		39.3	
Approach LOS		A	B		D	

Intersection Summary

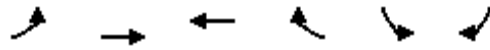
Cycle Length: 120
 Actuated Cycle Length: 110.8
 Natural Cycle: 100
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 13.8
 Intersection LOS: B
 Intersection Capacity Utilization 76.1%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 14: E. 160th Ave (SH 7) & Tuscon St



HCM 6th Signalized Intersection Summary
 14: E. 160th Ave (SH 7) & Tuscon St

2028 Total Traffic
 AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	959	1129	26	62	40
Future Volume (veh/h)	28	959	1129	26	62	40
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	1042	1227	28	67	43
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	232	1535	1399	1185	157	139
Arrive On Green	0.03	0.82	0.75	0.75	0.09	0.09
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	30	1042	1227	28	67	43
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	0.4	24.7	52.7	0.5	3.9	2.8
Cycle Q Clear(g_c), s	0.4	24.7	52.7	0.5	3.9	2.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	232	1535	1399	1185	157	139
V/C Ratio(X)	0.13	0.68	0.88	0.02	0.43	0.31
Avail Cap(c_a), veh/h	298	1535	1399	1185	325	289
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.0	4.0	10.1	3.5	47.4	46.9
Incr Delay (d2), s/veh	0.2	2.4	8.0	0.0	1.8	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	5.0	17.0	0.1	1.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.3	6.4	18.2	3.6	49.2	48.1
LnGrp LOS	B	A	B	A	D	D
Approach Vol, veh/h		1072	1255		110	
Approach Delay, s/veh		6.7	17.8		48.8	
Approach LOS		A	B		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		95.0		14.6	8.0	87.0
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		90.0		20.0	7.0	78.0
Max Q Clear Time (g_c+I1), s		26.7		5.9	2.4	54.7
Green Ext Time (p_c), s		10.2		0.2	0.0	11.2
Intersection Summary						
HCM 6th Ctrl Delay			14.3			
HCM 6th LOS			B			

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	21	8	49	71	2
Future Vol, veh/h	3	21	8	49	71	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	155	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	25	10	59	86	2

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	166	87	88	0	-	0
Stage 1	87	-	-	-	-	-
Stage 2	79	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	824	971	1508	-	-	-
Stage 1	936	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	818	971	1508	-	-	-
Mov Cap-2 Maneuver	818	-	-	-	-	-
Stage 1	929	-	-	-	-	-
Stage 2	944	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1508	-	949	-	-
HCM Lane V/C Ratio	0.006	-	0.03	-	-
HCM Control Delay (s)	7.4	-	8.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	3	39	15	59	93	2
Future Vol, veh/h	3	39	15	59	93	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	49	19	75	118	3

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	233	120	121	0	0
Stage 1	120	-	-	-	-
Stage 2	113	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	755	931	1467	-	-
Stage 1	905	-	-	-	-
Stage 2	912	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	744	931	1467	-	-
Mov Cap-2 Maneuver	744	-	-	-	-
Stage 1	892	-	-	-	-
Stage 2	912	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	1.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1467	-	915	-	-
HCM Lane V/C Ratio	0.013	-	0.058	-	-
HCM Control Delay (s)	7.5	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection												
Int Delay, s/veh	8.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑	↗	↖	↑	↗
Traffic Vol, veh/h	24	0	70	195	0	63	27	27	70	23	13	9
Future Vol, veh/h	24	0	70	195	0	63	27	27	70	23	13	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	250	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	0	82	229	0	74	32	32	82	27	15	11

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	243	247	15	212	176	32	26	0	0	114	0	0
Stage 1	69	69	-	96	96	-	-	-	-	-	-	-
Stage 2	174	178	-	116	80	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	711	655	1065	745	717	1042	1588	-	-	1475	-	-
Stage 1	941	837	-	911	815	-	-	-	-	-	-	-
Stage 2	828	752	-	889	828	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	641	630	1065	668	690	1042	1588	-	-	1475	-	-
Mov Cap-2 Maneuver	641	630	-	668	690	-	-	-	-	-	-	-
Stage 1	922	822	-	893	799	-	-	-	-	-	-	-
Stage 2	754	737	-	805	813	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.3		12.1		1.6		3.8	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1588	-	-	641	1065	668	1042	1475	-	-
HCM Lane V/C Ratio	0.02	-	-	0.044	0.077	0.343	0.071	0.018	-	-
HCM Control Delay (s)	7.3	-	-	10.9	8.7	13.2	8.7	7.5	-	-
HCM Lane LOS	A	-	-	B	A	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.3	1.5	0.2	0.1	-	-

HCM 6th TWSC
 18: Yosemite St & South Site Access

2028 Total Traffic
 AM Peak Hour

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷	↶	↷	↶	↷
Traffic Vol, veh/h	7	0	59	67	0	9	19	108	28	4	272	2
Future Vol, veh/h	7	0	59	67	0	9	19	108	28	4	272	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	250	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	69	79	0	11	22	127	33	5	320	2

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	523	534	320	537	503	127	322	0	0	160	0	0
Stage 1	330	330	-	171	171	-	-	-	-	-	-	-
Stage 2	193	204	-	366	332	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	465	452	721	455	471	923	1238	-	-	1419	-	-
Stage 1	683	646	-	831	757	-	-	-	-	-	-	-
Stage 2	809	733	-	653	644	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	452	442	721	404	461	923	1238	-	-	1419	-	-
Mov Cap-2 Maneuver	452	442	-	404	461	-	-	-	-	-	-	-
Stage 1	671	643	-	816	743	-	-	-	-	-	-	-
Stage 2	786	720	-	588	641	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.8		15.2		1		0.1	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1238	-	-	452	721	404	923	1419	-	-
HCM Lane V/C Ratio	0.018	-	-	0.018	0.096	0.195	0.011	0.003	-	-
HCM Control Delay (s)	8	-	-	13.1	10.5	16.1	8.9	7.5	-	-
HCM Lane LOS	A	-	-	B	B	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.3	0.7	0	0	-	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	1	5	3	150	405	0
Future Vol, veh/h	1	5	3	150	405	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	66	66	66	66	66	66
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	8	5	227	614	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	851	614	614	0	-	0
Stage 1	614	-	-	-	-	-
Stage 2	237	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	330	492	965	-	-	-
Stage 1	540	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	328	492	965	-	-	-
Mov Cap-2 Maneuver	328	-	-	-	-	-
Stage 1	537	-	-	-	-	-
Stage 2	802	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	965	-	454	-	-
HCM Lane V/C Ratio	0.005	-	0.02	-	-
HCM Control Delay (s)	8.7	0	13.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	0	27	11	159	405	0
Future Vol, veh/h	0	27	11	159	405	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	38	15	224	570	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	824	570	570	0	-	0
Stage 1	570	-	-	-	-	-
Stage 2	254	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	343	521	1002	-	-	-
Stage 1	566	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	337	521	1002	-	-	-
Mov Cap-2 Maneuver	337	-	-	-	-	-
Stage 1	556	-	-	-	-	-
Stage 2	788	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.5	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1002	-	521	-	-
HCM Lane V/C Ratio	0.015	-	0.073	-	-
HCM Control Delay (s)	8.6	0	12.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	2	19	0	57	3	47	8	18	25	1
Future Vol, veh/h	3	0	2	19	0	57	3	47	8	18	25	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	2	22	0	65	3	53	9	20	28	1

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	165	137	29	134	133	58	29	0	0	62	0	0
Stage 1	69	69	-	64	64	-	-	-	-	-	-	-
Stage 2	96	68	-	70	69	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	800	754	1046	838	758	1008	1584	-	-	1541	-	-
Stage 1	941	837	-	947	842	-	-	-	-	-	-	-
Stage 2	911	838	-	940	837	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	740	743	1046	826	747	1008	1584	-	-	1541	-	-
Mov Cap-2 Maneuver	740	743	-	826	747	-	-	-	-	-	-	-
Stage 1	939	826	-	945	840	-	-	-	-	-	-	-
Stage 2	851	836	-	926	826	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.3		9.1		0.4		3	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1584	-	-	838	955	1541	-
HCM Lane V/C Ratio	0.002	-	-	0.007	0.09	0.013	-
HCM Control Delay (s)	7.3	0	-	9.3	9.1	7.4	0
HCM Lane LOS	A	A	-	A	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0	-

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	4	52	0	33	3	25	23	12	34	0
Future Vol, veh/h	0	0	4	52	0	33	3	25	23	12	34	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	85	73	85	85	85	73	73	85	85	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	5	61	0	39	4	34	27	14	47	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	150	144	47	134	131	48	47	0	0	61	0	0
Stage 1	75	75	-	56	56	-	-	-	-	-	-	-
Stage 2	75	69	-	78	75	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	818	747	1022	838	760	1021	1560	-	-	1542	-	-
Stage 1	934	833	-	956	848	-	-	-	-	-	-	-
Stage 2	934	837	-	931	833	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	780	738	1022	826	751	1021	1560	-	-	1542	-	-
Mov Cap-2 Maneuver	780	738	-	826	751	-	-	-	-	-	-	-
Stage 1	931	826	-	953	845	-	-	-	-	-	-	-
Stage 2	896	834	-	918	826	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.5		9.5		0.5		1.7	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1560	-	-	1022	892	1542	-
HCM Lane V/C Ratio	0.003	-	-	0.005	0.112	0.009	-
HCM Control Delay (s)	7.3	0	-	8.5	9.5	7.4	0
HCM Lane LOS	A	A	-	A	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	8	435	252	14	12	3
Future Vol, veh/h	8	435	252	14	12	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	518	300	17	14	4

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	317	0	-	0	847 309
Stage 1	-	-	-	-	309 -
Stage 2	-	-	-	-	538 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1243	-	-	-	332 731
Stage 1	-	-	-	-	745 -
Stage 2	-	-	-	-	585 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1243	-	-	-	328 731
Mov Cap-2 Maneuver	-	-	-	-	328 -
Stage 1	-	-	-	-	737 -
Stage 2	-	-	-	-	585 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1243	-	-	-	369
HCM Lane V/C Ratio	0.008	-	-	-	0.048
HCM Control Delay (s)	7.9	0	-	-	15.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	421	25	58	262	5	78
Future Vol, veh/h	421	25	58	262	5	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	495	29	68	308	6	92

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	524	0	954
Stage 1	-	-	-	-	510
Stage 2	-	-	-	-	444
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1043	-	287
Stage 1	-	-	-	-	603
Stage 2	-	-	-	-	646
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1043	-	268
Mov Cap-2 Maneuver	-	-	-	-	268
Stage 1	-	-	-	-	603
Stage 2	-	-	-	-	604

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	268	563	-	-	1043	-
HCM Lane V/C Ratio	0.022	0.163	-	-	0.065	-
HCM Control Delay (s)	18.7	12.6	-	-	8.7	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.6	-	-	0.2	-

Intersection						
Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	433	54	3	261	37	3
Future Vol, veh/h	433	54	3	261	37	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	250	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	509	64	4	307	44	4

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	573	0	824	509
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	315	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1000	-	343	564
Stage 1	-	-	-	-	604	-
Stage 2	-	-	-	-	740	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1000	-	342	564
Mov Cap-2 Maneuver	-	-	-	-	342	-
Stage 1	-	-	-	-	604	-
Stage 2	-	-	-	-	737	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	342	564	-	-	1000	-
HCM Lane V/C Ratio	0.127	0.006	-	-	0.004	-
HCM Control Delay (s)	17.1	11.4	-	-	8.6	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑	↗	↙	↑	↗	↙	↗		↙	↗	
Traffic Vol, veh/h	42	309	84	43	174	30	50	4	28	33	6	39
Future Vol, veh/h	42	309	84	43	174	30	50	4	28	33	6	39
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	250	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	85	85	89	89	85	85	85	89	85	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	47	347	99	51	196	34	59	5	33	37	7	44

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	230	0	0	446	0	0	782	773	347	808	838	196
Stage 1	-	-	-	-	-	-	441	441	-	298	298	-
Stage 2	-	-	-	-	-	-	341	332	-	510	540	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1338	-	-	1114	-	-	312	330	696	299	302	845
Stage 1	-	-	-	-	-	-	595	577	-	711	667	-
Stage 2	-	-	-	-	-	-	674	644	-	546	521	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1338	-	-	1114	-	-	273	304	696	264	278	845
Mov Cap-2 Maneuver	-	-	-	-	-	-	273	304	-	264	278	-
Stage 1	-	-	-	-	-	-	574	557	-	686	636	-
Stage 2	-	-	-	-	-	-	603	614	-	498	503	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			1.5			17.7			15.1		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	273	599	1338	-	-	1114	-	-	264	659
HCM Lane V/C Ratio	0.215	0.063	0.035	-	-	0.045	-	-	0.14	0.077
HCM Control Delay (s)	21.8	11.4	7.8	-	-	8.4	-	-	20.9	10.9
HCM Lane LOS	C	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.8	0.2	0.1	-	-	0.1	-	-	0.5	0.2

HCM 6th TWSC
6: East Remington Access & E. 168th Ave

2028 Total Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	↙
Traffic Vol, veh/h	351	19	59	233	14	39
Future Vol, veh/h	351	19	59	233	14	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	250	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	413	22	69	274	16	46

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	435	0	825 413
Stage 1	-	-	-	-	413 -
Stage 2	-	-	-	-	412 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1125	-	342 639
Stage 1	-	-	-	-	668 -
Stage 2	-	-	-	-	669 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1125	-	321 639
Mov Cap-2 Maneuver	-	-	-	-	321 -
Stage 1	-	-	-	-	668 -
Stage 2	-	-	-	-	628 -

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	506	-	-	1125	-
HCM Lane V/C Ratio	0.123	-	-	0.062	-
HCM Control Delay (s)	13.1	-	-	8.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Intersection						
Int Delay, s/veh	2.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	361	39	82	297	23	53
Future Vol, veh/h	361	39	82	297	23	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	170	250	-	0	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	415	45	94	341	26	61

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	460	0	944
Stage 1	-	-	-	-	415
Stage 2	-	-	-	-	529
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1101	-	291
Stage 1	-	-	-	-	666
Stage 2	-	-	-	-	591
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1101	-	266
Mov Cap-2 Maneuver	-	-	-	-	266
Stage 1	-	-	-	-	666
Stage 2	-	-	-	-	541

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	266	637	-	-	1101	-
HCM Lane V/C Ratio	0.099	0.096	-	-	0.086	-
HCM Control Delay (s)	20	11.2	-	-	8.6	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.3	-	-	0.3	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	403	361	9	3	1
Future Vol, veh/h	2	403	361	9	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	433	388	10	3	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	398	0	-	0	830 393
Stage 1	-	-	-	-	393 -
Stage 2	-	-	-	-	437 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1161	-	-	-	340 656
Stage 1	-	-	-	-	682 -
Stage 2	-	-	-	-	651 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1161	-	-	-	339 656
Mov Cap-2 Maneuver	-	-	-	-	339 -
Stage 1	-	-	-	-	681 -
Stage 2	-	-	-	-	651 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1161	-	-	-	386
HCM Lane V/C Ratio	0.002	-	-	-	0.011
HCM Control Delay (s)	8.1	0	-	-	14.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	1.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	362	44	16	314	56	35
Future Vol, veh/h	362	44	16	314	56	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	385	47	17	334	60	37

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	432	0	753	385
Stage 1	-	-	-	-	385	-
Stage 2	-	-	-	-	368	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1128	-	377	663
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	700	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1128	-	370	663
Mov Cap-2 Maneuver	-	-	-	-	370	-
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	687	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	15.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	446	-	-	1128	-
HCM Lane V/C Ratio	0.217	-	-	0.015	-
HCM Control Delay (s)	15.3	-	-	8.2	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0	-

Timings
10: Quebec St & E. 160th Ave (SH 7)

2028 Total Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	1163	131	110	816	11	151	110	136	19	64	38
Future Volume (vph)	53	1163	131	110	816	11	151	110	136	19	64	38
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	12.0	71.0	71.0	12.0	71.0	71.0	12.0	25.0	25.0	12.0	25.0	25.0
Total Split (%)	10.0%	59.2%	59.2%	10.0%	59.2%	59.2%	10.0%	20.8%	20.8%	10.0%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	6.8	66.1	66.1	7.0	68.6	68.6	7.0	18.4	18.4	6.4	11.0	11.0
Actuated g/C Ratio	0.06	0.59	0.59	0.06	0.62	0.62	0.06	0.17	0.17	0.06	0.10	0.10
v/c Ratio	0.54	1.14	0.14	1.08	0.77	0.01	1.48	0.39	0.38	0.21	0.38	0.16
Control Delay	70.6	98.9	2.7	158.3	23.4	0.0	293.0	47.1	10.4	56.4	52.3	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.6	98.9	2.7	158.3	23.4	0.0	293.0	47.1	10.4	56.4	52.3	1.4
LOS	E	F	A	F	C	A	F	D	B	E	D	A
Approach Delay		88.5			39.0			127.9			37.1	
Approach LOS		F			D			F			D	

Intersection Summary

























Cycle Length: 120
 Actuated Cycle Length: 111.1
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.48
 Intersection Signal Delay: 75.3
 Intersection LOS: E
 Intersection Capacity Utilization 94.8%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 10: Quebec St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 10: Quebec St & E. 160th Ave (SH 7)

2028 Total Traffic
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	1163	131	110	816	11	151	110	136	19	64	38
Future Volume (veh/h)	53	1163	131	110	816	11	151	110	136	19	64	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	58	1264	142	120	887	12	164	120	148	21	70	41
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	75	1145	970	116	1188	1007	116	216	183	39	135	115
Arrive On Green	0.04	0.61	0.61	0.06	0.64	0.64	0.06	0.12	0.12	0.02	0.07	0.07
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	58	1264	142	120	887	12	164	120	148	21	70	41
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.5	66.0	4.1	7.0	35.5	0.3	7.0	6.5	9.8	1.3	3.9	2.7
Cycle Q Clear(g_c), s	3.5	66.0	4.1	7.0	35.5	0.3	7.0	6.5	9.8	1.3	3.9	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	75	1145	970	116	1188	1007	116	216	183	39	135	115
V/C Ratio(X)	0.78	1.10	0.15	1.04	0.75	0.01	1.42	0.55	0.81	0.54	0.52	0.36
Avail Cap(c_a), veh/h	116	1145	970	116	1188	1007	116	347	294	116	347	294
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.1	20.9	8.9	50.4	13.6	7.2	50.4	45.0	46.5	52.2	48.2	47.6
Incr Delay (d2), s/veh	15.8	59.8	0.1	94.1	2.6	0.0	231.0	2.2	8.3	11.4	3.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	42.2	1.3	6.0	12.9	0.1	10.5	3.1	4.2	0.7	1.9	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.9	80.7	9.0	144.5	16.3	7.2	281.4	47.3	54.8	63.6	51.2	49.5
LnGrp LOS	E	F	A	F	B	A	F	D	D	E	D	D
Approach Vol, veh/h		1464			1019			432			132	
Approach Delay, s/veh		73.2			31.3			138.7			52.7	
Approach LOS		E			C			F			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	71.0	12.0	12.8	9.5	73.5	7.3	17.5				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	66.0	7.0	20.0	7.0	66.0	7.0	20.0				
Max Q Clear Time (g_c+I1), s	9.0	68.0	9.0	5.9	5.5	37.5	3.3	11.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.3	0.0	6.7	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay				67.6								
HCM 6th LOS				E								

Timings

2028 Total Traffic

10: Quebec St & E. 160th Ave (SH 7) W/ 2 EB/WB TH

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	1163	131	110	816	11	151	110	136	19	64	38
Future Volume (vph)	53	1163	131	110	816	11	151	110	136	19	64	38
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	12.0	66.0	66.0	12.0	66.0	66.0	17.0	30.0	30.0	12.0	25.0	25.0
Total Split (%)	10.0%	55.0%	55.0%	10.0%	55.0%	55.0%	14.2%	25.0%	25.0%	10.0%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	6.8	40.4	40.4	7.1	43.3	43.3	12.1	22.0	22.0	6.4	9.0	9.0
Actuated g/C Ratio	0.08	0.45	0.45	0.08	0.49	0.49	0.14	0.25	0.25	0.07	0.10	0.10
v/c Ratio	0.43	0.79	0.18	0.85	0.52	0.01	0.68	0.26	0.29	0.17	0.37	0.16
Control Delay	53.8	24.5	2.9	89.5	17.5	0.0	55.6	34.2	8.4	47.1	46.2	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	24.5	2.9	89.5	17.5	0.0	55.6	34.2	8.4	47.1	46.2	1.3
LOS	D	C	A	F	B	A	E	C	A	D	D	A
Approach Delay		23.6			25.8			33.5			32.4	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 89	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 65.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 10: Quebec St & E. 160th Ave (SH 7) W/ 2 EB/WB TH



HCM 6th Signalized Intersection Summary
 10: Quebec St & E. 160th Ave (SH 7) W/ 2 EB/WB TH

2028 Total Traffic
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↘	↘	↑↑	↘	↘	↑	↘	↘	↑	↘
Traffic Volume (veh/h)	53	1163	131	110	816	11	151	110	136	19	64	38
Future Volume (veh/h)	53	1163	131	110	816	11	151	110	136	19	64	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	58	1264	142	120	887	12	164	120	148	21	70	41
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	1665	743	152	1802	804	203	295	250	42	125	106
Arrive On Green	0.05	0.47	0.47	0.09	0.51	0.51	0.11	0.16	0.16	0.02	0.07	0.07
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	58	1264	142	120	887	12	164	120	148	21	70	41
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.4	22.1	3.9	5.0	12.4	0.3	6.8	4.4	6.5	0.9	2.7	1.9
Cycle Q Clear(g_c), s	2.4	22.1	3.9	5.0	12.4	0.3	6.8	4.4	6.5	0.9	2.7	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	83	1665	743	152	1802	804	203	295	250	42	125	106
V/C Ratio(X)	0.70	0.76	0.19	0.79	0.49	0.01	0.81	0.41	0.59	0.50	0.56	0.39
Avail Cap(c_a), veh/h	165	2874	1282	165	2874	1282	283	620	525	165	496	420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.4	16.5	11.7	33.9	12.2	9.2	32.6	28.6	29.5	36.4	34.1	33.7
Incr Delay (d2), s/veh	10.1	0.7	0.1	21.0	0.2	0.0	11.1	0.9	2.2	8.9	3.8	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	7.4	1.2	2.9	3.9	0.1	3.4	1.9	2.5	0.5	1.3	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.5	17.3	11.8	54.9	12.4	9.2	43.7	29.5	31.8	45.3	37.9	36.0
LnGrp LOS	D	B	B	D	B	A	D	C	C	D	D	D
Approach Vol, veh/h		1464			1019			432			132	
Approach Delay, s/veh		17.9			17.4			35.7			38.5	
Approach LOS		B			B			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.4	40.3	13.6	10.1	8.5	43.2	6.8	16.9				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	61.0	12.0	20.0	7.0	61.0	7.0	25.0				
Max Q Clear Time (g_c+I1), s	7.0	24.1	8.8	4.7	4.4	14.4	2.9	8.5				
Green Ext Time (p_c), s	0.0	11.2	0.1	0.3	0.0	6.5	0.0	0.9				
Intersection Summary												
HCM 6th Ctrl Delay				21.1								
HCM 6th LOS				C								

Timings
11: Yosemite St & E. 160th Ave (SH 7)

2028 Total Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	234	1042	53	47	786	203	42	45	128	30	142	
Future Volume (vph)	234	1042	53	47	786	203	42	45	128	30	142	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	
Protected Phases	5	2		1	6			8		4		
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0	25.0	
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%	20.8%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min	Min	
Act Effect Green (s)	67.9	62.8	62.8	64.6	58.0	58.0	15.4	15.4	15.4	15.4	15.4	
Actuated g/C Ratio	0.70	0.64	0.64	0.66	0.59	0.59	0.16	0.16	0.16	0.16	0.16	
v/c Ratio	0.67	0.90	0.05	0.24	0.73	0.20	0.20	0.31	0.65	0.11	0.39	
Control Delay	15.0	27.2	1.6	6.7	17.7	1.6	44.0	30.6	59.4	42.0	10.8	
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	15.0	27.2	1.6	6.7	17.7	1.6	44.0	30.6	59.4	42.0	10.8	
LOS	B	C	A	A	B	A	D	C	E	D	B	
Approach Delay		24.0			14.1			34.8		34.7		
Approach LOS		C			B			C		C		

Intersection Summary
























Cycle Length: 120
 Actuated Cycle Length: 97.5
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 22.0
 Intersection LOS: C
 Intersection Capacity Utilization 85.3%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 11: Yosemite St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 11: Yosemite St & E. 160th Ave (SH 7)

2028 Total Traffic
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	1042	53	47	786	203	42	45	48	128	30	142
Future Volume (veh/h)	234	1042	53	47	786	203	42	45	48	128	30	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	241	1074	0	48	810	209	43	46	49	132	31	146
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	363	1172		211	1106	938	270	144	153	240	324	275
Arrive On Green	0.07	0.63	0.00	0.04	0.59	0.59	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1207	829	883	1301	1870	1585
Grp Volume(v), veh/h	241	1074	0	48	810	209	43	0	95	132	31	146
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1207	0	1711	1301	1870	1585
Q Serve(g_s), s	4.8	46.7	0.0	1.0	29.0	5.8	2.9	0.0	4.5	9.2	1.3	7.8
Cycle Q Clear(g_c), s	4.8	46.7	0.0	1.0	29.0	5.8	4.2	0.0	4.5	13.7	1.3	7.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.52	1.00		1.00
Lane Grp Cap(c), veh/h	363	1172		211	1106	938	270	0	297	240	324	275
V/C Ratio(X)	0.66	0.92		0.23	0.73	0.22	0.16	0.00	0.32	0.55	0.10	0.53
Avail Cap(c_a), veh/h	366	1571		277	1571	1331	321	0	369	294	403	341
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.1	15.2	0.0	17.7	13.7	8.9	34.0	0.0	33.6	39.6	32.3	34.9
Incr Delay (d2), s/veh	4.4	7.1	0.0	0.5	1.1	0.1	0.3	0.0	0.6	2.0	0.1	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	17.1	0.0	0.5	10.0	1.7	0.8	0.0	1.9	3.0	0.6	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.5	22.3	0.0	18.3	14.7	9.0	34.3	0.0	34.2	41.5	32.4	36.5
LnGrp LOS	B	C		B	B	A	C	A	C	D	C	D
Approach Vol, veh/h		1315			1067			138			309	
Approach Delay, s/veh		21.6			13.8			34.2			38.3	
Approach LOS		C			B			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.6	63.2		21.1	11.8	59.9		21.1				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	3.0	48.7		15.7	6.8	31.0		6.5				
Green Ext Time (p_c), s	0.0	9.5		0.4	0.0	7.0		0.4				

Intersection Summary

HCM 6th Ctrl Delay	21.1
HCM 6th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Timings
12: Havana St & E. 160th Ave (SH 7)

2028 Total Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	117	1060	56	107	949	30	43	19	9	13	62	
Future Volume (vph)	117	1060	56	107	949	30	43	19	9	13	62	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	
Protected Phases	5	2		1	6			8		4		
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0	25.0	
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%	20.8%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min	Min	
Act Effct Green (s)	63.5	58.2	58.2	61.1	54.3	54.3	8.7	8.7	8.7	8.7	8.7	
Actuated g/C Ratio	0.73	0.67	0.67	0.71	0.63	0.63	0.10	0.10	0.10	0.10	0.10	
v/c Ratio	0.37	0.85	0.05	0.41	0.82	0.03	0.31	0.31	0.07	0.07	0.29	
Control Delay	5.9	19.9	1.3	7.7	18.2	0.3	48.7	23.6	44.3	43.8	15.3	
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	5.9	19.9	1.3	7.7	18.2	0.3	48.7	23.6	44.3	43.8	15.3	
LOS	A	B	A	A	B	A	D	C	D	D	B	
Approach Delay		17.7			16.7			33.6		22.7		
Approach LOS		B			B			C		C		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 86.4
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 18.1
 Intersection LOS: B
 Intersection Capacity Utilization 83.3%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 12: Havana St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 12: Havana St & E. 160th Ave (SH 7)

2028 Total Traffic
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	1060	56	107	949	30	43	19	46	9	13	62
Future Volume (veh/h)	117	1060	56	107	949	30	43	19	46	9	13	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	118	1071	57	108	959	30	43	19	46	9	13	63
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	1215	1029	303	1212	1027	193	36	88	152	141	119
Arrive On Green	0.06	0.65	0.65	0.06	0.65	0.65	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1323	485	1174	1337	1870	1585
Grp Volume(v), veh/h	118	1071	57	108	959	30	43	0	65	9	13	63
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1323	0	1659	1337	1870	1585
Q Serve(g_s), s	1.4	33.1	0.9	1.3	26.1	0.5	2.2	0.0	2.7	0.5	0.5	2.7
Cycle Q Clear(g_c), s	1.4	33.1	0.9	1.3	26.1	0.5	2.7	0.0	2.7	3.1	0.5	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.71	1.00		1.00
Lane Grp Cap(c), veh/h	374	1215	1029	303	1212	1027	193	0	125	152	141	119
V/C Ratio(X)	0.32	0.88	0.06	0.36	0.79	0.03	0.22	0.00	0.52	0.06	0.09	0.53
Avail Cap(c_a), veh/h	437	2072	1756	369	2072	1756	470	0	471	432	531	450
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.2	10.1	4.5	13.0	9.0	4.4	31.6	0.0	31.3	32.8	30.3	31.4
Incr Delay (d2), s/veh	0.5	2.6	0.0	0.7	1.2	0.0	0.6	0.0	3.3	0.2	0.3	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	8.5	0.2	0.8	6.5	0.1	0.7	0.0	1.1	0.1	0.2	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.7	12.7	4.5	13.7	10.2	4.5	32.1	0.0	34.7	33.0	30.6	35.0
LnGrp LOS	A	B	A	B	B	A	C	A	C	C	C	C
Approach Vol, veh/h		1246			1097			108				85
Approach Delay, s/veh		12.0			10.4			33.7				34.1
Approach LOS		B			B			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.4	50.7		10.3	9.5	50.6		10.3				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	3.3	35.1		5.1	3.4	28.1		4.7				
Green Ext Time (p_c), s	0.1	10.7		0.2	0.1	8.5		0.3				

Intersection Summary

HCM 6th Ctrl Delay	13.0
HCM 6th LOS	B

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	1059	19	192	1089	19	320
Future Vol, veh/h	1059	19	192	1089	19	320
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	475	475	-	0	85
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1070	19	194	1100	19	323

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1089	0	2558
Stage 1	-	-	-	-	1070
Stage 2	-	-	-	-	1488
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	641	-	29
Stage 1	-	-	-	-	329
Stage 2	-	-	-	-	207
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	641	-	20
Mov Cap-2 Maneuver	-	-	-	-	125
Stage 1	-	-	-	-	329
Stage 2	-	-	-	-	144

Approach	EB	WB	NB
HCM Control Delay, s	0	2	39
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	125	-	-	-	641	-
HCM Lane V/C Ratio	0.154	-	-	-	0.303	-
HCM Control Delay (s)	39	0	-	-	13	-
HCM Lane LOS	E	A	-	-	B	-
HCM 95th %tile Q(veh)	0.5	-	-	-	1.3	-

HCM 6th TWSC
 14: E. 160th Ave (SH 7) & Tuscon St

2028 Total Traffic
 PM Peak Hour

Intersection						
Int Delay, s/veh	15					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	47	1293	1216	67	43	26
Future Vol, veh/h	47	1293	1216	67	43	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	450	-	-	325	0	200
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	1347	1267	70	45	27

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1337	0	0 2712 1267
Stage 1	-	-	- 1267 -
Stage 2	-	-	- 1445 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	516	-	- ~ 23 206
Stage 1	-	-	- 265 -
Stage 2	-	-	- 217 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	516	-	- ~ 21 206
Mov Cap-2 Maneuver	-	-	- ~ 21 -
Stage 1	-	-	- 240 -
Stage 2	-	-	- 217 -

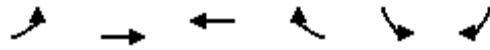
Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	\$ 576.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	516	-	-	-	21	206
HCM Lane V/C Ratio	0.095	-	-	-	2.133	0.131
HCM Control Delay (s)	12.7	-	-	-	\$ 910.4	25.1
HCM Lane LOS	B	-	-	-	F	D
HCM 95th %tile Q(veh)	0.3	-	-	-	5.8	0.4

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Timings
 14: E. 160th Ave (SH 7) & Tuscon St

2028 Total Traffic
 PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↑	↗	↖	↗
Traffic Volume (vph)	47	1293	1216	67	43	26
Future Volume (vph)	47	1293	1216	67	43	26
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	10.0	10.0
Minimum Split (s)	10.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	95.0	83.0	83.0	25.0	25.0
Total Split (%)	10.0%	79.2%	69.2%	69.2%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Max	Max	Max	None	None
Act Effect Green (s)	93.0	94.0	85.0	85.0	10.2	10.2
Actuated g/C Ratio	0.84	0.85	0.77	0.77	0.09	0.09
v/c Ratio	0.27	0.85	0.88	0.06	0.28	0.16
Control Delay	5.5	13.2	22.1	1.5	51.2	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	13.2	22.1	1.5	51.2	19.0
LOS	A	B	C	A	D	B
Approach Delay		13.0	21.1		39.1	
Approach LOS		B	C		D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 110.2
 Natural Cycle: 100
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 17.5
 Intersection LOS: B
 Intersection Capacity Utilization 84.7%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 14: E. 160th Ave (SH 7) & Tuscon St



HCM 6th Signalized Intersection Summary
 14: E. 160th Ave (SH 7) & Tuscon St

2028 Total Traffic
 PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	47	1293	1216	67	43	26
Future Volume (veh/h)	47	1293	1216	67	43	26
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	1347	1267	70	45	27
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	215	1546	1394	1181	145	129
Arrive On Green	0.04	0.83	0.75	0.75	0.08	0.08
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	49	1347	1267	70	45	27
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	0.6	48.6	58.2	1.3	2.6	1.7
Cycle Q Clear(g_c), s	0.6	48.6	58.2	1.3	2.6	1.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	215	1546	1394	1181	145	129
V/C Ratio(X)	0.23	0.87	0.91	0.06	0.31	0.21
Avail Cap(c_a), veh/h	267	1546	1394	1181	327	291
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	5.8	10.9	3.7	47.1	46.7
Incr Delay (d2), s/veh	0.5	7.0	10.3	0.1	1.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	10.0	19.4	0.3	1.2	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.7	12.9	21.2	3.8	48.3	47.5
LnGrp LOS	C	B	C	A	D	D
Approach Vol, veh/h		1396	1337		72	
Approach Delay, s/veh		13.2	20.3		48.0	
Approach LOS		B	C		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		95.0		13.9	8.9	86.1
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		90.0		20.0	7.0	78.0
Max Q Clear Time (g_c+I1), s		50.6		4.6	2.6	60.2
Green Ext Time (p_c), s		17.8		0.1	0.0	10.2
Intersection Summary						
HCM 6th Ctrl Delay			17.5			
HCM 6th LOS			B			

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	20	108	83	1
Future Vol, veh/h	0	8	20	108	83	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	155	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	23	124	95	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	266	96	96	0	-	0
Stage 1	96	-	-	-	-	-
Stage 2	170	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	723	960	1498	-	-	-
Stage 1	928	-	-	-	-	-
Stage 2	860	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	712	960	1498	-	-	-
Mov Cap-2 Maneuver	712	-	-	-	-	-
Stage 1	914	-	-	-	-	-
Stage 2	860	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1498	-	960	-	-
HCM Lane V/C Ratio	0.015	-	0.01	-	-
HCM Control Delay (s)	7.4	-	8.8	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	1	18	26	128	87	5
Future Vol, veh/h	1	18	26	128	87	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	21	30	147	100	6

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	310	103	106	0	0
Stage 1	103	-	-	-	-
Stage 2	207	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	682	952	1485	-	-
Stage 1	921	-	-	-	-
Stage 2	828	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	667	952	1485	-	-
Mov Cap-2 Maneuver	667	-	-	-	-
Stage 1	901	-	-	-	-
Stage 2	828	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	1.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1485	-	931	-	-
HCM Lane V/C Ratio	0.02	-	0.023	-	-
HCM Control Delay (s)	7.5	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

HCM 6th TWSC
 17: Yosemite St & North Site Access

2028 Total Traffic
 PM Peak Hour

Intersection												
Int Delay, s/veh	6.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↶	↶	↶	↶	↶
Traffic Vol, veh/h	16	0	50	132	0	43	78	23	222	72	34	27
Future Vol, veh/h	16	0	50	132	0	43	78	23	222	72	34	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	250	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	0	59	155	0	51	92	27	261	85	40	32

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	577	682	40	467	453	27	72	0	0	288	0	0
Stage 1	210	210	-	211	211	-	-	-	-	-	-	-
Stage 2	367	472	-	256	242	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	428	372	1031	506	503	1048	1528	-	-	1274	-	-
Stage 1	792	728	-	791	728	-	-	-	-	-	-	-
Stage 2	653	559	-	749	705	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	369	326	1031	432	441	1048	1528	-	-	1274	-	-
Mov Cap-2 Maneuver	369	326	-	432	441	-	-	-	-	-	-	-
Stage 1	744	679	-	744	684	-	-	-	-	-	-	-
Stage 2	584	525	-	659	658	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.3		15.6		1.8		4.3	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1528	-	-	369	1031	432	1048	1274	-	-
HCM Lane V/C Ratio	0.06	-	-	0.051	0.057	0.359	0.048	0.066	-	-
HCM Control Delay (s)	7.5	-	-	15.3	8.7	17.9	8.6	8	-	-
HCM Lane LOS	A	-	-	C	A	C	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0.2	1.6	0.2	0.2	-	-

HCM 6th TWSC
 18: Yosemite St & South Site Access

2028 Total Traffic
 PM Peak Hour

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↶	↶	↶	↶	↶
Traffic Vol, veh/h	5	0	38	48	0	7	64	313	70	9	199	8
Future Vol, veh/h	5	0	38	48	0	7	64	313	70	9	199	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	250	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	0	45	56	0	8	75	368	82	11	234	9

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	819	856	234	801	783	368	243	0	0	450	0	0
Stage 1	256	256	-	518	518	-	-	-	-	-	-	-
Stage 2	563	600	-	283	265	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	294	295	805	303	325	677	1323	-	-	1110	-	-
Stage 1	749	696	-	541	533	-	-	-	-	-	-	-
Stage 2	511	490	-	724	689	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	276	276	805	272	304	677	1323	-	-	1110	-	-
Mov Cap-2 Maneuver	276	276	-	272	304	-	-	-	-	-	-	-
Stage 1	706	689	-	510	503	-	-	-	-	-	-	-
Stage 2	476	462	-	677	682	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.7		20.3		1.1		0.3	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1323	-	-	276	805	272	677	1110	-	-
HCM Lane V/C Ratio	0.057	-	-	0.021	0.056	0.208	0.012	0.01	-	-
HCM Control Delay (s)	7.9	-	-	18.3	9.7	21.7	10.4	8.3	-	-
HCM Lane LOS	A	-	-	C	A	C	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	0.2	0.8	0	0	-	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	0	3	5	451	291	3
Future Vol, veh/h	0	3	5	451	291	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	6	543	351	4

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	908	353	355	0	-	0
Stage 1	353	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	306	691	1204	-	-	-
Stage 1	711	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	304	691	1204	-	-	-
Mov Cap-2 Maneuver	304	-	-	-	-	-
Stage 1	706	-	-	-	-	-
Stage 2	575	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1204	-	691	-	-
HCM Lane V/C Ratio	0.005	-	0.005	-	-
HCM Control Delay (s)	8	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	1	14	24	450	292	1
Future Vol, veh/h	1	14	24	450	292	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	16	28	523	340	1

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	920	341	341	0	0
Stage 1	341	-	-	-	-
Stage 2	579	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	301	701	1218	-	-
Stage 1	720	-	-	-	-
Stage 2	560	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	291	701	1218	-	-
Mov Cap-2 Maneuver	291	-	-	-	-
Stage 1	697	-	-	-	-
Stage 2	560	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1218	-	641	-	-
HCM Lane V/C Ratio	0.023	-	0.027	-	-
HCM Control Delay (s)	8	0	10.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	2	13	0	38	2	37	25	60	57	4
Future Vol, veh/h	1	0	2	13	0	38	2	37	25	60	57	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	3	19	0	57	3	55	37	90	85	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	376	366	88	350	351	74	91	0	0	92	0	0
Stage 1	268	268	-	80	80	-	-	-	-	-	-	-
Stage 2	108	98	-	270	271	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	581	562	970	605	573	988	1504	-	-	1503	-	-
Stage 1	738	687	-	929	828	-	-	-	-	-	-	-
Stage 2	897	814	-	736	685	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	521	525	970	573	536	988	1504	-	-	1503	-	-
Mov Cap-2 Maneuver	521	525	-	573	536	-	-	-	-	-	-	-
Stage 1	737	644	-	927	826	-	-	-	-	-	-	-
Stage 2	844	812	-	688	642	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.8		9.8		0.2		3.7	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1504	-	-	754	834	1503	-	-
HCM Lane V/C Ratio	0.002	-	-	0.006	0.091	0.06	-	-
HCM Control Delay (s)	7.4	0	-	9.8	9.8	7.5	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0.2	-	-

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	4	36	0	24	7	38	63	27	41	4
Future Vol, veh/h	2	0	4	36	0	24	7	38	63	27	41	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	85	63	85	85	85	63	63	85	85	63	63
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	6	42	0	28	11	60	74	32	65	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	265	288	68	254	254	97	71	0	0	134	0	0
Stage 1	132	132	-	119	119	-	-	-	-	-	-	-
Stage 2	133	156	-	135	135	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	688	622	995	699	650	959	1529	-	-	1451	-	-
Stage 1	871	787	-	885	797	-	-	-	-	-	-	-
Stage 2	870	769	-	868	785	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	652	603	995	678	630	959	1529	-	-	1451	-	-
Mov Cap-2 Maneuver	652	603	-	678	630	-	-	-	-	-	-	-
Stage 1	864	769	-	878	791	-	-	-	-	-	-	-
Stage 2	838	763	-	843	767	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB			
HCM Control Delay, s	9.3		10.2		0.6		2.3			
HCM LOS	A		B							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1529	-	-	847	768	1451	-
HCM Lane V/C Ratio	0.007	-	-	0.011	0.092	0.022	-
HCM Control Delay (s)	7.4	0	-	9.3	10.2	7.5	0
HCM Lane LOS	A	A	-	A	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0.1	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	176	235	2	7	7
Future Vol, veh/h	4	176	235	2	7	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	187	250	2	7	7

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	252	0	-	0	353
Stage 1	-	-	-	-	251
Stage 2	-	-	-	-	102
Critical Hdwy	4.14	-	-	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	2.22	-	-	-	3.52
Pot Cap-1 Maneuver	1310	-	-	-	618
Stage 1	-	-	-	-	768
Stage 2	-	-	-	-	911
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1310	-	-	-	616
Mov Cap-2 Maneuver	-	-	-	-	616
Stage 1	-	-	-	-	766
Stage 2	-	-	-	-	911

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1310	-	-	-	732
HCM Lane V/C Ratio	0.003	-	-	-	0.02
HCM Control Delay (s)	7.8	-	-	-	10
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	163	20	38	228	9	18
Future Vol, veh/h	163	20	38	228	9	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	250	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	173	21	40	243	10	19

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	194	0	375
Stage 1	-	-	-	-	173
Stage 2	-	-	-	-	202
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1377	-	599
Stage 1	-	-	-	-	840
Stage 2	-	-	-	-	812
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1377	-	582
Mov Cap-2 Maneuver	-	-	-	-	582
Stage 1	-	-	-	-	840
Stage 2	-	-	-	-	788

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	582	954	-	-	1377	-
HCM Lane V/C Ratio	0.016	0.02	-	-	0.029	-
HCM Control Delay (s)	11.3	8.9	-	-	7.7	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.1	-

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑	↗	↙	↗		↙	↗	
Traffic Vol, veh/h	25	166	5	2	274	27	10	0	1	27	0	34
Future Vol, veh/h	25	166	5	2	274	27	10	0	1	27	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	250	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	177	5	2	291	29	11	0	1	29	0	36

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	320	0	0	182	0	0	381	555	89	438	531	146
Stage 1	-	-	-	-	-	-	231	231	-	295	295	-
Stage 2	-	-	-	-	-	-	150	324	-	143	236	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1237	-	-	1391	-	-	552	438	951	502	452	875
Stage 1	-	-	-	-	-	-	751	712	-	689	668	-
Stage 2	-	-	-	-	-	-	837	648	-	845	708	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1237	-	-	1391	-	-	520	428	951	492	442	875
Mov Cap-2 Maneuver	-	-	-	-	-	-	520	428	-	492	442	-
Stage 1	-	-	-	-	-	-	734	696	-	674	667	-
Stage 2	-	-	-	-	-	-	801	647	-	826	692	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			0.1			11.8			10.8		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	520	951	1237	-	-	1391	-	-	492	875
HCM Lane V/C Ratio	0.02	0.001	0.022	-	-	0.002	-	-	0.058	0.041
HCM Control Delay (s)	12.1	8.8	8	-	-	7.6	-	-	12.8	9.3
HCM Lane LOS	B	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0	0.1	-	-	0	-	-	0.2	0.1

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	183	3	11	287	7	10
Future Vol, veh/h	183	3	11	287	7	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	170	250	-	0	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	195	3	12	305	7	11

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	198	0	372
Stage 1	-	-	-	-	195
Stage 2	-	-	-	-	177
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1372	-	602
Stage 1	-	-	-	-	819
Stage 2	-	-	-	-	836
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1372	-	597
Mov Cap-2 Maneuver	-	-	-	-	597
Stage 1	-	-	-	-	819
Stage 2	-	-	-	-	828

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	597	939	-	-	1372	-
HCM Lane V/C Ratio	0.012	0.011	-	-	0.009	-
HCM Control Delay (s)	11.1	8.9	-	-	7.6	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0	-	-	0	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑		↘	
Traffic Vol, veh/h	2	202	304	2	2	2
Future Vol, veh/h	2	202	304	2	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	215	323	2	2	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	325	0	-	0	436 163
Stage 1	-	-	-	-	324 -
Stage 2	-	-	-	-	112 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	1231	-	-	-	549 853
Stage 1	-	-	-	-	705 -
Stage 2	-	-	-	-	900 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1231	-	-	-	548 853
Mov Cap-2 Maneuver	-	-	-	-	548 -
Stage 1	-	-	-	-	704 -
Stage 2	-	-	-	-	900 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1231	-	-	-	667
HCM Lane V/C Ratio	0.002	-	-	-	0.006
HCM Control Delay (s)	7.9	-	-	-	10.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	2.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	202	2	88	293	13	69
Future Vol, veh/h	202	2	88	293	13	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	215	2	94	312	14	73

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	217	0	559 108
Stage 1	-	-	-	-	215 -
Stage 2	-	-	-	-	344 -
Critical Hdwy	-	-	4.14	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	-	-	2.22	-	3.52 3.32
Pot Cap-1 Maneuver	-	-	1350	-	459 925
Stage 1	-	-	-	-	800 -
Stage 2	-	-	-	-	689 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1350	-	427 925
Mov Cap-2 Maneuver	-	-	-	-	427 -
Stage 1	-	-	-	-	800 -
Stage 2	-	-	-	-	641 -

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	781	-	-	1350	-
HCM Lane V/C Ratio	0.112	-	-	0.069	-
HCM Control Delay (s)	10.2	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Timings
10: Quebec St & E. 160th Ave (SH 7)

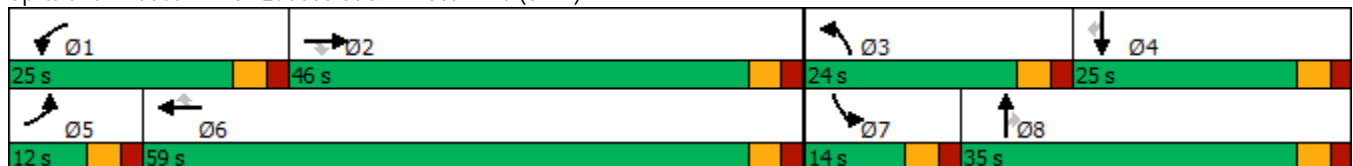
2043 Background Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	837	177	363	1164	25	437	76	238	33	114	47
Future Volume (vph)	20	837	177	363	1164	25	437	76	238	33	114	47
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	12.0	46.0	46.0	25.0	59.0	59.0	24.0	35.0	35.0	14.0	25.0	25.0
Total Split (%)	10.0%	38.3%	38.3%	20.8%	49.2%	49.2%	20.0%	29.2%	29.2%	11.7%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effect Green (s)	6.4	41.3	41.3	16.6	58.4	58.4	17.9	24.2	24.2	7.4	9.0	9.0
Actuated g/C Ratio	0.06	0.39	0.39	0.16	0.56	0.56	0.17	0.23	0.23	0.07	0.09	0.09
v/c Ratio	0.19	0.64	0.25	0.71	0.63	0.03	0.80	0.10	0.45	0.28	0.40	0.16
Control Delay	53.2	29.1	3.7	50.0	19.1	0.0	53.4	35.5	7.8	53.7	50.3	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.2	29.1	3.7	50.0	19.1	0.0	53.4	35.5	7.8	53.7	50.3	1.1
LOS	D	C	A	D	B	A	D	D	A	D	D	A
Approach Delay		25.3			26.0			37.1			38.9	
Approach LOS		C			C			D			D	

Intersection Summary

























Cycle Length: 120
 Actuated Cycle Length: 104.8
 Natural Cycle: 80
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 28.9
 Intersection LOS: C
 Intersection Capacity Utilization 68.0%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 10: Quebec St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 10: Quebec St & E. 160th Ave (SH 7)

2043 Background Traffic
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	837	177	363	1164	25	437	76	238	33	114	47
Future Volume (veh/h)	20	837	177	363	1164	25	437	76	238	33	114	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	21	890	0	386	1238	27	465	81	0	35	121	50
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	40	1560		474	1968	878	548	666		56	214	95
Arrive On Green	0.02	0.44	0.00	0.14	0.55	0.55	0.16	0.19	0.00	0.03	0.06	0.06
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	21	890	0	386	1238	27	465	81	0	35	121	50
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	1.1	18.3	0.0	10.6	23.3	0.8	12.8	1.8	0.0	1.9	3.2	3.0
Cycle Q Clear(g_c), s	1.1	18.3	0.0	10.6	23.3	0.8	12.8	1.8	0.0	1.9	3.2	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	40	1560		474	1968	878	548	666		56	214	95
V/C Ratio(X)	0.53	0.57		0.81	0.63	0.03	0.85	0.12		0.63	0.57	0.52
Avail Cap(c_a), veh/h	128	1560		709	1968	878	673	1093		164	729	325
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.2	20.5	0.0	40.8	14.9	9.9	39.9	32.9	0.0	46.7	44.6	44.5
Incr Delay (d2), s/veh	10.5	1.5	0.0	4.5	1.5	0.1	8.4	0.1	0.0	10.9	2.4	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	7.1	0.0	4.6	8.3	0.3	5.9	0.8	0.0	1.0	1.5	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.7	22.0	0.0	45.3	16.4	9.9	48.3	33.0	0.0	57.6	46.9	48.9
LnGrp LOS	E	C		D	B	A	D	C		E	D	D
Approach Vol, veh/h		911			1651			546			206	
Approach Delay, s/veh		22.8			23.1			46.0			49.2	
Approach LOS		C			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.4	47.8	20.5	10.9	7.2	59.0	8.1	23.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	20.0	41.0	19.0	20.0	7.0	54.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	12.6	20.3	14.8	5.2	3.1	25.3	3.9	3.8				
Green Ext Time (p_c), s	0.8	5.6	0.7	0.6	0.0	9.6	0.0	0.4				

Intersection Summary

HCM 6th Ctrl Delay	28.4
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Timings
11: Yosemite St & E. 160th Ave (SH 7)

2043 Background Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	14	1107	34	47	1545	7	67	9	16	7	18
Future Volume (vph)	14	1107	34	47	1545	7	67	9	16	7	18
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		1	6			8		4	
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	6	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	78.0	78.0	12.0	78.0	78.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min	Min
Act Effect Green (s)	40.2	37.0	37.0	42.3	41.4	41.4	10.1	10.1	10.1	10.1	10.1
Actuated g/C Ratio	0.63	0.58	0.58	0.66	0.64	0.64	0.16	0.16	0.16	0.16	0.16
v/c Ratio	0.05	0.58	0.04	0.14	0.72	0.01	0.32	0.28	0.08	0.02	0.06
Control Delay	3.8	10.6	0.7	4.2	10.0	0.0	34.8	13.2	32.5	31.9	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	3.8	10.6	0.7	4.2	10.0	0.0	34.8	13.2	32.5	31.9	0.4
LOS	A	B	A	A	B	A	C	B	C	C	A
Approach Delay		10.2			9.8			22.8		18.2	
Approach LOS		B			A			C		B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 64.2
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 10.8
 Intersection LOS: B
 Intersection Capacity Utilization 63.5%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 11: Yosemite St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 11: Yosemite St & E. 160th Ave (SH 7)

2043 Background Traffic
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	1107	34	47	1545	7	67	9	74	16	7	18
Future Volume (veh/h)	14	1107	34	47	1545	7	67	9	74	16	7	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	1178	0	50	1644	7	71	10	79	17	7	19
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	249	2161		398	2262	1009	251	18	142	179	186	157
Arrive On Green	0.02	0.61	0.00	0.05	0.64	0.64	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1385	181	1431	1308	1870	1585
Grp Volume(v), veh/h	15	1178	0	50	1644	7	71	0	89	17	7	19
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1385	0	1613	1308	1870	1585
Q Serve(g_s), s	0.2	11.9	0.0	0.6	19.1	0.1	3.0	0.0	3.2	0.8	0.2	0.7
Cycle Q Clear(g_c), s	0.2	11.9	0.0	0.6	19.1	0.1	3.2	0.0	3.2	4.0	0.2	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.89	1.00		1.00
Lane Grp Cap(c), veh/h	249	2161		398	2262	1009	251	0	160	179	186	157
V/C Ratio(X)	0.06	0.55		0.13	0.73	0.01	0.28	0.00	0.56	0.10	0.04	0.12
Avail Cap(c_a), veh/h	420	4251		519	4251	1896	681	0	661	585	766	649
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.9	7.0	0.0	5.0	7.5	4.0	26.3	0.0	26.2	28.1	24.9	25.1
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.1	0.5	0.0	0.6	0.0	3.0	0.2	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.6	0.0	0.1	3.8	0.0	0.9	0.0	1.3	0.2	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.0	7.2	0.0	5.2	8.0	4.1	26.9	0.0	29.2	28.3	24.9	25.4
LnGrp LOS	A	A		A	A	A	C	A	C	C	C	C
Approach Vol, veh/h		1193			1701			160			43	
Approach Delay, s/veh		7.2			7.9			28.2			26.5	
Approach LOS		A			A			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.9	42.1		11.1	6.1	43.8		11.1				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	73.0		25.0	7.0	73.0		25.0				
Max Q Clear Time (g_c+I1), s	2.6	13.9		6.0	2.2	21.1		5.2				
Green Ext Time (p_c), s	0.0	10.0		0.1	0.0	17.8		0.6				

Intersection Summary

HCM 6th Ctrl Delay	8.9
HCM 6th LOS	A

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Timings
12: Havana St & E. 160th Ave (SH 7)

2043 Background Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	16	1139	14	36	1452	9	29	5	16	8	39
Future Volume (vph)	16	1139	14	36	1452	9	29	5	16	8	39
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		1	6			8		4	
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	6	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min	Min
Act Effect Green (s)	34.3	32.3	32.3	35.1	34.3	34.3	7.6	7.6	7.6	7.6	7.6
Actuated g/C Ratio	0.63	0.59	0.59	0.65	0.63	0.63	0.14	0.14	0.14	0.14	0.14
v/c Ratio	0.05	0.57	0.02	0.10	0.69	0.01	0.16	0.34	0.10	0.03	0.15
Control Delay	3.1	8.6	0.0	3.4	8.7	0.0	29.7	11.9	29.4	28.5	6.3
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	3.1	8.6	0.0	3.4	8.7	0.0	29.7	11.9	29.4	28.5	6.3
LOS	A	A	A	A	A	A	C	B	C	C	A
Approach Delay		8.4			8.6			16.0		15.1	
Approach LOS		A			A			B		B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 54.3
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 9.0
 Intersection Capacity Utilization 61.0%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service B

Splits and Phases: 12: Havana St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 12: Havana St & E. 160th Ave (SH 7)

2043 Background Traffic
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	1139	14	36	1452	9	29	5	92	16	8	39
Future Volume (veh/h)	16	1139	14	36	1452	9	29	5	92	16	8	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	1212	15	38	1545	10	31	5	98	17	9	41
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	264	2107	940	367	2173	969	267	9	168	187	206	175
Arrive On Green	0.02	0.59	0.59	0.04	0.61	0.61	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1355	78	1519	1291	1870	1585
Grp Volume(v), veh/h	17	1212	15	38	1545	10	31	0	103	17	9	41
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1355	0	1597	1291	1870	1585
Q Serve(g_s), s	0.2	12.3	0.2	0.5	17.4	0.1	1.2	0.0	3.6	0.7	0.3	1.4
Cycle Q Clear(g_c), s	0.2	12.3	0.2	0.5	17.4	0.1	1.5	0.0	3.6	4.3	0.3	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.95	1.00		1.00
Lane Grp Cap(c), veh/h	264	2107	940	367	2173	969	267	0	176	187	206	175
V/C Ratio(X)	0.06	0.58	0.02	0.10	0.71	0.01	0.12	0.00	0.58	0.09	0.04	0.23
Avail Cap(c_a), veh/h	441	4757	2122	511	4757	2122	583	0	548	488	642	544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.8	7.3	4.9	5.4	7.8	4.4	23.8	0.0	24.7	26.7	23.2	23.7
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.1	0.4	0.0	0.2	0.0	3.1	0.2	0.1	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.6	0.0	0.1	3.5	0.0	0.4	0.0	1.4	0.2	0.1	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.9	7.6	4.9	5.6	8.2	4.4	24.0	0.0	27.7	26.9	23.3	24.4
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	C	C
Approach Vol, veh/h		1244			1593			134				67
Approach Delay, s/veh		7.5			8.1			26.9				24.9
Approach LOS		A			A			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	39.5		11.4	6.2	40.6		11.4				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	2.5	14.3		6.3	2.2	19.4		5.6				
Green Ext Time (p_c), s	0.0	10.6		0.1	0.0	16.2		0.5				

Intersection Summary

HCM 6th Ctrl Delay	9.1
HCM 6th LOS	A

Intersection						
Int Delay, s/veh	6.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	1192	47	399	1439	16	318
Future Vol, veh/h	1192	47	399	1439	16	318
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	475	475	-	0	85
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1268	50	424	1531	17	338

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1318	0	2882
Stage 1	-	-	-	-	1268
Stage 2	-	-	-	-	1614
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	520	-	~ 13
Stage 1	-	-	-	-	228
Stage 2	-	-	-	-	148
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	520	-	~ 2
Mov Cap-2 Maneuver	-	-	-	-	25
Stage 1	-	-	-	-	228
Stage 2	-	-	-	-	27

Approach	EB	WB	NB
HCM Control Delay, s	0	7.8	299.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	25	-	-	-	520	-
HCM Lane V/C Ratio	0.681	-	-	-	0.816	-
HCM Control Delay (s)	299.2	0	-	-	35.8	-
HCM Lane LOS	F	A	-	-	E	-
HCM 95th %tile Q(veh)	2.1	-	-	-	8	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Timings
14: E. 160th Ave (SH 7) & Tuscon St

2043 Background Traffic
AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↕	↕	↗	↖	↗
Traffic Volume (vph)	51	1495	1816	14	14	72
Future Volume (vph)	51	1495	1816	14	14	72
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	10.0	10.0
Minimum Split (s)	10.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	95.0	83.0	83.0	25.0	25.0
Total Split (%)	10.0%	79.2%	69.2%	69.2%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Max	Max	Max	None	None
Act Effect Green (s)	93.0	94.0	85.0	85.0	10.0	10.0
Actuated g/C Ratio	0.85	0.85	0.77	0.77	0.09	0.09
v/c Ratio	0.28	0.53	0.71	0.01	0.09	0.36
Control Delay	5.4	3.6	10.4	2.1	47.4	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.4	3.6	10.4	2.1	47.4	15.7
LOS	A	A	B	A	D	B
Approach Delay		3.6	10.3		20.9	
Approach LOS		A	B		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 110
 Natural Cycle: 80
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 7.6
 Intersection Capacity Utilization 66.9%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service C

Splits and Phases: 14: E. 160th Ave (SH 7) & Tuscon St



HCM 6th Signalized Intersection Summary
 14: E. 160th Ave (SH 7) & Tuscon St

2043 Background Traffic
 AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗	↑↑	↑↑	↗	↗	↗
Traffic Volume (veh/h)	51	1495	1816	14	14	72
Future Volume (veh/h)	51	1495	1816	14	14	72
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	54	1590	1932	15	15	77
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	229	2924	2630	1173	153	136
Arrive On Green	0.04	0.82	0.74	0.74	0.09	0.09
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	54	1590	1932	15	15	77
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	0.7	15.7	33.9	0.3	0.8	5.1
Cycle Q Clear(g_c), s	0.7	15.7	33.9	0.3	0.8	5.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	229	2924	2630	1173	153	136
V/C Ratio(X)	0.24	0.54	0.73	0.01	0.10	0.57
Avail Cap(c_a), veh/h	277	2924	2630	1173	326	290
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.1	3.1	8.1	3.7	46.1	48.0
Incr Delay (d2), s/veh	0.5	0.7	1.9	0.0	0.3	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	2.6	9.4	0.1	0.4	4.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.6	3.8	10.0	3.7	46.4	51.7
LnGrp LOS	B	A	A	A	D	D
Approach Vol, veh/h		1644	1947		92	
Approach Delay, s/veh		4.1	9.9		50.8	
Approach LOS		A	A		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		95.0		14.4	9.0	86.0
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		90.0		20.0	7.0	78.0
Max Q Clear Time (g_c+I1), s		17.7		7.1	2.7	35.9
Green Ext Time (p_c), s		17.6		0.2	0.0	21.9
Intersection Summary						
HCM 6th Ctrl Delay			8.3			
HCM 6th LOS			A			

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑	↑↑	
Traffic Vol, veh/h	3	21	8	47	67	2
Future Vol, veh/h	3	21	8	47	67	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	22	9	50	71	2

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	115	37	73	0	-	0
Stage 1	72	-	-	-	-	-
Stage 2	43	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	869	1027	1525	-	-	-
Stage 1	942	-	-	-	-	-
Stage 2	974	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	864	1027	1525	-	-	-
Mov Cap-2 Maneuver	864	-	-	-	-	-
Stage 1	936	-	-	-	-	-
Stage 2	974	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1525	-	1003	-	-
HCM Lane V/C Ratio	0.006	-	0.025	-	-
HCM Control Delay (s)	7.4	-	8.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑↑	↑↑	
Traffic Vol, veh/h	3	39	15	57	89	2
Future Vol, veh/h	3	39	15	57	89	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	41	16	61	95	2

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	159	49	97	0	0
Stage 1	96	-	-	-	-
Stage 2	63	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-
Pot Cap-1 Maneuver	816	1009	1494	-	-
Stage 1	917	-	-	-	-
Stage 2	952	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	807	1009	1494	-	-
Mov Cap-2 Maneuver	807	-	-	-	-
Stage 1	907	-	-	-	-
Stage 2	952	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1494	-	991	-	-
HCM Lane V/C Ratio	0.011	-	0.045	-	-
HCM Control Delay (s)	7.4	-	8.8	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	1	5	3	5	13	0
Future Vol, veh/h	1	5	3	5	13	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	5	3	5	14	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	25	14	14	0	0
Stage 1	14	-	-	-	-
Stage 2	11	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	991	1066	1604	-	-
Stage 1	1009	-	-	-	-
Stage 2	1012	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	989	1066	1604	-	-
Mov Cap-2 Maneuver	989	-	-	-	-
Stage 1	1007	-	-	-	-
Stage 2	1012	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	2.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1604	-	1052	-	-
HCM Lane V/C Ratio	0.002	-	0.006	-	-
HCM Control Delay (s)	7.2	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	27	11	14	13	0
Future Vol, veh/h	0	27	11	14	13	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	29	12	15	14	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	53	14	14	0	0
Stage 1	14	-	-	-	-
Stage 2	39	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	955	1066	1604	-	-
Stage 1	1009	-	-	-	-
Stage 2	983	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	947	1066	1604	-	-
Mov Cap-2 Maneuver	947	-	-	-	-
Stage 1	1001	-	-	-	-
Stage 2	983	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	3.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1604	-	1066	-	-
HCM Lane V/C Ratio	0.007	-	0.027	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	2	0	0	0	3	14	0	0	13	1
Future Vol, veh/h	3	0	2	0	0	0	3	14	0	0	13	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	2	0	0	0	3	15	0	0	14	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	36	36	15	37	36	15	15	0	0	15	0	0
Stage 1	15	15	-	21	21	-	-	-	-	-	-	-
Stage 2	21	21	-	16	15	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	970	856	1065	968	856	1065	1603	-	-	1603	-	-
Stage 1	1005	883	-	998	878	-	-	-	-	-	-	-
Stage 2	998	878	-	1004	883	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	968	854	1065	964	854	1065	1603	-	-	1603	-	-
Mov Cap-2 Maneuver	968	854	-	964	854	-	-	-	-	-	-	-
Stage 1	1003	883	-	996	876	-	-	-	-	-	-	-
Stage 2	996	876	-	1002	883	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.6		0		1.3		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1603	-	-	1005	-	1603	-
HCM Lane V/C Ratio	0.002	-	-	0.005	-	-	-
HCM Control Delay (s)	7.2	0	-	8.6	0	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	0	4	3	17	15	0
Future Vol, veh/h	0	4	3	17	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	3	18	16	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	40	16	16	0	0
Stage 1	16	-	-	-	-
Stage 2	24	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	972	1063	1602	-	-
Stage 1	1007	-	-	-	-
Stage 2	999	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	970	1063	1602	-	-
Mov Cap-2 Maneuver	970	-	-	-	-
Stage 1	1005	-	-	-	-
Stage 2	999	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1602	-	1063	-	-
HCM Lane V/C Ratio	0.002	-	0.004	-	-
HCM Control Delay (s)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	475	266	14	5	5
Future Vol, veh/h	13	475	266	14	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	505	283	15	5	5

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	298	0	-	0	572 149
Stage 1	-	-	-	-	291 -
Stage 2	-	-	-	-	281 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	1260	-	-	-	450 871
Stage 1	-	-	-	-	733 -
Stage 2	-	-	-	-	741 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1260	-	-	-	445 871
Mov Cap-2 Maneuver	-	-	-	-	445 -
Stage 1	-	-	-	-	725 -
Stage 2	-	-	-	-	741 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1260	-	-	-	589
HCM Lane V/C Ratio	0.011	-	-	-	0.018
HCM Control Delay (s)	7.9	-	-	-	11.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	435	45	61	271	9	83
Future Vol, veh/h	435	45	61	271	9	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	250	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	463	48	65	288	10	88

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	511	0	737
Stage 1	-	-	-	-	463
Stage 2	-	-	-	-	274
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1050	-	354
Stage 1	-	-	-	-	600
Stage 2	-	-	-	-	747
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1050	-	332
Mov Cap-2 Maneuver	-	-	-	-	332
Stage 1	-	-	-	-	600
Stage 2	-	-	-	-	701

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	332	770	-	-	1050	-
HCM Lane V/C Ratio	0.029	0.115	-	-	0.062	-
HCM Control Delay (s)	16.2	10.3	-	-	8.7	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.4	-	-	0.2	-

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑	↗	↙	↗		↙	↗	
Traffic Vol, veh/h	65	424	16	2	240	45	9	0	3	49	0	61
Future Vol, veh/h	65	424	16	2	240	45	9	0	3	49	0	61
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	250	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	69	451	17	2	255	48	10	0	3	52	0	65

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	303	0	0	468	0	0	721	896	226	623	865	128
Stage 1	-	-	-	-	-	-	589	589	-	259	259	-
Stage 2	-	-	-	-	-	-	132	307	-	364	606	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1255	-	-	1090	-	-	315	278	777	370	290	898
Stage 1	-	-	-	-	-	-	461	494	-	723	692	-
Stage 2	-	-	-	-	-	-	858	660	-	627	485	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1255	-	-	1090	-	-	280	262	777	353	273	898
Mov Cap-2 Maneuver	-	-	-	-	-	-	280	262	-	353	273	-
Stage 1	-	-	-	-	-	-	436	467	-	683	691	-
Stage 2	-	-	-	-	-	-	795	659	-	590	458	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	1		0.1		16.2		12.7	
HCM LOS					C		B	

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	280	777	1255	-	-	1090	-	-	353	898
HCM Lane V/C Ratio	0.034	0.004	0.055	-	-	0.002	-	-	0.148	0.072
HCM Control Delay (s)	18.3	9.7	8	-	-	8.3	-	-	17	9.3
HCM Lane LOS	C	A	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.1	0	0.2	-	-	0	-	-	0.5	0.2

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	478	8	26	311	3	11
Future Vol, veh/h	478	8	26	311	3	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	170	250	-	0	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	509	9	28	331	3	12

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	518	0	731
Stage 1	-	-	-	-	509
Stage 2	-	-	-	-	222
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1044	-	357
Stage 1	-	-	-	-	569
Stage 2	-	-	-	-	794
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1044	-	347
Mov Cap-2 Maneuver	-	-	-	-	347
Stage 1	-	-	-	-	569
Stage 2	-	-	-	-	773

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	347	744	-	-	1044	-
HCM Lane V/C Ratio	0.009	0.016	-	-	0.026	-
HCM Control Delay (s)	15.5	9.9	-	-	8.5	-
HCM Lane LOS	C	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	476	319	14	5	2
Future Vol, veh/h	4	476	319	14	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	506	339	15	5	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	354	0	-	0	608
Stage 1	-	-	-	-	347
Stage 2	-	-	-	-	261
Critical Hdwy	4.14	-	-	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	2.22	-	-	-	3.52
Pot Cap-1 Maneuver	1201	-	-	-	427
Stage 1	-	-	-	-	687
Stage 2	-	-	-	-	759
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1201	-	-	-	426
Mov Cap-2 Maneuver	-	-	-	-	426
Stage 1	-	-	-	-	685
Stage 2	-	-	-	-	759

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1201	-	-	-	495
HCM Lane V/C Ratio	0.004	-	-	-	0.015
HCM Control Delay (s)	8	-	-	-	12.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	470	11	29	315	18	63
Future Vol, veh/h	470	11	29	315	18	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	500	12	31	335	19	67

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	512	0	730
Stage 1	-	-	-	-	500
Stage 2	-	-	-	-	230
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1050	-	357
Stage 1	-	-	-	-	575
Stage 2	-	-	-	-	786
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1050	-	346
Mov Cap-2 Maneuver	-	-	-	-	346
Stage 1	-	-	-	-	575
Stage 2	-	-	-	-	762

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	595	-	-	1050	-
HCM Lane V/C Ratio	0.145	-	-	0.029	-
HCM Control Delay (s)	12.1	-	-	8.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Timings
10: Quebec St & E. 160th Ave (SH 7)

2043 Background Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	963	309	382	1008	20	399	184	263	34	107	34
Future Volume (vph)	52	963	309	382	1008	20	399	184	263	34	107	34
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			6			Free			4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	10.0	20.0		10.0	20.0	20.0	10.0	20.0		10.0	20.0	20.0
Total Split (s)	12.0	55.0		20.0	63.0	63.0	20.0	33.0		12.0	25.0	25.0
Total Split (%)	10.0%	45.8%		16.7%	52.5%	52.5%	16.7%	27.5%		10.0%	20.8%	20.8%
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Min		None	Min	Min
Act Effect Green (s)	6.8	33.7	92.5	14.9	44.3	44.3	15.1	22.0	92.5	6.6	8.5	8.5
Actuated g/C Ratio	0.07	0.36	1.00	0.16	0.48	0.48	0.16	0.24	1.00	0.07	0.09	0.09
v/c Ratio	0.43	0.79	0.21	0.73	0.63	0.03	0.76	0.23	0.18	0.29	0.35	0.11
Control Delay	54.8	31.3	0.3	47.4	20.6	0.1	48.3	33.0	0.2	50.2	44.2	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	0.0
Total Delay	54.8	31.3	0.3	47.4	20.6	0.1	48.3	33.0	0.2	50.2	44.2	0.7
LOS	D	C	A	D	C	A	D	C	A	D	D	A
Approach Delay		25.0			27.6			30.0			36.9	
Approach LOS		C			C			C			D	

Intersection Summary

























Cycle Length: 120
 Actuated Cycle Length: 92.5
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 27.7
 Intersection LOS: C
 Intersection Capacity Utilization 69.7%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 10: Quebec St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 10: Quebec St & E. 160th Ave (SH 7)

2043 Background Traffic
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	963	309	382	1008	20	399	184	263	34	107	34
Future Volume (veh/h)	52	963	309	382	1008	20	399	184	263	34	107	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	55	1024	0	406	1072	21	424	196	0	36	114	36
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	1331		509	1694	756	527	649		62	232	103
Arrive On Green	0.04	0.37	0.00	0.15	0.48	0.48	0.15	0.18	0.00	0.03	0.07	0.07
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	55	1024	0	406	1072	21	424	196	0	36	114	36
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.3	19.4	0.0	8.7	17.3	0.5	9.1	3.7	0.0	1.5	2.4	1.7
Cycle Q Clear(g_c), s	2.3	19.4	0.0	8.7	17.3	0.5	9.1	3.7	0.0	1.5	2.4	1.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	80	1331		509	1694	756	527	649		62	232	103
V/C Ratio(X)	0.69	0.77		0.80	0.63	0.03	0.81	0.30		0.58	0.49	0.35
Avail Cap(c_a), veh/h	163	2316		676	2687	1198	676	1297		163	926	413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.1	21.1	0.0	31.6	15.0	10.6	31.4	27.1	0.0	36.5	34.6	34.3
Incr Delay (d2), s/veh	9.9	1.0	0.0	5.0	0.4	0.0	5.5	0.3	0.0	8.2	1.6	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	7.0	0.0	3.7	5.7	0.2	4.0	1.5	0.0	0.8	1.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.0	22.0	0.0	36.6	15.4	10.7	36.9	27.4	0.0	44.7	36.3	36.3
LnGrp LOS	D	C		D	B	B	D	C		D	D	D
Approach Vol, veh/h		1079			1499			620			186	
Approach Delay, s/veh		23.3			21.1			33.9			37.9	
Approach LOS		C			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.3	33.7	16.7	10.0	8.5	41.6	7.7	19.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	50.0	15.0	20.0	7.0	58.0	7.0	28.0				
Max Q Clear Time (g_c+I1), s	10.7	21.4	11.1	4.4	4.3	19.3	3.5	5.7				
Green Ext Time (p_c), s	0.6	7.3	0.6	0.6	0.0	8.4	0.0	1.1				

Intersection Summary

HCM 6th Ctrl Delay	25.1
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Timings
11: Yosemite St & E. 160th Ave (SH 7)

2043 Background Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	25	1163	83	63	1364	11	65	11	9	9	15
Future Volume (vph)	25	1163	83	63	1364	11	65	11	9	9	15
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		1	6			8		4	
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	6	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min	Min
Act Effct Green (s)	36.7	33.5	33.5	37.9	35.9	35.9	9.4	9.4	9.4	9.4	9.4
Actuated g/C Ratio	0.61	0.56	0.56	0.63	0.60	0.60	0.16	0.16	0.16	0.16	0.16
v/c Ratio	0.09	0.63	0.10	0.19	0.69	0.01	0.32	0.25	0.05	0.03	0.05
Control Delay	3.9	11.2	2.2	4.7	10.9	0.0	32.9	13.6	30.0	29.7	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	3.9	11.2	2.2	4.7	10.9	0.0	32.9	13.6	30.0	29.7	0.3
LOS	A	B	A	A	B	A	C	B	C	C	A
Approach Delay		10.5			10.5			22.7		16.7	
Approach LOS		B			B			C		B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 60
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 11.2
 Intersection LOS: B
 Intersection Capacity Utilization 64.6%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 11: Yosemite St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 11: Yosemite St & E. 160th Ave (SH 7)

2043 Background Traffic
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↗		↘	↑	↗
Traffic Volume (veh/h)	25	1163	83	63	1364	11	65	11	61	9	9	15
Future Volume (veh/h)	25	1163	83	63	1364	11	65	11	61	9	9	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	1237	0	67	1451	12	69	12	65	10	10	16
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	2000		388	2100	937	264	25	134	205	184	156
Arrive On Green	0.03	0.56	0.00	0.06	0.59	0.59	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1385	253	1371	1322	1870	1585
Grp Volume(v), veh/h	27	1237	0	67	1451	12	69	0	77	10	10	16
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1385	0	1624	1322	1870	1585
Q Serve(g_s), s	0.3	12.5	0.0	0.8	15.1	0.2	2.5	0.0	2.4	0.4	0.3	0.5
Cycle Q Clear(g_c), s	0.3	12.5	0.0	0.8	15.1	0.2	2.8	0.0	2.4	2.8	0.3	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.84	1.00		1.00
Lane Grp Cap(c), veh/h	301	2000		388	2100	937	264	0	159	205	184	156
V/C Ratio(X)	0.09	0.62		0.17	0.69	0.01	0.26	0.00	0.48	0.05	0.05	0.10
Avail Cap(c_a), veh/h	479	5177		516	5177	2309	645	0	606	569	699	592
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.4	7.8	0.0	5.7	7.6	4.5	23.2	0.0	22.9	24.2	21.9	22.0
Incr Delay (d2), s/veh	0.1	0.3	0.0	0.2	0.4	0.0	0.5	0.0	2.3	0.1	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.7	0.0	0.1	2.9	0.0	0.8	0.0	0.9	0.1	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.5	8.2	0.0	5.9	8.0	4.5	23.7	0.0	25.1	24.3	22.0	22.3
LnGrp LOS	A	A		A	A	A	C	A	C	C	C	C
Approach Vol, veh/h		1264			1530			146				36
Approach Delay, s/veh		8.1			7.9			24.4				22.8
Approach LOS		A			A			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	35.1		10.3	6.7	36.6		10.3				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	2.8	14.5		4.8	2.3	17.1		4.8				
Green Ext Time (p_c), s	0.0	10.9		0.1	0.0	14.5		0.4				

Intersection Summary

HCM 6th Ctrl Delay	9.0
HCM 6th LOS	A

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Timings
12: Havana St & E. 160th Ave (SH 7)

2043 Background Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	48	1125	54	166	1425	19	14	10	9	7	18
Future Volume (vph)	48	1125	54	166	1425	19	14	10	9	7	18
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		1	6			8		4	
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	6	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min	Min
Act Effect Green (s)	40.3	33.7	33.7	43.5	39.8	39.8	7.0	7.0	7.0	7.0	7.0
Actuated g/C Ratio	0.63	0.53	0.53	0.69	0.63	0.63	0.11	0.11	0.11	0.11	0.11
v/c Ratio	0.17	0.64	0.07	0.49	0.68	0.02	0.10	0.36	0.07	0.03	0.08
Control Delay	3.9	11.7	1.8	9.4	10.7	0.1	32.7	15.4	32.3	31.6	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	3.9	11.7	1.8	9.4	10.7	0.1	32.7	15.4	32.3	31.6	0.7
LOS	A	B	A	A	B	A	C	B	C	C	A
Approach Delay		10.9			10.5			17.9		15.5	
Approach LOS		B			B			B		B	

Intersection Summary
























Cycle Length: 120
 Actuated Cycle Length: 63.5
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 11.0
 Intersection LOS: B
 Intersection Capacity Utilization 63.5%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 12: Havana St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 12: Havana St & E. 160th Ave (SH 7)

2043 Background Traffic
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	1125	54	166	1425	19	14	10	72	9	7	18
Future Volume (veh/h)	48	1125	54	166	1425	19	14	10	72	9	7	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	1197	57	177	1516	20	15	11	77	10	7	19
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	312	2019	900	421	2134	952	249	19	134	179	177	150
Arrive On Green	0.05	0.57	0.57	0.08	0.60	0.60	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1385	202	1414	1309	1870	1585
Grp Volume(v), veh/h	51	1197	57	177	1516	20	15	0	88	10	7	19
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1385	0	1616	1309	1870	1585
Q Serve(g_s), s	0.7	12.8	0.9	2.3	17.4	0.3	0.6	0.0	3.0	0.4	0.2	0.6
Cycle Q Clear(g_c), s	0.7	12.8	0.9	2.3	17.4	0.3	0.8	0.0	3.0	3.5	0.2	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.88	1.00		1.00
Lane Grp Cap(c), veh/h	312	2019	900	421	2134	952	249	0	153	179	177	150
V/C Ratio(X)	0.16	0.59	0.06	0.42	0.71	0.02	0.06	0.00	0.58	0.06	0.04	0.13
Avail Cap(c_a), veh/h	439	4743	2116	491	4743	2116	592	0	553	503	640	542
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.8	8.2	5.7	6.3	8.1	4.7	24.4	0.0	25.3	27.0	24.0	24.2
Incr Delay (d2), s/veh	0.2	0.3	0.0	0.7	0.4	0.0	0.1	0.0	3.4	0.1	0.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.0	0.2	0.5	3.7	0.1	0.2	0.0	1.2	0.1	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.1	8.5	5.7	7.0	8.6	4.7	24.5	0.0	28.7	27.1	24.1	24.6
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	C	C
Approach Vol, veh/h		1305			1713			103				36
Approach Delay, s/veh		8.3			8.4			28.1				25.2
Approach LOS		A			A			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	38.2		10.5	7.8	40.1		10.5				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	4.3	14.8		5.5	2.7	19.4		5.0				
Green Ext Time (p_c), s	0.1	10.6		0.0	0.0	15.7		0.3				
Intersection Summary												
HCM 6th Ctrl Delay				9.2								
HCM 6th LOS				A								

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	1140	29	300	1603	29	498
Future Vol, veh/h	1140	29	300	1603	29	498
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	475	475	-	0	85
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1213	31	319	1705	31	530

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1244	0	2704
Stage 1	-	-	-	-	1213
Stage 2	-	-	-	-	1491
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	555	-	~ 17
Stage 1	-	-	-	-	244
Stage 2	-	-	-	-	173
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	555	-	~ 7
Mov Cap-2 Maneuver	-	-	-	-	54
Stage 1	-	-	-	-	244
Stage 2	-	-	-	-	74

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	137.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	54	-	-	-	555	-
HCM Lane V/C Ratio	0.571	-	-	-	0.575	-
HCM Control Delay (s)	137.8	0	-	-	19.9	-
HCM Lane LOS	F	A	-	-	C	-
HCM 95th %tile Q(veh)	2.2	-	-	-	3.6	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Timings
 14: E. 160th Ave (SH 7) & Tuscon St

2043 Background Traffic
 PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↑↑	↗	↖	↗
Traffic Volume (vph)	85	1514	1817	38	9	47
Future Volume (vph)	85	1514	1817	38	9	47
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	10.0	10.0
Minimum Split (s)	10.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	95.0	83.0	83.0	25.0	25.0
Total Split (%)	10.0%	79.2%	69.2%	69.2%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Max	Max	Max	None	None
Act Effect Green (s)	93.0	94.0	84.6	84.6	10.0	10.0
Actuated g/C Ratio	0.85	0.85	0.77	0.77	0.09	0.09
v/c Ratio	0.45	0.53	0.71	0.03	0.06	0.26
Control Delay	13.4	3.6	10.7	1.6	46.8	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	3.6	10.7	1.6	46.8	16.9
LOS	B	A	B	A	D	B
Approach Delay		4.1	10.5		21.9	
Approach LOS		A	B		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 110
 Natural Cycle: 80
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 7.8
 Intersection Capacity Utilization 75.8%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service D

Splits and Phases: 14: E. 160th Ave (SH 7) & Tuscon St



HCM 6th Signalized Intersection Summary
 14: E. 160th Ave (SH 7) & Tuscon St

2043 Background Traffic
 PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	85	1514	1817	38	9	47
Future Volume (veh/h)	85	1514	1817	38	9	47
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	1611	1933	40	10	50
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	239	2952	2635	1175	137	122
Arrive On Green	0.04	0.83	0.74	0.74	0.08	0.08
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	90	1611	1933	40	10	50
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	1.1	15.2	33.4	0.7	0.6	3.3
Cycle Q Clear(g_c), s	1.1	15.2	33.4	0.7	0.6	3.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	239	2952	2635	1175	137	122
V/C Ratio(X)	0.38	0.55	0.73	0.03	0.07	0.41
Avail Cap(c_a), veh/h	277	2952	2635	1175	329	293
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.0	2.8	7.9	3.7	46.4	47.6
Incr Delay (d2), s/veh	1.0	0.7	1.9	0.1	0.2	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.2	9.2	0.2	0.3	3.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.0	3.6	9.8	3.8	46.6	49.8
LnGrp LOS	B	A	A	A	D	D
Approach Vol, veh/h		1701	1973		60	
Approach Delay, s/veh		4.1	9.7		49.3	
Approach LOS		A	A		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		95.0		13.4	9.7	85.3
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		90.0		20.0	7.0	78.0
Max Q Clear Time (g_c+I1), s		17.2		5.3	3.1	35.4
Green Ext Time (p_c), s		18.1		0.1	0.1	22.2
Intersection Summary						
HCM 6th Ctrl Delay			7.8			
HCM 6th LOS			A			

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑↑	↑↑	
Traffic Vol, veh/h	0	8	20	117	106	1
Future Vol, veh/h	0	8	20	117	106	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	21	124	113	1

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	218	57	114	0	0
Stage 1	114	-	-	-	-
Stage 2	104	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-
Pot Cap-1 Maneuver	750	997	1473	-	-
Stage 1	898	-	-	-	-
Stage 2	909	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	740	997	1473	-	-
Mov Cap-2 Maneuver	740	-	-	-	-
Stage 1	885	-	-	-	-
Stage 2	909	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1473	-	997	-	-
HCM Lane V/C Ratio	0.014	-	0.009	-	-
HCM Control Delay (s)	7.5	-	8.6	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑↑	↑↑	
Traffic Vol, veh/h	1	18	26	137	110	5
Future Vol, veh/h	1	18	26	137	110	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	19	28	146	117	5

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	249	61	122	0	0
Stage 1	120	-	-	-	-
Stage 2	129	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-
Pot Cap-1 Maneuver	718	991	1463	-	-
Stage 1	892	-	-	-	-
Stage 2	883	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	704	991	1463	-	-
Mov Cap-2 Maneuver	704	-	-	-	-
Stage 1	875	-	-	-	-
Stage 2	883	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1463	-	970	-	-
HCM Lane V/C Ratio	0.019	-	0.021	-	-
HCM Control Delay (s)	7.5	-	8.8	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	0	3	5	16	23	3
Future Vol, veh/h	0	3	5	16	23	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	5	17	24	3

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	53	26	27	0	0
Stage 1	26	-	-	-	-
Stage 2	27	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	955	1050	1587	-	-
Stage 1	997	-	-	-	-
Stage 2	996	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	952	1050	1587	-	-
Mov Cap-2 Maneuver	952	-	-	-	-
Stage 1	994	-	-	-	-
Stage 2	996	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	1.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1587	-	1050	-	-
HCM Lane V/C Ratio	0.003	-	0.003	-	-
HCM Control Delay (s)	7.3	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	1	14	24	15	24	1
Future Vol, veh/h	1	14	24	15	24	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	15	26	16	26	1

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	95	27	27	0	0
Stage 1	27	-	-	-	-
Stage 2	68	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	905	1048	1587	-	-
Stage 1	996	-	-	-	-
Stage 2	955	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	890	1048	1587	-	-
Mov Cap-2 Maneuver	890	-	-	-	-
Stage 1	979	-	-	-	-
Stage 2	955	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	4.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1587	-	1036	-	-
HCM Lane V/C Ratio	0.016	-	0.015	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	2	0	0	0	2	13	0	0	30	4
Future Vol, veh/h	1	0	2	0	0	0	2	13	0	0	30	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	2	0	0	0	2	14	0	0	32	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	52	52	34	53	54	14	36	0	0	14	0	0
Stage 1	34	34	-	18	18	-	-	-	-	-	-	-
Stage 2	18	18	-	35	36	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	947	839	1039	946	837	1066	1575	-	-	1604	-	-
Stage 1	982	867	-	1001	880	-	-	-	-	-	-	-
Stage 2	1001	880	-	981	865	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	946	838	1039	943	836	1066	1575	-	-	1604	-	-
Mov Cap-2 Maneuver	946	838	-	943	836	-	-	-	-	-	-	-
Stage 1	981	867	-	1000	879	-	-	-	-	-	-	-
Stage 2	1000	879	-	979	865	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.6		0		1		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1575	-	-	1006	-	1604	-
HCM Lane V/C Ratio	0.001	-	-	0.003	-	-	-
HCM Control Delay (s)	7.3	0	-	8.6	0	0	-
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	2	4	7	13	28	4
Future Vol, veh/h	2	4	7	13	28	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	63	63	63	63
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	6	11	21	44	6

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	90	47	50	0	0
Stage 1	47	-	-	-	-
Stage 2	43	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	910	1022	1557	-	-
Stage 1	975	-	-	-	-
Stage 2	979	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	904	1022	1557	-	-
Mov Cap-2 Maneuver	904	-	-	-	-
Stage 1	968	-	-	-	-
Stage 2	979	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	2.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1557	-	979	-	-
HCM Lane V/C Ratio	0.007	-	0.01	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	220	352	10	10	7
Future Vol, veh/h	4	220	352	10	10	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	234	374	11	11	7

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	385	0	-	0	505 193
Stage 1	-	-	-	-	380 -
Stage 2	-	-	-	-	125 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	1170	-	-	-	496 816
Stage 1	-	-	-	-	661 -
Stage 2	-	-	-	-	887 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1170	-	-	-	495 816
Mov Cap-2 Maneuver	-	-	-	-	495 -
Stage 1	-	-	-	-	659 -
Stage 2	-	-	-	-	887 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1170	-	-	-	591
HCM Lane V/C Ratio	0.004	-	-	-	0.031
HCM Control Delay (s)	8.1	-	-	-	11.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↖	↑↑	↖	↗
Traffic Vol, veh/h	210	20	68	353	9	32
Future Vol, veh/h	210	20	68	353	9	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	250	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	223	21	72	376	10	34

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	244	0	555	112
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	332	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1319	-	462	920
Stage 1	-	-	-	-	793	-
Stage 2	-	-	-	-	699	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1319	-	437	920
Mov Cap-2 Maneuver	-	-	-	-	437	-
Stage 1	-	-	-	-	793	-
Stage 2	-	-	-	-	661	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	437	920	-	-	1319	-
HCM Lane V/C Ratio	0.022	0.037	-	-	0.055	-
HCM Control Delay (s)	13.4	9.1	-	-	7.9	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.2	-

Intersection						
Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	237	21	2	424	49	3
Future Vol, veh/h	237	21	2	424	49	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	250	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	252	22	2	451	52	3

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	274	0	482
Stage 1	-	-	-	-	252
Stage 2	-	-	-	-	230
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1286	-	513
Stage 1	-	-	-	-	767
Stage 2	-	-	-	-	786
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1286	-	512
Mov Cap-2 Maneuver	-	-	-	-	512
Stage 1	-	-	-	-	767
Stage 2	-	-	-	-	784

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	512	901	-	-	1286	-
HCM Lane V/C Ratio	0.102	0.004	-	-	0.002	-
HCM Control Delay (s)	12.8	9	-	-	7.8	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	187	27	15	321	29	71	6	38	28	2	34
Future Vol, veh/h	25	187	27	15	321	29	71	6	38	28	2	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	250	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	199	29	16	341	31	76	6	40	30	2	36

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	372	0	0	228	0	0	457	657	100	530	655	171
Stage 1	-	-	-	-	-	-	253	253	-	373	373	-
Stage 2	-	-	-	-	-	-	204	404	-	157	282	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1183	-	-	1337	-	-	487	383	936	432	384	843
Stage 1	-	-	-	-	-	-	729	696	-	620	617	-
Stage 2	-	-	-	-	-	-	779	598	-	829	676	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1183	-	-	1337	-	-	452	370	936	397	371	843
Mov Cap-2 Maneuver	-	-	-	-	-	-	452	370	-	397	371	-
Stage 1	-	-	-	-	-	-	712	680	-	606	610	-
Stage 2	-	-	-	-	-	-	734	591	-	768	660	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.3			12.8			12		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	452	774	1183	-	-	1337	-	-	397	787
HCM Lane V/C Ratio	0.167	0.06	0.022	-	-	0.012	-	-	0.075	0.049
HCM Control Delay (s)	14.6	10	8.1	-	-	7.7	-	-	14.8	9.8
HCM Lane LOS	B	B	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.6	0.2	0.1	-	-	0	-	-	0.2	0.2

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	244	9	22	346	19	55
Future Vol, veh/h	244	9	22	346	19	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	250	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	260	10	23	368	20	59

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	270	0	490
Stage 1	-	-	-	-	260
Stage 2	-	-	-	-	230
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1290	-	507
Stage 1	-	-	-	-	760
Stage 2	-	-	-	-	786
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1290	-	498
Mov Cap-2 Maneuver	-	-	-	-	498
Stage 1	-	-	-	-	760
Stage 2	-	-	-	-	772

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	743	-	-	1290	-
HCM Lane V/C Ratio	0.106	-	-	0.018	-
HCM Control Delay (s)	10.4	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	278	14	30	324	35	71
Future Vol, veh/h	278	14	30	324	35	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	170	250	-	0	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	296	15	32	345	37	76

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	311	0	533	148
Stage 1	-	-	-	-	296	-
Stage 2	-	-	-	-	237	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1246	-	477	872
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	780	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1246	-	465	872
Mov Cap-2 Maneuver	-	-	-	-	465	-
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	760	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	465	872	-	-	1246	-
HCM Lane V/C Ratio	0.08	0.087	-	-	0.026	-
HCM Control Delay (s)	13.4	9.5	-	-	8	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.3	-	-	0.1	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑		↘	
Traffic Vol, veh/h	2	357	360	2	2	2
Future Vol, veh/h	2	357	360	2	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	380	383	2	2	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	385	0	-	0	578 193
Stage 1	-	-	-	-	384 -
Stage 2	-	-	-	-	194 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	1170	-	-	-	446 816
Stage 1	-	-	-	-	658 -
Stage 2	-	-	-	-	820 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1170	-	-	-	445 816
Mov Cap-2 Maneuver	-	-	-	-	445 -
Stage 1	-	-	-	-	657 -
Stage 2	-	-	-	-	820 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1170	-	-	-	576
HCM Lane V/C Ratio	0.002	-	-	-	0.007
HCM Control Delay (s)	8.1	-	-	-	11.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection						
Int Delay, s/veh	2.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	304	56	88	331	31	69
Future Vol, veh/h	304	56	88	331	31	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	323	60	94	352	33	73

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	383	0	687
Stage 1	-	-	-	-	323
Stage 2	-	-	-	-	364
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1172	-	381
Stage 1	-	-	-	-	706
Stage 2	-	-	-	-	673
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1172	-	351
Mov Cap-2 Maneuver	-	-	-	-	351
Stage 1	-	-	-	-	706
Stage 2	-	-	-	-	619

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	591	-	-	1172	-
HCM Lane V/C Ratio	0.18	-	-	0.08	-
HCM Control Delay (s)	12.4	-	-	8.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0.3	-

Timings
10: Quebec St & E. 160th Ave (SH 7)

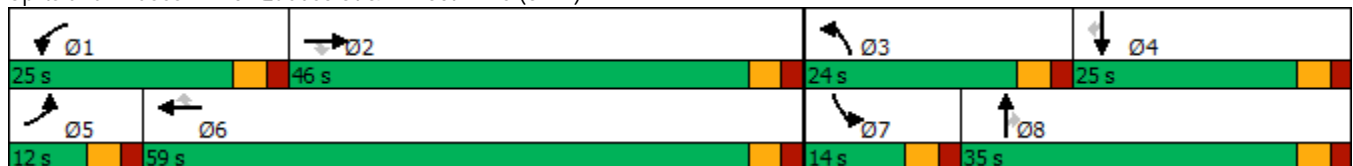
2043 Total Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	915	177	395	1375	25	437	79	250	33	121	70
Future Volume (vph)	31	915	177	395	1375	25	437	79	250	33	121	70
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	12.0	46.0	46.0	25.0	59.0	59.0	24.0	35.0	35.0	14.0	25.0	25.0
Total Split (%)	10.0%	38.3%	38.3%	20.8%	49.2%	49.2%	20.0%	29.2%	29.2%	11.7%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	None
Act Effect Green (s)	6.6	41.5	41.5	17.4	57.0	57.0	17.9	24.5	24.5	7.4	9.3	9.3
Actuated g/C Ratio	0.06	0.39	0.39	0.16	0.54	0.54	0.17	0.23	0.23	0.07	0.09	0.09
v/c Ratio	0.30	0.70	0.25	0.75	0.77	0.03	0.80	0.10	0.47	0.28	0.42	0.23
Control Delay	56.9	31.4	3.8	51.5	24.7	0.0	54.6	35.7	7.7	54.3	50.9	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.9	31.4	3.8	51.5	24.7	0.0	54.6	35.7	7.7	54.3	50.9	1.7
LOS	E	C	A	D	C	A	D	D	A	D	D	A
Approach Delay		27.8			30.2			37.3			36.1	
Approach LOS		C			C			D			D	

Intersection Summary

























Cycle Length: 120	
Actuated Cycle Length: 106.1	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 31.2	Intersection LOS: C
Intersection Capacity Utilization 75.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 10: Quebec St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 10: Quebec St & E. 160th Ave (SH 7)

2043 Total Traffic
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	915	177	395	1375	25	437	79	250	33	121	70
Future Volume (veh/h)	31	915	177	395	1375	25	437	79	250	33	121	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	33	973	0	420	1463	27	465	84	0	35	129	74
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	53	1506		505	1918	856	545	708		55	258	115
Arrive On Green	0.03	0.42	0.00	0.15	0.54	0.54	0.16	0.20	0.00	0.03	0.07	0.07
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	33	973	0	420	1463	27	465	84	0	35	129	74
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	1.8	21.7	0.0	11.8	32.2	0.8	13.1	1.9	0.0	1.9	3.5	4.5
Cycle Q Clear(g_c), s	1.8	21.7	0.0	11.8	32.2	0.8	13.1	1.9	0.0	1.9	3.5	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	53	1506		505	1918	856	545	708		55	258	115
V/C Ratio(X)	0.62	0.65		0.83	0.76	0.03	0.85	0.12		0.63	0.50	0.64
Avail Cap(c_a), veh/h	125	1506		691	1918	856	656	1066		160	711	317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.9	22.9	0.0	41.5	18.0	10.8	41.0	32.9	0.0	47.9	44.6	45.1
Incr Delay (d2), s/veh	11.0	2.2	0.0	6.3	2.9	0.1	9.2	0.1	0.0	11.3	1.5	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	8.6	0.0	5.2	12.0	0.3	6.1	0.8	0.0	1.0	1.6	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.0	25.0	0.0	47.8	20.9	10.8	50.2	32.9	0.0	59.2	46.1	51.0
LnGrp LOS	E	C		D	C	B	D	C		E	D	D
Approach Vol, veh/h		1006			1910			549			238	
Approach Delay, s/veh		26.1			26.7			47.5			49.6	
Approach LOS		C			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.6	47.4	20.8	12.3	8.0	59.0	8.1	24.9				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	20.0	41.0	19.0	20.0	7.0	54.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	13.8	23.7	15.1	6.5	3.8	34.2	3.9	3.9				
Green Ext Time (p_c), s	0.8	5.7	0.7	0.7	0.0	10.1	0.0	0.4				

Intersection Summary

HCM 6th Ctrl Delay	31.1
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Timings
11: Yosemite St & E. 160th Ave (SH 7)

2043 Total Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	83	1128	34	55	1600	71	67	21	188	38	206
Future Volume (vph)	83	1128	34	55	1600	71	67	21	188	38	206
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		1	6			8		4	
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	6	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	78.0	78.0	12.0	78.0	78.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min	Min
Act Effect Green (s)	64.5	59.4	59.4	64.0	59.1	59.1	20.8	20.8	20.8	20.8	20.8
Actuated g/C Ratio	0.65	0.60	0.60	0.64	0.59	0.59	0.21	0.21	0.21	0.21	0.21
v/c Ratio	0.44	0.57	0.04	0.20	0.81	0.08	0.25	0.25	0.75	0.10	0.52
Control Delay	17.7	14.1	0.8	6.9	20.4	2.4	40.3	14.8	58.8	37.5	23.6
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	17.7	14.1	0.8	6.9	20.4	2.4	40.3	14.8	58.8	37.5	23.6
LOS	B	B	A	A	C	A	D	B	E	D	C
Approach Delay		14.0			19.2			25.2		40.2	
Approach LOS		B			B			C		D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 99.4
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 20.2
 Intersection LOS: C
 Intersection Capacity Utilization 78.4%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 11: Yosemite St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 11: Yosemite St & E. 160th Ave (SH 7)

2043 Total Traffic
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	1128	34	55	1600	71	67	21	77	188	38	206
Future Volume (veh/h)	83	1128	34	55	1600	71	67	21	77	188	38	206
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	88	1200	0	59	1702	76	71	22	82	200	40	219
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	203	2060		315	2040	910	310	79	295	300	428	362
Arrive On Green	0.05	0.58	0.00	0.04	0.57	0.57	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1120	346	1291	1290	1870	1585
Grp Volume(v), veh/h	88	1200	0	59	1702	76	71	0	104	200	40	219
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1120	0	1638	1290	1870	1585
Q Serve(g_s), s	2.0	21.2	0.0	1.3	38.8	2.1	5.3	0.0	5.2	15.0	1.7	12.3
Cycle Q Clear(g_c), s	2.0	21.2	0.0	1.3	38.8	2.1	7.0	0.0	5.2	20.2	1.7	12.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.79	1.00		1.00
Lane Grp Cap(c), veh/h	203	2060		315	2040	910	310	0	374	300	428	362
V/C Ratio(X)	0.43	0.58		0.19	0.83	0.08	0.23	0.00	0.28	0.67	0.09	0.60
Avail Cap(c_a), veh/h	247	2617		369	2617	1167	336	0	413	331	472	400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.8	13.2	0.0	10.1	17.3	9.4	32.9	0.0	31.5	39.8	30.1	34.2
Incr Delay (d2), s/veh	1.5	0.3	0.0	0.3	2.0	0.0	0.4	0.0	0.4	4.4	0.1	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	7.1	0.0	0.4	13.5	0.6	1.4	0.0	2.0	4.9	0.7	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	13.5	0.0	10.4	19.2	9.5	33.3	0.0	31.9	44.2	30.2	36.4
LnGrp LOS	C	B		B	B	A	C	A	C	D	C	D
Approach Vol, veh/h		1288			1837			175			459	
Approach Delay, s/veh		14.0			18.5			32.4			39.3	
Approach LOS		B			B			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	62.4		27.7	9.6	61.9		27.7				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	73.0		25.0	7.0	73.0		25.0				
Max Q Clear Time (g_c+I1), s	3.3	23.2		22.2	4.0	40.8		9.0				
Green Ext Time (p_c), s	0.0	10.2		0.5	0.0	16.1		0.7				

Intersection Summary

HCM 6th Ctrl Delay	20.1
HCM 6th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Timings
12: Havana St & E. 160th Ave (SH 7)

2043 Total Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	40	1280	45	36	1505	13	41	8	16	16	102	
Future Volume (vph)	40	1280	45	36	1505	13	41	8	16	16	102	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	
Protected Phases	5	2		1	6			8		4		
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0	25.0	
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%	20.8%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min	Min	
Act Effect Green (s)	45.0	41.6	41.6	44.4	41.3	41.3	8.5	8.5	8.5	8.5	8.5	
Actuated g/C Ratio	0.67	0.62	0.62	0.66	0.62	0.62	0.13	0.13	0.13	0.13	0.13	
v/c Ratio	0.15	0.62	0.05	0.12	0.73	0.01	0.25	0.37	0.10	0.07	0.37	
Control Delay	3.9	9.7	1.2	3.5	11.9	0.0	37.2	14.0	35.6	34.6	12.0	
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	3.9	9.7	1.2	3.5	11.9	0.0	37.2	14.0	35.6	34.6	12.0	
LOS	A	A	A	A	B	A	D	B	D	C	B	
Approach Delay		9.2			11.6			20.7		17.5		
Approach LOS		A			B			C		B		

Intersection Summary
























Cycle Length: 120
 Actuated Cycle Length: 66.9
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 11.3
 Intersection LOS: B
 Intersection Capacity Utilization 64.6%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 12: Havana St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 12: Havana St & E. 160th Ave (SH 7)

2043 Total Traffic
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1280	45	36	1505	13	41	8	92	16	16	102
Future Volume (veh/h)	40	1280	45	36	1505	13	41	8	92	16	16	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	1362	48	38	1601	14	44	9	98	17	17	109
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	2194	979	324	2182	973	243	15	165	174	210	178
Arrive On Green	0.04	0.62	0.62	0.04	0.61	0.61	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1265	135	1471	1287	1870	1585
Grp Volume(v), veh/h	43	1362	48	38	1601	14	44	0	107	17	17	109
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1265	0	1606	1287	1870	1585
Q Serve(g_s), s	0.6	15.4	0.8	0.5	20.4	0.2	2.1	0.0	4.1	0.8	0.5	4.2
Cycle Q Clear(g_c), s	0.6	15.4	0.8	0.5	20.4	0.2	2.6	0.0	4.1	4.9	0.5	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.92	1.00		1.00
Lane Grp Cap(c), veh/h	279	2194	979	324	2182	973	243	0	180	174	210	178
V/C Ratio(X)	0.15	0.62	0.05	0.12	0.73	0.01	0.18	0.00	0.59	0.10	0.08	0.61
Avail Cap(c_a), veh/h	398	4292	1914	449	4292	1914	493	0	497	428	579	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.7	7.7	4.9	6.0	8.8	4.9	26.9	0.0	27.3	29.6	25.7	27.3
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.2	0.5	0.0	0.4	0.0	3.1	0.2	0.2	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.5	0.2	0.1	4.7	0.0	0.6	0.0	1.6	0.2	0.2	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.9	8.0	4.9	6.1	9.2	4.9	27.2	0.0	30.4	29.9	25.9	30.7
LnGrp LOS	A	A	A	A	A	A	C	A	C	C	C	C
Approach Vol, veh/h		1453			1653			151			143	
Approach Delay, s/veh		7.9			9.1			29.5			30.1	
Approach LOS		A			A			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	44.9		12.2	7.7	44.7		12.2				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	2.5	17.4		6.9	2.6	22.4		6.1				
Green Ext Time (p_c), s	0.0	13.2		0.3	0.0	17.2		0.5				
Intersection Summary												
HCM 6th Ctrl Delay				10.4								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	12.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	1333	47	399	1495	16	318
Future Vol, veh/h	1333	47	399	1495	16	318
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	475	475	-	0	85
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1418	50	424	1590	17	338

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1468	0	3061
Stage 1	-	-	-	-	1418
Stage 2	-	-	-	-	1643
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	456	-	~ 10
Stage 1	-	-	-	-	189
Stage 2	-	-	-	-	143
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	456	-	~ 1
Mov Cap-2 Maneuver	-	-	-	-	~ 9
Stage 1	-	-	-	-	189
Stage 2	-	-	-	-	~ 10

Approach	EB	WB	NB
HCM Control Delay, s	0	12	\$ 1222.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	9	-	-	-	456	-
HCM Lane V/C Ratio	1.891	-	-	-	0.931	-
HCM Control Delay (s)	\$ 1222.5	0	-	-	56.9	-
HCM Lane LOS	F	A	-	-	F	-
HCM 95th %tile Q(veh)	3.1	-	-	-	10.8	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Timings
 14: E. 160th Ave (SH 7) & Tuscon St

2043 Total Traffic
 AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↑↑	↗	↖	↗
Traffic Volume (vph)	51	1636	1872	32	68	72
Future Volume (vph)	51	1636	1872	32	68	72
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	10.0	10.0
Minimum Split (s)	10.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	95.0	83.0	83.0	25.0	25.0
Total Split (%)	10.0%	79.2%	69.2%	69.2%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Max	Max	Max	None	None
Act Effect Green (s)	90.0	90.0	81.0	81.0	11.0	11.0
Actuated g/C Ratio	0.81	0.81	0.73	0.73	0.10	0.10
v/c Ratio	0.32	0.61	0.77	0.03	0.41	0.34
Control Delay	8.8	5.1	12.9	1.9	54.4	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	5.1	12.9	1.9	54.4	14.7
LOS	A	A	B	A	D	B
Approach Delay		5.2	12.7		33.9	
Approach LOS		A	B		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 111
 Natural Cycle: 80
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 10.1
 Intersection LOS: B
 Intersection Capacity Utilization 68.4%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 14: E. 160th Ave (SH 7) & Tuscon St



HCM 6th Signalized Intersection Summary
 14: E. 160th Ave (SH 7) & Tuscon St

2043 Total Traffic
 AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷	↷	↶	↶
Traffic Volume (veh/h)	51	1636	1872	32	68	72
Future Volume (veh/h)	51	1636	1872	32	68	72
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	54	1740	1991	34	72	77
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	215	2910	2618	1168	160	143
Arrive On Green	0.04	0.82	0.74	0.74	0.09	0.09
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	54	1740	1991	34	72	77
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	0.7	19.1	36.9	0.6	4.2	5.1
Cycle Q Clear(g_c), s	0.7	19.1	36.9	0.6	4.2	5.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	215	2910	2618	1168	160	143
V/C Ratio(X)	0.25	0.60	0.76	0.03	0.45	0.54
Avail Cap(c_a), veh/h	263	2910	2618	1168	324	288
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.7	3.5	8.7	3.9	47.4	47.8
Incr Delay (d2), s/veh	0.6	0.9	2.1	0.0	2.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.3	10.5	0.2	1.9	4.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.3	4.4	10.8	3.9	49.4	51.0
LnGrp LOS	B	A	B	A	D	D
Approach Vol, veh/h		1794	2025		149	
Approach Delay, s/veh		4.7	10.7		50.2	
Approach LOS		A	B		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		95.0		14.9	9.0	86.0
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		90.0		20.0	7.0	78.0
Max Q Clear Time (g_c+I1), s		21.1		7.1	2.7	38.9
Green Ext Time (p_c), s		21.1		0.3	0.0	22.2
Intersection Summary						
HCM 6th Ctrl Delay			9.5			
HCM 6th LOS			A			

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	21	8	61	97	2
Future Vol, veh/h	3	21	8	61	97	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	22	9	65	103	2

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	155	53	105	0	-	0
Stage 1	104	-	-	-	-	-
Stage 2	51	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	821	1003	1484	-	-	-
Stage 1	909	-	-	-	-	-
Stage 2	965	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	816	1003	1484	-	-	-
Mov Cap-2 Maneuver	816	-	-	-	-	-
Stage 1	904	-	-	-	-	-
Stage 2	965	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1484	-	975	-	-
HCM Lane V/C Ratio	0.006	-	0.026	-	-
HCM Control Delay (s)	7.4	-	8.8	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑↑	↑↑	
Traffic Vol, veh/h	3	39	15	71	119	2
Future Vol, veh/h	3	39	15	71	119	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	41	16	76	127	2

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	198	65	129	0	-	0
Stage 1	128	-	-	-	-	-
Stage 2	70	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	772	986	1454	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	945	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	764	986	1454	-	-	-
Mov Cap-2 Maneuver	764	-	-	-	-	-
Stage 1	874	-	-	-	-	-
Stage 2	945	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	1.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1454	-	966	-	-
HCM Lane V/C Ratio	0.011	-	0.046	-	-
HCM Control Delay (s)	7.5	-	8.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th TWSC
 17: Yosemite St & North Site Access

2043 Total Traffic
 AM Peak Hour

Intersection												
Int Delay, s/veh	8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑	↗	↖	↑	↗
Traffic Vol, veh/h	24	0	70	195	0	63	27	27	70	23	13	9
Future Vol, veh/h	24	0	70	195	0	63	27	27	70	23	13	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	250	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	0	74	207	0	67	29	29	74	24	14	10

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	220	223	14	191	159	29	24	0	0	103	0	0
Stage 1	62	62	-	87	87	-	-	-	-	-	-	-
Stage 2	158	161	-	104	72	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	736	676	1066	769	733	1046	1591	-	-	1489	-	-
Stage 1	949	843	-	921	823	-	-	-	-	-	-	-
Stage 2	844	765	-	902	835	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	671	653	1066	697	708	1046	1591	-	-	1489	-	-
Mov Cap-2 Maneuver	671	653	-	697	708	-	-	-	-	-	-	-
Stage 1	932	830	-	904	808	-	-	-	-	-	-	-
Stage 2	776	751	-	825	822	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB		
HCM Control Delay, s	9.1		11.4		1.6			3.8		
HCM LOS	A		B							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1591	-	-	671	1066	697	1046	1489	-	-
HCM Lane V/C Ratio	0.018	-	-	0.038	0.07	0.298	0.064	0.016	-	-
HCM Control Delay (s)	7.3	-	-	10.6	8.6	12.3	8.7	7.5	-	-
HCM Lane LOS	A	-	-	B	A	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.2	1.2	0.2	0.1	-	-

HCM 6th TWSC
 18: Yosemite St & South Site Access

2043 Total Traffic
 AM Peak Hour

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑	↗	↖	↑	↗
Traffic Vol, veh/h	7	0	59	67	0	9	19	108	28	4	272	2
Future Vol, veh/h	7	0	59	67	0	9	19	108	28	4	272	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	250	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	0	63	71	0	10	20	115	30	4	289	2

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	472	482	289	485	454	115	291	0	0	145	0	0
Stage 1	297	297	-	155	155	-	-	-	-	-	-	-
Stage 2	175	185	-	330	299	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	502	484	750	492	502	937	1271	-	-	1437	-	-
Stage 1	712	668	-	847	769	-	-	-	-	-	-	-
Stage 2	827	747	-	683	666	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	490	475	750	444	492	937	1271	-	-	1437	-	-
Mov Cap-2 Maneuver	490	475	-	444	492	-	-	-	-	-	-	-
Stage 1	701	666	-	833	757	-	-	-	-	-	-	-
Stage 2	806	735	-	624	664	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.4		14		1		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1271	-	-	490	750	444	937	1437	-	-
HCM Lane V/C Ratio	0.016	-	-	0.015	0.084	0.161	0.01	0.003	-	-
HCM Control Delay (s)	7.9	-	-	12.5	10.2	14.7	8.9	7.5	-	-
HCM Lane LOS	A	-	-	B	B	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0.6	0	0	-	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	1	5	3	150	405	0
Future Vol, veh/h	1	5	3	150	405	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	5	3	160	431	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	597	431	431	0	-	0
Stage 1	431	-	-	-	-	-
Stage 2	166	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	466	624	1129	-	-	-
Stage 1	655	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	465	624	1129	-	-	-
Mov Cap-2 Maneuver	465	-	-	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	863	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1129	-	590	-	-
HCM Lane V/C Ratio	0.003	-	0.011	-	-
HCM Control Delay (s)	8.2	0	11.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	27	11	159	405	0
Future Vol, veh/h	0	27	11	159	405	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	29	12	169	431	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	624	431	431	0	-	0
Stage 1	431	-	-	-	-	-
Stage 2	193	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	449	624	1129	-	-	-
Stage 1	655	-	-	-	-	-
Stage 2	840	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	444	624	1129	-	-	-
Mov Cap-2 Maneuver	444	-	-	-	-	-
Stage 1	647	-	-	-	-	-
Stage 2	840	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1129	-	624	-	-
HCM Lane V/C Ratio	0.01	-	0.046	-	-
HCM Control Delay (s)	8.2	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	2	19	0	57	3	47	8	18	25	1
Future Vol, veh/h	3	0	2	19	0	57	3	47	8	18	25	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	2	20	0	61	3	50	9	19	27	1

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	157	131	28	128	127	55	28	0	0	59	0	0
Stage 1	66	66	-	61	61	-	-	-	-	-	-	-
Stage 2	91	65	-	67	66	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	809	760	1047	845	764	1012	1585	-	-	1545	-	-
Stage 1	945	840	-	950	844	-	-	-	-	-	-	-
Stage 2	916	841	-	943	840	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	752	749	1047	834	753	1012	1585	-	-	1545	-	-
Mov Cap-2 Maneuver	752	749	-	834	753	-	-	-	-	-	-	-
Stage 1	943	830	-	948	842	-	-	-	-	-	-	-
Stage 2	859	839	-	930	830	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.3		9.1		0.4		3	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1585	-	-	848	961	1545	-
HCM Lane V/C Ratio	0.002	-	-	0.006	0.084	0.012	-
HCM Control Delay (s)	7.3	0	-	9.3	9.1	7.4	0
HCM Lane LOS	A	A	-	A	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0	-

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	4	52	0	33	3	25	23	12	34	0
Future Vol, veh/h	0	0	4	52	0	33	3	25	23	12	34	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	4	55	0	35	3	27	24	13	36	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	125	119	36	109	107	39	36	0	0	51	0	0
Stage 1	62	62	-	45	45	-	-	-	-	-	-	-
Stage 2	63	57	-	64	62	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	849	771	1037	870	783	1033	1575	-	-	1555	-	-
Stage 1	949	843	-	969	857	-	-	-	-	-	-	-
Stage 2	948	847	-	947	843	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	813	763	1037	860	774	1033	1575	-	-	1555	-	-
Mov Cap-2 Maneuver	813	763	-	860	774	-	-	-	-	-	-	-
Stage 1	947	835	-	967	855	-	-	-	-	-	-	-
Stage 2	914	845	-	935	835	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.5		9.3		0.4		1.9	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1575	-	-	1037	920	1555	-
HCM Lane V/C Ratio	0.002	-	-	0.004	0.098	0.008	-
HCM Control Delay (s)	7.3	0	-	8.5	9.3	7.3	0
HCM Lane LOS	A	A	-	A	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	604	347	19	14	5
Future Vol, veh/h	13	604	347	19	14	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	643	369	20	15	5

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	389	0	0	729	195
Stage 1	-	-	-	379	-
Stage 2	-	-	-	350	-
Critical Hdwy	4.14	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	3.52	3.32
Pot Cap-1 Maneuver	1166	-	-	358	814
Stage 1	-	-	-	662	-
Stage 2	-	-	-	684	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1166	-	-	354	814
Mov Cap-2 Maneuver	-	-	-	354	-
Stage 1	-	-	-	654	-
Stage 2	-	-	-	684	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1166	-	-	-	416
HCM Lane V/C Ratio	0.012	-	-	-	0.049
HCM Control Delay (s)	8.1	-	-	-	14.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	572	45	85	358	9	115
Future Vol, veh/h	572	45	85	358	9	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	250	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	609	48	90	381	10	122

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	657	0	980 305
Stage 1	-	-	-	-	609 -
Stage 2	-	-	-	-	371 -
Critical Hdwy	-	-	4.14	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	-	-	2.22	-	3.52 3.32
Pot Cap-1 Maneuver	-	-	926	-	247 691
Stage 1	-	-	-	-	505 -
Stage 2	-	-	-	-	668 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	926	-	223 691
Mov Cap-2 Maneuver	-	-	-	-	223 -
Stage 1	-	-	-	-	505 -
Stage 2	-	-	-	-	603 -

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	223	691	-	-	926	-
HCM Lane V/C Ratio	0.043	0.177	-	-	0.098	-
HCM Control Delay (s)	21.9	11.3	-	-	9.3	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.6	-	-	0.3	-

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Traffic Vol, veh/h	621	54	3	384	37	3
Future Vol, veh/h	621	54	3	384	37	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	250	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	661	57	3	409	39	3

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	718	0	872
Stage 1	-	-	-	-	661
Stage 2	-	-	-	-	211
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	879	-	290
Stage 1	-	-	-	-	475
Stage 2	-	-	-	-	804
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	879	-	289
Mov Cap-2 Maneuver	-	-	-	-	289
Stage 1	-	-	-	-	475
Stage 2	-	-	-	-	802

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	18.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	289	665	-	-	879	-
HCM Lane V/C Ratio	0.136	0.005	-	-	0.004	-
HCM Control Delay (s)	19.4	10.4	-	-	9.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑	↗	↙	↗		↙	↗	
Traffic Vol, veh/h	65	474	84	43	275	46	50	4	28	51	6	61
Future Vol, veh/h	65	474	84	43	275	46	50	4	28	51	6	61
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	250	250	-	250	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	69	504	89	46	293	49	53	4	30	54	6	65

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	342	0	0	593	0	0	884	1076	252	777	1116	147
Stage 1	-	-	-	-	-	-	642	642	-	385	385	-
Stage 2	-	-	-	-	-	-	242	434	-	392	731	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1214	-	-	979	-	-	240	218	748	287	206	873
Stage 1	-	-	-	-	-	-	429	467	-	610	609	-
Stage 2	-	-	-	-	-	-	740	579	-	604	425	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1214	-	-	979	-	-	200	196	748	250	185	873
Mov Cap-2 Maneuver	-	-	-	-	-	-	200	196	-	250	185	-
Stage 1	-	-	-	-	-	-	405	440	-	575	580	-
Stage 2	-	-	-	-	-	-	646	552	-	542	401	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	1	22.6	16.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	200	553	1214	-	-	979	-	-	250	655
HCM Lane V/C Ratio	0.266	0.062	0.057	-	-	0.047	-	-	0.217	0.109
HCM Control Delay (s)	29.4	11.9	8.1	-	-	8.9	-	-	23.3	11.2
HCM Lane LOS	D	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	1	0.2	0.2	-	-	0.1	-	-	0.8	0.4

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	534	19	59	350	14	39
Future Vol, veh/h	534	19	59	350	14	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	250	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	568	20	63	372	15	41

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	588	0	880
Stage 1	-	-	-	-	568
Stage 2	-	-	-	-	312
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	983	-	287
Stage 1	-	-	-	-	530
Stage 2	-	-	-	-	715
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	983	-	269
Mov Cap-2 Maneuver	-	-	-	-	269
Stage 1	-	-	-	-	530
Stage 2	-	-	-	-	669

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	497	-	-	983	-
HCM Lane V/C Ratio	0.113	-	-	0.064	-
HCM Control Delay (s)	13.2	-	-	8.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	544	39	82	414	23	53
Future Vol, veh/h	544	39	82	414	23	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	170	250	-	0	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	579	41	87	440	24	56

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	620	0	973 290
Stage 1	-	-	-	-	579 -
Stage 2	-	-	-	-	394 -
Critical Hdwy	-	-	4.14	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	-	-	2.22	-	3.52 3.32
Pot Cap-1 Maneuver	-	-	956	-	250 707
Stage 1	-	-	-	-	524 -
Stage 2	-	-	-	-	650 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	956	-	227 707
Mov Cap-2 Maneuver	-	-	-	-	227 -
Stage 1	-	-	-	-	524 -
Stage 2	-	-	-	-	591 -

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	227	707	-	-	956	-
HCM Lane V/C Ratio	0.108	0.08	-	-	0.091	-
HCM Control Delay (s)	22.8	10.5	-	-	9.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0.3	-	-	0.3	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑		↘	
Traffic Vol, veh/h	4	584	477	14	5	2
Future Vol, veh/h	4	584	477	14	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	621	507	15	5	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	522	0	-	0	834 261
Stage 1	-	-	-	-	515 -
Stage 2	-	-	-	-	319 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	1041	-	-	-	307 738
Stage 1	-	-	-	-	565 -
Stage 2	-	-	-	-	710 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1041	-	-	-	306 738
Mov Cap-2 Maneuver	-	-	-	-	306 -
Stage 1	-	-	-	-	563 -
Stage 2	-	-	-	-	710 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1041	-	-	-	367
HCM Lane V/C Ratio	0.004	-	-	-	0.02
HCM Control Delay (s)	8.5	-	-	-	15
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	540	49	29	427	64	63
Future Vol, veh/h	540	49	29	427	64	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	574	52	31	454	68	67

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	626	0	863 287
Stage 1	-	-	-	-	574 -
Stage 2	-	-	-	-	289 -
Critical Hdwy	-	-	4.14	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	-	-	2.22	-	3.52 3.32
Pot Cap-1 Maneuver	-	-	952	-	294 710
Stage 1	-	-	-	-	527 -
Stage 2	-	-	-	-	735 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	952	-	284 710
Mov Cap-2 Maneuver	-	-	-	-	284 -
Stage 1	-	-	-	-	527 -
Stage 2	-	-	-	-	711 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	18.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	404	-	-	952	-
HCM Lane V/C Ratio	0.334	-	-	0.032	-
HCM Control Delay (s)	18.3	-	-	8.9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.4	-	-	0.1	-

Timings
10: Quebec St & E. 160th Ave (SH 7)

2043 Total Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	1197	309	404	1152	20	399	192	298	34	112	53
Future Volume (vph)	76	1197	309	404	1152	20	399	192	298	34	112	53
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			6			Free			4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	10.0	20.0		10.0	20.0	20.0	10.0	20.0		10.0	20.0	20.0
Total Split (s)	12.0	55.0		20.0	63.0	63.0	20.0	33.0		12.0	25.0	25.0
Total Split (%)	10.0%	45.8%		16.7%	52.5%	52.5%	16.7%	27.5%		10.0%	20.8%	20.8%
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Min		None	Min	Min
Act Effct Green (s)	7.0	43.5	102.8	15.1	51.6	51.6	15.1	22.3	102.8	6.6	8.9	8.9
Actuated g/C Ratio	0.07	0.42	1.00	0.15	0.50	0.50	0.15	0.22	1.00	0.06	0.09	0.09
v/c Ratio	0.67	0.85	0.21	0.85	0.69	0.02	0.84	0.27	0.20	0.32	0.39	0.18
Control Delay	76.0	33.0	0.3	61.3	21.9	0.1	60.1	37.8	0.3	56.4	49.5	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.0	33.0	0.3	61.3	21.9	0.1	60.1	37.8	0.3	56.4	49.5	1.2
LOS	E	C	A	E	C	A	E	D	A	E	D	A
Approach Delay		28.7			31.7			35.2			37.9	
Approach LOS		C			C			D			D	

Intersection Summary

























Cycle Length: 120
 Actuated Cycle Length: 102.8
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 31.6
 Intersection LOS: C
 Intersection Capacity Utilization 76.8%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 10: Quebec St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 10: Quebec St & E. 160th Ave (SH 7)

2043 Total Traffic
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	1197	309	404	1152	20	399	192	298	34	112	53
Future Volume (veh/h)	76	1197	309	404	1152	20	399	192	298	34	112	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	81	1273	0	430	1226	21	424	204	0	36	119	56
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	104	1525		506	1837	820	501	623		58	224	100
Arrive On Green	0.06	0.43	0.00	0.15	0.52	0.52	0.14	0.18	0.00	0.03	0.06	0.06
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	81	1273	0	430	1226	21	424	204	0	36	119	56
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	4.1	29.4	0.0	11.2	23.5	0.6	11.0	4.6	0.0	1.8	3.0	3.2
Cycle Q Clear(g_c), s	4.1	29.4	0.0	11.2	23.5	0.6	11.0	4.6	0.0	1.8	3.0	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	104	1525		506	1837	820	501	623		58	224	100
V/C Ratio(X)	0.78	0.84		0.85	0.67	0.03	0.85	0.33		0.62	0.53	0.56
Avail Cap(c_a), veh/h	135	1926		562	2234	996	562	1078		135	770	344
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.9	23.4	0.0	38.4	16.4	10.9	38.4	33.3	0.0	44.1	41.9	42.0
Incr Delay (d2), s/veh	19.1	2.7	0.0	11.0	0.6	0.0	10.6	0.3	0.0	10.2	2.0	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	11.3	0.0	5.2	8.2	0.2	5.2	2.0	0.0	1.0	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.0	26.1	0.0	49.4	17.0	10.9	49.0	33.6	0.0	54.3	43.9	46.8
LnGrp LOS	E	C		D	B	B	D	C		D	D	D
Approach Vol, veh/h		1354			1677			628			211	
Approach Delay, s/veh		28.3			25.2			44.0			46.4	
Approach LOS		C			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.5	44.6	18.4	10.8	10.4	52.7	8.0	21.2				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	15.0	50.0	15.0	20.0	7.0	58.0	7.0	28.0				
Max Q Clear Time (g_c+I1), s	13.2	31.4	13.0	5.2	6.1	25.5	3.8	6.6				
Green Ext Time (p_c), s	0.3	8.2	0.3	0.6	0.0	9.8	0.0	1.1				

Intersection Summary												
HCM 6th Ctrl Delay				30.5								
HCM 6th LOS				C								

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Timings
11: Yosemite St & E. 160th Ave (SH 7)

2043 Total Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	234	1223	83	69	1402	203	65	45	128	30	142
Future Volume (vph)	234	1223	83	69	1402	203	65	45	128	30	142
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		1	6			8		4	
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	6	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min	Min
Act Effect Green (s)	56.2	50.9	50.9	54.0	47.3	47.3	15.5	15.5	15.5	15.5	15.5
Actuated g/C Ratio	0.66	0.59	0.59	0.63	0.55	0.55	0.18	0.18	0.18	0.18	0.18
v/c Ratio	1.04	0.62	0.09	0.25	0.76	0.22	0.28	0.35	0.60	0.09	0.38
Control Delay	94.8	13.7	2.3	6.8	17.7	1.9	37.0	23.1	47.3	33.9	11.5
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	94.8	13.7	2.3	6.8	17.7	1.9	37.0	23.1	47.3	33.9	11.5
LOS	F	B	A	A	B	A	D	C	D	C	B
Approach Delay		25.4			15.3			28.1		29.0	
Approach LOS		C			B			C		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 85.7
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 21.3
 Intersection LOS: C
 Intersection Capacity Utilization 78.0%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 11: Yosemite St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 11: Yosemite St & E. 160th Ave (SH 7)

2043 Total Traffic
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	234	1223	83	69	1402	203	65	45	70	128	30	142
Future Volume (veh/h)	234	1223	83	69	1402	203	65	45	70	128	30	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	249	1301	0	73	1491	216	69	48	74	136	32	151
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	2055		314	1933	862	303	130	200	254	365	310
Arrive On Green	0.08	0.58	0.00	0.05	0.54	0.54	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1201	663	1023	1269	1870	1585
Grp Volume(v), veh/h	249	1301	0	73	1491	216	69	0	122	136	32	151
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1201	0	1686	1269	1870	1585
Q Serve(g_s), s	5.1	20.6	0.0	1.5	27.8	6.1	4.2	0.0	5.3	8.8	1.2	7.2
Cycle Q Clear(g_c), s	5.1	20.6	0.0	1.5	27.8	6.1	5.4	0.0	5.3	14.1	1.2	7.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.61	1.00		1.00
Lane Grp Cap(c), veh/h	294	2055		314	1933	862	303	0	329	254	365	310
V/C Ratio(X)	0.85	0.63		0.23	0.77	0.25	0.23	0.00	0.37	0.54	0.09	0.49
Avail Cap(c_a), veh/h	294	3284		375	3284	1465	353	0	400	306	443	376
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.1	11.8	0.0	9.5	15.1	10.2	30.0	0.0	29.5	35.6	27.8	30.2
Incr Delay (d2), s/veh	19.8	0.3	0.0	0.4	0.7	0.2	0.4	0.0	0.7	1.8	0.1	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	6.3	0.0	0.5	9.0	1.8	1.2	0.0	2.1	2.7	0.5	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.9	12.2	0.0	9.9	15.8	10.3	30.4	0.0	30.1	37.3	27.9	31.4
LnGrp LOS	D	B		A	B	B	C	A	C	D	C	C
Approach Vol, veh/h		1550			1780			191			319	
Approach Delay, s/veh		16.1			14.9			30.2			33.6	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	53.8		21.5	12.0	50.9		21.5				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	3.5	22.6		16.1	7.1	29.8		7.4				
Green Ext Time (p_c), s	0.0	11.8		0.4	0.0	16.1		0.6				

Intersection Summary

HCM 6th Ctrl Delay	17.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Timings
12: Havana St & E. 160th Ave (SH 7)

2043 Total Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	117	1222	75	166	1582	30	48	19	9	13	62
Future Volume (vph)	117	1222	75	166	1582	30	48	19	9	13	62
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		1	6			8		4	
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	6	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	83.0	83.0	12.0	83.0	83.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	69.2%	69.2%	10.0%	69.2%	69.2%	20.8%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	None	Min	Min	Min	Min	Min
Act Effect Green (s)	54.3	47.1	47.1	54.2	47.1	47.1	8.7	8.7	8.7	8.7	8.7
Actuated g/C Ratio	0.69	0.60	0.60	0.69	0.60	0.60	0.11	0.11	0.11	0.11	0.11
v/c Ratio	0.49	0.61	0.08	0.54	0.79	0.03	0.33	0.39	0.07	0.07	0.28
Control Delay	16.0	11.1	1.7	10.8	15.0	0.5	42.6	18.5	38.0	37.4	13.8
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	16.0	11.1	1.7	10.8	15.0	0.5	42.6	18.5	38.0	37.4	13.8
LOS	B	B	A	B	B	A	D	B	D	D	B
Approach Delay		11.0			14.4			26.8		20.2	
Approach LOS		B			B			C		C	

Intersection Summary
























Cycle Length: 120
 Actuated Cycle Length: 78.6
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 13.6
 Intersection LOS: B
 Intersection Capacity Utilization 72.0%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 12: Havana St & E. 160th Ave (SH 7)



HCM 6th Signalized Intersection Summary
 12: Havana St & E. 160th Ave (SH 7)

2043 Total Traffic
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	1222	75	166	1582	30	48	19	72	9	13	62
Future Volume (veh/h)	117	1222	75	166	1582	30	48	19	72	9	13	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	124	1300	80	177	1683	32	51	20	77	10	14	66
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	2218	989	384	2232	996	218	32	124	151	178	151
Arrive On Green	0.06	0.62	0.62	0.07	0.63	0.63	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1319	337	1299	1298	1870	1585
Grp Volume(v), veh/h	124	1300	80	177	1683	32	51	0	97	10	14	66
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1319	0	1637	1298	1870	1585
Q Serve(g_s), s	1.6	15.3	1.4	2.4	23.7	0.5	2.6	0.0	4.0	0.5	0.5	2.8
Cycle Q Clear(g_c), s	1.6	15.3	1.4	2.4	23.7	0.5	3.1	0.0	4.0	4.6	0.5	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.79	1.00		1.00
Lane Grp Cap(c), veh/h	300	2218	989	384	2232	996	218	0	156	151	178	151
V/C Ratio(X)	0.41	0.59	0.08	0.46	0.75	0.03	0.23	0.00	0.62	0.07	0.08	0.44
Avail Cap(c_a), veh/h	362	3918	1748	438	3918	1748	466	0	463	395	529	448
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.5	7.9	5.3	6.7	9.3	5.0	30.6	0.0	30.8	33.0	29.2	30.2
Incr Delay (d2), s/veh	0.9	0.2	0.0	0.9	0.5	0.0	0.5	0.0	4.0	0.2	0.2	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.7	0.3	0.5	5.8	0.1	0.8	0.0	1.7	0.2	0.2	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.4	8.1	5.3	7.6	9.8	5.0	31.1	0.0	34.8	33.2	29.4	32.2
LnGrp LOS	B	A	A	A	A	A	C	A	C	C	C	C
Approach Vol, veh/h		1504			1892			148			90	
Approach Delay, s/veh		8.2			9.5			33.5			31.9	
Approach LOS		A			A			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.8	49.2		11.7	9.6	49.4		11.7				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		20.0	7.0	78.0		20.0				
Max Q Clear Time (g_c+I1), s	4.4	17.3		6.6	3.6	25.7		6.0				
Green Ext Time (p_c), s	0.1	12.3		0.2	0.1	18.8		0.5				
Intersection Summary												
HCM 6th Ctrl Delay				10.5								
HCM 6th LOS				B								

HCM 6th TWSC
 13: Riverdale Rd & E. 160th Ave (SH 7)

2043 Total Traffic
 PM Peak Hour

Intersection						
Int Delay, s/veh	3.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	1237	29	300	1771	29	498
Future Vol, veh/h	1237	29	300	1771	29	498
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	475	475	-	0	85
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1316	31	319	1884	31	530

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1347	0	2896
Stage 1	-	-	-	-	1316
Stage 2	-	-	-	-	1580
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	507	-	~ 13
Stage 1	-	-	-	-	215
Stage 2	-	-	-	-	155
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	507	-	~ 5
Mov Cap-2 Maneuver	-	-	-	-	43
Stage 1	-	-	-	-	215
Stage 2	-	-	-	-	58

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	201.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	43	-	-	-	507	-
HCM Lane V/C Ratio	0.717	-	-	-	0.629	-
HCM Control Delay (s)	201.4	0	-	-	23.4	-
HCM Lane LOS	F	A	-	-	C	-
HCM 95th %tile Q(veh)	2.7	-	-	-	4.3	-

Notes
 -: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Timings
 14: E. 160th Ave (SH 7) & Tuscon St

2043 Total Traffic
 PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑↑	↑↑	↘	↙	↘
Traffic Volume (vph)	85	1611	1985	84	47	47
Future Volume (vph)	85	1611	1985	84	47	47
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0	15.0	10.0	10.0
Minimum Split (s)	10.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	95.0	83.0	83.0	25.0	25.0
Total Split (%)	10.0%	79.2%	69.2%	69.2%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Max	Max	Max	None	None
Act Effct Green (s)	93.0	94.0	84.6	84.6	10.3	10.3
Actuated g/C Ratio	0.84	0.85	0.77	0.77	0.09	0.09
v/c Ratio	0.53	0.57	0.78	0.07	0.30	0.26
Control Delay	26.0	4.1	12.9	1.2	51.9	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	4.1	12.9	1.2	51.9	16.5
LOS	C	A	B	A	D	B
Approach Delay		5.1	12.4		34.2	
Approach LOS		A	B		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 110.3
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 9.8
 Intersection Capacity Utilization 80.4%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service D

Splits and Phases: 14: E. 160th Ave (SH 7) & Tuscon St



HCM 6th Signalized Intersection Summary
 14: E. 160th Ave (SH 7) & Tuscon St

2043 Total Traffic
 PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	85	1611	1985	84	47	47
Future Volume (veh/h)	85	1611	1985	84	47	47
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	1714	2112	89	50	50
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	202	2920	2606	1162	155	138
Arrive On Green	0.04	0.82	0.73	0.73	0.09	0.09
Sat Flow, veh/h	1781	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	90	1714	2112	89	50	50
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1585
Q Serve(g_s), s	1.2	18.2	42.8	1.7	2.9	3.3
Cycle Q Clear(g_c), s	1.2	18.2	42.8	1.7	2.9	3.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	202	2920	2606	1162	155	138
V/C Ratio(X)	0.44	0.59	0.81	0.08	0.32	0.36
Avail Cap(c_a), veh/h	240	2920	2606	1162	325	289
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.7	3.4	9.6	4.1	47.0	47.1
Incr Delay (d2), s/veh	1.5	0.9	2.9	0.1	1.2	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	3.1	12.3	0.4	1.3	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.3	4.2	12.5	4.3	48.2	48.7
LnGrp LOS	C	A	B	A	D	D
Approach Vol, veh/h		1804	2201		100	
Approach Delay, s/veh		5.1	12.1		48.5	
Approach LOS		A	B		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		95.0		14.5	9.7	85.3
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		90.0		20.0	7.0	78.0
Max Q Clear Time (g_c+I1), s		20.2		5.3	3.2	44.8
Green Ext Time (p_c), s		20.5		0.2	0.1	22.1
Intersection Summary						
HCM 6th Ctrl Delay			9.9			
HCM 6th LOS			A			

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	20	149	130	1
Future Vol, veh/h	0	8	20	149	130	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	21	159	138	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	261	70	139	0	-	0
Stage 1	139	-	-	-	-	-
Stage 2	122	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	706	978	1442	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	890	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	695	978	1442	-	-	-
Mov Cap-2 Maneuver	695	-	-	-	-	-
Stage 1	860	-	-	-	-	-
Stage 2	890	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1442	-	978	-	-
HCM Lane V/C Ratio	0.015	-	0.009	-	-
HCM Control Delay (s)	7.5	-	8.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑↑	↑↑	
Traffic Vol, veh/h	1	18	26	169	134	5
Future Vol, veh/h	1	18	26	169	134	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	19	28	180	143	5

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	292	74	148	0	-	0
Stage 1	146	-	-	-	-	-
Stage 2	146	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	675	973	1431	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	866	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	662	973	1431	-	-	-
Mov Cap-2 Maneuver	662	-	-	-	-	-
Stage 1	849	-	-	-	-	-
Stage 2	866	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1431	-	950	-	-
HCM Lane V/C Ratio	0.019	-	0.021	-	-
HCM Control Delay (s)	7.6	-	8.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

HCM 6th TWSC
 17: Yosemite St & North Site Access

2043 Total Traffic
 PM Peak Hour

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑	↗	↖	↑	↗
Traffic Vol, veh/h	16	0	50	132	0	43	78	23	222	72	34	27
Future Vol, veh/h	16	0	50	132	0	43	78	23	222	72	34	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	250	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	53	140	0	46	83	24	236	77	36	29

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	521	616	36	421	409	24	65	0	0	260	0	0
Stage 1	190	190	-	190	190	-	-	-	-	-	-	-
Stage 2	331	426	-	231	219	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	466	406	1037	543	532	1052	1537	-	-	1304	-	-
Stage 1	812	743	-	812	743	-	-	-	-	-	-	-
Stage 2	682	586	-	772	722	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	408	361	1037	472	473	1052	1537	-	-	1304	-	-
Mov Cap-2 Maneuver	408	361	-	472	473	-	-	-	-	-	-	-
Stage 1	768	699	-	768	703	-	-	-	-	-	-	-
Stage 2	617	554	-	689	679	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	14	1.8	4.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1537	-	-	408	1037	472	1052	1304	-	-
HCM Lane V/C Ratio	0.054	-	-	0.042	0.051	0.298	0.043	0.059	-	-
HCM Control Delay (s)	7.5	-	-	14.2	8.7	15.8	8.6	7.9	-	-
HCM Lane LOS	A	-	-	B	A	C	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	0.2	1.2	0.1	0.2	-	-

HCM 6th TWSC
 18: Yosemite St & South Site Access

2043 Total Traffic
 PM Peak Hour

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↶	↶	↶	↶	↶
Traffic Vol, veh/h	5	0	38	48	0	7	64	313	70	9	199	8
Future Vol, veh/h	5	0	38	48	0	7	64	313	70	9	199	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	250	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	40	51	0	7	68	333	74	10	212	9

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	742	775	212	726	710	333	221	0	0	407	0	0
Stage 1	232	232	-	469	469	-	-	-	-	-	-	-
Stage 2	510	543	-	257	241	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	332	329	828	340	359	709	1348	-	-	1152	-	-
Stage 1	771	713	-	575	561	-	-	-	-	-	-	-
Stage 2	546	520	-	748	706	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	314	310	828	309	338	709	1348	-	-	1152	-	-
Mov Cap-2 Maneuver	314	310	-	309	338	-	-	-	-	-	-	-
Stage 1	732	707	-	546	533	-	-	-	-	-	-	-
Stage 2	513	494	-	705	700	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.4		17.8		1.1		0.3	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1348	-	-	314	828	309	709	1152	-	-
HCM Lane V/C Ratio	0.051	-	-	0.017	0.049	0.165	0.011	0.008	-	-
HCM Control Delay (s)	7.8	-	-	16.7	9.6	18.9	10.1	8.2	-	-
HCM Lane LOS	A	-	-	C	A	C	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	0.2	0.6	0	0	-	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	0	3	5	451	291	3
Future Vol, veh/h	0	3	5	451	291	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	5	480	310	3

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	802	312	313	0	-	0
Stage 1	312	-	-	-	-	-
Stage 2	490	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	353	728	1247	-	-	-
Stage 1	742	-	-	-	-	-
Stage 2	616	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	351	728	1247	-	-	-
Mov Cap-2 Maneuver	351	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	616	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1247	-	728	-	-
HCM Lane V/C Ratio	0.004	-	0.004	-	-
HCM Control Delay (s)	7.9	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	1	14	24	450	292	1
Future Vol, veh/h	1	14	24	450	292	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	15	26	479	311	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	843	312	312	0	-	0
Stage 1	312	-	-	-	-	-
Stage 2	531	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	334	728	1248	-	-	-
Stage 1	742	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	325	728	1248	-	-	-
Mov Cap-2 Maneuver	325	-	-	-	-	-
Stage 1	721	-	-	-	-	-
Stage 2	590	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1248	-	672	-	-
HCM Lane V/C Ratio	0.02	-	0.024	-	-
HCM Control Delay (s)	7.9	0	10.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	0	2	13	0	38	2	37	25	60	57	4
Future Vol, veh/h	1	0	2	13	0	38	2	37	25	60	57	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	2	14	0	40	2	39	27	64	61	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	268	261	63	249	250	53	65	0	0	66	0	0
Stage 1	191	191	-	57	57	-	-	-	-	-	-	-
Stage 2	77	70	-	192	193	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	685	644	1002	705	653	1014	1537	-	-	1536	-	-
Stage 1	811	742	-	955	847	-	-	-	-	-	-	-
Stage 2	932	837	-	810	741	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	636	616	1002	680	624	1014	1537	-	-	1536	-	-
Mov Cap-2 Maneuver	636	616	-	680	624	-	-	-	-	-	-	-
Stage 1	810	710	-	954	846	-	-	-	-	-	-	-
Stage 2	894	836	-	774	709	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.3		9.3		0.2		3.7	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1537	-	-	841	901	1536	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.06	0.042	-
HCM Control Delay (s)	7.3	0	-	9.3	9.3	7.4	0
HCM Lane LOS	A	A	-	A	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.1	-

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	4	36	0	24	7	38	63	27	41	4
Future Vol, veh/h	2	0	4	36	0	24	7	38	63	27	41	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	4	38	0	26	7	40	67	29	44	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	205	225	46	194	194	74	48	0	0	107	0	0
Stage 1	104	104	-	88	88	-	-	-	-	-	-	-
Stage 2	101	121	-	106	106	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	753	674	1023	765	701	988	1559	-	-	1484	-	-
Stage 1	902	809	-	920	822	-	-	-	-	-	-	-
Stage 2	905	796	-	900	807	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	720	657	1023	747	683	988	1559	-	-	1484	-	-
Mov Cap-2 Maneuver	720	657	-	747	683	-	-	-	-	-	-	-
Stage 1	897	793	-	915	818	-	-	-	-	-	-	-
Stage 2	877	792	-	878	791	-	-	-	-	-	-	-













Approach	EB		WB		NB		SB	
HCM Control Delay, s	9		9.7		0.5		2.8	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1559	-	-	897	828	1484	-
HCM Lane V/C Ratio	0.005	-	-	0.007	0.077	0.019	-
HCM Control Delay (s)	7.3	0	-	9	9.7	7.5	0
HCM Lane LOS	A	A	-	A	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.1	-

Queuing Reports

Queues
10: Quebec St & E. 160th Ave (SH 7)

2043 Total Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	33	973	188	420	1463	27	465	84	266	35	129	74
v/c Ratio	0.30	0.70	0.25	0.75	0.77	0.03	0.80	0.10	0.47	0.28	0.42	0.23
Control Delay	56.9	31.4	3.8	51.5	24.7	0.0	54.6	35.7	7.7	54.3	50.9	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.9	31.4	3.8	51.5	24.7	0.0	54.6	35.7	7.7	54.3	50.9	1.7
Queue Length 50th (ft)	23	297	0	145	449	0	162	25	0	24	45	0
Queue Length 95th (ft)	56	398	40	201	578	0	#237	48	70	57	77	0
Internal Link Dist (ft)		888			1060			849			1281	
Turn Bay Length (ft)	550		415	525		415	250		570	230		200
Base Capacity (vph)	117	1382	740	649	1900	921	616	1012	642	150	669	461
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.70	0.25	0.65	0.77	0.03	0.75	0.08	0.41	0.23	0.19	0.16

Intersection Summary

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

Queues
 11: Yosemite St & E. 160th Ave (SH 7)

2043 Total Traffic
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	88	1200	36	59	1702	76	71	104	200	40	219
v/c Ratio	0.44	0.57	0.04	0.20	0.81	0.08	0.25	0.25	0.75	0.10	0.52
Control Delay	17.7	14.1	0.8	6.9	20.4	2.4	40.3	14.8	58.8	37.5	23.6
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	17.7	14.1	0.8	6.9	20.4	2.4	40.3	14.8	58.8	37.5	23.6
Queue Length 50th (ft)	18	258	0	12	471	0	41	12	129	22	59
Queue Length 95th (ft)	58	331	5	25	592	19	90	62	#258	56	148
Internal Link Dist (ft)	1070		840				637		1040		
Turn Bay Length (ft)	435		615	800		700	200		140	150	
Base Capacity (vph)	205	2620	1189	312	2620	1192	366	501	345	501	512
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	0.43	0.46	0.03	0.19	0.65	0.06	0.19	0.21	0.58	0.08	0.43

Intersection Summary

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

Queues
12: Havana St & E. 160th Ave (SH 7)

2043 Total Traffic
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	43	1362	48	38	1601	14	44	107	17	17	109
v/c Ratio	0.15	0.62	0.05	0.12	0.73	0.01	0.25	0.37	0.10	0.07	0.37
Control Delay	3.9	9.7	1.2	3.5	11.9	0.0	37.2	14.0	35.6	34.6	12.0
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	3.9	9.7	1.2	3.5	11.9	0.0	37.2	14.0	35.6	34.6	12.0
Queue Length 50th (ft)	4	184	0	3	249	0	18	4	7	7	0
Queue Length 95th (ft)	12	282	8	11	378	0	58	53	30	29	48
Internal Link Dist (ft)		861			1065			1073		396	
Turn Bay Length (ft)	515		425	550		425	200		275		
Base Capacity (vph)	307	3390	1519	351	3390	1519	465	604	429	624	603
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	0.14	0.40	0.03	0.11	0.47	0.01	0.09	0.18	0.04	0.03	0.18

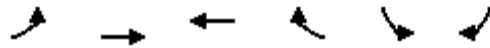
Intersection Summary

Queues

14: E. 160th Ave (SH 7) & Tuscon St

2043 Total Traffic

AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	54	1740	1991	34	72	77
v/c Ratio	0.32	0.61	0.77	0.03	0.41	0.34
Control Delay	8.8	5.1	12.9	1.9	54.4	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	5.1	12.9	1.9	54.4	14.7
Queue Length 50th (ft)	5	175	418	0	49	0
Queue Length 95th (ft)	22	270	604	10	96	44
Internal Link Dist (ft)		1375	1198		2530	
Turn Bay Length (ft)	450			325		
Base Capacity (vph)	183	2869	2581	1164	318	348
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	0.30	0.61	0.77	0.03	0.23	0.22

Intersection Summary

Queues
10: Quebec St & E. 160th Ave (SH 7)

2043 Total Traffic
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	81	1273	329	430	1226	21	424	204	317	36	119	56
v/c Ratio	0.67	0.85	0.21	0.85	0.69	0.02	0.84	0.27	0.20	0.32	0.39	0.18
Control Delay	76.0	33.0	0.3	61.3	21.9	0.1	60.1	37.8	0.3	56.4	49.5	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.0	33.0	0.3	61.3	21.9	0.1	60.1	37.8	0.3	56.4	49.5	1.2
Queue Length 50th (ft)	54	385	0	147	308	0	144	64	0	23	40	0
Queue Length 95th (ft)	#140	495	0	#255	401	0	#248	104	0	60	72	0
Internal Link Dist (ft)		888			1060			849			1281	
Turn Bay Length (ft)	550		415	525		415	250		570	230		200
Base Capacity (vph)	121	1733	1583	504	2010	966	504	970	1583	121	693	471
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.73	0.21	0.85	0.61	0.02	0.84	0.21	0.20	0.30	0.17	0.12

Intersection Summary

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

Queues
 11: Yosemite St & E. 160th Ave (SH 7)

2043 Total Traffic
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	249	1301	88	73	1491	216	69	122	136	32	151
v/c Ratio	1.04	0.62	0.09	0.25	0.76	0.22	0.28	0.35	0.60	0.09	0.38
Control Delay	94.8	13.7	2.3	6.8	17.7	1.9	37.0	23.1	47.3	33.9	11.5
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	94.8	13.7	2.3	6.8	17.7	1.9	37.0	23.1	47.3	33.9	11.5
Queue Length 50th (ft)	~101	241	0	11	305	0	32	30	68	14	7
Queue Length 95th (ft)	#300	334	19	25	416	28	85	94	154	46	64
Internal Link Dist (ft)		1070			840			637		1040	
Turn Bay Length (ft)	435		615	800		700	200		140		150
Base Capacity (vph)	239	3132	1411	302	3132	1425	332	452	303	451	486
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	1.04	0.42	0.06	0.24	0.48	0.15	0.21	0.27	0.45	0.07	0.31

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.

Queues
12: Havana St & E. 160th Ave (SH 7)

2043 Total Traffic
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	124	1300	80	177	1683	32	51	97	10	14	66
v/c Ratio	0.49	0.61	0.08	0.54	0.79	0.03	0.33	0.39	0.07	0.07	0.28
Control Delay	16.0	11.1	1.7	10.9	15.1	0.5	42.6	18.5	38.0	37.4	13.8
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	16.0	11.1	1.7	10.9	15.1	0.5	42.6	18.5	38.0	37.4	13.8
Queue Length 50th (ft)	12	184	0	17	287	0	23	9	4	6	0
Queue Length 95th (ft)	64	274	15	46	426	3	69	60	23	27	39
Internal Link Dist (ft)		861			1065			1073		396	
Turn Bay Length (ft)	515		425	550		425	200		275		
Base Capacity (vph)	258	3289	1477	331	3289	1476	369	491	342	493	468
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	0.48	0.40	0.05	0.53	0.51	0.02	0.14	0.20	0.03	0.03	0.14

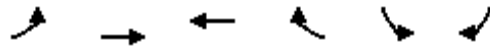
Intersection Summary

Queues

14: E. 160th Ave (SH 7) & Tuscon St

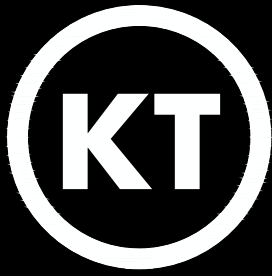
2043 Total Traffic

PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	90	1714	2112	89	50	50
v/c Ratio	0.53	0.57	0.78	0.07	0.30	0.26
Control Delay	26.0	4.1	12.9	1.2	51.9	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	4.1	12.9	1.2	51.9	16.5
Queue Length 50th (ft)	13	170	490	0	34	0
Queue Length 95th (ft)	68	232	653	14	72	37
Internal Link Dist (ft)		1375	1198		2530	
Turn Bay Length (ft)	450			325		
Base Capacity (vph)	178	3016	2716	1235	320	327
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	0.57	0.78	0.07	0.16	0.15

Intersection Summary



KT ENGINEERING
ENGINEERS • SURVEYORS

PROJECT:
TODD CREEK PUD AMENDMENT

REPORT:
**PRELIMINARY REGIONAL
DRAINAGE REPORT**

ISSUE DATE:
JUNE 5, 2023

REVISIONS:



Engineer Certification Statement

I hereby certify that this report for the Preliminary Regional Drainage Report of the Todd Creek PUD Amendment was prepared by me or under my direct supervision in accordance with the provisions of Adams County Storm Drainage Design and Technical Criteria for owners thereof. I understand that Adams County does not and will not assume liability for drainage facilities designed by others.

Kenneth Paul Toland
Registered Professional Engineer
State of Colorado No. 33801
For and on behalf of KT Engineering

Developer Certification Statement

Remington Homes hereby certifies that the drainage facilities for the Preliminary Regional Drainage Report of the Todd Creek PUD Amendment shall be constructed according to the design presented in this report. I understand that Adams County does not and will not assume liability for the drainage facilities designed and/or certified by my engineer. I understand that Adams County reviews drainage plans pursuant to Colorado Revised Statutes Title 30, Article 28; but cannot, on behalf of Remington Homes, guarantee that final drainage design review will absolve Remington Homes and/or their successors and/or assigns the future liability for improper design. I further understand that approval of the Final Plat and/or Final Development Plan does not imply approval of my engineer's drainage design.

HSG Land LLC

Date:

Remington Homes

Date:

Taylor Carlson

Date:

Table of Contents

I. Purpose and Scope.....	1
II. General Location and Description	2
Location.....	2
Description of Property.....	2
III. Drainage Basin and Sub-Basins	6
Major Basin Description.....	6
Sub-Basin Description	6
Regulations.....	7
Hydrological Criteria	7
Hydraulic Criteria	7
IV. Drainage Facility Design	8
General Concept	8
V. Conclusion.....	12
VI. References.....	12

Appendix

- A. Vicinity Map & Design Charts, Land Use Maps, Soils Map
- B. CUHP/SWMM Model Summary & Inputs
- C. Historic CUHP/SWMM Model
- D. Existing Condition CUHP/SWMM Model
- E. Proposed Condition CUHP/SWMM Model
- F. Future Condition CUHP/SWMM Model
- G. FEMA Floodplain Map

Maps

- Existing Topography Map
- Existing Condition Drainage Plan
- Proposed Condition Drainage Plan
- Detailed Proposed Condition Drainage Plan (WSP & Remington)
- Detailed Proposed Condition Drainage Plan (Carlson)
- Future Condition Drainage Plan

I. Purpose and Scope

The Todd Creek PUD Amendment area is composed of 3 separate properties totaling approximately 443.7 acres. The three properties are proposed to be developed into residential communities totaling 1,978 dwelling units consisting of mainly single-family dwellings, townhomes, and duplexes. One of the properties is proposed to have some apartments and an assisted living campus.

The properties are located in two distinct watersheds that encompass an area of approximately 3.75 square miles within the South Platte River watershed. The two drainages have been designated as E. 168th Avenue Drainage #1 and #2 in this report. The purpose of this drainage study is to analyze the total watershed area to determine existing constraints and evaluate both local and regional drainage improvements necessary within the watershed in general and with the development of the Todd Creek PUD Amendment area. There are four different scenarios analyzed in this report and are as follows: Historic Condition, Existing Condition, Proposed Condition and Future Condition. Each one is discussed in more detail below.

Historic Condition

The historic condition assumes all sub-basins are 2% impervious. No existing detention ponds are modeled in this condition. The purpose of this model is to establish a baseline for comparing flowrates in both proposed and future models.

Existing Condition

The existing condition model uses current land uses to establish a percent impervious for each sub-basin. An existing detention pond within the Shook Subdivision (Pond 2003) was modeled and assumed to release 100-year developed flowrates at approximately 1.0 cfs/acre. The purpose of this model is to establish existing flowrates within the watershed.

Proposed Condition

The proposed condition analyzes the existing condition and adds imperviousness increases and drainage improvements that will be constructed as part of the Todd Creek PUD Amendment. This includes modeling five proposed detention ponds (Ponds 1001, 1006, 2012A, 2012B and 2012C) while utilizing a medium density residential land use within the Todd Creek PUD Amendment Area. A future planned detention pond associated with Baseline Lakes Filing 2 (Pond 2005) was also added to the model utilizing UD-Detention data presented in the Baseline Lakes Filing 2 Final Drainage Report. The purpose of this model is to analyze the effects and mitigation measures proposed as part of the Todd Creek PUD Amendment.

Future Condition

The future condition builds upon the proposed condition model and analyzes what additional future improvements might be necessary from upstream reaches to the outfall of each of the drainages to the South Platte River.

II. General Location and Description

Location

The Todd Creek PUD Amendment area is composed of 3 separate properties along the south side of E. 168th Avenue. The Parcels from east to west are known as the Carlson Property (11750 E. 168th Avenue), Remington Property (9230 E. 168th Avenue), and the WSP Property (8120 E. 168th Avenue). The Carlson Property is located in the NE ¼ of Section 2, the Remington Property is located in the W ½ of Section 3, and the WSP Property is located in the NE ¼ of Section 4, all within Township 1 South and Range 67 West of the Sixth Principal Meridian. In general, the properties are bound to the north by E. 168th Avenue. All the properties abut agricultural land or subdivisions such as Baseline Lakes, Bartley Subdivision, Shook Subdivision, Hi Land Acres, and Todd Creek Meadows. The WSP Property abuts the Signal Reservoirs #1 and #2 along the west property line. A vicinity map has been provided in the appendix of this report.

The overall watershed for this project encompasses 3.75 square miles and is bound to the west by a high point at E. 168th Avenue just west of the WSP Property and by a portion of Weld County Road 19 and the berms of the Signal Reservoirs #1 and #2. It is bound to the north by a ridge in topography up to Weld County Road No. 4 and then by a ridge in topography along agricultural land in the southeast direction. It is bound to the east by the gravel mining operations that existing within the South Platte 100-year FEMA Floodplain. It is bound to south by several fairly recent subdivisions including the Bartley Subdivision, Shook Subdivision, Hi Land Acres, a high point in Yosemite Street and Todd Creek Meadows.

Description of Property

Existing Conditions

All three subject properties within the Todd Creek PUD Amendment Area are located within unincorporated Adams County. The total combined area of the 3 parcels is approximately 443.7 acres and can be broken down as follows: Carlson (118.9 acres), Remington (215.9 acres), and WSP (108.9 acres). All three parcels are largely undeveloped. Existing houses and out buildings are located within the Remington Property. All three parcels contain oil and gas wells and most notably the Carlson Property and WSP Property contain large oil and gas well pads and tank batteries. The Carlson Property also contains a retention pond associated with the Baseline Lakes subdivision and surrounding development of Lima and Havana Street. In general, all the properties are covered in native grasses common for the area. The properties tend to slope to the northeast at approximate slopes of 1.0 to 3.0 percent.

According to the USDA Web Soil Survey, the soils on within the Todd Creek PUD Amendment Area are made of Hydrologic Soil Group C soils consisting of Platner Loam (0-3% slopes), Platner Loam (3-5% slopes), and Ulm Loam (3-5% slopes). The Carlson Property does contain a small area of Gravelly land shale outcropping (Hydrologic Soil Group A) along the eastern boundary.

The Todd Creek PUD Amendment Area properties are located in two drainage basins. The WSP and Remington properties are located in the E. 168th Avenue Drainage #1 basin and the Carlson property is located in the E. 168th Avenue Drainage #2 basin. Both drainage basins begin as a roadside channel on the south side of E. 168th Avenue drainage to the east. From the westernmost extents of the basin at E. 168th Avenue, there are 2 channels that convey runoff to the east along E. 168th Avenue. Both channels are conveyed to the north side of E. 168th Avenue via two separate culverts at the same location at the southwest corner of the property located at 9945 E. 168th Avenue (aka Weld County Road 2). Once on the north side of E. 168th Avenue, the drainage enters Weld County. A smaller roadside channel resumes east of the dual culvert crossing which marks the start of E. 168th Avenue Drainage #2. The E. 168th Avenue Drainage #1 encompasses approximately 1,583 acres. Of which, approximately 425 acres are from the south side of E. 168th Avenue and the remaining 1,158 acres of tributary area are on the north side of E. 168th Avenue. In general, the land appears to be mostly agricultural land with small areas dedicated to houses with outbuildings. There are numerous oil and gas facilities located throughout the watershed. There are 2 commercial uses that exist within the watershed including an outdoor RV storage facility and a ModBox Storage facility. There is also an existing water reservoir located within the watershed and two water ditches that traverse the watershed, the Brantner and Brighton Ditches. At the eastern extents of the watershed area within the South Platte 100-yr FEMA Floodplain, it is hard to distinguish where surface runoff is conveyed to the South Platte River. This is largely due to the gravel mine operations that have been built in the area combined with the flat nature of the South Platte floodplain area. There are several low areas that appear to not release; however, an overflow path can be distinguished to the north within the 100-yr FEMA Floodplain.

The E. 168th Avenue Drainage #2 Basin encompasses approximately 815 acres and in general contains lands located south of E. 168th Avenue with the exception of 1 basin on the at the eastern end of the watershed that is located on the north side of E. 168th Avenue and drains south to the E. 168th Avenue Right-of-Way. In general the land consists of mostly agricultural land with larger lot residential subdivisions within the basin. There are three existing water reservoirs that exists within the water shed known as Stouffer Reservoirs #1, #2, and #3. The Brantner and Brighton ditches also traverse this water shed as well. At the eastern extents of the watershed area within the South Platte 100-yr FEMA Floodplain it is hard to distinguish where surface runoff is conveyed to the South Platte River. This is largely due to the gravel mine operations that have been built in the area combined with the flat nature of the South Platte floodplain area. The low point in E. 168th Avenue is shifted west of the South Platte River and appears to be conveyed to the north or northeasterly direction towards with South Platte River.

For this analysis all water ditches were ignored assumed to be flowing full.

A soils map has been included for the entire watershed area. The overall watershed contains Hydrologic Soil Groups A, B, C and D; however, it is predominantly Type C Soils which for simplicity has been assumed for the entire watershed area for this drainage report.

Proposed Conditions

The Carlson Property, Remington Property and WSP Property will all be developed as part of the Todd Creek PUD Amendment. Approximately 1,978 dwelling units are to be constructed across 443.7 acres (4.5 d.u. per acre). The dwellings will consist of single family houses, duplexes, townhomes and an assisted/independent living facility and apartments. A Medium Density Residential designation (50% imperviousness) was assumed across the three properties.

E. 168th Avenue Drainage #1

For the Remington and WSP Property which will discharge to the E. 168th Avenue Drainage #1, two Extended Detention Basins (EDB) are proposed as Ponds 1001 and 1006. Ponds 1001 and 1006 are proposed as Water Quality Capture Volume and will provide 100-year Detention which will release at a 5-year Historic flowrate per Weld County Drainage Criteria. The 100-year discharge rate of Pond 1001 is 10.3 cfs and will flow into Pond 1006 in series. The 100-year discharge rate of Pond 1006 is 19.9 cfs. These release rates correspond to the release rates generated in the 5-year historic CUHP/SWMM model. The roadside channels will be consolidated into a single channel and the culvert crossing will be replaced with a single 30-inch RCP conveyance with an approximately 19.9 cfs capacity. There are no other improvements associated with the Todd Creek PUD Amendment that are proposed downstream.

E. 168th Avenue Drainage #2

The Carlson Property discharges to the E. 168th Avenue Drainage #2. It is proposed that the existing Retention Pond will be converted to a series of 3 EDBs identified as Ponds 2012A, 2012B and 2012C. The series of ponds will be Water Quality Capture Volume, 5-year + 100% WQCV, and 100-yr + 50% WQCV ponds located in a series due to space constraints. The Design 100-year release will be 44.0 cfs (0.1 cfs/acre) and will discharge to a proposed 30-42-inch diameter RCP that will be extended approximately 1.1 miles in E. 168th Avenue from the South Platte River outfall to the Carlson Property. The South Platte River outfall should be constructed so that an additional 72-inch diameter pipe can be constructed within the same headwall as presented in the Future Condition analysis. There are no other improvements associated with the Todd Creek PUD Amendment that are proposed downstream. It should be noted that Basin 219 which consists of the northern half of the Bartley Subdivision has been excluded from carrying capacity within the proposed drainage pipe. This is due to the fact the development has an existing retention pond facility in place.

Future Conditions

E. 168th Avenue Drainage #1

In addition to the drainage improvements discussed in the proposed condition scenario, the entire watershed was also analyzed to determine any constraints or potential issues in conveying water to the South Platte River. One of the biggest issues is that a defined drainage path cannot be determined to the South Platte River once in the 100-year FEMA Floodplain. There appears to be a lot of grading operations within the Floodplain associated with gravel mining along the banks of the South Platte River. An overflow path can be made out to some degree as flowing north approximately 3.0 miles before joining the South Platte River. Disturbances associated with the gravel mining has disrupted the historic floodplain drainage path. For purposes of this report, a possible storm drain alignment location to the South Platte River is proposed that minimizes

impacts to surrounding properties. The constraint of this storm drain outfall is a flat slope of 0.12%. Due to this flat slope and minimal space to install a pipe, upstream EDB's are proposed in order to attenuate flows to downstream properties while minimizing the size of Pond 1010 so that it does not cross the threshold of a Colorado Jurisdictional Dam. Ponds 1010, 1022, and 1027 are also proposed along with Ponds 1001 and 1006 (located within the Todd Creek PUD Amendment). Ponds 1010, 1022, and 1027 are proposed to be Water Quality Capture Volume and will provide 100-year Detention which will release at a 10-year Historic flowrate per Weld County Drainage Criteria. The most downstream Pond 1010 is proposed to release a 10-year historic flow of 234.7 cfs during the 100-year storm event. This flow is proposed to be carried by 4,400 LF of a 10'W x 4'H RCBC at 0.12%.

E. 168th Avenue Drainage #2

Additional regional drainage improvements are necessary along E. 168th Avenue Drainage #2 as other adjacent sites may develop in the future. It is proposed that a parallel storm pipe be installed along the 30-42-inch RCP previously installed as part of the Proposed Condition. The additional Future Condition pipe size ranges from 30-72-inch RCP. As previously discussed in the Proposed Condition, both pipes (42-inch – Proposed, 72-inch – Future) would outfall at the South Platte River at the same location. The Future Condition pipe would include additional capacity for not only the Carlson property, but for additional properties along E. 168th Avenue. Due to the additional capacity of the pipe provided, the Carlson property series of detention ponds would be consolidated to a single EDB (Pond 2012). Additional developable area could be added to the Carlson property at this time in areas that previously contained Ponds 2012A and 2012B. The additional Future Condition pipe would range in size from 30-36-inch diameter upstream of Carlson Pond 2012 tie-in and 48-inch diameter downstream of the Carlson Pond 2102 tie-in. The pipe size is proposed to increase as additional flows are anticipated to be introduced to the system. The ultimate size of the Future Condition pipe is 72-inch diameter at the most downstream reaches. Future Condition Pond 2012 within the Carlson property can release 158.3 cfs, of which 44.8 cfs will be diverted to the 30-42-inch diameter RCP previously installed in the Proposed Condition. The remaining 113.5 cfs will be discharged to a 48-inch diameter RCP installed as part of the Future Condition storm improvements. The Carlson Property Future Pond 2012 will be restricted to a 100-year release rate of approximately 0.35 cfs per acre (158.3 cfs / 448.01 acres). The future storm line in general is designed to accept flows from other adjacent properties at the rate of 0.5 cfs per acre. The Adjacent properties included in this analysis are located in Sub-basins 200, 214, 215 and 216. Preliminary Ponds 2000, 2014, 2015, and 2016 have been sized in this report utilizing existing imperviousness associated with the adjacent properties. It should be noted that Basin 219 which consists of the northern half of the Bartley Subdivision has been excluded from carrying capacity within the proposed drainage pipe. This is due to the fact the development has an existing retention pond facility in place and an effort to minimize pipe sizes to the extent practical.

III. Drainage Basin and Sub-Basins

Major Basin Description

The watershed lies within the South Platte River major drainage basin. All three sites are within the direct watershed of the South Platte River. The South Platte River is a major conveyance in the Colorado Front Range. The watershed extends over an area of 23,000 square miles and is located in 3 states. Development within the South Platte River major drainage basin is controlled by the South Platte Major Drainageway Plan (June 2000), prepared by Camp Dresser & McKee Inc. All three of the proposed sites are located along the northern boundary of the study at E. 168th Avenue.

There are no FEMA floodplains within the Todd Creek PUD Amendment properties. According to Flood Insurance Rate Map Numbers 08001C0326H and 08001C0307H with effective dates of March 5, 200, all three properties are located in Zone X, which is an area determined to be outside the 500-year floodplain.

Sub-Basin Description

The watershed has been broken up into 41 sub-basins with an average area of 58.5 acres. The smallest basin is 2.9 acres and the largest basin is 169.3 acres. All basins designated in the 100's are tributary to E. 168th Avenue Drainage #1 and all basins in the 200's are tributary to E. 168th Avenue Drainage #2. The E. 168th Avenue Drainage #1 has a tributary area of 1,583 acres. The E. 168th Avenue Drainage #2 has a tributary area of 815 acres.

E. 168th Avenue Drainage #1

The E. 168th Avenue Drainage #1 is composed of 21 separate sub-basins. 7 basins are comprised of sub-basins south of E. 168th Avenue (Basins 100-106) and 14 are comprised of sub-basins north of E. 168th Avenue (Basins 107-129). As previously discussed, Sub-basins 100-106 are transferred to the north side of E. 168th Avenue via 2 culverts and grading located at the southwest corner of 9945 E. 168th Avenue. There are two separate flowlines that make up the majority of the E. 168th Avenue Drainage #1 Basin. Sub-basins 100-109 convey one of the flowlines and Sub-basins 120-128 convey the second flowline. The flowlines combine within Sub-basin 129 and overtop the Brighton Ditch within an additional Sub-Basin 110. The drainage path outside of Sub-Basin 110 is unable to be determined, however, it appears that an overflow path exists to the north that ultimately joins the South Platte River approximately 3 miles north.

E. 168th Avenue Drainage #2

The E. 168th Avenue Drainage #2 is composed of 20 separate sub-basins. Basin 219 historically has contributed flows, however, upon development of the Bartley Subdivision, a retention pond was constructed for this development. Due to this and an effort to reduce master planned flows where practical, Sub-Basin 219 was removed from this drainage study. The E. 168th Avenue Drainage #2 basin is primarily composed of runoff produced along the E. 168th Avenue roadside channel (downstream of the existing 2 culverts that separate E. 168th Avenue Drainage #1). In Addition, runoff from the Shook Subdivision, Havana Street/Lima Street, and the Baseline Lakes subdivision also make up flow paths within the watershed. An existing EDB within the Shook Subdivision (Pond

2003) and planned EDB within Baseline Lakes Filing 2 (Pond 2005) were incorporated into the proposed and future models. Pond 2003 was assumed to release the 100-year storm at 1 cfs per acre as allowed by Adams County Criteria and is also likely higher than the design. Pond 2005 information was obtained from the Baseline Lakes Filing 2 Final Drainage Report. Upon modeling, the Pond 2005 release rate is approximately 1 cfs per acre as well.

Regulations

Ponds 1001 and 1006 and drainage facilities in Weld County have been designed in compliance with criteria set forth in Chapter 5: Drainage Criteria in the Weld County Engineering and Construction Criteria. Other drainage facilities in Adams County have been designed in compliance with criteria set forth in Chapter 9: Storm Drainage Design and Stormwater Quality Control Regulations in the Adams County Development Standards and Regulations.

All facilities have been designed in compliance with the Mile High Flood District (MHFD) Urban Storm Drainage Criteria Manuals, Volumes 1-3.

Hydrological Criteria

1-hour point rainfall data for this watershed was obtained from NOAA Atlas 14. Sub-Basin hydrographs were generated in CUHP 2005 Version 2.0.1. Three storms were analyzed, the 5-year, 10-year and 100-year storm events. This report places emphasis on the 100-year storm event as this event will dictate overall pond and pipe infrastructure sizes. The Weld County Municipal Code does allow for the use of CUHP in areas located in the southwest portion of Weld County, in areas larger than 160 acres that have drainage characteristics similar to an urban area per Chapter 8, Article XI, Section 8-11-60.

Watersheds were delineated from Lidar Topography obtained from the Denver Regional Council of Governments (DRCOG) Regional Data Catalog. The Lidar was collected in 2020 and is Quality Level 2 Lidar (QL2) and was part of the DRCOG Regional Lidar Project 2020.

Hydraulic Criteria

EPA SWMM 5.2 was used to route flows through the drainage basins. Hydraflow AutoCAD extension software was used for preliminary channel and pipe capacities.

IV. Drainage Facility Design

General Concept

In general, drainage patterns remain the same from existing and future conditions. Runoff is either conveyed to E. 168th Avenue Drainage #1 or #2. Direct outfalls are proposed as part of this report which do not currently exist to minimize impacts to adjacent properties. The storm systems included with this report have been designed to capture and convey runoff up to the 100-year storm event.

E. 168th Avenue Drainage #1

Pond 1001 (Proposed)

Pond 1001 is a WQCV + 100-yr Detention Pond located on the WSP Property within the Todd Creek PUD Amendment area. This pond receives runoff from Sub-Basins 101 and 100 for a total tributary area of 153.8 acres. The future imperviousness assuming future development of the WSP Parcel as Medium Density Residential is 39.38% imperviousness. The 100-year release rate of this pond is 10.3 cfs, which corresponds to the Historic 5-year storm per Weld County Drainage Criteria. The pond is approximately 24.0 ac-ft in size. This pond outfalls to E. 168th Avenue Drainage #1.

Pond 1006 (Proposed)

Pond 1001 is a WQCV + 100-yr Detention Pond located on the Remington Property within the Todd Creek PUD Amendment area. This pond receives runoff from Sub-Basins 100-106 for a total tributary area of 424.5 acres. It is anticipated that outflows from Pond 1001 will enter Pond 1006. Due to Pond 1001's attenuation rates, Pond 1001 tributary area has little to no effect on Pond 1006's function based on results of the SWMM Model. Excluding Pond 1001's tributary area, direct inflows to Pond 1006 is 270.7 acres. The future imperviousness of the direct inflow basins assuming future development of the Remington Property as Medium Density Residential is 41.98% imperviousness. The 100-year release rate of this pond is 19.9 cfs, which corresponds to the historic 5-year storm per Weld County Drainage Criteria. The pond is approximately 44.3 ac-ft in size. This pond outfalls to E. 168th Avenue Drainage #1.

Pond 1022 (Future)

Pond 1022 is a WQCV + 100-yr Detention Pond located off-site in Weld County. This pond receives runoff from Sub-Basins 120, 121, and 122 for a total tributary area of 283.2 acres. The future imperviousness assuming no further future development is 11.32% imperviousness. This is due to the existing outdoor storage facility and ModBox Storage facility within the upstream watersheds. The 100-year release rate of this pond is 51.3 cfs, which corresponds to the historic 10-year storm event per Weld County Drainage Criteria. The pond is approximately 28.4 ac-ft in size. The pond outfalls on the northern flowline of the E. 168th Avenue Drainage #1. The purpose of this pond is to attenuate flows to downstream facilities so that downstream facilities do not satisfy Colorado Jurisdictional Dam Criteria.

Pond 1027 (Future)

Pond 1027 is a WQCV+100-yr Detention Pond located off-site in Weld County. This pond receives runoff from Sub-Basins 120-127 for a total tributary area of 664.1 acres. It is anticipated that flows from Pond 1022 will enter Pond 1027. Due to Pond 1022's attenuation rates, tributary area to Pond 1022 has little effect on Pond 1027's function based on the SWMM Model. Excluding Pond 1022 tributary area, direct inflows to Pond 1006 is 381.0 acres. The future imperviousness in direct inflow basins assuming no future development is 2.1% imperviousness. The 100-year release rate of this pond is 101.3 cfs, which corresponds to the historic 10-year storm per Weld County Drainage Criteria. The pond is approximately 43.4 ac-ft in size. This pond outfalls on the northern flowline of the E. 168th Drainage #1. The location of the pond was chosen due to an existing 8-ft low area that currently pools water. The purpose of this pond is to attenuate flows to downstream facilities so that downstream facilities do not satisfy Colorado Jurisdictional Dam Criteria.

Pond 1010 (Future)

Pond 1027 is a WQCV + 100-yr Detention Pond located off-site in Weld County. This pond receives runoff from Sub-Basins 100-127 for a total tributary area of 1,582.6 acres. Pond 1010 is the most downstream pond located in the E. 168th Avenue Drainage #1 Watershed and controls the release rate to the proposed box culvert outfall to the South Platte River. Ponds 1001, 1006, 1022, and 1027 discharge to Pond 1010. Due to the upstream Ponds attenuation rates, upstream Pond tributary area has a small effect on Pond 1010's function based on the SWMM Model. Excluding the upstream ponds tributary area, direct inflows to Pond 1010 is 493.9 acres. The future imperviousness assuming no further development in direct tributaries is 2.89% imperviousness. The 100-year release rate of this pond is 233.7 cfs, which corresponds to the historic 10-year storm per Weld County Drainage Criteria. The pond is approximately 46.5 ac-ft in size. This pond will outfall into a proposed 10'W x 4'H RCBC sloped at 0.12% and outfalls directly into the South Platte River.

E. 168th Avenue Drainage #1 Ditch Crossings

E. 168th Avenue Drainage #1 crosses two pronounced ditches in the Brantner and Brighton Ditches. There is a pronounced 7' low area at the Brantner Ditch Crossing. This area needs to be re-graded so that the low point is removed to provide a clear overflow path that is not in Ditch or Unnamed Reservoir. It is recommended that a concrete flow regulator and downstream weir wall be placed on the ditches. The purpose of this structure is to seal either end of the ditch with a channel section of ditch capacity. Any flows over the ditch capacity (or if the ditch is full of ditch water) would be regulated by the weir wall and passed downstream of the ditch.

E. 168th Avenue Drainage #2

Pond 2000 (Future)

Pond 2000 is a WQCV + 5-yr (+WQCV) + 100-yr (+ ½ WQCV) Detention Pond located off-site in Adams County. This pond receives runoff from Sub-Basin 200 with a tributary area of 52.3 acres. The future imperviousness assuming no further future development is 4.4% imperviousness. It is anticipated that this pond will be conveyed to the off-site storm pipe extended in the Future phase (30"-72" diameter RCP). The proposed 100-year release rate is 26.0 cfs. The pond is approximately 3.2 ac-ft in size. It is anticipated that the pond will outfall to a 30-inch RCP installed in the Future

Phase of the project. It is estimated that the 30-inch pipe will extend to DP 607.

Pond 2003 (Existing)

Pond 2003 is an existing EDB for the Shook Subdivision. This pond receives runoff from Sub-Basin 203 with a tributary area of 81.3 acres at 23.3% imperviousness. It has been assumed that the 100-year release rate for this pond is approximately 1 cfs/acre (82.1 cfs). This pond currently outfalls to a drainage channel and is conveyed to the Baseline Lakes Subdivision. It is anticipated that flows from this pond will enter Pond 2005 associated with Baseline Lakes Filing 2. Ultimately, flows enter the Carlson Property and would enter Ponds 2012A, 2012B, and 2012C or Future condition Pond 2012.

Pond 2005 (Proposed/Future)

Pond 2005 is a proposed EDB for Baseline Lakes Filing 2. This pond receives runoff from Sub-Basins 204 and 205 along with Pond 2003 outflows. Pond 2005 volumes and outlet rating curve information was obtained from UD-Detention Spreadsheets for Pond A included in the Baseline Lakes Filing 2 Final Drainage Report. It should be noted that the Final Drainage Report states that flows from the Shook Subdivision pond were not accounted to be detained within Pond A (Pond 2005 in this report). The SWMM Model shows a 100-year release rate of 156.3 cfs. This correlates to a release rate of 0.93 cfs per acre release (Sub-basins 203+204+205, or 168.4 acres), which seems reasonable. Flows from this pond are combined with other flows from Baseline Lakes Subdivision and ultimately enter the Pond(s) 2012 associated with the Todd Creek PUD Amendment Carlson Property.

Ponds 2012A, 2012B, 2012C (Proposed)

Ponds 2012A, 2012B and 2012C are a proposed series of Ponds located in Sub-basin 212 within the Carlson Property of the Todd Creek PUD Amendment. This is proposed to be a series of ponds that receives runoff from basins 202 through 213 with a tributary area of 448.0 acres. This includes outflows from Ponds 2003 and 2005. It is anticipated that the series of EDB's will provide WQCV + 5-yr (+WQCV) + 100-yr (+ ½ WQCV) detention. The primary function of these ponds is to attenuate flows to approximately 0.1 cfs/acre (44.0 cfs) to minimize off-site infrastructure required. This results in a combined size of the three ponds at 71.7 ac-ft (2012A: 25.7 ac-ft; 2012B: 23.7 ac-ft; 2012C: 22.3 ac-ft). Flows from Ponds 2012A, 2012B and 2012C will be conveyed to a regional storm pipe that consists of 30-42-inch diameter off-site storm drain within E. 168th Avenue and ultimately outfalls in the South Platte River. The anticipated peak 100-year flowrate out of the ponds is 46.7 cfs entering the 30-inch outfall pipe. It should be noted that Sub-Basin 219 was excluded from the pond calculations CUHP/SWMM Model because it currently discharges to an existing Retention Pond.

Pond 2012 (Future)

In the Future condition when another regional storm drainage pipe is extended up E. 168th Avenue, the Ponds 2012A, 2012B, and 2012C will be revised to one Pond 2012. Additional capacity in the future storm pipe will serve the Carlson property as well as adjoining properties generally along the south side of E. 168th Avenue. It is anticipated that Pond 2012 will provide WQCV + 5-yr (+WQCV) + 100-yr (+ ½ WQCV) detention. Flows will be attenuated to approximately 0.36 cfs/acre (161.2 cfs).

The pond is approximately 40.1 ac-ft in size. The first 47.0 cfs out of the pond will be directed to the off-site storm pipe (30"-42" diameter RCP) installed during the Proposed phase. Another storm pipe will be extended in E. 168th Avenue during the Future phase (30"-72" diameter RCP) and will take 114.2 cfs from Pond 2012. The Carlson property will have a proposed 100-yr release rate of 0.36 cfs/acre (161.2 cfs / 448 acres). Ultimately outflows outfall in the South Platte River. It should be noted that Sub-Basin 219 was excluded from the pond calculations CUHP/SWMM Model because it currently discharges to an existing Retention Pond.

Pond 2014 (Future)

Pond 2014 is a WQCV + 5-yr (+WQCV) + 100-yr (+ ½ WQCV) Detention Pond located off-site in Adams County. This pond receives runoff from Sub-Basin 214 with a tributary area of 66.9 acres. The future imperviousness assuming no further future development is 12.2% imperviousness. It is anticipated that this pond will be conveyed to the off-site storm pipe extended in the Future phase (30"-72" diameter RCP). The proposed 100-year release rate has been capped at 0.5 cfs per acre, which corresponds to an allowable 100-year release rate of 33.4 cfs. The pond is approximately 5.3 ac-ft in size. It is estimated that the pond will outfall to a 54-inch RCP that installed in the future phase of the project. It is estimated that the 54-inch pipe will extend to DP 612.

Pond 2015 (Future)

Pond 2015 is a WQCV + 5-yr (+WQCV) + 100-yr (+ ½ WQCV) Detention Pond located off-site in Adams County. This pond receives runoff from Sub-Basin 215 with a tributary area of 41.8 acres. The future imperviousness assuming no further future development is 9.2% imperviousness. It is anticipated that this pond will be conveyed to the off-site storm pipe extended in the Future phase (30"-72" diameter RCP). The proposed 100-year release rate has been capped at 0.5 cfs per acre, which corresponds to an allowable 100-year release rate of 21.3 cfs. The pond is approximately 2.4 ac-ft in size. It is estimated that the pond will outfall to a 72-inch RCP installed in the future phase of the project. It is estimated that the 72-inch pipe will extend to the outfall point at the South Platte River at DP 614.

Pond 2016 (Future)

Pond 2016 is a WQCV + 5-yr (+WQCV) + 100-yr (+ ½ WQCV) Detention Pond located off-site in Weld County. This pond receives runoff from Sub-Basin 216 with a tributary area of 19.4 acres. The future imperviousness assuming no further future development is 4.0% imperviousness. It is anticipated that this pond will be conveyed to the off-site storm pipe extended in the Future phase (30"-72" diameter RCP). The proposed 100-year release rate has been capped at 0.5 cfs per acre, which corresponds to an allowable 100-year release rate of 9.5 cfs. The pond is approximately 1.6 ac-ft in size. It is anticipated that the pond will outfall to a 72-inch RCP installed in the future phase of the project. It is estimated that the 72-inch pipe will extend to the outfall point at the South Platte River at DP 614. Because this Sub-Basin is discharging to the storm drain designed by Adams County Drainage Criteria, Adams County Drainage Criteria should be used upon development of the parcel and tie-in at the storm pipe.

Sub-Basins 201, 217, 218

Sub-Basins 201 is along the existing portion of Baseline Lakes Subdivision. This basin currently flows along the Right-of-Way of E. 168th Avenue and is not captured in the existing retention pond within Sub-Basin 212. This basin will need to be treated by other means for Water Quality and discharge to the 30-inch diameter RCP associated with the Future Phased drainage pipe.

Sub-Basins 217 and 218 are the north and south sides of E. 168th Avenue nearest the proposed outfall discharge to the South Platte River. This basin will need to be treated by other means for Water Quality and discharged to the 72-inch diameter RCP associated with the Future Phased drainage pipe.

V. Conclusion

This drainage report has been prepared in conformity with Chapter 5: Drainage Criteria in the Weld County Engineering and Construction Criteria and Chapter 9: Storm Drainage Design and Stormwater Quality Control Regulations in the Adams County Development Standards and Regulations. This drainage report is also in conformity with the MHFD Urban Storm Drainage Criteria Manuals.

VI. References

- 1. Weld County Engineering and Construction Criteria**
Atkins, January 2021.
- 2. Adams County Development Standards and Regulations, Chapter 9**
Adams County, December 8, 2020.
- 3. Urban Storm Drainage Design & Technical Criteria Manual Volumes 1-3**
Urban Drainage and Flood Control District, Revised August, 2018.
- 4. National Resources Conservation Service Web Soil Survey Golden Area, CO**
U.S. Department of Agriculture, Natural Resources Conservation Service
- 5. FIRM Map Numbers 08001C0326H & 08001C0307H**
Federal Emergency Management Agency, Effective Date: March 5, 2007.
- 6. Final Drainage Report: Baseline Lakes Filing 2**
Ware Malcomb, Dated December 9, 2022.

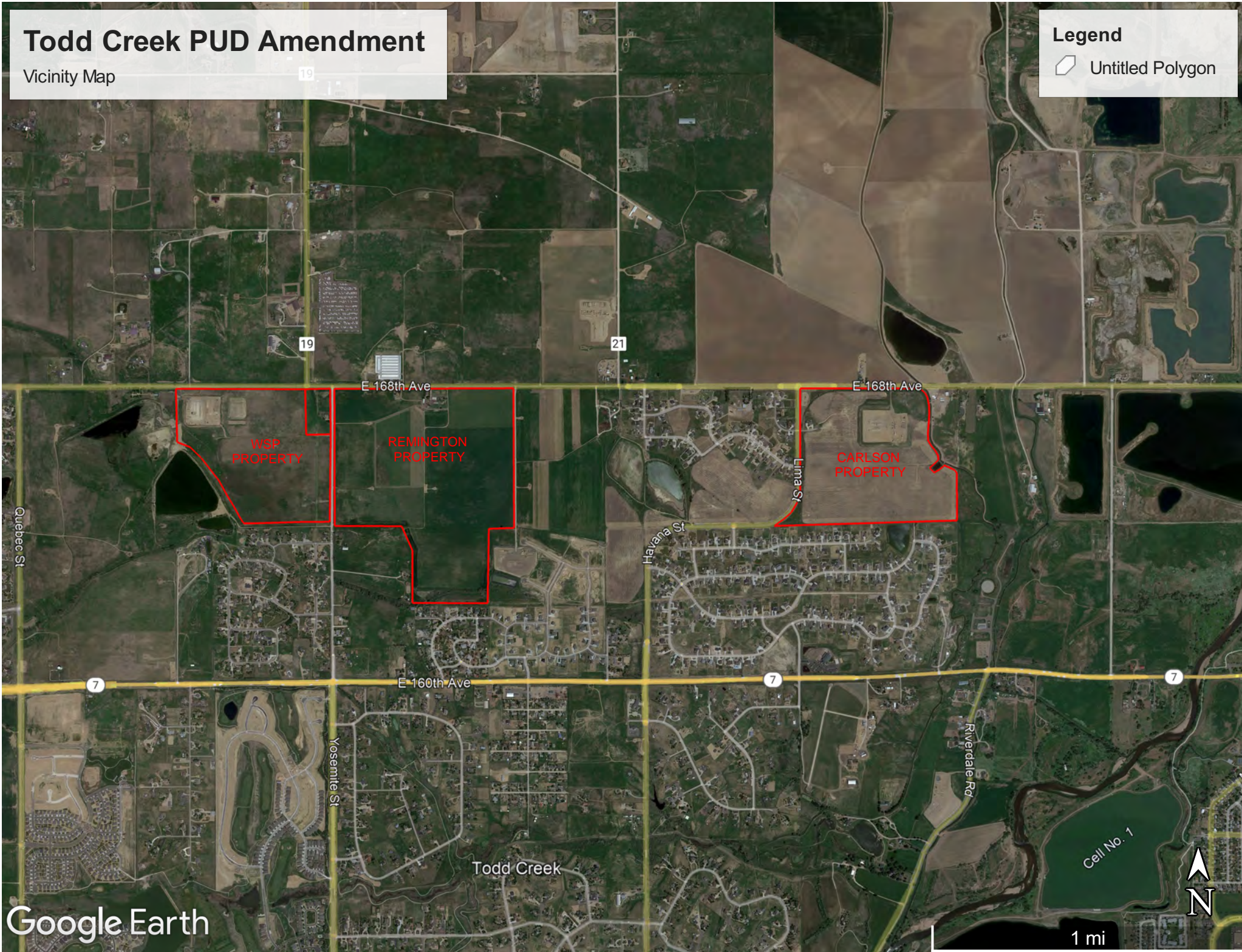
APPENDIX A
VICINITY MAP
DESIGN CHARTS
EXISTING LAND USE MAP
FUTURE LAND USE MAP
SOILS MAP

Todd Creek PUD Amendment

Vicinity Map

Legend

Untitled Polygon



Google Earth



NOAA Atlas 14, Volume 8, Version 2
Location name: Brighton, Colorado, USA*
Latitude: 40.0004°, Longitude: -104.8616°
Elevation: m/ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffrey Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

**1-hr Depth Rainfall
 amounts input to CUHP**

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.226 (0.174-0.294)	0.277 (0.213-0.360)	0.373 (0.285-0.486)	0.464 (0.353-0.609)	0.608 (0.457-0.852)	0.734 (0.536-1.04)	0.872 (0.616-1.26)	1.02 (0.696-1.52)	1.25 (0.815-1.91)	1.43 (0.905-2.19)
10-min	0.332 (0.255-0.431)	0.405 (0.311-0.528)	0.545 (0.418-0.712)	0.680 (0.517-0.892)	0.891 (0.670-1.25)	1.08 (0.785-1.52)	1.28 (0.902-1.85)	1.50 (1.02-2.23)	1.83 (1.19-2.79)	2.10 (1.33-3.21)
15-min	0.404 (0.311-0.526)	0.494 (0.380-0.644)	0.665 (0.509-0.869)	0.829 (0.631-1.09)	1.09 (0.817-1.52)	1.31 (0.957-1.85)	1.56 (1.10-2.25)	1.83 (1.24-2.72)	2.23 (1.46-3.40)	2.56 (1.62-3.92)
30-min	0.557 (0.428-0.725)	0.677 (0.520-0.882)	0.906 (0.693-1.18)	1.13 (0.857-1.48)	1.47 (1.11-2.07)	1.78 (1.30-2.51)	2.11 (1.49-3.06)	2.49 (1.69-3.70)	3.03 (1.98-4.63)	3.48 (2.20-5.33)
60-min	0.681 (0.523-0.885)	0.828 (0.636-1.08)	1.11 (0.849-1.45)	1.38 (1.05-1.81)	1.81 (1.36-2.53)	2.18 (1.59-3.08)	2.60 (1.83-3.76)	3.05 (2.07-4.54)	3.72 (2.43-5.68)	4.27 (2.70-6.55)
2-hr	0.804 (0.624-1.03)	0.979 (0.759-1.26)	1.31 (1.01-1.70)	1.63 (1.26-2.12)	2.14 (1.63-2.97)	2.59 (1.91-3.61)	3.08 (2.20-4.40)	3.62 (2.48-5.32)	4.41 (2.91-6.66)	5.06 (3.24-7.67)
3-hr	0.868 (0.678-1.11)	1.06 (0.824-1.35)	1.41 (1.10-1.82)	1.76 (1.36-2.27)	2.30 (1.76-3.17)	2.77 (2.06-3.84)	3.30 (2.37-4.68)	3.87 (2.67-5.65)	4.72 (3.13-7.06)	5.41 (3.48-8.13)
6-hr	1.03 (0.812-1.30)	1.24 (0.974-1.57)	1.63 (1.28-2.07)	2.00 (1.56-2.56)	2.59 (2.00-3.52)	3.11 (2.33-4.25)	3.67 (2.66-5.15)	4.30 (3.00-6.18)	5.21 (3.50-7.69)	5.96 (3.87-8.83)
12-hr	1.27 (1.02-1.60)	1.50 (1.20-1.88)	1.93 (1.53-2.42)	2.33 (1.84-2.94)	2.96 (2.30-3.95)	3.50 (2.65-4.72)	4.10 (3.00-5.66)	4.76 (3.35-6.74)	5.71 (3.87-8.31)	6.49 (4.26-9.49)
24-hr	1.53 (1.23-1.90)	1.81 (1.46-2.25)	2.32 (1.86-2.88)	2.78 (2.21-3.47)	3.46 (2.70-4.53)	4.04 (3.07-5.34)	4.65 (3.43-6.30)	5.31 (3.76-7.39)	6.24 (4.27-8.93)	6.99 (4.65-10.1)
2-day	1.75 (1.42-2.14)	2.12 (1.72-2.60)	2.75 (2.23-3.38)	3.29 (2.65-4.06)	4.04 (3.16-5.18)	4.65 (3.56-6.03)	5.26 (3.90-7.00)	5.90 (4.21-8.06)	6.77 (4.67-9.51)	7.45 (5.01-10.6)
3-day	1.90 (1.56-2.32)	2.29 (1.87-2.79)	2.93 (2.38-3.58)	3.47 (2.81-4.26)	4.24 (3.34-5.39)	4.85 (3.74-6.25)	5.48 (4.09-7.22)	6.13 (4.40-8.30)	7.01 (4.86-9.75)	7.69 (5.20-10.9)
4-day	2.03 (1.67-2.46)	2.41 (1.98-2.92)	3.04 (2.49-3.70)	3.59 (2.92-4.38)	4.36 (3.45-5.52)	4.98 (3.85-6.38)	5.61 (4.21-7.36)	6.27 (4.53-8.45)	7.17 (4.99-9.92)	7.86 (5.34-11.0)
7-day	2.33 (1.93-2.79)	2.71 (2.25-3.26)	3.36 (2.78-4.05)	3.92 (3.22-4.74)	4.71 (3.76-5.90)	5.34 (4.17-6.77)	5.98 (4.53-7.77)	6.66 (4.85-8.87)	7.57 (5.32-10.4)	8.29 (5.68-11.5)
10-day	2.58 (2.15-3.08)	2.98 (2.48-3.56)	3.66 (3.04-4.38)	4.23 (3.50-5.09)	5.05 (4.05-6.27)	5.69 (4.46-7.16)	6.34 (4.83-8.17)	7.02 (5.14-9.28)	7.94 (5.61-10.8)	8.65 (5.97-11.9)
20-day	3.30 (2.78-3.90)	3.77 (3.17-4.45)	4.53 (3.80-5.36)	5.17 (4.31-6.15)	6.05 (4.90-7.40)	6.74 (5.34-8.36)	7.43 (5.71-9.43)	8.14 (6.02-10.6)	9.08 (6.49-12.1)	9.80 (6.84-13.3)
30-day	3.88 (3.29-4.55)	4.41 (3.73-5.17)	5.28 (4.45-6.21)	5.99 (5.03-7.08)	6.97 (5.67-8.44)	7.72 (6.15-9.48)	8.46 (6.54-10.6)	9.21 (6.85-11.9)	10.2 (7.32-13.5)	10.9 (7.68-14.7)
45-day	4.57 (3.90-5.32)	5.21 (4.44-6.07)	6.24 (5.30-7.29)	7.08 (5.99-8.30)	8.21 (6.71-9.85)	9.06 (7.26-11.0)	9.89 (7.69-12.3)	10.7 (8.02-13.7)	11.8 (8.51-15.4)	12.6 (8.88-16.8)
60-day	5.13 (4.39-5.94)	5.88 (5.03-6.82)	7.08 (6.04-8.23)	8.04 (6.83-9.39)	9.33 (7.65-11.1)	10.3 (8.27-12.4)	11.2 (8.74-13.9)	12.1 (9.10-15.3)	13.3 (9.62-17.2)	14.1 (10.0-18.7)

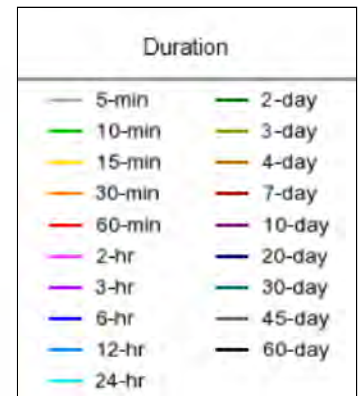
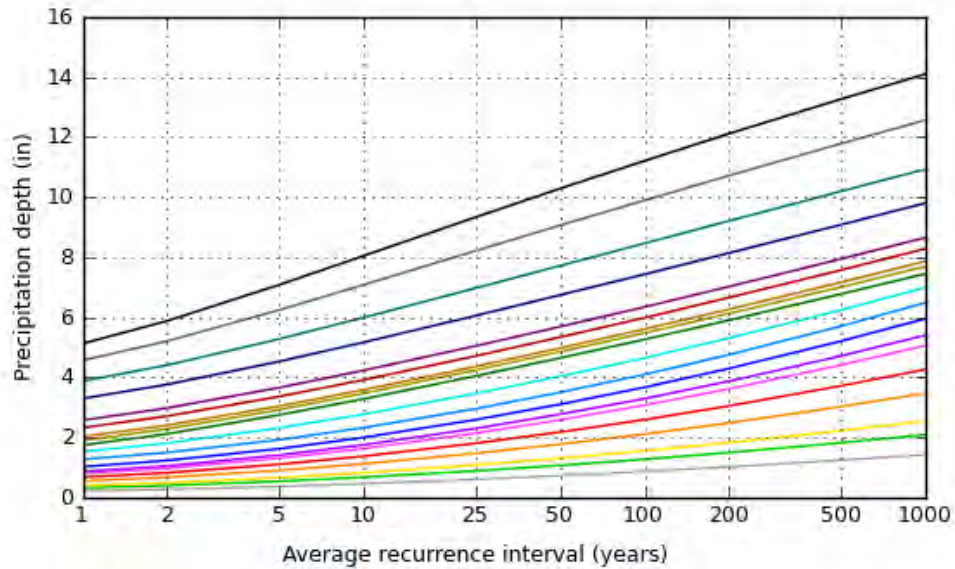
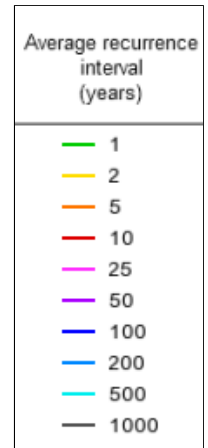
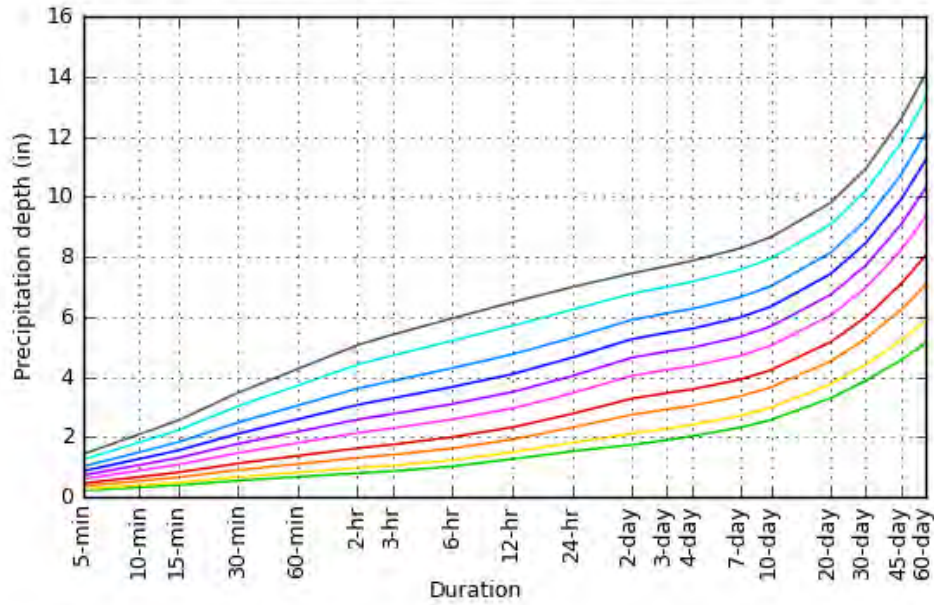
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

[Back to Top](#)

PF graphical

PDS-based depth-duration-frequency (DDF) curves

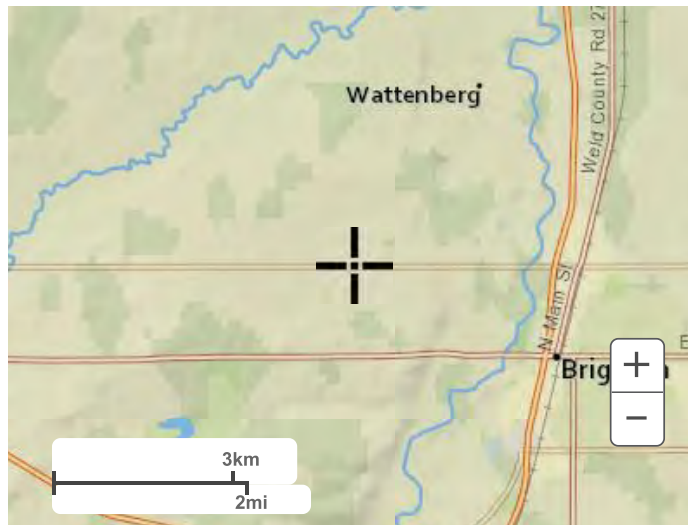
Latitude: 40.0004°, Longitude: -104.8616°



[Back to Top](#)

Maps & aeriels

Small scale terrain



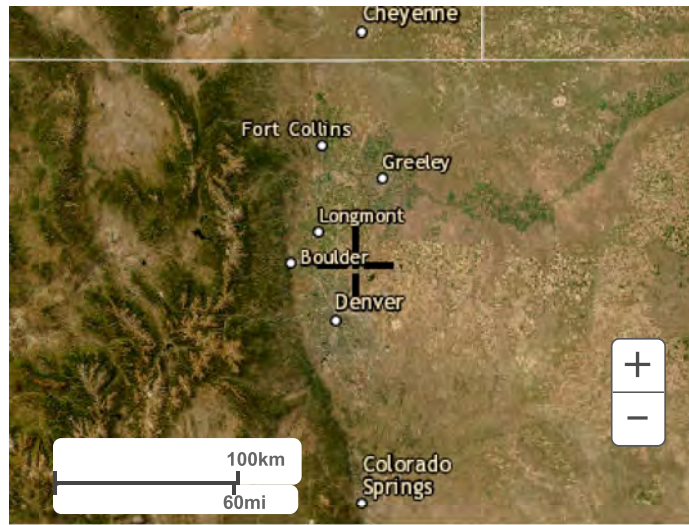
Large scale terrain



Large scale map



Large scale aerial

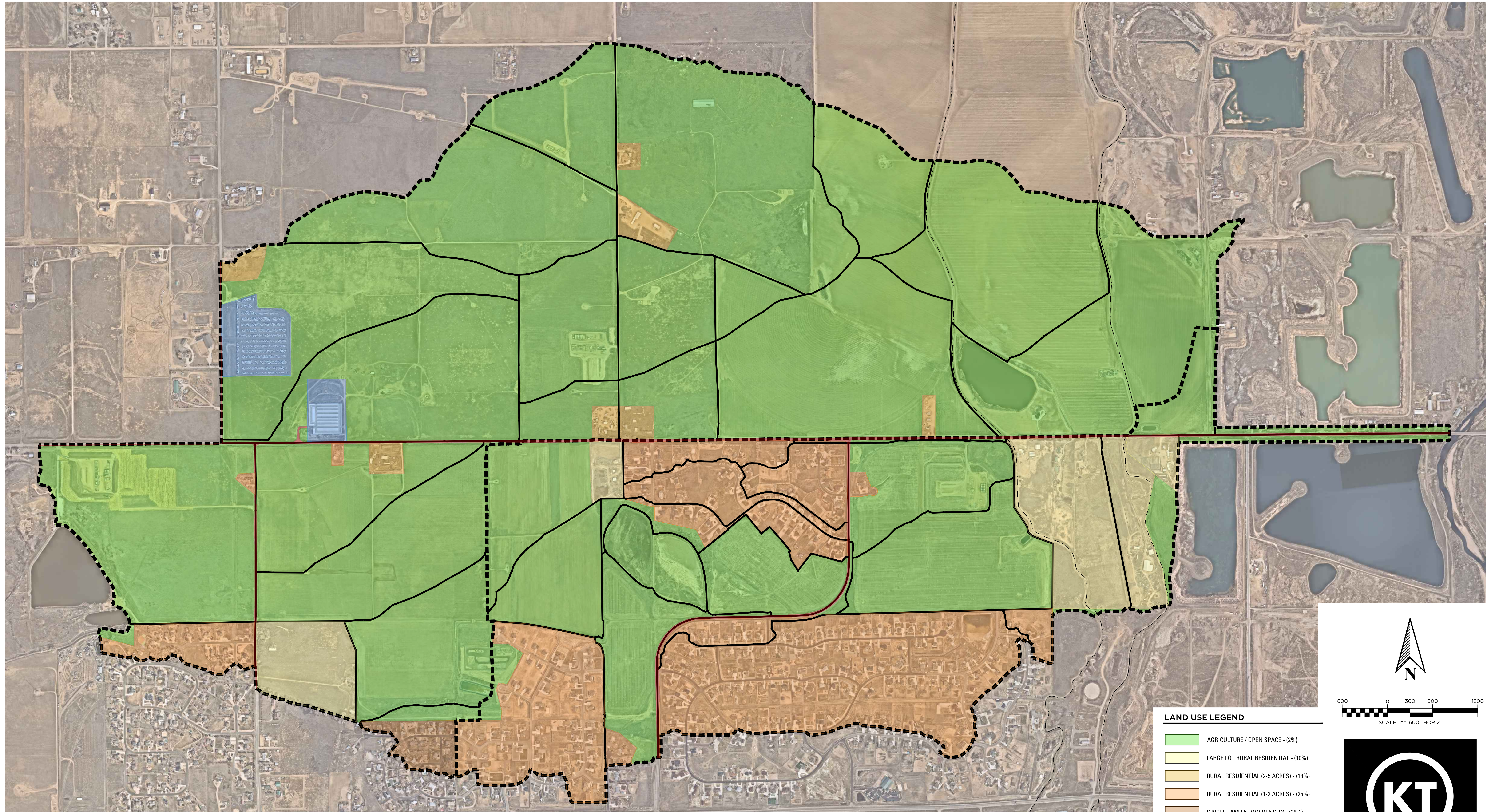


[Back to Top](#)

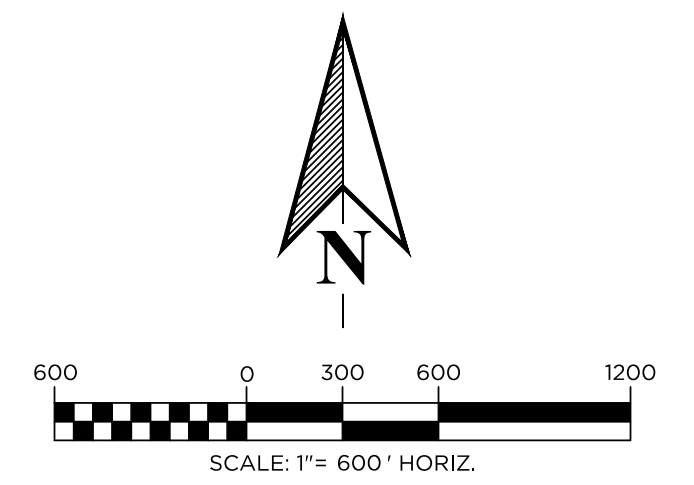
[US Department of Commerce](#)
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[National Weather Service](#)
[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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E. 168TH AVENUE DRAINAGE ANALYSIS EXISTING LAND USES

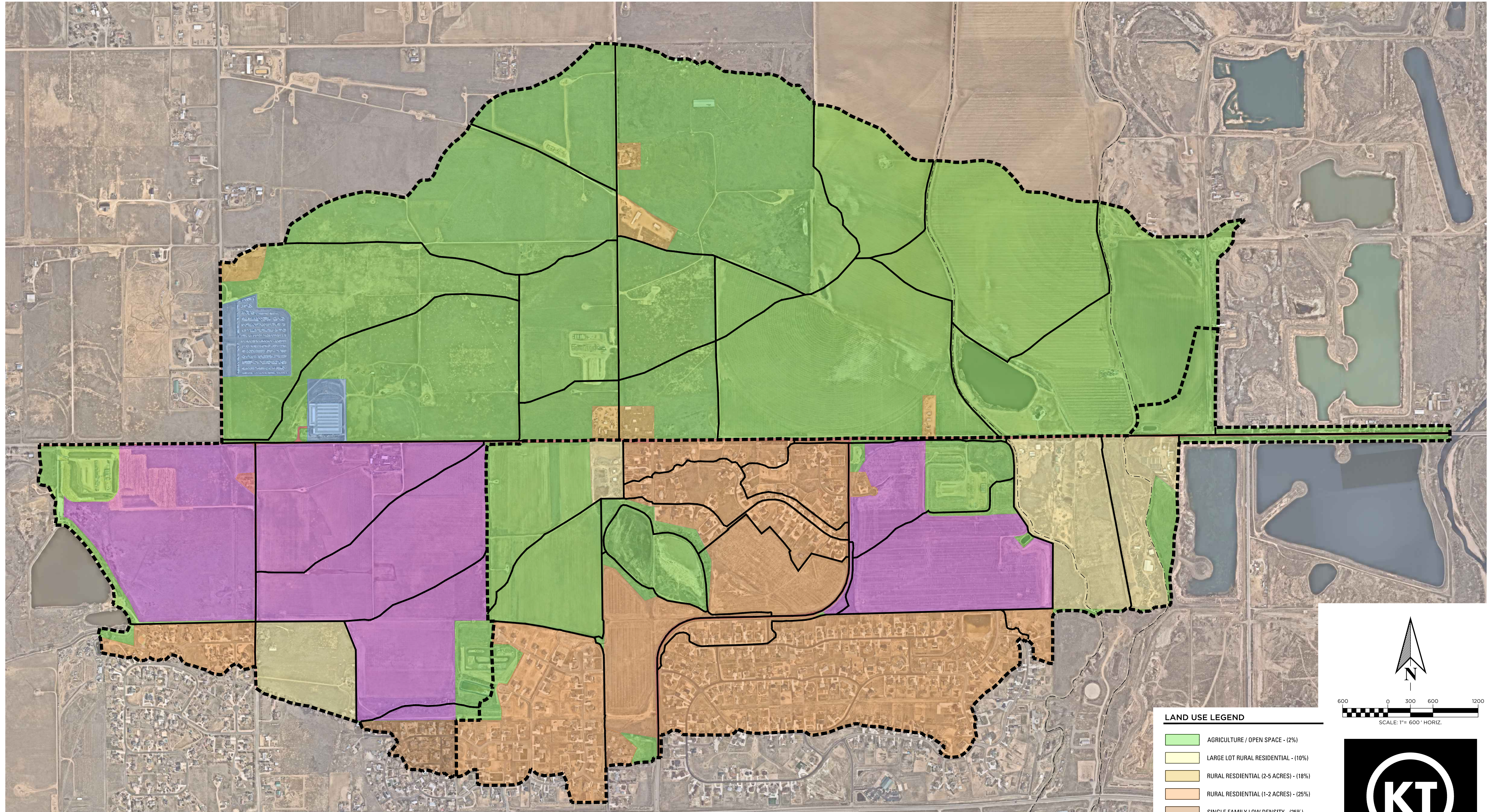


LAND USE LEGEND	
	AGRICULTURE / OPEN SPACE - (2%)
	LARGE LOT RURAL RESIDENTIAL - (10%)
	RURAL RESIDENTIAL (2-5 ACRES) - (18%)
	RURAL RESIDENTIAL (1-2 ACRES) - (25%)
	SINGLE FAMILY LOW DENSITY - (35%)
	LIGHT INDUSTRIAL - (80%)
	STREETS - (100%)

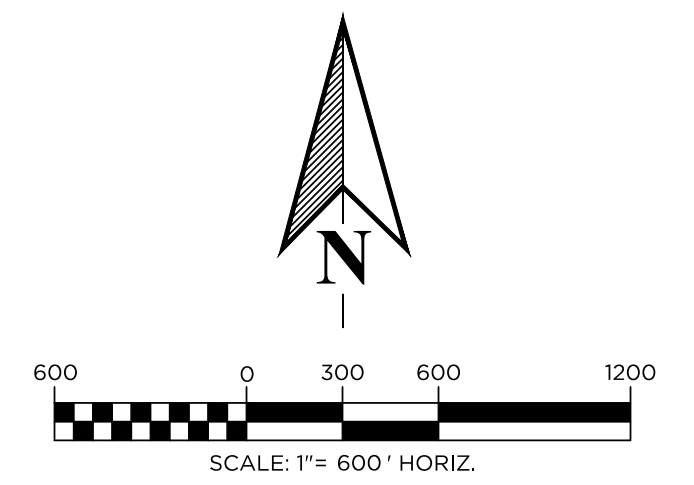


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E. 168TH AVENUE DRAINAGE ANALYSIS FUTURE LAND USES

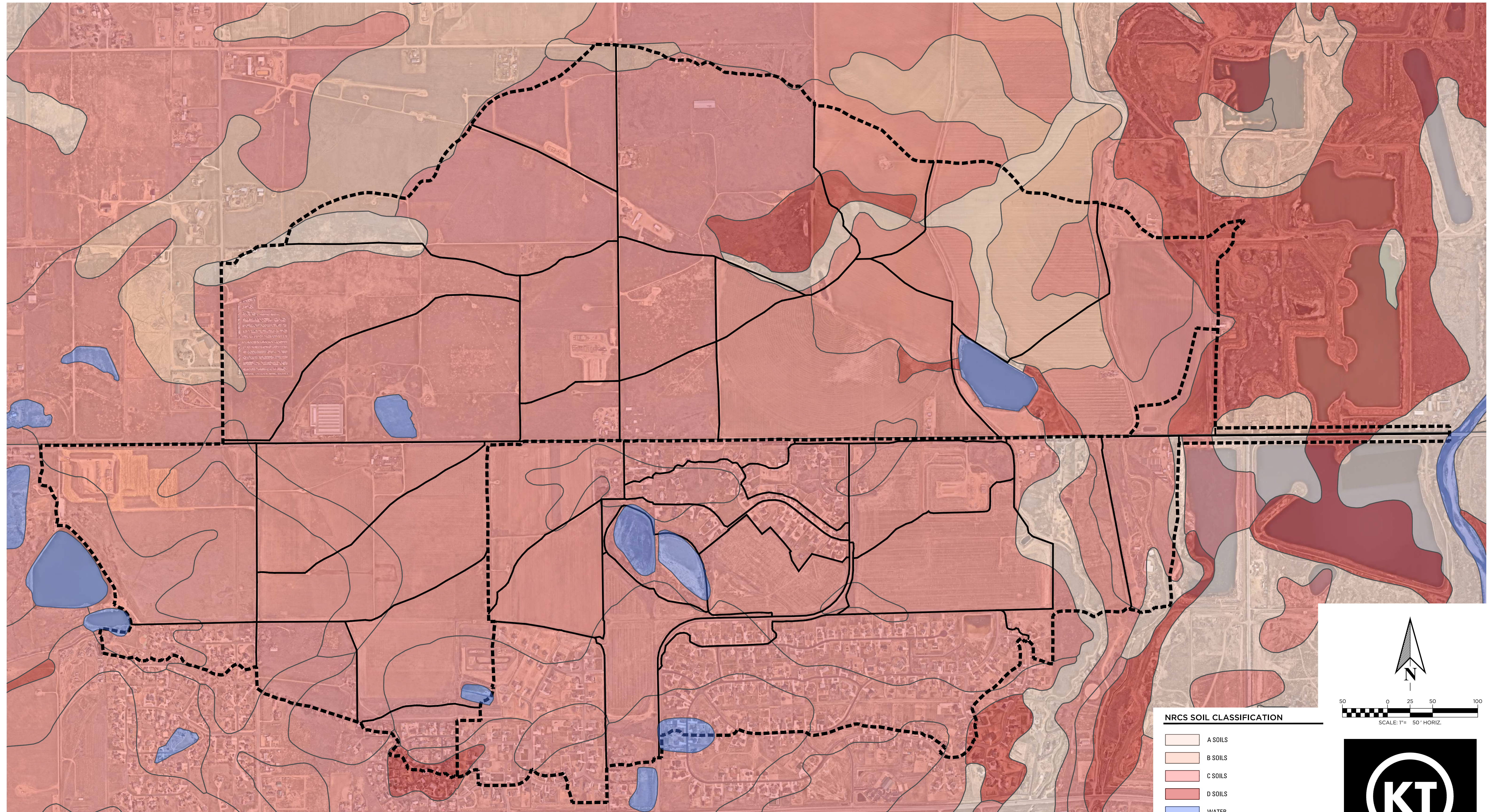


LAND USE LEGEND	
	AGRICULTURE / OPEN SPACE - (2%)
	LARGE LOT RURAL RESIDENTIAL - (10%)
	RURAL RESIDENTIAL (2-5 ACRES) - (18%)
	RURAL RESIDENTIAL (1-2 ACRES) - (25%)
	SINGLE FAMILY LOW DENSITY - (35%)
	MEDIUM DENSITY RESIDENTIAL - (50%)
	LIGHT INDUSTRIAL - (80%)
	STREETS - (100%)



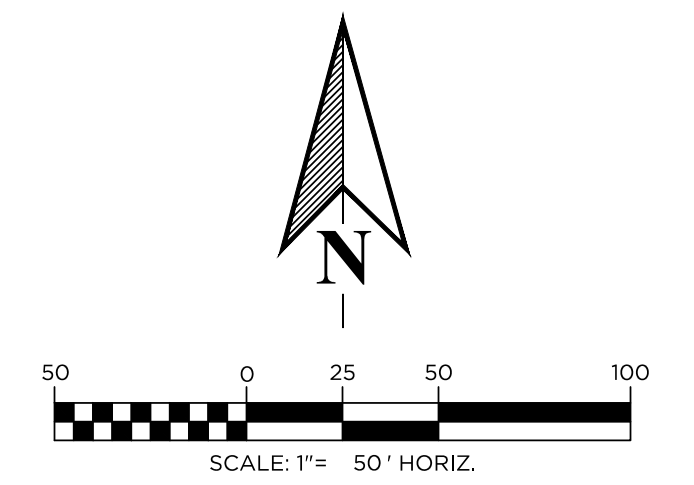
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E. 168TH AVENUE DRAINAGE ANALYSIS SOILS CONDITIONS MAP



NRCS SOIL CLASSIFICATION

	A SOILS
	B SOILS
	C SOILS
	D SOILS
	WATER



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APPENDIX B
CUHP / SWMM MODEL SUMMARY
CUHP INPUTS
POND SUMMARY SWMM INPUTS
SWMM MODEL INPUTS

PROJECT: TODD CREEK PUD AMENDMENT – E. 168TH AVE – REGIONAL DRAINAGE
SHEET TITLE: PEAK FLOW SUMMARY

E. 168th Ave Tributaries			Peak Discharge (cfs) - Historic			Peak Discharge (cfs) - Existing Condition			Peak Discharge (cfs) - Proposed Condition			Peak Discharge (cfs) - Future Condition		
SWMM Node	Drainage Area Existing (Acres)	Drainage Area Future (Acres)	5-year	10-year	100-year	5-year	10-year	100-year	5-year	10-year	100-year	5-year	10-year	100-year
300	153.8	153.8	10.6	38.3	218.1	13.9	42.6	226.4	1.5	6.3	10.3	1.5	6.3	10.3
301	226.6	226.6	11.2	46.3	289.0	16.0	52.1	298.3	38.6	55.6	156.2	38.6	55.6	156.2
302	117.8	117.8	6.9	28.1	167.0	14.0	36.0	176.2	43.7	72.8	244.3	43.7	72.8	244.3
303	424.5	424.5	20.3	85.2	528.9	32.1	98.9	546.9	2.7	9.5	19.9	2.7	9.5	19.9
304	445.4	445.4	20.8	87.9	552.6	33.0	102.2	571.3	3.3	9.7	40.0	3.3	9.7	40.0
305	477.1	477.1	21.9	93.3	594.7	34.8	108.6	614.5	5.6	15.7	79.8	5.6	15.7	79.8
306	620.9	620.9	22.5	104.9	743.2	35.4	120.6	764.6	12.3	43.9	263.2	12.3	43.9	263.2
307	115.2	115.2	6.7	24.1	136.6	12.3	29.8	142.7	12.3	29.8	142.7	12.3	29.8	142.7
308	115.4	115.4	4.7	17.3	103.9	12.6	25.8	114.6	12.6	25.8	114.6	12.6	25.8	114.6
309	230.6	230.6	11.1	40.7	235.7	24.6	55.1	254.2	24.6	55.1	254.2	24.6	55.1	254.2
310	283.2	283.2	13.5	51.5	306.4	27.4	66.6	327.2	27.4	66.6	327.1	1.0	15.1	51.3
311	327.9	327.9	14.7	58.3	356.9	28.7	73.7	378.2	28.7	73.7	378.1	2.7	16.1	86.7
312	106.6	106.6	4.2	15.6	93.8	4.2	15.6	93.8	4.2	15.6	93.8	4.2	15.6	93.8
313	434.5	434.5	18.7	73.3	447.7	32.5	88.4	467.2	32.5	88.4	467.1	6.0	22.9	180.2
314	45.8	45.8	3.2	11.4	62.5	3.2	11.4	62.5	3.2	11.4	62.5	3.2	11.4	62.5
315	14.6	14.6	1.3	4.7	24.8	1.3	4.7	24.8	1.3	4.7	24.8	1.3	4.7	24.8
316	664.1	664.1	24.1	104.8	720.2	37.8	120.2	744.0	38.0	120.7	745.4	1.6	3.7	101.3
317	712.0	712.0	24.5	109.6	768.0	38.1	125.0	793.0	38.3	125.4	794.3	3.5	12.4	104.1
318	1,446.2	1,446.2	47.5	222.7	1616.0	73.6	253.7	1664.7	48.7	170.8	1156.2	19.0	75.1	478.1
319	1,582.6	1,582.6	49.4	236.1	1742.4	75.6	267.4	1792.7	51.1	185.6	1287.9	2.2	3.4	233.7
500	81.3	81.3	5.7	20.2	111.5	2.9	7.0	82.1	2.9	7.0	82.1	2.9	7.0	82.1
501	128.7	128.7	6.4	25.9	158.6	3.7	10.5	119.1	9.1	16.3	124.2	9.1	16.3	124.2
502	259.2	259.2	11.1	46.0	293.6	10.5	32.9	240.7	5.7	17.9	245.0	5.7	17.9	245.0
503	282.4	296.1	11.7	48.5	308.9	13.2	37.8	258.8	10.6	26.0	274.0	10.6	26.0	274.0
504	305.4	319.1	12.5	52.0	335.8	17.5	45.5	287.3	15.2	34.3	303.1	14.9	33.7	298.8
505	370.8	448.0	13.8	58.5	386.1	20.7	54.3	337.8	44.1	65.4	187.8	53.1	81.4	408.2
506	74.3	74.3	5.0	18.0	99.6	5.0	18.0	99.6	43.8	65.0	186.4	44.0	65.3	186.8
508	-	-	-	-	-	-	-	-	1.8	2.3	46.7	2.5	5.3	47.0
511	-	-	-	-	-	-	-	-	1.8	2.3	46.7	2.5	5.3	47.0
512	-	-	-	-	-	-	-	-	1.8	2.3	46.7	2.5	5.3	47.0
513	-	-	-	-	-	-	-	-	1.8	2.3	46.7	2.5	5.3	47.0
514	-	-	-	-	-	-	-	-	1.8	2.3	46.7	2.5	5.3	47.0
606	52.3	52.3	3.1	11.1	62.4	3.9	11.8	63.2	3.9	11.8	63.2	0.3	5.5	26.0
607	70.9	70.9	2.9	11.6	72.8	5.6	14.8	78.3	5.6	14.8	78.3	2.7	9.1	40.5
608	444.6	518.9	16.1	68.8	457.1	26.0	68.1	414.9	5.2	13.8	76.9	2.7	9.0	147.6
611	585.7	585.7	20.3	89.9	619.7	34.2	94.6	559.6	10.1	26.5	154.7	2.9	16.6	179.8
612	627.5	627.5	21.4	95.3	663.0	36.8	102.1	600.0	14.3	33.8	201.0	6.7	21.7	200.5
613	646.9	646.9	21.6	97.1	683.4	37.3	104.6	618.4	15.4	38.0	223.3	6.7	22.2	209.4
614	662.3	662.3	20.3	92.9	671.5	36.1	101.5	620.1	13.6	37.0	223.6	7.3	23.6	214.5

PROJECT: TODD CREEK PUD AMENDMENT - E. 168TH AVE - REGIONAL DRAINAGE
 SHEET TITLE: CUHP INPUTS

Basin Name	Total Area (sq. miles)	Length To Centroid (miles)	Length (miles)	Slope (ft/ft)
100	0.0375	0.2119	0.4318	0.0237
101	0.2028	0.3134	0.5438	0.0247
102	0.1136	0.4163	0.6566	0.0193
103	0.0529	0.1572	0.2483	0.0191
104	0.0303	0.0701	0.1826	0.0456
105	0.1009	0.2858	0.5345	0.0145
106	0.1252	0.4591	0.8307	0.0173
107	0.0327	0.1241	0.2723	0.0111
108	0.0494	0.1070	0.2693	0.0127
109	0.2248	0.2646	0.6299	0.0123
110	0.2131	0.2913	0.8030	0.0116
120	0.1800	0.3434	0.7458	0.0135
121	0.1803	0.5699	0.9413	0.0127
122	0.0821	0.1534	0.2905	0.0104
123	0.0700	0.2080	0.3845	0.0103
124	0.0228	0.0672	0.1769	0.0139
125	0.1665	0.4428	0.9917	0.0088
126	0.0715	0.1708	0.3163	0.0084
127	0.2645	0.2506	0.6981	0.0165
128	0.0748	0.1648	0.4085	0.0148
129	0.1770	0.2455	0.5813	0.0173
200	0.0816	0.2051	0.5246	0.0119
201	0.0290	0.3108	0.5782	0.0128
202	0.0046	0.2797	0.5233	0.0080
203	0.1270	0.2931	0.5782	0.0272
204	0.0740	0.2692	0.5601	0.0169
205	0.0620	0.2464	0.4621	0.0114
206	0.0214	0.4103	0.6914	0.0137
207	0.0621	0.1830	0.3847	0.0123
208	0.0388	0.1087	0.2397	0.0071
209	0.0412	0.3381	0.6977	0.0106
210	0.0361	0.4097	0.7119	0.0186
211	0.0360	0.1785	0.2960	0.0221
212	0.0808	0.2803	0.5628	0.0077
213	0.1160	0.2038	0.5582	0.0129
214	0.1045	0.3042	0.3574	0.0201
215	0.0653	0.2002	0.3851	0.0089
216	0.0302	0.0564	0.1816	0.0049
217	0.0112	0.1634	0.4590	0.0019
218	0.0129	0.2218	0.5591	0.0017
219	0.2388	0.4618	1.1354	0.0110

PROJECT: TODD CREEK PUD AMENDMENT – E. 168TH AVE – REGIONAL DRAINAGE
 SHEET TITLE: EXISTING COMPOSITE RUNOFF FACTORS

Basin Name	Total Area (sq. miles)	Total Area (Acres)	Total Area (Sq. Ft.)	Agriculture/Open Space (Sq. Ft.)	Large Lot Rural Residential (Sq. Ft.)	Rural Residential (Sq. Ft.)	Rural Estate Residential (Sq. Ft.)	Single Family Low Density (Sq. Ft.)	Light Industrial (Sq. Ft.)	Streets (Sq. Ft.)	Soil Type "C" Composite Runoff Factors		
											C ₅	C ₁₀₀	I %
100	0.0375	24.02	1,046,369	74,060			964,891			7,418	0.23	0.58	23.90
101	0.2028	129.81	5,654,474	5,538,938			47,448			68,088	0.06	0.49	3.37
102	0.1136	72.72	3,167,594	2,858,546		190,051	48,321			70,676	0.08	0.50	5.50
103	0.0529	33.84	1,474,165	0	1,459,654					14,511	0.12	0.52	10.89
104	0.0303	19.40	845,194	249,637				595,557			0.24	0.59	25.25
105	0.1009	64.59	2,813,649	2,813,649							0.05	0.49	2.00
106	0.1252	80.13	3,490,662	3,481,402						9,260	0.05	0.49	2.26
107	0.0327	20.93	911,621	737,387		155,612				18,622	0.09	0.51	6.73
108	0.0494	31.63	1,377,978	1,149,147		206,415				22,416	0.08	0.50	5.99
109	0.2248	143.86	6,266,401	6,106,048		101,257				59,096	0.06	0.49	3.18
110	0.2131	136.40	5,941,560	5,921,424						20,136	0.05	0.49	2.33
120	0.1800	115.22	5,018,961	4,529,900					427,480	61,581	0.12	0.52	9.85
121	0.1803	115.41	5,027,163	4,115,873					882,590	28,700	0.17	0.55	16.25
122	0.0821	52.53	2,287,991	2,287,991							0.05	0.49	2.00
123	0.0700	44.78	1,950,635	1,950,635							0.05	0.49	2.00
124	0.0228	14.58	635,079	635,079							0.05	0.49	2.00
125	0.1665	106.57	4,642,077	4,642,077							0.05	0.49	2.00
126	0.0715	45.77	1,993,702	1,993,702							0.05	0.49	2.00
127	0.2645	169.27	7,373,366	7,257,487		115,879					0.05	0.49	2.25
128	0.0748	47.86	2,084,756	2,084,756							0.05	0.49	2.00
129	0.1770	113.26	4,933,711	4,933,711							0.05	0.49	2.00
200	0.0816	52.26	2,276,233	1,909,889	339,026					27,318	0.07	0.50	4.37
201	0.0290	18.59	809,795	0			768,458			41,337	0.27	0.60	28.83
202	0.0046	2.91	126,941	54,955			22,372			49,614	0.39	0.67	44.36
203	0.1270	81.30	3,541,467	258,475			3,282,992				0.22	0.58	23.32
204	0.0740	47.35	2,062,568	1,849,807			153,799			58,962	0.09	0.51	6.52
205	0.0620	39.71	1,729,769	1,704,104						25,665	0.06	0.49	3.45
206	0.0214	13.72	597,759	70,046			452,168			75,545	0.29	0.62	31.78
207	0.0621	39.71	1,729,942	1,729,942							0.05	0.49	2.00
208	0.0388	24.83	1,081,442	1,081,442							0.05	0.49	2.00
209	0.0412	26.35	1,147,717	251,658			892,141			3,918	0.20	0.57	20.21
210	0.0361	23.12	1,007,042	0			1,002,726			4,316	0.24	0.59	25.32
211	0.0360	23.01	1,002,279	0			985,115			17,164	0.25	0.59	26.28
212	0.0808	51.73	2,253,456	2,133,966			91,325			28,165	0.07	0.50	4.16
213	0.1160	74.26	3,234,963	3,234,963							0.05	0.49	2.00
214	0.1045	66.87	2,912,853	41,603	2,550,474		295,211			25,565	0.14	0.53	12.20
215	0.0653	41.77	1,819,547	393,550	1,407,384					18,613	0.11	0.52	9.19
216	0.0302	19.35	842,895	825,576						17,319	0.07	0.50	4.01
217	0.0112	7.15	311,508	261,217						50,291	0.18	0.56	17.82
218	0.0129	8.26	359,977	294,372						65,605	0.20	0.57	19.86
219	0.2388	152.85	6,658,264	0			6,658,264				0.24	0.59	25.00

Land Use	Imp., I %
Agriculture/Open Space	2
Large Lot Rural Residential	10
Rural Residential (2-5 ac.)	18
Rural Estate Residential (1-2 ac.)	25
Single Family Low Density	35
Light Industrial	80
Streets	100

PROJECT: TODD CREEK PUD AMENDMENT - E. 168TH AVE - REGIONAL DRAINAGE
 SHEET TITLE: PROPOSED COMPOSITE RUNOFF FACTORS

Basin Name	Total Area (sq. miles)	Total Area (Acres)	Total Area (Sq. Ft.)	Agriculture/Open Space (Sq. Ft.)	Large Lot Rural Residential (Sq. Ft.)	Rural Residential (Sq. Ft.)	Rural Estate Residential (Sq. Ft.)	Single Family Low Density (Sq. Ft.)	Light Industrial (Sq. Ft.)	Streets (Sq. Ft.)	Medium Density Residential (Sq. Ft.)	Soil Type "C" Composite Runoff Factors		
												C _s	C ₁₀₀	I %
100	0.0375	24.02	1,046,369	74,060			964,891			7,418		0.23	0.58	23.90
101	0.2028	129.81	5,654,474	959,247			47,448			68,088	4,579,691	0.38	0.66	42.25
102	0.1136	72.72	3,167,594	0						70,676	3,096,918	0.45	0.69	51.12
103	0.0529	33.84	1,474,165	0	1,459,654					14,511		0.12	0.52	10.89
104	0.0303	19.40	845,194	67,977				595,557			181,660	0.32	0.63	35.57
105	0.1009	64.59	2,813,649	559,560							2,254,089	0.36	0.65	40.45
106	0.1252	80.13	3,490,662	38,533						9,260	3,442,869	0.44	0.69	49.60
107	0.0327	20.93	911,621	737,387		155,612				18,622		0.09	0.51	6.73
108	0.0494	31.63	1,377,978	1,149,147		206,415				22,416		0.08	0.50	5.99
109	0.2248	143.86	6,266,401	6,106,048		101,257				59,096		0.06	0.49	3.18
110	0.2131	136.40	5,941,560	5,921,424						20,136		0.05	0.49	2.33
120	0.1800	115.22	5,018,961	4,529,900					427,480	61,581		0.12	0.52	9.85
121	0.1803	115.41	5,027,163	4,115,873					882,590	28,700		0.17	0.55	16.25
122	0.0821	52.53	2,287,991	2,287,991								0.05	0.49	2.00
123	0.0700	44.78	1,950,635	1,950,635								0.05	0.49	2.00
124	0.0228	14.58	635,079	635,079								0.05	0.49	2.00
125	0.1665	106.57	4,642,077	4,642,077								0.05	0.49	2.00
126	0.0715	45.77	1,993,702	1,993,702								0.05	0.49	2.00
127	0.2645	169.27	7,373,366	7,257,487		115,879						0.05	0.49	2.25
128	0.0748	47.86	2,084,756	2,084,756								0.05	0.49	2.00
129	0.1770	113.26	4,933,711	4,933,711								0.05	0.49	2.00
200	0.0816	52.26	2,276,233	1,909,889	339,026					27,318		0.07	0.50	4.37
201	0.0290	18.59	809,795	0			768,458			41,337		0.27	0.60	28.83
202	0.0046	2.91	126,941	54,955			22,372			49,614		0.39	0.67	44.36
203	0.1270	81.30	3,541,467	258,475			3,282,992					0.22	0.58	23.32
204	0.0740	47.35	2,062,568	240,216			1,763,390			58,962		0.23	0.59	24.47
205	0.0620	39.71	1,729,769	57,930			1,646,174			25,665		0.24	0.59	25.34
206	0.0214	13.72	597,759	3,213			452,168			75,545	66,833	0.34	0.64	37.15
207	0.0621	39.71	1,729,942	1,729,942								0.05	0.49	2.00
208	0.0388	24.83	1,081,442	1,081,442								0.05	0.49	2.00
209	0.0412	26.35	1,147,717	251,658			892,141			3,918		0.20	0.57	20.21
210	0.0361	23.12	1,007,042	0			1,002,726			4,316		0.24	0.59	25.32
211	0.0360	23.01	1,002,279	0			985,115			17,164		0.25	0.59	26.28
212	0.0808	51.73	2,253,456	1,701,155			91,325			28,165	432,811	0.14	0.54	13.38
213	0.1160	74.26	3,234,963	218,967							3,015,996	0.41	0.68	46.75
214	0.1045	66.87	2,912,853	41,603	2,550,474		295,211			25,565		0.14	0.53	12.20
215	0.0653	41.77	1,819,547	393,550	1,407,384					18,613		0.11	0.52	9.19
216	0.0302	19.35	842,895	825,576						17,319		0.07	0.50	4.01
217	0.0112	7.15	311,508	261,217						50,291		0.18	0.56	17.82
218	0.0129	8.26	359,977	294,372						65,605		0.20	0.57	19.86
219	0.2388	152.85	6,658,264	0			6,658,264					0.24	0.59	25.00
POND1001	0.2404	153.83	6,700,843	1,033,307	0	0	1,012,339	0	0	75,506	4,579,691	0.35	0.65	39.38
POND1006	0.4230	270.69	11,791,264	666,070	1,459,654	0	0	595,557	0	94,447	8,975,536	0.37	0.66	41.98
POND1022	0.4424	283.15	12,334,115.00	12,884,399.00	0.00	0.00	0.00	0.00	1,310,070.00	90,281.00	0.00	0.13	0.53	11.32
POND1027	0.5953	380.97	16,594,859.00	16,478,980.00	0.00	115,879.00	0.00	0.00	0.00	0.00	0.00	0.05	0.49	2.11
POND1010	0.7718	493.94	21,516,027.00	20,932,473.00	0.00	463,284.00	0.00	0.00	0.00	120,270.00	0.00	0.06	0.49	2.89
POND2012	0.7000	448.01	19,515,345	5,597,953	0	0	10,138,403	0	0	263,349	3,515,640	0.23	0.58	23.92
POND2005	0.1360	87.06	3,792,337	298,146	0	0	3,409,564	0	0	84,627	0	0.24	0.59	24.87
200 BASINS (excl 219)	1.0348	662.26	28,848,153	9,324,160	4,296,884	0	11,202,072	0	0	509,397	3,515,640	0.20	0.57	19.70

Land Use	Imp., I %
Agriculture/Open Space	2
Large Lot Rural Residential	10
Rural Residential (2-5 ac.)	18
Rural Estate Residential (1-2 ac)	25
Single Family Low Density	35
Light Industrial	80
Streets	100
Medium Density Residential	50

PROJECT: TODD CREEK PUD AMENDMENT – E. 168TH AVE – REGIONAL DRAINAGE
 SHEET TITLE: FUTURE COMPOSITE RUNOFF FACTORS

Basin Name	Total Area (sq. miles)	Total Area (Acres)	Total Area (Sq. Ft.)	Agriculture/Open Space (Sq. Ft.)	Large Lot Rural Residential (Sq. Ft.)	Rural Residential (Sq. Ft.)	Rural Estate Residential (Sq. Ft.)	Single Family Low Density (Sq. Ft.)	Light Industrial (Sq. Ft.)	Streets (Sq. Ft.)	Medium Density Residential (Sq. Ft.)	Soil Type "C" Composite Runoff Factors		
												C _s	C ₁₀₀	I %
100	0.0375	24.02	1,046,369	74,060			964,891			7,418		0.23	0.58	23.90
101	0.2028	129.81	5,654,474	959,247			47,448			68,088	4,579,691	0.38	0.66	42.25
102	0.1136	72.72	3,167,594	0						70,676	3,096,918	0.45	0.69	51.12
103	0.0529	33.84	1,474,165	0	1,459,654					14,511		0.12	0.52	10.89
104	0.0303	19.40	845,194	67,977				595,557			181,660	0.32	0.63	35.57
105	0.1009	64.59	2,813,649	559,560							2,254,089	0.36	0.65	40.45
106	0.1252	80.13	3,490,662	38,533						9,260	3,442,869	0.44	0.69	49.60
107	0.0327	20.93	911,621	737,387		155,612				18,622		0.09	0.51	6.73
108	0.0494	31.63	1,377,978	1,149,147		206,415				22,416		0.08	0.50	5.99
109	0.2248	143.86	6,266,401	6,106,048		101,257				59,096		0.06	0.49	3.18
110	0.2131	136.40	5,941,560	5,921,424						20,136		0.05	0.49	2.33
120	0.1800	115.22	5,018,961	4,529,900					427,480	61,581		0.12	0.52	9.85
121	0.1803	115.41	5,027,163	4,115,873					882,590	28,700		0.17	0.55	16.25
122	0.0821	52.53	2,287,991	2,287,991								0.05	0.49	2.00
123	0.0700	44.78	1,950,635	1,950,635								0.05	0.49	2.00
124	0.0228	14.58	635,079	635,079								0.05	0.49	2.00
125	0.1665	106.57	4,642,077	4,642,077								0.05	0.49	2.00
126	0.0715	45.77	1,993,702	1,993,702								0.05	0.49	2.00
127	0.2645	169.27	7,373,366	7,257,487		115,879						0.05	0.49	2.25
128	0.0748	47.86	2,084,756	2,084,756								0.05	0.49	2.00
129	0.1770	113.26	4,933,711	4,933,711								0.05	0.49	2.00
200	0.0816	52.26	2,276,233	1,909,889	339,026					27,318		0.07	0.50	4.37
201	0.0290	18.59	809,795	0			768,458			41,337		0.27	0.60	28.83
202	0.0046	2.91	126,941	54,955			22,372			49,614		0.39	0.67	44.36
203	0.1270	81.30	3,541,467	258,475			3,282,992					0.22	0.58	23.32
204	0.0740	47.35	2,062,568	240,216			1,763,390			58,962		0.23	0.59	24.47
205	0.0620	39.71	1,729,769	57,930			1,646,174			25,665		0.24	0.59	25.34
206	0.0214	13.72	597,759	3,213			452,168			75,545	66,833	0.34	0.64	37.15
207	0.0621	39.71	1,729,942	1,729,942								0.05	0.49	2.00
208	0.0388	24.83	1,081,442	1,081,442								0.05	0.49	2.00
209	0.0412	26.35	1,147,717	251,658			892,141			3,918		0.20	0.57	20.21
210	0.0361	23.12	1,007,042	0			1,002,726			4,316		0.24	0.59	25.32
211	0.0360	23.01	1,002,279	0			985,115			17,164		0.25	0.59	26.28
212	0.0808	51.73	2,253,456	1,044,447			91,325			28,165	1,089,519	0.26	0.60	27.36
213	0.1160	74.26	3,234,963	209,662							3,025,301	0.41	0.68	46.89
214	0.1045	66.87	2,912,853	41,603	2,550,474		295,211			25,565		0.14	0.53	12.20
215	0.0653	41.77	1,819,547	393,550	1,407,384					18,613		0.11	0.52	9.19
216	0.0302	19.35	842,895	825,576						17,319		0.07	0.50	4.01
217	0.0112	7.15	311,508	261,217						50,291		0.18	0.56	17.82
218	0.0129	8.26	359,977	294,372						65,605		0.20	0.57	19.86
219	0.2388	152.85	6,658,264	0			6,658,264					0.24	0.59	25.00
POND1001	0.2404	153.83	6,700,843	1,033,307	0	0	1,012,339	0	0	75,506	4,579,691	0.35	0.65	39.38
POND1006	0.4230	270.69	11,791,264	666,070	1,459,654	0	0	595,557	0	94,447	8,975,536	0.37	0.66	41.98
POND1022	0.4424	283.15	12,334,115.00	12,884,399.00	0.00	0.00	0.00	0.00	1,310,070.00	90,281.00	0.00	0.13	0.53	11.32
POND1027	0.5953	380.97	16,594,859.00	16,478,980.00	0.00	115,879.00	0.00	0.00	0.00	0.00	0.00	0.05	0.49	2.11
POND1010	0.7718	493.94	21,516,027.00	20,932,473.00	0.00	463,284.00	0.00	0.00	0.00	120,270.00	0.00	0.06	0.49	2.89
POND2012	0.7000	448.01	19,515,345	4,931,940	0	0	10,138,403	0	0	263,349	4,181,653	0.24	0.59	25.56
POND2005	0.1360	87.06	3,792,337	298,146	0	0	3,409,564	0	0	84,627	0	0.24	0.59	24.87
200 BASINS (excl 219)	1.0348	662.26	28,848,153	8,658,147	4,296,884	0	11,202,072	0	0	509,397	4,181,653	0.20	0.57	20.81

Land Use	Imp., I %
Agriculture/Open Space	2
Large Lot Rural Residential	10
Rural Residential (2-5 ac.)	18
Rural Estate Residential (1-2 ac.)	25
Single Family Low Density	35
Light Industrial	80
Streets	100
Medium Density Residential	50

PROJECT: TODD CREEK PUD AMENDMENT – E. 168TH AVE – REGIONAL DRAINAGE
 SHEET TITLE: POND SUMMARY

Pond 2003 - Existing/Proposed/Future			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 5073.00 ft			
0.00	0	0.000	0.00
1.00	32,230	0.370	0.29
1.90	35,857	1.073	0.60
2.00	36,260	1.156	0.69
3.00	40,465	2.037	5.49
4.00	44,670	3.014	8.60
5.00	49,085	4.090	50.69
6.00	53,500	5.268	82.07
6.50	55,804	5.895	86.20
7.00	58,107	6.549	118.35
8.00	62,715	7.936	261.78

Pond 1001 - Proposed/Future			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 5104.00 ft			
0.00	0	0.000	0.00
1.00	9,857	0.113	0.31
2.00	37,869	0.661	0.67
3.00	82,301	2.040	1.04
4.00	143,286	4.630	1.44
4.50	182,711	6.501	1.59
5.00	222,137	8.824	8.57
6.00	301,546	14.835	9.40
7.00	359,433	22.422	10.16
7.50	393,938	26.746	10.51
8.00	428,444	31.466	118.63
9.00	510,705	42.246	589.11

Pond 1006 - Proposed/Future			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 5061.00 ft			
0.00	0	0.000	0.00
1.00	8,515	0.098	0.51
2.00	46,413	0.728	1.04
3.00	106,407	2.482	1.48
4.00	195,675	5.950	2.26
5.00	314,128	11.801	2.76
6.00	451,369	20.588	17.36
7.00	571,482	32.329	18.80
8.00	658,875	46.451	20.13
9.00	709,743	62.161	390.98
10.00	833,347	79.873	1,095.11

Pond 2012A - Proposed			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 5006.00 ft			
0.00	0	0.000	0.00
1.00	15,308	0.176	0.39
2.00	57,402	1.010	0.88
3.00	120,424	3.051	1.46
3.75	162,151	5.484	1.80
4.00	176,060	6.455	2.13
5.00	217,001	10.966	6.52
5.50	231,898	13.543	10.26
6.00	246,796	16.290	45.29
7.00	272,800	22.254	140.25
7.75	289,475	27.095	149.10
8.00	295,034	28.772	227.24
9.00	313,445	35.756	1,018.10

Pond 2012B - Proposed			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 4998.00 ft			
0.00	0	0.000	0.00
1.00	10,404	0.119	0.39
2.00	41,028	0.710	0.88
3.00	80,490	2.105	1.46
3.75	112,567	3.767	1.80
4.00	123,259	4.443	2.10
5.00	170,565	7.816	6.07
5.50	197,719	9.930	9.44
6.00	224,874	12.355	13.64
6.25	237,442	13.682	16.04
7.00	275,146	18.094	47.86
7.75	309,879	23.131	50.50
8.00	321,457	24.942	126.65
9.00	361,282	32.779	909.92

Pond 2012C - Proposed			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 4995.00 ft			
0.00	0	0.000	0.00
1.00	12,370	0.142	0.59
2.00	50,712	0.866	1.21
3.00	115,595	2.775	1.71
3.75	173,357	5.263	2.44
4.00	192,611	6.313	2.62
5.00	249,089	11.383	3.18
5.50	265,768	14.338	3.43
6.00	282,448	17.484	3.65
7.00	298,725	24.155	62.41
7.75	306,851	29.368	65.94
8.00	309,560	31.137	179.87
9.00	320,509	38.369	1,345.98

Pond 1022 - Future			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 5035.00 ft			
0.00	0	0.000	0.00
1.00	12,185	0.140	0.23
2.00	56,214	0.925	0.57
3.00	112,430	2.861	0.97
3.50	147,042	4.350	1.09
4.00	181,655	6.236	16.48
5.00	253,737	11.234	41.63
6.00	323,976	17.865	46.19
7.00	392,862	26.093	50.34
7.50	415,696	30.734	52.30
8.00	438,530	35.636	161.94
9.00	482,383	46.207	635.35

Pond 1027 - Future			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 5008.00 ft			
0.00	0	0.000	0.00
1.00	17,656	0.203	0.16
1.75	51,959	0.802	0.31
2.00	63,393	1.133	0.82
3.00	141,611	3.486	2.52
4.00	253,371	8.020	3.41
5.00	397,337	15.489	4.11
5.80	537,943	24.077	4.59
6.00	573,095	26.628	10.94
7.00	764,456	41.981	96.95
8.00	950,977	61.671	151.87
9.00	1,133,350	85.596	773.08
10.00	1,299,443	113.521	1,925.68

Pond 1010 - Future			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 4947.00 ft			
0.00	0	0.000	0.00
1.00	16,369	0.188	0.21
2.00	65,176	1.124	0.45
3.00	145,906	3.547	2.02
4.00	257,874	8.182	2.79
5.00	400,190	15.735	3.38
5.85	538,814	24.897	3.82
6.00	563,277	26.794	11.61
7.00	734,073	41.686	168.23
7.50	821,029	50.611	286.22
8.00	907,985	60.534	690.57
9.00	1,070,023	83.238	1,906.53
10.00	1,261,095	109.996	3,597.40

PROJECT: TODD CREEK PUD AMENDMENT – E. 168TH AVE – REGIONAL DRAINAGE
 SHEET TITLE: POND SUMMARY

Pond 2000 - Future			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 5051.0 ft			
0.00	0	0.000	0.00
1.00	4,000	0.046	0.04
1.60	11,500	0.153	0.07
2.00	16,500	0.281	0.31
2.50	25,000	0.519	0.46
3.00	33,500	0.855	10.85
4.00	46,000	1.768	22.36
5.00	54,000	2.916	25.29
5.50	56,000	3.547	26.64
6.00	58,000	4.201	82.65
7.00	63,000	5.590	332.34

Pond 2012 - Future			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 4995.0 ft			
0.00	0	0.000	0.00
1.00	15,815	0.182	0.52
2.00	56,799	1.015	1.18
3.00	120,972	3.056	1.95
4.00	211,402	6.871	2.53
5.00	311,244	12.870	5.25
5.70	369,582	18.340	6.77
6.00	394,584	20.972	7.30
6.25	409,530	23.279	7.70
6.90	448,390	29.680	46.95
7.00	454,368	30.716	56.26
8.00	485,053	41.499	179.25
9.00	502,082	52.830	1,101.31

Pond 2014 - Future			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 4967.00 ft			
0.00	0	0.000	0.00
1.00	8,000	0.092	0.11
2.00	33,000	0.562	0.24
2.50	50,000	1.039	0.62
3.00	67,000	1.710	14.52
4.00	92,000	3.535	30.08
5.00	108,000	5.831	34.24
5.50	112,000	7.094	36.14
6.00	116,000	8.402	145.71
7.00	126,000	11.180	618.91

Pond 2015 - Future			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 4959.00 ft			
0.00	0	0.000	0.00
1.00	4,000	0.046	0.06
2.00	16,500	0.281	0.12
3.00	33,500	0.855	0.67
4.00	46,000	1.768	18.63
5.00	54,000	2.916	21.02
5.50	56,000	3.547	22.11
6.00	58,000	4.201	130.92
7.00	63,000	5.590	602.70

Pond 2016 - Future			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 4952.50 ft			
0.00	0	0.000	0.00
1.00	2,000	0.023	0.03
2.00	8,500	0.143	0.06
3.00	17,000	0.436	0.59
3.50	20,000	0.649	0.72
4.00	23,000	0.895	8.31
5.00	27,000	1.469	9.32
5.50	28,000	1.785	9.79
6.00	29,000	2.112	118.00
7.00	31,500	2.806	588.66

Pond 2005 - Proposed/Future			
Stage (ft)	Surface Area (ft ²)	Storage (ac-ft)	Discharge (cfs)
Stage 0.00 = 5026.70 ft			
0.00	200	0.000	0.00
1.00	1,606	0.021	0.08
2.00	16,032	0.178	0.24
2.80	39,761	0.664	0.34
3.00	46,852	0.863	0.66
4.00	69,526	2.243	2.94
5.00	78,814	3.973	57.21
5.30	80,584	4.522	68.92
6.00	84,141	5.845	429.90
6.30	85,665	6.430	686.46

[TITLE]

;;Project Title/Notes
Todd Creek PUD Amendment
Historic Condition Model
KT Engineering - June 2023

[OPTIONS]

;;Option	Value
FLOW_UNITS	CFS
INFILTRATION	HORTON
FLOW_ROUTING	KINWAVE
LINK_OFFSETS	DEPTH
MIN_SLOPE	0
ALLOW_PONDING	YES
SKIP_STEADY_STATE	NO
START_DATE	01/01/2005
START_TIME	00:00:00
REPORT_START_DATE	01/01/2005
REPORT_START_TIME	00:00:00
END_DATE	01/01/2005
END_TIME	12:00:00
SWEEP_START	01/01
SWEEP_END	01/01
DRY_DAYS	0
REPORT_STEP	00:01:00
WET_STEP	00:01:00
DRY_STEP	00:01:00
ROUTING_STEP	0:01:00
RULE_STEP	00:00:00
INERTIAL_DAMPING	PARTIAL
NORMAL_FLOW_LIMITED	BOTH
FORCE_MAIN_EQUATION	H-W
VARIABLE_STEP	0.75
LENGTHENING_STEP	0
MIN_SURFAREA	12.566
MAX_TRIALS	8
HEAD_TOLERANCE	0.005

SYS_FLOW_TOL 5
LAT_FLOW_TOL 5
MINIMUM_STEP 0.5
THREADS 1

[FILES]

;;Interfacing Files

USE INFLOWS "J:\0009\2207\CIVIL\DRAINAGE\PHASE I\REPORTS\CUHP\CUHP OUTPUT\SWMM
FILES\RG-SELTZER-HIST-100YR.txt"

[EVAPORATION]

;;Data Source Parameters

;;-----
CONSTANT 0.0
DRY_ONLY NO

[JUNCTIONS]

;;Name	Elevation	MaxDepth	InitDepth	SurDepth	Aponded
;;-----	-----	-----	-----	-----	-----
JUNCT_101	5106.5	0	0	0	0
JUNCT_300	5106.4	0	0	0	0
JUNCT_100	5136.6	0	0	0	0
JUNCT_301	5064.0	0	0	0	0
JUNCT_102	5064.1	0	0	0	0
JUNCT_303	5057.3	0	0	0	0
JUNCT_106	5057.4	0	0	0	0
JUNCT_302	5078.2	0	0	0	0
JUNCT_103	5112.7	0	0	0	0
JUNCT_104	5117.6	0	0	0	0
JUNCT_105	5078.3	0	0	0	0
JUNCT_304	5039.8	0	0	0	0
JUNCT_107	5039.9	0	0	0	0
JUNCT_305	5028.7	0	0	0	0
JUNCT_108	5028.8	0	0	0	0
JUNCT_306	4995.2	0	0	0	0
JUNCT_109	4995.3	0	0	0	0
JUNCT_110	5945.4	0	0	0	0
JUNCT_318	4960.1	0	0	0	0
JUNCT_129	4960.2	0	0	0	0

JUNCT_317	4999.7	0	0	0	0
JUNCT_128	4999.8	0	0	0	0
JUNCT_316	5008.5	0	0	0	0
JUNCT_127	5008.6	0	0	0	0
JUNCT_126	5040.7	0	0	0	0
JUNCT_314	5040.6	0	0	0	0
JUNCT_124	5015.2	0	0	0	0
JUNCT_315	5015.1	0	0	0	0
JUNCT_313	5016.2	0	0	0	0
JUNCT_311	5016.3	0	0	0	0
JUNCT_312	5038.7	0	0	0	0
JUNCT_125	5038.8	0	0	0	0
JUNCT_123	5016.4	0	0	0	0
JUNCT_310	5034.7	0	0	0	0
JUNCT_309	5044.3	0	0	0	0
JUNCT_308	5050.5	0	0	0	0
JUNCT_307	5049.6	0	0	0	0
JUNCT_121	5050.6	0	0	0	0
JUNCT_120	5049.7	0	0	0	0
JUNCT_203	5072.6	0	0	0	0
JUNCT_500	5072.5	0	0	0	0
JUNCT_501	5043.4	0	0	0	0
JUNCT_204	5043.5	0	0	0	0
JUNCT_502	5022.6	0	0	0	0
JUNCT_205	5022.8	0	0	0	0
JUNCT_209	5022.7	0	0	0	0
JUNCT_207	5060.2	0	0	0	0
JUNCT_208	5051.5	0	0	0	0
JUNCT_503	5021.8	0	0	0	0
JUNCT_210	5022	0	0	0	0
JUNCT_504	5013.2	0	0	0	0
JUNCT_211	5013.3	0	0	0	0
JUNCT_505	4999.4	0	0	0	0
JUNCT_608	4999.3	0	0	0	0
JUNCT_607	5026.3	0	0	0	0
JUNCT_606	5049.8	0	0	0	0
JUNCT_200	5049.9	0	0	0	0
JUNCT_201	5026.4	0	0	0	0
JUNCT_202	4999.4	0	0	0	0

JUNCT_611	4966.6	0	0	0	0
JUNCT_214	4966.7	0	0	0	0
JUNCT_506	5004.5	0	0	0	0
JUNCT_213	5004.6	0	0	0	0
JUNCT_509	5012.0	0	0	0	0
JUNCT_219	5012.1	0	0	0	0
JUNCT_612	4958.6	0	0	0	0
JUNCT_613	4952.6	0	0	0	0
JUNCT_215	4958.7	0	0	0	0
JUNCT_216	4952.7	0	0	0	0
JUNCT_217	4950	0	0	0	0
JUNCT_218	4950	0	0	0	0
JUNCT_122	5034.8	0	0	0	0
JUNCT_212	4999.5	0	0	0	0
JUNCT_206	5021.9	0	0	0	0

[OUTFALLS]

;;Name	Elevation	Type	Stage Data	Gated	Route To
OUTFALL_614	4943	FREE		NO	
OUTFALL_319	4945.3	FREE		NO	

[CONDUITS]

;;Name	From Node	To Node	Length	Roughness	InOffset	OutOffset	InitFlow
101	JUNCT_101	JUNCT_300	1	0.01	0	0	0
100	JUNCT_100	JUNCT_300	2330	.04	0	0	0
300	JUNCT_300	JUNCT_301	3097	.04	0	0	0
102	JUNCT_102	JUNCT_301	1	0.01	0	0	0
105	JUNCT_105	JUNCT_302	1	0.01	0	0	0
106	JUNCT_106	JUNCT_303	1	0.01	0	0	0

301	JUNCT_301	JUNCT_303	445	.04	0	0	0	0
302	JUNCT_302	JUNCT_303	1872	0.04	0	0	0	0
103	JUNCT_103	JUNCT_302	2132	.04	0	0	0	0
104	JUNCT_104	JUNCT_302	2181	0.04	0	0	0	0
107	JUNCT_107	JUNCT_304	1	0.01	0	0	0	0
303	JUNCT_303	JUNCT_304	1474	.04	0	0	0	0
108	JUNCT_108	JUNCT_305	1	0.01	0	0	0	0
304	JUNCT_304	JUNCT_305	1240	0.01	0	0	0	0
305	JUNCT_305	JUNCT_306	3060	.04	0	0	0	0
109	JUNCT_109	JUNCT_306	1	0.01	0	0	0	0
306	JUNCT_306	JUNCT_318	2191	0.04	0	0	0	0
318	JUNCT_318	OUTFALL_319	1504	.04	0	0	0	0
129	JUNCT_129	JUNCT_318	1	0.01	0	0	0	0
317	JUNCT_317	JUNCT_318	2462	.04	0	0	0	0
128	JUNCT_128	JUNCT_317	1	0.01	0	0	0	0
316	JUNCT_316	JUNCT_317	1470	0.04	0	0	0	0
127	JUNCT_127	JUNCT_316	1	0.01	0	0	0	0
126	JUNCT_126	JUNCT_314	1	0.01	0	0	0	0
124	JUNCT_124	JUNCT_315	1	0.01	0	0	0	0
314	JUNCT_314	JUNCT_316	3115	.04	0	0	0	0

315	JUNCT_315	JUNCT_316	1483	0.04	0	0	0	0
313	JUNCT_313	JUNCT_316	1886	0.04	0	0	0	0
125	JUNCT_125	JUNCT_312	1	0.01	0	0	0	0
312	JUNCT_312	JUNCT_313	1448	0.04	0	0	0	0
311	JUNCT_311	JUNCT_313	1	0.01	0	0	0	0
123	JUNCT_123	JUNCT_311	1	0.01	0	0	0	0
120	JUNCT_120	JUNCT_307	1	0.01	0	0	0	0
121	JUNCT_121	JUNCT_308	1	0.01	0	0	0	0
310	JUNCT_310	JUNCT_311	1257	.04	0	0	0	0
309	JUNCT_309	JUNCT_310	804	.04	0	0	0	0
307	JUNCT_307	JUNCT_309	580	.04	0	0	0	0
308	JUNCT_308	JUNCT_309	553	0.04	0	0	0	0
203	JUNCT_203	JUNCT_500	1	0.01	0	0	0	0
204	JUNCT_204	JUNCT_501	1	0.01	0	0	0	0
500	JUNCT_500	JUNCT_501	2651	0.04	0	0	0	0
501	JUNCT_501	JUNCT_502	1674	0.04	0	0	0	0
205	JUNCT_205	JUNCT_502	1	0.01	0	0	0	0
209	JUNCT_209	JUNCT_502	1	0.01	0	0	0	0
207	JUNCT_207	JUNCT_502	3816	.04	0	0	0	0

208	JUNCT_208	JUNCT_502	2169	0.04	0	0	0	0
502	JUNCT_502	JUNCT_503	150	0.013	0	0	0	0
210	JUNCT_210	JUNCT_503	1	0.01	0	0	0	0
503	JUNCT_503	JUNCT_504	1468	0.04	0	0	0	0
211	JUNCT_211	JUNCT_504	619	0.04	0	0	0	0
504	JUNCT_504	JUNCT_505	1472	0.04	0	0	0	0
505	JUNCT_505	JUNCT_608	1	0.01	0	0	0	0
200	JUNCT_200	JUNCT_606	1	0.01	0	0	0	0
201	JUNCT_201	JUNCT_607	1	0.01	0	0	0	0
202	JUNCT_202	JUNCT_608	1	0.01	0	0	0	0
606	JUNCT_606	JUNCT_607	2536	0.04	0	0	0	0
607	JUNCT_607	JUNCT_608	2886	0.04	0	0	0	0
608	JUNCT_608	JUNCT_611	1248	0.04	0	0	0	0
219	JUNCT_219	JUNCT_509	1	0.01	0	0	0	0
509	JUNCT_509	JUNCT_506	1395	0.04	0	0	0	0
213	JUNCT_213	JUNCT_506	1	0.01	0	0	0	0
510	JUNCT_506	JUNCT_611	1897	0.04	0	0	0	0
214	JUNCT_214	JUNCT_611	1	0.01	0	0	0	0
611	JUNCT_611	JUNCT_612	510	.04	0	0	0	0
612	JUNCT_612	JUNCT_613	1002	0.04	0	0	0	0

613	JUNCT_613	OUTFALL_614	3160	0.04	0	0	0	0
215	JUNCT_215	JUNCT_612	1	0.01	0	0	0	0
216	JUNCT_216	JUNCT_613	1	0.01	0	0	0	0
217	JUNCT_217	OUTFALL_614	1	0.01	0	0	0	0
218	JUNCT_218	OUTFALL_614	1	0.01	0	0	0	0
122	JUNCT_122	JUNCT_310	1	0.01	0	0	0	0
212	JUNCT_212	JUNCT_505	1	0.01	0	0	0	0
110	JUNCT_110	OUTFALL_319	1	0.01	0	0	0	0
206	JUNCT_206	JUNCT_505	2800	.04	0	0	0	0

[XSECTIONS]

;;Link	Shape	Geom1	Geom2	Geom3	Geom4	Barrels	Culvert
;;							
101	DUMMY	0	0	0	0	1	
100	TRAPEZOIDAL	5	15	5	5	1	
300	TRAPEZOIDAL	5	15	5	5	1	
102	DUMMY	0	0	0	0	1	
105	DUMMY	0	0	0	0	1	
106	DUMMY	0	0	0	0	1	
301	TRAPEZOIDAL	5	15	5	5	1	
302	TRAPEZOIDAL	5	15	5	5	1	
103	TRAPEZOIDAL	5	15	5	5	1	
104	TRAPEZOIDAL	5	15	5	5	1	
107	DUMMY	0	0	0	0	1	
303	TRAPEZOIDAL	5	15	5	5	1	
108	DUMMY	0	0	0	0	1	
304	TRAPEZOIDAL	5	20	20	20	1	
305	TRAPEZOIDAL	5	20	20	20	1	
109	DUMMY	0	0	0	0	1	

306	TRAPEZOIDAL	5	20	20	20	1
318	TRAPEZOIDAL	5	20	20	20	1
129	DUMMY	0	0	0	0	1
317	TRAPEZOIDAL	5	20	20	20	1
128	DUMMY	0	0	0	0	1
316	TRAPEZOIDAL	5	20	20	20	1
127	DUMMY	0	0	0	0	1
126	DUMMY	0	0	0	0	1
124	DUMMY	0	0	0	0	1
314	TRAPEZOIDAL	5	20	20	20	1
315	TRAPEZOIDAL	5	20	20	20	1
313	TRAPEZOIDAL	5	20	20	20	1
125	DUMMY	0	0	0	0	1
312	TRAPEZOIDAL	5	20	20	20	1
311	DUMMY	0	0	0	0	1
123	DUMMY	0	0	0	0	1
120	DUMMY	0	0	0	0	1
121	DUMMY	0	0	0	0	1
310	TRAPEZOIDAL	5	20	20	20	1
309	TRAPEZOIDAL	5	20	20	20	1
307	TRAPEZOIDAL	5	20	20	20	1
308	TRAPEZOIDAL	5	20	20	20	1
203	DUMMY	0	0	0	0	1
204	DUMMY	0	0	0	0	1
500	TRAPEZOIDAL	5	10	5	5	1
501	TRAPEZOIDAL	5	10	5	5	1
205	DUMMY	0	0	0	0	1
209	DUMMY	0	0	0	0	1
207	TRAPEZOIDAL	5	10	5	5	1
208	TRAPEZOIDAL	5	10	5	5	1
502	TRAPEZOIDAL	5	10	5	5	2
210	DUMMY	0	0	0	0	1
503	TRAPEZOIDAL	5	10	5	5	1
211	TRAPEZOIDAL	5	10	5	5	1
504	TRAPEZOIDAL	5	10	5	5	1
505	DUMMY	0	0	0	0	1
200	DUMMY	0	0	0	0	1
201	DUMMY	0	0	0	0	1
202	DUMMY	0	0	0	0	1

606	TRAPEZOIDAL	5	10	5	5	1
607	TRAPEZOIDAL	5	10	5	5	1
608	TRAPEZOIDAL	5	10	5	5	1
219	DUMMY	0	0	0	0	1
509	TRAPEZOIDAL	5	20	20	20	1
213	DUMMY	0	0	0	0	1
510	TRAPEZOIDAL	5	20	20	20	1
214	DUMMY	0	0	0	0	1
611	TRAPEZOIDAL	5	10	5	5	1
612	TRAPEZOIDAL	5	10	5	5	1
613	TRAPEZOIDAL	5	10	5	5	1
215	DUMMY	0	0	0	0	1
216	DUMMY	0	0	0	0	1
217	DUMMY	0	0	0	0	1
218	DUMMY	0	0	0	0	1
122	DUMMY	0	0	0	0	1
212	DUMMY	0	0	0	0	1
110	DUMMY	0	0	0	0	1
206	TRAPEZOIDAL	5	20	20	20	1

[REPORT]

;;Reporting Options
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]

DIMENSIONS -3514.483 0.000 10000.000 10205.329
Units None

[COORDINATES]

;;Node	X-Coord	Y-Coord
;;-----	-----	-----
JUNCT_101	-3047.927	7571.352
JUNCT_300	-2622.687	7570.394
JUNCT_100	-2839.903	7176.187
JUNCT_301	-2148.029	7586.484

JUNCT_102	-2139.984	7176.187
JUNCT_303	-1633.146	7594.529
JUNCT_106	-1633.146	8012.872
JUNCT_302	-1609.010	6942.880
JUNCT_103	-1890.587	6532.582
JUNCT_104	-1592.920	6347.546
JUNCT_105	-1311.344	6580.853
JUNCT_304	-1078.037	7610.619
JUNCT_107	-1078.037	8037.007
JUNCT_305	-547.064	7618.665
JUNCT_108	-514.883	8077.233
JUNCT_306	-40.225	7634.755
JUNCT_109	-40.225	8093.323
JUNCT_110	796.351	8139.965
JUNCT_318	288.294	8570.709
JUNCT_129	255.159	9001.454
JUNCT_317	-498.793	9179.405
JUNCT_128	-498.793	9605.792
JUNCT_316	-949.316	9163.315
JUNCT_127	-941.271	8833.467
JUNCT_126	-836.685	9919.549
JUNCT_314	-828.640	9589.702
JUNCT_124	-1238.938	9895.414
JUNCT_315	-1206.758	9565.567
JUNCT_313	-1423.974	9155.270
JUNCT_311	-1914.722	9147.224
JUNCT_312	-1423.974	9541.432
JUNCT_125	-1432.019	9903.459
JUNCT_123	-1928.557	9523.138
JUNCT_310	-2330.637	9141.162
JUNCT_309	-2809.112	9133.121
JUNCT_308	-2817.154	9515.097
JUNCT_307	-2813.133	8747.124
JUNCT_121	-2825.196	9824.698
JUNCT_120	-3042.319	8735.061
JUNCT_203	-450.523	4682.220
JUNCT_500	80.451	4690.265
JUNCT_501	651.649	4698.311
JUNCT_204	442.478	4304.103

JUNCT_502	1190.668	4698.311
JUNCT_205	1013.677	5148.833
JUNCT_209	1464.200	5156.879
JUNCT_207	1021.722	4304.103
JUNCT_208	1472.245	4296.058
JUNCT_503	1995.173	4706.356
JUNCT_210	1995.173	4263.878
JUNCT_504	2534.191	4706.356
JUNCT_211	2518.101	5181.014
JUNCT_505	3153.660	4722.446
JUNCT_608	3137.570	5671.762
JUNCT_607	2325.020	5671.762
JUNCT_606	1609.010	5663.717
JUNCT_200	1600.965	6218.825
JUNCT_201	2316.975	6234.916
JUNCT_202	3153.660	6259.051
JUNCT_611	3990.346	5679.807
JUNCT_214	3974.256	6259.051
JUNCT_506	3990.346	5108.608
JUNCT_213	3676.589	5092.518
JUNCT_509	4006.436	4674.175
JUNCT_219	4030.571	4215.607
JUNCT_612	4778.761	5703.942
JUNCT_613	5559.131	5695.897
JUNCT_215	4770.716	5132.743
JUNCT_216	5559.131	6275.141
JUNCT_217	6049.879	6259.051
JUNCT_218	6074.014	5221.239
JUNCT_122	-2339.359	8765.511
JUNCT_212	3181.774	4211.999
JUNCT_206	2905.305	4203.942
OUTFALL_614	6283.186	5711.987
OUTFALL_319	801.873	8587.277

[VERTICES]

;;Link	X-Coord	Y-Coord
;;-----	-----	-----
302	-1625.101	7546.259

[TITLE]

;;Project Title/Notes
Todd Creek PUD Amendment
Existing Condition Model
KT Engineering - June 2023

[OPTIONS]

;;Option	Value
FLOW_UNITS	CFS
INFILTRATION	HORTON
FLOW_ROUTING	KINWAVE
LINK_OFFSETS	DEPTH
MIN_SLOPE	0
ALLOW_PONDING	YES
SKIP_STEADY_STATE	NO
START_DATE	01/01/2005
START_TIME	00:00:00
REPORT_START_DATE	01/01/2005
REPORT_START_TIME	00:00:00
END_DATE	01/01/2005
END_TIME	12:00:00
SWEEP_START	01/01
SWEEP_END	01/01
DRY_DAYS	0
REPORT_STEP	00:01:00
WET_STEP	00:01:00
DRY_STEP	00:01:00
ROUTING_STEP	0:01:00
RULE_STEP	00:00:00
INERTIAL_DAMPING	PARTIAL
NORMAL_FLOW_LIMITED	BOTH
FORCE_MAIN_EQUATION	H-W
VARIABLE_STEP	0.75
LENGTHENING_STEP	0

```

MIN_SURFAREA      12.566
MAX_TRIALS        8
HEAD_TOLERANCE    0.005
SYS_FLOW_TOL      5
LAT_FLOW_TOL      5
MINIMUM_STEP      0.5
THREADS           1

```

[FILES]

```
;;Interfacing Files
```

```
USE INFLOWS "J:\0009\2207\CIVIL\DRAINAGE\PHASE I\REPORTS\CUHP\CUHP OUTPUT\SWMM FILES\RG-SELTZER-EXIST-100YR.txt"
```

[EVAPORATION]

```
;;Data Source      Parameters
```

```
;;-----
```

```
CONSTANT          0.0
DRY_ONLY          NO
```

[JUNCTIONS]

```
;;Name            Elevation  MaxDepth  InitDepth  SurDepth  Aponded
```

```
;;-----
```

JUNCT_101	5106.5	0	0	0	0
JUNCT_300	5106.4	0	0	0	0
JUNCT_100	5136.6	0	0	0	0
JUNCT_301	5064.0	0	0	0	0
JUNCT_102	5064.1	0	0	0	0
JUNCT_303	5057.3	0	0	0	0
JUNCT_106	5057.4	0	0	0	0
JUNCT_302	5078.2	0	0	0	0
JUNCT_103	5112.7	0	0	0	0
JUNCT_104	5117.6	0	0	0	0
JUNCT_105	5078.3	0	0	0	0
JUNCT_304	5039.8	0	0	0	0
JUNCT_107	5039.9	0	0	0	0
JUNCT_305	5028.7	0	0	0	0
JUNCT_108	5028.8	0	0	0	0

JUNCT_306	4995.2	0	0	0	0
JUNCT_109	4995.3	0	0	0	0
JUNCT_110	5945.4	0	0	0	0
JUNCT_318	4960.1	0	0	0	0
JUNCT_129	4960.2	0	0	0	0
JUNCT_317	4999.7	0	0	0	0
JUNCT_128	4999.8	0	0	0	0
JUNCT_316	5008.5	0	0	0	0
JUNCT_127	5008.6	0	0	0	0
JUNCT_126	5040.7	0	0	0	0
JUNCT_314	5040.6	0	0	0	0
JUNCT_124	5015.2	0	0	0	0
JUNCT_315	5015.1	0	0	0	0
JUNCT_313	5016.2	0	0	0	0
JUNCT_311	5016.3	0	0	0	0
JUNCT_312	5038.7	0	0	0	0
JUNCT_125	5038.8	0	0	0	0
JUNCT_123	5016.4	0	0	0	0
JUNCT_310	5034.7	0	0	0	0
JUNCT_309	5044.3	0	0	0	0
JUNCT_308	5050.5	0	0	0	0
JUNCT_307	5049.6	0	0	0	0
JUNCT_121	5050.6	0	0	0	0
JUNCT_120	5049.7	0	0	0	0
JUNCT_203	5072.6	0	0	0	0
JUNCT_500	5072.5	0	0	0	0
JUNCT_501	5043.4	0	0	0	0
JUNCT_204	5043.5	0	0	0	0
JUNCT_502	5022.6	0	0	0	0
JUNCT_205	5022.8	0	0	0	0
JUNCT_209	5022.7	0	0	0	0
JUNCT_207	5060.2	0	0	0	0
JUNCT_208	5051.5	0	0	0	0
JUNCT_503	5021.8	0	0	0	0
JUNCT_210	5022	0	0	0	0
JUNCT_504	5013.2	0	0	0	0

JUNCT_211	5013.3	0	0	0	0
JUNCT_505	4999.4	0	0	0	0
JUNCT_608	4999.3	0	0	0	0
JUNCT_607	5026.3	0	0	0	0
JUNCT_606	5049.8	0	0	0	0
JUNCT_200	5049.9	0	0	0	0
JUNCT_201	5026.4	0	0	0	0
JUNCT_202	4999.4	0	0	0	0
JUNCT_611	4966.6	0	0	0	0
JUNCT_214	4966.7	0	0	0	0
JUNCT_506	5004.5	0	0	0	0
JUNCT_213	5004.6	0	0	0	0
JUNCT_509	5012.0	0	0	0	0
JUNCT_219	5012.1	0	0	0	0
JUNCT_612	4958.6	0	0	0	0
JUNCT_613	4952.6	0	0	0	0
JUNCT_215	4958.7	0	0	0	0
JUNCT_216	4952.7	0	0	0	0
JUNCT_217	4950	0	0	0	0
JUNCT_218	4950	0	0	0	0
JUNCT_122	5034.8	0	0	0	0
JUNCT_212	4999.5	0	0	0	0
JUNCT_206	5021.9	0	0	0	0

[OUTFALLS]

;;Name	Elevation	Type	Stage Data	Gated	Route To
OUTFALL_614	4943	FREE		NO	
OUTFALL_319	4945.3	FREE		NO	

[STORAGE]

;;Name	Elev.	MaxDepth	InitDepth	Shape	Curve Type/Params	SurDepth	Fevap	Psi
STOR_2003	5073	8	0	TABULAR	STORAGE_CURVE_2003	0	0	

[CONDUITS]

;;Name	From Node	To Node	Length	Roughness	InOffset	OutOffset	InitFlow	MaxFlow
101	JUNCT_101	JUNCT_300	1	0.01	0	0	0	0
100	JUNCT_100	JUNCT_300	2330	.04	0	0	0	0
300	JUNCT_300	JUNCT_301	3097	.04	0	0	0	0
102	JUNCT_102	JUNCT_301	1	0.01	0	0	0	0
105	JUNCT_105	JUNCT_302	1	0.01	0	0	0	0
106	JUNCT_106	JUNCT_303	1	0.01	0	0	0	0
301	JUNCT_301	JUNCT_303	445	.04	0	0	0	0
302	JUNCT_302	JUNCT_303	1872	0.04	0	0	0	0
103	JUNCT_103	JUNCT_302	2132	.04	0	0	0	0
104	JUNCT_104	JUNCT_302	2181	0.04	0	0	0	0
107	JUNCT_107	JUNCT_304	1	0.01	0	0	0	0
303	JUNCT_303	JUNCT_304	1474	.04	0	0	0	0
108	JUNCT_108	JUNCT_305	1	0.01	0	0	0	0
304	JUNCT_304	JUNCT_305	1240	0.01	0	0	0	0
305	JUNCT_305	JUNCT_306	3060	.04	0	0	0	0

109	JUNCT_109	JUNCT_306	1	0.01	0	0	0	0
306	JUNCT_306	JUNCT_318	2191	0.04	0	0	0	0
318	JUNCT_318	OUTFALL_319	1504	.04	0	0	0	0
129	JUNCT_129	JUNCT_318	1	0.01	0	0	0	0
317	JUNCT_317	JUNCT_318	2462	.04	0	0	0	0
128	JUNCT_128	JUNCT_317	1	0.01	0	0	0	0
316	JUNCT_316	JUNCT_317	1470	0.04	0	0	0	0
127	JUNCT_127	JUNCT_316	1	0.01	0	0	0	0
126	JUNCT_126	JUNCT_314	1	0.01	0	0	0	0
124	JUNCT_124	JUNCT_315	1	0.01	0	0	0	0
314	JUNCT_314	JUNCT_316	3115	.04	0	0	0	0
315	JUNCT_315	JUNCT_316	1483	0.04	0	0	0	0
313	JUNCT_313	JUNCT_316	1886	0.04	0	0	0	0
125	JUNCT_125	JUNCT_312	1	0.01	0	0	0	0
312	JUNCT_312	JUNCT_313	1448	0.04	0	0	0	0
311	JUNCT_311	JUNCT_313	1	0.01	0	0	0	0
123	JUNCT_123	JUNCT_311	1	0.01	0	0	0	0
120	JUNCT_120	JUNCT_307	1	0.01	0	0	0	0

121	JUNCT_121	JUNCT_308	1	0.01	0	0	0	0
310	JUNCT_310	JUNCT_311	1257	.04	0	0	0	0
309	JUNCT_309	JUNCT_310	804	.04	0	0	0	0
307	JUNCT_307	JUNCT_309	580	.04	0	0	0	0
308	JUNCT_308	JUNCT_309	553	0.04	0	0	0	0
204	JUNCT_204	JUNCT_501	1	0.01	0	0	0	0
500	JUNCT_500	JUNCT_501	2651	0.04	0	0	0	0
501	JUNCT_501	JUNCT_502	1674	0.04	0	0	0	0
205	JUNCT_205	JUNCT_502	1	0.01	0	0	0	0
209	JUNCT_209	JUNCT_502	1	0.01	0	0	0	0
207	JUNCT_207	JUNCT_502	3816	.04	0	0	0	0
208	JUNCT_208	JUNCT_502	2169	0.04	0	0	0	0
502	JUNCT_502	JUNCT_503	150	0.013	0	0	0	0
210	JUNCT_210	JUNCT_503	1	0.01	0	0	0	0
503	JUNCT_503	JUNCT_504	1468	0.04	0	0	0	0
211	JUNCT_211	JUNCT_504	619	0.04	0	0	0	0
504	JUNCT_504	JUNCT_505	1472	0.04	0	0	0	0
505	JUNCT_505	JUNCT_608	1	0.01	0	0	0	0

200	JUNCT_200	JUNCT_606	1	0.01	0	0	0	0
201	JUNCT_201	JUNCT_607	1	0.01	0	0	0	0
202	JUNCT_202	JUNCT_608	1	0.01	0	0	0	0
606	JUNCT_606	JUNCT_607	2536	0.04	0	0	0	0
607	JUNCT_607	JUNCT_608	2886	0.04	0	0	0	0
608	JUNCT_608	JUNCT_611	1248	0.04	0	0	0	0
219	JUNCT_219	JUNCT_509	1	0.01	0	0	0	0
509	JUNCT_509	JUNCT_506	1395	0.04	0	0	0	0
213	JUNCT_213	JUNCT_506	1	0.01	0	0	0	0
510	JUNCT_506	JUNCT_611	1897	0.04	0	0	0	0
214	JUNCT_214	JUNCT_611	1	0.01	0	0	0	0
611	JUNCT_611	JUNCT_612	510	.04	0	0	0	0
612	JUNCT_612	JUNCT_613	1002	0.04	0	0	0	0
613	JUNCT_613	OUTFALL_614	3160	0.04	0	0	0	0
215	JUNCT_215	JUNCT_612	1	0.01	0	0	0	0
216	JUNCT_216	JUNCT_613	1	0.01	0	0	0	0
217	JUNCT_217	OUTFALL_614	1	0.01	0	0	0	0
218	JUNCT_218	OUTFALL_614	1	0.01	0	0	0	0

122	JUNCT_122	JUNCT_310	1	0.01	0	0	0	0
212	JUNCT_212	JUNCT_505	1	0.01	0	0	0	0
110	JUNCT_110	OUTFALL_319	1	0.01	0	0	0	0
206	JUNCT_206	JUNCT_505	2800	.04	0	0	0	0
27	JUNCT_203	STOR_2003	400	0.01	0	0	0	0

[OUTLETS]

;;Name	From Node	To Node	Offset	Type	QTable/Qcoeff	Qexpon	Gated
OUTLET_2003	STOR_2003	JUNCT_500	0	TABULAR/DEPTH	RATING_CURVE_2003		NO

[XSECTIONS]

;;Link	Shape	Geom1	Geom2	Geom3	Geom4	Barrels	Culvert
101	DUMMY	0	0	0	0	1	
100	TRAPEZOIDAL	5	15	5	5	1	
300	TRAPEZOIDAL	5	15	5	5	1	
102	DUMMY	0	0	0	0	1	
105	DUMMY	0	0	0	0	1	
106	DUMMY	0	0	0	0	1	
301	TRAPEZOIDAL	5	15	5	5	1	
302	TRAPEZOIDAL	5	15	5	5	1	
103	TRAPEZOIDAL	5	15	5	5	1	
104	TRAPEZOIDAL	5	15	5	5	1	
107	DUMMY	0	0	0	0	1	
303	TRAPEZOIDAL	5	15	5	5	1	
108	DUMMY	0	0	0	0	1	
304	TRAPEZOIDAL	5	20	20	20	1	
305	TRAPEZOIDAL	5	20	20	20	1	
109	DUMMY	0	0	0	0	1	

306	TRAPEZOIDAL	5	20	20	20	1
318	TRAPEZOIDAL	5	20	20	20	1
129	DUMMY	0	0	0	0	1
317	TRAPEZOIDAL	5	20	20	20	1
128	DUMMY	0	0	0	0	1
316	TRAPEZOIDAL	5	20	20	20	1
127	DUMMY	0	0	0	0	1
126	DUMMY	0	0	0	0	1
124	DUMMY	0	0	0	0	1
314	TRAPEZOIDAL	5	20	20	20	1
315	TRAPEZOIDAL	5	20	20	20	1
313	TRAPEZOIDAL	5	20	20	20	1
125	DUMMY	0	0	0	0	1
312	TRAPEZOIDAL	5	20	20	20	1
311	DUMMY	0	0	0	0	1
123	DUMMY	0	0	0	0	1
120	DUMMY	0	0	0	0	1
121	DUMMY	0	0	0	0	1
310	TRAPEZOIDAL	5	20	20	20	1
309	TRAPEZOIDAL	5	20	20	20	1
307	TRAPEZOIDAL	5	20	20	20	1
308	TRAPEZOIDAL	5	20	20	20	1
204	DUMMY	0	0	0	0	1
500	TRAPEZOIDAL	5	10	5	5	1
501	TRAPEZOIDAL	5	10	5	5	1
205	DUMMY	0	0	0	0	1
209	DUMMY	0	0	0	0	1
207	TRAPEZOIDAL	5	10	5	5	1
208	TRAPEZOIDAL	5	10	5	5	1
502	TRAPEZOIDAL	5	10	5	5	2
210	DUMMY	0	0	0	0	1
503	TRAPEZOIDAL	5	10	5	5	1
211	TRAPEZOIDAL	5	10	5	5	1
504	TRAPEZOIDAL	5	10	5	5	1
505	DUMMY	0	0	0	0	1
200	DUMMY	0	0	0	0	1

201	DUMMY	0	0	0	0	1
202	DUMMY	0	0	0	0	1
606	TRAPEZOIDAL	5	10	5	5	1
607	TRAPEZOIDAL	5	10	5	5	1
608	TRAPEZOIDAL	5	10	5	5	1
219	DUMMY	0	0	0	0	1
509	TRAPEZOIDAL	5	20	20	20	1
213	DUMMY	0	0	0	0	1
510	TRAPEZOIDAL	5	20	20	20	1
214	DUMMY	0	0	0	0	1
611	TRAPEZOIDAL	5	10	5	5	1
612	TRAPEZOIDAL	5	10	5	5	1
613	TRAPEZOIDAL	5	10	5	5	1
215	DUMMY	0	0	0	0	1
216	DUMMY	0	0	0	0	1
217	DUMMY	0	0	0	0	1
218	DUMMY	0	0	0	0	1
122	DUMMY	0	0	0	0	1
212	DUMMY	0	0	0	0	1
110	DUMMY	0	0	0	0	1
206	TRAPEZOIDAL	5	20	20	20	1
27	DUMMY	0	0	0	0	1

[CURVES]

;;Name	Type	X-Value	Y-Value
;;-----	-----	-----	-----
RATING_CURVE_2003	Rating	0	0
RATING_CURVE_2003		1	0.29
RATING_CURVE_2003		1.9	0.60
RATING_CURVE_2003		2	0.69
RATING_CURVE_2003		3	5.49
RATING_CURVE_2003		4	8.60
RATING_CURVE_2003		5	50.69
RATING_CURVE_2003		6	82.07
RATING_CURVE_2003		6.5	86.20
RATING_CURVE_2003		7	118.35

RATING_CURVE_2003	8	261.78
;		
STORAGE_CURVE_2003 Storage	0	0
STORAGE_CURVE_2003	1	32230
STORAGE_CURVE_2003	2	36260
STORAGE_CURVE_2003	4	44670
STORAGE_CURVE_2003	6	53500
STORAGE_CURVE_2003	8	62715

[REPORT]
 ;;Reporting Options
 SUBCATCHMENTS ALL
 NODES ALL
 LINKS ALL

[TAGS]

[MAP]
 DIMENSIONS -3514.483 0.000 10000.000 10205.329
 Units None

[COORDINATES]

;;Node	X-Coord	Y-Coord
;;-----		
JUNCT_101	-3047.927	7571.352
JUNCT_300	-2622.687	7570.394
JUNCT_100	-2839.903	7176.187
JUNCT_301	-2148.029	7586.484
JUNCT_102	-2139.984	7176.187
JUNCT_303	-1633.146	7594.529
JUNCT_106	-1633.146	8012.872
JUNCT_302	-1609.010	6942.880
JUNCT_103	-1890.587	6532.582
JUNCT_104	-1592.920	6347.546
JUNCT_105	-1311.344	6580.853
JUNCT_304	-1078.037	7610.619

JUNCT_107	-1078.037	8037.007
JUNCT_305	-547.064	7618.665
JUNCT_108	-514.883	8077.233
JUNCT_306	-40.225	7634.755
JUNCT_109	-40.225	8093.323
JUNCT_110	796.351	8139.965
JUNCT_318	288.294	8570.709
JUNCT_129	255.159	9001.454
JUNCT_317	-498.793	9179.405
JUNCT_128	-498.793	9605.792
JUNCT_316	-949.316	9163.315
JUNCT_127	-941.271	8833.467
JUNCT_126	-836.685	9919.549
JUNCT_314	-828.640	9589.702
JUNCT_124	-1238.938	9895.414
JUNCT_315	-1206.758	9565.567
JUNCT_313	-1423.974	9155.270
JUNCT_311	-1914.722	9147.224
JUNCT_312	-1423.974	9541.432
JUNCT_125	-1432.019	9903.459
JUNCT_123	-1928.557	9523.138
JUNCT_310	-2330.637	9141.162
JUNCT_309	-2809.112	9133.121
JUNCT_308	-2817.154	9515.097
JUNCT_307	-2813.133	8747.124
JUNCT_121	-2825.196	9824.698
JUNCT_120	-3042.319	8735.061
JUNCT_203	-721.463	4692.012
JUNCT_500	80.451	4690.265
JUNCT_501	651.649	4698.311
JUNCT_204	442.478	4304.103
JUNCT_502	1190.668	4698.311
JUNCT_205	1013.677	5148.833
JUNCT_209	1464.200	5156.879
JUNCT_207	1021.722	4304.103
JUNCT_208	1472.245	4296.058

JUNCT_503	1995.173	4706.356
JUNCT_210	1995.173	4263.878
JUNCT_504	2534.191	4706.356
JUNCT_211	2518.101	5181.014
JUNCT_505	3153.660	4722.446
JUNCT_608	3137.570	5671.762
JUNCT_607	2325.020	5671.762
JUNCT_606	1609.010	5663.717
JUNCT_200	1600.965	6218.825
JUNCT_201	2316.975	6234.916
JUNCT_202	3153.660	6259.051
JUNCT_611	3990.346	5679.807
JUNCT_214	3974.256	6259.051
JUNCT_506	3990.346	5108.608
JUNCT_213	3676.589	5092.518
JUNCT_509	4006.436	4674.175
JUNCT_219	4030.571	4215.607
JUNCT_612	4778.761	5703.942
JUNCT_613	5559.131	5695.897
JUNCT_215	4770.716	5132.743
JUNCT_216	5559.131	6275.141
JUNCT_217	6049.879	6259.051
JUNCT_218	6074.014	5221.239
JUNCT_122	-2339.359	8765.511
JUNCT_212	3181.774	4211.999
JUNCT_206	2905.305	4203.942
OUTFALL_614	6283.186	5711.987
OUTFALL_319	801.873	8587.277
STOR_2003	-347.403	4692.012

[VERTICES]

;;Link	X-Coord	Y-Coord
;;-----	-----	-----
302	-1625.101	7546.259

[TITLE]

;;Project Title/Notes
Todd Creek PUD Amendment
Proposed Condition Model
KT Engineering - June 2023

[OPTIONS]

;;Option	Value
FLOW_UNITS	CFS
INFILTRATION	HORTON
FLOW_ROUTING	KINWAVE
LINK_OFFSETS	DEPTH
MIN_SLOPE	0
ALLOW_PONDING	YES
SKIP_STEADY_STATE	NO
START_DATE	01/01/2005
START_TIME	00:00:00
REPORT_START_DATE	01/01/2005
REPORT_START_TIME	00:00:00
END_DATE	01/01/2005
END_TIME	12:00:00
SWEEP_START	01/01
SWEEP_END	01/01
DRY_DAYS	0
REPORT_STEP	00:01:00
WET_STEP	00:01:00
DRY_STEP	00:01:00
ROUTING_STEP	0:01:00
RULE_STEP	00:00:00
INERTIAL_DAMPING	PARTIAL
NORMAL_FLOW_LIMITED	BOTH
FORCE_MAIN_EQUATION	H-W
VARIABLE_STEP	0.75
LENGTHENING_STEP	0

MIN_SURFAREA 12.566
MAX_TRIALS 8
HEAD_TOLERANCE 0.005
SYS_FLOW_TOL 5
LAT_FLOW_TOL 5
MINIMUM_STEP 0.5
THREADS 1

[FILES]

;;Interfacing Files

USE INFLOWS "J:\0009\2207\CIVIL\DRAINAGE\PHASE I\REPORTS\CUHP\CUHP OUTPUT\SWMM FILES\RG-SELTZER-PROP-100YR.txt"

[EVAPORATION]

;;Data Source Parameters

;;-----

CONSTANT 0.0
DRY_ONLY NO

[JUNCTIONS]

;;Name Elevation MaxDepth InitDepth SurDepth Aponded

;;-----

JUNCT_101	5106.5	0	0	0	0
JUNCT_100	5136.6	0	0	0	0
JUNCT_301	5064.0	0	0	0	0
JUNCT_102	5064.1	0	0	0	0
JUNCT_106	5061.1	0	0	0	0
JUNCT_302	5078.2	0	0	0	0
JUNCT_103	5112.7	0	0	0	0
JUNCT_104	5117.6	0	0	0	0
JUNCT_105	5078.3	0	0	0	0
JUNCT_304	5039.8	0	0	0	0
JUNCT_107	5039.9	0	0	0	0
JUNCT_305	5028.7	0	0	0	0
JUNCT_108	5028.8	0	0	0	0
JUNCT_306	4995.2	0	0	0	0
JUNCT_109	4995.3	0	0	0	0

JUNCT_110	5945.4	0	0	0	0
JUNCT_318	4960.1	0	0	0	0
JUNCT_129	4960.2	0	0	0	0
JUNCT_317	4999.7	0	0	0	0
JUNCT_128	4999.8	0	0	0	0
JUNCT_127	5008.6	0	0	0	0
JUNCT_126	5040.7	0	0	0	0
JUNCT_314	5040.6	0	0	0	0
JUNCT_124	5015.2	0	0	0	0
JUNCT_315	5015.1	0	0	0	0
JUNCT_313	5016.2	0	0	0	0
JUNCT_311	5016.3	0	0	0	0
JUNCT_312	5038.7	0	0	0	0
JUNCT_125	5038.8	0	0	0	0
JUNCT_123	5016.4	0	0	0	0
JUNCT_309	5044.3	0	0	0	0
JUNCT_308	5050.5	0	0	0	0
JUNCT_307	5049.6	0	0	0	0
JUNCT_121	5050.6	0	0	0	0
JUNCT_120	5049.7	0	0	0	0
JUNCT_203	5072.6	0	0	0	0
JUNCT_500	5072.5	0	0	0	0
JUNCT_501	5043.4	0	0	0	0
JUNCT_204	5043.5	0	0	0	0
JUNCT_502	5022.6	0	0	0	0
JUNCT_205	5022.8	0	0	0	0
JUNCT_209	5022.7	0	0	0	0
JUNCT_207	5060.2	0	0	0	0
JUNCT_208	5051.5	0	0	0	0
JUNCT_503	5021.8	0	0	0	0
JUNCT_210	5022	0	0	0	0
JUNCT_504	5013.2	0	0	0	0
JUNCT_211	5013.3	0	0	0	0
JUNCT_508	4994.8	0	0	0	0
JUNCT_201	5026.4	0	0	0	0
JUNCT_202	4999.4	0	0	0	0

JUNCT_511	4966.6	0	0	0	0
JUNCT_506	5004.5	0	0	0	0
JUNCT_213	5004.6	0	0	0	0
JUNCT_509	5012.0	0	0	0	0
JUNCT_219	5012.1	0	0	0	0
JUNCT_512	4958.6	0	0	0	0
JUNCT_513	4952.4	0	0	0	0
JUNCT_217	4950	0	0	0	0
JUNCT_218	4950	0	0	0	0
JUNCT_122	5035.1	0	0	0	0
JUNCT_212	4999.5	0	0	0	0
JUNCT_206	5021.9	0	0	0	0
JUNCT_300	5103.8	0	0	0	0
JUNCT_303	5057.3	0	0	0	0
JUNCT_200	5051.1	0	0	0	0
JUNCT_214	4966.7	0	0	0	0
JUNCT_215	4959.1	0	0	0	0
JUNCT_216	4952.7	0	0	0	0
JUNCT_310	5034.9	0	0	0	0
JUNCT_316	5007.9	0	0	0	0
JUNCT_505	4997.9	0	0	0	0
JUNCT_613	4952.4	0	0	0	0
JUNCT_612	4958.6	0	0	0	0
JUNCT_611	4966.6	0	0	0	0
JUNCT_608	4994.8	0	0	0	0
JUNCT_607	5026.3	0	0	0	0
JUNCT_606	5049.8	0	0	0	0

[OUTFALLS]

;;Name	Elevation	Type	Stage Data	Gated	Route To
OUTFALL_514	4943	FREE		NO	
OUTFALL_319	4945.3	FREE		NO	
OUTFALL_614	4943	FREE		NO	

[STORAGE]

;;Name Ksat	IMD	Elev.	MaxDepth	InitDepth	Shape	Curve Type/Params	SurDepth	Fevap	Psi
STOR_1001		5104	9	0	TABULAR	STORAGE_CURVE_1001	0	0	
STOR_1006		5061	10	0	TABULAR	STORAGE_CURVE_1006	0	0	
STOR_2012B		4998	9	0	TABULAR	STORAGE_CURVE_2012B	0	0	
STOR_2003		5073	8	0	TABULAR	STORAGE_CURVE_2003	0	0	
STOR_2005		5026.7	6.3	0	TABULAR	STORAGE_CURVE_2005	0	0	
STOR_2012C		4995	9	0	TABULAR	STORAGE_CURVE_2012C	0	0	
STOR_2012A		5006	9	0	TABULAR	STORAGE_CURVE_2012A	0	0	

[CONDUITS]

;;Name	From Node	To Node	Length	Roughness	InOffset	OutOffset	InitFlow	MaxFlow
101	JUNCT_101	STOR_1001	1	0.01	0	0	0	0
100	JUNCT_100	STOR_1001	2330	0.013	0	0	0	0
102	JUNCT_102	JUNCT_301	1	0.01	0	0	0	0
105	JUNCT_105	JUNCT_302	1	0.01	0	0	0	0
106	JUNCT_106	STOR_1006	1	0.01	0	0	0	0
301	JUNCT_301	STOR_1006	445	.04	0	0	0	0
302	JUNCT_302	STOR_1006	1872	0.013	0	0	0	0
103	JUNCT_103	JUNCT_302	2132	.013	0	0	0	0
104	JUNCT_104	JUNCT_302	2181	0.013	0	0	0	0
107	JUNCT_107	JUNCT_304	1	0.01	0	0	0	0

108	JUNCT_108	JUNCT_305	1	0.01	0	0	0	0
304	JUNCT_304	JUNCT_305	1240	0.01	0	0	0	0
305	JUNCT_305	JUNCT_306	3060	.04	0	0	0	0
109	JUNCT_109	JUNCT_306	1	0.01	0	0	0	0
306	JUNCT_306	JUNCT_318	2191	0.04	0	0	0	0
318	JUNCT_318	OUTFALL_319	1504	.04	0	0	0	0
129	JUNCT_129	JUNCT_318	1	0.01	0	0	0	0
317	JUNCT_317	JUNCT_318	2462	.04	0	0	0	0
128	JUNCT_128	JUNCT_317	1	0.01	0	0	0	0
316	JUNCT_316	JUNCT_317	1470	0.04	0	0	0	0
127	JUNCT_127	JUNCT_316	1	0.01	0	0	0	0
126	JUNCT_126	JUNCT_314	1	0.01	0	0	0	0
124	JUNCT_124	JUNCT_315	1	0.01	0	0	0	0
314	JUNCT_314	JUNCT_316	3115	.04	0	0	0	0
315	JUNCT_315	JUNCT_316	1483	0.04	0	0	0	0
313	JUNCT_313	JUNCT_316	1886	0.04	0	0	0	0
125	JUNCT_125	JUNCT_312	1	0.01	0	0	0	0
312	JUNCT_312	JUNCT_313	1448	0.04	0	0	0	0

311	JUNCT_311	JUNCT_313	1	0.01	0	0	0	0
123	JUNCT_123	JUNCT_311	1	0.01	0	0	0	0
120	JUNCT_120	JUNCT_307	1	0.01	0	0	0	0
121	JUNCT_121	JUNCT_308	1	0.01	0	0	0	0
309	JUNCT_309	JUNCT_310	804	.04	0	0	0	0
307	JUNCT_307	JUNCT_309	580	.04	0	0	0	0
308	JUNCT_308	JUNCT_309	553	0.04	0	0	0	0
203	JUNCT_203	STOR_2003	1	0.01	0	0	0	0
204	JUNCT_204	JUNCT_501	1	0.01	0	0	0	0
500	JUNCT_500	JUNCT_501	2651	0.04	0	0	0	0
501	JUNCT_501	STOR_2005	1060	0.04	0	0	0	0
205	JUNCT_205	STOR_2005	1	0.01	0	0	0	0
209	JUNCT_209	JUNCT_502	1	0.01	0	0	0	0
207	JUNCT_207	JUNCT_502	3816	.04	0	0	0	0
208	JUNCT_208	JUNCT_502	2169	0.04	0	0	0	0
502	JUNCT_502	JUNCT_503	150	0.013	0	0	0	0
210	JUNCT_210	JUNCT_503	1	0.01	0	0	0	0
503	JUNCT_503	JUNCT_504	563	0.04	0	0	0	0

211	JUNCT_211	JUNCT_504	619	0.04	0	0	0	0
504	JUNCT_504	STOR_2012A	1472	0.04	0	0	0	0
201	JUNCT_201	JUNCT_607	1	0.01	0	0	0	0
202	JUNCT_202	JUNCT_505	1	0.01	0	0	0	0
508	JUNCT_508	JUNCT_511	1248	0.013	0	0	0	0
219	JUNCT_219	JUNCT_509	1	0.01	0	0	0	0
509	JUNCT_509	JUNCT_506	1395	0.04	0	0	0	0
213	JUNCT_213	JUNCT_506	1	0.01	0	0	0	0
506	JUNCT_506	JUNCT_505	343	0.04	0	0	0	0
511	JUNCT_511	JUNCT_512	510	0.013	0	0	0	0
512	JUNCT_512	JUNCT_513	1002	0.013	0	0	0	0
513	JUNCT_513	OUTFALL_514	3160	0.013	0	0	0	0
217	JUNCT_217	OUTFALL_614	1	0.01	0	0	0	0
218	JUNCT_218	OUTFALL_614	1	0.01	0	0	0	0
122	JUNCT_122	JUNCT_310	1	0.01	0	0	0	0
212	JUNCT_212	STOR_2012A	1	0.01	0	0	0	0
110	JUNCT_110	OUTFALL_319	1	0.01	0	0	0	0
206	JUNCT_206	JUNCT_503	1	.01	0	0	0	0

300	JUNCT_300	JUNCT_301	3097	0.04	0	0	0	0
303	JUNCT_303	JUNCT_304	1474	0.04	0	0	0	0
310	JUNCT_310	JUNCT_311	1257	0.04	0	0	0	0
505	JUNCT_505	STOR_2012C	1	0.01	0	0	0	0
606	JUNCT_606	JUNCT_607	2536	0.04	0	0	0	0
607	JUNCT_607	JUNCT_608	2886	0.04	0	0	0	0
608	JUNCT_608	JUNCT_611	1248	0.04	0	0	0	0
611	JUNCT_611	JUNCT_612	510	0.04	0	0	0	0
612	JUNCT_612	JUNCT_613	1002	.04	0	0	0	0
613	JUNCT_613	OUTFALL_614	3160	.04	0	0	0	0
200	JUNCT_200	JUNCT_606	1	0.01	0	0	0	0
214	JUNCT_214	JUNCT_611	1	0.01	0	0	0	0
215	JUNCT_215	JUNCT_612	1	0.01	0	0	0	0
216	JUNCT_216	JUNCT_613	1	0.01	0	0	0	0

[OUTLETS]

;;Name	From Node	To Node	Offset	Type	QTable/Qcoeff	Qexpon	Gated
OUTLET_1001	STOR_1001	JUNCT_300	0	TABULAR/DEPTH	RATING_CURVE_1001		NO
OUTLET_1006	STOR_1006	JUNCT_303	0	TABULAR/DEPTH	RATING_CURVE_1006		NO

OUTLET_2012B	STOR_2012B	JUNCT_505	0	TABULAR/DEPTH	RATING_CURVE_2012B	NO
OUTLET_2003	STOR_2003	JUNCT_500	0	TABULAR/DEPTH	RATING_CURVE_2003	NO
OUTLET_2005	STOR_2005	JUNCT_502	0	TABULAR/DEPTH	RATING_CURVE_2005	NO
OUTLET_2012C	STOR_2012C	JUNCT_508	0	TABULAR/DEPTH	RATING_CURVE_2012C	NO
OUTLET_2012A	STOR_2012A	STOR_2012B	0	TABULAR/DEPTH	RATING_CURVE_2012A	NO

[XSECTIONS]

;;Link	Shape	Geom1	Geom2	Geom3	Geom4	Barrels	Culvert

101	DUMMY	0	0	0	0	1	
100	CIRCULAR	2.5	0	0	0	1	
102	DUMMY	0	0	0	0	1	
105	DUMMY	0	0	0	0	1	
106	DUMMY	0	0	0	0	1	
301	TRAPEZOIDAL	5	15	5	5	1	
302	CIRCULAR	5.5	0	0	0	1	
103	CIRCULAR	3	0	0	0	1	
104	CIRCULAR	3	0	0	0	1	
107	DUMMY	0	0	0	0	1	
108	DUMMY	0	0	0	0	1	
304	TRAPEZOIDAL	5	20	20	20	1	
305	TRAPEZOIDAL	5	20	20	20	1	
109	DUMMY	0	0	0	0	1	
306	TRAPEZOIDAL	5	20	20	20	1	
318	TRAPEZOIDAL	5	20	20	20	1	
129	DUMMY	0	0	0	0	1	
317	TRAPEZOIDAL	5	20	20	20	1	
128	DUMMY	0	0	0	0	1	
316	TRAPEZOIDAL	5	20	20	20	1	
127	DUMMY	0	0	0	0	1	

126	DUMMY	0	0	0	0	1
124	DUMMY	0	0	0	0	1
314	TRAPEZOIDAL	5	20	20	20	1
315	TRAPEZOIDAL	5	20	20	20	1
313	TRAPEZOIDAL	5	20	20	20	1
125	DUMMY	0	0	0	0	1
312	TRAPEZOIDAL	5	20	20	20	1
311	DUMMY	0	0	0	0	1
123	DUMMY	0	0	0	0	1
120	DUMMY	0	0	0	0	1
121	DUMMY	0	0	0	0	1
309	TRAPEZOIDAL	5	20	20	20	1
307	TRAPEZOIDAL	5	20	20	20	1
308	TRAPEZOIDAL	5	20	20	20	1
203	DUMMY	0	0	0	0	1
204	DUMMY	0	0	0	0	1
500	TRAPEZOIDAL	5	10	5	5	1
501	TRAPEZOIDAL	5	10	5	5	1
205	DUMMY	0	0	0	0	1
209	DUMMY	0	0	0	0	1
207	TRAPEZOIDAL	5	10	5	5	1
208	TRAPEZOIDAL	5	10	5	5	1
502	TRAPEZOIDAL	5	10	5	5	2
210	DUMMY	0	0	0	0	1
503	TRAPEZOIDAL	5	10	5	5	1
211	TRAPEZOIDAL	5	10	5	5	1
504	TRAPEZOIDAL	5	10	5	5	1
201	DUMMY	0	0	0	0	1
202	DUMMY	0	0	0	0	1
508	CIRCULAR	2.5	0	0	0	1
219	DUMMY	0	0	0	0	1
509	TRAPEZOIDAL	5	20	20	20	1
213	DUMMY	0	0	0	0	1
506	TRAPEZOIDAL	5	20	20	20	1
511	CIRCULAR	2.5	0	0	0	1
512	CIRCULAR	3	0	0	0	1

513	CIRCULAR	3.5	0	0	0	1
217	DUMMY	0	0	0	0	1
218	DUMMY	0	0	0	0	1
122	DUMMY	0	0	0	0	1
212	DUMMY	0	0	0	0	1
110	DUMMY	0	0	0	0	1
206	DUMMY	0	0	0	0	1
300	TRAPEZOIDAL	5	15	5	5	1
303	TRAPEZOIDAL	5	15	5	5	1
310	TRAPEZOIDAL	5	20	20	20	1
505	DUMMY	0	0	0	0	1
606	TRAPEZOIDAL	5	10	5	5	1
607	TRAPEZOIDAL	5	10	5	5	1
608	TRAPEZOIDAL	5	10	5	5	1
611	TRAPEZOIDAL	5	10	5	5	1
612	TRAPEZOIDAL	5	10	5	5	1
613	TRAPEZOIDAL	5	10	5	5	1
200	DUMMY	0	0	0	0	1
214	DUMMY	0	0	0	0	1
215	DUMMY	0	0	0	0	1
216	DUMMY	0	0	0	0	1

[CURVES]

;;Name	Type	X-Value	Y-Value
;;-----			
RATING_CURVE_1006	Rating	0	0
RATING_CURVE_1006		1	.51
RATING_CURVE_1006		2	1.04
RATING_CURVE_1006		3	1.48
RATING_CURVE_1006		4	2.26
RATING_CURVE_1006		5	2.76
RATING_CURVE_1006		6	17.36
RATING_CURVE_1006		7	18.80
RATING_CURVE_1006		8	20.13
RATING_CURVE_1006		9	390.98
RATING_CURVE_1006		10	1095.11

```

;
RATING_CURVE_1001 Rating      0      0
RATING_CURVE_1001            1      0.31
RATING_CURVE_1001            2      0.67
RATING_CURVE_1001            3      1.04
RATING_CURVE_1001            4      1.44
RATING_CURVE_1001           4.5      1.59
RATING_CURVE_1001            5      8.57
RATING_CURVE_1001            6      9.40
RATING_CURVE_1001            7     10.16
RATING_CURVE_1001           7.5     10.51
RATING_CURVE_1001            8    118.63
RATING_CURVE_1001            9    589.11
;
RATING_CURVE_2012B Rating     0      0
RATING_CURVE_2012B           1      0.39
RATING_CURVE_2012B           2      0.88
RATING_CURVE_2012B           3      1.46
RATING_CURVE_2012B          3.75      1.80
RATING_CURVE_2012B           4      2.10
RATING_CURVE_2012B           5      6.07
RATING_CURVE_2012B          5.5      9.44
RATING_CURVE_2012B           6     13.64
RATING_CURVE_2012B          6.25     16.04
RATING_CURVE_2012B           7     47.86
RATING_CURVE_2012B          7.75     50.50
RATING_CURVE_2012B           8    126.65
RATING_CURVE_2012B           9    909.92
;
RATING_CURVE_2000 Rating      0      0
RATING_CURVE_2000            1      0.04
RATING_CURVE_2000           1.6      0.07
RATING_CURVE_2000            2      0.31
RATING_CURVE_2000           2.5      0.46
RATING_CURVE_2000            3     10.85
RATING_CURVE_2000            4     22.36

```


RATING_CURVE_2000		5	25.29
RATING_CURVE_2000		5.5	26.64
RATING_CURVE_2000		6	82.65
RATING_CURVE_2000		7	332.34
;			
RATING_CURVE_2014	Rating	0	0
RATING_CURVE_2014		1	0.11
RATING_CURVE_2014		2	0.24
RATING_CURVE_2014		2.5	0.62
RATING_CURVE_2014		3	14.52
RATING_CURVE_2014		4	30.08
RATING_CURVE_2014		5	34.24
RATING_CURVE_2014		5.5	36.14
RATING_CURVE_2014		6	145.71
RATING_CURVE_2014		7	618.91
;			
RATING_CURVE_2015	Rating	0	0
RATING_CURVE_2015		1	0.06
RATING_CURVE_2015		2	0.12
RATING_CURVE_2015		3	0.67
RATING_CURVE_2015		4	18.63
RATING_CURVE_2015		5	21.02
RATING_CURVE_2015		5.5	22.11
RATING_CURVE_2015		6	130.92
RATING_CURVE_2015		7	602.70
;			
RATING_CURVE_2016	Rating	0	0
RATING_CURVE_2016		1	0.03
RATING_CURVE_2016		2	0.06
RATING_CURVE_2016		3	0.59
RATING_CURVE_2016		3.5	0.72
RATING_CURVE_2016		4	8.31
RATING_CURVE_2016		5	9.32
RATING_CURVE_2016		5.5	9.79
RATING_CURVE_2016		6	118
RATING_CURVE_2016		7	588.66

```

;
RATING_CURVE_1022 Rating      0      0
RATING_CURVE_1022            1      0.23
RATING_CURVE_1022            2      0.57
RATING_CURVE_1022            3      0.97
RATING_CURVE_1022           3.5     1.09
RATING_CURVE_1022            4     16.48
RATING_CURVE_1022            5     44.98
RATING_CURVE_1022            6     49.98
RATING_CURVE_1022            7     54.53
RATING_CURVE_1022           7.5     56.66
RATING_CURVE_1022            8    166.48
RATING_CURVE_1022            9    640.22
;
RATING_CURVE_1027 Rating      0      0
RATING_CURVE_1027            1     0.16
RATING_CURVE_1027           1.75    0.31
RATING_CURVE_1027            2     0.82
RATING_CURVE_1027            3     2.52
RATING_CURVE_1027            4     3.41
RATING_CURVE_1027            5     4.11
RATING_CURVE_1027           5.75    4.56
RATING_CURVE_1027            6    13.42
RATING_CURVE_1027            7   102.74
RATING_CURVE_1027            8   151.87
RATING_CURVE_1027            9   773.08
RATING_CURVE_1027           10  1925.68
;
RATING_CURVE_1010 Rating      0      0
RATING_CURVE_1010            1     0.21
RATING_CURVE_1010            2     .45
RATING_CURVE_1010            3     2.02
RATING_CURVE_1010            4     2.79
RATING_CURVE_1010            5     3.38
RATING_CURVE_1010           5.85    3.82
RATING_CURVE_1010            6    11.61

```

RATING_CURVE_1010		7	168.23
RATING_CURVE_1010		7.5	286.22
RATING_CURVE_1010		8	690.57
RATING_CURVE_1010		9	1906.53
RATING_CURVE_1010		10	3597.40
;			
RATING_CURVE_2003	Rating	0	0
RATING_CURVE_2003		1	0.29
RATING_CURVE_2003		1.9	0.60
RATING_CURVE_2003		2	0.69
RATING_CURVE_2003		3	5.49
RATING_CURVE_2003		4	8.60
RATING_CURVE_2003		5	50.69
RATING_CURVE_2003		6	82.07
RATING_CURVE_2003		6.5	86.20
RATING_CURVE_2003		7	118.35
RATING_CURVE_2003		8	261.78
;			
RATING_CURVE_2005	Rating	0	0
RATING_CURVE_2005		1	0.08
RATING_CURVE_2005		2	0.24
RATING_CURVE_2005		2.8	0.34
RATING_CURVE_2005		3	0.66
RATING_CURVE_2005		4	2.94
RATING_CURVE_2005		5	57.21
RATING_CURVE_2005		5.3	68.92
RATING_CURVE_2005		6	429.90
RATING_CURVE_2005		6.3	686.46
;			
RATING_CURVE_2012C	Rating	0	0
RATING_CURVE_2012C		1	0.59
RATING_CURVE_2012C		2	1.21
RATING_CURVE_2012C		3	1.71
RATING_CURVE_2012C		3.75	2.44
RATING_CURVE_2012C		4	2.62
RATING_CURVE_2012C		5	3.18

RATING_CURVE_2012C		5.5	3.43
RATING_CURVE_2012C		6	3.65
RATING_CURVE_2012C		7	62.41
RATING_CURVE_2012C		7.75	65.94
RATING_CURVE_2012C		8	179.87
RATING_CURVE_2012C		9	1345.98
;			
RATING_CURVE_2012A	Rating	0	0
RATING_CURVE_2012A		1	0.39
RATING_CURVE_2012A		2	0.88
RATING_CURVE_2012A		3	1.46
RATING_CURVE_2012A		3.75	1.80
RATING_CURVE_2012A		4	2.13
RATING_CURVE_2012A		5	6.52
RATING_CURVE_2012A		5.5	10.26
RATING_CURVE_2012A		6	45.29
RATING_CURVE_2012A		7	140.25
RATING_CURVE_2012A		7.75	149.10
RATING_CURVE_2012A		8	227.24
RATING_CURVE_2012A		9	1018.10
;			
STORAGE_CURVE_1001	Storage	0	0
STORAGE_CURVE_1001		1	9857
STORAGE_CURVE_1001		2	37869
STORAGE_CURVE_1001		3	82301
STORAGE_CURVE_1001		4	143286
STORAGE_CURVE_1001		5	222137
STORAGE_CURVE_1001		6	301546
STORAGE_CURVE_1001		7	359433
STORAGE_CURVE_1001		8	428444
STORAGE_CURVE_1001		9	510705
;			
STORAGE_CURVE_1006	Storage	0	0
STORAGE_CURVE_1006		1	8515
STORAGE_CURVE_1006		2	46413
STORAGE_CURVE_1006		3	106407

STORAGE_CURVE_1006		4	195675
STORAGE_CURVE_1006		5	314128
STORAGE_CURVE_1006		6	451369
STORAGE_CURVE_1006		7	571482
STORAGE_CURVE_1006		8	658875
STORAGE_CURVE_1006		9	709743
STORAGE_CURVE_1006		10	833347
;			
STORAGE_CURVE_2012A	Storage	0	0
STORAGE_CURVE_2012A		1	15308
STORAGE_CURVE_2012A		2	57402
STORAGE_CURVE_2012A		3	120424
STORAGE_CURVE_2012A		4	176060
STORAGE_CURVE_2012A		5	217001
STORAGE_CURVE_2012A		6	246796
STORAGE_CURVE_2012A		7	272800
STORAGE_CURVE_2012A		8	295034
STORAGE_CURVE_2012A		9	313445
;			
STORAGE_CURVE_2000	Storage	0	0
STORAGE_CURVE_2000		1	4000
STORAGE_CURVE_2000		2	16500
STORAGE_CURVE_2000		3	33500
STORAGE_CURVE_2000		4	46000
STORAGE_CURVE_2000		5	54000
STORAGE_CURVE_2000		6	58000
STORAGE_CURVE_2000		7	63000
;			
STORAGE_CURVE_2014	Storage	0	0
STORAGE_CURVE_2014		1	8000
STORAGE_CURVE_2014		2	33000
STORAGE_CURVE_2014		3	67000
STORAGE_CURVE_2014		4	92000
STORAGE_CURVE_2014		5	108000
STORAGE_CURVE_2014		6	116000
STORAGE_CURVE_2014		7	126000

```

;
STORAGE_CURVE_2015 Storage 0 0
STORAGE_CURVE_2015 1 4000
STORAGE_CURVE_2015 2 16500
STORAGE_CURVE_2015 3 33500
STORAGE_CURVE_2015 4 46000
STORAGE_CURVE_2015 5 54000
STORAGE_CURVE_2015 6 58000
STORAGE_CURVE_2015 7 63000
;
STORAGE_CURVE_2016 Storage 0 0
STORAGE_CURVE_2016 1 2000
STORAGE_CURVE_2016 2 8500
STORAGE_CURVE_2016 3 17000
STORAGE_CURVE_2016 4 23000
STORAGE_CURVE_2016 5 27000
STORAGE_CURVE_2016 6 29000
STORAGE_CURVE_2016 7 31500
;
STORAGE_CURVE_1022 Storage 0 0
STORAGE_CURVE_1022 1 12185
STORAGE_CURVE_1022 2 56214
STORAGE_CURVE_1022 3 112430
STORAGE_CURVE_1022 4 181655
STORAGE_CURVE_1022 5 253737
STORAGE_CURVE_1022 6 323976
STORAGE_CURVE_1022 7 392862
STORAGE_CURVE_1022 8 438530
STORAGE_CURVE_1022 9 482383
;
STORAGE_CURVE_1027 Storage 0 0
STORAGE_CURVE_1027 1 17656
STORAGE_CURVE_1027 2 63393
STORAGE_CURVE_1027 3 141611
STORAGE_CURVE_1027 4 253371
STORAGE_CURVE_1027 5 397337

```

STORAGE_CURVE_1027		6	573095
STORAGE_CURVE_1027		7	764456
STORAGE_CURVE_1027		8	950977
STORAGE_CURVE_1027		9	1133350
STORAGE_CURVE_1027		10	1299443
;			
STORAGE_CURVE_1010	Storage	0	0
STORAGE_CURVE_1010		1	16369
STORAGE_CURVE_1010		2	65176
STORAGE_CURVE_1010		3	145906
STORAGE_CURVE_1010		4	257874
STORAGE_CURVE_1010		5	400190
STORAGE_CURVE_1010		6	563277
STORAGE_CURVE_1010		7	734073
STORAGE_CURVE_1010		8	907985
STORAGE_CURVE_1010		9	1070023
STORAGE_CURVE_1010		10	1261095
;			
STORAGE_CURVE_2003	Storage	0	0
STORAGE_CURVE_2003		1	32230
STORAGE_CURVE_2003		2	36260
STORAGE_CURVE_2003		4	44670
STORAGE_CURVE_2003		6	53500
STORAGE_CURVE_2003		8	62715
;			
STORAGE_CURVE_2005	Storage	0	200
STORAGE_CURVE_2005		1.30	2028
STORAGE_CURVE_2005		2.30	22034
STORAGE_CURVE_2005		3.30	57488
STORAGE_CURVE_2005		4.30	74685
STORAGE_CURVE_2005		5.30	80584
STORAGE_CURVE_2005		6.30	85665
;			
STORAGE_CURVE_2012C	Storage	0	0
STORAGE_CURVE_2012C		1	12370
STORAGE_CURVE_2012C		2	50712

STORAGE_CURVE_2012C	3	115595
STORAGE_CURVE_2012C	4	192611
STORAGE_CURVE_2012C	5	249089
STORAGE_CURVE_2012C	6	282448
STORAGE_CURVE_2012C	7	298725
STORAGE_CURVE_2012C	8	309560
STORAGE_CURVE_2012C	9	320509
;		
STORAGE_CURVE_2012B Storage	0	0
STORAGE_CURVE_2012B	1	10404
STORAGE_CURVE_2012B	2	41028
STORAGE_CURVE_2012B	3	80490
STORAGE_CURVE_2012B	4	123259
STORAGE_CURVE_2012B	5	170565
STORAGE_CURVE_2012B	6	224874
STORAGE_CURVE_2012B	7	275146
STORAGE_CURVE_2012B	8	321457
STORAGE_CURVE_2012B	9	361282

[REPORT]
 ;;Reporting Options
 SUBCATCHMENTS ALL
 NODES ALL
 LINKS ALL

[TAGS]

[MAP]
 DIMENSIONS -3863.727 0.000 10000.000 10239.881
 Units None

[COORDINATES]
 ;;Node X-Coord Y-Coord
 ;;-----
 JUNCT_101 -3380.541 7562.515
 JUNCT_100 -2917.032 7172.192

JUNCT_301	-2148.029	7586.484
JUNCT_102	-2139.984	7176.187
JUNCT_106	-1633.146	8012.872
JUNCT_302	-1609.010	6942.880
JUNCT_103	-1890.587	6532.582
JUNCT_104	-1592.920	6347.546
JUNCT_105	-1311.344	6580.853
JUNCT_304	-1078.037	7610.619
JUNCT_107	-1078.037	8037.007
JUNCT_305	-547.064	7618.665
JUNCT_108	-514.883	8077.233
JUNCT_306	-40.225	7634.755
JUNCT_109	-40.225	8093.323
JUNCT_110	1014.873	8009.760
JUNCT_318	567.627	8513.928
JUNCT_129	526.969	8904.252
JUNCT_317	-498.793	9179.405
JUNCT_128	-498.793	9605.792
JUNCT_127	-941.271	8833.467
JUNCT_126	-836.685	9919.549
JUNCT_314	-828.640	9589.702
JUNCT_124	-1238.938	9895.414
JUNCT_315	-1206.758	9565.567
JUNCT_313	-1423.974	9155.270
JUNCT_311	-1914.722	9147.224
JUNCT_312	-1423.974	9541.432
JUNCT_125	-1432.019	9903.459
JUNCT_123	-1928.557	9523.138
JUNCT_309	-2809.112	9133.121
JUNCT_308	-2817.154	9515.097
JUNCT_307	-2813.133	8747.124
JUNCT_121	-2825.196	9824.698
JUNCT_120	-3042.319	8735.061
JUNCT_203	-928.612	4683.880
JUNCT_500	-367.522	4692.012
JUNCT_501	-107.307	4692.012

JUNCT_204	-375.654	4374.874
JUNCT_502	632.681	4692.012
JUNCT_205	144.777	5090.467
JUNCT_209	640.813	5082.335
JUNCT_207	429.388	4350.479
JUNCT_208	779.052	4366.743
JUNCT_503	1242.561	4708.275
JUNCT_210	1250.693	4334.216
JUNCT_504	1595.389	4724.216
JUNCT_211	1579.070	5091.383
JUNCT_508	3242.969	5684.084
JUNCT_201	2339.139	7490.606
JUNCT_202	2958.358	4236.635
JUNCT_511	3990.346	5679.807
JUNCT_506	3348.681	4317.952
JUNCT_213	3405.603	3512.910
JUNCT_509	3706.478	4163.449
JUNCT_219	3747.136	3512.910
JUNCT_512	4778.761	5703.942
JUNCT_513	5559.131	5695.897
JUNCT_217	6163.460	7129.085
JUNCT_218	6201.918	6656.599
JUNCT_122	-2239.467	8787.531
JUNCT_212	2084.945	4291.775
JUNCT_206	1513.796	4340.730
JUNCT_300	-2526.709	7562.515
JUNCT_303	-1339.475	7603.174
JUNCT_200	1554.763	7462.157
JUNCT_214	3940.405	7466.221
JUNCT_215	4749.167	7482.477
JUNCT_216	5553.622	7464.221
JUNCT_310	-2220.122	9130.221
JUNCT_316	-952.234	9169.132
JUNCT_505	2917.699	4765.198
JUNCT_613	5571.382	6896.978
JUNCT_612	4769.025	6891.483

JUNCT_611	3972.163	6891.483
JUNCT_608	3158.814	6880.491
JUNCT_607	2345.465	6853.013
JUNCT_606	1559.594	6842.022
OUTFALL_514	6283.186	5711.987
OUTFALL_319	1007.329	8525.471
OUTFALL_614	6269.323	6885.987
STOR_1001	-2917.032	7562.515
STOR_1006	-1633.146	7594.529
STOR_2012B	2492.908	4756.853
STOR_2003	-717.187	4683.880
STOR_2005	136.645	4692.012
STOR_2012C	3299.891	4748.934
STOR_2012A	1962.556	4740.535

[VERTICES]

;;Link	X-Coord	Y-Coord
;;-----	-----	-----
302	-1625.101	7546.259

[TITLE]

;;Project Title/Notes
Todd Creek PUD Amendment
Future Condition Model
KT Engineering - June 2023

[OPTIONS]

;;Option	Value
FLOW_UNITS	CFS
INFILTRATION	HORTON
FLOW_ROUTING	KINWAVE
LINK_OFFSETS	DEPTH
MIN_SLOPE	0
ALLOW_PONDING	YES
SKIP_STEADY_STATE	NO
START_DATE	01/01/2005
START_TIME	00:00:00
REPORT_START_DATE	01/01/2005
REPORT_START_TIME	00:00:00
END_DATE	01/01/2005
END_TIME	12:00:00
SWEEP_START	01/01
SWEEP_END	01/01
DRY_DAYS	0
REPORT_STEP	00:01:00
WET_STEP	00:01:00
DRY_STEP	00:01:00
ROUTING_STEP	0:01:00
RULE_STEP	00:00:00
INERTIAL_DAMPING	PARTIAL
NORMAL_FLOW_LIMITED	BOTH
FORCE_MAIN_EQUATION	H-W
VARIABLE_STEP	0.75
LENGTHENING_STEP	0

```

MIN_SURFAREA      12.566
MAX_TRIALS        8
HEAD_TOLERANCE    0.005
SYS_FLOW_TOL      5
LAT_FLOW_TOL      5
MINIMUM_STEP      0.5
THREADS           1

```

[FILES]

```
;;Interfacing Files
```

```
USE INFLOWS "J:\0009\2207\CIVIL\DRAINAGE\PHASE I\REPORTS\CUHP\CUHP OUTPUT\SWMM FILES\RG-SELTZER-FUT-100YR.txt"
```

[EVAPORATION]

```
;;Data Source      Parameters
```

```
;;-----
CONSTANT           0.0
DRY_ONLY           NO

```

[JUNCTIONS]

```
;;Name             Elevation  MaxDepth  InitDepth  SurDepth  Aponded
;;-----
JUNCT_101          5106.5    0         0         0         0
JUNCT_100          5136.6    0         0         0         0
JUNCT_301          5064.0    0         0         0         0
JUNCT_102          5064.1    0         0         0         0
JUNCT_106          5061.1    0         0         0         0
JUNCT_302          5078.2    0         0         0         0
JUNCT_103          5112.7    0         0         0         0
JUNCT_104          5117.6    0         0         0         0
JUNCT_105          5078.3    0         0         0         0
JUNCT_304          5039.8    0         0         0         0
JUNCT_107          5039.9    0         0         0         0
JUNCT_305          5028.7    0         0         0         0
JUNCT_108          5028.8    0         0         0         0
JUNCT_306          4995.2    0         0         0         0
JUNCT_109          4995.3    0         0         0         0

```

JUNCT_110	5945.4	0	0	0	0
JUNCT_318	4960.1	0	0	0	0
JUNCT_129	4960.2	0	0	0	0
JUNCT_317	4999.7	0	0	0	0
JUNCT_128	4999.8	0	0	0	0
JUNCT_127	5008.6	0	0	0	0
JUNCT_126	5040.7	0	0	0	0
JUNCT_314	5040.6	0	0	0	0
JUNCT_124	5015.2	0	0	0	0
JUNCT_315	5015.1	0	0	0	0
JUNCT_313	5016.2	0	0	0	0
JUNCT_311	5016.3	0	0	0	0
JUNCT_312	5038.7	0	0	0	0
JUNCT_125	5038.8	0	0	0	0
JUNCT_123	5016.4	0	0	0	0
JUNCT_309	5044.3	0	0	0	0
JUNCT_308	5050.5	0	0	0	0
JUNCT_307	5049.6	0	0	0	0
JUNCT_121	5050.6	0	0	0	0
JUNCT_120	5049.7	0	0	0	0
JUNCT_203	5072.6	0	0	0	0
JUNCT_500	5072.5	0	0	0	0
JUNCT_501	5043.4	0	0	0	0
JUNCT_204	5043.5	0	0	0	0
JUNCT_502	5022.6	0	0	0	0
JUNCT_205	5022.8	0	0	0	0
JUNCT_209	5022.7	0	0	0	0
JUNCT_207	5060.2	0	0	0	0
JUNCT_208	5051.5	0	0	0	0
JUNCT_503	5021.8	0	0	0	0
JUNCT_210	5022	0	0	0	0
JUNCT_504	5013.2	0	0	0	0
JUNCT_211	5013.3	0	0	0	0
JUNCT_508	4994.8	0	0	0	0
JUNCT_201	5026.4	0	0	0	0
JUNCT_202	4999.4	0	0	0	0

JUNCT_511	4966.6	0	0	0	0
JUNCT_506	5004.5	0	0	0	0
JUNCT_213	5004.6	0	0	0	0
JUNCT_509	5012.0	0	0	0	0
JUNCT_219	5012.1	0	0	0	0
JUNCT_512	4958.6	0	0	0	0
JUNCT_513	4952.4	0	0	0	0
JUNCT_217	4950	0	0	0	0
JUNCT_218	4950	0	0	0	0
JUNCT_122	5035.1	0	0	0	0
JUNCT_212	4999.5	0	0	0	0
JUNCT_206	5021.9	0	0	0	0
JUNCT_300	5103.8	0	0	0	0
JUNCT_303	5057.3	0	0	0	0
JUNCT_200	5051.1	0	0	0	0
JUNCT_214	4967.1	0	0	0	0
JUNCT_215	4959.1	0	0	0	0
JUNCT_216	4952.7	0	0	0	0
JUNCT_310	5034.9	0	0	0	0
JUNCT_316	5007.9	0	0	0	0
JUNCT_505	4994.9	0	0	0	0
JUNCT_613	4952.4	0	0	0	0
JUNCT_612	4958.6	0	0	0	0
JUNCT_611	4966.6	0	0	0	0
JUNCT_608	4994.8	0	0	0	0
JUNCT_607	5026.3	0	0	0	0
JUNCT_606	5049.8	0	0	0	0

[OUTFALLS]

;;Name	Elevation	Type	Stage Data	Gated	Route To
OUTFALL_514	4943	FREE		NO	
OUTFALL_319	4945.3	FREE		NO	
OUTFALL_614	4943	FREE		NO	

[STORAGE]

;;Name Ksat	IMD	Elev.	MaxDepth	InitDepth	Shape	Curve Type/Params	SurDepth	Fevap	Psi
STOR_1001		5104	9	0	TABULAR	STORAGE_CURVE_1001	0	0	
STOR_1006		5061	10	0	TABULAR	STORAGE_CURVE_1006	0	0	
STOR_2012		4995	9	0	TABULAR	STORAGE_CURVE_2012	0	0	
STOR_2000		5051	7	0	TABULAR	STORAGE_CURVE_2000	0	0	
STOR_2014		4967	7	0	TABULAR	STORAGE_CURVE_2014	0	0	
STOR_2015		4959	7	0	TABULAR	STORAGE_CURVE_2015	0	0	
STOR_2016		4952.5	7	0	TABULAR	STORAGE_CURVE_2016	0	0	
STOR_1022		5035.0	9	0	TABULAR	STORAGE_CURVE_1022	0	0	
STOR_1027		5008	10	0	TABULAR	STORAGE_CURVE_1027	0	0	
STOR_1010		4947	10	0	TABULAR	STORAGE_CURVE_1010	0	0	
STOR_2003		5073	8	0	TABULAR	STORAGE_CURVE_2003	0	0	
STOR_2005		5026.7	6.3	0	TABULAR	STORAGE_CURVE_2005	0	0	

[CONDUITS]

;;Name	From Node	To Node	Length	Roughness	InOffset	OutOffset	InitFlow	MaxFlow
101	JUNCT_101	STOR_1001	1	0.01	0	0	0	0
100	JUNCT_100	STOR_1001	2330	0.013	0	0	0	0
102	JUNCT_102	JUNCT_301	1	0.01	0	0	0	0
105	JUNCT_105	JUNCT_302	1	0.01	0	0	0	0
106	JUNCT_106	STOR_1006	1	0.01	0	0	0	0
301	JUNCT_301	STOR_1006	445	.04	0	0	0	0
302	JUNCT_302	STOR_1006	1872	0.013	0	0	0	0

103	JUNCT_103	JUNCT_302	2132	.013	0	0	0	0
104	JUNCT_104	JUNCT_302	2181	0.013	0	0	0	0
107	JUNCT_107	JUNCT_304	1	0.01	0	0	0	0
108	JUNCT_108	JUNCT_305	1	0.01	0	0	0	0
304	JUNCT_304	JUNCT_305	1240	0.01	0	0	0	0
305	JUNCT_305	JUNCT_306	3060	.04	0	0	0	0
109	JUNCT_109	JUNCT_306	1	0.01	0	0	0	0
306	JUNCT_306	JUNCT_318	2191	0.04	0	0	0	0
318	JUNCT_318	STOR_1010	1504	.04	0	0	0	0
129	JUNCT_129	JUNCT_318	1	0.01	0	0	0	0
317	JUNCT_317	JUNCT_318	2462	.04	0	0	0	0
128	JUNCT_128	JUNCT_317	1	0.01	0	0	0	0
316	JUNCT_316	JUNCT_317	1470	0.04	0	0	0	0
127	JUNCT_127	STOR_1027	1	0.01	0	0	0	0
126	JUNCT_126	JUNCT_314	1	0.01	0	0	0	0
124	JUNCT_124	JUNCT_315	1	0.01	0	0	0	0
314	JUNCT_314	STOR_1027	3115	.04	0	0	0	0
315	JUNCT_315	STOR_1027	1483	0.04	0	0	0	0

313	JUNCT_313	STOR_1027	1886	0.04	0	0	0	0
125	JUNCT_125	JUNCT_312	1	0.01	0	0	0	0
312	JUNCT_312	JUNCT_313	1448	0.04	0	0	0	0
311	JUNCT_311	JUNCT_313	1	0.01	0	0	0	0
123	JUNCT_123	JUNCT_311	1	0.01	0	0	0	0
120	JUNCT_120	JUNCT_307	1	0.01	0	0	0	0
121	JUNCT_121	JUNCT_308	1	0.01	0	0	0	0
309	JUNCT_309	STOR_1022	804	.04	0	0	0	0
307	JUNCT_307	JUNCT_309	580	.04	0	0	0	0
308	JUNCT_308	JUNCT_309	553	0.04	0	0	0	0
203	JUNCT_203	STOR_2003	1	0.01	0	0	0	0
204	JUNCT_204	JUNCT_501	1	0.01	0	0	0	0
500	JUNCT_500	JUNCT_501	2651	0.04	0	0	0	0
501	JUNCT_501	STOR_2005	1060	0.04	0	0	0	0
205	JUNCT_205	STOR_2005	1	0.01	0	0	0	0
209	JUNCT_209	JUNCT_502	1	0.01	0	0	0	0
207	JUNCT_207	JUNCT_502	3816	.04	0	0	0	0
208	JUNCT_208	JUNCT_502	2169	0.04	0	0	0	0

502	JUNCT_502	JUNCT_503	150	0.013	0	0	0	0
210	JUNCT_210	JUNCT_503	1	0.01	0	0	0	0
503	JUNCT_503	JUNCT_504	1468	0.04	0	0	0	0
211	JUNCT_211	JUNCT_504	619	0.04	0	0	0	0
504	JUNCT_504	JUNCT_505	1472	0.04	0	0	0	0
201	JUNCT_201	JUNCT_607	1	0.01	0	0	0	0
202	JUNCT_202	JUNCT_505	1	0.01	0	0	0	0
508	JUNCT_508	JUNCT_511	1248	0.013	0	0	0	0
219	JUNCT_219	JUNCT_509	1	0.01	0	0	0	0
509	JUNCT_509	JUNCT_506	1395	0.04	0	0	0	0
213	JUNCT_213	JUNCT_506	1	0.01	0	0	0	0
506	JUNCT_506	JUNCT_505	343	0.04	0	0	0	0
511	JUNCT_511	JUNCT_512	510	0.013	0	0	0	0
512	JUNCT_512	JUNCT_513	1002	0.013	0	0	0	0
513	JUNCT_513	OUTFALL_514	3160	0.013	0	0	0	0
217	JUNCT_217	OUTFALL_614	1	0.01	0	0	0	0
218	JUNCT_218	OUTFALL_614	1	0.01	0	0	0	0
122	JUNCT_122	STOR_1022	1	0.01	0	0	0	0

212	JUNCT_212	JUNCT_505	1	0.01	0	0	0	0
110	JUNCT_110	STOR_1010	1	0.01	0	0	0	0
206	JUNCT_206	JUNCT_503	1	.01	0	0	0	0
300	JUNCT_300	JUNCT_301	3097	0.04	0	0	0	0
303	JUNCT_303	JUNCT_304	1474	0.04	0	0	0	0
200	JUNCT_200	STOR_2000	1	0.01	0	0	0	0
214	JUNCT_214	STOR_2014	1	0.01	0	0	0	0
215	JUNCT_215	STOR_2015	1	0.01	0	0	0	0
27	JUNCT_216	STOR_2016	1	0.01	0	0	0	0
310	JUNCT_310	JUNCT_311	1257	0.04	0	0	0	0
505	JUNCT_505	STOR_2012	1	0.01	0	0	0	0
606	JUNCT_606	JUNCT_607	2536	0.013	0	0	0	0
607	JUNCT_607	JUNCT_608	2886	0.013	0	0	0	0
608	JUNCT_608	JUNCT_611	1248	0.013	0	0	0	0
611	JUNCT_611	JUNCT_612	510	0.013	0	0	0	0
612	JUNCT_612	JUNCT_613	1002	0.013	0	0	0	0
613	JUNCT_613	OUTFALL_614	3160	0.013	0	0	0	0

[OUTLETS]

;;Name	From Node	To Node	Offset	Type	QTable/Qcoeff	Qexpon	Gated
OUTLET_1001	STOR_1001	JUNCT_300	0	TABULAR/DEPTH	RATING_CURVE_1001		NO
OUTLET_1006	STOR_1006	JUNCT_303	0	TABULAR/DEPTH	RATING_CURVE_1006		NO
OUTLET_2012A	STOR_2012	JUNCT_508	0	TABULAR/DEPTH	RATING_CURVE_2012A		NO
OUTLET_2000	STOR_2000	JUNCT_606	0	TABULAR/DEPTH	RATING_CURVE_2000		NO
OUTLET_2014	STOR_2014	JUNCT_611	0	TABULAR/DEPTH	RATING_CURVE_2014		NO
OUTLET_2015	STOR_2015	JUNCT_612	0	FUNCTIONAL/DEPTH	10.0	0.5	NO
OUTLET_2016	STOR_2016	JUNCT_613	0	TABULAR/DEPTH	RATING_CURVE_2016		NO
OUTLET_1022	STOR_1022	JUNCT_310	0	TABULAR/DEPTH	RATING_CURVE_1022		NO
OUTLET_1027	STOR_1027	JUNCT_316	0	TABULAR/DEPTH	RATING_CURVE_1027		NO
OUTLET_1010	STOR_1010	OUTFALL_319	0	TABULAR/DEPTH	RATING_CURVE_1010		NO
OUTLET_2003	STOR_2003	JUNCT_500	0	TABULAR/DEPTH	RATING_CURVE_2003		NO
OUTLET_2005	STOR_2005	JUNCT_502	0	TABULAR/DEPTH	RATING_CURVE_2005		NO
OUTLET_2012B	STOR_2012	JUNCT_608	0	TABULAR/DEPTH	RATING_CURVE_2012B		NO

[XSECTIONS]

;;Link	Shape	Geom1	Geom2	Geom3	Geom4	Barrels	Culvert
101	DUMMY	0	0	0	0	1	
100	CIRCULAR	2.5	0	0	0	1	
102	DUMMY	0	0	0	0	1	
105	DUMMY	0	0	0	0	1	

106	DUMMY	0	0	0	0	1
301	TRAPEZOIDAL	5	15	5	5	1
302	CIRCULAR	5.5	0	0	0	1
103	CIRCULAR	3	0	0	0	1
104	CIRCULAR	3	0	0	0	1
107	DUMMY	0	0	0	0	1
108	DUMMY	0	0	0	0	1
304	TRAPEZOIDAL	5	20	20	20	1
305	TRAPEZOIDAL	5	20	20	20	1
109	DUMMY	0	0	0	0	1
306	TRAPEZOIDAL	5	20	20	20	1
318	TRAPEZOIDAL	5	20	20	20	1
129	DUMMY	0	0	0	0	1
317	TRAPEZOIDAL	5	20	20	20	1
128	DUMMY	0	0	0	0	1
316	TRAPEZOIDAL	5	20	20	20	1
127	DUMMY	0	0	0	0	1
126	DUMMY	0	0	0	0	1
124	DUMMY	0	0	0	0	1
314	TRAPEZOIDAL	5	20	20	20	1
315	TRAPEZOIDAL	5	20	20	20	1
313	TRAPEZOIDAL	5	20	20	20	1
125	DUMMY	0	0	0	0	1
312	TRAPEZOIDAL	5	20	20	20	1
311	DUMMY	0	0	0	0	1
123	DUMMY	0	0	0	0	1
120	DUMMY	0	0	0	0	1
121	DUMMY	0	0	0	0	1
309	TRAPEZOIDAL	5	20	20	20	1
307	TRAPEZOIDAL	5	20	20	20	1
308	TRAPEZOIDAL	5	20	20	20	1
203	DUMMY	0	0	0	0	1
204	DUMMY	0	0	0	0	1
500	TRAPEZOIDAL	5	10	5	5	1
501	TRAPEZOIDAL	5	10	5	5	1
205	DUMMY	0	0	0	0	1

209	DUMMY	0	0	0	0	1
207	TRAPEZOIDAL	5	10	5	5	1
208	TRAPEZOIDAL	5	10	5	5	1
502	TRAPEZOIDAL	5	10	5	5	2
210	DUMMY	0	0	0	0	1
503	TRAPEZOIDAL	5	10	5	5	1
211	TRAPEZOIDAL	5	10	5	5	1
504	TRAPEZOIDAL	5	10	5	5	1
201	DUMMY	0	0	0	0	1
202	DUMMY	0	0	0	0	1
508	CIRCULAR	2.5	0	0	0	1
219	DUMMY	0	0	0	0	1
509	TRAPEZOIDAL	5	20	20	20	1
213	DUMMY	0	0	0	0	1
506	TRAPEZOIDAL	5	20	20	20	1
511	CIRCULAR	2.5	0	0	0	1
512	CIRCULAR	3	0	0	0	1
513	CIRCULAR	3.5	0	0	0	1
217	DUMMY	0	0	0	0	1
218	DUMMY	0	0	0	0	1
122	DUMMY	0	0	0	0	1
212	DUMMY	0	0	0	0	1
110	DUMMY	0	0	0	0	1
206	DUMMY	0	0	0	0	1
300	TRAPEZOIDAL	5	15	5	5	1
303	TRAPEZOIDAL	5	15	5	5	1
200	DUMMY	0	0	0	0	1
214	DUMMY	0	0	0	0	1
215	DUMMY	0	0	0	0	1
27	DUMMY	0	0	0	0	1
310	TRAPEZOIDAL	5	20	20	20	1
505	DUMMY	0	0	0	0	1
606	CIRCULAR	2.5	0	0	0	1
607	CIRCULAR	3	0	0	0	1
608	CIRCULAR	4	0	0	0	1
611	CIRCULAR	4.5	0	0	0	1

612	CIRCULAR	6	0	0	0	1
613	CIRCULAR	6	0	0	0	1

[CURVES]

;;Name	Type	X-Value	Y-Value
;;			
RATING_CURVE_1006	Rating	0	0
RATING_CURVE_1006		1	.51
RATING_CURVE_1006		2	1.04
RATING_CURVE_1006		3	1.48
RATING_CURVE_1006		4	2.26
RATING_CURVE_1006		5	2.76
RATING_CURVE_1006		6	17.36
RATING_CURVE_1006		7	18.80
RATING_CURVE_1006		8	20.13
RATING_CURVE_1006		9	390.98
RATING_CURVE_1006		10	1095.11
;			
RATING_CURVE_1001	Rating	0	0
RATING_CURVE_1001		1	0.31
RATING_CURVE_1001		2	0.67
RATING_CURVE_1001		3	1.04
RATING_CURVE_1001		4	1.44
RATING_CURVE_1001		4.5	1.59
RATING_CURVE_1001		5	8.57
RATING_CURVE_1001		6	9.40
RATING_CURVE_1001		7	10.16
RATING_CURVE_1001		7.5	10.51
RATING_CURVE_1001		8	118.63
RATING_CURVE_1001		9	589.11
;			
RATING_CURVE_2012A	Rating	0	0
RATING_CURVE_2012A		1	0.52
RATING_CURVE_2012A		2	1.18
RATING_CURVE_2012A		3	1.95
RATING_CURVE_2012A		4	2.53

RATING_CURVE_2012A	5	5.25
RATING_CURVE_2012A	5.7	6.77
RATING_CURVE_2012A	6	7.30
RATING_CURVE_2012A	6.25	7.70
RATING_CURVE_2012A	6.90	46.95
RATING_CURVE_2012A	7	46.95
RATING_CURVE_2012A	8	46.95
RATING_CURVE_2012A	9	46.95
;		
RATING_CURVE_2000 Rating	0	0
RATING_CURVE_2000	1	0.04
RATING_CURVE_2000	1.6	0.07
RATING_CURVE_2000	2	0.31
RATING_CURVE_2000	2.5	0.46
RATING_CURVE_2000	3	10.85
RATING_CURVE_2000	4	22.36
RATING_CURVE_2000	5	25.29
RATING_CURVE_2000	5.5	26.64
RATING_CURVE_2000	6	82.65
RATING_CURVE_2000	7	332.34
;		
RATING_CURVE_2014 Rating	0	0
RATING_CURVE_2014	1	0.11
RATING_CURVE_2014	2	0.24
RATING_CURVE_2014	2.5	0.62
RATING_CURVE_2014	3	14.52
RATING_CURVE_2014	4	30.08
RATING_CURVE_2014	5	34.24
RATING_CURVE_2014	5.5	36.14
RATING_CURVE_2014	6	145.71
RATING_CURVE_2014	7	618.91
;		
RATING_CURVE_2015 Rating	0	0
RATING_CURVE_2015	1	0.06
RATING_CURVE_2015	2	0.12
RATING_CURVE_2015	3	0.67

RATING_CURVE_2015		4	18.63
RATING_CURVE_2015		5	21.02
RATING_CURVE_2015		5.5	22.11
RATING_CURVE_2015		6	130.92
RATING_CURVE_2015		7	602.70
;			
RATING_CURVE_2016	Rating	0	0
RATING_CURVE_2016		1	0.03
RATING_CURVE_2016		2	0.06
RATING_CURVE_2016		3	0.59
RATING_CURVE_2016		3.5	0.72
RATING_CURVE_2016		4	8.31
RATING_CURVE_2016		5	9.32
RATING_CURVE_2016		5.5	9.79
RATING_CURVE_2016		6	118
RATING_CURVE_2016		7	588.66
;			
RATING_CURVE_1022	Rating	0	0
RATING_CURVE_1022		1	0.23
RATING_CURVE_1022		2	0.57
RATING_CURVE_1022		3	0.97
RATING_CURVE_1022		3.5	1.09
RATING_CURVE_1022		4	16.48
RATING_CURVE_1022		5	41.63
RATING_CURVE_1022		6	46.19
RATING_CURVE_1022		7	50.34
RATING_CURVE_1022		7.5	52.30
RATING_CURVE_1022		8	161.94
RATING_CURVE_1022		9	635.35
;			
RATING_CURVE_1027	Rating	0	0
RATING_CURVE_1027		1	0.16
RATING_CURVE_1027		1.75	0.31
RATING_CURVE_1027		2	0.82
RATING_CURVE_1027		3	2.52
RATING_CURVE_1027		4	3.41

RATING_CURVE_1027		5	4.11
RATING_CURVE_1027		5.8	4.59
RATING_CURVE_1027		6	10.94
RATING_CURVE_1027		7	96.95
RATING_CURVE_1027		8	151.87
RATING_CURVE_1027		9	773.08
RATING_CURVE_1027		10	1925.68
;			
RATING_CURVE_1010	Rating	0	0
RATING_CURVE_1010		1	0.21
RATING_CURVE_1010		2	.45
RATING_CURVE_1010		3	2.02
RATING_CURVE_1010		4	2.79
RATING_CURVE_1010		5	3.38
RATING_CURVE_1010		5.85	3.82
RATING_CURVE_1010		6	11.61
RATING_CURVE_1010		7	168.23
RATING_CURVE_1010		7.5	286.22
RATING_CURVE_1010		8	690.57
RATING_CURVE_1010		9	1906.53
RATING_CURVE_1010		10	3597.40
;			
RATING_CURVE_2003	Rating	0	0
RATING_CURVE_2003		1	0.29
RATING_CURVE_2003		1.9	0.60
RATING_CURVE_2003		2	0.69
RATING_CURVE_2003		3	5.49
RATING_CURVE_2003		4	8.60
RATING_CURVE_2003		5	50.69
RATING_CURVE_2003		6	82.07
RATING_CURVE_2003		6.5	86.20
RATING_CURVE_2003		7	118.35
RATING_CURVE_2003		8	261.78
;			
RATING_CURVE_2005	Rating	0	0
RATING_CURVE_2005		1	0.08

RATING_CURVE_2005		2	0.24
RATING_CURVE_2005		2.8	0.34
RATING_CURVE_2005		3	0.66
RATING_CURVE_2005		4	2.94
RATING_CURVE_2005		5	57.21
RATING_CURVE_2005		5.3	68.92
RATING_CURVE_2005		6	429.90
RATING_CURVE_2005		6.3	686.46
;			
RATING_CURVE_2012B	Rating	0	0
RATING_CURVE_2012B		1	0
RATING_CURVE_2012B		2	0
RATING_CURVE_2012B		3	0
RATING_CURVE_2012B		4	0
RATING_CURVE_2012B		5	0
RATING_CURVE_2012B		5.7	0
RATING_CURVE_2012B		6	0
RATING_CURVE_2012B		6.87	0
RATING_CURVE_2012B		7	9.25
RATING_CURVE_2012B		7.75	97.07
RATING_CURVE_2012B		8	132.3
RATING_CURVE_2012B		9	1054.36
;			
STORAGE_CURVE_1001	Storage	0	0
STORAGE_CURVE_1001		1	9857
STORAGE_CURVE_1001		2	37869
STORAGE_CURVE_1001		3	82301
STORAGE_CURVE_1001		4	143286
STORAGE_CURVE_1001		5	222137
STORAGE_CURVE_1001		6	301546
STORAGE_CURVE_1001		7	359433
STORAGE_CURVE_1001		8	428444
STORAGE_CURVE_1001		9	510705
;			
STORAGE_CURVE_1006	Storage	0	0
STORAGE_CURVE_1006		1	8515

STORAGE_CURVE_1006		2	46413
STORAGE_CURVE_1006		3	106407
STORAGE_CURVE_1006		4	195675
STORAGE_CURVE_1006		5	314128
STORAGE_CURVE_1006		6	451369
STORAGE_CURVE_1006		7	571482
STORAGE_CURVE_1006		8	658875
STORAGE_CURVE_1006		9	709743
STORAGE_CURVE_1006		10	833347
;			
STORAGE_CURVE_2012	Storage	0	0
STORAGE_CURVE_2012		1	15815
STORAGE_CURVE_2012		2	56799
STORAGE_CURVE_2012		3	120972
STORAGE_CURVE_2012		4	211402
STORAGE_CURVE_2012		5	311244
STORAGE_CURVE_2012		6	394584
STORAGE_CURVE_2012		7	454368
STORAGE_CURVE_2012		8	485053
STORAGE_CURVE_2012		9	502082
;			
STORAGE_CURVE_2000	Storage	0	0
STORAGE_CURVE_2000		1	4000
STORAGE_CURVE_2000		2	16500
STORAGE_CURVE_2000		3	33500
STORAGE_CURVE_2000		4	46000
STORAGE_CURVE_2000		5	54000
STORAGE_CURVE_2000		6	58000
STORAGE_CURVE_2000		7	63000
;			
STORAGE_CURVE_2014	Storage	0	0
STORAGE_CURVE_2014		1	8000
STORAGE_CURVE_2014		2	33000
STORAGE_CURVE_2014		3	67000
STORAGE_CURVE_2014		4	92000
STORAGE_CURVE_2014		5	108000

STORAGE_CURVE_2014		6	116000
STORAGE_CURVE_2014		7	126000
;			
STORAGE_CURVE_2015	Storage	0	0
STORAGE_CURVE_2015		1	4000
STORAGE_CURVE_2015		2	16500
STORAGE_CURVE_2015		3	33500
STORAGE_CURVE_2015		4	46000
STORAGE_CURVE_2015		5	54000
STORAGE_CURVE_2015		6	58000
STORAGE_CURVE_2015		7	63000
;			
STORAGE_CURVE_2016	Storage	0	0
STORAGE_CURVE_2016		1	2000
STORAGE_CURVE_2016		2	8500
STORAGE_CURVE_2016		3	17000
STORAGE_CURVE_2016		4	23000
STORAGE_CURVE_2016		5	27000
STORAGE_CURVE_2016		6	29000
STORAGE_CURVE_2016		7	31500
;			
STORAGE_CURVE_1022	Storage	0	0
STORAGE_CURVE_1022		1	12185
STORAGE_CURVE_1022		2	56214
STORAGE_CURVE_1022		3	112430
STORAGE_CURVE_1022		4	181655
STORAGE_CURVE_1022		5	253737
STORAGE_CURVE_1022		6	323976
STORAGE_CURVE_1022		7	392862
STORAGE_CURVE_1022		8	438530
STORAGE_CURVE_1022		9	482383
;			
STORAGE_CURVE_1027	Storage	0	0
STORAGE_CURVE_1027		1	17656
STORAGE_CURVE_1027		2	63393
STORAGE_CURVE_1027		3	141611

STORAGE_CURVE_1027		4	253371
STORAGE_CURVE_1027		5	397337
STORAGE_CURVE_1027		6	573095
STORAGE_CURVE_1027		7	764456
STORAGE_CURVE_1027		8	950977
STORAGE_CURVE_1027		9	1133350
STORAGE_CURVE_1027		10	1299443
;			
STORAGE_CURVE_1010	Storage	0	0
STORAGE_CURVE_1010		1	16369
STORAGE_CURVE_1010		2	65176
STORAGE_CURVE_1010		3	145906
STORAGE_CURVE_1010		4	257874
STORAGE_CURVE_1010		5	400190
STORAGE_CURVE_1010		6	563277
STORAGE_CURVE_1010		7	734073
STORAGE_CURVE_1010		8	907985
STORAGE_CURVE_1010		9	1070023
STORAGE_CURVE_1010		10	1261095
;			
STORAGE_CURVE_2003	Storage	0	0
STORAGE_CURVE_2003		1	32230
STORAGE_CURVE_2003		2	36260
STORAGE_CURVE_2003		4	44670
STORAGE_CURVE_2003		6	53500
STORAGE_CURVE_2003		8	62715
;			
STORAGE_CURVE_2005	Storage	0	200
STORAGE_CURVE_2005		1.30	2028
STORAGE_CURVE_2005		2.30	22034
STORAGE_CURVE_2005		3.30	57488
STORAGE_CURVE_2005		4.30	74685
STORAGE_CURVE_2005		5.30	80584
STORAGE_CURVE_2005		6.30	85665

[REPORT]

;;Reporting Options

SUBCATCHMENTS ALL

NODES ALL

LINKS ALL

[TAGS]

[MAP]

DIMENSIONS -3864.083 0.000 10000.000 10237.035

Units None

[COORDINATES]

;;Node	X-Coord	Y-Coord
;;-----	-----	-----
JUNCT_101	-3380.541	7562.515
JUNCT_100	-2917.032	7172.192
JUNCT_301	-2148.029	7586.484
JUNCT_102	-2139.984	7176.187
JUNCT_106	-1633.146	8012.872
JUNCT_302	-1609.010	6942.880
JUNCT_103	-1890.587	6532.582
JUNCT_104	-1592.920	6347.546
JUNCT_105	-1311.344	6580.853
JUNCT_304	-1078.037	7610.619
JUNCT_107	-1078.037	8037.007
JUNCT_305	-547.064	7618.665
JUNCT_108	-514.883	8077.233
JUNCT_306	-40.225	7634.755
JUNCT_109	-40.225	8093.323
JUNCT_110	1014.873	8009.760
JUNCT_318	567.627	8513.928
JUNCT_129	526.969	8904.252
JUNCT_317	-498.793	9179.405
JUNCT_128	-498.793	9605.792
JUNCT_127	-941.271	8833.467
JUNCT_126	-836.685	9919.549

JUNCT_314	-828.640	9589.702
JUNCT_124	-1238.938	9895.414
JUNCT_315	-1206.758	9565.567
JUNCT_313	-1423.974	9155.270
JUNCT_311	-1914.722	9147.224
JUNCT_312	-1423.974	9541.432
JUNCT_125	-1432.019	9903.459
JUNCT_123	-1928.557	9523.138
JUNCT_309	-2809.112	9133.121
JUNCT_308	-2817.154	9515.097
JUNCT_307	-2813.133	8747.124
JUNCT_121	-2825.196	9824.698
JUNCT_120	-3042.319	8735.061
JUNCT_203	-450.523	4682.220
JUNCT_500	80.451	4690.265
JUNCT_501	651.649	4698.311
JUNCT_204	442.478	4304.103
JUNCT_502	1185.380	4696.798
JUNCT_205	878.140	5143.882
JUNCT_209	1180.398	5138.386
JUNCT_207	1043.008	4264.586
JUNCT_208	1472.245	4296.058
JUNCT_503	1995.173	4706.356
JUNCT_210	1995.173	4263.878
JUNCT_504	2534.191	4706.356
JUNCT_211	2518.101	5181.014
JUNCT_508	3341.014	5788.307
JUNCT_201	2340.346	7570.647
JUNCT_202	2828.250	5188.048
JUNCT_511	3980.484	5788.307
JUNCT_506	3177.915	4261.030
JUNCT_213	3226.705	3569.832
JUNCT_509	3519.448	4114.659
JUNCT_219	3576.370	3569.832
JUNCT_512	4801.872	5810.358
JUNCT_513	5568.134	5810.358

JUNCT_217	6163.460	7129.085
JUNCT_218	6201.918	6656.599
JUNCT_122	-2499.272	8759.351
JUNCT_212	2852.645	4228.503
JUNCT_206	2207.395	4266.111
JUNCT_300	-2526.709	7562.515
JUNCT_303	-1339.475	7603.174
JUNCT_200	1537.612	7534.468
JUNCT_214	3944.685	7523.477
JUNCT_215	4785.511	6314.444
JUNCT_216	5553.622	7464.221
JUNCT_310	-2220.122	9130.221
JUNCT_316	-683.027	9169.068
JUNCT_505	2844.514	4708.275
JUNCT_613	5571.382	6896.978
JUNCT_612	4769.025	6891.483
JUNCT_611	3972.163	6891.483
JUNCT_608	3145.388	6871.317
JUNCT_607	2345.465	6853.013
JUNCT_606	1559.594	6842.022
OUTFALL_514	6290.294	5810.358
OUTFALL_319	1460.338	8521.729
OUTFALL_614	6269.323	6885.987
STOR_1001	-2917.032	7562.515
STOR_1006	-1633.146	7594.529
STOR_2012	3153.660	4722.446
STOR_2000	1548.603	7155.271
STOR_2014	3950.180	7232.210
STOR_2015	4774.520	6528.773
STOR_2016	5561.863	7214.243
STOR_1022	-2497.319	9136.124
STOR_1027	-949.316	9163.315
STOR_1010	1023.005	8513.928
STOR_2003	-197.220	4687.177
STOR_2005	883.635	4698.738

[VERTICES]

;;Link

X-Coord

Y-Coord

;;

302

-1625.101

7546.259

APPENDIX C
HISTORIC CUHP/SWMM MODEL

CUHP SUBCATCHMENTS

Columns with this color heading are for required user-input
 Columns with this color heading are for optional override values
 Columns with this color heading are for program-calculated values

Subcatchment Name	EPA SWMM Target Node	Raingage	Area (mi ²)	Length to Centroid (mi)	Length (mi)	Slope (ft/ft)	Percent Imperviousness	Maximum Depression Storage (Watershed inches)		Horton's Infiltration Parameters			DCIA Level 0, 1, or 2
								Pervious	Impervious	Initial Rate (in/hr)	Decay Coefficient (1/seconds)	Final Rate (in/hr)	
100	JUNCT_100	100-YR	0.0375	0.2119	0.4318	0.0237	2	0.38	0.1	3	0.0018	0.5	0
101	JUNCT_101	100-YR	0.2028	0.3134	0.5438	0.0247	2	0.38	0.1	3	0.0018	0.5	0
102	JUNCT_102	100-YR	0.1136	0.4163	0.6566	0.01933	2	0.38	0.1	3	0.0018	0.5	0
103	JUNCT_103	100-YR	0.0529	0.1572	0.2483	0.0191	2	0.38	0.1	3	0.0018	0.5	0
104	JUNCT_104	100-YR	0.0303	0.0701	0.1826	0.0456	2	0.38	0.1	3	0.0018	0.5	0
105	JUNCT_105	100-YR	0.1009	0.2858	0.5345	0.0145	2	0.38	0.1	3	0.0018	0.5	0
106	JUNCT_106	100-YR	0.1252	0.4591	0.8307	0.0173	2	0.38	0.1	3	0.0018	0.5	0
107	JUNCT_107	100-YR	0.0327	0.1241	0.2723	0.0111	2	0.38	0.1	3	0.0018	0.5	0
108	JUNCT_108	100-YR	0.0494	0.107	0.2693	0.0127	2	0.38	0.1	3	0.0018	0.5	0
109	JUNCT_109	100-YR	0.2248	0.2646	0.6299	0.0123	2	0.38	0.1	3	0.0018	0.5	0
110	JUNCT_110	100-YR	0.2131	0.2913	0.803	0.0116	2	0.38	0.1	3	0.0018	0.5	0
120	JUNCT_120	100-YR	0.18	0.3434	0.7458	0.0135	2	0.38	0.1	3	0.0018	0.5	0
121	JUNCT_121	100-YR	0.1803	0.5699	0.9413	0.0127	2	0.38	0.1	3	0.0018	0.5	0
122	JUNCT_122	100-YR	0.0821	0.1534	0.2905	0.0104	2	0.38	0.1	3	0.0018	0.5	0
123	JUNCT_123	100-YR	0.07	0.208	0.3845	0.0103	2	0.38	0.1	3	0.0018	0.5	0
124	JUNCT_124	100-YR	0.0228	0.0672	0.1769	0.0139	2	0.38	0.1	3	0.0018	0.5	0
125	JUNCT_125	100-YR	0.1665	0.4428	0.9917	0.0088	2	0.38	0.1	3	0.0018	0.5	0
126	JUNCT_126	100-YR	0.0715	0.1708	0.3163	0.0084	2	0.38	0.1	3	0.0018	0.5	0
127	JUNCT_127	100-YR	0.2645	0.2506	0.6981	0.0165	2	0.38	0.1	3	0.0018	0.5	0
128	JUNCT_128	100-YR	0.0748	0.1648	0.4085	0.0148	2	0.38	0.1	3	0.0018	0.5	0
129	JUNCT_129	100-YR	0.177	0.2455	0.5813	0.0173	2	0.38	0.1	3	0.0018	0.5	0
200	JUNCT_200	100-YR	0.0816	0.2051	0.5246	0.0119	2	0.38	0.1	3	0.0018	0.5	0
201	JUNCT_201	100-YR	0.029	0.31075	0.5782159	0.0128	2	0.38	0.1	3	0.0018	0.5	0
202	JUNCT_202	100-YR	0.0046	0.2797	0.5233	0.008	2	0.38	0.1	3	0.0018	0.5	0
203	JUNCT_203	100-YR	0.127	0.293140152	0.5782254	0.0272	2	0.38	0.1	3	0.0018	0.5	0
204	JUNCT_204	100-YR	0.074	0.2692	0.5601	0.0169	2	0.38	0.1	3	0.0018	0.5	0
205	JUNCT_205	100-YR	0.062	0.2464	0.4621	0.0114	2	0.38	0.1	3	0.0018	0.5	0
206	JUNCT_206	100-YR	0.0214	0.4103	0.6914	0.0137	2	0.38	0.1	3	0.0018	0.5	0
207	JUNCT_207	100-YR	0.0621	0.183	0.3847	0.0123	2	0.38	0.1	3	0.0018	0.5	0
208	JUNCT_208	100-YR	0.0388	0.10868	0.23969	0.0071	2	0.38	0.1	3	0.0018	0.5	0
209	JUNCT_209	100-YR	0.0412	0.3381	0.6977	0.0106	2	0.38	0.1	3	0.0018	0.5	0
210	JUNCT_210	100-YR	0.0361	0.4097	0.7119	0.0186	2	0.38	0.1	3	0.0018	0.5	0
211	JUNCT_211	100-YR	0.036	0.1785	0.296	0.0221	2	0.38	0.1	3	0.0018	0.5	0
212	JUNCT_212	100-YR	0.0808	0.280333333	0.5628106	0.0077	2	0.38	0.1	3	0.0018	0.5	0
213	JUNCT_213	100-YR	0.116	0.203833333	0.5581742	0.0129	2	0.38	0.1	3	0.0018	0.5	0
214	JUNCT_214	100-YR	0.1045	0.304159091	0.3573902	0.0201	2	0.38	0.1	3	0.0018	0.5	0
215	JUNCT_215	100-YR	0.0653	0.200164773	0.3851307	0.0089	2	0.38	0.1	3	0.0018	0.5	0
216	JUNCT_216	100-YR	0.0302	0.0564	0.1816	0.0049	2	0.38	0.1	3	0.0018	0.5	0
217	JUNCT_217	100-YR	0.0112	0.1634	0.459	0.0019	2	0.38	0.1	3	0.0018	0.5	0
218	JUNCT_218	100-YR	0.0129	0.2218	0.5591	0.0017	2	0.38	0.1	3	0.0018	0.5	0

HISTORIC CONDITION - 5-YR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.1)

Analysis Options

Flow Units CFS

Process Models:

Rainfall/Runoff NO

RDII NO

Snowmelt NO

Groundwater NO

Flow Routing YES

Ponding Allowed YES

Water Quality NO

Flow Routing Method KINWAVE

Starting Date 01/01/2005 00:00:00

Ending Date 01/01/2005 12:00:00

Antecedent Dry Days 0.0

Report Time Step 00:01:00

Routing Time Step 60.00 sec

Flow Routing Continuity

	Volume acre-feet	Volume 10 ⁶ gal
	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.000	0.000
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	12.439	4.053
External Outflow	13.345	4.349
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000

Final Stored Volume 0.153 0.050
 Continuity Error (%) -8.511

Highest Flow Instability Indexes

- Link 317 (1)
- Link 505 (1)
- Link 313 (1)
- Link 316 (1)
- Link 510 (1)

Routing Time Step Summary

Minimum Time Step : 60.00 sec
 Average Time Step : 60.00 sec
 Maximum Time Step : 60.00 sec
 % of Time in Steady State : 0.00
 Average Iterations per Step : 1.00
 % of Steps Not Converging : 0.00

Node Depth Summary

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
JUNCT_101	JUNCTION	0.00	0.00	5106.50	0 00:00	0.00
JUNCT_300	JUNCTION	0.04	0.33	5106.73	0 00:45	0.33
JUNCT_100	JUNCTION	0.01	0.10	5136.70	0 00:45	0.10
JUNCT_301	JUNCTION	0.06	0.33	5064.33	0 01:04	0.33
JUNCT_102	JUNCTION	0.00	0.00	5064.10	0 00:00	0.00

JUNCT_303	JUNCTION	0.10	0.50	5057.80	0	01:08	0.50
JUNCT_106	JUNCTION	0.00	0.00	5057.40	0	00:00	0.00
JUNCT_302	JUNCTION	0.04	0.27	5078.47	0	00:57	0.27
JUNCT_103	JUNCTION	0.01	0.14	5112.84	0	00:41	0.14
JUNCT_104	JUNCTION	0.01	0.13	5117.73	0	00:37	0.13
JUNCT_105	JUNCTION	0.00	0.00	5078.30	0	00:00	0.00
JUNCT_304	JUNCTION	0.10	0.50	5040.30	0	01:16	0.50
JUNCT_107	JUNCTION	0.00	0.00	5039.90	0	00:00	0.00
JUNCT_305	JUNCTION	0.09	0.42	5029.12	0	01:18	0.42
JUNCT_108	JUNCTION	0.00	0.00	5028.80	0	00:00	0.00
JUNCT_306	JUNCTION	0.11	0.39	4995.59	0	01:43	0.39
JUNCT_109	JUNCTION	0.00	0.00	4995.30	0	00:00	0.00
JUNCT_110	JUNCTION	0.00	0.00	5945.40	0	00:00	0.00
JUNCT_318	JUNCTION	0.19	0.65	4960.75	0	01:51	0.65
JUNCT_129	JUNCTION	0.00	0.00	4960.20	0	00:00	0.00
JUNCT_317	JUNCTION	0.14	0.51	5000.21	0	01:40	0.51
JUNCT_128	JUNCTION	0.00	0.00	4999.80	0	00:00	0.00
JUNCT_316	JUNCTION	0.14	0.52	5009.02	0	01:28	0.52
JUNCT_127	JUNCTION	0.00	0.00	5008.60	0	00:00	0.00
JUNCT_126	JUNCTION	0.00	0.00	5040.70	0	00:00	0.00
JUNCT_314	JUNCTION	0.02	0.15	5040.75	0	00:43	0.15
JUNCT_124	JUNCTION	0.00	0.00	5015.20	0	00:00	0.00
JUNCT_315	JUNCTION	0.01	0.11	5015.21	0	00:39	0.11
JUNCT_313	JUNCTION	0.11	0.50	5016.70	0	01:13	0.50
JUNCT_311	JUNCTION	0.06	0.29	5016.59	0	01:13	0.29
JUNCT_312	JUNCTION	0.03	0.15	5038.85	0	00:56	0.15
JUNCT_125	JUNCTION	0.00	0.00	5038.80	0	00:00	0.00
JUNCT_123	JUNCTION	0.00	0.00	5016.40	0	00:00	0.00
JUNCT_310	JUNCTION	0.06	0.30	5035.00	0	01:03	0.30
JUNCT_309	JUNCTION	0.05	0.28	5044.58	0	00:58	0.28
JUNCT_308	JUNCTION	0.03	0.18	5050.68	0	00:56	0.18
JUNCT_307	JUNCTION	0.03	0.23	5049.83	0	00:49	0.23
JUNCT_121	JUNCTION	0.00	0.00	5050.60	0	00:00	0.00
JUNCT_120	JUNCTION	0.00	0.00	5049.70	0	00:00	0.00
JUNCT_203	JUNCTION	0.00	0.00	5072.60	0	00:00	0.00
JUNCT_500	JUNCTION	0.03	0.30	5072.80	0	00:45	0.30
JUNCT_501	JUNCTION	0.06	0.31	5043.71	0	01:04	0.31
JUNCT_204	JUNCTION	0.00	0.00	5043.50	0	00:00	0.00
JUNCT_502	JUNCTION	0.06	0.31	5022.91	0	01:17	0.31

JUNCT_205	JUNCTION	0.00	0.00	5022.80	0	00:00	0.00
JUNCT_209	JUNCTION	0.00	0.00	5022.70	0	00:00	0.00
JUNCT_207	JUNCTION	0.02	0.20	5060.40	0	00:44	0.20
JUNCT_208	JUNCTION	0.02	0.15	5051.65	0	00:42	0.15
JUNCT_503	JUNCTION	0.12	0.55	5022.35	0	01:16	0.55
JUNCT_210	JUNCTION	0.00	0.00	5022.00	0	00:00	0.00
JUNCT_504	JUNCTION	0.13	0.54	5013.74	0	01:27	0.54
JUNCT_211	JUNCTION	0.06	0.48	5013.78	0	00:43	0.48
JUNCT_505	JUNCTION	0.12	0.50	4999.90	0	01:36	0.50
JUNCT_608	JUNCTION	0.11	0.43	4999.73	0	01:36	0.43
JUNCT_607	JUNCTION	0.05	0.21	5026.51	0	01:14	0.21
JUNCT_606	JUNCTION	0.03	0.22	5050.02	0	00:45	0.22
JUNCT_200	JUNCTION	0.00	0.00	5049.90	0	00:00	0.00
JUNCT_201	JUNCTION	0.00	0.00	5026.40	0	00:00	0.00
JUNCT_202	JUNCTION	0.00	0.00	4999.40	0	00:00	0.00
JUNCT_611	JUNCTION	0.15	0.57	4967.17	0	01:36	0.57
JUNCT_214	JUNCTION	0.00	0.00	4966.70	0	00:00	0.00
JUNCT_506	JUNCTION	0.02	0.16	5004.66	0	00:45	0.16
JUNCT_213	JUNCTION	0.00	0.00	5004.60	0	00:00	0.00
JUNCT_509	JUNCTION	0.00	0.00	5012.00	0	00:00	0.00
JUNCT_219	JUNCTION	0.00	0.00	5012.10	0	00:00	0.00
JUNCT_612	JUNCTION	0.21	0.76	4959.36	0	01:38	0.76
JUNCT_613	JUNCTION	0.26	0.92	4953.52	0	01:43	0.92
JUNCT_215	JUNCTION	0.00	0.00	4958.70	0	00:00	0.00
JUNCT_216	JUNCTION	0.00	0.00	4952.70	0	00:00	0.00
JUNCT_217	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_218	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_122	JUNCTION	0.00	0.00	5034.80	0	00:00	0.00
JUNCT_212	JUNCTION	0.00	0.00	4999.50	0	00:00	0.00
JUNCT_206	JUNCTION	0.01	0.04	5021.94	0	00:59	0.04
OUTFALL_614	OUTFALL	0.27	0.88	4943.88	0	02:07	0.88
OUTFALL_319	OUTFALL	0.19	0.65	4945.95	0	02:00	0.65

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10 ⁶ gal	Total Inflow Volume 10 ⁶ gal	Flow Balance Error Percent
JUNCT_101	JUNCTION	10.50	10.50	0 00:44	0.234	0.234	0.000
JUNCT_300	JUNCTION	0.00	10.57	0 00:45	0	0.284	0.000
JUNCT_100	JUNCTION	1.28	1.28	0 00:45	0.0433	0.0433	0.000
JUNCT_301	JUNCTION	0.00	11.15	0 01:04	0	0.44	0.000
JUNCT_102	JUNCTION	3.63	3.63	0 00:49	0.131	0.131	0.000
JUNCT_303	JUNCTION	0.00	20.34	0 01:08	0	0.823	0.000
JUNCT_106	JUNCTION	3.50	3.50	0 00:52	0.145	0.145	0.000
JUNCT_302	JUNCTION	0.00	6.86	0 00:57	0	0.229	0.000
JUNCT_103	JUNCTION	2.85	2.85	0 00:41	0.0611	0.0611	0.000
JUNCT_104	JUNCTION	2.46	2.46	0 00:37	0.035	0.035	0.000
JUNCT_105	JUNCTION	3.73	3.73	0 00:46	0.117	0.117	0.000
JUNCT_304	JUNCTION	0.00	20.79	0 01:16	0	0.865	0.000
JUNCT_107	JUNCTION	1.38	1.38	0 00:43	0.0378	0.0378	0.000
JUNCT_305	JUNCTION	0.00	21.86	0 01:18	0	0.923	0.000
JUNCT_108	JUNCTION	2.70	2.70	0 00:41	0.0571	0.0571	0.000
JUNCT_306	JUNCTION	0.00	22.52	0 01:39	0	1.2	0.000
JUNCT_109	JUNCTION	10.42	10.42	0 00:46	0.26	0.26	0.000
JUNCT_110	JUNCTION	8.28	8.28	0 00:48	0.246	0.246	0.000
JUNCT_318	JUNCTION	0.00	47.50	0 01:51	0	2.79	0.000
JUNCT_129	JUNCTION	8.85	8.85	0 00:44	0.205	0.205	0.000
JUNCT_317	JUNCTION	0.00	24.53	0 01:39	0	1.36	0.000
JUNCT_128	JUNCTION	3.50	3.50	0 00:43	0.0864	0.0864	0.000
JUNCT_316	JUNCTION	0.00	24.06	0 01:28	0	1.26	0.000
JUNCT_127	JUNCTION	13.37	13.37	0 00:45	0.306	0.306	0.000
JUNCT_126	JUNCTION	3.20	3.20	0 00:43	0.0826	0.0826	0.000
JUNCT_314	JUNCTION	0.00	3.20	0 00:43	0	0.0826	0.000
JUNCT_124	JUNCTION	1.34	1.34	0 00:39	0.0263	0.0263	0.000
JUNCT_315	JUNCTION	0.00	1.34	0 00:39	0	0.0263	0.000
JUNCT_313	JUNCTION	0.00	18.69	0 01:13	0	0.802	0.000
JUNCT_311	JUNCTION	0.00	14.74	0 01:12	0	0.605	0.000
JUNCT_312	JUNCTION	0.00	4.24	0 00:56	0	0.192	0.000
JUNCT_125	JUNCTION	4.24	4.24	0 00:56	0.192	0.192	0.000
JUNCT_123	JUNCTION	2.74	2.74	0 00:45	0.0809	0.0809	0.000
JUNCT_310	JUNCTION	0.00	13.45	0 01:03	0	0.518	0.000

JUNCT_309	JUNCTION	0.00	11.05	0	00:58	0	0.419	0.000
JUNCT_308	JUNCTION	0.00	4.72	0	00:56	0	0.208	0.000
JUNCT_307	JUNCTION	0.00	6.66	0	00:49	0	0.208	0.000
JUNCT_121	JUNCTION	4.72	4.72	0	00:56	0.208	0.208	0.000
JUNCT_120	JUNCTION	6.66	6.66	0	00:49	0.208	0.208	0.000
JUNCT_203	JUNCTION	5.67	5.67	0	00:45	0.147	0.147	0.000
JUNCT_500	JUNCTION	0.00	5.67	0	00:45	0	0.147	0.000
JUNCT_501	JUNCTION	0.00	6.35	0	01:04	0	0.247	0.000
JUNCT_204	JUNCTION	2.50	2.50	0	00:47	0.0855	0.0855	0.000
JUNCT_502	JUNCTION	0.00	11.10	0	01:16	0	0.509	0.000
JUNCT_205	JUNCTION	2.01	2.01	0	00:47	0.0716	0.0716	0.000
JUNCT_209	JUNCTION	0.79	0.79	0	00:54	0.0476	0.0476	0.000
JUNCT_207	JUNCTION	2.54	2.54	0	00:44	0.0718	0.0718	0.000
JUNCT_208	JUNCTION	1.78	1.78	0	00:42	0.0448	0.0448	0.000
JUNCT_503	JUNCTION	0.00	11.73	0	01:16	0	0.551	0.000
JUNCT_210	JUNCTION	0.67	0.67	0	00:54	0.0417	0.0417	0.000
JUNCT_504	JUNCTION	0.00	12.48	0	01:26	0	0.605	0.000
JUNCT_211	JUNCTION	1.51	1.51	0	00:43	0.0416	0.0416	0.000
JUNCT_505	JUNCTION	0.00	13.80	0	01:34	0	0.73	0.000
JUNCT_608	JUNCTION	0.00	16.12	0	01:36	0	0.88	0.000
JUNCT_607	JUNCTION	0.00	2.85	0	01:14	0	0.139	0.000
JUNCT_606	JUNCTION	0.00	3.08	0	00:45	0	0.0943	0.000
JUNCT_200	JUNCTION	3.08	3.08	0	00:45	0.0943	0.0943	0.000
JUNCT_201	JUNCTION	0.57	0.57	0	00:52	0.0335	0.0335	0.000
JUNCT_202	JUNCTION	0.04	0.04	0	01:14	0.00519	0.00519	0.000
JUNCT_611	JUNCTION	0.00	20.30	0	01:36	0	1.14	0.000
JUNCT_214	JUNCTION	4.88	4.88	0	00:44	0.121	0.121	0.000
JUNCT_506	JUNCTION	0.00	5.04	0	00:45	0	0.134	-0.000
JUNCT_213	JUNCTION	5.04	5.04	0	00:45	0.134	0.134	0.000
JUNCT_509	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_219	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_612	JUNCTION	0.00	21.38	0	01:38	0	1.22	0.000
JUNCT_613	JUNCTION	0.00	21.58	0	01:43	0	1.26	0.000
JUNCT_215	JUNCTION	2.44	2.44	0	00:45	0.0755	0.0755	0.000
JUNCT_216	JUNCTION	1.70	1.70	0	00:40	0.0349	0.0349	0.000
JUNCT_217	JUNCTION	0.14	0.14	0	01:00	0.0129	0.0129	0.000
JUNCT_218	JUNCTION	0.13	0.13	0	01:11	0.0149	0.0149	0.000
JUNCT_122	JUNCTION	4.40	4.40	0	00:42	0.0949	0.0949	0.000
JUNCT_212	JUNCTION	2.32	2.32	0	00:49	0.0934	0.0934	0.000

JUNCT_206	JUNCTION	0.30	0.30	0	00:59	0.0247	0.0247	0.000
OUTFALL_614	OUTFALL	0.00	20.25	0	02:07	0	1.31	0.000
OUTFALL_319	OUTFALL	0.00	49.37	0	01:59	0	3.04	0.000

Node Flooding Summary

No nodes were flooded.

Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
OUTFALL_614	96.81	4.18	20.25	1.308
OUTFALL_319	97.78	9.62	49.37	3.041
System	97.29	13.80	69.20	4.348

Link Flow Summary

Link	Type	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Veloc ft/sec	Max/ Full Flow	Max/ Full Depth
101	DUMMY	10.50	0 00:44			
100	CONDUIT	0.92	0 01:25	0.82	0.00	0.02
300	CONDUIT	8.09	0 01:08	1.86	0.00	0.06

102	DUMMY	3.63	0	00:49			
105	DUMMY	3.73	0	00:46			
106	DUMMY	3.50	0	00:52			
301	CONDUIT	11.13	0	01:07	2.04	0.01	0.07
302	CONDUIT	6.29	0	01:13	1.56	0.00	0.05
103	CONDUIT	2.07	0	01:04	1.20	0.00	0.02
104	CONDUIT	1.57	0	01:00	1.22	0.00	0.02
107	DUMMY	1.38	0	00:43			
303	CONDUIT	20.00	0	01:16	2.34	0.01	0.10
108	DUMMY	2.70	0	00:41			
304	CONDUIT	20.73	0	01:19	4.35	0.00	0.04
305	CONDUIT	19.26	0	01:43	1.88	0.00	0.08
109	DUMMY	10.42	0	00:46			
306	CONDUIT	21.87	0	01:52	2.15	0.00	0.08
318	CONDUIT	47.08	0	02:00	2.24	0.01	0.13
129	DUMMY	8.85	0	00:44			
317	CONDUIT	23.83	0	01:52	2.21	0.00	0.08
128	DUMMY	3.50	0	00:43			
316	CONDUIT	23.47	0	01:40	1.55	0.01	0.10
127	DUMMY	13.37	0	00:45			
126	DUMMY	3.20	0	00:43			
124	DUMMY	1.34	0	00:39			
314	CONDUIT	2.02	0	01:25	1.02	0.00	0.02
315	CONDUIT	0.82	0	01:15	0.58	0.00	0.02
313	CONDUIT	16.62	0	01:35	1.26	0.01	0.09
125	DUMMY	4.24	0	00:56			
312	CONDUIT	3.96	0	01:15	1.23	0.00	0.03
311	DUMMY	14.74	0	01:12			
123	DUMMY	2.74	0	00:45			
120	DUMMY	6.66	0	00:49			
121	DUMMY	4.72	0	00:56			
310	CONDUIT	12.95	0	01:13	1.76	0.00	0.06
309	CONDUIT	10.81	0	01:05	1.54	0.00	0.06
307	CONDUIT	6.50	0	00:56	1.20	0.00	0.05
308	CONDUIT	4.67	0	01:03	1.13	0.00	0.04
203	DUMMY	5.67	0	00:45			
204	DUMMY	2.50	0	00:47			
500	CONDUIT	4.36	0	01:08	1.58	0.00	0.05
501	CONDUIT	6.12	0	01:17	1.77	0.00	0.06

205	DUMMY	2.01	0	00:47			
209	DUMMY	0.79	0	00:54			
207	CONDUIT	1.64	0	01:26	1.18	0.00	0.03
208	CONDUIT	1.30	0	01:09	1.09	0.00	0.02
502	CONDUIT	11.10	0	01:16	2.63	0.00	0.04
210	DUMMY	0.67	0	00:54			
503	CONDUIT	11.46	0	01:27	1.69	0.01	0.11
211	CONDUIT	1.07	0	01:15	0.25	0.01	0.08
504	CONDUIT	12.29	0	01:36	2.01	0.01	0.10
505	DUMMY	13.80	0	01:34			
200	DUMMY	3.08	0	00:45			
201	DUMMY	0.57	0	00:52			
202	DUMMY	0.04	0	01:14			
606	CONDUIT	2.33	0	01:16	1.20	0.00	0.04
607	CONDUIT	2.42	0	01:48	1.21	0.00	0.04
608	CONDUIT	16.06	0	01:41	3.08	0.01	0.09
219	DUMMY	0.00	0	00:00			
509	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
213	DUMMY	5.04	0	00:45			
510	CONDUIT	4.09	0	01:04	1.38	0.00	0.03
214	DUMMY	4.88	0	00:44			
611	CONDUIT	20.28	0	01:38	2.78	0.01	0.11
612	CONDUIT	21.26	0	01:44	2.04	0.02	0.15
613	CONDUIT	20.03	0	02:07	1.66	0.03	0.18
215	DUMMY	2.44	0	00:45			
216	DUMMY	1.70	0	00:40			
217	DUMMY	0.14	0	01:00			
218	DUMMY	0.13	0	01:11			
122	DUMMY	4.40	0	00:42			
212	DUMMY	2.32	0	00:49			
110	DUMMY	8.28	0	00:48			
206	CONDUIT	0.21	0	02:46	0.36	0.00	0.01

Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Tue Jun 6 14:55:23 2023
Analysis ended on: Tue Jun 6 14:55:24 2023
Total elapsed time: 00:00:01

HISTORIC CONDITION - 10-YR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.1)

Analysis Options

Flow Units CFS

Process Models:

Rainfall/Runoff NO
RDII NO
Snowmelt NO
Groundwater NO
Flow Routing YES
Ponding Allowed YES
Water Quality NO

Flow Routing Method KINWAVE

Starting Date 01/01/2005 00:00:00

Ending Date 01/01/2005 12:00:00

Antecedent Dry Days 0.0

Report Time Step 00:01:00

Routing Time Step 60.00 sec

Flow Routing Continuity

	Volume acre-feet	Volume 10 ⁶ gal
	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.000	0.000
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	47.367	15.435
External Outflow	49.321	16.072
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000

Final Stored Volume 0.175 0.057
 Continuity Error (%) -4.496

Highest Flow Instability Indexes

- Link 313 (1)
- Link 314 (1)
- Link 315 (1)
- Link 316 (1)
- Link 312 (1)

Routing Time Step Summary

Minimum Time Step : 60.00 sec
 Average Time Step : 60.00 sec
 Maximum Time Step : 60.00 sec
 % of Time in Steady State : 0.00
 Average Iterations per Step : 1.00
 % of Steps Not Converging : 0.00

Node Depth Summary

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
JUNCT_101	JUNCTION	0.00	0.00	5106.50	0 00:00	0.00
JUNCT_300	JUNCTION	0.09	0.69	5107.09	0 00:44	0.69
JUNCT_100	JUNCTION	0.03	0.20	5136.80	0 00:46	0.20
JUNCT_301	JUNCTION	0.12	0.75	5064.75	0 00:58	0.75
JUNCT_102	JUNCTION	0.00	0.00	5064.10	0 00:00	0.00

JUNCT_303	JUNCTION	0.19	1.12	5058.42	0	00:59	1.12
JUNCT_106	JUNCTION	0.00	0.00	5057.40	0	00:00	0.00
JUNCT_302	JUNCTION	0.08	0.61	5078.81	0	00:51	0.61
JUNCT_103	JUNCTION	0.03	0.30	5113.00	0	00:40	0.30
JUNCT_104	JUNCTION	0.02	0.26	5117.86	0	00:35	0.26
JUNCT_105	JUNCTION	0.00	0.00	5078.30	0	00:00	0.00
JUNCT_304	JUNCTION	0.19	1.11	5040.91	0	01:05	1.11
JUNCT_107	JUNCTION	0.00	0.00	5039.90	0	00:00	0.00
JUNCT_305	JUNCTION	0.17	0.89	5029.59	0	01:06	0.89
JUNCT_108	JUNCTION	0.00	0.00	5028.80	0	00:00	0.00
JUNCT_306	JUNCTION	0.19	0.86	4996.06	0	01:20	0.86
JUNCT_109	JUNCTION	0.00	0.00	4995.30	0	00:00	0.00
JUNCT_110	JUNCTION	0.00	0.00	5945.40	0	00:00	0.00
JUNCT_318	JUNCTION	0.34	1.38	4961.48	0	01:29	1.38
JUNCT_129	JUNCTION	0.00	0.00	4960.20	0	00:00	0.00
JUNCT_317	JUNCTION	0.26	1.08	5000.78	0	01:24	1.08
JUNCT_128	JUNCTION	0.00	0.00	4999.80	0	00:00	0.00
JUNCT_316	JUNCTION	0.25	1.09	5009.59	0	01:15	1.09
JUNCT_127	JUNCTION	0.00	0.00	5008.60	0	00:00	0.00
JUNCT_126	JUNCTION	0.00	0.00	5040.70	0	00:00	0.00
JUNCT_314	JUNCTION	0.04	0.30	5040.90	0	00:43	0.30
JUNCT_124	JUNCTION	0.00	0.00	5015.20	0	00:00	0.00
JUNCT_315	JUNCTION	0.02	0.23	5015.33	0	00:38	0.23
JUNCT_313	JUNCTION	0.21	1.01	5017.21	0	01:04	1.01
JUNCT_311	JUNCTION	0.12	0.61	5016.91	0	01:04	0.61
JUNCT_312	JUNCTION	0.06	0.32	5039.02	0	00:56	0.32
JUNCT_125	JUNCTION	0.00	0.00	5038.80	0	00:00	0.00
JUNCT_123	JUNCTION	0.00	0.00	5016.40	0	00:00	0.00
JUNCT_310	JUNCTION	0.11	0.61	5035.31	0	00:57	0.61
JUNCT_309	JUNCTION	0.10	0.57	5044.87	0	00:55	0.57
JUNCT_308	JUNCTION	0.07	0.37	5050.87	0	00:56	0.37
JUNCT_307	JUNCTION	0.07	0.46	5050.06	0	00:49	0.46
JUNCT_121	JUNCTION	0.00	0.00	5050.60	0	00:00	0.00
JUNCT_120	JUNCTION	0.00	0.00	5049.70	0	00:00	0.00
JUNCT_203	JUNCTION	0.00	0.00	5072.60	0	00:00	0.00
JUNCT_500	JUNCTION	0.07	0.63	5073.13	0	00:44	0.63
JUNCT_501	JUNCTION	0.11	0.69	5044.09	0	00:57	0.69
JUNCT_204	JUNCTION	0.00	0.00	5043.50	0	00:00	0.00
JUNCT_502	JUNCTION	0.12	0.68	5023.28	0	01:05	0.68

JUNCT_205	JUNCTION	0.00	0.00	5022.80	0	00:00	0.00
JUNCT_209	JUNCTION	0.00	0.00	5022.70	0	00:00	0.00
JUNCT_207	JUNCTION	0.05	0.41	5060.61	0	00:44	0.41
JUNCT_208	JUNCTION	0.04	0.31	5051.81	0	00:42	0.31
JUNCT_503	JUNCTION	0.24	1.19	5022.99	0	01:05	1.19
JUNCT_210	JUNCTION	0.00	0.00	5022.00	0	00:00	0.00
JUNCT_504	JUNCTION	0.25	1.18	5014.38	0	01:13	1.18
JUNCT_211	JUNCTION	0.12	0.96	5014.26	0	00:43	0.96
JUNCT_505	JUNCTION	0.23	1.08	5000.48	0	01:19	1.08
JUNCT_608	JUNCTION	0.22	0.96	5000.26	0	01:19	0.96
JUNCT_607	JUNCTION	0.10	0.48	5026.78	0	01:04	0.48
JUNCT_606	JUNCTION	0.07	0.47	5050.27	0	00:46	0.47
JUNCT_200	JUNCTION	0.00	0.00	5049.90	0	00:00	0.00
JUNCT_201	JUNCTION	0.00	0.00	5026.40	0	00:00	0.00
JUNCT_202	JUNCTION	0.00	0.00	4999.40	0	00:00	0.00
JUNCT_611	JUNCTION	0.30	1.27	4967.87	0	01:19	1.27
JUNCT_214	JUNCTION	0.00	0.00	4966.70	0	00:00	0.00
JUNCT_506	JUNCTION	0.04	0.32	5004.82	0	00:45	0.32
JUNCT_213	JUNCTION	0.00	0.00	5004.60	0	00:00	0.00
JUNCT_509	JUNCTION	0.00	0.00	5012.00	0	00:00	0.00
JUNCT_219	JUNCTION	0.00	0.00	5012.10	0	00:00	0.00
JUNCT_612	JUNCTION	0.40	1.67	4960.27	0	01:20	1.67
JUNCT_613	JUNCTION	0.49	1.99	4954.59	0	01:24	1.99
JUNCT_215	JUNCTION	0.00	0.00	4958.70	0	00:00	0.00
JUNCT_216	JUNCTION	0.00	0.00	4952.70	0	00:00	0.00
JUNCT_217	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_218	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_122	JUNCTION	0.00	0.00	5034.80	0	00:00	0.00
JUNCT_212	JUNCTION	0.00	0.00	4999.50	0	00:00	0.00
JUNCT_206	JUNCTION	0.03	0.08	5021.98	0	01:03	0.08
OUTFALL_614	OUTFALL	0.51	1.94	4944.94	0	01:41	1.94
OUTFALL_319	OUTFALL	0.35	1.38	4946.68	0	01:35	1.38

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10 ⁶ gal	Total Inflow Volume 10 ⁶ gal	Flow Balance Error Percent
JUNCT_101	JUNCTION	37.20	37.20	0 00:43	0.892	0.892	0.000
JUNCT_300	JUNCTION	0.00	38.28	0 00:44	0	1.07	0.000
JUNCT_100	JUNCTION	4.60	4.60	0 00:46	0.165	0.165	0.000
JUNCT_301	JUNCTION	0.00	46.27	0 00:58	0	1.62	0.000
JUNCT_102	JUNCTION	13.20	13.20	0 00:50	0.5	0.5	0.000
JUNCT_303	JUNCTION	0.00	85.17	0 00:59	0	3.03	0.000
JUNCT_106	JUNCTION	12.80	12.80	0 00:53	0.551	0.551	0.000
JUNCT_302	JUNCTION	0.00	28.05	0 00:51	0	0.841	0.000
JUNCT_103	JUNCTION	10.02	10.02	0 00:40	0.233	0.233	0.000
JUNCT_104	JUNCTION	8.42	8.42	0 00:35	0.133	0.133	0.000
JUNCT_105	JUNCTION	13.43	13.43	0 00:47	0.444	0.444	0.000
JUNCT_304	JUNCTION	0.00	87.90	0 01:04	0	3.18	0.000
JUNCT_107	JUNCTION	4.89	4.89	0 00:43	0.144	0.144	0.000
JUNCT_305	JUNCTION	0.00	93.32	0 01:06	0	3.4	0.000
JUNCT_108	JUNCTION	9.48	9.48	0 00:39	0.217	0.217	0.000
JUNCT_306	JUNCTION	0.00	104.92	0 01:20	0	4.42	0.000
JUNCT_109	JUNCTION	37.18	37.18	0 00:45	0.989	0.989	0.000
JUNCT_110	JUNCTION	29.88	29.88	0 00:48	0.938	0.938	0.000
JUNCT_318	JUNCTION	0.00	222.68	0 01:29	0	10.3	0.000
JUNCT_129	JUNCTION	31.39	31.39	0 00:43	0.779	0.779	0.000
JUNCT_317	JUNCTION	0.00	109.57	0 01:23	0	5.06	0.000
JUNCT_128	JUNCTION	12.40	12.40	0 00:42	0.329	0.329	0.000
JUNCT_316	JUNCTION	0.00	104.80	0 01:15	0	4.7	0.000
JUNCT_127	JUNCTION	47.51	47.51	0 00:44	1.16	1.16	0.000
JUNCT_126	JUNCTION	11.35	11.35	0 00:43	0.315	0.315	0.000
JUNCT_314	JUNCTION	0.00	11.35	0 00:43	0	0.315	0.000
JUNCT_124	JUNCTION	4.71	4.71	0 00:38	0.1	0.1	0.000
JUNCT_315	JUNCTION	0.00	4.71	0 00:38	0	0.1	0.000
JUNCT_313	JUNCTION	0.00	73.28	0 01:04	0	3.02	0.000
JUNCT_311	JUNCTION	0.00	58.31	0 01:03	0	2.28	0.000
JUNCT_312	JUNCTION	0.00	15.55	0 00:56	0	0.733	0.000
JUNCT_125	JUNCTION	15.55	15.55	0 00:56	0.733	0.733	0.000
JUNCT_123	JUNCTION	9.79	9.79	0 00:45	0.308	0.308	0.000
JUNCT_310	JUNCTION	0.00	51.50	0 00:57	0	1.96	-0.000

JUNCT_309	JUNCTION	0.00	40.73	0	00:55	0	1.59	0.000	
JUNCT_308	JUNCTION	0.00	17.29	0	00:56	0	0.793	0.000	
JUNCT_307	JUNCTION	0.00	24.07	0	00:49	0	0.792	0.000	
JUNCT_121	JUNCTION	17.29	17.29	0	00:56	0.793	0.793	0.000	
JUNCT_120	JUNCTION	24.07	24.07	0	00:49	0.792	0.792	0.000	
JUNCT_203	JUNCTION	20.19	20.19	0	00:44	0.559	0.559	0.000	
JUNCT_500	JUNCTION	0.00	20.19	0	00:44	0	0.559	0.000	
JUNCT_501	JUNCTION	0.00	25.93	0	00:57	0	0.912	0.000	
JUNCT_204	JUNCTION	9.02	9.02	0	00:48	0.326	0.326	0.000	
JUNCT_502	JUNCTION	0.00	46.01	0	01:04	0	1.86	0.000	
JUNCT_205	JUNCTION	7.29	7.29	0	00:48	0.273	0.273	0.000	
JUNCT_209	JUNCTION	2.91	2.91	0	00:55	0.181	0.181	0.000	
JUNCT_207	JUNCTION	9.05	9.05	0	00:44	0.273	0.273	0.000	
JUNCT_208	JUNCTION	6.29	6.29	0	00:42	0.171	0.171	-0.000	
JUNCT_503	JUNCTION	0.00	48.46	0	01:05	0	2.02	0.000	
JUNCT_210	JUNCTION	2.49	2.49	0	00:55	0.159	0.159	0.000	
JUNCT_504	JUNCTION	0.00	51.99	0	01:12	0	2.21	0.000	
JUNCT_211	JUNCTION	5.36	5.36	0	00:43	0.158	0.158	0.000	
JUNCT_505	JUNCTION	0.00	58.54	0	01:18	0	2.67	0.000	
JUNCT_608	JUNCTION	0.00	68.80	0	01:19	0	3.22	0.000	
JUNCT_607	JUNCTION	0.00	11.58	0	01:04	0	0.508	0.000	
JUNCT_606	JUNCTION	0.00	11.07	0	00:46	0	0.359	0.000	
JUNCT_200	JUNCTION	11.07	11.07	0	00:46	0.359	0.359	0.000	
JUNCT_201	JUNCTION	2.08	2.08	0	00:53	0.128	0.128	0.000	
JUNCT_202	JUNCTION	0.15	0.15	0	01:20	0.0198	0.0198	0.000	
JUNCT_611	JUNCTION	0.00	89.89	0	01:19	0	4.21	0.000	
JUNCT_214	JUNCTION	17.32	17.32	0	00:43	0.46	0.46	0.000	
JUNCT_506	JUNCTION	0.00	17.97	0	00:45	0	0.51	0.000	
JUNCT_213	JUNCTION	17.97	17.97	0	00:45	0.51	0.51	0.000	
JUNCT_509	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	gal
JUNCT_219	JUNCTION	0.00	0.00	0	00:00	0	0	0.000	gal
JUNCT_612	JUNCTION	0.00	95.34	0	01:20	0	4.49	0.000	
JUNCT_613	JUNCTION	0.00	97.13	0	01:24	0	4.63	0.000	
JUNCT_215	JUNCTION	8.76	8.76	0	00:46	0.287	0.287	0.000	
JUNCT_216	JUNCTION	6.00	6.00	0	00:38	0.133	0.133	0.000	
JUNCT_217	JUNCTION	0.52	0.52	0	01:11	0.0493	0.0493	0.000	
JUNCT_218	JUNCTION	0.50	0.50	0	01:20	0.0567	0.0567	0.000	
JUNCT_122	JUNCTION	15.49	15.49	0	00:41	0.361	0.361	0.000	
JUNCT_212	JUNCTION	8.47	8.47	0	00:50	0.356	0.356	0.000	

JUNCT_206	JUNCTION	1.11	1.11	0	01:03	0.0942	0.0942	0.000
OUTFALL_614	OUTFALL	0.00	92.91	0	01:41	0	4.8	0.000
OUTFALL_319	OUTFALL	0.00	236.05	0	01:34	0	11.3	0.000

Node Flooding Summary

No nodes were flooded.

Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
OUTFALL_614	96.94	15.32	92.91	4.799
OUTFALL_319	97.92	35.62	236.05	11.272
System	97.43	50.94	327.24	16.071

Link Flow Summary

Link	Type	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Veloc ft/sec	Max/ Full Flow	Max/ Full Depth
101	DUMMY	37.20	0 00:43			
100	CONDUIT	3.85	0 01:09	1.37	0.00	0.04
300	CONDUIT	33.86	0 00:59	3.02	0.02	0.13

102	DUMMY	13.20	0	00:50			
105	DUMMY	13.43	0	00:47			
106	DUMMY	12.80	0	00:53			
301	CONDUIT	46.23	0	00:59	3.31	0.02	0.15
302	CONDUIT	26.61	0	01:01	2.56	0.02	0.12
103	CONDUIT	8.57	0	00:55	2.00	0.00	0.05
104	CONDUIT	6.56	0	00:51	1.94	0.00	0.04
107	DUMMY	4.89	0	00:43			
303	CONDUIT	84.33	0	01:05	3.72	0.05	0.22
108	DUMMY	9.48	0	00:39			
304	CONDUIT	87.72	0	01:07	6.86	0.01	0.09
305	CONDUIT	85.10	0	01:23	2.83	0.02	0.17
109	DUMMY	37.18	0	00:45			
306	CONDUIT	102.88	0	01:29	3.35	0.02	0.17
318	CONDUIT	221.20	0	01:35	3.40	0.05	0.28
129	DUMMY	31.39	0	00:43			
317	CONDUIT	107.80	0	01:32	3.41	0.02	0.17
128	DUMMY	12.40	0	00:42			
316	CONDUIT	103.39	0	01:24	2.34	0.03	0.22
127	DUMMY	47.51	0	00:44			
126	DUMMY	11.35	0	00:43			
124	DUMMY	4.71	0	00:38			
314	CONDUIT	8.48	0	01:11	1.48	0.00	0.05
315	CONDUIT	3.46	0	01:01	0.84	0.00	0.04
313	CONDUIT	68.25	0	01:20	1.85	0.02	0.19
125	DUMMY	15.55	0	00:56			
312	CONDUIT	15.18	0	01:08	1.89	0.00	0.06
311	DUMMY	58.31	0	01:03			
123	DUMMY	9.79	0	00:45			
120	DUMMY	24.07	0	00:49			
121	DUMMY	17.29	0	00:56			
310	CONDUIT	50.62	0	01:04	2.64	0.01	0.12
309	CONDUIT	40.43	0	01:00	2.29	0.01	0.11
307	CONDUIT	23.92	0	00:53	1.79	0.01	0.09
308	CONDUIT	17.25	0	01:00	1.73	0.00	0.07
203	DUMMY	20.19	0	00:44			
204	DUMMY	9.02	0	00:48			
500	CONDUIT	17.69	0	00:59	2.47	0.01	0.12
501	CONDUIT	25.23	0	01:05	2.79	0.02	0.14

205	DUMMY	7.29	0	00:48			
209	DUMMY	2.91	0	00:55			
207	CONDUIT	6.93	0	01:12	1.80	0.01	0.07
208	CONDUIT	5.37	0	00:59	1.78	0.00	0.06
502	CONDUIT	46.01	0	01:05	4.30	0.01	0.09
210	DUMMY	2.49	0	00:55			
503	CONDUIT	47.73	0	01:13	2.59	0.05	0.24
211	CONDUIT	4.35	0	01:06	0.38	0.03	0.17
504	CONDUIT	51.50	0	01:19	3.11	0.04	0.22
505	DUMMY	58.54	0	01:18			
200	DUMMY	11.07	0	00:46			
201	DUMMY	2.08	0	00:53			
202	DUMMY	0.15	0	01:20			
606	CONDUIT	9.54	0	01:04	1.90	0.01	0.09
607	CONDUIT	10.49	0	01:26	1.96	0.01	0.09
608	CONDUIT	68.66	0	01:23	4.84	0.03	0.19
219	DUMMY	0.00	0	00:00			
509	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
213	DUMMY	17.97	0	00:45			
510	CONDUIT	16.41	0	00:56	2.14	0.00	0.06
214	DUMMY	17.32	0	00:43			
611	CONDUIT	89.84	0	01:21	4.35	0.05	0.25
612	CONDUIT	95.02	0	01:24	3.14	0.09	0.33
613	CONDUIT	91.97	0	01:41	2.53	0.13	0.38
215	DUMMY	8.76	0	00:46			
216	DUMMY	6.00	0	00:38			
217	DUMMY	0.52	0	01:11			
218	DUMMY	0.50	0	01:20			
122	DUMMY	15.49	0	00:41			
212	DUMMY	8.47	0	00:50			
110	DUMMY	29.88	0	00:48			
206	CONDUIT	0.91	0	02:11	0.60	0.00	0.01

Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Tue Jun 6 14:54:10 2023
Analysis ended on: Tue Jun 6 14:54:10 2023
Total elapsed time: < 1 sec

HISTORIC CONDITION - 100-YR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.1)

Analysis Options

Flow Units CFS

Process Models:

Rainfall/Runoff NO

RDII NO

Snowmelt NO

Groundwater NO

Flow Routing YES

Ponding Allowed YES

Water Quality NO

Flow Routing Method KINWAVE

Starting Date 01/01/2005 00:00:00

Ending Date 01/01/2005 12:00:00

Antecedent Dry Days 0.0

Report Time Step 00:01:00

Routing Time Step 60.00 sec

Flow Routing Continuity

	Volume acre-feet	Volume 10 ⁶ gal
	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.000	0.000
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	297.405	96.914
External Outflow	301.814	98.351
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000

Final Stored Volume 0.220 0.072
 Continuity Error (%) -1.557

Highest Flow Instability Indexes

- Link 313 (1)
- Link 316 (1)
- Link 312 (1)
- Link 307 (1)
- Link 505 (1)

Routing Time Step Summary

Minimum Time Step : 60.00 sec
 Average Time Step : 60.00 sec
 Maximum Time Step : 60.00 sec
 % of Time in Steady State : 0.00
 Average Iterations per Step : 1.00
 % of Steps Not Converging : 0.00

Node Depth Summary

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
JUNCT_101	JUNCTION	0.00	0.00	5106.50	0 00:00	0.00
JUNCT_300	JUNCTION	0.24	1.78	5108.18	0 00:50	1.78
JUNCT_100	JUNCTION	0.09	0.56	5137.16	0 00:54	0.56
JUNCT_301	JUNCTION	0.32	2.01	5066.01	0 01:00	2.01
JUNCT_102	JUNCTION	0.00	0.00	5064.10	0 00:00	0.00

JUNCT_303	JUNCTION	0.48	2.88	5060.18	0	01:00	2.88
JUNCT_106	JUNCTION	0.00	0.00	5057.40	0	00:00	0.00
JUNCT_302	JUNCTION	0.23	1.63	5079.83	0	00:53	1.63
JUNCT_103	JUNCTION	0.09	0.79	5113.49	0	00:45	0.79
JUNCT_104	JUNCTION	0.05	0.68	5118.28	0	00:39	0.68
JUNCT_105	JUNCTION	0.00	0.00	5078.30	0	00:00	0.00
JUNCT_304	JUNCTION	0.49	2.88	5042.68	0	01:03	2.88
JUNCT_107	JUNCTION	0.00	0.00	5039.90	0	00:00	0.00
JUNCT_305	JUNCTION	0.39	2.11	5030.81	0	01:04	2.11
JUNCT_108	JUNCTION	0.00	0.00	5028.80	0	00:00	0.00
JUNCT_306	JUNCTION	0.43	2.14	4997.34	0	01:12	2.14
JUNCT_109	JUNCTION	0.00	0.00	4995.30	0	00:00	0.00
JUNCT_110	JUNCTION	0.00	0.00	5945.40	0	00:00	0.00
JUNCT_318	JUNCTION	0.74	3.33	4963.43	0	01:18	3.33
JUNCT_129	JUNCTION	0.00	0.00	4960.20	0	00:00	0.00
JUNCT_317	JUNCTION	0.58	2.61	5002.31	0	01:16	2.61
JUNCT_128	JUNCTION	0.00	0.00	4999.80	0	00:00	0.00
JUNCT_316	JUNCTION	0.58	2.62	5011.12	0	01:11	2.62
JUNCT_127	JUNCTION	0.00	0.00	5008.60	0	00:00	0.00
JUNCT_126	JUNCTION	0.00	0.00	5040.70	0	00:00	0.00
JUNCT_314	JUNCTION	0.10	0.74	5041.34	0	00:49	0.74
JUNCT_124	JUNCTION	0.00	0.00	5015.20	0	00:00	0.00
JUNCT_315	JUNCTION	0.06	0.57	5015.67	0	00:43	0.57
JUNCT_313	JUNCTION	0.50	2.32	5018.52	0	01:07	2.32
JUNCT_311	JUNCTION	0.29	1.46	5017.76	0	01:05	1.46
JUNCT_312	JUNCTION	0.18	0.82	5039.52	0	01:08	0.82
JUNCT_125	JUNCTION	0.00	0.00	5038.80	0	00:00	0.00
JUNCT_123	JUNCTION	0.00	0.00	5016.40	0	00:00	0.00
JUNCT_310	JUNCTION	0.29	1.46	5036.16	0	01:01	1.46
JUNCT_309	JUNCTION	0.27	1.36	5045.66	0	01:02	1.36
JUNCT_308	JUNCTION	0.20	0.93	5051.43	0	01:07	0.93
JUNCT_307	JUNCTION	0.18	1.12	5050.72	0	00:55	1.12
JUNCT_121	JUNCTION	0.00	0.00	5050.60	0	00:00	0.00
JUNCT_120	JUNCTION	0.00	0.00	5049.70	0	00:00	0.00
JUNCT_203	JUNCTION	0.00	0.00	5072.60	0	00:00	0.00
JUNCT_500	JUNCTION	0.21	1.55	5074.05	0	00:50	1.55
JUNCT_501	JUNCTION	0.29	1.79	5045.19	0	00:59	1.79
JUNCT_204	JUNCTION	0.00	0.00	5043.50	0	00:00	0.00
JUNCT_502	JUNCTION	0.30	1.78	5024.38	0	01:04	1.78

JUNCT_205	JUNCTION	0.00	0.00	5022.80	0	00:00	0.00
JUNCT_209	JUNCTION	0.00	0.00	5022.70	0	00:00	0.00
JUNCT_207	JUNCTION	0.15	1.06	5061.26	0	00:51	1.06
JUNCT_208	JUNCTION	0.10	0.80	5052.30	0	00:48	0.80
JUNCT_503	JUNCTION	0.59	2.95	5024.75	0	01:05	2.95
JUNCT_210	JUNCTION	0.00	0.00	5022.00	0	00:00	0.00
JUNCT_504	JUNCTION	0.61	2.94	5016.14	0	01:10	2.94
JUNCT_211	JUNCTION	0.33	2.28	5015.58	0	00:49	2.28
JUNCT_505	JUNCTION	0.56	2.74	5002.14	0	01:14	2.74
JUNCT_608	JUNCTION	0.56	2.49	5001.79	0	01:14	2.49
JUNCT_607	JUNCTION	0.26	1.30	5027.60	0	01:05	1.30
JUNCT_606	JUNCTION	0.18	1.20	5051.00	0	00:53	1.20
JUNCT_200	JUNCTION	0.00	0.00	5049.90	0	00:00	0.00
JUNCT_201	JUNCTION	0.00	0.00	5026.40	0	00:00	0.00
JUNCT_202	JUNCTION	0.00	0.00	4999.40	0	00:00	0.00
JUNCT_611	JUNCTION	0.72	3.24	4969.84	0	01:12	3.24
JUNCT_214	JUNCTION	0.00	0.00	4966.70	0	00:00	0.00
JUNCT_506	JUNCTION	0.11	0.79	5005.29	0	00:50	0.79
JUNCT_213	JUNCTION	0.00	0.00	5004.60	0	00:00	0.00
JUNCT_509	JUNCTION	0.00	0.00	5012.00	0	00:00	0.00
JUNCT_219	JUNCTION	0.00	0.00	5012.10	0	00:00	0.00
JUNCT_612	JUNCTION	0.94	4.15	4962.75	0	01:12	4.15
JUNCT_613	JUNCTION	1.13	4.88	4957.48	0	01:14	4.88
JUNCT_215	JUNCTION	0.00	0.00	4958.70	0	00:00	0.00
JUNCT_216	JUNCTION	0.00	0.00	4952.70	0	00:00	0.00
JUNCT_217	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_218	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_122	JUNCTION	0.00	0.00	5034.80	0	00:00	0.00
JUNCT_212	JUNCTION	0.00	0.00	4999.50	0	00:00	0.00
JUNCT_206	JUNCTION	0.09	0.25	5022.15	0	01:14	0.25
OUTFALL_614	OUTFALL	1.16	4.82	4947.82	0	01:26	4.82
OUTFALL_319	OUTFALL	0.75	3.32	4948.62	0	01:21	3.32

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10 ⁶ gal	Total Inflow Volume 10 ⁶ gal	Flow Balance Error Percent
JUNCT_101	JUNCTION	201.26	201.26	0 00:48	5.6	5.6	0.000
JUNCT_300	JUNCTION	0.00	218.09	0 00:50	0	6.66	0.000
JUNCT_100	JUNCTION	26.23	26.23	0 00:54	1.04	1.04	0.000
JUNCT_301	JUNCTION	0.00	289.01	0 01:00	0	9.9	0.000
JUNCT_102	JUNCTION	76.22	76.22	0 00:58	3.14	3.14	0.000
JUNCT_303	JUNCTION	0.00	528.85	0 01:00	0	18.5	0.000
JUNCT_106	JUNCTION	75.56	75.56	0 01:03	3.46	3.46	0.000
JUNCT_302	JUNCTION	0.00	166.99	0 00:53	0	5.15	0.000
JUNCT_103	JUNCTION	53.63	53.63	0 00:45	1.46	1.46	0.000
JUNCT_104	JUNCTION	42.66	42.66	0 00:39	0.837	0.837	0.000
JUNCT_105	JUNCTION	76.02	76.02	0 00:54	2.79	2.79	0.000
JUNCT_304	JUNCTION	0.00	552.62	0 01:03	0	19.5	0.000
JUNCT_107	JUNCTION	27.12	27.12	0 00:49	0.904	0.904	0.000
JUNCT_305	JUNCTION	0.00	594.67	0 01:04	0	20.8	-0.000
JUNCT_108	JUNCTION	50.62	50.62	0 00:45	1.36	1.36	0.000
JUNCT_306	JUNCTION	0.00	743.19	0 01:12	0	27.1	0.000
JUNCT_109	JUNCTION	204.48	204.48	0 00:50	6.21	6.21	0.000
JUNCT_110	JUNCTION	168.54	168.54	0 00:55	5.89	5.89	0.000
JUNCT_318	JUNCTION	0.00	1615.98	0 01:18	0	63.3	0.000
JUNCT_129	JUNCTION	170.63	170.63	0 00:48	4.89	4.89	0.000
JUNCT_317	JUNCTION	0.00	768.04	0 01:15	0	31.1	0.000
JUNCT_128	JUNCTION	67.84	67.84	0 00:48	2.07	2.07	0.000
JUNCT_316	JUNCTION	0.00	720.16	0 01:11	0	29	0.000
JUNCT_127	JUNCTION	258.19	258.19	0 00:49	7.31	7.31	0.000
JUNCT_126	JUNCTION	62.51	62.51	0 00:49	1.98	1.98	0.000
JUNCT_314	JUNCTION	0.00	62.51	0 00:49	0	1.98	0.000
JUNCT_124	JUNCTION	24.83	24.83	0 00:43	0.63	0.63	0.000
JUNCT_315	JUNCTION	0.00	24.83	0 00:43	0	0.63	0.000
JUNCT_313	JUNCTION	0.00	447.71	0 01:07	0	18.8	0.000
JUNCT_311	JUNCTION	0.00	356.90	0 01:05	0	14.2	0.000
JUNCT_312	JUNCTION	0.00	93.77	0 01:08	0	4.6	0.000
JUNCT_125	JUNCTION	93.77	93.77	0 01:08	4.6	4.6	0.000
JUNCT_123	JUNCTION	54.96	54.96	0 00:52	1.93	1.93	0.000
JUNCT_310	JUNCTION	0.00	306.44	0 01:01	0	12.2	0.000

JUNCT_309	JUNCTION	0.00	235.69	0	01:02	0	9.96	0.000
JUNCT_308	JUNCTION	0.00	103.86	0	01:07	0	4.98	0.000
JUNCT_307	JUNCTION	0.00	136.62	0	00:55	0	4.97	0.000
JUNCT_121	JUNCTION	103.86	103.86	0	01:07	4.98	4.98	0.000
JUNCT_120	JUNCTION	136.62	136.62	0	00:55	4.97	4.97	0.000
JUNCT_203	JUNCTION	111.46	111.46	0	00:50	3.51	3.51	0.000
JUNCT_500	JUNCTION	0.00	111.46	0	00:50	0	3.51	0.000
JUNCT_501	JUNCTION	0.00	158.64	0	00:59	0	5.61	0.000
JUNCT_204	JUNCTION	51.62	51.62	0	00:55	2.04	2.04	0.000
JUNCT_502	JUNCTION	0.00	293.60	0	01:04	0	11.4	0.000
JUNCT_205	JUNCTION	41.87	41.87	0	00:56	1.71	1.71	0.000
JUNCT_209	JUNCTION	18.19	18.19	0	01:11	1.14	1.14	0.000
JUNCT_207	JUNCTION	50.46	50.46	0	00:51	1.72	1.72	0.000
JUNCT_208	JUNCTION	34.49	34.49	0	00:48	1.07	1.07	-0.000
JUNCT_503	JUNCTION	0.00	308.93	0	01:05	0	12.4	0.000
JUNCT_210	JUNCTION	15.58	15.58	0	01:11	0.997	0.997	0.000
JUNCT_504	JUNCTION	0.00	335.79	0	01:10	0	13.4	-0.000
JUNCT_211	JUNCTION	29.76	29.76	0	00:49	0.995	0.995	-0.000
JUNCT_505	JUNCTION	0.00	386.10	0	01:13	0	16.3	0.000
JUNCT_608	JUNCTION	0.00	457.11	0	01:14	0	19.5	0.000
JUNCT_607	JUNCTION	0.00	72.83	0	01:05	0	3.1	0.000
JUNCT_606	JUNCTION	0.00	62.43	0	00:53	0	2.25	0.000
JUNCT_200	JUNCTION	62.43	62.43	0	00:53	2.25	2.25	0.000
JUNCT_201	JUNCTION	12.96	12.96	0	01:10	0.801	0.801	0.000
JUNCT_202	JUNCTION	0.96	0.96	0	01:18	0.124	0.124	0.000
JUNCT_611	JUNCTION	0.00	619.70	0	01:12	0	25.7	0.000
JUNCT_214	JUNCTION	94.87	94.87	0	00:49	2.89	2.89	0.000
JUNCT_506	JUNCTION	0.00	99.56	0	00:50	0	3.21	0.000
JUNCT_213	JUNCTION	99.56	99.56	0	00:50	3.21	3.21	0.000
JUNCT_509	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_219	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_612	JUNCTION	0.00	662.99	0	01:12	0	27.5	0.000
JUNCT_613	JUNCTION	0.00	683.41	0	01:14	0	28.3	0.000
JUNCT_215	JUNCTION	49.42	49.42	0	00:53	1.8	1.8	0.000
JUNCT_216	JUNCTION	31.80	31.80	0	00:43	0.834	0.834	0.000
JUNCT_217	JUNCTION	3.32	3.32	0	01:14	0.309	0.309	0.000
JUNCT_218	JUNCTION	3.16	3.16	0	01:19	0.356	0.356	0.000
JUNCT_122	JUNCTION	83.09	83.09	0	00:46	2.27	2.27	0.000
JUNCT_212	JUNCTION	49.56	49.56	0	01:00	2.23	2.23	0.000

JUNCT_206	JUNCTION	7.13	7.13	0	01:14	0.591	0.591	0.000
OUTFALL_614	OUTFALL	0.00	671.51	0	01:26	0	29.2	0.000
OUTFALL_319	OUTFALL	0.00	1742.35	0	01:20	0	69.2	0.000

Node Flooding Summary

No nodes were flooded.

Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
OUTFALL_614	97.08	92.96	671.51	29.164
OUTFALL_319	98.06	218.33	1742.35	69.180
System	97.57	311.30	2404.35	98.343

Link Flow Summary

Link	Type	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Veloc ft/sec	Max/ Full Flow	Max/ Full Depth
101	DUMMY	201.26	0 00:48			
100	CONDUIT	25.29	0 01:10	2.64	0.01	0.11
300	CONDUIT	212.99	0 01:00	5.18	0.12	0.35

102	DUMMY	76.22	0	00:58			
105	DUMMY	76.02	0	00:54			
106	DUMMY	75.56	0	01:03			
301	CONDUIT	288.93	0	01:00	5.75	0.15	0.40
302	CONDUIT	164.98	0	00:59	4.45	0.10	0.32
103	CONDUIT	51.99	0	00:55	3.58	0.03	0.16
104	CONDUIT	39.85	0	00:50	3.45	0.02	0.13
107	DUMMY	27.12	0	00:49			
303	CONDUIT	527.54	0	01:03	6.25	0.31	0.58
108	DUMMY	50.62	0	00:45			
304	CONDUIT	552.31	0	01:04	11.49	0.03	0.23
305	CONDUIT	577.08	0	01:14	4.60	0.13	0.42
109	DUMMY	204.48	0	00:50			
306	CONDUIT	737.12	0	01:17	5.56	0.13	0.43
318	CONDUIT	1611.41	0	01:21	5.64	0.37	0.66
129	DUMMY	170.63	0	00:48			
317	CONDUIT	762.78	0	01:21	5.63	0.14	0.43
128	DUMMY	67.84	0	00:48			
316	CONDUIT	716.51	0	01:16	3.83	0.21	0.52
127	DUMMY	258.19	0	00:49			
126	DUMMY	62.51	0	00:49			
124	DUMMY	24.83	0	00:43			
314	CONDUIT	56.83	0	01:12	2.53	0.01	0.14
315	CONDUIT	22.33	0	01:00	1.44	0.01	0.11
313	CONDUIT	441.74	0	01:16	2.97	0.16	0.46
125	DUMMY	93.77	0	01:08			
312	CONDUIT	93.47	0	01:13	3.19	0.02	0.16
311	DUMMY	356.90	0	01:05			
123	DUMMY	54.96	0	00:52			
120	DUMMY	136.62	0	00:55			
121	DUMMY	103.86	0	01:07			
310	CONDUIT	305.60	0	01:05	4.26	0.06	0.29
309	CONDUIT	235.40	0	01:05	3.68	0.05	0.27
307	CONDUIT	136.41	0	00:58	2.89	0.03	0.22
308	CONDUIT	103.80	0	01:10	2.89	0.02	0.19
203	DUMMY	111.46	0	00:50			
204	DUMMY	51.62	0	00:55			
500	CONDUIT	107.64	0	01:00	4.09	0.08	0.30
501	CONDUIT	157.63	0	01:04	4.69	0.11	0.36

205	DUMMY	41.87	0	00:56			
209	DUMMY	18.19	0	01:11			
207	CONDUIT	46.76	0	01:13	3.22	0.04	0.20
208	CONDUIT	33.25	0	00:58	3.11	0.02	0.16
502	CONDUIT	293.60	0	01:05	7.59	0.05	0.24
210	DUMMY	15.58	0	01:11			
503	CONDUIT	307.91	0	01:10	4.26	0.31	0.59
211	CONDUIT	27.88	0	01:10	0.63	0.17	0.44
504	CONDUIT	335.17	0	01:14	5.17	0.26	0.55
505	DUMMY	386.10	0	01:13			
200	DUMMY	62.43	0	00:53			
201	DUMMY	12.96	0	01:10			
202	DUMMY	0.96	0	01:18			
606	CONDUIT	60.02	0	01:05	3.30	0.05	0.24
607	CONDUIT	71.45	0	01:19	3.48	0.06	0.26
608	CONDUIT	456.88	0	01:16	8.17	0.21	0.50
219	DUMMY	0.00	0	00:00			
509	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
213	DUMMY	99.56	0	00:50			
510	CONDUIT	97.41	0	00:58	3.53	0.02	0.16
214	DUMMY	94.87	0	00:49			
611	CONDUIT	619.58	0	01:13	7.32	0.38	0.65
612	CONDUIT	662.09	0	01:15	5.21	0.65	0.83
613	CONDUIT	665.13	0	01:26	4.16	0.92	0.96
215	DUMMY	49.42	0	00:53			
216	DUMMY	31.80	0	00:43			
217	DUMMY	3.32	0	01:14			
218	DUMMY	3.16	0	01:19			
122	DUMMY	83.09	0	00:46			
212	DUMMY	49.56	0	01:00			
110	DUMMY	168.54	0	00:55			
206	CONDUIT	6.54	0	01:47	1.17	0.00	0.05

Conduit Surcharge Summary






No conduits were surcharged.

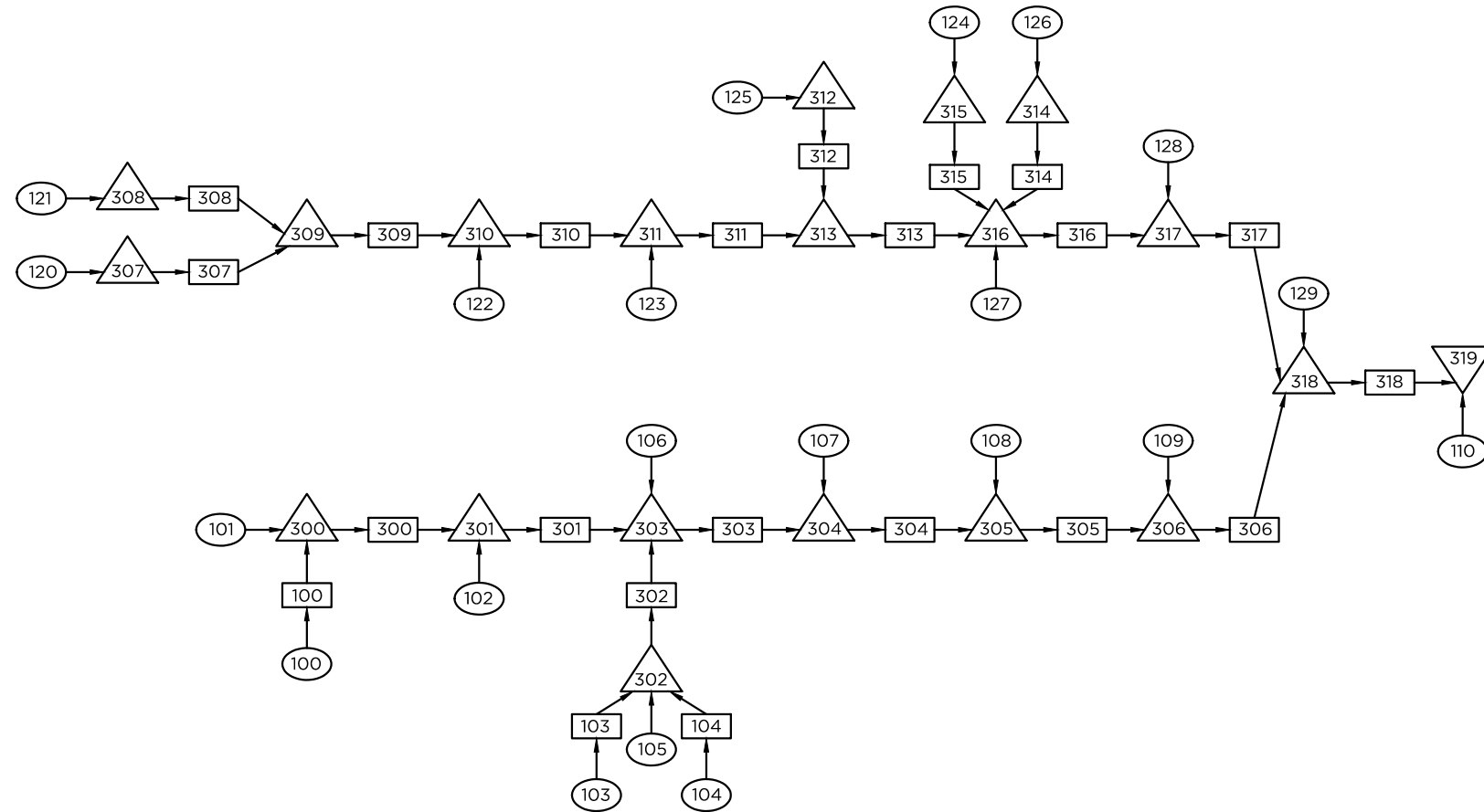
Analysis begun on: Tue Jun 6 14:53:00 2023
Analysis ended on: Tue Jun 6 14:53:00 2023
Total elapsed time: < 1 sec

APPENDIX D
EXISTING CONDITION CUHP/SWMM MODEL

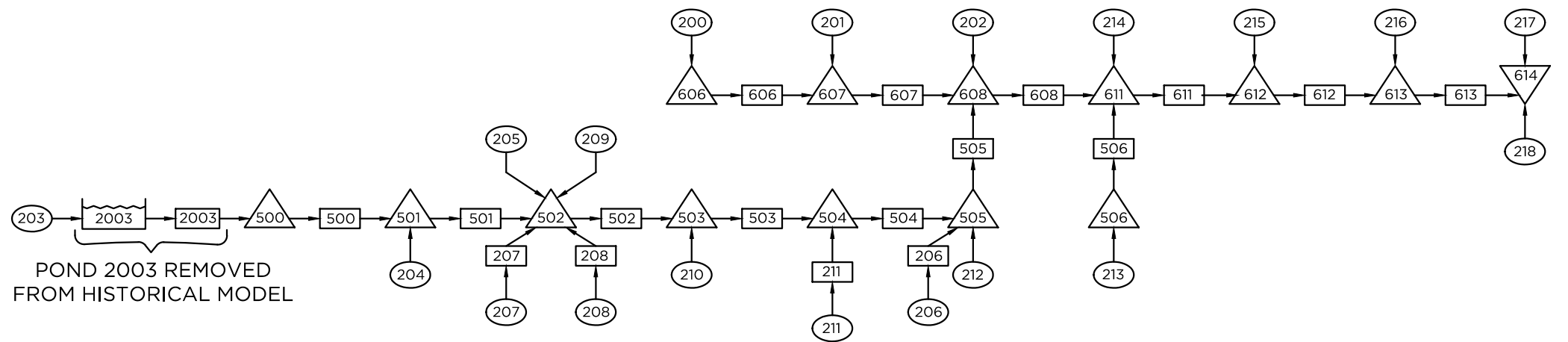
EXISTING CONDITIONS MAP

LEGEND

-  DESIGN POINT
-  SUBBASIN
-  DETENTION FACILITY
-  OUTFALL
-  CONVEYANCE ELEMENT



E. 168TH AVENUE - DRAINAGE #1



E. 168TH AVENUE - DRAINAGE #2

CUHP SUBCATCHMENTS

Columns with this color heading are for required user-input
 Columns with this color heading are for optional override values
 Columns with this color heading are for program-calculated values

Subcatchment Name	EPA SWMM Target Node	Raingage	Area (mi ²)	Length to Centroid (mi)	Length (mi)	Slope (ft/ft)	Percent Imperviousness	Maximum Depression Storage (Watershed inches)		Horton's Infiltration Parameters			DCIA Level 0, 1, or 2
								Pervious	Impervious	Initial Rate (in/hr)	Decay Coefficient (1/seconds)	Final Rate (in/hr)	
100	JUNCT_100	5-YR	0.0375	0.2119	0.4318	0.0237	23.9	0.38	0.1	3	0.0018	0.5	0
101	JUNCT_101	5-YR	0.2028	0.3134	0.5438	0.0247	3.37	0.38	0.1	3	0.0018	0.5	0
102	JUNCT_102	5-YR	0.1136	0.4163	0.6566	0.01933	5.5	0.38	0.1	3	0.0018	0.5	0
103	JUNCT_103	5-YR	0.0529	0.1572	0.2483	0.0191	10.89	0.38	0.1	3	0.0018	0.5	0
104	JUNCT_104	5-YR	0.0303	0.0701	0.1826	0.0456	25.25	0.38	0.1	3	0.0018	0.5	0
105	JUNCT_105	5-YR	0.1009	0.2858	0.5345	0.0145	2	0.38	0.1	3	0.0018	0.5	0
106	JUNCT_106	5-YR	0.1252	0.4591	0.8307	0.0173	2.26	0.38	0.1	3	0.0018	0.5	0
107	JUNCT_107	5-YR	0.0327	0.1241	0.2723	0.0111	6.73	0.38	0.1	3	0.0018	0.5	0
108	JUNCT_108	5-YR	0.0494	0.107	0.2693	0.0127	5.99	0.38	0.1	3	0.0018	0.5	0
109	JUNCT_109	5-YR	0.2248	0.2646	0.6299	0.0123	3.18	0.38	0.1	3	0.0018	0.5	0
110	JUNCT_110	5-YR	0.2131	0.2913	0.803	0.0116	2.33	0.38	0.1	3	0.0018	0.5	0
120	JUNCT_120	5-YR	0.18	0.3434	0.7458	0.0135	9.85	0.38	0.1	3	0.0018	0.5	0
121	JUNCT_121	5-YR	0.1803	0.5699	0.9413	0.0127	16.25	0.38	0.1	3	0.0018	0.5	0
122	JUNCT_122	5-YR	0.0821	0.1534	0.2905	0.0104	2	0.38	0.1	3	0.0018	0.5	0
123	JUNCT_123	5-YR	0.07	0.208	0.3845	0.0103	2	0.38	0.1	3	0.0018	0.5	0
124	JUNCT_124	5-YR	0.0228	0.0672	0.1769	0.0139	2	0.38	0.1	3	0.0018	0.5	0
125	JUNCT_125	5-YR	0.1665	0.4428	0.9917	0.0088	2	0.38	0.1	3	0.0018	0.5	0
126	JUNCT_126	5-YR	0.0715	0.1708	0.3163	0.0084	2	0.38	0.1	3	0.0018	0.5	0
127	JUNCT_127	5-YR	0.2645	0.2506	0.6981	0.0165	2.25	0.38	0.1	3	0.0018	0.5	0
128	JUNCT_128	5-YR	0.0748	0.1648	0.4085	0.0148	2	0.38	0.1	3	0.0018	0.5	0
129	JUNCT_129	5-YR	0.177	0.2455	0.5813	0.0173	2	0.38	0.1	3	0.0018	0.5	0
200	JUNCT_200	5-YR	0.0816	0.2051	0.5246	0.0119	4.37	0.38	0.1	3	0.0018	0.5	0
201	JUNCT_201	5-YR	0.029	0.31075	0.5782159	0.0128	28.83	0.38	0.1	3	0.0018	0.5	0
202	JUNCT_202	5-YR	0.0046	0.2797	0.5233	0.008	44.36	0.38	0.1	3	0.0018	0.5	0
203	JUNCT_203	5-YR	0.127	0.293140152	0.5782254	0.0272	23.32	0.38	0.1	3	0.0018	0.5	0
204	JUNCT_204	5-YR	0.074	0.2692	0.5601	0.0169	6.52	0.38	0.1	3	0.0018	0.5	0
205	JUNCT_205	5-YR	0.062	0.2464	0.4621	0.0114	3.45	0.38	0.1	3	0.0018	0.5	0
206	JUNCT_206	5-YR	0.0214	0.4103	0.6914	0.0137	31.78	0.38	0.1	3	0.0018	0.5	0
207	JUNCT_207	5-YR	0.0621	0.183	0.3847	0.0123	2	0.38	0.1	3	0.0018	0.5	0
208	JUNCT_208	5-YR	0.0388	0.10868	0.23969	0.0071	2	0.38	0.1	3	0.0018	0.5	0
209	JUNCT_209	5-YR	0.0412	0.3381	0.6977	0.0106	20.21	0.38	0.1	3	0.0018	0.5	0
210	JUNCT_210	5-YR	0.0361	0.4097	0.7119	0.0186	25.32	0.38	0.1	3	0.0018	0.5	0
211	JUNCT_211	5-YR	0.036	0.1785	0.296	0.0221	26.28	0.38	0.1	3	0.0018	0.5	0
212	JUNCT_212	5-YR	0.0808	0.280333333	0.5628106	0.0077	4.16	0.38	0.1	3	0.0018	0.5	0
213	JUNCT_213	5-YR	0.116	0.203833333	0.5581742	0.0129	2	0.38	0.1	3	0.0018	0.5	0
214	JUNCT_214	5-YR	0.1045	0.304159091	0.3573902	0.0201	12.2	0.38	0.1	3	0.0018	0.5	0
215	JUNCT_215	5-YR	0.0653	0.200164773	0.3851307	0.0089	9.19	0.38	0.1	3	0.0018	0.5	0
216	JUNCT_216	5-YR	0.0302	0.0564	0.1816	0.0049	4.01	0.38	0.1	3	0.0018	0.5	0
217	JUNCT_217	5-YR	0.0112	0.1634	0.459	0.0019	17.82	0.38	0.1	3	0.0018	0.5	0
218	JUNCT_218	5-YR	0.0129	0.2218	0.5591	0.0017	19.86	0.38	0.1	3	0.0018	0.5	0

EXISTING CONDITION - 5-YR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.1)

Analysis Options

Flow Units CFS

Process Models:

Rainfall/Runoff NO

RDII NO

Snowmelt NO

Groundwater NO

Flow Routing YES

Ponding Allowed YES

Water Quality NO

Flow Routing Method KINWAVE

Starting Date 01/01/2005 00:00:00

Ending Date 01/01/2005 12:00:00

Antecedent Dry Days 0.0

Report Time Step 00:01:00

Routing Time Step 60.00 sec

Flow Routing Continuity

	Volume acre-feet	Volume 10 ⁶ gal
	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.000	0.000
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	21.120	6.882
External Outflow	21.114	6.880
Flooding Loss	0.000	0.000

Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	1.253	0.408
Continuity Error (%)	-5.905	

Highest Flow Instability Indexes

- Link 317 (1)
- Link 313 (1)
- Link 309 (1)
- Link 308 (1)
- Link 505 (1)

Routing Time Step Summary

Minimum Time Step	:	60.00 sec
Average Time Step	:	60.00 sec
Maximum Time Step	:	60.00 sec
% of Time in Steady State	:	0.00
Average Iterations per Step	:	1.00
% of Steps Not Converging	:	0.00

Node Depth Summary

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
------	------	--------------------------	--------------------------	------------------------	--	-------------------------------

JUNCT_101	JUNCTION	0.00	0.00	5106.50	0	00:00	0.00
JUNCT_300	JUNCTION	0.06	0.38	5106.78	0	00:48	0.38
JUNCT_100	JUNCTION	0.03	0.20	5136.80	0	00:43	0.20
JUNCT_301	JUNCTION	0.08	0.41	5064.41	0	01:07	0.41
JUNCT_102	JUNCTION	0.00	0.00	5064.10	0	00:00	0.00
JUNCT_303	JUNCTION	0.12	0.65	5057.95	0	01:06	0.65
JUNCT_106	JUNCTION	0.00	0.00	5057.40	0	00:00	0.00
JUNCT_302	JUNCTION	0.06	0.41	5078.61	0	00:53	0.41
JUNCT_103	JUNCTION	0.02	0.21	5112.91	0	00:39	0.21
JUNCT_104	JUNCTION	0.02	0.26	5117.86	0	00:33	0.26
JUNCT_105	JUNCTION	0.00	0.00	5078.30	0	00:00	0.00
JUNCT_304	JUNCTION	0.13	0.64	5040.44	0	01:13	0.64
JUNCT_107	JUNCTION	0.00	0.00	5039.90	0	00:00	0.00
JUNCT_305	JUNCTION	0.11	0.54	5029.24	0	01:15	0.54
JUNCT_108	JUNCTION	0.00	0.00	5028.80	0	00:00	0.00
JUNCT_306	JUNCTION	0.13	0.51	4995.71	0	01:37	0.51
JUNCT_109	JUNCTION	0.00	0.00	4995.30	0	00:00	0.00
JUNCT_110	JUNCTION	0.00	0.00	5945.40	0	00:00	0.00
JUNCT_318	JUNCTION	0.23	0.81	4960.91	0	01:47	0.81
JUNCT_129	JUNCTION	0.00	0.00	4960.20	0	00:00	0.00
JUNCT_317	JUNCTION	0.17	0.65	5000.35	0	01:36	0.65
JUNCT_128	JUNCTION	0.00	0.00	4999.80	0	00:00	0.00
JUNCT_316	JUNCTION	0.17	0.66	5009.16	0	01:25	0.66
JUNCT_127	JUNCTION	0.00	0.00	5008.60	0	00:00	0.00
JUNCT_126	JUNCTION	0.00	0.00	5040.70	0	00:00	0.00
JUNCT_314	JUNCTION	0.02	0.15	5040.75	0	00:43	0.15
JUNCT_124	JUNCTION	0.00	0.00	5015.20	0	00:00	0.00
JUNCT_315	JUNCTION	0.01	0.11	5015.21	0	00:39	0.11
JUNCT_313	JUNCTION	0.15	0.67	5016.87	0	01:08	0.67
JUNCT_311	JUNCTION	0.09	0.43	5016.73	0	01:07	0.43
JUNCT_312	JUNCTION	0.03	0.15	5038.85	0	00:56	0.15
JUNCT_125	JUNCTION	0.00	0.00	5038.80	0	00:00	0.00
JUNCT_123	JUNCTION	0.00	0.00	5016.40	0	00:00	0.00
JUNCT_310	JUNCTION	0.09	0.44	5035.14	0	00:59	0.44
JUNCT_309	JUNCTION	0.08	0.44	5044.74	0	00:55	0.44

JUNCT_308	JUNCTION	0.07	0.31	5050.81	0	00:54	0.31
JUNCT_307	JUNCTION	0.05	0.32	5049.92	0	00:47	0.32
JUNCT_121	JUNCTION	0.00	0.00	5050.60	0	00:00	0.00
JUNCT_120	JUNCTION	0.00	0.00	5049.70	0	00:00	0.00
JUNCT_203	JUNCTION	0.00	0.00	5072.60	0	00:00	0.00
JUNCT_500	JUNCTION	0.10	0.21	5072.71	0	02:25	0.21
JUNCT_501	JUNCTION	0.12	0.23	5043.63	0	00:46	0.23
JUNCT_204	JUNCTION	0.00	0.00	5043.50	0	00:00	0.00
JUNCT_502	JUNCTION	0.12	0.22	5022.82	0	02:51	0.22
JUNCT_205	JUNCTION	0.00	0.00	5022.80	0	00:00	0.00
JUNCT_209	JUNCTION	0.00	0.00	5022.70	0	00:00	0.00
JUNCT_207	JUNCTION	0.02	0.20	5060.40	0	00:44	0.20
JUNCT_208	JUNCTION	0.02	0.15	5051.65	0	00:42	0.15
JUNCT_503	JUNCTION	0.22	0.59	5022.39	0	01:06	0.59
JUNCT_210	JUNCTION	0.00	0.00	5022.00	0	00:00	0.00
JUNCT_504	JUNCTION	0.26	0.90	5014.10	0	01:05	0.90
JUNCT_211	JUNCTION	0.14	0.99	5014.29	0	00:39	0.99
JUNCT_505	JUNCTION	0.21	0.60	5000.00	0	01:24	0.60
JUNCT_608	JUNCTION	0.19	0.57	4999.87	0	01:27	0.57
JUNCT_607	JUNCTION	0.08	0.32	5026.62	0	01:11	0.32
JUNCT_606	JUNCTION	0.04	0.26	5050.06	0	00:45	0.26
JUNCT_200	JUNCTION	0.00	0.00	5049.90	0	00:00	0.00
JUNCT_201	JUNCTION	0.00	0.00	5026.40	0	00:00	0.00
JUNCT_202	JUNCTION	0.00	0.00	4999.40	0	00:00	0.00
JUNCT_611	JUNCTION	0.25	0.76	4967.36	0	01:24	0.76
JUNCT_214	JUNCTION	0.00	0.00	4966.70	0	00:00	0.00
JUNCT_506	JUNCTION	0.02	0.16	5004.66	0	00:45	0.16
JUNCT_213	JUNCTION	0.00	0.00	5004.60	0	00:00	0.00
JUNCT_509	JUNCTION	0.00	0.00	5012.00	0	00:00	0.00
JUNCT_219	JUNCTION	0.00	0.00	5012.10	0	00:00	0.00
JUNCT_612	JUNCTION	0.34	1.02	4959.62	0	01:25	1.02
JUNCT_613	JUNCTION	0.41	1.23	4953.83	0	01:29	1.23
JUNCT_215	JUNCTION	0.00	0.00	4958.70	0	00:00	0.00
JUNCT_216	JUNCTION	0.00	0.00	4952.70	0	00:00	0.00
JUNCT_217	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_218	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00

JUNCT_122	JUNCTION	0.00	0.00	5034.80	0	00:00	0.00
JUNCT_212	JUNCTION	0.00	0.00	4999.50	0	00:00	0.00
JUNCT_206	JUNCTION	0.03	0.11	5022.01	0	01:06	0.11
OUTFALL_614	OUTFALL	0.42	1.19	4944.19	0	01:52	1.19
OUTFALL_319	OUTFALL	0.23	0.81	4946.11	0	01:54	0.81
STOR_2003	STORAGE	1.87	2.47	5075.47	0	02:25	2.47

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
JUNCT_101	JUNCTION	11.95	11.95	0 00:44	0.277	0.277	0.000
JUNCT_300	JUNCTION	0.00	13.85	0 00:48	0	0.472	0.000
JUNCT_100	JUNCTION	4.56	4.56	0 00:43	0.184	0.184	0.000
JUNCT_301	JUNCTION	0.00	15.95	0 01:07	0	0.69	0.000
JUNCT_102	JUNCTION	5.01	5.01	0 00:49	0.193	0.193	0.000
JUNCT_303	JUNCTION	0.00	32.10	0 01:06	0	1.28	0.000
JUNCT_106	JUNCTION	3.60	3.60	0 00:52	0.15	0.15	0.000
JUNCT_302	JUNCTION	0.00	14.03	0 00:53	0	0.429	0.000
JUNCT_103	JUNCTION	5.41	5.41	0 00:39	0.136	0.136	0.000
JUNCT_104	JUNCTION	8.07	8.07	0 00:33	0.156	0.156	0.000
JUNCT_105	JUNCTION	3.73	3.73	0 00:46	0.117	0.117	0.000
JUNCT_304	JUNCTION	0.00	33.00	0 01:13	0	1.35	0.000
JUNCT_107	JUNCTION	2.06	2.06	0 00:42	0.0619	0.0619	0.000
JUNCT_305	JUNCTION	0.00	34.82	0 01:15	0	1.44	0.000
JUNCT_108	JUNCTION	3.77	3.77	0 00:40	0.0878	0.0878	0.000
JUNCT_306	JUNCTION	0.00	35.44	0 01:34	0	1.76	0.000
JUNCT_109	JUNCTION	11.68	11.68	0 00:45	0.301	0.301	0.000
JUNCT_110	JUNCTION	8.57	8.57	0 00:48	0.257	0.257	0.000

JUNCT_318	JUNCTION	0.00	73.55	0	01:47	0	4.02	0.000
JUNCT_129	JUNCTION	8.85	8.85	0	00:44	0.205	0.205	0.000
JUNCT_317	JUNCTION	0.00	38.14	0	01:35	0	2.04	0.000
JUNCT_128	JUNCTION	3.50	3.50	0	00:43	0.0864	0.0864	0.000
JUNCT_316	JUNCTION	0.00	37.83	0	01:25	0	1.94	0.000
JUNCT_127	JUNCTION	13.71	13.71	0	00:45	0.316	0.316	0.000
JUNCT_126	JUNCTION	3.20	3.20	0	00:43	0.0826	0.0826	0.000
JUNCT_314	JUNCTION	0.00	3.20	0	00:43	0	0.0826	0.000
JUNCT_124	JUNCTION	1.34	1.34	0	00:39	0.0263	0.0263	0.000
JUNCT_315	JUNCTION	0.00	1.34	0	00:39	0	0.0263	0.000
JUNCT_313	JUNCTION	0.00	32.51	0	01:08	0	1.45	0.000
JUNCT_311	JUNCTION	0.00	28.73	0	01:07	0	1.26	0.000
JUNCT_312	JUNCTION	0.00	4.24	0	00:56	0	0.192	0.000
JUNCT_125	JUNCTION	4.24	4.24	0	00:56	0.192	0.192	0.000
JUNCT_123	JUNCTION	2.74	2.74	0	00:45	0.0809	0.0809	0.000
JUNCT_310	JUNCTION	0.00	27.38	0	00:59	0	1.17	0.000
JUNCT_309	JUNCTION	0.00	24.59	0	00:55	0	1.07	0.000
JUNCT_308	JUNCTION	0.00	12.62	0	00:54	0	0.635	0.000
JUNCT_307	JUNCTION	0.00	12.30	0	00:47	0	0.431	0.000
JUNCT_121	JUNCTION	12.62	12.62	0	00:54	0.635	0.635	0.000
JUNCT_120	JUNCTION	12.30	12.30	0	00:47	0.431	0.431	0.000
JUNCT_203	JUNCTION	19.17	19.17	0	00:41	0.61	0.61	0.000
JUNCT_500	JUNCTION	0.00	2.94	0	02:25	0	0.328	0.000
JUNCT_501	JUNCTION	0.00	3.71	0	00:46	0	0.453	0.000
JUNCT_204	JUNCTION	3.71	3.71	0	00:46	0.138	0.138	0.000
JUNCT_502	JUNCTION	0.00	10.45	0	01:07	0	0.848	0.000
JUNCT_205	JUNCTION	2.33	2.33	0	00:47	0.0855	0.0855	0.000
JUNCT_209	JUNCTION	2.61	2.61	0	00:59	0.175	0.175	0.000
JUNCT_207	JUNCTION	2.54	2.54	0	00:44	0.0718	0.0718	0.000
JUNCT_208	JUNCTION	1.78	1.78	0	00:42	0.0448	0.0448	0.000
JUNCT_503	JUNCTION	0.00	13.19	0	01:06	0	1.03	0.000
JUNCT_210	JUNCTION	2.77	2.77	0	00:58	0.187	0.187	0.000
JUNCT_504	JUNCTION	0.00	17.54	0	01:16	0	1.24	0.000
JUNCT_211	JUNCTION	5.73	5.73	0	00:39	0.193	0.193	0.000
JUNCT_505	JUNCTION	0.00	20.65	0	01:24	0	1.5	0.000
JUNCT_608	JUNCTION	0.00	26.03	0	01:27	0	1.85	0.000

JUNCT_607	JUNCTION	0.00	5.58	0	01:11	0	0.304	0.000
JUNCT_606	JUNCTION	0.00	3.85	0	00:45	0	0.124	0.000
JUNCT_200	JUNCTION	3.85	3.85	0	00:45	0.124	0.124	0.000
JUNCT_201	JUNCTION	2.70	2.70	0	00:55	0.169	0.169	0.000
JUNCT_202	JUNCTION	0.44	0.44	0	01:15	0.0405	0.0405	0.000
JUNCT_611	JUNCTION	0.00	34.15	0	01:24	0	2.29	0.000
JUNCT_214	JUNCTION	10.05	10.05	0	00:42	0.293	0.293	0.000
JUNCT_506	JUNCTION	0.00	5.04	0	00:45	0	0.134	-0.000
JUNCT_213	JUNCTION	5.04	5.04	0	00:45	0.134	0.134	0.000
JUNCT_509	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_219	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_612	JUNCTION	0.00	36.77	0	01:25	0	2.43	0.000
JUNCT_613	JUNCTION	0.00	37.26	0	01:29	0	2.47	0.000
JUNCT_215	JUNCTION	4.31	4.31	0	00:44	0.149	0.149	0.000
JUNCT_216	JUNCTION	2.05	2.05	0	00:39	0.0443	0.0443	0.000
JUNCT_217	JUNCTION	0.44	0.44	0	01:16	0.0426	0.0426	0.000
JUNCT_218	JUNCTION	0.47	0.47	0	01:23	0.0539	0.0539	0.000
JUNCT_122	JUNCTION	4.40	4.40	0	00:42	0.0949	0.0949	0.000
JUNCT_212	JUNCTION	2.87	2.87	0	00:50	0.12	0.12	0.000
JUNCT_206	JUNCTION	1.78	1.78	0	01:06	0.136	0.136	0.000
OUTFALL_614	OUTFALL	0.00	36.05	0	01:52	0	2.59	0.000
OUTFALL_319	OUTFALL	0.00	75.62	0	01:54	0	4.29	0.000
STOR_2003	STORAGE	0.00	19.17	0	00:41	0	0.61	0.058

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

Storage Unit	Average Volume 1000 ft ³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft ³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
STOR_2003	46.701	14	0	0	67.826	20	0 02:25	2.94

 Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10 ⁶ gal
OUTFALL_614	98.06	8.19	36.05	2.593
OUTFALL_319	97.78	13.57	75.62	4.286
System	97.92	21.75	111.65	6.880

 Link Flow Summary

Link	Type	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Veloc ft/sec	Max/ Full Flow	Max/ Full Depth
101	DUMMY	11.95	0 00:44			
100	CONDUIT	3.92	0 01:10	1.37	0.00	0.04
300	CONDUIT	11.78	0 01:10	2.10	0.01	0.07
102	DUMMY	5.01	0 00:49			

105	DUMMY	3.73	0	00:46			
106	DUMMY	3.60	0	00:52			
301	CONDUIT	15.93	0	01:09	2.31	0.01	0.08
302	CONDUIT	13.03	0	01:05	2.02	0.01	0.08
103	CONDUIT	4.37	0	00:59	1.55	0.00	0.04
104	CONDUIT	6.45	0	00:49	1.91	0.00	0.04
107	DUMMY	2.06	0	00:42			
303	CONDUIT	31.66	0	01:13	2.73	0.02	0.13
108	DUMMY	3.77	0	00:40			
304	CONDUIT	32.92	0	01:16	5.06	0.00	0.05
305	CONDUIT	31.06	0	01:37	2.15	0.01	0.10
109	DUMMY	11.68	0	00:45			
306	CONDUIT	34.56	0	01:46	2.46	0.01	0.10
318	CONDUIT	72.86	0	01:54	2.53	0.02	0.16
129	DUMMY	8.85	0	00:44			
317	CONDUIT	37.03	0	01:48	2.51	0.01	0.10
128	DUMMY	3.50	0	00:43			
316	CONDUIT	36.94	0	01:36	1.76	0.01	0.13
127	DUMMY	13.71	0	00:45			
126	DUMMY	3.20	0	00:43			
124	DUMMY	1.34	0	00:39			
314	CONDUIT	2.02	0	01:25	1.02	0.00	0.02
315	CONDUIT	0.82	0	01:15	0.58	0.00	0.02
313	CONDUIT	29.47	0	01:29	1.47	0.01	0.13
125	DUMMY	4.24	0	00:56			
312	CONDUIT	3.96	0	01:15	1.23	0.00	0.03
311	DUMMY	28.73	0	01:07			
123	DUMMY	2.74	0	00:45			
120	DUMMY	12.30	0	00:47			
121	DUMMY	12.62	0	00:54			
310	CONDUIT	26.76	0	01:07	2.19	0.01	0.09
309	CONDUIT	24.37	0	01:00	1.97	0.01	0.09
307	CONDUIT	12.16	0	00:53	1.45	0.00	0.06
308	CONDUIT	12.59	0	00:59	1.57	0.00	0.06
204	DUMMY	3.71	0	00:46			
500	CONDUIT	2.87	0	02:49	1.30	0.00	0.04

501	CONDUIT	3.54	0	02:51	1.44	0.00	0.04
205	DUMMY	2.33	0	00:47			
209	DUMMY	2.61	0	00:59			
207	CONDUIT	1.64	0	01:26	1.18	0.00	0.03
208	CONDUIT	1.30	0	01:09	1.09	0.00	0.02
502	CONDUIT	10.45	0	01:07	2.57	0.00	0.04
210	DUMMY	2.77	0	00:58			
503	CONDUIT	12.99	0	01:18	1.75	0.01	0.12
211	CONDUIT	4.75	0	01:05	0.39	0.03	0.18
504	CONDUIT	17.40	0	01:24	2.24	0.01	0.12
505	DUMMY	20.65	0	01:24			
200	DUMMY	3.85	0	00:45			
201	DUMMY	2.70	0	00:55			
202	DUMMY	0.44	0	01:15			
606	CONDUIT	3.02	0	01:14	1.31	0.00	0.04
607	CONDUIT	5.18	0	01:37	1.54	0.00	0.06
608	CONDUIT	25.99	0	01:32	3.59	0.01	0.11
219	DUMMY	0.00	0	00:00			
509	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
213	DUMMY	5.04	0	00:45			
510	CONDUIT	4.09	0	01:04	1.38	0.00	0.03
214	DUMMY	10.05	0	00:42			
611	CONDUIT	34.14	0	01:26	3.27	0.02	0.15
612	CONDUIT	36.66	0	01:30	2.39	0.04	0.20
613	CONDUIT	35.22	0	01:52	1.93	0.05	0.24
215	DUMMY	4.31	0	00:44			
216	DUMMY	2.05	0	00:39			
217	DUMMY	0.44	0	01:16			
218	DUMMY	0.47	0	01:23			
122	DUMMY	4.40	0	00:42			
212	DUMMY	2.87	0	00:50			
110	DUMMY	8.57	0	00:48			
206	CONDUIT	1.56	0	02:09	0.73	0.00	0.02
27	DUMMY	19.17	0	00:41			
OUTLET_2003	DUMMY	2.94	0	02:25			

Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Tue Jun 6 11:10:10 2023

Analysis ended on: Tue Jun 6 11:10:10 2023

Total elapsed time: < 1 sec

EXISTING CONDITION - 10-YR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.1)

Analysis Options

Flow Units CFS

Process Models:

Rainfall/Runoff NO
RDII NO
Snowmelt NO
Groundwater NO
Flow Routing YES
Ponding Allowed YES
Water Quality NO

Flow Routing Method KINWAVE

Starting Date 01/01/2005 00:00:00

Ending Date 01/01/2005 12:00:00

Antecedent Dry Days 0.0

Report Time Step 00:01:00

Routing Time Step 60.00 sec

Flow Routing Continuity

	Volume acre-feet	Volume 10 ⁶ gal
	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.000	0.000
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	57.447	18.720
External Outflow	58.217	18.971
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000

Final Stored Volume 1.370 0.446
 Continuity Error (%) -3.725

Highest Flow Instability Indexes

- Link 313 (1)
- Link 315 (1)
- Link 314 (1)
- Link 312 (1)
- Link 309 (1)

Routing Time Step Summary

Minimum Time Step : 60.00 sec
 Average Time Step : 60.00 sec
 Maximum Time Step : 60.00 sec
 % of Time in Steady State : 0.00
 Average Iterations per Step : 1.00
 % of Steps Not Converging : 0.00

Node Depth Summary

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
JUNCT_101	JUNCTION	0.00	0.00	5106.50	0 00:00	0.00
JUNCT_300	JUNCTION	0.10	0.73	5107.13	0 00:45	0.73
JUNCT_100	JUNCTION	0.05	0.29	5136.89	0 00:43	0.29
JUNCT_301	JUNCTION	0.14	0.80	5064.80	0 00:58	0.80
JUNCT_102	JUNCTION	0.00	0.00	5064.10	0 00:00	0.00

JUNCT_303	JUNCTION	0.21	1.21	5058.51	0	00:59	1.21
JUNCT_106	JUNCTION	0.00	0.00	5057.40	0	00:00	0.00
JUNCT_302	JUNCTION	0.10	0.70	5078.90	0	00:49	0.70
JUNCT_103	JUNCTION	0.04	0.35	5113.05	0	00:38	0.35
JUNCT_104	JUNCTION	0.03	0.37	5117.97	0	00:32	0.37
JUNCT_105	JUNCTION	0.00	0.00	5078.30	0	00:00	0.00
JUNCT_304	JUNCTION	0.21	1.21	5041.01	0	01:03	1.21
JUNCT_107	JUNCTION	0.00	0.00	5039.90	0	00:00	0.00
JUNCT_305	JUNCTION	0.18	0.96	5029.66	0	01:05	0.96
JUNCT_108	JUNCTION	0.00	0.00	5028.80	0	00:00	0.00
JUNCT_306	JUNCTION	0.21	0.92	4996.12	0	01:19	0.92
JUNCT_109	JUNCTION	0.00	0.00	4995.30	0	00:00	0.00
JUNCT_110	JUNCTION	0.00	0.00	5945.40	0	00:00	0.00
JUNCT_318	JUNCTION	0.37	1.47	4961.57	0	01:28	1.47
JUNCT_129	JUNCTION	0.00	0.00	4960.20	0	00:00	0.00
JUNCT_317	JUNCTION	0.28	1.16	5000.86	0	01:22	1.16
JUNCT_128	JUNCTION	0.00	0.00	4999.80	0	00:00	0.00
JUNCT_316	JUNCTION	0.28	1.16	5009.66	0	01:14	1.16
JUNCT_127	JUNCTION	0.00	0.00	5008.60	0	00:00	0.00
JUNCT_126	JUNCTION	0.00	0.00	5040.70	0	00:00	0.00
JUNCT_314	JUNCTION	0.04	0.30	5040.90	0	00:43	0.30
JUNCT_124	JUNCTION	0.00	0.00	5015.20	0	00:00	0.00
JUNCT_315	JUNCTION	0.02	0.23	5015.33	0	00:38	0.23
JUNCT_313	JUNCTION	0.23	1.10	5017.30	0	01:01	1.10
JUNCT_311	JUNCTION	0.14	0.69	5016.99	0	01:01	0.69
JUNCT_312	JUNCTION	0.06	0.32	5039.02	0	00:56	0.32
JUNCT_125	JUNCTION	0.00	0.00	5038.80	0	00:00	0.00
JUNCT_123	JUNCTION	0.00	0.00	5016.40	0	00:00	0.00
JUNCT_310	JUNCTION	0.14	0.70	5035.40	0	00:55	0.70
JUNCT_309	JUNCTION	0.13	0.67	5044.97	0	00:53	0.67
JUNCT_308	JUNCTION	0.10	0.46	5050.96	0	00:53	0.46
JUNCT_307	JUNCTION	0.08	0.52	5050.12	0	00:47	0.52
JUNCT_121	JUNCTION	0.00	0.00	5050.60	0	00:00	0.00
JUNCT_120	JUNCTION	0.00	0.00	5049.70	0	00:00	0.00
JUNCT_203	JUNCTION	0.00	0.00	5072.60	0	00:00	0.00
JUNCT_500	JUNCTION	0.16	0.34	5072.84	0	02:16	0.34
JUNCT_501	JUNCTION	0.20	0.42	5043.82	0	01:49	0.42
JUNCT_204	JUNCTION	0.00	0.00	5043.50	0	00:00	0.00
JUNCT_502	JUNCTION	0.20	0.42	5023.02	0	01:58	0.42

JUNCT_205	JUNCTION	0.00	0.00	5022.80	0	00:00	0.00
JUNCT_209	JUNCTION	0.00	0.00	5022.70	0	00:00	0.00
JUNCT_207	JUNCTION	0.05	0.41	5060.61	0	00:44	0.41
JUNCT_208	JUNCTION	0.04	0.31	5051.81	0	00:42	0.31
JUNCT_503	JUNCTION	0.35	1.04	5022.84	0	01:00	1.04
JUNCT_210	JUNCTION	0.00	0.00	5022.00	0	00:00	0.00
JUNCT_504	JUNCTION	0.37	1.22	5014.42	0	01:01	1.22
JUNCT_211	JUNCTION	0.19	1.33	5014.63	0	00:39	1.33
JUNCT_505	JUNCTION	0.33	1.01	5000.41	0	01:14	1.01
JUNCT_608	JUNCTION	0.30	0.96	5000.26	0	01:17	0.96
JUNCT_607	JUNCTION	0.12	0.55	5026.85	0	01:03	0.55
JUNCT_606	JUNCTION	0.07	0.49	5050.29	0	00:46	0.49
JUNCT_200	JUNCTION	0.00	0.00	5049.90	0	00:00	0.00
JUNCT_201	JUNCTION	0.00	0.00	5026.40	0	00:00	0.00
JUNCT_202	JUNCTION	0.00	0.00	4999.40	0	00:00	0.00
JUNCT_611	JUNCTION	0.39	1.30	4967.90	0	01:15	1.30
JUNCT_214	JUNCTION	0.00	0.00	4966.70	0	00:00	0.00
JUNCT_506	JUNCTION	0.04	0.32	5004.82	0	00:45	0.32
JUNCT_213	JUNCTION	0.00	0.00	5004.60	0	00:00	0.00
JUNCT_509	JUNCTION	0.00	0.00	5012.00	0	00:00	0.00
JUNCT_219	JUNCTION	0.00	0.00	5012.10	0	00:00	0.00
JUNCT_612	JUNCTION	0.52	1.72	4960.32	0	01:15	1.72
JUNCT_613	JUNCTION	0.63	2.06	4954.66	0	01:19	2.06
JUNCT_215	JUNCTION	0.00	0.00	4958.70	0	00:00	0.00
JUNCT_216	JUNCTION	0.00	0.00	4952.70	0	00:00	0.00
JUNCT_217	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_218	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_122	JUNCTION	0.00	0.00	5034.80	0	00:00	0.00
JUNCT_212	JUNCTION	0.00	0.00	4999.50	0	00:00	0.00
JUNCT_206	JUNCTION	0.05	0.15	5022.05	0	01:06	0.15
OUTFALL_614	OUTFALL	0.64	2.01	4945.01	0	01:36	2.01
OUTFALL_319	OUTFALL	0.37	1.47	4946.77	0	01:34	1.47
STOR_2003	STORAGE	2.25	3.48	5076.48	0	02:16	3.48

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10 ⁶ gal	Total Inflow Volume 10 ⁶ gal	Flow Balance Error Percent
JUNCT_101	JUNCTION	38.61	38.61	0 00:43	0.944	0.944	0.000
JUNCT_300	JUNCTION	0.00	42.64	0 00:45	0	1.28	0.000
JUNCT_100	JUNCTION	8.19	8.19	0 00:43	0.327	0.327	0.000
JUNCT_301	JUNCTION	0.00	52.07	0 00:58	0	1.91	0.000
JUNCT_102	JUNCTION	14.61	14.61	0 00:49	0.574	0.574	0.000
JUNCT_303	JUNCTION	0.00	98.88	0 00:59	0	3.55	0.000
JUNCT_106	JUNCTION	12.90	12.90	0 00:52	0.557	0.557	0.000
JUNCT_302	JUNCTION	0.00	35.96	0 00:49	0	1.07	0.000
JUNCT_103	JUNCTION	12.64	12.64	0 00:38	0.321	0.321	0.000
JUNCT_104	JUNCTION	14.77	14.77	0 00:32	0.272	0.272	0.000
JUNCT_105	JUNCTION	13.43	13.43	0 00:47	0.444	0.444	0.000
JUNCT_304	JUNCTION	0.00	102.20	0 01:03	0	3.73	0.000
JUNCT_107	JUNCTION	5.58	5.58	0 00:42	0.173	0.173	0.000
JUNCT_305	JUNCTION	0.00	108.55	0 01:05	0	3.99	0.000
JUNCT_108	JUNCTION	10.56	10.56	0 00:39	0.254	0.254	0.000
JUNCT_306	JUNCTION	0.00	120.57	0 01:19	0	5.07	0.000
JUNCT_109	JUNCTION	38.42	38.42	0 00:45	1.04	1.04	0.000
JUNCT_110	JUNCTION	30.17	30.17	0 00:48	0.951	0.951	0.000
JUNCT_318	JUNCTION	0.00	253.67	0 01:28	0	11.7	0.000
JUNCT_129	JUNCTION	31.39	31.39	0 00:43	0.779	0.779	0.000
JUNCT_317	JUNCTION	0.00	124.98	0 01:21	0	5.83	0.000
JUNCT_128	JUNCTION	12.40	12.40	0 00:42	0.329	0.329	0.000
JUNCT_316	JUNCTION	0.00	120.21	0 01:14	0	5.47	0.000
JUNCT_127	JUNCTION	47.83	47.83	0 00:44	1.18	1.18	0.000
JUNCT_126	JUNCTION	11.35	11.35	0 00:43	0.315	0.315	0.000
JUNCT_314	JUNCTION	0.00	11.35	0 00:43	0	0.315	0.000
JUNCT_124	JUNCTION	4.71	4.71	0 00:38	0.1	0.1	0.000
JUNCT_315	JUNCTION	0.00	4.71	0 00:38	0	0.1	0.000
JUNCT_313	JUNCTION	0.00	88.37	0 01:01	0	3.78	0.000
JUNCT_311	JUNCTION	0.00	73.72	0 01:00	0	3.04	0.000
JUNCT_312	JUNCTION	0.00	15.55	0 00:56	0	0.733	0.000
JUNCT_125	JUNCTION	15.55	15.55	0 00:56	0.733	0.733	0.000
JUNCT_123	JUNCTION	9.79	9.79	0 00:45	0.308	0.308	0.000

JUNCT_310	JUNCTION	0.00	66.63	0	00:55	0	2.72	0.000
JUNCT_309	JUNCTION	0.00	55.13	0	00:53	0	2.35	0.000
JUNCT_308	JUNCTION	0.00	25.83	0	00:53	0	1.29	0.000
JUNCT_307	JUNCTION	0.00	29.84	0	00:47	0	1.06	0.000
JUNCT_121	JUNCTION	25.83	25.83	0	00:53	1.29	1.29	0.000
JUNCT_120	JUNCTION	29.84	29.84	0	00:47	1.06	1.06	0.000
JUNCT_203	JUNCTION	34.75	34.75	0	00:40	1.09	1.09	0.000
JUNCT_500	JUNCTION	0.00	6.98	0	02:16	0	0.777	0.000
JUNCT_501	JUNCTION	0.00	10.50	0	01:49	0	1.15	0.000
JUNCT_204	JUNCTION	10.26	10.26	0	00:47	0.388	0.388	0.000
JUNCT_502	JUNCTION	0.00	32.90	0	01:00	0	2.26	0.000
JUNCT_205	JUNCTION	7.61	7.61	0	00:48	0.289	0.289	0.000
JUNCT_209	JUNCTION	4.93	4.93	0	00:57	0.328	0.328	0.000
JUNCT_207	JUNCTION	9.05	9.05	0	00:44	0.273	0.273	0.000
JUNCT_208	JUNCTION	6.29	6.29	0	00:42	0.171	0.171	-0.000
JUNCT_503	JUNCTION	0.00	37.75	0	01:00	0	2.58	0.000
JUNCT_210	JUNCTION	4.84	4.84	0	00:57	0.325	0.325	0.000
JUNCT_504	JUNCTION	0.00	45.50	0	01:08	0	2.93	0.000
JUNCT_211	JUNCTION	10.00	10.00	0	00:39	0.331	0.331	0.000
JUNCT_505	JUNCTION	0.00	54.30	0	01:14	0	3.56	0.000
JUNCT_608	JUNCTION	0.00	68.13	0	01:17	0	4.33	0.000
JUNCT_607	JUNCTION	0.00	14.77	0	01:03	0	0.698	0.000
JUNCT_606	JUNCTION	0.00	11.84	0	00:46	0	0.395	0.000
JUNCT_200	JUNCTION	11.84	11.84	0	00:46	0.395	0.395	0.000
JUNCT_201	JUNCTION	4.59	4.59	0	00:52	0.282	0.282	0.000
JUNCT_202	JUNCTION	0.66	0.66	0	01:18	0.0595	0.0595	0.000
JUNCT_611	JUNCTION	0.00	94.61	0	01:15	0	5.51	0.000
JUNCT_214	JUNCTION	22.61	22.61	0	00:41	0.662	0.662	0.000
JUNCT_506	JUNCTION	0.00	17.97	0	00:45	0	0.51	0.000
JUNCT_213	JUNCTION	17.97	17.97	0	00:45	0.51	0.51	0.000
JUNCT_509	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_219	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_612	JUNCTION	0.00	102.09	0	01:15	0	5.89	0.000
JUNCT_613	JUNCTION	0.00	104.59	0	01:19	0	6.03	0.000
JUNCT_215	JUNCTION	10.67	10.67	0	00:45	0.375	0.375	0.000
JUNCT_216	JUNCTION	6.34	6.34	0	00:38	0.144	0.144	0.000
JUNCT_217	JUNCTION	0.87	0.87	0	01:19	0.0837	0.0837	0.000
JUNCT_218	JUNCTION	0.89	0.89	0	01:24	0.102	0.102	0.000
JUNCT_122	JUNCTION	15.49	15.49	0	00:41	0.361	0.361	0.000

JUNCT_212	JUNCTION	9.03	9.03	0	00:50	0.388	0.388	0.000
JUNCT_206	JUNCTION	2.91	2.91	0	01:06	0.221	0.221	0.000
OUTFALL_614	OUTFALL	0.00	101.50	0	01:36	0	6.27	0.000
OUTFALL_319	OUTFALL	0.00	267.40	0	01:33	0	12.7	0.000
STOR_2003	STORAGE	0.00	34.75	0	00:40	0	1.09	0.123

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

Storage Unit	Average Volume 1000 ft ³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft ³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
STOR_2003	61.134	18	0	0	108.656	31	0 02:16	6.98

Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10 ⁶ gal
OUTFALL_614	98.19	19.77	101.50	6.272
OUTFALL_319	98.06	40.07	267.40	12.697
System	98.12	59.84	368.47	18.970

Link Flow Summary

Link	Type	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Veloc ft/sec	Max/ Full Flow	Max/ Full Depth
101	DUMMY	38.61	0 00:43			
100	CONDUIT	7.27	0 01:04	1.70	0.00	0.05
300	CONDUIT	38.44	0 01:00	3.14	0.02	0.14
102	DUMMY	14.61	0 00:49			
105	DUMMY	13.43	0 00:47			
106	DUMMY	12.90	0 00:52			
301	CONDUIT	52.02	0 01:00	3.44	0.03	0.16
302	CONDUIT	34.32	0 00:58	2.79	0.02	0.14
103	CONDUIT	11.08	0 00:53	2.17	0.01	0.06
104	CONDUIT	11.97	0 00:47	2.37	0.01	0.06
107	DUMMY	5.58	0 00:42			
303	CONDUIT	97.95	0 01:03	3.90	0.06	0.24
108	DUMMY	10.56	0 00:39			
304	CONDUIT	102.00	0 01:05	7.17	0.01	0.10
305	CONDUIT	99.24	0 01:21	2.94	0.02	0.18
109	DUMMY	38.42	0 00:45			
306	CONDUIT	118.29	0 01:28	3.47	0.02	0.18
318	CONDUIT	251.93	0 01:34	3.52	0.06	0.29
129	DUMMY	31.39	0 00:43			
317	CONDUIT	122.84	0 01:30	3.52	0.02	0.18
128	DUMMY	12.40	0 00:42			
316	CONDUIT	118.60	0 01:22	2.42	0.04	0.23
127	DUMMY	47.83	0 00:44			
126	DUMMY	11.35	0 00:43			
124	DUMMY	4.71	0 00:38			
314	CONDUIT	8.48	0 01:11	1.48	0.00	0.05
315	CONDUIT	3.46	0 01:01	0.84	0.00	0.04
313	CONDUIT	82.45	0 01:17	1.93	0.03	0.21

125	DUMMY	15.55	0	00:56			
312	CONDUIT	15.18	0	01:08	1.89	0.00	0.06
311	DUMMY	73.72	0	01:00			
123	DUMMY	9.79	0	00:45			
120	DUMMY	29.84	0	00:47			
121	DUMMY	25.83	0	00:53			
310	CONDUIT	65.72	0	01:01	2.83	0.01	0.14
309	CONDUIT	54.84	0	00:57	2.49	0.01	0.13
307	CONDUIT	29.71	0	00:51	1.90	0.01	0.10
308	CONDUIT	25.78	0	00:57	1.95	0.01	0.09
204	DUMMY	10.26	0	00:47			
500	CONDUIT	6.95	0	02:33	1.75	0.01	0.07
501	CONDUIT	10.47	0	01:58	2.09	0.01	0.08
205	DUMMY	7.61	0	00:48			
209	DUMMY	4.93	0	00:57			
207	CONDUIT	6.93	0	01:12	1.80	0.01	0.07
208	CONDUIT	5.37	0	00:59	1.78	0.00	0.06
502	CONDUIT	32.91	0	01:00	3.84	0.01	0.07
210	DUMMY	4.84	0	00:57			
503	CONDUIT	37.22	0	01:09	2.40	0.04	0.21
211	CONDUIT	8.52	0	01:01	0.45	0.05	0.24
504	CONDUIT	45.14	0	01:14	2.99	0.04	0.20
505	DUMMY	54.30	0	01:14			
200	DUMMY	11.84	0	00:46			
201	DUMMY	4.59	0	00:52			
202	DUMMY	0.66	0	01:18			
606	CONDUIT	10.29	0	01:04	1.94	0.01	0.09
607	CONDUIT	13.73	0	01:24	2.12	0.01	0.10
608	CONDUIT	68.05	0	01:20	4.82	0.03	0.19
219	DUMMY	0.00	0	00:00			
509	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
213	DUMMY	17.97	0	00:45			
510	CONDUIT	16.41	0	00:56	2.14	0.00	0.06
214	DUMMY	22.61	0	00:41			
611	CONDUIT	94.57	0	01:16	4.41	0.06	0.26
612	CONDUIT	101.84	0	01:19	3.19	0.10	0.34
613	CONDUIT	99.80	0	01:36	2.56	0.14	0.40
215	DUMMY	10.67	0	00:45			
216	DUMMY	6.34	0	00:38			

217	DUMMY	0.87	0	01:19			
218	DUMMY	0.89	0	01:24			
122	DUMMY	15.49	0	00:41			
212	DUMMY	9.03	0	00:50			
110	DUMMY	30.17	0	00:48			
206	CONDUIT	2.62	0	01:56	0.87	0.00	0.03
27	DUMMY	34.75	0	00:40			
OUTLET_2003	DUMMY	6.98	0	02:16			

 Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Tue Jun 6 11:08:56 2023
 Analysis ended on: Tue Jun 6 11:08:56 2023
 Total elapsed time: < 1 sec

EXISTING CONDITION - 100-YR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.1)

Analysis Options

Flow Units CFS

Process Models:

Rainfall/Runoff NO

RDII NO

Snowmelt NO

Groundwater NO

Flow Routing YES

Ponding Allowed YES

Water Quality NO

Flow Routing Method KINWAVE

Starting Date 01/01/2005 00:00:00

Ending Date 01/01/2005 12:00:00

Antecedent Dry Days 0.0

Report Time Step 00:01:00

Routing Time Step 60.00 sec

Flow Routing Continuity

	Volume acre-feet	Volume 10 ⁶ gal
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Dry Weather Inflow	0.000	0.000
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Wet Weather Inflow	0.000	0.000
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Groundwater Inflow	0.000	0.000
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RDII Inflow	0.000	0.000
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External Inflow	307.716	100.274
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External Outflow	310.723	101.254
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Flooding Loss	0.000	0.000
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Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	1.456	0.474
Continuity Error (%)	-1.450	

Highest Flow Instability Indexes

Link 313 (1)
 Link 312 (1)
 Link 309 (1)
 Link 510 (1)
 Link 206 (1)

Routing Time Step Summary

Minimum Time Step	:	60.00 sec
Average Time Step	:	60.00 sec
Maximum Time Step	:	60.00 sec
% of Time in Steady State	:	0.00
Average Iterations per Step	:	1.00
% of Steps Not Converging	:	0.00

Node Depth Summary

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
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JUNCT_101	JUNCTION	0.00	0.00	5106.50	0	00:00	0.00
JUNCT_300	JUNCTION	0.25	1.81	5108.21	0	00:50	1.81
JUNCT_100	JUNCTION	0.10	0.63	5137.23	0	00:50	0.63
JUNCT_301	JUNCTION	0.32	2.04	5066.04	0	00:59	2.04
JUNCT_102	JUNCTION	0.00	0.00	5064.10	0	00:00	0.00
JUNCT_303	JUNCTION	0.49	2.93	5060.23	0	00:59	2.93
JUNCT_106	JUNCTION	0.00	0.00	5057.40	0	00:00	0.00
JUNCT_302	JUNCTION	0.23	1.68	5079.88	0	00:52	1.68
JUNCT_103	JUNCTION	0.09	0.82	5113.52	0	00:44	0.82
JUNCT_104	JUNCTION	0.06	0.75	5118.35	0	00:37	0.75
JUNCT_105	JUNCTION	0.00	0.00	5078.30	0	00:00	0.00
JUNCT_304	JUNCTION	0.50	2.93	5042.73	0	01:02	2.93
JUNCT_107	JUNCTION	0.00	0.00	5039.90	0	00:00	0.00
JUNCT_305	JUNCTION	0.39	2.14	5030.84	0	01:03	2.14
JUNCT_108	JUNCTION	0.00	0.00	5028.80	0	00:00	0.00
JUNCT_306	JUNCTION	0.44	2.17	4997.37	0	01:11	2.17
JUNCT_109	JUNCTION	0.00	0.00	4995.30	0	00:00	0.00
JUNCT_110	JUNCTION	0.00	0.00	5945.40	0	00:00	0.00
JUNCT_318	JUNCTION	0.74	3.37	4963.47	0	01:17	3.37
JUNCT_129	JUNCTION	0.00	0.00	4960.20	0	00:00	0.00
JUNCT_317	JUNCTION	0.59	2.65	5002.35	0	01:15	2.65
JUNCT_128	JUNCTION	0.00	0.00	4999.80	0	00:00	0.00
JUNCT_316	JUNCTION	0.58	2.66	5011.16	0	01:10	2.66
JUNCT_127	JUNCTION	0.00	0.00	5008.60	0	00:00	0.00
JUNCT_126	JUNCTION	0.00	0.00	5040.70	0	00:00	0.00
JUNCT_314	JUNCTION	0.10	0.74	5041.34	0	00:49	0.74
JUNCT_124	JUNCTION	0.00	0.00	5015.20	0	00:00	0.00
JUNCT_315	JUNCTION	0.06	0.57	5015.67	0	00:43	0.57
JUNCT_313	JUNCTION	0.50	2.36	5018.56	0	01:05	2.36
JUNCT_311	JUNCTION	0.30	1.51	5017.81	0	01:03	1.51
JUNCT_312	JUNCTION	0.18	0.82	5039.52	0	01:08	0.82
JUNCT_125	JUNCTION	0.00	0.00	5038.80	0	00:00	0.00
JUNCT_123	JUNCTION	0.00	0.00	5016.40	0	00:00	0.00
JUNCT_310	JUNCTION	0.30	1.51	5036.21	0	00:59	1.51
JUNCT_309	JUNCTION	0.28	1.41	5045.71	0	00:59	1.41

JUNCT_308	JUNCTION	0.21	0.98	5051.48	0	01:03	0.98
JUNCT_307	JUNCTION	0.19	1.14	5050.74	0	00:54	1.14
JUNCT_121	JUNCTION	0.00	0.00	5050.60	0	00:00	0.00
JUNCT_120	JUNCTION	0.00	0.00	5049.70	0	00:00	0.00
JUNCT_203	JUNCTION	0.00	0.00	5072.60	0	00:00	0.00
JUNCT_500	JUNCTION	0.32	1.33	5073.83	0	01:24	1.33
JUNCT_501	JUNCTION	0.40	1.55	5044.95	0	01:25	1.55
JUNCT_204	JUNCTION	0.00	0.00	5043.50	0	00:00	0.00
JUNCT_502	JUNCTION	0.40	1.55	5024.15	0	01:30	1.55
JUNCT_205	JUNCTION	0.00	0.00	5022.80	0	00:00	0.00
JUNCT_209	JUNCTION	0.00	0.00	5022.70	0	00:00	0.00
JUNCT_207	JUNCTION	0.15	1.06	5061.26	0	00:51	1.06
JUNCT_208	JUNCTION	0.10	0.80	5052.30	0	00:48	0.80
JUNCT_503	JUNCTION	0.70	2.71	5024.51	0	01:20	2.71
JUNCT_210	JUNCTION	0.00	0.00	5022.00	0	00:00	0.00
JUNCT_504	JUNCTION	0.72	2.71	5015.91	0	01:24	2.71
JUNCT_211	JUNCTION	0.35	2.52	5015.82	0	00:46	2.52
JUNCT_505	JUNCTION	0.65	2.55	5001.95	0	01:26	2.55
JUNCT_608	JUNCTION	0.61	2.38	5001.68	0	01:23	2.38
JUNCT_607	JUNCTION	0.26	1.35	5027.65	0	01:04	1.35
JUNCT_606	JUNCTION	0.19	1.21	5051.01	0	00:53	1.21
JUNCT_200	JUNCTION	0.00	0.00	5049.90	0	00:00	0.00
JUNCT_201	JUNCTION	0.00	0.00	5026.40	0	00:00	0.00
JUNCT_202	JUNCTION	0.00	0.00	4999.40	0	00:00	0.00
JUNCT_611	JUNCTION	0.78	3.09	4969.69	0	01:19	3.09
JUNCT_214	JUNCTION	0.00	0.00	4966.70	0	00:00	0.00
JUNCT_506	JUNCTION	0.11	0.79	5005.29	0	00:50	0.79
JUNCT_213	JUNCTION	0.00	0.00	5004.60	0	00:00	0.00
JUNCT_509	JUNCTION	0.00	0.00	5012.00	0	00:00	0.00
JUNCT_219	JUNCTION	0.00	0.00	5012.10	0	00:00	0.00
JUNCT_612	JUNCTION	1.01	3.97	4962.57	0	01:18	3.97
JUNCT_613	JUNCTION	1.21	4.67	4957.27	0	01:19	4.67
JUNCT_215	JUNCTION	0.00	0.00	4958.70	0	00:00	0.00
JUNCT_216	JUNCTION	0.00	0.00	4952.70	0	00:00	0.00
JUNCT_217	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_218	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00

JUNCT_122	JUNCTION	0.00	0.00	5034.80	0	00:00	0.00
JUNCT_212	JUNCTION	0.00	0.00	4999.50	0	00:00	0.00
JUNCT_206	JUNCTION	0.09	0.31	5022.21	0	01:09	0.31
OUTFALL_614	OUTFALL	1.24	4.65	4947.65	0	01:30	4.65
OUTFALL_319	OUTFALL	0.75	3.36	4948.66	0	01:20	3.36
STOR_2003	STORAGE	2.83	6.01	5079.01	0	01:24	6.01

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
JUNCT_101	JUNCTION	202.43	202.43	0 00:48	5.66	5.66	0.000
JUNCT_300	JUNCTION	0.00	226.39	0 00:50	0	6.88	0.000
JUNCT_100	JUNCTION	31.49	31.49	0 00:50	1.2	1.2	0.000
JUNCT_301	JUNCTION	0.00	298.30	0 00:59	0	10.2	0.000
JUNCT_102	JUNCTION	77.60	77.60	0 00:57	3.21	3.21	0.000
JUNCT_303	JUNCTION	0.00	546.86	0 00:59	0	19.1	0.000
JUNCT_106	JUNCTION	75.65	75.65	0 01:03	3.47	3.47	0.000
JUNCT_302	JUNCTION	0.00	176.22	0 00:52	0	5.37	-0.000
JUNCT_103	JUNCTION	56.48	56.48	0 00:44	1.55	1.55	0.000
JUNCT_104	JUNCTION	51.38	51.38	0 00:37	0.978	0.978	0.000
JUNCT_105	JUNCTION	76.02	76.02	0 00:54	2.79	2.79	0.000
JUNCT_304	JUNCTION	0.00	571.28	0 01:02	0	20	0.000
JUNCT_107	JUNCTION	27.83	27.83	0 00:48	0.933	0.933	0.000
JUNCT_305	JUNCTION	0.00	614.47	0 01:03	0	21.4	0.000
JUNCT_108	JUNCTION	51.68	51.68	0 00:44	1.4	1.4	0.000
JUNCT_306	JUNCTION	0.00	764.62	0 01:11	0	27.8	0.000
JUNCT_109	JUNCTION	205.55	205.55	0 00:50	6.26	6.26	0.000
JUNCT_110	JUNCTION	168.77	168.77	0 00:54	5.9	5.9	0.000

JUNCT_318	JUNCTION	0.00	1664.65	0	01:17	0	64.7	0.000
JUNCT_129	JUNCTION	170.63	170.63	0	00:48	4.89	4.89	0.000
JUNCT_317	JUNCTION	0.00	793.00	0	01:14	0	31.9	0.000
JUNCT_128	JUNCTION	67.84	67.84	0	00:48	2.07	2.07	0.000
JUNCT_316	JUNCTION	0.00	743.99	0	01:10	0	29.8	0.000
JUNCT_127	JUNCTION	258.45	258.45	0	00:49	7.32	7.32	0.000
JUNCT_126	JUNCTION	62.51	62.51	0	00:49	1.98	1.98	0.000
JUNCT_314	JUNCTION	0.00	62.51	0	00:49	0	1.98	0.000
JUNCT_124	JUNCTION	24.83	24.83	0	00:43	0.63	0.63	0.000
JUNCT_315	JUNCTION	0.00	24.83	0	00:43	0	0.63	0.000
JUNCT_313	JUNCTION	0.00	467.15	0	01:05	0	19.6	0.000
JUNCT_311	JUNCTION	0.00	378.16	0	01:02	0	15	0.000
JUNCT_312	JUNCTION	0.00	93.77	0	01:08	0	4.6	0.000
JUNCT_125	JUNCTION	93.77	93.77	0	01:08	4.6	4.6	0.000
JUNCT_123	JUNCTION	54.96	54.96	0	00:52	1.93	1.93	0.000
JUNCT_310	JUNCTION	0.00	327.15	0	00:59	0	13	0.000
JUNCT_309	JUNCTION	0.00	254.19	0	00:59	0	10.7	0.000
JUNCT_308	JUNCTION	0.00	114.57	0	01:03	0	5.49	0.000
JUNCT_307	JUNCTION	0.00	142.69	0	00:54	0	5.24	0.000
JUNCT_121	JUNCTION	114.57	114.57	0	01:03	5.49	5.49	0.000
JUNCT_120	JUNCTION	142.69	142.69	0	00:54	5.24	5.24	0.000
JUNCT_203	JUNCTION	131.53	131.53	0	00:47	4.05	4.05	0.000
JUNCT_500	JUNCTION	0.00	82.12	0	01:24	0	3.72	0.000
JUNCT_501	JUNCTION	0.00	119.09	0	01:25	0	5.84	0.000
JUNCT_204	JUNCTION	52.89	52.89	0	00:54	2.11	2.11	0.000
JUNCT_502	JUNCTION	0.00	240.66	0	01:20	0	11.7	0.000
JUNCT_205	JUNCTION	42.17	42.17	0	00:55	1.73	1.73	0.000
JUNCT_209	JUNCTION	21.24	21.24	0	01:08	1.29	1.29	0.000
JUNCT_207	JUNCTION	50.46	50.46	0	00:51	1.72	1.72	0.000
JUNCT_208	JUNCTION	34.49	34.49	0	00:48	1.07	1.07	-0.000
JUNCT_503	JUNCTION	0.00	258.76	0	01:20	0	12.9	0.000
JUNCT_210	JUNCTION	19.38	19.38	0	01:08	1.17	1.17	0.000
JUNCT_504	JUNCTION	0.00	287.31	0	01:23	0	14.1	0.000
JUNCT_211	JUNCTION	36.68	36.68	0	00:46	1.17	1.17	0.000
JUNCT_505	JUNCTION	0.00	337.79	0	01:25	0	17.1	0.000
JUNCT_608	JUNCTION	0.00	414.94	0	01:23	0	20.6	0.000

JUNCT_607	JUNCTION	0.00	78.30	0	01:04	0	3.29	0.000
JUNCT_606	JUNCTION	0.00	63.15	0	00:53	0	2.29	0.000
JUNCT_200	JUNCTION	63.15	63.15	0	00:53	2.29	2.29	0.000
JUNCT_201	JUNCTION	17.54	17.54	0	01:04	0.958	0.958	0.000
JUNCT_202	JUNCTION	2.06	2.06	0	01:10	0.167	0.167	0.000
JUNCT_611	JUNCTION	0.00	559.56	0	01:19	0	27	0.000
JUNCT_214	JUNCTION	100.77	100.77	0	00:47	3.09	3.09	0.000
JUNCT_506	JUNCTION	0.00	99.56	0	00:50	0	3.21	0.000
JUNCT_213	JUNCTION	99.56	99.56	0	00:50	3.21	3.21	0.000
JUNCT_509	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_219	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_612	JUNCTION	0.00	600.04	0	01:18	0	28.9	0.000
JUNCT_613	JUNCTION	0.00	618.40	0	01:19	0	29.7	0.000
JUNCT_215	JUNCTION	51.50	51.50	0	00:52	1.89	1.89	0.000
JUNCT_216	JUNCTION	32.12	32.12	0	00:43	0.846	0.846	0.000
JUNCT_217	JUNCTION	3.83	3.83	0	01:12	0.345	0.345	0.000
JUNCT_218	JUNCTION	3.76	3.76	0	01:17	0.402	0.402	0.000
JUNCT_122	JUNCTION	83.09	83.09	0	00:46	2.27	2.27	0.000
JUNCT_212	JUNCTION	50.11	50.11	0	01:00	2.27	2.27	0.000
JUNCT_206	JUNCTION	10.88	10.88	0	01:09	0.72	0.72	0.000
OUTFALL_614	OUTFALL	0.00	620.05	0	01:29	0	30.6	0.000
OUTFALL_319	OUTFALL	0.00	1792.71	0	01:20	0	70.6	0.000
STOR_2003	STORAGE	0.00	131.53	0	00:47	0	4.05	0.028

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

Storage Unit	Average Volume 1000 ft ³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft ³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
STOR_2003	86.186	25	0	0	229.808	66	0 01:24	82.12

 Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10 ⁶ gal
OUTFALL_614	98.33	96.39	620.05	30.629
OUTFALL_319	98.19	222.56	1792.71	70.618
System	98.26	318.95	2393.97	101.246

 Link Flow Summary

Link	Type	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Veloc ft/sec	Max/ Full Flow	Max/ Full Depth
101	DUMMY	202.43	0 00:48			
100	CONDUIT	30.33	0 01:03	2.80	0.02	0.12
300	CONDUIT	220.86	0 00:59	5.23	0.12	0.36
102	DUMMY	77.60	0 00:57			

105	DUMMY	76.02	0	00:54			
106	DUMMY	75.65	0	01:03			
301	CONDUIT	298.21	0	01:00	5.80	0.16	0.41
302	CONDUIT	174.22	0	00:57	4.53	0.11	0.33
103	CONDUIT	54.83	0	00:54	3.64	0.03	0.16
104	CONDUIT	47.43	0	00:48	3.66	0.02	0.14
107	DUMMY	27.83	0	00:48			
303	CONDUIT	545.42	0	01:02	6.31	0.32	0.59
108	DUMMY	51.68	0	00:44			
304	CONDUIT	570.88	0	01:03	11.59	0.03	0.23
305	CONDUIT	595.64	0	01:13	4.63	0.13	0.42
109	DUMMY	205.55	0	00:50			
306	CONDUIT	758.03	0	01:16	5.60	0.14	0.43
318	CONDUIT	1659.64	0	01:20	5.68	0.38	0.67
129	DUMMY	170.63	0	00:48			
317	CONDUIT	787.59	0	01:20	5.68	0.14	0.44
128	DUMMY	67.84	0	00:48			
316	CONDUIT	740.46	0	01:15	3.86	0.22	0.53
127	DUMMY	258.45	0	00:49			
126	DUMMY	62.51	0	00:49			
124	DUMMY	24.83	0	00:43			
314	CONDUIT	56.83	0	01:12	2.53	0.01	0.14
315	CONDUIT	22.33	0	01:00	1.44	0.01	0.11
313	CONDUIT	460.97	0	01:15	3.00	0.17	0.47
125	DUMMY	93.77	0	01:08			
312	CONDUIT	93.47	0	01:13	3.19	0.02	0.16
311	DUMMY	378.16	0	01:02			
123	DUMMY	54.96	0	00:52			
120	DUMMY	142.69	0	00:54			
121	DUMMY	114.57	0	01:03			
310	CONDUIT	326.18	0	01:03	4.33	0.06	0.30
309	CONDUIT	253.83	0	01:02	3.75	0.05	0.28
307	CONDUIT	142.44	0	00:56	2.92	0.03	0.23
308	CONDUIT	114.50	0	01:05	2.97	0.02	0.20
204	DUMMY	52.89	0	00:54			
500	CONDUIT	81.42	0	01:33	3.78	0.06	0.26

501	CONDUIT	118.76	0	01:30	4.34	0.08	0.31
205	DUMMY	42.17	0	00:55			
209	DUMMY	21.24	0	01:08			
207	CONDUIT	46.76	0	01:13	3.22	0.04	0.20
208	CONDUIT	33.25	0	00:58	3.11	0.02	0.16
502	CONDUIT	240.65	0	01:20	7.17	0.04	0.22
210	DUMMY	19.38	0	01:08			
503	CONDUIT	258.03	0	01:24	4.07	0.26	0.54
211	CONDUIT	34.27	0	01:02	0.66	0.21	0.49
504	CONDUIT	286.76	0	01:26	4.96	0.23	0.51
505	DUMMY	337.79	0	01:25			
200	DUMMY	63.15	0	00:53			
201	DUMMY	17.54	0	01:04			
202	DUMMY	2.06	0	01:10			
606	CONDUIT	60.77	0	01:04	3.31	0.05	0.24
607	CONDUIT	76.65	0	01:18	3.54	0.06	0.27
608	CONDUIT	414.71	0	01:25	7.96	0.20	0.48
219	DUMMY	0.00	0	00:00			
509	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
213	DUMMY	99.56	0	00:50			
510	CONDUIT	97.41	0	00:58	3.53	0.02	0.16
214	DUMMY	100.77	0	00:47			
611	CONDUIT	559.50	0	01:20	7.12	0.34	0.62
612	CONDUIT	599.81	0	01:21	5.08	0.59	0.79
613	CONDUIT	612.70	0	01:30	4.05	0.85	0.93
215	DUMMY	51.50	0	00:52			
216	DUMMY	32.12	0	00:43			
217	DUMMY	3.83	0	01:12			
218	DUMMY	3.76	0	01:17			
122	DUMMY	83.09	0	00:46			
212	DUMMY	50.11	0	01:00			
110	DUMMY	168.77	0	00:54			
206	CONDUIT	9.95	0	01:35	1.34	0.00	0.06
27	DUMMY	131.53	0	00:47			
OUTLET_2003	DUMMY	82.12	0	01:24			

Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Tue Jun 6 11:08:04 2023






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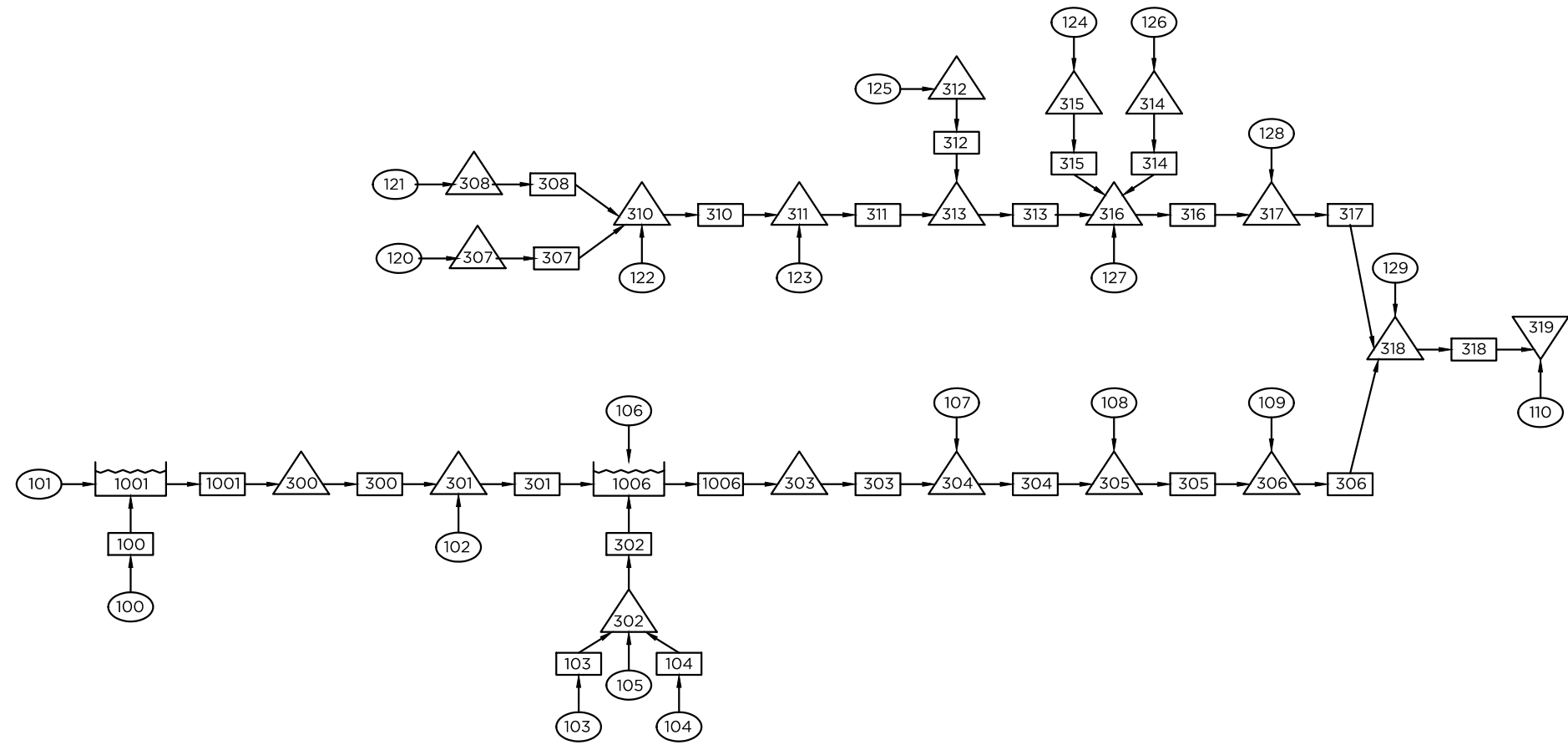
Total elapsed time: < 1 sec

APPENDIX E
PROPOSED CONDITION CUHP/SWMM MODEL

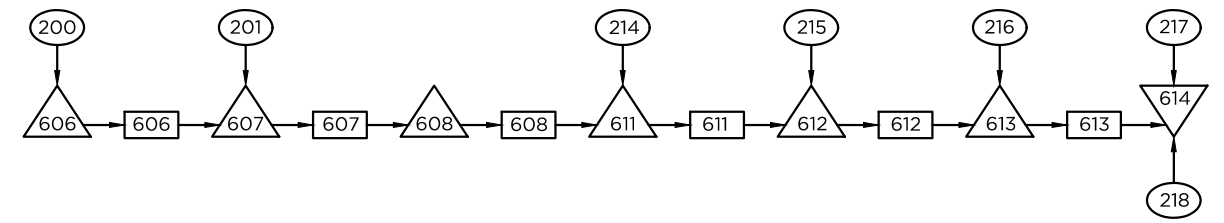
PROPOSED CONDITIONS MAP

LEGEND

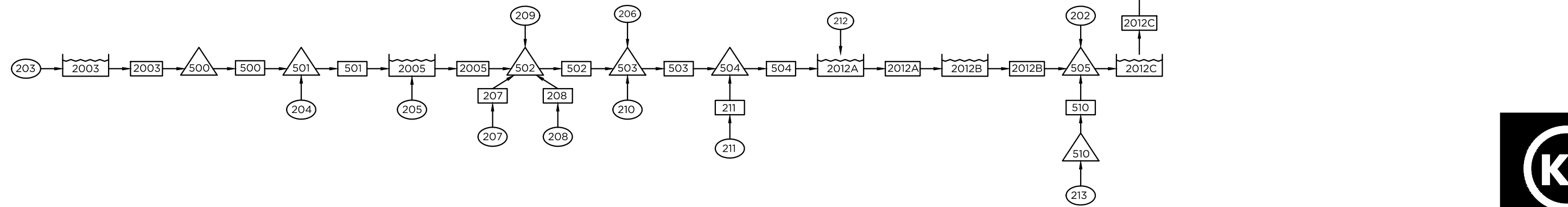
-  DESIGN POINT
-  SUBBASIN
-  DETENTION FACILITY
-  OUTFALL
-  CONVEYANCE ELEMENT



E. 168TH AVENUE - DRAINAGE #1



E. 168TH AVENUE - DRAINAGE #2



J:\0009\2017\CIVIL\RAINAGE\PHASE I\CAD FILES\OUTFALL PLAN-PROPOSED.DWG



KT ENGINEERING
 12500 W. 58th AVE, #230
 ARVADA, CO 80002
 PH: 720.638.5190

CUHP SUBCATCHMENTS

Columns with this color heading are for required user-input
 Columns with this color heading are for optional override values
 Columns with this color heading are for program-calculated values

Subcatchment Name	EPA SWMM Target Node	Raingage	Area (mi ²)	Length to Centroid (mi)	Length (mi)	Slope (ft/ft)	Percent Imperviousness	Maximum Depression Storage (Watershed inches)		Horton's Infiltration Parameters			DCIA Level 0, 1, or 2
								Pervious	Impervious	Initial Rate (in/hr)	Decay Coefficient (1/seconds)	Final Rate (in/hr)	
100	JUNCT_100	5-YR	0.0375	0.2119	0.4318	0.0237	23.9	0.38	0.1	3	0.0018	0.5	0
101	JUNCT_101	5-YR	0.2028	0.3134	0.5438	0.0247	42.25	0.38	0.1	3	0.0018	0.5	0
102	JUNCT_102	5-YR	0.1136	0.4163	0.6566	0.01933	51.12	0.38	0.1	3	0.0018	0.5	0
103	JUNCT_103	5-YR	0.0529	0.1572	0.2483	0.0191	10.89	0.38	0.1	3	0.0018	0.5	0
104	JUNCT_104	5-YR	0.0303	0.0701	0.1826	0.0456	35.57	0.38	0.1	3	0.0018	0.5	0
105	JUNCT_105	5-YR	0.1009	0.2858	0.5345	0.0145	40.45	0.38	0.1	3	0.0018	0.5	0
106	JUNCT_106	5-YR	0.1252	0.4591	0.8307	0.0173	49.6	0.38	0.1	3	0.0018	0.5	0
107	JUNCT_107	5-YR	0.0327	0.1241	0.2723	0.0111	6.73	0.38	0.1	3	0.0018	0.5	0
108	JUNCT_108	5-YR	0.0494	0.107	0.2693	0.0127	5.99	0.38	0.1	3	0.0018	0.5	0
109	JUNCT_109	5-YR	0.2248	0.2646	0.6299	0.0123	3.18	0.38	0.1	3	0.0018	0.5	0
110	JUNCT_110	5-YR	0.2131	0.2913	0.803	0.0116	2.33	0.38	0.1	3	0.0018	0.5	0
120	JUNCT_120	5-YR	0.18	0.3434	0.7458	0.0135	9.85	0.38	0.1	3	0.0018	0.5	0
121	JUNCT_121	5-YR	0.1803	0.5699	0.9413	0.0127	16.25	0.38	0.1	3	0.0018	0.5	0
122	JUNCT_122	5-YR	0.0821	0.1534	0.2905	0.0104	2	0.38	0.1	3	0.0018	0.5	0
123	JUNCT_123	5-YR	0.07	0.208	0.3845	0.0103	2	0.38	0.1	3	0.0018	0.5	0
124	JUNCT_124	5-YR	0.0228	0.0672	0.1769	0.0139	2	0.38	0.1	3	0.0018	0.5	0
125	JUNCT_125	5-YR	0.1665	0.4428	0.9917	0.0088	2	0.38	0.1	3	0.0018	0.5	0
126	JUNCT_126	5-YR	0.0715	0.1708	0.3163	0.0084	2	0.38	0.1	3	0.0018	0.5	0
127	JUNCT_127	5-YR	0.2645	0.2506	0.6981	0.0165	2.25	0.38	0.1	3	0.0018	0.5	0
128	JUNCT_128	5-YR	0.0748	0.1648	0.4085	0.0148	2	0.38	0.1	3	0.0018	0.5	0
129	JUNCT_129	5-YR	0.177	0.2455	0.5813	0.0173	2	0.38	0.1	3	0.0018	0.5	0
200	JUNCT_200	5-YR	0.0816	0.2051	0.5246	0.0119	4.37	0.38	0.1	3	0.0018	0.5	0
201	JUNCT_201	5-YR	0.029	0.31075	0.5782159	0.0128	28.83	0.38	0.1	3	0.0018	0.5	0
202	JUNCT_202	5-YR	0.0046	0.2797	0.5233	0.008	44.36	0.38	0.1	3	0.0018	0.5	0
203	JUNCT_203	5-YR	0.127	0.293140152	0.5782254	0.0272	23.32	0.38	0.1	3	0.0018	0.5	0
204	JUNCT_204	5-YR	0.074	0.2692	0.5601	0.0169	24.47	0.38	0.1	3	0.0018	0.5	0
205	JUNCT_205	5-YR	0.062	0.2464	0.4621	0.0114	3.45	0.38	0.1	3	0.0018	0.5	0
206	JUNCT_206	5-YR	0.0214	0.4103	0.6914	0.0137	37.15	0.38	0.1	3	0.0018	0.5	0
207	JUNCT_207	5-YR	0.0621	0.183	0.3847	0.0123	2	0.38	0.1	3	0.0018	0.5	0
208	JUNCT_208	5-YR	0.0388	0.10868	0.23969	0.0071	2	0.38	0.1	3	0.0018	0.5	0
209	JUNCT_209	5-YR	0.0412	0.3381	0.6977	0.0106	20.21	0.38	0.1	3	0.0018	0.5	0
210	JUNCT_210	5-YR	0.0361	0.4097	0.7119	0.0186	25.32	0.38	0.1	3	0.0018	0.5	0
211	JUNCT_211	5-YR	0.036	0.1785	0.296	0.0221	26.28	0.38	0.1	3	0.0018	0.5	0
212	JUNCT_212	5-YR	0.0808	0.280333333	0.5628106	0.0077	13.38	0.38	0.1	3	0.0018	0.5	0
213	JUNCT_213	5-YR	0.116	0.203833333	0.5581742	0.0129	46.75	0.38	0.1	3	0.0018	0.5	0
214	JUNCT_214	5-YR	0.1045	0.304159091	0.3573902	0.0201	12.2	0.38	0.1	3	0.0018	0.5	0
215	JUNCT_215	5-YR	0.0653	0.200164773	0.3851307	0.0089	9.19	0.38	0.1	3	0.0018	0.5	0
216	JUNCT_216	5-YR	0.0302	0.0564	0.1816	0.0049	4.01	0.38	0.1	3	0.0018	0.5	0
217	JUNCT_217	5-YR	0.0112	0.1634	0.459	0.0019	17.82	0.38	0.1	3	0.0018	0.5	0
218	JUNCT_218	5-YR	0.0129	0.2218	0.5591	0.0017	19.86	0.38	0.1	3	0.0018	0.5	0

PROPOSED CONDITION - 5-YR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.1)

Analysis Options

Flow Units CFS

Process Models:

Rainfall/Runoff NO

RDII NO

Snowmelt NO

Groundwater NO

Flow Routing YES

Ponding Allowed YES

Water Quality NO

Flow Routing Method KINWAVE

Starting Date 01/01/2005 00:00:00

Ending Date 01/01/2005 12:00:00

Antecedent Dry Days 0.0

Report Time Step 00:01:00

Routing Time Step 60.00 sec

Flow Routing Continuity

	Volume acre-feet	Volume 10 ⁶ gal
	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.000	0.000
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	38.079	12.409
External Outflow	15.618	5.089
Flooding Loss	0.000	0.000

Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	23.404	7.627
Continuity Error (%)	-2.476	

Highest Flow Instability Indexes

- Link 317 (1)
- Link 313 (1)
- Link 309 (1)
- Link 308 (1)

Routing Time Step Summary

Minimum Time Step	:	60.00 sec
Average Time Step	:	60.00 sec
Maximum Time Step	:	60.00 sec
% of Time in Steady State	:	0.00
Average Iterations per Step	:	1.00
% of Steps Not Converging	:	0.00

Node Depth Summary

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet

JUNCT_101	JUNCTION	0.00	0.00	5106.50	0	00:00	0.00
JUNCT_100	JUNCTION	0.10	0.52	5137.12	0	00:43	0.52
JUNCT_301	JUNCTION	0.21	0.85	5064.85	0	00:38	0.85
JUNCT_102	JUNCTION	0.00	0.00	5064.10	0	00:00	0.00
JUNCT_106	JUNCTION	0.00	0.00	5061.10	0	00:00	0.00
JUNCT_302	JUNCTION	0.18	1.37	5079.57	0	00:38	1.37
JUNCT_103	JUNCTION	0.06	0.51	5113.21	0	00:39	0.51
JUNCT_104	JUNCTION	0.07	0.76	5118.36	0	00:32	0.76
JUNCT_105	JUNCTION	0.00	0.00	5078.30	0	00:00	0.00
JUNCT_304	JUNCTION	0.14	0.15	5039.95	0	03:38	0.15
JUNCT_107	JUNCTION	0.00	0.00	5039.90	0	00:00	0.00
JUNCT_305	JUNCTION	0.13	0.20	5028.90	0	00:47	0.20
JUNCT_108	JUNCTION	0.00	0.00	5028.80	0	00:00	0.00
JUNCT_306	JUNCTION	0.14	0.28	4995.48	0	00:50	0.28
JUNCT_109	JUNCTION	0.00	0.00	4995.30	0	00:00	0.00
JUNCT_110	JUNCTION	0.00	0.00	5945.40	0	00:00	0.00
JUNCT_318	JUNCTION	0.25	0.66	4960.76	0	01:45	0.66
JUNCT_129	JUNCTION	0.00	0.00	4960.20	0	00:00	0.00
JUNCT_317	JUNCTION	0.18	0.66	5000.36	0	01:36	0.66
JUNCT_128	JUNCTION	0.00	0.00	4999.80	0	00:00	0.00
JUNCT_127	JUNCTION	0.00	0.00	5008.60	0	00:00	0.00
JUNCT_126	JUNCTION	0.00	0.00	5040.70	0	00:00	0.00
JUNCT_314	JUNCTION	0.02	0.14	5040.74	0	00:43	0.14
JUNCT_124	JUNCTION	0.00	0.00	5015.20	0	00:00	0.00
JUNCT_315	JUNCTION	0.01	0.11	5015.21	0	00:39	0.11
JUNCT_313	JUNCTION	0.14	0.66	5016.86	0	01:08	0.66
JUNCT_311	JUNCTION	0.09	0.43	5016.73	0	01:07	0.43
JUNCT_312	JUNCTION	0.03	0.15	5038.85	0	00:56	0.15
JUNCT_125	JUNCTION	0.00	0.00	5038.80	0	00:00	0.00
JUNCT_123	JUNCTION	0.00	0.00	5016.40	0	00:00	0.00
JUNCT_309	JUNCTION	0.09	0.44	5044.74	0	00:55	0.44
JUNCT_308	JUNCTION	0.07	0.31	5050.81	0	00:54	0.31
JUNCT_307	JUNCTION	0.05	0.32	5049.92	0	00:47	0.32
JUNCT_121	JUNCTION	0.00	0.00	5050.60	0	00:00	0.00
JUNCT_120	JUNCTION	0.00	0.00	5049.70	0	00:00	0.00
JUNCT_203	JUNCTION	0.00	0.00	5072.60	0	00:00	0.00

JUNCT_500	JUNCTION	0.10	0.21	5072.71	0	02:25	0.21
JUNCT_501	JUNCTION	0.14	0.36	5043.76	0	00:44	0.36
JUNCT_204	JUNCTION	0.00	0.00	5043.50	0	00:00	0.00
JUNCT_502	JUNCTION	0.07	0.15	5022.75	0	01:26	0.15
JUNCT_205	JUNCTION	0.00	0.00	5022.80	0	00:00	0.00
JUNCT_209	JUNCTION	0.00	0.00	5022.70	0	00:00	0.00
JUNCT_207	JUNCTION	0.02	0.20	5060.40	0	00:44	0.20
JUNCT_208	JUNCTION	0.02	0.15	5051.65	0	00:42	0.15
JUNCT_503	JUNCTION	0.19	0.40	5022.20	0	01:12	0.40
JUNCT_210	JUNCTION	0.00	0.00	5022.00	0	00:00	0.00
JUNCT_504	JUNCTION	0.30	0.90	5014.10	0	01:05	0.90
JUNCT_211	JUNCTION	0.14	0.99	5014.29	0	00:39	0.99
JUNCT_508	JUNCTION	0.27	0.29	4995.09	0	02:42	0.29
JUNCT_201	JUNCTION	0.00	0.00	5026.40	0	00:00	0.00
JUNCT_202	JUNCTION	0.00	0.00	4999.40	0	00:00	0.00
JUNCT_511	JUNCTION	0.30	0.32	4966.92	0	02:45	0.32
JUNCT_506	JUNCTION	0.06	0.52	5005.02	0	00:35	0.52
JUNCT_213	JUNCTION	0.00	0.00	5004.60	0	00:00	0.00
JUNCT_509	JUNCTION	0.00	0.00	5012.00	0	00:00	0.00
JUNCT_219	JUNCTION	0.00	0.00	5012.10	0	00:00	0.00
JUNCT_512	JUNCTION	0.35	0.38	4958.98	0	02:46	0.38
JUNCT_513	JUNCTION	0.40	0.43	4952.83	0	02:50	0.43
JUNCT_217	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_218	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_122	JUNCTION	0.00	0.00	5035.10	0	00:00	0.00
JUNCT_212	JUNCTION	0.00	0.00	4999.50	0	00:00	0.00
JUNCT_206	JUNCTION	0.00	0.00	5021.90	0	00:00	0.00
JUNCT_300	JUNCTION	0.10	0.11	5103.91	0	02:49	0.11
JUNCT_303	JUNCTION	0.14	0.15	5057.45	0	03:23	0.15
JUNCT_200	JUNCTION	0.00	0.00	5051.10	0	00:00	0.00
JUNCT_214	JUNCTION	0.00	0.00	4966.70	0	00:00	0.00
JUNCT_215	JUNCTION	0.00	0.00	4959.10	0	00:00	0.00
JUNCT_216	JUNCTION	0.00	0.00	4952.70	0	00:00	0.00
JUNCT_310	JUNCTION	0.09	0.44	5035.34	0	01:00	0.44
JUNCT_316	JUNCTION	0.17	0.67	5008.57	0	01:24	0.67
JUNCT_505	JUNCTION	0.06	0.52	4998.42	0	00:37	0.52

JUNCT_613	JUNCTION	0.19	0.77	4953.17	0	00:52	0.77
JUNCT_612	JUNCTION	0.15	0.61	4959.21	0	00:44	0.61
JUNCT_611	JUNCTION	0.10	0.38	4966.98	0	00:42	0.38
JUNCT_608	JUNCTION	0.08	0.29	4995.09	0	01:35	0.29
JUNCT_607	JUNCTION	0.07	0.30	5026.60	0	01:11	0.30
JUNCT_606	JUNCTION	0.04	0.26	5050.06	0	00:45	0.26
OUTFALL_514	OUTFALL	0.39	0.43	4943.43	0	03:06	0.43
OUTFALL_319	OUTFALL	0.24	0.65	4945.95	0	01:53	0.65
OUTFALL_614	OUTFALL	0.21	0.70	4943.70	0	01:48	0.70
STOR_1001	STORAGE	3.89	4.24	5108.24	0	02:49	4.24
STOR_1006	STORAGE	4.46	4.81	5065.81	0	03:23	4.81
STOR_2012B	STORAGE	1.38	2.02	5000.02	0	12:00	2.02
STOR_2003	STORAGE	1.87	2.47	5075.47	0	02:25	2.47
STOR_2005	STORAGE	3.12	3.51	5030.21	0	04:29	3.51
STOR_2012C	STORAGE	2.83	3.11	4998.11	0	02:42	3.11
STOR_2012A	STORAGE	2.74	3.12	5009.12	0	08:24	3.12

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
JUNCT_101	JUNCTION	75.89	75.89	0 00:35	1.7	1.7	0.000
JUNCT_100	JUNCTION	4.56	4.56	0 00:43	0.184	0.184	0.000
JUNCT_301	JUNCTION	0.00	38.63	0 00:38	0	1.56	0.000
JUNCT_102	JUNCTION	38.62	38.62	0 00:38	1.14	1.14	0.000
JUNCT_106	JUNCTION	36.76	36.76	0 00:40	1.23	1.23	0.000
JUNCT_302	JUNCTION	0.00	43.71	0 00:38	0	1.16	0.000
JUNCT_103	JUNCTION	5.41	5.41	0 00:39	0.136	0.136	0.000
JUNCT_104	JUNCTION	12.56	12.56	0 00:32	0.215	0.215	0.000

JUNCT_105	JUNCTION	27.31	27.31	0	00:38	0.813	0.813	0.000
JUNCT_304	JUNCTION	0.00	3.29	0	01:24	0	0.836	0.000
JUNCT_107	JUNCTION	2.06	2.06	0	00:42	0.0619	0.0619	0.000
JUNCT_305	JUNCTION	0.00	5.55	0	00:47	0	0.913	0.000
JUNCT_108	JUNCTION	3.77	3.77	0	00:40	0.0878	0.0878	0.000
JUNCT_306	JUNCTION	0.00	12.31	0	00:50	0	1.17	0.000
JUNCT_109	JUNCTION	11.68	11.68	0	00:45	0.301	0.301	0.000
JUNCT_110	JUNCTION	8.57	8.57	0	00:48	0.257	0.257	0.000
JUNCT_318	JUNCTION	0.00	48.69	0	01:45	0	3.4	0.000
JUNCT_129	JUNCTION	8.85	8.85	0	00:44	0.205	0.205	0.000
JUNCT_317	JUNCTION	0.00	38.27	0	01:35	0	2.04	0.000
JUNCT_128	JUNCTION	3.50	3.50	0	00:43	0.0864	0.0864	0.000
JUNCT_127	JUNCTION	13.71	13.71	0	00:45	0.316	0.316	0.000
JUNCT_126	JUNCTION	3.20	3.20	0	00:43	0.0826	0.0826	0.000
JUNCT_314	JUNCTION	0.00	3.20	0	00:43	0	0.0826	0.000
JUNCT_124	JUNCTION	1.34	1.34	0	00:39	0.0263	0.0263	0.000
JUNCT_315	JUNCTION	0.00	1.34	0	00:39	0	0.0263	0.000
JUNCT_313	JUNCTION	0.00	32.51	0	01:08	0	1.45	0.000
JUNCT_311	JUNCTION	0.00	28.73	0	01:07	0	1.26	0.000
JUNCT_312	JUNCTION	0.00	4.24	0	00:56	0	0.192	0.000
JUNCT_125	JUNCTION	4.24	4.24	0	00:56	0.192	0.192	0.000
JUNCT_123	JUNCTION	2.74	2.74	0	00:45	0.0809	0.0809	0.000
JUNCT_309	JUNCTION	0.00	24.59	0	00:55	0	1.07	0.000
JUNCT_308	JUNCTION	0.00	12.62	0	00:54	0	0.635	0.000
JUNCT_307	JUNCTION	0.00	12.30	0	00:47	0	0.431	0.000
JUNCT_121	JUNCTION	12.62	12.62	0	00:54	0.635	0.635	0.000
JUNCT_120	JUNCTION	12.30	12.30	0	00:47	0.431	0.431	0.000
JUNCT_203	JUNCTION	19.17	19.17	0	00:41	0.61	0.61	0.000
JUNCT_500	JUNCTION	0.00	2.94	0	02:25	0	0.328	0.000
JUNCT_501	JUNCTION	0.00	9.14	0	00:44	0	0.687	0.000
JUNCT_204	JUNCTION	9.14	9.14	0	00:44	0.371	0.371	0.000
JUNCT_502	JUNCTION	0.00	5.67	0	01:15	0	0.733	0.000
JUNCT_205	JUNCTION	2.33	2.33	0	00:47	0.0855	0.0855	0.000
JUNCT_209	JUNCTION	2.61	2.61	0	00:59	0.175	0.175	0.000
JUNCT_207	JUNCTION	2.54	2.54	0	00:44	0.0718	0.0718	0.000
JUNCT_208	JUNCTION	1.78	1.78	0	00:42	0.0448	0.0448	0.000

JUNCT_503	JUNCTION	0.00	10.58	0	01:12	0	1.08	0.000
JUNCT_210	JUNCTION	2.77	2.77	0	00:58	0.187	0.187	0.000
JUNCT_504	JUNCTION	0.00	15.21	0	01:11	0	1.28	0.000
JUNCT_211	JUNCTION	5.73	5.73	0	00:39	0.193	0.193	0.000
JUNCT_508	JUNCTION	0.00	1.82	0	02:42	0	0.525	0.000
JUNCT_201	JUNCTION	2.70	2.70	0	00:55	0.169	0.169	0.000
JUNCT_202	JUNCTION	0.44	0.44	0	01:15	0.0405	0.0405	0.000
JUNCT_511	JUNCTION	0.00	1.82	0	02:45	0	0.522	0.000
JUNCT_506	JUNCTION	0.00	43.79	0	00:35	0	1.07	-0.000
JUNCT_213	JUNCTION	43.79	43.79	0	00:35	1.07	1.07	0.000
JUNCT_509	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_219	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_512	JUNCTION	0.00	1.82	0	02:46	0	0.521	0.000
JUNCT_513	JUNCTION	0.00	1.82	0	02:50	0	0.517	0.000
JUNCT_217	JUNCTION	0.44	0.44	0	01:16	0.0426	0.0426	0.000
JUNCT_218	JUNCTION	0.47	0.47	0	01:23	0.0539	0.0539	0.000
JUNCT_122	JUNCTION	4.40	4.40	0	00:42	0.0949	0.0949	0.000
JUNCT_212	JUNCTION	5.30	5.30	0	00:49	0.243	0.243	0.000
JUNCT_206	JUNCTION	2.28	2.28	0	00:59	0.158	0.158	0.000
JUNCT_300	JUNCTION	0.00	1.51	0	02:49	0	0.45	0.000
JUNCT_303	JUNCTION	0.00	2.66	0	03:23	0	0.797	0.000
JUNCT_200	JUNCTION	3.85	3.85	0	00:45	0.124	0.124	0.000
JUNCT_214	JUNCTION	10.05	10.05	0	00:42	0.293	0.293	0.000
JUNCT_215	JUNCTION	4.31	4.31	0	00:44	0.149	0.149	0.000
JUNCT_216	JUNCTION	2.05	2.05	0	00:39	0.0443	0.0443	0.000
JUNCT_310	JUNCTION	0.00	27.37	0	00:59	0	1.17	0.000
JUNCT_316	JUNCTION	0.00	38.03	0	01:24	0	1.94	0.000
JUNCT_505	JUNCTION	0.00	44.06	0	00:37	0	1.3	0.000
JUNCT_613	JUNCTION	0.00	15.35	0	00:52	0	0.804	0.000
JUNCT_612	JUNCTION	0.00	14.31	0	00:44	0	0.756	0.000
JUNCT_611	JUNCTION	0.00	10.05	0	00:42	0	0.606	0.000
JUNCT_608	JUNCTION	0.00	5.22	0	01:35	0	0.313	0.000
JUNCT_607	JUNCTION	0.00	5.58	0	01:11	0	0.304	0.000
JUNCT_606	JUNCTION	0.00	3.85	0	00:45	0	0.124	0.000
OUTFALL_514	OUTFALL	0.00	1.82	0	03:06	0	0.504	0.000
OUTFALL_319	OUTFALL	0.00	51.09	0	01:51	0	3.64	0.000

OUTFALL_614	OUTFALL	0.00	13.58	0	01:48	0	0.948	0.000
STOR_1001	STORAGE	0.00	78.86	0	00:36	0	1.89	0.000
STOR_1006	STORAGE	0.00	118.44	0	00:41	0	3.94	-0.000
STOR_2012B	STORAGE	0.00	1.52	0	08:24	0	0.425	-0.047
STOR_2003	STORAGE	0.00	19.17	0	00:41	0	0.61	0.058
STOR_2005	STORAGE	0.00	11.31	0	00:50	0	0.769	-0.014
STOR_2012C	STORAGE	0.00	44.06	0	00:37	0	1.3	-0.000
STOR_2012A	STORAGE	0.00	19.28	0	01:19	0	1.51	-0.005

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

Storage Unit	Average Volume 1000 ft ³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft ³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
STOR_1001	201.404	11	0	0	238.482	13	0 02:49	1.51
STOR_1006	398.143	11	0	0	455.772	13	0 03:23	2.66
STOR_2012B	15.394	1	0	0	31.547	2	0 12:00	0.89
STOR_2003	46.701	14	0	0	67.826	20	0 02:25	2.94
STOR_2005	50.593	18	0	0	65.931	24	0 04:29	1.83
STOR_2012C	110.639	7	0	0	134.382	8	0 02:42	1.82
STOR_2012A	119.792	8	0	0	148.138	10	0 08:24	1.52

Outfall Loading Summary

Outfall Node	Flow Freq Pcmt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
OUTFALL_514	94.44	1.65	1.82	0.504
OUTFALL_319	97.78	11.51	51.09	3.636
OUTFALL_614	98.06	2.99	13.58	0.948
System	96.76	16.16	66.29	5.089

 Link Flow Summary

Link	Type	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Veloc ft/sec	Max/ Full Flow	Max/ Full Depth
101	DUMMY	75.89	0 00:35			
100	CONDUIT	4.51	0 00:48	6.23	0.09	0.21
102	DUMMY	38.62	0 00:38			
105	DUMMY	27.31	0 00:38			
106	DUMMY	36.76	0 00:40			
301	CONDUIT	38.46	0 00:40	2.38	0.03	0.17
302	CONDUIT	43.28	0 00:41	9.51	0.13	0.25
103	CONDUIT	5.31	0 00:44	6.79	0.06	0.17
104	CONDUIT	12.05	0 00:36	9.05	0.13	0.25
107	DUMMY	2.06	0 00:42			
108	DUMMY	3.77	0 00:40			
304	CONDUIT	3.28	0 01:30	2.26	0.00	0.01

305	CONDUIT	4.72	0	01:34	1.17	0.00	0.04
109	DUMMY	11.68	0	00:45			
306	CONDUIT	11.29	0	01:13	1.73	0.00	0.05
318	CONDUIT	48.21	0	01:53	2.25	0.01	0.13
129	DUMMY	8.85	0	00:44			
317	CONDUIT	37.14	0	01:48	2.51	0.01	0.10
128	DUMMY	3.50	0	00:43			
316	CONDUIT	37.06	0	01:36	1.72	0.01	0.13
127	DUMMY	13.71	0	00:45			
126	DUMMY	3.20	0	00:43			
124	DUMMY	1.34	0	00:39			
314	CONDUIT	2.02	0	01:25	1.02	0.00	0.02
315	CONDUIT	0.83	0	01:14	0.59	0.00	0.02
313	CONDUIT	29.59	0	01:28	1.51	0.01	0.12
125	DUMMY	4.24	0	00:56			
312	CONDUIT	3.96	0	01:15	1.23	0.00	0.03
311	DUMMY	28.73	0	01:07			
123	DUMMY	2.74	0	00:45			
120	DUMMY	12.30	0	00:47			
121	DUMMY	12.62	0	00:54			
309	CONDUIT	24.37	0	01:00	1.95	0.01	0.09
307	CONDUIT	12.16	0	00:53	1.45	0.00	0.06
308	CONDUIT	12.59	0	00:59	1.57	0.00	0.06
203	DUMMY	19.17	0	00:41			
204	DUMMY	9.14	0	00:44			
500	CONDUIT	2.87	0	02:49	1.30	0.00	0.04
501	CONDUIT	9.00	0	00:51	2.15	0.01	0.07
205	DUMMY	2.33	0	00:47			
209	DUMMY	2.61	0	00:59			
207	CONDUIT	1.64	0	01:26	1.18	0.00	0.03
208	CONDUIT	1.30	0	01:09	1.09	0.00	0.02
502	CONDUIT	5.67	0	01:16	2.05	0.00	0.03
210	DUMMY	2.77	0	00:58			
503	CONDUIT	10.57	0	01:14	2.23	0.01	0.08
211	CONDUIT	4.75	0	01:05	0.39	0.03	0.18
504	CONDUIT	15.04	0	01:23	1.71	0.02	0.13

201	DUMMY	2.70	0	00:55			
202	DUMMY	0.44	0	01:15			
508	CONDUIT	1.82	0	02:45	5.62	0.03	0.12
219	DUMMY	0.00	0	00:00			
509	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
213	DUMMY	43.79	0	00:35			
506	CONDUIT	43.66	0	00:37	2.75	0.01	0.10
511	CONDUIT	1.82	0	02:46	4.93	0.04	0.13
512	CONDUIT	1.82	0	02:50	3.48	0.03	0.13
513	CONDUIT	1.82	0	03:06	2.64	0.03	0.12
217	DUMMY	0.44	0	01:16			
218	DUMMY	0.47	0	01:23			
122	DUMMY	4.40	0	00:42			
212	DUMMY	5.30	0	00:49			
110	DUMMY	8.57	0	00:48			
206	DUMMY	2.28	0	00:59			
300	CONDUIT	1.51	0	03:43	0.92	0.00	0.02
303	CONDUIT	2.66	0	03:38	1.11	0.00	0.03
310	CONDUIT	26.76	0	01:07	2.19	0.01	0.09
505	DUMMY	44.06	0	00:37			
606	CONDUIT	3.02	0	01:14	1.31	0.00	0.04
607	CONDUIT	5.22	0	01:35	1.62	0.00	0.06
608	CONDUIT	5.20	0	01:43	1.99	0.00	0.05
611	CONDUIT	10.00	0	00:44	2.22	0.01	0.08
612	CONDUIT	13.73	0	00:53	1.82	0.01	0.12
613	CONDUIT	12.73	0	01:48	1.44	0.02	0.14
200	DUMMY	3.85	0	00:45			
214	DUMMY	10.05	0	00:42			
215	DUMMY	4.31	0	00:44			
216	DUMMY	2.05	0	00:39			
OUTLET_1001	DUMMY	1.51	0	02:49			
OUTLET_1006	DUMMY	2.66	0	03:23			
OUTLET_2012B	DUMMY	0.89	0	12:00			
OUTLET_2003	DUMMY	2.94	0	02:25			
OUTLET_2005	DUMMY	1.83	0	04:29			
OUTLET_2012C	DUMMY	1.82	0	02:42			

OUTLET_2012A DUMMY 1.52 0 08:24

Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Tue Jun 6 14:40:15 2023
Analysis ended on: Tue Jun 6 14:40:15 2023
Total elapsed time: < 1 sec

PROPOSED CONDITION - 10-YR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.1)

Analysis Options

Flow Units CFS

Process Models:

Rainfall/Runoff NO

RDII NO

Snowmelt NO

Groundwater NO

Flow Routing YES

Ponding Allowed YES

Water Quality NO

Flow Routing Method KINWAVE

Starting Date 01/01/2005 00:00:00

Ending Date 01/01/2005 12:00:00

Antecedent Dry Days 0.0

Report Time Step 00:01:00

Routing Time Step 60.00 sec

Flow Routing Continuity

	Volume acre-feet	Volume 10 ⁶ gal
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Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.000	0.000
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	76.399	24.896
External Outflow	42.149	13.735
Flooding Loss	0.000	0.000

Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	35.844	11.680
Continuity Error (%)	-2.087	

Highest Flow Instability Indexes

Link 313 (1)
Link 312 (1)
Link 309 (1)
Link 307 (1)
Link 308 (1)

Routing Time Step Summary

Minimum Time Step	:	60.00 sec
Average Time Step	:	60.00 sec
Maximum Time Step	:	60.00 sec
% of Time in Steady State	:	0.00
Average Iterations per Step	:	1.01
% of Steps Not Converging	:	0.00

Node Depth Summary

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
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JUNCT_101	JUNCTION	0.00	0.00	5106.50	0	00:00	0.00
JUNCT_100	JUNCTION	0.13	0.69	5137.29	0	00:43	0.69
JUNCT_301	JUNCTION	0.28	1.03	5065.03	0	00:38	1.03
JUNCT_102	JUNCTION	0.00	0.00	5064.10	0	00:00	0.00
JUNCT_106	JUNCTION	0.00	0.00	5061.10	0	00:00	0.00
JUNCT_302	JUNCTION	0.23	1.78	5079.98	0	00:37	1.78
JUNCT_103	JUNCTION	0.09	0.78	5113.48	0	00:38	0.78
JUNCT_104	JUNCTION	0.08	0.98	5118.58	0	00:31	0.98
JUNCT_105	JUNCTION	0.00	0.00	5078.30	0	00:00	0.00
JUNCT_304	JUNCTION	0.24	0.32	5040.12	0	03:17	0.32
JUNCT_107	JUNCTION	0.00	0.00	5039.90	0	00:00	0.00
JUNCT_305	JUNCTION	0.23	0.35	5029.05	0	00:43	0.35
JUNCT_108	JUNCTION	0.00	0.00	5028.80	0	00:00	0.00
JUNCT_306	JUNCTION	0.25	0.55	4995.75	0	00:50	0.55
JUNCT_109	JUNCTION	0.00	0.00	4995.30	0	00:00	0.00
JUNCT_110	JUNCTION	0.00	0.00	5945.40	0	00:00	0.00
JUNCT_318	JUNCTION	0.42	1.22	4961.32	0	01:27	1.22
JUNCT_129	JUNCTION	0.00	0.00	4960.20	0	00:00	0.00
JUNCT_317	JUNCTION	0.28	1.18	5000.88	0	01:22	1.18
JUNCT_128	JUNCTION	0.00	0.00	4999.80	0	00:00	0.00
JUNCT_127	JUNCTION	0.00	0.00	5008.60	0	00:00	0.00
JUNCT_126	JUNCTION	0.00	0.00	5040.70	0	00:00	0.00
JUNCT_314	JUNCTION	0.04	0.30	5040.90	0	00:43	0.30
JUNCT_124	JUNCTION	0.00	0.00	5015.20	0	00:00	0.00
JUNCT_315	JUNCTION	0.02	0.22	5015.32	0	00:38	0.22
JUNCT_313	JUNCTION	0.23	1.08	5017.28	0	01:01	1.08
JUNCT_311	JUNCTION	0.14	0.69	5016.99	0	01:01	0.69
JUNCT_312	JUNCTION	0.06	0.32	5039.02	0	00:56	0.32
JUNCT_125	JUNCTION	0.00	0.00	5038.80	0	00:00	0.00
JUNCT_123	JUNCTION	0.00	0.00	5016.40	0	00:00	0.00
JUNCT_309	JUNCTION	0.13	0.67	5044.97	0	00:53	0.67
JUNCT_308	JUNCTION	0.10	0.46	5050.96	0	00:53	0.46
JUNCT_307	JUNCTION	0.08	0.52	5050.12	0	00:47	0.52
JUNCT_121	JUNCTION	0.00	0.00	5050.60	0	00:00	0.00
JUNCT_120	JUNCTION	0.00	0.00	5049.70	0	00:00	0.00

JUNCT_203	JUNCTION	0.00	0.00	5072.60	0	00:00	0.00
JUNCT_500	JUNCTION	0.16	0.34	5072.84	0	02:16	0.34
JUNCT_501	JUNCTION	0.21	0.50	5043.90	0	00:44	0.50
JUNCT_204	JUNCTION	0.00	0.00	5043.50	0	00:00	0.00
JUNCT_502	JUNCTION	0.13	0.35	5022.95	0	01:12	0.35
JUNCT_205	JUNCTION	0.00	0.00	5022.80	0	00:00	0.00
JUNCT_209	JUNCTION	0.00	0.00	5022.70	0	00:00	0.00
JUNCT_207	JUNCTION	0.05	0.41	5060.61	0	00:44	0.41
JUNCT_208	JUNCTION	0.04	0.31	5051.81	0	00:42	0.31
JUNCT_503	JUNCTION	0.30	0.66	5022.46	0	01:08	0.66
JUNCT_210	JUNCTION	0.00	0.00	5022.00	0	00:00	0.00
JUNCT_504	JUNCTION	0.44	1.22	5014.42	0	01:01	1.22
JUNCT_211	JUNCTION	0.19	1.33	5014.63	0	00:39	1.33
JUNCT_508	JUNCTION	0.30	0.33	4995.13	0	02:45	0.33
JUNCT_201	JUNCTION	0.00	0.00	5026.40	0	00:00	0.00
JUNCT_202	JUNCTION	0.00	0.00	4999.40	0	00:00	0.00
JUNCT_511	JUNCTION	0.33	0.36	4966.96	0	02:47	0.36
JUNCT_506	JUNCTION	0.07	0.64	5005.14	0	00:35	0.64
JUNCT_213	JUNCTION	0.00	0.00	5004.60	0	00:00	0.00
JUNCT_509	JUNCTION	0.00	0.00	5012.00	0	00:00	0.00
JUNCT_219	JUNCTION	0.00	0.00	5012.10	0	00:00	0.00
JUNCT_512	JUNCTION	0.39	0.42	4959.02	0	02:48	0.42
JUNCT_513	JUNCTION	0.44	0.48	4952.88	0	02:52	0.48
JUNCT_217	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_218	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_122	JUNCTION	0.00	0.00	5035.10	0	00:00	0.00
JUNCT_212	JUNCTION	0.00	0.00	4999.50	0	00:00	0.00
JUNCT_206	JUNCTION	0.00	0.00	5021.90	0	00:00	0.00
JUNCT_300	JUNCTION	0.15	0.25	5104.05	0	02:26	0.25
JUNCT_303	JUNCTION	0.25	0.32	5057.62	0	03:07	0.32
JUNCT_200	JUNCTION	0.00	0.00	5051.10	0	00:00	0.00
JUNCT_214	JUNCTION	0.00	0.00	4966.70	0	00:00	0.00
JUNCT_215	JUNCTION	0.00	0.00	4959.10	0	00:00	0.00
JUNCT_216	JUNCTION	0.00	0.00	4952.70	0	00:00	0.00
JUNCT_310	JUNCTION	0.14	0.70	5035.60	0	00:55	0.70
JUNCT_316	JUNCTION	0.28	1.19	5009.09	0	01:13	1.19

JUNCT_505	JUNCTION	0.07	0.64	4998.54	0	00:36	0.64
JUNCT_613	JUNCTION	0.29	1.25	4953.65	0	00:49	1.25
JUNCT_612	JUNCTION	0.23	0.97	4959.57	0	01:18	0.97
JUNCT_611	JUNCTION	0.16	0.66	4967.26	0	01:18	0.66
JUNCT_608	JUNCTION	0.12	0.51	4995.31	0	01:23	0.51
JUNCT_607	JUNCTION	0.11	0.53	5026.83	0	01:03	0.53
JUNCT_606	JUNCTION	0.07	0.49	5050.29	0	00:46	0.49
OUTFALL_514	OUTFALL	0.43	0.48	4943.48	0	03:06	0.48
OUTFALL_319	OUTFALL	0.42	1.22	4946.52	0	01:33	1.22
OUTFALL_614	OUTFALL	0.32	1.20	4944.20	0	01:37	1.20
STOR_1001	STORAGE	4.36	4.84	5108.84	0	02:26	4.84
STOR_1006	STORAGE	4.98	5.46	5066.46	0	03:07	5.46
STOR_2012B	STORAGE	1.92	2.99	5000.99	0	12:00	2.99
STOR_2003	STORAGE	2.25	3.48	5076.48	0	02:16	3.48
STOR_2005	STORAGE	3.64	4.17	5030.87	0	02:44	4.17
STOR_2012C	STORAGE	3.27	3.56	4998.56	0	02:45	3.56
STOR_2012A	STORAGE	3.84	4.42	5010.42	0	06:00	4.42

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
JUNCT_101	JUNCTION	116.54	116.54	0 00:35	2.54	2.54	0.000
JUNCT_100	JUNCTION	8.19	8.19	0 00:43	0.327	0.327	0.000
JUNCT_301	JUNCTION	0.00	55.55	0 00:38	0	2.5	0.000
JUNCT_102	JUNCTION	55.55	55.55	0 00:38	1.63	1.63	0.000
JUNCT_106	JUNCTION	53.22	53.22	0 00:40	1.76	1.76	0.000
JUNCT_302	JUNCTION	0.00	72.79	0 00:37	0	1.88	0.000
JUNCT_103	JUNCTION	12.64	12.64	0 00:38	0.321	0.321	0.000

JUNCT_104	JUNCTION	20.60	20.60	0	00:31	0.337	0.337	0.000
JUNCT_105	JUNCTION	42.01	42.01	0	00:38	1.22	1.22	0.000
JUNCT_304	JUNCTION	0.00	9.69	0	02:48	0	2.18	0.000
JUNCT_107	JUNCTION	5.58	5.58	0	00:42	0.173	0.173	0.000
JUNCT_305	JUNCTION	0.00	15.66	0	00:43	0	2.42	0.000
JUNCT_108	JUNCTION	10.56	10.56	0	00:39	0.254	0.254	0.000
JUNCT_306	JUNCTION	0.00	43.86	0	00:50	0	3.41	0.000
JUNCT_109	JUNCTION	38.42	38.42	0	00:45	1.04	1.04	0.000
JUNCT_110	JUNCTION	30.17	30.17	0	00:48	0.951	0.951	0.000
JUNCT_318	JUNCTION	0.00	170.82	0	01:27	0	10	0.000
JUNCT_129	JUNCTION	31.39	31.39	0	00:43	0.779	0.779	0.000
JUNCT_317	JUNCTION	0.00	125.37	0	01:21	0	5.83	0.000
JUNCT_128	JUNCTION	12.40	12.40	0	00:42	0.329	0.329	0.000
JUNCT_127	JUNCTION	47.83	47.83	0	00:44	1.18	1.18	0.000
JUNCT_126	JUNCTION	11.35	11.35	0	00:43	0.315	0.315	0.000
JUNCT_314	JUNCTION	0.00	11.35	0	00:43	0	0.315	0.000
JUNCT_124	JUNCTION	4.71	4.71	0	00:38	0.1	0.1	0.000
JUNCT_315	JUNCTION	0.00	4.71	0	00:38	0	0.1	0.000
JUNCT_313	JUNCTION	0.00	88.36	0	01:01	0	3.78	0.000
JUNCT_311	JUNCTION	0.00	73.71	0	01:00	0	3.04	0.000
JUNCT_312	JUNCTION	0.00	15.55	0	00:56	0	0.733	0.000
JUNCT_125	JUNCTION	15.55	15.55	0	00:56	0.733	0.733	0.000
JUNCT_123	JUNCTION	9.79	9.79	0	00:45	0.308	0.308	0.000
JUNCT_309	JUNCTION	0.00	55.13	0	00:53	0	2.35	0.000
JUNCT_308	JUNCTION	0.00	25.83	0	00:53	0	1.29	0.000
JUNCT_307	JUNCTION	0.00	29.84	0	00:47	0	1.06	0.000
JUNCT_121	JUNCTION	25.83	25.83	0	00:53	1.29	1.29	0.000
JUNCT_120	JUNCTION	29.84	29.84	0	00:47	1.06	1.06	0.000
JUNCT_203	JUNCTION	34.75	34.75	0	00:40	1.09	1.09	0.000
JUNCT_500	JUNCTION	0.00	6.98	0	02:16	0	0.777	0.000
JUNCT_501	JUNCTION	0.00	16.30	0	00:44	0	1.42	0.000
JUNCT_204	JUNCTION	16.30	16.30	0	00:44	0.653	0.653	0.000
JUNCT_502	JUNCTION	0.00	17.92	0	02:30	0	2.03	0.000
JUNCT_205	JUNCTION	7.61	7.61	0	00:48	0.289	0.289	0.000
JUNCT_209	JUNCTION	4.93	4.93	0	00:57	0.328	0.328	0.000
JUNCT_207	JUNCTION	9.05	9.05	0	00:44	0.273	0.273	0.000

JUNCT_208	JUNCTION	6.29	6.29	0	00:42	0.171	0.171	-0.000
JUNCT_503	JUNCTION	0.00	26.02	0	01:08	0	2.6	0.000
JUNCT_210	JUNCTION	4.84	4.84	0	00:57	0.325	0.325	0.000
JUNCT_504	JUNCTION	0.00	34.25	0	01:08	0	2.94	0.000
JUNCT_211	JUNCTION	10.00	10.00	0	00:39	0.331	0.331	0.000
JUNCT_508	JUNCTION	0.00	2.26	0	02:45	0	0.655	0.000
JUNCT_201	JUNCTION	4.59	4.59	0	00:52	0.282	0.282	0.000
JUNCT_202	JUNCTION	0.66	0.66	0	01:18	0.0595	0.0595	0.000
JUNCT_511	JUNCTION	0.00	2.26	0	02:47	0	0.652	0.000
JUNCT_506	JUNCTION	0.00	65.03	0	00:35	0	1.56	0.000
JUNCT_213	JUNCTION	65.03	65.03	0	00:35	1.56	1.56	0.000
JUNCT_509	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_219	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_512	JUNCTION	0.00	2.26	0	02:48	0	0.65	0.000
JUNCT_513	JUNCTION	0.00	2.26	0	02:52	0	0.646	0.000
JUNCT_217	JUNCTION	0.87	0.87	0	01:19	0.0837	0.0837	0.000
JUNCT_218	JUNCTION	0.89	0.89	0	01:24	0.102	0.102	0.000
JUNCT_122	JUNCTION	15.49	15.49	0	00:41	0.361	0.361	0.000
JUNCT_212	JUNCTION	11.64	11.64	0	00:49	0.531	0.531	0.000
JUNCT_206	JUNCTION	3.56	3.56	0	00:58	0.245	0.245	0.000
JUNCT_300	JUNCTION	0.00	6.33	0	02:26	0	0.906	-0.000
JUNCT_303	JUNCTION	0.00	9.47	0	03:07	0	2.04	0.000
JUNCT_200	JUNCTION	11.84	11.84	0	00:46	0.395	0.395	0.000
JUNCT_214	JUNCTION	22.61	22.61	0	00:41	0.662	0.662	0.000
JUNCT_215	JUNCTION	10.67	10.67	0	00:45	0.375	0.375	0.000
JUNCT_216	JUNCTION	6.34	6.34	0	00:38	0.144	0.144	0.000
JUNCT_310	JUNCTION	0.00	66.61	0	00:55	0	2.72	0.000
JUNCT_316	JUNCTION	0.00	120.72	0	01:13	0	5.46	0.000
JUNCT_505	JUNCTION	0.00	65.38	0	00:36	0	1.9	0.000
JUNCT_613	JUNCTION	0.00	37.98	0	00:49	0	1.9	-0.000
JUNCT_612	JUNCTION	0.00	33.77	0	01:18	0	1.75	0.000
JUNCT_611	JUNCTION	0.00	26.54	0	01:18	0	1.37	0.000
JUNCT_608	JUNCTION	0.00	13.83	0	01:23	0	0.71	0.000
JUNCT_607	JUNCTION	0.00	14.77	0	01:03	0	0.698	0.000
JUNCT_606	JUNCTION	0.00	11.84	0	00:46	0	0.395	0.000
OUTFALL_514	OUTFALL	0.00	2.26	0	03:06	0	0.628	0.000

OUTFALL_319	OUTFALL	0.00	185.60	0	01:31	0	10.9	0.000
OUTFALL_614	OUTFALL	0.00	37.03	0	01:37	0	2.17	0.000
STOR_1001	STORAGE	0.00	122.41	0	00:35	0	2.86	0.015
STOR_1006	STORAGE	0.00	180.96	0	00:40	0	6.13	0.007
STOR_2012B	STORAGE	0.00	3.95	0	06:00	0	0.965	-0.028
STOR_2003	STORAGE	0.00	34.75	0	00:40	0	1.09	0.123
STOR_2005	STORAGE	0.00	23.77	0	00:49	0	1.71	0.049
STOR_2012C	STORAGE	0.00	65.38	0	00:36	0	1.9	-0.000
STOR_2012A	STORAGE	0.00	43.57	0	01:15	0	3.46	-0.010

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

Storage Unit	Average Volume 1000 ft ³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft ³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
STOR_1001	278.807	15	0	0	349.702	19	0 02:26	6.33
STOR_1006	560.050	16	0	0	672.946	19	0 03:07	9.47
STOR_2012B	39.705	3	0	0	91.134	6	0 12:00	1.46
STOR_2003	61.134	18	0	0	108.656	31	0 02:16	6.98
STOR_2005	81.983	29	0	0	109.439	39	0 02:44	11.92
STOR_2012C	167.897	10	0	0	198.352	12	0 02:45	2.26
STOR_2012A	285.883	18	0	0	357.840	23	0 06:00	3.95

 Outfall Loading Summary

Outfall Node	Flow Freq Pcmt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
OUTFALL_514	94.58	2.06	2.26	0.628
OUTFALL_319	98.06	34.52	185.60	10.937
OUTFALL_614	98.19	6.83	37.03	2.169
System	96.94	43.41	223.97	13.734

 Link Flow Summary

Link	Type	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Veloc ft/sec	Max/ Full Flow	Max/ Full Depth
101	DUMMY	116.54	0 00:35			
100	CONDUIT	8.10	0 00:49	7.39	0.17	0.28
102	DUMMY	55.55	0 00:38			
105	DUMMY	42.01	0 00:38			
106	DUMMY	53.22	0 00:40			
301	CONDUIT	55.37	0 00:40	2.67	0.04	0.21
302	CONDUIT	72.37	0 00:40	11.00	0.22	0.32
103	CONDUIT	12.49	0 00:42	8.67	0.15	0.26
104	CONDUIT	19.96	0 00:34	10.36	0.22	0.32
107	DUMMY	5.58	0 00:42			
108	DUMMY	10.56	0 00:39			

304	CONDUIT	9.69	0	02:53	3.34	0.00	0.03
305	CONDUIT	12.60	0	01:15	1.66	0.00	0.06
109	DUMMY	38.42	0	00:45			
306	CONDUIT	41.72	0	01:04	2.60	0.01	0.11
318	CONDUIT	169.78	0	01:33	3.18	0.04	0.24
129	DUMMY	31.39	0	00:43			
317	CONDUIT	123.21	0	01:30	3.52	0.02	0.18
128	DUMMY	12.40	0	00:42			
316	CONDUIT	118.96	0	01:22	2.36	0.04	0.24
127	DUMMY	47.83	0	00:44			
126	DUMMY	11.35	0	00:43			
124	DUMMY	4.71	0	00:38			
314	CONDUIT	8.49	0	01:10	1.49	0.00	0.05
315	CONDUIT	3.49	0	01:00	0.86	0.00	0.04
313	CONDUIT	82.73	0	01:17	1.99	0.03	0.21
125	DUMMY	15.55	0	00:56			
312	CONDUIT	15.18	0	01:08	1.89	0.00	0.06
311	DUMMY	73.71	0	01:00			
123	DUMMY	9.79	0	00:45			
120	DUMMY	29.84	0	00:47			
121	DUMMY	25.83	0	00:53			
309	CONDUIT	54.84	0	00:57	2.47	0.01	0.13
307	CONDUIT	29.71	0	00:51	1.90	0.01	0.10
308	CONDUIT	25.78	0	00:57	1.95	0.01	0.09
203	DUMMY	34.75	0	00:40			
204	DUMMY	16.30	0	00:44			
500	CONDUIT	6.95	0	02:33	1.75	0.01	0.07
501	CONDUIT	16.18	0	00:50	2.61	0.01	0.10
205	DUMMY	7.61	0	00:48			
209	DUMMY	4.93	0	00:57			
207	CONDUIT	6.93	0	01:12	1.80	0.01	0.07
208	CONDUIT	5.37	0	00:59	1.78	0.00	0.06
502	CONDUIT	17.92	0	02:31	3.12	0.00	0.05
210	DUMMY	4.84	0	00:57			
503	CONDUIT	26.00	0	01:10	2.98	0.02	0.13
211	CONDUIT	8.52	0	01:01	0.45	0.05	0.24

504	CONDUIT	33.91	0	01:17	2.18	0.04	0.21
201	DUMMY	4.59	0	00:52			
202	DUMMY	0.66	0	01:18			
508	CONDUIT	2.26	0	02:47	5.97	0.04	0.13
219	DUMMY	0.00	0	00:00			
509	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
213	DUMMY	65.03	0	00:35			
506	CONDUIT	64.81	0	00:36	3.08	0.01	0.13
511	CONDUIT	2.26	0	02:48	5.27	0.04	0.14
512	CONDUIT	2.26	0	02:52	3.71	0.04	0.14
513	CONDUIT	2.26	0	03:06	2.81	0.04	0.14
217	DUMMY	0.87	0	01:19			
218	DUMMY	0.89	0	01:24			
122	DUMMY	15.49	0	00:41			
212	DUMMY	11.64	0	00:49			
110	DUMMY	30.17	0	00:48			
206	DUMMY	3.56	0	00:58			
300	CONDUIT	6.22	0	02:51	1.58	0.00	0.05
303	CONDUIT	9.47	0	03:17	1.78	0.01	0.06
310	CONDUIT	65.72	0	01:01	2.84	0.01	0.14
505	DUMMY	65.38	0	00:36			
606	CONDUIT	10.29	0	01:04	1.94	0.01	0.09
607	CONDUIT	13.83	0	01:23	2.24	0.01	0.10
608	CONDUIT	13.77	0	01:28	2.79	0.01	0.08
611	CONDUIT	26.52	0	01:20	3.03	0.02	0.13
612	CONDUIT	33.65	0	01:23	2.37	0.03	0.19
613	CONDUIT	35.34	0	01:37	1.95	0.05	0.24
200	DUMMY	11.84	0	00:46			
214	DUMMY	22.61	0	00:41			
215	DUMMY	10.67	0	00:45			
216	DUMMY	6.34	0	00:38			
OUTLET_1001	DUMMY	6.33	0	02:26			
OUTLET_1006	DUMMY	9.47	0	03:07			
OUTLET_2012B	DUMMY	1.46	0	12:00			
OUTLET_2003	DUMMY	6.98	0	02:16			
OUTLET_2005	DUMMY	11.92	0	02:44			

OUTLET_2012C	DUMMY	2.26	0	02:45
OUTLET_2012A	DUMMY	3.95	0	06:00

Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Tue Jun 6 14:38:40 2023
Analysis ended on: Tue Jun 6 14:38:40 2023
Total elapsed time: < 1 sec

PROPOSED CONDITION - 100-YR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.1)

Analysis Options

Flow Units CFS

Process Models:

Rainfall/Runoff NO
RDII NO
Snowmelt NO
Groundwater NO
Flow Routing YES
Ponding Allowed YES
Water Quality NO

Flow Routing Method KINWAVE

Starting Date 01/01/2005 00:00:00

Ending Date 01/01/2005 12:00:00

Antecedent Dry Days 0.0

Report Time Step 00:01:00

Routing Time Step 60.00 sec

Flow Routing Continuity

	Volume acre-feet	Volume 10 ⁶ gal
	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.000	0.000
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	326.807	106.495
External Outflow	227.750	74.216
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000

Final Stored Volume 102.382 33.363
 Continuity Error (%) -1.018

 Highest Flow Instability Indexes

 Link 313 (1)
 Link 312 (1)
 Link 309 (1)

 Routing Time Step Summary

 Minimum Time Step : 60.00 sec
 Average Time Step : 60.00 sec
 Maximum Time Step : 60.00 sec
 % of Time in Steady State : 0.00
 Average Iterations per Step : 1.04
 % of Steps Not Converging : 0.00

 Node Depth Summary

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
JUNCT_101	JUNCTION	0.00	0.00	5106.50	0 00:00	0.00
JUNCT_100	JUNCTION	0.24	1.47	5138.07	0 00:50	1.47
JUNCT_301	JUNCTION	0.53	1.80	5065.80	0 00:44	1.80
JUNCT_102	JUNCTION	0.00	0.00	5064.10	0 00:00	0.00
JUNCT_106	JUNCTION	0.00	0.00	5061.10	0 00:00	0.00
JUNCT_302	JUNCTION	0.40	3.58	5081.78	0 00:43	3.58
JUNCT_103	JUNCTION	0.21	1.79	5114.49	0 00:44	1.79

JUNCT_104	JUNCTION	0.14	1.87	5119.47	0	00:36	1.87
JUNCT_105	JUNCTION	0.00	0.00	5078.30	0	00:00	0.00
JUNCT_304	JUNCTION	0.46	0.49	5040.29	0	03:00	0.49
JUNCT_107	JUNCTION	0.00	0.00	5039.90	0	00:00	0.00
JUNCT_305	JUNCTION	0.43	0.82	5029.52	0	01:08	0.82
JUNCT_108	JUNCTION	0.00	0.00	5028.80	0	00:00	0.00
JUNCT_306	JUNCTION	0.50	1.34	4996.54	0	00:56	1.34
JUNCT_109	JUNCTION	0.00	0.00	4995.30	0	00:00	0.00
JUNCT_110	JUNCTION	0.00	0.00	5945.40	0	00:00	0.00
JUNCT_318	JUNCTION	0.84	2.89	4962.99	0	01:16	2.89
JUNCT_129	JUNCTION	0.00	0.00	4960.20	0	00:00	0.00
JUNCT_317	JUNCTION	0.59	2.69	5002.39	0	01:14	2.69
JUNCT_128	JUNCTION	0.00	0.00	4999.80	0	00:00	0.00
JUNCT_127	JUNCTION	0.00	0.00	5008.60	0	00:00	0.00
JUNCT_126	JUNCTION	0.00	0.00	5040.70	0	00:00	0.00
JUNCT_314	JUNCTION	0.10	0.74	5041.34	0	00:49	0.74
JUNCT_124	JUNCTION	0.00	0.00	5015.20	0	00:00	0.00
JUNCT_315	JUNCTION	0.06	0.56	5015.66	0	00:43	0.56
JUNCT_313	JUNCTION	0.49	2.32	5018.52	0	01:05	2.32
JUNCT_311	JUNCTION	0.29	1.50	5017.80	0	01:03	1.50
JUNCT_312	JUNCTION	0.18	0.82	5039.52	0	01:08	0.82
JUNCT_125	JUNCTION	0.00	0.00	5038.80	0	00:00	0.00
JUNCT_123	JUNCTION	0.00	0.00	5016.40	0	00:00	0.00
JUNCT_309	JUNCTION	0.28	1.41	5045.71	0	00:59	1.41
JUNCT_308	JUNCTION	0.21	0.98	5051.48	0	01:03	0.98
JUNCT_307	JUNCTION	0.19	1.14	5050.74	0	00:54	1.14
JUNCT_121	JUNCTION	0.00	0.00	5050.60	0	00:00	0.00
JUNCT_120	JUNCTION	0.00	0.00	5049.70	0	00:00	0.00
JUNCT_203	JUNCTION	0.00	0.00	5072.60	0	00:00	0.00
JUNCT_500	JUNCTION	0.32	1.33	5073.83	0	01:24	1.33
JUNCT_501	JUNCTION	0.39	1.49	5044.89	0	01:24	1.49
JUNCT_204	JUNCTION	0.00	0.00	5043.50	0	00:00	0.00
JUNCT_502	JUNCTION	0.28	1.10	5023.70	0	01:23	1.10
JUNCT_205	JUNCTION	0.00	0.00	5022.80	0	00:00	0.00
JUNCT_209	JUNCTION	0.00	0.00	5022.70	0	00:00	0.00
JUNCT_207	JUNCTION	0.15	1.06	5061.26	0	00:51	1.06
JUNCT_208	JUNCTION	0.10	0.80	5052.30	0	00:48	0.80
JUNCT_503	JUNCTION	0.59	2.22	5024.02	0	01:23	2.22
JUNCT_210	JUNCTION	0.00	0.00	5022.00	0	00:00	0.00

JUNCT_504	JUNCTION	0.83	3.05	5016.25	0	01:23	3.05
JUNCT_211	JUNCTION	0.35	2.52	5015.82	0	00:46	2.52
JUNCT_508	JUNCTION	0.98	1.63	4996.43	0	07:19	1.63
JUNCT_201	JUNCTION	0.00	0.00	5026.40	0	00:00	0.00
JUNCT_202	JUNCTION	0.00	0.00	4999.40	0	00:00	0.00
JUNCT_511	JUNCTION	1.10	1.87	4968.47	0	07:20	1.87
JUNCT_506	JUNCTION	0.11	1.09	5005.59	0	00:40	1.09
JUNCT_213	JUNCTION	0.00	0.00	5004.60	0	00:00	0.00
JUNCT_509	JUNCTION	0.00	0.00	5012.00	0	00:00	0.00
JUNCT_219	JUNCTION	0.00	0.00	5012.10	0	00:00	0.00
JUNCT_512	JUNCTION	1.30	2.21	4960.81	0	07:20	2.21
JUNCT_513	JUNCTION	1.46	2.48	4954.88	0	07:22	2.48
JUNCT_217	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_218	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_122	JUNCTION	0.00	0.00	5035.10	0	00:00	0.00
JUNCT_212	JUNCTION	0.00	0.00	4999.50	0	00:00	0.00
JUNCT_206	JUNCTION	0.00	0.00	5021.90	0	00:00	0.00
JUNCT_300	JUNCTION	0.31	0.33	5104.13	0	02:34	0.33
JUNCT_303	JUNCTION	0.46	0.49	5057.79	0	02:52	0.49
JUNCT_200	JUNCTION	0.00	0.00	5051.10	0	00:00	0.00
JUNCT_214	JUNCTION	0.00	0.00	4966.70	0	00:00	0.00
JUNCT_215	JUNCTION	0.00	0.00	4959.10	0	00:00	0.00
JUNCT_216	JUNCTION	0.00	0.00	4952.70	0	00:00	0.00
JUNCT_310	JUNCTION	0.30	1.51	5036.41	0	00:59	1.51
JUNCT_316	JUNCTION	0.59	2.70	5010.60	0	01:09	2.70
JUNCT_505	JUNCTION	0.11	1.09	4998.99	0	00:41	1.09
JUNCT_613	JUNCTION	0.61	2.97	4955.37	0	01:11	2.97
JUNCT_612	JUNCTION	0.48	2.38	4960.98	0	01:09	2.38
JUNCT_611	JUNCTION	0.33	1.67	4968.27	0	01:10	1.67
JUNCT_608	JUNCTION	0.26	1.28	4996.08	0	01:17	1.28
JUNCT_607	JUNCTION	0.25	1.30	5027.60	0	01:04	1.30
JUNCT_606	JUNCTION	0.19	1.21	5051.01	0	00:53	1.21
OUTFALL_514	OUTFALL	1.44	2.48	4945.48	0	07:28	2.48
OUTFALL_319	OUTFALL	0.84	2.88	4948.18	0	01:20	2.88
OUTFALL_614	OUTFALL	0.65	2.92	4945.92	0	01:24	2.92
STOR_1001	STORAGE	6.43	7.19	5111.19	0	02:34	7.19
STOR_1006	STORAGE	7.16	7.86	5068.86	0	02:52	7.86
STOR_2012B	STORAGE	5.80	7.83	5005.83	0	04:24	7.83
STOR_2003	STORAGE	2.83	6.01	5079.01	0	01:24	6.01

STOR_2005	STORAGE	4.02	5.47	5032.17	0	01:26	5.47
STOR_2012C	STORAGE	5.81	6.73	5001.73	0	07:19	6.73
STOR_2012A	STORAGE	5.42	7.54	5013.54	0	02:35	7.54

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
JUNCT_101	JUNCTION	346.42	346.42	0 00:40	7.26	7.26	0.000
JUNCT_100	JUNCTION	31.49	31.49	0 00:50	1.2	1.2	0.000
JUNCT_301	JUNCTION	0.00	156.21	0 00:44	0	7.21	0.000
JUNCT_102	JUNCTION	156.21	156.21	0 00:44	4.28	4.28	0.000
JUNCT_106	JUNCTION	153.47	153.47	0 00:46	4.67	4.67	0.000
JUNCT_302	JUNCTION	0.00	244.28	0 00:43	0	6.17	0.000
JUNCT_103	JUNCTION	56.48	56.48	0 00:44	1.55	1.55	0.000
JUNCT_104	JUNCTION	63.84	63.84	0 00:36	1.04	1.04	0.000
JUNCT_105	JUNCTION	130.17	130.17	0 00:44	3.57	3.57	0.000
JUNCT_304	JUNCTION	0.00	40.03	0 01:10	0	6.72	0.000
JUNCT_107	JUNCTION	27.83	27.83	0 00:48	0.933	0.933	0.000
JUNCT_305	JUNCTION	0.00	79.75	0 01:08	0	8.08	0.000
JUNCT_108	JUNCTION	51.68	51.68	0 00:44	1.4	1.4	0.000
JUNCT_306	JUNCTION	0.00	263.22	0 00:56	0	14.2	0.000
JUNCT_109	JUNCTION	205.55	205.55	0 00:50	6.26	6.26	0.000
JUNCT_110	JUNCTION	168.77	168.77	0 00:54	5.9	5.9	0.000
JUNCT_318	JUNCTION	0.00	1156.19	0 01:16	0	50.9	0.000
JUNCT_129	JUNCTION	170.63	170.63	0 00:48	4.89	4.89	0.000
JUNCT_317	JUNCTION	0.00	794.27	0 01:14	0	31.9	0.000
JUNCT_128	JUNCTION	67.84	67.84	0 00:48	2.07	2.07	0.000
JUNCT_127	JUNCTION	258.45	258.45	0 00:49	7.32	7.32	0.000
JUNCT_126	JUNCTION	62.51	62.51	0 00:49	1.98	1.98	0.000
JUNCT_314	JUNCTION	0.00	62.51	0 00:49	0	1.98	0.000
JUNCT_124	JUNCTION	24.83	24.83	0 00:43	0.63	0.63	0.000

JUNCT_315	JUNCTION	0.00	24.83	0	00:43	0	0.63	0.000
JUNCT_313	JUNCTION	0.00	467.14	0	01:05	0	19.6	0.000
JUNCT_311	JUNCTION	0.00	378.14	0	01:02	0	15	0.000
JUNCT_312	JUNCTION	0.00	93.77	0	01:08	0	4.6	0.000
JUNCT_125	JUNCTION	93.77	93.77	0	01:08	4.6	4.6	0.000
JUNCT_123	JUNCTION	54.96	54.96	0	00:52	1.93	1.93	0.000
JUNCT_309	JUNCTION	0.00	254.19	0	00:59	0	10.7	0.000
JUNCT_308	JUNCTION	0.00	114.57	0	01:03	0	5.49	0.000
JUNCT_307	JUNCTION	0.00	142.69	0	00:54	0	5.24	0.000
JUNCT_121	JUNCTION	114.57	114.57	0	01:03	5.49	5.49	0.000
JUNCT_120	JUNCTION	142.69	142.69	0	00:54	5.24	5.24	0.000
JUNCT_203	JUNCTION	131.53	131.53	0	00:47	4.05	4.05	0.000
JUNCT_500	JUNCTION	0.00	82.12	0	01:24	0	3.72	0.000
JUNCT_501	JUNCTION	0.00	124.24	0	01:24	0	6.11	0.000
JUNCT_204	JUNCTION	62.30	62.30	0	00:51	2.38	2.38	0.000
JUNCT_502	JUNCTION	0.00	244.96	0	01:23	0	11.4	0.000
JUNCT_205	JUNCTION	42.17	42.17	0	00:55	1.73	1.73	0.000
JUNCT_209	JUNCTION	21.24	21.24	0	01:08	1.29	1.29	0.000
JUNCT_207	JUNCTION	50.46	50.46	0	00:51	1.72	1.72	0.000
JUNCT_208	JUNCTION	34.49	34.49	0	00:48	1.07	1.07	-0.000
JUNCT_503	JUNCTION	0.00	273.98	0	01:23	0	13.4	0.000
JUNCT_210	JUNCTION	19.38	19.38	0	01:08	1.17	1.17	0.000
JUNCT_504	JUNCTION	0.00	303.13	0	01:23	0	14.5	0.000
JUNCT_211	JUNCTION	36.68	36.68	0	00:46	1.17	1.17	0.000
JUNCT_508	JUNCTION	0.00	46.72	0	07:19	0	7.47	0.000
JUNCT_201	JUNCTION	17.54	17.54	0	01:04	0.958	0.958	0.000
JUNCT_202	JUNCTION	2.06	2.06	0	01:10	0.167	0.167	0.000
JUNCT_511	JUNCTION	0.00	46.72	0	07:20	0	7.45	0.000
JUNCT_506	JUNCTION	0.00	186.41	0	00:40	0	4.26	0.000
JUNCT_213	JUNCTION	186.41	186.41	0	00:40	4.26	4.26	0.000
JUNCT_509	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_219	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_512	JUNCTION	0.00	46.72	0	07:20	0	7.44	0.000
JUNCT_513	JUNCTION	0.00	46.72	0	07:22	0	7.42	0.000
JUNCT_217	JUNCTION	3.83	3.83	0	01:12	0.345	0.345	0.000
JUNCT_218	JUNCTION	3.76	3.76	0	01:17	0.402	0.402	0.000
JUNCT_122	JUNCTION	83.09	83.09	0	00:46	2.27	2.27	0.000
JUNCT_212	JUNCTION	53.44	53.44	0	00:57	2.41	2.41	0.000
JUNCT_206	JUNCTION	12.39	12.39	0	01:07	0.744	0.744	0.000

JUNCT_300	JUNCTION	0.00	10.29	0	02:34	0	3.03	0.000
JUNCT_303	JUNCTION	0.00	19.94	0	02:52	0	5.87	0.000
JUNCT_200	JUNCTION	63.15	63.15	0	00:53	2.29	2.29	0.000
JUNCT_214	JUNCTION	100.77	100.77	0	00:47	3.09	3.09	0.000
JUNCT_215	JUNCTION	51.50	51.50	0	00:52	1.89	1.89	0.000
JUNCT_216	JUNCTION	32.12	32.12	0	00:43	0.846	0.846	0.000
JUNCT_310	JUNCTION	0.00	327.12	0	00:59	0	13	0.000
JUNCT_316	JUNCTION	0.00	745.38	0	01:09	0	29.7	-0.000
JUNCT_505	JUNCTION	0.00	187.84	0	00:42	0	13.7	0.000
JUNCT_613	JUNCTION	0.00	223.33	0	01:11	0	9.17	0.000
JUNCT_612	JUNCTION	0.00	201.01	0	01:09	0	8.31	0.000
JUNCT_611	JUNCTION	0.00	154.65	0	01:10	0	6.41	0.000
JUNCT_608	JUNCTION	0.00	76.85	0	01:17	0	3.31	0.000
JUNCT_607	JUNCTION	0.00	78.30	0	01:04	0	3.29	0.000
JUNCT_606	JUNCTION	0.00	63.15	0	00:53	0	2.29	0.000
OUTFALL_514	OUTFALL	0.00	46.70	0	07:28	0	7.33	0.000
OUTFALL_319	OUTFALL	0.00	1287.92	0	01:18	0	56.8	0.000
OUTFALL_614	OUTFALL	0.00	223.64	0	01:24	0	10.1	0.000
STOR_1001	STORAGE	0.00	371.69	0	00:40	0	8.46	0.002
STOR_1006	STORAGE	0.00	552.74	0	00:45	0	18	0.001
STOR_2012B	STORAGE	0.00	146.66	0	02:35	0	13.3	0.063
STOR_2003	STORAGE	0.00	131.53	0	00:47	0	4.05	0.028
STOR_2005	STORAGE	0.00	156.93	0	01:23	0	7.83	0.298
STOR_2012C	STORAGE	0.00	187.84	0	00:42	0	13.7	0.015
STOR_2012A	STORAGE	0.00	341.73	0	01:28	0	17	0.065

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

Storage Unit	Average Volume 1000 ft ³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft ³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
STOR_1001	839.627	46	0	0	1046.555	57	0 02:34	10.29
STOR_1006	1633.847	47	0	0	1930.430	55	0 02:52	19.94
STOR_2012B	617.944	43	0	0	1031.015	72	0 04:24	73.41
STOR_2003	86.186	25	0	0	229.808	66	0 01:24	82.12
STOR_2005	108.667	39	0	0	210.681	75	0 01:26	156.25
STOR_2012C	754.381	45	0	0	973.007	58	0 07:19	46.72
STOR_2012A	622.632	40	0	0	1120.803	72	0 02:35	146.66

 Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10 ⁶ gal
OUTFALL_514	94.72	23.97	46.70	7.332
OUTFALL_319	98.19	178.91	1287.92	56.764
OUTFALL_614	98.33	31.83	223.64	10.114
System	97.08	234.71	1510.98	74.210

 Link Flow Summary

Link	Type	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Veloc ft/sec	Max/ Full Flow	Max/ Full Depth
101	DUMMY	346.42	0 00:40			

100	CONDUIT	31.41	0	00:54	10.55	0.65	0.59
102	DUMMY	156.21	0	00:44			
105	DUMMY	130.17	0	00:44			
106	DUMMY	153.47	0	00:46			
301	CONDUIT	156.02	0	00:45	3.63	0.12	0.36
302	CONDUIT	243.73	0	00:44	14.95	0.76	0.65
103	CONDUIT	56.33	0	00:47	12.87	0.66	0.60
104	CONDUIT	63.12	0	00:38	13.85	0.70	0.62
107	DUMMY	27.83	0	00:48			
108	DUMMY	51.68	0	00:44			
304	CONDUIT	39.91	0	01:13	5.38	0.00	0.06
305	CONDUIT	78.09	0	01:18	2.79	0.02	0.16
109	DUMMY	205.55	0	00:50			
306	CONDUIT	259.97	0	01:04	4.24	0.05	0.27
318	CONDUIT	1152.95	0	01:20	5.18	0.27	0.58
129	DUMMY	170.63	0	00:48			
317	CONDUIT	788.92	0	01:19	5.68	0.14	0.44
128	DUMMY	67.84	0	00:48			
316	CONDUIT	741.65	0	01:14	3.76	0.23	0.54
127	DUMMY	258.45	0	00:49			
126	DUMMY	62.51	0	00:49			
124	DUMMY	24.83	0	00:43			
314	CONDUIT	56.87	0	01:12	2.54	0.01	0.14
315	CONDUIT	22.45	0	01:00	1.48	0.01	0.11
313	CONDUIT	461.36	0	01:14	3.08	0.16	0.46
125	DUMMY	93.77	0	01:08			
312	CONDUIT	93.47	0	01:13	3.19	0.02	0.16
311	DUMMY	378.14	0	01:02			
123	DUMMY	54.96	0	00:52			
120	DUMMY	142.69	0	00:54			
121	DUMMY	114.57	0	01:03			
309	CONDUIT	253.83	0	01:02	3.72	0.05	0.28
307	CONDUIT	142.44	0	00:56	2.92	0.03	0.23
308	CONDUIT	114.50	0	01:05	2.97	0.02	0.20
203	DUMMY	131.53	0	00:47			
204	DUMMY	62.30	0	00:51			
500	CONDUIT	81.42	0	01:33	3.78	0.06	0.26
501	CONDUIT	124.11	0	01:27	4.77	0.08	0.30
205	DUMMY	42.17	0	00:55			

209	DUMMY	21.24	0	01:08			
207	CONDUIT	46.76	0	01:13	3.22	0.04	0.20
208	CONDUIT	33.25	0	00:58	3.11	0.02	0.16
502	CONDUIT	244.99	0	01:23	7.21	0.04	0.22
210	DUMMY	19.38	0	01:08			
503	CONDUIT	273.86	0	01:24	5.85	0.17	0.44
211	CONDUIT	34.27	0	01:02	0.66	0.21	0.49
504	CONDUIT	299.78	0	01:29	3.97	0.33	0.61
201	DUMMY	17.54	0	01:04			
202	DUMMY	2.06	0	01:10			
508	CONDUIT	46.72	0	07:20	13.82	0.76	0.65
219	DUMMY	0.00	0	00:00			
509	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
213	DUMMY	186.41	0	00:40			
506	CONDUIT	186.18	0	00:41	4.12	0.03	0.22
511	CONDUIT	46.72	0	07:20	11.85	0.91	0.75
512	CONDUIT	46.72	0	07:22	8.38	0.89	0.74
513	CONDUIT	46.70	0	07:28	6.42	0.85	0.71
217	DUMMY	3.83	0	01:12			
218	DUMMY	3.76	0	01:17			
122	DUMMY	83.09	0	00:46			
212	DUMMY	53.44	0	00:57			
110	DUMMY	168.77	0	00:54			
206	DUMMY	12.39	0	01:07			
300	CONDUIT	10.29	0	02:55	1.88	0.01	0.07
303	CONDUIT	19.94	0	03:00	2.31	0.01	0.10
310	CONDUIT	326.16	0	01:03	4.34	0.06	0.30
505	DUMMY	187.84	0	00:42			
606	CONDUIT	60.77	0	01:04	3.31	0.05	0.24
607	CONDUIT	76.85	0	01:17	3.74	0.06	0.26
608	CONDUIT	76.73	0	01:20	4.75	0.04	0.21
611	CONDUIT	154.58	0	01:11	5.06	0.09	0.33
612	CONDUIT	200.39	0	01:13	3.88	0.19	0.47
613	CONDUIT	216.16	0	01:24	3.14	0.30	0.58
200	DUMMY	63.15	0	00:53			
214	DUMMY	100.77	0	00:47			
215	DUMMY	51.50	0	00:52			
216	DUMMY	32.12	0	00:43			
OUTLET_1001	DUMMY	10.29	0	02:34			

OUTLET_1006	DUMMY	19.94	0	02:52
OUTLET_2012B	DUMMY	73.41	0	04:24
OUTLET_2003	DUMMY	82.12	0	01:24
OUTLET_2005	DUMMY	156.25	0	01:26
OUTLET_2012C	DUMMY	46.72	0	07:19
OUTLET_2012A	DUMMY	146.66	0	02:35

Conduit Surcharge Summary






No conduits were surcharged.

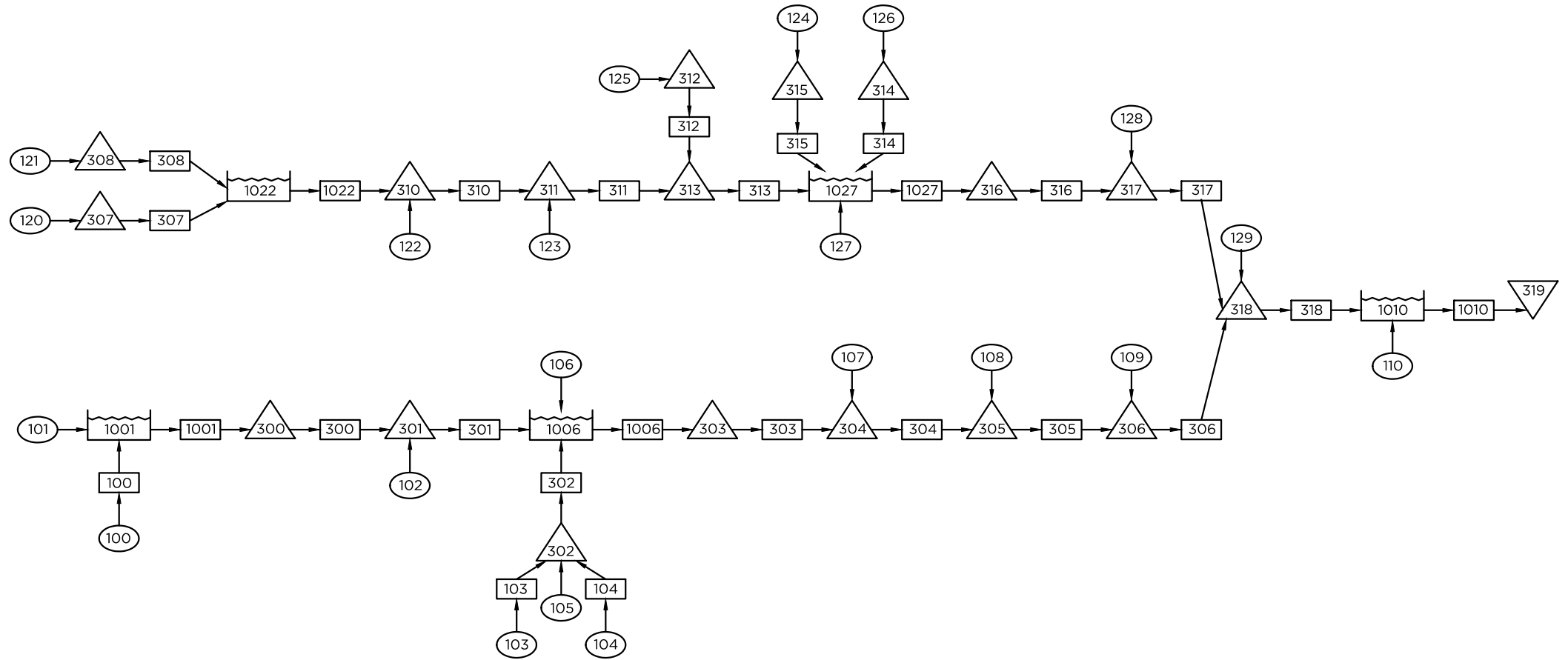
Analysis begun on: Tue Jun 6 14:31:55 2023
Analysis ended on: Tue Jun 6 14:31:55 2023
Total elapsed time: < 1 sec

APPENDIX F
FUTURE CONDITION CUHP/SWMM MODEL

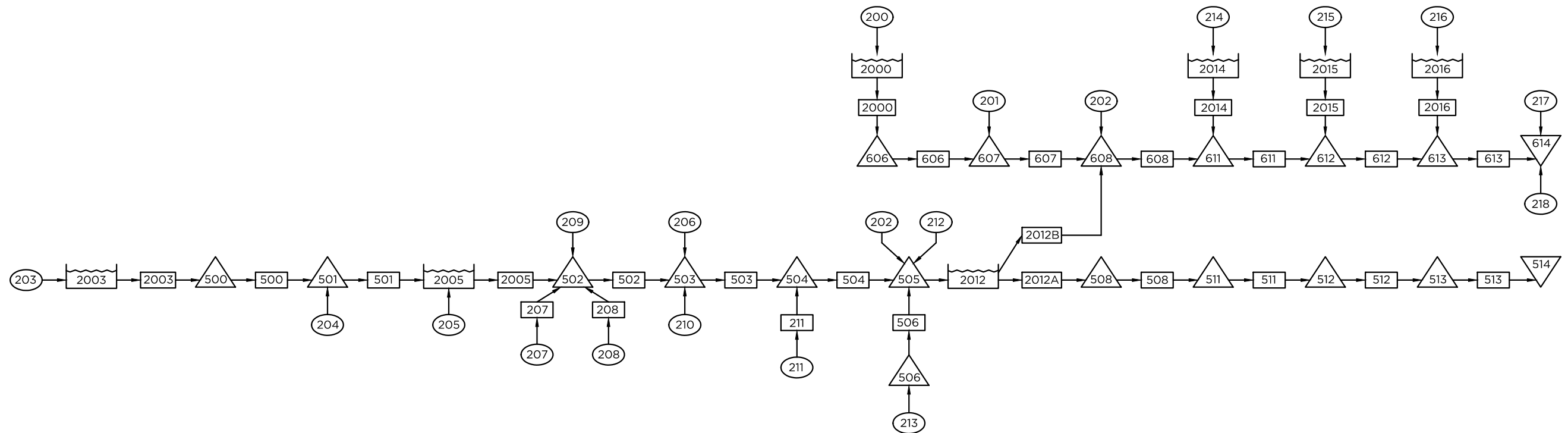
FUTURE CONDITIONS MAP

LEGEND

-  DESIGN POINT
-  SUBBASIN
-  DETENTION FACILITY
-  OUTFALL
-  CONVEYANCE ELEMENT



E. 168TH AVENUE - DRAINAGE #1



E. 168TH AVENUE - DRAINAGE #2

J:\0009\207\CIVIL\RAINAGE\PHASE I\CAD FILES\OUTFALL PLAN-FUTURE.DWG



KT ENGINEERING
 12500 W. 58th AVE, #230
 ARVADA, CO 80002
 PH: 720.638.5190

CUHP SUBCATCHMENTS

Columns with this color heading are for required user-input
Columns with this color heading are for optional override values
Columns with this color heading are for program-calculated values

Subcatchment Name	EPA SWMM Target Node	Raingage	Area (mi ²)	Length to Centroid (mi)	Length (mi)	Slope (ft/ft)	Percent Imperviousness	Maximum Depression Storage (Watershed inches)		Horton's Infiltration Parameters		
								Pervious	Impervious	Initial Rate (in/hr)	Decay Coefficient (1/seconds)	Final Rate (in/hr)
100	JUNCT_100	5-YR	0.0375	0.2119	0.4318	0.0237	23.9	0.38	0.1	3	0.0018	0.5
101	JUNCT_101	5-YR	0.2028	0.3134	0.5438	0.0247	42.25	0.38	0.1	3	0.0018	0.5
102	JUNCT_102	5-YR	0.1136	0.4163	0.6566	0.01933	51.12	0.38	0.1	3	0.0018	0.5
103	JUNCT_103	5-YR	0.0529	0.1572	0.2483	0.0191	10.89	0.38	0.1	3	0.0018	0.5
104	JUNCT_104	5-YR	0.0303	0.0701	0.1826	0.0456	35.57	0.38	0.1	3	0.0018	0.5
105	JUNCT_105	5-YR	0.1009	0.2858	0.5345	0.0145	40.45	0.38	0.1	3	0.0018	0.5
106	JUNCT_106	5-YR	0.1252	0.4591	0.8307	0.0173	49.6	0.38	0.1	3	0.0018	0.5
107	JUNCT_107	5-YR	0.0327	0.1241	0.2723	0.0111	6.73	0.38	0.1	3	0.0018	0.5
108	JUNCT_108	5-YR	0.0494	0.107	0.2693	0.0127	5.99	0.38	0.1	3	0.0018	0.5
109	JUNCT_109	5-YR	0.2248	0.2646	0.6299	0.0123	3.18	0.38	0.1	3	0.0018	0.5
110	JUNCT_110	5-YR	0.2131	0.2913	0.803	0.0116	2.33	0.38	0.1	3	0.0018	0.5
120	JUNCT_120	5-YR	0.18	0.3434	0.7458	0.0135	9.85	0.38	0.1	3	0.0018	0.5
121	JUNCT_121	5-YR	0.1803	0.5699	0.9413	0.0127	16.25	0.38	0.1	3	0.0018	0.5
122	JUNCT_122	5-YR	0.0821	0.1534	0.2905	0.0104	2	0.38	0.1	3	0.0018	0.5
123	JUNCT_123	5-YR	0.07	0.208	0.3845	0.0103	2	0.38	0.1	3	0.0018	0.5
124	JUNCT_124	5-YR	0.0228	0.0672	0.1769	0.0139	2	0.38	0.1	3	0.0018	0.5
125	JUNCT_125	5-YR	0.1665	0.4428	0.9917	0.0088	2	0.38	0.1	3	0.0018	0.5
126	JUNCT_126	5-YR	0.0715	0.1708	0.3163	0.0084	2	0.38	0.1	3	0.0018	0.5
127	JUNCT_127	5-YR	0.2645	0.2506	0.6981	0.0165	2.25	0.38	0.1	3	0.0018	0.5
128	JUNCT_128	5-YR	0.0748	0.1648	0.4085	0.0148	2	0.38	0.1	3	0.0018	0.5
129	JUNCT_129	5-YR	0.177	0.2455	0.5813	0.0173	2	0.38	0.1	3	0.0018	0.5
200	JUNCT_200	5-YR	0.0816	0.2051	0.5246	0.0119	4.37	0.38	0.1	3	0.0018	0.5
201	JUNCT_201	5-YR	0.029	0.31075	0.5782159	0.0128	28.83	0.38	0.1	3	0.0018	0.5
202	JUNCT_202	5-YR	0.0046	0.2797	0.5233	0.008	44.36	0.38	0.1	3	0.0018	0.5
203	JUNCT_203	5-YR	0.127	0.293140152	0.5782254	0.0272	23.32	0.38	0.1	3	0.0018	0.5
204	JUNCT_204	5-YR	0.074	0.2692	0.5601	0.0169	24.47	0.38	0.1	3	0.0018	0.5
205	JUNCT_205	5-YR	0.062	0.2464	0.4621	0.0114	3.45	0.38	0.1	3	0.0018	0.5
206	JUNCT_206	5-YR	0.0214	0.4103	0.6914	0.0137	37.15	0.38	0.1	3	0.0018	0.5
207	JUNCT_207	5-YR	0.0621	0.183	0.3847	0.0123	2	0.38	0.1	3	0.0018	0.5
208	JUNCT_208	5-YR	0.0388	0.10868	0.23969	0.0071	2	0.38	0.1	3	0.0018	0.5
209	JUNCT_209	5-YR	0.0412	0.3381	0.6977	0.0106	20.21	0.38	0.1	3	0.0018	0.5
210	JUNCT_210	5-YR	0.0361	0.4097	0.7119	0.0186	25.32	0.38	0.1	3	0.0018	0.5
211	JUNCT_211	5-YR	0.036	0.1785	0.296	0.0221	26.28	0.38	0.1	3	0.0018	0.5
212	JUNCT_212	5-YR	0.0808	0.280333333	0.5628106	0.0077	27.36	0.38	0.1	3	0.0018	0.5
213	JUNCT_213	5-YR	0.116	0.203833333	0.5581742	0.0129	46.89	0.38	0.1	3	0.0018	0.5
214	JUNCT_214	5-YR	0.1045	0.304159091	0.3573902	0.0201	12.2	0.38	0.1	3	0.0018	0.5
215	JUNCT_215	5-YR	0.0653	0.200164773	0.3851307	0.0089	9.19	0.38	0.1	3	0.0018	0.5
216	JUNCT_216	5-YR	0.0302	0.0564	0.1816	0.0049	4.01	0.38	0.1	3	0.0018	0.5
217	JUNCT_217	5-YR	0.0112	0.1634	0.459	0.0019	17.82	0.38	0.1	3	0.0018	0.5
218	JUNCT_218	5-YR	0.0129	0.2218	0.5591	0.0017	19.86	0.38	0.1	3	0.0018	0.5

FUTURE CONDITION - 5-YR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.1)

Analysis Options

Flow Units CFS

Process Models:

Rainfall/Runoff NO
RDII NO
Snowmelt NO
Groundwater NO
Flow Routing YES
Ponding Allowed YES
Water Quality NO

Flow Routing Method KINWAVE

Starting Date 01/01/2005 00:00:00

Ending Date 01/01/2005 12:00:00

Antecedent Dry Days 0.0

Report Time Step 00:01:00

Routing Time Step 60.00 sec

Flow Routing Continuity

	Volume acre-feet	Volume 10 ⁶ gal
	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.000	0.000
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	38.717	12.616
External Outflow	5.719	1.863
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000

Final Stored Volume 33.551 10.933
 Continuity Error (%) -1.428

 Highest Flow Instability Indexes

Link OUTLET_2015 (33)
 Link 612 (25)
 Link 613 (25)
 Link 308 (1)
 Link 309 (1)

 Routing Time Step Summary

Minimum Time Step : 60.00 sec
 Average Time Step : 60.00 sec
 Maximum Time Step : 60.00 sec
 % of Time in Steady State : 0.00
 Average Iterations per Step : 1.01
 % of Steps Not Converging : 0.00

 Node Depth Summary

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
JUNCT_101	JUNCTION	0.00	0.00	5106.50	0 00:00	0.00
JUNCT_100	JUNCTION	0.10	0.52	5137.12	0 00:43	0.52
JUNCT_301	JUNCTION	0.21	0.85	5064.85	0 00:38	0.85
JUNCT_102	JUNCTION	0.00	0.00	5064.10	0 00:00	0.00
JUNCT_106	JUNCTION	0.00	0.00	5061.10	0 00:00	0.00

JUNCT_302	JUNCTION	0.18	1.37	5079.57	0	00:38	1.37
JUNCT_103	JUNCTION	0.06	0.51	5113.21	0	00:39	0.51
JUNCT_104	JUNCTION	0.07	0.76	5118.36	0	00:32	0.76
JUNCT_105	JUNCTION	0.00	0.00	5078.30	0	00:00	0.00
JUNCT_304	JUNCTION	0.14	0.15	5039.95	0	03:38	0.15
JUNCT_107	JUNCTION	0.00	0.00	5039.90	0	00:00	0.00
JUNCT_305	JUNCTION	0.13	0.20	5028.90	0	00:47	0.20
JUNCT_108	JUNCTION	0.00	0.00	5028.80	0	00:00	0.00
JUNCT_306	JUNCTION	0.14	0.28	4995.48	0	00:50	0.28
JUNCT_109	JUNCTION	0.00	0.00	4995.30	0	00:00	0.00
JUNCT_110	JUNCTION	0.00	0.00	5945.40	0	00:00	0.00
JUNCT_318	JUNCTION	0.20	0.41	4960.51	0	01:05	0.41
JUNCT_129	JUNCTION	0.00	0.00	4960.20	0	00:00	0.00
JUNCT_317	JUNCTION	0.10	0.13	4999.83	0	00:43	0.13
JUNCT_128	JUNCTION	0.00	0.00	4999.80	0	00:00	0.00
JUNCT_127	JUNCTION	0.00	0.00	5008.60	0	00:00	0.00
JUNCT_126	JUNCTION	0.00	0.00	5040.70	0	00:00	0.00
JUNCT_314	JUNCTION	0.02	0.14	5040.74	0	00:43	0.14
JUNCT_124	JUNCTION	0.00	0.00	5015.20	0	00:00	0.00
JUNCT_315	JUNCTION	0.01	0.11	5015.21	0	00:39	0.11
JUNCT_313	JUNCTION	0.12	0.26	5016.46	0	01:12	0.26
JUNCT_311	JUNCTION	0.06	0.07	5016.37	0	04:59	0.07
JUNCT_312	JUNCTION	0.03	0.15	5038.85	0	00:56	0.15
JUNCT_125	JUNCTION	0.00	0.00	5038.80	0	00:00	0.00
JUNCT_123	JUNCTION	0.00	0.00	5016.40	0	00:00	0.00
JUNCT_309	JUNCTION	0.09	0.44	5044.74	0	00:55	0.44
JUNCT_308	JUNCTION	0.07	0.31	5050.81	0	00:54	0.31
JUNCT_307	JUNCTION	0.05	0.32	5049.92	0	00:47	0.32
JUNCT_121	JUNCTION	0.00	0.00	5050.60	0	00:00	0.00
JUNCT_120	JUNCTION	0.00	0.00	5049.70	0	00:00	0.00
JUNCT_203	JUNCTION	0.00	0.00	5072.60	0	00:00	0.00
JUNCT_500	JUNCTION	0.10	0.21	5072.71	0	02:25	0.21
JUNCT_501	JUNCTION	0.14	0.36	5043.76	0	00:44	0.36
JUNCT_204	JUNCTION	0.00	0.00	5043.50	0	00:00	0.00
JUNCT_502	JUNCTION	0.07	0.15	5022.75	0	01:26	0.15
JUNCT_205	JUNCTION	0.00	0.00	5022.80	0	00:00	0.00
JUNCT_209	JUNCTION	0.00	0.00	5022.70	0	00:00	0.00
JUNCT_207	JUNCTION	0.02	0.20	5060.40	0	00:44	0.20
JUNCT_208	JUNCTION	0.02	0.15	5051.65	0	00:42	0.15

JUNCT_503	JUNCTION	0.25	0.52	5022.32	0	01:12	0.52
JUNCT_210	JUNCTION	0.00	0.00	5022.00	0	00:00	0.00
JUNCT_504	JUNCTION	0.29	0.90	5014.10	0	01:05	0.90
JUNCT_211	JUNCTION	0.14	0.99	5014.29	0	00:39	0.99
JUNCT_508	JUNCTION	0.32	0.35	4995.15	0	05:58	0.35
JUNCT_201	JUNCTION	0.00	0.00	5026.40	0	00:00	0.00
JUNCT_202	JUNCTION	0.00	0.00	4999.40	0	00:00	0.00
JUNCT_511	JUNCTION	0.35	0.38	4966.98	0	06:00	0.38
JUNCT_506	JUNCTION	0.05	0.47	5004.97	0	00:35	0.47
JUNCT_213	JUNCTION	0.00	0.00	5004.60	0	00:00	0.00
JUNCT_509	JUNCTION	0.00	0.00	5012.00	0	00:00	0.00
JUNCT_219	JUNCTION	0.00	0.00	5012.10	0	00:00	0.00
JUNCT_512	JUNCTION	0.42	0.45	4959.05	0	06:01	0.45
JUNCT_513	JUNCTION	0.47	0.51	4952.91	0	06:04	0.51
JUNCT_217	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_218	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_122	JUNCTION	0.00	0.00	5035.10	0	00:00	0.00
JUNCT_212	JUNCTION	0.00	0.00	4999.50	0	00:00	0.00
JUNCT_206	JUNCTION	0.00	0.00	5021.90	0	00:00	0.00
JUNCT_300	JUNCTION	0.10	0.11	5103.91	0	02:49	0.11
JUNCT_303	JUNCTION	0.14	0.15	5057.45	0	03:23	0.15
JUNCT_200	JUNCTION	0.00	0.00	5051.10	0	00:00	0.00
JUNCT_214	JUNCTION	0.00	0.00	4967.10	0	00:00	0.00
JUNCT_215	JUNCTION	0.00	0.00	4959.10	0	00:00	0.00
JUNCT_216	JUNCTION	0.00	0.00	4952.70	0	00:00	0.00
JUNCT_310	JUNCTION	0.06	0.07	5034.97	0	04:40	0.07
JUNCT_316	JUNCTION	0.10	0.12	5008.02	0	05:03	0.12
JUNCT_505	JUNCTION	0.23	0.51	4995.41	0	01:26	0.51
JUNCT_613	JUNCTION	0.31	0.70	4953.10	0	00:55	0.70
JUNCT_612	JUNCTION	0.25	0.58	4959.18	0	00:52	0.58
JUNCT_611	JUNCTION	0.20	0.34	4966.94	0	01:08	0.34
JUNCT_608	JUNCTION	0.19	0.40	4995.20	0	01:05	0.40
JUNCT_607	JUNCTION	0.19	0.40	5026.70	0	00:56	0.40
JUNCT_606	JUNCTION	0.13	0.16	5049.96	0	03:02	0.16
OUTFALL_514	OUTFALL	0.46	0.51	4943.51	0	06:16	0.51
OUTFALL_319	OUTFALL	0.00	0.00	4945.30	0	00:00	0.00
OUTFALL_614	OUTFALL	0.31	0.68	4943.68	0	01:13	0.68
STOR_1001	STORAGE	3.89	4.24	5108.24	0	02:49	4.24
STOR_1006	STORAGE	4.46	4.81	5065.81	0	03:23	4.81

STOR_2012	STORAGE	3.66	4.00	4999.00	0	05:58	4.00
STOR_2000	STORAGE	1.77	2.11	5053.11	0	03:02	2.11
STOR_2014	STORAGE	2.03	2.30	4969.30	0	02:45	2.30
STOR_2015	STORAGE	0.02	0.21	4959.21	0	00:34	0.21
STOR_2016	STORAGE	1.70	1.91	4954.41	0	02:22	1.91
STOR_1022	STORAGE	2.78	3.15	5038.15	0	04:40	3.15
STOR_1027	STORAGE	2.20	2.46	5010.46	0	05:03	2.46
STOR_1010	STORAGE	2.74	3.28	4950.28	0	12:00	3.28
STOR_2003	STORAGE	1.87	2.47	5075.47	0	02:25	2.47
STOR_2005	STORAGE	3.12	3.51	5030.21	0	04:29	3.51

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
JUNCT_101	JUNCTION	75.89	75.89	0 00:35	1.7	1.7	0.000
JUNCT_100	JUNCTION	4.56	4.56	0 00:43	0.184	0.184	0.000
JUNCT_301	JUNCTION	0.00	38.63	0 00:38	0	1.56	0.000
JUNCT_102	JUNCTION	38.62	38.62	0 00:38	1.14	1.14	0.000
JUNCT_106	JUNCTION	36.76	36.76	0 00:40	1.23	1.23	0.000
JUNCT_302	JUNCTION	0.00	43.71	0 00:38	0	1.16	0.000
JUNCT_103	JUNCTION	5.41	5.41	0 00:39	0.136	0.136	0.000
JUNCT_104	JUNCTION	12.56	12.56	0 00:32	0.215	0.215	0.000
JUNCT_105	JUNCTION	27.31	27.31	0 00:38	0.813	0.813	0.000
JUNCT_304	JUNCTION	0.00	3.29	0 01:24	0	0.836	0.000
JUNCT_107	JUNCTION	2.06	2.06	0 00:42	0.0619	0.0619	0.000
JUNCT_305	JUNCTION	0.00	5.55	0 00:47	0	0.913	0.000
JUNCT_108	JUNCTION	3.77	3.77	0 00:40	0.0878	0.0878	0.000
JUNCT_306	JUNCTION	0.00	12.31	0 00:50	0	1.17	0.000
JUNCT_109	JUNCTION	11.68	11.68	0 00:45	0.301	0.301	0.000
JUNCT_110	JUNCTION	8.57	8.57	0 00:48	0.257	0.257	0.000
JUNCT_318	JUNCTION	0.00	19.02	0 01:05	0	1.82	0.000

JUNCT_129	JUNCTION	8.85	8.85	0	00:44	0.205	0.205	0.000
JUNCT_317	JUNCTION	0.00	3.50	0	00:43	0	0.488	0.000
JUNCT_128	JUNCTION	3.50	3.50	0	00:43	0.0864	0.0864	0.000
JUNCT_127	JUNCTION	13.71	13.71	0	00:45	0.316	0.316	0.000
JUNCT_126	JUNCTION	3.20	3.20	0	00:43	0.0826	0.0826	0.000
JUNCT_314	JUNCTION	0.00	3.20	0	00:43	0	0.0826	0.000
JUNCT_124	JUNCTION	1.34	1.34	0	00:39	0.0263	0.0263	0.000
JUNCT_315	JUNCTION	0.00	1.34	0	00:39	0	0.0263	0.000
JUNCT_313	JUNCTION	0.00	5.97	0	01:12	0	0.554	0.000
JUNCT_311	JUNCTION	0.00	2.74	0	00:45	0	0.356	0.000
JUNCT_312	JUNCTION	0.00	4.24	0	00:56	0	0.192	0.000
JUNCT_125	JUNCTION	4.24	4.24	0	00:56	0.192	0.192	0.000
JUNCT_123	JUNCTION	2.74	2.74	0	00:45	0.0809	0.0809	0.000
JUNCT_309	JUNCTION	0.00	24.59	0	00:55	0	1.07	0.000
JUNCT_308	JUNCTION	0.00	12.62	0	00:54	0	0.635	0.000
JUNCT_307	JUNCTION	0.00	12.30	0	00:47	0	0.431	0.000
JUNCT_121	JUNCTION	12.62	12.62	0	00:54	0.635	0.635	0.000
JUNCT_120	JUNCTION	12.30	12.30	0	00:47	0.431	0.431	0.000
JUNCT_203	JUNCTION	19.17	19.17	0	00:41	0.61	0.61	0.000
JUNCT_500	JUNCTION	0.00	2.94	0	02:25	0	0.328	0.000
JUNCT_501	JUNCTION	0.00	9.14	0	00:44	0	0.687	0.000
JUNCT_204	JUNCTION	9.14	9.14	0	00:44	0.371	0.371	0.000
JUNCT_502	JUNCTION	0.00	5.67	0	01:15	0	0.733	0.000
JUNCT_205	JUNCTION	2.33	2.33	0	00:47	0.0855	0.0855	0.000
JUNCT_209	JUNCTION	2.61	2.61	0	00:59	0.175	0.175	0.000
JUNCT_207	JUNCTION	2.54	2.54	0	00:44	0.0718	0.0718	0.000
JUNCT_208	JUNCTION	1.78	1.78	0	00:42	0.0448	0.0448	0.000
JUNCT_503	JUNCTION	0.00	10.58	0	01:12	0	1.08	0.000
JUNCT_210	JUNCTION	2.77	2.77	0	00:58	0.187	0.187	0.000
JUNCT_504	JUNCTION	0.00	14.92	0	01:19	0	1.27	0.000
JUNCT_211	JUNCTION	5.73	5.73	0	00:39	0.193	0.193	0.000
JUNCT_508	JUNCTION	0.00	2.53	0	05:58	0	0.747	0.000
JUNCT_201	JUNCTION	2.70	2.70	0	00:55	0.169	0.169	0.000
JUNCT_202	JUNCTION	0.44	0.44	0	01:15	0.0405	0.0405	0.000
JUNCT_511	JUNCTION	0.00	2.53	0	06:00	0	0.743	0.000
JUNCT_506	JUNCTION	0.00	43.98	0	00:35	0	1.08	0.000
JUNCT_213	JUNCTION	43.98	43.98	0	00:35	1.08	1.08	0.000
JUNCT_509	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_219	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal

JUNCT_512	JUNCTION	0.00	2.53	0	06:01	0	0.741	0.000
JUNCT_513	JUNCTION	0.00	2.53	0	06:04	0	0.736	0.000
JUNCT_217	JUNCTION	0.44	0.44	0	01:16	0.0426	0.0426	0.000
JUNCT_218	JUNCTION	0.47	0.47	0	01:23	0.0539	0.0539	0.000
JUNCT_122	JUNCTION	4.40	4.40	0	00:42	0.0949	0.0949	0.000
JUNCT_212	JUNCTION	9.70	9.70	0	00:46	0.448	0.448	0.000
JUNCT_206	JUNCTION	2.28	2.28	0	00:59	0.158	0.158	0.000
JUNCT_300	JUNCTION	0.00	1.51	0	02:49	0	0.45	0.000
JUNCT_303	JUNCTION	0.00	2.66	0	03:23	0	0.797	0.000
JUNCT_200	JUNCTION	3.85	3.85	0	00:45	0.124	0.124	0.000
JUNCT_214	JUNCTION	10.05	10.05	0	00:42	0.293	0.293	0.000
JUNCT_215	JUNCTION	4.31	4.31	0	00:44	0.149	0.149	0.000
JUNCT_216	JUNCTION	2.05	2.05	0	00:39	0.0443	0.0443	0.000
JUNCT_310	JUNCTION	0.00	1.00	0	04:40	0	0.287	0.000
JUNCT_316	JUNCTION	0.00	1.60	0	05:03	0	0.426	0.000
JUNCT_505	JUNCTION	0.00	53.05	0	00:38	0	2.83	0.000
JUNCT_613	JUNCTION	0.00	6.68	0	00:55	0	0.496	0.000
JUNCT_612	JUNCTION	0.00	6.66	0	00:52	0	0.482	0.000
JUNCT_611	JUNCTION	0.00	2.93	0	01:08	0	0.344	0.000
JUNCT_608	JUNCTION	0.00	2.70	0	01:05	0	0.236	0.000
JUNCT_607	JUNCTION	0.00	2.72	0	00:56	0	0.237	0.000
JUNCT_606	JUNCTION	0.00	0.34	0	03:02	0	0.0695	0.000
OUTFALL_514	OUTFALL	0.00	2.53	0	06:16	0	0.717	0.000
OUTFALL_319	OUTFALL	0.00	2.23	0	12:00	0	0.559	0.000
OUTFALL_614	OUTFALL	0.00	7.29	0	01:13	0	0.587	0.000
STOR_1001	STORAGE	0.00	78.86	0	00:36	0	1.89	0.000
STOR_1006	STORAGE	0.00	118.44	0	00:41	0	3.94	-0.000
STOR_2012	STORAGE	0.00	53.05	0	00:38	0	2.83	-0.002
STOR_2000	STORAGE	0.00	3.85	0	00:45	0	0.124	0.017
STOR_2014	STORAGE	0.00	10.05	0	00:42	0	0.293	0.002
STOR_2015	STORAGE	0.00	4.31	0	00:44	0	0.149	7.829
STOR_2016	STORAGE	0.00	2.05	0	00:39	0	0.0443	-0.000
STOR_1022	STORAGE	0.00	27.37	0	00:59	0	1.17	-0.002
STOR_1027	STORAGE	0.00	14.39	0	00:47	0	0.993	-0.011
STOR_1010	STORAGE	0.00	24.11	0	01:14	0	2.05	-0.012
STOR_2003	STORAGE	0.00	19.17	0	00:41	0	0.61	0.058
STOR_2005	STORAGE	0.00	11.31	0	00:50	0	0.769	-0.014

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

Storage Unit	Average Volume 1000 ft ³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft ³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
STOR_1001	201.404	11	0	0	238.482	13	0 02:49	1.51
STOR_1006	398.143	11	0	0	455.772	13	0 03:23	2.66
STOR_2012	256.264	11	0	0	299.382	13	0 05:58	2.53
STOR_2000	9.749	4	0	0	14.113	6	0 03:02	0.34
STOR_2014	27.940	6	0	0	36.040	7	0 02:45	0.47
STOR_2015	0.005	0	0	0	0.084	0	0 00:34	4.31
STOR_2016	4.344	4	0	0	5.544	5	0 02:22	0.06
STOR_1022	114.964	6	0	0	141.684	7	0 04:40	1.00
STOR_1027	72.004	1	0	0	86.662	2	0 05:03	1.60
STOR_1010	139.022	3	0	0	199.025	4	0 12:00	2.23
STOR_2003	46.701	14	0	0	67.826	20	0 02:25	2.94
STOR_2005	50.593	18	0	0	65.931	24	0 04:29	1.83

Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10 ⁶ gal
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OUTFALL_514	94.31	2.35	2.53	0.717
OUTFALL_319	97.64	1.77	2.23	0.559
OUTFALL_614	98.06	1.85	7.29	0.587

System	96.67	5.98	9.84	1.863

Link Flow Summary

Link	Type	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Veloc ft/sec	Max/ Full Flow	Max/ Full Depth

101	DUMMY	75.89	0 00:35			
100	CONDUIT	4.51	0 00:48	6.23	0.09	0.21
102	DUMMY	38.62	0 00:38			
105	DUMMY	27.31	0 00:38			
106	DUMMY	36.76	0 00:40			
301	CONDUIT	38.46	0 00:40	2.38	0.03	0.17
302	CONDUIT	43.28	0 00:41	9.51	0.13	0.25
103	CONDUIT	5.31	0 00:44	6.79	0.06	0.17
104	CONDUIT	12.05	0 00:36	9.05	0.13	0.25
107	DUMMY	2.06	0 00:42			
108	DUMMY	3.77	0 00:40			
304	CONDUIT	3.28	0 01:30	2.26	0.00	0.01
305	CONDUIT	4.72	0 01:34	1.17	0.00	0.04
109	DUMMY	11.68	0 00:45			
306	CONDUIT	11.29	0 01:13	1.73	0.00	0.05
318	CONDUIT	18.49	0 01:18	1.64	0.00	0.08
129	DUMMY	8.85	0 00:44			
317	CONDUIT	2.46	0 01:11	1.11	0.00	0.02
128	DUMMY	3.50	0 00:43			
316	CONDUIT	1.60	0 05:31	0.62	0.00	0.02
127	DUMMY	13.71	0 00:45			
126	DUMMY	3.20	0 00:43			
124	DUMMY	1.34	0 00:39			

314	CONDUIT	2.02	0	01:25	1.02	0.00	0.02
315	CONDUIT	0.83	0	01:14	0.59	0.00	0.02
313	CONDUIT	5.33	0	01:42	0.90	0.00	0.05
125	DUMMY	4.24	0	00:56			
312	CONDUIT	3.96	0	01:15	1.23	0.00	0.03
311	DUMMY	2.74	0	00:45			
123	DUMMY	2.74	0	00:45			
120	DUMMY	12.30	0	00:47			
121	DUMMY	12.62	0	00:54			
309	CONDUIT	24.36	0	01:00	1.95	0.01	0.09
307	CONDUIT	12.16	0	00:53	1.45	0.00	0.06
308	CONDUIT	12.59	0	00:59	1.57	0.00	0.06
203	DUMMY	19.17	0	00:41			
204	DUMMY	9.14	0	00:44			
500	CONDUIT	2.87	0	02:49	1.30	0.00	0.04
501	CONDUIT	9.00	0	00:51	2.15	0.01	0.07
205	DUMMY	2.33	0	00:47			
209	DUMMY	2.61	0	00:59			
207	CONDUIT	1.64	0	01:26	1.18	0.00	0.03
208	CONDUIT	1.30	0	01:09	1.09	0.00	0.02
502	CONDUIT	5.67	0	01:16	2.05	0.00	0.03
210	DUMMY	2.77	0	00:58			
503	CONDUIT	10.47	0	01:23	1.62	0.01	0.10
211	CONDUIT	4.75	0	01:05	0.39	0.03	0.18
504	CONDUIT	14.86	0	01:26	2.34	0.01	0.10
201	DUMMY	2.70	0	00:55			
202	DUMMY	0.44	0	01:15			
508	CONDUIT	2.53	0	06:00	6.19	0.04	0.14
219	DUMMY	0.00	0	00:00			
509	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
213	DUMMY	43.98	0	00:35			
506	CONDUIT	43.87	0	00:37	3.15	0.01	0.09
511	CONDUIT	2.53	0	06:01	5.44	0.05	0.15
512	CONDUIT	2.53	0	06:04	3.84	0.05	0.15
513	CONDUIT	2.53	0	06:16	2.91	0.05	0.15
217	DUMMY	0.44	0	01:16			
218	DUMMY	0.47	0	01:23			
122	DUMMY	4.40	0	00:42			
212	DUMMY	9.70	0	00:46			

110	DUMMY	8.57	0	00:48			
206	DUMMY	2.28	0	00:59			
300	CONDUIT	1.51	0	03:43	0.92	0.00	0.02
303	CONDUIT	2.66	0	03:38	1.11	0.00	0.03
200	DUMMY	3.85	0	00:45			
214	DUMMY	10.05	0	00:42			
215	DUMMY	4.31	0	00:44			
27	DUMMY	2.05	0	00:39			
310	CONDUIT	1.00	0	04:59	0.71	0.00	0.01
505	DUMMY	53.05	0	00:38			
606	CONDUIT	0.34	0	03:14	2.47	0.01	0.07
607	CONDUIT	2.70	0	01:05	4.79	0.04	0.13
608	CONDUIT	2.70	0	01:07	5.92	0.01	0.08
611	CONDUIT	2.92	0	01:09	5.23	0.01	0.08
612	CONDUIT	6.64	0	00:55	7.82	0.02	0.10
613	CONDUIT	6.39	0	01:13	4.14	0.03	0.11
OUTLET_1001	DUMMY	1.51	0	02:49			
OUTLET_1006	DUMMY	2.66	0	03:23			
OUTLET_2012A	DUMMY	2.53	0	05:58			
OUTLET_2000	DUMMY	0.34	0	03:02			
OUTLET_2014	DUMMY	0.47	0	02:45			
OUTLET_2015	DUMMY	4.31	0	00:45			
OUTLET_2016	DUMMY	0.06	0	02:22			
OUTLET_1022	DUMMY	1.00	0	04:40			
OUTLET_1027	DUMMY	1.60	0	05:03			
OUTLET_1010	DUMMY	2.23	0	12:00			
OUTLET_2003	DUMMY	2.94	0	02:25			
OUTLET_2005	DUMMY	1.83	0	04:29			
OUTLET_2012B	DUMMY	0.00	0	00:00			

Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Tue Jun 6 16:06:43 2023

Analysis ended on: Tue Jun 6 16:06:43 2023
Total elapsed time: < 1 sec

FUTURE CONDITION - 10-YR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.1)

Analysis Options

Flow Units CFS

Process Models:

Rainfall/Runoff NO

RDII NO

Snowmelt NO

Groundwater NO

Flow Routing YES

Ponding Allowed YES

Water Quality NO

Flow Routing Method KINWAVE

Starting Date 01/01/2005 00:00:00

Ending Date 01/01/2005 12:00:00

Antecedent Dry Days 0.0

Report Time Step 00:01:00

Routing Time Step 60.00 sec

Flow Routing Continuity

	Volume acre-feet	Volume 10 ⁶ gal
	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.000	0.000
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	77.114	25.129
External Outflow	12.160	3.962
Flooding Loss	0.000	0.000

Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	65.895	21.473
Continuity Error (%)	-1.221	

Highest Flow Instability Indexes

Link OUTLET_2015 (27)
 Link 612 (20)
 Link 613 (16)
 Link 313 (1)
 Link 308 (1)

Routing Time Step Summary

Minimum Time Step	:	60.00 sec
Average Time Step	:	60.00 sec
Maximum Time Step	:	60.00 sec
% of Time in Steady State	:	0.00
Average Iterations per Step	:	1.04
% of Steps Not Converging	:	0.00

Node Depth Summary

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
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JUNCT_101	JUNCTION	0.00	0.00	5106.50	0	00:00	0.00
JUNCT_100	JUNCTION	0.13	0.69	5137.29	0	00:43	0.69
JUNCT_301	JUNCTION	0.28	1.03	5065.03	0	00:38	1.03
JUNCT_102	JUNCTION	0.00	0.00	5064.10	0	00:00	0.00
JUNCT_106	JUNCTION	0.00	0.00	5061.10	0	00:00	0.00
JUNCT_302	JUNCTION	0.23	1.78	5079.98	0	00:37	1.78
JUNCT_103	JUNCTION	0.09	0.78	5113.48	0	00:38	0.78
JUNCT_104	JUNCTION	0.08	0.98	5118.58	0	00:31	0.98
JUNCT_105	JUNCTION	0.00	0.00	5078.30	0	00:00	0.00
JUNCT_304	JUNCTION	0.24	0.32	5040.12	0	03:17	0.32
JUNCT_107	JUNCTION	0.00	0.00	5039.90	0	00:00	0.00
JUNCT_305	JUNCTION	0.23	0.35	5029.05	0	00:43	0.35
JUNCT_108	JUNCTION	0.00	0.00	5028.80	0	00:00	0.00
JUNCT_306	JUNCTION	0.25	0.55	4995.75	0	00:50	0.55
JUNCT_109	JUNCTION	0.00	0.00	4995.30	0	00:00	0.00
JUNCT_110	JUNCTION	0.00	0.00	5945.40	0	00:00	0.00
JUNCT_318	JUNCTION	0.36	0.84	4960.94	0	00:58	0.84
JUNCT_129	JUNCTION	0.00	0.00	4960.20	0	00:00	0.00
JUNCT_317	JUNCTION	0.18	0.28	4999.98	0	00:42	0.28
JUNCT_128	JUNCTION	0.00	0.00	4999.80	0	00:00	0.00
JUNCT_127	JUNCTION	0.00	0.00	5008.60	0	00:00	0.00
JUNCT_126	JUNCTION	0.00	0.00	5040.70	0	00:00	0.00
JUNCT_314	JUNCTION	0.04	0.30	5040.90	0	00:43	0.30
JUNCT_124	JUNCTION	0.00	0.00	5015.20	0	00:00	0.00
JUNCT_315	JUNCTION	0.02	0.23	5015.33	0	00:38	0.23
JUNCT_313	JUNCTION	0.26	0.55	5016.75	0	01:04	0.55
JUNCT_311	JUNCTION	0.13	0.32	5016.62	0	02:53	0.32
JUNCT_312	JUNCTION	0.06	0.32	5039.02	0	00:56	0.32
JUNCT_125	JUNCTION	0.00	0.00	5038.80	0	00:00	0.00
JUNCT_123	JUNCTION	0.00	0.00	5016.40	0	00:00	0.00
JUNCT_309	JUNCTION	0.13	0.67	5044.97	0	00:53	0.67
JUNCT_308	JUNCTION	0.10	0.46	5050.96	0	00:53	0.46
JUNCT_307	JUNCTION	0.08	0.52	5050.12	0	00:47	0.52
JUNCT_121	JUNCTION	0.00	0.00	5050.60	0	00:00	0.00
JUNCT_120	JUNCTION	0.00	0.00	5049.70	0	00:00	0.00

JUNCT_203	JUNCTION	0.00	0.00	5072.60	0	00:00	0.00
JUNCT_500	JUNCTION	0.16	0.34	5072.84	0	02:16	0.34
JUNCT_501	JUNCTION	0.21	0.50	5043.90	0	00:44	0.50
JUNCT_204	JUNCTION	0.00	0.00	5043.50	0	00:00	0.00
JUNCT_502	JUNCTION	0.13	0.35	5022.95	0	01:12	0.35
JUNCT_205	JUNCTION	0.00	0.00	5022.80	0	00:00	0.00
JUNCT_209	JUNCTION	0.00	0.00	5022.70	0	00:00	0.00
JUNCT_207	JUNCTION	0.05	0.41	5060.61	0	00:44	0.41
JUNCT_208	JUNCTION	0.04	0.31	5051.81	0	00:42	0.31
JUNCT_503	JUNCTION	0.39	0.85	5022.65	0	01:08	0.85
JUNCT_210	JUNCTION	0.00	0.00	5022.00	0	00:00	0.00
JUNCT_504	JUNCTION	0.43	1.22	5014.42	0	01:01	1.22
JUNCT_211	JUNCTION	0.19	1.33	5014.63	0	00:39	1.33
JUNCT_508	JUNCTION	0.45	0.50	4995.30	0	05:39	0.50
JUNCT_201	JUNCTION	0.00	0.00	5026.40	0	00:00	0.00
JUNCT_202	JUNCTION	0.00	0.00	4999.40	0	00:00	0.00
JUNCT_511	JUNCTION	0.48	0.54	4967.14	0	05:41	0.54
JUNCT_506	JUNCTION	0.06	0.58	5005.08	0	00:35	0.58
JUNCT_213	JUNCTION	0.00	0.00	5004.60	0	00:00	0.00
JUNCT_509	JUNCTION	0.00	0.00	5012.00	0	00:00	0.00
JUNCT_219	JUNCTION	0.00	0.00	5012.10	0	00:00	0.00
JUNCT_512	JUNCTION	0.57	0.64	4959.24	0	05:42	0.64
JUNCT_513	JUNCTION	0.65	0.73	4953.13	0	05:45	0.73
JUNCT_217	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_218	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_122	JUNCTION	0.00	0.00	5035.10	0	00:00	0.00
JUNCT_212	JUNCTION	0.00	0.00	4999.50	0	00:00	0.00
JUNCT_206	JUNCTION	0.00	0.00	5021.90	0	00:00	0.00
JUNCT_300	JUNCTION	0.15	0.25	5104.05	0	02:26	0.25
JUNCT_303	JUNCTION	0.25	0.32	5057.62	0	03:07	0.32
JUNCT_200	JUNCTION	0.00	0.00	5051.10	0	00:00	0.00
JUNCT_214	JUNCTION	0.00	0.00	4967.10	0	00:00	0.00
JUNCT_215	JUNCTION	0.00	0.00	4959.10	0	00:00	0.00
JUNCT_216	JUNCTION	0.00	0.00	4952.70	0	00:00	0.00
JUNCT_310	JUNCTION	0.13	0.32	5035.22	0	02:45	0.32
JUNCT_316	JUNCTION	0.17	0.19	5008.09	0	06:39	0.19

JUNCT_505	JUNCTION	0.35	0.80	4995.70	0	01:20	0.80
JUNCT_613	JUNCTION	0.48	1.25	4953.65	0	01:40	1.25
JUNCT_612	JUNCTION	0.38	1.04	4959.64	0	01:38	1.04
JUNCT_611	JUNCTION	0.29	0.79	4967.39	0	01:47	0.79
JUNCT_608	JUNCTION	0.27	0.73	4995.53	0	01:47	0.73
JUNCT_607	JUNCTION	0.28	0.73	5027.03	0	01:42	0.73
JUNCT_606	JUNCTION	0.23	0.63	5050.43	0	01:41	0.63
OUTFALL_514	OUTFALL	0.64	0.73	4943.73	0	05:55	0.73
OUTFALL_319	OUTFALL	0.00	0.00	4945.30	0	00:00	0.00
OUTFALL_614	OUTFALL	0.47	1.25	4944.25	0	01:48	1.25
STOR_1001	STORAGE	4.36	4.84	5108.84	0	02:26	4.84
STOR_1006	STORAGE	4.98	5.46	5066.46	0	03:07	5.46
STOR_2012	STORAGE	4.54	5.03	5000.03	0	05:39	5.03
STOR_2000	STORAGE	2.21	2.74	5053.74	0	01:41	2.74
STOR_2014	STORAGE	2.29	2.75	4969.75	0	01:44	2.75
STOR_2015	STORAGE	0.09	0.98	4959.98	0	00:54	0.98
STOR_2016	STORAGE	2.34	2.86	4955.36	0	02:10	2.86
STOR_1022	STORAGE	3.35	3.95	5038.95	0	02:45	3.95
STOR_1027	STORAGE	3.87	4.37	5012.37	0	06:39	4.37
STOR_1010	STORAGE	4.31	5.10	4952.10	0	12:00	5.10
STOR_2003	STORAGE	2.25	3.48	5076.48	0	02:16	3.48
STOR_2005	STORAGE	3.64	4.17	5030.87	0	02:44	4.17

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10 ⁶ gal	Total Inflow Volume 10 ⁶ gal	Flow Balance Error Percent
JUNCT_101	JUNCTION	116.54	116.54	0 00:35	2.54	2.54	0.000
JUNCT_100	JUNCTION	8.19	8.19	0 00:43	0.327	0.327	0.000

JUNCT_301	JUNCTION	0.00	55.55	0	00:38	0	2.5	0.000
JUNCT_102	JUNCTION	55.55	55.55	0	00:38	1.63	1.63	0.000
JUNCT_106	JUNCTION	53.22	53.22	0	00:40	1.76	1.76	0.000
JUNCT_302	JUNCTION	0.00	72.79	0	00:37	0	1.88	0.000
JUNCT_103	JUNCTION	12.64	12.64	0	00:38	0.321	0.321	0.000
JUNCT_104	JUNCTION	20.60	20.60	0	00:31	0.337	0.337	0.000
JUNCT_105	JUNCTION	42.01	42.01	0	00:38	1.22	1.22	0.000
JUNCT_304	JUNCTION	0.00	9.69	0	02:48	0	2.18	0.000
JUNCT_107	JUNCTION	5.58	5.58	0	00:42	0.173	0.173	0.000
JUNCT_305	JUNCTION	0.00	15.66	0	00:43	0	2.42	0.000
JUNCT_108	JUNCTION	10.56	10.56	0	00:39	0.254	0.254	0.000
JUNCT_306	JUNCTION	0.00	43.86	0	00:50	0	3.41	0.000
JUNCT_109	JUNCTION	38.42	38.42	0	00:45	1.04	1.04	0.000
JUNCT_110	JUNCTION	30.17	30.17	0	00:48	0.951	0.951	0.000
JUNCT_318	JUNCTION	0.00	75.05	0	00:58	0	5.46	0.000
JUNCT_129	JUNCTION	31.39	31.39	0	00:43	0.779	0.779	0.000
JUNCT_317	JUNCTION	0.00	12.40	0	00:42	0	1.33	0.000
JUNCT_128	JUNCTION	12.40	12.40	0	00:42	0.329	0.329	0.000
JUNCT_127	JUNCTION	47.83	47.83	0	00:44	1.18	1.18	0.000
JUNCT_126	JUNCTION	11.35	11.35	0	00:43	0.315	0.315	0.000
JUNCT_314	JUNCTION	0.00	11.35	0	00:43	0	0.315	0.000
JUNCT_124	JUNCTION	4.71	4.71	0	00:38	0.1	0.1	0.000
JUNCT_315	JUNCTION	0.00	4.71	0	00:38	0	0.1	0.000
JUNCT_313	JUNCTION	0.00	22.94	0	01:04	0	2.46	0.000
JUNCT_311	JUNCTION	0.00	16.09	0	02:44	0	1.72	0.000
JUNCT_312	JUNCTION	0.00	15.55	0	00:56	0	0.733	0.000
JUNCT_125	JUNCTION	15.55	15.55	0	00:56	0.733	0.733	0.000
JUNCT_123	JUNCTION	9.79	9.79	0	00:45	0.308	0.308	0.000
JUNCT_309	JUNCTION	0.00	55.13	0	00:53	0	2.35	-0.000
JUNCT_308	JUNCTION	0.00	25.83	0	00:53	0	1.29	0.000
JUNCT_307	JUNCTION	0.00	29.84	0	00:47	0	1.06	0.000
JUNCT_121	JUNCTION	25.83	25.83	0	00:53	1.29	1.29	0.000
JUNCT_120	JUNCTION	29.84	29.84	0	00:47	1.06	1.06	0.000
JUNCT_203	JUNCTION	34.75	34.75	0	00:40	1.09	1.09	0.000
JUNCT_500	JUNCTION	0.00	6.98	0	02:16	0	0.777	0.000
JUNCT_501	JUNCTION	0.00	16.30	0	00:44	0	1.42	0.000

JUNCT_204	JUNCTION	16.30	16.30	0	00:44	0.653	0.653	0.000
JUNCT_502	JUNCTION	0.00	17.92	0	02:30	0	2.03	0.000
JUNCT_205	JUNCTION	7.61	7.61	0	00:48	0.289	0.289	0.000
JUNCT_209	JUNCTION	4.93	4.93	0	00:57	0.328	0.328	0.000
JUNCT_207	JUNCTION	9.05	9.05	0	00:44	0.273	0.273	0.000
JUNCT_208	JUNCTION	6.29	6.29	0	00:42	0.171	0.171	-0.000
JUNCT_503	JUNCTION	0.00	26.02	0	01:08	0	2.6	0.000
JUNCT_210	JUNCTION	4.84	4.84	0	00:57	0.325	0.325	0.000
JUNCT_504	JUNCTION	0.00	33.66	0	01:14	0	2.93	0.000
JUNCT_211	JUNCTION	10.00	10.00	0	00:39	0.331	0.331	0.000
JUNCT_508	JUNCTION	0.00	5.31	0	05:39	0	1.45	0.000
JUNCT_201	JUNCTION	4.59	4.59	0	00:52	0.282	0.282	0.000
JUNCT_202	JUNCTION	0.66	0.66	0	01:18	0.0595	0.0595	0.000
JUNCT_511	JUNCTION	0.00	5.31	0	05:41	0	1.44	0.000
JUNCT_506	JUNCTION	0.00	65.25	0	00:35	0	1.56	0.000
JUNCT_213	JUNCTION	65.25	65.25	0	00:35	1.56	1.56	0.000
JUNCT_509	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_219	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_512	JUNCTION	0.00	5.31	0	05:42	0	1.44	0.000
JUNCT_513	JUNCTION	0.00	5.31	0	05:45	0	1.43	0.000
JUNCT_217	JUNCTION	0.87	0.87	0	01:19	0.0837	0.0837	0.000
JUNCT_218	JUNCTION	0.89	0.89	0	01:24	0.102	0.102	0.000
JUNCT_122	JUNCTION	15.49	15.49	0	00:41	0.361	0.361	0.000
JUNCT_212	JUNCTION	16.81	16.81	0	00:47	0.761	0.761	0.000
JUNCT_206	JUNCTION	3.56	3.56	0	00:58	0.245	0.245	0.000
JUNCT_300	JUNCTION	0.00	6.33	0	02:26	0	0.906	-0.000
JUNCT_303	JUNCTION	0.00	9.47	0	03:07	0	2.04	0.000
JUNCT_200	JUNCTION	11.84	11.84	0	00:46	0.395	0.395	0.000
JUNCT_214	JUNCTION	22.61	22.61	0	00:41	0.662	0.662	0.000
JUNCT_215	JUNCTION	10.67	10.67	0	00:45	0.375	0.375	0.000
JUNCT_216	JUNCTION	6.34	6.34	0	00:38	0.144	0.144	0.000
JUNCT_310	JUNCTION	0.00	15.05	0	02:45	0	1.43	-0.000
JUNCT_316	JUNCTION	0.00	3.67	0	06:39	0	1.04	0.000
JUNCT_505	JUNCTION	0.00	81.38	0	01:00	0	5.3	0.000
JUNCT_613	JUNCTION	0.00	22.17	0	01:40	0	1.46	0.000
JUNCT_612	JUNCTION	0.00	21.71	0	01:38	0	1.37	0.000

JUNCT_611	JUNCTION	0.00	16.63	0	01:47	0	1.01	0.000
JUNCT_608	JUNCTION	0.00	9.03	0	01:47	0	0.581	0.000
JUNCT_607	JUNCTION	0.00	9.06	0	01:42	0	0.586	0.000
JUNCT_606	JUNCTION	0.00	5.51	0	01:41	0	0.308	0.000
OUTFALL_514	OUTFALL	0.00	5.31	0	05:55	0	1.4	0.000
OUTFALL_319	OUTFALL	0.00	3.43	0	12:00	0	0.939	0.000
OUTFALL_614	OUTFALL	0.00	23.62	0	01:48	0	1.63	0.000
STOR_1001	STORAGE	0.00	122.41	0	00:35	0	2.86	0.015
STOR_1006	STORAGE	0.00	180.96	0	00:40	0	6.13	0.007
STOR_2012	STORAGE	0.00	81.38	0	01:00	0	5.3	-0.005
STOR_2000	STORAGE	0.00	11.84	0	00:46	0	0.395	0.207
STOR_2014	STORAGE	0.00	22.61	0	00:41	0	0.662	0.161
STOR_2015	STORAGE	0.00	10.67	0	00:45	0	0.375	2.298
STOR_2016	STORAGE	0.00	6.34	0	00:38	0	0.144	0.049
STOR_1022	STORAGE	0.00	66.61	0	00:55	0	2.72	0.069
STOR_1027	STORAGE	0.00	59.49	0	01:04	0	4.11	-0.003
STOR_1010	STORAGE	0.00	97.42	0	01:04	0	6.36	-0.002
STOR_2003	STORAGE	0.00	34.75	0	00:40	0	1.09	0.123
STOR_2005	STORAGE	0.00	23.77	0	00:49	0	1.71	0.049

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

Storage Unit	Average Volume 1000 ft ³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft ³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
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STOR_1001	278.807	15	0	0	349.702	19	0	02:26	6.33
STOR_1006	560.050	16	0	0	672.946	19	0	03:07	9.47
STOR_2012	474.435	21	0	0	569.224	25	0	05:39	5.31
STOR_2000	17.763	7	0	0	29.203	12	0	01:41	5.51
STOR_2014	38.613	8	0	0	58.965	12	0	01:44	7.64
STOR_2015	0.109	0	0	0	1.914	1	0	00:54	9.89
STOR_2016	10.598	9	0	0	16.776	14	0	02:10	0.52
STOR_1022	187.201	9	0	0	263.305	13	0	02:45	15.05
STOR_1027	363.173	7	0	0	452.324	9	0	06:39	3.67
STOR_1010	516.278	11	0	0	724.677	15	0	12:00	3.43
STOR_2003	61.134	18	0	0	108.656	31	0	02:16	6.98
STOR_2005	81.983	29	0	0	109.439	39	0	02:44	11.92

Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10 ⁶ gal
OUTFALL_514	94.58	4.57	5.31	1.396
OUTFALL_319	97.78	2.98	3.43	0.939
OUTFALL_614	98.19	5.13	23.62	1.626
System	96.85	12.67	28.93	3.962

Link Flow Summary

Link	Type	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Veloc ft/sec	Max/ Full Flow	Max/ Full Depth
101	DUMMY	116.54	0 00:35			
100	CONDUIT	8.10	0 00:49	7.39	0.17	0.28
102	DUMMY	55.55	0 00:38			
105	DUMMY	42.01	0 00:38			
106	DUMMY	53.22	0 00:40			
301	CONDUIT	55.37	0 00:40	2.67	0.04	0.21
302	CONDUIT	72.37	0 00:40	11.00	0.22	0.32
103	CONDUIT	12.49	0 00:42	8.67	0.15	0.26
104	CONDUIT	19.96	0 00:34	10.36	0.22	0.32
107	DUMMY	5.58	0 00:42			
108	DUMMY	10.56	0 00:39			
304	CONDUIT	9.69	0 02:53	3.34	0.00	0.03
305	CONDUIT	12.60	0 01:15	1.66	0.00	0.06
109	DUMMY	38.42	0 00:45			
306	CONDUIT	41.72	0 01:04	2.60	0.01	0.11
318	CONDUIT	73.50	0 01:07	2.44	0.02	0.17
129	DUMMY	31.39	0 00:43			
317	CONDUIT	10.17	0 01:02	1.73	0.00	0.05
128	DUMMY	12.40	0 00:42			
316	CONDUIT	3.67	0 06:59	0.82	0.00	0.04
127	DUMMY	47.83	0 00:44			
126	DUMMY	11.35	0 00:43			
124	DUMMY	4.71	0 00:38			
314	CONDUIT	8.49	0 01:10	1.49	0.00	0.05
315	CONDUIT	3.49	0 01:00	0.86	0.00	0.04
313	CONDUIT	22.19	0 02:43	1.39	0.01	0.11
125	DUMMY	15.55	0 00:56			
312	CONDUIT	15.18	0 01:08	1.89	0.00	0.06
311	DUMMY	16.09	0 02:44			
123	DUMMY	9.79	0 00:45			
120	DUMMY	29.84	0 00:47			
121	DUMMY	25.83	0 00:53			

309	CONDUIT	54.83	0	00:57	2.46	0.01	0.13
307	CONDUIT	29.71	0	00:51	1.90	0.01	0.10
308	CONDUIT	25.78	0	00:57	1.95	0.01	0.09
203	DUMMY	34.75	0	00:40			
204	DUMMY	16.30	0	00:44			
500	CONDUIT	6.95	0	02:33	1.75	0.01	0.07
501	CONDUIT	16.18	0	00:50	2.61	0.01	0.10
205	DUMMY	7.61	0	00:48			
209	DUMMY	4.93	0	00:57			
207	CONDUIT	6.93	0	01:12	1.80	0.01	0.07
208	CONDUIT	5.37	0	00:59	1.78	0.00	0.06
502	CONDUIT	17.92	0	02:31	3.12	0.00	0.05
210	DUMMY	4.84	0	00:57			
503	CONDUIT	25.79	0	01:17	2.14	0.03	0.17
211	CONDUIT	8.52	0	01:01	0.45	0.05	0.24
504	CONDUIT	33.52	0	01:20	3.01	0.02	0.16
201	DUMMY	4.59	0	00:52			
202	DUMMY	0.66	0	01:18			
508	CONDUIT	5.31	0	05:41	7.69	0.09	0.20
219	DUMMY	0.00	0	00:00			
509	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
213	DUMMY	65.25	0	00:35			
506	CONDUIT	65.10	0	00:36	3.53	0.01	0.12
511	CONDUIT	5.31	0	05:42	6.76	0.10	0.22
512	CONDUIT	5.31	0	05:45	4.76	0.10	0.21
513	CONDUIT	5.31	0	05:55	3.62	0.10	0.21
217	DUMMY	0.87	0	01:19			
218	DUMMY	0.89	0	01:24			
122	DUMMY	15.49	0	00:41			
212	DUMMY	16.81	0	00:47			
110	DUMMY	30.17	0	00:48			
206	DUMMY	3.56	0	00:58			
300	CONDUIT	6.22	0	02:51	1.58	0.00	0.05
303	CONDUIT	9.47	0	03:17	1.78	0.01	0.06
200	DUMMY	11.84	0	00:46			
214	DUMMY	22.61	0	00:41			

215	DUMMY	10.67	0	00:45			
27	DUMMY	6.34	0	00:38			
310	CONDUIT	15.03	0	02:53	1.82	0.00	0.06
505	DUMMY	81.38	0	01:00			
606	CONDUIT	5.48	0	01:47	5.70	0.14	0.25
607	CONDUIT	9.03	0	01:47	6.83	0.13	0.24
608	CONDUIT	9.02	0	01:49	8.52	0.04	0.14
611	CONDUIT	16.63	0	01:48	8.83	0.07	0.18
612	CONDUIT	21.69	0	01:40	6.65	0.07	0.17
613	CONDUIT	21.99	0	01:48	5.28	0.10	0.21
OUTLET_1001	DUMMY	6.33	0	02:26			
OUTLET_1006	DUMMY	9.47	0	03:07			
OUTLET_2012A	DUMMY	5.31	0	05:39			
OUTLET_2000	DUMMY	5.51	0	01:41			
OUTLET_2014	DUMMY	7.64	0	01:44			
OUTLET_2015	DUMMY	9.89	0	00:54			
OUTLET_2016	DUMMY	0.52	0	02:10			
OUTLET_1022	DUMMY	15.05	0	02:45			
OUTLET_1027	DUMMY	3.67	0	06:39			
OUTLET_1010	DUMMY	3.43	0	12:00			
OUTLET_2003	DUMMY	6.98	0	02:16			
OUTLET_2005	DUMMY	11.92	0	02:44			
OUTLET_2012B	DUMMY	0.00	0	00:00			

Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Tue Jun 6 16:04:16 2023

Analysis ended on: Tue Jun 6 16:04:16 2023

Total elapsed time: < 1 sec

FUTURE CONDITION - 100-YR

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.1)

Analysis Options

Flow Units CFS

Process Models:

Rainfall/Runoff NO

RDII NO

Snowmelt NO

Groundwater NO

Flow Routing YES

Ponding Allowed YES

Water Quality NO

Flow Routing Method KINWAVE

Starting Date 01/01/2005 00:00:00

Ending Date 01/01/2005 12:00:00

Antecedent Dry Days 0.0

Report Time Step 00:01:00

Routing Time Step 60.00 sec

Flow Routing Continuity

	Volume acre-feet	Volume 10 ⁶ gal
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Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.000	0.000
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	327.527	106.729
External Outflow	179.499	58.492
Flooding Loss	0.000	0.000

Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	149.771	48.805
Continuity Error (%)	-0.532	

Highest Flow Instability Indexes

Link OUTLET_2015 (7)
 Link 613 (2)
 Link 612 (1)
 Link 505 (1)
 Link 312 (1)

Routing Time Step Summary

Minimum Time Step	:	60.00 sec
Average Time Step	:	60.00 sec
Maximum Time Step	:	60.00 sec
% of Time in Steady State	:	0.00
Average Iterations per Step	:	1.12
% of Steps Not Converging	:	0.00

Node Depth Summary

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
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JUNCT_101	JUNCTION	0.00	0.00	5106.50	0	00:00	0.00
JUNCT_100	JUNCTION	0.24	1.47	5138.07	0	00:50	1.47
JUNCT_301	JUNCTION	0.53	1.80	5065.80	0	00:44	1.80
JUNCT_102	JUNCTION	0.00	0.00	5064.10	0	00:00	0.00
JUNCT_106	JUNCTION	0.00	0.00	5061.10	0	00:00	0.00
JUNCT_302	JUNCTION	0.40	3.58	5081.78	0	00:43	3.58
JUNCT_103	JUNCTION	0.21	1.79	5114.49	0	00:44	1.79
JUNCT_104	JUNCTION	0.14	1.87	5119.47	0	00:36	1.87
JUNCT_105	JUNCTION	0.00	0.00	5078.30	0	00:00	0.00
JUNCT_304	JUNCTION	0.46	0.49	5040.29	0	03:00	0.49
JUNCT_107	JUNCTION	0.00	0.00	5039.90	0	00:00	0.00
JUNCT_305	JUNCTION	0.43	0.82	5029.52	0	01:08	0.82
JUNCT_108	JUNCTION	0.00	0.00	5028.80	0	00:00	0.00
JUNCT_306	JUNCTION	0.50	1.34	4996.54	0	00:56	1.34
JUNCT_109	JUNCTION	0.00	0.00	4995.30	0	00:00	0.00
JUNCT_110	JUNCTION	0.00	0.00	5945.40	0	00:00	0.00
JUNCT_318	JUNCTION	0.99	2.02	4962.12	0	01:00	2.02
JUNCT_129	JUNCTION	0.00	0.00	4960.20	0	00:00	0.00
JUNCT_317	JUNCTION	0.81	1.09	5000.79	0	03:09	1.09
JUNCT_128	JUNCTION	0.00	0.00	4999.80	0	00:00	0.00
JUNCT_127	JUNCTION	0.00	0.00	5008.60	0	00:00	0.00
JUNCT_126	JUNCTION	0.00	0.00	5040.70	0	00:00	0.00
JUNCT_314	JUNCTION	0.10	0.74	5041.34	0	00:49	0.74
JUNCT_124	JUNCTION	0.00	0.00	5015.20	0	00:00	0.00
JUNCT_315	JUNCTION	0.06	0.56	5015.66	0	00:43	0.56
JUNCT_313	JUNCTION	0.79	1.52	5017.72	0	01:14	1.52
JUNCT_311	JUNCTION	0.47	0.61	5016.91	0	03:06	0.61
JUNCT_312	JUNCTION	0.18	0.82	5039.52	0	01:08	0.82
JUNCT_125	JUNCTION	0.00	0.00	5038.80	0	00:00	0.00
JUNCT_123	JUNCTION	0.00	0.00	5016.40	0	00:00	0.00
JUNCT_309	JUNCTION	0.28	1.42	5045.72	0	00:59	1.42
JUNCT_308	JUNCTION	0.21	0.98	5051.48	0	01:03	0.98
JUNCT_307	JUNCTION	0.19	1.14	5050.74	0	00:54	1.14
JUNCT_121	JUNCTION	0.00	0.00	5050.60	0	00:00	0.00
JUNCT_120	JUNCTION	0.00	0.00	5049.70	0	00:00	0.00

JUNCT_203	JUNCTION	0.00	0.00	5072.60	0	00:00	0.00
JUNCT_500	JUNCTION	0.32	1.33	5073.83	0	01:24	1.33
JUNCT_501	JUNCTION	0.39	1.49	5044.89	0	01:24	1.49
JUNCT_204	JUNCTION	0.00	0.00	5043.50	0	00:00	0.00
JUNCT_502	JUNCTION	0.28	1.10	5023.70	0	01:23	1.10
JUNCT_205	JUNCTION	0.00	0.00	5022.80	0	00:00	0.00
JUNCT_209	JUNCTION	0.00	0.00	5022.70	0	00:00	0.00
JUNCT_207	JUNCTION	0.15	1.06	5061.26	0	00:51	1.06
JUNCT_208	JUNCTION	0.10	0.80	5052.30	0	00:48	0.80
JUNCT_503	JUNCTION	0.76	2.79	5024.59	0	01:23	2.79
JUNCT_210	JUNCTION	0.00	0.00	5022.00	0	00:00	0.00
JUNCT_504	JUNCTION	0.79	2.77	5015.97	0	01:28	2.77
JUNCT_211	JUNCTION	0.35	2.52	5015.82	0	00:46	2.52
JUNCT_508	JUNCTION	1.04	1.63	4996.43	0	01:37	1.63
JUNCT_201	JUNCTION	0.00	0.00	5026.40	0	00:00	0.00
JUNCT_202	JUNCTION	0.00	0.00	4999.40	0	00:00	0.00
JUNCT_511	JUNCTION	1.17	1.88	4968.48	0	02:01	1.88
JUNCT_506	JUNCTION	0.10	0.99	5005.49	0	00:40	0.99
JUNCT_213	JUNCTION	0.00	0.00	5004.60	0	00:00	0.00
JUNCT_509	JUNCTION	0.00	0.00	5012.00	0	00:00	0.00
JUNCT_219	JUNCTION	0.00	0.00	5012.10	0	00:00	0.00
JUNCT_512	JUNCTION	1.38	2.22	4960.82	0	02:01	2.22
JUNCT_513	JUNCTION	1.56	2.49	4954.89	0	05:18	2.49
JUNCT_217	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_218	JUNCTION	0.00	0.00	4950.00	0	00:00	0.00
JUNCT_122	JUNCTION	0.00	0.00	5035.10	0	00:00	0.00
JUNCT_212	JUNCTION	0.00	0.00	4999.50	0	00:00	0.00
JUNCT_206	JUNCTION	0.00	0.00	5021.90	0	00:00	0.00
JUNCT_300	JUNCTION	0.31	0.33	5104.13	0	02:34	0.33
JUNCT_303	JUNCTION	0.46	0.49	5057.79	0	02:52	0.49
JUNCT_200	JUNCTION	0.00	0.00	5051.10	0	00:00	0.00
JUNCT_214	JUNCTION	0.00	0.00	4967.10	0	00:00	0.00
JUNCT_215	JUNCTION	0.00	0.00	4959.10	0	00:00	0.00
JUNCT_216	JUNCTION	0.00	0.00	4952.70	0	00:00	0.00
JUNCT_310	JUNCTION	0.47	0.61	5035.51	0	03:00	0.61
JUNCT_316	JUNCTION	0.77	1.09	5008.99	0	03:01	1.09

JUNCT_505	JUNCTION	0.67	2.43	4997.33	0	01:31	2.43
JUNCT_613	JUNCTION	1.35	4.48	4956.88	0	02:31	4.48
JUNCT_612	JUNCTION	1.04	3.36	4961.96	0	02:31	3.36
JUNCT_611	JUNCTION	0.85	2.85	4969.45	0	02:31	2.85
JUNCT_608	JUNCTION	0.73	2.43	4997.23	0	02:30	2.43
JUNCT_607	JUNCTION	0.57	1.64	5027.94	0	01:15	1.64
JUNCT_606	JUNCTION	0.52	1.48	5051.28	0	01:55	1.48
OUTFALL_514	OUTFALL	1.54	2.50	4945.50	0	05:21	2.50
OUTFALL_319	OUTFALL	0.00	0.00	4945.30	0	00:00	0.00
OUTFALL_614	OUTFALL	1.35	4.48	4947.48	0	02:36	4.48
STOR_1001	STORAGE	6.43	7.19	5111.19	0	02:34	7.19
STOR_1006	STORAGE	7.16	7.86	5068.86	0	02:52	7.86
STOR_2012	STORAGE	6.32	7.87	5002.87	0	02:33	7.87
STOR_2000	STORAGE	2.81	5.25	5056.25	0	01:55	5.25
STOR_2014	STORAGE	2.79	4.79	4971.79	0	01:50	4.79
STOR_2015	STORAGE	1.10	4.53	4963.53	0	01:55	4.53
STOR_2016	STORAGE	3.26	5.22	4957.72	0	01:42	5.22
STOR_1022	STORAGE	5.28	7.25	5042.25	0	03:00	7.25
STOR_1027	STORAGE	6.16	7.08	5015.08	0	03:01	7.08
STOR_1010	STORAGE	6.22	7.28	4954.28	0	02:28	7.28
STOR_2003	STORAGE	2.83	6.01	5079.01	0	01:24	6.01
STOR_2005	STORAGE	4.02	5.47	5032.17	0	01:26	5.47

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
JUNCT_101	JUNCTION	346.42	346.42	0 00:40	7.26	7.26	0.000
JUNCT_100	JUNCTION	31.49	31.49	0 00:50	1.2	1.2	0.000

JUNCT_301	JUNCTION	0.00	156.21	0	00:44	0	7.21	0.000
JUNCT_102	JUNCTION	156.21	156.21	0	00:44	4.28	4.28	0.000
JUNCT_106	JUNCTION	153.47	153.47	0	00:46	4.67	4.67	0.000
JUNCT_302	JUNCTION	0.00	244.28	0	00:43	0	6.17	0.000
JUNCT_103	JUNCTION	56.48	56.48	0	00:44	1.55	1.55	0.000
JUNCT_104	JUNCTION	63.84	63.84	0	00:36	1.04	1.04	0.000
JUNCT_105	JUNCTION	130.17	130.17	0	00:44	3.57	3.57	0.000
JUNCT_304	JUNCTION	0.00	40.03	0	01:10	0	6.72	0.000
JUNCT_107	JUNCTION	27.83	27.83	0	00:48	0.933	0.933	0.000
JUNCT_305	JUNCTION	0.00	79.75	0	01:08	0	8.08	0.000
JUNCT_108	JUNCTION	51.68	51.68	0	00:44	1.4	1.4	0.000
JUNCT_306	JUNCTION	0.00	263.22	0	00:56	0	14.2	0.000
JUNCT_109	JUNCTION	205.55	205.55	0	00:50	6.26	6.26	0.000
JUNCT_110	JUNCTION	168.77	168.77	0	00:54	5.9	5.9	0.000
JUNCT_318	JUNCTION	0.00	478.05	0	01:00	0	39.3	0.000
JUNCT_129	JUNCTION	170.63	170.63	0	00:48	4.89	4.89	0.000
JUNCT_317	JUNCTION	0.00	104.13	0	02:37	0	20.5	0.000
JUNCT_128	JUNCTION	67.84	67.84	0	00:48	2.07	2.07	0.000
JUNCT_127	JUNCTION	258.45	258.45	0	00:49	7.32	7.32	0.000
JUNCT_126	JUNCTION	62.51	62.51	0	00:49	1.98	1.98	0.000
JUNCT_314	JUNCTION	0.00	62.51	0	00:49	0	1.98	0.000
JUNCT_124	JUNCTION	24.83	24.83	0	00:43	0.63	0.63	0.000
JUNCT_315	JUNCTION	0.00	24.83	0	00:43	0	0.63	0.000
JUNCT_313	JUNCTION	0.00	180.17	0	01:14	0	17.9	0.000
JUNCT_311	JUNCTION	0.00	86.70	0	01:14	0	13.3	0.000
JUNCT_312	JUNCTION	0.00	93.77	0	01:08	0	4.6	0.000
JUNCT_125	JUNCTION	93.77	93.77	0	01:08	4.6	4.6	0.000
JUNCT_123	JUNCTION	54.96	54.96	0	00:52	1.93	1.93	0.000
JUNCT_309	JUNCTION	0.00	254.19	0	00:59	0	10.7	0.000
JUNCT_308	JUNCTION	0.00	114.57	0	01:03	0	5.49	0.000
JUNCT_307	JUNCTION	0.00	142.69	0	00:54	0	5.24	0.000
JUNCT_121	JUNCTION	114.57	114.57	0	01:03	5.49	5.49	0.000
JUNCT_120	JUNCTION	142.69	142.69	0	00:54	5.24	5.24	0.000
JUNCT_203	JUNCTION	131.53	131.53	0	00:47	4.05	4.05	0.000
JUNCT_500	JUNCTION	0.00	82.12	0	01:24	0	3.72	0.000
JUNCT_501	JUNCTION	0.00	124.24	0	01:24	0	6.11	0.000

JUNCT_204	JUNCTION	62.30	62.30	0	00:51	2.38	2.38	0.000
JUNCT_502	JUNCTION	0.00	244.96	0	01:23	0	11.4	0.000
JUNCT_205	JUNCTION	42.17	42.17	0	00:55	1.73	1.73	0.000
JUNCT_209	JUNCTION	21.24	21.24	0	01:08	1.29	1.29	0.000
JUNCT_207	JUNCTION	50.46	50.46	0	00:51	1.72	1.72	0.000
JUNCT_208	JUNCTION	34.49	34.49	0	00:48	1.07	1.07	-0.000
JUNCT_503	JUNCTION	0.00	273.98	0	01:23	0	13.4	0.000
JUNCT_210	JUNCTION	19.38	19.38	0	01:08	1.17	1.17	0.000
JUNCT_504	JUNCTION	0.00	298.82	0	01:27	0	14.5	0.000
JUNCT_211	JUNCTION	36.68	36.68	0	00:46	1.17	1.17	0.000
JUNCT_508	JUNCTION	0.00	46.95	0	01:37	0	8	0.000
JUNCT_201	JUNCTION	17.54	17.54	0	01:04	0.958	0.958	0.000
JUNCT_202	JUNCTION	2.06	2.06	0	01:10	0.167	0.167	0.000
JUNCT_511	JUNCTION	0.00	46.95	0	02:01	0	7.99	0.000
JUNCT_506	JUNCTION	0.00	186.80	0	00:40	0	4.26	0.000
JUNCT_213	JUNCTION	186.80	186.80	0	00:40	4.26	4.26	0.000
JUNCT_509	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_219	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
JUNCT_512	JUNCTION	0.00	46.95	0	02:02	0	7.98	0.000
JUNCT_513	JUNCTION	0.00	46.95	0	05:18	0	7.97	0.000
JUNCT_217	JUNCTION	3.83	3.83	0	01:12	0.345	0.345	0.000
JUNCT_218	JUNCTION	3.76	3.76	0	01:17	0.402	0.402	0.000
JUNCT_122	JUNCTION	83.09	83.09	0	00:46	2.27	2.27	0.000
JUNCT_212	JUNCTION	63.72	63.72	0	00:54	2.64	2.64	0.000
JUNCT_206	JUNCTION	12.39	12.39	0	01:07	0.744	0.744	0.000
JUNCT_300	JUNCTION	0.00	10.29	0	02:34	0	3.03	0.000
JUNCT_303	JUNCTION	0.00	19.94	0	02:52	0	5.87	0.000
JUNCT_200	JUNCTION	63.15	63.15	0	00:53	2.29	2.29	0.000
JUNCT_214	JUNCTION	100.77	100.77	0	00:47	3.09	3.09	0.000
JUNCT_215	JUNCTION	51.50	51.50	0	00:52	1.89	1.89	0.000
JUNCT_216	JUNCTION	32.12	32.12	0	00:43	0.846	0.846	0.000
JUNCT_310	JUNCTION	0.00	51.31	0	03:00	0	11.4	0.000
JUNCT_316	JUNCTION	0.00	101.27	0	03:01	0	18.6	0.000
JUNCT_505	JUNCTION	0.00	408.18	0	01:27	0	21.6	0.000
JUNCT_613	JUNCTION	0.00	209.43	0	02:31	0	14.9	0.000
JUNCT_612	JUNCTION	0.00	200.46	0	02:31	0	14.2	0.000

JUNCT_611	JUNCTION	0.00	179.78	0	02:31	0	12.3	0.000
JUNCT_608	JUNCTION	0.00	147.59	0	02:30	0	9.44	0.000
JUNCT_607	JUNCTION	0.00	40.51	0	01:15	0	3.15	0.000
JUNCT_606	JUNCTION	0.00	25.96	0	01:55	0	2.19	0.000
OUTFALL_514	OUTFALL	0.00	47.07	0	05:21	0	7.92	0.000
OUTFALL_319	OUTFALL	0.00	233.73	0	02:28	0	35	0.000
OUTFALL_614	OUTFALL	0.00	214.49	0	02:36	0	15.6	0.000
STOR_1001	STORAGE	0.00	371.69	0	00:40	0	8.46	0.002
STOR_1006	STORAGE	0.00	552.74	0	00:45	0	18	0.001
STOR_2012	STORAGE	0.00	408.18	0	01:27	0	21.6	0.148
STOR_2000	STORAGE	0.00	63.15	0	00:53	0	2.29	0.036
STOR_2014	STORAGE	0.00	100.77	0	00:47	0	3.09	0.062
STOR_2015	STORAGE	0.00	51.50	0	00:52	0	1.89	0.083
STOR_2016	STORAGE	0.00	32.12	0	00:43	0	0.846	0.071
STOR_1022	STORAGE	0.00	327.10	0	00:59	0	13	0.063
STOR_1027	STORAGE	0.00	435.76	0	01:12	0	28	0.051
STOR_1010	STORAGE	0.00	634.60	0	01:04	0	45	0.073
STOR_2003	STORAGE	0.00	131.53	0	00:47	0	4.05	0.028
STOR_2005	STORAGE	0.00	156.93	0	01:23	0	7.83	0.298

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

Storage Unit	Average Volume 1000 ft ³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft ³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
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STOR_1001	839.627	46	0	0	1046.555	57	0	02:34	10.29
STOR_1006	1633.847	47	0	0	1930.430	55	0	02:52	19.94
STOR_2012	1130.517	49	0	0	1745.725	76	0	02:33	161.17
STOR_2000	40.412	17	0	0	140.474	58	0	01:55	25.96
STOR_2014	74.861	15	0	0	231.318	47	0	01:50	33.35
STOR_2015	19.382	8	0	0	102.693	42	0	01:55	21.29
STOR_2016	26.681	22	0	0	70.025	57	0	01:42	9.53
STOR_1022	661.673	33	0	0	1235.184	61	0	03:00	51.31
STOR_1027	1418.967	29	0	0	1889.411	38	0	03:01	101.27
STOR_1010	1457.529	30	0	0	2026.279	42	0	02:28	233.73
STOR_2003	86.186	25	0	0	229.808	66	0	01:24	82.12
STOR_2005	108.667	39	0	0	210.681	75	0	01:26	156.25

Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10 ⁶ gal
OUTFALL_514	94.44	25.95	47.07	7.919
OUTFALL_319	97.92	110.52	233.73	34.956
OUTFALL_614	98.33	49.14	214.49	15.612
System	96.90	185.61	494.51	58.488

Link Flow Summary

Link	Type	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Veloc ft/sec	Max/ Full Flow	Max/ Full Depth
101	DUMMY	346.42	0 00:40			
100	CONDUIT	31.41	0 00:54	10.55	0.65	0.59
102	DUMMY	156.21	0 00:44			
105	DUMMY	130.17	0 00:44			
106	DUMMY	153.47	0 00:46			
301	CONDUIT	156.02	0 00:45	3.63	0.12	0.36
302	CONDUIT	243.73	0 00:44	14.95	0.76	0.65
103	CONDUIT	56.33	0 00:47	12.87	0.66	0.60
104	CONDUIT	63.12	0 00:38	13.85	0.70	0.62
107	DUMMY	27.83	0 00:48			
108	DUMMY	51.68	0 00:44			
304	CONDUIT	39.91	0 01:13	5.38	0.00	0.06
305	CONDUIT	78.09	0 01:18	2.79	0.02	0.16
109	DUMMY	205.55	0 00:50			
306	CONDUIT	259.97	0 01:04	4.24	0.05	0.27
318	CONDUIT	475.15	0 01:06	3.95	0.12	0.40
129	DUMMY	170.63	0 00:48			
317	CONDUIT	103.86	0 02:47	3.30	0.02	0.17
128	DUMMY	67.84	0 00:48			
316	CONDUIT	101.23	0 03:09	2.22	0.03	0.22
127	DUMMY	258.45	0 00:49			
126	DUMMY	62.51	0 00:49			
124	DUMMY	24.83	0 00:43			
314	CONDUIT	56.87	0 01:12	2.54	0.01	0.14
315	CONDUIT	22.43	0 01:00	1.47	0.01	0.11
313	CONDUIT	175.93	0 01:25	2.39	0.06	0.30
125	DUMMY	93.77	0 01:08			
312	CONDUIT	93.47	0 01:13	3.19	0.02	0.16
311	DUMMY	86.70	0 01:14			
123	DUMMY	54.96	0 00:52			
120	DUMMY	142.69	0 00:54			
121	DUMMY	114.57	0 01:03			

309	CONDUIT	253.83	0	01:02	3.71	0.05	0.28
307	CONDUIT	142.44	0	00:56	2.92	0.03	0.23
308	CONDUIT	114.50	0	01:05	2.97	0.02	0.20
203	DUMMY	131.53	0	00:47			
204	DUMMY	62.30	0	00:51			
500	CONDUIT	81.42	0	01:33	3.78	0.06	0.26
501	CONDUIT	124.11	0	01:27	4.77	0.08	0.30
205	DUMMY	42.17	0	00:55			
209	DUMMY	21.24	0	01:08			
207	CONDUIT	46.76	0	01:13	3.22	0.04	0.20
208	CONDUIT	33.25	0	00:58	3.11	0.02	0.16
502	CONDUIT	244.99	0	01:23	7.21	0.04	0.22
210	DUMMY	19.38	0	01:08			
503	CONDUIT	271.38	0	01:28	4.13	0.27	0.55
211	CONDUIT	34.27	0	01:02	0.66	0.21	0.49
504	CONDUIT	297.50	0	01:31	5.56	0.20	0.49
201	DUMMY	17.54	0	01:04			
202	DUMMY	2.06	0	01:10			
508	CONDUIT	46.95	0	02:01	13.86	0.76	0.65
219	DUMMY	0.00	0	00:00			
509	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
213	DUMMY	186.80	0	00:40			
506	CONDUIT	186.66	0	00:41	4.73	0.03	0.20
511	CONDUIT	46.95	0	02:02	11.87	0.91	0.75
512	CONDUIT	46.95	0	05:18	8.41	0.89	0.74
513	CONDUIT	47.07	0	05:21	6.49	0.86	0.71
217	DUMMY	3.83	0	01:12			
218	DUMMY	3.76	0	01:17			
122	DUMMY	83.09	0	00:46			
212	DUMMY	63.72	0	00:54			
110	DUMMY	168.77	0	00:54			
206	DUMMY	12.39	0	01:07			
300	CONDUIT	10.29	0	02:55	1.88	0.01	0.07
303	CONDUIT	19.94	0	03:00	2.31	0.01	0.10
200	DUMMY	63.15	0	00:53			
214	DUMMY	100.77	0	00:47			

215	DUMMY	51.50	0	00:52			
27	DUMMY	32.12	0	00:43			
310	CONDUIT	51.31	0	03:06	2.62	0.01	0.12
505	DUMMY	408.18	0	01:27			
606	CONDUIT	25.95	0	01:59	8.58	0.66	0.59
607	CONDUIT	40.51	0	01:19	10.23	0.58	0.55
608	CONDUIT	147.57	0	02:31	18.49	0.68	0.61
611	CONDUIT	179.78	0	02:31	16.90	0.73	0.63
612	CONDUIT	200.44	0	02:32	12.32	0.60	0.56
613	CONDUIT	209.22	0	02:36	9.29	0.91	0.75
OUTLET_1001	DUMMY	10.29	0	02:34			
OUTLET_1006	DUMMY	19.94	0	02:52			
OUTLET_2012A	DUMMY	46.95	0	01:37			
OUTLET_2000	DUMMY	25.96	0	01:55			
OUTLET_2014	DUMMY	33.35	0	01:50			
OUTLET_2015	DUMMY	21.29	0	01:55			
OUTLET_2016	DUMMY	9.53	0	01:42			
OUTLET_1022	DUMMY	51.31	0	03:00			
OUTLET_1027	DUMMY	101.27	0	03:01			
OUTLET_1010	DUMMY	233.73	0	02:28			
OUTLET_2003	DUMMY	82.12	0	01:24			
OUTLET_2005	DUMMY	156.25	0	01:26			
OUTLET_2012B	DUMMY	114.22	0	02:33			

Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Tue Jun 6 16:00:24 2023

Analysis ended on: Tue Jun 6 16:00:25 2023

Total elapsed time: 00:00:01

APPENDIX G
FEMA FLOODPLAIN MAP

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the **Flood Profiles and Floodway Data** and/or **Summary of Stillwater Elevations** tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.7 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NNGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was provided by the Adams County and Commerce City GIS departments. The coordinate system used for the production of the digital FIRM is Universal Transverse Mercator, Zone 13N, referenced to North American Datum of 1983 and the GRS 80 spheroid, Western Hemisphere.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the **Flood Profiles and Floodway Data** tables in the **Flood Insurance Study report** (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

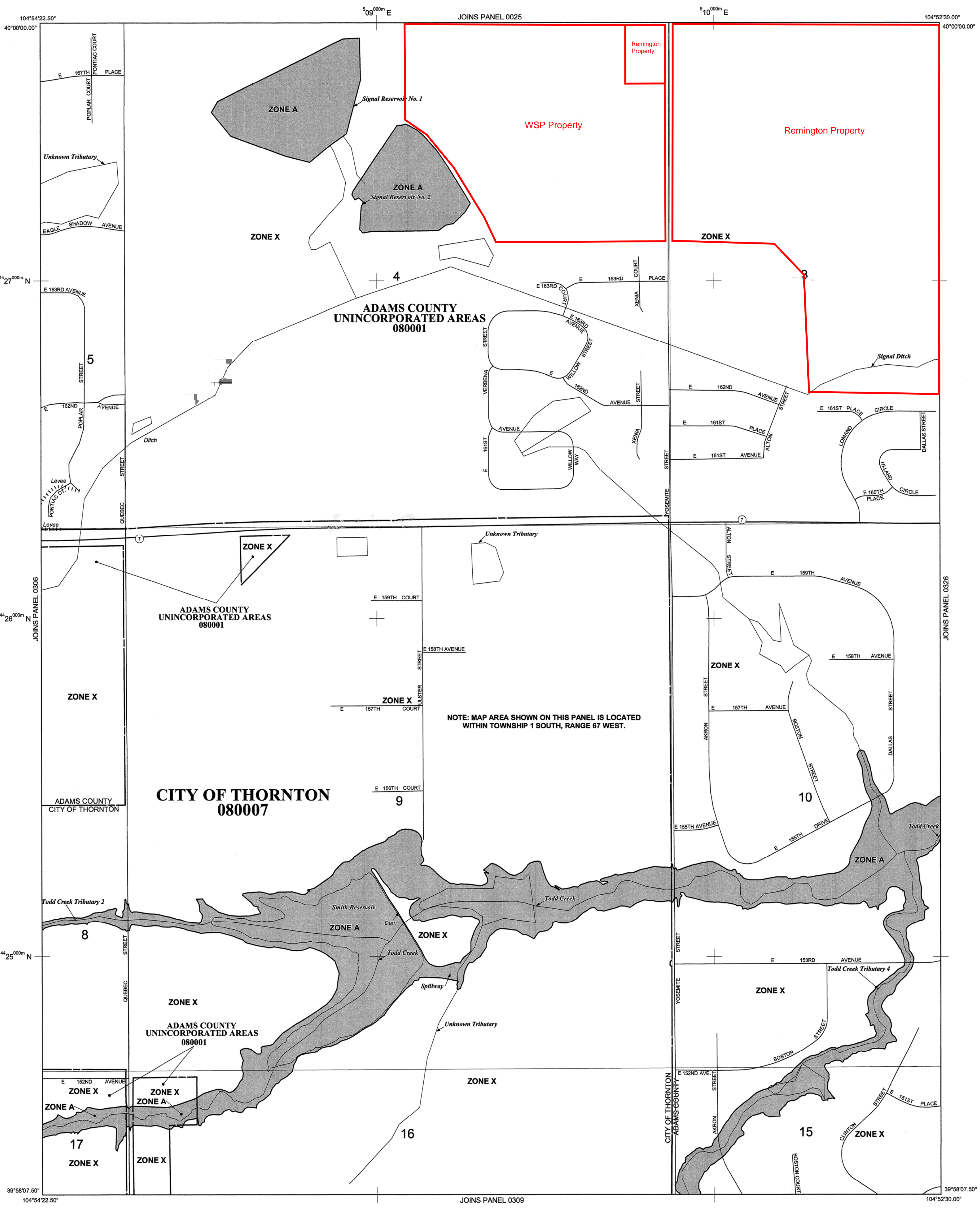
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov/>.

If you have **questions about this map** or **questions concerning the National Flood Insurance Program** in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/>.

This digital Flood Insurance Rate Map (FIRM) was produced through a cooperative partnership between the State of Colorado Water Conservation Board, the Urban Drainage and Flood Control District, and the Federal Emergency Management Agency (FEMA). The State of Colorado Water Conservation Board and the Urban Drainage and Flood Control District have implemented a long-term approach of floodplain management to reduce the costs associated with flooding. As part of this effort, both the State of Colorado and the Urban Drainage and Flood Control District have joined in Cooperating Technical Partner agreements with FEMA to produce this digital FIRM.

Additional flood hazard information and resources are available from local communities, the Colorado Water Conservation Board, and the Urban Drainage and Flood Control District.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently identified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

--- Cross section line

--- Transect line

97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

42°55'00"N 1000-meter Universal Transverse Mercator grid ticks, zone 13

6000000 M 5000-foot grid ticks: Alabama State Plane coordinate system, east zone (FIPSZONE 0101), Transverse Mercator

DX5510 x Bench mark (see explanation in Notes to Users section of this FIRM panel)

M1.5 River Mile

MAP REPOSITORIES Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP August 16, 1995

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL March 5, 2007 - to update map format

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0307H

FIRM FLOOD INSURANCE RATE MAP

ADAMS COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 307 OF 1150

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ADAMS COUNTY	080001	0307	H
THORNTON, CITY OF	080007	0307	H

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

MAP NUMBER 08001C0307H

MAP REVISED MARCH 5, 2007

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

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Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the **Summary of Stillwater Elevations** table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the **Summary of Stillwater Elevations** table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSM/C-3, #6202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was provided by the Adams County and Commerce City GIS departments. The coordinate system used for the production of the digital FIRM is Universal Transverse Mercator, Zone 13N, referenced to North American Datum of 1983 and the GRS 80 spheroid, Western Hemisphere.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the **Flood Profiles and Floodway Data** tables in the **Flood Insurance Study report (which contains authoritative hydraulic data)** may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

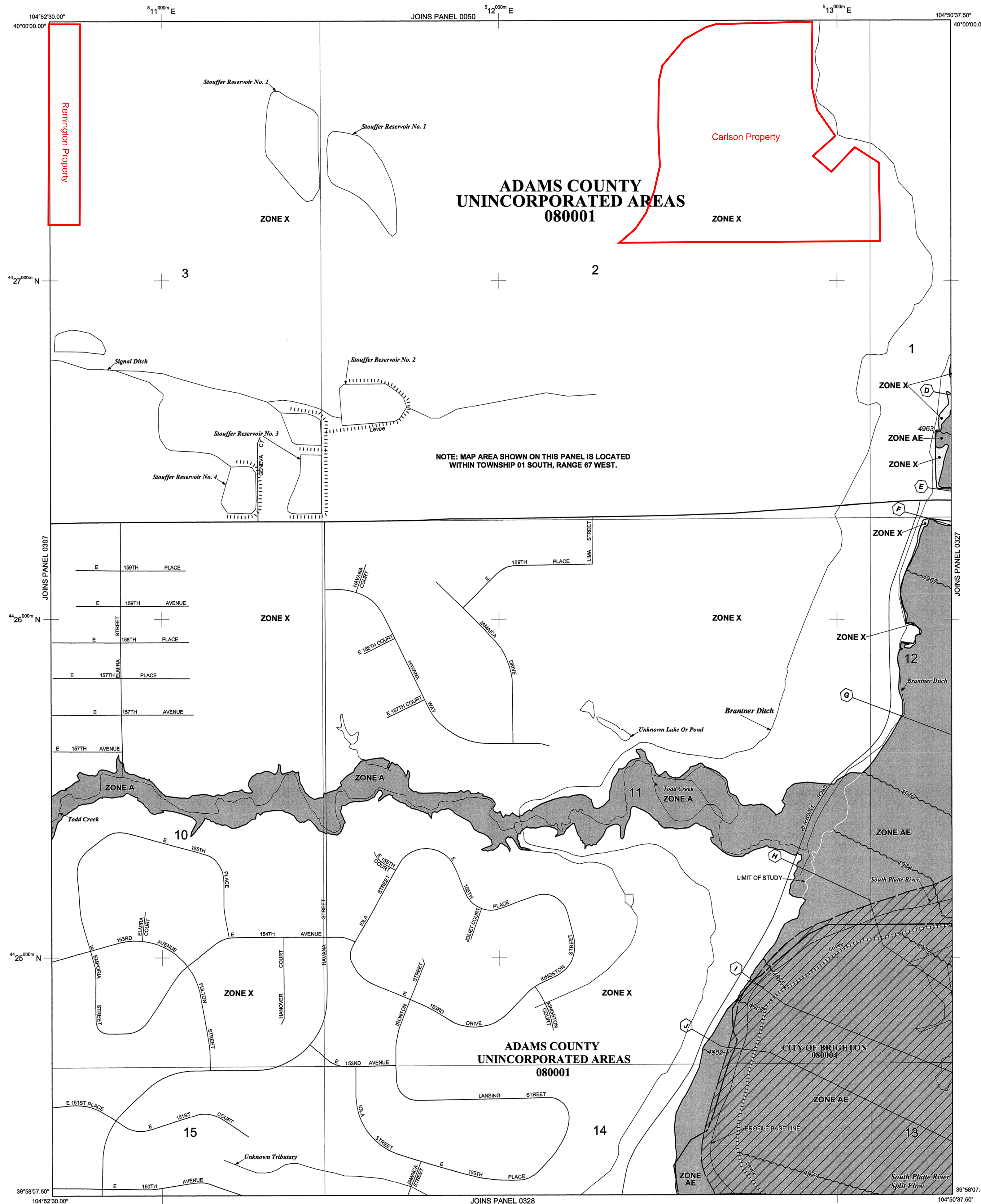
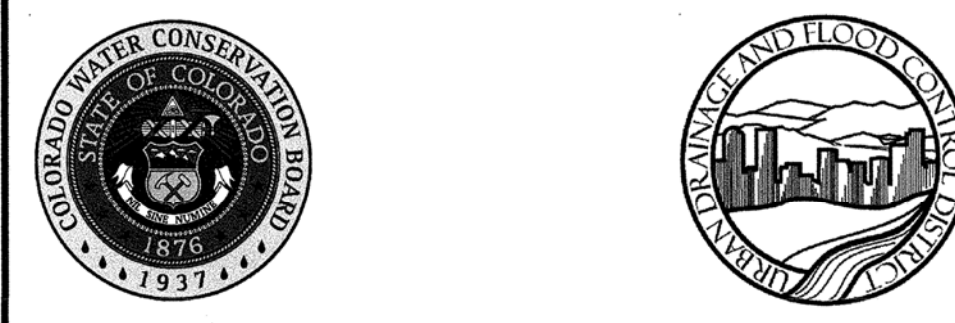
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a **Listing of Communities** table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued **Letters of Map Change**, a **Flood Insurance Study report**, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/>.

This digital Flood Insurance Rate Map (FIRM) was produced through a cooperative partnership between the State of Colorado Water Conservation Board, the Urban Drainage and Flood Control District, and the Federal Emergency Management Agency (FEMA). The State of Colorado Water Conservation Board and the Urban Drainage and Flood Control District have implemented a long-term approach of floodplain management to reduce the costs associated with flooding. As part of this effort, both the State of Colorado and the Urban Drainage and Flood Control District have joined in Cooperating Technical Partner agreements with FEMA to produce this digital FIRM.

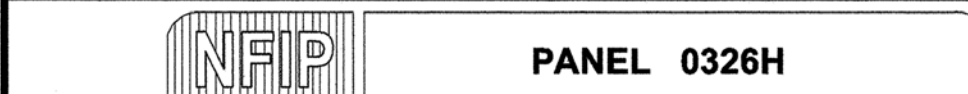
Additional flood hazard information and resources are available from local communities, the Colorado Water Conservation Board, and the Urban Drainage and Flood Control District.



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 01 SOUTH, RANGE 67 WEST.

LEGEND

- SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**
The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE**
The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS**
- ZONE X** Area of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS**
- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OPAs)**
CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
(EL 987)
- Base Flood Elevation value where uniform within zone; elevation in feet*
- Cross section line
- Transect line
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
97°07'30" 32°22'30"
- 1000-meter Universal Transverse Mercator grid ticks, zone 13
4275000M
- 5000-foot grid ticks: Alabama State Plane coordinate system, east zone (FIPSZONE 0101), Transverse Mercator
6000000 M
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
DX5510
- River Mile
M1.5
- MAP REPOSITORIES**
Refer to Map Repositories list on Map Index.
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP**
August 16, 1995
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL**
March 5, 2007 - to update map format.



PANEL 0326H

**FIRM
FLOOD INSURANCE RATE MAP
ADAMS COUNTY,
COLORADO
AND INCORPORATED AREAS**

PANEL 326 OF 1150
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ADAMS COUNTY	080001	0326	H
BRIGHTON, CITY OF	080004	0326	H

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

**MAP NUMBER
08001C0326H
MAP REVISED
MARCH 5, 2007**

Federal Emergency Management Agency

MAPS

EXISTING TOPOGRAPHY MAP

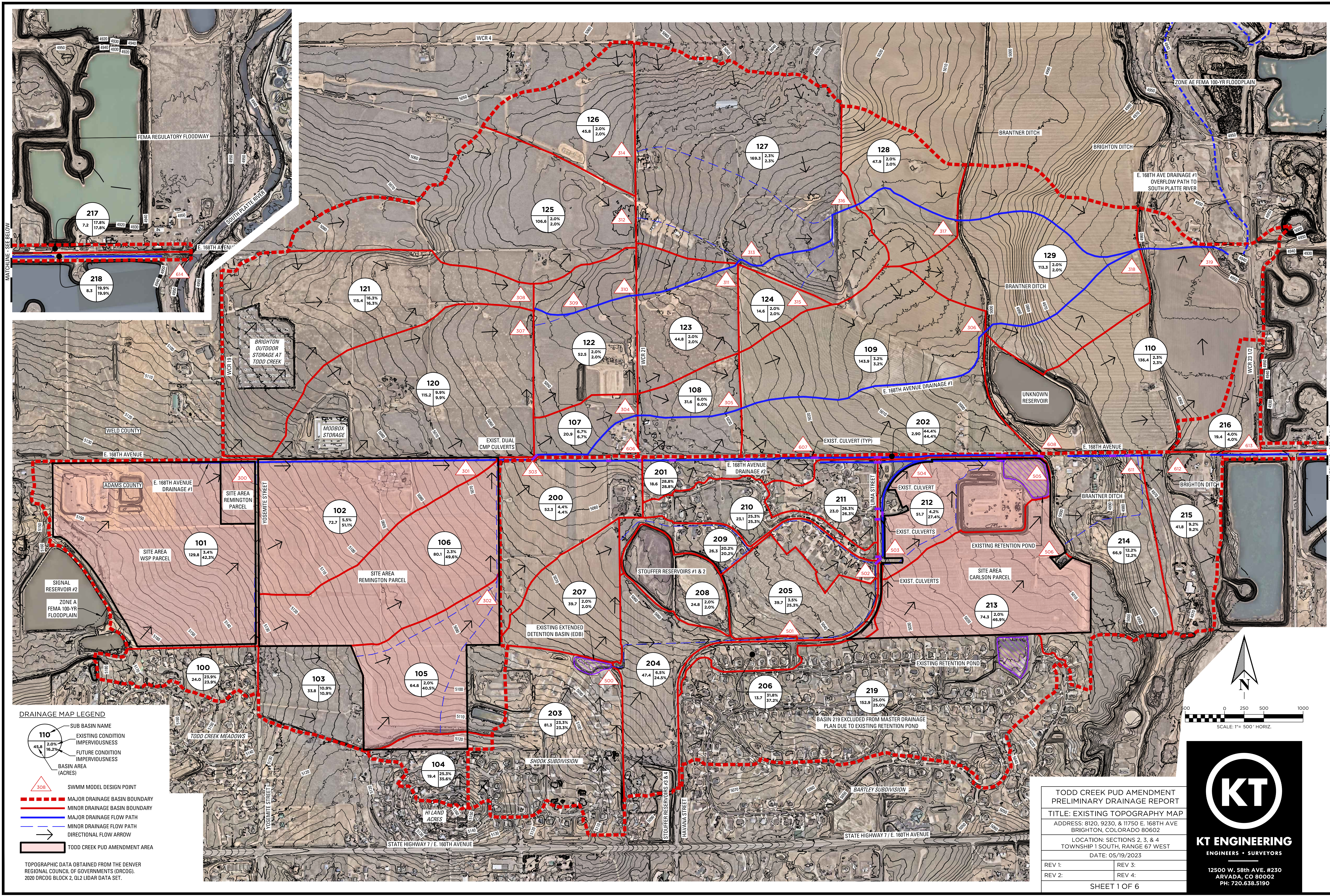
EXISTING CONDITION DRAINAGE PLAN

PROPOSED CONDITION DRAINAGE PLAN

DETAILED PROPOSED CONDITION DRAINAGE PLAN (WSP & REMINGTON PROPERTIES)

DETAILED PROPOSED CONDITION DRAINAGE PLAN (CARLSON PROPERTY)

FUTURE CONDITION DRAINAGE PLAN



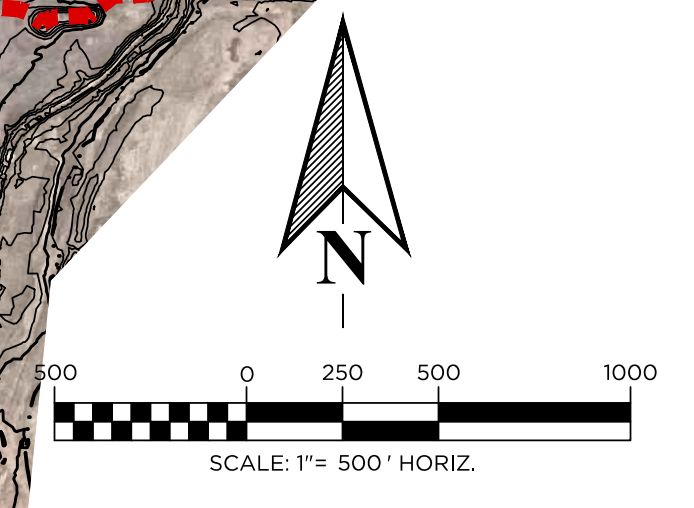
MATCHLINE - SEE BELOW

MATCHLINE - SEE ABOVE

DRAINAGE MAP LEGEND

- 110 SUB BASIN NAME
- 45.8 EXISTING CONDITION IMPERVIOUSNESS
- 16.2% FUTURE CONDITION IMPERVIOUSNESS
- 7.2 BASIN AREA (ACRES)
- ▲ SWMM MODEL DESIGN POINT
- MAJOR DRAINAGE BASIN BOUNDARY
- MINOR DRAINAGE BASIN BOUNDARY
- MAJOR DRAINAGE FLOW PATH
- MINOR DRAINAGE FLOW PATH
- DIRECTIONAL FLOW ARROW
- TODD CREEK PUD AMENDMENT AREA

TOPOGRAPHIC DATA OBTAINED FROM THE DENVER REGIONAL COUNCIL OF GOVERNMENTS (DRCG), 2020 DRCOG BLOCK 2, Q12 LIDAR DATA SET.

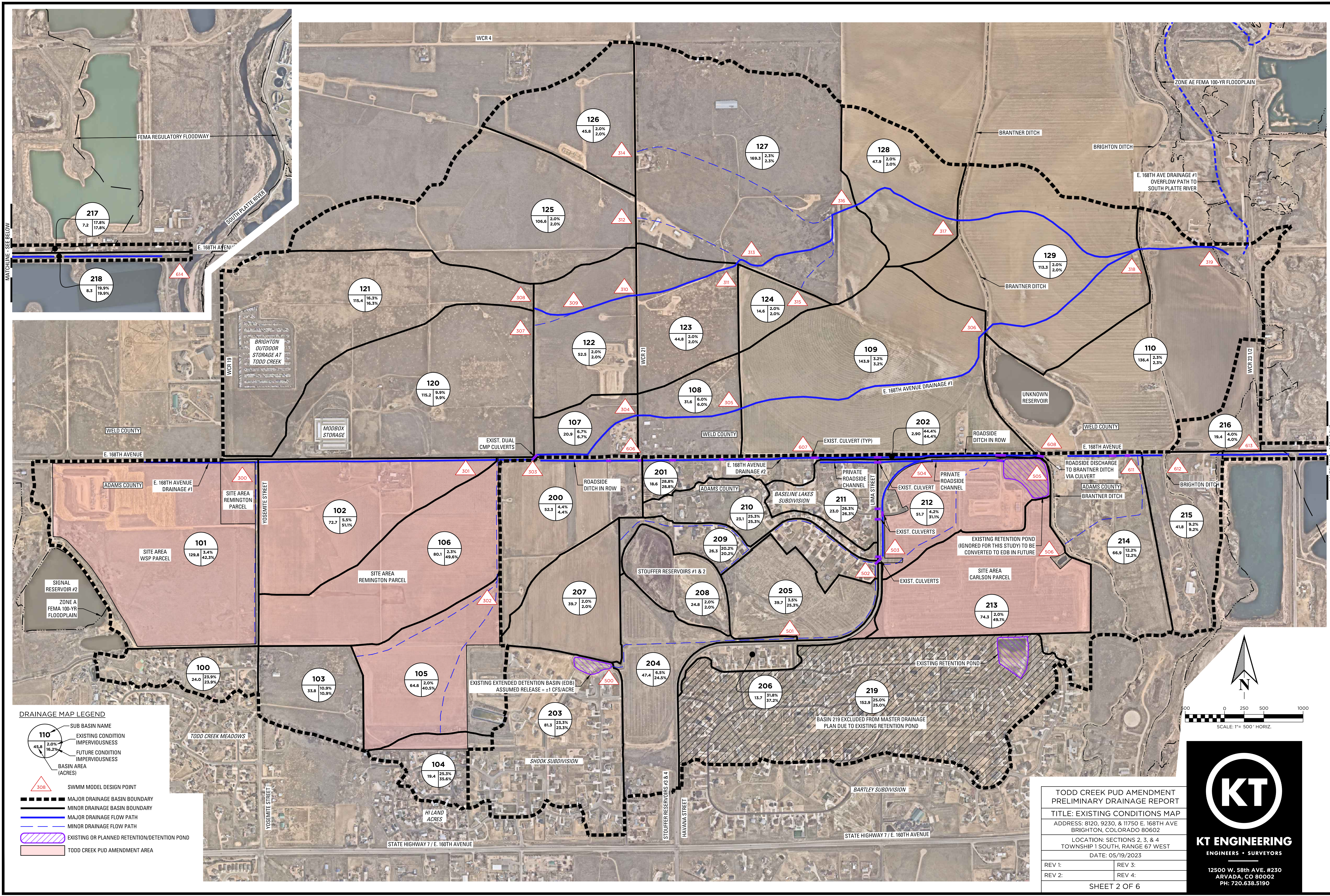


TODD CREEK PUD AMENDMENT PRELIMINARY DRAINAGE REPORT
TITLE: EXISTING TOPOGRAPHY MAP
 ADDRESS: 8120, 9230, & 11750 E. 168TH AVE BRIGHTON, COLORADO 80602
 LOCATION: SECTIONS 2, 3, & 4 TOWNSHIP 1 SOUTH, RANGE 67 WEST
 DATE: 05/19/2023
 REV 1: REV 3:
 REV 2: REV 4:
 SHEET 1 OF 6



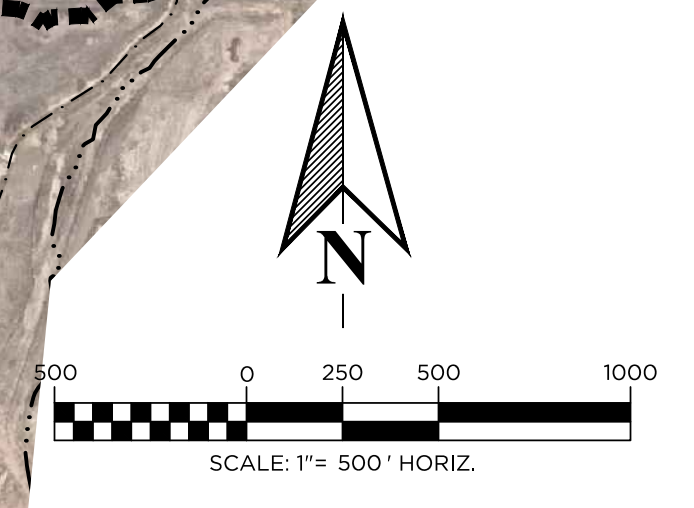
KT ENGINEERING
 ENGINEERS • SURVEYORS
 12500 W. 58TH AVE. #230
 ARVADA, CO 80002
 PH: 720.638.5190

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DRAINAGE MAP LEGEND

- 110: SUB BASIN NAME
- 45.8 / 2.0% / 16.2%: EXISTING CONDITION IMPERVIOUSNESS
- 7.2 / 17.8% / 17.8%: FUTURE CONDITION IMPERVIOUSNESS
- 7.2: BASIN AREA (ACRES)
- 308: SWMM MODEL DESIGN POINT
- : MAJOR DRAINAGE BASIN BOUNDARY
- - - : MINOR DRAINAGE BASIN BOUNDARY
- : MAJOR DRAINAGE FLOW PATH
- - - : MINOR DRAINAGE FLOW PATH
- ▨: EXISTING OR PLANNED RETENTION/DETENTION POND
- ▨: TODD CREEK PUD AMENDMENT AREA



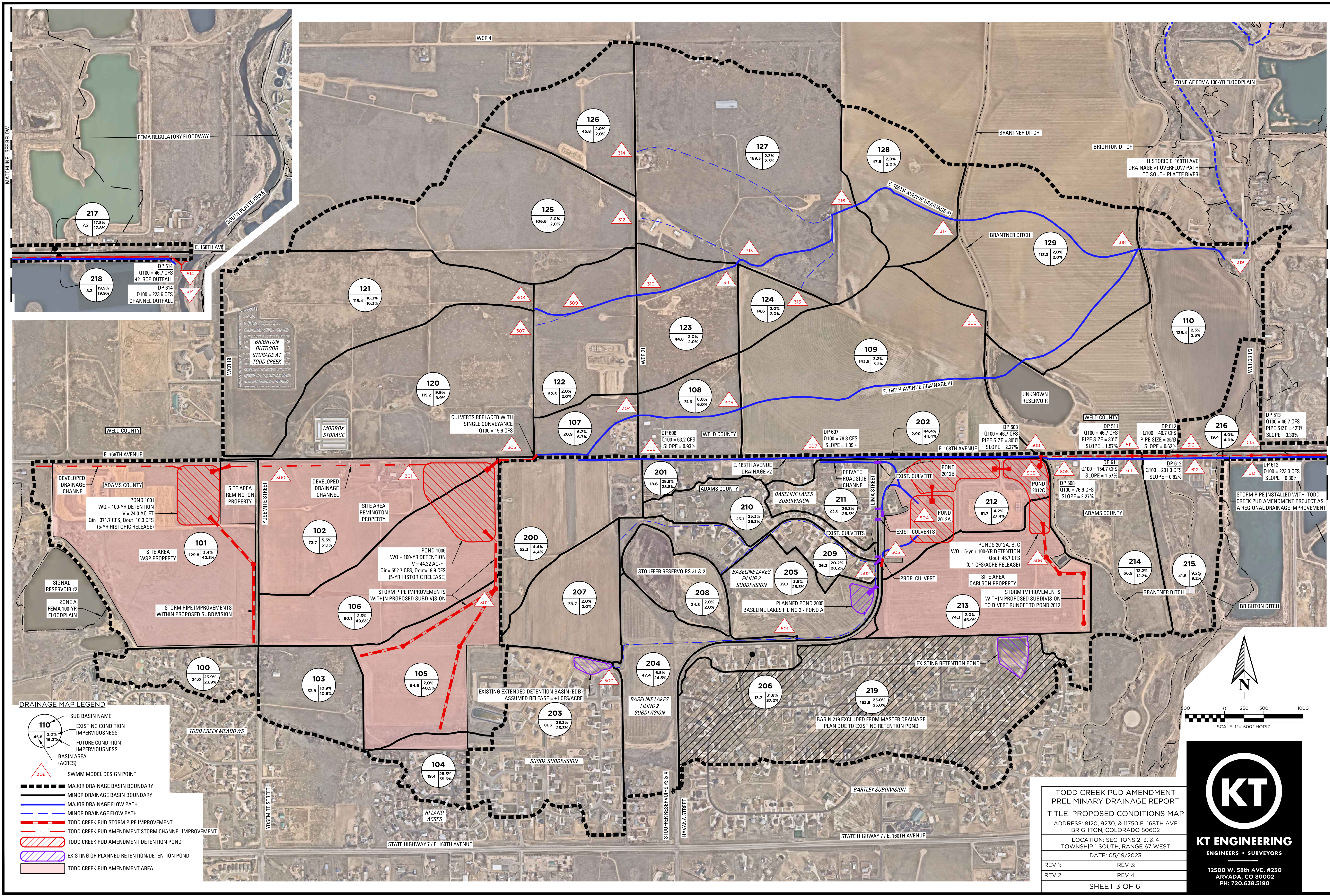
TODD CREEK PUD AMENDMENT
 PRELIMINARY DRAINAGE REPORT
 TITLE: EXISTING CONDITIONS MAP
 ADDRESS: 8120, 9230, & 11750 E. 168TH AVE
 BRIGHTON, COLORADO 80602
 LOCATION: SECTIONS 2, 3, & 4
 TOWNSHIP 1 SOUTH, RANGE 67 WEST
 DATE: 05/19/2023

REV 1:	REV 3:
REV 2:	REV 4:

SHEET 2 OF 6

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MATCHLINE - SEE BELOW

MATCHLINE - SEE ABOVE

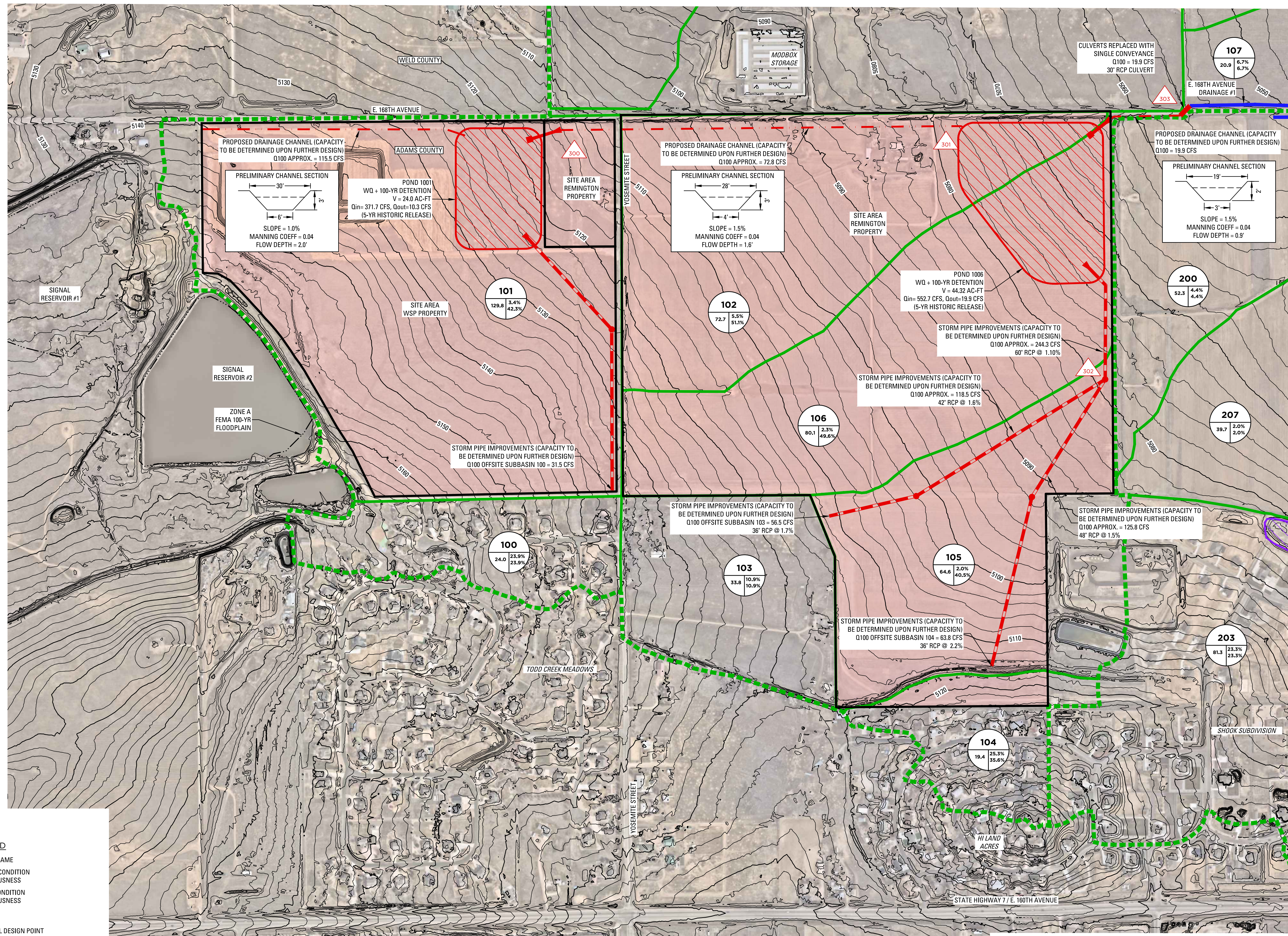
DRAINAGE MAP LEGEND

- 110 SUB BASIN NAME
- 45.8 EXISTING CONDITION IMPERVIOUSNESS
- 16.2% FUTURE CONDITION IMPERVIOUSNESS
- 7.2 BASIN AREA (ACRES)
- ▲ SWMM MODEL DESIGN POINT
- MAJOR DRAINAGE BASIN BOUNDARY
- MINOR DRAINAGE BASIN BOUNDARY
- MAJOR DRAINAGE FLOW PATH
- MINOR DRAINAGE FLOW PATH
- TODD CREEK PUD STORM PIPE IMPROVEMENT
- TODD CREEK PUD AMENDMENT STORM CHANNEL IMPROVEMENT
- TODD CREEK PUD AMENDMENT DETENTION POND
- EXISTING OR PLANNED RETENTION/DETENTION POND
- TODD CREEK PUD AMENDMENT AREA

TODD CREEK PUD AMENDMENT PRELIMINARY DRAINAGE REPORT
TITLE: PROPOSED CONDITIONS MAP
 ADDRESS: 8120, 9230, & 11750 E. 168TH AVE
 BRIGHTON, COLORADO 80602
 LOCATION: SECTIONS 2, 3, & 4
 TOWNSHIP 1 SOUTH, RANGE 67 WEST
 DATE: 05/19/2023
 REV 1: REV 3:
 REV 2: REV 4:
 SHEET 3 OF 6

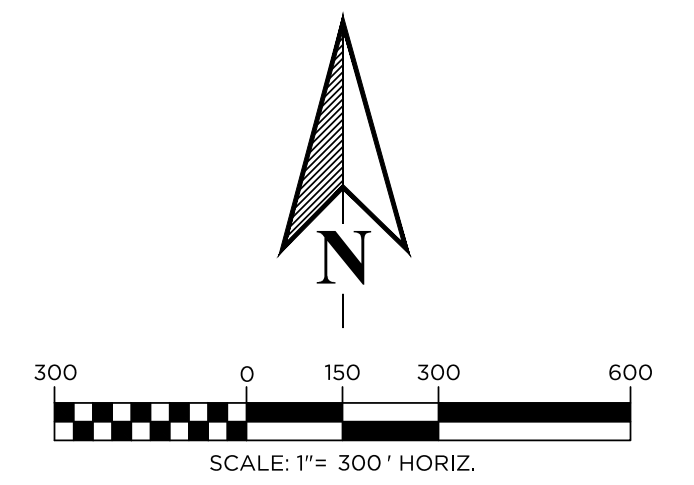
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DRAINAGE MAP LEGEND

- 110 SUB BASIN NAME
- EXISTING CONDITION IMPERVIOUSNESS
- FUTURE CONDITION IMPERVIOUSNESS
- BASIN AREA (ACRES)
- SWMM MODEL DESIGN POINT
- MAJOR DRAINAGE BASIN BOUNDARY
- MINOR DRAINAGE BASIN BOUNDARY
- MAJOR DRAINAGE FLOW PATH
- MINOR DRAINAGE FLOW PATH
- TODD CREEK PUD STORM PIPE IMPROVEMENT
- TODD CREEK PUD AMENDMENT STORM CHANNEL IMPROVEMENT
- TODD CREEK PUD AMENDMENT DETENTION POND
- EXISTING OR PLANNED RETENTION/DETENTION POND
- TODD CREEK PUD AMENDMENT AREA



TODD CREEK PUD AMENDMENT PRELIMINARY DRAINAGE REPORT	
TITLE: PROPOSED DETAILED PLAN - WSP & REMINGTON PROPERTIES	
ADDRESS: 8120, 9230, & 11750 E. 168TH AVE BRIGHTON, COLORADO 80602	
LOCATION: SECTIONS 2, 3, & 4 TOWNSHIP 1 SOUTH, RANGE 67 WEST	
DATE: 05/19/2023	
REV 1:	REV 3:
REV 2:	REV 4:
SHEET 4 OF 6	

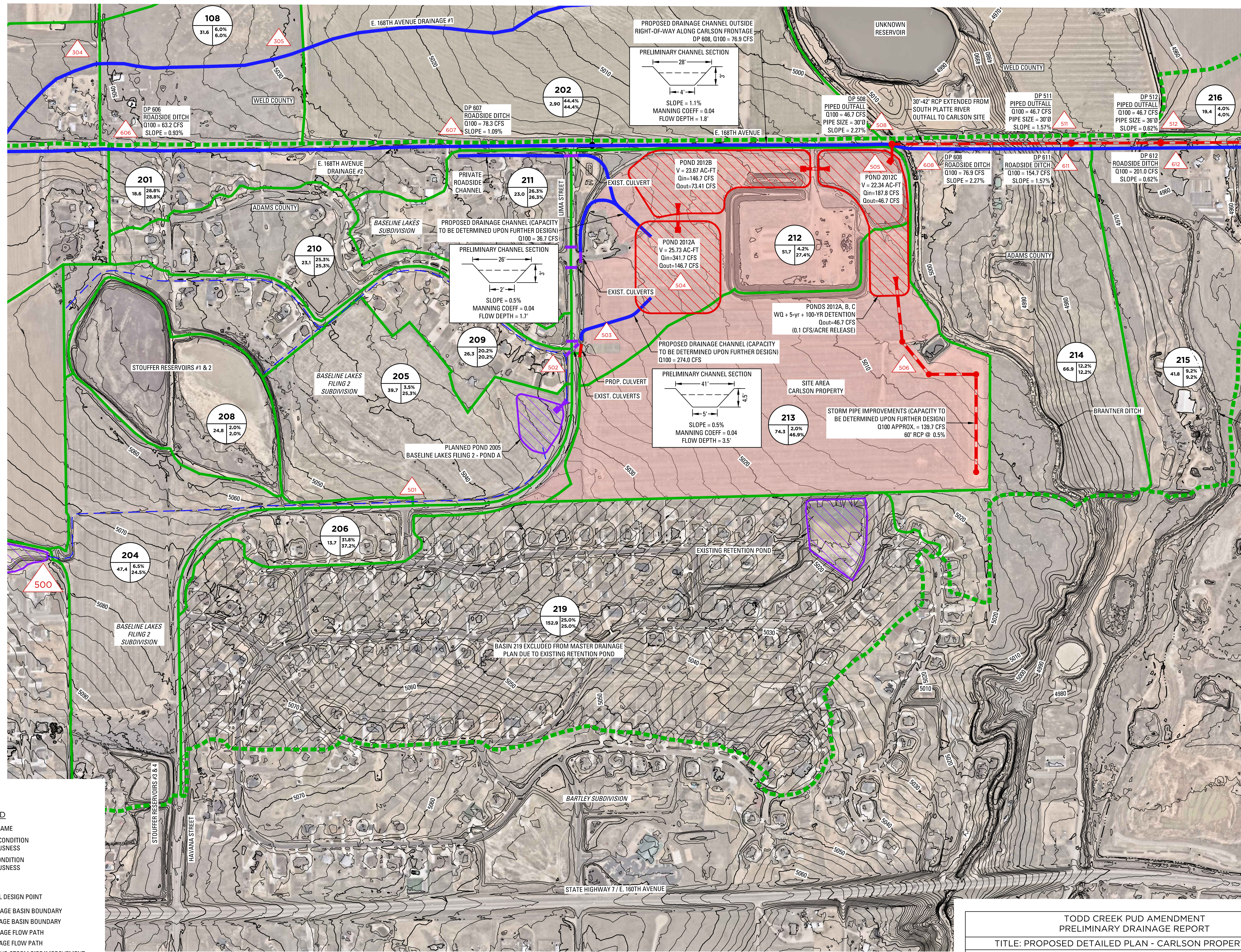


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PH: 720.638.5190

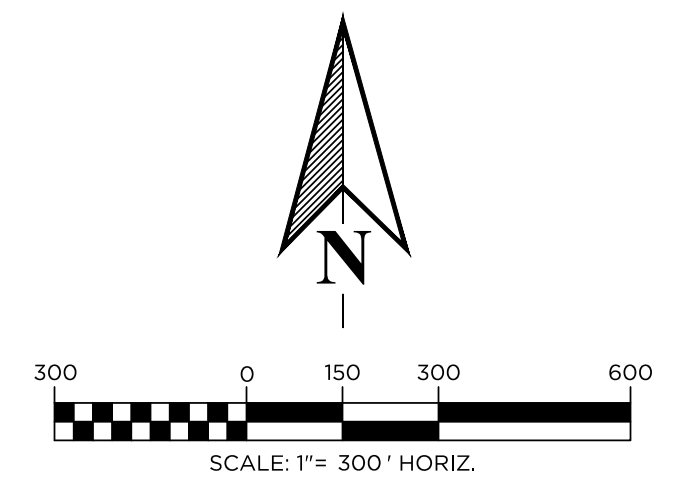
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DRAINAGE MAP LEGEND

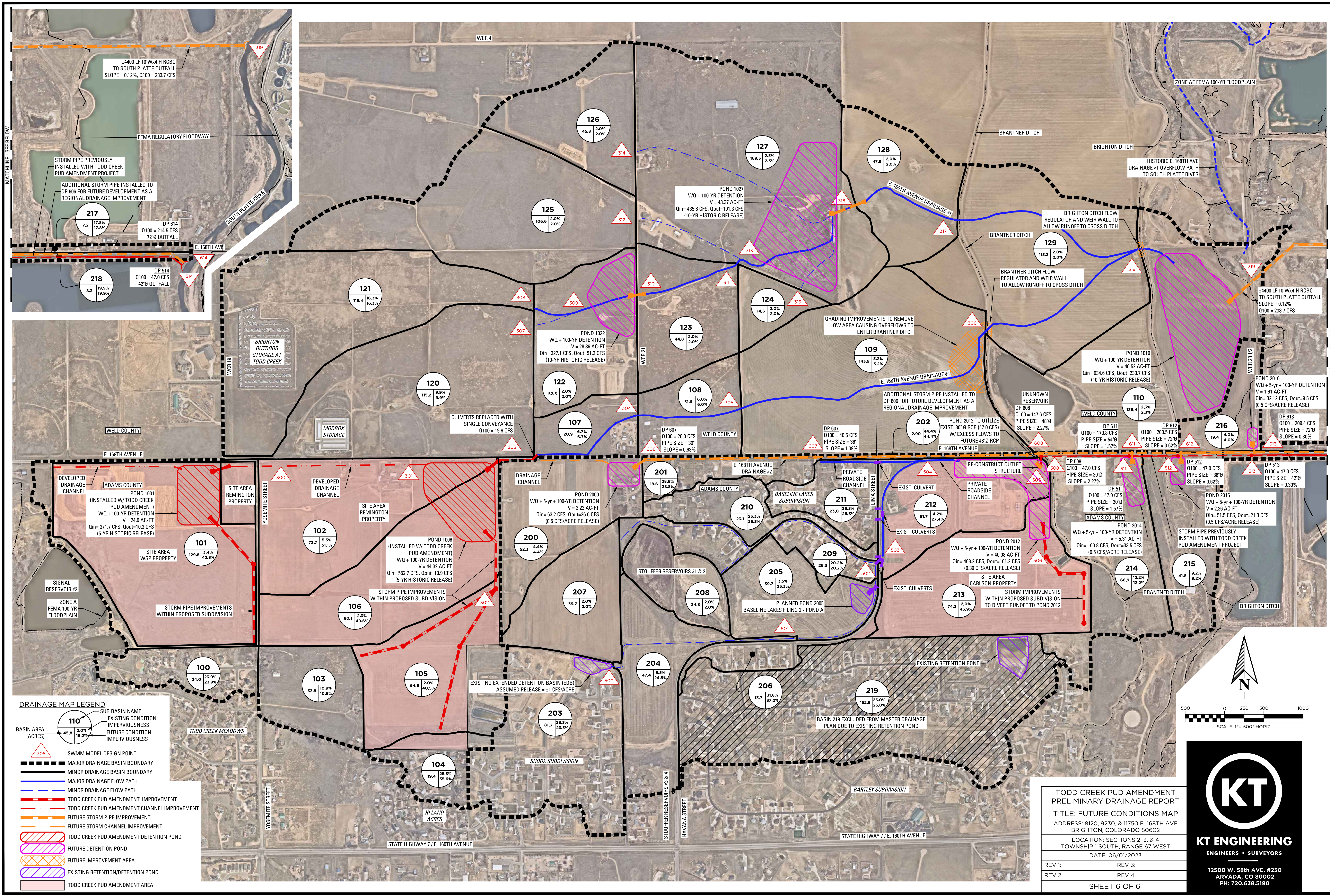
- SUB BASIN NAME
- EXISTING CONDITION IMPERVIOUSNESS
- FUTURE CONDITION IMPERVIOUSNESS
- BASIN AREA (ACRES)
- SWMM MODEL DESIGN POINT
- MAJOR DRAINAGE BASIN BOUNDARY
- MINOR DRAINAGE BASIN BOUNDARY
- MAJOR DRAINAGE FLOW PATH
- MINOR DRAINAGE FLOW PATH
- TODD CREEK PUD STORM PIPE IMPROVEMENT
- TODD CREEK PUD AMENDMENT STORM CHANNEL IMPROVEMENT
- TODD CREEK PUD AMENDMENT DETENTION POND
- EXISTING OR PLANNED RETENTION/DETENTION POND
- TODD CREEK PUD AMENDMENT AREA



TODD CREEK PUD AMENDMENT PRELIMINARY DRAINAGE REPORT	
TITLE: PROPOSED DETAILED PLAN - CARLSON PROPERTY	
ADDRESS: 8120, 9230, & 11750 E. 168TH AVE BRIGHTON, COLORADO 80602	
LOCATION: SECTIONS 2, 3, & 4 TOWNSHIP 1 SOUTH, RANGE 67 WEST	
DATE: 05/19/2023	
REV 1:	REV 3:
REV 2:	REV 4:
SHEET 5 OF 6	

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ARVADA, CO 80002
PH: 720.638.5190



DRAINAGE MAP LEGEND

	SUB BASIN NAME
	EXISTING CONDITION
	IMPERVIOUSNESS
	FUTURE CONDITION
	IMPERVIOUSNESS
	SWMM MODEL DESIGN POINT
	MAJOR DRAINAGE BASIN BOUNDARY
	MINOR DRAINAGE BASIN BOUNDARY
	MAJOR DRAINAGE FLOW PATH
	MINOR DRAINAGE FLOW PATH
	TODD CREEK PUD AMENDMENT IMPROVEMENT
	TODD CREEK PUD AMENDMENT CHANNEL IMPROVEMENT
	FUTURE STORM PIPE IMPROVEMENT
	FUTURE STORM CHANNEL IMPROVEMENT
	TODD CREEK PUD AMENDMENT DETENTION POND
	FUTURE DETENTION POND
	FUTURE IMPROVEMENT AREA
	EXISTING RETENTION/DETENTION POND
	TODD CREEK PUD AMENDMENT AREA

**TODD CREEK PUD AMENDMENT
PRELIMINARY DRAINAGE REPORT**

TITLE: FUTURE CONDITIONS MAP

ADDRESS: 8120, 9230, & 11750 E. 168TH AVE
BRIGHTON, COLORADO 80602

LOCATION: SECTIONS 2, 3, & 4
TOWNSHIP 1 SOUTH, RANGE 67 WEST

DATE: 06/01/2023

REV 1: _____ REV 3: _____
REV 2: _____ REV 4: _____

SHEET 6 OF 6

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PH: 720.638.5190

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5.25.2023

Meeting Date: 4.20.2023

Venue: Virtual

Total Attendees: 41



Presenters: Marcus Pachner, John Prestwich, Matt Cavanaugh

Panelists: 12

Meeting Summary:

The meeting began with Marcus Pachner, a representative from The Pachner Company, presenting the comprehensive plan known as Advancing Adams. This plan aims to establish a renewed vision for the future of Adams County. Marcus Pachner walked through the key points of the plan, emphasizing the expected population growth, the current housing shortage, and the potential issues arising from rising housing prices, such as attainability and displacement concerns derived from the guidance of the Comprehensive Plan.

John Prestwich explained that the comprehensive plan's future land use classification of the property was categorized as Residential Low. This classification allows for a maximum density of six dwelling units per acre, and indicated that this project was actually less than the allowable density permitted.

Marcus Pachner also provided an overview of the plan's boundaries, noting that the project is still in its early stages. At this point, the focus is primarily on complying with future land use zoning requirements while being sensitive to community feedback.

Following the presentation, the meeting was opened up to a question-and-answer session. Attendees expressed their concerns on various topics, with the most prominent areas of interest being sufficient open spaces, adequate city and school services, sewer and water infrastructure, site plan-related matters, and traffic.

To review the meeting live, please see link here:

https://www.youtube.com/watch?v=UYIHVI_oEK8

End of Report.

Attendee Report
Report Generated:

5/25/2023 13:23

Topic	Webinar ID	Actual Start Time	Actual Duration (minutes)	# Registered	# Cancelled	Unique Viewers	Total Users	Max Concurrent Views	Enable Registration
Todd Creek Neighborhood Meeting	872 1012 1327	4/20/2023 17:39		110	37	0	32	49	30 Yes

Host Details

Attended	User Name (Original Name)	Email	Join Time	Leave Time	Time in Session (minutes)	Is Guest	Country/Region Name
Yes	Presentation screen (Marcus Pachner)	marcus@thepachnercompany.com	4/20/2023 17:39		4/20/2023 19:28	110 No	United States

Panelist Details

Attended	User Name (Original Name)	Email	Join Time	Leave Time	Time in Session (minutes)	Is Guest	Country/Region Name
Yes	Ken T.	ktoland@kteng.net	4/20/2023 17:46		4/20/2023 19:28	102 Yes	United States
Yes	Guillaume P.	gp@remingtonhomes.net	4/20/2023 17:59		4/20/2023 19:28	90 Yes	United States
Yes	John Prestwich	john@pcsgroupco.com	4/20/2023 17:46		4/20/2023 19:28	103 Yes	United Kingdom
Yes	Todd D.	tdunning@wspcos.com	4/20/2023 17:57		4/20/2023 19:28	92 Yes	United States
Yes	George H.	ghanlon@wspcos.com	4/20/2023 18:00		4/20/2023 19:26	86 Yes	United States
Yes	Matt C.	mattc@remingtonhomes.net	4/20/2023 17:51		4/20/2023 19:28	98 Yes	United States
Yes	Tucker H.	thanlon@wspcos.com	4/20/2023 17:53		4/20/2023 19:28	96 Yes	United States
Yes	Don S.	Don@wspcos.com	4/20/2023 18:01		4/20/2023 19:28	88 Yes	United States
Yes	Ryan C.	ryancarson@carsonland.net	4/20/2023 18:01		4/20/2023 19:28	88 Yes	United States
Yes	Regan H.	reganh@remingtonhomes.net	4/20/2023 17:55		4/20/2023 19:28	94 Yes	United States
Yes	Carli G	Carli@pcsgroupco.com	4/20/2023 17:56		4/20/2023 19:28	92 Yes	United States
Yes	Marcus	marcus_pachner@yahoo.com	4/20/2023 17:53		4/20/2023 19:28	96 Yes	United States

Attendee Details

Attended	User Name (Original Name)	First Name	Last Name	Email	Registration Time	Approval Status	Join Time	Leave Time	Time in Session (minutes)	Is Guest	Country/Region Name
No	J	J	Vu	jasperhmongvue@gmail.com	4/6/2023 10:43	approved	--	--	--	--	--
Yes	Richard Fleeman	Richard	Fleeman	rcfleeman@msn.com	4/14/2023 8:41	approved	4/20/2023 18:32	4/20/2023 18:43	4/20/2023 18:43	11 Yes	United States
Yes	Richard Fleeman	Richard	Fleeman	rcfleeman@msn.com			4/20/2023 18:43	4/20/2023 18:59		16 Yes	United States
No	Mel Schulman	Mel	Schulman	mschulman@seniortechcolorado.com	4/15/2023 11:46	approved	--	--	--	--	--
Yes	Cindy Rapp	Cindy	Rapp	cinrapp@oliver-bc.com	4/19/2023 8:14	approved	4/20/2023 18:05	4/20/2023 18:08		4 Yes	United States
Yes	Janette Szakmeister	Janette	Szakmeister	janetteszakmeister@gmail.com	4/20/2023 14:26	approved	4/20/2023 18:03	4/20/2023 19:28		86 Yes	United States
Yes	Wayne Muhler	Wayne	Muhler	wmuhler@yahoo.com	4/20/2023 15:24	approved	4/20/2023 18:00	4/20/2023 19:15		75 Yes	United States
No	David Dahlgren	David	Dahlgren	david.dahlgren@flowcosolutions.com	4/20/2023 15:37	approved	--	--	--	--	--
Yes	I F	I	F	lforsythe@carollo.com	4/20/2023 15:37	approved	4/20/2023 18:00	4/20/2023 19:28		89 Yes	United States
Yes	Mike Lloyd	Mike	Lloyd	bmlloyd@aol.com	4/20/2023 15:54	approved	4/20/2023 18:00	4/20/2023 19:28		89 Yes	United States
No	James	James	Hood	Jim.hood007@gmail.com	4/20/2023 16:05	approved	--	--	--	--	--
Yes	Randy Wilson	Randy	Wilson	rwilson555@msn.com	4/20/2023 17:33	approved	4/20/2023 18:00	4/20/2023 18:08		9 Yes	United States
Yes	Randy Wilson	Randy	Wilson	rwilson555@msn.com			4/20/2023 18:07	4/20/2023 19:28		81 Yes	United States
Yes	Robert Schlosser	Robert	Schlosser	rsssys2003@q.com	4/20/2023 17:43	approved	4/20/2023 18:00	4/20/2023 19:28		89 Yes	United States
Yes	Sandra Rodgers	Sandra	Rodgers	srodders4@gmail.com	4/20/2023 17:47	approved	4/20/2023 18:00	4/20/2023 19:28		89 Yes	United States
Yes	Carrie Vogt	Carrie	Vogt	carrie.vogt@comcast.net	4/20/2023 17:47	approved	4/20/2023 18:00	4/20/2023 19:01		61 Yes	United States
Yes	Mel Schulman	Mel	Schulman	Mel.schulman@gmail.com	4/20/2023 17:50	approved	4/20/2023 18:00	4/20/2023 18:57		58 Yes	United States
Yes	Sherry Kreutzer	Sherry	Kreutzer	flowerchild1@protonmail.com	4/20/2023 17:53	approved	4/20/2023 18:00	4/20/2023 19:28		89 Yes	United States
Yes	Cris Muhler	Cris	Muhler	Bmfracecars@msn.com	4/20/2023 17:54	approved	4/20/2023 18:00	4/20/2023 19:06		66 Yes	United States
Yes	Jason K	Jason	K	klingerman73@gmail.com	4/20/2023 17:55	approved	4/20/2023 18:00	4/20/2023 19:23		83 Yes	United States
Yes	Rich	Rich		Lampsboards@yahoo.com	4/20/2023 17:55	approved	4/20/2023 18:00	4/20/2023 19:28		89 Yes	United States
Yes	Kay Sears	Kay	Sears	searskay@comcast.net	4/20/2023 17:56	approved	4/20/2023 18:01	4/20/2023 18:09		9 Yes	United States
Yes	Kay Sears	Kay	Sears	searskay@comcast.net			4/20/2023 18:09	4/20/2023 19:05		56 Yes	United States
Yes	Mark Huddleston	Mark	Huddleston	toddcreek@markhuddleston.com	4/20/2023 17:57	approved	4/20/2023 18:00	4/20/2023 18:03		4 Yes	United States
Yes	Michael Zopes	Michael	Zopes	mikezopes@msn.com	4/20/2023 17:58	approved	4/20/2023 18:00	4/20/2023 19:28		88 Yes	United States
Yes	Anna Smouse	Anna	Smouse	asisneros2002@comcast.net	4/20/2023 17:58	approved	4/20/2023 18:00	4/20/2023 19:28		89 Yes	United States
Yes	Rob M	Rob	M	rjm22@me.com	4/20/2023 17:59	approved	4/20/2023 18:00	4/20/2023 19:28		89 Yes	United States
Yes	Pa Vang	Pa	Vang	vangp83@gmail.com	4/20/2023 18:00	approved	4/20/2023 18:05	4/20/2023 19:28		84 Yes	United States
Yes	Jack Bajorek	Jack	Bajorek	jbajorek00@gmail.com	4/20/2023 18:01	approved	4/20/2023 18:01	4/20/2023 19:28		88 Yes	United States
Yes	Misty Acker	Misty	Acker	ack956@gmail.com	4/20/2023 18:01	approved	4/20/2023 18:01	4/20/2023 19:28		88 Yes	United States
Yes	Taylor Carlson	Taylor	Carlson	taylor@carsonland.net	4/20/2023 18:03	approved	4/20/2023 18:03	4/20/2023 19:28		86 Yes	United States
Yes	Joey Dahlgren	Joey	Dahlgren	Jolene.dahlgren@yahoo.com	4/20/2023 18:04	approved	4/20/2023 18:04	4/20/2023 19:28		85 Yes	United States
Yes	Jenn Millikan	Jenn	Millikan	JenniferMarieMillikan@gmail.com	4/20/2023 18:04	approved	4/20/2023 18:04	4/20/2023 18:35		32 Yes	United States
Yes	Matthew Hadden	Matthew	Hadden	nomadictexan@msn.com	4/20/2023 18:04	approved	4/20/2023 18:04	4/20/2023 18:35		31 Yes	United States
Yes	Kristopher Neilsen	Kristopher	Neilsen	kamaro67@gmail.com	4/20/2023 18:05	approved	4/20/2023 18:06	4/20/2023 19:28		83 Yes	United States
Yes	Clay Carlson	Clay	Carlson	Clay@carsonland.net	4/20/2023 18:06	approved	4/20/2023 18:06	4/20/2023 18:25		20 Yes	United States
Yes	Clay Carlson	Clay	Carlson	Clay@carsonland.net			4/20/2023 18:25	4/20/2023 18:53		28 Yes	United States
Yes	Jack Bajorek	Jack	Bajorek	jbajorek00@aol.com	4/20/2023 18:07	approved	4/20/2023 18:12	4/20/2023 19:28		77 Yes	United States
Yes	Brad Penwell	Brad	Penwell	brad@carsonland.net	4/20/2023 18:09	approved	4/20/2023 18:10	4/20/2023 19:28		79 Yes	United States
No	John	John	Weigandt	johnweigandt58@gmail.com	4/20/2023 18:26	approved	--	--	--	--	--
Yes	Jim Piccolo	Jim	Piccolo	jt_pic@yahoo.com	4/20/2023 18:26	approved	4/20/2023 18:26	4/20/2023 19:23		57 Yes	United States

WHEN RECORDED RETURN TO:

Todd Creek Farms Metropolitan District No. 1
c/o Gene Osborne
21 N. 1st Avenue, Suite 190,
P.O. Box 490, Brighton, Colorado 80601

Date
\$ <u>116.30</u>
State Doc, Fee

SPECIAL WARRANTY DEED

THIS DEED, made this 4th day of April, 2008, between the CITY OF WESTMINSTER, a Colorado municipal corporation, whose address is 4800 West 92nd Avenue, Westminster, Colorado 80031 ("Grantor"), and TODD CREEK FARMS METROPOLITAN DISTRICT NO. 1, a Colorado special district and political subdivision of the State of Colorado, whose legal address is P.O. Box 490 Brighton, CO 80601 ("Grantee").

WITNESSETH, that the Grantor, for and in consideration of the sum of Ten and 00/100ths Dollars (\$10.00), and other good and sufficient consideration, the receipt and sufficiency of which is hereby acknowledged, has granted, bargained, sold and conveyed, and by these presents does grant, bargain, sell, convey and confirm unto the Grantee, its heirs and assigns forever, the real property in the County of Adams and State of Colorado, described as follows:

See Attached Exhibit A,

TOGETHER with all and singular the hereditaments and appurtenances thereunto belonging, or in anywise appertaining, and together with any and all easements, rights-of-way, access rights or rights appertaining or in anywise belonging thereto, and together with the reversion and reversions, remainder and remainders, rents, issues and profits thereof, and all the estate, right, title, interest, claim and demand whatsoever of Grantor, either in law or equity, of, in and to the Property, with the hereditaments and appurtenances;

TO HAVE AND TO HOLD the same, with appurtenances, and all of the estate, right and title of Grantor, to the Grantee, its successors and assigns, forever.

The Grantor shall and will WARRANT AND FOREVER DEFEND the above-bargained premises in the quiet and peaceable possession of the Grantee, its heirs, successors and assigns, against any and every person or persons lawfully claiming the whole or any part thereof by, under or through the Grantor.

The singular number shall include the plural, the plural the singular, and the use of any gender shall be applicable to all genders.

① H0098455

UNOFFICIAL COPY

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2
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FAITC

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EXHIBIT A

That part of the North one-half of Section 4, Township 1 South, Range 67 West of the 6th Principal Meridian, Adams County, Colorado, described as:

Beginning at the Southeast corner of the Northeast one-quarter Northwest one-quarter of said Section 4; thence $N00^{\circ}46'55''E$ on an assumed bearing along the East line of said Northeast one-quarter Northwest one-quarter a distance of 575.00 feet; thence $N89^{\circ}13'05''W$ a distance of 60.00 feet to a point on a non-tangent curve to the left, the radius of said curve is 383.83 feet, the delta of said curve is $117^{\circ}09'59''$, the chord of said curve bears $N61^{\circ}31'50''W$, 655.11 feet; thence along the arc of said curve a distance of 784.90 feet; thence $S63^{\circ}27'16''W$ a distance of 773.68 feet to a point 569.50 feet South of the Northeast corner of the Northwest one-quarter Northwest one-quarter of said Section 4; thence $S63^{\circ}52'05''W$ a distance of 811.12 feet to the Northeast corner of a parcel of land described in Book 774, Page 20, Adams County records; thence $S08^{\circ}40'00''E$ along the Easterly line of said parcel a distance of 187.20 feet to a point on the South line of said Northwest one-quarter Northwest one-quarter, said point being 635.00 feet East of the Southwest corner of said Northwest one-quarter Northwest one-quarter; thence continuing $S08^{\circ}40'00''E$ a distance of 301.00 feet; thence $S57^{\circ}04'00''E$ a distance of 390.00 feet; thence $S64^{\circ}11'00''E$ a distance of 291.00 feet; thence $S64^{\circ}15'06''E$ a distance of 54.31 feet to a point on the East line of the Southwest one-quarter Northwest one-quarter of said Section 4, said point being 660.00 feet North of the Southeast corner of said Southwest one-quarter Northwest one-quarter; thence $N90^{\circ}00'00''E$ parallel with the East-West Centerline of said Section 4 a distance of 830.00 feet; thence $S34^{\circ}31'32''W$ a distance of 801.02 feet to a point on said East-West Centerline, said point being 385.00 feet East of the Southwest corner of the Southeast one-quarter Northwest one-quarter of said Section 4; thence $S00^{\circ}00'00''E$ a distance of 75.00 feet; thence $N33^{\circ}55'00''E$ a distance of 130.00 feet; thence $N73^{\circ}24'00''E$ a distance of 350.00 feet; thence $N87^{\circ}03'00''E$ a distance of 347.00 feet; thence $N81^{\circ}31'00''E$ a distance of 236.00 feet; thence $N81^{\circ}13'00''E$ a distance of 334.00 feet; thence $N82^{\circ}55'00''E$ a distance of 210.00 feet; thence $N80^{\circ}33'00''E$ a distance of 305.00 feet; thence $S31^{\circ}37'00''E$ a distance of 200.00 feet; thence $S87^{\circ}30'00''E$ a distance of 50.00 feet; thence $N00^{\circ}00'00''E$ a distance of 42.00 feet; thence $N32^{\circ}11'48''W$ a distance of 1344.62 feet to a point on the North line of the Southwest one-quarter Northeast one-quarter of said Section 4, said point being 305.00 feet East of the point of beginning; thence $S90^{\circ}00'00''W$ along said North line a distance of 305.00 feet to the point of beginning.

Containing 81.951 acres more or less, and excepting therefrom that portion of land subject to a Boundary Line Agreement between the City of Westminster and the Robert Seltzer Family Trust, recorded in the Adams County Clerk and Recorder's Office, 2/04/97, at Book 4931, Pages 0452-0453, Reception # C0250867.



10450 E 159th Court
Brighton, CO 80602

Phone: (303) 637-0344
Fax: (303)637-0423

May 31, 2023

RE: Conditional Will-Serve Letter for various Parcels in the Todd Creek Village Preliminary PUD Plan Adams County, Colorado

Dear Owner's Representative:

You are the owner's representatives of several parcels included in an application for a change in the Todd Creek Village Preliminary PUD Plan (the "Owners") in Adams County, Colorado (the "Property"). The Property is generally located south of WCR 2 and between Quebec St. and Tucson St. in Adams County, Colorado. The Property is located within the service area of Todd Creek Village Metropolitan District ("TCVMD" or the "District"). It is the understanding of TCVMD that the Owners may develop certain sites within the Property (the "Site") and seek Service (as defined below) to the Site. Therefore, the Site is the subject of this Conditional Will-Serve Letter from TCVMD.

TCVMD is willing and able to provide potable and non-potable water service and sanitary sewer service to the Site (the "Service") for either residential or commercial uses subject to the following conditions, which shall be conditions precedent to any obligation on the part of TCVMD to provide such Service:

1. The Owners shall pay TCVMD's then current water and sewer tap fees and all other applicable fees, rates, tolls and charges imposed pursuant to TCVMD's then current Rules and Regulations, as may be amended from time-to-time.
2. The Owners shall dedicate all groundwater rights to the District as outlined in TCVMD's Rules & Regulations at such time the District requires.
3. This Conditional Will-Serve Letter, as it relates to sewer service availability, is subject to the District receiving approval of its pending application with Metro Water Recovery to be deemed a "Special Connector" that is allowed to utilize Metro Water Recovery's sewer services.
4. The Owners shall design, construct, acquire easements and install any and all infrastructure required or deemed necessary by TCVMD to provide Service to the Site (including but not limited to: service taps, service lines, mainlines or any other improvements and facilities required, including any permits or improvements required by Adams County or Weld County). The Owners shall design all such Owner-installed infrastructure according TCVMD's design standards and in accordance with TCVMD's Rules and Regulations, in place at such time as the design is completed. The Owners shall reimburse TCVMD for any and all costs the District incurs related to its review of the

infrastructure design, construction and installation, including reimbursement of its engineering, legal and other consultant fees.

5. The Owners will be required to pay for any off-site capital improvements deemed necessary by TCVMD to provide Service to the Site including, but not limited to, water storage tanks, pipelines, reservoir improvements, pumps, water treatment plant or upgrades needed to any other District infrastructure.

6. TCVMD will provide the Owners with non-monetary assistance in the acquisition of easements necessary to provide for offsite infrastructure to allow TCVMD to provide Service to the Site. In addition, TCVMD will provide the terms of, and administer, reimbursement or cost recovery agreements related to the installation or upsizing of offsite facilities or infrastructure designed and constructed by the Owners benefiting future development receiving service from TVCMD. The standard life span of such reimbursement agreements is fifteen years.

7. The Service will be provided to the Site, subject to and conditioned upon, compliance with the District's policies and Rules and Regulations as may be amended from time-to-time and the payment of all applicable fees, rates, tolls and charges imposed thereunder. This commitment shall run only to the Site and shall not be transferrable or assignable in any manner whatsoever.

This Conditional Will-Serve Letter shall not be effective until the Owners execute a Tap Purchase Agreement with TCVMD indicating the Owner's willingness to be bound by the terms set forth therein.

If any of the Owners have any follow-up questions or concerns, please do not hesitate to contact me.

Todd Creek Village Metropolitan District



Don Summers
General Manager,
Todd Creek Village Metropolitan District

cc: Blair Dickhoner, District Counsel
Todd Creek Village Metropolitan District - Board of Directors



OWNERS NAME AND ADDRESS:

TODD CREEK FARMS METRO DIST NO 1 WATER C/O ZIONS FIRST NATIONAL BANK TRUSTEE
717 17TH ST STE 301
DENVER CO 80202-3310

LEGAL DESCRIPTION:

SECT,TWN,RNG:4-1-67 DESC: PARC IN SEC 4 DESC AS FOLS COMMENCING AT THE N1/4 COR OF SD SEC 4 TH S 00D 26M 28S E 543/5 FT TO THE POB TH S 00D 26M 26S E 493/04 FT TO A PT BEING 55/73 FT NLY FROM THE CEN N 1/16TH COR OF SD SEC 4 AND BEING A PT ON THE DCRY LN ADJUSTMENT DESC IN BOOK 4931 PAGE 452 TH ALG SD BDRY LN AGREEMENT THE FOL 10 COURSES AND DISTS TH N 89D 31M 59S E 32/19 FT TH S 71D 03M 37S E 115/93 FT TH S 46D 44M 52S E 185/31 FT TH S 52D 43M 55S E 131/26 FT TH S 42D 42M 06S E 70/54 FT TH S 47D 00M 19S E 27/90 FT TH S 34D 53M 37S E 28/74 FT TH S 30D 03M 43S E 404/31 FT TH S 32D 55M 27S E 457/80 FT TH S 25D 59M 02S E 76/03 FT TH DEPARTING SD BDRY LN ADJUSTMENT AND ALG THE N BDRY LN AT A PARC OF LAND FOR TODD CREEK FARMS METRO DIST NO 1 (REC NO C0846354) THE FOL COURSES & DISTS TH N 32D 50M 21S W 114/27 FT TH S 79D 19M 39S W 305 FT TH S 81D 41M 39S W 210 FT TH S 79D 59M 39S W 334 FT TH S 80D 17M 39S W 236 FT TH S 85D 49M 39S W 347 FT TH S 72D 10M 39S W 350 FT TH S 32D 41M 39S W 130 FT TH N 01D 13M 21S W 75 FT TH N 33D 18M 11S E 801/02 FT TH S 88D 46M 39S W 830 FT TH N 65D 28M 27S W 54/31 FT TH N 65D 24M 21S W 291 FT TH N 58D 17M 21S W 390/05 FT TH N 09D 53M 21S W 301 FT TH N 09D 53M 21S W 187/20 FT TH N 62D 38M 48S E 811/12 FT TH N 02D 53M 33S W 27/98 FT TO A PT ON THE SOUTHERN BDRY OF THE EDWARDS PROP THE FOL 16 COURSES TH N 62D 16M 51S E 73/50 FT TH N 63D 04M 07S E 101/27 FT TH N 63D 18M 54S E 97/13 FT TH N 63D 04M 02S E 120/44 FT TH N 63D 17M 41S E 100/72 FT TH N 62D 29M 09S E 56/87 FT TH N 65D 02M 46S E 131/38 FT TH N 75D 55M 20S E 131/74 FT TH N 83D 31M 01S E 98/70 FT TH S 82D 36M 09S E 26/37 FT TH S 79D 22M 49S E 64/20 FT TH S 67D 13M 40S E 98/32 FT TH S 51D 17M 54S E 47/76 FT TH S 13D 24M 16S E 154/59 FT TH S 13D 09M 17S E 112/21 FT TH N 89D 34M 11S E 214/94 FT TO THE POB 79/27A







Statement Of Taxes Due

Account Number R0178786

Parcel 0157104200001

Assessed To

TODD CREEK FARMS METRO DIST NO 1 WATER
C/O:C/O ZIONS FIRST NATIONAL BANK TRUSTEE
717 17TH ST STE 301
DENVER, CO 80202-3310

Legal Description

Situs Address

SECT,TWN,RNG:4-1-67 DESC: PARC IN SEC 4 DESC AS FOLS COMMENCING AT THE N1/4 COR OF SD SEC 4 TH S 00D 26M 0
28S E 543/5 FT TO THE POB TH S 00D 26M 26S E 493/04 FT TO A PT BEING 55/73 FT NLY FROM THE CEN N 1/16TH COR OF
SD SEC 4 AND BEING A PT ON THE DCRY LN ADJUSTMENT DESC IN BOOK 4931 PAGE 452 TH ALG... Additional Legal on File

Year	Tax	Interest	Fees	Payments	Balance
Grand Total Due as of 05/05/2023					\$0.00

Tax Billed at 2022 Rates for Tax Area 290 - 290

Authority	Mill Levy	Amount	Values	Actual	Assessed
RANGEVIEW LIBRARY DISTRICT	3.6150000*	\$0.00	POLITICAL SUB TOT	\$1,931,050	\$560,000
FIRE DISTRICT 6 - GREATER B	15.3200000	\$0.00	LD		
GENERAL	22.8430000	\$0.00	Total	\$1,931,050	\$560,000
RETIREMENT	0.3140000	\$0.00			
ROAD/BRIDGE	1.3000000	\$0.00			
DEVELOPMENTALLY DISABLED	0.2570000	\$0.00			
SD 27 BOND (Brighton)	22.0690000	\$0.00			
SD 27 GENERAL (Brighton)	34.2210000	\$0.00			
URBAN DRAINAGE SOUTH PLATTE	0.1000000	\$0.00			
URBAN DRAINAGE & FLOOD CONT	0.9000000	\$0.00			
SOCIAL SERVICES	2.2530000	\$0.00			
Taxes Billed 2022	103.1920000	\$0.00			

* Credit Levy

Tax amounts are subject to change due to endorsement, advertising, or fees.
Please call the office to confirm amount due after August 1st.

All Tax Lien Redemption payments must be made with cash or cashier's check.

Adams County Treasurer & Public Trustee
4430 S Adams County Parkway, Suite W1000
Brighton, CO 80601
720-523-6160



Statement Of Taxes Due

Account Number R0178787

Assessed To

Parcel 0157104200001

TODD CREEK FARMS METRO DIST NO 1 WATER
C/O:C/O ZIONS FIRST NATIONAL BANK TRUSTEE
717 17TH ST STE 301
DENVER, CO 80202-3310

Legal Description

Situs Address

SECT.TWN,RNG:4-1-67 DESC: PARC IN SEC 4 DESC AS FOLS COMMENCING AT THE N1/4 COR OF SD SEC 4 TH S 00D 26M 0
28S E 543/5 FT TO THE POB TH S 00D 26M 26S E 493/04 FT TO A PT BEING 55/73 FT NLY FROM THE CEN N 1/16TH COR OF
SD SEC 4 AND BEING A PT ON THE DCRY LN ADJUSTMENT DESC IN BOOK 4931 PAGE 452 TH ALG... Additional Legal on File

Year	Tax	Interest	Fees	Payments	Balance
Grand Total Due as of 05/05/2023					\$0.00

Tax Billed at 2022 Rates for Tax Area 294 - 294

Authority	Mill Levy	Amount	Values	Actual	Assessed
RANGEVIEW LIBRARY DISTRICT	3.6150000*	\$0.00	POLITICAL SUB TOT	\$50,750	\$14,720
CENTRAL COLO WATER CONSERVA	1.0680000	\$0.00	LD		
CENTRAL COLO GROUND WATER S	1.5820000	\$0.00	Total	\$50,750	\$14,720
FIRE DISTRICT 6 - GREATER B	15.3200000	\$0.00			
GENERAL	22.8430000	\$0.00			
RETIREMENT	0.3140000	\$0.00			
ROAD/BRIDGE	1.3000000	\$0.00			
DEVELOPMENTALLY DISABLED	0.2570000	\$0.00			
SD 27 BOND (Brighton)	22.0690000	\$0.00			
SD 27 GENERAL (Brighton)	34.2210000	\$0.00			
URBAN DRAINAGE SOUTH PLATTE	0.1000000	\$0.00			
URBAN DRAINAGE & FLOOD CONT	0.9000000	\$0.00			
SOCIAL SERVICES	2.2530000	\$0.00			
Taxes Billed 2022	105.8420000	\$0.00			

* Credit Levy

Tax amounts are subject to change due to endorsement, advertising, or fees.

Please call the office to confirm amount due after August 1st.

All Tax Lien Redemption payments must be made with cash or cashier's check.

Adams County Treasurer & Public Trustee
4430 S Adams County Parkway, Suite W1000
Brighton, CO 80601
720-523-6160