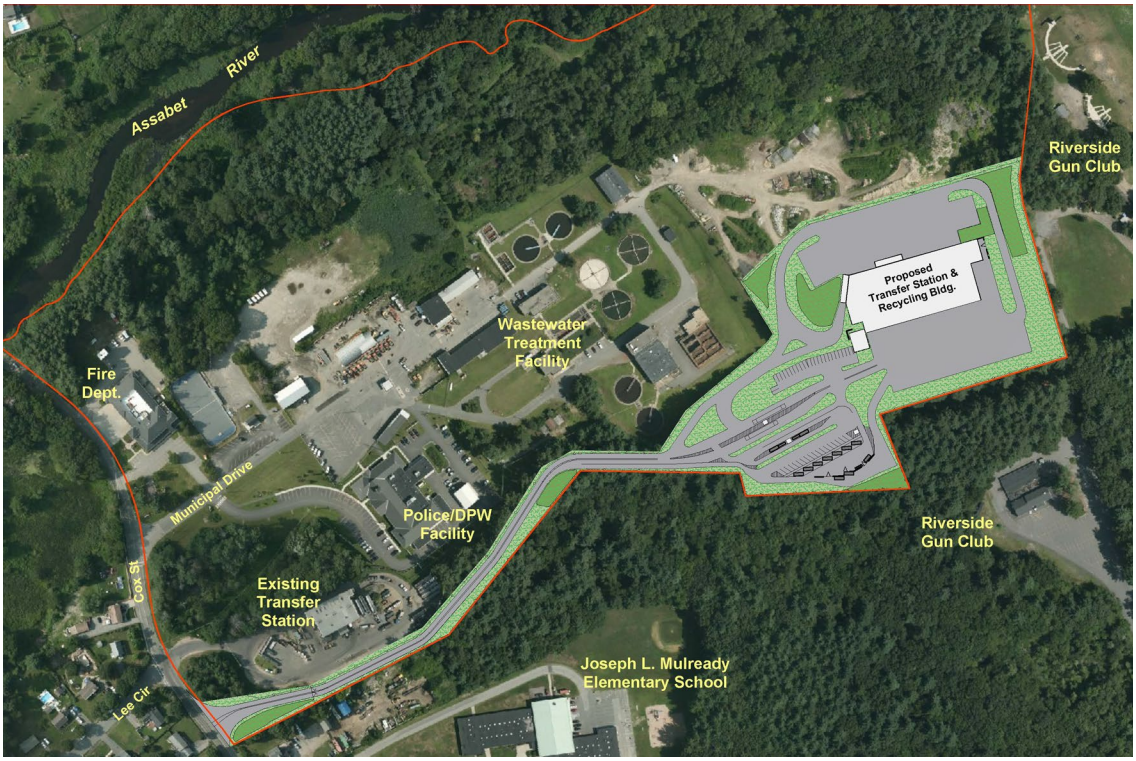
Draft Environmental Impact Report
EEA # 16586

Hudson Solid Waste Transfer Station and Recycling Facility



Submitted to:
Executive Office of Energy and Environmental Affairs
MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Submitted by:
B-P Trucking, Inc.
65 Nickerson Road
Ashland, MA 01721

Prepared by:
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3 Mill & Main Place, Suite 250
Maynard, MA 01754

In Association with:
Sanborn, Head & Associates, Inc.
Vanasse & Associates, Inc.

April 01, 2024

Epsilon ASSOCIATES INC.

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Chapter 1

General Information and Project Description

1.0 GENERAL INFORMATION AND PROJECT DESCRIPTION

1.1 Introduction

With the construction of the Hudson Police Department / Public Works Facility in 2017, the Town of Hudson and B-P Trucking, Inc. (B-P) seek to relocate the existing transfer station operations towards the interior of the town-owned 72-acre parcel located at 300 Cox Street, Hudson. The new transfer station and recycling facility will be owned by B-P, located on land leased from the Town of Hudson, and have a permitted capacity of 850 tons per day (TPD). The existing facility, operated by B-P, is currently permitted to accept up to 350 TPD of solid waste (municipal solid waste and construction and demolition debris). Once operating, the Town of Hudson and B-P will terminate operation of the existing transfer station.

1.2 Project Description

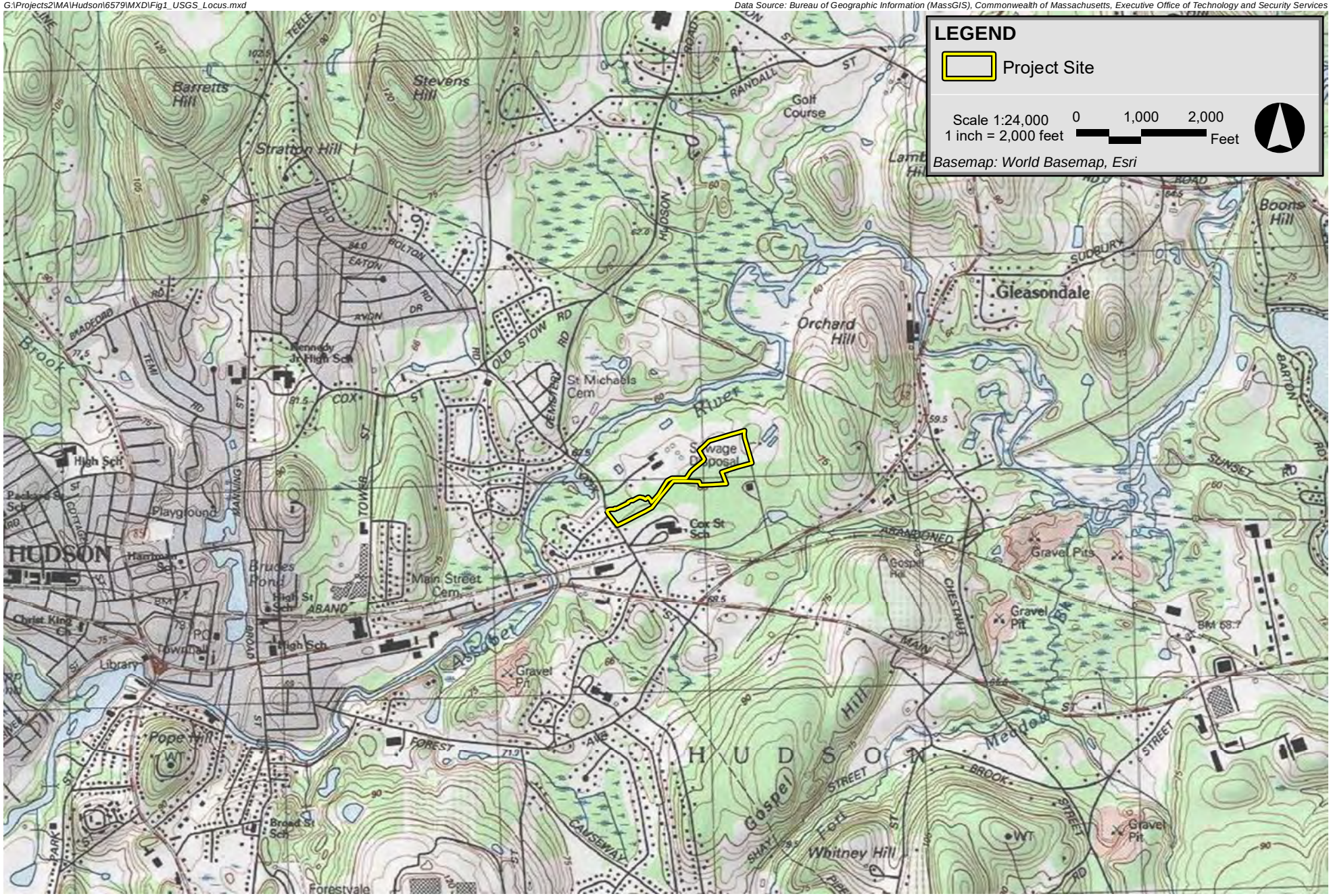
1.2.1 Project Site

The Town of Hudson (or, the "Town") owns an approximately 72-acre parcel which currently includes an existing solid waste transfer station, as well as other municipal facilities such as the Hudson Fire Department, Hudson Wastewater Treatment Facility, and combined Hudson Police Department and Public Works Facility. The existing transfer station was constructed in 1988 and began operating in 1996. Since 1999, the transfer station has been operated by B-P Trucking of Ashland, Massachusetts (the "Proponent"). Prompted by the 2017 construction of the Hudson Police Department and Public Works Facility (Police/DPW Facility), the Town and B-P have been engaged in planning activities aimed at relocating the existing transfer station operations to the interior of the 72-acre parcel so that these operations are located more distant from the Town's other municipal facilities. For comparison, the existing transfer station building is located approximately 350 feet from Cox Street, whereas the proposed transfer station and recycling building will be located approximately 1,800 feet from Cox Street.

The approximately 675,180 square foot (15.5 acre) area that encompasses the existing transfer station and the proposed location for the new transfer station and recycling facility will be referred herein as the "Project Site." See Figures 1-1 and 1-2 for the USGS and aerial locus maps of the Project Site.

G:\Projects2\MA\Hudson\6579\MXD\Fig1_USGS_Locus.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Hudson Waste Transfer Station Hudson, Massachusetts

Epsilon Associates Inc.

Figure 1-1

USGS Locus

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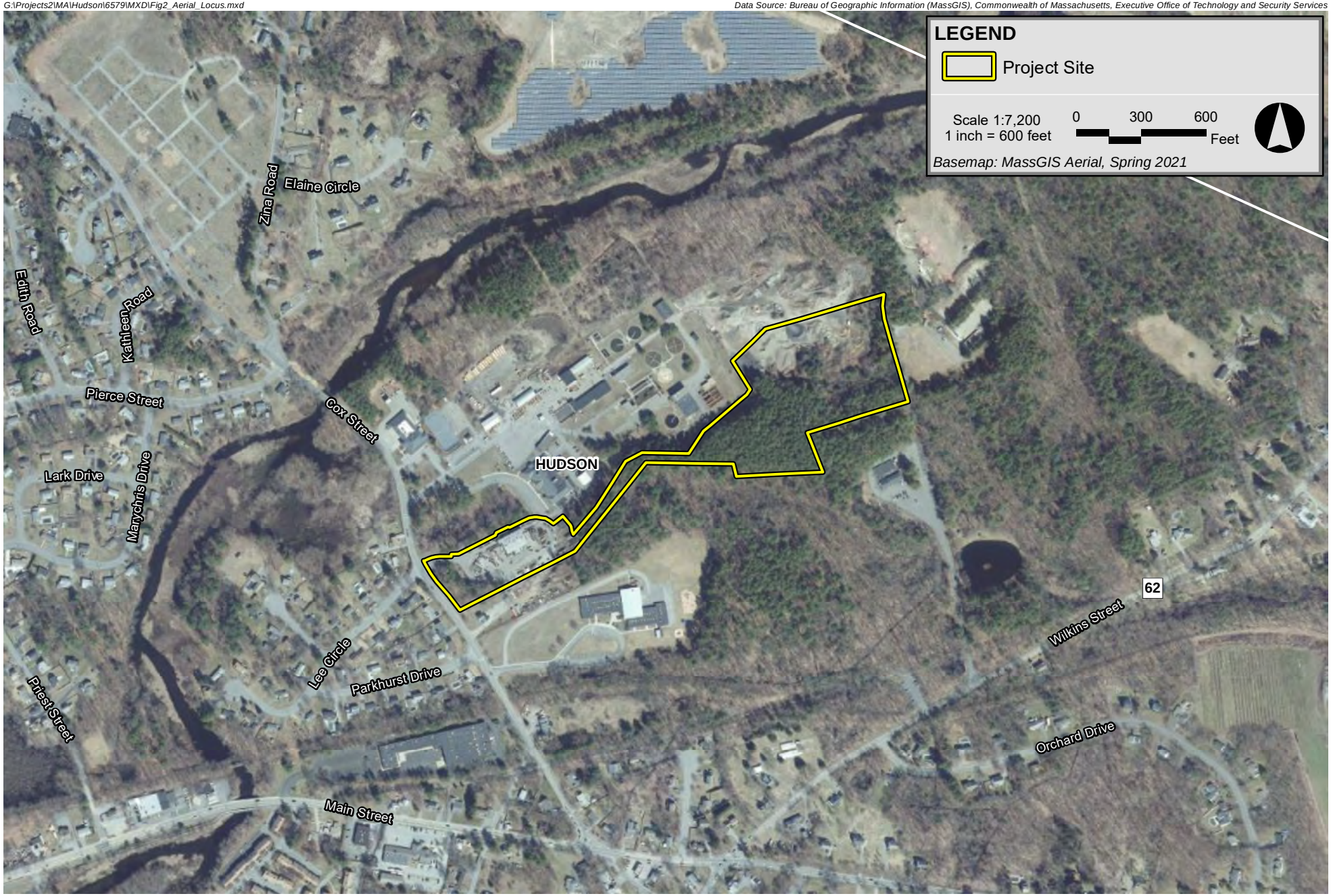
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Hudson Waste Transfer Station Hudson, Massachusetts

Epsilon Associates Inc.

Figure 1-2
Aerial Locus

1.2.2 Project Description

The existing transfer station is permitted to accept up to 350 TPD of solid waste. The Proponent proposes to construct a new, approximately 53,000 square foot (sf) transfer station permitted to accept up to 850 TPD of solid waste (the "Project"); an increase of 500 TPD to the existing facility's permitted capacity. The solid waste material accepted at the proposed facility will be the same as currently accepted and consist of municipal solid waste (MSW) and construction and demolition (C&D) debris. The proposed facility will provide sufficient space to transfer MSW and C&D into semi-trailers that will transport the material off-site for final disposal or reclamation. The proposed Project will also allow Hudson residents to visit the facility for drop-off MSW and household recyclables in an exterior drop-off area.

The Project will also accept recyclable materials (glass, metal, plastic, paper) and, with the exception of glass, provide for sorting and baling of these materials within the building. The hours of operation will remain unchanged from the current operating hours. The facility will be open to the public from 7:00 a.m. to 5:00 p.m., Monday through Friday, and Saturdays from 7:00 a.m. to 2:00 p.m. Figures 1-3A and 1-3B show the existing Site layout, and Figure 1-4 shows the proposed layout.

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NOTES:

1. TOPOGRAPHY, EXISTING SITE FEATURES AND PROPERTY LINE SURVEY WERE PROVIDED TO SANBORN HEAD BY CONTROL POINT ASSOCIATES, INC. (CONTROL POINT) OF SOUTHBOROUGH, MA IN AN ELECTRONIC FILE TITLED "03-180244-01 - BTU REV 1 (ISSUED 2023-03-17).dwg". ELECTRONIC FILE DEPICTS INFORMATION SHOWN ON DRAWINGS TITLED "BOUNDARY & TOPOGRAPHIC SURVEY", SHEETS 1 THOUGH 8, DATED MARCH 17, 2023 PREPARED BY CONTROL POINT OF SOUTHBOROUGH, MA FOR SANBORN HEAD.
2. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON THE FOLLOWING:
   A. AERIAL IMAGERY, DATED APRIL 21, 2018, PROVIDED BY EASTERN TOPOGRAPHICS OF WOLFBORO NEW HAMPSHIRE, AND AN ON-THE-GROUND FIELD SURVEY BY CONTROL POINT BETWEEN OCTOBER 11, 2018 AND OCTOBER 22, 2018; AND
   B. PLANIMETRIC AND TOPOGRAPHIC FEATURES COMPILED BY CONTROL POINT USING PHOTOGRAMMETRIC METHODS FROM UAV PHOTOGRAPHY AND AN ON-THE-GROUND FIELD SURVEY BY CONTROL POINT ON JANUARY 3, 2023.
3. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). HORIZONTAL DATUM IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), MASSACHUSETTS STATE PLANE COORDINATE SYSTEM.
4. WETLAND INFORMATION WAS OBTAINED FROM MassGIS, EXCEPT IN THOSE AREAS SHOWN ON THE PLAN AS FOLLOWS:

   THE ABOVE LINE TYPE DESIGNATES THE LIMITS OF AN ON-THE-GROUND WETLAND DELINEATION PERFORMED BY EPSILON ASSOCIATES ON JANUARY 18 AND 22, 2023 AND FIELD LOCATED BY CONTROL POINT ON JANUARY 30, 2023.
5. ASSABET RIVER BOUNDARY WAS OBTAINED BY SANBORN HEAD FROM THE MassGIS HYDROGRAPHIC (WATER-RELATED) FEATURE DATA SET. HYDROGRAPHIC FEATURE DATA WAS LAST UPDATED BY MassDEP IN DECEMBER 2019.
6. FLOODPLAIN INFORMATION WAS OBTAINED FROM FLOOD INSURANCE RATE (FIRM) MAP FOR MIDDLESEX COUNTY, MASSACHUSETTS. MAP NUMBER 25017C0343F, MAP REVISED JULY 7, 2014.

LEGEND:

- EXISTING 5-FOOT CONTOUR
- EXISTING 1-FOOT CONTOUR
- EXISTING PAVED ROAD
- EXISTING GRAVEL ROAD
- EXISTING TREE LINE
- EXISTING FENCE
- OE — EXISTING OVERHEAD ELECTRIC
- EXISTING UTILITY POLE
- EXISTING MANHOLE
- EXISTING CATCH BASIN
- EXISTING FIRE HYDRANT
- PROJECT SITE AREA
- SITE PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- WETLAND AREA (SEE NOTE 4)
- WETLAND BOUNDARY (MASSGIS)
- SURVEYED WETLAND BOUNDARY (JAN 2023)
- 100-FOOT WETLAND BUFFER SETBACK
- ASSABET RIVER BOUNDARY (SEE NOTE 5)
- 200-FT RIVERFRONT OFFSET
- 100-YEAR FLOODPLAIN
- 500-YEAR FLOODPLAN

SANBORN HEAD

GRAPHICAL SCALE
120' 60' 0' 120' 240'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: A. WILKER
DESIGNED BY: A. WILKER
REVIEWED BY: S. WRIGHT
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: MARCH 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

EXISTING CONDITIONS SITE PLAN

PROJECT NUMBER: 3984.01
FIGURE NUMBER: 1-3A

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FILE: P:\3000s\3984.01\Graphics Files\CAD\DWG\Wetlands Plan.dwg
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USER: mlaw
PLOT DATE: 3-19-24 4:47 PM

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2. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON THE FOLLOWING:
   A. AERIAL IMAGERY, DATED APRIL 21, 2018, PROVIDED BY EASTERN TOPOGRAPHICS OF WOLFBORO NEW HAMPSHIRE, AND AN ON-THE-GROUND FIELD SURVEY BY CONTROL POINT BETWEEN OCTOBER 11, 2018 AND OCTOBER 22, 2018; AND
   B. PLANIMETRIC AND TOPOGRAPHIC FEATURES COMPILED BY CONTROL POINT USING PHOTOGRAMMETRIC METHODS FROM UAV PHOTOGRAPHY AND AN ON-THE-GROUND FIELD SURVEY BY CONTROL POINT ON JANUARY 3, 2023.
3. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). HORIZONTAL DATUM IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), MASSACHUSETTS STATE PLANE COORDINATE SYSTEM.
4. WETLAND INFORMATION WAS OBTAINED FROM MassGIS, EXCEPT IN THOSE AREAS SHOWN ON THE PLAN AS FOLLOWS:

   THE ABOVE LINE TYPE DESIGNATES THE LIMITS OF AN ON-THE-GROUND WETLAND DELINEATION PERFORMED BY EPSILON ASSOCIATES ON JANUARY 18 AND 22, 2023 AND FIELD LOCATED BY CONTROL POINT ON JANUARY 30, 2023.
5. FLOODPLAIN INFORMATION WAS OBTAINED FROM FLOOD INSURANCE RATE (FIRM) MAP FOR MIDDLESEX COUNTY, MASSACHUSETTS. MAP NUMBER 25017C0343F, MAP REVISED JULY 7, 2014.

POLICE/DPW FACILITY

TO WASTEWATER TREATMENT PLANT

OIL/WATER SEPARATOR

TRAILER PIT

EXISTING TRANSFER STATION

TRAILER STORAGE AREA

EMPTY CONTAINER STORAGE AREA

TRAILER STORAGE AREA (GRAVEL)

RESIDENTIAL RECYCLING DROP-OFF AREA

DONATED BIKES

SCRAP METAL

MIXED PAPER

YARD WASTE

METAL CANS

GLASS

PLASTIC

BULKY WASTE

ROLL-UP DOOR

OFFICE

SHED

CLEAN GYPSUM

CARDBOARD DUMPSTERS

TAKE IT/LEAVE IT SHED

TRUCK SCALE

SCALE HOUSE

RESIDENTIAL MSW DROP-OFF AREA

COMPACTORS AND CONTAINERS (2)

COX STREET

MAP 21, LOT 71
N/F LANDS OF
D & E REALTY TRUST
B. 31277, PG. 358

MAP 22, LOT 1
N/F LANDS OF
TOWN OF HUDSON
BK. 10437, PG. 338

MAP 22, LOT 1
N/F LANDS OF
TOWN OF HUDSON

LEGEND:

- EXISTING 5-FOOT CONTOUR
- EXISTING 1-FOOT CONTOUR
- EXISTING PAVED ROAD
- EXISTING GRAVEL ROAD
- EXISTING TREE LINE
- EXISTING FENCE
- OE — EXISTING OVERHEAD ELECTRIC
- S — EXISTING SEWER LINE (APPROXIMATE)
- D — EXISTING DRAIN LINE (APPROXIMATE)
- W — EXISTING WATER LINE (APPROXIMATE)
- EXISTING UTILITY POLE
- EXISTING MANHOLE
- EXISTING CATCH BASIN
- EXISTING FIRE HYDRANT
- PROJECT SITE AREA
- SITE PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- WETLAND AREA (SEE NOTE 4)
- WETLAND BOUNDARY (MASSGIS)
- SURVEYED WETLAND BOUNDARY (JAN 2023)
- 100-FOOT WETLAND BUFFER SETBACK
- 500-YEAR FLOODPLAIN

SANBORN HEAD

GRAPHICAL SCALE
30' 15' 0' 30' 60'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: A. WILKER
DESIGNED BY: A. WILKER
REVIEWED BY: S. WRIGHT
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: MARCH 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

PROJECT NUMBER: 3984.01

EXISTING CONDITIONS
ENLARGED SITE PLAN (EXISTING TRANSFER STATION)

FIGURE NUMBER: 1-3B

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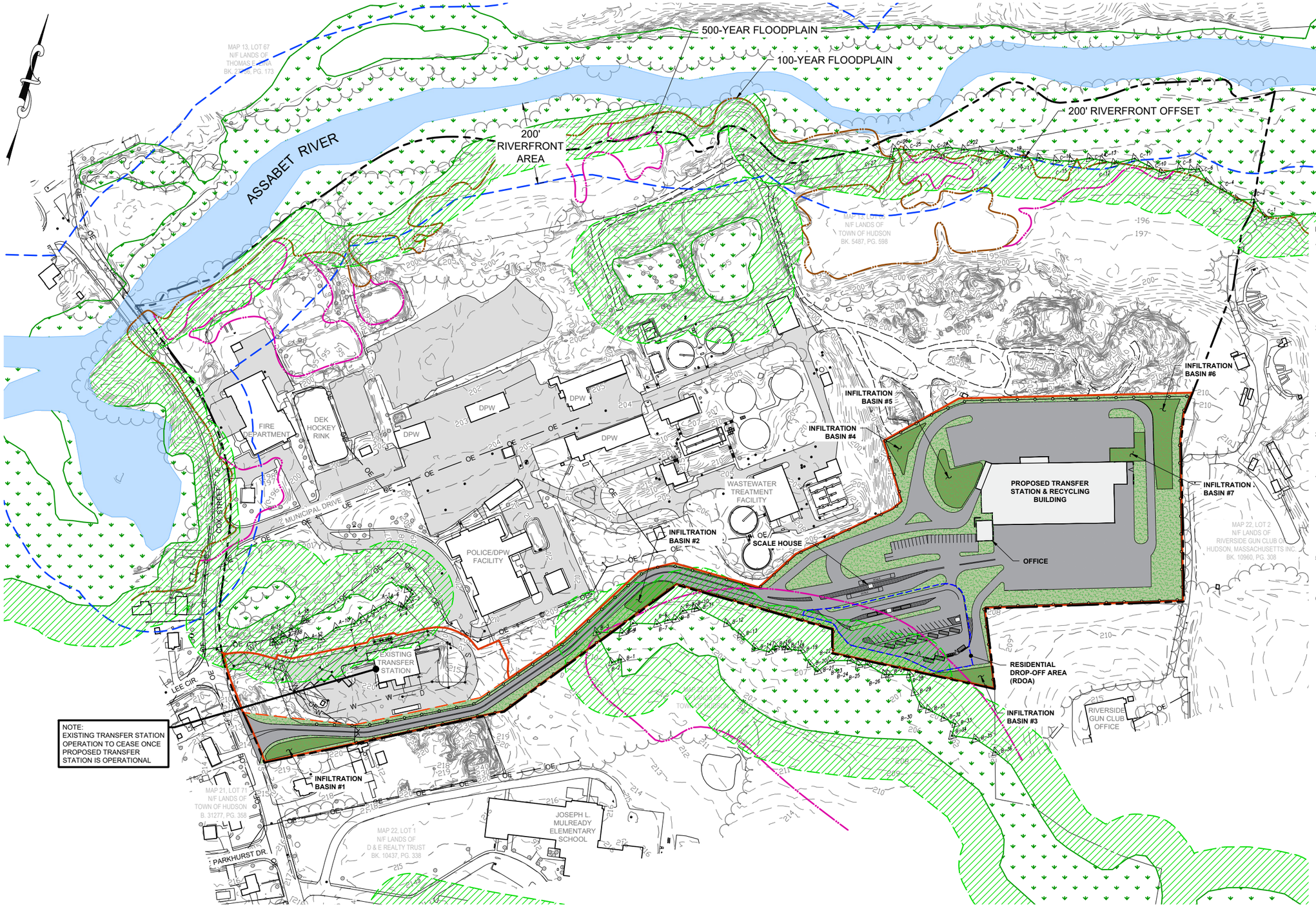


NOTE:
EXISTING TRANSFER STATION OPERATION TO CEASE ONCE PROPOSED TRANSFER STATION IS OPERATIONAL

NOTES:

1. TOPOGRAPHY, EXISTING SITE FEATURES AND PROPERTY LINE SURVEY WERE PROVIDED TO SANBORN HEAD BY CONTROL POINT ASSOCIATES, INC. (CONTROL POINT) OF SOUTHBOROUGH, MA IN AN ELECTRONIC FILE TITLED "03-180244-01 - BTU REV 1 (ISSUED 2023-03-17).dwg". ELECTRONIC FILE DEPICTS INFORMATION SHOWN ON DRAWINGS TITLED "BOUNDARY & TOPOGRAPHIC SURVEY", SHEETS 1 THOUGH 8, DATED MARCH 17, 2023 PREPARED BY CONTROL POINT OF SOUTHBOROUGH, MA FOR SANBORN HEAD.
2. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON THE FOLLOWING:
   A. AERIAL IMAGERY, DATED APRIL 21, 2018, PROVIDED BY EASTERN TOPOGRAPHICS OF WOLFBORO NEW HAMPSHIRE, AND AN ON-THE-GROUND FIELD SURVEY BY CONTROL POINT BETWEEN OCTOBER 11, 2018 AND OCTOBER 22, 2018; AND
   B. PLANIMETRIC AND TOPOGRAPHIC FEATURES COMPILED BY CONTROL POINT USING PHOTOGRAMMETRIC METHODS FROM UAV PHOTOGRAPHY AND AN ON-THE-GROUND FIELD SURVEY BY CONTROL POINT ON JANUARY 3, 2023.
3. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). HORIZONTAL DATUM IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), MASSACHUSETTS STATE PLANE COORDINATE SYSTEM.
4. WETLAND INFORMATION WAS OBTAINED FROM MassGIS, EXCEPT IN THOSE AREAS SHOWN ON THE PLAN AS FOLLOWS:

   THE ABOVE LINE TYPE DESIGNATES THE LIMITS OF AN ON-THE-GROUND WETLAND DELINEATION PERFORMED BY EPSILON ASSOCIATES ON JANUARY 18 AND 22, 2023 AND FIELD LOCATED BY CONTROL POINT ON JANUARY 30, 2023.
5. ASSABET RIVER BOUNDARY WAS OBTAINED BY SANBORN HEAD FROM THE MassGIS HYDROGRAPHIC (WATER-RELATED) FEATURE DATA SET. HYDROGRAPHIC FEATURE DATA WAS LAST UPDATED BY MassDEP IN DECEMBER 2019.
6. FLOODPLAIN INFORMATION WAS OBTAINED FROM FLOOD INSURANCE RATE (FIRM) MAP FOR MIDDLESEX COUNTY, MASSACHUSETTS. MAP NUMBER 25017C0343F, MAP REVISED JULY 7, 2014.

LEGEND:

- 210 — EXISTING 5-FOOT CONTOUR
- EXISTING 1-FOOT CONTOUR
- 210 — PROPOSED 10-FOOT CONTOUR
- PROPOSED 2-FOOT CONTOUR
- PROJECT SITE AREA
- SITE PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- WETLAND AREA
- WETLAND BOUNDARY (MASSGIS)
- SURVEYED WETLAND BOUNDARY (JAN 2023)
- 100-FOOT WETLAND BUFFER SETBACK
- ASSABET RIVER BOUNDARY
- 200-FT RIVERFRONT OFFSET
- 100-YEAR FLOODPLAIN
- 500-YEAR FLOODPLAIN
- PROPOSED CHAIN LINK FENCE

SANBORN HEAD

GRAPHICAL SCALE
120' 60' 0' 120' 240'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: A. WILKER
DESIGNED BY: S. WRIGHT
REVIEWED BY: S. WRIGHT
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: MARCH 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

PROJECT NUMBER: 3984.01

PROPOSED CONDITIONS SITE PLAN

FIGURE NUMBER: 1-4

IMAGES: P:\3000s\3984.01\Graphics\Final\CAD\VIEWS\Proposed Conditions Site Plan.dwg
XREFS: P:\3000s\3984.01\Graphics\Final\CAD\REFS\Base.dwg
P:\3000s\3984.01\Graphics\Final\CAD\REFS\Wetlands.dwg
P:\3000s\3984.01\Graphics\Final\CAD\REFS\Proposed Transfer Station.dwg
P:\3000s\3984.01\Graphics\Final\CAD\REFS\Proposed Structures.dwg
P:\3000s\3984.01\Graphics\Final\CAD\REFS\Proposed Grading_V1.dwg
FILE: P:\3000s\3984.01\Graphics\Final\CAD\VIEWS\Proposed Conditions Site Plan.dwg
LAST SAVED: Mar 18, 2024 - 4:16 PM
USER: mahe
PLOT DATE: 3-18-24 - 4:16 PM

1.3 Changes Since Filing the ENF

Changes to the Project since the ENF was submitted in August of 2022 reflect the further evaluation and refinement of layout and operating concepts that have been performed since that time. The facility layout shown in the ENF has largely been retained with respect to the access roadways and major operational nodes. To this end, access into the site, interior roadways, building area, weigh scale area, and Town of Hudson Residential Drop-off Area (RDOA) are all located in roughly the same areas as shown in the ENF and retain largely the same configuration as contemplated in the ENF.

The changes to the Project resulting from the programming and design development activities completed over the past several months are summarized below.

1.3.1 Transfer Station & Recycling Building

Interior programming for the building's operational space was a major focus of the planning activities performed since the ENF was submitted. Chief among the programming considerations was how household recyclable materials will be handled within the building. At the time the ENF was submitted, the recycling activities performed within the building were expected to be limited to the sorting and baling of cardboard. Having further evaluated material recovery operations that can be accommodated within the building and coordinating material throughput with equipment vendors, the facility operations will now support the sorting and baling of metal and plastic containers in addition to cardboard. To support this change, the recycling operations have been moved to the eastern end of the building, where a bump-out to the building footprint is now located to support additional interior bale storage space and a loading dock area that integrates more effectively into the overall site layout.

Another change to the building layout was driven by the desire to enable the two trailer pits in the building to function as drive-through pits. In the ENF, the trailer pits were conceived (but not shown on the ENF site plans) as back-in pits that would be staggered and closely located to each other in a Z-wall configuration (one pit for MSW transfer trailer loading and one pit for C&D debris trailer loading). The limitation to this concept is that it intermingles MSW and C&D material handling on the tipping floor due to the proximity of the two trailer pits. This limitation was understood during the ENF phase and it was known at that time that a further evaluation of the trailer pit configuration would need to be finalized and presented in the DEIR. That effort is now complete and the resulting pit configuration places the MSW trailer pit adjacent to a tipping floor area dedicated to MSW operations and a C&D trailer pit adjacent to the C&D tipping floor operations. In order for both pits to function as drive-through pits and still retain the general dimensions of the building shown in the ENF, the MSW pit is located on the north elevation of the building and the C&D pit on the west elevation.

The modifications to the recycling, MSW, and C&D portions of the Transfer Station & Recycling Building have resulted in an increase in the building's footprint of approximately 6,000 square feet (47,000 square foot building footprint in the ENF compared to 53,000 square feet in the DEIR).

The location of the C&D trailer pit at the west end of the building resulted in shifting the building's office/administration space approximately 45 feet south of the location shown in the ENF, but no change in the square footage of the space.

For a detailed description of the Transfer Station & Recycling Building layout and operations, see Chapter 8 of the DEIR.

1.3.2 Residential Drop-off Area (RDOA)

In the ENF the RDOA was shown as a reserve area depicting approximate pavement limits but without specific detail on its layout or materials to be accepted. The DEIR includes detailed information on the layout of this area, traffic flow, and materials to be accepted, which will include residential MSW, household recyclables, yard waste, and other waste ban materials. The limit of pavement in this area shown in the ENF was approximately 1.1 acres. To accommodate the extent of recyclables that will be accepted in the RDOA, the paved area has increased to approximately 1.3 acres per the refined layout shown in the DEIR.

For a detailed description of the layout and materials accepted in the RDOA, see Chapter 8 of the DEIR.

1.3.3 Pavement Areas

As part of the design development, proposed access roads and paved areas were refined to accommodate vehicle access to and movement within the RDOA and vehicle access and movement in and around the Transfer Station & Recycling Building. Pavement areas were also refined to accommodate empty trailer storage, temporary full trailer vehicle layover, and roll-off container storage. The results of these activities led to the following changes to the limits of pavement shown in the ENF:

- The access road into the site was widened to provide two inbound lanes beginning near Stormwater Basin #2 and continuing to the entrance of the RDOA. The widening of the road in this area (from one inbound lane and one outbound lane to two inbound lanes and one outbound lane) will provide residents with a dedicated lane to the RDOA so that they do not need to share this length of the road with commercial vehicles visiting the Transfer Station & Recycling Building.

- Additional pavement is provided in the weigh scale area to improve traffic flow for the scale bypass lane for inbound vehicles.

- Additional pavement is provided at the main access road turn-off to the northern perimeter road that loops around the building. The additional pavement is necessary to accommodate transfer trailer turning movements in this area.

- Additional pavement is provided for employee/visitor parking to accommodate 25 spaces (compared to 20 spaces provided in the ENF).

- Additional pavement is provided near the C&D trailer pit as needed for it to function as a drive-through pit.

- Additional pavement is provided on the north side of the building for trailer and container storage.

- Additional pavement is provided on the south side of the building that will extend the paved apron in this area further to the south by approximately 45 feet. This area will provide trailer storage and additional vehicle maneuvering space on the vehicle entrance side of the building.

- Additional pavement is provided on the east end of the building for the loading dock that supports the recycling operations.

The adjustments to the pavement areas itemized above, as well as the increased pavement area in the RDOA, result in a total increase in pavement area of 1.7 acres compared to the change in pavement area identified in the ENF. Specifically, the ENF identified a change in the Project Site's internal roadways, parking, and other paved areas of 5.3 acres. The total change to these areas in comparison to existing conditions increases to approximately 7 acres based on the layout refinements described herein.

1.3.4 Stormwater

The ENF Certificate states that the DEIR should include a detailed stormwater design and include information on water quality improvements. A detailed stormwater design was completed as part of the DEIR and addresses stormwater management needs associated with the proposed Project, inclusive of all site layout, grading, and associated impervious area changes made to the Project since the completion of the ENF. The ENF presented a conceptual stormwater design and at that early development stage, intentionally did not evaluate stormwater infrastructure but instead focused on evaluating anticipated basin sizing needed in support of the then-proposed facility layout.

The ENF showed the location of four proposed stormwater basins. The detailed stormwater design prepared as part of the DEIR has led to a change in the size of Basins 1 through 3, however they are generally in the same location as shown in the ENF. The area where Basin 4 was shown in the ENF was reconfigured to allow for drive-through pit access on the northern side of the proposed Transfer Station & Recycling Building. Therefore, the detailed stormwater design replaced Basin 4 with four new stormwater basins numbered Basins 4 through 7.

All seven stormwater basins are proposed as infiltration basins and were designed using infiltration rates identified by USGS for the soil type at each proposed basin location. In addition to seven stormwater basins, four subsurface detention/infiltration structure systems are

proposed to detain stormwater runoff and infiltrate a majority of it to groundwater, with some stormwater flow discharging from these systems in larger storm events into one of the seven infiltration basins through closed drainage.

Pre-treatment of stormwater entering the infiltration basins will be provided through a combination of deep sump catch basins and sediment forebays. Pre-treatment of stormwater entering the subsurface detention/infiltration structure systems is intended to be provided through a combination of deep sump catch basins and oil/grit separators.

For a detailed discussion of the stormwater management design for the Project, see Chapter 9 of the DEIR.

1.3.5 Earthen Berm

Figures 6A and 6B of the ENF showed the location of a visual barrier berm proposed along the Project Site's eastern property line. The berm had proposed dimensions of approximately 500 feet long, 60 feet wide, and 15 feet high. During the DEIR design development phase, representatives from B-P Trucking and the Hudson DPW met with representatives from the Riverside Gun Club, owners of the abutting property at the eastern end of the site. As a result of the meeting, it was agreed that perimeter fencing would be installed in this area instead of the earthern berm, where an approximately 225-foot length of the fence would be provided with privacy slats. Since the earthen berm will not be installed, it is not shown on the DEIR site layout plans.

1.4 Public Benefits

The more modern, efficient transfer station will benefit the Town and the broader community. The facility will have the space to transfer MSW and C&D material into semi-trailers for offsite disposal or reclamation. The Project will also allow Hudson residents to visit the facility to drop-off MSW and household recyclables in an exterior drop -off area. The new area will be over two times larger than the existing residential drop-off area and available for the exclusive use of Hudson residents only.

The Project will also accept recyclable materials (glass, metal, plastic, paper) and provide for the sorting and baling of cardboard within the building. Additional benefits include the creation of temporary construction and new full-time jobs, resulting in a positive impact due to construction spending and employment.

In addition to the benefits associated with the operational features of the proposed facility, B-P will continue to provide the following public benefits to the Town:

- Free trash and recycling to all town buildings (schools, town buildings, town fields; currently over 28 different locations);
- Free disposal at the transfer station for the Hudson Department of Public Works; and

- Support to town community organizations and events by way of free container use and free disposal (examples: Assabet River Clean-up and Hudson Clean-up Day).

1.5 Project Schedule

Permitting for the Project is expected to extend into 2025 with construction estimated to begin by the end of-2025 and the facility to begin operating in 2026. The existing transfer station will cease operations once the new transfer station begins operating.

1.6 Statutory and Regulatory Standards

Anticipated permits and approvals for the Project are listed in Table 1-1.

Table 1-1 Anticipated Permits and Approvals

Agency	Review or Approval[1]
Town of Hudson	
Board of Health	Minor Modification to Existing Site Assignment
Conservation Commission	Wetlands Protection Act Order of Conditions
Planning Board	Site Plan Approval
Building Department	Building Permit and Occupancy Permit
State	
MassDEP Solid Waste	Authorization to Construct Large Handling Facility (BWP SW 05) Authorization to Operate Large Handling Facility (BWP SW 06)
Federal	
Environmental Protection Agency	National Pollutant Discharge Elimination System General Permit(s), if required

1 Pursuit of permits will begin once the MEPA process has concluded.

As noted by MassDEP as part of their review of the ENF (MassDEP August 30, 2022 comment letter included with the September 9, 2022 ENF Certificate), the solid waste permits for the Project will be issued to both the Proponent (B-P Trucking) as the facility owner/operator and the Town of Hudson as the owner of the property.

1.7 Alternatives Analysis

In the Project's ENF, the Proponent explored alternate site locations and facility configurations and explained how the Preferred Alternative, described above, was best suited to maximize Project success and minimize environmental impacts. A summary of the alternatives is provided below.

Alternate Site 1 was evaluated in 2012 and located on an approximately 28-acre parcel in Ashland, MA. A 40,000-sf facility would be constructed with a development area of similar scale to the Preferred Alternative. This site was considered due to its proximity to a vehicle maintenance building and office space. The ENF indicates Site 1 was dismissed because approximately 19.5 acres of the site is within a mapped FEMA 100-year floodplain and the remaining area was deemed insufficient to support the proposed facility layout due to the inability to meet the waste handling setback criterion defined in 310 CMR 19.038(2)(b)(2)(d).

Alternate Site 2, located in Hudson on an approximately 24-acre parcel, would involve construction of a 45,000-sf facility. An existing building and parking lot on the site were considered for potential use as a vehicle maintenance building. According to the ENF, Site 2 was deemed not viable because a pond on the upland portion of the site drained via a stream to an approximately 1.6-acre wetland area located centrally on the site.

Alternate Site 3 was on approximately 27-acres of land in Hudson and evaluated in 2015/2016. This Alternative would involve construction of a 45,000-sf facility and the site was evaluated to determine if vehicle maintenance operations could be supported on the site. The ENF states a number of considerations led to this Alternate Site being deemed not viable and dismissed. Considerations included the fact that greater than half of the site is within a Zone II of a public water supply and would not meet MassDEP Site Assignment criterion 310 CMR 16.40(3)(d)(2); 13-acres of the site is mapped within the FEMA 100-yr floodplain and would not meet the waste handling area setback criterion 310 CMR 19.038(2)(b)(2)(d); and a portion of the site is mapped by the Natural Resource Conservation Service (NRCS) as having farmland designated as of Unique Importance and would not meet the Site Assignment criterion at 310 CMR 16.40(4)(a)(1).

Alternate Site 4 was evaluated in 2016 on an approximately 110-acre site in Berlin, MA and would involve construction of a 45,000-sf facility. This site was also considered for the location of a vehicle maintenance building and office space, although these operations were not a factor in evaluating the feasibility of the site for locating a transfer station facility. According to the ENF, this site was deemed not viable because NRCS mapping showed that the principal development area (approximately 23 acres; much of the remaining acreage is sloped and not conducive for development) would be located on land classified as Prime Farmland and Farmland of Statewide Importance. This land classification was deemed a factor that would not meet the Site Assignment criterion at 310 CMR 16.40(4)(a)(1).

Alternate Site 5, also located in Berlin, would construct a 45,000-sf facility on an approximately 27-acre site. This Site was evaluated in 2016. NRCS mapping showed this parcel was also located on Prime Farmland and Farmland of Statewide Importance. The ENF indicates this site was dismissed for the same reason as Alternate Site 4 as the land classification is a flaw which would fail to meet the Site Assignment criterion at 310 CMR 16.40(4)(a)(1).

Alternate Site 6 in Southborough was evaluated in 2016 and would construct a 42,500-sf facility on approximately ten acres of land. To avoid site constraints, the facility would be constructed in an "L" configuration, though this configuration was deemed operationally limiting. According to the ENF, this site was dismissed and deemed not viable due to the presence of wetlands on a significant portion of the site and NRCS mapping showed Prime Farmland on a majority of the parcel. As indicated above for Alternate Sites 4 and 5, the Prime Farmland classification would cause the Project to not meet the Site Assignment criterion at 310 CMR 16.40(4)(a)(1).

Chapter 2

Environmental Justice

2.0 ENVIRONMENTAL JUSTICE

2.1 Introduction

This chapter addresses the MEPA Public Involvement Protocol for Environmental Justice Populations (EJ Involvement Protocol) and the MEPA Interim Protocol for Analysis of Project Impacts on Environmental Justice Populations (EJ Analysis Protocol), both with an effective date of January 1, 2022, and follows the applicable sections of the new protocols.

This chapter provides an analysis of the existing unfair and inequitable environmental burdens in Environmental Justice (EJ) communities around the Project Site, including an evaluation of vulnerable health criteria, potential sources of pollution, and an evaluation of climate change adaptation. An assessment of the nature and severity of impacts is then provided.

2.2 Designated Geographic Area

MEPA has classified areas of Massachusetts as to whether they meet the criteria of an EJ population by using the United States Census data to determine whether a block group meets one or more of the following criteria:

1. The annual median household income is not more than 65% of the statewide annual median household income;
2. Minority groups comprise 40% or more of the population;
3. 25% or more of households lack English language proficiency;
4. Minority groups comprise 25% or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150% of the statewide annual median household income; or
5. The Secretary has determined that a particular neighborhood should be designated as an EJ population.

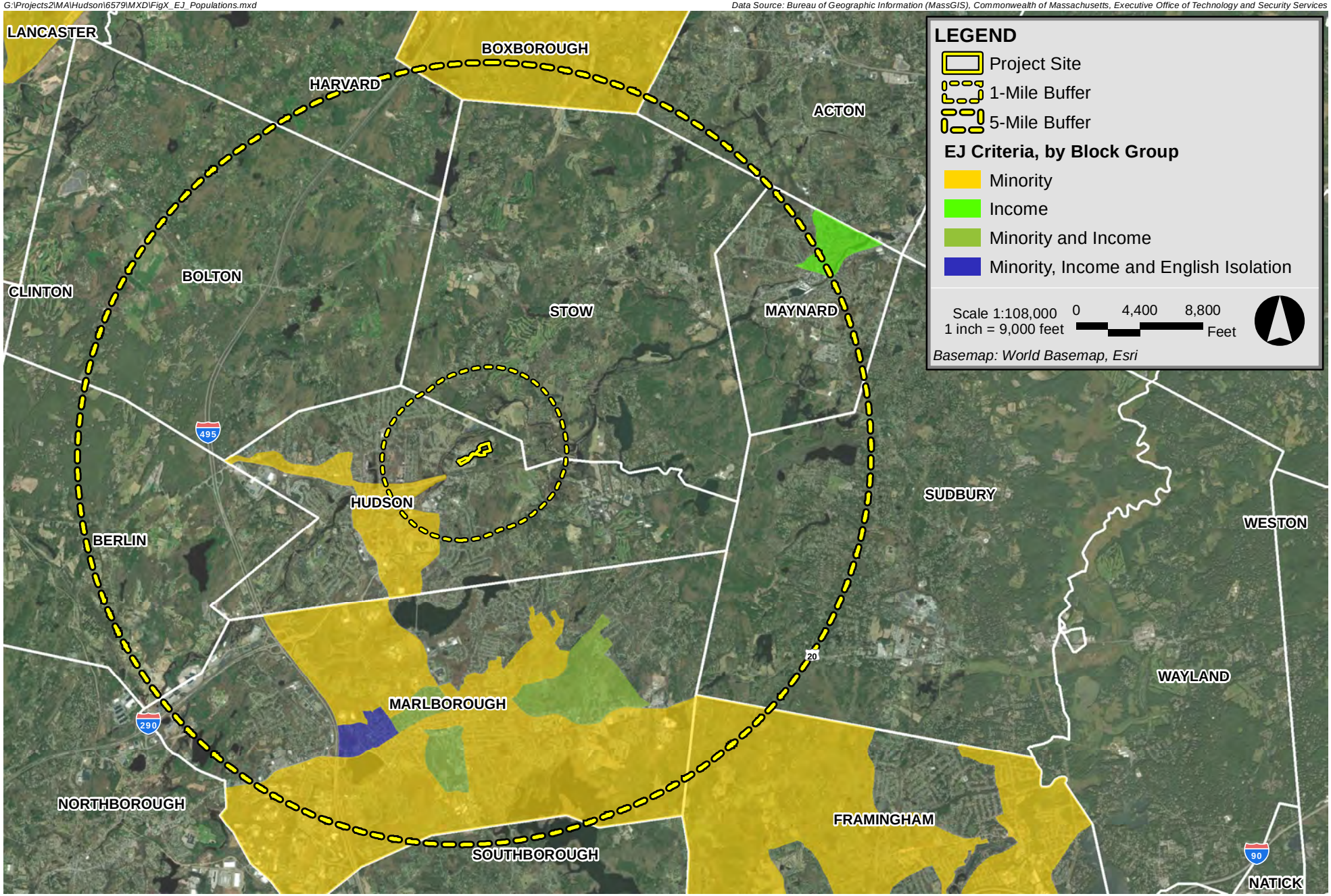
The Project is expected to generate 150 or more new average daily trips of diesel traffic over one year or more, so the area within five miles of a project is defined as the designated geographic area (DGA), consistent with 301 CMR 11.02(b), which will be used as the basis for analyzing potential Project impacts and for public outreach purposes. The Proponent identified 25 EJ populations within the DGA. These populations are identified as: Income; Minority; Minority and income; and Minority, Income, and English Isolation. Table 2-1 lists these groups and figure 2-1 shows a circle denoting the five-mile radius around the Project site and establishes the DGA that will be used as the basis for analyzing potential Project impacts and for public outreach purposes.

Table 2-1 2022 EJ Block Groups within the DGA

Census Tract	Block Group	EJ Designation	Municipality
3211	1	Minority	Marlborough
3212	1	Minority	Marlborough
3213.01	2	Minority and income	Marlborough
3213.02	1	Minority	Marlborough
3215	1	Minority, income and English isolation	Marlborough
3215	3	Minority and income	Marlborough
3222	1	Minority	Hudson
3224	2	Minority	Hudson
3213.01	3	Minority	Marlborough
3211	2	Minority and income	Marlborough
3212	3	Minority	Marlborough
3212	2	Minority	Marlborough
3212	4	Minority	Marlborough
3213.01	1	Minority	Marlborough
3216	5	Minority	Marlborough
3213.02	2	Minority	Marlborough
3214	2	Minority	Marlborough
3215	2	Minority	Marlborough
3215	4	Minority	Marlborough
3216	2	Minority	Marlborough
3223	3	Minority	Hudson
3641.01	2	Income	Maynard
3839.04	4	Minority	Framingham
3881	1	Minority	Boxborough
3881	2	Minority	Boxborough

G:\Projects2\MA\Hudson\6579\MXD\FigX_EJ_Populations.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Hudson Waste Transfer Station Hudson, Massachusetts

Epsilon Associates Inc.

Figure 2-1

Environmental Justice Populations

2.3 Community Engagement

The Proponent will maintain a distribution list including CBOs, tribes, and other individual entities within the DGA, to circulate notices of the MEPA Site Visit, summaries of supplemental information submitted to the MEPA office, and any other relevant notices or materials generated during the course of the Project's MEPA review.

Coordination on EJ outreach was conducted in July and August of 2022. A public information session was originally held on August 22nd both in person and *via* Zoom. The Proponent also posted flyers (Fact Sheet and Meeting Notice) regarding the Project information in community spaces in Hudson, and in potentially impacted EJ populations in Marlborough. Copies of the Fact Sheet that the in English, Portuguese, and Spanish were also posted on the Proponent's website (https://bptrucking.com/). These Fact Sheets will be updated as needed throughout the MEPA review process.

As part of community engagement, the Proponent held a pre-filing conference for the DEIR with the MEPA office and EEA on March 30, 2023. The Proponent presented a plan for additional community engagement prior to filing the DEIR and solicited input on the process from the MEPA office and EEA.

Two informational sessions were held on June 14, 2023. The in-person meeting was held at the Hudson Public Library during the daytime (to allow use of public transportation). An online meeting was held in the evening to allow broader access outside of working hours. Eleven members of the public attended the daytime meeting, and eleven members of the public joined the online meeting. Attendees who provided email addresses are being notified of the availability of this DEIR.

In both meetings the Proponent requested feedback on the proposed project, and asked about concerns that members of the public may have. The attendees provided feedback and described their concerns, and the meetings included informal discussions regarding existing transfer station operations. The Proponent has reached out ahead of the filing of this DEIR to individuals who have expressed interest and provided contact information to make them aware that it was available for their review and comment.

2.3.1 Outreach Engagement Responses

Project-related comments and concerns that were collected by the Proponent during their community engagement efforts are summarized as underlined below, followed by a brief response in italics These questions and responses are also provided in Chapter 13 of this DEIR.

<u>What are the benefits to the residents of Hudson?</u>

The proposed facility will greatly enhance waste reduction, diversion, and material recovery capabilities at the Site, while providing an additional outlet for the efficient management of these materials. As part of these enhanced operational capabilities, one of the Project's principal

objectives is to improve the safe and convenient use of the facility by Hudson residents for drop-off of their solid waste and recyclables. To this end, a significantly expanded Residential Drop-off Area (RDOA) is a key feature. The proposed RDOA will allow residents to access and use the area without intermixing with commercial vehicles visiting the Transfer Station & Recycling Building. With an area of approximately 1.3 acres, which is roughly two-and-a-half times larger than the existing transfer station's half-acre de-centralized drop-off area, the proposed RDOA will provide a vastly improved user experience for the residents. A more detailed description of the RDOA layout is provided in Chapter 8 of the DEIR. In addition to the benefits associated with proposed RDOA, the Proponent will continue to provide the following public benefits to the Town, as described in Chapter 1:

- *Free trash and recycling to all town buildings (schools, town buildings, town fields; currently over 28 different locations);*
- *Free disposal at the transfer station for the Hudson Department of Public Works; and*
- *Support to town community organizations and events by way of free container use and free disposal (examples: Assabet River Clean-up and Hudson Clean-up Day).*

Will the residents of Hudson experience any pricing changes as a result of the project?

There are no planned per-bag price changes to residents as a result of the Project. Per-bag fees for Municipal Solid Waste (MSW) disposal have not changed since B-P began operating the facility in 1999. The cost for an annual sticker to use the facility (currently $10.00) is set by the Hudson Board of Health and the Board of Health receives the revenue from the sticker sales.

How much material will come to the Facility from Hudson residents and businesses?

The Proponent does not separately track the quantity of disposable material (MSW and C&D) brought to the facility by Town of Hudson residents and businesses. Since the facility is available for use by all town residents, an estimate of the quantity of MSW delivered to it can be estimated using a per-capita waste generation rate applied to the town population. Based on total annual tons of waste material generated in Massachusetts and requiring disposal (6,220,000 tons in 2021; from the latest MassDEP Solid Waste Data Update published in June 2023), and the state's population (6,985,000 in 2021), the Massachusetts per-capita generation rate for disposed waste is approximately 0.9 tons/person per year (6,220,000/6,985,000). Applying this per capita disposal rate to the population of Hudson (19,947 in 2022) results in an estimated quantity of disposed waste (landfilled or combusted waste, does not include recyclables) generated by the town of 17,950 tons per year. On a 6 day per week basis (equal to the operating days per week of the existing and proposed transfer stations) equates to approximately 60 tons per day of disposal waste generated by the town. For general estimating purposes, this would be the town "load" placed on the proposed facility, principally representative of MSW. This quantity is not expected to change significantly over time given the relatively modest population growth in Hudson over the past 30 years (approximately 15% population growth when compared to 1990 census data).

Why is the Proponent requesting a capacity increase to 850 tons/day?

The increase is requested as capacity needs are expected to increase. The tonnage increase from the currently permitted 350 tons per day (TPD) to the proposed 850 TPD is aimed at:

- *Providing reserve capacity to the Proponent if other transfer or disposal facilities used by the Proponent are no longer available on a temporary or permanent basis. For planning purposes, this reserve capacity represents approximately 100 TPD of the 500 TPD capacity increase.*

- *Providing additional capacity for the receipt of MSW from third party customers. For planning purposes, this represents approximately 250 TPD of the 500 TPD capacity increase.*

- *Providing additional capacity for the receipt of construction and demolition (C&D) debris from third party customers. For planning purposes, this represents approximately 150 TPD of the 500 TPD capacity increase.*

How will the tons/day increase be reflected in additional traffic trips/day?

At full operational capacity of 850 tons per day, the Project proposes 414 new truck trips per day, of these, 370 would be packer trucks, roll-off trucks, and smaller vehicles; 44 would be semi-trailers.

What will the residential experience be using the new transfer station? Will residential traffic be separated from commercial traffic? How will vehicle and material flow be improved?

The residential user experience will be improved as a result of the Project. The proposed Residential Drop-off Area (RDOA) will function as an independent operational node dedicated exclusively for the use of Hudson residents. The layout of the RDOA will allow residents to access and use the area without intermixing with commercial vehicles visiting the Transfer Station & Recycling Building and improve vehicle and material flow on-site. A more detailed description of vehicle circulation and the proposed RDOA layout is provided in Chapter 8 of the DEIR.

Will the facility allow for the separate drop-off of materials not allowed in the waste stream? If Massachusetts requires separate handling of new material streams in the future, will the new facility allow for that separation?

Yes, the facility will allow for the separate drop-off of materials not allowed in the waste stream. These drop-off activities will be performed in the proposed 1.3-acre Residential Drop-off Area, which is roughly two-and-a-half times larger than the existing transfer station's half-acre drop-off area. A more detailed description of the RDOA layout and summary of materials accepted in the area are provided in Chapter 8 of the DEIR.

What is the status of project authorization at the local level?

The local authorization/permitting process will begin after the MEPA process has concluded (Final EIR Certificate has been issued). Although not a permit, the Project will require a minor modification to the existing site assignment, which falls under the granting authority of the Board of Health. The Project will also require an Order of Conditions from the Conservation Commission, Site Plan Approval from the Planning Board, and a Building Permit and Occupancy Permit from the Building Department.

What is the expected project schedule? Who is responsible for the project cost?

Once the MEPA process has concluded, permitting and final design activities will proceed. These activities are anticipated to extend through much of 2025, with construction anticipated to begin in late 2025 and operations beginning in late 2026. The project proponent is responsible for all Project costs.

How will the new facility comply with applicable noise requirements?

The facility relocation further into the site will result in an improvement in noise control relative to Cox Street abutters. In addition to the improvement related to the building relocation, operation of the facility will be performed to be sensitive to the surrounding area. This will include use of handling equipment, such as loaders and excavators, with back-up alarms set at the lowest levels allowed by OSHA and local regulations. Noise control will also be exercised by properly maintaining equipment in use at the facility, including maintaining sound reducing devices, such as mufflers, installed on the equipment.

How will the new facility avoid and minimize offsite odors?

As part of routine operations, the facility will employ a "first-in, first-out" policy for waste received, which will reduce the potential for odors to accumulate in the building. As an exception to the "first-in, first-out" waste transfer policy, odorous waste loads will take priority when loading trailers for off-site material disposal. In addition to these waste handling operational procedures, the facility will include an odor control misting system that will be installed in the ceiling of the MSW tipping floor and trailer pit.

How will the new facility avoid and minimize rodents?

A vector control program, conducted by a professional exterminating service, will be in-place at the proposed facility. The exterminating service will conduct routine inspections, set and collect trap stations, and advise the Proponent on housekeeping activities aimed at improving vector control as needed.

How much material will be stored onsite overnight?

As part of normal facility operations, storage of material within the building will occur overnight and would be loaded into trailers the following operating day. In general, the quantity of material in the building is not expected to exceed one day's worth of permitted capacity. Other overnight storage would occur when needed for holding full trailers before transporting them off-site. Under normal operations, this temporary full vehicle layover would typically not exceed 24 hours, except for trailers filled towards the end of a Friday and requiring storage until the following Monday.

Will the Proponent work to limit spillage of material on local roads (from un-tarped loads, and from liquids draining from trucks)?

Yes. Vehicles owned and under the direct control of the Proponent are tarped. Independent commercial haulers using the existing transfer station are required to tarp their loads when visiting the facility. This will be a requirement for the proposed facility as well. If an independent hauler brings material to the site un-tarped that could fall on other vehicles or on the access road and create litter or potential hazards to other vehicles, the Proponent will issue a warning to the driver. If the same hauler violates the tarped load requirement following the first warning, that hauler will not be allowed to use the facility in the future.

Will trucks comply with the weight restriction on the Cox Street bridge crossing the Assabet River?

Yes. Vehicles owned and under the direct control of the Proponent will comply with the Cox Street Bridge weight restriction.

Will the proposed new entrance have acceptable sight lines for safe turning onto Cox Street?

Yes. The new entrance will have acceptable sight lines for safe turning onto Cox Street. A sight distance evaluation for the proposed new driveway intersection with Cox Street is included in Chapter 7 (Section 7.4).

What are the proposed trucking routes and will Reed Road be used?

The proposed trucking routes are shown on Figure 7-8, provided in Chapter 7. As is the current case, the Proponent may use its collection vehicles to provide service to customers that are located on and within the Reed Road development area. The Proponent's semi-trailers will not use Reed Road.

In addition to the above, certain attendees expressed concern regarding the additional truck traffic associated with the Project. Other attendees had specific suggestions to improve transfer station ease-of-use for Hudson residents, , which the Proponent believes has been addressed in the facility layout as presented in this DEIR (see Chapter 8).

2.4 Enhanced Analysis Overview

The EJ Analysis Protocol applies "for any project that is likely to cause damage to the environment and is located within a distance of one mile of an EJ population; provided, that for a project that impacts air quality, such environmental impact report shall be required if the project is likely to cause damage to the environment and is located within a distance of five miles of an environmental justice population."

Under the EJ Analysis Protocol, the analysis must include:

- An assessment of existing unfair or inequitable environmental burdens on the EJ population.
- An assessment of the Project's impacts to determine disproportionate adverse effect (if existing unfair or inequitable environmental burdens exist) on the EJ population.
- An analysis of the Project to determine Climate Change Effects (if existing unfair or inequitable environmental burdens exist).
- Mitigation and Section 61 Findings (if the Project impacts causes a disproportionate adverse effect or Climate Change Effects on the EJ population).

The Project is not anticipated to have a disproportionate adverse effect on EJ populations within the DGA or have climate change effects that would impact nearby EJ populations.

2.5 Assessment of Existing Unfair or Inequitable Environmental Burden

Under the EJ Analysis Protocol, a four-step process has been developed for assessing whether EJ populations have experienced existing unfair or inequitable environmental burdens within the DGA. As part of this approach, a series of mapping tools have been developed that focus on, (1) the rates of four vulnerable health criteria as they relate to statewide averages, (2) existing past and current polluting activities, (3) a review of the RMAT Climate Resilience Output Tool, and (4) the use of the United States Environmental Protection Agency's Environmental Justice Screening Tool (EJ SCREEN). Each of these steps are described in detail below along with an assessment of the specific results for the EJ populations within the DGA.

2.5.1 Vulnerable Health Criteria

The vulnerable health EJ criteria are four environmentally related health indicators used to identify populations with evidence of higher-than-average rates of environmentally related health outcomes.[1] Any EJ population that exhibits "vulnerable health EJ criteria" could potentially bear

[1] Vulnerable Health Indicator Definition

an "unfair or inequitable" environmental burden and related public health consequences. Multiple terms are used to describe the vulnerable health EJ criteria as it relates to the EJ populations. These terms are defined and described below.

The vulnerable health EJ criteria are reported for a population in a specific area. The area can be a state, town, or census tract. Census tracts are small, relatively permanent areas of land with a population typically between 1,200 – 8,000 people.[2]

Health criteria are reported as *rates*, or the number of people with the identified condition divided by the population in consideration. The Department of Public Health ("DPH") EJ tool compares the *community rate*, or the town or census tract of interest, to the *statewide rate*, or the rate for the population of Massachusetts. Two rate types are used: *crude rate* and *age-adjusted rate*. The crude rate is the rate calculated as number of individuals with a condition divided by the entire population. The age-adjusted rate is statistically modified to consider how different age groups have different rates of prevalence, as in the case of heart attack rate. Rates are also classified as *stable* or *unstable*. Unstable rates occur when there are too few cases in a community for a rate to be considered reliable such that the addition or deletion of a small number of cases would lead to a substantial change in the rate. Stable rates are the opposite; there are enough cases in a population so that the rate will not fluctuate dramatically. A *confidence interval* refers to the minimum and maximum value such that the actual rate has a 95% chance of occurring between the calculated range. In other words, the specified rate has a high likelihood to be included in the range of values. The confidence interval is helpful to determine if a rate for a community is much higher than the statewide rate and not due to chance. A *casecount* refers to the number of surveyed individuals that had the condition of interest. For example, if out of forty children screened for blood lead levels, one child had elevated levels, the *casecount* would be equal to 1.

The first step is to determine whether EJ populations within the DGA have experienced higher rates of the vulnerable health criteria when compared to the statewide rate. The MA DPH EJ tool[3] provides information on these four different indicators: heart attack hospitalizations, childhood blood lead exposure, low birth weight, and childhood asthma for the most recent five-year period of available data. It should be noted that each of these datasets are available at different geographies: heart attack hospitalizations and childhood asthma are available at the community level, while low birth weight and childhood blood lead exposure are available at the census tract level. Each of these specific criteria are described below along with the results of the analysis for the towns within the DGA that contain EJ populations: Hudson, Framingham, Boxborough, Maynard and Marlborough.

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[2] United States Census Bureau

[3] MA DPH Environmental Justice Tool, accessed 03/15/2023.

2.5.1.1 Heart Attack Hospitalization

As described on the MA DPH website, heart attack hospitalization is a criterion used to identify vulnerable health EJ populations. Exposure to air pollution can increase the risk for heart attack and other forms of heart disease, and it is indicative of a serious chronic illness that can lead to disability, decreased quality of life and premature death. People living in EJ areas have higher than average heart attack hospitalization rates when compared to other communities.

Heart attack hospitalization data is based on data collected from all hospitals in Massachusetts and reflects individuals greater than 35 years of age who have been admitted to the hospital for a heart attack. The vulnerable health criterion for heart attack hospitalizations is the most recent five-year average age-adjusted rate of hospitalization for myocardial infarction that is equal to or greater than 100% of the state rate. This indicator is available at the community, or town-wide, level.

Heart Attack Vulnerable Health Criteria for the Project

Within the DGA at the community level, none of the municipalities meet the vulnerable health criterion for heart attack hospitalizations.

2.5.1.2 Childhood Blood Lead Levels

As described on the MA DPH website, childhood lead exposure is a criterion used to identify vulnerable health EJ populations because lead exposure disproportionately impacts lower income communities and communities of color, and childhood exposure to relatively low levels can cause severe and irreversible health effects, including damage to a child's mental and physical development.

Childhood Blood Lead Level data is based on data collected as part of the Massachusetts Lead Poisoning Prevention and Control Act which is a state law that requires all children to be screened each year for lead poisoning through age three, and children in high-risk communities must be screened through age four. The vulnerable health criterion for Childhood Blood Lead Level is the five-year average prevalence of elevated (≥5 ug/dL estimated confirmed) childhood blood lead levels (ages 9-47 months) that is equal to or greater than 110% of the state prevalence. This indicator is available at the community and census tract level.

Childhood Blood Lead Levels Vulnerable Health Criteria for the Project

At the community level, none of the municipalities meet the vulnerable health criterion for childhood blood lead levels.

This indicator was further examined for the census tracts with EJ Populations within the DGA. None of the census tracts identified met the vulnerable health criterion for childhood blood lead levels.

In Massachusetts, most lead poisoning is associated with lead-based paint used in homes built before 1978. When paint peels or cracks it creates lead paint chips and dust. The lead dust can land on floors and ultimately into children's bodies when they put their hands and toys into their mouths. Lead can also occur in drinking water and soil. As these risks are typically associated with an individual's home, the Project is not anticipated to impact this risk factor.

2.5.1.3 Low Birth Weight

As described on the MA DPH website, low birth weight (LBW) is a criterion used to identify vulnerable health EJ populations because exposure to environmental contaminants can increase the risk of delivering a LBW baby and LBW is a significant predictor of maternal and infant health. Women of color and low-income women have a higher risk of delivering a LBW baby. LBW can increase the risk of infant mortality and morbidity, health problems throughout childhood, developing cognitive disorders, developmental delay and chronic diseases as an adult such as cardiovascular diseases and type 2 diabetes.

LBW data are collected by the Registry of Vital Records and Statistics. Medical data, such as birth weight and gestational age, are based on information supplied by hospitals and birthing facilities. The vulnerable health criterion for LBW is the five-year average LBW rate among full-term births that is equal to or greater than 110% of the statewide rate. This indicator is available at both the community and census tract level.

Low Birth Weight Vulnerable Health Criteria for the Project

At the community level, only Boxborough meets the vulnerable health criterion for LBW.

This indicator was further examined for the census tracts with an EJ Population within the DGA. While at the community level Marlborough is less than 110% of the statewide LBW rate, census tracts 3211, 3213, and 3216 in Marlborough are greater than 110% of the statewide LBW rate. Therefore, these specific census tracts with EJ populations within the DGA meet the vulnerable health criterion for LBW.

2.5.1.4 Childhood Asthma

As described on the MA DPH website, childhood asthma is a criterion used to identify vulnerable health EJ populations because people of color and low-income individuals are at greater risk for asthma exacerbations due to increased exposure to asthma triggers. Uncontrolled asthma can impact an individual's overall health and wellbeing. For example, uncontrolled asthma can reduce activity levels, negatively impact cardiovascular fitness, and increase school absenteeism.

Childhood asthma data are based on data collected from all hospitals in Massachusetts and reflects children between the ages of 5 and 14 years of age that have visited an emergency room for treatment for asthma. The vulnerable health criterion for childhood asthma is the five-year

average rate of emergency department visits for childhood (5-14 years) asthma that is equal to or greater than 110% of the state rate. This indicator is available at the community, or town-wide, level.

Childhood Asthma Vulnerable Health Criteria for the Project

At the community level, only Framingham meets the vulnerable health criterion for childhood asthma.

2.5.1.5 Vulnerable Health Criteria Summary

At the community level, Boxborough meets the vulnerable health criterion for LBW and Framingham meets the vulnerable health criterion for childhood asthma.

At the census tract level, census tracts 3881 (Boxborough); and 3211, 3213, and 3216 (Marlborough) meet the vulnerable health criterion for LBW.

Table 2-2 provides a summary of the vulnerable health criteria analysis in the designated geographic area. Based on the descriptions provided above, the EJ community in the DGA is considered vulnerable and is subject to at least some level of existing environmental burden.

Table 2-2 Vulnerable Health Criteria Summary

Vulnerable Health Criteria	Geography Type	Community Rate	Community Rate Confidence Interval	Statistical Significance	Stability	Statewide Rate	Statewide Rate Confidence Interval	110% Statewide Rate	>110% of Statewide Rate?
Heart Attack	Boxborough	12	6.4, 17.5	SSL	Stable	26.4	26, 27	29.1	No
	Framingham	15.5	13.9, 17.1	SSL	Stable				No
	Hudson	26.8	22.8, 30.8	NSSD	Stable				No
	Marlborough	28.1	25.1, 31.2	NSSD	Stable				No
	Maynard	26.7	21.1, 32.4	NSSD	Stable				No
Lead Poisoning	Boxborough	NS	NS	NS	NS	15.0	15, 15	16.5	No
	Framingham	13.2	11, 15.4	NSD	Stable				No
	Hudson	9.4	5.6, 13.3	SSL	Stable				No
	Marlborough	11.5	8.7, 14.3	SSL	Stable				No
	Maynard	8.5	3.5, 13.5	SSL	Unstable				No
	3881 (B)	NS	NS	NS	NS				No
	3839.01 (F)	NS	NS	NS	NS				No
	3224 (H)	NS	NS	NS	NS				No
	3211 (M)	NS	NS	NS	NS				No
	3212 (M)	14.3	5.8, 22.7	NSD	Unstable				No
	3213 (M)	12.9	5.6, 20.2	NSD	Stable				No
	3214 (M)	NS	NS	NS	NS				No
	3215 (M)	16.1	8.5, 23.8	NSD	Stable				No
	3216 (M)	6.6	1.7, 11.5	SSL	Unstable				No
	3641.01 (Maynard)	14.1	4.9, 23.3	NSSD	Unstable				No
	3223 (H)	14.4	5.9, 22.9	NSSD	Unstable				No
	3222 (H)	NS	NS	NS	NS				No
Low Birth Weight	**Boxborough**	**NS**	**NS**	**NS**	**NS**	216.8	212, 222	238.5	**Yes**
	Framingham	218	172.2, 263.8	NSSD	Stable				No
	Hudson	102.2	38.9, 165.6	SSL	Unstable				No
	Marlborough	233.4	170, 296.8	NSSD	Unstable				No
	Maynard	127.3	33, 221.6	NSSD	Unstable				No

Table 2-2 Vulnerable Health Criteria Summary (Continued)

	3881 (B)	NS	NS	NS	NS				Yes
	3839.01 (F)	NS	NS	NS	NS				No
	3224 (H)	NS	NS	NS	NS				No
	3211 (M)	**239.7**	**62.1, 417.3**	**NSSD**	**Unstable**				**Yes**
	3212 (M)	236	72.5, 399.5	NSSD	Unstable				No
	3213 (M)	**304.4**	**138.9, 470**	**NSSD**	**Unstable**				**Yes**
	3214 (M)	232.6	46.5, 418.6	NSSD	Unstable				No
	3215 (M)	NS	NS	NS	NS				No
	3216 (M)	**303**	**138.3, 467.8**	**NSSD**	**Unstable**				**Yes**
	3641.01 (Maynard)	NS	NS	NS	NS				No
	3223 (H)	NS	NS	NS	NS				No
	3222 (H)	NS	NS	NS	NS				No
Childhood Asthma	Boxborough	NS	NS	NS	NS	83.1	82, 84	91.4	No
	Framingham	**100.1**	**90.2, 110**	**SSH**	**Stable**				**Yes**
	Hudson	61.7	47.7, 75.6	SSL	Stable				No
	Marlborough	62	51.7, 72.2	SSL	Stable				No
	Maynard	44.6	27.5, 61.8	SSL	Unstable				No

SSL: Statistically significantly lower
NSSD: Not statistically significantly different
NS: Not shown (due to low numbers)
NSD: Not statistically different
SSH: Statistically significantly higher

2.5.2 Potential Sources of Pollution

As described in the EJ Analysis Protocol, the next step of the existing environmental burden analysis focuses on other potential sources of pollution within the boundaries of the EJ population. Layers from the DPH EJ Tool were downloaded into ArcGIS and a five mile buffer drawn around the Project site boundary. Each of the resulting layers were used to develop a narrative of the number of types of facilities and infrastructure for the EJ populations in the DGA. Below is a narrative discussion of the information gleaned using the mapping layers listed above in the MA DPH EJ Tool. It is important to note that while some of the facilities are located outside the DGA, they are all established within EJ block groups that are located within whole or part of the five-mile radius. Figure 2-2 depicts the locations of these pollution sources.

2.5.2.1 MassDEP Major Air and Waste Facilities

MassDEP major air and waste facilities are facilities that have air operating permits, treat, store, generate or recycle large quantities of hazardous waste, or utilize large quantities of toxics. These facilities are further specified in the following sections and include airports, facilities with air permits, draft NPDES permits, hazardous waste, treatment, storage, recycling, or disposal facilities, large quantity generators, large quantity toxic users, land disposal of solid waste, and toxics release inventory sites[4].

There are 34 MassDEP major air and waste facilities located within an EJ community that is wholly or partly within the DGA.

2.5.2.2 M.G.L. c. 21E Sites

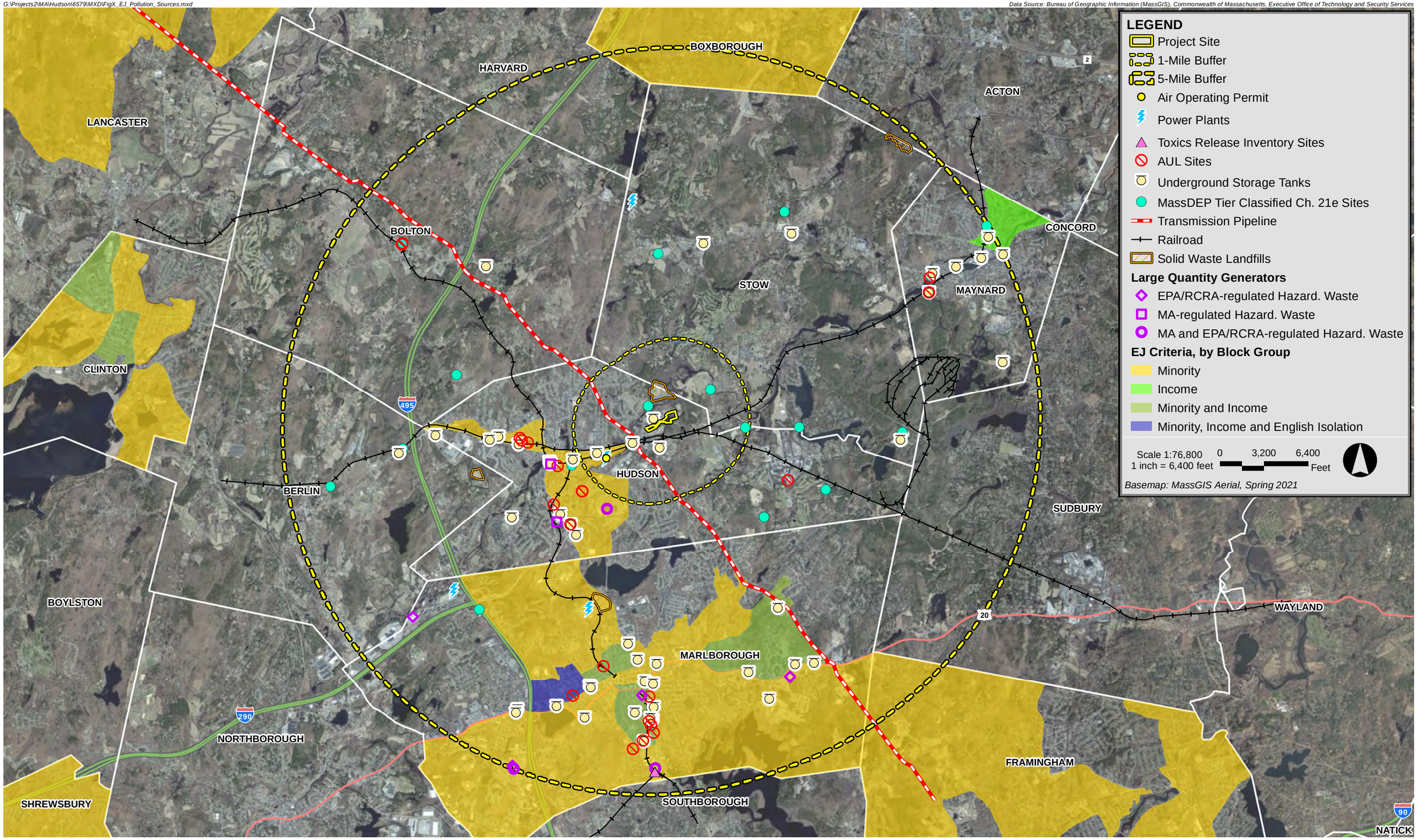
21E sites are sites that have experienced a release of a hazardous material above a certain threshold. Once a release is reported to MassDEP it must be cleaned up within a year or it is classified as Tier I, Tier ID, or Tier II. A Tier I site poses an immediate hazard, a Tier 1D site has not posed a permanent solution or final classification of the site, while a Tier II site does not meet the criteria for an immediate hazard.

There are ten 21E sites that are wholly or partly within EJ communities in the DGA. The facilities range from 1.1 miles to 5.7 miles from the Site.

[4] https://www.mass.gov/info-details/massgis-data-massdep-major-facilities

G:\Projects2\MA\Hudson\6579\MXD\FigX_EJ_Pollution_Sources.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Hudson Waste Transfer Station **Hudson, Massachusetts**

Epsilon Associates Inc.

Figure 2-2

Environmental Justice Populations and Potential Pollution Sources

2.5.2.3 Tier II Facilities

A facility is required to submit a Tier II report to emergency response agencies if it uses over a certain threshold of hazardous chemicals during a calendar year. The purpose of Tier reports is to help facilitate emergency response in the event the fire department would need to respond to an emergency at the facility.

There are 41 Tier II facilities within the EJ population that is wholly or partly within the DGA.

2.5.2.4 MassDEP sites with AULs

An Activity Use Limitation ("AUL") provides notice of the presence of oil and/or hazardous material contamination remaining at a location after a cleanup has been conducted pursuant to Chapter 21E and the MCP. The AUL is a legal document that identifies activities and uses of the property that may and may not occur, as well as the property owner's obligation and maintenance conditions that must be followed to ensure the safe use of the property.

There are 17 MassDEP sites with AULs within the EJ populations that are wholly or partly within the DGA.

2.5.2.5 MassDEP Groundwater Discharge Permits

This dataset contains the locations of permitted discharges of groundwater. This includes discharges from: Sanitary sewage in excess of 10,000 gallons per day, coin operated laundromats, car washes, industrial facilities, and reclaimed water (used in cooling towers and other closed-loop systems, no actual discharge).

There are six facilities with a MassDEP Groundwater Discharge Permit within the EJ population that is wholly or partly within the DGA; they are located between 4.9 miles and 7.4miles from the Site.

2.5.2.6 Wastewater Treatment Plants

The MA DPH Tool provides information on facilities that have received a National Pollutant Discharge Elimination System ("NPDES") permit. NPDES is a permit for facilities that treat wastewater.

There are three wastewater treatment plants within an EJ population that is wholly or partly within the DGA.

2.5.2.7 MassDEP Public Water Suppliers

This dataset contains locations of public community surface and groundwater supply sources based on data available in the MassDEP's Water Quality Testing System database for tracking water supply data. A community water system refers to the public water system which services at least twenty-five year-round residents.

There are eight MassDEP public water suppliers within the EJ population that is wholly or partly within the DGA.

2.5.2.8 Underground Storage Tanks

MassDEP regulates the registration, installation, operation, maintenance, inspection, and closure of petroleum fuel and hazardous substance of underground storage tank ("UST") systems. As part of the UST program, there are 34 USTs that located in EJ populations that are wholly or partly within the DGA.

2.5.2.9 EPA Facilities

EPA facilities are defined as Toxic Release Inventory ("TRI") facilities. TRI facilities use and/or release over a certain threshold of toxic chemicals to the environment. There are 777 individual chemicals and thirty-three chemical categories covered by the TRI program.

There are 21 TRI facilities within EJ population that is wholly or partly within the DGA.

2.5.2.10 Road Infrastructure

Road infrastructure includes Massachusetts Department of Transportation roads and bike lanes or shared use pathways. There are numerous major routes within a five-mile radius of the site, including Routes 27, 85 and 111 which run north and south and Routes 2 and 62 which run east and west.

2.5.2.11 MBTA Bus and Rapid Transit

The Massachusetts Bay Transit Authority data includes all MBTA bus routes, stops, commuter rails, commuter rail stations, parking lots, and rapid transit stops.

There are six MBTA bus or rapid transit routes within the EJ population that is wholly or partly within the DGA.

2.5.2.12 Other Transportation Infrastructure

Other transportation infrastructure includes airports, freight yards, water taxis, railroad tracks, and ferry routes. There are no freight yards, ferry routes, ferry stops, or water taxis within the DGA.

There is one airport approximately 4.7 miles from the Site, and, per MassGIS data, there are ten railroad lines within the DGA.

2.5.2.13 Regional Transit Agencies

Regional Transit Agency (RTA's) that operate within the DGA are the Lowell RTA, Montachusett RTA, Worcester RTA and MetroWest RTA.

There are 18 RTA bus stops within the EJ population that is wholly or partly within the DGA.

2.5.2.14 Energy Generation and Supply

The Energy Generation and Supply layer includes nuclear power plants, power plants, and transmission lines from Massachusetts Geographic Information Systems and the United States Geological Survey databases.

There are two power plants, and four transmission lines within the EJ communities that are wholly or partly within the DGA.

2.5.3 Climate Adaptation (RMAT)

The Climate Resilience Design Standards tool prepared by the Resilient Massachusetts Action Team, RMAT, provides information about sea level rise/storm surge, heat, and extreme precipitation impacts for a Project.

The RMAT tool identified the proposed Project as high risk for extreme precipitation urban and riverine flooding, and extreme heat. Detailed RMAT results were presented in the Project's ENF filing.

2.5.4 USEPA EJ Screen

The EPA EJ Screen Tool was consulted to assess whether the EJ Populations located in the DGA are subject to adverse impacts related to EJ Indexes as compared to a baseline for other EJ populations within Massachusetts. As noted in the EJ Protocol "The environmental indicators/percentiles could be relevant for assessing potential environmental exposures in the relevant census block as compared to statewide averages, and, therefore, could serve as a potential (though not definitive) indicator of "unfair or inequitable" environmental burden impacting the EJ population." The environmental indicators available through EPA EJ Screen are shown in Table 2-3.

Table 2-3 EPA Environmental Justice Screen

Indicator	Exposure v. Risk	Key Medium
NATA Air Toxics Cancer Risk (lifetime exposure)	Risk/Hazard	Air
NATA Respiratory Hazard Index Ratio	Risk/Hazard	Air
NATA Diesel PM (DPM)	Potential Exposure	Air
Particulate Matter (PM2.5, annual average)	Potential Exposure	Air
Ozone (summer seasonal average, daily 8-hr max)	Potential Exposure	Air
Lead Paint (% of housing built before 1960)	Potential Exposure	Dust/lead paint
Traffic Proximity and Volume Count of Vehicles (average annual)	Proximity/Quantity	Air
Proximity to RMP (Risk Management Plan/hazardous waste cleanup) Sites	Proximity/Quantity	Waste/Water/Air
Proximity to TSDFs (Hazardous waste treatment, Storage, and Disposal Facilities)	Proximity/Quantity	Waste/Water/Air
Proximity to NPLs (National Priority List/Superfund sites)	Proximity/Quantity	Waste/Water/Air
Wastewater Discharge Toxicity (based on NPDES permitted discharge locations)	Proximity/Quantity	Water

The USEPA EJ Screen tool was run with the "compare to state" option turned on, and the "EJ Index" data layer turned off, for the census tract within five miles of the Project Site.

The analysis in this Chapter focuses on the primary air quality indicators because the Project is associated with increased traffic around the Project site that will primarily impact air. These include the NATA Air Toxics Cancer Risk, Respiratory Hazard Index Ratio, and Diesel PM, PM2.5, Ozone and Traffic proximity. An indicator that exceeds the 80th percentile compared to the state is typically considered to be a potential environmental burden to EJ communities. Of these, the indicators for which an EJ community in the DGA exceeded the 80th percentile compared to the state were Air Toxics Cancer Risk, Lead Paint Exposure, Proximity to RMP Sites, Proximity to NPLs, and Wastewater Discharge Proximity. However, because the EJ screening tool is based on ranking and not based on comparison to health-based standards, the percentile ranking results do not necessarily mean that Air Toxics Cancer Risk levels in this community are necessarily harmful. EJ Screen data for EJ communities in the DGA is included.

2.5.5 Summary of EJ Screening Results and Determination of Burdens

Based on the descriptions provided above, there are EJ communities in the designated geographic area that are considered vulnerable and subject to at least some level of existing environmental burdens, the block groups are listed in table 2-4 below.

Table 2-4 Summary of Elevated Indicators in EJ Screen

Block Group	Elevated Indicators (≥ 80th percentile)
32130-1	Lead Paint Exposure
32130-3	Lead Pain Exposure
321302-2	RMP Proximity
321400-2	Air Toxics; Hazardous Waste Proximity; RMP Proximity
32200-1	Wastewater Discharge Proximity
322300-3	Wastewater Discharge Proximity
322400-2	Wastewater Discharge Proximity
364101-2	Superfund Proximity, Wastewater Discharge Proximity

2.6 Analysis of Project Impacts to Determine Disproportionate Adverse Effects

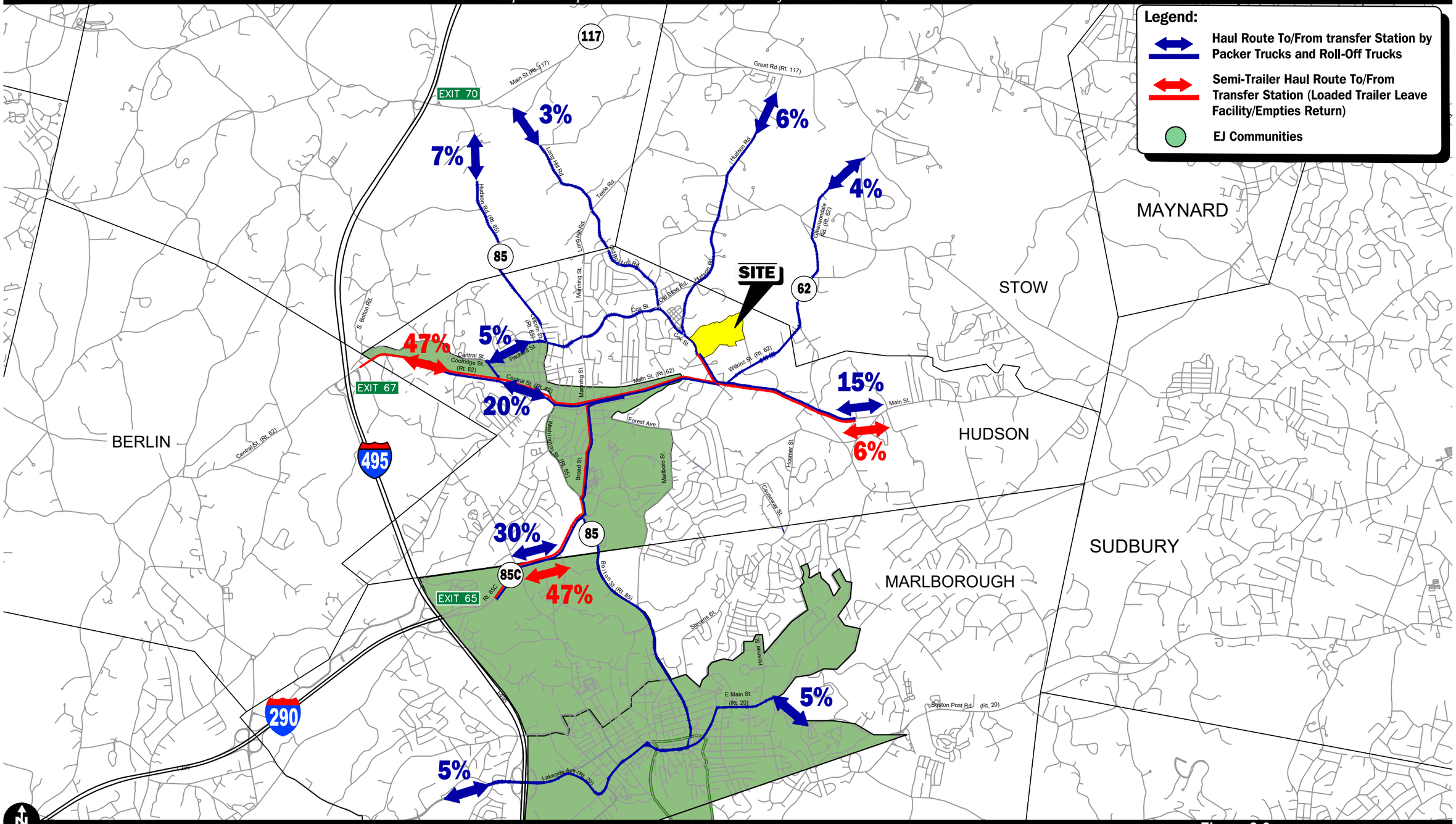
As noted above, the main impacts of the Project are local air quality; these impacts were analyzed by estimating the emissions expected from Project trucks travelling between I-495 and the Site. Intersections near EJ populations were analyzed and emissions from Project trucks we estimated using emission factors calculated through mesoscale analysis using the US EPA's MOVES4 program, described in Chapter 3 of this DEIR and combined with expected delay times and vehicle volumes at studied intersections as determined by the traffic analysis presented in Chapter 7 of this DEIR. The local emissions of Volatile Organic Compounds (VOC's), Oxides of Nitrogen (NOx), Particulate Matter, (PM10) and Diesel Particulate Matter (DPM) at each of the analyzed intersections, and for the project overall are expected to be minimal and are presented below in Table 2-5.

Table 2-5 Project Truck Intersection Emissions Analysis Summary

Intersection	VOC tons/yr	NOx tons/yr	DPM tons/yr
1: Forest Avenue/Wilkins Street & Main Street	0.0000	0.000	0.0000
2: Glendale Road/Cox Street & Main Street	0.0002	0.001	0.0000
3: Cox Street & Parkhurst Drive	0.0000	0.000	0.0000
4: Lee Circle/Transfer Station & Cox Street	0.0000	0.000	0.0000
5: Pierce Street/Zina Road & Cox Street	0.0000	0.000	0.0000
6: Cox Street & Old Stow Road & Old Bolton Road	0.0000	0.000	0.0000
7: Lincoln Street & Packard Street/Cox Street	0.0000	0.000	0.0000
15: East Main Street & Lincoln Street & Stevens Street	0.0000	0.000	0.0000
16: Lakeside Avenue & Lincoln Street	0.0004	0.002	0.0001
33: Vila do Porto Boulevard/Tower Street & Main Street	0.0001	0.001	0.0000
62: Woodrow Street/Mackin Street & Main Street	0.0000	0.000	0.0000
72: Broad Street & South Street	0.0001	0.001	0.0000
Route 62 at Washington Street and Felton Street (Rotary)	0.0001	0.001	0.0000
Washington Street at Broad Street (Rotary)	0.0002	0.001	0.0000
Total	0.00126	0.0080	0.0003

2.6.1 Truck Routing Alternatives

The Proponent developed transportation routes that would require trucks to traverse roads in EJ communities as little as possible. In order to determine alternate semi-trailer truck routes, several pathways within a five-mile radius of the facility were analyzed. To minimize local traffic disruption, all semi-trailer trucks were routed towards the interstate highways. In terms of directions, due to the 17-ton capacity limit of the bridge on Cox Street over the Assabet River, semi-trailer trucks exiting the Hudson Transfer Station are required to turn left onto Cox Street and head south of the site. As a result, five routes were identified which are described below. These routes and the EJ communities are graphically depicted in Figure 2-3. Please see Attachment 10 of Appendix D for detailed route evaluation that supports the route analysis summary presented below.



Not to scale

Figure 2-3

Trip Distribution Map

Vanasse & Associates inc

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- ***Route 1*** – This route extends for approximately 4.9 miles connecting the transfer station to Exit 65 of I-495 at I-290. This route follows Cox Street, Forest Avenue, Marlboro Street, Reed Road, Technology Drive, and Route 85C, leading to Exit 65 of I-495 and I-290. Overall, across all studied intersections along Route 1, it was found that if semi-trailers were to use this route, they would often obstruct adjacent lanes at the start of their turns, encroach on opposing lanes at the end of their turns, and/or could affect adjacent curbs or sidewalks during the turning process. While it is technically possible to navigate this route, it is important to emphasize that, from a safety standpoint, we strongly discourage its use.

- ***Route 2*** – This route extends for approximately 4 miles connecting the transfer station to Exit 65 of I-495 at I-290, while partially passing through downtown Hudson. This route begins on Cox Street, proceeds along Main Street, Vila do Porto Boulevard, Broad Street, and Washington Street, and then joins Route 85C to reach I-495 and I-290. Route 2 represents an existing semi-trailer route currently used by B-P that serves as the connecting route between the existing transfer station and Exit 65A of I-495 (Hudson/Route 85 exit). It is important to note that outbound semi-trailers from Cox Street to Main Street currently have two exit options: one via Mackin Street (currently used by B-P) which is a one-way street, and the other via the Cox Street intersection with Main Street (not currently used by B-P). Inbound semi-trailers are required to make a left turn from Main Street onto Cox Street.

  Upon a thorough examination of this route, it was found that trucks exiting the facility maneuvering from both Mackin Street and Cox Street onto Main Street present safety concerns. To address this issue and improve overall safety at both locations, intersection improvements developed in coordination with the Town of Hudson DPW were recommended (see recommendation section). With the proposed improvements in place VAI concludes that semi-trailers will be able to navigate turns efficiently without causing substantial disruption to the main traffic flow along this route.

- ***Route 3*** – This route, which is approximately 4.4 miles long, connects the transfer station to Exit 67 off I-495, passing through downtown Hudson. This route is the most direct, starting from Cox Street, moving through Main Street, Central Street, and Coolidge Street, and directly accessing I 495. Route 3 represents an existing semi-trailer route currently used by B-P that serves as the connecting route between the existing transfer station and Exit 67 of I-495 (Berlin, Hudson/Route 62 exit). This route overlaps Route 2 from the transfer station site up to the Main Street at Tower Street and Vila do Porto Boulevard intersection. Upon thorough examination of the critical study intersection along Route 3, VAI concludes that semi-trailers can navigate turns efficiently without causing substantial disruption to the main traffic flow.

- ***Route 4 –*** This route provides access for trucks arriving from or heading toward the eastern Boston area. It begins on Cox Street, moves through Main Street, follows Route 27 and Route 20, and then directly connects to I-95, leading them directly to their ultimate

destination. This route, which is currently used less frequently by B-P and expected to continue as a lesser-used route in the future, is a feasible option for vehicles headed eastward toward Boston.

- ***Route 5*** – This route extends for approximately 8.2 miles and connects the transfer station to Exit 70 off I-495, passing through Gleasondale Village and the Town of Stow. It begins on Cox Street, moves through Main Street, follows Route 62 and Route 117, and then directly accesses I-495. This route crosses three bridges, with weight restrictions ranging from 19 to 36 tons, which is inadequate for semi-trailer traffic and therefore infeasible for use.

Based upon VAI's route analysis, we have concluded that Routes 2, 3 and 4 are viable and recommended for use.

2.7 Mitigation of Project Impacts

Air impacts are also expected to result from the Proponent's construction activities. The increased truck traffic will depend on the nature of the work being performed but is not expected to be a large number of vehicles. The Proponent will work with contractors to minimize air impacts by:

- Encouraging contractors to use EPA Tier 4 construction equipment or equipment retrofitted with diesel emission control devices to the greatest extent practicable;
- Using Ultra-Low Sulphur Diesel for all trucks and construction machinery;
- Use of after-engine emissions controls, such as oxidation catalysts or diesel particulate filters;
- Maintaining an "idle free" work area;
- Minimizing exposed storage of debris on-site through measures such as wetting soils prior to disturbing and covering stockpiles.

Section 12.3 of this DEIR further discusses construction mitigation measures including the construction-related traffic, noise, and air quality impacts.

Chapter 3

Air Quality

3.0 AIR QUALITY

3.1 Air Quality

3.1.1 Introduction

Air quality impacts from a project can be viewed within the context of the overall regional air quality to assess whether any additional project-related emissions will significantly contribute to the air quality in the project location and cause air pollutant concentrations to exceed available health-based air quality standards.

The Proponent anticipates that any potential air quality impacts from the project will be related to some increase in vehicle traffic and specifically diesel truck traffic. The primary air pollutant of concern from diesel trucks are particulates ($PM_{2.5}$). The primary air pollutants of concern from diesel trucks are particulates ($PM_{2.5}$) and nitrogen oxides (NOx). Therefore, to provide air quality context, we evaluated two key sources of information: estimated $PM_{2.5}$ and NOx from on-road vehicles (which include trucks) and estimated $PM_{2.5}$ and NO_2 concentrations at the nearest air monitoring site (which include contributions from diesel trucks). $PM_{2.5}$ data were selected because it is a greater health hazard due to its smaller size. NO_2 is one of a group of gases known as nitrogen oxides (NO_x) and NO_2 concentrations are measured at monitoring sites and used as the health indicator for the larger group of NO_x.

Emission trends for $PM_{2.5}$ and NOx from on-road highway vehicles were reviewed to obtain an overall understanding of current emission patterns. The emissions data is collected and reported by the US EPA[1] and emission trends are shown in Figure 3-1. As can be observed, the Massachusetts air emissions from vehicle traffic have fallen dramatically in recent years, with reductions in excess of 80%, largely due to vehicle emissions regulations that have served to reduce these emissions. In particular, Federal pollution regulations for medium and heavy-duty trucks have tightened significantly over time[2] , as shown in Table 3-1. Full implementation of the 2007 standards combined with the use of Ultra-Low Sulfur Diesel (ULSD) has served to dramatically reduce air emissions from Medium and Heavy Duty (MHD) trucks. Modern MHD vehicles meet emissions standards through engine design and aftertreatment technologies.

1 https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data
2 https://dieselnet.com/standards/us/hd.php

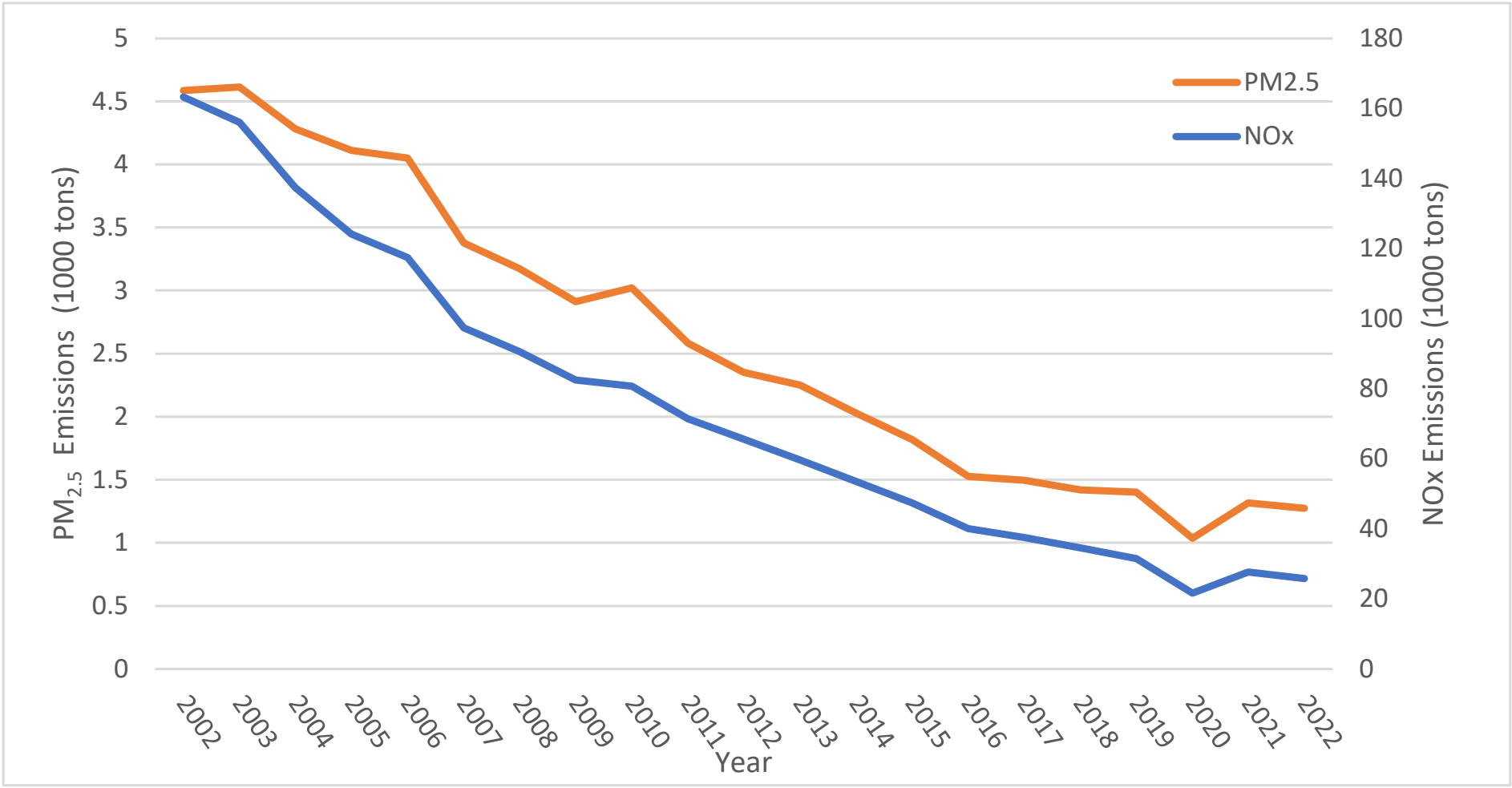


Figure 3-1

State-wide Emissions of Fine Particulate Matter (PM2.5) from Onroad Vehicles in 1000 tons

Table 3-1 Emission Limits for Medium and Heavy-Duty Vehicles

Year	Emission limit, grams per brake horsepower hour (g/bhp-hr)	
	NOx	PM
1988	10.7	0.6
1990	6.0	0.6
1991	5.0	0.25
1994	5.0	0.10
1998	4.0	0.10
2007	0.2	0.01

In addition, there are a number of new initiatives that will serve to further reduce vehicle emissions. For example, as described in the Massachusetts Global Warming Solutions Act – 10 Year Progress Report[3], many transportation-related initiatives aim to reduce vehicle emissions including the Federal and California Vehicle Efficiency and Greenhouse Standards requirements as well as new Federal Emissions and Fuel Efficiency Standards for Medium and Heavy Duty Vehicles.

To evaluate the related impacts on air pollutant concentrations in Massachusetts, we obtained the air pollutant concentration information from monitoring stations across the state.[4] The nearest air monitoring station is in Worcester about 16 miles southwest from the site location. Background air pollutant concentrations as well as trends in air pollutant concentrations were obtained from this monitoring location. In the next section, the US Environmental Protection Agency (EPA) National Ambient Air Quality Standards (NAAQS), which are health-based standards below which health impacts are not expected are discussed. These air quality standards are used to determine if there are adverse impacts from emissions sources. Monitored background concentrations and trends as they compare to these NAAQS are presented for the key air pollutants of concern (i.e., $PM_{2.5}$ and NO_2).

3.1.2 National Ambient Air Quality Standards and Background Concentrations

The 1970 Clean Air Act was enacted by the U.S. Congress to protect the health and welfare of the public from the adverse effects of air pollution. As required by the Clean Air Act, EPA promulgated NAAQS for the following criteria pollutants: nitrogen dioxide (NO_2), sulfur dioxide (SO_2),

[3] GWSA Progress Report, at https://www.mass.gov/doc/gwsa-10-year-progress-report/download

[4] Air Quality Design Values | US EPA

particulate matter (PM) (PM_{10} and $PM_{2.5}$), carbon monoxide (CO), ozone (O_3), and lead (Pb).[5] The NAAQS are listed in Table 3-2. The Commonwealth promulgated amendments to the Massachusetts Ambient Air Quality Standards (MAAQS) to be identical to NAAQS.[6]

NAAQS specify concentration levels for various averaging times and include both "primary" and "secondary" standards. Primary standards are intended to protect human health, whereas secondary standards are intended to protect public welfare from any known or anticipated adverse effects associated with the presence of air pollutants, such as damage to vegetation.

The NAAQS also reflect various durations of exposure. The short-term averaging times (24 hours or less) refer to exposure levels not to be exceeded more than once a year. Long-term periods refer to limits that cannot be exceeded for exposure averaged over three months or longer.

Table 3-2 National (NAAQS) and Massachusetts (MAAQS) Ambient Air Quality Standards

Pollutant	Averaging Period	NAAQS/MAAQS ($\mu g/m^3$) Primary	Secondary
NO_2	Annual (1)	100	Same
	1-hour (2)	188	None
SO_2	3-hour (3)	None	1300
	1-hour (4)	196	None
$PM_{2.5}$	Annual (1)	9	15
	24-hour (5)	35	Same
PM_{10}	24-hour (3)	150	Same
CO	8-hour (3)	10,000	Same
	1-hour (3)	40,000	Same
Ozone	8-hour (6)	147	Same
Pb	3-month (1)	0.15	Same

Source: http://www.epa.gov/ttn/naaqs/criteria.html and 310 CMR 6.04
(1) Not to be exceeded.
(2) 98th percentile of one-hour daily maximum concentrations, averaged over three years.
(3) Not to be exceeded more than once per year.
(4) 99th percentile of one-hour daily maximum concentrations, averaged over three years.
(5) 98th percentile, averaged over three years.
(6) Annual fourth-highest daily maximum eight-hour concentration, averaged over three years.

For the purposes of this analysis, the focus will be on the two key criteria air pollutants associated with vehicle emissions, $PM_{2.5}$ and NO_2.

5 40 CFR 50, National Primary and Secondary Ambient Air Quality Standards, Nov. 25, 1971.

6 310 CMR 6.04, June 14, 2019

3.1.2.2 Background Concentrations and Air Quality Trends

To estimate background pollutant concentrations representative of the area, the most recent air quality monitor data was obtained for 2020 to 2022 from the nearest air monitoring site. Data for air pollutants and averaging time combination were obtained from the EPA's design values. US EPA reports air pollution concentrations with respect to how the health-based NAAQS are defined. These are called the design values.

To attain the 24-hour $PM_{2.5}$ standard, the three-year average of the 98th percentile of 24-hour concentrations must not exceed 35 µg/m^3 (i.e., the design value for short-term exposures to $PM_{2.5}$). For the long-term or annual $PM_{2.5}$, the average of the NAAQS is defined as the highest yearly observations averaged over 3-years and should not exceed 9 µg/m^3.[7] To attain the one-hour NO_2 standard, the three-year average of the 98th percentile of the maximum daily one-hour concentrations must not exceed 188 µg/m^3.

Background concentrations were obtained from the closest available monitoring stations to the Project Site. The next closest monitor, in Worcester (16 miles west) was used. A summary of the background air quality concentrations is presented in Table 3-3.

Table 3-3 Observed Ambient Air Quality Concentrations and Selected Background Levels

Pollutant	Averaging Period	Form	Background Concentration (µg/m³)	NAAQS	Percent of NAAQS
$PM_{2.5}$	24-Hr [(2)]	98th %	18	35.0	51%
	Annual [(2)]	H	5.9	9.0	66%
NO_2 [(1)]	1-Hr [(2)]	98th %	86.5	188.0	46%
	Annual	H	18.8	100.0	19%

Notes:
From US EPA Design Values (Air Quality Design Values | US EPA) for 2020-2022
[(1)] NO_2 reported in ppb. Converted to µg/m³ using factor of 1 ppb = 1.88 µg/m³.
[(2)] Background level is the average concentration of the three years at the monitor station listed above.

Air quality in the vicinity of the Project Site is generally good, with all local background concentrations found to be well below the NAAQS. US EPA recently reduced the annual $PM_{2.5}$ NAAQS to 9 µg/m^3 and background levels are still well below this reduced NAAQS level. As shown in Figures 3-2 and 3-3, air quality trends are going down largely due to more stringent vehicle emission standards and improved vehicle performance. In Figure 3-2 the relevant NAAQS is noted by the red line and in Figure 3-3 the relevant NAAQS is noted by the orange line.

[7] The annual $PM_{2.5}$ NAAQS was recently lowered to 9 µg/m^3 (Final Reconsideration of the National Ambient Air Quality Standards for Particulate Matter (PM) | US EPA)

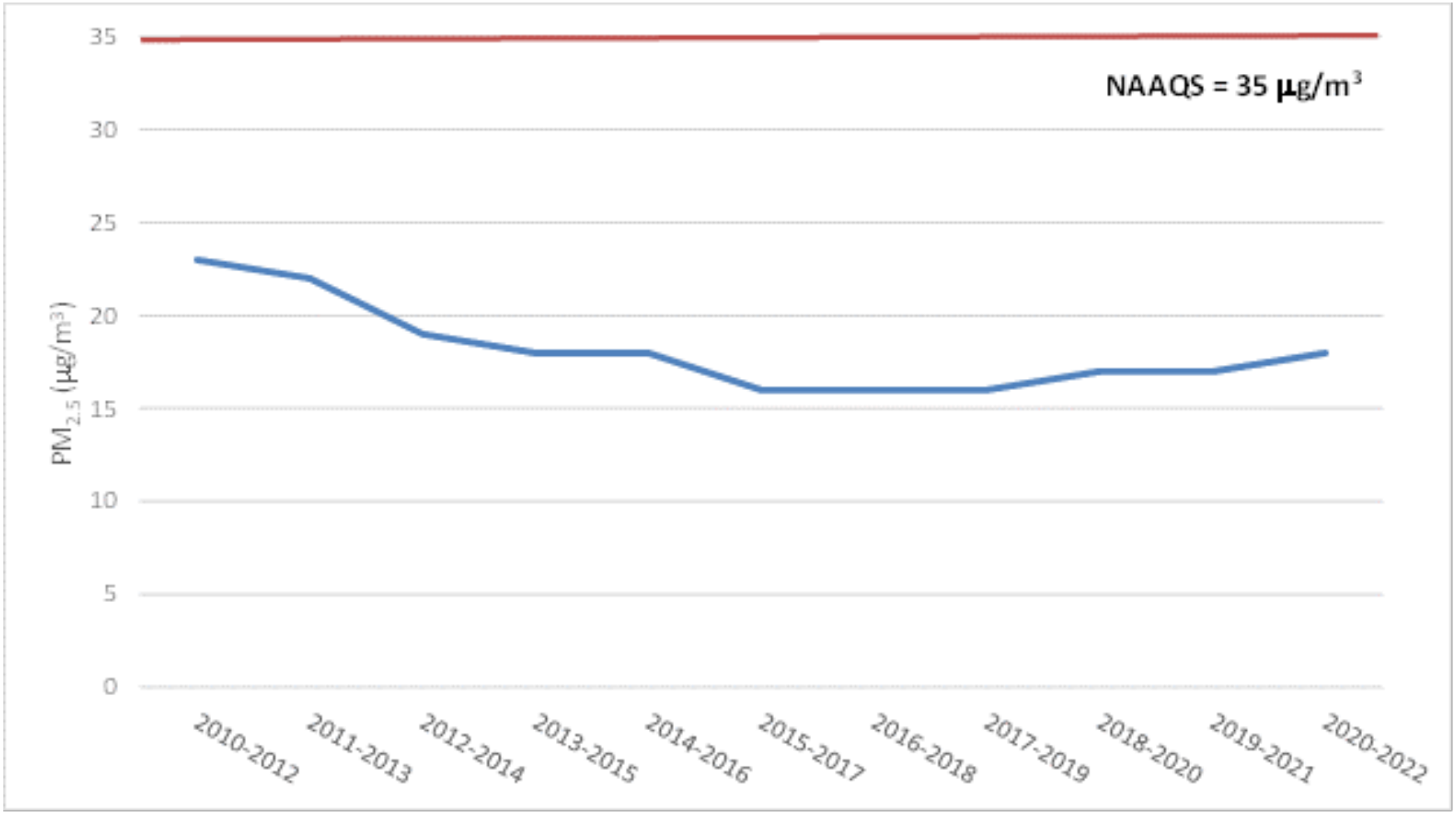
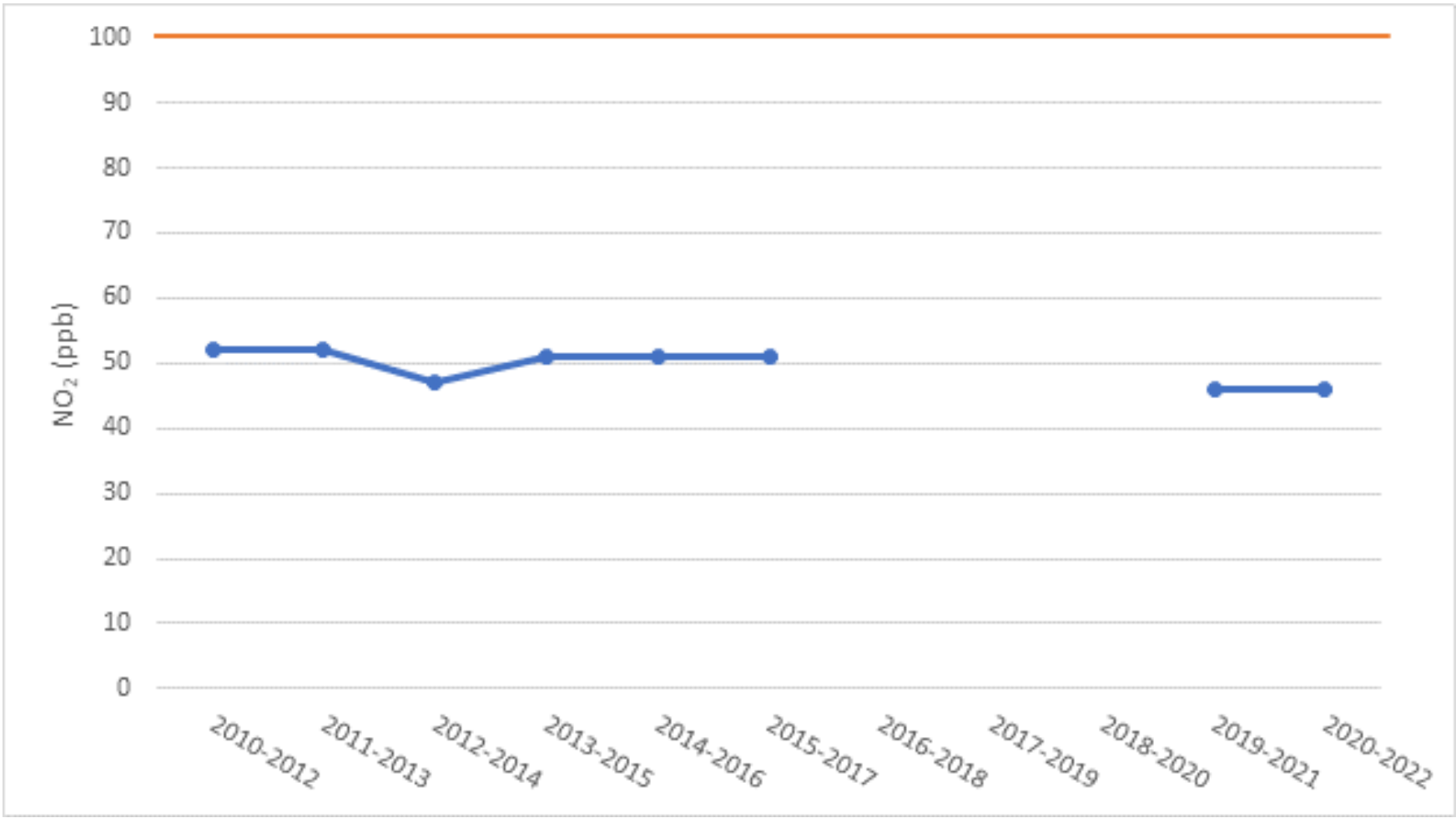


Figure 3-2

Short-term Design Values for Fine Particulate Matter (PM2.5) at the Worcester Monitoring Station. (Source: Air Quality Design Values | US EPA)



Epsilon ASSOCIATES INC.

Figure 3-3

Short-term Design Values for Nitrogen Dioxide (NO2) at the Worcester Monitoring Station. (Source: Air Quality Design Values | US EPA)

3.2 Mesoscale Analysis

An air quality impacts assessment of Project-related vehicle emissions is typically included in MEPA EIR scopes for projects of varying sizes to assess whether EJ communities near the Project Site (i.e., within 1 or 5 miles of the DGA) would be adversely and disproportionately affected. This often includes an estimate of air pollutant emissions at intersections within the EJ community. These estimates have historically been assessed using a mesoscale analysis[8], and have been traditionally limited to estimating NOx and volatile organic compounds for the Existing, No-Build, and Build conditions. This evaluation was originally needed because these air pollutants are precursors to ozone, and Massachusetts was not in compliance with the ozone NAAQS at the time these analyses were developed to ensure compliance. Massachusetts is no longer in violation of the ozone NAAQS. More recently, MEPA has expanded the requirements to include other air pollutants associated with vehicle emissions (e.g., PM).

3.2.1 Methodology

A mesoscale analysis predicts the change in regional ozone precursor emissions, NOx and VOCs due to the Project; this analysis also includes Project-related emissions of $PM_{2.5}$ and diesel particulate matter (DPM)[9]. The analysis includes a comparison of the 2024 Existing condition compared to the 2031 No-Build condition as well as the future 2031 Build condition to the No-Build condition. The methodology and parameters for the mesoscale analysis follow methodology approved by MassDEP. Traffic conditions are described in more detail in Chapter 7.

The EPA has developed an emissions factor model (called MOVES4), which was used to estimate motor vehicle emissions of VOC, NOx, $PM_{2.5}$, DPM and greenhouse gases on the roadway network in the Project area. Average hourly emission estimates were calculated using the vehicle count data provided in the transportation study, mileage between intersections, and county-specific model inputs provided by MassDEP.

A total of 40 roadway links and 17 intersections were included in the mesoscale analysis. Peak hour traffic volumes from the traffic analysis were used to estimate the average daily traffic (ADT) assuming a 10 percent K-Factor.[10] This ADT was then converted into average hourly volumes by dividing by 24. Average speed was assumed based on roadway type (typically 10-40 mph for arterial roads) for all links. Distances for the links were estimated with mapping software. Emissions estimates are in grams per hour and were converted to tons per year assuming a seven-day week for 52 weeks per year.

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[8] Mesoscale analyses are conducted in accordance with the *MassDEP Guidelines for Performing Mesoscale Analysis of Indirect Sources (1991)* and utilize the EPA MOVES model to estimate emissions.

[9] DPM is a subset of $PM_{2,5}$

[10] The K factor is a traffic engineering factor that defines the proportion of the annual average traffic that would occur in 1 hour.

For intersection emissions, idle vehicle emission rates were obtained in MOVES4 by using a standardized roadway link with 1 vehicle and a zero miles per hour vehicle speed. MOVES4 post-processing scripts will produce a mass per hour emission rate for idling vehicles. This method is recommended by EPA to get emission factors for air quality concentration analyses of idling vehicles at intersections (microscale analyses). [11] These emission factors were then used with vehicle counts and delay information from the traffic analyses to estimate vehicle emissions at intersections. Appendix B presents the intersection emissions calculations, and the Project-specific link data input into the MOVES4 program.

3.2.2 Results

Results of the mesoscale analysis are presented in Tables 3-4 and 3-5.

Table 3-4 presents the change in total emissions from the 2024 Existing condition to the 2031 No-Build conditions. Typically, a decrease in total emissions, even with the modest increases in traffic vehicle miles traveled (VMT), is attributable to anticipated improvements in vehicle engine and emissions technologies, which are expected to reduce the per-vehicle emission rates. A 14% decrease in VOC, a 51% decrease in NOx is predicted, a 3% decrease in $PM_{2.5}$ and a 15% decrease in DPM are expected.

Table 3-4 Regional Mesoscale (Indirect) Emissions Analysis Summary (No Build)

2024Exiting vs 2031No-Build	VOC lbs/day	VOC tons/yr	NOx lbs/day	NOx tons/yr	$PM_{2.5}$ lbs/day	$PM_{2.5}$ tons/yr	DPM lbs/day	DPM tons/yr
2024 Existing	36.5	6.7	39.7	7.2	2.237	0.408	1.133	0.207
2031 No-Build	31.4	5.7	19.4	3.5	2.179	0.398	0.961	0.175
Difference	-5.1	-0.9	-20.3	-3.7	-0.057	-0.010	-0.172	-0.031
Difference (%)	-14%	-14%	-51%	-51%	-3%	-3%	-15%	-15%

Table 3-5 compares the Build to the No-Build condition. Compared to the No-Build condition, the 2031 Build condition shows a very small increase in NOx, VOC, $PM_{2.5}$, and DPM emissions from the anticipated increase in vehicle emissions. These increases are 3.5% or less, and less than 0.05 tons per year.

[11] U.S. EPA, 2010. Using MOVES in Project-Level Carbon Monoxide Analyses. EPA-420-B-10-041.

Table 3-5 Regional Mesoscale (Indirect) Emissions Analysis Summary (Build)

2031 No-Build vs 2031 Build	VOC lbs/day	VOC tons/yr	NOx lbs/day	NOx tons/yr	$PM_{2.5}$ lbs/day	$PM_{2.5}$ tons/yr	DPM lbs/day	DPM tons/yr
2031 No-Build	31.38	5.73	19.4	3.54	2.179	0.398	0.961	0.175
2031 Build	31.71	5.79	19.6	3.58	2.226	0.406	0.992	0.181
Difference	0.33	0.06	0.3	0.05	0.046	0.008	0.031	0.006
Difference (%)	1.0%	1.0%	1.4%	1.4%	2.1%	2.1%	3.2%	3.2%

3.2.2.1 Analysis of Diesel Truck Emissions Only

As part of the analysis of the Projects impacts, the Proponent quantified the expected intersection emissions of Project-related diesel trucks. With the proposed expansion, the Project is expected to generate a total of 207 new inbound and outbound truck trips, on an average weekday In order to provide a conservative estimate of these emissions, MOVES4 was used to generate idle emissions factors as described in Section 3.2.1 with the vehicle population adjusted to be made up of single unit short-haul trucks, MOVES source type ID 52, and Combination short-haul trucks, MOVES source type ID 61. These source types are representative of the diesel trucks associated with the Project. These emission factors were then used in combination with the intersection delay times and truck volumes determined by the traffic analysis to calculate the expected idle intersection emissions of Project trucks.

Table 3-6 summarizes the emissions of the trucks associated with the Project at intersections included in the transportation study. The intersections that are located in EJ communities are shown in bold. The analysis shows that the air pollutant emissions at any of the intersections (including in EJ block groups) are minimally increased, with estimates of less than 0.01 tons per year. Truck volumes, pollutant emission factors and delay times can be found in Appendix B.

Table 3-6 Intersection Emissions Analysis for Diesel Trucks Only

Intersection	VOC tons/yr	NOx tons/yr	DPM tons/yr
1: Forest Avenue/Wilkins Street & Main Street	0.0000	0.000	0.0000
2: Glendale Road/Cox Street & Main Street	0.0002	0.001	0.0000
3: Cox Street & Parkhurst Drive	0.0000	0.000	0.0000
4: Lee Circle/Transfer Station & Cox Street	0.0000	0.000	0.0000
5: Pierce Street/Zina Road & Cox Street	0.0000	0.000	0.0000
6: Cox Street & Old Stow Road & Old Bolton Road	0.0000	0.000	0.0000
7: Lincoln Street & Packard Street/Cox Street	0.0000	0.000	0.0000
15: East Main Street & Lincoln Street & Stevens Street	0.0001	0.001	0.0000
16: Lakeside Avenue & Lincoln Street	0.0001	0.001	0.0000
33: Vila do Porto Boulevard/Tower Street & Main Street	0.0002	0.001	0.0000
62: Woodrow Street/Mackin Street & Main Street	0.0000	0.000	0.0000

Table 3-6 Intersection Emissions Analysis for Diesel Trucks Only (Continued)

Intersection	VOC tons/yr	NOx tons/yr	DPM tons/yr
72: Broad Street & South Street	0.0000	0.000	0.0000
Route 62 at Washington Street and Felton Street (Rotary)	0.0000	0.000	0.0000
13: Washington Street & Route 85 Connector/Technology Drive	0.0002	0.001	0.0000
15: South Bolton Street & Granger Boulevard	0.0000	0.000	0.0000
Washington Street at Broad Street Rotary	0.0000	0.000	0.0000
Total	0.00126	0.0080	0.0003

3.2.3 Air Quality Comparison to Similar Massachusetts Projects

Information on emissions of air pollutants is not sufficient to assess air quality impacts because an increase of air pollutant emissions does not necessarily mean that air concentrations will be impacted to the extent that they will exceed concentrations that adversely affect health (i.e., exceed air quality standards that are protective of health). Therefore, to be able to assess air quality impacts, estimates of air pollutant concentrations are needed that can be compared to the health-based air quality standards (i.e., the Federal NAAQS). These air concentrations are estimated using air dispersion models with estimated emissions as inputs to the model. The preferred air dispersion model is EPA's AERMOD model.

Through the MEPA review process, a number of projects have been submitted that include an air quality analysis of vehicle emission impacts using air dispersion modeling to estimate air concentrations of $PM_{2.5}$ and NO_2 at the worst-case intersections in EJ communities within the DGA of different project sites. The results from these analyses have been tabulated below in Table 3-8. Table 3-7 shows the project location, delay, and volume per hour of the worst-case intersection during the highest peak hour of the day along with the corresponding emissions and concentrations for $PM_{2.5}$ and NO_2. The data show that the emission rates are a function of both the vehicle numbers and the intersection delay times. The highest emissions resulted from a project that had both a high hourly peak number of vehicle trips and a long delay time at the intersection, whereas the smallest emissions resulted from a similarly high hourly peak number of vehicle trips but a very short delay time at the intersection.

The data summarized in Table 3-7 can be used to estimate the impact of this Project on the air quality near EJ communities. As shown in Table 3-7, based on the number of vehicles and the delay times, together with emission factors derived from MOVES, the intersection with the highest emissions of $PM_{2.5}$ and NOx was identified as the intersection of Lakeside Avenue & Lincoln Street with a peak AM emissions of 6.77E-05 and 1.96E-04 grams/second for $PM_{2.5}$ and NOx, respectively (with about 40 peak project-related vehicles for hour, and a delay time of 76 seconds). The comparable Project is in Taunton, MA as shown in Table 3-8. At these emission

rates, the expected air concentrations would be less than 0.5 µg/m^3 for $PM_{2.5}$ and less than 1 µg/m^3 for NO_2. Adding the background short-term concentrations for Worcester for $PM_{2.5}$ and NO_2 (Table 3-3), respectively, would result in total future concentrations well-below the NAAQS.

Table 3-7 Worst-Case Intersection Analysis

Intersections (Signalized and *Unsignalized*)	2030 Prj-Gen a.m. Peak		2031 Prj-Gen p.m. Peak		Emission Rate (g/s)[1]			
					$PM_{2.5}$		NOx	
	Veh/Hr	Delay (sec/veh)	Veh/Hr	Delay (sec/veh)	AM	PM	AM	PM
1: Forest Avenue/Wilkins Street & Main Street	16	18.5	8	19.1	6.40E-06	3.30E-06	1.85E-05	9.55E-06
2: Glendale Road/Cox Street & Main Street	72	22.2	28	12.6	3.45E-05	7.62E-06	9.99E-05	2.21E-05
3: Cox Street & Parkhurst Drive	72	0.3	28	0.2	4.67E-07	1.21E-07	1.35E-06	3.50E-07
4: Lee Circle/Transfer Station & Cox Street	90	3	34	1.4	5.84E-06	1.03E-06	1.69E-05	2.98E-06
5: Pierce Street/Zina Road & Cox Street	18	2.4	6	2.2	9.34E-07	2.85E-07	2.70E-06	8.25E-07
6: Cox Street & Old Stow Road & Old Bolton Road	12	14.2	4	15.6	3.68E-06	1.35E-06	1.07E-05	3.90E-06
7: Lincoln Street & Packard Street/Cox Street	12	17.9	4	19.1	4.64E-06	1.65E-06	1.34E-05	4.78E-06
15: East Main Street & Lincoln Street & Stevens Street	6	14.6	2	14.7	1.89E-06	6.35E-07	5.48E-06	1.84E-06
16: Lakeside Avenue & Lincoln Street	41	76.4	2	73.2	6.77E-05	3.16E-06	1.96E-04	9.15E-06
33: Vila do Porto Boulevard/Tower Street & Main Street	56	19.8	22	19.9	2.40E-05	9.46E-06	6.93E-05	2.74E-05
62: Woodrow Street/Mackin Street & Main Street	56	5.4	28	3.5	6.54E-06	2.12E-06	1.89E-05	6.13E-06
72: Broad Street & South Street	33	28.7	12	21.7	2.05E-05	5.63E-06	5.92E-05	1.63E-05
Route 62 at Washington Street and Felton Street (Rotary)	20	37.4	6	31.8	1.62E-05	4.12E-06	4.68E-05	1.19E-05
13: Washington Street & Route 85 Connector/Technology Drive	36	40.7	16	62.5	3.17E-05	**2.16E-05**	9.16E-05	**6.25E-05**
15: South Bolton Street & Granger Boulevard	8	19.7	4	19	3.41E-06	1.64E-06	9.85E-06	4.75E-06
Washington Street at Broad Street Rotary	36	9.2	16	12	7.16E-06	4.15E-06	2.07E-05	1.20E-05

[1] Emission rate is calculated as veh/hr*delay* emission factor (g/s)* 1/3600; Emission factors for NO_2 and $PM_{2.5}$ were obtained from MOVES and are 2.25E-4 and 7.78E-5, respectively

Table 3-8 Air Quality Modeling Results for Local Projects

Project Location	Worst Case Intersection (Future Build)		Idling + Moving Emission Rate (g/s)		Concentration (µg/m^3)	
	Intersection Delay (s/veh)	Project-Generated (veh/hr)	$PM_{2.5}$	NO_2	$PM_{2.5}$	NO_2
Boxboro, MA	70	1295	9.59E-04	1.14E-02	1.3	65
Somerville, MA	403	118	1.95E-04	3.96E-03	0.3	33
Allston, MA	123	225	1.96E-04	2.96E-03	0.2	8.7
Boston, MA	296	108	1.09E-04	2.46E-03	0.06	5.6
Taunton, MA	33	50	2.34E-05	3.65E-04	0.02	0.86
Salem, MA	0.7	1238	2.60E-06	6.33E-05	0.01	0.8

3.4 Conclusions

Based on the results from the air quality analysis, including a comparison with other projects where air modeling was conducted, the Project-related traffic that will travel through EJ communities will result in only minor contributions to overall air pollution levels and will not contribute to any exceedance of the health-based NAAQS. Therefore, any air quality impacts will not result in a disproportionate adverse effect on EJ populations in the Project area.

3.5 Stationary Sources of Air Pollution

Stationary sources of air pollution are typically units that combust fuel. No stationary sources that require air plan approval or ERP certification are planned as part of the Project.

Chapter 4

Public Health

4.0 PUBLIC HEALTH

4.1 Assessment of Public Health Impacts

A comprehensive review of the vulnerable health criteria and information included in the Massachusetts Department of Public Health Environmental Justice Tool to assess public health conditions in the area surrounding the Project site is provided in Chapter 2 of the DIER as part of the EJ analysis. The key vulnerability criteria that are likely to be associated with air quality impacts from traffic or construction activities include heart attacks and asthma. None of the towns in the DGA met the heart attack criterion and the Town of Framingham was the only community in the DGA that met the childhood asthma criterion. Although outdoor air pollution could be a contributing factor, the Proponent's air quality analysis shows that the air quality is easily meeting health-based standards, which are set to protect vulnerable population groups, including people with pre-existing health conditions such as heart disease. The temporary construction impacts will be mitigated as discussed in Section 2.7 of this DEIR and are not anticipated to result in exceedances of the National Ambient Air Quality Standards, in particular in the nearby EJ communities. Air quality is discussed in Chapter 3 of this DEIR.

Chapter 5

Wild, Scenic and Recreational Rivers

5.0 WILD, SCENIC AND RECREATIONAL RIVERS

This Chapter discusses the Project's predicted impacts on nearby Wild and Scenic rivers.

5.1 River Designation

The Assabet River runs from Westborough, Massachusetts, and flows northeast before merging with the Sudbury River at Egg Rock in Concord, Massachusetts, to become the Concord River.

5.2 Project Impacts

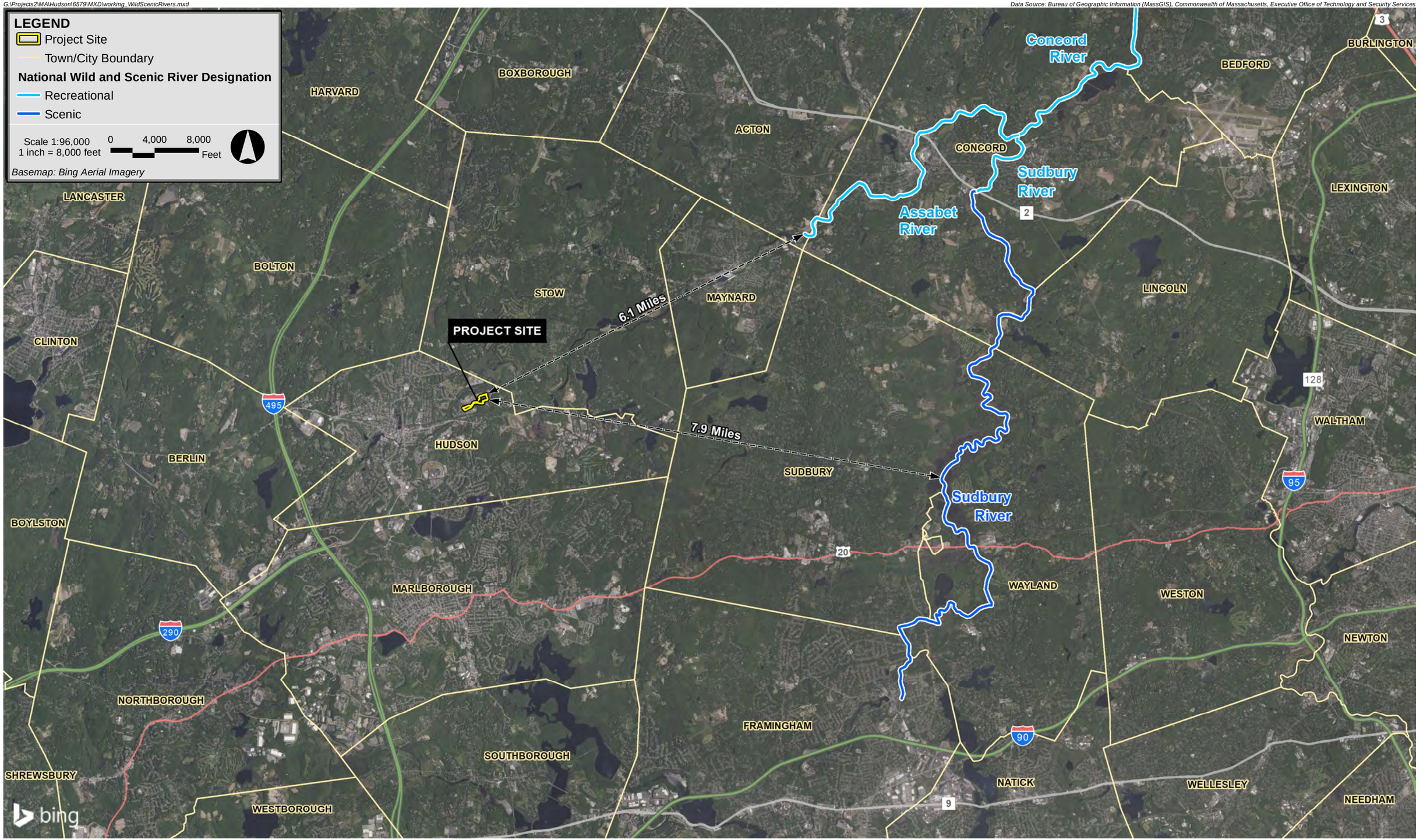
The Project Site is approximately 6.1 miles upstream of the designated Recreational segment of the Assabet River and based on this distance as well as the Proponent's plan to implement a robust stormwater management system, the Project is not expected to have detrimental impacts to the river. The Project's location relative to the designated portion of the Assabet and Sudbury Rivers is shown in Figure 5-1. The stormwater management plan is discussed further in Chapter 9 and Appendix F of this DEIR.

5.3 River Stewardship Council Coordination

The Proponent has reached out to the River Stewardship Council to make the body aware of the Project and solicit feedback on impact mitigation if required. The Council representative shared that the Project should work to adequately manage stormwater on the Site to prevent detrimental impacts to the river. The Proponent will continue to communicate with the Council including providing this DEIR for their review.

G:\Projects2\MA\Hudson\6579\MXD\working_WildScenicRivers.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Hudson Waste Transfer Station **Hudson, Massachusetts**

Epsilon Associates Inc.

Figure 5-1

National Wild and Scenic River Location

Chapter 6

Wetlands and Water Resources

6.0 WETLAND AND WATER RESOURCES

6.1 Introduction

Epsilon Associates, Inc. was retained to provide Wetland Resource Area Delineation on the property of the Hudson Department of Public Works for B-P Trucking in Hudson, Massachusetts (the "Study Area"). This chapter describes the wetland resource areas delineated by Epsilon within the Study Area on January 18 and 22, 2023. Please refer to the locus maps in this chapter and Site photographs in Appendix C for additional information.

6.2 Existing Site Conditions

The Study Area encompasses discrete areas of the approximately 72-acre Town-owned parcel on which the existing transfer station is located, and the new transfer station and recycling facility is proposed, inclusive of areas along the Assabet River in the northeastern portion of the property. In addition to the existing transfer station, the parcel is also the location of several other municipal facilities, including a fire department, combined police department and public works facility, and wastewater treatment facility (refer to Figures 6-1 and 6-2). The existing transfer station has a dedicated access road, located at 300 Cox Street, whereas the remaining municipal operations are accessible via Municipal Drive, located approximately 300 feet north of the transfer station entrance. Topography is generally flat across the parcel. The Assabet River flows easterly along the northern boundary of the parcel (see Figure 6-3).

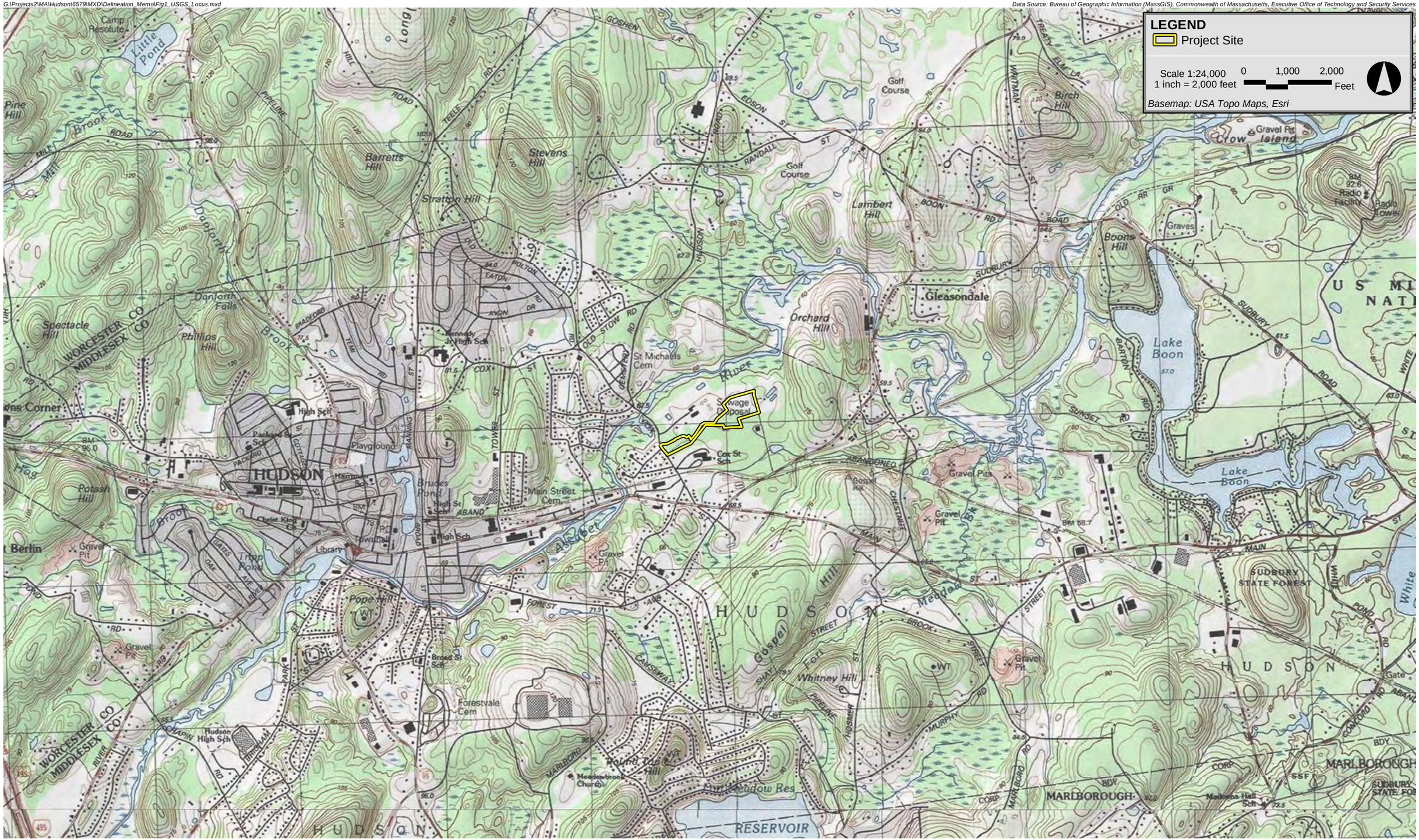
According to the Federal Emergency Management Agency – Flood insurance Rate Map (FEMA-FIRM) (community panel number 25017C0343F effective 6/04/2010), the northern portion of the Study Area is located within an area of mapped 100-year floodplain, Zone AE, elevations 195 and 196 feet NAVD 88 (see Figure 6-4). The 100-year floodplain is regulated as Bordering Land Subject to Flooding under the Act. The floodway extends along the northern boundary. Zone X extends through a portion of the southern portion of the Study Area, associated with Bordering Vegetated Wetlands (BVW) wetland series B described below.

According to the NRCS Web Soil Survey, the majority of the Study Area is mapped as Udorthents, wet substratum along with Merrimac fine sand, Deerfield loamy fine sand, and Hinckley loamy sand. Mapped hydric soil present along the river includes Freetown Muck.

No portion of the Study Area is located within areas of mapped Priority Habitat of Rare Species and/or Estimated Habitat of Rare Wildlife by the Natural Heritage and Endangered Species Program (NHESP) under the Massachusetts Endangered Species Act and Massachusetts Wetlands Protection Act, respectively (Natural Heritage Atlas, 2021).

G:\Projects2\MA\Hudson\6579\MXD\Delineation_Memo\Fig1_USGS_Locus.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Hudson Waste Transfer Station **Hudson, Massachusetts**

Epsilon Associates Inc.

Figure 6-1
USGS Locus

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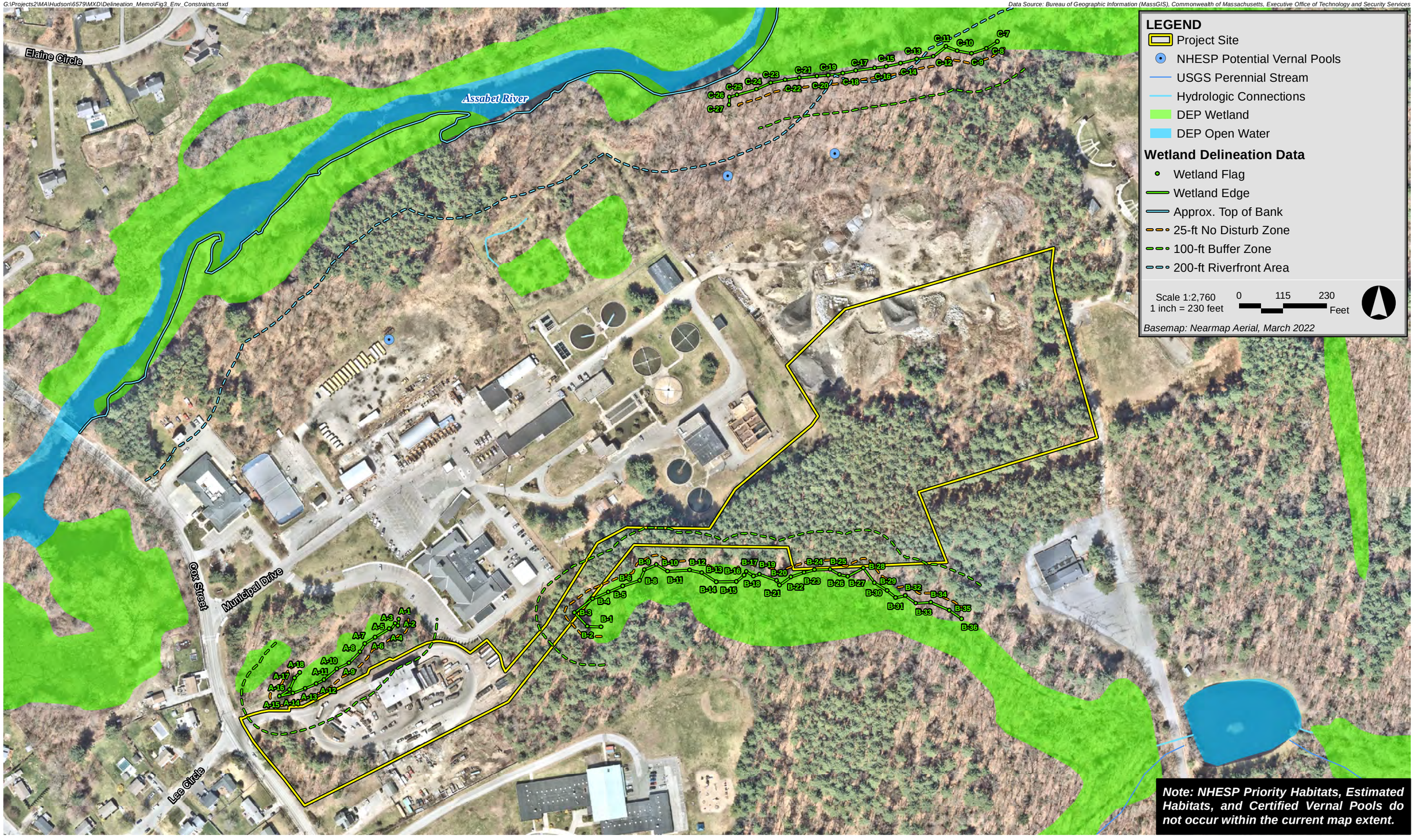
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Hudson Waste Transfer Station **Hudson, Massachusetts**

Epsilon Associates Inc.

Figure 6-2
Aerial Locus



Hudson Waste Transfer Station **Hudson, Massachusetts**

Epsilon Associates Inc.

Figure 6-3
Environmental Constraints

G:\Projects2\MA\Hudson\6579\MXD\Delineation_Memo\Fig4_FEMA_FIRM.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0343F

FIRM

FLOOD INSURANCE RATE MAP

MIDDLESEX COUNTY, MASSACHUSETTS (ALL JURISDICTIONS)

PANEL 343 OF 656

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

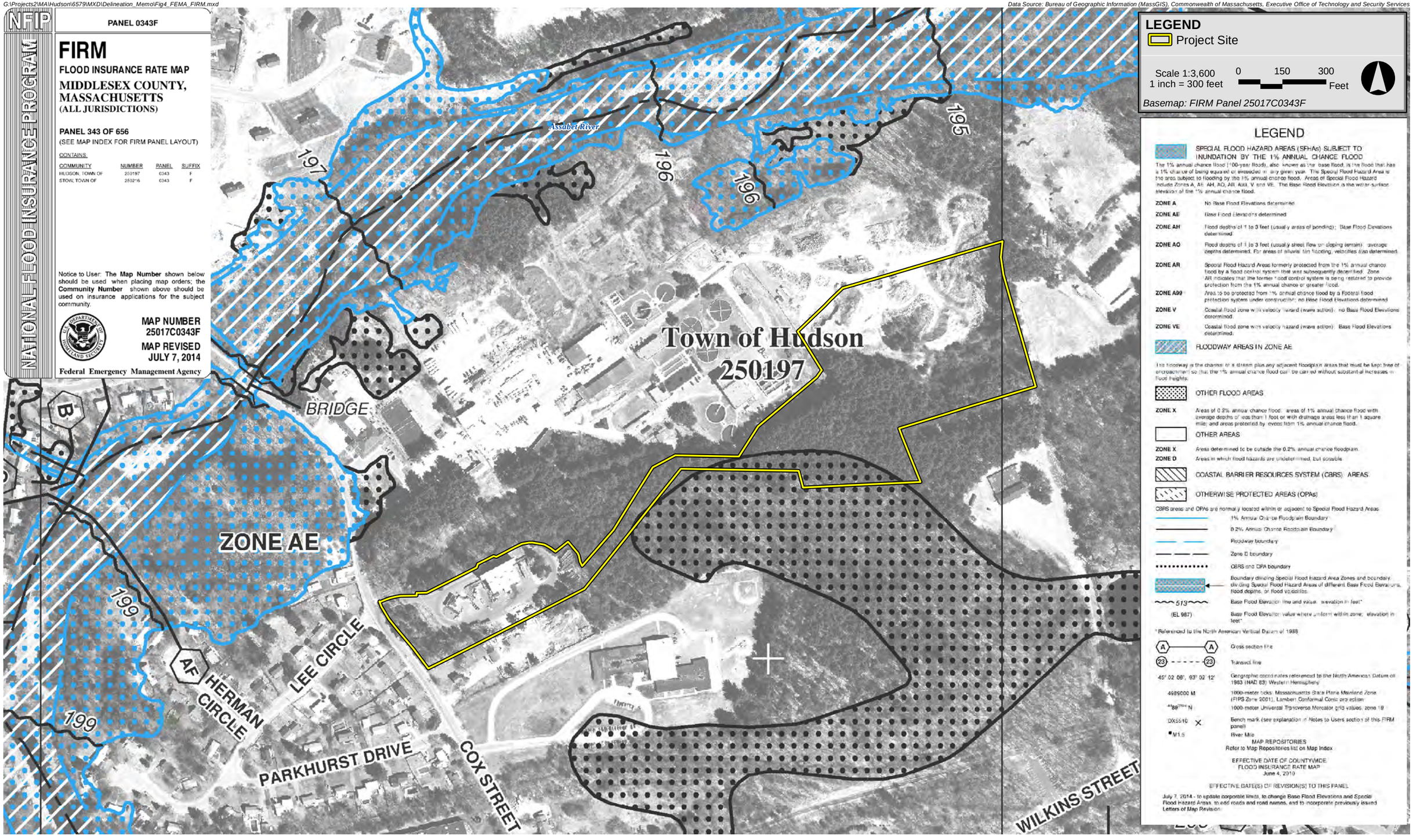
COMMUNITY	NUMBER	PANEL	SUFFIX
HUDSON, TOWN OF	250197	0343	F
STOW, TOWN OF	250216	0343	F

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 25017C0343F

MAP REVISED JULY 7, 2014

Federal Emergency Management Agency



LEGEND

Project Site

Scale 1:3,600
1 inch = 300 feet

0 150 300 Feet

Basemap: FIRM Panel 25017C0343F

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 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.

1% Annual Chance Floodplain Boundary

0.2% Annual Chance Floodplain Boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.

513 Base Flood Elevation line and value; elevation in feet*

(EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A A Cross section line

23 23 Transect line

45° 02' 08", 93° 02' 12" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere

4989000 M 1000-meter ticks: Massachusetts State Plane Mainland Zone (FIPS Zone 2001), Lambert Conformal Conic projection

1000-meter Universal Transverse Mercator grid values, zone 19

DX5510 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
June 4, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

July 7, 2014 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to add roads and road names, and to incorporate previously issued Letters of Map Revision

6.3 Wetland Delineation Methodology

As noted above, wetland resource areas within the Study Area were delineated by Epsilon on January 18 and 22, 2023. Vegetated Wetlands were delineated in accordance with the U.S Army Corps of Engineers Wetland Delineation Manual (USACE, 1987) the "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northeast Region, Version 2.0 (2012), the Massachusetts Wetland Protection Act and implementing regulations (310 CMR 10.00), and the Massachusetts Department of Environmental Protection's handbook, Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act (MADEP, 1995). The state and federal delineation methodologies generally prescribe a multi-parameter approach, where hydrophytic vegetation and hydrology (including hydric soils) are reviewed in conjunction with one another when delineating a wetland edge. The boundaries of the wetland resource areas were delineated in the field by tying brightly colored survey ribbons to woody vegetation or other relatively permanent vegetation/structures. Colored ribbons were placed sufficiently close together to clearly identify wetland/resource area edges and to allow survey crews to see adjacent flags from one another. Flags were labeled successively using alpha numeric identifiers.

6.4 Findings

Three Bordering Vegetated Wetland ("BVW") series were delineated. Each delineated resource area is described in more detail below. Other resource areas identified within the study area included the Bordering Land Subject to Flooding and 200-food Riverfront Area associated with the Assabet River. There is a 100-foot Buffer Zone associated with each BVW series. Additionally, the Town of Hudson has a 25-foot zone No Disturb Policy and a pending Wetlands Protection Bylaw (Article XII)[1] which formalizes the No Disturb Policy into a requirement.

Site photographs depicting the Study Area and each wetland resource area, along with wetland determination forms are included in Appendix C.

6.4.1 BVW Series A (flags WF-A.1 through WF-A.18)

This series delineates a portion of a BVW located in the southwestern portion of the Study Area. This wetland is located north of the existing transfer station, west southwest of the Hudson Police/DPW Facility, and east of Cox Street. The wetland is fed primarily by stormwater and drains via intermittent stream to the west side of Cox Street into an emergent marsh.

Dominant wetland vegetation included: red maple (*Acer rubrum*), silky dogwood (*Swida amomum*), American elm (*Ulmus americana*), winterberry (*Ilex verticillata*), arrowwood (*Viburnum dentatum*) and cinnamon fern (*Osmunda cinnamomea*). Standing water was present at the time of delineation.

[1] The Wetlands Protection Bylaw was approved at Hudson Town Meeting on October 25, 2023 and is currently waiting signature by the Massachusetts' Attorney General's office.

6.4.2 BVW Series B (flags WF-B1 through WF-B36)

This series delineates the western and northern boundaries of a forested BVW located in the southeastern portion of the Study Area. This wetland is located north-northwest of Mulready Elementary School, west of Riverside Gun Club, and southeast of Municipal Drive. This wetland borders an intermittent stream located off-site to the east and contains pockets of standing water along with pit-mound topography.

Dominant wetland vegetation included: red maple, silky dogwood, winterberry, highbush blueberry (*Vaccinium corymbosum*), glossy buckthorn (*Frangula alnus*) and cinnamon fern.

6.4.3 BVW Series C (flags WF-C1 through WF-C27)

This series delineates the southern boundary of a wetland directly bordering the Assabet River. This wetland is located in the northeastern part of the study area and extends to the eastern parcel limits.

Dominant wetland vegetation included: American Elm, red maple, swamp white oak (*Quercus bicolor*) highbush blueberry, silky dogwood, glossy buckthorn, speckled alder (*Alnus incana*), and sensitive fern (*Onoclea sensibilis*).

6.5 Extent of Work

The Project's proposed Limit of Work is not expected to traverse these delineated boundaries. No work is proposed within vegetated wetlands, however, a limited amount of work will occur within the 100-foot buffer zone thereto, specifically the buffer zone of the BVW located in the southeastern portion of the Study Area ("B" series delineation). The locations of permanent alterations to buffer zone area are shown on the Wetland Buffer Zone Work Area Plan (Figure 6-5). These areas are associated with the access road, residential drop off area, and infiltration basins #2 and #3. Permanent alterations include areas where pavement and/or a permanent grade change will occur within the defined buffer zones. Temporary impacts include short-term construction-related activities associated with material storage, installation of erosion and sedimentation controls, and similar activities. The approximate square footage of total work proposed in the buffer zone areas broken down into permanent versus temporary alteration, is summarized in Table 6-1.

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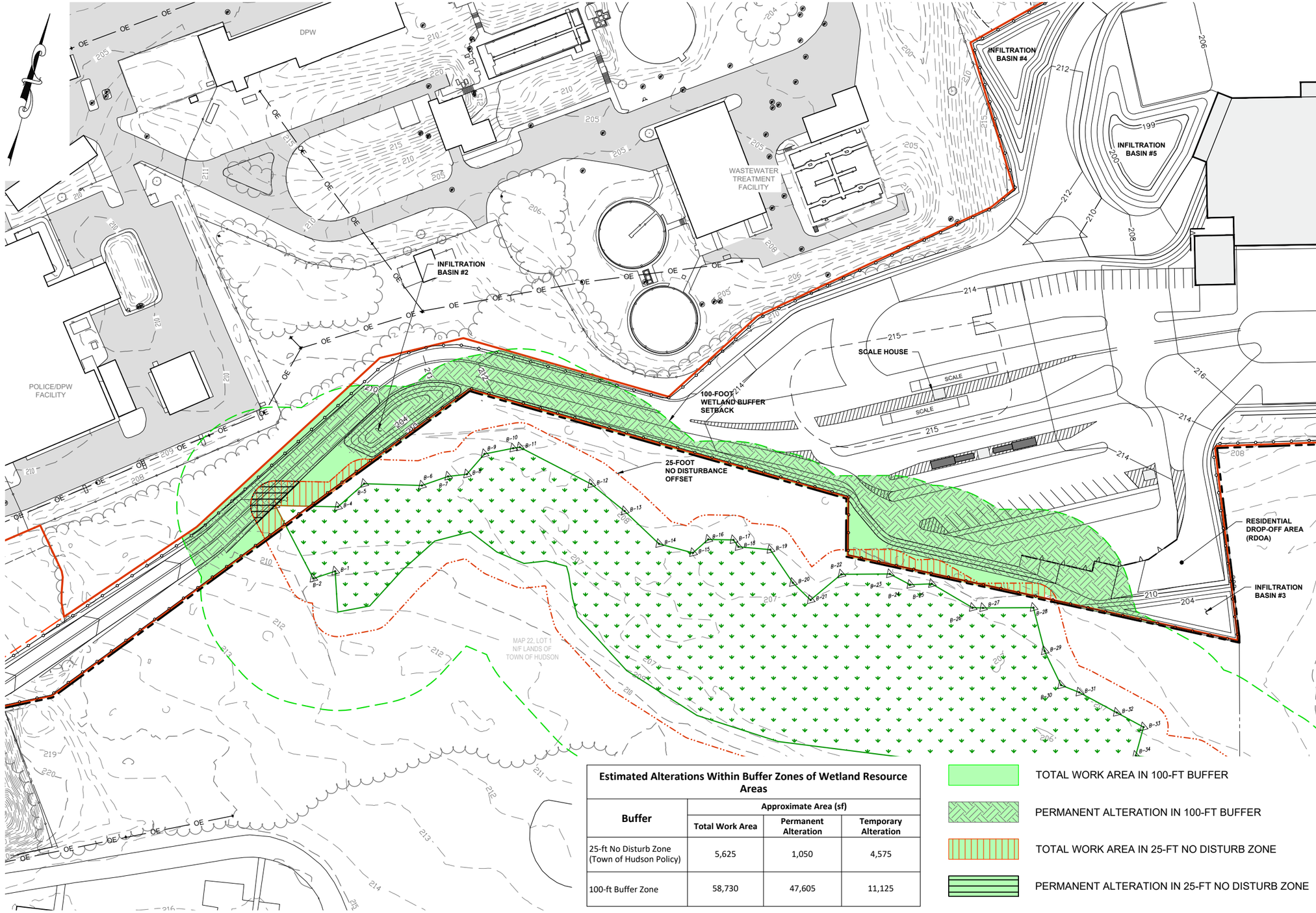

NOTES:

1. TOPOGRAPHY, EXISTING SITE FEATURES AND PROPERTY LINE SURVEY WERE PROVIDED TO SANBORN HEAD BY CONTROL POINT ASSOCIATES, INC. (CONTROL POINT) OF SOUTHBOROUGH, MA IN AN ELECTRONIC FILE TITLED "03-180244-01 - BTU REV 1 (ISSUED 2023-03-17).dwg". ELECTRONIC FILE DEPICTS INFORMATION SHOWN ON DRAWINGS TITLED "BOUNDARY & TOPOGRAPHIC SURVEY", SHEETS 1 THOUGH 8, DATED MARCH 17, 2023 PREPARED BY CONTROL POINT OF SOUTHBOROUGH, MA FOR SANBORN HEAD.
2. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON THE FOLLOWING:
   A. AERIAL IMAGERY, DATED APRIL 21, 2018, PROVIDED BY EASTERN TOPOGRAPHICS OF WOLFBORO NEW HAMPSHIRE, AND AN ON-THE-GROUND FIELD SURVEY BY CONTROL POINT BETWEEN OCTOBER 11, 2018 AND OCTOBER 22, 2018; AND
   B. PLANIMETRIC AND TOPOGRAPHIC FEATURES COMPILED BY CONTROL POINT USING PHOTOGRAMMETRIC METHODS FROM UAV PHOTOGRAPHY AND AN ON-THE-GROUND FIELD SURVEY BY CONTROL POINT ON JANUARY 3, 2023.
3. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). HORIZONTAL DATUM IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), MASSACHUSETTS STATE PLANE COORDINATE SYSTEM.
4. WETLAND INFORMATION WAS OBTAINED FROM MassGIS, EXCEPT IN THOSE AREAS SHOWN ON THE PLAN AS FOLLOWS:

THE ABOVE LINE TYPE DESIGNATES THE LIMITS OF AN ON-THE-GROUND WETLAND DELINEATION PERFORMED BY EPSILON ASSOCIATES ON JANUARY 18 AND 22, 2023 AND FIELD LOCATED BY CONTROL POINT ON JANUARY 30, 2023.

LEGEND:

- 210 — EXISTING 5-FOOT CONTOUR
- EXISTING 1-FOOT CONTOUR
- 210 — PROPOSED 10-FOOT CONTOUR
- PROPOSED 2-FOOT CONTOUR
- PROJECT SITE AREA
- SITE PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- WETLAND AREA (SEE NOTE 4)
- WETLAND BOUNDARY (MASSGIS)
- SURVEYED WETLAND BOUNDARY (JAN 2023)
- 100-FOOT WETLAND BUFFER SETBACK
- 25-FOOT NO DISTURBANCE SETBACK
- PROPOSED CHAIN LINK FENCE

Estimated Alterations Within Buffer Zones of Wetland Resource Areas

Buffer	Approximate Area (sf)		
	Total Work Area	Permanent Alteration	Temporary Alteration
25-ft No Disturb Zone (Town of Hudson Policy)	5,625	1,050	4,575
100-ft Buffer Zone	58,730	47,605	11,125

- TOTAL WORK AREA IN 100-FT BUFFER
- PERMANENT ALTERATION IN 100-FT BUFFER
- TOTAL WORK AREA IN 25-FT NO DISTURB ZONE
- PERMANENT ALTERATION IN 25-FT NO DISTURB ZONE

SANBORN HEAD

GRAPHICAL SCALE
50' 25' 0' 50' 100'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: A. WILKER
DESIGNED BY: S. WRIGHT
REVIEWED BY: S. WRIGHT
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: MARCH 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

WETLAND BUFFER ZONE WORK AREA PLAN

PROJECT NUMBER: 3984.01

FIGURE NUMBER: 6-5

IMAGES: P:\3900s\3984.01\Graphics\Figures\Fig6-5_WetlandBufferZone.jpg
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USER: mlh
PLOT DATE: 3-22-24 2:17 PM

Table 6-1 Onsite Alterations Within Buffer Zones to Wetland Resource Areas

Buffer	Location	Approximate Area (sf)		
		Total Work Area	Permanent Alteration	Temporary Alteration
25-ft No Disturb Zone (Town of Hudson Policy)	Buffer to BVW "B" (see Figure 6-5)	5,625	1,050	4,575
100-ft Buffer Zone	Buffer to BVW "B" (see Figure 6-5)	58,730	47,605	11,125

6.6 Avoidance, Minimization, and Mitigation Measures

6.6.1 Avoidance and Minimization Measures

In areas where the proposed project is located near a wetland resource area (the "B" series delineation), the layout was adjusted and refined as necessary to avoid direct impact to the resource area and to minimize, to the greatest extent practicable, any disturbance within 25 feet of the resource area, all as shown on Figure 6-5.

6.6.2 Mitigation Measures

The Project will incorporate sedimentation and erosion controls into design and construction practices. The Project will comply with the requirements of the 2022 EPA NPDES Construction General Permit, which includes the development of a Stormwater Pollution Prevention Plan (SWPPP). Please also see discussion in Section 9.4 regarding Post-Construction Stormwater Management.

During construction, erosion control mitigation measures may include but are not limited to perimeter controls, sediment track-out, dust control, and storm drain inlet protection. If appropriate for the Project, the contractor will be required to prepare a dewatering plan which will be reviewed and approved. All soil stockpiles will be located outside of any natural buffers and away from existing and proposed catch basins and area drains.

Erosion and sedimentation will be controlled by encircling all work with sedimentation barriers and protecting all infiltration systems and stormwater structures before commencement of any construction. Sediment control measures will be adjusted to meet field conditions at the time of and during all phases of construction. The measures will be constructed prior to and immediately after grading or disturbance of surface material on the Project site. Periodic inspection and maintenance of all sediment control structures will also be provided.

The contractor will be responsible for preventing sediments from entering any storm drainage system and from being conveyed to wetland resource areas, public ways, abutting properties or outside the Project's limits.

Permanent erosion control will be primarily accomplished by land grading and permanent vegetation cover. The Project site is not subject to flooding or ponding. The proposed surface drainage system will be upgraded to reduce runoff off-site.

Disturbed areas will be kept to a minimum and will be stabilized within 14 days after construction activities have temporarily or permanently stopped on any portion of the site. Stabilization of disturbed areas will be achieved by paving, permanent seeding, mulching (blown hay or woodchips), landscaping, or an acceptable equivalent alternative. Rip rap or other velocity reducing measures will be used where necessary to control erosion as needed during construction. Temporary stabilization may also be provided through temporary seeding during the growing season and chopped hay and/or tackifier during non-the growing season if needed to aid in erosion control.

Chapter 7

Transportation

7.0 TRANSPORTATION

7.1 Introduction

Vanasse & Associates, Inc. (VAI) has prepared this Transportation Impact Assessment (TIA) in order to identify the traffic impacts associated with the expansion of the existing transfer station facility located at 300 Cox Street in Hudson, Massachusetts. The expansion consists of constructing a new, larger transfer station and recycling facility that will be located further into the interior of the 72-acre site. This report identifies and analyzes existing and future traffic conditions both with and without the Project and reviews access requirements, potential offsite improvements, and safety considerations. A proposed conditions site plan is provided in Chapter 1 (Figure 1-4).

7.1.1 Study Methodology

This study was prepared in accordance with the Massachusetts Department of Transportation (MassDOT)'s *Transportation Impact Assessment (TIA) Guidelines* and the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports and was conducted in three distinct stages.

The first stage involved an assessment of existing conditions in the study area and included an inventory of roadway geometrics; pedestrian and bicycle facilities; on-street parking; public transportation services; and a review of available traffic count data for the study area.

In the second stage of the study, future traffic conditions were projected and analyzed. Specific travel demand forecasts for the Project were assessed along with future traffic demands due to expected traffic growth independent of the Project. A seven-year time horizon was selected for analyses consistent with MassDOT's *Transportation Impact Assessment (TIA) Guidelines*. The traffic analysis conducted in stage two identifies existing or projected future roadway capacity, traffic safety, and site access issues.

The third stage of the study presents and evaluates measures to address traffic and safety issues, if any, identified in stage two of the study.

7.2 Existing Conditions

A comprehensive field inventory of existing conditions within the study area was conducted in January 2023 and updated in December 2023 and March 2024. The field investigation consisted of an inventory of existing roadway geometrics; traffic volumes; operating characteristics; as well as posted speed limits, sight distance, and land use information within the study area. The study area for the Project contains the major roadway which provides access to the Project, as well as the intersections which are expected to accommodate the majority of Project-related traffic. The study area is listed below and graphically depicted on Figure 7-1.

Town of Hudson

1. *Cox Street at Old Bolton Road*
2. *Cox Street at Zina Road/Pierce Street*
3. *Cox Street at Lee Circle/transfer station driveway*
4. *Cox Street at Parkhurst Drive*
5. *Main Street at Forest Avenue/Wilkins Street (Route 62)*
6. *Main Street at Cox Street/Glendale Road*
7. *Main Street at Mackin Street/Woodrow Street*
8. *Main Street at Tower Road/Vila Do Porto Boulevard*
9. *Broad Street at Vila Do Porto Boulevard/South Street*
10. *Main Street at Washington Street (downtown rotary)*
11. *Lincoln Street (Route 85) at Packard Street/Cox Street*
12. *Broad Street at Washington Street (Route 85)*
13. *Washington Street (Route 85) at Route 85C/Technology Drive*

City of Marlborough

14. *East Main Street (Route 20) at Stevens Street and Lincoln Street*
15. *Granger Boulevard (Route 20) at South Bolton Street (Route 85)*
16. *Lakeside Avenue (Route 20) at Lincoln Street*

Legend:

- Ⓢ Signalized Intersection
- Ⓤ Unsignalized Intersection
- Ⓡ Roundabout

Source: Google Earth.

0 1750 3500 Scale in Feet

Figure 7-1

Site Location and Study Area Map

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Town of Hudson

1. Cox Street at Old Bolton Road
2. Cox Street at Zina Road/Pierce Street
3. Cox Street at Lee Circle/transfer station driveway
4. Cox Street at Parkhurst Drive
5. Main Street at Forest Avenue/Wilkins Street (Route 62)
6. Main Street at Cox Street/Glendale Road
7. Main Street at Mackin Street/Woodrow Street
8. Main Street at Tower Road/Vila Do Porto Boulevard
9. Broad Street at Vila Do Porto Boulevard/South Street
10. Main Street at Washington Street (downtown rotary)
11. Lincoln Street (Route 85) at Packard Street/Cox Street
12. Broad Street at Washington Street (Route 85)
13. Washington Street (Route 85) at Route 85C/Technology Drive

City of Marlborough

14. East Main Street (Route 20) at Stevens Street and Lincoln Street
15. Granger Boulevard (Route 20) at South Bolton Street (Route 85)
16. Lakeside Avenue (Route 20) at Lincoln Street

The following describes the study area roadway which provides access/egress to the Project.

7.2.1 Geometry

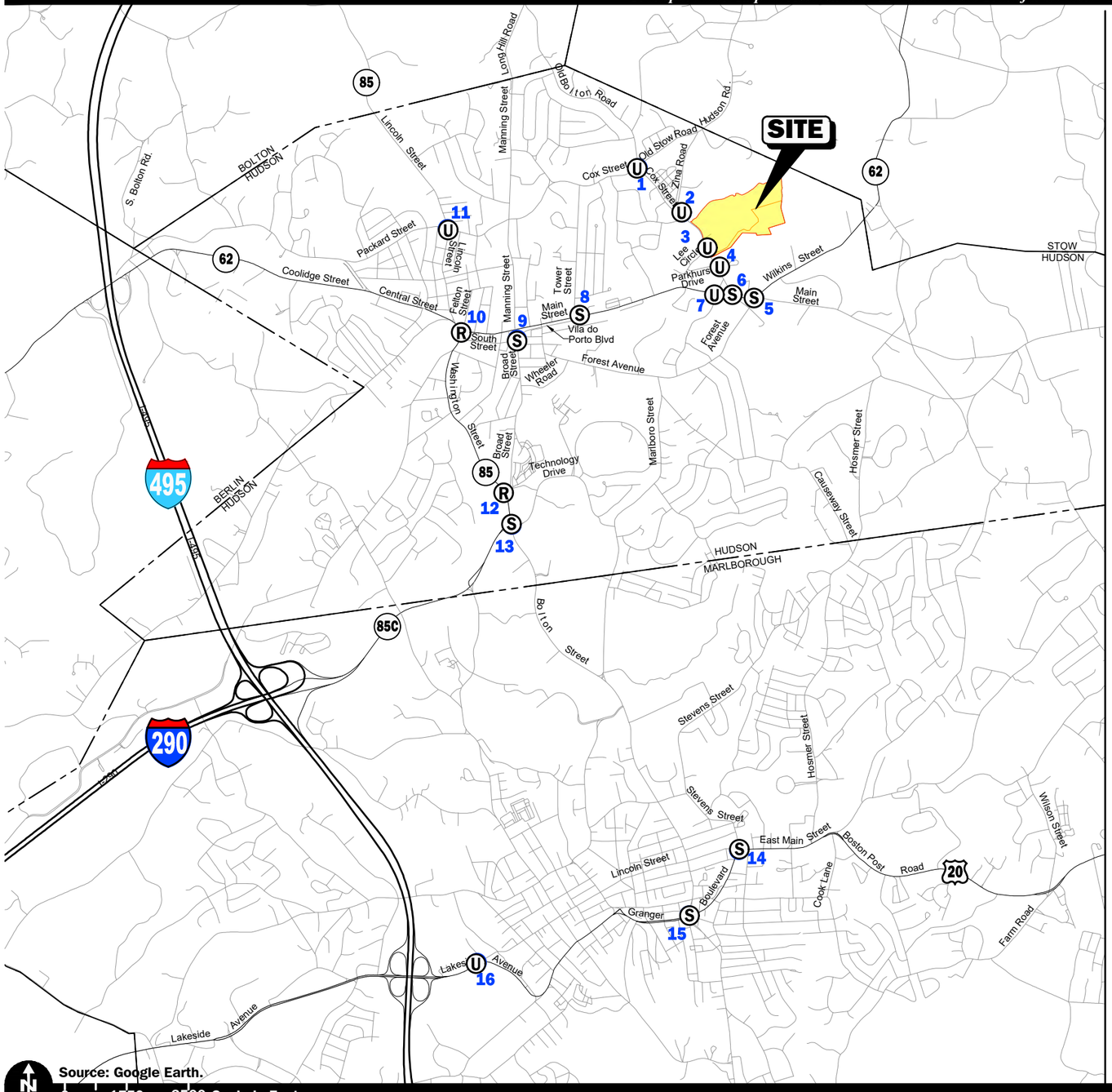
7.2.1.1 Roadway

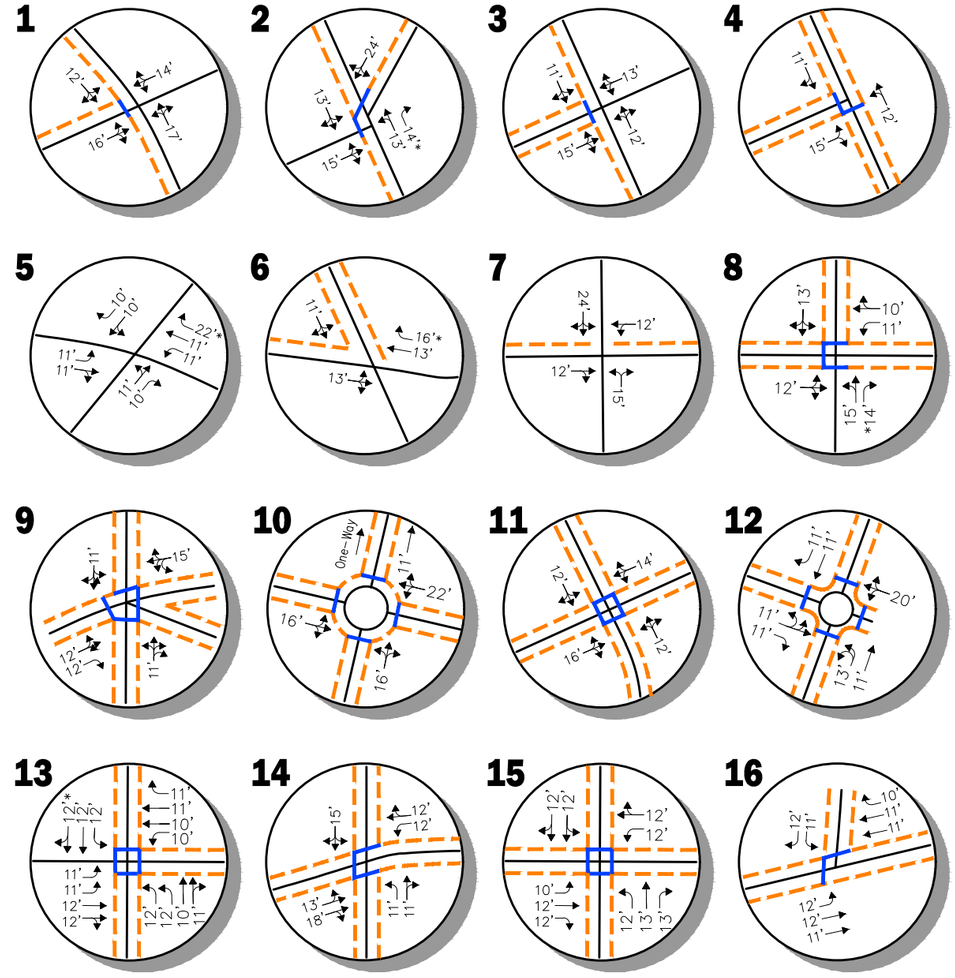
Cox Street

Cox Street is classified as an urban major collector roadway under the jurisdiction of the Town of Hudson. Cox Street runs in a general north-to-south alignment until the Old Stow Road at Old Bolton Road intersection where Cox Street runs in a general east-to-west alignment throughout the study area. Cox Street provides one general-purpose travel lane in each direction separated by a double-yellow centerline with exclusive turn lanes provided at some intersections. The land uses along Cox Street throughout the study area predominantly feature residential properties, as well as the Hudson Fire Department, the Hudson Police Department, and an elementary school.

7.2.1.2 Intersections

Figure 7-2 summarizes existing lane use, travel lane widths, and sidewalk and crosswalk locations at the study area intersections.





Legend:

- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Sidewalk
- Crosswalk
- XX' Lane Use and Travel Lane Width
- *XX' Channelized Right-Turn Lane

Source: Google Earth.

0 1750 3500 Scale in Feet

Figure 7-2

Existing Intersection Lane Use, Travel Lane Width, and Pedestrian Facilities

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7.2.2 Existing Traffic Volumes

In order to establish existing baseline traffic-volume conditions within the study area, historical data was obtained, including manual turning movement counts (TMCs) and automatic traffic recorder (ATR) counts conducted in May 2022, January, March, and September 2023. For study intersections where data was not available, new counts were collected in December 2023 and March 2024. The TMCs were conducted during the weekday morning (7:00 to 9:00 AM) and weekday afternoon (4:00 to 6:00 PM) peak periods. These times were chosen to account for the presence of school-related vehicle and pedestrian traffic, and also represent the peak periods for adjacent road traffic. The TMCs included counts of pedestrian and bicycle volumes and were performed while schools were in regular session. The ATR data was collected over a 24-hour period from May 25 to May 26, 2022. The corresponding traffic count details are provided in Attachments 2 and 3 of Appendix D.

7.2.2.1 Traffic-Volume Adjustments

In order to develop existing baseline traffic conditions, MassDOT weekday seasonal factors for Urban Groups 4-7 (major and minor collectors and local roads and streets, the functional classifications of the majority of the study area roadways) were reviewed.[1] Based on a review of this data, it was determined that traffic volumes for January and December are 1 and 4 percent *below* the average-month conditions, respectively. In contrast, traffic volumes for March and May are *above* the average-month conditions. In line with MassDOT guidelines and to ensure a representation of average-month conditions, an upward adjustment of 1 and 4 percent was applied to the January and December traffic volumes, respectively. The traffic volumes for March and May were found to be consistent with average conditions and did not require any adjustments.

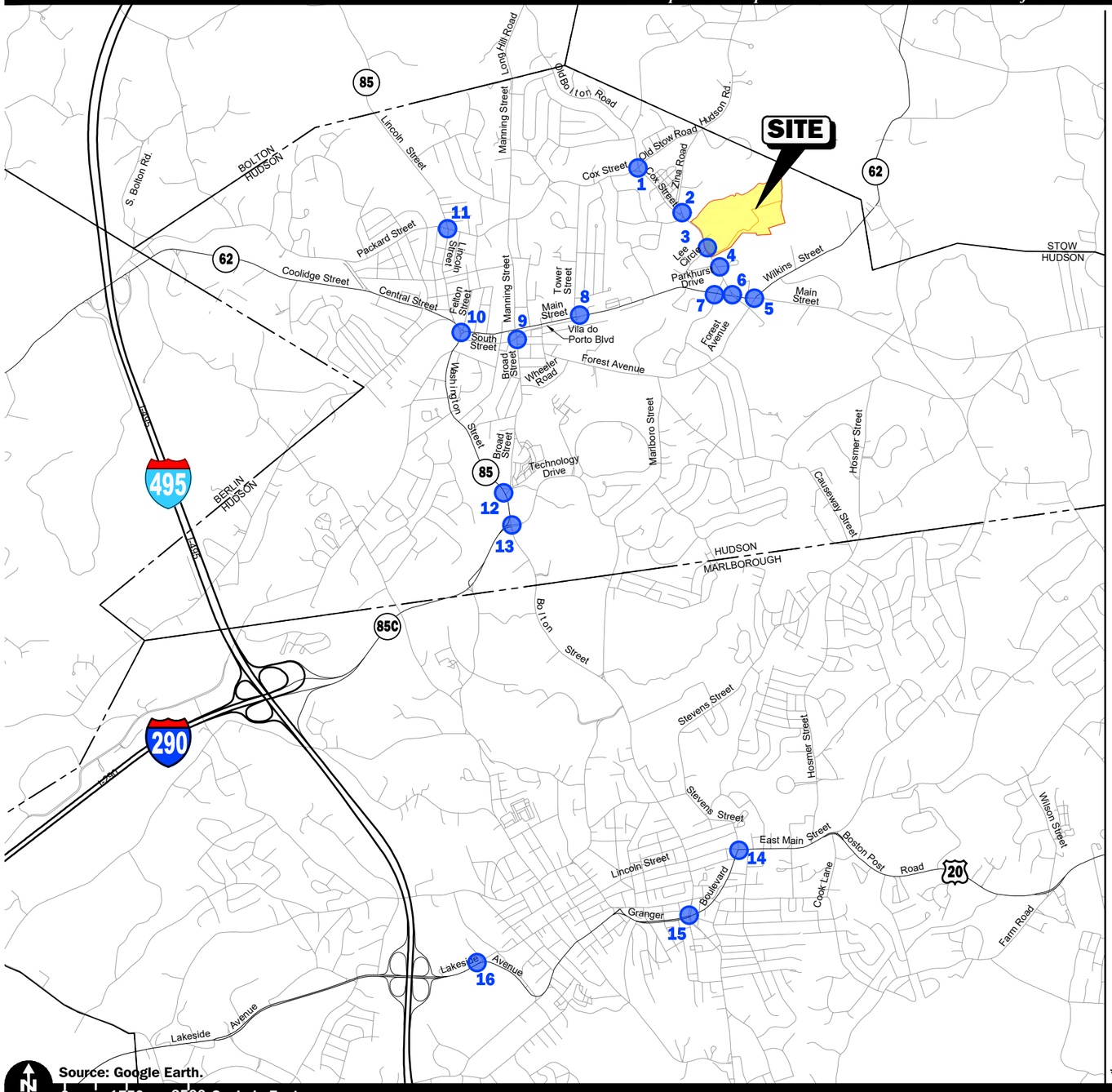
MassDOT no longer requires pandemic-related adjustment of traffic counts performed after March 2022 except in locations where the predominant land use consists of offices or similar uses.[2] Given that the predominant land use within the study area is residential, no further adjustment (beyond the seasonal adjustment) is necessary.

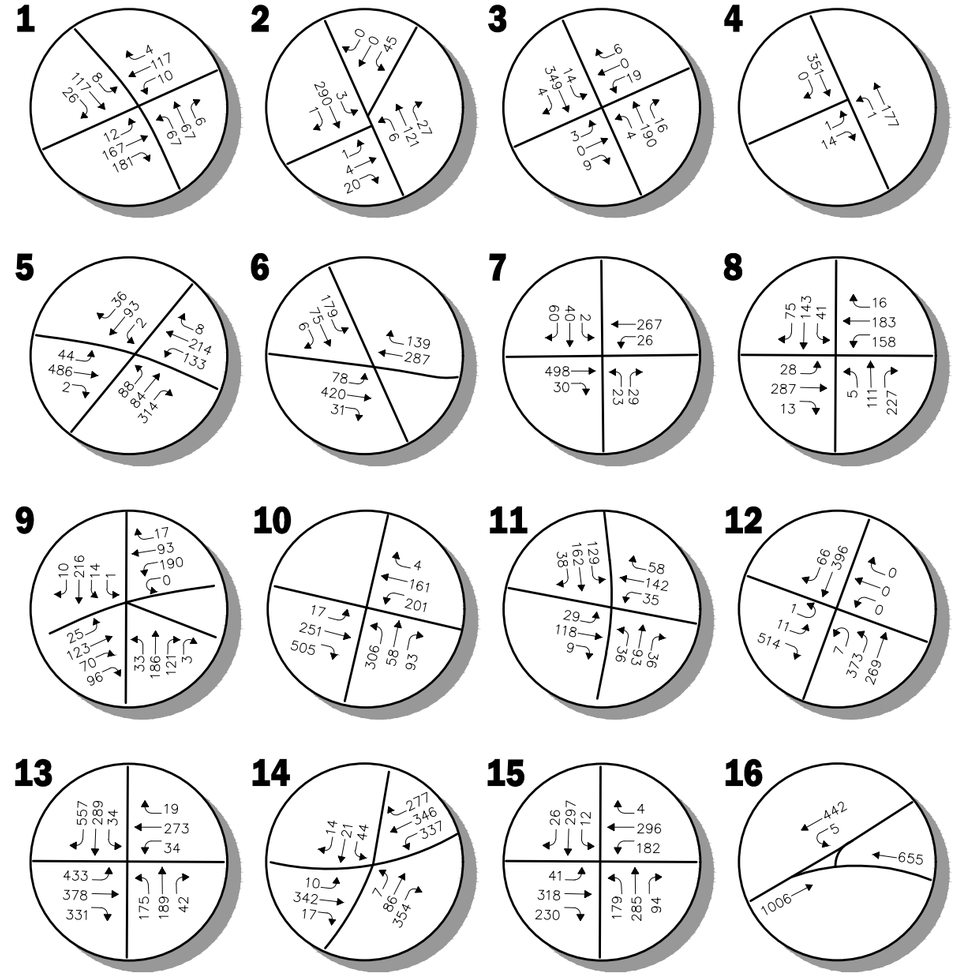
The 2023 existing traffic counts were grown by a background traffic growth rate of 1.0 percent per year to establish the 2024 Baseline condition. The 2024 Baseline traffic volumes are summarized in Table 7-1, with the weekday morning and afternoon peak-hour traffic volumes graphically depicted on Figures 7-3 and 7-4, respectively. Details on the adjustments to the traffic count are provided in Attachment 4 of Appendix D. It is important to note that the peak-hour traffic volumes presented in Table 1 were obtained from the TMCs and are reflected in the aforementioned figure.

---

1 MassDOT statewide Traffic Data Collection; 2019 Weekday Seasonal Factors, Groups U4-7.

2 *25% Design Submission Guidelines*; MassDOT Highway Division, Traffic and Safety Engineering; Revised May 31, 2022.





*Illegal maneuver.

Figure 7-3

2024 Existing Conditions
Weekday Morning
Peak-Hour Traffic Volumes

Vanasse & Associates inc

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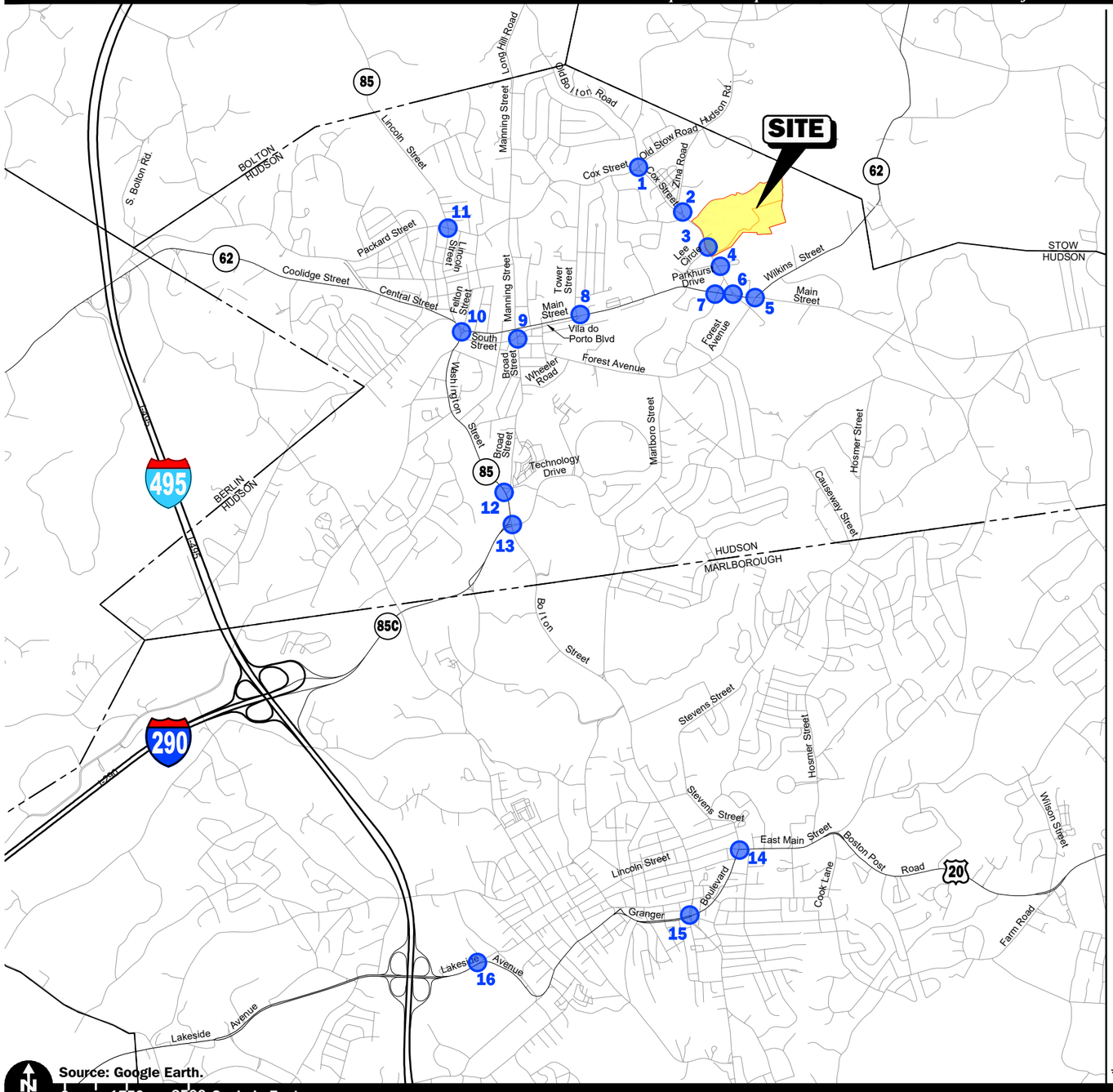

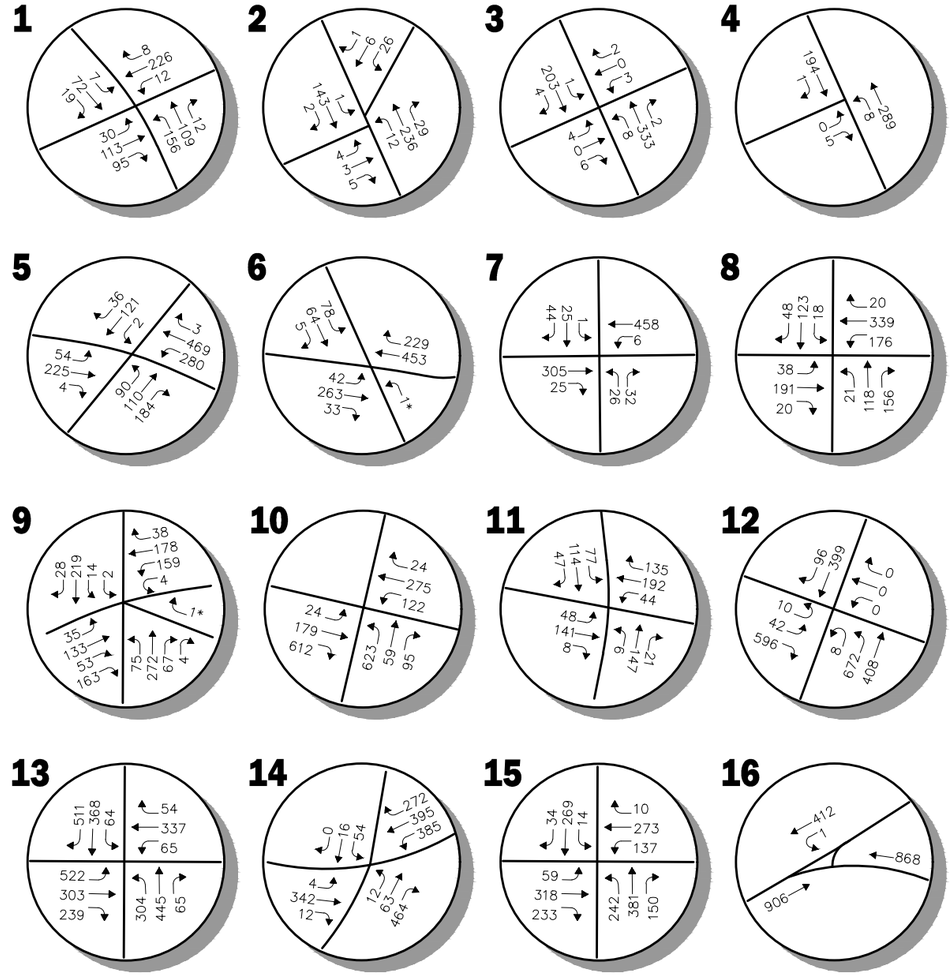

*Illegal maneuver.

Source: Google Earth.

0 1750 3500 Scale in Feet

Figure 7-4

2024 Existing Conditions
Weekday Afternoon
Peak-Hour Traffic Volumes

Vanasse & Associates inc

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Table 7-1 2024 Existing Roadway Traffic-Volume Summary

Location	Daily Volume (vpd)[1]	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
		Volume (vph)[2]	Percent of Daily Traffic[3]	Predominant Flow	Volume (vph)	Percent of Daily Traffic	Predominant Flow
Cox Street, south of the existing Transfer Station Driveway	7,060	587	8.3	64% SB	555	7.9	62% NB

[1] Two-way daily traffic expressed in vehicles per day; from ATR counts, May 2022 (adjusted to 2024 condition).
[2] Manual turning movement counts conducted (seasonally adjusted).
[3] The percentage of daily traffic that occurs during the peak hour.
NB = northbound, SB - southbound.

As can be seen in Table 7-1, Cox Street was found to accommodate approximately 7,060 vehicles per day (vpd) with 587 vehicles per hour (vph) during the weekday morning peak hour and 555 vph during the weekday afternoon peak hour. During the weekday morning peak hour, 64 percent of traffic is traveling southbound and during the weekday afternoon peak hour, 62 percent is traveling northbound.

7.2.3 Pedestrian and Bicycle Facilities

A comprehensive field inventory of pedestrian and bicycle facilities within the study area was undertaken in January and December 2023 and March 2024. The field inventory consisted of a review of the location of sidewalks and pedestrian crossing locations along the study area roadways and at the study area intersections, as well as the location of bicycle facilities. The field inventory consisted of a review of the location of sidewalks and pedestrian crossing facilities along the study roadways and at the study intersections, as well as the location of existing and planned future bicycle facilities. As detailed on Figure 7-2, sidewalks are generally provided along both sides of all study roads, with painted crosswalks provided at most intersections, specifically along the main street. Overall, the area is well-served by sidewalks, ensuring pedestrian accessibility and safety across a wide range of streets and neighborhoods.

7.2.4 Safety Analysis

In order to evaluate whether there are any notable trends that would indicate potential safety deficiencies within the study area, a motor vehicle accident analysis was conducted in accordance with State guidelines as described below.

Motor vehicle crash information for the study area intersections was provided by the MassDOT Safety Management/Traffic Operations Unit for the most recent three-year period available (2016 through 2020) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized in Table 7-2 by intersection, type, weather condition, lighting condition, pavement condition, and severity.

As can be seen in Table 7-2, the study area intersections experienced on average a range of 1 to 11 accidents per year. With the exception of the intersection of Cox Street at Old Bolton Road, Main Street at Tower Road/Vila Do Porto Boulevard, Broad Street at Vila Do Porto Boulevard/South Street, and East Main Street (Route 20) at Stevens Street/ Lincoln Street, most of the intersections were observed to have crash rates below the MassDOT District 3 crash rates for unsignalized and signalized intersections. The Highway Safety Improvement Program (HSIP) database was reviewed, and it was determined that some intersections are listed as Top HSIP crash clusters. Designation as an HSIP location allows MassDOT to prioritize funding for safety-related improvements in a specific region of the state. According to the Top Crash Location database the following intersections were listed as HSIP cluster locations:

- Top 200 crash 2018-2020 HSIP clusters
  - Main Street at Forest Avenue/Wilkins Street (Route 62)
  - Main Street at Tower Road/Vila Do Porto Boulevard
  - Broad Street at Vila Do Porto Boulevard/South Street
  - East Main Street (Route 20) at Stevens Street/Lincoln Street
- the Top 5% intersection 2016-2018
  - Washington Street (Route 85) at Route 85C/Technology Drive
  - Granger Boulevard (Route 20) at South Bolton Street (Route 85)

According to the MassDOT Road Safety Audit (RSA) database, an RSA has been conducted at the East Main Street (Route 20) at Stevens Street/Lincoln Street[3] intersection. Within all the study intersections no fatalities were reported over the five-year period reviewed.

In terms of accidents involving trucks (single-unit trucks (2-axle, 6-tires) and semi-trailers), the majority of the study intersections, specifically near the transfer station, experienced an average of one crash involving trucks over the five-year period reviewed. The majority of these accidents were angle collisions that occurred on dry pavement during daylight in clear weather and resulted only in property damage.

[3] Road Safety Audit, Stevens Street at East Main Street (Route 20), City of Marlborough; VHB; June 2018.

Table 7-2 Motor Vehicle Accident Data Summary

	Town of Hudson					
	Cox St. at Old Bolton Rd. (Unsignalized)	Cox St. at Zina Rd/ Pierce St. (Unsignalized)	Cox St. at Lee Circle/ Transfer Station Driveway (Unsignalized)	Cox St. at Parkhurst Drive (Unsignalized)	Main St. at Forest Ave./ Wilkins St. (Signalized)	Main St at Cox St./ Glendale Rd. (Signalized)
Year:						
2016	2	0	0	0	1	2
2017	3	1	1	2	8	2
2018	4	0	1	0	7	1
2019	2	1	0	1	10	2
2020	3	0	0	0	6	1
Total	14	2	2	3	32	8
Average[2]	2.80	0.40	0.40	0.60	6.40	1.60
Crash Rate[3]	0.71	0.17	0.14	0.24	0.89	0.29
Significant	Yes	No	No	No	Yes	No
Type:						
Angle	12	2	1	1	8	3
Rear-End	1	0	0	1	18	3
Head-On	1	0	0	1	2	2
Sideswipe	0	0	1	0	3	0
Fixed Object	0	0	0	0	1	0
Pedestrian	0	0	0	0	0	0
Bicyclist	0	0	0	0	0	0
Unknown/Other	0	0	0	0	0	0
Total	14	2	2	3	32	8
Weather Conditions:						
Clear	11	0	1	3	21	7
Cloudy/Rain	3	2	1	0	10	0
Snow/Ice	0	0	0	0	1	0
Fog	0	0	0	0	0	0
Unknown/Other	0	0	0	0	0	1
Total	14	2	2	3	32	8
Lighting Conditions:						
Daylight	11	2	2	3	23	5
Dawn/Dusk	1	0	0	0	2	0
Dark (lit)	2	0	0	0	7	3
Dark (unlit)	0	0	0	0	0	0
Total	14	2	2	3	32	8
Pavement Conditions :						
Dry	12	2	1	3	24	8
Wet	2	0	1	0	8	0
Snow/Ice	0	0	0	0	0	0
Total	14	2	2	3	32	8
Vehicle Configuration:						
Passenger car	7	0	0	1	24	4
Light truck	5	1	1	1	6	2
Motorcycle	0	0	0	0	0	0
Bus	0	1	0	1	0	0
Single-unit truck	2	0	0	0	0	1
Tractor/semi-trailer	0	0	1	0	2	1
Other	0	0	0	0	0	0
Total	14	2	2	3	32	8
Severity:						
Property Damage Only	8	2	1	2	23	6
Personal Injury	6	0	1	1	8	2
Fatality	0	0	0	0	0	0
Unknown/Other	0	0	0	0	1	0
Total	14	2	2	3	32	8

See notes at end of table.

Table 7-2 Motor Vehicle Accident Data Summary (Continued)

	Town of Hudson					
	Main St. Mackin Street/ Woodrow St. (Unsignalized)	Main St. at Tower Rd. and Vila Do Porto Blvd (Signalized)	Broad St. at Vila Do Porto Blvd (Signalized)	Main St. at Washington St. (Rotary)	Lincoln St. (Route 85) at Packard St./ Cox St. (Unsignalized)	Broad St. Washington St./ 85 Connector (Rotary)
Year:						
2016	5	8	8	13	2	6
2017	4	6	9	10	2	8
2018	2	10	5	9	1	4
2019	0	2	4	8	3	10
2020	3	6	5	14	0	3
Total	14	32	31	54	8	31
Average[2]	2.80	6.40	6.20	10.80	1.60	6.20
Crash Rate[3]	0.63	1.09	0.94	1.18	0.36	0.61
Significant	No	Yes	Yes	Yes	No	--
Type:						
Angle	7	14	19	12	6	11
Rear-End	6	10	5	24	1	6
Head-On	0	4	3	0	1	0
Sideswipe	0	2	3	10	0	13
Fixed Object	1	1	1	7	0	1
Bicyclist	0	1	0	1	0	0
Unknown/Other	0	0	0	0	0	0
Total	14	32	31	54	8	31
Weather Conditions:						
Clear	9	22	20	40	3	23
Cloudy/Rain	4	9	11	14	4	8
Snow/Ice	1	1	0	0	1	0
Fog	0	0	0	0	0	0
Total	14	32	31	54	8	31
Lighting Conditions:						
Daylight	14	25	22	43	5	23
Dawn/Dusk	0	0	0	2	0	2
Dark (lit)	0	7	9	9	3	6
Dark (unlit)	0	0	0	0	0	0
Total	14	32	31	54	8	31
Pavement Conditions :						
Dry	11	23	24	49	5	26
Wet	2	7	6	5	2	3
Snow/Ice	1	2	0	0	1	1
Unknown/Other	0	0	1	0	0	0
Total	14	32	31	54	8	31
Vehicle Configuration:						
Passenger car	8	18	15	28	3	21
Light truck	5	11	16	17	5	7
Motorcycle	0	0	0	0	0	1
Bus	0	0	0	1	0	0
Single-unit truck	0	2	0	3	0	1
Tractor/semi-trailer	1	1	0	5	0	1
Other	0	0	0	0	0	0
Total	14	32	31	54	8	31
Severity:						
Property Damage Only	10	20	22	45	5	28
Personal Injury	4	11	9	8	2	2
Fatality	0	0	0	0	0	0
Unknown/Other	14	1	0	1	1	1
Total	20	32	31	54	8	31

See notes at end of table.

Table 7-2 Motor Vehicle Accident Data Summary (Continued)

	Town of Hudson	City of Marlborough		
	Washington St./Technology Dr./85 Connector (Signalized)	East Main St. (Route 20) at Stevens St. and Lincoln St. (Signalized)	Granger Blvd./South Bolton St. (Signalized)	Lakeside Ave. (Route 20) at Lincoln St. (Unsignalized)
Year:				
2016	11	8	12	1
2017	7	8	11	0
2018	7	7	10	1
2019	12	8	9	1
2020	13	14	9	2
Total	50	45	51	5
Average[2]	10.0	9.00	10.20	1.00
Crash Rate[3]	0.67	0.98	1.05	0.1
Significant	No	Yes	Yes	No
Type:				
Angle	5	16	17	1
Rear-End	30	18	21	1
Head-On	0	0	3	0
Sideswipe	11	7	9	2
Fixed Object	3	3	1	1
Pedestrian	0	1	0	0
Unknown/Other	1	0	0	0
Total	50	45	51	5
Weather Conditions:				
Clear	34	29	36	3
Cloudy/Rain	14	12	14	2
Snow/Ice	2	4	1	0
Total	50	45	51	5
Lighting Conditions:				
Daylight	31	24	38	4
Dawn/Dusk	4	1	3	0
Dark (lit)	12	20	10	1
Dark (unlit)	3	0	0	0
Total	50	45	51	5
Pavement Conditions :				
Dry	38	32	38	4
Wet	9	11	11	1
Snow/Ice	2	2	2	0
Unknown/Other	1	0	0	0
Total	50	45	51	5
Vehicle Configuration:				
Passenger car	36	27	27	3
Light truck	12	13	22	2
Bus	0	1	1	0
Single-unit truck	0	1	0	0
Tractor/semi-trailer	2	2	1	0
Other	0	1	0	0
Total	50	45	51	5
Severity:				
Property Damage Only	38	33	45	4
Personal Injury	10	11	6	1
Fatality	0	0	0	0
Unknown/Other	2	1	0	0
Total	50	45	51	5

[2]Average crashes over five-year period.

[3]Crash rate per million entering vehicles.

Unsignalized intersections are significant if rate >0.61 crashes per million vehicles or if rate >0.57 crashes per million vehicles.
Signalized intersections are significant if rate >0.89 crashes per million vehicles or if rate >0.78 crashes per million vehicles.

At the intersections of Main Street at Cox Street and Main Street at Forest Avenue/Wilkins Street two truck-related accidents were recorded at each location over the five-year period. Truck accidents at Main Street at Cox Street involved rear-end and sideswipe collisions. The incidents at Main Street and Cox Street consisted of a rear-end collision and a sideswipe. Meanwhile, the accidents at the intersection of Main Street and Forest Avenue/Wilkins Street involved angle and rear-end collisions. At the site driveway, there was one crash identified where a passenger vehicle turning left onto Cox Street collided with a semi-trailer truck. The intersection with the highest number of truck accidents is the Main Street Rotary with Washington Street in the Hudson Downtown area. The majority of these accidents occurred in 2020, accounting for 5 out of the 8 accidents. According to the crash data, these occurred when passenger vehicles were trying to overtake or pass the semi-trailers, or when semi-trailers were attempting to turn left from Main Street onto Washington Street. It is important to note that this rotary was under reconstruction during this period. A comprehensive list of truck incidents by year, along with detailed descriptions of each incident is provided in Attachment 5 of Appendix D. The detailed MassDOT Crash data and crash Rate Worksheets are provided in Attachment 5.

7.2.6 Vehicle Speeds

Existing vehicle speeds along Cox Street south of the transfer station driveway, were recorded to determine the average and 85th percentile vehicle speeds. The speed limit on Cox Street northbound and southbound in the vicinity of the site is 30 mph. The results of the speed measurements are shown in Table 7-3, whereas additional details are provided in Attachment 6 of Appendix D.

Table 7-3 Vehicle Travel Speed Measurements

	Cox Street Northbound	Cox Street Southbound
Mean Travel Speed (mph)	31	28
85th Percentile Speed (mph)	34	32
Posted Speed Limit (mph)	30	30

mph = miles per hour.

[1] The 85th percentile speed is defined as a speed that 85 percent of all vehicles are observed to travel at or below under free-flowing conditions past a monitored point

[2] Traffic Rules and Orders – Town of Hudson - Pg. 43-44

As can be seen from Table 7-3, the average speed recorded on Cox Street was 31 mph in the northbound direction and 28 mph on the southbound direction. The 85th percentile speed recorded was 34 and 32 mph in the northbound and southbound direction, respectively.

As shown above, vehicles traveling in both directions on Cox Street frequently exceed the designated speed limits for this road. During field observations, it was noted that speed limit signs are not posted within the vicinity of the transfer station. Therefore, to improve safety, the installation of clearly visible speed limit signage near the site is recommended (see Recommendations section).

7.3 Future Conditions

To determine the impact of site-generated traffic volumes on the roadway network under future conditions, baseline traffic volumes in the study area were projected to the year 2031. Traffic volumes on the roadway network at that time, in the absence of the Project (that is, the No-Build condition), would include existing traffic, new traffic due to general background traffic growth, and traffic related to specific development by others expected to be completed by 2031. Inclusion of these factors resulted in the development of 2031 No-Build traffic volumes. Anticipated site-generated traffic volumes were then superimposed upon these No-Build traffic-flow networks to develop the 2031 Build traffic-volume conditions.

7.3.1 Future Traffic Growth

Traffic growth on area roadways is a function of the expected land development impacting the study area. Several methods are used to estimate this growth. A procedure frequently employed estimates an annual percentage increase in traffic growth and applies that percentage to all existing traffic volumes under study. The drawback to such a procedure is that some turning volumes may actually grow at either a higher or a lower rate at particular intersections.

In addition, we identified the location and type of planned development affecting the study area, estimated the traffic to be generated by that development, and assigned it to the area roadway network. This produces a more realistic estimate of growth for local traffic. However, the drawback of this procedure is that the potential growth in population and development external to the study area would not be accounted for in the traffic projections.

To provide a conservative analysis framework, both procedures were used in this TIA.

7.3.1.1 General Background Growth

Traffic-volume data compiled by MassDOT from permanent count stations and historic traffic counts in the area were reviewed in order to determine general background traffic growth trends. Based on a review of this data and other area traffic studies, it was determined that the traffic volumes are increasing in the area by approximately 1 percent per year on average. Therefore, a 1.0 percent per year compounded annual background traffic growth rate was used to account for future traffic growth including presently unforeseen development within the study area. Traffic growth calculations are provided in Attachment 7 of Appendix D.

7.3.1.2 Specific Development by Others

The Town of Hudson and the City of Marlborough were contacted in order to determine if there are any planned or approved development projects that are expected to influence future traffic volumes within the study area. The following projects were identified for review for possible inclusion in this assessment.

Town of Hudson

- ***Proposed Residential Development - 62 Packard Street – Hudson, MA –*** The proposed project entails repurposing of the former Police Station into 40 units of affordable housing. Additional traffic expected to be generated by this development was obtained from the traffic impact assessment memo[4] prepared for this project and has been incorporated into the analysis of future traffic conditions.
- ***Proposed Manufacturing Development - 34 Tower Street – Hudson, MA –*** The project entails razing the existing buildings and constructing a 57,260 square foot (sf) manufacturing building. Additional traffic expected to be generated by this development were obtained from the traffic impact assessment report[5] prepared for this project and have been incorporated into the analysis of future traffic conditions.
- ***Proposed Commercial Development - 256 Washington Street – Hudson, MA –*** This project entails construction of a 2,710 sf Dunkin' restaurant with a drive-thru, as well as 9,803 sf of leasable space divided between four units. Additional traffic expected to be generated by this development were obtained from the traffic impact assessment memo[6] prepared for this project and have been incorporated into the analysis of future traffic conditions.
- ***Proposed Residential Development - Manzo Way (200 Cox Street) – Hudson, MA –*** This project is a four-lot residential subdivision to be located along Manzo Way in Hudson, Massachusetts. Access to the site is proposed via Manzo Way. The 1.0 percent general background growth rate was assumed to account for the new trips generated by this project.
- ***Proposed Gas Station Development – 240-242 Washington Street– Hudson, MA –*** A six-pump self-service gas station with a 4,820-sf freestanding convenience store. Additional traffic expected to be generated by this development was obtained from the projections

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[4] Traffic Impact Study Memo – Proposed Residential development 62 Packard Street - prepared by Nitsch Engineering; October 2021.

[5] Transportation Impact Assessment– Proposed Manufacturing Development - 34 Tower Street - VAI; November 2023.

[6] Traffic Impact Study Memo – Proposed Dunkin & Retail Redevelopment- prepared by McMahon; April 2023.

presented in the traffic impact study prepared for the proposed warehouse development to be located at 75 Reed Road.[7] Traffic volume projections for the proposed gas station have been incorporated into the analysis of future traffic conditions.

- ***Proposed Commercial Development - 540 Main Street – Hudson, MA –*** This project entails construction of a 7,200-sf commercial building to be located at 540 Main Street in Hudson, Massachusetts. There was no traffic study completed for this project.
- ***Proposed Residential Development - Old County Road – Hudson, MA –*** The proposed project entails the construction of a 32–lot single-family subdivision to be located on Old County Road. There was no traffic study completed for this project.
- ***Proposed Commercial Development - 114 Forest Avenue – Hudson, MA –*** The proposed project entails the construction of four commercial contractor bays. There was no traffic study completed for this project. Given the expected traffic generation from this development and its location relative to the study area, a 1.0 percent general background growth rate has been assumed to account for the new trips generated by this development.
- ***Proposed Residential Development - 17 School Street – Hudson MA –*** The proposed project entails repurposing an existing restaurant building to six residential condominiums. There was no traffic study completed for this project.
- ***Proposed Retirement Community - Chestnut Street/Murphy Road – Hudson, MA –*** This project entails construction of a 64-unit retirement community to be located on the corner of Chestnut Street and Murphy Road in Hudson, Massachusetts. There was no traffic study completed for this project.

City of Marlborough

- ***Proposed Mixed-Use Development - 57 Main Street – Marlborough, MA –*** This mixed-use development consists of a five-story building with 5,047 sf of ground floor retail/restaurant space along Main Street, 99 residential units, 25 ground floor parking spaces, and a courtyard adjacent to Union Common. There was no traffic study completed for this project.
- ***Proposed Mixed-Use Development - 28 South Bolton Street – Marlborough, MA –*** This mixed-use development consists of a five-story building with 36 residential units, two ground-floor retail units, and an enclosed garage on the ground floor with 29 parking spaces. There was no traffic study completed for this project.
- ***Proposed Residential Development – 339 Boston Post Road East – Marlborough, MA –*** This project involves the construction of a 40-unit multifamily residential complex at 339 Boston Post Road East. The complex will consist of three buildings and provide 280

[7] ENF – Proposed Warehouse Development - 75 Reed Road – Epsilon; August 2022.

on-site parking spaces. Additional traffic expected to be generated by this development was obtained from the traffic impact assessment report[8] prepared for this project and has been incorporated into the analysis of future traffic conditions.

- ***Proposed Mixed-Use Development - 297 Lincoln Street – Marlborough, MA –*** The proposed project consists of 10,074 sf of ground floor retail and commercial space and 276 dwelling units including an on-site parking garage with 448 spaces. Additional traffic expected to be generated by this development was obtained from the traffic impact assessment report[9] prepared for this project and has been incorporated into the analysis of future traffic conditions.

Traffic volumes associated with the aforementioned specific development projects by others were obtained from the respective traffic studies or using trip-generation information available from the Institute of Transportation Engineers (ITE)[10] for the appropriate land use and were assigned onto the study area roadway network based on existing traffic patterns where no other information was available. Total Background development volumes are provided in Attachment 8 of Appendix D. No other developments were identified at this time that are expected to result in an increase in traffic within the study area beyond the general background traffic growth rate.

7.3.1.3 Planned Roadway Improvements

The Town of Hudson and the City of Marlborough were contacted to determine if there were any planned future roadway improvement projects expected to be complete by 2031 within the study area. Based on these discussions, no roadway improvement projects are planned within the study area beyond general maintenance. The Town of Hudson Department of Public Works (DPW) identified the following maintenance activities:

- ***Cox Street repaving –*** The section of Cox Street adjacent to our site, extending north from Main Street, is scheduled for repaving. This project includes surface milling, a new asphalt overlay, and restriping.

7.3.1.4 No-Build Traffic Volumes

The 2031 No-Build peak-hour traffic-volume networks were developed by applying the 1.0 percent per year compounded annual background traffic growth rate to the 2024 Existing peak-hour traffic volumes plus the identified background developments. The resulting 2031 No-Build weekday morning and weekday afternoon peak-hour traffic-volume networks are shown on Figures 7-5 and 7-6.

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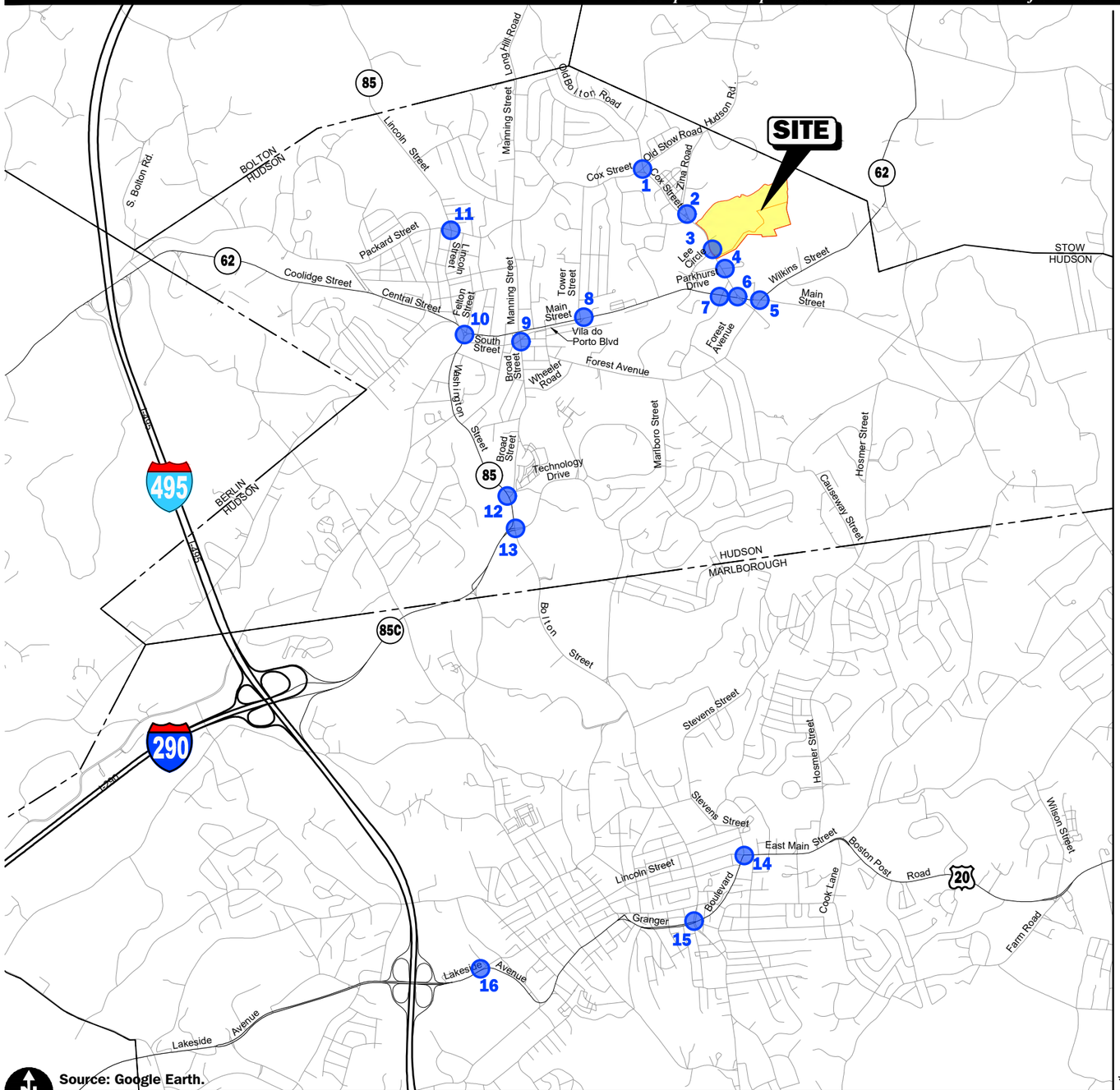
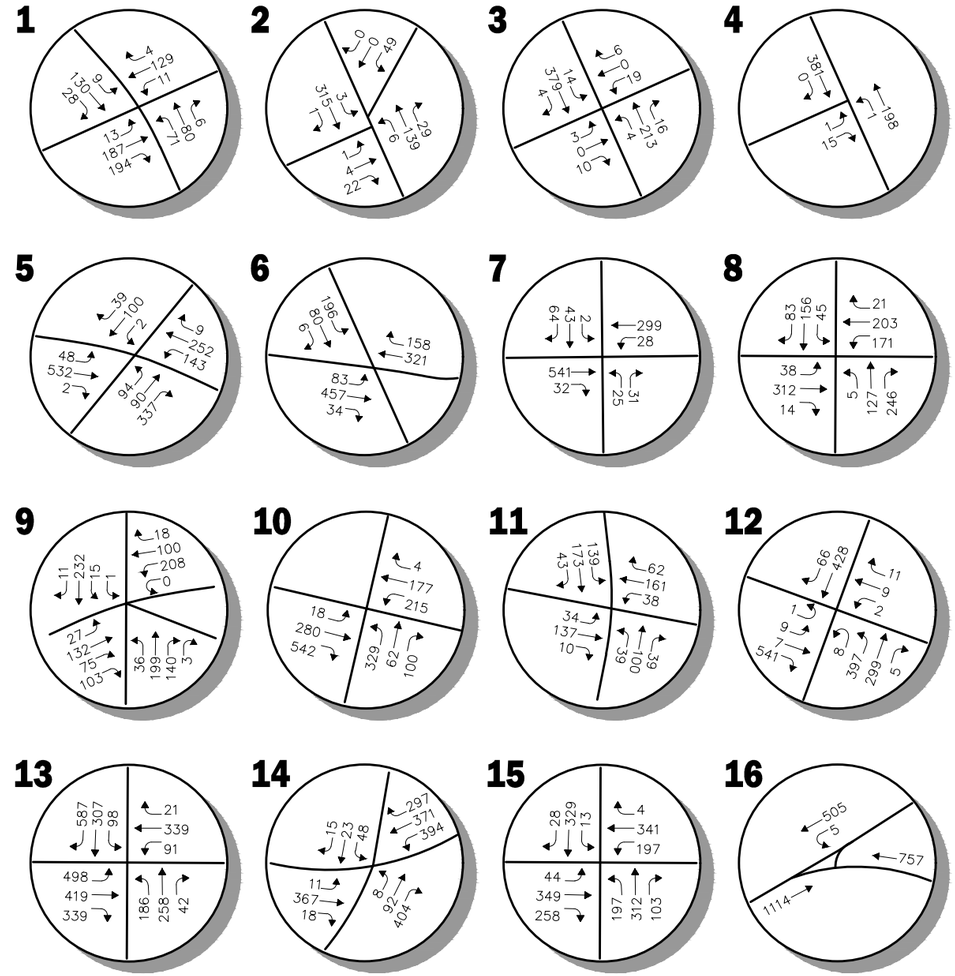
[8] Transportation Impact Assessment– Proposed Residential Development - VAI; December 2019.

[9] Transportation Impact Assessment– Proposed Residential Development - VAI; May 2022.

[10] Trip Generation, 10th Edition; Institute of Transportation Engineers; Washington, DC; 2023





*Illegal maneuver.

Source: Google Earth.

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Figure 7-5

2031 No-Build Condition
Weekday Morning
Peak-Hour Traffic Volumes

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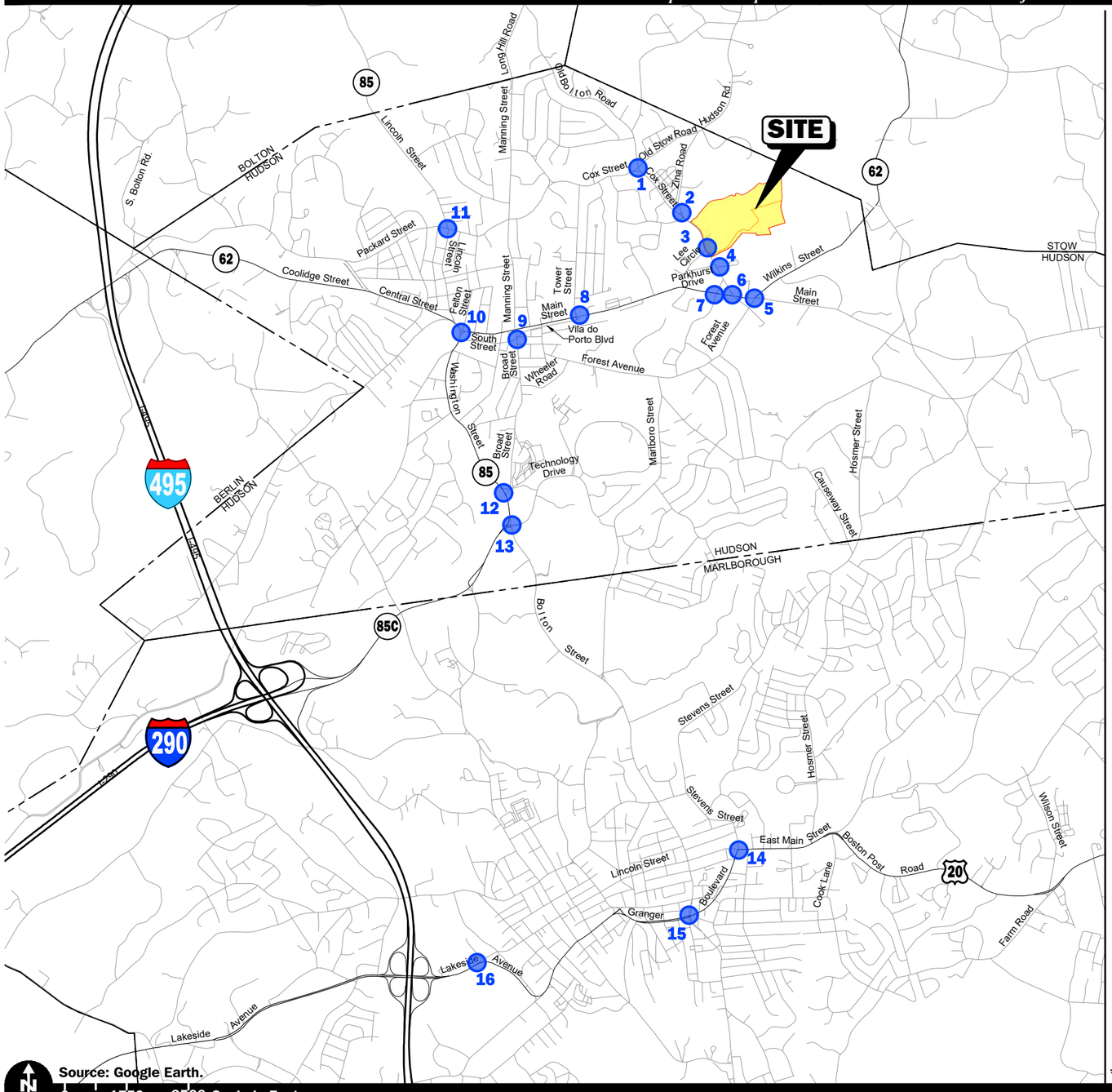

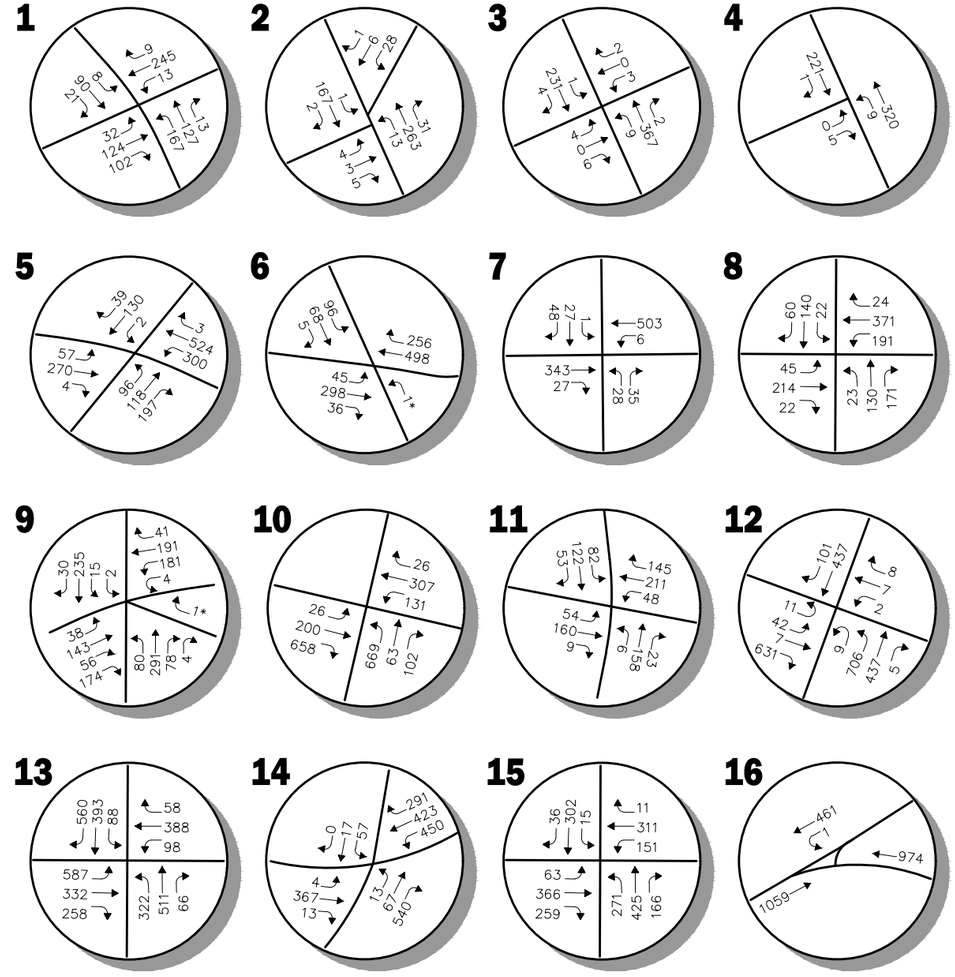

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Figure 7-6

2031 No-Build Condition
Weekday Afternoon
Peak-Hour Traffic Volumes

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7.3.1.5 Project-Generated Traffic

Site Existing Trip Generation

In order to establish traffic characteristics for the existing transfer station facility, an automatic traffic recorder (ATR) count conducted on Thursday, May 25, 2022, at the site driveway for 24 hours was obtained. It is important to note that based on the existing scale data collected over a year at the Hudson Transfer Station, the month of May represents the peak number of scale crossings at the facility.

The ATR shows that the facility generates approximately 754 daily trips including truck trips with MSW and C&D waste and vehicle trips made by Hudson residents using the facility.

The transfer station daily tonnage scale data, provided by B-P Trucking, Inc., collected on the same day (May 25, 2022) was also obtained and analyzed. The data shows the total waste tonnage processed and the total number of loads (truck trips) occurring throughout the day.

The data indicated that on that day, the facility accepted a total of 318.92 tons of waste (inbound trucks) on a total of 111 trucks/loads, resulting in a ratio of 2.87 tons/truck. The facility transported a total of 309.62 tons of waste (outbound trucks) to offsite material recovery facilities on 12 trailer trucks/loads, resulting in a ratio of 25.8 tons/truck.

Proposed Site Expansion Trip Generation

The Project involves the increase in weekday daily tonnage of the Hudson waste facility from 350 TPD to 850 TPD. To establish traffic characteristics for this proposed expansion, the existing truck ratio from May (2.87 tons per inbound truck and 25.8 tons per outbound truck) was applied to the proposed full capacity of 850 TPD. With the proposed expansion, the Hudson waste facility is expected to generate a total of 185 new inbound truck trips and a total of 22 new outbound truck trips, on an average weekday (one-way, 24-hour volume).

As part of this Project, it is anticipated that vehicle drop-off trips by Hudson residents will continue as they currently are. Consequently, no adjustments have been made to the existing trip volume to account for these drop-off trips. For the purposes of this analysis, an addition of 17 new employees has been factored into the daily trips. All employees work a single shift, and it is expected that their trips will occur outside of the facility's operating hours.

In order to determine the trip peak period, the scale data was evaluated by hour. For analysis purposes, the truck/load data was separated by the number of loads occurring every 15 minutes. It was assumed that each load in the data represents trucks entering the facility and exiting within 15 minutes. May 25, 2022, scale data indicated that on an hourly basis, the peak percentage varied between 8 and 23 percent of the total daily trips. Therefore, to provide a conservative analysis it was assumed that approximately 23 and 8 percent of the daily trips will occur during the morning and afternoon peak hours, respectively, for the inbound trips and that approximately 9 percent of the daily trips will occur during the morning and afternoon peak hours for outbound trips.

In order to determine the trip increase, the existing load was extracted from the proposed projections. The existing trips generated and expected trips generated by the facility are summarized in Table 7-4.

Table 7-4 Site Trip-Generation Summary

Land Use	AM Peak Hour[4] (8:00 – 9:00 AM)			PM Peak Hour[4] (12:00 – 1:00 PM)			Weekday ADT[5]		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Existing Waste Facility Trips									
TMC May 25, 2022 (350 TPD)[1]	54	48	102	49	48	97	374	380	754
Proposed Waste Facility Expansion									
Proposed Expansion Inbound Trips[2]	43	43	86	15	15	30	185	185	370
Proposed Expansion Outbound Trips[2]	2	2	4	2	2	4	22	22	44
Proposed Employee trip Increases[3]	0	0	0	0	0	0	17	17	34
Proposed Expansion Total Trips	45	45	90	17	17	34	224	224	448
Waste Facility Total Trips									
850 TPD	99	93	192	66	65	131	598	604	1,202

Notes:
1. Based on driveway counts conducted on May 25, 2022.
2. Based on existing facility scale tonnage data from May 25, 2022.
3. Assumed addition of 17 employees
4. Weekday vehicle trips per hour
5. Weekday vehicle trips per day

As shown in Table 7-4, with the proposed changes, the facility is expected to generate approximately 448 new vehicle trips on an average weekday (two-way, 24-hour volume), with 90 new truck trips (45 entering and 45 exiting) expected during the weekday morning peak hour and 34 new truck trips (17 entering and 17 exiting) expected during the weekday afternoon peak hour. It is important to note that the trip generation projections for the Project, as presented in this study, are likely conservative. The typical weekday afternoon peak hour for adjacent roads usually falls between 4:00 PM and 6:00 PM. In contrast, the critical traffic activities for the existing facility peak around midday, between 12:00 PM to 2:00 PM, a time when adjacent roads are not typically burdened with heavy traffic volumes. This analysis merges the facility's peak projections with those of the adjacent roads, resulting in a conservative analysis.

Background calculations for trip generation are provided in Attachment 9 of Appendix D.

7.3.2 Trip Distribution and Assignment

The directional distribution of both inbound (packer and roll-off trucks) and outbound (semi-trailer) trucks to and from the Project was determined by reviewing existing travel patterns and assessing the feasibility of potential routes for heavy trucks.

7.3.2.1 Semi-trailer Truck Routes

The semi-trailer truck routes to and from the facility have been determined based on the existing truck routes, existing road characteristics, and their proximity to EJ communities. There are two EJ community areas shown on the Massachusetts Environmental Policy Act (MEPA) EJ Map viewer that are located between the Project and regional roadways of I-495 and I-290.

In order to determine alternate semi-trailer truck routes, several pathways within a 5-mile radius of the facility were analyzed. To minimize local traffic disruption, all semi-trailer trucks were routed towards the interstate highways. In terms of directions, due to the 17-ton capacity limit of the bridge on Cox Street over the Assabet River, semi-trailer trucks exiting the Hudson Transfer Station are required to turn left onto Cox Street and head south of the site. As a result, five routes were identified which are described below. These routes and the EJ communities are graphically depicted in Figure 7-7. Please see memorandum provided in Attachment 10 of Appendix D for detailed route evaluation that supports the route analysis summary presented below.

- ***Route 1*** – This route extends for approximately 4.9 miles connecting the transfer station to Exit 65 of I-495 at I-290. This route follows Cox Street, Forest Avenue, Marlboro Street, Reed Road, Technology Drive, and Route 85C, leading to Exit 65 of I-495 and I-290. Overall, across all studied intersections along Route 1, it was found that if semi-trailers were to use this route, they would often obstruct adjacent lanes at the start of their turns, encroach on opposing lanes at the end of their turns, and/or could affect adjacent curbs or sidewalks during the turning process. While it is technically possible to navigate this route, it is important to emphasize that, from a safety standpoint, we strongly discourage its use.
- ***Route 2*** – This route extends for approximately 4 miles connecting the transfer station to Exit 65 of I-495 at I-290, while partially passing through downtown Hudson. This route begins on Cox Street, proceeds along Main Street, Vila do Porto Boulevard, Broad Street, and Washington Street, and then joins Route 85C to reach I-495 and I-290. Route 2 represents an existing semi-trailer route currently used by B-P that serves as the connecting route between the existing transfer station and Exit 65A of I-495 (Hudson/Route 85 exit). It is important to note that outbound semi-trailers from Cox Street to Main Street currently have two exit options: one via Mackin Street (currently used by B-P) which is a one-way street, and the other via the Cox Street intersection with Main Street (not currently used by B-P). Inbound semi-trailers are required to make a left turn from Main Street onto Cox Street.

Upon a thorough examination of this route, it was found that trucks exiting the facility maneuvering from both Mackin Street and Cox Street onto Main Street present safety concerns. To address this issue and improve overall safety at both locations, intersection improvements developed in coordination with the Town of Hudson DPW were recommended (see recommendation section). With the proposed improvements in place VAI concludes that semi-trailers will be able to navigate turns efficiently without causing substantial disruption to the main traffic flow along this route.

- ***Route 3 –*** This route, which is approximately 4.4 miles long, connects the transfer station to Exit 67 off I-495, passing through downtown Hudson. This route is the most direct, starting from Cox Street, moving through Main Street, Central Street, and Coolidge Street, and directly accessing I 495. Route 3 represents an existing semi-trailer route currently used by B-P that serves as the connecting route between the existing transfer station and Exit 67 of I-495 (Berlin, Hudson/Route 62 exit). This route overlaps Route 2 from the transfer station site up to the Main Street at Tower Street and Vila do Porto Boulevard intersection. Upon thorough examination of the critical study intersection along Route 3, VAI concludes that semi-trailers can navigate turns efficiently without causing substantial disruption to the main traffic flow.
- ***Route 4 –*** This route provides access for trucks arriving from or heading toward the eastern Boston area. It begins on Cox Street, moves through Main Street, follows Route 27 and Route 20, and then directly connects to I-95, leading them directly to their ultimate destination. This route, which is currently used less frequently by B-P and expected to continue as a lesser-used route in the future, is a feasible option for vehicles headed eastward toward Boston.
- ***Route 5 –*** This route extends for approximately 8.2 miles and connects the transfer station to Exit 70 off I-495, passing through Gleasondale Village and the Town of Stow. It begins on Cox Street, moves through Main Street, follows Route 62 and Route 117, and then directly accesses I-495. This route crosses three bridges, with weight restrictions ranging from 19 to 36 tons, which is inadequate for semi-trailer traffic and therefore infeasible for use.

Based upon VAI's route analysis, we have concluded that Routes 2, 3 and 4 are viable and recommended for use.

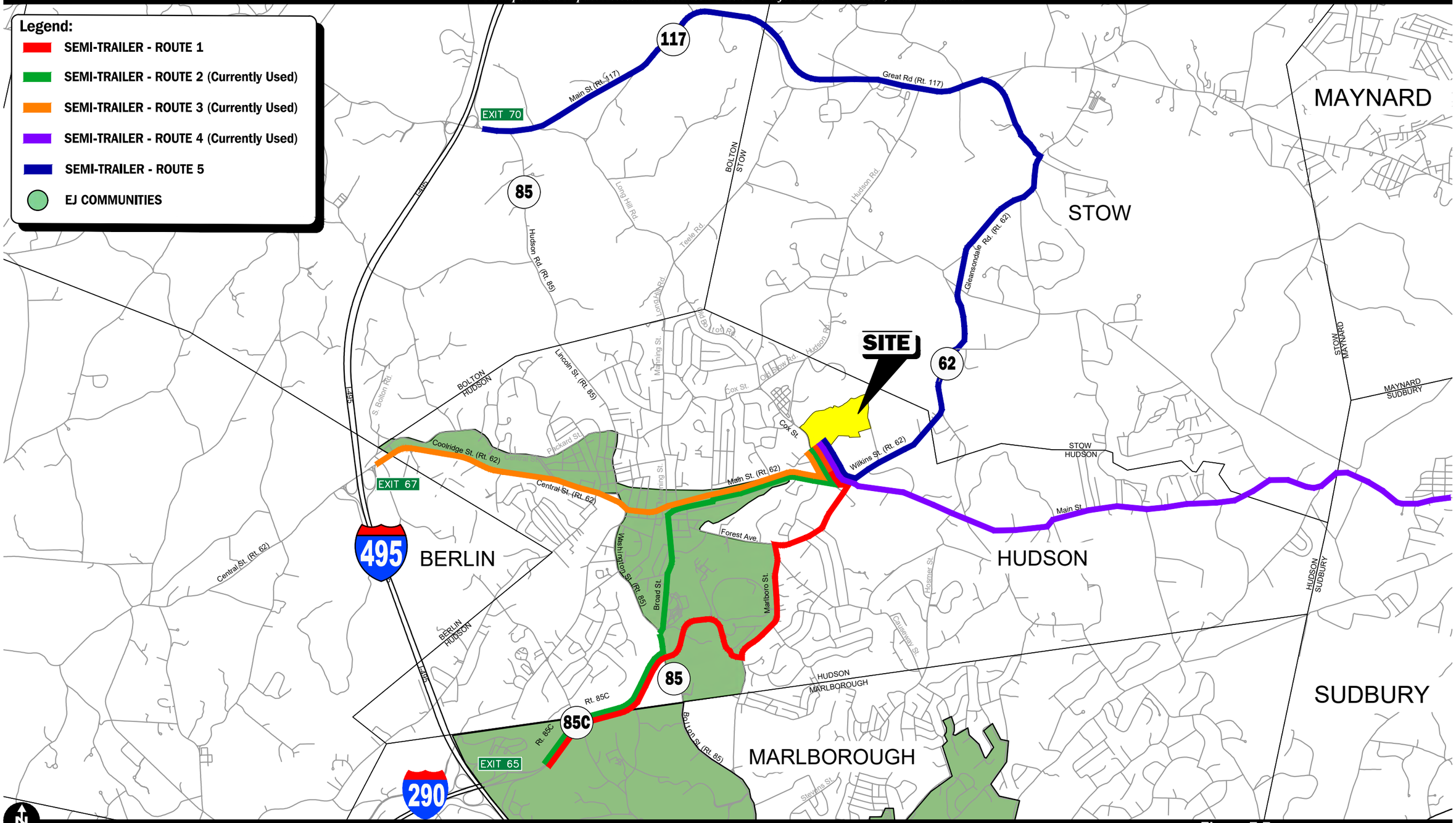

Figure 7-7

Semi-Trailer Haul Routes Evaluated
(Routes 2,3 and 4 are Recommended)

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7.3.2.2 Packer and Roll-off Truck Routes

The directional distribution of trips by new packers and roll-off trucks to and from the proposed transfer station expansion was determined through discussions with B-P Trucking and an analysis of existing routes, along with a review of existing travel patterns at the study area intersections.

The trip distribution for inbound and outbound trucks are summarized in Table 7-5 and graphically depicted on Figure 7-8. Background calculations for trip distribution are provided in Attachment 11 of Appendix D.

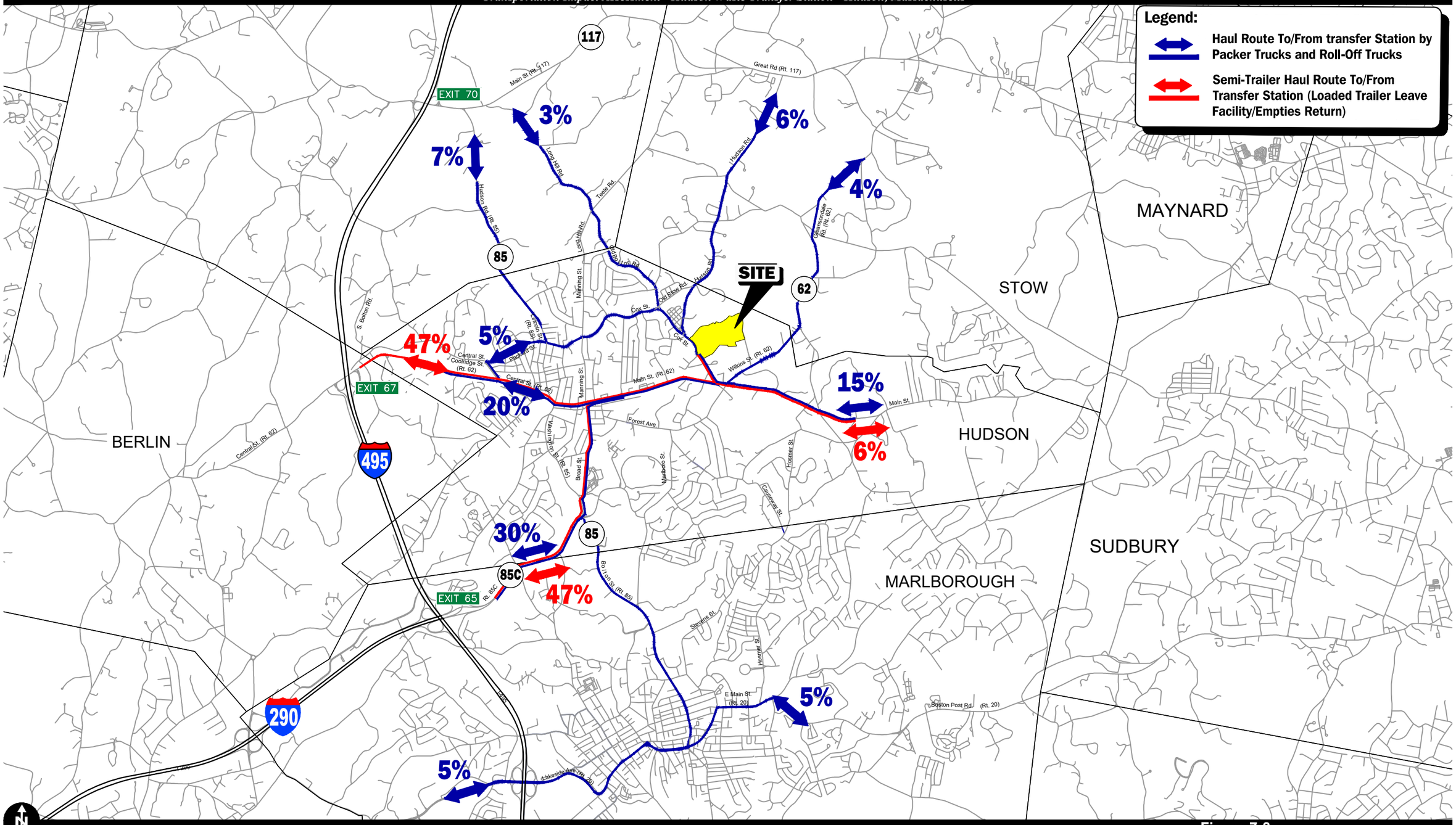
Table 7-5 Trip-Distribution Summary

Roadway	Direction (To/From)	Semi-Trailer Trucks Trip distribution Percent (To/From)	Packer and Roll-off Truck Trip distribution Percent (To/From)
Lincoln Street (Route 85)	North/West	0	7
Old Bolton Road	North	0	3
Hudson Road	North/East	0	6
Gleansondale Road (Route 62)	North/East	0	4
Main Street	East	6	15
Central Street	West	47	20
Packard Street	West	0	5
Route 85C	South/West	47	30
Lakeside Avenue (Route 20)	South/West	0	5
Boston Post Road (Route 20)	South/East	0	5
TOTAL		100	100

The weekday morning and afternoon peak-hour traffic volumes expected to be generated by the Project were assigned on the study area roadway network as shown on Figure 7-9 and Figure 7-10, respectively.

Legend:

- Haul Route To/From transfer Station by Packer Trucks and Roll-Off Trucks
- Semi-Trailer Haul Route To/From Transfer Station (Loaded Trailer Leave Facility/Empties Return)



Not to scale

Figure 7-8

Trip Distribution Map

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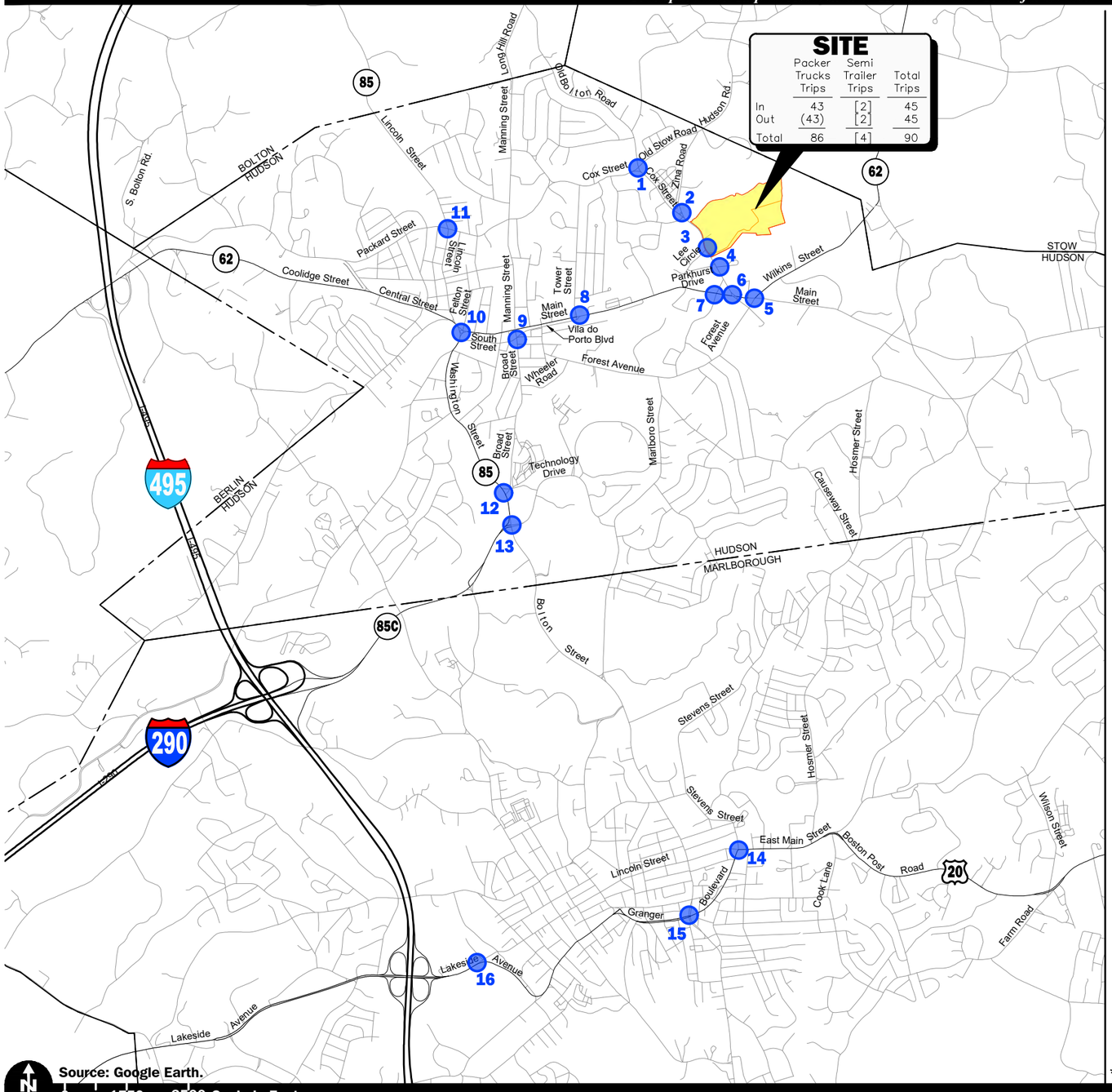

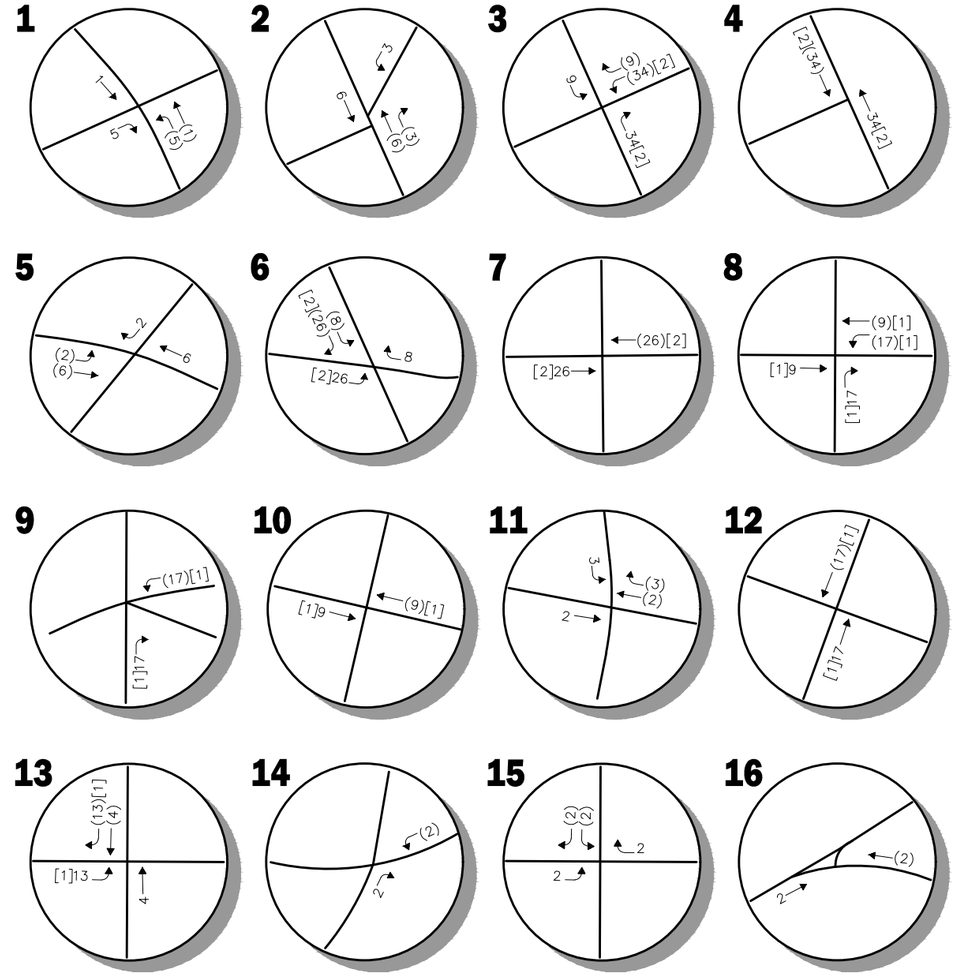

Legend:

XX	Packer Truck Entering Trips
(XX)	Packer Truck Exiting Trips
[XX]	Semi-Trailer Trips

*Illegal maneuver.

Source: Google Earth.

0 1750 3500 Scale in Feet

Figure 7-9

Project-Generated Weekday Morning Peak-Hour Traffic Volumes

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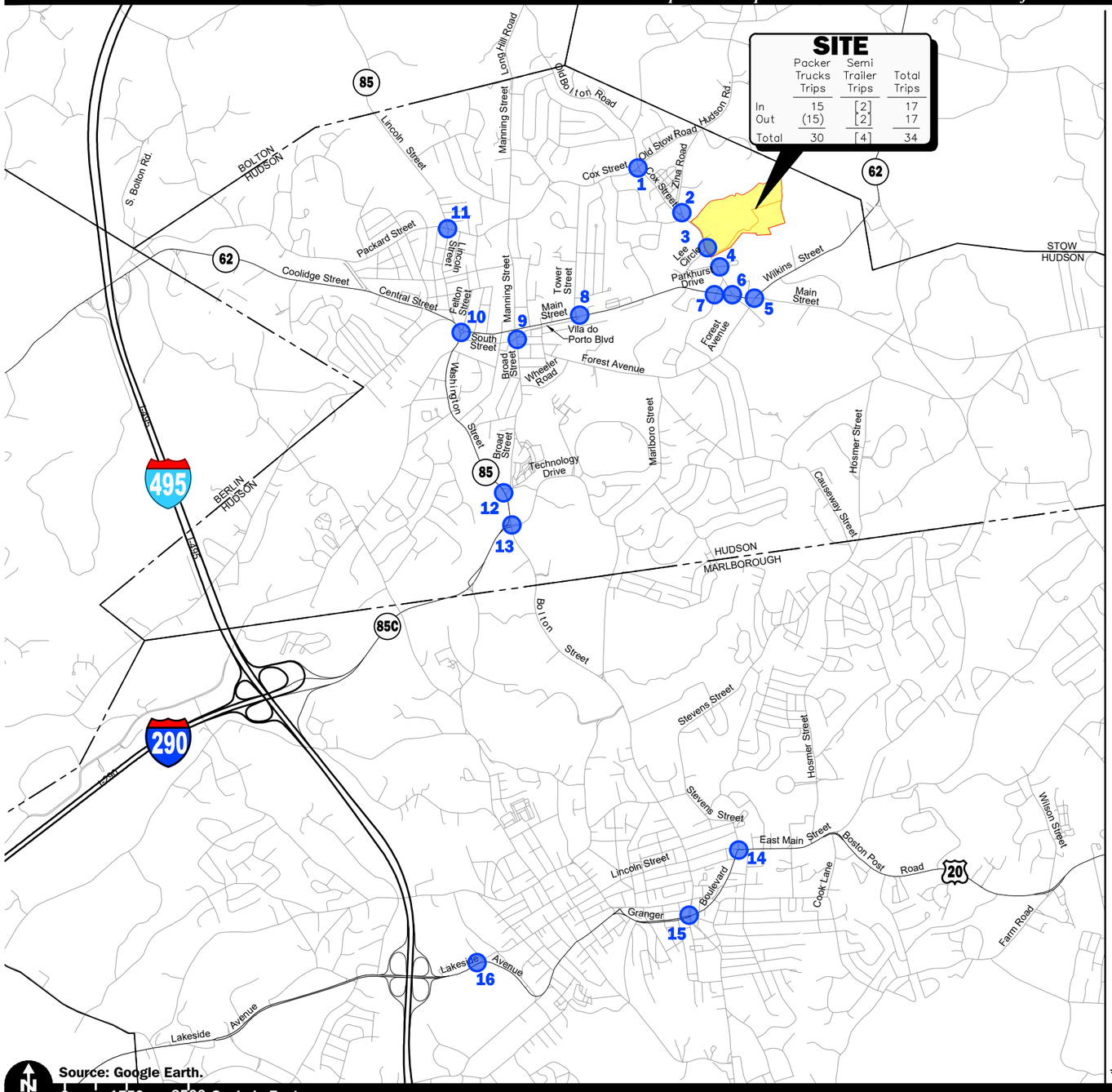

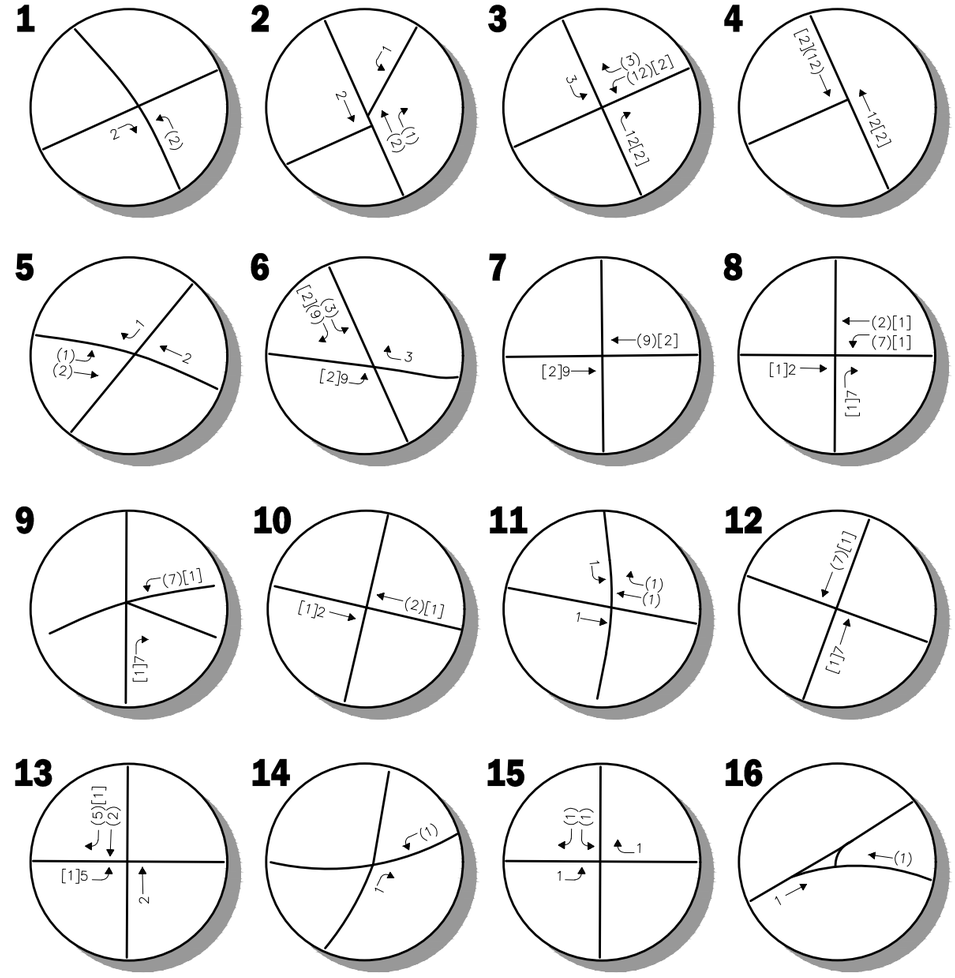

*Illegal maneuver.

Legend:

XX	Packer Truck Entering Trips
(XX)	Packer Truck Exiting Trips
[XX]	Semi-Trailer Trips

Figure 7-10

Project-Generated Weekday Afternoon Peak-Hour Traffic Volumes

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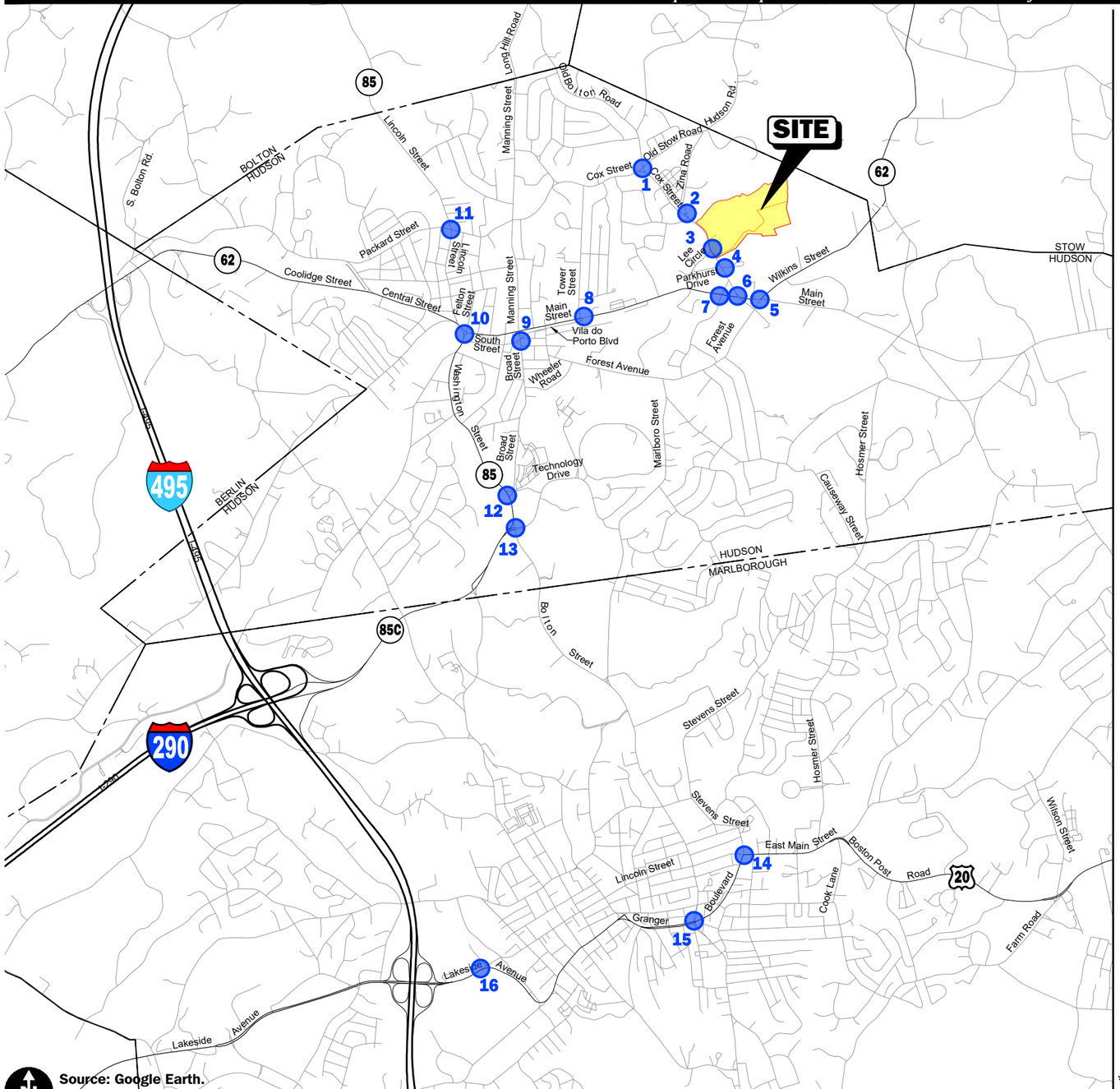
7.3.1 Future Traffic Volumes – Build Condition

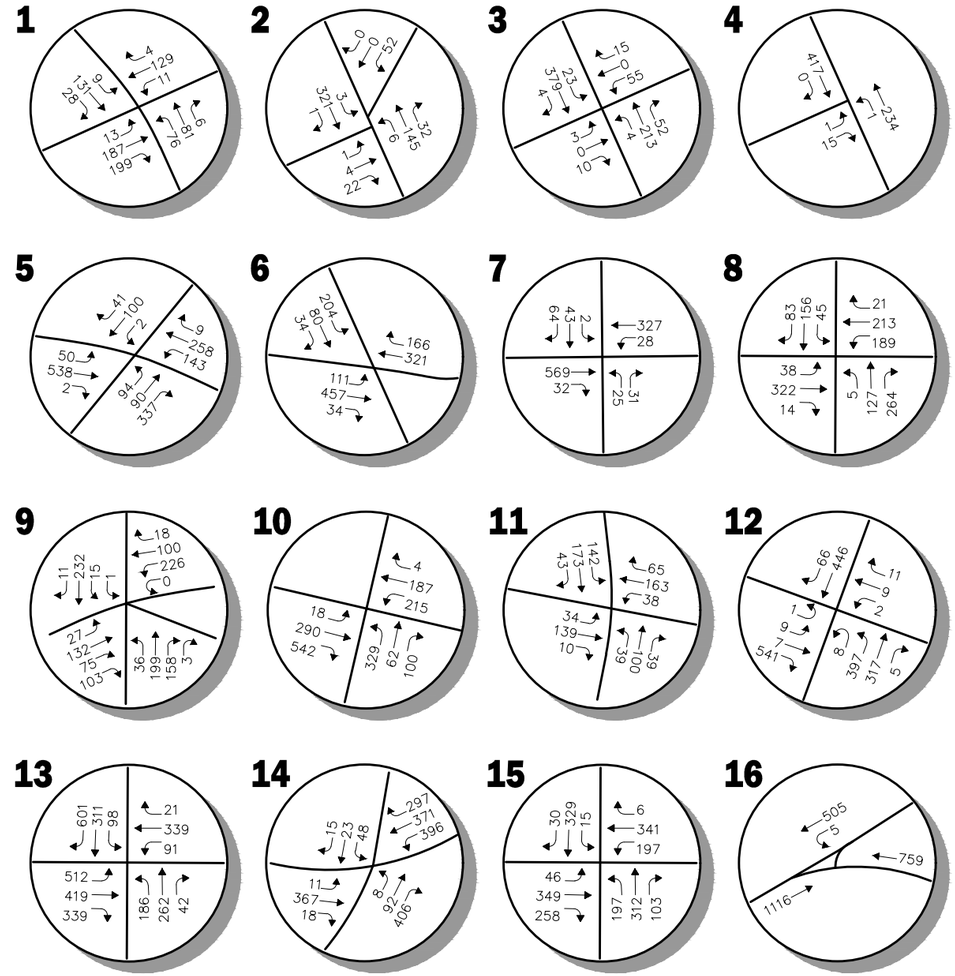
The 2031 Build condition networks consist of the 2031 No-Build traffic volumes with the anticipated Project-generated traffic added to them. The 2031 Build weekday morning and afternoon midday peak-hour traffic-volume networks are graphically depicted on Figure 7-11 and Figure 7-12, respectively.

A summary of peak-hour projected traffic-volume increases external to the study area that is the subject of this assessment is shown in Table 7-6. These volumes are based on the expected increases from the Project.

Table 7-6 Peak-Hour Traffic-Volume Increases

Location/Peak Hour	2031 No-Build	2031 Build	Traffic-Volume Increase Over No-Build	Percent Increase Over No-Build
Hudson Road, north of Packard Street:				
Weekday Morning	551	557	6	1.1
Weekday Afternoon	614	616	2	0.3
Old Bolton Road, north of Cox Street:				
Weekday Morning	264	266	2	0.8
Weekday Afternoon	287	287	0	--
Hudson Road, north of Cox Street:				
Weekday Morning	431	437	6	1.4
Weekday Afternoon	475	477	2	0.4
Wilkins Street, north of Main Street:				
Weekday Morning	288	292	4	1.4
Weekday Afternoon	349	351	2	0.6
Main Street, east of Wilkins Street:				
Weekday Morning	1,275	1,287	12	0.9
Weekday Afternoon	1,296	1,300	4	0.3
Route 20*, east of Stevens Street:*				
Weekday Morning	1,881	1,885	4	0.2
Weekday Afternoon	2,128	2,130	2	0.1
Route 20*, west of Lincoln Street:*				
Weekday Morning	2,376	2,380	4	0.2
Weekday Afternoon	2,494	2,496	2	0.1
Packard Street*, west of Lincoln Street:*				
Weekday Morning	424	428	4	0.9
Weekday Afternoon	493	495	2	0.4
Route 85C*, south of Washington Drive:*				
Weekday Morning	2,368	2,396	28	1.2
Weekday Afternoon	2,447	2,459	12	0.5
Central Street*, west of Washington Street:*				
Weekday Morning	1,346	1,366	20	1.5
Weekday Afternoon	1,860	1,866	6	0.3





*Illegal maneuver.

Source: Google Earth.

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Figure 7-11

2031 Build Condition
Weekday Morning
Peak-Hour Traffic Volumes

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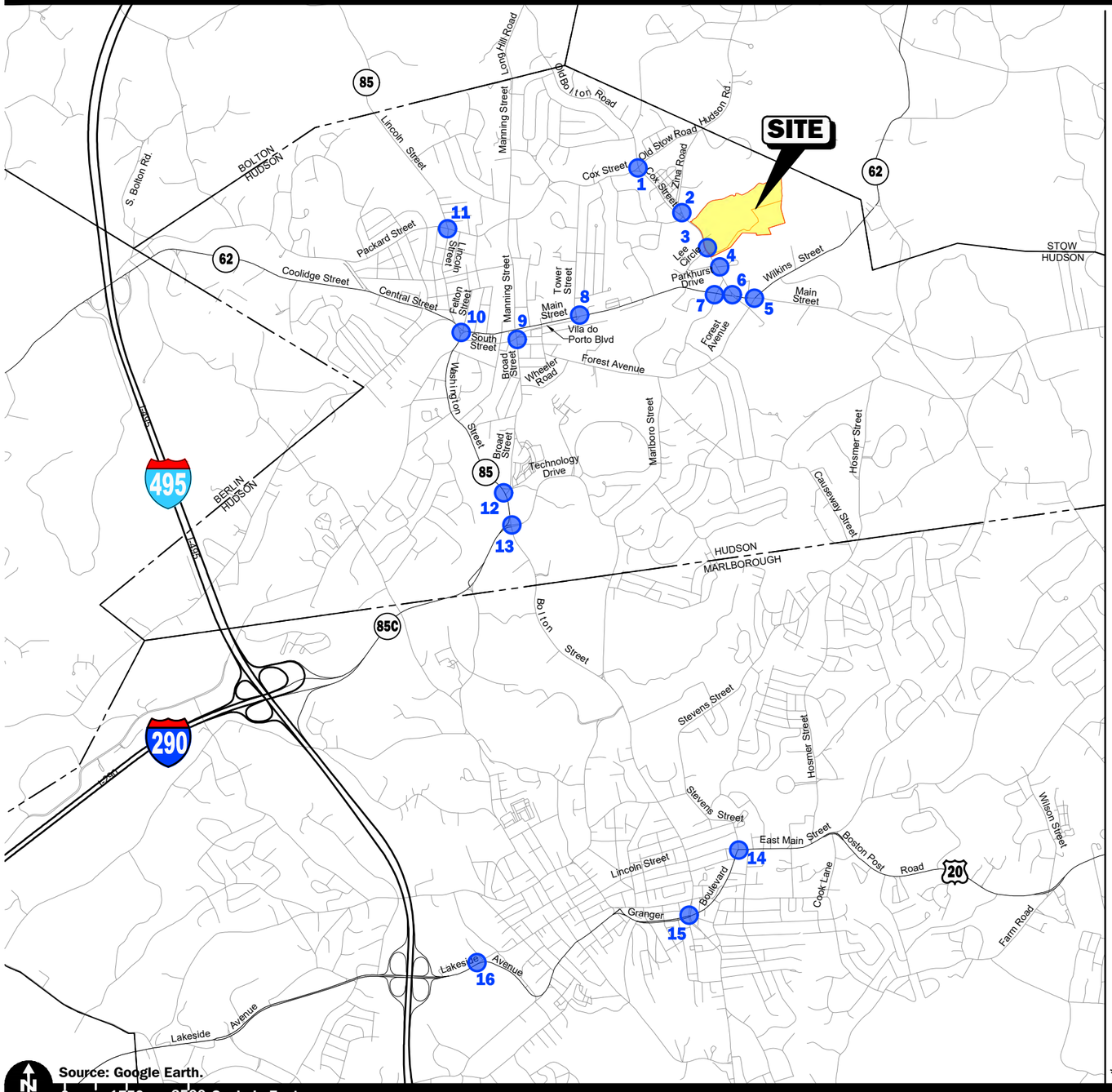

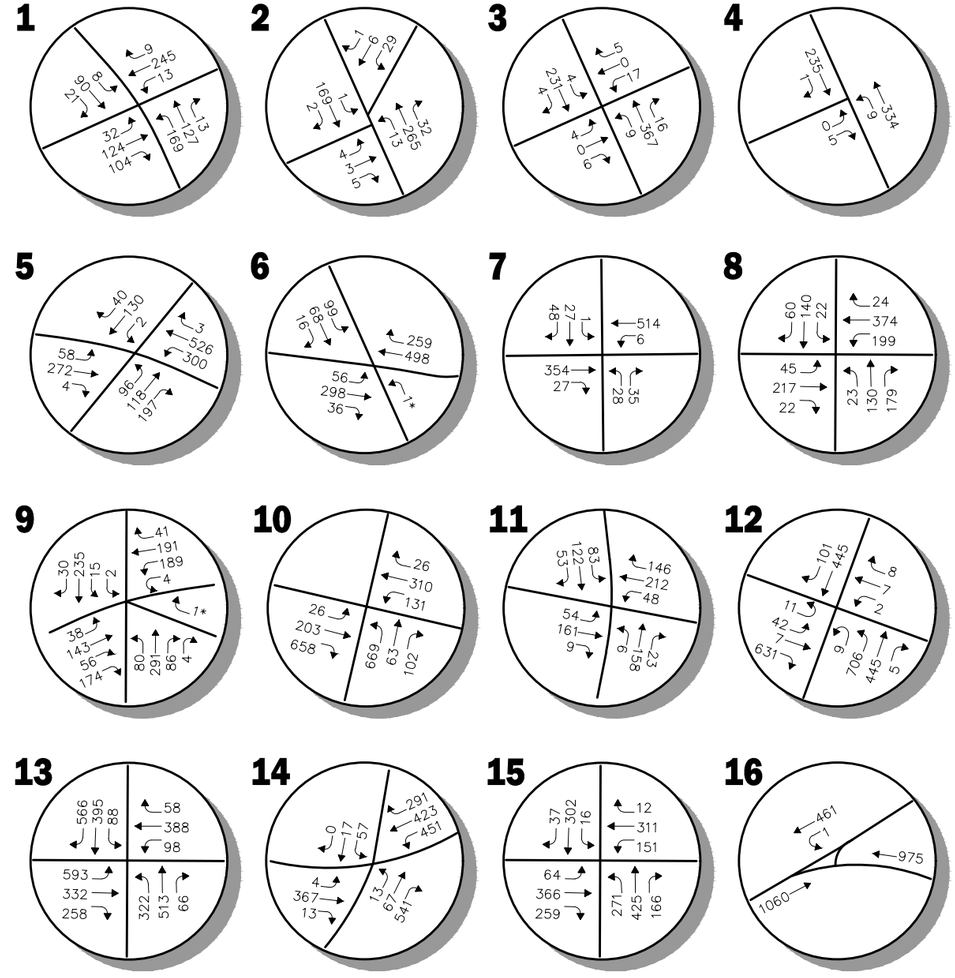

*Illegal maneuver.

Figure 7-12

2031 Build Condition
Weekday Afternoon
Peak-Hour Traffic Volumes

Vanasse & Associates inc

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As shown in Table 7-6, Project-related traffic-volume increases external to the study area relative to 2031 No-Build conditions are anticipated to range from 2 to 28 vehicles or 0.1 to 1.5 percent during the peak periods.

7.4 Sight Distance Evaluation

Sight distance measurements were performed at the Transfer Station proposed new driveway intersections with Cox Street in accordance with MassDOT and American Association of State Highway and Transportation Officials (AASHTO)[11] recommendations. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance recommended to be provided by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD is the sight distance recommended to be provided by a driver entering or crossing an intersecting roadway to perceive an on-coming vehicle and safely complete a turning or crossing maneuver with on-coming traffic. ***In accordance with AASHTO standards, if the available sight distance for an entering or crossing vehicle is at least equal to the appropriate sight distance for the major road, drivers have sufficient sight distance to anticipate and avoid collisions.*** Table 7-7 presents the measured SSD and ISD at the subject intersection.

Table 7-7 Sight Distances Measurements[1]

Intersection/Sight Distance Measurement	Recommended Minimum Distances (Feet)[2] (32 mph)[3]	(34 mph)[3]	Measured
Cox Street at the proposed new driveway			
Stopping Sight Distance:			
Cox Street approaching from the north.	220	--	382 (400)[4]
Cox Street approaching from the south	--	240	500+
Intersection Sight Distance:			
Looking to the north from the proposed new driveway	450	--	285 (400)[4]
Looking to the south from the proposed new driveway	--	425	500+

[1] Recommended minimum values obtained from A Policy on Geometric Design of Highways and Streets, 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018. Values calculated used data appropriate for trucks entering and exiting the driveway.

[2] Values shown are the intersection sight distance for a vehicle turning right or left exiting a roadway under STOP control such that motorists approaching the intersection on the major street should not need to adjust their travel speed to less than 70 percent of their initial approach speed.

[3] Based on the 85th percentile speed of 34 mph, a maximum speed of 35 mph speed was assumed for the analysis.

[4] Value in parentheses is the available dimension if existing bush is removed or trimmed.

[11] *A Policy on Geometric Design of Highway and Streets,* 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2018.

As can be seen in Table 7-7, the sight distances at the proposed new driveway with Cox Street were found to exceed the recommended minimum for SSD, based on the 85th percentile speed of 32 and 34 mph. Due to existing vegetation and road vegetation, ISD is not currently present at this driveway looking to the north direction. However, since the measured ISD is greater than the recommended SSD value, then drivers have sufficient sight distance to anticipate and avoid collisions. During the site visit, VAI identified existing bushes and trees on the north side of the driveway, which is obstructing the view for drivers looking to the north. If this vegetation is trimmed or removed, better sight vision would be provided for drivers. Therefore, VAI recommends either trimming or removing this vegetation to enhance drivers' sight visibility.

In order to encourage safe and efficient flow of traffic to and from the site, should any landscaping or signage along the site frontage or the site driveway be proposed or requested by others, these features are recommended to be no higher than 24 inches or be set back sufficiently from the edge of the roadways so as not to inhibit the available sightlines.

7.5 Traffic Operations Analysis

Measuring existing and future traffic volumes quantifies traffic flow within the study area. To assess quality of flow, roadway capacity and vehicle queue analyses were conducted under Existing, No-Build, and Build traffic-volume conditions. Capacity analyses provide an indication of how well the roadway facilities serve the traffic demands placed upon them, with vehicle queue analyses providing a secondary measure of the operational characteristics of an intersection or section of roadway under study.

7.5.1 Methodology

7.5.1.1 Levels of Service

A primary result of capacity analyses is the assignment of level of service to traffic facilities under various traffic-flow conditions.[12] The concept of level of service is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six levels of service are defined for each type of facility. They are given letter designations from A to F, with level-of-service (LOS) A representing the best-operating conditions and LOS F representing congested or constrained operating conditions.

[12] *The capacity analysis methodology is based on the concepts and procedures presented in the Highway Capacity Manual 6th Edition; Transportation Research Board; Washington, DC; 2016.*

Since the level of service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service, depending on the time of day, day of week, or period of year.

7.5.1.2 Signalized Intersections

The six levels of service for signalized intersections may be described as follows:

- LOS A describes operations with very low control delay; most vehicles do not stop at all.
- LOS B describes operations with relatively low control delay. However, more vehicles stop than LOS A.
- LOS C describes operations with higher control delays. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
- LOS D describes operations with control delay in the range where the influence of congestion becomes more noticeable. Many vehicles stop, and individual cycle failures are noticeable.
- LOS E describes operations with high control delay values. Individual cycle failures are frequent occurrences.
- LOS F describes operations with high control delay values that often occur with over-saturation. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Levels of service for signalized intersections were calculated using the Percentile Delay Method implemented as a part of the Synchro™ 11 software as required by MassDOT. The Percentile Delay Method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on "percentile" delay. Level-of-service designations are based on the criterion of percentile delay per vehicle and are a measure of: i) driver discomfort; ii) motorist frustration; and iii) fuel consumption; and include a uniform delay based on percentile volumes using a Poisson arrival pattern, an initial queue move-up time, and a queue interaction delay that accounts for delays resulting from queues extending from adjacent intersections. Table 7-8 summarizes the relationship between level-of-service and percentile delay and uses the same numerical delay thresholds as the *Highway Capacity Manual*[13] method. The tabulated percentile delay criterion may be applied in assigning level-of-service designations to individual lane groups, individual intersection approaches, or to entire intersections.

[13] *Highway Capacity Manual 6th Edition*; Transportation Research Board; Washington, DC; 2016.

Table 7-8 Level-of-Service Criteria for Signalized Intersections

Level of Service	Percentile Delay Per Vehicle (Seconds)
A	≤10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	>80.0

7.5.1.3 Unsignalized Intersections

The six levels of service for unsignalized intersections may be described as follows:

- LOS A represents a condition with little or no control delay to minor street traffic.
- LOS B represents a condition with short control delays to minor street traffic.
- LOS C represents a condition with average control delays to minor street traffic.
- LOS D represents a condition with long control delays to minor street traffic.
- LOS E represents operating conditions at or near capacity level, with very long control delays to minor street traffic.
- LOS F represents a condition where minor street demand volume exceeds capacity of an approach lane, with extreme control delays resulting.

The levels of service of unsignalized intersections are determined by application of a procedure described in the *Highway Capacity Manual 6th Edition.* Level of service is measured in terms of average control delay. Mathematically, control delay is a function of the capacity and degree of saturation of the lane group and/or approach under study and is a quantification of motorist delay associated with traffic control devices such as traffic signals and STOP signs. Control delay includes the effects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. Definitions for level of service at unsignalized intersections are also given in the *Highway Capacity Manual 6th Edition*. Table 7-9 summarizes the relationship between level of service and average control delay for two-way STOP-controlled and all-way STOP-controlled intersections.

Table 7-9 Level-of-Service Criteria for Unsignalized Intersections

Level-of-Service by Volume-to-Capacity Ratio		Average Control Delay
v/c ≤ 1.0	v/c > 1.0	(Seconds Per Vehicle)
A	F	≤10.0
B	F	10.1 to 15.0
C	F	15.1 to 25.0
D	F	25.1 to 35.0
E	F	35.1 to 50.0
F	F	>50.0

Source: *Highway Capacity Manual 6th Edition*; Transportation Research Board; Washington, DC; 2016; page 20-6.

7.5.1.4 Rotary

The rotary capacity analysis is based on the procedures described in SIDRA SOLUTIONS roundabout analysis methodology[14]. The main features of SIDRA for rotary capacity estimation are the dependence of gap acceptance parameters on rotary geometry, circulating flows and entry lane flows, and the designation of approach lanes as controlling and otherwise that have different capacity characteristics. Provision of two-lane approaches tends to substantially increase rotary capacity. As a general rule, individual approach volumes exceeding 85 percent of the calculated capacity of that approach are considered over-saturated and indicate areas of concern.

The SIDRA analytical model calculates several components of delay. One of these, the average total delay component, produces level-of-service results based on the concepts described in the *Highway Capacity Manual*. Using this level-of-service delay definition for rotaries results in criteria similar to those for unsignalized intersections. The delay ranges that define levels of service for rotaries are shown in Table 7-10.

Table 7-10 Level-of-Service Criteria for Rotaries

Level of Service	Control Delay Per Vehicle (Seconds)
A	≤10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 50.0
E	50.1 to 70.0
F	>70.0

Source: SIDRA V9.1 Users Guide; SIDRA SOLUTIONS, AKCELIK & Associates Pty Ltd; Greythorn, Victoria 3104, Australia; 2023.

[14] SIDRA SOLUTIONS 9.1 User Guide; Akcelik & Associates Pty Ltd; Greythorn, Victoria 3104, Australia; 2024.

7.5.1.5 Vehicle Queue Analysis

Vehicle queue analyses are a direct measurement of an intersection's ability to process vehicles under various traffic control and volume scenarios and lane use arrangements. The vehicle queue analysis was performed using the Synchro® intersection capacity analysis software for unsignalized and signalized intersections, and using the SIDRA analytical model for rotaries, which are based upon the methodology and procedures presented in the Synchro Percentile Delay Method and *Highway Capacity Manual* 6th edition, respectively. The Synchro® vehicle queue analysis methodology is a simulation-based model which reports the number of vehicles that experience a delay of six seconds or more at an intersection. For signalized intersections, Synchro® reports both the average (50th percentile) and the 95th percentile vehicle queue. For unsignalized intersections and rotaries, Synchro® and *SIDRA*, respectively, report the 95th percentile vehicle queue. Vehicle queue lengths are a function of the capacity of the movement under study and the volume of traffic being processed by the intersection during the analysis period. The 95th percentile vehicle queue is the vehicle queue length that will be exceeded only 5 percent of the time, or approximately 3 minutes out of 60 minutes during the peak one hour of the day (during the remaining 57 minutes, the vehicle queue length will be less than the 95th percentile queue length).

7.5.2 Analysis Results

Level-of-service analyses were conducted for 2024 Existing, 2031 No-Build, and 2031 Build conditions for the study area intersections. The results of the intersection capacity analysis within the study area are described below, with a tabular summary provided in Tables 7-11, 7-12, and 7-13. Operations worksheets are included in Attachment 12 of Appendix D.

It is important to note that with the increase in the total number of trucks on the road network, the percentage representing heavy trucks has been adjusted to accurately reflect this increase under the proposed Build conditions.

7.5.2.1 Signalized Intersections

Under existing conditions, all studied signalized intersections are currently operating at an acceptable overall LOS B during weekday morning and afternoon peak hours, except for the intersection of Washington Street and Route 85 /Technology Drive, which operates at LOS C during weekday morning and at LOS D during the weekday afternoon peak hour. Similarly, under the No-build scenario, most studied signalized intersections are expected to maintain excellent operations (LOS C or better), with all movements operating below capacity. The exception is that under the No-Build condition, the Washington Street intersection with Route 85 /Technology Drive will operate at LOS D during weekday morning and at LOS E during the weekday afternoon peak hour.

With the addition of the Project-related traffic, no change in LOS over No-Build conditions are expected, except for the intersection of Main Street with Cox Street/Glendale Road, which was shown to result in a minor increase in average motorist delay (up to 3.0 seconds) that resulted in a change in level-of-service from LOS B to LOS C during the weekday morning peak-hour.

Overall, Project-related impacts are defined as a predicted increase in overall average motorist delay of less than 5 seconds with no material increase in vehicle queuing, with average of 2 vehicles increase on average, compared to the future No-Build condition. The exception is the intersection of Broad Street with South Street/Vila do Porto Boulevard, where an increase of 7 seconds is expected on the overall delays.

7.5.2.2 Unsignalized Intersection Analysis Results

Under existing conditions, vehicles turning to/from most of the studied intersections currently operate at a LOS C or better during both peak hour periods. With the exception of the intersection of Main Street with Woodrow Street/Mackin Street and Lakeside Avenue (Route 20) with Lincoln Street. Turning movements from Woodrow Street onto Main Street are shown to operate at an acceptable Level of Service (LOS) D during the weekday morning peak hour. At the intersection of Lakeside Avenue (Route 20) with Lincoln Street, turns from Lincoln Street onto Lakeside Avenue (Route 20) are shown to operate under LOS F conditions during both peak periods.

The addition of Project-related traffic at the intersection of Main Street with Woodrow Street/Mackin Street was shown to result in minor increases in average motorist delay (up to 4.5 second) that resulted in a degradation in level-of-service at the eastbound approach from LOS D to LOS E during the weekday morning peak-hour. This occurs as the project adds additional through movements along Main Street.

Transfer Station Driveway

Under existing conditions, the Transfer Station Driveway functions efficiently, operating at a satisfactory LOS C during weekday morning peak hours and at LOS B during the afternoon peak. Under the No-build scenario, it is anticipated that this driveway will operate at a LOS C during both peak periods. However, with the proposed expansion, the new driveway of the Transfer Station and Recycling Facility is expected to increase in average motorist delay (up to 10.9 seconds) which resulted in a degradation in level-of-service from LOS C to LOS D during the weekday morning peak-hour. During the weekday afternoon peak hour LOS at this driveway will remain the same (LOS C). However, these delays are realized on-site so adjacent street traffic does not experience these delay increases.

7.5.2.3 Rotary Intersection Analysis Results

Route 85/Washington Street and Broad Street

Under existing conditions, this intersection operates at LOS A during both peak hours. Under future conditions this intersection is expected to operate at LOS A during the weekday morning peak hour and at LOS B during the weekday afternoon peak hour. No change in the overall LOS with a negligible increase in motorist delays is expected with the addition of the project traffic.

Main Street (Route 62) at Washington Street (Downtown Rotary)

Under existing conditions, this intersection operates at LOS C during both peak hours, and no change in the overall LOS is anticipated under future No-build conditions. With the addition of Project-related traffic, this rotary has been shown to result in some increases in the overall motorist delays (up to 4.5 seconds). This increase leads to a degradation in the overall LOS shifting from LOS C to LOS D during the weekday morning peak hour. Additionally, vehicle queues at the rotary were indicated to increase by up to 6 vehicles.

Table 7-11 Signalized Intersection Capacity Analysis Summary

Signalized Intersection/ Peak Hour/Movement	2024 Existing V/C[1]	2024 Existing Delay[2]	2024 Existing LOS[3]	2024 Existing Queue[4] Avg/95th	2031 No-Build V/C	2031 No-Build Delay	2031 No-Build LOS	2031 No-Build Queue Avg/95th	2031 Build V/C	2031 Build Delay	2031 Build LOS	2031 Build Queue Avg/95th
Main Street at Forest Avenue/Wilkins Street												
Weekday Morning:												
Main Street EB LT	0.08	6.9	A	6/24	0.09	7.3	A	8/27	0.10	7.3	A	8/27
Main Street EB TH/RT	0.70	21.7	C	152/330	0.77	25.1	C	186/387	0.77	25.3	C	190/394
Main Street WB LT	0.33	7.9	A	19/56	0.40	9.3	A	23/63	0.40	9.3	A	23/63
Main Street WB TH	0.33	15.0	B	58/133	0.35	15.4	B	74/163	0.36	15.5	B	77/168
Main Street WB RT	0.01	0.0	A	0/0	0.01	0.0	A	0/0	0.01	0.0	A	0/0
Forest Avenue NB LT/TH	0.52	28.3	C	58/152	0.57	31.8	C	69/174	0.58	32.5	C	70/176
Forest Avenue NB RT	0.54	6.6	A	0/62	0.57	7.1	A	1/71	0.57	7.4	A	2/73
Wilkins Street SB LT/TH	0.33	23.8	C	43/80	0.36	26.0	C	51/90	0.36	26.4	C	52/92
Wilkins Street SB RT	0.08	4.8	A	0/10	0.10	5.0	A	0/11	0.10	5.2	A	0/11
Overall	--	**16.3**	**B**	--	--	**18.3**	**B**	--	--	**18.5**	**B**	--
Weekday Afternoon:												
Main Street EB LT	0.16	7.7	A	9/29	0.18	8.0	A	10/30	0.18	8.1	A	11/31
Main Street EB TH/RT	0.41	16.7	B	70/143	0.45	17.3	B	93/174	0.46	17.5	B	94/175
Main Street WB LT	0.48	9.4	A	46/119	0.55	10.9	B	56/132	0.56	11.0	B	57/132
Main Street WB TH	0.68	21.8	C	161/332	0.72	23.2	C	204/391	0.72	23.2	C	207/393
Main Street WB RT	0.00	0.0	A	0/0	0.00	0.0	A	0/0	0.00	0.0	A	0/0
Forest Avenue NB LT	0.60	31.0	C	71/174	0.64	35.0	C	86/205	0.64	35.2	D	87/207
Forest Avenue NB RT	0.38	6.3	A	0/49	0.40	6.6	A	0/53	0.40	6.6	A	0/53
Wilkins Street SB LT/TH	0.31	24.0	C	42/108	0.33	26.7	C	51/126	0.33	26.8	C	51/127
Wilkins Street SB RT	0.06	5.2	A	0/17	0.07	5.7	A	0/21	0.07	5.7	A	0/21
Overall	--	**17.5**	**B**	--	--	**19.0**	**B**	--	--	**19.1**	**B**	--
Main Street at Cox Street/Glendale Road												
Weekday Morning:												
Main Street EB LT/TH/RT	0.73	17.5	B	130/260	0.78	19.8	B	168/292	0.85	24.8	C	207/333
Main Street WB TH	0.33	9.9	A	53/108	0.37	10.4	B	69/120	0.35	10.2	B	74/116
Main Street WB RT	0.16	2.2	A	0/22	0.17	2.0	A	0/23	0.18	1.7	A	0/21
Cox Street SB LT/TH/RT	0.62	23.9	C	79/175	0.65	26.7	C	95/208	0.78	37.8	D	133/344
Overall	--	**15.6**	**B**	--	--	**17.2**	**B**	--	--	**22.2**	**C**	--
Weekday Afternoon:												
Main Street EB LT/TH/RT	0.42	8.8	A	55/112	0.58	11.4	B	69/138	0.65	13.9	B	78/163
Main Street WB TH	0.45	9.1	A	71/157	0.60	11.8	B	86/190	0.61	12.4	B	90/205
Main Street WB RT	0.23	3.1	A	9/39	0.30	3.8	A	13/48	0.31	4.1	A	14/52
Cox Street SB LT/TH/RT	0.36	16.8	B	31/85	0.48	20.1	C	41/105	0.53	21.0	C	46/112
Overall	--	**8.9**	**A**	--	--	**11.3**	**B**	--	--	**12.6**	**B**	--

See notes at end of table.

Table 7-11 Signalized Intersection Capacity Analysis Summary (Continued)

Signalized Intersection/ Peak Hour/Movement	2024 Existing				2031 No-Build				2031 Build			
	V/C[1]	Delay[2]	LOS[3]	Queue[4] Avg/95th	V/C	Delay	LOS	Queue Avg/95th	V/C	Delay	LOS	Queue Avg/95th
Main Street at Vila do Porto Boulevard/ Tower Street												
Weekday Morning:												
Main Street EB LT/TH/RT	0.68	22.5	C	88/231	0.71	23.0	C	101/261	0.67	20.8	C	106/273
Main Street WB LT	0.70	32.5	C	39/148	0.73	34.8	C	44/166	0.78	38.3	D	52/220
Main Street WB TH/RT	0.40	16.3	B	42/137	0.42	16.0	B	49/153	0.40	15.2	B	51/162
Vila do Porto Boulevard NB LT/TH	0.16	17.1	B	19/110	0.19	18.5	B	23/128	0.20	20.4	C	29/128
Vila do Porto Boulevard NB RT	0.31	4.8	A	0/59	0.33	5.0	A	0/63	0.39	5.5	A	0/65
Tower Street SB LT/TH/RT	0.40	18.2	B	44/247	0.46	20.6	C	53/303	0.49	22.9	C	67/304
Overall	--	**18.4**	**B**	--	--	**19.4**	**B**	--	--	**19.8**	**B**	--
Weekday Afternoon:												
Main Street EB LT/TH/RT	0.52	18.7	B	54/174	0.61	20.7	C	65/206	0.61	21.0	C	67/210
Main Street WB LT	0.55	21.7	C	43/142	0.59	22.9	C	48/159	0.64	25.1	C	51/171
Main Street WB TH/RT	0.69	22.6	C	92/263	0.71	22.8	C	104/294	0.72	23.1	C	106/297
Vila do Porto Boulevard NB LT/TH	0.20	17.6	B	25/130	0.23	18.9	B	30/148	0.23	19.0	B	30/148
Vila do Porto Boulevard NB RT	0.22	5.2	A	0/50	0.25	5.3	A	0/54	0.27	5.4	A	0/55
Tower Street SB LT/TH/RT	0.34	17.6	B	39/159	0.41	19.8	B	51/197	0.42	19.9	B	52/198
Overall	--	**18.3**	**B**	--	--	**19.4**	**B**	--	--	**19.9**	**B**	--
Broad Street and South Street/ Vila do Porto Boulevard												
Weekday Morning:												
South Street EB LT/TH	0.36	10.9	B	40/86	0.38	11.3	B	49/93	0.37	11.6	B	53/93
South Street EB RT	0.16	3.1	A	0/19	0.16	3.0	A	0/20	0.16	3.0	A	0/20
Vila do Porto Boulevard WB LT/TH/RT	0.82	28.5	C	87/134	0.88	35.9	D	112/182	0.98	55.6	E	148/208
Broad Street NB LT/TH/RT	0.72	19.0	B	79/134	0.78	22.7	C	91/152	0.83	26.1	C	96/167
Broad Street SB LT/TH/RT	0.47	14.4	B	57/100	0.50	15.0	B	63/108	0.49	14.9	B	63/108
Overall	--	**18.3**	**B**	--	--	**21.7**	**C**	--	--	**28.7**	**C**	--
Weekday Afternoon:												
South Street EB LT/TH	0.41	11.9	B	50/86	0.42	12.3	B	58/92	0.42	12.2	B	58/92
South Street EB RT	0.26	2.9	A	0/20	0.27	2.8	A	0/21	0.27	2.8	A	0/21
Vila do Porto Boulevard WB LT/TH/RT	0.78	23.7	C	92/214	0.85	30.4	C	114/254	0.88	34.1	C	120/266
Broad Street NB LT/TH/RT	0.75	21.5	C	97/218	0.81	26.2	C	112/249	0.83	28.3	C	114/257
Broad Street SB LT/TH/RT	0.52	14.4	B	67/105	0.55	15.3	B	75/112	0.55	15.4	B	75/112
Overall	--	**16.9**	**B**	--	--	**20.1**	**C**	--	--	**21.7**	**C**	--

See notes at end of table.

Table 7-11 Signalized Intersection Capacity Analysis Summary (Continued)

Signalized Intersection/ Peak Hour/Movement	2024 Existing				2031 No-Build				2031 Build			
	V/C[1]	Delay[2]	LOS[3]	Queue[4] Avg/95th	V/C	Delay	LOS	Queue Avg/95th	V/C	Delay	LOS	Queue Avg/95th
Washington Street and Route 85 /Technology Dr.												
Weekday Morning												
Route 85 EB LT	0.70	38.7	D	131/191	0.74	40.8	D	157/214	0.74	41.1	D	162/219
Route 85 EB TH/RT	0.64	22.4	C	173/236	0.78	29.4	C	193/263	0.78	30.1	C	195/263
Technology Drive WB LT	0.31	48.8	D	23/55	0.79	>80.0	F	67/164	0.79	>80.0	F	67/164
Technology Drive WB TH	0.57	38.8	D	94/132	0.70	44.7	D	124/168	0.72	46.7	D	125/169
Technology Drive WB RT	0.06	0.3	A	0/0	0.06	0.3	A	0/0	0.06	0.3	A	0/0
Washington Street NB LT	0.87	78.2	E	60/136	1.03	>80.0	F	72/146	1.04	>80.0	F	73/146
Washington Street NB TH/RT	0.32	31.3	C	71/113	0.66	42.7	D	100/143	0.66	42.9	D	102/143
Washington Street SB LT	0.12	31.5	C	16/47	0.29	35.8	D	54/112	0.29	36.1	D	54/113
Washington Street SB TH	0.34	26.0	C	71/119	0.35	27.4	C	81/127	0.34	27.3	C	82/128
Washington Street SB RT	0.81	20.3	C	114/286	0.84	24.0	C	151/377	0.84	24.6	C	162/396
Overall	--	**31.4**	**C**	--	--	**39.9**	**D**	--	--	**40.7**	**D**	--
Weekday Afternoon:												
Route 85 EB LT	0.78	48.2	D	177/365	0.79	48.5	D	208/438	0.80	48.9	D	211/446
Route 85 EB TH/RT	0.65	32.7	C	151/275	0.83	43.4	D	177/309	0.83	43.4	D	177/309
Technology Drive WB LT	0.31	47.0	D	42/112	0.35	46.0	D	68/179	0.35	46.0	D	68/179
Technology Drive WB TH	0.70	50.2	D	128/227	0.77	54.1	D	158/284	0.77	54.1	D	158/284
Technology Drive WB RT	0.16	0.8	A	0/0	0.17	0.9	A	0/0	0.17	0.9	A	0/0
Washington Street NB LT	0.70	53.9	D	101/238	0.76	59.4	E	113/258	0.76	59.4	E	113/258
Washington Street NB TH/RT	0.61	41.0	D	162/352	0.81	51.3	D	199/427	0.81	51.5	D	200/430
Washington Street SB LT	0.40	57.6	E	41/112	0.58	66.5	E	61/177	0.58	66.5	E	61/177
Washington Street SB TH	0.63	47.4	D	121/267	0.73	53.0	D	138/296	0.73	53.1	D	139/298
Washington Street SB RT	1.06	>82.5	F	245/636	1.20	>80.0	F	330/729	1.20	>80.0	F	337/739
Overall	--	**49.6**	**D**	--	--	**61.8**	**E**	--	--	**62.5**	**E**	--

See notes at end of table.

Table 7-11 Signalized Intersection Capacity Analysis Summary (Continued)

Signalized Intersection/ Peak Hour/Movement	2024 Existing				2031 No-Build				2031 Build			
	V/C[1]	Delay[2]	LOS[3]	Queue[4] Avg/95th	V/C	Delay	LOS	Queue Avg/95th	V/C	Delay	LOS	Queue Avg/95th
East Main Street at Lincoln Street and Stevens Street												
Weekday Morning												
Lincoln Street EB LT/TH/TR	0.49	20.4	C	51/116	0.52	22.3	C	63/136	0.52	22.5	C	64/136
East Main Street WB LT	0.57	9.2	A	49/114	0.66	11.2	B	65/153	0.67	11.6	B	67/156
East Main Street WB TH/RT	0.69	11.2	B	107/251	0.73	12.6	B	134/313	0.73	12.5	B	135/313
East Main Street NB LT/TH	0.35	22.4	C	31/72	0.36	24.7	C	38/86	0.36	24.9	C	38/86
East Main Street NB RT	0.51	5.4	A	29/59	0.59	7.5	A	48/105	0.59	7.6	A	49/107
Stevens Street SB LH/TH/RT	0.49	24.4	C	38/53	0.53	27.4	C	48/64	0.53	27.6	C	48/64
Overall	**--**	**12.8**	**B**	--	--	**14.5**	**B**	--	--	**14.6**	**B**	--
Weekday Afternoon:												
Lincoln Street EB LT/TH/TR	0.49	22.4	C	52/121	0.50	23.5	C	63/133	0.50	23.5	C	63/133
East Main Street WB LT	0.57	9.9	A	57/141	0.66	11.9	B	76/185	0.66	11.9	B	76/186
East Main Street WB TH/RT	0.68	11.7	B	117/289	0.71	12.8	B	143/354	0.71	12.8	B	143/354
East Main Street NB LT/TH	0.20	20.1	C	20/63	0.21	22.3	C	24/73	0.21	22.3	C	24/73
East Main Street NB RT	0.49	4.5	A	30/91	0.57	6.8	A	50/183	0.57	6.9	A	50/184
Stevens Street SB LH/TH/RT	0.56	26.7	C	53/47	0.59	29.9	C	64/55	0.59	29.9	C	64/55
Overall	**--**	**13.2**	**B**	--	--	**14.7**	**B**	--	--	**14.7**	**B**	--

See notes at end of table.

Table 7-11 Signalized Intersection Capacity Analysis Summary (Continued)

Signalized Intersection/ Peak Hour/Movement	2024 Existing				2031 No-Build				2031 Build			
	V/C[1]	Delay[2]	LOS[3]	Queue[4] Avg/95th	V/C	Delay	LOS	Queue Avg/95th	V/C	Delay	LOS	Queue Avg/95th
South Bolton Street (Route 85) & Granger Boulevard (Route 20)												
Weekday Morning												
Route 20 EB LT	0.11	11.8	B	10/26	0.13	12.0	B	11/27	0.15	12.2	B	11/28
Route 20 EB TH	0.68	29.4	C	120/201	0.71	30.2	C	134/225	0.71	30.2	C	134/225
Route 20 EB TR	0.40	5.1	A	0/46	0.42	5.0	A	0/48	0.42	5.0	A	0/48
Route 20 WB LT	0.59	21.4	C	51/92	0.66	25.5	C	56/116	0.66	25.5	C	56/116
Route 20 WB LH RT	0.57	24.0	C	118/198	0.62	25.7	C	141/242	0.63	26.1	C	142/259
Route 85 NB LT	0.35	12.4	B	43/80	0.41	13.5	B	48/87	0.41	13.5	B	48/87
Route 85 NB TH	0.34	13.4	B	78/131	0.38	14.2	B	87/145	0.38	14.2	B	87/145
Route 85 NB RT	0.12	3.3	A	0/23	0.13	3.3	A	1/24	0.13	3.3	A	1/24
Route 85 SB LT/ TH/RT	0.41	22.1	C	65/106	0.48	23.6	C	74/117	0.49	23.7	C	75/118
Overall	--	**18.4**	**B**	--	--	**19.6**	**B**	--	--	**19.7**	**B**	--
Weekday Afternoon:												
Route 20 EB LT	0.15	12.3	B	14/34	0.17	12.4	B	15/36	0.19	12.6	B	16/36
Route 20 EB TH	0.68	29.1	C	117/196	0.71	30.2	C	140/234	0.71	30.2	C	140/234
Route 20 EB TR	0.40	5.2	A	0/46	0.41	4.9	A	0/48	0.41	4.9	A	0/48
Route 20 WB LT	0.43	16.3	B	35/68	0.50	17.9	B	39/74	0.50	17.9	B	39/74
Route 20 WB LH RT	0.51	22.9	C	104/177	0.55	23.3	C	122/204	0.60	25.4	C	123/204
Route 85 NB LT	0.47	13.7	B	61/110	0.57	16.1	B	72/124	0.57	16.1	B	72/124
Route 85 NB TH	0.46	14.8	B	111/187	0.53	16.5	B	133/213	0.53	16.5	B	133/213
Route 85 NB RT	0.19	4.4	A	8/38	0.22	5.0	A	12/45	0.22	5.0	A	12/45
Route 85 SB LT/ TH/RT	0.44	22.5	C	65/100	0.52	24.8	C	76/111	0.53	24.9	C	76/112
Overall	--	**17.3**	**B**	--	--	**18.7**	**B**	--	--	**19.0**	**B**	--

[1]Volume-to-capacity ratio.
[2]Control (signal) delay per vehicle in seconds.
[3]Level of service.
[4]Queue length in feet.
NB = northbound; SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

Table 7-12 Unsignalized Intersection Capacity Analysis Summary

Unsignalized Intersection/ Peak Hour/Movement	2024 Existing V/C[1]	2024 Existing Delay[2]	2024 Existing LOS[3]	2024 Existing Queue[4]	2031 No-Build V/C	2031 No-Build Delay	2031 No-Build LOS	2031 No-Build Queue	2031 Build V/C	2031 Build Delay	2031 Build LOS	2031 Build Queue
Cox Street and Old Stow Road and Old Bold Road												
Weekday Morning:												
Cox Street NB	0.29	11.2	B	2	0.34	12.3	B	2	0.36	12.7	B	2
Cox Street EB	0.55	13.7	B	4	0.63	16.4	C	5	0.64	16.9	C	5
Old Strow Road WB	0.25	10.4	B	1	0.28	11.2	B	2	0.28	11.3	B	2
Old Bolton Road SB	0.29	11.2	B	2	0.33	12.2	B	2	0.33	12.3	B	2
Weekday Afternoon:												
Cox Street NB	0.50	14.6	B	3	0.59	17.8	C	4	0.59	18.0	C	4
Cox Street EB	0.43	12.6	B	3	0.50	14.8	B	3	0.50	14.9	B	3
Old Strow Road WB	0.44	13.1	B	2	0.51	15.4	C	3	0.51	15.5	C	3
Old Bolton Road SB	0.20	10.5	B	1	0.26	11.8	B	1	0.25	11.8	B	1
Pierce Street/Zina Road and Cox Street												
Weekday Morning:												
Pierce Street NE LT/ TH/RT	0.05	10.7	B	1	0.05	10.9	B	1	0.05	11.0	B	1
Cox Street NW LT	0.01	8.1	A	0	0.01	8.2	A	0	0.01	8.2	A	0
Cox Street SE LT	0.00	7.5	A	0	0.00	7.6	A	0	0.00	7.6	A	0
Zina Road SW LT/ TH/RT	0.15	14.5	B	1	0.17	15.7	C	1	0.19	16.3	C	1
Weekday Afternoon:												
Pierce Street NE LT/ TH/RT	0.05	11.2	B	1	0.05	11.6	B	1	0.05	11.7	B	1
Cox Street NW LT	0.01	7.5	A	0	0.01	7.6	A	0	0.01	7.6	A	0
Cox Street SE LT	0.00	7.7	A	0	0.00	7.8	A	0	0.00	7.8	A	0
Zina Road SW LT/ TH/RT	0.12	13.3	B	1	0.15	14.3	B	1	0.15	14.6	B	1
Lee Circle/Transfer Station and Cox Street												
Weekday Morning:												
Lee Circle NE LT/ TH/RT	0.03	12.5	B	1	0.04	13.0	B	1	0.04	13.4	B	1
Cox Street NB LT	0.01	8.1	A	0	0.01	8.2	A	0	0.01	8.2	A	0
Cox Street SB LT	0.02	8.2	A	0	0.02	8.3	A	0	0.03	8.9	A	1
Transfer Station SW LT/ TH/RT	0.08	15.5	C	1	0.09	16.7	C	1	0.35	28.1	D	2
Weekday Afternoon:												
Lee Circle NE LT/ TH/RT	0.03	11.1	B	1	0.03	11.6	B	1	0.03	11.7	B	1
Cox Street NB LT	0.01	7.6	A	0	0.01	7.7	A	0	0.01	7.7	A	0
Cox Street SB LT	0.00	7.9	A	0	0.00	8.0	A	0	0.01	9.2	A	0
Transfer Station SW LT/ TH/RT	0.02	14.6	B	1	0.02	15.6	C	1	0.12	18.6	C	1

See notes at end of table.

Table 7-12 Unsignalized Intersection Capacity Analysis Summary (Continued)

Unsignalized Intersection/ Peak Hour/Movement	2024 Existing V/C[1]	2024 Existing Delay[2]	2024 Existing LOS[3]	2024 Existing Queue[4]	2031 No-Build V/C	2031 No-Build Delay	2031 No-Build LOS	2031 No-Build Queue	2031 Build V/C	2031 Build Delay	2031 Build LOS	2031 Build Queue
Cox Street and Parkhurst Drive												
Weekday Morning:												
CoxStreet NB LT	0.00	8.1	A	0	0.00	8.1	A	0	0.00	8.2	A	0
Parkhurst Drive EB LT/ TH/RT	0.03	10.7	B	1	0.03	11.0	B	1	0.03	11.4	B	1
Weekday Afternoon:												
Cox Street NB LT	0.01	7.7	A	0	0.01	7.7	A	0	0.01	7.8	A	0
Parkhurst Drive EB LT/ TH/RT	0.01	9.4	A	0	0.01	9.6	A	0	0.01	9.7	A	0
Woodrow Street/Mackin Street and Main Street												
Weekday Morning:												
Woodrow Street NB LT/ TH/RT	0.30	25.2	D	2	0.38	32.1	D	2	0.43	37.4	E	2
Mackin Street SB LT/ TH/RT	0.36	19.1	C	2	0.43	22.3	C	3	0.46	24.8	C	3
Weekday Afternoon:												
Woodrow Street NB LT/ TH/RT	0.23	18.1	C	1	0.29	21.4	C	2	0.30	22.9	C	2
Mackin Street SB LT/ TH/RT	0.22	15.8	C	1	0.27	17.6	C	2	0.28	18.2	C	2
Cox Street/Parkhurst Street and Lincoln Street												
Weekday Morning:												
Lincoln Street NB	0.38	12.8	B	2	0.44	14.5	B	3	0.44	14.8	B	3
Parkhurst Street EB	0.31	12.3	B	2	0.38	13.9	B	2	0.39	14.3	B	2
Cox Street WB	0.47	14.3	B	3	0.55	17.0	C	4	0.56	17.6	C	4
Lincoln Street SB	0.57	16.9	C	4	0.67	21.1	C	5	0.68	22.1	C	6
Weekday Afternoon:												
Lincoln Street NB	0.32	12.4	B	2	0.37	13.8	B	2	0.37	13.8	B	2
Parkhurst Street EB	0.40	13.2	B	2	0.48	15.4	C	3	0.48	15.6	C	3
Cox Street WB	0.65	18.8	C	5	0.75	24.6	C	7	0.75	25.0	C	7
Lincoln Street SB	0.45	14.2	B	3	0.52	16.4	C	3	0.52	16.6	C	3
Lakeside Avenue and Lincoln Street												
Weekday Morning:												
Lincoln Street SB	1.26	>50.0	F	22	1.68	>50.0	F	35	1.69	>50.0	F	36
Weekday Afternoon:												
Lincoln Street SB	1.36	>50.0	F	22	1.79	>50.0	F	33	1.79	>50.0	F	33

[1]Demand in vehicles per hour.
[2]Delay in seconds per vehicle.
[3]Level of service.
[4]95th percentile queue length in Vehicles.
NB = northbound; SB = southbound; EB = eastbound; WB = westbound; NE = northeastbound; LT = left-turning movements; TH = through movements; RT = right-turning movements;

Table 7-13 Rotary Capacity Analysis Summary

Rotary/Peak Hour/Movement	2024 Existing V/C[1]	2024 Existing Delay[2]	2024 Existing LOS[3]	2024 Existing Queue[4]	2031 No-Build V/C	2031 No-Build Delay	2031 No-Build LOS	2031 No-Build Queue	2031 Build V/C	2031 Build Delay	2031 Build LOS	2031 Build Queue
Main Street (Route 62) at Washington Street (downtown rotary)												
Weekday Morning:												
Washington Street NB	0.56	11.8	B	5	0.62	13.9	B	7	0.63	14.3	B	8
Route 62 WB	0.50	10.7	B	4	0.56	12.4	B	5	0.58	13.4	B	6
Route 62 SB	0.92	32.8	C	36	1.01	53.8	E	55	1.04	62.3	E	61
Overall	**0.92**	**21.7**	**C**	**36**	**1.01**	**32.9**	**C**	**55**	**1.04**	**37.4**	**D**	**61**
Weekday Afternoon:												
Washington Street NB	0.82	21.1	C	21	0.90	30.5	C	34	0.91	31.2	C	35
Route 62 WB	0.72	22.2	C	9	0.89	42.0	D	18	0.90	43.8	D	18
Route 62 SB	0.79	18.6	B	15	0.87	25.0	C	30	0.87	25.7	C	31
Overall	**0.82**	**20.4**	**C**	**21**	**0.90**	**30.9**	**C**	**34**	**0.90**	**31.8**	**C**	**35**
Route 85/Washington Street and Broad Street												
Weekday Morning:												
Washington Street NB	0.31	6.2	A	2	0.33	6.6	A	2	0.34	6.7	A	3
Gas Station	--	--	--	--	0.03	5.7	A	1	0.03	5.8	A	1
Broad Street SWB	0.35	8.4	A	2	0.38	9.3	A	2	0.39	9.4	A	2
Washington Street SB	0.41	10.8	B	3	0.45	12.1	B	3	0.46	12.4	B	3
Overall	**0.41**	**8.3**	**A**	**3**	**0.45**	**9.0**	**A**	**3**	**0.46**	**9.2**	**A**	**3**
Weekday Afternoon												
Washington Street NB	0.48	7.8	A	5	0.52	8.5	A	5	0.54	9.1	A	6
Gas Station	--	--	--	--	0.03	8.1	A	1	0.04	10.3	B	1
Broad Street SWB	0.42	11.6	B	3	0.48	13.4	B	3	0.52	15.6	B	3
Washington Street SB	0.39	10.1	B	2	0.53	13.5	B	4	0.54	14.3	B	4
Overall	**0.48**	**9.3**	**A**	**5**	**0.53**	**11.0**	**B**	**5**	**0.54**	**12.0**	**B**	**6**

[1]Demand in vehicles per hour.
[2]Delay in seconds per vehicle.
[3]Level of service.
[4]95th percentile queue length in vehicles.
NB = northbound; SB = southbound; WB = westbound; SW = southwestbound.

7.6 Recommendations and Conclusions

Vanasse & Associates, Inc. (VAI) has prepared this Transportation Impact Assessment (TIA) to identify the traffic impacts associated with the expansion of the existing transfer station facility located at 300 Cox Street in Hudson, Massachusetts. This study was prepared in accordance with MassDOT Guidelines for *Transportation Impact Assessment (TIA);* and was conducted pursuant to the standards of the traffic engineering and transportation planning professions for the preparation of such reports. Based on the results of this study, the following can be concluded:

- The proposed transfer station expansion is expected to add approximately 448 new vehicle trips on an average weekday (two-way, 24-hour volume), with 90 new truck trips (45 entering and 45 exiting) expected during the weekday morning peak hour and 34 new truck trips (17 entering and 17 exiting) expected during the weekday afternoon peak hour.
- Project-related traffic increases external to the study area are projected to range between 2 to 28 vehicles during peak hours, with traffic percentage increases ranging from or 0.1 to 1.5 percent.
- The analysis has indicated that the Project will result in minimal impact on motorist delays at the study intersections, as compared to future No-Build conditions.
- No apparent safety deficiencies were noted with respect to the motor vehicle crash history at the study area intersections in the immediate area of the Project.
- Lines of sight at the proposed site driveway where it will intersect with Cox Street were found to exceed or could be made to meet or exceed the recommended minimum distance for safe operation based on the appropriate approach speed.

7.6.1 Recommendations

A transportation improvement program has been developed that is designed to provide safe and efficient access to the Project and address any deficiencies identified at the study area locations. The following improvements have been recommended as a part of this evaluation:

7.6.1.1 Project Access

Access to the Project site will be provided via one new driveway onto Cox Street. The following recommendations are offered with respect to the design and operation of the Project site driveway:

- The driveway should be placed under STOP-sign *(Manual on Uniform Traffic Control Devices (MUTCD)*[15] *R1-1*) control, with a painted STOP-bar included.

[15] *Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, DC; 2009.

- All signs and other pavement markings to be installed within the Project site shall conform to the applicable standards of the current MUTCD.
- Snow windrows within sight triangle areas of the Project site driveway should be promptly removed where such accumulations would impede sightlines.
- In order to encourage safe and efficient flow of traffic to and from the site, should any landscaping or signage along the site frontage or the site driveway be proposed or requested by others, these features are recommended to be no higher than 24 inches or be set back sufficiently from the edge of the roadways so as not to inhibit the available sightlines. It is our recommendation that the existing vegetation on the north side of the driveway be trimmed or removed to provide an unobstructed sight line for vehicles exiting the Project driveway.

7.6.1.2 Off-Site Improvements

Main Street at Cox Street and Main Street at Mackin Street

Outbound semi-trailers from Cox Street to Main Street currently have two exit options: one via Mackin Street (currently used by B-P), a one-way street, and the other via the Cox Street intersection with Main Street (not currently used by B-P).

- **Main Street at Mackin Street** - At present, outbound semi-trailers exiting Mackin Street are required to drive in the opposing lane to make their turn, waiting until both directions of Main Street are clear before executing the turn. This maneuver is not recommended due to the potential encroachment of large vehicles across the Main Street travel lanes with minimal notice provided to motorists. Therefore, in order to improve overall safety at this location it is recommended to install appropriate warning signage, such as MUTCD designation W8-6 (Truck Crossing), along Main Street. This will alert motorists driving along Main Street to the possibility of trucks crossing at the intersection, thereby improving overall traffic safety. The sign should be installed on each direction of Main Street approximately 200 feet away from the intersection.
- **Main Street at Cox Street** - At the intersection of Cox Street and Main Street, outbound semi-trailers are likely to encroach into the eastbound Main Street opposing lane during their right turn, potentially conflicting with vehicles stopped at the stop bar on the eastbound approach of Main Street. It is also important to note that semi-trailers are shown to pass over the existing island on Cox Street during the turn (see Figure 9B of semi-trailer route evaluation memorandum provided in Attachment 10 of Appendix D).

In collaboration with the Town of Hudson Department of Public Works, we have assessed various improvement scenarios, and the following improvements are recommended to enhance safety at this intersection:

- It is recommended that the Main Street eastbound stop bar be relocated (approximately 20 ft) to the west of the intersection, to reduce the level of encroachment from B-P's outbound semi-trailers.

- In order to allow trucks to safely navigate the turn, it is also recommended that the existing scored concrete island be extended and replace the existing raised island.

These adjustments will alleviate potential conflicts with opposing traffic, resulting in smoother and safer turns for outbound semi-trailers and motorists on Main Street. Figure 7-13 graphically depicts the proposed improvements for both Main Street at Cox Street and Main Street at Mackin Street.

Cox Street Speed Limit Signage

Independent of the proposed Project, the Town of Hudson should consider the installation of speed limit signage. Speed measurements indicate that vehicles traveling in both directions on Cox Street exceed the designated speed limits for this road. During field observations, it was observed that speed limit signs are not posted within the vicinity of the transfer station. Therefore, to enhance safety, the installation of clearly visible speed limit signage near the site is recommended. Figure 7-14 graphically depicts the proposed location for the speed limit signage for Cox Street.

7.6.2 Conclusions

As documented in this study, Project-related traffic increases will not result in significant increases on overall traffic volumes or traffic delays within the study area and the site driveway will provide efficient access to and from the development. In conclusion, Project-related traffic can be adequately accommodated within the existing infrastructure with minimal impact on the traffic operations within the study area.

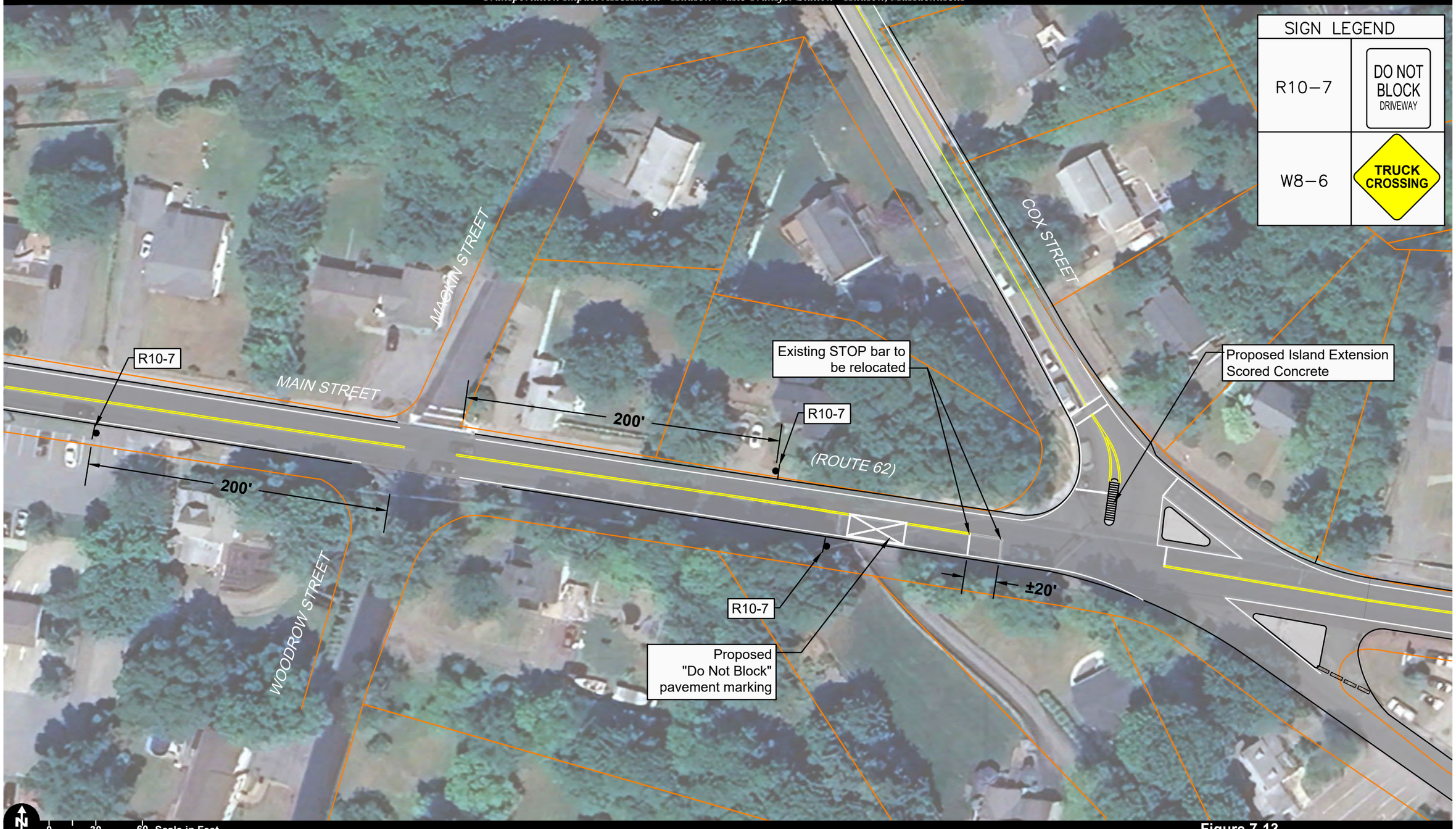

Figure 7-13

Conceptual Improvement Plan

Vanasse & Associates inc

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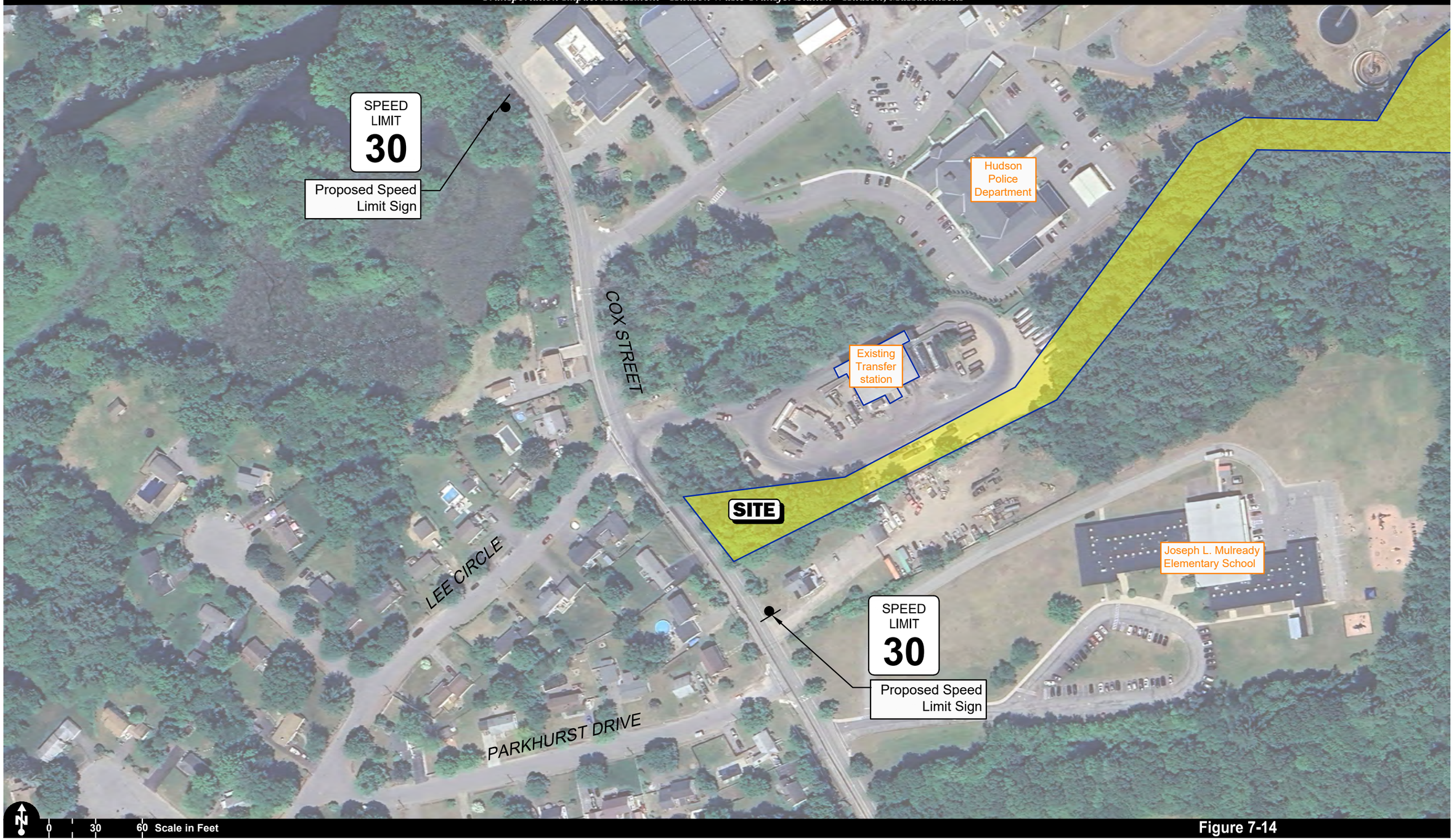

Figure 7-14

Conceptual Improvement Plan
Cox Street Speed Limit Signage

Vanasse & Associates inc

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Chapter 8

Solid Waste

8.0 SOLID WASTE

8.1 Facility Overview

The proposed facility will consist of two primary operational areas: an approximately 53,000 square foot Transfer Station & Recycling Building; and an approximately 1.3-acre Residential Drop-off Area, reserved for Hudson residents who choose to visit the Site to drop-off their household waste and recyclables. The transfer station building will accept commercial loads of both municipal solid waste (MSW) and unprocessed construction and demolition (C&D) debris. In addition to the building's MSW and C&D material transfer operations, approximately one-third of the building's total footprint will be dedicated to sorting and baling of household recyclable materials.

The proposed Residential Drop-off Area (RDOA), while located close to the Transfer Station & Recycling Building, will function as an independent operational node dedicated for residential use. The layout of the RDOA will allow residents to access and use the area without intermixing with commercial vehicles visiting the Transfer Station & Recycling Building.

A description of the layout and operational features of the Transfer Station & Recycling Building, the RDOA, and ancillary operations, is provided below. Drawings depicting the proposed facility layout are provided on Figures 8-1 through 8-7.

8.1.1 Site Access and Vehicle Circulation

As shown on Figure 8-1, the proposed Transfer Station & Recycling Building will be located deep within the Town-owned 72.4-acre parcel, more than 1,800 feet from Cox Street. A new access road into the Site, roughly aligned to follow much of the Site's southern property line, connects to Cox Street approximately 200 feet south of the current access road to the existing transfer station, which itself is just 350 feet from Cox Street.

When measured along the alignment of the proposed access road, vehicles will reach the apron area in the front of the Transfer Station & Recycling Building at a distance of approximately 2,000 feet from Cox Street. Prior to reaching the building, at a distance of approximately 1,450 feet from the Cox Street entrance, the Site opens up and transitions into the operational areas of the proposed facility. In this area the proposed RDOA is located just south of the access road leading to the Transfer Station & Recycling Building. The proposed inbound and outbound truck scales will also be located in this area, with both scales located approximately 300 feet from the building and bypass lanes provided on either side of the scales. A northern perimeter road will branch off of the main access road approximately 550 feet from the building. This road will provide an access route around the back (north side) of the building, loop around it to the east, and tie into the apron area in the front (south side) of the building.

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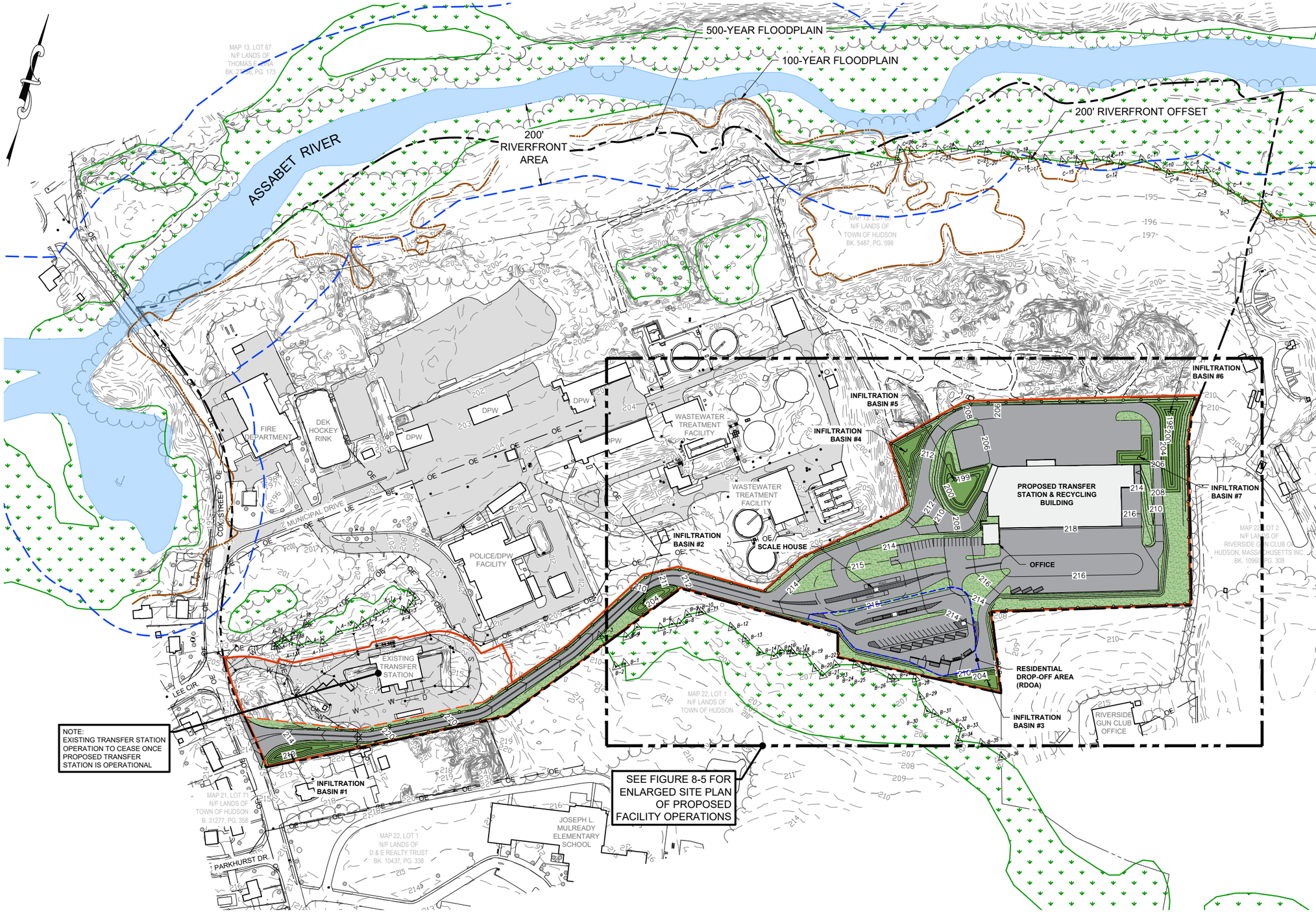

NOTE:
EXISTING TRANSFER STATION OPERATION TO CEASE ONCE PROPOSED TRANSFER STATION IS OPERATIONAL

SEE FIGURE 8-5 FOR ENLARGED SITE PLAN OF PROPOSED FACILITY OPERATIONS

NOTES:

1. TOPOGRAPHY, EXISTING SITE FEATURES AND PROPERTY LINE SURVEY WERE PROVIDED TO SANBORN HEAD BY CONTROL POINT ASSOCIATES, INC. (CONTROL POINT) OF SOUTHBOROUGH, MA IN AN ELECTRONIC FILE TITLED "03-180244-01 - BTU REV 1 (ISSUED 2023-03-17).dwg". ELECTRONIC FILE DEPICTS INFORMATION SHOWN ON DRAWINGS TITLED "BOUNDARY & TOPOGRAPHIC SURVEY", SHEETS 1 THOUGH 8, DATED MARCH 17, 2023 PREPARED BY CONTROL POINT OF SOUTHBOROUGH, MA FOR SANBORN HEAD.
2. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON THE FOLLOWING:
   A. AERIAL IMAGERY, DATED APRIL 21, 2018, PROVIDED BY EASTERN TOPOGRAPHICS OF WOLFBORO NEW HAMPSHIRE, AND AN ON-THE-GROUND FIELD SURVEY BY CONTROL POINT BETWEEN OCTOBER 11, 2018 AND OCTOBER 22, 2018; AND
   B. PLANIMETRIC AND TOPOGRAPHIC FEATURES COMPILED BY CONTROL POINT USING PHOTOGRAMMETRIC METHODS FROM UAV PHOTOGRAPHY AND AN ON-THE-GROUND FIELD SURVEY BY CONTROL POINT ON JANUARY 3, 2023.
3. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). HORIZONTAL DATUM IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), MASSACHUSETTS STATE PLANE COORDINATE SYSTEM.
4. WETLAND INFORMATION WAS OBTAINED FROM MassGIS, EXCEPT IN THOSE AREAS SHOWN ON THE PLAN AS FOLLOWS:

   THE ABOVE LINE TYPE DESIGNATES THE LIMITS OF AN ON-THE-GROUND WETLAND DELINEATION PERFORMED BY EPSILON ASSOCIATES ON JANUARY 18 AND 22, 2023 AND FIELD LOCATED BY CONTROL POINT ON JANUARY 30, 2023.
5. ASSABET RIVER BOUNDARY WAS OBTAINED BY SANBORN HEAD FROM THE MassGIS HYDROGRAPHIC (WATER-RELATED) FEATURE DATA SET. HYDROGRAPHIC FEATURE DATA WAS LAST UPDATED BY MassDEP IN DECEMBER 2019.
6. FLOODPLAIN INFORMATION WAS OBTAINED FROM FLOOD INSURANCE RATE (FIRM) MAP FOR MIDDLESEX COUNTY, MASSACHUSETTS. MAP NUMBER 25017C0343F, MAP REVISED JULY 7, 2014.

LEGEND:

- 210 — EXISTING 5-FOOT CONTOUR
- EXISTING 1-FOOT CONTOUR
- 210 — PROPOSED 10-FOOT CONTOUR
- PROPOSED 2-FOOT CONTOUR
- PROPOSED PERIMETER FENCE
- PROPOSED RETAINING WALL
- PROJECT SITE AREA
- SITE PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- WETLAND AREA
- WETLAND BOUNDARY (MASSGIS)
- SURVEYED WETLAND BOUNDARY (JAN 2023)
- 100-FOOT WETLAND BUFFER SETBACK
- ASSABET RIVER BOUNDARY
- 200-FT RIVERFRONT OFFSET
- 100-YEAR FLOODPLAIN

SANBORN HEAD

GRAPHICAL SCALE
120' 60' 0' 120' 240'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: A. WILKER
DESIGNED BY: S. WRIGHT
REVIEWED BY: S. WRIGHT
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: MARCH 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

PROJECT NUMBER: 3984.01

PROPOSED CONDITIONS OVERALL SITE PLAN

FIGURE NUMBER: 8-1

IMAGE B: P:\3000s\3984.01\Graphics\ TraxCAD\DEIR\SHEET - 8-1 - OVERALL SITE PLAN.dwg
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P:\3000s\3984.01\Graphics\ TraxCAD\DEIR\SHEET - 8-5 - PROPOSED FACILITY OPERATIONS.dwg
P:\3000s\3984.01\Graphics\ TraxCAD\DEIR\SHEET - 8-6 - PROPOSED TRANSFER STATION.dwg
P:\3000s\3984.01\Graphics\ TraxCAD\DEIR\SHEET - 8-7 - PROPOSED RECYCLING BUILDING.dwg
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The access road into the Site consists of a single outbound lane and a single inbound lane, except for a section of the road that expands to two inbound lanes at a point approximately 330 feet in advance of the RDOA. This second inbound lane, located on the right-hand side of the roadway, provides an outlet for residential vehicles to access the RDOA without having to share this length of the inbound road with commercial vehicles visiting the Transfer Station & Recycling Building.

Where the inbound lane transitions into two lanes in advance of the RDOA, the commercial vehicles (packer trucks, roll-off trucks, and various smaller vehicles including panel vans, pick-up trucks, and small body dump bed trucks and trailer hitches) visiting the facility will use the left-hand lane to access the Transfer Station & Recycling Building by first weighing-in at the inbound scale. After weighing-in, commercial vehicles will proceed to the apron area in front of the building and back into one of the several large overhead doors that provide access into the building. Vehicles departing the building will weigh-out at the outbound truck scale, located approximately 250 feet from the west end of the building and in the same area as the inbound scale. Scale transactions will be controlled at the scale house, centrally located between the inbound scale and outbound scale. After weighing out, commercial vehicles will depart the Site.

Semi-trailers, used to haul MSW and C&D loads from the transfer station will access the building via the northern perimeter road that branches off the main access road approximately 550 feet from the building. The empty trailers will be stored on the north side (trailer pit) side of the building. When an empty trailer is ready to be brought into the trailer pit for loading, it will first be brought around the building to be weighed (tare weight) on the outbound truck scale. The semi-trailer will then return to the back of the building via a roadway turn-off located shortly after the trailer departs the scale, where it will be brought into either the MSW or C&D trailer pit for loading.

As described here, the circulation of empty semi-trailers will follow a clockwise motion around the building when arriving and crossing the scale to obtain tare weights. Similarly, when full trailers are weighing out, they will leave the trailer pits and follow a clockwise motion from the back of the building to the front and cross the outbound scale. Once the full trailers are weighed, they will be temporarily stored on-site in one of the areas designated for temporary vehicle layover. Temporary on-site storage would typically not exceed 24-hours, except for trailers filled towards the end of a Friday and requiring storage until the following Monday.

Vehicle circulation for residents, commercial customers, and transfer trailers are shown on Figures 8-2A and 8-2B. Figure 8-2B, which shows the transfer trailer vehicle circulation, also shows the temporary vehicle layover areas for the trailers.

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INFILTRATION BASIN #4
INFILTRATION BASIN #5
INFILTRATION BASIN #6
INFILTRATION BASIN #7
INFILTRATION BASIN #3
MSW TRAILER PIT
C&D TRAILER PIT
PROPOSED TRANSFER STATION & RECYCLING BUILDING
OFFICE/ ADMIN
WASTEWATER TREATMENT FACILITY
SCALE
SCALE
BYPASS LANE
OE
OE
OE
OE
B-12
B-13
B-14
B-15
B-16
B-17
B-18
B-19
B-20
B-21
B-22
B-23
B-24
B-25
B-26
B-27
B-28
B-29

VEHICLE CIRCULATION LEGEND:

- RESIDENTS (RESIDENTIAL DROP-OFF AREA)
- COMMERCIAL CUSTOMERS
- BACK-UP MOTION

NOTES:

1. SEE FIGURE 8-1 FOR DRAWING NOTES.

LEGEND:

- 210 — EXISTING 5-FOOT CONTOUR
- EXISTING 1-FOOT CONTOUR
- 210 — PROPOSED 10-FOOT CONTOUR
- PROPOSED 2-FOOT CONTOUR
- PROJECT SITE AREA
- SITE PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- WETLAND AREA
- WETLAND BOUNDARY (MASSGIS)
- SURVEYED WETLAND BOUNDARY (JAN 2023)
- PROPOSED CHAIN LINK FENCE
- PROPOSED RETAINING WALL

SANBORN HEAD

GRAPHICAL SCALE
40' 20' 0' 40' 80'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: A. WILKER
DESIGNED BY: A. WILKER
REVIEWED BY: S. WRIGHT
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: MARCH 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

PROJECT NUMBER: 3984.01

VEHICULAR CIRCULATION PLAN
RESIDENTIAL AND COMMERCIAL VISITORS

FIGURE NUMBER: 8-2A

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TEMPORARY VEHICLE LAYOVER AREA FOR TRAILERS

TEMPORARY VEHICLE LAYOVER AREA FOR TRAILERS

TEMPORARY VEHICLE LAYOVER AREA FOR TRAILERS

INFILTRATION BASIN #4

INFILTRATION BASIN #5

INFILTRATION BASIN #6

INFILTRATION BASIN #7

MSW TRAILER PIT

C&D TRAILER PIT

PROPOSED TRANSFER STATION & RECYCLING BUILDING

OFFICE/ ADMIN

WASTEWATER TREATMENT FACILITY

SCALE

SCALE

BYPASS LANE

TEMPORARY VEHICLE LAYOVER AREA FOR TRAILERS

INFILTRATION BASIN #3

OE

OE

OE

OE

B-12 B-13 B-14 B-15 B-16 B-17 B-18 B-19 B-20 B-21 B-22 B-23 B-24 B-25 B-26 B-27 B-28 B-29

VEHICLE CIRCULATION LEGEND:

- EMPTY SEMI-TRAILER WEIGH-IN (TARE WEIGHT)
- EMPTY SEMI-TRAILER POST WEIGH-IN TO TRAILER PIT
- FULL SEMI-TRAILER WEIGH-OUT

NOTES:

1. SEE FIGURE 8-1 FOR DRAWING NOTES.

LEGEND:

- 210 EXISTING 5-FOOT CONTOUR
- EXISTING 1-FOOT CONTOUR
- 210 PROPOSED 10-FOOT CONTOUR
- PROPOSED 2-FOOT CONTOUR
- PROJECT SITE AREA
- SITE PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- WETLAND AREA
- WETLAND BOUNDARY (MASSGIS)
- SURVEYED WETLAND BOUNDARY (JAN 2023)
- PROPOSED CHAIN LINK FENCE
- PROPOSED RETAINING WALL

SANBORN HEAD

GRAPHICAL SCALE
40' 20' 0' 40' 80'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: A. WILKER
DESIGNED BY: S. WRIGHT
REVIEWED BY: S. WRIGHT
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: MARCH 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

VEHICULAR CIRCULATION PLAN
SEMI-TRAILERS

PROJECT NUMBER: 3984.01

FIGURE NUMBER: 8-2B

8.2 Transfer Station & Recycling Building

A floor plan of the proposed Transfer Station & Recycling Building is provided as Figure 8-3. The building will provide a large tipping floor area for the receipt of MSW and unprocessed C&D waste, and a Recyclables Processing Area for the receipt, sorting and baling of recyclable materials. An office/administration space will be located at the southwest corner of the building, providing an administration area, offices, mechanical and electrical rooms, and staff break room and restrooms. A floor plan depicting the space programming for the office/administration space is included on Figure 8-3.

The individual areas that comprise the 53,000 square foot Transfer Station & Recycling Building are summarized in Table 8-1

Table 8-1 Transfer Station & Recycling Building Approximate SF Per Operational Area

Operational Area		Approximate Square Footage	
MSW and C&D Area:		32,835	
MSW Tipping Floor	17,800		
C&D Tipping Floor	12,935		
MSW Trailer Pit	1,050		
C&D Trailer Pit	1,050		
Recyclables Processing Area		18,165	
Total Material Handling Portion of Building (MSW, C&D, and Recycling Operational Area)		51,000	51,000
Office/Administration Space			2,000
Total Transfer Station & Recycling Building Area			53,000

The operational portion of the building (tipping floor, trailer pits, and Recyclables Processing Area) will be high bay, single-story unconditioned space with an eave height of approximately 35 feet from ground elevation along the building's southern façade. The office/administration area will consist of single-story conditioned space with an eave height of approximately 10 feet. Conceptual building elevations are shown on Figure 8-4 .

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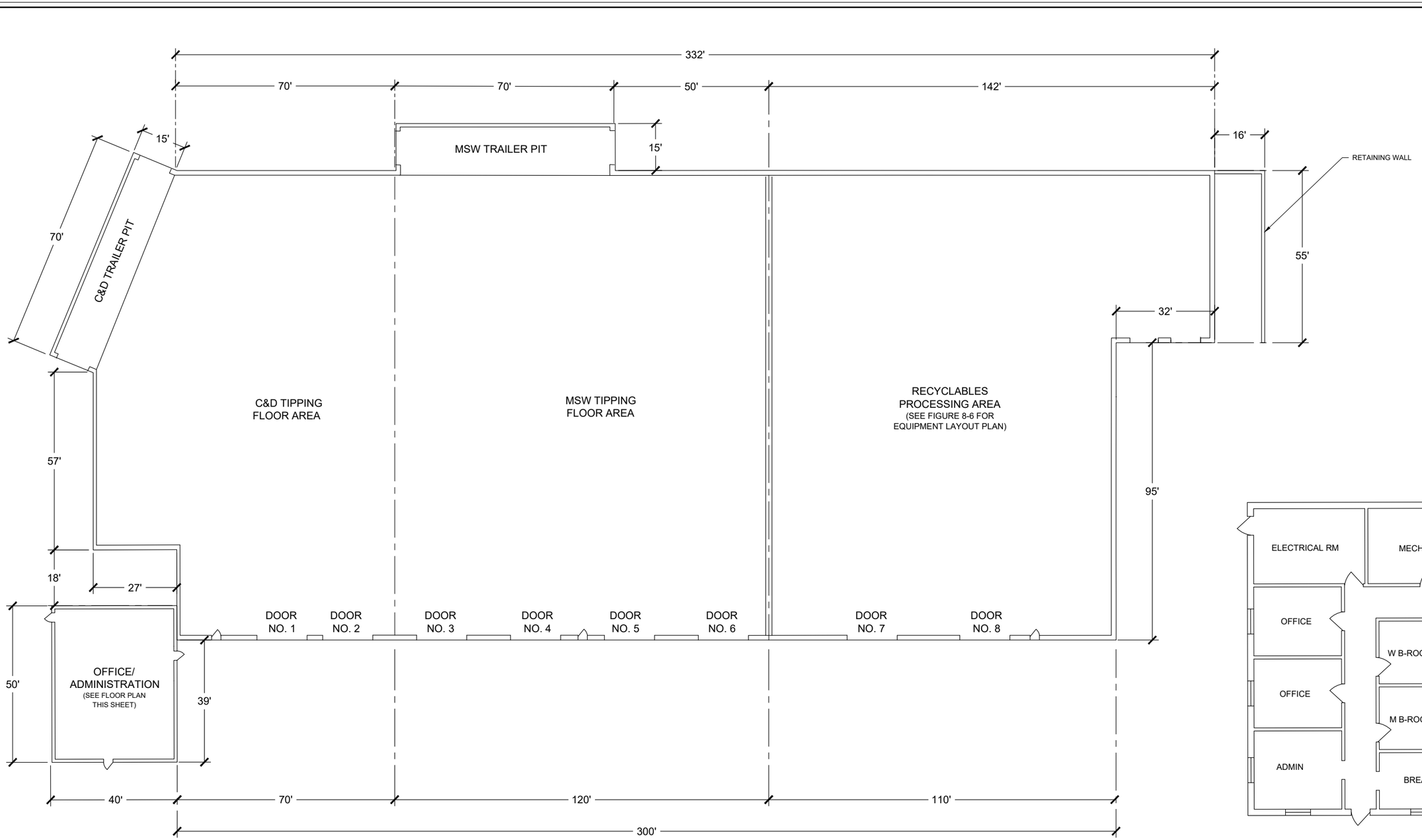
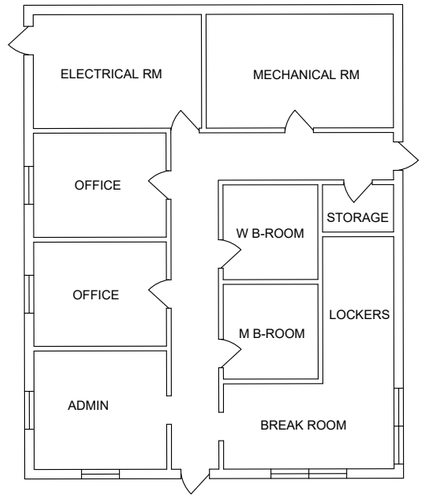


TRANSFER STATION & RECYCLING BUILDING FLOOR PLAN

GRAPHICAL SCALE

16' 8' 0' 16' 32'



OFFICE/ADMINISTRATION FLOOR PLAN

GRAPHICAL SCALE

8' 4' 0' 8' 16'

SANBORN HEAD	SCALE: AS NOTED	NO. / DATE / DESCRIPTION / BY	DRAWN BY: O. HERNANDEZ/ M. PARENT DESIGNED BY: S. WRIGHT REVIEWED BY: S. WRIGHT PROJECT MGR: S. WRIGHT PIC: S. WRIGHT DATE: MARCH 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

FLOOR PLAN
TRANSFER STATION & RECYCLING BUILDING

PROJECT NUMBER: 3984.01

FIGURE NUMBER: 8-3

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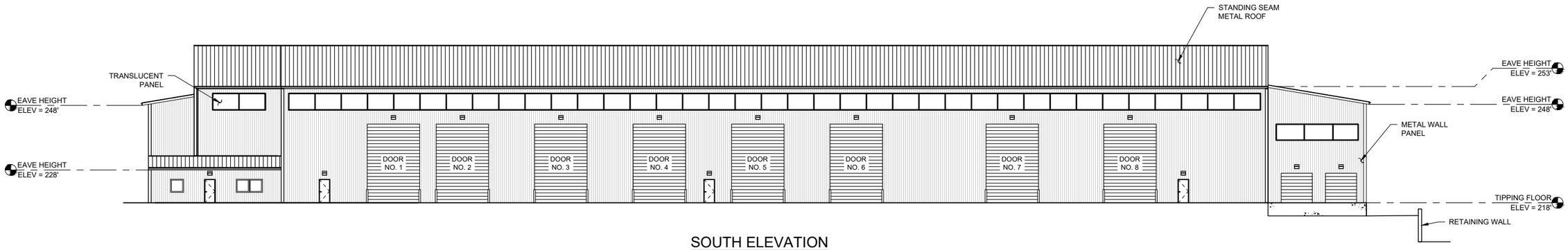
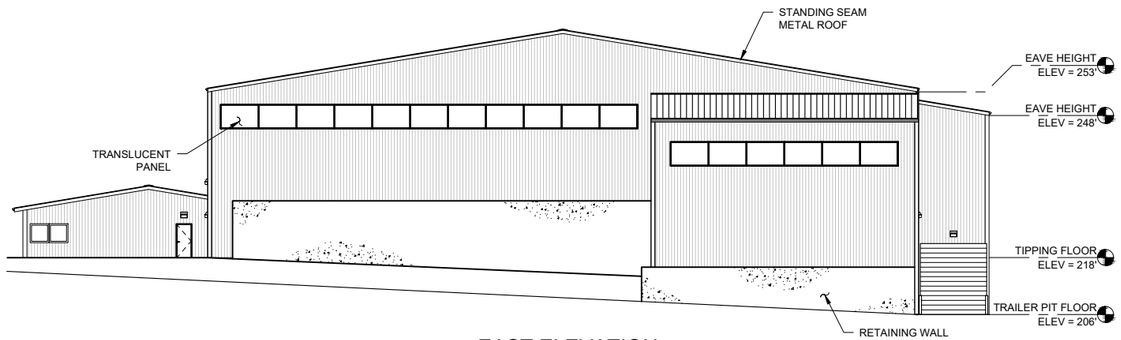
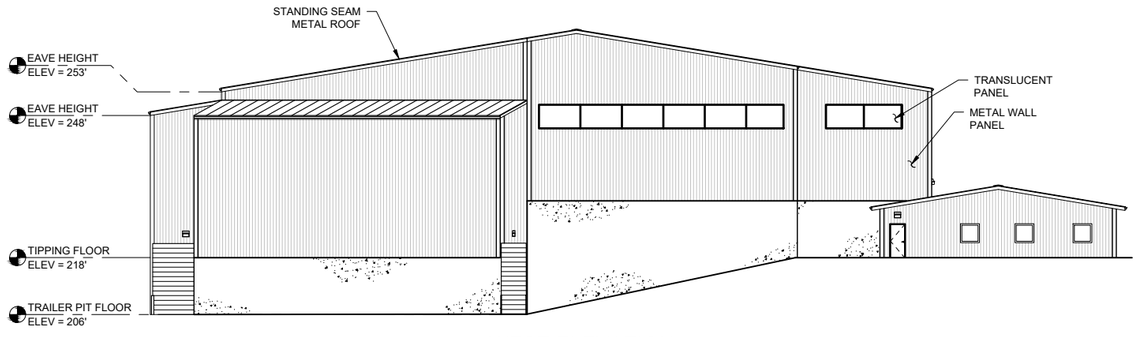


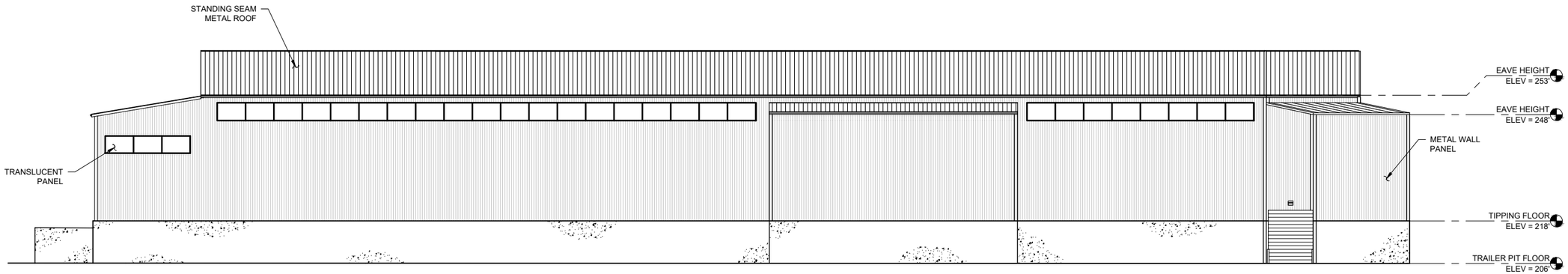
SOUTH ELEVATION



EAST ELEVATION



WEST ELEVATION



NORTH ELEVATION

SANBORN HEAD

GRAPHICAL SCALE
16' 8' 0' 16' 32'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: O. HERNANDEZ
DESIGNED BY: S. WRIGHT
REVIEWED BY: S. WRIGHT
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: MARCH 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

BUILDING ELEVATIONS

PROJECT NUMBER: 3984.01

FIGURE NUMBER: 8-4

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LAYOUT: ELEVATIONS
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PLOT DATE: 3-18-24

8.2.1 MSW and C&D Area

As shown on Figure 8-3, the MSW and C&D operational areas occupy the central and western portion of the building and, as summarized in Table 8-1 above, encompass approximately 65 percent of the material handling portion of the building's footprint. Of this area, the C&D operations will be performed in the western portion of the building and the MSW operations will be performed in the central portion.

There will be no barriers or partition walls separating the MSW tipping floor operations from the C&D operations. In this way, depending on demands placed on the building and bays occupied by vehicles at any given time, C&D and MSW loads can be brought into the building through any of the six large overhead doors that provide access to the entire MSW/C&D tipping floor area. As shown on Figure 8-3, two of the overhead doors are aligned with the C&D portion of the tipping floor and four doors are aligned with the MSW portion of the floor. Under typical operations, C&D loads will be preferentially delivered to the two western-most overhead doors and MSW loads will be delivered to the four centrally-located overhead doors.

8.2.2 C&D Operations

During the normal course of operations, as C&D loads are deposited on the tipping floor, a front-end-loader will be used to move the material and stockpile it against the western end wall of the building. This will keep the tipping floor clear for subsequent waste drop-off activities. The western end wall will have an approximately 12-foot high concrete pushwall clad with steel plate. The steel plate will extend to a height of approximately 16 feet above finished floor, providing a total pushwall height of approximately 16 feet against which to stockpile C&D material for trailer loading. In the northwestern corner of the building, the C&D trailer pit will be located. The pit, with approximate dimensions of 70 feet by 15 feet will have an overhead door at either end, allowing open top trailers to use the pit in a drive-through manner (the trailer can be brought into the pit at one end, loaded, and driven out at the opposite end, eliminating the need for back-up maneuvering into the pit if it had only one doorway for access and egress). The C&D pit will have a floor elevation approximately 12 feet below the tipping floor elevation. An excavator dedicated to C&D handling activities will operate on the tipping floor and will be used to load the open-top trailer in the C&D pit.

The C&D operations will be performed in accordance with MassDEP's October 2021 guidance policy titled *Minimum Performance Standard for Construction and Demolition Handling Facilities to Comply with* MassDEP's *Waste Ban Regulations and Waste Ban Compliance Plans*. This guidance, commonly referred to as the MPS, establishes two performance criteria that are intended to improve the efficiency of C&D handling facilities in separating banned and other recoverable materials from inbound waste loads. As it does currently at the existing transfer station, B-P will operate the proposed transfer station in compliance with the MPS by transferring all unprocessed or partially processed C&D materials to an MPS compliant facility(ies). Refer to Section 8.5.3 for further discussion of the MPS and its applicability to the operation of the proposed Transfer Station & Recycling Building.

Because the proposed facility will accept C&D waste, it will be required to conduct its C&D handling operations in accordance with MassDEP's *Asbestos Inspection Protocol for Construction & Demolition Debris Processing Facilities and Large* Construction *and Demolition Debris Transfer Station Facilities*. The protocol, which addresses inspection, testing, and handling requirements for suspect asbestos containing materials (ACM), will be incorporated into MassDEP's Authorization to Operate (ATO) permit for the facility. It is important to note that ACM will not be accepted at the facility and that the Asbestos Inspection Protocol represents a best management practice to screen for and manage the material should its presence be suspected in an incoming load.

8.2.3 MSW Operations

Receipt and handling of MSW loads will be performed similarly to how C&D material will be handled. During the normal course of operations, as MSW loads are deposited on the tipping floor, a front-end-loader will be used to move the material and stockpile it against the common wall that separates the MSW/C&D tipping floor area from the building's Recyclables Processing Area. This dividing wall will consist of an approximately 12-foot high concrete pushwall clad with steel plate on the MSW side of the wall. The steel plate will extend approximately 16 feet above finished floor, similar to the pushwall height at the west end of the building for the C&D area. The MSW trailer pit will be located on the northern side of the building and, like the C&D trailer pit, the MSW pit will have a floor elevation approximately 12 feet below the tipping floor elevation and function as a drive through pit. An excavator dedicated to MSW handling activities will operate on the tipping floor and will be used to load the open-top trailer in the MSW pit.

MSW operations will be performed in accordance with MassDEP handling facility operation and maintenance requirements specified in 310 CMR 19.207 of the Solid Waste Regulations and will comply with the waste ban restrictions applicable to transfer station facilities as described in 310 CMR 19.017 of the Regulations. To ensure compliance with the waste ban regulations, MSW operations will be conducted in accordance with a facility-specific waste ban compliance plan that will be prepared during the solid waste permitting phase for the Project. Additionally, pursuant to 310 CMR 19.018 of the Regulations, independent third-party waste ban inspections and operation and maintenance inspections will be performed during the operating life of the facility to document compliance with the operational criteria for a facility permitted to accept MSW and C&D waste.

In support of the facility's compliance with MassDEP's waste bans, three roll-off containers will be located at the southwestern corner of the paved apron area in front of the building. These containers will be used to store scrap metal, used mattresses, and clean gypsum wallboard that may be found in MSW and C&D loads delivered to the building. The three containers in the apron area, shown on Figure 8-5, are for B-P operations use only. If these waste ban materials are found in loads delivered to the building and they can be safely removed, the banned materials will be brought by front-end loader to the appropriate outdoor roll-off container for storage. When full, the containers will be transported to an off-site recycling/reclamation facility.

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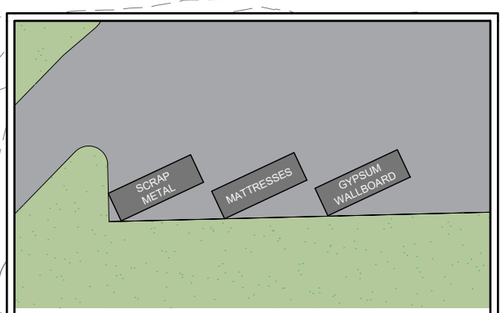

INSET "A"
CONTAINER STORAGE FOR WASTE BAN ITEMS REMOVED FROM TIPPING FLOOR LOADS

Feet
20 10 0 20 40

NOTES:

1. SEE FIGURE 8-1 FOR DRAWING NOTES.

LEGEND:

- 210 — EXISTING 5-FOOT CONTOUR
- — EXISTING 1-FOOT CONTOUR
- 210 — PROPOSED 10-FOOT CONTOUR
- PROPOSED 2-FOOT CONTOUR
- PROJECT SITE AREA
- SITE PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- WETLAND AREA
- WETLAND BOUNDARY (MASSGIS)
- SURVEYED WETLAND BOUNDARY (JAN 2023)
- PROPOSED STORMWATER MANHOLE
- PROPOSED STORMWATER CATCH BASIN
- PROPOSED CHAIN LINK FENCE
- PROPOSED RETAINING WALL

SANBORN HEAD

GRAPHICAL SCALE
50' 25' 0' 50' 100'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: A. WILKER
DESIGNED BY: S. WRIGHT
REVIEWED BY: S. WRIGHT
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: MARCH 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

PROJECT NUMBER: 3984.01

ENLARGED SITE PLAN OF PROPOSED FACILITY OPERATIONS

FIGURE NUMBER: 8-5

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USER: awilker
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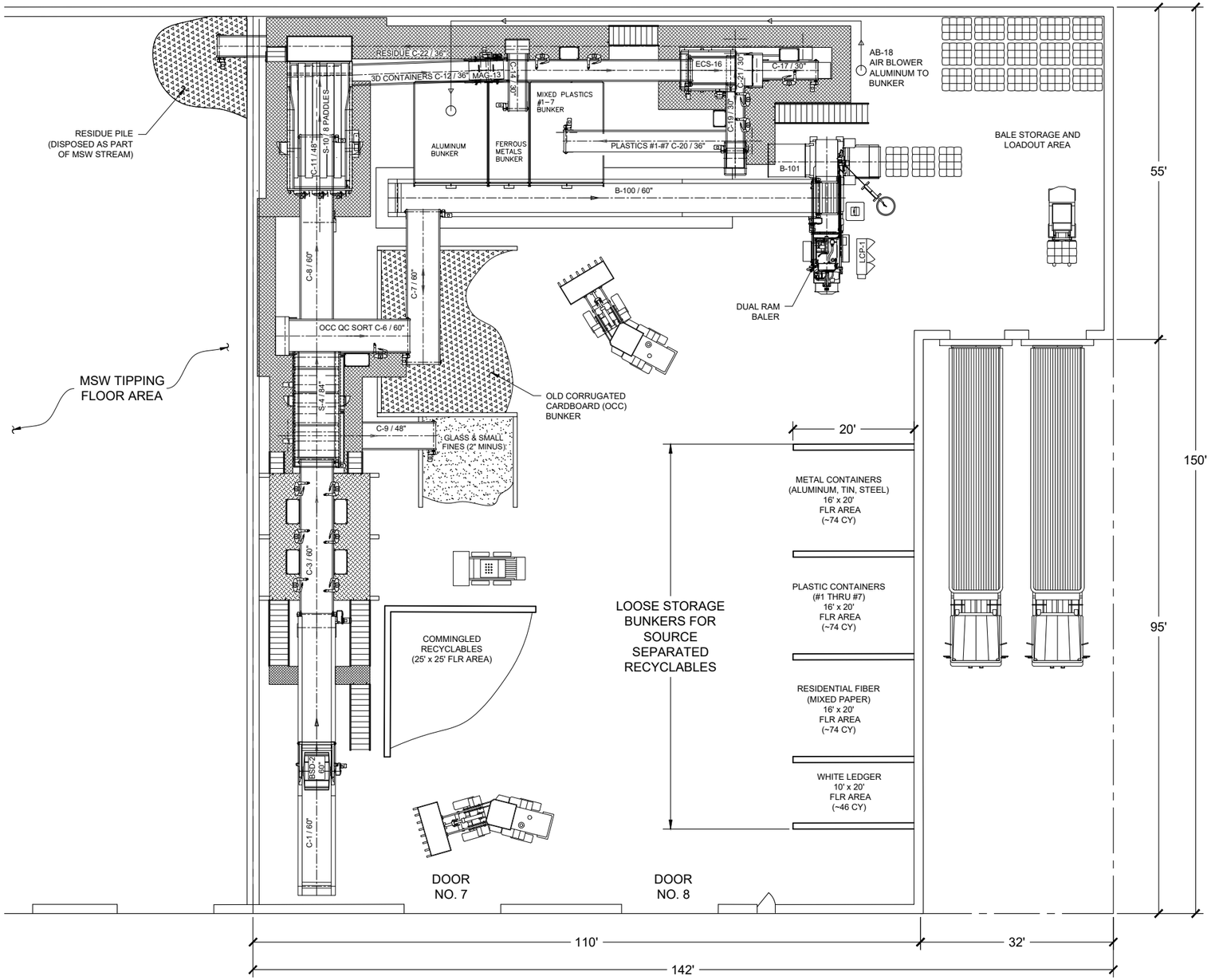
RECYCLABLES PROCESSING AREA EQUIPMENT LIST

ITEM #	DESCRIPTION
C-1	C-1 INFEED CONVEYOR
BSD-2	BACK SCRAPING DRUM
C-3	PRE-SORT CONVEYOR
S-4	OCC SCREEN
S-5	FINES SCREEN
C-6	OCC CONVEYOR
C-7	OCC REVERSING CONVEYOR
C-8	FINES SCREEN OVERS CONVEYOR
C-9	GLASS FINES CONVEYOR
SEPB-10	8 PADDLE BALLISTIC
C-11	3D CONTAINERS TRANSFER CONVEYOR
C-12	CONTAINERS TRANSFER CONVEYOR
MAG-13	FERROUS MAGNET
C-14	FERROUS METALS CONVEYOR
C-15	CONTAINERS TRANSFER CONVEYOR
ECS-16	EDDY CURRENT
C-17	EDDY SORT LINE
AB-18	NON FERROUS BLOWER
C-19	PLASTIC CONTAINERS SORTING CONVEYOR
C-20	PLASTIC CONTAINERS BUNKER FEED CONVEYOR
C-21	RESIDUE CONVEYOR
C-22	RESIDUE CONVEYOR
PLA-1	PRESORT & BUNKERS
PLA-2	SCREEN STRUCTURES
PLA-3	SCREEN SERVICE PLATFORM
PLA-4	OCC & GLASS FINES FLOOR BUNKERS
PLA-5	BALLISTIC-STEEL PACKAGE
PLA-6	MAGNET-STEEL PACKAGE
PLA-7	CONTAINER LINE-STEEL PACKAGE
PLA-8	EDDY CURRENT-STEEL PACKAGE
PLA-9	SLOPE FLOOR BUNKER PACKAGE
B-100	SINGLE SORTED FIBER INFEED CONVEYOR
B-101	DUAL RAM BALER



RECYCLABLES PROCESSING AREA FLOOR PLAN

SANBORN HEAD

GRAPHICAL SCALE
10' 5' 0' 10' 20'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: O. HERNANDEZ
DESIGNED BY: MXI/SEW
REVIEWED BY: S. WRIGHT
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: MARCH 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

RECYCLABLES PROCESSING AREA EQUIPMENT LAYOUT PLAN

PROJECT NUMBER: 3984.01

FIGURE NUMBER: 8-6

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PLOT DATE: 3-15-24

8.2.4 Recyclables Processing Area

As shown on Figure 8-3, the Recyclables Processing Area will be located at the eastern end of the Transfer Station & Recycling Building. With a floor area of slightly more than 18,000 square feet, this area comprises approximately 35 percent of the building's material handling footprint. Operations in this area will be dedicated to the receipt of both commingled and source separated household recyclables, where the focus of the operations will be to sort and bale metal, plastic, and fiber and deliver the baled material to either secondary processing facilities or to manufacturers to be turned into new products.

Commingled recyclables brought to the building will come predominantly from B-P's commercial customers and will be brought to the facility by B-P, where the material is collected at the source through a combination of container pickup using roll-off trucks and curbside collection pickup using packer tracks. The commingled loads brought to the building will contain cardboard (OCC), mixed paper (magazines, newsprint, and other non-OCC paper), plastic and metal food and beverage containers, and some glass containers.

In addition to commingled recyclables, B-P will also bring source-separated recyclables to the building for baling. These loads will be collected by B-P from the following primary sources:

- Municipal residential recycling drop-off areas that B-P services (one of which will be the Hudson RDOA). Recyclables collected at these locations are source separated by residents into dedicated roll-off containers as follows:
  - OCC;
  - Mixed Paper (magazines, newsprint, and other non-OCC paper)
  - Plastic (#1 through #7) food and beverage containers; and
  - Metal (aluminum and steel) food and beverage containers.
- B-P customers (businesses) where the loads consist almost entirely of OCC. This represents one of the highest components of recyclable materials that would be brought to the Transfer Station & Recycling Building.
- B-P customers (businesses) where the loads consist of white office paper ("white ledger"). This is generally not a high-volume recyclable stream for B-P.

The above source-separated loads will be brought to the Recyclables Processing Area of the building and deposited into dedicated storage bays for each material type. The majority of these bays consist of "pre-sort" bunkers, meaning they store pre-sorted recyclables that can be fed directly to the baler. The pre-sort bunkers will be located along the eastern side wall of the building and provide individual storage for the following materials: Mixed Paper; Plastic Containers (#1 through #7); Metal Containers; and White Ledger.

Source separated OCC brought to the building will be deposited into the OCC "sort-line" bunker. This bunker is part of the sorting line for commingled recyclables, located close to the sort line so it can directly receive OCC removed from the commingled stream and also be loaded into the

adjacent feed conveyor for the baler. Because OCC is expected to represent the largest volume of material baled at the facility, it is appropriate to consolidate the storage of this high-volume material into a single bunker. Therefore, the OCC sort-line bunker has been sized to also serve as a receiving bunker for source-separated OCC delivered to the facility.

The Recyclables Processing Area is shown in detail on Figure 8-6. As shown on the figure, the commingled sort line is configured in an "L" shape, with the longest leg running the full width of the building from south to north. The shorter leg is located along the building's northern wall, running west to east, where the sort-line bunkers for OCC, aluminum, steel, and mixed plastics are located and where the feed conveyor from these bunkers discharges to the baler. An interior bale storage area and loading dock are located adjacent to the baler at the northeast corner of the building. This area provides a minimum storage of 45 bales within the building and loading bays for two semi-trailers, with each trailer providing storage for approximately 40 bales.

Vehicle access into the Recyclables Processing Area is provided by two large roll-up doors located on the southern façade of the building. Commingled loads will be brought into the building through the door located closest to the sort-line infeed conveyor (shown as Door No. 7 on Figure 8-6). In this area, drop-off and storage of commingled recyclables will be performed. From this storage area the commingled material will be loader-fed into the sort line infeed conveyor. The eastern-most overhead door (Door No. 8) will be used by vehicles depositing source-separated material onto the floor, where the material will be loaded into the appropriate bunker storage bays by front-end loader and/or skid steer loader. As shown on Figure 8-6, the commingled sort line includes several manual picking stations, where staff will manually remove materials not suitable for baling (for example, larger rigid plastics and longer metal items). The sort-line also includes a bunker for glass fines and other fines that will be removed from the commingled stream.

Residuals (waste materials unsuitable for recovery) from the sort-line will be directed by conveyor to discharge through the westerly partition wall of the Recyclables Processing Area. This is a common wall to the MSW tipping floor and will allow the sort-line residuals to discharge onto the northeasterly corner of the tipping floor where they will be disposed of as part of the MSW transfer station operations.

The sort line configuration shown on Figure 8-6 represents the full equipment build-out of the proposed Recyclables Processing Area. As opposed to installing the entire system immediately, B-P may choose to proceed with a two-staged installation, with the initial stage consisting of conveyors and support equipment, including the baler, that will focus on baling OCC. If a two-staged equipment installation is performed, during the first stage, the OCC will be baled and the non-OCC material (mixed paper, metal, plastic) will pass through the sort line and discharge to a compactor located on the exterior of the building near the loading dock. Under a Stage 1 OCC-focused baling operation, the compactor, when full, will be transported to a Materials Recovery Facility for sorting and recovery of the non-OCC recyclables.

8.2.5 Hudson Residential Drop-off Area (RDOA)

The proposed layout for the Hudson RDOA is shown on Figure 8-7. Vehicles entering the area will be directed first to the recycling drop-off area. This area will provide angled parking for approximately 18 vehicles (passenger vehicles and pick-up trucks). From these spaces, residents will have access to a take-it-or-leave-it shed and several roll-off containers, ranging in size from 20 to 40 cubic yards, used to store the following materials:

- Commingled glass containers;
- Commingled metal containers;
- Commingled plastic containers;
- Mixed paper;
- OCC;
- Bulky waste;
- Styrofoam.

The above containers, aligned along the length of the parking spaces, will be located at the same grade as the parking spaces (no grade separation for the containers). Adjacent to this area, slightly to the south, two container bays with a 4-foot grade separation will be provided for residential drop-off of yard waste and scrap metal. In this same area, donation bins for textiles/used clothes and a steel storage container for used mattresses will also be located.

Following drop-off of recyclable items, residents will depart this part of the RDOA in a counterclockwise direction, bringing them to the MSW drop-off portion of the RDOA. This area will consist of two in-line stationary compactors separated by an attendants' booth with drop-off lanes provided on both sides of the compactors. A third lane will serve as a bypass/outlet lane in this area. All vehicles departing the MSW drop-off area will be directed to the exit of the RDOA, located west of the truck scales, which will allow departing residential vehicles to leave the site with minimal interaction with commercial vehicles.

As shown on Figure 8-7, there are two access lanes into and out of the RDOA that are meant for B-P operational use only. Both lanes provide a direct connection between the RDOA and the Transfer Station & Recycling Building. These lanes will be used by B-P to: 1) collect full MSW compaction containers, empty them in the transfer station, and return the containers to the RDOA; and 2) collect roll-off containers with recyclable materials that can be baled in the Recyclables Processing Area of the building (OCC, mixed paper, metal containers, and plastic containers) and return empty containers to the RDOA.

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SCALE HOUSE
SCALE
SCALE
BYPASS LANE
MSW DROP-OFF LANE (COMPACTORS)
MSW
MSW
MSW DROP-OFF LANE (COMPACTORS)
ATTENDANT'S BOOTH
TAKE IT OR LEAVE IT SHED
OPERATIONS USE ONLY
OPERATIONS USE ONLY
PARKING FOR RESIDENTIAL DROP-OFF OF RECYCLABLES
STYROFOAM
BULKY
OCC
MIXED PAPER
PLASTIC
TIN/ALUM.
GLASS
AT-GRADE ROLL-OFF CONTAINER (TYP. THIS ROW)
TEXTILE BINS
MATTRESSES
SCRAP METAL
YARD WASTE
OPERATIONS USE ONLY
INFILTRATION BASIN #3
B-16
B-17
B-18
B-19
B-20
B-21
B-22
B-23
B-24
B-25
B-26
B-27
B-28
B-29
207
208
209
207

CONTAINER LEGEND:

PLASTIC	ROLL-OFF CONTAINER
MSW	MSW COMPACTOR & CONTAINER

NOTES:

1. SEE FIGURE 8-1 FOR DRAWING NOTES.

LEGEND:

- 210 — EXISTING 5-FOOT CONTOUR
- EXISTING 1-FOOT CONTOUR
- 210 — PROPOSED 10-FOOT CONTOUR
- PROPOSED 2-FOOT CONTOUR
- PROJECT SITE AREA
- SITE PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- WETLAND AREA
- WETLAND BOUNDARY (MASSGIS)
- SURVEYED WETLAND BOUNDARY (JAN 2023)
- PROPOSED CHAIN LINK FENCE
- PROPOSED RETAINING WALL

SANBORN HEAD

GRAPHICAL SCALE
20' 10' 0' 20' 40'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: A. WILKER
DESIGNED BY: S. WRIGHT
REVIEWED BY: S. WRIGHT
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: MARCH 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

ENLARGED SITE PLAN OF PROPOSED RESIDENTIAL DROP-OFF AREA

PROJECT NUMBER: 3984.01

FIGURE NUMBER: 8-7

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8.3 Facility Staffing and Hours of Operation

8.3.1 Staffing

Estimated staffing needs for the proposed facility are summarized in Table 8-2.

Table 8-2 Estimated Staffing Associated with Proposed Facility Operations

Operational Area		No. of Employees	Responsibility
Transfer Station& Recycling Building	MSW/C&D Tipping Floor	1	Supervisor/Heavy Equipment Operator
		2	Loader Operator
		2	Excavator Operator
	Recyclables Processing Area	1	Supervisor/Heavy Equipment Operator
		12	Sort Line Picker
		1	Skid Steer Operator
Site		1	Scale House Attendant
		1	RDOA Attendant
Total Planned Employees		**21**	**-**

Note that the number of sort line pickers in the Recyclables Processing Area is based on the full equipment build-out shown on Figure 8-6. Should B-P proceed with a two-staged equipment installation, the number of pickers needed to support the initial stage of sort line operations (focused on sorting and baling OCC only) is estimated to be five.

8.3.2 Hours of Operation

The hours of operation for the proposed facility will be the same as those of the existing transfer station. The facility will be open to the public Monday through Friday from 7:00 a.m. to 5:00 p.m., and Saturday from 7:00 a.m. to 2:00 p.m.

8.4 Best Management Practices

8.4.1 Housekeeping

Routine housekeeping activities will be performed to support the efficient and safe operations of the proposed facility. This will include clearing the tipping floor and conducting occasional floor washdown to help maintain the general cleanliness of tipping floor operations, performing regular

inspection and cleaning of floor trench drains, and repairing metal building panels in the event they become damaged. Similarly, access roads and drop-off areas will be maintained in good condition and security fencing will be routinely inspected and repaired if damaged.

Handling equipment (loaders, excavators, skid steers) and other on-site rolling stock (such as power sweeping equipment, hoist trucks, yard mules) will be maintained as part of a routine preventive maintenance program. Other housekeeping activities associated with the control of dust, odor, and other nuisance conditions are described in greater detail in the Nuisance Control section that follows.

8.4.2 Nuisance Control

8.4.2.1 Dust and Odor Control

A dust control and odor control misting system will be installed in the proposed building. The misting system will be a split system, where odor control misting units will be installed in the ceiling of the MSW trailer pit and in the ceiling of the MSW portion of the building's tipping floor area. The dust control misting portion of the system will be installed in the ceiling of the C&D trailer pit and in the ceiling of the C&D portion of the tipping floor. During the winter months (generally from December through March) the system will be deactivated as necessary to prevent freezing in the misting system lines.

The facility will exercise dust and odor control mitigation measures as summarized below:

Dust Control

- Maintain paved vehicle traffic areas, including sweeping of these areas on a routine basis;
- Wet paved surfaces as necessary;
- Post signage regarding requirements for covering (tarping) of loads until inspection at the scale house;
- Provide verbal commands at the scale house;
- Handle C&D materials within the building; and
- Use the dust control water misting system in the C&D portion of the building during spring, summer, and fall (when the system will not be subject to freezing).

Odor Control

- Handle commercial MSW loads within the building (residential MSW drop-off will be performed in the RDOA at the stationary compactors, which themselves will provide odor control through the fully enclosed containment of the residential MSW waste stream);

- Employ a "first-in, first-out" policy for waste received at the facility, which will reduce the potential for odors to accumulate in the building;

- As an exception to the "first-in, first-out" waste transfer policy, odorous waste loads will take priority when loading trailers for off-site material disposal; and

- Use the MSW odor control misting system, which will contain odor control agents, during spring, summer, and fall (when the system will not be subject to freezing).

8.4.2.2 Noise Control

The proposed Transfer Station & Recycling Building will be located approximately 1,400 further into the site than the existing transfer station. Where the existing transfer station is located approximately 450 feet from the homes along Cox Street, the proposed facility will place the building approximately 2,000 feet from these homes. The facility relocation itself will result in an improvement in noise control at the site. In addition to the improvement in noise control related to the building relocation, operation of the facility will be performed to be sensitive to the surrounding area. This will include use of handling equipment, such as loaders and excavators, with back-up alarms set at the lowest levels allowed by OSHA and local regulations. Noise control will also be exercised by properly maintaining equipment in use at the facility, including maintaining sound reducing devices, such as mufflers, installed on the equipment.

8.4.2.3 Litter Control

Litter control at the facility will be exercised using procedures currently employed. Material delivered to the facility will be confined to the Transfer Station & Recycling Building or areas of the site dedicated to residential drop-off activities. All commercial loads delivered to the site must be covered and vehicles transporting material from the site will be covered prior to leaving the facility. Laborers will be responsible for the maintenance of the site, including collection of any windblown litter.

Employees will inspect the facility daily for material which could be dispersed due to wind conditions. If materials are found, they will be picked up for disposal or recycling. To reduce the potential for windblown litter and material dispersion, all containers subject to windy conditions will be properly covered and/or otherwise contained to the extent practicable. Routine sweeping of roadways will also assist with litter control. In addition, security fencing installed around the perimeter of the facility, will help confine windblown litter on-site and facilitate its collection.

All areas around the proposed building, in the RDOA, and along the facility access road will be inspected for litter and windblown material on a daily basis. Should litter and/or other windblown materials be encountered, including in areas along the perimeter fencing, they will be picked up during the daily cleanup activities.

8.4.2.4 Vector Control

C&D debris consists of non-putrescible materials and as such are not a food source that attract vectors. MSW on the other hand can provide a food source that may attract vectors such as rodents, insects, and birds. The best management practices aimed at maintaining odor control, such as the transfer of waste on a "first-in, first-out" basis and keeping the waste moving through the facility, will aid in vector control. A vector control program, conducted by a professional exterminating service, will also be in-place at the proposed facility. The exterminating service will conduct routine inspections, set and collect trap stations, and advise B-P on housekeeping activities aimed at improving vector control as needed.

8.4.2.5 Wastewater Management

The sanitary sewer service for the office/administration space will tie to the Hudson municipal sewer system. The sewer service for the office/administration space will be for the restrooms. In addition to this sanitary sewer flow, the facility will also collect wastewater from the building's floor drain system located in the operational space of the Transfer Station & Recycling Building. The trench drains will be located within the building near the large roll-up doors that provide vehicle access into the tipping floor space. Trench drains will also be located in the floor of both trailer pits. The trench drains will collect run-off from within the building, including washdown water when floor washdown is performed.

Wastewater flow from the trench drain system will be directed through an oil/water separator, commonly referred to as an MDC trap, and then into pre-cast concrete holding tank (tight tank) for storage. The oil/water separator will separate and retain petroleum-based oil and grease and sand particles from normal wastes in the wastewater. The holding tank will include a high-level float alarm that will provide notification to operations staff that the tank requires emptying. Emptying of the tank will be performed by a qualified wastewater collection and transportation company and delivered to the on-site Hudson Wastewater Treatment Facility.

The holding tank will be located on the north side (rear) of the Transfer Station & Recycling Building, where the grade is low relative to the front entrance to the building. This will allow wastewater flow from the higher elevation floor drains in the tipping floor and wastewater flow from the lower elevation trailer pit floor drains to convey wastewater by gravity to the holding tank.

8.4.2.6 Stormwater Management

Stormwater management is described in Chapter 9 of this DEIR.

8.4.2.7 Site Security

Site security will be provided through the installation of a 6-foot-high chain link fence that will encompass the entire perimeter of the proposed development area. Controlled access into the site

will be provided by a security gate located near the proposed facility entrance off Cox Street. The access gate will be locked during all non-operating hours. The proposed security fencing is shown on Figures 8-1, 8-2A, 8-2B, 8-5, and 8-7.

Site security will be supplemented using a video surveillance system. Video surveillance will consist of closed-circuit cameras, located at key operational points at the facility. The cameras will provide coverage for both exterior operations, as well as selected operations performed within the Transfer Station & Recycling Building. Video images will be transmitted to an office within the office/administration space of the building and to B-P's corporate offices in Ashland, Massachusetts.

8.4.2.8 Facility Inspections

In addition to routine inspections performed by facility staff, third party operations and maintenance inspections will also be performed in accordance with the requirements of 310 CMR 19.018 of the Solid Waste Regulations. The third-party inspector must have an in-depth knowledge and understanding of solid waste management regulations, handling facility design and operational requirements, and be certified by MassDEP to perform the inspections. Per the requirements of 310 CMR 19.018, the frequency of the inspections for the proposed facility will be quarterly (four times per year), in accordance with the frequency stipulated for C&D transfer stations.

The intent of the third-party inspections is to complete a routine assessment of the facility's ongoing compliance with applicable requirements set forth in 310 CMR 19.000, the facility's operation and maintenance plan, and other facility-specific permits and approvals issued by MassDEP. To this end, the third-party inspector will be responsible for examining and evaluating the facility's solid waste activities, equipment, operations, practices, and procedures. In particular, the inspections will focus on the facility's compliance with the *Handling Facility Operation and Maintenance Requirements* specified in 310 CMR 19.207 of the Solid Waste Regulations. Many of the operational BMPs described herein address specific O&M requirements provided in 310 CMR 19.207.

Following completion of each O&M inspection, the third-party inspector will prepare an inspection report on MassDEP-prescribed forms. The report will detail the results of the inspection, identify any deviation from compliance with the Solid Waste Regulations and/or facility specific permits, and recommend corrective actions to be taken to address the deviation. Each report will be submitted to B-P Trucking, the Hudson Board of Health, and MassDEP. In this way, the third-party inspections will provide a routine program for monitoring the facility's operation and maintenance activities and communicating recommended corrective actions that will reinforce the regular O&M activities performed by facility staff.

8.4.2.9 Fire Protection

The Transfer Station and Recycling Building will be provided with an indoor overhead water fire suppression sprinkler system for the unconditioned building space (MSW/C&D area and Recycling Processing Area) and office/administration space.

In addition to the sprinkler system, fire hydrants will be located in areas of the site for use by the Hudson Fire Department. Hydrant locations will be coordinated with the Hudson Fire Department during the project design phase. It should be noted that the Hudson Fire Department has a station house located at 296 Cox Street, approximately 800 feet north of the proposed access road leading from Cox Street to the new Transfer Station & Recycling Building.

Fire protection procedures at the proposed facility will follow the operational fire protection requirements for waste handling facilities described in 310 CMR 19.207(20) of the Solid Waste Regulations. In accordance with these requirements, fire extinguishers will be placed in the Transfer Station & Recycling Building (office and operating area), in the scale house, and in the attendant's booth in the RDOA. Fire extinguishers will also be placed in the front-end loader and excavator equipment operating within the building.

As required under 310 CMR 19.207(20), a separate area will be provided at the site, located away from combustible materials, refuse and buildings, for quick dumping and quenching of "hot loads". Hot loads are those observed to be smoldering as they weigh in or prepare to dump in the building. A potential hot load area is shown on Figure 8-5. The location of the hot load area will be further evaluated during the facility design phase, which will include coordination with the Hudson Fire Department.

8.5 Permitting Requirements

8.5.1 Solid Waste Permits for Proposed Facility and Process for Closing Existing Facility

The proposed 850 ton per day (TPD) facility will replace the existing 350 TPD transfer station located at the site (300 Cox Street address, MassDEP Facility ID No. 280115). Replacement of the existing facility will consist of terminating its operations once the proposed facility receives an Authorization to Operate permit from MassDEP and the new facility is ready to begin operating.

As coordinated with MassDEP's Solid Waste Management Program, the following solid waste permits will be required for the proposed facility:

- Authorization to Construct (ATC) Large Handling Facility (permit application BWP SW 05); and
- Authorization to Operate (ATO) Large Handling Facility (permit application BWP SW 06)

With respect to terminating operations at the existing transfer station, the following steps will be taken to close and decommission the facility in accordance with Project-specific recommendations provided by MassDEP:

1. In accordance with 310 CMR 19.045 of the Solid Waste Regulations - *Facility Closure and Post-closure*, the Town of Hudson/B-P shall provide written notification to MassDEP six (6) months prior to the date that they intend to close and stop accepting waste at the existing transfer station. The notification shall include a closure plan prepared by a professional engineer that is consistent with the existing closure plan included in Section 8 of the June 1996 ATO permit application (approved by MassDEP on August 30, 1996);
2. MassDEP will respond in writing to the Town/B-P acknowledging receipt of the closure notification and approving the closure plan; and
3. The Town/B-P shall complete the closure activities and submit written proof of closure completion as detailed in the MassDEP-approved closure plan.

When completed, the closure activities at the existing transfer station will serve to formally terminate the building's use as a solid waste transfer station. At that time, the building will be re-purposed for general use by the Hudson DPW for equipment and material storage, which could include salt and/or sand storage.

8.5.2 Types of Waste Accepted and Proposed Facility Classification

The proposed facility will be permitted to accept the same types of waste materials (MSW and C&D debris) as those accepted at the existing transfer station. The procedures for handling these materials at the proposed facility will essentially be the same as current handling procedures, except they will occur within a larger building and involve handling a larger quantity of these same materials. Consistent with the permitted types of waste accepted at the existing transfer station, the proposed facility will accept these same regulated materials, as summarized below:

- Category 1 – Construction and Demolition (C&D) Waste;
- Category 3 – Bulky Waste; and
- Municipal Solid Waste (MSW).

These materials are defined by MassDEP as follows (note: Category 1 and Category 3 refer to categories of C&D waste):

Category 1 – C&D Waste

Building materials and rubble resulting from the construction, remodeling, repair or demolition of buildings, pavements, roads or other structures. Construction and Demolition waste includes, but is not limited to: metal, concrete, bricks, lumber, masonry, road paving materials, rebar, gypsum wallboard and plaster.

Category 3 – Bulky Waste:

Waste items resulting from commercial or residential activities with low potential for recovering recyclable materials. In general, these materials are generated during commercial and residential building cleanouts and include items not generally accepted during pickup of the typical daily waste stream generated by commercial and residential activities. Examples of bulky waste include but are not limited to: furniture such as tables, chairs and desks; carpets; temporary partitions such as cubicle walls; and toys.

Municipal Solid Waste

Any residential or commercial solid waste, but not including C&D Waste. With the proposed facility accepting the same types of wastes as the existing transfer station, it follows that the proposed facility will be classified the same as the existing transfer station, which is as a Large Construction and Demolition Debris Transfer Station. The Solid Waste Regulations define a Transfer Station as follows:

Transfer Station means a handling facility where solid waste is brought, stored, and transferred from one vehicle or container to another vehicle or container for transport off-site to a solid waste treatment, processing, or disposal facility.

Construction and Demolition Waste (C&D) Transfer Station means a transfer station permitted by the Department to accept 50 tons per day or more of construction and demolition waste. A C&D waste transfer station may accept other types of solid waste in accordance with its permit.

The existing transfer station operating permit (ATO Renewal, dated December 12, 2022) places a limit on the amount of C&D waste that can be accepted at the facility on any given day based on the availability of staff to pick C&D waste on that day. Based on current staffing of three employees available to conduct manual picking operations, the current ATO Renewal permit establishes a Category 1 C&D limit of 201 to 300 TPD. As summarized in Table 8-2, as many as five employees would be available on a routine basis to conduct manual picking operations at the proposed facility. This number of employees equates to a range of 401 to 500 TPD of C&D waste that could be brought to the facility based on the ranges specified in the existing ATO permit. This is a larger quantity of C&D waste than what is anticipated in connection with the proposed facility, which for planning purposes is estimated to represent approximately 200 TPD of the total 850 TPD capacity.

Per the facility definitions provided in the Solid Waste Regulations, the proposed activities on site are appropriately designated as “Transfer Station” and more specifically classified as operations applicable to a “Large Construction and Demolition Debris Transfer Station”. This classification, per MassDEP’s definition of a C&D Transfer Station, is appropriate because the proposed facility will be permitted to accept more than 50 TPD of C&D Waste and will also be permitted to accept Bulky Waste and MSW. Like the operations at the existing transfer station, the proposed facility

will not function as a C&D Processing Facility. As defined in the Solid Waste Regulations, a C&D Processing Facility is a handling facility where C&D waste is stored and processed (usually by sorting, crushing, screening, etc.). C&D processing operations will not be performed at the facility.

Although C&D processing will not be performed at the proposed facility, its classification as a Large C&D Transfer Station requires that it be operated in compliance with MassDEP's Minimum Performance Standard (MPS) guidance policy. The MPS was developed to provide a uniform standard for C&D facilities to comply with MassDEP's waste bans on disposal or transfer for disposal of banned materials such as wood; asphalt pavement, brick, and concrete (ABC); metal; and clean gypsum wallboard. The MPS and the Project Proponent's proposed procedures for complying with the policy are presented in the following section.

8.5.3 Minimum Performance Standard for C&D Handling Facilities

The Minimum Performance Standard was issued by MassDEP as guidance policy to C&D processors and large C&D transfer stations (collectively, C&D Handling Facilities) in February of 2020 and updated in October of 2021. In summary, the MPS establishes two performance criteria that are intended to improve the efficiency of C&D handling facilities in separating banned and other recoverable materials from inbound waste loads. These performance criteria are summarized below:

1. Facilities must achieve a minimum threshold Process Separation Rate (PSR) of 15%, which is defined as the ratio of the quantity (by weight) of materials recycled or diverted from the incoming waste stream compared to the total quantity (by weight) of the total inbound material accepted; and
2. Facilities must demonstrate that all banned materials are being separated to the greatest extent possible.

Failure to satisfy either MPS performance criterion constitutes a failure to comply with the Waste Ban Regulations and a facility's Waste Ban Compliance Plan requirements.

The MPS applies to the C&D portion of the waste stream delivered to the existing Hudson Transfer Station and will similarly apply to the receipt of C&D material at the proposed facility. As provided in the MPS guidance, if a transfer station elects to transfer all unprocessed or partially processed C&D materials to an MPS-compliant facility for further processing after first separating clean gypsum wallboard and zero-tolerance waste ban items (CRTs, whole tires, lead acid batteries, white goods, and mattresses), the above MPS performance criteria are "Not Applicable" and that transfer station is considered to be compliant with the MPS.

Pursuant to the MPS guidance, when receiving C&D loads at the existing transfer station, B-P removes clean gypsum wallboard and zero-tolerance items from the loads to the greatest extent possible when manual separation can be safely performed. The C&D material is then transferred to an MPS-compliant facility for further processing. Operations at the proposed facility will be performed in this same manner to comply with the MPS policy: clean gypsum wallboard and

zero-tolerance items will be removed from the incoming C&D loads to the greatest extent possible when manual separation can be safely performed and the remaining C&D material will then be transferred to an MPS-compliant facility(ies) for further processing.

8.5.4 Site Assignment

8.5.4.1 Existing Site Assignment

On January 16, 2018, during the early planning phase for the proposed transfer station project, representatives from the Town of Hudson, B-P Trucking, and Sanborn Head met with representatives from MassDEP's Solid Waste Program at the Department's Central Regional Office in Worcester, Massachusetts. The purpose of the meeting was to advise MassDEP of the general scope of the Project and discuss anticipated solid waste permitting that would be required.

During the meeting, the existing site assignment, dated January 7, 1986, was discussed. The site assignment was issued by the Hudson Board of Health for the entirety of the Town-owned 72.4-acre parcel of land on which the existing transfer station is located and the proposed transfer station will be located. As a follow-up to the meeting, MassDEP requested that additional information be provided to confirm the limits of the site-assigned area and that title certification be provided evidencing that the site assignment property is and has continuously been owned by the Town of Hudson.

The Board of Health submitted the requested supplemental information to MassDEP in letters dated March 27, 2018 (which includes the site assignment) and May 29, 2018. The title certification was submitted to MassDEP on May 31, 2018. The Department found these documents satisfactory in confirming that the January 7, 1986 site assignment pertains to the entirety of the 72.4 acre parcel of Town-owned land. Copies of the site assignment and supporting documentation referenced herein are provided in Appendix E.

8.5.4.2 Modification to Existing Site Assignment

On July 13, 2022 an informational meeting (virtual) was held with representatives from the Town of Hudson, B-P Trucking, Sanborn Head, and solid waste staff from MassDEP's Central Regional Office. The purpose of the meeting was to provide MassDEP with an update on the Project in advance of the Project Proponent submitting the Environmental Notification Form to MEPA. During the meeting, MassDEP confirmed that the Project will require a minor modification to the existing site assignment pursuant to 310 CMR 16.22(3) of the Site Assignment Regulations.

Under 310 CMR 16.22(2) and 16.22(3), the Site Assignment Regulations distinguish between what constitutes a site assignment "Major Modification" and "Minor Modification". Requirements for a Major Modification are defined in 310 CMR 16.22(2), which states the following:

(2) Major Modifications to Site Assignments at the Request of the Facility Owner or Operator. Modifications deemed to be "Major Modifications" include: modifications required to "Expand a Site"; vertical expansions beyond the limits of an approved plan; modifications as specified at 310

CMR 16.21(1) and 16.21(3), Alternative Use of An Assigned Site; or any request to waive *any site assignment criterion set forth at 310 CMR 16.40(3) as it app lies to the existing facility. A major modification shall require submittal of a new site assignment application that addresses all criteria affected by the modification, as determined by the Department in writing, and shall be reviewed in accordance with the requirements established at 310 CMR 16.08 through 16.20.*

The provisions of 310 CMR 16.22(2) do not apply to the proposed facility for the reasons enumerated below:

a. Modifications required to "Expand a Site" – The term "Expand a Site" is defined in the Site Assignment Regulations as follows:

   Expand a Site means to move or expand a solid waste facility's operation to a previously unassigned site that is contiguous to the original site or to modify a solid waste facility's operations causing it to exceed any capacity or total volume limit stated in its current site assignment.

   The proposed facility does not meet the definition of "Expand a Site" because: 1) the proposed facility will not be relocated to an area that is unassigned (the proposed facility will remain within the limits of the existing site-assigned area); and 2) the proposed facility's operations will not cause it to exceed any capacity or total volume limit stated in the existing site assignment (the existing site assignment does not specify a capacity or total volume limit).

b. Vertical expansions beyond the limits of an approved plan – This modification applies to landfills and therefore is not applicable to the proposed facility.

c. Modifications as specified at 310 CMR 16.21(1) and 16.21(3), *Alternative Use of An Assigned Site* – The proposed facility does not represent a different solid waste activity than what is allowed in the existing site assignment. The Board of Health granted site assignment for use of the property for transfer station purposes, which is consistent with the proposed facility operations.

d. Any request to waive any site assignment criterion set forth at 310 CMR 16.40(3) as it applies to the existing facility – There are no site assignment criteria set forth in 310 CMR 16.40(3) that are stipulated in the existing site assignment.

Because none of the above provisions of a Major Modification are applicable to the proposed facility, the provisions of a Minor Modification, as provided in 310 CMR 16.22(3), must be reviewed to determine their applicability. 310 CMR 16.22(3) states the following:

(3) <u>Minor Modifications to Site Assignments at the Request of the Facility Owner or Operator</u>. Any request to modify a site assignment that is not subject to 310 CMR 16.22(1) or (2), including any request to modify conditions established by the Board of Health in the site assignment, or to increase daily or annual tonnage limits, except as specified at 310 CMR 16.22(4), are deemed to be "Minor Modifications." The Board of

Health may modify a site assignment to address a minor modification, at the request of the facility owner or operator, without requiring the filing of a new application by the applicant or site suitability report by the Department, provided the Board of Health provides public notice and holds a public hearing in accordance with the requirements of 310 CMR 16.00 prior to deciding on the minor modification.

In the context of the proposed facility, the operative provision in 310 CMR 16.22(3) is the reference stating that any request "to increase daily or annual tonnage limits" – on the basis that the provisions of 310 CMR 16.22(1), 16.22(2) and 16.22(4) do not apply – would be deemed a Minor Modification to a site assignment. Regarding lack of applicability of 310 CMR 16.22(1), 16.22(2) and 16.22(4) to the proposed Project, note the following:

- 310 CMR 16.22(1) addresses site assignment modifications that are due to a threat to public health, safety or the environment. This provision is not applicable to the proposed facility.
- 310 CMR 16.22(2) addresses requirements for a Major Modification to site assignments. As enumerated above, the provisions of 310 CMR 16.22(2) do not apply to the proposed facility.
- 310 CMR 16.22(4) addresses a facility's request to temporarily increase the daily or annual tonnage limits to address a short-term emergency situation without the requirement for a modification to the site assignment. This provision is not applicable to the proposed facility.

The proposed facility, with a sought-after capacity of 850 TPD, represents a capacity increase to the permitted capacity of the existing 350 TPD transfer station. In instances when an existing site assignment does not stipulate a capacity or total volume limit (as is the case with the existing Hudson site assignment), MassDEP's regulations under 310 CMR 16.22(3) provide the mechanism whereby a proposed increase in the permitted capacity at the site requires a Minor Modification to the site assignment[1].

In its August 30, 2022 comment letter on the ENF, MassDEP confirmed that a Minor Modification to the site assignment will be required for the proposed facility. As provided in 310 CMR 16.22(3), a Minor Modification does not require the filing of a site suitability application with MassDEP or the Department's issuance of a site suitability report. Pursuant to the Site Assignment Regulations, the Minor Modification will be sought from the Hudson Board of Health in accordance with the public notice and public hearing requirements provided in the regulations.

8.6 Master Plan Compliance

As acknowledged in the 2030 Solid Waste Master Plan, solid waste disposal options and disposal capacity in Massachusetts and throughout the northeast are increasingly limited, with landfill

[1] See Theophilopoulos vs. Board of Health of Salem, 85 Mass. App. Ct. 90 (2014)

capacity in Massachusetts projected to decline to "virtually zero" by 2030. For this reason, and to realize other environmental and economic benefits, the core objective of the Master Plan is to put into place systems that will help Massachusetts reduce the amount of waste requiring disposal so that it can achieve the 30% and 90% reduction targets set for 2030 and 2050, respectively.

The proposed Hudson Transfer Station and Recycling Facility will support the objectives of the Master Plan in several key areas:

- The Recyclables Processing Area of the building will provide added materials recovery capacity to the state's MRF infrastructure, which, as noted in the Master Plan, is operating at nearly 100 percent of capacity. Additionally, the Recyclables Processing Area will help support recovery of waste ban materials from the MSW operations, where uncontaminated banned materials that may be safely removed from incoming MSW loads (for example, cardboard) can be delivered to the Recyclables Processing Area for recovery.

- Increased recycling by Hudson residents visiting the facility will be promoted by the expanded and self-contained layout of the Residential Drop-off Area, which will prioritize recycling as a "front-end" drop-off activity.

- The tipping floor for C&D operations will encompass an area of approximately 13,000 square feet, which is over four times the floor area provided for C&D operations at the existing transfer station. The additional floor area, as well as dedicated trailer pit for receipt of C&D material, will not only accommodate the receipt of a greater quantity of C&D material at the facility, it will also provide needed floor area to conduct C&D operations that incorporate the requirements of the MPS (inspection of incoming loads, removal of clean gypsum wallboard, and removal of zero tolerance waste ban items) into the building's physical space. As the requirements of the MPS evolve to support the waste reduction objectives of the Solid Waste Master Plan, the proposed facility will have the operational space to adapt to both existing and future MPS-related operational requirements.

- The MSW operations of the proposed facility will offer similar benefits in support of the Master Plan as the C&D operations will provide. The tipping floor for MSW operations will encompass an area of approximately 17,800 square feet, which is almost six times the floor area provided for MSW operations at the existing transfer station. As with the proposed C&D operational space, the MSW operational space will provide expanded floor area to conduct load inspections and segregate banned materials from the incoming waste stream. As the waste bans evolve in support of the waste reduction objectives of the Master Plan, the proposed facility will have the operational space to adapt to increased material management and diversion needs associated with both existing and future waste ban requirements.

As itemized above, the proposed facility will greatly enhance waste reduction, diversion, and material recovery capabilities at the Site while providing an additional outlet for the efficient management of these materials as in-state disposal capacity continues to diminish. In this way, the proposed facility, with its increased capacity to receive MSW and C&D debris, together with its focus on materials recovery, will provide added resiliency to Massachusetts' waste disposal infrastructure in and around the Town of Hudson. For these reasons, the proposed Hudson Transfer Station and Recycling Facility is fully aligned with the objectives of the 2030 Solid Waste Master Plan and will have the flexibility to support the plan's initiatives well into the future.

Chapter 9

Stormwater Management

9.0 STORMWATER MANAGEMENT

9.1 Introduction

The Project includes installation of stormwater controls that have been designed to limit the calculated peak post-development flows leaving the Proposed Facility and appurtenances, herein referred to as the Development Area, to levels that are equal to or less than the calculated peak pre-development flow. Treatment of the stormwater will be achieved through a combination of best management practices (BMPs) including deep sump catch basins, oil/grit separators, subsurface detention/infiltration structures, and sediment forebays paired with infiltration basins.

Post-development runoff rates will be equal to, or less than, pre-development rates, for the 2-, 10-, 25-, and 100-year storm events. Post-development runoff rates will be controlled by the BMPs and will meet applicable requirements of the Stormwater Standards listed in the Massachusetts Stormwater Handbook.

The stormwater management and conveyance systems are being designed to comply with MassDEP's Stormwater Management Standards and the storm water control requirements provided in 310 CMR 19.205 of the Solid Waste Management Regulations. A detailed Stormwater Management Report, prepared by Sanborn Head for the Project, is provided in Appendix F. The report includes stormwater model output for pre- and post-development conditions, drainage calculations, BMP selection, and demonstration of compliance with MassDEP's Stormwater Management requirements, as well as an evaluation of the stormwater design's resiliency to future climate conditions.

9.2 Pre-Development

For stormwater management system design purposes, the pre-development condition is based on existing site conditions as of January 3, 2023, which is the date of the most recent aerial mapping update. In the current condition, stormwater sheet flows across the Development Area primarily towards wetlands located north and south of the Development Area, as well as to existing stormwater infrastructure associated with other Town development on the Site. The pre-development peak discharge rates for the Development Area were calculated for the pre-development condition.

Stormwater runoff from the Development Area discharges at four locations, as depicted on the Pre-Development Drainage Plan, Figure 9-1.

9.2.1 Discharge Point No. 1

Discharge Point No. 1 (DP-1) is a wetland located north of the Existing Facility. The watershed to DP-1 is comprised of pavement, grassed, and wooded areas that flow northerly from the Development Area to the wetland.

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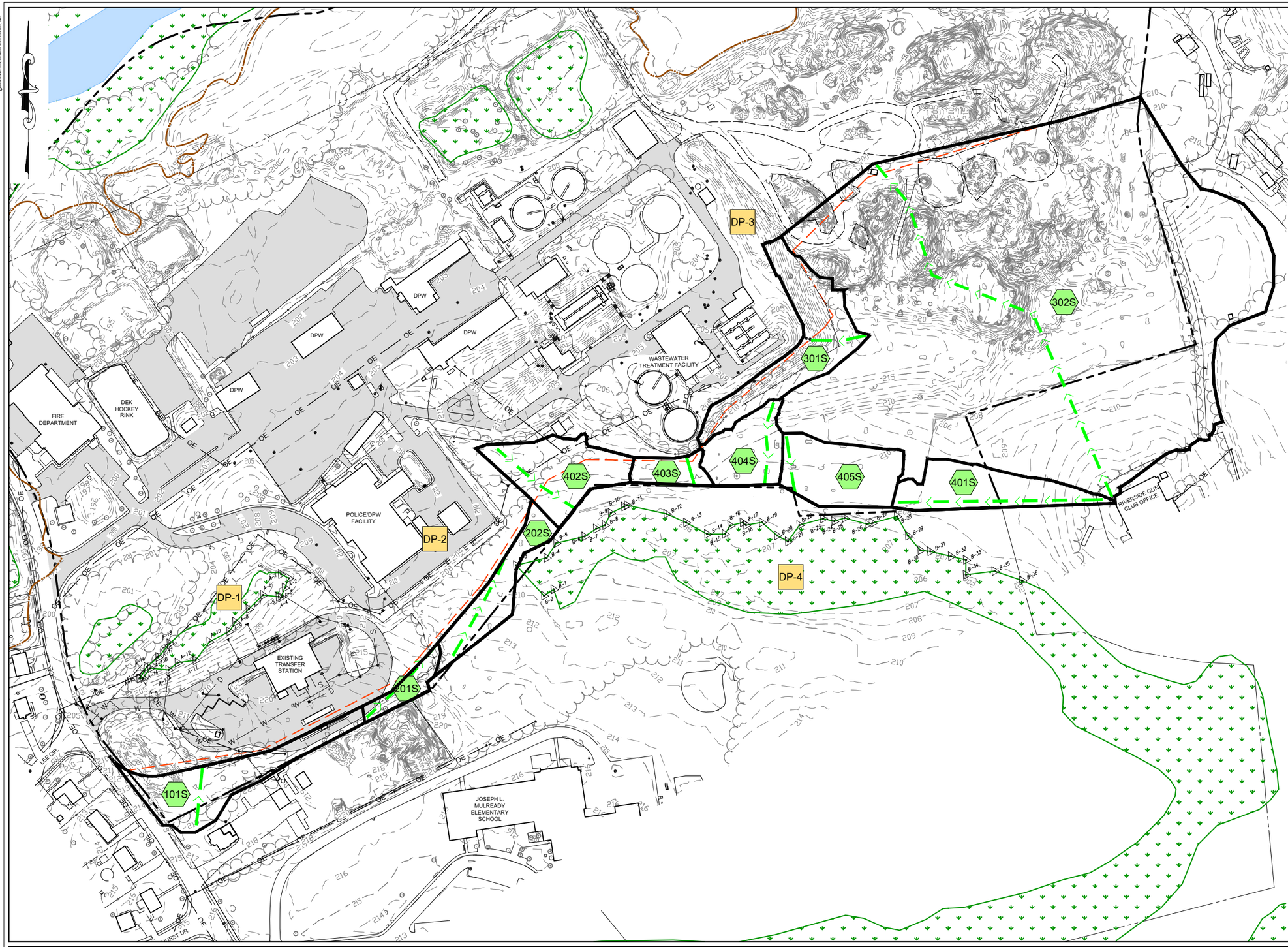

NOTES:

1. TOPOGRAPHY, EXISTING SITE FEATURES AND PROPERTY LINE SURVEY WERE PROVIDED TO SANBORN HEAD BY CONTROL POINT ASSOCIATES, INC. (CONTROL POINT) OF SOUTHBOROUGH, MA IN AN ELECTRONIC FILE TITLED "03-180244-01 - BTU REV 1 (ISSUED 2023-03-17).dwg". ELECTRONIC FILE DEPICTS INFORMATION SHOWN ON DRAWINGS TITLED "BOUNDARY & TOPOGRAPHIC SURVEY", SHEETS 1 THOUGH 8, DATED MARCH 17, 2023 PREPARED BY CONTROL POINT OF SOUTHBOROUGH, MA FOR SANBORN HEAD.

2. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON THE FOLLOWING:

   A. AERIAL IMAGERY, DATED APRIL 21, 2018, PROVIDED BY EASTERN TOPOGRAPHICS OF WOLFBORO NEW HAMPSHIRE, AND AN ON-THE-GROUND FIELD SURVEY BY CONTROL POINT BETWEEN OCTOBER 11, 2018 AND OCTOBER 22, 2018; AND

   B. PLANIMETRIC AND TOPOGRAPHIC FEATURES COMPILED BY CONTROL POINT USING PHOTOGRAMMETRIC METHODS FROM UAV PHOTOGRAPHY AND AN ON-THE-GROUND FIELD SURVEY BY CONTROL POINT ON JANUARY 3, 2023.

3. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). HORIZONTAL DATUM IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), MASSACHUSETTS STATE PLANE COORDINATE SYSTEM.

4. WETLAND INFORMATION WAS OBTAINED FROM MassGIS, EXCEPT IN THOSE AREAS SHOWN ON THE PLAN AS FOLLOWS:

   THE ABOVE LINE TYPE DESIGNATES THE LIMITS OF AN ON-THE-GROUND WETLAND DELINEATION PERFORMED BY EPSILON ASSOCIATES ON JANUARY 18 AND 22, 2023 AND FIELD LOCATED BY CONTROL POINT ON JANUARY 30, 2023.

5. ASSABET RIVER BOUNDARY WAS OBTAINED BY SANBORN HEAD FROM THE MassGIS HYDROGRAPHIC (WATER-RELATED) FEATURE DATA SET. HYDROGRAPHIC FEATURE DATA WAS LAST UPDATED BY MassDEP IN DECEMBER 2019.

6. FLOODPLAIN INFORMATION WAS OBTAINED FROM FLOOD INSURANCE RATE (FIRM) MAP FOR MIDDLESEX COUNTY, MASSACHUSETTS. MAP NUMBER 25017C0343F, MAP REVISED JULY 7, 2014.

LEGEND:

- 206 — 2023 2-FOOT CONTOUR
- 210 — 2023 10-FOOT CONTOUR
- EXISTING PAVED ROAD
- EXISTING GRAVEL ROAD
- EXISTING TREE LINE
- EXISTING FENCE
- SITE PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- SUBCATCHMENT LINES
- TIME OF CONCENTRATION FLOW PATH
- 1S — SUBCATCHMENT
- DP-1 — DISCHARGE POINT (SUMMARY NODE)

SANBORN HEAD

GRAPHICAL SCALE
100' 50' 0' 100' 200'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: A. WILKER
DESIGNED BY: A. WILKER
REVIEWED BY: D. LONG
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: MARCH 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

PROJECT NUMBER: 3984.01

PRE-DEVELOPMENT DRAINAGE PLAN

FIGURE NUMBER: 9-1

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9.2.2 Discharge Point No. 2

DP-2 is a drainage swale adjacent to the Police/DPW Facility that abuts the northern portion of the Development Area. The watershed is comprised of pavement, grassed, wooded, and gravel areas draining north from the Development Area.

9.2.3 Discharge Point No. 3

DP-3 is a drainage swale adjacent to the Town's Wastewater Treatment Plant that is located north of the Development Area. The watershed is comprised of pavement, grassed, wooded and gravel areas that flow northerly from the Development Area to the swale. Additionally, this includes run-on to the Development Area that is rerouted and treated as off-site flow in the Post-Development condition.

9.2.4 Discharge Point No. 4

DP-4 consists of the wetland located south of the Development Area. The watershed is comprised of pavement, grassed, and wooded areas that flow southerly from the Development Area to the wetland.

9.3 Post-Development

In the post-development condition, stormwater runoff from construction of the Proposed Facility will be directed to a series of subsurface stormwater conveyance and detention features, including deep sump catch basins, drain manholes, oil/grit separators, and subsurface detention/infiltration structures, and sediment forebays paired with seven infiltration basins. The closed drainage system is comprised of 4 subsurface detention/infiltration structures and oil/grit separators, 50 deep sump catch basins, 29 drain manholes, and associated drain piping. The subsurface detention/infiltration structures will provide detention that will reduce peak flows off-site and provide removal of total suspended solids (TSS), through infiltration. Stormwater management in the post-development condition, depicting catchment areas and proposed stormwater infrastructure, is shown on the Post-Development Drainage Plan, Figure 9-2.

Basins 1 through 7 have been designed as infiltration basins to detain and slowly infiltrate accumulated stormwater. The basins will provide detention that will reduce peak flows off-site, and provide varying levels of removal of TSS, total nitrogen, total phosphorus, metals, and pathogens, through infiltration. Of the seven proposed basins, only Basins 2 and 3 are designed with outlet structures and emergency overflow spillways that discharge some stormwater to the DP-4 wetland. The remaining five proposed infiltration basins are large enough to detain and slowly infiltrate stormwater generated up to a 100-year storm, without the need to discharge.

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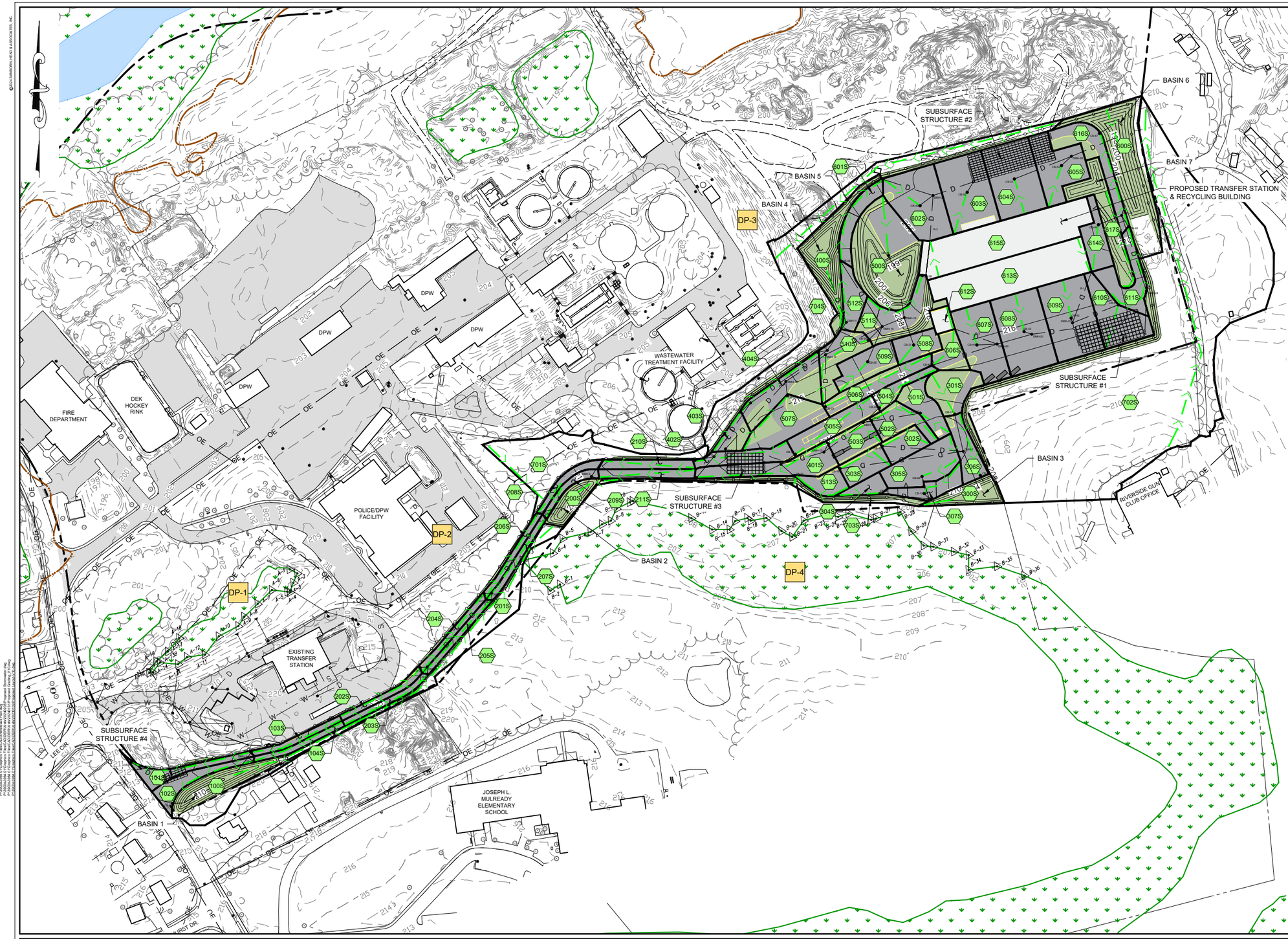

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- SITE PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- SUBCATCHMENT LINES
- TIME OF CONCENTRATION FLOW PATH
- 101S — SUBCATCHMENT
- DP-1 — DISCHARGE POINT (SUMMARY NODE)

SANBORN HEAD

GRAPHICAL SCALE
100' 50' 0' 100' 200'

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DRAWN BY: A. WILKER
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DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

POST-DEVELOPMENT DRAINAGE PLAN

PROJECT NUMBER: 3984.01

FIGURE NUMBER: 9-2

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9.3.1 Discharge Point No. 1

In the post-development condition, the proposed stormwater drainage patterns direct a majority of the stormwater flow to Basin 1, where it is infiltrated. The remainder of the stormwater is directed to an ADS StormTech® SC-740 Chamber System (Structure 4). The subsurface detention/infiltration structure has 24 chambers that provide approximately 1,700 cubic feet (cf) of subsurface storage. The system is designed to detain stormwater in the system, infiltrating all of it. Between Basin 1 and Structure 4 there is no longer any stormwater being sent to discharge point, DP-1.

9.3.2 Discharge Point No. 2

Stormwater directed to discharge point, DP-2, is from a portion of the area that flows to DP-2 in the Pre-Development condition.

9.3.3 Discharge Point No. 3

In the post-development condition, the proposed stormwater drainage patterns were developed to direct stormwater flow to Basins 4 through 7, where it is infiltrated. Prior to reaching the basins, a portion of the stormwater is directed to three ADS StormTech® Chamber Systems. Two of the subsurface/infiltration structures, Structures 1 and 3, are MC-3500 Chamber Systems. These two subsurface detention/infiltration structures have 144 and 60 chambers that provide approximately 27,350 cf and 11,600 cf of subsurface storage, respectively. The third subsurface/infiltration structure, Structure 2, is a SC-740 Chamber System. This structure has 288 chambers that provides approximately 22,230 cf of subsurface storage. The structures are designed to detain stormwater, infiltrating some, if not all of it, before discharging the remainder to either Basin 5 (for Structure 3) or Basin 6 (for Structures 1 and 2).

The remainder of the stormwater flow directed to discharge point, DP-3, is from a portion of the area that flows to DP-3 in the Pre-Development condition. A portion of this is run-on from an adjacent site, which is being re-directed round the Proposed Facility.

9.3.4 Discharge Point No. 4

In the post-development condition, the proposed stormwater drainage patterns were developed to direct stormwater flow to Basins 2 and 3, where a portion of it is infiltrated and the remaining stormwater is discharged to discharge point, DP-4, the southern wetland.

9.4 Compliance with MassDEP Stormwater Management Regulations

The Stormwater Policy was established by MassDEP to prevent stormwater discharges from polluting the surface waters and groundwaters of the Commonwealth. The policy was further explained in the Massachusetts Stormwater Handbook. Over time, MassDEP has updated the Stormwater Management Standards and the Massachusetts Stormwater Handbook to promote increased stormwater recharge, the treatment of more runoff from polluting land uses, low

impact development techniques, pollution prevention, the removal of illicit discharges to stormwater management systems, and improved operation and maintenance of stormwater best management practices.

The Stormwater Management Standards are enforced by MassDEP under the Wetlands Protection Act (310 CMR 10.05(6)(k)) and the Massachusetts Clean Waters Act (314 CMR 9.06(6)(a)).

A summary of MassDEP Stormwater Performance Standards and the Project's anticipated compliance with each standard is provided below:

Standard 1: No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

Compliance: The Project is designed with no new stormwater conveyances that allow discharge of untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth of Massachusetts. The proposed stormwater design incorporates BMPs including deep sump catch basins, oil/grit separators, sediment forebays paired with infiltration basins, subsurface detention/infiltration structures, drainage channels, and energy dissipation to mitigate erosion and treat stormwater. The stormwater conveyances are designed to reduce stormwater velocities and minimize erosion and scour to the receiving wetlands.

The sedimentation forebays and oil/grit separators will allow solids to settle prior to discharge. Accumulated sediment within these devices will be removed at a scheduled interval. Stormwater basins and subsurface detention/infiltration structures are designed to store stormwater flows and regulate post-development discharge rates to be less than the pre-development discharge rates.

The Proposed Facility's Stormwater Pollution Prevention Plan (SWPPP) will include a long-term inspection and maintenance program. The SWPPP will be reviewed, amended, or updated as necessary to ensure the functionality of the stormwater management system after the construction of the Project.

Standard 2: Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.

Compliance: The stormwater calculations discussed in Section 6 of the Stormwater Management Report summarize the stormwater evaluations for the pre-development condition and post-development condition. The proposed stormwater conveyances will control the post-development peak discharge rates less than the pre-development peak discharge rates for the 2-year, 10-year, 25-year, and 100-year 24-hour storm events.

Standard 3: Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook

Compliance: Most of the proposed management of generated stormwater is through infiltration, either through the seven proposed infiltration basins, or the four proposed subsurface detention/infiltration structures. Due to the amount of infiltration proposed for this Project, it is expected that recharge to groundwater in the post-development condition should meet or exceed the recharge to groundwater occurring in the pre-development condition.

Standard 4: Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:

- *Suitable practices for source control and pollution prevention are identified in a long- term pollution prevention plan, and thereafter are implemented and maintained;*
- *Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and*
- *Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.*

Compliance: The proposed Project will provide source reduction of potential TSS through various BMPs including deep sump catch basins, oil/grit separators, sediment forebays paired with infiltration basins, and subsurface detention/infiltration structures. TSS removal rates from the proposed BMPs as outlined in the Massachusetts Stormwater Handbook, Volume One, Chapter One, TSS Removal Efficiencies for Best Management Practices Table, dated February 2008, show that a minimum of 80 percent of the average annual load will be removed in all proposed BMP chains for the Development Area.

Standard 4 also requires the development and implementation of suitable practices for source control and pollution prevention. These measures must be identified in a long-term pollution prevention plan. The Proposed Facility's SWPPP will include a long-term inspection and maintenance program. The SWPPP will be reviewed, amended, or updated as necessary to ensure the functionality of the stormwater management system after the construction of the Project.

Standard 5: For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher

potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

Compliance: Since the Proposed Facility is classified as an area with higher potential pollutant loads, specific structural BMPs determined to be suitable for treating runoff from such land uses were selected, including deep sump catch basins, oil/grit separators, sediment forebays paired with infiltration basins, and subsurface detention/infiltration structures. The limitations of use of these BMPs in areas with higher potential pollutant loads were evaluated and are suitable for use on this Project.

Standard 6: Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area, if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "storm water discharge" as defined in 314 CMR 3.04(2)(a)1 or (b) to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.

Compliance: Stormwater from the Development Area either infiltrates or discharges to the adjacent wetland resource areas. None of the receiving wetland resource areas are classified as critical areas.

Standard 7: A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

Compliance: The Project is not being developed under the redevelopment standards.

Standard 8: A plan to control construction related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented. All redevelopment projects shall fully comply with Standard 8.

Compliance: Projects that disturb one acre of land or more are required to obtain coverage under the NPDES Construction General Permit issued by EPA and prepare a Construction SWPPP.

A Construction SWPPP for the Project will be prepared by the contractor prior to the start of construction. The Construction SWPPP identifies the potential sources of pollution reasonably expected to affect stormwater quality and documents the selection, design, installation, and implementation of BMPs for erosion and sediment control and pollutant reduction during construction.

A request for permit coverage will be submitted to USEPA in an electronic Notice of Intent (NOI). A copy of the completed NOI form and applicable USEPA authorization documentation will be included in the Construction SWPPP upon completion. The Construction SWPPP will be submitted to the Town of Hudson before land disturbance commences, in accordance with the Construction General Permit requirements.

Standard 9: A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.

Compliance: The Operations and Maintenance (O&M) Plan will incorporate stormwater operations and management provided in the Proposed Facility's SWPPP. The SWPPP will be reviewed, amended, or updated as necessary to ensure the functionality of the stormwater management system after the construction of the Project.

Standard 10: All illicit discharges to the stormwater management system are prohibited.

Compliance: The Proposed Facility's SWPPP shall include measures to prevent illicit discharges. The SWPPP shall be reviewed, amended, or updated as necessary to accommodate compliance with the MassDEP Stormwater Management Standards.

9.5 Climate Resiliency

The proposed stormwater infrastructure was designed, including structure and pipe sizing and elevations, to safely convey stormwater during the Resilient Mass Action Team (RMAT) 50-year, 24-hour storm event projected for the year 2070, discussed in further detail in Chapter 10. By designing the proposed stormwater infrastructure to safely convey stormwater during this design storm event, the proposed stormwater infrastructure is anticipated to be resilient to future climate conditions throughout the expected useful life of the proposed facility.

In addition to the stormwater infrastructure design resiliency, the proposed structures (i.e buildings) associated with the development are also anticipated to be resilient to future climate conditions. The resiliency of the structures is based upon a comparison of the elevations of the proposed structures to FEMA's 100-year Base Flood Elevation in the site area.

The FEMA Flood Insurance Rate Map (Map No. 25017C0343F) depicts the 100-year floodplain in the site area, which is mapped in the vicinity of the Assabet River. The boundary of the floodplain at its closest distance to the proposed Transfer Station & Recycling Building is slightly more than 500 feet north of the building. The Base Flood Elevation in this portion of the Assabet River floodplain is elevation 196 (NAVD 88), which is 10 feet lower than the proposed trailer pit floor elevation of 206, which is the lowest floor elevation of the proposed building. The major operational space of the building (tipping floor and floor elevation for the Recyclables Processing Area) has a proposed floor elevation of 218, which is 22 feet above the 100-year Base Flood Elevation. On this basis, the elevation of the Transfer Station & Recycling Building, as well as the proposed elevations of the scale house and attendant's booth (both with floor elevations of approximately 214) are anticipated to be resilient to future climate conditions.

A further discussion of the Project's climate change resiliency is provided in Chapter 10 of this DEIR.

Chapter 10

Climate Change Resilience

10.0 CLIMATE CHANGE RESILIENCE

10.1 Introduction

The Project was designed with climate resiliency in mind. As required in the Project's September 9, 2022 ENF Certificate, the proposed facility's stormwater infrastructure was modeled for an anticipated storm event for the year 2070, representing the useful life of the facility, in order to ensure the infrastructure proposed can accommodate changes to precipitation intensity and frequency anticipated for the future. Additionally, floodplain mapping was referenced during the design process and the elevational placement of site features selected to keep the Transfer Station & Recycling Building and associated structures resilient to future climate conditions.

10.2 Stormwater Design Resiliency

To assess the climate risks of the proposed Project, the Resilient Mass Action Team (RMAT) Climate Resilience Design Standards Tool was used to generate a target planning horizon for the Project and to generate a recommended design stormwater event to evaluate the Project at the target planning horizon. The output provided by the tool indicated the target event was a 50-year storm event in the year 2070. The output also provided a projected 24-hour total precipitation depth of 9.5 inches. A copy of the RMAT output is included as an attachment to the Stormwater Management Report, provided in Appendix F.

In addition to evaluating the Project for the 2-year, 10-year, 25-year, and 100-year, 24-hour storm events, as described in detail in Chapter 9, the post-development condition was also evaluated for a 9.5 inch, 24-hour storm, which as mentioned above is representative of a 50-year, 24-hour storm event, in the year 2070. By designing the proposed stormwater infrastructure to safely convey stormwater during this design storm event, the proposed stormwater infrastructure is anticipated to be resilient to future climate conditions throughout the expected useful life of the proposed facility.

The stormwater model for the RMAT Climate Resiliency Storm Event is included as an attachment to the Stormwater Management Report, provided in Appendix F.

10.3 Resiliency of Proposed Structures

In addition to the stormwater infrastructure design resiliency, the proposed structures (i.e., buildings) associated with the development are also anticipated to be resilient to future climate conditions. The resiliency of the structures is based upon a comparison of the elevations of the proposed structures to FEMA's 100-year Base Flood Elevation in the site area.

The FEMA Flood Insurance Rate Map (Map No. 25017C0343F) depicts the 100-year floodplain in the site area, which is mapped in the vicinity of the Assabet River. The boundary of the floodplain at its closest distance to the proposed Transfer Station & Recycling Building is slightly more than 500 feet north of the building. The Base Flood Elevation in this portion of the Assabet River

floodplain is elevation 196 (NAVD 88), which is 10 feet lower than the proposed trailer pit floor elevation of 206, which is the lowest floor elevation of the proposed building. The major operational space of the building (tipping floor and floor elevation for the Recyclables Processing Area) has a proposed floor elevation of 218, which is 22 feet above the 100-year Base Flood Elevation. On this basis, the elevation of the Transfer Station & Recycling Building, as well as the proposed elevations of the scale house and attendant's booth (both with floor elevations of approximately 214) are anticipated to be resilient to future climate conditions.

Chapter 11

Greenhouse Gas Emissions

11.0 GREENHOUSE GAS EMISSIONS

The Proponent is taking strong, practical steps to reduce carbon emissions while balancing its development goals to create a successful and thriving Project, as described in this chapter. The Project will be designed to minimize energy use to the maximum extent practicable, and with an understanding of the need to reduce carbon emissions.

This chapter presents a greenhouse gas ("GHG") analysis that complies with the MEPA Greenhouse Gas Emissions Policy and Protocol ("GHG Policy") of May 2010.

11.1 Introduction

The GHG analysis focuses on emissions of carbon dioxide ("CO_2"). As noted in the GHG Policy, although there are other GHGs, CO_2 is the predominant contributor to global warming. Furthermore, CO_2 is by far the predominant GHG emitted from the types of sources related to this Project, and CO_2 emissions can be calculated for these source types with readily available data.

GHG emissions sources can be categorized into two groups: (1) stationary sources, or emissions related to structures and equipment that are stationary on the site; and (2) mobile sources, or emissions related to transportation. Stationary sources can be further broken down into direct sources and indirect sources; direct sources include GHG emissions from on-site fuel combustion, and indirect sources include GHG emissions associated with electricity and other forms of energy that are imported from off-site power plants via the regional electrical grid for use on-site.

The mobile source GHG analysis was developed using the traffic study presented in Chapter 7 of this DEIR. Transportation-related GHG emissions are presented for three typical cases: 2024 Existing, 2031 No-Build, and 2031 Build.

For the GHG analysis, the Proponent can only take credit for improvements above and beyond the Project ("base" case). The traffic analysis analyzes the No-Build Condition (the expected traffic conditions in 2031, including proposed projects in the area other than the Project) and the Build Condition (the No-Build Condition plus the Project). To determine the GHG emissions from the Project alone, the difference between the Build Condition and the No-Build Condition is calculated – this is the Project's "base" case. Any GHG reductions as a result of traffic mitigation that may be proposed on behalf of the Project would be credited to the Project's GHG totals. Please refer to Section 11.3 for the Mobile Source Analysis.

11.2 Stationary Sources

The Project consists of various solid waste and recycling facilities operations, central to which is the proposed 53,000 sf Transfer Station & Recycling Building. Most of the building consists of unconditioned space where MSW, C&D, and recyclables material handling will be performed. Adjoining this unconditioned space is an approximately 2,000 sf office/administration space, which is small enough to fall into the range of opt-out of GHG quantification. The building

envelope enclosing the conditioned space will be constructed to comply with Stretch Code requirements and the office area will be heated and cooled by electric heat pumps and domestic hot water will be provided by heat pump hot water heaters. Consistent with correspondence between the Proponent, MEPA, and DOER, the proposed design and building envelope avoid, minimize, and mitigate GHG impacts to the extent feasible and no quantitative analysis is required. As such, the Proponent proposes to follow the opt-out provision of the GHG policy for this portion of the Project.

For the office/administrative area the Proponent will commit to;

- High performing envelope for conditioned office spaces;
- 100% electric heat pump space heating and cooling and;
- Electric domestic hot water heating via air source heat pumps;

A letter stating commitment to these measures is included in Appendix G of this DEIR.

The Project will also provide the following measures for Energy Code Compliance;

- Roofs to be constructed PV-ready;
- Installed electric vehicle (EV) charging and readiness per Stretch Energy Code

11.3 Mobile Sources

As part of the GHG analysis, emissions of carbon dioxide from regional traffic associated with the Project were evaluated.

11.3.1 Traffic GHG Analysis

In accordance with the MEPA GHG Policy, GHG emissions were estimated for mobile sources within the transportation study area (see Chapter 7 for the transportation analysis). For mobile source GHG emissions, the methodology follows the same methodology that is outlined in MassDEP guidance for mesoscale analyses.[1] The analysis includes a comparison of the future Build condition to the No-Build condition.

A mesoscale GHG analysis predicts the change in regional carbon dioxide (CO_2) due to the Project. The analysis includes a comparison of the future Build condition to the No-Build condition. If emissions are greater for the Build condition, reasonable and feasible mitigation measures will be evaluated. The methodology and parameters for the mesoscale GHG analysis follow methodology approved by MassDEP.

[1] MassDEP, Guidelines for Performing Mesoscale Analysis of Indirect Sources, May 1991.

The mesoscale analysis performed for this Project predicts the change in regional GHG emissions due to the Project. The total vehicle pollutant burden was estimated for the 2024 Existing condition and the No-Build and Build conditions for year 2031. Traffic conditions are described in more detail in Chapter 7.

The EPA has developed an emissions factor model (called MOVES4), and MassDEP provides state-specific inputs required for this model. Therefore, the MOVES4 computer program was used to estimate motor vehicle emissions of greenhouse gases on the roadway network in the Project area. Average hourly emission estimates were calculated using the vehicle count data provided in the transportation study, mileage between intersections, and county-specific model inputs provided by MassDEP.

Traffic volumes provided in Chapter 7 form the basis of the mesoscale GHG study. Approximately 40 roadway links and 17 intersections were included in the analysis. Peak hour traffic volumes were provided in the traffic analysis. Estimates of average daily traffic (ADT) were made from the peak hour volumes assuming a 10 percent K-Factor. This ADT was then converted into average hourly volumes by dividing by 24. Average speed was assumed based on roadway type (typically 10-40 mph for arterial roads) for all links. Distances for the links were estimated with mapping software.

MOVES output emissions are in grams per hour. Since average hourly traffic data were input, emissions in tons per year were calculated assuming a seven-day week for 52 weeks per year.

For intersection emissions, idle vehicle emission rates were obtained in MOVES4 by using an artificial roadway link with 1 vehicle and a zero miles per hour vehicle speed. The total emissions on this link equal a mass per hour emission rate for idling vehicles. This method is recommended by EPA to get emission factors for air quality concentration analyses of idling vehicles at intersections (microscale analyses).[2] These emission factors were then used with vehicle counts and delay information from the traffic analyses to estimate vehicle emissions at intersections.

Appendix B presents the intersection emissions calculations, and the Project-specific link data input into the MOVES4 program.

11.3.2 Traffic GHG Analysis Results

Table 11-1 represents the difference between the Existing case and the future No-Build case (i.e., traffic expected without the addition of the Project to the area). Anticipated improvements in vehicle engine and emissions technologies, which are expected to reduce the per-vehicle emission rates, typically reduce future emissions. This results in a 13 percent decrease in GHG.

[2] U.S. EPA, 2010. Using MOVES in Project-Level Carbon Monoxide Analyses. EPA-420-B-10-041.

Table 11-1 Regional Traffic GHG Emissions Analysis Summary (No-Build)

Pollutant	CO_2 (lbs/day)	CO_2 (tons/yr)
2024 Existing	70,491	12,865
2031 No-Build	62,193	11,350
Difference	-8,298	-1,514
Difference (%)	-12%	-12%

Table 11-2 represents the differences between the No-Build case and the Build case (i.e., traffic associated with the addition of the Project to the area.

As shown, the 2031 Build condition exhibits a 1.4 percent increase of CO_2 emissions compared to 2031 No-Build condition. This is due to the increase in vehicular traffic and subsequent increased delay times generated by the proposed Project alone. The increased vehicle volumes produce increased delays at nearby intersections.

Table 11-2 Regional Traffic GHG Emissions Analysis Summary (Build)

Pollutant	CO_2 (lbs/day)	CO_2 (tons/yr)
2031 No-Build	62,193	11,350
2031 Build	63,042	11,505
Difference	849	155
Difference (%)	1.4%	1.4%

11.3.3 Summary

Table 11-3 shows the details of the mobile source GHG analysis from case to case. Changes are based on the case to the left. Vehicle miles traveled (VMT) represents the approximate mileage of all vehicles traveling on the modeled roadway network, and the net VMT change represents the difference from the prior case. A zero change in VMT means that there are no vehicles added or removed from the network for that case. Net delay represents the time sum of all idle traffic at all network intersections over the course of a day.

Table 11-3 Regional Traffic GHG Emissions Analysis Summary

	units	2024 Existing	2031 No-Build	2031 Build
Daily VMT	veh-miles/day	92,605	103,101	104,152
Net VMT Change	veh-miles/day	-	10,496	1,051
Net Delay	veh-hrs/day	430	633	674
Net Delay Change	veh-hrs/day	-	203	40
Roadway CO_2	tpy	12,353	10,693	10,806
Intersection CO_2	tpy	512	657	699
Net CO_2 Emissions	tpy	12,865	11,350	11,505
Net CO_2 Change	tpy	-	-1,514	155

GHG emissions between the No-Build and Build conditions are compared to determine the mobile source GHG emissions related to the Project. Table 11-4 shows the Project-related mobile source GHG emissions. The Project results in 97 tons of mobile source GHG emissions.

Table 11-4 Project Traffic GHG Emissions Analysis Summary

	units	2031 Build minus 2031 No-Build
Daily VMT	veh-miles/day	1051.0
Net Change	veh-miles/day	-
Net Delay	veh-hrs/day	40.2
Net Change	veh-hrs/day	-
Roadway CO_2	tpy	113
Intersection CO_2	tpy	42
Total CO_2 Emissions	tpy	155

11.4 Summary and Mitigation Commitments

11.4.1 Project GHG Summary

The Proponent has detailed its commitments to mitigate Project GHG emissions in Section 11.2. Specific stationary source GHG reduction has not been quantified, as the Proponent is committing to a series of GHG mitigation commitments per the MEPA GHG Policy "Opt-Out" provision, and therefore did not perform energy modeling; Table 11-5 summarizes the Project's mobile source emissions.

Table 11-5 Project GHG Emissions Summary

	Baseline	Proposed tons/year		Difference Percent Change
Mobile Sources	11,350	11,505	155	1.4%

11.4.2 Proponent's Commitments to Self-Certification

Upon completion of the Transfer Station & Recycling Building, the Proponent will submit a self-certification to the MEPA Office, prepared in accordance with the GHG Policy. This certification will identify the GHG mitigation measures incorporated into the Project. Details of the Proponent's implementation of operational measures will also be included.

Chapter 12

Mitigation and Draft Section 61 Findings

12.0 MITIGATION AND DRAFT SECTION 61 FINDINGS

12.1 Introduction

M.G.L.c.30, s.61 requires that "[a]ll authorities of the Commonwealth … review, evaluate, and determine the impact on the natural environment of all works, projects or activities conducted by them and … use all practicable means and measures to minimize [their] damage to the environment. … Any determination made by an agency of the Commonwealth shall include a finding describing the environmental impact, if any, of the project and a finding that all feasible measures have been taken to avoid or minimize said impact." Each state agency that issues a permit for the Project shall issue a Section 61 Finding in connection with permit issuance, identifying mitigation that is relied upon to satisfy the Section 61 requirement. A proposed Section 61 Finding is provided in Section 12.3, and a table of mitigation measures is included as part of the Section 61 Finding. All mitigation will be the responsibility of the Proponent. Section 1.4 includes a description of the Project Benefits.

12.2 Anticipated State Permits and Approvals

The State Actions for the Project include the issuance of an Authorization to Construct Permit for a Large Handing Facility, as well as an Authorization to Operate Permit for a Large Handing Facility from the Massachusetts Department of Environmental Protection.

12.3 Proposed Section 61 Findings

Project Name	Hudson Solid Waste Transfer Station
Project Location	Hudson, MA
Project Proponent	B-P Trucking, Inc.
EEA Number	16586
Date Noticed in Monitor	April 10, 2024

The potential environmental impacts of the Project have been characterized and quantified in the ENF dated August 1, 2022, and this Draft EIR, which are incorporated by reference into this Section 61 Finding. Throughout the planning and environmental review process, the Proponent has been working to develop measures to mitigate significant impacts of the Project. With the mitigation proposed and carried out in cooperation with state agencies, the [Agency] finds that there are no significant unmitigated impacts.

The Proponent recognizes that the identification of effective mitigation, and implementation of that mitigation throughout the life of the Project, is central to its responsibilities under the Massachusetts Environmental Policy Act (MEPA). The Proponent has accordingly prepared the annexed Table of Impacts and Mitigation Measures that specifies, for each potential state permit category, the mitigation that the Proponent will provide.

Now, therefore, [Agency], having reviewed the MEPA filings for the Project, including the mitigation measures itemized on the annexed Table of Impacts and Mitigation Measures, finds pursuant to M.G.L. C. 30, S. 61, that with the implementation of the aforesaid measures, all practicable and feasible means and measures will have been taken to avoid or minimize potential damage from the Project to the environment.

_____

[Agency]

_____

By

_____

[Date]

Table 12-1 Summary of Mitigation Measures

Mitigation	Schedule	Cost
Sustainable Design Features		
LED Lighting utilized throughout the building design	During operation	Part of operating cost
Energy Efficient Infrastructure	During construction & operation	Included in the overall Project cost
Low-Flow Fixtures	During construction & operation	Included in the overall Project cost
Stormwater Management		
Erosion and sedimentation controls will be implemented to prevent stormwater impacts during construction or land disturbance activities. A Construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared by the contractor prior to the start of construction identifying temporary best management practices (BMPs) for erosion and sedimentation control.	During construction	Included in the overall Project cost
Treatment of the stormwater through a combination of BMPs including deep sump catch basins, oil/grit separators, subsurface detention/infiltration structures, and sediment forebays paired with infiltration basins.	During operation	Included in the overall Project cost
Stormwater management and conveyance systems will comply with MassDEP's Stormwater Management Standards and the storm water control requirements provided in 310 CMR 19.205 of the Solid Waste Management Regulations.	During operation	Included in the overall Project cost
The Facility's O&M Plan will include a SWPPP that addresses the long-term inspection and maintenance program for the stormwater BMPs. The SWPPP will be reviewed, amended, or updated as necessary to ensure the functionality of the stormwater management system after construction of the Project.	During operation	Part of the operating cost
Climate Resiliency		
The proposed stormwater infrastructure, including structure and pipe sizing and elevations, is designed to safely convey stormwater during the Resilient Mass Action Team (RMAT) 50-year, 24-hour storm event projected for the year 2070.	During operation	Included in the overall Project cost
The proposed Transfer Station & Recycling Building will be located approximately 500 feet from the 100-year floodplain of the Assabet River. The building's lowest floor elevation (the trailer pit floors) will be approximately 10 feet above the 100-year base flood elevation of the river and the major operational space of the building (tipping floor) will be approximately 22 feet above the base flood elevation. On this basis, the elevation of the Transfer Station & Recycling Building, as well as the proposed elevations of the scale house and attendant's booth, will be situated to be resilient to future climate conditions.	During operation	Included in the overall Project cost

Table 12-1 Summary of Mitigation Measures (Continued)

Mitigation	Schedule	Cost
Transportation		
The Proponent is committed to the following mitigation elements for the Project: ♦ The driveways will be placed under STOP-sign (Manual on Uniform Traffic Control Devices (MUTCD) R1-1) control, with a painted STOP-bar included. ♦ All signs and other pavement markings to be installed within the Project site shall conform to the applicable standards of the current MUTCD. ♦ Snow windrows within sight triangle areas of the Project site driveway will be promptly removed where such accumulations would impede sight lines. ♦ In order to encourage safe and efficient flow of traffic to and from the site, should any landscaping or signage along the site frontage or the site driveway be proposed or requested by others, these features will be no higher than 24 inches or be set back sufficiently from the edge of the roadways so as not to inhibit the available sightlines. The existing vegetation on the north site of the driveway will be trimmed or removed to provide an unobstructed sight line for vehicles exiting the Project driveway.	During construction & operation	Part of the operating cost
The Proponent is committed to the following off-site improvements for the Project in collaboration with the Town of Hudson Department of Public Works as required: ♦ Main Street at Mackin Street in order to improve overall safety at this location the Project will install appropriate warning signage, such as MUTCD designation W8-6 (Truck Crossing), along Main Street. This will alert motorists driving along Main Street to the possibility of trucks crossing at the intersection, thereby improving overall traffic safety. The sign would be installed on each direction of Main Street approximately 200 feet away from the intersection. See Figure 7-13. ♦ Main Street at Cox Street - The Main Street eastbound stop bar be relocated (approximately 20 ft) to the west of the intersection, to reduce the level of encroachment from B-P's outbound semi-trailers (see Figure 7-13). In order to allow trucks to safely navigate the turn, this improvement would include extending the existing scored concrete island and replacement the existing raised island.	During construction	Included in the overall Project cost

Table 12-1 Summary of Mitigation Measures (Continued)

Mitigation	Schedule	Cost
Greenhouse Gas		
The Proponent is committed to the following mitigation elements for the Project: ♦ High performing envelope for conditioned office spaces; ♦ 100% electric heat pump space heating and cooling; ♦ Electric domestic hot water heating via air source heat pumps; ♦ Roofs to be constructed PV-ready; ♦ Installed electric vehicle (EV) charging and readiness per Stretch Energy Code;	During construction & operation	Included in the overall Project cost
Upon completion of the Project, the Proponent will submit a self-certification to the MEPA Office, prepared in accordance with the GHG Policy. This certification will identify the GHG mitigation measures incorporated into the building and will illustrate the degree of GHG reduction from a Baseline case, as Baseline is defined herein, and how such reductions are achieved. Details of the Proponent's implementation of operational measures will also be included.	During Operation	Part of operating cost
Construction		
Construction methodologies that ensure public safety and protect the immediate surrounding area will be employed. Techniques such as barricades and signage will be used. Construction management and scheduling will minimize impacts on the surrounding environment and will include plans for construction worker commuting and parking, routing plans for trucking and deliveries, and the control of noise and dust.	During construction	Included in Project cost
"Don't Dump - Drains to Waterways" plaques will be installed at storm drains that are replaced or installed as part of the Project.	Following construction	Included in Project cost
The general contractor will work to ensure that construction workers are well informed of the public transportation options serving the area. Space on-site will be made available for workers' supplies and tools, so they do not have to be brought to the site each day.	During construction	Included in Project cost
"No Idling" signs will be included at the loading, delivery, pick-up, and drop-off areas. Ensuring construction vehicle operators abide by the Massachusetts Vehicle Idling Regulations (Massachusetts 5-Minute idle Law), idling of construction equipment would comply with 310 CMR 7.11;	During construction and operations	Included in Project cost
Plans for controlling fugitive dust during construction activities include mechanical street sweeping, wetting portions of the site during periods of high wind, and careful removal of debris by covered trucks.	During construction	Included in Project cost

Table 12-1 Summary of Mitigation Measures (Continued)

Mitigation	Schedule	Cost
The Proponent will require the Project's construction contractor to use after-engine emission controls such as diesel oxidation catalysts or diesel particulate filters on construction vehicles and use of Ultra Low Sulfur Diesel fuel in off-road engines. Additionally, the Proponent will maintain a list of the engines, their emission tiers, and, if applicable, the best available control technology installed on each piece of diesel equipment used in the operation of the facility.	During construction	Included in Project cost
The construction contract will include provisions that promote implementation of procedures for the necessary segregation, reprocessing, reuse, and recycling of construction materials when possible. For those materials that cannot be recycled, solid waste will be transported in covered trucks to an approved solid waste facility or facilities.	During construction	Included in Project cost
Public Health		
The general contractor will work to ensure that construction workers are well informed of the public transportation options serving the area. Space on-site will be made available for workers' supplies and tools, so they do not have to be brought to the site each day.	During construction	Included in Project cost
"No Idling" signs will be included at the loading, delivery, pick-up, and drop-off areas. Ensuring construction vehicle operators abide by the Massachusetts Vehicle Idling Regulations (Massachusetts 5-Minute idle Law), idling of construction equipment would comply with 310 CMR 7.11;	During construction and operations	Included in Project cost
Plans for controlling fugitive dust during construction activities include mechanical street sweeping, wetting portions of the site during periods of high wind, and careful removal of debris by covered trucks.	During construction	Included in Project cost
Environmental Justice		
Routing of Project trucks such that roads traversed are in EJ communities as infrequently as possible for those vehicles that are under the Proponent's direct Control. Communication with Proponent's drivers to promote adherence to these routes.	Ongoing	Part of operating cost

Chapter 13

Response to Comments

13.0 RESPONSE TO COMMENTS

13.1 MEPA Certificate and Associated Comment Letters

This Chapter provides responses to the comment letters received by the Secretary during the review of the ENF. The comment letters have been annotated and individual comments coded in the right-hand margin. The responses to the comments are listed below with the corresponding code numbers and a brief synopsis of the comments. Comment letters were received from the following agencies and organizations:

Table 13-1 Secretary's Certificate and Comment Letters

Commenter	Abbreviation
EEA Secretary's Certificate on the ENF	MEPA
Massachusetts Department of Environmental Protection	DEP
Members of the Public	P

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Bethany A. Card
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1081
http://www.mass.gov/eea

September 9, 2022

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: Hudson Solid Waste Transfer Station
PROJECT MUNICIPALITY	: Hudson
PROJECT WATERSHED	: SuAsCo
EEA NUMBER	: 16586
PROJECT PROPONENT	: B-P Trucking, Inc.
DATE NOTICED IN MONITOR	: August 10, 2022

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G. L. c. 30, ss. 61-62L) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project **requires** the preparation of a mandatory Draft Environmental Impact Report (DEIR).

Project Description

As described in the Environmental Notification Form (ENF), the project consists of constructing a new approximately 47,000 sf waste transfer station permitted to accept up to 850 tons per day (tpd) of solid waste consisting of municipal solid waste (MSW), construction and demolition (C&D) debris, and recyclable materials (glass, metal, plastic, paper). The new facility is proposed to be located approximately 1,800 ft from Cox Street, and will provide enough space to transfer MSW and C&D debris into semi-trailers that will transport the material off-site for final disposal or reclamation. Cardboard will be sorted and baled inside the facility and the remaining recyclables will be transported off-site via a semi-trailer to a material recovery facility. Additionally, the new facility will also allow Hudson residents to drop-off municipal solid waste and household recyclables in an exterior drop-off. Hours of operation will remain unchanged from the existing facility: open to the public 7:00am – 5:00pm Monday – Friday, and Saturday from 7:00am – 2:00pm. The existing solid waste transfer station located on the site is

currently permitted to accept up to 350 tpd of solid waste. The new facility will seek to increase this capacity by 500 tpd. The existing facility will be decommissioned, repurposed and likely utilized by the Hudson Department of Public Works (DPW) as a material stockpile and storage area, once the new facility is in operation.

Project Site and Procedural History

The Town of Hudson (the Town) owns an approximately 72.4-acre parcel which consists of a number of municipal facilities, including an existing solid waste transfer station, the Hudson Fire Department, Hudson Wastewater Treatment Facility, the Hudson Police Department, and Department Public Works Facility. The existing solid waste transfer station (8,286 sf) was constructed in 1988 and began operating in 1996. Since 1999, the waste transfer station has been operated by the Proponent. The existing waste transfer facility accepts up to 350 tpd of solid waste consisting of MSW and C&D debris.

The ENF indicates the site was previously subject to an archaeological survey, though no archaeological resources were found on the site. The site is located within one-mile (0.3-miles) of an Environmental Justice (EJ) population characterized by Minority and within five miles of multiple EJ populations characterized by Minority (13), Minority and Income (1), Minority, Income, and English Isolation (2). As described below, the ENF identified the "Designated Geographic Area" for the project as five miles around EJ populations, included a review of potential impacts and benefits to EJ populations within this DGA, and described public outreach efforts undertaken to date.

The existing solid waste facility was permitted when the Hudson Board of Health filed an ENF (EEA# 6415) on February 11, 1987; a Certificate was issued on March 3, 1987 stating that no EIR was required. The original site assignment did not include a tonnage limit. On December 23, 2000, the Proponent filed an ENF for the Hudson Transfer Station and Recycling Project (EEA# 12391) at this location; this Certificate was issued on January 1, 2001 and stated that no EIR was required.

Environmental Impacts and Mitigation

Potential environmental impacts associated with the project include 10.8 acres of land alteration, creation of 6.4 acres of impervious area (8.2 acres of impervious area total), and addition of 428 vehicle trips (1,182 vehicle trips total and 414 truck trips). The project will add 20 parking spaces (26 spaces total), use 1080 additional gallons of water per day (gpd; 1,390 gpd), and generate 220 gpd of wastewater (345 gpd). The facility will increase handling of solid waste by 500 tpd (proposing to accept 850 tpd of solid waste total).

Measures to avoid, minimize, and mitigate project impacts include installing a stormwater management system and consideration of site constraints and layout to minimize impacts to resource areas. According to the ENF, the additional capacity of the facility will improve waste management in the area and address anticipated capacity concerns associated with solid waste management. Truck routing options have been evaluated to minimize impacts to surrounding EJ communities. A water misting system will be used to suppress dust and the

improved efficiency of the operations will minimize odors. Essential mechanical systems will be elevated to reduce risk of flooding. Additional mitigation measures should be detailed in the DEIR.

Jurisdiction and Permitting

The project is undergoing MEPA review because it requires Agency Action and exceeds ENF thresholds at 301 CMR 11.03(1)(b)(2) creation of five or more acres of impervious area and 301 CMR 11.03(9)(b)(1) New capacity or Expansion in capacity for combustion or disposal of any quantity of solid waste, or storage, treatment or processing of 50 or more tpd of solid waste.[1] The project is required to prepare an EIR pursuant to 301 CMR 11.06(7)(b) because it is located within a Designated Geographic Area (or DGA, as defined in 301 CMR 11.02) around one or more EJ populations. The project requires a Massachusetts Department of Environmental Protection (MassDEP) Authorization to Construct Permit for Large Handling Facility and Authorization to Operate Permit for Large Handling Facility.

The project requires a local Order of Conditions (OOC) from the Hudson Conservation Commission; if the OOC is appealed, a Superseding OOC will be required from MassDEP. The entire site is within a valid site assigned area. Comments from MassDEP state that because the original site assignment did not specify a tonnage limit and this project proposes an increase in tonnage without any physical expansion of the facility, it can be permitted by the Hudson Board of Health through a minor modification to the existing Site Assignment in accordance with 310 CMR 16.22.

The project is not receiving Financial Assistance from the Commonwealth. MassDEP's site suitability regulations are broad enough to confer broad scope jurisdiction for purposes of MEPA review Therefore, MEPA jurisdiction extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations.

Review of the ENF

The ENF provided a description of existing and proposed conditions, preliminary project plans, and a preliminary identification of measures to avoid, minimize and mitigate environmental impacts. The Proponent submitted supplemental information on the alternatives analysis, including a description of alternative sites considered for the project and reason for their dismissal. The Proponent confirmed the entire 72.4-acre site is within an existing site-assigned area.[2] Consistent with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency, the ENF contained an output report from the Climate Resilience Design Standards Tool prepared by the Resilient Massachusetts Action Team (RMAT) (the "MA Resilience

[1] As discussed below, the project is proposed to be a "transfer station," and, therefore, is asserted to be exempt from the mandatory EIR threshold at 301 CMR 11.03(9)(a), *New Capacity or Expansion in Capacity of 150 or more tpd for storage, treatment, processing, combustion or disposal of solid waste, unless the Project is a transfer station, is an Expansion of an existing facility within a validly site assigned area for the proposed use, or is exempt from site assignment requirements.* As noted, the project requires EIR review in any event due to its proximity to EJ populations.

[2] Email from A.J. Jablonowski (consultant) to Christina Lyons (MEPA Analyst) on September 7, 2022.

Design Tool"),[3] together with information on climate resilience strategies to be undertaken by the project.

SCOPE

General

The DEIR should follow Section 11.07 of the MEPA regulations for outline and content and provide the information and analyses required in this Scope. It should clearly demonstrate that the Proponent has sought to avoid, minimize and mitigate Damage to the Environment to the maximum extent practicable. MEPA.1

Project Description and Permitting

The DEIR should include an updated description of the project and identify any changes to the project since the filing of the ENF. The DEIR should identify, describe, and assess the environmental impacts of any changes in the project that have occurred between the preparation of the ENF and DEIR. It should clearly identify and describe State, federal, and local permitting and review requirements associated with the project and provide an update on the status of each of these pending actions. The DEIR should include a description and analysis of applicable statutory and regulatory standards and requirements, and a discussion of the project's consistency with those standards. The DEIR should include detailed site plans for existing and post-development conditions at a legible scale. The plan should clearly identify buildings, interior and exterior public areas, impervious areas, transportation improvements, stormwater and utility infrastructure, and a grading plan. The DEIR should project detailed plans, sections, and below-ground structures, resiliency and other mitigation measures. MEPA.2 MEPA.3 MEPA.4 MEPA.5 MEPA.6 MEPA.7

The information and analyses identified in this Scope should be addressed within the main body of the DEIR and not in appendices. In general, appendices should only be used to provide raw data, such as drainage calculations, traffic counts, capacity analyses, and energy modeling, that is otherwise adequately summarized with text, tables, and figures within the main body and separated by tabs, or, if provided in electronic format, include links to individual sections. Any references in the DEIR to materials provided in an appendix should include specific page numbers to facilitate the review. MEPA.8

Alternatives Analysis

The ENF indicates that the reason for relocating and expanding the existing solid waste transfer facility is because the Police Department/Public Works facility is located in close proximity to the existing waste transfer facility and a new facility was deemed necessary to accommodate future growth and potential closures of other facilities. The ENF indicates the Proponent evaluated several off-site locations over a five-year period to assess the optimal location for the new solid waste transfer facility. Criteria used to evaluate alternate sites included: parcels available for purchase, space available to support transfer station operations, and proximity to the Proponent's corporate headquarters and vehicle storage/maintenance facility

[3] https://resilientma.org/rmat_home/designstandards/

in Ashland, MA. According to the ENF, after consultation with MassDEP regarding siting criteria in 310 CMR 16.40, the Proponent evaluated a total of six sites in Ashland, Southborough, Berlin, and Hudson, as described below.

Alternate Site 1 was evaluated in 2012 and located on an approximately 28-acre parcel in Ashland, MA. A 40,000-sf facility would be constructed with a development area of similar scale to the Preferred Alternative. This site was considered due to its proximity to a vehicle maintenance building and office space. The ENF indicates Site 1 was dismissed because approximately 19.5 acres of the site is within a mapped FEMA 100-year floodplain and the remaining area was deemed insufficient to support the proposed facility layout while meeting the waste handling setback criterion defined in 310 CMR 19.038(2)(b)(2)(d).

Alternate Site 2, located in Hudson on an approximately 24-acre parcel, would involve construction of a 45,000-sf facility. An existing building and parking lot on the site were considered for potential use as a vehicle maintenance building. According to the ENF, Site 2 was deemed not viable because a pond on the upland portion of the site drained via a stream to an approximately 1.6-acre wetland area located centrally on the site.

Alternate Site 3 was on approximately 27-acres of land in Hudson and evaluated in 2015/2016. This Alternative would involve construction of a 45,000-sf facility and the site was evaluated to determine if vehicle maintenance operations could be supported on the site. The ENF states a number of considerations led to this Alternate Site being deemed not viable and dismissed. Considerations included the fact that greater than half of the site is within Zone II of a public water supply and would not meet MassDEP Site Assignment criteria 310 CMR 16.40(3)(d)(2); 13-acres of the site is mapped within the FEMA 100-yr floodplain and would not meet Site Assignment criteria 310 CMR 19.038(2)(b)(2)(d); and a portion of the site is mapped by the Natural Resource Conservation Service (NRCS) as having farmland designated as of Unique Importance and would not meet Site Assignment criteria at 310 CMR 16.40(a)(1).

Alternate Site 4 was evaluated in 2016 on an approximately 110-acre site in Berlin, MA and involves construction of a 45,000-sf facility. This site was also considered because it included a vehicle maintenance building and office space. According to the ENF, this site was deemed not viable because NRCS maps show most development area is sloped and not conducive for development and is located on land classified as Prime Farmland and Farmland of Statewide Importance. This land classification was deemed a factor that would not meet permitting criteria pursuant to 310 CMR 16.40(4)(a)(1).

Alternate Site 5, also located in Berlin, would construct a 45,000-sf facility on an approximately 27-acre site. This Site was evaluated in 2016. NRCS mapping showed this parcel was also located on Prime Farmland and Farmland of Statewide Importance. The ENF indicates this site was dismissed for the same reason as Alternate Site 4 as the land classification is a flaw which would fail to meet permitting criteria.

Alternate Site 6 in Southborough was evaluated in 2016 and would construct a 42,500-sf facility on approximately ten acres of land. To avoid site constraints, the facility would be constructed in an “L” configuration, though this configuration was deemed operationally

limiting. According to the ENF, this site was dismissed and deemed not viable due to the presence of wetlands on a significant portion of the site; NRCS mapping also showed Prime Farmland on a majority of the parcel. Additionally, as indicated above for Alternate Sites 4 and 5, the Prime Farmland classification would cause the project to not meet permitting criteria.

The Preferred Alternative, discussed herein, would construct a new solid waste transfer station further back (north) on the same property as the existing facility. The site is approximately 72-acres, including the existing facility. The new, 47,000-sf facility will utilize existing topography which is conducive to the grade change required for efficient material transfer and loading operations of the facility. The location of the new residential drop-off area will result in impact to the wetland buffer zone, but would be located outside wetland resource areas. The Preferred Alternative was selected because the location is within a validly site assigned area and is anticipated to meet MassDEP siting criteria at 310 CMR 19.038(2)(b) which must be met to obtain an Authorization to Construct Permit (BWP SW05). Specifically, the Preferred Alternative is located outside the 100-year floodplain, any public water supply areas, and any areas designed as farmland of Prime, Statewide, or Unique Importance. Additionally, the ENF states the project will provide benefits to the community by locating the transfer station farther back from residential areas on Cox Street, Mulready Elementary School and the Police Department/Public Works Facility; allow reuse of the existing transfer station by the Hudson DPW for material stockpile and storage; and avoid environmental impacts to the Assabet River and other wetlands.

Environmental Justice

As noted above, the project site is located within one-mile (0.3-miles) of an Environmental Justice (EJ) population characterized by Minority located southwest of the site along Main Street Downtown. The project is also within five miles of multiple populations to the south of the site characterized by Minority (13), Minority and Income (1), Minority, Income, and English Isolation (2); one population characterized by Minority south of the site is located on Hosmer Street and one Minority and two Minority, Income and English Isolation populations are located along I-495, south of the Route 85 ramp. Within the census tracts containing the above EJ populations within 1 mile of the project site, the following languages are identified as those spoken by 5% of more of residents who also identify as not speaking English very well: Portuguese or Portuguese Creole. The corresponding languages identified for a five-mile radius around the project site are as follows: Spanish or Spanish Creole and Portuguese or Portuguese Creole.

The project submitted the EJ Screening Form with translations to a list of Community Based Organizations (CBOs) and tribes/indigenous organizations provided by the MEPA Office (the "EJ Reference List") in May 2022. The Proponent has also included project fact sheets translated into the above languages which are posted on the Proponent's website. The DEIR should provide additional information on public outreach and engagement activities undertaken after the filing of the ENF, and should describe the outreach and public involvement measures the project intends to undertake for the remainder of the MEPA review process. It is my expectation that the project undertake a robust community engagement process well before filling the DEIR. MEPA.9

Effective January 1, 2022, all new projects in "Designated Geographic Areas" ("DGA", as defined in 301 CMR 11.02, as amended) around EJ populations are subject to new requirements imposed by Chapter 8 of the Acts of 2021: *An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy* (the "Climate Roadmap Map") and amended MEPA regulations at 301 CMR 11.00.[4] Two related MEPA protocols – the MEPA Public Involvement Protocol for Environmental Justice Populations (the "MEPA Public Involvement Protocol") and MEPA Interim Protocol for Analysis of project Impacts on Environmental Justice Populations (the "MEPA Interim Protocol for Analysis of EJ Impacts") – are also in effect for new project filed on or after January 1, 2022.[5] Under the new regulations and protocols, all projects located in a DGA around one or more EJ populations must take steps to enhance public involvement opportunities for EJ populations and must submit analysis of impacts to such EJ populations in the form of an EIR.

The DEIR should contain a description of measures the Proponent intends to undertake to promote public involvement by EJ populations during the remainder of the MEPA review process, including a discussion of any of the best practices listed in the MEPA EJ Public Involvement Protocol that the project intends to employ. The DEIR, or a summary thereof, should be distributed to all CBOs and tribes included in the "EJ Reference List" that was utilized to provide notice of the ENF, unless any such entity has requested to be excluded or the MEPA Office and EEA EJ Director have provided an alternative list. The Proponent is encouraged to consult with the EEA EJ Director and the MEPA Office regarding community engagement strategies appropriate for the project, well before the filing of the DEIR. MEPA.10

The DEIR should include a separate section on "Environmental Justice," and should include a baseline assessment of any existing "unfair or inequitable Environmental Burden and related public health consequences" impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)1. and the MEPA Interim Protocol for Analysis of EJ Impacts. This information should be provided for each of the identified EJ populations where data are available, and not the 5-mile DGA as a whole. The DEIR should survey data from EPA EJ Screen to determine whether any of the identified EJ populations exhibit any environmental indicators that are elevated at 80th percentile of statewide average of higher.

The ENF states the project is likely to benefit surrounding populations by providing temporary construction jobs and permanent job opportunities for residences in the surrounding communities and by providing more efficient recycling and waste transfer operations for the community. As discussed below, the ENF includes a preliminary evaluation of existing and proposed traffic routes with proposes truck routes that avoid the EJ populations within 1-mile of the project site. The project proposes to add 414 new truck trips, which is above the 150 adt triggering the need to conduct EJ analysis over a 5-mile radius. The project anticipates minor increases in truck traffic in the EJ population in Marlborough, though states this is not expected to have a material impact on air quality in that area. The DEIR should continue to analyze routes MEPA.11

[4] MEPA regulations have been amended to implement Sections 55-60 of the Climate Roadmap Act, and took effect on December 24, 2021. More information is available at https://www.mass.gov/service-details/information-about-upcoming-regulatory-updates.
[5] Available at https://www.mass.gov/service-details/eea-policies-and-guidance.

of travel for new vehicle and truck trips and whether new traffic will disproportionately affect EJ populations, and assess the number of diesel-generated vehicle trips and routes of travel that would result from the project including during the construction period. As indicated below, the DEIR should conduct a mesoscale air quality analysis consistent with MassDEP Guidelines for Performing Mesoscale Analysis of Indirect Sources, based on the traffic study conducted for the project. For any routes of truck traffic that extend adjacent to EJ populations, the DEIR should estimate air emissions at key intersections near those neighborhoods and discuss the extent to which the additional trips from the project are anticipated to materially affect air quality at those locations. To the extent feasible, the air emissions at those locations should be compared against applicable risk management criteria such as the National Ambient Air Quality Standards (NAAQS). If any of the identified intersections will experience any degradation in Level of Service (LOS) as documented in the traffic study for the project, mitigation should be considered to avoid or minimize impacts on the adjacent EJ populations. I reserve the ability to require further quantitative analysis of air emissions to the extent any impacted intersections are adjacent to EJ populations that are identified as having a high level of existing air pollution burden. MEPA.11 MEPA.12

The DEIR should analyze any other relevant short-term and long-term environmental or public health impacts of the project, including construction period activities, that may extend to the identified EJ populations. If any disproportionate adverse effects or increased risks of climate change are identified, the DEIR must include a discussion of proposed mitigation and include such measures in draft Section 61 findings. MEPA.13

Public Health

The DEIR should include a separate section on "Public Health," and discuss any known or reasonably foreseeable public health consequences that may result from the environmental impacts of the project. Particular focus should be given to any impacts that may materially exacerbate "vulnerable health EJ criteria," in accordance with the MEPA Interim Protocol for Analysis of EJ Impacts. In addition, other publicly available data, including through the DPH EJ Tool, should be surveyed to assess the public health conditions in the immediate vicinity of the project site (including non-EJ neighborhoods), in accordance with 301 CMR 11.07(6)(g)10. Any project impacts that could materially exacerbate such conditions should be analyzed. To the extent any required Permits for the project contain performance standards intended to protect public health, the DEIR should contain specific discussion of such standards and how the project intends to meet or exceed them. MEPA.14

Wild and Scenic Rivers

In 1968 the United States Congress enacted the Wild and Scenic Rivers Act (Public Law 90-542; 16U.S.C. 1271 et seq.) through the National Wild and Scenic Rivers System with the goal of preserving certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition. Under this system, rivers are classified as either Wild, Scenic, or Recreational. These designations can be granted to the full length of a river or to segments of a river. Rivers classified as Wild and Scenic are free of impoundments with completely to mostly primitive shorelines and accessible by trails or roads.

In April 1999 (PL 106-20), 29-miles of the Sudbury, Assabet, and Concord Rivers were designated as a Wild and Scenic River. This designation includes 14.9-miles of the Sudbury River form Framingham to Concord, the 1.7-mile segment of the Sudbury River to the confluence of the Assabet River, 4.4-miles of the Assabet River in Concord, and 8-miles of the Concord River extending from the confluence of the Sudbury and Assabet Rivers to Billerica. These rivers were designated based on their values including ecological, historical, archaeological, recreation, and scenic resources. The River Stewardship Council was established to coordinate the conservation of the Sudbury, Assabet and Concord Rivers and includes representatives from the Towns of Bedford, Billerica, Carlisle, Concord, Lincoln, Sudbury, and Wayland; the City of Framingham; OARS; Sudbury Valley Trustees; the Commonwealth of Massachusetts; U.S. Fish and Wildlife Services; and the National Parks Services (NPS). The River Stewardship Council provides guidance and coordination for implementation of the River Conservation Plan. The Assabet River is listed as an impaired waterbody due to organic enrichment, low dissolved oxygen, and noxious aquatic plants. Though the project site is located upstream of the portion of the Assabet River that is designated as a Wild and Scenic River, any discharges to the river in this location could impact the portion of the Assabet River and Sudbury River designated as Wild and Scenic. According to the ENF, the project will not impact any of the outstandingly remarkable resources of these federally Wild and Scenic Rivers. However, this conclusion was not substantiated with analysis. The DEIR should include information on the location of Wild and Scenic River designation and consult with the River Stewardship Council to determine if the project will result in any impacts to the Assabet River and necessary mitigation measures. MEPA.15

Wetland and Water Resources

According to the ENF, the project will not result in any impact to wetland resources. The portion of the project for residential drop-off and part of the access drive is located within the Buffer Zone to wetland resources (53,900 sf). Comments from MassDEP indicates that site plans show areas of Bordering Vegetated Wetlands that appear to be within the limits of work. The Proponent should ensure that the delineation of resource areas and limits of work are included in the Notice of Intent (NOI) submitted to the local conservation commission. This information should be provided in the DEIR. MEPA.16

Transportation

The project does not require a permit from Massachusetts Department of Transportation (MassDOT). A new site driveway will be constructed to the east of the existing waste transfer station driveway on Cox Street to allow direct access to the new facility. The project proposes 414 new truck trips per day, of these, 370 would be packer trucks and roll-off trucks and 44 would be semi-trailers. As indicated above, the ENF included traffic counts for eight roadways surrounding the project site and included two potential traffic routing plans for trucks with the estimated number of truck trips per day based on current routing (includes routing through EJ populations) and modified routing (minimizing trips through EJ populations). Two roadways, Hosmer Street and Main Street Downtown, travel through EJ populations. Based on current routing, packer trucks and roll-off trucks mainly use Route 85 to I-495 Ramp, Homer Street, and Main Street Downtown and semi-trailers would mostly use Route 85 to I-495 Ramp with some

trips using Main Street Downtown. The modified routing plan eliminates trips on Main Street Downtown for packer trucks, roll-off trucks, and semi-trucks and directs packer trucks and roll-off trucks to Cox Street and Route 85 to I-495 Ramp while all semi-truck trips are directed to the Route 85 to I-495. Packer trucks and roll-off trucks would still travel on Hosmer Street in the modified routing plan, though there is no increase in trip generation along these roadways.

The DEIR should include a traffic study to assess traffic related impacts associated with the proposed facility. This study should be conducted in accordance with MassDOT guidelines for completing a Transportation Impact Assessment (TIA). The TIA should assess the impacts of project generated trips on surrounding roadways and at intersections. Specifically, this analysis should include an assessment of LOS and safety and include measures to minimize impacts to surrounding populations. The DEIR should continue to assess truck routing plans and indicate if there is a preferred truck routing plan. Mitigation should be provided if the preferred truck routing plan is anticipated to impact EJ communities. MEPA.17 MEPA.18

Solid Waste

The project is increasing solid waste transfer capacity by 500 tpd (850 tpd transfer capacity upon project completion). The project requires a MassDEP Authorization to Construct Permit for Large Handling Facility and Authorization to Operate Permit for Large Handling Facility. Comments from MassDEP indicate that the Department encourages this type of solid waste transfer facility to assist in managing Massachusetts waste, including the reuse/recycling of C&D materials. MassDEP indicates that proper waste management and waste diversion is important to conserve the state's declining landfill space and resources if accomplished in an environmentally sound manner.

The Proponent has indicated that the entire 72.4-acre site is site-assigned. As indicated above, the proposed increase in tonnage can be permitted through a minor modification to the site assignment approval, since the original site assignment did not contain a tonnage limit. The DEIR should confirm that the project requires only a minor modification and explain the reasons for this level of permitting. The DEIR should include a description of the project operations and indicate areas allocated for C&D activities, handling of MSW, and recycling and how the project will meet Solid Waste Facility Regulations (310 CMR 19.00). The DEIR should identify Best Management Practices (BMPs) the project will incorporate to minimize potential impacts to the site and surrounding environment. MEPA.19A MEPA.19B MEPA.20

The DEIR should include a discussion of the solid waste permitting requirements for handling facilities and include a discussion of whether this facility qualifies for "Transfer Station" designation. The Proponent should confirm that the proposed activities on site allow for designation as a "Transfer Station," and explain how that term is defined in MassDEP solid waste regulations. MEPA.21

The project site is located adjacent to the Department of Public Works stockpile area. The ENF indicates material from the stockpile area will likely be moved to the site of the existing waste transfer facility once construction is complete. Comments from MassDEP encourages the Proponent to coordinate with the Town to not interfere with ongoing activities at the abutting

"DPW Material Stockpile" which is managed under an Administrative Consent Order with Penalty, Enforcement Document Number 00010720.

Stormwater Management

The project will add 6.4 acres of impervious area to the site (8.4 acres of impervious area total). Conceptual stormwater design was modeled with HydroCAD ® Stormwater Modeling Software for the 2-, 10-, 25-, and 100-year 24-hour storm events to evaluate anticipated basin sizing required to support the proposed facility layout. The conceptual stormwater plan includes two 4-ft deep infiltration basins and two 6-ft deep infiltration basins. During large storm events, stormwater from two basins would discharge into the southern wetland area and one basin would discharge through a vegetated swale to the Assabet River. The DEIR should include a detailed stormwater design and include information on water quality improvements. The ENF indicates the final stormwater design will meet all performance standards listed in the MassDEP Stormwater Management Regulations. The DEIR should discuss whether stormwater design will be resilient to future climate conditions as described below. MEPA.22

Climate Change

Effective October 1, 2021, all MEPA projects are required to submit an output report from the MA Resilience Design Tool to assess the climate risks of the project. Based on the output report attached to the ENF, the project has a high exposure rating based on the project's location for extreme precipitation (urban flooding and riverine flooding) and extreme heat. Based on the 60-year useful life identified for the project and the self-assessed criticality of the waste transfer station, the MA Resilience Design Tool recommends a planning horizon of 2070 and a return period associated with a 50-year (2% chance) storm event when designing for extreme precipitation. According to the MA Resilience Design Tool guidance, this corresponds to a "Medium" criticality assessment for the project asset.

As stated above, the stormwater system has been evaluated for anticipated basin sizing using HydroCAD® for the (current) 2- through 100-year 24-hour storm events. The ENF indicates precipitation data from the *Extreme Precipitation in New York and New England* (the Cornell Study) will be used to inform the final stormwater design. The DEIR should include a discussion of whether the project design, including stormwater design and elevation of structures, is anticipated to be resilient to future climate conditions. MEPA.23 The DEIR should discuss whether stormwater design is anticipated to be resilient to 50-year storm conditions as of 2070. MEPA.24

Greenhouse Gas Emissions

The project is subject to review under the May 5, 2010 MEPA Greenhouse Gas Emissions Policy and Protocol ("the Policy") because it requires an EIR. The DEIR should include an analysis of GHG emissions and mitigation measures in accordance with the Policy. MEPA.25 The Policy requires projects to quantify carbon dioxide (CO_2) emissions and identify measures to avoid, minimize, and mitigate such emissions. The analysis should quantify direct and indirect CO_2 emissions associated with the project's energy use (stationary sources) and transportation-related emissions (mobile sources). The DEIR should identify and commit to mitigation

measures to reduce GHG emissions. The project will facilitate the reuse and recycling of C&D materials. I note that a general benefit of diverting waste from landfills and re-use of material would provide a reduction in CO_2 emissions. To the extent feasible, the DEIR should quantify the GHG emissions reductions that would result from this diversion.

Stationary Sources

The DEIR should include a GHG analysis that calculates and compares GHG emissions associated with 1) a Base Case corresponding to the 9th Edition of the Massachusetts Building Code with amendments and 2) a Preferred Alternative that achieves greater reductions in energy use and GHG emissions than required by the Building Code. Alternatively, the analysis may use the U.S. Environmental Protection Agency's (EPA) WARM model, which estimates GHG reductions associated with waste management operations. The DEIR should clarify which portions of the building will be conditioned and which portions of the building will not be conditioned. The DEIR should identify proposed mitigation measures which will reduce GHG emissions associated with the project. The DEIR should indicate whether best management practices for energy efficiency for similar facilities will be utilized. MEPA.26

Mobile Sources / Air Quality

The GHG analysis should include an evaluation of the potential GHG emissions of the project's mobile sources using the EPA MOVES emissions model. The DEIR should follow the guidance provided in the Policy for Indirect Emissions from Transportation and use data gathered as part of the traffic study to determine mobile emissions for the Existing Conditions and Future Conditions. MEPA.27

As indicated above, the DEIR should include an analysis of air quality based on the traffic study and include a mesoscale air quality analysis consistent with MassDEP Guidelines for Performing Mesoscale Analysis of Indirect Sources. Air emissions at any impacted study area intersections should be evaluated and compared against applicable risk management criteria such as NAAQS, to the extent feasible. The DEIR should include a discussion on measures to minimize air quality impacts, particularly on any EJ populations identified along routes of truck traffic from the project. MEPA.28

<u>Construction Period</u>

The project is expected to be completed in one phase with construction beginning by mid-2024 and the facility operational in early 2025. All construction activities should be managed in accordance with applicable MassDEP regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00). The project should include measures to reduce construction period impacts (e.g., noise, dust, odor, solid waste management) and emissions of air pollutants from equipment, including anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11). I encourage the Proponent to require that its contractors use construction equipment with engine manufactured to Tier 4 federal emission standards, or to select project contractors that have installed retrofit emission control devices or vehicles that use alternative fuels to reduce emissions of volatile

organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. Off-road vehicles are required to use ultra-low sulfur diesel fuel (ULSD). All construction activities should be undertaken in compliance with the conditions of all State and local permits.

Mitigation and Draft Section 61 Findings

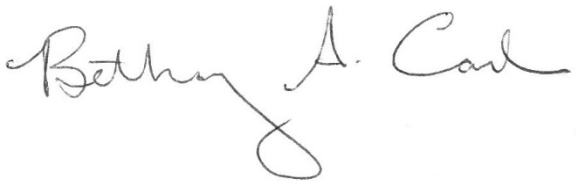
The DEIR should include a separate chapter summarizing all proposed mitigation measures including construction-period measures. This chapter should also include a comprehensive list of all commitments made by the Proponent to avoid, minimize and mitigate the environmental and related public health impacts of the project, and should include a separate section outlining mitigation commitments relative to EJ populations. The filing should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of commitments should be provided in a tabular format organized by subject matter (traffic, solid and hazardous waste, stormwater, environmental justice, etc.) and identify the Agency Action or Permit associated with each category of impact. Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project. The filing should clearly indicate which mitigation measures will be constructed or implemented based upon project phasing to ensure that adequate measures are in place to mitigate impacts associated with each development phase. MEPA.29

Response to Comments

The DEIR should contain a copy of this Certificate and a copy of each comment letter received. To ensure that the issues raised by commenters are addressed, the DEIR should include direct responses to comments to the extent that they are within MEPA jurisdiction. This directive is not intended, and shall not be construed, to enlarge the scope of the DEIR beyond what has been expressly identified in this certificate.

Circulation

The Proponent should circulate the DEIR to each Person or Agency who previously commented on the ENF, each Agency from which the Project will seek Permits, Land Transfers or Financial Assistance, and to any other Agency or Person identified in the Scope. Pursuant to 301 CMR 11.16(5), the Proponent may circulate copies electronically. However, the Proponent must make a reasonable number of hard copies available to accommodate those without convenient access to a computer and distribute these upon request on a first-come, first-served basis.



September 9, 2022
Date

Bethany A. Card

Comments received:

8/30/2022 Massachusetts Department of Environmental Protection (MassDEP)

BAC/CAL/cal

SECRETARY'S CERTIFICATE ON THE ENF

MEPA.1 **The DEIR should follow Section 11.07 of the MEPA regulations for outline and content and provide the information and analyses required in this Scope. It should clearly demonstrate that the Proponent has sought to avoid, minimize and mitigate Damage to the Environment to the maximum extent practicable.**

This DEIR complies with the MEPA Regulations in terms of format and content. It demonstrates that all feasible measures to avoid, minimize and mitigate Damage to the Environment have been taken in terms of transportation, wetland impact, solid waste, greenhouse gas, etc.

MEPA.2 **The DEIR should include an updated description of the project and identify any changes to the project since the filing of the ENF.**

Section 1.2 of the DEIR describes the current project and Section 1.3 of the DEIR outlines the changes since the filing of the ENF.

MEPA.3 **The DEIR should identify, describe, and assess the environmental impacts of any changes in the project that have occurred between the preparation of the ENF and DEIR.**

Changes since the ENF was filed are outlined in Section 1.3

MEPA.4 **It should clearly identify and describe State, federal, and local permitting and review requirements associated with the project and provide an update on the status of each of these pending actions.**

Table 1-1 identifies the permitting requirements for the Project. Pursuit of permits will begin once the MEPA process has concluded.

MEPA.5 **The DEIR should include a description and analysis of applicable statutory and regulatory standards and requirements, and a discussion of the project's consistency with those standards.**

The DEIR describes applicable standards and requirements as well as the Project's consistency with those standards.

MEPA.6 **The DEIR should include detailed site plans for existing and post-development conditions at a legible scale. The plan should clearly identify buildings, interior and exterior public areas, impervious areas, transportation improvements, stormwater and utility infrastructure, and a grading plan.**

Plans of the Project and Project Site are included in Chapters 1, 8 & 9.

MEPA.7 **The DEIR should project detailed plans, sections, and below-ground structures, resiliency and other mitigation measures.**

Project detailed plans are included in Chapters 1, 8 and 9. Resiliency and other mitigation measures are described in Chapters 9 (Stormwater) and 10 (Climate).

MEPA.8 **The information and analyses identified in this Scope should be addressed within the main body of the DEIR and not in appendices. In general, appendices should only be used to provide raw data, such as drainage calculations, traffic counts, capacity analyses, and energy modeling, that is otherwise adequately summarized with text, tables, and figures within the main body and separated by tabs, or, if provided in electronic format, include links to individual sections. Any references in the DEIR to materials provided in an appendix should include specific page numbers to facilitate the review.**

The chapters of this DEIR address the scope items noted in the ENF certificate with supporting information provided in appendices.

MEPA.9 **The DEIR should provide additional information on public outreach and engagement activities undertaken after the filing of the ENF, and should describe the outreach and public involvement measures the project intends to undertake for the remainder of the MEPA review process. It is my expectation that the project undertake a robust community engagement process well before filling the DEIR.**

Section 2-3 of the DEIR describes the Proponents outreach and engagement with the public.

MEPA.10 **The DEIR should contain a description of measures the Proponent intends to undertake to promote public involvement by EJ populations during the remainder of the MEPA review process, including a discussion of any of the best practices listed in the MEPA EJ Public Involvement Protocol that the project intends to employ.**

The Proponent will continue to engage with members of the public who have attended the previous meetings and provided contact information to solicit their feedback on the Project.

MEPA.11 **The DEIR should continue to analyze routes of travel for new vehicle and truck trips and whether new traffic will disproportionately affect EJ populations, and assess the number of diesel-generated vehicle trips and routes of travel that would result from the project including during the construction period.**

The Proponent has analyzed routes of travel for new truck and vehicle trips and provided this analysis in Section 2.6.1, Section 7.3.2.1 and Attachment 10 of Appendix D.

MEPA.12 **The DEIR should conduct a mesoscale air quality analysis consistent with MassDEP Guidelines for Performing Mesoscale Analysis of Indirect Sources, based on the traffic study conducted for the project. For any routes of truck traffic that extend adjacent to EJ populations, the DEIR should estimate air emissions at key intersections near those neighborhoods and discuss the extent to which the additional trips from the project are anticipated to materially affect air quality at those locations.t**

A mesoscale air quality analysis was conducted for the Project and the results are presented in Chapter 3 and Chapter 11 of this DEIR. Figure 2-3 shows the routing of truck relative to EJ populations and analysis of emissions at intersections near or in EJ communities are provided in Chapter 2.

MEPA.13 **The DEIR should analyze any other relevant short-term and long-term environmental or public health impacts of the project, including construction period activities, that may extend to the identified EJ populations**

Expected public health impacts are primarily expected through air emissions. Emissions resulting from the Project were analyzed and are expected to be modest. The Proponent will put measures in place to reduce impacts during construction. The expected impacts of the Project are discussed in Chapters 2 and 4 of this DEIR.

MEPA.14 **The DEIR should include a separate section on "Public Health," and discuss any known or reasonably foreseeable public health consequences that may result from the environmental impacts of the project**

Chapter 4 of this DEIR discusses the public health impacts of the Project.

MEPA.15 **The DEIR should include information on the location of Wild and Scenic River designation and consult with the River Stewardship Council to determine if the project will result in any impacts to the Assabet River and necessary mitigation measures.**

The Proponent has consulted with the River Stewardship Council to make the body aware of the Project and solicit feedback on impact mitigation if required. The Proponent will continue to communicate with the Council including providing this DEIR for their review.

MEPA.16 **The Proponent should ensure that the delineation of resource areas and limits of work are included in the Notice of Intent (NOI) submitted to the local conservation commission. This information should be provided in the DEIR.**

The findings of the Proponent's Wetland Resource Area Delineation of the Project Site are presented in Chapter 6 of this DEIR. Delineation of resource areas and limits of work will be included in the NOI submitted to the local conservation commission.

MEPA.17 **The DEIR should include a traffic study to assess traffic related impacts associated with the proposed facility. This study should be conducted in accordance with MassDOT guidelines for completing a Transportation Impact Assessment (TIA).**

The Proponent conducted a traffic study to assess traffic related impacts associated with the Project. This study is discussed in Chapter 7 of the DEIR.

MEPA.18 **The TIA should assess the impacts of project generated trips on surrounding roadways and at intersections. Specifically, this analysis should include an assessment of LOS and safety and include measures to minimize impacts to surrounding populations. The DEIR should continue to assess truck routing plans and indicate if there is a preferred truck routing plan. Mitigation should be provided if the preferred truck routing plan is anticipated to impact EJ communities.**

The TIA included in Chapter 7 of the DEIR includes assessments of LOS, safety and measures to reduce traffic impacts. The Proponent developed a truck routing plan that avoids traversing through EJ communities as much as possible and impacts to surrounding EJ populations are expected to be minimal. The Project's impacts on EJ communities are discussed in Chapter 2 of the DEIR.

MEPA.19A **The DEIR should confirm that the project requires only a minor modification [to the existing Board of Health site assignment] and explain the reasons for this level of permitting.**

Discussion of the Project's existing site assignment and the need for a site assignment minor modification is discussed in Section 8.5.4 of the DEIR.

MEPA.19B **The DEIR should include a description of the project operations and indicate areas allocated for C&D activities, handling of MSW, and recycling and how the project will meet Solid Waste Facility Regulations (310 CMR 19.00).**

Sections 8.1, and 8.2 of the DEIR describe the Project's layout, operations, and how the operations will comply with MassDEP's Solid Waste Facility Regulations. Additional Project-specific permitting information and operational compliance with the Solid Waste Regulations is provided in Section 8.5.

MEPA.20 **The DEIR should identify Best Management Practices (BMPs) the project will incorporate to minimize potential impacts to the site and surrounding environment.**

The Best Management Practices that will be employed to minimize potential impacts to the site and surrounding environment can be grouped into the following operational categories: Housekeeping; Nuisance Control; Fire Protection; Stormwater Management; Wastewater Management; Site Security; and Facility Inspections. A summary of the BMPs that will be followed in connection with each of these operational categories is provided in Section 8.4 of the DEIR.

MEPA.21 **The DEIR should include a discussion of the solid waste permitting requirements for handling facilities and include a discussion of whether this facility qualifies for "Transfer Station" designation. The Proponent should confirm that the proposed activities on site allow for designation as a "Transfer Station," and explain how that term is defined in MassDEP solid waste regulations.**

Solid waste permitting requirements are discussed in Section 8.5 of the DEIR. Section 8.5.2 describes the basis for the classification of the proposed facility as a Transfer Station (Large Construction and Demolition Debris Transfer Station), pursuant to the provisions of the MassDEP Solid Waste Regulations and the definitions provided therein.

MEPA.22 **The DEIR should include a detailed stormwater design and include information on water quality improvements. The ENF indicates the final stormwater design will meet all performance standards listed in the MassDEP Stormwater Management Regulations. The DEIR should discuss whether stormwater design will be resilient to future climate conditions.**

Chapter 9 of the DEIR describes the proposed stormwater management design for the Project and includes information on water quality improvements. Section 9.5 describes how the stormwater design will be resilient to future climate conditions.

MEPA.23 **The DEIR should include a discussion of whether the project design, including stormwater design and elevation of structures, is anticipated to be resilient to future climate conditions.**

Section 9.5 and Chapter 10 of the DEIR describe how the stormwater design will be resilient to future climate conditions. Chapter 10 also includes a discussion of the resiliency of the project's proposed structures (buildings) to future climate conditions.

MEPA.24 **The DEIR should discuss whether stormwater design is anticipated to be resilient to 50-year storm conditions as of 2070.**

Section 9.5 and Chapter 10 of the DEIR describe how the stormwater design will be resilient to 50-year storm conditions as of 2070.

MEPA.25 **The DEIR should include an analysis of GHG emissions and mitigation measures in accordance with the [Greenhouse Gas] Policy.**

Chapter 11 of the DEIR contains a GHG analysis for the Project.

MEPA.26 **The Project will facilitate the reuse and recycling of C&D materials, diverting this material from disposal in landfills. To the extent feasible, the DEIR should quantify the GHG emissions reductions that would result from this diversion. The analysis may use the U.S. Environmental Protection Agency's (EPA) WARM model, which estimates GHG reductions associated with waste management operations.**

EPA's WARM model estimates that for each ton of recyclables diverted from landfills and recycled, 2.89 tons of GHG are saved. The Project itself will support an increased capacity to handle construction and demolition (C&D) waste. For planning purposes, the quantity of C&D waste handled at the proposed facility is expected to represent 200 tons per day (TPD) of the 850 TPD permitted capacity. The existing transfer station handles, on average, approximately 35 TPD of C&D waste. Therefore, the proposed facility is expected to handle approximately 165 TPD of additional C&D material compared to existing operations (200 TPD C&D at proposed facility vs. 35 TPD at existing). Assuming 15% of the C&D is recovered for reuse at a C&D processing facility, the increased daily quantity of recycled C&D material at the proposed facility in comparison to the existing facility is approximately 25 TPD (165 TPD x 15%). Using the EPA's WARM GHG reduction rate of 2.89 tons saved for every ton of C&D material recycled, it is estimated that the added GHG reduction associated with the increased C&D throughput capacity at the proposed facility would be approximately 70 TPD (25 TPD C&D recycled x 2.89 tons GHG saved per recycled ton).

MEPA.27 **The GHG analysis should include an evaluation of the potential GHG emissions of the project's mobile sources using the EPA MOVES emissions model.**

Chapter 11 of the DEIR contains an analysis of mobile source emission associated with the Project.

MEPA.28 **The DEIR should include a discussion on measures to minimize air quality impacts, particularly on any EJ populations identified along routes of truck traffic from the project.**

The Proponent has developed truck routes that avoid EJ populations as much as possible. Additionally, the expected emissions associated with the Project are expected to be minimal.

MEPA.29 **The DEIR should include a separate chapter summarizing all proposed mitigation measures including construction-period measures. This chapter should also include a comprehensive list of all commitments made by the Proponent to avoid, minimize and mitigate the environmental and related public health impacts of the project, and should include a separate section outlining mitigation commitments relative to EJ populations.**

Chapter 12 of the DEIR summarizes mitigation measures and includes a section of mitigation that relates to EJ communities.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Central Regional Office • 8 New Bond Street, Worcester MA 01606 • 508-792-7650

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Bethany A. Card
Secretary

Martin Suuberg
Commissioner

August 30, 2022

Secretary Bethany A. Card
Executive Office of Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114

Attention: MEPA Unit – Christina Lyons

Re: Environmental Notification Form (ENF)
Hudson Solid Waste Transfer Station
Hudson
EEA #16568

Dear Secretary Card,

The Massachusetts Department of Environmental Protection's ("MassDEP") Central Regional Office has reviewed the ENF for the Hudson Solid Waste Transfer Station (the "Project"). B-P Trucking, Inc. (the "Proponent") is proposing to relocate and expand the existing solid waste transfer station located at 300 Cox Street on 72 acres of town-owned land. The new Transfer Station will be 47,000 square feet, will accept 850 tons per day (TPD) of solid waste and will be 1,800 feet from the street. The current facility, also located on the town-owned 72-acre parcel, is 8,286 square feet, accepts 350 TPD of solid waste and is located 350 feet from the road. The Project will be serviced by municipal water and sewer.

The Project is under MEPA review because it meets or exceeds the following review thresholds:

- 301 CMR 11.03(1)(b)(2) - Creation of five or more acres of impervious area;
- 301 CMR 11.03(9)(b)(i) - New Capacity or Expansion in Capacity for combustion or disposal of any quantity of solid waste, or storage, treatment or processing of 50 or more tpd of solid waste, unless the Project is exempt from site assignment requirements.

The Project requires the following State Agency Permits:

- MassDEP Superseding Order of Conditions (if a local Order of Conditions is appealed);

- MassDEP Authorization to Construct Permit for Large Handling Facility (SW 05);
- MassDEP Authorization to Operate Permit for Large Handling Facility (SW 06).

On February 11, 1987, the Hudson Board of Health filed an ENF for the Hudson Solid Waste Transfer Station Project at this location (EEA #6415). The Secretary of Environmental Affairs issued a Certificate on the ENF for the Project on March 3, 1987, stating no EIR was required. On December 23, 2000, BP Trucking, Inc. filed an ENF for the Hudson Transfer Station and Recycling Project at this location (EEA #12391). The Secretary of Environmental Affairs issued a Certificate on the ENF on January 1, 2001, stating no EIR was required.

MassDEP offers the following comments:

Solid Waste

The Proponent plans to relocate the existing transfer station operations toward the interior of the existing 72-acre site by constructing a new 47,000 square foot transfer station building permitted to accept 850 tons per day of solid waste, an increase of 500 tons per day to the existing facility's permitted capacity.

The 72-acre parcel is owned by the town of Hudson and was site-assigned for use as a solid waste transfer station facility by the Hudson Board of Health on January 7, 1986, pursuant to 310 CMR 16.00. Because the Project includes an increase to the permitted tonnage limits at the facility, the Proponent will be required to obtain from the town of Hudson Board of Health a minor modification to the existing Site Assignment in accordance with 310 CMR 16.22 of the *Site Assignment Regulations for Solid Waste Facilities*. MassDEP notes that its permits for the Project will be issued to both the Proponent as the operator and the Town of Hudson as the owner of the property. DEP.1

MassDEP also notes that the Project area abuts or is near the "DPW Material Stockpile Area" (shown on Figure 6A). The Town of Hudson is managing the stockpiled materials under an Administrative Consent Order with Penalty, Enforcement Document Number 00010720, (the "Consent Order"). MassDEP encourages the Proponent to coordinate with the Town so as not to interfere with ongoing activities under the Consent Order. DEP.2

The Department encourages this type of solid waste transfer facility to assist in managing Massachusetts waste, including the reuse/recycling of construction and demolition materials. Proper waste management and waste diversion is important to conserve the state's declining landfill space and resources if accomplished in an environmentally sound manner. DEP.3

MassDEP's current *Massachusetts 2030 Solid Waste Master Plan –Working Together Toward Zero Waste*, issued in November 2021, identifies a key goal to reduce solid waste disposal by 30% over the next decade and its long-term goal of achieving 90% reduction in disposal by 2050. MassDEP encourages the Proponent to review the plan to identify Project management and operations practices that will assist the Commonwealth in meeting its material management goals. More information on the *Solid Waste Master Plan* and yearly update reports can be found at: https://www.mass.gov/guides/solid-waste-master-plan. DEP.4

Wetlands

Although the ENF states that Project activities will be limited to buffer zone, the plans show areas of Bordering Vegetated Wetlands that appear to be within the limits of work. When preparing the Notice of Intent, the Proponent shall ensure that the delineation of resource areas and the actual work areas, including location of equipment for grading and road construction, are accurately represented. DEP.5

MassDEP appreciates the opportunity to comment on the Project. If you have any questions regarding these comments, please do not hesitate to contact JoAnne Kasper-Dunne, Central Regional Office MEPA Coordinator, at (508) 767-2716.

Very truly yours,

Mary Jude Pigsley
Regional Director

cc: Commissioner's Office, MassDEP

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP.1 **Because the Project includes an increase to the permitted tonnage limits at the facility, the Proponent will be required to obtain from the town of Hudson Board of Health a minor modification to the existing Site Assignment in accordance with 310 CMR 16.22 of the Site Assignment Regulations for Solid Waste Facilities.**

Discussion of the Project's existing site assignment and the need for a site assignment minor modification is discussed in Section 8.5.4 of the DEIR.

DEP.2 **MassDEP also notes that the Project area abuts or is near the "DPW Material Stockpile Area" (shown on Figure 6A). The Town of Hudson is managing the stockpiled materials under an Administrative Consent Order with Penalty, Enforcement Document Number 00010720, (the "Consent Order"). MassDEP encourages the Proponent to coordinate with the Town so as not to interfere with ongoing activities under the Consent Order.**

The Proponent and the Town of Hudson maintain routine communication regarding the Project to ensure site layout and operational considerations are coordinated. Through these communication activities, the Proponent has been aware for several months of the Town's removal of stockpiled materials near the Project Site area. Continued communication between the parties will ensure that the Project proceeds without interfering with the Town's stockpile management activities.

DEP.3 **The Department encourages this type of solid waste transfer facility to assist in managing Massachusetts waste, including the reuse/recycling of construction and demolition materials.**

Although C&D processing will not be performed at the proposed facility, its classification as a Large C&D Transfer Station requires that it be operated in compliance with MassDEP's Minimum Performance Standard (MPS) guidance policy. The MPS was developed to provide a uniform standard for C&D facilities to comply with MassDEP's waste bans on disposal or transfer for disposal of banned materials such as wood; asphalt pavement, brick, and concrete (ABC); metal; and clean gypsum wallboard. The MPS and the Proponent's proposed procedures for complying with the policy are presented in Section 8.5.3 of the DEIR.

DEP.4 **MassDEP's current Massachusetts 2030 Solid Waste Master Plan –Working Together Toward Zero Waste, issued in November 2021, identifies a key goal to reduce solid waste disposal by 30% over the next decade and its long-term goal of achieving 90% reduction in disposal by 2050. MassDEP encourages the Proponent to review the plan to identify Project management and operations practices that will assist the Commonwealth in meeting its material management goals.**

The Project will greatly enhance waste reduction, diversion, and material recovery capabilities at the Site while providing an additional outlet for the efficient management of these materials. With its increased capacity to receive MSW and C&D debris, together with its focus on materials recovery, the Project will provide added resiliency to Massachusetts' waste disposal infrastructure in and around the Town of Hudson. The facility's support of the objectives outlined in the 2030 Solid Waste Master Plan are described in Section 8.6 of the DEIR.

DEP.5 **When preparing the Notice of Intent, the Proponent shall ensure that the delineation of resource areas and the actual work areas, including location of equipment for grading and road construction, are accurately represented.**

Delineation of resource areas and limits of work will be included in the NOI submitted to the local conservation commission.

13.2 Questions from the Public

QUESTIONS FROM THE PUBLIC

P.1 What are the benefits to the residents of Hudson?

The proposed facility will greatly enhance waste reduction, diversion, and material recovery capabilities at the Site, while providing an additional outlet for the efficient management of these materials. As part of these enhanced operational capabilities, one of the Project's principal objectives is to improve the safe and convenient use of the facility by Hudson residents for drop-off of their solid waste and recyclables. To this end, a significantly expanded Residential Drop-off Area (RDOA) is a key feature. The proposed RDOA will allow residents to access and use the area without intermixing with commercial vehicles visiting the Transfer Station & Recycling Building. With an area of approximately 1.3 acres, which is roughly two-and-a-half times larger than the existing transfer station's half-acre de-centralized drop-off area, the proposed RDOA will provide a vastly improved user experience for the residents. A more detailed description of the RDOA layout is provided in Chapter 8 of the DEIR. In addition to the benefits associated with proposed RDOA, the Proponent will continue to provide the following public benefits to the Town, as described in Chapter 1:

- Free trash and recycling to all town buildings (schools, town buildings, town fields; currently over 28 different locations);
- Free disposal at the transfer station for the Hudson Department of Public Works; and
- Support to town community organizations and events by way of free container use and free disposal (examples: Assabet River Clean-up and Hudson Clean-up Day).

P.2 Will the residents of Hudson experience any pricing changes as a result of the project?

There are no planned per-bag price changes to residents as a result of the Project. Per-bag fees for Municipal Solid Waste (MSW) disposal have not changed since B-P began operating the facility in 1999. The cost for an annual sticker to use the facility (currently $10.00) is set by the Hudson Board of Health and the Board of Health receives the revenue from the sticker sales.

P.3 How much material will come to the Facility from Hudson residents and businesses?

The Proponent does not separately track the quantity of disposable material (MSW and C&D) brought to the facility by Town of Hudson residents and businesses. Since the facility is available for use by all town residents, an estimate of the quantity of MSW delivered to it can be estimated using a per-capita waste generation rate applied to the town population. Based on total annual tons of waste material generated in Massachusetts and requiring disposal (6,220,000 tons in 2021; from the latest MassDEP

Solid Waste Data Update published in June 2023), and the state's population (6,985,000 in 2021), the Massachusetts per-capita generation rate for disposed waste is approximately 0.9 tons/person per year (6,220,000/6,985,000). Applying this per capita disposal rate to the population of Hudson (19,947 in 2022) results in an estimated quantity of disposed waste (landfilled or combusted waste, does not include recyclables) generated by the town of 17,950 tons per year. On a 6 day per week basis (equal to the operating days per week of the existing and proposed transfer stations) equates to approximately 60 tons per day of disposal waste generated by the town. For general estimating purposes, this would be the town "load" placed on the proposed facility, principally representative of MSW. This quantity is not expected to change significantly over time given the relatively modest population growth in Hudson over the past 30 years (approximately 15% population growth when compared to 1990 census data).

P.4 Why is the Proponent requesting a capacity increase to 850 tons/day?

- The increase is requested as capacity needs are expected to increase. The tonnage increase from the currently permitted 350 tons per day (TPD) to the proposed 850 TPD is aimed at:
- Providing reserve capacity to the Proponent if other transfer or disposal facilities used by the Proponent are no longer available on a temporary or permanent basis. For planning purposes, this reserve capacity represents approximately 100 TPD of the 500 TPD capacity increase.
- Providing additional capacity for the receipt of MSW from third party customers. For planning purposes, this represents approximately 250 TPD of the 500 TPD capacity increase.
- Providing additional capacity for the receipt of construction and demolition (C&D) debris from third party customers. For planning purposes, this represents approximately 150 TPD of the 500 TPD capacity increase.

P.5 How will the tons/day increase be reflected in additional traffic trips/day?

At full operational capacity of 850 tons per day, the Project proposes 414 new truck trips per day. Of these, 370 would be packer trucks, roll-off trucks, and smaller vehicles; 44 would be semi-trailers.

P.6 What will the residential experience be using the new transfer station? Will residential traffic be separated from commercial traffic? How will vehicle and material flow be improved?

The residential user experience will be improved as a result of the Project. The proposed Residential Drop-off Area (RDOA) will function as an independent operational node dedicated exclusively for the use of Hudson residents. The layout of the RDOA will allow residents to access and use the area without intermixing with commercial vehicles visiting

the Transfer Station & Recycling Building and improve vehicle and material flow on-site. A more detailed description of vehicle circulation and the proposed RDOA layout is provided in Chapter 8 of the DEIR.

P.7 Will the facility allow for the separate drop-off of materials not allowed in the waste stream? If Massachusetts requires separate handling of new material streams in the future, will the new facility allow for that separation?

Yes, the facility will allow for the separate drop-off of materials not allowed in the waste stream. These drop-off activities will be performed in the proposed 1.3-acre Residential Drop-off Area, which is roughly two-and-a-half times larger than the existing transfer station's half-acre drop-off area. A more detailed description of the RDOA layout and summary of materials accepted in the area are provided in Chapter 8 of the DEIR.

P.8 What is the status of project authorization at the local level?

The local authorization/permitting process will begin after the MEPA process has concluded (Final EIR Certificate has been issued). Although not a permit, the Project will require a minor modification to the existing site assignment, which falls under the granting authority of the Board of Health. The Project will also require an Order of Conditions from the Conservation Commission, Site Plan Approval from the Planning Board, and a Building Permit and Occupancy Permit from the Building Department.

P.9 What is the expected project schedule? Who is responsible for the project cost?

Once the MEPA process has concluded, permitting and final design activities will proceed. These activities are anticipated to extend through much of 2025, with construction anticipated to begin in late 2025 and operations beginning in late 2026. The project proponent is responsible for all Project costs.

P.10 How will the new facility comply with applicable noise requirements?

The facility relocation further into the site will result in an improvement in noise control relative to Cox Street abutters. In addition to the improvement related to the building relocation, operation of the facility will be performed to be sensitive to the surrounding area. This will include use of handling equipment, such as loaders and excavators, with back-up alarms set at the lowest levels allowed by OSHA and local regulations. Noise control will also be exercised by properly maintaining equipment in use at the facility, including maintaining sound reducing devices, such as mufflers, installed on the equipment.

P.11 How will the new facility avoid and minimize offsite odors?

As part of routine operations, the facility will employ a "first-in, first-out" policy for waste received, which will reduce the potential for odors to accumulate in the building. As an exception to the "first-in, first-out" waste transfer policy, odorous waste loads will take priority when loading trailers for off-site material disposal. In addition to these waste handling operational procedures, the facility will include an odor control misting system that will be installed in the ceiling of the MSW tipping floor and trailer pit.

P.12 How will the new facility avoid and minimize rodents?

A vector control program, conducted by a professional exterminating service, will be in-place at the proposed facility. The exterminating service will conduct routine inspections, set and collect trap stations, and advise the Proponent on housekeeping activities aimed at improving vector control as needed.

P.13 How much material will be stored onsite overnight?

As part of normal facility operations, storage of material within the building will occur overnight and would be loaded into trailers the following operating day. In general, the quantity of material in the building is not expected to exceed one day's worth of permitted capacity. Other overnight storage would occur when needed for holding full trailers before transporting them off-site. Under normal operations, this temporary full vehicle layover would typically not exceed 24 hours, except for trailers filled towards the end of a Friday and requiring storage until the following Monday.

P.14 Will the Proponent work to limit spillage of material on local roads (from un-tarped loads, and from liquids draining from trucks)?

Yes. Vehicles owned and under the direct control of the Proponent are tarped. Independent commercial haulers using the existing transfer station are required to tarp their loads when visiting the facility. This will be a requirement for the proposed facility as well. If an independent hauler brings material to the site un-tarped that could fall on other vehicles or on the access road and create litter or potential hazards to other vehicles, the Proponent will issue a warning to the driver. If the same hauler violates the tarped load requirement following the first warning, that hauler will not be allowed to use the facility in the future.

P.15 Will trucks comply with the weight restriction on the Cox Street bridge crossing the Assabet River?

Yes. Vehicles owned and under the direct control of the Proponent will comply with the Cox Street Bridge weight restriction.

P.16 Will the proposed new entrance have acceptable sight lines for safe turning onto Cox Street?

Yes. The new entrance will have acceptable sight lines for safe turning onto Cox Street. A sight distance evaluation for the proposed new driveway intersection with Cox Street is included in Chapter 7 (Section 7.4).

P.17 What are the proposed trucking routes and will Reed Road be used?

The proposed trucking routes are shown on Figure 7-8, provided in Chapter 7. As is the current case, the Proponent may use its collection vehicles to provide service to customers that are located on and within the Reed Road development area. The Proponent's semi-trailers will not use Reed Road.

Appendix A

Environmental Justice

Geographic	Municipality	EJ Designation
Block Group 1, Census Tract 3211, Middlesex County, Massachusetts	Marlborough	Minority
Block Group 1, Census Tract 3212, Middlesex County, Massachusetts	Marlborough	Minority
Block Group 2, Census Tract 3213.01, Middlesex County, Massachusetts	Marlborough	Minority and income
Block Group 1, Census Tract 3213.02, Middlesex County, Massachusetts	Marlborough	Minority
Block Group 1, Census Tract 3215, Middlesex County, Massachusetts	Marlborough	Minority, income and English isolation
Block Group 3, Census Tract 3215, Middlesex County, Massachusetts	Marlborough	Minority and income
Block Group 1, Census Tract 3222, Middlesex County, Massachusetts	Hudson	Minority
Block Group 2, Census Tract 3224, Middlesex County, Massachusetts	Hudson	Minority
Block Group 3, Census Tract 3213.01, Middlesex County, Massachusetts	Marlborough	Minority
Block Group 2, Census Tract 3211, Middlesex County, Massachusetts	Marlborough	Minority and income
Block Group 3, Census Tract 3212, Middlesex County, Massachusetts	Marlborough	Minority
Block Group 2, Census Tract 3212, Middlesex County, Massachusetts	Marlborough	Minority
Block Group 4, Census Tract 3212, Middlesex County, Massachusetts	Marlborough	Minority
Block Group 1, Census Tract 3213.01, Middlesex County, Massachusetts	Marlborough	Minority
Block Group 5, Census Tract 3216, Middlesex County, Massachusetts	Marlborough	Minority
Block Group 2, Census Tract 3213.02, Middlesex County, Massachusetts	Marlborough	Minority
Block Group 2, Census Tract 3214, Middlesex County, Massachusetts	Marlborough	Minority
Block Group 2, Census Tract 3215, Middlesex County, Massachusetts	Marlborough	Minority
Block Group 4, Census Tract 3215, Middlesex County, Massachusetts	Marlborough	Minority
Block Group 2, Census Tract 3216, Middlesex County, Massachusetts	Marlborough	Minority
Block Group 3, Census Tract 3223, Middlesex County, Massachusetts	Hudson	Minority
Block Group 2, Census Tract 3641.01, Middlesex County, Massachusetts	Maynard	Income
Block Group 4, Census Tract 3839.04, Middlesex County, Massachusetts	Framingham	Minority
Block Group 1, Census Tract 3881, Middlesex County, Massachusetts	Boxborough	Minority
Block Group 2, Census Tract 3881, Middlesex County, Massachusetts	Boxborough	Minority

Hudson Transfer Station EJ Screen Data

Census Tract	Block Group	Environmental Indicator	State Avg.	Value	%ile in State
25017321100	**1**	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.19	30
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	1.2	28
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.031	0
		Ozone (ppb)	**39.5**	39	37
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.8	50
		RMP Proximity (facility count/km distance)	**0.74**	0.15	23
		Superfund Proximity (site count/km distance)	**0.18**	0.1	53
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	250	25
		Underground Storage Tank Indicator	**3.4**	0.78	31
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	0.00004	19
	2	Air Toxics Cancer Risk (risk per MM)	**21**	20	3
		Air Toxics Respiratory Hazard Index	**0.26**	0.2	2
		Diesel PM (ug/m3)	**0.253**	0.176	35
		Hazardous Waste Proximity (facility count/km distance)	**6.7**	2.6	43
		Lead Paint Indicator (% pre-1960s housing)	**0.51**	0.04	3
		Ozone (ppb)	**58.3**	56.4	18
		Particulate Matter (PM 2.5 in ug/m3)	**6.62**	6.88	59
		RMP Proximity (facility count/km distance)	**0.36**	0.13	40
		Superfund Proximity (site count/km distance)	**0.18**	0.09	43
		Traffic Proximity and Volume (daily traffic count/distance to road)	**630**	240	47
		Underground Storage Tank Indicator	**3.4**	1.6	46
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.2**	0.000042	21
25017321200	**1**	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.197	33
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	4.9	71
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.46	41
		Ozone (ppb)	**39.5**	39.1	42
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.78	49
		RMP Proximity (facility count/km distance)	**0.74**	0.23	41
		Superfund Proximity (site count/km distance)	**0.18**	0.089	42
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	1400	65
		Underground Storage Tank Indicator	**3.4**	3.6	67
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	N/A	N/A
	2	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.197	33
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	3.2	57
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.64	61
		Ozone (ppb)	**39.5**	39.1	42
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.78	49
		RMP Proximity (facility count/km distance)	**0.74**	0.27	46
		Superfund Proximity (site count/km distance)	**0.18**	0.096	48
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	230	24
		Underground Storage Tank Indicator	**3.4**	2.1	52
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	0.000029	17
	3	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.197	33
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	1.8	36
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.018	0
		Ozone (ppb)	**39.5**	39.1	42
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.78	49
		RMP Proximity (facility count/km distance)	**0.74**	0.18	33
		Superfund Proximity (site count/km distance)	**0.18**	0.095	47
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	1100	58
		Underground Storage Tank Indicator	**3.4**	1.9	50
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	0.000012	13
	4	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.197	33
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	2.1	42
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.15	11
		Ozone (ppb)	**39.5**	39.1	42
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.78	49
		RMP Proximity (facility count/km distance)	**0.74**	0.2	37
		Superfund Proximity (site count/km distance)	**0.18**	0.098	49
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	120	14
		Underground Storage Tank Indicator	**3.4**	0.61	28
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	0.000027	17
25017321301	**1**	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.197	34
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	3.6	60
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.86	**89**
		Ozone (ppb)	**39.5**	39.2	44
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.72	46

Census Tract	Block Group	Environmental Indicator	State Avg.	Value	%ile in State
25017321301	**1**	RMP Proximity (facility count/km distance)	**0.74**	0.51	59
		Superfund Proximity (site count/km distance)	**0.18**	0.086	39
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	2000	73
		Underground Storage Tank Indicator	**3.4**	4.9	77
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	N/A	N/A
	2	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.197	34
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	3.6	61
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.54	50
		Ozone (ppb)	**39.5**	39.2	44
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.72	46
		RMP Proximity (facility count/km distance)	**0.74**	0.69	66
		Superfund Proximity (site count/km distance)	**0.18**	0.09	42
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	1300	62
		Underground Storage Tank Indicator	**3.4**	3.9	69
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	N/A	N/A
	3	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.197	34
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	3.7	62
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.94	**96**
		Ozone (ppb)	**39.5**	39.2	44
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.72	46
		RMP Proximity (facility count/km distance)	**0.74**	0.8	69
		Superfund Proximity (site count/km distance)	**0.18**	0.089	42
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	1600	67
		Underground Storage Tank Indicator	**3.4**	6	**81**
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	N/A	N/A
25017321302	**1**	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.197	34
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	4.5	68
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.39	34
		Ozone (ppb)	**39.5**	39.2	44
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.72	46
		RMP Proximity (facility count/km distance)	**0.74**	0.99	74
		Superfund Proximity (site count/km distance)	**0.18**	0.094	47
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	1600	67
		Underground Storage Tank Indicator	**3.4**	12	**95**
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	0.00018	31
	2	Air Toxics Cancer Risk (risk per MM)	**21**	20	3
		Air Toxics Respiratory Hazard Index	**0.26**	0.2	2
		Diesel PM (ug/m3)	**0.253**	0.175	34
		Hazardous Waste Proximity (facility count/km distance)	**6.7**	4.7	64
		Lead Paint Indicator (% pre-1960s housing)	**0.51**	0.26	22
		Ozone (ppb)	**58.3**	56.7	22
		Particulate Matter (PM 2.5 in ug/m3)	**6.62**	6.86	58
		RMP Proximity (facility count/km distance)	**0.36**	0.59	**83**
		Superfund Proximity (site count/km distance)	**0.18**	0.099	50
		Traffic Proximity and Volume (daily traffic count/distance to road)	**630**	160	37
		Underground Storage Tank Indicator	**3.4**	2.5	57
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.2**	0.000081	25
25017321400	**2**	Air Toxics Cancer Risk (risk per MM)	**24**	30	**99**
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.202	35
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	8.2	**83**
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.013	0
		Ozone (ppb)	**39.5**	39.2	43
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.63	42
		RMP Proximity (facility count/km distance)	**0.74**	2.6	**95**
		Superfund Proximity (site count/km distance)	**0.18**	0.12	61
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	1400	64
		Underground Storage Tank Indicator	**3.4**	2.3	55
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	0.002	65

Census Tract	Block Group	Environmental Indicator	State Avg.	Value	%ile in State
25017321500	**1**	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.213	40
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	4.7	70
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.59	55
		Ozone (ppb)	**39.5**	39.1	39
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.64	42
		RMP Proximity (facility count/km distance)	**0.74**	0.91	72
		Superfund Proximity (site count/km distance)	**0.18**	0.093	45
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	1200	61
		Underground Storage Tank Indicator	**3.4**	14	**97**
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	N/A	N/A
	2	Air Toxics Cancer Risk (risk per MM)	**21**	20	3
		Air Toxics Respiratory Hazard Index	**0.26**	0.2	2
		Diesel PM (ug/m3)	**0.253**	0.192	42
		Hazardous Waste Proximity (facility count/km distance)	**6.7**	4.9	66
		Lead Paint Indicator (% pre-1960s housing)	**0.51**	0.28	24
		Ozone (ppb)	**58.3**	56.6	20
		Particulate Matter (PM 2.5 in ug/m3)	**6.62**	6.79	53
		RMP Proximity (facility count/km distance)	**0.36**	0.41	76
		Superfund Proximity (site count/km distance)	**0.18**	0.087	40
		Traffic Proximity and Volume (daily traffic count/distance to road)	**630**	210	44
		Underground Storage Tank Indicator	**3.4**	0.12	15
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.2**	0.0052	73
	3	Air Toxics Cancer Risk (risk per MM)	**21**	20	3
		Air Toxics Respiratory Hazard Index	**0.26**	0.2	2
		Diesel PM (ug/m3)	**0.253**	0.192	42
		Hazardous Waste Proximity (facility count/km distance)	**6.7**	4.2	60
		Lead Paint Indicator (% pre-1960s housing)	**0.51**	0.56	53
		Ozone (ppb)	**58.3**	56.6	20
		Particulate Matter (PM 2.5 in ug/m3)	**6.62**	6.79	53
		RMP Proximity (facility count/km distance)	**0.36**	0.4	76
		Superfund Proximity (site count/km distance)	**0.18**	0.086	39
		Traffic Proximity and Volume (daily traffic count/distance to road)	**630**	250	48
		Underground Storage Tank Indicator	**3.4**	9.8	**91**
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.2**	0.0014	56
	4	Air Toxics Cancer Risk (risk per MM)	**21**	20	3
		Air Toxics Respiratory Hazard Index	**0.26**	0.2	2
		Diesel PM (ug/m3)	**0.253**	0.192	42
		Hazardous Waste Proximity (facility count/km distance)	**6.7**	4.3	61
		Lead Paint Indicator (% pre-1960s housing)	**0.51**	0.62	60
		Ozone (ppb)	**58.3**	56.6	20
		Particulate Matter (PM 2.5 in ug/m3)	**6.62**	6.79	53
		RMP Proximity (facility count/km distance)	**0.36**	0.38	75
		Superfund Proximity (site count/km distance)	**0.18**	0.085	38
		Traffic Proximity and Volume (daily traffic count/distance to road)	**630**	21	7
		Underground Storage Tank Indicator	**3.4**	3.8	69
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.2**	0.0019	61
25017321600	**2**	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.195	32
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	1.1	27
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.21	17
		Ozone (ppb)	**39.5**	39	36
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.69	45
		RMP Proximity (facility count/km distance)	**0.74**	0.15	25
		Superfund Proximity (site count/km distance)	**0.18**	0.084	38
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	65	9
		Underground Storage Tank Indicator	**3.4**	0	0
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	0.000001	7
	5	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.195	32
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	3.4	59
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.26	21
		Ozone (ppb)	**39.5**	39	36
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.69	45
		RMP Proximity (facility count/km distance)	**0.74**	0.21	38
		Superfund Proximity (site count/km distance)	**0.18**	0.084	37
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	470	37
		Underground Storage Tank Indicator	**3.4**	4.3	73
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	N/A	N/A

Census Tract	Block Group	Environmental Indicator	State Avg.	Value	%ile in State
25017322200	**1**	Air Toxics Cancer Risk (risk per MM)	**21**	20	3
		Air Toxics Respiratory Hazard Index	**0.26**	0.2	2
		Diesel PM (ug/m3)	**0.253**	0.169	32
		Hazardous Waste Proximity (facility count/km distance)	**6.7**	2.2	38
		Lead Paint Indicator (% pre-1960s housing)	**0.51**	0.27	23
		Ozone (ppb)	**58.3**	56.4	17
		Particulate Matter (PM 2.5 in ug/m3)	**6.62**	6.72	48
		RMP Proximity (facility count/km distance)	**0.36**	0.14	44
		Superfund Proximity (site count/km distance)	**0.18**	0.075	30
		Traffic Proximity and Volume (daily traffic count/distance to road)	**630**	130	31
		Underground Storage Tank Indicator	**3.4**	3.7	68
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.2**	0.03	**88**
25017322300	**3**	Air Toxics Cancer Risk (risk per MM)	**21**	20	3
		Air Toxics Respiratory Hazard Index	**0.26**	0.2	2
		Diesel PM (ug/m3)	**0.253**	0.165	31
		Hazardous Waste Proximity (facility count/km distance)	**6.7**	0.83	20
		Lead Paint Indicator (% pre-1960s housing)	**0.51**	0.69	68
		Ozone (ppb)	**58.3**	56.3	16
		Particulate Matter (PM 2.5 in ug/m3)	**6.62**	6.65	43
		RMP Proximity (facility count/km distance)	**0.36**	0.12	38
		Superfund Proximity (site count/km distance)	**0.18**	0.073	28
		Traffic Proximity and Volume (daily traffic count/distance to road)	**630**	350	57
		Underground Storage Tank Indicator	**3.4**	4.3	73
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.2**	0.0099	**80**
25017322400	**2**	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.172	25
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	1.1	27
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.55	51
		Ozone (ppb)	**39.5**	38.8	19
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.54	38
		RMP Proximity (facility count/km distance)	**0.74**	0.13	19
		Superfund Proximity (site count/km distance)	**0.18**	0.078	32
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	1400	64
		Underground Storage Tank Indicator	**3.4**	5	77
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	0.071	**94**
25017364101	**2**	Air Toxics Cancer Risk (risk per MM)	**21**	20	3
		Air Toxics Respiratory Hazard Index	**0.26**	0.2	2
		Diesel PM (ug/m3)	**0.253**	0.179	37
		Hazardous Waste Proximity (facility count/km distance)	**6.7**	1.8	34
		Lead Paint Indicator (% pre-1960s housing)	**0.51**	0.62	59
		Ozone (ppb)	**58.3**	55.6	11
		Particulate Matter (PM 2.5 in ug/m3)	**6.62**	6.72	48
		RMP Proximity (facility count/km distance)	**0.36**	0.057	10
		Superfund Proximity (site count/km distance)	**0.18**	0.87	**96**
		Traffic Proximity and Volume (daily traffic count/distance to road)	**630**	500	66
		Underground Storage Tank Indicator	**3.4**	3.5	66
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.2**	0.019	**85**
25017383904	**4**	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.21	38
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	2.4	47
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.17	13
		Ozone (ppb)	**39.5**	39.1	43
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.96	55
		RMP Proximity (facility count/km distance)	**0.74**	0.2	35
		Superfund Proximity (site count/km distance)	**0.18**	0.12	60
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	120	15
		Underground Storage Tank Indicator	**3.4**	0.9	34
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	0.000028	17

Census Tract	Block Group	Environmental Indicator	State Avg.	Value	%ile in State
25017388100	**1**	Air Toxics Cancer Risk (risk per MM)	**21**	20	3
		Air Toxics Respiratory Hazard Index	**0.26**	0.2	2
		Diesel PM (ug/m3)	**0.253**	0.153	25
		Hazardous Waste Proximity (facility count/km distance)	**6.7**	0.27	9
		Lead Paint Indicator (% pre-1960s housing)	**0.51**	0.16	12
		Ozone (ppb)	**58.3**	55.3	10
		Particulate Matter (PM 2.5 in ug/m3)	**6.62**	6.45	35
		RMP Proximity (facility count/km distance)	**0.36**	0.051	8
		Superfund Proximity (site count/km distance)	**0.18**	0.14	69
		Traffic Proximity and Volume (daily traffic count/distance to road)	**630**	39	13
		Underground Storage Tank Indicator	**3.4**	0.14	15
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.2**	0.00023	35
	2	Air Toxics Cancer Risk (risk per MM)	**24**	20	54
		Air Toxics Respiratory Hazard Index	**0.3**	0.3	79
		Diesel PM (ug/m3)	**0.307**	0.176	26
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	0.16	6
		Lead Paint Indicator (% pre-1960s housing)	**0.49**	0	0
		Ozone (ppb)	**39.5**	38.3	11
		Particulate Matter (PM 2.5 in ug/m3)	**6.79**	6.36	28
		RMP Proximity (facility count/km distance)	**0.74**	0.064	5
		Superfund Proximity (site count/km distance)	**0.18**	0.13	65
		Traffic Proximity and Volume (daily traffic count/distance to road)	**2400**	2500	78
		Underground Storage Tank Indicator	**3.4**	0.47	24
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	N/A	N/A

Hudson Transfer Station EJ Screen Data (80th Percentile)

Census Tract	Block Group	Environmental Indicator	State Avg.	Value	%ile in State
25017321301	**1**	Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.86	**89**
	3	Lead Paint Indicator (% pre-1960s housing)	**0.49**	0.94	**96**
		Underground Storage Tank Indicator	**3.4**	6	**81**
25017321302	**1**	Underground Storage Tank Indicator	**3.4**	12	**95**
	2	RMP Proximity (facility count/km distance)	**0.36**	0.59	**83**
25017321400	**2**	Air Toxics Cancer Risk (risk per MM)	**24**	30	**99**
		Hazardous Waste Proximity (facility count/km distance)	**5.6**	8.2	**83**
		RMP Proximity (facility count/km distance)	**0.74**	2.6	**95**
25017321500	**1**	Underground Storage Tank Indicator	**3.4**	14	**97**
	3	Underground Storage Tank Indicator	**3.4**	9.8	**91**
25017322200	**1**	Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.2**	0.03	**88**
25017322300	**3**	Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.2**	0.0099	**80**
25017322400	**2**	Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.21**	0.071	**94**
25017364101	**2**	Superfund Proximity (site count/km distance)	**0.18**	0.87	**96**
		Wastewater Discharge Indicators (toxicity-weighted concentration/m distance)	**0.2**	0.019	**85**

Statewide Environmental Justice Community Based Organizations

First Name	Last Name	Title	Phone	Email	Affiliation
Ben	Hellerstein	MA State Director	617-747-4368	ben@environmentmassachusetts.org	Environment Massachusetts
Cindy	Luppi	New England Director	617-338-8131 x208	cluppi@cleanwater.org	Clean Water Action
Deb	Pasternak	Director, MA Chapter	617-423-5775	deb.pasternak@sierraclub.org	Sierra Club MA
Elvis	Mendez	Organizing Director	508 904-5359	elvis@n2nma.org	Neighbor to Neighbor
Heather	Clish	Director of Conservation & Recreation Policy	(617) 523-0655	hclish@outdoors.org	Appalachian Mountain Club
Heidi	Ricci	Director of Policy	Not Provided	hricci@massaudubon.org	Mass Audubon
Julia	Blatt	Executive Director	(617) 714-4272	juliablatt@massriversalliance.org	Mass Rivers Alliance
Kelly	Boling	MA & RI State Director	(617) 367-6200	kelly.boling@tpl.org	The Trust for Public Land
Kerry	Bowie	Board President	Not Provided	kerry@msaadapartners.com	Browning the GreenSpace
Nancy	Goodman	Vice President for Policy	Not Provided	ngoodman@environmentalleague.org	Environmental League of MA
Pat	Stanton	Project Manager	Not Provided	pstanton@e4thefuture.org	E4TheFuture
Rob	Moir	Executive Director	Not Provided	rob@oceanriver.org	Ocean River Institute
Robb	Johnson	Executive Director	(978) 443-2233	robb@massland.org	Mass Land Trust Coalition
Sarah	Dooling	Executive Director	Not Provided	sarah@massclimateaction.net	Mass Climate Action Network (MCAN)
Staci	Rubin	Senior Attorney	617 350-0990	srubin@clf.org	Conservation Law Foundation
Sylvia	Broude	Executive Director	617 292-4821	sylvia@communityactionworks.org	Community Action Works
Tali	Smookler	Organizing Director	508 308-9261	tsmookler@uumassaction.org	Unitarian Universalist Mass Action Network
Winston	Vaughan	Director of Climate Solutions	Not Provided	wvaughan@hcwh.org	Healthcare without Harm

Indigenous Organizations					
First Name	**Last Name**	**Title**	**Phone**	**Email**	**Affiliation**
Alma	Gordon	President	Not Provided	tribalcouncil@chappaquiddick-wampanoag.org	Chappaquiddick Tribe of the Wampanoag Nation
Cheryll	Toney Holley	Chair	774-317-9138	crwritings@aol.com	Nipmuc Nation (Hassanamisco Nipmucs)
John	Peters, Jr.	Executive Director	617-573-1292	john.peters@mass.gov	Massachusetts Commission on Indian Affairs (MCIA)
Kenneth	White	Council Chairman	508-347-7829	acw1213@verizon.net	Chaubunagungamaug Nipmuck Indian Council
Melissa	Ferretti	Chair	(508) 304-5023	melissa@herringpondtribe.org	Herring Pond Wampanoag Tribe
Patricia	D. Rocker	Council Chair	Not Provided	rockerpatriciad@verizon.net	Chappaquiddick Tribe of the Wampanoag Nation, Whale Clan
Raquel	Halsey	Executive Director	(617) 232-0343	rhalsey@naicob.org	North American Indian Center of Boston
Cora	Pierce	Not Provided	Not Provided	Coradot@yahooe.com	Pocassett Wampanoag Tribe
Elizabth	Soloman	Not Provided	Not Provided	Solomon.Elizabeth.e@gmail.om	Massachusetts Tribe at Ponkapoag

Federally Recognized Tribes					
First	**Last**	**Title**	**Phone**	**Email**	**Affiliation**
Bettina	Washington	Tribal Historic Preservation Officer	508-560-9014	thpo@wampanoagtribe-nsn.gov	Wampanoag Tribe of Gay Head (Aquinnah)
Bonney	Hartley	Historic Preservation Manager	413-884-6048	bonney.hartley@mohican-nsn.gov	Stockbridge-Munsee Tribe
Brian	Weeden	Chair	774-413-0520	Brian.Weeden@mwtribe-nsn.gov	Mashpee Wampanoag Tribe

Appendix B

Air Quality

B-P Hudson Transfer Station

Roads

	VOC lbs/day	VOC tons/yr	NOx lbs/day	NOx tons/yr	CO2 lbs/day	CO2 tons/yr	PM10 lbs/day	PM10 tons/yr	PM2.5 lbs/day	PM2.5 tons/yr	DPM lbs/day	DPM tons/yr
2024 Existing	35.5	6.48	38.6	7.05	67,686	12,353	9.60	1.75	2.18	0.40	1.08	0.20
2031 No-Build	30.3	5.52	18.2	3.33	58,592	10,693	9.92	1.81	1.79	0.327	0.571	0.104
delta from 2024 Existing	-5.2	-0.96	-20.4	-3.72	-9,094	-1,660	0.32	0.06	-0.39	-0.07	-0.51	-0.09
2031 Build	30.5	5.57	18.4	3.37	59,212	10,806	10.04	1.83	1.81	0.331	0.577	0.105
delta from 2031 No-Build	0.3	0.05	0.2	0.04	620	113	0.12	0.02	0.02	0.004	0.006	0.001

Intersections

	VOC lbs/day	VOC tons/yr	NOx lbs/day	NOx tons/yr	CO2 lbs/day	CO2 tons/yr	PM10 lbs/day	PM10 tons/yr	PM2.5 lbs/day	PM2.5 tons/yr	DPM lbs/day	DPM tons/yr
2024 Existing	1.0	0.18	1.1	0.19	2,805	512	0.058	0.011	0.052	0.010	0.052	0.010
2031 No-Build	1.1	0.20	1.1	0.21	3,602	657	0.043	0.008	0.390	0.071	0.390	0.071
delta from 2024 Existing	0.1	0.02	0.1	0.01	797	145	-0.015	-0.003	0.337	0.062	0.337	0.062
2031 Build	1.2	0.22	1.2	0.22	3,830	699	0.046	0.008	0.415	0.076	0.415	0.076
delta from 2031 No-Build	0.1	0.01	0.1	0.01	229	42	0.003	0.000	0.025	0.005	0.025	0.005

Total

Pollutant	VOC lbs/day	VOC tons/yr	NOx lbs/day	NOx tons/yr	CO2 lbs/day	CO2 tons/yr	PM10 lbs/day	PM10 tons/yr	PM2.5 lbs/day	PM2.5 tons/yr	DPM lbs/day	DPM tons/yr
2024 Existing	36.5	6.66	39.7	7.25	70,491	12,865	9.66	1.76	2.24	0.41	1.13	0.21
2031 No-Build	31.4	5.73	19.4	3.54	62,193	11,350	9.96	1.82	2.18	0.40	0.96	0.18
delta from 2024 Existing	-5.1	-0.94	-20.3	-3.71	-8,298	-1,514	0.30	0.05	-0.06	-0.01	-0.17	-0.03
2031 Build	31.7	5.79	19.6	3.58	63,042	11,505	10.09	1.84	2.23	0.41	0.99	0.18
delta from 2031 No-Build	0.3	0.06	0.3	0.05	849	155	0.13	0.02	0.05	0.01	0.03	0.01

Minor differences in sums are due to rounding of individual values.

Pound per day to tons per year is based on an 100% factor to account for peak daily to annual data.

B-P Hudson Transfer Station

	units	2024 Existing	2031 No-Build	2031 Build
Daily VMT	veh-miles/day	92,605	103,101	104,152
Net Change	veh-miles/day	-	10,496	1,051
Net Delay	veh-hrs/day	430	633	674
Net Change	veh-hrs/day	-	203	40
Roadway CO_2e	tpy	12,353	10,693	10,806
Intersection CO_2e	tpy	512	657	699
Total CO_2e	tpy	12,865	11,350	11,505
Net CO_2e Change	tpy	-	-1,514	155

B-P Hudson Transfer Station

	units	Case 1 2031 Build minus 2031 No-Build
Daily VMT	veh-miles/day	1051.0
Net Change	veh-miles/day	-
Net Delay	veh-hrs/day	40.2
Net Change	veh-hrs/day	-
Roadway CO2e	tpy	113
Intersection CO2e	tpy	42
Net CO2e Emissions	tpy	155
Net CO2e Change	tpy	-
Percent Change		-

Hudson Transfer Station

Regional Mesoscale Emissions Analysis - Roadway Emissions
Link Data

Link Number	Roadway Segment	Link Distance (miles)	Estimated Average Speed (mph)	Weekday AM Peak Hour Volume			Weekday PM Peak Hour Volume		
				2024 Existing	2031 No Build	2031 Build	2024 Existing	2031 No Build	2031 Build
1	Main Street E of Wilkins Street	0.10	30	1,157	1,275	1,287	1,163	1,296	1,300
2	Wilkins Street N of Mains Street	0.10	35	267	288	292	326	349	351
3	Forest Ave btwn Main St. and Marlboro Street (5-8)	0.72	35	714	766	766	789	845	847
4	Main Street W of Wilkins Street (5-6)	0.12	30	870	967	983	878	990	998
5	Cox Street between Parkhurst Dr and Main St (6-4)	0.19	30	477	523	595	418	470	498
6	Parkhurst Drive	0.15	20	16	17	17	14	15	15
7	Cox St. btwn Lee Circle and Parkhurst Dr. (4-3)	0.09	30	529	580	652	484	542	570
8	Cox St btwn Lee Cir and Zina Rd (3-2)	0.23	30	509	560	578	451	507	513
9	Zina Rd btwn Cox Street and Hudson Rd	0.10	25	79	85	91	66	70	72
10	Cox Street btwn Zina Rd and Old Stow Rd (2-1)	0.37	30	416	459	471	387	438	442
11	Cox Street W of Old Bolston Road	0.16	30	570	622	632	639	691	695
12	Old Stow Road btwn Cox and Hudson	0.10	30	312	346	346	378	412	412
13	Old Bolton Road N of Old Stow Rd	0.16	30	234	264	266	245	287	287
14	Main Street between Cox and Tower St (7-9)	0.86	30	912	1,019	1,075	920	1,017	1,039
15	Tower Street N of Main	0.10	30	414	375	186	176	199	199
16	Vila do Porto Blvd btwn Tower St and Manning St (9-10)	0.34	30	657	719	755	614	677	693
17	Main St btwn Tower St and Felton St (9-11)	0.62	30	591	655	675	657	735	741
18	Manning St N of Main St	0.10	30	469	503	503	608	652	652
19	Broad St S of Main St	0.10	30	845	921	954	959	1,043	1,055
20	South Street btwn Broad St. and Washington Street (10-11)	0.31	30	450	484	484	665	712	712
21	Lincoln Street btwn South St. and Packard Street (11-12)	0.57	30	371	399	399	340	366	366
22	Packard St. W of Lincoln St	0.10	30	372	422	428	442	493	495
23	Lincoln St. N of Packard St.	0.10	30	509	551	557	568	614	616
24	Packard St. E of Lincoln St.	0.10	30	518	574	586	610	669	673
25	Washington Street S of South St	0.99	40	742	813	849	945	1,025	1,041
26	RTE 85C W of Washington St.	0.10	30	2,147	2,368	2,396	2,216	2,447	2,459
27	Technology Dr. E of Washington St.	0.10	30	780	1,010	1,010	888	1,030	1,030
28	Bolton Street btwn Technology Drive and East Main Street (13-17) [NOT USED]	2.51	40						
29	Grainger Blvd to Lakeside Ave btwn Stevens St. and Bond Street (17-18)	1.87	45	1,666	1,870	1,880	1,775	2,034	2,036
30	Lincoln St W of Stevens St.	0.10	45	736	790	790	765	820	820
31	East Main St. E of Stevens St.	0.10	45	1,700	1,881	1,887	1,912	2,128	2,130
32	Washington Street btwn Technology Drive and Broad Street	0.17	30	1,056	1,157	1,193	1,529	1,644	1,660
33	Lakeside Ave W of Lincoln Street	0.10	30	2,103	2,339	2,380	2,186	2,494	2,496
34	Farm Road S of Boston Post Rd. [NOT USED]	0.10	30						
35	Wilson Street N of Boston Post Rd. [NOT USED]	0.10	30						
36	Boston Post Road E of Wilson St. [NOT USED]	0.10	45						
37	Causeway St btwn Hosmer St. and Marlboro St. (14-8) [NOT USED]	1.41	30						
38	Hosmer St N of Causeway St. [NOT USED]	0.10	30						
39	Marlboro/Reservoir St btwn Forest Ave. and Bolton St [NOT USED]	1.70	30						
40	Forest Ave btwn Marlboro Street and Wheeler Rd	0.49	30	432	469	469	555	609	609

Hudson Transfer Station

Regional Mesoscale Emissions Analysis - Roadway Emissions
Link Data

Link Number	Roadway Segment	Link Distance (miles)	Estimated Average Speed (mph)	K-factor	Average Daily Traffic (ADT)			Average Hourly Traffic Volumes		
					2024 Existing	2031 No Build	2031 Build	2024 Existing	2031 No Build	2031 Build
1	Main Street E of Wilkins Street	0.10	30	10.0%	11,630	12,960	13,000	485	540	542
2	Wilkins Street N of Mains Street	0.10	35	10.0%	3,260	3,490	3,510	136	145	146
3	Forest Ave btwn Main St. and Marlboro Street (5-8)	0.72	35	10.0%	7,890	8,450	8,470	329	352	353
4	Main Street W of Wilkins Street (5-6)	0.12	30	10.0%	8,780	9,900	9,980	366	413	416
5	Cox Street between Parkhurst Dr and Main St (6-4)	0.19	30	10.0%	4,770	5,230	5,950	199	218	248
6	Parkhurst Drive	0.15	20	10.0%	160	170	170	7	7	7
7	Cox St. btwn Lee Circle and Parkhurst Dr. (4-3)	0.09	30	10.0%	5,290	5,800	6,520	220	242	272
8	Cox St btwn Lee Cir and Zina Rd (3-2)	0.23	30	10.0%	5,090	5,600	5,780	212	233	241
9	Zina Rd btwn Cox Street and Hudson Rd	0.10	25	10.0%	790	850	910	33	35	38
10	Cox Street btwn Zina Rd and Old Stow Rd (2-1)	0.37	30	10.0%	4,160	4,590	4,710	173	191	196
11	Cox Street W of Old Bolston Road	0.16	30	10.0%	6,390	6,910	6,950	266	288	290
12	Old Stow Road btwn Cox and Hudson	0.10	30	10.0%	3,780	4,120	4,120	158	172	172
13	Old Bolton Road N of Old Stow Rd	0.16	30	10.0%	2,450	2,870	2,870	102	120	120
14	Main Street between Cox and Tower St (7-9)	0.86	30	10.0%	9,200	10,190	10,750	383	425	448
15	Tower Street N of Main	0.10	30	10.0%	4,140	3,750	1,990	173	156	83
16	Vila do Porto Blvd btwn Tower St and Manning St (9-10)	0.34	30	10.0%	6,570	7,190	7,550	274	300	315
17	Main St btwn Tower St and Felton St (9-11)	0.62	30	10.0%	6,570	7,350	7,410	274	306	309
18	Manning St N of Main St	0.10	30	10.0%	6,080	6,520	6,520	253	272	272
19	Broad St S of Main St	0.10	30	10.0%	9,590	10,430	10,550	400	435	440
20	South Street btwn Broad St. and Washington Street (10-11)	0.31	30	10.0%	6,650	7,120	7,120	277	297	297
21	Lincoln Street btwn South St. and Packard Street (11-12)	0.57	30	10.0%	3,710	3,990	3,990	155	166	166
22	Packard St. W of Lincoln St	0.10	30	10.0%	4,420	4,930	4,950	184	205	206
23	Lincoln St. N of Packard St.	0.10	30	10.0%	5,680	6,140	6,160	237	256	257
24	Packard St. E of Lincoln St.	0.10	30	10.0%	6,100	6,690	6,730	254	279	280
25	Washington Street S of South St	0.99	40	10.0%	9,450	10,250	10,410	394	427	434
26	RTE 85C W of Washington St.	0.10	30	10.0%	22,160	24,470	24,590	923	1,020	1,025
27	Technology Dr. E of Washington St.	0.10	30	10.0%	8,880	10,300	10,300	370	429	429
28	Bolton Street btwn Technology Drive and East Main Street (13-17) [NOT USED]	2.51	40	10.0%	0	0	0	0	0	0
29	Grainger Blvd to Lakeside Ave btwn Stevens St. and Bond Street (17-18)	1.87	45	10.0%	17,750	20,340	20,360	740	848	848
30	Lincoln St W of Stevens St.	0.10	45	10.0%	7,650	8,200	8,200	319	342	342
31	East Main St. E of Stevens St.	0.10	45	10.0%	19,120	21,280	21,300	797	887	888
32	Washington Street btwn Technology Drive and Broad Street	0.17	30	10.0%	15,290	16,440	16,600	637	685	692
33	Lakeside Ave W of Lincoln Street	0.10	30	10.0%	21,860	24,940	24,960	911	1,039	1,040
34	Farm Road S of Boston Post Rd. [NOT USED]	0.10	30	10.0%	0	0	0	0	0	0
35	Wilson Street N of Boston Post Rd. [NOT USED]	0.10	30	10.0%	0	0	0	0	0	0
36	Boston Post Road E of Wilson St. [NOT USED]	0.10	45	10.0%	0	0	0	0	0	0
37	Causeway St btwn Hosmer St. and Marlboro St. (14-8) [NOT USED]	1.41	30	10.0%	0	0	0	0	0	0
38	Hosmer St N of Causeway St. [NOT USED]	0.10	30	10.0%	0	0	0	0	0	0
39	Marlboro/Reservoir St btwn Forest Ave. and Bolton St [NOT USED]	1.70	30	10.0%	0	0	0	0	0	0
40	Forest Ave btwn Marlboro Street and Wheeler Rd	0.49	30	10.0%	5,550	6,090	6,090	231	254	254

Hudson Transfer Station

Daily VMT

	SUM		
sum	92,605	103,101	104,152

Link Number	Roadway Segment	Link Distance (miles)	Average Daily Traffic (ADT) Volumes				Daily VMT		
			2024 Existing	2031 No Build	2031 Build	2029 Mitigated Build	2024 Existing	2031 No Build	2031 Build
1	Main Street E of Wilkins Street	0.10	11,630	12,960	13,000	0	1,211	1,350	1,354
2	Wilkins Street N of Mains Street	0.10	3,260	3,490	3,510	0	340	364	366
3	Forest Ave btwn Main St. and Marlboro Street (5-8)	0.72	7,890	8,450	8,470	0	5,659	6,061	6,075
4	Main Street W of Wilkins Street (5-6)	0.12	8,780	9,900	9,980	0	1,031	1,163	1,172
5	Cox Street between Parkhurst Dr and Main St (6-4)	0.19	4,770	5,230	5,950	0	926	1,015	1,155
6	Parkhurst Drive	0.15	160	170	170	0	24	26	26
7	Cox St. btwn Lee Circle and Parkhurst Dr. (4-3)	0.09	5,290	5,800	6,520	0	476	522	587
8	Cox St btwn Lee Cir and Zina Rd (3-2)	0.23	5,090	5,600	5,780	0	1,166	1,283	1,325
9	Zina Rd btwn Cox Street and Hudson Rd	0.10	790	850	910	0	82	89	95
10	Cox Street btwn Zina Rd and Old Stow Rd (2-1)	0.37	4,160	4,590	4,710	0	1,521	1,678	1,722
11	Cox Street W of Old Bolston Road	0.16	6,390	6,910	6,950	0	1,029	1,112	1,119
12	Old Stow Road btwn Cox and Hudson	0.10	3,780	4,120	4,120	0	394	429	429
13	Old Bolton Road N of Old Stow Rd	0.16	2,450	2,870	2,870	0	394	462	462
14	Main Street between Cox and Tower St (7-9)	0.86	9,200	10,190	10,750	0	7,928	8,781	9,264
15	Tower Street N of Main	0.10	4,140	3,750	1,990	0	431	391	207
16	Vila do Porto Blvd btwn Tower St and Manning St (9-10)	0.34	6,570	7,190	7,550	0	2,215	2,424	2,545
17	Main St btwn Tower St and Felton St (9-11)	0.62	6,570	7,350	7,410	0	4,078	4,562	4,599
18	Manning St N of Main St	0.10	6,080	6,520	6,520	0	633	679	679
19	Broad St S of Main St	0.10	9,590	10,430	10,550	0	999	1,086	1,099
20	South Street btwn Broad St. and Washington Street (10-11)	0.31	6,650	7,120	7,120	0	2,066	2,212	2,212
21	Lincoln Street btwn South St. and Packard Street (11-12)	0.57	3,710	3,990	3,990	0	2,108	2,267	2,267
22	Packard St. W of Lincoln St	0.10	4,420	4,930	4,950	0	460	514	516
23	Lincoln St. N of Packard St.	0.10	5,680	6,140	6,160	0	592	640	642
24	Packard St. E of Lincoln St.	0.10	6,100	6,690	6,730	0	635	697	701
25	Washington Street S of South St	0.99	9,450	10,250	10,410	0	9,350	10,141	10,300
26	RTE 85C W of Washington St.	0.10	22,160	24,470	24,590	0	2,308	2,549	2,561
27	Technology Dr. E of Washington St.	0.10	8,880	10,300	10,300	0	925	1,073	1,073
28	olton Street btwn Technology Drive and East Main Street (13-17) [NOT USE	2.51	0	0	0	0	0	0	0
29	Grainger Blvd to Lakeside Ave btwn Stevens St. and Bond Street (17-18)	1.87	17,750	20,340	20,360	0	33,197	38,041	38,079
30	Lincoln St W of Stevens St.	0.10	7,650	8,200	8,200	0	797	854	854
31	East Main St. E of Stevens St.	0.10	19,120	21,280	21,300	0	1,992	2,217	2,219
32	Washington Street btwn Technology Drive and Broad Street	0.17	15,290	16,440	16,600	0	2,638	2,837	2,864
33	Lakeside Ave W of Lincoln Street	0.10	21,860	24,940	24,960	0	2,277	2,598	2,600
34	Farm Road S of Boston Post Rd. [NOT USED]	0.10	0	0	0	0	0	0	0
35	Wilson Street N of Boston Post Rd. [NOT USED]	0.10	0	0	0	0	0	0	0
36	Boston Post Road E of Wilson St. [NOT USED]	0.10	0	0	0	0	0	0	0
37	Causeway St btwn Hosmer St. and Marlboro St. (14-8) [NOT USED]	1.41	0	0	0	0	0	0	0
38	Hosmer St N of Causeway St. [NOT USED]	0.10	0	0	0	0	0	0	0
39	Marlboro/Reservoir St btwn Forest Ave. and Bolton St [NOT USED]	1.70	0	0	0	0	0	0	0
40	Forest Ave btwn Marlboro Street and Wheeler Rd	0.49	5,550	6,090	6,090	6,090	2,722	2,987	2,987

B-P Hudson Transfer Station

	2024 Existing			2024 Existing		
	Weekday AM Peak			Weekday PM Peak		
Intersections (Signalized and *Unsignalized*)	LOS	Delay (Sec)	Traffic Volume	LOS	Delay (Sec)	Traffic Volume
1: Forest Avenue/Wilkins Street & Main Street	B	16.3	1504	B	17.5	1578
2: Glendale Road/Cox Street & Main Street	B	15.6	1215	A	8.9	1167
3: Cox Street & Parkhurst Drive	-	0.3	544	-	0.3	497
4: Lee Circle/Transfer Station & Cox Street	-	1.1	614	0	0.6	566
5: Pierce Street/Zina Road & Cox Street	-	2.2	518	-	2.2	468
6: Cox Street & Old Stow Road & Old Bolton Road	B	12.2	782	B	13.1	859
7: Lincoln Street & Packard Street/Cox Street	B	14.5	885	C	15.4	980
15: East Main Street & Lincoln Street & Stevens Street	B	12.8	1855	B	13.2	2019
16: Lakeside Avenue & Lincoln Street	-	35.8	2108	-	40.0	2187
33: Vila do Porto Boulevard/Tower Street & Main Street	B	18.4	1287	B	18.3	1268
62: Woodrow Street/Mackin Street & Main Street	-	4.3	975	-	3.0	922
72: Broad Street & South Street	B	18.3	1198	B	16.9	1440
Route 62 at Washington Street and Felton Street (Rotary)	C	21.7	1596	C	20.4	2013
13: Washington Street & Route 85 Connector/Technology Drive	C	31.4	2754	D	49.6	3277
15: South Bolton Street & Granger Boulevard	B	18.4	1964	B	17.3	2120
Washington Street at Broad Street Rotary	A	8.3	1637	A	9.3	2120

LOS is HCM value for signalized intersections and ICU value for unsignalized intersections.
Color Code:
Red = Signalized intersections at LOS D or worse.

Green = Top 3 signalized intersections based on volume.
Purple/Orange = mitigated delay times decreased/increased

B-P Hudson Transfer Station

	2031 No-Build			2031 No-Build		
	Weekday AM Peak			Weekday PM Peak		
Intersections (Signalized and *Unsignalized*)	**LOS**	**Delay (Sec)**	**Traffic Volume**	**LOS**	**Delay (Sec)**	**Traffic Volume**
1: Forest Avenue/Wilkins Street & Main Street	B	18.3	1648	B	19.0	1740
2: Glendale Road/Cox Street & Main Street	B	17.2	1335	B	11.3	1302
3: Cox Street & Parkhurst Drive	-	0.3	596	-	0.2	556
4: Lee Circle/Transfer Station & Cox Street	-	1.1	668	-	0.6	629
5: Pierce Street/Zina Road & Cox Street	-	2.3	569	-	2.2	524
6: Cox Street & Old Stow Road & Old Bolton Road	B	13.9	862	C	15.5	951
7: Lincoln Street & Packard Street/Cox Street	C	17.3	973	C	18.8	1071
15: East Main Street & Lincoln Street & Stevens Street	B	14.5	2048	B	14.7	2242
16: Lakeside Avenue & Lincoln Street	-	64.2	2344	-	73.2	2495
33: Vila do Porto Boulevard/Tower Street & Main Street	B	19.4	1421	B	19.4	1413
62: Woodrow Street/Mackin Street & Main Street	-	5.1	1065	-	3.3	1012
72: Broad Street & South Street	C	21.7	1300	C	20.1	1559
Route 62 at Washington Street and Felton Street (Rotary)	C	32.9	1727	C	30.9	2182
13: Washington Street & Route 85 Connector/Technology Drive	D	39.9	3185	E	61.8	3661
15: South Bolton Street & Granger Boulevard	B	19.6	2175	B	18.7	2376
Washington Street at Broad Street Rotary	A	9.0	1783	B	11.0	2403

LOS is HCM value for signalized intersections and ICU value for unsignalized intersections.
Color Code:
Red = Signalized intersections at LOS D or worse.

Green = Top 3 signalized intersections based on volume.
Purple/Orange = mitigated delay times decreased/increased

B-P Hudson Transfer Station

	2031 Build Weekday AM Peak			2031 Build Weekday PM Peak		
Intersections (Signalized and *Unsignalized*)	**LOS**	**Delay (Sec)**	**Traffic Volume**	**LOS**	**Delay (Sec)**	**Traffic Volume**
1: Forest Avenue/Wilkins Street & Main Street	B	18.5	1664	B	19.1	1748
2: Glendale Road/Cox Street & Main Street	C	22.2	1407	B	12.6	1330
3: Cox Street & Parkhurst Drive	-	0.3	668	-	0.2	584
4: Lee Circle/Transfer Station & Cox Street	-	3.0	758	-	1.4	663
5: Pierce Street/Zina Road & Cox Street	-	2.4	587	-	2.2	530
6: Cox Street & Old Stow Road & Old Bolton Road	B	14.2	874	C	15.6	955
7: Lincoln Street & Packard Street/Cox Street	C	17.9	985	C	19.1	1075
15: East Main Street & Lincoln Street & Stevens Street	B	14.6	2054	B	14.7	2244
16: Lakeside Avenue & Lincoln Street	-	76.4	2385	-	73.2	2497
33: Vila do Porto Boulevard/Tower Street & Main Street	B	19.8	1477	B	19.9	1435
62: Woodrow Street/Mackin Street & Main Street	-	5.4	1121	-	3.5	1040
72: Broad Street & South Street	C	28.7	1333	C	21.7	1571
Route 62 at Washington Street and Felton Street (Rotary)	D	37.4	1747	C	31.8	2188
13: Washington Street & Route 85 Connector/Technology Drive	D	40.7	3221	E	62.5	3677
15: South Bolton Street & Granger Boulevard	B	19.7	2183	B	19.0	2380
Washington Street at Broad Street Rotary	A	9.2	1819	B	12.0	2419

LOS is HCM value for signalized intersections and ICU value for unsignalized intersections.
Color Code:
Red = Signalized intersections at LOS D or worse.

Green = Top 3 signalized intersections based on volume.
Purple/Orange = mitigated delay times decreased/increased

B-P Hudson Transfer Station

2024 Existing

K Factor	10%	factors peak hour vehicle volumes to daily volumes
Peak hr delay to daily Factor (8hr/day)	33%	Factors peak hour delay to daily delay
Daily delay to annual Factor (7 days/wk, 52 wk/yr)	100%	factors peak daily delay to annual delay

Intersection	Average Peak Delay time (s)	Traffic Volume (adt)	Idle MOVES VOC (g/hr)	VOC (lb/day)	VOC (tpy)	Idle MOVES NOX (g/hr)	NOX (lb/day)	NOX (tpy)	Idle MOVES CO2 (g/hr)	CO2 (lb/day)	CO2 (tpy)	Idle MOVES PM10 (g/hr)	PM10 (lb/day)	PM10 (tpy)	Idle MOVES PM2.5 (g/hr)	PM2.5 (lb/day)	PM2.5 (tpy)
1: Forest Avenue/Wilkins Street & Main Street	16.91	15780	1.0653	0.06	0.01	1.1194	0.06	0.011	2964.200	161.50	29.394	0.061	0.00	0.001	0.055	0.00	0.001
2: Glendale Road/Cox Street & Main Street	12.32	12150	1.065	0.03	0.01	1.119	0.03	0.006	2964.200	90.56	16.481	0.061	0.00	0.000	0.055	0.00	0.000
3: Cox Street & Parkhurst Drive	0.30	5440	1.065	0.00	0.00	1.119	0.00	0.000	2964.200	0.99	0.180	0.061	0.00	0.000	0.055	0.00	0.000
4: Lee Circle/Transfer Station & Cox Street	0.86	6140	1.065	0.00	0.00	1.119	0.00	0.000	2964.200	3.20	0.582	0.061	0.00	0.000	0.055	0.00	0.000
5: Pierce Street/Zina Road & Cox Street	2.20	5180	1.065	0.00	0.00	1.119	0.00	0.000	2964.200	6.90	1.255	0.061	0.00	0.000	0.055	0.00	0.000
6: Cox Street & Old Stow Road & Old Bolton Road	12.67	8590	1.065	0.02	0.00	1.119	0.02	0.005	2964.200	65.86	11.987	0.061	0.00	0.000	0.055	0.00	0.000
7: Lincoln Street & Packard Street/Cox Street	14.97	9800	1.065	0.03	0.01	1.119	0.03	0.006	2964.200	88.79	16.159	0.061	0.00	0.000	0.055	0.00	0.000
15: East Main Street & Lincoln Street & Stevens Street	13.01	20190	1.065	0.06	0.01	1.119	0.06	0.011	2964.200	158.92	28.924	0.061	0.00	0.001	0.055	0.00	0.001
16: Lakeside Avenue & Lincoln Street	37.94	21870	1.065	0.18	0.03	1.119	0.19	0.035	2964.200	502.05	91.374	0.061	0.01	0.002	0.055	0.01	0.002
33: Vila do Porto Boulevard/Tower Street & Main Street	18.35	12870	1.065	0.05	0.01	1.119	0.05	0.010	2964.200	142.90	26.008	0.061	0.00	0.001	0.055	0.00	0.000
62: Woodrow Street/Mackin Street & Main Street	3.67	9750	1.065	0.01	0.00	1.119	0.01	0.001	2964.200	21.64	3.939	0.061	0.00	0.000	0.055	0.00	0.000
72: Broad Street & South Street	17.54	14400	1.065	0.05	0.01	1.119	0.06	0.011	2964.200	152.79	27.809	0.061	0.00	0.001	0.055	0.00	0.001
Route 62 at Washington Street and Felton Street (Rotary)	20.97	20130	1.065	0.09	0.02	1.119	0.10	0.018	2964.200	255.48	46.498	0.061	0.01	0.001	0.055	0.00	0.001
13: Washington Street & Route 85 Connector/Technology Drive	41.29	32770	1.065	0.29	0.05	1.119	0.31	0.056	2964.200	818.71	149.006	0.061	0.02	0.003	0.055	0.02	0.003
15: South Bolton Street & Granger Boulevard	17.83	21200	1.065	0.08	0.01	1.119	0.09	0.016	2964.200	228.71	41.625	0.061	0.00	0.001	0.055	0.00	0.001
Washington Street at Broad Street Rotary	8.86	21200	1.065	0.04	0.01	1.119	0.04	0.008	2964.200	113.71	20.695	0.061	0.00	0.000	0.055	0.00	0.000
Totals	hrs	430.410273		1.01	0.18		1.06	0.19		2812.72	511.92		0.06	0.01		0.05	0.01

B-P Hudson Transfer Station

2031 No-Build

K Factor	10%	factors peak hour vehicle volumes to daily volumes
Peak hr delay to daily Factor (8hr/day)	33%	Factors peak hour delay to daily delay
Daily delay to annual Factor (7 days/wk, 52 wk/yr)	100%	factors peak daily delay to annual delay

Intersection	Average Peak Delay time (s)	Traffic Volume (adt)	Idle MOVES VOC (g/hr)	VOC (lb/day)	VOC (tpy)	Idle MOVES NOX (g/hr)	NOX (lb/day)	NOX (tpy)	Idle MOVES CO2 (g/hr)	CO2 (lb/day)	CO2 (tpy)	Idle MOVES PM10 (g/hr)	PM10 (lb/day)	PM10 (tpy)	Idle MOVES PM2.5 (g/hr)	PM2.5 (lb/day)	PM2.5 (tpy)
1: Forest Avenue/Wilkins Street & Main Street	18.66	17400	0.7979	0.05	0.01	0.8102	0.05	0.010	2586.12	171.40	31.195	0.031	0.00	0.000	0.27994	0.02	0.003
2: Glendale Road/Cox Street & Main Street	14.29	13350	0.798	0.03	0.01	0.810	0.03	0.006	2586.120	100.69	18.325	0.031	0.00	0.000	0.280	0.01	0.002
3: Cox Street & Parkhurst Drive	0.25	5960	0.798	0.00	0.00	0.810	0.00	0.000	2586.120	0.79	0.144	0.031	0.00	0.000	0.280	0.00	0.000
4: Lee Circle/Transfer Station & Cox Street	0.86	6680	0.798	0.00	0.00	0.810	0.00	0.000	2586.120	3.02	0.550	0.031	0.00	0.000	0.280	0.00	0.000
5: Pierce Street/Zina Road & Cox Street	2.25	5690	0.798	0.00	0.00	0.810	0.00	0.000	2586.120	6.76	1.231	0.031	0.00	0.000	0.280	0.00	0.000
6: Cox Street & Old Stow Road & Old Bolton Road	14.74	9510	0.798	0.02	0.00	0.810	0.02	0.004	2586.120	74.00	13.468	0.031	0.00	0.000	0.280	0.01	0.001
7: Lincoln Street & Packard Street/Cox Street	18.09	10710	0.798	0.03	0.01	0.810	0.03	0.006	2586.120	102.26	18.611	0.031	0.00	0.000	0.280	0.01	0.002
15: East Main Street & Lincoln Street & Stevens Street	14.60	22420	0.798	0.05	0.01	0.810	0.05	0.010	2586.120	172.86	31.460	0.031	0.00	0.000	0.280	0.02	0.003
16: Lakeside Avenue & Lincoln Street	68.84	24950	0.798	0.28	0.05	0.810	0.28	0.052	2586.120	906.72	165.024	0.031	0.01	0.002	0.280	0.10	0.018
33: Vila do Porto Boulevard/Tower Street & Main Street	19.40	14210	0.798	0.04	0.01	0.810	0.05	0.008	2586.120	145.53	26.487	0.031	0.00	0.000	0.280	0.02	0.003
62: Woodrow Street/Mackin Street & Main Street	4.22	10650	0.798	0.01	0.00	0.810	0.01	0.001	2586.120	23.74	4.321	0.031	0.00	0.000	0.280	0.00	0.000
72: Broad Street & South Street	20.83	15590	0.798	0.05	0.01	0.810	0.05	0.010	2586.120	171.41	31.197	0.031	0.00	0.000	0.280	0.02	0.003
Route 62 at Washington Street and Felton Street (Rotary)	31.78	21820	0.798	0.11	0.02	0.810	0.11	0.021	2586.120	366.12	66.633	0.031	0.00	0.001	0.280	0.04	0.007
13: Washington Street & Route 85 Connector/Technology Drive	51.61	36610	0.798	0.31	0.06	0.810	0.31	0.057	2586.120	997.49	181.542	0.031	0.01	0.002	0.280	0.11	0.020
15: South Bolton Street & Granger Boulevard	19.13	23760	0.798	0.07	0.01	0.810	0.08	0.014	2586.120	239.95	43.671	0.031	0.00	0.001	0.280	0.03	0.005
Washington Street at Broad Street Rotary	10.15	24030	0.798	0.04	0.01	0.810	0.04	0.007	2586.120	128.74	23.430	0.031	0.00	0.000	0.280	0.01	0.003
Totals	hrs	633.4325792		1.11	0.20		1.13	0.21		3611.48	657.29		0.04	0.01		0.39	0.07

B-P Hudson Transfer Station

2031 Build

K Factor	10%	factors peak hour vehicle volumes to daily volumes
Peak hr delay to daily Factor (8hr/day)	33%	Factors peak hour delay to daily delay
Daily delay to annual Factor (7 days/wk, 52 wk/yr)	100%	factors peak daily delay to annual delay

Intersection	Average Peak Delay time (s)	Traffic Volume (adt)	Idle MOVES VOC (g/hr)	VOC (lb/day)	VOC (tpy)	Idle MOVES NOX (g/hr)	NOX (lb/day)	NOX (tpy)	Idle MOVES CO2 (g/hr)	CO2 (lb/day)	CO2 (tpy)	Idle MOVES PM10 (g/hr)	PM10 (lb/day)	PM10 (tpy)	Idle MOVES PM2.5 (g/hr)	PM2.5 (lb/day)	PM2.5 (tpy)
1: Forest Avenue/Wilkins Street & Main Street	18.81	17480	0.7979	0.05	0.01	0.8102	0.05	0.010	2586.12	173.55	31.587	0.031	0.00	0.000	0.27994	0.02	0.003
2: Glendale Road/Cox Street & Main Street	17.54	14070	0.798	0.04	0.01	0.810	0.04	0.007	2586.120	130.25	23.705	0.031	0.00	0.000	0.280	0.01	0.003
3: Cox Street & Parkhurst Drive	0.25	6680	0.798	0.00	0.00	0.810	0.00	0.000	2586.120	0.89	0.163	0.031	0.00	0.000	0.280	0.00	0.000
4: Lee Circle/Transfer Station & Cox Street	2.25	7580	0.798	0.00	0.00	0.810	0.00	0.001	2586.120	9.02	1.641	0.031	0.00	0.000	0.280	0.00	0.000
5: Pierce Street/Zina Road & Cox Street	2.31	5870	0.798	0.00	0.00	0.810	0.00	0.000	2586.120	7.14	1.300	0.031	0.00	0.000	0.280	0.00	0.000
6: Cox Street & Old Stow Road & Old Bolton Road	14.93	9550	0.798	0.02	0.00	0.810	0.02	0.004	2586.120	75.28	13.700	0.031	0.00	0.000	0.280	0.01	0.001
7: Lincoln Street & Packard Street/Cox Street	18.53	10750	0.798	0.03	0.01	0.810	0.03	0.006	2586.120	105.14	19.135	0.031	0.00	0.000	0.280	0.01	0.002
15: East Main Street & Lincoln Street & Stevens Street	14.65	22440	0.798	0.05	0.01	0.810	0.05	0.010	2586.120	173.58	31.591	0.031	0.00	0.000	0.280	0.02	0.003
16: Lakeside Avenue & Lincoln Street	74.76	24970	0.798	0.30	0.06	0.810	0.31	0.056	2586.120	985.53	179.366	0.031	0.01	0.002	0.280	0.11	0.019
33: Vila do Porto Boulevard/Tower Street & Main Street	19.85	14770	0.798	0.05	0.01	0.810	0.05	0.009	2586.120	154.77	28.168	0.031	0.00	0.000	0.280	0.02	0.003
62: Woodrow Street/Mackin Street & Main Street	4.49	11210	0.798	0.01	0.00	0.810	0.01	0.002	2586.120	26.55	4.831	0.031	0.00	0.000	0.280	0.00	0.001
72: Broad Street & South Street	24.91	15710	0.798	0.06	0.01	0.810	0.06	0.012	2586.120	206.62	37.604	0.031	0.00	0.000	0.280	0.02	0.004
Route 62 at Washington Street and Felton Street (Rotary)	34.29	21880	0.798	0.12	0.02	0.810	0.12	0.023	2586.120	396.03	72.077	0.031	0.00	0.001	0.280	0.04	0.008
13: Washington Street & Route 85 Connector/Technology Drive	52.32	36770	0.798	0.31	0.06	0.810	0.32	0.058	2586.120	1015.61	184.841	0.031	0.01	0.002	0.280	0.11	0.020
15: South Bolton Street & Granger Boulevard	19.33	23800	0.798	0.07	0.01	0.810	0.08	0.014	2586.120	242.93	44.213	0.031	0.00	0.001	0.280	0.03	0.005
Washington Street at Broad Street Rotary	10.80	24190	0.798	0.04	0.01	0.810	0.04	0.008	2586.120	137.90	25.097	0.031	0.00	0.000	0.280	0.01	0.003
Totals	hrs	673.647209		1.19	0.22		1.20	0.22		3840.76	699.02		0.05	0.01		0.42	0.08

B-P Hudson Transfer Station

2031 Build Trucks Only (wEF's)

K Factor	100%	factors peak hour vehicle volumes to daily volumes
Peak hr delay to daily Factor (8hr/day)	33%	Factors peak hour delay to daily delay
Daily delay to annual Factor (7 days/wk, 52 wk/yr)	100%	factors peak daily delay to annual delay

Intersection	Average Peak Delay time (s)	Traffic Volume (adt)	Idle MOVES VOC (g/hr)	VOC (lb/day)	VOC (tpy)	Idle MOVES NOX (g/hr)	NOX (lb/day)	NOX (tpy)	Idle MOVES CO2 (g/hr)	CO2 (lb/day)	CO2 (tpy)	Idle MOVES PM10 (g/hr)	PM10 (lb/day)	PM10 (tpy)	Idle MOVES PM2.5 (g/hr)	PM2.5 (lb/day)	PM2.5 (tpy)
1: Forest Avenue/Wilkins Street & Main Street	18.70	16	3.1888	0.00	0.0000	20.2424	0.00	0.000	5791.92	0.35	0.064	0.754	0.00	0.0000	0.693	0.00	0.0000
2: Glendale Road/Cox Street & Main Street	19.51	72	3.189	0.00	0.0002	20.242	0.01	0.001	5791.920	1.66	0.302	0.754	0.00	0.0000	0.693	0.00	0.0000
3: Cox Street & Parkhurst Drive	0.27	90	3.189	0.00	0.0000	20.242	0.00	0.000	5791.920	0.03	0.005	0.754	0.00	0.0000	0.693	0.00	0.0000
4: Lee Circle/Transfer Station & Cox Street	2.60	18	3.189	0.00	0.0000	20.242	0.00	0.000	5791.920	0.06	0.010	0.754	0.00	0.0000	0.693	0.00	0.0000
5: Pierce Street/Zina Road & Cox Street	2.35	18	3.189	0.00	0.0000	20.242	0.00	0.000	5791.920	0.05	0.009	0.754	0.00	0.0000	0.693	0.00	0.0000
6: Cox Street & Old Stow Road & Old Bolton Road	14.55	12	3.189	0.00	0.0000	20.242	0.00	0.000	5791.920	0.21	0.038	0.754	0.00	0.0000	0.693	0.00	0.0000
7: Lincoln Street & Packard Street/Cox Street	18.20	12	3.189	0.00	0.0000	20.242	0.00	0.000	5791.920	0.26	0.047	0.754	0.00	0.0000	0.693	0.00	0.0000
15: East Main Street & Lincoln Street & Stevens Street	14.63	6	3.189	0.00	0.0000	20.242	0.00	0.000	5791.920	0.10	0.019	0.754	0.00	0.0000	0.693	0.00	0.0000
16: Lakeside Avenue & Lincoln Street	76.25	41	3.189	0.00	0.0004	20.242	0.01	0.002	5791.920	3.70	0.673	0.754	0.00	0.0001	0.693	0.00	0.0001
33: Vila do Porto Boulevard/Tower Street & Main Street	19.83	56	3.189	0.00	0.0001	20.242	0.00	0.001	5791.920	1.31	0.239	0.754	0.00	0.0000	0.693	0.00	0.0000
62: Woodrow Street/Mackin Street & Main Street	4.77	56	3.189	0.00	0.0000	20.242	0.00	0.000	5791.920	0.32	0.057	0.754	0.00	0.0000	0.693	0.00	0.0000
72: Broad Street & South Street	26.83	33	3.189	0.00	0.0001	20.242	0.00	0.001	5791.920	1.05	0.191	0.754	0.00	0.0000	0.693	0.00	0.0000
Route 62 at Washington Street and Felton Street (Rotary)	36.11	20	3.189	0.00	0.0001	20.242	0.00	0.001	5791.920	0.85	0.155	0.754	0.00	0.0000	0.693	0.00	0.0000
13: Washington Street & Route 85 Connector/Technology Drive	47.41	36	3.189	0.00	0.0002	20.242	0.01	0.001	5791.920	2.02	0.367	0.754	0.00	0.0000	0.693	0.00	0.0000
15: South Bolton Street & Granger Boulevard	19.47	8	3.189	0.00	0.0000	20.242	0.00	0.000	5791.920	0.18	0.034	0.754	0.00	0.0000	0.693	0.00	0.0000
Washington Street at Broad Street Rotary	10.06	36	3.189	0.00	0.0000	20.242	0.00	0.000	5791.920	0.43	0.078	0.754	0.00	0.0000	0.693	0.00	0.0000
	hrs	0.98466076		0.01	0.00126		0.04	0.0080		12.57	2.29		0.00	0.0003		0.00	0.0003

Appendix C

Wetlands

Photo 1: View of Wetland A looking east towards police station.

Photo 2: Wetland A outlet channel (draining to left), looking towards existing transfer station

Photo 3: Eastern limits of Wetland Series B, looking west.

Photo 4: Wetland B interior looking south.

Photo 5: Wetland B interior with pit/mound topography and pockets of standing water

Photo 6: Wetland B wetland data plot location.

Photo 7: Wetland B Data plot soil profile

Photo 8: Wetland B upland data plot location.

Photo 9: Wetland B upland data plot soil profile

Photo 10: Wetland C. at eastern limits looking north towards Assabet River.

Photo 11: Wetland C western limits of delineation.

Photo 12: Assabet River riverbank.

Wetland Determination Data Forms

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region** See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R	***OMB Control #: 0710-0024, Exp: 11/30/2024*** ***Requirement Control Symbol EXEMPT:*** ***(Authority: AR 335-15, paragraph 5-2a)***

Project/Site: Hudson DPW Transfer Station City/County: Hudson Sampling Date: 1/18/23

Applicant/Owner: B-P/Town of Hudson State: MA Sampling Point: B-Upland

Investigator(s): Alyssa Jacobs Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): none Slope %:

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.39897 Long: -71.53818 Datum:

Soil Map Unit Name: Merrimac fine sandy loam NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes	No x	**within a Wetland?** **Yes** **No** X
Wetland Hydrology Present?	Yes	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Dataplot near B-20

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No x	Depth (inches):
Water Table Present?	Yes	No x	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No x	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: B-Upland

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	5	No	FAC
2. *Pinus strobus*	30	Yes	FACU
3. *Quercus rubra*	20	Yes	FACU
4.			
5.			
6.			
7.			
	55	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Pinus strobus*	15	Yes	FACU
2. *Acer rubrum*	1	No	FAC
3.	0		
4.	0		
5.			
6.			
7.			
	16	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Pinus strobus*	1	No	FACU
2. *Lycopodium clavatum*	3	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	4	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	9	x 3 =	27
FACU species	66	x 4 =	264
UPL species	0	x 5 =	0
Column Totals:	75 (A)		291 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: B-Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 2/1	100					Loamy/Clayey	
9-18	10YR 3/3	100					Loamy/Clayey	
18-24	7.5YR 3/4	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Mesic Spodic (A17) **(MLRA 144A, 145, 149B)**
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)
- ___ Red Parent Material (F21) **(MLRA 145)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Red Parent Material (F21) **(outside MLRA 145)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** x

Remarks:

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region** See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R	***OMB Control #: 0710-0024, Exp: 11/30/2024*** ***Requirement Control Symbol EXEMPT:*** ***(Authority: AR 335-15, paragraph 5-2a)***

Project/Site: Hudson DPW Transfer Station City/County: Hudson Sampling Date: 1/18/23

Applicant/Owner: B-P/Town of Hudson State: MA Sampling Point: B\-Wet

Investigator(s): Alyssa Jacobs Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): none Slope %:

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.39877 Long: -71.5382 Datum:

Soil Map Unit Name: Freetown muck NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No	**within a Wetland?** **Yes** X **No**
Wetland Hydrology Present?	Yes X	No	If yes, optional Wetland Site ID: Wetland B

Remarks: (Explain alternative procedures here or in a separate report.)
Dataplot near B-20

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- x Surface Water (A1)
- High Water Table (A2)
- X Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- x Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No x	Depth (inches):
Water Table Present?	Yes x	No	Depth (inches): 18
Saturation Present? (includes capillary fringe)	Yes x	No	Depth (inches): 7

Wetland Hydrology Present? **Yes** X **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: B\-Wet

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	Yes	FAC
2. *Pinus strobus*	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	50	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Pinus strobus*	25	Yes	FACU
2. *Vaccinium corymbosum*	10	Yes	FACW
3.	0		
4.	0		
5.			
6.			
7.			
	35	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Osmunda cinnamomea*	40	Yes	FACW
2. *Lycopodium clavatum*	5	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	35	x 3 =	105
FACU species	45	x 4 =	180
UPL species	0	x 5 =	0
Column Totals:	130 (A)		385 (B)

Prevalence Index = B/A = 2.96

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: B\-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					Muck	
5-22	10YR 2/2	100					Sandy	
22-24	7.5YR 2.5/3	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- x Mesic Spodic (A17) **(MLRA 144A, 145, 149B)**
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)
- ___ Red Parent Material (F21) **(MLRA 145)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Red Parent Material (F21) **(outside MLRA 145)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region** See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R	***OMB Control #: 0710-0024, Exp: 11/30/2024*** ***Requirement Control Symbol EXEMPT:*** ***(Authority: AR 335-15, paragraph 5-2a)***

Project/Site: Hudson DPW Transfer Station City/County: Hudson Sampling Date: 1/22/23

Applicant/Owner: B-P/Town of Hudson State: MA Sampling Point: C-Up

Investigator(s): Alyssa Jacobs Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): none Slope %:

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.40278 Long: -71.53668 Datum:

Soil Map Unit Name: Deerfield loamy sand, 0-3% slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes	No X	**within a Wetland?** **Yes** **No** X
Wetland Hydrology Present?	Yes	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No x	Depth (inches):
Water Table Present?	Yes	No x	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No x	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: C-Up

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	50	Yes	FAC
2. *Quercus alba*	10	No	FACU
3.			
4.			
5.			
6.			
7.			
	60	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Pinus strobus*	15	Yes	FACU
2. *Ilex verticillata*	1	No	FACW
3. *Corylus americana*	5	Yes	FACU
4. *Ostrya virginiana*	1	No	FACU
5.			
6.			
7.			
	22	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Pinus strobus*	5	Yes	FACU
2. *Dennstaedtia punctilobula*	5	Yes	UPL
3. *Osmunda cinnamomea*	5	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	15	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	6	x 2 =	12
FAC species	50	x 3 =	150
FACU species	36	x 4 =	144
UPL species	5	x 5 =	25
Column Totals:	97 (A)		331 (B)

Prevalence Index = B/A = 3.41

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: C-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 2/2	100					Loamy/Clayey	
14-22	10YR 4/6	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Mesic Spodic (A17) **(MLRA 144A, 145, 149B)**
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)
- ___ Red Parent Material (F21) **(MLRA 145)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Red Parent Material (F21) **(outside MLRA 145)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region
See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Hudson DPW Transfer Station City/County: Hudson Sampling Date: 1/22/23

Applicant/Owner: B-P/Town of Hudson State: MA Sampling Point: C-Wet

Investigator(s): Alyssa Jacobs Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): none Slope %:

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.40251 Long: -71.53761 Datum:

Soil Map Unit Name: Freetown muck NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No	**within a Wetland?** **Yes** X **No**
Wetland Hydrology Present?	Yes X	No	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No x	Depth (inches):
Water Table Present?	Yes x	No	Depth (inches): 12
Saturation Present? (includes capillary fringe)	Yes x	No	Depth (inches): 10

Wetland Hydrology Present? **Yes** X **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: C-Wet

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	50	Yes	FAC
2.	0		
3.			
4.			
5.			
6.			
7.			
	50	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Ilex verticillata*	10	No	FACW
2. *Corylus americana*	50	Yes	FACU
3.	0		
4.	0		
5.			
6.			
7.			
	60	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Thelypteris palustris*	20	Yes	FACW
2.	0		
3.	5	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	25	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	35	x 2 =	70
FAC species	50	x 3 =	150
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	135 (A)		420 (B)

Prevalence Index = B/A = 3.11

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: C-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/1	100					Muck	
12-22	10YR 4/4	100					Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Mesic Spodic (A17) **(MLRA 144A, 145, 149B)**
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)
- ___ Red Parent Material (F21) **(MLRA 145)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- X 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Red Parent Material (F21) **(outside MLRA 145)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Appendix D

Transportation

APPENDIX D - List of Attachments

Attachment 1 - SITE PLAN
Attachment 2 - TURNING MOVEMENT COUNTS
Attachment 3 - AUTOMATIC TRAFFIC RECODER (ATR)
Attachment 4 - SPOT SPEED MEASUREMENTS
Attachment 5 - TRAFFIC ADJUSTMENTS
Attachment 6 - MOTOR VEHICLE CRASH DATA
Attachment 7 - GROWTH RATE CALCULATIONS
Attachment 8 - BACKGROUND DEVELOPMENT
Attachment 9 - TRIP GENERATION
Attachment 10 - SEMI-TRAILER ROUTE ANALYSIS
Attachment 11 - TRIP DISTRIBUTION
Attachment 12 - CAPACITY ANALYSIS

Attachment 1 - SITE PLAN

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FILE: P:\3800s\3984.01\Graphics\Final\CAD\Work\V2024227 Conceptual4.wor.dwg
DATE: 2/27/24
USER: dtrfw
PLOT DATE: 2/27/24 dtrfw

XREFS: P:\3800s\3984.01\Graphics\Final\CAD\Work\V20240227 Land Lease Area Worked by BP3\xconcurrents_Page_1.dwf
P:\3800s\3984.01\Graphics\Final\CAD\Work\V20240227 Conceptual4.dwg
P:\3800s\3984.01\Graphics\Final\CAD\Work\BP Proposed Layout.dwg

MAP 13, LOT 57
N/F LANDS OF
RCI HUDSON INC &
C/O WASTE
MANAGEMENT
BK. 19853, PG. 391

MAP 13, LOT 67
N/F LANDS OF
THOMAS E. ZINA
BK. 27756, PG. 173

MAP 13, LOT 67
N/F LANDS OF
THOMAS E. ZINA
BK. 27756, PG. 173

ASSABET
RIVER

MAP 13, LOT 66
N/F LANDS OF
TOWN OF HUDSON
BK. 5487, PG. 598

MAP 22, LOT 2
N/F LANDS OF
RIVERSIDE GUN CLUB OF
HUDSON, MASSACHUSETTS INC.
BK. 10960, PG. 308

MAP 22, LOT 2
N/F LANDS OF
RIVERSIDE GUN CLUB OF
HUDSON, MASSACHUSETTS INC.
BK. 10960, PG. 308

PROPOSED TRANSFER
STATION & RECYCLING
BUILDING

MAP 22, LOT 2
N/F LANDS OF
RIVERSIDE GUN CLUB OF
HUDSON, MASSACHUSETTS INC.
BK. 10960, PG. 308

MAP 22, LOT 1
N/F LANDS OF
TOWN OF HUDSON

MAP 21, LOT 71
N/F LANDS OF
TOWN OF HUDSON
B. 31277, PG. 358

MAP 22, LOT 1
N/F LANDS OF
TOWN OF HUDSON
BK. 10437, PG. 338

COX STREET
(PUBLIC - 50' WIDE)
NO. REF
(DOING RESEARCH)

SEE INSET

N16°00'18"W
397.40'

N73°59'42"E
461.20'

N87°20'36"E

S69°04'01"E

S51°53'53"E
206.1'

R=545.79'
Δ=044°18'00"
L=421.99'
CHB=S29°44'45"E
CHD=411.56'

S07°35'55"E
156.81'

R=442.09'
Δ=037°14'20"
L=287.35'
CHB=S23°48'53"E
CHD=282.37'

S39°50'25"E
78.00'

R=1136.32'
Δ=009°09'28"
L=181.61'
CHB=S31°22'19"E
CHD=181.41'

N07°01'23"E
225.27'

N82°47'58"E
180.39'

N13°10'04"W
6.52'

SANBORN HEAD

GRAPHICAL SCALE
150' 75' 0' 150' 300'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: D. LONG
DESIGNED BY: A. WILKER
REVIEWED BY: S. WRIGHT
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: FEBRUARY 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

PROPOSED CONDITIONS SITE PLAN

PROJECT NUMBER: 3984.01

FIGURE NUMBER: 1

Attachment 2 - TURNING MOVEMENT COUNTS

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 1

Groups Printed- Cars - Trucks

	Old Bolton Rd From North			Old Stow Rd From East			Cox St From South			Old Stow Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	3	26	8	2	26	2	22	16	0	4	32	35	176
07:15 AM	4	17	5	1	24	1	29	20	2	2	28	39	172
07:30 AM	1	24	7	0	27	1	22	19	2	1	40	57	201
07:45 AM	4	32	8	5	34	0	14	21	0	3	46	38	205
Total	12	99	28	8	111	4	87	76	4	10	146	169	754
08:00 AM	2	24	4	2	30	2	13	13	2	3	34	44	173
08:15 AM	1	35	7	3	24	1	16	12	2	5	43	38	187
08:30 AM	3	18	3	3	22	0	23	17	4	7	33	43	176
08:45 AM	0	14	6	0	31	0	14	14	1	3	28	14	125
Total	6	91	20	8	107	3	66	56	9	18	138	139	661
Grand Total	18	190	48	16	218	7	153	132	13	28	284	308	1415
Apprch %	7	74.2	18.8	6.6	90.5	2.9	51.3	44.3	4.4	4.5	45.8	49.7	
Total %	1.3	13.4	3.4	1.1	15.4	0.5	10.8	9.3	0.9	2	20.1	21.8	
Cars	15	187	47	16	215	5	145	129	13	27	283	287	1369
% Cars	83.3	98.4	97.9	100	98.6	71.4	94.8	97.7	100	96.4	99.6	93.2	96.7
Trucks	3	3	1	0	3	2	8	3	0	1	1	21	46
% Trucks	16.7	1.6	2.1	0	1.4	28.6	5.2	2.3	0	3.6	0.4	6.8	3.3

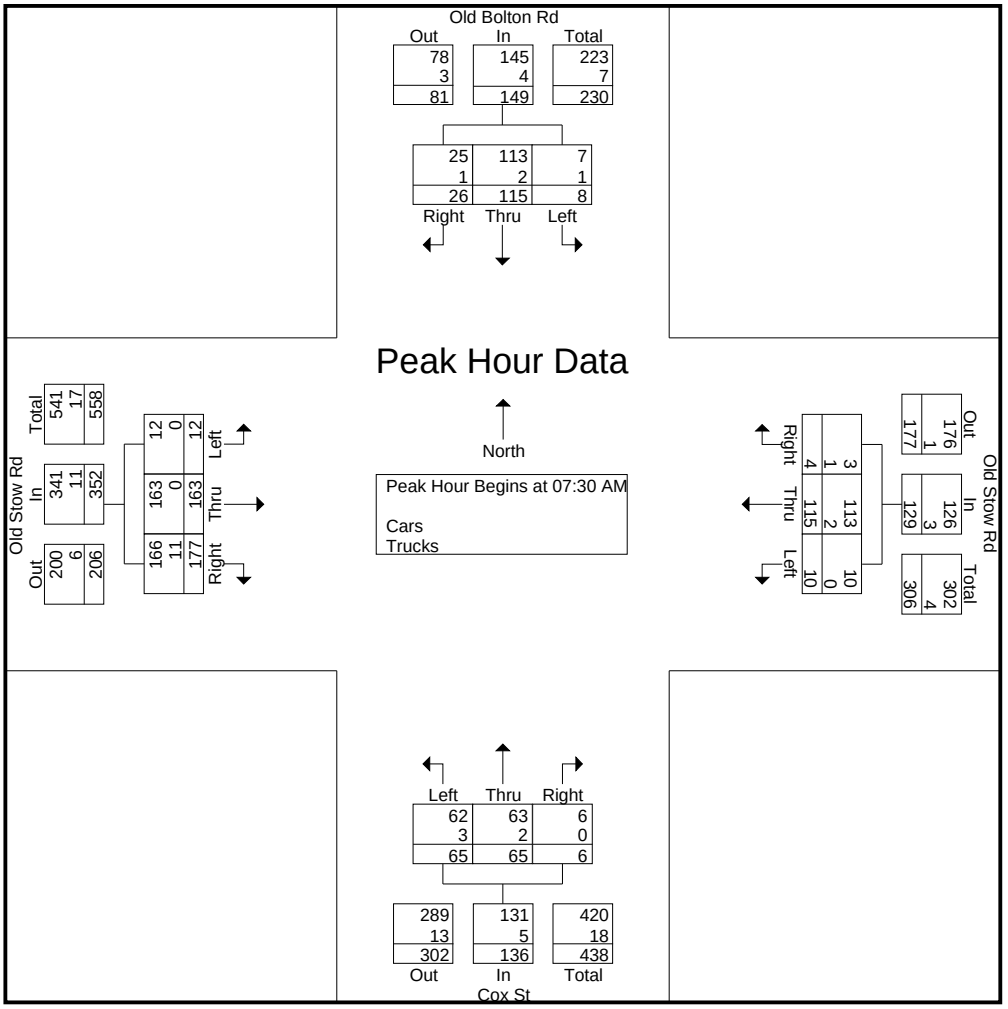
	Old Bolton Rd From North				Old Stow Rd From East				Cox St From South				Old Stow Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	1	24	7	32	0	27	1	28	**22**	19	**2**	**43**	1	40	**57**	**98**	201
07:45 AM	**4**	32	**8**	**44**	**5**	**34**	0	**39**	14	**21**	0	35	3	**46**	38	87	**205**
08:00 AM	2	24	4	30	2	30	**2**	34	13	13	2	28	3	34	44	81	173
08:15 AM	1	**35**	7	43	3	24	1	28	16	12	2	30	**5**	43	38	86	187
Total Volume	8	115	26	149	10	115	4	129	65	65	6	136	12	163	177	352	766
% App. Total	5.4	77.2	17.4		7.8	89.1	3.1		47.8	47.8	4.4		3.4	46.3	50.3		
PHF	.500	.821	.813	.847	.500	.846	.500	.827	.739	.774	.750	.791	.600	.886	.776	.898	.934
Cars	7	113	25	145	10	113	3	126	62	63	6	131	12	163	166	341	743
% Cars	87.5	98.3	96.2	97.3	100	98.3	75.0	97.7	95.4	96.9	100	96.3	100	100	93.8	96.9	97.0
Trucks	1	2	1	4	0	2	1	3	3	2	0	5	0	0	11	11	23
% Trucks	12.5	1.7	3.8	2.7	0	1.7	25.0	2.3	4.6	3.1	0	3.7	0	0	6.2	3.1	3.0

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

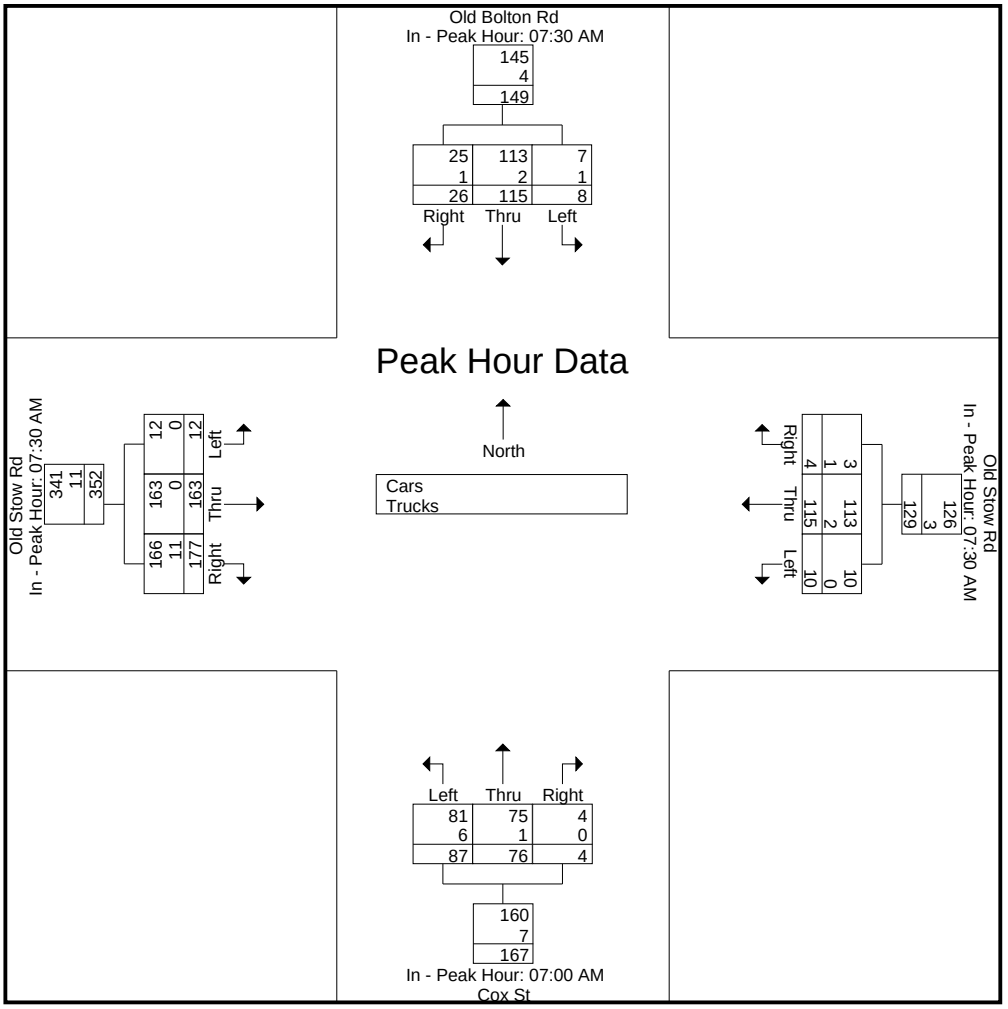
	07:30 AM				07:30 AM				07:00 AM				07:30 AM			
+0 mins.	1	24	7	32	0	27	1	28	22	16	0	38	1	40	**57**	**98**
+15 mins.	**4**	32	**8**	**44**	**5**	**34**	0	**39**	**29**	20	**2**	**51**	3	**46**	38	87
+30 mins.	2	24	4	30	2	30	**2**	34	22	19	2	43	3	34	44	81
+45 mins.	1	**35**	7	43	3	24	1	28	14	**21**	0	35	**5**	43	38	86
Total Volume	8	115	26	149	10	115	4	129	87	76	4	167	12	163	177	352
% App. Total	5.4	77.2	17.4		7.8	89.1	3.1		52.1	45.5	2.4		3.4	46.3	50.3	
PHF	.500	.821	.813	.847	.500	.846	.500	.827	.750	.905	.500	.819	.600	.886	.776	.898
Cars	7	113	25	145	10	113	3	126	81	75	4	160	12	163	166	341
% Cars	87.5	98.3	96.2	97.3	100	98.3	75	97.7	93.1	98.7	100	95.8	100	100	93.8	96.9
Trucks	1	2	1	4	0	2	1	3	6	1	0	7	0	0	11	11
% Trucks	12.5	1.7	3.8	2.7	0	1.7	25	2.3	6.9	1.3	0	4.2	0	0	6.2	3.1

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023

Groups Printed- Cars

	Old Bolton Rd From North			Old Stow Rd From East			Cox St From South			Old Stow Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	3	26	8	2	26	1	21	16	0	3	32	34	172
07:15 AM	3	16	5	1	24	1	27	20	2	2	28	36	165
07:30 AM	1	23	6	0	27	1	20	18	2	1	40	49	188
07:45 AM	4	32	8	5	33	0	13	21	0	3	46	37	202
Total	11	97	27	8	110	3	81	75	4	9	146	156	727
08:00 AM	1	23	4	2	29	1	13	13	2	3	34	44	169
08:15 AM	1	35	7	3	24	1	16	11	2	5	43	36	184
08:30 AM	2	18	3	3	22	0	22	17	4	7	33	37	168
08:45 AM	0	14	6	0	30	0	13	13	1	3	27	14	121
Total	4	90	20	8	105	2	64	54	9	18	137	131	642
Grand Total	15	187	47	16	215	5	145	129	13	27	283	287	1369
Apprch %	6	75.1	18.9	6.8	91.1	2.1	50.5	44.9	4.5	4.5	47.4	48.1	
Total %	1.1	13.7	3.4	1.2	15.7	0.4	10.6	9.4	0.9	2	20.7	21	

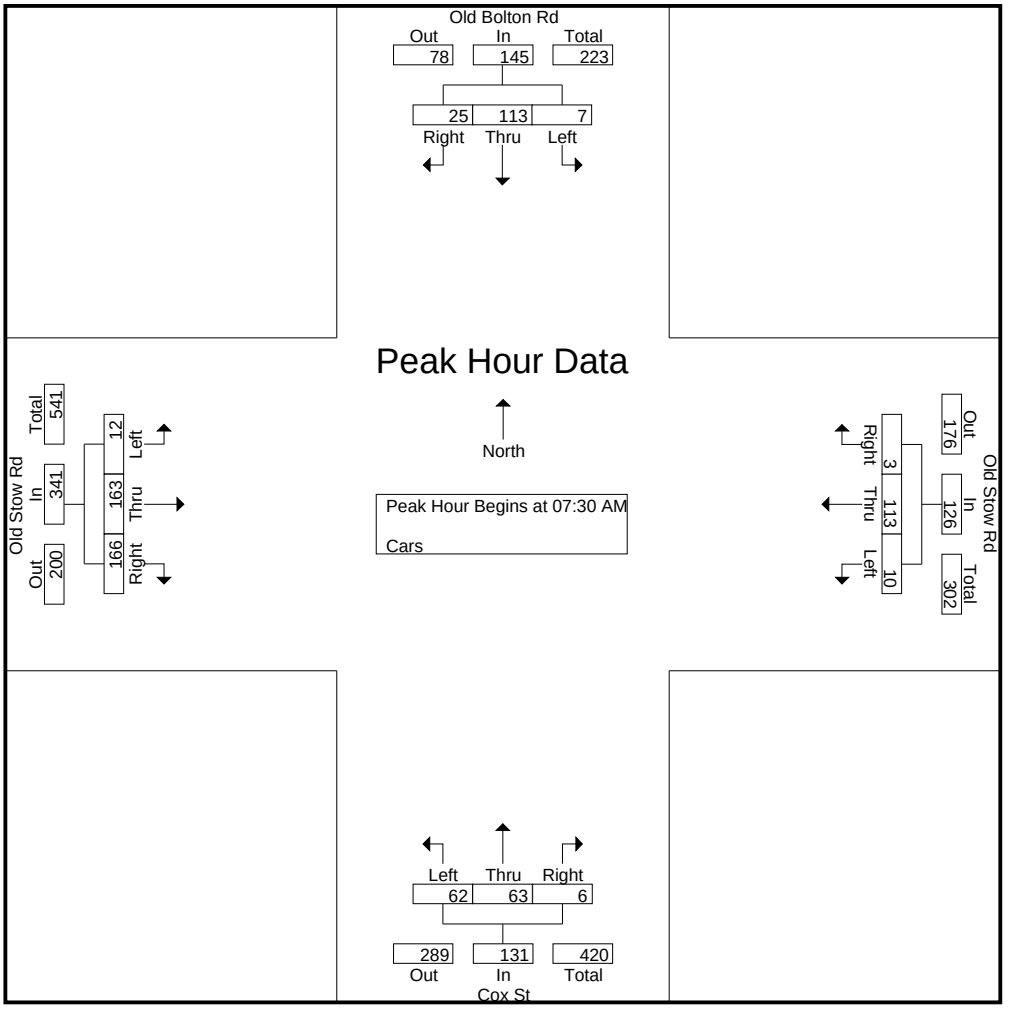
	Old Bolton Rd From North				Old Stow Rd From East				Cox St From South				Old Stow Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	1	23	6	30	0	27	**1**	28	**20**	18	**2**	**40**	1	40	**49**	**90**	188
07:45 AM	**4**	32	**8**	**44**	**5**	**33**	0	**38**	13	**21**	0	34	3	**46**	37	86	**202**
08:00 AM	1	23	4	28	2	29	1	32	13	13	2	28	3	34	44	81	169
08:15 AM	1	**35**	7	43	3	24	1	28	16	11	2	29	**5**	43	36	84	184
Total Volume	7	113	25	145	10	113	3	126	62	63	6	131	12	163	166	341	743
% App. Total	4.8	77.9	17.2		7.9	89.7	2.4		47.3	48.1	4.6		3.5	47.8	48.7		
PHF	.438	.807	.781	.824	.500	.856	.750	.829	.775	.750	.750	.819	.600	.886	.847	.947	.920

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

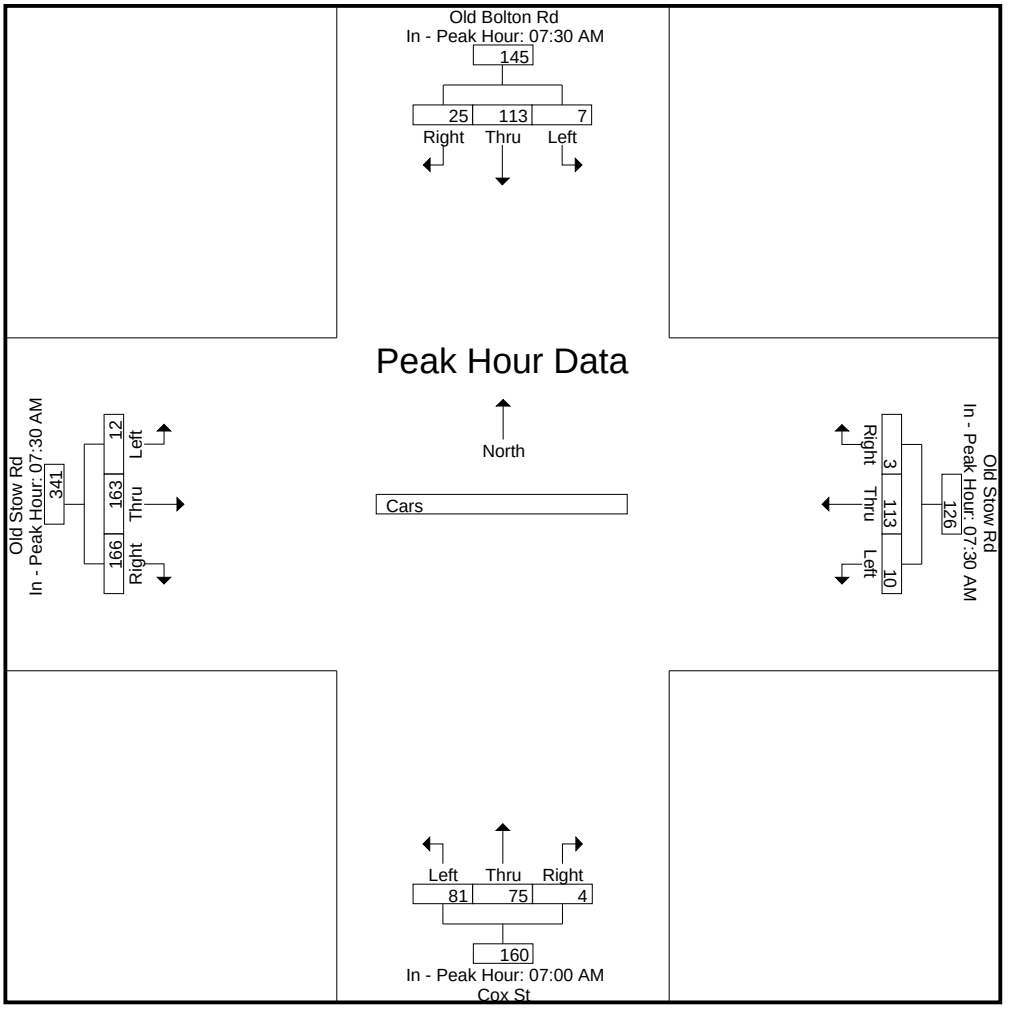
	07:30 AM				07:30 AM				07:00 AM				07:30 AM			
+0 mins.	1	23	6	30	0	27	**1**	28	21	16	0	37	1	40	**49**	**90**
+15 mins.	**4**	32	**8**	**44**	**5**	**33**	0	**38**	**27**	20	**2**	**49**	3	**46**	37	86
+30 mins.	1	23	4	28	2	29	1	32	20	18	2	40	3	34	44	81
+45 mins.	1	**35**	7	43	3	24	1	28	13	**21**	0	34	**5**	43	36	84
Total Volume	7	113	25	145	10	113	3	126	81	75	4	160	12	163	166	341
% App. Total	4.8	77.9	17.2		7.9	89.7	2.4		50.6	46.9	2.5		3.5	47.8	48.7	
PHF	.438	.807	.781	.824	.500	.856	.750	.829	.750	.893	.500	.816	.600	.886	.847	.947

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023

Groups Printed- Trucks

	Old Bolton Rd From North			Old Stow Rd From East			Cox St From South			Old Stow Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	0	1	1	0	0	1	0	1	4
07:15 AM	1	1	0	0	0	0	2	0	0	0	0	3	7
07:30 AM	0	1	1	0	0	0	2	1	0	0	0	8	13
07:45 AM	0	0	0	0	1	0	1	0	0	0	0	1	3
Total	1	2	1	0	1	1	6	1	0	1	0	13	27
08:00 AM	1	1	0	0	1	1	0	0	0	0	0	0	4
08:15 AM	0	0	0	0	0	0	0	1	0	0	0	2	3
08:30 AM	1	0	0	0	0	0	1	0	0	0	0	6	8
08:45 AM	0	0	0	0	1	0	1	1	0	0	1	0	4
Total	2	1	0	0	2	1	2	2	0	0	1	8	19
Grand Total	3	3	1	0	3	2	8	3	0	1	1	21	46
Apprch %	42.9	42.9	14.3	0	60	40	72.7	27.3	0	4.3	4.3	91.3	
Total %	6.5	6.5	2.2	0	6.5	4.3	17.4	6.5	0	2.2	2.2	45.7	

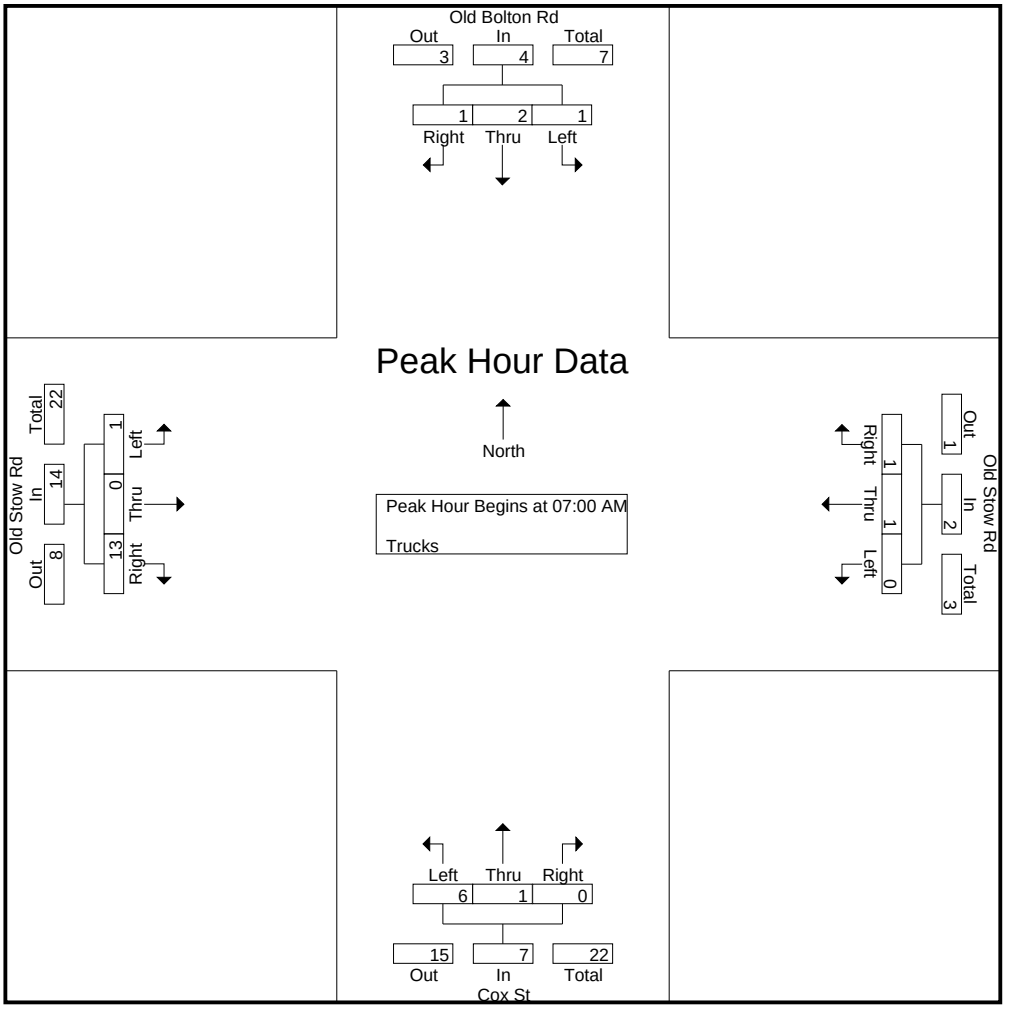
	Old Bolton Rd From North				Old Stow Rd From East				Cox St From South				Old Stow Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	**1**	**1**	1	0	0	1	**1**	0	1	2	4
07:15 AM	**1**	**1**	0	**2**	0	0	0	0	**2**	0	0	2	0	0	3	3	7
07:30 AM	0	1	**1**	2	0	0	0	0	2	**1**	0	**3**	0	0	**8**	**8**	**13**
07:45 AM	0	0	0	0	0	**1**	0	1	1	0	0	1	0	0	1	1	3
Total Volume	1	2	1	4	0	1	1	2	6	1	0	7	1	0	13	14	27
% App. Total	25	50	25		0	50	50		85.7	14.3	0		7.1	0	92.9		
PHF	.250	.500	.250	.500	.000	.250	.250	.500	.750	.250	.000	.583	.250	.000	.406	.438	.519

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

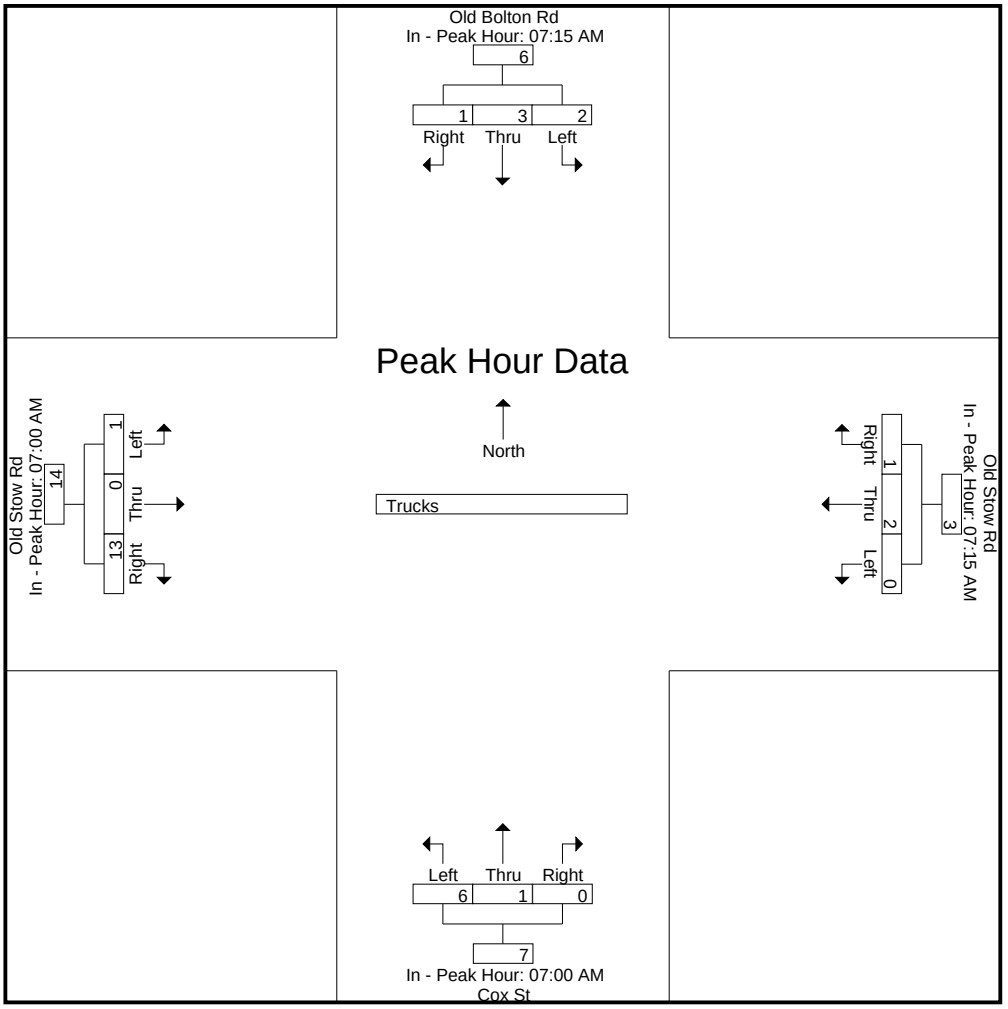
	07:15 AM				07:15 AM				07:00 AM				07:00 AM			
+0 mins.	**1**	**1**	0	**2**	0	0	0	0	1	0	0	1	**1**	0	1	2
+15 mins.	0	1	**1**	2	0	0	0	0	**2**	0	0	2	0	0	3	3
+30 mins.	0	0	0	0	0	**1**	0	1	2	**1**	0	**3**	0	0	**8**	**8**
+45 mins.	1	1	0	2	0	1	**1**	**2**	1	0	0	1	0	0	1	1
Total Volume	2	3	1	6	0	2	1	3	6	1	0	7	1	0	13	14
% App. Total	33.3	50	16.7		0	66.7	33.3		85.7	14.3	0		7.1	0	92.9	
PHF	.500	.750	.250	.750	.000	.500	.250	.375	.750	.250	.000	.583	.250	.000	.406	.438

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023

Groups Printed- Bikes Peds

	Old Bolton Rd From North				Old Stow Rd From East				Cox St From South				Old Stow Rd From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	0	2
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	0	2
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

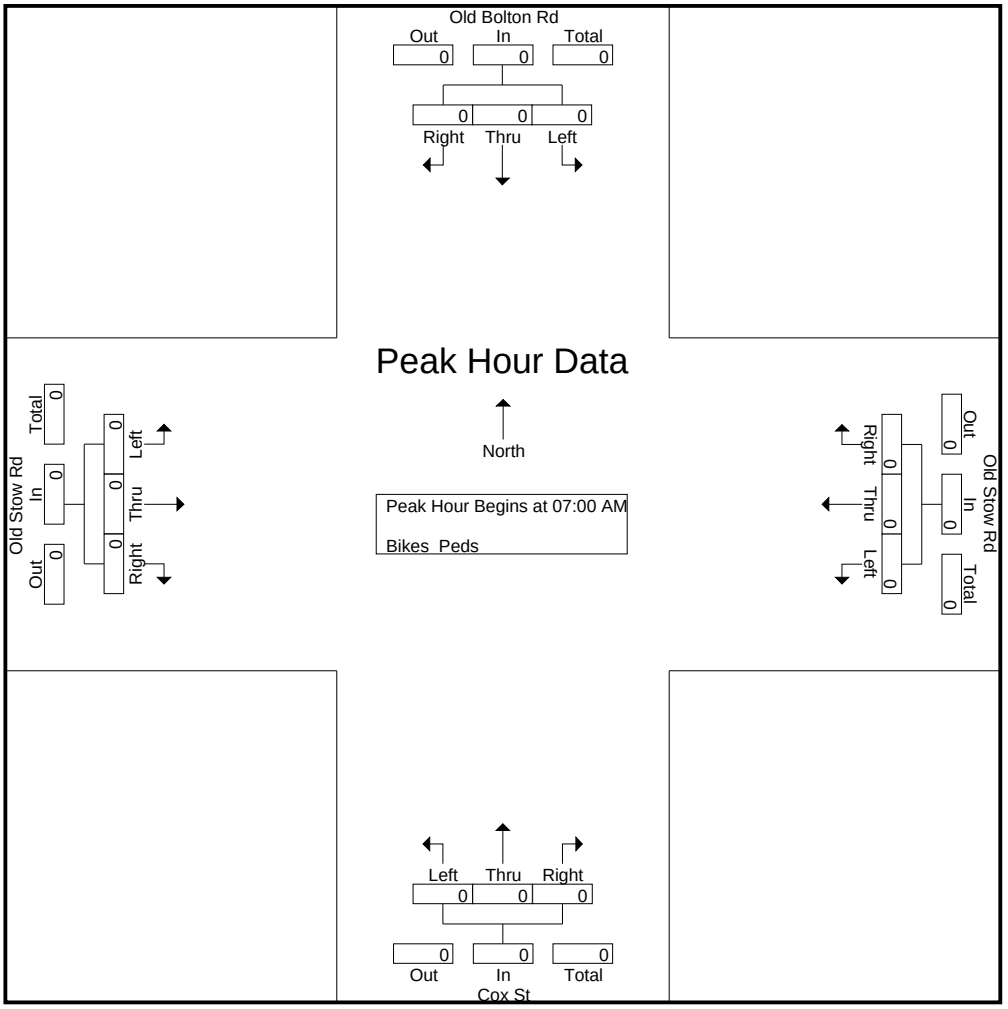
	Old Bolton Rd From North				Old Stow Rd From East				Cox St From South				Old Stow Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

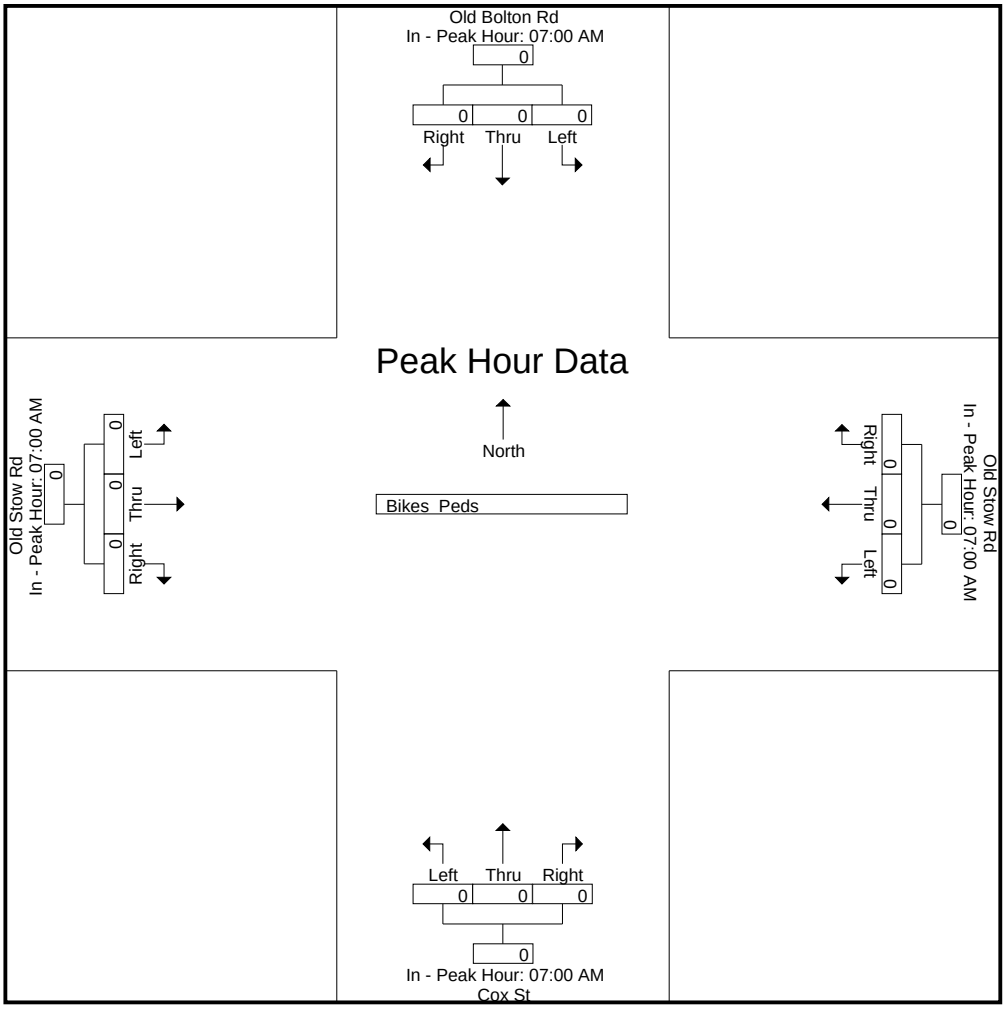
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 1

Groups Printed- Cars - Trucks

	Old Bolton Rd From North			Old Stow Rd From East			Cox St From South			Old Stow Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	2	20	7	0	62	1	34	41	1	9	25	24	226
04:15 PM	1	22	4	6	59	4	39	24	4	4	27	20	214
04:30 PM	1	15	3	3	50	2	36	22	4	10	33	27	206
04:45 PM	3	13	5	3	51	1	43	20	3	7	26	22	197
Total	7	70	19	12	222	8	152	107	12	30	111	93	843
05:00 PM	4	17	6	3	53	3	31	23	3	9	30	28	210
05:15 PM	0	8	4	1	55	3	28	19	1	6	42	15	182
05:30 PM	0	8	6	4	54	1	37	28	6	10	32	26	212
05:45 PM	0	8	8	6	46	0	35	24	2	4	28	12	173
Total	4	41	24	14	208	7	131	94	12	29	132	81	777
Grand Total	11	111	43	26	430	15	283	201	24	59	243	174	1620
Apprch %	6.7	67.3	26.1	5.5	91.3	3.2	55.7	39.6	4.7	12.4	51.1	36.6	
Total %	0.7	6.9	2.7	1.6	26.5	0.9	17.5	12.4	1.5	3.6	15	10.7	
Cars	11	111	43	26	429	15	281	200	24	59	242	173	1614
% Cars	100	100	100	100	99.8	100	99.3	99.5	100	100	99.6	99.4	99.6
Trucks	0	0	0	0	1	0	2	1	0	0	1	1	6
% Trucks	0	0	0	0	0.2	0	0.7	0.5	0	0	0.4	0.6	0.4

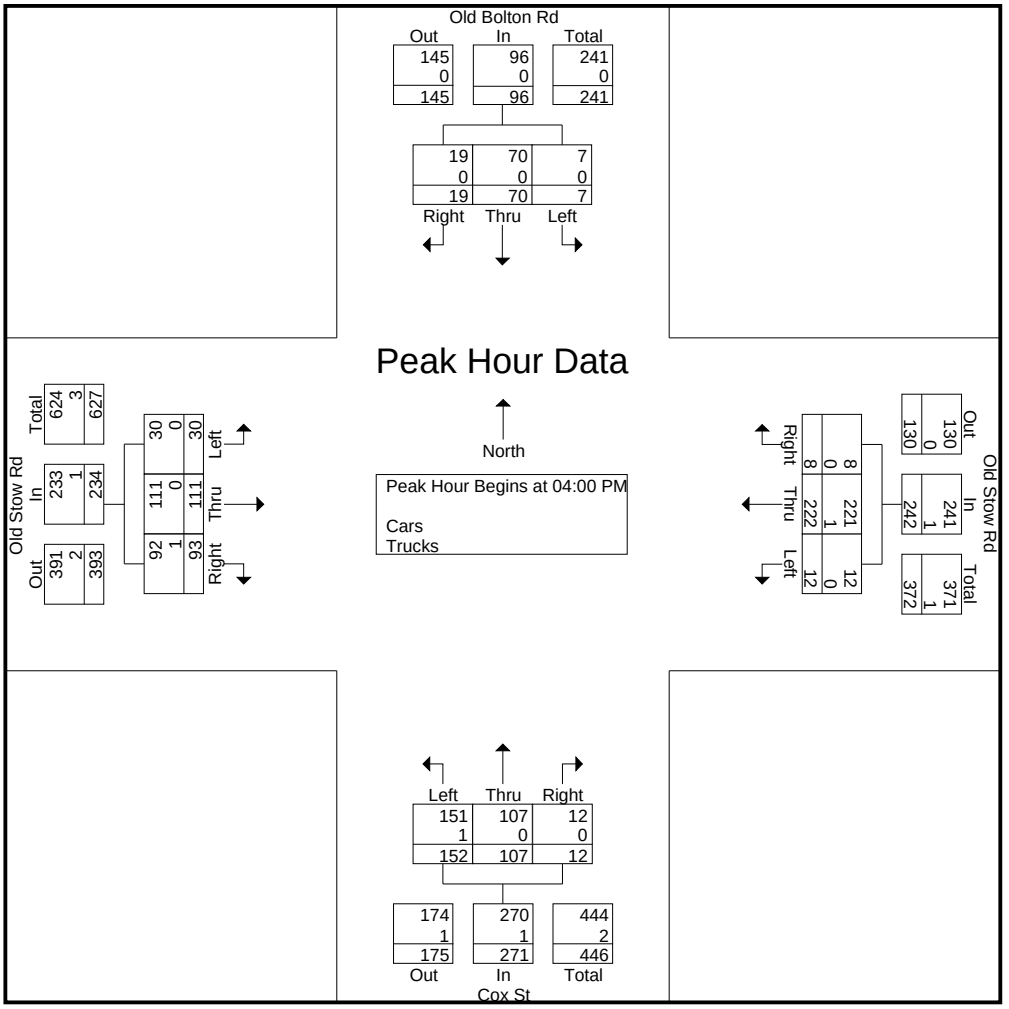
	Old Bolton Rd From North				Old Stow Rd From East				Cox St From South				Old Stow Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	2	20	**7**	**29**	0	**62**	1	63	34	**41**	1	**76**	9	25	24	58	**226**
04:15 PM	1	**22**	4	27	**6**	59	**4**	**69**	39	24	**4**	67	4	27	20	51	214
04:30 PM	1	15	3	19	3	50	2	55	36	22	4	62	**10**	**33**	**27**	**70**	206
04:45 PM	**3**	13	5	21	3	51	1	55	**43**	20	3	66	7	26	22	55	197
Total Volume	7	70	19	96	12	222	8	242	152	107	12	271	30	111	93	234	843
% App. Total	7.3	72.9	19.8		5	91.7	3.3		56.1	39.5	4.4		12.8	47.4	39.7		
PHF	.583	.795	.679	.828	.500	.895	.500	.877	.884	.652	.750	.891	.750	.841	.861	.836	.933
Cars	7	70	19	96	12	221	8	241	151	107	12	270	30	111	92	233	840
% Cars	100	100	100	100	100	99.5	100	99.6	99.3	100	100	99.6	100	100	98.9	99.6	99.6
Trucks	0	0	0	0	0	1	0	1	1	0	0	1	0	0	1	1	3
% Trucks	0	0	0	0	0	0.5	0	0.4	0.7	0	0	0.4	0	0	1.1	0.4	0.4

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

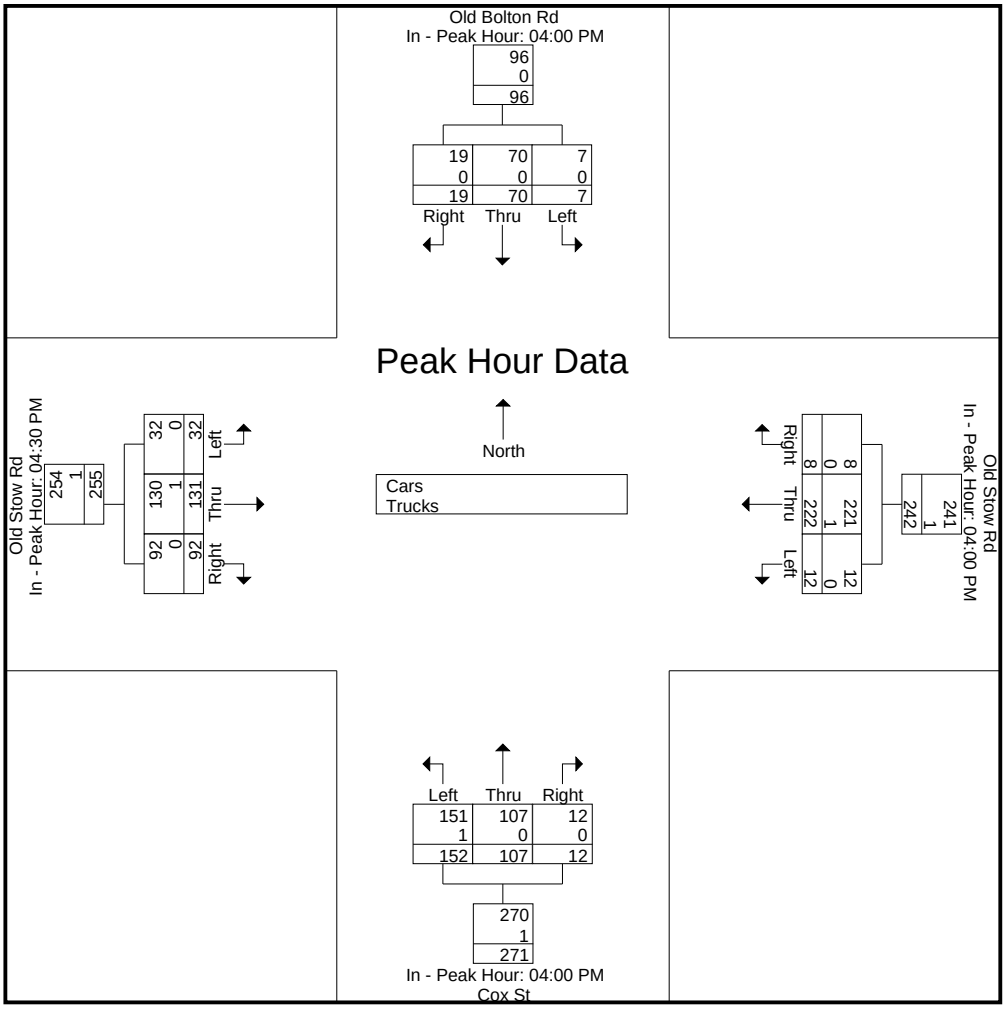
	04:00 PM				04:00 PM				04:00 PM				04:30 PM			
+0 mins.	2	20	**7**	**29**	0	**62**	1	63	34	**41**	1	**76**	**10**	33	27	**70**
+15 mins.	1	**22**	4	27	**6**	59	**4**	**69**	39	24	**4**	67	7	26	22	55
+30 mins.	1	15	3	19	3	50	2	55	36	22	4	62	9	30	**28**	67
+45 mins.	**3**	13	5	21	3	51	1	55	**43**	20	3	66	6	**42**	15	63
Total Volume	7	70	19	96	12	222	8	242	152	107	12	271	32	131	92	255
% App. Total	7.3	72.9	19.8		5	91.7	3.3		56.1	39.5	4.4		12.5	51.4	36.1	
PHF	.583	.795	.679	.828	.500	.895	.500	.877	.884	.652	.750	.891	.800	.780	.821	.911
Cars	7	70	19	96	12	221	8	241	151	107	12	270	32	130	92	254
% Cars	100	100	100	100	100	99.5	100	99.6	99.3	100	100	99.6	100	99.2	100	99.6
Trucks	0	0	0	0	0	1	0	1	1	0	0	1	0	1	0	1
% Trucks	0	0	0	0	0	0.5	0	0.4	0.7	0	0	0.4	0	0.8	0	0.4

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023

Groups Printed- Cars

	Old Bolton Rd From North			Old Stow Rd From East			Cox St From South			Old Stow Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	2	20	7	0	62	1	34	41	1	9	25	23	225
04:15 PM	1	22	4	6	59	4	39	24	4	4	27	20	214
04:30 PM	1	15	3	3	49	2	36	22	4	10	33	27	205
04:45 PM	3	13	5	3	51	1	42	20	3	7	26	22	196
Total	7	70	19	12	221	8	151	107	12	30	111	92	840
05:00 PM	4	17	6	3	53	3	31	22	3	9	30	28	209
05:15 PM	0	8	4	1	55	3	27	19	1	6	41	15	180
05:30 PM	0	8	6	4	54	1	37	28	6	10	32	26	212
05:45 PM	0	8	8	6	46	0	35	24	2	4	28	12	173
Total	4	41	24	14	208	7	130	93	12	29	131	81	774
Grand Total	11	111	43	26	429	15	281	200	24	59	242	173	1614
Apprch %	6.7	67.3	26.1	5.5	91.3	3.2	55.6	39.6	4.8	12.4	51.1	36.5	
Total %	0.7	6.9	2.7	1.6	26.6	0.9	17.4	12.4	1.5	3.7	15	10.7	

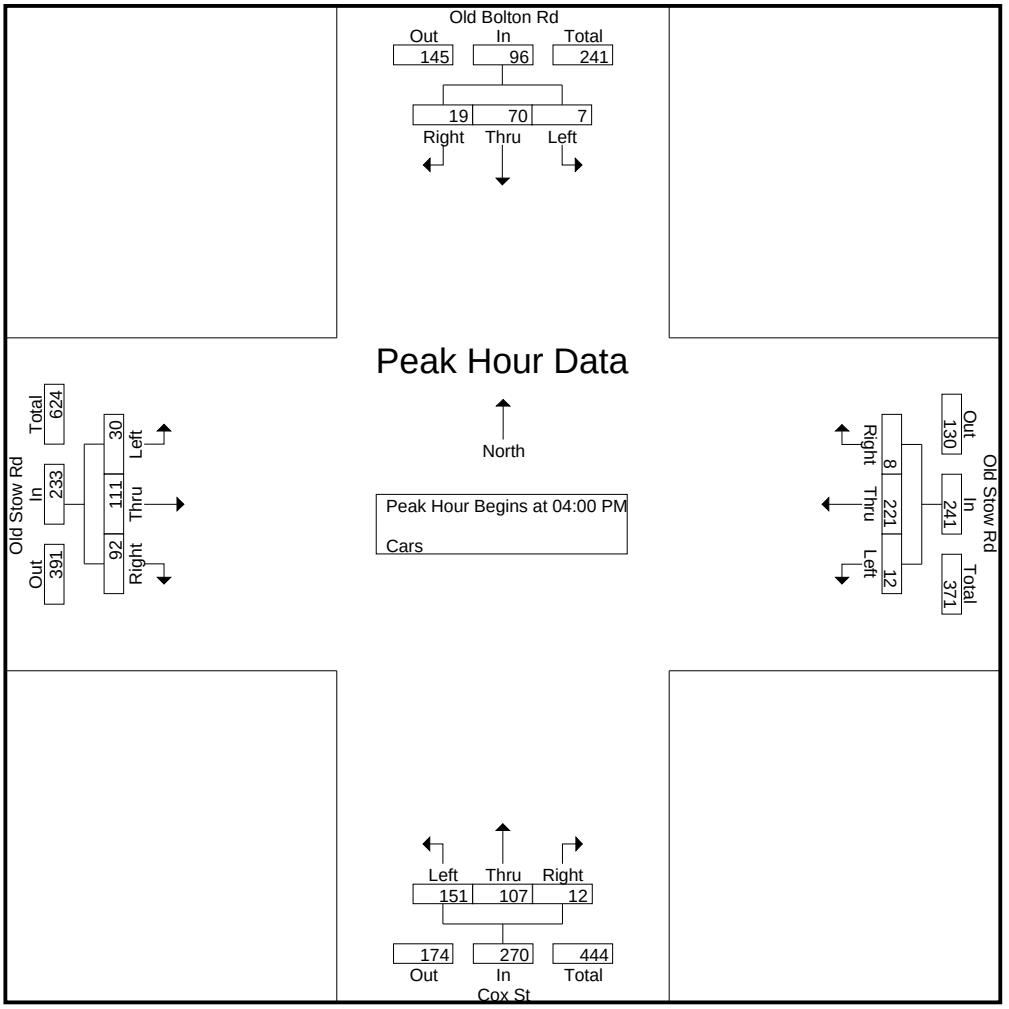
	Old Bolton Rd From North				Old Stow Rd From East				Cox St From South				Old Stow Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	2	20	**7**	**29**	0	**62**	1	63	34	**41**	1	**76**	9	25	23	57	**225**
04:15 PM	1	**22**	4	27	**6**	59	**4**	**69**	39	24	**4**	67	4	27	20	51	214
04:30 PM	1	15	3	19	3	49	2	54	36	22	4	62	**10**	**33**	**27**	**70**	205
04:45 PM	**3**	13	5	21	3	51	1	55	**42**	20	3	65	7	26	22	55	196
Total Volume	7	70	19	96	12	221	8	241	151	107	12	270	30	111	92	233	840
% App. Total	7.3	72.9	19.8		5	91.7	3.3		55.9	39.6	4.4		12.9	47.6	39.5		
PHF	.583	.795	.679	.828	.500	.891	.500	.873	.899	.652	.750	.888	.750	.841	.852	.832	.933

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

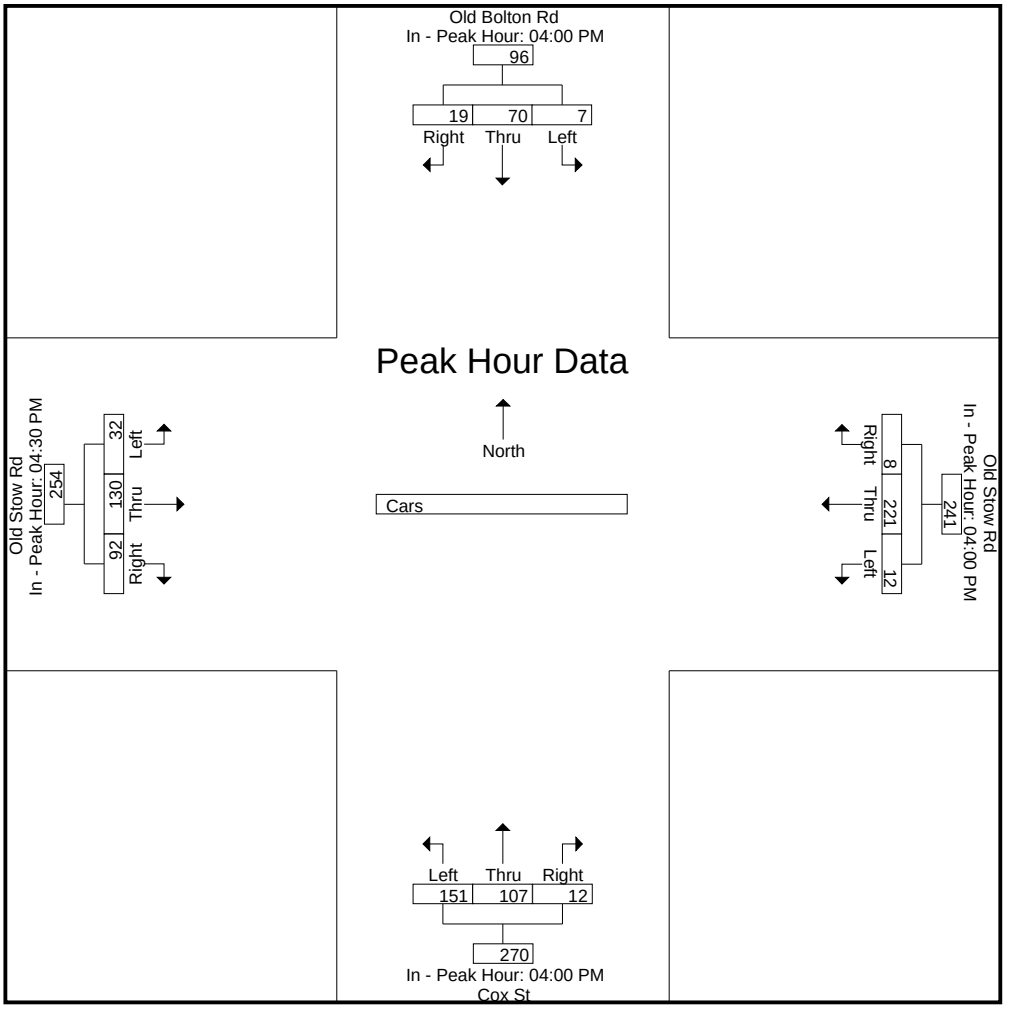
	04:00 PM				04:00 PM				04:00 PM				04:30 PM			
+0 mins.	2	20	**7**	**29**	0	**62**	1	63	34	**41**	1	**76**	**10**	33	27	**70**
+15 mins.	1	**22**	4	27	**6**	59	**4**	**69**	39	24	**4**	67	7	26	22	55
+30 mins.	1	15	3	19	3	49	2	54	36	22	4	62	9	30	**28**	67
+45 mins.	**3**	13	5	21	3	51	1	55	**42**	20	3	65	6	**41**	15	62
Total Volume	7	70	19	96	12	221	8	241	151	107	12	270	32	130	92	254
% App. Total	7.3	72.9	19.8		5	91.7	3.3		55.9	39.6	4.4		12.6	51.2	36.2	
PHF	.583	.795	.679	.828	.500	.891	.500	.873	.899	.652	.750	.888	.800	.793	.821	.907

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023

Groups Printed- Trucks

	Old Bolton Rd From North			Old Stow Rd From East			Cox St From South			Old Stow Rd From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	1	0	1	0	0	0	0	1	3
05:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	1	0	0	0	1	0	2
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	1	0	0	1	0	3
Grand Total	0	0	0	0	1	0	2	1	0	0	1	1	6
Apprch %	0	0	0	0	100	0	66.7	33.3	0	0	50	50	
Total %	0	0	0	0	16.7	0	33.3	16.7	0	0	16.7	16.7	

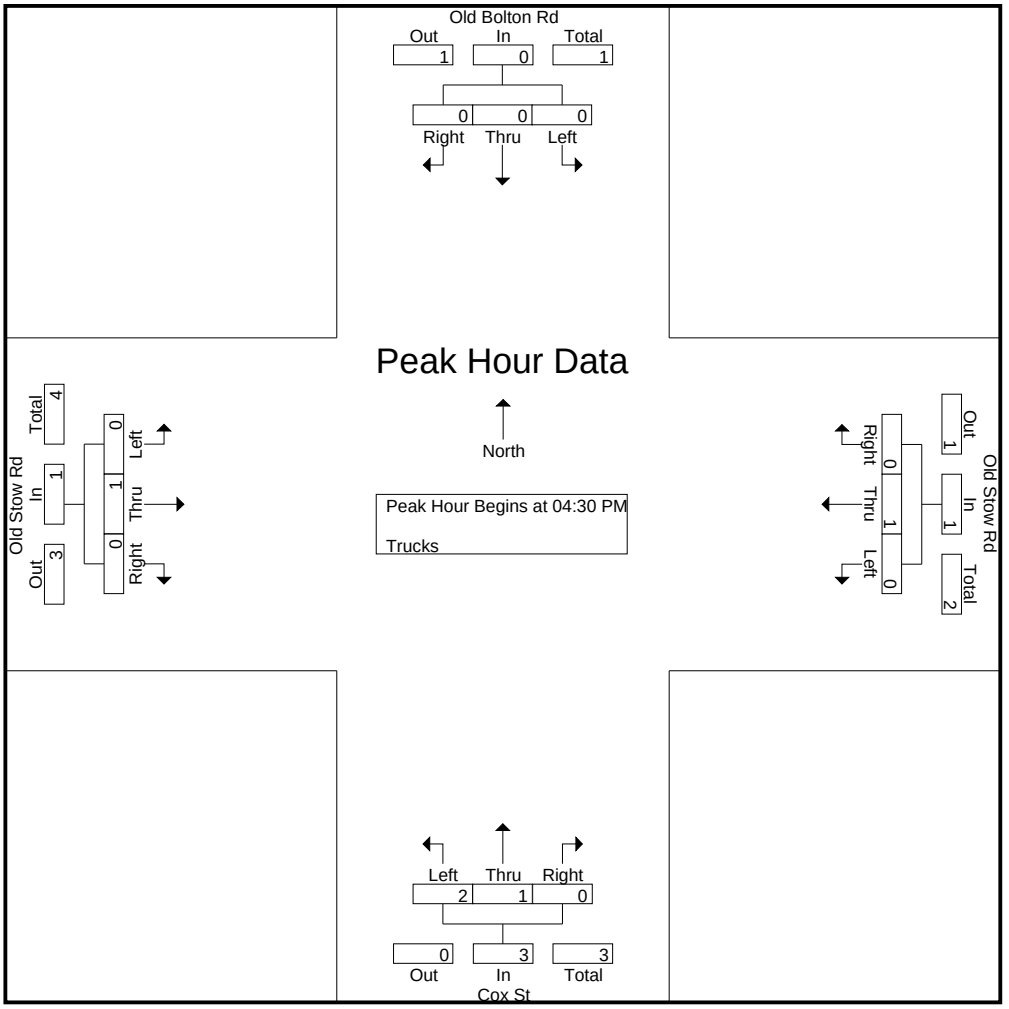
	Old Bolton Rd From North				Old Stow Rd From East				Cox St From South				Old Stow Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	**1**	0	0	**1**	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	**1**	0	1	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	**1**	0	**1**	**2**
Total Volume	0	0	0	0	0	1	0	1	2	1	0	3	0	1	0	1	5
% App. Total	0	0	0		0	100	0		66.7	33.3	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.500	.250	.000	.750	.000	.250	.000	.250	.625

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

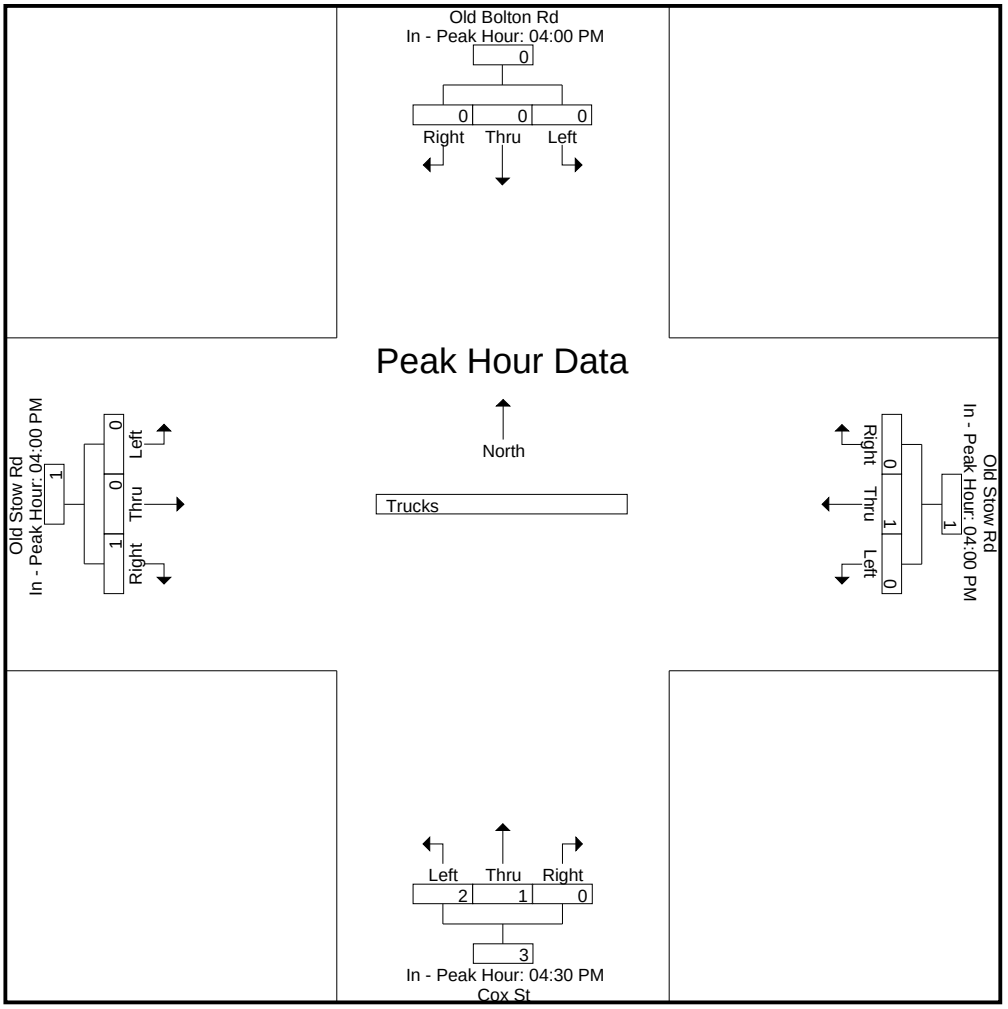
	04:00 PM				04:00 PM				04:30 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**
+15 mins.	0	0	0	0	0	0	0	0	**1**	0	0	**1**	0	0	0	0
+30 mins.	0	0	0	0	0	**1**	0	**1**	0	**1**	0	1	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	2	1	0	3	0	0	1	1
% App. Total	0	0	0		0	100	0		66.7	33.3	0		0	0	100	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.500	.250	.000	.750	.000	.000	.250	.250

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 10

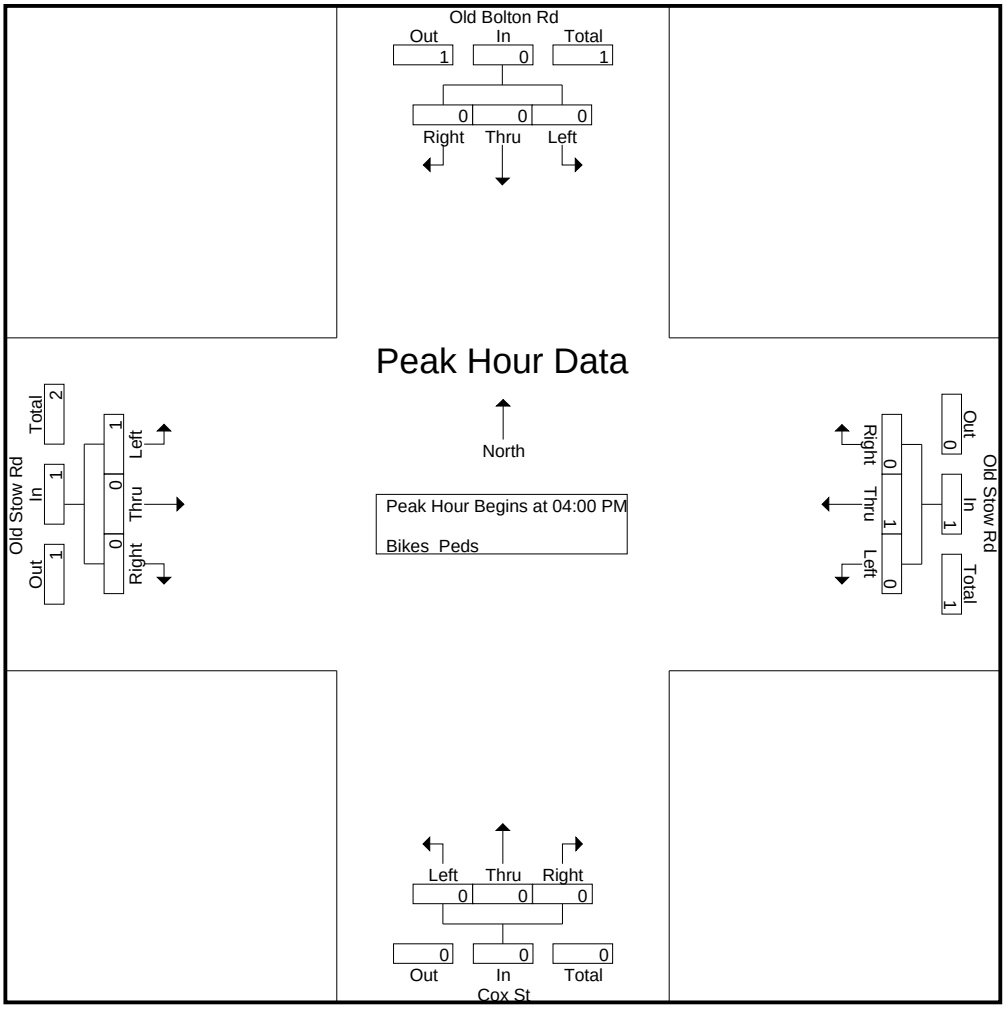
Groups Printed- Bikes Peds

	Old Bolton Rd From North				Old Stow Rd From East				Cox St From South				Old Stow Rd From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	1	0	1	0	1	0	0	0	0	1	0	0	1	3	2	5
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	1	0	1	0	0	0	0	1	0	0	1	3	2	5
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	1	0	1	0	1	0	0	0	0	1	0	0	1	3	2	5
Apprch %	0	0	0		0	100	0		0	0	0		100	0	0				
Total %	0	0	0		0	50	0		0	0	0		50	0	0		60	40	

	Old Bolton Rd From North				Old Stow Rd From East				Cox St From South				Old Stow Rd From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	**1**	0	0	**1**	**2**
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	2
% App. Total	0	0	0		0	100	0		0	0	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.250	.000	.000	.250	.250

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 11



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

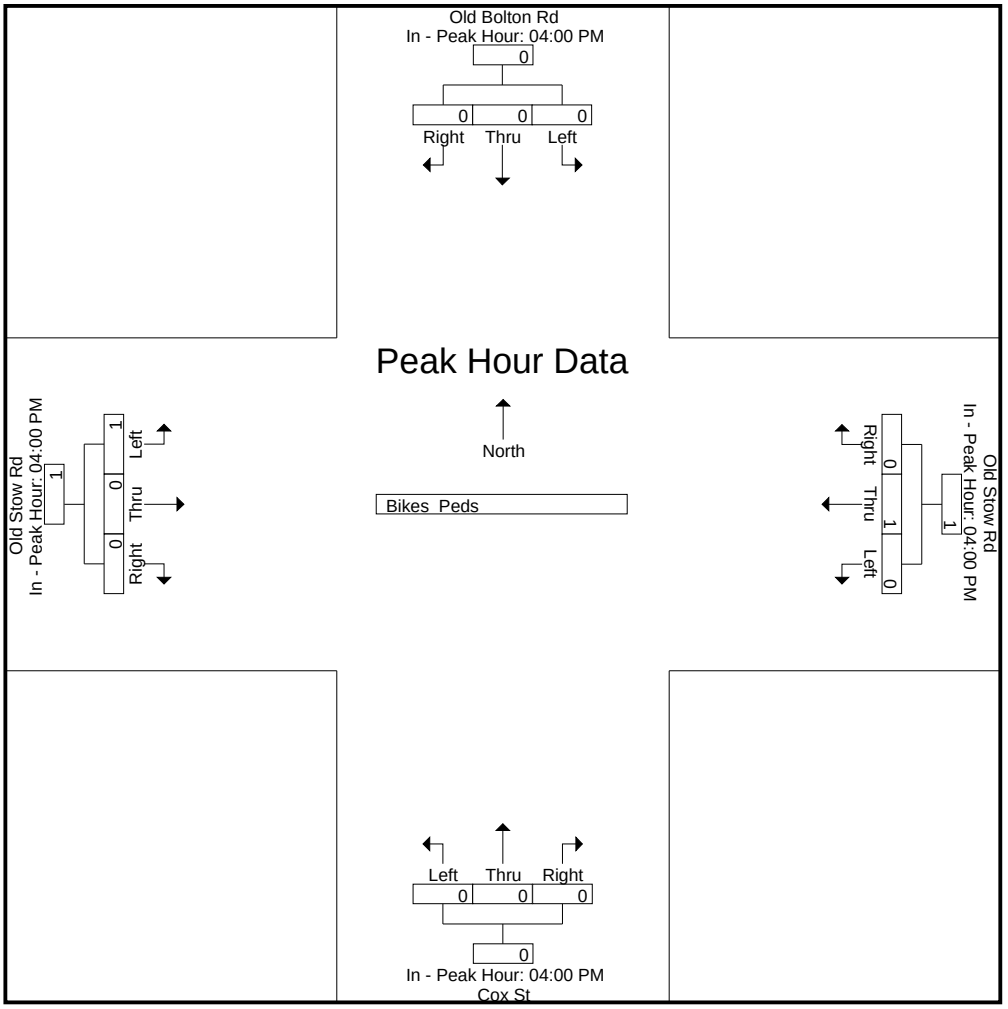
	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	**1**	0	0	**1**
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1
% App. Total	0	0	0		0	100	0		0	0	0		100	0	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.250	.000	.000	.250

Accurate Counts

978-664-2565

N/S Street : Old Bolton Rd / Cox St
E/W Street : Old Stow Road
City/State : Hudson, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 1/24/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 1

Groups Printed- Cars - Trucks

	Cox St From North			Zina Rd From East			Cox St From South			Pierce St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	63	0	4	0	0	2	36	10	0	0	0	115
07:15 AM	0	53	1	4	0	1	1	47	2	1	1	2	113
07:30 AM	3	71	1	9	0	0	3	42	8	0	0	6	143
07:45 AM	0	73	0	9	0	0	1	25	7	1	2	5	123
Total	3	260	2	26	0	1	7	150	27	2	3	13	494
08:00 AM	0	68	0	16	0	0	1	26	6	0	1	4	122
08:15 AM	0	72	0	11	0	0	1	26	6	0	1	5	122
08:30 AM	1	65	0	5	0	0	2	40	6	0	0	1	120
08:45 AM	0	31	1	8	0	0	1	25	3	0	0	3	72
Total	1	236	1	40	0	0	5	117	21	0	2	13	436
Grand Total	4	496	3	66	0	1	12	267	48	2	5	26	930
Apprch %	0.8	98.6	0.6	98.5	0	1.5	3.7	81.7	14.7	6.1	15.2	78.8	
Total %	0.4	53.3	0.3	7.1	0	0.1	1.3	28.7	5.2	0.2	0.5	2.8	
Cars	4	474	2	62	0	1	10	257	43	2	5	25	885
% Cars	100	95.6	66.7	93.9	0	100	83.3	96.3	89.6	100	100	96.2	95.2
Trucks	0	22	1	4	0	0	2	10	5	0	0	1	45
% Trucks	0	4.4	33.3	6.1	0	0	16.7	3.7	10.4	0	0	3.8	4.8

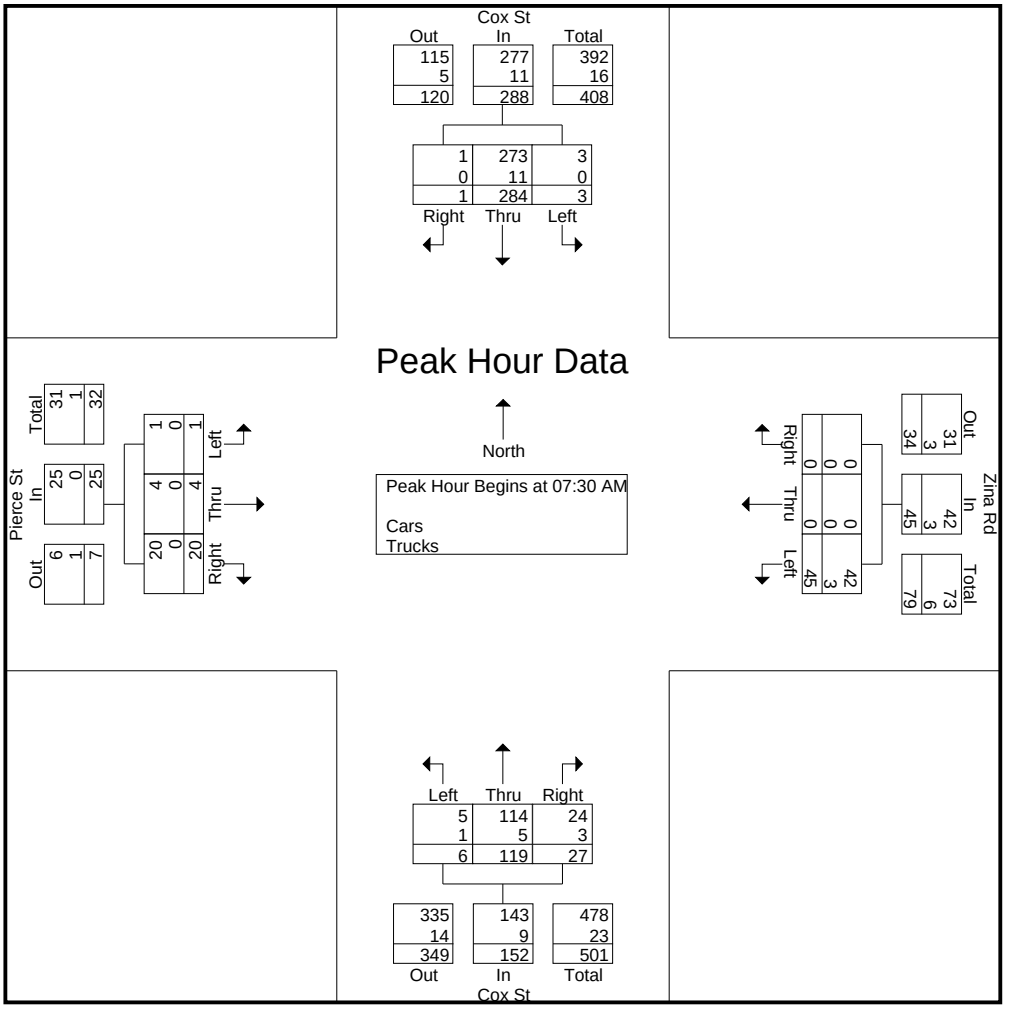
	Cox St From North				Zina Rd From East				Cox St From South				Pierce St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**3**	71	**1**	**75**	9	0	0	9	**3**	**42**	**8**	**53**	0	0	**6**	6	**143**
07:45 AM	0	**73**	0	73	9	0	0	9	1	25	7	33	**1**	**2**	5	**8**	123
08:00 AM	0	68	0	68	**16**	0	0	**16**	1	26	6	33	0	1	4	5	122
08:15 AM	0	72	0	72	11	0	0	11	1	26	6	33	0	1	5	6	122
Total Volume	3	284	1	288	45	0	0	45	6	119	27	152	1	4	20	25	510
% App. Total	1	98.6	0.3		100	0	0		3.9	78.3	17.8		4	16	80		
PHF	.250	.973	.250	.960	.703	.000	.000	.703	.500	.708	.844	.717	.250	.500	.833	.781	.892
Cars	3	273	1	277	42	0	0	42	5	114	24	143	1	4	20	25	487
% Cars	100	96.1	100	96.2	93.3	0	0	93.3	83.3	95.8	88.9	94.1	100	100	100	100	95.5
Trucks	0	11	0	11	3	0	0	3	1	5	3	9	0	0	0	0	23
% Trucks	0	3.9	0	3.8	6.7	0	0	6.7	16.7	4.2	11.1	5.9	0	0	0	0	4.5

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

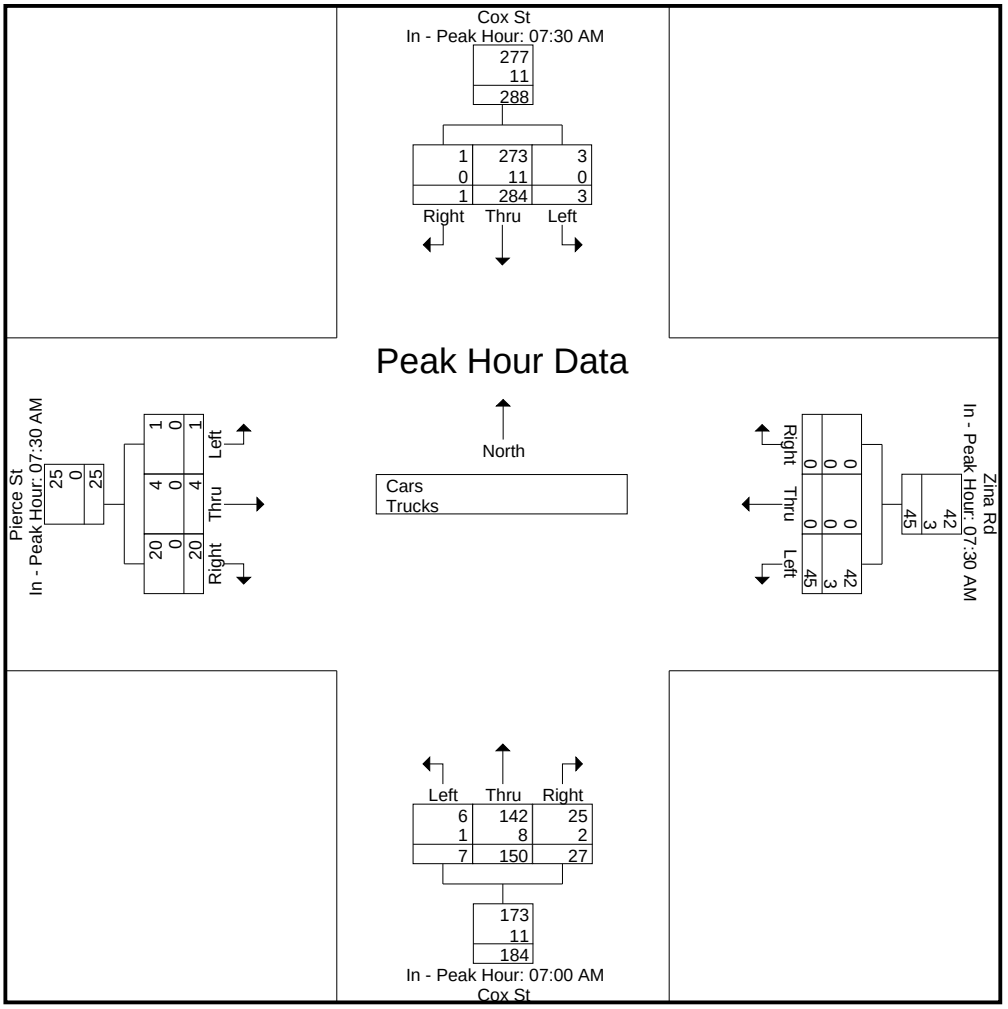
	07:30 AM				07:30 AM				07:00 AM				07:30 AM			
+0 mins.	**3**	71	**1**	**75**	9	0	0	9	2	36	**10**	48	0	0	**6**	6
+15 mins.	0	**73**	0	73	9	0	0	9	1	**47**	2	50	**1**	**2**	5	**8**
+30 mins.	0	68	0	68	**16**	0	0	**16**	**3**	42	8	**53**	0	1	4	5
+45 mins.	0	72	0	72	11	0	0	11	1	25	7	33	0	1	5	6
Total Volume	3	284	1	288	45	0	0	45	7	150	27	184	1	4	20	25
% App. Total	1	98.6	0.3		100	0	0		3.8	81.5	14.7		4	16	80	
PHF	.250	.973	.250	.960	.703	.000	.000	.703	.583	.798	.675	.868	.250	.500	.833	.781
Cars	3	273	1	277	42	0	0	42	6	142	25	173	1	4	20	25
% Cars	100	96.1	100	96.2	93.3	0	0	93.3	85.7	94.7	92.6	94	100	100	100	100
Trucks	0	11	0	11	3	0	0	3	1	8	2	11	0	0	0	0
% Trucks	0	3.9	0	3.8	6.7	0	0	6.7	14.3	5.3	7.4	6	0	0	0	0

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023

Groups Printed- Cars

	Cox St From North			Zina Rd From East			Cox St From South			Pierce St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	62	0	4	0	0	2	34	8	0	0	0	110
07:15 AM	0	51	0	4	0	1	0	45	2	1	1	2	107
07:30 AM	3	64	1	9	0	0	3	40	8	0	0	6	134
07:45 AM	0	71	0	8	0	0	1	23	7	1	2	5	118
Total	3	248	1	25	0	1	6	142	25	2	3	13	469
08:00 AM	0	67	0	15	0	0	0	26	4	0	1	4	117
08:15 AM	0	71	0	10	0	0	1	25	5	0	1	5	118
08:30 AM	1	59	0	5	0	0	2	40	6	0	0	0	113
08:45 AM	0	29	1	7	0	0	1	24	3	0	0	3	68
Total	1	226	1	37	0	0	4	115	18	0	2	12	416
Grand Total	4	474	2	62	0	1	10	257	43	2	5	25	885
Apprch %	0.8	98.8	0.4	98.4	0	1.6	3.2	82.9	13.9	6.2	15.6	78.1	
Total %	0.5	53.6	0.2	7	0	0.1	1.1	29	4.9	0.2	0.6	2.8	

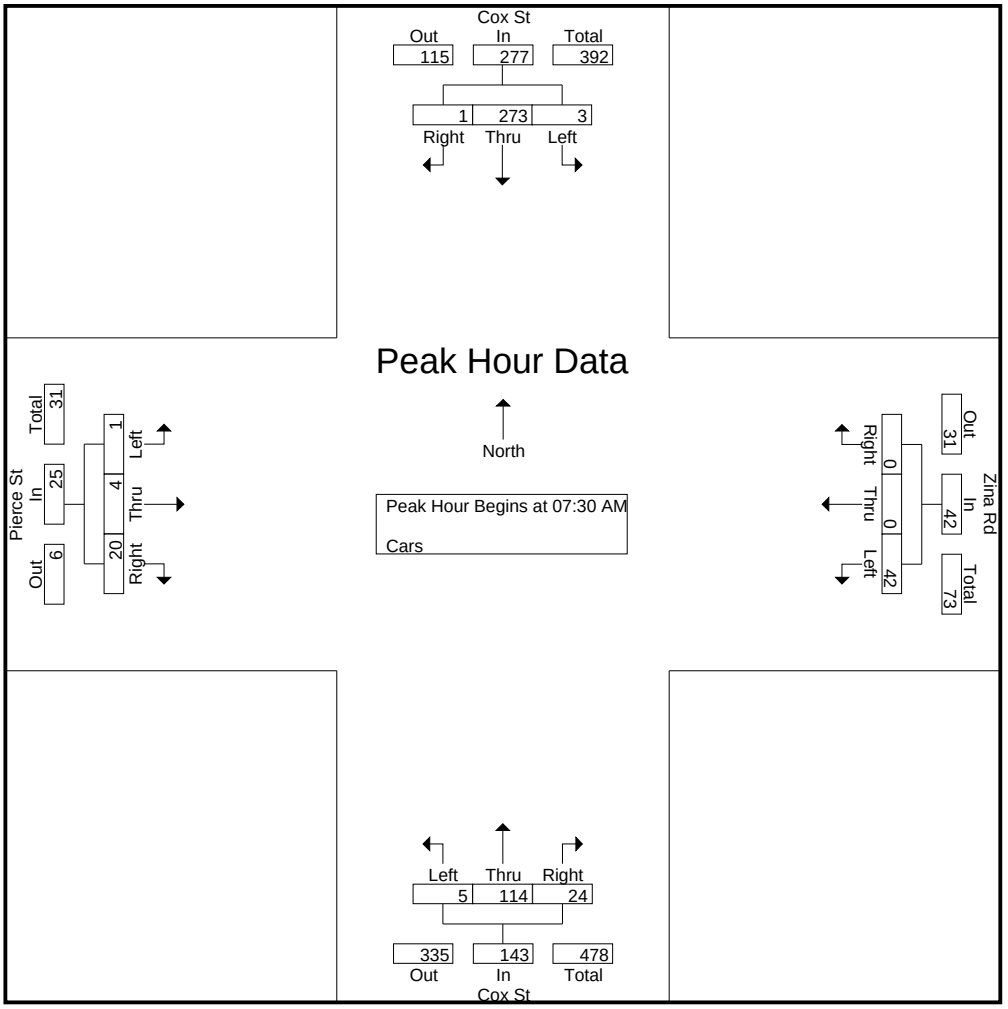
	Cox St From North				Zina Rd From East				Cox St From South				Pierce St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**3**	64	**1**	68	9	0	0	9	**3**	**40**	**8**	**51**	0	0	**6**	6	**134**
07:45 AM	0	**71**	0	**71**	8	0	0	8	1	23	7	31	**1**	**2**	5	**8**	118
08:00 AM	0	67	0	67	**15**	0	0	**15**	0	26	4	30	0	1	4	5	117
08:15 AM	0	71	0	71	10	0	0	10	1	25	5	31	0	1	5	6	118
Total Volume	3	273	1	277	42	0	0	42	5	114	24	143	1	4	20	25	487
% App. Total	1.1	98.6	0.4		100	0	0		3.5	79.7	16.8		4	16	80		
PHF	.250	.961	.250	.975	.700	.000	.000	.700	.417	.713	.750	.701	.250	.500	.833	.781	.909

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

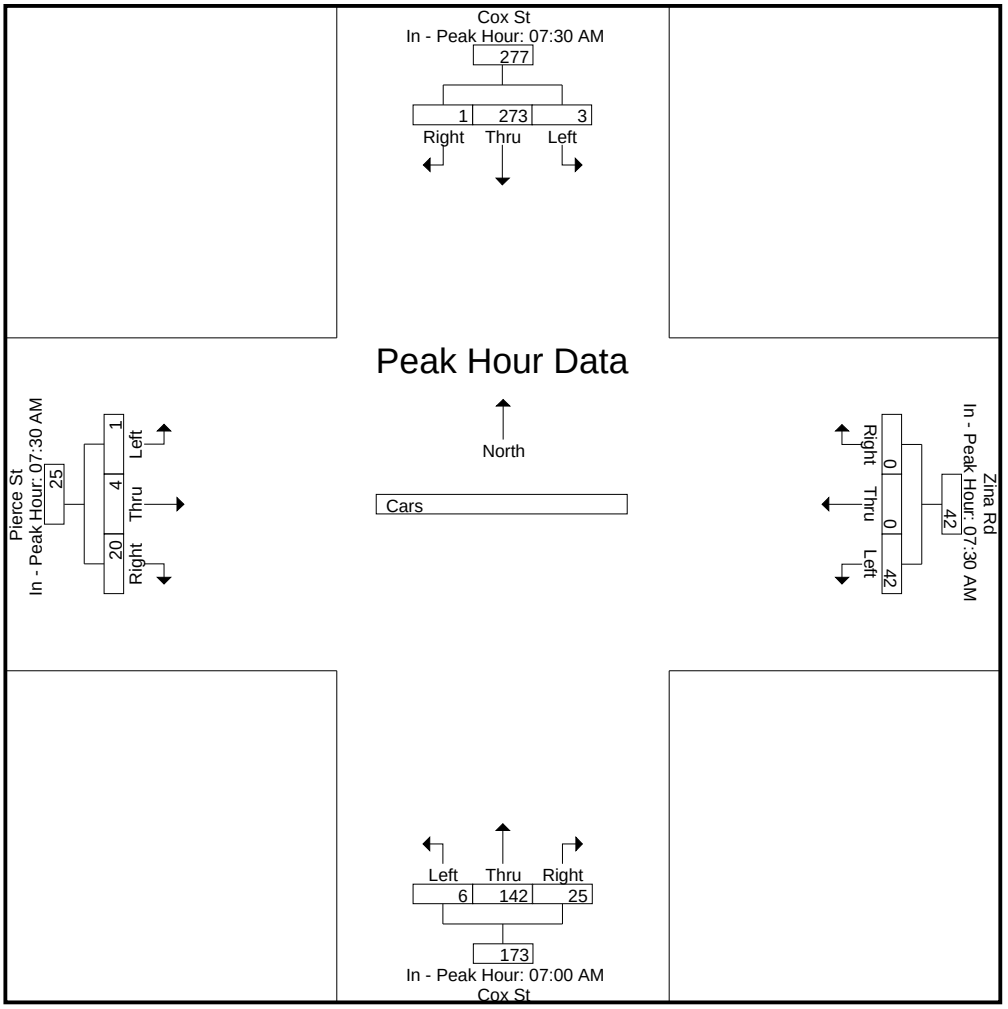
	07:30 AM				07:30 AM				07:00 AM				07:30 AM			
+0 mins.	**3**	64	**1**	68	9	0	0	9	2	34	**8**	44	0	0	**6**	6
+15 mins.	0	**71**	0	**71**	8	0	0	8	0	**45**	2	47	**1**	**2**	5	**8**
+30 mins.	0	67	0	67	**15**	0	0	**15**	**3**	40	8	**51**	0	1	4	5
+45 mins.	0	71	0	71	10	0	0	10	1	23	7	31	0	1	5	6
Total Volume	3	273	1	277	42	0	0	42	6	142	25	173	1	4	20	25
% App. Total	1.1	98.6	0.4		100	0	0		3.5	82.1	14.5		4	16	80	
PHF	.250	.961	.250	.975	.700	.000	.000	.700	.500	.789	.781	.848	.250	.500	.833	.781

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023

Groups Printed- Trucks

	Cox St From North			Zina Rd From East			Cox St From South			Pierce St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	1	0	0	0	0	0	2	2	0	0	0	5
07:15 AM	0	2	1	0	0	0	1	2	0	0	0	0	6
07:30 AM	0	7	0	0	0	0	0	2	0	0	0	0	9
07:45 AM	0	2	0	1	0	0	0	2	0	0	0	0	5
Total	0	12	1	1	0	0	1	8	2	0	0	0	25
08:00 AM	0	1	0	1	0	0	1	0	2	0	0	0	5
08:15 AM	0	1	0	1	0	0	0	1	1	0	0	0	4
08:30 AM	0	6	0	0	0	0	0	0	0	0	0	1	7
08:45 AM	0	2	0	1	0	0	0	1	0	0	0	0	4
Total	0	10	0	3	0	0	1	2	3	0	0	1	20
Grand Total	0	22	1	4	0	0	2	10	5	0	0	1	45
Apprch %	0	95.7	4.3	100	0	0	11.8	58.8	29.4	0	0	100	
Total %	0	48.9	2.2	8.9	0	0	4.4	22.2	11.1	0	0	2.2	

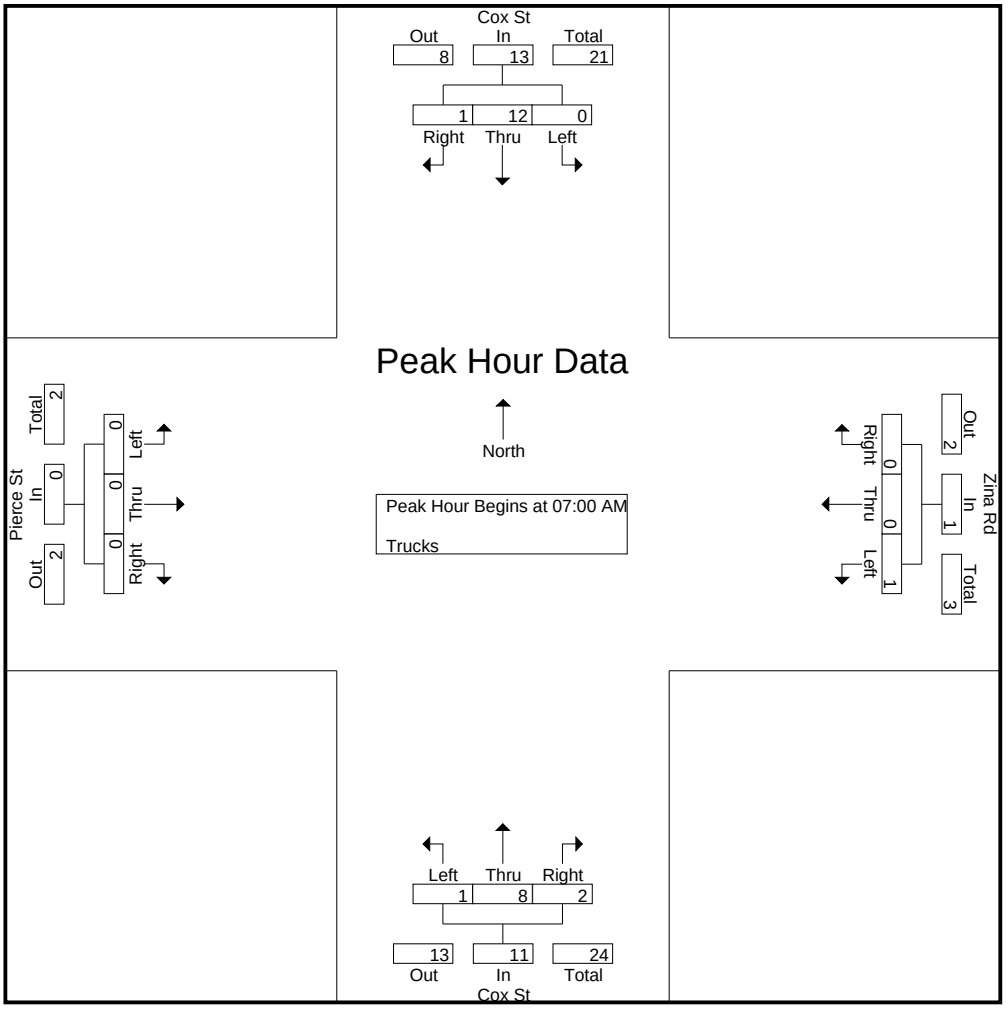
	Cox St From North				Zina Rd From East				Cox St From South				Pierce St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	1	0	1	0	0	0	0	0	**2**	**2**	**4**	0	0	0	0	5
07:15 AM	0	2	**1**	3	0	0	0	0	**1**	2	0	3	0	0	0	0	6
07:30 AM	0	**7**	0	**7**	0	0	0	0	0	2	0	2	0	0	0	0	**9**
07:45 AM	0	2	0	2	**1**	0	0	**1**	0	2	0	2	0	0	0	0	5
Total Volume	0	12	1	13	1	0	0	1	1	8	2	11	0	0	0	0	25
% App. Total	0	92.3	7.7		100	0	0		9.1	72.7	18.2		0	0	0		
PHF	.000	.429	.250	.464	.250	.000	.000	.250	.250	1.00	.250	.688	.000	.000	.000	.000	.694

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

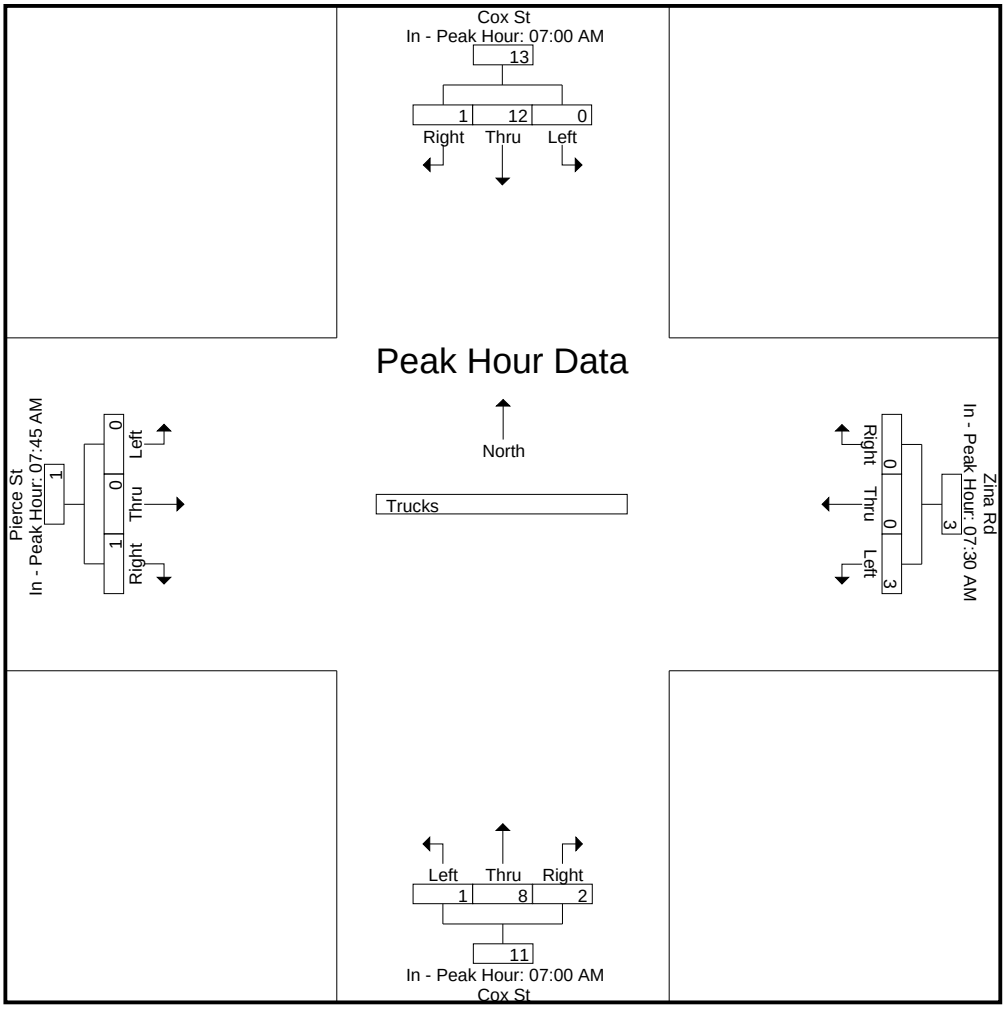
	07:00 AM				07:30 AM				07:00 AM				07:45 AM			
+0 mins.	0	1	0	1	0	0	0	0	0	**2**	**2**	**4**	0	0	0	0
+15 mins.	0	2	**1**	3	**1**	0	0	**1**	**1**	2	0	3	0	0	0	0
+30 mins.	0	**7**	0	**7**	1	0	0	1	0	2	0	2	0	0	0	0
+45 mins.	0	2	0	2	1	0	0	1	0	2	0	2	0	0	**1**	**1**
Total Volume	0	12	1	13	3	0	0	3	1	8	2	11	0	0	1	1
% App. Total	0	92.3	7.7		100	0	0		9.1	72.7	18.2		0	0	100	
PHF	.000	.429	.250	.464	.750	.000	.000	.750	.250	1.000	.250	.688	.000	.000	.250	.250

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023

Groups Printed- Bikes Peds

	Cox St From North				Zina Rd From East				Cox St From South				Pierce St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

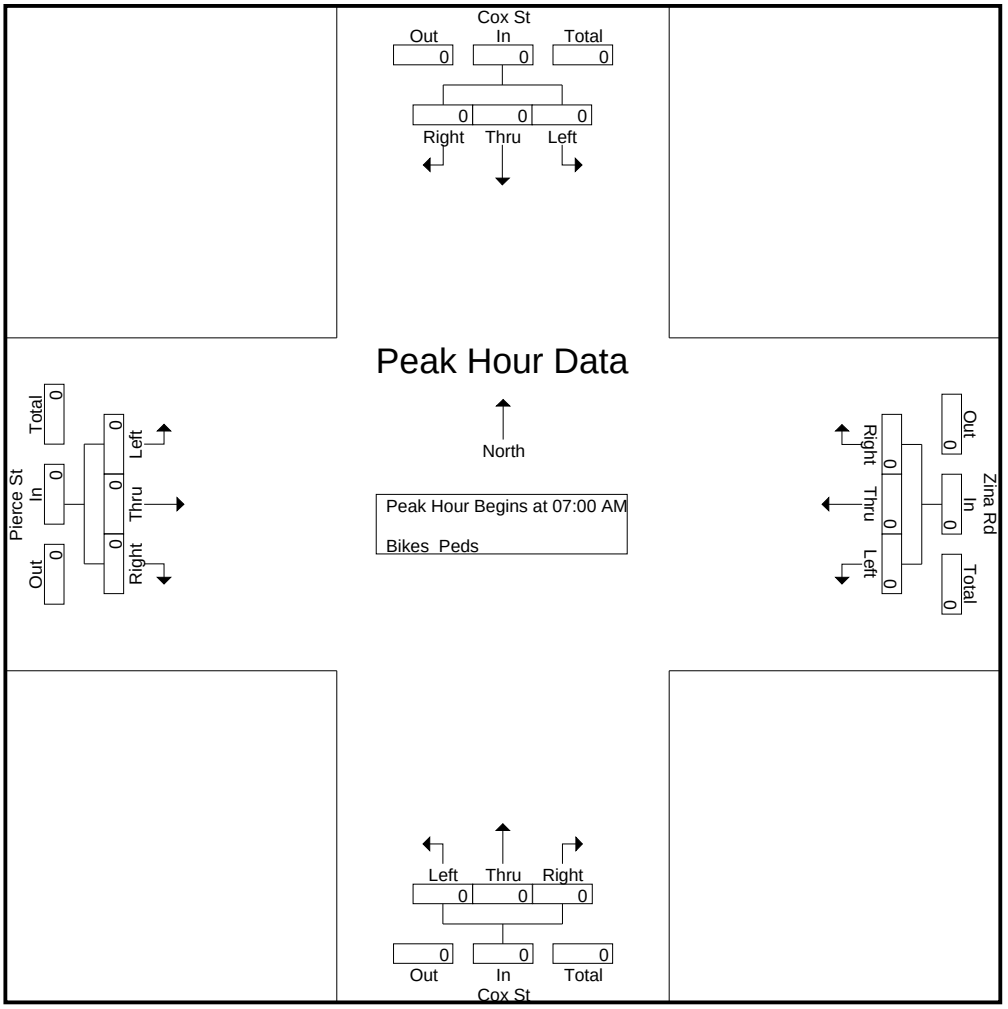
	Cox St From North				Zina Rd From East				Cox St From South				Pierce St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

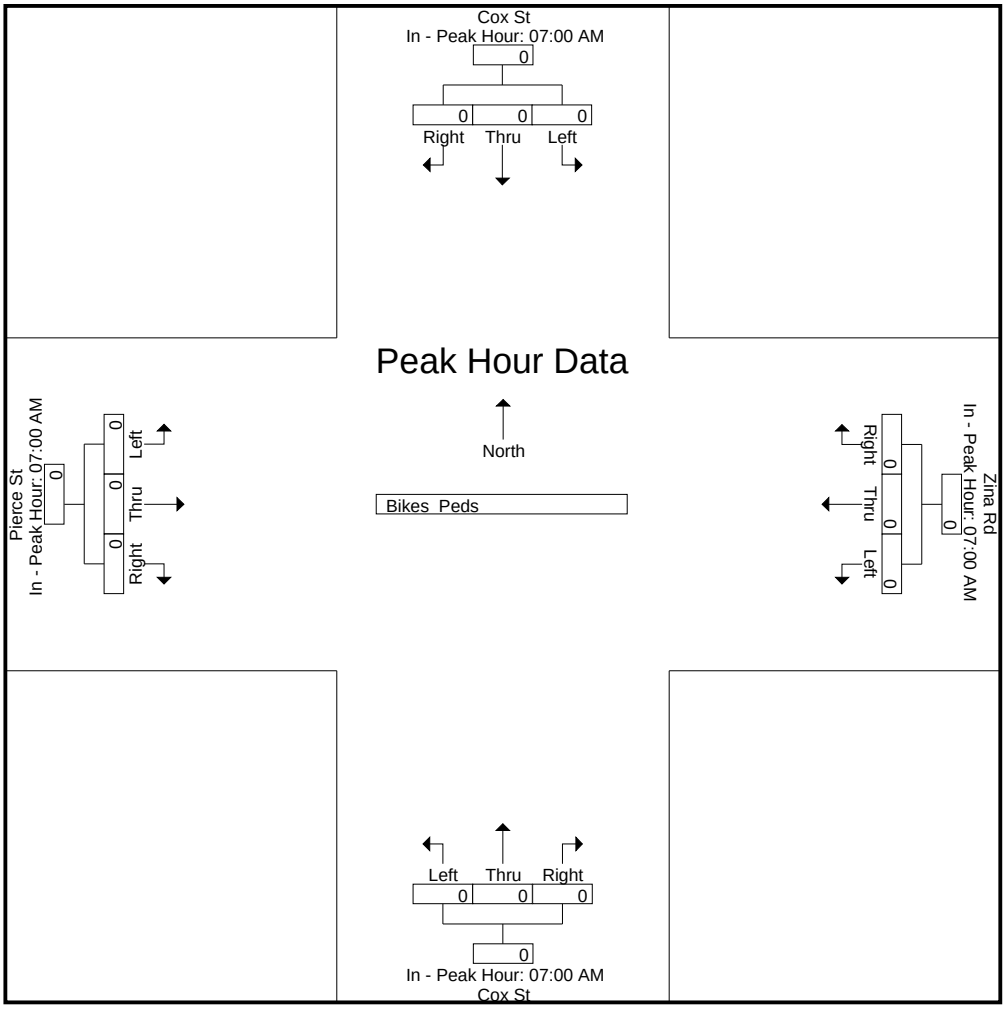
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023

Groups Printed- Cars - Trucks

	Cox St From North			Zina Rd From East			Cox St From South			Pierce St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	33	1	10	1	0	3	64	9	1	0	0	122
04:15 PM	1	40	0	3	1	0	2	56	9	0	0	2	114
04:30 PM	0	30	1	4	2	1	3	53	6	1	0	1	102
04:45 PM	0	38	0	9	2	0	4	59	5	2	3	2	124
Total	1	141	2	26	6	1	12	232	29	4	3	5	462
05:00 PM	0	38	0	7	0	0	4	47	7	1	0	1	105
05:15 PM	1	15	1	7	0	1	5	52	5	0	0	1	88
05:30 PM	0	32	0	6	0	0	4	55	5	1	1	2	106
05:45 PM	0	15	1	2	0	0	3	50	5	1	1	3	81
Total	1	100	2	22	0	1	16	204	22	3	2	7	380
Grand Total	2	241	4	48	6	2	28	436	51	7	5	12	842
Apprch %	0.8	97.6	1.6	85.7	10.7	3.6	5.4	84.7	9.9	29.2	20.8	50	
Total %	0.2	28.6	0.5	5.7	0.7	0.2	3.3	51.8	6.1	0.8	0.6	1.4	
Cars	2	240	4	47	6	2	28	433	49	7	5	12	835
% Cars	100	99.6	100	97.9	100	100	100	99.3	96.1	100	100	100	99.2
Trucks	0	1	0	1	0	0	0	3	2	0	0	0	7
% Trucks	0	0.4	0	2.1	0	0	0	0.7	3.9	0	0	0	0.8

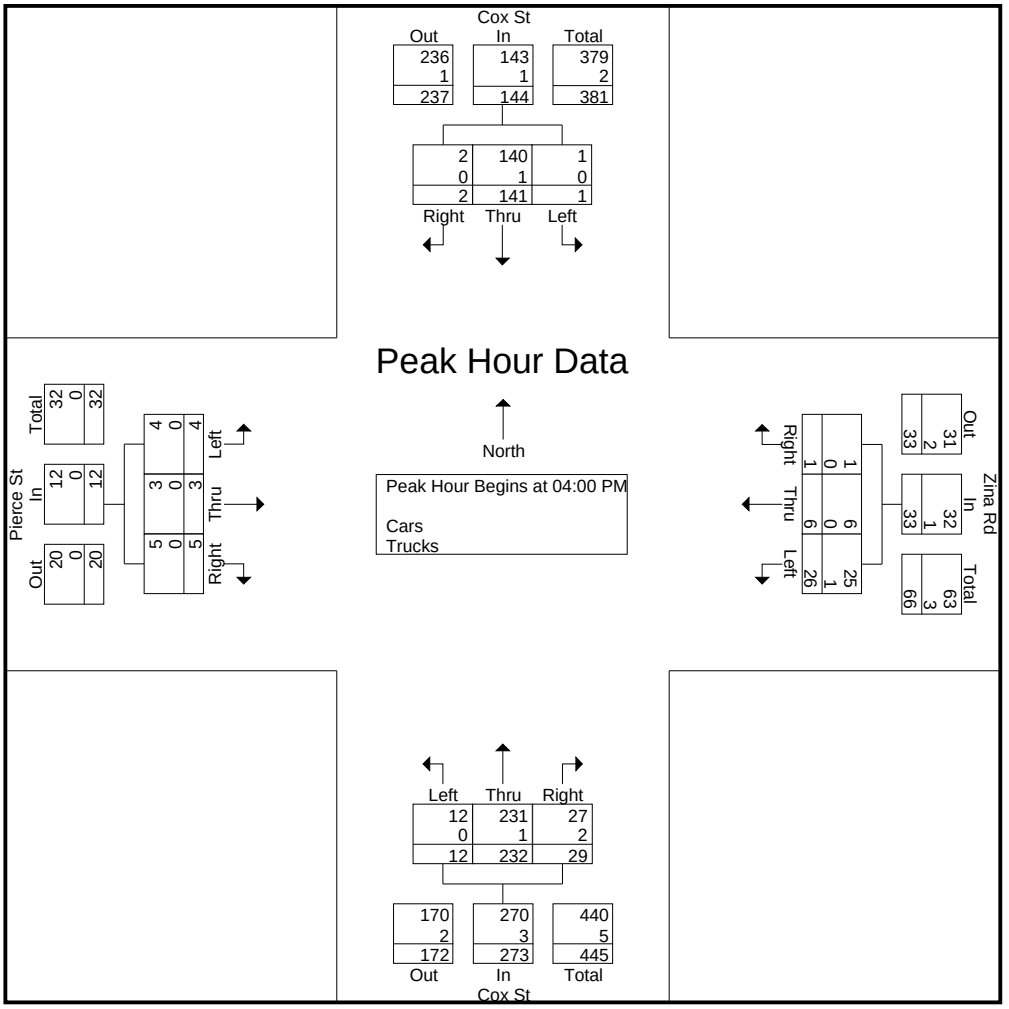
	Cox St From North				Zina Rd From East				Cox St From South				Pierce St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	33	**1**	34	**10**	1	0	**11**	3	**64**	**9**	**76**	1	0	0	1	122
04:15 PM	**1**	**40**	0	**41**	3	1	0	4	2	56	9	67	0	0	**2**	2	114
04:30 PM	0	30	1	31	4	**2**	**1**	7	3	53	6	62	1	0	1	2	102
04:45 PM	0	38	0	38	9	2	0	11	**4**	59	5	68	**2**	**3**	2	**7**	**124**
Total Volume	1	141	2	144	26	6	1	33	12	232	29	273	4	3	5	12	462
% App. Total	0.7	97.9	1.4		78.8	18.2	3		4.4	85	10.6		33.3	25	41.7		
PHF	.250	.881	.500	.878	.650	.750	.250	.750	.750	.906	.806	.898	.500	.250	.625	.429	.931
Cars	1	140	2	143	25	6	1	32	12	231	27	270	4	3	5	12	457
% Cars	100	99.3	100	99.3	96.2	100	100	97.0	100	99.6	93.1	98.9	100	100	100	100	98.9
Trucks	0	1	0	1	1	0	0	1	0	1	2	3	0	0	0	0	5
% Trucks	0	0.7	0	0.7	3.8	0	0	3.0	0	0.4	6.9	1.1	0	0	0	0	1.1

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

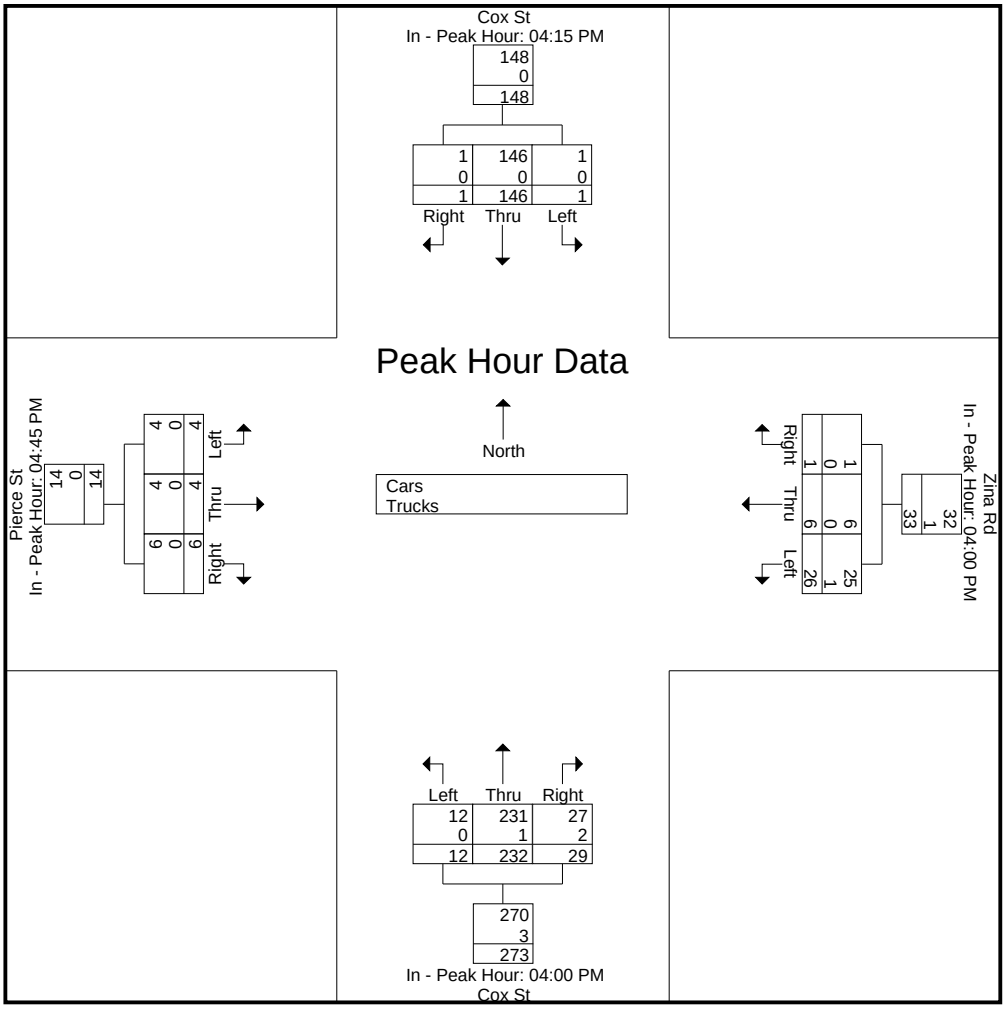
	04:15 PM				04:00 PM				04:00 PM				04:45 PM			
+0 mins.	**1**	**40**	0	**41**	**10**	1	0	**11**	3	**64**	**9**	**76**	**2**	**3**	**2**	**7**
+15 mins.	0	30	**1**	31	3	1	0	4	2	56	9	67	1	0	1	2
+30 mins.	0	38	0	38	4	**2**	**1**	7	3	53	6	62	0	0	1	1
+45 mins.	0	38	0	38	9	2	0	11	**4**	59	5	68	1	1	2	4
Total Volume	1	146	1	148	26	6	1	33	12	232	29	273	4	4	6	14
% App. Total	0.7	98.6	0.7		78.8	18.2	3		4.4	85	10.6		28.6	28.6	42.9	
PHF	.250	.913	.250	.902	.650	.750	.250	.750	.750	.906	.806	.898	.500	.333	.750	.500
Cars	1	146	1	148	25	6	1	32	12	231	27	270	4	4	6	14
% Cars	100	100	100	100	96.2	100	100	97	100	99.6	93.1	98.9	100	100	100	100
Trucks	0	0	0	0	1	0	0	1	0	1	2	3	0	0	0	0
% Trucks	0	0	0	0	3.8	0	0	3	0	0.4	6.9	1.1	0	0	0	0

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023

Groups Printed- Cars

	Cox St From North			Zina Rd From East			Cox St From South			Pierce St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	32	1	10	1	0	3	64	8	1	0	0	120
04:15 PM	1	40	0	3	1	0	2	56	8	0	0	2	113
04:30 PM	0	30	1	3	2	1	3	52	6	1	0	1	100
04:45 PM	0	38	0	9	2	0	4	59	5	2	3	2	124
Total	1	140	2	25	6	1	12	231	27	4	3	5	457
05:00 PM	0	38	0	7	0	0	4	46	7	1	0	1	104
05:15 PM	1	15	1	7	0	1	5	51	5	0	0	1	87
05:30 PM	0	32	0	6	0	0	4	55	5	1	1	2	106
05:45 PM	0	15	1	2	0	0	3	50	5	1	1	3	81
Total	1	100	2	22	0	1	16	202	22	3	2	7	378
Grand Total	2	240	4	47	6	2	28	433	49	7	5	12	835
Apprch %	0.8	97.6	1.6	85.5	10.9	3.6	5.5	84.9	9.6	29.2	20.8	50	
Total %	0.2	28.7	0.5	5.6	0.7	0.2	3.4	51.9	5.9	0.8	0.6	1.4	

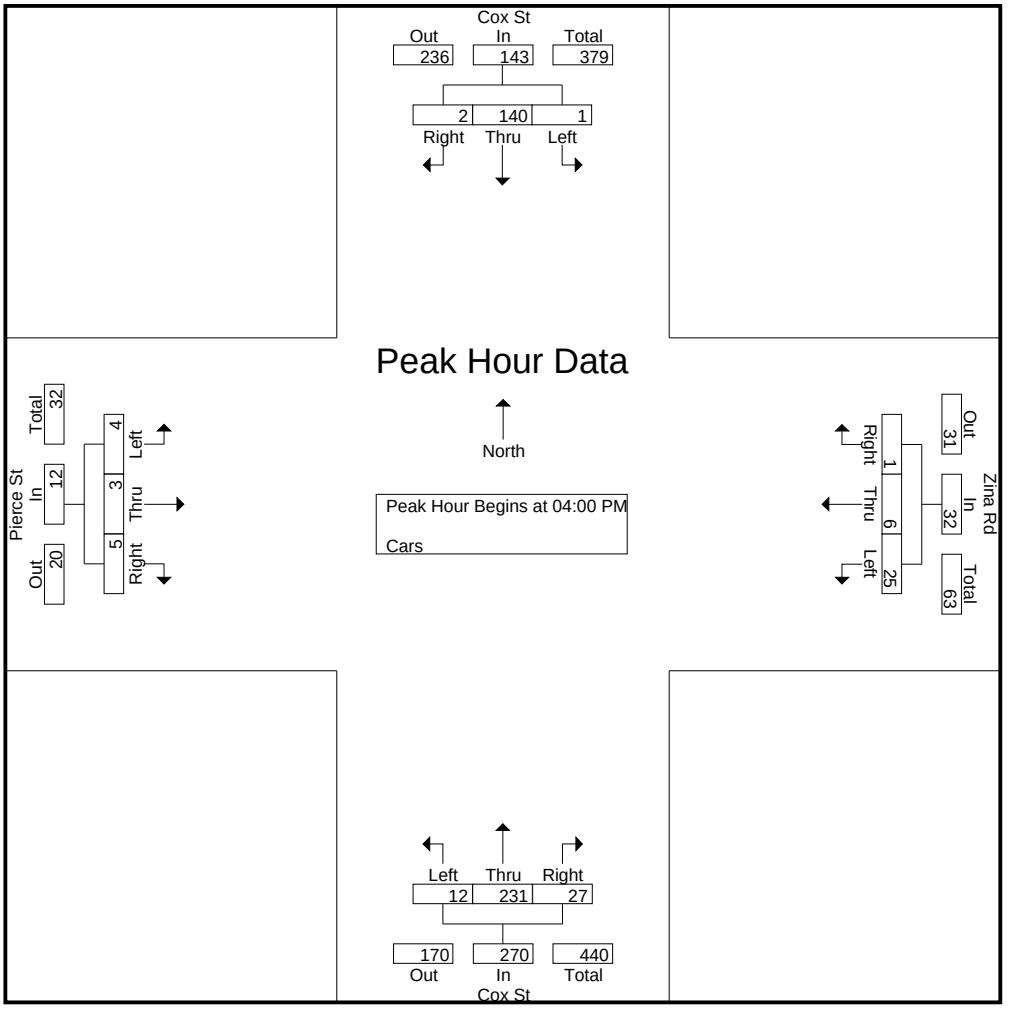
	Cox St From North				Zina Rd From East				Cox St From South				Pierce St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	32	**1**	33	**10**	1	0	**11**	3	**64**	**8**	**75**	1	0	0	1	120
04:15 PM	**1**	**40**	0	**41**	3	1	0	4	2	56	8	66	0	0	**2**	2	113
04:30 PM	0	30	1	31	3	**2**	**1**	6	3	52	6	61	1	0	1	2	100
04:45 PM	0	38	0	38	9	2	0	11	**4**	59	5	68	**2**	**3**	2	**7**	**124**
Total Volume	1	140	2	143	25	6	1	32	12	231	27	270	4	3	5	12	457
% App. Total	0.7	97.9	1.4		78.1	18.8	3.1		4.4	85.6	10		33.3	25	41.7		
PHF	.250	.875	.500	.872	.625	.750	.250	.727	.750	.902	.844	.900	.500	.250	.625	.429	.921

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

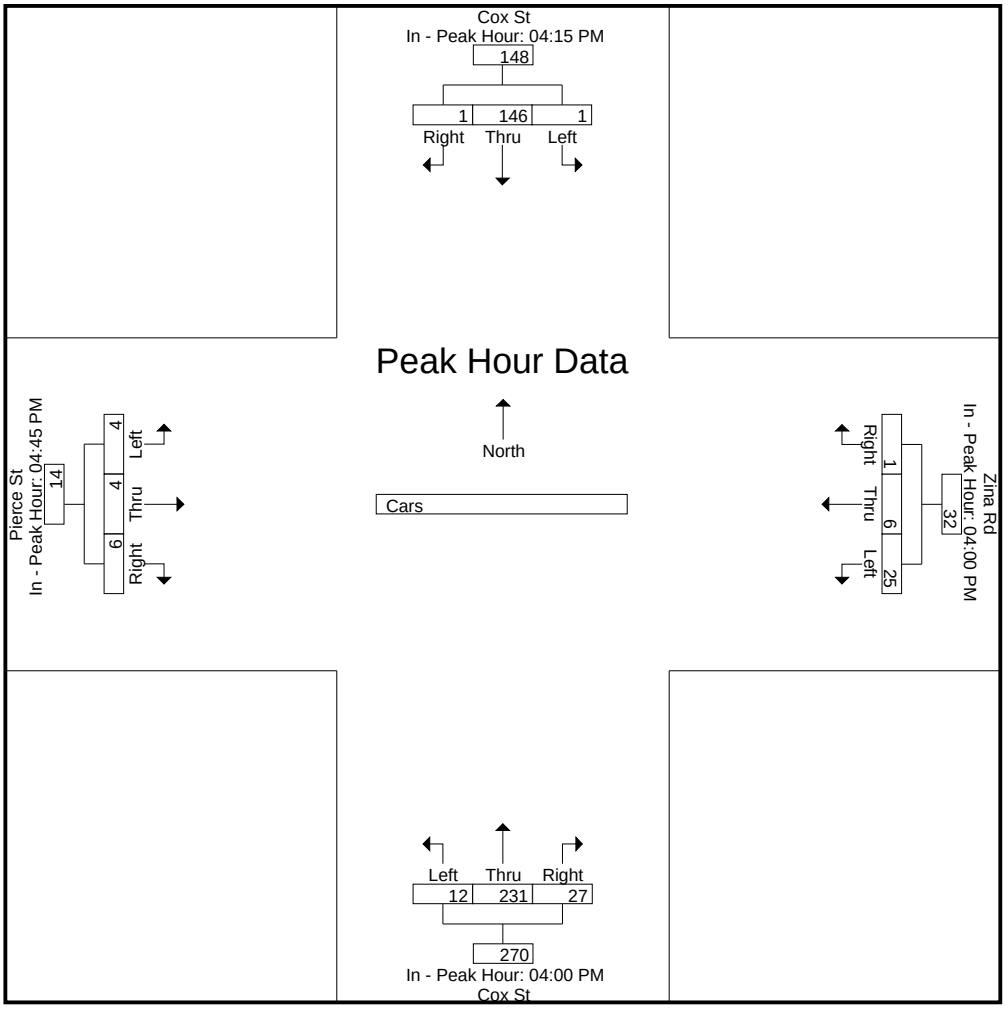
	04:15 PM				04:00 PM				04:00 PM				04:45 PM			
+0 mins.	**1**	**40**	0	**41**	**10**	1	0	**11**	3	**64**	**8**	**75**	**2**	**3**	**2**	**7**
+15 mins.	0	30	**1**	31	3	1	0	4	2	56	8	66	1	0	1	2
+30 mins.	0	38	0	38	3	**2**	**1**	6	3	52	6	61	0	0	1	1
+45 mins.	0	38	0	38	9	2	0	11	**4**	59	5	68	1	1	2	4
Total Volume	1	146	1	148	25	6	1	32	12	231	27	270	4	4	6	14
% App. Total	0.7	98.6	0.7		78.1	18.8	3.1		4.4	85.6	10		28.6	28.6	42.9	
PHF	.250	.913	.250	.902	.625	.750	.250	.727	.750	.902	.844	.900	.500	.333	.750	.500

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023

Groups Printed- Trucks

	Cox St From North			Zina Rd From East			Cox St From South			Pierce St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	1	0	0	0	0	0	0	1	0	0	0	2
04:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	1
04:30 PM	0	0	0	1	0	0	0	1	0	0	0	0	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	1	2	0	0	0	5
05:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	2	0	0	0	0	2
Grand Total	0	1	0	1	0	0	0	3	2	0	0	0	7
Apprch %	0	100	0	100	0	0	0	60	40	0	0	0	
Total %	0	14.3	0	14.3	0	0	0	42.9	28.6	0	0	0	

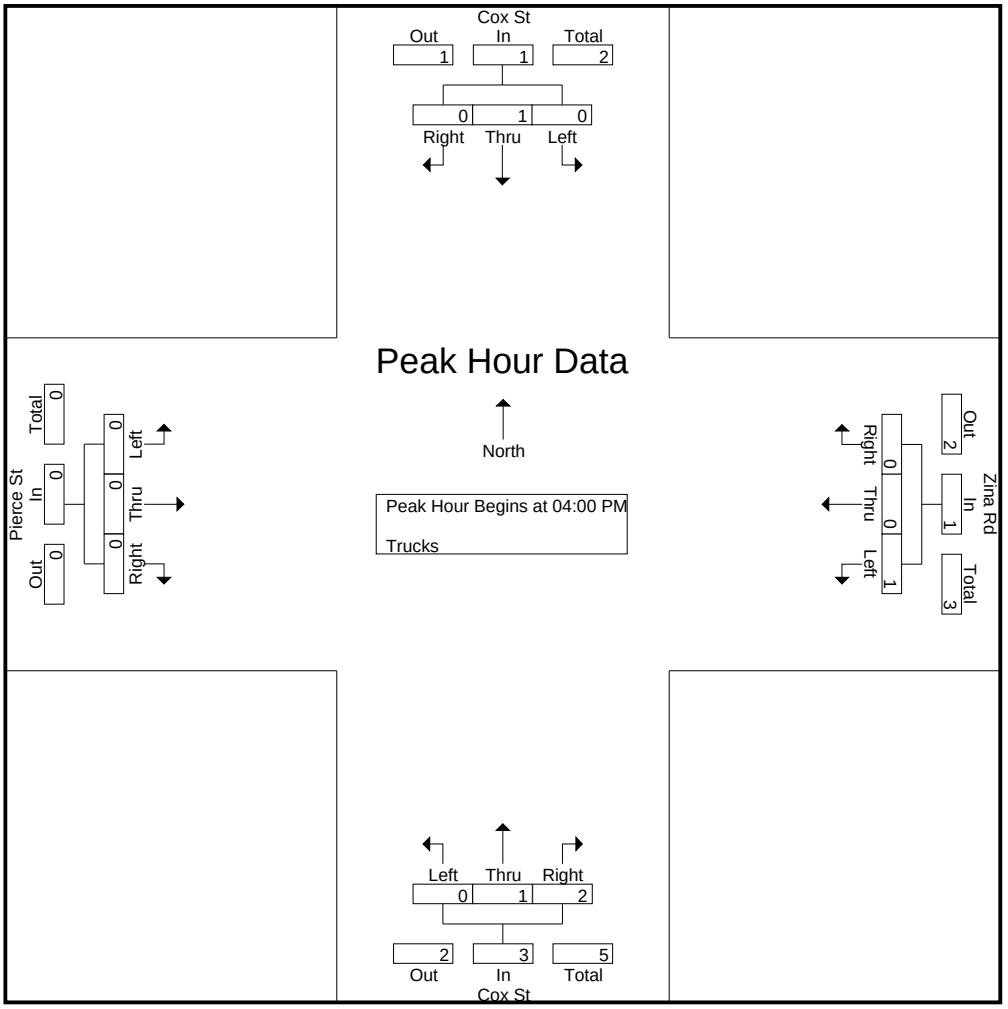
	Cox St From North				Zina Rd From East				Cox St From South				Pierce St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**1**	0	**1**	0	0	0	0	0	0	**1**	**1**	0	0	0	0	**2**
04:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
04:30 PM	0	0	0	0	**1**	0	0	**1**	0	**1**	0	1	0	0	0	0	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	1	0	0	1	0	1	2	3	0	0	0	0	5
% App. Total	0	100	0		100	0	0		0	33.3	66.7		0	0	0		
PHF	.000	.250	.000	.250	.250	.000	.000	.250	.000	.250	.500	.750	.000	.000	.000	.000	.625

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

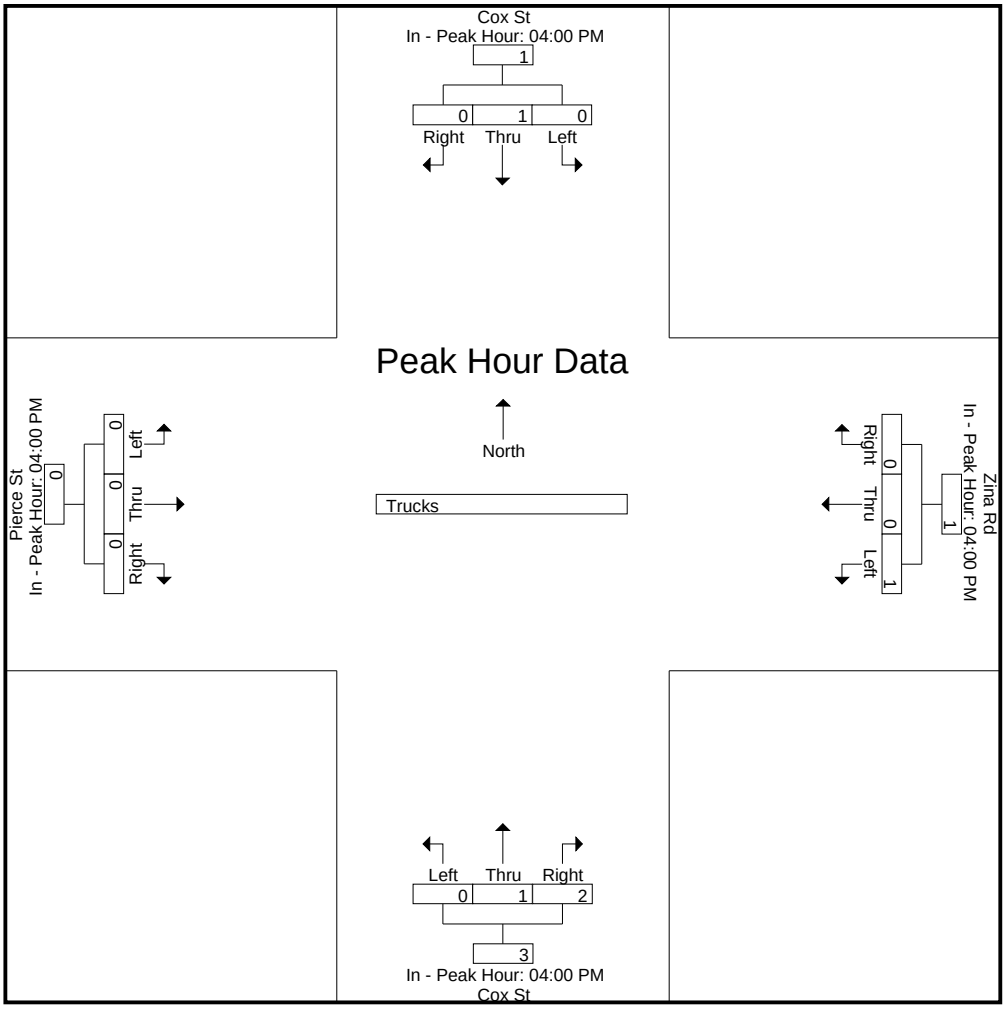
	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	**1**	0	**1**	0	0	0	0	0	0	**1**	**1**	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
+30 mins.	0	0	0	0	**1**	0	0	**1**	0	**1**	0	1	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	1	0	0	1	0	1	2	3	0	0	0	0
% App. Total	0	100	0		100	0	0		0	33.3	66.7		0	0	0	
PHF	.000	.250	.000	.250	.250	.000	.000	.250	.000	.250	.500	.750	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023

Groups Printed- Bikes Peds

	Cox St From North				Zina Rd From East				Cox St From South				Pierce St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
04:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	3	0	3
04:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2	0	2
04:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	4	7	0	7
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	4	7	0	7
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

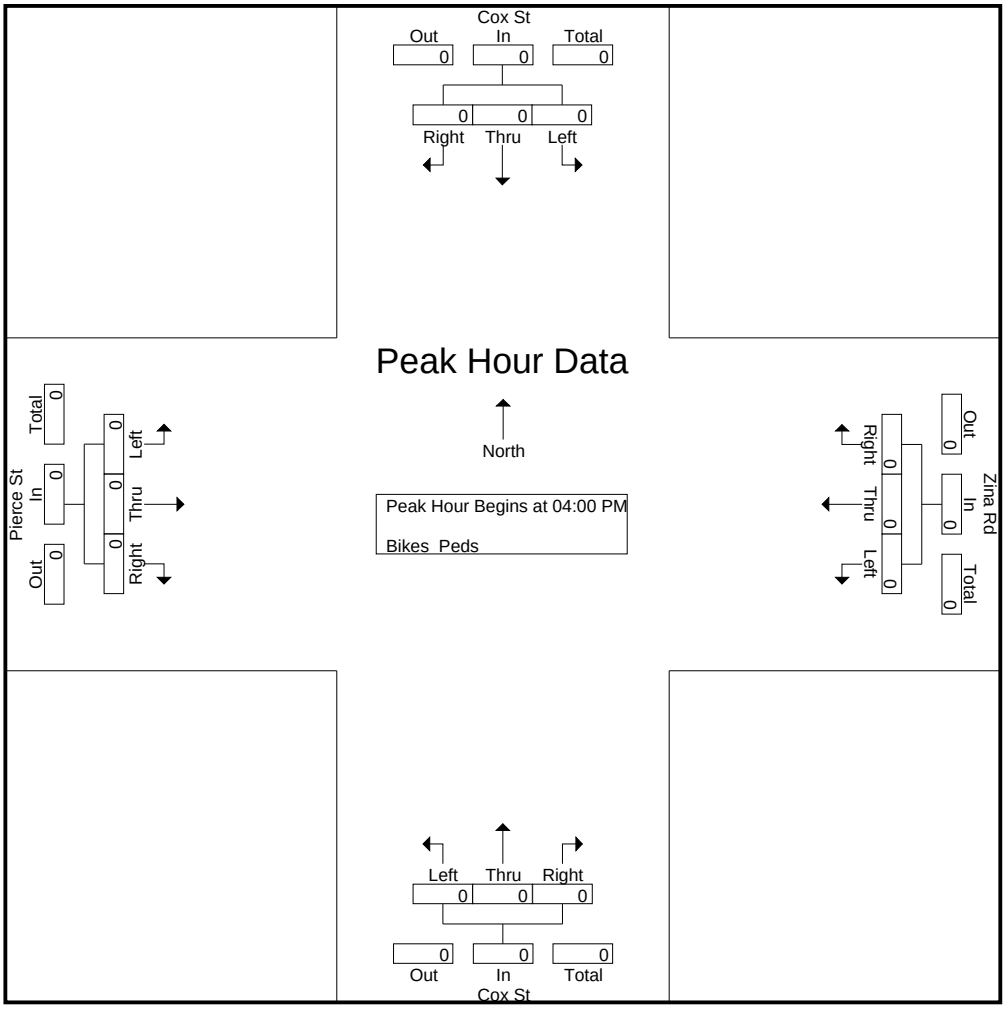
	Cox St From North				Zina Rd From East				Cox St From South				Pierce St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 11



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

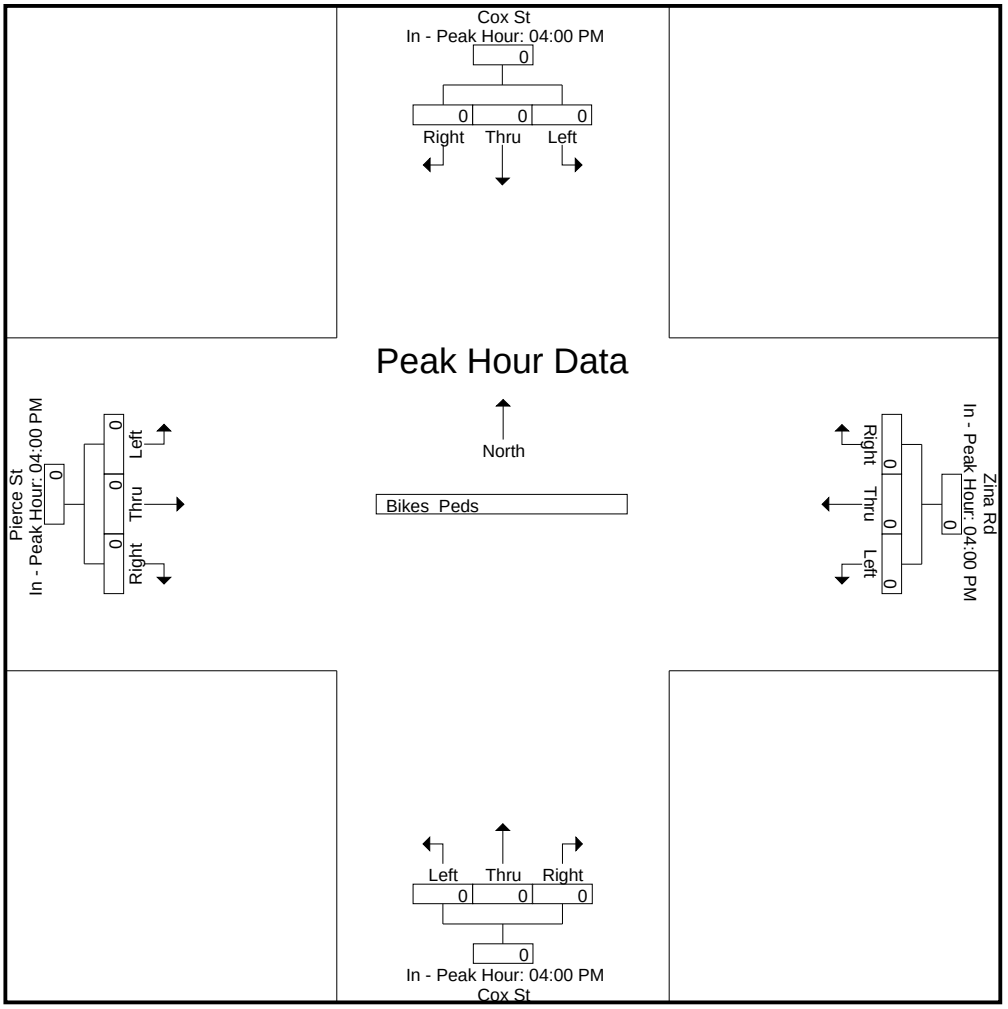
	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Zina Road / Pierce Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 1/24/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 1

Groups Printed- Cars - Trucks

	Cox St From North			Transfer Station From East			Cox St From South			Lee Circle From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	71	1	1	0	0	0	35	0	1	0	1	110
07:15 AM	2	81	1	1	0	0	2	52	2	0	0	1	142
07:30 AM	0	82	0	1	0	0	1	52	1	1	0	1	139
07:45 AM	1	74	1	1	0	1	1	38	2	2	1	1	123
Total	3	308	3	4	0	1	4	177	5	4	1	4	514
08:00 AM	4	76	1	4	0	1	1	36	6	0	0	3	132
08:15 AM	4	100	0	4	0	1	3	63	0	0	0	3	178
08:30 AM	5	73	2	8	0	4	0	36	6	1	0	1	136
08:45 AM	0	84	1	2	0	0	0	46	3	2	0	2	140
Total	13	333	4	18	0	6	4	181	15	3	0	9	586
Grand Total	16	641	7	22	0	7	8	358	20	7	1	13	1100
Apprch %	2.4	96.5	1.1	75.9	0	24.1	2.1	92.7	5.2	33.3	4.8	61.9	
Total %	1.5	58.3	0.6	2	0	0.6	0.7	32.5	1.8	0.6	0.1	1.2	
Cars	10	622	6	11	0	6	8	341	8	6	1	13	1032
% Cars	62.5	97	85.7	50	0	85.7	100	95.3	40	85.7	100	100	93.8
Trucks	6	19	1	11	0	1	0	17	12	1	0	0	68
% Trucks	37.5	3	14.3	50	0	14.3	0	4.7	60	14.3	0	0	6.2

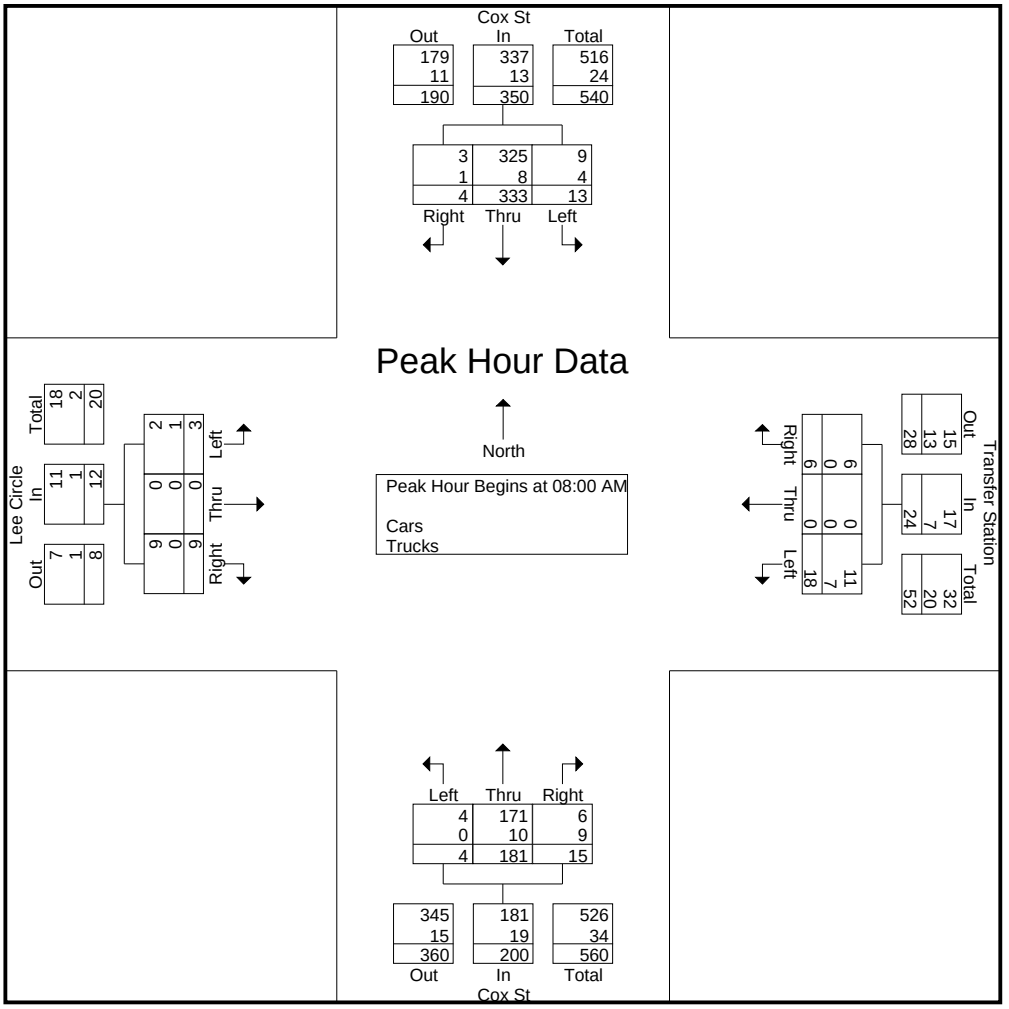
	Cox St From North				Transfer Station From East				Cox St From South				Lee Circle From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	4	76	1	81	4	0	1	5	1	36	**6**	43	0	0	**3**	3	132
08:15 AM	4	**100**	0	**104**	4	0	1	5	**3**	**63**	0	**66**	0	0	3	3	**178**
08:30 AM	**5**	73	**2**	80	**8**	0	**4**	**12**	0	36	6	42	1	0	1	2	136
08:45 AM	0	84	1	85	2	0	0	2	0	46	3	49	**2**	0	2	**4**	140
Total Volume	13	333	4	350	18	0	6	24	4	181	15	200	3	0	9	12	586
% App. Total	3.7	95.1	1.1		75	0	25		2	90.5	7.5		25	0	75		
PHF	.650	.833	.500	.841	.563	.000	.375	.500	.333	.718	.625	.758	.375	.000	.750	.750	.823
Cars	9	325	3	337	11	0	6	17	4	171	6	181	2	0	9	11	546
% Cars	69.2	97.6	75.0	96.3	61.1	0	100	70.8	100	94.5	40.0	90.5	66.7	0	100	91.7	93.2
Trucks	4	8	1	13	7	0	0	7	0	10	9	19	1	0	0	1	40
% Trucks	30.8	2.4	25.0	3.7	38.9	0	0	29.2	0	5.5	60.0	9.5	33.3	0	0	8.3	6.8

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

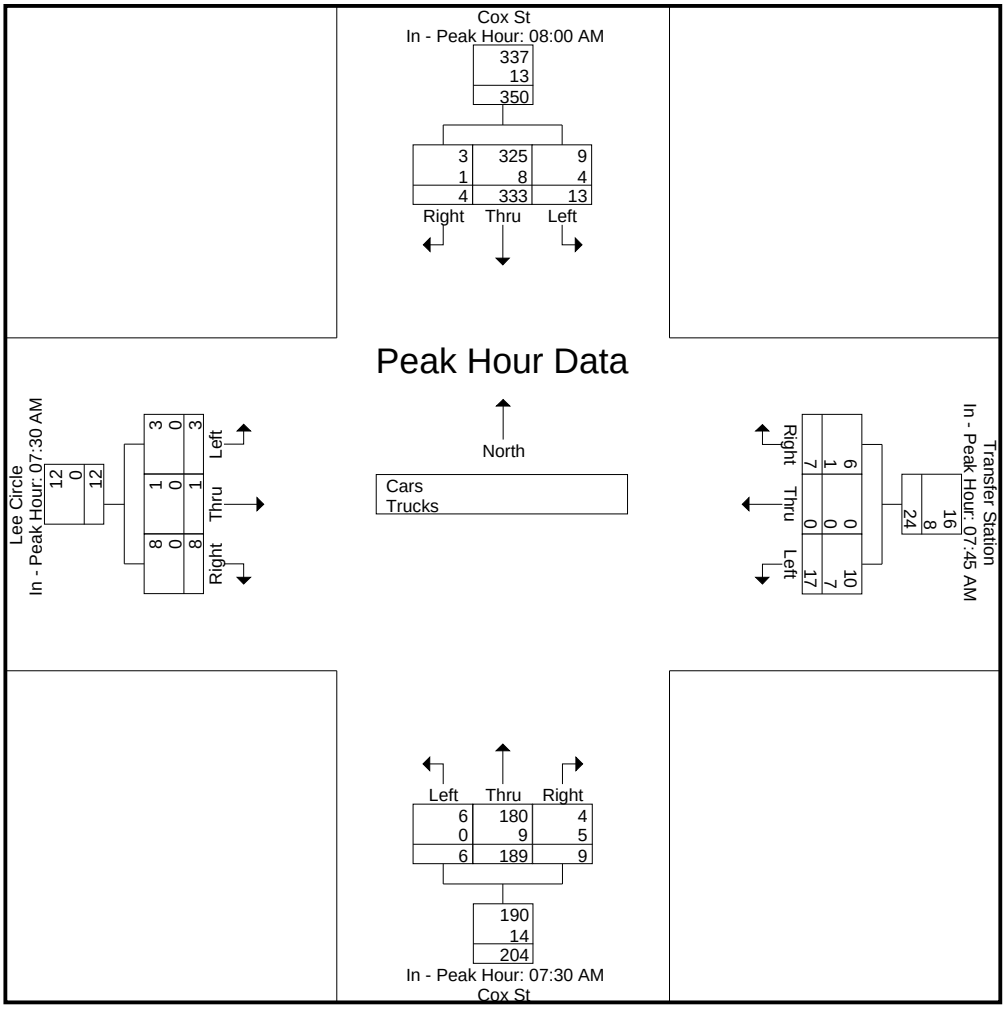
	08:00 AM				07:45 AM				07:30 AM				07:30 AM			
+0 mins.	4	76	1	81	1	0	1	2	1	52	1	54	1	0	1	2
+15 mins.	4	**100**	0	**104**	4	0	1	5	1	38	2	41	**2**	**1**	1	**4**
+30 mins.	**5**	73	**2**	80	4	0	1	5	1	36	**6**	43	0	0	**3**	3
+45 mins.	0	84	1	85	**8**	0	**4**	**12**	**3**	**63**	0	**66**	0	0	3	3
Total Volume	13	333	4	350	17	0	7	24	6	189	9	204	3	1	8	12
% App. Total	3.7	95.1	1.1		70.8	0	29.2		2.9	92.6	4.4		25	8.3	66.7	
PHF	.650	.833	.500	.841	.531	.000	.438	.500	.500	.750	.375	.773	.375	.250	.667	.750
Cars	9	325	3	337	10	0	6	16	6	180	4	190	3	1	8	12
% Cars	69.2	97.6	75	96.3	58.8	0	85.7	66.7	100	95.2	44.4	93.1	100	100	100	100
Trucks	4	8	1	13	7	0	1	8	0	9	5	14	0	0	0	0
% Trucks	30.8	2.4	25	3.7	41.2	0	14.3	33.3	0	4.8	55.6	6.9	0	0	0	0

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023

Groups Printed- Cars

	Cox St From North			Transfer Station From East			Cox St From South			Lee Circle From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	70	1	0	0	0	0	31	0	1	0	1	104
07:15 AM	0	80	1	0	0	0	2	51	1	0	0	1	136
07:30 AM	0	78	0	0	0	0	1	51	0	1	0	1	132
07:45 AM	1	69	1	0	0	0	1	37	1	2	1	1	114
Total	1	297	3	0	0	0	4	170	2	4	1	4	486
08:00 AM	2	75	1	2	0	1	1	34	3	0	0	3	122
08:15 AM	3	98	0	4	0	1	3	58	0	0	0	3	170
08:30 AM	4	73	1	4	0	4	0	35	1	1	0	1	124
08:45 AM	0	79	1	1	0	0	0	44	2	1	0	2	130
Total	9	325	3	11	0	6	4	171	6	2	0	9	546
Grand Total	10	622	6	11	0	6	8	341	8	6	1	13	1032
Apprch %	1.6	97.5	0.9	64.7	0	35.3	2.2	95.5	2.2	30	5	65	
Total %	1	60.3	0.6	1.1	0	0.6	0.8	33	0.8	0.6	0.1	1.3	

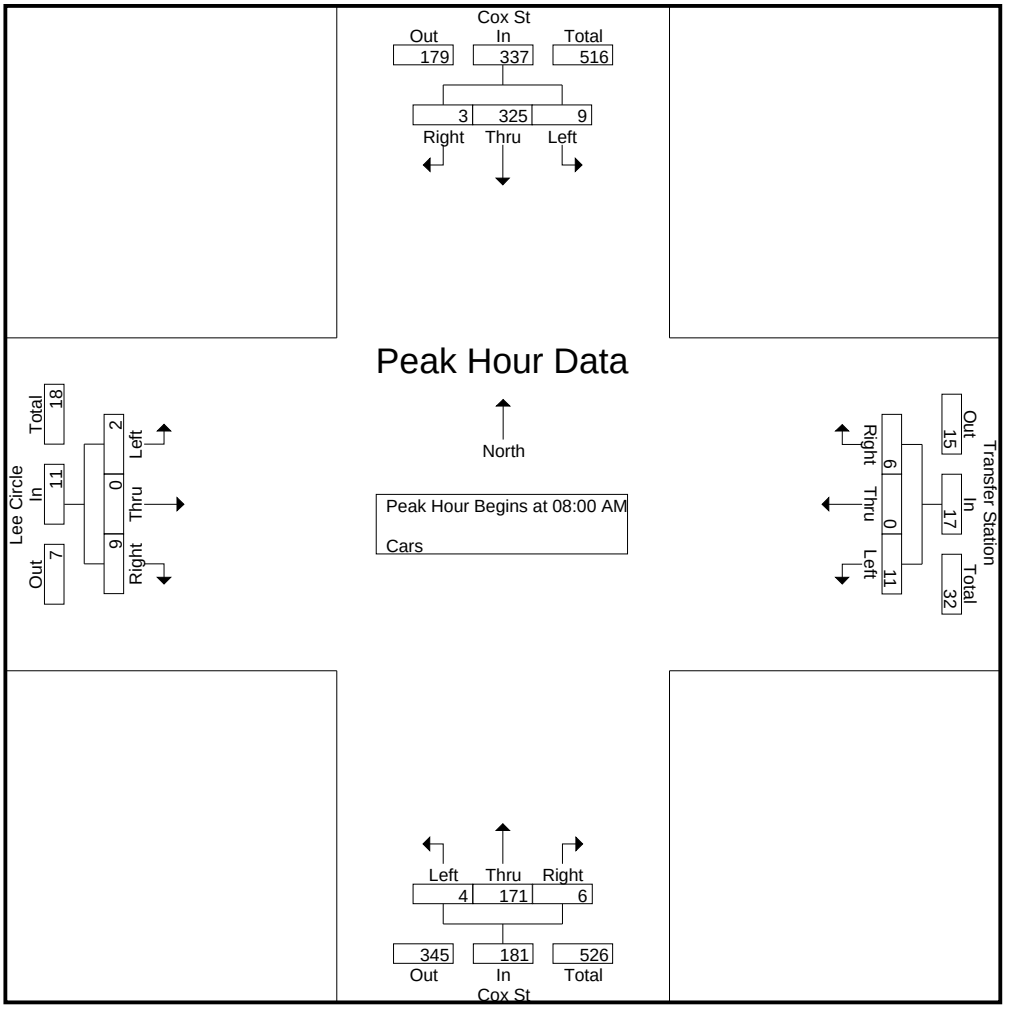
	Cox St From North				Transfer Station From East				Cox St From South				Lee Circle From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	2	75	**1**	78	2	0	1	3	1	34	**3**	38	0	0	**3**	**3**	122
08:15 AM	3	**98**	0	**101**	**4**	0	1	5	**3**	**58**	0	**61**	0	0	3	3	**170**
08:30 AM	**4**	73	1	78	4	0	**4**	**8**	0	35	1	36	**1**	0	1	2	124
08:45 AM	0	79	1	80	1	0	0	1	0	44	2	46	1	0	2	3	130
Total Volume	9	325	3	337	11	0	6	17	4	171	6	181	2	0	9	11	546
% App. Total	2.7	96.4	0.9		64.7	0	35.3		2.2	94.5	3.3		18.2	0	81.8		
PHF	.563	.829	.750	.834	.688	.000	.375	.531	.333	.737	.500	.742	.500	.000	.750	.917	.803

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

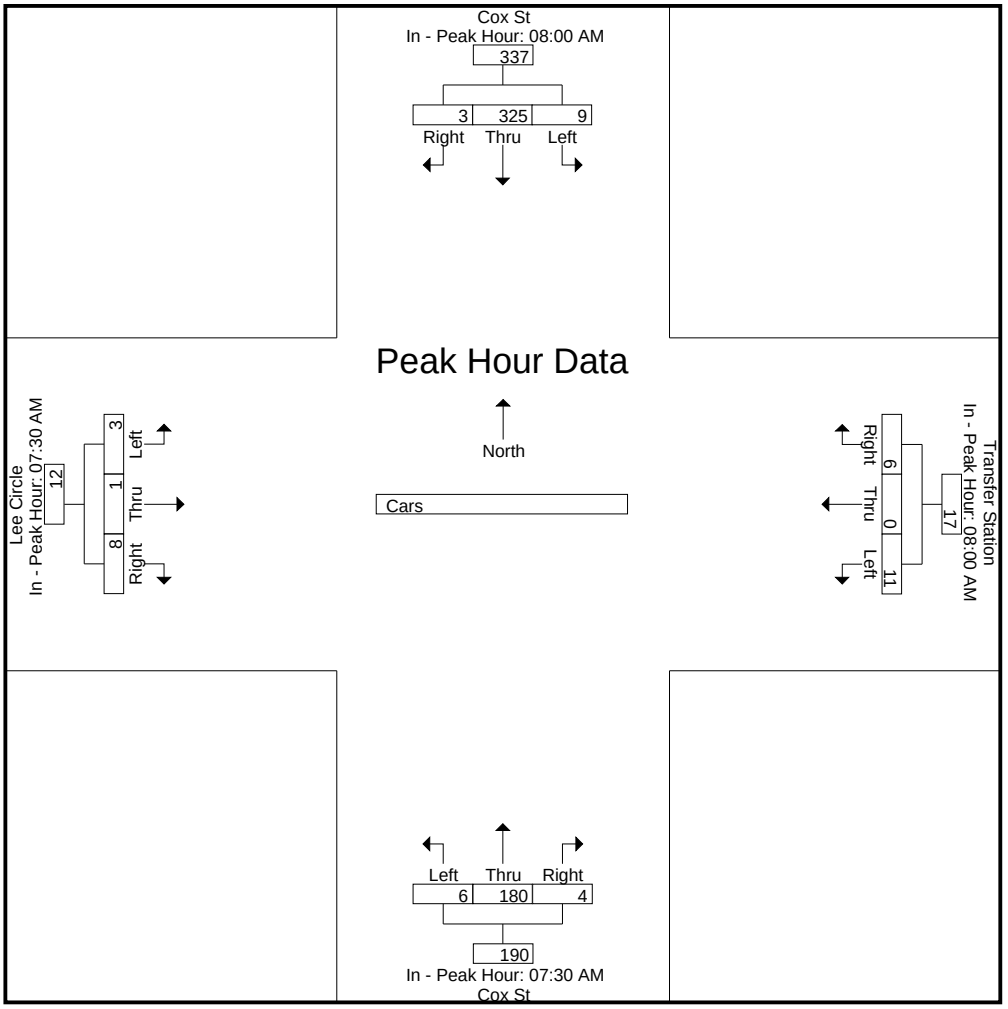
	08:00 AM				08:00 AM				07:30 AM				07:30 AM			
+0 mins.	2	75	**1**	78	2	0	1	3	1	51	0	52	1	0	1	2
+15 mins.	3	**98**	0	**101**	**4**	0	1	5	1	37	1	39	**2**	**1**	1	**4**
+30 mins.	**4**	73	1	78	4	0	**4**	**8**	1	34	**3**	38	0	0	**3**	3
+45 mins.	0	79	1	80	1	0	0	1	**3**	**58**	0	**61**	0	0	3	3
Total Volume	9	325	3	337	11	0	6	17	6	180	4	190	3	1	8	12
% App. Total	2.7	96.4	0.9		64.7	0	35.3		3.2	94.7	2.1		25	8.3	66.7	
PHF	.563	.829	.750	.834	.688	.000	.375	.531	.500	.776	.333	.779	.375	.250	.667	.750

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023

Groups Printed- Trucks

	Cox St From North			Transfer Station From East			Cox St From South			Lee Circle From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	1	0	1	0	0	0	4	0	0	0	0	6
07:15 AM	2	1	0	1	0	0	0	1	1	0	0	0	6
07:30 AM	0	4	0	1	0	0	0	1	1	0	0	0	7
07:45 AM	0	5	0	1	0	1	0	1	1	0	0	0	9
Total	2	11	0	4	0	1	0	7	3	0	0	0	28
08:00 AM	2	1	0	2	0	0	0	2	3	0	0	0	10
08:15 AM	1	2	0	0	0	0	0	5	0	0	0	0	8
08:30 AM	1	0	1	4	0	0	0	1	5	0	0	0	12
08:45 AM	0	5	0	1	0	0	0	2	1	1	0	0	10
Total	4	8	1	7	0	0	0	10	9	1	0	0	40
Grand Total	6	19	1	11	0	1	0	17	12	1	0	0	68
Apprch %	23.1	73.1	3.8	91.7	0	8.3	0	58.6	41.4	100	0	0	
Total %	8.8	27.9	1.5	16.2	0	1.5	0	25	17.6	1.5	0	0	

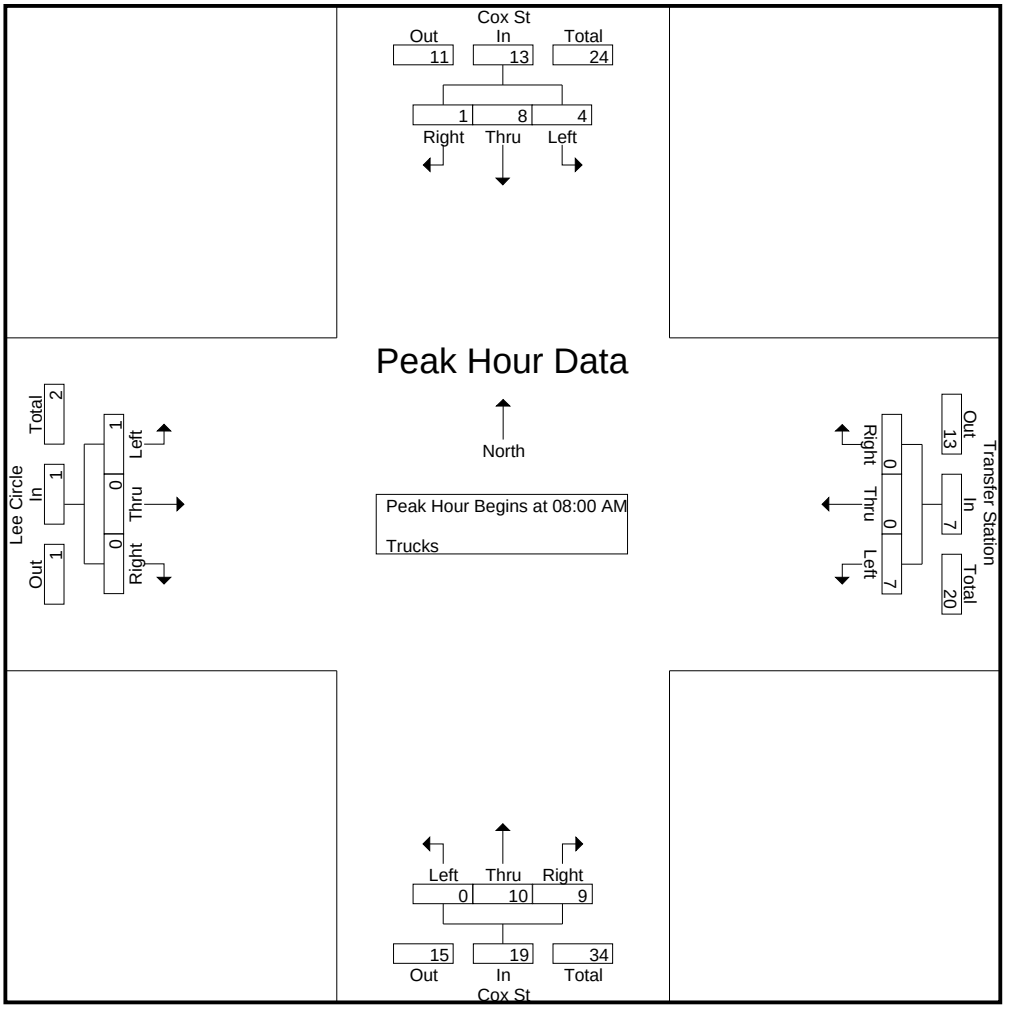
	Cox St From North				Transfer Station From East				Cox St From South				Lee Circle From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	**2**	1	0	3	2	0	0	2	0	2	3	5	0	0	0	0	10
08:15 AM	1	2	0	3	0	0	0	0	0	**5**	0	5	0	0	0	0	8
08:30 AM	1	0	**1**	2	**4**	0	0	**4**	0	1	**5**	**6**	0	0	0	0	**12**
08:45 AM	0	**5**	0	**5**	1	0	0	1	0	2	1	3	**1**	0	0	**1**	10
Total Volume	4	8	1	13	7	0	0	7	0	10	9	19	1	0	0	1	40
% App. Total	30.8	61.5	7.7		100	0	0		0	52.6	47.4		100	0	0		
PHF	.500	.400	.250	.650	.438	.000	.000	.438	.000	.500	.450	.792	.250	.000	.000	.250	.833

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM				07:45 AM				08:00 AM				08:00 AM			
+0 mins.	**2**	1	0	3	1	0	**1**	2	0	2	3	5	0	0	0	0
+15 mins.	0	4	0	4	2	0	0	2	0	**5**	0	5	0	0	0	0
+30 mins.	0	**5**	0	**5**	0	0	0	0	0	1	**5**	**6**	0	0	0	0
+45 mins.	2	1	0	3	**4**	0	0	**4**	0	2	1	3	**1**	0	0	**1**
Total Volume	4	11	0	15	7	0	1	8	0	10	9	19	1	0	0	1
% App. Total	26.7	73.3	0		87.5	0	12.5		0	52.6	47.4		100	0	0	
PHF	.500	.550	.000	.750	.438	.000	.250	.500	.000	.500	.450	.792	.250	.000	.000	.250

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
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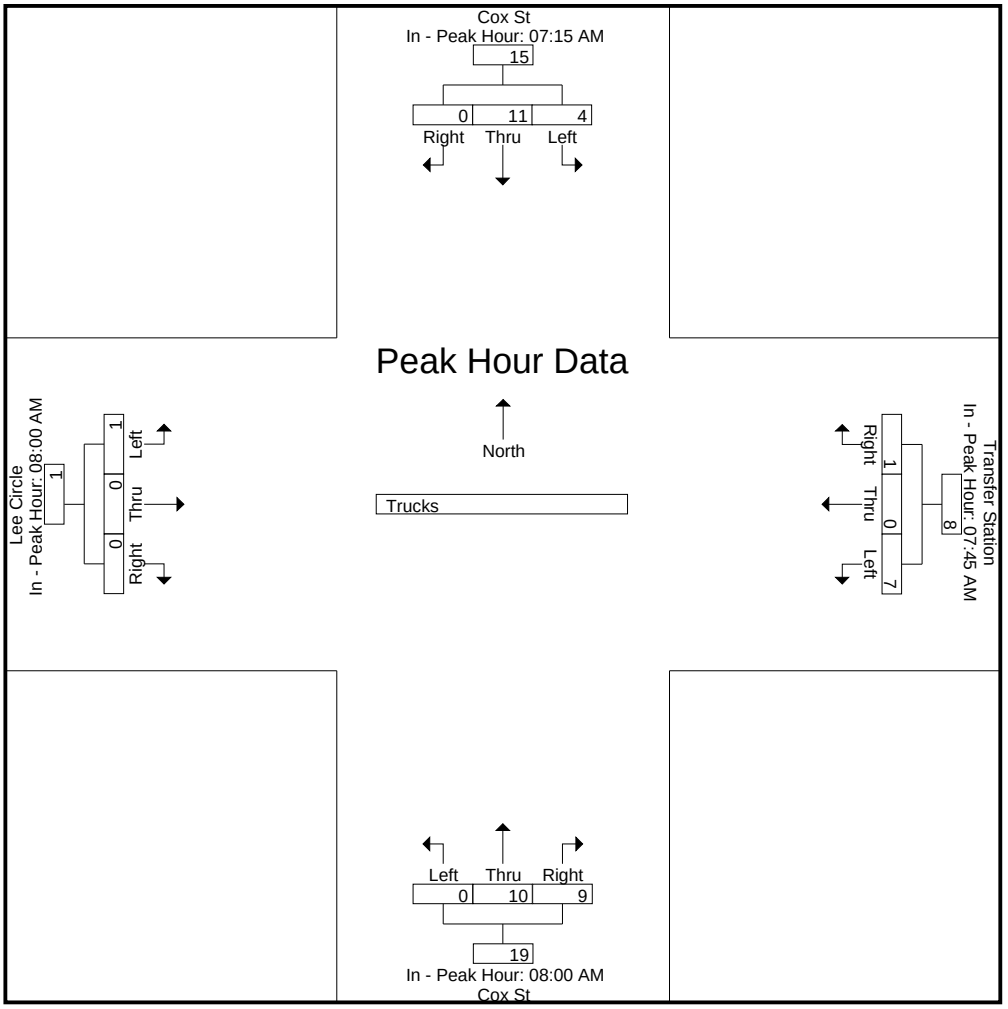


Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023

Groups Printed- Bikes Peds

	Cox St From North				Transfer Station From East				Cox St From South				Lee Circle From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	3	0	0	0	0	0	1	0	0	0	0	0	1	4	1	5
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	3	0	0	0	0	0	1	0	0	0	0	0	1	4	1	5
08:00 AM	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	3	0	3
Grand Total	0	0	0	4	0	0	0	1	0	1	0	0	0	0	0	2	7	1	8
Apprch %	0	0	0		0	0	0		0	100	0		0	0	0				
Total %	0	0	0		0	0	0		0	100	0		0	0	0		87.5	12.5	

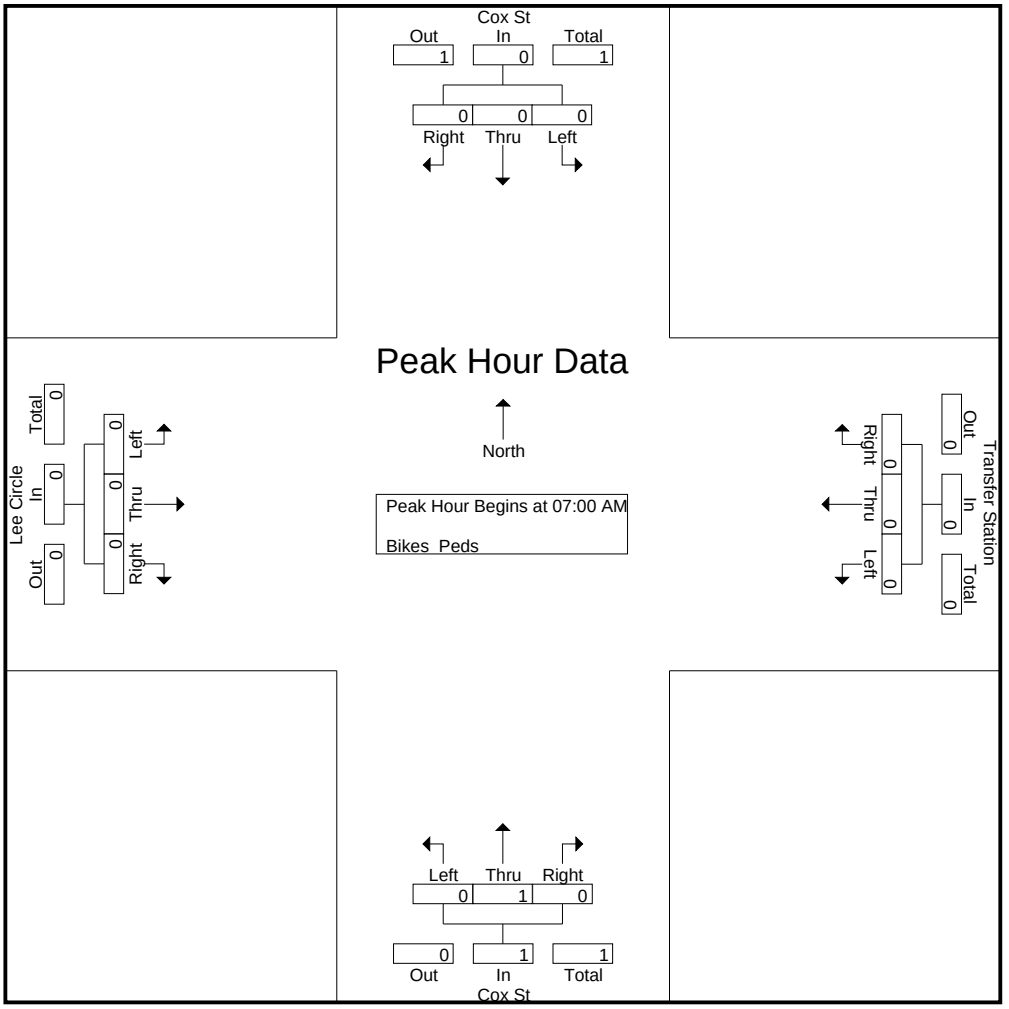
	Cox St From North				Transfer Station From East				Cox St From South				Lee Circle From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0	**1**
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.250

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

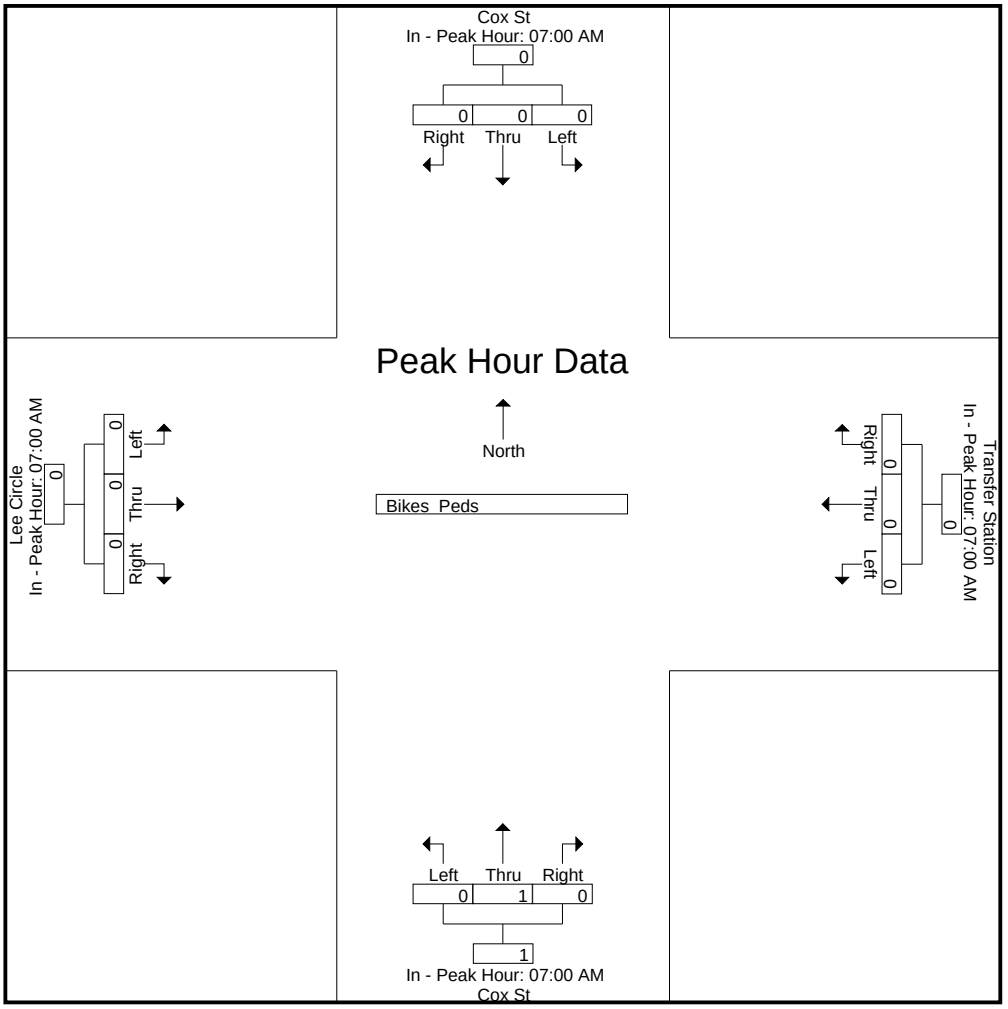
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 1

Groups Printed- Cars - Trucks

	Cox St From North			Transfer Station From East			Cox St From South			Lee Circle From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	50	4	3	0	0	1	76	0	0	0	1	135
04:15 PM	0	48	2	1	0	1	1	76	0	1	0	2	132
04:30 PM	1	49	0	0	0	1	4	78	0	0	0	1	134
04:45 PM	0	48	1	0	0	0	1	82	1	2	0	2	137
Total	1	195	7	4	0	2	7	312	1	3	0	6	538
05:00 PM	0	48	1	2	0	0	2	81	1	1	0	1	137
05:15 PM	0	31	1	0	0	0	0	77	0	0	0	0	109
05:30 PM	0	38	1	1	0	0	1	79	2	0	0	1	123
05:45 PM	0	34	1	2	0	0	2	82	0	0	0	0	121
Total	0	151	4	5	0	0	5	319	3	1	0	2	490
Grand Total	1	346	11	9	0	2	12	631	4	4	0	8	1028
Apprch %	0.3	96.6	3.1	81.8	0	18.2	1.9	97.5	0.6	33.3	0	66.7	
Total %	0.1	33.7	1.1	0.9	0	0.2	1.2	61.4	0.4	0.4	0	0.8	
Cars	1	340	11	4	0	1	12	628	0	4	0	8	1009
% Cars	100	98.3	100	44.4	0	50	100	99.5	0	100	0	100	98.2
Trucks	0	6	0	5	0	1	0	3	4	0	0	0	19
% Trucks	0	1.7	0	55.6	0	50	0	0.5	100	0	0	0	1.8

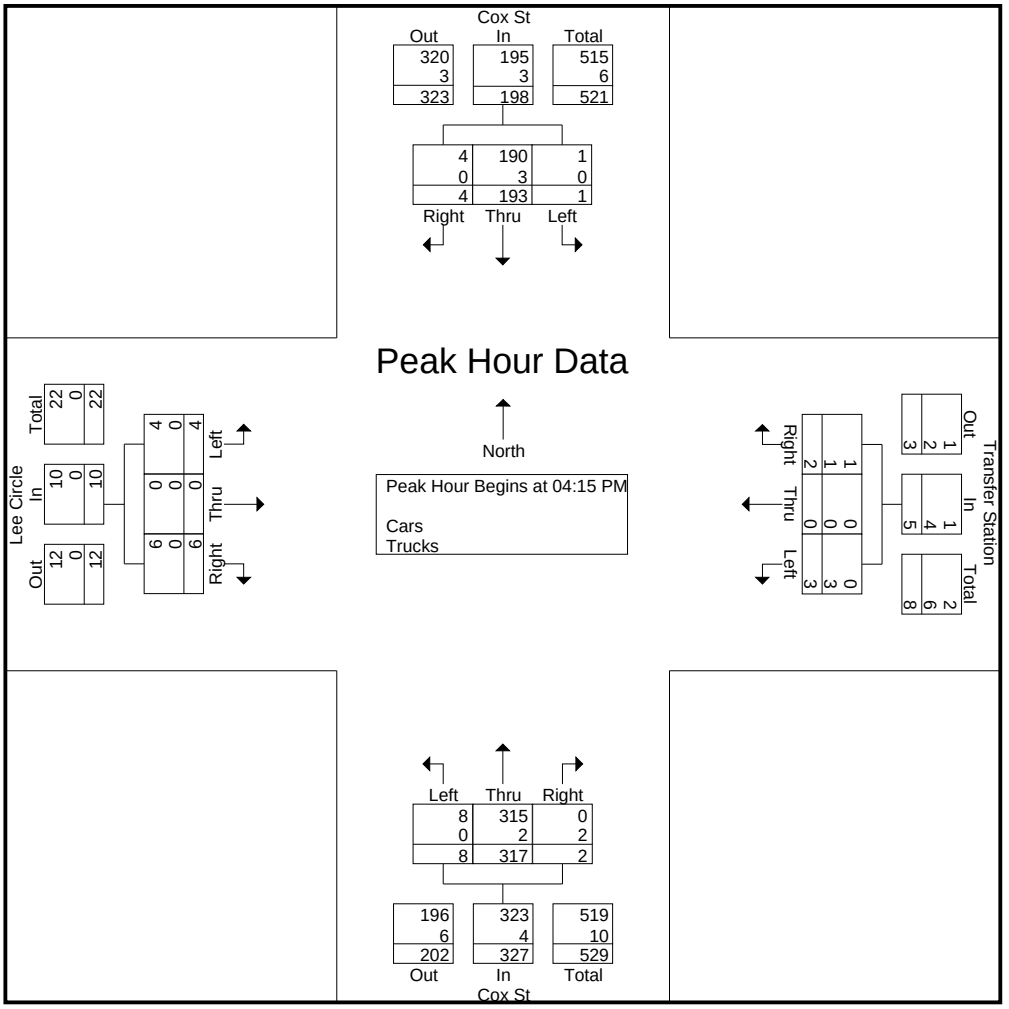
	Cox St From North				Transfer Station From East				Cox St From South				Lee Circle From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	48	**2**	**50**	1	0	**1**	**2**	1	76	0	77	1	0	**2**	3	132
04:30 PM	**1**	**49**	0	50	0	0	1	1	**4**	78	0	82	0	0	1	1	134
04:45 PM	0	48	1	49	0	0	0	0	1	**82**	**1**	**84**	**2**	0	2	**4**	**137**
05:00 PM	0	48	1	49	**2**	0	0	2	2	81	1	84	1	0	1	2	137
Total Volume	1	193	4	198	3	0	2	5	8	317	2	327	4	0	6	10	540
% App. Total	0.5	97.5	2		60	0	40		2.4	96.9	0.6		40	0	60		
PHF	.250	.985	.500	.990	.375	.000	.500	.625	.500	.966	.500	.973	.500	.000	.750	.625	.985
Cars	1	190	4	195	0	0	1	1	8	315	0	323	4	0	6	10	529
% Cars	100	98.4	100	98.5	0	0	50.0	20.0	100	99.4	0	98.8	100	0	100	100	98.0
Trucks	0	3	0	3	3	0	1	4	0	2	2	4	0	0	0	0	11
% Trucks	0	1.6	0	1.5	100	0	50.0	80.0	0	0.6	100	1.2	0	0	0	0	2.0

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

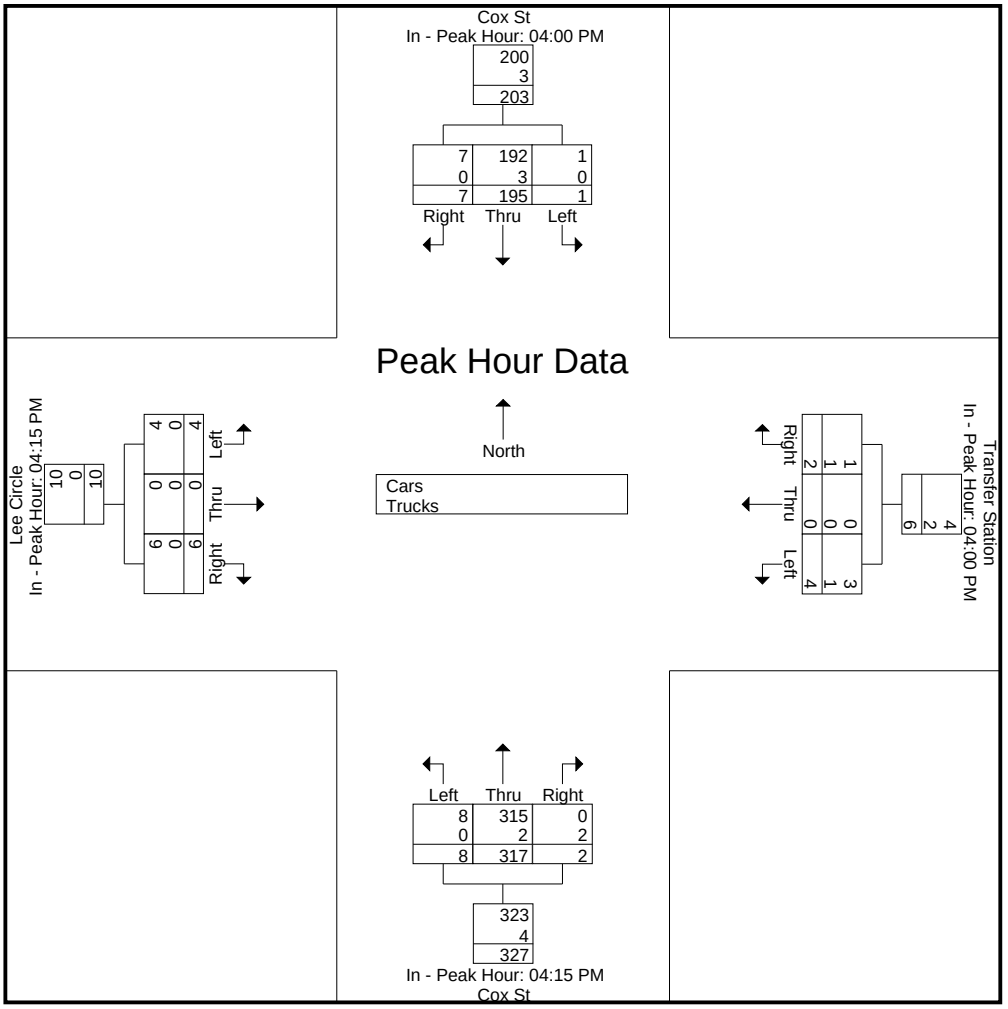
	04:00 PM				04:00 PM				04:15 PM				04:15 PM			
+0 mins.	0	**50**	**4**	**54**	**3**	0	0	**3**	1	76	0	77	1	0	**2**	3
+15 mins.	0	48	2	50	1	0	**1**	2	**4**	78	0	82	0	0	1	1
+30 mins.	**1**	49	0	50	0	0	1	1	1	**82**	**1**	**84**	**2**	0	2	**4**
+45 mins.	0	48	1	49	0	0	0	0	2	81	1	84	1	0	1	2
Total Volume	1	195	7	203	4	0	2	6	8	317	2	327	4	0	6	10
% App. Total	0.5	96.1	3.4		66.7	0	33.3		2.4	96.9	0.6		40	0	60	
PHF	.250	.975	.438	.940	.333	.000	.500	.500	.500	.966	.500	.973	.500	.000	.750	.625
Cars	1	192	7	200	3	0	1	4	8	315	0	323	4	0	6	10
% Cars	100	98.5	100	98.5	75	0	50	66.7	100	99.4	0	98.8	100	0	100	100
Trucks	0	3	0	3	1	0	1	2	0	2	2	4	0	0	0	0
% Trucks	0	1.5	0	1.5	25	0	50	33.3	0	0.6	100	1.2	0	0	0	0

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023

Groups Printed- Cars

	Cox St From North			Transfer Station From East			Cox St From South			Lee Circle From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	49	4	3	0	0	1	75	0	0	0	1	133
04:15 PM	0	47	2	0	0	0	1	75	0	1	0	2	128
04:30 PM	1	49	0	0	0	1	4	77	0	0	0	1	133
04:45 PM	0	47	1	0	0	0	1	82	0	2	0	2	135
Total	1	192	7	3	0	1	7	309	0	3	0	6	529
05:00 PM	0	47	1	0	0	0	2	81	0	1	0	1	133
05:15 PM	0	30	1	0	0	0	0	77	0	0	0	0	108
05:30 PM	0	37	1	0	0	0	1	79	0	0	0	1	119
05:45 PM	0	34	1	1	0	0	2	82	0	0	0	0	120
Total	0	148	4	1	0	0	5	319	0	1	0	2	480
Grand Total	1	340	11	4	0	1	12	628	0	4	0	8	1009
Apprch %	0.3	96.6	3.1	80	0	20	1.9	98.1	0	33.3	0	66.7	
Total %	0.1	33.7	1.1	0.4	0	0.1	1.2	62.2	0	0.4	0	0.8	

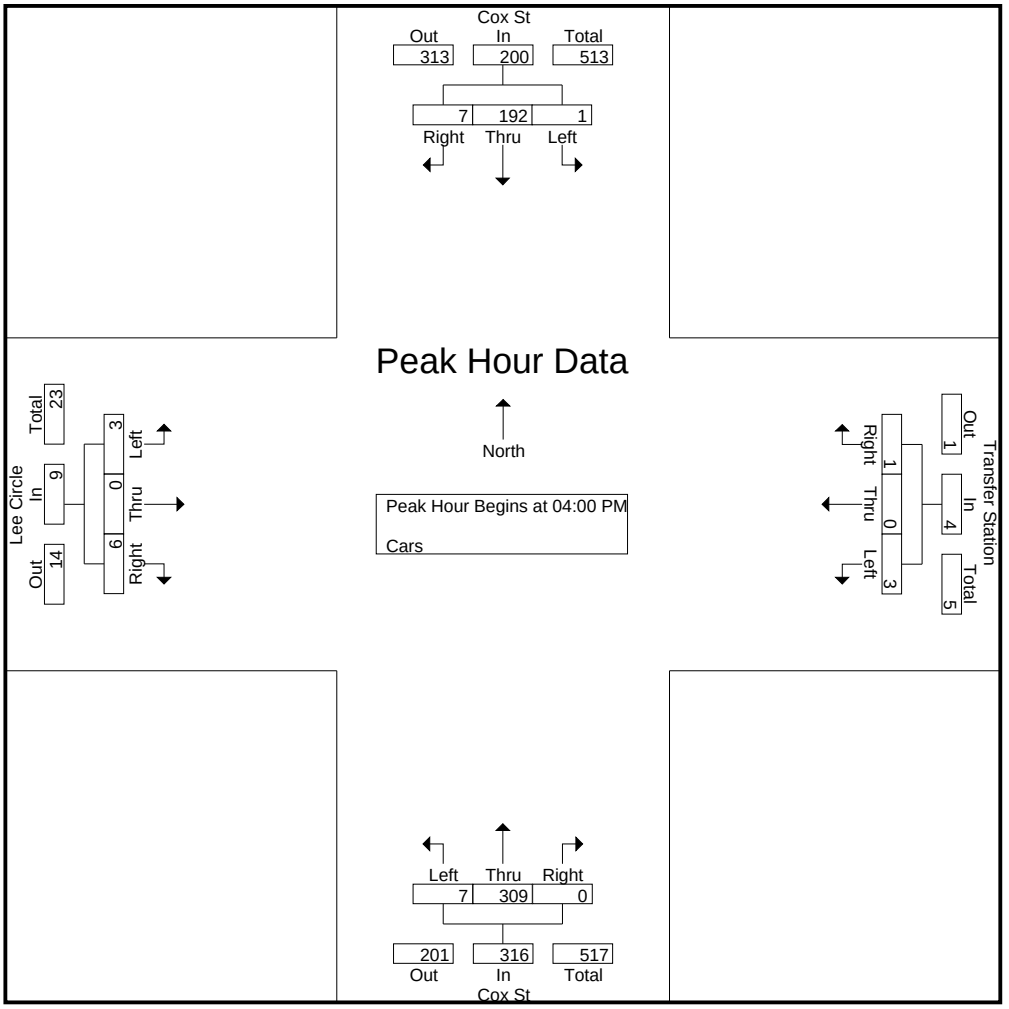
	Cox St From North				Transfer Station From East				Cox St From South				Lee Circle From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**49**	**4**	**53**	**3**	0	0	**3**	1	75	0	76	0	0	1	1	133
04:15 PM	0	47	2	49	0	0	0	0	1	75	0	76	1	0	**2**	3	128
04:30 PM	**1**	49	0	50	0	0	**1**	1	**4**	77	0	81	0	0	1	1	133
04:45 PM	0	47	1	48	0	0	0	0	1	**82**	0	**83**	**2**	0	2	**4**	**135**
Total Volume	1	192	7	200	3	0	1	4	7	309	0	316	3	0	6	9	529
% App. Total	0.5	96	3.5		75	0	25		2.2	97.8	0		33.3	0	66.7		
PHF	.250	.980	.438	.943	.250	.000	.250	.333	.438	.942	.000	.952	.375	.000	.750	.563	.980

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

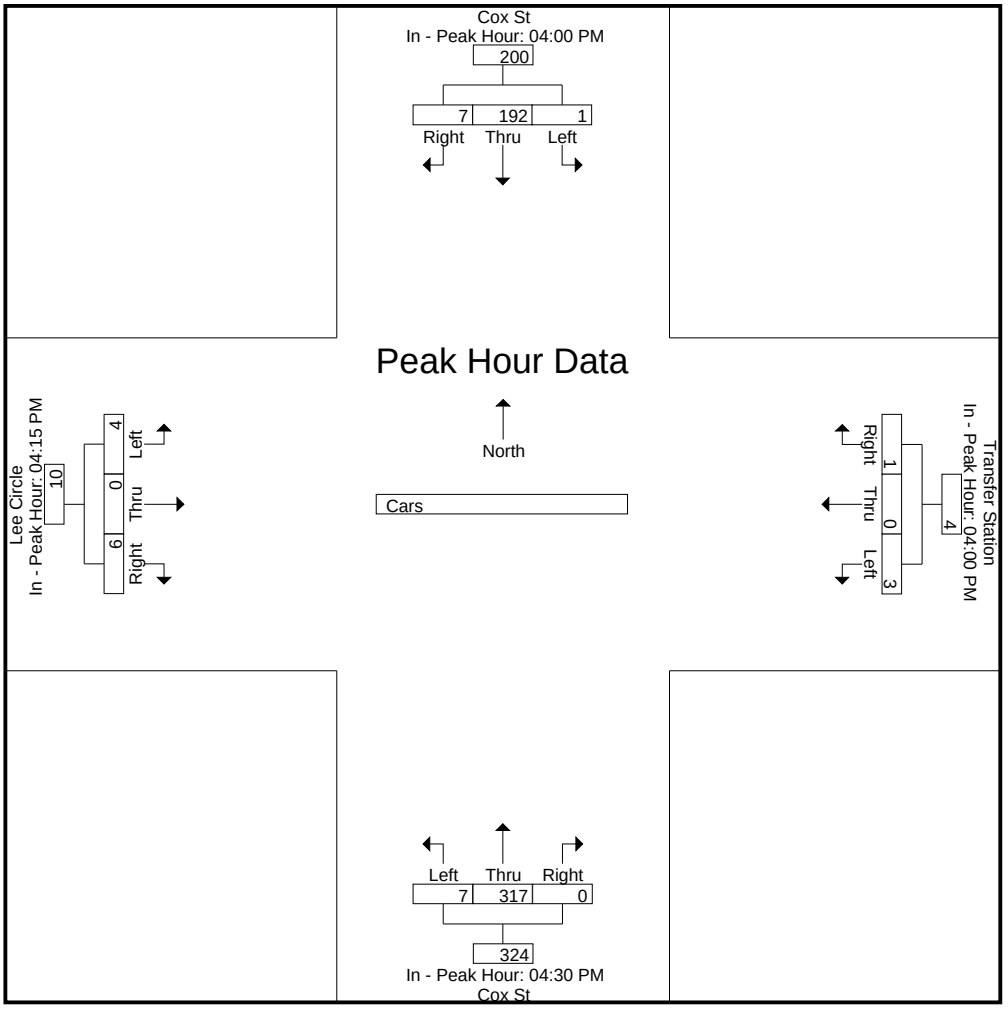
	04:00 PM				04:00 PM				04:30 PM				04:15 PM			
+0 mins.	0	**49**	**4**	**53**	**3**	0	0	**3**	**4**	77	0	81	1	0	**2**	3
+15 mins.	0	47	2	49	0	0	0	0	1	**82**	0	**83**	0	0	1	1
+30 mins.	**1**	49	0	50	0	0	**1**	1	2	81	0	83	**2**	0	2	**4**
+45 mins.	0	47	1	48	0	0	0	0	0	77	0	77	1	0	1	2
Total Volume	1	192	7	200	3	0	1	4	7	317	0	324	4	0	6	10
% App. Total	0.5	96	3.5		75	0	25		2.2	97.8	0		40	0	60	
PHF	.250	.980	.438	.943	.250	.000	.250	.333	.438	.966	.000	.976	.500	.000	.750	.625

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023

Groups Printed- Trucks

	Cox St From North			Transfer Station From East			Cox St From South			Lee Circle From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	1	0	0	0	0	0	1	0	0	0	0	2
04:15 PM	0	1	0	1	0	1	0	1	0	0	0	0	4
04:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
04:45 PM	0	1	0	0	0	0	0	0	1	0	0	0	2
Total	0	3	0	1	0	1	0	3	1	0	0	0	9
05:00 PM	0	1	0	2	0	0	0	0	1	0	0	0	4
05:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	1	0	1	0	0	0	0	2	0	0	0	4
05:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	0	3	0	4	0	0	0	0	3	0	0	0	10
Grand Total	0	6	0	5	0	1	0	3	4	0	0	0	19
Apprch %	0	100	0	83.3	0	16.7	0	42.9	57.1	0	0	0	
Total %	0	31.6	0	26.3	0	5.3	0	15.8	21.1	0	0	0	

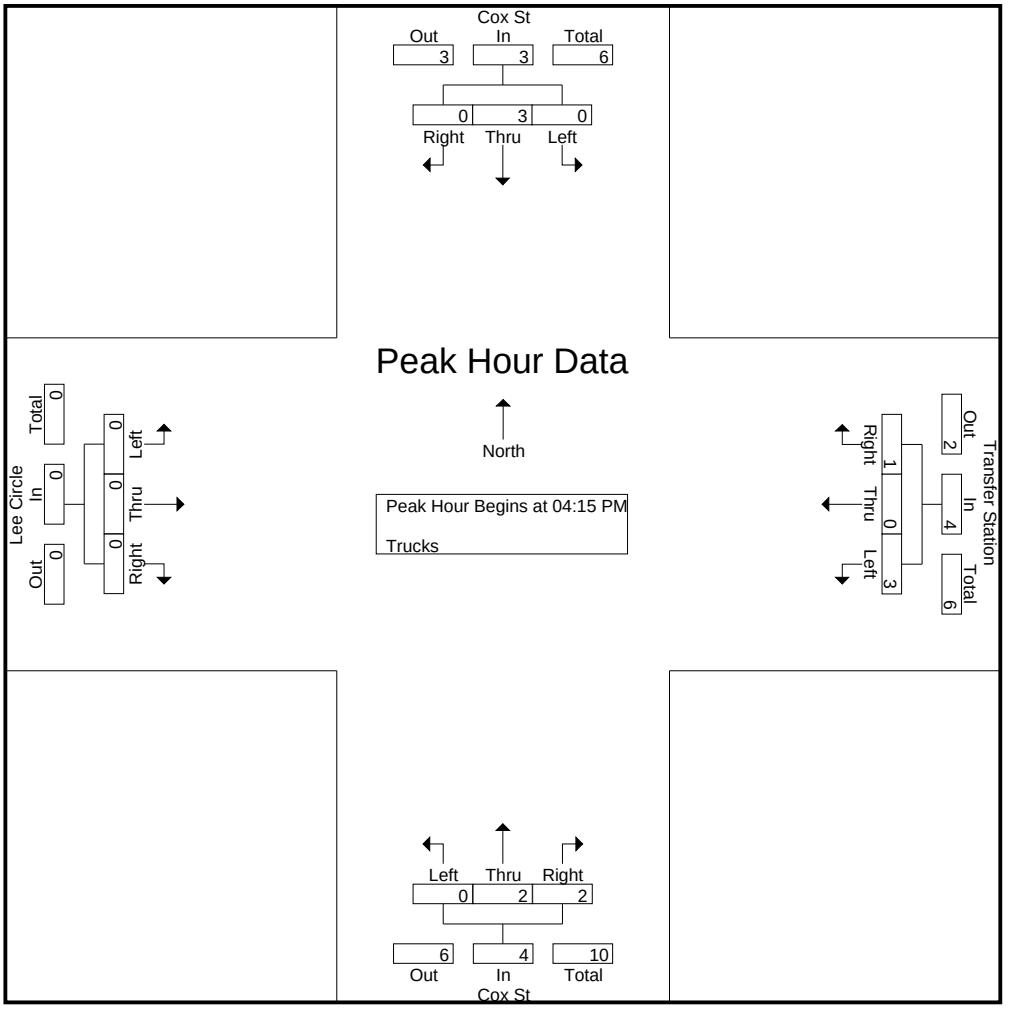
	Cox St From North				Transfer Station From East				Cox St From South				Lee Circle From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	**1**	0	**1**	1	0	**1**	**2**	0	**1**	0	**1**	0	0	0	0	**4**
04:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
04:45 PM	0	1	0	1	0	0	0	0	0	0	**1**	1	0	0	0	0	2
05:00 PM	0	1	0	1	**2**	0	0	2	0	0	1	1	0	0	0	0	4
Total Volume	0	3	0	3	3	0	1	4	0	2	2	4	0	0	0	0	11
% App. Total	0	100	0		75	0	25		0	50	50		0	0	0		
PHF	.000	.750	.000	.750	.375	.000	.250	.500	.000	.500	.500	1.00	.000	.000	.000	.000	.688

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

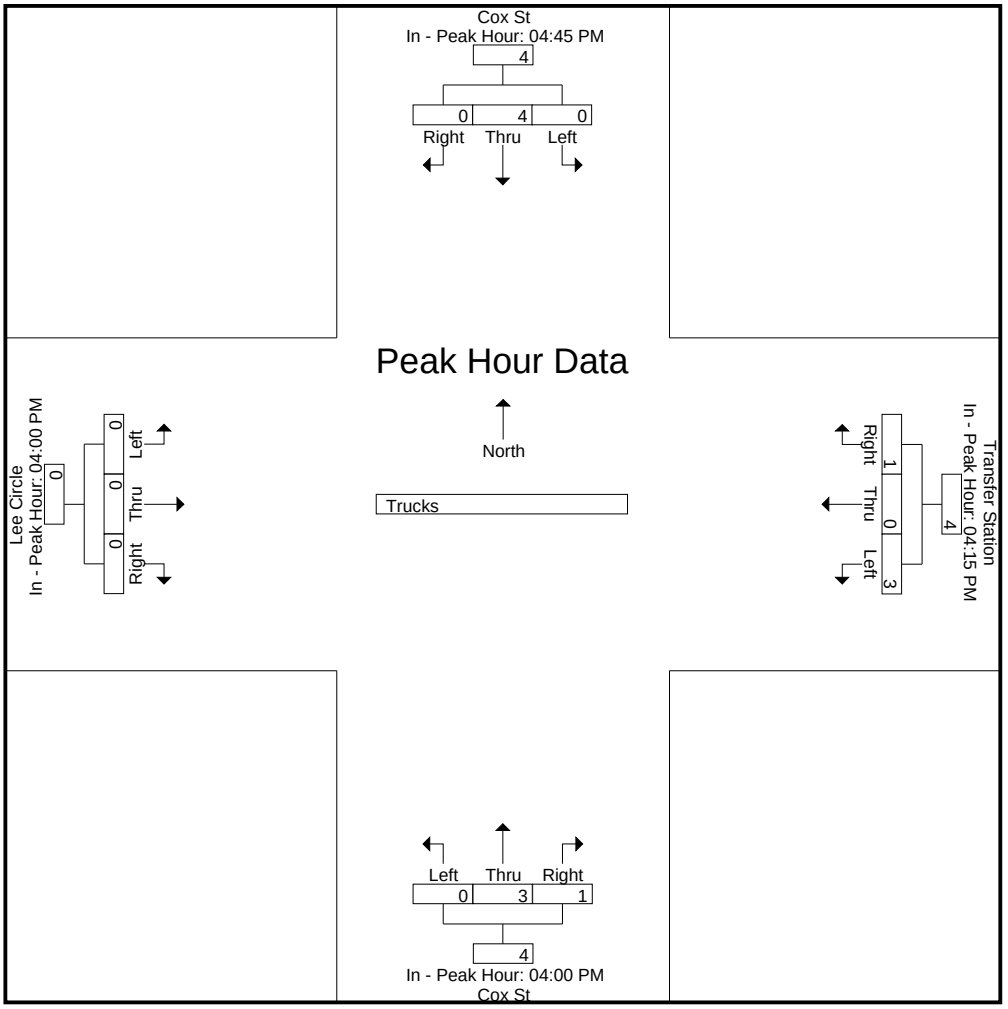
	04:45 PM				04:15 PM				04:00 PM				04:00 PM			
+0 mins.	0	**1**	0	**1**	1	0	**1**	**2**	0	**1**	0	**1**	0	0	0	0
+15 mins.	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0
+30 mins.	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0
+45 mins.	0	1	0	1	**2**	0	0	2	0	0	**1**	1	0	0	0	0
Total Volume	0	4	0	4	3	0	1	4	0	3	1	4	0	0	0	0
% App. Total	0	100	0		75	0	25		0	75	25		0	0	0	
PHF	.000	1.000	.000	1.000	.375	.000	.250	.500	.000	.750	.250	1.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 10

Groups Printed- Bikes Peds

	Cox St From North				Transfer Station From East				Cox St From South				Lee Circle From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Grand Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Apprch %	0	100	0		0	0	0		0	0	0		0	0	0				
Total %	0	100	0		0	0	0		0	0	0		0	0	0		0	100	

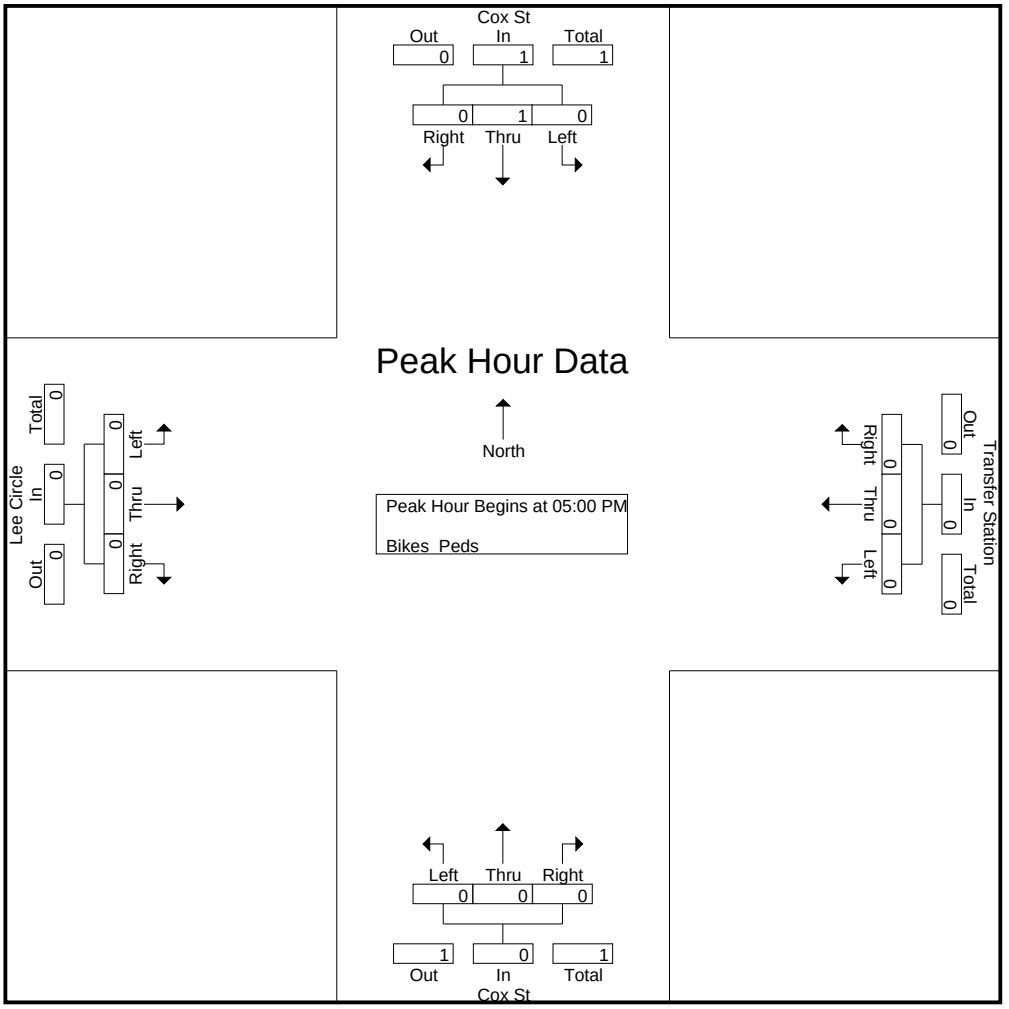
	Cox St From North				Transfer Station From East				Cox St From South				Lee Circle From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Total Volume	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 11



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

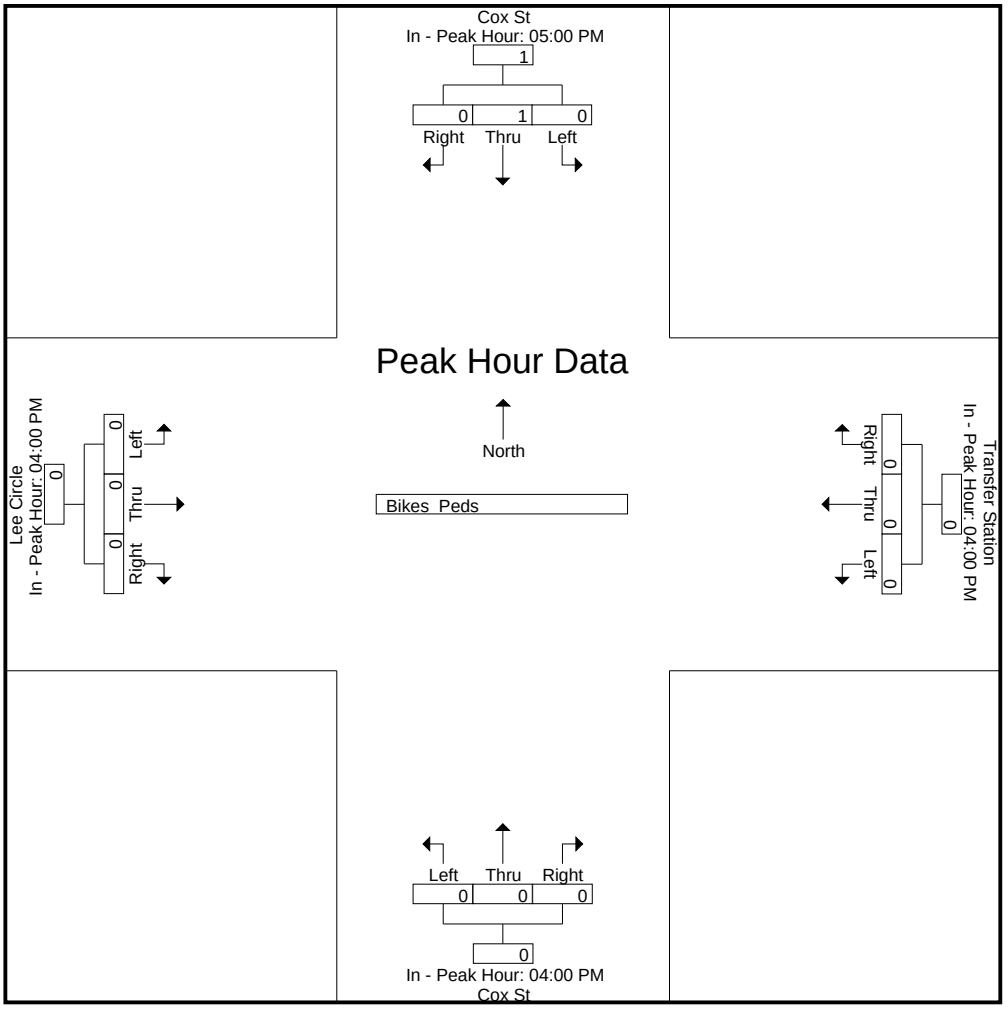
	05:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Transfer Station / Lee Circle
City/State : Hudson, MA
Weather : Clear

File Name : 92160003
Site Code : 92160003
Start Date : 12/6/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023

Groups Printed- Cars - Trucks

	Cox St From North		Cox St From South		Parkhurst Dr From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
07:00 AM	72	1	1	46	0	2	122
07:15 AM	75	0	0	49	0	4	128
07:30 AM	81	0	0	54	0	4	139
07:45 AM	93	0	1	29	1	3	127
Total	321	1	2	178	1	13	516
08:00 AM	96	0	0	41	0	3	140
08:15 AM	89	0	0	39	0	0	128
08:30 AM	73	2	0	58	1	2	136
08:45 AM	52	0	1	27	0	3	83
Total	310	2	1	165	1	8	487
Grand Total	631	3	3	343	2	21	1003
Apprch %	99.5	0.5	0.9	99.1	8.7	91.3	
Total %	62.9	0.3	0.3	34.2	0.2	2.1	
Cars	606	2	3	318	2	21	952
% Cars	96	66.7	100	92.7	100	100	94.9
Trucks	25	1	0	25	0	0	51
% Trucks	4	33.3	0	7.3	0	0	5.1

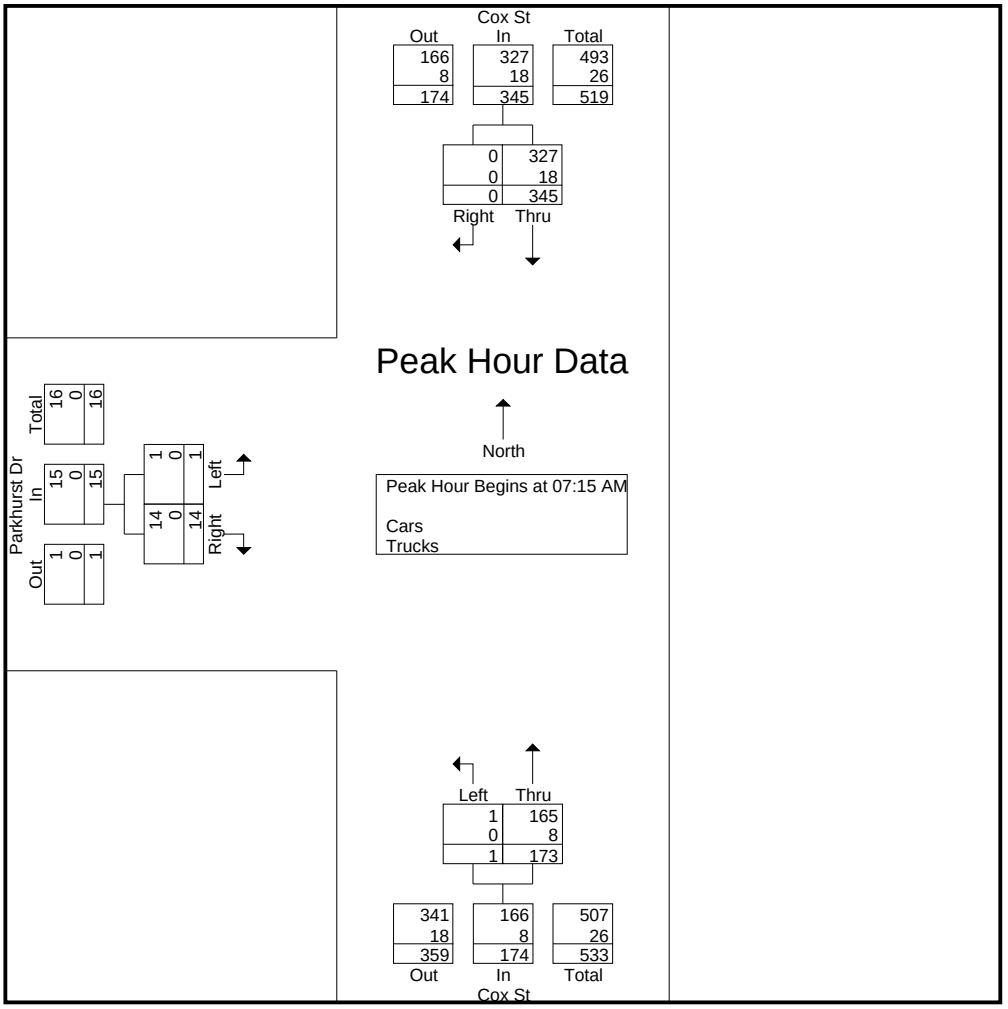
	Cox St From North			Cox St From South			Parkhurst Dr From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	75	0	75	0	49	49	0	**4**	**4**	128
07:30 AM	81	0	81	0	**54**	**54**	0	4	4	139
07:45 AM	93	0	93	**1**	29	30	**1**	3	4	127
08:00 AM	**96**	0	**96**	0	41	41	0	3	3	**140**
Total Volume	345	0	345	1	173	174	1	14	15	534
% App. Total	100	0		0.6	99.4		6.7	93.3		
PHF	.898	.000	.898	.250	.801	.806	.250	.875	.938	.954
Cars	327	0	327	1	165	166	1	14	15	508
% Cars	94.8	0	94.8	100	95.4	95.4	100	100	100	95.1
Trucks	18	0	18	0	8	8	0	0	0	26
% Trucks	5.2	0	5.2	0	4.6	4.6	0	0	0	4.9

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

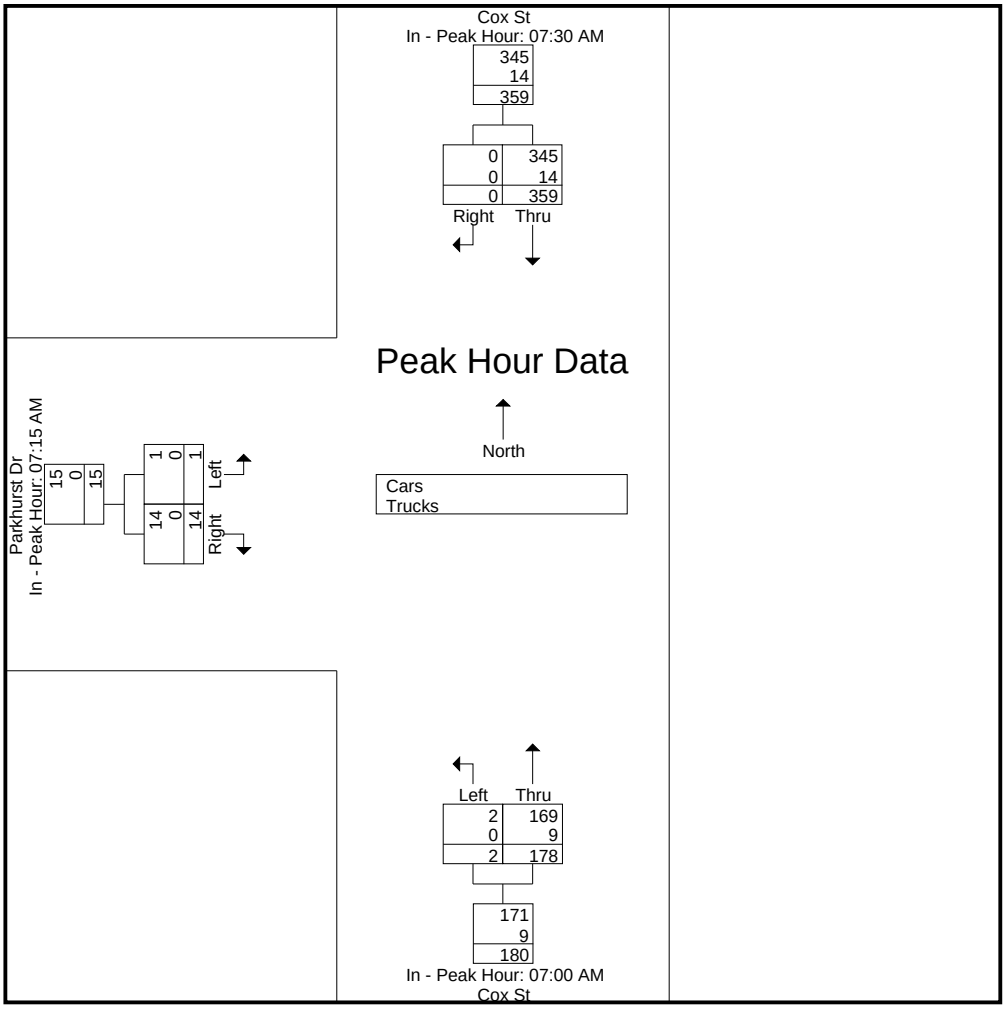
	07:30 AM			07:00 AM			07:15 AM		
+0 mins.	81	0	81	**1**	46	47	0	**4**	**4**
+15 mins.	93	0	93	0	49	49	0	4	4
+30 mins.	**96**	0	**96**	0	**54**	**54**	**1**	3	4
+45 mins.	89	0	89	1	29	30	0	3	3
Total Volume	359	0	359	2	178	180	1	14	15
% App. Total	100	0		1.1	98.9		6.7	93.3	
PHF	.935	.000	.935	.500	.824	.833	.250	.875	.938
Cars	345	0	345	2	169	171	1	14	15
% Cars	96.1	0	96.1	100	94.9	95	100	100	100
Trucks	14	0	14	0	9	9	0	0	0
% Trucks	3.9	0	3.9	0	5.1	5	0	0	0

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023

Groups Printed- Cars

	Cox St From North		Cox St From South		Parkhurst Dr From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
07:00 AM	72	1	1	43	0	2	119
07:15 AM	69	0	0	47	0	4	120
07:30 AM	77	0	0	52	0	4	133
07:45 AM	88	0	1	27	1	3	120
Total	306	1	2	169	1	13	492
08:00 AM	93	0	0	39	0	3	135
08:15 AM	87	0	0	34	0	0	121
08:30 AM	72	1	0	52	1	2	128
08:45 AM	48	0	1	24	0	3	76
Total	300	1	1	149	1	8	460
Grand Total	606	2	3	318	2	21	952
Apprch %	99.7	0.3	0.9	99.1	8.7	91.3	
Total %	63.7	0.2	0.3	33.4	0.2	2.2	

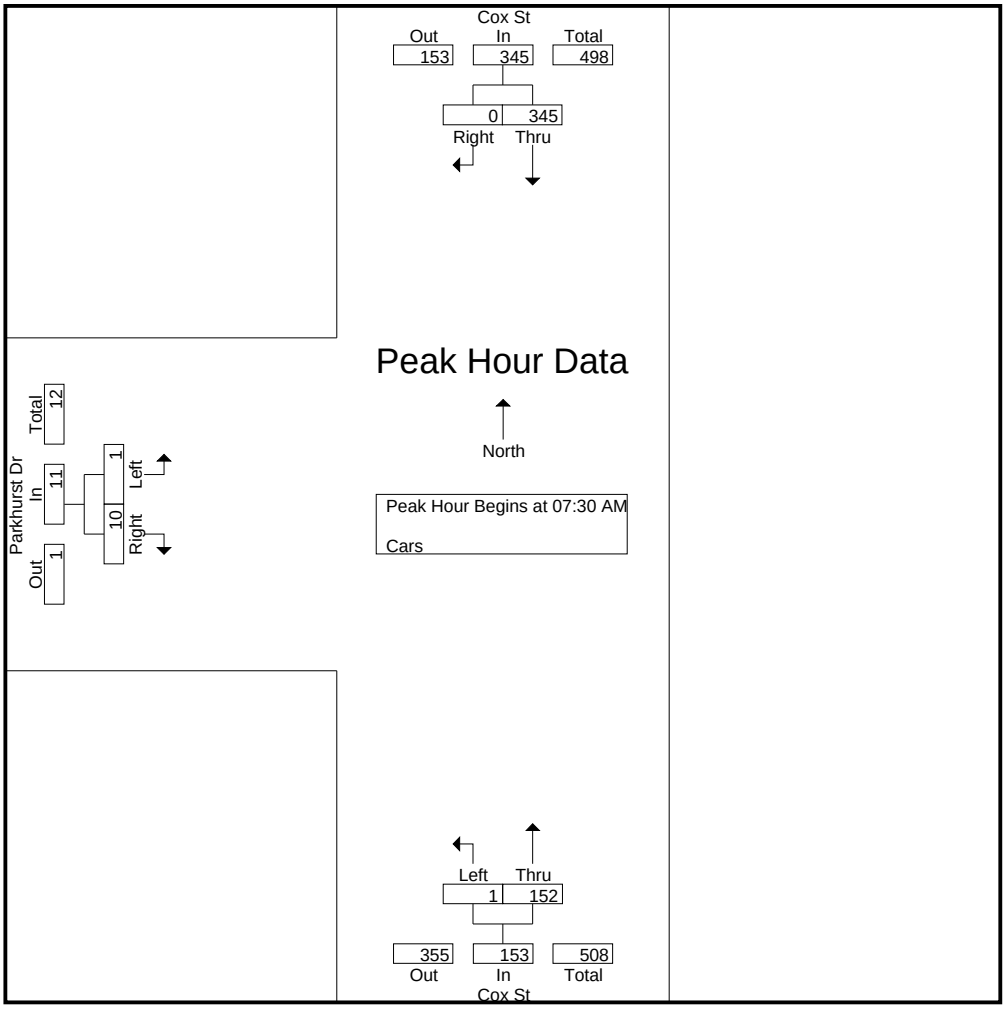
	Cox St From North			Cox St From South			Parkhurst Dr From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	77	0	77	0	**52**	**52**	0	**4**	**4**	133
07:45 AM	88	0	88	**1**	27	28	**1**	3	4	120
08:00 AM	**93**	0	**93**	0	39	39	0	3	3	**135**
08:15 AM	87	0	87	0	34	34	0	0	0	121
Total Volume	345	0	345	1	152	153	1	10	11	509
% App. Total	100	0		0.7	99.3		9.1	90.9		
PHF	.927	.000	.927	.250	.731	.736	.250	.625	.688	.943

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

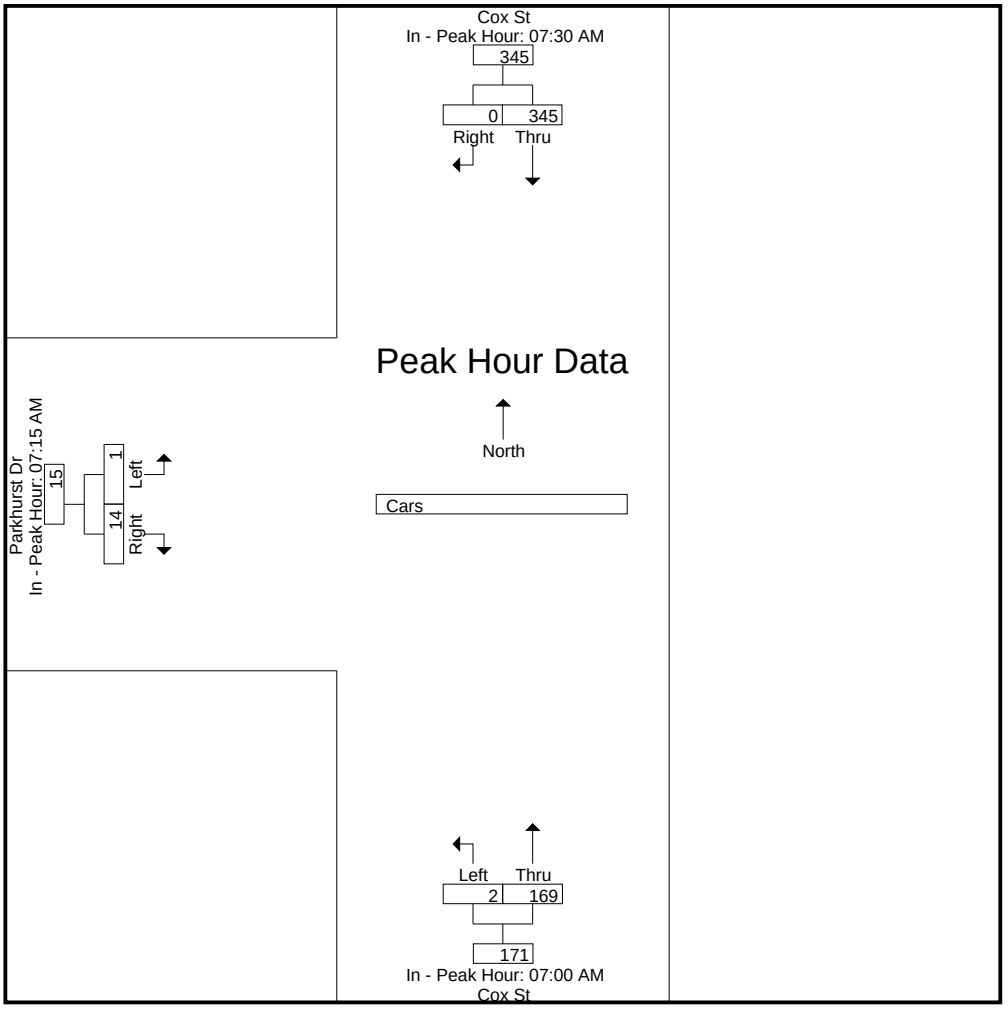
	07:30 AM			07:00 AM			07:15 AM		
+0 mins.	77	0	77	**1**	43	44	0	**4**	**4**
+15 mins.	88	0	88	0	47	47	0	4	4
+30 mins.	**93**	0	**93**	0	**52**	**52**	**1**	3	4
+45 mins.	87	0	87	1	27	28	0	3	3
Total Volume	345	0	345	2	169	171	1	14	15
% App. Total	100	0		1.2	98.8		6.7	93.3	
PHF	.927	.000	.927	.500	.813	.822	.250	.875	.938

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023

Groups Printed- Trucks

	Cox St From North		Cox St From South		Parkhurst Dr From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
07:00 AM	0	0	0	3	0	0	3
07:15 AM	6	0	0	2	0	0	8
07:30 AM	4	0	0	2	0	0	6
07:45 AM	5	0	0	2	0	0	7
Total	15	0	0	9	0	0	24
08:00 AM	3	0	0	2	0	0	5
08:15 AM	2	0	0	5	0	0	7
08:30 AM	1	1	0	6	0	0	8
08:45 AM	4	0	0	3	0	0	7
Total	10	1	0	16	0	0	27
Grand Total	25	1	0	25	0	0	51
Apprch %	96.2	3.8	0	100	0	0	
Total %	49	2	0	49	0	0	

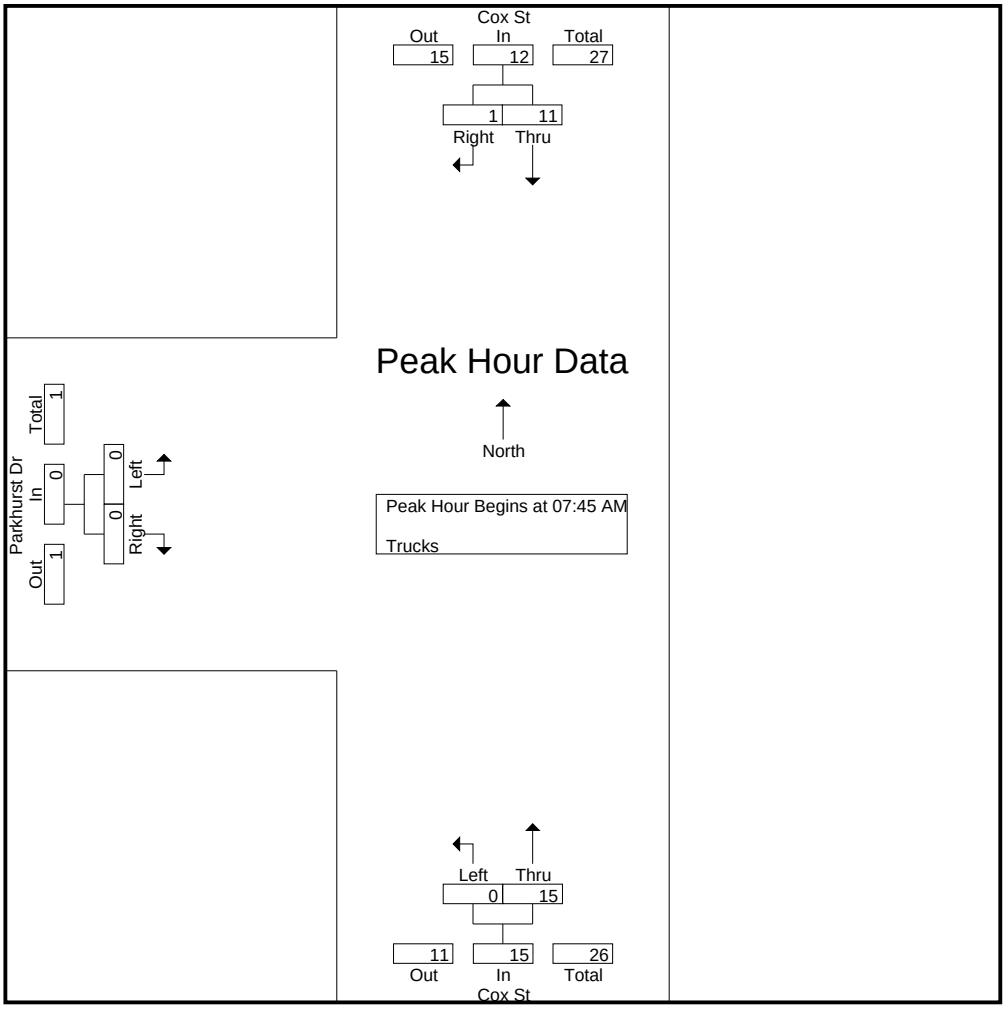
	Cox St From North			Cox St From South			Parkhurst Dr From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	**5**	0	**5**	0	2	2	0	0	0	7
08:00 AM	3	0	3	0	2	2	0	0	0	5
08:15 AM	2	0	2	0	5	5	0	0	0	7
08:30 AM	1	**1**	2	0	**6**	**6**	0	0	0	**8**
Total Volume	11	1	12	0	15	15	0	0	0	27
% App. Total	91.7	8.3		0	100		0	0		
PHF	.550	.250	.600	.000	.625	.625	.000	.000	.000	.844

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM			08:00 AM			07:00 AM		
+0 mins.	**6**	0	**6**	0	2	2	0	0	0
+15 mins.	4	0	4	0	5	5	0	0	0
+30 mins.	5	0	5	0	**6**	**6**	0	0	0
+45 mins.	3	0	3	0	3	3	0	0	0
Total Volume	18	0	18	0	16	16	0	0	0
% App. Total	100	0		0	100		0	0	
PHF	.750	.000	.750	.000	.667	.667	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
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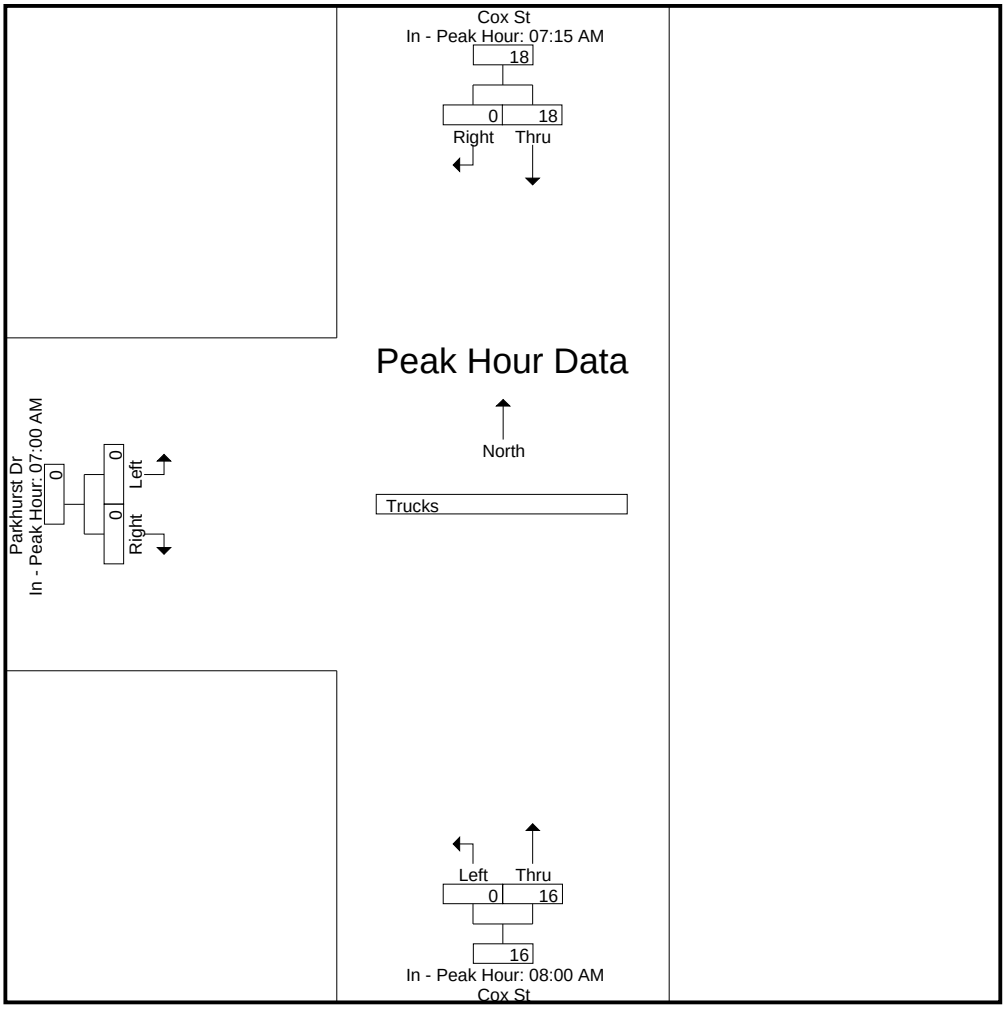


Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023

Groups Printed- Bikes Peds

	Cox St From North			Cox St From South			Parkhurst Dr From West					
Start Time	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	1	1	0	1
Total	0	0	0	0	0	0	0	0	1	1	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	2	0	0	0	0	0	0	2	0	2
08:30 AM	0	0	1	0	0	0	0	0	0	1	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	3	0	0	0	0	0	0	3	0	3
Grand Total	0	0	3	0	0	0	0	0	1	4	0	4
Apprch %	0	0		0	0		0	0				
Total %										100	0	

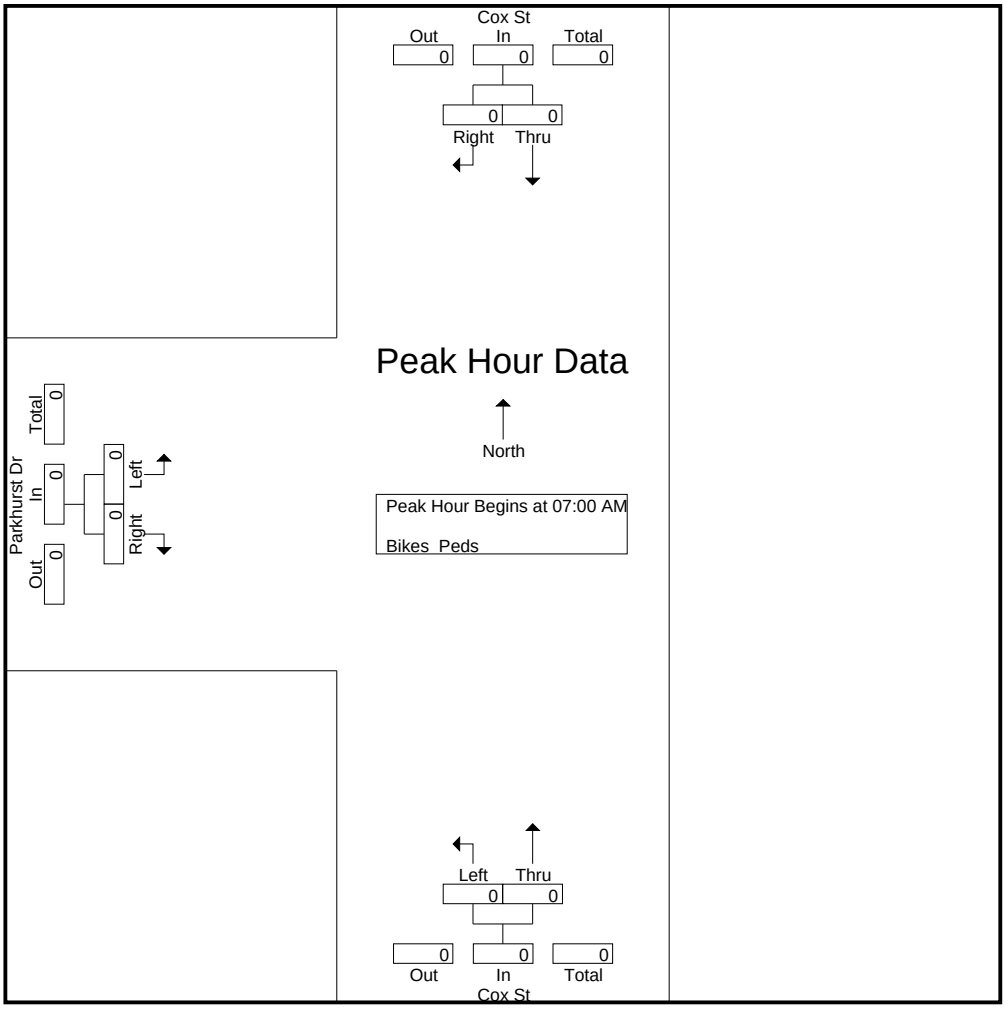
	Cox St From North			Cox St From South			Parkhurst Dr From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

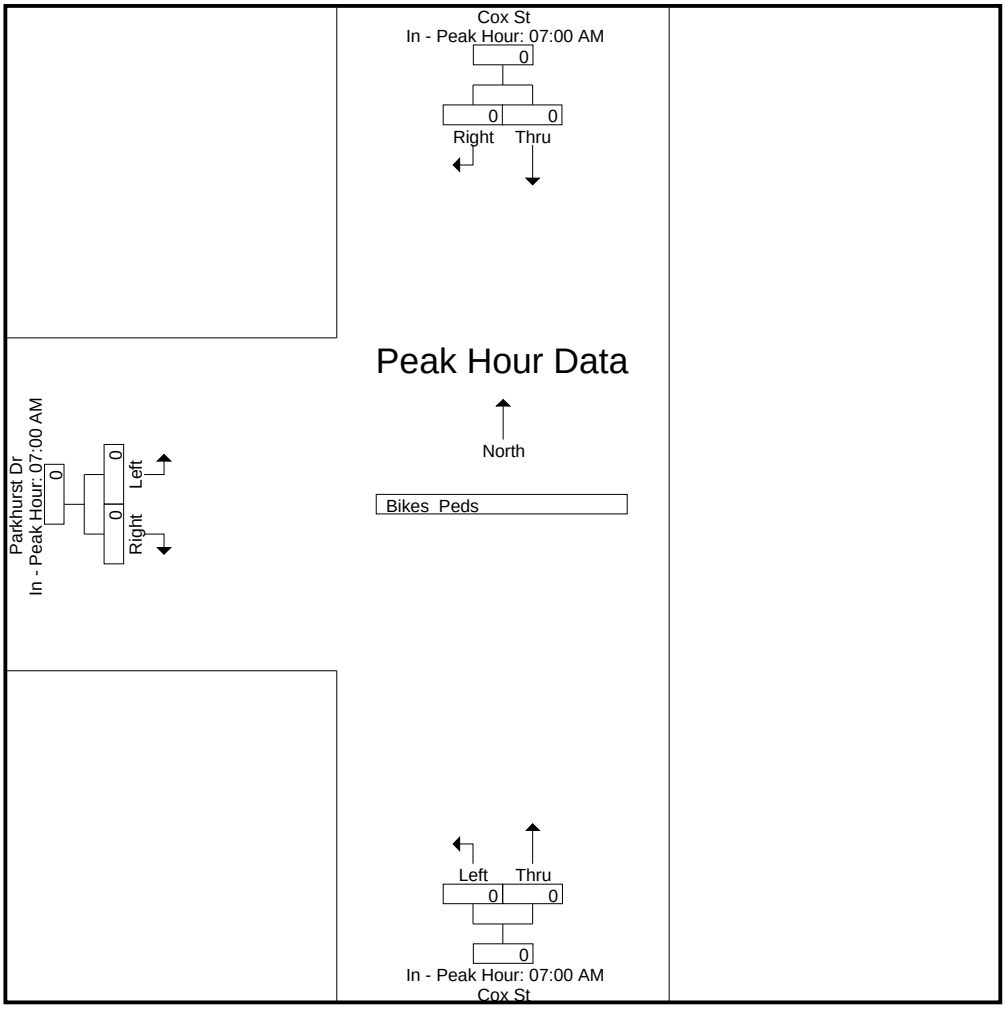
	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023

Groups Printed- Cars - Trucks

	Cox St From North		Cox St From South		Parkhurst Dr From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
04:00 PM	55	0	4	77	0	2	138
04:15 PM	46	1	0	69	0	1	117
04:30 PM	38	0	2	67	0	1	108
04:45 PM	51	0	2	70	0	1	124
Total	190	1	8	283	0	5	487
05:00 PM	48	0	2	55	0	1	106
05:15 PM	30	0	4	63	0	3	100
05:30 PM	39	0	3	64	0	1	107
05:45 PM	22	2	0	58	1	0	83
Total	139	2	9	240	1	5	396
Grand Total	329	3	17	523	1	10	883
Apprch %	99.1	0.9	3.1	96.9	9.1	90.9	
Total %	37.3	0.3	1.9	59.2	0.1	1.1	
Cars	322	3	17	514	1	10	867
% Cars	97.9	100	100	98.3	100	100	98.2
Trucks	7	0	0	9	0	0	16
% Trucks	2.1	0	0	1.7	0	0	1.8

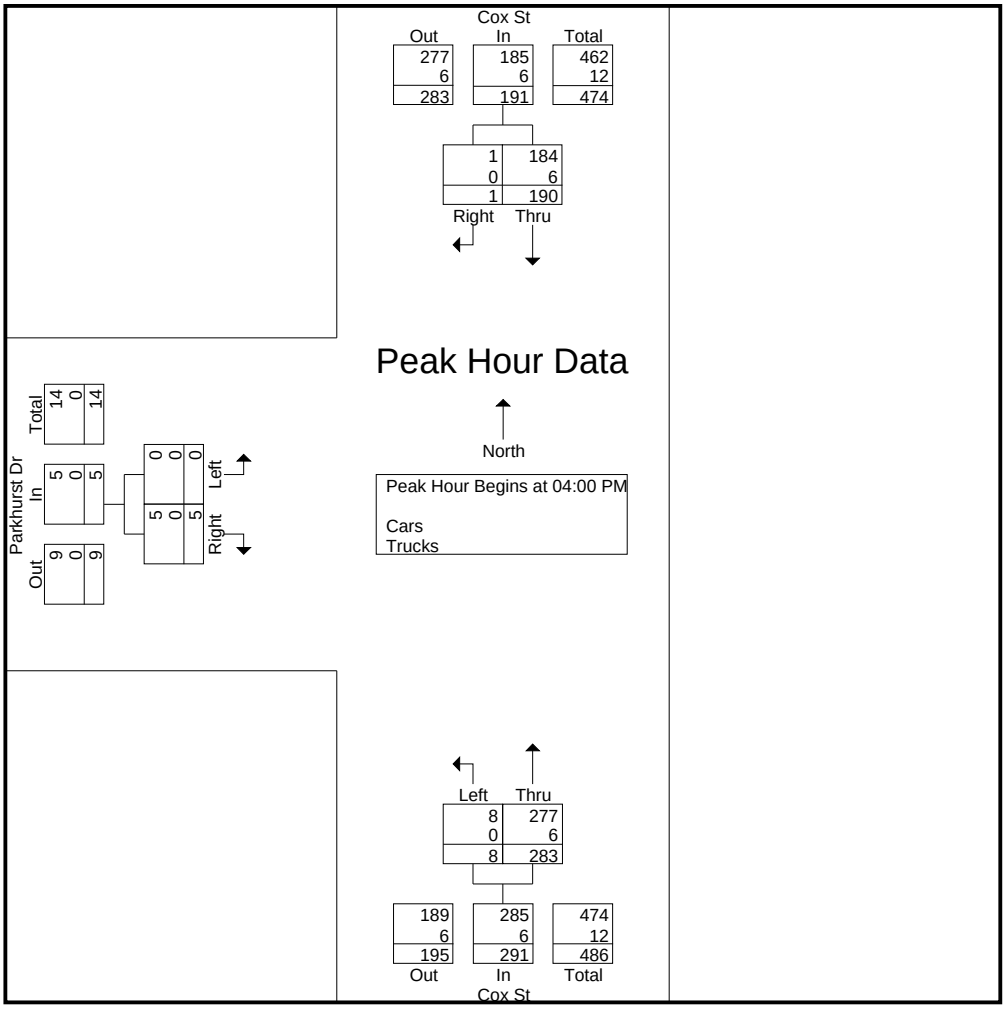
	Cox St From North			Cox St From South			Parkhurst Dr From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**55**	0	**55**	**4**	**77**	**81**	0	**2**	**2**	**138**
04:15 PM	46	**1**	47	0	69	69	0	1	1	117
04:30 PM	38	0	38	2	67	69	0	1	1	108
04:45 PM	51	0	51	2	70	72	0	1	1	124
Total Volume	190	1	191	8	283	291	0	5	5	487
% App. Total	99.5	0.5		2.7	97.3		0	100		
PHF	.864	.250	.868	.500	.919	.898	.000	.625	.625	.882
Cars	184	1	185	8	277	285	0	5	5	475
% Cars	96.8	100	96.9	100	97.9	97.9	0	100	100	97.5
Trucks	6	0	6	0	6	6	0	0	0	12
% Trucks	3.2	0	3.1	0	2.1	2.1	0	0	0	2.5

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

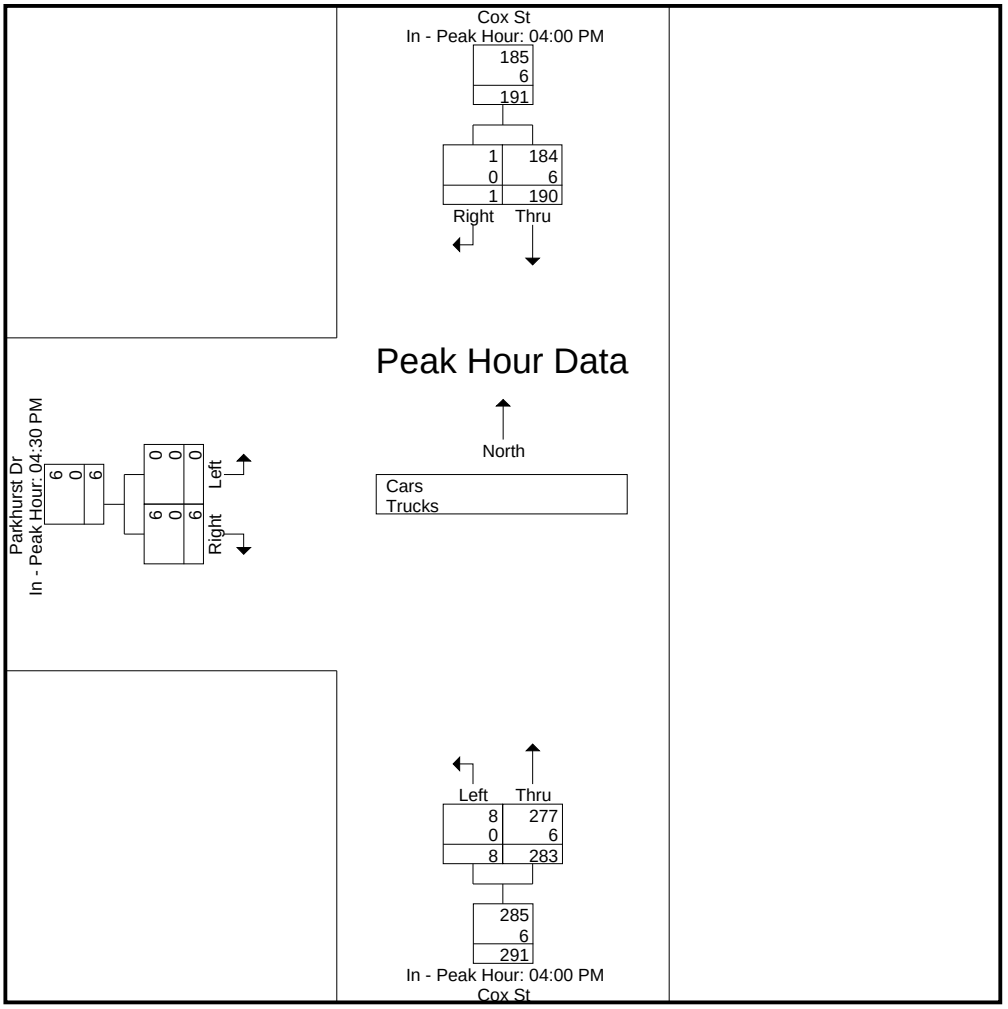
	04:00 PM			04:00 PM			04:30 PM		
+0 mins.	**55**	0	**55**	**4**	**77**	**81**	0	1	1
+15 mins.	46	**1**	47	0	69	69	0	1	1
+30 mins.	38	0	38	2	67	69	0	1	1
+45 mins.	51	0	51	2	70	72	0	**3**	**3**
Total Volume	190	1	191	8	283	291	0	6	6
% App. Total	99.5	0.5		2.7	97.3		0	100	
PHF	.864	.250	.868	.500	.919	.898	.000	.500	.500
Cars	184	1	185	8	277	285	0	6	6
% Cars	96.8	100	96.9	100	97.9	97.9	0	100	100
Trucks	6	0	6	0	6	6	0	0	0
% Trucks	3.2	0	3.1	0	2.1	2.1	0	0	0

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023

Groups Printed- Cars

	Cox St From North		Cox St From South		Parkhurst Dr From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
04:00 PM	52	0	4	75	0	2	133
04:15 PM	46	1	0	67	0	1	115
04:30 PM	36	0	2	66	0	1	105
04:45 PM	50	0	2	69	0	1	122
Total	184	1	8	277	0	5	475
05:00 PM	48	0	2	54	0	1	105
05:15 PM	30	0	4	61	0	3	98
05:30 PM	38	0	3	64	0	1	106
05:45 PM	22	2	0	58	1	0	83
Total	138	2	9	237	1	5	392
Grand Total	322	3	17	514	1	10	867
Apprch %	99.1	0.9	3.2	96.8	9.1	90.9	
Total %	37.1	0.3	2	59.3	0.1	1.2	

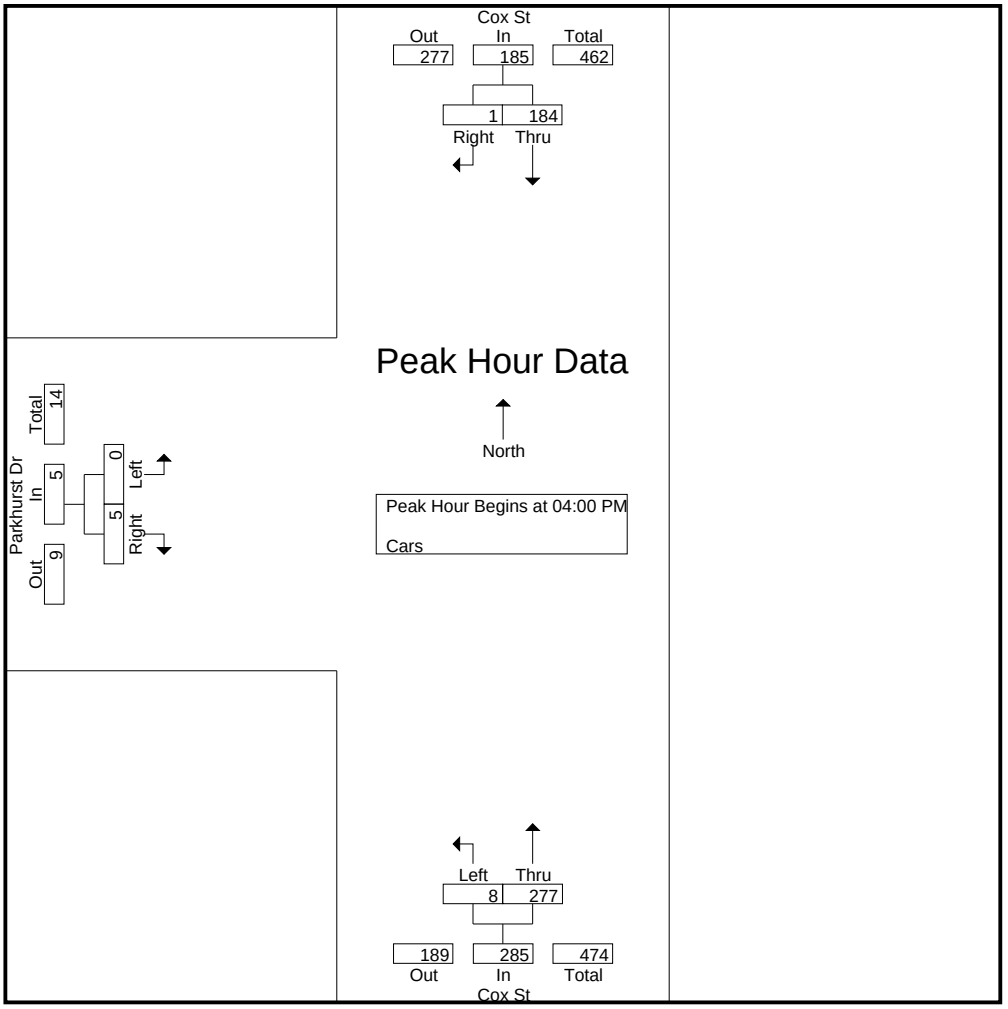
	Cox St From North			Cox St From South			Parkhurst Dr From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**52**	0	**52**	**4**	**75**	**79**	0	**2**	**2**	**133**
04:15 PM	46	**1**	47	0	67	67	0	1	1	115
04:30 PM	36	0	36	2	66	68	0	1	1	105
04:45 PM	50	0	50	2	69	71	0	1	1	122
Total Volume	184	1	185	8	277	285	0	5	5	475
% App. Total	99.5	0.5		2.8	97.2		0	100		
PHF	.885	.250	.889	.500	.923	.902	.000	.625	.625	.893

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

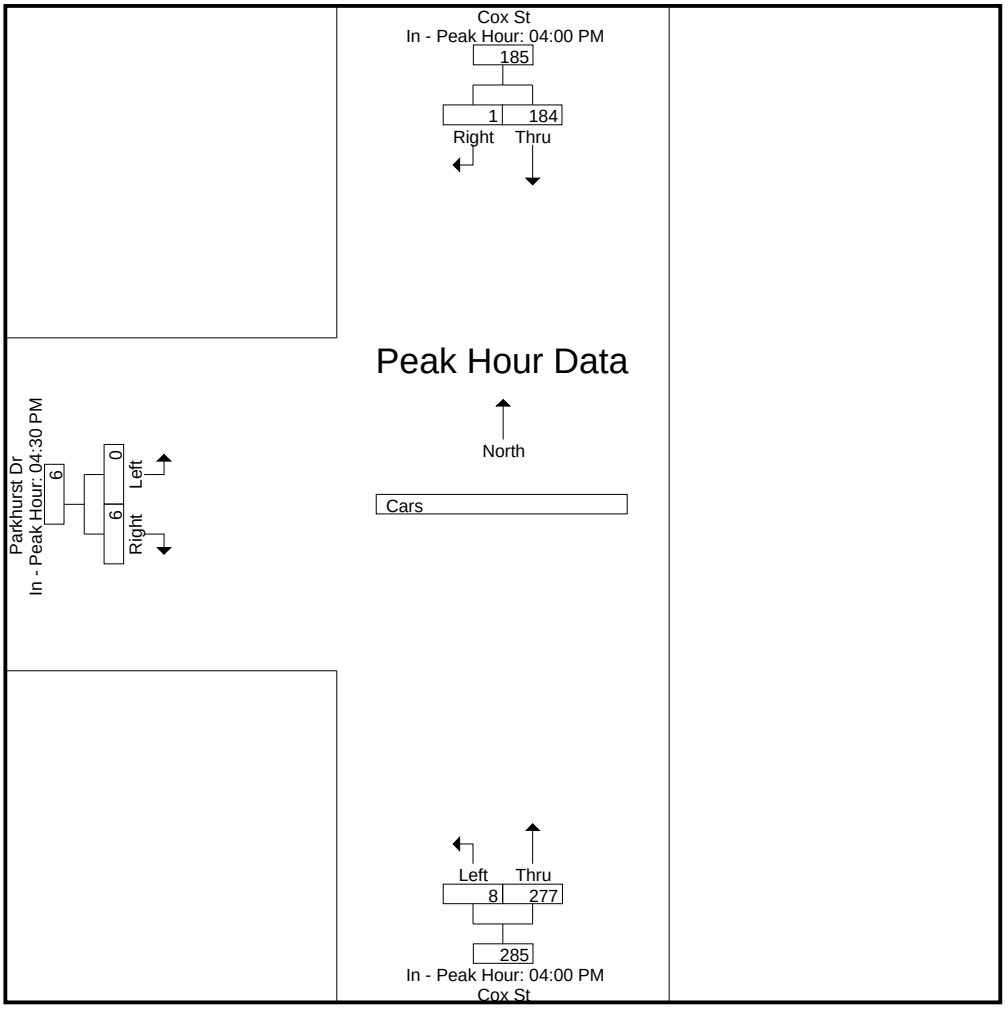
	04:00 PM			04:00 PM			04:30 PM		
+0 mins.	**52**	0	**52**	**4**	**75**	**79**	0	1	1
+15 mins.	46	**1**	47	0	67	67	0	1	1
+30 mins.	36	0	36	2	66	68	0	1	1
+45 mins.	50	0	50	2	69	71	0	**3**	**3**
Total Volume	184	1	185	8	277	285	0	6	6
% App. Total	99.5	0.5		2.8	97.2		0	100	
PHF	.885	.250	.889	.500	.923	.902	.000	.500	.500

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023

Groups Printed- Trucks

	Cox St From North		Cox St From South		Parkhurst Dr From West		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
04:00 PM	3	0	0	2	0	0	5
04:15 PM	0	0	0	2	0	0	2
04:30 PM	2	0	0	1	0	0	3
04:45 PM	1	0	0	1	0	0	2
Total	6	0	0	6	0	0	12
05:00 PM	0	0	0	1	0	0	1
05:15 PM	0	0	0	2	0	0	2
05:30 PM	1	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0
Total	1	0	0	3	0	0	4
Grand Total	7	0	0	9	0	0	16
Apprch %	100	0	0	100	0	0	
Total %	43.8	0	0	56.2	0	0	

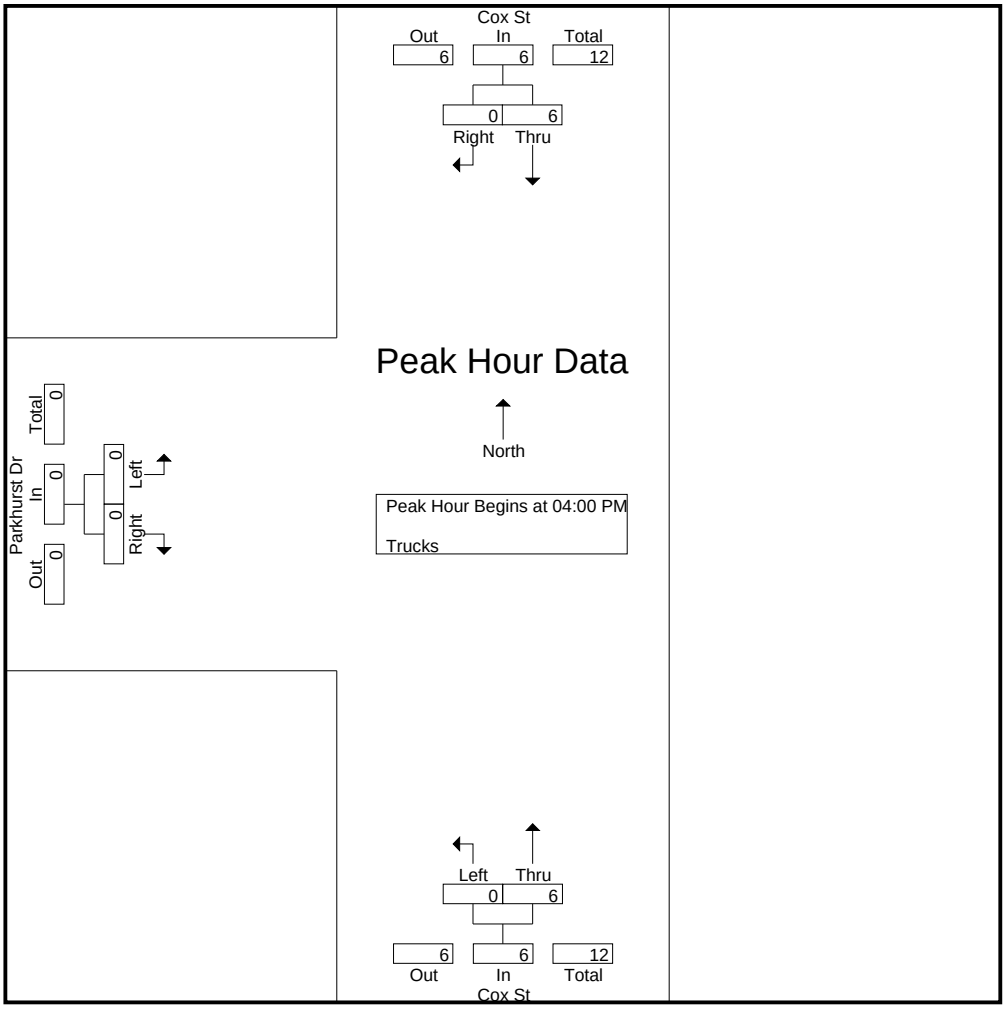
	Cox St From North			Cox St From South			Parkhurst Dr From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**3**	0	**3**	0	**2**	**2**	0	0	0	**5**
04:15 PM	0	0	0	0	2	2	0	0	0	2
04:30 PM	2	0	2	0	1	1	0	0	0	3
04:45 PM	1	0	1	0	1	1	0	0	0	2
Total Volume	6	0	6	0	6	6	0	0	0	12
% App. Total	100	0		0	100		0	0		
PHF	.500	.000	.500	.000	.750	.750	.000	.000	.000	.600

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

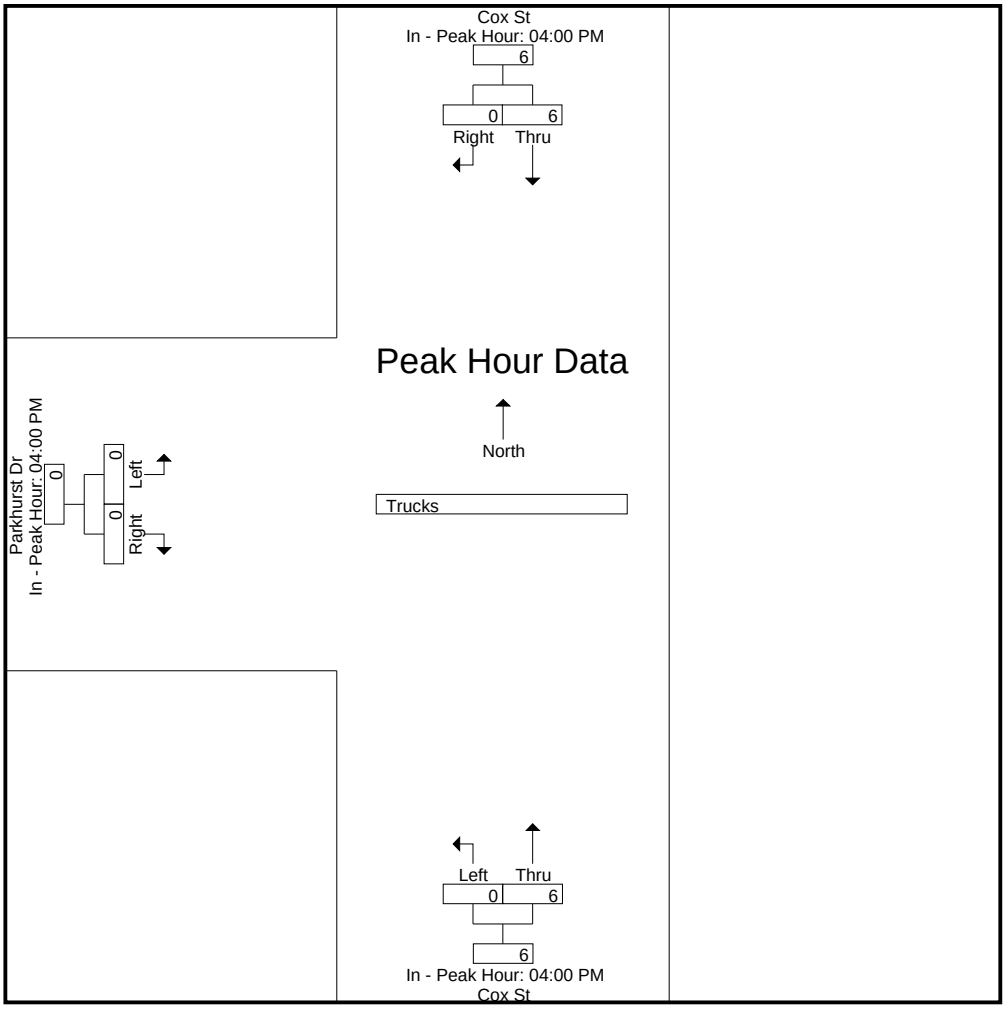
	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	**3**	0	**3**	0	**2**	**2**	0	0	0
+15 mins.	0	0	0	0	2	2	0	0	0
+30 mins.	2	0	2	0	1	1	0	0	0
+45 mins.	1	0	1	0	1	1	0	0	0
Total Volume	6	0	6	0	6	6	0	0	0
% App. Total	100	0		0	100		0	0	
PHF	.500	.000	.500	.000	.750	.750	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023

Groups Printed- Bikes Peds

	Cox St From North			Cox St From South			Parkhurst Dr From West					
Start Time	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	1	1	0	1
04:30 PM	0	0	0	0	0	0	0	0	1	1	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	2	2	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	2	2	0	2
Apprch %	0	0		0	0		0	0				
Total %										100	0	

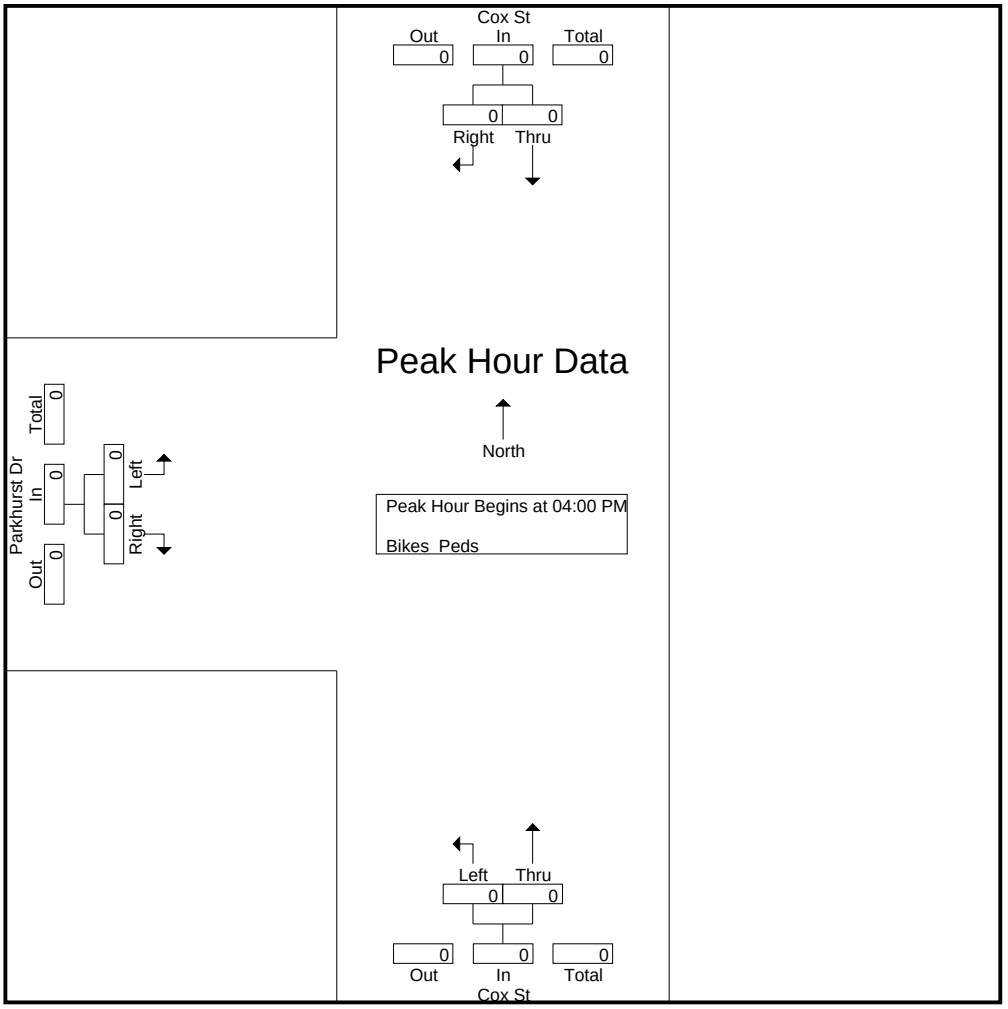
	Cox St From North			Cox St From South			Parkhurst Dr From West			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 11



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

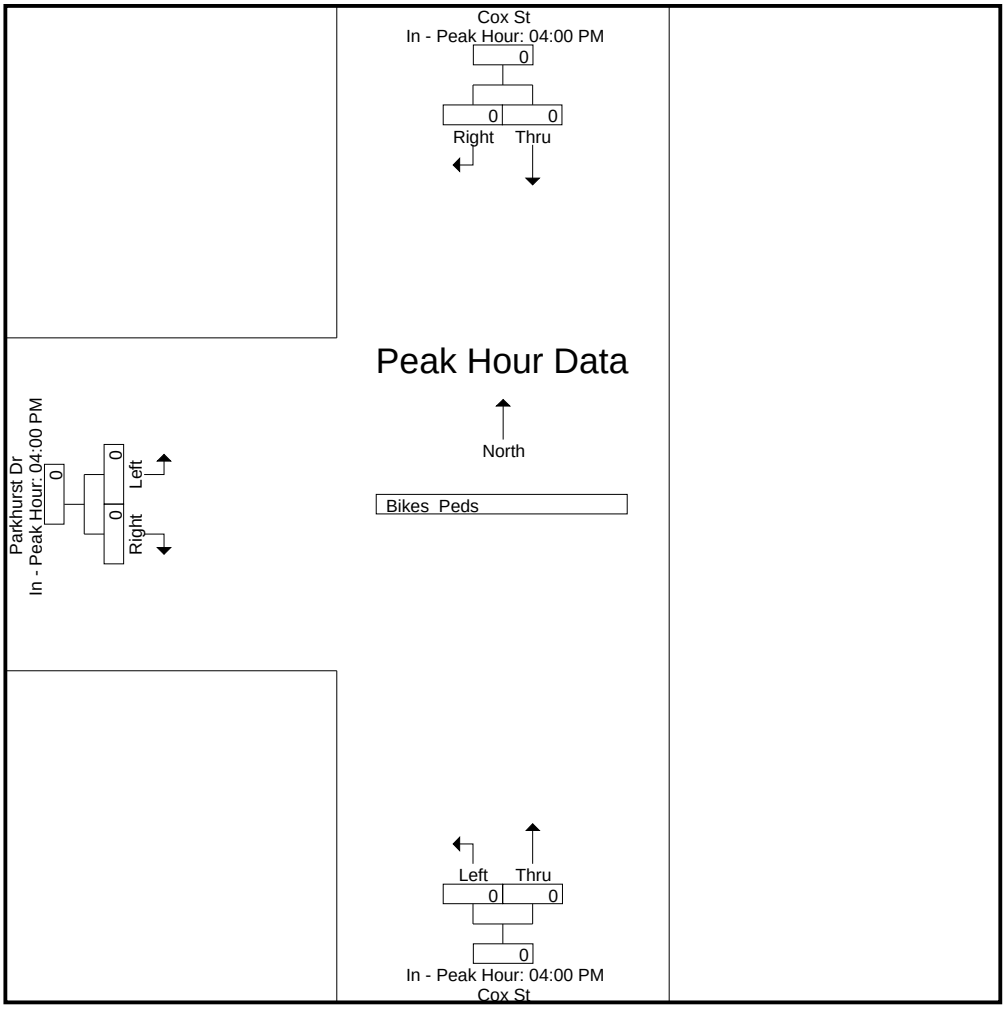
	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street
E/W Street : Parkhurst Drive
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 1/24/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 1

Groups Printed- Cars - Trucks

	Wilkins St From North			Main St From East			Forest Ave From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	2	15	9	22	62	1	15	15	69	7	141	1	359
07:15 AM	0	35	15	33	63	1	19	20	83	8	113	1	391
07:30 AM	0	16	3	25	57	2	22	18	90	15	125	0	373
07:45 AM	0	17	9	40	43	3	20	19	60	14	120	1	346
Total	2	83	36	120	225	7	76	72	302	44	499	3	1469
08:00 AM	2	23	9	33	47	2	25	25	75	7	118	0	366
08:15 AM	0	14	5	38	65	3	14	22	64	9	116	0	350
08:30 AM	1	25	12	36	46	1	21	20	66	13	90	1	332
08:45 AM	0	15	10	23	46	3	18	13	49	14	85	1	277
Total	3	77	36	130	204	9	78	80	254	43	409	2	1325
Grand Total	5	160	72	250	429	16	154	152	556	87	908	5	2794
Apprch %	2.1	67.5	30.4	36	61.7	2.3	17.9	17.6	64.5	8.7	90.8	0.5	
Total %	0.2	5.7	2.6	8.9	15.4	0.6	5.5	5.4	19.9	3.1	32.5	0.2	
Cars	5	159	67	239	415	14	154	152	547	81	890	5	2728
% Cars	100	99.4	93.1	95.6	96.7	87.5	100	100	98.4	93.1	98	100	97.6
Trucks	0	1	5	11	14	2	0	0	9	6	18	0	66
% Trucks	0	0.6	6.9	4.4	3.3	12.5	0	0	1.6	6.9	2	0	2.4

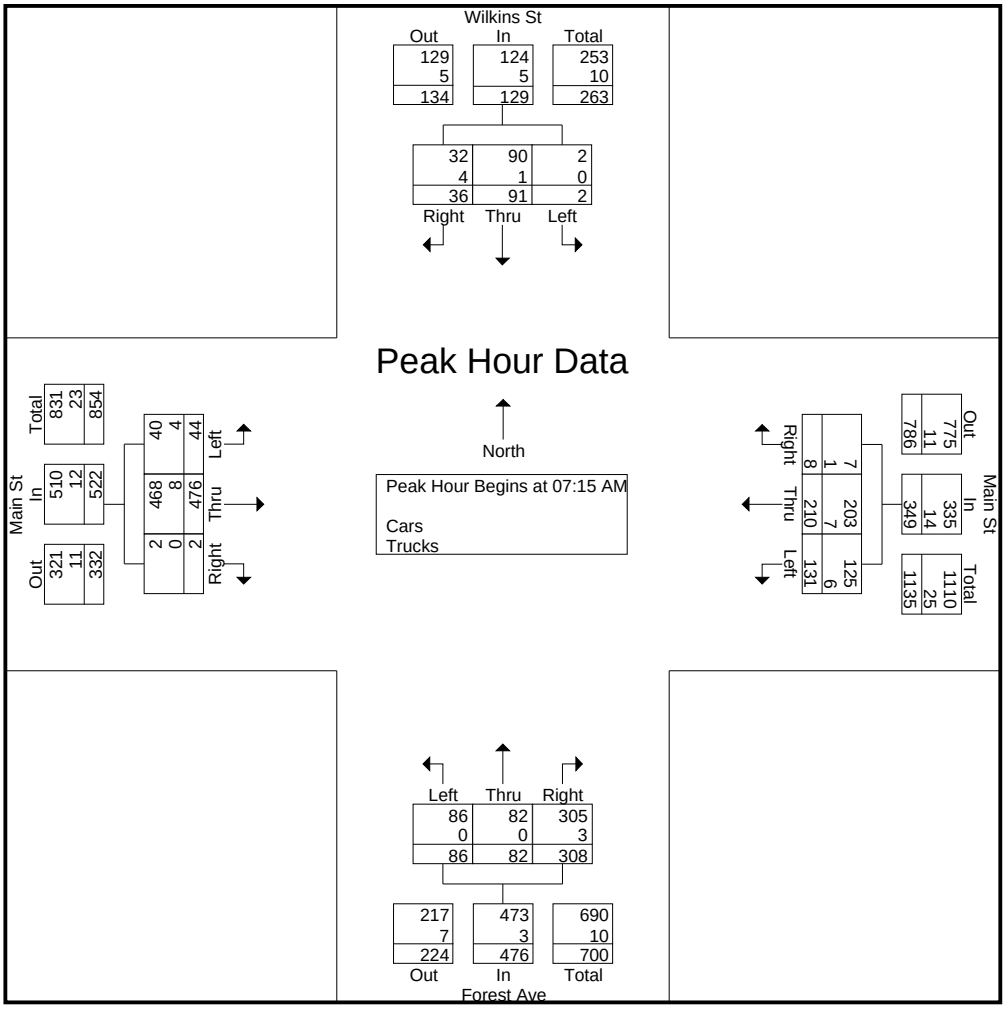
	Wilkins St From North				Main St From East				Forest Ave From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	**35**	**15**	**50**	33	**63**	1	**97**	19	20	83	122	8	113	**1**	122	**391**
07:30 AM	0	16	3	19	25	57	2	84	22	18	**90**	**130**	**15**	**125**	0	**140**	373
07:45 AM	0	17	9	26	**40**	43	**3**	86	20	19	60	99	14	120	1	135	346
08:00 AM	**2**	23	9	34	33	47	2	82	**25**	**25**	75	125	7	118	0	125	366
Total Volume	2	91	36	129	131	210	8	349	86	82	308	476	44	476	2	522	1476
% App. Total	1.6	70.5	27.9		37.5	60.2	2.3		18.1	17.2	64.7		8.4	91.2	0.4		
PHF	.250	.650	.600	.645	.819	.833	.667	.899	.860	.820	.856	.915	.733	.952	.500	.932	.944
Cars	2	90	32	124	125	203	7	335	86	82	305	473	40	468	2	510	1442
% Cars	100	98.9	88.9	96.1	95.4	96.7	87.5	96.0	100	100	99.0	99.4	90.9	98.3	100	97.7	97.7
Trucks	0	1	4	5	6	7	1	14	0	0	3	3	4	8	0	12	34
% Trucks	0	1.1	11.1	3.9	4.6	3.3	12.5	4.0	0	0	1.0	0.6	9.1	1.7	0	2.3	2.3

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

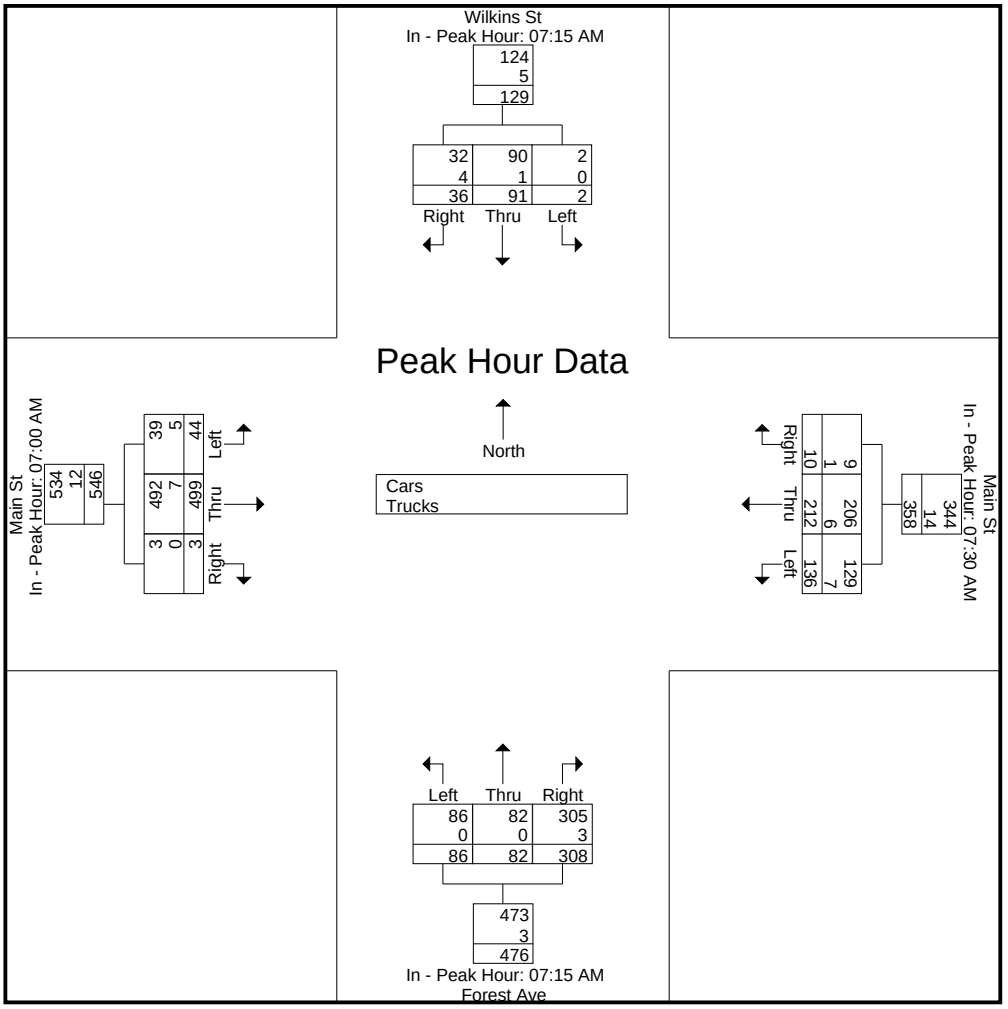
	07:15 AM				07:30 AM				07:15 AM				07:00 AM			
+0 mins.	0	**35**	**15**	**50**	25	57	2	84	19	20	83	122	7	**141**	**1**	**149**
+15 mins.	0	16	3	19	**40**	43	**3**	86	22	18	**90**	**130**	8	113	1	122
+30 mins.	0	17	9	26	33	47	2	82	20	19	60	99	**15**	125	0	140
+45 mins.	**2**	23	9	34	38	**65**	3	**106**	**25**	**25**	75	125	14	120	1	135
Total Volume	2	91	36	129	136	212	10	358	86	82	308	476	44	499	3	546
% App. Total	1.6	70.5	27.9		38	59.2	2.8		18.1	17.2	64.7		8.1	91.4	0.5	
PHF	.250	.650	.600	.645	.850	.815	.833	.844	.860	.820	.856	.915	.733	.885	.750	.916
Cars	2	90	32	124	129	206	9	344	86	82	305	473	39	492	3	534
% Cars	100	98.9	88.9	96.1	94.9	97.2	90	96.1	100	100	99	99.4	88.6	98.6	100	97.8
Trucks	0	1	4	5	7	6	1	14	0	0	3	3	5	7	0	12
% Trucks	0	1.1	11.1	3.9	5.1	2.8	10	3.9	0	0	1	0.6	11.4	1.4	0	2.2

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023

Groups Printed- Cars

	Wilkins St From North			Main St From East			Forest Ave From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	2	15	8	22	59	0	15	15	68	6	138	1	349
07:15 AM	0	35	13	31	61	1	19	20	83	7	113	1	384
07:30 AM	0	16	3	25	56	2	22	18	89	14	125	0	370
07:45 AM	0	17	9	38	42	2	20	19	60	12	116	1	336
Total	2	83	33	116	218	5	76	72	300	39	492	3	1439
08:00 AM	2	22	7	31	44	2	25	25	73	7	114	0	352
08:15 AM	0	14	5	35	64	3	14	22	64	8	113	0	342
08:30 AM	1	25	12	35	43	1	21	20	63	13	89	1	324
08:45 AM	0	15	10	22	46	3	18	13	47	14	82	1	271
Total	3	76	34	123	197	9	78	80	247	42	398	2	1289
Grand Total	5	159	67	239	415	14	154	152	547	81	890	5	2728
Apprch %	2.2	68.8	29	35.8	62.1	2.1	18.1	17.8	64.1	8.3	91.2	0.5	
Total %	0.2	5.8	2.5	8.8	15.2	0.5	5.6	5.6	20.1	3	32.6	0.2	

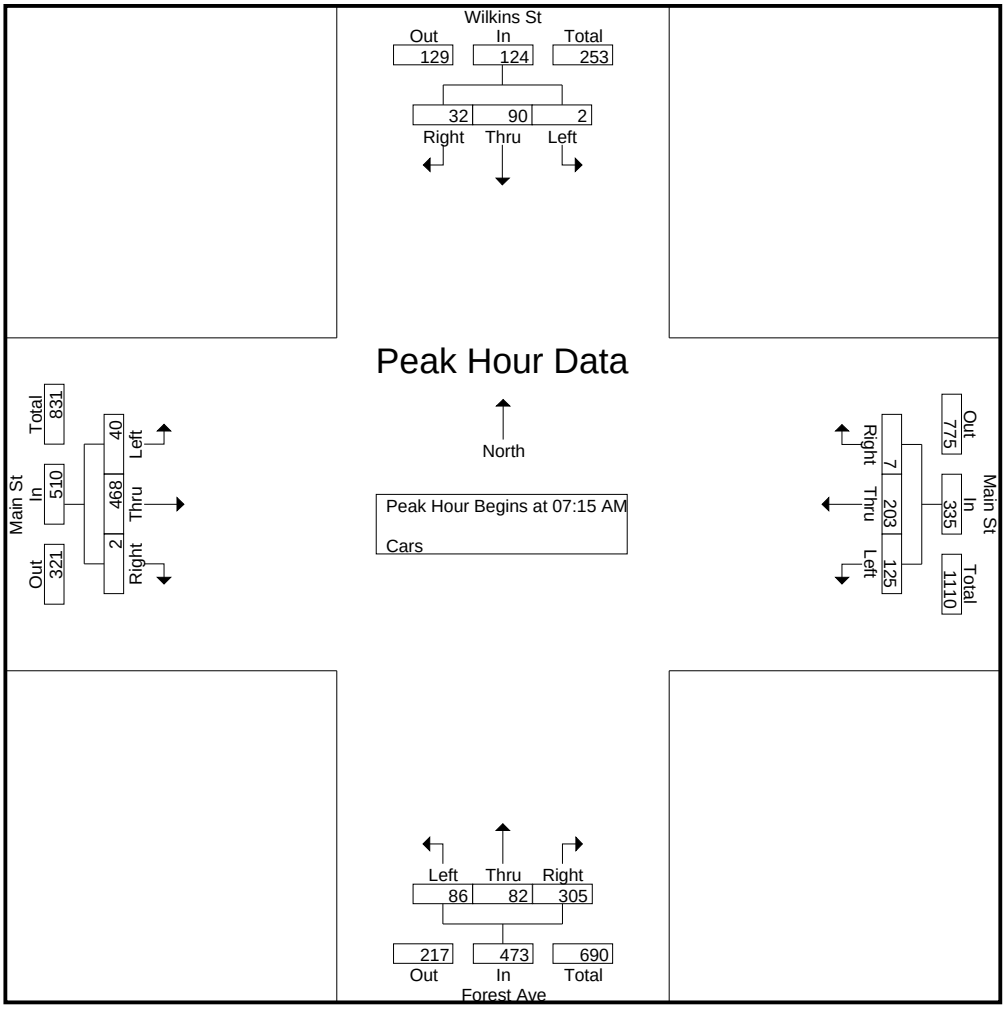
	Wilkins St From North				Main St From East				Forest Ave From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	**35**	**13**	**48**	31	**61**	1	**93**	19	20	83	122	7	113	**1**	121	**384**
07:30 AM	0	16	3	19	25	56	**2**	83	22	18	**89**	**129**	**14**	**125**	0	**139**	370
07:45 AM	0	17	9	26	**38**	42	2	82	20	19	60	99	12	116	1	129	336
08:00 AM	**2**	22	7	31	31	44	2	77	**25**	**25**	73	123	7	114	0	121	352
Total Volume	2	90	32	124	125	203	7	335	86	82	305	473	40	468	2	510	1442
% App. Total	1.6	72.6	25.8		37.3	60.6	2.1		18.2	17.3	64.5		7.8	91.8	0.4		
PHF	.250	.643	.615	.646	.822	.832	.875	.901	.860	.820	.857	.917	.714	.936	.500	.917	.939

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

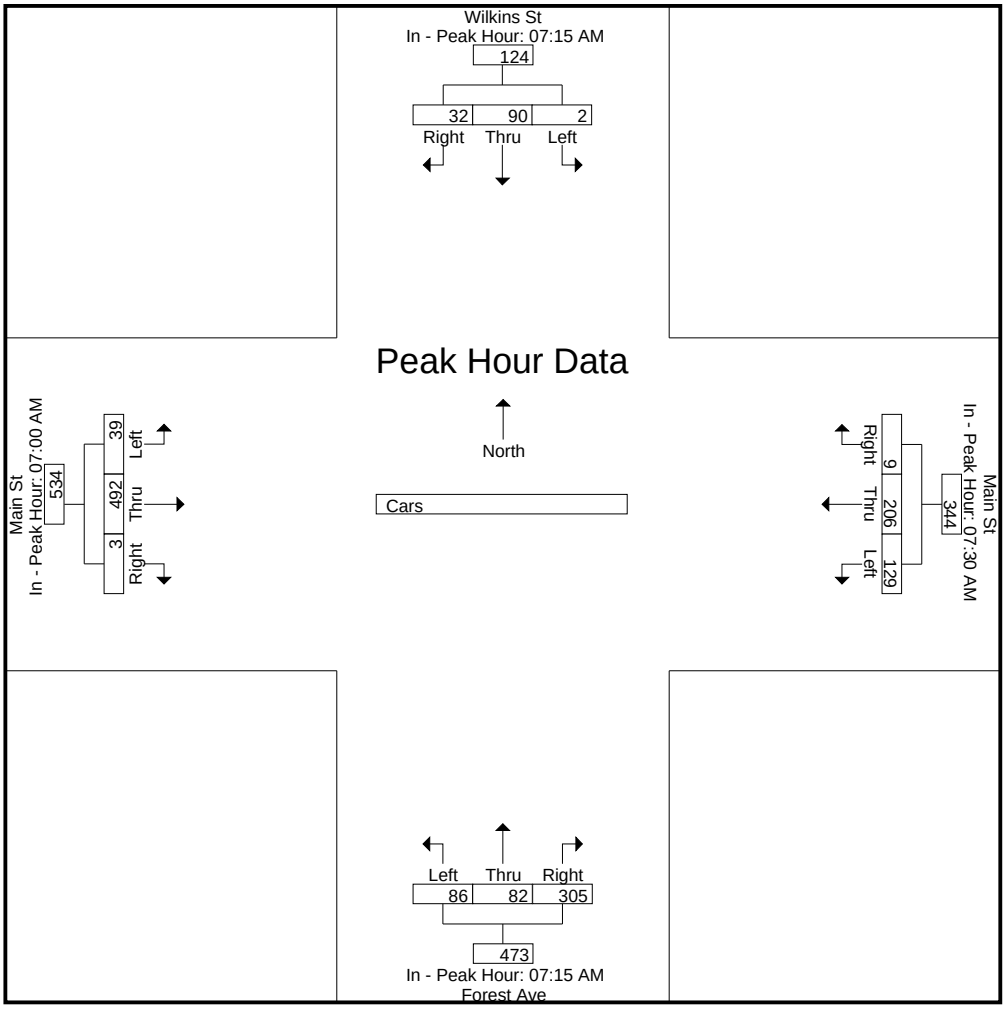
	07:15 AM				07:30 AM				07:15 AM				07:00 AM			
+0 mins.	0	**35**	**13**	**48**	25	56	2	83	19	20	83	122	6	**138**	**1**	**145**
+15 mins.	0	16	3	19	**38**	42	2	82	22	18	**89**	**129**	7	113	1	121
+30 mins.	0	17	9	26	31	44	2	77	20	19	60	99	**14**	125	0	139
+45 mins.	**2**	22	7	31	35	**64**	**3**	**102**	**25**	**25**	73	123	12	116	1	129
Total Volume	2	90	32	124	129	206	9	344	86	82	305	473	39	492	3	534
% App. Total	1.6	72.6	25.8		37.5	59.9	2.6		18.2	17.3	64.5		7.3	92.1	0.6	
PHF	.250	.643	.615	.646	.849	.805	.750	.843	.860	.820	.857	.917	.696	.891	.750	.921

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023

Groups Printed- Trucks

	Wilkins St From North			Main St From East			Forest Ave From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	1	0	3	1	0	0	1	1	3	0	10
07:15 AM	0	0	2	2	2	0	0	0	0	1	0	0	7
07:30 AM	0	0	0	0	1	0	0	0	1	1	0	0	3
07:45 AM	0	0	0	2	1	1	0	0	0	2	4	0	10
Total	0	0	3	4	7	2	0	0	2	5	7	0	30
08:00 AM	0	1	2	2	3	0	0	0	2	0	4	0	14
08:15 AM	0	0	0	3	1	0	0	0	0	1	3	0	8
08:30 AM	0	0	0	1	3	0	0	0	3	0	1	0	8
08:45 AM	0	0	0	1	0	0	0	0	2	0	3	0	6
Total	0	1	2	7	7	0	0	0	7	1	11	0	36
Grand Total	0	1	5	11	14	2	0	0	9	6	18	0	66
Apprch %	0	16.7	83.3	40.7	51.9	7.4	0	0	100	25	75	0	
Total %	0	1.5	7.6	16.7	21.2	3	0	0	13.6	9.1	27.3	0	

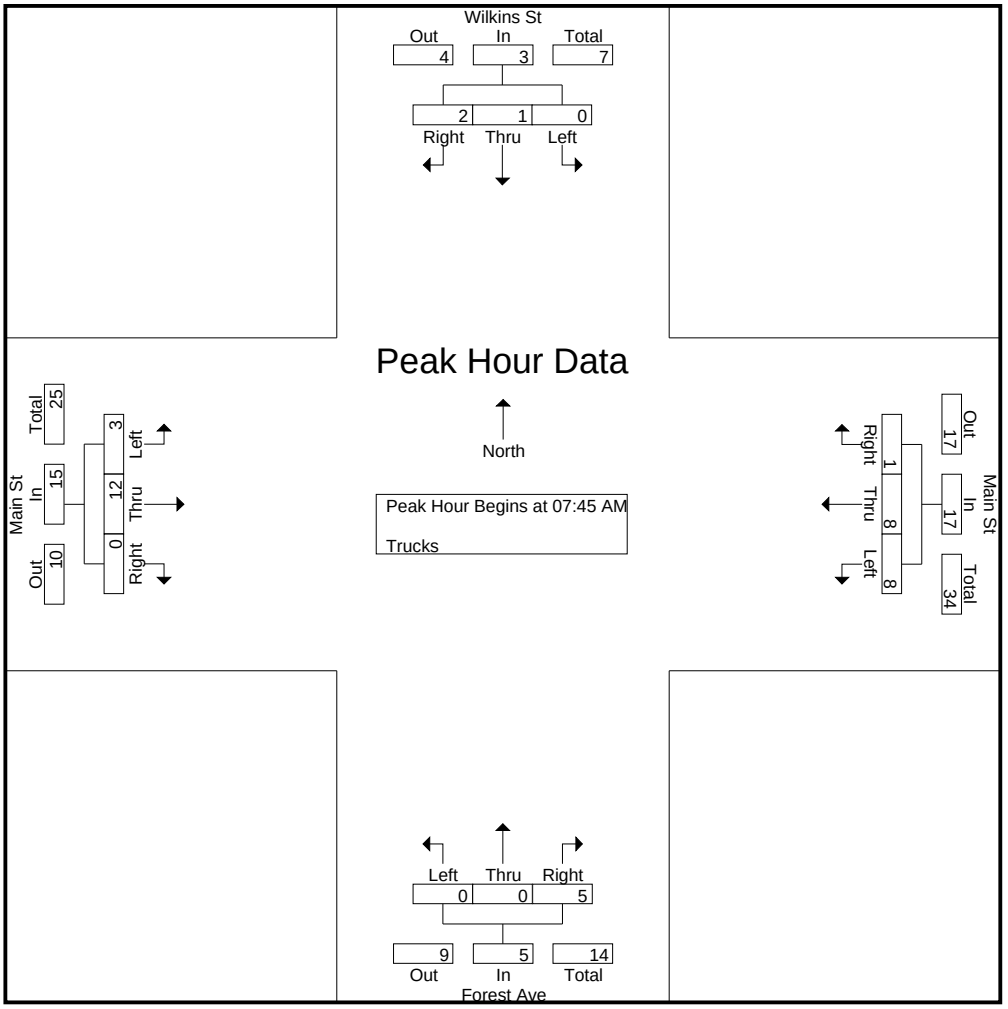
	Wilkins St From North				Main St From East				Forest Ave From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	2	1	**1**	4	0	0	0	0	**2**	**4**	0	**6**	10
08:00 AM	0	**1**	**2**	**3**	2	**3**	0	**5**	0	0	2	2	0	4	0	4	**14**
08:15 AM	0	0	0	0	**3**	1	0	4	0	0	0	0	1	3	0	4	8
08:30 AM	0	0	0	0	1	3	0	4	0	0	**3**	**3**	0	1	0	1	8
Total Volume	0	1	2	3	8	8	1	17	0	0	5	5	3	12	0	15	40
% App. Total	0	33.3	66.7		47.1	47.1	5.9		0	0	100		20	80	0		
PHF	.000	.250	.250	.250	.667	.667	.250	.850	.000	.000	.417	.417	.375	.750	.000	.625	.714

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

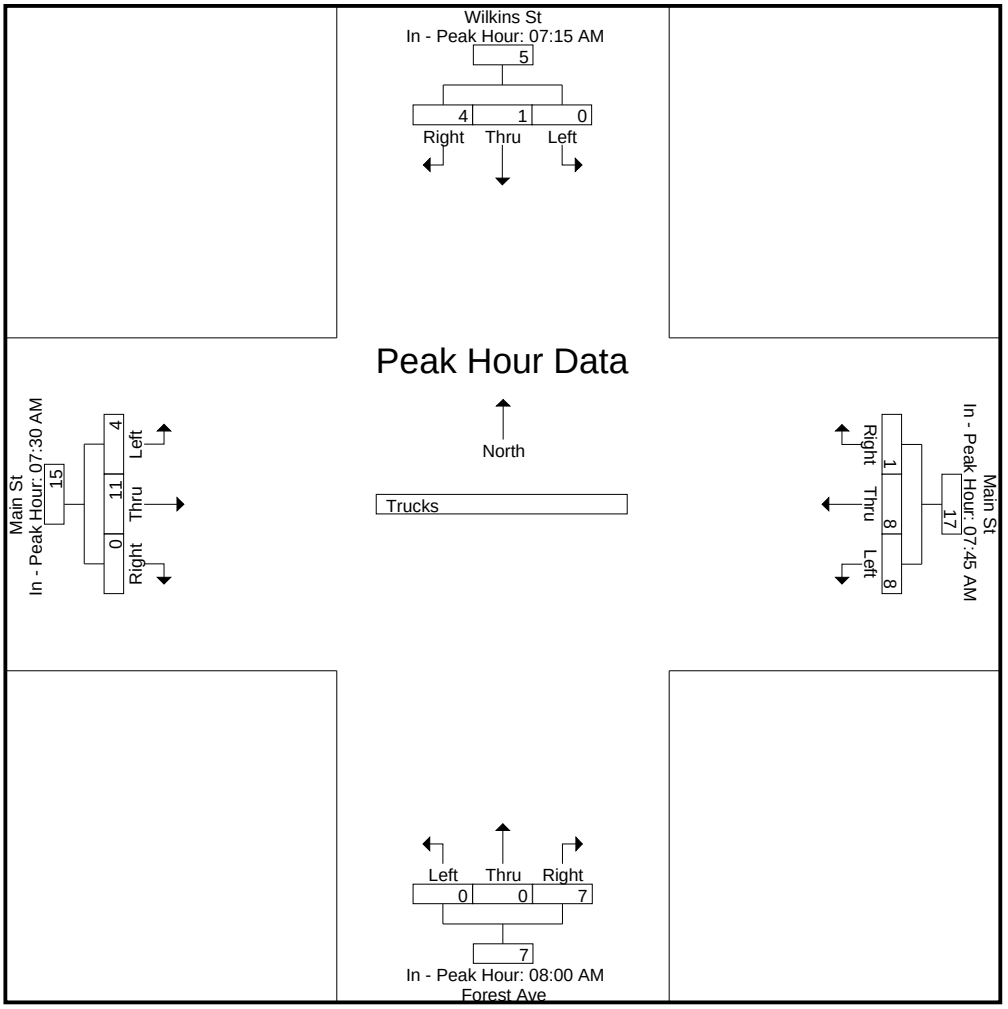
	07:15 AM				07:45 AM				08:00 AM				07:30 AM			
+0 mins.	0	0	**2**	2	2	1	**1**	4	0	0	2	2	1	0	0	1
+15 mins.	0	0	0	0	2	**3**	0	**5**	0	0	0	0	**2**	**4**	0	**6**
+30 mins.	0	0	0	0	**3**	1	0	4	0	0	**3**	**3**	0	4	0	4
+45 mins.	0	**1**	2	**3**	1	3	0	4	0	0	2	2	1	3	0	4
Total Volume	0	1	4	5	8	8	1	17	0	0	7	7	4	11	0	15
% App. Total	0	20	80		47.1	47.1	5.9		0	0	100		26.7	73.3	0	
PHF	.000	.250	.500	.417	.667	.667	.250	.850	.000	.000	.583	.583	.500	.688	.000	.625

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023

Groups Printed- Bikes Peds

	Wilkins St From North				Main St From East				Forest Ave From South				Main St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	0	0	

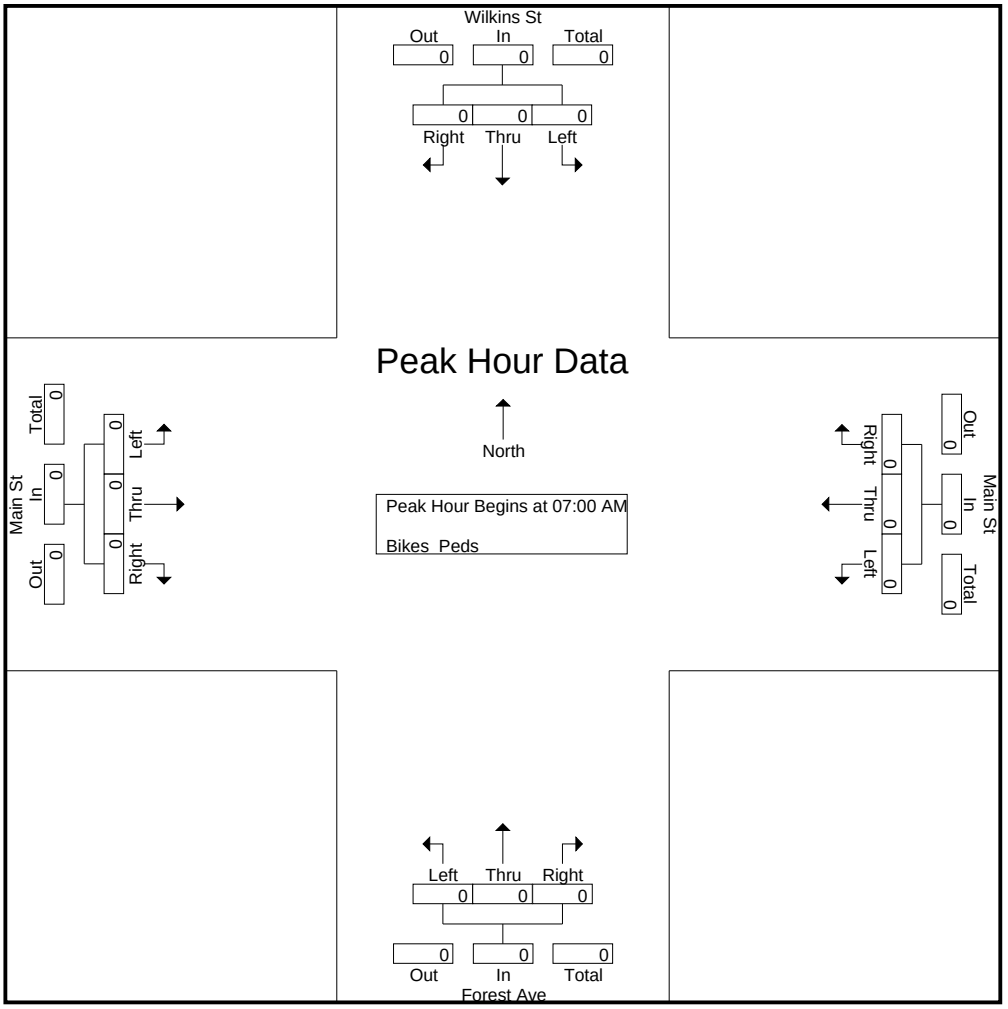
	Wilkins St From North				Main St From East				Forest Ave From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

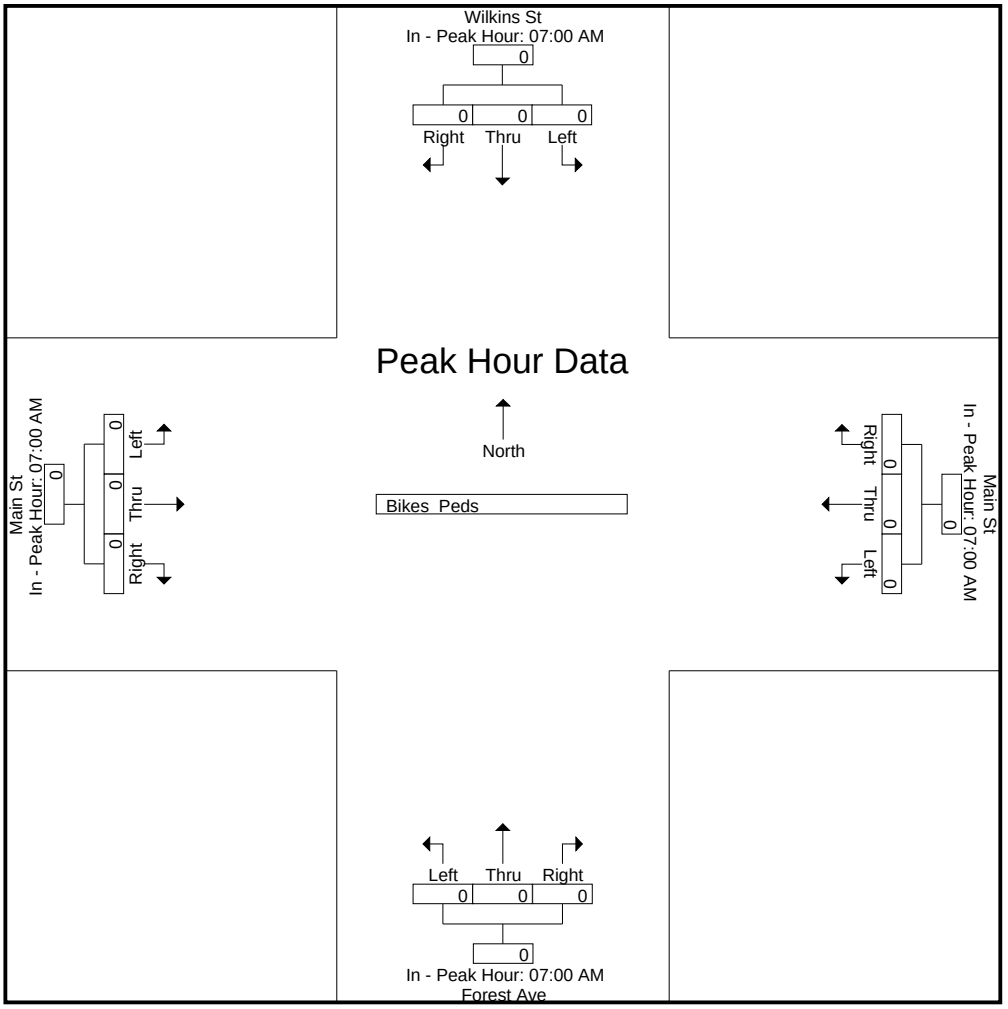
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023

Groups Printed- Cars - Trucks

	Wilkins St From North			Main St From East			Forest Ave From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	22	14	78	134	0	21	13	39	11	51	1	384
04:15 PM	3	29	14	83	112	1	24	27	35	8	50	0	386
04:30 PM	1	17	13	78	116	2	20	16	32	11	59	1	366
04:45 PM	0	38	6	60	111	0	27	20	42	10	55	1	370
Total	4	106	47	299	473	3	92	76	148	40	215	3	1506
05:00 PM	0	23	11	66	104	1	22	27	52	16	64	1	387
05:15 PM	1	32	9	86	119	2	27	26	38	14	52	1	407
05:30 PM	1	26	10	62	125	0	12	35	48	12	50	1	382
05:45 PM	1	23	11	43	108	0	11	20	29	12	39	0	297
Total	3	104	41	257	456	3	72	108	167	54	205	3	1473
06:00 PM	0	1	1	0	0	0	0	0	0	0	0	0	2
Grand Total	7	211	89	556	929	6	164	184	315	94	420	6	2981
Apprch %	2.3	68.7	29	37.3	62.3	0.4	24.7	27.8	47.5	18.1	80.8	1.2	
Total %	0.2	7.1	3	18.7	31.2	0.2	5.5	6.2	10.6	3.2	14.1	0.2	
Cars	7	211	88	548	915	6	163	183	311	92	413	6	2943
% Cars	100	100	98.9	98.6	98.5	100	99.4	99.5	98.7	97.9	98.3	100	98.7
Trucks	0	0	1	8	14	0	1	1	4	2	7	0	38
% Trucks	0	0	1.1	1.4	1.5	0	0.6	0.5	1.3	2.1	1.7	0	1.3

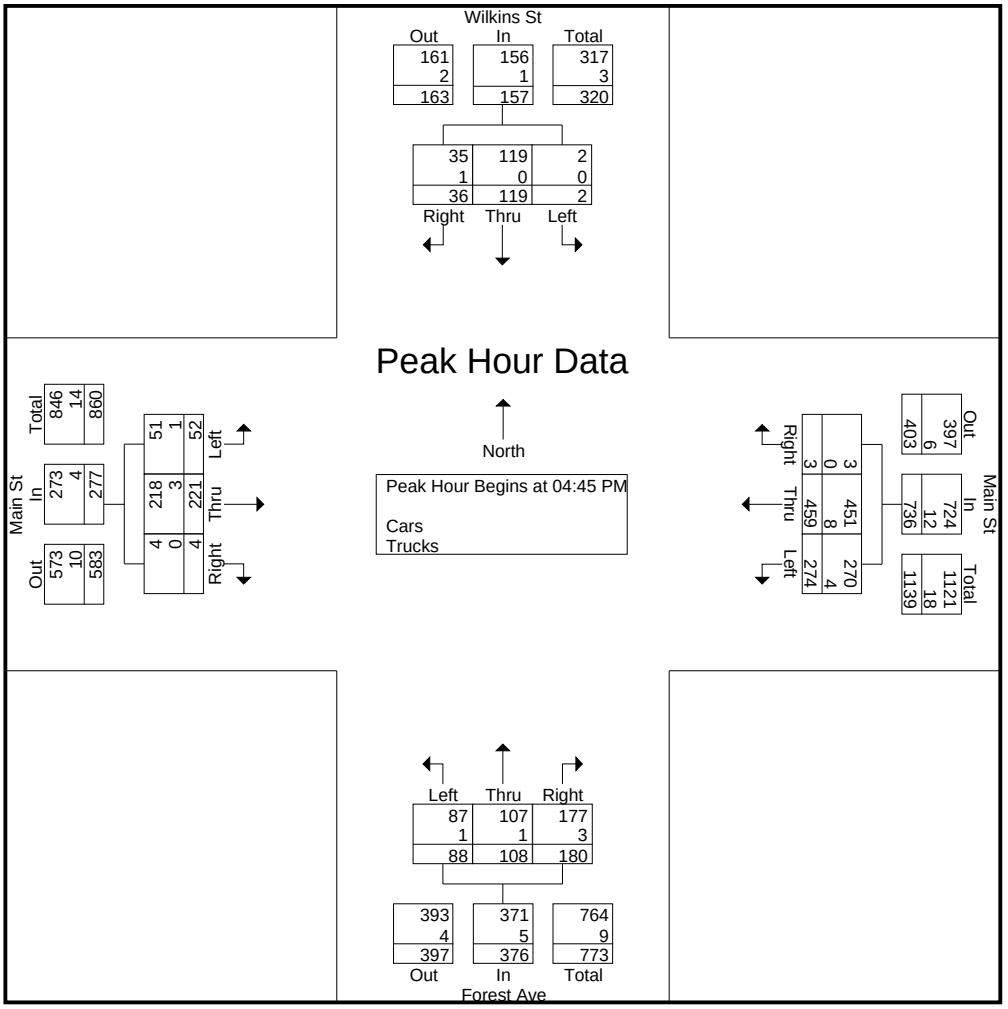
	Wilkins St From North				Main St From East				Forest Ave From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	**38**	6	**44**	60	111	0	171	**27**	20	42	89	10	55	**1**	66	370
05:00 PM	0	23	**11**	34	66	104	1	171	22	27	**52**	**101**	**16**	**64**	1	**81**	387
05:15 PM	**1**	32	9	42	**86**	119	**2**	**207**	27	26	38	91	14	52	1	67	**407**
05:30 PM	1	26	10	37	62	**125**	0	187	12	**35**	48	95	12	50	1	63	382
Total Volume	2	119	36	157	274	459	3	736	88	108	180	376	52	221	4	277	1546
% App. Total	1.3	75.8	22.9		37.2	62.4	0.4		23.4	28.7	47.9		18.8	79.8	1.4		
PHF	.500	.783	.818	.892	.797	.918	.375	.889	.815	.771	.865	.931	.813	.863	1.00	.855	.950
Cars	2	119	35	156	270	451	3	724	87	107	177	371	51	218	4	273	1524
% Cars	100	100	97.2	99.4	98.5	98.3	100	98.4	98.9	99.1	98.3	98.7	98.1	98.6	100	98.6	98.6
Trucks	0	0	1	1	4	8	0	12	1	1	3	5	1	3	0	4	22
% Trucks	0	0	2.8	0.6	1.5	1.7	0	1.6	1.1	0.9	1.7	1.3	1.9	1.4	0	1.4	1.4

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 06:00 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

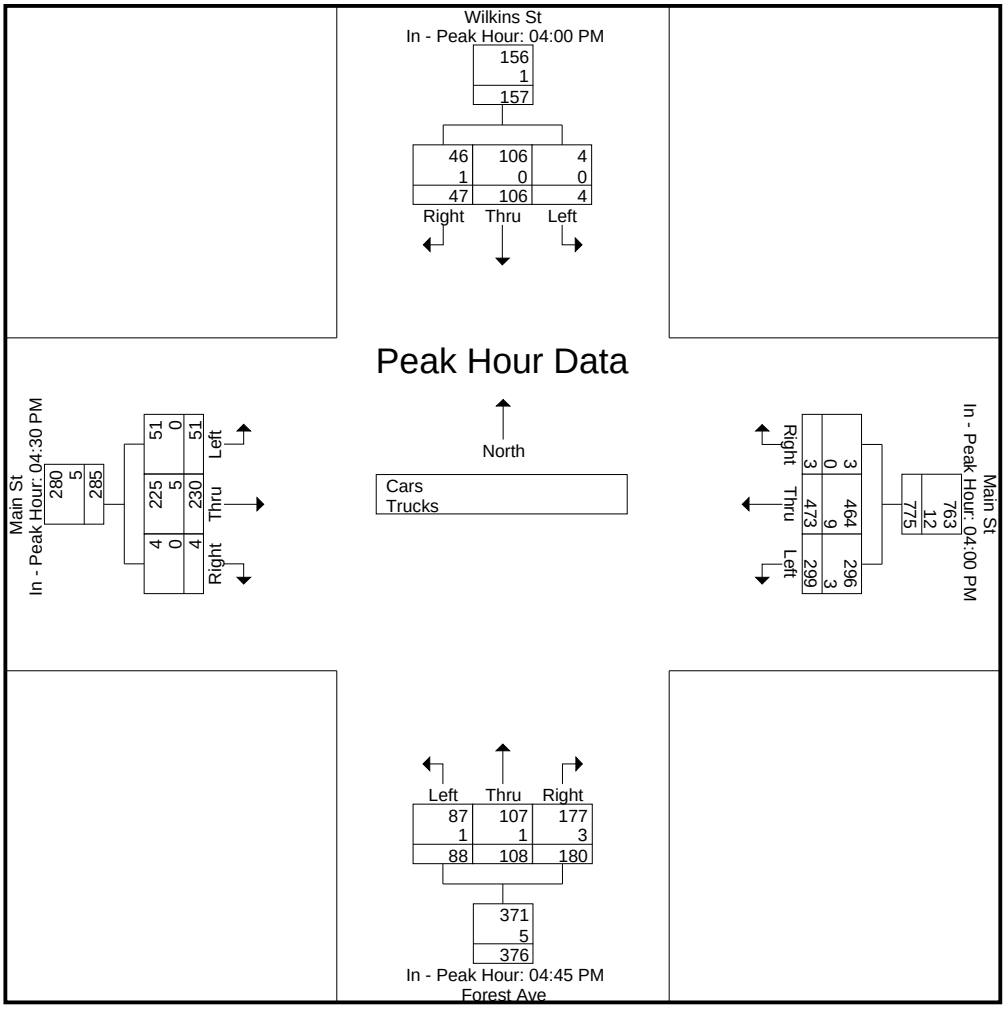
	04:00 PM				04:00 PM				04:45 PM				04:30 PM			
+0 mins.	0	22	**14**	36	78	**134**	0	**212**	**27**	20	42	89	11	59	**1**	71
+15 mins.	**3**	29	14	**46**	**83**	112	1	196	22	27	**52**	**101**	10	55	1	66
+30 mins.	1	17	13	31	78	116	**2**	196	27	26	38	91	**16**	**64**	1	**81**
+45 mins.	0	**38**	6	44	60	111	0	171	12	**35**	48	95	14	52	1	67
Total Volume	4	106	47	157	299	473	3	775	88	108	180	376	51	230	4	285
% App. Total	2.5	67.5	29.9		38.6	61	0.4		23.4	28.7	47.9		17.9	80.7	1.4	
PHF	.333	.697	.839	.853	.901	.882	.375	.914	.815	.771	.865	.931	.797	.898	1.000	.880
Cars	4	106	46	156	296	464	3	763	87	107	177	371	51	225	4	280
% Cars	100	100	97.9	99.4	99	98.1	100	98.5	98.9	99.1	98.3	98.7	100	97.8	100	98.2
Trucks	0	0	1	1	3	9	0	12	1	1	3	5	0	5	0	5
% Trucks	0	0	2.1	0.6	1	1.9	0	1.5	1.1	0.9	1.7	1.3	0	2.2	0	1.8

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023

Groups Printed- Cars

	Wilkins St From North			Main St From East			Forest Ave From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	22	14	78	130	0	21	13	39	10	50	1	378
04:15 PM	3	29	14	81	111	1	24	27	35	8	49	0	382
04:30 PM	1	17	13	77	115	2	20	16	31	11	57	1	361
04:45 PM	0	38	5	60	108	0	27	20	41	10	53	1	363
Total	4	106	46	296	464	3	92	76	146	39	209	3	1484
05:00 PM	0	23	11	65	102	1	22	26	50	16	64	1	381
05:15 PM	1	32	9	84	117	2	26	26	38	14	51	1	401
05:30 PM	1	26	10	61	124	0	12	35	48	11	50	1	379
05:45 PM	1	23	11	42	108	0	11	20	29	12	39	0	296
Total	3	104	41	252	451	3	71	107	165	53	204	3	1457
06:00 PM	0	1	1	0	0	0	0	0	0	0	0	0	2
Grand Total	7	211	88	548	915	6	163	183	311	92	413	6	2943
Apprch %	2.3	69	28.8	37.3	62.3	0.4	24.8	27.9	47.3	18	80.8	1.2	
Total %	0.2	7.2	3	18.6	31.1	0.2	5.5	6.2	10.6	3.1	14	0.2	

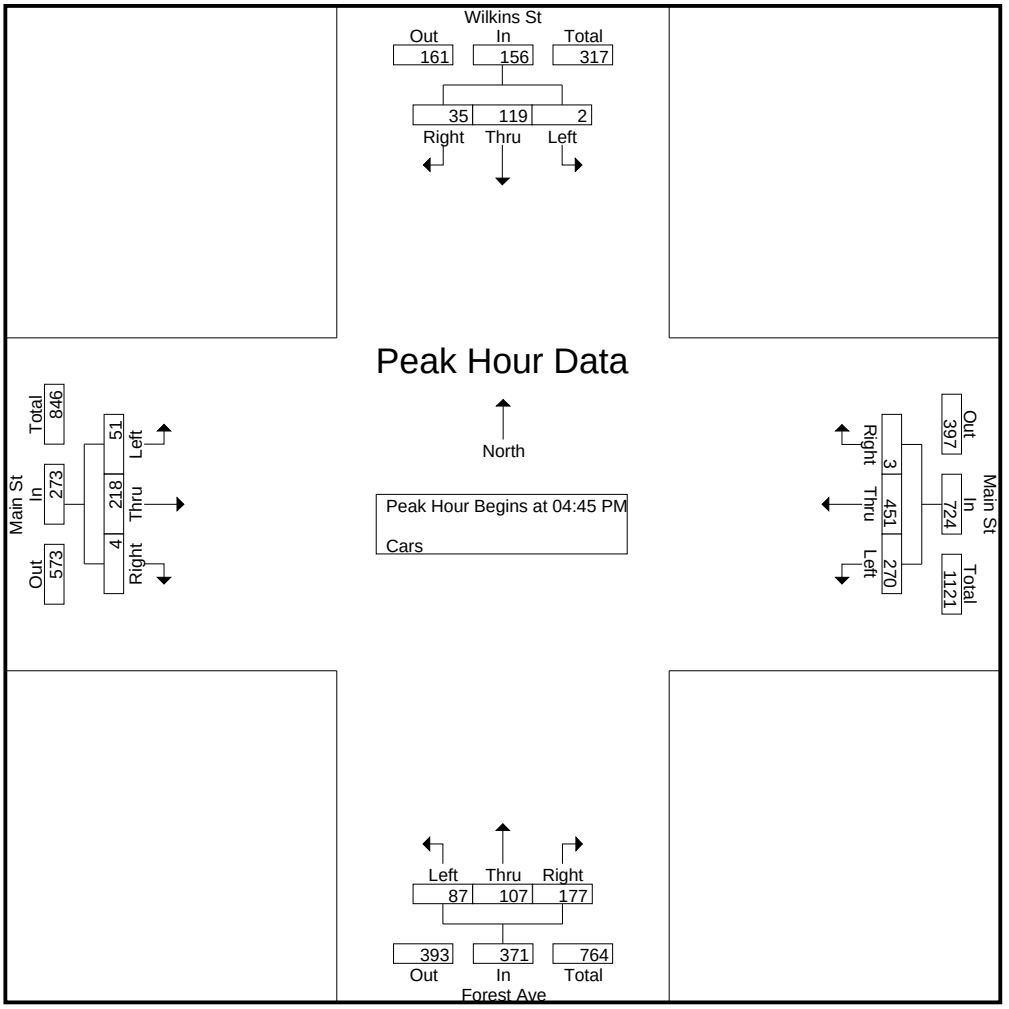
	Wilkins St From North				Main St From East				Forest Ave From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	**38**	5	**43**	60	108	0	168	**27**	20	41	88	10	53	**1**	64	363
05:00 PM	0	23	**11**	34	65	102	1	168	22	26	**50**	**98**	**16**	**64**	1	**81**	381
05:15 PM	**1**	32	9	42	**84**	117	**2**	**203**	26	26	38	90	14	51	1	66	**401**
05:30 PM	1	26	10	37	61	**124**	0	185	12	**35**	48	95	11	50	1	62	379
Total Volume	2	119	35	156	270	451	3	724	87	107	177	371	51	218	4	273	1524
% App. Total	1.3	76.3	22.4		37.3	62.3	0.4		23.5	28.8	47.7		18.7	79.9	1.5		
PHF	.500	.783	.795	.907	.804	.909	.375	.892	.806	.764	.885	.946	.797	.852	1.00	.843	.950

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 04:00 PM to 06:00 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

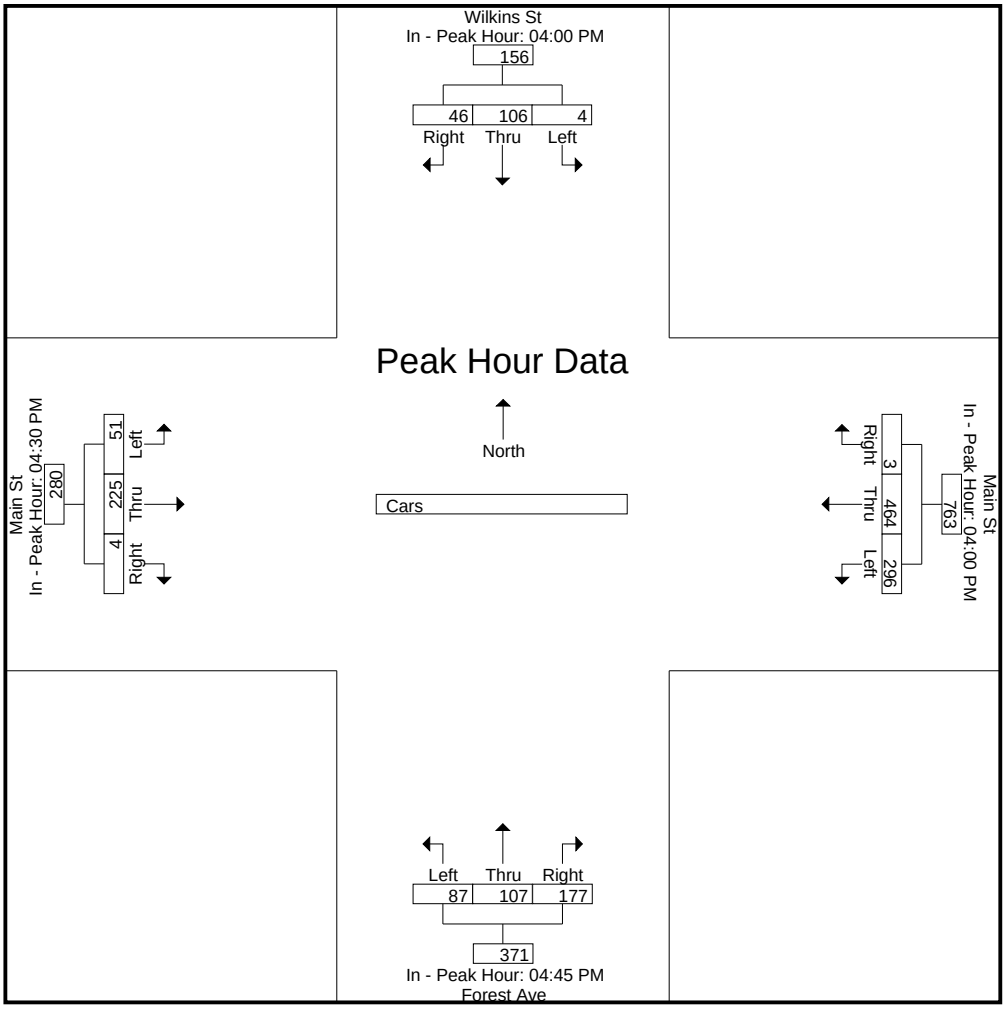
	04:00 PM				04:00 PM				04:45 PM				04:30 PM			
+0 mins.	0	22	**14**	36	78	**130**	0	**208**	**27**	20	41	88	11	57	**1**	69
+15 mins.	**3**	29	14	**46**	**81**	111	1	193	22	26	**50**	**98**	10	53	1	64
+30 mins.	1	17	13	31	77	115	**2**	194	26	26	38	90	**16**	**64**	1	**81**
+45 mins.	0	**38**	5	43	60	108	0	168	12	**35**	48	95	14	51	1	66
Total Volume	4	106	46	156	296	464	3	763	87	107	177	371	51	225	4	280
% App. Total	2.6	67.9	29.5		38.8	60.8	0.4		23.5	28.8	47.7		18.2	80.4	1.4	
PHF	.333	.697	.821	.848	.914	.892	.375	.917	.806	.764	.885	.946	.797	.879	1.000	.864

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 7

Groups Printed- Trucks

	Wilkins St From North			Main St From East			Forest Ave From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	4	0	0	0	0	1	1	0	6
04:15 PM	0	0	0	2	1	0	0	0	0	0	1	0	4
04:30 PM	0	0	0	1	1	0	0	0	1	0	2	0	5
04:45 PM	0	0	1	0	3	0	0	0	1	0	2	0	7
Total	0	0	1	3	9	0	0	0	2	1	6	0	22
05:00 PM	0	0	0	1	2	0	0	1	2	0	0	0	6
05:15 PM	0	0	0	2	2	0	1	0	0	0	1	0	6
05:30 PM	0	0	0	1	1	0	0	0	0	1	0	0	3
05:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	5	5	0	1	1	2	1	1	0	16
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	1	8	14	0	1	1	4	2	7	0	38
Apprch %	0	0	100	36.4	63.6	0	16.7	16.7	66.7	22.2	77.8	0	
Total %	0	0	2.6	21.1	36.8	0	2.6	2.6	10.5	5.3	18.4	0	

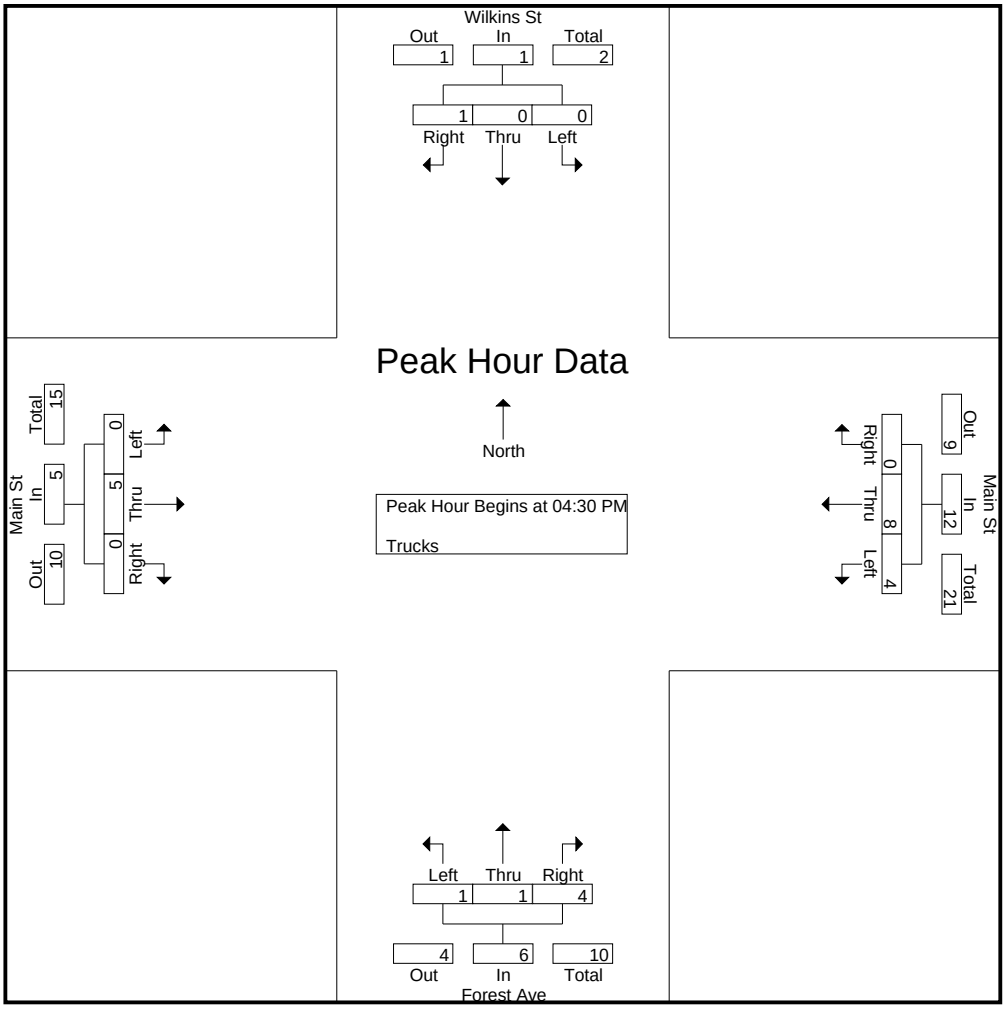
	Wilkins St From North				Main St From East				Forest Ave From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	1	1	0	2	0	0	1	1	0	**2**	0	**2**	5
04:45 PM	0	0	**1**	**1**	0	**3**	0	3	0	0	1	1	0	2	0	2	**7**
05:00 PM	0	0	0	0	1	2	0	3	0	**1**	**2**	**3**	0	0	0	0	6
05:15 PM	0	0	0	0	**2**	2	0	**4**	**1**	0	0	1	0	1	0	1	6
Total Volume	0	0	1	1	4	8	0	12	1	1	4	6	0	5	0	5	24
% App. Total	0	0	100		33.3	66.7	0		16.7	16.7	66.7		0	100	0		
PHF	.000	.000	.250	.250	.500	.667	.000	.750	.250	.250	.500	.500	.000	.625	.000	.625	.857

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 04:00 PM to 06:00 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

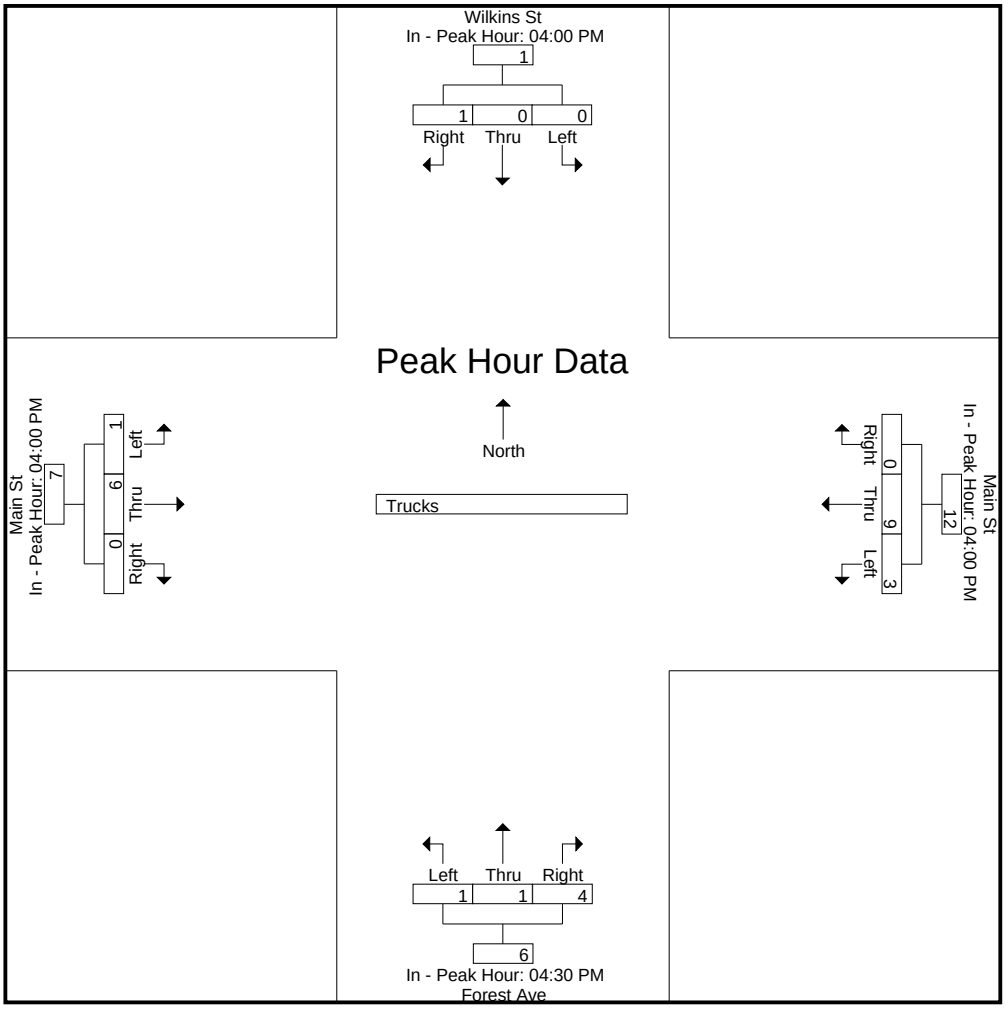
	04:00 PM				04:00 PM				04:30 PM				04:00 PM			
+0 mins.	0	0	0	0	0	**4**	0	**4**	0	0	1	1	**1**	1	0	**2**
+15 mins.	0	0	0	0	**2**	1	0	3	0	0	1	1	0	1	0	1
+30 mins.	0	0	0	0	1	1	0	2	0	**1**	**2**	**3**	0	**2**	0	2
+45 mins.	0	0	**1**	**1**	0	3	0	3	**1**	0	0	1	0	2	0	2
Total Volume	0	0	1	1	3	9	0	12	1	1	4	6	1	6	0	7
% App. Total	0	0	100		25	75	0		16.7	16.7	66.7		14.3	85.7	0	
PHF	.000	.000	.250	.250	.375	.563	.000	.750	.250	.250	.500	.500	.250	.750	.000	.875

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023

Groups Printed- Bikes Peds

	Wilkins St From North				Main St From East				Forest Ave From South				Main St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	0	0	

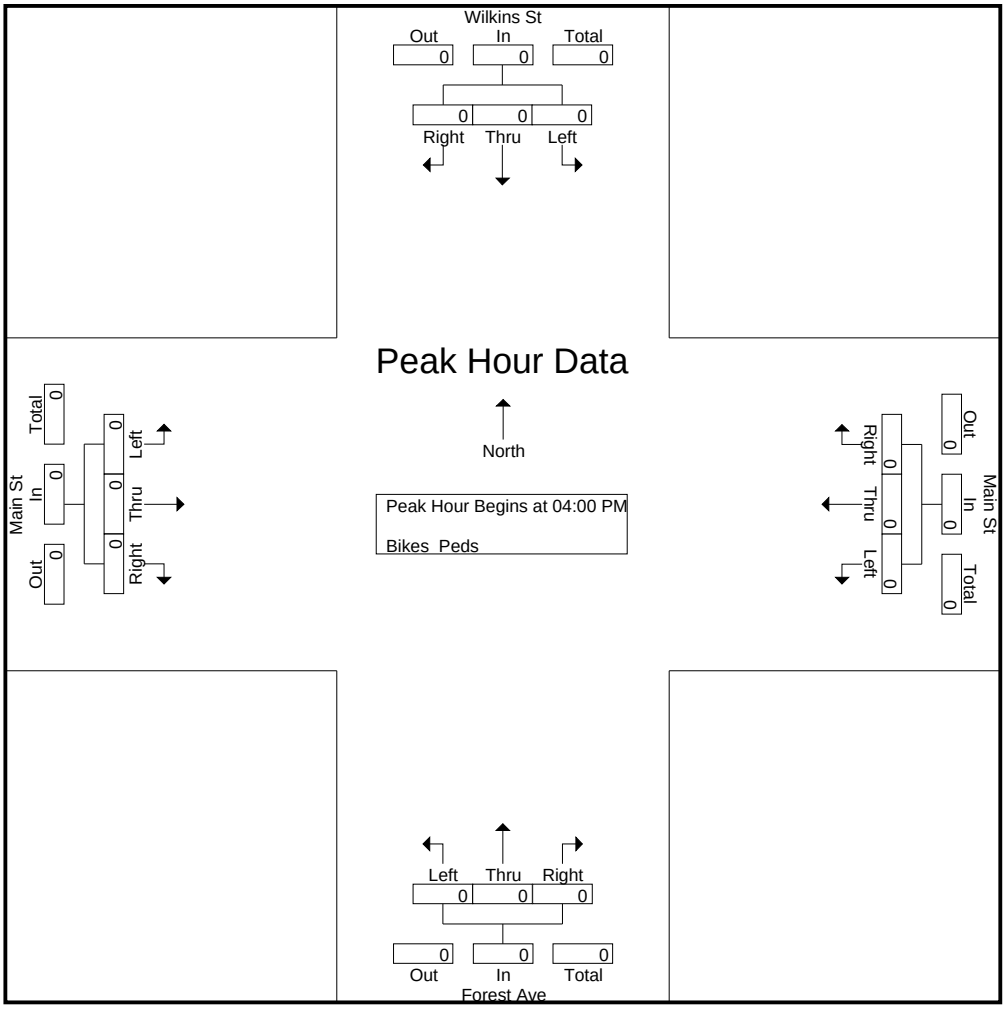
	Wilkins St From North				Main St From East				Forest Ave From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 11



Peak Hour Analysis From 04:00 PM to 06:00 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

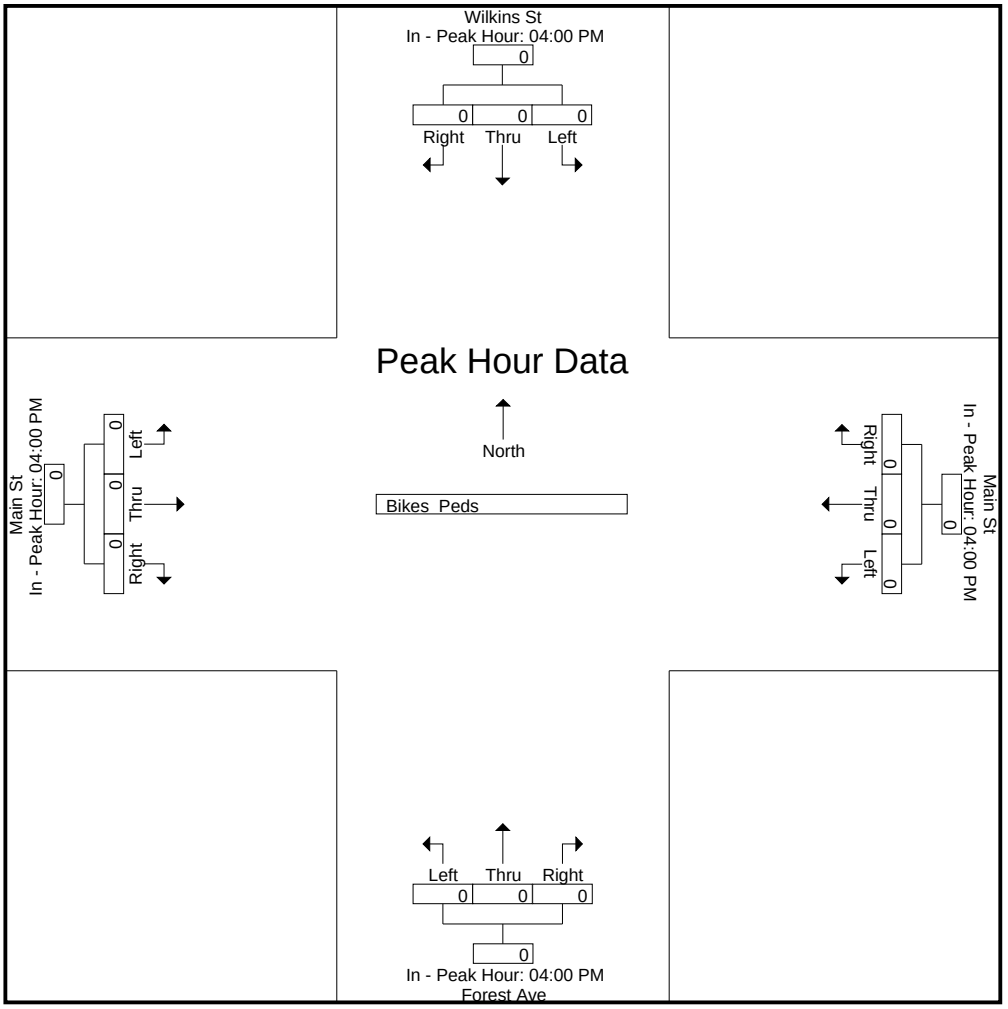
	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Wilkins Street/Forest Ave
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160007
Site Code : 92160007
Start Date : 1/24/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 1

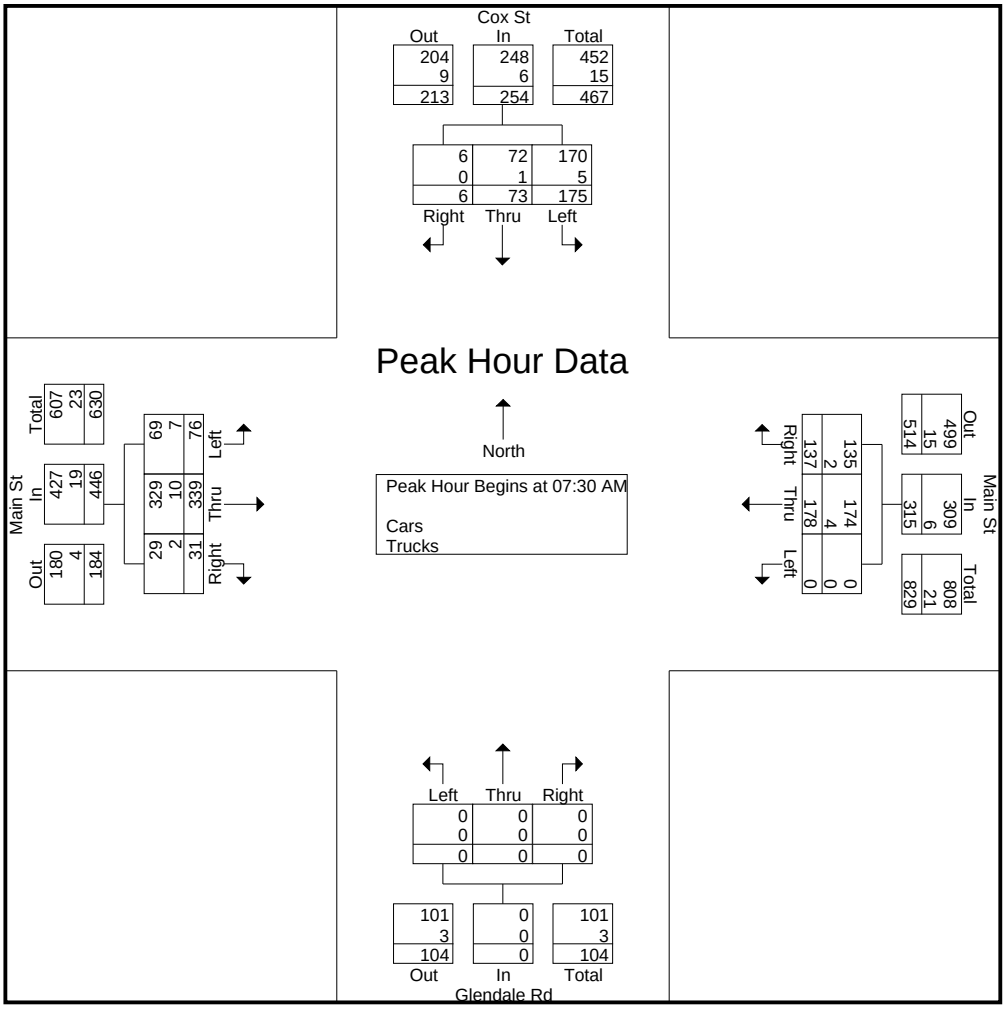
Groups Printed- Cars - Trucks

	Cox St From North			Main St From East			Glendale Rd From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	49	6	0	0	53	34	0	0	0	13	100	7	262
07:15 AM	43	18	1	0	56	43	0	0	0	10	84	2	257
07:30 AM	35	13	2	0	39	41	0	0	0	15	96	5	246
07:45 AM	56	18	2	0	43	30	0	0	0	10	79	10	248
Total	183	55	5	0	191	148	0	0	0	48	359	24	1013
08:00 AM	43	22	2	0	39	40	0	0	0	17	83	9	255
08:15 AM	41	20	0	0	57	26	0	0	0	34	81	7	266
08:30 AM	36	19	1	0	42	34	0	0	0	20	73	9	234
08:45 AM	18	14	2	0	52	21	0	0	0	7	76	4	194
Total	138	75	5	0	190	121	0	0	0	78	313	29	949
Grand Total	321	130	10	0	381	269	0	0	0	126	672	53	1962
Apprch %	69.6	28.2	2.2	0	58.6	41.4	0	0	0	14.8	79	6.2	
Total %	16.4	6.6	0.5	0	19.4	13.7	0	0	0	6.4	34.3	2.7	
Cars	314	129	10	0	369	265	0	0	0	113	654	50	1904
% Cars	97.8	99.2	100	0	96.9	98.5	0	0	0	89.7	97.3	94.3	97
Trucks	7	1	0	0	12	4	0	0	0	13	18	3	58
% Trucks	2.2	0.8	0	0	3.1	1.5	0	0	0	10.3	2.7	5.7	3

	Cox St From North				Main St From East				Glendale Rd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	35	13	**2**	50	0	39	**41**	80	0	0	0	0	15	**96**	5	116	246
07:45 AM	**56**	18	2	**76**	0	43	30	73	0	0	0	0	10	79	**10**	99	248
08:00 AM	43	**22**	2	67	0	39	40	79	0	0	0	0	17	83	9	109	255
08:15 AM	41	20	0	61	0	**57**	26	**83**	0	0	0	0	**34**	81	7	**122**	**266**
Total Volume	175	73	6	254	0	178	137	315	0	0	0	0	76	339	31	446	1015
% App. Total	68.9	28.7	2.4		0	56.5	43.5		0	0	0		17	76	7		
PHF	.781	.830	.750	.836	.000	.781	.835	.949	.000	.000	.000	.000	.559	.883	.775	.914	.954
Cars	170	72	6	248	0	174	135	309	0	0	0	0	69	329	29	427	984
% Cars	97.1	98.6	100	97.6	0	97.8	98.5	98.1	0	0	0	0	90.8	97.1	93.5	95.7	96.9
Trucks	5	1	0	6	0	4	2	6	0	0	0	0	7	10	2	19	31
% Trucks	2.9	1.4	0	2.4	0	2.2	1.5	1.9	0	0	0	0	9.2	2.9	6.5	4.3	3.1

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

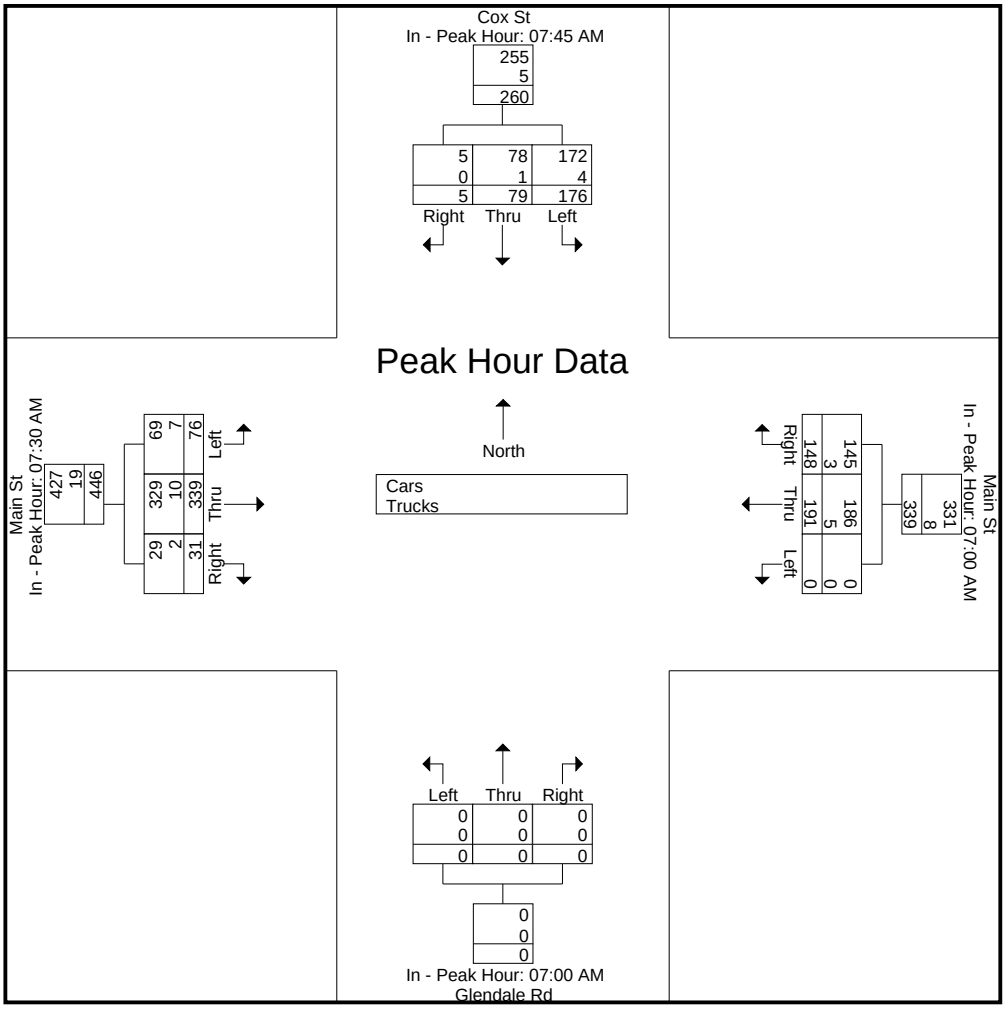
	07:45 AM				07:00 AM				07:00 AM				07:30 AM			
+0 mins.	**56**	18	**2**	**76**	0	53	34	87	0	0	0	0	15	**96**	5	116
+15 mins.	43	**22**	2	67	0	**56**	**43**	**99**	0	0	0	0	10	79	**10**	99
+30 mins.	41	20	0	61	0	39	41	80	0	0	0	0	17	83	9	109
+45 mins.	36	19	1	56	0	43	30	73	0	0	0	0	**34**	81	7	**122**
Total Volume	176	79	5	260	0	191	148	339	0	0	0	0	76	339	31	446
% App. Total	67.7	30.4	1.9		0	56.3	43.7		0	0	0		17	76	7	
PHF	.786	.898	.625	.855	.000	.853	.860	.856	.000	.000	.000	.000	.559	.883	.775	.914
Cars	172	78	5	255	0	186	145	331	0	0	0	0	69	329	29	427
% Cars	97.7	98.7	100	98.1	0	97.4	98	97.6	0	0	0	0	90.8	97.1	93.5	95.7
Trucks	4	1	0	5	0	5	3	8	0	0	0	0	7	10	2	19
% Trucks	2.3	1.3	0	1.9	0	2.6	2	2.4	0	0	0	0	9.2	2.9	6.5	4.3

Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 4

Groups Printed- Cars

	Cox St From North			Main St From East			Glendale Rd From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	48	6	0	0	50	34	0	0	0	11	97	6	252
07:15 AM	42	18	1	0	54	41	0	0	0	10	84	2	252
07:30 AM	34	13	2	0	39	40	0	0	0	14	96	5	243
07:45 AM	52	17	2	0	43	30	0	0	0	9	77	10	240
Total	176	54	5	0	186	145	0	0	0	44	354	23	987
08:00 AM	43	22	2	0	36	39	0	0	0	16	79	7	244
08:15 AM	41	20	0	0	56	26	0	0	0	30	77	7	257
08:30 AM	36	19	1	0	39	34	0	0	0	17	72	9	227
08:45 AM	18	14	2	0	52	21	0	0	0	6	72	4	189
Total	138	75	5	0	183	120	0	0	0	69	300	27	917
Grand Total	314	129	10	0	369	265	0	0	0	113	654	50	1904
Apprch %	69.3	28.5	2.2	0	58.2	41.8	0	0	0	13.8	80	6.1	
Total %	16.5	6.8	0.5	0	19.4	13.9	0	0	0	5.9	34.3	2.6	

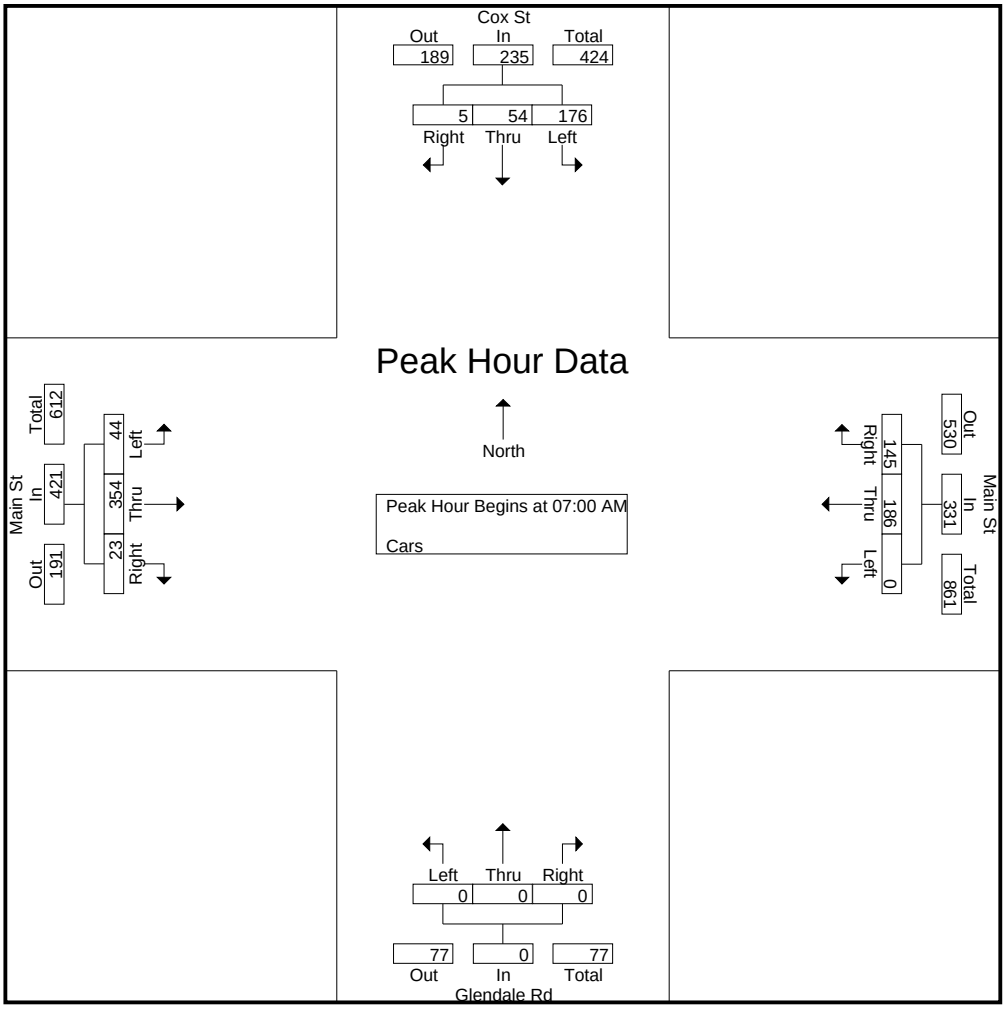
	Cox St From North				Main St From East				Glendale Rd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	48	6	0	54	0	50	34	84	0	0	0	0	11	**97**	6	114	**252**
07:15 AM	42	**18**	1	61	0	**54**	**41**	**95**	0	0	0	0	10	84	2	96	252
07:30 AM	34	13	**2**	49	0	39	40	79	0	0	0	0	**14**	96	5	**115**	243
07:45 AM	**52**	17	2	**71**	0	43	30	73	0	0	0	0	9	77	**10**	96	240
Total Volume	176	54	5	235	0	186	145	331	0	0	0	0	44	354	23	421	987
% App. Total	74.9	23	2.1		0	56.2	43.8		0	0	0		10.5	84.1	5.5		
PHF	.846	.750	.625	.827	.000	.861	.884	.871	.000	.000	.000	.000	.786	.912	.575	.915	.979

Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

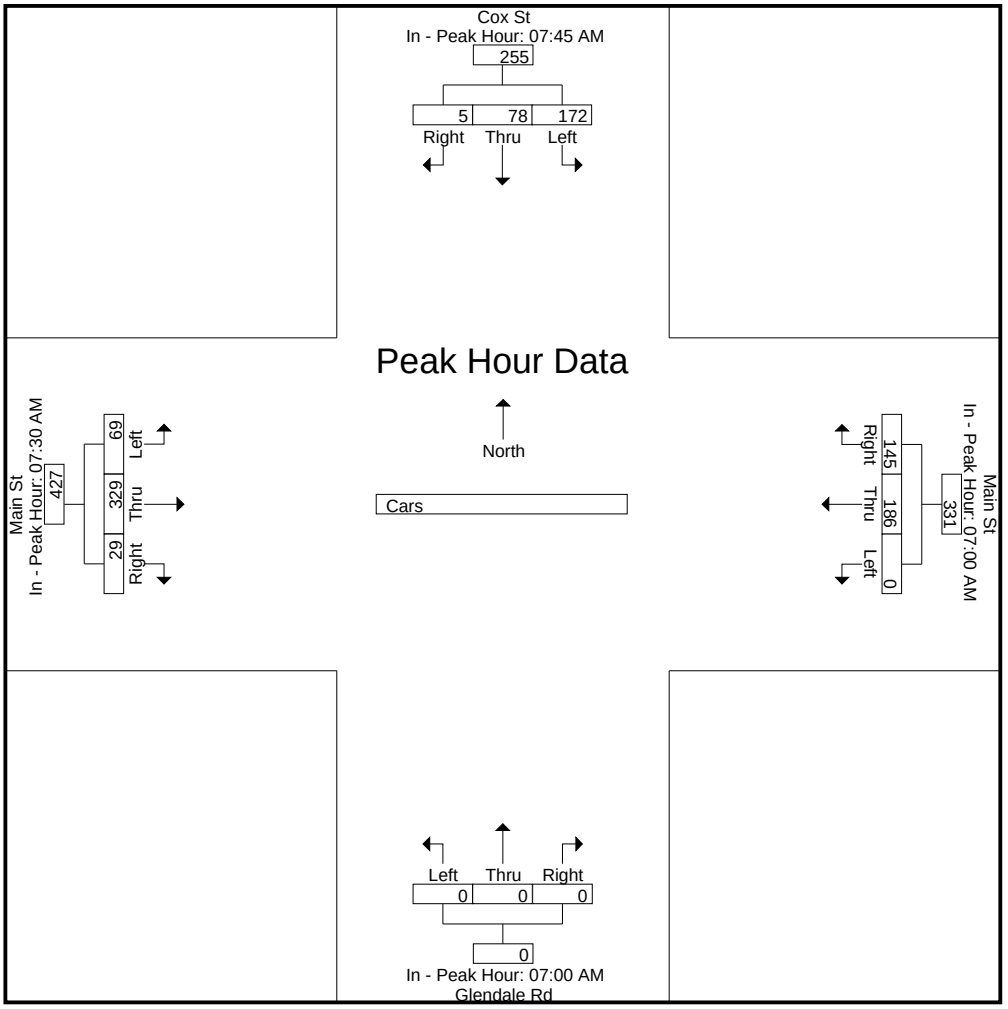
	07:45 AM				07:00 AM				07:00 AM				07:30 AM			
+0 mins.	**52**	17	**2**	**71**	0	50	34	84	0	0	0	0	14	**96**	5	**115**
+15 mins.	43	**22**	2	67	0	**54**	**41**	**95**	0	0	0	0	9	77	**10**	96
+30 mins.	41	20	0	61	0	39	40	79	0	0	0	0	16	79	7	102
+45 mins.	36	19	1	56	0	43	30	73	0	0	0	0	**30**	77	7	114
Total Volume	172	78	5	255	0	186	145	331	0	0	0	0	69	329	29	427
% App. Total	67.5	30.6	2		0	56.2	43.8		0	0	0		16.2	77	6.8	
PHF	.827	.886	.625	.898	.000	.861	.884	.871	.000	.000	.000	.000	.575	.857	.725	.928

Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023

Groups Printed- Trucks

	Cox St From North			Main St From East			Glendale Rd From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	0	0	0	3	0	0	0	0	2	3	1	10
07:15 AM	1	0	0	0	2	2	0	0	0	0	0	0	5
07:30 AM	1	0	0	0	0	1	0	0	0	1	0	0	3
07:45 AM	4	1	0	0	0	0	0	0	0	1	2	0	8
Total	7	1	0	0	5	3	0	0	0	4	5	1	26
08:00 AM	0	0	0	0	3	1	0	0	0	1	4	2	11
08:15 AM	0	0	0	0	1	0	0	0	0	4	4	0	9
08:30 AM	0	0	0	0	3	0	0	0	0	3	1	0	7
08:45 AM	0	0	0	0	0	0	0	0	0	1	4	0	5
Total	0	0	0	0	7	1	0	0	0	9	13	2	32
Grand Total	7	1	0	0	12	4	0	0	0	13	18	3	58
Apprch %	87.5	12.5	0	0	75	25	0	0	0	38.2	52.9	8.8	
Total %	12.1	1.7	0	0	20.7	6.9	0	0	0	22.4	31	5.2	

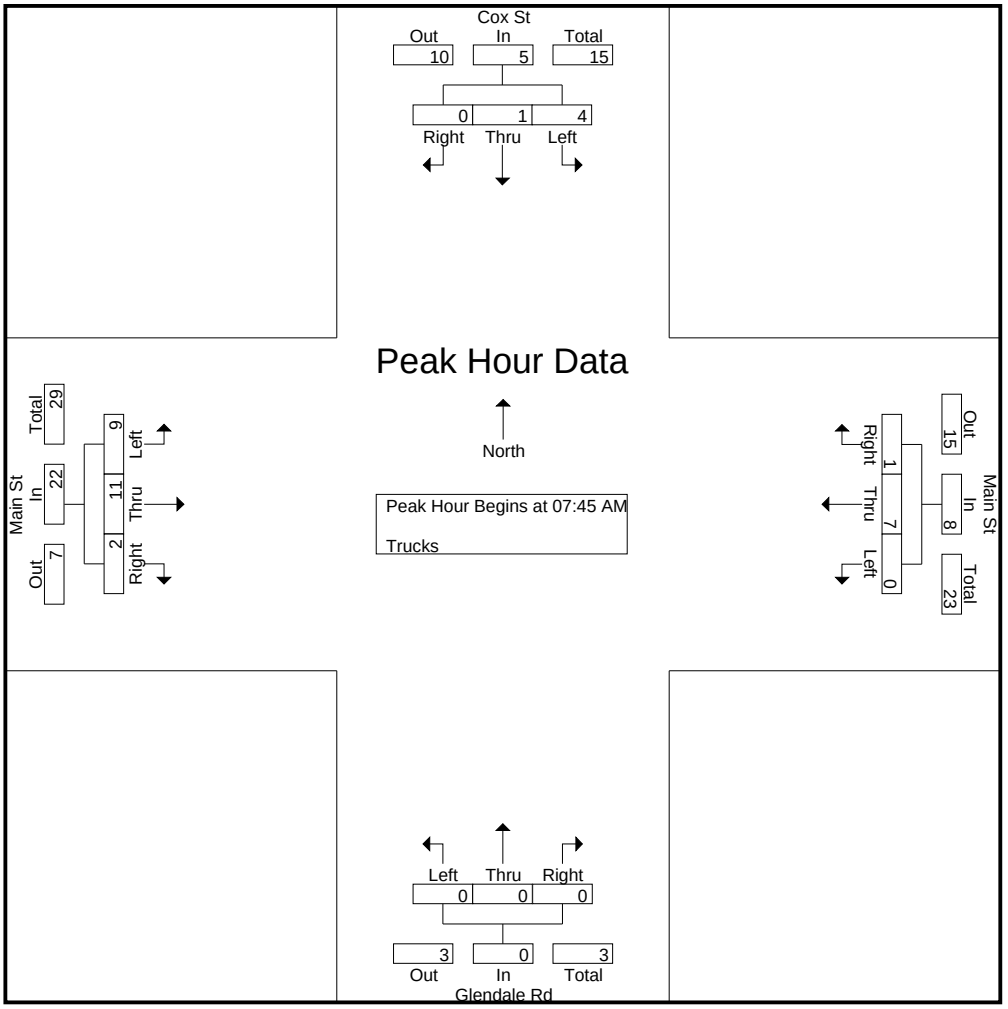
	Cox St From North				Main St From East				Glendale Rd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**4**	**1**	0	**5**	0	0	0	0	0	0	0	0	1	2	0	3	8
08:00 AM	0	0	0	0	0	**3**	**1**	**4**	0	0	0	0	1	**4**	**2**	7	**11**
08:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	**4**	4	0	**8**	9
08:30 AM	0	0	0	0	0	3	0	3	0	0	0	0	3	1	0	4	7
Total Volume	4	1	0	5	0	7	1	8	0	0	0	0	9	11	2	22	35
% App. Total	80	20	0		0	87.5	12.5		0	0	0		40.9	50	9.1		
PHF	.250	.250	.000	.250	.000	.583	.250	.500	.000	.000	.000	.000	.563	.688	.250	.688	.795

Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

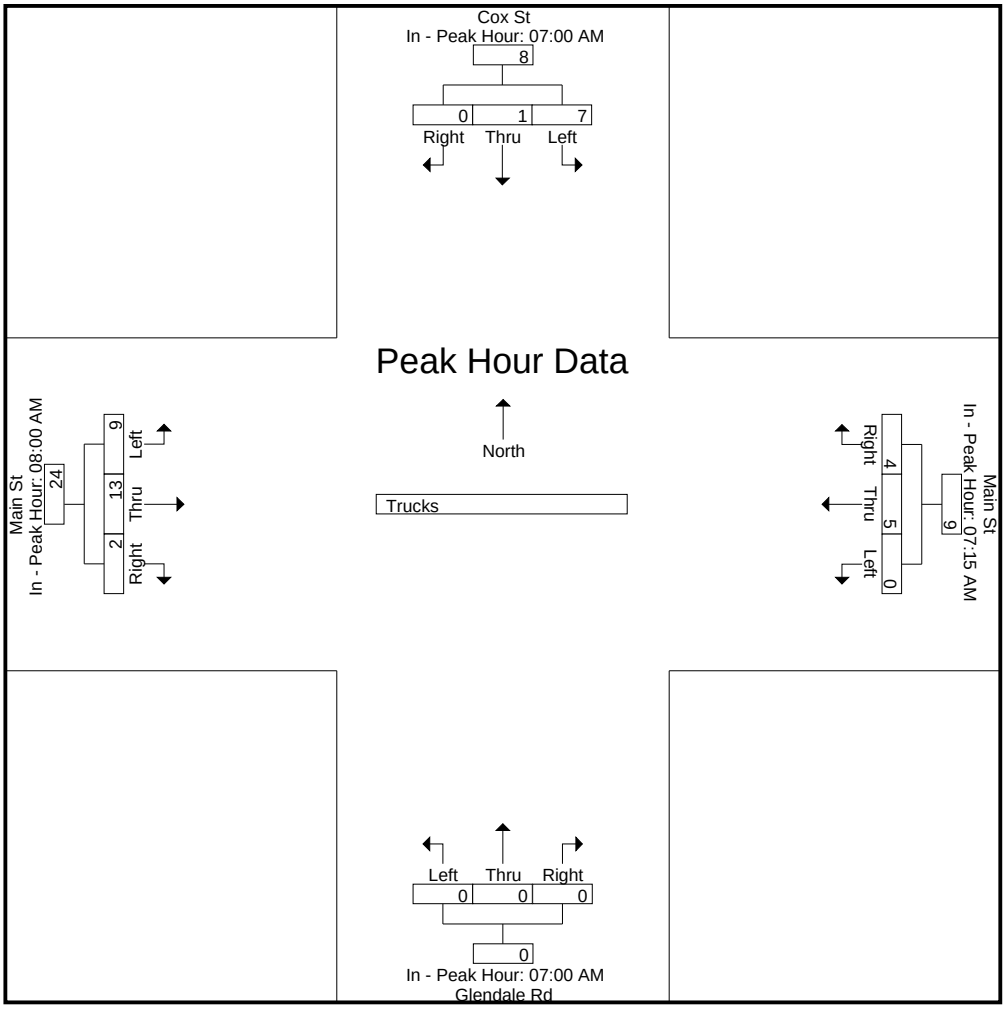
	07:00 AM				07:15 AM				07:00 AM				08:00 AM			
+0 mins.	1	0	0	1	0	2	**2**	**4**	0	0	0	0	1	**4**	**2**	7
+15 mins.	1	0	0	1	0	0	1	1	0	0	0	0	**4**	4	0	**8**
+30 mins.	1	0	0	1	0	0	0	0	0	0	0	0	3	1	0	4
+45 mins.	**4**	**1**	0	**5**	0	**3**	1	4	0	0	0	0	1	4	0	5
Total Volume	7	1	0	8	0	5	4	9	0	0	0	0	9	13	2	24
% App. Total	87.5	12.5	0		0	55.6	44.4		0	0	0		37.5	54.2	8.3	
PHF	.438	.250	.000	.400	.000	.417	.500	.563	.000	.000	.000	.000	.563	.813	.250	.750

Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023

Groups Printed- Bikes Peds

	Cox St From North				Main St From East				Glendale Rd From South				Main St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	0	0	

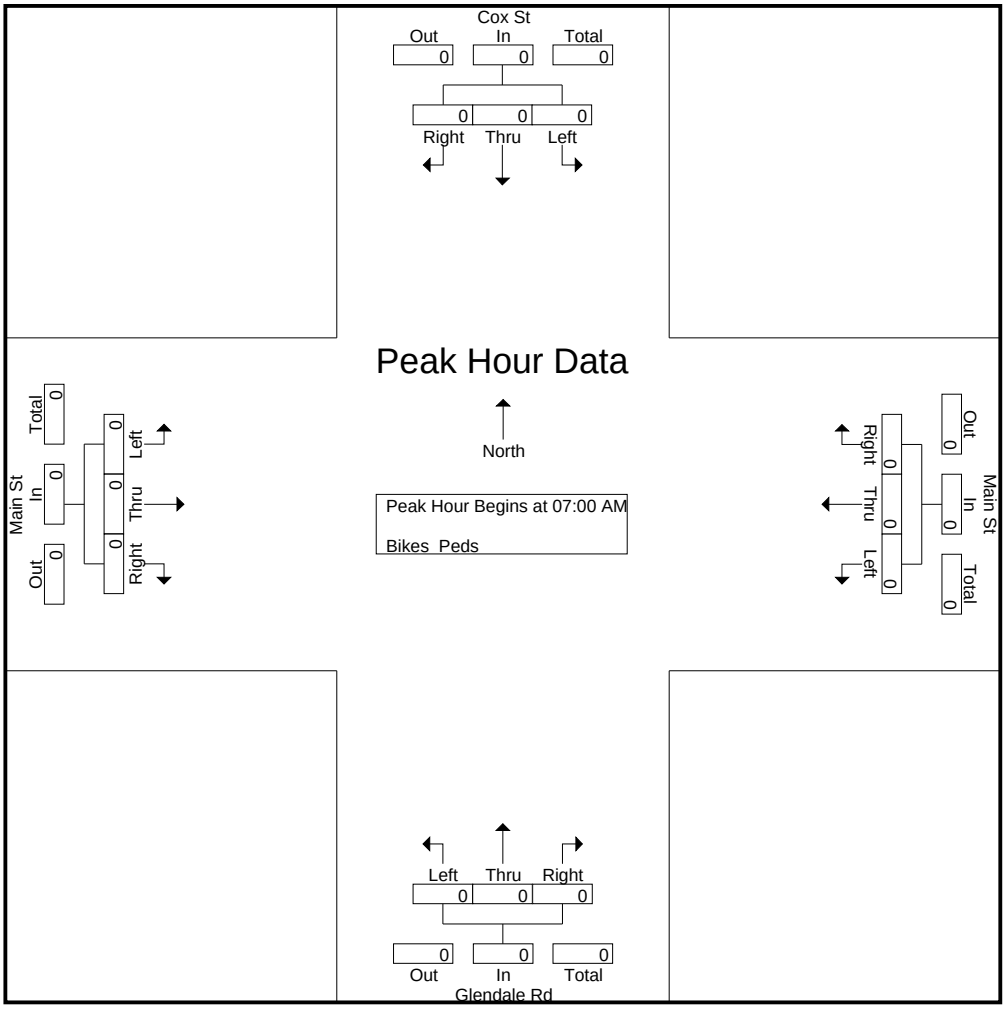
	Cox St From North				Main St From East				Glendale Rd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

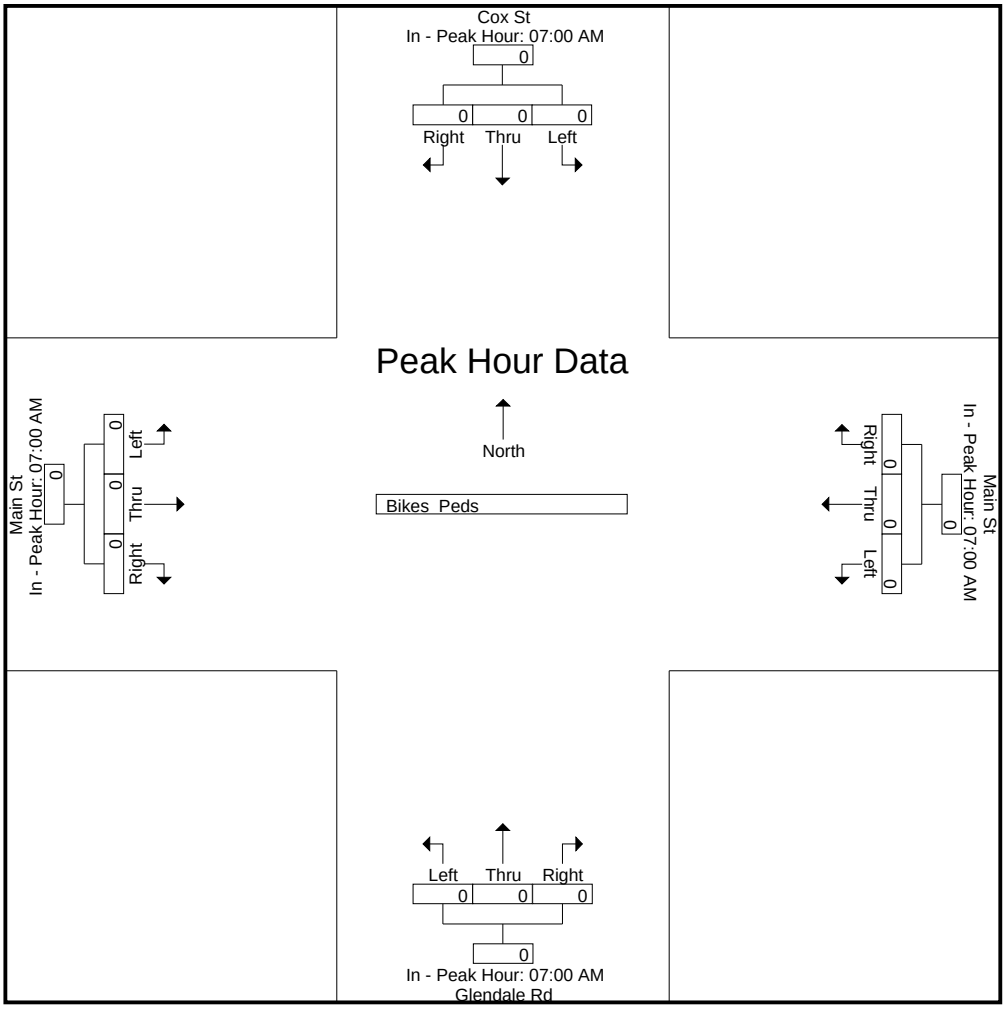
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 1

Groups Printed- Cars - Trucks

	Cox St From North			Main St From East			Glendale Rd From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	17	18	0	0	87	76	0	0	0	8	45	8	259
04:15 PM	22	25	1	0	92	55	0	0	0	14	39	10	258
04:30 PM	17	12	1	0	83	59	0	0	0	10	50	12	244
04:45 PM	18	22	2	0	76	65	0	0	0	10	49	8	250
Total	74	77	4	0	338	255	0	0	0	42	183	38	1011
05:00 PM	25	18	0	0	78	49	1	0	0	9	67	12	259
05:15 PM	13	11	3	0	100	52	0	0	0	13	53	4	249
05:30 PM	20	11	0	0	100	59	0	0	0	10	46	9	255
05:45 PM	11	4	0	0	77	45	0	0	0	9	40	9	195
Total	69	44	3	0	355	205	1	0	0	41	206	34	958
Grand Total	143	121	7	0	693	460	1	0	0	83	389	72	1969
Apprch %	52.8	44.6	2.6	0	60.1	39.9	100	0	0	15.3	71.5	13.2	
Total %	7.3	6.1	0.4	0	35.2	23.4	0.1	0	0	4.2	19.8	3.7	
Cars	141	119	7	0	684	456	1	0	0	82	382	71	1943
% Cars	98.6	98.3	100	0	98.7	99.1	100	0	0	98.8	98.2	98.6	98.7
Trucks	2	2	0	0	9	4	0	0	0	1	7	1	26
% Trucks	1.4	1.7	0	0	1.3	0.9	0	0	0	1.2	1.8	1.4	1.3

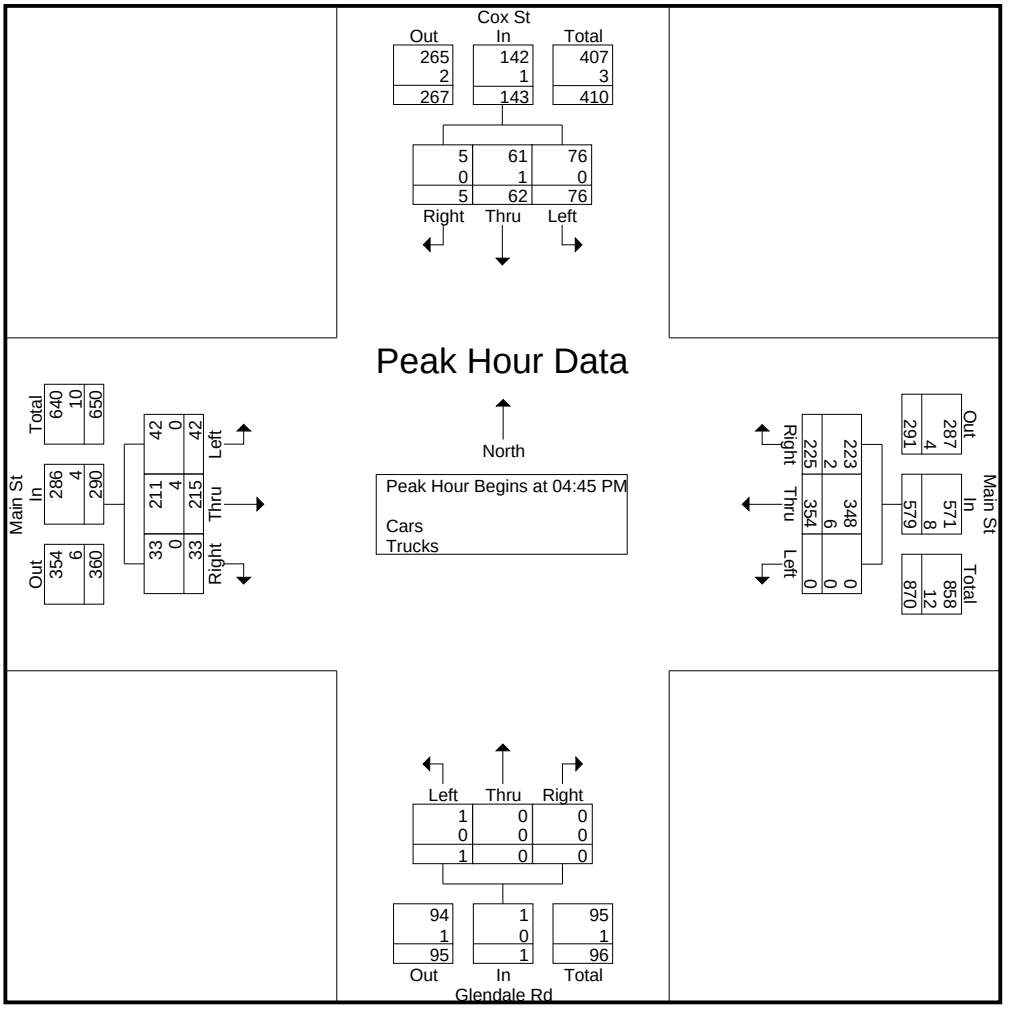
	Cox St From North				Main St From East				Glendale Rd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	18	**22**	2	42	0	76	**65**	141	0	0	0	0	10	49	8	67	250
05:00 PM	**25**	18	0	**43**	0	78	49	127	**1**	0	0	**1**	9	**67**	**12**	**88**	**259**
05:15 PM	13	11	**3**	27	0	**100**	52	152	0	0	0	0	**13**	53	4	70	249
05:30 PM	20	11	0	31	0	100	59	**159**	0	0	0	0	10	46	9	65	255
Total Volume	76	62	5	143	0	354	225	579	1	0	0	1	42	215	33	290	1013
% App. Total	53.1	43.4	3.5		0	61.1	38.9		100	0	0		14.5	74.1	11.4		
PHF	.760	.705	.417	.831	.000	.885	.865	.910	.250	.000	.000	.250	.808	.802	.688	.824	.978
Cars	76	61	5	142	0	348	223	571	1	0	0	1	42	211	33	286	1000
% Cars	100	98.4	100	99.3	0	98.3	99.1	98.6	100	0	0	100	100	98.1	100	98.6	98.7
Trucks	0	1	0	1	0	6	2	8	0	0	0	0	0	4	0	4	13
% Trucks	0	1.6	0	0.7	0	1.7	0.9	1.4	0	0	0	0	0	1.9	0	1.4	1.3

Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

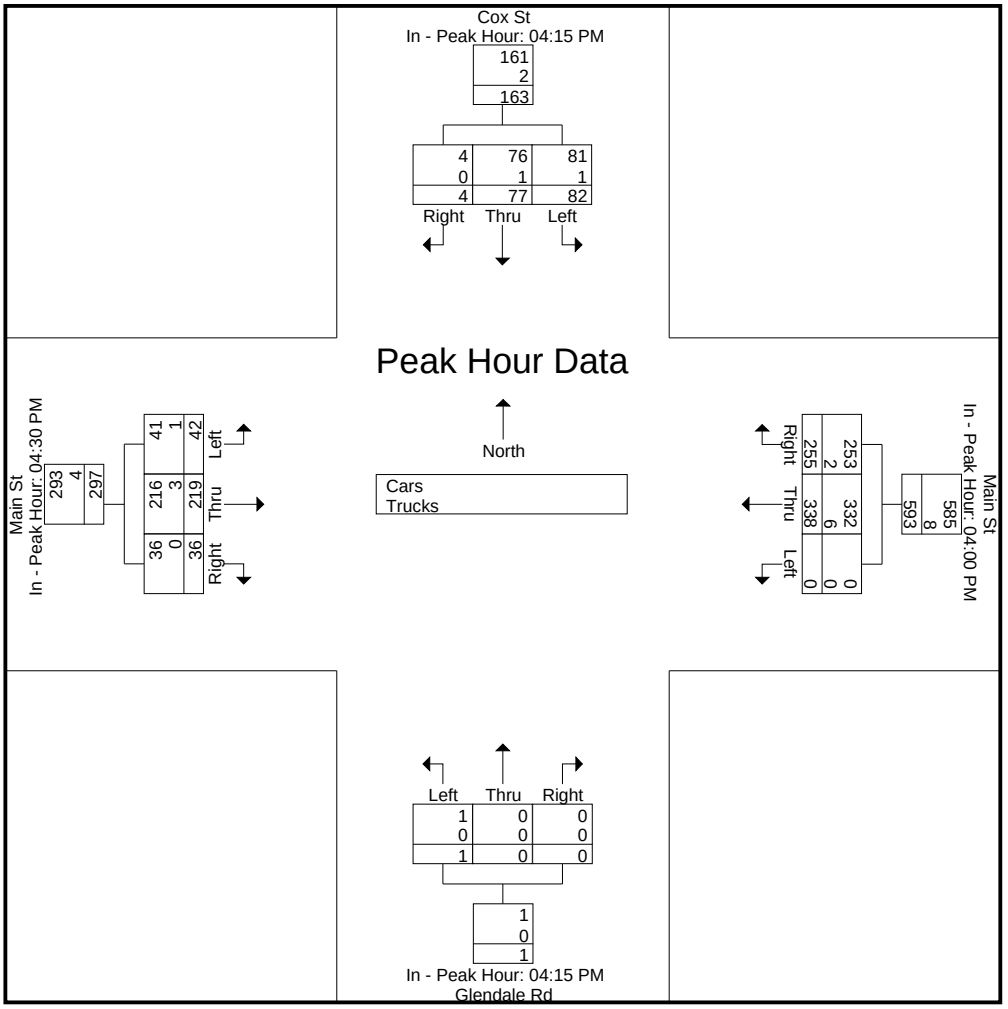
	04:15 PM				04:00 PM				04:15 PM				04:30 PM			
+0 mins.	22	**25**	1	**48**	0	87	**76**	**163**	0	0	0	0	10	50	**12**	72
+15 mins.	17	12	1	30	0	**92**	55	147	0	0	0	0	10	49	8	67
+30 mins.	18	22	**2**	42	0	83	59	142	0	0	0	0	9	**67**	12	**88**
+45 mins.	**25**	18	0	43	0	76	65	141	**1**	0	0	**1**	**13**	53	4	70
Total Volume	82	77	4	163	0	338	255	593	1	0	0	1	42	219	36	297
% App. Total	50.3	47.2	2.5		0	57	43		100	0	0		14.1	73.7	12.1	
PHF	.820	.770	.500	.849	.000	.918	.839	.910	.250	.000	.000	.250	.808	.817	.750	.844
Cars	81	76	4	161	0	332	253	585	1	0	0	1	41	216	36	293
% Cars	98.8	98.7	100	98.8	0	98.2	99.2	98.7	100	0	0	100	97.6	98.6	100	98.7
Trucks	1	1	0	2	0	6	2	8	0	0	0	0	1	3	0	4
% Trucks	1.2	1.3	0	1.2	0	1.8	0.8	1.3	0	0	0	0	2.4	1.4	0	1.3

Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 4

Groups Printed- Cars

	Cox St From North			Main St From East			Glendale Rd From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	16	18	0	0	85	75	0	0	0	8	44	8	254
04:15 PM	22	25	1	0	92	54	0	0	0	14	37	9	254
04:30 PM	16	11	1	0	82	59	0	0	0	9	50	12	240
04:45 PM	18	22	2	0	73	65	0	0	0	10	47	8	245
Total	72	76	4	0	332	253	0	0	0	41	178	37	993
05:00 PM	25	18	0	0	77	49	1	0	0	9	67	12	258
05:15 PM	13	11	3	0	99	50	0	0	0	13	52	4	245
05:30 PM	20	10	0	0	99	59	0	0	0	10	45	9	252
05:45 PM	11	4	0	0	77	45	0	0	0	9	40	9	195
Total	69	43	3	0	352	203	1	0	0	41	204	34	950
Grand Total	141	119	7	0	684	456	1	0	0	82	382	71	1943
Apprch %	52.8	44.6	2.6	0	60	40	100	0	0	15.3	71.4	13.3	
Total %	7.3	6.1	0.4	0	35.2	23.5	0.1	0	0	4.2	19.7	3.7	

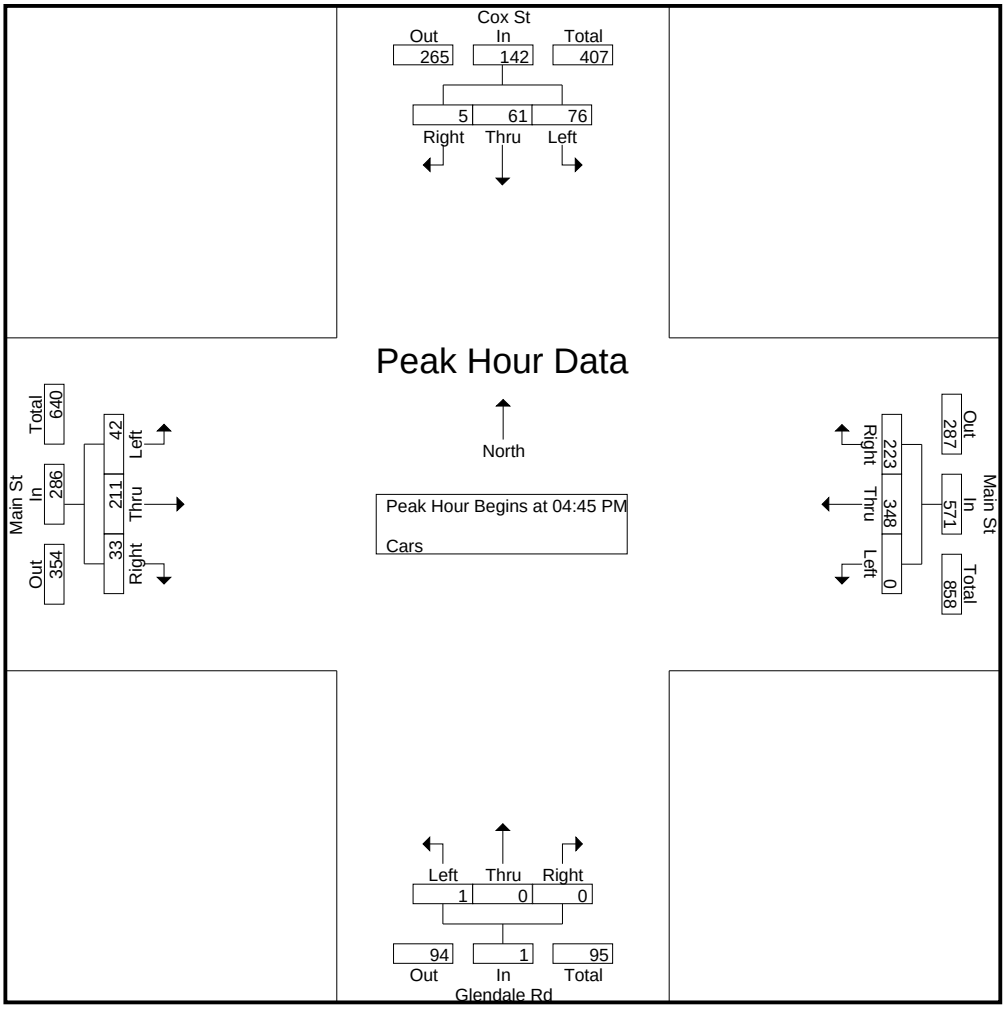
	Cox St From North				Main St From East				Glendale Rd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	18	**22**	2	42	0	73	**65**	138	0	0	0	0	10	47	8	65	245
05:00 PM	**25**	18	0	**43**	0	77	49	126	**1**	0	0	**1**	9	**67**	**12**	**88**	**258**
05:15 PM	13	11	**3**	27	0	**99**	50	149	0	0	0	0	**13**	52	4	69	245
05:30 PM	20	10	0	30	0	99	59	**158**	0	0	0	0	10	45	9	64	252
Total Volume	76	61	5	142	0	348	223	571	1	0	0	1	42	211	33	286	1000
% App. Total	53.5	43	3.5		0	60.9	39.1		100	0	0		14.7	73.8	11.5		
PHF	.760	.693	.417	.826	.000	.879	.858	.903	.250	.000	.000	.250	.808	.787	.688	.813	.969

Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

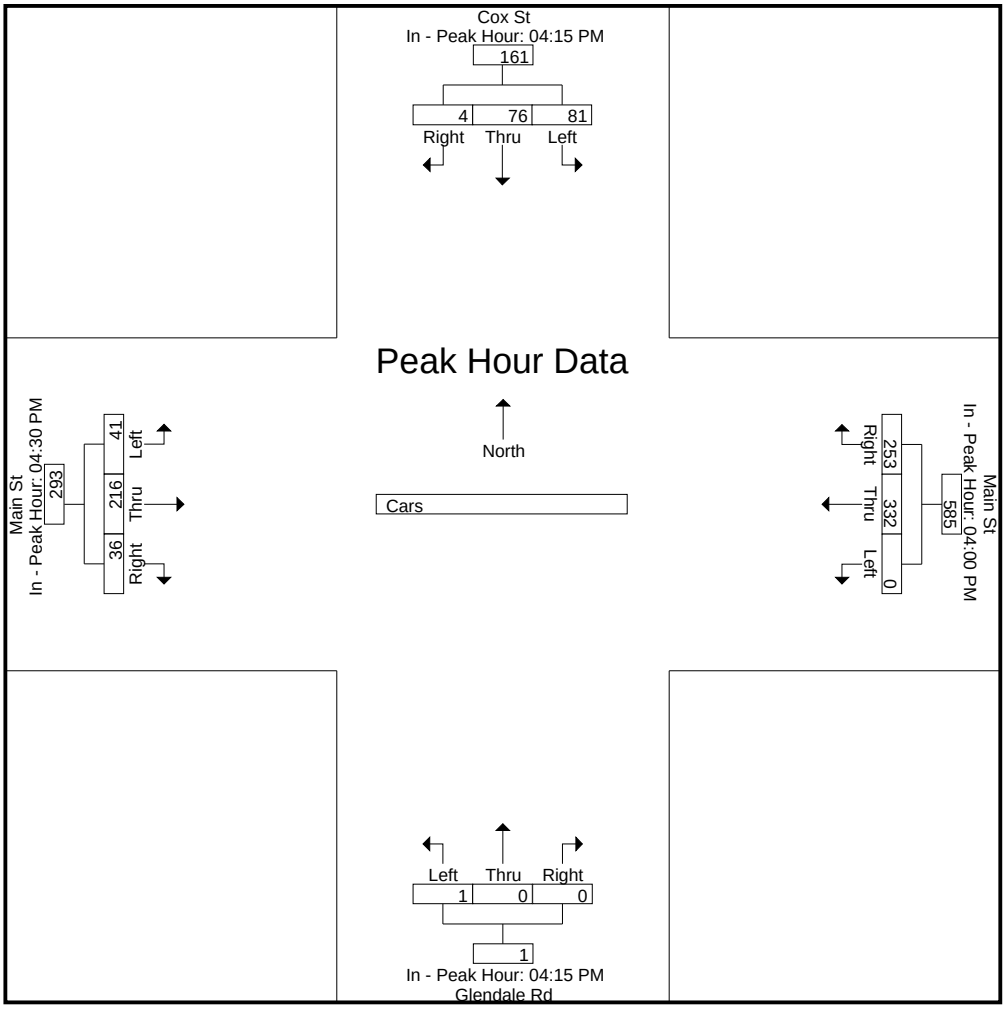
	04:15 PM				04:00 PM				04:15 PM				04:30 PM			
+0 mins.	22	**25**	1	**48**	0	85	**75**	**160**	0	0	0	0	9	50	**12**	71
+15 mins.	16	11	1	28	0	**92**	54	146	0	0	0	0	10	47	8	65
+30 mins.	18	22	**2**	42	0	82	59	141	0	0	0	0	9	**67**	12	**88**
+45 mins.	**25**	18	0	43	0	73	65	138	**1**	0	0	**1**	**13**	52	4	69
Total Volume	81	76	4	161	0	332	253	585	1	0	0	1	41	216	36	293
% App. Total	50.3	47.2	2.5		0	56.8	43.2		100	0	0		14	73.7	12.3	
PHF	.810	.760	.500	.839	.000	.902	.843	.914	.250	.000	.000	.250	.788	.806	.750	.832

Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023

Groups Printed- Trucks

	Cox St From North			Main St From East			Glendale Rd From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	1	0	0	0	2	1	0	0	0	0	1	0	5
04:15 PM	0	0	0	0	0	1	0	0	0	0	2	1	4
04:30 PM	1	1	0	0	1	0	0	0	0	1	0	0	4
04:45 PM	0	0	0	0	3	0	0	0	0	0	2	0	5
Total	2	1	0	0	6	2	0	0	0	1	5	1	18
05:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	1	2	0	0	0	0	1	0	4
05:30 PM	0	1	0	0	1	0	0	0	0	0	1	0	3
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	3	2	0	0	0	0	2	0	8
Grand Total	2	2	0	0	9	4	0	0	0	1	7	1	26
Apprch %	50	50	0	0	69.2	30.8	0	0	0	11.1	77.8	11.1	
Total %	7.7	7.7	0	0	34.6	15.4	0	0	0	3.8	26.9	3.8	

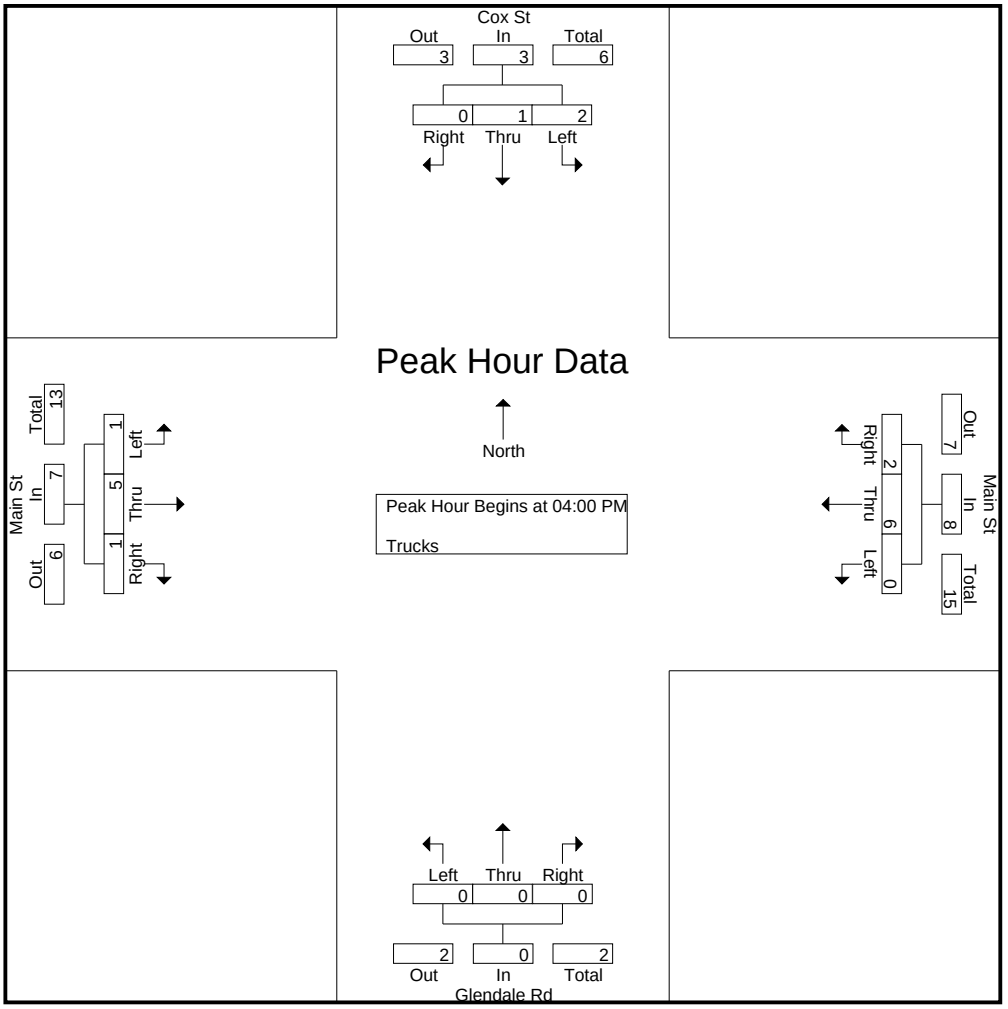
	Cox St From North				Main St From East				Glendale Rd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**1**	0	0	1	0	2	**1**	**3**	0	0	0	0	0	1	0	1	**5**
04:15 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	**2**	**1**	**3**	4
04:30 PM	1	**1**	0	**2**	0	1	0	1	0	0	0	0	**1**	0	0	1	4
04:45 PM	0	0	0	0	0	**3**	0	3	0	0	0	0	0	2	0	2	5
Total Volume	2	1	0	3	0	6	2	8	0	0	0	0	1	5	1	7	18
% App. Total	66.7	33.3	0		0	75	25		0	0	0		14.3	71.4	14.3		
PHF	.500	.250	.000	.375	.000	.500	.500	.667	.000	.000	.000	.000	.250	.625	.250	.583	.900

Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

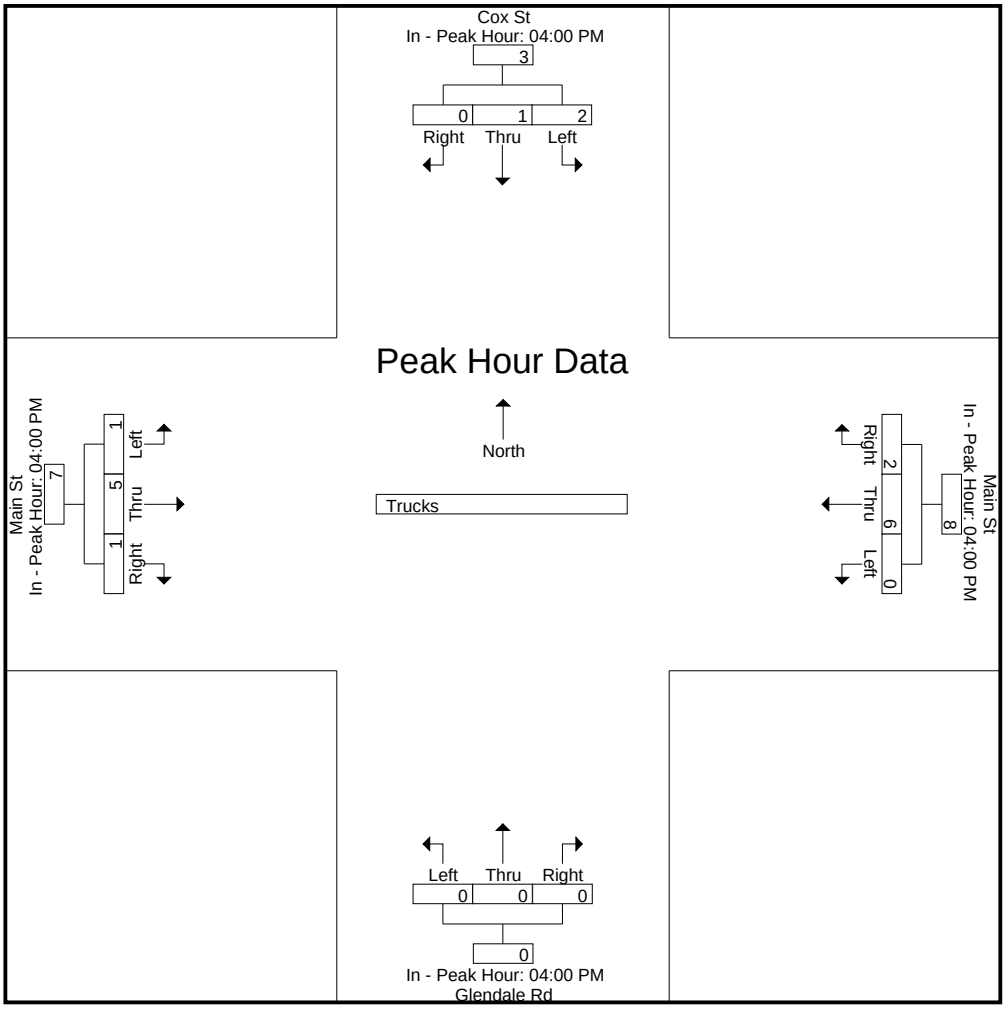
	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	**1**	0	0	1	0	2	**1**	**3**	0	0	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	0	1	1	0	0	0	0	0	**2**	**1**	**3**
+30 mins.	1	**1**	0	**2**	0	1	0	1	0	0	0	0	**1**	0	0	1
+45 mins.	0	0	0	0	0	**3**	0	3	0	0	0	0	0	2	0	2
Total Volume	2	1	0	3	0	6	2	8	0	0	0	0	1	5	1	7
% App. Total	66.7	33.3	0		0	75	25		0	0	0		14.3	71.4	14.3	
PHF	.500	.250	.000	.375	.000	.500	.500	.667	.000	.000	.000	.000	.250	.625	.250	.583

Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023

Groups Printed- Bikes Peds

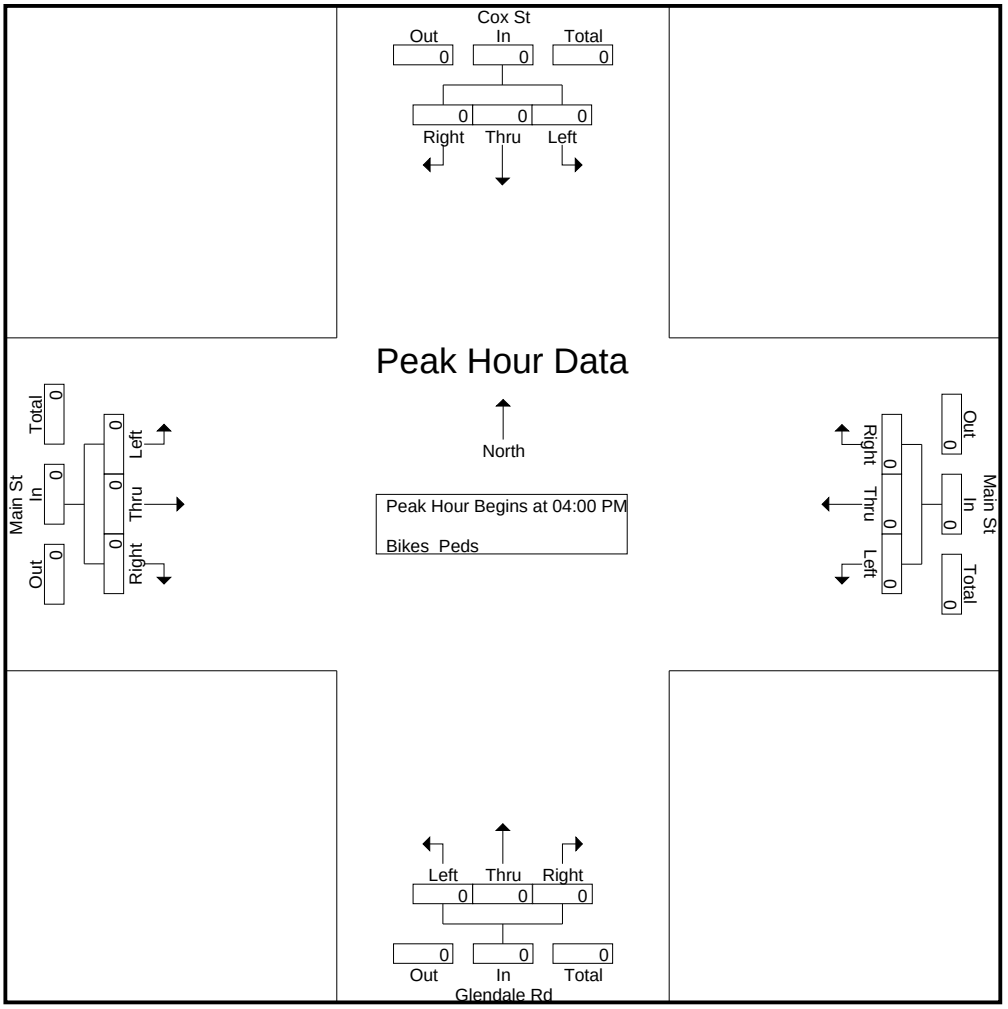
	Cox St From North				Main St From East				Glendale Rd From South				Main St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

	Cox St From North				Main St From East				Glendale Rd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

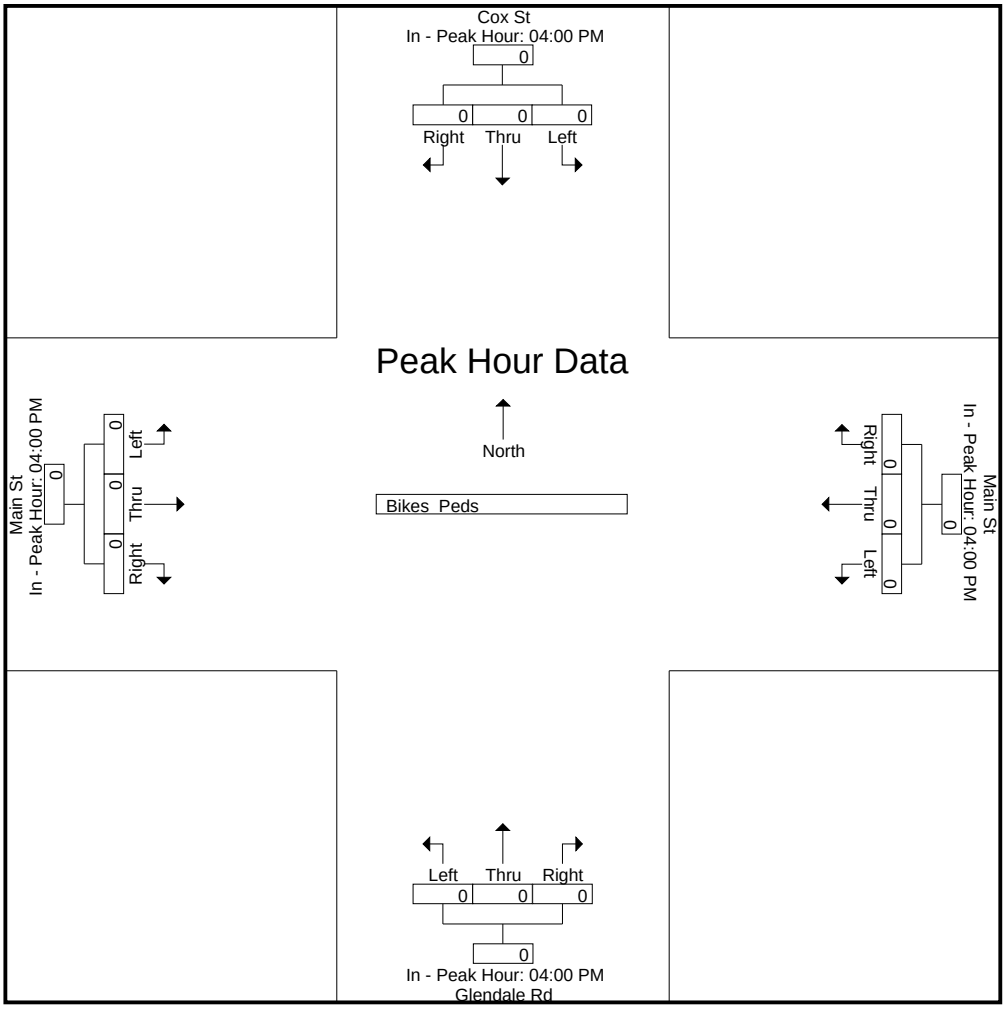
	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Cox Street / Glendale Road
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160006
Site Code : 92160006
Start Date : 1/24/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 1

Groups Printed- Cars - Trucks

	Mackin St From North			Main St From East			Woodrow St From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	6	19	1	60	0	3	0	6	0	144	1	241
07:15 AM	1	10	13	3	67	0	4	0	1	0	120	3	222
07:30 AM	0	7	16	1	38	0	3	0	4	0	128	3	200
07:45 AM	1	8	12	2	64	0	8	0	5	0	130	5	235
Total	3	31	60	7	229	0	18	0	16	0	522	12	898
08:00 AM	0	7	6	5	55	0	6	0	5	0	113	7	204
08:15 AM	0	11	23	12	66	0	5	0	13	0	129	12	271
08:30 AM	1	12	16	6	69	0	3	0	5	0	102	5	219
08:45 AM	0	2	18	1	68	0	2	0	4	0	96	6	197
Total	1	32	63	24	258	0	16	0	27	0	440	30	891
Grand Total	4	63	123	31	487	0	34	0	43	0	962	42	1789
Apprch %	2.1	33.2	64.7	6	94	0	44.2	0	55.8	0	95.8	4.2	
Total %	0.2	3.5	6.9	1.7	27.2	0	1.9	0	2.4	0	53.8	2.3	
Cars	3	61	114	31	457	0	34	0	38	0	908	42	1688
% Cars	75	96.8	92.7	100	93.8	0	100	0	88.4	0	94.4	100	94.4
Trucks	1	2	9	0	30	0	0	0	5	0	54	0	101
% Trucks	25	3.2	7.3	0	6.2	0	0	0	11.6	0	5.6	0	5.6

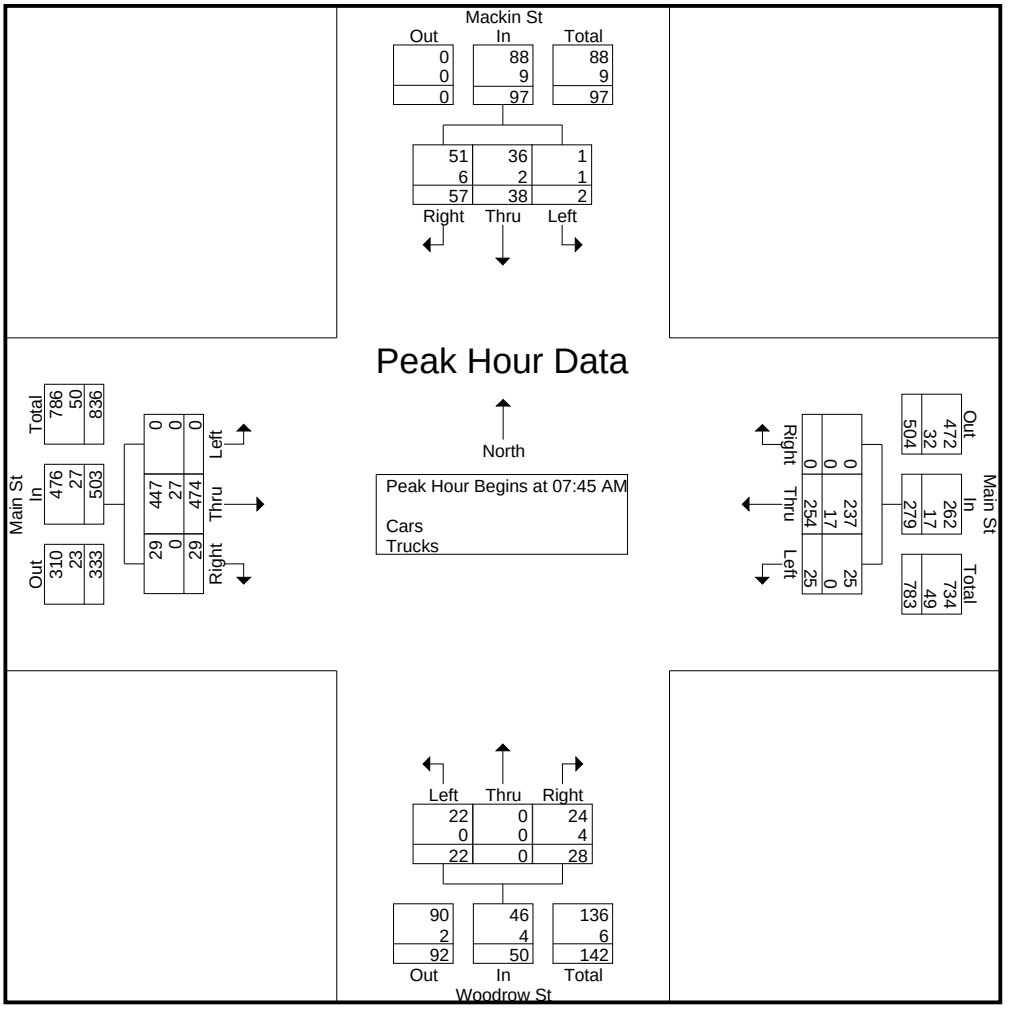
	Mackin St From North				Main St From East				Woodrow St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**1**	8	12	21	2	64	0	66	**8**	0	5	13	0	**130**	5	135	235
08:00 AM	0	7	6	13	5	55	0	60	6	0	5	11	0	113	7	120	204
08:15 AM	0	11	**23**	**34**	**12**	66	0	**78**	5	0	**13**	**18**	0	129	**12**	**141**	**271**
08:30 AM	1	**12**	16	29	6	**69**	0	75	3	0	5	8	0	102	5	107	219
Total Volume	2	38	57	97	25	254	0	279	22	0	28	50	0	474	29	503	929
% App. Total	2.1	39.2	58.8		9	91	0		44	0	56		0	94.2	5.8		
PHF	.500	.792	.620	.713	.521	.920	.000	.894	.688	.000	.538	.694	.000	.912	.604	.892	.857
Cars	1	36	51	88	25	237	0	262	22	0	24	46	0	447	29	476	872
% Cars	50.0	94.7	89.5	90.7	100	93.3	0	93.9	100	0	85.7	92.0	0	94.3	100	94.6	93.9
Trucks	1	2	6	9	0	17	0	17	0	0	4	4	0	27	0	27	57
% Trucks	50.0	5.3	10.5	9.3	0	6.7	0	6.1	0	0	14.3	8.0	0	5.7	0	5.4	6.1

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

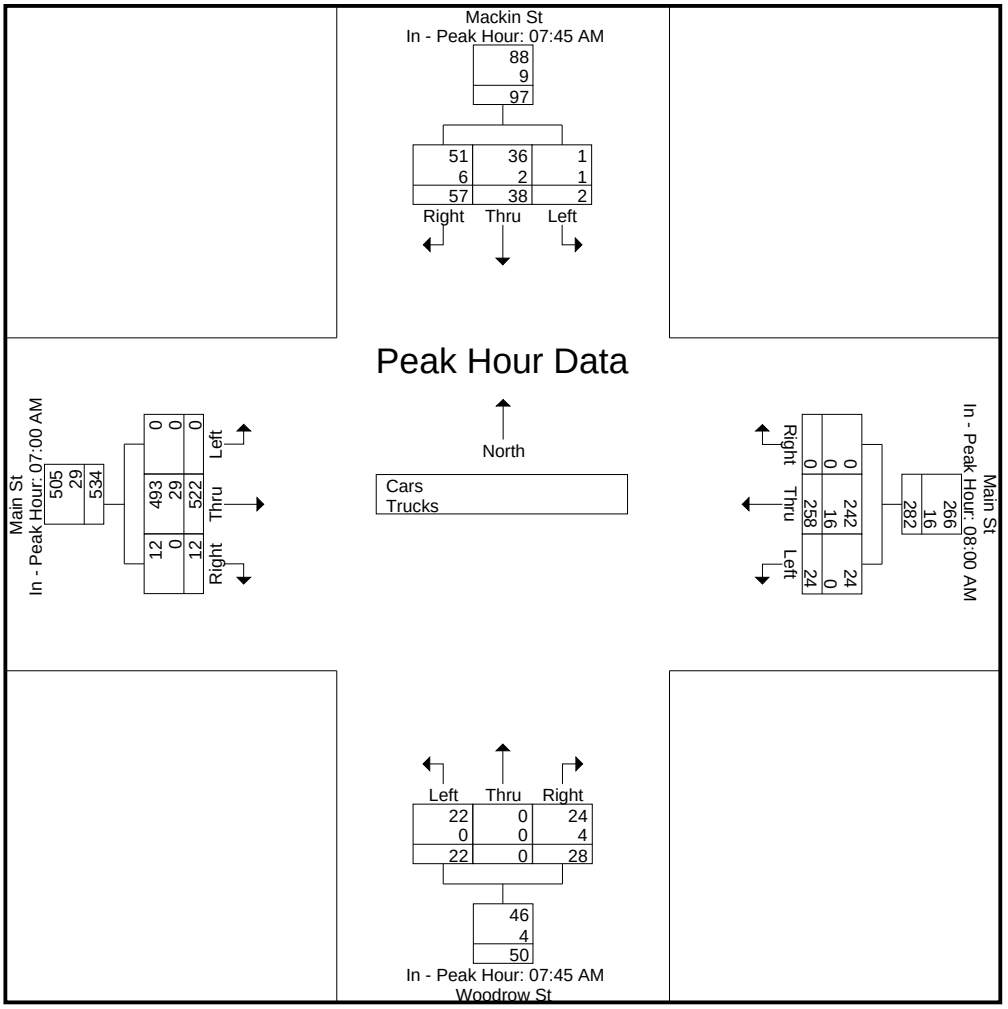
	07:45 AM				08:00 AM				07:45 AM				07:00 AM			
+0 mins.	**1**	8	12	21	5	55	0	60	**8**	0	5	13	0	**144**	1	**145**
+15 mins.	0	7	6	13	**12**	66	0	**78**	6	0	5	11	0	120	3	123
+30 mins.	0	11	**23**	**34**	6	**69**	0	75	5	0	**13**	**18**	0	128	3	131
+45 mins.	1	**12**	16	29	1	68	0	69	3	0	5	8	0	130	**5**	135
Total Volume	2	38	57	97	24	258	0	282	22	0	28	50	0	522	12	534
% App. Total	2.1	39.2	58.8		8.5	91.5	0		44	0	56		0	97.8	2.2	
PHF	.500	.792	.620	.713	.500	.935	.000	.904	.688	.000	.538	.694	.000	.906	.600	.921
Cars	1	36	51	88	24	242	0	266	22	0	24	46	0	493	12	505
% Cars	50	94.7	89.5	90.7	100	93.8	0	94.3	100	0	85.7	92	0	94.4	100	94.6
Trucks	1	2	6	9	0	16	0	16	0	0	4	4	0	29	0	29
% Trucks	50	5.3	10.5	9.3	0	6.2	0	5.7	0	0	14.3	8	0	5.6	0	5.4

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023

Groups Printed- Cars

	Mackin St From North			Main St From East			Woodrow St From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	6	19	1	54	0	3	0	6	0	135	1	226
07:15 AM	1	10	13	3	62	0	4	0	1	0	114	3	211
07:30 AM	0	7	15	1	38	0	3	0	3	0	121	3	191
07:45 AM	0	7	8	2	61	0	8	0	5	0	123	5	219
Total	2	30	55	7	215	0	18	0	15	0	493	12	847
08:00 AM	0	6	6	5	51	0	6	0	5	0	104	7	190
08:15 AM	0	11	23	12	62	0	5	0	10	0	122	12	257
08:30 AM	1	12	14	6	63	0	3	0	4	0	98	5	206
08:45 AM	0	2	16	1	66	0	2	0	4	0	91	6	188
Total	1	31	59	24	242	0	16	0	23	0	415	30	841
Grand Total	3	61	114	31	457	0	34	0	38	0	908	42	1688
Apprch %	1.7	34.3	64	6.4	93.6	0	47.2	0	52.8	0	95.6	4.4	
Total %	0.2	3.6	6.8	1.8	27.1	0	2	0	2.3	0	53.8	2.5	

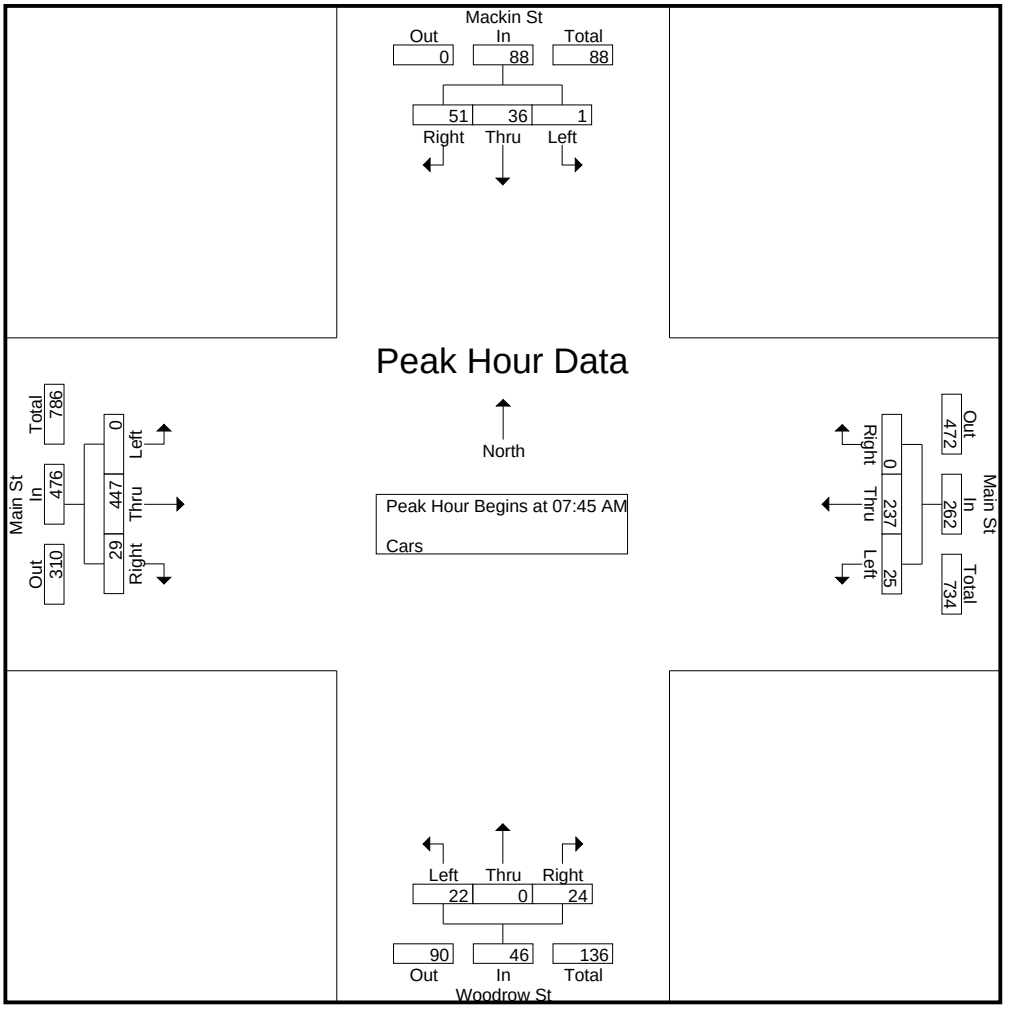
	Mackin St From North				Main St From East				Woodrow St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	7	8	15	2	61	0	63	**8**	0	5	13	0	**123**	5	128	219
08:00 AM	0	6	6	12	5	51	0	56	6	0	5	11	0	104	7	111	190
08:15 AM	0	11	**23**	**34**	**12**	62	0	**74**	5	0	**10**	**15**	0	122	**12**	**134**	**257**
08:30 AM	**1**	**12**	14	27	6	**63**	0	69	3	0	4	7	0	98	5	103	206
Total Volume	1	36	51	88	25	237	0	262	22	0	24	46	0	447	29	476	872
% App. Total	1.1	40.9	58		9.5	90.5	0		47.8	0	52.2		0	93.9	6.1		
PHF	.250	.750	.554	.647	.521	.940	.000	.885	.688	.000	.600	.767	.000	.909	.604	.888	.848

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

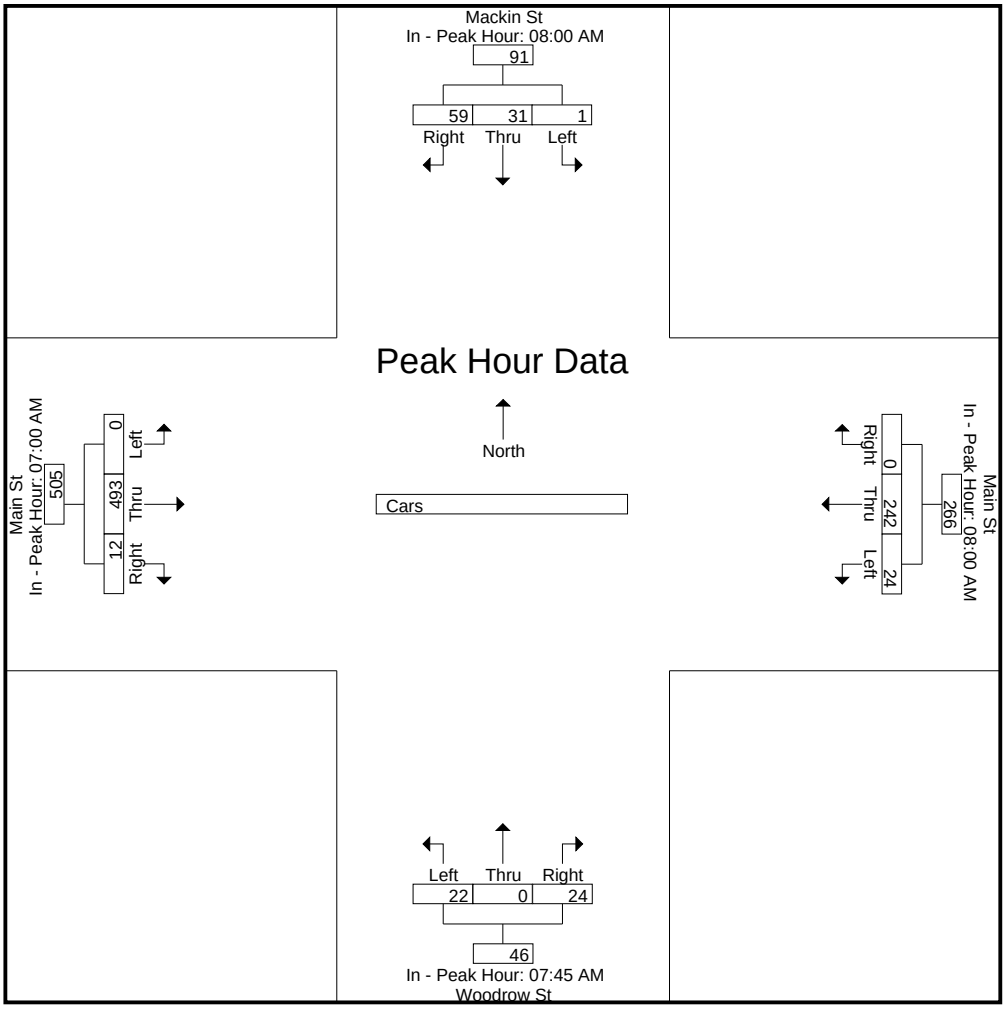
	08:00 AM				08:00 AM				07:45 AM				07:00 AM			
+0 mins.	0	6	6	12	5	51	0	56	**8**	0	5	13	0	**135**	1	**136**
+15 mins.	0	11	**23**	**34**	**12**	62	0	**74**	6	0	5	11	0	114	3	117
+30 mins.	**1**	**12**	14	27	6	63	0	69	5	0	**10**	**15**	0	121	3	124
+45 mins.	0	2	16	18	1	**66**	0	67	3	0	4	7	0	123	**5**	128
Total Volume	1	31	59	91	24	242	0	266	22	0	24	46	0	493	12	505
% App. Total	1.1	34.1	64.8		9	91	0		47.8	0	52.2		0	97.6	2.4	
PHF	.250	.646	.641	.669	.500	.917	.000	.899	.688	.000	.600	.767	.000	.913	.600	.928

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023

Groups Printed- Trucks

	Mackin St From North			Main St From East			Woodrow St From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	6	0	0	0	0	0	9	0	15
07:15 AM	0	0	0	0	5	0	0	0	0	0	6	0	11
07:30 AM	0	0	1	0	0	0	0	0	1	0	7	0	9
07:45 AM	1	1	4	0	3	0	0	0	0	0	7	0	16
Total	1	1	5	0	14	0	0	0	1	0	29	0	51
08:00 AM	0	1	0	0	4	0	0	0	0	0	9	0	14
08:15 AM	0	0	0	0	4	0	0	0	3	0	7	0	14
08:30 AM	0	0	2	0	6	0	0	0	1	0	4	0	13
08:45 AM	0	0	2	0	2	0	0	0	0	0	5	0	9
Total	0	1	4	0	16	0	0	0	4	0	25	0	50
Grand Total	1	2	9	0	30	0	0	0	5	0	54	0	101
Apprch %	8.3	16.7	75	0	100	0	0	0	100	0	100	0	
Total %	1	2	8.9	0	29.7	0	0	0	5	0	53.5	0	

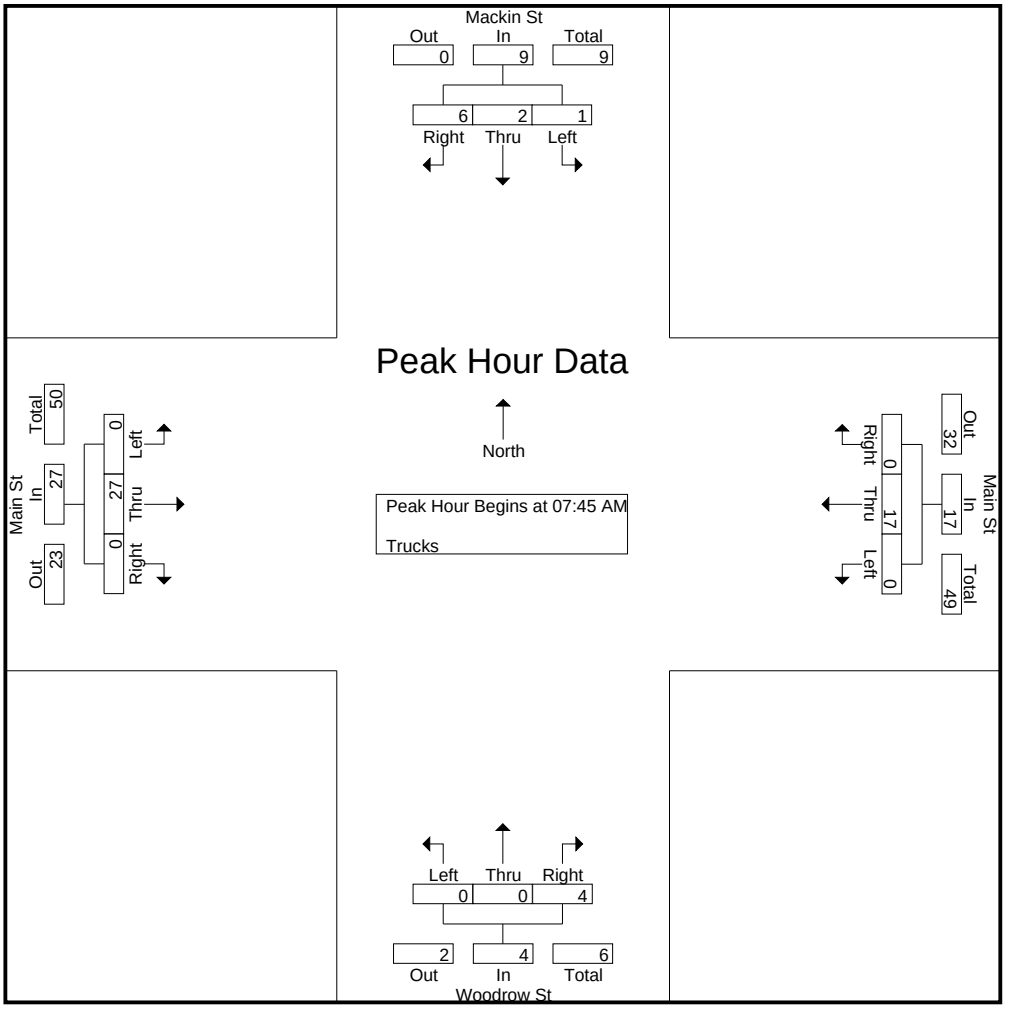
	Mackin St From North				Main St From East				Woodrow St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**1**	**1**	**4**	**6**	0	3	0	3	0	0	0	0	0	7	0	7	**16**
08:00 AM	0	1	0	1	0	4	0	4	0	0	0	0	0	**9**	0	**9**	14
08:15 AM	0	0	0	0	0	4	0	4	0	0	**3**	**3**	0	7	0	7	14
08:30 AM	0	0	2	2	0	**6**	0	**6**	0	0	1	1	0	4	0	4	13
Total Volume	1	2	6	9	0	17	0	17	0	0	4	4	0	27	0	27	57
% App. Total	11.1	22.2	66.7		0	100	0		0	0	100		0	100	0		
PHF	.250	.500	.375	.375	.000	.708	.000	.708	.000	.000	.333	.333	.000	.750	.000	.750	.891

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

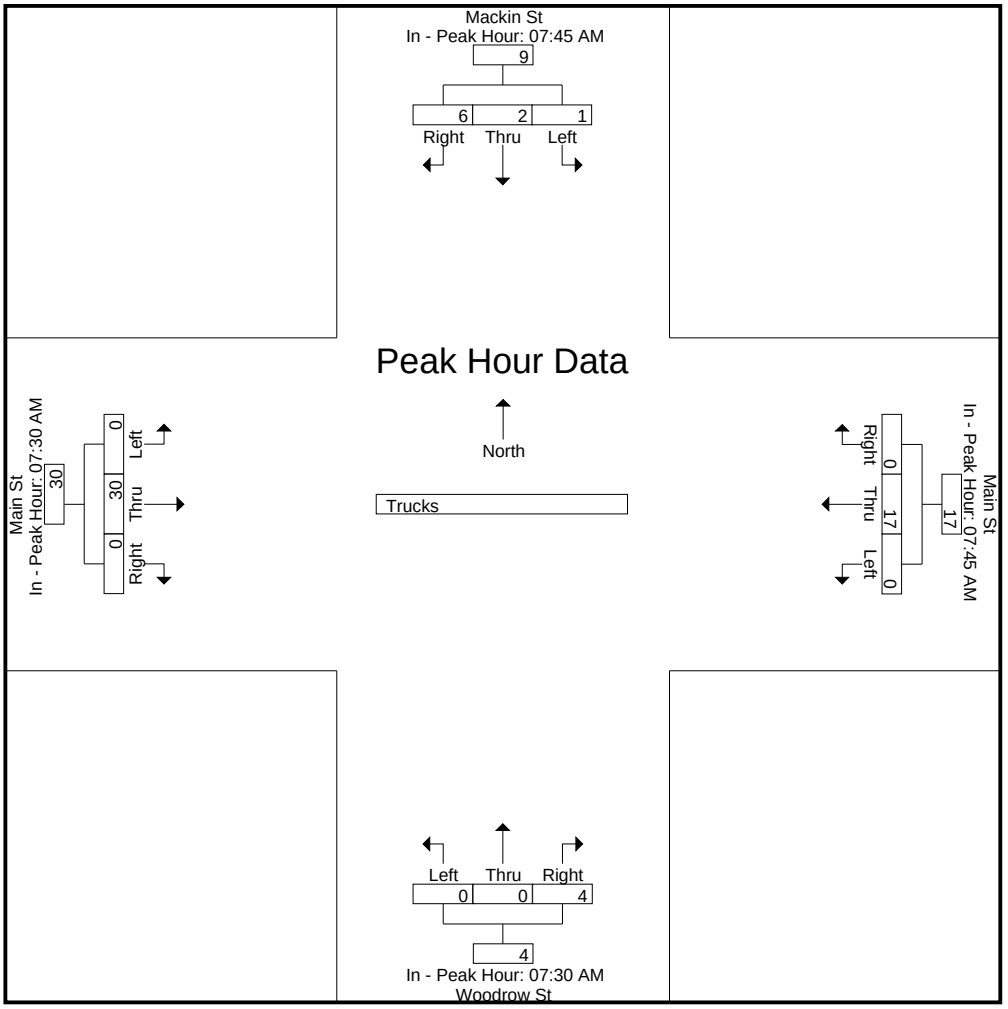
	07:45 AM				07:45 AM				07:30 AM				07:30 AM			
+0 mins.	**1**	**1**	**4**	**6**	0	3	0	3	0	0	1	1	0	7	0	7
+15 mins.	0	1	0	1	0	4	0	4	0	0	0	0	0	7	0	7
+30 mins.	0	0	0	0	0	4	0	4	0	0	0	0	0	**9**	0	**9**
+45 mins.	0	0	2	2	0	**6**	0	**6**	0	0	**3**	**3**	0	7	0	7
Total Volume	1	2	6	9	0	17	0	17	0	0	4	4	0	30	0	30
% App. Total	11.1	22.2	66.7		0	100	0		0	0	100		0	100	0	
PHF	.250	.500	.375	.375	.000	.708	.000	.708	.000	.000	.333	.333	.000	.833	.000	.833

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023

Groups Printed- Bikes Peds

	Mackin St From North				Main St From East				Woodrow St From South				Main St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2	2
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2	2
Apprch %	0	0	0		0	0	0		50	50	0		0	0	0				
Total %	0	0	0		0	0	0		50	50	0		0	0	0		0	100	

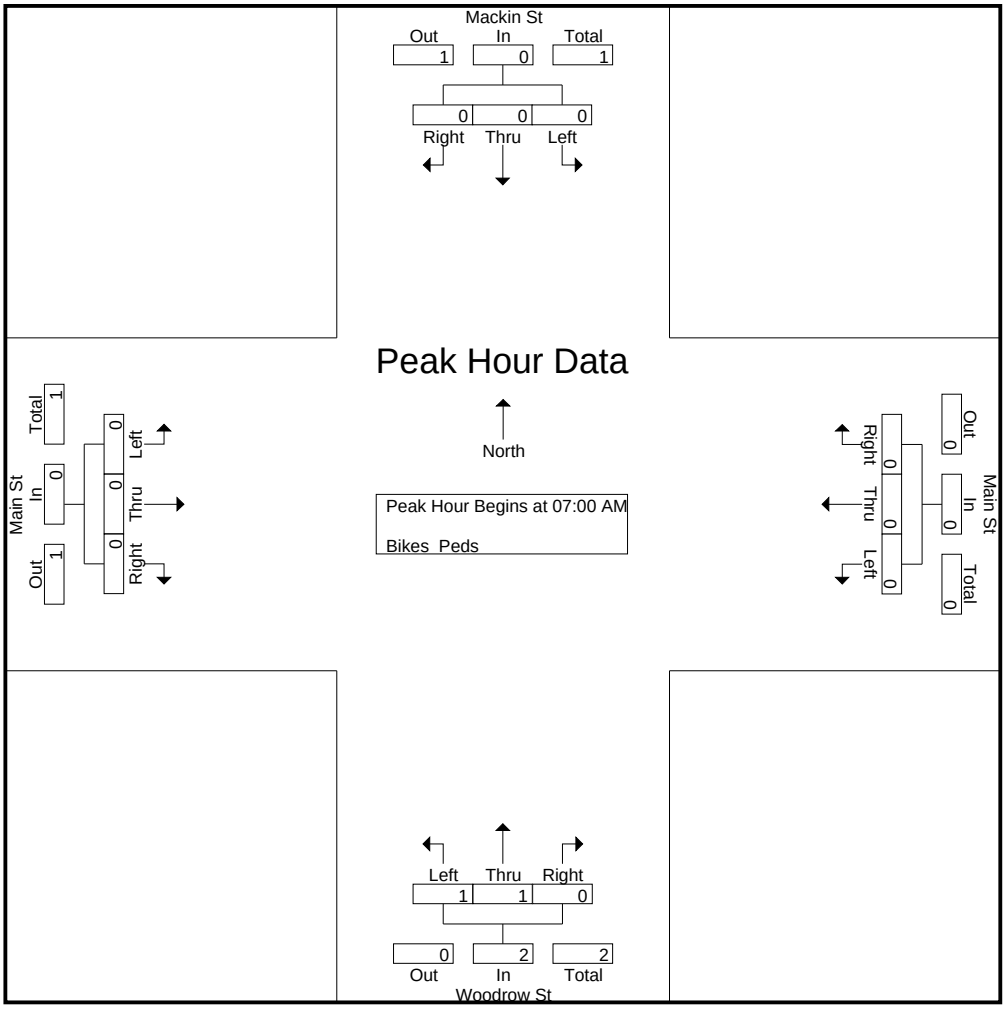
	Mackin St From North				Main St From East				Woodrow St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	**1**	**1**	0	**2**	0	0	0	0	**2**
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	2
% App. Total	0	0	0		0	0	0		50	50	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.250	.000	.000	.000	.000	.250

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

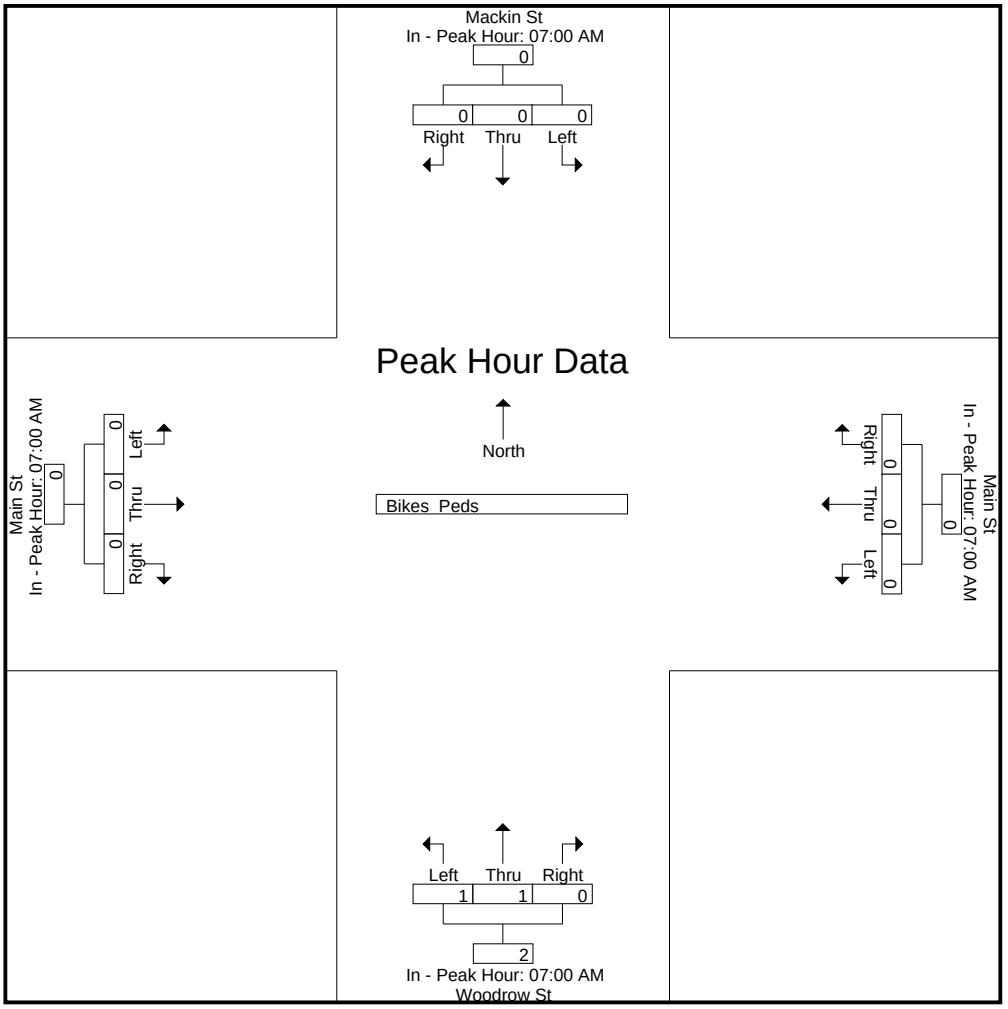
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	**1**	**1**	0	**2**	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0
% App. Total	0	0	0		0	0	0		50	50	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.250	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 1

Groups Printed- Cars - Trucks

	Mackin St From North			Main St From East			Woodrow St From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	8	15	2	108	0	10	0	10	0	71	5	229
04:15 PM	0	6	9	1	111	0	2	0	7	0	75	8	219
04:30 PM	1	4	13	2	98	0	5	0	9	0	74	5	211
04:45 PM	0	6	5	1	119	0	8	0	5	0	70	6	220
Total	1	24	42	6	436	0	25	0	31	0	290	24	879
05:00 PM	0	2	10	1	103	0	5	0	7	0	70	8	206
05:15 PM	1	1	3	1	109	0	7	0	6	0	81	4	213
05:30 PM	0	1	4	1	120	0	8	0	6	0	70	4	214
05:45 PM	0	3	12	2	102	0	8	0	5	0	71	4	207
Total	1	7	29	5	434	0	28	0	24	0	292	20	840
Grand Total	2	31	71	11	870	0	53	0	55	0	582	44	1719
Apprch %	1.9	29.8	68.3	1.2	98.8	0	49.1	0	50.9	0	93	7	
Total %	0.1	1.8	4.1	0.6	50.6	0	3.1	0	3.2	0	33.9	2.6	
Cars	2	30	68	11	864	0	52	0	53	0	574	44	1698
% Cars	100	96.8	95.8	100	99.3	0	98.1	0	96.4	0	98.6	100	98.8
Trucks	0	1	3	0	6	0	1	0	2	0	8	0	21
% Trucks	0	3.2	4.2	0	0.7	0	1.9	0	3.6	0	1.4	0	1.2

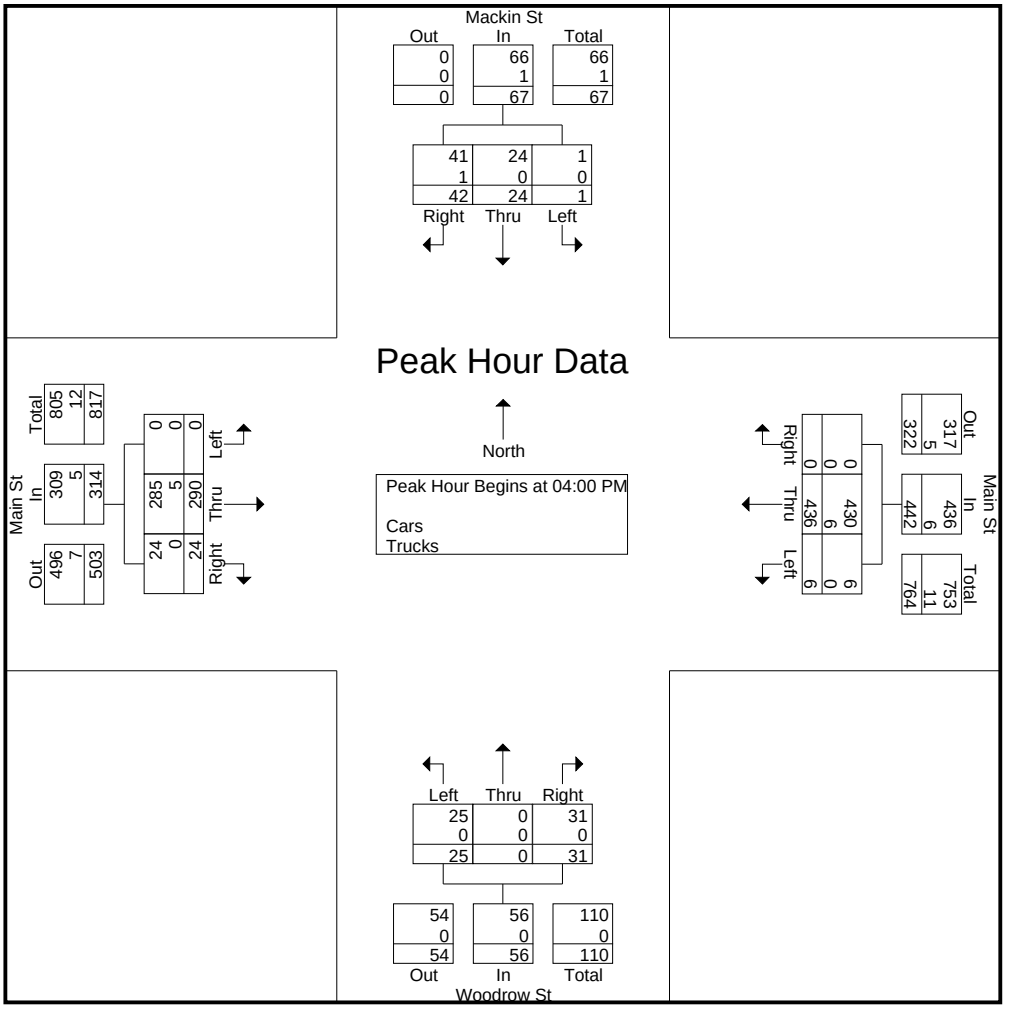
	Mackin St From North				Main St From East				Woodrow St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**8**	**15**	**23**	**2**	108	0	110	**10**	0	**10**	**20**	0	71	5	76	**229**
04:15 PM	0	6	9	15	1	111	0	112	2	0	7	9	0	**75**	**8**	**83**	219
04:30 PM	**1**	4	13	18	2	98	0	100	5	0	9	14	0	74	5	79	211
04:45 PM	0	6	5	11	1	**119**	0	**120**	8	0	5	13	0	70	6	76	220
Total Volume	1	24	42	67	6	436	0	442	25	0	31	56	0	290	24	314	879
% App. Total	1.5	35.8	62.7		1.4	98.6	0		44.6	0	55.4		0	92.4	7.6		
PHF	.250	.750	.700	.728	.750	.916	.000	.921	.625	.000	.775	.700	.000	.967	.750	.946	.960
Cars	1	24	41	66	6	430	0	436	25	0	31	56	0	285	24	309	867
% Cars	100	100	97.6	98.5	100	98.6	0	98.6	100	0	100	100	0	98.3	100	98.4	98.6
Trucks	0	0	1	1	0	6	0	6	0	0	0	0	0	5	0	5	12
% Trucks	0	0	2.4	1.5	0	1.4	0	1.4	0	0	0	0	0	1.7	0	1.6	1.4

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

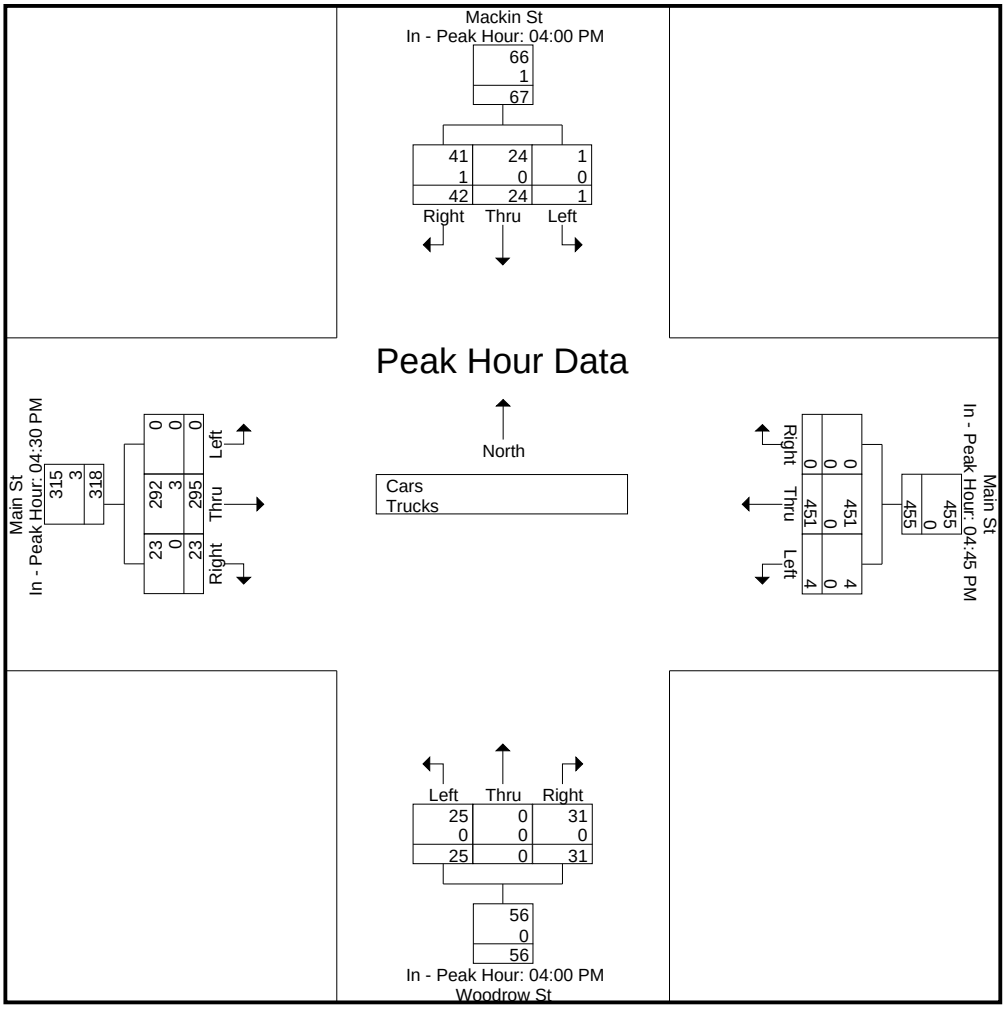
	04:00 PM				04:45 PM				04:00 PM				04:30 PM			
+0 mins.	0	**8**	**15**	**23**	**1**	119	0	120	**10**	0	**10**	**20**	0	74	5	79
+15 mins.	0	6	9	15	1	103	0	104	2	0	7	9	0	70	6	76
+30 mins.	**1**	4	13	18	1	109	0	110	5	0	9	14	0	70	**8**	78
+45 mins.	0	6	5	11	1	**120**	0	**121**	8	0	5	13	0	**81**	4	**85**
Total Volume	1	24	42	67	4	451	0	455	25	0	31	56	0	295	23	318
% App. Total	1.5	35.8	62.7		0.9	99.1	0		44.6	0	55.4		0	92.8	7.2	
PHF	.250	.750	.700	.728	1.000	.940	.000	.940	.625	.000	.775	.700	.000	.910	.719	.935
Cars	1	24	41	66	4	451	0	455	25	0	31	56	0	292	23	315
% Cars	100	100	97.6	98.5	100	100	0	100	100	0	100	100	0	99	100	99.1
Trucks	0	0	1	1	0	0	0	0	0	0	0	0	0	3	0	3
% Trucks	0	0	2.4	1.5	0	0	0	0	0	0	0	0	0	1	0	0.9

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023

Groups Printed- Cars

	Mackin St From North			Main St From East			Woodrow St From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	8	15	2	108	0	10	0	10	0	68	5	226
04:15 PM	0	6	8	1	106	0	2	0	7	0	74	8	212
04:30 PM	1	4	13	2	97	0	5	0	9	0	74	5	210
04:45 PM	0	6	5	1	119	0	8	0	5	0	69	6	219
Total	1	24	41	6	430	0	25	0	31	0	285	24	867
05:00 PM	0	2	9	1	103	0	5	0	7	0	69	8	204
05:15 PM	1	1	3	1	109	0	7	0	6	0	80	4	212
05:30 PM	0	0	4	1	120	0	8	0	4	0	69	4	210
05:45 PM	0	3	11	2	102	0	7	0	5	0	71	4	205
Total	1	6	27	5	434	0	27	0	22	0	289	20	831
Grand Total	2	30	68	11	864	0	52	0	53	0	574	44	1698
Apprch %	2	30	68	1.3	98.7	0	49.5	0	50.5	0	92.9	7.1	
Total %	0.1	1.8	4	0.6	50.9	0	3.1	0	3.1	0	33.8	2.6	

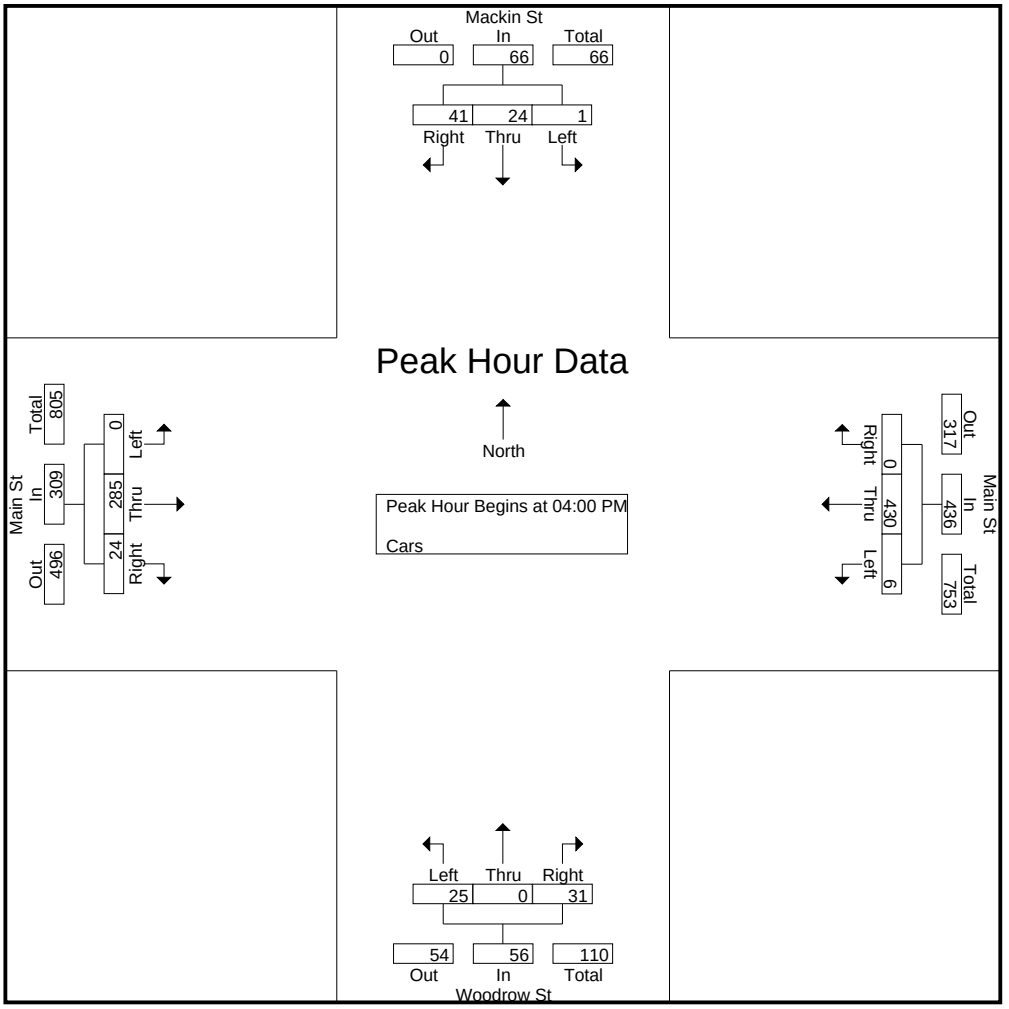
	Mackin St From North				Main St From East				Woodrow St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**8**	**15**	**23**	**2**	108	0	110	**10**	0	**10**	**20**	0	68	5	73	**226**
04:15 PM	0	6	8	14	1	106	0	107	2	0	7	9	0	**74**	**8**	**82**	212
04:30 PM	**1**	4	13	18	2	97	0	99	5	0	9	14	0	74	5	79	210
04:45 PM	0	6	5	11	1	**119**	0	**120**	8	0	5	13	0	69	6	75	219
Total Volume	1	24	41	66	6	430	0	436	25	0	31	56	0	285	24	309	867
% App. Total	1.5	36.4	62.1		1.4	98.6	0		44.6	0	55.4		0	92.2	7.8		
PHF	.250	.750	.683	.717	.750	.903	.000	.908	.625	.000	.775	.700	.000	.963	.750	.942	.959

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

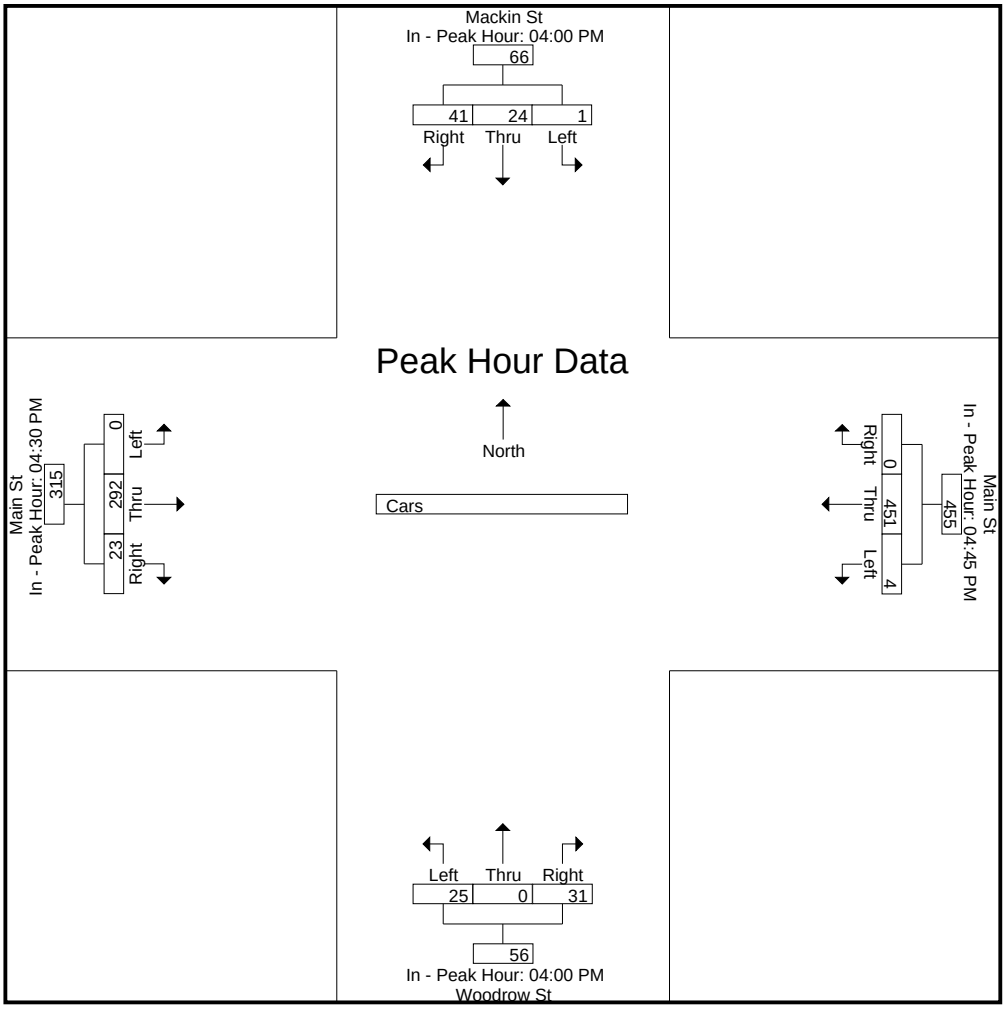
	04:00 PM				04:45 PM				04:00 PM				04:30 PM			
+0 mins.	0	**8**	**15**	**23**	**1**	119	0	120	**10**	0	**10**	**20**	0	74	5	79
+15 mins.	0	6	8	14	1	103	0	104	2	0	7	9	0	69	6	75
+30 mins.	**1**	4	13	18	1	109	0	110	5	0	9	14	0	69	**8**	77
+45 mins.	0	6	5	11	1	**120**	0	**121**	8	0	5	13	0	**80**	4	**84**
Total Volume	1	24	41	66	4	451	0	455	25	0	31	56	0	292	23	315
% App. Total	1.5	36.4	62.1		0.9	99.1	0		44.6	0	55.4		0	92.7	7.3	
PHF	.250	.750	.683	.717	1.000	.940	.000	.940	.625	.000	.775	.700	.000	.913	.719	.938

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023

Groups Printed- Trucks

	Mackin St From North			Main St From East			Woodrow St From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	3
04:15 PM	0	0	1	0	5	0	0	0	0	0	1	0	7
04:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	1	0	6	0	0	0	0	0	5	0	12
05:00 PM	0	0	1	0	0	0	0	0	0	0	1	0	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
05:30 PM	0	1	0	0	0	0	0	0	2	0	1	0	4
05:45 PM	0	0	1	0	0	0	1	0	0	0	0	0	2
Total	0	1	2	0	0	0	1	0	2	0	3	0	9
Grand Total	0	1	3	0	6	0	1	0	2	0	8	0	21
Apprch %	0	25	75	0	100	0	33.3	0	66.7	0	100	0	
Total %	0	4.8	14.3	0	28.6	0	4.8	0	9.5	0	38.1	0	

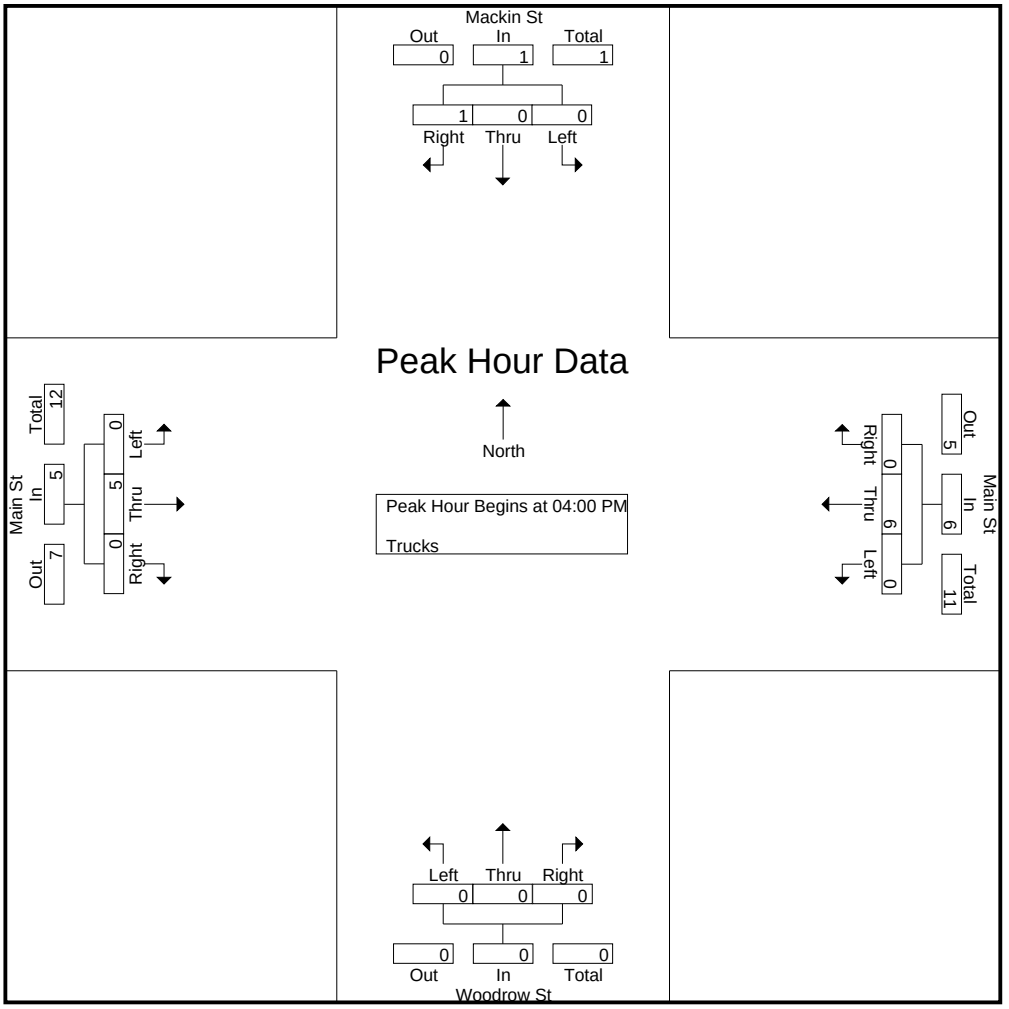
	Mackin St From North				Main St From East				Woodrow St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**	0	**3**	3
04:15 PM	0	0	**1**	**1**	0	**5**	0	**5**	0	0	0	0	0	1	0	1	**7**
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	1	1	0	6	0	6	0	0	0	0	0	5	0	5	12
% App. Total	0	0	100		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.250	.250	.000	.300	.000	.300	.000	.000	.000	.000	.000	.417	.000	.417	.429

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

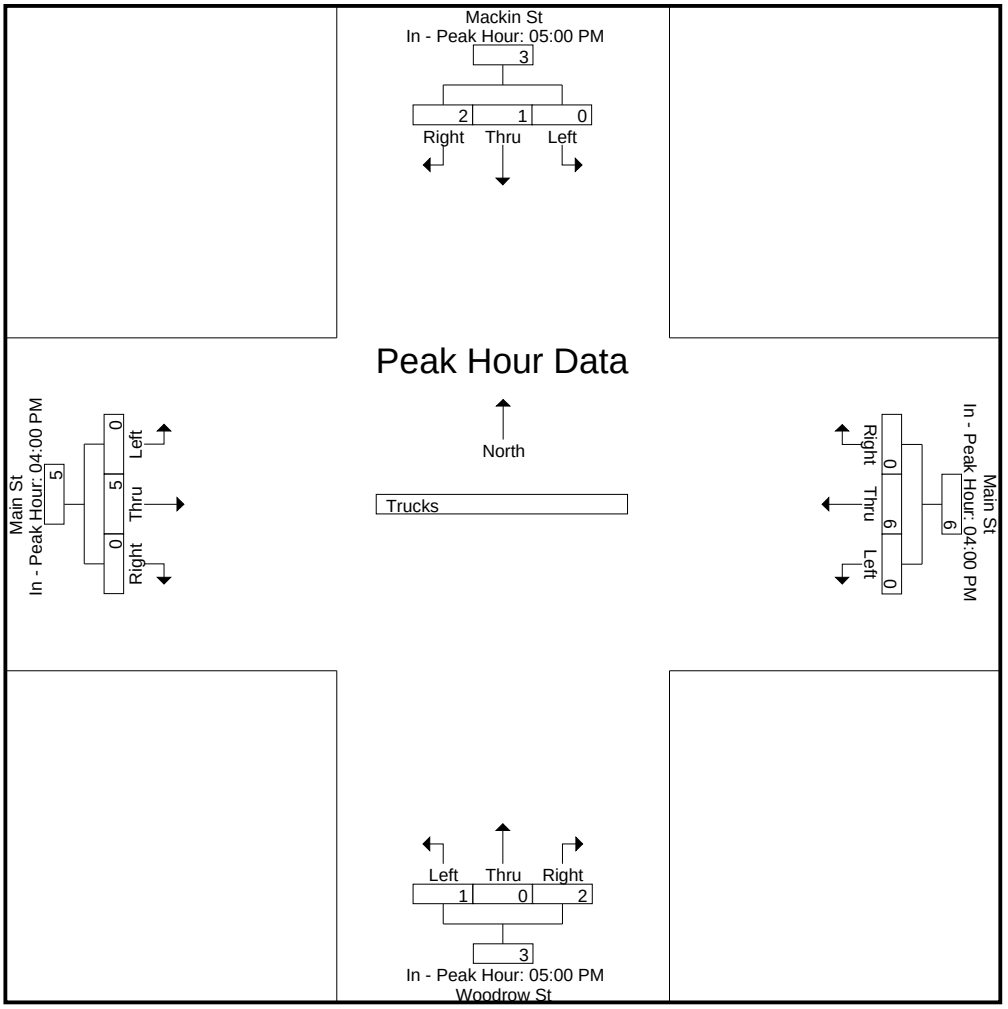
	05:00 PM				04:00 PM				05:00 PM				04:00 PM			
+0 mins.	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	**3**	0	**3**
+15 mins.	0	0	0	0	0	**5**	0	**5**	0	0	0	0	0	1	0	1
+30 mins.	0	**1**	0	1	0	1	0	1	0	0	**2**	**2**	0	0	0	0
+45 mins.	0	0	1	1	0	0	0	0	**1**	0	0	1	0	1	0	1
Total Volume	0	1	2	3	0	6	0	6	1	0	2	3	0	5	0	5
% App. Total	0	33.3	66.7		0	100	0		33.3	0	66.7		0	100	0	
PHF	.000	.250	.500	.750	.000	.300	.000	.300	.250	.000	.250	.375	.000	.417	.000	.417

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023

Groups Printed- Bikes Peds

	Mackin St From North				Main St From East				Woodrow St From South				Main St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

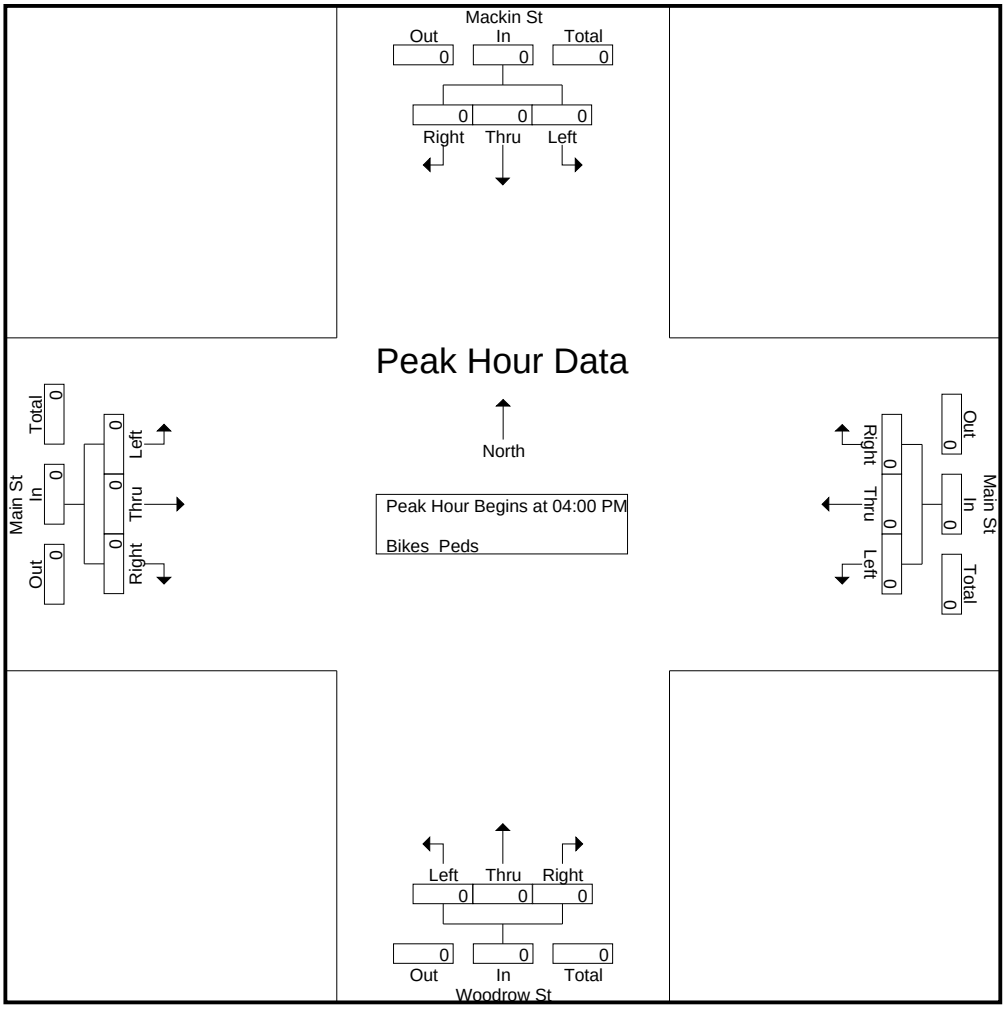
	Mackin St From North				Main St From East				Woodrow St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 11



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

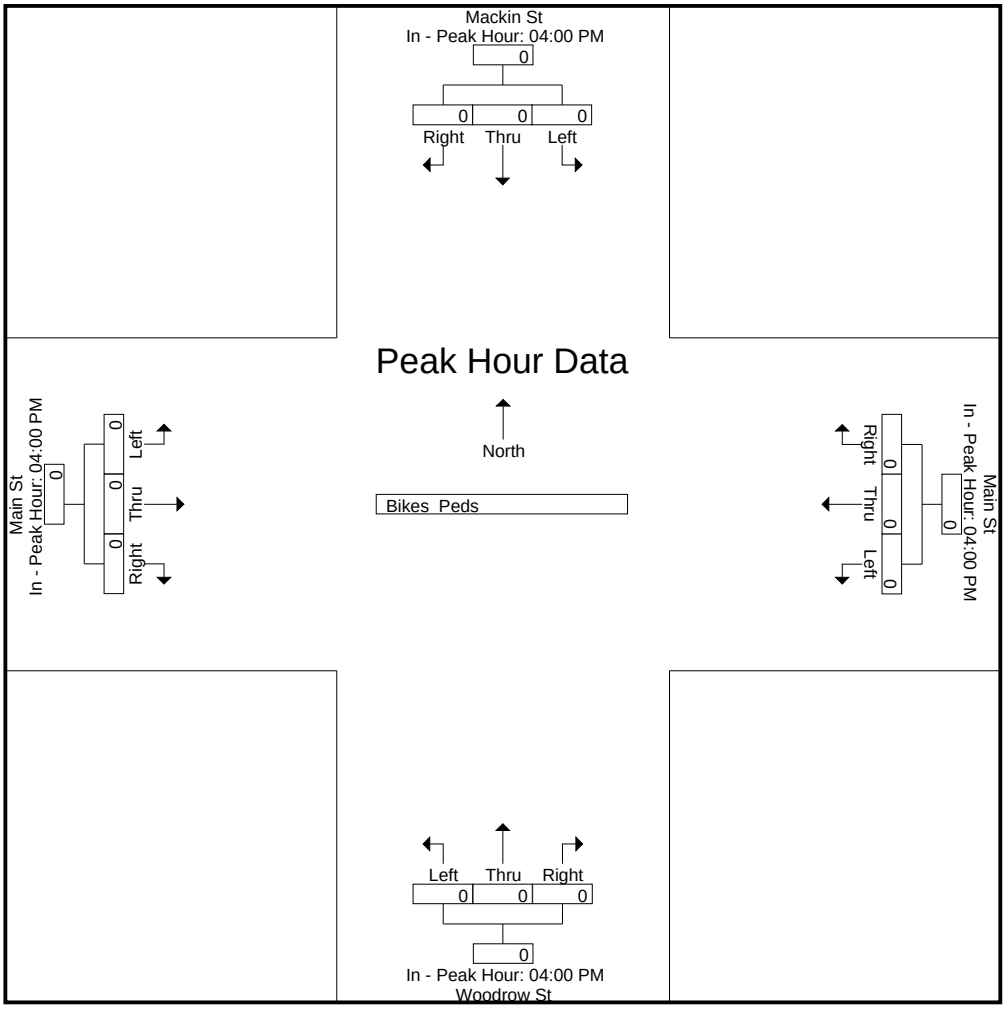
	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Mackin St / Woodrow St
E/W Street : Main Street
City/State : Hudosn, MA
Weather : Clear

File Name : 92160004
Site Code : 92160004
Start Date : 12/6/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Tower St / Villa Do Porto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 7937001A
Site Code : 79370001
Start Date : 9/14/2023
Page No : 1

Groups Printed- Cars - Trucks

	Tower St From North			Main St From East			Villa Do Porto Blvd From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	5	27	23	38	57	2	1	24	64	4	75	6	326
07:15 AM	8	37	19	39	43	6	1	28	63	9	66	0	319
07:30 AM	13	42	16	34	44	4	2	26	62	11	83	4	341
07:45 AM	15	36	16	45	37	4	1	32	36	4	60	3	289
Total	41	142	74	156	181	16	5	110	225	28	284	13	1275
08:00 AM	9	30	14	38	31	5	1	25	46	9	56	4	268
08:15 AM	9	34	9	33	41	3	2	17	56	16	61	3	284
08:30 AM	13	27	7	46	41	2	8	28	57	5	68	7	309
08:45 AM	7	38	14	44	44	2	5	21	59	8	72	2	316
Total	38	129	44	161	157	12	16	91	218	38	257	16	1177
Grand Total	79	271	118	317	338	28	21	201	443	66	541	29	2452
Apprch %	16.9	57.9	25.2	46.4	49.5	4.1	3.2	30.2	66.6	10.4	85.1	4.6	
Total %	3.2	11.1	4.8	12.9	13.8	1.1	0.9	8.2	18.1	2.7	22.1	1.2	
Cars	79	270	112	303	325	24	21	197	426	65	524	27	2373
% Cars	100	99.6	94.9	95.6	96.2	85.7	100	98	96.2	98.5	96.9	93.1	96.8
Trucks	0	1	6	14	13	4	0	4	17	1	17	2	79
% Trucks	0	0.4	5.1	4.4	3.8	14.3	0	2	3.8	1.5	3.1	6.9	3.2

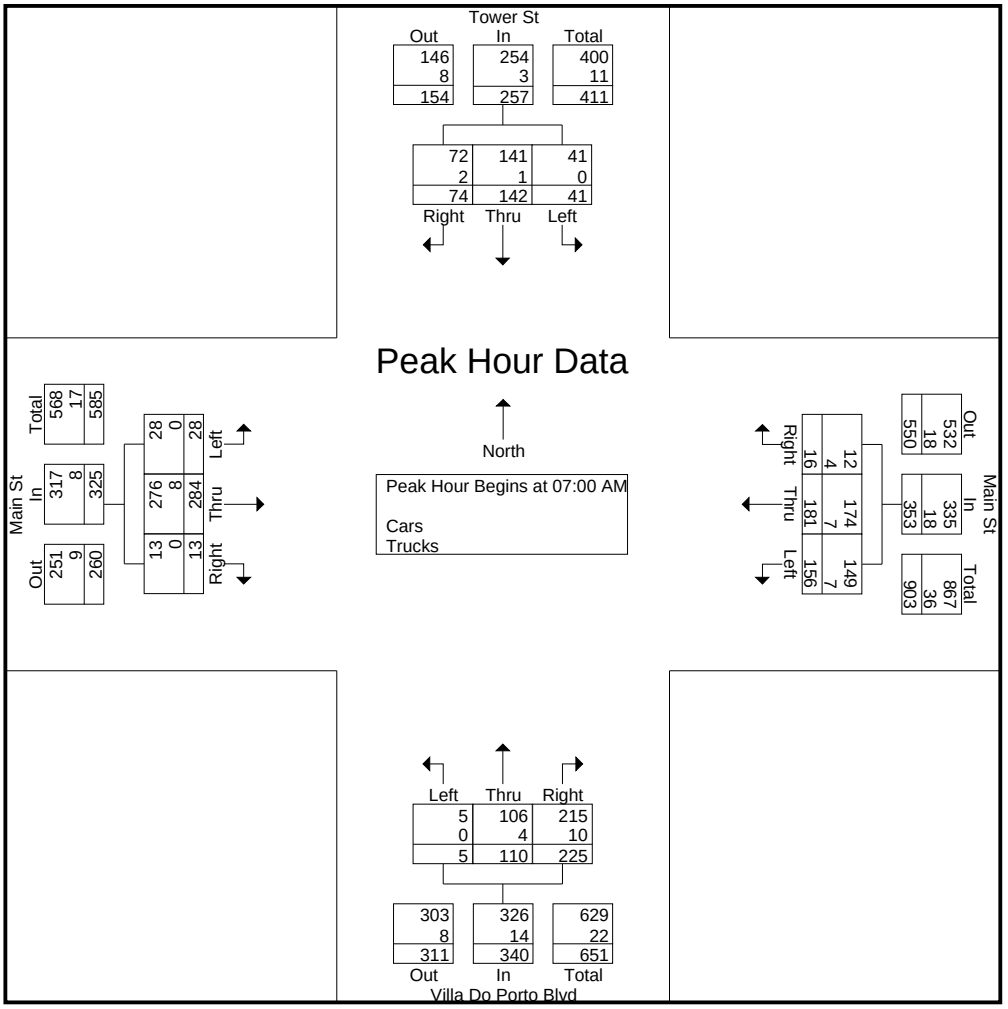
	Tower St From North				Main St From East				Villa Do Porto Blvd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	5	27	**23**	55	38	**57**	2	**97**	1	24	**64**	89	4	75	**6**	85	326
07:15 AM	8	37	19	64	39	43	**6**	88	1	28	63	**92**	9	66	0	75	319
07:30 AM	13	**42**	16	**71**	34	44	4	82	**2**	26	62	90	**11**	**83**	4	**98**	**341**
07:45 AM	**15**	36	16	67	**45**	37	4	86	1	**32**	36	69	4	60	3	67	289
Total Volume	41	142	74	257	156	181	16	353	5	110	225	340	28	284	13	325	1275
% App. Total	16	55.3	28.8		44.2	51.3	4.5		1.5	32.4	66.2		8.6	87.4	4		
PHF	.683	.845	.804	.905	.867	.794	.667	.910	.625	.859	.879	.924	.636	.855	.542	.829	.935
Cars	41	141	72	254	149	174	12	335	5	106	215	326	28	276	13	317	1232
% Cars	100	99.3	97.3	98.8	95.5	96.1	75.0	94.9	100	96.4	95.6	95.9	100	97.2	100	97.5	96.6
Trucks	0	1	2	3	7	7	4	18	0	4	10	14	0	8	0	8	43
% Trucks	0	0.7	2.7	1.2	4.5	3.9	25.0	5.1	0	3.6	4.4	4.1	0	2.8	0	2.5	3.4

Accurate Counts

978-664-2565

N/S Street : Tower St / Villa Do Porto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 7937001A
Site Code : 79370001
Start Date : 9/14/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

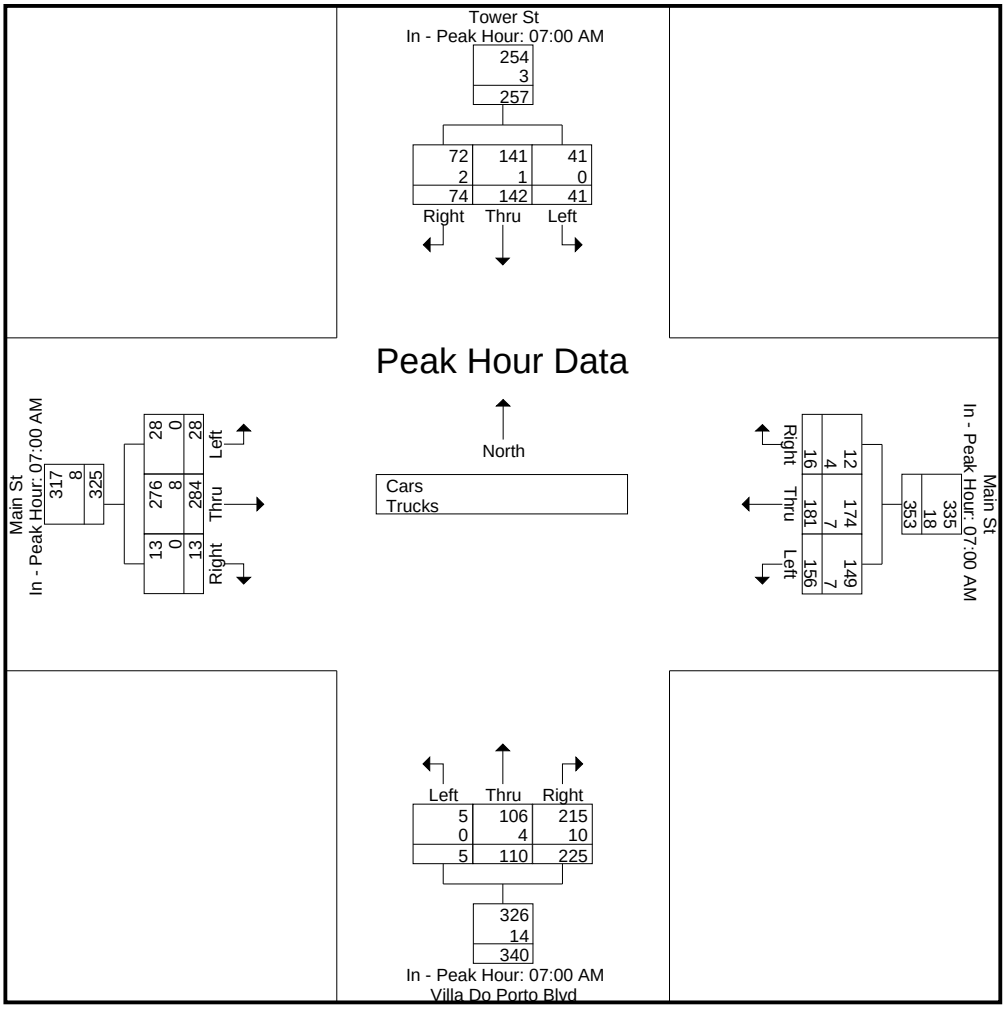
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	5	27	**23**	55	38	**57**	2	**97**	1	24	**64**	89	4	75	**6**	85
+15 mins.	8	37	19	64	39	43	**6**	88	1	28	63	**92**	9	66	0	75
+30 mins.	13	**42**	16	**71**	34	44	4	82	**2**	26	62	90	**11**	**83**	4	**98**
+45 mins.	**15**	36	16	67	**45**	37	4	86	1	**32**	36	69	4	60	3	67
Total Volume	41	142	74	257	156	181	16	353	5	110	225	340	28	284	13	325
% App. Total	16	55.3	28.8		44.2	51.3	4.5		1.5	32.4	66.2		8.6	87.4	4	
PHF	.683	.845	.804	.905	.867	.794	.667	.910	.625	.859	.879	.924	.636	.855	.542	.829
Cars	41	141	72	254	149	174	12	335	5	106	215	326	28	276	13	317
% Cars	100	99.3	97.3	98.8	95.5	96.1	75	94.9	100	96.4	95.6	95.9	100	97.2	100	97.5
Trucks	0	1	2	3	7	7	4	18	0	4	10	14	0	8	0	8
% Trucks	0	0.7	2.7	1.2	4.5	3.9	25	5.1	0	3.6	4.4	4.1	0	2.8	0	2.5

Accurate Counts

978-664-2565

N/S Street : Tower St / Villa Do Porto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 7937001A
Site Code : 79370001
Start Date : 9/14/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Tower St / Villa Do Porto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 7937001A
Site Code : 79370001
Start Date : 9/14/2023

Groups Printed- Cars

	Tower St From North			Main St From East			Villa Do Porto Blvd From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	5	26	21	34	56	2	1	23	60	4	71	6	309
07:15 AM	8	37	19	38	40	4	1	26	61	9	64	0	307
07:30 AM	13	42	16	33	41	3	2	25	60	11	83	4	333
07:45 AM	15	36	16	44	37	3	1	32	34	4	58	3	283
Total	41	141	72	149	174	12	5	106	215	28	276	13	1232
08:00 AM	9	30	12	36	31	5	1	25	43	9	56	4	261
08:15 AM	9	34	8	32	41	3	2	17	55	16	59	3	279
08:30 AM	13	27	6	45	38	2	8	28	56	5	65	5	298
08:45 AM	7	38	14	41	41	2	5	21	57	7	68	2	303
Total	38	129	40	154	151	12	16	91	211	37	248	14	1141
Grand Total	79	270	112	303	325	24	21	197	426	65	524	27	2373
Apprch %	17.1	58.6	24.3	46.5	49.8	3.7	3.3	30.6	66.1	10.6	85.1	4.4	
Total %	3.3	11.4	4.7	12.8	13.7	1	0.9	8.3	18	2.7	22.1	1.1	

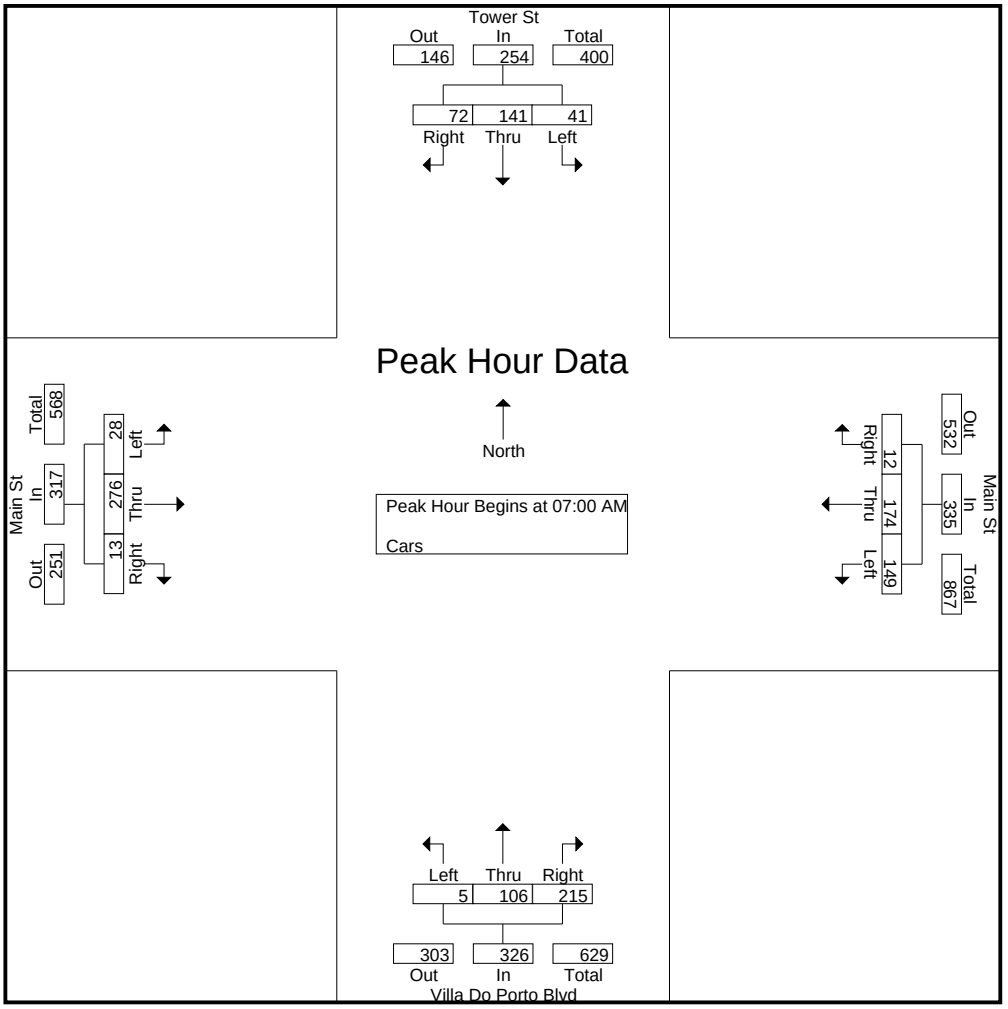
	Tower St From North				Main St From East				Villa Do Porto Blvd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	5	26	**21**	52	34	**56**	2	**92**	1	23	60	84	4	71	**6**	81	309
07:15 AM	8	37	19	64	38	40	**4**	82	1	26	**61**	**88**	9	64	0	73	307
07:30 AM	13	**42**	16	**71**	33	41	3	77	**2**	25	60	87	**11**	**83**	4	**98**	**333**
07:45 AM	**15**	36	16	67	**44**	37	3	84	1	**32**	34	67	4	58	3	65	283
Total Volume	41	141	72	254	149	174	12	335	5	106	215	326	28	276	13	317	1232
% App. Total	16.1	55.5	28.3		44.5	51.9	3.6		1.5	32.5	66		8.8	87.1	4.1		
PHF	.683	.839	.857	.894	.847	.777	.750	.910	.625	.828	.881	.926	.636	.831	.542	.809	.925

Accurate Counts

978-664-2565

N/S Street : Tower St / Villa Do Porto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 7937001A
Site Code : 79370001
Start Date : 9/14/2023
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

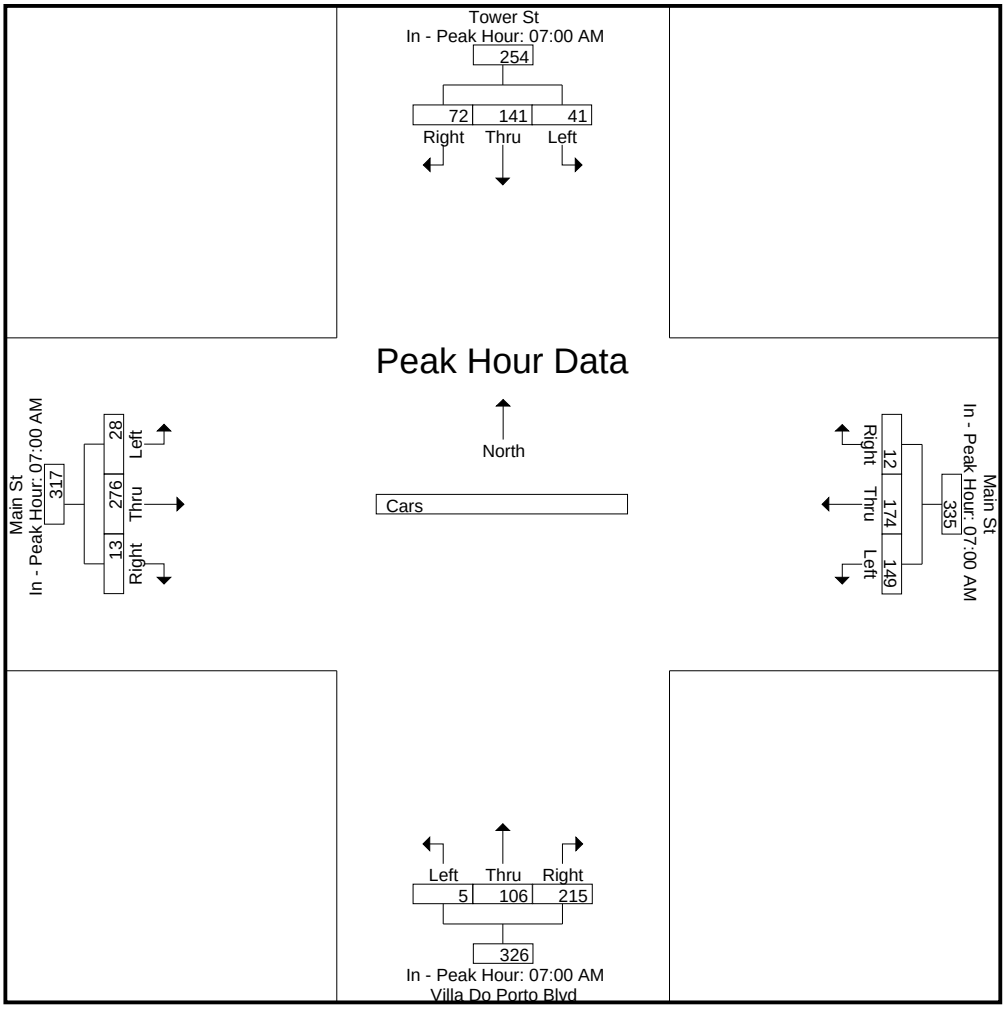
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	5	26	**21**	52	34	**56**	2	**92**	1	23	60	84	4	71	**6**	81
+15 mins.	8	37	19	64	38	40	**4**	82	1	26	**61**	**88**	9	64	0	73
+30 mins.	13	**42**	16	**71**	33	41	3	77	**2**	25	60	87	**11**	**83**	4	**98**
+45 mins.	**15**	36	16	67	**44**	37	3	84	1	**32**	34	67	4	58	3	65
Total Volume	41	141	72	254	149	174	12	335	5	106	215	326	28	276	13	317
% App. Total	16.1	55.5	28.3		44.5	51.9	3.6		1.5	32.5	66		8.8	87.1	4.1	
PHF	.683	.839	.857	.894	.847	.777	.750	.910	.625	.828	.881	.926	.636	.831	.542	.809

Accurate Counts

978-664-2565

N/S Street : Tower St / Villa Do Porto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 7937001A
Site Code : 79370001
Start Date : 9/14/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Tower St / Villa Do Porto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 7937001A
Site Code : 79370001
Start Date : 9/14/2023

Groups Printed- Trucks

	Tower St From North			Main St From East			Villa Do Porto Blvd From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	1	2	4	1	0	0	1	4	0	4	0	17
07:15 AM	0	0	0	1	3	2	0	2	2	0	2	0	12
07:30 AM	0	0	0	1	3	1	0	1	2	0	0	0	8
07:45 AM	0	0	0	1	0	1	0	0	2	0	2	0	6
Total	0	1	2	7	7	4	0	4	10	0	8	0	43
08:00 AM	0	0	2	2	0	0	0	0	3	0	0	0	7
08:15 AM	0	0	1	1	0	0	0	0	1	0	2	0	5
08:30 AM	0	0	1	1	3	0	0	0	1	0	3	2	11
08:45 AM	0	0	0	3	3	0	0	0	2	1	4	0	13
Total	0	0	4	7	6	0	0	0	7	1	9	2	36
Grand Total	0	1	6	14	13	4	0	4	17	1	17	2	79
Apprch %	0	14.3	85.7	45.2	41.9	12.9	0	19	81	5	85	10	
Total %	0	1.3	7.6	17.7	16.5	5.1	0	5.1	21.5	1.3	21.5	2.5	

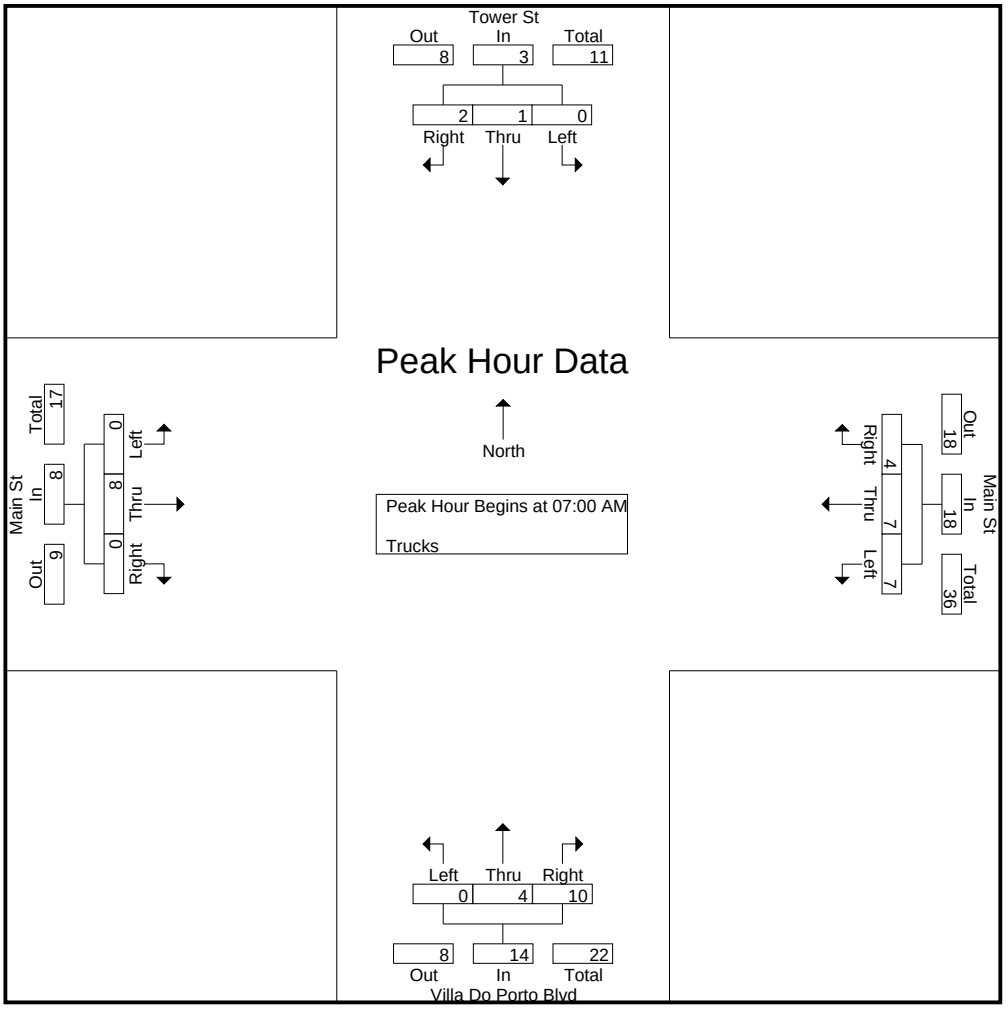
	Tower St From North				Main St From East				Villa Do Porto Blvd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	**1**	**2**	**3**	**4**	1	0	5	0	1	**4**	**5**	0	**4**	0	**4**	**17**
07:15 AM	0	0	0	0	1	**3**	**2**	**6**	0	**2**	2	4	0	2	0	2	12
07:30 AM	0	0	0	0	1	3	1	5	0	1	2	3	0	0	0	0	8
07:45 AM	0	0	0	0	1	0	1	2	0	0	2	2	0	2	0	2	6
Total Volume	0	1	2	3	7	7	4	18	0	4	10	14	0	8	0	8	43
% App. Total	0	33.3	66.7		38.9	38.9	22.2		0	28.6	71.4		0	100	0		
PHF	.000	.250	.250	.250	.438	.583	.500	.750	.000	.500	.625	.700	.000	.500	.000	.500	.632

Accurate Counts

978-664-2565

N/S Street : Tower St / Villa Do Porto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 7937001A
Site Code : 79370001
Start Date : 9/14/2023
Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

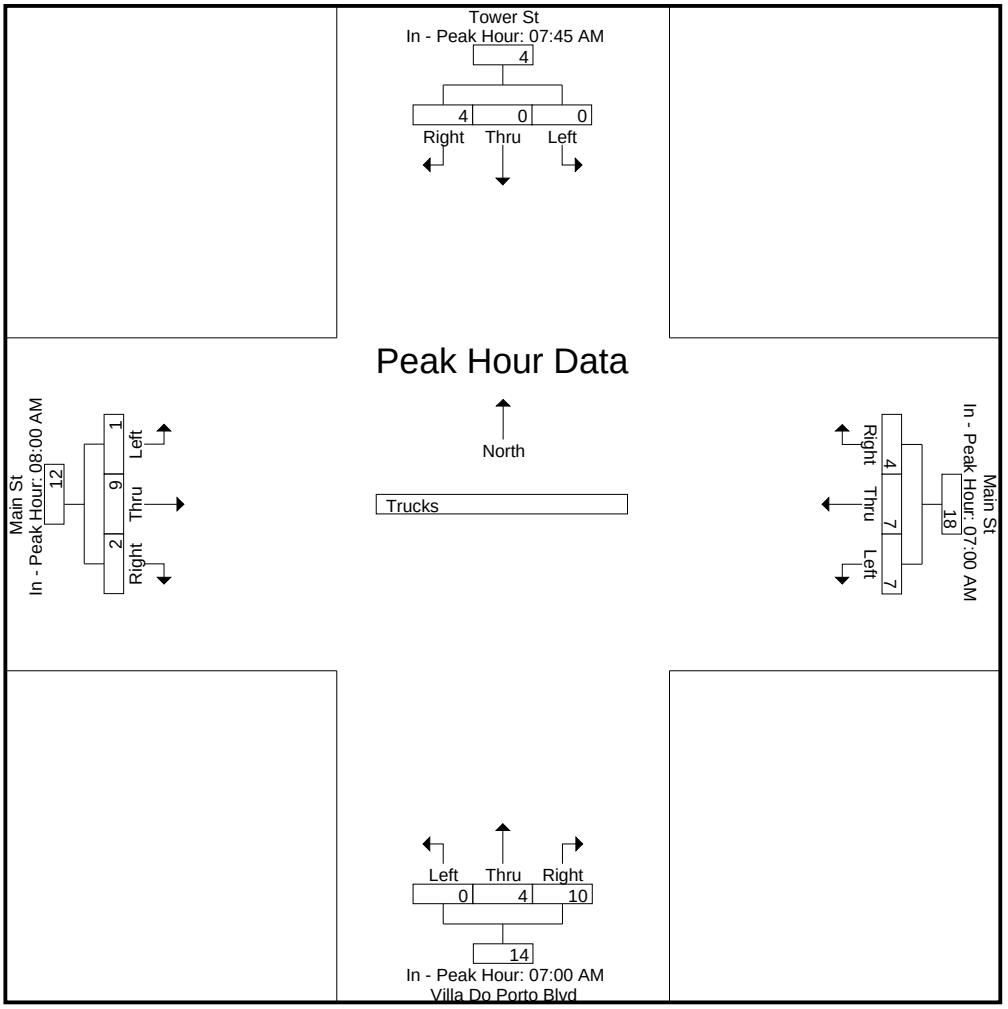
	07:45 AM				07:00 AM				07:00 AM				08:00 AM			
+0 mins.	0	0	0	0	**4**	1	0	5	0	1	**4**	**5**	0	0	0	0
+15 mins.	0	0	**2**	**2**	1	**3**	**2**	**6**	0	**2**	2	4	0	2	0	2
+30 mins.	0	0	1	1	1	3	1	5	0	1	2	3	0	3	**2**	**5**
+45 mins.	0	0	1	1	1	0	1	2	0	0	2	2	**1**	**4**	0	5
Total Volume	0	0	4	4	7	7	4	18	0	4	10	14	1	9	2	12
% App. Total	0	0	100		38.9	38.9	22.2		0	28.6	71.4		8.3	75	16.7	
PHF	.000	.000	.500	.500	.438	.583	.500	.750	.000	.500	.625	.700	.250	.563	.250	.600

Accurate Counts

978-664-2565

N/S Street : Tower St / Villa Do Porto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 7937001A
Site Code : 79370001
Start Date : 9/14/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Tower St / Villa Do Porto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 7937001A
Site Code : 79370001
Start Date : 9/14/2023

Groups Printed- Bikes Peds

	Tower St From North				Main St From East				Villa Do Porto Blvd From South				Main St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	3
07:15 AM	0	0	0	1	0	1	0	0	0	0	0	3	0	0	0	0	4	1	5
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5	0	5
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	8
Total	0	0	0	1	0	1	0	0	0	0	0	19	0	0	0	0	20	1	21
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2
08:15 AM	0	0	0	1	0	0	0	0	0	0	1	3	0	0	0	0	4	1	5
08:30 AM	0	0	0	2	0	1	0	0	0	0	0	7	0	0	0	0	9	1	10
08:45 AM	0	0	0	0	0	1	0	0	0	0	0	8	0	0	0	0	8	1	9
Total	0	0	0	3	0	2	0	0	0	0	1	20	0	0	0	0	23	3	26
Grand Total	0	0	0	4	0	3	0	0	0	0	1	39	0	0	0	0	43	4	47
Apprch %	0	0	0		0	100	0		0	0	100		0	0	0				
Total %	0	0	0		0	75	0		0	0	25		0	0	0		91.5	8.5	

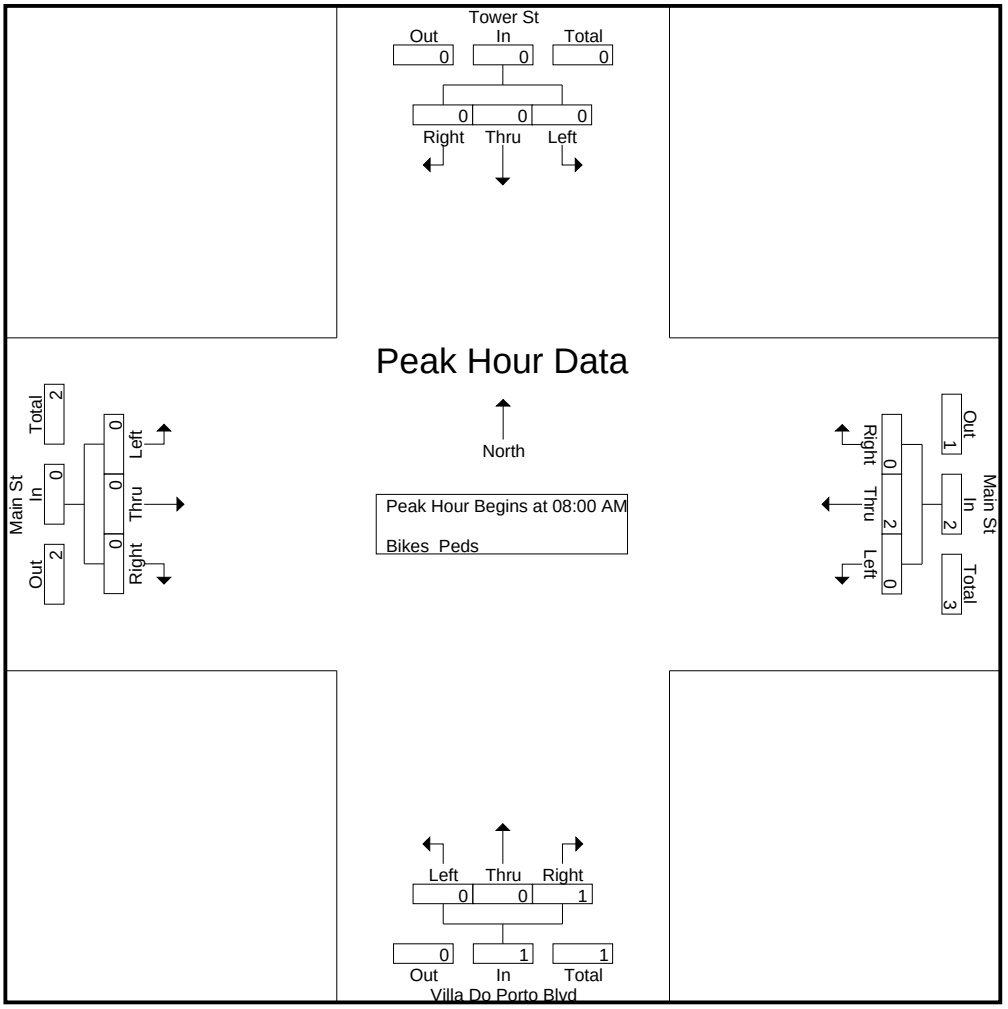
	Tower St From North				Main St From East				Villa Do Porto Blvd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0	**1**
08:30 AM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	2	0	2	0	0	1	1	0	0	0	0	3
% App. Total	0	0	0		0	100	0		0	0	100		0	0	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.250	.250	.000	.000	.000	.000	.750

Accurate Counts

978-664-2565

N/S Street : Tower St / Villa Do Porto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 7937001A
Site Code : 79370001
Start Date : 9/14/2023
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

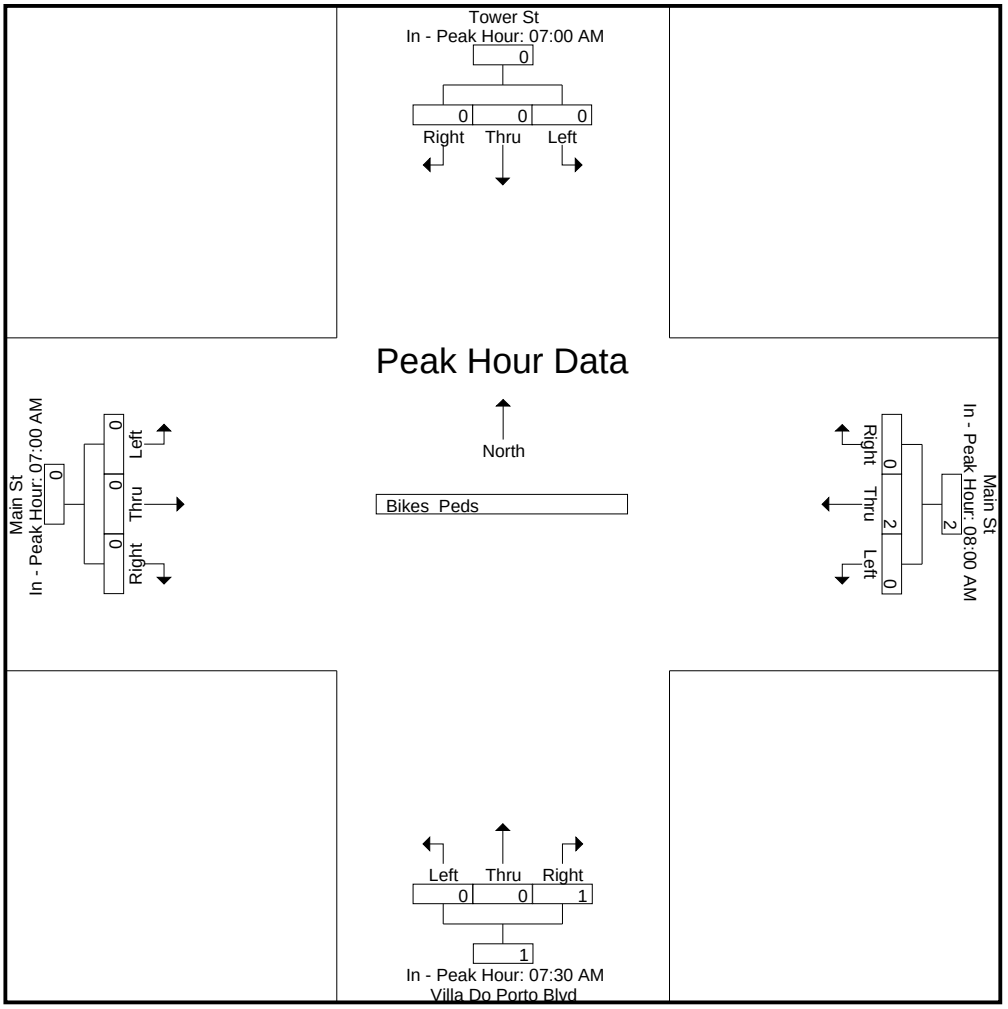
	07:00 AM				08:00 AM				07:30 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	1	0	1	0	0	**1**	**1**	0	0	0	0
Total Volume	0	0	0	0	0	2	0	2	0	0	1	1	0	0	0	0
% App. Total	0	0	0		0	100	0		0	0	100		0	0	0	
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.250	.250	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Tower St / Villa Do Porto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 7937001A
Site Code : 79370001
Start Date : 9/14/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Tower St / VillaDoPorto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 79370001
Site Code : 79370001
Start Date : 9/6/2023
Page No : 1

Groups Printed- Cars - Trucks

	Tower St From North			Main St From East			Villa Do Porto Blvd From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	2	31	4	44	65	3	9	24	37	10	51	5	285
04:15 PM	5	37	5	50	94	6	3	34	31	13	48	2	328
04:30 PM	9	30	22	36	91	6	8	30	42	10	48	5	337
04:45 PM	2	24	17	44	86	5	1	29	44	5	42	8	307
Total	18	122	48	174	336	20	21	117	154	38	189	20	1257
05:00 PM	5	35	14	40	83	6	4	24	32	10	27	4	284
05:15 PM	4	34	15	32	85	9	4	32	46	16	46	6	329
05:30 PM	5	27	15	47	85	5	3	29	38	8	36	4	302
05:45 PM	7	28	17	33	81	9	4	25	26	14	43	2	289
Total	21	124	61	152	334	29	15	110	142	48	152	16	1204
Grand Total	39	246	109	326	670	49	36	227	296	86	341	36	2461
Apprch %	9.9	62.4	27.7	31.2	64.1	4.7	6.4	40.6	53	18.6	73.7	7.8	
Total %	1.6	10	4.4	13.2	27.2	2	1.5	9.2	12	3.5	13.9	1.5	
Cars	39	246	109	323	660	48	36	227	292	86	334	36	2436
% Cars	100	100	100	99.1	98.5	98	100	100	98.6	100	97.9	100	99
Trucks	0	0	0	3	10	1	0	0	4	0	7	0	25
% Trucks	0	0	0	0.9	1.5	2	0	0	1.4	0	2.1	0	1

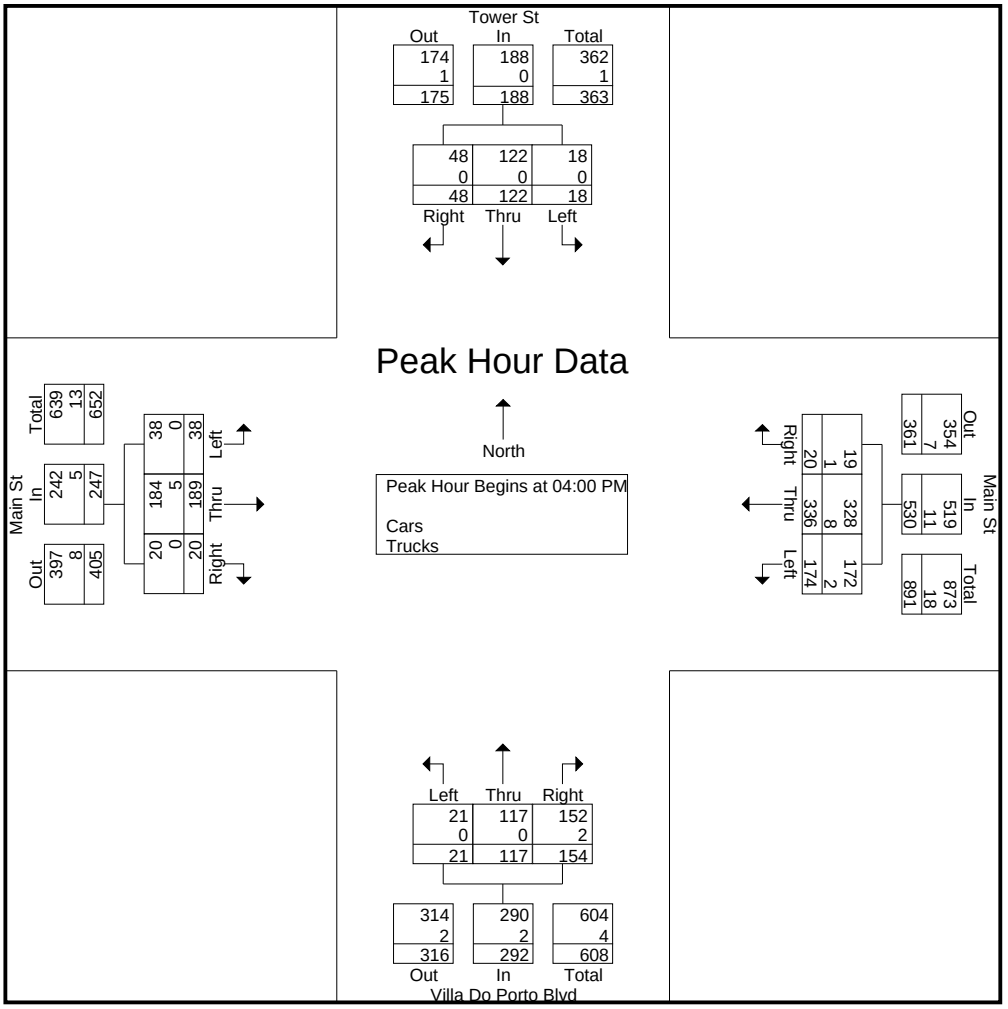
	Tower St From North				Main St From East				Villa Do Porto Blvd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	2	31	4	37	44	65	3	112	**9**	24	37	70	10	**51**	5	**66**	285
04:15 PM	5	**37**	5	47	**50**	**94**	**6**	**150**	3	**34**	31	68	**13**	48	2	63	328
04:30 PM	**9**	30	**22**	**61**	36	91	6	133	8	30	42	**80**	10	48	5	63	**337**
04:45 PM	2	24	17	43	44	86	5	135	1	29	**44**	74	5	42	**8**	55	307
Total Volume	18	122	48	188	174	336	20	530	21	117	154	292	38	189	20	247	1257
% App. Total	9.6	64.9	25.5		32.8	63.4	3.8		7.2	40.1	52.7		15.4	76.5	8.1		
PHF	.500	.824	.545	.770	.870	.894	.833	.883	.583	.860	.875	.913	.731	.926	.625	.936	.932
Cars	18	122	48	188	172	328	19	519	21	117	152	290	38	184	20	242	1239
% Cars	100	100	100	100	98.9	97.6	95.0	97.9	100	100	98.7	99.3	100	97.4	100	98.0	98.6
Trucks	0	0	0	0	2	8	1	11	0	0	2	2	0	5	0	5	18
% Trucks	0	0	0	0	1.1	2.4	5.0	2.1	0	0	1.3	0.7	0	2.6	0	2.0	1.4

Accurate Counts

978-664-2565

N/S Street : Tower St / VillaDoPorto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 79370001
Site Code : 79370001
Start Date : 9/6/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

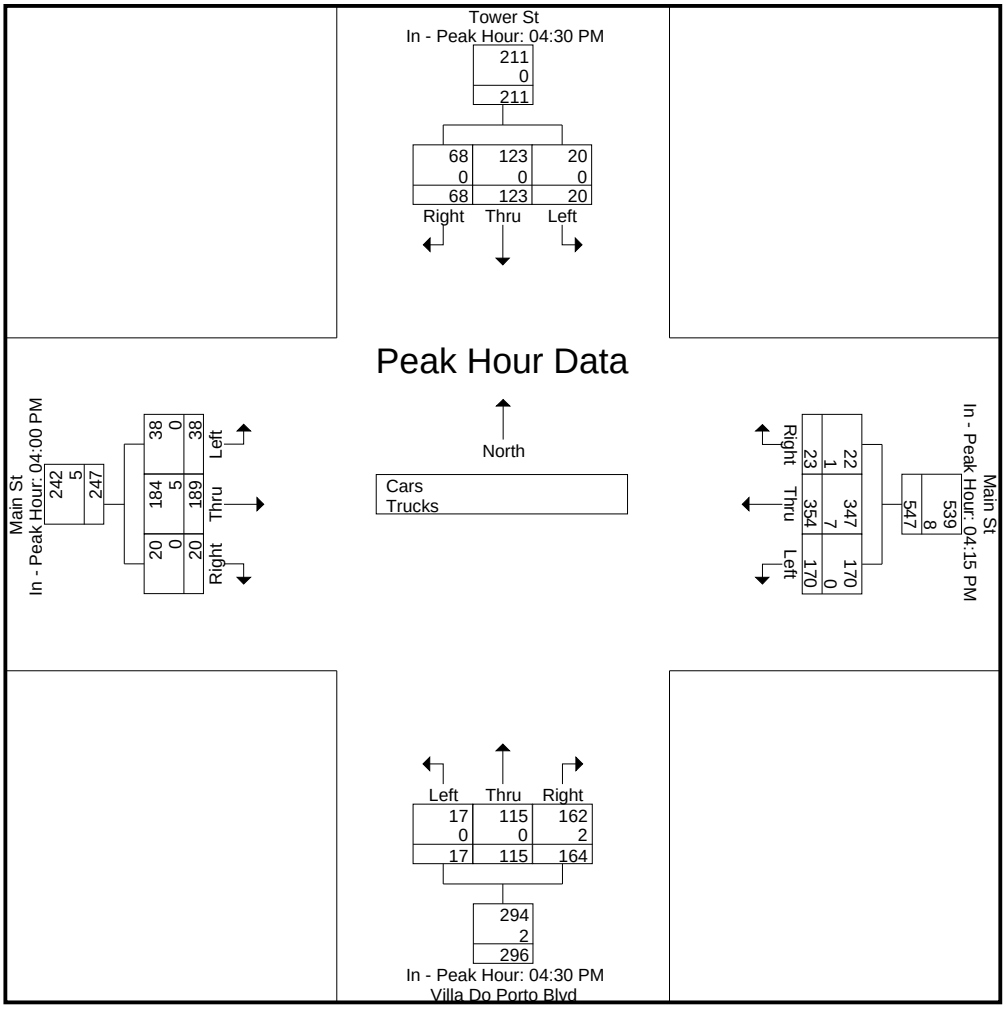
	04:30 PM				04:15 PM				04:30 PM				04:00 PM			
+0 mins.	**9**	30	**22**	**61**	**50**	**94**	**6**	**150**	**8**	30	42	80	10	**51**	5	**66**
+15 mins.	2	24	17	43	36	91	6	133	1	29	44	74	**13**	48	2	63
+30 mins.	5	**35**	14	54	44	86	5	135	4	24	32	60	10	48	5	63
+45 mins.	4	34	15	53	40	83	6	129	4	**32**	**46**	**82**	5	42	**8**	55
Total Volume	20	123	68	211	170	354	23	547	17	115	164	296	38	189	20	247
% App. Total	9.5	58.3	32.2		31.1	64.7	4.2		5.7	38.9	55.4		15.4	76.5	8.1	
PHF	.556	.879	.773	.865	.850	.941	.958	.912	.531	.898	.891	.902	.731	.926	.625	.936
Cars	20	123	68	211	170	347	22	539	17	115	162	294	38	184	20	242
% Cars	100	100	100	100	100	98	95.7	98.5	100	100	98.8	99.3	100	97.4	100	98
Trucks	0	0	0	0	0	7	1	8	0	0	2	2	0	5	0	5
% Trucks	0	0	0	0	0	2	4.3	1.5	0	0	1.2	0.7	0	2.6	0	2

Accurate Counts

978-664-2565

N/S Street : Tower St / VillaDoPorto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 79370001
Site Code : 79370001
Start Date : 9/6/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Tower St / VillaDoPorto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 79370001
Site Code : 79370001
Start Date : 9/6/2023

Groups Printed- Cars

	Tower St From North			Main St From East			Villa Do Porto Blvd From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	2	31	4	42	63	3	9	24	36	10	50	5	279
04:15 PM	5	37	5	50	92	6	3	34	31	13	48	2	326
04:30 PM	9	30	22	36	90	5	8	30	42	10	46	5	333
04:45 PM	2	24	17	44	83	5	1	29	43	5	40	8	301
Total	18	122	48	172	328	19	21	117	152	38	184	20	1239
05:00 PM	5	35	14	40	82	6	4	24	31	10	27	4	282
05:15 PM	4	34	15	31	84	9	4	32	46	16	46	6	327
05:30 PM	5	27	15	47	85	5	3	29	38	8	35	4	301
05:45 PM	7	28	17	33	81	9	4	25	25	14	42	2	287
Total	21	124	61	151	332	29	15	110	140	48	150	16	1197
Grand Total	39	246	109	323	660	48	36	227	292	86	334	36	2436
Apprch %	9.9	62.4	27.7	31.3	64	4.7	6.5	40.9	52.6	18.9	73.2	7.9	
Total %	1.6	10.1	4.5	13.3	27.1	2	1.5	9.3	12	3.5	13.7	1.5	

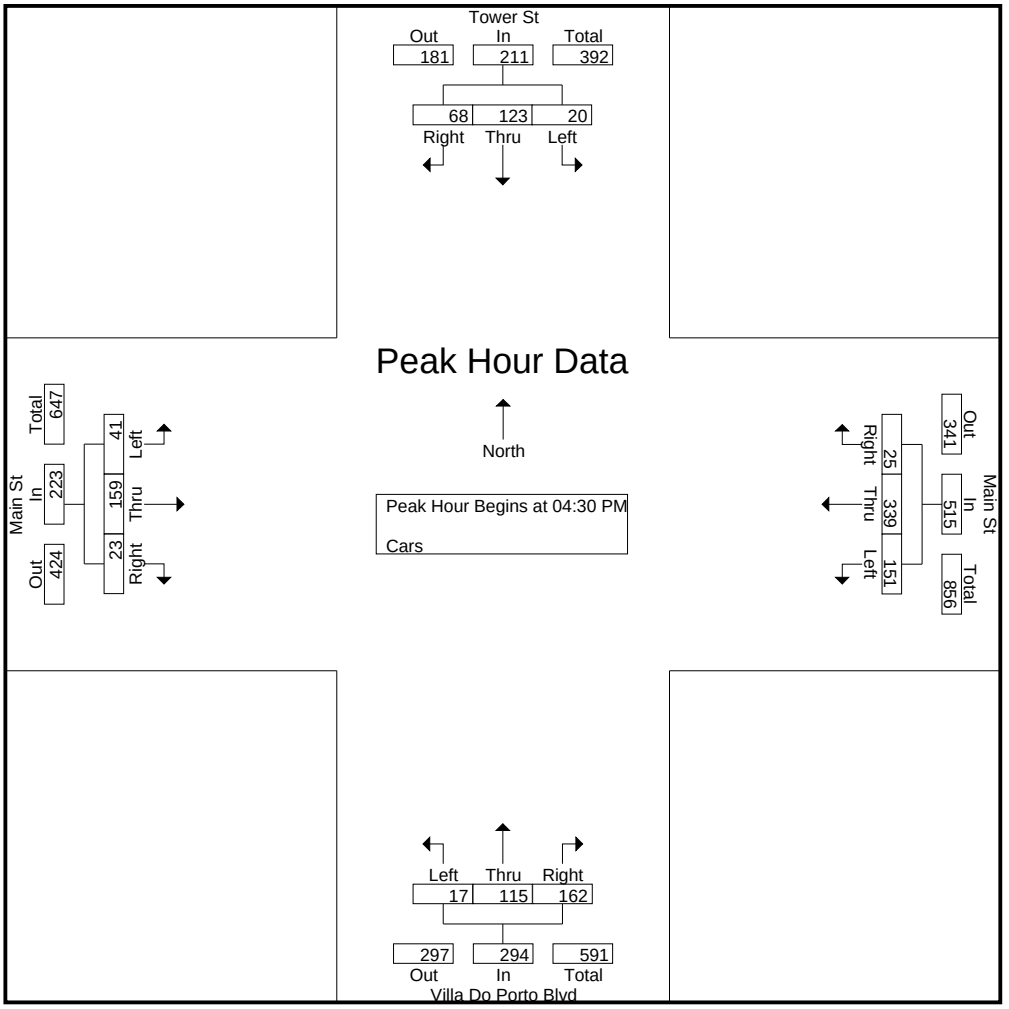
	Tower St From North				Main St From East				Villa Do Porto Blvd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**9**	30	**22**	**61**	36	**90**	5	131	**8**	30	42	80	10	**46**	5	61	**333**
04:45 PM	2	24	17	43	**44**	83	5	**132**	1	29	43	73	5	40	**8**	53	301
05:00 PM	5	**35**	14	54	40	82	6	128	4	24	31	59	10	27	4	41	282
05:15 PM	4	34	15	53	31	84	**9**	124	4	**32**	**46**	**82**	**16**	46	6	**68**	327
Total Volume	20	123	68	211	151	339	25	515	17	115	162	294	41	159	23	223	1243
% App. Total	9.5	58.3	32.2		29.3	65.8	4.9		5.8	39.1	55.1		18.4	71.3	10.3		
PHF	.556	.879	.773	.865	.858	.942	.694	.975	.531	.898	.880	.896	.641	.864	.719	.820	.933

Accurate Counts

978-664-2565

N/S Street : Tower St / VillaDoPorto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 79370001
Site Code : 79370001
Start Date : 9/6/2023
Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

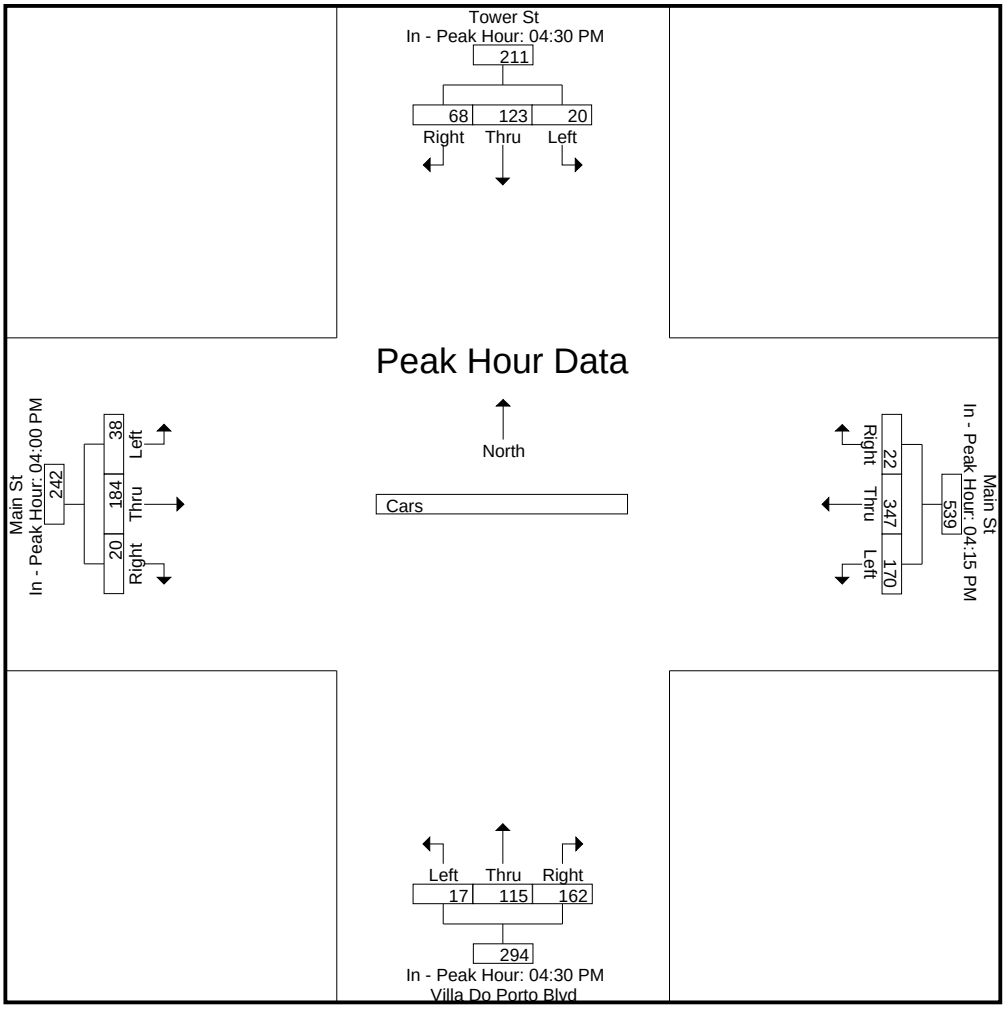
	04:30 PM				04:15 PM				04:30 PM				04:00 PM			
+0 mins.	**9**	30	**22**	**61**	**50**	**92**	**6**	**148**	**8**	30	42	80	10	**50**	5	**65**
+15 mins.	2	24	17	43	36	90	5	131	1	29	43	73	**13**	48	2	63
+30 mins.	5	**35**	14	54	44	83	5	132	4	24	31	59	10	46	5	61
+45 mins.	4	34	15	53	40	82	6	128	4	**32**	**46**	**82**	5	40	**8**	53
Total Volume	20	123	68	211	170	347	22	539	17	115	162	294	38	184	20	242
% App. Total	9.5	58.3	32.2		31.5	64.4	4.1		5.8	39.1	55.1		15.7	76	8.3	
PHF	.556	.879	.773	.865	.850	.943	.917	.910	.531	.898	.880	.896	.731	.920	.625	.931

Accurate Counts

978-664-2565

N/S Street : Tower St / VillaDoPorto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 79370001
Site Code : 79370001
Start Date : 9/6/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Tower St / VillaDoPorto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 79370001
Site Code : 79370001
Start Date : 9/6/2023

Groups Printed- Trucks

	Tower St From North			Main St From East			Villa Do Porto Blvd From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	2	2	0	0	0	1	0	1	0	6
04:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
04:30 PM	0	0	0	0	1	1	0	0	0	0	2	0	4
04:45 PM	0	0	0	0	3	0	0	0	1	0	2	0	6
Total	0	0	0	2	8	1	0	0	2	0	5	0	18
05:00 PM	0	0	0	0	1	0	0	0	1	0	0	0	2
05:15 PM	0	0	0	1	1	0	0	0	0	0	0	0	2
05:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
05:45 PM	0	0	0	0	0	0	0	0	1	0	1	0	2
Total	0	0	0	1	2	0	0	0	2	0	2	0	7
Grand Total	0	0	0	3	10	1	0	0	4	0	7	0	25
Apprch %	0	0	0	21.4	71.4	7.1	0	0	100	0	100	0	
Total %	0	0	0	12	40	4	0	0	16	0	28	0	

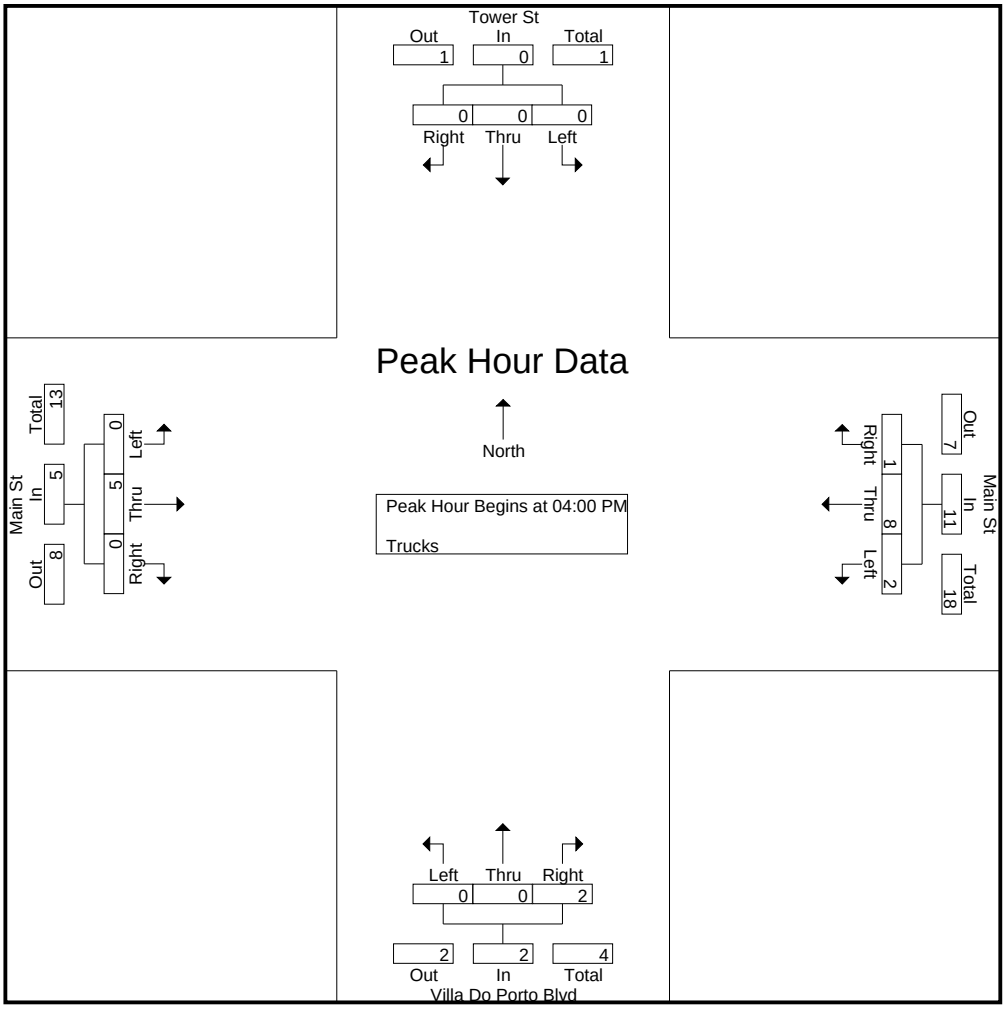
	Tower St From North				Main St From East				Villa Do Porto Blvd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	**2**	2	0	**4**	0	0	**1**	**1**	0	1	0	1	**6**
04:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
04:30 PM	0	0	0	0	0	1	**1**	2	0	0	0	0	0	**2**	0	**2**	4
04:45 PM	0	0	0	0	0	**3**	0	3	0	0	1	1	0	2	0	2	6
Total Volume	0	0	0	0	2	8	1	11	0	0	2	2	0	5	0	5	18
% App. Total	0	0	0		18.2	72.7	9.1		0	0	100		0	100	0		
PHF	.000	.000	.000	.000	.250	.667	.250	.688	.000	.000	.500	.500	.000	.625	.000	.625	.750

Accurate Counts

978-664-2565

N/S Street : Tower St / VillaDoPorto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 79370001
Site Code : 79370001
Start Date : 9/6/2023
Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

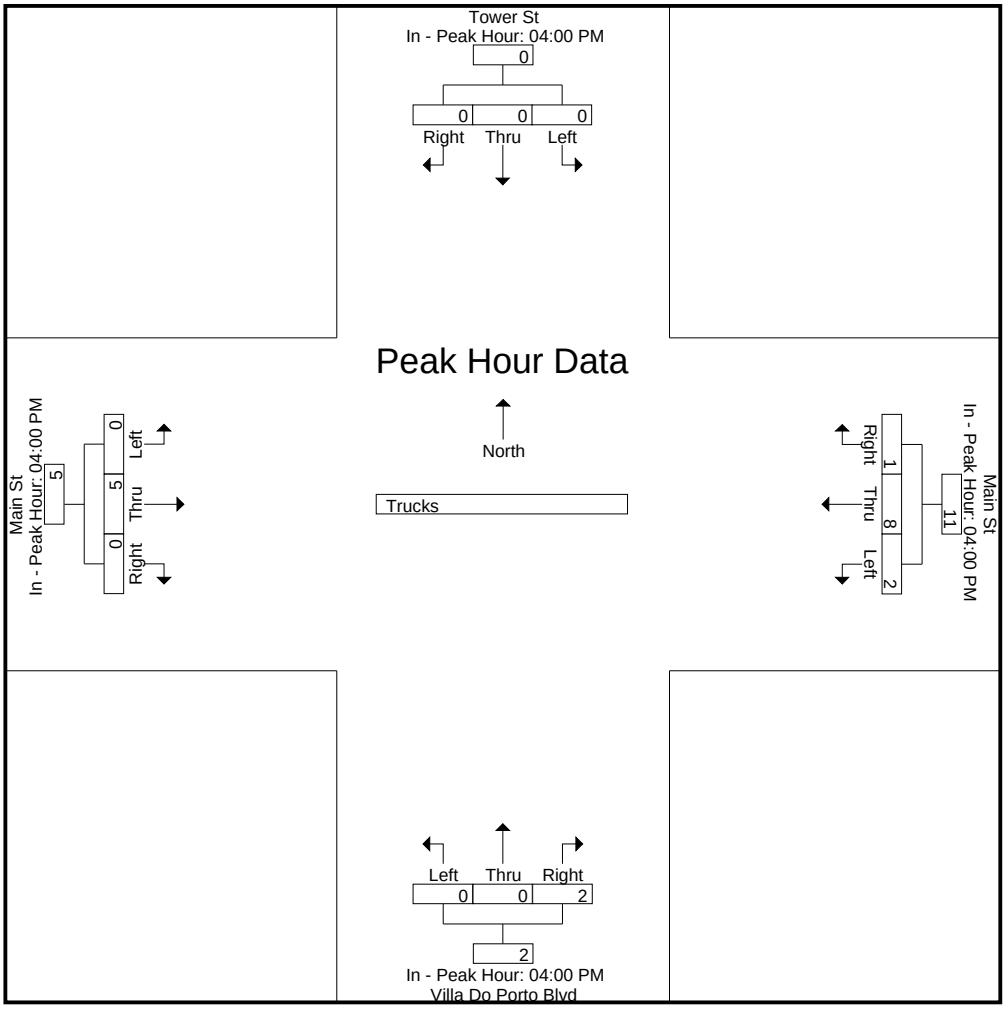
	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	**2**	2	0	**4**	0	0	**1**	**1**	0	1	0	1
+15 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	1	**1**	2	0	0	0	0	0	**2**	0	**2**
+45 mins.	0	0	0	0	0	**3**	0	3	0	0	1	1	0	2	0	2
Total Volume	0	0	0	0	2	8	1	11	0	0	2	2	0	5	0	5
% App. Total	0	0	0		18.2	72.7	9.1		0	0	100		0	100	0	
PHF	.000	.000	.000	.000	.250	.667	.250	.688	.000	.000	.500	.500	.000	.625	.000	.625

Accurate Counts

978-664-2565

N/S Street : Tower St / VillaDoPorto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 79370001
Site Code : 79370001
Start Date : 9/6/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Tower St / VillaDoPorto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 79370001
Site Code : 79370001
Start Date : 9/6/2023

Groups Printed- Bikes Peds

	Tower St From North				Main St From East				Villa Do Porto Blvd From South				Main St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	2
04:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	2
04:45 PM	0	0	0	0	1	0	0	0	0	0	0	1	0	2	0	1	2	3	5
Total	0	0	0	0	1	2	0	0	0	0	0	2	0	3	0	3	5	6	11
05:00 PM	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	2	1	3
05:15 PM	0	1	0	0	1	0	0	0	0	0	1	1	1	4	0	0	1	8	9
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2
05:45 PM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	1	2
Total	0	1	0	1	1	2	0	0	0	0	1	5	1	4	0	0	6	10	16
Grand Total	0	1	0	1	2	4	0	0	0	0	1	7	1	7	0	3	11	16	27
Apprch %	0	100	0		33.3	66.7	0		0	0	100		12.5	87.5	0				
Total %	0	6.2	0		12.5	25	0		0	0	6.2		6.2	43.8	0		40.7	59.3	

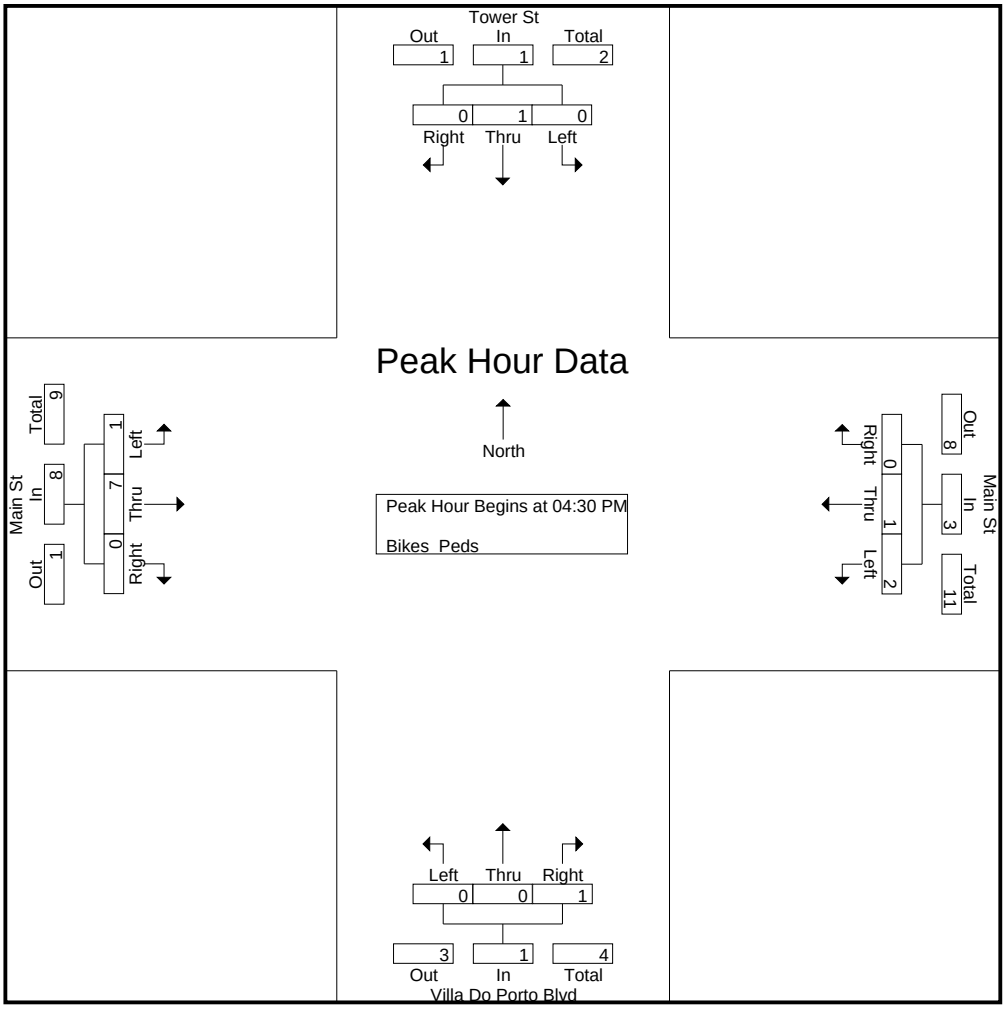
	Tower St From North				Main St From East				Villa Do Porto Blvd From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:45 PM	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	2	0	2	3
05:00 PM	0	0	0	0	0	**1**	0	1	0	0	0	0	0	0	0	0	1
05:15 PM	0	**1**	0	**1**	1	0	0	1	0	0	**1**	**1**	**1**	**4**	0	**5**	**8**
Total Volume	0	1	0	1	2	1	0	3	0	0	1	1	1	7	0	8	13
% App. Total	0	100	0		66.7	33.3	0		0	0	100		12.5	87.5	0		
PHF	.000	.250	.000	.250	.500	.250	.000	.750	.000	.000	.250	.250	.250	.438	.000	.400	.406

Accurate Counts

978-664-2565

N/S Street : Tower St / VillaDoPorto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 79370001
Site Code : 79370001
Start Date : 9/6/2023
Page No : 11



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

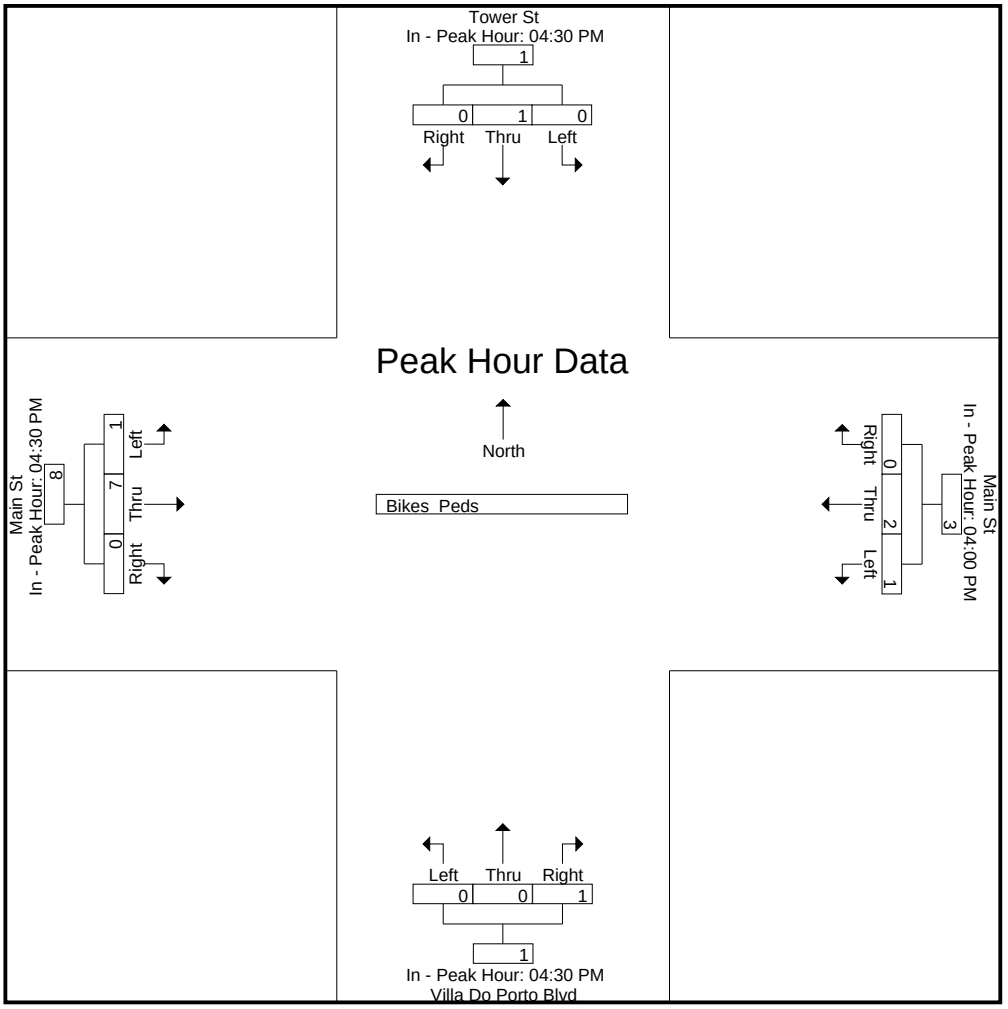
	04:30 PM				04:00 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	**1**	0	**1**	**1**	0	0	1	0	0	**1**	**1**	**1**	**4**	0	**5**
Total Volume	0	1	0	1	1	2	0	3	0	0	1	1	1	7	0	8
% App. Total	0	100	0		33.3	66.7	0		0	0	100		12.5	87.5	0	
PHF	.000	.250	.000	.250	.250	.500	.000	.750	.000	.000	.250	.250	.250	.438	.000	.400

Accurate Counts

978-664-2565

N/S Street : Tower St / VillaDoPorto Blvd
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 79370001
Site Code : 79370001
Start Date : 9/6/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 1

Groups Printed- Cars - Trucks

	Broad St From North				Vila do Porto Blvd From East				Loring St From Southeast				Broad St From South				South St Ext From West				
Start Time	Left	Bear Left	Thru	Right	Hard Left	Left	Thru	Right	Hard Left	Bear Left	Bear Right	Hard Right	Left	Thru	Right	Hard Right	Left	Thru	Bear Right	Right	Int. Total
07:00 AM	0	1	44	1	0	35	25	10	0	0	0	0	11	33	24	1	5	32	8	21	251
07:15 AM	0	1	38	4	0	57	34	4	0	0	0	0	7	48	17	3	10	31	20	23	297
07:30 AM	0	3	62	3	0	34	26	6	0	0	0	0	6	45	34	0	7	25	12	20	283
07:45 AM	0	4	56	2	0	50	20	2	0	0	0	0	8	51	41	0	3	24	18	17	296
Total	0	9	200	10	0	176	105	22	0	0	0	0	32	177	116	4	25	112	58	81	1127
08:00 AM	1	5	50	1	0	40	8	4	0	0	0	0	11	33	23	0	4	37	16	31	264
08:15 AM	1	4	49	3	0	49	20	4	0	0	0	0	8	37	30	0	4	29	16	27	281
08:30 AM	0	2	31	1	0	48	25	4	0	0	0	0	8	50	32	0	8	17	4	17	247
08:45 AM	1	1	41	3	0	46	24	6	0	0	0	0	7	40	25	1	7	14	11	23	250
Total	3	12	171	8	0	183	77	18	0	0	0	0	34	160	110	1	23	97	47	98	1042
Grand Total	3	21	371	18	0	359	182	40	0	0	0	0	66	337	226	5	48	209	105	179	2169
Apprch %	0.7	5.1	89.8	4.4	0	61.8	31.3	6.9	0	0	0	0	10.4	53.2	35.6	0.8	8.9	38.6	19.4	33.1	
Total %	0.1	1	17.1	0.8	0	16.6	8.4	1.8	0	0	0	0	3	15.5	10.4	0.2	2.2	9.6	4.8	8.3	
Cars	3	21	368	18	0	337	180	38	0	0	0	0	64	325	203	5	47	203	100	175	2087
% Cars	100	100	99.2	100	0	93.9	98.9	95	0	0	0	0	97	96.4	89.8	100	97.9	97.1	95.2	97.8	96.2
Trucks	0	0	3	0	0	22	2	2	0	0	0	0	2	12	23	0	1	6	5	4	82
% Trucks	0	0	0.8	0	0	6.1	1.1	5	0	0	0	0	3	3.6	10.2	0	2.1	2.9	4.8	2.2	3.8

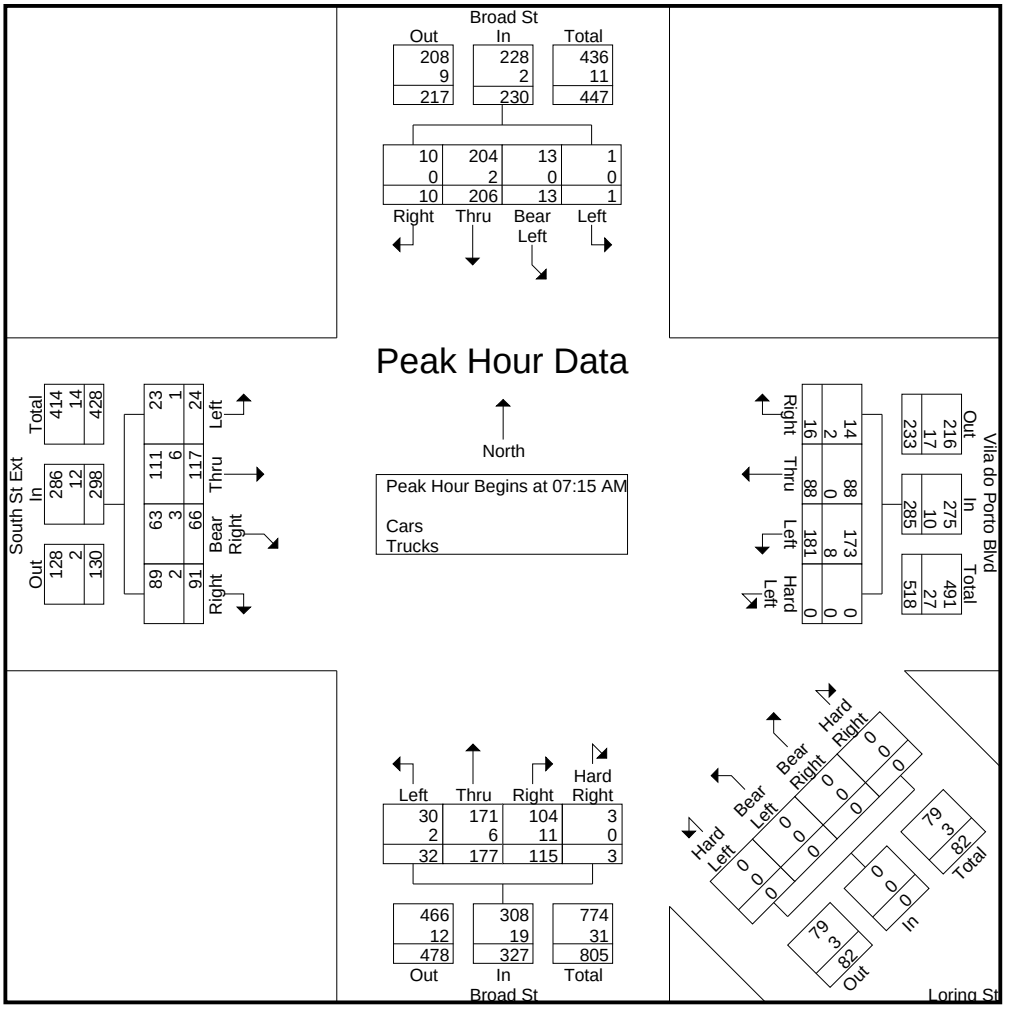
	Broad St From North					Vila do Porto Blvd From East					Loring St From Southeast					Broad St From South					South St Ext From West					
Start Time	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Left	Thru	Bear Right	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:15 AM																										
07:15 AM	0	1	38	**4**	43	0	**57**	**34**	4	**95**	0	0	0	0	0	7	48	17	**3**	75	**10**	31	**20**	23	84	**297**
07:30 AM	0	3	**62**	3	**68**	0	34	26	**6**	66	0	0	0	0	0	6	45	34	0	85	7	25	12	20	64	283
07:45 AM	0	4	56	2	62	0	50	20	2	72	0	0	0	0	0	8	**51**	**41**	0	**100**	3	24	18	17	62	296
08:00 AM	**1**	**5**	50	1	57	0	40	8	4	52	0	0	0	0	0	**11**	33	23	0	67	4	**37**	16	**31**	**88**	264
Total Volume	1	13	206	10	230	0	181	88	16	285	0	0	0	0	0	32	177	115	3	327	24	117	66	91	298	1140
% App. Total	0.4	5.7	89.6	4.3		0	63.5	30.9	5.6		0	0	0	0		9.8	54.1	35.2	0.9		8.1	39.3	22.1	30.5		
PHF	.250	.650	.831	.625	.846	.000	.794	.647	.667	.750	.000	.000	.000	.000	.000	.727	.868	.701	.250	.818	.600	.791	.825	.734	.847	.960
Cars	1	13	204	10	228	0	173	88	14	275	0	0	0	0	0	30	171	104	3	308	23	111	63	89	286	1097
% Cars	100	100	99.0	100	99.1	0	95.6	100	87.5	96.5	0	0	0	0	0	93.8	96.6	90.4	100	94.2	95.8	94.9	95.5	97.8	96.0	96.2
Trucks	0	0	2	0	2	0	8	0	2	10	0	0	0	0	0	2	6	11	0	19	1	6	3	2	12	43
% Trucks	0	0	1.0	0	0.9	0	4.4	0	12.5	3.5	0	0	0	0	0	6.3	3.4	9.6	0	5.8	4.2	5.1	4.5	2.2	4.0	3.8

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

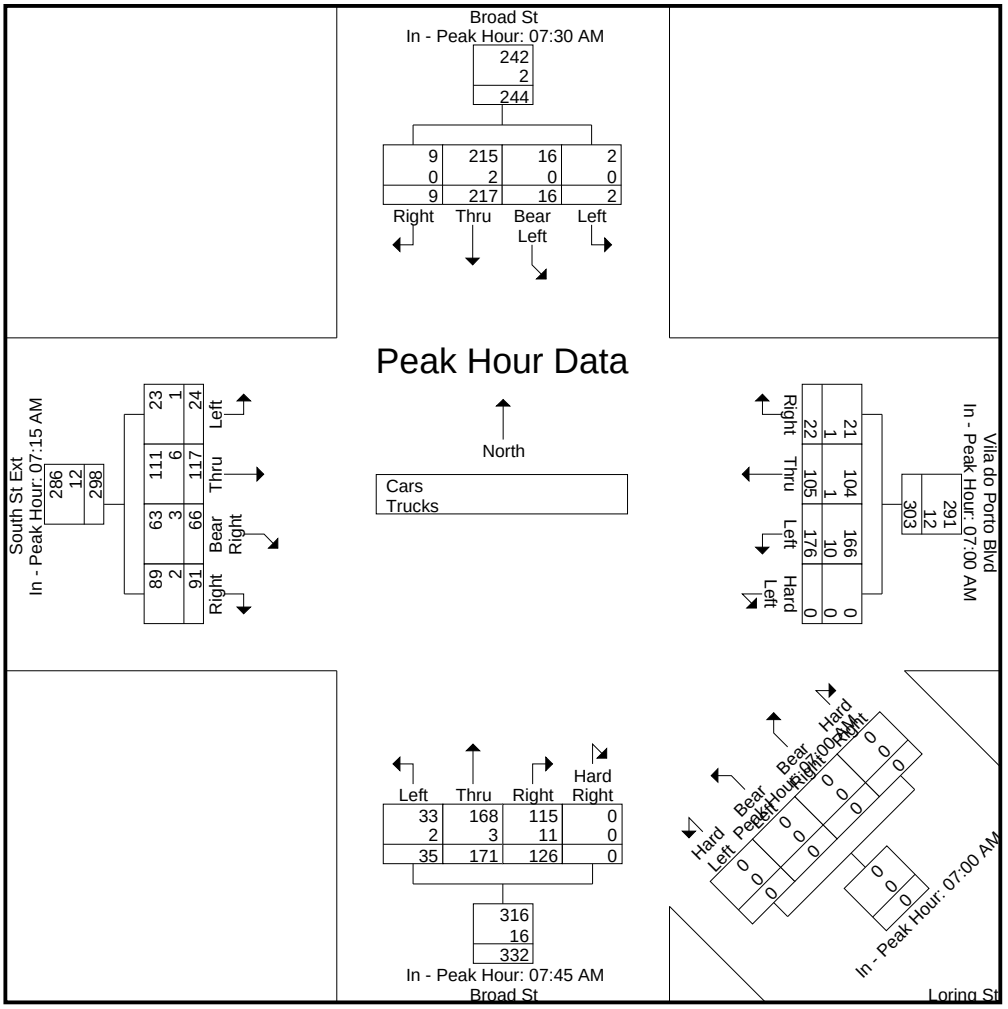
	07:30 AM					07:00 AM					07:00 AM					07:45 AM					07:15 AM				
+0 mins.	0	3	**62**	**3**	**68**	0	35	25	**10**	70	0	0	0	0	0	8	**51**	**41**	0	**100**	**10**	31	**20**	23	84
+15 mins.	0	4	56	2	62	0	**57**	**34**	4	**95**	0	0	0	0	0	**11**	33	23	0	67	7	25	12	20	64
+30 mins.	**1**	**5**	50	1	57	0	34	26	6	66	0	0	0	0	0	8	37	30	0	75	3	24	18	17	62
+45 mins.	1	4	49	3	57	0	50	20	2	72	0	0	0	0	0	8	50	32	0	90	4	**37**	16	**31**	**88**
Total Volume	2	16	217	9	244	0	176	105	22	303	0	0	0	0	0	35	171	126	0	332	24	117	66	91	298
% App. Total	0.8	6.6	88.9	3.7		0	58.1	34.7	7.3		0	0	0	0		10.5	51.5	38	0		8.1	39.3	22.1	30.5	
PHF	.500	.800	.875	.750	.897	.000	.772	.772	.550	.797	.000	.000	.000	.000	.000	.795	.838	.768	.000	.830	.600	.791	.825	.734	.847
Cars	2	16	215	9	242	0	166	104	21	291	0	0	0	0	0	33	168	115	0	316	23	111	63	89	286
% Cars	100	100	99.1	100	99.2	0	94.3	99	95.5	96	0	0	0	0	0	94.3	98.2	91.3	0	95.2	95.8	94.9	95.5	97.8	96
Trucks	0	0	2	0	2	0	10	1	1	12	0	0	0	0	0	2	3	11	0	16	1	6	3	2	12
% Trucks	0	0	0.9	0	0.8	0	5.7	1	4.5	4	0	0	0	0	0	5.7	1.8	8.7	0	4.8	4.2	5.1	4.5	2.2	4

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 4

Groups Printed- Cars

	Broad St From North				Vila do Porto Blvd From East				Loring St From Southeast				Broad St From South				South St Ext From West				
Start Time	Left	Bear Left	Thru	Right	Hard Left	Left	Thru	Right	Hard Left	Bear Left	Bear Right	Hard Right	Left	Thru	Right	Hard Right	Left	Thru	Bear Right	Right	Int. Total
07:00 AM	0	1	44	1	0	33	24	10	0	0	0	0	11	32	22	1	5	32	7	21	244
07:15 AM	0	1	38	4	0	54	34	4	0	0	0	0	7	45	12	3	9	30	19	22	282
07:30 AM	0	3	62	3	0	32	26	6	0	0	0	0	6	42	32	0	7	22	12	20	273
07:45 AM	0	4	55	2	0	47	20	1	0	0	0	0	8	51	39	0	3	23	17	17	287
Total	0	9	199	10	0	166	104	21	0	0	0	0	32	170	105	4	24	107	55	80	1086
08:00 AM	1	5	49	1	0	40	8	3	0	0	0	0	9	33	21	0	4	36	15	30	255
08:15 AM	1	4	49	3	0	45	19	4	0	0	0	0	8	36	27	0	4	29	15	25	269
08:30 AM	0	2	31	1	0	44	25	4	0	0	0	0	8	48	28	0	8	17	4	17	237
08:45 AM	1	1	40	3	0	42	24	6	0	0	0	0	7	38	22	1	7	14	11	23	240
Total	3	12	169	8	0	171	76	17	0	0	0	0	32	155	98	1	23	96	45	95	1001
Grand Total	3	21	368	18	0	337	180	38	0	0	0	0	64	325	203	5	47	203	100	175	2087
Apprch %	0.7	5.1	89.8	4.4	0	60.7	32.4	6.8	0	0	0	0	10.7	54.4	34	0.8	9	38.7	19	33.3	
Total %	0.1	1	17.6	0.9	0	16.1	8.6	1.8	0	0	0	0	3.1	15.6	9.7	0.2	2.3	9.7	4.8	8.4	

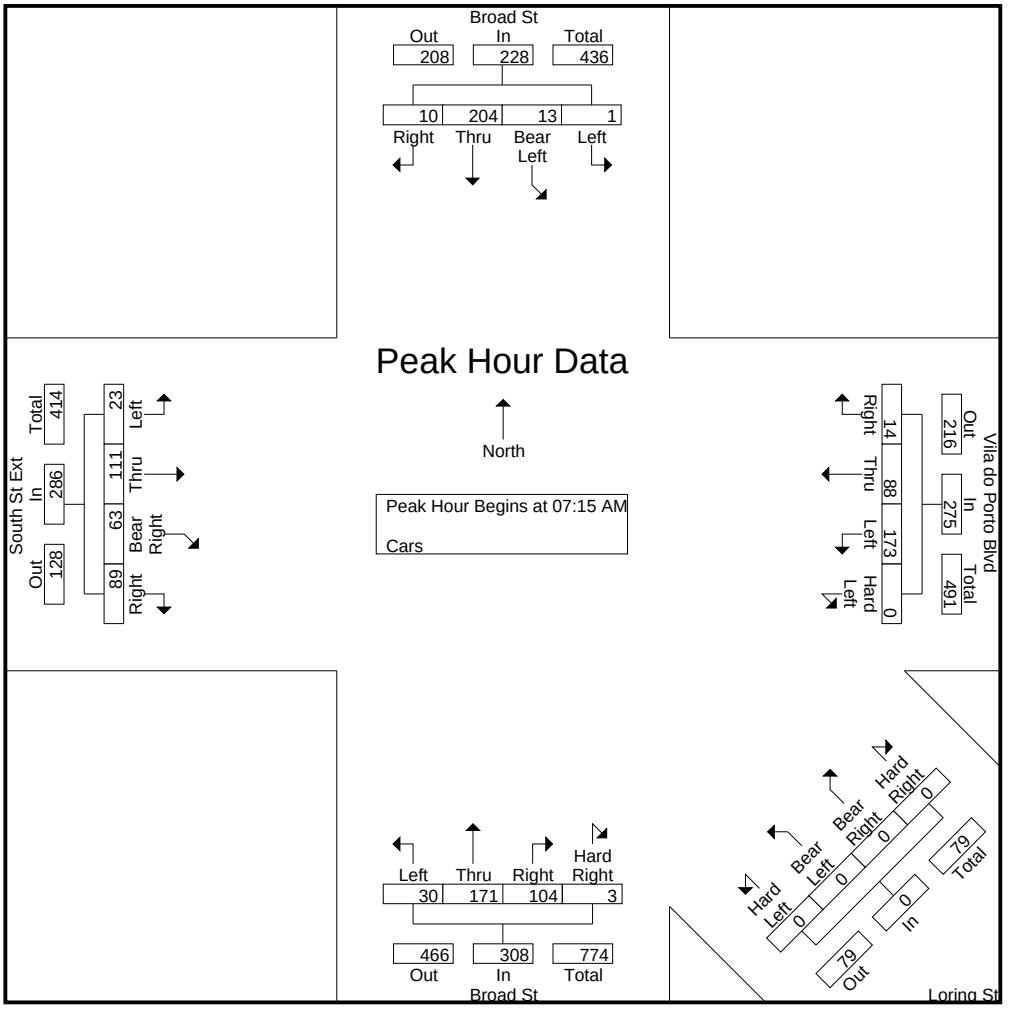
	Broad St From North					Vila do Porto Blvd From East					Loring St From Southeast					Broad St From South					South St Ext From West					
Start Time	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Left	Thru	Bear Right	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:15 AM																										
07:15 AM	0	1	38	**4**	43	0	**54**	**34**	4	**92**	0	0	0	0	0	7	45	12	**3**	67	**9**	30	**19**	22	80	282
07:30 AM	0	3	**62**	3	**68**	0	32	26	**6**	64	0	0	0	0	0	6	42	32	0	80	7	22	12	20	61	273
07:45 AM	0	4	55	2	61	0	47	20	1	68	0	0	0	0	0	8	**51**	**39**	0	**98**	3	23	17	17	60	**287**
08:00 AM	**1**	**5**	49	1	56	0	40	8	3	51	0	0	0	0	0	**9**	33	21	0	63	4	**36**	15	**30**	**85**	255
Total Volume	1	13	204	10	228	0	173	88	14	275	0	0	0	0	0	30	171	104	3	308	23	111	63	89	286	1097
% App. Total	0.4	5.7	89.5	4.4		0	62.9	32	5.1		0	0	0	0		9.7	55.5	33.8	1		8	38.8	22	31.1		
PHF	.250	.650	.823	.625	.838	.000	.801	.647	.583	.747	.000	.000	.000	.000	.000	.833	.838	.667	.250	.786	.639	.771	.829	.742	.841	.956

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

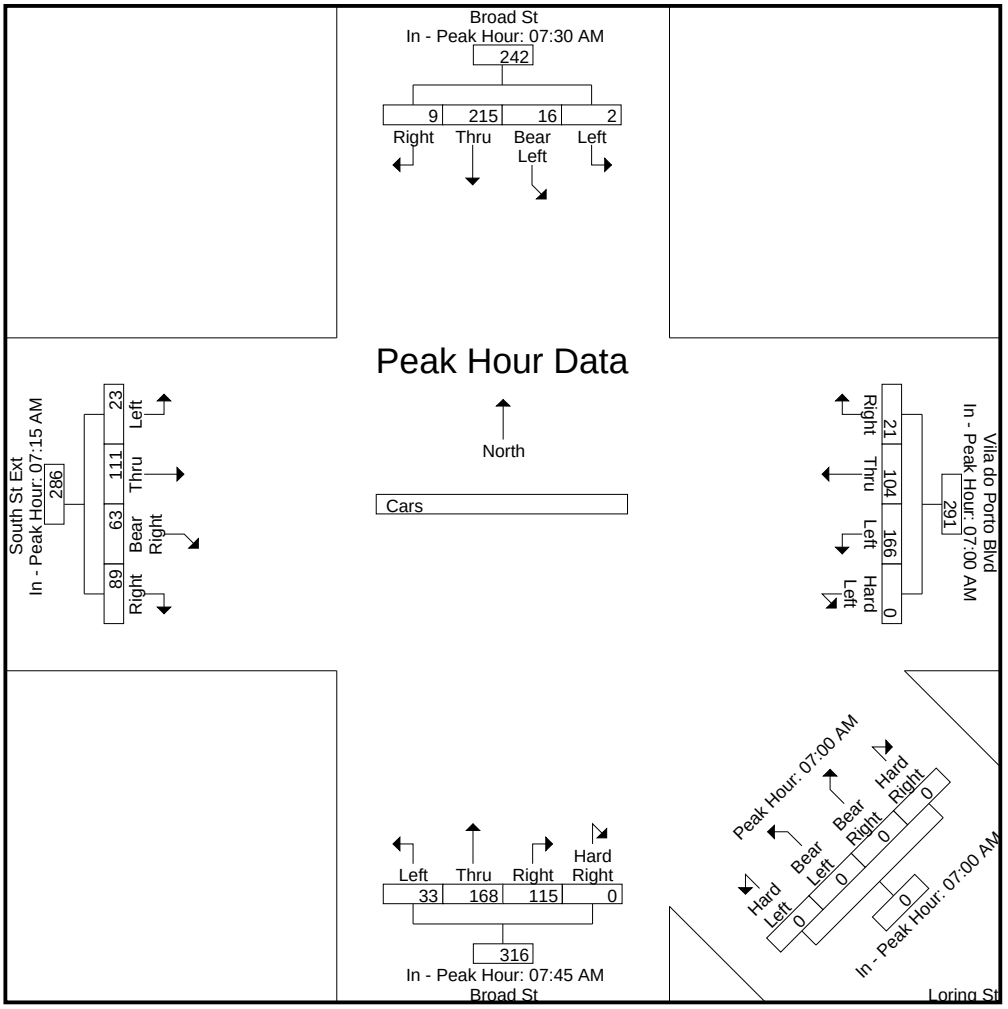
	07:30 AM					07:00 AM					07:00 AM					07:45 AM					07:15 AM				
+0 mins.	0	3	**62**	**3**	**68**	0	33	24	**10**	67	0	0	0	0	0	8	**51**	**39**	0	**98**	**9**	30	**19**	22	80
+15 mins.	0	4	55	2	61	0	**54**	**34**	4	**92**	0	0	0	0	0	**9**	33	21	0	63	7	22	12	20	61
+30 mins.	**1**	**5**	49	1	56	0	32	26	6	64	0	0	0	0	0	8	36	27	0	71	3	23	17	17	60
+45 mins.	1	4	49	3	57	0	47	20	1	68	0	0	0	0	0	8	48	28	0	84	4	**36**	15	**30**	**85**
Total Volume	2	16	215	9	242	0	166	104	21	291	0	0	0	0	0	33	168	115	0	316	23	111	63	89	286
% App. Total	0.8	6.6	88.8	3.7		0	57	35.7	7.2		0	0	0	0		10.4	53.2	36.4	0		8	38.8	22	31.1	
PHF	.500	.800	.867	.750	.890	.000	.769	.765	.525	.791	.000	.000	.000	.000	.000	.917	.824	.737	.000	.806	.639	.771	.829	.742	.841

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 7

Groups Printed- Trucks

	Broad St From North				Vila do Porto Blvd From East				Loring St From Southeast				Broad St From South				South St Ext From West				
Start Time	Left	Bear Left	Thru	Right	Hard Left	Left	Thru	Right	Hard Left	Bear Left	Bear Right	Hard Right	Left	Thru	Right	Hard Right	Left	Thru	Bear Right	Right	Int. Total
07:00 AM	0	0	0	0	0	2	1	0	0	0	0	0	0	1	2	0	0	0	1	0	7
07:15 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	3	5	0	1	1	1	1	15
07:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	3	2	0	0	3	0	0	10
07:45 AM	0	0	1	0	0	3	0	1	0	0	0	0	0	0	2	0	0	1	1	0	9
Total	0	0	1	0	0	10	1	1	0	0	0	0	0	7	11	0	1	5	3	1	41
08:00 AM	0	0	1	0	0	0	0	1	0	0	0	0	2	0	2	0	0	1	1	1	9
08:15 AM	0	0	0	0	0	4	1	0	0	0	0	0	0	1	3	0	0	0	1	2	12
08:30 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	2	4	0	0	0	0	0	10
08:45 AM	0	0	1	0	0	4	0	0	0	0	0	0	0	2	3	0	0	0	0	0	10
Total	0	0	2	0	0	12	1	1	0	0	0	0	2	5	12	0	0	1	2	3	41
Grand Total	0	0	3	0	0	22	2	2	0	0	0	0	2	12	23	0	1	6	5	4	82
Apprch %	0	0	100	0	0	84.6	7.7	7.7	0	0	0	0	5.4	32.4	62.2	0	6.2	37.5	31.2	25	
Total %	0	0	3.7	0	0	26.8	2.4	2.4	0	0	0	0	2.4	14.6	28	0	1.2	7.3	6.1	4.9	

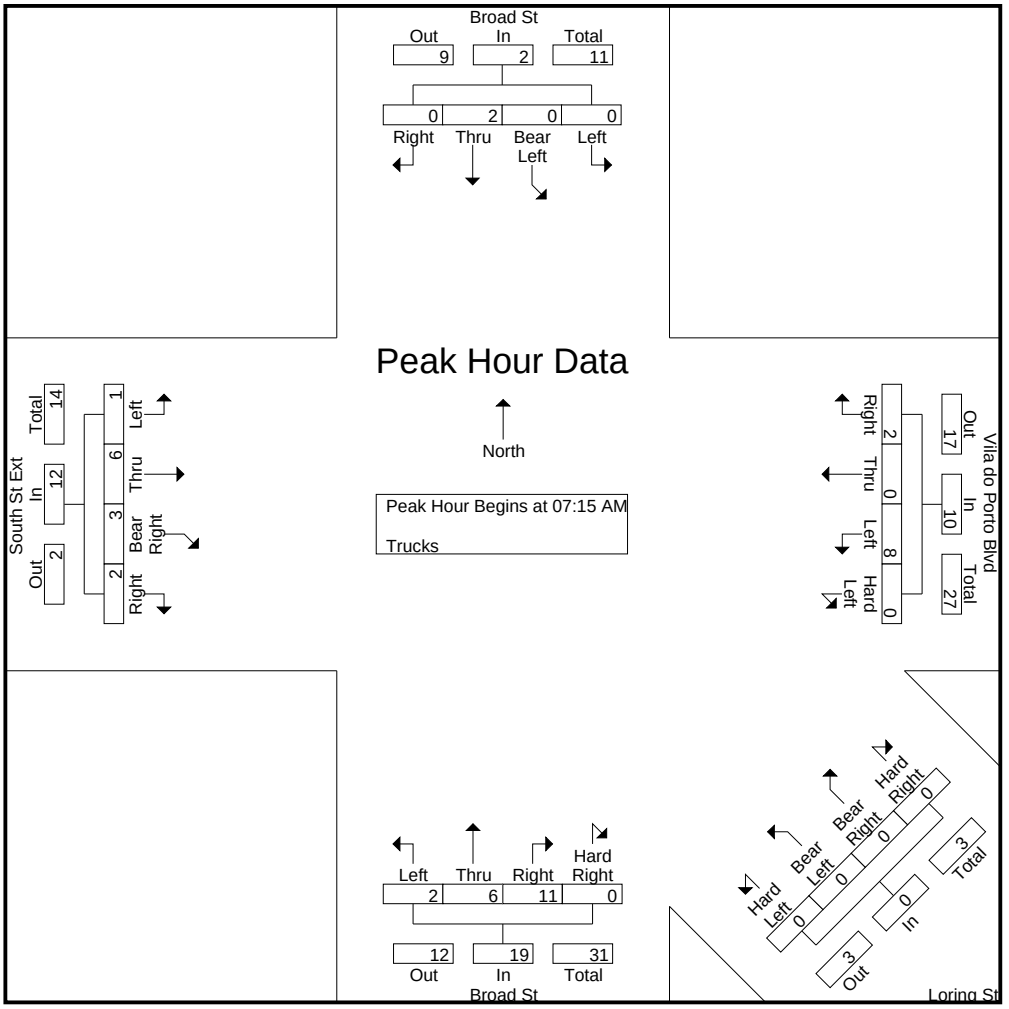
	Broad St From North					Vila do Porto Blvd From East					Loring St From Southeast					Broad St From South					South St Ext From West					
Start Time	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Left	Thru	Bear Right	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:15 AM																										
07:15 AM	0	0	0	0	0	0	**3**	0	0	3	0	0	0	0	0	0	**3**	**5**	0	**8**	**1**	1	**1**	**1**	**4**	**15**
07:30 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	3	2	0	5	0	**3**	0	0	3	10
07:45 AM	0	0	**1**	0	**1**	0	3	0	**1**	**4**	0	0	0	0	0	0	0	2	0	2	0	1	1	0	2	9
08:00 AM	0	0	1	0	1	0	0	0	1	1	0	0	0	0	0	**2**	0	2	0	4	0	1	1	1	3	9
Total Volume	0	0	2	0	2	0	8	0	2	10	0	0	0	0	0	2	6	11	0	19	1	6	3	2	12	43
% App. Total	0	0	100	0		0	80	0	20		0	0	0	0		10.5	31.6	57.9	0		8.3	50	25	16.7		
PHF	.000	.000	.500	.000	.500	.000	.667	.000	.500	.625	.000	.000	.000	.000	.000	.250	.500	.550	.000	.594	.250	.500	.750	.500	.750	.717

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

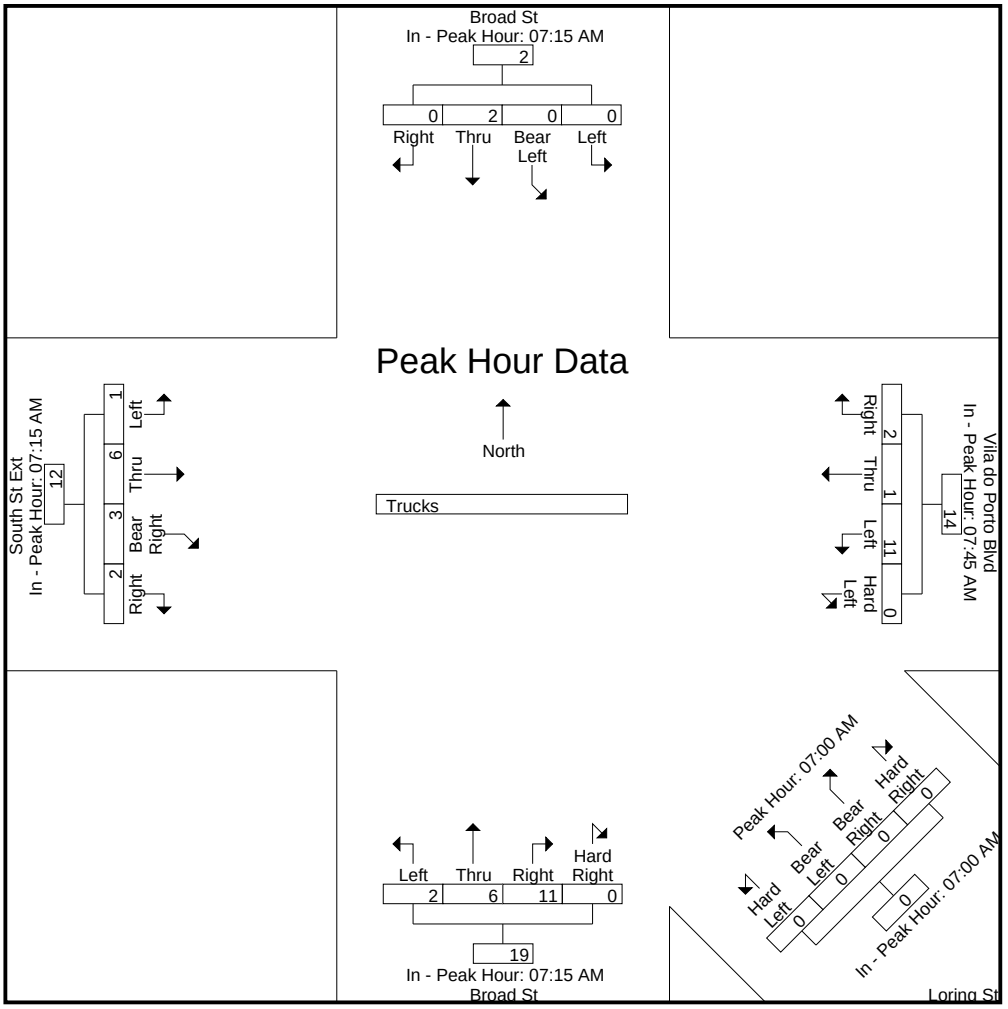
	07:15 AM					07:45 AM					07:00 AM					07:15 AM					07:15 AM				
+0 mins.	0	0	0	0	0	0	3	0	**1**	4	0	0	0	0	0	0	**3**	**5**	0	**8**	**1**	1	**1**	**1**	**4**
+15 mins.	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	3	2	0	5	0	**3**	0	0	3
+30 mins.	0	0	**1**	0	**1**	0	**4**	**1**	0	**5**	0	0	0	0	0	0	0	2	0	2	0	1	1	0	2
+45 mins.	0	0	1	0	1	0	4	0	0	4	0	0	0	0	0	**2**	0	2	0	4	0	1	1	1	3
Total Volume	0	0	2	0	2	0	11	1	2	14	0	0	0	0	0	2	6	11	0	19	1	6	3	2	12
% App. Total	0	0	100	0		0	78.6	7.1	14.3		0	0	0	0		10.5	31.6	57.9	0		8.3	50	25	16.7	
PHF	.000	.000	.500	.000	.500	.000	.688	.250	.500	.700	.000	.000	.000	.000	.000	.250	.500	.550	.000	.594	.250	.500	.750	.500	.750

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023

Groups Printed- Bikes Peds

	Broad St From North					Vila do Porto Blvd From East					Loring St From Southeast					Broad St From South					South St Ext From West							
Start Time	Left	Bear Left	Thru	Right	Peds	Hard Left	Left	Thru	Right	Peds	Hard Left	Bear Left	Bear Right	Hard Right	Peds	Left	Thru	Right	Hard Right	Peds	Left	Thru	Bear Right	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	3
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	2
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	2
Grand Total	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	5	0	5
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0				
Total %																										100	0	

	Broad St From North					Vila do Porto Blvd From East					Loring St From Southeast					Broad St From South					South St Ext From West						
Start Time	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Left	Thru	Bear Right	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:00 AM																										
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
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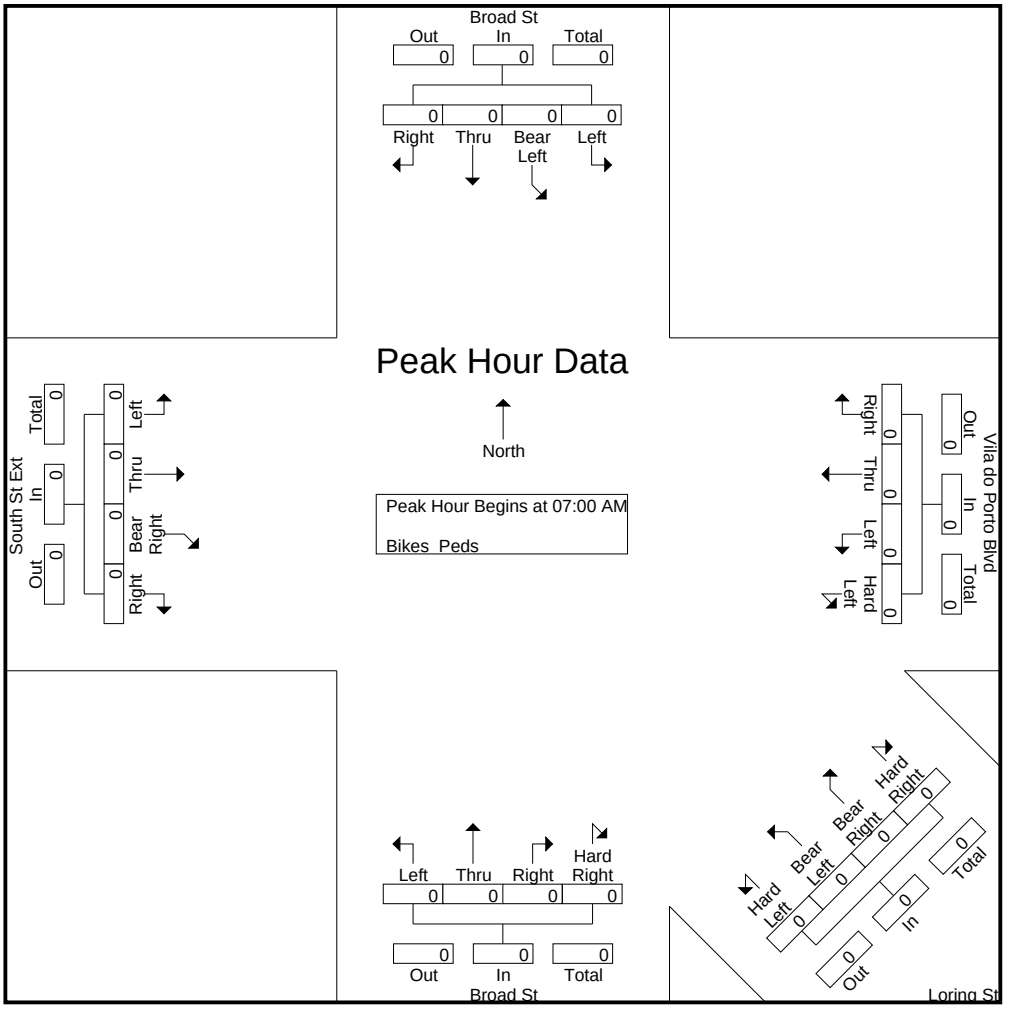
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

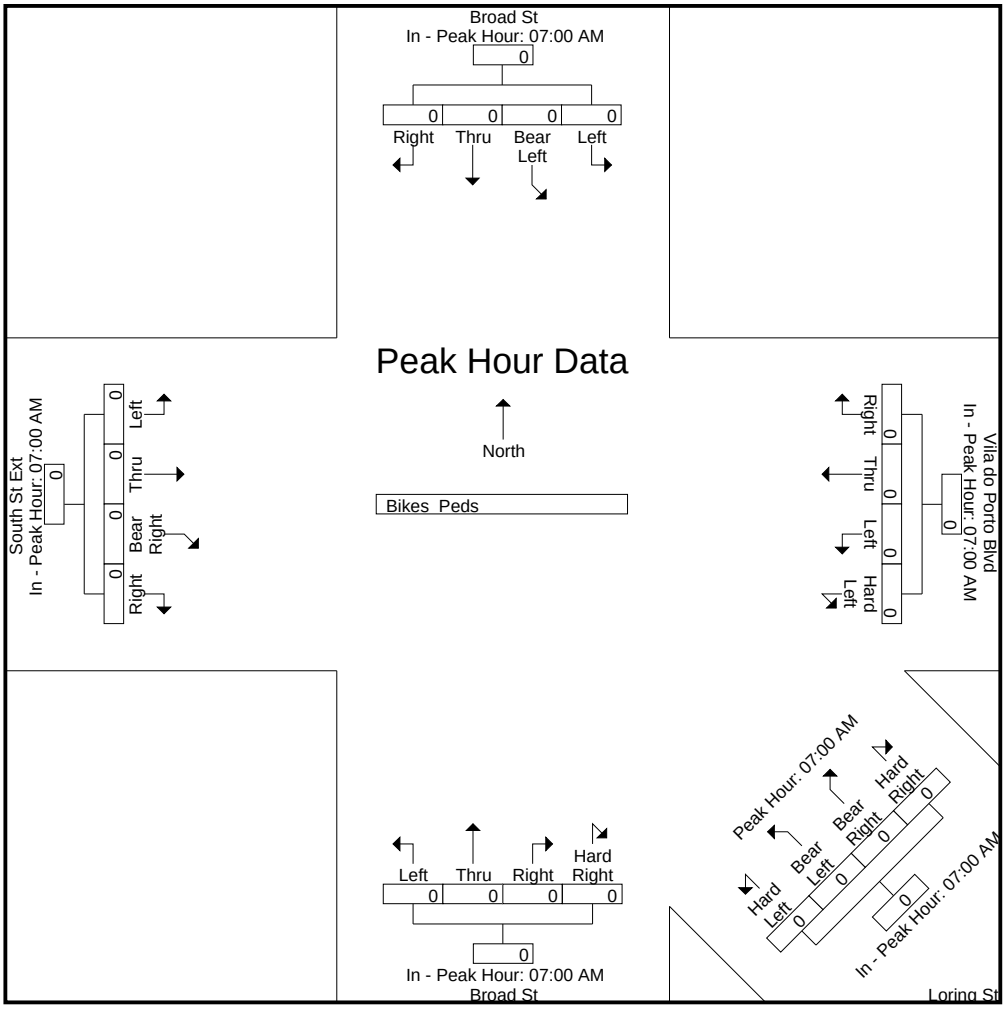
	07:00 AM					07:00 AM					07:00 AM					07:00 AM					07:00 AM				
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 1

Groups Printed- Cars - Trucks

	Broad St From North				Vila do Porto Blvd From East				Loring St From Southeast				Broad St From South				South St Ext From West				
Start Time	Left	Bear Left	Thru	Right	Hard Left	Left	Thru	Right	Hard Left	Bear Left	Bear Right	Hard Right	Left	Thru	Right	Hard Right	Left	Thru	Bear Right	Right	Int. Total
04:00 PM	0	3	50	3	0	48	31	5	0	0	0	0	16	76	14	0	3	26	19	35	329
04:15 PM	1	4	49	1	0	36	44	9	0	0	1	0	18	64	21	0	8	18	8	43	325
04:30 PM	0	4	48	8	2	50	38	12	0	0	0	0	11	69	14	2	7	32	13	40	350
04:45 PM	0	4	65	11	1	27	32	6	0	0	0	0	27	64	13	1	4	31	12	35	333
Total	1	15	212	23	3	161	145	32	0	0	1	0	72	273	62	3	22	107	52	153	1337
05:00 PM	1	1	47	7	1	38	55	10	0	0	0	0	15	62	15	1	15	46	17	37	368
05:15 PM	2	3	43	8	0	41	32	10	0	0	0	0	14	52	8	2	11	21	11	29	287
05:30 PM	0	2	55	6	0	36	46	8	0	0	0	1	12	64	14	4	11	37	11	36	343
05:45 PM	0	3	38	5	1	43	27	13	0	0	0	1	14	81	17	2	13	28	18	31	335
Total	3	9	183	26	2	158	160	41	0	0	0	2	55	259	54	9	50	132	57	133	1333
Grand Total	4	24	395	49	5	319	305	73	0	0	1	2	127	532	116	12	72	239	109	286	2670
Apprch %	0.8	5.1	83.7	10.4	0.7	45.4	43.4	10.4	0	0	33.3	66.7	16.1	67.6	14.7	1.5	10.2	33.9	15.4	40.5	
Total %	0.1	0.9	14.8	1.8	0.2	11.9	11.4	2.7	0	0	0	0.1	4.8	19.9	4.3	0.4	2.7	9	4.1	10.7	
Cars	4	24	393	49	5	313	305	73	0	0	1	2	125	529	113	12	71	239	109	286	2653
% Cars	100	100	99.5	100	100	98.1	100	100	0	0	100	100	98.4	99.4	97.4	100	98.6	100	100	100	99.4
Trucks	0	0	2	0	0	6	0	0	0	0	0	0	2	3	3	0	1	0	0	0	17
% Trucks	0	0	0.5	0	0	1.9	0	0	0	0	0	0	1.6	0.6	2.6	0	1.4	0	0	0	0.6

	Broad St From North					Vila do Porto Blvd From East					Loring St From Southeast					Broad St From South					South St Ext From West					
Start Time	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Left	Thru	Bear Right	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:15 PM																										
04:15 PM	**1**	**4**	49	1	55	0	36	44	9	89	0	0	**1**	0	**1**	18	64	**21**	0	103	8	18	8	**43**	77	325
04:30 PM	0	4	48	8	60	**2**	**50**	38	**12**	102	0	0	0	0	0	11	**69**	14	**2**	96	7	32	13	40	92	350
04:45 PM	0	4	**65**	**11**	**80**	1	27	32	6	66	0	0	0	0	0	**27**	64	13	1	**105**	4	31	12	35	82	333
05:00 PM	1	1	47	7	56	1	38	**55**	10	**104**	0	0	0	0	0	15	62	15	1	93	**15**	**46**	**17**	37	**115**	**368**
Total Volume	2	13	209	27	251	4	151	169	37	361	0	0	1	0	1	71	259	63	4	397	34	127	50	155	366	1376
% App. Total	0.8	5.2	83.3	10.8		1.1	41.8	46.8	10.2		0	0	100	0		17.9	65.2	15.9	1		9.3	34.7	13.7	42.3		
PHF	.500	.813	.804	.614	.784	.500	.755	.768	.771	.868	.000	.000	.250	.000	.250	.657	.938	.750	.500	.945	.567	.690	.735	.901	.796	.935
Cars	2	13	208	27	250	4	147	169	37	357	0	0	1	0	1	69	258	61	4	392	33	127	50	155	365	1365
% Cars	100	100	99.5	100	99.6	100	97.4	100	100	98.9	0	0	100	0	100	97.2	99.6	96.8	100	98.7	97.1	100	100	100	99.7	99.2
Trucks	0	0	1	0	1	0	4	0	0	4	0	0	0	0	0	2	1	2	0	5	1	0	0	0	1	11
% Trucks	0	0	0.5	0	0.4	0	2.6	0	0	1.1	0	0	0	0	0	2.8	0.4	3.2	0	1.3	2.9	0	0	0	0.3	0.8

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
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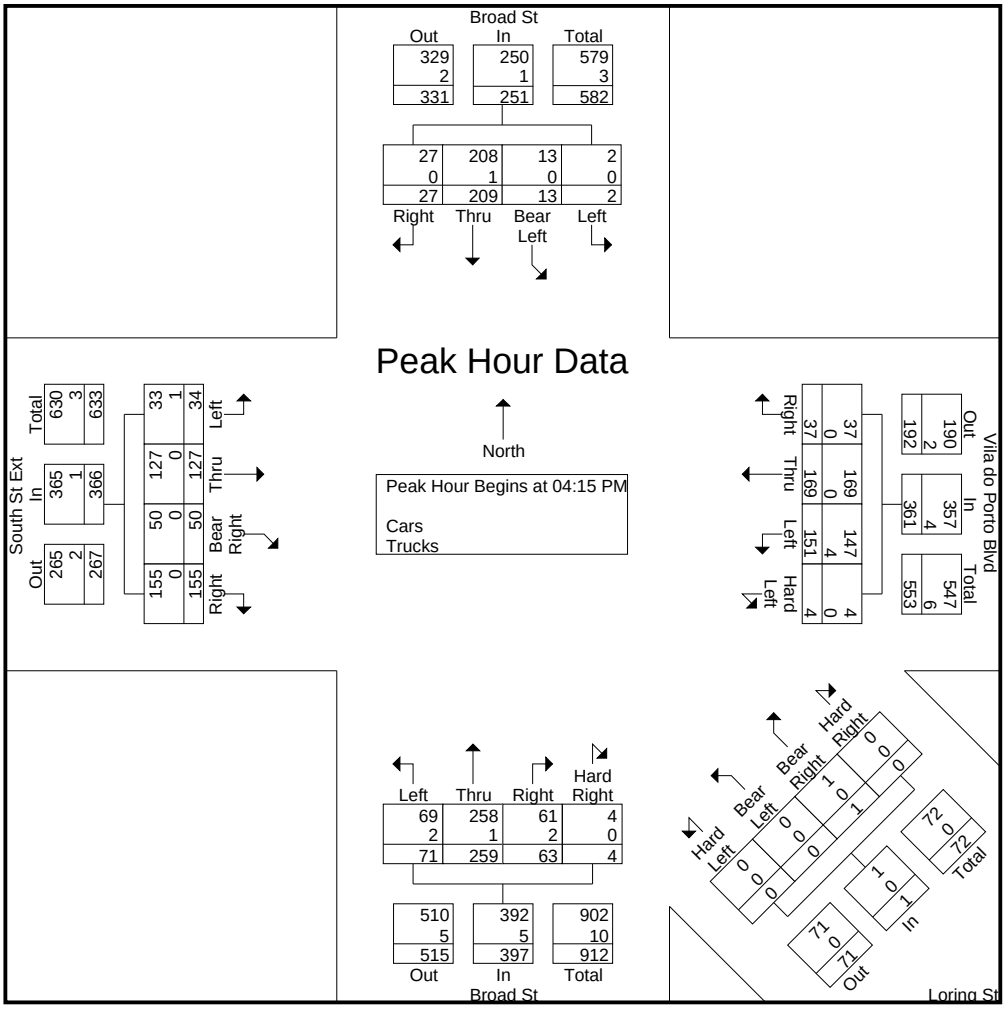


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

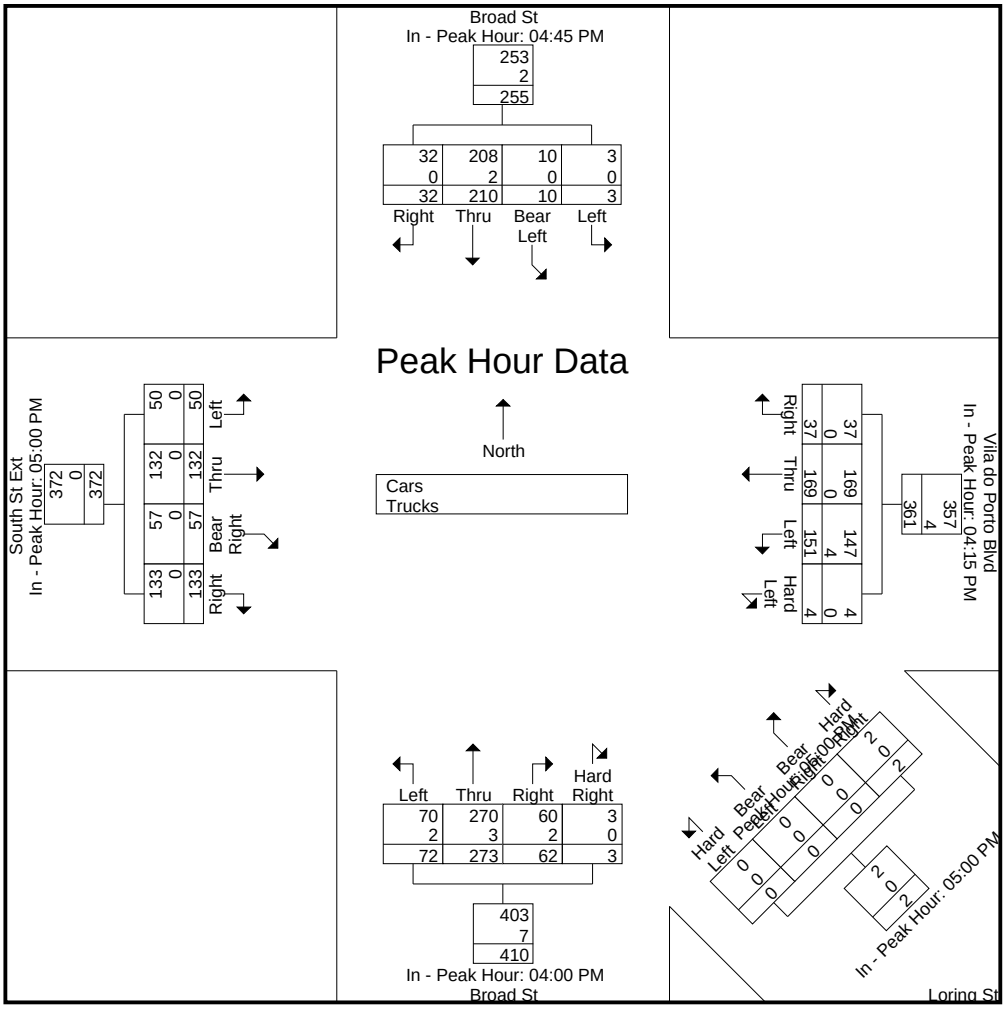
	04:45 PM					04:15 PM					05:00 PM					04:00 PM					05:00 PM				
+0 mins.	0	**4**	**65**	**11**	**80**	0	36	44	9	89	0	0	0	0	0	16	**76**	14	0	**106**	**15**	**46**	17	**37**	**115**
+15 mins.	1	1	47	7	56	**2**	**50**	38	**12**	102	0	0	0	0	0	18	64	**21**	0	103	11	21	11	29	72
+30 mins.	**2**	3	43	8	56	1	27	32	6	66	0	0	0	**1**	**1**	11	69	14	**2**	96	11	37	11	36	95
+45 mins.	0	2	55	6	63	1	38	**55**	10	**104**	0	0	0	1	1	**27**	64	13	1	105	13	28	**18**	31	90
Total Volume	3	10	210	32	255	4	151	169	37	361	0	0	0	2	2	72	273	62	3	410	50	132	57	133	372
% App. Total	1.2	3.9	82.4	12.5		1.1	41.8	46.8	10.2		0	0	0	100		17.6	66.6	15.1	0.7		13.4	35.5	15.3	35.8	
PHF	.375	.625	.808	.727	.797	.500	.755	.768	.771	.868	.000	.000	.000	.500	.500	.667	.898	.738	.375	.967	.833	.717	.792	.899	.809
Cars	3	10	208	32	253	4	147	169	37	357	0	0	0	2	2	70	270	60	3	403	50	132	57	133	372
% Cars	100	100	99	100	99.2	100	97.4	100	100	98.9	0	0	0	100	100	97.2	98.9	96.8	100	98.3	100	100	100	100	100
Trucks	0	0	2	0	2	0	4	0	0	4	0	0	0	0	0	2	3	2	0	7	0	0	0	0	0
% Trucks	0	0	1	0	0.8	0	2.6	0	0	1.1	0	0	0	0	0	2.8	1.1	3.2	0	1.7	0	0	0	0	0

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 4

Groups Printed- Cars

	Broad St From North				Vila do Porto Blvd From East				Loring St From Southeast				Broad St From South				South St Ext From West				
Start Time	Left	Bear Left	Thru	Right	Hard Left	Left	Thru	Right	Hard Left	Bear Left	Bear Right	Hard Right	Left	Thru	Right	Hard Right	Left	Thru	Bear Right	Right	Int. Total
04:00 PM	0	3	50	3	0	47	31	5	0	0	0	0	16	74	13	0	3	26	19	35	325
04:15 PM	1	4	49	1	0	35	44	9	0	0	1	0	17	63	21	0	7	18	8	43	321
04:30 PM	0	4	48	8	2	48	38	12	0	0	0	0	11	69	14	2	7	32	13	40	348
04:45 PM	0	4	65	11	1	27	32	6	0	0	0	0	26	64	12	1	4	31	12	35	331
Total	1	15	212	23	3	157	145	32	0	0	1	0	70	270	60	3	21	107	52	153	1325
05:00 PM	1	1	46	7	1	37	55	10	0	0	0	0	15	62	14	1	15	46	17	37	365
05:15 PM	2	3	43	8	0	41	32	10	0	0	0	0	14	52	8	2	11	21	11	29	287
05:30 PM	0	2	54	6	0	36	46	8	0	0	0	1	12	64	14	4	11	37	11	36	342
05:45 PM	0	3	38	5	1	42	27	13	0	0	0	1	14	81	17	2	13	28	18	31	334
Total	3	9	181	26	2	156	160	41	0	0	0	2	55	259	53	9	50	132	57	133	1328
Grand Total	4	24	393	49	5	313	305	73	0	0	1	2	125	529	113	12	71	239	109	286	2653
Apprch %	0.9	5.1	83.6	10.4	0.7	45	43.8	10.5	0	0	33.3	66.7	16	67.9	14.5	1.5	10.1	33.9	15.5	40.6	
Total %	0.2	0.9	14.8	1.8	0.2	11.8	11.5	2.8	0	0	0	0.1	4.7	19.9	4.3	0.5	2.7	9	4.1	10.8	

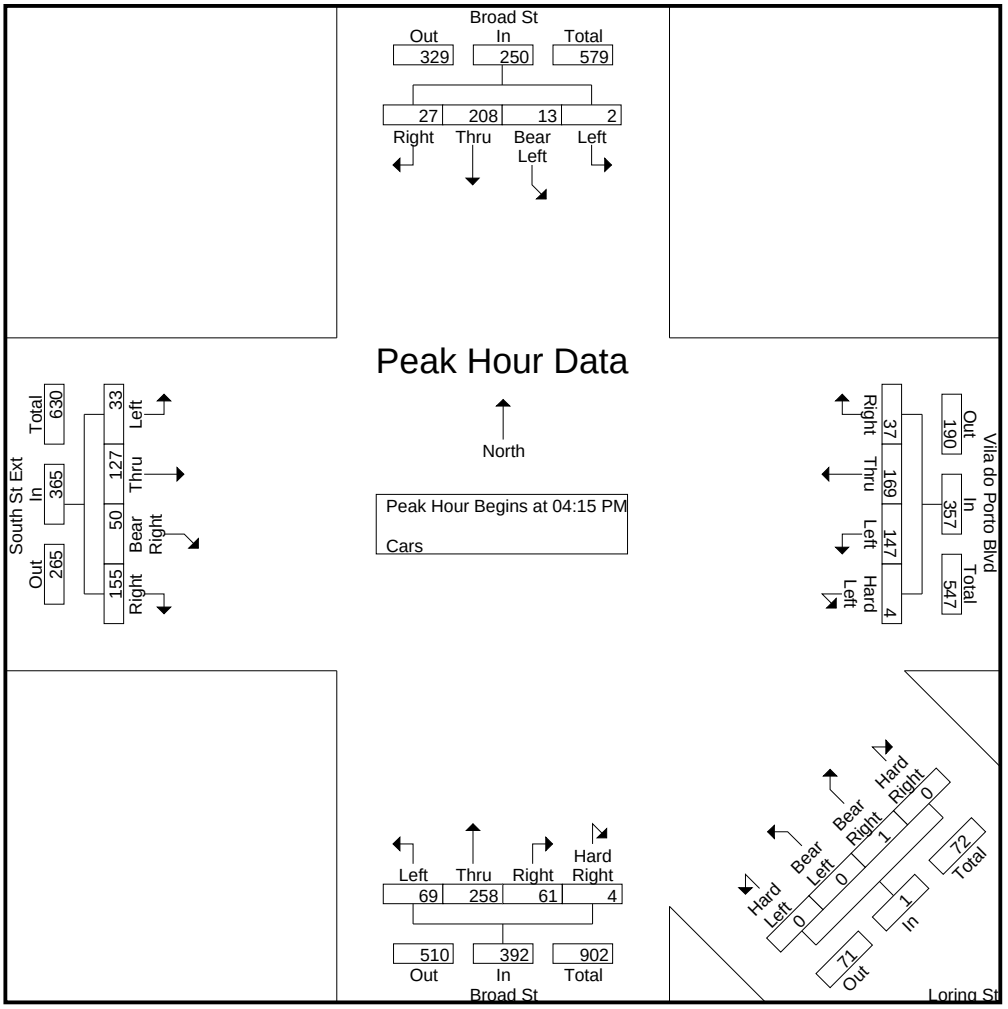
	Broad St From North					Vila do Porto Blvd From East					Loring St From Southeast					Broad St From South					South St Ext From West					
Start Time	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Left	Thru	Bear Right	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:15 PM																										
04:15 PM	**1**	**4**	49	1	55	0	35	44	9	88	0	0	**1**	0	**1**	17	63	**21**	0	101	7	18	8	**43**	76	321
04:30 PM	0	4	48	8	60	**2**	**48**	38	**12**	100	0	0	0	0	0	11	**69**	14	**2**	96	7	32	13	40	92	348
04:45 PM	0	4	**65**	**11**	**80**	1	27	32	6	66	0	0	0	0	0	**26**	64	12	1	**103**	4	31	12	35	82	331
05:00 PM	1	1	46	7	55	1	37	**55**	10	**103**	0	0	0	0	0	15	62	14	1	92	**15**	**46**	**17**	37	**115**	**365**
Total Volume	2	13	208	27	250	4	147	169	37	357	0	0	1	0	1	69	258	61	4	392	33	127	50	155	365	1365
% App. Total	0.8	5.2	83.2	10.8		1.1	41.2	47.3	10.4		0	0	100	0		17.6	65.8	15.6	1		9	34.8	13.7	42.5		
PHF	.500	.813	.800	.614	.781	.500	.766	.768	.771	.867	.000	.000	.250	.000	.250	.663	.935	.726	.500	.951	.550	.690	.735	.901	.793	.935

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

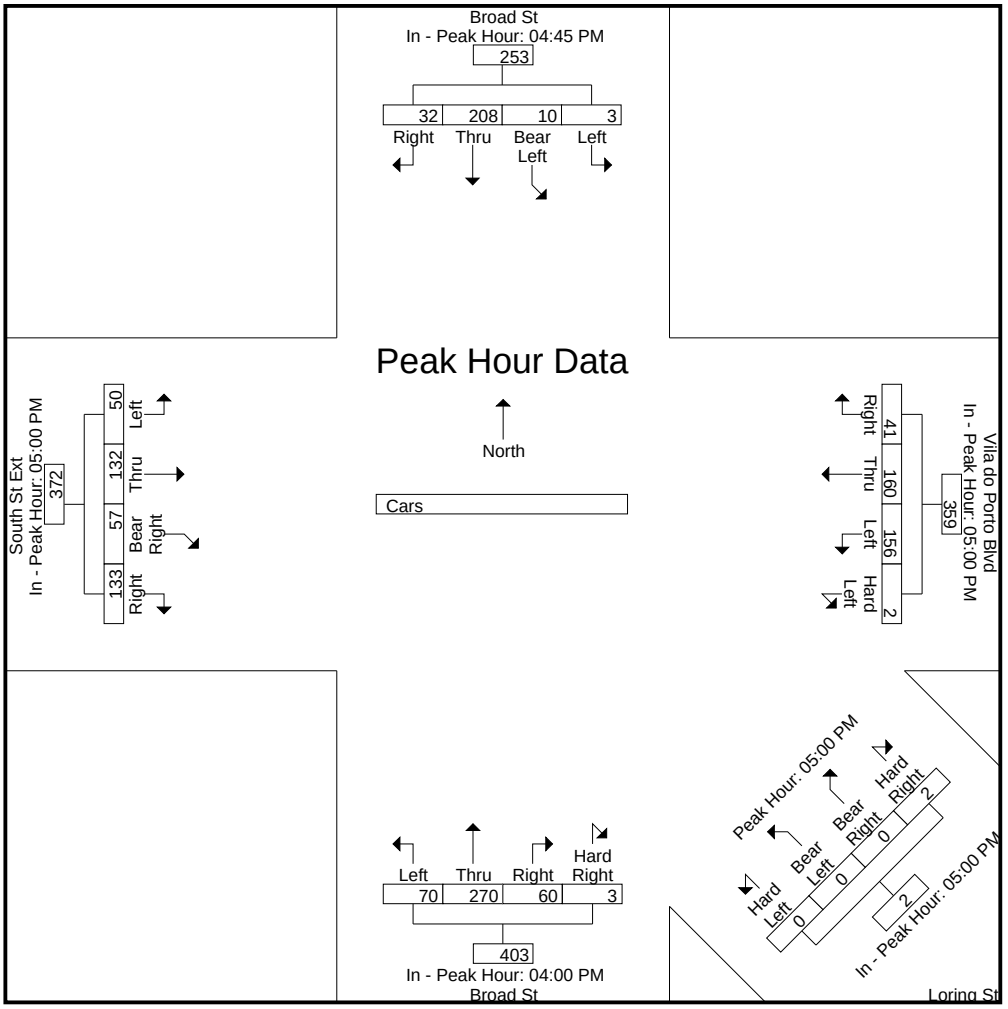
	04:45 PM					05:00 PM					05:00 PM					04:00 PM					05:00 PM				
+0 mins.	0	**4**	**65**	**11**	**80**	**1**	37	**55**	10	**103**	0	0	0	0	0	16	**74**	13	0	**103**	**15**	**46**	17	**37**	**115**
+15 mins.	1	1	46	7	55	0	41	32	10	83	0	0	0	0	0	17	63	**21**	0	101	11	21	11	29	72
+30 mins.	**2**	3	43	8	56	0	36	46	8	90	0	0	0	**1**	**1**	11	69	14	**2**	96	11	37	11	36	95
+45 mins.	0	2	54	6	62	1	**42**	27	**13**	83	0	0	0	1	1	**26**	64	12	1	103	13	28	**18**	31	90
Total Volume	3	10	208	32	253	2	156	160	41	359	0	0	0	2	2	70	270	60	3	403	50	132	57	133	372
% App. Total	1.2	4	82.2	12.6		0.6	43.5	44.6	11.4		0	0	0	100		17.4	67	14.9	0.7		13.4	35.5	15.3	35.8	
PHF	.375	.625	.800	.727	.791	.500	.929	.727	.788	.871	.000	.000	.000	.500	.500	.673	.912	.714	.375	.978	.833	.717	.792	.899	.809

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 7

Groups Printed- Trucks

	Broad St From North				Vila do Porto Blvd From East				Loring St From Southeast				Broad St From South				South St Ext From West				
Start Time	Left	Bear Left	Thru	Right	Hard Left	Left	Thru	Right	Hard Left	Bear Left	Bear Right	Hard Right	Left	Thru	Right	Hard Right	Left	Thru	Bear Right	Right	Int. Total
04:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	1	0	0	0	0	0	4
04:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	1	0	0	0	4
04:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
Total	0	0	0	0	0	4	0	0	0	0	0	0	2	3	2	0	1	0	0	0	12
05:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	2	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	5
Grand Total	0	0	2	0	0	6	0	0	0	0	0	0	2	3	3	0	1	0	0	0	17
Apprch %	0	0	100	0	0	100	0	0	0	0	0	0	25	37.5	37.5	0	100	0	0	0	
Total %	0	0	11.8	0	0	35.3	0	0	0	0	0	0	11.8	17.6	17.6	0	5.9	0	0	0	

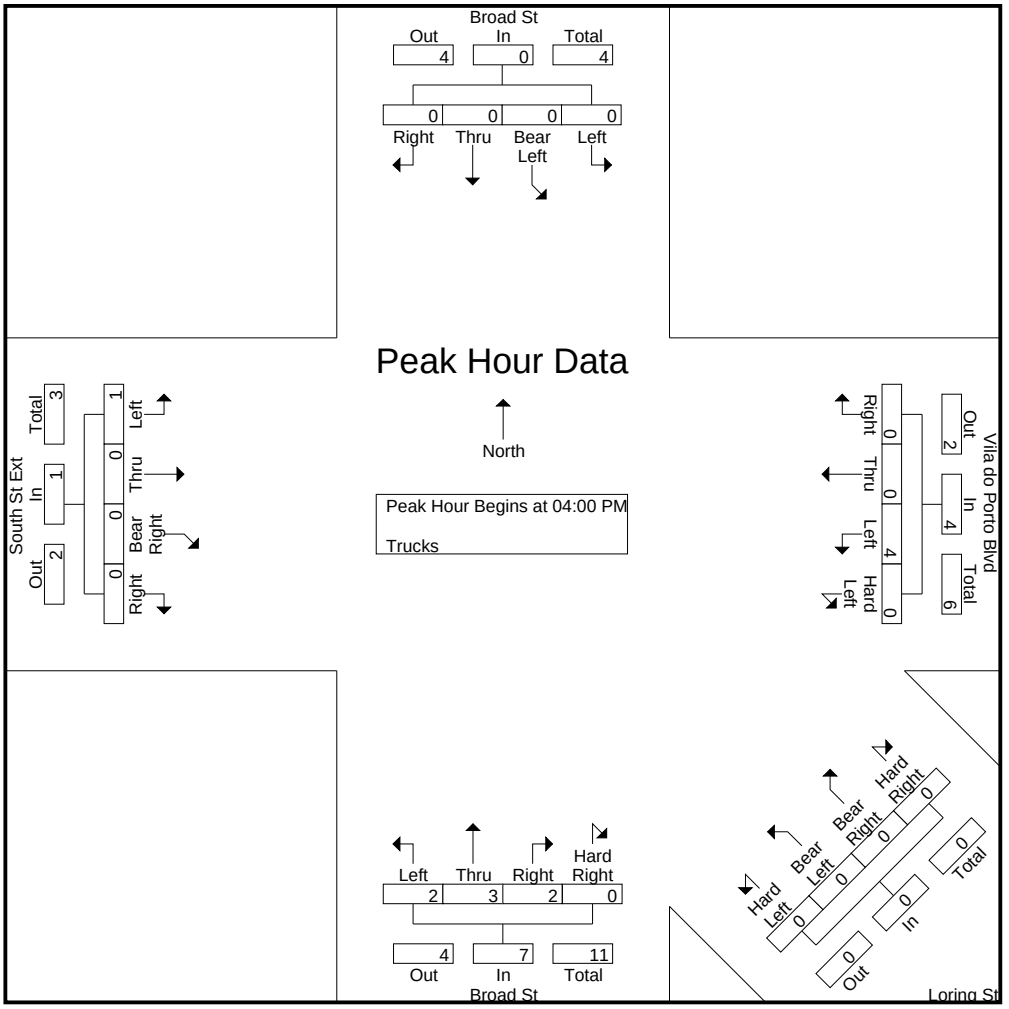
	Broad St From North					Vila do Porto Blvd From East					Loring St From Southeast					Broad St From South					South St Ext From West					
Start Time	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Left	Thru	Bear Right	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:00 PM																										
04:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	**2**	**1**	0	**3**	0	0	0	0	0	**4**
04:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	**1**	1	0	0	2	**1**	0	0	0	**1**	4
04:30 PM	0	0	0	0	0	0	**2**	0	0	**2**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	2
Total Volume	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	2	3	2	0	7	1	0	0	0	1	12
% App. Total	0	0	0	0		0	100	0	0		0	0	0	0		28.6	42.9	28.6	0		100	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.500	.000	.000	.500	.000	.000	.000	.000	.000	.500	.375	.500	.000	.583	.250	.000	.000	.000	.250	.750

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

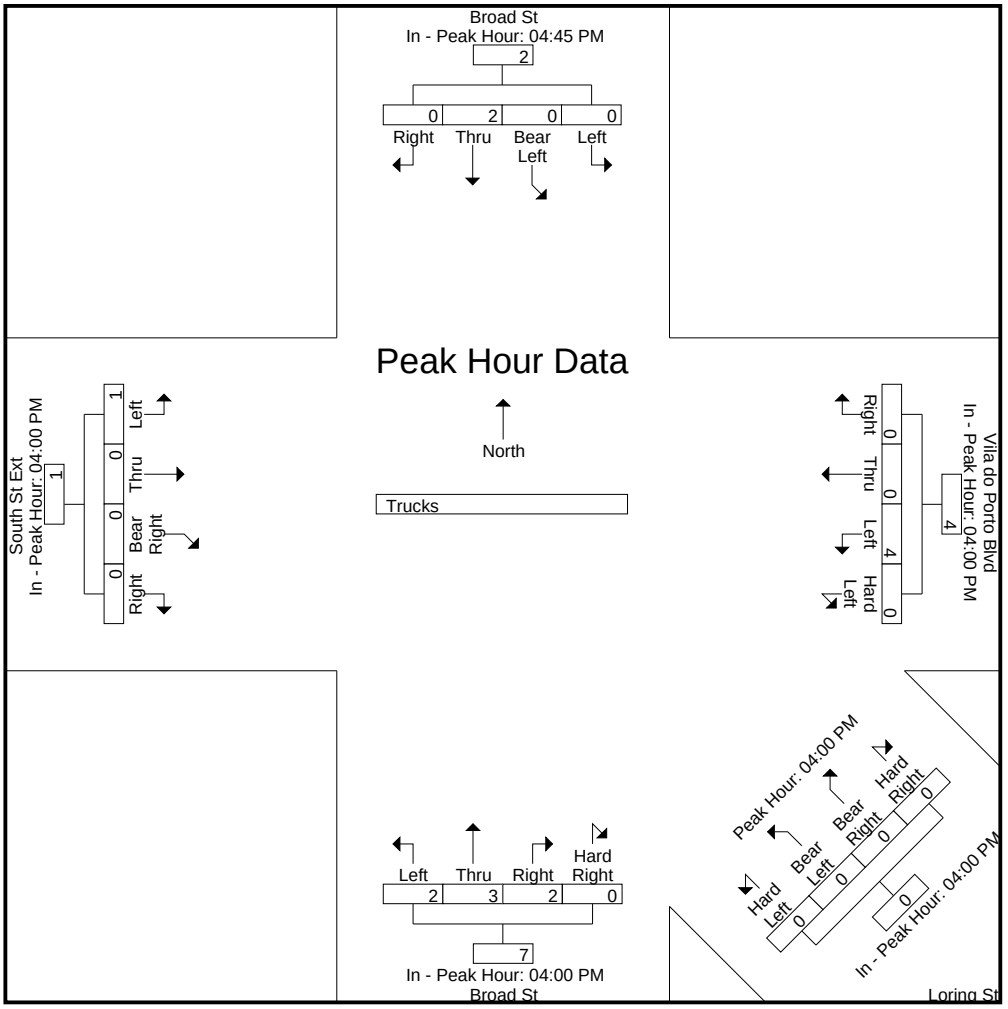
	04:45 PM					04:00 PM					04:00 PM					04:00 PM					04:00 PM				
+0 mins.	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	**2**	**1**	0	**3**	0	0	0	0	0
+15 mins.	0	0	**1**	0	**1**	0	1	0	0	1	0	0	0	0	0	**1**	1	0	0	2	**1**	0	0	0	**1**
+30 mins.	0	0	0	0	0	0	**2**	0	0	**2**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0
Total Volume	0	0	2	0	2	0	4	0	0	4	0	0	0	0	0	2	3	2	0	7	1	0	0	0	1
% App. Total	0	0	100	0		0	100	0	0		0	0	0	0		28.6	42.9	28.6	0		100	0	0	0	
PHF	.000	.000	.500	.000	.500	.000	.500	.000	.000	.500	.000	.000	.000	.000	.000	.500	.375	.500	.000	.583	.250	.000	.000	.000	.250

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023

Groups Printed- Bikes Peds

	Broad St From North					Vila do Porto Blvd From East					Loring St From Southeast					Broad St From South					South St Ext From West							
Start Time	Left	Bear Left	Thru	Right	Peds	Hard Left	Left	Thru	Right	Peds	Hard Left	Bear Left	Bear Right	Hard Right	Peds	Left	Thru	Right	Hard Right	Peds	Left	Thru	Bear Right	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
04:15 PM	0	0	0	0	2	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	2	7	0	7
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	3	0	3
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	3	0	0	0	0	1	0	0	0	0	1	0	0	0	0	3	0	0	0	0	3	11	0	11
05:00 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1	7	0	7
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4	0	4
Total	0	0	0	0	0	0	0	0	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0	0	1	13	0	13
Grand Total	0	0	0	0	3	0	0	0	0	7	0	0	0	0	7	0	0	0	0	3	0	0	0	0	4	24	0	24
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0				
Total %																										100	0	

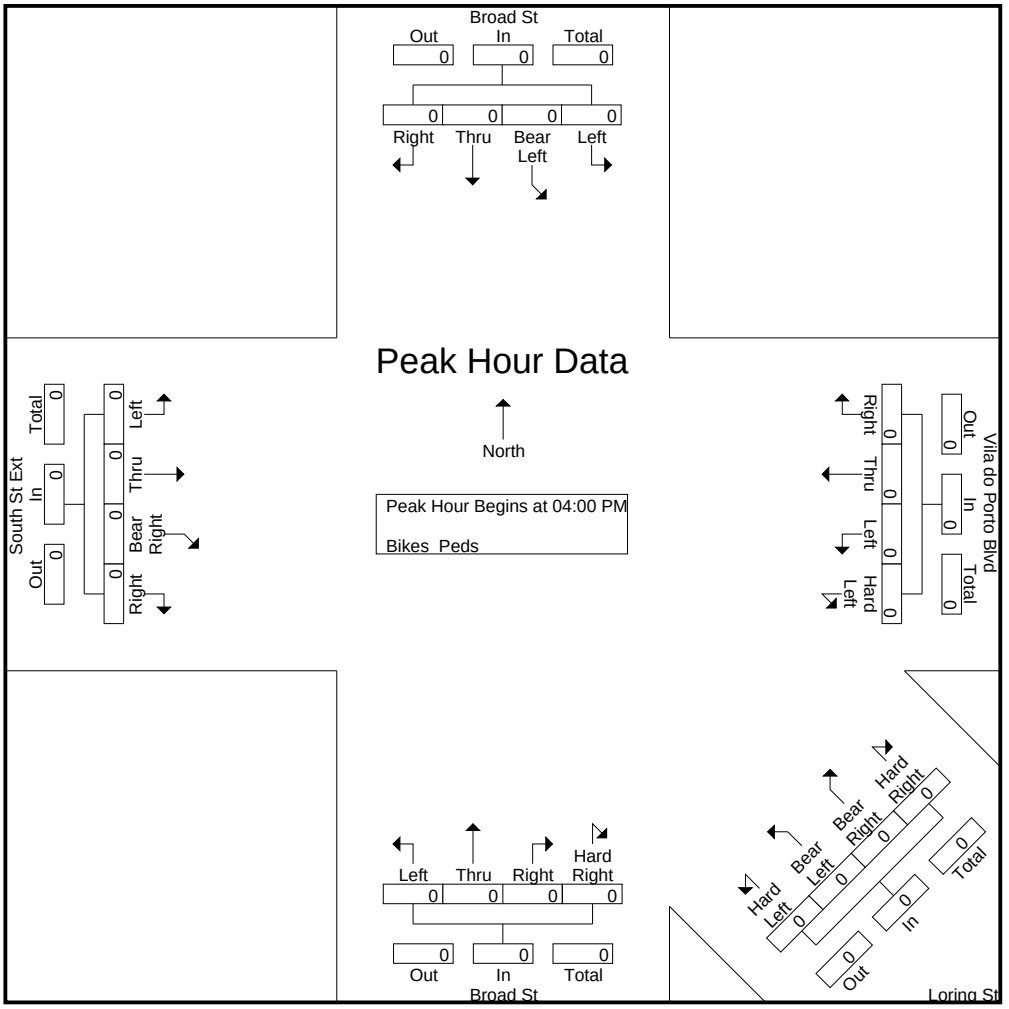
	Broad St From North					Vila do Porto Blvd From East					Loring St From Southeast					Broad St From South					South St Ext From West						
Start Time	Left	Bear Left	Thru	Right	App. Total	Hard Left	Left	Thru	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Left	Thru	Right	Hard Right	App. Total	Left	Thru	Bear Right	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:00 PM																										
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 11



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

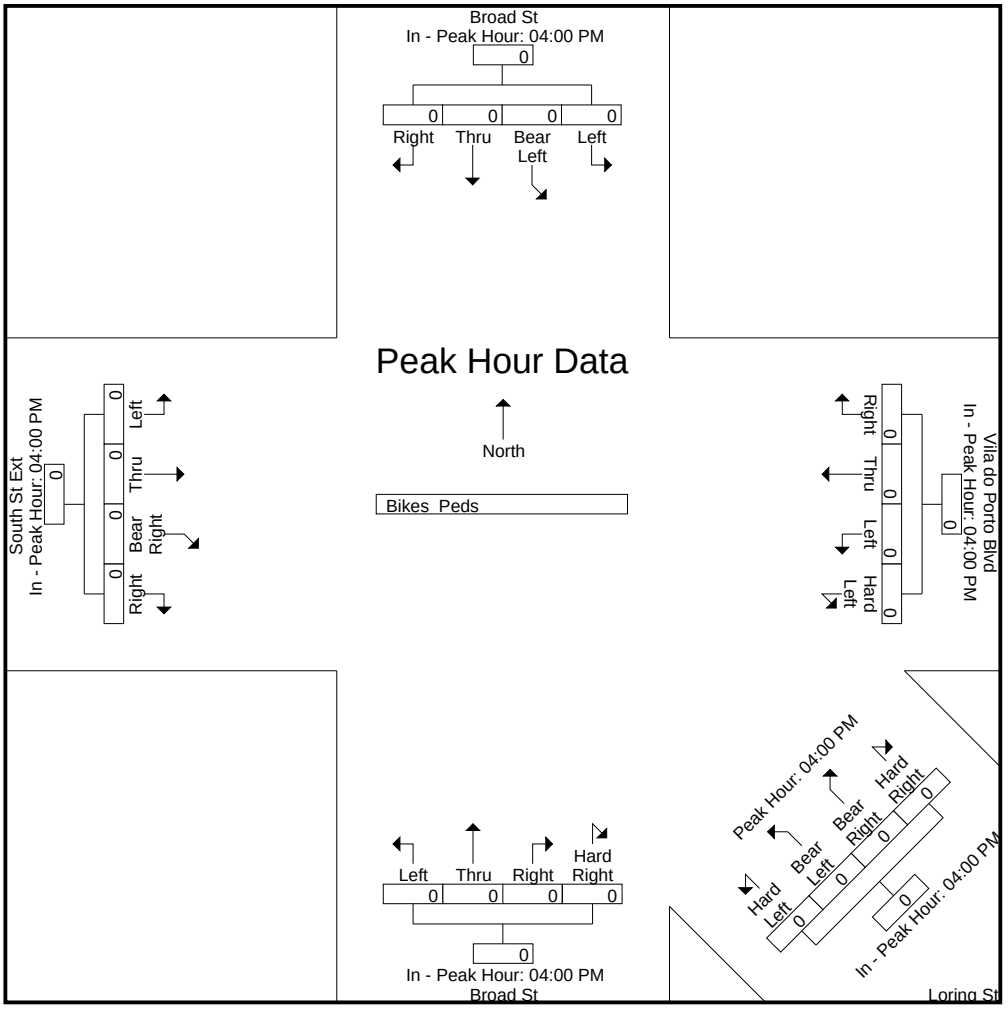
	04:00 PM					04:00 PM					04:00 PM					04:00 PM					04:00 PM				
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Broad Street
E/W Street : Vila do Porto / South St Ext
City/State : Hudson, MA
Weather : Clear

File Name : 92160001
Site Code : 92160001
Start Date : 12/6/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023

Groups Printed- Cars - Trucks

	Felton St From North			Main St From East			Washington St From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	47	33	3	75	8	24	3	58	101	352
07:15 AM	0	0	0	68	36	0	68	24	21	7	42	149	415
07:30 AM	0	0	0	39	34	0	85	13	21	3	73	90	358
07:45 AM	0	0	0	37	50	1	63	10	22	3	66	141	393
Total	0	0	0	191	153	4	291	55	88	16	239	481	1518
08:00 AM	0	0	0	36	36	2	75	10	15	1	59	113	347
08:15 AM	0	0	0	27	34	2	76	7	12	5	65	122	350
08:30 AM	0	0	0	32	44	0	79	15	22	4	57	98	351
08:45 AM	0	0	0	40	43	0	72	12	19	5	52	114	357
Total	0	0	0	135	157	4	302	44	68	15	233	447	1405
Grand Total	0	0	0	326	310	8	593	99	156	31	472	928	2923
Apprch %	0	0	0	50.6	48.1	1.2	69.9	11.7	18.4	2.2	33	64.8	
Total %	0	0	0	11.2	10.6	0.3	20.3	3.4	5.3	1.1	16.1	31.7	
Cars	0	0	0	319	281	8	576	94	151	30	450	910	2819
% Cars	0	0	0	97.9	90.6	100	97.1	94.9	96.8	96.8	95.3	98.1	96.4
Trucks	0	0	0	7	29	0	17	5	5	1	22	18	104
% Trucks	0	0	0	2.1	9.4	0	2.9	5.1	3.2	3.2	4.7	1.9	3.6

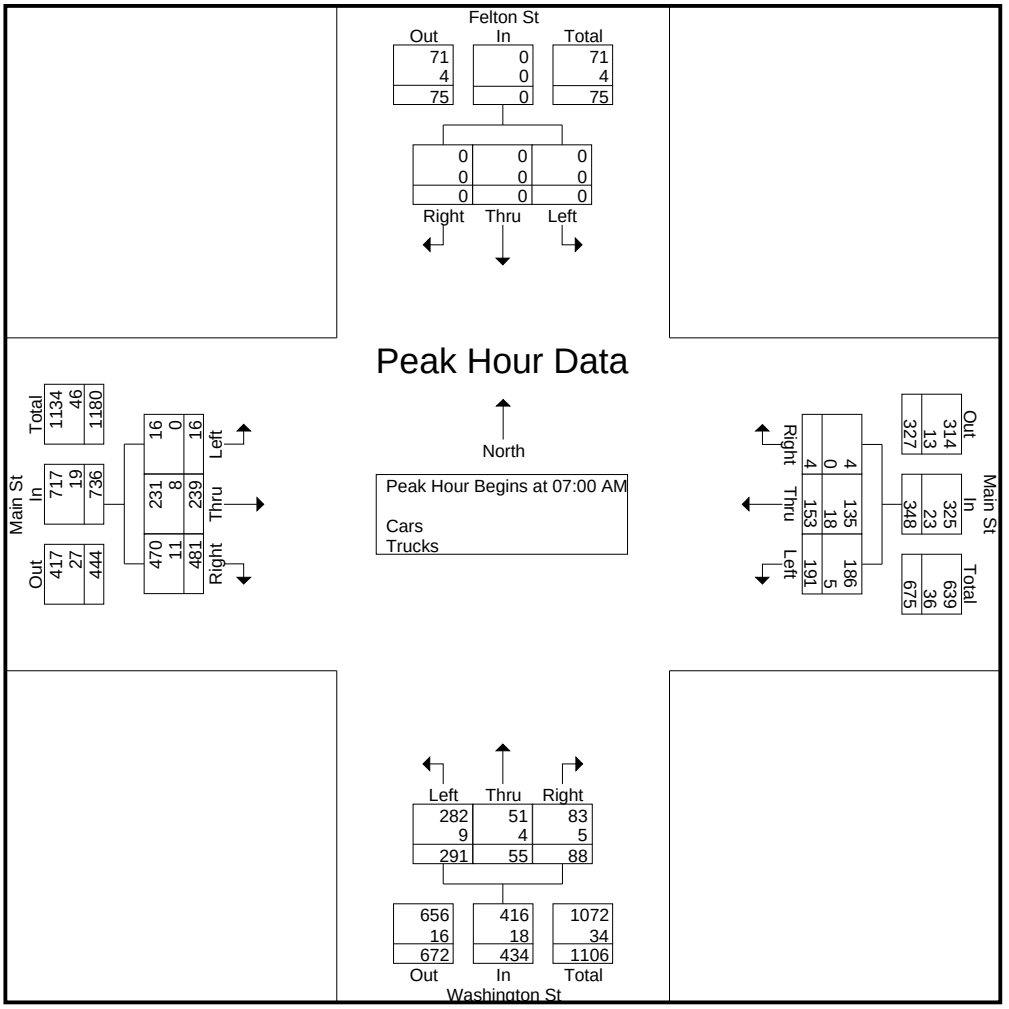
	Felton St From North				Main St From East				Washington St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	47	33	**3**	83	75	8	**24**	107	3	58	101	162	352
07:15 AM	0	0	0	0	**68**	36	0	**104**	68	**24**	21	113	**7**	42	**149**	198	**415**
07:30 AM	0	0	0	0	39	34	0	73	**85**	13	21	**119**	3	**73**	90	166	358
07:45 AM	0	0	0	0	37	**50**	1	88	63	10	22	95	3	66	141	**210**	393
Total Volume	0	0	0	0	191	153	4	348	291	55	88	434	16	239	481	736	1518
% App. Total	0	0	0		54.9	44	1.1		67.1	12.7	20.3		2.2	32.5	65.4		
PHF	.000	.000	.000	.000	.702	.765	.333	.837	.856	.573	.917	.912	.571	.818	.807	.876	.914
Cars	0	0	0	0	186	135	4	325	282	51	83	416	16	231	470	717	1458
% Cars	0	0	0	0	97.4	88.2	100	93.4	96.9	92.7	94.3	95.9	100	96.7	97.7	97.4	96.0
Trucks	0	0	0	0	5	18	0	23	9	4	5	18	0	8	11	19	60
% Trucks	0	0	0	0	2.6	11.8	0	6.6	3.1	7.3	5.7	4.1	0	3.3	2.3	2.6	4.0

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

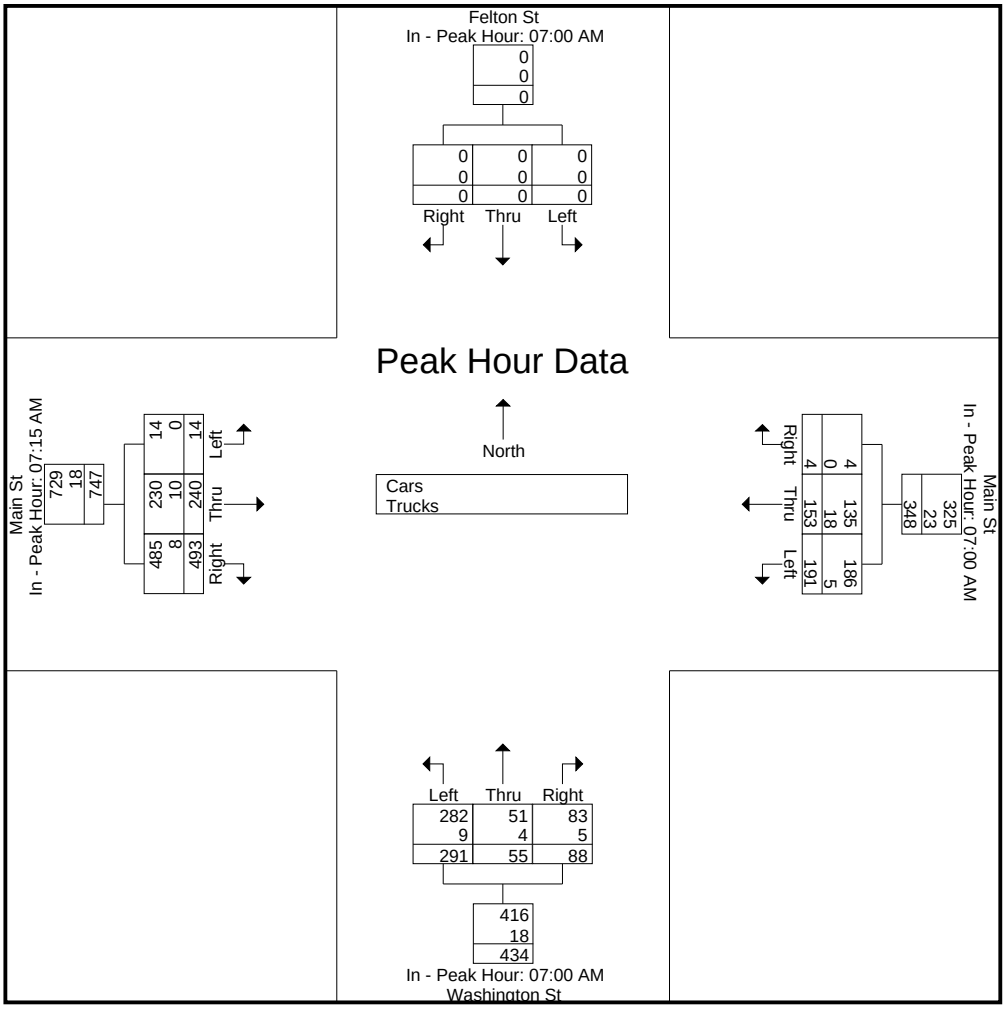
	07:00 AM				07:00 AM				07:00 AM				07:15 AM			
+0 mins.	0	0	0	0	47	33	**3**	83	75	8	**24**	107	**7**	42	**149**	198
+15 mins.	0	0	0	0	**68**	36	0	**104**	68	**24**	21	113	3	**73**	90	166
+30 mins.	0	0	0	0	39	34	0	73	**85**	13	21	**119**	3	66	141	**210**
+45 mins.	0	0	0	0	37	**50**	1	88	63	10	22	95	1	59	113	173
Total Volume	0	0	0	0	191	153	4	348	291	55	88	434	14	240	493	747
% App. Total	0	0	0		54.9	44	1.1		67.1	12.7	20.3		1.9	32.1	66	
PHF	.000	.000	.000	.000	.702	.765	.333	.837	.856	.573	.917	.912	.500	.822	.827	.889
Cars	0	0	0	0	186	135	4	325	282	51	83	416	14	230	485	729
% Cars	0	0	0	0	97.4	88.2	100	93.4	96.9	92.7	94.3	95.9	100	95.8	98.4	97.6
Trucks	0	0	0	0	5	18	0	23	9	4	5	18	0	10	8	18
% Trucks	0	0	0	0	2.6	11.8	0	6.6	3.1	7.3	5.7	4.1	0	4.2	1.6	2.4

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023

Groups Printed- Cars

	Felton St From North			Main St From East			Washington St From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	45	24	3	70	8	20	3	56	97	326
07:15 AM	0	0	0	67	34	0	67	20	20	7	40	147	402
07:30 AM	0	0	0	38	31	0	84	13	21	3	72	89	351
07:45 AM	0	0	0	36	46	1	61	10	22	3	63	137	379
Total	0	0	0	186	135	4	282	51	83	16	231	470	1458
08:00 AM	0	0	0	35	33	2	73	9	15	1	55	112	335
08:15 AM	0	0	0	27	33	2	73	7	12	5	61	118	338
08:30 AM	0	0	0	31	39	0	79	15	22	4	55	96	341
08:45 AM	0	0	0	40	41	0	69	12	19	4	48	114	347
Total	0	0	0	133	146	4	294	43	68	14	219	440	1361
Grand Total	0	0	0	319	281	8	576	94	151	30	450	910	2819
Apprch %	0	0	0	52.5	46.2	1.3	70.2	11.4	18.4	2.2	32.4	65.5	
Total %	0	0	0	11.3	10	0.3	20.4	3.3	5.4	1.1	16	32.3	

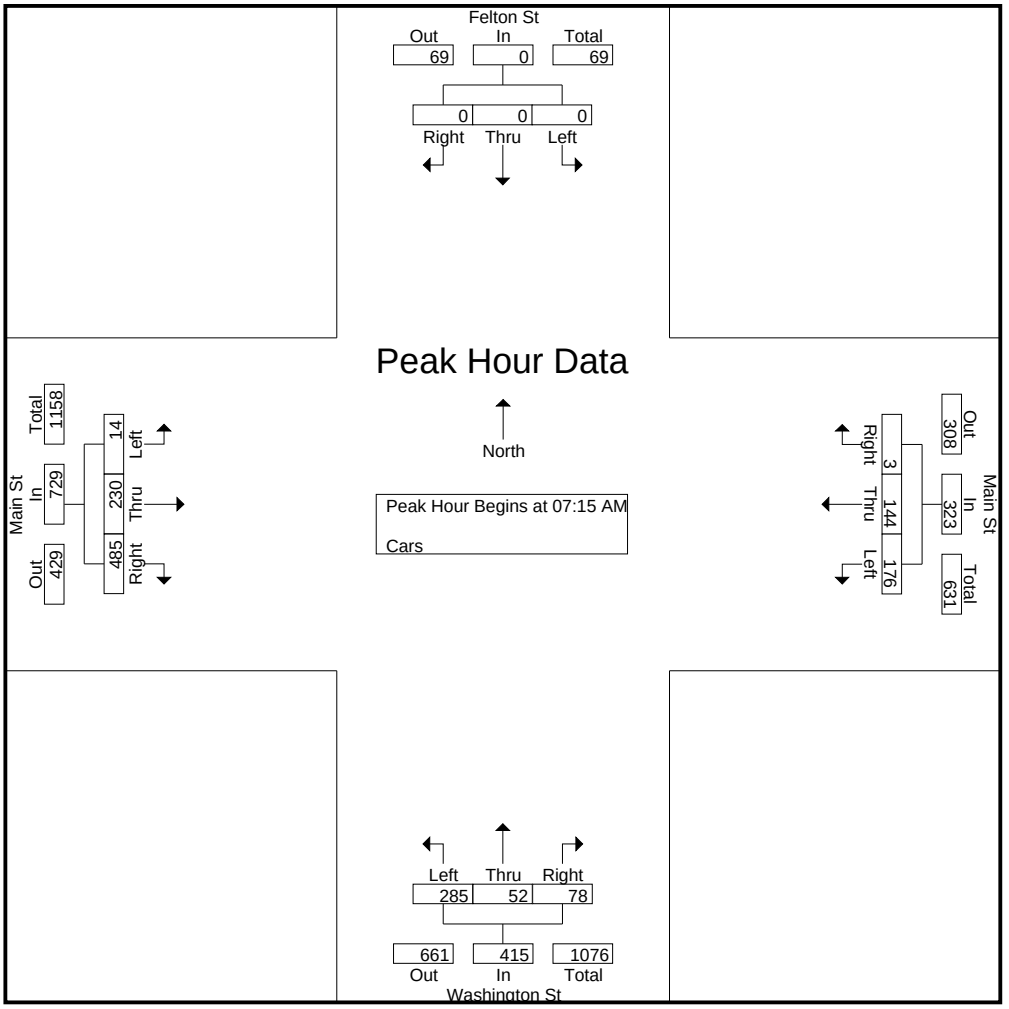
	Felton St From North				Main St From East				Washington St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	**67**	34	0	**101**	67	**20**	20	107	**7**	40	**147**	194	**402**
07:30 AM	0	0	0	0	38	31	0	69	**84**	13	21	**118**	3	**72**	89	164	351
07:45 AM	0	0	0	0	36	**46**	1	83	61	10	**22**	93	3	63	137	**203**	379
08:00 AM	0	0	0	0	35	33	**2**	70	73	9	15	97	1	55	112	168	335
Total Volume	0	0	0	0	176	144	3	323	285	52	78	415	14	230	485	729	1467
% App. Total	0	0	0		54.5	44.6	0.9		68.7	12.5	18.8		1.9	31.6	66.5		
PHF	.000	.000	.000	.000	.657	.783	.375	.800	.848	.650	.886	.879	.500	.799	.825	.898	.912

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

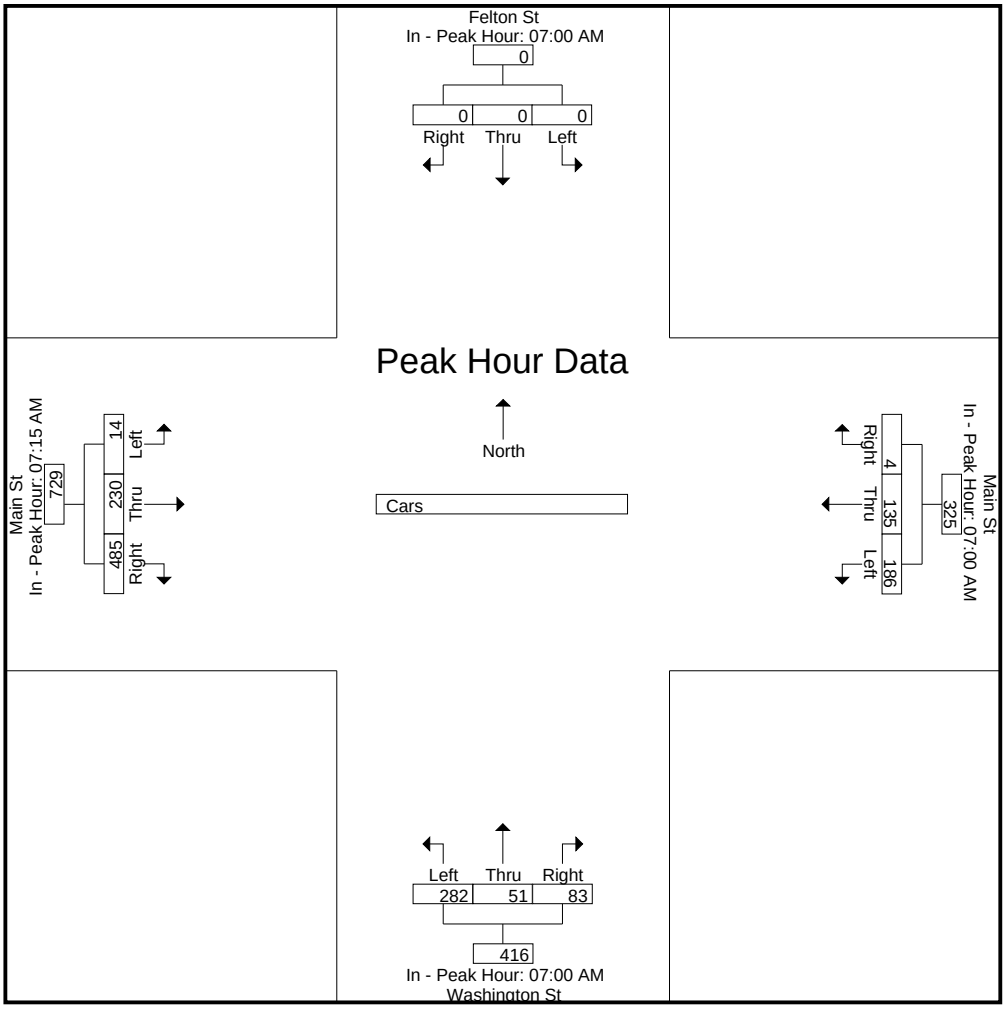
	07:00 AM				07:00 AM				07:00 AM				07:15 AM			
+0 mins.	0	0	0	0	45	24	**3**	72	70	8	20	98	**7**	40	**147**	194
+15 mins.	0	0	0	0	**67**	34	0	**101**	67	**20**	20	107	3	**72**	89	164
+30 mins.	0	0	0	0	38	31	0	69	**84**	13	21	**118**	3	63	137	**203**
+45 mins.	0	0	0	0	36	**46**	1	83	61	10	**22**	93	1	55	112	168
Total Volume	0	0	0	0	186	135	4	325	282	51	83	416	14	230	485	729
% App. Total	0	0	0		57.2	41.5	1.2		67.8	12.3	20		1.9	31.6	66.5	
PHF	.000	.000	.000	.000	.694	.734	.333	.804	.839	.638	.943	.881	.500	.799	.825	.898

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023

Groups Printed- Trucks

	Felton St From North			Main St From East			Washington St From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	2	9	0	5	0	4	0	2	4	26
07:15 AM	0	0	0	1	2	0	1	4	1	0	2	2	13
07:30 AM	0	0	0	1	3	0	1	0	0	0	1	1	7
07:45 AM	0	0	0	1	4	0	2	0	0	0	3	4	14
Total	0	0	0	5	18	0	9	4	5	0	8	11	60
08:00 AM	0	0	0	1	3	0	2	1	0	0	4	1	12
08:15 AM	0	0	0	0	1	0	3	0	0	0	4	4	12
08:30 AM	0	0	0	1	5	0	0	0	0	0	2	2	10
08:45 AM	0	0	0	0	2	0	3	0	0	1	4	0	10
Total	0	0	0	2	11	0	8	1	0	1	14	7	44
Grand Total	0	0	0	7	29	0	17	5	5	1	22	18	104
Apprch %	0	0	0	19.4	80.6	0	63	18.5	18.5	2.4	53.7	43.9	
Total %	0	0	0	6.7	27.9	0	16.3	4.8	4.8	1	21.2	17.3	

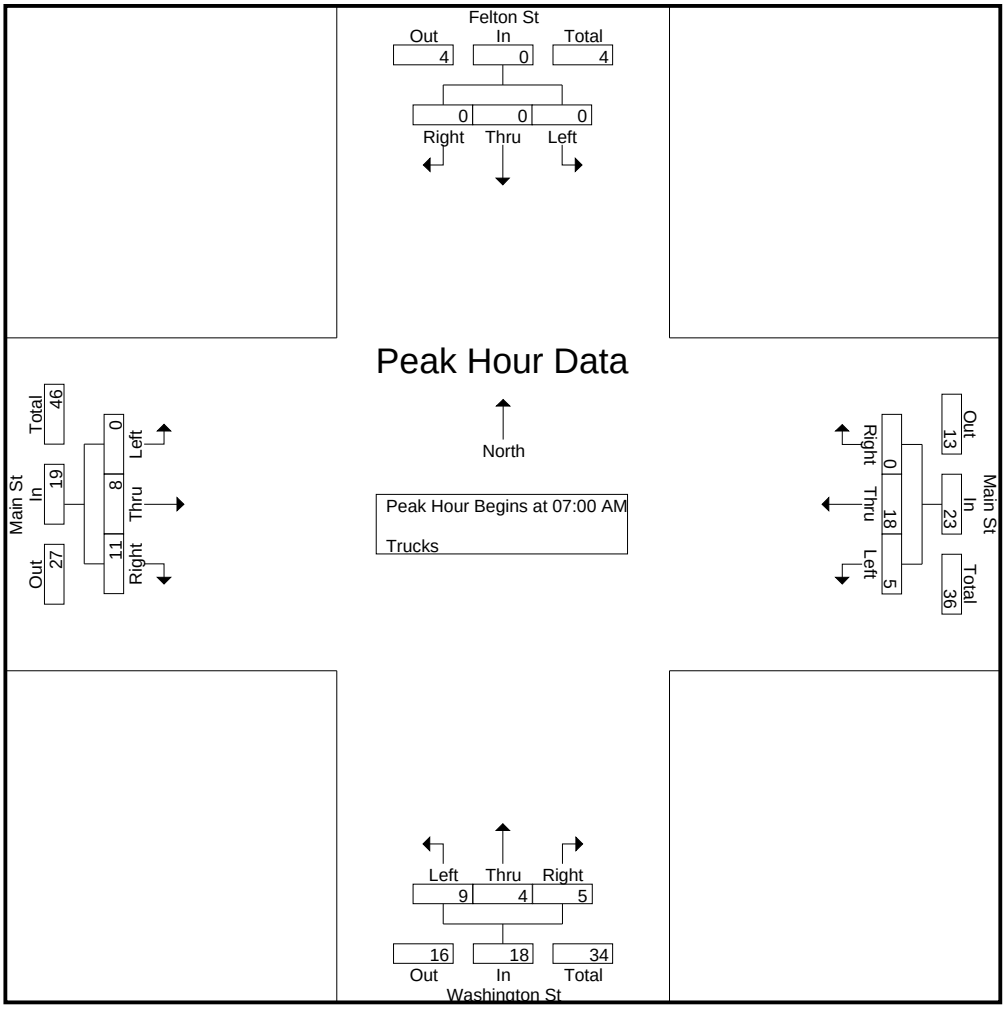
	Felton St From North				Main St From East				Washington St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	**2**	**9**	0	**11**	**5**	0	**4**	**9**	0	2	**4**	6	**26**
07:15 AM	0	0	0	0	1	2	0	3	1	**4**	1	6	0	2	2	4	13
07:30 AM	0	0	0	0	1	3	0	4	1	0	0	1	0	1	1	2	7
07:45 AM	0	0	0	0	1	4	0	5	2	0	0	2	0	**3**	4	**7**	14
Total Volume	0	0	0	0	5	18	0	23	9	4	5	18	0	8	11	19	60
% App. Total	0	0	0		21.7	78.3	0		50	22.2	27.8		0	42.1	57.9		
PHF	.000	.000	.000	.000	.625	.500	.000	.523	.450	.250	.313	.500	.000	.667	.688	.679	.577

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:45 AM			
+0 mins.	0	0	0	0	**2**	**9**	0	**11**	**5**	0	**4**	**9**	0	3	**4**	7
+15 mins.	0	0	0	0	1	2	0	3	1	**4**	1	6	0	**4**	1	5
+30 mins.	0	0	0	0	1	3	0	4	1	0	0	1	0	4	4	**8**
+45 mins.	0	0	0	0	1	4	0	5	2	0	0	2	0	2	2	4
Total Volume	0	0	0	0	5	18	0	23	9	4	5	18	0	13	11	24
% App. Total	0	0	0		21.7	78.3	0		50	22.2	27.8		0	54.2	45.8	
PHF	.000	.000	.000	.000	.625	.500	.000	.523	.450	.250	.313	.500	.000	.813	.688	.750

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
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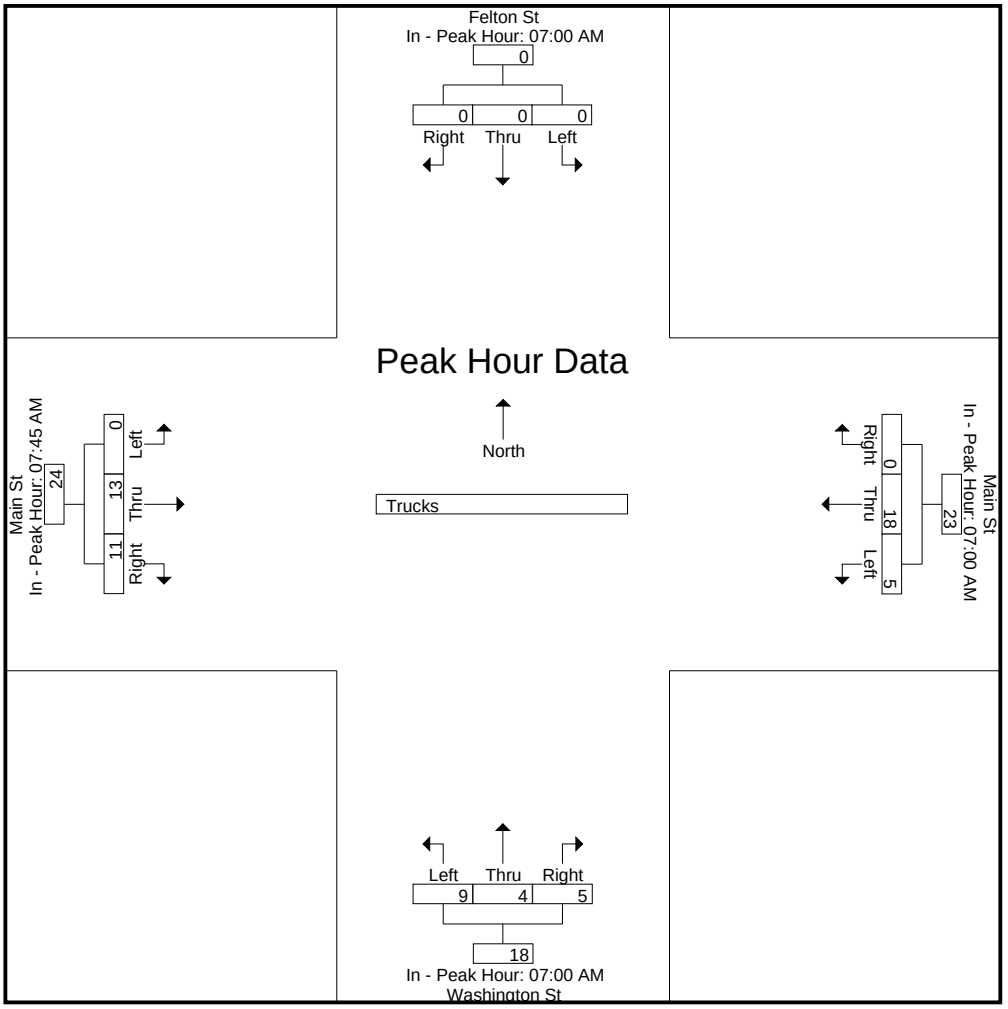


Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023

Groups Printed- Bikes Peds

	Felton St From North				Main St From East				Washington St From South				Main St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
07:30 AM	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	3	0	3
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
Total	0	0	0	5	0	0	0	1	0	0	0	3	0	0	0	0	9	0	9
08:00 AM	0	0	0	1	0	0	0	1	0	0	0	6	0	0	0	0	8	0	8
08:15 AM	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	3	0	3
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	2	6	0	6
08:45 AM	0	0	0	2	0	0	0	0	0	0	0	5	0	0	0	2	9	0	9
Total	0	0	0	4	0	0	0	1	0	0	0	17	0	0	0	4	26	0	26
Grand Total	0	0	0	9	0	0	0	2	0	0	0	20	0	0	0	4	35	0	35
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

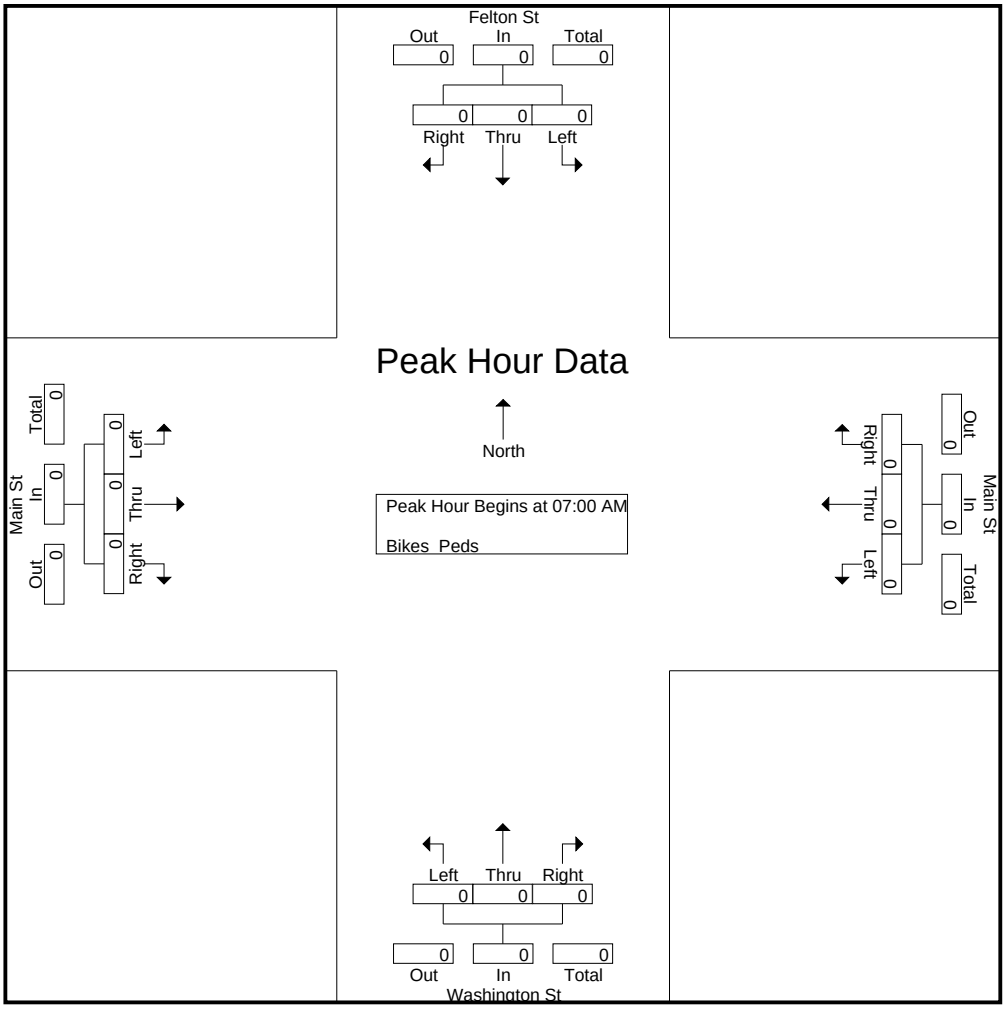
	Felton St From North				Main St From East				Washington St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

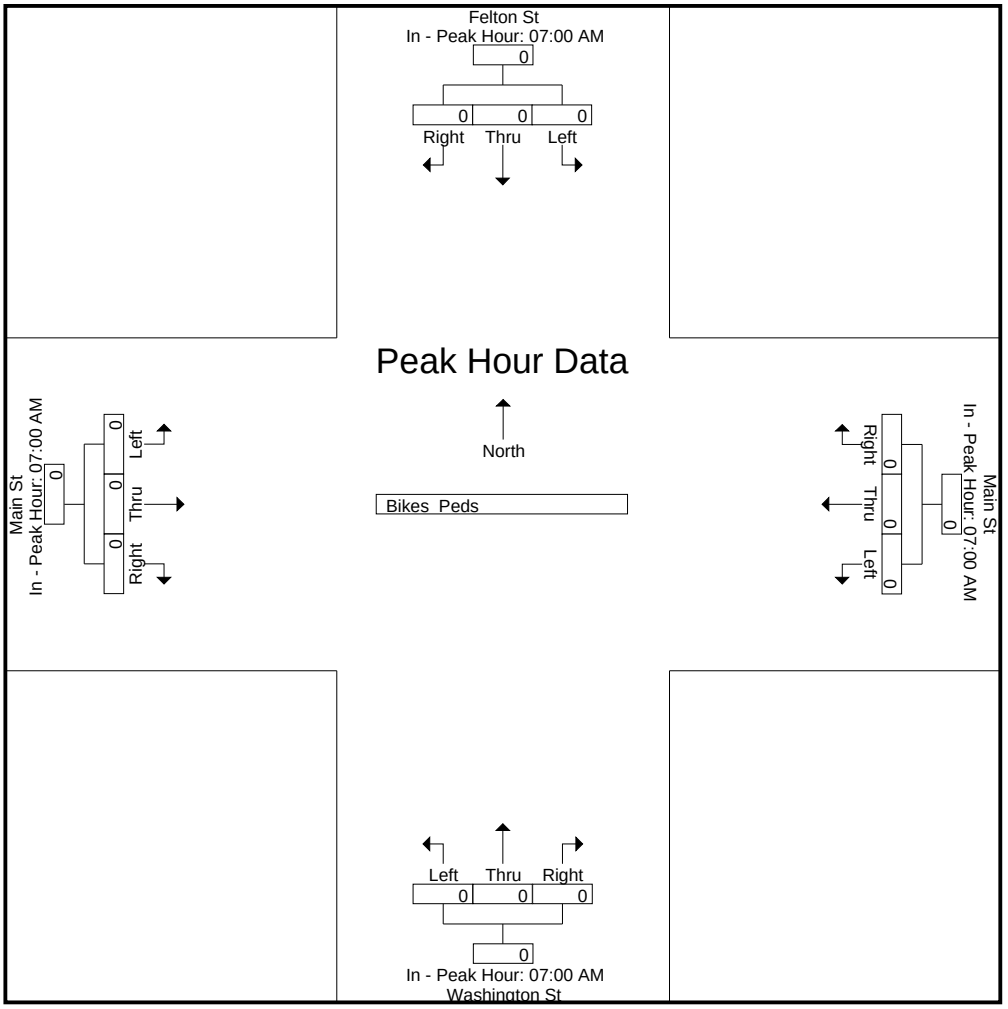
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 1

Groups Printed- Cars - Trucks

	Felton St From North			Main St From East			Washington St From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	30	69	5	122	14	21	9	39	133	442
04:15 PM	0	0	0	29	70	5	134	9	26	7	49	115	444
04:30 PM	0	0	0	29	67	2	169	11	18	2	41	152	491
04:45 PM	0	0	0	25	60	9	145	19	20	7	44	149	478
Total	0	0	0	113	266	21	570	53	85	25	173	549	1855
05:00 PM	0	0	0	33	71	8	141	5	22	3	46	149	478
05:15 PM	0	0	0	29	64	4	138	21	30	11	39	133	469
05:30 PM	0	0	0	30	73	6	139	13	23	4	44	126	458
05:45 PM	0	0	0	41	65	3	136	10	26	6	46	114	447
Total	0	0	0	133	273	21	554	49	101	24	175	522	1852
Grand Total	0	0	0	246	539	42	1124	102	186	49	348	1071	3707
Apprch %	0	0	0	29.7	65.2	5.1	79.6	7.2	13.2	3.3	23.7	73	
Total %	0	0	0	6.6	14.5	1.1	30.3	2.8	5	1.3	9.4	28.9	
Cars	0	0	0	245	532	42	1112	101	186	48	347	1064	3677
% Cars	0	0	0	99.6	98.7	100	98.9	99	100	98	99.7	99.3	99.2
Trucks	0	0	0	1	7	0	12	1	0	1	1	7	30
% Trucks	0	0	0	0.4	1.3	0	1.1	1	0	2	0.3	0.7	0.8

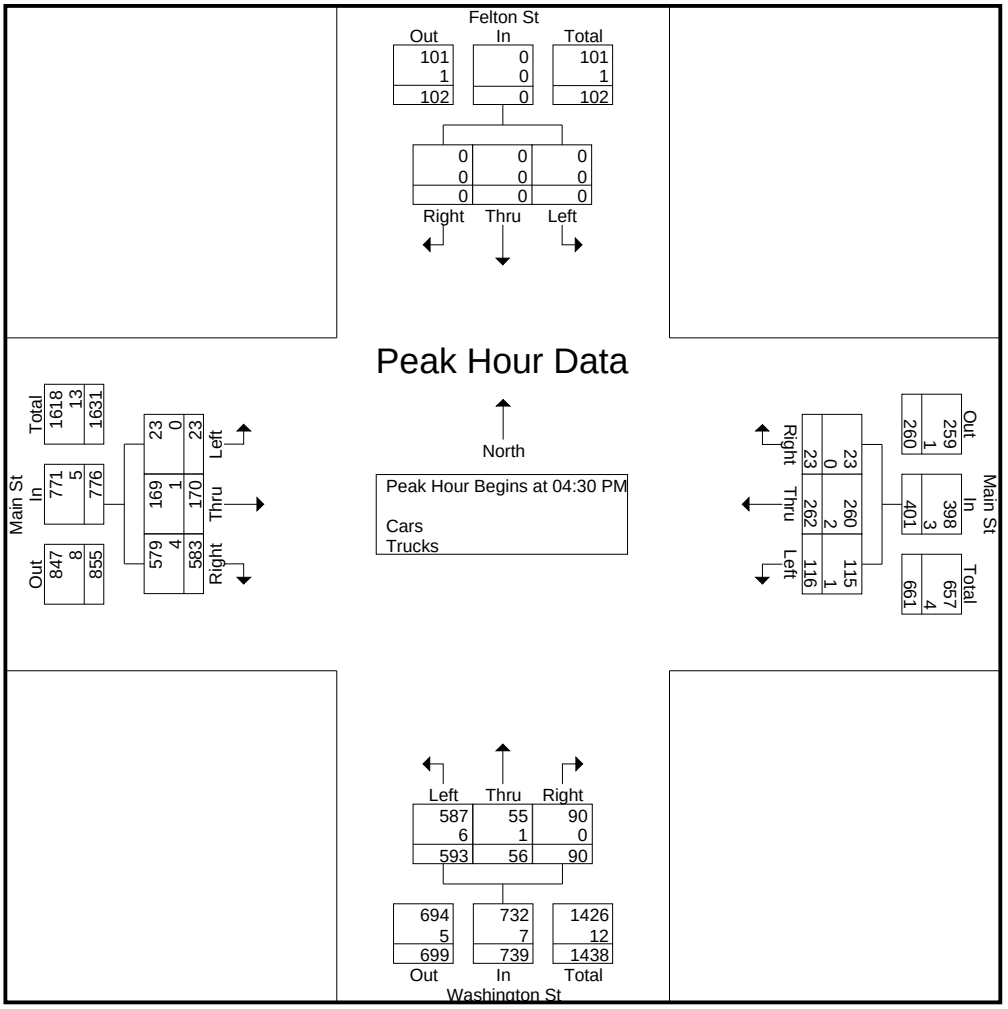
	Felton St From North				Main St From East				Washington St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	29	67	2	98	**169**	11	18	**198**	2	41	**152**	195	**491**
04:45 PM	0	0	0	0	25	60	**9**	94	145	19	20	184	7	44	149	**200**	478
05:00 PM	0	0	0	0	**33**	**71**	8	**112**	141	5	22	168	3	**46**	149	198	478
05:15 PM	0	0	0	0	29	64	4	97	138	**21**	**30**	189	**11**	39	133	183	469
Total Volume	0	0	0	0	116	262	23	401	593	56	90	739	23	170	583	776	1916
% App. Total	0	0	0		28.9	65.3	5.7		80.2	7.6	12.2		3	21.9	75.1		
PHF	.000	.000	.000	.000	.879	.923	.639	.895	.877	.667	.750	.933	.523	.924	.959	.970	.976
Cars	0	0	0	0	115	260	23	398	587	55	90	732	23	169	579	771	1901
% Cars	0	0	0	0	99.1	99.2	100	99.3	99.0	98.2	100	99.1	100	99.4	99.3	99.4	99.2
Trucks	0	0	0	0	1	2	0	3	6	1	0	7	0	1	4	5	15
% Trucks	0	0	0	0	0.9	0.8	0	0.7	1.0	1.8	0	0.9	0	0.6	0.7	0.6	0.8

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

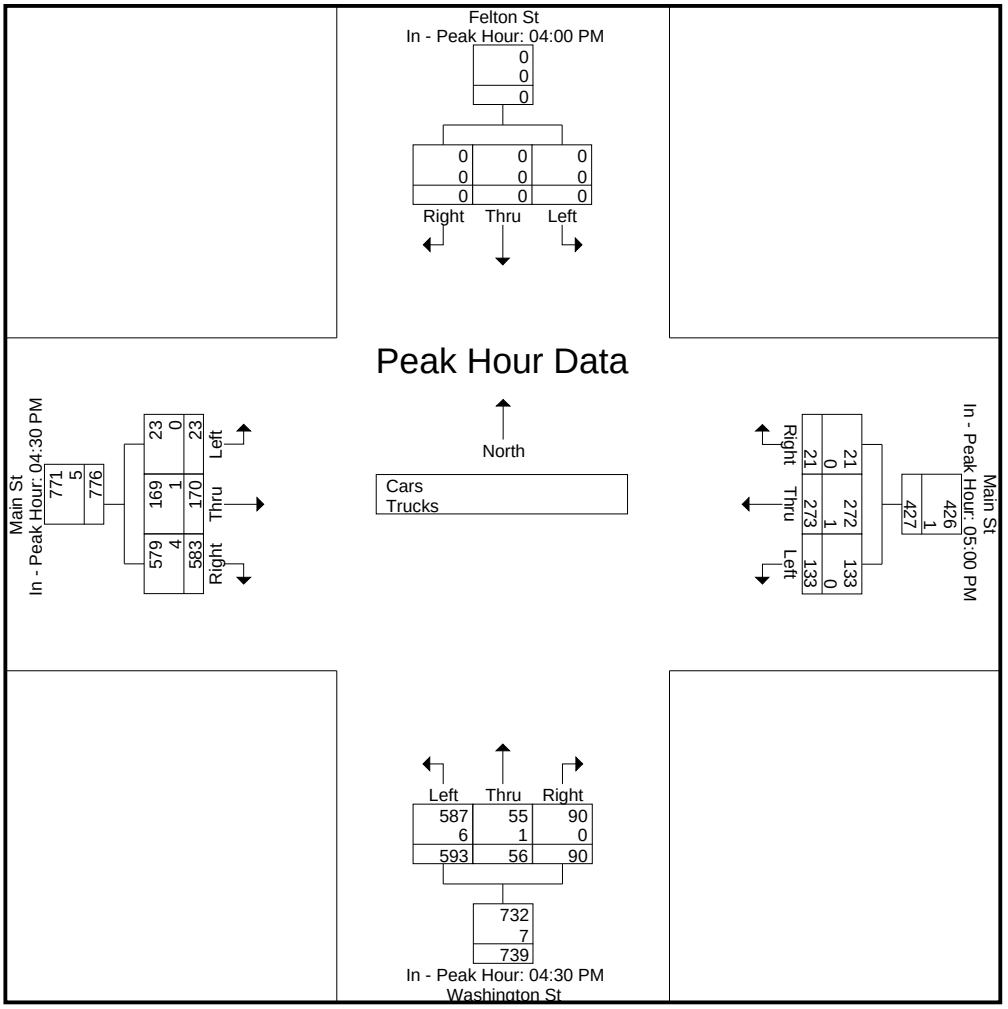
	04:00 PM				05:00 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	33	71	**8**	**112**	**169**	11	18	**198**	2	41	**152**	195
+15 mins.	0	0	0	0	29	64	4	97	145	19	20	184	7	44	149	**200**
+30 mins.	0	0	0	0	30	**73**	6	109	141	5	22	168	3	**46**	149	198
+45 mins.	0	0	0	0	**41**	65	3	109	138	**21**	**30**	189	**11**	39	133	183
Total Volume	0	0	0	0	133	273	21	427	593	56	90	739	23	170	583	776
% App. Total	0	0	0		31.1	63.9	4.9		80.2	7.6	12.2		3	21.9	75.1	
PHF	.000	.000	.000	.000	.811	.935	.656	.953	.877	.667	.750	.933	.523	.924	.959	.970
Cars	0	0	0	0	133	272	21	426	587	55	90	732	23	169	579	771
% Cars	0	0	0	0	100	99.6	100	99.8	99	98.2	100	99.1	100	99.4	99.3	99.4
Trucks	0	0	0	0	0	1	0	1	6	1	0	7	0	1	4	5
% Trucks	0	0	0	0	0	0.4	0	0.2	1	1.8	0	0.9	0	0.6	0.7	0.6

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023

Groups Printed- Cars

	Felton St From North			Main St From East			Washington St From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	30	68	5	121	14	21	8	39	131	437
04:15 PM	0	0	0	29	66	5	131	9	26	7	49	115	437
04:30 PM	0	0	0	29	67	2	168	11	18	2	41	151	489
04:45 PM	0	0	0	24	59	9	143	19	20	7	44	148	473
Total	0	0	0	112	260	21	563	53	85	24	173	545	1836
05:00 PM	0	0	0	33	71	8	141	5	22	3	45	148	476
05:15 PM	0	0	0	29	63	4	135	20	30	11	39	132	463
05:30 PM	0	0	0	30	73	6	138	13	23	4	44	125	456
05:45 PM	0	0	0	41	65	3	135	10	26	6	46	114	446
Total	0	0	0	133	272	21	549	48	101	24	174	519	1841
Grand Total	0	0	0	245	532	42	1112	101	186	48	347	1064	3677
Apprch %	0	0	0	29.9	65	5.1	79.5	7.2	13.3	3.3	23.8	72.9	
Total %	0	0	0	6.7	14.5	1.1	30.2	2.7	5.1	1.3	9.4	28.9	

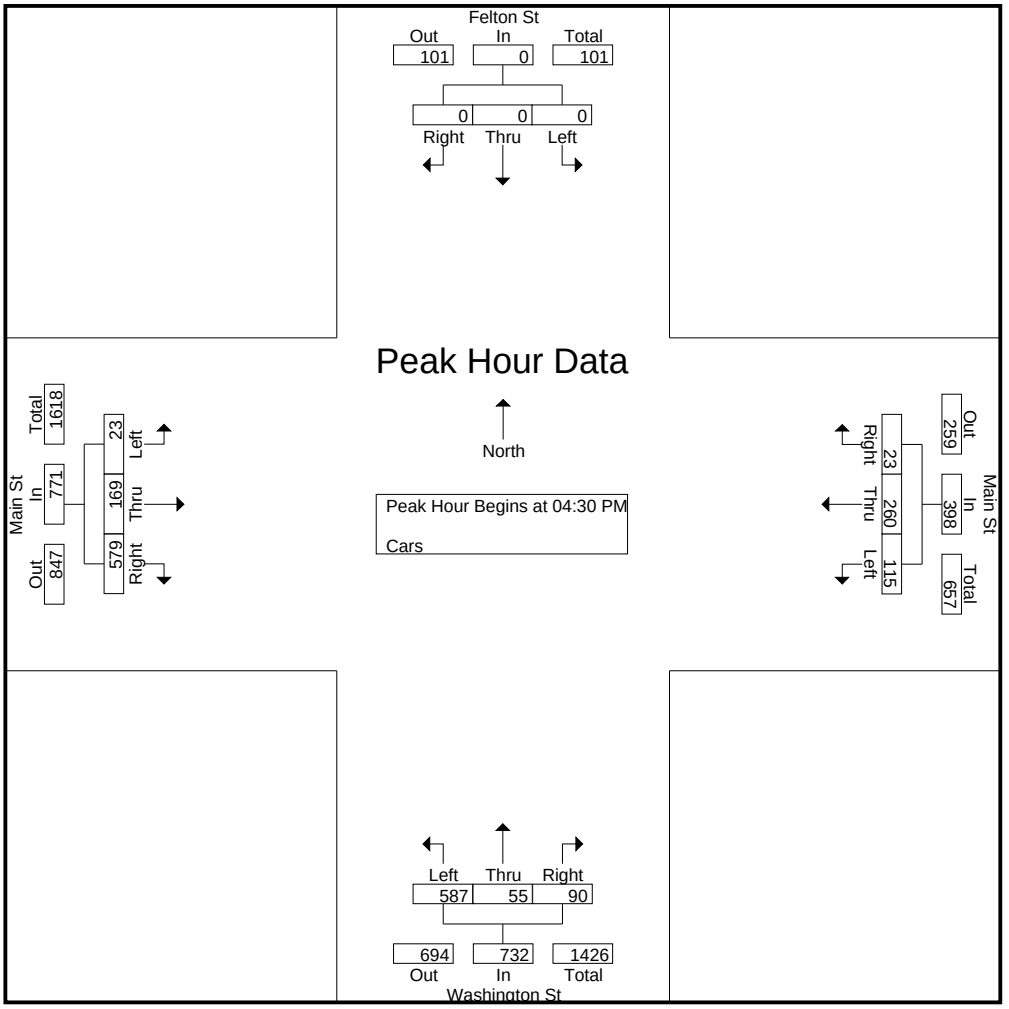
	Felton St From North				Main St From East				Washington St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	29	67	2	98	**168**	11	18	**197**	2	41	**151**	194	**489**
04:45 PM	0	0	0	0	24	59	**9**	92	143	19	20	182	7	44	148	**199**	473
05:00 PM	0	0	0	0	**33**	**71**	8	**112**	141	5	22	168	3	**45**	148	196	476
05:15 PM	0	0	0	0	29	63	4	96	135	**20**	**30**	185	**11**	39	132	182	463
Total Volume	0	0	0	0	115	260	23	398	587	55	90	732	23	169	579	771	1901
% App. Total	0	0	0		28.9	65.3	5.8		80.2	7.5	12.3		3	21.9	75.1		
PHF	.000	.000	.000	.000	.871	.915	.639	.888	.874	.688	.750	.929	.523	.939	.959	.969	.972

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

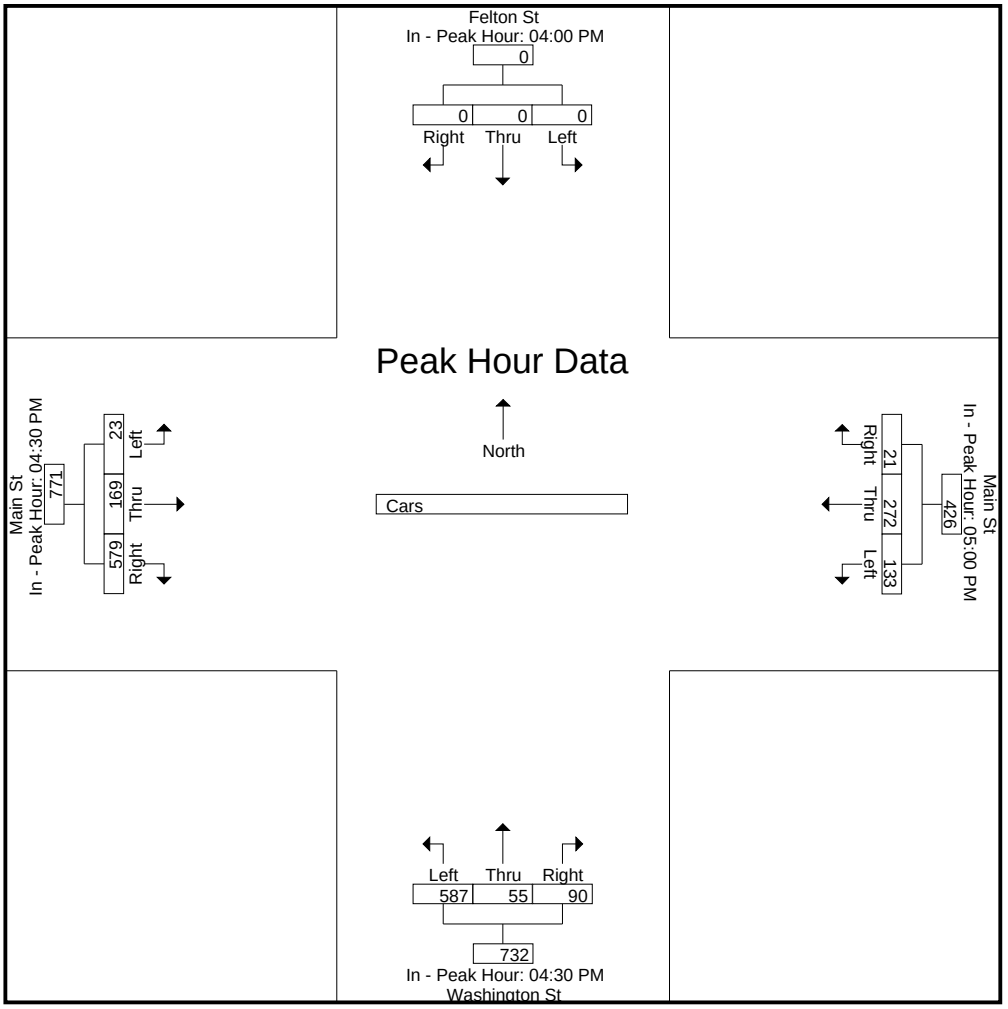
	04:00 PM				05:00 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	33	71	**8**	**112**	**168**	11	18	**197**	2	41	**151**	194
+15 mins.	0	0	0	0	29	63	4	96	143	19	20	182	7	44	148	**199**
+30 mins.	0	0	0	0	30	**73**	6	109	141	5	22	168	3	**45**	148	196
+45 mins.	0	0	0	0	**41**	65	3	109	135	**20**	**30**	185	**11**	39	132	182
Total Volume	0	0	0	0	133	272	21	426	587	55	90	732	23	169	579	771
% App. Total	0	0	0		31.2	63.8	4.9		80.2	7.5	12.3		3	21.9	75.1	
PHF	.000	.000	.000	.000	.811	.932	.656	.951	.874	.688	.750	.929	.523	.939	.959	.969

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023

Groups Printed- Trucks

	Felton St From North			Main St From East			Washington St From South			Main St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	1	0	1	0	0	1	0	2	5
04:15 PM	0	0	0	0	4	0	3	0	0	0	0	0	7
04:30 PM	0	0	0	0	0	0	1	0	0	0	0	1	2
04:45 PM	0	0	0	1	1	0	2	0	0	0	0	1	5
Total	0	0	0	1	6	0	7	0	0	1	0	4	19
05:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	2
05:15 PM	0	0	0	0	1	0	3	1	0	0	0	1	6
05:30 PM	0	0	0	0	0	0	1	0	0	0	0	1	2
05:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	1	0	5	1	0	0	1	3	11
Grand Total	0	0	0	1	7	0	12	1	0	1	1	7	30
Apprch %	0	0	0	12.5	87.5	0	92.3	7.7	0	11.1	11.1	77.8	
Total %	0	0	0	3.3	23.3	0	40	3.3	0	3.3	3.3	23.3	

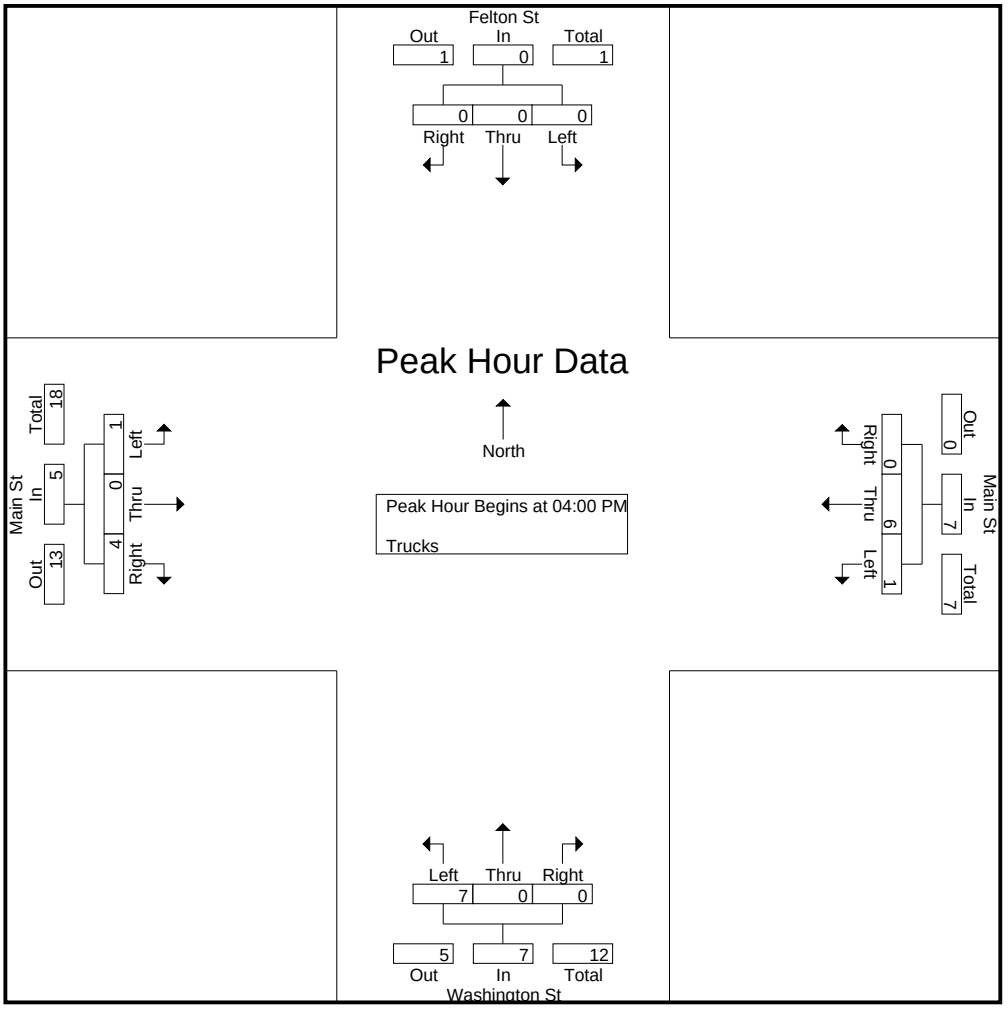
	Felton St From North				Main St From East				Washington St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	1	0	1	1	0	0	1	**1**	0	**2**	**3**	5
04:15 PM	0	0	0	0	0	**4**	0	**4**	**3**	0	0	**3**	0	0	0	0	**7**
04:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	2
04:45 PM	0	0	0	0	**1**	1	0	2	2	0	0	2	0	0	1	1	5
Total Volume	0	0	0	0	1	6	0	7	7	0	0	7	1	0	4	5	19
% App. Total	0	0	0		14.3	85.7	0		100	0	0		20	0	80		
PHF	.000	.000	.000	.000	.250	.375	.000	.438	.583	.000	.000	.583	.250	.000	.500	.417	.679

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

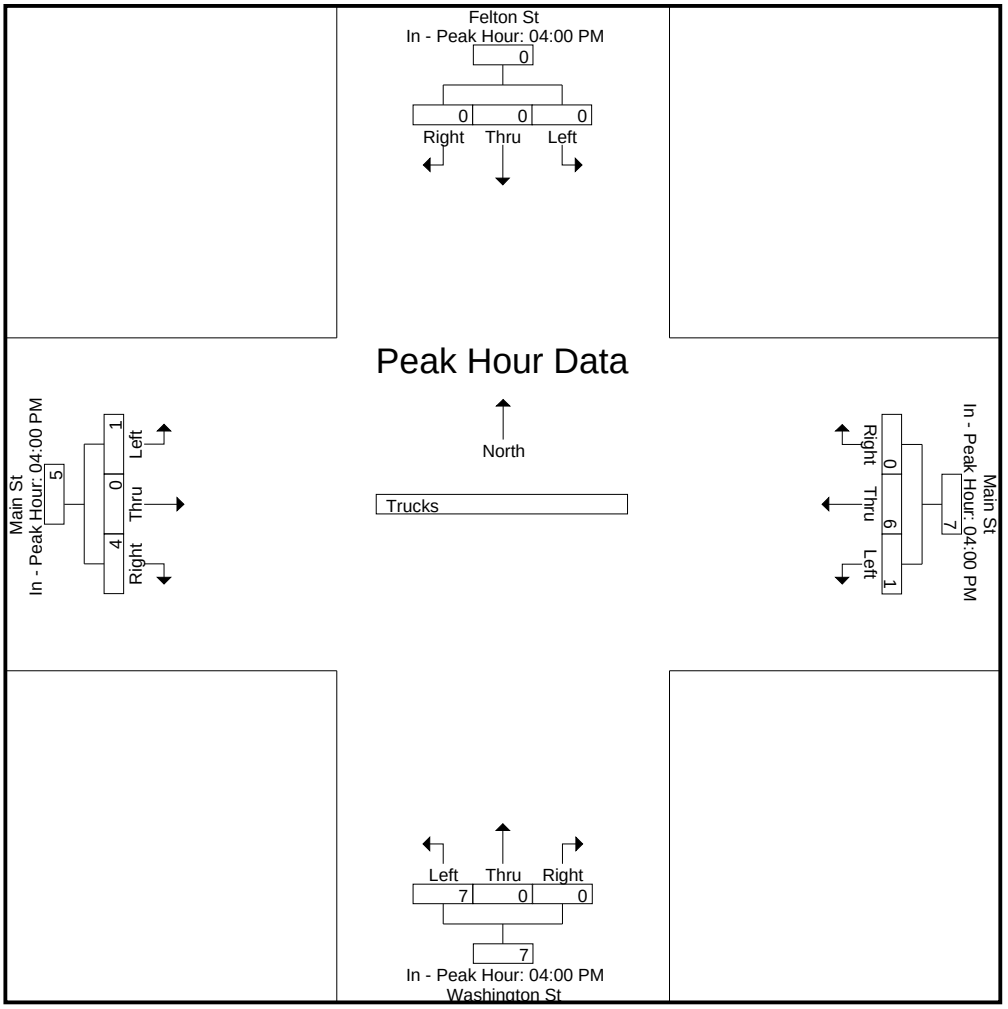
	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	1	0	1	1	0	0	1	**1**	0	**2**	**3**
+15 mins.	0	0	0	0	0	**4**	0	**4**	**3**	0	0	**3**	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1
+45 mins.	0	0	0	0	**1**	1	0	2	2	0	0	2	0	0	1	1
Total Volume	0	0	0	0	1	6	0	7	7	0	0	7	1	0	4	5
% App. Total	0	0	0		14.3	85.7	0		100	0	0		20	0	80	
PHF	.000	.000	.000	.000	.250	.375	.000	.438	.583	.000	.000	.583	.250	.000	.500	.417

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023

Groups Printed- Bikes Peds

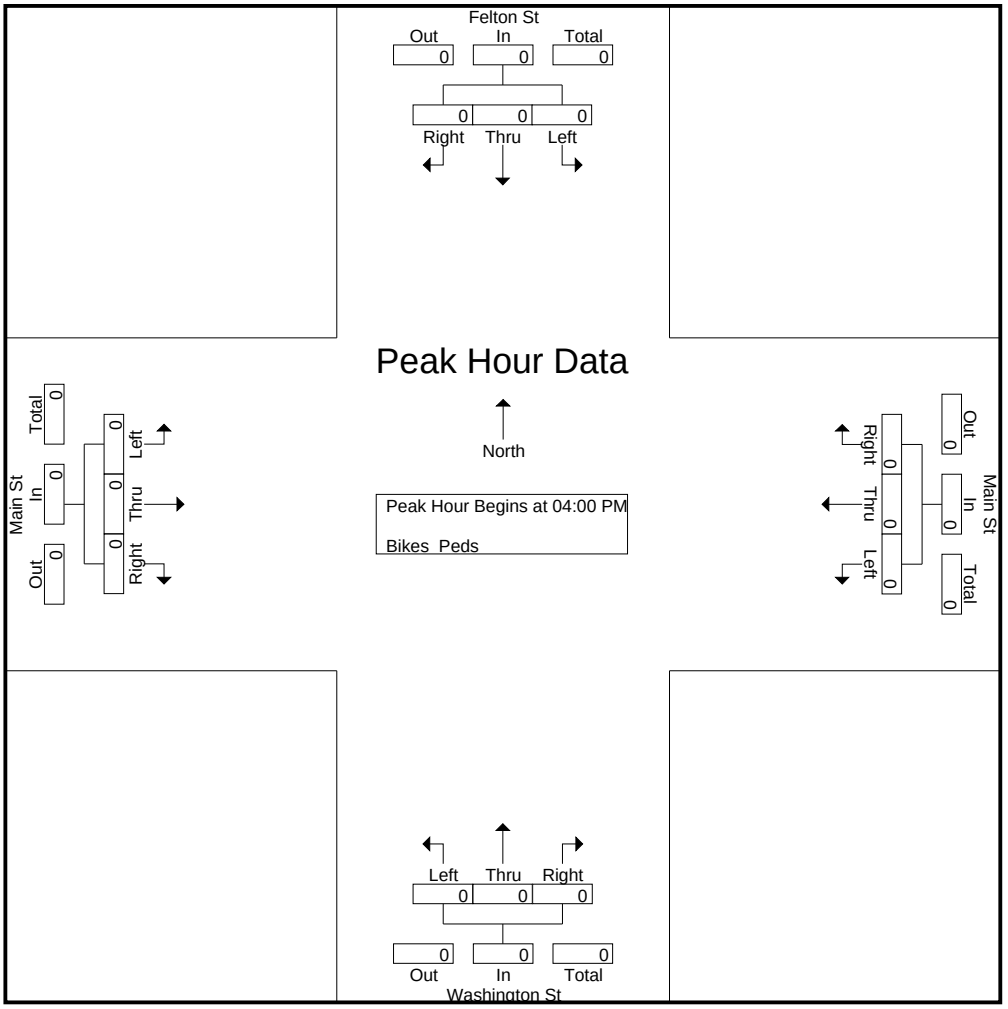
	Felton St From North				Main St From East				Washington St From South				Main St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	3
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	6	0	6
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2
Total	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	12	0	12
05:00 PM	0	0	0	0	0	0	0	1	0	0	0	14	0	0	0	0	15	0	15
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	3
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	7	0	7
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	8
Total	0	0	0	0	0	0	0	1	0	0	0	32	0	0	0	0	33	0	33
Grand Total	0	0	0	0	0	0	0	1	0	0	0	44	0	0	0	0	45	0	45
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

	Felton St From North				Main St From East				Washington St From South				Main St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts
978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

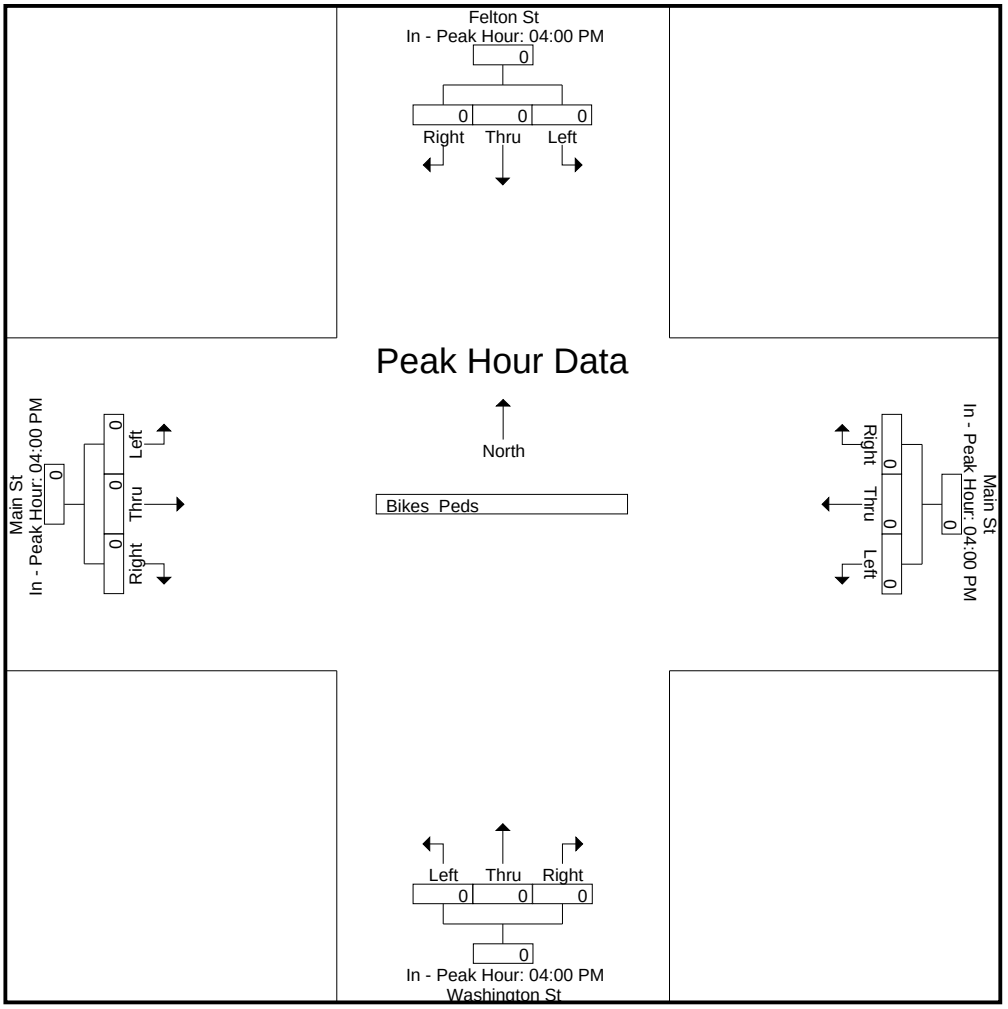
	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Felton St / Washington St
E/W Street : Main Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160002
Site Code : 92160002
Start Date : 12/6/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 1

Groups Printed- Cars - Trucks

	Lincoln St From North			Cox St From East			Lincoln St From South			Packard St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	14	22	10	4	15	9	1	25	5	4	18	1	128
07:15 AM	35	33	12	16	12	16	3	26	10	5	31	5	204
07:30 AM	32	44	11	15	31	22	0	27	8	8	31	2	231
07:45 AM	30	47	12	8	38	14	2	21	7	8	26	3	216
Total	111	146	45	43	96	61	6	99	30	25	106	11	779
08:00 AM	37	36	7	4	28	12	11	21	9	6	25	1	197
08:15 AM	28	31	8	8	43	8	23	22	12	7	34	3	227
08:30 AM	26	23	10	7	30	15	19	23	3	8	46	8	218
08:45 AM	23	23	8	13	25	11	3	15	3	1	24	4	153
Total	114	113	33	32	126	46	56	81	27	22	129	16	795
Grand Total	225	259	78	75	222	107	62	180	57	47	235	27	1574
Apprch %	40	46.1	13.9	18.6	55	26.5	20.7	60.2	19.1	15.2	76.1	8.7	
Total %	14.3	16.5	5	4.8	14.1	6.8	3.9	11.4	3.6	3	14.9	1.7	
Cars	219	256	74	72	215	106	61	173	55	46	224	26	1527
% Cars	97.3	98.8	94.9	96	96.8	99.1	98.4	96.1	96.5	97.9	95.3	96.3	97
Trucks	6	3	4	3	7	1	1	7	2	1	11	1	47
% Trucks	2.7	1.2	5.1	4	3.2	0.9	1.6	3.9	3.5	2.1	4.7	3.7	3

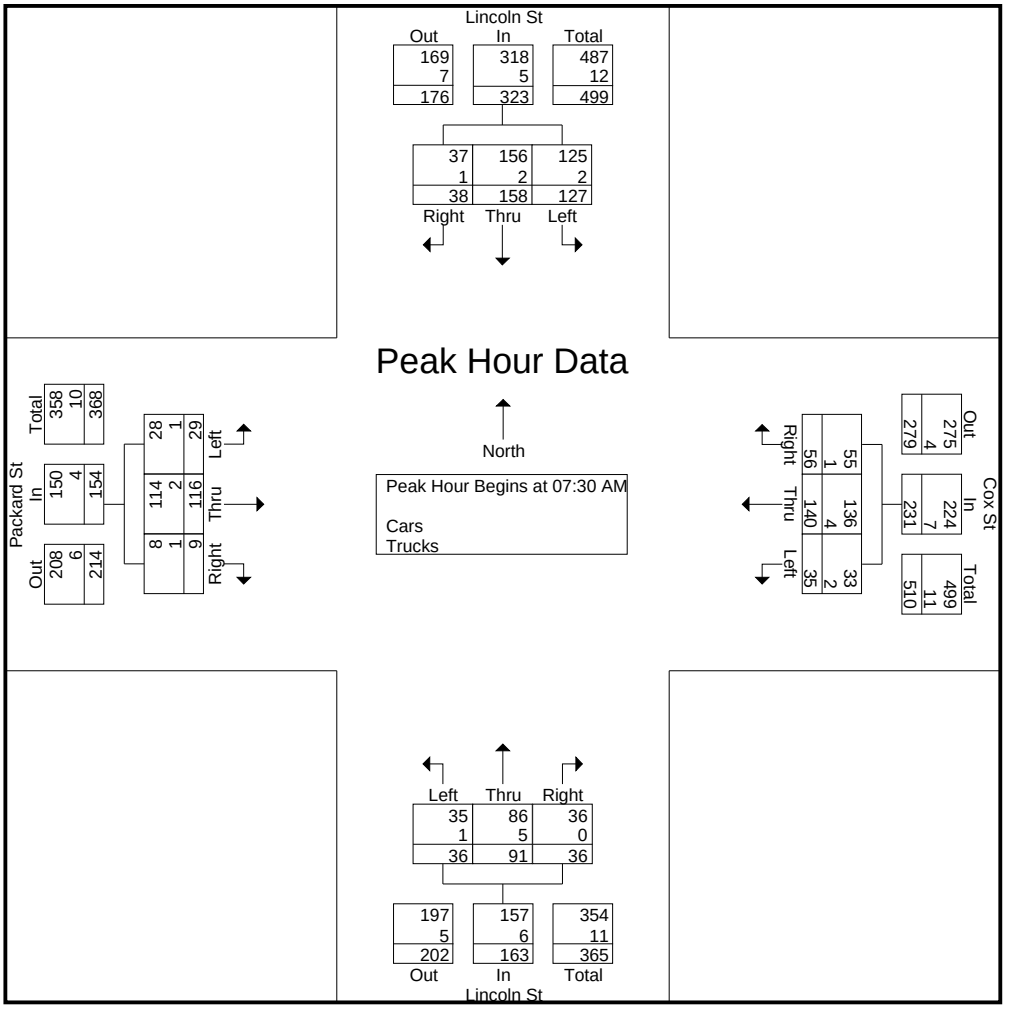
	Lincoln St From North				Cox St From East				Lincoln St From South				Packard St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	32	44	11	87	**15**	31	**22**	**68**	0	**27**	8	35	**8**	31	2	41	**231**
07:45 AM	30	**47**	**12**	**89**	8	38	14	60	2	21	7	30	8	26	**3**	37	216
08:00 AM	**37**	36	7	80	4	28	12	44	11	21	9	41	6	25	1	32	197
08:15 AM	28	31	8	67	8	**43**	8	59	**23**	22	**12**	**57**	7	**34**	3	**44**	227
Total Volume	127	158	38	323	35	140	56	231	36	91	36	163	29	116	9	154	871
% App. Total	39.3	48.9	11.8		15.2	60.6	24.2		22.1	55.8	22.1		18.8	75.3	5.8		
PHF	.858	.840	.792	.907	.583	.814	.636	.849	.391	.843	.750	.715	.906	.853	.750	.875	.943
Cars	125	156	37	318	33	136	55	224	35	86	36	157	28	114	8	150	849
% Cars	98.4	98.7	97.4	98.5	94.3	97.1	98.2	97.0	97.2	94.5	100	96.3	96.6	98.3	88.9	97.4	97.5
Trucks	2	2	1	5	2	4	1	7	1	5	0	6	1	2	1	4	22
% Trucks	1.6	1.3	2.6	1.5	5.7	2.9	1.8	3.0	2.8	5.5	0	3.7	3.4	1.7	11.1	2.6	2.5

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

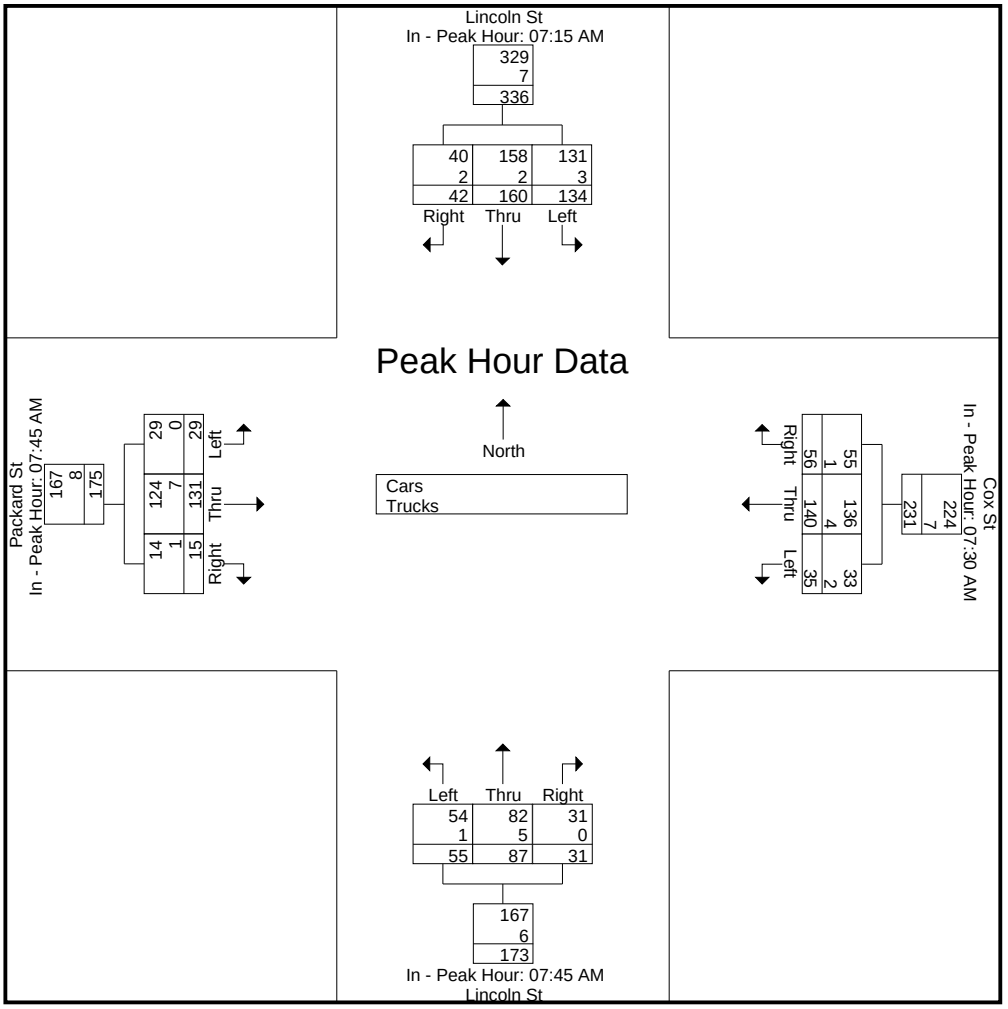
	07:15 AM				07:30 AM				07:45 AM				07:45 AM			
+0 mins.	35	33	**12**	80	**15**	31	**22**	**68**	2	21	7	30	**8**	26	3	37
+15 mins.	32	44	11	87	8	38	14	60	11	21	9	41	6	25	1	32
+30 mins.	30	**47**	12	**89**	4	28	12	44	**23**	22	**12**	**57**	7	34	3	44
+45 mins.	**37**	36	7	80	8	**43**	8	59	19	**23**	3	45	8	**46**	**8**	**62**
Total Volume	134	160	42	336	35	140	56	231	55	87	31	173	29	131	15	175
% App. Total	39.9	47.6	12.5		15.2	60.6	24.2		31.8	50.3	17.9		16.6	74.9	8.6	
PHF	.905	.851	.875	.944	.583	.814	.636	.849	.598	.946	.646	.759	.906	.712	.469	.706
Cars	131	158	40	329	33	136	55	224	54	82	31	167	29	124	14	167
% Cars	97.8	98.8	95.2	97.9	94.3	97.1	98.2	97	98.2	94.3	100	96.5	100	94.7	93.3	95.4
Trucks	3	2	2	7	2	4	1	7	1	5	0	6	0	7	1	8
% Trucks	2.2	1.2	4.8	2.1	5.7	2.9	1.8	3	1.8	5.7	0	3.5	0	5.3	6.7	4.6

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023

Groups Printed- Cars

	Lincoln St From North			Cox St From East			Lincoln St From South			Packard St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	14	22	9	4	14	9	1	24	4	4	16	1	122
07:15 AM	34	33	11	16	11	16	3	26	9	5	30	5	199
07:30 AM	30	44	11	14	29	22	0	27	8	7	30	2	224
07:45 AM	30	45	11	8	37	14	1	21	7	8	26	2	210
Total	108	144	42	42	91	61	5	98	28	24	102	10	755
08:00 AM	37	36	7	3	28	12	11	19	9	6	25	1	194
08:15 AM	28	31	8	8	42	7	23	19	12	7	33	3	221
08:30 AM	24	23	9	7	30	15	19	23	3	8	40	8	209
08:45 AM	22	22	8	12	24	11	3	14	3	1	24	4	148
Total	111	112	32	30	124	45	56	75	27	22	122	16	772
Grand Total	219	256	74	72	215	106	61	173	55	46	224	26	1527
Apprch %	39.9	46.6	13.5	18.3	54.7	27	21.1	59.9	19	15.5	75.7	8.8	
Total %	14.3	16.8	4.8	4.7	14.1	6.9	4	11.3	3.6	3	14.7	1.7	

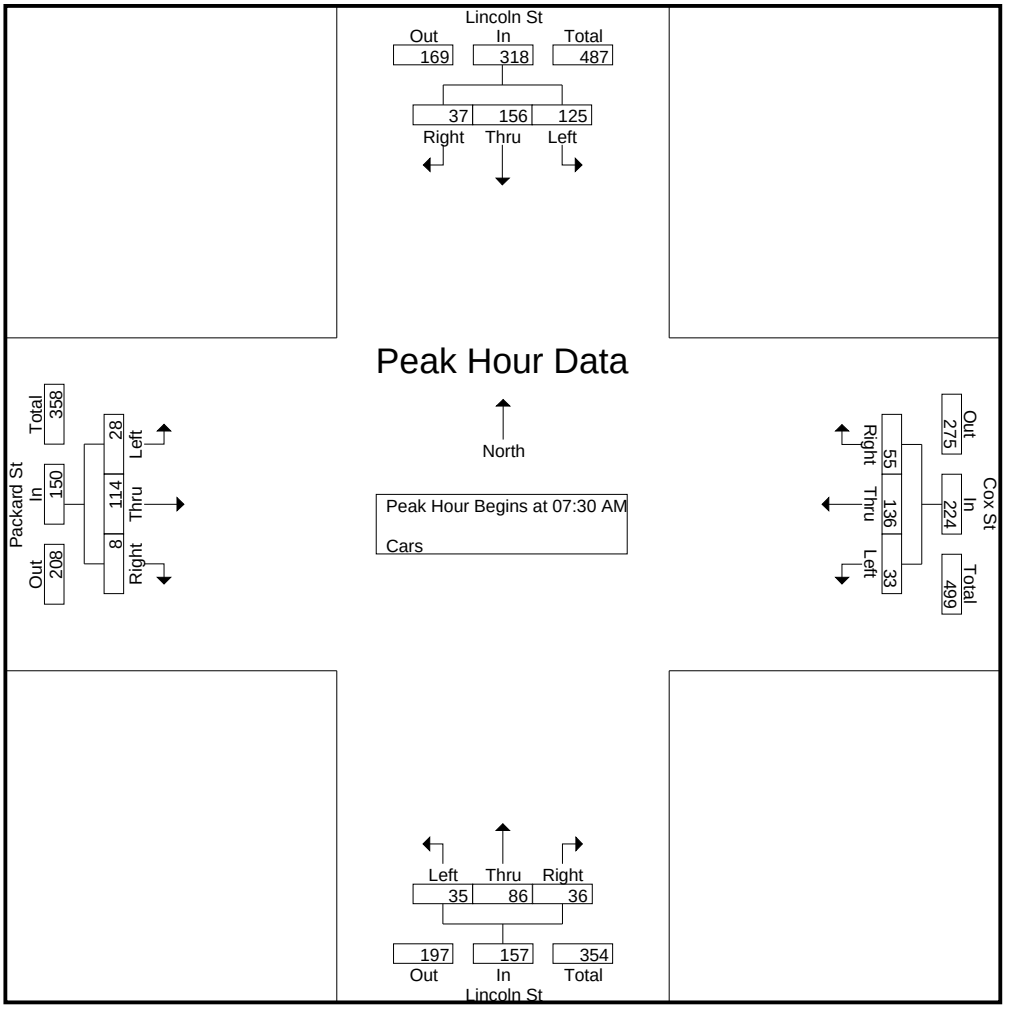
	Lincoln St From North				Cox St From East				Lincoln St From South				Packard St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	30	44	**11**	85	**14**	29	**22**	**65**	0	**27**	8	35	7	30	2	39	**224**
07:45 AM	30	**45**	11	**86**	8	37	14	59	1	21	7	29	**8**	26	2	36	210
08:00 AM	**37**	36	7	80	3	28	12	43	11	19	9	39	6	25	1	32	194
08:15 AM	28	31	8	67	8	**42**	7	57	**23**	19	**12**	**54**	7	**33**	**3**	**43**	221
Total Volume	125	156	37	318	33	136	55	224	35	86	36	157	28	114	8	150	849
% App. Total	39.3	49.1	11.6		14.7	60.7	24.6		22.3	54.8	22.9		18.7	76	5.3		
PHF	.845	.867	.841	.924	.589	.810	.625	.862	.380	.796	.750	.727	.875	.864	.667	.872	.948

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

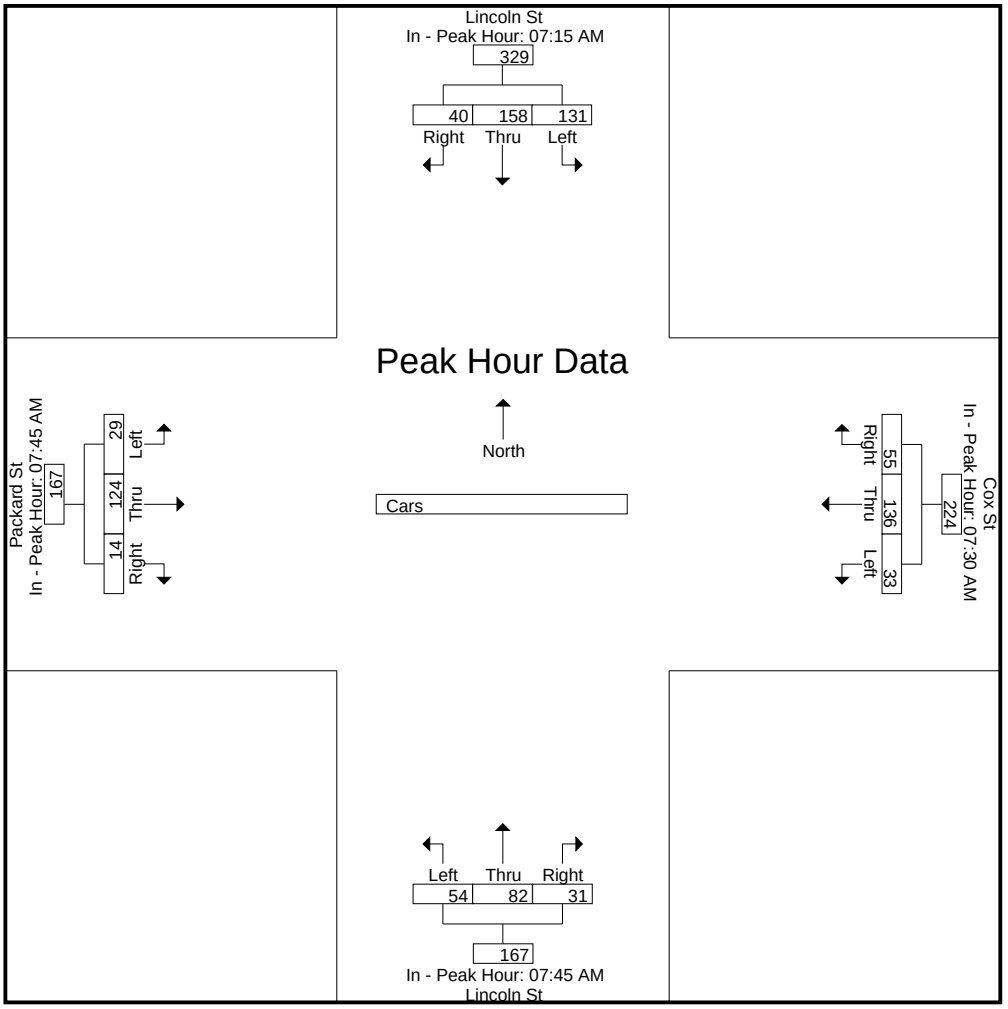
	07:15 AM				07:30 AM				07:45 AM				07:45 AM			
+0 mins.	34	33	**11**	78	**14**	29	**22**	**65**	1	21	7	29	**8**	26	2	36
+15 mins.	30	44	11	85	8	37	14	59	11	19	9	39	6	25	1	32
+30 mins.	30	**45**	11	**86**	3	28	12	43	**23**	19	**12**	**54**	7	33	3	43
+45 mins.	**37**	36	7	80	8	**42**	7	57	19	**23**	3	45	8	**40**	**8**	**56**
Total Volume	131	158	40	329	33	136	55	224	54	82	31	167	29	124	14	167
% App. Total	39.8	48	12.2		14.7	60.7	24.6		32.3	49.1	18.6		17.4	74.3	8.4	
PHF	.885	.878	.909	.956	.589	.810	.625	.862	.587	.891	.646	.773	.906	.775	.438	.746

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023

Groups Printed- Trucks

	Lincoln St From North			Cox St From East			Lincoln St From South			Packard St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	1	0	1	0	0	1	1	0	2	0	6
07:15 AM	1	0	1	0	1	0	0	0	1	0	1	0	5
07:30 AM	2	0	0	1	2	0	0	0	0	1	1	0	7
07:45 AM	0	2	1	0	1	0	1	0	0	0	0	1	6
Total	3	2	3	1	5	0	1	1	2	1	4	1	24
08:00 AM	0	0	0	1	0	0	0	2	0	0	0	0	3
08:15 AM	0	0	0	0	1	1	0	3	0	0	1	0	6
08:30 AM	2	0	1	0	0	0	0	0	0	0	6	0	9
08:45 AM	1	1	0	1	1	0	0	1	0	0	0	0	5
Total	3	1	1	2	2	1	0	6	0	0	7	0	23
Grand Total	6	3	4	3	7	1	1	7	2	1	11	1	47
Apprch %	46.2	23.1	30.8	27.3	63.6	9.1	10	70	20	7.7	84.6	7.7	
Total %	12.8	6.4	8.5	6.4	14.9	2.1	2.1	14.9	4.3	2.1	23.4	2.1	

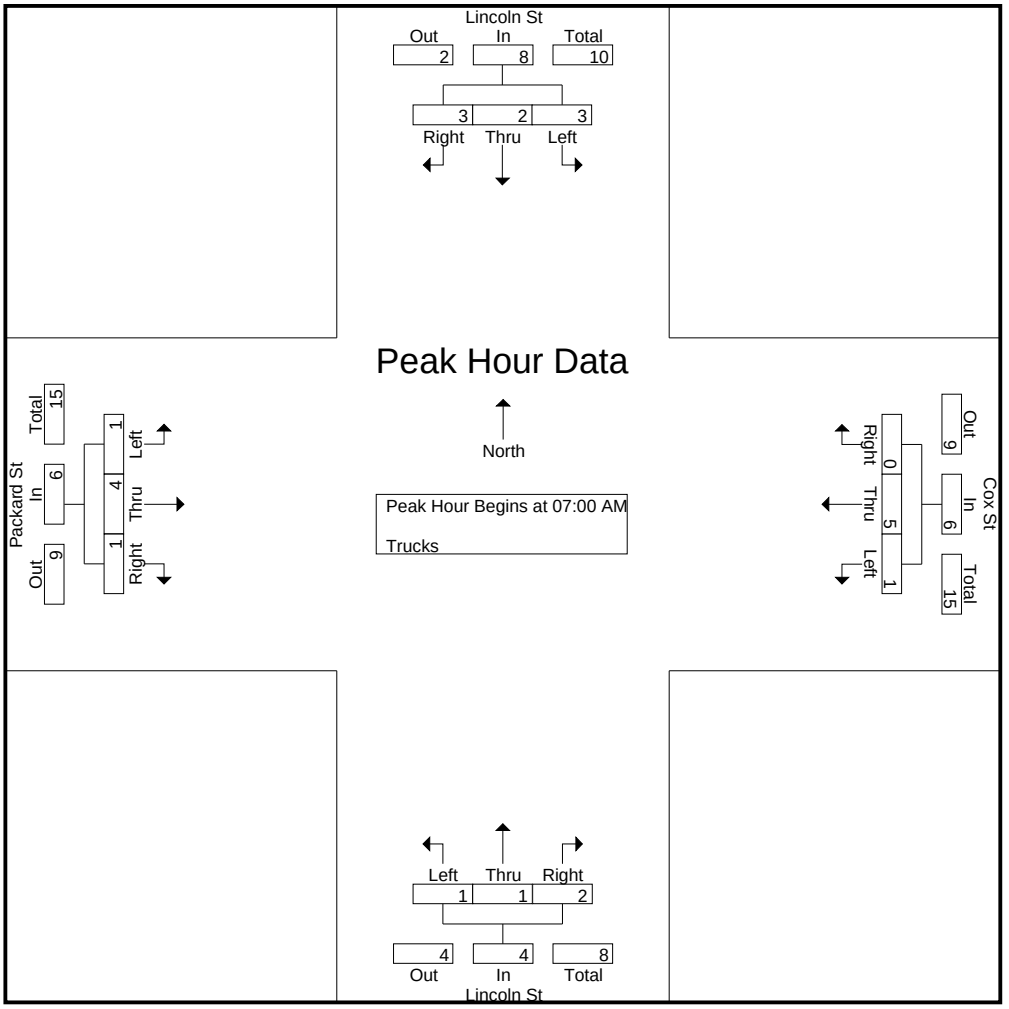
	Lincoln St From North				Cox St From East				Lincoln St From South				Packard St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	**1**	1	0	1	0	1	0	**1**	**1**	**2**	0	**2**	0	**2**	6
07:15 AM	1	0	1	2	0	1	0	1	0	0	1	1	0	1	0	1	5
07:30 AM	**2**	0	0	2	**1**	**2**	0	**3**	0	0	0	0	**1**	1	0	2	**7**
07:45 AM	0	**2**	1	**3**	0	1	0	1	**1**	0	0	1	0	0	**1**	1	6
Total Volume	3	2	3	8	1	5	0	6	1	1	2	4	1	4	1	6	24
% App. Total	37.5	25	37.5		16.7	83.3	0		25	25	50		16.7	66.7	16.7		
PHF	.375	.250	.750	.667	.250	.625	.000	.500	.250	.250	.500	.500	.250	.500	.250	.750	.857

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

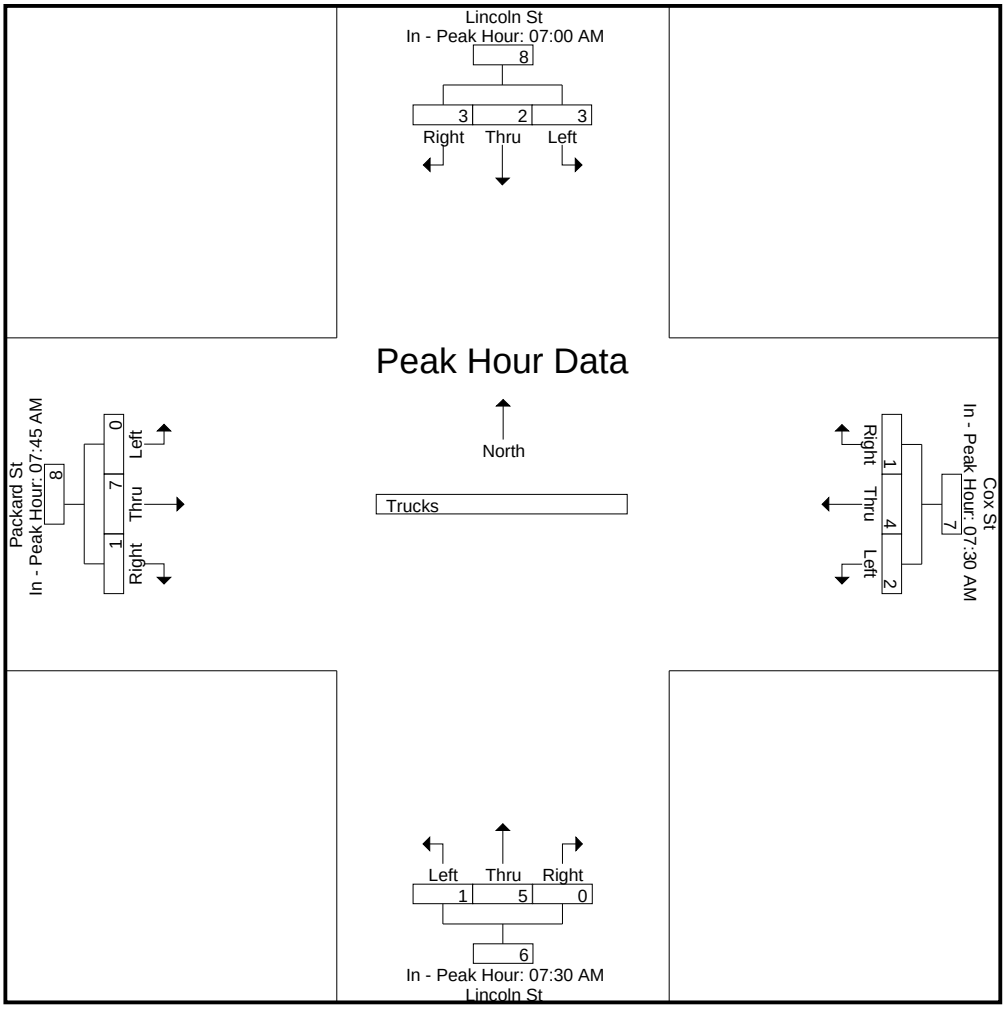
	07:00 AM				07:30 AM				07:30 AM				07:45 AM			
+0 mins.	0	0	**1**	1	**1**	**2**	0	**3**	0	0	0	0	0	0	**1**	1
+15 mins.	1	0	1	2	0	1	0	1	**1**	0	0	1	0	0	0	0
+30 mins.	**2**	0	0	2	1	0	0	1	0	2	0	2	0	1	0	1
+45 mins.	0	**2**	1	**3**	0	1	**1**	2	0	**3**	0	**3**	0	**6**	0	**6**
Total Volume	3	2	3	8	2	4	1	7	1	5	0	6	0	7	1	8
% App. Total	37.5	25	37.5		28.6	57.1	14.3		16.7	83.3	0		0	87.5	12.5	
PHF	.375	.250	.750	.667	.500	.500	.250	.583	.250	.417	.000	.500	.000	.292	.250	.333

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023

Groups Printed- Bikes Peds

	Lincoln St From North				Cox St From East				Lincoln St From South				Packard St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7
08:30 AM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10
Grand Total	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

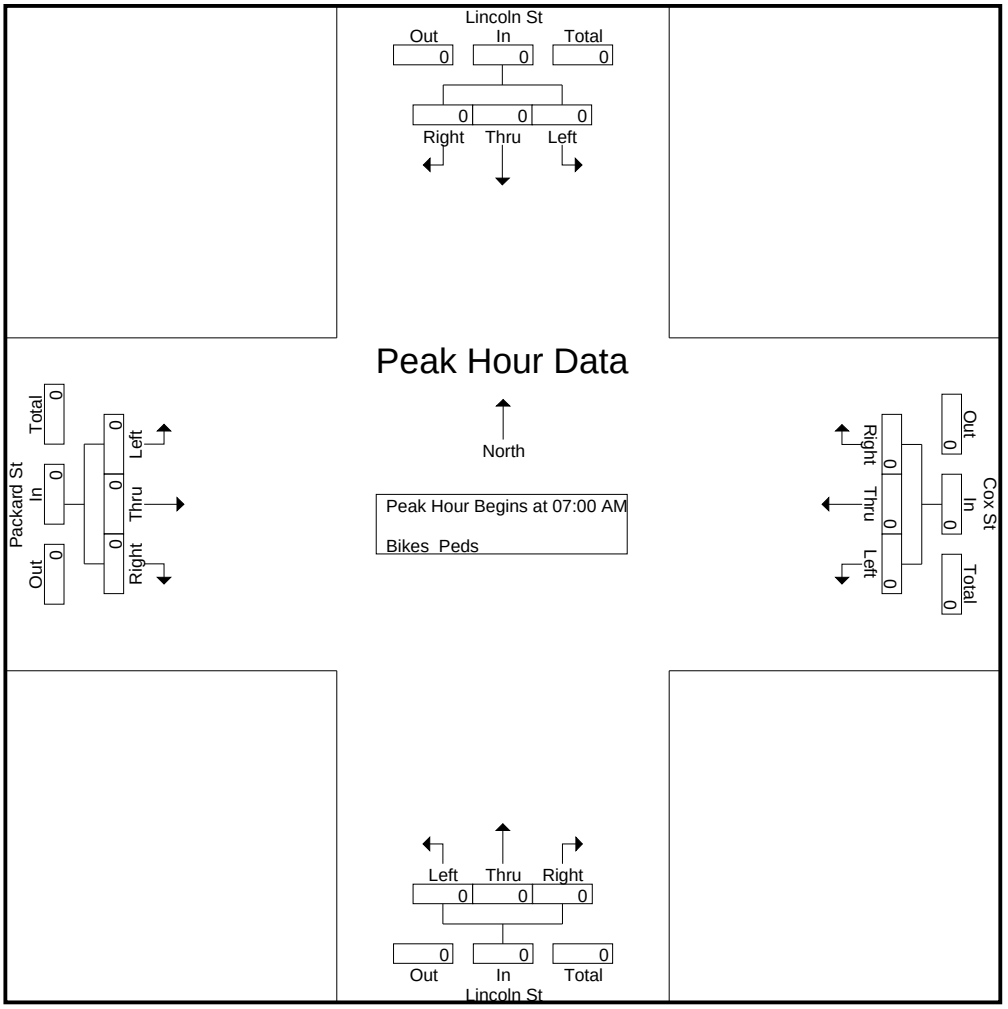
	Lincoln St From North				Cox St From East				Lincoln St From South				Packard St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

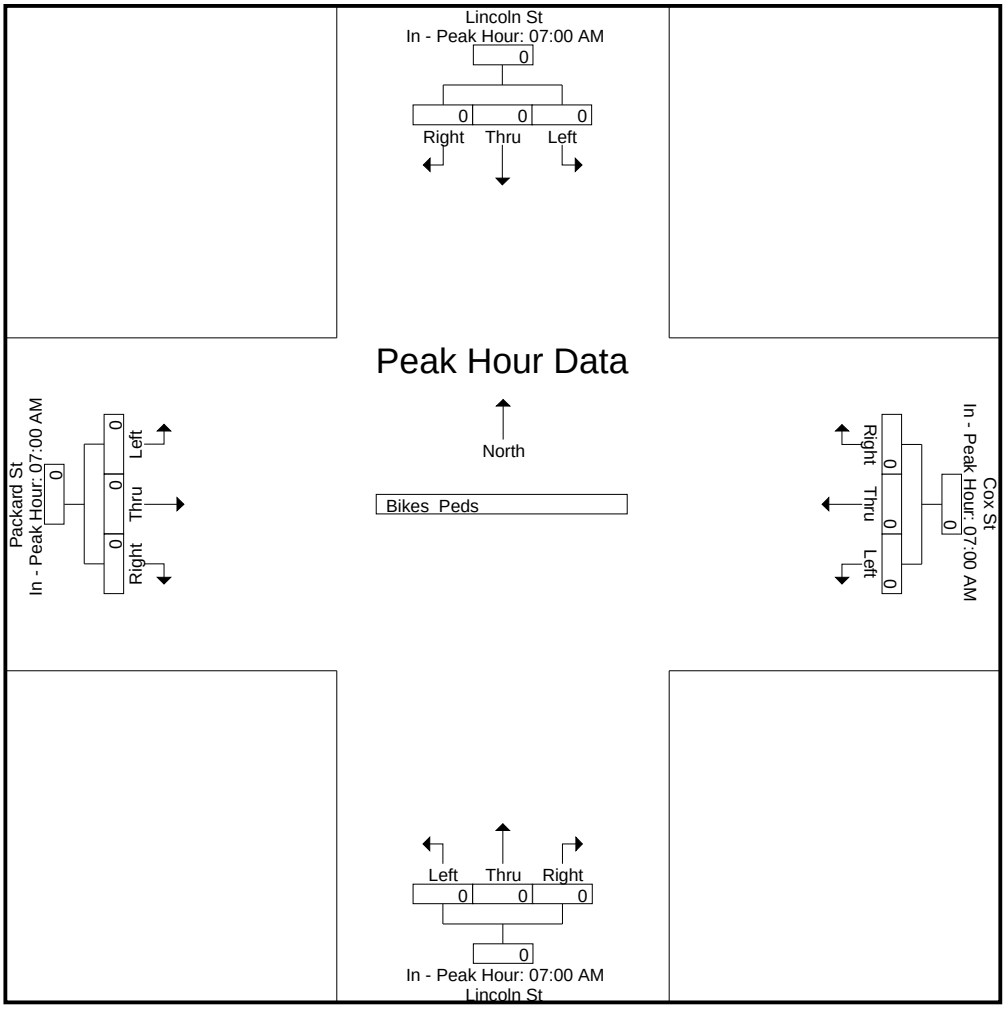
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 1

Groups Printed- Cars - Trucks

	Lincoln St From North			Cox St From East			Lincoln St From South			Packard St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	15	29	16	14	43	45	0	36	2	13	41	4	258
04:15 PM	21	35	8	12	53	28	0	37	7	12	29	3	245
04:30 PM	17	24	10	7	39	22	3	40	2	13	40	0	217
04:45 PM	22	24	13	11	53	38	3	32	10	10	29	1	246
Total	75	112	47	44	188	133	6	145	21	48	139	8	966
05:00 PM	14	31	9	12	52	30	5	32	5	6	38	3	237
05:15 PM	23	26	6	12	42	28	2	28	7	7	35	3	219
05:30 PM	14	21	7	13	52	27	2	24	9	6	39	1	215
05:45 PM	27	30	15	8	33	22	2	27	8	10	26	3	211
Total	78	108	37	45	179	107	11	111	29	29	138	10	882
Grand Total	153	220	84	89	367	240	17	256	50	77	277	18	1848
Apprch %	33.5	48.1	18.4	12.8	52.7	34.5	5.3	79.3	15.5	20.7	74.5	4.8	
Total %	8.3	11.9	4.5	4.8	19.9	13	0.9	13.9	2.7	4.2	15	1	
Cars	153	219	84	86	366	239	17	255	50	77	276	17	1839
% Cars	100	99.5	100	96.6	99.7	99.6	100	99.6	100	100	99.6	94.4	99.5
Trucks	0	1	0	3	1	1	0	1	0	0	1	1	9
% Trucks	0	0.5	0	3.4	0.3	0.4	0	0.4	0	0	0.4	5.6	0.5

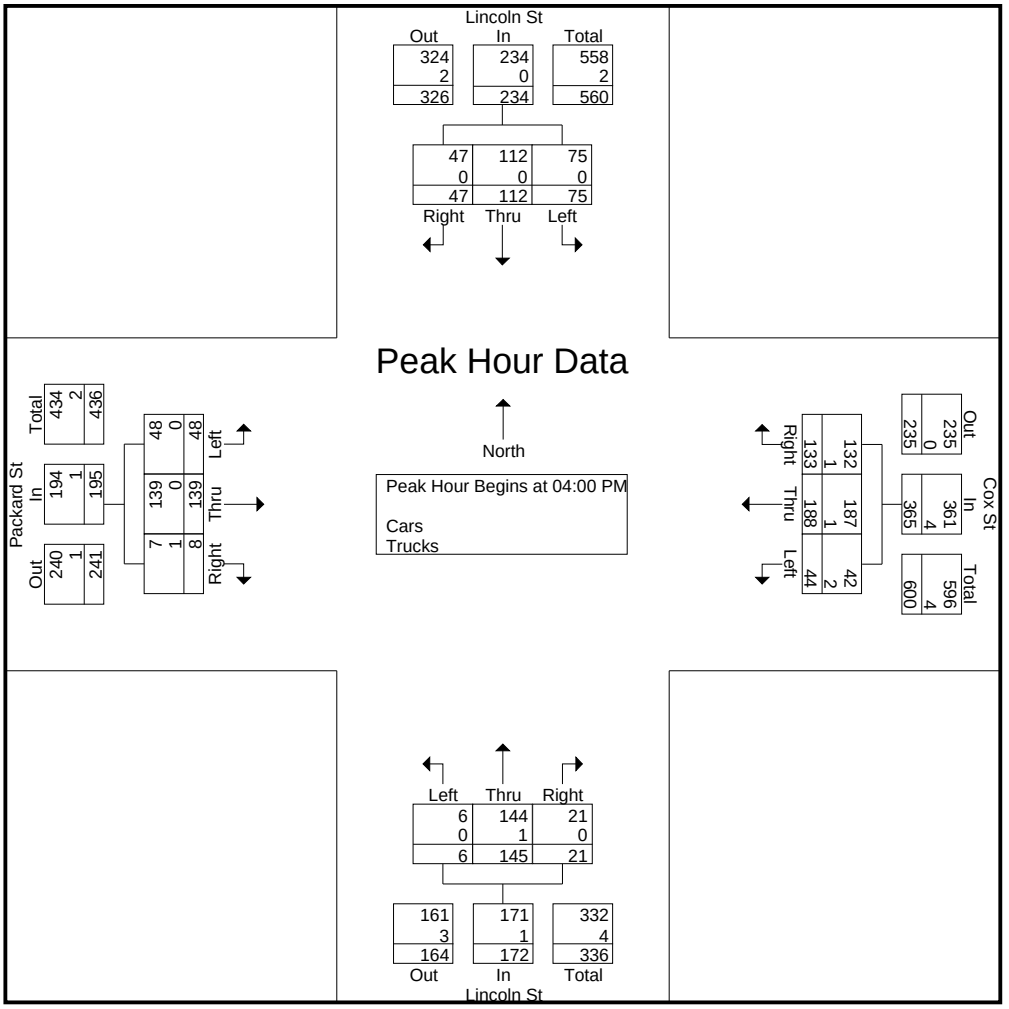
	Lincoln St From North				Cox St From East				Lincoln St From South				Packard St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	15	29	**16**	60	**14**	43	**45**	**102**	0	36	2	38	**13**	**41**	**4**	**58**	**258**
04:15 PM	21	**35**	8	**64**	12	**53**	28	93	0	37	7	44	12	29	3	44	245
04:30 PM	17	24	10	51	7	39	22	68	**3**	**40**	2	**45**	13	40	0	53	217
04:45 PM	**22**	24	13	59	11	53	38	102	3	32	**10**	45	10	29	1	40	246
Total Volume	75	112	47	234	44	188	133	365	6	145	21	172	48	139	8	195	966
% App. Total	32.1	47.9	20.1		12.1	51.5	36.4		3.5	84.3	12.2		24.6	71.3	4.1		
PHF	.852	.800	.734	.914	.786	.887	.739	.895	.500	.906	.525	.956	.923	.848	.500	.841	.936
Cars	75	112	47	234	42	187	132	361	6	144	21	171	48	139	7	194	960
% Cars	100	100	100	100	95.5	99.5	99.2	98.9	100	99.3	100	99.4	100	100	87.5	99.5	99.4
Trucks	0	0	0	0	2	1	1	4	0	1	0	1	0	0	1	1	6
% Trucks	0	0	0	0	4.5	0.5	0.8	1.1	0	0.7	0	0.6	0	0	12.5	0.5	0.6

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

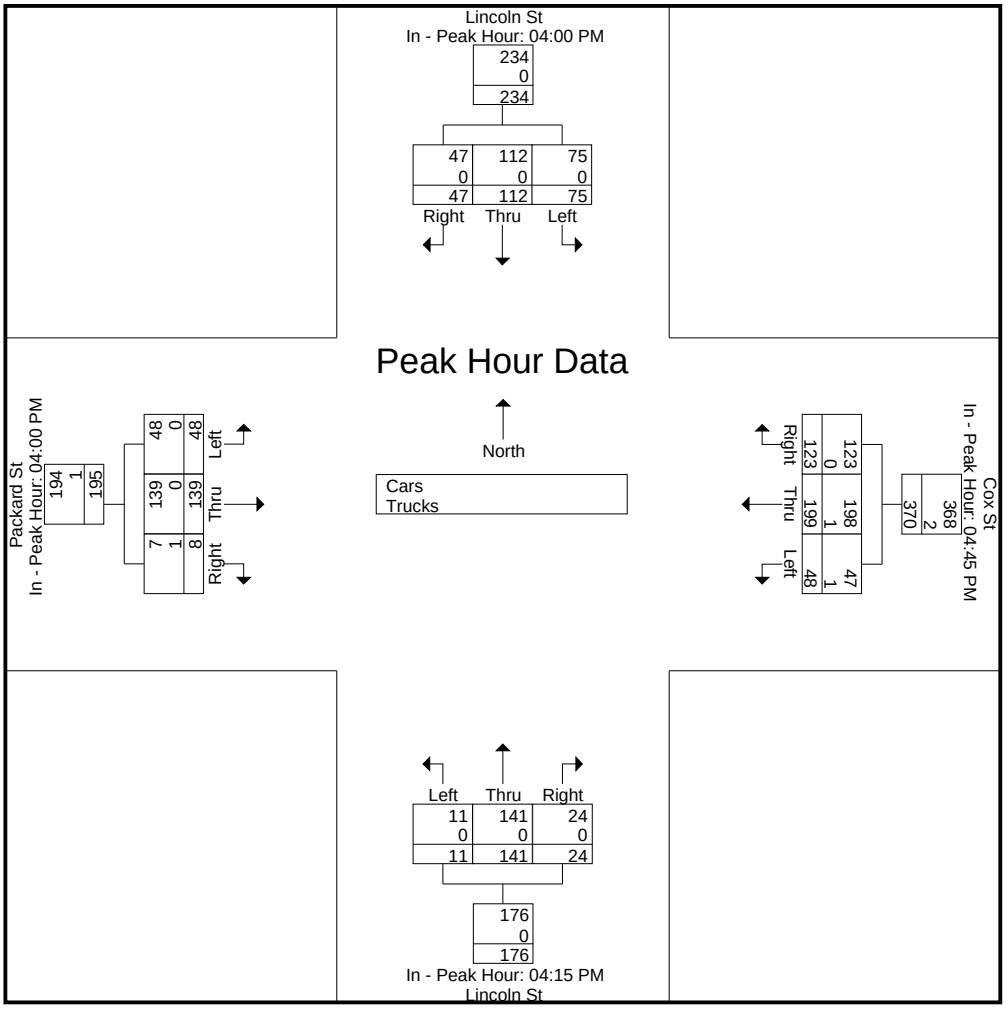
	04:00 PM				04:45 PM				04:15 PM				04:00 PM			
+0 mins.	15	29	**16**	60	11	**53**	**38**	**102**	0	37	7	44	**13**	**41**	**4**	**58**
+15 mins.	21	**35**	8	**64**	12	52	30	94	3	**40**	2	**45**	12	29	3	44
+30 mins.	17	24	10	51	12	42	28	82	3	32	**10**	45	13	40	0	53
+45 mins.	**22**	24	13	59	**13**	52	27	92	**5**	32	5	42	10	29	1	40
Total Volume	75	112	47	234	48	199	123	370	11	141	24	176	48	139	8	195
% App. Total	32.1	47.9	20.1		13	53.8	33.2		6.2	80.1	13.6		24.6	71.3	4.1	
PHF	.852	.800	.734	.914	.923	.939	.809	.907	.550	.881	.600	.978	.923	.848	.500	.841
Cars	75	112	47	234	47	198	123	368	11	141	24	176	48	139	7	194
% Cars	100	100	100	100	97.9	99.5	100	99.5	100	100	100	100	100	100	87.5	99.5
Trucks	0	0	0	0	1	1	0	2	0	0	0	0	0	0	1	1
% Trucks	0	0	0	0	2.1	0.5	0	0.5	0	0	0	0	0	0	12.5	0.5

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023

Groups Printed- Cars

	Lincoln St From North			Cox St From East			Lincoln St From South			Packard St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	15	29	16	14	43	44	0	35	2	13	41	4	256
04:15 PM	21	35	8	12	53	28	0	37	7	12	29	2	244
04:30 PM	17	24	10	5	39	22	3	40	2	13	40	0	215
04:45 PM	22	24	13	11	52	38	3	32	10	10	29	1	245
Total	75	112	47	42	187	132	6	144	21	48	139	7	960
05:00 PM	14	31	9	12	52	30	5	32	5	6	38	3	237
05:15 PM	23	25	6	12	42	28	2	28	7	7	34	3	217
05:30 PM	14	21	7	12	52	27	2	24	9	6	39	1	214
05:45 PM	27	30	15	8	33	22	2	27	8	10	26	3	211
Total	78	107	37	44	179	107	11	111	29	29	137	10	879
Grand Total	153	219	84	86	366	239	17	255	50	77	276	17	1839
Apprch %	33.6	48	18.4	12.4	53	34.6	5.3	79.2	15.5	20.8	74.6	4.6	
Total %	8.3	11.9	4.6	4.7	19.9	13	0.9	13.9	2.7	4.2	15	0.9	

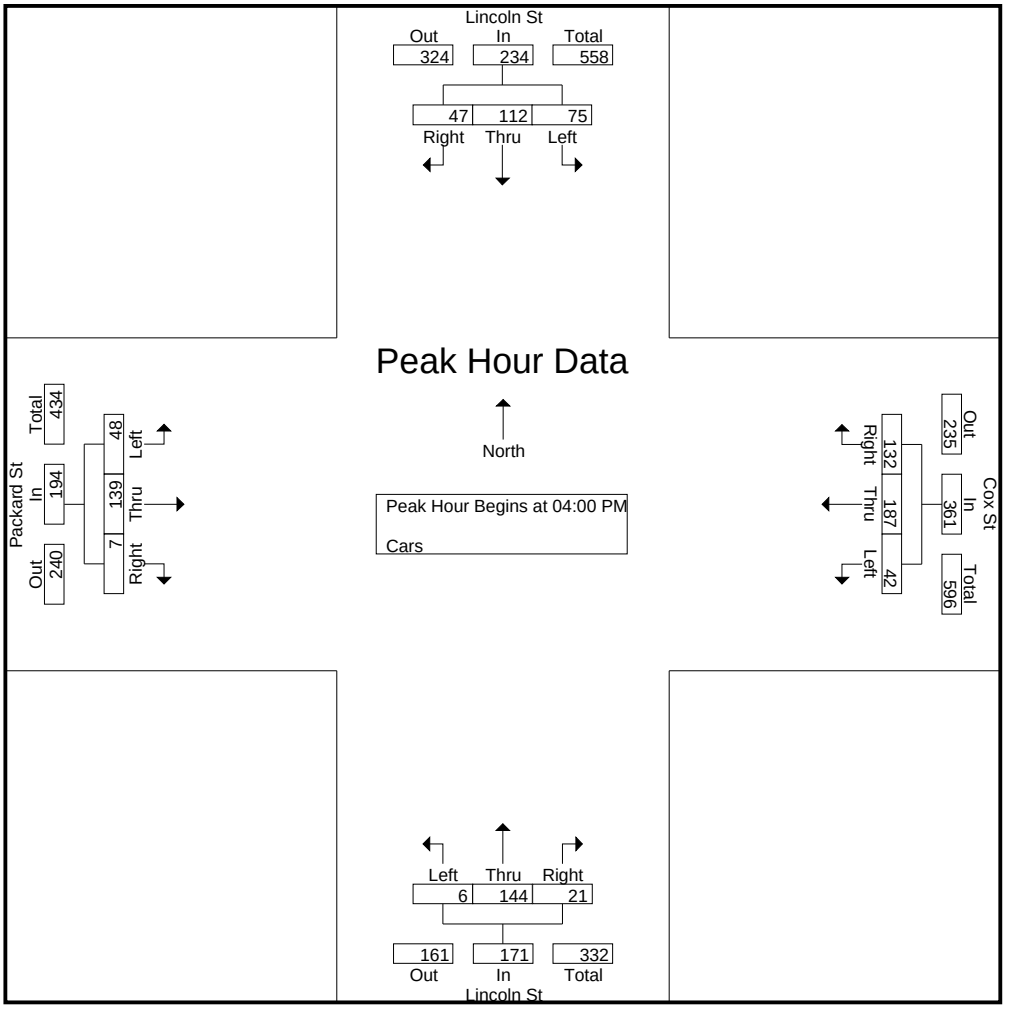
	Lincoln St From North				Cox St From East				Lincoln St From South				Packard St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	15	29	**16**	60	**14**	43	**44**	**101**	0	35	2	37	**13**	**41**	**4**	**58**	**256**
04:15 PM	21	**35**	8	**64**	12	**53**	28	93	0	37	7	44	12	29	2	43	244
04:30 PM	17	24	10	51	5	39	22	66	**3**	**40**	2	**45**	13	40	0	53	215
04:45 PM	**22**	24	13	59	11	52	38	101	3	32	**10**	45	10	29	1	40	245
Total Volume	75	112	47	234	42	187	132	361	6	144	21	171	48	139	7	194	960
% App. Total	32.1	47.9	20.1		11.6	51.8	36.6		3.5	84.2	12.3		24.7	71.6	3.6		
PHF	.852	.800	.734	.914	.750	.882	.750	.894	.500	.900	.525	.950	.923	.848	.438	.836	.938

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

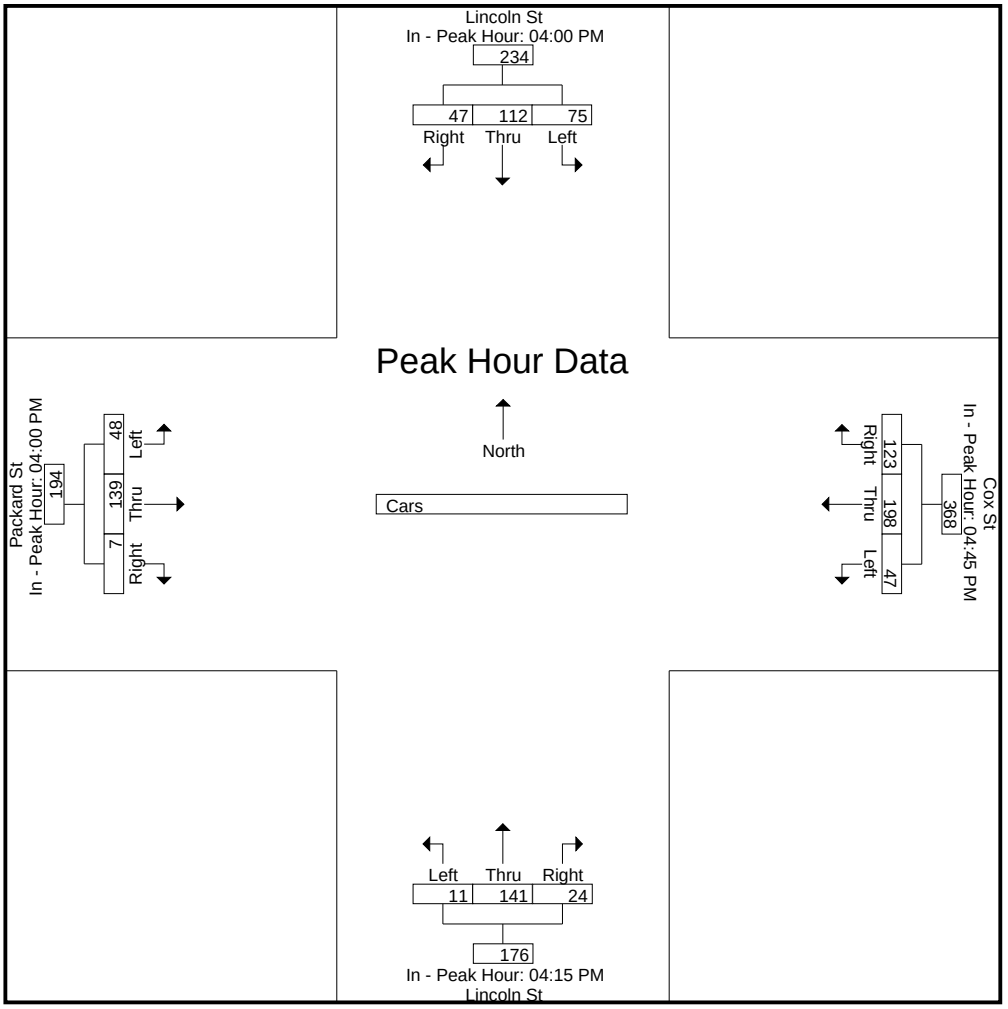
	04:00 PM				04:45 PM				04:15 PM				04:00 PM			
+0 mins.	15	29	**16**	60	11	**52**	**38**	**101**	0	37	7	44	**13**	**41**	**4**	**58**
+15 mins.	21	**35**	8	**64**	**12**	52	30	94	3	**40**	2	**45**	12	29	2	43
+30 mins.	17	24	10	51	12	42	28	82	3	32	**10**	45	13	40	0	53
+45 mins.	**22**	24	13	59	12	52	27	91	**5**	32	5	42	10	29	1	40
Total Volume	75	112	47	234	47	198	123	368	11	141	24	176	48	139	7	194
% App. Total	32.1	47.9	20.1		12.8	53.8	33.4		6.2	80.1	13.6		24.7	71.6	3.6	
PHF	.852	.800	.734	.914	.979	.952	.809	.911	.550	.881	.600	.978	.923	.848	.438	.836

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023

Groups Printed- Trucks

	Lincoln St From North			Cox St From East			Lincoln St From South			Packard St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	2
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	1
04:30 PM	0	0	0	2	0	0	0	0	0	0	0	0	2
04:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	2	1	1	0	1	0	0	0	1	6
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	1	0	0	0	0	0	0	0	0	1	0	2
05:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	1	0	3
Grand Total	0	1	0	3	1	1	0	1	0	0	1	1	9
Apprch %	0	100	0	60	20	20	0	100	0	0	50	50	
Total %	0	11.1	0	33.3	11.1	11.1	0	11.1	0	0	11.1	11.1	

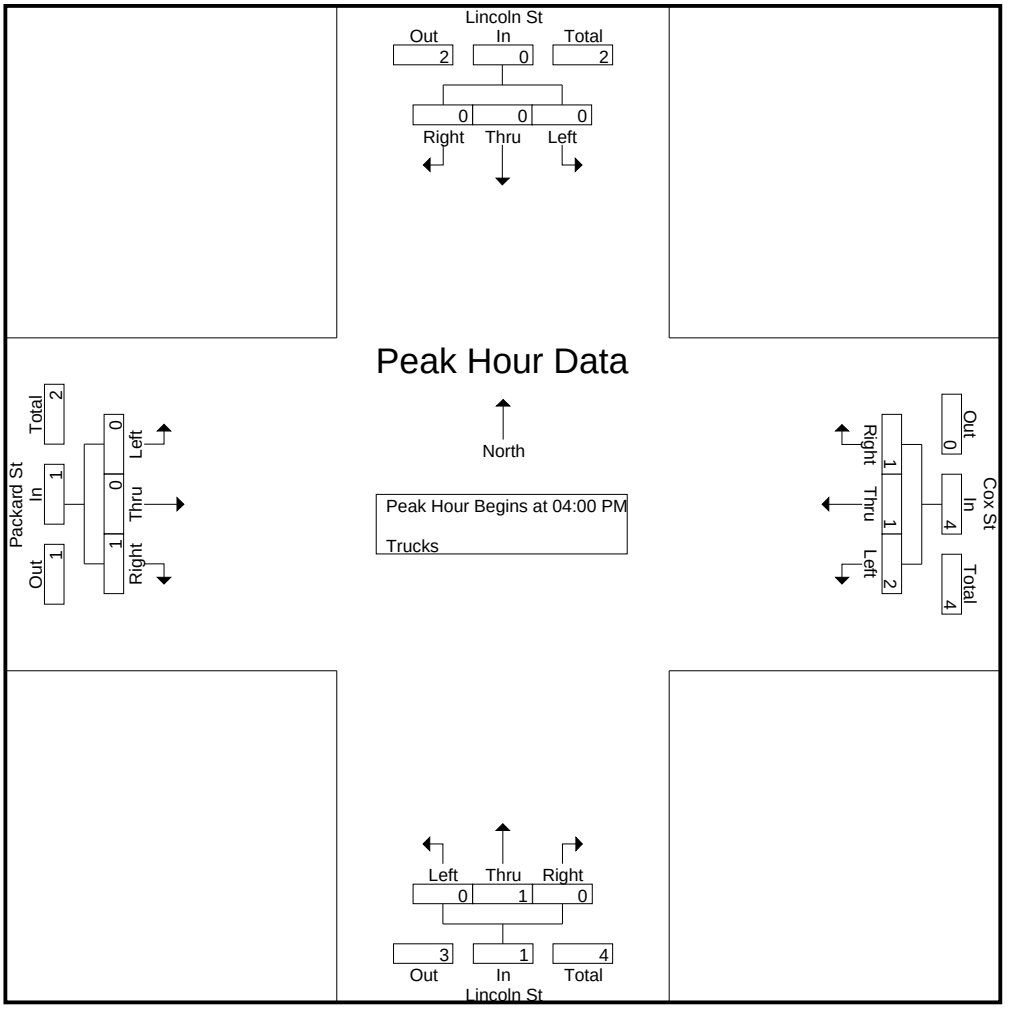
	Lincoln St From North				Cox St From East				Lincoln St From South				Packard St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	**1**	1	0	**1**	0	**1**	0	0	0	0	**2**
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**	1
04:30 PM	0	0	0	0	**2**	0	0	**2**	0	0	0	0	0	0	0	0	2
04:45 PM	0	0	0	0	0	**1**	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	2	1	1	4	0	1	0	1	0	0	1	1	6
% App. Total	0	0	0		50	25	25		0	100	0		0	0	100		
PHF	.000	.000	.000	.000	.250	.250	.250	.500	.000	.250	.000	.250	.000	.000	.250	.250	.750

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

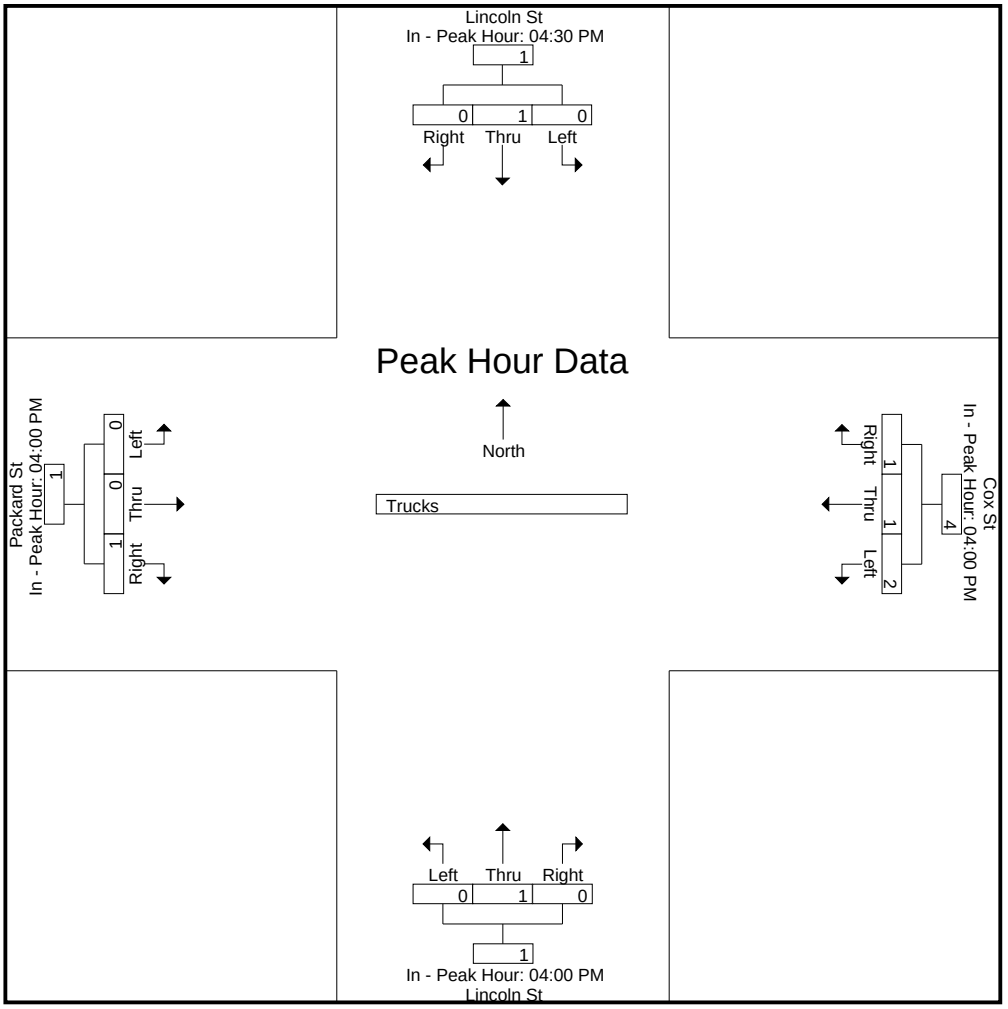
	04:30 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	**1**	1	0	**1**	0	**1**	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**
+30 mins.	0	0	0	0	**2**	0	0	**2**	0	0	0	0	0	0	0	0
+45 mins.	0	**1**	0	**1**	0	**1**	0	1	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	2	1	1	4	0	1	0	1	0	0	1	1
% App. Total	0	100	0		50	25	25		0	100	0		0	0	100	
PHF	.000	.250	.000	.250	.250	.250	.250	.500	.000	.250	.000	.250	.000	.000	.250	.250

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023

Groups Printed- Bikes Peds

	Lincoln St From North				Cox St From East				Lincoln St From South				Packard St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

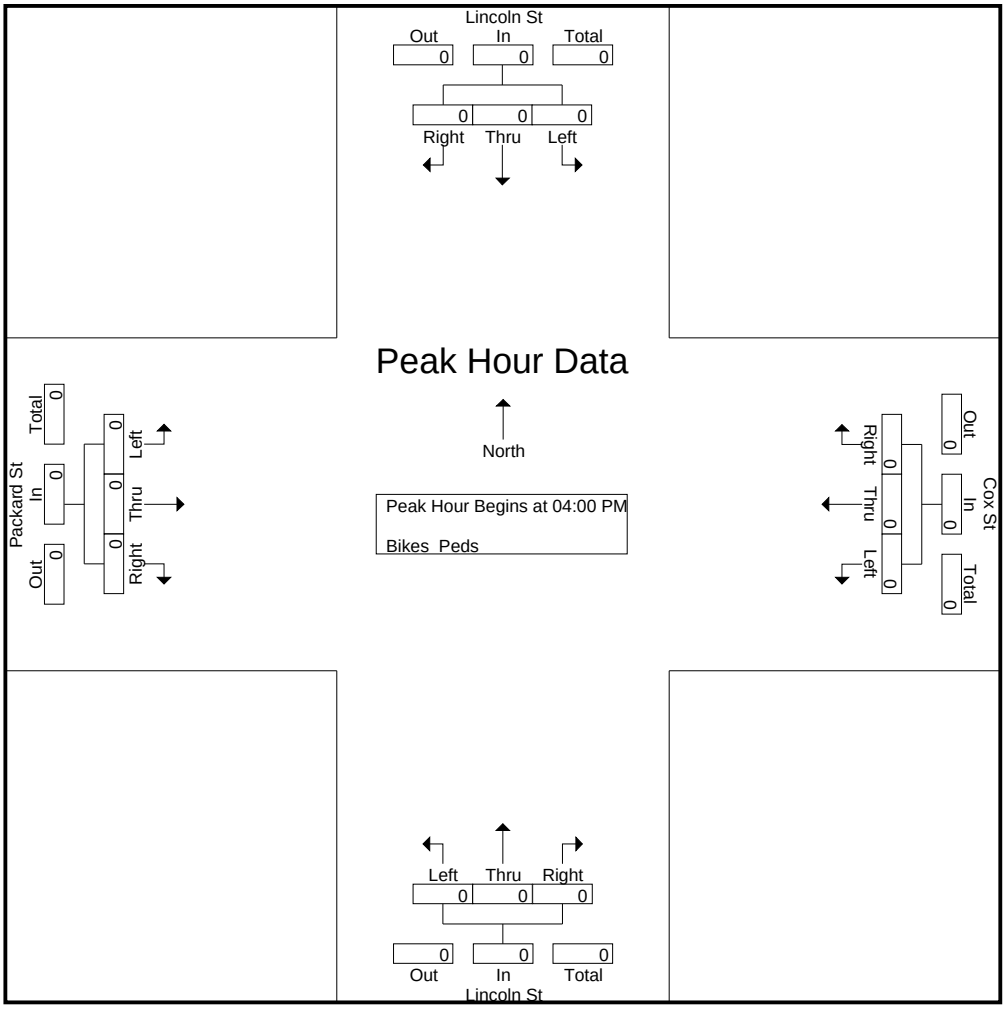
	Lincoln St From North				Cox St From East				Lincoln St From South				Packard St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 11



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

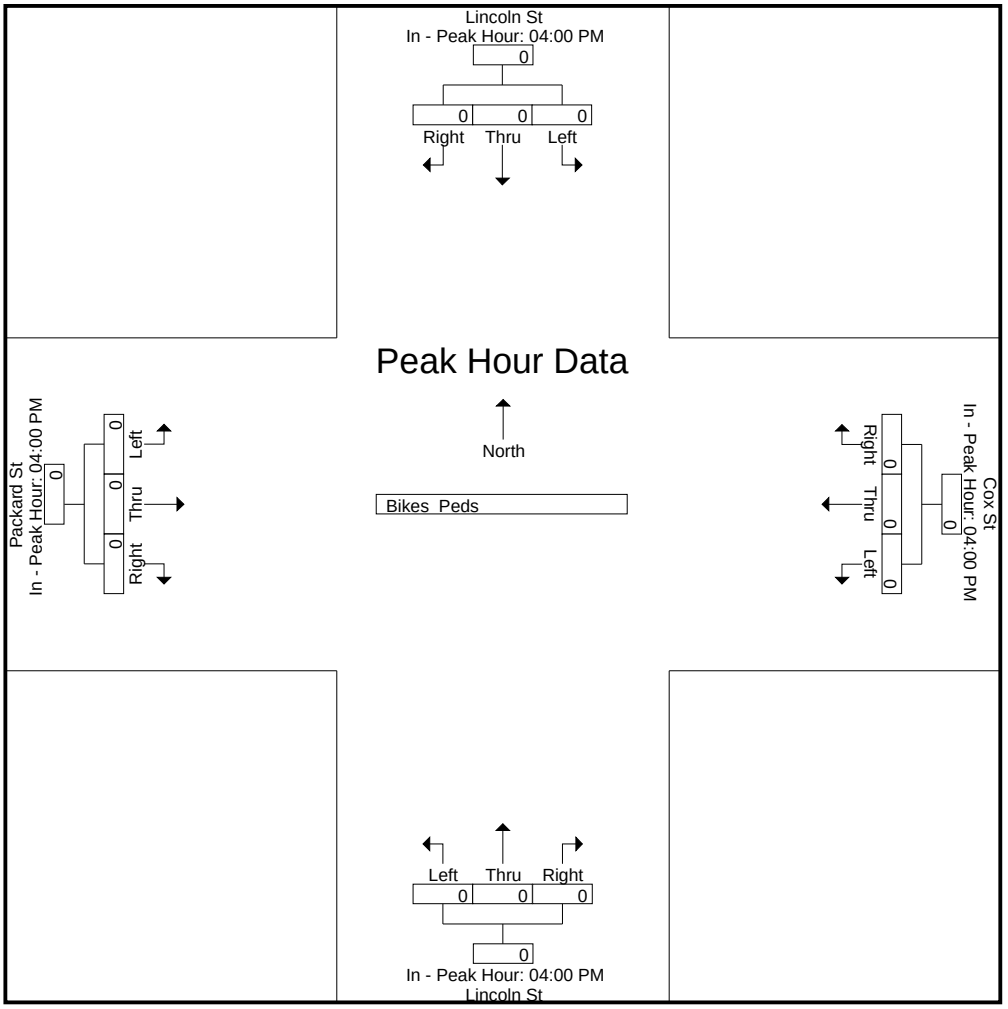
	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Cox Street / Packard Street
City/State : Hudson, MA
Weather : Clear

File Name : 92160005
Site Code : 92160005
Start Date : 1/24/2023
Page No : 12



Client:	Emma Parisi, EIT
Project #:	882_002_HSH
BTD #:	Location G1
Location:	Hudson, MA
Street 1:	Washington Street
Street 2:	Broad Street
Count Date:	3/15/2022
Day of Week:	Tuesday
Weather:	Clouds & Sun, 50°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

PASSENGER CARS & HEAVY VEHICLES COMBINED

	Washington Street Northbound				Broad Street Southbound				Washington Street Southeastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	5	59	41	0	0	0	76	16	1	5	105	0	0	0	0	0
7:15 AM	2	86	68	0	0	0	115	25	0	2	132	0	0	0	0	0
7:30 AM	2	98	63	0	0	0	108	16	1	3	138	0	0	0	0	0
7:45 AM	1	102	68	0	0	0	91	11	0	3	126	0	0	0	0	0
8:00 AM	2	83	67	0	0	0	78	13	0	3	113	0	0	0	0	0
8:15 AM	2	87	73	0	1	0	80	20	0	4	141	0	0	0	0	0
8:30 AM	3	85	67	0	1	0	86	20	0	4	115	0	0	0	0	0
8:45 AM	3	122	70	0	0	0	51	11	0	4	92	0	0	0	0	0

	Washington Street Northbound				Broad Street Southbound				Washington Street Southeastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	2	151	91	0	0	0	120	18	4	9	99	0	0	0	0	0
4:15 PM	9	169	100	0	0	0	98	15	0	14	116	0	0	0	0	0
4:30 PM	3	164	93	0	0	0	107	27	0	8	149	0	0	0	0	0
4:45 PM	2	179	123	0	0	0	94	18	3	10	136	0	0	0	0	0
5:00 PM	3	161	92	0	0	0	89	25	5	12	152	0	0	0	0	0
5:15 PM	0	161	96	0	0	0	95	25	2	12	153	0	0	0	0	0
5:30 PM	5	156	81	0	0	0	103	27	3	11	152	0	0	0	0	0
5:45 PM	0	142	104	0	0	0	81	25	1	6	133	0	0	0	0	0

AM PEAK HOUR 7:15 AM to 8:15 AM	Washington Street Northbound				Broad Street Southbound				Washington Street Southeastbound				Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	7	**369**	**266**	**0**	**0**	**0**	**392**	**65**	**1**	**11**	**509**	**0**	**0**	**0**	**0**	**0**
PHF	**0.94**				**0.82**				**0.92**				**0.00**			
HV %	**14.3%**	**4.9%**	**3.4%**	**0.0%**	**0.0%**	**0.0%**	**2.6%**	**6.2%**	**0.0%**	**27.3%**	**3.1%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

PM PEAK HOUR 4:30 PM to 5:30 PM	Washington Street Northbound				Broad Street Southbound				Washington Street Southeastbound				Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	8	**665**	**404**	**0**	**0**	**0**	**385**	**95**	**10**	**42**	**590**	**0**	**0**	**0**	**0**	**0**
PHF	**0.89**				**0.90**				**0.95**				**0.00**			
HV %	**0.0%**	**0.5%**	**1.5%**	**0.0%**	**0.0%**	**0.0%**	**1.0%**	**3.2%**	**10.0%**	**2.4%**	**2.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Emma Parisi, EIT
Project #:	882_002_HSH
BTD #:	Location G1
Location:	Hudson, MA
Street 1:	Washington Street
Street 2:	Broad Street
Count Date:	3/15/2022
Day of Week:	Tuesday
Weather:	Clouds & Sun, 50°F

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HEAVY VEHICLES

	Washington Street Northbound				Broad Street Southbound				Washington Street Southeastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	1	1	0	0	0	1	1	0	0	1	0	0	0	0	0
7:15 AM	0	3	4	0	0	0	4	1	0	1	4	0	0	0	0	0
7:30 AM	1	4	2	0	0	0	3	2	0	1	3	0	0	0	0	0
7:45 AM	0	7	1	0	0	0	2	1	0	1	3	0	0	0	0	0
8:00 AM	0	4	2	0	0	0	1	0	0	0	6	0	0	0	0	0
8:15 AM	0	3	4	0	0	0	2	0	0	0	3	0	0	0	0	0
8:30 AM	0	4	2	0	0	0	2	0	0	0	6	0	0	0	0	0
8:45 AM	1	6	2	0	0	0	2	0	0	1	6	0	0	0	0	0

	Washington Street Northbound				Broad Street Southbound				Washington Street Southeastbound				Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	4	0	0	0	0	4	1	0	0	1	0	0	0	0	0
4:15 PM	0	1	2	0	0	0	3	0	0	0	1	0	0	0	0	0
4:30 PM	0	0	2	0	0	0	0	2	0	0	3	0	0	0	0	0
4:45 PM	0	1	1	0	0	0	2	0	1	0	4	0	0	0	0	0
5:00 PM	0	0	2	0	0	0	1	1	0	1	6	0	0	0	0	0
5:15 PM	0	2	1	0	0	0	1	0	0	0	1	0	0	0	0	0
5:30 PM	0	2	0	0	0	0	1	0	0	0	1	0	0	0	0	0
5:45 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR	Washington Street Northbound				Broad Street Southbound				Washington Street Southeastbound				Westbound			
7:15 AM to 8:15 AM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	1	**18**	**9**	**0**	**0**	**0**	**10**	**4**	**0**	**3**	**16**	**0**	**0**	**0**	**0**	**0**
PHF	**0.88**				**0.70**				**0.79**				**0.00**			

PM PEAK HOUR	Washington Street Northbound				Broad Street Southbound				Washington Street Southeastbound				Westbound			
4:15 PM to 5:15 PM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**2**	**7**	**0**	**0**	**0**	**6**	**3**	**1**	**1**	**14**	**0**	**0**	**0**	**0**	**0**
PHF	**0.75**				**0.75**				**0.57**				**0.00**			

Client:	Emma Parisi, EIT
Project #:	882_002_HSH
BTD #:	Location G1
Location:	Hudson, MA
Street 1:	Washington Street
Street 2:	Broad Street
Count Date:	3/15/2022
Day of Week:	Tuesday
Weather:	Clouds & Sun, 50°F

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PEDESTRIANS & BICYCLES

	Washington Street Northbound				Broad Street Southbound				Washington Street Southeastbound				Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Washington Street Northbound				Broad Street Southbound				Washington Street Southeastbound				Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1]	Washington Street Northbound				Broad Street Southbound				Washington Street Southeastbound				Westbound			
7:15 AM to 8:15 AM	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0

PM PEAK HOUR[1]	Washington Street Northbound				Broad Street Southbound				Washington Street Southeastbound				Westbound			
4:30 PM to 5:30 PM	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Client:	Emma Parisi, EIT
Project #:	882_002_HSH
BTD #:	Location G3
Location:	Hudson, MA
Street 1:	Driveway at Rotary
Street 2:	Washington Street/Broad Street
Count Date:	3/15/2022
Day of Week:	Tuesday
Weather:	Clouds & Sun, 50°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Driveway at Rotary				Driveway at Rotary			
Start Time	-	-	In	-	-	-	Out	-
7:00 AM	-	-	0	-	-	-	0	-
7:15 AM	-	-	0	-	-	-	0	-
7:30 AM	-	-	0	-	-	-	0	-
7:45 AM	-	-	0	-	-	-	0	-
8:00 AM	-	-	0	-	-	-	0	-
8:15 AM	-	-	0	-	-	-	0	-
8:30 AM	-	-	0	-	-	-	0	-
8:45 AM	-	-	0	-	-	-	0	-

	Driveway at Rotary				Driveway at Rotary			
Start Time	-	-	In	-	-	-	Out	-
4:00 PM	-	-	0	-	-	-	0	-
4:15 PM	-	-	0	-	-	-	0	-
4:30 PM	-	-	0	-	-	-	0	-
4:45 PM	-	-	0	-	-	-	0	-
5:00 PM	-	-	0	-	-	-	0	-
5:15 PM	-	-	0	-	-	-	0	-
5:30 PM	-	-	0	-	-	-	0	-
5:45 PM	-	-	0	-	-	-	0	-

AM PEAK HOUR	Driveway at Rotary				Driveway at Rotary			
7:00 AM								
to	-	-	In	-	-	-	Out	-
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.00**				**0.00**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

PM PEAK HOUR	Driveway at Rotary				Driveway at Rotary			
4:00 PM								
to	-	-	In	-	-	-	Out	-
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.00**				**0.00**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Client:	Emma Parisi, EIT
Project #:	882_002_HSH
BTD #:	Location G3
Location:	Hudson, MA
Street 1:	Driveway at Rotary
Street 2:	Washington Street/Broad Street
Count Date:	3/15/2022
Day of Week:	Tuesday
Weather:	Clouds & Sun, 50°F

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HEAVY VEHICLES

	Driveway at Rotary					Driveway at Rotary		
Start Time	-	-	In	-	-	-	Out	-
7:00 AM	-	-	0	-	-	-	0	-
7:15 AM	-	-	0	-	-	-	0	-
7:30 AM	-	-	0	-	-	-	0	-
7:45 AM	-	-	0	-	-	-	0	-
8:00 AM	-	-	0	-	-	-	0	-
8:15 AM	-	-	0	-	-	-	0	-
8:30 AM	-	-	0	-	-	-	0	-
8:45 AM	-	-	0	-	-	-	0	-

	Driveway at Rotary					Driveway at Rotary		
Start Time	-	-	In	-	-	-	Out	-
4:00 PM	-	-	0	-	-	-	0	-
4:15 PM	-	-	0	-	-	-	0	-
4:30 PM	-	-	0	-	-	-	0	-
4:45 PM	-	-	0	-	-	-	0	-
5:00 PM	-	-	0	-	-	-	0	-
5:15 PM	-	-	0	-	-	-	0	-
5:30 PM	-	-	0	-	-	-	0	-
5:45 PM	-	-	0	-	-	-	0	-

AM PEAK HOUR	Driveway at Rotary					Driveway at Rotary		
7:00 AM								
to	-	-	In	-	-	-	Out	-
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.00**				**0.00**			

PM PEAK HOUR	Driveway at Rotary					Driveway at Rotary		
4:00 PM								
to	-	-	In	-	-	-	Out	-
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PHF	**0.00**				**0.00**			

Client:	Emma Parisi, EIT
Project #:	882_002_HSH
BTD #:	Location A
Location:	Hudson, MA
Street 1:	Washington Street
Street 2:	Technology Drive & 85C
Count Date:	3/15/2022
Day of Week:	Tuesday
Weather:	Clouds & Sun, 50°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Washington Street Northbound				Washington Street Southbound				85C Eastbound				Technology Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	37	34	8	0	1	59	121	0	66	79	69	0	6	39	1
7:15 AM	0	45	53	8	0	7	68	155	0	104	100	85	0	6	59	3
7:30 AM	0	49	42	8	0	3	67	165	0	104	66	106	0	11	80	5
7:45 AM	0	52	51	11	0	13	80	114	0	111	116	77	0	9	78	4
8:00 AM	0	26	39	14	0	10	68	112	0	105	89	56	0	7	51	7
8:15 AM	0	25	47	7	0	14	63	123	0	101	74	44	0	7	72	8
8:30 AM	0	35	48	3	0	13	67	108	0	96	65	46	0	12	58	6
8:45 AM	0	18	79	10	0	12	78	53	0	96	75	56	0	8	44	6

	Washington Street Northbound				Washington Street Southbound				85C Eastbound				Technology Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	62	120	12	0	21	75	123	0	93	65	43	0	13	91	14
4:15 PM	0	51	93	18	0	22	87	124	0	128	86	65	0	15	91	8
4:30 PM	0	80	99	21	0	18	88	130	0	105	77	51	0	12	90	19
4:45 PM	0	67	126	17	0	23	87	116	0	153	76	61	0	16	59	7
5:00 PM	0	68	103	19	0	11	82	127	0	116	67	55	0	18	106	13
5:15 PM	0	83	108	7	0	11	104	128	0	138	77	67	0	18	75	14
5:30 PM	0	73	105	24	0	15	103	125	0	101	67	38	0	23	81	7
5:45 PM	0	74	95	7	0	11	92	108	0	120	39	25	0	8	53	7

AM PEAK HOUR 7:15 AM to 8:15 AM	Washington Street Northbound				Washington Street Southbound				85C Eastbound				Technology Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**172**	**185**	**41**	**0**	**33**	**283**	**546**	**0**	**424**	**371**	**324**	**0**	**33**	**268**	**19**
PHF	**0.87**				**0.92**				**0.92**				**0.83**			
HV %	**0.0%**	**9.3%**	**4.3%**	**12.2%**	**0.0%**	**0.0%**	**3.9%**	**3.3%**	**0.0%**	**4.0%**	**3.8%**	**2.2%**	**0.0%**	**0.0%**	**1.9%**	**5.3%**

PM PEAK HOUR 4:30 PM to 5:30 PM	Washington Street Northbound				Washington Street Southbound				85C Eastbound				Technology Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**298**	**436**	**64**	**0**	**63**	**361**	**501**	**0**	**512**	**297**	**234**	**0**	**64**	**330**	**53**
PHF	**0.95**				**0.95**				**0.90**				**0.82**			
HV %	**0.0%**	**0.0%**	**0.5%**	**1.6%**	**0.0%**	**0.0%**	**1.7%**	**1.6%**	**0.0%**	**1.2%**	**1.0%**	**0.4%**	**0.0%**	**0.0%**	**0.9%**	**0.0%**

Client:	Emma Parisi, EIT
Project #:	882_002_HSH
BTD #:	Location A
Location:	Hudson, MA
Street 1:	Washington Street
Street 2:	Technology Drive & 85C
Count Date:	3/15/2022
Day of Week:	Tuesday
Weather:	Clouds & Sun, 50°F

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HEAVY VEHICLES

	Washington Street Northbound				Washington Street Southbound				85C Eastbound				Technology Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	1	1	0	0	0	0	4	0	1	2	2	0	0	1	0
7:15 AM	0	12	2	4	0	0	3	5	0	6	6	2	0	0	3	0
7:30 AM	0	2	1	0	0	0	2	6	0	3	1	4	0	0	0	0
7:45 AM	0	2	2	0	0	0	2	4	0	5	3	0	0	0	1	1
8:00 AM	0	0	3	1	0	0	4	3	0	3	4	1	0	0	1	0
8:15 AM	0	0	3	1	0	1	1	3	0	4	1	2	0	0	2	1
8:30 AM	0	2	3	0	0	1	2	3	0	3	1	2	0	0	2	0
8:45 AM	0	4	6	1	0	0	3	5	0	3	3	3	0	0	1	0

	Washington Street Northbound				Washington Street Southbound				85C Eastbound				Technology Drive Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	1	3	0	0	0	1	4	0	3	2	0	0	0	1	0
4:15 PM	0	1	0	0	0	0	0	3	0	2	3	0	0	0	0	0
4:30 PM	0	0	1	1	0	0	1	2	0	1	2	0	0	0	3	0
4:45 PM	0	0	1	0	0	0	1	3	0	1	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	2	2	0	2	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	2	1	0	2	1	1	0	0	0	0
5:30 PM	0	2	1	1	0	0	0	2	0	1	0	0	0	0	1	0
5:45 PM	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0

AM PEAK HOUR 7:15 AM to 8:15 AM	Washington Street Northbound				Washington Street Southbound				85C Eastbound				Technology Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**16**	**8**	**5**	**0**	**0**	**11**	**18**	**0**	**17**	**14**	**7**	**0**	**0**	**5**	**1**
PHF	**0.40**				**0.91**				**0.68**				**0.50**			

PM PEAK HOUR 4:00 PM to 5:00 PM	Washington Street Northbound				Washington Street Southbound				85C Eastbound				Technology Drive Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**2**	**5**	**1**	**0**	**0**	**3**	**12**	**0**	**7**	**7**	**0**	**0**	**0**	**4**	**0**
PHF	**0.50**				**0.75**				**0.70**				**0.33**			

Client:	Emma Parisi, EIT
Project #:	882_002_HSH
BTD #:	Location A
Location:	Hudson, MA
Street 1:	Washington Street
Street 2:	Technology Drive & 85C
Count Date:	3/15/2022
Day of Week:	Tuesday
Weather:	Clouds & Sun, 50°F

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PEDESTRIANS & BICYCLES

	Washington Street Northbound				Washington Street Southbound				85C Eastbound				Technology Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Washington Street Northbound				Washington Street Southbound				85C Eastbound				Technology Drive Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1] 7:15 AM to 8:15 AM	Washington Street Northbound				Washington Street Southbound				85C Eastbound				Technology Drive Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR[1] 4:30 PM to 5:30 PM	Washington Street Northbound				Washington Street Southbound				85C Eastbound				Technology Drive Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	1	0	0	0	0	2	0	0	0	1	0	0	0	2

[1] *NOTE: Peak hour summaries here correspond to peak hours identified for passenger cars and heavy vehicles combined.*

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 1

Groups Printed- Cars - Trucks

	Stevens St From North			East Main St From East			East Main St From South			Lincoln St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	7	3	0	48	62	39	2	4	70	0	104	4	343
07:15 AM	5	1	2	88	105	64	1	14	69	0	92	5	446
07:30 AM	8	3	0	90	93	91	1	13	84	1	79	8	471
07:45 AM	23	13	4	86	72	78	2	41	107	5	72	3	506
Total	43	20	6	312	332	272	6	72	330	6	347	20	1766
08:00 AM	8	4	8	67	70	38	3	16	87	4	93	1	399
08:15 AM	11	0	1	92	81	37	8	5	94	0	70	5	404
08:30 AM	9	1	1	65	82	33	6	9	102	2	121	8	439
08:45 AM	14	1	1	93	73	36	5	12	78	0	80	4	397
Total	42	6	11	317	306	144	22	42	361	6	364	18	1639
Grand Total	85	26	17	629	638	416	28	114	691	12	711	38	3405
Apprch %	66.4	20.3	13.3	37.4	37.9	24.7	3.4	13.7	83	1.6	93.4	5	
Total %	2.5	0.8	0.5	18.5	18.7	12.2	0.8	3.3	20.3	0.4	20.9	1.1	
Cars	83	24	16	596	629	404	26	112	651	12	692	37	3282
% Cars	97.6	92.3	94.1	94.8	98.6	97.1	92.9	98.2	94.2	100	97.3	97.4	96.4
Trucks	2	2	1	33	9	12	2	2	40	0	19	1	123
% Trucks	2.4	7.7	5.9	5.2	1.4	2.9	7.1	1.8	5.8	0	2.7	2.6	3.6

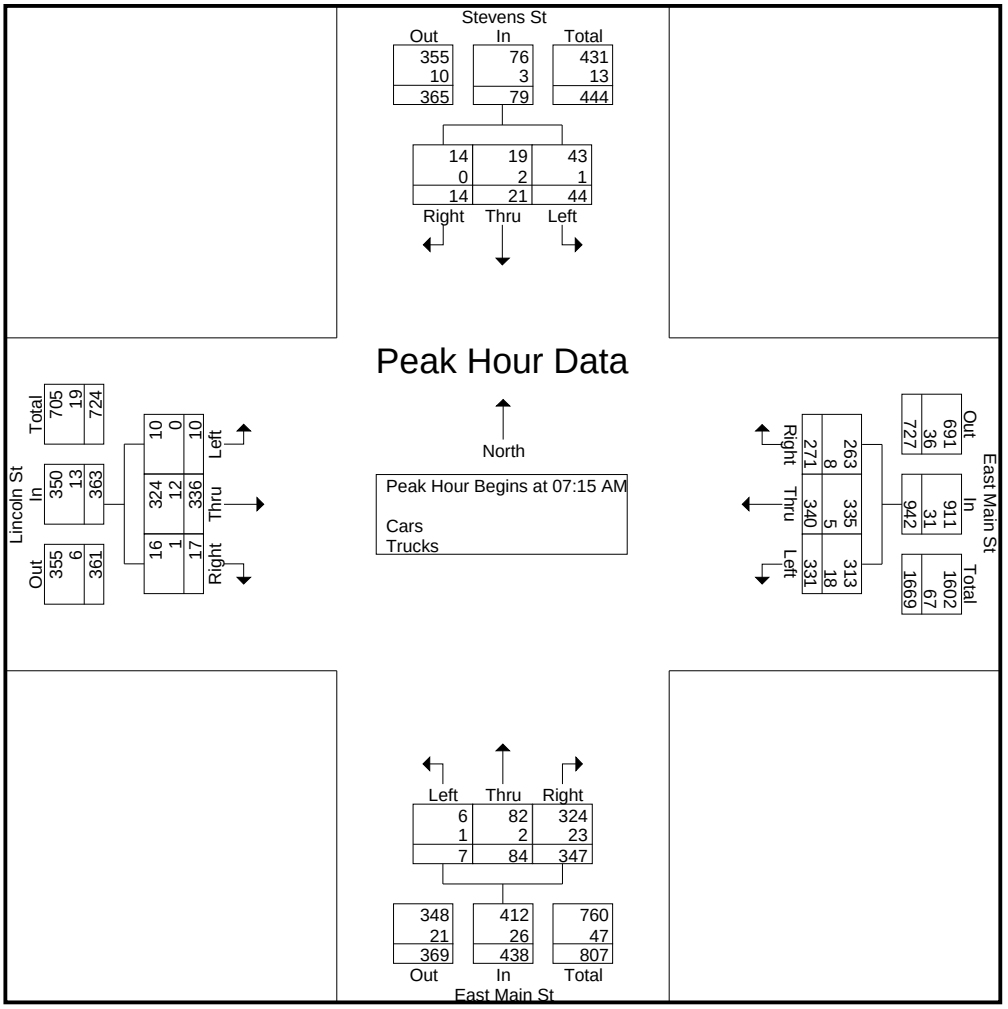
	Stevens St From North				East Main St From East				East Main St From South				Lincoln St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	5	1	2	8	88	**105**	64	257	1	14	69	84	0	92	5	97	446
07:30 AM	8	3	0	11	**90**	93	**91**	**274**	1	13	84	98	1	79	**8**	88	471
07:45 AM	**23**	**13**	4	**40**	86	72	78	236	2	**41**	**107**	**150**	**5**	72	3	80	**506**
08:00 AM	8	4	**8**	20	67	70	38	175	**3**	16	87	106	4	**93**	1	**98**	399
Total Volume	44	21	14	79	331	340	271	942	7	84	347	438	10	336	17	363	1822
% App. Total	55.7	26.6	17.7		35.1	36.1	28.8		1.6	19.2	79.2		2.8	92.6	4.7		
PHF	.478	.404	.438	.494	.919	.810	.745	.859	.583	.512	.811	.730	.500	.903	.531	.926	.900
Cars	43	19	14	76	313	335	263	911	6	82	324	412	10	324	16	350	1749
% Cars	97.7	90.5	100	96.2	94.6	98.5	97.0	96.7	85.7	97.6	93.4	94.1	100	96.4	94.1	96.4	96.0
Trucks	1	2	0	3	18	5	8	31	1	2	23	26	0	12	1	13	73
% Trucks	2.3	9.5	0	3.8	5.4	1.5	3.0	3.3	14.3	2.4	6.6	5.9	0	3.6	5.9	3.6	4.0

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

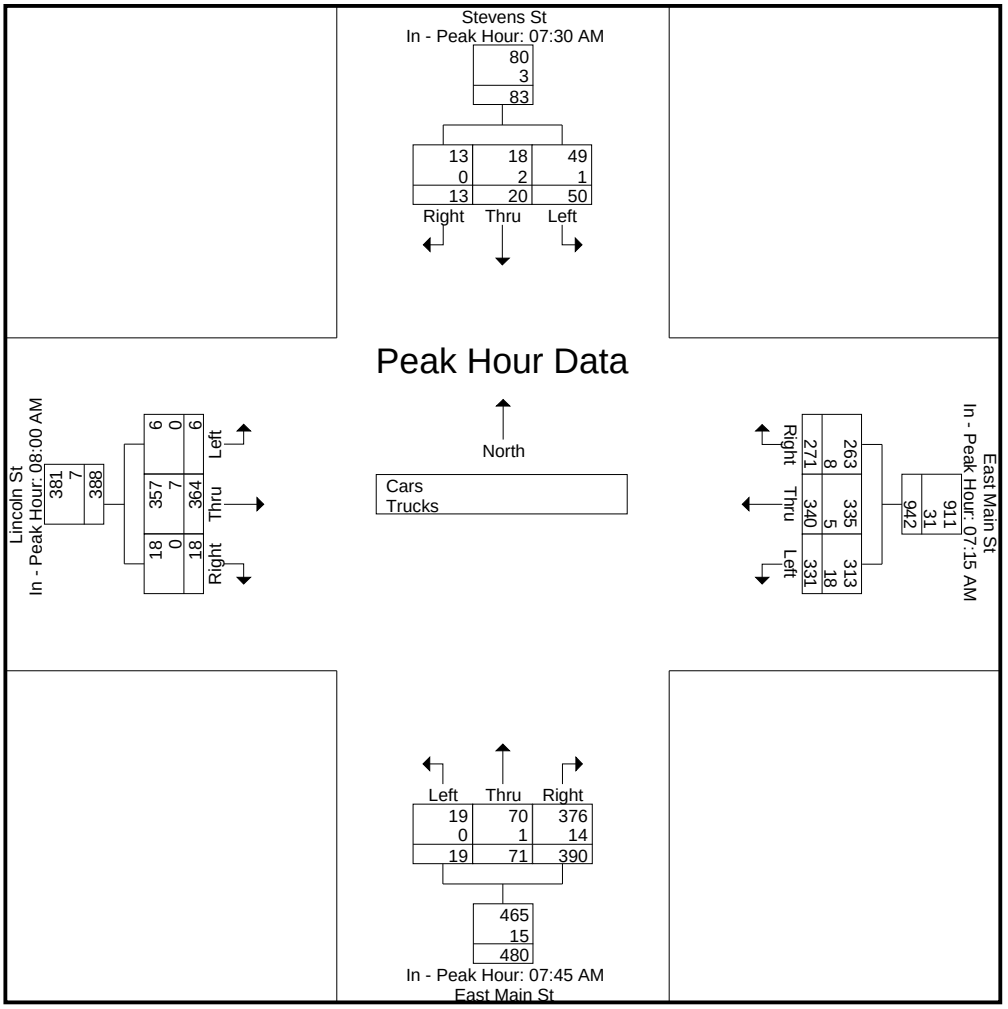
	07:30 AM				07:15 AM				07:45 AM				08:00 AM			
+0 mins.	8	3	0	11	88	**105**	64	257	2	**41**	**107**	**150**	**4**	93	1	98
+15 mins.	**23**	**13**	4	**40**	**90**	93	**91**	**274**	3	16	87	106	0	70	5	75
+30 mins.	8	4	**8**	20	86	72	78	236	**8**	5	94	107	2	**121**	**8**	**131**
+45 mins.	11	0	1	12	67	70	38	175	6	9	102	117	0	80	4	84
Total Volume	50	20	13	83	331	340	271	942	19	71	390	480	6	364	18	388
% App. Total	60.2	24.1	15.7		35.1	36.1	28.8		4	14.8	81.2		1.5	93.8	4.6	
PHF	.543	.385	.406	.519	.919	.810	.745	.859	.594	.433	.911	.800	.375	.752	.563	.740
Cars	49	18	13	80	313	335	263	911	19	70	376	465	6	357	18	381
% Cars	98	90	100	96.4	94.6	98.5	97	96.7	100	98.6	96.4	96.9	100	98.1	100	98.2
Trucks	1	2	0	3	18	5	8	31	0	1	14	15	0	7	0	7
% Trucks	2	10	0	3.6	5.4	1.5	3	3.3	0	1.4	3.6	3.1	0	1.9	0	1.8

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023

Groups Printed- Cars

	Stevens St From North			East Main St From East			East Main St From South			Lincoln St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	7	3	0	47	61	38	2	4	60	0	100	4	326
07:15 AM	5	1	2	81	105	62	1	14	66	0	91	5	433
07:30 AM	7	3	0	85	91	86	0	12	73	1	76	7	441
07:45 AM	23	11	4	82	70	77	2	41	104	5	68	3	490
Total	42	18	6	295	327	263	5	71	303	6	335	19	1690
08:00 AM	8	4	8	65	69	38	3	15	81	4	89	1	385
08:15 AM	11	0	1	87	79	37	8	5	92	0	68	5	393
08:30 AM	9	1	0	60	82	33	6	9	99	2	120	8	429
08:45 AM	13	1	1	89	72	33	4	12	76	0	80	4	385
Total	41	6	10	301	302	141	21	41	348	6	357	18	1592
Grand Total	83	24	16	596	629	404	26	112	651	12	692	37	3282
Apprch %	67.5	19.5	13	36.6	38.6	24.8	3.3	14.2	82.5	1.6	93.4	5	
Total %	2.5	0.7	0.5	18.2	19.2	12.3	0.8	3.4	19.8	0.4	21.1	1.1	

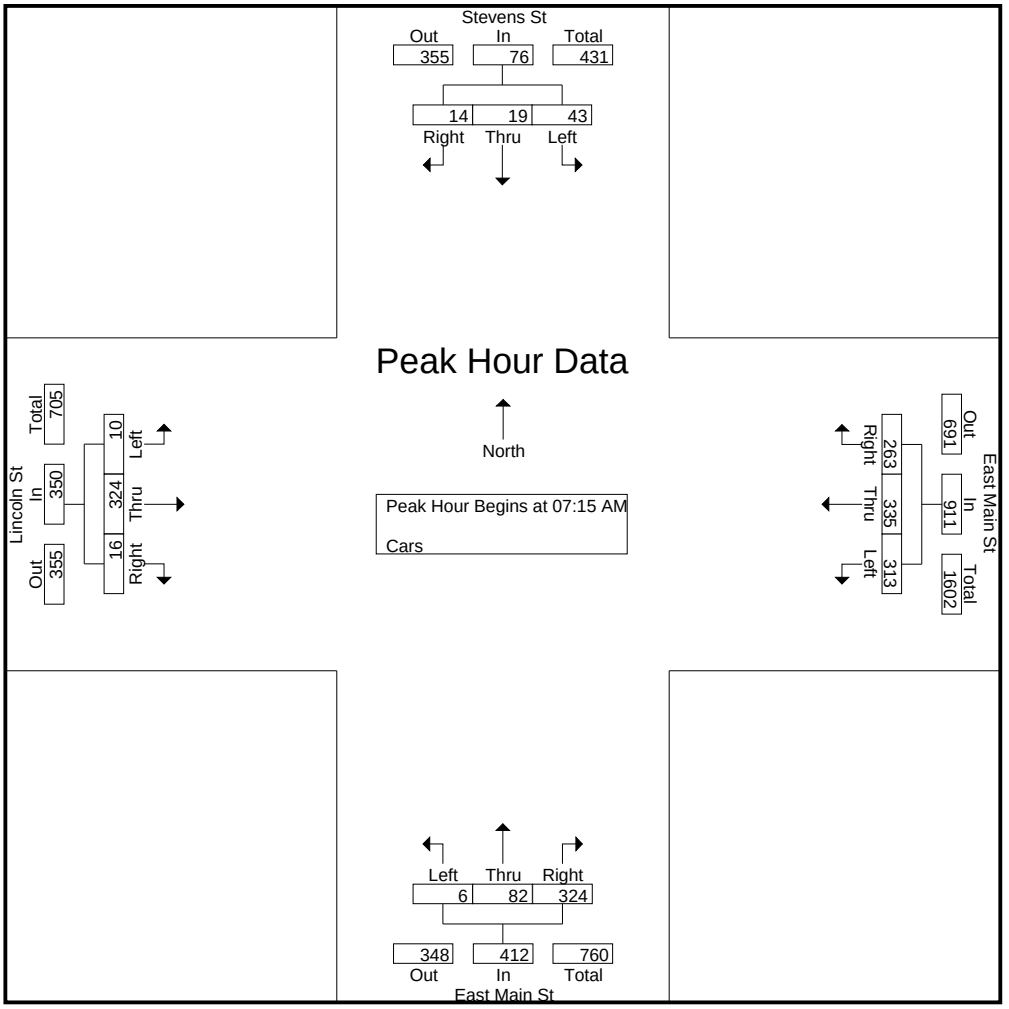
	Stevens St From North				East Main St From East				East Main St From South				Lincoln St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	5	1	2	8	81	**105**	62	248	1	14	66	81	0	**91**	5	**96**	433
07:30 AM	7	3	0	10	**85**	91	**86**	**262**	0	12	73	85	1	76	**7**	84	441
07:45 AM	**23**	**11**	4	**38**	82	70	77	229	2	**41**	**104**	**147**	**5**	68	3	76	**490**
08:00 AM	8	4	**8**	20	65	69	38	172	**3**	15	81	99	4	89	1	94	385
Total Volume	43	19	14	76	313	335	263	911	6	82	324	412	10	324	16	350	1749
% App. Total	56.6	25	18.4		34.4	36.8	28.9		1.5	19.9	78.6		2.9	92.6	4.6		
PHF	.467	.432	.438	.500	.921	.798	.765	.869	.500	.500	.779	.701	.500	.890	.571	.911	.892

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

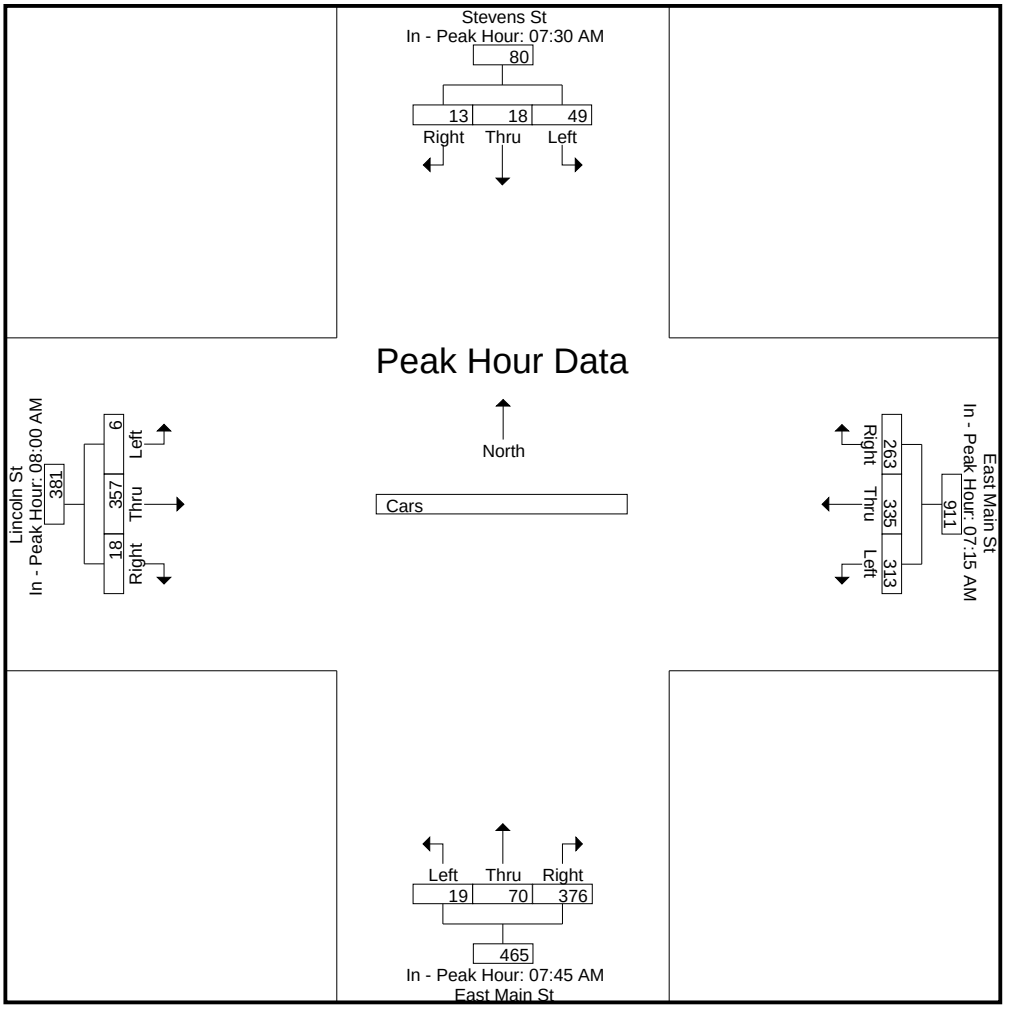
	07:30 AM				07:15 AM				07:45 AM				08:00 AM			
+0 mins.	7	3	0	10	81	**105**	62	248	2	**41**	**104**	**147**	**4**	89	1	94
+15 mins.	**23**	**11**	4	**38**	**85**	91	**86**	**262**	3	15	81	99	0	68	5	73
+30 mins.	8	4	**8**	20	82	70	77	229	**8**	5	92	105	2	**120**	**8**	**130**
+45 mins.	11	0	1	12	65	69	38	172	6	9	99	114	0	80	4	84
Total Volume	49	18	13	80	313	335	263	911	19	70	376	465	6	357	18	381
% App. Total	61.2	22.5	16.2		34.4	36.8	28.9		4.1	15.1	80.9		1.6	93.7	4.7	
PHF	.533	.409	.406	.526	.921	.798	.765	.869	.594	.427	.904	.791	.375	.744	.563	.733

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023

Groups Printed- Trucks

	Stevens St From North			East Main St From East			East Main St From South			Lincoln St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	1	1	1	0	0	10	0	4	0	17
07:15 AM	0	0	0	7	0	2	0	0	3	0	1	0	13
07:30 AM	1	0	0	5	2	5	1	1	11	0	3	1	30
07:45 AM	0	2	0	4	2	1	0	0	3	0	4	0	16
Total	1	2	0	17	5	9	1	1	27	0	12	1	76
08:00 AM	0	0	0	2	1	0	0	1	6	0	4	0	14
08:15 AM	0	0	0	5	2	0	0	0	2	0	2	0	11
08:30 AM	0	0	1	5	0	0	0	0	3	0	1	0	10
08:45 AM	1	0	0	4	1	3	1	0	2	0	0	0	12
Total	1	0	1	16	4	3	1	1	13	0	7	0	47
Grand Total	2	2	1	33	9	12	2	2	40	0	19	1	123
Apprch %	40	40	20	61.1	16.7	22.2	4.5	4.5	90.9	0	95	5	
Total %	1.6	1.6	0.8	26.8	7.3	9.8	1.6	1.6	32.5	0	15.4	0.8	

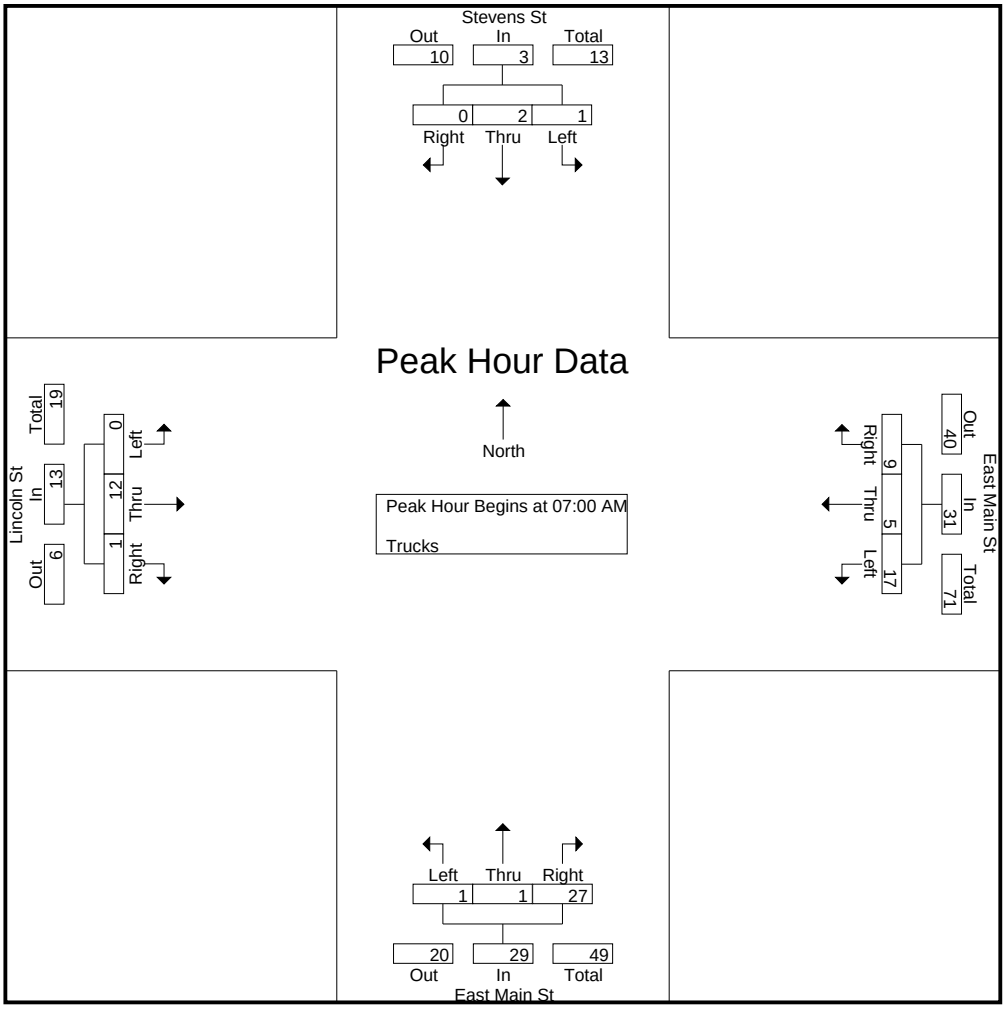
	Stevens St From North				East Main St From East				East Main St From South				Lincoln St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	1	1	1	3	0	0	10	10	0	**4**	0	**4**	17
07:15 AM	0	0	0	0	**7**	0	2	9	0	0	3	3	0	1	0	1	13
07:30 AM	**1**	0	0	1	5	**2**	**5**	**12**	**1**	**1**	**11**	**13**	0	3	**1**	4	**30**
07:45 AM	0	**2**	0	**2**	4	2	1	7	0	0	3	3	0	4	0	4	16
Total Volume	1	2	0	3	17	5	9	31	1	1	27	29	0	12	1	13	76
% App. Total	33.3	66.7	0		54.8	16.1	29		3.4	3.4	93.1		0	92.3	7.7		
PHF	.250	.250	.000	.375	.607	.625	.450	.646	.250	.250	.614	.558	.000	.750	.250	.813	.633

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

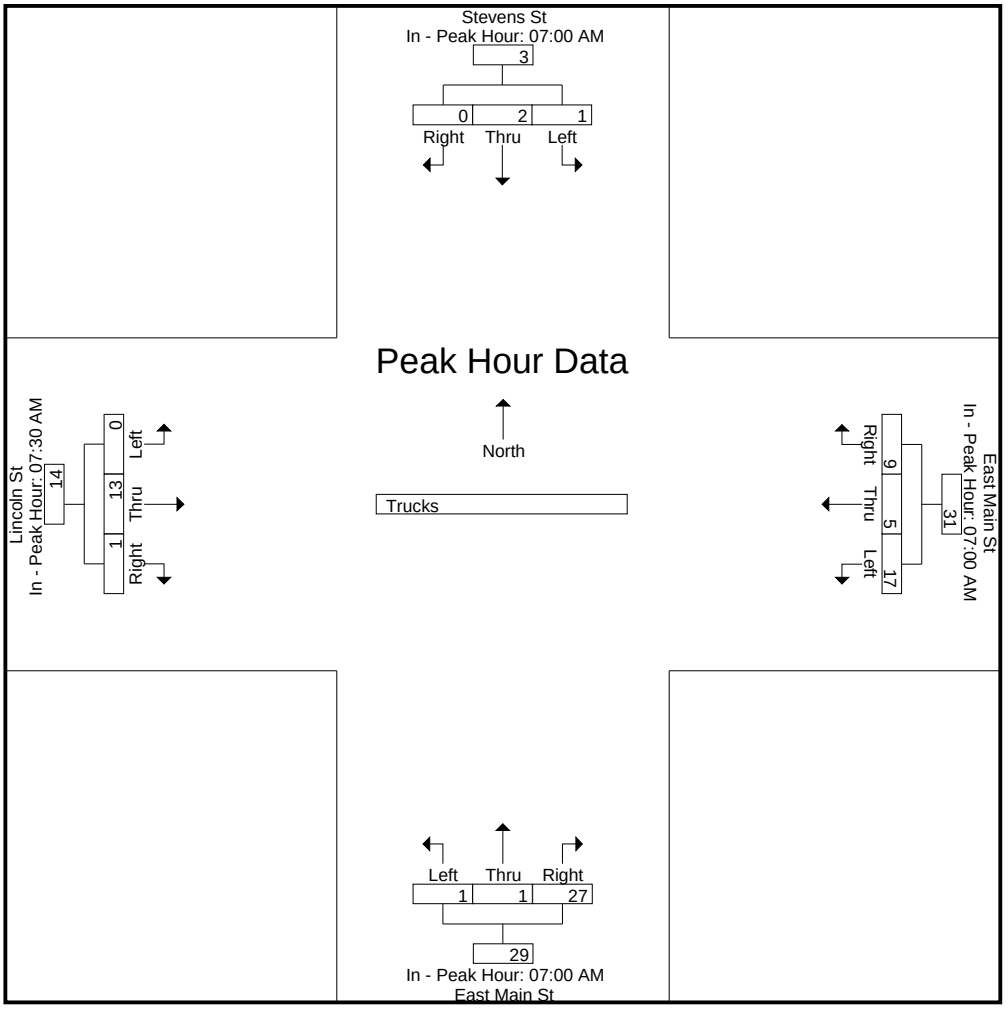
	07:00 AM				07:00 AM				07:00 AM				07:30 AM			
+0 mins.	0	0	0	0	1	1	1	3	0	0	10	10	0	3	**1**	**4**
+15 mins.	0	0	0	0	**7**	0	2	9	0	0	3	3	0	**4**	0	4
+30 mins.	**1**	0	0	1	5	**2**	**5**	**12**	**1**	**1**	**11**	**13**	0	4	0	4
+45 mins.	0	**2**	0	**2**	4	2	1	7	0	0	3	3	0	2	0	2
Total Volume	1	2	0	3	17	5	9	31	1	1	27	29	0	13	1	14
% App. Total	33.3	66.7	0		54.8	16.1	29		3.4	3.4	93.1		0	92.9	7.1	
PHF	.250	.250	.000	.375	.607	.625	.450	.646	.250	.250	.614	.558	.000	.813	.250	.875

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023

Groups Printed- Bikes Peds

	Stevens St From North				East Main St From East				East Main St From South				Lincoln St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
07:30 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
Total	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	0	4	0	4
08:00 AM	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	3	0	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
Total	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	1	5	0	5
Grand Total	0	0	0	5	0	0	0	0	0	0	0	3	0	0	0	1	9	0	9
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

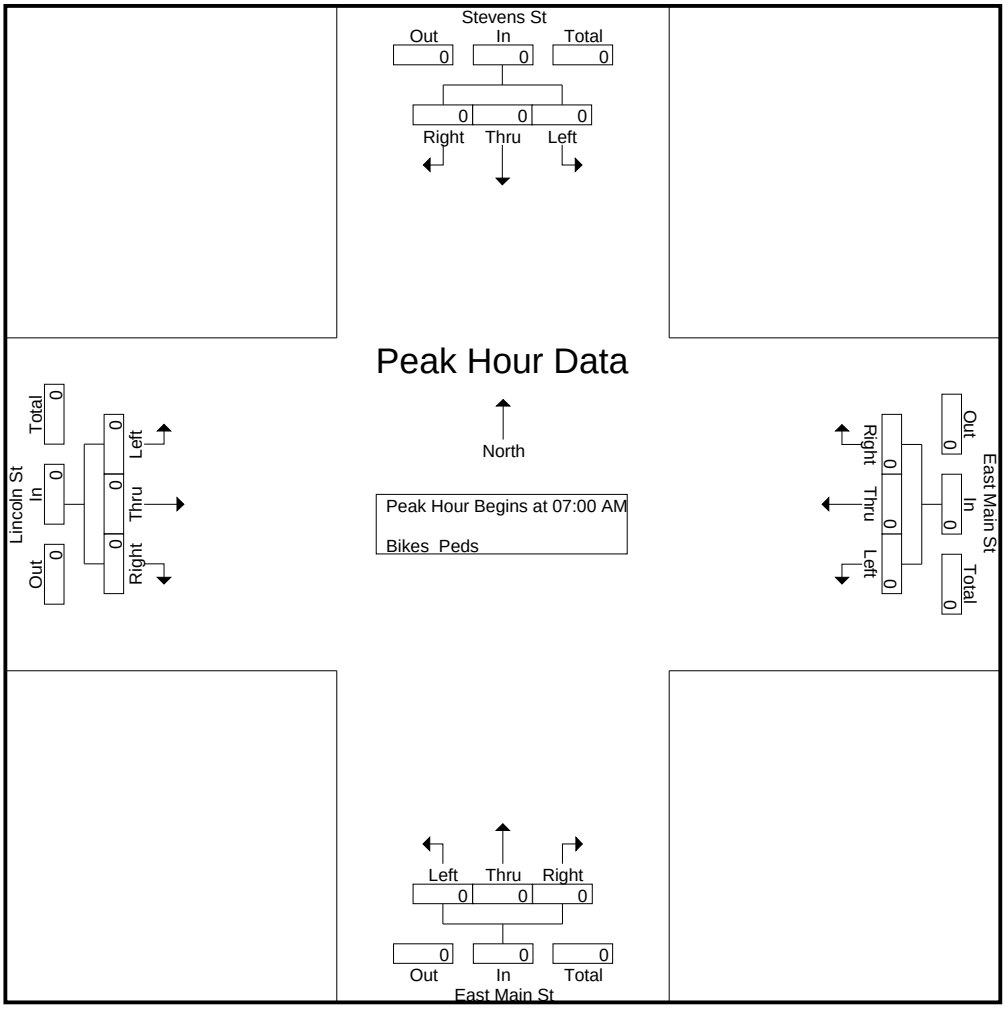
	Stevens St From North				East Main St From East				East Main St From South				Lincoln St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

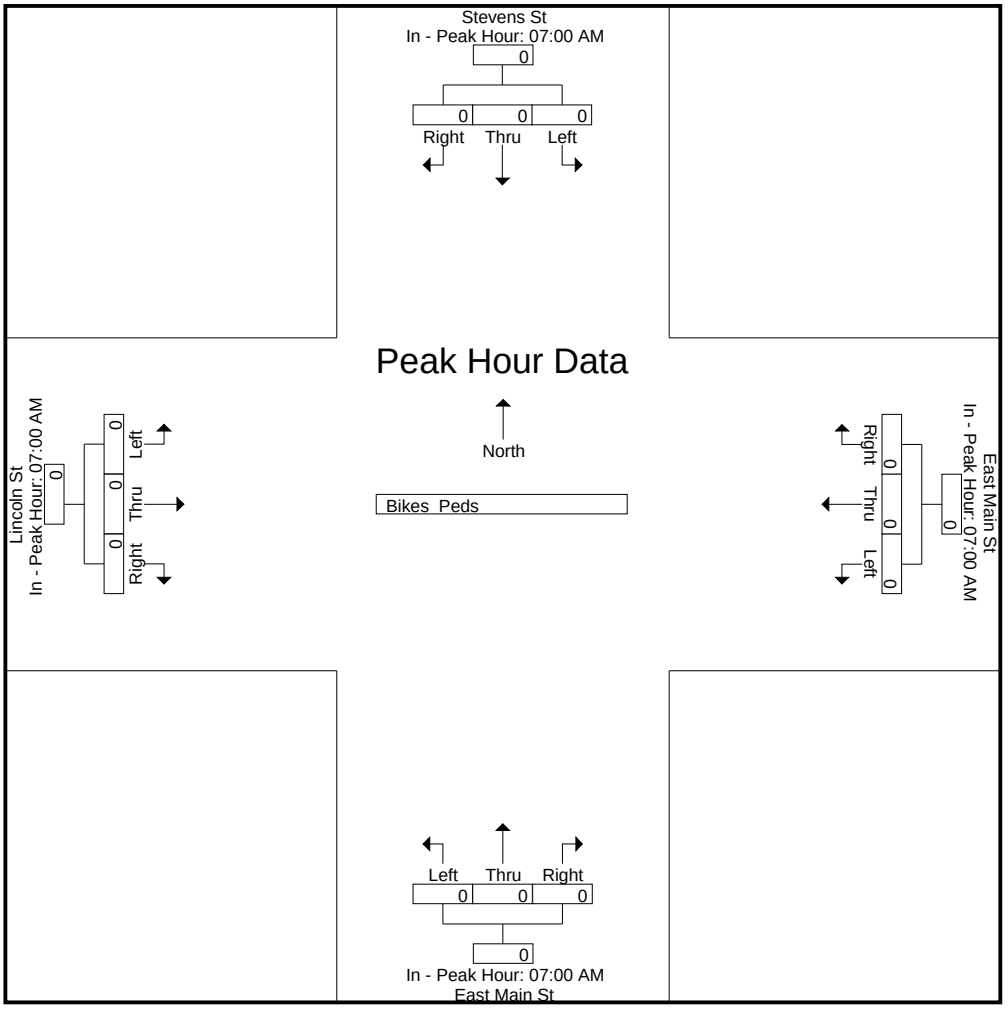
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 12



Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023

Groups Printed- Cars - Trucks

	Stevens St From North			East Main St From East			East Main St From South			Lincoln St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	5	2	0	103	95	53	1	13	109	0	69	5	455
04:15 PM	8	0	1	99	120	65	2	8	118	0	88	5	514
04:30 PM	1	3	0	95	99	71	2	17	113	0	88	4	493
04:45 PM	6	4	1	84	101	55	5	15	117	1	82	3	474
Total	20	9	2	381	415	244	10	53	457	1	327	17	1936
05:00 PM	4	0	0	102	97	76	2	14	105	2	80	3	485
05:15 PM	3	3	0	93	95	62	3	12	129	1	79	4	484
05:30 PM	7	3	0	81	105	64	1	22	108	0	90	3	484
05:45 PM	38	10	0	101	90	64	6	13	112	1	87	2	524
Total	52	16	0	377	387	266	12	61	454	4	336	12	1977
Grand Total	72	25	2	758	802	510	22	114	911	5	663	29	3913
Apprch %	72.7	25.3	2	36.6	38.7	24.6	2.1	10.9	87	0.7	95.1	4.2	
Total %	1.8	0.6	0.1	19.4	20.5	13	0.6	2.9	23.3	0.1	16.9	0.7	
Cars	69	25	2	750	799	502	22	114	899	5	663	29	3879
% Cars	95.8	100	100	98.9	99.6	98.4	100	100	98.7	100	100	100	99.1
Trucks	3	0	0	8	3	8	0	0	12	0	0	0	34
% Trucks	4.2	0	0	1.1	0.4	1.6	0	0	1.3	0	0	0	0.9

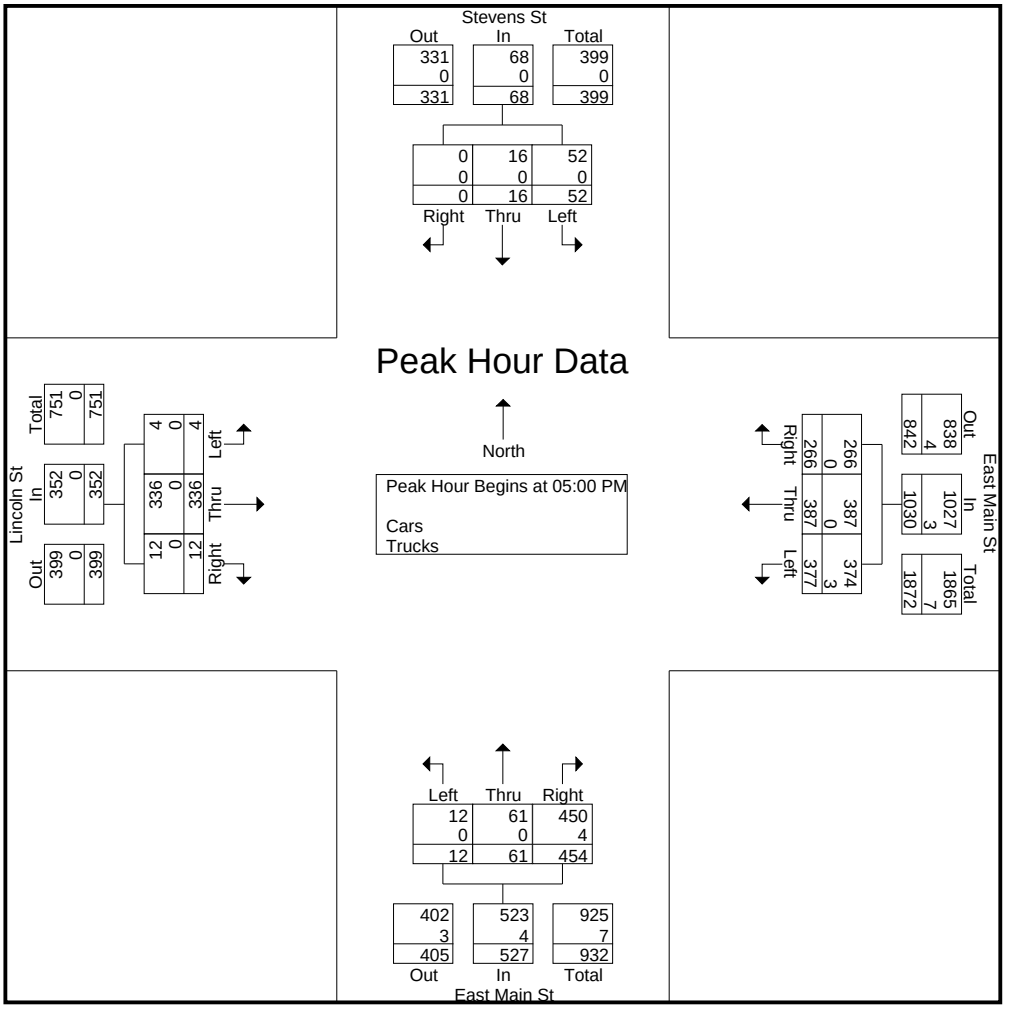
	Stevens St From North				East Main St From East				East Main St From South				Lincoln St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	4	0	0	4	**102**	97	**76**	**275**	2	14	105	121	**2**	80	3	85	485
05:15 PM	3	3	0	6	93	95	62	250	3	12	**129**	**144**	1	79	**4**	84	484
05:30 PM	7	3	0	10	81	**105**	64	250	1	**22**	108	131	0	**90**	3	**93**	484
05:45 PM	**38**	**10**	0	**48**	101	90	64	255	**6**	13	112	131	1	87	2	90	**524**
Total Volume	52	16	0	68	377	387	266	1030	12	61	454	527	4	336	12	352	1977
% App. Total	76.5	23.5	0		36.6	37.6	25.8		2.3	11.6	86.1		1.1	95.5	3.4		
PHF	.342	.400	.000	.354	.924	.921	.875	.936	.500	.693	.880	.915	.500	.933	.750	.946	.943
Cars	52	16	0	68	374	387	266	1027	12	61	450	523	4	336	12	352	1970
% Cars	100	100	0	100	99.2	100	100	99.7	100	100	99.1	99.2	100	100	100	100	99.6
Trucks	0	0	0	0	3	0	0	3	0	0	4	4	0	0	0	0	7
% Trucks	0	0	0	0	0.8	0	0	0.3	0	0	0.9	0.8	0	0	0	0	0.4

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

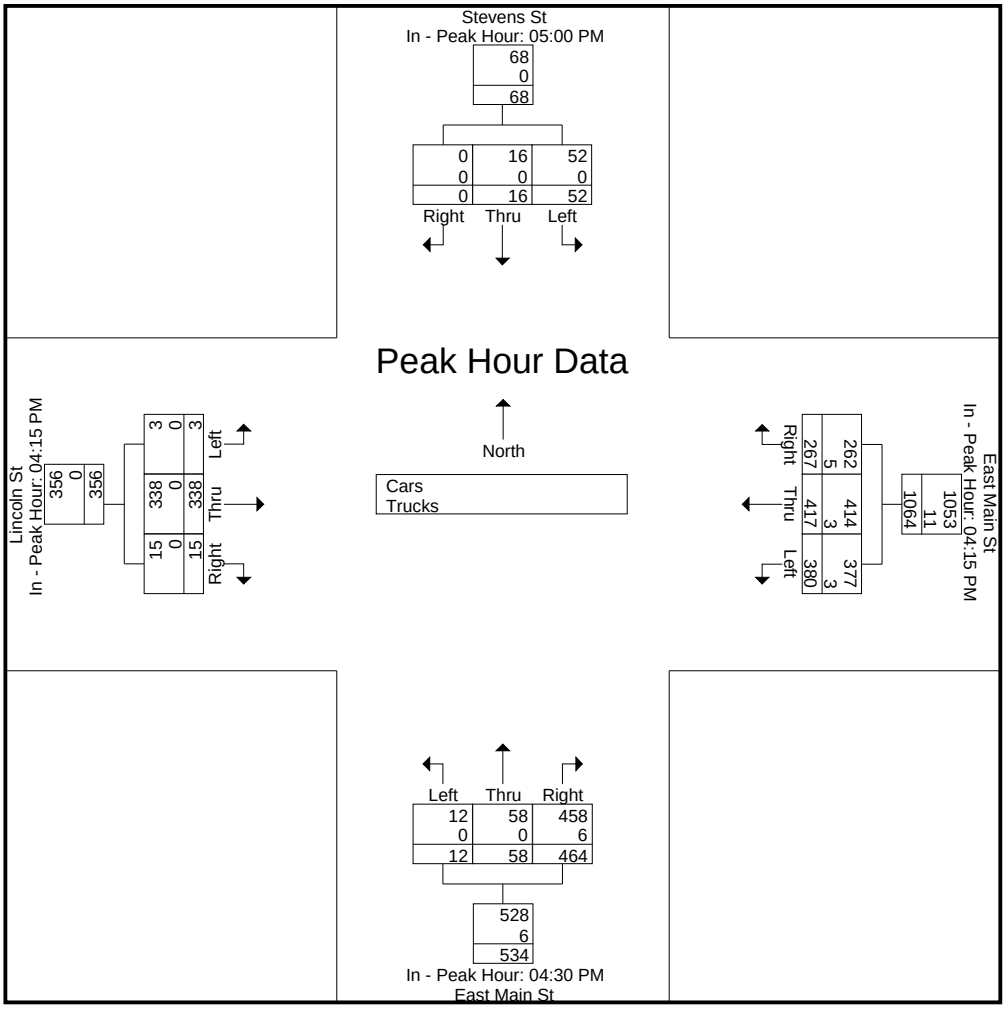
	05:00 PM				04:15 PM				04:30 PM				04:15 PM			
+0 mins.	4	0	0	4	99	**120**	65	**284**	2	**17**	113	132	0	**88**	**5**	**93**
+15 mins.	3	3	0	6	95	99	71	265	**5**	15	117	137	0	88	4	92
+30 mins.	7	3	0	10	84	101	55	240	2	14	105	121	1	82	3	86
+45 mins.	**38**	**10**	0	**48**	**102**	97	**76**	275	3	12	**129**	**144**	**2**	80	3	85
Total Volume	52	16	0	68	380	417	267	1064	12	58	464	534	3	338	15	356
% App. Total	76.5	23.5	0		35.7	39.2	25.1		2.2	10.9	86.9		0.8	94.9	4.2	
PHF	.342	.400	.000	.354	.931	.869	.878	.937	.600	.853	.899	.927	.375	.960	.750	.957
Cars	52	16	0	68	377	414	262	1053	12	58	458	528	3	338	15	356
% Cars	100	100	0	100	99.2	99.3	98.1	99	100	100	98.7	98.9	100	100	100	100
Trucks	0	0	0	0	3	3	5	11	0	0	6	6	0	0	0	0
% Trucks	0	0	0	0	0.8	0.7	1.9	1	0	0	1.3	1.1	0	0	0	0

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023

Groups Printed- Cars

	Stevens St From North			East Main St From East			East Main St From South			Lincoln St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	5	2	0	101	95	50	1	13	107	0	69	5	448
04:15 PM	5	0	1	99	119	62	2	8	117	0	88	5	506
04:30 PM	1	3	0	93	97	69	2	17	111	0	88	4	485
04:45 PM	6	4	1	83	101	55	5	15	114	1	82	3	470
Total	17	9	2	376	412	236	10	53	449	1	327	17	1909
05:00 PM	4	0	0	102	97	76	2	14	105	2	80	3	485
05:15 PM	3	3	0	92	95	62	3	12	128	1	79	4	482
05:30 PM	7	3	0	80	105	64	1	22	106	0	90	3	481
05:45 PM	38	10	0	100	90	64	6	13	111	1	87	2	522
Total	52	16	0	374	387	266	12	61	450	4	336	12	1970
Grand Total	69	25	2	750	799	502	22	114	899	5	663	29	3879
Apprch %	71.9	26	2.1	36.6	39	24.5	2.1	11	86.9	0.7	95.1	4.2	
Total %	1.8	0.6	0.1	19.3	20.6	12.9	0.6	2.9	23.2	0.1	17.1	0.7	

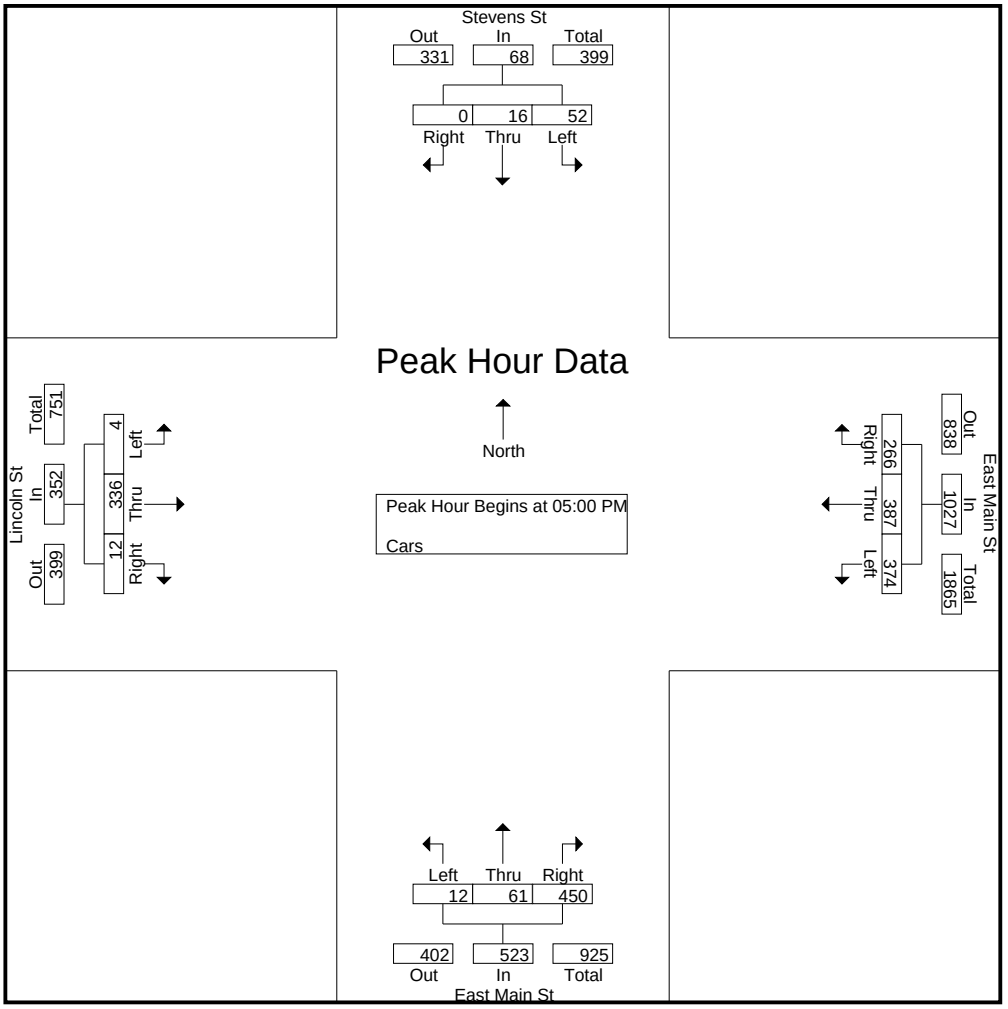
	Stevens St From North				East Main St From East				East Main St From South				Lincoln St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	4	0	0	4	**102**	97	**76**	**275**	2	14	105	121	**2**	80	3	85	485
05:15 PM	3	3	0	6	92	95	62	249	3	12	**128**	**143**	1	79	**4**	84	482
05:30 PM	7	3	0	10	80	**105**	64	249	1	**22**	106	129	0	**90**	3	**93**	481
05:45 PM	**38**	**10**	0	**48**	100	90	64	254	**6**	13	111	130	1	87	2	90	**522**
Total Volume	52	16	0	68	374	387	266	1027	12	61	450	523	4	336	12	352	1970
% App. Total	76.5	23.5	0		36.4	37.7	25.9		2.3	11.7	86		1.1	95.5	3.4		
PHF	.342	.400	.000	.354	.917	.921	.875	.934	.500	.693	.879	.914	.500	.933	.750	.946	.943

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

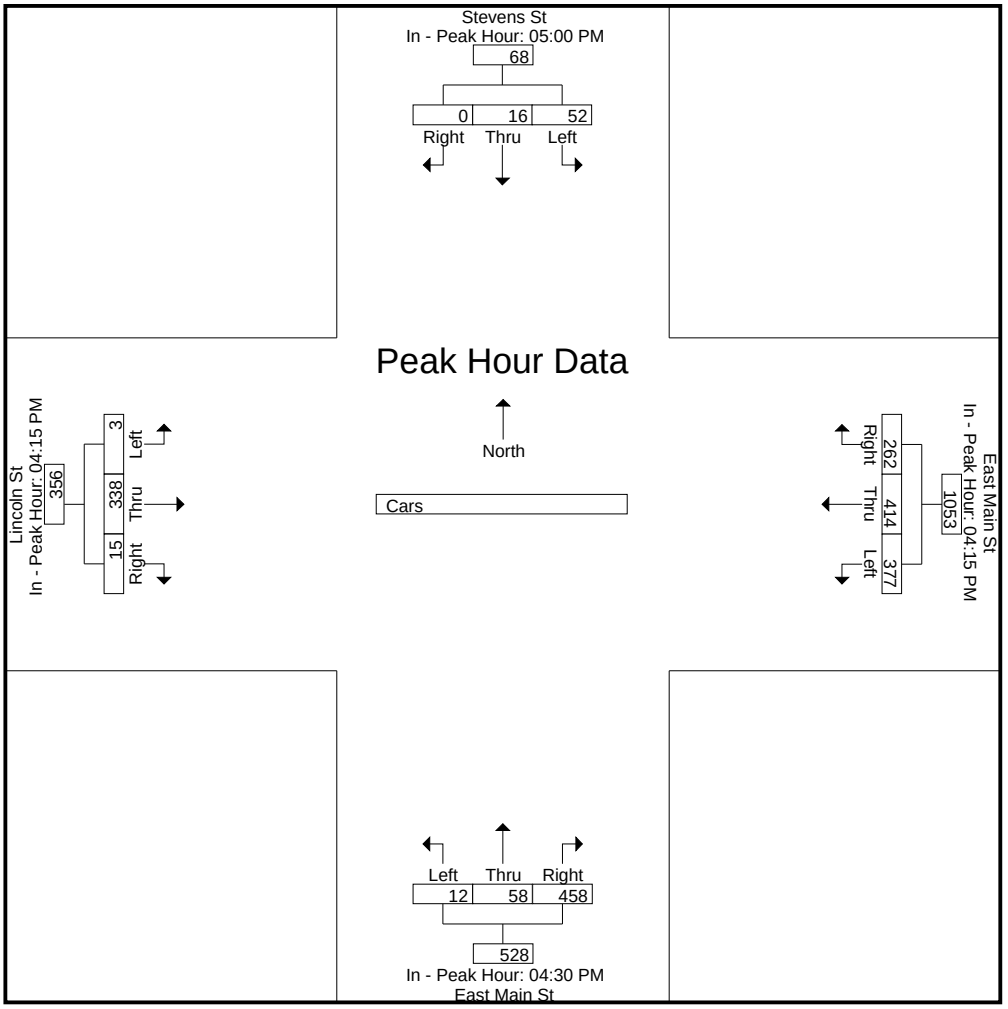
	05:00 PM				04:15 PM				04:30 PM				04:15 PM			
+0 mins.	4	0	0	4	99	**119**	62	**280**	2	**17**	111	130	0	**88**	**5**	**93**
+15 mins.	3	3	0	6	93	97	69	259	**5**	15	114	134	0	88	4	92
+30 mins.	7	3	0	10	83	101	55	239	2	14	105	121	1	82	3	86
+45 mins.	**38**	**10**	0	**48**	**102**	97	**76**	275	3	12	**128**	**143**	**2**	80	3	85
Total Volume	52	16	0	68	377	414	262	1053	12	58	458	528	3	338	15	356
% App. Total	76.5	23.5	0		35.8	39.3	24.9		2.3	11	86.7		0.8	94.9	4.2	
PHF	.342	.400	.000	.354	.924	.870	.862	.940	.600	.853	.895	.923	.375	.960	.750	.957

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023

Groups Printed- Trucks

	Stevens St From North			East Main St From East			East Main St From South			Lincoln St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	2	0	3	0	0	2	0	0	0	7
04:15 PM	3	0	0	0	1	3	0	0	1	0	0	0	8
04:30 PM	0	0	0	2	2	2	0	0	2	0	0	0	8
04:45 PM	0	0	0	1	0	0	0	0	3	0	0	0	4
Total	3	0	0	5	3	8	0	0	8	0	0	0	27
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	1	0	0	0	0	1	0	0	0	2
05:30 PM	0	0	0	1	0	0	0	0	2	0	0	0	3
05:45 PM	0	0	0	1	0	0	0	0	1	0	0	0	2
Total	0	0	0	3	0	0	0	0	4	0	0	0	7
Grand Total	3	0	0	8	3	8	0	0	12	0	0	0	34
Apprch %	100	0	0	42.1	15.8	42.1	0	0	100	0	0	0	
Total %	8.8	0	0	23.5	8.8	23.5	0	0	35.3	0	0	0	

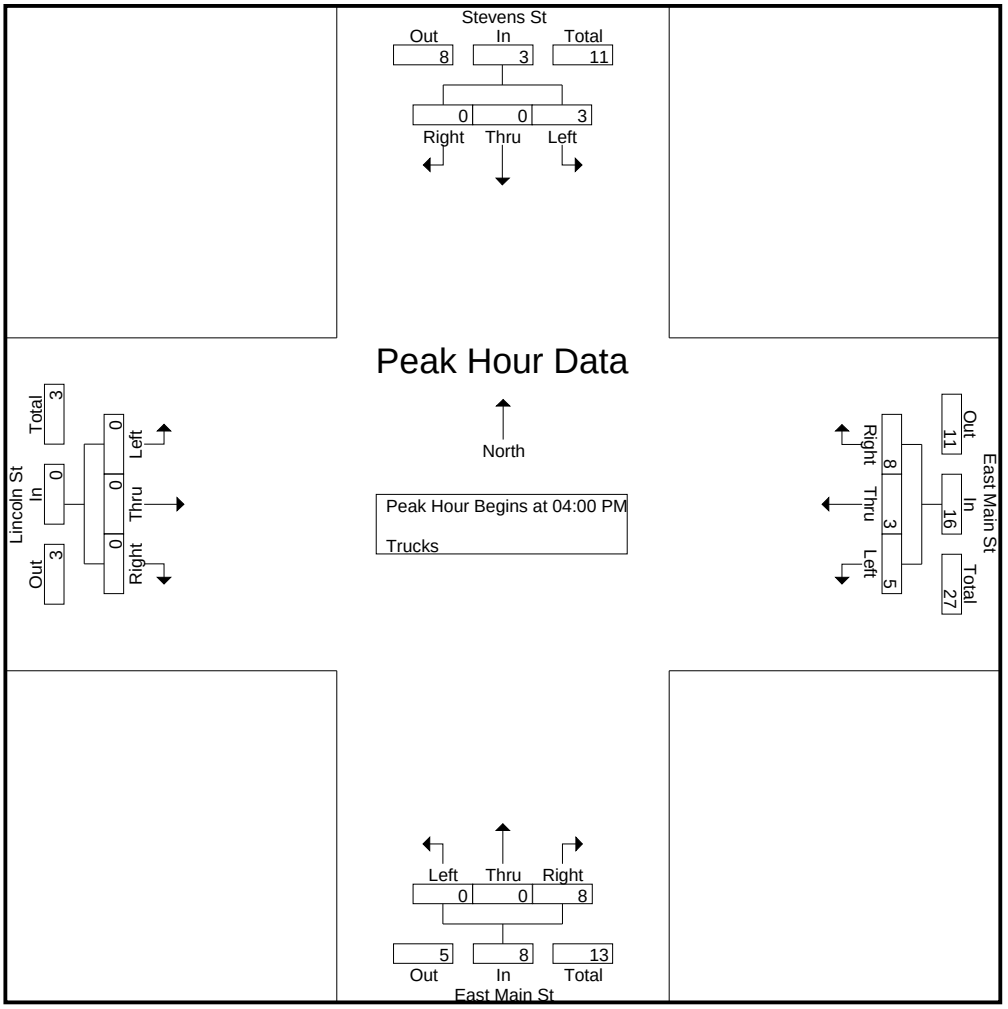
	Stevens St From North				East Main St From East				East Main St From South				Lincoln St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	**2**	0	**3**	5	0	0	2	2	0	0	0	0	7
04:15 PM	**3**	0	0	**3**	0	1	3	4	0	0	1	1	0	0	0	0	**8**
04:30 PM	0	0	0	0	2	**2**	2	**6**	0	0	2	2	0	0	0	0	8
04:45 PM	0	0	0	0	1	0	0	1	0	0	**3**	**3**	0	0	0	0	4
Total Volume	3	0	0	3	5	3	8	16	0	0	8	8	0	0	0	0	27
% App. Total	100	0	0		31.2	18.8	50		0	0	100		0	0	0		
PHF	.250	.000	.000	.250	.625	.375	.667	.667	.000	.000	.667	.667	.000	.000	.000	.000	.844

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

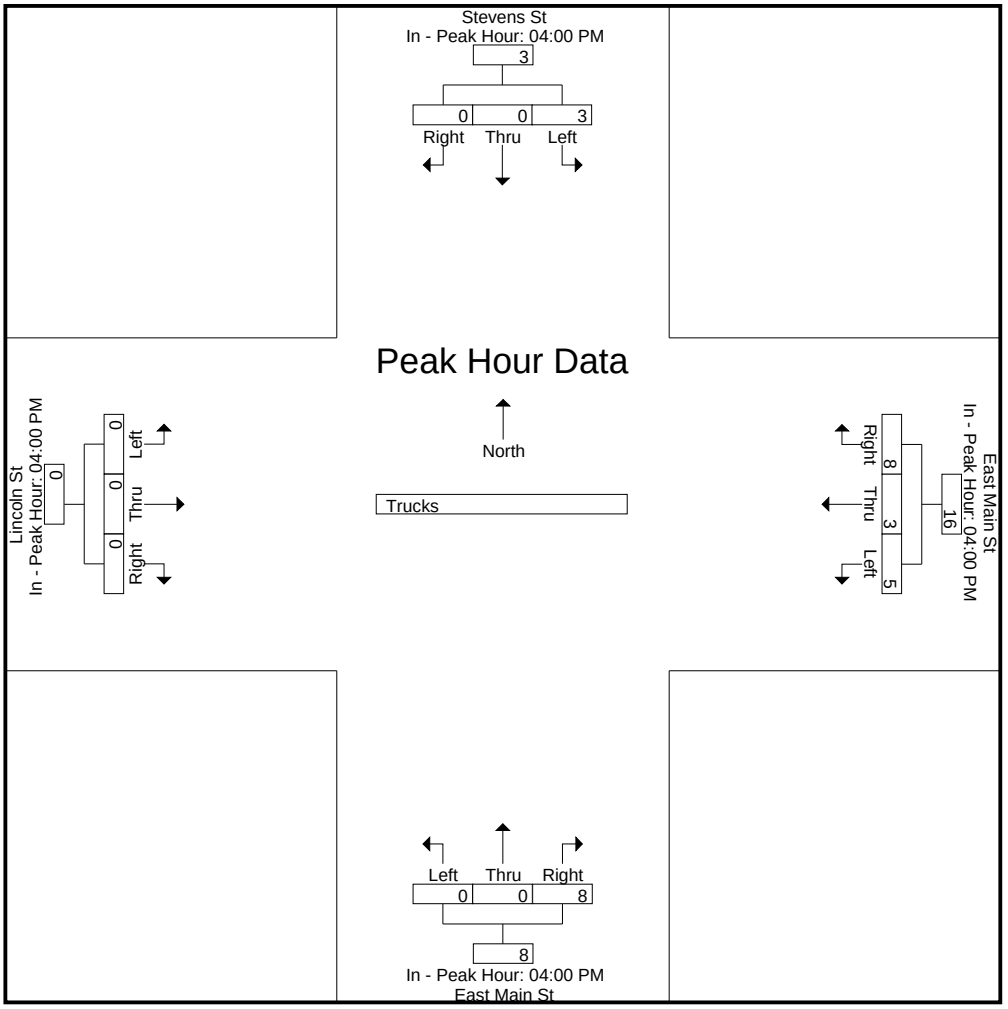
	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	**2**	0	**3**	5	0	0	2	2	0	0	0	0
+15 mins.	**3**	0	0	**3**	0	1	3	4	0	0	1	1	0	0	0	0
+30 mins.	0	0	0	0	2	**2**	2	**6**	0	0	2	2	0	0	0	0
+45 mins.	0	0	0	0	1	0	0	1	0	0	**3**	**3**	0	0	0	0
Total Volume	3	0	0	3	5	3	8	16	0	0	8	8	0	0	0	0
% App. Total	100	0	0		31.2	18.8	50		0	0	100		0	0	0	
PHF	.250	.000	.000	.250	.625	.375	.667	.667	.000	.000	.667	.667	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023

Groups Printed- Bikes Peds

	Stevens St From North				East Main St From East				East Main St From South				Lincoln St From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
04:45 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Total	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	3	0	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Grand Total	0	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	5	0	5
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0				
Total %																	100	0	

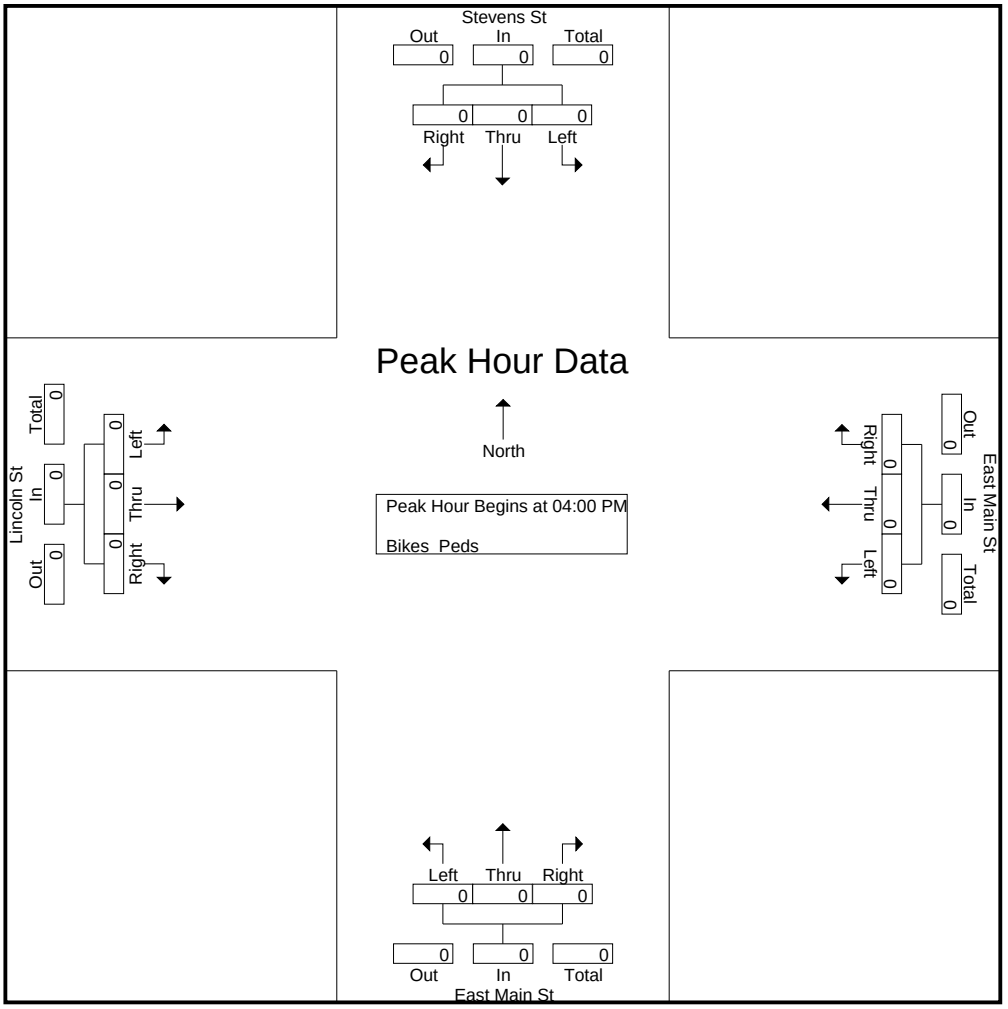
	Stevens St From North				East Main St From East				East Main St From South				Lincoln St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 11



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

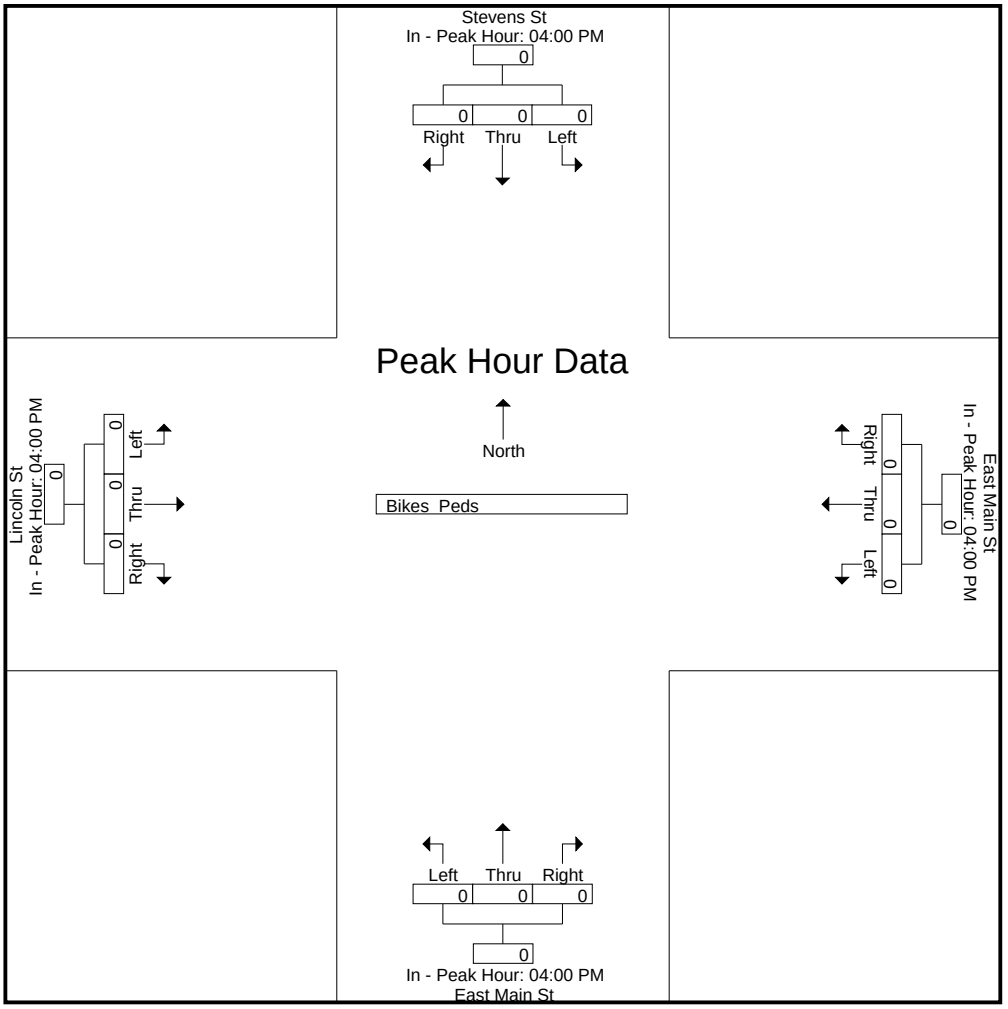
	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

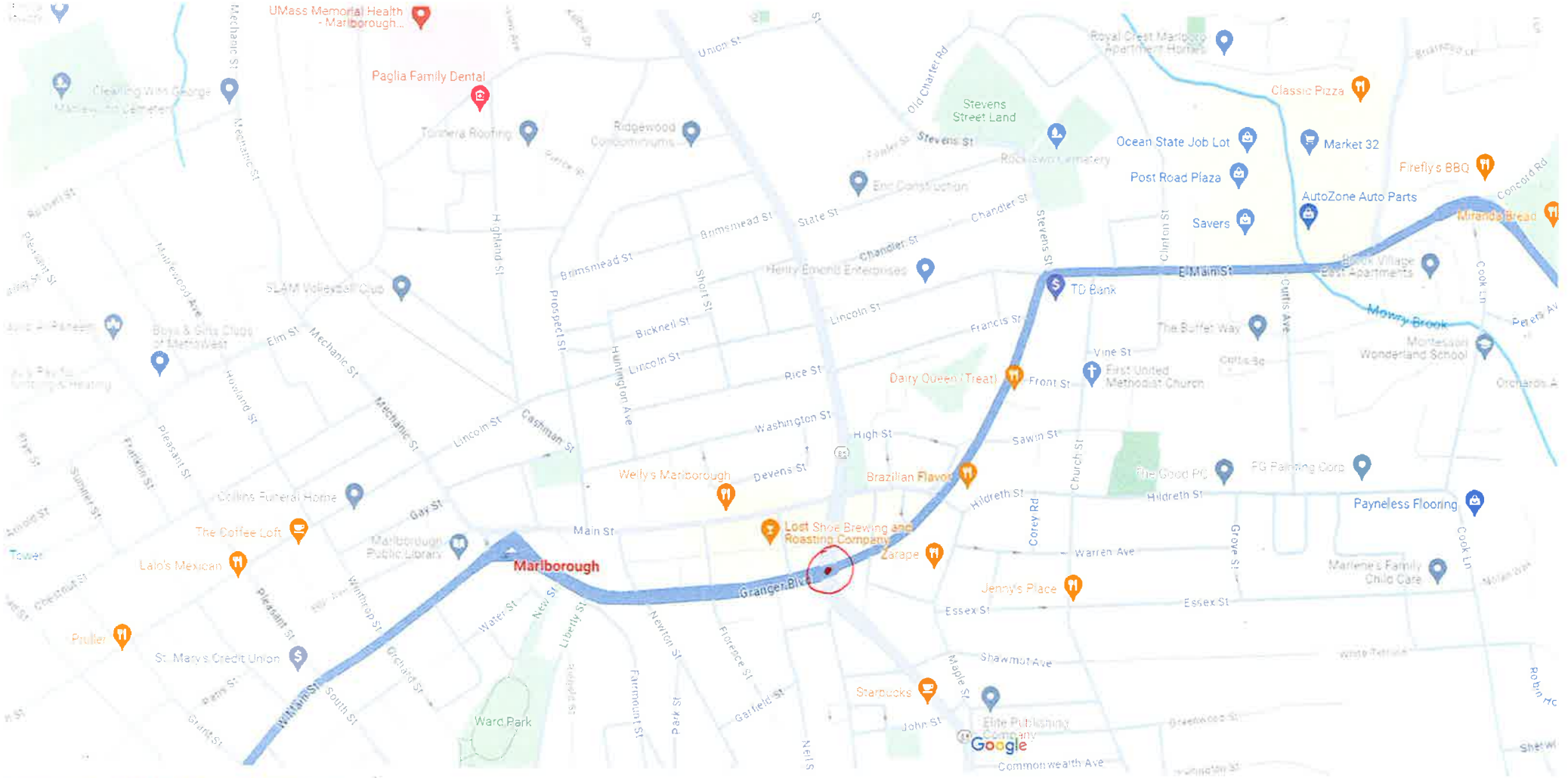
978-664-2565

N/S Street : Stevens St/East Main St
E/W Street : East Main St/Lincoln St
City/State : Marlborough, MA
Weather : Clear

File Name : 92160013
Site Code : 92160013
Start Date : 1/24/2023
Page No : 12



Google Maps Marlborough



Marlborough
Massachusetts

Partly cloudy · 3°C
10:54 AM

Directions Save Nearby Send to Share

- TMC

#9216

RT 85 @ RT 20

7 AM - 9 AM

4 PM - 6 PM

- INVENTORY

Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601am
Site Code : 00921601
Start Date : 3/12/2024
Page No : 1

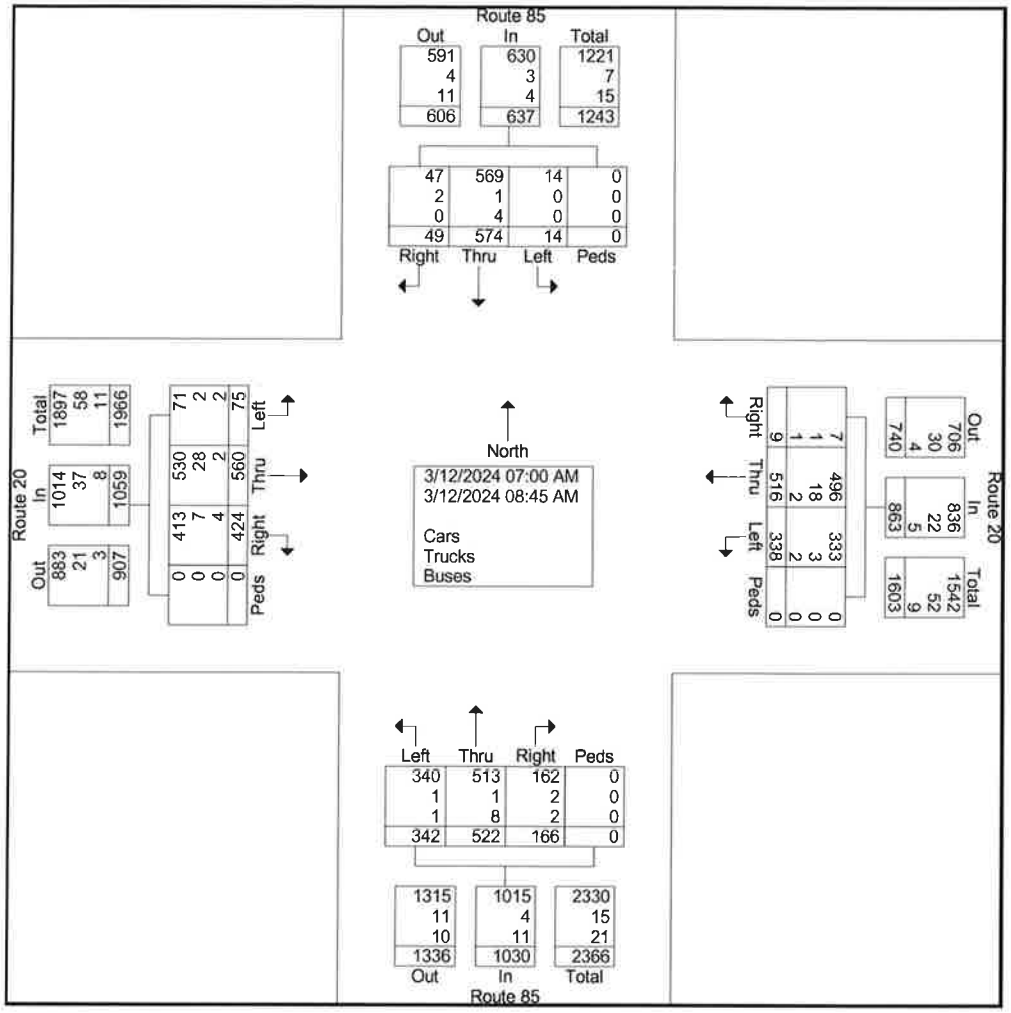
Groups Printed- Cars - Trucks - Buses

	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	4	55	0	0	59	1	38	26	0	65	10	49	25	0	84	41	56	5	0	102	310
07:15 AM	2	83	0	0	85	1	54	33	0	88	23	56	37	0	116	48	58	6	0	112	401
07:30 AM	7	76	0	0	83	2	70	43	0	115	16	60	54	0	130	54	60	18	0	132	460
07:45 AM	2	74	2	0	78	0	84	50	0	134	15	80	45	0	140	52	73	14	0	139	491
Total	15	288	2	0	305	4	246	152	0	402	64	245	161	0	470	195	247	43	0	485	1662
08:00 AM	11	78	3	0	92	1	72	49	0	122	29	69	40	0	138	59	80	5	0	144	496
08:15 AM	3	75	4	0	82	2	72	52	0	126	33	73	39	0	145	53	87	11	0	151	504
08:30 AM	10	70	3	0	83	1	68	31	0	100	17	63	55	0	135	66	78	11	0	155	473
08:45 AM	10	63	2	0	75	1	58	54	0	113	23	72	47	0	142	51	68	5	0	124	454
Total	34	286	12	0	332	5	270	186	0	461	102	277	181	0	560	229	313	32	0	574	1927
Grand Total	49	574	14	0	637	9	516	338	0	863	166	522	342	0	1030	424	560	75	0	1059	3589
Apprch %	7.7	90.1	2.2	0		1	59.8	39.2	0		16.1	50.7	33.2	0		40	52.9	7.1	0		
Total %	1.4	16	0.4	0	17.7	0.3	14.4	9.4	0	24	4.6	14.5	9.5	0	28.7	11.8	15.6	2.1	0	29.5	
Cars	47	569	14	0	630	7	496	333	0	836	162	513	340	0	1015	413	530	71	0	1014	3495
% Cars	95.9	99.1	100	0	98.9	77.8	96.1	98.5	0	96.9	97.6	98.3	99.4	0	98.5	97.4	94.6	94.7	0	95.8	97.4
Trucks	2	1	0	0	3	1	18	3	0	22	2	1	1	0	4	7	28	2	0	37	66
% Trucks	4.1	0.2	0	0	0.5	11.1	3.5	0.9	0	2.5	1.2	0.2	0.3	0	0.4	1.7	5	2.7	0	3.5	1.8
Buses	0	4	0	0	4	1	2	2	0	5	2	8	1	0	11	4	2	2	0	8	28
% Buses	0	0.7	0	0	0.6	11.1	0.4	0.6	0	0.6	1.2	1.5	0.3	0	1.1	0.9	0.4	2.7	0	0.8	0.8

Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601am
Site Code : 00921601
Start Date : 3/12/2024
Page No : 2

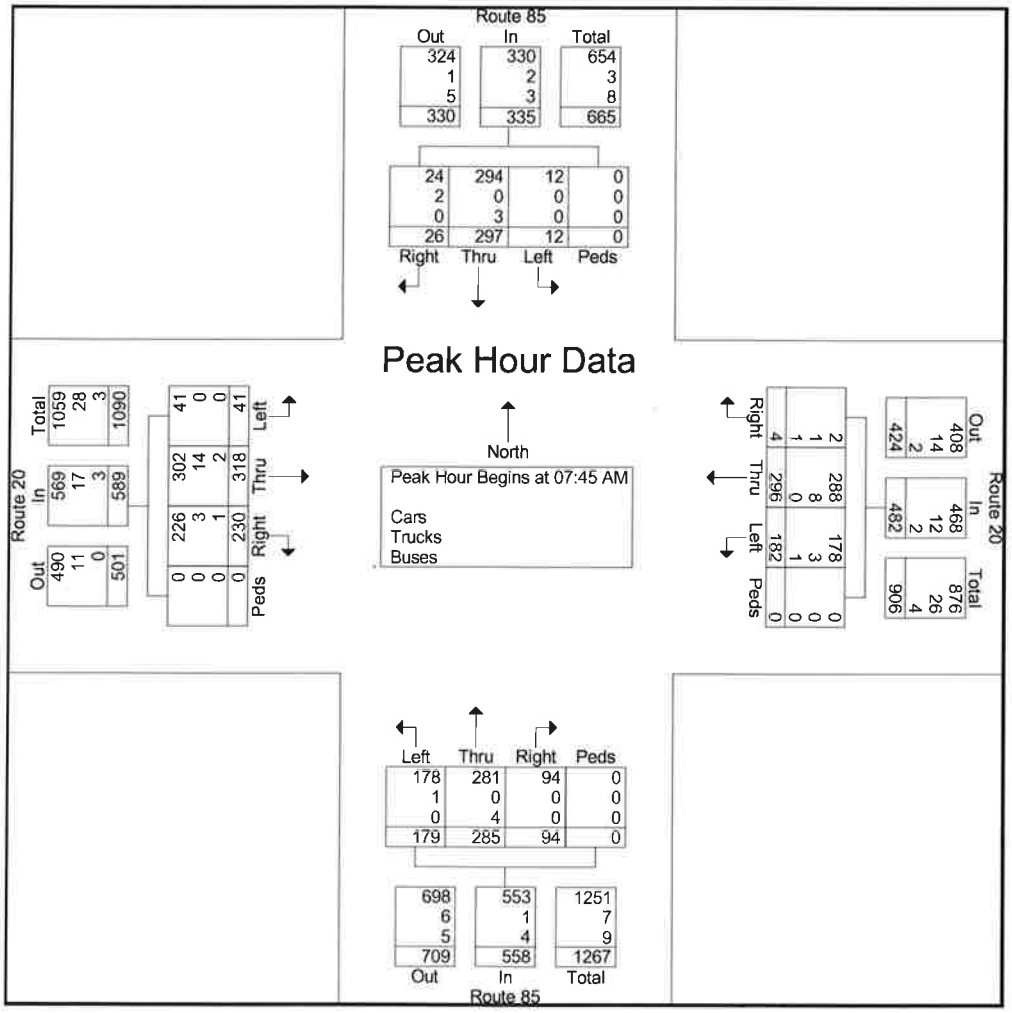


Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601am
Site Code : 00921601
Start Date : 3/12/2024
Page No : 3

	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	2	74	2	0	78	0	**84**	50	0	**134**	15	**80**	45	0	140	52	73	**14**	0	139	491
08:00 AM	**11**	**78**	3	0	**92**	1	72	49	0	122	29	69	40	0	138	59	80	5	0	144	496
08:15 AM	3	75	**4**	0	82	**2**	72	**52**	0	126	**33**	73	39	0	**145**	53	**87**	11	0	151	**504**
08:30 AM	10	70	3	0	83	1	68	31	0	100	17	63	**55**	0	135	**66**	78	11	0	**155**	473
Total Volume	26	297	12	0	335	4	296	182	0	482	94	285	179	0	558	230	318	41	0	589	1964
% App. Total	7.8	88.7	3.6	0		0.8	61.4	37.8	0		16.8	51.1	32.1	0		39	54	7	0		
PHF	.591	.952	.750	.000	.910	.500	.881	.875	.000	.899	.712	.891	.814	.000	.962	.871	.914	.732	.000	.950	.974
Cars	24	294	12	0	330	2	288	178	0	468	94	281	178	0	553	226	302	41	0	569	1920
% Cars	92.3	99.0	100	0	98.5	50.0	97.3	97.8	0	97.1	100	98.6	99.4	0	99.1	98.3	95.0	100	0	96.6	97.8
Trucks	2	0	0	0	2	1	8	3	0	12	0	0	1	0	1	3	14	0	0	17	32
% Trucks	7.7	0	0	0	0.6	25.0	2.7	1.6	0	2.5	0	0	0.6	0	0.2	1.3	4.4	0	0	2.9	1.6
Buses	0	3	0	0	3	1	0	1	0	2	0	4	0	0	4	1	2	0	0	3	12
% Buses	0	1.0	0	0	0.9	25.0	0	0.5	0	0.4	0	1.4	0	0	0.7	0.4	0.6	0	0	0.5	0.6



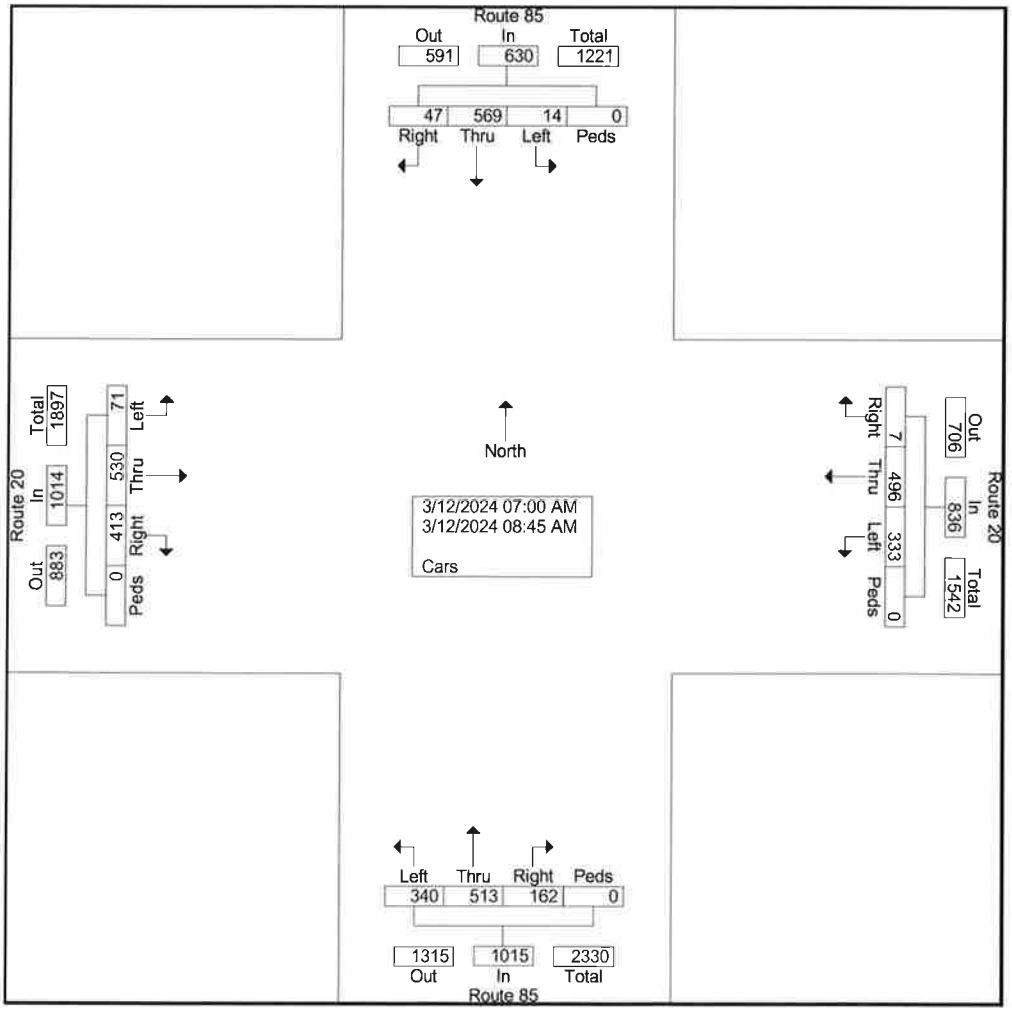
Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601am
Site Code : 00921601
Start Date : 3/12/2024
Page No : 1

Groups Printed- Cars

	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	4	55	0	0	59	1	34	26	0	61	9	48	24	0	81	39	55	5	0	99	300
07:15 AM	2	83	0	0	85	1	51	33	0	85	22	56	37	0	115	47	53	3	0	103	388
07:30 AM	7	75	0	0	82	2	67	43	0	112	14	57	54	0	125	52	56	18	0	126	445
07:45 AM	2	73	2	0	77	0	83	49	0	132	15	80	45	0	140	51	70	14	0	135	484
Total	15	286	2	0	303	4	235	151	0	390	60	241	160	0	461	189	234	40	0	463	1617
08:00 AM	9	77	3	0	89	1	70	48	0	119	29	69	40	0	138	57	76	5	0	138	484
08:15 AM	3	74	4	0	81	1	68	50	0	119	33	73	39	0	145	53	83	11	0	147	492
08:30 AM	10	70	3	0	83	0	67	31	0	98	17	59	54	0	130	65	73	11	0	149	460
08:45 AM	10	62	2	0	74	1	56	53	0	110	23	71	47	0	141	49	64	4	0	117	442
Total	32	283	12	0	327	3	261	182	0	446	102	272	180	0	554	224	296	31	0	551	1878
Grand Total	47	569	14	0	630	7	496	333	0	836	162	513	340	0	1015	413	530	71	0	1014	3495
Apprch %	7.5	90.3	2.2	0		0.8	59.3	39.8	0		16	50.5	33.5	0		40.7	52.3	7	0		
Total %	1.3	16.3	0.4	0	18	0.2	14.2	9.5	0	23.9	4.6	14.7	9.7	0	29	11.8	15.2	2	0	29	

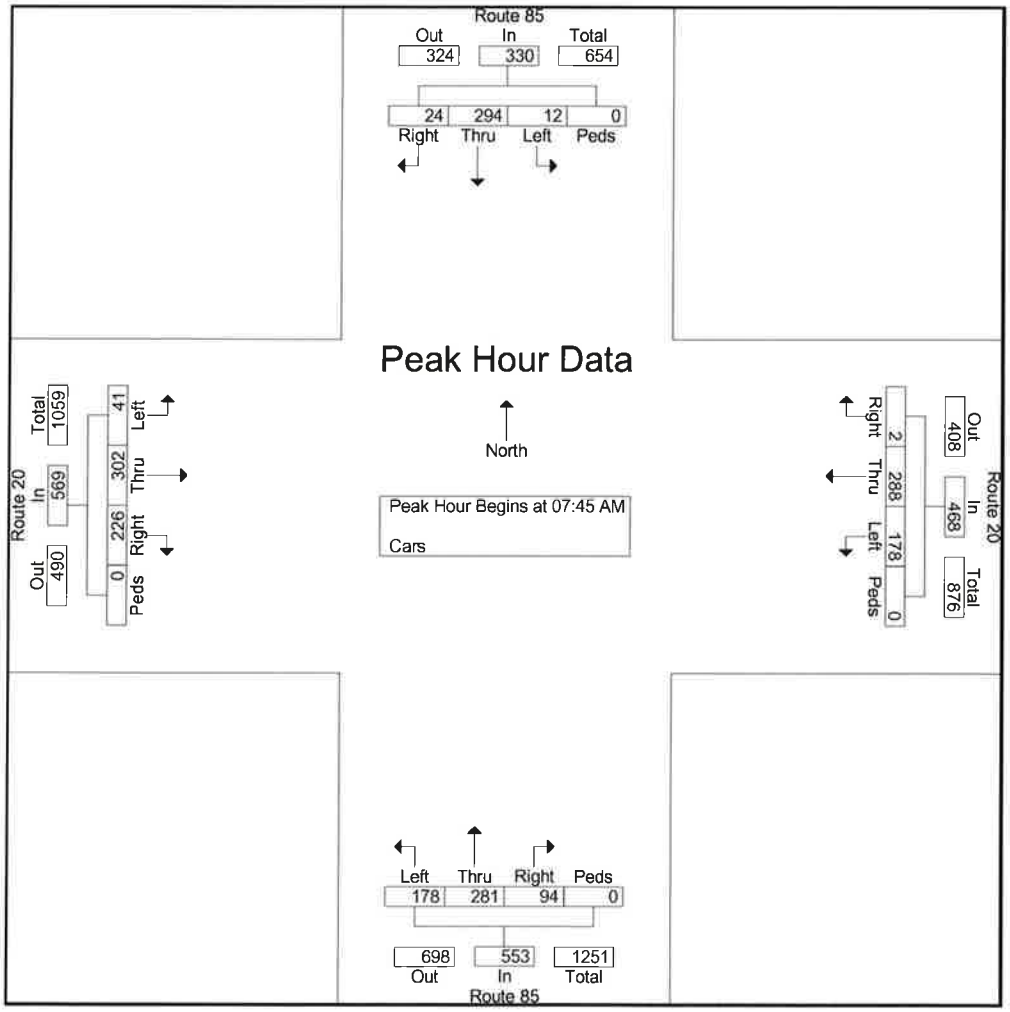


Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601am
Site Code : 00921601
Start Date : 3/12/2024
Page No : 2

Start Time	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	2	73	2	0	77	0	**83**	49	0	**132**	15	**80**	45	0	140	51	70	**14**	0	135	484
08:00 AM	9	**77**	3	0	**89**	**1**	70	48	0	119	29	69	40	0	138	57	76	5	0	138	484
08:15 AM	3	74	**4**	0	81	1	68	**50**	0	119	**33**	73	39	0	**145**	53	**83**	11	0	147	**492**
08:30 AM	**10**	70	3	0	83	0	67	31	0	98	17	59	**54**	0	130	**65**	73	11	0	**149**	460
Total Volume	24	294	12	0	330	2	288	178	0	468	94	281	178	0	553	226	302	41	0	569	1920
% App. Total	7.3	89.1	3.6	0		0.4	61.5	38	0		17	50.8	32.2	0		39.7	53.1	7.2	0		
PHF	.600	.955	.750	.000	.927	.500	.867	.890	.000	.886	.712	.878	.824	.000	.953	.869	.910	.732	.000	.955	.976



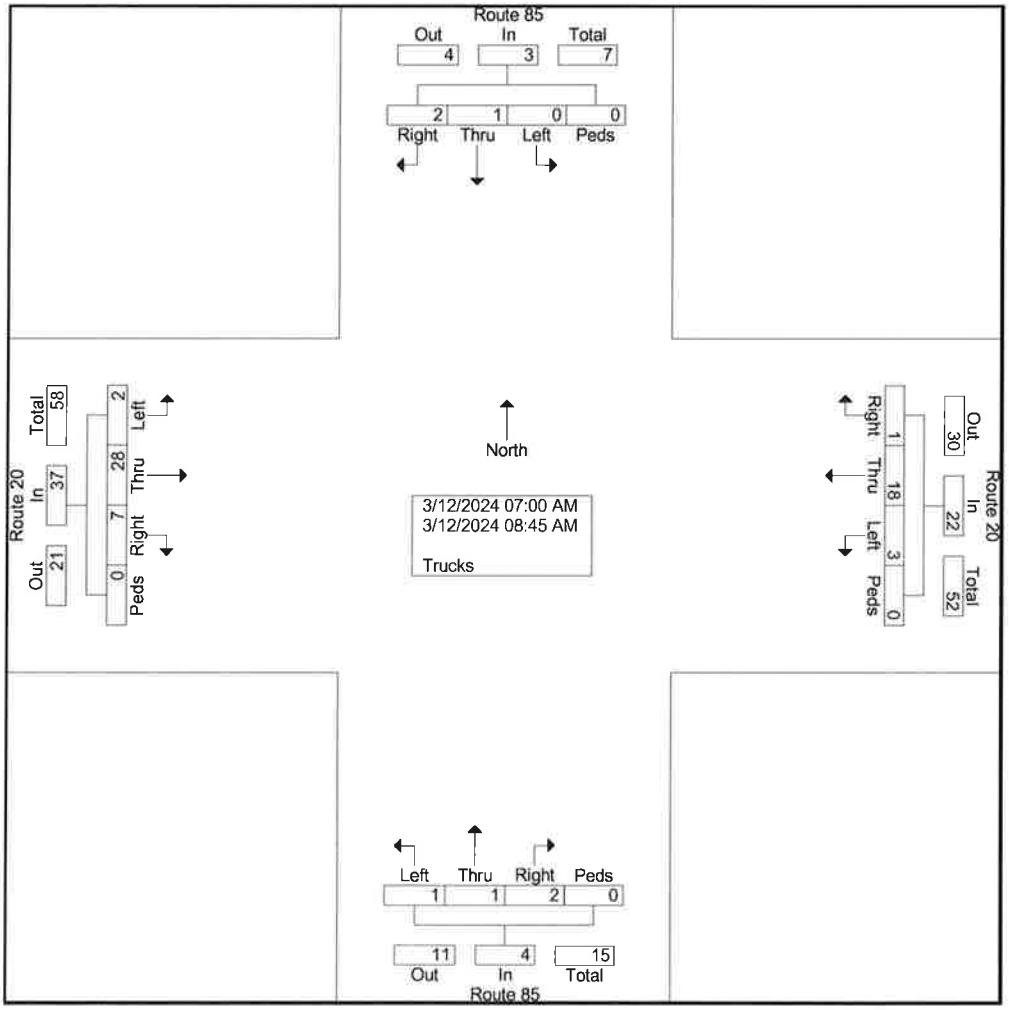
Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601am
Site Code : 00921601
Start Date : 3/12/2024
Page No : 1

Groups Printed- Trucks

	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	4	0	0	4	0	1	0	0	1	2	1	0	0	3	8
07:15 AM	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	1	5	1	0	7	9
07:30 AM	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	0	4	0	0	4	8
07:45 AM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	1	3	0	0	4	6
Total	0	0	0	0	0	0	9	1	0	10	2	1	0	0	3	4	13	1	0	18	31
08:00 AM	2	0	0	0	2	0	2	1	0	3	0	0	0	0	0	2	4	0	0	6	11
08:15 AM	0	0	0	0	0	0	4	1	0	5	0	0	0	0	0	0	4	0	0	4	9
08:30 AM	0	0	0	0	0	1	1	0	0	2	0	0	1	0	1	0	3	0	0	3	6
08:45 AM	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	1	4	1	0	6	9
Total	2	1	0	0	3	1	9	2	0	12	0	0	1	0	1	3	15	1	0	19	35
Grand Total	2	1	0	0	3	1	18	3	0	22	2	1	1	0	4	7	28	2	0	37	66
Apprch %	66.7	33.3	0	0		4.5	81.8	13.6	0		50	25	25	0		18.9	75.7	5.4	0		
Total %	3	1.5	0	0	4.5	1.5	27.3	4.5	0	33.3	3	1.5	1.5	0	6.1	10.6	42.4	3	0	56.1	

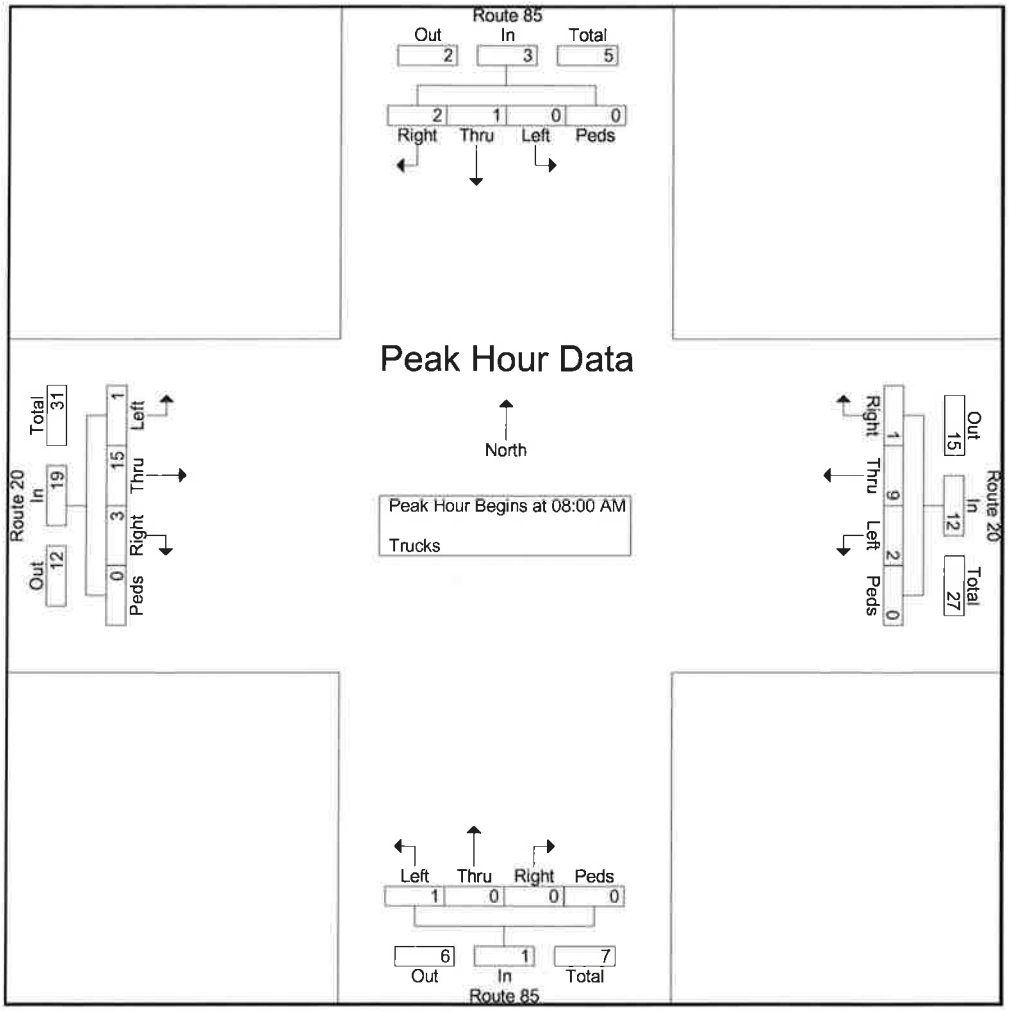


Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601am
Site Code : 00921601
Start Date : 3/12/2024
Page No : 2

Start Time	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	**2**	0	0	0	**2**	0	2	**1**	0	3	0	0	0	0	0	**2**	**4**	0	0	**6**	**11**
08:15 AM	0	0	0	0	0	0	**4**	1	0	**5**	0	0	0	0	0	0	4	0	0	4	9
08:30 AM	0	0	0	0	0	**1**	1	0	0	2	0	0	**1**	0	**1**	0	3	0	0	3	6
08:45 AM	0	**1**	0	0	1	0	2	0	0	2	0	0	0	0	0	1	4	**1**	0	6	9
Total Volume	2	1	0	0	3	1	9	2	0	12	0	0	1	0	1	3	15	1	0	19	35
% App. Total	66.7	33.3	0	0		8.3	75	16.7	0		0	0	100	0		15.8	78.9	5.3	0		
PHF	.250	.250	.000	.000	.375	.250	.563	.500	.000	.600	.000	.000	.250	.000	.250	.375	.938	.250	.000	.792	.795



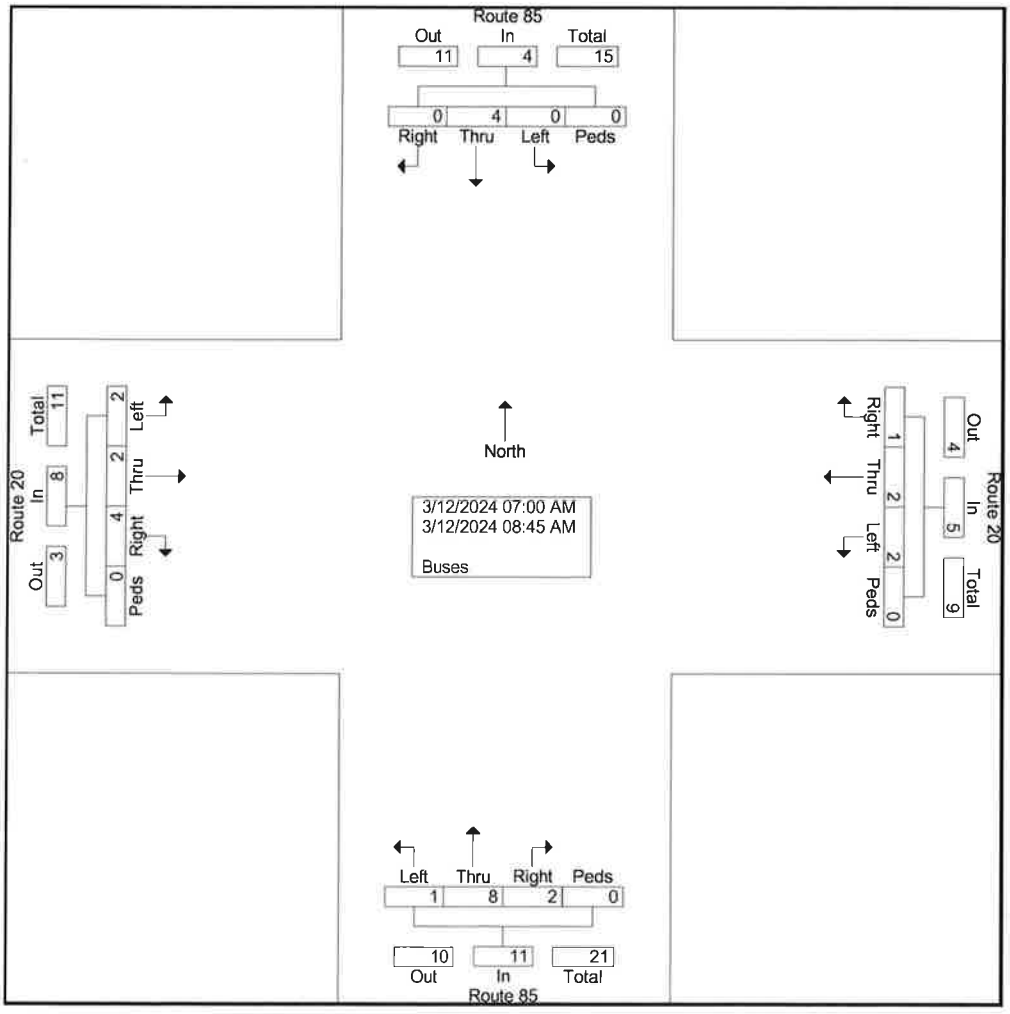
Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601am
Site Code : 00921601
Start Date : 3/12/2024
Page No : 1

Groups Printed- Buses

	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	2
07:15 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	2	0	2	4
07:30 AM	0	1	0	0	1	0	0	0	0	0	1	3	0	0	4	2	0	0	0	2	7
07:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	0	0	2	0	2	0	0	2	2	3	1	0	6	2	0	2	0	4	14
08:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	1	0	0	1	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	3
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	1	2	0	0	3	7
08:45 AM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	1	0	0	0	1	3
Total	0	2	0	0	2	1	0	2	0	3	0	5	0	0	5	2	2	0	0	4	14
Grand Total	0	4	0	0	4	1	2	2	0	5	2	8	1	0	11	4	2	2	0	8	28
Apprch %	0	100	0	0		20	40	40	0		18.2	72.7	9.1	0		50	25	25	0		
Total %	0	14.3	0	0	14.3	3.6	7.1	7.1	0	17.9	7.1	28.6	3.6	0	39.3	14.3	7.1	7.1	0	28.6	

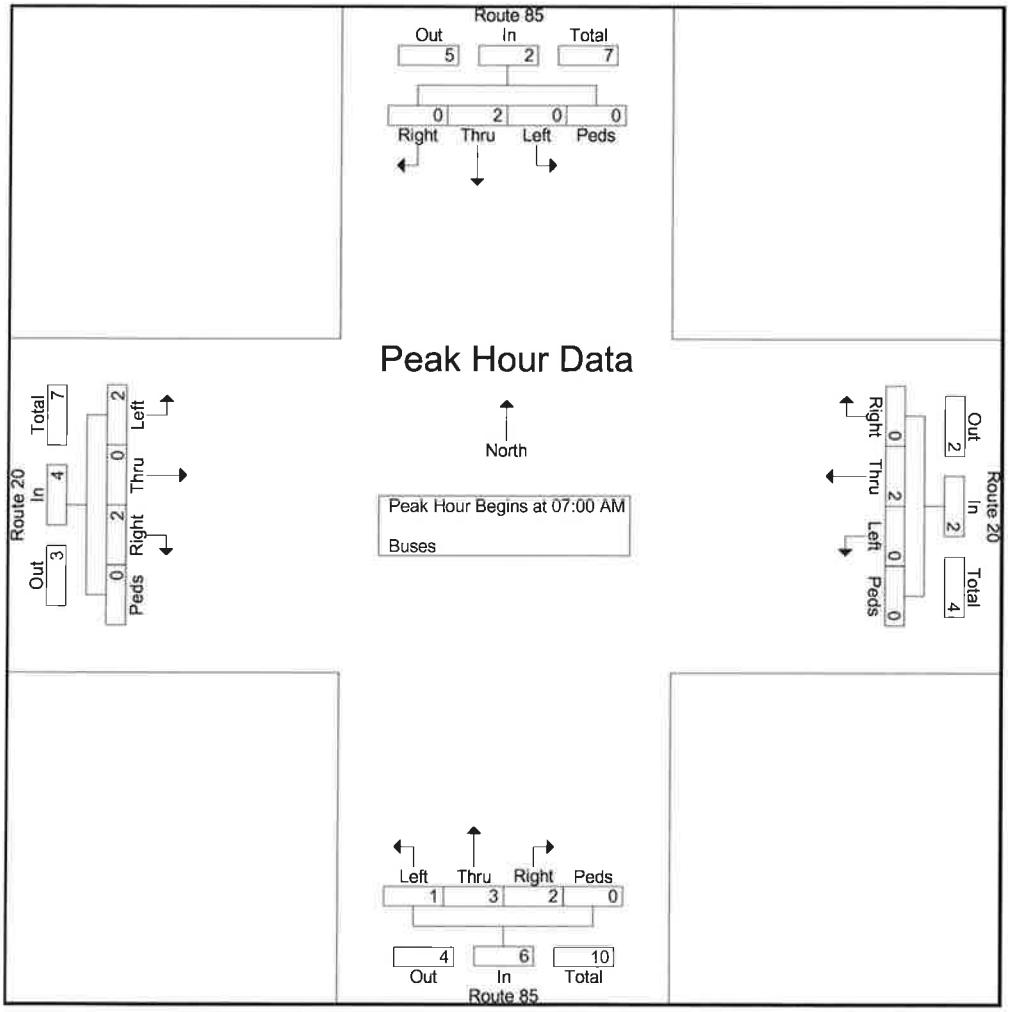


Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601am
Site Code : 00921601
Start Date : 3/12/2024
Page No : 2

Start Time	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	2
07:15 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	2	0	2	4
07:30 AM	0	1	0	0	1	0	0	0	0	0	1	3	0	0	4	2	0	0	0	2	7
07:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	2	0	0	2	0	2	0	0	2	2	3	1	0	6	2	0	2	0	4	14
% App. Total	0	100	0	0		0	100	0	0		33.3	50	16.7	0		50	0	50	0		
PHF	.000	.500	.000	.000	.500	.000	.250	.000	.000	.250	.500	.250	.250	.000	.375	.250	.000	.250	.000	.500	.500



Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601pm
Site Code : 00921601
Start Date : 3/11/2024
Page No : 1

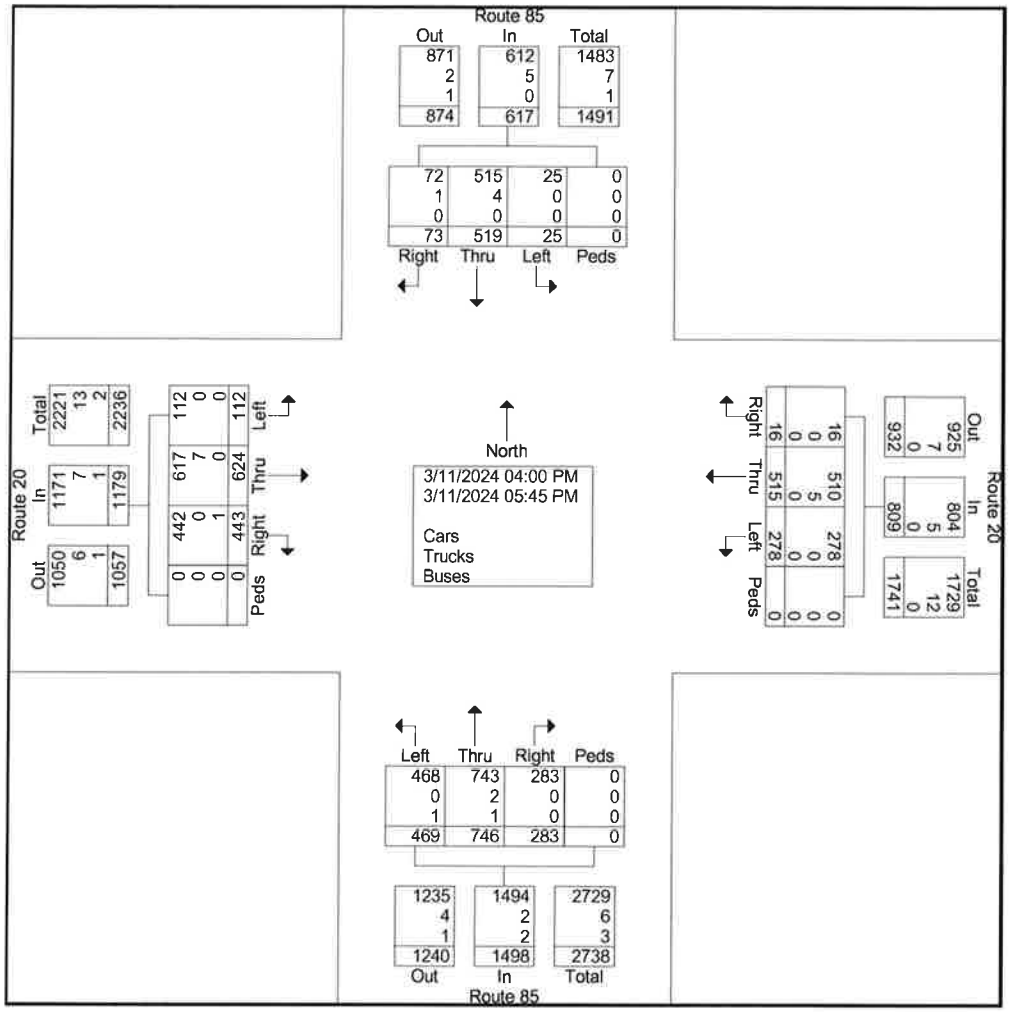
Groups Printed- Cars - Trucks - Buses

	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	9	85	3	0	97	1	63	50	0	114	34	89	52	0	175	47	78	18	0	143	529
04:15 PM	11	57	3	0	71	3	59	25	0	87	42	105	68	0	215	53	78	11	0	142	515
04:30 PM	8	56	2	0	66	2	50	36	0	88	26	101	63	0	190	53	69	12	0	134	478
04:45 PM	9	61	6	0	76	3	64	40	0	107	27	100	61	0	188	60	82	17	0	159	530
Total	37	259	14	0	310	9	236	151	0	396	129	395	244	0	768	213	307	58	0	578	2052
05:00 PM	9	76	2	0	87	3	68	28	0	99	44	89	58	0	191	57	77	18	0	152	529
05:15 PM	9	80	3	0	92	4	67	41	0	112	40	100	67	0	207	61	77	13	0	151	562
05:30 PM	7	52	3	0	62	0	74	28	0	102	39	92	56	0	187	55	82	11	0	148	499
05:45 PM	11	52	3	0	66	0	70	30	0	100	31	70	44	0	145	57	81	12	0	150	461
Total	36	260	11	0	307	7	279	127	0	413	154	351	225	0	730	230	317	54	0	601	2051
Grand Total	73	519	25	0	617	16	515	278	0	809	283	746	469	0	1498	443	624	112	0	1179	4103
Apprch %	11.8	84.1	4.1	0		2	63.7	34.4	0		18.9	49.8	31.3	0		37.6	52.9	9.5	0		
Total %	1.8	12.6	0.6	0	15	0.4	12.6	6.8	0	19.7	6.9	18.2	11.4	0	36.5	10.8	15.2	2.7	0	28.7	
Cars	72	515	25	0	612	16	510	278	0	804	283	743	468	0	1494	442	617	112	0	1171	4081
% Cars	98.6	99.2	100	0	99.2	100	99	100	0	99.4	100	99.6	99.8	0	99.7	99.8	98.9	100	0	99.3	99.5
Trucks	1	4	0	0	5	0	5	0	0	5	0	2	0	0	2	0	7	0	0	7	19
% Trucks	1.4	0.8	0	0	0.8	0	1	0	0	0.6	0	0.3	0	0	0.1	0	1.1	0	0	0.6	0.5
Buses	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	3
% Buses	0	0	0	0	0	0	0	0	0	0	0	0.1	0.2	0	0.1	0.2	0	0	0	0.1	0.1

Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601pm
Site Code : 00921601
Start Date : 3/11/2024
Page No : 2

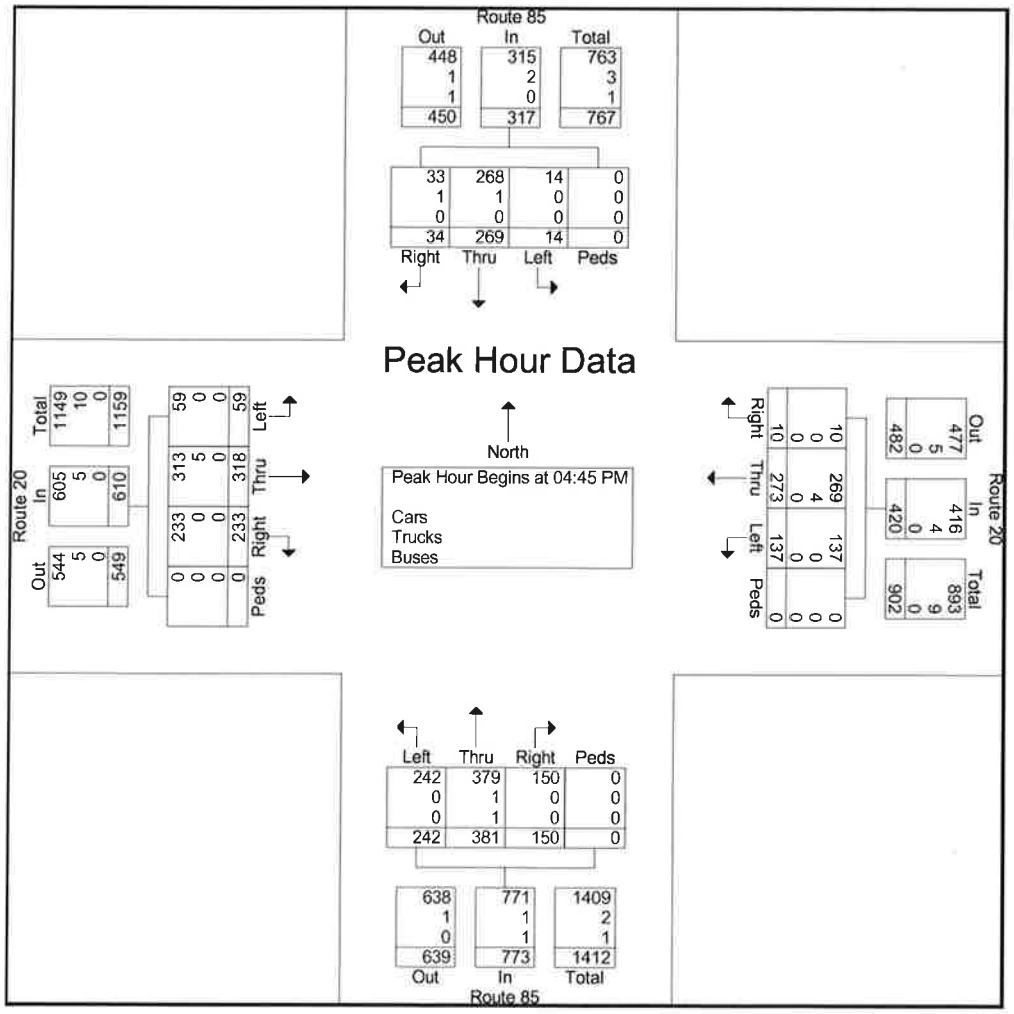


Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601pm
Site Code : 00921601
Start Date : 3/11/2024
Page No : 3

	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	**9**	61	**6**	0	76	3	64	40	0	107	27	**100**	61	0	188	60	**82**	17	0	**159**	530
05:00 PM	9	76	2	0	87	3	68	28	0	99	**44**	89	58	0	191	57	77	**18**	0	152	529
05:15 PM	9	**80**	3	0	**92**	**4**	67	**41**	0	**112**	40	100	**67**	0	**207**	**61**	77	13	0	151	**562**
05:30 PM	7	52	3	0	62	0	**74**	28	0	102	39	92	56	0	187	55	82	11	0	148	499
Total Volume	34	269	14	0	317	10	273	137	0	420	150	381	242	0	773	233	318	59	0	610	2120
% App. Total	10.7	84.9	4.4	0		2.4	65	32.6	0		19.4	49.3	31.3	0		38.2	52.1	9.7	0		
PHF	.944	.841	.583	.000	.861	.625	.922	.835	.000	.938	.852	.953	.903	.000	.934	.955	.970	.819	.000	.959	.943
Cars	33	268	14	0	315	10	269	137	0	416	150	379	242	0	771	233	313	59	0	605	2107
% Cars	97.1	99.6	100	0	99.4	100	98.5	100	0	99.0	100	99.5	100	0	99.7	100	98.4	100	0	99.2	99.4
Trucks	1	1	0	0	2	0	4	0	0	4	0	1	0	0	1	0	5	0	0	5	12
% Trucks	2.9	0.4	0	0	0.6	0	1.5	0	0	1.0	0	0.3	0	0	0.1	0	1.6	0	0	0.8	0.6
Buses	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Buses	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0.1	0	0	0	0	0	0.0



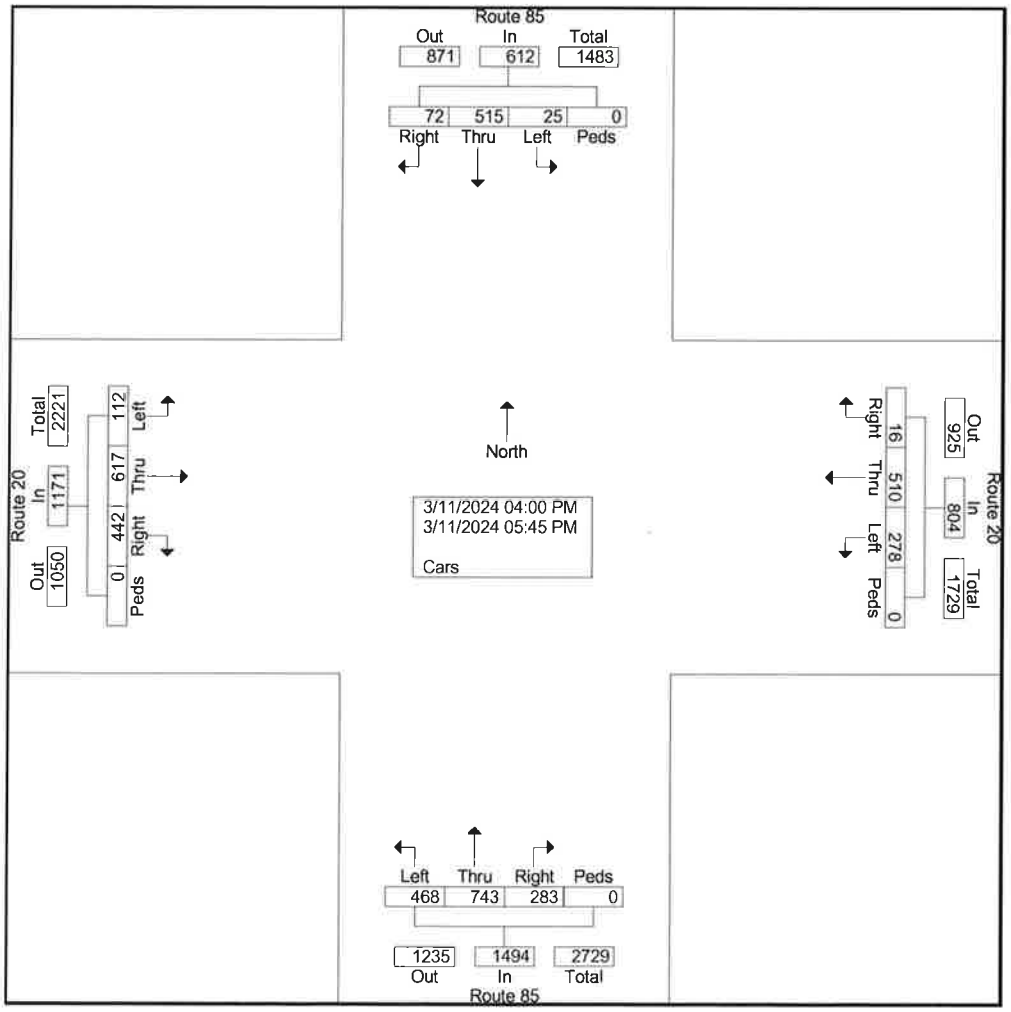
Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601pm
Site Code : 00921601
Start Date : 3/11/2024
Page No : 1

Groups Printed- Cars

	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	9	84	3	0	96	1	62	50	0	113	34	88	51	0	173	47	78	18	0	143	525
04:15 PM	11	55	3	0	69	3	59	25	0	87	42	105	68	0	215	53	77	11	0	141	512
04:30 PM	8	56	2	0	66	2	50	36	0	88	26	101	63	0	190	52	69	12	0	133	477
04:45 PM	9	61	6	0	76	3	62	40	0	105	27	98	61	0	186	60	81	17	0	158	525
Total	37	256	14	0	307	9	233	151	0	393	129	392	243	0	764	212	305	58	0	575	2039
05:00 PM	8	76	2	0	86	3	68	28	0	99	44	89	58	0	191	57	76	18	0	151	527
05:15 PM	9	80	3	0	92	4	67	41	0	112	40	100	67	0	207	61	76	13	0	150	561
05:30 PM	7	51	3	0	61	0	72	28	0	100	39	92	56	0	187	55	80	11	0	146	494
05:45 PM	11	52	3	0	66	0	70	30	0	100	31	70	44	0	145	57	80	12	0	149	460
Total	35	259	11	0	305	7	277	127	0	411	154	351	225	0	730	230	312	54	0	596	2042
Grand Total	72	515	25	0	612	16	510	278	0	804	283	743	468	0	1494	442	617	112	0	1171	4081
Apprch %	11.8	84.2	4.1	0		2	63.4	34.6	0		18.9	49.7	31.3	0		37.7	52.7	9.6	0		
Total %	1.8	12.6	0.6	0	15	0.4	12.5	6.8	0	19.7	6.9	18.2	11.5	0	36.6	10.8	15.1	2.7	0	28.7	

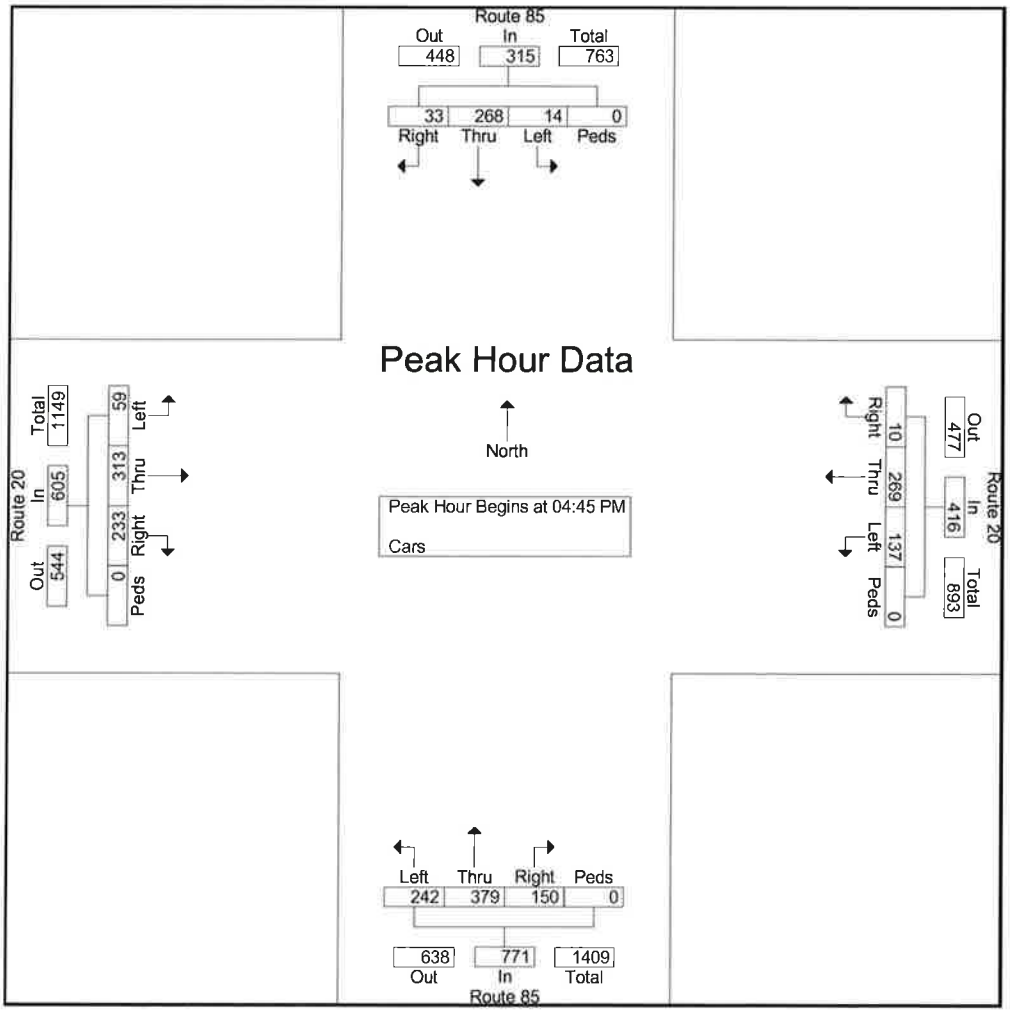


Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601pm
Site Code : 00921601
Start Date : 3/11/2024
Page No : 2

Start Time	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	**9**	61	**6**	0	76	3	62	40	0	105	27	98	61	0	186	60	**81**	17	0	**158**	525
05:00 PM	8	76	2	0	86	3	68	28	0	99	**44**	89	58	0	191	57	76	**18**	0	151	527
05:15 PM	9	**80**	3	0	**92**	**4**	67	**41**	0	**112**	40	**100**	**67**	0	**207**	**61**	76	13	0	150	**561**
05:30 PM	7	51	3	0	61	0	**72**	28	0	100	39	92	56	0	187	55	80	11	0	146	494
Total Volume	33	268	14	0	315	10	269	137	0	416	150	379	242	0	771	233	313	59	0	605	2107
% App. Total	10.5	85.1	4.4	0		2.4	64.7	32.9	0		19.5	49.2	31.4	0		38.5	51.7	9.8	0		
PHF	.917	.838	.583	.000	.856	.625	.934	.835	.000	.929	.852	.948	.903	.000	.931	.955	.966	.819	.000	.957	.939



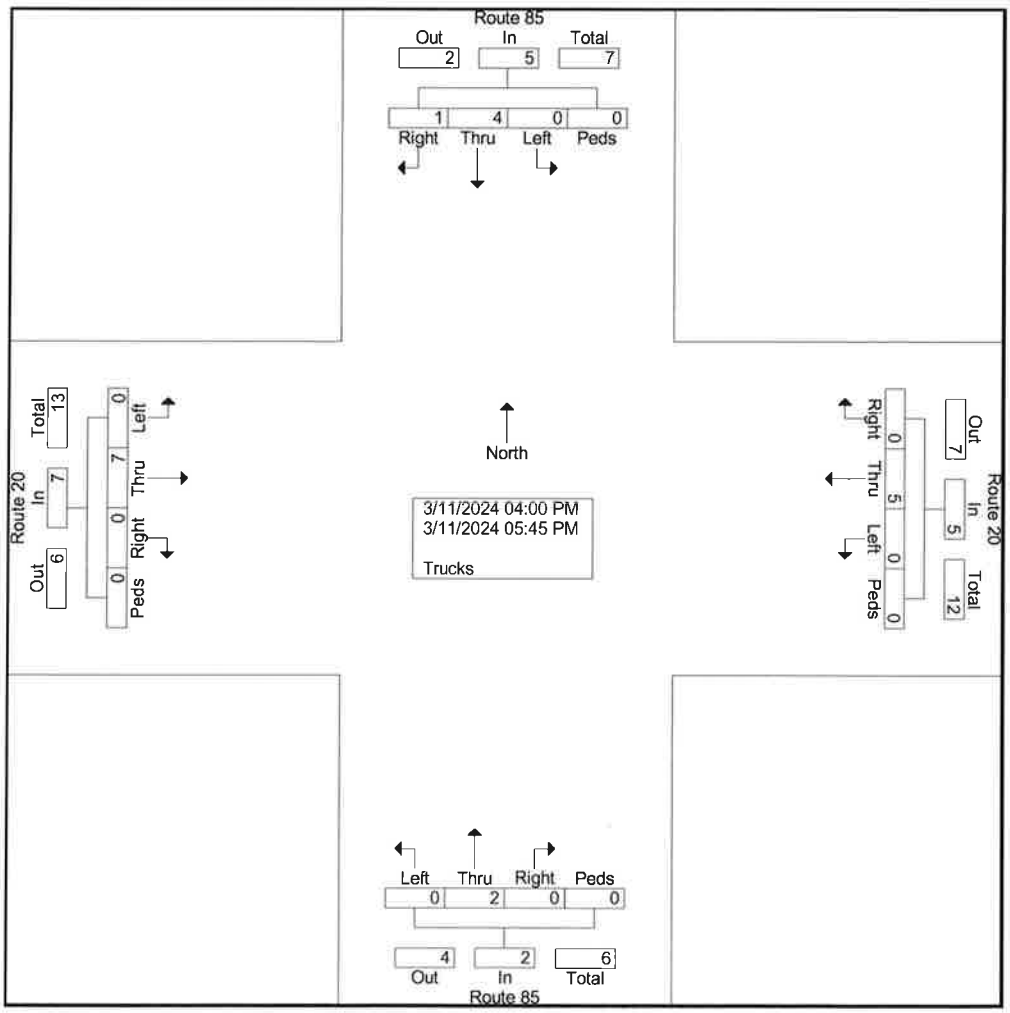
Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601pm
Site Code : 00921601
Start Date : 3/11/2024
Page No : 1

Groups Printed- Trucks

	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	3
04:15 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	0	1	0	0	1	4
Total	0	3	0	0	3	0	3	0	0	3	0	2	0	0	2	0	2	0	0	2	10
05:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
05:30 PM	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	5
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	1	1	0	0	2	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	9
Grand Total	1	4	0	0	5	0	5	0	0	5	0	2	0	0	2	0	7	0	0	7	19
Apprch %	20	80	0	0		0	100	0	0		0	100	0	0		0	100	0	0		
Total %	5.3	21.1	0	0	26.3	0	26.3	0	0	26.3	0	10.5	0	0	10.5	0	36.8	0	0	36.8	

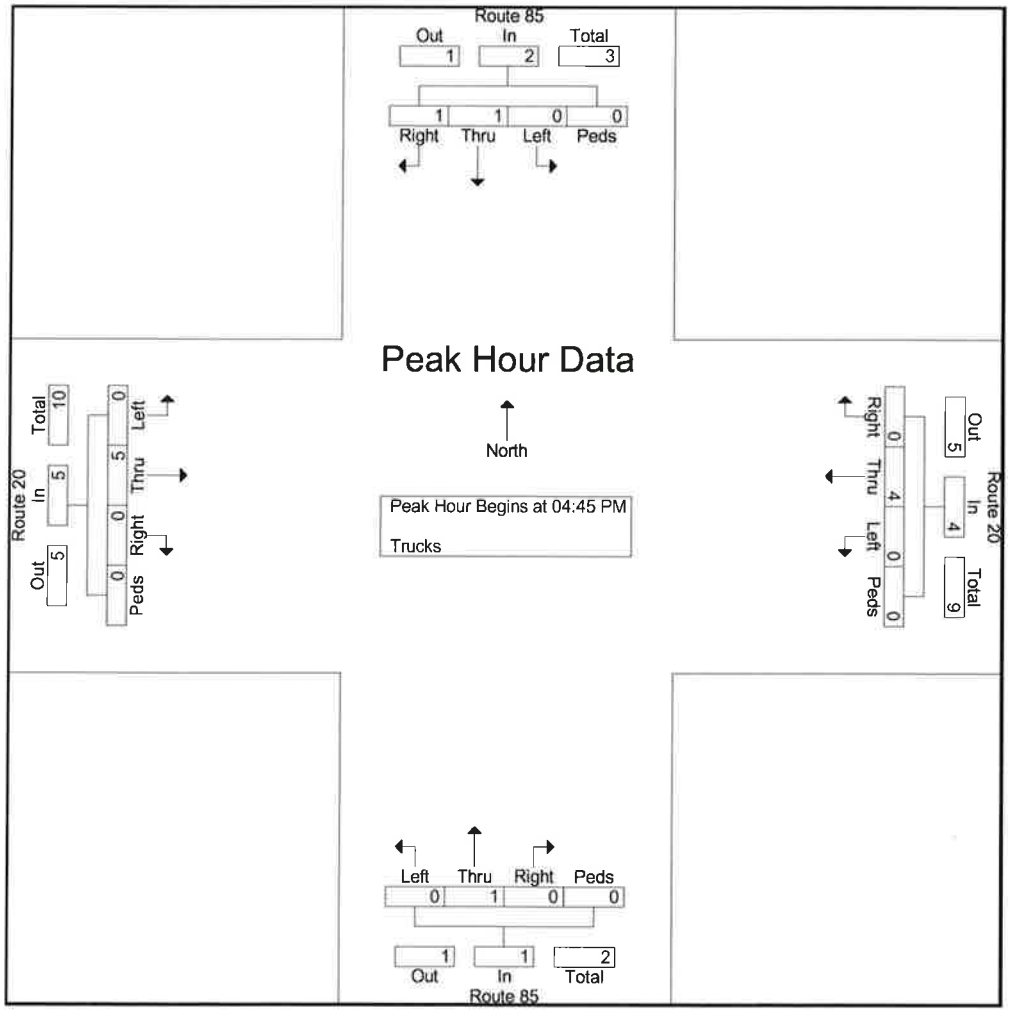


Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601pm
Site Code : 00921601
Start Date : 3/11/2024
Page No : 2

Start Time	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	0	**2**	0	0	**2**	0	**1**	0	0	**1**	0	1	0	0	1	4
05:00 PM	**1**	0	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
05:30 PM	0	**1**	0	0	1	0	2	0	0	2	0	0	0	0	0	0	**2**	0	0	**2**	**5**
Total Volume	1	1	0	0	2	0	4	0	0	4	0	1	0	0	1	0	5	0	0	5	12
% App. Total	50	50	0	0		0	100	0	0		0	100	0	0		0	100	0	0		
PHF	.250	.250	.000	.000	.500	.000	.500	.000	.000	.500	.000	.250	.000	.000	.250	.000	.625	.000	.000	.625	.600



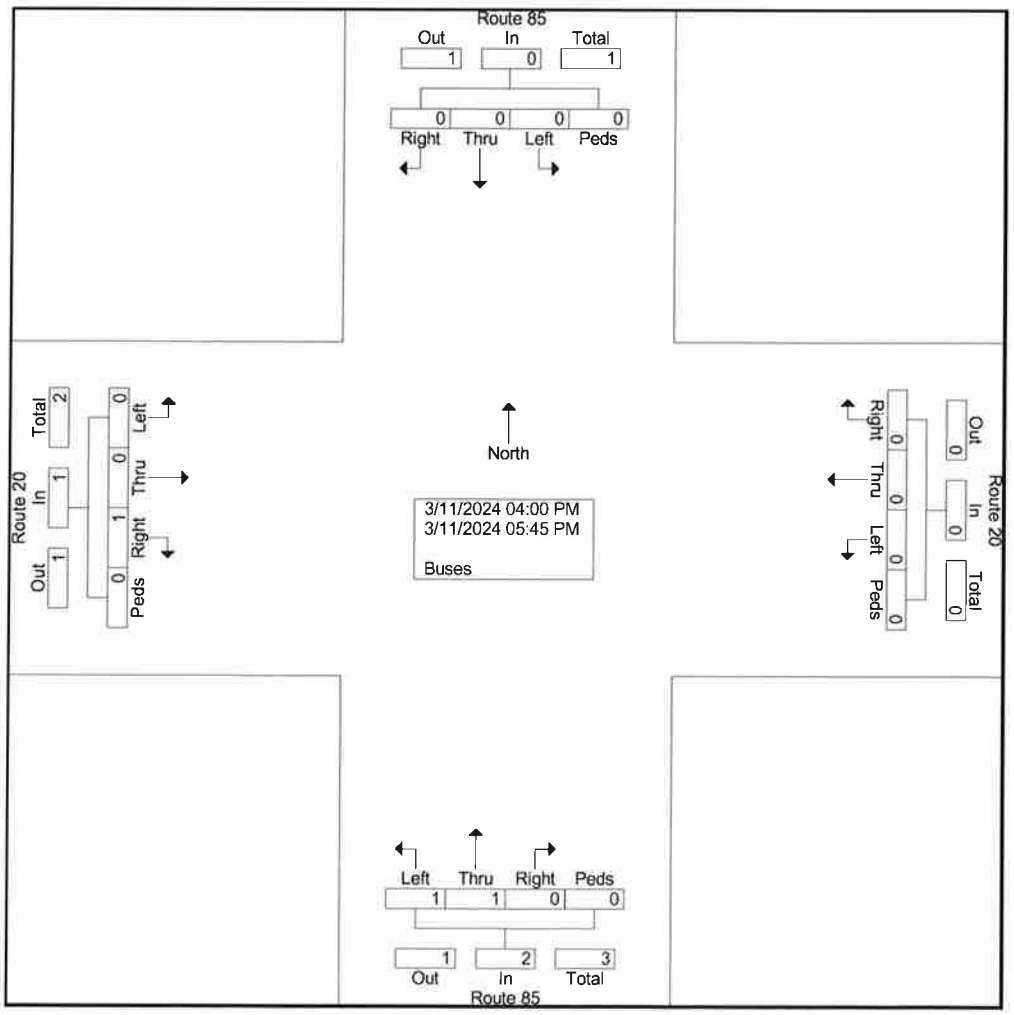
Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601pm
Site Code : 00921601
Start Date : 3/11/2024
Page No : 1

Groups Printed- Buses

	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	3
Apprch %	0	0	0	0		0	0	0	0		0	50	50	0		100	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	33.3	33.3	0	66.7	33.3	0	0	0	33.3	

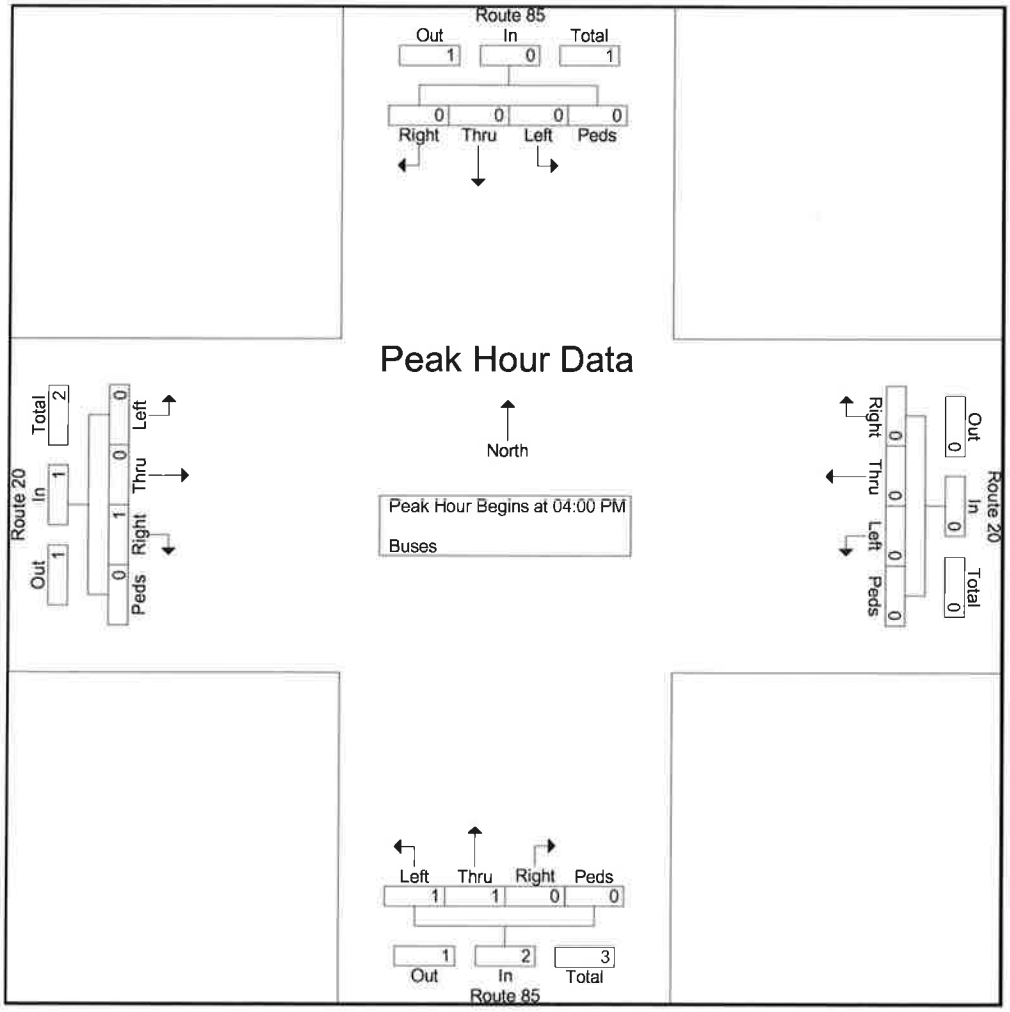


Vanasse & Associates

Route 20 at Route 85
Marlborough, MA
Weather : Clear

File Name : 921601pm
Site Code : 00921601
Start Date : 3/11/2024
Page No : 2

Start Time	Route 85 From North					Route 20 From East					Route 85 From South					Route 20 From West					Int. Total
	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	3
% App. Total	0	0	0	0		0	0	0	0		0	50	50	0		100	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.500	.250	.000	.000	.000	.250	.750



Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023

Groups Printed- Cars - Trucks

	Lincoln St From North		Lakeside Ave From East		Lakeside Ave From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	0	86	113	0	0	175	374
07:15 AM	0	96	126	0	0	205	427
07:30 AM	3	107	133	0	0	239	482
07:45 AM	1	123	183	0	0	230	537
Total	4	412	555	0	0	849	1820
08:00 AM	1	95	174	0	0	258	528
08:15 AM	0	109	153	0	0	259	521
08:30 AM	0	86	152	0	0	229	467
08:45 AM	0	96	177	0	0	198	471
Total	1	386	656	0	0	944	1987
Grand Total	5	798	1211	0	0	1793	3807
Apprch %	0.6	99.4	100	0	0	100	
Total %	0.1	21	31.8	0	0	47.1	
Cars	5	791	1182	0	0	1768	3746
% Cars	100	99.1	97.6	0	0	98.6	98.4
Trucks	0	7	29	0	0	25	61
% Trucks	0	0.9	2.4	0	0	1.4	1.6

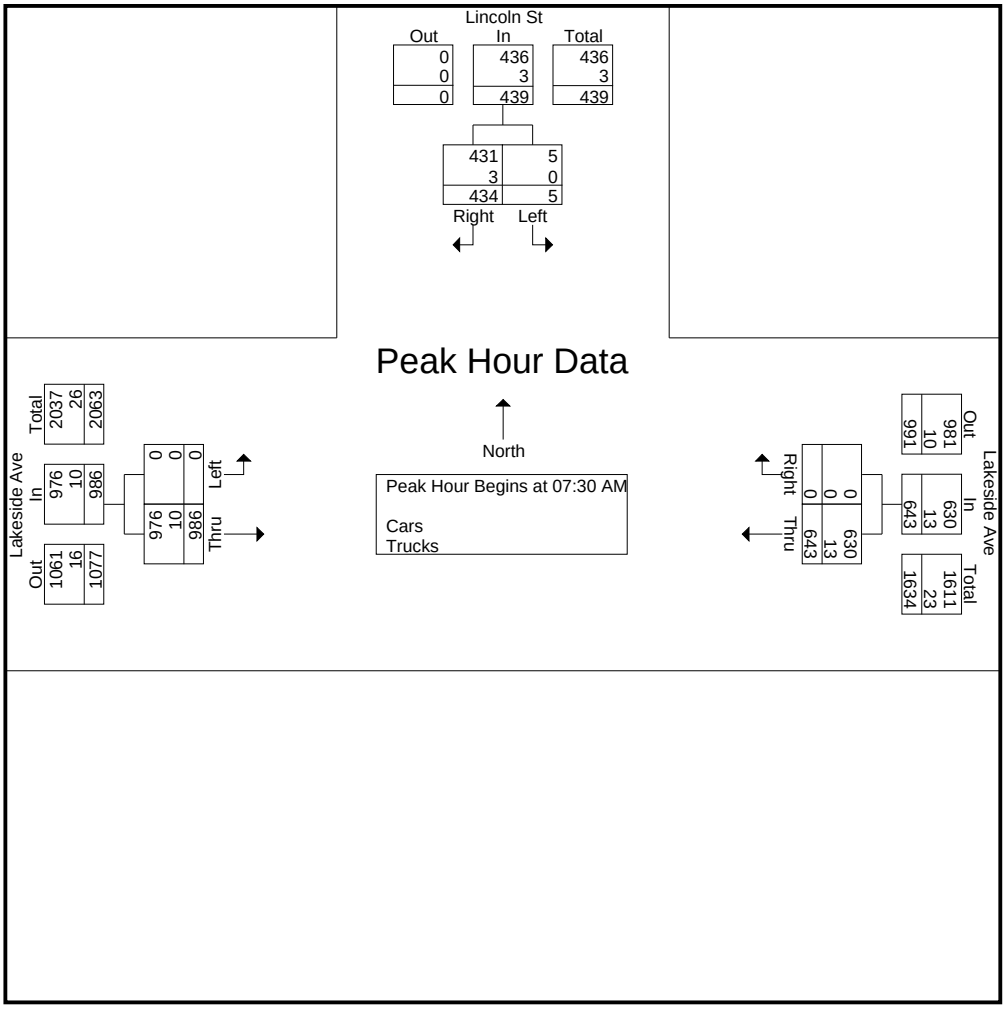
	Lincoln St From North			Lakeside Ave From East			Lakeside Ave From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	**3**	107	110	133	0	133	0	239	239	482
07:45 AM	1	**123**	**124**	**183**	0	**183**	0	230	230	**537**
08:00 AM	1	95	96	174	0	174	0	258	258	528
08:15 AM	0	109	109	153	0	153	0	**259**	**259**	521
Total Volume	5	434	439	643	0	643	0	986	986	2068
% App. Total	1.1	98.9		100	0		0	100		
PHF	.417	.882	.885	.878	.000	.878	.000	.952	.952	.963
Cars	5	431	436	630	0	630	0	976	976	2042
% Cars	100	99.3	99.3	98.0	0	98.0	0	99.0	99.0	98.7
Trucks	0	3	3	13	0	13	0	10	10	26
% Trucks	0	0.7	0.7	2.0	0	2.0	0	1.0	1.0	1.3

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

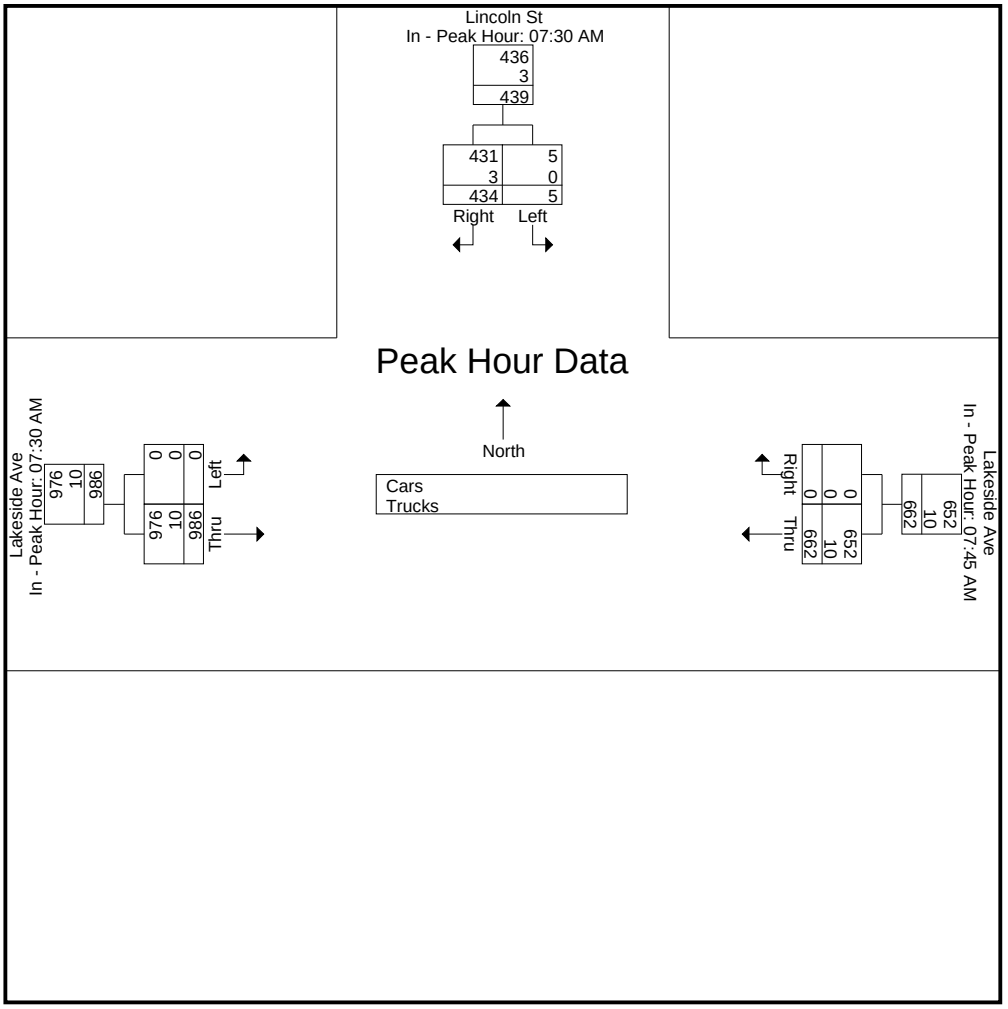
	07:30 AM			07:45 AM			07:30 AM		
+0 mins.	**3**	107	110	**183**	0	**183**	0	239	239
+15 mins.	1	**123**	**124**	174	0	174	0	230	230
+30 mins.	1	95	96	153	0	153	0	258	258
+45 mins.	0	109	109	152	0	152	0	**259**	**259**
Total Volume	5	434	439	662	0	662	0	986	986
% App. Total	1.1	98.9		100	0		0	100	
PHF	.417	.882	.885	.904	.000	.904	.000	.952	.952
Cars	5	431	436	652	0	652	0	976	976
% Cars	100	99.3	99.3	98.5	0	98.5	0	99	99
Trucks	0	3	3	10	0	10	0	10	10
% Trucks	0	0.7	0.7	1.5	0	1.5	0	1	1

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023

Groups Printed- Cars

	Lincoln St From North		Lakeside Ave From East		Lakeside Ave From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	0	85	109	0	0	167	361
07:15 AM	0	94	123	0	0	201	418
07:30 AM	3	106	129	0	0	233	471
07:45 AM	1	123	179	0	0	230	533
Total	4	408	540	0	0	831	1783
08:00 AM	1	95	171	0	0	257	524
08:15 AM	0	107	151	0	0	256	514
08:30 AM	0	85	151	0	0	229	465
08:45 AM	0	96	169	0	0	195	460
Total	1	383	642	0	0	937	1963
Grand Total	5	791	1182	0	0	1768	3746
Apprch %	0.6	99.4	100	0	0	100	
Total %	0.1	21.1	31.6	0	0	47.2	

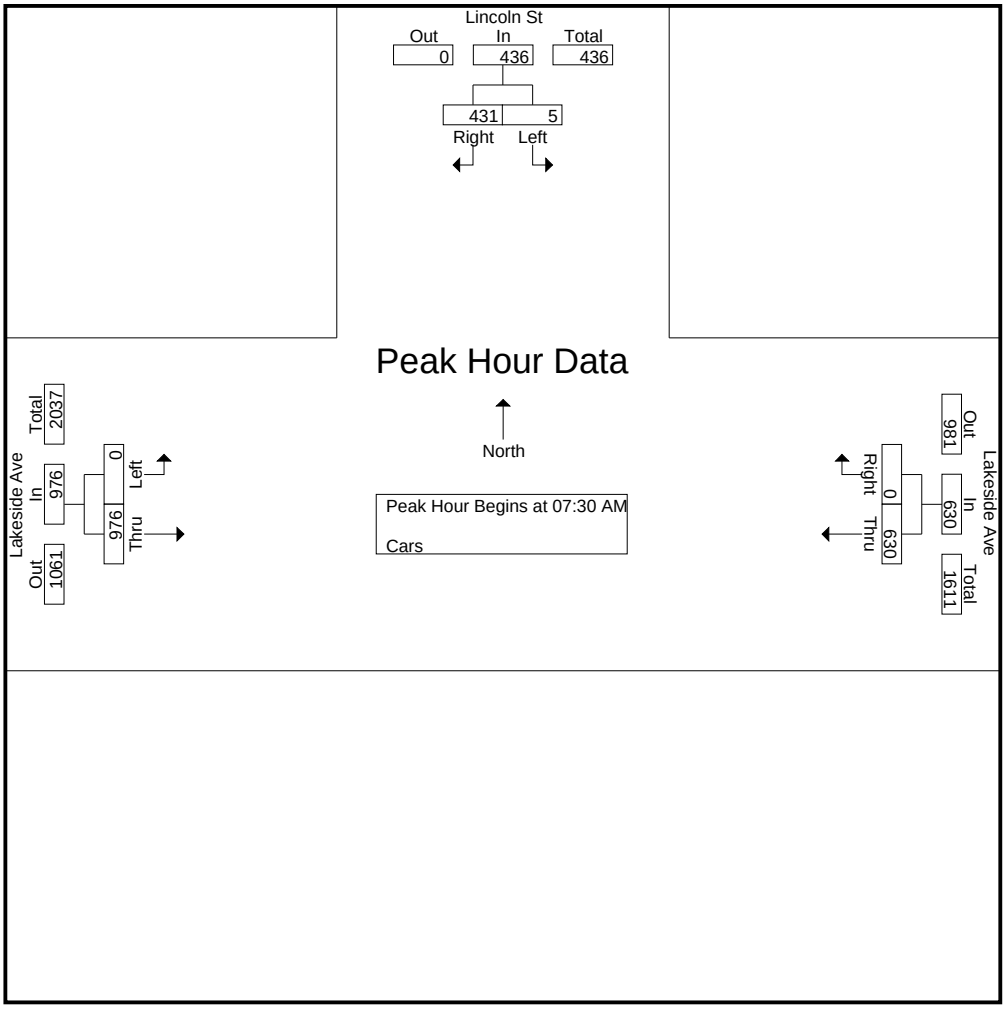
	Lincoln St From North			Lakeside Ave From East			Lakeside Ave From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	**3**	106	109	129	0	129	0	233	233	471
07:45 AM	1	**123**	**124**	**179**	0	**179**	0	230	230	**533**
08:00 AM	1	95	96	171	0	171	0	**257**	**257**	524
08:15 AM	0	107	107	151	0	151	0	256	256	514
Total Volume	5	431	436	630	0	630	0	976	976	2042
% App. Total	1.1	98.9		100	0		0	100		
PHF	.417	.876	.879	.880	.000	.880	.000	.949	.949	.958

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

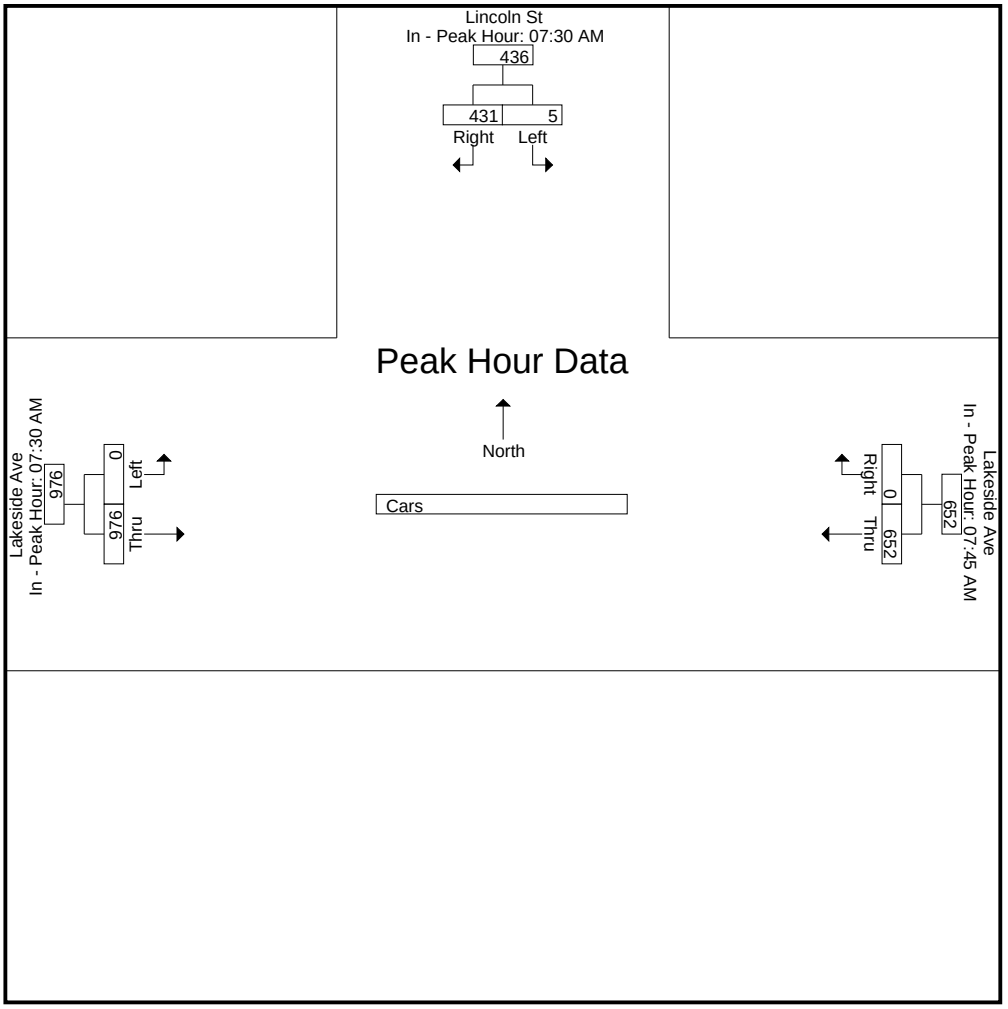
	07:30 AM			07:45 AM			07:30 AM		
+0 mins.	**3**	106	109	**179**	0	**179**	0	233	233
+15 mins.	1	**123**	**124**	171	0	171	0	230	230
+30 mins.	1	95	96	151	0	151	0	**257**	**257**
+45 mins.	0	107	107	151	0	151	0	256	256
Total Volume	5	431	436	652	0	652	0	976	976
% App. Total	1.1	98.9		100	0		0	100	
PHF	.417	.876	.879	.911	.000	.911	.000	.949	.949

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023

Groups Printed- Trucks

	Lincoln St From North		Lakeside Ave From East		Lakeside Ave From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	0	1	4	0	0	8	13
07:15 AM	0	2	3	0	0	4	9
07:30 AM	0	1	4	0	0	6	11
07:45 AM	0	0	4	0	0	0	4
Total	0	4	15	0	0	18	37
08:00 AM	0	0	3	0	0	1	4
08:15 AM	0	2	2	0	0	3	7
08:30 AM	0	1	1	0	0	0	2
08:45 AM	0	0	8	0	0	3	11
Total	0	3	14	0	0	7	24
Grand Total	0	7	29	0	0	25	61
Apprch %	0	100	100	0	0	100	
Total %	0	11.5	47.5	0	0	41	

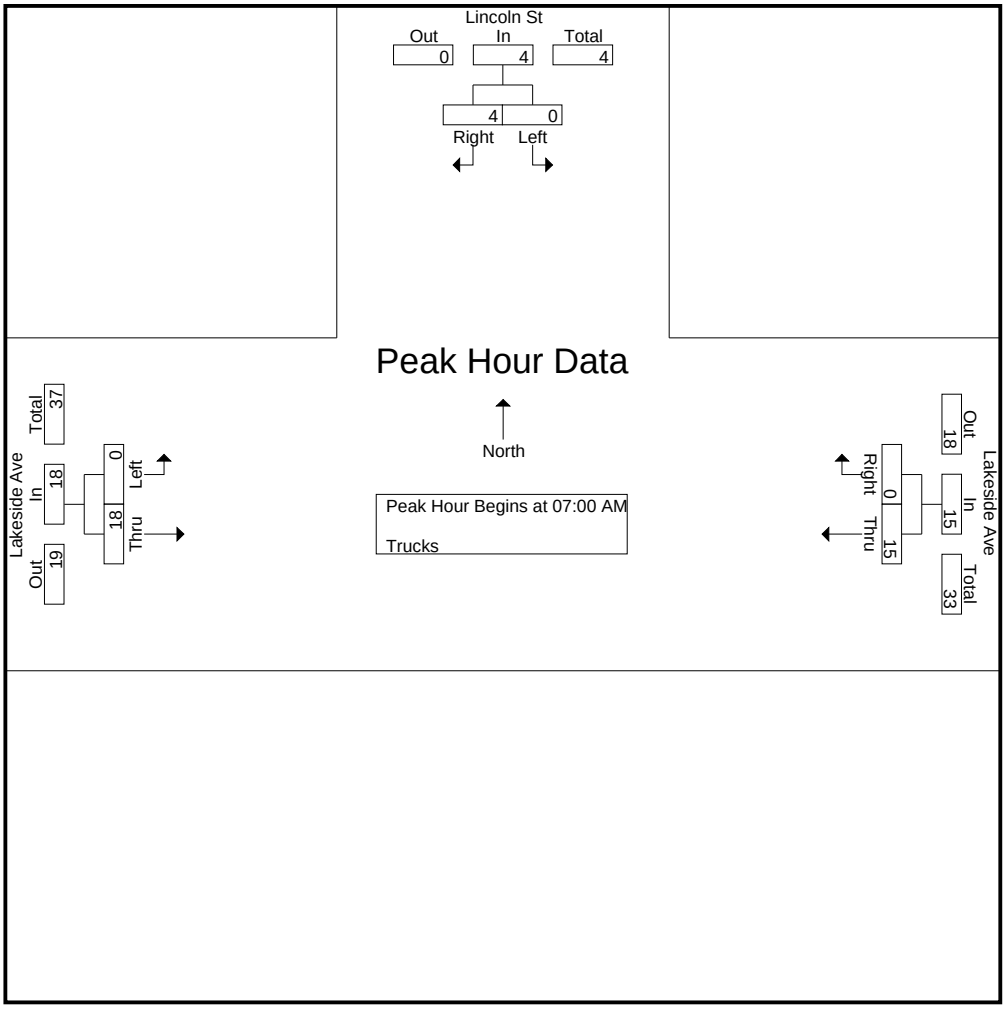
	Lincoln St From North			Lakeside Ave From East			Lakeside Ave From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	1	1	**4**	0	**4**	0	**8**	**8**	**13**
07:15 AM	0	**2**	**2**	3	0	3	0	4	4	9
07:30 AM	0	1	1	4	0	4	0	6	6	11
07:45 AM	0	0	0	4	0	4	0	0	0	4
Total Volume	0	4	4	15	0	15	0	18	18	37
% App. Total	0	100		100	0		0	100		
PHF	.000	.500	.500	.938	.000	.938	.000	.563	.563	.712

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	1	1	**4**	0	**4**	0	**8**	**8**
+15 mins.	0	**2**	**2**	3	0	3	0	4	4
+30 mins.	0	1	1	4	0	4	0	6	6
+45 mins.	0	0	0	4	0	4	0	0	0
Total Volume	0	4	4	15	0	15	0	18	18
% App. Total	0	100		100	0		0	100	
PHF	.000	.500	.500	.938	.000	.938	.000	.563	.563

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
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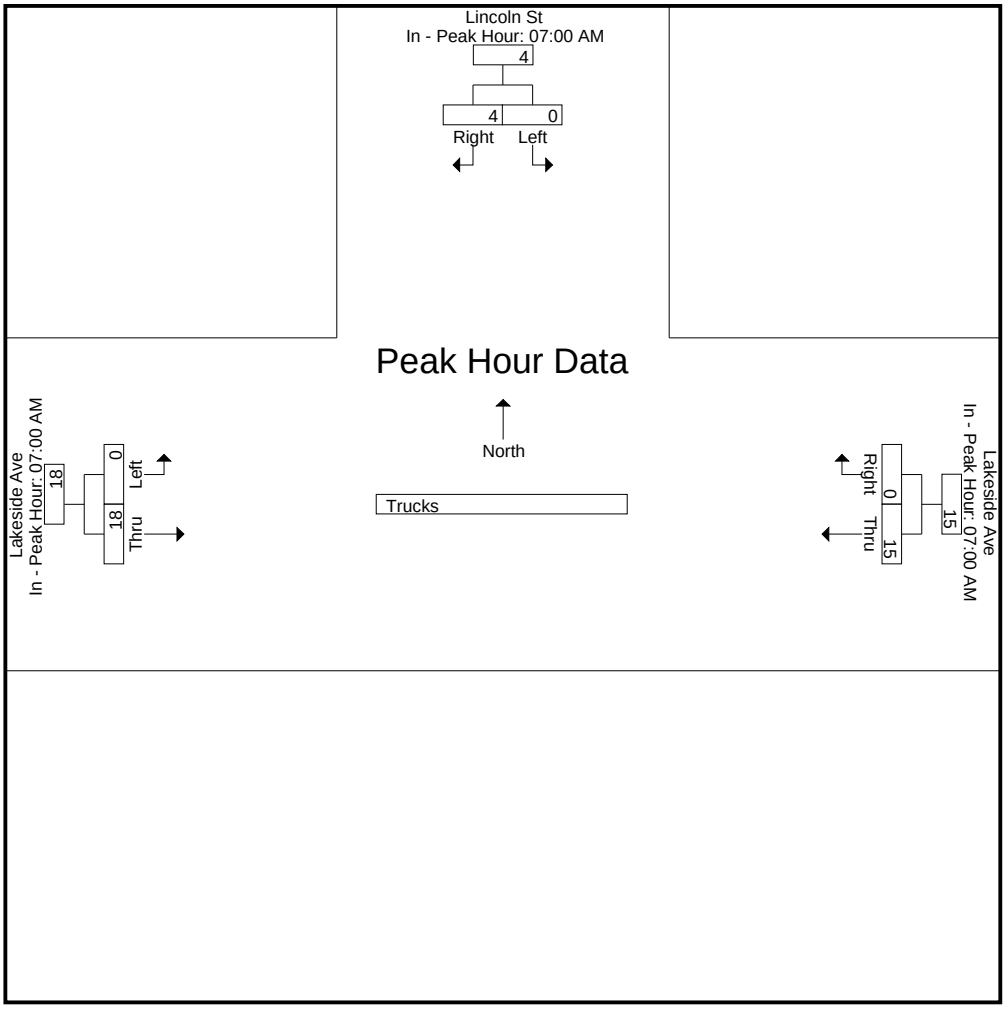

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023

Groups Printed- Bikes Peds

	Lincoln St From North			Lakeside Ave From East			Lakeside Ave From West					
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0				
Total %										0	0	

	Lincoln St From North			Lakeside Ave From East			Lakeside Ave From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
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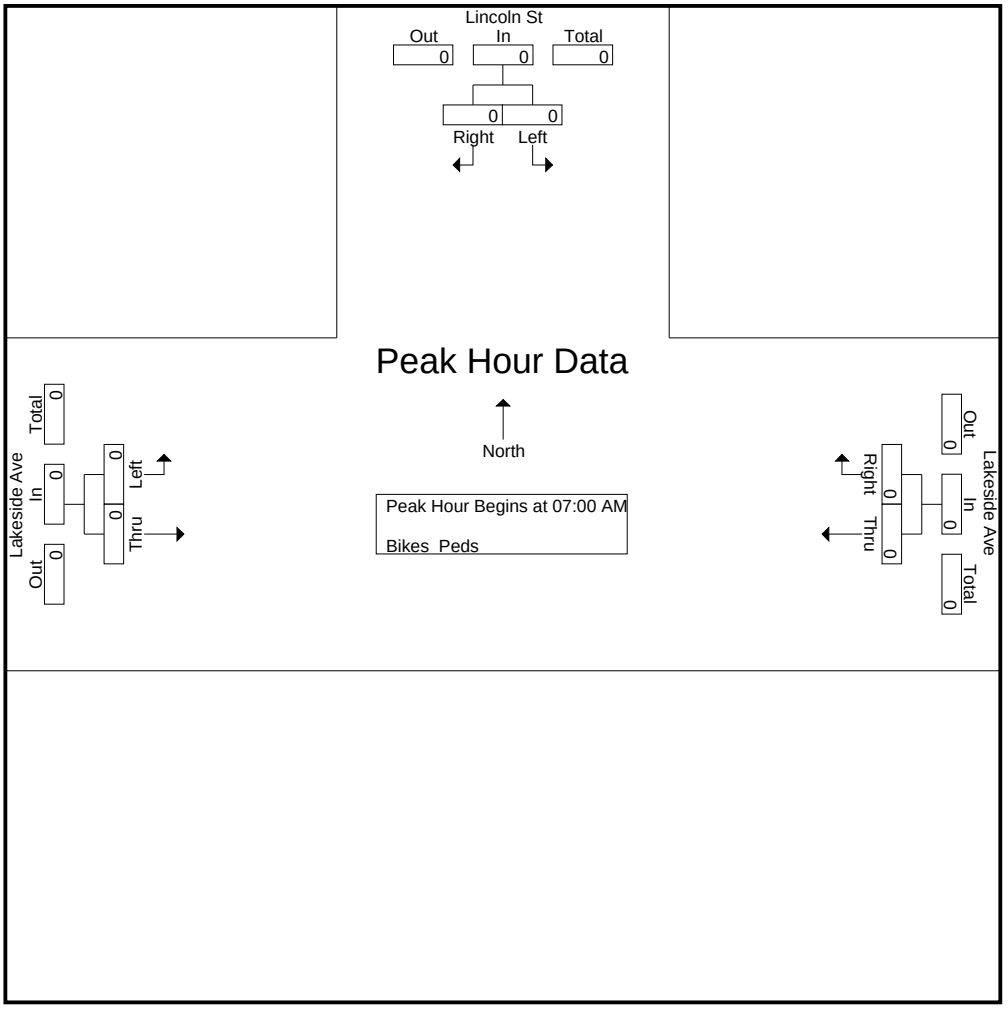

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
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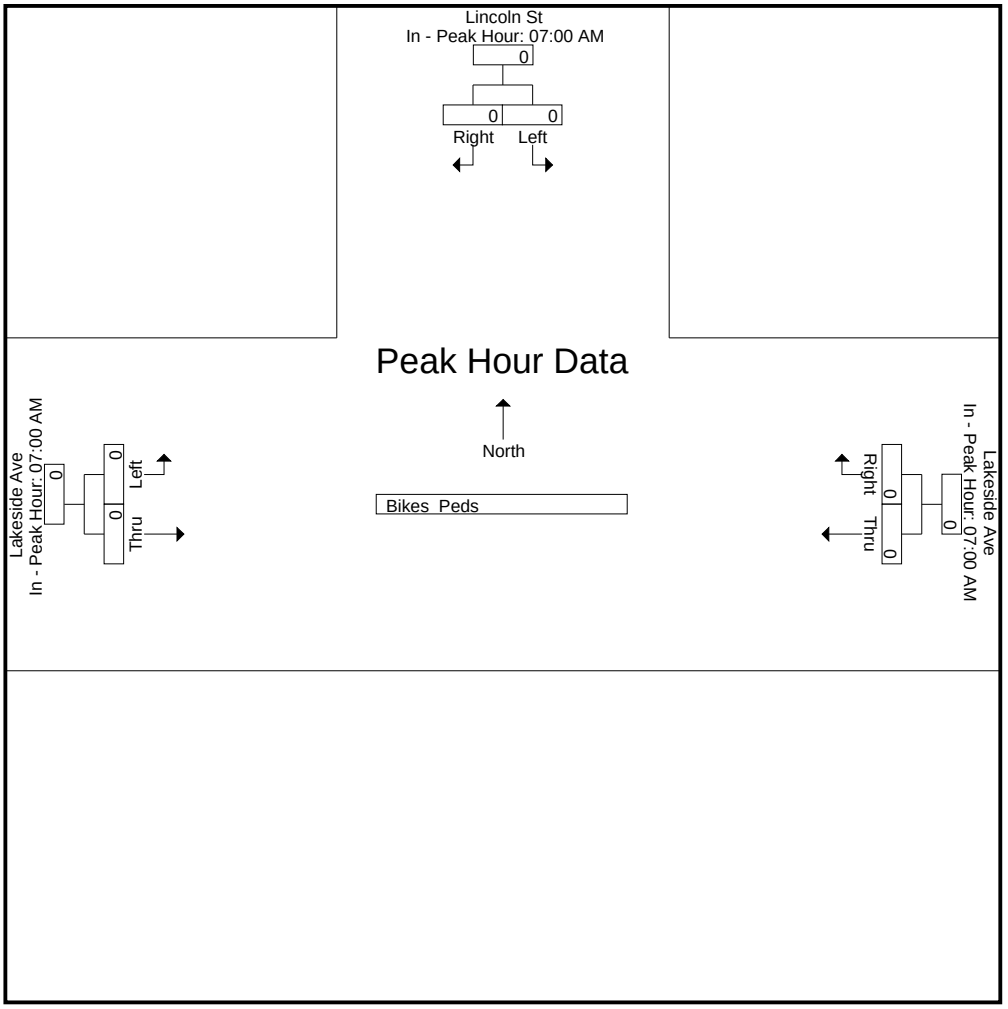


Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023

Groups Printed- Cars - Trucks

	Lincoln St From North		Lakeside Ave From East		Lakeside Ave From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	0	76	240	0	0	215	531
04:15 PM	0	86	219	0	0	197	502
04:30 PM	0	97	216	0	0	227	540
04:45 PM	1	104	197	0	0	234	536
Total	1	363	872	0	0	873	2109
05:00 PM	0	97	232	0	0	211	540
05:15 PM	0	106	205	0	0	216	527
05:30 PM	0	103	202	0	0	201	506
05:45 PM	0	90	186	0	0	221	497
Total	0	396	825	0	0	849	2070
Grand Total	1	759	1697	0	0	1722	4179
Apprch %	0.1	99.9	100	0	0	100	
Total %	0	18.2	40.6	0	0	41.2	
Cars	1	758	1681	0	0	1711	4151
% Cars	100	99.9	99.1	0	0	99.4	99.3
Trucks	0	1	16	0	0	11	28
% Trucks	0	0.1	0.9	0	0	0.6	0.7

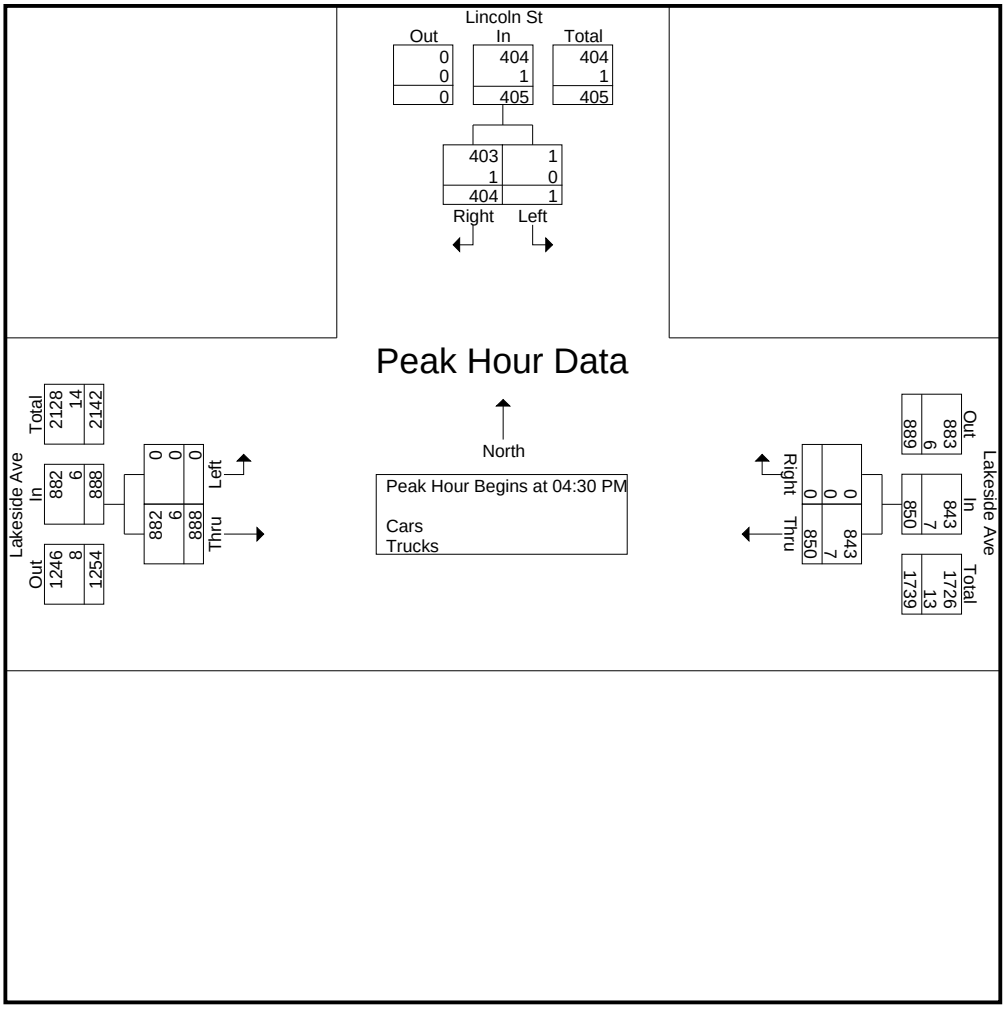
	Lincoln St From North			Lakeside Ave From East			Lakeside Ave From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	97	97	216	0	216	0	227	227	**540**
04:45 PM	**1**	104	105	197	0	197	0	**234**	**234**	536
05:00 PM	0	97	97	**232**	0	**232**	0	211	211	540
05:15 PM	0	**106**	**106**	205	0	205	0	216	216	527
Total Volume	1	404	405	850	0	850	0	888	888	2143
% App. Total	0.2	99.8		100	0		0	100		
PHF	.250	.953	.955	.916	.000	.916	.000	.949	.949	.992
Cars	1	403	404	843	0	843	0	882	882	2129
% Cars	100	99.8	99.8	99.2	0	99.2	0	99.3	99.3	99.3
Trucks	0	1	1	7	0	7	0	6	6	14
% Trucks	0	0.2	0.2	0.8	0	0.8	0	0.7	0.7	0.7

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

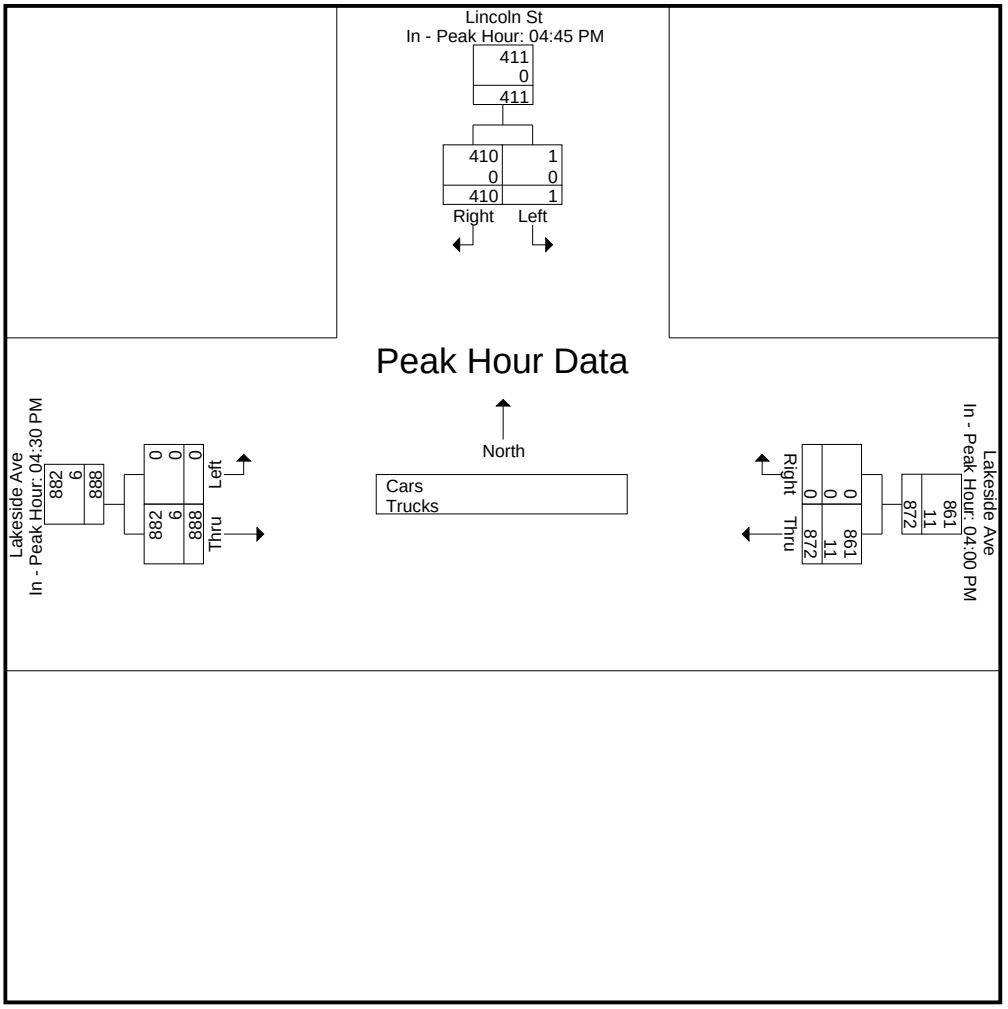
	04:45 PM			04:00 PM			04:30 PM		
+0 mins.	**1**	104	105	**240**	0	**240**	0	227	227
+15 mins.	0	97	97	219	0	219	0	**234**	**234**
+30 mins.	0	**106**	**106**	216	0	216	0	211	211
+45 mins.	0	103	103	197	0	197	0	216	216
Total Volume	1	410	411	872	0	872	0	888	888
% App. Total	0.2	99.8		100	0		0	100	
PHF	.250	.967	.969	.908	.000	.908	.000	.949	.949
Cars	1	410	411	861	0	861	0	882	882
% Cars	100	100	100	98.7	0	98.7	0	99.3	99.3
Trucks	0	0	0	11	0	11	0	6	6
% Trucks	0	0	0	1.3	0	1.3	0	0.7	0.7

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023

Groups Printed- Cars

	Lincoln St From North		Lakeside Ave From East		Lakeside Ave From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	0	76	235	0	0	214	525
04:15 PM	0	86	217	0	0	197	500
04:30 PM	0	96	214	0	0	224	534
04:45 PM	1	104	195	0	0	233	533
Total	1	362	861	0	0	868	2092
05:00 PM	0	97	232	0	0	210	539
05:15 PM	0	106	202	0	0	215	523
05:30 PM	0	103	201	0	0	198	502
05:45 PM	0	90	185	0	0	220	495
Total	0	396	820	0	0	843	2059
Grand Total	1	758	1681	0	0	1711	4151
Apprch %	0.1	99.9	100	0	0	100	
Total %	0	18.3	40.5	0	0	41.2	

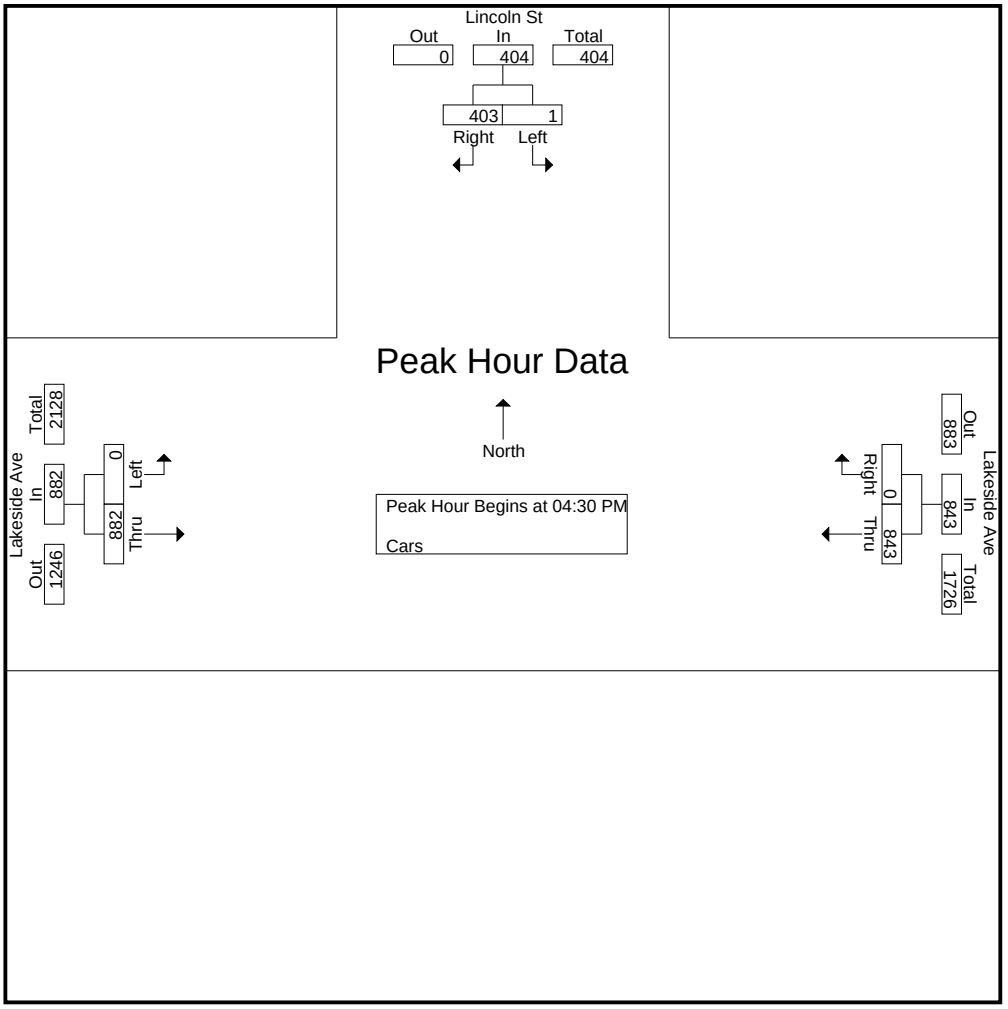
	Lincoln St From North			Lakeside Ave From East			Lakeside Ave From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	96	96	214	0	214	0	224	224	534
04:45 PM	**1**	104	105	195	0	195	0	**233**	**233**	533
05:00 PM	0	97	97	**232**	0	**232**	0	210	210	**539**
05:15 PM	0	**106**	**106**	202	0	202	0	215	215	523
Total Volume	1	403	404	843	0	843	0	882	882	2129
% App. Total	0.2	99.8		100	0		0	100		
PHF	.250	.950	.953	.908	.000	.908	.000	.946	.946	.987

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
Page No : 5



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

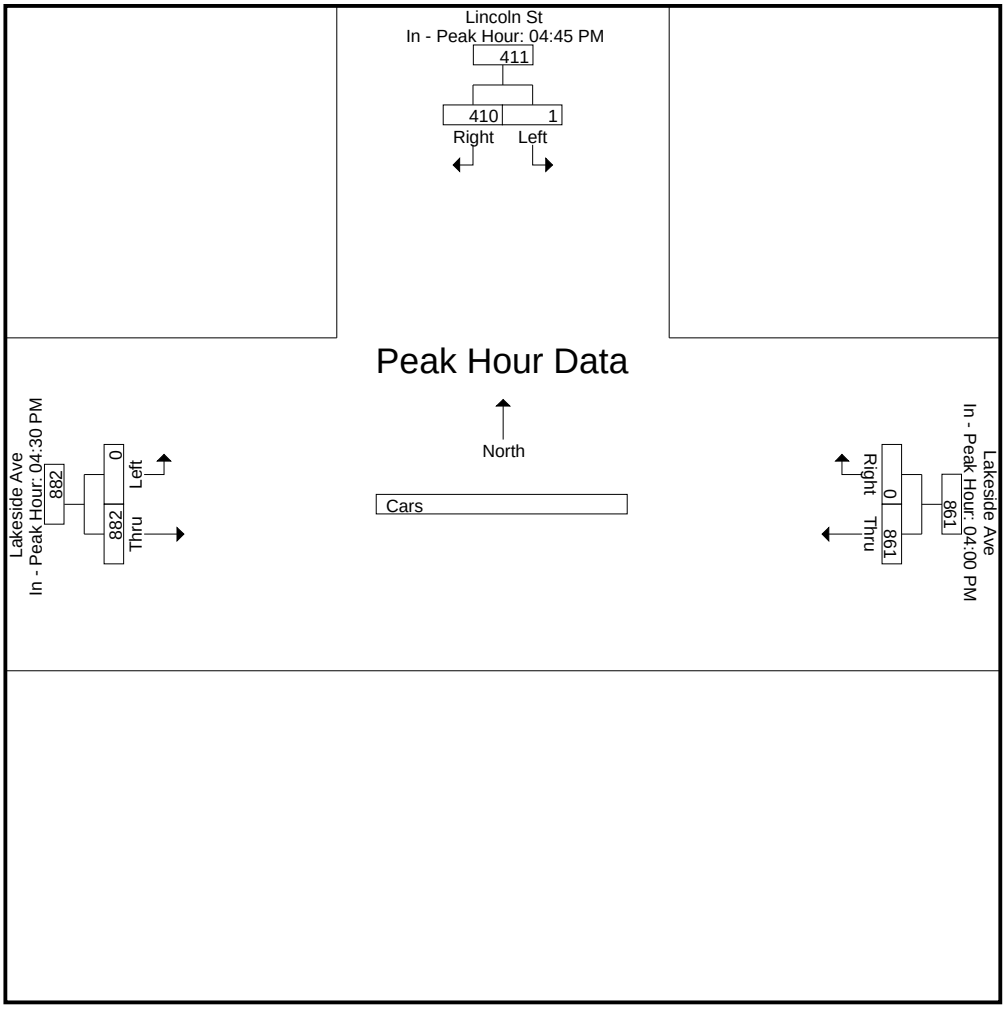
	04:45 PM			04:00 PM			04:30 PM		
+0 mins.	**1**	104	105	**235**	0	**235**	0	224	224
+15 mins.	0	97	97	217	0	217	0	**233**	**233**
+30 mins.	0	**106**	**106**	214	0	214	0	210	210
+45 mins.	0	103	103	195	0	195	0	215	215
Total Volume	1	410	411	861	0	861	0	882	882
% App. Total	0.2	99.8		100	0		0	100	
PHF	.250	.967	.969	.916	.000	.916	.000	.946	.946

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023

Groups Printed- Trucks

	Lincoln St From North		Lakeside Ave From East		Lakeside Ave From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	0	0	5	0	0	1	6
04:15 PM	0	0	2	0	0	0	2
04:30 PM	0	1	2	0	0	3	6
04:45 PM	0	0	2	0	0	1	3
Total	0	1	11	0	0	5	17
05:00 PM	0	0	0	0	0	1	1
05:15 PM	0	0	3	0	0	1	4
05:30 PM	0	0	1	0	0	3	4
05:45 PM	0	0	1	0	0	1	2
Total	0	0	5	0	0	6	11
Grand Total	0	1	16	0	0	11	28
Apprch %	0	100	100	0	0	100	
Total %	0	3.6	57.1	0	0	39.3	

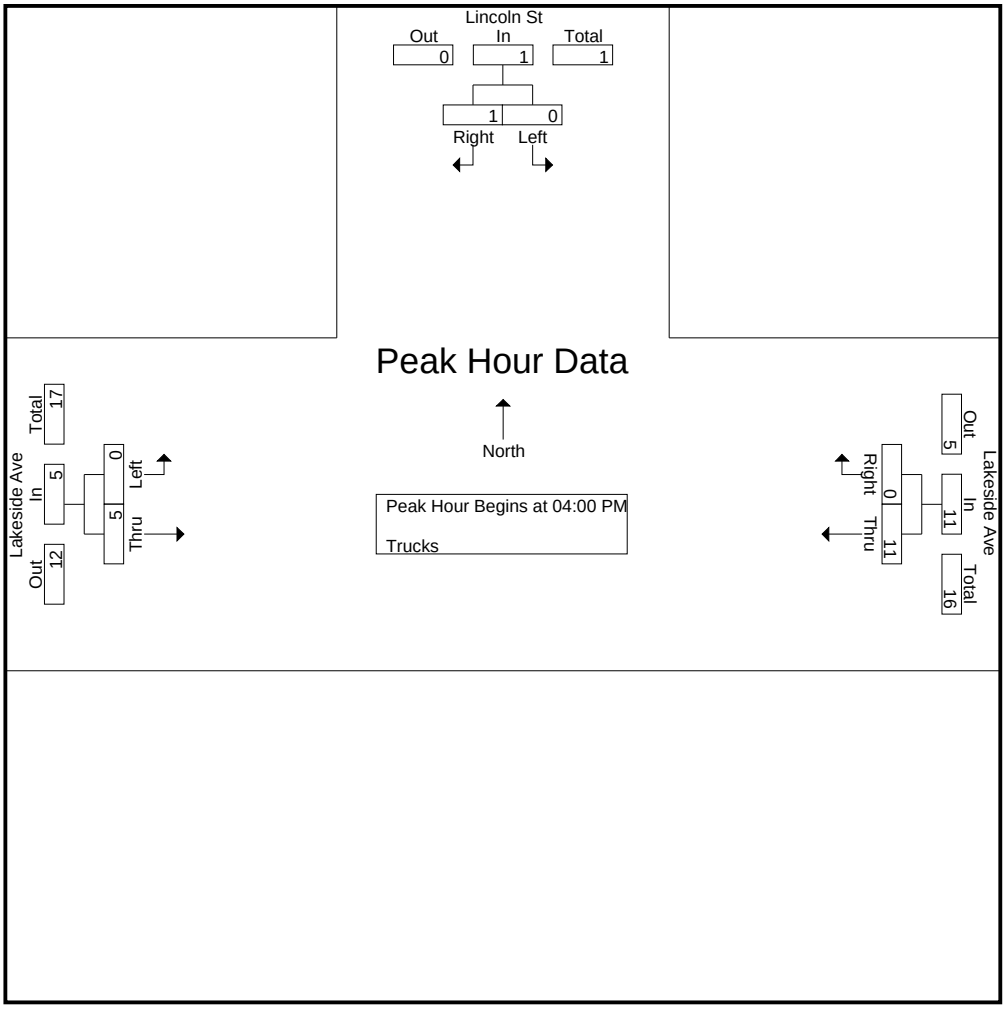
	Lincoln St From North			Lakeside Ave From East			Lakeside Ave From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	**5**	0	**5**	0	1	1	**6**
04:15 PM	0	0	0	2	0	2	0	0	0	2
04:30 PM	0	**1**	**1**	2	0	2	0	**3**	**3**	6
04:45 PM	0	0	0	2	0	2	0	1	1	3
Total Volume	0	1	1	11	0	11	0	5	5	17
% App. Total	0	100		100	0		0	100		
PHF	.000	.250	.250	.550	.000	.550	.000	.417	.417	.708

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

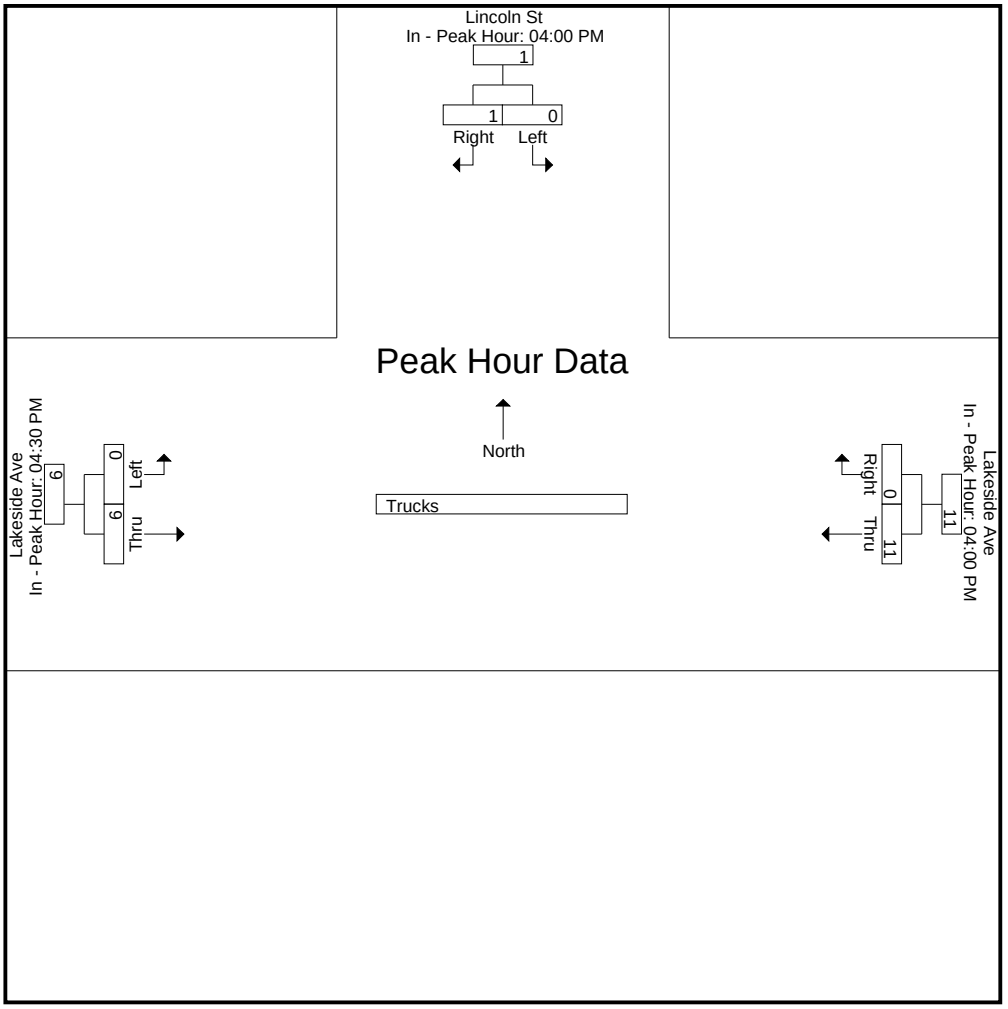
	04:00 PM			04:00 PM			04:30 PM		
+0 mins.	0	0	0	**5**	0	**5**	0	**3**	**3**
+15 mins.	0	0	0	2	0	2	0	1	1
+30 mins.	0	**1**	**1**	2	0	2	0	1	1
+45 mins.	0	0	0	2	0	2	0	1	1
Total Volume	0	1	1	11	0	11	0	6	6
% App. Total	0	100		100	0		0	100	
PHF	.000	.250	.250	.550	.000	.550	.000	.500	.500

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023

Groups Printed- Bikes Peds

	Lincoln St From North			Lakeside Ave From East			Lakeside Ave From West					
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0				
Total %										0	0	

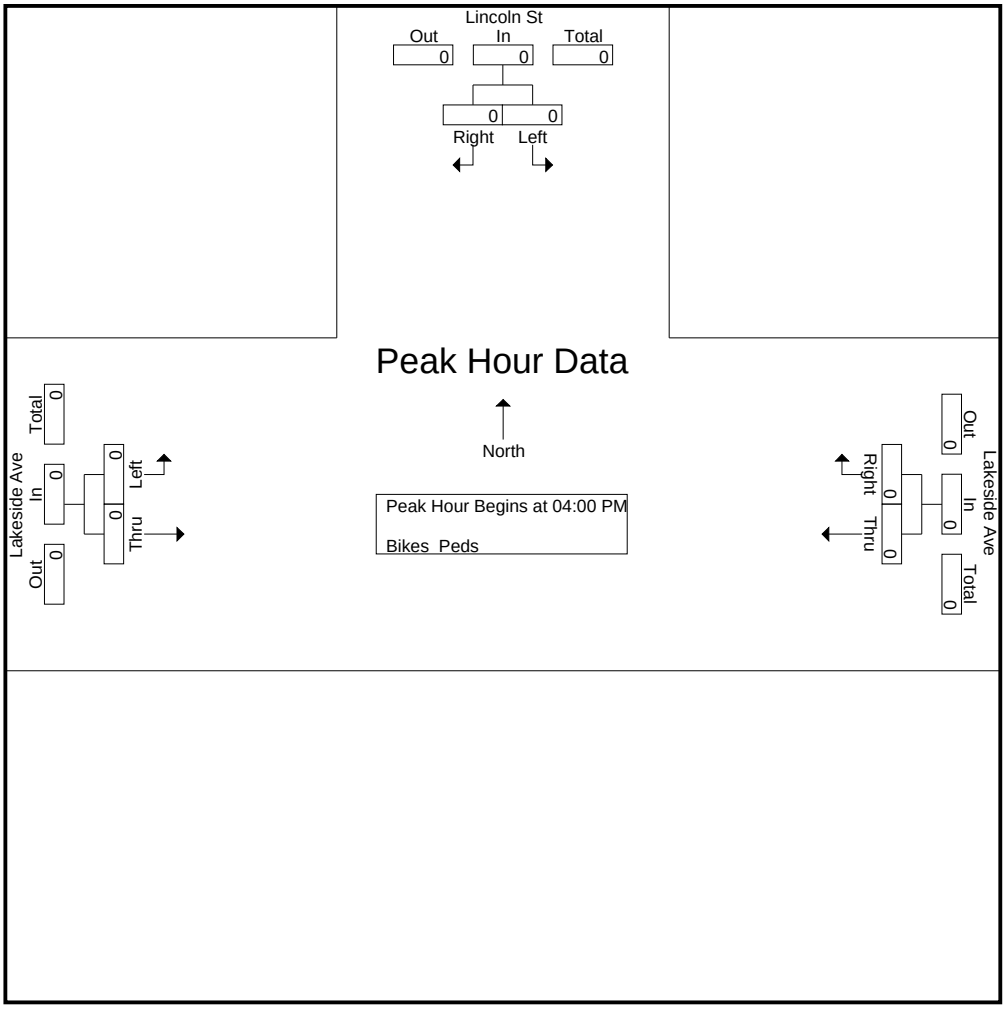
	Lincoln St From North			Lakeside Ave From East			Lakeside Ave From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
Page No : 11



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

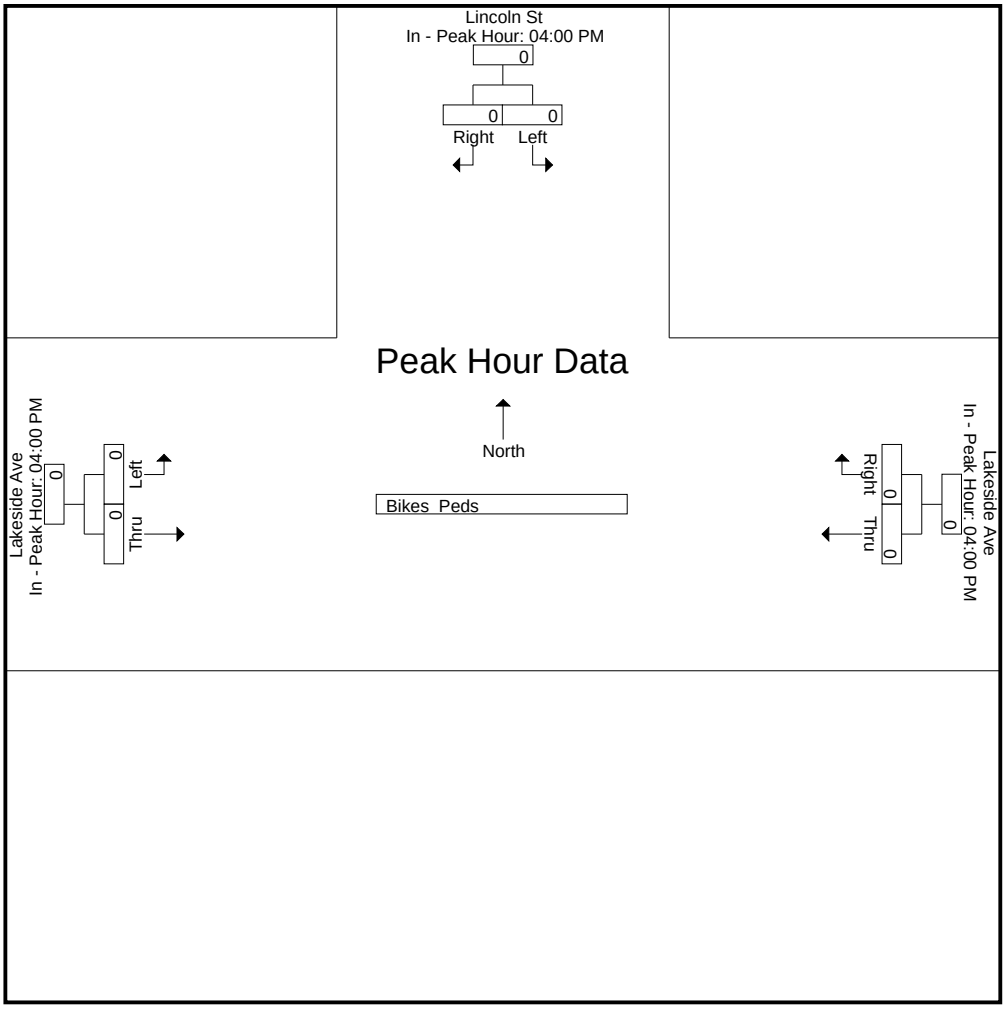
	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Lincoln Street
E/W Street : Lakeside Avenue
City/State : Marlborough, MA
Weather : Clear

File Name : 92160014
Site Code : 92160014
Start Date : 1/24/2023
Page No : 12



Attachment 3 - AUTOMATIC TRAFFIC RECODER (ATR)

Location : Driveway to 300 Cox Street 92160001
Location : East of Cox Street
City/State: Hudson, MA
Direction: EB,

5/25/2022 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Bicycles	Total
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
6:00	0	0	2	0	0	1	0	0	0	0	0	0	0	0	3
7:00	0	0	3	2	0	4	1	0	0	0	0	0	0	1	11
8:00	0	18	17	3	10	4	1	0	0	0	0	0	0	1	54
9:00	0	17	15	2	9	1	0	1	0	0	0	0	0	0	45
10:00	0	16	11	0	7	5	0	0	1	0	0	0	0	0	40
11:00	0	17	10	1	4	2	0	1	0	0	0	0	0	1	36
12:00 PM	0	24	11	1	6	3	0	3	1	0	0	0	0	0	49
1:00	0	16	13	0	6	3	0	2	0	0	0	0	0	0	40
2:00	0	20	11	2	5	3	0	2	0	0	0	0	0	0	43
3:00	1	18	10	2	6	3	0	0	0	0	0	0	0	0	40
4:00	0	0	1	1	2	0	0	0	0	0	0	0	0	0	4
5:00	0	0	0	1	1	1	0	0	1	0	0	0	0	1	5
6:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	147	104	15	58	31	2	9	3	0	0	0	0	4	374
Percent	0.3%	39.3%	27.8%	4.0%	15.5%	8.3%	0.5%	2.4%	0.8%	0.0%	0.0%	0.0%	0.0%	1.1%	
AM Peak		8:00	8:00	8:00	8:00	10:00	7:00	9:00	10:00					7:00	8:00
	*	18	17	3	10	5	1	1	1	*	*	*	*	1	54
PM Peak	3:00	12:00 PM	1:00	2:00	12:00 PM	12:00 PM		12:00 PM	12:00 PM					5:00	12:00 PM
	1	24	13	2	6	3	*	3	1	*	*	*	*	1	49

Location : Driveway to 300 Cox Street 92160001
Location : East of Cox Street
City/State: Hudson, MA
Direction: WB,

5/25/2022 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Bicycles	Total
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00	0	0	1	1	1	7	0	0	0	0	0	0	0	2	12
8:00	0	19	13	1	4	3	0	0	0	0	0	0	0	0	40
9:00	0	18	15	0	7	6	0	1	0	0	0	0	0	1	48
10:00	0	17	13	0	11	4	0	1	0	0	0	0	0	1	47
11:00	0	20	8	0	2	6	0	0	0	0	0	0	0	0	36
12:00 PM	0	24	10	0	3	7	0	1	0	0	0	0	0	3	48
1:00	0	17	13	0	6	6	0	1	0	0	0	0	0	1	44
2:00	1	20	13	1	3	2	0	2	0	0	0	0	0	1	43
3:00	0	16	11	0	5	5	0	0	0	0	0	0	0	0	37
4:00	0	4	0	0	3	3	0	0	0	0	0	0	0	1	11
5:00	0	0	0	0	2	1	1	0	0	0	0	0	0	1	5
6:00	0	2	3	0	1	1	0	0	0	0	0	0	0	1	8
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	157	100	3	48	51	1	6	0	0	0	0	0	12	379
Percent	0.3%	41.4%	26.4%	0.8%	12.7%	13.5%	0.3%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	
AM Peak		11:00	9:00	7:00	10:00	7:00		9:00						7:00	9:00
	*	20	15	1	11	7	*	1	*	*	*	*	*	2	48
PM Peak	2:00	12:00 PM	1:00	2:00	1:00	12:00 PM	5:00	2:00						12:00 PM	12:00 PM
	1	24	13	1	6	7	1	2	*	*	*	*	*	3	48

Location : Driveway to 300 Cox Street 92160001
Location : East of Cox Street
City/State: Hudson, MA
Direction: Combined

5/25/2022 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Bicycles	Total
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
6:00	0	0	2	0	0	1	0	0	0	0	0	0	0	0	3
7:00	0	0	4	3	1	11	1	0	0	0	0	0	0	3	23
8:00	0	37	30	4	14	7	1	0	0	0	0	0	0	1	94
9:00	0	35	30	2	16	7	0	2	0	0	0	0	0	1	93
10:00	0	33	24	0	18	9	0	1	1	0	0	0	0	1	87
11:00	0	37	18	1	6	8	0	1	0	0	0	0	0	1	72
12:00 PM	0	48	21	1	9	10	0	4	1	0	0	0	0	3	97
1:00	0	33	26	0	12	9	0	3	0	0	0	0	0	1	84
2:00	1	40	24	3	8	5	0	4	0	0	0	0	0	1	86
3:00	1	34	21	2	11	8	0	0	0	0	0	0	0	0	77
4:00	0	4	1	1	5	3	0	0	0	0	0	0	0	1	15
5:00	0	0	0	1	3	2	1	0	1	0	0	0	0	2	10
6:00	0	2	3	0	2	2	0	0	0	0	0	0	0	1	10
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	304	204	18	106	82	3	15	3	0	0	0	0	16	753
Percent	0.3%	40.4%	27.1%	2.4%	14.1%	10.9%	0.4%	2.0%	0.4%	0.0%	0.0%	0.0%	0.0%	2.1%	
AM Peak		8:00	8:00	8:00	10:00	7:00	7:00	9:00	10:00					7:00	8:00
	*	37	30	4	18	11	1	2	1	*	*	*	*	3	94
PM Peak	2:00	12:00 PM	1:00	2:00	1:00	12:00 PM	5:00	12:00 PM	12:00 PM					12:00 PM	12:00 PM
	1	48	26	3	12	10	1	4	1	*	*	*	*	3	97

Location : Cox Street 92160003
Location : South of Driveway
City/State: Hudson, MA

5/25/2022	SB,		Hour Totals		NB,		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	2	65			4	53				
12:15	2	54			0	53				
12:30	3	37			3	40				
12:45	2	52	9	208	1	55	8	201	17	409
1:00	0	52			0	48				
1:15	0	51			1	59				
1:30	0	67			2	56				
1:45	0	56	0	226	2	43	5	206	5	432
2:00	1	46			0	54				
2:15	0	41			0	79				
2:30	0	65			1	59				
2:45	1	59	2	211	0	70	1	262	3	473
3:00	1	70			1	118				
3:15	0	77			1	68				
3:30	1	93			1	101				
3:45	1	55	3	295	0	87	3	374	6	669
4:00	1	54			0	64				
4:15	1	57			0	78				
4:30	4	69			0	108				
4:45	7	78	13	258	5	95	5	345	18	603
5:00	7	57			6	90				
5:15	8	52			6	86				
5:30	30	53			9	91				
5:45	36	60	81	222	12	59	33	326	114	548
6:00	31	42			14	83				
6:15	45	42			20	59				
6:30	62	35			31	60				
6:45	57	22	195	141	42	36	107	238	302	379
7:00	88	42			49	40				
7:15	94	40			57	37				
7:30	82	37			55	35				
7:45	96	21	360	140	46	29	207	141	567	281
8:00	81	17			62	25				
8:15	108	24			87	18				
8:30	78	30			63	24				
8:45	71	21	338	92	39	23	251	90	589	182
9:00	48	11			43	16				
9:15	53	16			44	9				
9:30	39	11			37	3				
9:45	52	8	192	46	35	8	159	36	351	82
10:00	39	5			47	11				
10:15	50	1			45	12				
10:30	37	6			38	6				
10:45	34	5	160	17	35	6	165	35	325	52
11:00	40	6			46	3				
11:15	49	9			35	3				
11:30	46	3			35	8				
11:45	35	3	170	21	40	1	156	15	326	36
Total	1523	1877			1100	2269			2623	4146
Percent	44.8%	55.2%			32.7%	67.3%			38.8%	61.2%

Location : Cox Street 92160003
Location : South of Driveway
City/State: Hudson, MA

5/26/2022	SB,		Hour Totals		NB,		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	3	49			4	65				
12:15	1	57			3	44				
12:30	1	48			2	46				
12:45	1	46	6	200	1	53	10	208	16	408
1:00	4	36			5	42				
1:15	2	45			0	53				
1:30	0	68			2	55				
1:45	0	40	6	189	2	53	9	203	15	392
2:00	0	44			0	55				
2:15	3	57			2	63				
2:30	1	89			0	57				
2:45	2	67	6	257	0	80	2	255	8	512
3:00	2	58			1	132				
3:15	1	49			0	82				
3:30	1	87			1	84				
3:45	0	66	4	260	1	82	3	380	7	640
4:00	1	61			2	88				
4:15	2	57			1	92				
4:30	3	60			2	95				
4:45	7	78	13	256	2	82	7	357	20	613
5:00	13	57			7	77				
5:15	9	52			7	80				
5:30	17	47			8	90				
5:45	26	62	65	218	11	70	33	317	98	535
6:00	36	73			16	88				
6:15	43	55			26	61				
6:30	58	41			29	70				
6:45	68	39	205	208	46	57	117	276	322	484
7:00	74	43			51	59				
7:15	76	53			38	63				
7:30	86	29			69	41				
7:45	101	31	337	156	50	43	208	206	545	362
8:00	85	34			58	39				
8:15	103	34			80	20				
8:30	90	26			72	19				
8:45	82	27	360	121	37	23	247	101	607	222
9:00	55	17			37	17				
9:15	42	11			41	18				
9:30	44	14			40	12				
9:45	40	15	181	57	38	12	156	59	337	116
10:00	47	6			37	16				
10:15	43	5			40	7				
10:30	40	5			40	17				
10:45	49	7	179	23	36	10	153	50	332	73
11:00	40	5			47	6				
11:15	55	4			36	4				
11:30	49	1			41	1				
11:45	46	10	190	20	52	2	176	13	366	33
Total	1552	1965			1121	2425			2673	4390
Percent	44.1%	55.9%			31.6%	68.4%			37.8%	62.2%
Grand Total	3075	3842			2221	4694			5296	8536
Percent	44.5%	55.5%			32.1%	67.9%			38.3%	61.7%
ADT		ADT: 6,916		AADT: 6,916						

Location : Cox Street 92160003
Location : South of Driveway
City/State: Hudson, MA

5/23/2022	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Week Average	
Time	SB,	NB,	SB,	NB,	SB,	NB,	SB,	NB,	SB,	NB,	SB,	NB,	SB,	NB,	SB,	NB,
12:00 AM	*	*	*	*	9	8	6	10	*	*	*	*	*	*	8	9
1:00	*	*	*	*	0	5	6	9	*	*	*	*	*	*	3	7
2:00	*	*	*	*	2	1	6	2	*	*	*	*	*	*	4	2
3:00	*	*	*	*	3	3	4	3	*	*	*	*	*	*	4	3
4:00	*	*	*	*	13	5	13	7	*	*	*	*	*	*	13	6
5:00	*	*	*	*	81	33	65	33	*	*	*	*	*	*	73	33
6:00	*	*	*	*	195	107	205	117	*	*	*	*	*	*	200	112
7:00	*	*	*	*	360	207	337	208	*	*	*	*	*	*	348	208
8:00	*	*	*	*	338	251	360	247	*	*	*	*	*	*	349	249
9:00	*	*	*	*	192	159	181	156	*	*	*	*	*	*	186	158
10:00	*	*	*	*	160	165	179	153	*	*	*	*	*	*	170	159
11:00	*	*	*	*	170	156	190	176	*	*	*	*	*	*	180	166
12:00 PM	*	*	*	*	208	201	200	208	*	*	*	*	*	*	204	204
1:00	*	*	*	*	226	206	189	203	*	*	*	*	*	*	208	204
2:00	*	*	*	*	211	262	257	255	*	*	*	*	*	*	234	258
3:00	*	*	*	*	295	374	260	380	*	*	*	*	*	*	278	377
4:00	*	*	*	*	258	345	256	357	*	*	*	*	*	*	257	351
5:00	*	*	*	*	222	326	218	317	*	*	*	*	*	*	220	322
6:00	*	*	*	*	141	238	208	276	*	*	*	*	*	*	174	257
7:00	*	*	*	*	140	141	156	206	*	*	*	*	*	*	148	174
8:00	*	*	*	*	92	90	121	101	*	*	*	*	*	*	106	96
9:00	*	*	*	*	46	36	57	59	*	*	*	*	*	*	52	48
10:00	*	*	*	*	17	35	23	50	*	*	*	*	*	*	20	42
11:00	*	*	*	*	21	15	20	13	*	*	*	*	*	*	20	14
Total	0	0	0	0	3400	3369	3517	3546	0	0	0	0	0	0	3459	3459
Day	0		0		6769		7063		0		0		0		6918	
AM Peak					7:00	8:00	8:00	8:00							8:00	8:00
Volume					360	251	360	247							349	249
PM Peak					3:00	3:00	3:00	3:00							3:00	3:00
Volume					295	374	260	380							278	377
Comb Total	0		0		6769		7063		0		0		0		6918	
ADT	ADT: 6,916		AADT: 6,916													

Attachment 4 - TRAFFIC ADJUSTMENTS

Massachusetts Highway Department
Statewide Traffic Data Collection
2019 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
R1	1.22	1.14	1.12	1.06	1.00	0.96	0.87	0.85	0.96	0.99	1.04	1.12	0.85
R2	0.95	0.96	0.98	0.97	0.97	0.93	0.97	0.94	0.96	0.90	0.92	0.93	0.96
R3	1.15	1.06	1.07	1.00	0.89	0.88	0.89	0.89	0.95	0.92	1.02	1.01	0.97
R4-R7	1.09	1.09	1.11	1.02	0.96	0.92	0.89	0.89	0.99	0.98	1.09	1.13	0.98
U1-Boston	1.03	1.01	0.98	0.94	0.94	0.92	0.95	0.93	0.94	0.94	0.97	1.04	0.96
U1-Essex	1.09	1.06	1.03	0.99	0.94	0.90	0.88	0.86	0.93	0.94	0.99	1.06	0.93
U1-Southeast	1.06	1.05	1.01	0.97	0.95	0.93	0.93	0.90	0.94	0.94	0.98	1.04	0.98
U1-West	1.19	1.14	1.09	0.95	0.92	0.89	0.89	0.86	0.91	0.95	0.97	1.07	0.84
U1-Worcester	1.02	1.04	0.97	0.94	0.93	0.91	0.95	0.91	0.93	0.92	0.95	1.10	0.88
U2	1.01	1.00	0.94	0.93	0.91	0.89	0.93	0.90	0.90	0.91	0.94	1.02	0.99
U3	1.06	1.03	0.98	0.94	0.93	0.91	0.95	0.91	0.92	0.93	0.97	1.00	0.98
U4-U7	1.01	1.00	0.95	0.92	0.88	0.86	0.92	0.91	0.92	0.94	0.99	1.04	0.99
Rec - East	1.04	1.16	1.12	0.98	0.92	0.88	0.77	0.81	0.94	1.02	1.08	1.12	0.99
Rec - West	1.30	1.23	1.32	1.18	0.95	0.82	0.70	0.69	0.97	0.96	1.16	1.15	0.98

Round off:
0-999 = 10
>1000 = 100

U = Urban
R = Rural

1 - Interstate
2 - Freeway and Expressway
3 - Other Principal Arterial
4 - Minor Arterial
5 - Major Collector
6 - Minor Collector
7 - Local Road and Street

Recreational - East Group - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations 7014,7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108 and 7178), Martha's Vineyard and Nantucket.
Recreational - West Group - Continuous Stations 2 and 189 including stations 1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113,1114,1116,2196,2197 and 2198.

1/26/2024

Attachment 5 - MOTOR VEHICLE CRASH DATA

MassDOT Crash Report for Hudson and Marborough 2016 - 2020

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway/ Landmark
Cox Street at Old Bolton Road																	
4695662	HUDSON	04/19/2019	Property damage only (none injured)	7:35 PM	No Apparent Injury (O)	2	D1: (Unknown) / D2: (Exceeded authorized speed limit)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: W	Clear		COX ST / OLD BOLTON RD	
4376001	HUDSON	06/12/2017	Non-fatal injury	9:57 AM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: N	Clear		COX STREET / OLD STOW ROAD / OLD STOW	
4381185	HUDSON	06/22/2017	Non-fatal injury	8:26 AM	Non-fatal injury - Non-incapa	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: N	Clear		OLD BOLTON ROAD / OLD STOW ROAD	
4548045	HUDSON	06/03/2018	Non-fatal injury	3:04 PM	Non-fatal injury - Possible	2	D1: (Disregarded traffic signs, signals, road markings),(Inattention) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: W	Clear		OLD BOLTON RD / OLD STOW RD	
4555934	HUDSON	06/19/2018	Non-fatal injury	5:13 PM	Non-fatal injury - Non-incapa	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Angle	Dry	V1: Entering traffic lane / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: N	Clear		COX STREET / OLD STOW ROAD / OLD BOLTON ROAD	
4804178	HUDSON	12/19/2019	Property damage only (none injured)	8:08 AM	No Apparent Injury (O)	3	D1: (Disregarded traffic signs, signals, road markings),(Glare) / D2: (No improper driving) / D3: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V3: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V3:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Single-unit truck (2-axle, 6-tires))	V1: S / V3: E / V2: W	Clear		OLD STOW RD / OLD BOLTON RD	
4871650	HUDSON	08/21/2020	Property damage only (none injured)	11:48 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: E	Clear		OLD BOLTON RD / COX ST	
4872987	HUDSON	07/27/2020	Property damage only (none injured)	10:20 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V2: Travelling straight ahead / V1: Travelling straight ahead	V2:(Passenger car) / V1:(Single-unit truck (2-axle, 6-tires))	V2: S / V1: E	Clear		OLD BOLTON ROAD / OLD STOW ROAD	
4445180	HUDSON	10/27/2017	Property damage only (none injured)	5:32 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Dusk	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: E / V2: S	Clear		COX STREET / OLD BOLTON ROAD	
4177399	HUDSON	04/16/2016	Property damage only (none injured)	3:05 PM	No injury	2	D1: (No improper driving),(No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear		COX STREET / COX STREET / OLD STOW ROAD	
4582598	HUDSON	08/14/2018	Property damage only (none injured)	8:53 PM	No injury	2	D1: (Exceeded authorized speed limit) / D2: (Failed to yield right of way)	Dark - lighted roadway	Angle	Wet	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: N	Clear/Cloudy		OLD BOLTON RD / OLD STOW RD	
4804183	HUDSON	01/09/2020	Non-fatal injury	3:35 PM	Suspected Serious Injury (A)	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Front to Front	Dry	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: E	Clear/Unknown		OLD STOW ROAD / OLD BOLTON ROAD	
4533542	HUDSON	04/14/2018	Non-fatal injury	10:55 AM	Non-fatal injury - Possible	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: W	Cloudy		COX ST / OLD STOW RD / OLD BOLTON RD	
4302094	HUDSON	12/24/2016	Property damage only (none injured)	10:43 AM	No injury	2	D1: (Inattention) / D2: (No improper driving)	Daylight	Angle	Wet	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: E	Rain/Cloudy		OLD BOLTON ROAD / OLD BOLTON / OLD STOW ROAD	
Cox Street at Zina Road/Pierce Street																	
4379283	HUDSON	06/19/2017	Property damage only (none injured)	7:39 AM	No injury	2	D1: (No improper driving) / D2: (Other improper action)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Backing	V1:(Bus (seats for 16 or more, including driver)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: N	Cloudy	293	COX STREET	
4761041	HUDSON	10/09/2019	Property damage only (none injured)	9:15 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: S	Cloudy	297	COX ST	
Cox Street at Lee Circle/transfer station driveway																	
4382391	HUDSON	06/23/2017	Property damage only (none injured)	11:11 AM	No injury	2	D1: (Illness) / D2: (No improper driving)	Daylight	Sideswipe, opposite direction	Dry	V1: Leaving traffic lane / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: S	Clear	300	COX STREET	
4607684	HUDSON	10/09/2018	Non-fatal injury	9:03 AM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Angle	Wet	V2: Turning left / V1: Travelling straight ahead	V2:(Passenger car) / V1:(Truck/trailer)	V2: S / V1: N	Cloudy	300	COX STREET	
Cox Street at Parkhurst Drive																	
4364715	HUDSON	05/17/2017	Property damage only (none injured)	7:27 AM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Bus (seats for 16 or more, including driver)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Clear	306	COX STREET	SECTOR 2
4376000	HUDSON	06/12/2017	Property damage only (none injured)	7:43 AM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: E	Clear	304	COX STREET	SECTOR 1
4703703	HUDSON	05/18/2019	Non-fatal injury	12:48 PM	Suspected Minor Injury (B)	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Daylight	Head-on	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: E	Clear	306	COX STREET	

MassDOT Crash Report for Hudson and Marborough 2016 - 2020

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway/ Landmark
Main Street at Forest Avenue/Wilkins Street (Route 62)																	
4363197	HUDSON	04/24/2017	Non-fatal injury	3:40 PM	Non-fatal injury - Non-incapa	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: S	Clear		FOREST AVENUE / MAIN STREET Rte 62 E / FOREST AVENUE	
4567469	HUDSON	07/12/2018	Non-fatal injury	7:06 AM	Non-fatal injury - Non-incapa	2	D1: (Glare) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: N	Clear		FOREST AVE / MAIN ST	
4677240	HUDSON	03/17/2019	Non-fatal injury	5:33 PM	Suspected Minor Injury (B)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: E	Clear		MAIN ST Rte 62 E / WILKINS ST Rte 62 N / FOREST AVE	
4582599	HUDSON	08/15/2018	Property damage only (none injured)	3:39 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: W	Clear		WILKINS ST / MAIN ST	
4677239	HUDSON	03/16/2019	Property damage only (none injured)	4:54 PM	No Apparent Injury (O)	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: N	Clear		MAIN ST Rte 62 / FOREST AVE / WILKINS ST Rte 62	
4742662	HUDSON	08/27/2019	Non-fatal injury	11:21 AM	Possible Injury (C)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Head-on	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: W	Clear		MAIN STREET / FOREST AVENUE / WILKINS STREET	
4604572	HUDSON	09/29/2018	Property damage only (none injured)	9:18 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear		FOREST AVE / MAIN ST Rte 62	
4807195	HUDSON	01/20/2020	Property damage only (none injured)	5:29 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear	463	MAIN ST	
4385705	HUDSON	07/03/2017	Property damage only (none injured)	8:25 PM	No injury	2		Dawn	Rear-end	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Clear		MAIN STREET / WILKINS STREET	
4381560	HUDSON	06/23/2017	Non-fatal injury	4:31 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Distracted)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear		MAIN STREET / FOREST AVENUE / MAIN STREET Rte 62 W	
4392669	HUDSON	07/19/2017	Property damage only (none injured)	4:02 PM	No injury	2	D1: (No improper driving),(No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear		FOREST AVENUE / MAIN STREET / FOREST AVENUE	
4510685	HUDSON	03/01/2018	Property damage only (none injured)	6:36 AM	No injury	2	D1: (No improper driving) / D2: (Inattention),(Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear		FOREST AVE / MAIN ST	
4607688	HUDSON	10/10/2018	Property damage only (none injured)	1:04 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Tractor/semi-trailer)	V1: E / V2: E	Clear		MAIN ST / FOREST AVE	
4669051	HUDSON	02/26/2019	Property damage only (none injured)	5:25 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear		MAIN ST / WILKINS ST / FOREST AVE	
4742657	HUDSON	08/16/2019	Property damage only (none injured)	5:25 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear		FOREST AVE / MAIN ST	
4825800	HUDSON	03/04/2020	Property damage only (none injured)	5:16 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear		MAIN ST / WILKINS ST	
4872991	HUDSON	08/24/2020	Property damage only (none injured)	3:09 PM	No Apparent Injury (O)	2	D1: (Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Turning right / V2: Turning right	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear		FOREST AVE / MAIN ST	
4817214	HUDSON	02/11/2020	Property damage only (none injured)	5:23 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Dusk	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Clear		MAIN ST / WILKINS ST / FOREST AVE	
4277334	HUDSON	11/07/2016	Non-fatal injury	5:49 AM	Non-fatal injury - Possible	1	D1: (Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, e)	Dark - lighted roadway	Single vehicle crash	Dry	V1: Turning left	V1:(Passenger car)	V1: S	Clear	469	MAIN STREET	
4666663	HUDSON	02/14/2019	Property damage only (none injured)	6:28 PM	No injury	1	D1: (No improper driving)	Dark - lighted roadway	Sideswipe, opposite direction	Water (standing	V1: Travelling straight ahead	V1:(Passenger car)	V1: S	Clear		MAIN ST / WILKINS ST	
4352271	HUDSON	04/15/2017	Property damage only (none injured)	3:37 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: N	Clear/Clear		MAIN STREET / WILKINS ST	
4555828	HUDSON	06/05/2018	Non-fatal injury	9:01 AM	Non-fatal injury - Non-incapa	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Head-on	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: E	Cloudy		MAIN ST / WILKINS ST / FOREST AVE	
4455217	HUDSON	11/17/2017	Property damage only (none injured)	11:33 AM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: W	Cloudy		WILKINS STREET / WILKINS STREET Rte 62 N / MAIN STREET	
4631593	HUDSON	11/29/2018	Property damage only (none injured)	7:00 PM	No injury	2	D1: (No improper driving) / D2: (Other improper action)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Turning right / V2: Travelling straight ahead	V1:(Passenger car)	V1: N / V2: N	Cloudy	463	MAIN STREET	
4819390	HUDSON	02/01/2020	Property damage only (none injured)	12:08 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Angle	Wet	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: E	Cloudy		MAIN ST / FOREST AVE / WILKINS ST	
4667139	HUDSON	02/14/2019	Property damage only (none injured)	11:55 AM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: W	Cloudy		WILKINS STREET / MAIN STREET	FOREST AVENUE
4786771	HUDSON	12/05/2019	Property damage only (none injured)	9:57 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Visibility obstructed)	Daylight	Sideswipe, same direction	Wet	V1: Travelling straight ahead / V2: Changing lanes	V1:(Passenger car) / V2:(Unknown heavy truck, cannot classify)	V1: E / V2: E	Cloudy		MAIN STREET / FOREST AVENUE	

MassDOT Crash Report for Hudson and Marborough 2016 - 2020

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway/ Landmark
4379829	HUDSON	06/20/2017	Not Reported	6:26 AM	Unknown	2	D1: (Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Wet	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Cloudy/Rain	469	MAIN STREET	
4824919	HUDSON	02/27/2020	Non-fatal injury	1:52 PM	Possible Injury (C)	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings),(Failure to keep in proper lane or running off road)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: E	Cloudy/Severe crosswinds		MAIN ST / WILKINS ST	
4774325	HUDSON	11/07/2019	Property damage only (none injured)	8:47 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Unknown)	Dark - lighted roadway	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: W	Rain		MAIN ST / FOREST AVE	
4764690	HUDSON	10/02/2019	Property damage only (none injured)	4:48 PM	No Apparent Injury (O)	2	D1: (Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Wet	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Rain		FOREST AVE / MAIN ST	
4319471	HUDSON	01/31/2017	Property damage only (none injured)	5:50 PM	No injury	2	D1: (Inattention) / D2: (No improper driving)	Dark - lighted roadway	Rear-end	Wet	V1: Backing / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: N / V2: N	Snow		FOREST AVENUE / MAIN STREET Rte 62 E / WILKINS STREET Rte 62 N	
Main Street at Cox Street/Glendale Road																	
4747496	HUDSON	09/08/2019	Non-fatal injury	12:34 PM	Suspected Serious Injury (A)	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: W	Clear/Unknown		COX ST	MAIN ST
4479578	HUDSON	12/07/2017	Property damage only (none injured)	10:22 AM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: N	Not Reported		MAIN STREET Rte 62 W / COX STREET	
4563122	HUDSON	07/03/2018	Property damage only (none injured)	10:51 AM	No injury	2	D1: (Other improper action) / D2: (No improper driving)	Daylight	Angle	Dry	V2: Slowing or stopped in traffic / V1: Backing	V2:(Light truck(van, mini-van, pickup, sport utility)) / V1:(Unknown heavy truck, cannot classify)	V2: W / V1: E	Clear	457	MAIN STREET	COX STREET
4300018	HUDSON	12/19/2016	Non-fatal injury	5:32 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Head-on	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: E	Clear		MAIN STREET / MAIN STREET / COX STREET	
4719692	HUDSON	06/22/2019	Property damage only (none injured)	9:05 PM	No Apparent Injury (O)	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Dark - lighted roadway	Head-on	Dry	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: W	Clear		MAIN ST / GLENDALE RD / COX ST	
4156580	HUDSON	03/01/2016	Property damage only (none injured)	7:48 PM	No injury	2	D1: (No improper driving),(No improper driving) / D2: (Disregarded traffic signs, signals, road markings)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: W	Clear	456	MAIN STREET	
4338989	HUDSON	03/18/2017	Property damage only (none injured)	9:33 AM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Clear		MAIN STREET / MAIN ST / COX ST	
4854151	HUDSON	06/27/2020	Property damage only (none injured)	10:26 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Single-unit truck (2-axle, 6-tires))	V1: E / V2: E	Clear		MAIN ST / COX ST	
Main Street at Mackin Street/Woodrow Street																	
4129689	HUDSON	01/04/2016	Property damage only (none injured)	9:26 AM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Single vehicle crash	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: S	Cloudy		MAIN STREET Rte 62 E / WOODROW STREET	
4140655	HUDSON	01/21/2016	Property damage only (none injured)	8:59 AM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Tractor/semi-trailer) / V2:(Passenger car)	V1: W / V2: S	Clear/Clear		MAIN STREET / MACKIN STREET	
4229736	HUDSON	08/09/2016	Non-fatal injury	5:57 PM	Non-fatal injury - Non-incapa	1	D1: (No improper driving)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic	V1:(Passenger car)	V1: W	Clear	441	MAIN STREET	
4248501	HUDSON	09/15/2016	Property damage only (none injured)	5:28 PM	No injury	2	D1: (Inattention) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Entering traffic lane / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear	441	MAIN STREET Rte 62 E	50 feet W of
4269149	HUDSON	10/25/2016	Non-fatal injury	8:48 AM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: S	Clear/Clear	442	MAIN STREET	
4363090	HUDSON	05/04/2017	Property damage only (none injured)	6:39 AM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: W	Clear	441	MAIN STREET	
4363096	HUDSON	05/12/2017	Property damage only (none injured)	7:20 AM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: W	Clear/Clear	442	MAIN STREET	
4429447	HUDSON	09/26/2017	Property damage only (none injured)	1:31 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: W	Clear/Clear	442	MAIN STREET	
4435440	HUDSON	10/09/2017	Property damage only (none injured)	5:16 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Rain/Cloudy	442	MAIN STREET	
4510686	HUDSON	03/01/2018	Non-fatal injury	11:31 AM	Non-fatal injury - Possible	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Turning right / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: E	Clear		MAIN STREET Rte SR62 W / MACKIN STREET	
4518023	HUDSON	02/28/2018	Non-fatal injury	3:30 PM	Non-fatal injury - Possible	2	D1: (Failure to keep in proper lane or running off road) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Turning right / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: E	Clear		MAIN ST / MACKIN ST	

MassDOT Crash Report for Hudson and Marborough 2016 - 2020

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway/ Landmark
4819392	HUDSON	02/13/2020	Property damage only (none injured)	8:32 AM	No Apparent Injury (O)	3	D1: (No improper driving) / D2: (No improper driving) / D3: (Distracted)	Daylight	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car) / V3:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E / V3: E	Cloudy	442	MAIN ST	WOODROW ST
4862528	HUDSON	06/29/2020	Property damage only (none injured)	2:38 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: S	Cloudy	446	MAIN ST	
4893776	HUDSON	10/30/2020	Property damage only (none injured)	3:46 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Slush	V1: Travelling straight ahead / V2: Turning right	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: S	Cloudy/Snow		MAIN ST / MACKIN ST	
Main Street at Tower Road and Vila Do Porto Boulevard																	
4140918	HUDSON	01/26/2016	Property damage only (none injured)	8:23 AM	No injury	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Single-unit truck (2-axle, 6-tires))	V1: E / V2: W	Rain/Cloudy	12	VILA DO PORTO BOULEVARD	MAIN STREET
4158099	HUDSON	03/05/2016	Property damage only (none injured)	9:48 AM	No injury	2		Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning right	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Clear	312	MAIN STREET	
4168581	HUDSON	03/28/2016	Property damage only (none injured)	2:25 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: E / V2: E	Rain/Rain		VILA DO PORTO BOULEVARD / MAIN STREET Rte SR62 E / TOWER STREET	
4186648	HUDSON	05/05/2016	Non-fatal injury	9:21 AM	Non-fatal injury - Possible	2		Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Clear	319	MAIN STREET	
4190208	HUDSON	05/12/2016	Property damage only (none injured)	10:20 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Clear/Clear		MAIN STREET / TOWER STREET / MAIN STREET	
4192059	HUDSON	05/18/2016	Property damage only (none injured)	8:47 AM	No injury	2	D1: (Inattention) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Single-unit truck (2-axle, 6-tires)) / V2:(Passenger car)	V1: S / V2: S	Clear		TOWER STREET / MAIN STREET Rte 62 W	
4299482	HUDSON	12/13/2016	Property damage only (none injured)	6:13 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Dark - lighted roadway	Head-on	Wet	V1: Travelling straight ahead / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: E	Clear		MAIN STREET / TOWER STREET	
4299491	HUDSON	12/17/2016	Property damage only (none injured)	11:54 AM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Angle	Snow	V1: Travelling straight ahead / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Snow		VILA DO PORTO BOULEVARD / MAIN STREET / VILA-DIPORTO	
4371550	HUDSON	06/03/2017	Non-fatal injury	1:19 PM	Non-fatal injury - Possible	2	D1: (Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Wet	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Rain/Rain	312	MAIN STREET	
4410349	HUDSON	08/17/2017	Non-fatal injury	8:12 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Distracted)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: N	Clear		MAIN STREET / MAIN STREET / TOWER STREET	
4412792	HUDSON	08/27/2017	Property damage only (none injured)	6:07 PM	No injury	1	D1: (No improper driving)	Daylight	Single vehicle crash	Dry	V1: Travelling straight ahead	V1:(Passenger car)	V1: E	Clear/Clear		VILA DO PORTO BLVD / MAIN STREET	MAIN STREET
4416427	HUDSON	09/05/2017	Property damage only (none injured)	4:09 PM	No injury	2	D1: (Other improper action) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Overtaking/passing / V2: Turning right	V1:(Passenger car) / V2:(Truck/trailer)	V1: E / V2: E	Clear		MAIN STREET Rte 62 E / VILA DO PORTO BOULEVARD /	
4418344	HUDSON	09/07/2017	Property damage only (none injured)	7:35 AM	No injury	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Angle	Wet	V1: Turning left / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: E	Cloudy/Cloudy		MAIN STREET / TOWER ST	
4518019	HUDSON	02/23/2018	Non-fatal injury	1:17 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Visibility obstructed)	Daylight	Head-on	Wet	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: E	Cloudy		MAIN ST Rte 62 / TOWER ST / VILA DO PORTO BLVD	
4518228	HUDSON	12/23/2017	Unknown	7:54 PM	Unknown	2	D1: (No improper driving) / D2: (Followed too closely)	Dark - lighted roadway	Rear-end	Ice	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Rain/Sleet, hail (freezing rain or drizzle)	314	MAIN STREET	
4522688	HUDSON	04/03/2018	Non-fatal injury	4:29 PM	Non-fatal injury - Possible	2	D1: (Unknown) / D2: (Unknown)	Daylight	Head-on	Wet	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: E	Rain/Cloudy	312	MAIN ST	TOWER ST
4523956	HUDSON	04/05/2018	Non-fatal injury	3:48 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings),(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: E	Clear		MAIN ST / TOWER ST	
4525550	HUDSON	04/08/2018	Non-fatal injury	3:00 PM	Non-fatal injury - Possible	2	D1: (No improper driving)	Daylight	Angle	Dry	V1: Turning right / V2: Other	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: S	Clear	312	MAIN STREET	
4573911	HUDSON	07/23/2018	Property damage only (none injured)	6:00 AM	No injury	2	D1: (No improper driving) / D2: (Inattention),(Failed to yield right of way)	Daylight	Head-on	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: E / V2: W	Clear		MAIN ST / VILA DO PORTO BLVD	
4587221	HUDSON	08/29/2018	Property damage only (none injured)	1:01 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear	312	MAIN ST	
4590779	HUDSON	08/24/2018	Property damage only (none injured)	1:07 PM	No injury	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: W	Clear	312	MAIN ST	

MassDOT Crash Report for Hudson and Marborough 2016 - 2020

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway/ Landmark
4612486	HUDSON	10/19/2018	Property damage only (none injured)	3:12 PM	No injury	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings),(Failed to yield right of way)	Daylight	Sideswipe, same direction	Dry	V1: Slowing or stopped in traffic / V2: Overtaking/passing	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear	312	MAIN ST	100 feet W of TOWER ST
4636953	HUDSON	12/01/2018	Non-fatal injury	6:42 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: S	Clear		TOWER ST / MAIN ST	
4644391	HUDSON	12/23/2018	Property damage only (none injured)	8:13 AM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: N	Cloudy		MAIN ST / TOWER ST	
4675252	HUDSON	03/04/2019	Non-fatal injury	3:54 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear/Unknown		MAIN STREET / TOWER STREET / VILA DO PORTO BOULEVARD	
4695599	HUDSON	04/25/2019	Property damage only (none injured)	5:31 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear	312	MAIN ST	
4824923	HUDSON	03/02/2020	Non-fatal injury	7:03 PM	Suspected Minor Injury (B)	2	D1: (No improper driving),(Unknown) / D2: (Failed to yield right of way),(Unknown)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: N	Clear		MAIN ST / TOWER ST	
4828305	HUDSON	03/11/2020	Property damage only (none injured)	8:04 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: W	Clear	312	MAIN ST	
4860510	HUDSON	07/15/2020	Non-fatal injury	6:21 PM	Suspected Minor Injury (B)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(MOPED)	V1: E / V2: W	Clear	312	MAIN ST	
4868093	HUDSON	07/25/2020	Property damage only (none injured)	9:50 PM	No Apparent Injury (O)	1	D1: (No improper driving)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead	V1:(Passenger car)	V1: S	Clear	2	VILA DO PORTO BLVD	MAIN ST
4871653	HUDSON	08/19/2020	Property damage only (none injured)	5:16 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: S	Cloudy		MAIN ST Rte 62 / VILA DO PORTO BLVD	
4908109	HUDSON	12/03/2020	Property damage only (none injured)	3:19 PM	No Apparent Injury (O)	1	D1: (No improper driving)	Daylight	Sideswipe, opposite direction	Dry	V1: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: S	Clear	312	MAIN ST	
Broad Street at Vila Do Porto Boulevard																	
4145528	HUDSON	02/04/2016	Non-fatal injury	6:44 AM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: E	Clear		BROAD STREET / SOUTH STREET / VILA DO PORTO BLVD	
4152625	HUDSON	02/19/2016	Property damage only (none injured)	9:59 PM	No injury	2		Dark - lighted roadway	Sideswipe, opposite direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: S	Clear	1	LORING STREET	
4164264	HUDSON	03/16/2016	Non-fatal injury	2:13 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Head-on	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: W	Clear/Clear		BROAD STREET / SOUTH STREET EXTENSION	
4221908	HUDSON	07/23/2016	Property damage only (none injured)	11:42 AM	No injury	2		Daylight	Angle	Not reported	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: N	Clear		BROAD STREET / BROAD STREET / SOUTH STREET	
4227088	HUDSON	08/02/2016	Property damage only (none injured)	11:41 PM	No injury	1	D1: (Over-correcting/over-steering)	Dark - lighted roadway	Single vehicle crash	Dry	V1: Travelling straight ahead	V1:(Passenger car)	V1: N	Clear		VILA DO PORTO BLVD / BROAD STREET / VILA DO PORTO BOULEVARD / BROAD STREET	
4249559	HUDSON	09/18/2016	Property damage only (none injured)	12:46 PM	No injury	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Daylight	Angle	Dry	V1: Slowing or stopped in traffic / V2: Not reported	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: Not Reported	Cloudy		SOUTH STREET EXTENSION / BROAD STREET	
4262354	HUDSON	10/13/2016	Non-fatal injury	8:17 PM	Non-fatal injury - Possible	2		Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: E	Clear		SOUTH STREET EXTENSION / BROAD STREET / SOUTH STREET	
4303083	HUDSON	12/27/2016	Property damage only (none injured)	12:07 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning right	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Cloudy		BROAD STREET / SOUTH ST / BROAD ST	
4326683	HUDSON	02/16/2017	Non-fatal injury	10:08 PM	Non-fatal injury - Non-incapa	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: S	Clear	14	BROAD STREET	
4340077	HUDSON	03/20/2017	Property damage only (none injured)	2:26 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear/Clear	12	BROAD STREET	
4348526	HUDSON	04/05/2017	Property damage only (none injured)	2:35 PM	No injury	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: S	Cloudy	15	BROAD STREET / / BROAD STREET	SOUTH STREET EXTENSION/15 BROAD STREET DRIVEWAY
4367416	HUDSON	05/24/2017	Property damage only (none injured)	12:20 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: W	Cloudy	5	BROAD STREET	
4395352	HUDSON	07/24/2017	Non-fatal injury	11:47 AM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Wet	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: E / V2: N	Rain/Rain		BROAD STREET / SOUTH STREET EXTENSION	
4418997	HUDSON	09/08/2017	Non-fatal injury	8:05 AM	Non-fatal injury - Possible	3	D1: (No improper driving) / D2: (Failed to yield right of way) / D3: (No improper driving)	Daylight	Angle	Dry	V1: Turning left / V2: Turning right / V3: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility)) / V3:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S / V3: N	Clear		BROAD STREET / SOUTH STREET EXTENSION	

MassDOT Crash Report for Hudson and Marborough 2016 - 2020

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway/ Landmark
4445882	HUDSON	10/30/2017	Non-fatal injury	11:27 AM	Non-fatal injury - Possible	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Angle	Wet	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: E	Cloudy/Rain		BROAD STREET / SOUTH STREET EXTENSION	
4456747	HUDSON	11/21/2017	Property damage only (none injured)	11:15 AM	No injury	2	D1: (Other improper action) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: E	Clear/Clear		SOUTH STREET EXTENSION / BROAD STREET	
4517882	HUDSON	12/27/2017	Property damage only (none injured)	7:43 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Dark - lighted roadway	Head-on	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: S	Clear		BROAD STREET / VILA DO PORTO BOULEVARD	
4517889	HUDSON	03/20/2018	Property damage only (none injured)	2:08 PM	No injury	2	D1: (Over-correcting/over-steering) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Turning right	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear		BROAD ST / VILA DO PORTO BLVD	
4524090	HUDSON	04/04/2018	Property damage only (none injured)	1:08 PM	No injury	2	D1: (No improper driving) / D2: (Distracted)	Daylight	Angle	Wet	V1: Travelling straight ahead / V2: Turning right	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: S	Cloudy/Rain	5	BROAD ST	
4548046	HUDSON	06/03/2018	Property damage only (none injured)	3:41 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear		BROAD ST / SOUTH STREET EXTENSION / VILO DO PORTO BOULEVARD	
4590781	HUDSON	08/28/2018	Non-fatal injury	8:43 AM	Non-fatal injury - Incapacitati	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: W	Clear		BROAD ST / VILA DO PORTO BLVD	
4611356	HUDSON	10/16/2018	Non-fatal injury	1:09 PM	Non-fatal injury - Possible	2	D1: (Other improper action) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: E	Cloudy	15	BROAD STREET	
4677237	HUDSON	03/15/2019	Property damage only (none injured)	2:54 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Inattention),(Followed too closely)	Daylight	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear/Cloudy	12	BROAD ST	
4677241	HUDSON	03/17/2019	Property damage only (none injured)	7:29 PM	No Apparent Injury (O)	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Dark - lighted roadway	Angle	Dry	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: E	Clear		BROAD STREET / SOUTH STREET EXTENSION	
4677242	HUDSON	03/17/2019	Property damage only (none injured)	7:41 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (No improper driving)	Dark - lighted roadway	Angle	Dry	V1: Turning right / V2: Turning right	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: E	Clear		SOUTH STREET EXTENSION / BROAD STREET	
4786781	HUDSON	12/10/2019	Property damage only (none injured)	6:19 PM	No Apparent Injury (O)	2	D1: (Unknown) / D2: (Unknown)	Dark - lighted roadway	Angle	Wet	V1: Turning left / V2: Turning right	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: N / V2: N	Cloudy/Rain		BROAD STREET / SOUTH STREET EXTENSION / VILA DO PORTO BOULEVARD	
4819272	HUDSON	02/14/2020	Property damage only (none injured)	5:45 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Unknown)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Clear		BROAD STREET / SOUTH STREET EXTENSION	
4837623	HUDSON	04/19/2020	Property damage only (none injured)	5:57 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Sideswipe, opposite direction	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: W	Clear		LORING ST	BROAD ST
4890134	HUDSON	10/23/2020	Property damage only (none injured)	7:20 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Angle	Wet	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: E	Cloudy	12	BROAD ST	
4895664	HUDSON	11/03/2020	Property damage only (none injured)	4:04 PM	No Apparent Injury (O)	2	D1: (Inattention) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Entering traffic lane / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: S	Clear		BROAD ST / LORING ST	
4895667	HUDSON	11/05/2020	Property damage only (none injured)	4:14 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Head-on	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: W	Clear		ST EXT / BROAD ST / VILA DO PORTO BLVD	
Main Street at Washington Street (downtown rotary)																	
4143327	HUDSON	02/01/2016	Property damage only (none injured)	2:58 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: E	Clear	19	WASHINGTON STREET	
4168580	HUDSON	03/28/2016	Property damage only (none injured)	1:18 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Wet	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Rain/Rain	3	WASHINGTON STREET	
4171008	HUDSON	04/01/2016	Property damage only (none injured)	6:10 PM	No injury	1		Daylight	Single vehicle crash	Dry	V1: Travelling straight ahead	V1:(Passenger car)	V1: E	Clear	3	WASHINGTON STREET	
4178689	HUDSON	04/20/2016	Not Reported	3:14 PM	Not reported	2		Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Clear/Clear	3	WASHINGTON STREET	
4203601	HUDSON	06/12/2016	Property damage only (none injured)	6:03 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Clear	20	MAIN STREET	100 feet W of
4206689	HUDSON	06/19/2016	Property damage only (none injured)	11:10 AM	No injury	2	D1: (Inattention) / D2: (Inattention)	Daylight	Sideswipe, opposite direction	Dry	V1: Other / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: E	Clear		MAIN STREET / MAIN STREET / WASHINGTON STREET	
4211633	HUDSON	07/04/2016	Non-fatal injury	3:19 PM	Non-fatal injury - Possible	2		Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Motorcycle) / V2:(Passenger car)	V1: W / V2: N	Clear	24	MAIN STREET	
4228400	HUDSON	08/05/2016	Non-fatal injury	12:33 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: W	Clear/Clear	18	MAIN STREET	
4251940	HUDSON	09/24/2016	Property damage only (none injured)	6:11 PM	No injury	2		Daylight	Sideswipe, same direction	Dry	V1: Turning right / V2: Turning right	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: N / V2: N	Clear		MAIN STREET / FELTON STREET	
4259391	HUDSON	10/10/2016	Property damage only (none injured)	6:18 PM	No injury	2	D2: (No improper driving)	Daylight	Rear-to-rear	Dry	V1: Other / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: W	Clear	24	MAIN STREET	
4262353	HUDSON	10/13/2016	Property damage only (none injured)	3:20 PM	No injury	2	D1: (Unknown) / D2: (Unknown)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: N / V2: W	Clear		MAIN STREET Rte 62 W / WASHINGTON STREET Rte 85 N / FELTON STREET	

MassDOT Crash Report for Hudson and Marborough 2016 - 2020

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway/ Landmark
4264760	HUDSON	10/17/2016	Property damage only (none injured)	5:20 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Cloudy		MAIN STREET / WASHINGTON STREET / MAIN STREET	
4299475	HUDSON	12/10/2016	Property damage only (none injured)	2:12 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Cloudy/Clear	27	WASHINGTON STREET	
4327932	HUDSON	02/18/2017	Property damage only (none injured)	6:22 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: S	Clear	19	WASHINGTON STREET Rte 85 S	50 feet N of
4327933	HUDSON	02/19/2017	Property damage only (none injured)	12:45 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: W	Cloudy	24	MAIN STREET	
4375526	HUDSON	06/09/2017	Property damage only (none injured)	2:13 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: E / V2: E	Clear/Clear	1	WASHINGTON STREET	
4413270	HUDSON	08/28/2017	Non-fatal injury	2:44 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear/Clear	20	MAIN STREET	
4430053	HUDSON	09/28/2017	Property damage only (none injured)	2:55 PM	No injury	2	D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear	3	WASHINGTON STREET	
4435151	HUDSON	10/06/2017	Property damage only (none injured)	8:15 PM	No injury	2	D1: (No improper driving),(No improper driving) / D2: (Failed to yield right of way),(Failed to yield right of way)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: N	Clear		MAIN STREET / MAIN STREET Rte 62 E / WASHINGTON STREET Rte 85 N	
4458043	HUDSON	11/22/2017	Non-fatal injury	10:37 AM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Rain/Rain	24	MAIN STREET	
4461250	HUDSON	11/30/2017	Non-fatal injury	6:21 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Distracted)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Clear		WASHINGTON STREET / MAIN STREET / WASHINGTON STREET	
4517817	HUDSON	12/16/2017	Property damage only (none injured)	11:08 AM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Single-unit truck (2-axle, 6-tires))	V1: E / V2: N	Clear	24	MAIN ST	
4517881	HUDSON	12/27/2017	Property damage only (none injured)	7:18 PM	No injury	3	D1: (No improper driving) / D2: (No improper driving) / D3: (Followed too closely)	Dusk	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car) / V3:(Passenger car)	V1: W / V2: W / V3: W	Clear	3	WASHINGTON ST	50 feet E of LINCOLN ST
4517917	HUDSON	01/30/2018	Property damage only (none injured)	7:57 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear		MAIN ST / FELTON ST	
4518230	HUDSON	01/16/2018	Property damage only (none injured)	11:42 AM	No injury	2	D1: (No improper driving) / D2: (Other improper action)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Backing	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Cloudy	3	WASHINGTON STREET	
4547994	HUDSON	06/02/2018	Property damage only (none injured)	3:45 PM	No injury	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Entering traffic lane / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear/Unknown	3	WASHINGTON ST	
4567470	HUDSON	07/13/2018	Non-fatal injury	5:00 PM	Non-fatal injury - Non-incapa	2	D1: (No improper driving) / D2: (Inattention),(Distracted)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Motorcycle) / V2:(Passenger car)	V1: S / V2: S	Clear	13	WASHINGTON ST	
4604577	HUDSON	10/03/2018	Non-fatal injury	1:09 AM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Dark - lighted roadway	Angle	Wet	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: W	Rain	20	MAIN ST	
4607681	HUDSON	10/05/2018	Property damage only (none injured)	10:29 AM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Clear		MAIN STREET Rte SR62 E	WASHINGTON STREET Rte SR85 S
4611497	HUDSON	10/15/2018	Property damage only (none injured)	10:22 AM	No injury	1	D1: (No improper driving)	Daylight	Single vehicle crash	Wet	V1: Entering traffic lane	V1:(Bus (seats for 16 or more, including driver))	V1: E	Rain	3	WASHINGTON STREET	
4612485	HUDSON	10/18/2018	Property damage only (none injured)	1:57 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear	28	MAIN ST	
4644772	HUDSON	12/27/2018	Property damage only (none injured)	1:54 PM	No injury	1	D1: (Inattention)	Dawn	Single vehicle crash	Dry	V1: Turning left	V1:(Tractor/semi-trailer)	V1: E	Clear	2	WASHINGTON STREET	
4648162	HUDSON	01/04/2019	Property damage only (none injured)	3:03 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear/Unknown	1	MAIN ST	
4693236	HUDSON	04/21/2019	Property damage only (none injured)	4:44 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: N	Clear		MAIN ST / WASHINGTON ST	
4696899	HUDSON	04/30/2019	Property damage only (none injured)	12:47 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Cloudy	15	WASHINGTON ST	
4708074	HUDSON	06/02/2019	Property damage only (none injured)	5:10 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Cloudy	1	WASHINGTON ST	
4750751	HUDSON	09/16/2019	Property damage only (none injured)	5:51 PM	No Apparent Injury (O)	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Entering traffic lane / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: N	Clear	14	MAIN ST	
4761040	HUDSON	10/12/2019	Property damage only (none injured)	3:06 AM	No Apparent Injury (O)	1	D1: (Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Dark - lighted roadway	Single vehicle crash	Wet	V1: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: W	Rain/Cloudy	28	MAIN ST	

MassDOT Crash Report for Hudson and Marborough 2016 - 2020

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway/ Landmark
4764694	HUDSON	10/19/2019	Non-fatal injury	8:52 AM	Possible Injury (C)	1	D1: (Failed to yield right of way)	Daylight	Single vehicle crash	Dry	V1: Turning left	V1:(Passenger car)	V1: W	Clear	1	WASHINGTON ST	
4771998	HUDSON	11/05/2019	Property damage only (none injured)	9:16 AM	No Apparent Injury (O)	1	D1: (No improper driving)	Daylight	Single vehicle crash	Dry	V1: Backing	V1:(Single-unit truck (2-axle, 6-tires))	V1: W	Cloudy	37	MAIN ST	
4801478	HUDSON	01/09/2020	Property damage only (none injured)	6:51 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road),(Wrong side or wrong way)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Slowing or stopped in traffic / V2: Overtaking/passing	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear	3	WASHINGTON ST Rte 85	50 feet S of LINCOLN ST
4804180	HUDSON	01/10/2020	Property damage only (none injured)	3:53 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: W	Clear/Other	28	MAIN ST	
4804182	HUDSON	01/09/2020	Property damage only (none injured)	2:06 PM	No Apparent Injury (O)	2	D1: (Inattention) / D2: (No improper driving)	Daylight	Front to Rear	Dry	V1: Backing / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: N	Clear	23	WASHINGTON ST	
4813939	HUDSON	01/31/2020	Property damage only (none injured)	8:17 AM	No Apparent Injury (O)	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: N	Clear	13	WASHINGTON ST	
4819395	HUDSON	02/14/2020	Property damage only (none injured)	3:36 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Clear/Unknown	1	WASHINGTON ST	
4829989	HUDSON	03/12/2020	Property damage only (none injured)	12:49 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V2: Travelling straight ahead / V1: Slowing or stopped in traffic	V2:(Passenger car) / V1:(Single-unit truck (2-axle, 6-tires))	V2: E / V1: E	Cloudy	5	WASHINGTON ST	
4846518	HUDSON	05/20/2020	Property damage only (none injured)	2:53 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear	28	MAIN ST	
4852261	HUDSON	06/18/2020	Property damage only (none injured)	12:33 PM	No Apparent Injury (O)	2	D1: (Unknown) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Overtaking/passing / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Unknown heavy truck, cannot classify)	V1: W / V2: W	Clear		FELTON ST / MAIN ST Rte 85 W	
4857070	HUDSON	06/29/2020	Property damage only (none injured)	9:17 AM	No Apparent Injury (O)	1	D1: (Inattention)	Daylight	Single vehicle crash	Dry	V1: Travelling straight ahead	V1:(Passenger car)	V1: S	Cloudy	21	WASHINGTON ST	50 feet N of SOUTH ST
4868095	HUDSON	07/29/2020	Property damage only (none injured)	7:28 AM	No Apparent Injury (O)	2	D1: (Inattention) / D2: (No improper driving)	Daylight	Angle	Dry	V2: Travelling straight ahead / V1: Turning left	V2:(Passenger car) / V1:(Tractor/semi-trailer)	V2: S / V1: S	Clear	1	WASHINGTON ST	200 feet E of RIVER RD
4870038	HUDSON	08/14/2020	Property damage only (none injured)	11:46 AM	No Apparent Injury (O)	2	D1: (Failed to yield right of way) / D2: (Other improper action)	Daylight	Angle	Dry	V1: Entering traffic lane / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Clear	24	WASHINGTON ST	
4872992	HUDSON	08/16/2020	Property damage only (none injured)	10:22 PM	No Apparent Injury (O)	1	D1: (Unknown)	Dark - lighted roadway	Single vehicle crash	Dry	V1: Travelling straight ahead	V1:(Tractor/semi-trailer)	V1: N	Clear	24	MAIN STREET	
4911373	HUDSON	12/04/2020	Property damage only (none injured)	11:40 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Other improper action)	Daylight	Sideswipe, same direction	Dry	V2: Slowing or stopped in traffic / V1: Travelling straight ahead	V2:(Passenger car) / V1:(Unknown heavy truck, cannot classify)	V2: E / V1: E	Clear	3	WASHINGTON STREET	
4915572	HUDSON	12/31/2020	Property damage only (none injured)	5:45 PM	No Apparent Injury (O)	3	D1: (No improper driving) / D2: (No improper driving) / D3: (Followed too closely)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car) / V3:(Passenger car)	V1: N / V2: N / V3: N	Clear	3	WASHINGTON ST	
Lincoln Street (Route 85) at Packard Street/Cox Street																	
4710488	HUDSON	06/09/2019	Property damage only (none injured)	2:17 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Unknown)	Daylight	Angle	Dry	V1: Slowing or stopped in traffic / V2: Turning left	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: S	Clear	83	LINCOLN ST	
4622940	HUDSON	11/14/2018	Non-fatal injury	5:45 PM	Non-fatal injury - Possible	2	D1: (Unknown) / D2: (Unknown)	Dark - lighted roadway	Head-on	Dry	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: S	Clear		LINCOLN ST / PACKARD ST	
4221782	HUDSON	07/22/2016	Not Reported	12:59 PM	Unknown	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: N	Clear/Clear	83	LINCOLN STREET	
4353528	HUDSON	04/19/2017	Property damage only (none injured)	4:11 PM	No injury	2		Daylight	Angle	Dry	V1: Turning right / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Clear/Cloudy		COX STREET / LINCOLN STREET / PACKARD STREET	
4443863	HUDSON	10/25/2017	Property damage only (none injured)	2:11 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Other e.g. farm equipment)	V1: E / V2: E	Cloudy/Cloudy		LINCOLN STREET / PACKARD ST	
4267669	HUDSON	10/21/2016	Non-fatal injury	6:17 PM	Non-fatal injury - Possible	2		Dark - lighted roadway	Angle	Wet	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: N	Rain	4	COX STREET	
4735525	HUDSON	08/07/2019	Property damage only (none injured)	8:43 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (No improper driving)	Dark - lighted roadway	Angle	Wet	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: N	Rain		COX ST / LINCOLN ST	
4664125	HUDSON	02/12/2019	Property damage only (none injured)	2:46 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Angle	Snow	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: E	Snow		LINCOLN STREET / COX STREET / PACKARD STREET	

MassDOT Crash Report for Hudson and Marborough 2016 - 2020

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway/ Landmark
Broad Street at Washington Street/Route 85 connector																	
4142302	HUDSON	01/28/2016	Property damage only (none injured)	8:32 AM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: W	Clear/Clear		WASHINGTON STREET / BROAD ST	
4142303	HUDSON	01/28/2016	Not Reported	3:26 PM	Not reported	2		Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Clear/Clear	245	WASHINGTON STREET	
4143069	HUDSON	01/29/2016	Property damage only (none injured)	4:55 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Dusk	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: W	Clear		BROAD STREET / FORESTVALE ROAD / WASHINGTON STREET	ROTARY
4211312	HUDSON	07/02/2016	Property damage only (none injured)	11:01 AM	No injury	1	D1: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Slowing or stopped in traffic	V1:(Passenger car)	V1: S	Clear		BROAD STREET / FORESTVALE RD	
4225158	HUDSON	07/31/2016	Property damage only (none injured)	1:00 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Wet	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Rain/Rain		BROAD STREET / WASHINGTON ST	
4302095	HUDSON	12/26/2016	Property damage only (none injured)	12:25 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: S	Clear/Clear	247	WASHINGTON STREET	
4326681	HUDSON	02/15/2017	Property damage only (none injured)	4:52 PM	No injury	2		Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Cloudy		WASHINGTON STREET / BROAD STREET	
4342120	HUDSON	03/26/2017	Property damage only (none injured)	6:38 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Dusk	Angle	Dry	V1: Leaving traffic lane / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: S	Clear		WASHINGTON STREET / BROAD ST	
4363088	HUDSON	05/01/2017	Property damage only (none injured)	10:52 AM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Sideswipe, same direction	Dry	V1: Other / V2: Other	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Cloudy/Cloudy	230	WASHINGTON STREET	
4363089	HUDSON	05/02/2017	Non-fatal injury	1:59 PM	Non-fatal injury - Possible	1		Daylight	Single vehicle crash	Dry	V1: Turning left	V1:(Motorcycle)	V1: S	Cloudy	251	WASHINGTON STREET	ROUNDABOUT
4364978	HUDSON	05/18/2017	Property damage only (none injured)	4:55 PM	No injury	2	D1: (Inattention) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: S	Clear		WASHINGTON STREET / WASHINGTON ST Rte 85 S / BROAD ST	
4445883	HUDSON	10/30/2017	Property damage only (none injured)	4:22 PM	No injury	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Cloudy		WASHINGTON STREET Rte 85 N / WASHINGTON STREET Rte 85 N / BROAD STREET	
4452735	HUDSON	11/13/2017	Property damage only (none injured)	6:21 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Angle	Wet	V1: Turning left / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: W	Rain/Rain		FORESTVALE ROAD	BROAD STREET
4457993	HUDSON	11/24/2017	Non-fatal injury	4:46 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: S	Clear		WASHINGTON STREET / WASHINGTON STREET / BROAD STREET	
4517955	HUDSON	02/08/2018	Property damage only (none injured)	5:20 PM	No injury	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Dark - lighted roadway	Angle	Dry	V1: Entering traffic lane / V2: Changing lanes	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: N	Clear		WASHINGTON ST Rte 85 / BROAD ST	
4573917	HUDSON	07/26/2018	Property damage only (none injured)	4:17 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear		WASHINGTON ST Rte 85 / BROAD ST	
4622933	HUDSON	11/07/2018	Property damage only (none injured)	3:34 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear		WASHINGTON ST / BROAD ST	
4638318	HUDSON	12/15/2018	Property damage only (none injured)	12:10 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: N / V2: N	Clear		WASHINGTON ST Rte 85 N / BROAD ST	
4663569	HUDSON	02/11/2019	Property damage only (none injured)	8:31 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear		WASHINGTON ST / BROAD ST	
4675258	HUDSON	03/11/2019	Property damage only (none injured)	6:27 AM	No injury	2	D1: (No improper driving) / D2: (Driving too fast for conditions)	Daylight	Rear-end	Ice	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Clear		WASHINGTON ST / BROAD ST	
4713581	HUDSON	06/10/2019	Property damage only (none injured)	12:24 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Overtaking/passing	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear		BROAD ST / WASHINGTON ST	
4720001	HUDSON	06/26/2019	Property damage only (none injured)	4:41 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Tractor/semi-trailer)	V1: N / V2: N	Clear	227	WASHINGTON STREET	50 feet S of BROAD STREET
4722704	HUDSON	07/08/2019	Property damage only (none injured)	6:08 PM	No Apparent Injury (O)	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: N	Clear		WASHINGTON ST / BROAD ST	
4726371	HUDSON	07/15/2019	Property damage only (none injured)	3:19 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Daylight	Sideswipe, same direction		V1: Travelling straight ahead / V2: Changing lanes	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear		WASHINGTON ST / BROAD ST	
4758568	HUDSON	10/01/2019	Property damage only (none injured)	2:36 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V2: Changing lanes / V1: Travelling straight ahead	V2:(Passenger car) / V1:(Single-unit truck (2-axle, 6-tires))	V2: N / V1: N	Clear		WASHINGTON ST	BROAD ST
4764633	HUDSON	10/14/2019	Property damage only (none injured)	11:35 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Front to Rear	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Motorcycle)	V1: S / V2: S	Clear		WASHINGTON STREET	

MassDOT Crash Report for Hudson and Marborough 2016 - 2020

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway/ Landmark
4786780	HUDSON	12/10/2019	Property damage only (none injured)	4:53 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failed to yield right of way),(Failure to keep in proper lane or running off road)	Dark - lighted roadway	Sideswipe, same direction	Wet	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: N	Cloudy/Rain		WASHINGTON ST / BROAD ST	
4798561	HUDSON	12/16/2019	Property damage only (none injured)	5:47 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: S	Clear		WASHINGTON ST / BROAD ST	
4850812	HUDSON	06/01/2020	Property damage only (none injured)	5:55 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Changing lanes	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Clear		WASHINGTON ST / BROAD ST	
4857069	HUDSON	06/24/2020	Property damage only (none injured)	2:37 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failed to yield right of way),(Failure to keep in proper lane or running off road)	Daylight	Angle	Dry	V1: Leaving traffic lane / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Clear		WASHINGTON STREET Rte SR85 S	BROAD STREET
4879463	HUDSON	09/03/2020	Property damage only (none injured)	10:55 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Cloudy	177	BROAD STREET / BROAD STREET / WASHINGTON STREET	
East Main Street (Route 20) at Stevens Street and Lincoln Street																	
4405112	MARLBORO	12/01/2016	Property damage only (none injured)	8:28 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: S	Clear		EAST MAIN ST / STEVENS ST	
4808805	MARLBORO	01/22/2020	Property damage only (none injured)	5:25 PM	No Apparent Injury (O)	3	D1: (No improper driving) / D2: (No improper driving) / D3: (Inattention)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Turning right / V3: Turning left	V1:(Passenger car) / V2:(Passenger car) / V3:(Passenger car)	V1: W / V2: E / V3: S	Clear		EAST MAIN ST / LINCOLN ST	
4405459	MARLBORO	11/14/2016	Non-fatal injury	9:36 PM	Non-fatal injury - Possible	1	D1: (No improper driving)	Dark - lighted roadway	Head-on	Dry	V1: Turning left	V1:(Passenger car)	V1: W	Clear		LINCOLN ST / EAST MAIN ST	
4405645	MARLBORO	02/17/2017	Non-fatal injury	6:11 PM	Non-fatal injury - Non-incapa	2	D1: (No improper driving) / D2: (Unknown)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: W	Clear		EAST MAIN ST / STEVENS ST	
4416519	MARLBORO	09/02/2017	Non-fatal injury	9:17 PM	Non-fatal injury - Non-incapa	2	D1: (No improper driving) / D2: (Exceeded authorized speed limit),(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Dark - lighted roadway	Rear-end	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear		EAST MAIN ST / LINCOLN ST	
4466609	MARLBORO	12/08/2017	Non-fatal injury	11:28 PM	Non-fatal injury - Non-incapa	2	D1: (No improper driving) / D2: (Followed too closely)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear		EAST MAIN ST / STEVENS ST / LINCOLN ST	
4488042	MARLBORO	01/20/2018	Non-fatal injury	5:29 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Distracted)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear		EAST MAIN ST / STEVENS ST	
4905465	MARLBORO	12/03/2020	Property damage only (none injured)	5:11 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: W	Clear		EAST MAIN ST / STEVENS ST	
4662775	MARLBORO	02/05/2019	Property damage only (none injured)	5:16 AM	No injury	2	D1: (Inattention) / D2: (No improper driving)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Turning left / V2: Turning right	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear		EAST MAIN ST / STEVENS ST	
4792107	MARLBORO	12/19/2019	Property damage only (none injured)	7:33 PM	No Apparent Injury (O)	2	D1: (Unknown) / D2: (Unknown)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Turning right / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear		EAST MAIN ST / STEVENS ST	
4915760	MARLBORO	12/31/2020	Property damage only (none injured)	9:46 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Changing lanes	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear		EAST MAIN ST Rte 20 / STEVENS ST	
4133814	MARLBORO	01/11/2016	Property damage only (none injured)	2:10 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: S	Clear		EAST MAIN ST / STEVENS ST / LINCOLN ST	
4210951	MARLBORO	06/29/2016	Property damage only (none injured)	10:08 AM	No injury	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: E	Clear		EAST MAIN ST / STEVENS ST	
4494675	MARLBORO	01/31/2018	Property damage only (none injured)	12:09 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: W	Clear		STEVENS ST / EAST MAIN ST / LINCOLN ST	
4613872	MARLBORO	10/21/2018	Property damage only (none injured)	12:47 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Turning right / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: S	Clear		EAST MAIN ST / STEVENS ST	
4830113	MARLBORO	03/16/2020	Property damage only (none injured)	2:19 PM	No Apparent Injury (O)	2	D1: (Unknown) / D2: (Unknown)	Daylight	Angle	Dry	V1: Turning right / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: S	Clear		EAST MAIN ST / STEVENS ST	
4861600	MARLBORO	07/14/2020	Property damage only (none injured)	9:08 AM	No Apparent Injury (O)	2	D1: (Other improper action) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Turning right / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear		EAST MAIN ST / STEVENS ST / LINCOLN ST	
4897447	MARLBORO	11/02/2020	Property damage only (none injured)	5:11 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: S	Clear		EAST MAIN ST / STEVENS ST	

MassDOT Crash Report for Hudson and Marborough 2016 - 2020

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway/ Landmark
4143427	MARLBORO	01/30/2016	Non-fatal injury	12:06 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Distracted)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Clear	6	STEVENS ST	
4185600	MARLBORO	04/30/2016	Property damage only (none injured)	8:54 AM	No injury	2	D1: (Unknown) / D2: (Unknown)	Daylight	Rear-end	Dry	V1: Unknown / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear		EAST MAIN ST / STEVENS ST	
4405169	MARLBORO	08/15/2016	Property damage only (none injured)	1:22 PM	No injury	3	D1: (Inattention) / D2: (No improper driving) / D3: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car) / V3:(Passenger car)	V1: N / V2: N / V3: N	Clear	133	EAST MAIN ST	
4405494	MARLBORO	02/04/2017	Property damage only (none injured)	10:09 AM	No injury	2	D1: (No improper driving) / D2: (Distracted)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear		LINCOLN ST / EAST MAIN ST	
4615172	MARLBORO	10/17/2018	Property damage only (none injured)	7:20 AM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear		STEVENS STREET	EAST MAIN STREET
4203095	MARLBORO	06/07/2016	Property damage only (none injured)	12:55 PM	No injury	2	D1: (Other improper action) / D2: (Other improper action)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear		EAST MAIN ST / STEVENS ST / LINCOLN ST	
4865986	MARLBORO	07/31/2020	Property damage only (none injured)	12:02 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Daylight	Sideswipe, same direction	Dry	V1: Turning left / V2: Changing lanes	V1:(Passenger car) / V2:(Bus (seats for 9-15 people, including driver))	V1: W / V2: W	Clear		EAST MAIN ST / STEVENS ST	
4897462	MARLBORO	11/10/2020	Property damage only (none injured)	2:32 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Clear		EAST MAIN ST / STEVENS ST	
4411937	MARLBORO	08/21/2017	Non-fatal injury	5:33 PM	Non-fatal injury - Non-incapa	1	D1: (Inattention)	Daylight	Single vehicle crash	Dry	V1: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: N	Clear		EAST MAIN ST / STEVENS ST	
4842087	MARLBORO	05/08/2020	Non-fatal injury	7:14 AM	Possible Injury (C)	2	D1: (Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, e) / D2: (Glare)	Daylight	Single vehicle crash	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Single-unit truck (2-axle, 6-tires))	V1: W / V2: E	Clear		STEVENS ST / LINCOLN ST / EAST MAIN ST	
4619415	MARLBORO	11/02/2018	Non-fatal injury	7:54 PM	Non-fatal injury - Non-incapa	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Dark - lighted roadway	Angle	Wet	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: N	Clear		STEVENS ST / EAST MAIN ST / LINCOLN ST	
4656606	MARLBORO	01/18/2019	Property damage only (none injured)	7:28 AM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Turning right / V2: Travelling straight ahead	V1:(Truck/trailer) / V2:(Passenger car)	V1: E / V2: W	Cloudy		EAST MAIN ST / LINCOLN ST / STEVENS ST	
4698199	MARLBORO	05/01/2019	Non-fatal injury	9:22 AM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Cloudy		EAST MAIN ST / STEVENS ST / LINCOLN ST	
4410952	MARLBORO	08/18/2017	Property damage only (none injured)	7:27 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Turning left / V2: Turning right	V1:(Passenger car) / V2:(Other e.g. farm equipment)	V1: S / V2: S	Cloudy	5	STEVENS ST	
4803835	MARLBORO	01/10/2020	Property damage only (none injured)	12:26 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Cloudy		EAST MAIN ST / LINCOLN ST / STEVENS ST	
4812466	MARLBORO	02/01/2020	Property damage only (none injured)	4:53 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Dark - lighted roadway	Front to Rear	Wet	V2: Turning right / V1: Turning right	V2:(Passenger car) / V1:(Truck/trailer)	V2: S / V1: S	Cloudy/Snow		LINCOLN ST / EAST MAIN ST	
4406276	MARLBORO	06/04/2017	Property damage only (none injured)	8:14 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Dark - lighted roadway	Angle	Wet	V1: Turning left / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: W	Rain	133	EAST MAIN ST	
4769717	MARLBORO	10/30/2019	Property damage only (none injured)	5:02 PM	No injury	2	D1: (No improper driving) / D2: (Driving too fast for conditions)	Dark - lighted roadway	Angle	Wet	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: N	Rain		STEVENS ST / LINCOLN ST	
4605521	MARLBORO	10/02/2018	Property damage only (none injured)	7:34 PM	No injury	1	D1: (Physical impairment)	Dark - lighted roadway	Rear-end	Wet	V1: Slowing or stopped in traffic	V1:(Passenger car)	V1: W	Rain		EAST MAIN ST / LINCOLN ST	
4770312	MARLBORO	10/31/2019	Property damage only (none injured)	8:15 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Dark - lighted roadway	Rear-end	Wet	V1: Turning right / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: W	Rain		EAST MAIN ST / STEVENS ST	
4870978	MARLBORO	08/17/2020	Property damage only (none injured)	12:40 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely),(Inattention)	Dark - lighted roadway	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: W	Rain	114	EAST MAIN ST Rte 20 W	LINCOLN ST
4541712	MARLBORO	05/20/2018	Unknown	1:57 AM	Unknown	1	D1: (Other improper action)	Dark - lighted roadway	Single vehicle crash	Wet	V1: Travelling straight ahead	V1:(Passenger car)	V1: E	Rain	133	EAST MAIN ST	
4744974	MARLBORO	08/28/2019	Property damage only (none injured)	4:03 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Wet	V1: Travelling straight ahead / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: E / V2: W	Rain		EAST MAIN ST / STEVENS ST	
4898165	MARLBORO	11/13/2020	Property damage only (none injured)	11:37 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Daylight	Angle	Wet	V1: Turning right / V2: Turning left	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Rain/Clear	133	EAST MAIN ST	
4405624	MARLBORO	02/13/2017	Property damage only (none injured)	10:20 AM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Sideswipe, same direction	Snow	V1: Travelling straight ahead / V2: Changing lanes	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Snow		EAST MAIN ST / STEVENS ST	
4653966	MARLBORO	01/19/2019	Non-fatal injury	9:28 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (No improper driving)	Dusk	Rear-end	Snow	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Snow		LINCOLN ST / EAST MAIN ST	
4812465	MARLBORO	01/31/2020	Property damage only (none injured)	11:39 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (No improper driving)	Dark - lighted roadway	Angle	Wet	V1: Turning left / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: W	Snow	133	EAST MAIN ST	

MassDOT Crash Report for Hudson and Marborough 2016 - 2020

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway/ Landmark
Lakeside Avenue (Route 20) at Lincoln Street																	
4717315	MARLBORO	06/24/2019	Non-fatal injury	10:06 AM	Suspected Serious Injury (A)	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Angle	Dry	V1: Turning right / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear	169	LAKESIDE AVE	
4877977	MARLBORO	09/09/2020	Property damage only (none injured)	7:20 PM	No injury	2	D1: (Unknown) / D2: (Unknown)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Slowing or stopped in traffic / V2: Overtaking/passing	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Clear		LAKESIDE AVENUE Rte US20 E / LINCOLN STREET	
4838277	MARLBORO	04/17/2020	Property damage only (none injured)	8:07 AM	No Apparent Injury (O)	1	D1: (Failure to keep in proper lane or running off road)	Daylight	Single vehicle crash	Dry	V1: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: W	Clear		LAKESIDE AVE / LINCOLN ST	
4147923	MARLBORO	02/07/2016	Property damage only (none injured)	11:31 AM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear/Cloudy	165	LAKESIDE AVE	
4488869	MARLBORO	01/22/2018	Property damage only (none injured)	8:35 AM	No injury	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Daylight	Sideswipe, same direction	Wet	V1: Turning right / V2: Overtaking/passing	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Rain	163	LAKESIDE AVE	
Washington Street (Route 85) at Route 85C/Technology Drive																	
4234204	HUDSON	08/19/2016	Property damage only (none injured)	1:55 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving),(No improper driving)	Daylight	Not reported	Dry	V1: Turning right / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Clear/Clear		HUDSON STREET / WASHINGTON STREET / 290 CONNECTOR Rte 290 W	
4303084	HUDSON	12/27/2016	Property damage only (none injured)	5:51 PM	No injury	2	D1: (Followed too closely) / D2: (No improper driving)	Dark - lighted roadway	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		HUDSON STREET / WASHINGTON STREET Rte SR85 S	
4383128	HUDSON	06/26/2017	Non-fatal injury	9:55 PM	Non-fatal injury - Possible	2	D1: (Inattention),(Followed too closely) / D2: (No improper driving)	Dark - lighted roadway	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	Cloudy		WASHINGTON STREET Rte 85 N / WASHINGTON STREET Rte 85 N / TECHNOLOGY DRIVE	
4757755	HUDSON	10/03/2019	Property damage only (none injured)	7:42 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Entering traffic lane / V2: Entering traffic lane	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	Cloudy		ROUTE 85 CONNECTOR	WASHINGTON STREET
4133652	HUDSON	01/12/2016	Property damage only (none injured)	5:50 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Sideswipe, same direction	Wet	V1: Travelling straight ahead / V2: Changing lanes	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	Snow		TECHNOLOGY DRIVE / WASHINGTON STREET Rte 85 N	
4899964	HUDSON	11/18/2020	Property damage only (none injured)	4:55 PM	No Apparent Injury (O)	1	D1: (No improper driving)	Dark - roadway not lighted	Sideswipe, same direction	Dry	V1: Slowing or stopped in traffic	V1:(Passenger car)	V1:(No)	Clear		290 CONNECTOR	WASHINGTON STREET Rte 85
4809187	HUDSON	01/24/2020	Property damage only (none injured)	4:59 PM	No Apparent Injury (O)	1	D1: (No improper driving)	Dusk	Front to Rear	Dry	V1: Slowing or stopped in traffic	V1:(Passenger car)	V1:(No)	Clear	255	WASHINGTON ST	
4171010	HUDSON	04/02/2016	Property damage only (none injured)	11:11 PM	No injury	1	D1: (Driving too fast for conditions)	Dark - lighted roadway	Single vehicle crash	Wet	V1: Slowing or stopped in traffic	V1:(Passenger car)	V1:(No)	Cloudy		HUDSON STREET / WASHINGTON STREET Rte SR85 / TECHNOLOGY DRIVE	
4663656	HUDSON	02/12/2019	Property damage only (none injured)	3:45 PM	No injury	1	D1: (Driving too fast for conditions)	Daylight	Single vehicle crash	Snow	V1: Travelling straight ahead	V1:(Passenger car)	V1:(No)	Snow/Blowing sand, snow		ROUTE 85 CONNECTOR / WASHINGTON STREET	
4517883	HUDSON	12/28/2017	Non-fatal injury	1:36 PM	Non-fatal injury - Possible	2	D1: (Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Clear		ROUTE 85 CONNECTOR	HUDSON STREET
4212099	HUDSON	07/05/2016	Property damage only (none injured)	4:18 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Clear		WASHINGTON STREET / HUDSON STREET / WASHIGTON ST	
4764626	HUDSON	10/21/2019	Property damage only (none injured)	11:22 AM	No Apparent Injury (O)	2	D1: (Emotional) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Clear		WASHINGTON STREET / TECHNOLOGY DRIVE	
4158097	HUDSON	03/04/2016	Property damage only (none injured)	11:12 AM	No injury	2	D1: (No improper driving) / D2: (Other improper action)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Cloudy		HUDSON STREET / WASHINGTON STREET Rte SR85 / TECHNOLOGY DRIVE	
4203598	HUDSON	06/10/2016	Non-fatal injury	11:57 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (No improper driving)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		WASHINGTON STREET / WASHINGTON STREET / TECHNOLOGY DRIVE	
4432833	HUDSON	10/02/2017	Property damage only (none injured)	10:25 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely),(Inattention)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		HUDSON STREET / WASHINGTON STREET	
4798555	HUDSON	12/23/2019	Property damage only (none injured)	5:11 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Changing lanes	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		HUDSON STREET Rte SR85 N	WASHINGTON STREET
4829990	HUDSON	03/13/2020	Property damage only (none injured)	7:58 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Unknown)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Turning left / V2: Turning right	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		WASHINGTON STREET Rte SR85 N / / TECHNOLOGY DRIVE	
4813931	HUDSON	01/24/2020	Non-fatal injury	5:20 PM	Possible Injury (C)	2	D1: (No improper driving) / D2: (Inattention)	Dark - roadway not lighted	Front to Rear	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		HUDSON STREET	290 CONNECTOR WB ONRAMP
4808533	HUDSON	01/23/2020	Property damage only (none injured)	7:43 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failure to keep in proper lane or running off road)	Dark - roadway not lighted	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear	10	TECHNOLOGY DR	
4421227	HUDSON	09/13/2017	Not Reported	5:43 AM	Unknown	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Dawn	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		HUDSON STREET	WASHINGTON STREET
4192622	HUDSON	05/19/2016	Non-fatal injury	5:44 PM	Non-fatal injury - Possible	2	D1: (Inattention) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		WASHINGTON STREET / HUDSON STREET / WASHINGTON STREET	

MassDOT Crash Report for Hudson and Marborough 2016 - 2020

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway/ Landmark
4717989	HUDSON	06/26/2019	Non-fatal injury	2:34 PM	Possible Injury (C)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear	256	WASHINGTON ST	
4798568	HUDSON	12/28/2019	Non-fatal injury	1:26 PM	Possible Injury (C)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		HUDSON STREET	ROUTE 85 CONNECTOR
4780298	HUDSON	11/23/2019	Property damage only (none injured)	3:07 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Dry	V1: Turning left / V2: Turning right	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		WASHINGTON STREET / TECHNOLOGY DRIVE	
4540801	HUDSON	05/10/2018	Property damage only (none injured)	4:57 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Other	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		WASHINGTON STREET Rte SR85 S / ROUTE 85 CONNECTOR	
4681567	HUDSON	03/24/2019	Property damage only (none injured)	3:34 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear	256	WASHINGTON ST	
4780870	HUDSON	11/26/2019	Property damage only (none injured)	3:28 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Unknown)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear	10	TECHNOLOGY DR	
4822454	HUDSON	02/26/2020	Property damage only (none injured)	2:46 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Other improper action)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		HUDSON STREET / WASHINGTON STREET Rte 85 / TECHNOLOGY DRIVE	290 CONNECTOR
4880418	HUDSON	09/16/2020	Property damage only (none injured)	12:14 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		RT 290 EXTENSION / WASHINGTON STREET Rte 85 / TECHNOLOGY DRIVE	HUDSON ST/RT 85 CONNECTOR
4895665	HUDSON	11/04/2020	Property damage only (none injured)	3:46 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		HUDSON STREET	290 CONNECTOR RAMP FROM WASH ST
4900559	HUDSON	09/29/2020	Property damage only (none injured)	2:25 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		290 CONNECTOR / WASHINGTON STREET Rte 85 W / TECHNOLOGY DRIVE / HUDSON STREET	
4846852	HUDSON	05/19/2020	Property damage only (none injured)	6:30 AM	No Apparent Injury (O)	2	D1: (Disregarded traffic signs, signals, road markings),(Fatigued/asleep) / D2: (No improper driving)	Daylight	Single vehicle crash	Dry	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		WASHINGTON STREET Rte 85 / TECHNOLOGY DRIVE / HUDSON STREET	290 CONNECTOR
4518024	HUDSON	03/05/2018	Unknown	3:18 PM	Unknown	2	D1: (Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Turning right / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		HUDSON STREET Rte SR85 S	YIELD SIGN AT ON RAMP FROM WASHI
4299464	HUDSON	12/06/2016	Property damage only (none injured)	6:49 AM	No injury	2	D1: (No improper driving) / D2: (Distracted)	Dawn	Rear-end	Ice	V1: Slowing or stopped in traffic / V2: Turning right	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		WASHINGTON STREET / HUDSON STREET / 290 CONNECTOR Rte 85 W	
4158098	HUDSON	03/04/2016	Property damage only (none injured)	3:30 PM	No injury	2		Daylight	Rear-end	Not reported	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		HUDSON STREET / WASHINGTON STREET Rte SR 85	
4457995	HUDSON	11/25/2017	Property damage only (none injured)	8:01 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely),(Inattention)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear/Clear		WASHINGTON STREET / HUDSON STREET	
4447093	HUDSON	11/01/2017	Property damage only (none injured)	5:07 PM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Dusk	Rear-end	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear/Clear		HUDSON STREET	WASHINGTON STREET
4868088	HUDSON	07/30/2020	Non-fatal injury	3:38 PM	Possible Injury (C)	2	D1: (Followed too closely) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Cloudy		WASHINGTON STREET Rte SR85 W	290 CONNECTOR
4634301	HUDSON	11/28/2018	Property damage only (none injured)	9:50 AM	No injury	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Turning right / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Cloudy	256	WASHINGTON ST	
4607683	HUDSON	10/08/2018	Property damage only (none injured)	2:14 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Cloudy		WASHINGTON ST Rte 85 / TECHNOLOGY DR	
4778275	HUDSON	11/19/2019	Property damage only (none injured)	9:54 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Unknown)	Dark - lighted roadway	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Cloudy		WASHINGTON STREET / HUDSON STREET	
4293948	HUDSON	12/05/2016	Non-fatal injury	1:49 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Wet	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Cloudy/Cloudy		WASHINGTON STREET / TECHNOLOGY DR	
4604575	HUDSON	10/02/2018	Property damage only (none injured)	12:05 AM	No injury	2	D1: (Inattention) / D2: (Inattention)	Dark - lighted roadway	Sideswipe, same direction	Wet	V1: Turning left / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Rain		ROUTE 85 CONNECTOR /	
4836372	HUDSON	04/13/2020	Property damage only (none injured)	2:52 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Other improper action),(Unknown)	Daylight	Angle	Wet	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Rain		WASHINGTON ST Rte 85 S / TECHNOLOGY DR	
4886826	HUDSON	10/12/2020	Property damage only (none injured)	1:20 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Rain		290 CONNECTOR / HUDSON STREET	NEAR 255 WASHINGTON ST
4644390	HUDSON	12/21/2018	Non-fatal injury	5:29 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Followed too closely)	Dark - lighted roadway	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Single-unit truck (2-axle, 6-tires))	V1:(No) / V2:(No)	Rain		ROUTE 85 CONNECTOR / WASHINGTON STREET	
4679991	HUDSON	03/22/2019	Property damage only (none injured)	2:28 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Made an improper turn)	Daylight	Sideswipe, same direction	Wet	V1: Turning right / V2: Turning right	V1:(Passenger car) / V2:(Single-unit truck (2-axle, 6-tires))	V1:(No) / V2:(No)	Rain/Cloudy		WASHINGTON STREET / TECHNOLOGY DRIVE	

MassDOT Crash Report for Hudson and Marborough 2016 - 2020

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Max Injury Severity Reported	Number of Vehicles	Driver Contributing Circumstances (All Drivers)	Light Conditions	Manner of Collision	Road Surface Condition	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Street Number	Roadway	Near Intersection Roadway/ Landmark
4353700	HUDSON	04/20/2017	Property damage only (none injured)	7:55 AM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Turning left / V2: Turning left	V1:(Passenger car) / V2:(Tractor/semi-trailer)	V1:(No) / V2:(No)	Clear/Clear		ROUTE 85 CONNECTOR / ROUTE 85 CONNECTOR Rte 85 N / WASHINGTON STREET	
4754890	HUDSON	09/20/2019	Property damage only (none injured)	5:37 PM	No Apparent Injury (O)	1	D1: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Turning right	V1:(Truck/trailer)	V1:(No)	Clear	255	WASHINGTON STREET	
4518543	HUDSON	01/25/2018	Property damage only (none injured)	6:37 AM	No injury	2	D1: (No improper driving) / D2: (Unknown)	Daylight	Rear-end	Dry	V2: Travelling straight ahead / V1: Slowing or stopped in traffic	V2:(Passenger car) / V1:(Single-unit truck (2-axle, 6-tires))	V2:(No) / V1:(No)	Clear	10	TECHNOLOGY DRIVE	
Granger Boulevard (Route 20) at South Bolton Street (Route 85)																	
4147183	MARLBORO	02/05/2016	Property damage only (none injured)	6:04 PM	No injury	2	D1: (No improper driving) / D2: (Driving too fast for conditions)	Dark - lighted roadway	Angle	Slush	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Cloudy		GRANGER BLVD / SOUTH BOLTON ST	
4151139	MARLBORO	02/11/2016	Property damage only (none injured)	8:24 AM	No injury	2	D1: (No improper driving) / D2: (Distracted)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4153628	MARLBORO	02/19/2016	Property damage only (none injured)	9:09 AM	No injury	1	D1: (Over-correcting/over-steering)	Daylight	Single vehicle crash	Dry	V1: Turning right	V1:(Passenger car)	V1:(No)	Clear		SOUTH BOLTON ST / GRANGER BLVD	
4158253	MARLBORO	03/03/2016	Non-fatal injury	2:01 PM	Non-fatal injury - Non-incapa	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		GRANGER BOULEVARD Rte US20 W / SOUTH BOLTON STREET	
4186743	MARLBORO	04/28/2016	Property damage only (none injured)	2:49 PM	No injury	2	D1: (No improper driving) / D2: (Unknown)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Truck/trailer) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4194065	MARLBORO	05/19/2016	Property damage only (none injured)	4:12 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Cloudy		GRANGER BLVD / SOUTH BOLTON ST	
4196310	MARLBORO	05/25/2016	Property damage only (none injured)	12:34 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4205050	MARLBORO	06/09/2016	Non-fatal injury	1:19 PM	Non-fatal injury - Possible	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Single-unit truck (3-or-more axles))	V1:(No) / V2:(No)	Clear		GRANGER BOULEVARD / SOUTH BOLTON STREET	
4230945	MARLBORO	08/09/2016	Property damage only (none injured)	3:50 PM	No injury	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Turning left / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		SOUTH BOLTON ST / GRANGER BLVD	
4405238	MARLBORO	12/16/2016	Property damage only (none injured)	6:27 AM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4405580	MARLBORO	08/18/2016	Property damage only (none injured)	1:23 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Clear	80	GRANGER BOULEVARD	SOUTH BOLTON STREET
4405587	MARLBORO	10/25/2016	Property damage only (none injured)	7:18 AM	No injury	2	D1: (No improper driving) / D2: (Followed too closely)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Bus (seats for 16 or more, including driver)) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		SOUTH BOLTON STREET / GRANGER BOULEVARD	
4406083	MARLBORO	04/15/2017	Non-fatal injury	11:02 PM	Non-fatal injury - Non-incapa	2	D1: (No improper driving) / D2: (Followed too closely)	Dark - lighted roadway	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Cloudy		GRANGER BLVD / SOUTH BOLTON ST	
4406097	MARLBORO	01/11/2017	Property damage only (none injured)	12:10 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Changing lanes	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4406281	MARLBORO	06/05/2017	Property damage only (none injured)	5:44 PM	No injury	2	D1: (Inattention) / D2: (Fatigued/asleep)	Daylight	Angle	Wet	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Cloudy/Rain		SOUTH BOLTON ST / GRANGER BLVD	
4406347	MARLBORO	06/08/2017	Property damage only (none injured)	10:47 AM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4407407	MARLBORO	08/03/2017	Property damage only (none injured)	10:02 PM	No injury	2	D1: (No improper driving) / D2: (Other improper action)	Dark - lighted roadway	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Changing lanes	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4407545	MARLBORO	06/28/2017	Property damage only (none injured)	8:43 AM	No injury	2	D1: (Inattention) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Single-unit truck (2-axle, 6-tires))	V1:(No) / V2:(No)	Clear		GRANGER BOULEVARD / SOUTH BOLTON STREET	
4407582	MARLBORO	07/22/2017	Property damage only (none injured)	5:20 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4407583	MARLBORO	07/24/2017	Non-fatal injury	12:20 PM	Non-fatal injury - Non-incapa	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings),(Failed to yield right of way)	Daylight	Angle	Wet	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Rain/Cloudy		GRANGER BLVD / SOUTH BOLTON ST	
4424860	MARLBORO	09/17/2017	Property damage only (none injured)	12:19 PM	No injury	2	D1: (No improper driving) / D2: (Inattention),(Failure to keep in proper lane or running off road)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Changing lanes	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4466606	MARLBORO	12/06/2017	Property damage only (none injured)	2:57 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Cloudy		SOUTH BOLTON ST / GRANGER BLVD	

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4474149	MARLBORO	12/21/2017	Property damage only (none injured)	2:08 PM	No injury	2	D1: (No improper driving) / D2: (Disregarded traffic signs, signals, road markings)	Daylight	Head-on	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear	28	SOUTH BOLTON ST	
4513178	MARLBORO	03/06/2018	Property damage only (none injured)	6:14 PM	No injury	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Daylight	Sideswipe, opposite direction	Dry	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4529300	MARLBORO	04/18/2018	Property damage only (none injured)	1:05 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Angle	Dry	V1: Turning right / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4543430	MARLBORO	05/22/2018	Property damage only (none injured)	2:31 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Rain		GRANGER BLVD / SOUTH BOLTON ST	
4553852	MARLBORO	06/11/2018	Property damage only (none injured)	6:34 PM	No injury	2	D1: (Unknown)	Daylight	Angle	Dry	V1: Unknown / V2: Parked	V1:(Passenger car) / V2:(Passenger car)	V1:(No)	Clear	29	SOUTH BOLTON ST	
4587292	MARLBORO	08/26/2018	Property damage only (none injured)	4:58 PM	No injury	2	D1: (Unknown) / D2: (Unknown)	Daylight	Sideswipe, opposite direction	Dry	V1: Turning left / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(Yes)	Clear		SOUTH BOLTON STREET / GRANGER BOULEVARD	
4621198	MARLBORO	11/02/2018	Property damage only (none injured)	7:07 AM	No injury	2	D1: (Unknown) / D2: (Unknown)	Dawn	Angle	Wet	V1: Travelling straight ahead / V2: Changing lanes	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Rain		SOUTH BOLTON ST / GRANGER BLVD	
4624029	MARLBORO	11/13/2018	Non-fatal injury	3:43 PM	Non-fatal injury - Non-incapa	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Daylight	Angle	Wet	V1: Travelling straight ahead / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	Cloudy		SOUTH BOLTON ST / GRANGER BLVD	
4635330	MARLBORO	11/15/2018	Property damage only (none injured)	9:09 PM	No injury	2	D1: (Followed too closely),(No improper driving) / D2: (No improper driving)	Dark - lighted roadway	Rear-end	Snow	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Snow		GRANGER BLVD / SOUTH BOLTON ST	
4635332	MARLBORO	12/06/2018	Property damage only (none injured)	2:40 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4638504	MARLBORO	12/12/2018	Property damage only (none injured)	1:19 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Head-on	Dry	V1: Turning left / V2: Turning right	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4656745	MARLBORO	01/24/2019	Property damage only (none injured)	7:53 PM	No injury	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Dawn	Angle	Wet	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Cloudy/Rain		GRANGER BLVD / SOUTH BOLTON ST	
4689232	MARLBORO	04/08/2019	Property damage only (none injured)	10:16 PM	No injury	2	D1: (Failed to yield right of way) / D2: (No improper driving)	Dark - lighted roadway	Head-on	Dry	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Clear		GRANGER BOULEVARD / SOUTH BOLTON STREET	
4747947	MARLBORO	09/05/2019	Property damage only (none injured)	5:33 PM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4750157	MARLBORO	09/13/2019	Property damage only (none injured)	7:12 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Dusk	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		SOUTH BOLTON ST / GRANGER BLVD	
4755716	MARLBORO	09/23/2019	Property damage only (none injured)	11:52 AM	No injury	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Changing lanes	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4770311	MARLBORO	10/28/2019	Property damage only (none injured)	7:05 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Rear-end	Wet	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Cloudy/Rain		GRANGER BLVD / SOUTH BOLTON ST	
4782460	MARLBORO	11/20/2019	Non-fatal injury	4:27 PM	Suspected Minor Injury (B)	2	D1: (No improper driving) / D2: (Failed to yield right of way)	Dark - lighted roadway	Angle	Wet	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Rain/Fog, smog, smoke		GRANGER BLVD / SOUTH BOLTON ST	
4782461	MARLBORO	11/20/2019	Property damage only (none injured)	4:49 PM	No Apparent Injury (O)	2	D1: (Inattention) / D2: (No improper driving)	Dark - lighted roadway	Sideswipe, same direction	Wet	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Rain		GRANGER BLVD / SOUTH BOLTON ST	
4787453	MARLBORO	12/09/2019	Property damage only (none injured)	4:23 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Dark - lighted roadway	Angle	Wet	V1: Travelling straight ahead / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Rain		GRANGER BLVD / SOUTH BOLTON ST	
4820877	MARLBORO	02/23/2020	Property damage only (none injured)	4:40 PM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4838679	MARLBORO	04/20/2020	Property damage only (none injured)	11:53 AM	No Apparent Injury (O)	2	D1: (No improper driving) / D2: (No improper driving)	Daylight	Front to Rear	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4847929	MARLBORO	05/23/2020	Property damage only (none injured)	7:09 PM	No Apparent Injury (O)	2	D1: (Unknown) / D2: (Unknown)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		SOUTH BOLTON ST / GRANGER BLVD	
4854243	MARLBORO	06/25/2020	Property damage only (none injured)	5:51 PM	No Apparent Injury (O)	2	D1: (Unknown) / D2: (No improper driving)	Daylight	Rear-end	Dry	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		SOUTH BOLTON ST / GRANGER BLVD	
4869807	MARLBORO	08/11/2020	Property damage only (none injured)	8:20 PM	No injury	2	D1: (Disregarded traffic signs, signals, road markings),(Distracted) / D2: (No improper driving)	Dark - lighted roadway	Angle	Dry	V1: Travelling straight ahead / V2: Turning right	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		SOUTH BOLTON ST / GRANGER BLVD	
4875609	MARLBORO	09/01/2020	Property damage only (none injured)	3:43 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		SOUTH BOLTON ST / GRANGER BLVD	
4877971	MARLBORO	09/09/2020	Property damage only (none injured)	3:34 PM	No injury	2	D1: (Unknown) / D2: (Unknown)	Daylight	Sideswipe, same direction	Dry	V1: Travelling straight ahead / V2: Overtaking/passing	V1:(Passenger car) / V2:(Passenger car)	V1:(No) / V2:(No)	Clear		SOUTH BOLTON ST / GRANGER BLVD	

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4888462	MARLBORO	10/15/2020	Property damage only (none injured)	1:43 PM	No Apparent Injury (O)	2	D1: (Disregarded traffic signs, signals, road markings) / D2: (Failed to yield right of way),(Disregarded traffic signs, signals, road markings)	Daylight	Angle	Dry	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	
4897461	MARLBORO	11/10/2020	Property damage only (none injured)	2:05 PM	No injury	2	D1: (No improper driving) / D2: (Inattention)	Daylight	Rear-end	Dry	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1:(No) / V2:(No)	Clear		GRANGER BLVD / SOUTH BOLTON ST	

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Hudson | COUNT DATE : January 2023

DISTRICT : 3 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Cox Street

MINOR STREET(S) : Old Bolton Road

Old Stow Road

INTERSECTION DIAGRAM (Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	238	246	277	98		**859**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **10,738**

TOTAL # OF CRASHES : 14

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **2.80**

CRASH RATE CALCULATION : **0.71**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Hudson | COUNT DATE : January 2023

DISTRICT : 3 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Cox Street

MINOR STREET(S) : Pierce Street

Zina Road

INTERSECTION DIAGRAM (Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM) :	25	45	154	294		**518**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **6,475**

TOTAL # OF CRASHES : 2

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.40**

CRASH RATE CALCULATION : **0.17**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Hudson | COUNT DATE : December 2023

DISTRICT : 3 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Cox Street

MINOR STREET(S) : Lee Circle

Existing Driveway

INTERSECTION DIAGRAM (Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM) :	12	25	210	367		**614**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **7,675**

TOTAL # OF CRASHES : 2 | # OF YEARS : 5 | AVERAGE # OF CRASHES PER YEAR (**A**) : **0.40**

CRASH RATE CALCULATION : **0.14**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Hudson | COUNT DATE : January 2023

DISTRICT : 3 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Cox Street

MINOR STREET(S) : Parkhurst Drive

INTERSECTION DIAGRAM
(Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM) :	15		178	351		**544**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **6,800**

TOTAL # OF CRASHES : 3

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.60**

CRASH RATE CALCULATION : **0.24**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Hudson | COUNT DATE : January 2023

DISTRICT : 3 | UNSIGNALIZED : | SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Main Street

MINOR STREET(S) : Wilkins Street

Forest Avenue

INTERSECTION DIAGRAM (Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	283	752	384	159		**1,578**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **19,725**

TOTAL # OF CRASHES : 32

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **6.40**

CRASH RATE CALCULATION : **0.89**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Hudson | COUNT DATE : January 2023

DISTRICT : 3 | UNSIGNALIZED : | SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Cox Street

MINOR STREET(S) : Main Street

Glendale Road

INTERSECTION DIAGRAM
(Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM) :	529	426		260		**1,215**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **15,188**

TOTAL # OF CRASHES : 8

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **1.60**

CRASH RATE CALCULATION : **0.29**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Hudson | COUNT DATE : December 2023

DISTRICT : 3 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Main Street

MINOR STREET(S) : Mackin Street

Woodrow Street

INTERSECTION DIAGRAM (Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM) :	528	293	52	102		**975**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **12,188**

TOTAL # OF CRASHES : 14

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **2.80**

CRASH RATE CALCULATION : **0.63**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Hudson | COUNT DATE : September 2023

DISTRICT : 3 | UNSIGNALIZED : | SIGNALIZED : X

~ INTERSECTION DATA ~

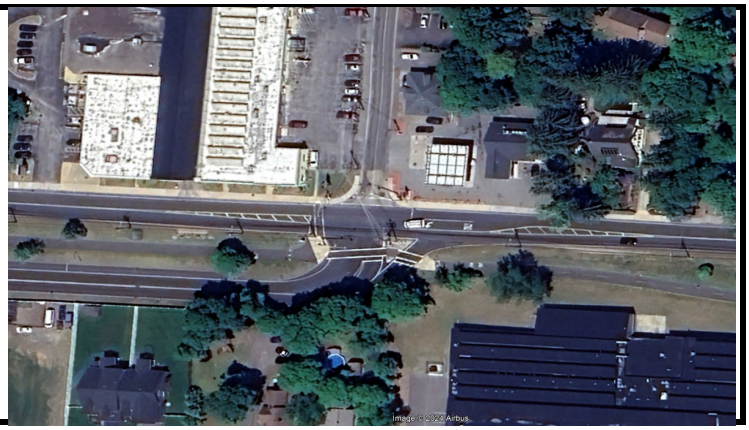
MAJOR STREET : Main Street

MINOR STREET(S) : Villa do Porto Blvd

Tower Street

INTERSECTION DIAGRAM (Label Approaches)

↑ *North*



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM) :	328	357	343	259		**1,287**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **16,088**

TOTAL # OF CRASHES : 32

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **6.40**

CRASH RATE CALCULATION : **1.09**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Hudson | COUNT DATE : Decemeber 2023

DISTRICT : 3 | UNSIGNALIZED : | SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Broad Street

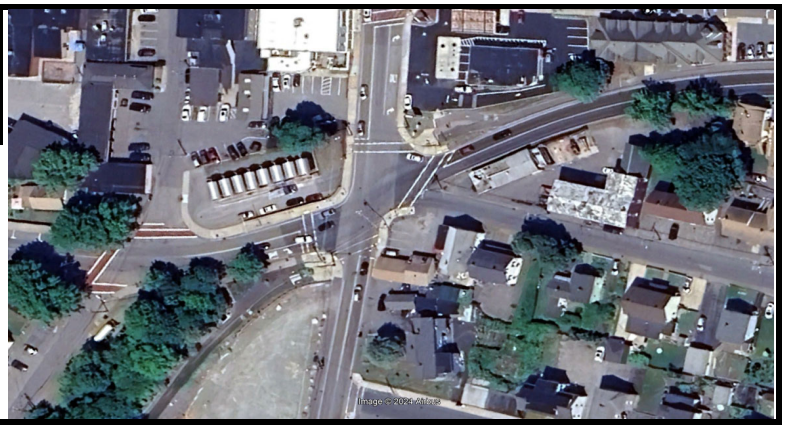
MINOR STREET(S) : Villa do Porto Blvd

South Street

Loring Street

INTERSECTION DIAGRAM (Label Approaches)

↑ *North*



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	384	379	418	263	1	**1,445**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **18,063**

TOTAL # OF CRASHES : 31

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **6.20**

CRASH RATE CALCULATION : **0.94**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Hudson | COUNT DATE : December 2023

DISTRICT : 3 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Main Street

MINOR STREET(S) : Washington Street

INTERSECTION DIAGRAM (Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	815	421	777			**2,013**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **25,163**

TOTAL # OF CRASHES : 54

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **10.80**

CRASH RATE CALCULATION : **1.18**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Hudson | COUNT DATE : January 2023

DISTRICT : 3 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Cox Street

MINOR STREET(S) : Lincoln Street

Packard Street

INTERSECTION DIAGRAM (Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	197	371	174	238		**980**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **12,250**

TOTAL # OF CRASHES : 8

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **1.60**

CRASH RATE CALCULATION : **0.36**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Hudson | COUNT DATE : March 2023

DISTRICT : 3 | UNSIGNALIZED : X | SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Washington Street

MINOR STREET(S) : Broad Street

INTERSECTION DIAGRAM
(Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	648	0	1,088	495		**2,231**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **27,888**

TOTAL # OF CRASHES : 31

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **6.20**

CRASH RATE CALCULATION : **0.61**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Hudson | COUNT DATE : Mar-22

DISTRICT : 3 | UNSIGNALIZED : | SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Washington Street

MINOR STREET(S) : Route 85 Connector

Technology Street

INTERSECTION DIAGRAM
(Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	1,043	447	798	925		**3,213**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **40,163**

TOTAL # OF CRASHES : 50

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **10.00**

CRASH RATE CALCULATION : **0.68**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Marlborough COUNT DATE : January 2023

DISTRICT : 3 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : East Main Street

MINOR STREET(S) : Stevens Street

Lincoln Street

INTERSECTION DIAGRAM
(Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	358	1,052	539	70		**2,019**

" K " FACTOR : **0.080** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **25,238**

TOTAL # OF CRASHES : 45 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (**A**) : **9.00**

CRASH RATE CALCULATION : **0.98** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Marlborough | COUNT DATE : Mar-24

DISTRICT : 3 | UNSIGNALIZED : | SIGNALIZED : X

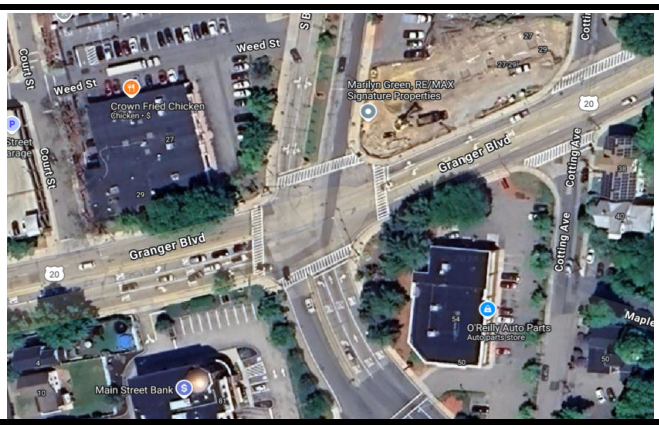
~ INTERSECTION DATA ~

MAJOR STREET : Granger Boulevard

MINOR STREET(S) : South Bolton Street

INTERSECTION DIAGRAM
(Label Approaches)

↑ *North*



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	610	420	773	317		**2,120**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **26,500**

TOTAL # OF CRASHES : 51

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **10.20**

CRASH RATE CALCULATION : **1.05**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Marlborough COUNT DATE : January 2023

DISTRICT : 3 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Lincoln Street

MINOR STREET(S) : Lakeside Avenue

INTERSECTION DIAGRAM
(Label Approaches)

↑ *North*

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (PM) :	906	868		413		**2,187**

" K " FACTOR : **0.080** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **27,338**

TOTAL # OF CRASHES : 5 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (**A**) : **1.00**

CRASH RATE CALCULATION : **0.10** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: Expansion of Transfer Station Facility

Attachment 6 - SPOT SPEED MEASUREMENTS

Location : Cox Street 92160003
Location : South of Driveway
City/State: Hudson, MA
Direction: SB,

5/25/2022 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	Total
12:00 AM	0	0	0	0	0	0	0	1	2	2	2	1	1	0	9
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
3:00	0	0	0	0	0	0	0	0	1	0	0	1	1	0	3
4:00	0	0	0	0	0	0	1	1	4	2	1	2	1	1	13
5:00	0	0	0	0	0	1	1	1	5	22	25	17	6	3	81
6:00	0	0	0	0	0	0	7	10	24	69	54	24	5	2	195
7:00	0	0	0	4	3	5	16	30	87	111	78	23	2	1	360
8:00	0	0	8	6	7	5	28	32	92	115	38	7	0	0	338
9:00	0	0	3	1	2	12	18	21	47	53	25	7	2	1	192
10:00	0	0	1	1	10	10	19	18	28	36	26	9	2	0	160
11:00	0	0	0	0	0	5	21	19	36	43	32	12	2	0	170
12:00 PM	0	0	2	6	5	3	17	22	41	60	31	15	5	1	208
1:00	0	0	2	0	4	11	19	26	52	61	37	12	2	0	226
2:00	0	0	0	1	2	11	18	28	57	45	32	10	5	2	211
3:00	0	0	0	0	1	5	17	36	84	93	36	13	4	6	295
4:00	0	0	1	5	3	3	11	8	71	82	47	20	6	1	258
5:00	0	0	0	1	2	4	3	12	44	77	48	19	10	2	222
6:00	0	0	0	1	3	1	6	4	35	37	32	13	7	2	141
7:00	0	0	0	0	0	1	1	10	34	54	25	9	3	3	140
8:00	0	0	0	0	1	0	0	9	27	32	17	2	4	0	92
9:00	0	0	0	0	0	0	0	5	13	22	4	1	0	1	46
10:00	0	0	1	0	0	0	0	1	4	2	5	2	0	2	17
11:00	0	0	0	0	0	0	0	2	2	4	8	2	1	2	21
Total	0	0	18	26	43	77	203	296	790	1022	605	221	69	30	3400

Percentile	15th	50th	85th	95th
Speed	22	28	32	35

Mean Speed (Average)	28.2
10 MPH Pace Speed	23-32
Number in Pace	2505
Percent in Pace	73.7%
Number > 30 MPH	925
Percent > 30 MPH	27.2%

Location : Cox Street 92160003
Location : South of Driveway
City/State: Hudson, MA
Direction: SB,

5/26/2022 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	Total
12:00 AM	0	0	0	0	0	0	0	2	2	2	0	0	0	0	6
1:00	0	0	0	0	0	0	0	0	0	2	3	1	0	0	6
2:00	0	0	0	0	0	0	0	0	1	5	0	0	0	0	6
3:00	0	0	0	0	0	0	0	0	1	1	1	1	0	0	4
4:00	0	0	0	0	0	0	1	1	3	3	3	2	0	0	13
5:00	0	0	0	0	0	1	2	0	10	16	23	10	2	1	65
6:00	0	0	0	0	0	3	1	9	26	77	62	20	5	2	205
7:00	0	0	1	1	3	9	19	23	86	101	59	25	8	2	337
8:00	0	0	5	1	8	14	23	39	100	103	54	11	1	1	360
9:00	0	0	1	1	1	7	22	10	33	60	34	10	2	0	181
10:00	0	0	1	0	3	9	16	26	42	46	30	4	1	1	179
11:00	0	0	0	3	4	11	10	23	44	50	24	13	7	1	190
12:00 PM	0	0	0	2	3	13	11	20	36	63	42	8	1	1	200
1:00	0	0	0	0	5	6	18	21	53	47	32	6	0	1	189
2:00	0	0	1	1	3	6	25	34	70	63	37	12	2	3	257
3:00	0	0	0	3	0	11	20	20	55	75	58	10	7	1	260
4:00	0	0	0	0	6	5	13	9	53	103	50	14	3	0	256
5:00	0	0	1	0	0	3	7	11	44	76	57	15	2	2	218
6:00	0	0	0	0	1	2	9	15	40	91	37	9	4	0	208
7:00	0	0	0	0	0	3	1	14	33	49	35	14	4	3	156
8:00	0	0	0	0	0	1	1	6	40	38	26	4	3	2	121
9:00	0	0	0	0	0	0	0	8	15	16	10	3	3	2	57
10:00	0	0	0	0	0	0	0	1	6	7	5	1	3	0	23
11:00	0	0	0	0	0	0	1	3	4	3	6	2	0	1	20
Total	0	0	10	12	37	104	200	295	797	1097	688	195	58	24	3517
			Percentile	15th	50th	85th	95th								
			Speed	23	28	32	34								
		Mean Speed (Average)		28.1											
		10 MPH Pace Speed		23-32											
		Number in Pace		2667											
		Percent in Pace		75.8%											
		Number > 30 MPH		965											
		Percent > 30 MPH		27.4%											
Grand Total	0	0	28	38	80	181	403	591	1587	2119	1293	416	127	54	6917
Stats			Percentile	15th	50th	85th	95th								
			Speed	23	28	32	34								
		Mean Speed (Average)		28.2											
		10 MPH Pace Speed		23-32											
		Number in Pace		5173											
		Percent in Pace		74.8%											
		Number > 30 MPH		1890											
		Percent > 30 MPH		27.3%											

Location : Cox Street 92160003
Location : South of Driveway
City/State: Hudson, MA
Direction: NB,

5/25/2022 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	Total
12:00 AM	0	0	0	0	0	0	0	0	0	2	2	2	2	0	8
1:00	0	0	0	0	0	0	0	0	0	0	2	1	1	1	5
2:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
3:00	0	0	0	0	0	0	0	0	0	0	2	0	1	0	3
4:00	0	0	0	0	0	1	0	0	1	0	2	1	0	0	5
5:00	0	0	0	0	0	0	1	1	3	6	8	5	6	3	33
6:00	0	0	0	0	0	2	2	1	3	19	42	23	9	6	107
7:00	0	0	1	7	11	7	7	13	12	39	65	33	10	2	207
8:00	0	0	2	4	13	14	25	28	41	54	45	12	5	8	251
9:00	0	0	1	1	14	8	25	15	22	35	22	11	0	5	159
10:00	0	0	2	0	10	18	8	12	31	33	30	12	2	7	165
11:00	0	0	0	0	6	8	12	15	12	28	48	18	5	4	156
12:00 PM	0	0	0	1	6	8	19	15	28	38	54	20	7	5	201
1:00	0	0	1	2	12	13	18	15	15	34	55	29	4	8	206
2:00	0	0	4	6	10	19	25	22	37	55	58	19	6	1	262
3:00	0	0	3	5	10	10	27	27	53	100	93	30	13	3	374
4:00	0	0	0	0	2	9	12	18	18	79	131	48	26	2	345
5:00	0	0	1	2	11	3	5	3	10	60	120	72	32	7	326
6:00	0	0	0	0	3	2	4	4	15	34	93	44	32	7	238
7:00	0	0	0	0	0	0	3	6	11	30	50	25	11	5	141
8:00	0	0	0	0	2	2	3	4	5	24	30	14	4	2	90
9:00	0	0	0	0	0	0	0	2	5	9	12	4	4	0	36
10:00	0	0	0	0	0	0	0	0	3	5	12	8	3	4	35
11:00	0	0	0	0	0	0	0	0	0	2	4	6	3	0	15
Total	0	0	15	28	110	124	196	201	325	687	980	437	186	80	3369

Percentile	15th	50th	85th	95th
Speed	21	30	34	37

Mean Speed (Average)	31.2
10 MPH Pace Speed	26-35
Number in Pace	2209
Percent in Pace	65.6%
Number > 30 MPH	1683
Percent > 30 MPH	50.0%

Location : Cox Street 92160003
Location : South of Driveway
City/State: Hudson, MA
Direction: NB,

5/26/2022 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	Total
12:00 AM	0	0	0	0	0	0	0	0	0	2	4	4	0	0	10
1:00	0	0	0	0	0	0	0	0	0	1	4	1	1	2	9
2:00	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
3:00	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3
4:00	0	0	0	0	0	0	0	0	0	3	2	1	1	0	7
5:00	0	0	0	0	0	0	1	1	6	4	10	4	1	6	33
6:00	0	0	1	2	1	0	4	3	6	28	43	20	6	3	117
7:00	0	0	0	2	15	7	17	15	22	39	60	19	6	6	208
8:00	0	0	2	3	16	13	21	19	49	66	49	2	5	2	247
9:00	0	0	0	0	7	10	17	12	12	34	40	10	6	8	156
10:00	0	0	1	3	5	5	16	8	15	40	32	14	9	5	153
11:00	0	0	1	2	10	9	20	16	10	40	43	15	7	3	176
12:00 PM	0	0	0	2	14	11	24	8	17	41	55	21	10	5	208
1:00	0	0	0	0	6	11	17	18	22	42	53	21	7	6	203
2:00	0	0	6	8	6	17	25	23	24	54	68	12	4	8	255
3:00	0	0	0	1	2	17	29	29	72	107	80	28	13	2	380
4:00	0	0	0	0	12	2	13	14	22	90	121	51	25	7	357
5:00	0	0	3	0	4	7	8	7	13	48	115	62	46	4	317
6:00	0	0	0	0	2	2	7	11	18	64	103	40	22	7	276
7:00	0	0	1	0	0	1	3	11	21	50	83	20	10	6	206
8:00	0	0	0	0	0	1	2	5	8	27	32	13	12	1	101
9:00	0	0	0	0	0	0	2	0	8	15	21	8	5	0	59
10:00	0	0	0	0	0	0	1	1	5	13	17	8	2	3	50
11:00	0	0	0	0	0	0	0	0	0	1	4	5	2	1	13
Total	0	0	15	23	100	113	227	201	350	809	1041	381	200	86	3546
			Percentile	15th	50th	85th	95th								
			Speed	22	30	34	37								
		Mean Speed (Average)		31.2											
		10 MPH Pace Speed		26-35											
		Number in Pace		2347											
		Percent in Pace		66.2%											
		Number > 30 MPH		1708											
		Percent > 30 MPH		48.2%											
Grand Total	0	0	30	51	210	237	423	402	675	1496	2021	818	386	166	6915
Stats			Percentile	15th	50th	85th	95th								
			Speed	22	30	34	37								
		Mean Speed (Average)		31.2											
		10 MPH Pace Speed		26-35											
		Number in Pace		4555											
		Percent in Pace		65.9%											
		Number > 30 MPH		3391											
		Percent > 30 MPH		49.0%											

Location : Cox Street 92160003
Location : South of Driveway
City/State: Hudson, MA
Direction: Combined

5/25/2022 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	Total
12:00 AM	0	0	0	0	0	0	0	1	2	4	4	3	3	0	17
1:00	0	0	0	0	0	0	0	0	0	0	2	1	1	1	5
2:00	0	0	0	0	0	0	0	0	0	1	2	0	0	0	3
3:00	0	0	0	0	0	0	0	0	1	0	2	1	2	0	6
4:00	0	0	0	0	0	1	1	1	5	2	3	3	1	1	18
5:00	0	0	0	0	0	1	2	2	8	28	33	22	12	6	114
6:00	0	0	0	0	0	2	9	11	27	88	96	47	14	8	302
7:00	0	0	1	11	14	12	23	43	99	150	143	56	12	3	567
8:00	0	0	10	10	20	19	53	60	133	169	83	19	5	8	589
9:00	0	0	4	2	16	20	43	36	69	88	47	18	2	6	351
10:00	0	0	3	1	20	28	27	30	59	69	56	21	4	7	325
11:00	0	0	0	0	6	13	33	34	48	71	80	30	7	4	326
12:00 PM	0	0	2	7	11	11	36	37	69	98	85	35	12	6	409
1:00	0	0	3	2	16	24	37	41	67	95	92	41	6	8	432
2:00	0	0	4	7	12	30	43	50	94	100	90	29	11	3	473
3:00	0	0	3	5	11	15	44	63	137	193	129	43	17	9	669
4:00	0	0	1	5	5	12	23	26	89	161	178	68	32	3	603
5:00	0	0	1	3	13	7	8	15	54	137	168	91	42	9	548
6:00	0	0	0	1	6	3	10	8	50	71	125	57	39	9	379
7:00	0	0	0	0	0	1	4	16	45	84	75	34	14	8	281
8:00	0	0	0	0	3	2	3	13	32	56	47	16	8	2	182
9:00	0	0	0	0	0	0	0	7	18	31	16	5	4	1	82
10:00	0	0	1	0	0	0	0	1	7	7	17	10	3	6	52
11:00	0	0	0	0	0	0	0	2	2	6	12	8	4	2	36
Total	0	0	33	54	153	201	399	497	1115	1709	1585	658	255	110	6769

	Percentile	15th	50th	85th	95th
	Speed	22	29	34	36

Mean Speed (Average)	29.7
10 MPH Pace Speed	24-33
Number in Pace	4623
Percent in Pace	68.3%
Number > 30 MPH	2608
Percent > 30 MPH	38.5%

Location : Cox Street 92160003
Location : South of Driveway
City/State: Hudson, MA
Direction: Combined

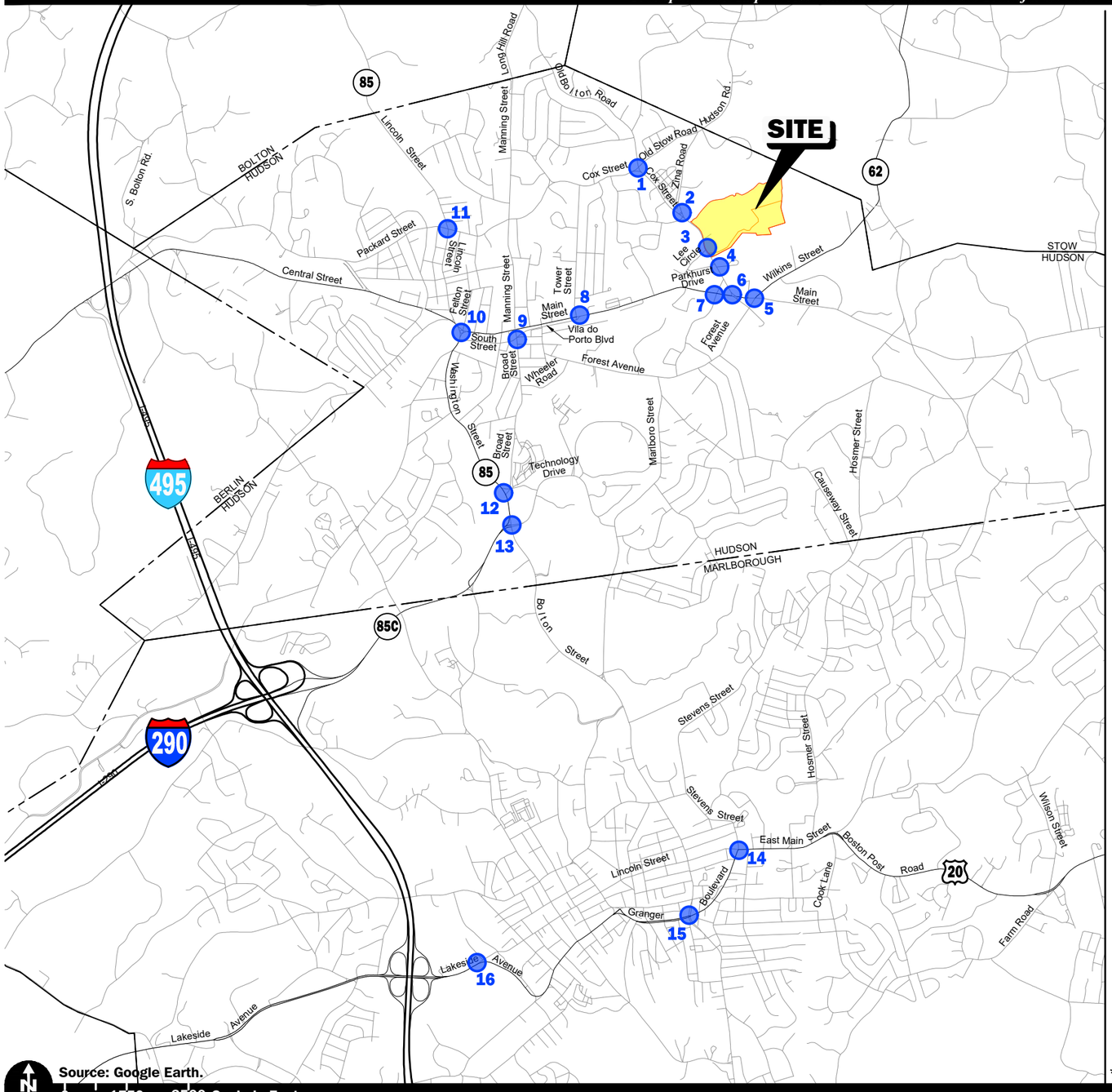
5/26/2022 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	Total
12:00 AM	0	0	0	0	0	0	0	2	2	4	4	4	0	0	16
1:00	0	0	0	0	0	0	0	0	0	3	7	2	1	2	15
2:00	0	0	0	0	0	0	0	0	1	5	0	1	0	1	8
3:00	0	0	0	0	0	0	0	0	1	1	3	2	0	0	7
4:00	0	0	0	0	0	0	1	1	3	6	5	3	1	0	20
5:00	0	0	0	0	0	1	3	1	16	20	33	14	3	7	98
6:00	0	0	1	2	1	3	5	12	32	105	105	40	11	5	322
7:00	0	0	1	3	18	16	36	38	108	140	119	44	14	8	545
8:00	0	0	7	4	24	27	44	58	149	169	103	13	6	3	607
9:00	0	0	1	1	8	17	39	22	45	94	74	20	8	8	337
10:00	0	0	2	3	8	14	32	34	57	86	62	18	10	6	332
11:00	0	0	1	5	14	20	30	39	54	90	67	28	14	4	366
12:00 PM	0	0	0	4	17	24	35	28	53	104	97	29	11	6	408
1:00	0	0	0	0	11	17	35	39	75	89	85	27	7	7	392
2:00	0	0	7	9	9	23	50	57	94	117	105	24	6	11	512
3:00	0	0	0	4	2	28	49	49	127	182	138	38	20	3	640
4:00	0	0	0	0	18	7	26	23	75	193	171	65	28	7	613
5:00	0	0	4	0	4	10	15	18	57	124	172	77	48	6	535
6:00	0	0	0	0	3	4	16	26	58	155	140	49	26	7	484
7:00	0	0	1	0	0	4	4	25	54	99	118	34	14	9	362
8:00	0	0	0	0	0	2	3	11	48	65	58	17	15	3	222
9:00	0	0	0	0	0	0	2	8	23	31	31	11	8	2	116
10:00	0	0	0	0	0	0	1	2	11	20	22	9	5	3	73
11:00	0	0	0	0	0	0	1	3	4	4	10	7	2	2	33
Total	0	0	25	35	137	217	427	496	1147	1906	1729	576	258	110	7063
			Percentile	15th	50th	85th	95th								
			Speed	22	29	33	36								
			Mean Speed (Average)	29.7											
			10 MPH Pace Speed	24-33											
			Number in Pace	4971											
			Percent in Pace	70.4%											
			Number > 30 MPH	2673											
			Percent > 30 MPH	37.8%											
Grand Total	0	0	58	89	290	418	826	993	2262	3615	3314	1234	513	220	13832
Stats			Percentile	15th	50th	85th	95th								
			Speed	22	29	33	36								
			Mean Speed (Average)	29.7											
			10 MPH Pace Speed	24-33											
			Number in Pace	9594											
			Percent in Pace	69.4%											
			Number > 30 MPH	5281											
			Percent > 30 MPH	38.2%											

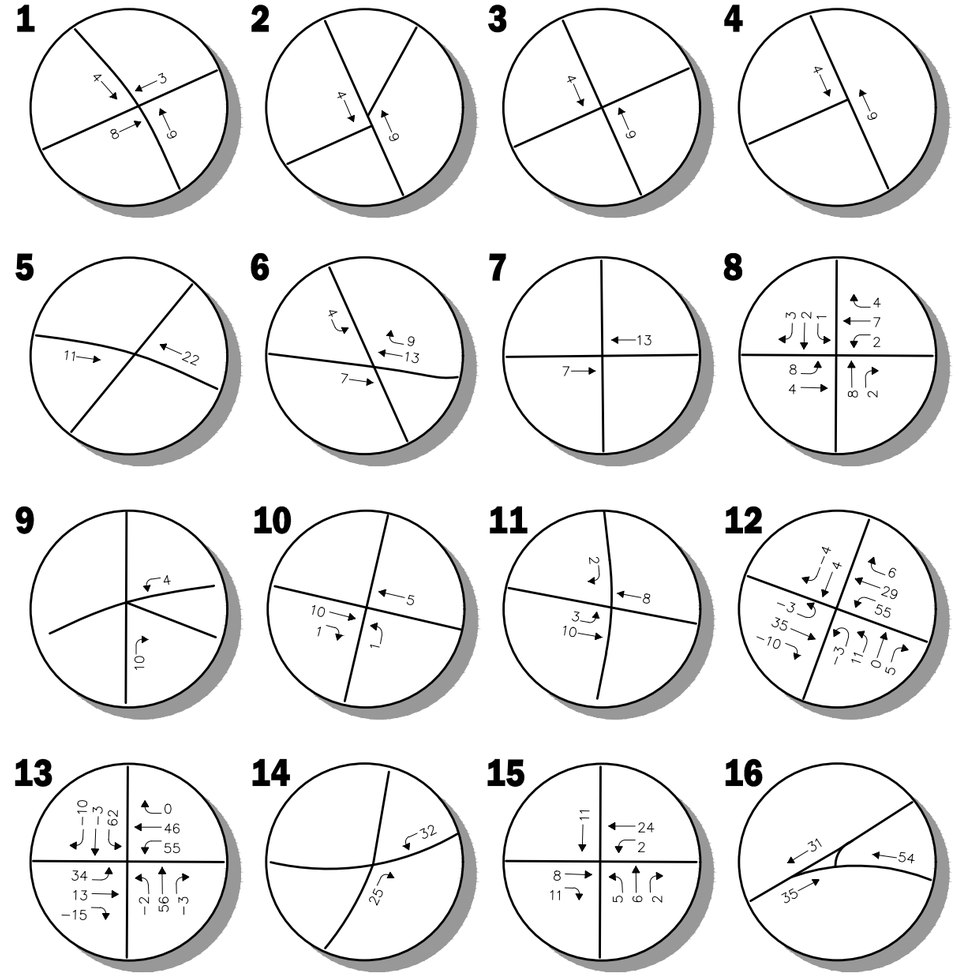
Attachment 7 - GROWTH RATE CALCULATIONS

General Background Traffic Growth - Daily Traffic Volumes

CITY/TOWN	ROUTE/STREET	LOCATION	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Annual Growth Rate
Hudson	Main Street	West of Lincoln Street	11,411	11,500	11,586	12,063	12,493	13,180	13,325	15,408	15,577	15,795	13,071	**2.95%**
Hudson	Wilkins Street	At Town Line	4,981	5,035	5,572	5,700	5,746	6,062	6,129	6,209	4,088	4,145	4,162	**-1.79%**
Hudson	Main Street	West of Tower Street	9,100	9,132	9,310	9,839	10,022	10,573	9,171	9,290				**0.66%**
Stow	Gleasondale Road	East of Rockbottom Road								4,843	4,896	4,965	4,985	**1.01%**
														0.61%

Attachment 8 - BACKGROUND DEVELOPMENT





Source: Google Earth.

0 1750 3500 Scale in Feet

*Illegal maneuver.

Figure A1

Background Development
Weekday Morning
Peak-Hour Traffic Volumes

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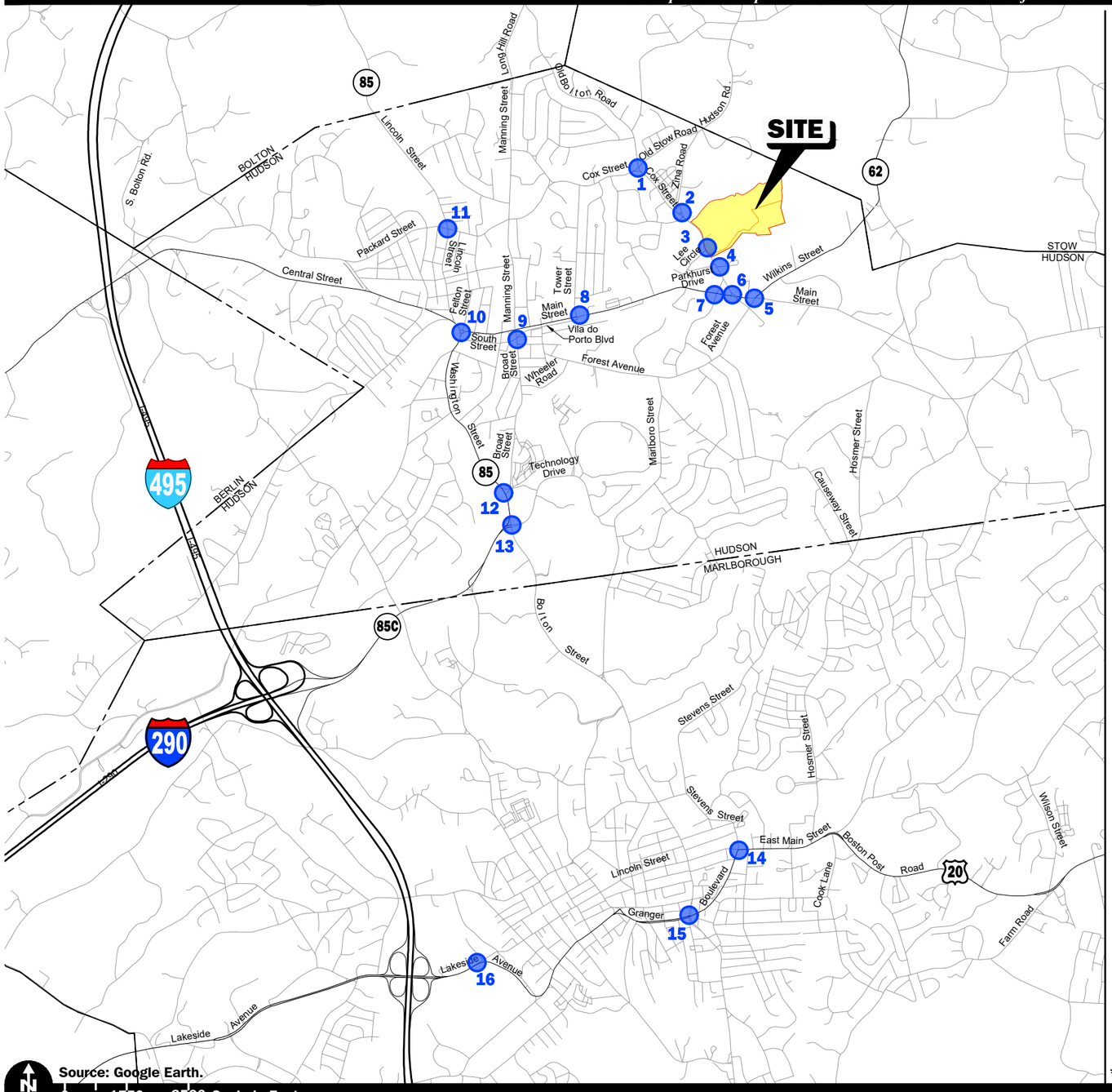

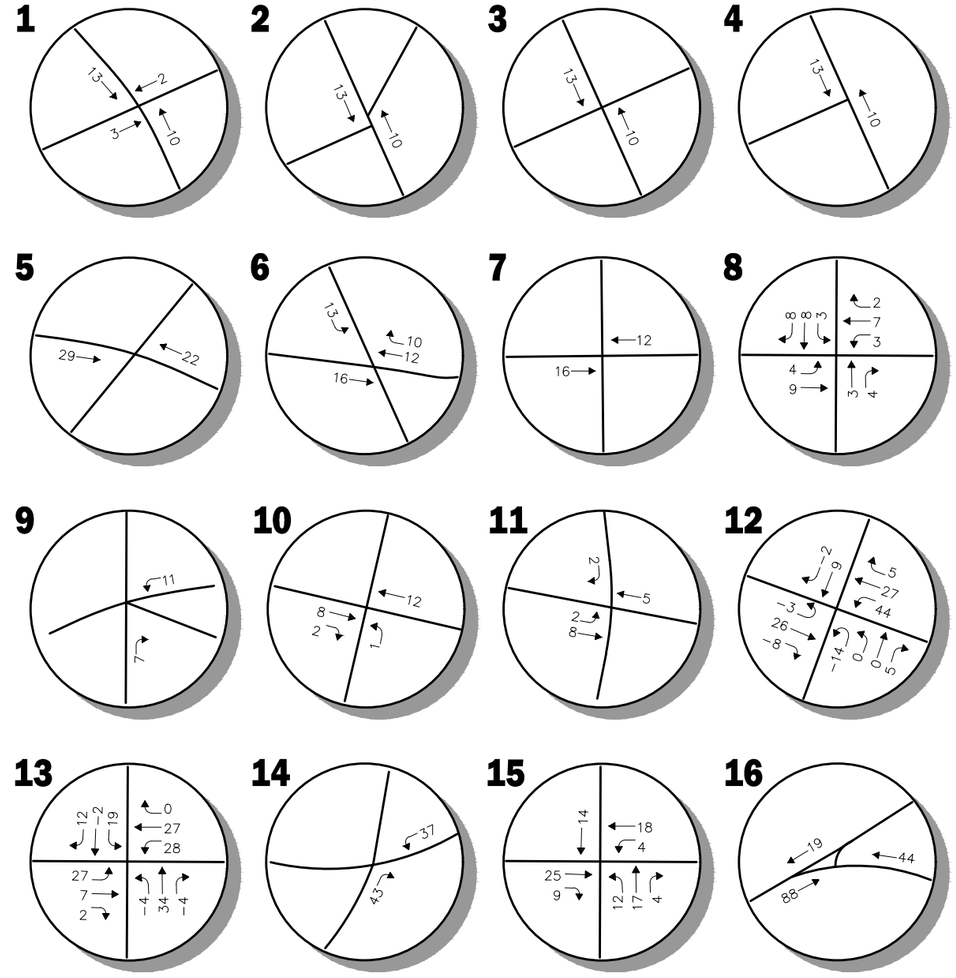

Source: Google Earth.

0 1750 3500 Scale in Feet

*Illegal maneuver.

Figure A2

Background Development
Weekday Evening
Peak-Hour Traffic Volumes

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Attachment 9 - TRIP GENERATION

Truck loads				
Time	Inboud	Outbound	Total	Volumes by hour
7:00:00 AM	2		2	
7:15:00 AM	1		1	
7:30:00 AM	1	1	2	
7:45:00 AM	3		3	8
8:00:00 AM	11		11	17
8:15:00 AM	6		6	22
8:30:00 AM	8		8	28
8:45:00 AM	1	1	2	27
9:00:00 AM				16
9:15:00 AM	6		6	16
9:30:00 AM	7		7	15
9:45:00 AM	1		1	14
10:00:00 AM	7	1	8	22
10:15:00 AM	3		3	19
10:30:00 AM	4		4	16
10:45:00 AM	4		4	19
11:00:00 AM	4	1	5	16
11:15:00 AM	5		5	18
11:30:00 AM	1		1	15
11:45:00 AM	2		2	13
12:00:00 PM	2	1	3	11
12:15:00 PM	2		2	8
12:30:00 PM	1	1	2	9
12:45:00 PM	3		3	10
1:00:00 PM	4		4	11
1:15:00 PM	1	1	2	11
1:30:00 PM	1		1	10
1:45:00 PM				7
2:00:00 PM	3		3	6
2:15:00 PM	3		3	7
2:30:00 PM	2	1	3	9
2:45:00 PM	1		1	10
3:00:00 PM	3	1	4	11
3:15:00 PM				8
3:30:00 PM	2		2	7
3:45:00 PM	2	1	3	9
4:00:00 PM				5
4:15:00 PM	1		1	6
4:30:00 PM	1	1	2	6
4:45:00 PM				3
5:00:00 PM	1		1	4
5:15:00 PM				3
5:30:00 PM	1	1	2	3
Total	**111**	**12**	**123**	

Daily		
IN	123	
OUT	123	
TOTAL	246	
AM		
IN	28	22%
OUT	28	
TOTAL	56	
PM		
IN	11	8%
OUT	11	
TOTAL	22	

Trip Generation Calculation

Job: Traffic Engineering and Transportation Planning Services - Hudson Waste Transfer Station - Hudson, Massachusetts
Job Number: 9216
Calculated By: Scott Thorton
Date: 9/7/2022

Vanasse & Associates inc
Transportation Engineers & Planners

	Daily Traffic Volume - Wednedday, May 25, 2022				AM Peak Traffic Volume - Wednedday, May 25, 2022				PM Peak Traffic Volume - Wednedday, May 25, 2022			
	Bikes and Motorcycles	Cars/Trailer + 2 axle long	Trucks	Total	Bikes and Motorcycles	Cars/Trailer + 2 axle long	Trucks	Total	Bikes and Motorcycles	Cars/Trailer + 2 axle long	Trucks	Total
Entering	5	251	118	374	1	35	18	54	2	37	10	49
Exiting	13	257	109	379	2	35	11	48	4	37	7	48
Total	18	508	227	753	3	70	29	102	6	74	17	97

	Scale Data (Truck trips) - Wednedday, May 5, 2022				
	Eastbound (In/out)			Daily Load (ton)	
	Inbound	Outbound	Total	Inbound	Outbound
Entering	111	12	123	318.92	309.62
Exiting	111	12	123		
Total	222	24	246		

Inbound Trip Projection

Inbound Tonnage (318.92 TPD) = Inbound trip (111 daily trips)
Future Tonnage (850 TPD) = (x)

318.92 = 111
850 = x
(X) = 295.84 Trips

Outbound Trip Projection

Outbound trip Tonnage (309.62 TPD) = Outbound trip (12 daily trips)
Future Tonnage (850 TPD) = (x)

309.62 = 12
850 = x
(X) = 32.94 Trips

		Trip Generation Summary									
		Existing Trips			Estimated Future trip			Employee Trip Increase	Net Increase		
		Inbound	Outbound	Total	Inbound	Outbound	Total		Inbound	Outbound	Total
Daily	**Entering**	111	12	123	296	34	330	7	185	22	214
	Exiting	111	12	123	296	34	330	7	185	22	214
	Total	222	24	246	592	68	660	14	370	44	428
		Existing Trips			**Estimated Future trip**			**Employee Trip Increase**	**Net Increase**		
		Inbound	**Outbound**	**Total**	**Inbound**	**Outbound**	**Total**		**Inbound**	**Outbound**	**Total**
AM	**Entering**	26	1	27	69	3	72	0	43	2	45
	Exiting	26	1	27	69	3	72	0	43	2	45
	Total	52	2	54	138	6	144	0	86	4	90
		Existing Trips			**Estimated Future trip**			**Employee Trip Increase**	**Net Increase**		
		Inbound	**Outbound**	**Total**	**Inbound**	**Outbound**	**Total**		**Inbound**	**Outbound**	**Total**
PM	**Entering**	9	1	10	24	3	27	0	15	2	17
	Exiting	9	1	10	24	3	27	0	15	2	17
	Total	18	2	20	48	6	54	0	30	4	34
	AM	23%	8%	22%	23%	9%	22%	0%	23%	9%	21%
	PM	8%	8%	8%	8%	9%	8%	0%	8%	9%	8%

Attachment 10 - SEMI-TRAILER ROUTE ANALYSIS

MEMORANDUM

TO: Stephen E. Wright, PE
Vice President
Sanborn Head & Associates, Inc.
1 Technology Park Drive
Westford, MA 01886

FROM: Scott W. Thornton, P.E. *and*
Jennifer Conners
Vanasse & Associates, Inc.
35 New England Business Center Drive
Suite 140
Andover, MA 01810-1066

DATE: February 26, 2024

REF: 9216

SUBJECT: Semi-Trailer Route Analysis
Proposed B-P Trucking Solid Waste Transfer Station and
Recycling Facility, Hudson, Massachusetts

Vanasse & Associates, Inc. (VAI) has prepared this memorandum to assess potential semi-trailer truck route options to avoid or minimize truck travel through Environmental Justice (EJ) communities in the town of Hudson, Massachusetts. These truck routes are associated with the proposed B-P Trucking Solid Waste Transfer Station and Recycling Facility located at 300 Cox Street in Hudson, Massachusetts (hereafter referred to as the "Project"). The proposed facility will replace the existing town-owned transfer station, which is located at the same site and operated by B-P Trucking. Specifically, this memo has been prepared as a supporting document in connection with the Project's Traffic Impact Assessment (TIA), prepared by VAI. The memo provides a comprehensive overview of existing and alternative routes for semi-trailer trucks which access the facility. The assessment includes a detailed analysis of each route, with a specific focus on critical intersections where turning movements for semi-trailer trucks were evaluated. The intersection analysis was conducted using AutoTURN simulations, which determine the feasibility of each route.

TRUCK ROUTES

The semi-trailer truck routes to and from the facility have been determined based on the current truck routes, existing road characteristics, and their proximity to EJ communities. There are two EJ community areas shown on the Massachusetts Environmental Policy Act (MEPA) EJ Map viewer that are located between the Project and regional roadways of I-495 and I-290. In order to determine alternate semi-trailer truck routes, several pathways within a 5-mile radius of the facility were analyzed. To minimize local traffic disruption, all semi-trailer trucks were routed towards the interstate highway for both inbound and outbound journeys. Additionally, an existing route was assessed for trucks heading toward the eastern Boston area. In terms of directions, due to the 17-ton capacity limit of the bridge on Cox Street over the Assabet River, semi-trailer trucks exiting the Hudson transfer station are required to turn left onto Cox Street and head south of the site. As a result, five routes were identified which are described below:

- ***Route 1*** – This route extends for approximately 4.9 miles connecting the transfer station to Exit 65 of I-495 at I-290. This route follows Cox Street, Forest Avenue, Marlboro Street, Reed Road, Technology Drive, and Route 85C, leading to Exit 65 of I-495 and I-290.

- ***Route 2*** – This route extends for approximately 4 miles connecting the transfer station to Exit 65 of I-495 at I-290, while partially passing through downtown Hudson. This route begins on Cox Street, proceeds along Main Street, Vila do Porto Boulevard, Broad Street, and Washington Street, and then joins Route 85C to reach I-495 and I-290.

- ***Route 3*** – This route, which is approximately 4.4 miles long, connects the transfer station to Exit 67 off I-495, passing through downtown Hudson. This route is the most direct, starting from Cox Street, moving through Main Street, Central Street, and Coolidge Street, and directly accessing I-495.

- ***Route 4*** – This route provides access for trucks arriving from or heading toward the eastern Boston area. It begins on Cox Street, moves through Main Street, follows Route 27 and Route 20, and then directly connects to I-95, leading them directly to their ultimate destination.

- ***Route 5*** – This route extends for approximately 8.2 miles and connects the transfer station to Exit 70 off I-495, passing through Gleasondale Village and the town of Stow. It begins on Cox Street, moves through Main Street, follows Route 62 and Route 117, and then directly accesses I-495.

These routes and the EJ communities are graphically depicted in Figure 1.

ROUTE 1 ASSESSMENT

Route 1 was initially selected due to its advantageous path, which bypasses the Main Street area of Hudson and avoids the downtown EJ community. However, based on field inventory, it was noted that semi-trailer trucks are likely to encounter difficulties in executing turning maneuvers at several intersections along this route. To quantify problematic truck turning maneuvers and to evaluate the route feasibility, AutoTURN software was employed at the critical intersections summarized below. The semi-trailer turning analysis for each intersection along Route 1 is detailed in Figures 2 through 8.

- ***Cox Street/Glendale Road at Main Street (Figures 2 through 4) –*** On this route, outbound trucks are required to make a left turn from Cox Street onto Main Street, while inbound trucks make a right turn from Main Street onto Cox Street. Additional analysis was conducted, showing outbound trucks traveling straight onto Glendale Road. The truck turning analysis indicates that trucks would generally not face difficulty navigating these turns; however, the analysis shows that outbound semi-trailers making a left turn onto Main Street would be prone to clipping the existing island on Cox Street with the back wheels of their trailers. The island consists of a raised flush concrete surface with a rumble strip at its edge. At present, there is no signage structure in place on the island, therefore, no major conflicts exist, as trucks are able to maneuver and drive across without any issues.

- ***Main Street at Forest Avenue/Wilkins Street (Figures 2 and 3)*** – For both inbound and outbound trips, the analysis shows that in order for semi-trailers to make turns, they are required to use the intersection's auxiliary turn lanes and encroach on opposing lanes at the end of their turns. Maneuvers can be executed at this intersection when there are no vehicles on both the Main Street and Forest Avenue approaches. However, from a safety standpoint, it is not recommended that semi-trailer trucks use this intersection to turn from Main Street to Forest Avenue or vice versa.

- ***Glendale Road at Forest Avenue (Figure 4) –*** The analysis shows that outbound semi-trailers (only direction possible on one-way Glendale) generally would not face difficulty navigating a right turn

onto Forest Avenue. However, it was noted that at the end of the turn, semi-trailers would tend to slightly encroach into the opposing lane on Forest Avenue.

- ***Forest Avenue at Marlboro Street (Figures 5 and 6) –*** The analysis indicates that inbound semi-trailers would need to utilize both left-turn and right-turn lanes on Marlboro Street to complete the right-turn movement onto Forest Avenue without encroaching into the sidewalk and a stone wall on the southeast corner of the intersection. The analysis also shows that outbound semi-trailers could execute the turn from Forest Avenue to Marlboro Street using the left-turn lane on Forest Avenue. However, similar to inbound trips, they would encounter a conflict with the opposing left-turn lane on Marlboro Street near the STOP bar.

- ***Marlboro Street at Reed Road (Figures 7 and 8)*** – The analysis indicates that inbound semi-trailers are capable of executing the left turn from Reed Road's exclusive left turn lane onto Marlboro Street. However, this maneuver may encroach with the southbound through traffic lane on Marlboro Street upon completing the turn. For the reverse maneuver, outbound semi-trailers would need to either use both lanes on Marlboro Street to complete the right turn onto Reed Road, resulting in a conflict with left-turning traffic on Reed Road, or run over the sidewalk to avoid the Reed Road approach lanes to the intersection.

Overall, across all studied intersections along Route 1, it was found that if semi-trailers were to use this route, they would often obstruct adjacent lanes at the start of their turns, encroach on opposing lanes at the end of their turns, and/or could affect adjacent curbs or sidewalks during the turning process. While it is technically possible to navigate this route, it is important to emphasize that, from a safety standpoint, we strongly discourage its use.

ROUTE 2 ASSESSMENT

Route 2 represents an existing semi-trailer route currently used by B-P that serves as the connecting route between the existing transfer station and Exit 65A of I-495 (Hudson/Route 85 exit). This route is included in the intersection analysis because it represents an option for continued use by B-P in connection with the proposed transfer station operations. As such, an intersection evaluation along this route was performed to interpret its feasibility in the same manner as Route 1's feasibility was evaluated. To that end, AutoTURN software was employed at the critical intersections summarized below. The semi-trailer turning analysis for each intersection along Route 2 is detailed on Figures 9 through 12.

- ***Main Street at Cox Street/Mackin Street (Figures 9A and 9B):***

    - ***Outbound trip - Main Street at Cox Street/Mackin Street:*** Outbound semi-trailers from Cox Street to Main Street currently have two exit options: one via Mackin Street (currently used by B-P), a one-way street, and the other via the Cox Street intersection with Main Street (not currently used by B-P). At present, outbound semi-trailers exiting Mackin Street are required to drive in the opposing lane to make their turn, waiting until both directions of Main Street are clear before executing the turn. This maneuver is not recommended as it increases the risk of accidents. Therefore, in order to improve overall safety at this location it is recommended to install appropriate warning signage, such as Manual on Uniform Traffic Control Devices (MUTCD) [1] designation W8-6 (Trucks Crossing), along

[1] *Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, DC; 2009.

Main Street (see Figure 9A). This will alert motorists driving along Main Street to the possibility of trucks crossing at the intersection, thereby improving overall traffic safety.

At the intersection of Cox Street and Main Street, outbound semi-trailers are likely to encroach into the eastbound Main Street opposing lane during their right turn, potentially conflicting with vehicles stopped at the stop bar on the eastbound approach of Main Street (Figure 9B). It is also important to note that trucks are shown to pass over the existing island on Cox Street during the turn . The island consists of a raised island with a rumble strip at its edge and no signage in place; therefore, trucks are able to maneuver and drive over this island.

In collaboration with the Town of Hudson Department of Public Works, we have assessed various improvement scenarios, and the following improvements are recommended to enhance safety at this intersection:

- It is recommended that the Main Street eastbound stop bar be relocated (approximately 20 ft) to the west of the intersection, to reduce the level of encroachment from B-P's outbound semi-trailers.

- In order to allow trucks to safely navigate the turn, it is also recommended that the existing scored concrete island be extended and replace the existing raised island.

These adjustments, shown on Figure 9B, will alleviate major conflicts with opposing traffic, resulting in smoother and safer turns for outbound semi-trailers.

- ***Inbound trip - Main Street at Cox Street***: Inbound semi-trailers are required to make a left turn from Main Street onto Cox Street. The truck turning analysis indicates that inbound semi-trailers, similar to the outbound trucks, may encounter a minor issue where the back wheels of their trailers drive over the existing island. As mentioned previously, trucks are able to maneuver and drive over the island (see 9B), which the proposed island change noted above will address. The inbound trucks wheels are shown to cross the centerline on Cox Street but this is not considered problematic**.**

- ***Main Street at Tower Street and Vila do Porto Boulevard (Figure 10) –*** The truck turning analysis indicates that inbound semi-trailers are able to navigate the intersection without encroachment. Outbound semi-trailers are required to turn left using both the left-turn and through/right-turn lanes on the westbound approach of Main Street. However, if the truck uses both approach lanes equally, the turn can be accomplished without smaller vehicles bypassing the truck on the left or the right.

- ***Broad Street at South Street and Loring Street and Vila do Porto Boulevard (Figure 11) –*** The truck turning analysis indicates that semi-trailers traveling both inbound and outbound do not encounter any difficulties in navigating the intersection.

- ***Washington Street at Broad Street (Figure 12) –*** The truck turning analysis indicates that inbound semi-trailers navigate the rotary without difficulty. However, outbound semi-trailers need to utilize both lanes on the approach to the rotary to transition smoothly into the rotary and effectively merge

onto the southbound leg of Washington Street. This is similar to the situation at Main Street and Vila do Porto Boulevard and should not present safety conditions since smaller vehicles will not be able to bypass the truck at the approach.

Upon a thorough examination of all studied intersections along Route 2, it becomes clear that with the proposed improvements, trucks can safely and efficiently navigate throughout the route without causing substantial disruption to the main traffic flow.

ROUTE 3 ASSESSMENT

Route 3 represents an existing semi-trailer route currently used by B-P that serves as the connecting route between the existing transfer station and Exit 67 of I-495 (Berlin, Hudson/Route 62 exit). This route, which overlaps Route 2 from the transfer station site up to the Main Street at Tower Street and Vila do Porto Boulevard intersection, is included in the intersection analysis because it represents an option for continued use by B-P in connection with the proposed transfer station operations. The additional critical intersection associated with Route 3 is limited to Washington Street at Main Street (the rotary in downtown Hudson). The total number of intersections evaluated in connection with the Route 3 feasibility assessment, including the overlapping intersection associated with Route 2, are summarized below.

- ***Main Street at Cox Street/Mackin Street (Figures 9A and 9B)*** – See summary presented under the Route 2 Assessment above.

- ***Washington Street at Main Street (Figure 13)*** **–** For this intersection, outbound semi-trailers are required to use both Main Street approach lanes as with other intersections, enter the rotary, and take the first exit to continue on Main Street. Conversely, on their inbound journey, semi-trailers from Main Street exit the rotary at the second exit to continue on Main Street. The truck turning analysis indicates that semi-trailers traveling both inbound and outbound encounter no more difficulties than at the Washington Street rotary or the Main Street/Vila do Porto Boulevard intersection in navigating the intersection.

Upon thorough examination of the critical study intersection along Route 3, VAI concludes that semi-trailers can navigate turns efficiently without causing substantial disruption to the main traffic flow.

ROUTE 4 ASSESSMENT

The fourth route evaluated is an existing semi-trailer route used by B-P that provides access for trucks arriving from or heading toward the eastern Boston area. It begins on Cox Street, moves through the east direction of Main Street, follows Route 27 and Route 20, and then directly connects to I-95, leading them directly to their ultimate destination. This route bypasses environmental justice (EJ) communities in the immediate area, and no constraints that would impede semi-trailer truck traffic were observed within the immediate study area along this route.

ROUTE 5 ASSESSMENT

The fifth route evaluated traverses Route 62 and Route 117 through Gleasondale Village and Stow, and, unlike Routes 1, 2, and 3, avoids all EJ communities in the immediate area. However, based upon detailed examination of this alternative, key constraints were identified that compromise its feasibility. This route crosses three bridges, with weight restrictions ranging from 19 to 36 tons, which is inadequate for semi-

trailer traffic. Figure 14 depicts a map highlighting the location and truck tonnage restriction for each specific constraint located along this route.

CONCLUSIONS

Based upon VAI's route analysis, we have concluded that Routes 1 and 5 are not suitable for use by semi-trailer trucks. In all the studied intersections along Route 1, it was found that if semi-trailers were to use this route they would, at various locations, obstruct adjacent lanes at the start of their turns, encroach on opposing lanes at the end of their turns, and/or affect adjacent curbs or sidewalks during the turning process. While it is technically possible to navigate this route, it is important to emphasize that, from a safety standpoint, we strongly discourage its use. Given the identified weight restrictions along Route 5, this alternative route also does not offer a feasible solution for accommodating the semi-trailer traffic.

Our analysis of Routes 2, 3, and 4 has led us to conclude that these routes are viable for use. The analysis showed that with the recommended stop bar relocation at the eastbound leg of the intersection of Main Street with Cox Street and the replacement of the raised concrete island with an extension to the scored concrete center island, semi-trailers can navigate turns efficiently throughout the route without causing substantial disruption to the main traffic flow. Furthermore, to enhance overall safety on Mackin Street for outbound trucks that may use that road, it is recommended to install appropriate warning signage, such as the W8-6 sign, along Main Street. This would alert motorists on Main Street to the potential for trucks crossing at the intersection.

It is anticipated that Routes 2 and 3 will be the most utilized, with both experiencing similar levels of usage, whereas Route 4 is expected to be used less frequently. As described, both Routes 2 and 3 partially traverse and pass through Hudson's Main Street and close to or through the downtown area. This route is necessary, as no other routes were found to effectively avoid these areas. While navigating a busy area like Main Street presents challenges, these routes have been determined to be the most viable for maintaining B-P's transfer station operations for both existing and proposed (new transfer station) conditions. Although Route 4 is anticipated to have lower usage, it remains a feasible option for vehicles headed eastward toward Boston. This is attributed to its ability to avoid EJ communities and the absence of any obstacles that might affect semi-trailer truck traffic.

cc: File

Semi-trailer AutoTURN Route Analysis - Hudson Waste Transfer Station - Hudson, Massachusetts

Legend:

- SEMI-TRAILER - ROUTE 1
- SEMI-TRAILER - ROUTE 2 (Currently Used)
- SEMI-TRAILER - ROUTE 3 (Currently Used)
- SEMI-TRAILER - ROUTE 4 (Currently Used)
- SEMI-TRAILER - ROUTE 5
- EJ COMMUNITIES
- AUTOTURN ANALYSIS LOCATION

1-MILE RADIUS

5-MILE RADIUS

SITE

Figure 9A and Figure 9B

Figure 10

Figure 11

Figure 12

Figure 13

Figures 2 to 4

Figures 5 and 6

Figures 7 and 8

117 85 62 85C 495 290

EXIT 70 EXIT 67 EXIT 65

Main St (Rt. 117) Great Rd (Rt. 117) Hudson Rd (Rt. 85) Gleasondale Rd. (Rt. 62) Long Hill Rd Teele Rd Old Bolton Rd Lincoln St. (Rt. 85) S. Bolton Rd Cox St. Wilkins St. (Rt. 62) Coolidge St. (Rt. 62) Central St. (Rt. 62) Packard Main St. (Rt. 62) Washington St. (Rt. 85) Broad St. Forest Ave. Maple St. Maynard Rd Hudson Rd Jackson St. Old Bolton Rd Main St Marlboro St. Causeway St. Bolton St. (Rt. 85) Stevens St. Rt. 85C

BOLTON STOW HUDSON BERLIN HUDSON MARLBOROUGH STOW HUDSON STOW MAYNARD MAYNARD SUDBURY HUDSON SUDBURY

MAYNARD STOW HUDSON BERLIN SUDBURY MARLBOROUGH

Not to scale

Figure 1

Semi-Trailer Haul Routes
To/From Hudson Transfer Station
Key Map

Vanasse & Associates inc

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Semi-trailer AutoTURN Route Analysis - Hudson Waste Transfer Station - Hudson, Massachusetts

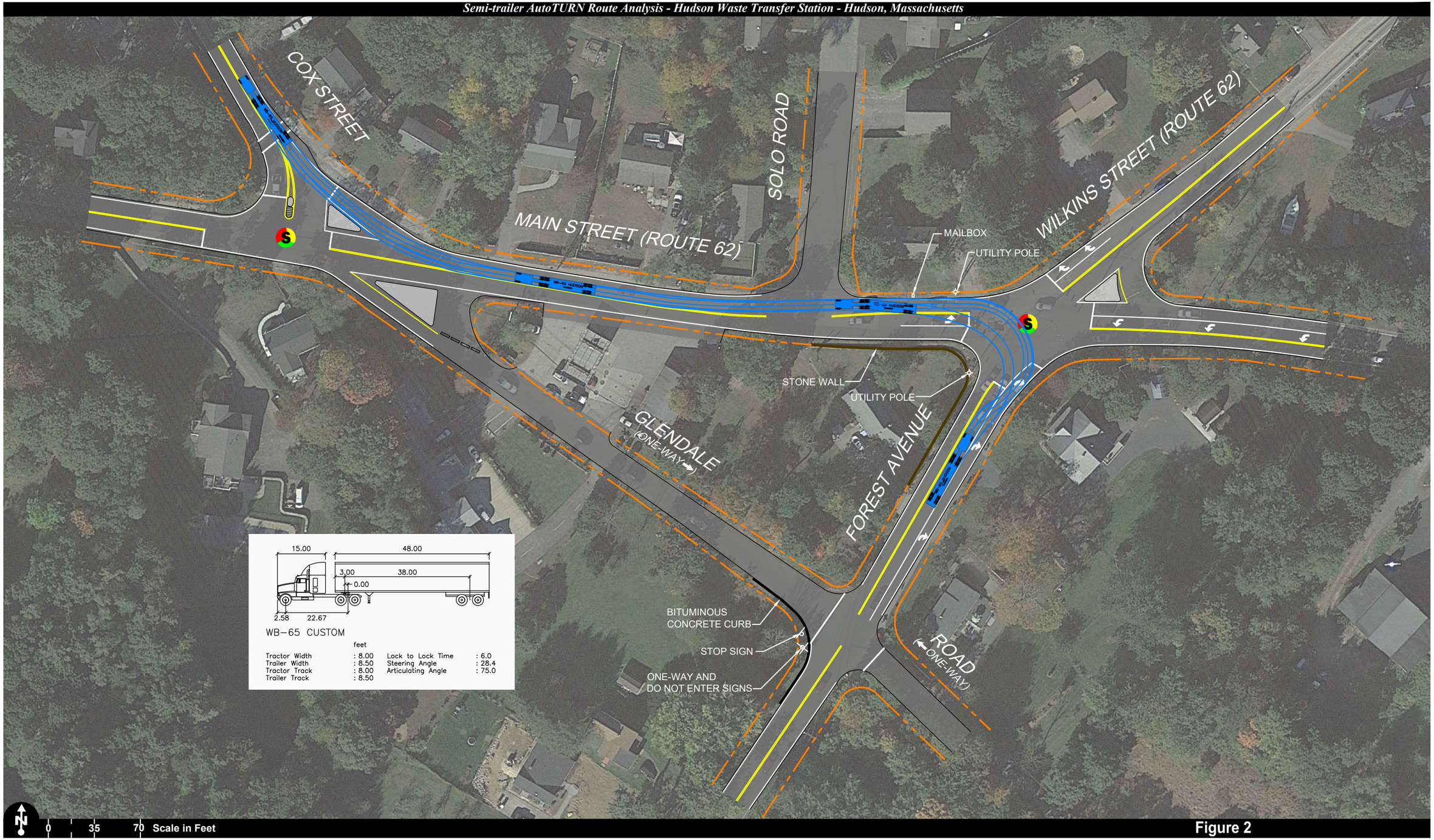

Figure 2

Truck Turning Analysis - Inbound
Main Street at Forest Avenue and
Cox Street Lane Impacts

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COX STREET

SOLO ROAD

MAIN STREET (ROUTE 62)

WILKINS STREET (ROUTE 62)

MAILBOX

UTILITY POLE

STONE WALL

UTILITY POLE

GLENDALE
(ONE-WAY)

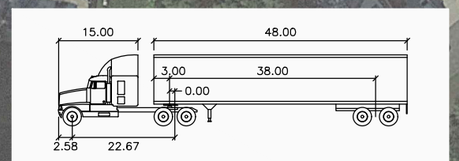
FOREST AVENUE

ROAD
(ONE-WAY)

BITUMINOUS
CONCRETE CURB

STOP SIGN

ONE-WAY AND
DO NOT ENTER SIGNS



WB–65 CUSTOM

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

N

0 35 70 Scale in Feet

Figure 3

**Truck Turning Analysis - Outbound
Main Street at Forest Avenue and
Cox Street Lane Impacts**

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Semi-trailer AutoTURN Route Analysis - Hudson Waste Transfer Station - Hudson, Massachusetts

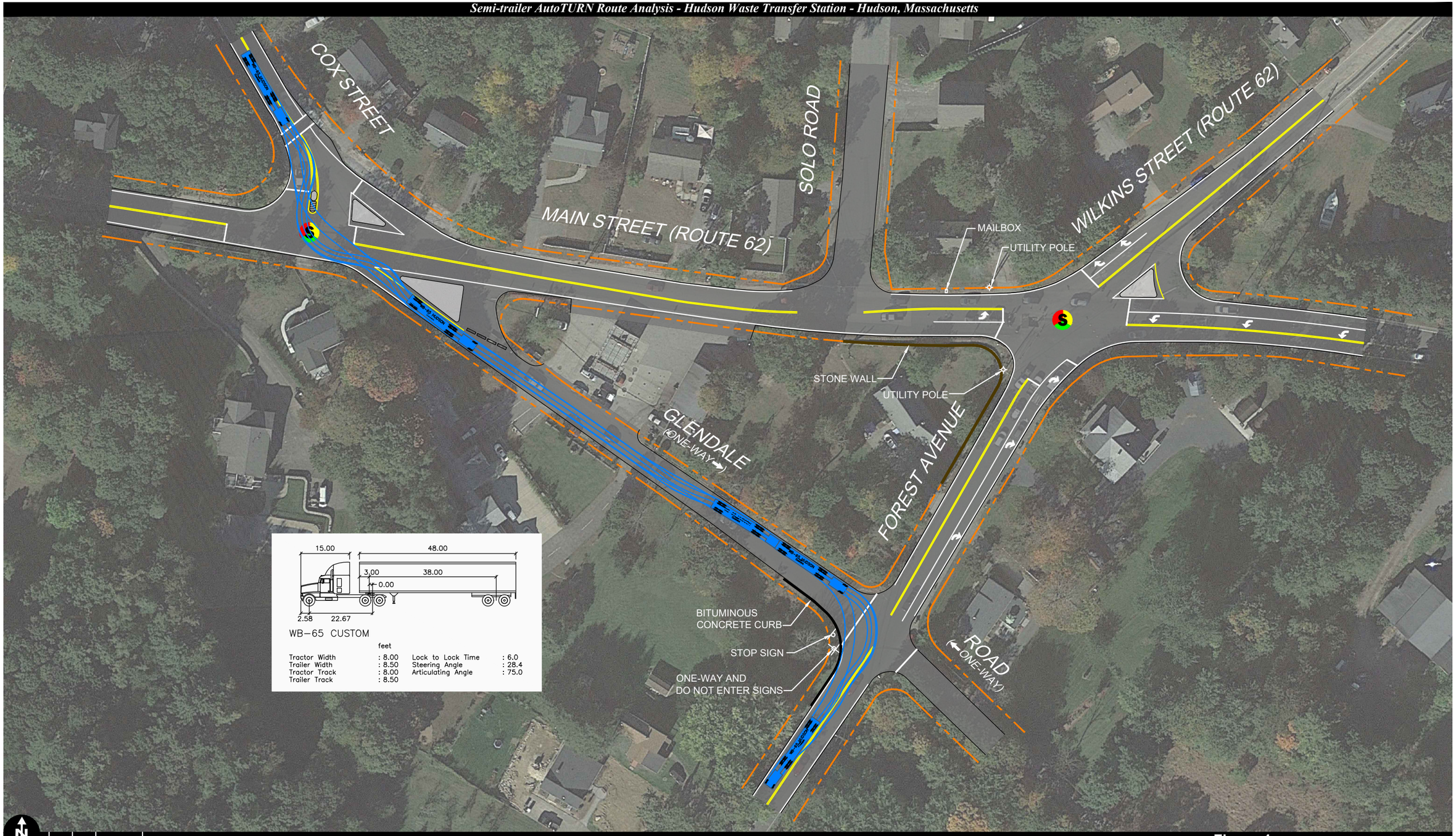

Figure 4

Truck Turning Analysis - Outbound
Glendale Road at Forest Avenue
Lane Impacts

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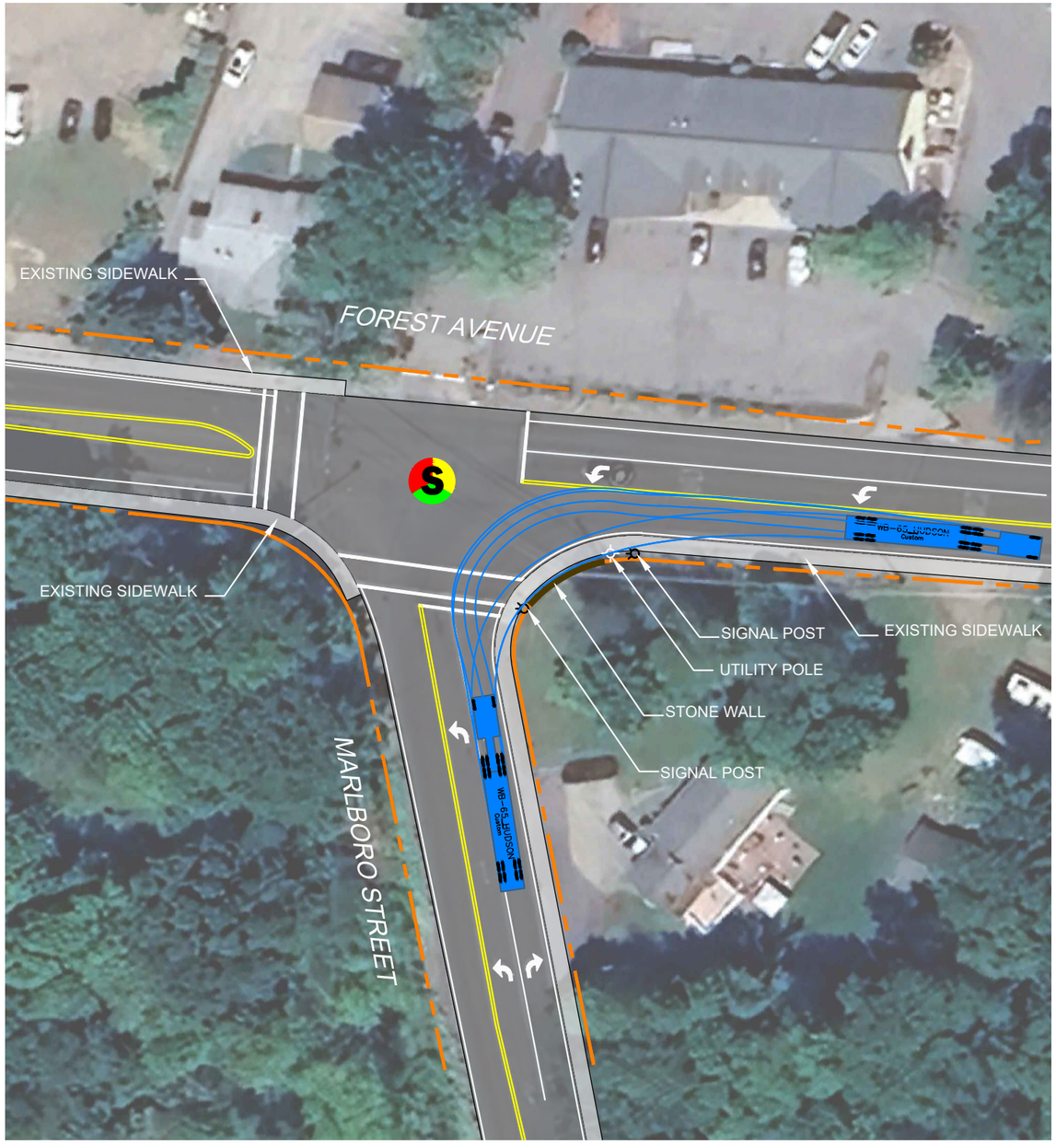

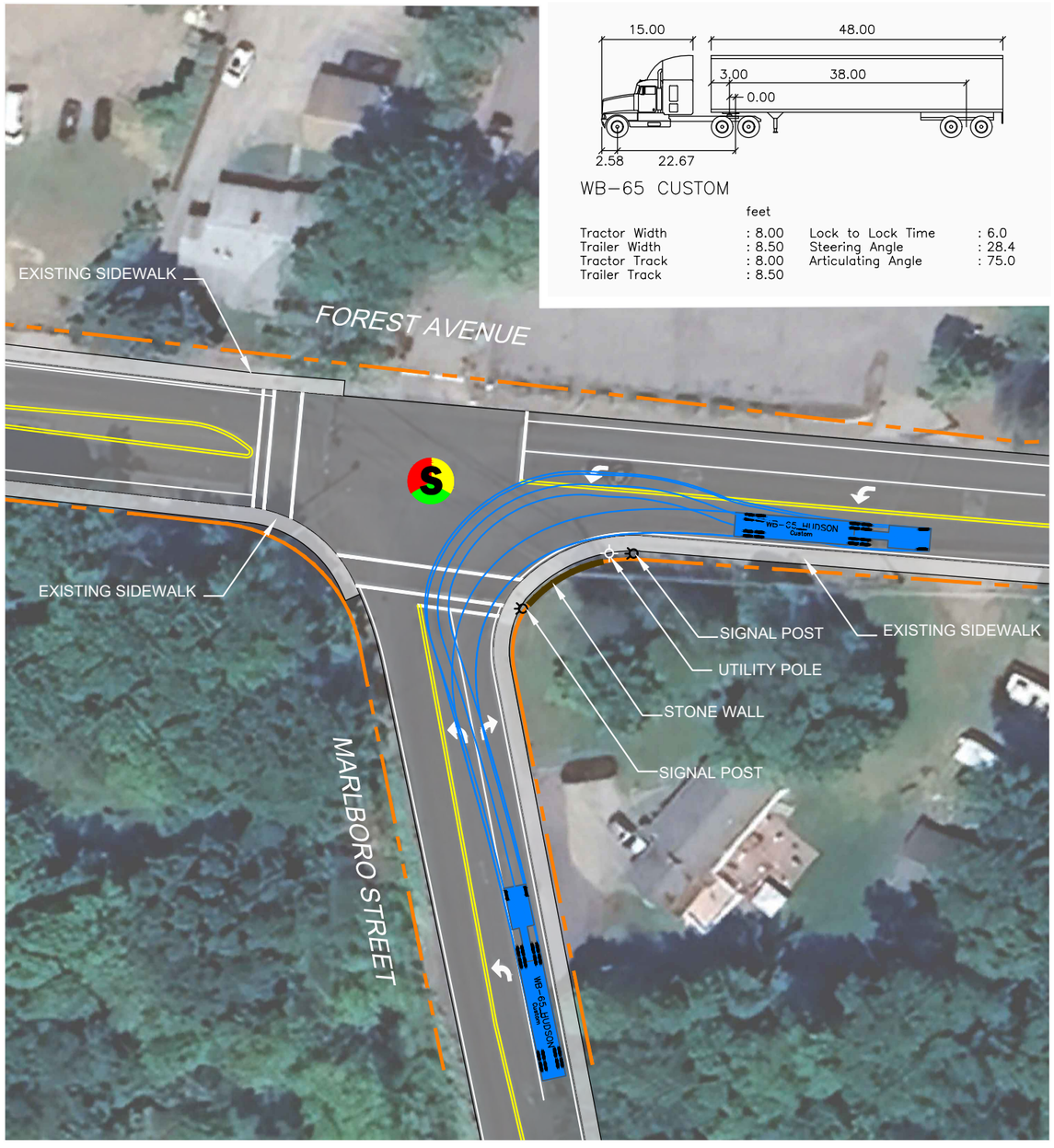

WB–65 CUSTOM

feet

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Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

N 0 25 50 Scale in Feet

Figure 5

Truck Turning Analysis - Inbound
Forest Avenue at Marlboro Street
Curb Impacts

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WB–65 CUSTOM

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

Figure 6

Truck Turning Analysis - Outbound
Forest Avenue at Marlboro Street
Lane Impacts

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Semi-trailer AutoTURN Route Analysis - Hudson Waste Transfer Station - Hudson, Massachusetts

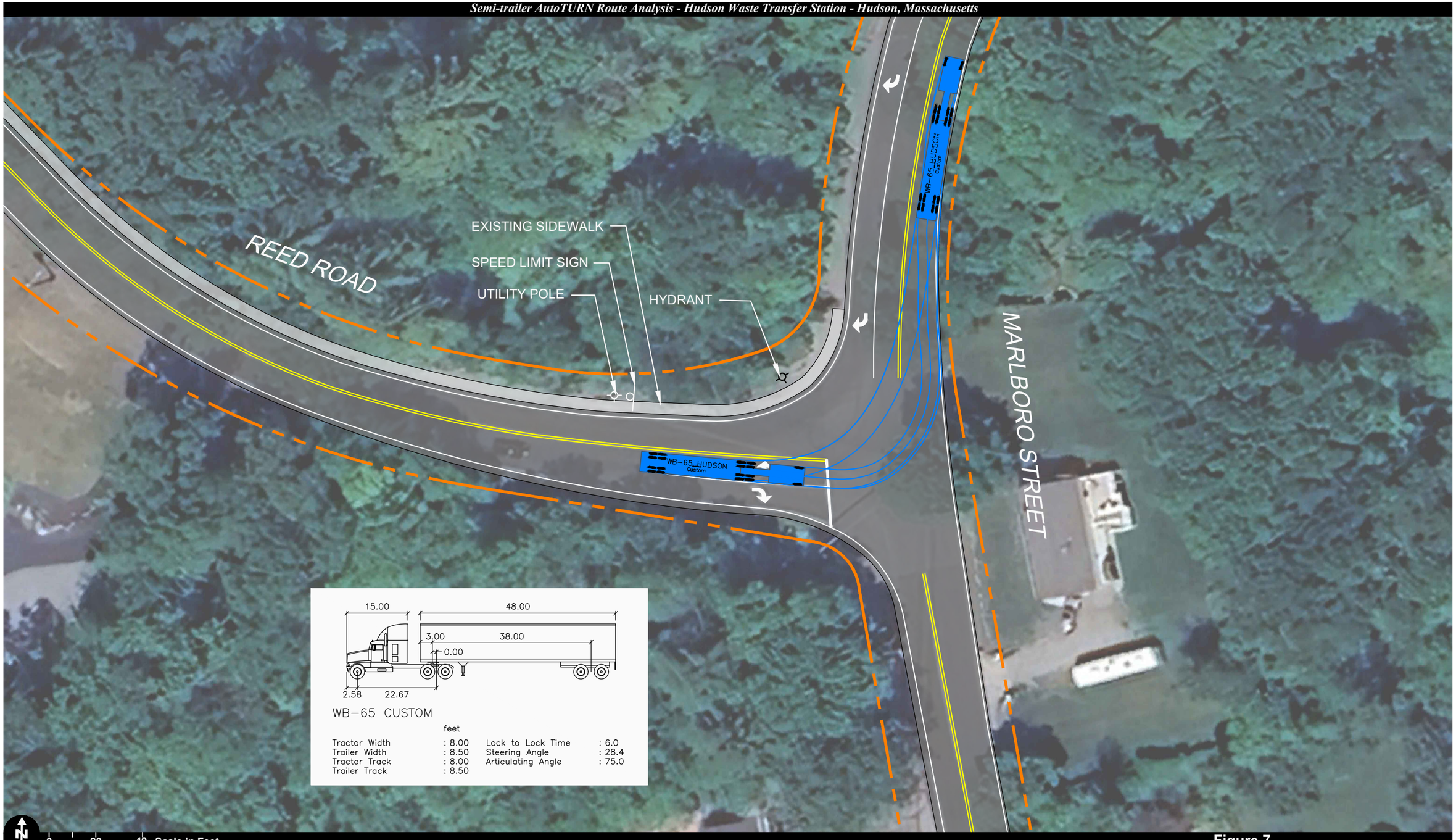

Figure 7

Truck Turning Analysis - Inbound
Marlboro Street at Reed Road
Lane Impacts

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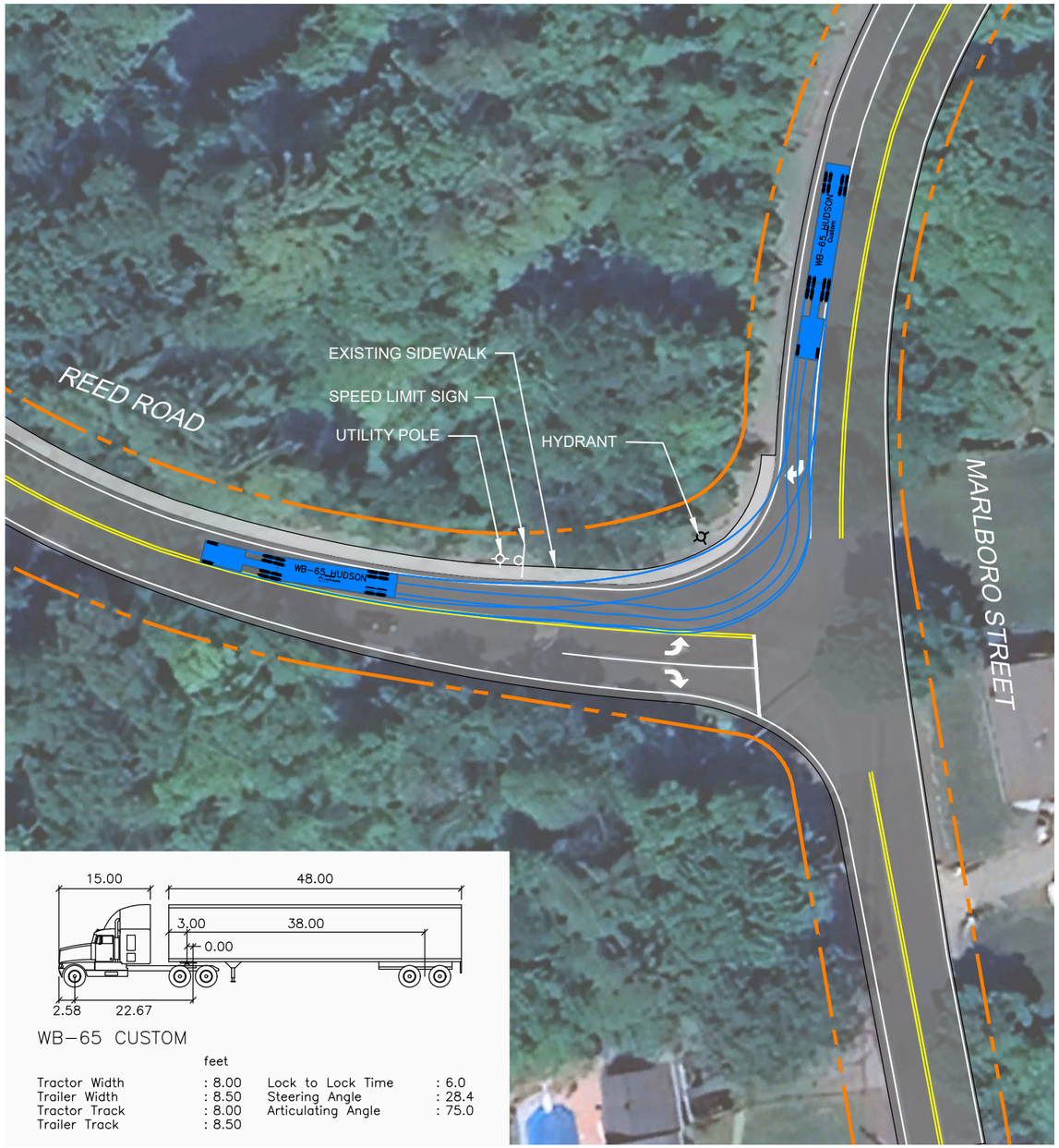

WB–65 CUSTOM

feet

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Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

0 20 40 Scale in Feet

Figure 8

Truck Turning Analysis - Outbound
Marlboro Street at Reed Road
Lane Impact

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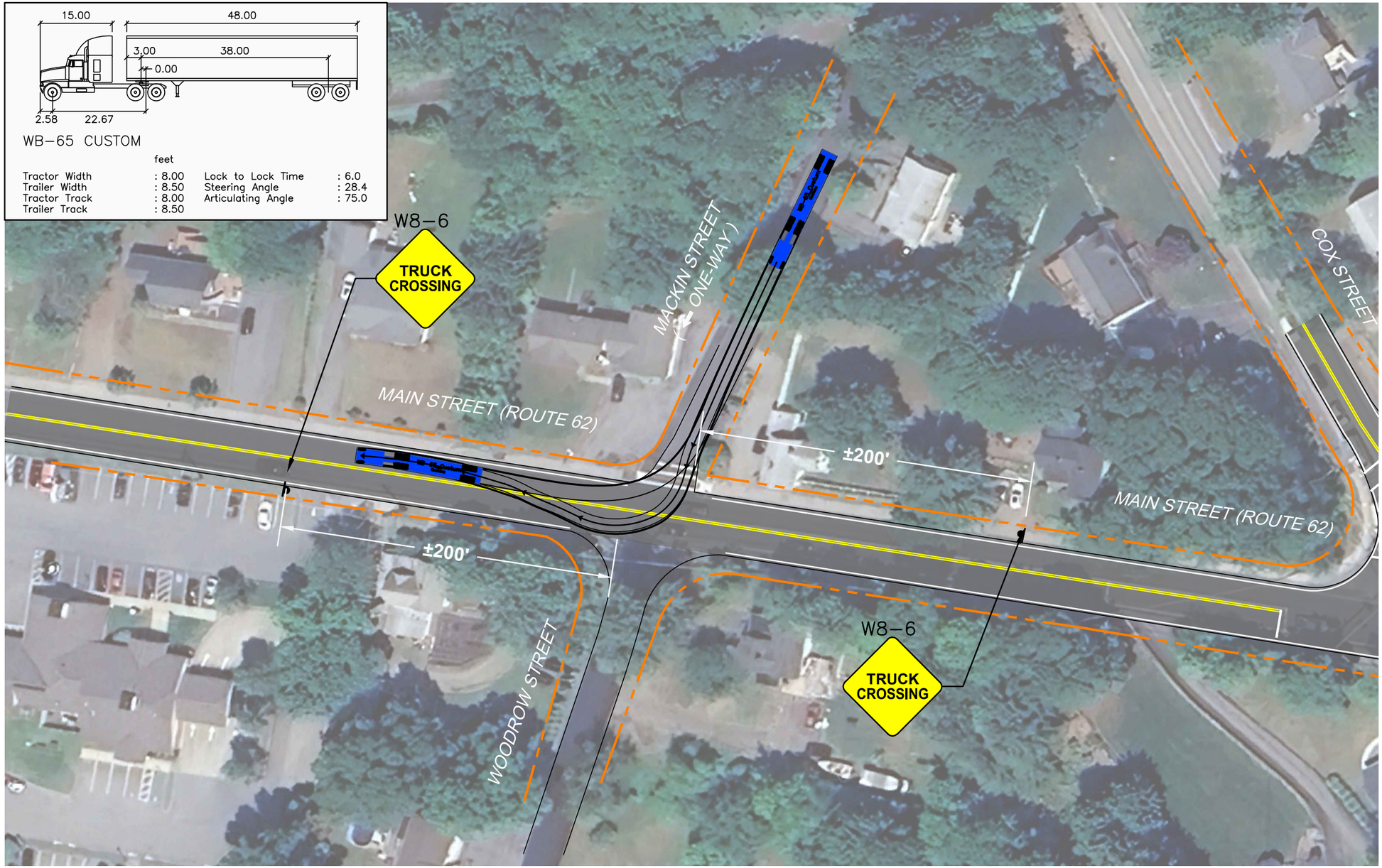

SEMI-TRAILER OUTBOUND TRIP

N 0 30 60 Scale in Feet

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Figure 9A

Truck Turning Analysis - Outbound Trip
Main Street at Mackin Street

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WB–65 CUSTOM

feet

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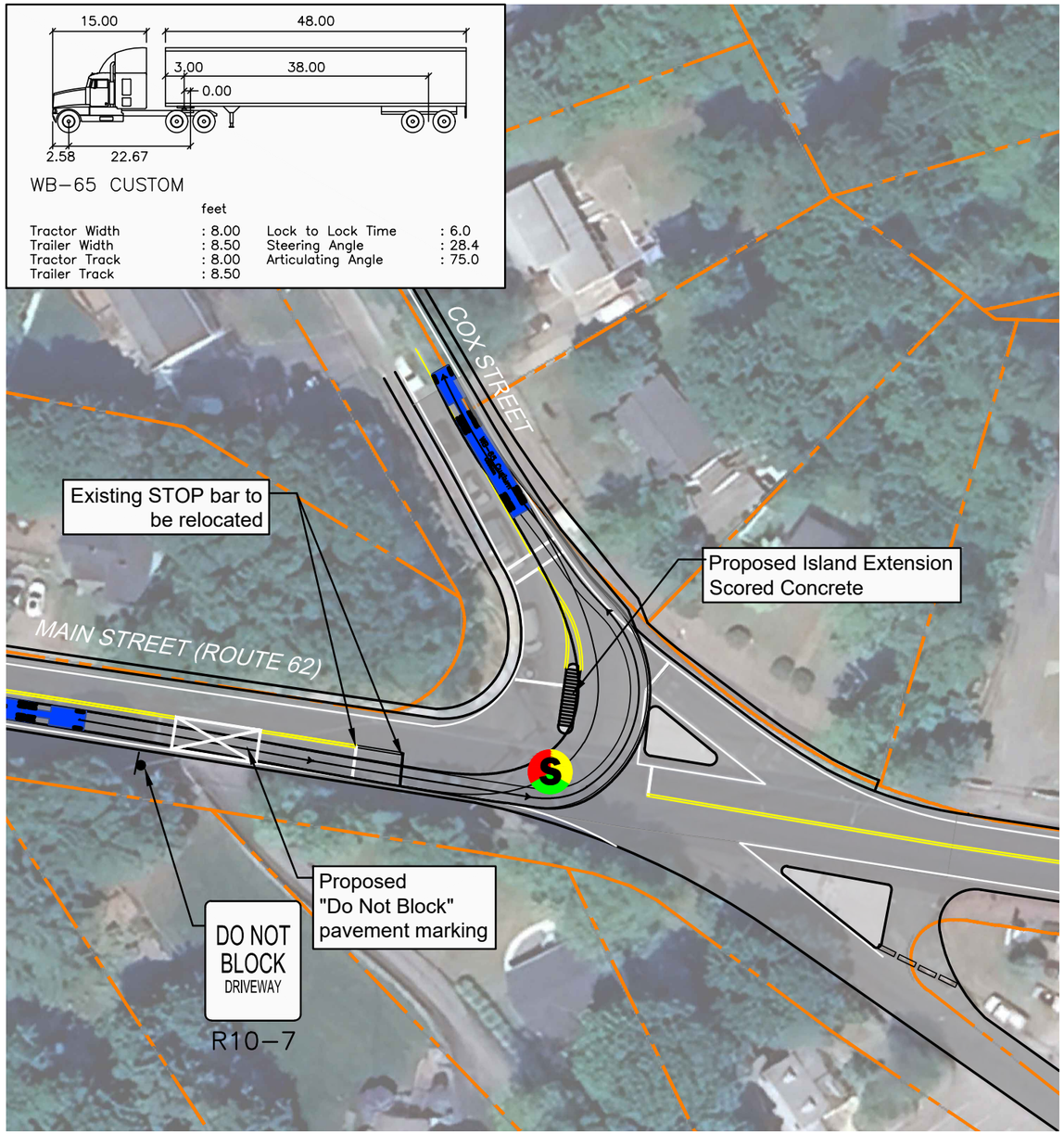

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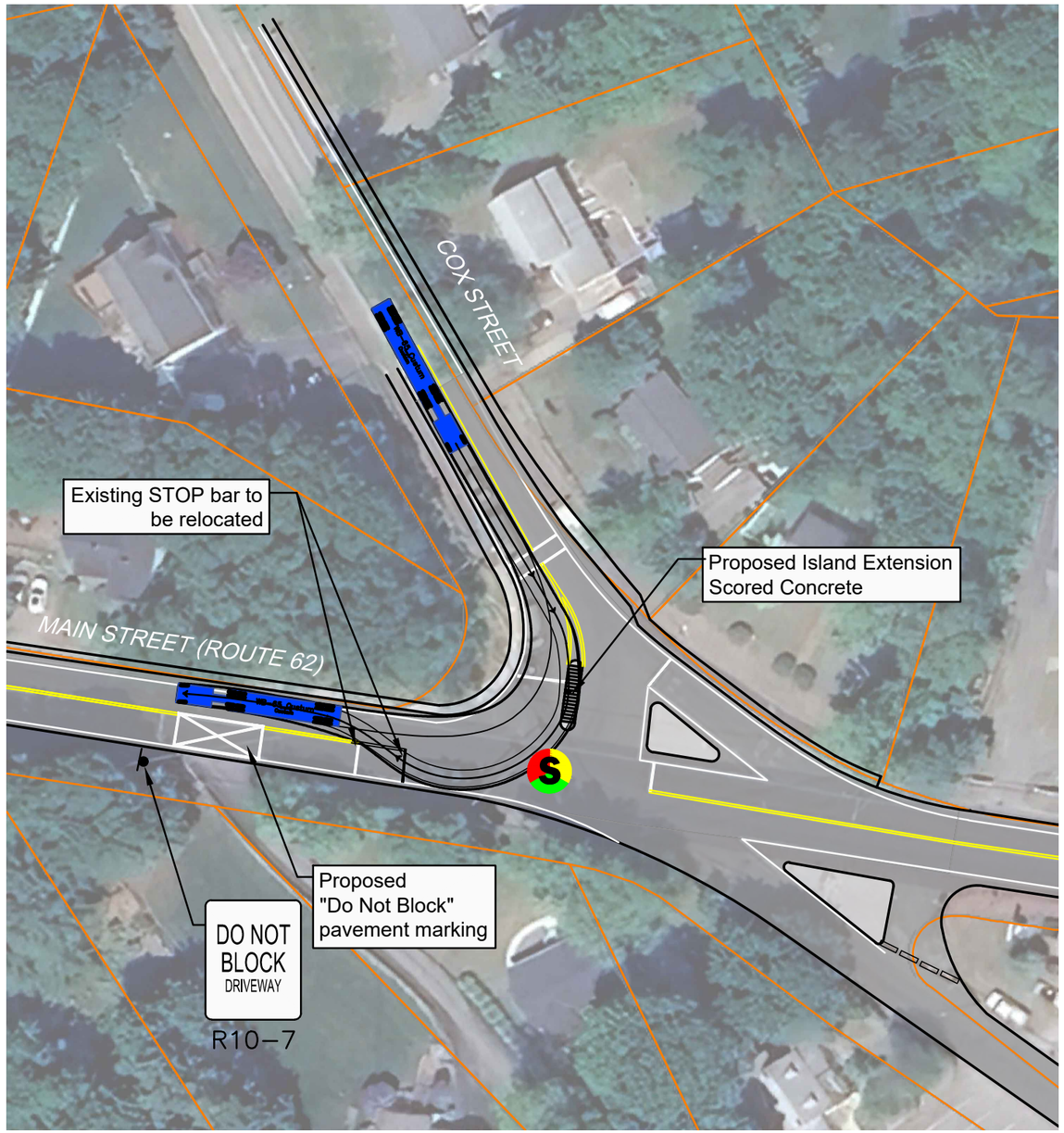

SEMI-TRAILER OUTBOUND TRIP

N

0 30 60 Scale in Feet

Figure 9B

Conceptual Improvement Plan
Truck Turning Analysis -
Inbound and Outbound Trip
Main Street at Cox Street

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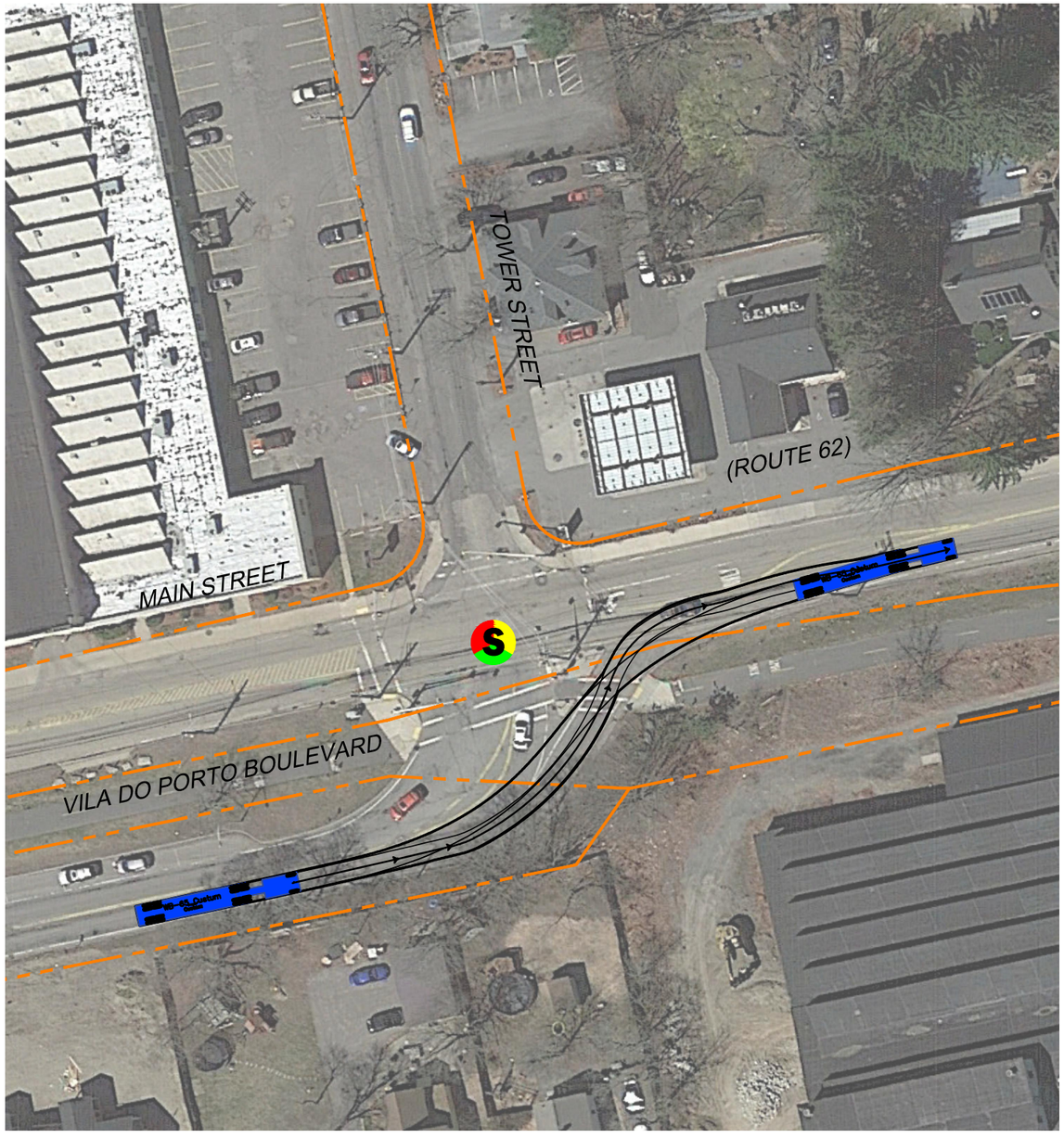

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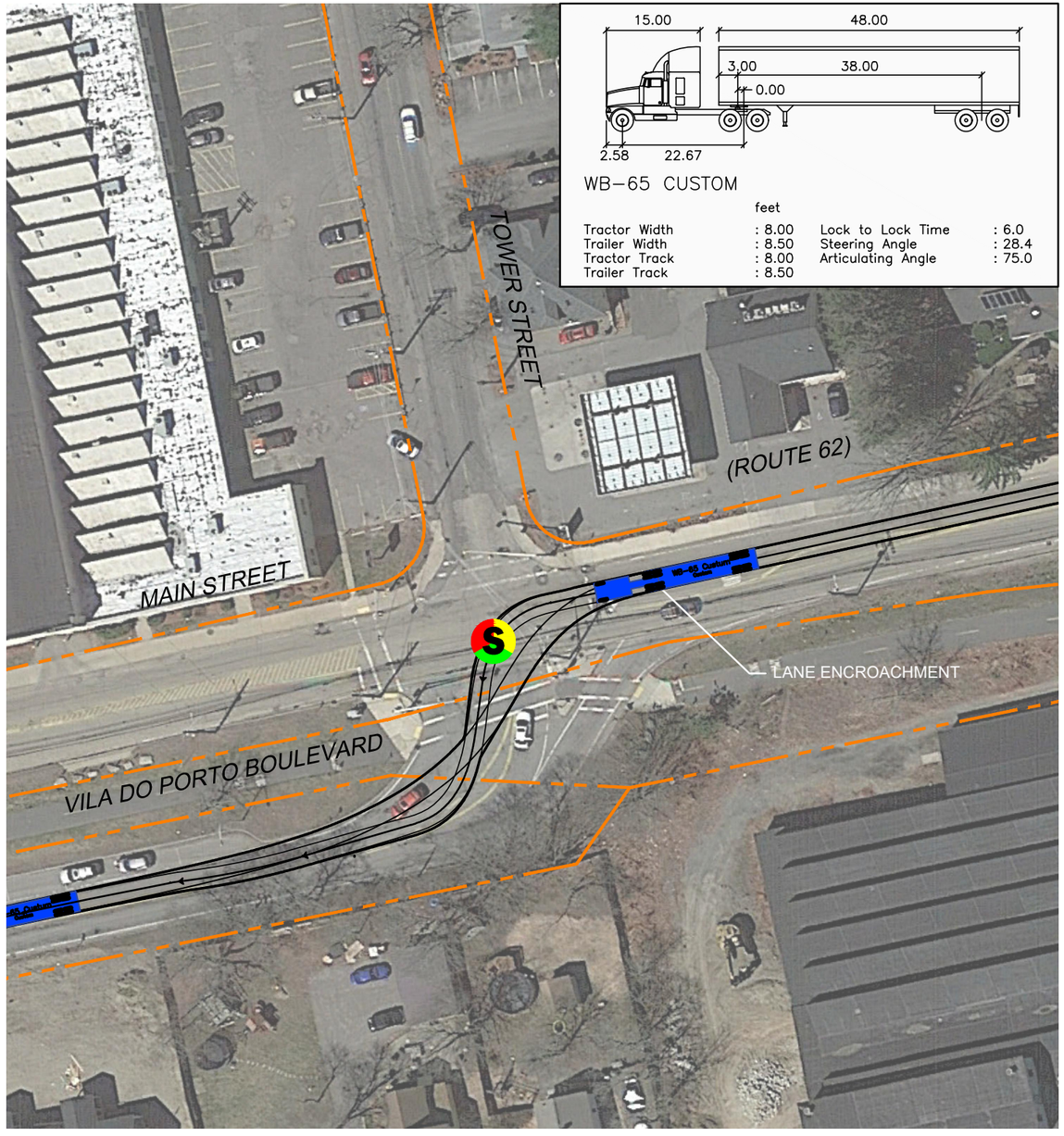

SEMI-TRAILER OUTBOUND TRIP

N 0 30 60 Scale in Feet

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Figure 10

Truck Turning Analysis - Inbound and Outbound Trip Main Street at Tower Street and Vila Do Porto Boulevard

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WB–65 CUSTOM

feet

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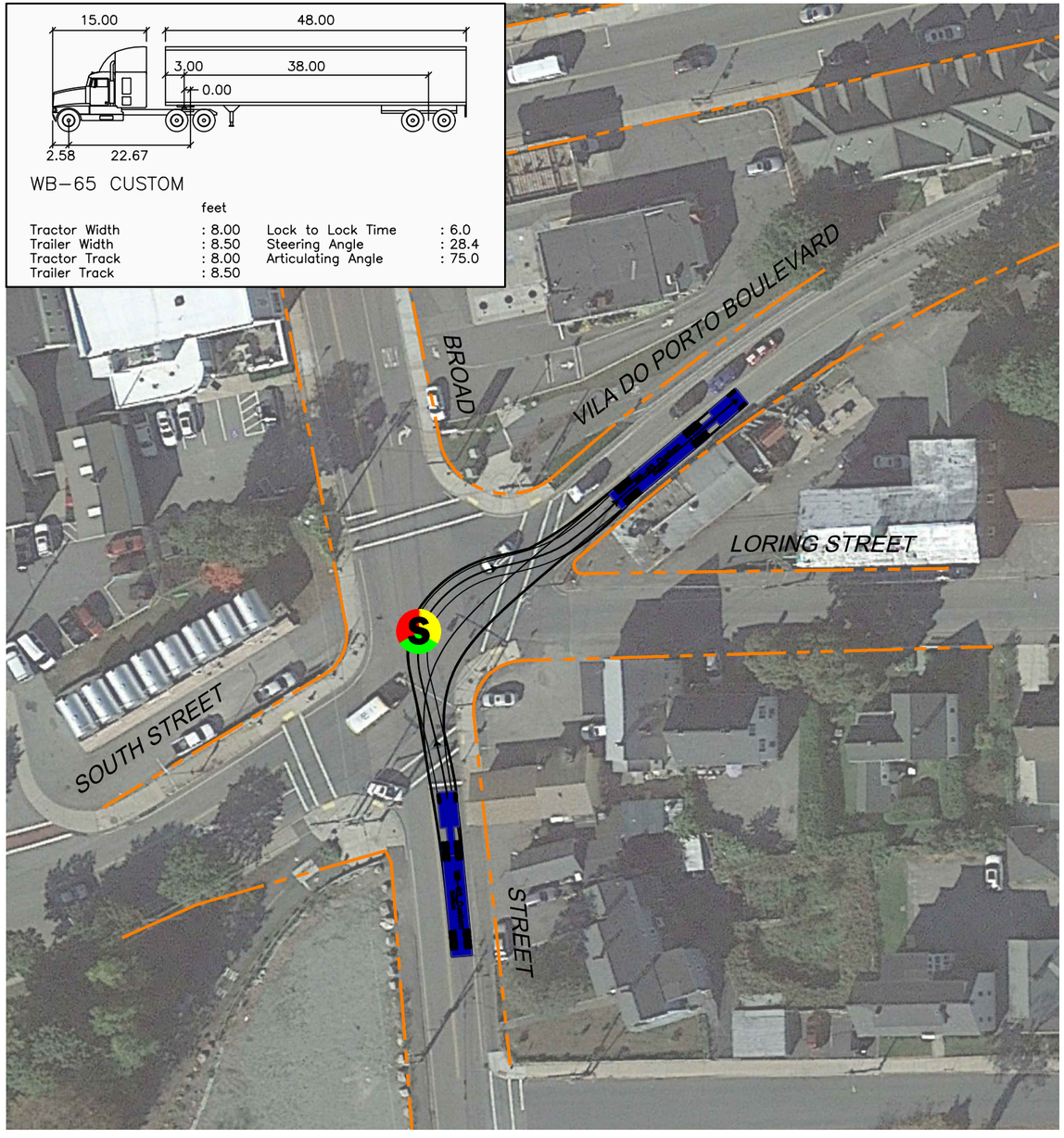

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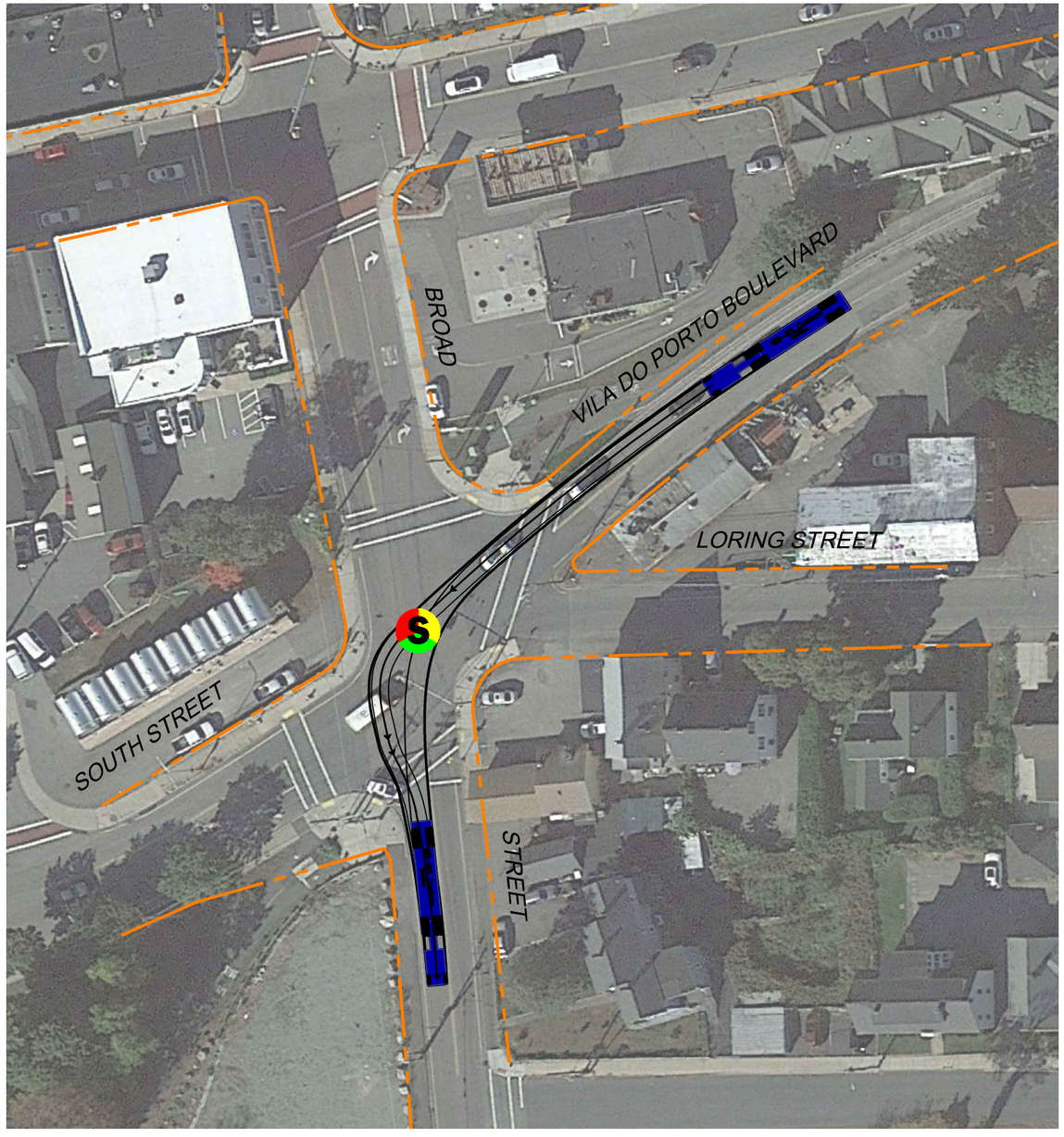

SEMI-TRAILER OUTBOUND TRIP

N 0 30 60 Scale in Feet

Figure 11

Truck Turning Analysis - Inbound and Outbound Trip Broad Street at South Street, Loring Street and Vila Do Porto Boulevard

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WB–65 CUSTOM

feet

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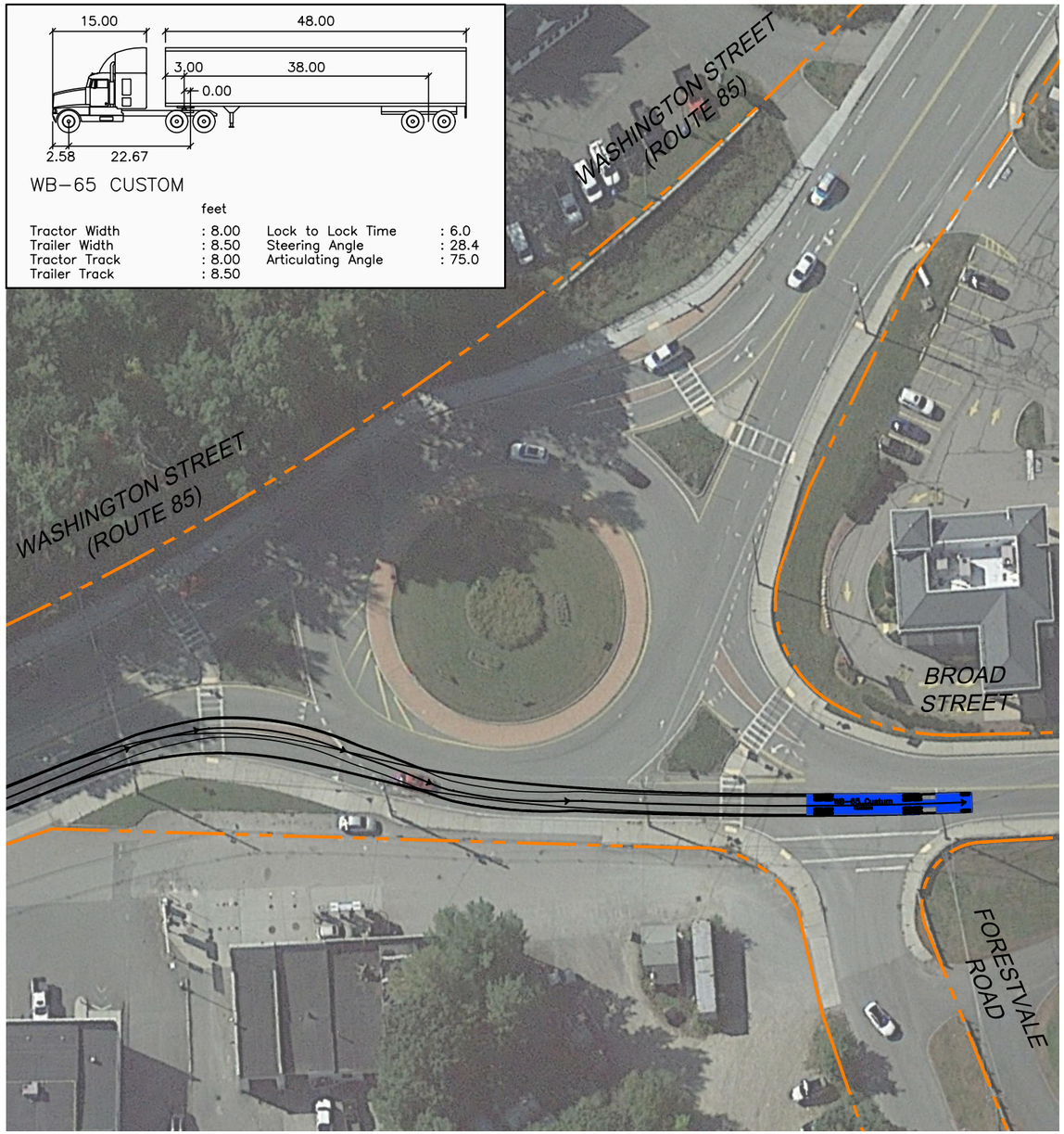

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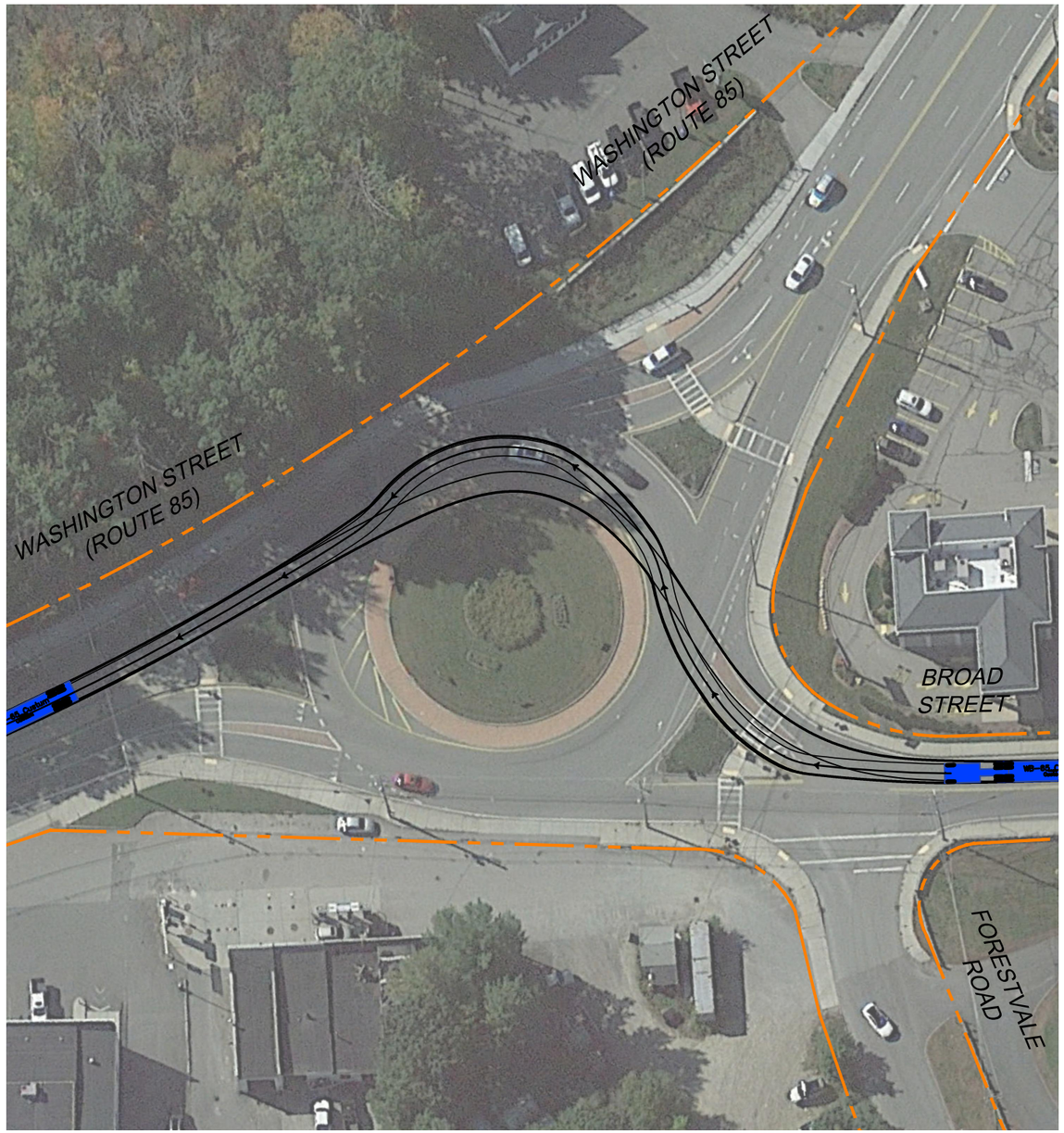

SEMI-TRAILER OUTBOUND TRIP

0 30 60 Scale in Feet

Figure 12

**Truck Turning Analysis -
Inbound and Outbound Trip
Washington Street at Broad Street**

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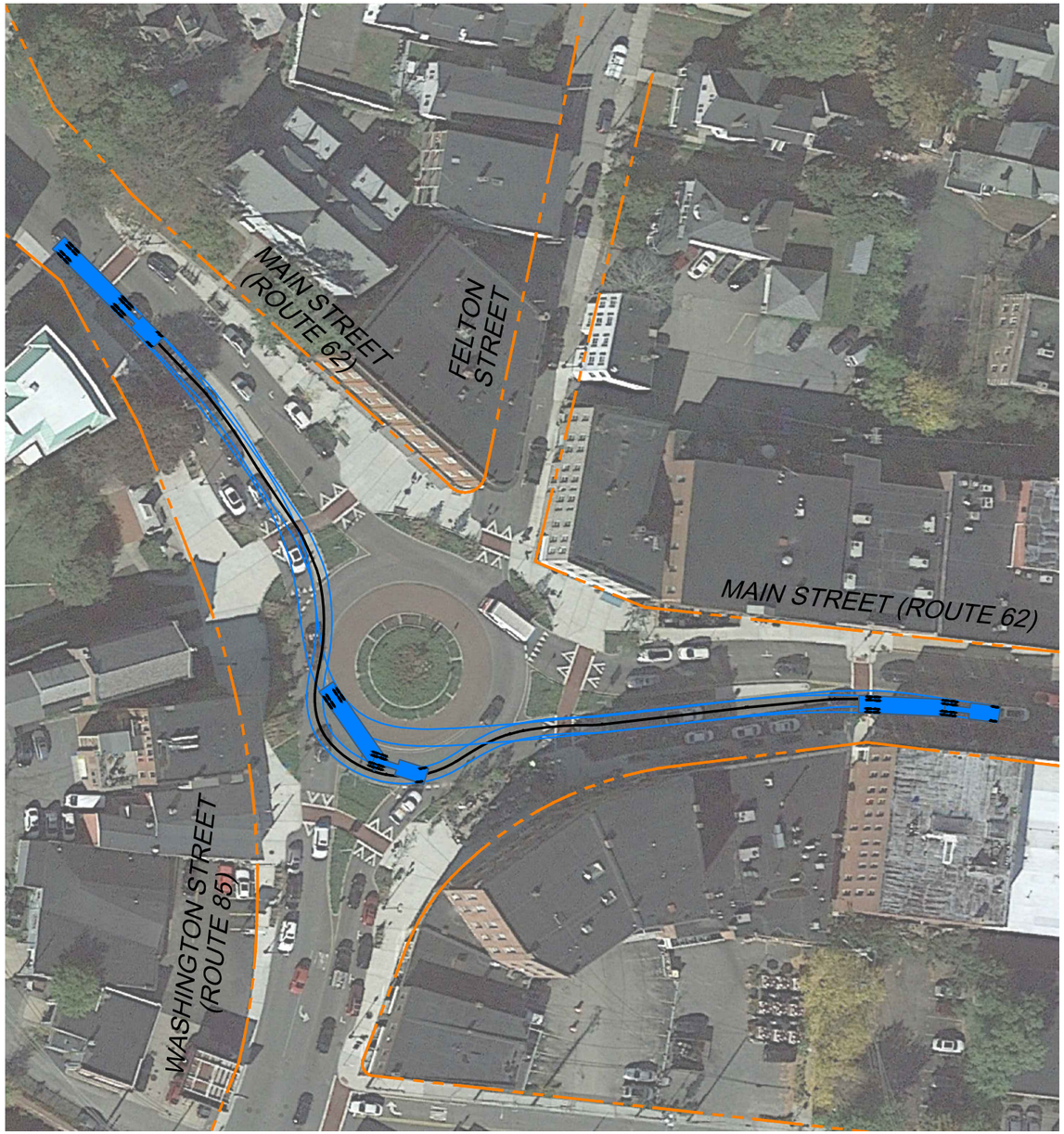

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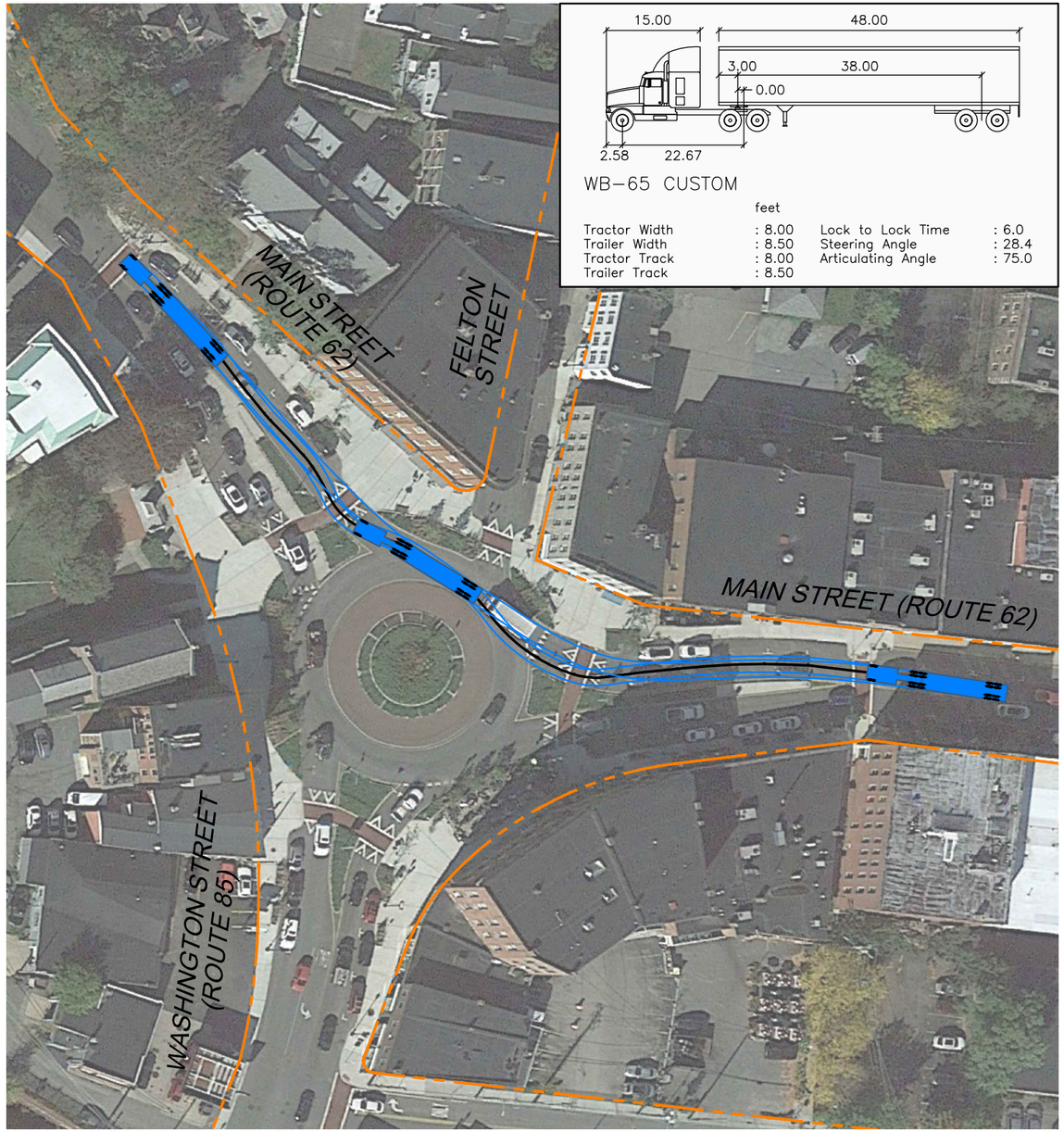

SEMI-TRAILER OUTBOUND TRIP

N

0 35 70 Scale in Feet

Figure 13

Truck Turning Analysis -
Inbound and Outbound Trip
Washington Street at Main Street

Vanasse & Associates inc

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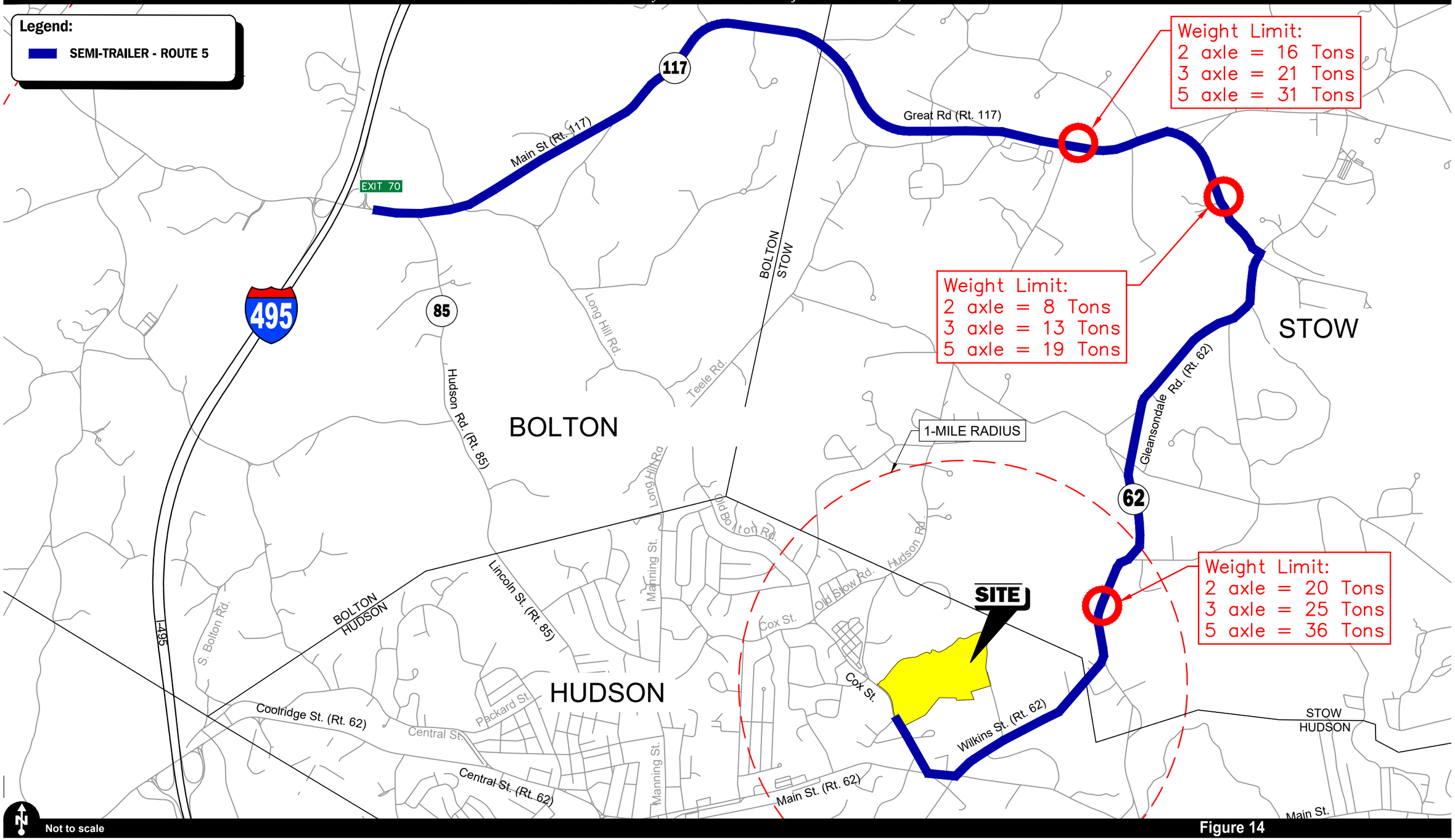
Semi-trailer AutoTURN Route Analysis - Hudson Waste Transfer Station - Hudson, Massachusetts



Not to scale

Figure 14

Route 5 Weight Restrictions Map

Vanasse & Associates inc

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Attachment 11 – TRIP DISTRIBUTION

Trip Distribution Calculation (Inboud Trucks)								
	2024 Existing		2024 Existing				43	15
	AM	PM	AM	PM	average	SAY	AM	PM
Hudson Road (Route 85)	509	568	7%	7%	7.3%	7%	3	1
Old Bolton Road	234	245	3%	3%	3.2%	3%	1	
Hudson Road	391	437	6%	6%	5.6%	6%	3	1
Gleansondale Road (Route 62)	267	326	4%	4%	4.0%	4%	2	1
Main Street	1157	1163	17%	15%	15.7%	15%	6	2
S Bolton St	665	767	10%	10%	9.6%	10%	4	2
Boston Post Road (Route 20)					5.0%			
Lakeside Avenue (Route 20)					5.0%			
Route 85C	2147	2216	31%	28%	29.4%	30%	13	5
Packard Street	372	442	5%	6%	5.5%	5%	2	1
Coolridge Street (Roue 62)	1240	1713	18%	22%	19.8%	20%	9	2
Total	**6982**	**7877**				**1**	43	15

Attachment 12 – CAPACITY ANALYSIS

2024 Baseline Weekday Morning Peak Hour
2024 Baseline Weekday Afternoon Peak Hour
2031 No-Build Weekday Morning Peak Hour
2031 No-Build Weekday Afternoon Peak Hour
2031 Build Weekday Morning Peak Hour
2031 Build Weekday Afternoon Peak Hour

2024 Baseline Weekday Morning Peak Hour

Intersection	
Intersection Delay, s/veh	12.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	167	181	10	117	4	67	67	6	8	117	26
Future Vol, veh/h	12	167	181	10	117	4	67	67	6	8	117	26
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.79	0.79	0.79	0.85	0.85	0.85
Heavy Vehicles, %	0	0	6	0	2	25	5	3	0	13	2	4
Mvmt Flow	13	186	201	12	141	5	85	85	8	9	138	31
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.7	10.4	11.2	11.2
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	48%	3%	8%	5%
Vol Thru, %	48%	46%	89%	77%
Vol Right, %	4%	50%	3%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	140	360	131	151
LT Vol	67	12	10	8
Through Vol	67	167	117	117
RT Vol	6	181	4	26
Lane Flow Rate	177	400	158	178
Geometry Grp	1	1	1	1
Degree of Util (X)	0.287	0.546	0.243	0.287
Departure Headway (Hd)	5.834	4.911	5.547	5.808
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	615	732	646	616
Service Time	3.887	2.952	3.6	3.86
HCM Lane V/C Ratio	0.288	0.546	0.245	0.289
HCM Control Delay	11.2	13.7	10.4	11.2
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.2	3.3	0.9	1.2

Intersection	
Int Delay, s/veh	2.2

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	3	290	1	6	121	27	1	4	20	45	0	0
Future Vol, veh/h	3	290	1	6	121	27	1	4	20	45	0	0
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	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	72	72	72	78	78	78	70	70	70
Heavy Vehicles, %	0	4	0	17	4	11	0	0	0	7	0	0
Mvmt Flow	3	302	1	8	168	38	1	5	26	64	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	168	0	0	303	0	0	493	493	303	508	493	168
Stage 1	-	-	-	-	-	-	309	309	-	184	184	-
Stage 2	-	-	-	-	-	-	184	184	-	324	309	-
Critical Hdwy	4.1	-	-	4.27	-	-	7.1	6.5	6.2	7.17	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.17	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.17	5.5	-
Follow-up Hdwy	2.2	-	-	2.353	-	-	3.5	4	3.3	3.563	4	3.3
Pot Cap-1 Maneuver	1422	-	-	1177	-	-	490	480	741	467	480	881
Stage 1	-	-	-	-	-	-	705	663	-	806	751	-
Stage 2	-	-	-	-	-	-	822	751	-	678	663	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1422	-	-	1177	-	-	486	475	741	443	475	881
Mov Cap-2 Maneuver	-	-	-	-	-	-	486	475	-	443	475	-
Stage 1	-	-	-	-	-	-	703	661	-	804	745	-
Stage 2	-	-	-	-	-	-	815	745	-	648	661	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	0.1	0.3	10.7	14.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	667	1177	-	-	1422	-	-	443
HCM Lane V/C Ratio	0.048	0.007	-	-	0.002	-	-	0.145
HCM Control Delay (s)	10.7	8.1	0	-	7.5	0	-	14.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.5

Intersection	
Int Delay, s/veh	1.1

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	190	16	14	349	4	3	0	9	19	0	6
Future Vol, veh/h	4	190	16	14	349	4	3	0	9	19	0	6
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	84	84	84	75	75	75	85	85	85
Heavy Vehicles, %	0	6	60	31	2	25	33	0	0	7	0	0
Mvmt Flow	5	250	21	17	415	5	4	0	12	22	0	7

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	420	0	0	271	0	0	726	733	418	729	725	261
Stage 1	-	-	-	-	-	-	452	452	-	271	271	-
Stage 2	-	-	-	-	-	-	274	281	-	458	454	-
Critical Hdwy	4.1	-	-	4.41	-	-	7.43	6.5	6.2	7.17	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.43	5.5	-	6.17	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.43	5.5	-	6.17	5.5	-
Follow-up Hdwy	2.2	-	-	2.479	-	-	3.797	4	3.3	3.563	4	3.3
Pot Cap-1 Maneuver	1150	-	-	1142	-	-	303	350	639	332	354	783
Stage 1	-	-	-	-	-	-	532	574	-	724	689	-
Stage 2	-	-	-	-	-	-	669	682	-	573	573	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1150	-	-	1142	-	-	295	342	639	320	346	783
Mov Cap-2 Maneuver	-	-	-	-	-	-	295	342	-	320	346	-
Stage 1	-	-	-	-	-	-	529	563	-	720	686	-
Stage 2	-	-	-	-	-	-	660	679	-	552	562	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.2	0.3	12.5	15.5
HCM LOS			B	C

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	495	1150	-	-	1142	-	-	373
HCM Lane V/C Ratio	0.032	0.005	-	-	0.015	-	-	0.079
HCM Control Delay (s)	12.5	8.1	0	-	8.2	0	-	15.5
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3

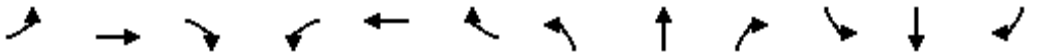
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	14	1	177	351	0
Future Vol, veh/h	1	14	1	177	351	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	81	81	90	90
Heavy Vehicles, %	0	0	0	5	6	0
Mvmt Flow	1	15	1	219	390	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	611	390	390	0	-	0
Stage 1	390	-	-	-	-	-
Stage 2	221	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	460	663	1180	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	821	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	460	663	1180	-	-	-
Mov Cap-2 Maneuver	460	-	-	-	-	-
Stage 1	688	-	-	-	-	-
Stage 2	821	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1180	-	644	-	-
HCM Lane V/C Ratio	0.001	-	0.025	-	-
HCM Control Delay (s)	8.1	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

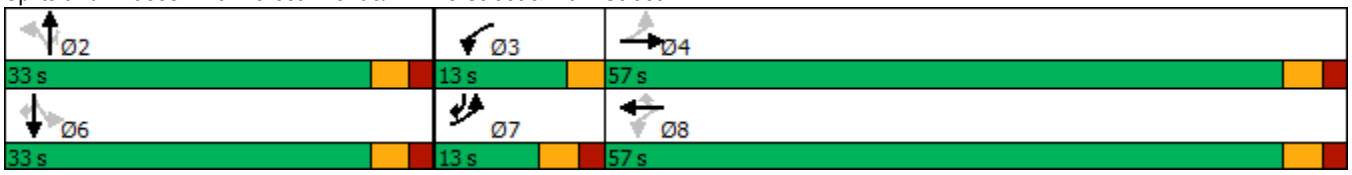


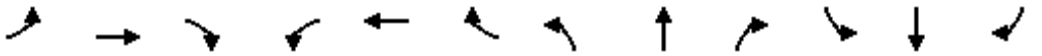
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	486	2	133	214	8	88	84	314	2	93	36
Future Volume (vph)	44	486	2	133	214	8	88	84	314	2	93	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	16	11	11	10	10	10	10
Storage Length (ft)	110		0	190		100	0		265	0		65
Storage Lanes	1		0	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.975			0.999	
Satd. Flow (prot)	1601	1799	0	1662	1783	1620	0	1791	1492	0	1754	1358
Flt Permitted	0.580			0.310				0.763			0.994	
Satd. Flow (perm)	977	1799	0	542	1783	1620	0	1401	1492	0	1746	1358
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						74			341			55
Link Speed (mph)		30			30			30			35	
Link Distance (ft)		592			1353			704			566	
Travel Time (s)		13.5			30.8			16.0			11.0	
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.92	0.92	0.92	0.65	0.65	0.65
Heavy Vehicles (%)	9%	2%	0%	5%	3%	13%	0%	0%	1%	0%	1%	11%
Adj. Flow (vph)	47	523	2	148	238	9	96	91	341	3	143	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	525	0	148	238	9	0	187	341	0	146	55
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	0.85	1.04	1.04	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases	4			8		8	2		2	6		6
Detector Phase	7	4		3	8	8	2	2	2	6	6	7
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	23.0		9.5	23.0	23.0	23.0	23.0	23.0	23.0	23.0	10.0
Total Split (s)	13.0	57.0		13.0	57.0	57.0	33.0	33.0	33.0	33.0	33.0	13.0
Total Split (%)	12.6%	55.3%		12.6%	55.3%	55.3%	32.0%	32.0%	32.0%	32.0%	32.0%	12.6%
Maximum Green (s)	8.0	52.0		10.0	52.0	52.0	28.0	28.0	28.0	28.0	28.0	8.0
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		0.0	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
Total Lost Time (s)	5.0	5.0		3.0	5.0	5.0		5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	None	None	None	None	None	None
Act Effct Green (s)	30.0	24.9		32.7	24.4	24.4		15.3	15.3		15.3	28.2
Actuated g/C Ratio	0.50	0.42		0.55	0.41	0.41		0.26	0.26		0.26	0.47
v/c Ratio	0.08	0.70		0.33	0.33	0.01		0.52	0.54		0.33	0.08
Control Delay	6.9	21.7		7.9	15.0	0.0		28.3	6.6		23.8	4.8
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	6.9	21.7		7.9	15.0	0.0		28.3	6.6		23.8	4.8
LOS	A	C		A	B	A		C	A		C	A
Approach Delay		20.5			12.0			14.3			18.6	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	6	152		19	58	0		58	0		43	0
Queue Length 95th (ft)	24	330		56	133	0		152	62		80	10
Internal Link Dist (ft)		512			1273			624			486	
Turn Bay Length (ft)	110			190		100			265			65
Base Capacity (vph)	598	1510		521	1496	1371		742	951		925	709
Starvation Cap Reductn	0	5		0	0	0		0	0		0	0
Spillback Cap Reductn	0	0		0	0	0		0	0		0	0
Storage Cap Reductn	0	0		0	0	0		0	0		0	0
Reduced v/c Ratio	0.08	0.35		0.28	0.16	0.01		0.25	0.36		0.16	0.08

Intersection Summary			
Area Type:	Other		
Cycle Length: 103			
Actuated Cycle Length: 59.9			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 16.3		Intersection LOS: B	
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Forest Avenue/Wilkins Street & Main Street



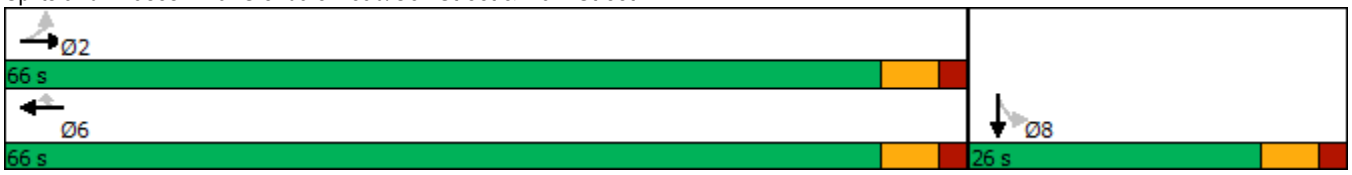


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	420	31	0	287	139	0	0	0	179	75	6
Future Volume (vph)	78	420	31	0	287	139	0	0	0	179	75	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	16	12	12	12	11	11	11
Storage Length (ft)	0		0	0		50	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850					0.997	
Flt Protected		0.993									0.967	
Satd. Flow (prot)	0	1857	0	0	1925	1794	0	0	0	0	1730	0
Flt Permitted		0.899									0.967	
Satd. Flow (perm)	0	1682	0	0	1925	1794	0	0	0	0	1730	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				146					1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		506			592			456			1021	
Travel Time (s)		11.5			13.5			10.4			23.2	
Peak Hour Factor	0.91	0.91	0.91	0.95	0.95	0.95	0.92	0.92	0.92	0.84	0.84	0.84
Heavy Vehicles (%)	9%	3%	7%	0%	2%	2%	0%	0%	0%	3%	1%	0%
Adj. Flow (vph)	86	462	34	0	302	146	0	0	0	213	89	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	582	0	0	302	146	0	0	0	0	309	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.96	0.96	0.96	0.96	0.96	0.85	1.00	1.00	1.00	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	
Protected Phases		2			6						8	
Permitted Phases	2					6				8		
Detector Phase	2	2			6	6				8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0				5.0	5.0	
Minimum Split (s)	24.0	24.0			24.0	24.0				24.0	24.0	
Total Split (s)	66.0	66.0			66.0	66.0				26.0	26.0	
Total Split (%)	71.7%	71.7%			71.7%	71.7%				28.3%	28.3%	
Maximum Green (s)	60.0	60.0			60.0	60.0				20.0	20.0	
Yellow Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
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	
Total Lost Time (s)		6.0			6.0	6.0					6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None			None	None				None	None	
Act Effct Green (s)		24.7			24.7	24.7					15.2	
Actuated g/C Ratio		0.47			0.47	0.47					0.29	
v/c Ratio		0.73			0.33	0.16					0.62	
Control Delay		17.5			9.9	2.2					23.9	
Queue Delay		0.0			0.0	0.0					0.0	
Total Delay		17.5			9.9	2.2					23.9	
LOS		B			A	A					C	
Approach Delay		17.5			7.4						23.9	
Approach LOS		B			A						C	
Queue Length 50th (ft)		130			53	0					79	
Queue Length 95th (ft)		260			108	22					175	
Internal Link Dist (ft)		426			512			376			941	
Turn Bay Length (ft)						50						
Base Capacity (vph)		1636			1872	1748					693	
Starvation Cap Reductn		0			0	0					0	
Spillback Cap Reductn		0			0	0					0	
Storage Cap Reductn		0			0	0					0	
Reduced v/c Ratio		0.36			0.16	0.08					0.45	

Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 52.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 15.6		Intersection LOS: B	
Intersection Capacity Utilization 72.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Glendale Road/Cox Street & Main Street



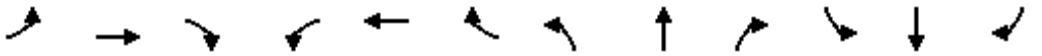
Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	498	30	26	267	0	23	0	29	2	40	60
Future Vol, veh/h	0	498	30	26	267	0	23	0	29	2	40	60
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	69	69	69	71	71	71
Heavy Vehicles, %	0	6	0	0	7	0	0	0	14	50	5	10
Mvmt Flow	0	560	34	29	300	0	33	0	42	3	56	85

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	594	0	0	1006	935	577	956	952	300
Stage 1	-	-	-	-	-	-	577	577	-	358	358	-
Stage 2	-	-	-	-	-	-	429	358	-	598	594	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	6.5	6.34	7.6	6.55	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.6	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.6	5.55	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	4	3.426	3.95	4.045	3.39
Pot Cap-1 Maneuver	0	-	-	992	-	0	222	267	494	196	256	721
Stage 1	0	-	-	-	-	0	506	505	-	572	622	-
Stage 2	0	-	-	-	-	0	608	631	-	415	488	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	992	-	-	157	258	494	174	247	721
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	258	-	174	247	-
Stage 1	-	-	-	-	-	-	506	505	-	572	600	-
Stage 2	-	-	-	-	-	-	469	609	-	380	488	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	25.2	19.1
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	253	-	-	992	-	397
HCM Lane V/C Ratio	0.298	-	-	0.029	-	0.362
HCM Control Delay (s)	25.2	-	-	8.7	0	19.1
HCM Lane LOS	D	-	-	A	A	C
HCM 95th %tile Q(veh)	1.2	-	-	0.1	-	1.6



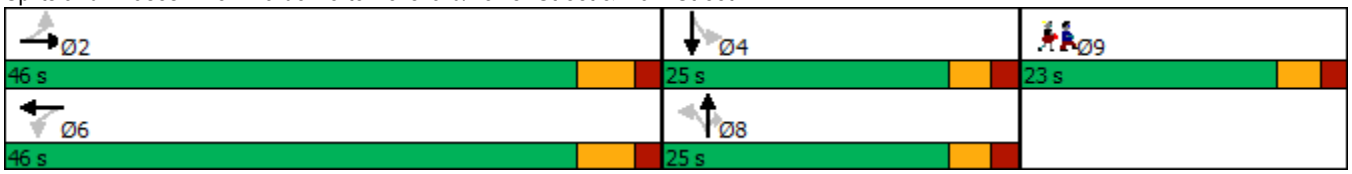
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	287	13	158	183	16	5	111	227	41	143	75
Future Volume (vph)	28	287	13	158	183	16	5	111	227	41	143	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	10	10	15	15	14	13	13	13
Storage Length (ft)	0		0	70		0	0		100	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.988				0.850		0.961	
Flt Protected		0.996		0.950				0.998			0.992	
Satd. Flow (prot)	0	1835	0	1678	1657	0	0	2009	1656	0	1845	0
Flt Permitted		0.954		0.429				0.987			0.939	
Satd. Flow (perm)	0	1757	0	758	1657	0	0	1987	1656	0	1747	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			6				247		20	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		639			834			152			404	
Travel Time (s)		12.4			16.2			3.5			9.2	
Peak Hour Factor	0.83	0.83	0.83	0.91	0.91	0.91	0.92	0.92	0.92	0.91	0.91	0.91
Heavy Vehicles (%)	0%	3%	0%	4%	4%	25%	0%	4%	4%	0%	1%	3%
Adj. Flow (vph)	34	346	16	174	201	18	5	121	247	45	157	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	396	0	174	219	0	0	126	247	0	284	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.04	1.09	1.09	0.88	0.88	0.92	0.96	0.96	0.96
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	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	
Minimum Split (s)	24.0	24.0		24.0	24.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	46.0	46.0		46.0	46.0		25.0	25.0	25.0	25.0	25.0	
Total Split (%)	48.9%	48.9%		48.9%	48.9%		26.6%	26.6%	26.6%	26.6%	26.6%	
Maximum Green (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		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	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		6.0		6.0	6.0			5.0	5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	

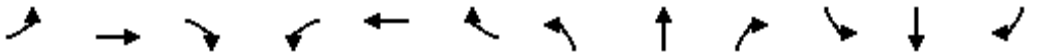
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		17.9		17.9	17.9			21.7	21.7		21.7	
Actuated g/C Ratio		0.33		0.33	0.33			0.40	0.40		0.40	
v/c Ratio		0.68		0.70	0.40			0.16	0.31		0.40	
Control Delay		22.5		32.5	16.3			17.1	4.8		18.2	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		22.5		32.5	16.3			17.1	4.8		18.2	
LOS		C		C	B			B	A		B	
Approach Delay		22.5			23.5			9.0			18.2	
Approach LOS		C			C			A			B	
Queue Length 50th (ft)		88		39	42			19	0		44	
Queue Length 95th (ft)		231		148	137			110	59		#247	
Internal Link Dist (ft)		559			754			72			324	
Turn Bay Length (ft)				70					100			
Base Capacity (vph)		1403		605	1324			793	809		709	
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		0.28		0.29	0.17			0.16	0.31		0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 94			
Actuated Cycle Length: 54.3			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 18.4		Intersection LOS: B	
Intersection Capacity Utilization 63.2%		ICU Level of Service B	
Analysis Period (min) 15			

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

Splits and Phases: 8: Vila do Porto Boilevard/Tower Street & Main Street



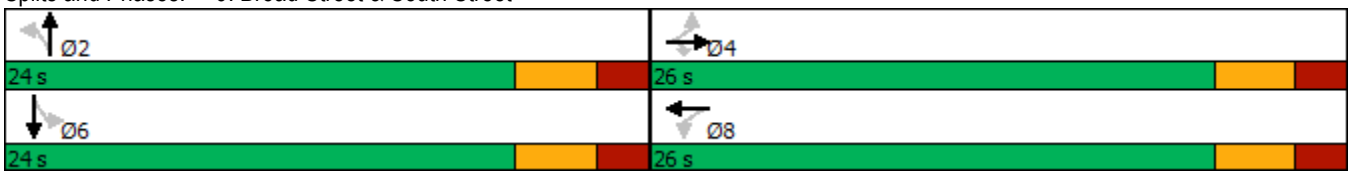


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	193	96	190	93	17	33	186	124	15	216	10
Future Volume (vph)	25	193	96	190	93	17	33	186	124	15	216	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	0		0	0		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.992			0.951			0.994	
Flt Protected		0.994			0.969			0.995			0.997	
Satd. Flow (prot)	0	1801	1553	0	1770	0	0	1699	0	0	1866	0
Flt Permitted		0.928			0.664			0.942			0.963	
Satd. Flow (perm)	0	1681	1553	0	1213	0	0	1609	0	0	1803	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			113		7			66			5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		257			126			357			165	
Travel Time (s)		5.8			2.9			8.1			3.8	
Peak Hour Factor	0.85	0.85	0.85	0.70	0.70	0.70	0.82	0.82	0.82	0.85	0.85	0.85
Heavy Vehicles (%)	4%	5%	4%	4%	0%	12%	6%	3%	10%	0%	1%	0%
Adj. Flow (vph)	29	227	113	271	133	24	40	227	151	18	254	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	256	113	0	428	0	0	418	0	0	284	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	26.0	26.0	26.0	26.0	26.0		24.0	24.0		24.0	24.0	
Total Split (%)	52.0%	52.0%	52.0%	52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	21.0	21.0	21.0	21.0	21.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	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	
Lost Time Adjust (s)		0.0	0.0		0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0		5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		18.5	18.5		18.5			14.3			14.3	
Actuated g/C Ratio		0.43	0.43		0.43			0.33			0.33	
v/c Ratio		0.36	0.16		0.82			0.72			0.47	
Control Delay		10.9	3.1		28.5			19.0			14.4	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		10.9	3.1		28.5			19.0			14.4	
LOS		B	A		C			B			B	
Approach Delay		8.5			28.5			19.0			14.4	
Approach LOS		A			C			B			B	
Queue Length 50th (ft)		40	0		87			79			57	
Queue Length 95th (ft)		86	19		134			134			100	
Internal Link Dist (ft)		177			46			277			85	
Turn Bay Length (ft)			50									
Base Capacity (vph)		849	840		616			771			826	
Starvation Cap Reductn		0	0		0			0			0	
Spillback Cap Reductn		0	0		0			0			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.30	0.13		0.69			0.54			0.34	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 43.2			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 68.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Broad Street & South Street



MOVEMENT SUMMARY

Site: 10 [Intersection 10: Route 62 at Washington Street and Felton Street (Site Folder: General)]

2024 Existing Weekday Morning Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Washington Street														
3	L2	306	3.0	336	3.0	0.561	11.8	LOS B	5.3	135.6	0.70	0.65	0.83	23.1
8	T1	58	7.0	64	7.0	0.561	12.0	LOS B	5.3	135.6	0.70	0.65	0.83	23.0
18	R2	93	6.0	102	6.0	0.561	12.0	LOS B	5.3	135.6	0.70	0.65	0.83	22.6
Approach		457	4.1	502	4.1	0.561	11.9	LOS B	5.3	135.6	0.70	0.65	0.83	23.0
East: Route 62														
1	L2	201	3.0	239	3.0	0.500	10.5	LOS B	3.5	92.9	0.62	0.64	0.75	23.4
6	T1	161	12.0	192	12.0	0.500	10.9	LOS B	3.5	92.9	0.62	0.64	0.75	21.9
16	R2	4	0.0	5	0.0	0.500	10.4	LOS B	3.5	92.9	0.62	0.64	0.75	21.6
Approach		366	6.9	436	6.9	0.500	10.7	LOS B	3.5	92.9	0.62	0.64	0.75	22.7
West: Route 62														
5	L2	17	0.0	19	0.0	0.915	32.7	LOS C	35.5	904.0	1.00	1.69	2.23	18.3
2	T1	251	3.0	285	3.0	0.915	32.9	LOS C	35.5	904.0	1.00	1.69	2.23	18.2
12	R2	505	2.0	574	2.0	0.915	32.8	LOS C	35.5	904.0	1.00	1.69	2.23	19.0
Approach		773	2.3	878	2.3	0.915	32.8	LOS C	35.5	904.0	1.00	1.69	2.23	18.7
All Vehicles		1596	3.9	1816	3.9	0.915	21.7	LOS C	35.5	904.0	0.83	1.15	1.49	20.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection	
Intersection Delay, s/veh	14.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	118	9	35	142	58	36	93	36	129	162	38
Future Vol, veh/h	29	118	9	35	142	58	36	93	36	129	162	38
Peak Hour Factor	0.88	0.88	0.88	0.85	0.85	0.85	0.72	0.72	0.72	0.91	0.91	0.91
Heavy Vehicles, %	3	2	11	6	3	2	3	6	0	2	1	3
Mvmt Flow	33	134	10	41	167	68	50	129	50	142	178	42
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.3	14.3	12.8	16.9
HCM LOS	B	B	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	19%	15%	39%
Vol Thru, %	56%	76%	60%	49%
Vol Right, %	22%	6%	25%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	165	156	235	329
LT Vol	36	29	35	129
Through Vol	93	118	142	162
RT Vol	36	9	58	38
Lane Flow Rate	229	177	276	362
Geometry Grp	1	1	1	1
Degree of Util (X)	0.383	0.312	0.466	0.588
Departure Headway (Hd)	6.014	6.338	6.069	5.853
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	598	565	594	618
Service Time	4.059	4.389	4.09	3.871
HCM Lane V/C Ratio	0.383	0.313	0.465	0.586
HCM Control Delay	12.8	12.3	14.3	16.9
HCM Lane LOS	B	B	B	C
HCM 95th-tile Q	1.8	1.3	2.5	3.8

MOVEMENT SUMMARY

Site: 12 [Intersection 12: Washington Street at Broad Street (Site Folder: General)]

2024 Existing Weekday Morning Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Washington Street														
3u	U	7	14.0	7	14.0	0.307	6.5	LOS A	2.1	54.6	0.14	0.04	0.14	30.3
3a	L1	373	5.0	397	5.0	0.307	6.2	LOS A	2.1	53.3	0.14	0.04	0.14	29.8
8	T1	269	3.0	286	3.0	0.307	6.1	LOS A	2.1	53.3	0.13	0.04	0.13	31.3
Approach		649	4.3	690	4.3	0.307	6.2	LOS A	2.1	54.6	0.14	0.04	0.14	30.4
North: Broad Street														
4	T1	396	3.0	483	3.0	0.345	8.4	LOS A	1.7	44.1	0.57	0.50	0.57	33.4
14b	R3	66	6.0	80	6.0	0.345	8.6	LOS A	1.7	44.3	0.57	0.51	0.57	31.9
Approach		462	3.4	563	3.4	0.345	8.4	LOS A	1.7	44.3	0.57	0.50	0.57	33.2
NorthWest: Washington Street														
7ux	U	1	0.0	1	0.0	0.410	10.6	LOS B	2.5	65.0	0.71	0.71	0.77	33.1
7bx	L3	11	27.0	12	27.0	0.410	12.8	LOS B	2.5	65.0	0.71	0.71	0.77	31.9
14ax	R1	514	3.0	559	3.0	0.410	10.8	LOS B	2.5	64.5	0.71	0.71	0.77	32.1
Approach		526	3.5	572	3.5	0.410	10.8	LOS B	2.5	65.0	0.71	0.71	0.77	32.1
All Vehicles		1637	3.8	1826	3.8	0.410	8.3	LOS A	2.5	65.0	0.45	0.39	0.47	31.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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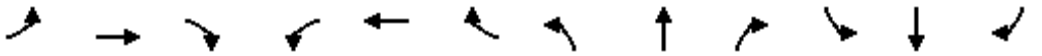
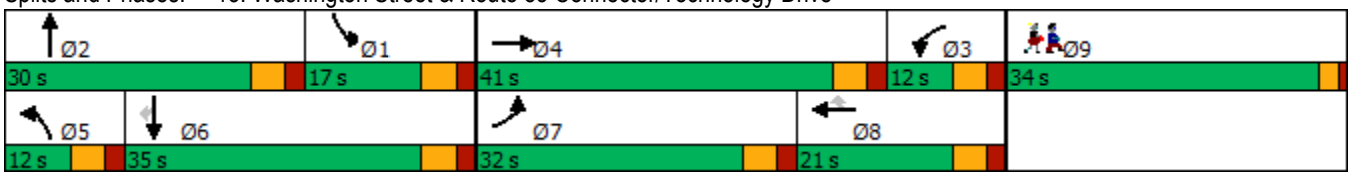


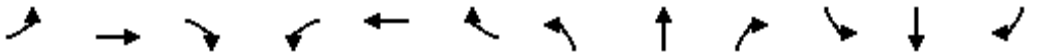
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	433	378	331	34	273	19	175	189	42	34	289	557
Future Volume (vph)	433	378	331	34	273	19	175	189	42	34	289	557
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	10	10	10	11	10	10	11	11	11	10	14
Storage Length (ft)	350		0	175		175	350		0	215		50
Storage Lanes	2		0	1		1	2		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95	1.00	0.95	1.00
Frt		0.930				0.850		0.973				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3255	3040	0	1685	3421	1436	2998	3220	0	1745	3240	1672
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3255	3040	0	1685	3421	1436	2998	3220	0	1745	3240	1672
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		160				179		17				379
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		680			776			490			543	
Travel Time (s)		15.5			17.6			11.1			12.3	
Peak Hour Factor	0.92	0.92	0.92	0.83	0.83	0.83	0.87	0.87	0.87	0.92	0.92	0.92
Heavy Vehicles (%)	4%	4%	2%	0%	2%	5%	9%	4%	12%	0%	4%	3%
Adj. Flow (vph)	471	411	360	41	329	23	201	217	48	37	314	605
Shared Lane Traffic (%)												
Lane Group Flow (vph)	471	771	0	41	329	23	201	265	0	37	314	605
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		22			22			20			20	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.09	1.09	1.09	1.04	1.09	1.09	1.04	1.04	1.04	1.09	0.92
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	12.0	16.0		12.0	16.0	16.0	12.0	16.0		12.0	35.0	35.0
Total Split (s)	32.0	41.0		12.0	21.0	21.0	12.0	30.0		17.0	35.0	35.0
Total Split (%)	23.9%	30.6%		9.0%	15.7%	15.7%	9.0%	22.4%		12.7%	26.1%	26.1%
Maximum Green (s)	26.5	35.5		6.5	15.5	15.5	6.5	24.5		11.5	29.5	29.5
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
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)	5.5	5.5		5.5	5.5	5.5	5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	None	Min		None	Min	Min
Walk Time (s)											7.0	7.0
Flash Dont Walk (s)											22.0	22.0
Pedestrian Calls (#/hr)											0	0
Act Effct Green (s)	18.0	31.4		6.7	14.5	14.5	6.6	22.2		14.9	24.8	24.8
Actuated g/C Ratio	0.21	0.36		0.08	0.17	0.17	0.08	0.26		0.17	0.29	0.29
v/c Ratio	0.70	0.64		0.31	0.57	0.06	0.87	0.32		0.12	0.34	0.81
Control Delay	38.7	22.4		48.8	38.8	0.3	78.2	31.3		31.5	26.0	20.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	38.7	22.4		48.8	38.8	0.3	78.2	31.3		31.5	26.0	20.3
LOS	D	C		D	D	A	E	C		C	C	C
Approach Delay		28.6			37.6			51.5			22.6	
Approach LOS		C			D			D			C	
Queue Length 50th (ft)	131	173		23	94	0	60	71		16	71	114
Queue Length 95th (ft)	191	236		55	132	0	#136	113		47	119	#286
Internal Link Dist (ft)		600			696			410			463	
Turn Bay Length (ft)	350			175		175	350			215		50
Base Capacity (vph)	1019	1369		133	652	418	230	1046		350	1130	829
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.46	0.56		0.31	0.50	0.06	0.87	0.25		0.11	0.28	0.73

Intersection Summary			
Area Type:	Other		
Cycle Length: 134			
Actuated Cycle Length: 86.4			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 31.4		Intersection LOS: C	
Intersection Capacity Utilization 61.6%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 13: Washington Street & Route 85 Connector/Technology Drive



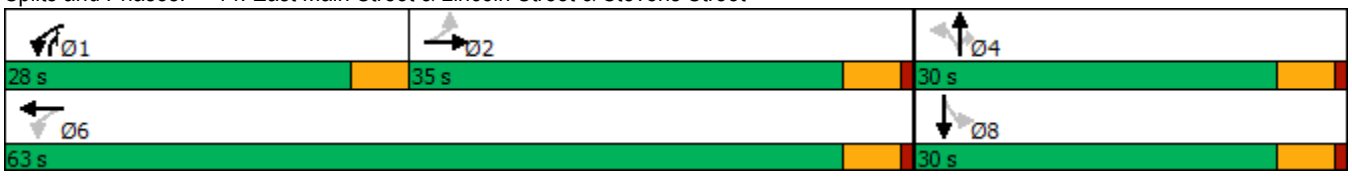


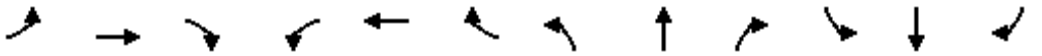
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	342	17	337	346	277	7	86	354	44	21	14
Future Volume (vph)	10	342	17	337	346	277	7	86	354	44	21	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	16	12	12	12	11	11	11	15	15	15
Storage Length (ft)	115		0	0		0	0		130	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.933				0.850		0.976	
Flt Protected		0.999		0.950				0.996			0.973	
Satd. Flow (prot)	0	3559	0	1719	1730	0	0	1777	1459	0	1913	0
Flt Permitted		0.926		0.392				0.969			0.758	
Satd. Flow (perm)	0	3299	0	709	1730	0	0	1729	1459	0	1490	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			82				247		12	
Link Speed (mph)		25			25			30			20	
Link Distance (ft)		679			2541			789			556	
Travel Time (s)		18.5			69.3			17.9			19.0	
Peak Hour Factor	0.93	0.93	0.93	0.86	0.86	0.86	0.73	0.73	0.73	0.49	0.49	0.49
Heavy Vehicles (%)	0%	4%	6%	5%	2%	3%	14%	2%	7%	2%	10%	0%
Adj. Flow (vph)	11	368	18	392	402	322	10	118	485	90	43	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	397	0	392	724	0	0	128	485	0	162	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.96	0.96	0.85	1.00	1.00	1.00	1.04	1.04	1.04	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.0	25.0		10.0	25.0		25.0	25.0	10.0	25.0	25.0	
Total Split (s)	35.0	35.0		28.0	63.0		30.0	30.0	28.0	30.0	30.0	
Total Split (%)	37.6%	37.6%		30.1%	67.7%		32.3%	32.3%	30.1%	32.3%	32.3%	
Maximum Green (s)	30.0	30.0		24.0	58.0		25.0	25.0	24.0	25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0	0.0	1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		5.0		4.0	5.0			5.0	4.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	Min	Min		None	None		Min	Min	None	None	None	
Walk Time (s)	9.0	9.0			9.0		9.0	9.0		9.0	9.0	
Flash Dont Walk (s)	8.0	8.0			8.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		12.7		31.7	30.6			11.3	30.2		11.3	
Actuated g/C Ratio		0.24		0.60	0.58			0.22	0.58		0.22	
v/c Ratio		0.49		0.57	0.69			0.35	0.51		0.49	
Control Delay		20.4		9.2	11.2			22.4	5.4		24.4	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		20.4		9.2	11.2			22.4	5.4		24.4	
LOS		C		A	B			C	A		C	
Approach Delay		20.4			10.5			9.0			24.4	
Approach LOS		C			B			A			C	
Queue Length 50th (ft)		51		49	107			31	29		38	
Queue Length 95th (ft)		116		114	251			72	59		53	
Internal Link Dist (ft)		599			2461			709			476	
Turn Bay Length (ft)									130			
Base Capacity (vph)		1996		927	1656			870	1215		756	
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		0.20		0.42	0.44			0.15	0.40		0.21	

Intersection Summary			
Area Type:	Other		
Cycle Length: 93			
Actuated Cycle Length: 52.5			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 12.8		Intersection LOS: B	
Intersection Capacity Utilization 69.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: East Main Street & Lincoln Street & Stevens Street





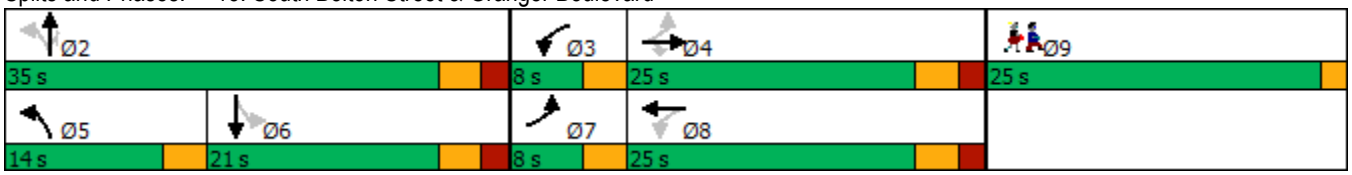
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	318	230	182	296	4	179	285	94	12	297	26
Future Volume (vph)	41	318	230	182	296	4	179	285	94	12	297	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	12	12	12	13	13	12	12	12
Storage Length (ft)	135		0	0		0	115		115	0		0
Storage Lanes	1		1	1		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.998				0.850		0.988	
Flt Protected	0.950			0.950			0.950				0.998	
Satd. Flow (prot)	1685	1810	1583	1770	1831	0	1787	1944	1669	0	3506	0
Flt Permitted	0.462			0.345			0.431				0.939	
Satd. Flow (perm)	819	1810	1583	643	1831	0	811	1944	1669	0	3299	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			242		1				98		8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1659			2112			460			421	
Travel Time (s)		37.7			48.0			10.5			9.6	
Peak Hour Factor	0.95	0.95	0.95	0.90	0.90	0.90	0.96	0.96	0.96	0.91	0.91	0.91
Heavy Vehicles (%)	0%	5%	2%	2%	3%	50%	1%	1%	0%	0%	1%	8%
Adj. Flow (vph)	43	335	242	202	329	4	186	297	98	13	326	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	335	242	202	333	0	186	297	98	0	368	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	7	4	4	3	8		5	2	2	6	6	
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)	8.0	10.0	10.0	8.0	10.0		8.0	10.0	10.0	10.0	10.0	
Total Split (s)	8.0	25.0	25.0	8.0	25.0		14.0	35.0	35.0	21.0	21.0	
Total Split (%)	8.6%	26.9%	26.9%	8.6%	26.9%		15.1%	37.6%	37.6%	22.6%	22.6%	
Maximum Green (s)	5.0	20.0	20.0	5.0	20.0		11.0	30.0	30.0	16.0	16.0	
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)	0.0	2.0	2.0	0.0	2.0		0.0	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	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0	5.0		5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None		None	Max	Max	Max	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	24.9	17.8	17.8	26.1	21.2		32.0	30.0	30.0		17.7	
Actuated g/C Ratio	0.38	0.27	0.27	0.40	0.32		0.49	0.46	0.46		0.27	
v/c Ratio	0.11	0.68	0.40	0.59	0.57		0.35	0.34	0.12		0.41	
Control Delay	11.8	29.4	5.1	21.4	24.0		12.4	13.4	3.3		22.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	
Total Delay	11.8	29.4	5.1	21.4	24.0		12.4	13.4	3.3		22.1	
LOS	B	C	A	C	C		B	B	A		C	
Approach Delay		18.7			23.0			11.4			22.1	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	10	120	0	51	118		43	78	0		65	
Queue Length 95th (ft)	26	201	46	92	198		80	131	23		106	
Internal Link Dist (ft)		1579			2032			380			341	
Turn Bay Length (ft)	135						115		115			
Base Capacity (vph)	374	550	649	340	589		557	885	814		893	
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	
Reduced v/c Ratio	0.11	0.61	0.37	0.59	0.57		0.33	0.34	0.12		0.41	

Intersection Summary

Area Type: Other
Cycle Length: 93
Actuated Cycle Length: 65.9
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 18.4 Intersection LOS: B
Intersection Capacity Utilization 67.0% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 15: South Bolton Street & Granger Boulevard



Intersection	
Int Delay, s/veh	35.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↾	
Traffic Vol, veh/h	0	1006	655	0	5	442
Future Vol, veh/h	0	1006	655	0	5	442
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	95	95	88	88	89	89
Heavy Vehicles, %	0	1	2	0	0	1
Mvmt Flow	0	1059	744	0	6	497

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	1803	744
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	1059	-
Critical Hdwy	-	-	-	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.309
Pot Cap-1 Maneuver	0	-	-	0	88	~ 416
Stage 1	0	-	-	0	473	-
Stage 2	0	-	-	0	336	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	88	~ 416
Mov Cap-2 Maneuver	-	-	-	-	88	-
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	336	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	164.4
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	399
HCM Lane V/C Ratio	-	-	1.259
HCM Control Delay (s)	-	-	164.4
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	21.6

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

2024 Baseline Weekday Afternoon Peak Hour

Intersection	
Intersection Delay, s/veh	13.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	113	95	12	226	8	156	109	12	7	72	19
Future Vol, veh/h	30	113	95	12	226	8	156	109	12	7	72	19
Peak Hour Factor	0.84	0.84	0.84	0.88	0.88	0.88	0.89	0.89	0.89	0.83	0.83	0.83
Heavy Vehicles, %	0	0	1	0	0	0	1	0	0	0	0	0
Mvmt Flow	36	135	113	14	257	9	175	122	13	8	87	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.6	13.1	14.6	10.5
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	56%	13%	5%	7%
Vol Thru, %	39%	47%	92%	73%
Vol Right, %	4%	40%	3%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	277	238	246	98
LT Vol	156	30	12	7
Through Vol	109	113	226	72
RT Vol	12	95	8	19
Lane Flow Rate	311	283	280	118
Geometry Grp	1	1	1	1
Degree of Util (X)	0.5	0.429	0.438	0.196
Departure Headway (Hd)	5.782	5.448	5.645	5.975
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	619	657	635	596
Service Time	3.848	3.517	3.714	4.061
HCM Lane V/C Ratio	0.502	0.431	0.441	0.198
HCM Control Delay	14.6	12.6	13.1	10.5
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.8	2.2	2.2	0.7

Intersection	
Int Delay, s/veh	2.2

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	1	143	2	12	236	29	4	3	5	26	6	1
Future Vol, veh/h	1	143	2	12	236	29	4	3	5	26	6	1
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	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	90	90	90	43	43	43	50	75	75
Heavy Vehicles, %	0	1	0	0	0	7	0	0	0	4	0	0
Mvmt Flow	1	163	2	13	262	32	9	7	12	52	8	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	262	0	0	165	0	0	459	454	164	464	455	262
Stage 1	-	-	-	-	-	-	166	166	-	288	288	-
Stage 2	-	-	-	-	-	-	293	288	-	176	167	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.14	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.536	4	3.3
Pot Cap-1 Maneuver	1314	-	-	1426	-	-	516	505	886	505	504	782
Stage 1	-	-	-	-	-	-	841	765	-	715	677	-
Stage 2	-	-	-	-	-	-	719	677	-	821	764	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1314	-	-	1426	-	-	504	499	886	488	498	782
Mov Cap-2 Maneuver	-	-	-	-	-	-	504	499	-	488	498	-
Stage 1	-	-	-	-	-	-	840	764	-	714	670	-
Stage 2	-	-	-	-	-	-	701	670	-	802	763	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	0.1	0.3	11.2	13.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	612	1426	-	-	1314	-	-	493
HCM Lane V/C Ratio	0.046	0.009	-	-	0.001	-	-	0.124
HCM Control Delay (s)	11.2	7.5	0	-	7.7	0	-	13.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	0.6

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	333	2	1	203	4	4	0	6	3	0	2
Future Vol, veh/h	8	333	2	1	203	4	4	0	6	3	0	2
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	99	99	99	62	62	62	62	62	62
Heavy Vehicles, %	0	1	100	0	2	0	0	0	0	100	0	50
Mvmt Flow	8	343	2	1	205	4	6	0	10	5	0	3

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	209	0	0	345	0	0	571	570	207	574	571	344
Stage 1	-	-	-	-	-	-	209	209	-	360	360	-
Stage 2	-	-	-	-	-	-	362	361	-	214	211	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	8.1	6.5	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	7.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	7.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	4.4	4	3.75
Pot Cap-1 Maneuver	1374	-	-	1225	-	-	435	434	839	313	434	602
Stage 1	-	-	-	-	-	-	798	733	-	497	630	-
Stage 2	-	-	-	-	-	-	661	629	-	610	731	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1374	-	-	1225	-	-	430	431	839	307	431	602
Mov Cap-2 Maneuver	-	-	-	-	-	-	430	431	-	307	431	-
Stage 1	-	-	-	-	-	-	792	732	-	494	626	-
Stage 2	-	-	-	-	-	-	653	625	-	602	730	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.2	0	11.1	14.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	608	1374	-	-	1225	-	-	382
HCM Lane V/C Ratio	0.027	0.006	-	-	0.001	-	-	0.021
HCM Control Delay (s)	11.1	7.6	0	-	7.9	0	-	14.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

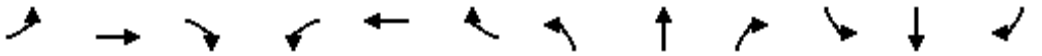
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	8	289	194	1
Future Vol, veh/h	0	5	8	289	194	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	62	62	90	90	87	87
Heavy Vehicles, %	0	0	0	2	3	0
Mvmt Flow	0	8	9	321	223	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	563	224	224	0	-	0
Stage 1	224	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	491	820	1357	-	-	-
Stage 1	818	-	-	-	-	-
Stage 2	726	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	487	820	1357	-	-	-
Mov Cap-2 Maneuver	487	-	-	-	-	-
Stage 1	811	-	-	-	-	-
Stage 2	726	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1357	-	820	-	-
HCM Lane V/C Ratio	0.007	-	0.01	-	-
HCM Control Delay (s)	7.7	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

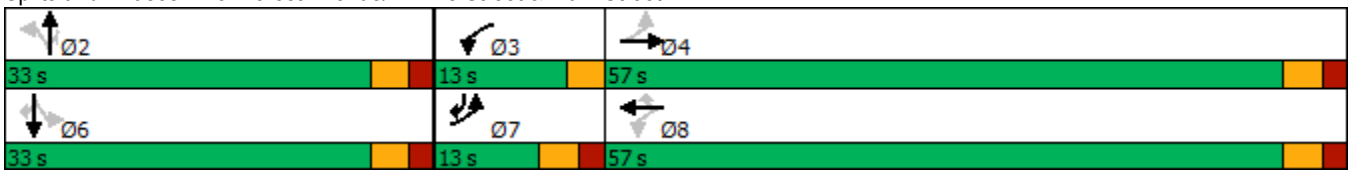


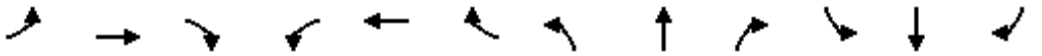
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	225	4	280	469	3	90	110	184	2	121	36
Future Volume (vph)	54	225	4	280	469	3	90	110	184	2	121	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	16	11	11	10	10	10	10
Storage Length (ft)	110		0	190		100	0		265	0		65
Storage Lanes	1		0	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.978			0.999	
Satd. Flow (prot)	1711	1813	0	1711	1801	1830	0	1778	1492	0	1772	1463
Flt Permitted	0.322			0.503				0.789			0.996	
Satd. Flow (perm)	580	1813	0	906	1801	1830	0	1435	1492	0	1766	1463
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				74			198			40
Link Speed (mph)		30			30			30			35	
Link Distance (ft)		592			1353			704			566	
Travel Time (s)		13.5			30.8			16.0			11.0	
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.93	0.93	0.93	0.89	0.89	0.89
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%	1%	1%	1%	0%	0%	3%
Adj. Flow (vph)	64	265	5	315	527	3	97	118	198	2	136	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	270	0	315	527	3	0	215	198	0	138	40
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	0.85	1.04	1.04	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases	4			8		8	2		2	6		6
Detector Phase	7	4		3	8	8	2	2	2	6	6	7
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	23.0		9.5	23.0	23.0	23.0	23.0	23.0	23.0	23.0	10.0
Total Split (s)	13.0	57.0		13.0	57.0	57.0	33.0	33.0	33.0	33.0	33.0	13.0
Total Split (%)	12.6%	55.3%		12.6%	55.3%	55.3%	32.0%	32.0%	32.0%	32.0%	32.0%	12.6%
Maximum Green (s)	8.0	52.0		10.0	52.0	52.0	28.0	28.0	28.0	28.0	28.0	8.0
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		0.0	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
Total Lost Time (s)	5.0	5.0		3.0	5.0	5.0		5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	None	None	None	None	None	None
Act Effct Green (s)	30.5	23.2		36.6	27.1	27.1		15.8	15.8		15.8	28.6
Actuated g/C Ratio	0.48	0.37		0.58	0.43	0.43		0.25	0.25		0.25	0.45
v/c Ratio	0.16	0.41		0.48	0.68	0.00		0.60	0.38		0.31	0.06
Control Delay	7.7	16.7		9.4	21.8	0.0		31.0	6.3		24.0	5.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	7.7	16.7		9.4	21.8	0.0		31.0	6.3		24.0	5.2
LOS	A	B		A	C	A		C	A		C	A
Approach Delay		15.0			17.1			19.1			19.7	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	9	70		46	161	0		71	0		42	0
Queue Length 95th (ft)	29	143		119	332	0		174	49		108	17
Internal Link Dist (ft)		512			1273			624			486	
Turn Bay Length (ft)	110			190		100			265			65
Base Capacity (vph)	451	1494		668	1484	1521		699	829		861	718
Starvation Cap Reductn	0	0		0	0	0		0	0		0	0
Spillback Cap Reductn	0	0		0	0	0		0	0		0	0
Storage Cap Reductn	0	0		0	0	0		0	0		0	0
Reduced v/c Ratio	0.14	0.18		0.47	0.36	0.00		0.31	0.24		0.16	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 103			
Actuated Cycle Length: 63.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 62.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Forest Avenue/Wilkins Street & Main Street



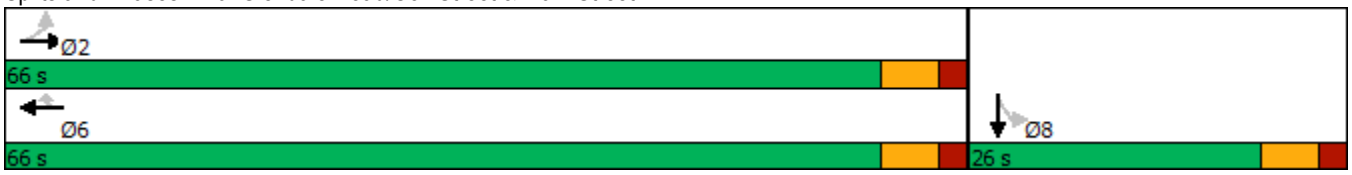


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	263	33	0	453	229	0	0	0	78	64	5
Future Volume (vph)	42	263	33	0	453	229	0	0	0	78	64	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	16	12	12	12	11	11	11
Storage Length (ft)	0		0	0		50	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987				0.850					0.995	
Flt Protected		0.994									0.974	
Satd. Flow (prot)	0	1897	0	0	1925	1812	0	0	0	0	1765	0
Flt Permitted		0.895									0.974	
Satd. Flow (perm)	0	1708	0	0	1925	1812	0	0	0	0	1765	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				171					2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		506			592			456			1021	
Travel Time (s)		11.5			13.5			10.4			23.2	
Peak Hour Factor	0.82	0.82	0.82	0.91	0.91	0.91	0.25	0.25	0.25	0.83	0.83	0.83
Heavy Vehicles (%)	0%	2%	0%	0%	2%	1%	0%	0%	0%	0%	2%	0%
Adj. Flow (vph)	51	321	40	0	498	252	0	0	0	94	77	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	412	0	0	498	252	0	0	0	0	177	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.96	0.96	0.96	0.96	0.96	0.85	1.00	1.00	1.00	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	
Protected Phases		2			6						8	
Permitted Phases	2					6				8		
Detector Phase	2	2			6	6				8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0				5.0	5.0	
Minimum Split (s)	24.0	24.0			24.0	24.0				24.0	24.0	
Total Split (s)	66.0	66.0			66.0	66.0				26.0	26.0	
Total Split (%)	71.7%	71.7%			71.7%	71.7%				28.3%	28.3%	
Maximum Green (s)	60.0	60.0			60.0	60.0				20.0	20.0	
Yellow Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
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	
Total Lost Time (s)		6.0			6.0	6.0					6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None			None	None				None	None	
Act Effct Green (s)		21.5			21.5	21.5					10.3	
Actuated g/C Ratio		0.57			0.57	0.57					0.28	
v/c Ratio		0.42			0.45	0.23					0.36	
Control Delay		8.8			9.1	3.1					16.8	
Queue Delay		0.0			0.0	0.0					0.0	
Total Delay		8.8			9.1	3.1					16.8	
LOS		A			A	A					B	
Approach Delay		8.8			7.1						16.8	
Approach LOS		A			A						B	
Queue Length 50th (ft)		55			71	9					31	
Queue Length 95th (ft)		112			157	39					85	
Internal Link Dist (ft)		426			512			376			941	
Turn Bay Length (ft)						50						
Base Capacity (vph)		1708			1925	1812					1035	
Starvation Cap Reductn		0			0	0					0	
Spillback Cap Reductn		0			0	0					0	
Storage Cap Reductn		0			0	0					0	
Reduced v/c Ratio		0.24			0.26	0.14					0.17	

Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 37.4			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 8.9		Intersection LOS: A	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Glendale Road/Cox Street & Main Street



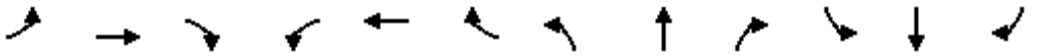
Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	305	25	6	458	0	26	0	32	1	25	44
Future Vol, veh/h	0	305	25	6	458	0	26	0	32	1	25	44
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	92	92	92	70	70	70	73	73	73
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	0	2
Mvmt Flow	0	321	26	7	498	0	37	0	46	1	34	60

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	347	0	0	893	846	334	869	859	498
Stage 1	-	-	-	-	-	-	334	334	-	512	512	-
Stage 2	-	-	-	-	-	-	559	512	-	357	347	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.318
Pot Cap-1 Maneuver	0	-	-	1223	-	0	264	301	712	274	296	572
Stage 1	0	-	-	-	-	0	684	647	-	548	540	-
Stage 2	0	-	-	-	-	0	517	540	-	665	638	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1223	-	-	214	299	712	255	294	572
Mov Cap-2 Maneuver	-	-	-	-	-	-	214	299	-	255	294	-
Stage 1	-	-	-	-	-	-	684	647	-	548	536	-
Stage 2	-	-	-	-	-	-	430	536	-	622	638	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	18.5	16
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	348	-	-	1223	-	422
HCM Lane V/C Ratio	0.238	-	-	0.005	-	0.227
HCM Control Delay (s)	18.5	-	-	8	0	16
HCM Lane LOS	C	-	-	A	A	C
HCM 95th %tile Q(veh)	0.9	-	-	0	-	0.9

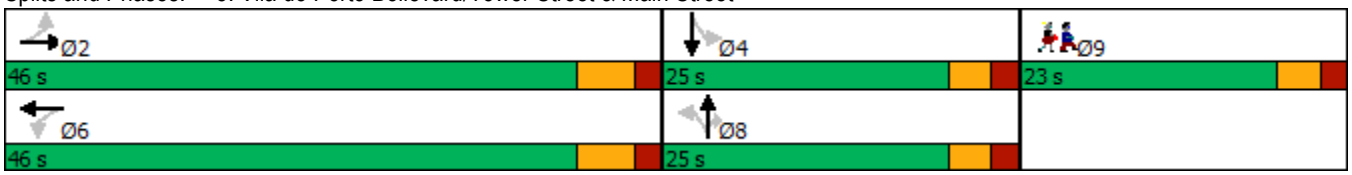


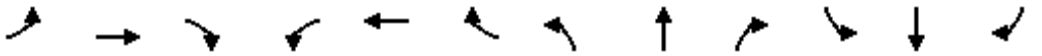
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	191	20	176	339	20	21	118	156	18	123	48
Future Volume (vph)	38	191	20	176	339	20	21	118	156	18	123	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	10	10	15	15	14	13	13	13
Storage Length (ft)	0		0	70		0	0		100	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.992				0.850		0.966	
Flt Protected		0.992		0.950				0.993			0.995	
Satd. Flow (prot)	0	1822	0	1728	1722	0	0	2075	1706	0	1887	0
Flt Permitted		0.801		0.586				0.937			0.967	
Satd. Flow (perm)	0	1471	0	1066	1722	0	0	1958	1706	0	1834	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			4				171		16	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		639			834			152			404	
Travel Time (s)		12.4			16.2			3.5			9.2	
Peak Hour Factor	0.94	0.94	0.94	0.88	0.88	0.88	0.91	0.91	0.91	0.77	0.77	0.77
Heavy Vehicles (%)	0%	3%	0%	1%	2%	5%	0%	0%	1%	0%	0%	0%
Adj. Flow (vph)	40	203	21	200	385	23	23	130	171	23	160	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	264	0	200	408	0	0	153	171	0	245	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.04	1.09	1.09	0.88	0.88	0.92	0.96	0.96	0.96
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	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	
Minimum Split (s)	24.0	24.0		24.0	24.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	46.0	46.0		46.0	46.0		25.0	25.0	25.0	25.0	25.0	
Total Split (%)	48.9%	48.9%		48.9%	48.9%		26.6%	26.6%	26.6%	26.6%	26.6%	
Maximum Green (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		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	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		6.0		6.0	6.0			5.0	5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		18.9		18.9	18.9			21.6	21.6		21.6	
Actuated g/C Ratio		0.34		0.34	0.34			0.39	0.39		0.39	
v/c Ratio		0.52		0.55	0.69			0.20	0.22		0.34	
Control Delay		18.7		21.7	22.6			17.6	5.2		17.6	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		18.7		21.7	22.6			17.6	5.2		17.6	
LOS		B		C	C			B	A		B	
Approach Delay		18.7			22.3			11.1			17.6	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		54		43	92			25	0		39	
Queue Length 95th (ft)		174		142	263			130	50		159	
Internal Link Dist (ft)		559			754			72			324	
Turn Bay Length (ft)				70					100			
Base Capacity (vph)		1152		834	1348			766	771		727	
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		0.23		0.24	0.30			0.20	0.22		0.34	

Intersection Summary			
Area Type:	Other		
Cycle Length: 94			
Actuated Cycle Length: 55.1			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 63.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Vila do Porto Boilevard/Tower Street & Main Street



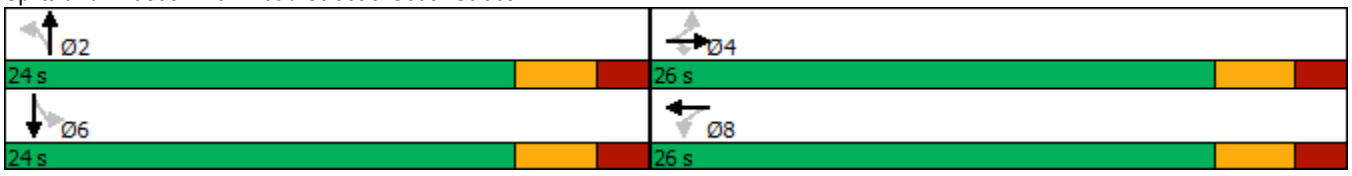


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	186	163	159	178	38	75	272	71	16	219	28
Future Volume (vph)	35	186	163	159	178	38	75	272	71	16	219	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	0		0	0		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.986			0.977			0.986	
Flt Protected		0.992			0.979			0.991			0.997	
Satd. Flow (prot)	0	1876	1615	0	1811	0	0	1820	0	0	1868	0
Flt Permitted		0.891			0.738			0.888			0.959	
Satd. Flow (perm)	0	1685	1615	0	1365	0	0	1631	0	0	1797	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			204		14			24			14	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		257			126			357			165	
Travel Time (s)		5.8			2.9			8.1			3.8	
Peak Hour Factor	0.80	0.80	0.80	0.87	0.87	0.87	0.94	0.94	0.94	0.78	0.78	0.78
Heavy Vehicles (%)	3%	0%	0%	3%	0%	0%	3%	0%	3%	0%	0%	0%
Adj. Flow (vph)	44	233	204	183	205	44	80	289	76	21	281	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	277	204	0	432	0	0	445	0	0	338	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	26.0	26.0	26.0	26.0	26.0		24.0	24.0		24.0	24.0	
Total Split (%)	52.0%	52.0%	52.0%	52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	21.0	21.0	21.0	21.0	21.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	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	
Lost Time Adjust (s)		0.0	0.0		0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0		5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		17.3	17.3		17.3			15.4			15.4	
Actuated g/C Ratio		0.40	0.40		0.40			0.36			0.36	
v/c Ratio		0.41	0.26		0.78			0.75			0.52	
Control Delay		11.9	2.9		23.7			21.5			14.4	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		11.9	2.9		23.7			21.5			14.4	
LOS		B	A		C			C			B	
Approach Delay		8.1			23.7			21.5			14.4	
Approach LOS		A			C			C			B	
Queue Length 50th (ft)		50	0		92			97			67	
Queue Length 95th (ft)		86	20		#214			#218			105	
Internal Link Dist (ft)		177			46			277			85	
Turn Bay Length (ft)			50									
Base Capacity (vph)		855	920		699			762			833	
Starvation Cap Reductn		0	0		0			0			0	
Spillback Cap Reductn		0	0		0			0			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.32	0.22		0.62			0.58			0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 43.2			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 16.9		Intersection LOS: B	
Intersection Capacity Utilization 85.8%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 9: Broad Street & South Street



MOVEMENT SUMMARY

Site: 10 [Intersection 10: Route 62 at Washington Street and Felton Street (Site Folder: General)]

2024 Existing Weekday Evening Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Washington Street														
3	L2	623	1.0	670	1.0	0.817	21.1	LOS C	21.4	539.9	0.89	0.98	1.48	21.1
8	T1	59	2.0	63	2.0	0.817	21.1	LOS C	21.4	539.9	0.89	0.98	1.48	21.0
18	R2	95	0.0	102	0.0	0.817	21.0	LOS C	21.4	539.9	0.89	0.98	1.48	20.6
Approach		777	1.0	835	1.0	0.817	21.1	LOS C	21.4	539.9	0.89	0.98	1.48	21.0
East: Route 62														
1	L2	122	1.0	136	1.0	0.721	22.2	LOS C	9.2	231.4	0.95	1.35	1.69	21.1
6	T1	275	1.0	306	1.0	0.721	22.2	LOS C	9.2	231.4	0.95	1.35	1.69	19.9
16	R2	24	0.0	27	0.0	0.721	22.1	LOS C	9.2	231.4	0.95	1.35	1.69	19.6
Approach		421	0.9	468	0.9	0.721	22.2	LOS C	9.2	231.4	0.95	1.35	1.69	20.2
West: Route 62														
5	L2	24	0.0	25	0.0	0.789	18.6	LOS B	14.9	375.8	0.84	0.64	0.97	20.7
2	T1	179	1.0	185	1.0	0.789	18.6	LOS B	14.9	375.8	0.84	0.64	0.97	20.6
12	R2	612	1.0	631	1.0	0.789	18.6	LOS B	14.9	375.8	0.84	0.64	0.97	21.6
Approach		815	1.0	840	1.0	0.789	18.6	LOS B	14.9	375.8	0.84	0.64	0.97	21.4
All Vehicles		2013	1.0	2143	1.0	0.817	20.4	LOS C	21.4	539.9	0.88	0.93	1.33	21.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection	
Intersection Delay, s/veh	15.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	141	8	44	192	135	6	147	21	77	114	47
Future Vol, veh/h	48	141	8	44	192	135	6	147	21	77	114	47
Peak Hour Factor	0.84	0.84	0.84	0.90	0.90	0.90	0.96	0.96	0.96	0.91	0.91	0.91
Heavy Vehicles, %	0	0	12	4	1	1	0	1	0	0	0	0
Mvmt Flow	57	168	10	49	213	150	6	153	22	85	125	52
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.2	18.8	12.4	14.2
HCM LOS	B	C	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	24%	12%	32%
Vol Thru, %	84%	72%	52%	48%
Vol Right, %	12%	4%	36%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	174	197	371	238
LT Vol	6	48	44	77
Through Vol	147	141	192	114
RT Vol	21	8	135	47
Lane Flow Rate	181	235	412	262
Geometry Grp	1	1	1	1
Degree of Util (X)	0.32	0.4	0.653	0.448
Departure Headway (Hd)	6.349	6.133	5.7	6.169
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	564	586	639	583
Service Time	4.408	4.184	3.7	4.222
HCM Lane V/C Ratio	0.321	0.401	0.645	0.449
HCM Control Delay	12.4	13.2	18.8	14.2
HCM Lane LOS	B	B	C	B
HCM 95th-tile Q	1.4	1.9	4.8	2.3

MOVEMENT SUMMARY

Site: 12 [Intersection 12: Washington Street at Broad Street (Site Folder: General)]

2024 Existing Weekday Evening Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Washington Street														
3u	U	8	0.0	9	0.0	0.481	7.8	LOS A	4.7	118.4	0.36	0.16	0.36	29.9
3a	L1	672	1.0	755	1.0	0.481	7.8	LOS A	4.7	118.7	0.36	0.16	0.36	29.2
8	T1	408	2.0	458	2.0	0.481	7.8	LOS A	4.7	118.7	0.36	0.16	0.36	30.4
Approach		1088	1.4	1222	1.4	0.481	7.8	LOS A	4.7	118.7	0.36	0.16	0.36	29.6
North: Broad Street														
4	T1	399	1.0	443	1.0	0.421	11.6	LOS B	2.5	63.5	0.73	0.78	0.89	31.9
14b	R3	96	3.0	107	3.0	0.421	11.8	LOS B	2.5	63.8	0.73	0.78	0.89	30.6
Approach		495	1.4	550	1.4	0.421	11.6	LOS B	2.5	63.8	0.73	0.78	0.89	31.7
NorthWest: Washington Street														
7ux	U	10	10.0	11	10.0	0.390	10.7	LOS B	2.3	58.4	0.69	0.64	0.69	32.6
7bx	L3	42	2.0	44	2.0	0.390	10.1	LOS B	2.3	58.4	0.69	0.64	0.69	32.5
14ax	R1	485	2.0	511	2.0	0.390	10.1	LOS B	2.3	58.3	0.69	0.64	0.69	32.2
Approach		537	2.1	565	2.1	0.390	10.1	LOS B	2.3	58.4	0.69	0.64	0.69	32.3
All Vehicles		2120	1.6	2338	1.6	0.481	9.3	LOS A	4.7	118.7	0.53	0.42	0.56	30.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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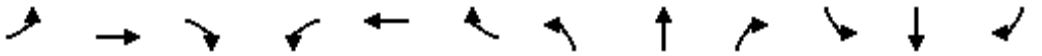


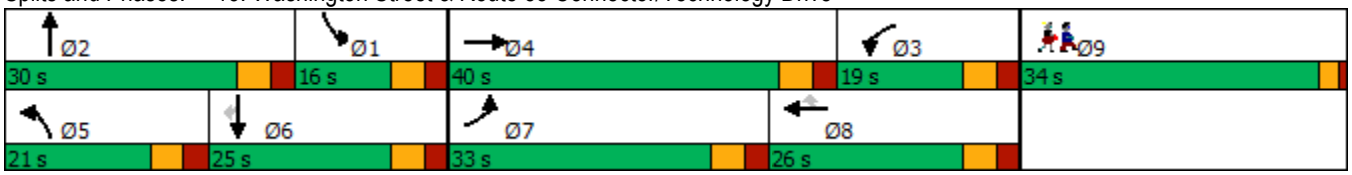
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	522	303	239	65	337	54	304	445	65	64	368	511
Future Volume (vph)	522	303	239	65	337	54	304	445	65	64	368	511
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	10	10	10	11	10	10	11	11	11	10	14
Storage Length (ft)	350		0	175		175	350		0	215		50
Storage Lanes	2		0	1		1	2		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95	1.00	0.95	1.00
Frt		0.934				0.850		0.981				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3351	3116	0	1685	3455	1507	3268	3385	0	1745	3303	1689
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3351	3116	0	1685	3455	1507	3268	3385	0	1745	3303	1689
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		136				188		10				237
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		680			776			490			543	
Travel Time (s)		15.5			17.6			11.1			12.3	
Peak Hour Factor	0.90	0.90	0.90	0.82	0.82	0.82	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	1%	0%	1%	0%	0%	1%	2%	0%	2%	2%
Adj. Flow (vph)	580	337	266	79	411	66	320	468	68	67	387	538
Shared Lane Traffic (%)												
Lane Group Flow (vph)	580	603	0	79	411	66	320	536	0	67	387	538
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		22			22			20			20	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.09	1.09	1.09	1.04	1.09	1.09	1.04	1.04	1.04	1.09	0.92
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	12.0	16.0		12.0	16.0	16.0	12.0	16.0		12.0	25.0	25.0
Total Split (s)	33.0	40.0		19.0	26.0	26.0	21.0	30.0		16.0	25.0	25.0
Total Split (%)	23.7%	28.8%		13.7%	18.7%	18.7%	15.1%	21.6%		11.5%	18.0%	18.0%
Maximum Green (s)	27.0	34.0		13.0	20.0	20.0	15.0	24.0		10.0	19.0	19.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5
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)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0

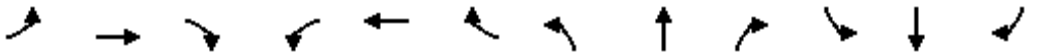
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	None	Min		None	Min	Min
Walk Time (s)											7.0	7.0
Flash Dont Walk (s)											12.0	12.0
Pedestrian Calls (#/hr)											5	5
Act Effct Green (s)	23.3	27.8		16.2	17.8	17.8	14.8	27.2		10.0	19.5	19.5
Actuated g/C Ratio	0.22	0.26		0.15	0.17	0.17	0.14	0.26		0.10	0.19	0.19
v/c Ratio	0.78	0.65		0.31	0.70	0.16	0.70	0.61		0.40	0.63	1.06
Control Delay	48.2	32.7		47.0	50.2	0.8	53.9	41.0		57.6	47.4	82.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	48.2	32.7		47.0	50.2	0.8	53.9	41.0		57.6	47.4	82.5
LOS	D	C		D	D	A	D	D		E	D	F
Approach Delay		40.3			43.9			45.8			67.1	
Approach LOS		D			D			D			E	
Queue Length 50th (ft)	177	151		42	128	0	101	162		41	121	~245
Queue Length 95th (ft)	#365	275		112	227	0	#238	#352		112	#267	#636
Internal Link Dist (ft)		600			696			410			463	
Turn Bay Length (ft)	350			175		175	350			215		50
Base Capacity (vph)	882	1146		285	674	445	478	906		181	612	506
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.66	0.53		0.28	0.61	0.15	0.67	0.59		0.37	0.63	1.06

Intersection Summary

Area Type: Other
Cycle Length: 139
Actuated Cycle Length: 105.1
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 49.6 Intersection LOS: D
Intersection Capacity Utilization 64.6% ICU Level of Service C
Analysis Period (min) 15
~ 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.

Splits and Phases: 13: Washington Street & Route 85 Connector/Technology Drive



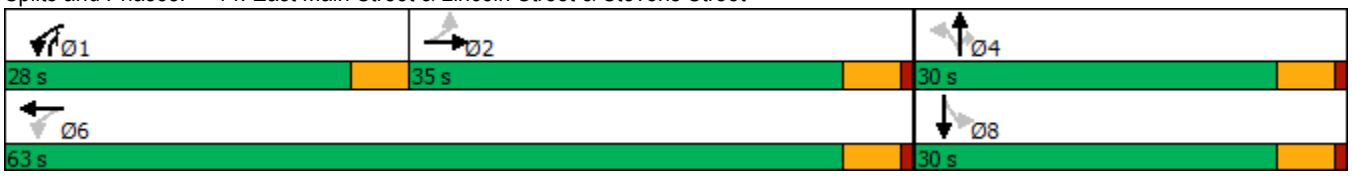


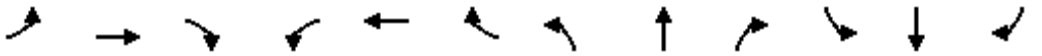
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	342	12	385	395	272	12	63	464	54	16	0
Future Volume (vph)	4	342	12	385	395	272	12	63	464	54	16	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	16	12	12	12	11	11	11	15	15	15
Storage Length (ft)	115		0	0		0	0		130	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.939				0.850			
Flt Protected		0.999		0.950				0.992			0.963	
Satd. Flow (prot)	0	3708	0	1787	1784	0	0	1822	1546	0	2013	0
Flt Permitted		0.945		0.392				0.935			0.722	
Satd. Flow (perm)	0	3508	0	737	1784	0	0	1717	1546	0	1509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			71				255			
Link Speed (mph)		25			25			30			20	
Link Distance (ft)		679			2541			789			556	
Travel Time (s)		18.5			69.3			17.9			19.0	
Peak Hour Factor	0.95	0.95	0.95	0.94	0.94	0.94	0.92	0.92	0.92	0.35	0.35	0.35
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	0%
Adj. Flow (vph)	4	360	13	410	420	289	13	68	504	154	46	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	377	0	410	709	0	0	81	504	0	200	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.96	0.96	0.85	1.00	1.00	1.00	1.04	1.04	1.04	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.0	25.0		10.0	25.0		25.0	25.0	10.0	25.0	25.0	
Total Split (s)	35.0	35.0		28.0	63.0		30.0	30.0	28.0	30.0	30.0	
Total Split (%)	37.6%	37.6%		30.1%	67.7%		32.3%	32.3%	30.1%	32.3%	32.3%	
Maximum Green (s)	30.0	30.0		24.0	58.0		25.0	25.0	24.0	25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0	0.0	1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		5.0		4.0	5.0			5.0	4.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	Min	Min		None	None		Min	Min	None	None	None	
Walk Time (s)	9.0	9.0			9.0		9.0	9.0		9.0	9.0	
Flash Dont Walk (s)	8.0	8.0			8.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		12.1		32.2	31.1			13.1	33.2		13.1	
Actuated g/C Ratio		0.22		0.59	0.57			0.24	0.61		0.24	
v/c Ratio		0.49		0.57	0.68			0.20	0.49		0.56	
Control Delay		22.4		9.9	11.7			20.1	4.5		26.7	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		22.4		9.9	11.7			20.1	4.5		26.7	
LOS		C		A	B			C	A		C	
Approach Delay		22.4			11.0			6.7			26.7	
Approach LOS		C			B			A			C	
Queue Length 50th (ft)		52		57	117			20	30		53	
Queue Length 95th (ft)		121		141	289			63	91		47	
Internal Link Dist (ft)		599			2461			709			476	
Turn Bay Length (ft)									130			
Base Capacity (vph)		2035		929	1681			829	1286		729	
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		0.19		0.44	0.42			0.10	0.39		0.27	

Intersection Summary			
Area Type:	Other		
Cycle Length: 93			
Actuated Cycle Length: 54.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 13.2		Intersection LOS: B	
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: East Main Street & Lincoln Street & Stevens Street





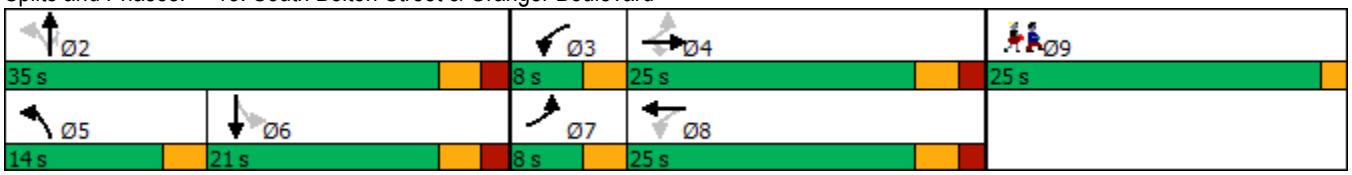
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	318	233	137	273	10	242	381	150	14	269	34
Future Volume (vph)	59	318	233	137	273	10	242	381	150	14	269	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	12	12	12	13	13	12	12	12
Storage Length (ft)	135		0	0		0	115		115	0		0
Storage Lanes	1		1	1		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.995				0.850		0.984	
Flt Protected	0.950			0.950			0.950				0.998	
Satd. Flow (prot)	1685	1863	1615	1805	1855	0	1805	1944	1669	0	3504	0
Flt Permitted	0.510			0.345			0.423				0.928	
Satd. Flow (perm)	904	1863	1615	656	1855	0	804	1944	1669	0	3258	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			243		2				126		12	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1659			2112			460			421	
Travel Time (s)		37.7			48.0			10.5			9.6	
Peak Hour Factor	0.96	0.96	0.96	0.94	0.94	0.94	0.93	0.93	0.93	0.86	0.86	0.86
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	1%	0%	0%	1%	3%
Adj. Flow (vph)	61	331	243	146	290	11	260	410	161	16	313	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	331	243	146	301	0	260	410	161	0	369	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	7	4	4	3	8		5	2	2	6	6	
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)	8.0	10.0	10.0	8.0	10.0		8.0	10.0	10.0	10.0	10.0	
Total Split (s)	8.0	25.0	25.0	8.0	25.0		14.0	35.0	35.0	21.0	21.0	
Total Split (%)	8.6%	26.9%	26.9%	8.6%	26.9%		15.1%	37.6%	37.6%	22.6%	22.6%	
Maximum Green (s)	5.0	20.0	20.0	5.0	20.0		11.0	30.0	30.0	16.0	16.0	
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)	0.0	2.0	2.0	0.0	2.0		0.0	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	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0	5.0		5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None		None	Max	Max	Max	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	24.2	17.2	17.2	25.5	20.6		32.1	30.1	30.1		16.7	
Actuated g/C Ratio	0.37	0.26	0.26	0.39	0.32		0.49	0.46	0.46		0.26	
v/c Ratio	0.15	0.68	0.40	0.43	0.51		0.47	0.46	0.19		0.44	
Control Delay	12.3	29.1	5.2	16.3	22.9		13.7	14.8	4.4		22.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	
Total Delay	12.3	29.1	5.2	16.3	22.9		13.7	14.8	4.4		22.5	
LOS	B	C	A	B	C		B	B	A		C	
Approach Delay		18.3			20.7			12.4			22.5	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	14	117	0	35	104		61	111	8		65	
Queue Length 95th (ft)	34	196	46	68	177		110	187	38		100	
Internal Link Dist (ft)		1579			2032			380			341	
Turn Bay Length (ft)	135						115		115			
Base Capacity (vph)	394	571	664	343	592		564	895	836		841	
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	
Reduced v/c Ratio	0.15	0.58	0.37	0.43	0.51		0.46	0.46	0.19		0.44	

Intersection Summary

Area Type: Other
Cycle Length: 93
Actuated Cycle Length: 65.3
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 17.3 — Intersection LOS: B
Intersection Capacity Utilization 69.1% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 15: South Bolton Street & Granger Boulevard



Intersection	
Int Delay, s/veh	40

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↾	
Traffic Vol, veh/h	0	906	868	0	1	412
Future Vol, veh/h	0	906	868	0	1	412
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	95	95	92	92	95	95
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	0	954	943	0	1	434

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	1897	943
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	954	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	77	~ 321
Stage 1	0	-	-	0	382	-
Stage 2	0	-	-	0	377	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	77	~ 321
Mov Cap-2 Maneuver	-	-	-	-	77	-
Stage 1	-	-	-	-	382	-
Stage 2	-	-	-	-	377	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	214.5
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	319
HCM Lane V/C Ratio	-	-	1.363
HCM Control Delay (s)	-	-	214.5
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	21.9

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

2031 No-Build Weekday Morning Peak Hour

Intersection	
Intersection Delay, s/veh	13.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	187	194	11	129	4	71	80	6	9	130	28
Future Vol, veh/h	13	187	194	11	129	4	71	80	6	9	130	28
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.79	0.79	0.79	0.85	0.85	0.85
Heavy Vehicles, %	0	0	6	0	2	25	5	3	0	13	2	4
Mvmt Flow	14	208	216	13	155	5	90	101	8	11	153	33
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.4	11.2	12.3	12.2
HCM LOS	C	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	45%	3%	8%	5%
Vol Thru, %	51%	47%	90%	78%
Vol Right, %	4%	49%	3%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	157	394	144	167
LT Vol	71	13	11	9
Through Vol	80	187	129	130
RT Vol	6	194	4	28
Lane Flow Rate	199	438	173	196
Geometry Grp	1	1	1	1
Degree of Util (X)	0.336	0.623	0.28	0.332
Departure Headway (Hd)	6.091	5.123	5.819	6.076
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	586	700	612	587
Service Time	4.168	3.184	3.898	4.152
HCM Lane V/C Ratio	0.34	0.626	0.283	0.334
HCM Control Delay	12.3	16.4	11.2	12.2
HCM Lane LOS	B	C	B	B
HCM 95th-tile Q	1.5	4.4	1.1	1.4

Intersection	
Int Delay, s/veh	2.3

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	3	315	1	6	139	29	1	4	22	49	0	0
Future Vol, veh/h	3	315	1	6	139	29	1	4	22	49	0	0
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	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	72	72	72	78	78	78	70	70	70
Heavy Vehicles, %	0	4	0	17	4	11	0	0	0	7	0	0
Mvmt Flow	3	328	1	8	193	40	1	5	28	70	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	193	0	0	329	0	0	544	544	329	560	544	193
Stage 1	-	-	-	-	-	-	335	335	-	209	209	-
Stage 2	-	-	-	-	-	-	209	209	-	351	335	-
Critical Hdwy	4.1	-	-	4.27	-	-	7.1	6.5	6.2	7.17	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.17	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.17	5.5	-
Follow-up Hdwy	2.2	-	-	2.353	-	-	3.5	4	3.3	3.563	4	3.3
Pot Cap-1 Maneuver	1392	-	-	1151	-	-	453	449	717	431	449	854
Stage 1	-	-	-	-	-	-	683	646	-	782	733	-
Stage 2	-	-	-	-	-	-	798	733	-	655	646	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1392	-	-	1151	-	-	449	444	717	407	444	854
Mov Cap-2 Maneuver	-	-	-	-	-	-	449	444	-	407	444	-
Stage 1	-	-	-	-	-	-	681	644	-	780	727	-
Stage 2	-	-	-	-	-	-	792	727	-	622	644	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	0.1	0.3	10.9	15.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	644	1151	-	-	1392	-	-	407
HCM Lane V/C Ratio	0.054	0.007	-	-	0.002	-	-	0.172
HCM Control Delay (s)	10.9	8.2	0	-	7.6	0	-	15.7
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	1.1

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	213	16	14	379	4	3	0	10	19	0	6
Future Vol, veh/h	4	213	16	14	379	4	3	0	10	19	0	6
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	84	84	84	75	75	75	85	85	85
Heavy Vehicles, %	0	6	60	31	2	25	33	0	0	7	0	0
Mvmt Flow	5	280	21	17	451	5	4	0	13	22	0	7

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	456	0	0	301	0	0	792	799	454	795	791	291
Stage 1	-	-	-	-	-	-	488	488	-	301	301	-
Stage 2	-	-	-	-	-	-	304	311	-	494	490	-
Critical Hdwy	4.1	-	-	4.41	-	-	7.43	6.5	6.2	7.17	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.43	5.5	-	6.17	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.43	5.5	-	6.17	5.5	-
Follow-up Hdwy	2.2	-	-	2.479	-	-	3.797	4	3.3	3.563	4	3.3
Pot Cap-1 Maneuver	1115	-	-	1112	-	-	273	321	610	300	324	753
Stage 1	-	-	-	-	-	-	507	553	-	697	669	-
Stage 2	-	-	-	-	-	-	644	662	-	548	552	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1115	-	-	1112	-	-	265	313	610	288	316	753
Mov Cap-2 Maneuver	-	-	-	-	-	-	265	313	-	288	316	-
Stage 1	-	-	-	-	-	-	504	542	-	694	666	-
Stage 2	-	-	-	-	-	-	635	659	-	525	541	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.1	0.3	13	16.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	469	1115	-	-	1112	-	-	338
HCM Lane V/C Ratio	0.037	0.005	-	-	0.015	-	-	0.087
HCM Control Delay (s)	13	8.2	0	-	8.3	0	-	16.7
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3

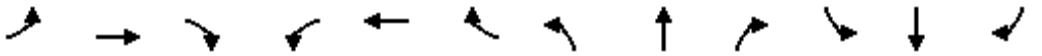
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	15	1	198	381	0
Future Vol, veh/h	1	15	1	198	381	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	81	81	90	90
Heavy Vehicles, %	0	0	0	5	6	0
Mvmt Flow	1	16	1	244	423	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	669	423	423	0	-	0
Stage 1	423	-	-	-	-	-
Stage 2	246	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	426	635	1147	-	-	-
Stage 1	665	-	-	-	-	-
Stage 2	800	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	426	635	1147	-	-	-
Mov Cap-2 Maneuver	426	-	-	-	-	-
Stage 1	664	-	-	-	-	-
Stage 2	800	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1147	-	616	-	-
HCM Lane V/C Ratio	0.001	-	0.028	-	-
HCM Control Delay (s)	8.1	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

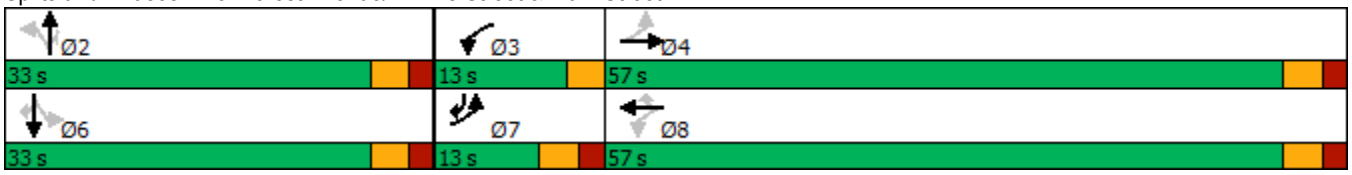


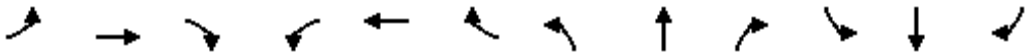
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	532	2	143	252	9	94	90	337	2	100	39
Future Volume (vph)	48	532	2	143	252	9	94	90	337	2	100	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	16	11	11	10	10	10	10
Storage Length (ft)	110		0	190		100	0		265	0		65
Storage Lanes	1		0	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.975			0.999	
Satd. Flow (prot)	1601	1799	0	1662	1783	1620	0	1791	1492	0	1754	1358
Flt Permitted	0.572			0.244				0.759			0.994	
Satd. Flow (perm)	964	1799	0	427	1783	1620	0	1394	1492	0	1746	1358
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						74			361			60
Link Speed (mph)		30			30			30			35	
Link Distance (ft)		592			1353			704			566	
Travel Time (s)		13.5			30.8			16.0			11.0	
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.92	0.92	0.92	0.65	0.65	0.65
Heavy Vehicles (%)	9%	2%	0%	5%	3%	13%	0%	0%	1%	0%	1%	11%
Adj. Flow (vph)	52	572	2	159	280	10	102	98	366	3	154	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	574	0	159	280	10	0	200	366	0	157	60
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	0.85	1.04	1.04	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases	4			8		8	2		2	6		6
Detector Phase	7	4		3	8	8	2	2	2	6	6	7
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	23.0		9.5	23.0	23.0	23.0	23.0	23.0	23.0	23.0	10.0
Total Split (s)	13.0	57.0		13.0	57.0	57.0	33.0	33.0	33.0	33.0	33.0	13.0
Total Split (%)	12.6%	55.3%		12.6%	55.3%	55.3%	32.0%	32.0%	32.0%	32.0%	32.0%	12.6%
Maximum Green (s)	8.0	52.0		10.0	52.0	52.0	28.0	28.0	28.0	28.0	28.0	8.0
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		0.0	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
Total Lost Time (s)	5.0	5.0		3.0	5.0	5.0		5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	None	None	None	None	None	None
Act Effct Green (s)	35.3	28.3		39.5	30.9	30.9		17.0	17.0		17.0	29.4
Actuated g/C Ratio	0.52	0.42		0.58	0.46	0.46		0.25	0.25		0.25	0.43
v/c Ratio	0.09	0.77		0.40	0.35	0.01		0.57	0.57		0.36	0.10
Control Delay	7.3	25.1		9.3	15.4	0.0		31.8	7.1		26.0	5.0
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	7.3	25.1		9.3	15.4	0.0		31.8	7.1		26.0	5.0
LOS	A	C		A	B	A		C	A		C	A
Approach Delay		23.6			12.9			15.9			20.2	
Approach LOS		C			B			B			C	
Queue Length 50th (ft)	8	186		23	74	0		69	1		51	0
Queue Length 95th (ft)	27	387		63	163	0		174	71		90	11
Internal Link Dist (ft)		512			1273			624			486	
Turn Bay Length (ft)	110			190		100			265			65
Base Capacity (vph)	607	1420		454	1407	1294		626	869		784	655
Starvation Cap Reductn	0	22		0	0	0		0	0		0	0
Spillback Cap Reductn	0	0		0	0	0		0	0		0	0
Storage Cap Reductn	0	0		0	0	0		0	0		0	0
Reduced v/c Ratio	0.09	0.41		0.35	0.20	0.01		0.32	0.42		0.20	0.09

Intersection Summary			
Area Type:	Other		
Cycle Length: 103			
Actuated Cycle Length: 67.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 66.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Forest Avenue/Wilkins Street & Main Street



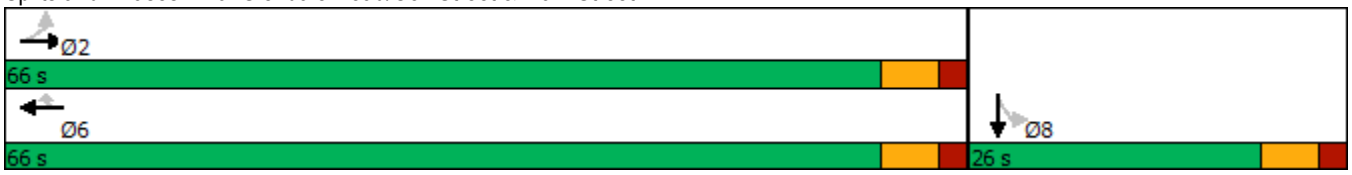


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	457	34	0	321	158	0	0	0	196	80	6
Future Volume (vph)	83	457	34	0	321	158	0	0	0	196	80	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	16	12	12	12	11	11	11
Storage Length (ft)	0		0	0		50	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850					0.997	
Flt Protected		0.993									0.966	
Satd. Flow (prot)	0	1858	0	0	1925	1794	0	0	0	0	1728	0
Flt Permitted		0.894									0.966	
Satd. Flow (perm)	0	1673	0	0	1925	1794	0	0	0	0	1728	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				166					1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		506			592			456			1021	
Travel Time (s)		11.5			13.5			10.4			23.2	
Peak Hour Factor	0.91	0.91	0.91	0.95	0.95	0.95	0.92	0.92	0.92	0.84	0.84	0.84
Heavy Vehicles (%)	9%	3%	7%	0%	2%	2%	0%	0%	0%	3%	1%	0%
Adj. Flow (vph)	91	502	37	0	338	166	0	0	0	233	95	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	630	0	0	338	166	0	0	0	0	335	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.96	0.96	0.96	0.96	0.96	0.85	1.00	1.00	1.00	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	
Protected Phases		2			6						8	
Permitted Phases	2					6				8		
Detector Phase	2	2			6	6				8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0				5.0	5.0	
Minimum Split (s)	24.0	24.0			24.0	24.0				24.0	24.0	
Total Split (s)	66.0	66.0			66.0	66.0				26.0	26.0	
Total Split (%)	71.7%	71.7%			71.7%	71.7%				28.3%	28.3%	
Maximum Green (s)	60.0	60.0			60.0	60.0				20.0	20.0	
Yellow Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
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	
Total Lost Time (s)		6.0			6.0	6.0					6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None			None	None				None	None	
Act Effct Green (s)		27.5			27.5	27.5					17.1	
Actuated g/C Ratio		0.48			0.48	0.48					0.30	
v/c Ratio		0.78			0.37	0.17					0.65	
Control Delay		19.8			10.4	2.0					26.7	
Queue Delay		0.0			0.0	0.0					0.0	
Total Delay		19.8			10.4	2.0					26.7	
LOS		B			B	A					C	
Approach Delay		19.8			7.7						26.7	
Approach LOS		B			A						C	
Queue Length 50th (ft)		168			69	0					95	
Queue Length 95th (ft)		292			120	23					208	
Internal Link Dist (ft)		426			512			376			941	
Turn Bay Length (ft)						50						
Base Capacity (vph)		1585			1823	1708					632	
Starvation Cap Reductn		0			0	0					0	
Spillback Cap Reductn		0			0	0					0	
Storage Cap Reductn		0			0	0					0	
Reduced v/c Ratio		0.40			0.19	0.10					0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 57.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 17.2		Intersection LOS: B	
Intersection Capacity Utilization 78.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Glendale Road/Cox Street & Main Street



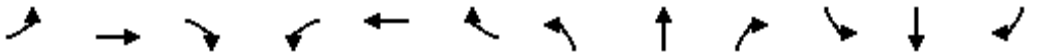
Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	541	32	28	299	0	25	0	31	2	43	64
Future Vol, veh/h	0	541	32	28	299	0	25	0	31	2	43	64
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	69	69	69	71	71	71
Heavy Vehicles, %	0	6	0	0	7	0	0	0	14	50	5	10
Mvmt Flow	0	608	36	31	336	0	36	0	45	3	61	90

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	644	0	0	1100	1024	626	1047	1042	336
Stage 1	-	-	-	-	-	-	626	626	-	398	398	-
Stage 2	-	-	-	-	-	-	474	398	-	649	644	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	6.5	6.34	7.6	6.55	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.6	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.6	5.55	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	4	3.426	3.95	4.045	3.39
Pot Cap-1 Maneuver	0	-	-	951	-	0	191	237	463	168	227	688
Stage 1	0	-	-	-	-	0	475	480	-	542	598	-
Stage 2	0	-	-	-	-	0	575	606	-	388	463	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	951	-	-	127	228	463	147	218	688
Mov Cap-2 Maneuver	-	-	-	-	-	-	127	228	-	147	218	-
Stage 1	-	-	-	-	-	-	475	480	-	542	574	-
Stage 2	-	-	-	-	-	-	429	582	-	350	463	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	32.1	22.3
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	212	-	-	951	-	359
HCM Lane V/C Ratio	0.383	-	-	0.033	-	0.428
HCM Control Delay (s)	32.1	-	-	8.9	0	22.3
HCM Lane LOS	D	-	-	A	A	C
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-	2.1



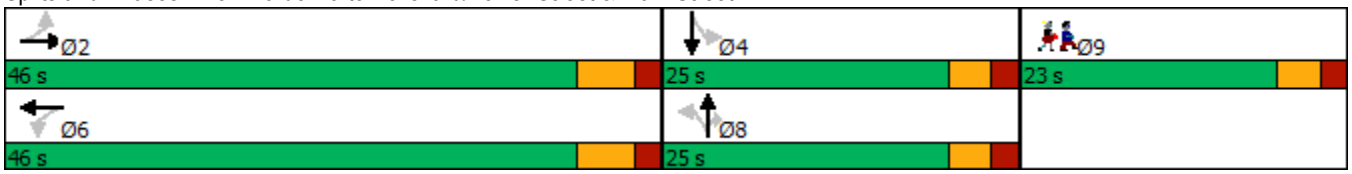
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	312	14	171	203	21	5	127	246	45	156	83
Future Volume (vph)	38	312	14	171	203	21	5	127	246	45	156	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	10	10	15	15	14	13	13	13
Storage Length (ft)	0		0	70		0	0		100	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.986				0.850		0.960	
Flt Protected		0.995		0.950				0.998			0.992	
Satd. Flow (prot)	0	1834	0	1678	1650	0	0	2008	1656	0	1843	0
Flt Permitted		0.938		0.409				0.988			0.934	
Satd. Flow (perm)	0	1729	0	722	1650	0	0	1988	1656	0	1736	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			7				267		20	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		639			834			152			404	
Travel Time (s)		12.4			16.2			3.5			9.2	
Peak Hour Factor	0.83	0.83	0.83	0.91	0.91	0.91	0.92	0.92	0.92	0.91	0.91	0.91
Heavy Vehicles (%)	0%	3%	0%	4%	4%	25%	0%	4%	4%	0%	1%	3%
Adj. Flow (vph)	46	376	17	188	223	23	5	138	267	49	171	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	439	0	188	246	0	0	143	267	0	311	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.04	1.09	1.09	0.88	0.88	0.92	0.96	0.96	0.96
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	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	
Minimum Split (s)	24.0	24.0		24.0	24.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	46.0	46.0		46.0	46.0		25.0	25.0	25.0	25.0	25.0	
Total Split (%)	48.9%	48.9%		48.9%	48.9%		26.6%	26.6%	26.6%	26.6%	26.6%	
Maximum Green (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		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	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		6.0		6.0	6.0			5.0	5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		20.1		20.1	20.1			21.7	21.7		21.7	
Actuated g/C Ratio		0.36		0.36	0.36			0.38	0.38		0.38	
v/c Ratio		0.71		0.73	0.42			0.19	0.33		0.46	
Control Delay		23.0		34.8	16.0			18.5	5.0		20.6	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		23.0		34.8	16.0			18.5	5.0		20.6	
LOS		C		C	B			B	A		C	
Approach Delay		23.0			24.1			9.7			20.6	
Approach LOS		C			C			A			C	
Queue Length 50th (ft)		101		44	49			23	0		53	
Queue Length 95th (ft)		261		166	153			128	63		#303	
Internal Link Dist (ft)		559			754			72			324	
Turn Bay Length (ft)				70					100			
Base Capacity (vph)		1330		555	1270			764	801		679	
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		0.33		0.34	0.19			0.19	0.33		0.46	

Intersection Summary

Area Type: Other
Cycle Length: 94
Actuated Cycle Length: 56.5
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 19.4 Intersection LOS: B
Intersection Capacity Utilization 72.4% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Vila do Porto Boilevard/Tower Street & Main Street

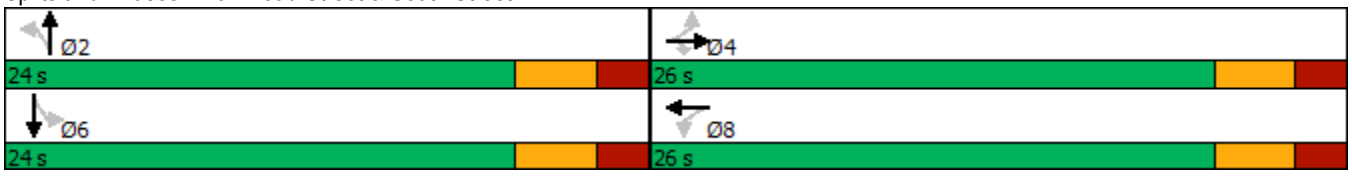


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	207	103	208	100	18	36	199	143	16	232	11
Future Volume (vph)	27	207	103	208	100	18	36	199	143	16	232	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	0		0	0		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.992			0.949			0.994	
Flt Protected		0.994			0.969			0.995			0.997	
Satd. Flow (prot)	0	1801	1553	0	1769	0	0	1694	0	0	1866	0
Flt Permitted		0.921			0.652			0.944			0.964	
Satd. Flow (perm)	0	1668	1553	0	1191	0	0	1607	0	0	1804	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121		7			70			5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		257			126			357			165	
Travel Time (s)		5.8			2.9			8.1			3.8	
Peak Hour Factor	0.85	0.85	0.85	0.70	0.70	0.70	0.82	0.82	0.82	0.85	0.85	0.85
Heavy Vehicles (%)	4%	5%	4%	4%	0%	12%	6%	3%	10%	0%	1%	0%
Adj. Flow (vph)	32	244	121	297	143	26	44	243	174	19	273	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	276	121	0	466	0	0	461	0	0	305	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	26.0	26.0	26.0	26.0	26.0		24.0	24.0		24.0	24.0	
Total Split (%)	52.0%	52.0%	52.0%	52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	21.0	21.0	21.0	21.0	21.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	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	
Lost Time Adjust (s)		0.0	0.0		0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0		5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		20.3	20.3		20.3			15.5			15.5	
Actuated g/C Ratio		0.44	0.44		0.44			0.34			0.34	
v/c Ratio		0.38	0.16		0.88			0.78			0.50	
Control Delay		11.3	3.0		35.9			22.7			15.0	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		11.3	3.0		35.9			22.7			15.0	
LOS		B	A		D			C			B	
Approach Delay		8.8			35.9			22.7			15.0	
Approach LOS		A			D			C			B	
Queue Length 50th (ft)		49	0		112			91			63	
Queue Length 95th (ft)		93	20		#182			152			108	
Internal Link Dist (ft)		177			46			277			85	
Turn Bay Length (ft)			50									
Base Capacity (vph)		774	785		556			715			760	
Starvation Cap Reductn		0	0		0			0			0	
Spillback Cap Reductn		0	0		0			0			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.36	0.15		0.84			0.64			0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 45.9			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 21.7		Intersection LOS: C	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 9: Broad Street & South Street



MOVEMENT SUMMARY

Site: 10 [Intersection 10: Route 62 at Washington Street and Felton Street (Site Folder: General)]

2031 No-Build Weekday Morning Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Washington Street														
3	L2	329	3.0	362	3.0	0.622	13.8	LOS B	7.3	189.1	0.77	0.82	1.06	22.7
8	T1	62	7.0	68	7.0	0.622	14.0	LOS B	7.3	189.1	0.77	0.82	1.06	22.6
18	R2	100	6.0	110	6.0	0.622	13.9	LOS B	7.3	189.1	0.77	0.82	1.06	22.2
Approach		491	4.1	540	4.1	0.622	13.9	LOS B	7.3	189.1	0.77	0.82	1.06	22.6
East: Route 62														
1	L2	215	3.0	256	3.0	0.559	12.2	LOS B	4.9	128.6	0.68	0.80	0.95	23.0
6	T1	177	12.0	211	12.0	0.559	12.6	LOS B	4.9	128.6	0.68	0.80	0.95	21.6
16	R2	4	0.0	5	0.0	0.559	12.0	LOS B	4.9	128.6	0.68	0.80	0.95	21.2
Approach		396	7.0	471	7.0	0.559	12.4	LOS B	4.9	128.6	0.68	0.80	0.95	22.3
West: Route 62														
5	L2	18	0.0	20	0.0	1.014	53.7	LOS E	55.2	1405.5	1.00	2.34	3.11	15.6
2	T1	280	3.0	318	3.0	1.014	53.8	LOS E	55.2	1405.5	1.00	2.34	3.11	15.6
12	R2	542	2.0	616	2.0	1.014	53.8	LOS E	55.2	1405.5	1.00	2.34	3.11	16.1
Approach		840	2.3	955	2.3	1.014	53.8	LOS E	55.2	1405.5	1.00	2.34	3.11	15.9
All Vehicles		1727	3.9	1966	3.9	1.014	32.9	LOS C	55.2	1405.5	0.86	1.55	2.03	18.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Intersection	
Intersection Delay, s/veh	17.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	135	10	38	161	62	39	100	39	139	173	43
Future Vol, veh/h	34	135	10	38	161	62	39	100	39	139	173	43
Peak Hour Factor	0.88	0.88	0.88	0.85	0.85	0.85	0.72	0.72	0.72	0.91	0.91	0.91
Heavy Vehicles, %	3	2	11	6	3	2	3	6	0	2	1	3
Mvmt Flow	39	153	11	45	189	73	54	139	54	153	190	47
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.9	17	14.5	21.1
HCM LOS	B	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	19%	15%	39%
Vol Thru, %	56%	75%	62%	49%
Vol Right, %	22%	6%	24%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	178	179	261	355
LT Vol	39	34	38	139
Through Vol	100	135	161	173
RT Vol	39	10	62	43
Lane Flow Rate	247	203	307	390
Geometry Grp	1	1	1	1
Degree of Util (X)	0.441	0.381	0.547	0.671
Departure Headway (Hd)	6.429	6.735	6.409	6.188
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	556	531	562	581
Service Time	4.502	4.808	4.474	4.249
HCM Lane V/C Ratio	0.444	0.382	0.546	0.671
HCM Control Delay	14.5	13.9	17	21.1
HCM Lane LOS	B	B	C	C
HCM 95th-tile Q	2.2	1.8	3.3	5

MOVEMENT SUMMARY

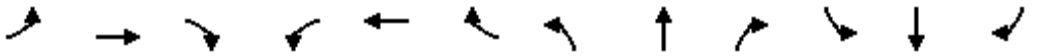
Site: 12 [Intersection 12: Washington Street at Broad Street (Site Folder: General)]

2031 No-Build Weekday Morning Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Washington Street														
3u	U	8	14.0	9	14.0	0.338	6.9	LOS A	2.4	62.6	0.17	0.05	0.17	30.2
3a	L1	397	5.0	422	5.0	0.338	6.6	LOS A	2.4	61.2	0.17	0.05	0.17	29.6
8	T1	304	3.0	323	3.0	0.338	6.5	LOS A	2.4	61.2	0.16	0.05	0.16	31.2
Approach		709	4.2	754	4.2	0.338	6.6	LOS A	2.4	62.6	0.17	0.05	0.17	30.2
East: Private Driveway														
1	L2	2	2.0	2	2.0	0.035	5.7	LOS A	0.1	2.5	0.44	0.39	0.44	34.6
16a	R1	9	2.0	10	2.0	0.035	5.7	LOS A	0.1	2.5	0.44	0.39	0.44	34.3
16	R2	11	2.0	12	2.0	0.035	5.7	LOS A	0.1	2.5	0.44	0.39	0.44	33.5
Approach		22	2.0	24	2.0	0.035	5.7	LOS A	0.1	2.5	0.44	0.39	0.44	33.9
North: Broad Street														
4	T1	428	3.0	522	3.0	0.380	9.2	LOS A	2.0	50.1	0.60	0.55	0.60	33.0
14b	R3	66	6.0	80	6.0	0.380	9.4	LOS A	2.0	50.3	0.60	0.56	0.60	31.6
Approach		494	3.4	602	3.4	0.380	9.2	LOS A	2.0	50.3	0.60	0.55	0.60	32.8
NorthWest: Washington Street														
7ux	U	1	0.0	1	0.0	0.453	11.8	LOS B	3.1	79.3	0.74	0.80	0.91	32.4
7bx	L3	9	27.0	10	27.0	0.453	14.2	LOS B	3.1	79.3	0.74	0.80	0.91	31.3
7ax	L1	7	2.0	8	2.0	0.453	12.0	LOS B	3.1	79.3	0.74	0.80	0.91	31.4
14ax	R1	541	3.0	588	3.0	0.453	12.0	LOS B	3.1	79.0	0.74	0.80	0.90	31.5
Approach		558	3.4	607	3.4	0.453	12.1	LOS B	3.1	79.3	0.74	0.80	0.90	31.5
All Vehicles		1783	3.7	1987	3.7	0.453	9.0	LOS A	3.1	79.3	0.48	0.44	0.53	31.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



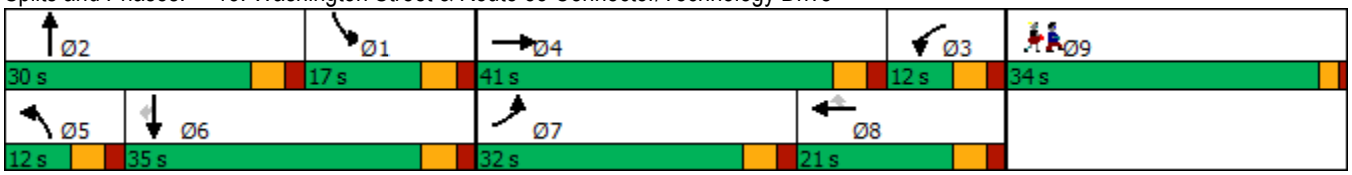
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	498	419	339	91	339	21	186	258	42	98	307	587
Future Volume (vph)	498	419	339	91	339	21	186	258	42	98	307	587
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	10	10	10	11	10	10	11	11	11	10	14
Storage Length (ft)	350		0	175		175	350		0	215		50
Storage Lanes	2		0	1		1	2		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95	1.00	0.95	1.00
Frt		0.933				0.850		0.979				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3255	3049	0	1685	3421	1436	2998	3250	0	1745	3240	1672
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3255	3049	0	1685	3421	1436	2998	3250	0	1745	3240	1672
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		148				179		12				375
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		680			776			490			543	
Travel Time (s)		15.5			17.6			11.1			12.3	
Peak Hour Factor	0.92	0.92	0.92	0.83	0.83	0.83	0.87	0.87	0.87	0.92	0.92	0.92
Heavy Vehicles (%)	4%	4%	2%	0%	2%	5%	9%	4%	12%	0%	4%	3%
Adj. Flow (vph)	541	455	368	110	408	25	214	297	48	107	334	638
Shared Lane Traffic (%)												
Lane Group Flow (vph)	541	823	0	110	408	25	214	345	0	107	334	638
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		22			22			20			20	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.09	1.09	1.09	1.04	1.09	1.09	1.04	1.04	1.04	1.09	0.92
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	12.0	16.0		12.0	16.0	16.0	12.0	16.0		12.0	35.0	35.0
Total Split (s)	32.0	41.0		12.0	21.0	21.0	12.0	30.0		17.0	35.0	35.0
Total Split (%)	23.9%	30.6%		9.0%	15.7%	15.7%	9.0%	22.4%		12.7%	26.1%	26.1%
Maximum Green (s)	26.5	35.5		6.5	15.5	15.5	6.5	24.5		11.5	29.5	29.5
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
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)	5.5	5.5		5.5	5.5	5.5	5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0

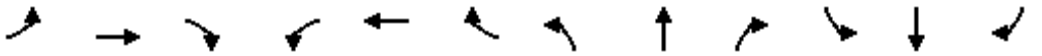
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	None	Min		None	Min	Min
Walk Time (s)											7.0	7.0
Flash Dont Walk (s)											22.0	22.0
Pedestrian Calls (#/hr)											0	0
Act Effct Green (s)	21.1	29.3		7.8	16.1	16.1	6.5	14.8		19.7	28.0	28.0
Actuated g/C Ratio	0.22	0.31		0.08	0.17	0.17	0.07	0.16		0.21	0.30	0.30
v/c Ratio	0.74	0.78		0.79	0.70	0.06	1.03	0.66		0.29	0.35	0.84
Control Delay	40.8	29.4		82.2	44.7	0.3	115.7	42.7		35.8	27.4	24.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	40.8	29.4		82.2	44.7	0.3	115.7	42.7		35.8	27.4	24.0
LOS	D	C		F	D	A	F	D		D	C	C
Approach Delay		34.0			50.3			70.6			26.2	
Approach LOS		C			D			E			C	
Queue Length 50th (ft)	157	193		67	124	0	~72	100		54	81	151
Queue Length 95th (ft)	214	263		#164	168	0	#146	143		112	127	#377
Internal Link Dist (ft)		600			696			410			463	
Turn Bay Length (ft)	350			175		175	350			215		50
Base Capacity (vph)	924	1251		140	586	394	208	862		366	1024	785
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.59	0.66		0.79	0.70	0.06	1.03	0.40		0.29	0.33	0.81

Intersection Summary

Area Type: Other
Cycle Length: 134
Actuated Cycle Length: 93.8
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 39.9 Intersection LOS: D
Intersection Capacity Utilization 64.8% ICU Level of Service C
Analysis Period (min) 15
~ 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.

Splits and Phases: 13: Washington Street & Route 85 Connector/Technology Drive



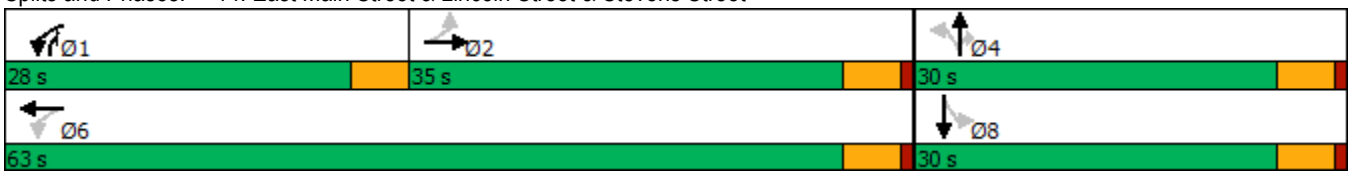


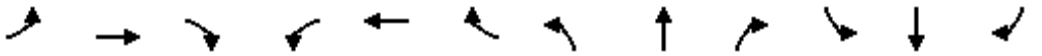
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	367	18	394	371	297	8	92	404	48	23	15
Future Volume (vph)	11	367	18	394	371	297	8	92	404	48	23	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	16	12	12	12	11	11	11	15	15	15
Storage Length (ft)	115		0	0		0	0		130	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.933				0.850		0.976	
Flt Protected		0.999		0.950				0.996			0.973	
Satd. Flow (prot)	0	3559	0	1719	1730	0	0	1777	1459	0	1912	0
Flt Permitted		0.924		0.367				0.968			0.753	
Satd. Flow (perm)	0	3292	0	664	1730	0	0	1727	1459	0	1480	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			82				220		11	
Link Speed (mph)		25			25			30			20	
Link Distance (ft)		679			2541			789			556	
Travel Time (s)		18.5			69.3			17.9			19.0	
Peak Hour Factor	0.93	0.93	0.93	0.86	0.86	0.86	0.73	0.73	0.73	0.49	0.49	0.49
Heavy Vehicles (%)	0%	4%	6%	5%	2%	3%	14%	2%	7%	2%	10%	0%
Adj. Flow (vph)	12	395	19	458	431	345	11	126	553	98	47	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	426	0	458	776	0	0	137	553	0	176	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.96	0.96	0.85	1.00	1.00	1.00	1.04	1.04	1.04	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.0	25.0		10.0	25.0		25.0	25.0	10.0	25.0	25.0	
Total Split (s)	35.0	35.0		28.0	63.0		30.0	30.0	28.0	30.0	30.0	
Total Split (%)	37.6%	37.6%		30.1%	67.7%		32.3%	32.3%	30.1%	32.3%	32.3%	
Maximum Green (s)	30.0	30.0		24.0	58.0		25.0	25.0	24.0	25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0	0.0	1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		5.0		4.0	5.0			5.0	4.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	Min	Min		None	None		Min	Min	None	None	None	
Walk Time (s)	9.0	9.0			9.0		9.0	9.0		9.0	9.0	
Flash Dont Walk (s)	8.0	8.0			8.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		14.3		35.5	34.4			12.7	33.8		12.7	
Actuated g/C Ratio		0.25		0.61	0.60			0.22	0.58		0.22	
v/c Ratio		0.52		0.66	0.73			0.36	0.59		0.53	
Control Delay		22.3		11.2	12.6			24.7	7.5		27.4	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		22.3		11.2	12.6			24.7	7.5		27.4	
LOS		C		B	B			C	A		C	
Approach Delay		22.3			12.1			10.9			27.4	
Approach LOS		C			B			B			C	
Queue Length 50th (ft)		63		65	134			38	48		48	
Queue Length 95th (ft)		136		153	313			86	105		64	
Internal Link Dist (ft)		599			2461			709			476	
Turn Bay Length (ft)									130			
Base Capacity (vph)		1836		882	1595			801	1158		693	
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		0.23		0.52	0.49			0.17	0.48		0.25	

Intersection Summary			
Area Type:	Other		
Cycle Length: 93			
Actuated Cycle Length: 57.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 72.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: East Main Street & Lincoln Street & Stevens Street





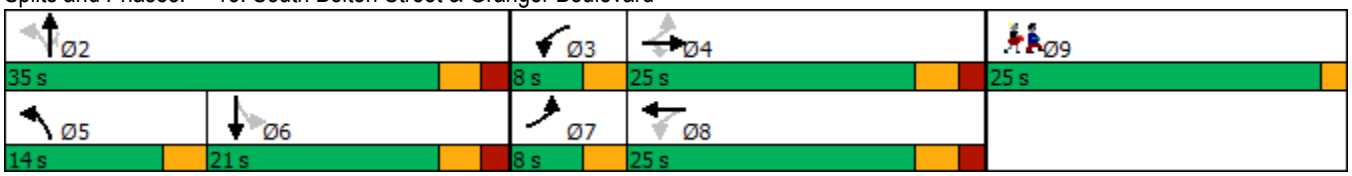
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	349	258	197	341	4	197	312	103	13	329	28
Future Volume (vph)	44	349	258	197	341	4	197	312	103	13	329	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	12	12	12	13	13	12	12	12
Storage Length (ft)	135		0	0		0	115		115	0		0
Storage Lanes	1		1	1		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.998				0.850		0.989	
Flt Protected	0.950			0.950			0.950				0.998	
Satd. Flow (prot)	1685	1810	1583	1770	1832	0	1787	1944	1669	0	3511	0
Flt Permitted	0.393			0.319			0.389				0.937	
Satd. Flow (perm)	697	1810	1583	594	1832	0	732	1944	1669	0	3296	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			272		1				105		8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1659			2112			460			421	
Travel Time (s)		37.7			48.0			10.5			9.6	
Peak Hour Factor	0.95	0.95	0.95	0.90	0.90	0.90	0.96	0.96	0.96	0.91	0.91	0.91
Heavy Vehicles (%)	0%	5%	2%	2%	3%	50%	1%	1%	0%	0%	1%	8%
Adj. Flow (vph)	46	367	272	219	379	4	205	325	107	14	362	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	367	272	219	383	0	205	325	107	0	407	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	7	4	4	3	8		5	2	2	6	6	
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)	8.0	10.0	10.0	8.0	10.0		8.0	10.0	10.0	10.0	10.0	
Total Split (s)	8.0	25.0	25.0	8.0	25.0		14.0	35.0	35.0	21.0	21.0	
Total Split (%)	8.6%	26.9%	26.9%	8.6%	26.9%		15.1%	37.6%	37.6%	22.6%	22.6%	
Maximum Green (s)	5.0	20.0	20.0	5.0	20.0		11.0	30.0	30.0	16.0	16.0	
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)	0.0	2.0	2.0	0.0	2.0		0.0	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	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0	5.0		5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None		None	Max	Max	Max	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	26.3	19.3	19.3	27.5	22.5		32.0	30.0	30.0		17.3	
Actuated g/C Ratio	0.39	0.29	0.29	0.41	0.33		0.48	0.45	0.45		0.26	
v/c Ratio	0.13	0.71	0.42	0.66	0.62		0.41	0.38	0.13		0.48	
Control Delay	12.0	30.2	5.0	25.5	25.7		13.5	14.2	3.3		23.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	
Total Delay	12.0	30.2	5.0	25.5	25.7		13.5	14.2	3.3		23.6	
LOS	B	C	A	C	C		B	B	A		C	
Approach Delay		19.0			25.6			12.2			23.6	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	11	134	0	56	141		48	87	1		74	
Queue Length 95th (ft)	27	#225	48	#116	#242		87	145	24		117	
Internal Link Dist (ft)		1579			2032			380			341	
Turn Bay Length (ft)	135						115		115			
Base Capacity (vph)	345	538	661	330	614		520	866	802		855	
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	
Reduced v/c Ratio	0.13	0.68	0.41	0.66	0.62		0.39	0.38	0.13		0.48	

Intersection Summary

Area Type: Other
Cycle Length: 93
Actuated Cycle Length: 67.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 19.6 Intersection LOS: B
Intersection Capacity Utilization 71.9% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 15: South Bolton Street & Granger Boulevard



Intersection	
Int Delay, s/veh	75.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	1114	757	0	5	505
Future Vol, veh/h	0	1114	757	0	5	505
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	95	95	88	88	89	89
Heavy Vehicles, %	0	1	2	0	0	1
Mvmt Flow	0	1173	860	0	6	567

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	2033	860
Stage 1	-	-	-	-	860	-
Stage 2	-	-	-	-	1173	-
Critical Hdwy	-	-	-	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.309
Pot Cap-1 Maneuver	0	-	-	0	64	~ 357
Stage 1	0	-	-	0	418	-
Stage 2	0	-	-	0	297	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	64	~ 357
Mov Cap-2 Maneuver	-	-	-	-	64	-
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	297	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	$ 343.7
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	342
HCM Lane V/C Ratio	-	-	1.676
HCM Control Delay (s)	-	-	$ 343.7
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	35

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

2031 No-Build Weekday Afternoon Peak Hour

Intersection	
Intersection Delay, s/veh	15.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	124	102	13	245	9	167	127	13	8	90	21
Future Vol, veh/h	32	124	102	13	245	9	167	127	13	8	90	21
Peak Hour Factor	0.84	0.84	0.84	0.88	0.88	0.88	0.89	0.89	0.89	0.83	0.83	0.83
Heavy Vehicles, %	0	0	1	0	0	0	1	0	0	0	0	0
Mvmt Flow	38	148	121	15	278	10	188	143	15	10	108	25
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.8	15.4	17.8	11.8
HCM LOS	B	C	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	12%	5%	7%
Vol Thru, %	41%	48%	92%	76%
Vol Right, %	4%	40%	3%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	307	258	267	119
LT Vol	167	32	13	8
Through Vol	127	124	245	90
RT Vol	13	102	9	21
Lane Flow Rate	345	307	303	143
Geometry Grp	1	1	1	1
Degree of Util (X)	0.591	0.502	0.512	0.257
Departure Headway (Hd)	6.163	5.885	6.078	6.459
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	586	611	592	555
Service Time	4.203	3.931	4.123	4.514
HCM Lane V/C Ratio	0.589	0.502	0.512	0.258
HCM Control Delay	17.8	14.8	15.4	11.8
HCM Lane LOS	C	B	C	B
HCM 95th-tile Q	3.8	2.8	2.9	1

Intersection	
Int Delay, s/veh	2.2

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		⇕			⇂	↱		⇕			⇕	
Traffic Vol, veh/h	1	167	2	13	263	31	4	3	5	28	6	1
Future Vol, veh/h	1	167	2	13	263	31	4	3	5	28	6	1
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	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	90	90	90	43	43	43	50	75	75
Heavy Vehicles, %	0	1	0	0	0	7	0	0	0	4	0	0
Mvmt Flow	1	190	2	14	292	34	9	7	12	56	8	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	292	0	0	192	0	0	518	513	191	523	514	292
Stage 1	-	-	-	-	-	-	193	193	-	320	320	-
Stage 2	-	-	-	-	-	-	325	320	-	203	194	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.14	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.536	4	3.3
Pot Cap-1 Maneuver	1281	-	-	1394	-	-	471	468	856	461	467	752
Stage 1	-	-	-	-	-	-	813	745	-	687	656	-
Stage 2	-	-	-	-	-	-	692	656	-	794	744	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1281	-	-	1394	-	-	459	462	856	445	461	752
Mov Cap-2 Maneuver	-	-	-	-	-	-	459	462	-	445	461	-
Stage 1	-	-	-	-	-	-	812	744	-	686	648	-
Stage 2	-	-	-	-	-	-	674	648	-	775	743	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	0	0.3	11.6	14.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	570	1394	-	-	1281	-	-	451
HCM Lane V/C Ratio	0.049	0.01	-	-	0.001	-	-	0.145
HCM Control Delay (s)	11.6	7.6	0	-	7.8	0	-	14.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.5

Intersection	
Int Delay, s/veh	0.6

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	367	2	1	231	4	4	0	6	3	0	2
Future Vol, veh/h	9	367	2	1	231	4	4	0	6	3	0	2
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	99	99	99	62	62	62	62	62	62
Heavy Vehicles, %	0	1	100	0	2	0	0	0	0	100	0	50
Mvmt Flow	9	378	2	1	233	4	6	0	10	5	0	3

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	237	0	0	380	0	0	636	635	235	639	636	379
Stage 1	-	-	-	-	-	-	237	237	-	397	397	-
Stage 2	-	-	-	-	-	-	399	398	-	242	239	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	8.1	6.5	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	7.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	7.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	4.4	4	3.75
Pot Cap-1 Maneuver	1342	-	-	1190	-	-	393	399	809	280	398	574
Stage 1	-	-	-	-	-	-	771	713	-	472	607	-
Stage 2	-	-	-	-	-	-	631	606	-	586	711	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1342	-	-	1190	-	-	388	395	809	275	394	574
Mov Cap-2 Maneuver	-	-	-	-	-	-	388	395	-	275	394	-
Stage 1	-	-	-	-	-	-	764	712	-	468	602	-
Stage 2	-	-	-	-	-	-	622	601	-	578	710	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.2	0	11.6	15.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	564	1342	-	-	1190	-	-	347
HCM Lane V/C Ratio	0.029	0.007	-	-	0.001	-	-	0.023
HCM Control Delay (s)	11.6	7.7	0	-	8	0	-	15.6
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

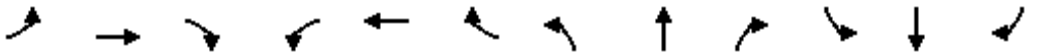
Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	9	320	221	1
Future Vol, veh/h	0	5	9	320	221	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	62	62	90	90	87	87
Heavy Vehicles, %	0	0	0	2	3	0
Mvmt Flow	0	8	10	356	254	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	631	255	255	0	-	0
Stage 1	255	-	-	-	-	-
Stage 2	376	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	448	789	1322	-	-	-
Stage 1	792	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	444	789	1322	-	-	-
Mov Cap-2 Maneuver	444	-	-	-	-	-
Stage 1	785	-	-	-	-	-
Stage 2	699	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1322	-	789	-	-
HCM Lane V/C Ratio	0.008	-	0.01	-	-
HCM Control Delay (s)	7.7	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

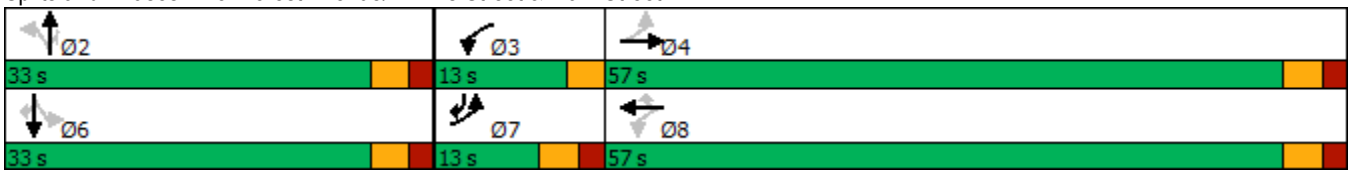


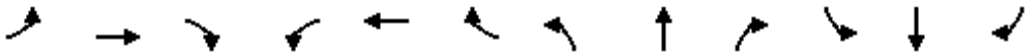
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	270	4	300	524	3	96	118	197	2	130	39
Future Volume (vph)	57	270	4	300	524	3	96	118	197	2	130	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	16	11	11	10	10	10	10
Storage Length (ft)	110		0	190		100	0		265	0		65
Storage Lanes	1		0	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.978			0.999	
Satd. Flow (prot)	1711	1815	0	1711	1801	1830	0	1778	1492	0	1772	1463
Flt Permitted	0.276			0.447				0.786			0.996	
Satd. Flow (perm)	497	1815	0	805	1801	1830	0	1429	1492	0	1766	1463
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				74			212			44
Link Speed (mph)		30			30			30			35	
Link Distance (ft)		592			1353			704			566	
Travel Time (s)		13.5			30.8			16.0			11.0	
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.93	0.93	0.93	0.89	0.89	0.89
Heavy Vehicles (%)	2%	1%	0%	2%	2%	0%	1%	1%	1%	0%	0%	3%
Adj. Flow (vph)	67	318	5	337	589	3	103	127	212	2	146	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	323	0	337	589	3	0	230	212	0	148	44
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	0.85	1.04	1.04	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases	4			8		8	2		2	6		6
Detector Phase	7	4		3	8	8	2	2	2	6	6	7
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	23.0		9.5	23.0	23.0	23.0	23.0	23.0	23.0	23.0	10.0
Total Split (s)	13.0	57.0		13.0	57.0	57.0	33.0	33.0	33.0	33.0	33.0	13.0
Total Split (%)	12.6%	55.3%		12.6%	55.3%	55.3%	32.0%	32.0%	32.0%	32.0%	32.0%	12.6%
Maximum Green (s)	8.0	52.0		10.0	52.0	52.0	28.0	28.0	28.0	28.0	28.0	8.0
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		0.0	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
Total Lost Time (s)	5.0	5.0		3.0	5.0	5.0		5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	None	None	None	None	None	None
Act Effct Green (s)	34.9	27.4		41.3	31.6	31.6		17.6	17.6		17.6	30.6
Actuated g/C Ratio	0.50	0.39		0.59	0.45	0.45		0.25	0.25		0.25	0.44
v/c Ratio	0.18	0.45		0.55	0.72	0.00		0.64	0.40		0.33	0.07
Control Delay	8.0	17.3		10.9	23.2	0.0		35.0	6.6		26.7	5.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	8.0	17.3		10.9	23.2	0.0		35.0	6.6		26.7	5.7
LOS	A	B		B	C	A		C	A		C	A
Approach Delay		15.7			18.6			21.3			21.9	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	10	93		56	204	0		86	0		51	0
Queue Length 95th (ft)	30	174		132	391	0		205	53		126	21
Internal Link Dist (ft)		512			1273			624			486	
Turn Bay Length (ft)	110			190		100			265			65
Base Capacity (vph)	414	1382		622	1371	1410		637	783		788	696
Starvation Cap Reductn	0	0		0	0	0		0	0		0	0
Spillback Cap Reductn	0	0		0	0	0		0	0		0	0
Storage Cap Reductn	0	0		0	0	0		0	0		0	0
Reduced v/c Ratio	0.16	0.23		0.54	0.43	0.00		0.36	0.27		0.19	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 103			
Actuated Cycle Length: 69.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 19.0		Intersection LOS: B	
Intersection Capacity Utilization 66.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Forest Avenue/Wilkins Street & Main Street



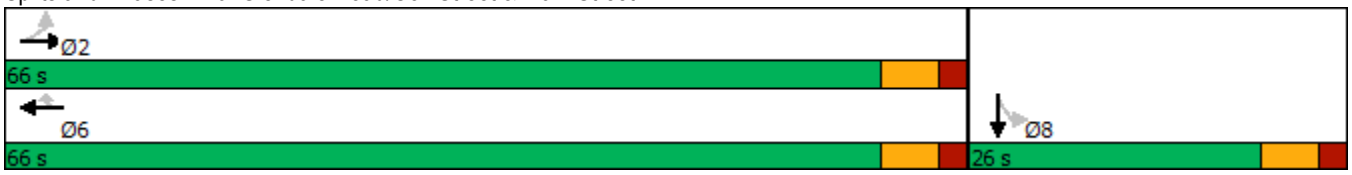


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	298	36	0	498	256	0	0	0	96	68	5
Future Volume (vph)	45	298	36	0	498	256	0	0	0	96	68	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	16	12	12	12	11	11	11
Storage Length (ft)	0		0	0		50	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987				0.850					0.996	
Flt Protected		0.994									0.972	
Satd. Flow (prot)	0	1896	0	0	1925	1812	0	0	0	0	1764	0
Flt Permitted		0.889									0.972	
Satd. Flow (perm)	0	1696	0	0	1925	1812	0	0	0	0	1764	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				173					2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		506			592			456			1021	
Travel Time (s)		11.5			13.5			10.4			23.2	
Peak Hour Factor	0.82	0.82	0.82	0.91	0.91	0.91	0.25	0.25	0.25	0.83	0.83	0.83
Heavy Vehicles (%)	0%	2%	0%	0%	2%	1%	0%	0%	0%	0%	2%	0%
Adj. Flow (vph)	55	363	44	0	547	281	0	0	0	116	82	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	462	0	0	547	281	0	0	0	0	204	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.96	0.96	0.96	0.96	0.96	0.85	1.00	1.00	1.00	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	
Protected Phases		2			6						8	
Permitted Phases	2					6				8		
Detector Phase	2	2			6	6				8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0				5.0	5.0	
Minimum Split (s)	24.0	24.0			24.0	24.0				24.0	24.0	
Total Split (s)	66.0	66.0			66.0	66.0				26.0	26.0	
Total Split (%)	71.7%	71.7%			71.7%	71.7%				28.3%	28.3%	
Maximum Green (s)	60.0	60.0			60.0	60.0				20.0	20.0	
Yellow Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
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	
Total Lost Time (s)		6.0			6.0	6.0					6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None			None	None				None	None	
Act Effct Green (s)		20.6			20.6	20.6					10.6	
Actuated g/C Ratio		0.47			0.47	0.47					0.24	
v/c Ratio		0.58			0.60	0.30					0.48	
Control Delay		11.4			11.8	3.8					20.1	
Queue Delay		0.0			0.0	0.0					0.0	
Total Delay		11.4			11.8	3.8					20.1	
LOS		B			B	A					C	
Approach Delay		11.4			9.1						20.1	
Approach LOS		B			A						C	
Queue Length 50th (ft)		69			86	13					41	
Queue Length 95th (ft)		138			190	48					105	
Internal Link Dist (ft)		426			512			376			941	
Turn Bay Length (ft)						50						
Base Capacity (vph)		1693			1921	1809					848	
Starvation Cap Reductn		0			0	0					0	
Spillback Cap Reductn		0			0	0					0	
Storage Cap Reductn		0			0	0					0	
Reduced v/c Ratio		0.27			0.28	0.16					0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 43.9			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 11.3		Intersection LOS: B	
Intersection Capacity Utilization 70.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Glendale Road/Cox Street & Main Street



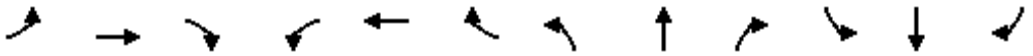
Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	343	27	0	503	0	28	0	35	1	27	48
Future Vol, veh/h	0	343	27	0	503	0	28	0	35	1	27	48
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	92	92	92	70	70	70	73	73	73
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	0	2
Mvmt Flow	0	361	28	0	547	0	40	0	50	1	37	66

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	389	0	0	974	922	375	947	936	547
Stage 1	-	-	-	-	-	-	375	375	-	547	547	-
Stage 2	-	-	-	-	-	-	599	547	-	400	389	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.318
Pot Cap-1 Maneuver	0	-	-	1181	-	0	233	272	676	243	267	537
Stage 1	0	-	-	-	-	0	650	621	-	525	521	-
Stage 2	0	-	-	-	-	0	492	521	-	630	612	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1181	-	-	183	272	676	225	267	537
Mov Cap-2 Maneuver	-	-	-	-	-	-	183	272	-	225	267	-
Stage 1	-	-	-	-	-	-	650	621	-	525	521	-
Stage 2	-	-	-	-	-	-	401	521	-	583	612	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	21.4	17.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	308	-	-	1181	-	390
HCM Lane V/C Ratio	0.292	-	-	-	-	0.267
HCM Control Delay (s)	21.4	-	-	0	-	17.6
HCM Lane LOS	C	-	-	A	-	C
HCM 95th %tile Q(veh)	1.2	-	-	0	-	1.1

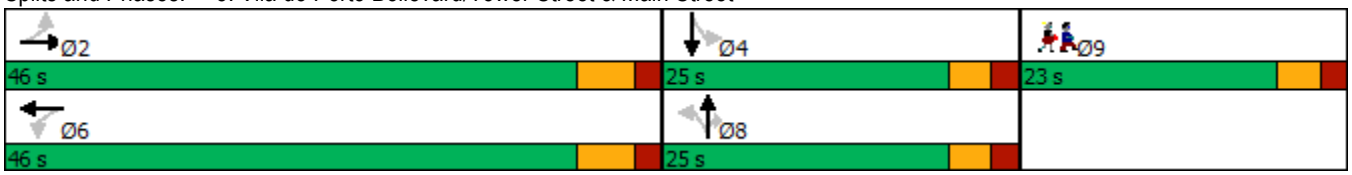


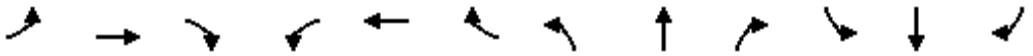
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	214	22	191	371	24	23	130	171	22	140	60
Future Volume (vph)	45	214	22	191	371	24	23	130	171	22	140	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	10	10	15	15	14	13	13	13
Storage Length (ft)	0		0	70		0	0		100	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.991				0.850		0.964	
Flt Protected		0.992		0.950				0.993			0.995	
Satd. Flow (prot)	0	1824	0	1728	1720	0	0	2075	1706	0	1883	0
Flt Permitted		0.731		0.551				0.929			0.960	
Satd. Flow (perm)	0	1344	0	1002	1720	0	0	1942	1706	0	1817	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			4				188		18	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		639			834			152			404	
Travel Time (s)		12.4			16.2			3.5			9.2	
Peak Hour Factor	0.94	0.94	0.94	0.88	0.88	0.88	0.91	0.91	0.91	0.77	0.77	0.77
Heavy Vehicles (%)	0%	3%	0%	1%	2%	5%	0%	0%	1%	0%	0%	0%
Adj. Flow (vph)	48	228	23	217	422	27	25	143	188	29	182	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	299	0	217	449	0	0	168	188	0	289	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.04	1.09	1.09	0.88	0.88	0.92	0.96	0.96	0.96
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	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	
Minimum Split (s)	24.0	24.0		24.0	24.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	46.0	46.0		46.0	46.0		25.0	25.0	25.0	25.0	25.0	
Total Split (%)	48.9%	48.9%		48.9%	48.9%		26.6%	26.6%	26.6%	26.6%	26.6%	
Maximum Green (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		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	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		6.0		6.0	6.0			5.0	5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		20.8		20.8	20.8			21.6	21.6		21.6	
Actuated g/C Ratio		0.36		0.36	0.36			0.38	0.38		0.38	
v/c Ratio		0.61		0.59	0.71			0.23	0.25		0.41	
Control Delay		20.7		22.9	22.8			18.9	5.3		19.8	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		20.7		22.9	22.8			18.9	5.3		19.8	
LOS		C		C	C			B	A		B	
Approach Delay		20.7			22.9			11.7			19.8	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)		65		48	104			30	0		51	
Queue Length 95th (ft)		206		159	294			148	54		197	
Internal Link Dist (ft)		559			754			72			324	
Turn Bay Length (ft)				70					100			
Base Capacity (vph)		1017		757	1302			734	762		698	
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		0.29		0.29	0.34			0.23	0.25		0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 94			
Actuated Cycle Length: 57.1			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 19.4		Intersection LOS: B	
Intersection Capacity Utilization 74.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 8: Vila do Porto Boilevard/Tower Street & Main Street



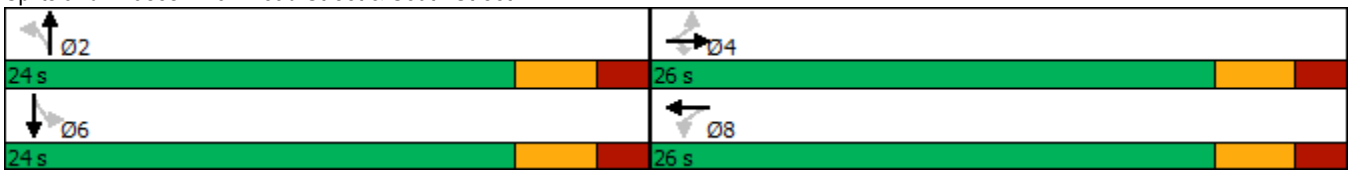


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	199	174	181	191	41	80	291	82	17	235	30
Future Volume (vph)	38	199	174	181	191	41	80	291	82	17	235	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	0		0	0		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.987			0.976			0.986	
Flt Protected		0.992			0.979			0.991			0.997	
Satd. Flow (prot)	0	1876	1615	0	1812	0	0	1818	0	0	1868	0
Flt Permitted		0.888			0.713			0.878			0.962	
Satd. Flow (perm)	0	1679	1615	0	1320	0	0	1611	0	0	1802	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218		14			26			14	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		257			126			357			165	
Travel Time (s)		5.8			2.9			8.1			3.8	
Peak Hour Factor	0.80	0.80	0.80	0.87	0.87	0.87	0.94	0.94	0.94	0.78	0.78	0.78
Heavy Vehicles (%)	3%	0%	0%	3%	0%	0%	3%	0%	3%	0%	0%	0%
Adj. Flow (vph)	48	249	218	208	220	47	85	310	87	22	301	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	297	218	0	475	0	0	482	0	0	361	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	26.0	26.0	26.0	26.0	26.0		24.0	24.0		24.0	24.0	
Total Split (%)	52.0%	52.0%	52.0%	52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	21.0	21.0	21.0	21.0	21.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	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	
Lost Time Adjust (s)		0.0	0.0		0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0		5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		19.3	19.3		19.3			16.6			16.6	
Actuated g/C Ratio		0.42	0.42		0.42			0.36			0.36	
v/c Ratio		0.42	0.27		0.85			0.81			0.55	
Control Delay		12.3	2.8		30.4			26.2			15.3	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		12.3	2.8		30.4			26.2			15.3	
LOS		B	A		C			C			B	
Approach Delay		8.3			30.4			26.2			15.3	
Approach LOS		A			C			C			B	
Queue Length 50th (ft)		58	0		114			112			75	
Queue Length 95th (ft)		92	21		#254			#249			112	
Internal Link Dist (ft)		177			46			277			85	
Turn Bay Length (ft)			50									
Base Capacity (vph)		782	868		622			694			767	
Starvation Cap Reductn		0	0		0			0			0	
Spillback Cap Reductn		0	0		0			0			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.38	0.25		0.76			0.69			0.47	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 46.1			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 20.1		Intersection LOS: C	
Intersection Capacity Utilization 91.7%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 9: Broad Street & South Street



MOVEMENT SUMMARY

Site: 10 [Intersection 10: Route 62 at Washington Street and Felton Street (Site Folder: General)]

2031 No-Build Weekday Evening Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Washington Street														
3	L2	669	1.0	719	1.0	0.903	30.5	LOS C	34.2	860.7	1.00	1.36	2.11	19.4
8	T1	63	2.0	68	2.0	0.903	30.6	LOS C	34.2	860.7	1.00	1.36	2.11	19.3
18	R2	102	0.0	110	0.0	0.903	30.5	LOS C	34.2	860.7	1.00	1.36	2.11	19.0
Approach		834	1.0	897	1.0	0.903	30.5	LOS C	34.2	860.7	1.00	1.36	2.11	19.3
East: Route 62														
1	L2	131	1.0	146	1.0	0.892	42.0	LOS D	17.5	441.3	1.00	1.84	2.57	17.8
6	T1	307	1.0	341	1.0	0.892	42.0	LOS D	17.5	441.3	1.00	1.84	2.57	16.9
16	R2	26	0.0	29	0.0	0.892	41.9	LOS D	17.5	441.3	1.00	1.84	2.57	16.7
Approach		464	0.9	516	0.9	0.892	42.0	LOS D	17.5	441.3	1.00	1.84	2.57	17.2
West: Route 62														
5	L2	26	0.0	27	0.0	0.867	25.0	LOS C	29.6	746.4	1.00	1.03	1.50	19.6
2	T1	200	1.0	206	1.0	0.867	25.1	LOS C	29.6	746.4	1.00	1.03	1.50	19.5
12	R2	658	1.0	678	1.0	0.867	25.1	LOS C	29.6	746.4	1.00	1.03	1.50	20.3
Approach		884	1.0	911	1.0	0.867	25.1	LOS C	29.6	746.4	1.00	1.03	1.50	20.1
All Vehicles		2182	1.0	2324	1.0	0.903	30.9	LOS C	34.2	860.7	1.00	1.34	1.97	19.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection	
Intersection Delay, s/veh	18.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	54	160	9	48	211	145	6	158	23	82	122	53
Future Vol, veh/h	54	160	9	48	211	145	6	158	23	82	122	53
Peak Hour Factor	0.84	0.84	0.84	0.90	0.90	0.90	0.96	0.96	0.96	0.91	0.91	0.91
Heavy Vehicles, %	0	0	12	4	1	1	0	1	0	0	0	0
Mvmt Flow	64	190	11	53	234	161	6	165	24	90	134	58
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	15.4	24.6	13.8	16.4
HCM LOS	C	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	24%	12%	32%
Vol Thru, %	84%	72%	52%	47%
Vol Right, %	12%	4%	36%	21%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	187	223	404	257
LT Vol	6	54	48	82
Through Vol	158	160	211	122
RT Vol	23	9	145	53
Lane Flow Rate	195	265	449	282
Geometry Grp	1	1	1	1
Degree of Util (X)	0.367	0.478	0.745	0.513
Departure Headway (Hd)	6.778	6.487	5.974	6.544
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	528	552	602	548
Service Time	4.858	4.561	4.036	4.616
HCM Lane V/C Ratio	0.369	0.48	0.746	0.515
HCM Control Delay	13.8	15.4	24.6	16.4
HCM Lane LOS	B	C	C	C
HCM 95th-tile Q	1.7	2.6	6.5	2.9

MOVEMENT SUMMARY

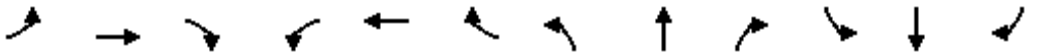
Site: 12 [Intersection 12: Washington Street at Broad Street (Site Folder: General)]

2031 No-Build Weekday Evening Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Washington Street														
3u	U	9	0.0	10	0.0	0.518	8.5	LOS A	5.4	135.5	0.41	0.19	0.41	29.6
3a	L1	706	1.0	793	1.0	0.518	8.5	LOS A	5.4	136.0	0.41	0.19	0.41	28.9
8	T1	442	2.0	497	2.0	0.518	8.5	LOS A	5.4	136.0	0.41	0.19	0.41	30.2
Approach		1157	1.4	1300	1.4	0.518	8.5	LOS A	5.4	136.0	0.41	0.19	0.41	29.4
East: Private Driveway														
1	L2	2	2.0	2	2.0	0.039	8.1	LOS A	0.1	3.2	0.61	0.61	0.61	33.3
16a	R1	7	2.0	8	2.0	0.039	8.1	LOS A	0.1	3.2	0.61	0.61	0.61	33.0
16	R2	8	2.0	9	2.0	0.039	8.1	LOS A	0.1	3.2	0.61	0.61	0.61	32.3
Approach		17	2.0	18	2.0	0.039	8.1	LOS A	0.1	3.2	0.61	0.61	0.61	32.7
North: Broad Street														
4	T1	437	1.0	486	1.0	0.480	13.4	LOS B	3.2	81.3	0.77	0.86	1.04	31.1
14b	R3	101	3.0	112	3.0	0.480	13.6	LOS B	3.2	81.5	0.77	0.86	1.04	29.8
Approach		538	1.4	598	1.4	0.480	13.4	LOS B	3.2	81.5	0.77	0.86	1.04	30.9
NorthWest: Washington Street														
7ux	U	11	10.0	12	10.0	0.526	14.1	LOS B	4.3	110.6	0.78	0.86	1.04	31.2
7bx	L3	42	2.0	44	2.0	0.526	13.5	LOS B	4.3	110.6	0.78	0.86	1.04	31.1
7ax	L1	7	2.0	8	2.0	0.526	13.5	LOS B	4.3	110.6	0.78	0.86	1.04	30.5
14ax	R1	631	2.0	664	2.0	0.526	13.4	LOS B	4.4	110.5	0.78	0.86	1.04	30.8
Approach		691	2.1	728	2.1	0.526	13.5	LOS B	4.4	110.6	0.78	0.86	1.04	30.8
All Vehicles		2403	1.6	2644	1.6	0.526	11.0	LOS B	5.4	136.0	0.59	0.53	0.73	30.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



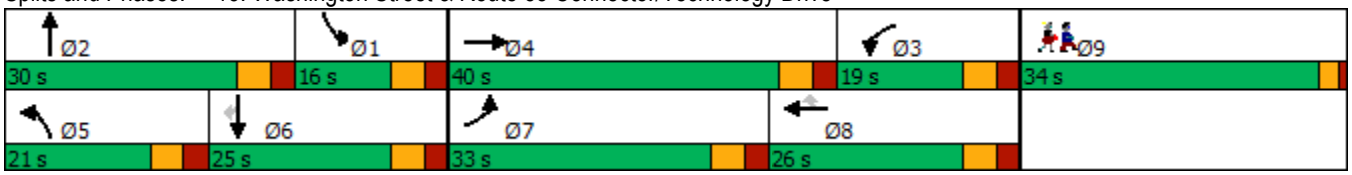
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	587	332	258	98	388	58	322	511	66	88	393	560
Future Volume (vph)	587	332	258	98	388	58	322	511	66	88	393	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	10	10	10	11	10	10	11	11	11	10	14
Storage Length (ft)	350		0	175		175	350		0	215		50
Storage Lanes	2		0	1		1	2		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95	1.00	0.95	1.00
Frt		0.934				0.850		0.983				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3351	3116	0	1685	3455	1507	3268	3393	0	1745	3303	1689
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3351	3116	0	1685	3455	1507	3268	3393	0	1745	3303	1689
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		135				188		9				243
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		680			776			490			543	
Travel Time (s)		15.5			17.6			11.1			12.3	
Peak Hour Factor	0.90	0.90	0.90	0.82	0.82	0.82	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	1%	0%	1%	0%	0%	1%	2%	0%	2%	2%
Adj. Flow (vph)	652	369	287	120	473	71	339	538	69	93	414	589
Shared Lane Traffic (%)												
Lane Group Flow (vph)	652	656	0	120	473	71	339	607	0	93	414	589
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		22			22			20			20	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.09	1.09	1.09	1.04	1.09	1.09	1.04	1.04	1.04	1.09	0.92
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	12.0	16.0		12.0	16.0	16.0	12.0	16.0		12.0	25.0	25.0
Total Split (s)	33.0	40.0		19.0	26.0	26.0	21.0	30.0		16.0	25.0	25.0
Total Split (%)	23.7%	28.8%		13.7%	18.7%	18.7%	15.1%	21.6%		11.5%	18.0%	18.0%
Maximum Green (s)	27.0	34.0		13.0	20.0	20.0	15.0	24.0		10.0	19.0	19.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5
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)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0

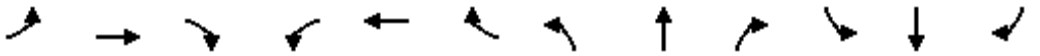
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	None	Min		None	Min	Min
Walk Time (s)											7.0	7.0
Flash Dont Walk (s)											12.0	12.0
Pedestrian Calls (#/hr)											5	5
Act Effct Green (s)	27.4	24.3		22.8	19.7	19.7	15.2	24.3		10.1	19.2	19.2
Actuated g/C Ratio	0.25	0.22		0.20	0.18	0.18	0.14	0.22		0.09	0.17	0.17
v/c Ratio	0.79	0.83		0.35	0.77	0.17	0.76	0.81		0.58	0.73	1.20
Control Delay	48.5	43.4		46.0	54.1	0.9	59.4	51.3		66.5	53.0	131.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	48.5	43.4		46.0	54.1	0.9	59.4	51.3		66.5	53.0	131.2
LOS	D	D		D	D	A	E	D		E	D	F
Approach Delay		45.9			46.9			54.2			96.2	
Approach LOS		D			D			D			F	
Queue Length 50th (ft)	208	177		68	158	0	113	199		61	138	~330
Queue Length 95th (ft)	#438	309		#179	#284	0	#258	#427		#177	#296	#729
Internal Link Dist (ft)		600			696			410			463	
Turn Bay Length (ft)	350			175		175	350			215		50
Base Capacity (vph)	823	1057		344	629	428	445	748		159	571	492
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.79	0.62		0.35	0.75	0.17	0.76	0.81		0.58	0.73	1.20

Intersection Summary

Area Type: Other
Cycle Length: 139
Actuated Cycle Length: 111.3
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.20
Intersection Signal Delay: 61.8 Intersection LOS: E
Intersection Capacity Utilization 69.6% ICU Level of Service C
Analysis Period (min) 15
~ 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.

Splits and Phases: 13: Washington Street & Route 85 Connector/Technology Drive



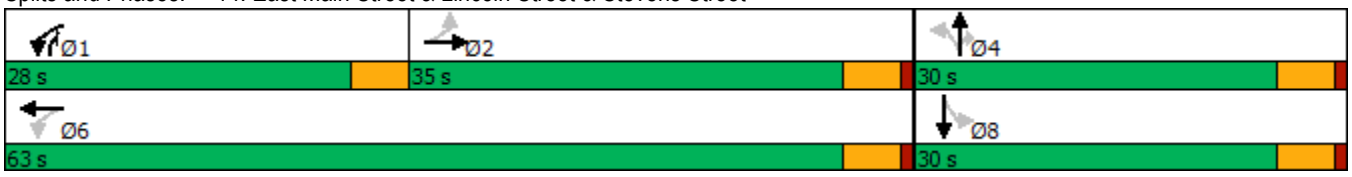


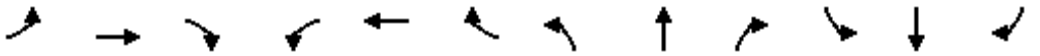
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	367	13	450	423	291	13	67	540	57	17	0
Future Volume (vph)	4	367	13	450	423	291	13	67	540	57	17	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	16	12	12	12	11	11	11	15	15	15
Storage Length (ft)	115		0	0		0	0		130	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.939				0.850			
Flt Protected				0.950				0.992			0.963	
Satd. Flow (prot)	0	3712	0	1787	1784	0	0	1822	1546	0	2013	0
Flt Permitted		0.946		0.372				0.934			0.719	
Satd. Flow (perm)	0	3511	0	700	1784	0	0	1715	1546	0	1503	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			71				229			
Link Speed (mph)		25			25			30			20	
Link Distance (ft)		679			2541			789			556	
Travel Time (s)		18.5			69.3			17.9			19.0	
Peak Hour Factor	0.95	0.95	0.95	0.94	0.94	0.94	0.92	0.92	0.92	0.35	0.35	0.35
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	0%
Adj. Flow (vph)	4	386	14	479	450	310	14	73	587	163	49	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	404	0	479	760	0	0	87	587	0	212	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.96	0.96	0.85	1.00	1.00	1.00	1.04	1.04	1.04	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.0	25.0		10.0	25.0		25.0	25.0	10.0	25.0	25.0	
Total Split (s)	35.0	35.0		28.0	63.0		30.0	30.0	28.0	30.0	30.0	
Total Split (%)	37.6%	37.6%		30.1%	67.7%		32.3%	32.3%	30.1%	32.3%	32.3%	
Maximum Green (s)	30.0	30.0		24.0	58.0		25.0	25.0	24.0	25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0	0.0	1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		5.0		4.0	5.0			5.0	4.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	Min	Min		None	None		Min	Min	None	None	None	
Walk Time (s)	9.0	9.0			9.0		9.0	9.0		9.0	9.0	
Flash Dont Walk (s)	8.0	8.0			8.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		13.9		36.0	35.0			14.4	36.6		14.4	
Actuated g/C Ratio		0.23		0.60	0.58			0.24	0.61		0.24	
v/c Ratio		0.50		0.66	0.71			0.21	0.57		0.59	
Control Delay		23.5		11.9	12.8			22.3	6.8		29.9	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		23.5		11.9	12.8			22.3	6.8		29.9	
LOS		C		B	B			C	A		C	
Approach Delay		23.5			12.5			8.8			29.9	
Approach LOS		C			B			A			C	
Queue Length 50th (ft)		63		76	143			24	50		64	
Queue Length 95th (ft)		133		185	354			73	183		55	
Internal Link Dist (ft)		599			2461			709			476	
Turn Bay Length (ft)									130			
Base Capacity (vph)		1884		890	1619			766	1226		671	
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		0.21		0.54	0.47			0.11	0.48		0.32	

Intersection Summary			
Area Type:	Other		
Cycle Length: 93			
Actuated Cycle Length: 60.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 14: East Main Street & Lincoln Street & Stevens Street





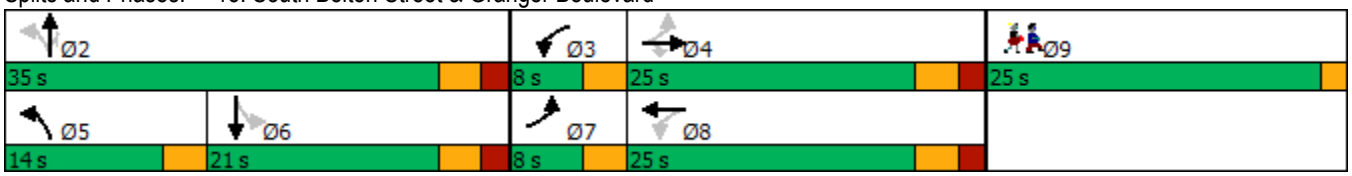
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	366	259	151	311	11	271	425	166	15	302	36
Future Volume (vph)	63	366	259	151	311	11	271	425	166	15	302	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	12	12	12	13	13	12	12	12
Storage Length (ft)	135		0	0		0	115		115	0		0
Storage Lanes	1		1	1		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.995				0.850		0.985	
Flt Protected	0.950			0.950			0.950				0.998	
Satd. Flow (prot)	1685	1863	1615	1805	1855	0	1805	1944	1669	0	3508	0
Flt Permitted	0.452			0.301			0.372				0.925	
Satd. Flow (perm)	802	1863	1615	572	1855	0	707	1944	1669	0	3251	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			270		2				125		11	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1659			2112			460			421	
Travel Time (s)		37.7			48.0			10.5			9.6	
Peak Hour Factor	0.96	0.96	0.96	0.94	0.94	0.94	0.93	0.93	0.93	0.86	0.86	0.86
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	1%	0%	0%	1%	3%
Adj. Flow (vph)	66	381	270	161	331	12	291	457	178	17	351	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	66	381	270	161	343	0	291	457	178	0	410	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	7	4	4	3	8		5	2	2	6	6	
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)	8.0	10.0	10.0	8.0	10.0		8.0	10.0	10.0	10.0	10.0	
Total Split (s)	8.0	25.0	25.0	8.0	25.0		14.0	35.0	35.0	21.0	21.0	
Total Split (%)	8.6%	26.9%	26.9%	8.6%	26.9%		15.1%	37.6%	37.6%	22.6%	22.6%	
Maximum Green (s)	5.0	20.0	20.0	5.0	20.0		11.0	30.0	30.0	16.0	16.0	
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)	0.0	2.0	2.0	0.0	2.0		0.0	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	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0	5.0		5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None		None	Max	Max	Max	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	26.4	19.4	19.4	27.6	22.6		32.0	30.0	30.0		16.0	
Actuated g/C Ratio	0.39	0.29	0.29	0.41	0.34		0.47	0.45	0.45		0.24	
v/c Ratio	0.17	0.71	0.41	0.50	0.55		0.57	0.53	0.22		0.52	
Control Delay	12.4	30.2	4.9	17.9	23.3		16.1	16.5	5.0		24.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	
Total Delay	12.4	30.2	4.9	17.9	23.3		16.1	16.5	5.0		24.8	
LOS	B	C	A	B	C		B	B	A		C	
Approach Delay		19.0			21.6			14.2			24.8	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	15	140	0	39	122		72	133	12		76	
Queue Length 95th (ft)	36	#234	48	74	204		124	213	45		111	
Internal Link Dist (ft)		1579			2032			380			341	
Turn Bay Length (ft)	135						115		115			
Base Capacity (vph)	379	552	669	325	624		515	865	812		782	
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	
Reduced v/c Ratio	0.17	0.69	0.40	0.50	0.55		0.57	0.53	0.22		0.52	

Intersection Summary

Area Type: Other
Cycle Length: 93
Actuated Cycle Length: 67.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 18.7 Intersection LOS: B
Intersection Capacity Utilization 75.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 15: South Bolton Street & Granger Boulevard



Intersection	
Int Delay, s/veh	73.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	1059	974	0	1	461
Future Vol, veh/h	0	1059	974	0	1	461
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	95	95	92	92	95	95
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	0	1115	1059	0	1	485

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	2174	1059
Stage 1	-	-	-	-	1059	-
Stage 2	-	-	-	-	1115	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	52	~ 275
Stage 1	0	-	-	0	336	-
Stage 2	0	-	-	0	316	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	52	~ 275
Mov Cap-2 Maneuver	-	-	-	-	52	-
Stage 1	-	-	-	-	336	-
Stage 2	-	-	-	-	316	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	$ 400.6
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	272
HCM Lane V/C Ratio	-	-	1.788
HCM Control Delay (s)	-	-	$ 400.6
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	32.4

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

2031 Build Weekday Morning Peak Hour

Intersection	
Intersection Delay, s/veh	14.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	187	199	11	129	4	76	81	6	9	131	28
Future Vol, veh/h	13	187	199	11	129	4	76	81	6	9	131	28
Peak Hour Factor	0.90	0.90	0.90	0.83	0.83	0.83	0.79	0.79	0.79	0.85	0.85	0.85
Heavy Vehicles, %	0	0	8	0	2	25	10	4	0	12	3	4
Mvmt Flow	14	208	221	13	155	5	96	103	8	11	154	33
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.9	11.3	12.7	12.3
HCM LOS	C	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	47%	3%	8%	5%
Vol Thru, %	50%	47%	90%	78%
Vol Right, %	4%	50%	3%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	163	399	144	168
LT Vol	76	13	11	9
Through Vol	81	187	129	131
RT Vol	6	199	4	28
Lane Flow Rate	206	443	173	198
Geometry Grp	1	1	1	1
Degree of Util (X)	0.356	0.636	0.283	0.336
Departure Headway (Hd)	6.213	5.162	5.879	6.112
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	576	696	605	585
Service Time	4.296	3.23	3.967	4.195
HCM Lane V/C Ratio	0.358	0.636	0.286	0.338
HCM Control Delay	12.7	16.9	11.3	12.3
HCM Lane LOS	B	C	B	B
HCM 95th-tile Q	1.6	4.6	1.2	1.5

Intersection	
Int Delay, s/veh	2.4

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		⇕			⇂	↱		⇕			⇕	
Traffic Vol, veh/h	3	321	1	6	145	32	1	4	22	52	0	0
Future Vol, veh/h	3	321	1	6	145	32	1	4	22	52	0	0
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	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	72	72	72	78	78	78	70	70	70
Heavy Vehicles, %	0	6	0	17	8	19	0	0	0	12	0	0
Mvmt Flow	3	334	1	8	201	44	1	5	28	74	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	201	0	0	335	0	0	558	558	335	574	558	201
Stage 1	-	-	-	-	-	-	341	341	-	217	217	-
Stage 2	-	-	-	-	-	-	217	217	-	357	341	-
Critical Hdwy	4.1	-	-	4.27	-	-	7.1	6.5	6.2	7.22	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.22	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.22	5.5	-
Follow-up Hdwy	2.2	-	-	2.353	-	-	3.5	4	3.3	3.608	4	3.3
Pot Cap-1 Maneuver	1383	-	-	1145	-	-	443	441	712	415	441	845
Stage 1	-	-	-	-	-	-	678	642	-	763	727	-
Stage 2	-	-	-	-	-	-	790	727	-	641	642	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1383	-	-	1145	-	-	439	436	712	392	436	845
Mov Cap-2 Maneuver	-	-	-	-	-	-	439	436	-	392	436	-
Stage 1	-	-	-	-	-	-	676	640	-	761	721	-
Stage 2	-	-	-	-	-	-	784	721	-	609	640	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	0.1	0.3	11	16.3
HCM LOS			B	C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	638	1145	-	-	1383	-	-	392
HCM Lane V/C Ratio	0.054	0.007	-	-	0.002	-	-	0.19
HCM Control Delay (s)	11	8.2	0	-	7.6	0	-	16.3
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	3

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	213	52	23	379	4	3	0	10	55	0	15
Future Vol, veh/h	4	213	52	23	379	4	3	0	10	55	0	15
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	84	84	84	75	75	75	85	85	85
Heavy Vehicles, %	0	6	88	60	2	25	33	0	0	78	0	60
Mvmt Flow	5	280	68	27	451	5	4	0	13	65	0	18

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	456	0	0	348	0	0	841	866	454	838	834	314
Stage 1	-	-	-	-	-	-	508	508	-	324	324	-
Stage 2	-	-	-	-	-	-	333	358	-	514	510	-
Critical Hdwy	4.1	-	-	4.7	-	-	7.43	6.5	6.2	7.88	6.5	6.8
Critical Hdwy Stg 1	-	-	-	-	-	-	6.43	5.5	-	6.88	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.43	5.5	-	6.88	5.5	-
Follow-up Hdwy	2.2	-	-	2.74	-	-	3.797	4	3.3	4.202	4	3.84
Pot Cap-1 Maneuver	1115	-	-	949	-	-	252	293	610	215	306	610
Stage 1	-	-	-	-	-	-	494	542	-	554	653	-
Stage 2	-	-	-	-	-	-	620	631	-	427	541	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1115	-	-	949	-	-	237	280	610	203	293	610
Mov Cap-2 Maneuver	-	-	-	-	-	-	237	280	-	203	293	-
Stage 1	-	-	-	-	-	-	491	521	-	551	649	-
Stage 2	-	-	-	-	-	-	598	627	-	402	520	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.1	0.5	13.4	28.1
HCM LOS			B	D

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	447	1115	-	-	949	-	-	237
HCM Lane V/C Ratio	0.039	0.005	-	-	0.029	-	-	0.347
HCM Control Delay (s)	13.4	8.2	0	-	8.9	0	-	28.1
HCM Lane LOS	B	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	1.5

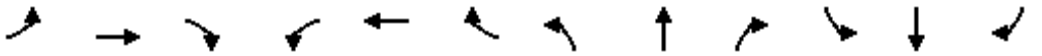
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	15	1	234	417	0
Future Vol, veh/h	1	15	1	234	417	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	81	81	90	90
Heavy Vehicles, %	0	0	0	19	13	0
Mvmt Flow	1	16	1	289	463	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	754	463	463	0	-	0
Stage 1	463	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	380	603	1109	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	763	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	380	603	1109	-	-	-
Mov Cap-2 Maneuver	380	-	-	-	-	-
Stage 1	637	-	-	-	-	-
Stage 2	763	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1109	-	582	-	-
HCM Lane V/C Ratio	0.001	-	0.029	-	-
HCM Control Delay (s)	8.2	0	11.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

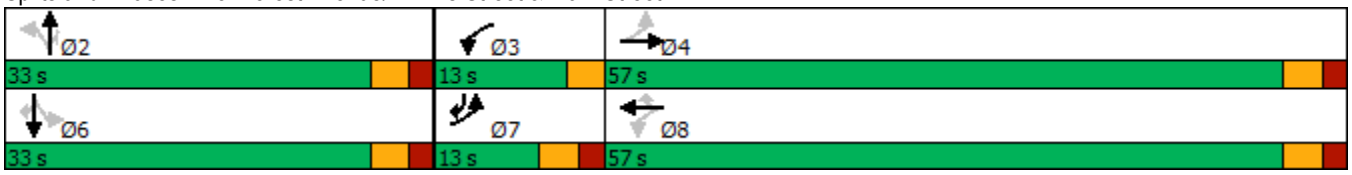


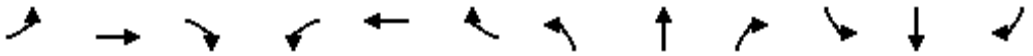
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	538	2	143	258	9	94	90	337	2	100	41
Future Volume (vph)	50	538	2	143	258	9	94	90	337	2	100	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	16	11	11	10	10	10	10
Storage Length (ft)	110		0	190		100	0		265	0		65
Storage Lanes	1		0	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.975			0.999	
Satd. Flow (prot)	1558	1782	0	1662	1749	1620	0	1791	1492	0	1754	1311
Flt Permitted	0.565			0.243				0.759			0.994	
Satd. Flow (perm)	927	1782	0	425	1749	1620	0	1394	1492	0	1746	1311
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						74			358			63
Link Speed (mph)		30			30			30			35	
Link Distance (ft)		592			1353			704			566	
Travel Time (s)		13.5			30.8			16.0			11.0	
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.92	0.92	0.92	0.65	0.65	0.65
Heavy Vehicles (%)	12%	3%	0%	5%	5%	13%	0%	0%	1%	0%	1%	15%
Adj. Flow (vph)	54	578	2	159	287	10	102	98	366	3	154	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	580	0	159	287	10	0	200	366	0	157	63
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	0.85	1.04	1.04	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases	4			8		8	2		2	6		6
Detector Phase	7	4		3	8	8	2	2	2	6	6	7
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	23.0		9.5	23.0	23.0	23.0	23.0	23.0	23.0	23.0	10.0
Total Split (s)	13.0	57.0		13.0	57.0	57.0	33.0	33.0	33.0	33.0	33.0	13.0
Total Split (%)	12.6%	55.3%		12.6%	55.3%	55.3%	32.0%	32.0%	32.0%	32.0%	32.0%	12.6%
Maximum Green (s)	8.0	52.0		10.0	52.0	52.0	28.0	28.0	28.0	28.0	28.0	8.0
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		0.0	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
Total Lost Time (s)	5.0	5.0		3.0	5.0	5.0		5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	None	None	None	None	None	None
Act Effct Green (s)	36.0	29.0		40.1	31.5	31.5		17.0	17.0		17.0	29.6
Actuated g/C Ratio	0.52	0.42		0.58	0.46	0.46		0.25	0.25		0.25	0.43
v/c Ratio	0.10	0.77		0.40	0.36	0.01		0.58	0.57		0.36	0.10
Control Delay	7.3	25.3		9.3	15.5	0.0		32.5	7.4		26.4	5.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	7.3	25.3		9.3	15.5	0.0		32.5	7.4		26.4	5.2
LOS	A	C		A	B	A		C	A		C	A
Approach Delay		23.8			13.0			16.3			20.4	
Approach LOS		C			B			B			C	
Queue Length 50th (ft)	8	190		23	77	0		70	2		52	0
Queue Length 95th (ft)	27	394		63	168	0		176	73		92	11
Internal Link Dist (ft)		512			1273			624			486	
Turn Bay Length (ft)	110			190		100			265			65
Base Capacity (vph)	589	1395		453	1369	1284		620	862		776	630
Starvation Cap Reductn	0	24		0	0	0		0	0		0	0
Spillback Cap Reductn	0	0		0	0	0		0	0		0	0
Storage Cap Reductn	0	0		0	0	0		0	0		0	0
Reduced v/c Ratio	0.09	0.42		0.35	0.21	0.01		0.32	0.42		0.20	0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 103			
Actuated Cycle Length: 68.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 18.5		Intersection LOS: B	
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Forest Avenue/Wilkins Street & Main Street



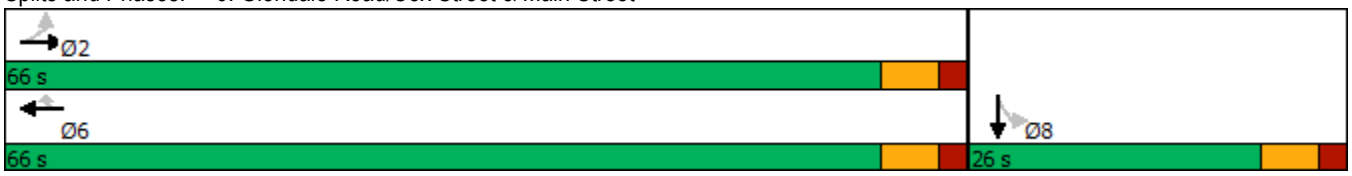


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	457	34	0	321	166	0	0	0	204	80	34
Future Volume (vph)	111	457	34	0	321	166	0	0	0	204	80	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	16	12	12	12	11	11	11
Storage Length (ft)	0		0	0		50	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992				0.850					0.986	
Flt Protected		0.991									0.969	
Satd. Flow (prot)	0	1778	0	0	1925	1727	0	0	0	0	1547	0
Flt Permitted		0.859									0.969	
Satd. Flow (perm)	0	1541	0	0	1925	1727	0	0	0	0	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				175					6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		506			592			456			1021	
Travel Time (s)		11.5			13.5			10.4			23.2	
Peak Hour Factor	0.91	0.91	0.91	0.95	0.95	0.95	0.92	0.92	0.92	0.84	0.84	0.84
Heavy Vehicles (%)	32%	3%	7%	0%	2%	6%	0%	0%	0%	7%	1%	82%
Adj. Flow (vph)	122	502	37	0	338	175	0	0	0	243	95	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	661	0	0	338	175	0	0	0	0	378	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.96	0.96	0.96	0.96	0.96	0.85	1.00	1.00	1.00	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	
Protected Phases		2			6						8	
Permitted Phases	2					6				8		
Detector Phase	2	2			6	6				8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0				5.0	5.0	
Minimum Split (s)	24.0	24.0			24.0	24.0				24.0	24.0	
Total Split (s)	66.0	66.0			66.0	66.0				26.0	26.0	
Total Split (%)	71.7%	71.7%			71.7%	71.7%				28.3%	28.3%	
Maximum Green (s)	60.0	60.0			60.0	60.0				20.0	20.0	
Yellow Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
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	
Total Lost Time (s)		6.0			6.0	6.0					6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None			None	None				None	None	
Act Effct Green (s)		33.3			33.3	33.3					20.6	
Actuated g/C Ratio		0.50			0.50	0.50					0.31	
v/c Ratio		0.85			0.35	0.18					0.78	
Control Delay		24.8			10.2	1.7					37.8	
Queue Delay		0.0			0.0	0.0					0.0	
Total Delay		24.8			10.2	1.7					37.8	
LOS		C			B	A					D	
Approach Delay		24.8			7.3						37.8	
Approach LOS		C			A						D	
Queue Length 50th (ft)		207			74	0					133	
Queue Length 95th (ft)		333			116	21					#344	
Internal Link Dist (ft)		426			512			376			941	
Turn Bay Length (ft)						50						
Base Capacity (vph)		1380			1723	1564					484	
Starvation Cap Reductn		0			0	0					0	
Spillback Cap Reductn		0			0	0					0	
Storage Cap Reductn		0			0	0					0	
Reduced v/c Ratio		0.48			0.20	0.11					0.78	

Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 66.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 81.7%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Glendale Road/Cox Street & Main Street



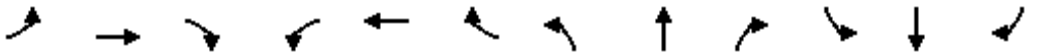
Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	569	32	28	327	0	25	0	31	2	43	64
Future Vol, veh/h	0	569	32	28	327	0	25	0	31	2	43	64
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	69	69	69	71	71	71
Heavy Vehicles, %	0	10	0	0	15	0	0	0	14	50	5	10
Mvmt Flow	0	639	36	31	367	0	36	0	45	3	61	90

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	675	0	0	1162	1086	657	1109	1104	367
Stage 1	-	-	-	-	-	-	657	657	-	429	429	-
Stage 2	-	-	-	-	-	-	505	429	-	680	675	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	6.5	6.34	7.6	6.55	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.6	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.6	5.55	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	4	3.426	3.95	4.045	3.39
Pot Cap-1 Maneuver	0	-	-	926	-	0	174	218	444	152	208	661
Stage 1	0	-	-	-	-	0	457	465	-	520	579	-
Stage 2	0	-	-	-	-	0	553	587	-	372	449	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	926	-	-	111	209	444	132	199	661
Mov Cap-2 Maneuver	-	-	-	-	-	-	111	209	-	132	199	-
Stage 1	-	-	-	-	-	-	457	465	-	520	555	-
Stage 2	-	-	-	-	-	-	408	562	-	334	449	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	37.4	24.8
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	190	-	-	926	-	332
HCM Lane V/C Ratio	0.427	-	-	0.034	-	0.462
HCM Control Delay (s)	37.4	-	-	9	0	24.8
HCM Lane LOS	E	-	-	A	A	C
HCM 95th %tile Q(veh)	2	-	-	0.1	-	2.3



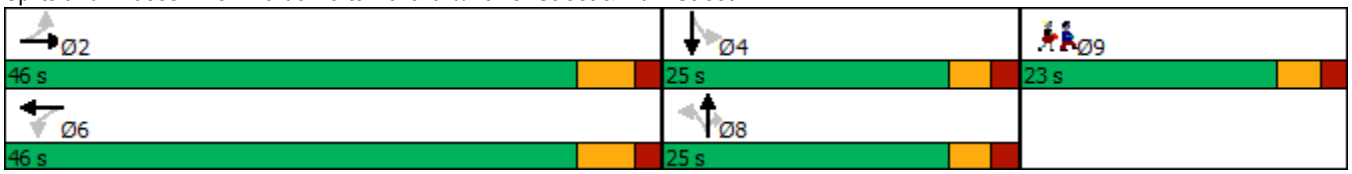
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	322	14	189	213	21	5	127	264	45	156	83
Future Volume (vph)	38	322	14	189	213	21	5	127	264	45	156	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	10	10	15	15	14	13	13	13
Storage Length (ft)	0		0	70		0	0		100	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.987				0.850		0.960	
Flt Protected		0.995		0.950				0.998			0.992	
Satd. Flow (prot)	0	1789	0	1531	1598	0	0	2008	1552	0	1843	0
Flt Permitted		0.941		0.420				0.988			0.933	
Satd. Flow (perm)	0	1692	0	677	1598	0	0	1988	1552	0	1734	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			7				287		20	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		639			834			152			404	
Travel Time (s)		12.4			16.2			3.5			9.2	
Peak Hour Factor	0.83	0.83	0.83	0.91	0.91	0.91	0.92	0.92	0.92	0.91	0.91	0.91
Heavy Vehicles (%)	0%	6%	0%	14%	8%	25%	0%	4%	11%	0%	1%	3%
Adj. Flow (vph)	46	388	17	208	234	23	5	138	287	49	171	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	451	0	208	257	0	0	143	287	0	311	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.04	1.09	1.09	0.88	0.88	0.92	0.96	0.96	0.96
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	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	
Minimum Split (s)	24.0	24.0		24.0	24.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	46.0	46.0		46.0	46.0		25.0	25.0	25.0	25.0	25.0	
Total Split (%)	48.9%	48.9%		48.9%	48.9%		26.6%	26.6%	26.6%	26.6%	26.6%	
Maximum Green (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		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	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		6.0		6.0	6.0			5.0	5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	

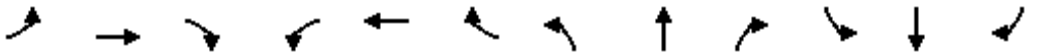
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		23.7		23.7	23.7			21.5	21.5		21.5	
Actuated g/C Ratio		0.40		0.40	0.40			0.36	0.36		0.36	
v/c Ratio		0.67		0.78	0.40			0.20	0.39		0.49	
Control Delay		20.8		38.3	15.2			20.4	5.5		22.9	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		20.8		38.3	15.2			20.4	5.5		22.9	
LOS		C		D	B			C	A		C	
Approach Delay		20.8			25.5			10.4			22.9	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)		106		52	51			29	0		67	
Queue Length 95th (ft)		273		#220	162			128	65		#304	
Internal Link Dist (ft)		559			754			72			324	
Turn Bay Length (ft)				70					100			
Base Capacity (vph)		1212		484	1146			711	739		633	
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		0.37		0.43	0.22			0.20	0.39		0.49	

Intersection Summary

Area Type: Other
Cycle Length: 94
Actuated Cycle Length: 59.9
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 19.8 Intersection LOS: B
Intersection Capacity Utilization 73.4% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Vila do Porto Boilevard/Tower Street & Main Street





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	207	103	226	100	18	36	199	158	16	232	11
Future Volume (vph)	27	207	103	226	100	18	36	199	158	16	232	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	0		0	0		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.993			0.946			0.994	
Flt Protected		0.994			0.968			0.995			0.997	
Satd. Flow (prot)	0	1801	1553	0	1683	0	0	1624	0	0	1866	0
Flt Permitted		0.918			0.646			0.945			0.964	
Satd. Flow (perm)	0	1663	1553	0	1123	0	0	1543	0	0	1804	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121		7			78			5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		257			126			357			165	
Travel Time (s)		5.8			2.9			8.1			3.8	
Peak Hour Factor	0.85	0.85	0.85	0.70	0.70	0.70	0.82	0.82	0.82	0.85	0.85	0.85
Heavy Vehicles (%)	4%	5%	4%	12%	0%	12%	6%	3%	20%	0%	1%	0%
Adj. Flow (vph)	32	244	121	323	143	26	44	243	193	19	273	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	276	121	0	492	0	0	480	0	0	305	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	26.0	26.0	26.0	26.0	26.0		24.0	24.0		24.0	24.0	
Total Split (%)	52.0%	52.0%	52.0%	52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	21.0	21.0	21.0	21.0	21.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	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	
Lost Time Adjust (s)		0.0	0.0		0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0		5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	

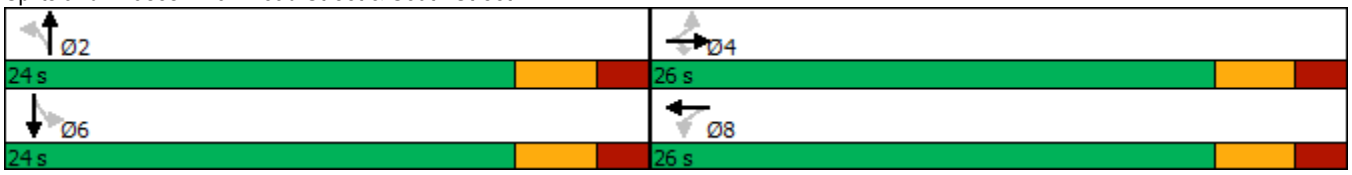
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		21.1	21.1		21.1			16.3			16.3	
Actuated g/C Ratio		0.44	0.44		0.44			0.34			0.34	
v/c Ratio		0.37	0.16		0.98			0.83			0.49	
Control Delay		11.6	3.0		55.6			26.1			14.9	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		11.6	3.0		55.6			26.1			14.9	
LOS		B	A		E			C			B	
Approach Delay		8.9			55.6			26.1			14.9	
Approach LOS		A			E			C			B	
Queue Length 50th (ft)		53	0		~148			97			63	
Queue Length 95th (ft)		93	20		#208			#170			108	
Internal Link Dist (ft)		177			46			277			85	
Turn Bay Length (ft)			50									
Base Capacity (vph)		738	757		502			666			728	
Starvation Cap Reductn		0	0		0			0			0	
Spillback Cap Reductn		0	0		0			0			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.37	0.16		0.98			0.72			0.42	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 47.5			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 28.7		Intersection LOS: C	
Intersection Capacity Utilization 75.6%		ICU Level of Service D	
Analysis Period (min) 15			

~ 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.

Splits and Phases: 9: Broad Street & South Street



MOVEMENT SUMMARY

Site: 10 [Intersection 10: Route 62 at Washington Street and Felton Street (Site Folder: General)]

2031 Build Weekday Morning Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Washington Street														
3	L2	329	3.0	362	3.0	0.630	14.2	LOS B	7.6	196.5	0.78	0.85	1.11	22.6
8	T1	62	7.0	68	7.0	0.630	14.4	LOS B	7.6	196.5	0.78	0.85	1.11	22.5
18	R2	100	6.0	110	6.0	0.630	14.4	LOS B	7.6	196.5	0.78	0.85	1.11	22.1
Approach		491	4.1	540	4.1	0.630	14.3	LOS B	7.6	196.5	0.78	0.85	1.11	22.5
East: Route 62														
1	L2	215	3.0	256	3.0	0.589	13.1	LOS B	5.6	150.0	0.71	0.87	1.04	22.8
6	T1	187	16.6	223	16.6	0.589	13.8	LOS B	5.6	150.0	0.71	0.87	1.04	21.4
16	R2	4	0.0	5	0.0	0.589	13.0	LOS B	5.6	150.0	0.71	0.87	1.04	21.0
Approach		406	9.2	483	9.2	0.589	13.4	LOS B	5.6	150.0	0.71	0.87	1.04	22.1
West: Route 62														
5	L2	18	0.0	20	0.0	1.043	62.1	LOS E	60.9	1565.6	1.00	2.56	3.40	14.7
2	T1	290	6.6	330	6.6	1.043	62.4	LOS E	60.9	1565.6	1.00	2.56	3.40	14.7
12	R2	542	2.0	616	2.0	1.043	62.2	LOS E	60.9	1565.6	1.00	2.56	3.40	15.2
Approach		850	3.5	966	3.5	1.043	62.3	LOS E	60.9	1565.6	1.00	2.56	3.40	15.0
All Vehicles		1747	5.0	1989	5.1	1.043	37.4	LOS D	60.9	1565.6	0.87	1.68	2.20	18.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection	
Intersection Delay, s/veh	17.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	139	10	38	163	65	39	100	39	142	173	43
Future Vol, veh/h	34	139	10	38	163	65	39	100	39	142	173	43
Peak Hour Factor	0.88	0.88	0.88	0.85	0.85	0.85	0.72	0.72	0.72	0.91	0.91	0.91
Heavy Vehicles, %	3	3	11	6	4	6	3	6	0	4	1	3
Mvmt Flow	39	158	11	45	192	76	54	139	54	156	190	47
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.3	17.6	14.8	22.1
HCM LOS	B	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	19%	14%	40%
Vol Thru, %	56%	76%	61%	48%
Vol Right, %	22%	5%	24%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	178	183	266	358
LT Vol	39	34	38	142
Through Vol	100	139	163	173
RT Vol	39	10	65	43
Lane Flow Rate	247	208	313	393
Geometry Grp	1	1	1	1
Degree of Util (X)	0.447	0.393	0.562	0.687
Departure Headway (Hd)	6.509	6.799	6.463	6.285
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	551	526	557	574
Service Time	4.586	4.879	4.532	4.349
HCM Lane V/C Ratio	0.448	0.395	0.562	0.685
HCM Control Delay	14.8	14.3	17.6	22.1
HCM Lane LOS	B	B	C	C
HCM 95th-tile Q	2.3	1.9	3.5	5.3

MOVEMENT SUMMARY

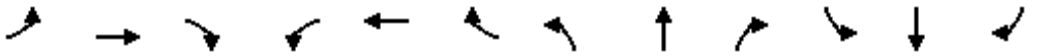
Site: 12 [Intersection 12: Washington Street at Broad Street (Site Folder: General)]

2031 Build Weekday Morning Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Washington Street														
3u	U	8	14.0	9	14.0	0.347	7.0	LOS A	2.5	65.1	0.17	0.05	0.17	30.1
3a	L1	397	5.0	422	5.0	0.347	6.7	LOS A	2.5	64.0	0.17	0.05	0.17	29.5
8	T1	322	3.4	343	3.4	0.347	6.6	LOS A	2.5	64.0	0.17	0.05	0.17	31.2
Approach		727	4.4	773	4.4	0.347	6.7	LOS A	2.5	65.1	0.17	0.05	0.17	30.2
East: Private Driveway														
1	L2	2	2.0	2	2.0	0.036	5.8	LOS A	0.1	2.5	0.44	0.39	0.44	34.5
16a	R1	9	2.0	10	2.0	0.036	5.8	LOS A	0.1	2.5	0.44	0.39	0.44	34.2
16	R2	11	2.0	12	2.0	0.036	5.8	LOS A	0.1	2.5	0.44	0.39	0.44	33.5
Approach		22	2.0	24	2.0	0.036	5.8	LOS A	0.1	2.5	0.44	0.39	0.44	33.9
North: Broad Street														
4	T1	446	2.7	544	2.7	0.393	9.4	LOS A	2.1	52.6	0.61	0.56	0.61	33.0
14b	R3	66	6.0	80	6.0	0.393	9.6	LOS A	2.1	52.8	0.61	0.56	0.61	31.5
Approach		512	3.1	624	3.1	0.393	9.4	LOS A	2.1	52.8	0.61	0.56	0.61	32.8
NorthWest: Washington Street														
7ux	U	1	0.0	1	0.0	0.461	12.2	LOS B	3.2	81.8	0.75	0.82	0.94	32.3
7bx	L3	9	27.0	10	27.0	0.461	14.6	LOS B	3.2	81.8	0.75	0.82	0.94	31.1
7ax	L1	7	2.0	8	2.0	0.461	12.3	LOS B	3.2	81.8	0.75	0.82	0.94	31.2
14ax	R1	541	3.0	588	3.0	0.461	12.4	LOS B	3.2	81.5	0.75	0.82	0.94	31.4
Approach		558	3.4	607	3.4	0.461	12.4	LOS B	3.2	81.8	0.75	0.82	0.94	31.4
All Vehicles		1819	3.7	2028	3.7	0.461	9.2	LOS A	3.2	81.8	0.48	0.44	0.54	31.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



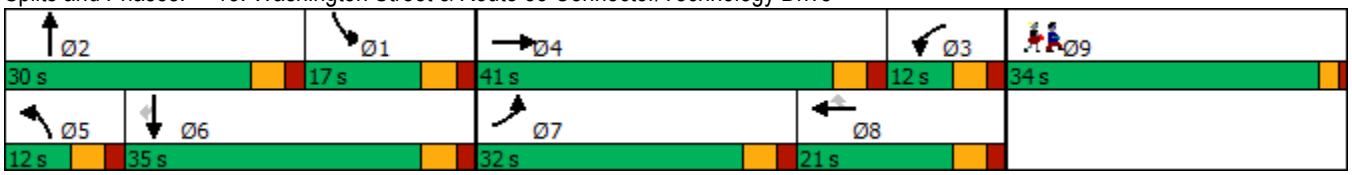
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	512	419	339	91	339	21	186	262	42	98	311	601
Future Volume (vph)	512	419	339	91	339	21	186	262	42	98	311	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	10	10	10	11	10	10	11	11	11	10	14
Storage Length (ft)	350		0	175		175	350		0	215		50
Storage Lanes	2		0	1		1	2		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95	1.00	0.95	1.00
Frt		0.933				0.850		0.979				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3255	3049	0	1685	3421	1436	2998	3251	0	1745	3240	1672
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3255	3049	0	1685	3421	1436	2998	3251	0	1745	3240	1672
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		148				179		12				379
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		680			776			490			543	
Travel Time (s)		15.5			17.6			11.1			12.3	
Peak Hour Factor	0.92	0.92	0.92	0.83	0.83	0.83	0.87	0.87	0.87	0.92	0.92	0.92
Heavy Vehicles (%)	4%	4%	2%	0%	2%	5%	9%	4%	12%	0%	4%	3%
Adj. Flow (vph)	557	455	368	110	408	25	214	301	48	107	338	653
Shared Lane Traffic (%)												
Lane Group Flow (vph)	557	823	0	110	408	25	214	349	0	107	338	653
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		22			22			20			20	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.09	1.09	1.09	1.04	1.09	1.09	1.04	1.04	1.04	1.09	0.92
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	12.0	16.0		12.0	16.0	16.0	12.0	16.0		12.0	35.0	35.0
Total Split (s)	32.0	41.0		12.0	21.0	21.0	12.0	30.0		17.0	35.0	35.0
Total Split (%)	23.9%	30.6%		9.0%	15.7%	15.7%	9.0%	22.4%		12.7%	26.1%	26.1%
Maximum Green (s)	26.5	35.5		6.5	15.5	15.5	6.5	24.5		11.5	29.5	29.5
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
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)	5.5	5.5		5.5	5.5	5.5	5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0

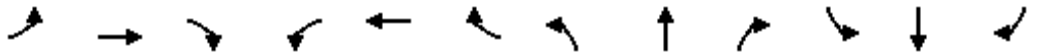
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	None	Min		None	Min	Min
Walk Time (s)											7.0	7.0
Flash Dont Walk (s)											22.0	22.0
Pedestrian Calls (#/hr)											0	0
Act Effct Green (s)	21.8	29.6		8.0	15.8	15.8	6.5	15.2		20.6	29.3	29.3
Actuated g/C Ratio	0.23	0.31		0.08	0.17	0.17	0.07	0.16		0.22	0.31	0.31
v/c Ratio	0.75	0.79		0.78	0.72	0.06	1.05	0.66		0.28	0.34	0.84
Control Delay	41.1	30.1		81.3	46.7	0.3	121.8	42.9		36.1	27.3	24.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	41.1	30.1		81.3	46.7	0.3	121.8	42.9		36.1	27.3	24.6
LOS	D	C		F	D	A	F	D		D	C	C
Approach Delay		34.5			51.6			72.9			26.6	
Approach LOS		C			D			E			C	
Queue Length 50th (ft)	162	195		67	125	0	~73	102		54	82	162
Queue Length 95th (ft)	219	263		#164	169	0	#146	143		113	128	#396
Internal Link Dist (ft)		600			696			410			463	
Turn Bay Length (ft)	350			175		175	350			215		50
Base Capacity (vph)	906	1229		141	565	386	204	845		376	1003	779
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.61	0.67		0.78	0.72	0.06	1.05	0.41		0.28	0.34	0.84

Intersection Summary

Area Type: Other
Cycle Length: 134
Actuated Cycle Length: 95.4
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 40.7 Intersection LOS: D
Intersection Capacity Utilization 65.6% ICU Level of Service C
Analysis Period (min) 15
~ 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.

Splits and Phases: 13: Washington Street & Route 85 Connector/Technology Drive



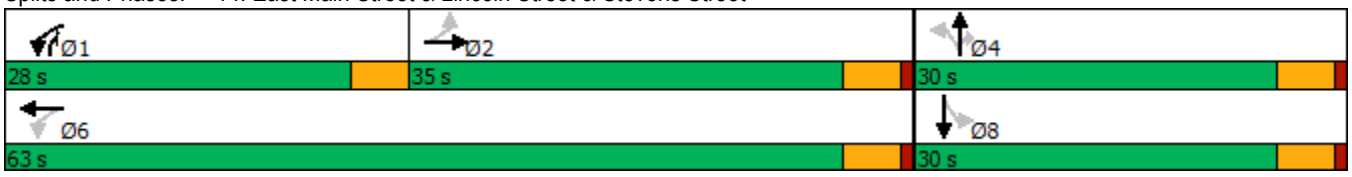


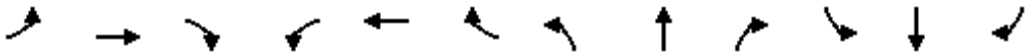
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	367	18	397	371	297	8	92	407	48	23	15
Future Volume (vph)	11	367	18	397	371	297	8	92	407	48	23	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	16	12	12	12	11	11	11	15	15	15
Storage Length (ft)	115		0	0		0	0		130	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.933				0.850		0.976	
Flt Protected		0.999		0.950				0.996			0.973	
Satd. Flow (prot)	0	3559	0	1687	1730	0	0	1777	1459	0	1912	0
Flt Permitted		0.924		0.366				0.968			0.753	
Satd. Flow (perm)	0	3292	0	650	1730	0	0	1727	1459	0	1480	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			82				220		11	
Link Speed (mph)		25			25			30			20	
Link Distance (ft)		679			2541			789			556	
Travel Time (s)		18.5			69.3			17.9			19.0	
Peak Hour Factor	0.93	0.93	0.93	0.86	0.86	0.86	0.73	0.73	0.73	0.49	0.49	0.49
Heavy Vehicles (%)	0%	4%	6%	7%	2%	3%	14%	2%	7%	2%	10%	0%
Adj. Flow (vph)	12	395	19	462	431	345	11	126	558	98	47	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	426	0	462	776	0	0	137	558	0	176	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.96	0.96	0.85	1.00	1.00	1.00	1.04	1.04	1.04	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.0	25.0		10.0	25.0		25.0	25.0	10.0	25.0	25.0	
Total Split (s)	35.0	35.0		28.0	63.0		30.0	30.0	28.0	30.0	30.0	
Total Split (%)	37.6%	37.6%		30.1%	67.7%		32.3%	32.3%	30.1%	32.3%	32.3%	
Maximum Green (s)	30.0	30.0		24.0	58.0		25.0	25.0	24.0	25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0	0.0	1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		5.0		4.0	5.0			5.0	4.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	Min	Min		None	None		Min	Min	None	None	None	
Walk Time (s)	9.0	9.0			9.0		9.0	9.0		9.0	9.0	
Flash Dont Walk (s)	8.0	8.0			8.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		14.3		35.8	34.7			12.7	34.1		12.7	
Actuated g/C Ratio		0.25		0.62	0.60			0.22	0.59		0.22	
v/c Ratio		0.52		0.67	0.73			0.36	0.59		0.53	
Control Delay		22.5		11.6	12.5			24.9	7.6		27.6	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		22.5		11.6	12.5			24.9	7.6		27.6	
LOS		C		B	B			C	A		C	
Approach Delay		22.5			12.2			11.0			27.6	
Approach LOS		C			B			B			C	
Queue Length 50th (ft)		64		67	135			38	49		48	
Queue Length 95th (ft)		136		156	313			86	107		64	
Internal Link Dist (ft)		599			2461			709			476	
Turn Bay Length (ft)									130			
Base Capacity (vph)		1824		863	1592			796	1153		688	
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		0.23		0.54	0.49			0.17	0.48		0.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 93			
Actuated Cycle Length: 58.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 72.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: East Main Street & Lincoln Street & Stevens Street





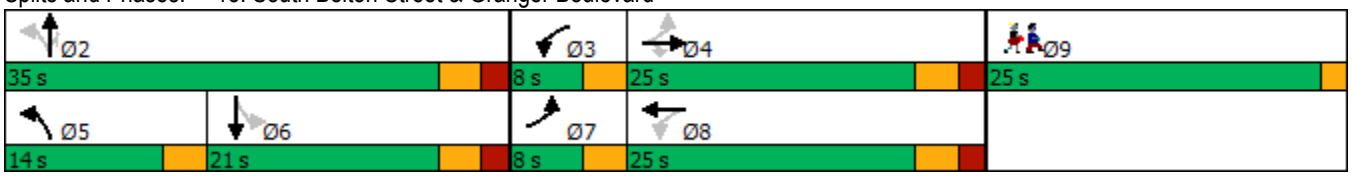
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	349	258	197	341	6	197	312	103	15	329	30
Future Volume (vph)	46	349	258	197	341	6	197	312	103	15	329	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	12	12	12	13	13	12	12	12
Storage Length (ft)	135		0	0		0	115		115	0		0
Storage Lanes	1		1	1		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.997				0.850		0.988	
Flt Protected	0.950			0.950			0.950				0.998	
Satd. Flow (prot)	1620	1810	1583	1770	1819	0	1787	1944	1669	0	3475	0
Flt Permitted	0.389			0.319			0.386				0.934	
Satd. Flow (perm)	663	1810	1583	594	1819	0	726	1944	1669	0	3252	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			272		1				105		8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1659			2112			460			421	
Travel Time (s)		37.7			48.0			10.5			9.6	
Peak Hour Factor	0.95	0.95	0.95	0.90	0.90	0.90	0.96	0.96	0.96	0.91	0.91	0.91
Heavy Vehicles (%)	4%	5%	2%	2%	3%	67%	1%	1%	0%	13%	1%	13%
Adj. Flow (vph)	48	367	272	219	379	7	205	325	107	16	362	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	367	272	219	386	0	205	325	107	0	411	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	7	4	4	3	8		5	2	2	6	6	
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)	8.0	10.0	10.0	8.0	10.0		8.0	10.0	10.0	10.0	10.0	
Total Split (s)	8.0	25.0	25.0	8.0	25.0		14.0	35.0	35.0	21.0	21.0	
Total Split (%)	8.6%	26.9%	26.9%	8.6%	26.9%		15.1%	37.6%	37.6%	22.6%	22.6%	
Maximum Green (s)	5.0	20.0	20.0	5.0	20.0		11.0	30.0	30.0	16.0	16.0	
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)	0.0	2.0	2.0	0.0	2.0		0.0	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	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0	5.0		5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None		None	Max	Max	Max	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	26.3	19.3	19.3	27.5	22.5		32.0	30.0	30.0		17.3	
Actuated g/C Ratio	0.39	0.29	0.29	0.41	0.33		0.48	0.45	0.45		0.26	
v/c Ratio	0.15	0.71	0.42	0.66	0.63		0.41	0.38	0.13		0.49	
Control Delay	12.2	30.2	5.0	25.5	26.1		13.5	14.2	3.3		23.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	
Total Delay	12.2	30.2	5.0	25.5	26.1		13.5	14.2	3.3		23.7	
LOS	B	C	A	C	C		B	B	A		C	
Approach Delay		19.0			25.9			12.2			23.7	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	11	134	0	56	142		48	87	1		75	
Queue Length 95th (ft)	28	#225	48	#116	#259		87	145	24		118	
Internal Link Dist (ft)		1579			2032			380			341	
Turn Bay Length (ft)	135						115		115			
Base Capacity (vph)	330	538	661	330	609		518	866	802		844	
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	
Reduced v/c Ratio	0.15	0.68	0.41	0.66	0.63		0.40	0.38	0.13		0.49	

Intersection Summary

Area Type: Other
Cycle Length: 93
Actuated Cycle Length: 67.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 19.7 Intersection LOS: B
Intersection Capacity Utilization 72.0% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 15: South Bolton Street & Granger Boulevard



Intersection	
Int Delay, s/veh	76.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		Y	
Traffic Vol, veh/h	0	1116	759	0	5	505
Future Vol, veh/h	0	1116	759	0	5	505
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	95	95	88	88	89	89
Heavy Vehicles, %	0	1	2	0	0	1
Mvmt Flow	0	1175	863	0	6	567

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	2038	863
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	1175	-
Critical Hdwy	-	-	-	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.309
Pot Cap-1 Maneuver	0	-	-	0	63	~ 356
Stage 1	0	-	-	0	416	-
Stage 2	0	-	-	0	296	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	63	~ 356
Mov Cap-2 Maneuver	-	-	-	-	63	-
Stage 1	-	-	-	-	416	-
Stage 2	-	-	-	-	296	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	$ 348.2
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	340
HCM Lane V/C Ratio	-	-	1.685
HCM Control Delay (s)	-	-	$ 348.2
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	35.2

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

2031 Build Weekday Afternoon Peak Hour

Intersection	
Intersection Delay, s/veh	15.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	124	104	13	245	9	169	127	13	8	90	21
Future Vol, veh/h	32	124	104	13	245	9	169	127	13	8	90	21
Peak Hour Factor	0.84	0.84	0.84	0.88	0.88	0.88	0.89	0.89	0.89	0.83	0.83	0.83
Heavy Vehicles, %	0	0	3	0	0	0	2	0	0	0	0	0
Mvmt Flow	38	148	124	15	278	10	190	143	15	10	108	25
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.9	15.5	18	11.8
HCM LOS	B	C	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	55%	12%	5%	7%
Vol Thru, %	41%	48%	92%	76%
Vol Right, %	4%	40%	3%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	309	260	267	119
LT Vol	169	32	13	8
Through Vol	127	124	245	90
RT Vol	13	104	9	21
Lane Flow Rate	347	310	303	143
Geometry Grp	1	1	1	1
Degree of Util (X)	0.597	0.507	0.514	0.258
Departure Headway (Hd)	6.193	5.902	6.1	6.483
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	583	610	592	552
Service Time	4.236	3.945	4.145	4.539
HCM Lane V/C Ratio	0.595	0.508	0.512	0.259
HCM Control Delay	18	14.9	15.5	11.8
HCM Lane LOS	C	B	C	B
HCM 95th-tile Q	3.9	2.9	2.9	1

Intersection	
Int Delay, s/veh	2.2

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		⇕			⇂	↱		⇕			⇕	
Traffic Vol, veh/h	1	169	2	13	265	32	4	3	5	29	6	1
Future Vol, veh/h	1	169	2	13	265	32	4	3	5	29	6	1
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	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	90	90	90	43	43	43	50	75	75
Heavy Vehicles, %	0	2	0	0	1	9	0	0	0	7	0	0
Mvmt Flow	1	192	2	14	294	36	9	7	12	58	8	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	294	0	0	194	0	0	522	517	193	527	518	294
Stage 1	-	-	-	-	-	-	195	195	-	322	322	-
Stage 2	-	-	-	-	-	-	327	322	-	205	196	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.17	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.17	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.17	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.563	4	3.3
Pot Cap-1 Maneuver	1279	-	-	1391	-	-	468	465	854	454	465	750
Stage 1	-	-	-	-	-	-	811	743	-	679	655	-
Stage 2	-	-	-	-	-	-	690	655	-	786	742	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1279	-	-	1391	-	-	456	459	854	438	459	750
Mov Cap-2 Maneuver	-	-	-	-	-	-	456	459	-	438	459	-
Stage 1	-	-	-	-	-	-	810	742	-	678	647	-
Stage 2	-	-	-	-	-	-	672	647	-	767	741	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	0	0.3	11.7	14.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SER	SWLn1
Capacity (veh/h)	567	1391	-	-	1279	-	-	444
HCM Lane V/C Ratio	0.049	0.01	-	-	0.001	-	-	0.152
HCM Control Delay (s)	11.7	7.6	0	-	7.8	0	-	14.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.5

Intersection	
Int Delay, s/veh	1.4

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	367	16	4	231	4	4	0	6	17	0	5
Future Vol, veh/h	9	367	16	4	231	4	4	0	6	17	0	5
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	99	99	99	62	62	62	62	62	62
Heavy Vehicles, %	0	1	100	75	2	0	0	0	0	100	0	80
Mvmt Flow	9	378	16	4	233	4	6	0	10	27	0	8

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	237	0	0	394	0	0	651	655	235	652	649	386
Stage 1	-	-	-	-	-	-	243	243	-	404	404	-
Stage 2	-	-	-	-	-	-	408	412	-	248	245	-
Critical Hdwy	4.1	-	-	4.85	-	-	7.1	6.5	6.2	8.1	6.5	7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	7.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	7.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.875	-	-	3.5	4	3.3	4.4	4	4.02
Pot Cap-1 Maneuver	1342	-	-	858	-	-	384	388	809	274	391	520
Stage 1	-	-	-	-	-	-	765	708	-	467	603	-
Stage 2	-	-	-	-	-	-	624	598	-	582	707	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1342	-	-	858	-	-	374	383	809	268	386	520
Mov Cap-2 Maneuver	-	-	-	-	-	-	374	383	-	268	386	-
Stage 1	-	-	-	-	-	-	758	704	-	463	598	-
Stage 2	-	-	-	-	-	-	609	593	-	572	703	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	0.2	0.2	11.7	18.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NELn1	NBL	NBT	NBR	SBL	SBT	SBR	SWLn1
Capacity (veh/h)	552	1342	-	-	858	-	-	301
HCM Lane V/C Ratio	0.029	0.007	-	-	0.005	-	-	0.118
HCM Control Delay (s)	11.7	7.7	0	-	9.2	0	-	18.6
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4

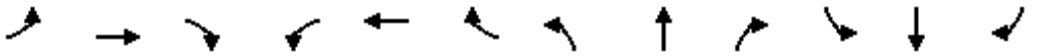
Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	9	334	235	1
Future Vol, veh/h	0	5	9	334	235	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	62	62	90	90	87	87
Heavy Vehicles, %	0	0	0	6	9	0
Mvmt Flow	0	8	10	371	270	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	662	271	271	0	-	0
Stage 1	271	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	430	773	1304	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	688	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	426	773	1304	-	-	-
Mov Cap-2 Maneuver	426	-	-	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	688	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1304	-	773	-	-
HCM Lane V/C Ratio	0.008	-	0.01	-	-
HCM Control Delay (s)	7.8	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

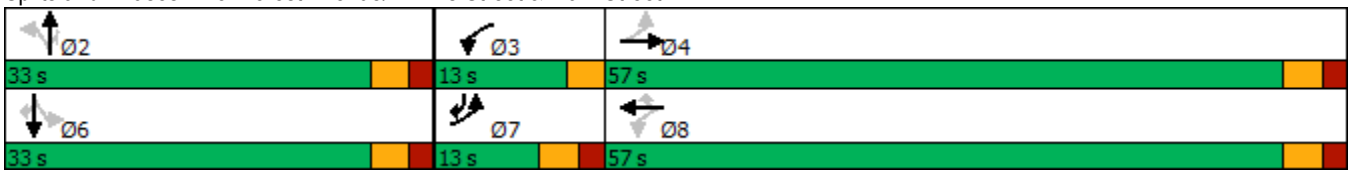


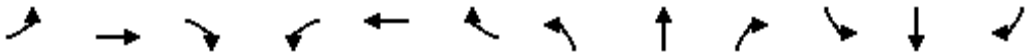
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	272	4	300	526	3	98	118	197	2	130	40
Future Volume (vph)	58	272	4	300	526	3	98	118	197	2	130	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	16	11	11	10	10	10	10
Storage Length (ft)	110		0	190		100	0		265	0		65
Storage Lanes	1		0	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.978			0.999	
Satd. Flow (prot)	1694	1798	0	1711	1801	1830	0	1778	1478	0	1772	1436
Flt Permitted	0.275			0.445				0.784			0.996	
Satd. Flow (perm)	490	1798	0	801	1801	1830	0	1426	1478	0	1766	1436
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				74			212			45
Link Speed (mph)		30			30			30			35	
Link Distance (ft)		592			1353			704			566	
Travel Time (s)		13.5			30.8			16.0			11.0	
Peak Hour Factor	0.85	0.85	0.85	0.89	0.89	0.89	0.93	0.93	0.93	0.89	0.89	0.89
Heavy Vehicles (%)	3%	2%	0%	2%	2%	0%	1%	1%	2%	0%	0%	5%
Adj. Flow (vph)	68	320	5	337	591	3	105	127	212	2	146	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	325	0	337	591	3	0	232	212	0	148	45
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	0.85	1.04	1.04	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases	4			8		8	2		2	6		6
Detector Phase	7	4		3	8	8	2	2	2	6	6	7
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	23.0		9.5	23.0	23.0	23.0	23.0	23.0	23.0	23.0	10.0
Total Split (s)	13.0	57.0		13.0	57.0	57.0	33.0	33.0	33.0	33.0	33.0	13.0
Total Split (%)	12.6%	55.3%		12.6%	55.3%	55.3%	32.0%	32.0%	32.0%	32.0%	32.0%	12.6%
Maximum Green (s)	8.0	52.0		10.0	52.0	52.0	28.0	28.0	28.0	28.0	28.0	8.0
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		0.0	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
Total Lost Time (s)	5.0	5.0		3.0	5.0	5.0		5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	None	None	None	None	None	None
Act Effct Green (s)	35.2	27.7		41.6	31.9	31.9		17.8	17.8		17.8	30.8
Actuated g/C Ratio	0.50	0.40		0.59	0.46	0.46		0.25	0.25		0.25	0.44
v/c Ratio	0.18	0.46		0.56	0.72	0.00		0.64	0.40		0.33	0.07
Control Delay	8.1	17.5		11.0	23.2	0.0		35.2	6.6		26.8	5.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	8.1	17.5		11.0	23.2	0.0		35.2	6.6		26.8	5.7
LOS	A	B		B	C	A		D	A		C	A
Approach Delay		15.9			18.8			21.5			21.8	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	11	94		57	207	0		87	0		51	0
Queue Length 95th (ft)	31	175		132	393	0		207	53		127	21
Internal Link Dist (ft)		512			1273			624			486	
Turn Bay Length (ft)	110			190		100			265			65
Base Capacity (vph)	408	1361		619	1363	1403		632	772		782	684
Starvation Cap Reductn	0	0		0	0	0		0	0		0	0
Spillback Cap Reductn	0	0		0	0	0		0	0		0	0
Storage Cap Reductn	0	0		0	0	0		0	0		0	0
Reduced v/c Ratio	0.17	0.24		0.54	0.43	0.00		0.37	0.27		0.19	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 103			
Actuated Cycle Length: 70.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 67.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Forest Avenue/Wilkins Street & Main Street



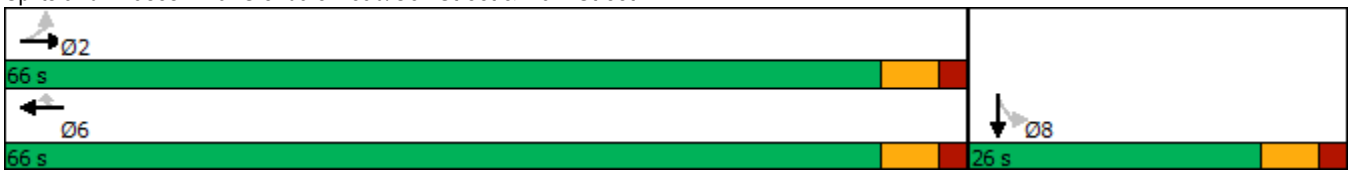


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	298	36	0	498	259	0	0	0	99	68	16
Future Volume (vph)	56	298	36	0	498	259	0	0	0	99	68	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	16	12	12	12	11	11	11
Storage Length (ft)	0		0	0		50	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987				0.850					0.988	
Flt Protected		0.993									0.974	
Satd. Flow (prot)	0	1843	0	0	1925	1794	0	0	0	0	1632	0
Flt Permitted		0.842									0.974	
Satd. Flow (perm)	0	1563	0	0	1925	1794	0	0	0	0	1632	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				176					5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		506			592			456			1021	
Travel Time (s)		11.5			13.5			10.4			23.2	
Peak Hour Factor	0.82	0.82	0.82	0.91	0.91	0.91	0.25	0.25	0.25	0.83	0.83	0.83
Heavy Vehicles (%)	20%	2%	0%	0%	2%	2%	0%	0%	0%	3%	2%	69%
Adj. Flow (vph)	68	363	44	0	547	285	0	0	0	119	82	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	475	0	0	547	285	0	0	0	0	220	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.96	0.96	0.96	0.96	0.96	0.85	1.00	1.00	1.00	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	
Protected Phases		2			6						8	
Permitted Phases	2					6				8		
Detector Phase	2	2			6	6				8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0			5.0	5.0				5.0	5.0	
Minimum Split (s)	24.0	24.0			24.0	24.0				24.0	24.0	
Total Split (s)	66.0	66.0			66.0	66.0				26.0	26.0	
Total Split (%)	71.7%	71.7%			71.7%	71.7%				28.3%	28.3%	
Maximum Green (s)	60.0	60.0			60.0	60.0				20.0	20.0	
Yellow Time (s)	4.0	4.0			4.0	4.0				4.0	4.0	
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	
Total Lost Time (s)		6.0			6.0	6.0					6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None			None	None				None	None	
Act Effct Green (s)		21.2			21.2	21.2					11.5	
Actuated g/C Ratio		0.47			0.47	0.47					0.25	
v/c Ratio		0.65			0.61	0.31					0.53	
Control Delay		13.9			12.4	4.1					21.0	
Queue Delay		0.0			0.0	0.0					0.0	
Total Delay		13.9			12.4	4.1					21.0	
LOS		B			B	A					C	
Approach Delay		13.9			9.6						21.0	
Approach LOS		B			A						C	
Queue Length 50th (ft)		78			90	14					46	
Queue Length 95th (ft)		163			205	52					112	
Internal Link Dist (ft)		426			512			376			941	
Turn Bay Length (ft)						50						
Base Capacity (vph)		1550			1910	1781					763	
Starvation Cap Reductn		0			0	0					0	
Spillback Cap Reductn		0			0	0					0	
Storage Cap Reductn		0			0	0					0	
Reduced v/c Ratio		0.31			0.29	0.16					0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 92			
Actuated Cycle Length: 45.4			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 12.6		Intersection LOS: B	
Intersection Capacity Utilization 72.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Glendale Road/Cox Street & Main Street



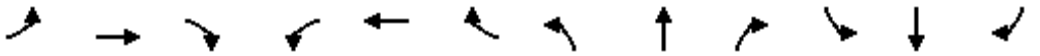
Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	354	27	6	514	0	28	0	35	1	27	48
Future Vol, veh/h	0	354	27	6	514	0	28	0	35	1	27	48
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	92	92	92	70	70	70	73	73	73
Heavy Vehicles, %	0	5	0	0	4	0	0	0	0	0	0	2
Mvmt Flow	0	373	28	7	559	0	40	0	50	1	37	66

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	401	0	0	1012	960	387	985	974	559
Stage 1	-	-	-	-	-	-	387	387	-	573	573	-
Stage 2	-	-	-	-	-	-	625	573	-	412	401	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.318
Pot Cap-1 Maneuver	0	-	-	1169	-	0	220	259	665	229	254	529
Stage 1	0	-	-	-	-	0	641	613	-	508	507	-
Stage 2	0	-	-	-	-	0	476	507	-	621	604	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1169	-	-	170	257	665	210	252	529
Mov Cap-2 Maneuver	-	-	-	-	-	-	170	257	-	210	252	-
Stage 1	-	-	-	-	-	-	641	613	-	508	502	-
Stage 2	-	-	-	-	-	-	383	502	-	574	604	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	22.9	18.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	290	-	-	1169	-	375
HCM Lane V/C Ratio	0.31	-	-	0.006	-	0.278
HCM Control Delay (s)	22.9	-	-	8.1	0	18.2
HCM Lane LOS	C	-	-	A	A	C
HCM 95th %tile Q(veh)	1.3	-	-	0	-	1.1

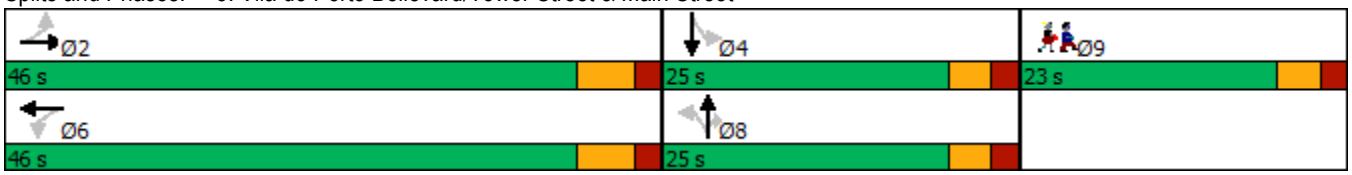


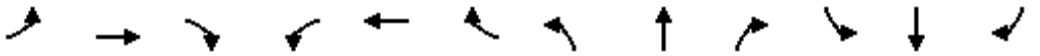
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	217	22	199	374	24	23	130	179	22	140	60
Future Volume (vph)	45	217	22	199	374	24	23	130	179	22	140	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	10	10	15	15	14	13	13	13
Storage Length (ft)	0		0	70		0	0		100	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (ft)	25			50			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.991				0.850		0.964	
Flt Protected		0.992		0.950				0.993			0.995	
Satd. Flow (prot)	0	1811	0	1662	1704	0	0	2075	1625	0	1883	0
Flt Permitted		0.732		0.549				0.929			0.960	
Satd. Flow (perm)	0	1336	0	960	1704	0	0	1942	1625	0	1817	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			4				197		18	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		639			834			152			404	
Travel Time (s)		12.4			16.2			3.5			9.2	
Peak Hour Factor	0.94	0.94	0.94	0.88	0.88	0.88	0.91	0.91	0.91	0.77	0.77	0.77
Heavy Vehicles (%)	0%	4%	0%	5%	3%	5%	0%	0%	6%	0%	0%	0%
Adj. Flow (vph)	48	231	23	226	425	27	25	143	197	29	182	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	302	0	226	452	0	0	168	197	0	289	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.04	1.09	1.09	0.88	0.88	0.92	0.96	0.96	0.96
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	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	
Minimum Split (s)	24.0	24.0		24.0	24.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	46.0	46.0		46.0	46.0		25.0	25.0	25.0	25.0	25.0	
Total Split (%)	48.9%	48.9%		48.9%	48.9%		26.6%	26.6%	26.6%	26.6%	26.6%	
Maximum Green (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		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	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		6.0		6.0	6.0			5.0	5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		21.0		21.0	21.0			21.6	21.6		21.6	
Actuated g/C Ratio		0.37		0.37	0.37			0.38	0.38		0.38	
v/c Ratio		0.61		0.64	0.72			0.23	0.27		0.42	
Control Delay		21.0		25.1	23.1			19.0	5.4		19.9	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		21.0		25.1	23.1			19.0	5.4		19.9	
LOS		C		C	C			B	A		B	
Approach Delay		21.0			23.8			11.6			19.9	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)		67		51	106			30	0		52	
Queue Length 95th (ft)		210		171	297			148	55		198	
Internal Link Dist (ft)		559			754			72			324	
Turn Bay Length (ft)				70					100			
Base Capacity (vph)		1008		723	1285			731	735		695	
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		0.31	0.35			0.23	0.27		0.42	

Intersection Summary			
Area Type:	Other		
Cycle Length: 94			
Actuated Cycle Length: 57.3			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 19.9		Intersection LOS: B	
Intersection Capacity Utilization 75.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 8: Vila do Porto Boilevard/Tower Street & Main Street



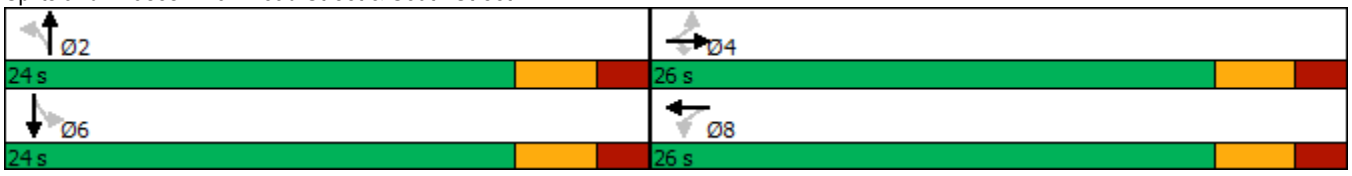


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	199	174	189	191	41	80	291	86	17	235	30
Future Volume (vph)	38	199	174	189	191	41	80	291	86	17	235	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	0		0	0		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.987			0.975			0.986	
Flt Protected		0.992			0.978			0.991			0.997	
Satd. Flow (prot)	0	1876	1615	0	1778	0	0	1786	0	0	1868	0
Flt Permitted		0.886			0.707			0.877			0.962	
Satd. Flow (perm)	0	1675	1615	0	1285	0	0	1581	0	0	1802	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218		13			27			14	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		257			126			357			165	
Travel Time (s)		5.8			2.9			8.1			3.8	
Peak Hour Factor	0.80	0.80	0.80	0.87	0.87	0.87	0.94	0.94	0.94	0.78	0.78	0.78
Heavy Vehicles (%)	3%	0%	0%	7%	0%	0%	3%	0%	12%	0%	0%	0%
Adj. Flow (vph)	48	249	218	217	220	47	85	310	91	22	301	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	297	218	0	484	0	0	486	0	0	361	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	26.0	26.0	26.0	26.0	26.0		24.0	24.0		24.0	24.0	
Total Split (%)	52.0%	52.0%	52.0%	52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	21.0	21.0	21.0	21.0	21.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	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	
Lost Time Adjust (s)		0.0	0.0		0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0		5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		19.9	19.9		19.9			16.8			16.8	
Actuated g/C Ratio		0.42	0.42		0.42			0.36			0.36	
v/c Ratio		0.42	0.27		0.88			0.83			0.55	
Control Delay		12.2	2.8		34.1			28.3			15.4	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		12.2	2.8		34.1			28.3			15.4	
LOS		B	A		C			C			B	
Approach Delay		8.2			34.1			28.3			15.4	
Approach LOS		A			C			C			B	
Queue Length 50th (ft)		58	0		120			114			75	
Queue Length 95th (ft)		92	21		#266			#257			112	
Internal Link Dist (ft)		177			46			277			85	
Turn Bay Length (ft)			50									
Base Capacity (vph)		760	852		591			665			749	
Starvation Cap Reductn		0	0		0			0			0	
Spillback Cap Reductn		0	0		0			0			0	
Storage Cap Reductn		0	0		0			0			0	
Reduced v/c Ratio		0.39	0.26		0.82			0.73			0.48	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 46.9			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 21.7		Intersection LOS: C	
Intersection Capacity Utilization 92.3%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 9: Broad Street & South Street



MOVEMENT SUMMARY

Site: 10 [Intersection 10: Route 62 at Washington Street and Felton Street (Site Folder: General)]

2031 Build Weekday Evening Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Washington Street														
3	L2	669	1.0	719	1.0	0.908	31.2	LOS C	34.7	873.3	1.00	1.39	2.16	19.2
8	T1	63	2.0	68	2.0	0.908	31.3	LOS C	34.7	873.3	1.00	1.39	2.16	19.2
18	R2	102	0.0	110	0.0	0.908	31.2	LOS C	34.7	873.3	1.00	1.39	2.16	18.9
Approach		834	1.0	897	1.0	0.908	31.2	LOS C	34.7	873.3	1.00	1.39	2.16	19.2
East: Route 62														
1	L2	131	1.0	146	1.0	0.902	43.7	LOS D	18.3	461.2	1.00	1.88	2.65	17.6
6	T1	310	1.6	344	1.6	0.902	43.8	LOS D	18.3	461.2	1.00	1.88	2.65	16.7
16	R2	26	0.0	29	0.0	0.902	43.7	LOS D	18.3	461.2	1.00	1.88	2.65	16.5
Approach		467	1.3	519	1.3	0.902	43.8	LOS D	18.3	461.2	1.00	1.88	2.65	16.9
West: Route 62														
5	L2	26	0.0	27	0.0	0.872	25.6	LOS C	30.7	775.7	1.00	1.05	1.53	19.5
2	T1	203	2.0	209	2.0	0.872	25.7	LOS C	30.7	775.7	1.00	1.05	1.53	19.4
12	R2	658	1.0	678	1.0	0.872	25.6	LOS C	30.7	775.7	1.00	1.05	1.53	20.2
Approach		887	1.2	914	1.2	0.872	25.7	LOS C	30.7	775.7	1.00	1.05	1.53	20.0
All Vehicles		2188	1.1	2330	1.1	0.908	31.8	LOS C	34.7	873.3	1.00	1.37	2.02	18.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection	
Intersection Delay, s/veh	19.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	54	161	9	48	212	146	6	158	23	83	122	53
Future Vol, veh/h	54	161	9	48	212	146	6	158	23	83	122	53
Peak Hour Factor	0.84	0.84	0.84	0.90	0.90	0.90	0.96	0.96	0.96	0.91	0.91	0.91
Heavy Vehicles, %	0	1	12	4	1	2	0	1	0	1	0	0
Mvmt Flow	64	192	11	53	236	162	6	165	24	91	134	58
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	15.6	25	13.8	16.6
HCM LOS	C	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	24%	12%	32%
Vol Thru, %	84%	72%	52%	47%
Vol Right, %	12%	4%	36%	21%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	187	224	406	258
LT Vol	6	54	48	83
Through Vol	158	161	212	122
RT Vol	23	9	146	53
Lane Flow Rate	195	267	451	284
Geometry Grp	1	1	1	1
Degree of Util (X)	0.368	0.482	0.751	0.518
Departure Headway (Hd)	6.805	6.507	5.992	6.581
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	526	552	600	544
Service Time	4.887	4.583	4.054	4.656
HCM Lane V/C Ratio	0.371	0.484	0.752	0.522
HCM Control Delay	13.8	15.6	25	16.6
HCM Lane LOS	B	C	C	C
HCM 95th-tile Q	1.7	2.6	6.7	3

MOVEMENT SUMMARY

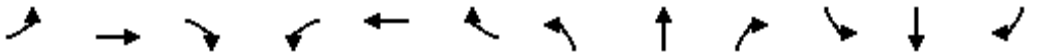
Site: 12 [Intersection 12: Washington Street at Broad Street (Site Folder: General)]

2031 Build Weekday Evening Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Washington Street														
3u	U	9	0.0	10	0.0	0.540	8.8	LOS A	5.8	146.8	0.43	0.20	0.43	29.5
3a	L1	706	1.0	793	1.0	0.540	8.9	LOS A	5.8	146.8	0.43	0.20	0.43	28.8
8	T1	450	8.8	506	8.8	0.540	9.4	LOS A	5.8	152.2	0.44	0.21	0.44	29.9
Approach		1165	4.0	1309	4.0	0.540	9.1	LOS A	5.8	152.2	0.43	0.20	0.43	29.2
East: Private Driveway														
1	L2	2	2.0	2	2.0	0.049	10.3	LOS B	0.2	4.6	0.70	0.70	0.70	32.2
16a	R1	7	2.0	8	2.0	0.049	10.3	LOS B	0.2	4.6	0.70	0.70	0.70	32.0
16	R2	8	2.0	9	2.0	0.049	10.3	LOS B	0.2	4.6	0.70	0.70	0.70	31.3
Approach		17	2.0	18	2.0	0.049	10.3	LOS B	0.2	4.6	0.70	0.70	0.70	31.7
North: Broad Street														
4	T1	445	6.5	494	6.5	0.526	15.7	LOS B	3.8	99.5	0.80	0.92	1.16	30.1
14b	R3	101	3.0	112	3.0	0.526	15.3	LOS B	3.8	99.5	0.80	0.92	1.15	29.1
Approach		546	5.9	607	5.9	0.526	15.6	LOS B	3.8	99.9	0.80	0.92	1.16	29.9
NorthWest: Washington Street														
7ux	U	11	10.0	12	10.0	0.544	15.0	LOS B	4.6	117.5	0.80	0.92	1.11	30.8
7bx	L3	42	2.0	44	2.0	0.544	14.3	LOS B	4.6	117.5	0.80	0.92	1.11	30.7
7ax	L1	7	2.0	8	2.0	0.544	14.3	LOS B	4.6	117.5	0.80	0.92	1.11	30.1
14ax	R1	631	2.0	664	2.0	0.544	14.3	LOS B	4.6	117.4	0.80	0.92	1.11	30.4
Approach		691	2.1	728	2.1	0.544	14.3	LOS B	4.6	117.5	0.80	0.92	1.11	30.4
All Vehicles		2419	3.9	2662	3.9	0.544	12.0	LOS B	5.8	152.2	0.62	0.57	0.79	29.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



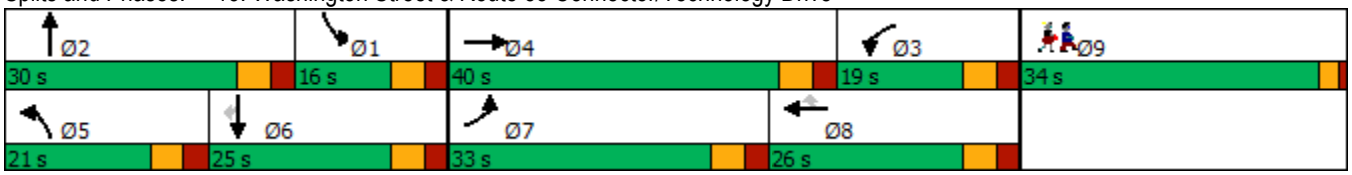
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	593	332	258	98	388	58	322	513	66	88	395	566
Future Volume (vph)	593	332	258	98	388	58	322	513	66	88	395	566
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	10	10	10	11	10	10	11	11	11	10	14
Storage Length (ft)	350		0	175		175	350		0	215		50
Storage Lanes	2		0	1		1	2		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	0.97	0.95	0.95	1.00	0.95	1.00
Frt		0.934				0.850		0.983				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3351	3116	0	1685	3455	1507	3268	3393	0	1745	3303	1689
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3351	3116	0	1685	3455	1507	3268	3393	0	1745	3303	1689
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		135				188		9				245
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		680			776			490			543	
Travel Time (s)		15.5			17.6			11.1			12.3	
Peak Hour Factor	0.90	0.90	0.90	0.82	0.82	0.82	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	1%	0%	1%	0%	0%	1%	2%	0%	2%	2%
Adj. Flow (vph)	659	369	287	120	473	71	339	540	69	93	416	596
Shared Lane Traffic (%)												
Lane Group Flow (vph)	659	656	0	120	473	71	339	609	0	93	416	596
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		22			22			20			20	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.09	1.09	1.09	1.04	1.09	1.09	1.04	1.04	1.04	1.09	0.92
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	6.0	10.0		6.0	10.0	10.0
Minimum Split (s)	12.0	16.0		12.0	16.0	16.0	12.0	16.0		12.0	25.0	25.0
Total Split (s)	33.0	40.0		19.0	26.0	26.0	21.0	30.0		16.0	25.0	25.0
Total Split (%)	23.7%	28.8%		13.7%	18.7%	18.7%	15.1%	21.6%		11.5%	18.0%	18.0%
Maximum Green (s)	27.0	34.0		13.0	20.0	20.0	15.0	24.0		10.0	19.0	19.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5
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)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0

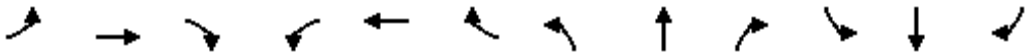
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None		None	None	None	None	Min		None	Min	Min
Walk Time (s)											7.0	7.0
Flash Dont Walk (s)											12.0	12.0
Pedestrian Calls (#/hr)											5	5
Act Effct Green (s)	27.4	24.3		22.8	19.7	19.7	15.2	24.3		10.1	19.2	19.2
Actuated g/C Ratio	0.25	0.22		0.20	0.18	0.18	0.14	0.22		0.09	0.17	0.17
v/c Ratio	0.80	0.83		0.35	0.77	0.17	0.76	0.81		0.58	0.73	1.21
Control Delay	48.9	43.4		46.0	54.1	0.9	59.4	51.5		66.5	53.1	134.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	48.9	43.4		46.0	54.1	0.9	59.4	51.5		66.5	53.1	134.7
LOS	D	D		D	D	A	E	D		E	D	F
Approach Delay		46.1			46.9			54.3			98.3	
Approach LOS		D			D			D			F	
Queue Length 50th (ft)	211	177		68	158	0	113	200		61	139	~337
Queue Length 95th (ft)	#446	309		#179	#284	0	#258	#430		#177	#298	#739
Internal Link Dist (ft)		600			696			410			463	
Turn Bay Length (ft)	350			175		175	350			215		50
Base Capacity (vph)	823	1057		344	629	428	445	748		159	571	494
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.80	0.62		0.35	0.75	0.17	0.76	0.81		0.58	0.73	1.21

Intersection Summary

Area Type: Other
Cycle Length: 139
Actuated Cycle Length: 111.3
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.21
Intersection Signal Delay: 62.5 Intersection LOS: E
Intersection Capacity Utilization 70.0% ICU Level of Service C
Analysis Period (min) 15
~ 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.

Splits and Phases: 13: Washington Street & Route 85 Connector/Technology Drive





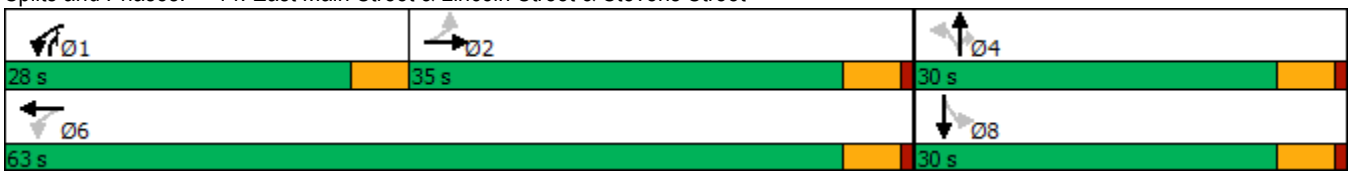
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	367	13	451	423	291	13	67	541	57	17	0
Future Volume (vph)	4	367	13	451	423	291	13	67	541	57	17	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	16	12	12	12	11	11	11	15	15	15
Storage Length (ft)	115		0	0		0	0		130	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.939				0.850			
Flt Protected				0.950				0.992			0.963	
Satd. Flow (prot)	0	3712	0	1787	1784	0	0	1822	1546	0	2013	0
Flt Permitted		0.946		0.372				0.934			0.719	
Satd. Flow (perm)	0	3511	0	700	1784	0	0	1715	1546	0	1503	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			71				229			
Link Speed (mph)		25			25			30			20	
Link Distance (ft)		679			2541			789			556	
Travel Time (s)		18.5			69.3			17.9			19.0	
Peak Hour Factor	0.95	0.95	0.95	0.94	0.94	0.94	0.92	0.92	0.92	0.35	0.35	0.35
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	0%
Adj. Flow (vph)	4	386	14	480	450	310	14	73	588	163	49	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	404	0	480	760	0	0	87	588	0	212	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.96	0.96	0.85	1.00	1.00	1.00	1.04	1.04	1.04	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases		2		1	6			4	1		8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		1	6		4	4	1	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	25.0	25.0		10.0	25.0		25.0	25.0	10.0	25.0	25.0	
Total Split (s)	35.0	35.0		28.0	63.0		30.0	30.0	28.0	30.0	30.0	
Total Split (%)	37.6%	37.6%		30.1%	67.7%		32.3%	32.3%	30.1%	32.3%	32.3%	
Maximum Green (s)	30.0	30.0		24.0	58.0		25.0	25.0	24.0	25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		0.0	1.0		1.0	1.0	0.0	1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		5.0		4.0	5.0			5.0	4.0		5.0	
Lead/Lag	Lag	Lag		Lead					Lead			
Lead-Lag Optimize?	Yes	Yes		Yes					Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	Min	Min		None	None		Min	Min	None	None	None	
Walk Time (s)	9.0	9.0			9.0		9.0	9.0		9.0	9.0	
Flash Dont Walk (s)	8.0	8.0			8.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		13.9		36.1	35.0			14.4	36.6		14.4	
Actuated g/C Ratio		0.23		0.60	0.58			0.24	0.61		0.24	
v/c Ratio		0.50		0.66	0.71			0.21	0.57		0.59	
Control Delay		23.5		11.9	12.8			22.3	6.9		29.9	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		23.5		11.9	12.8			22.3	6.9		29.9	
LOS		C		B	B			C	A		C	
Approach Delay		23.5			12.5			8.8			29.9	
Approach LOS		C			B			A			C	
Queue Length 50th (ft)		63		76	143			24	50		64	
Queue Length 95th (ft)		133		186	354			73	184		55	
Internal Link Dist (ft)		599			2461			709			476	
Turn Bay Length (ft)									130			
Base Capacity (vph)		1884		890	1618			766	1226		671	
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		0.21		0.54	0.47			0.11	0.48		0.32	

Intersection Summary

Area Type: Other
Cycle Length: 93
Actuated Cycle Length: 60.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 14.7 Intersection LOS: B
Intersection Capacity Utilization 73.9% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 14: East Main Street & Lincoln Street & Stevens Street



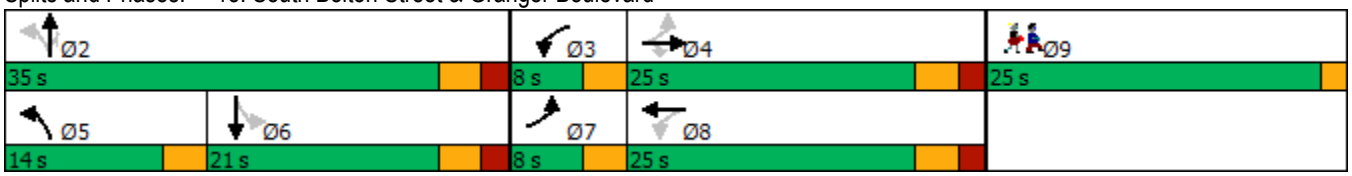
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	366	259	151	311	12	271	425	166	16	302	37
Future Volume (vph)	64	366	259	151	311	12	271	425	166	16	302	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	12	12	12	13	13	12	12	12
Storage Length (ft)	135		0	0		0	115		115	0		0
Storage Lanes	1		1	1		0	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Frt			0.850		0.994				0.850		0.984	
Flt Protected	0.950			0.950			0.950				0.998	
Satd. Flow (prot)	1652	1863	1615	1805	1847	0	1805	1944	1669	0	3488	0
Flt Permitted	0.413			0.309			0.372				0.921	
Satd. Flow (perm)	718	1863	1615	587	1847	0	707	1944	1669	0	3219	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			270		2				125		12	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1659			2112			460			421	
Travel Time (s)		37.7			48.0			10.5			9.6	
Peak Hour Factor	0.96	0.96	0.96	0.94	0.94	0.94	0.93	0.93	0.93	0.86	0.86	0.86
Heavy Vehicles (%)	2%	2%	0%	0%	2%	8%	0%	1%	0%	6%	1%	5%
Adj. Flow (vph)	67	381	270	161	331	13	291	457	178	19	351	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	381	270	161	344	0	291	457	178	0	413	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	7	4	4	3	8		5	2	2	6	6	
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)	8.0	10.0	10.0	8.0	10.0		8.0	10.0	10.0	10.0	10.0	
Total Split (s)	8.0	25.0	25.0	8.0	25.0		14.0	35.0	35.0	21.0	21.0	
Total Split (%)	8.6%	26.9%	26.9%	8.6%	26.9%		15.1%	37.6%	37.6%	22.6%	22.6%	
Maximum Green (s)	5.0	20.0	20.0	5.0	20.0		11.0	30.0	30.0	16.0	16.0	
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)	0.0	2.0	2.0	0.0	2.0		0.0	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	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0	5.0		5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Recall Mode	None	None	None	None	None		None	Max	Max	Max	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	26.4	19.4	19.4	27.0	21.0		32.0	30.0	30.0		16.0	
Actuated g/C Ratio	0.39	0.29	0.29	0.40	0.31		0.47	0.45	0.45		0.24	
v/c Ratio	0.19	0.71	0.41	0.50	0.60		0.57	0.53	0.22		0.53	
Control Delay	12.6	30.2	4.9	17.9	25.4		16.1	16.5	5.0		24.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	
Total Delay	12.6	30.2	4.9	17.9	25.4		16.1	16.5	5.0		24.9	
LOS	B	C	A	B	C		B	B	A		C	
Approach Delay		19.0			23.0			14.2			24.9	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	16	140	0	39	123		72	133	12		76	
Queue Length 95th (ft)	36	#234	48	74	204		124	213	45		112	
Internal Link Dist (ft)		1579			2032			380			341	
Turn Bay Length (ft)	135						115		115			
Base Capacity (vph)	350	552	669	325	577		515	865	812		774	
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	
Reduced v/c Ratio	0.19	0.69	0.40	0.50	0.60		0.57	0.53	0.22		0.53	

Intersection Summary

Area Type: Other
Cycle Length: 93
Actuated Cycle Length: 67.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 19.0 Intersection LOS: B
Intersection Capacity Utilization 75.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 15: South Bolton Street & Granger Boulevard



Intersection	
Int Delay, s/veh	73.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↾	
Traffic Vol, veh/h	0	1060	975	0	1	461
Future Vol, veh/h	0	1060	975	0	1	461
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	95	95	92	92	95	95
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	0	1116	1060	0	1	485

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	2176	1060
Stage 1	-	-	-	-	1060	-
Stage 2	-	-	-	-	1116	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	52	~ 275
Stage 1	0	-	-	0	336	-
Stage 2	0	-	-	0	316	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	52	~ 275
Mov Cap-2 Maneuver	-	-	-	-	52	-
Stage 1	-	-	-	-	336	-
Stage 2	-	-	-	-	316	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	$ 400.6
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	272
HCM Lane V/C Ratio	-	-	1.788
HCM Control Delay (s)	-	-	$ 400.6
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	32.4

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

Appendix E

Solid Waste

Hudson Health Department
78 Main Street
Hudson, MA 01749

(978) 562-2020
www.hudsonhealthdept.org

Mr. James McQuade, Section Chief
Department of Environmental Protection
Division of Solid Waste Management
Central Regional Office
8 New Bond Street
Worcester, Massachusetts 01606

March 27, 2018

Re: Site Assignment
Town of Hudson Solid Waste Transfer Station

This letter is in response to an inquiry made by the Massachusetts Department of Environmental Protection (MassDEP) during a January 16, 2018 meeting with representatives of BP Trucking and the Hudson Department of Public Works concerning the existing site assignment for the Hudson Transfer Station. The site assignment was granted by the Board of Health on January 7, 1986. The question raised by MassDEP was whether the parcel referenced in the site assignment remains entirely owned by the Town of Hudson, including but not limited to the area to be utilized by BP Trucking for the purposes of constructing and operating a new transfer station. It is the intention of the Town and BP Trucking to utilize such transfer station to manage Hudson's municipal waste and, upon construction, terminate operation of the current transfer station located on the property.

In response to your inquiry, please note that the parcel referenced in the site assignment (Plate 13, Parcel 66 of the Town's Assessors maps) has remained unchanged since the site assignment was granted and consists of an area of approximately 71 acres, as shown on the Town of Hudson Assessors mapping, copies of which are attached hereto. The Assessors mapping, dated January 1, 1968, represents the mapping that was available and referenced by the Board of Health when it granted site assignment in 1986. While the 71-acre site-assigned parcel is referenced to Plate 13, Parcel 66, this plate only shows a portion of the full parcel, which extends onto three adjacent plates (Plates 14, 21 and 22).

In the interest of providing MassDEP with Assessors mapping that shows the full limits of the site-assigned parcel, we have attached copies of the 1968 Assessors Plates 13, 14, 21 and 22, which have been highlighted to show where the site-assigned parcel resides. We have also attached a compiled Assessors plan, showing the juxtaposition of the four 1968 plates depicting the entirety of the site-assigned parcel on a single plan. The compiled plate plan, referred to as Figure 1, also shows the approximate location of the existing transfer station, as well as the approximate location of the proposed new transfer station building.

If you require additional information, please do not hesitate to contact this office.

Very truly yours,

James Murphy

James Murphy, Chairman Hudson Board of Health

cc: BP Trucking, Inc.

ATTACHMENT A

Site Assignment

BOARD OF HEALTH

TOWN HALL, HUDSON, MASSACHUSETTS 01749
PHONE 617-562-7050

January 26, 1987

At a Public Hearing held January 7, 1986 for the purpose of the Site Assignment of 1 Municipal Drive, plate 13, parcel 66, for use as a Refuse Transfer Station it was voted on by the Board of Health 3-0 in favor of granting the Site Assignment.

Site Assignment of 1 Municipal Drive, plate 13 parcel 66, granted January 7, 1986.

Patrick J. Colaluca

Patrick J. Colaluca

Chairman, Board of Health

PC/jh

ATTACHMENT B

Assessors Mapping Related to Site-Assigned Parcel

PLATE 13

PLATE 14

PLATE 21

PLATE 22

SITE -ASSIGNED PARCEL (PLATE 13, PARCEL 66; 71 ACRES)

EXISTING TRANSFER STATION

APPROXIMATE LOCATION OF PROPOSED TRANSFER STATION BUILDING

ASSABET RIVER

STOW

TOWN OF HUDSON

0 500 FEET

FIGURE 1 - COMPILED PLATE PLAN

TOWN OF HUDSON ASSESSORS MAPPING (DATED JANUARY 1, 1968) SHOWING THE FOUR PLATES THAT DEPICT THE FULL LIMITS OF THE 71-ACRE BOARD OF HEALTH SITE-ASSIGNED PARCEL ("PLATE 13 PARCEL 66") FOR REFUSE TRANSFER STATION. SITE ASSIGNMENT GRANTED BY BOARD OF HEALTH ON JANUARY 7, 1986.

SEE PLATE 6

N 512,000

OLD BOLTON ROAD

HARVEY ST.

OLD STOW ROAD

COX

ROAD

ZINA

STREET

KATHLEEN

EDITH

ROAD

PIERCE

STREET

ASSABET

RIVER

10.18 AC.

34.1 AC.

5.1 AC.

4.01 AC.

5.0 AC.

16.843 AC.

4.6 AC.

3.5 AC.

7.1 AC.

5.6 AC.

E 585,700

E 588,700

SEE PLATE 12

SEE PLATE 14

SEE PLATE 21

N 510,000

SITE-ASSIGNED PARCEL

VEO & WHEELER INC.
HUDSON, MASSACHUSETTS
JANUARY 1, 1968

CONTROL: MASSACHUSETTS GEODETIC COORDINATE SYSTEM

SCALE 1 INCH = 100 FEET

100 0 100 200 300 400 500 FEET

HUDSON, MASSACHUSETTS
ASSESSORS MAP
PLATE 13 OF 75 PLATES

PLATE 13

SEE PLATE 14A

SEE PLATE

N 512 ,000

46 AC.

S T O W

RIVER

ASSABET

3.5 AC.

E 588 ,700

SEE PLATE 13

71 AC.

TOWN OF HUDSON

41.5 AC.

4

16 AC

9 AC.

18.06AC.

SITE-ASSIGNED PARCEL

SEE PLATE 6

STOW

46 AC.

SEE PLATE 14

PLATE 14A

E 591 ,700

SEE PLATE 15 ON PLATE 23

SEE PLATE 22

N 510 ,000

VEO & WHEELER INC.
HUDSON, MASSACHUSETTS
JANUARY 1, 1968
CONTROL: MASSACHUSETTS GEODETIC COORDINATE SYSTEM

SCALE 1 INCH = 100 FEET

100 0 100 200 300 400 500 FEET

HUDSON, MASSACHUSETTS
ASSESSORS MAP
PLATE 14 OF 75 PLATES

PLATE 14

SEE PLATE 13

N 510,000

E 595,700

E 598,700

SEE PLATE 20

SEE PLATE 22

SEE PLATE 31

N 508,000

PIERCE STREET

LARK DRIVE

EASEMENT

MARYCHRIS DRIVE

RIVER

GAS

SWAMP

MERRITT DRIVE

PRIEST STREET

MERRITT SEE DRIVE

ASSABET

LEE

PARKHURST DRIVE

HERMAN CIRCLE

COX STREET

TRANSFER STATION

MACKIN STREET

MAINE AND BOSTON RAILROAD

BOSTON & MAINE RAILROAD

MAIN STREET

SITE-ASSIGNED PARCEL

71 AC.

10.3 AC.

1.89 AC.

5.92 AC.

1.05AC.

1.14 AC

4.836 AC.

6.5 AC.

3.25 Ac.

4.54 Ac.

1.19 Ac.

11.5 Ac.

5.044 AC.

4.81 AC.

4.163 AC.

VEO & WHEELER INC.
HUDSON, MASSACHUSETTS
JANUARY 1, 1968
CONTROL: MASSACHUSETTS GEODETIC COORDINATE SYSTEM

SCALE 1 INCH = 100 FEET

100 0 100 200 300 400 500 FEET

HUDSON, MASSACHUSETTS
ASSESSORS MAP
PLATE 21 OF 75 PLATES

PLATE 21

SEE PLATE 14

N 510 .000

E 588 .700

E 591.700

SEE PLATE 21

SEE PLATE 23

SITE-ASSIGNED PARCEL

71 AC.

1 28.3 AC.

2 41.5 AC.

3 18.06 AC.

9 AC.

48,039 sf

30,088 sf

4 40,200 sf

50,606 sf

16,475 sf

21 42,709 sf

2.4 sf

115.40'

35.00'

4.56'

22'

120'

6 14,800 sf

18

100'

20

120'

STREET

535

19 21,781 sf

2.8 sf

4.062 AC.

20 8.7 AC.

344.57'

5.92 AC.

RAILROAD

23 1.3 AC.

7 0.7 AC.

515'

655'

17 1.2 AC

22 14,429 sf

98'

8 1.4 AC. TOTAL

BOSTON AND MAINE RAILROAD

4.163 AC.

BOSTON

320'

WILKINS

120.00'

17

5 31,887 sf

LOT #2 40,049 sf #4

LOT #3 40,019 sf #6

LOT #4 40,000 sf #8

LOT #5 40,000 sf #10

LOT #6 40,079 sf #12

LOT #7 40,353 sf #14

LOT #8 ~~1.714 AC~~ #16 1.194 AC

18 35.068 AC.

57.2 AC.

ORCHARD DR.

LOT #9 41,228 sf #18

LOT #10 1.045 AC #20

LOT #21 #13

LOT #22 #7

LOT #20 #15

LOT #19 #17

LOT #18 #19

LOT #17 #21

LOT #23 #5

LOT #24 #3

LOT #25 1.536 AC. #1

LOT #26 40,430 sf

#11 PARCEL 53

PARCEL "A" 7.172 AC.

880'

313.75'

124.7'

38.45'

173.95'

5

4

2

1

SOLO ROAD

271.55'

127.55'

100.91'

100.0'

160.29'

LOT 1

LOT 2

LOT 3

LOT 4

LOT 5

LOT 6

LOT 7

LOT 8

LOT 11

27 20,892 sf

28 15,779 sf

26 36,810 sf

25 22,188 sf

24 15,371 sf

9 16,350 sf

10 18,680 sf

11 19,077 sf

12 15,537 sf

13 22,5 sf

14 28,874 sf

15 1.1 AC

16 2.6 AC.

10 101.00'

8 101.00'

6 101.00'

3 100.91'

1 100.0'

2 160.29'

454

456

458

16,487 sf

53 5.2 AC.

28,288 sf 268'

YALE STREET

53,546 sf

42,847 sf

310'

55'

HARVARD STREET

233.75'

70,562 sf

440'

PRINCTON STREET

419'

51,850 sf

SEE PLATE 32

N 508 .000

VEO & WHEELER INC.
HUDSON, MASSACHUSETTS

JANUARY 1. 1968

CONTROL: MASSACHUSETTS GEODETIC COORDINATE SYSTEM

SCALE 1 INCH = 100 FEET

100 0 100 200 300 400 500 FEET

HUDSON, MASSACHUSETTS

ASSESSORS MAP

PLATE 22 OF 75 PLATES

PLATE 22

LAW OFFICES OF JERRY C. EFFREN

Jerry C. Effren

Neal J. Bingham

Paralegals

Margaret L. Burchard
Rebekah Ayuso

25 West Union Street
Ashland, Massachusetts 01721
(508) 881-4950 – Telephone
(508) 881-7563 – Telecopier
E-Mail Address: info@effren.net

Via Email **Anne.Blackman@state.ma.us**

May 31, 2018

Anne Berlin Blackman, Acting Chief Regional Counsel
MassDEP/Central Regional Office
627 Main Street
Worcester, MA 01608;

Dear Anne:

Per your request, attached for your review please find the supplemental letter from the Board of Health and the title certification evidencing that the "site assignment" parcel is and has continuously been owned by the Town of Hudson.

Please let me know if you need additional information or if this is suffiienct.

Thank you for your assistance.

Very truly yours,

THE LAW OFFICES OF JERRY C. EFFREN

Jerry C. Effren, Esq.

Enclosures
cc: B-P Trucking, Inc.

BOARD OF HEALTH
78 Main Street, Hudson, MA 01749
(978) 562-2020

May 29, 2018

Mr. James McQuade, Section Chief
Department of Environmental Protection
Division of Solid Waste Management
Central Regional Office
8 New Bond Street
Worcester, MA 01606

RE: Site Assignment-Town of Hudson Solid Waste Transfer Station

This letter is in further response to an inquiry made by the Massachusetts Department of Environmental Protection (Mass DEP) during a January 16, 2018 meeting with representatives of B-P Trucking and the Hudson Department of Public Works concerning the existing site assignment for the Hudson Transfer Station. It is intended to supplement our previous correspondence to you dated March 27, 2018 on this subject matter.

The language in the original site assignment of January 7, 1986 identified the parcel as Plate 13, Parcel 66 of the Assessor's records. That was the ***parcel identifier*** then and remains so now, a parcel containing approximately 71 acres which has been continuously owned by the Town of Hudson both before and after the granting of the site assignment. The parcel identifier includes property on Assessor plates 13, 14, 21 and 22. To the extent the original site assignment omitted reference to the plates 14, 21 and 22, that omission was not intentional and does not change in any way the parcel description which was the subject of the January 7, 1986 site assignment.

The Figure 1 mapping plan, which was submitted with the Board's prior correspondence of March 27, 2018, accurately sets forth the boundaries of the site assignment parcel, as referenced to the Assessor's Plates 13, 14, 21 and 22 and also shows that the location of both the existing transfer station and proposed new transfer station location lie completely within the site assignment parcel.

If you require any additional information, please do not hesitate to contact this office.

Very truly yours,

James Murphy, Chairman

Hudson Board of Health

LAW OFFICES OF JERRY C. EFFREN
25 WEST UNION STREET
ASHLAND, MASSACHUSETTS 01721

ATTORNEY'S CERTIFICATION OF TITLE

Anne Berlin Blackman, Acting Chief Regional Counsel
MassDEP/Central Regional Office
627 Main Street
Worcester, MA 01608;
e-mail: **Anne.Blackman@state.ma.us**

Re: Parcel of land on Cox Street, Hudson, Massachusetts sometimes known as 1 Municipal Drive which parcel is shown on Assessor's Map 13 as Lot 66 (formerly known as Plate 13-66) which is the subject of that certain Site Assignment granted January 7, 1986

Dear Ms. Blackman:

We have examined the record title to the above-referenced premises in the Middlesex South District Registry of Deeds and Registry of Probate through ***May 22, 2018*** and certify title, at that time, to be in the name of:

TOWN OF HUDSON

via 1) Deed from Edmund M. Stowe dated November 27, 1903 and recorded in Book 3075, Page 193; 2) Deed from Arthur M. Stowe to Town of Hudson dated September 2, 1909 and recorded in Book 3467, Page 218; and 3) Deed from Edmund M. Stowe dated August 14, 1930 and recorded in Book 5487, Page 598. The Town of Hudson holds good, clear, marketable title of record to the property, free from all encumbrances which would materially affect the title, excepting, however, only those matters which are expressly enumerated below:

ENCUMBRANCES

SECTION A: Matters generally affecting real estate not reflected in the records of the Registry of Deeds in the chain of title to the subject property:

1. Real estate taxes, sewer and water use charges and assessments which are not yet due and payable, and takings voted but not recorded.

2. Zoning, subdivision control environmental, conservation and historic district laws, building codes and other Federal, State and Local regulatory laws and violations of such law and codes by existing structures, use or condition of the premises.

3. Accuracy of descriptions and surveys, and matters disclosed by accurate surveys and personal inspection.

4. Rights of tenants, lessees or occupants.

5. What buildings and other improvements, if any, are located on the premises and the location of any such improvements in relation to the boundaries of the property.

6. Mechanic's liens for work performed on the premises during the previous forty (40) days.

7. Easements by prescription.

8. Bankruptcies, except such as appear of record.

9. Incorrect municipal lien certificates.

10. Violation of restrictions.

11. Lack of access to a public way for travel and for connection with utilities.

12. Liens, whether presently existing or hereafter arising on account of any indebtedness or liability to the Commonwealth of Massachusetts arising pursuant to the provisions of Massachusetts General Laws, Chapter 21E (the Massachusetts Oil and Hazardous Materials Release Prevention and Response Act of 1983).

SECTION B. Matters reflected in records of Registry of Deeds in chain of title to the subject property.

1. Liens for real estate taxes and assessments, which become due and payable subsequent to the date of this policy, plus unpaid water and sewer charges, if any.

In addition to the matters set forth in Section B, the title to the estate or interest in the land described or referred to above is subject to the following matters, if any be shown, but the undersigned certifies that such matters are subordinate to the lien or charge of the insured mortgage upon said estate or interest:

None.

Thank You,

Jerry C. Effren, Esquire

Appendix F

Stormwater

SANBORN HEAD

STORMWATER MANAGEMENT REPORT

HUDSON SOLID WASTE TRANSFER STATION

Hudson, Massachusetts

Prepared for B-P Trucking, Inc.
File No. 3984.01
February 2024

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FIGURES

Figure 1 Pre-Development Drainage Plan
Figure 2 Post-Development Drainage Plan

ATTACHMENTS
Pre-Development Stormwater Model
Post-Development Stormwater Model
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Web Soil Survey
Precipitation Estimates
RMAT Climate Resilience Design Standards Tool Project Report
Water Quality Calculations
BMP Worksheets

1.0 EXECUTIVE SUMMARY

The Town of Hudson, Massachusetts (Town) and B-P Trucking, Inc. (B-P) are proposing to relocate the existing Hudson Solid Waste Transfer Station (Existing Facility) operations to the interior of the 72-acre parcel located at 300 Cox Street, Hudson, Massachusetts (Site). The new transfer station and recycling facility (Proposed Facility) will be owned by B-P, located on land leased from the Town of Hudson, and have a permitted capacity of 850 tons per day (TPD). The Existing Facility is currently permitted to accept up to 350 TPD of municipal solid waste (MSW). Once operational, the Town and B-P will terminate operation of the Existing Facility.

The construction of the Proposed Facility will include a new, approximately 53,000 square foot (sf) transfer station and recycling building. The building will provide adequate space to transfer MSW and construction and demolition (C&D) waste into semi-trailers that will transport material off-site for final disposal or reclamation, as well as space for the sorting and baling of household recyclable materials. Additionally, the Proposed Facility will include a residential drop-off area for MSW and household recyclables, which will be open to Town residents.

The goal of the stormwater design is to limit the calculated peak post-development flows leaving the Proposed Facility and appurtenances, herein referred to as the Development Area, to levels that are equal to or less than the calculated peak pre-development flow. The pre-development condition reflects existing conditions at the site as of January 3, 2023, the date of the most recent aerial mapping update. The post-development condition reflects construction of the new transfer station and associated appurtenances.

The HydroCAD model includes four discharge points identified as DP-1, DP-2, DP-3, and DP-4. DP-1 represents the stormwater flows that drain to a wetland located north of the Existing Facility. DP-2 represents the stormwater flows that drain into a drainage swale that abuts the Town's Police/DPW Facility. DP-3 represents the stormwater flows that drain into a perimeter drainage swale adjacent to the Town's municipal wastewater treatment plant. DP-4 represents the stormwater flows that drain into a wetland located south of the Site. Table 1 provides a summary of the 2-year, 10-year, 25-year, and 100-year, 24-hour pre-development and post-development calculated peak run-off flows.

TABLE 1
SUMMARY OF PEAK DISCHARGE RATES

Discharge Location	Pre-Development Condition (cfs)	Post-Development Condition (cfs)
2-Year, 24-Hour Storm Peak Discharge Flow Summary		
DP-1	0.00	0.00
DP-2	0.14	0.00
DP-3	0.72	0.10
DP-4	0.00	0.00
10-Year, 24-Hour Storm Peak Discharge Flow Summary		
DP-1	0.10	0.00
DP-2	0.63	0.03
DP-3	7.76	0.75
DP-4	0.08	0.00
25-Year, 24-Hour Storm Peak Discharge Flow Summary		
DP-1	0.37	0.00
DP-2	1.02	0.15
DP-3	14.18	1.31
DP-4	0.42	0.00
100-Year, 24-Hour Storm Peak Discharge Flow Summary		
DP-1	1.01	0.00
DP-2	1.73	0.49
DP-3	26.14	3.78
DP-4	1.59	1.02

Stormwater models for the pre- and post-development conditions for the project indicate that the predicted peak post-development flows are less than or equal to the predicted pre-development flow for the 2-year, 10-year, 25-year, and 100-year, 24-hour storm events at the discharge locations.

The calculated pre-development and post-development discharge volumes for each discharge point are summarized in Table 2.

TABLE 2
SUMMARY OF DISCHARGE VOLUMES

Discharge Location	Pre-Development Condition (ac-ft)	Post-Development Condition (ac-ft)
2-Year, 24-Hour Storm Peak Discharge Volume		
DP-1	0.003	0.000
DP-2	0.021	0.001
DP-3	0.283	0.022
DP-4	0.002	0.000
10-Year, 24-Hour Storm Peak Discharge Volume		
DP-1	0.026	0.000
DP-2	0.066	0.013
DP-3	1.095	0.198
DP-4	0.056	0.000
25-Year, 24-Hour Storm Peak Discharge Volume		
DP-1	0.050	0.000
DP-2	0.102	0.027
DP-3	1.783	0.391
DP-4	0.123	0.000
100-Year, 24-Hour Storm Peak Discharge Volume		
DP-1	0.098	0.000
DP-2	0.164	0.056
DP-3	3.028	0.781
DP-4	0.266	0.123

The stormwater models indicate that in the post-development condition the discharge volumes to the discharge locations, DP-1, DP-2, DP-3, and DP-4, are less than or equal to the pre-development volumes.

2.0 SITE DESCRIPTION

The Town owns an approximately 72-acre parcel which includes an existing solid waste transfer station as well as other municipal facilities. This includes the Hudson Fire Department, Hudson Wastewater Treatment Facility, and Hudson Police Department and Public Works Facility. The existing transfer station was constructed in 1988 and began operating in 1996. The transfer station has been operated by B-P Trucking of Ashland, Massachusetts, since 1999. Prompted by the construction of the Hudson Police Department and Public Works Facility (Police/DPW Facility) in 2017, the Town and B-P have been engaged in planning activities aimed at relocating the existing transfer station operations to the interior of the 72-acre parcel so that these operations are located more distant from the Town's other municipal facilities.

For comparison, the existing transfer station building is located approximately 350 feet from Cox Street, whereas the proposed transfer station and recycling building will be located approximately 1,800 feet from Cox Street.

3.0 SOIL CONDITIONS

Soils mapping was obtained from http://websoilsurvey.nrcs.usda.gov, and is based on the U.S. Department of Agriculture, Natural Resources Conservation Service, Soil Survey for Middlesex County, Massachusetts. Web soil survey results are included as an attachment. Table 3 summarizes the surficial soil types at the Site.

TABLE 3
SUMMARY OF SURFICIAL SOIL TYPES

Map Unit Symbol	Map Unit Name	Hydrologic Soil Group
36A	Saco mucky silt loam frequently ponded, 0 to 1% slopes, frequently flooded	B/D
52A	Freetown muck, 0 to 1% slopes	B/D
253B	Hinckley loamy sand, 3 to 8% slopes	A
254A	Merrimac fine sandy loam, 0 to 3% slopes	A
256A	Deerfield loamy fine sand, 0 to 3% slopes	A
260B	Sudbury fine sandy loam, 3 to 8% slopes	B
626B	Merrimac-Urban land complex, 0 to 8% slopes	A
655	Udorthents, wet substratum	Assumed A

4.0 PROJECT DESCRIPTION

The Town and B-P are proposing to construct an approximately 53,000 sf solid waste transfer station and recycling building on the Town-owned 72-acre parcel located further within the parcel away from Cox Street. The Proposed Facility will be owned by B-P and located on a portion of the 72-acre that B-P will lease from the Town. The project includes installation of stormwater controls. Treatment of the stormwater will be achieved through a combination of best management practices (BMPs) including deep sump catch basins, oil/grit separators, subsurface detention/infiltration structures, and sediment forebays paired with infiltration basins.

Post-development runoff rates will be equal to, or less than, pre-development rates, for the 2-, 10-, 25-, and 100-year storm events. Post-development runoff rates will be controlled by the BMPs and will meet applicable requirements of the Stormwater Standards listed in the Massachusetts Stormwater Handbook.

5.0 STORMWATER MODEL CONDITIONS

The stormwater management and conveyance systems are being designed to comply with Massachusetts Department of Environmental Protection's (MassDEP's) Stormwater

Management Standards and the storm water control requirements of the Solid Waste Management Regulations, 310 CMR 19.205(1).

5.1 Pre-Development

For stormwater management system design purposes, the pre-development condition is based on existing site conditions as of January 3, 2023, which is the date of the most recent aerial mapping update. In the current condition, stormwater sheet flows across the Development Area primarily towards wetlands located north and south of the Development Area, as well as to existing stormwater infrastructure associated with other Town development on the Site. The pre-development peak discharge rates for the Development Area were calculated for the pre-development condition.

Stormwater runoff from the Development Area discharges at four locations, as depicted on the Pre-Development Drainage Plan, Figure 1.

5.1.1 Discharge Point No. 1

Discharge Point No. 1 (DP-1) is a wetland located north of the Existing Facility. The watershed to DP-1 is comprised of pavement, grassed, and wooded areas that flow northerly from the Development Area to the wetland.

5.1.2 Discharge Point No. 2

DP-2 is a drainage swale adjacent to the Police/DPW Facility that abuts the northern portion of the Development Area. The watershed is comprised of pavement, grassed, wooded, and gravel areas draining north from the Development Area.

5.1.3 Discharge Point No. 3

DP-3 is a drainage swale adjacent to the Town's Wastewater Treatment Plant that is located north of the Development Area. The watershed is comprised of pavement, grassed, wooded and gravel areas that flow northerly from the Development Area to the swale. Additionally, this includes run-on to the Development Area that is rerouted and treated as off-site flow in the Post-Development condition.

5.1.4 Discharge Point No. 4

DP-4 consists of the wetland located south of the Development Area. The watershed is comprised of pavement, grassed, and wooded areas that flow southerly from the Development Area to the wetland.

5.2 Post-Development

In the post-development condition, stormwater runoff from construction of the Proposed Facility will be directed to a series of subsurface stormwater conveyance and detention features, including deep sump catch basins, drain manholes, oil/grit separators, and subsurface detention/infiltration structures, and sediment forebays paired with seven infiltration basins. The closed drainage system is comprised of 4 subsurface detention/infiltration structures and oil/grit separators, 50 deep sump catch basins, 29 drain manholes, and associated drain piping.

The subsurface detention/infiltration structures will provide detention that will reduce peak flows off-site and provide removal of total suspended solids (TSS), through infiltration. Stormwater management in the post-development condition, depicting catchment areas and proposed stormwater infrastructure, is shown on the Post-Development Drainage Plan, Figure 2.

Basins 1 through 7 have been designed as infiltration basins to detain and slowly infiltrate accumulated stormwater. The basins will provide detention that will reduce peak flows off-site, and provide varying levels of removal of TSS, total nitrogen, total phosphorus, metals, and pathogens, through infiltration. Of the seven proposed basins, only Basins 2 and 3 are designed with outlet structures and emergency overflow spillways that discharge some stormwater to the DP-4 wetland. The remaining five proposed infiltration basins are large enough to detain and slowly infiltrate stormwater generated up to a 100-year storm, without the need to discharge.

5.2.1 Discharge Point No. 1

In the post-development condition, the proposed stormwater drainage patterns direct a majority of the stormwater flow to Basin 1, where it is infiltrated. The remainder of the stormwater is directed to an ADS StormTech® SC-740 Chamber System (Structure 4). The subsurface detention/infiltration structure has 24 chambers that provide approximately 1,700 cubic feet (cf) of subsurface storage. The system is designed to detain stormwater in the system, infiltrating all of it. Between Basin 1 and Structure 4 there is no longer any stormwater being sent to discharge point, DP-1.

5.2.2 Discharge Point No. 2

Stormwater directed to discharge point, DP-2, is from a portion of the area that flows to DP-2 in the Pre-Development condition.

5.2.3 Discharge Point No. 3

In the post-development condition, the proposed stormwater drainage patterns were developed to direct stormwater flow to Basins 4 through 7, where it is infiltrated. Prior to reaching the basins, a portion of the stormwater is directed to three ADS StormTech® Chamber Systems. Two of the subsurface/infiltration structures, Structures 1 and 3, are MC-3500 Chamber Systems. These two subsurface detention/infiltration structures have 144 and 60 chambers that provide approximately 27,350 cf and 11,600 cf of subsurface storage, respectively. The third subsurface/infiltration structure, Structure 2, is a SC-740 Chamber System. This structure has 288 chambers that provides approximately 22,230 cf of subsurface storage. Structures 1 and 3 are designed to detain stormwater, infiltrating some of it, before discharging the remainder to either Basin 6 or Basin 5, respectively. Structure 2 is designed to detain stormwater in the system, infiltrating all of it.

The remainder of the stormwater flow directed to discharge point, DP-3, is from a portion of the area that flows to DP-3 in the Pre-Development condition. A portion of this is run-on from an adjacent site, which is being re-directed round the Proposed Facility.

5.2.4 Discharge Point No. 4

In the post-development condition, the proposed stormwater drainage patterns were developed to direct stormwater flow to Basins 2 and 3, where a portion of it is infiltrated and the remaining stormwater is discharged to discharge point, DP-4, the southern wetland.

6.0 DRAINAGE CALCULATIONS

The purpose of the drainage calculations is to (i) demonstrate that the post-development peak discharge rates do not exceed the pre-development peak discharge rates for all conditions for the 2- and 10-year storm events in accordance with the MassDEP Stormwater Management Policy and for the 25- and 100-year storm events in accordance with the Stormwater controls requirements of Massachusetts Solid Waste Regulation - 310 CMR 19.205(1); (ii) select treatment BMPs to pretreat stormwater in accordance with the MassDEP stormwater management regulations; and (iii) demonstrate that Water Quality Volumes achieve the 80% Total Suspended Solids (TSS) removal requirement.

6.1 Evaluation of Peak Flow Rates and Stormwater Runoff Volumes

Stormwater calculations were performed using HydroCAD™ version 10.20, which is a stormwater-modeling software developed by HydroCAD Software Solutions, LLC of Chocorua, New Hampshire. The model reports, area listing, soil listing, model node listings for the 2-year, 10-year, 25-year, and 100-year, 24-hour storm events are provided for the pre-development and post-development conditions.

Rainfall depths are based on NOAA Atlas 14, Volume 10, Version 3 precipitation frequency estimate tables, specific to the Development Area. Selection of curve numbers (CN) are based on the review of U.S. Department of Agriculture (USDA), Natural Resources Conservation Services soil maps. The soil map report and precipitation estimates are included as attachments.

Rainfall distribution was modeled as Type III 24-hour Rainfall[1]. Rainfall information for the Development Area is listed in Table 4 below:

TABLE 4
RAINFALL DISTRIBUTION
Hudson, Massachusetts

24-Hr Storm Event	Intensity (inches)
2-yr	3.29
10-yr	5.06
25-yr	6.17
100-yr	7.88

[1] HydroCAD Software Solutions LLC. 2012. *HydroCAD Software, Version 10.00.* Chocorua, NH.

The selected Curve Numbers[1] are based on the review of the U.S. Department of Agriculture (USDA), Natural Resources Conservation Services soil maps which are attached. Soils in the Development Area are shown as Hydrologic Soil Group A, B, C and D. Curve numbers used in the models are included in Table 5.

TABLE 5
SUMMARY OF CURVE NUMBERS

Cover Type	Cover Description	Hydrologic Soil Group	CN
Grass	Open Space-Fair (50 to 75% Grass)	A	49
Grass	Open Space-Fair (50 to 75% Grass)	C	79
Grass	50-75% Grass cover, Fair Condition	A	49
Grass	50-75% Grass cover, Fair Condition	B	69
Grass	50-75% Grass cover, Fair Condition	C	79
Grass	>75% Grass cover, Good Condition	A	39
Gravel	Gravel Roads	A	76
Gravel	Gravel Roads	B	85
Gravel	Gravel Roads	C	89
Woods	Woods, Fair Condition	A	36
Woods	Woods, Fair Condition	B	60
Woods	Woods, Fair Condition	C	73
Impervious	Unconnected Pavement	A/B/C	98
Impervious	Roofs	A/C	98

The calculated time of concentration is based on the lag method, sheet flow, shallow concentrated flow, and channel flow. A minimum time of concentration of five minutes was assumed as suggested in the Massachusetts Highway Design Manual.

The drainage plans and stormwater models are included as attachments. The calculated pre-development and post-development peak discharge flow rates for each discharge point are summarized in Table 6.

TABLE 6
SUMMARY OF PEAK DISCHARGE RATES

Discharge Location	Pre-Development Condition (cfs)	Post-Development Condition (cfs)
2-Year, 24-Hour Storm Peak Discharge Flow Summary		
DP-1	0.00	0.00
DP-2	0.14	0.00
DP-3	0.72	0.10
DP-4	0.00	0.00
10-Year, 24-Hour Storm Peak Discharge Flow Summary		
DP-1	0.10	0.00
DP-2	0.63	0.03
DP-3	7.76	0.75
DP-4	0.08	0.00
25-Year, 24-Hour Storm Peak Discharge Flow Summary		
DP-1	0.37	0.00
DP-2	1.02	0.15
DP-3	14.18	1.31
DP-4	0.42	0.00
100-Year, 24-Hour Storm Peak Discharge Flow Summary		
DP-1	1.01	0.00
DP-2	1.73	0.49
DP-3	26.14	3.78
DP-4	1.59	1.02

Stormwater models for the pre-development and post-development conditions for the project indicate that the predicted peak post-development flow rates do not exceed the pre-development peak discharge rates for all conditions for the 2- and 10-year storm events in accordance with the MassDEP Stormwater Management Policy and for the 25- and 100-year storm events in accordance with the Stormwater controls requirements of Massachusetts Solid Waste Regulation 310 CMR 19.205(1).

The calculated pre-development and post-development discharge volumes for each discharge point are summarized in Table 7.

TABLE 7
SUMMARY OF DISCHARGE VOLUMES

Discharge Location	Pre-Development Condition (ac-ft)	Post-Development Condition (ac-ft)
2-Year, 24-Hour Storm Peak Discharge Volume		
DP-1	0.003	0.000
DP-2	0.021	0.001
DP-3	0.283	0.022
DP-4	0.002	0.000
10-Year, 24-Hour Storm Peak Discharge Volume		
DP-1	0.026	0.000
DP-2	0.066	0.013
DP-3	1.095	0.198
DP-4	0.056	0.000
25-Year, 24-Hour Storm Peak Discharge Volume		
DP-1	0.050	0.000
DP-2	0.102	0.027
DP-3	1.783	0.391
DP-4	0.123	0.000
100-Year, 24-Hour Storm Peak Discharge Volume		
DP-1	0.098	0.000
DP-2	0.164	0.056
DP-3	3.028	0.781
DP-4	0.266	0.123

The stormwater models indicate that in the post-development condition the discharge volumes to the discharge locations, DP-1, DP-2, DP-3, and DP-4, are less than or equal to the pre-development volumes.

6.2 BMP Selection

Treatment of the stormwater will be achieved through a combination of deep sump catch basins, oil/grit separators, subsurface detention/infiltration structures, and sediment forebays paired with infiltration basins. The selected BMPs for the Project are consistent with the Stormwater Standards listed in the Massachusetts Stormwater Handbook.

6.2.1 Sediment Forebays

MassDEP requires a sediment forebay as pretreatment before stormwater is discharged to an infiltration basin. TSS removal rates from the proposed BMPs as outlined in the Massachusetts Stormwater Handbook, Volume One, Chapter One, TSS Removal Efficiencies for Best

Management Practices Table, dated February 2008, show that 80 percent of the average annual load is removed when a sediment forebay and infiltration basin are used in combination. Proposed Basins 1 through 7 include a sediment forebay paired with an infiltration basin.

6.2.2 Infiltration Basins

Infiltration basins are runoff impoundments that are constructed over permeable soils and use exfiltration as the primary mechanism to treat stormwater. The basins allow treatment of contaminants, including TSS. They are designed to have enough storage to control peak discharge rates. Proposed Basins 1 through 7 are designed as infiltration basins.

The Massachusetts Stormwater Handbook provides suggested design criteria for stormwater BMP's. All proposed basins were designed to meet the intent of the Massachusetts Stormwater Handbook's design criteria for an infiltration basin. Table 8 summarizes the design criteria and identifies which criteria have not been completely met in bold text.

TABLE 8
INFILTRATION BASIN DESIGN CRITERIA

Factor	Criteria	Design
Drainage Area	≤15 acres	≤3.27 acres (all 7 basins)
Minimum Depth to Groundwater	2 feet	≥2 feet (all 7 basins)
Minimum Infiltration Rate	≥0.17 inches per hour	≥1.19 inches per hour (all 7 basins)
Required Storage Volume	Sum of Recharge Volume + precipitation in basin + 1 foot of free board	Included
Exfiltration	No less than 72 hours	≤72 hours
Perimeter Access	15-feet perimeter access	**<15-feet perimeter access**

The proposed basins have been designed to meet the intent of the Massachusetts Stormwater Handbook, to the maximum extent practicable, within the area available and existing conditions. The criteria not completely met are discussed in the following paragraphs.

Perimeter Access

Perimeter access for Basins 1 through 7 is not provided on all sides of the proposed basins, and therefore does not meet the minimum design criteria of 15 feet. While the proposed basins do not meet the design criteria for perimeter access, the relatively small sizes of the stormwater basins would allow access for maintenance to be performed from the side(s) where access is provided, therefore eliminating the need for access around the entire perimeter.

6.2.3 Subsurface Structures

Subsurface detention/infiltration structures are underground systems that capture runoff and gradually infiltrate it into groundwater through rock and gravel. The subsurface structures selected as part of this design are the ADS StormTech® SC-740 and MC-3500 models that are manufactured chambers that are placed atop a stone bed and allow infiltration. Pretreatment of the stormwater is performed using deep sump catch basins and oil/grit separators. The structures are designed to provide suspended solids and pollutant removal as well as infiltration into the soil. There are four subsurface detention/infiltration structures proposed throughout the Development Area. Subsurface structures are utilized in areas that convey stormwater to Basins 5 and 6.

6.2.4 Deep Sump Catch Basin

Deep sump-hooded catch basins are underground retention systems designed to remove litter, debris, and coarse sediment from stormwater runoff, and serve as temporary spill containment devices for floatables such as oils and greases. Deep sump-hooded catch basins are proposed in the Development Area.

6.2.5 Oil/Grit Separator

An oil/grit separator is a flow-through structure with chambers to remove sediments, floatables, and other pollutants. Oil/grit separators will be used as pre-treatment devices for the four subsurface detention/infiltration structures proposed throughout the Development Area.

6.3 Water Quality Calculations

Water quality calculations were performed to demonstrate compliance with the required water quality standards identified in Standards 3 and 4 of the Massachusetts Stormwater Handbook. The following criteria are addressed in the water quality calculations:

1. Calculate the Recharge Volume for each infiltration basin, and verify that each basin provides enough storage below the lowest outlet orifice to meet or exceed this volume;

2. Estimate the total TSS removal for each discharge location associated with the project; and

3. Calculate the Water Quality Volume for each infiltration basin and sediment forebay.

The Recharge Volume was calculated for each of the seven proposed infiltration basins by calculating the volume of a target depth factor (related to soil type) over the impervious tributary area to each basin. All seven basins provide adequate storage volume below the lowest outlet orifice to detain the Recharge Volume.

The total TSS removal rate for all proposed discharges (including infiltration) is calculated to be greater than or equal to 80%, using the MassDEP TSS removal calculation worksheet, meeting the minimum TSS removal rate of 80%.

The water quality volume was calculated for each of the seven proposed infiltration basins by calculating the volume of 1 inch of rainfall over the impervious tributary areas to each basin. All forebays for the seven proposed basins shall provide storage volume that meets or exceeds the required volume of 10% of the water quality volume.

The recharge volume calculation, water quality volume calculation, and TSS removal rate tables are included as attachments to this stormwater report.

7.0 COMPLIANCE WITH MASSDEP STORMWATER MANAGEMENT REGULATIONS

7.1 Standard #1

No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

The Project is designed with no new stormwater conveyances that allow discharge of untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth of Massachusetts. The proposed stormwater design incorporates BMPs including deep sump catch basins, oil/grit separators, sediment forebays paired with infiltration basins, subsurface detention/infiltration structures, drainage channels, and energy dissipation to mitigate erosion and treat stormwater. The stormwater conveyances are designed to reduce stormwater velocities and minimize erosion and scour to the receiving wetlands.

The sedimentation forebays and oil/grit separators will allow solids to settle prior to discharge. Accumulated sediment within these devices will be removed at a scheduled interval. Stormwater basins and subsurface detention/infiltration structures are designed to store stormwater flows and regulate post-development discharge rates to be less than the pre-development discharge rates.

The Proposed Facility's Stormwater Pollution Prevention Plan (SWPPP) will include a long-term inspection and maintenance program. The SWPPP will be reviewed, amended, or updated as necessary to ensure the functionality of the stormwater management system after the construction of the Project.

7.2 Standard #2

Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.

The stormwater calculations discussed in Section 6 summarize the stormwater evaluations for the pre-development condition and post-development condition. The proposed stormwater conveyances will control the post-development peak discharge rates less than the pre-

development peak discharge rates for the 2-year, 10-year, 25-year, and 100-year 24-hour storm events.

7.3 Standard #3

Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to the maximum extent practicable. The annual recharge from the post-development site should approximate the annual recharge from the pre-development or existing site conditions, based on soil types.

Most of the proposed management of generated stormwater is through infiltration, either through the seven proposed infiltration basins, or the four proposed subsurface detention/infiltration structures. Due to the amount of infiltration proposed for this Project, it is expected that recharge to groundwater in the post-development condition should meet or exceed the recharge to groundwater occurring in the pre-development condition.

7.4 Standard #4

For new development, stormwater management systems must be designed to remove 80% of the average annual load (post-development conditions) of Total Suspended Solids (TSS). It is presumed that this standard is met when:

- *(a) Suitable nonstructural practices for source control and pollution prevention are implemented;*
- *(b) Stormwater management best practices (BMPs) are sized to capture the prescribed runoff volume; and*
- *(c) Stormwater management BMPs are maintained as designed.*

The proposed Project will provide source reduction of potential TSS through various BMPs including deep sump catch basins, oil/grit separators, sediment forebays paired with infiltration basins, and subsurface detention/infiltration structures. TSS removal rates from the proposed BMPs as outlined in the Massachusetts Stormwater Handbook, Volume One, Chapter One, TSS Removal Efficiencies for Best Management Practices Table, dated February 2008, show that a minimum of 80 percent of the average annual load will be removed in all proposed BMP chains for the Development Area.

Standard 4 also requires the development and implementation of suitable practices for source control and pollution prevention. These measures must be identified in a long-term pollution prevention plan. The Proposed Facility's SWPPP will include a long-term inspection and maintenance program. The SWPPP will be reviewed, amended, or updated as necessary to ensure the functionality of the stormwater management system after the construction of the Project.

7.5 Standard #5

Stormwater discharges from areas with higher potential pollutant loads require the use of specific stormwater management BMPs. The use of infiltration practices without pre-treatment is prohibited.

Since the Proposed Facility is classified as an area with higher potential pollutant loads, specific structural BMPs determined to be suitable for treating runoff from such land uses were selected, including deep sump catch basins, oil/grit separators, sediment forebays paired with infiltration basins, and subsurface detention/infiltration structures. The limitations of use of these BMPs in areas with higher potential pollutant loads were evaluated and are suitable for use on this Project.

7.6 Standard #6

Stormwater discharges to critical areas must utilize certain stormwater management BMPs approved for critical areas. Critical areas are Outstanding Resources Waters (ORWs), shellfish beds, swimming beaches, cold water fisheries, and recharge areas for public water supplies.

Stormwater from the Development Area either infiltrates or discharges to the adjacent wetland resource areas. None of the receiving wetland resource areas are classified as critical areas.

7.7 Standard #7

Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable. Where it is not practicable to meet all the Standards, new (retrofitted or expanded) stormwater management systems must be designed to improve existing conditions.

The Project is not being developed under the redevelopment standards.

7.8 Standard #8

Erosion and sediment controls must be implemented to prevent impacts during construction, or land disturbance activities.

Projects that disturb one acre of land or more are required to obtain coverage under the NPDES Construction General Permit issued by EPA and prepare a Construction SWPPP.

A Construction SWPPP for the Project will be prepared by the contractor prior to the start of construction. The Construction SWPPP identifies the potential sources of pollution reasonably expected to affect stormwater quality and documents the selection, design, installation, and implementation of BMPs for erosion and sediment control and pollutant reduction during construction.

A request for permit coverage will be submitted to USEPA in an electronic Notice of Intent (NOI). A copy of the completed NOI form and applicable USEPA authorization documentation will be included in the Construction SWPPP upon completion. The Construction SWPPP will be submitted to the Town of Hudson before land disturbance commences, in accordance with the Construction General Permit requirements.

7.9 Standard #9

All stormwater management systems must have an operations and maintenance plan to ensure that systems function as designed.

The Operations and Maintenance (O&M) Plan will incorporate stormwater operations and management provided in the Proposed Facility's SWPPP. The SWPPP will be reviewed, amended, or updated as necessary to ensure the functionality of the stormwater management system after the construction of the Project.

Table 9 summarizes the inspection and maintenance requirements for the proposed BMPs that will be incorporated into the Operations and Maintenance Plan in accordance with the Handbook.

TABLE 9
SUMMARY OF STORMWATER BMP INSPECTION AND MAINTENANCE REQUIREMENTS

Activity	Design
Sediment Forebay	
Inspect to ensure proper functioning	Monthly
Remove sediment	Four times per year or when sediment depth is between 3 to 6 feet
Infiltration Basin	
Preventative maintenance	Twice a year
Inspect to ensure proper functioning	After every major storm during the first 3 months of operation and twice a year thereafter, as well as any time there are discharges through the high outlet orifice
Mow the buffer area, side slopes, and basin bottom if grassed floor; rake if stone bottom remove trash and debris remove grass clippings and accumulated organic matter	Twice a year
Inspect and clean pretreatment devices (sediment forebay and deep sump catch basins)	At least twice a year and after every major storm event
Subsurface Structure	
Inspect to ensure proper functioning	Twice a year
Remove any debris from the inlet manhole that might clog the system	Twice a year
Deep Sump Catch Basin	
Inspect to ensure proper functioning	Four times per year
Clean unit	Four times per year or whenever the depth of deposits is greater than or equal to one half the depth of the sump
Oil/Grit Separator	
Inspect to ensure proper functioning	Monthly and after every major storm
Clean unit	Twice a year

7.10 Standard #10

All illicit discharges to the stormwater management system are prohibited.

The Proposed Facility's SWPPP shall include measures to prevent illicit discharges. The SWPPP shall be reviewed, amended, or updated as necessary to accommodate compliance with the MassDEP Stormwater Management Standards.

8.0 CLIMATE RESILIENCY

To assess the climate risks of the proposed Project, the Resilient Mass Action Team (RMAT) Climate Resilience Design Standards Tool was used to generate a target planning horizon for the Project and to generate a recommended design storm to evaluate the Project at the target planning horizon. The output provided by the tool indicated the target event was a 50-year storm event in the year 2070. The output also provided a projected 24-hour total precipitation depth of 9.5 inches.

In addition to evaluating the Project for the 2-year, 10-year, 25-year, and 100-year, 24-hour storm events, the post-development condition was also evaluated for a 9.5 inch, 24-hour storm, which as mentioned above is representative of a 50-year, 24-hour storm event in the year 2070.

The proposed infrastructure was sized to safely convey stormwater from this future storm event. The calculated post-development peak discharge flow rates and volumes at the discharge points, for the RMAT Climate Resiliency Storm Event, are summarized in Table 10.

TABLE 10
SUMMARY OF RMAT CLIMATE RESILIENCY STORM EVENT PEAK DISCHARGE RATES AND DISCHARGE VOLUMES

Discharge Location	Post-Development Condition
Peak Discharge Flow (cfs)	
DP-1	0.00
DP-2	0.88
DP-3	7.00
DP-4	3.75
Peak Discharge Volume (ac-ft)	
DP-1	0.000
DP-2	0.089
DP-3	1.234
DP-4	0.323

The stormwater model for the RMAT Climate Resiliency Storm Event is included as an attachment.

9.0 SUMMARY

The stormwater calculations indicate that the peak post-development discharge rates and discharge volumes do not exceed the pre-development discharge rates and discharge volumes, for the 2-year, 10-year, 25-year, and 100-year, 24-hour storm events.

The stormwater evaluation confirms that stormwater flow, in the 2-year, 10-year, 25-year, and 100-year, 24-hour storm events, as well as flow in the RMAT Climate Resiliency Storm Event, can be effectively managed with the infrastructure as proposed.

P:\3900s\3984.01\Source Files\Task 060 - MEPA EIR\Stormwater\BP Stormwater Report Narrative_FINAL.docx

Figures

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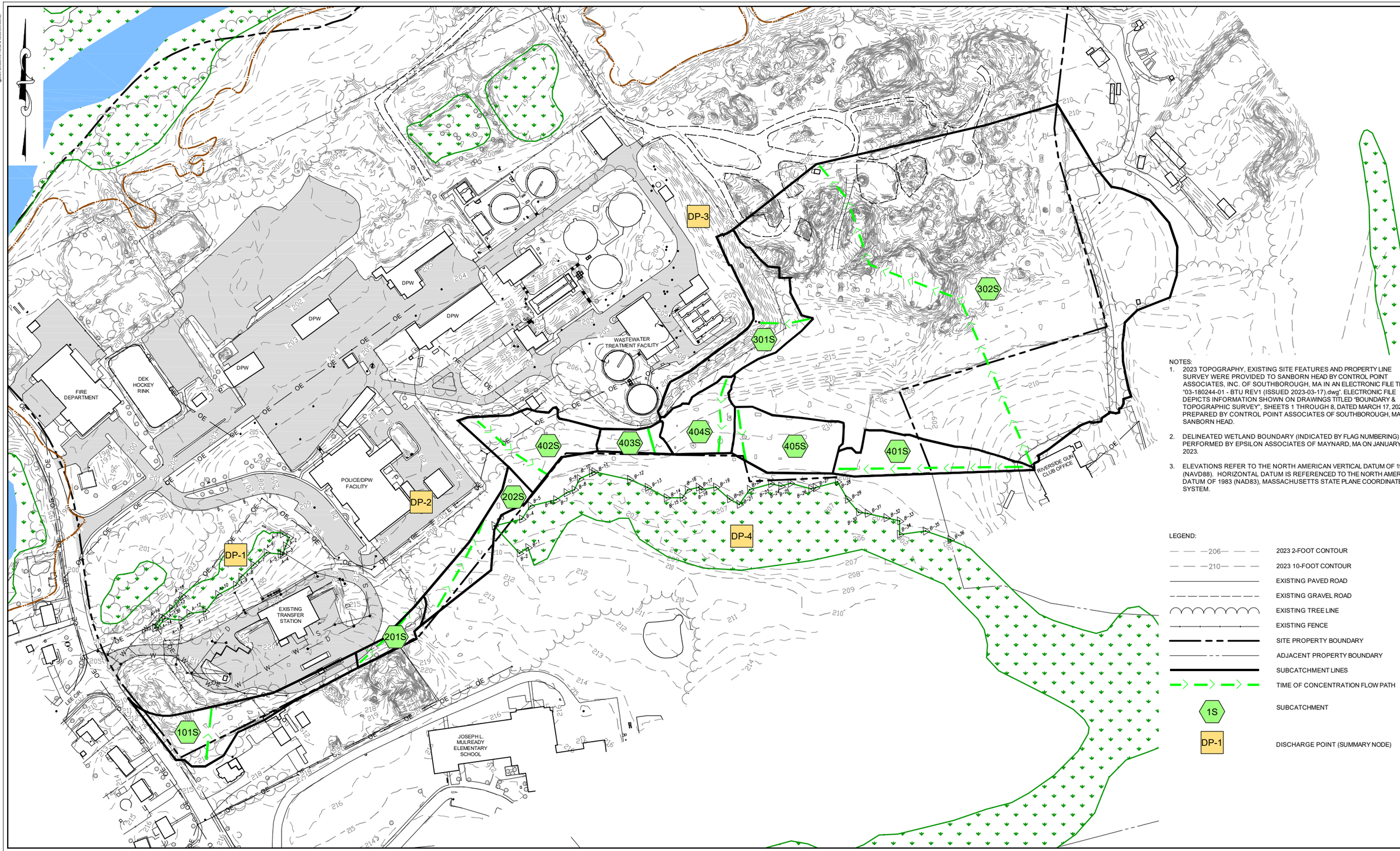

NOTES:

1. 2023 TOPOGRAPHY, EXISTING SITE FEATURES AND PROPERTY LINE SURVEY WERE PROVIDED TO SANBORN HEAD BY CONTROL POINT ASSOCIATES, INC. OF SOUTHBOROUGH, MA IN AN ELECTRONIC FILE TITLED "03-180244-01 - BTU REV1 (ISSUED 2023-03-17).dwg". ELECTRONIC FILE DEPICTS INFORMATION SHOWN ON DRAWINGS TITLED "BOUNDARY & TOPOGRAPHIC SURVEY", SHEETS 1 THROUGH 8, DATED MARCH 17, 2023 PREPARED BY CONTROL POINT ASSOCIATES OF SOUTHBOROUGH, MA FOR SANBORN HEAD.
2. DELINEATED WETLAND BOUNDARY (INDICATED BY FLAG NUMBERING) WAS PERFORMED BY EPSILON ASSOCIATES OF MAYNARD, MA ON JANUARY 18, 2023.
3. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). HORIZONTAL DATUM IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), MASSACHUSETTS STATE PLANE COORDINATE SYSTEM.

LEGEND:

- 2023 2-FOOT CONTOUR
- 2023 10-FOOT CONTOUR
- EXISTING PAVED ROAD
- EXISTING GRAVEL ROAD
- EXISTING TREE LINE
- EXISTING FENCE
- SITE PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- SUBCATCHMENT LINES
- TIME OF CONCENTRATION FLOW PATH
- 1S — SUBCATCHMENT
- DP-1 — DISCHARGE POINT (SUMMARY NODE)

SANBORN HEAD

GRAPHICAL SCALE
100' 50' 0' 100' 200'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: A. WILKER
DESIGNED BY: A. WILKER
REVIEWED BY: D. LONG
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: FEBRUARY 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

PROJECT NUMBER: 3984.01

PRE-DEVELOPMENT DRAINAGE PLAN

SHEET NUMBER: 1 OF 2

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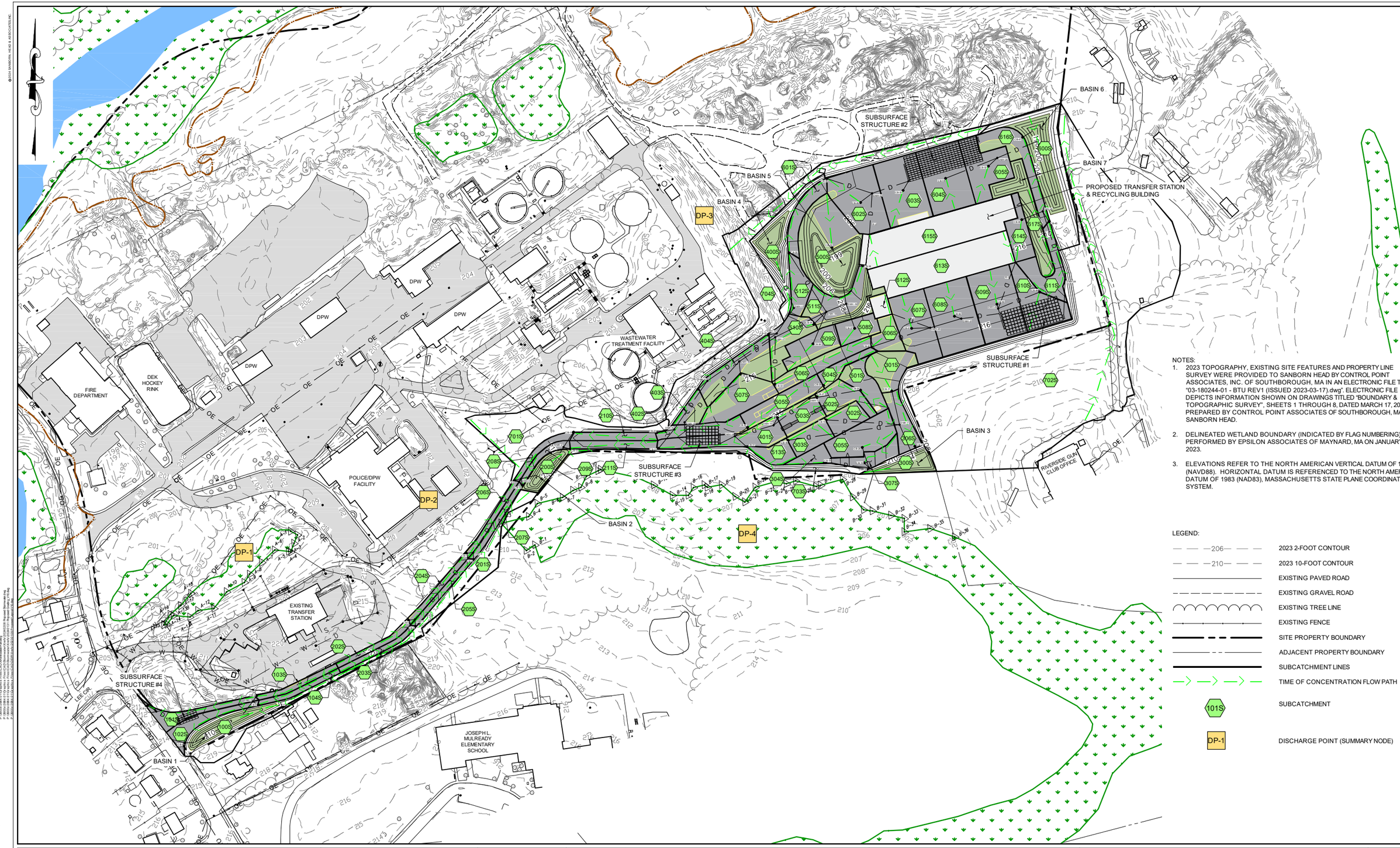


NOTES:

1. 2023 TOPOGRAPHY, EXISTING SITE FEATURES AND PROPERTY LINE SURVEY WERE PROVIDED TO SANBORN HEAD BY CONTROL POINT ASSOCIATES, INC. OF SOUTHBOROUGH, MA IN AN ELECTRONIC FILE TITLED "03-180244-01 - BTU REV1 (ISSUED 2023-03-17).dwg". ELECTRONIC FILE DEPICTS INFORMATION SHOWN ON DRAWINGS TITLED "BOUNDARY & TOPOGRAPHIC SURVEY", SHEETS 1 THROUGH 8, DATED MARCH 17, 2023 PREPARED BY CONTROL POINT ASSOCIATES OF SOUTHBOROUGH, MA FOR SANBORN HEAD.
2. DELINEATED WETLAND BOUNDARY (INDICATED BY FLAG NUMBERING) WAS PERFORMED BY EPSILON ASSOCIATES OF MAYNARD, MA ON JANUARY 18, 2023.
3. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). HORIZONTAL DATUM IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), MASSACHUSETTS STATE PLANE COORDINATE SYSTEM.

LEGEND:

- 2023 2-FOOT CONTOUR
- 2023 10-FOOT CONTOUR
- EXISTING PAVED ROAD
- EXISTING GRAVEL ROAD
- EXISTING TREE LINE
- EXISTING FENCE
- SITE PROPERTY BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- SUBCATCHMENT LINES
- TIME OF CONCENTRATION FLOW PATH
- 101S — SUBCATCHMENT
- DP-1 — DISCHARGE POINT (SUMMARY NODE)

SANBORN HEAD

GRAPHICAL SCALE
100' 50' 0' 100' 200'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: A. WILKER
DESIGNED BY: A. WILKER
REVIEWED BY: D. LONG
PROJECT MGR: S. WRIGHT
PIC: S. WRIGHT
DATE: FEBRUARY 2024

DRAFT ENVIRONMENTAL IMPACT REPORT
B-P TRUCKING TRANSFER STATION AND RECYCLING FACILITY
HUDSON, MASSACHUSETTS

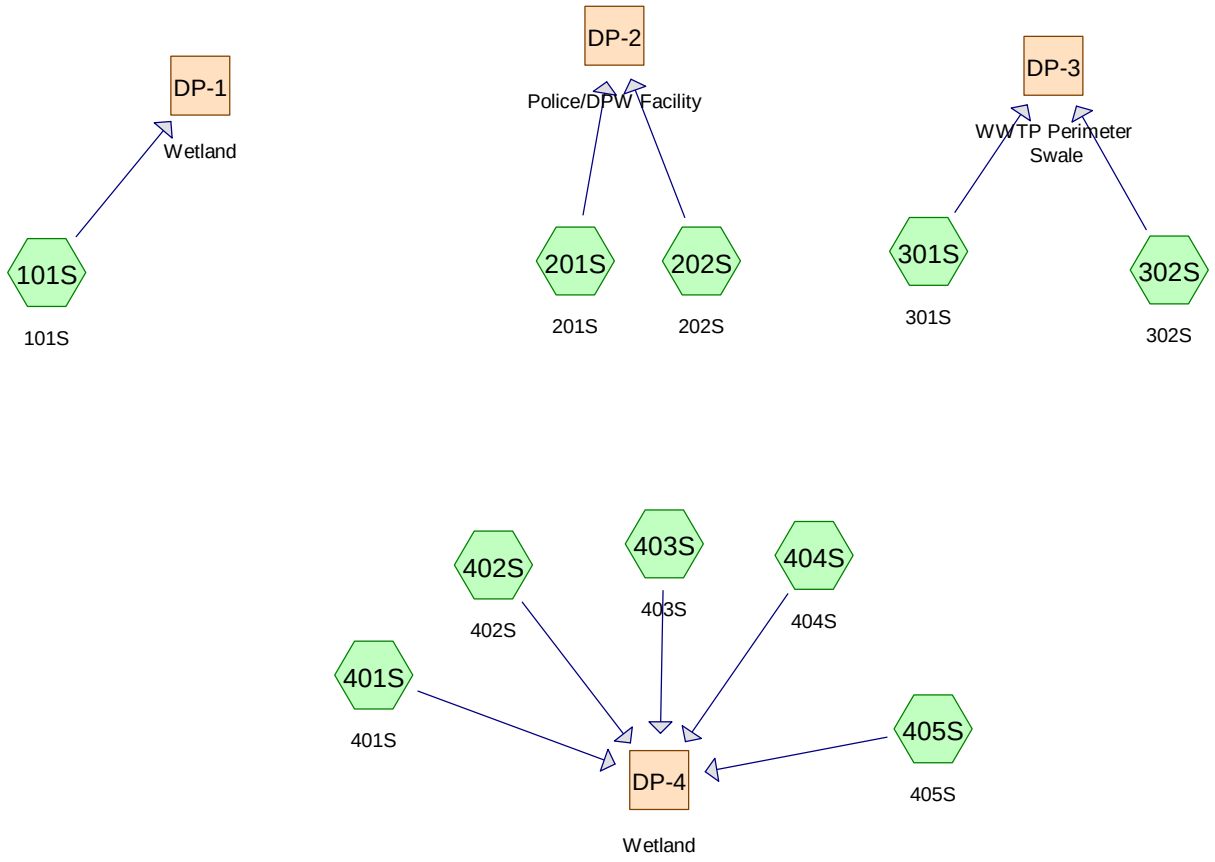
POST-DEVELOPMENT DRAINAGE PLAN

PROJECT NUMBER: 3984.01

SHEET NUMBER: 2 OF 2

Pre-Development
Stormwater Model

SANBORN HEAD



Subcat Reach Pond Link

Routing Diagram for 398401 - 01 - Pre-Development Conditions
Prepared by Sanborn Head & Associates, Inc, Printed 2/20/2024
HydroCAD® 10.20-2g s/n 00705 © 2022 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.383	76	Gravel roads HSG A (201S, 202S, 301S, 302S)
0.000	85	Gravel roads HSG B (201S)
3.271	89	Gravel roads HSG C (302S)
2.382	49	Open Space-Fair (50% to 75% grass) HSG A (101S, 201S, 301S, 302S, 401S, 402S)
0.051	79	Open Space-Fair (50% to 75% grass) HSG C (301S, 302S)
0.008	98	Roofs HSG A (101S)
0.130	98	Unconnected pavement HSG A (101S, 201S, 302S, 401S)
10.326	36	Woods, Fair HSG A (101S, 201S, 202S, 301S, 302S, 401S, 402S, 403S, 404S, 405S)
0.739	60	Woods, Fair HSG B (201S, 202S, 401S, 402S, 403S, 404S, 405S)
1.065	73	Woods, Fair HSG C (302S)
18.355	**52**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
13.228	HSG A	101S, 201S, 202S, 301S, 302S, 401S, 402S, 403S, 404S, 405S
0.739	HSG B	201S, 202S, 401S, 402S, 403S, 404S, 405S
4.387	HSG C	301S, 302S
0.000	HSG D	
0.000	Other	
18.355		**TOTAL AREA**

Time span=0.00-26.00 hrs, dt=0.10 hrs, 261 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 101S: 101S Runoff Area=32,360 sf 13.08% Impervious Runoff Depth=0.04"
Flow Length=116' Slope=0.1357 '/' Tc=5.0 min UI Adjusted CN=44 Runoff=0.00 cfs 0.003 af

Subcatchment 201S: 201S Runoff Area=7,440 sf 6.97% Impervious Runoff Depth=0.37"
Flow Length=199' Slope=0.1245 '/' Tc=5.0 min UI Adjusted CN=58 Runoff=0.03 cfs 0.005 af

Subcatchment 202S: 202S Runoff Area=20,137 sf 0.00% Impervious Runoff Depth=0.41"
Flow Length=226' Slope=0.0414 '/' Tc=8.4 min CN=59 Runoff=0.11 cfs 0.016 af

Subcatchment 301S: 301S Runoff Area=39,092 sf 0.00% Impervious Runoff Depth=0.05"
Flow Length=112' Slope=0.1834 '/' Tc=5.0 min CN=45 Runoff=0.01 cfs 0.004 af

Subcatchment 302S: 302S Runoff Area=584,579 sf 0.15% Impervious Runoff Depth=0.25"
Flow Length=874' Slope=0.1372 '/' Tc=15.5 min CN=54 Runoff=0.72 cfs 0.278 af

Subcatchment 401S: 401S Runoff Area=27,569 sf 1.28% Impervious Runoff Depth>0.00"
Flow Length=413' Slope=0.0163 '/' Tc=37.5 min CN=38 Runoff=0.00 cfs 0.000 af

Subcatchment 402S: 402S Runoff Area=30,015 sf 0.00% Impervious Runoff Depth=0.02"
Flow Length=198' Slope=0.0319 '/' Tc=13.4 min CN=42 Runoff=0.00 cfs 0.001 af

Subcatchment 403S: 403S Runoff Area=8,358 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=58' Slope=0.0359 '/' Tc=5.4 min CN=37 Runoff=0.00 cfs 0.000 af

Subcatchment 404S: 404S Runoff Area=20,702 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=169' Slope=0.0389 '/' Tc=11.9 min CN=38 Runoff=0.00 cfs 0.000 af

Subcatchment 405S: 405S Runoff Area=29,280 sf 0.00% Impervious Runoff Depth=0.02"
Flow Length=117' Slope=0.0206 '/' Tc=10.9 min CN=42 Runoff=0.00 cfs 0.001 af

Reach DP-1: Wetland Inflow=0.00 cfs 0.003 af
Outflow=0.00 cfs 0.003 af

Reach DP-2: Police/DPW Facility Inflow=0.14 cfs 0.021 af
Outflow=0.14 cfs 0.021 af

Reach DP-3: WWTP Perimeter Swale Inflow=0.72 cfs 0.283 af
Outflow=0.72 cfs 0.283 af

Reach DP-4: Wetland Inflow=0.00 cfs 0.002 af
Outflow=0.00 cfs 0.002 af

Total Runoff Area = 18.355 ac Runoff Volume = 0.308 af Average Runoff Depth = 0.20"
99.25% Pervious = 18.217 ac 0.75% Impervious = 0.137 ac

Time span=0.00-26.00 hrs, dt=0.10 hrs, 261 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 101S: 101S Runoff Area=32,360 sf 13.08% Impervious Runoff Depth=0.41"
Flow Length=116' Slope=0.1357 '/' Tc=5.0 min UI Adjusted CN=44 Runoff=0.10 cfs 0.026 af

Subcatchment 201S: 201S Runoff Area=7,440 sf 6.97% Impervious Runoff Depth=1.20"
Flow Length=199' Slope=0.1245 '/' Tc=5.0 min UI Adjusted CN=58 Runoff=0.19 cfs 0.017 af

Subcatchment 202S: 202S Runoff Area=20,137 sf 0.00% Impervious Runoff Depth=1.27"
Flow Length=226' Slope=0.0414 '/' Tc=8.4 min CN=59 Runoff=0.48 cfs 0.049 af

Subcatchment 301S: 301S Runoff Area=39,092 sf 0.00% Impervious Runoff Depth=0.46"
Flow Length=112' Slope=0.1834 '/' Tc=5.0 min CN=45 Runoff=0.15 cfs 0.034 af

Subcatchment 302S: 302S Runoff Area=584,579 sf 0.15% Impervious Runoff Depth=0.95"
Flow Length=874' Slope=0.1372 '/' Tc=15.5 min CN=54 Runoff=7.63 cfs 1.061 af

Subcatchment 401S: 401S Runoff Area=27,569 sf 1.28% Impervious Runoff Depth>0.18"
Flow Length=413' Slope=0.0163 '/' Tc=37.5 min CN=38 Runoff=0.01 cfs 0.009 af

Subcatchment 402S: 402S Runoff Area=30,015 sf 0.00% Impervious Runoff Depth=0.33"
Flow Length=198' Slope=0.0319 '/' Tc=13.4 min CN=42 Runoff=0.04 cfs 0.019 af

Subcatchment 403S: 403S Runoff Area=8,358 sf 0.00% Impervious Runoff Depth=0.15"
Flow Length=58' Slope=0.0359 '/' Tc=5.4 min CN=37 Runoff=0.00 cfs 0.002 af

Subcatchment 404S: 404S Runoff Area=20,702 sf 0.00% Impervious Runoff Depth=0.18"
Flow Length=169' Slope=0.0389 '/' Tc=11.9 min CN=38 Runoff=0.01 cfs 0.007 af

Subcatchment 405S: 405S Runoff Area=29,280 sf 0.00% Impervious Runoff Depth=0.33"
Flow Length=117' Slope=0.0206 '/' Tc=10.9 min CN=42 Runoff=0.04 cfs 0.018 af

Reach DP-1: Wetland Inflow=0.10 cfs 0.026 af
Outflow=0.10 cfs 0.026 af

Reach DP-2: Police/DPW Facility Inflow=0.63 cfs 0.066 af
Outflow=0.63 cfs 0.066 af

Reach DP-3: WWTP Perimeter Swale Inflow=7.76 cfs 1.095 af
Outflow=7.76 cfs 1.095 af

Reach DP-4: Wetland Inflow=0.08 cfs 0.056 af
Outflow=0.08 cfs 0.056 af

Total Runoff Area = 18.355 ac Runoff Volume = 1.243 af Average Runoff Depth = 0.81"
99.25% Pervious = 18.217 ac 0.75% Impervious = 0.137 ac

Time span=0.00-26.00 hrs, dt=0.10 hrs, 261 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 101S: 101S Runoff Area=32,360 sf 13.08% Impervious Runoff Depth=0.80"
Flow Length=116' Slope=0.1357 '/' Tc=5.0 min UI Adjusted CN=44 Runoff=0.37 cfs 0.050 af

Subcatchment 201S: 201S Runoff Area=7,440 sf 6.97% Impervious Runoff Depth=1.86"
Flow Length=199' Slope=0.1245 '/' Tc=5.0 min UI Adjusted CN=58 Runoff=0.31 cfs 0.027 af

Subcatchment 202S: 202S Runoff Area=20,137 sf 0.00% Impervious Runoff Depth=1.95"
Flow Length=226' Slope=0.0414 '/' Tc=8.4 min CN=59 Runoff=0.78 cfs 0.075 af

Subcatchment 301S: 301S Runoff Area=39,092 sf 0.00% Impervious Runoff Depth=0.87"
Flow Length=112' Slope=0.1834 '/' Tc=5.0 min CN=45 Runoff=0.53 cfs 0.065 af

Subcatchment 302S: 302S Runoff Area=584,579 sf 0.15% Impervious Runoff Depth=1.54"
Flow Length=874' Slope=0.1372 '/' Tc=15.5 min CN=54 Runoff=13.86 cfs 1.718 af

Subcatchment 401S: 401S Runoff Area=27,569 sf 1.28% Impervious Runoff Depth>0.44"
Flow Length=413' Slope=0.0163 '/' Tc=37.5 min CN=38 Runoff=0.05 cfs 0.023 af

Subcatchment 402S: 402S Runoff Area=30,015 sf 0.00% Impervious Runoff Depth=0.67"
Flow Length=198' Slope=0.0319 '/' Tc=13.4 min CN=42 Runoff=0.18 cfs 0.039 af

Subcatchment 403S: 403S Runoff Area=8,358 sf 0.00% Impervious Runoff Depth=0.39"
Flow Length=58' Slope=0.0359 '/' Tc=5.4 min CN=37 Runoff=0.01 cfs 0.006 af

Subcatchment 404S: 404S Runoff Area=20,702 sf 0.00% Impervious Runoff Depth=0.44"
Flow Length=169' Slope=0.0389 '/' Tc=11.9 min CN=38 Runoff=0.04 cfs 0.017 af

Subcatchment 405S: 405S Runoff Area=29,280 sf 0.00% Impervious Runoff Depth=0.67"
Flow Length=117' Slope=0.0206 '/' Tc=10.9 min CN=42 Runoff=0.20 cfs 0.038 af

Reach DP-1: Wetland Inflow=0.37 cfs 0.050 af
Outflow=0.37 cfs 0.050 af

Reach DP-2: Police/DPW Facility Inflow=1.02 cfs 0.102 af
Outflow=1.02 cfs 0.102 af

Reach DP-3: WWTP Perimeter Swale Inflow=14.18 cfs 1.783 af
Outflow=14.18 cfs 1.783 af

Reach DP-4: Wetland Inflow=0.42 cfs 0.123 af
Outflow=0.42 cfs 0.123 af

Total Runoff Area = 18.355 ac Runoff Volume = 2.058 af Average Runoff Depth = 1.35"
99.25% Pervious = 18.217 ac 0.75% Impervious = 0.137 ac

Time span=0.00-26.00 hrs, dt=0.10 hrs, 261 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 101S: 101S Runoff Area=32,360 sf 13.08% Impervious Runoff Depth=1.58"
Flow Length=116' Slope=0.1357 '/' Tc=5.0 min UI Adjusted CN=44 Runoff=1.01 cfs 0.098 af

Subcatchment 201S: 201S Runoff Area=7,440 sf 6.97% Impervious Runoff Depth=3.03"
Flow Length=199' Slope=0.1245 '/' Tc=5.0 min UI Adjusted CN=58 Runoff=0.53 cfs 0.043 af

Subcatchment 202S: 202S Runoff Area=20,137 sf 0.00% Impervious Runoff Depth=3.13"
Flow Length=226' Slope=0.0414 '/' Tc=8.4 min CN=59 Runoff=1.28 cfs 0.121 af

Subcatchment 301S: 301S Runoff Area=39,092 sf 0.00% Impervious Runoff Depth=1.67"
Flow Length=112' Slope=0.1834 '/' Tc=5.0 min CN=45 Runoff=1.33 cfs 0.125 af

Subcatchment 302S: 302S Runoff Area=584,579 sf 0.15% Impervious Runoff Depth=2.60"
Flow Length=874' Slope=0.1372 '/' Tc=15.5 min CN=54 Runoff=25.04 cfs 2.903 af

Subcatchment 401S: 401S Runoff Area=27,569 sf 1.28% Impervious Runoff Depth>1.02"
Flow Length=413' Slope=0.0163 '/' Tc=37.5 min CN=38 Runoff=0.19 cfs 0.054 af

Subcatchment 402S: 402S Runoff Area=30,015 sf 0.00% Impervious Runoff Depth=1.38"
Flow Length=198' Slope=0.0319 '/' Tc=13.4 min CN=42 Runoff=0.59 cfs 0.079 af

Subcatchment 403S: 403S Runoff Area=8,358 sf 0.00% Impervious Runoff Depth=0.93"
Flow Length=58' Slope=0.0359 '/' Tc=5.4 min CN=37 Runoff=0.09 cfs 0.015 af

Subcatchment 404S: 404S Runoff Area=20,702 sf 0.00% Impervious Runoff Depth=1.02"
Flow Length=169' Slope=0.0389 '/' Tc=11.9 min CN=38 Runoff=0.25 cfs 0.040 af

Subcatchment 405S: 405S Runoff Area=29,280 sf 0.00% Impervious Runoff Depth=1.38"
Flow Length=117' Slope=0.0206 '/' Tc=10.9 min CN=42 Runoff=0.64 cfs 0.078 af

Reach DP-1: Wetland Inflow=1.01 cfs 0.098 af
Outflow=1.01 cfs 0.098 af

Reach DP-2: Police/DPW Facility Inflow=1.73 cfs 0.164 af
Outflow=1.73 cfs 0.164 af

Reach DP-3: WWTP Perimeter Swale Inflow=26.14 cfs 3.028 af
Outflow=26.14 cfs 3.028 af

Reach DP-4: Wetland Inflow=1.59 cfs 0.266 af
Outflow=1.59 cfs 0.266 af

Total Runoff Area = 18.355 ac Runoff Volume = 3.556 af Average Runoff Depth = 2.32"
99.25% Pervious = 18.217 ac 0.75% Impervious = 0.137 ac

Time span=0.00-26.00 hrs, dt=0.10 hrs, 261 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 101S: 101S Runoff Area=32,360 sf 13.08% Impervious Runoff Depth=0.80"
Flow Length=116' Slope=0.1357 '/' Tc=5.0 min UI Adjusted CN=44 Runoff=0.37 cfs 0.050 af

Subcatchment 201S: 201S Runoff Area=7,440 sf 6.97% Impervious Runoff Depth=1.86"
Flow Length=199' Slope=0.1245 '/' Tc=5.0 min UI Adjusted CN=58 Runoff=0.31 cfs 0.027 af

Subcatchment 202S: 202S Runoff Area=20,137 sf 0.00% Impervious Runoff Depth=1.95"
Flow Length=226' Slope=0.0414 '/' Tc=8.4 min CN=59 Runoff=0.78 cfs 0.075 af

Subcatchment 301S: 301S Runoff Area=39,092 sf 0.00% Impervious Runoff Depth=0.87"
Flow Length=112' Slope=0.1834 '/' Tc=5.0 min CN=45 Runoff=0.53 cfs 0.065 af

Subcatchment 302S: 302S Runoff Area=584,579 sf 0.15% Impervious Runoff Depth=1.54"
Flow Length=874' Slope=0.1372 '/' Tc=15.5 min CN=54 Runoff=13.86 cfs 1.718 af

Subcatchment 401S: 401S Runoff Area=27,569 sf 1.28% Impervious Runoff Depth>0.44"
Flow Length=413' Slope=0.0163 '/' Tc=37.5 min CN=38 Runoff=0.05 cfs 0.023 af

Subcatchment 402S: 402S Runoff Area=30,015 sf 0.00% Impervious Runoff Depth=0.67"
Flow Length=198' Slope=0.0319 '/' Tc=13.4 min CN=42 Runoff=0.18 cfs 0.039 af

Subcatchment 403S: 403S Runoff Area=8,358 sf 0.00% Impervious Runoff Depth=0.39"
Flow Length=58' Slope=0.0359 '/' Tc=5.4 min CN=37 Runoff=0.01 cfs 0.006 af

Subcatchment 404S: 404S Runoff Area=20,702 sf 0.00% Impervious Runoff Depth=0.44"
Flow Length=169' Slope=0.0389 '/' Tc=11.9 min CN=38 Runoff=0.04 cfs 0.017 af

Subcatchment 405S: 405S Runoff Area=29,280 sf 0.00% Impervious Runoff Depth=0.67"
Flow Length=117' Slope=0.0206 '/' Tc=10.9 min CN=42 Runoff=0.20 cfs 0.038 af

Reach DP-1: Wetland Inflow=0.37 cfs 0.050 af
Outflow=0.37 cfs 0.050 af

Reach DP-2: Police/DPW Facility Inflow=1.02 cfs 0.102 af
Outflow=1.02 cfs 0.102 af

Reach DP-3: WWTP Perimeter Swale Inflow=14.18 cfs 1.783 af
Outflow=14.18 cfs 1.783 af

Reach DP-4: Wetland Inflow=0.42 cfs 0.123 af
Outflow=0.42 cfs 0.123 af

Total Runoff Area = 18.355 ac Runoff Volume = 2.058 af Average Runoff Depth = 1.35"
99.25% Pervious = 18.217 ac 0.75% Impervious = 0.137 ac

Summary for Subcatchment 101S: 101S

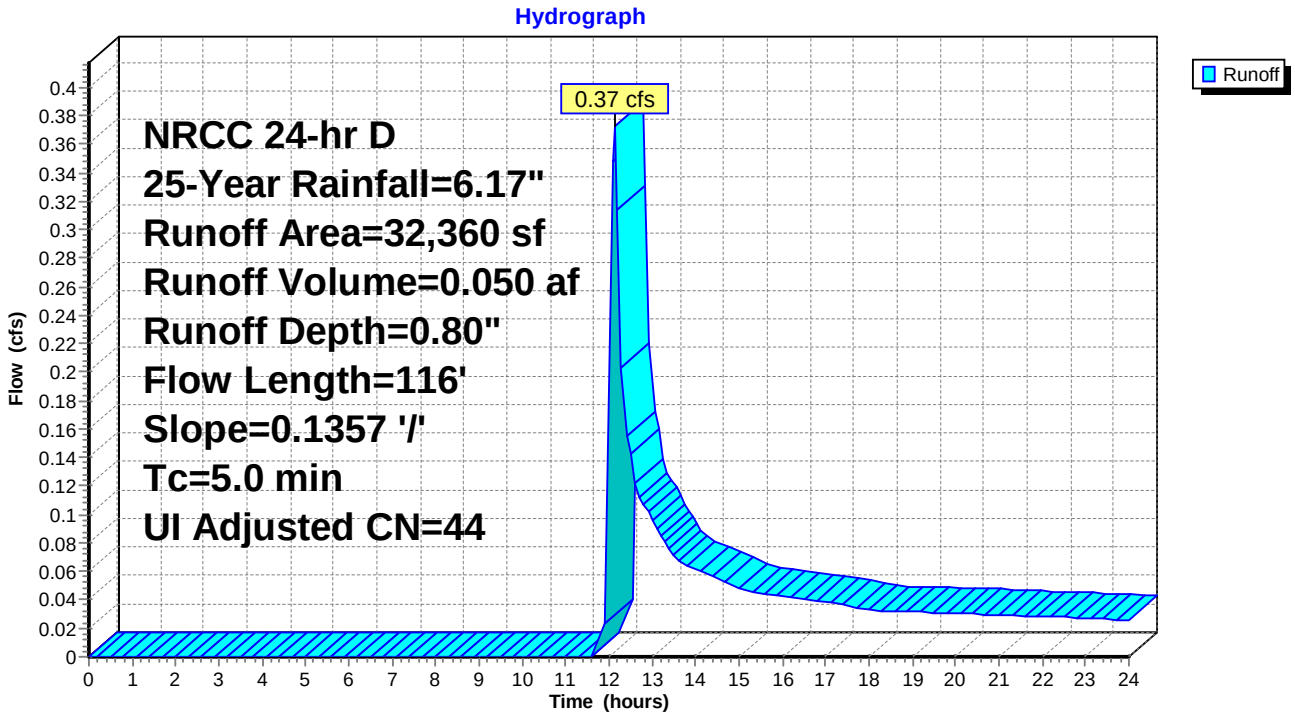
Runoff = 0.37 cfs @ 12.14 hrs, Volume= 0.050 af, Depth= 0.80"
Routed to Reach DP-1 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-26.00 hrs, dt= 0.10 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Adj	Description
	329	98		Roofs HSG A
	3,904	98		Unconnected pavement HSG A
	19,916	36		Woods, Fair HSG A
*	8,211	49		Open Space-Fair (50% to 75% grass) HSG A
	32,360	47	44	Weighted Average, UI Adjusted
	28,127			86.92% Pervious Area
	4,233			13.08% Impervious Area
	3,904			92.23% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	116	0.1357	0.52		**Lag/CN Method,**
3.7	116	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 101S: 101S



Summary for Subcatchment 201S: 201S

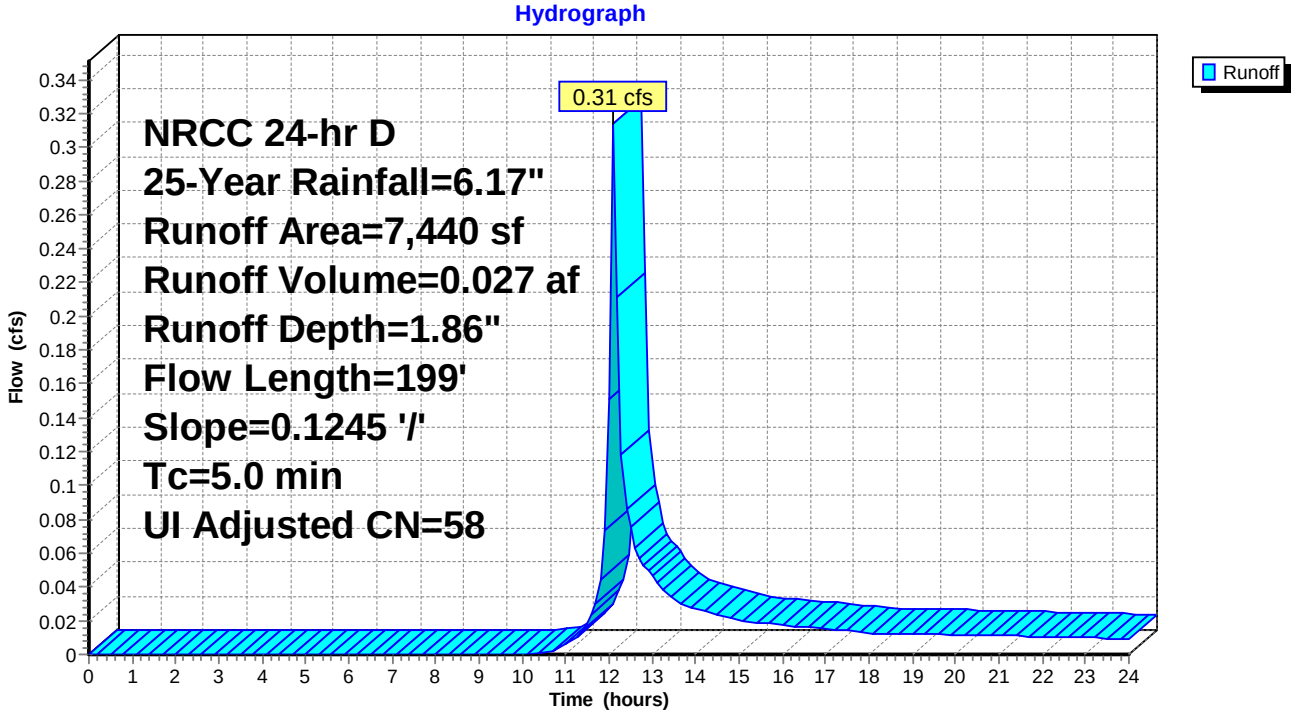
Runoff = 0.31 cfs @ 12.11 hrs, Volume= 0.027 af, Depth= 1.86"
Routed to Reach DP-2 : Police/DPW Facility

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-26.00 hrs, dt= 0.10 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Adj	Description
	3,306	76		Gravel roads HSG A
	9	85		Gravel roads HSG B
	518	98		Unconnected pavement HSG A
	2,736	36		Woods, Fair HSG A
	167	60		Woods, Fair HSG B
*	703	49		Open Space-Fair (50% to 75% grass) HSG A
	7,440	60	58	Weighted Average, UI Adjusted
	6,921			93.03% Pervious Area
	518			6.97% Impervious Area
	518			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	199	0.1245	0.77		**Lag/CN Method,**
4.3	199	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 201S: 201S



Summary for Subcatchment 202S: 202S

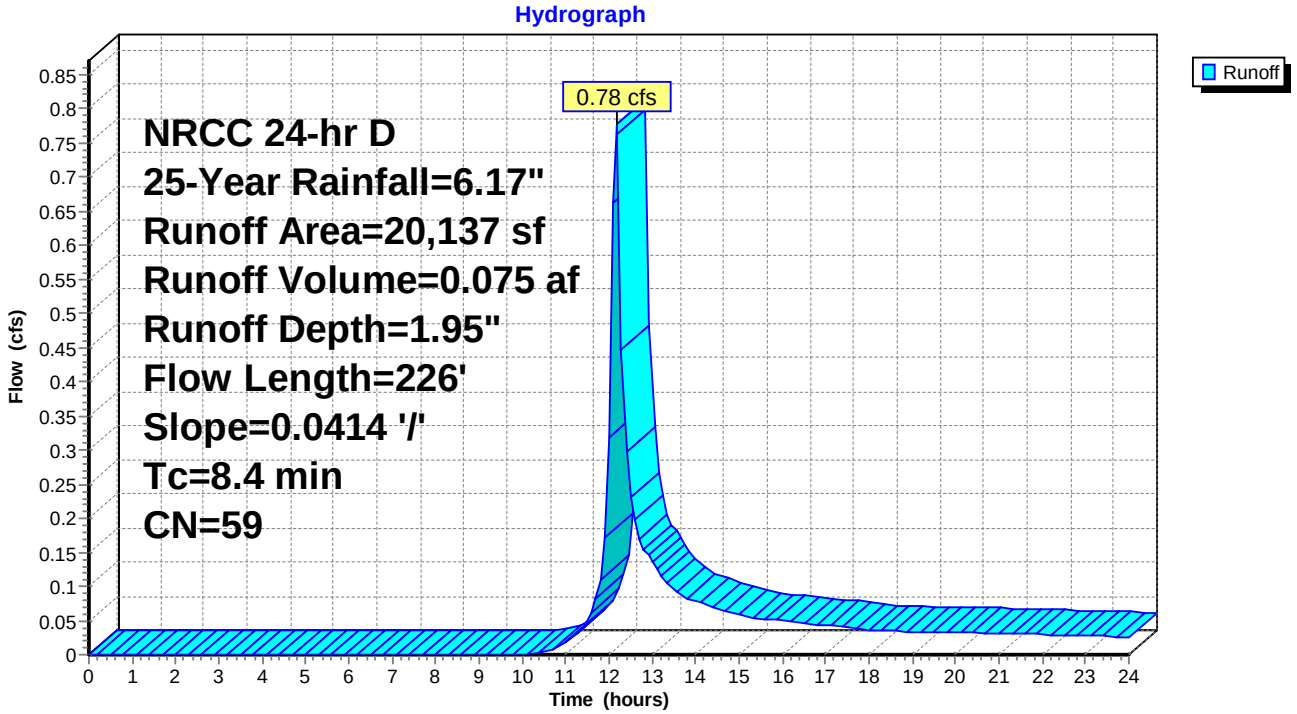
Runoff = 0.78 cfs @ 12.17 hrs, Volume= 0.075 af, Depth= 1.95"
Routed to Reach DP-2 : Police/DPW Facility

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-26.00 hrs, dt= 0.10 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
665	36	Woods, Fair HSG A
37	76	Gravel roads HSG A
19,435	60	Woods, Fair HSG B
20,137	59	Weighted Average
20,137		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	226	0.0414	0.45		**Lag/CN Method,**

Subcatchment 202S: 202S



Summary for Subcatchment 301S: 301S

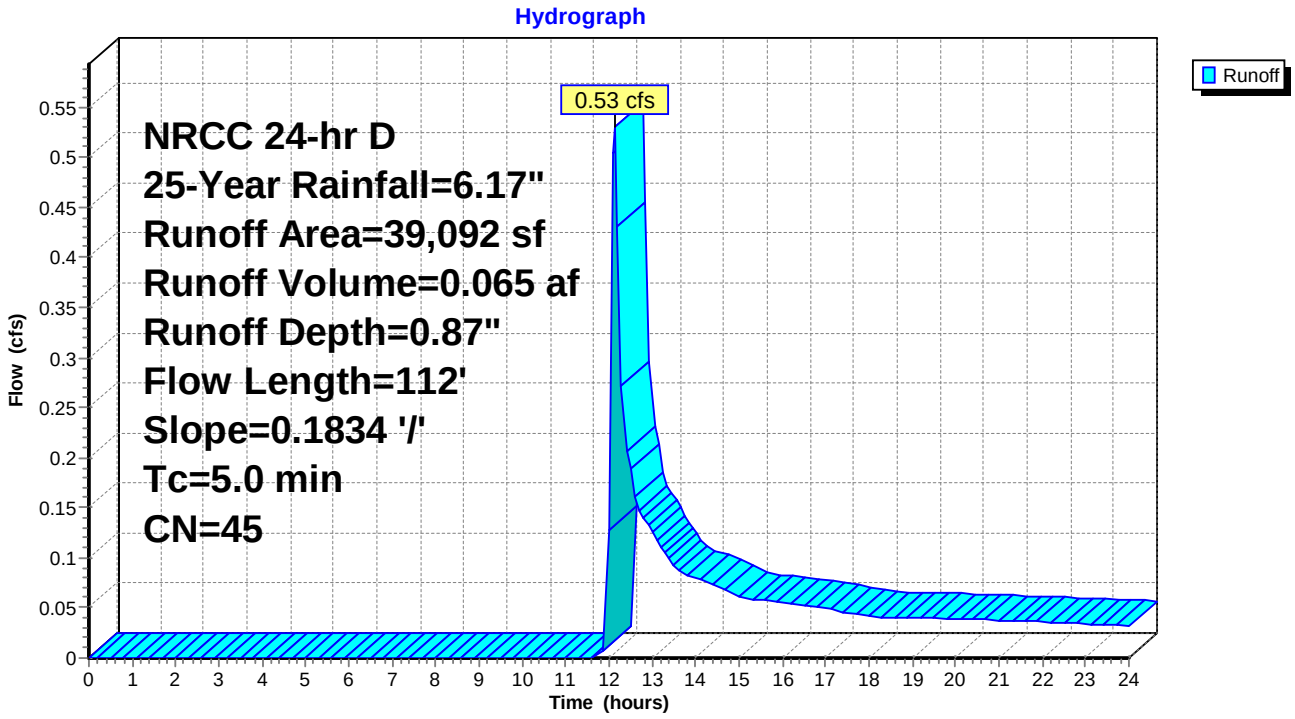
Runoff = 0.53 cfs @ 12.13 hrs, Volume= 0.065 af, Depth= 0.87"
Routed to Reach DP-3 : WWTP Perimeter Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-26.00 hrs, dt= 0.10 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	623	76	Gravel roads HSG A
	15,602	36	Woods, Fair HSG A
*	21,694	49	Open Space-Fair (50% to 75% grass) HSG A
*	1,173	79	Open Space-Fair (50% to 75% grass) HSG C
	39,092	45	Weighted Average
	39,092		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	112	0.1834	0.57		**Lag/CN Method,**
3.3	112	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 301S: 301S



Summary for Subcatchment 302S: 302S

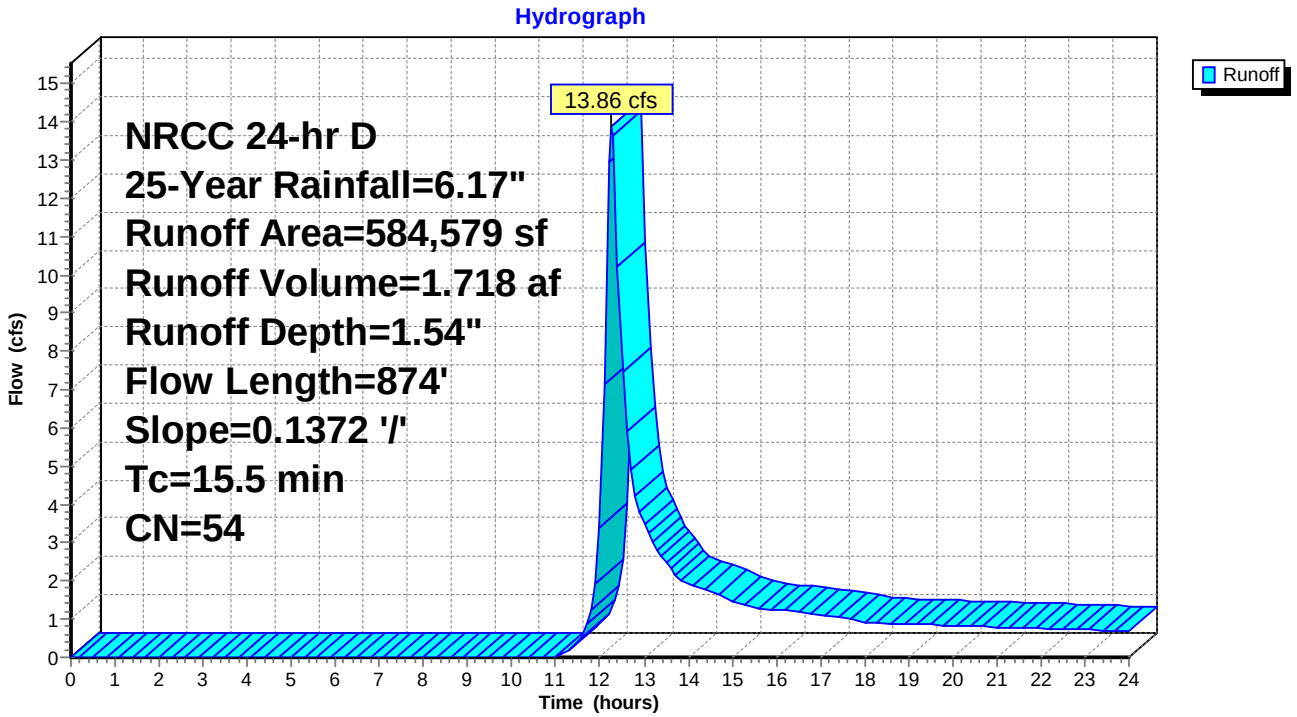
Runoff = 13.86 cfs @ 12.27 hrs, Volume= 1.718 af, Depth= 1.54"
Routed to Reach DP-3 : WWTP Perimeter Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-26.00 hrs, dt= 0.10 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	46,382	73	Woods, Fair HSG C
	142,481	89	Gravel roads HSG C
	877	98	Unconnected pavement HSG A
	12,733	76	Gravel roads HSG A
	317,276	36	Woods, Fair HSG A
*	63,766	49	Open Space-Fair (50% to 75% grass) HSG A
*	1,065	79	Open Space-Fair (50% to 75% grass) HSG C
	584,579	54	Weighted Average
	583,702		99.85% Pervious Area
	877		0.15% Impervious Area
	877		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	874	0.1372	0.94		**Lag/CN Method,**

Subcatchment 302S: 302S



Summary for Subcatchment 401S: 401S

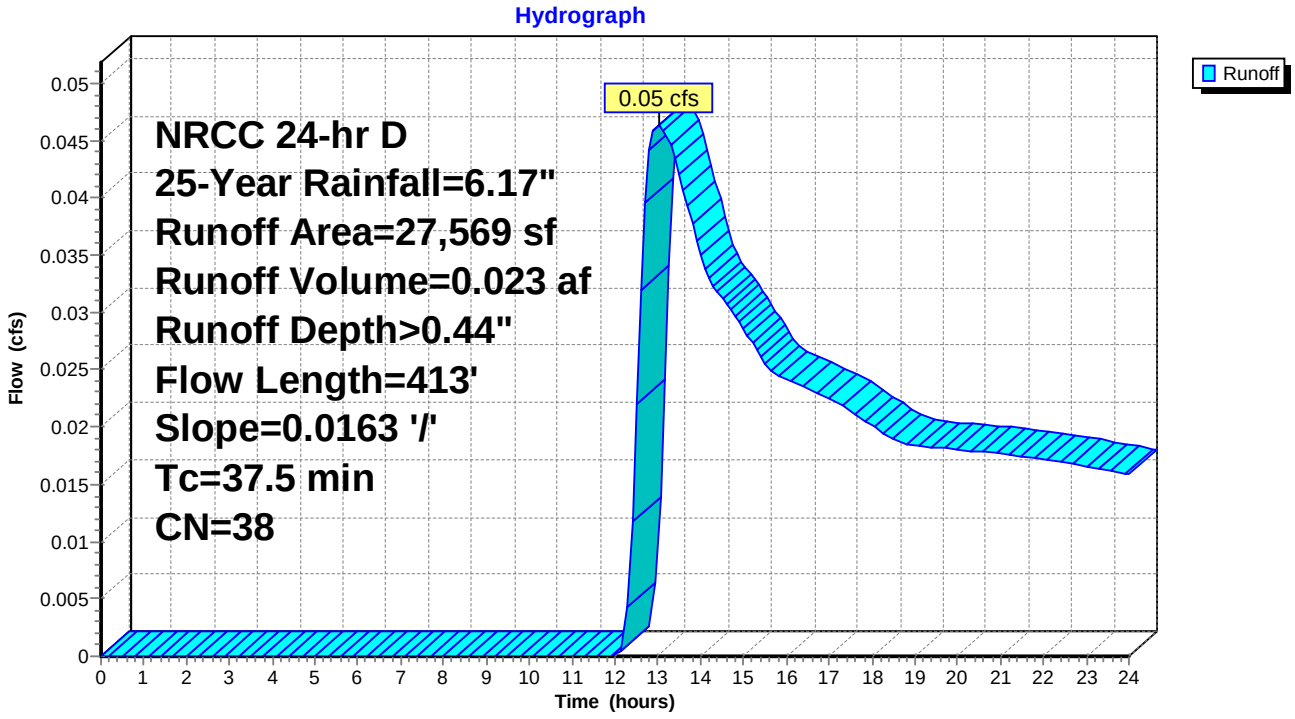
Runoff = 0.05 cfs @ 13.02 hrs, Volume= 0.023 af, Depth> 0.44"
Routed to Reach DP-4 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-26.00 hrs, dt= 0.10 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	25,666	36	Woods, Fair HSG A
	352	98	Unconnected pavement HSG A
	1,064	60	Woods, Fair HSG B
*	487	49	Open Space-Fair (50% to 75% grass) HSG A
	27,569	38	Weighted Average
	27,217		98.72% Pervious Area
	352		1.28% Impervious Area
	352		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.5	413	0.0163	0.18		**Lag/CN Method,**

Subcatchment 401S: 401S



Summary for Subcatchment 402S: 402S

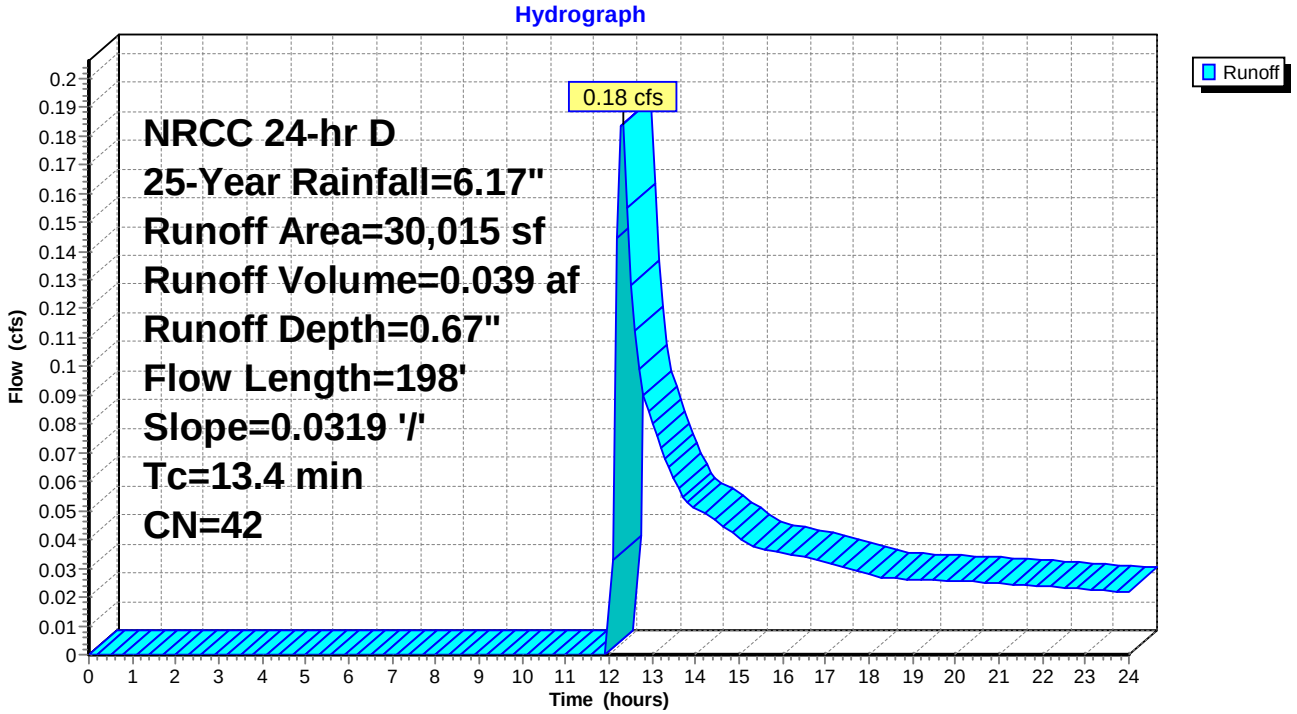
Runoff = 0.18 cfs @ 12.31 hrs, Volume= 0.039 af, Depth= 0.67"
Routed to Reach DP-4 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-26.00 hrs, dt= 0.10 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	2,623	60	Woods, Fair HSG B
	18,509	36	Woods, Fair HSG A
*	8,884	49	Open Space-Fair (50% to 75% grass) HSG A
	30,015	42	Weighted Average
	30,015		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	198	0.0319	0.25		**Lag/CN Method,**

Subcatchment 402S: 402S



Summary for Subcatchment 403S: 403S

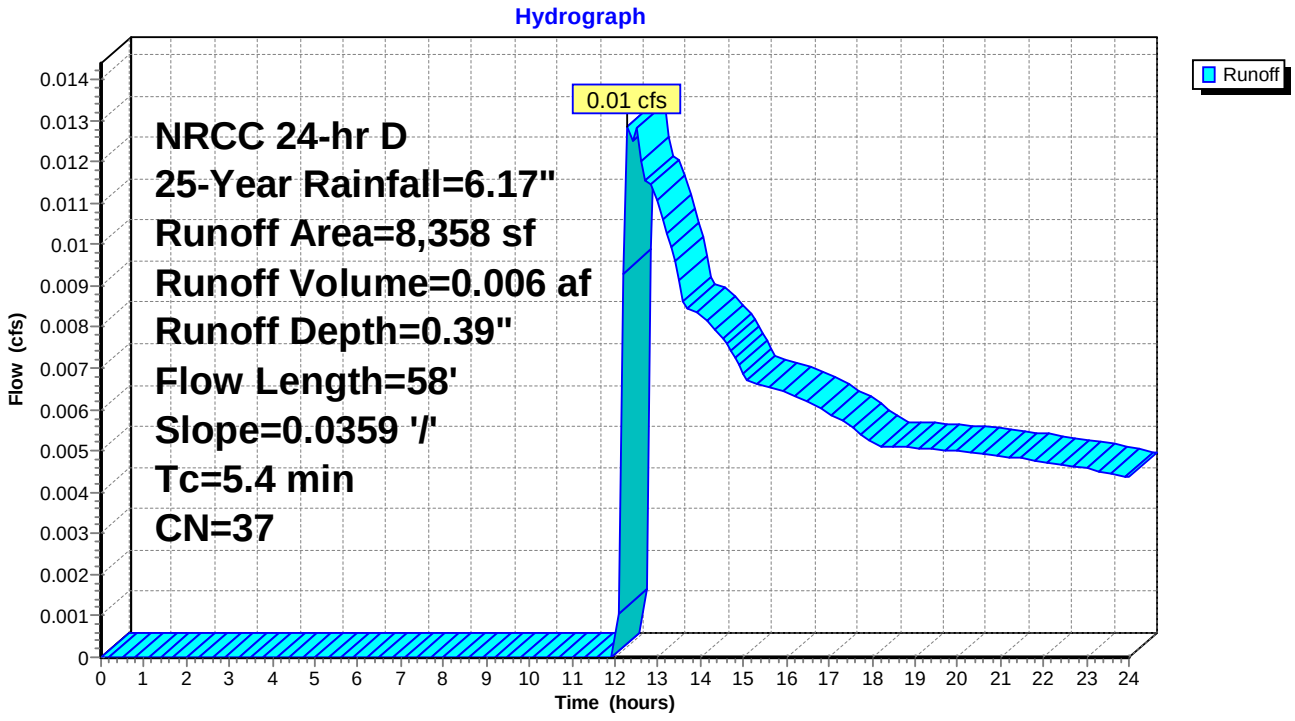
Runoff = 0.01 cfs @ 12.30 hrs, Volume= 0.006 af, Depth= 0.39"
Routed to Reach DP-4 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-26.00 hrs, dt= 0.10 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
8,169	36	Woods, Fair HSG A
190	60	Woods, Fair HSG B
8,358	37	Weighted Average
8,358		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	58	0.0359	0.18		**Lag/CN Method,**

Subcatchment 403S: 403S



Summary for Subcatchment 404S: 404S

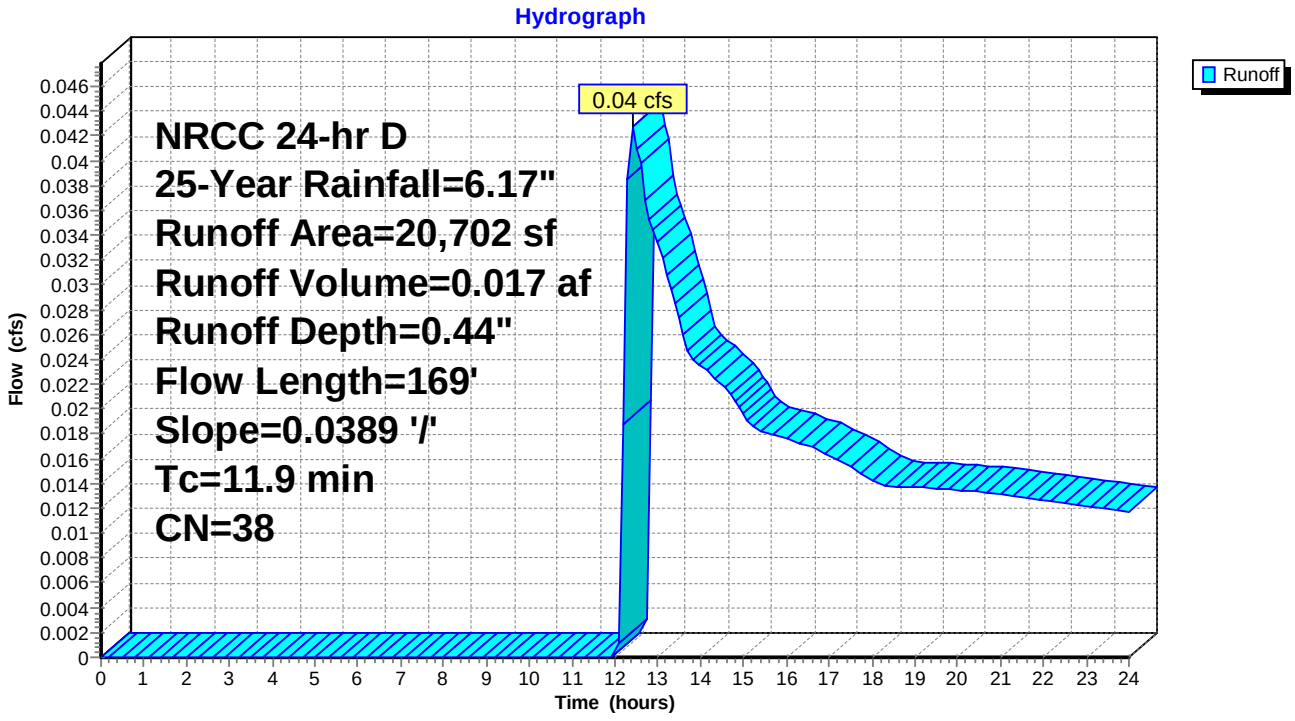
Runoff = 0.04 cfs @ 12.42 hrs, Volume= 0.017 af, Depth= 0.44"
Routed to Reach DP-4 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-26.00 hrs, dt= 0.10 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
*	19,163	36	Woods, Fair HSG A
*	1,539	60	Woods, Fair HSG B
	20,702	38	Weighted Average
	20,702		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	169	0.0389	0.24		**Lag/CN Method,**

Subcatchment 404S: 404S



Summary for Subcatchment 405S: 405S

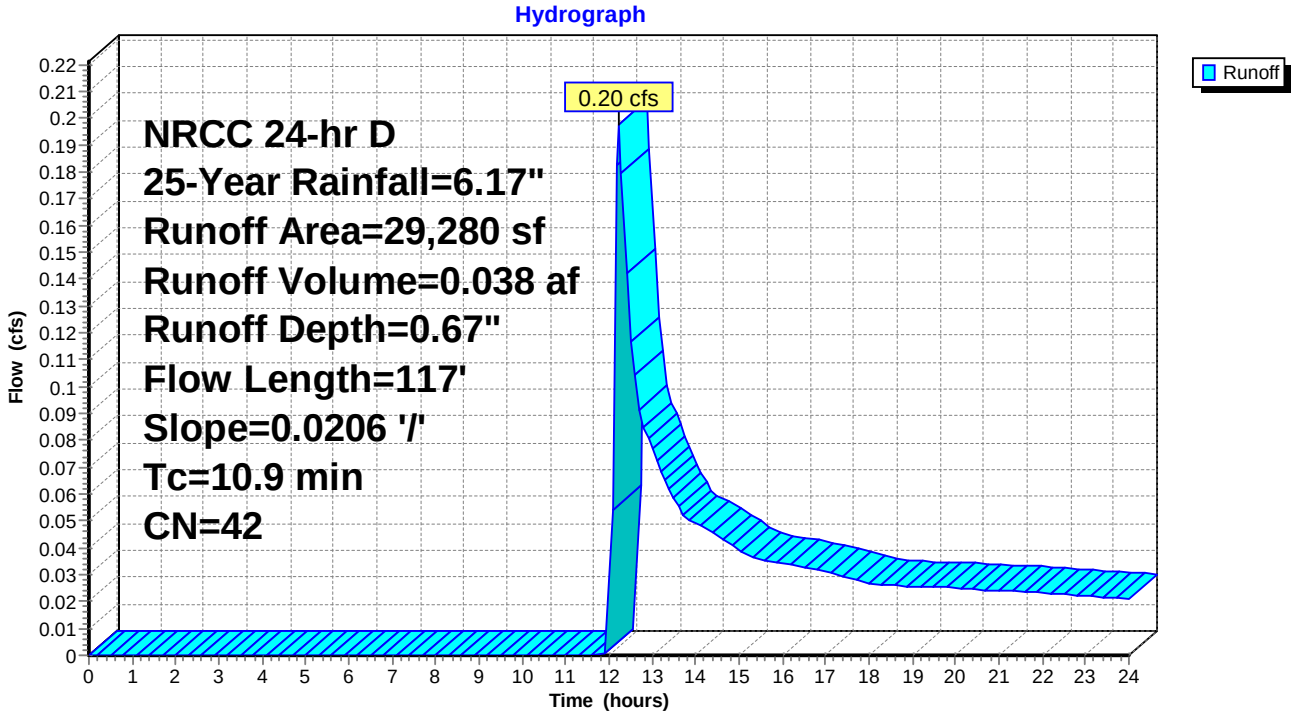
Runoff = 0.20 cfs @ 12.25 hrs, Volume= 0.038 af, Depth= 0.67"
Routed to Reach DP-4 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-26.00 hrs, dt= 0.10 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
*	22,102	36	Woods, Fair HSG A
*	7,178	60	Woods, Fair HSG B
	29,280	42	Weighted Average
	29,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	117	0.0206	0.18		**Lag/CN Method,**

Subcatchment 405S: 405S

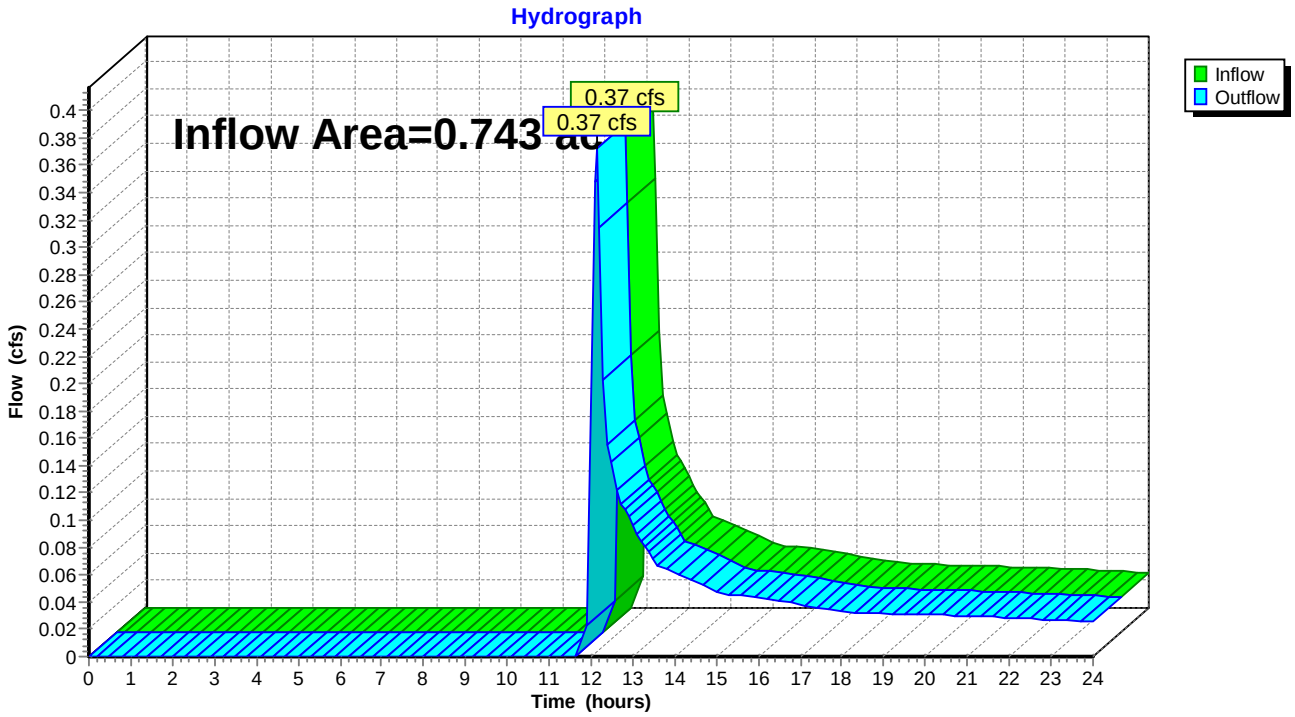


Summary for Reach DP-1: Wetland

Inflow Area = 0.743 ac, 13.08% Impervious, Inflow Depth = 0.80" for 25-Year event
Inflow = 0.37 cfs @ 12.14 hrs, Volume= 0.050 af
Outflow = 0.37 cfs @ 12.14 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.10 hrs / 3

Reach DP-1: Wetland

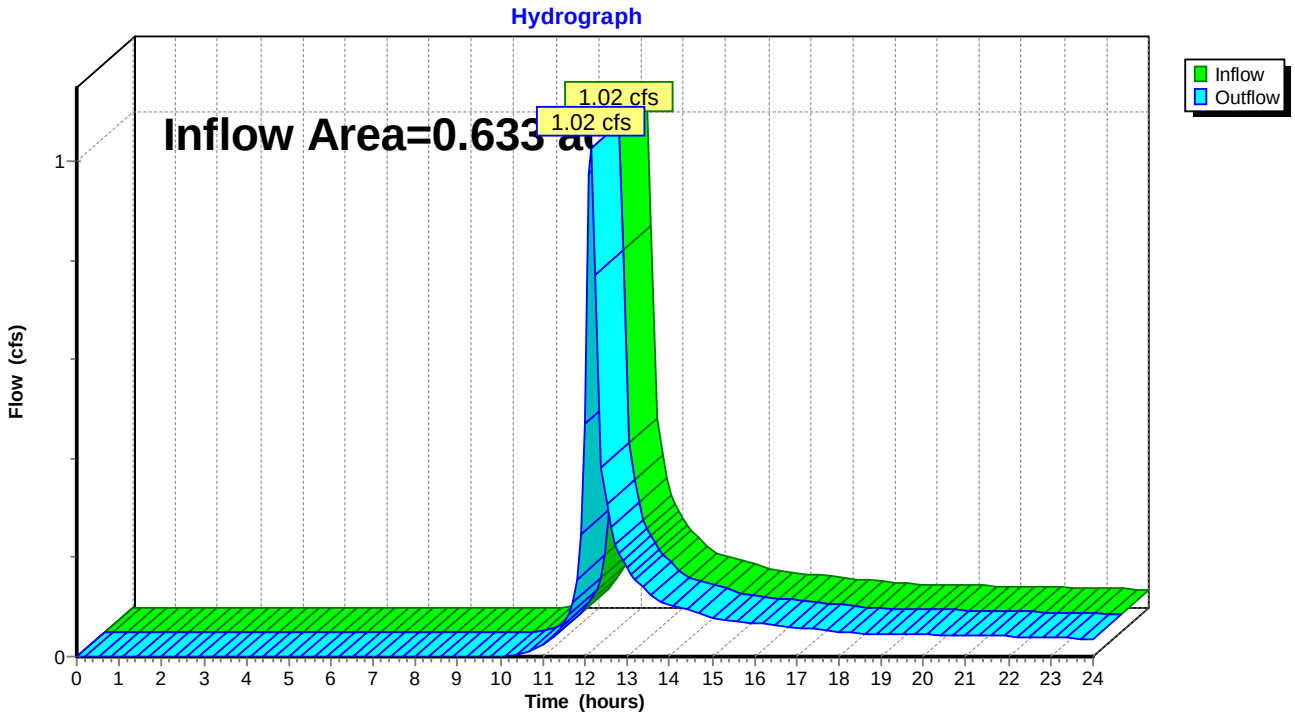


Summary for Reach DP-2: Police/DPW Facility

Inflow Area = 0.633 ac, 1.88% Impervious, Inflow Depth = 1.93" for 25-Year event
Inflow = 1.02 cfs @ 12.15 hrs, Volume= 0.102 af
Outflow = 1.02 cfs @ 12.15 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.10 hrs / 3

Reach DP-2: Police/DPW Facility

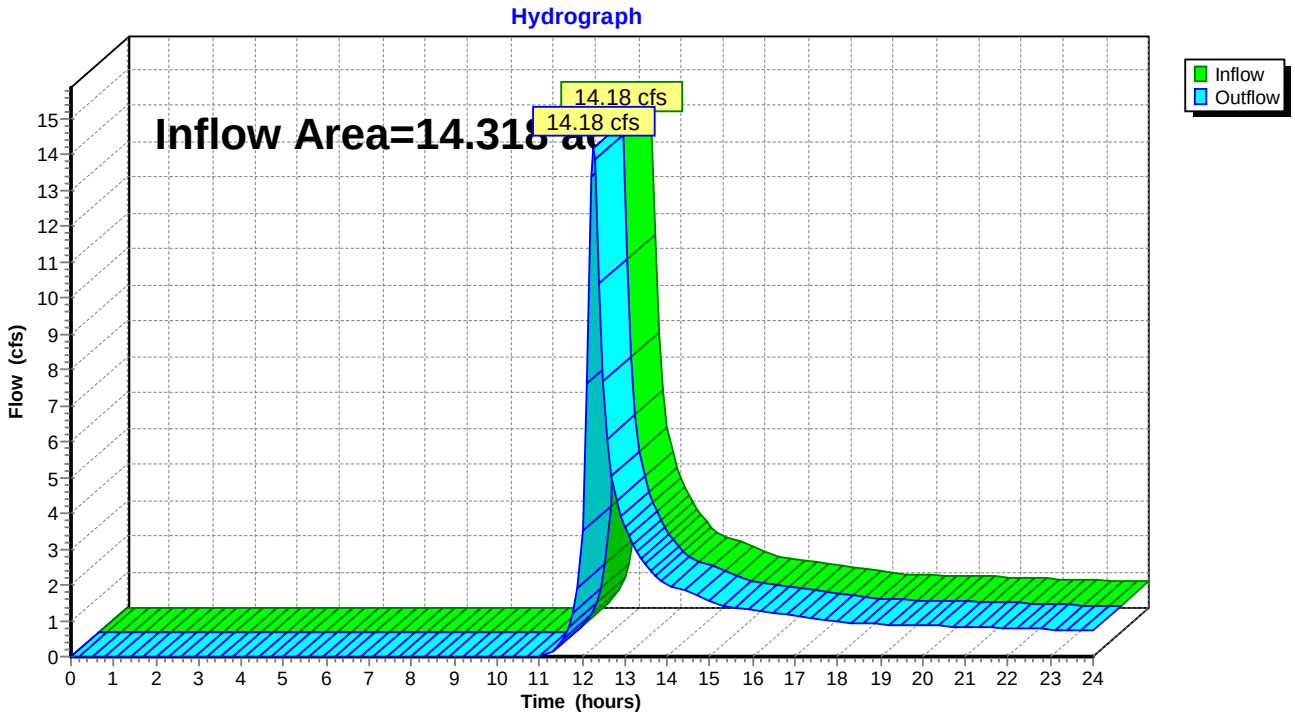


Summary for Reach DP-3: WWTP Perimeter Swale

Inflow Area = 14.318 ac, 0.14% Impervious, Inflow Depth = 1.49" for 25-Year event
Inflow = 14.18 cfs @ 12.26 hrs, Volume= 1.783 af
Outflow = 14.18 cfs @ 12.26 hrs, Volume= 1.783 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.10 hrs / 3

Reach DP-3: WWTP Perimeter Swale

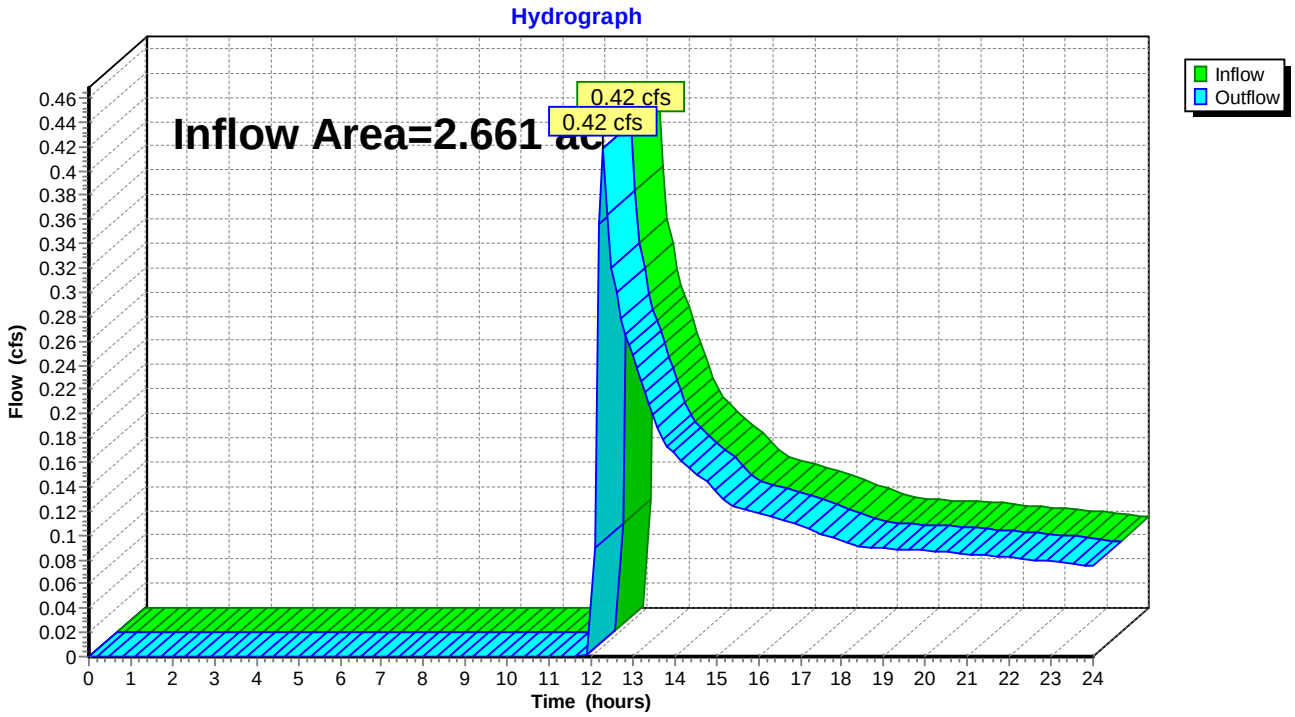


Summary for Reach DP-4: Wetland

Inflow Area = 2.661 ac, 0.30% Impervious, Inflow Depth = 0.56" for 25-Year event
Inflow = 0.42 cfs @ 12.30 hrs, Volume= 0.123 af
Outflow = 0.42 cfs @ 12.30 hrs, Volume= 0.123 af, Atten= 0%, Lag= 0.0 min

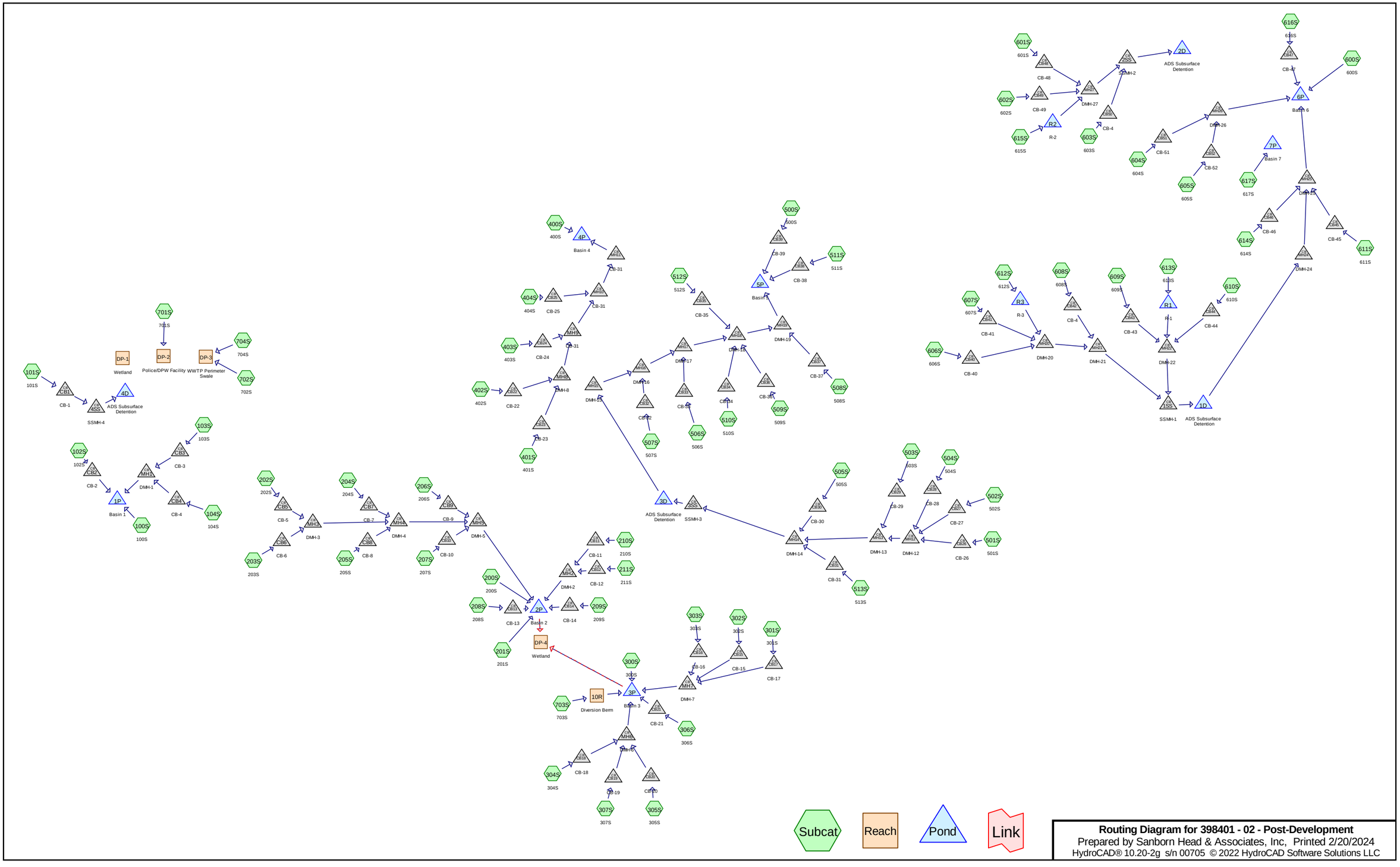
Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.10 hrs / 3

Reach DP-4: Wetland



Post-Development
Stormwater Model

SANBORN HEAD



Routing Diagram for 398401 - 02 - Post-Development
Prepared by Sanborn Head & Associates, Inc, Printed 2/20/2024
HydroCAD® 10.20-2g s/n 00705 © 2022 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.207	49	50-75% Grass cover, Fair HSG A (100S, 200S, 300S, 301S, 302S, 303S, 306S, 401S, 402S, 403S, 404S, 500S, 501S, 502S, 503S, 504S, 505S, 506S, 507S, 508S, 509S, 510S, 511S, 512S, 513S, 606S, 607S, 611S, 617S, 702S)
0.071	69	50-75% Grass cover, Fair HSG B (200S, 201S, 300S, 401S, 513S)
0.520	79	50-75% Grass cover, Fair HSG C (500S, 511S, 512S, 601S, 602S, 614S, 615S, 616S, 617S)
0.255	39	>75% Grass cover, Good, HSG A (600S)
0.077	76	Gravel roads HSG A (201S, 202S, 203S, 204S, 205S)
0.000	85	Gravel roads HSG B (204S)
0.124	89	Gravel roads HSG C (601S, 602S, 704S)
3.132	49	Open Space-Fair (50% to 75% grass) HSG A (100S, 101S, 103S, 201S, 300S, 301S, 306S, 400S, 404S, 510S, 701S, 702S, 704S)
0.043	79	Open Space-Fair (50% to 75% grass) HSG C (704S)
0.054	98	Roofs HSG A (100S, 103S, 612S, 701S, 702S)
1.137	98	Roofs HSG C (500S, 603S, 613S, 615S)
4.912	98	Unconnected pavement HSG A (100S, 101S, 102S, 103S, 104S, 200S, 202S, 203S, 204S, 205S, 208S, 209S, 210S, 211S, 300S, 301S, 302S, 303S, 304S, 305S, 306S, 307S, 401S, 402S, 403S, 404S, 500S, 501S, 502S, 503S, 504S, 505S, 506S, 507S, 508S, 509S, 510S, 511S, 512S, 513S, 606S, 607S, 608S, 609S, 610S, 611S, 613S, 616S, 702S, 703S)
0.303	98	Unconnected pavement HSG B (204S, 205S, 206S, 207S, 208S, 209S, 303S, 304S, 307S, 401S, 513S, 703S)
1.758	98	Unconnected pavement HSG C (500S, 511S, 512S, 601S, 602S, 603S, 604S, 605S, 607S, 608S, 609S, 610S, 611S, 613S, 614S, 615S, 616S, 617S)
4.395	36	Woods, Fair HSG A (100S, 101S, 102S, 104S, 200S, 201S, 300S, 404S, 611S, 616S, 701S, 702S, 703S, 704S)
0.365	60	Woods, Fair HSG B (200S, 201S, 204S, 206S, 300S, 701S, 703S)
18.355	**69**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
14.032	HSG A	100S, 101S, 102S, 103S, 104S, 200S, 201S, 202S, 203S, 204S, 205S, 208S, 209S, 210S, 211S, 300S, 301S, 302S, 303S, 304S, 305S, 306S, 307S, 400S, 401S, 402S, 403S, 404S, 500S, 501S, 502S, 503S, 504S, 505S, 506S, 507S, 508S, 509S, 510S, 511S, 512S, 513S, 600S, 606S, 607S, 608S, 609S, 610S, 611S, 612S, 613S, 616S, 617S, 701S, 702S, 703S, 704S
0.739	HSG B	200S, 201S, 204S, 205S, 206S, 207S, 208S, 209S, 300S, 303S, 304S, 307S, 401S, 513S, 701S, 703S
3.583	HSG C	500S, 511S, 512S, 601S, 602S, 603S, 604S, 605S, 607S, 608S, 609S, 610S, 611S, 613S, 614S, 615S, 616S, 617S, 704S
0.000	HSG D	
0.000	Other	
18.355		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	1D	210.41	210.01	80.0	0.0050	0.013	0.0	18.0	0.0
2	1SS	208.76	208.75	5.0	0.0020	0.013	0.0	24.0	0.0
3	2P	208.50	208.00	55.0	0.0091	0.013	0.0	6.0	0.0
4	2SS	200.50	200.50	5.0	0.0000	0.013	0.0	24.0	0.0
5	3D	209.20	209.00	40.0	0.0050	0.013	0.0	12.0	0.0
6	3P	207.35	207.00	70.0	0.0050	0.013	0.0	6.0	0.0
7	3SS	208.89	207.25	5.0	0.3280	0.013	0.0	24.0	0.0
8	4SS	206.83	206.00	5.0	0.1660	0.013	0.0	24.0	0.0
9	CB1	207.33	206.93	80.0	0.0050	0.013	0.0	8.0	0.0
10	CB10	207.60	207.50	10.0	0.0100	0.013	0.0	12.0	0.0
11	CB11	208.70	208.53	34.7	0.0049	0.013	0.0	12.0	0.0
12	CB12	207.50	207.45	10.0	0.0050	0.013	0.0	12.0	0.0
13	CB13	207.10	206.92	35.0	0.0051	0.013	0.0	12.0	0.0
14	CB14	207.00	206.90	20.0	0.0050	0.013	0.0	12.0	0.0
15	CB15	211.20	210.38	165.0	0.0050	0.013	0.0	12.0	0.0
16	CB16	211.50	210.25	250.0	0.0050	0.013	0.0	12.0	0.0
17	CB17	211.00	210.61	78.0	0.0050	0.013	0.0	12.0	0.0
18	CB18	211.00	206.40	100.0	0.0460	0.013	0.0	12.0	0.0
19	CB19	206.50	206.40	10.0	0.0100	0.013	0.0	12.0	0.0
20	CB2	211.10	210.98	21.1	0.0057	0.013	0.0	12.0	0.0
21	CB20	211.00	206.40	46.0	0.1000	0.013	0.0	12.0	0.0
22	CB21	209.20	209.13	15.0	0.0047	0.013	0.0	12.0	0.0
23	CB22	209.00	208.72	55.0	0.0051	0.013	0.0	12.0	0.0
24	CB23	209.00	208.80	40.0	0.0050	0.013	0.0	12.0	0.0
25	CB24	211.00	210.86	28.0	0.0050	0.013	0.0	12.0	0.0
26	CB25	209.40	209.30	20.0	0.0050	0.013	0.0	12.0	0.0
27	CB26	211.00	210.41	118.0	0.0050	0.013	0.0	12.0	0.0
28	CB27	211.50	211.41	18.0	0.0050	0.013	0.0	12.0	0.0
29	CB28	211.00	210.78	45.0	0.0049	0.013	0.0	12.0	0.0
30	CB29	211.90	211.80	20.0	0.0050	0.013	0.0	12.0	0.0
31	CB3	214.00	213.85	10.0	0.0150	0.013	0.0	12.0	0.0
32	CB30	212.00	211.70	36.0	0.0083	0.013	0.0	12.0	0.0
33	CB31	211.00	210.82	35.0	0.0051	0.013	0.0	12.0	0.0
34	CB32	211.70	211.00	27.0	0.0259	0.013	0.0	12.0	0.0
35	CB33	212.00	209.70	104.0	0.0221	0.013	0.0	12.0	0.0
36	CB34	208.20	206.60	40.0	0.0400	0.013	0.0	12.0	0.0
37	CB35	209.40	206.60	157.0	0.0178	0.013	0.0	12.0	0.0
38	CB36	211.00	206.60	78.0	0.0564	0.013	0.0	12.0	0.0
39	CB37	212.00	204.80	56.0	0.1286	0.013	0.0	12.0	0.0
40	CB38	203.00	202.95	10.0	0.0050	0.013	0.0	12.0	0.0
41	CB39	203.00	202.95	10.0	0.0050	0.013	0.0	12.0	0.0
42	CB4	214.00	213.85	10.0	0.0150	0.013	0.0	12.0	0.0

Pipe Listing (all nodes) (continued)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
43	CB40	212.90	212.21	139.0	0.0050	0.013	0.0	12.0	0.0
44	CB41	212.60	211.30	42.0	0.0310	0.013	0.0	12.0	0.0
45	CB42	212.60	211.52	16.0	0.0675	0.013	0.0	12.0	0.0
46	CB43	212.60	212.55	10.0	0.0050	0.013	0.0	12.0	0.0
47	CB44	212.60	212.10	100.0	0.0050	0.013	0.0	12.0	0.0
48	CB45	205.70	204.60	25.0	0.0440	0.013	0.0	12.0	0.0
49	CB46	210.90	204.60	51.0	0.1235	0.013	0.0	12.0	0.0
50	CB47	202.00	201.88	25.0	0.0048	0.013	0.0	24.0	0.0
51	CB48	203.00	202.46	108.0	0.0050	0.013	0.0	12.0	0.0
52	CB49	203.00	202.83	34.0	0.0050	0.013	0.0	12.0	0.0
53	CB5	214.50	214.45	9.6	0.0052	0.013	0.0	12.0	0.0
54	CB50	201.75	201.63	25.0	0.0048	0.013	0.0	15.0	0.0
55	CB51	202.50	201.88	125.0	0.0050	0.013	0.0	12.0	0.0
56	CB52	203.00	202.86	28.0	0.0050	0.013	0.0	12.0	0.0
57	CB6	214.60	214.50	10.0	0.0100	0.013	0.0	12.0	0.0
58	CB7	210.60	210.50	10.0	0.0100	0.013	0.0	12.0	0.0
59	CB8	210.60	210.50	10.0	0.0100	0.013	0.0	12.0	0.0
60	CB9	207.60	207.50	10.0	0.0100	0.013	0.0	12.0	0.0
61	MH1	213.60	213.44	32.0	0.0050	0.013	0.0	15.0	0.0
62	MH10	206.81	206.47	69.0	0.0049	0.013	0.0	18.0	0.0
63	MH11	206.37	205.87	100.0	0.0050	0.013	0.0	18.0	0.0
64	MH12	210.31	209.81	100.0	0.0050	0.013	0.0	18.0	0.0
65	MH13	209.71	209.25	91.0	0.0051	0.013	0.0	18.0	0.0
66	MH14	209.07	208.89	35.0	0.0051	0.013	0.0	24.0	0.0
67	MH15	208.90	207.97	185.0	0.0050	0.013	0.0	12.0	0.0
68	MH16	207.87	207.40	95.0	0.0049	0.013	0.0	18.0	0.0
69	MH17	207.40	206.10	126.0	0.0103	0.013	0.0	18.0	0.0
70	MH18	206.00	203.80	46.0	0.0478	0.013	0.0	24.0	0.0
71	MH19	203.70	203.30	80.0	0.0050	0.013	0.0	30.0	0.0
72	MH2	207.35	207.29	12.8	0.0047	0.013	0.0	12.0	0.0
73	MH20	211.20	210.84	73.0	0.0049	0.013	0.0	18.0	0.0
74	MH21	210.74	210.31	85.0	0.0051	0.013	0.0	18.0	0.0
75	MH22	212.00	211.95	10.0	0.0050	0.013	0.0	18.0	0.0
76	MH24	209.88	204.10	156.0	0.0371	0.013	0.0	18.0	0.0
77	MH25	204.00	203.90	20.0	0.0050	0.013	0.0	18.0	0.0
78	MH26	201.78	201.38	80.0	0.0050	0.013	0.0	18.0	0.0
79	MH27	201.36	200.93	86.0	0.0050	0.013	0.0	18.0	0.0
80	MH3	214.00	212.03	395.0	0.0050	0.013	0.0	18.0	0.0
81	MH4	210.00	209.01	198.0	0.0050	0.013	0.0	18.0	0.0
82	MH5	207.00	206.83	34.3	0.0050	0.013	0.0	18.0	0.0
83	MH6	206.35	206.30	10.0	0.0050	0.013	0.0	12.0	0.0
84	MH7	210.05	207.50	75.0	0.0340	0.013	0.0	18.0	0.0

Pipe Listing (all nodes) (continued)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
85	MH8	208.62	207.96	133.0	0.0050	0.013	0.0	18.0	0.0
86	MH9	207.86	206.91	190.0	0.0050	0.013	0.0	18.0	0.0
87	R1	214.00	213.20	111.0	0.0072	0.013	0.0	6.0	0.0
88	R2	204.00	203.53	93.0	0.0051	0.012	0.0	6.0	0.0
89	R3	214.00	212.30	91.0	0.0187	0.013	0.0	6.0	0.0

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 100S: 100S Runoff Area=16,048 sf 1.48% Impervious Runoff Depth>0.05"
Flow Length=271' Slope=0.2676 '/' Tc=5.5 min CN=45 Runoff=0.00 cfs 0.002 af

Subcatchment 101S: 101S Runoff Area=4,604 sf 99.20% Impervious Runoff Depth>3.05"
Flow Length=250' Slope=0.0454 '/' Tc=5.0 min CN=98 Runoff=0.32 cfs 0.027 af

Subcatchment 102S: 102S Runoff Area=4,972 sf 99.97% Impervious Runoff Depth>3.05"
Flow Length=191' Slope=0.0647 '/' Tc=5.0 min CN=98 Runoff=0.35 cfs 0.029 af

Subcatchment 103S: 103S Runoff Area=2,524 sf 99.84% Impervious Runoff Depth>3.05"
Flow Length=190' Slope=0.0262 '/' Tc=5.0 min CN=98 Runoff=0.18 cfs 0.015 af

Subcatchment 104S: 104S Runoff Area=2,369 sf 99.85% Impervious Runoff Depth>3.05"
Flow Length=193' Slope=0.0531 '/' Tc=5.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment 200S: 200S Runoff Area=5,107 sf 0.04% Impervious Runoff Depth>0.31"
Flow Length=86' Slope=0.3119 '/' Tc=5.0 min CN=56 Runoff=0.02 cfs 0.003 af

Subcatchment 201S: 201S Runoff Area=13,023 sf 0.00% Impervious Runoff Depth>0.31"
Flow Length=580' Slope=0.1372 '/' Tc=10.6 min CN=56 Runoff=0.03 cfs 0.008 af

Subcatchment 202S: 202S Runoff Area=3,513 sf 65.30% Impervious Runoff Depth>2.25"
Flow Length=188' Slope=0.0633 '/' Tc=5.0 min CN=90 Runoff=0.21 cfs 0.015 af

Subcatchment 203S: 203S Runoff Area=2,381 sf 88.01% Impervious Runoff Depth>2.73"
Flow Length=195' Slope=0.0357 '/' Tc=5.0 min CN=95 Runoff=0.16 cfs 0.012 af

Subcatchment 204S: 204S Runoff Area=3,342 sf 71.56% Impervious Runoff Depth>2.34"
Flow Length=199' Slope=0.0581 '/' Tc=5.0 min CN=91 Runoff=0.20 cfs 0.015 af

Subcatchment 205S: 205S Runoff Area=2,387 sf 70.63% Impervious Runoff Depth>2.43"
Flow Length=198' Slope=0.0233 '/' Tc=5.0 min CN=92 Runoff=0.15 cfs 0.011 af

Subcatchment 206S: 206S Runoff Area=2,446 sf 98.11% Impervious Runoff Depth>2.94"
Flow Length=198' Slope=0.0272 '/' Tc=5.0 min CN=97 Runoff=0.17 cfs 0.014 af

Subcatchment 207S: 207S Runoff Area=2,467 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=198' Slope=0.0178 '/' Tc=5.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment 208S: 208S Runoff Area=2,368 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=75' Slope=0.0259 '/' Tc=5.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment 209S: 209S Runoff Area=2,142 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=66' Slope=0.0272 '/' Tc=5.0 min CN=98 Runoff=0.15 cfs 0.013 af

Subcatchment 210S: 210S Runoff Area=3,634 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=182' Slope=0.0066 '/' Tc=5.0 min CN=98 Runoff=0.26 cfs 0.021 af

Subcatchment 211S: 211S Runoff Area=3,726 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=192' Slope=0.0364 '/' Tc=5.0 min CN=98 Runoff=0.26 cfs 0.022 af

Subcatchment 300S: 300S Runoff Area=5,728 sf 1.00% Impervious Runoff Depth>0.10"
Flow Length=60' Slope=0.3181 '/' Tc=5.0 min CN=48 Runoff=0.00 cfs 0.001 af

Subcatchment 301S: 301S Runoff Area=7,393 sf 25.16% Impervious Runoff Depth>0.28"
Flow Length=90' Slope=0.0369 '/' Tc=5.0 min UI Adjusted CN=55 Runoff=0.02 cfs 0.004 af

Subcatchment 302S: 302S Runoff Area=4,293 sf 91.05% Impervious Runoff Depth>2.63"
Flow Length=102' Slope=0.0024 '/' Tc=6.1 min CN=94 Runoff=0.27 cfs 0.022 af

Subcatchment 303S: 303S Runoff Area=4,892 sf 90.09% Impervious Runoff Depth>2.53"
Flow Length=116' Slope=0.0087 '/' Tc=5.0 min CN=93 Runoff=0.31 cfs 0.024 af

Subcatchment 304S: 304S Runoff Area=2,534 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=81' Slope=0.0080 '/' Tc=5.0 min CN=98 Runoff=0.18 cfs 0.015 af

Subcatchment 305S: 305S Runoff Area=9,974 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=127' Slope=0.0042 '/' Tc=5.0 min CN=98 Runoff=0.70 cfs 0.058 af

Subcatchment 306S: 306S Runoff Area=5,568 sf 93.75% Impervious Runoff Depth>2.73"
Flow Length=129' Slope=0.0516 '/' Tc=5.0 min CN=95 Runoff=0.37 cfs 0.029 af

Subcatchment 307S: 307S Runoff Area=4,466 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=97' Slope=0.1504 '/' Tc=5.0 min CN=98 Runoff=0.31 cfs 0.026 af

Subcatchment 400S: 400S Runoff Area=12,752 sf 0.00% Impervious Runoff Depth>0.13"
Flow Length=118' Slope=0.5000 '/' Tc=5.0 min CN=49 Runoff=0.00 cfs 0.003 af

Subcatchment 401S: 401S Runoff Area=9,676 sf 91.33% Impervious Runoff Depth>2.63"
Flow Length=277' Slope=0.0262 '/' Tc=5.0 min CN=94 Runoff=0.63 cfs 0.049 af

Subcatchment 402S: 402S Runoff Area=5,699 sf 98.17% Impervious Runoff Depth>2.94"
Flow Length=189' Slope=0.0230 '/' Tc=5.0 min CN=97 Runoff=0.40 cfs 0.032 af

Subcatchment 403S: 403S Runoff Area=3,356 sf 57.17% Impervious Runoff Depth>1.27"
Flow Length=93' Slope=0.0420 '/' Tc=5.0 min CN=77 Runoff=0.11 cfs 0.008 af

Subcatchment 404S: 404S Runoff Area=10,254 sf 63.96% Impervious Runoff Depth>1.47"
Flow Length=193' Slope=0.0236 '/' Tc=5.5 min CN=80 Runoff=0.40 cfs 0.029 af

Subcatchment 500S: 500S Runoff Area=23,945 sf 25.10% Impervious Runoff Depth>1.04"
Flow Length=119' Slope=0.1593 '/' Tc=5.0 min UI Adjusted CN=73 Runoff=0.65 cfs 0.048 af

Subcatchment 501S: 501S Runoff Area=5,785 sf 85.28% Impervious Runoff Depth>2.34"
Flow Length=69' Slope=0.0081 '/' Tc=5.0 min CN=91 Runoff=0.35 cfs 0.026 af

Subcatchment 502S: 502S Runoff Area=5,884 sf 84.95% Impervious Runoff Depth>2.34"
Flow Length=162' Slope=0.0053 '/' Tc=6.9 min CN=91 Runoff=0.33 cfs 0.026 af

Subcatchment 503S: 503S Runoff Area=5,683 sf 81.04% Impervious Runoff Depth>2.16"
Flow Length=122' Slope=0.0101 '/' Tc=5.0 min CN=89 Runoff=0.32 cfs 0.023 af

Subcatchment 504S: 504S Runoff Area=3,171 sf 85.31% Impervious Runoff Depth>2.34"
Flow Length=140' Slope=0.0105 '/' Tc=5.0 min CN=91 Runoff=0.19 cfs 0.014 af

Subcatchment 505S: 505S Runoff Area=7,640 sf 89.34% Impervious Runoff Depth>2.53"
Flow Length=189' Slope=0.0052 '/' Tc=7.2 min CN=93 Runoff=0.45 cfs 0.037 af

Subcatchment 506S: 506S Runoff Area=7,342 sf 77.95% Impervious Runoff Depth>1.99"
Flow Length=237' Slope=0.0122 '/' Tc=7.2 min CN=87 Runoff=0.36 cfs 0.028 af

Subcatchment 507S: 507S Runoff Area=10,148 sf 58.61% Impervious Runoff Depth>1.33"
Flow Length=138' Slope=0.0031 '/' Tc=12.4 min CN=78 Runoff=0.27 cfs 0.026 af

Subcatchment 508S: 508S Runoff Area=4,639 sf 96.02% Impervious Runoff Depth>2.83"
Flow Length=47' Slope=0.0332 '/' Tc=5.0 min CN=96 Runoff=0.32 cfs 0.025 af

Subcatchment 509S: 509S Runoff Area=7,021 sf 81.27% Impervious Runoff Depth>2.16"
Flow Length=81' Slope=0.0254 '/' Tc=5.0 min CN=89 Runoff=0.40 cfs 0.029 af

Subcatchment 510S: 510S Runoff Area=7,367 sf 54.04% Impervious Runoff Depth>1.15"
Flow Length=181' Slope=0.0487 '/' Tc=5.0 min CN=75 Runoff=0.22 cfs 0.016 af

Subcatchment 511S: 511S Runoff Area=11,919 sf 66.76% Impervious Runoff Depth>1.61"
Flow Length=165' Slope=0.1792 '/' Tc=5.0 min CN=82 Runoff=0.51 cfs 0.037 af

Subcatchment 512S: 512S Runoff Area=4,847 sf 99.72% Impervious Runoff Depth>3.05"
Flow Length=135' Slope=0.0492 '/' Tc=5.0 min CN=98 Runoff=0.34 cfs 0.028 af

Subcatchment 513S: 513S Runoff Area=3,621 sf 93.15% Impervious Runoff Depth>2.73"
Flow Length=120' Slope=0.0111 '/' Tc=5.0 min CN=95 Runoff=0.24 cfs 0.019 af

Subcatchment 600S: 600S Runoff Area=11,097 sf 0.00% Impervious Runoff Depth>0.00"
Flow Length=440' Slope=0.0020 '/' Tc=109.7 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment 601S: 601S Runoff Area=4,934 sf 99.24% Impervious Runoff Depth>3.05"
Flow Length=190' Slope=0.0460 '/' Tc=5.0 min CN=98 Runoff=0.35 cfs 0.029 af

Subcatchment 602S: 602S Runoff Area=14,445 sf 98.07% Impervious Runoff Depth>3.05"
Flow Length=89' Slope=0.1108 '/' Tc=5.0 min CN=98 Runoff=1.02 cfs 0.084 af

Subcatchment 603S: 603S Runoff Area=14,930 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=84' Slope=0.0144 '/' Tc=5.0 min CN=98 Runoff=1.05 cfs 0.087 af

Subcatchment 604S: 604S Runoff Area=14,934 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=71' Slope=0.0188 '/' Tc=5.0 min CN=98 Runoff=1.05 cfs 0.087 af

Subcatchment 605S: 605S Runoff Area=10,448 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=84' Slope=0.0102 '/' Tc=5.0 min CN=98 Runoff=0.74 cfs 0.061 af

Subcatchment 606S: 606S Runoff Area=4,304 sf 51.34% Impervious Runoff Depth>1.09"
Flow Length=87' Slope=0.0093 '/' Tc=5.6 min CN=74 Runoff=0.12 cfs 0.009 af

Subcatchment 607S: 607S Runoff Area=12,360 sf 96.48% Impervious Runoff Depth>2.83"
Flow Length=77' Slope=0.0196 '/' Tc=5.0 min CN=96 Runoff=0.85 cfs 0.067 af

Subcatchment 608S: 608S Runoff Area=16,074 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=76' Slope=0.0189 '/' Tc=5.0 min CN=98 Runoff=1.13 cfs 0.094 af

Subcatchment 609S: 609S Runoff Area=15,970 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=74' Slope=0.0190 '/' Tc=5.0 min CN=98 Runoff=1.13 cfs 0.093 af

Subcatchment 610S: 610S Runoff Area=9,740 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=84' Slope=0.0161 '/' Tc=5.0 min CN=98 Runoff=0.69 cfs 0.057 af

Subcatchment 611S: 611S Runoff Area=7,305 sf 99.80% Impervious Runoff Depth>2.85"
Tc=244.9 min CN=98 Runoff=0.08 cfs 0.040 af

Subcatchment 612S: 612S Runoff Area=1,999 sf 100.00% Impervious Runoff Depth>3.05"
Flow Length=45' Slope=0.0440 '/' Tc=5.0 min CN=98 Runoff=0.14 cfs 0.012 af

Subcatchment 613S: 613S Runoff Area=23,737 sf 100.00% Impervious Runoff Depth>3.02"
Flow Length=70' Slope=0.0000 '/' Tc=56.7 min CN=98 Runoff=0.61 cfs 0.137 af

Subcatchment 614S: 614S Runoff Area=5,458 sf 99.28% Impervious Runoff Depth>3.01"
Tc=68.9 min CN=98 Runoff=0.12 cfs 0.031 af

Subcatchment 615S: 615S Runoff Area=26,616 sf 99.90% Impervious Runoff Depth>3.01"
Flow Length=370' Slope=0.0001 '/' Tc=68.0 min CN=98 Runoff=0.61 cfs 0.153 af

Subcatchment 616S: 616S Runoff Area=8,937 sf 75.92% Impervious Runoff Depth>2.53"
Flow Length=195' Slope=0.0133 '/' Tc=5.0 min CN=93 Runoff=0.57 cfs 0.043 af

Subcatchment 617S: 617S Runoff Area=10,344 sf 0.07% Impervious Runoff Depth>0.98"
Flow Length=216' Slope=0.2648 '/' Tc=5.0 min CN=72 Runoff=0.26 cfs 0.019 af

Subcatchment 701S: 701S Runoff Area=21,147 sf 0.01% Impervious Runoff Depth>0.02"
Flow Length=153' Slope=0.0344 '/' Tc=10.5 min CN=42 Runoff=0.00 cfs 0.001 af

Subcatchment 702S: 702S Runoff Area=256,529 sf 0.50% Impervious Runoff Depth>0.01"
Flow Length=714' Slope=0.0674 '/' Tc=26.4 min CN=41 Runoff=0.01 cfs 0.005 af

Subcatchment 703S: 703S Runoff Area=6,055 sf 0.20% Impervious Runoff Depth>0.37"
Flow Length=11' Slope=0.3294 '/' Tc=5.0 min CN=58 Runoff=0.03 cfs 0.004 af

Subcatchment 704S: 704S Runoff Area=29,520 sf 0.00% Impervious Runoff Depth>0.31"
Flow Length=274' Slope=0.2098 '/' Tc=5.0 min CN=56 Runoff=0.10 cfs 0.017 af

Reach 10R: Diversion Berm Avg. Flow Depth=0.12' Max Vel=0.30 fps Inflow=0.03 cfs 0.004 af
n=0.030 L=580.0' S=0.0017 '/' Capacity=3.08 cfs Outflow=0.01 cfs 0.004 af

Reach DP-1: Wetland
Outflow=0.00 cfs 0.000 af

Reach DP-2: Police/DPW Facility Inflow=0.00 cfs 0.001 af
Outflow=0.00 cfs 0.001 af

Reach DP-3: WWTP Perimeter Swale Inflow=0.10 cfs 0.022 af
Outflow=0.10 cfs 0.022 af

Reach DP-4: Wetland Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 1D: ADS Subsurface Detention Peak Elev=209.57' Storage=7,904 cf Inflow=4.27 cfs 0.469 af
Discarded=0.30 cfs 0.406 af Primary=0.00 cfs 0.000 af Outflow=0.30 cfs 0.406 af

Pond 1P: Basin 1 Peak Elev=210.96' Storage=934 cf Inflow=0.70 cfs 0.059 af
Outflow=0.06 cfs 0.057 af

Pond 1SS: SSMH-1 Peak Elev=209.87' Inflow=4.27 cfs 0.469 af
24.0" Round Culvert n=0.013 L=5.0' S=0.0020 '/' Outflow=4.27 cfs 0.469 af

Pond 2D: ADS Subsurface Detention Peak Elev=200.71' Storage=3,865 cf Inflow=2.63 cfs 0.354 af
Outflow=0.42 cfs 0.354 af

Pond 2P: Basin 2 Peak Elev=206.30' Storage=3,415 cf Inflow=1.92 cfs 0.162 af
Discarded=0.10 cfs 0.111 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.111 af

Pond 2SS: SSMH-2 Peak Elev=201.37' Inflow=2.63 cfs 0.354 af
24.0" Round Culvert n=0.013 L=5.0' S=0.0000 '/' Outflow=2.63 cfs 0.354 af

Pond 3D: ADS Subsurface Detention Peak Elev=207.68' Storage=2,279 cf Inflow=1.87 cfs 0.146 af
Discarded=0.14 cfs 0.146 af Primary=0.00 cfs 0.000 af Outflow=0.14 cfs 0.146 af

Pond 3P: Basin 3 Peak Elev=205.36' Storage=3,197 cf Inflow=2.17 cfs 0.183 af
Discarded=0.14 cfs 0.157 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.14 cfs 0.157 af

Pond 3SS: SSMH-3 Peak Elev=209.46' Inflow=1.87 cfs 0.146 af
24.0" Round Culvert n=0.013 L=5.0' S=0.3280 '/' Outflow=1.87 cfs 0.146 af

Pond 4D: ADS Subsurface Detention Peak Elev=206.12' Storage=279 cf Inflow=0.32 cfs 0.027 af
Outflow=0.04 cfs 0.027 af

Pond 4P: Basin 4 Peak Elev=202.86' Storage=1,914 cf Inflow=1.54 cfs 0.121 af
Outflow=0.11 cfs 0.115 af

Pond 4SS: SSMH-4 Peak Elev=207.06' Inflow=0.32 cfs 0.027 af
24.0" Round Culvert n=0.013 L=5.0' S=0.1660 '/' Outflow=0.32 cfs 0.027 af

Pond 5P: Basin 5 Peak Elev=200.20' Storage=4,285 cf Inflow=3.00 cfs 0.237 af
Outflow=0.18 cfs 0.191 af

Pond 6P: Basin 6 Peak Elev=201.06' Storage=5,315 cf Inflow=2.42 cfs 0.263 af
Outflow=0.18 cfs 0.187 af

Pond 7P: Basin 7 Peak Elev=202.22' Storage=196 cf Inflow=0.26 cfs 0.019 af
Outflow=0.04 cfs 0.019 af

Pond CB1: CB-1 Peak Elev=211.38' Inflow=0.32 cfs 0.027 af
Outflow=0.32 cfs 0.027 af

Pond CB10: CB-10 Peak Elev=210.64' Inflow=0.17 cfs 0.014 af
Outflow=0.17 cfs 0.014 af

Pond CB11: CB-11 Peak Elev=211.75' Inflow=0.26 cfs 0.021 af
Outflow=0.26 cfs 0.021 af

Pond CB12: CB-12 Peak Elev=210.53' Inflow=0.26 cfs 0.022 af
Outflow=0.26 cfs 0.022 af

Pond CB13: CB-13 Peak Elev=210.03' Inflow=0.17 cfs 0.014 af
Outflow=0.17 cfs 0.014 af

Pond CB14: CB-14 Peak Elev=210.03' Inflow=0.15 cfs 0.013 af
Outflow=0.15 cfs 0.013 af

Pond CB15: CB-15 Peak Elev=214.25' Inflow=0.27 cfs 0.022 af
Outflow=0.27 cfs 0.022 af

Pond CB16: CB-16 Peak Elev=214.55' Inflow=0.31 cfs 0.024 af
Outflow=0.31 cfs 0.024 af

Pond CB17: CB-17 Peak Elev=213.01' Inflow=0.02 cfs 0.004 af
Outflow=0.02 cfs 0.004 af

Pond CB18: CB-18 Peak Elev=214.04' Inflow=0.18 cfs 0.015 af
Outflow=0.18 cfs 0.015 af

Pond CB19: CB-19 Peak Elev=209.55' Inflow=0.31 cfs 0.026 af
Outflow=0.31 cfs 0.026 af

Pond CB2: CB-2 Peak Elev=214.04' Inflow=0.35 cfs 0.029 af
Outflow=0.35 cfs 0.029 af

Pond CB20: CB-20 Peak Elev=214.06' Inflow=0.70 cfs 0.058 af
Outflow=0.70 cfs 0.058 af

Pond CB21: CB-21 Peak Elev=212.26' Inflow=0.37 cfs 0.029 af
Outflow=0.37 cfs 0.029 af

Pond CB22: CB-22 Peak Elev=212.06' Inflow=0.40 cfs 0.032 af
Outflow=0.40 cfs 0.032 af

Pond CB23: CB-23 Peak Elev=212.06' Inflow=0.63 cfs 0.049 af
Outflow=0.63 cfs 0.049 af

Pond CB24: CB-24 Peak Elev=214.03' Inflow=0.11 cfs 0.008 af
Outflow=0.11 cfs 0.008 af

Pond CB25: CB-25 Peak Elev=212.44' Inflow=0.40 cfs 0.029 af
Outflow=0.40 cfs 0.029 af

Pond CB26: CB-26 Peak Elev=214.06' Inflow=0.35 cfs 0.026 af
Outflow=0.35 cfs 0.026 af

Pond CB27: CB-27 Peak Elev=214.55' Inflow=0.33 cfs 0.026 af
Outflow=0.33 cfs 0.026 af

Pond CB28: CB-28 Peak Elev=214.04' Inflow=0.19 cfs 0.014 af
Outflow=0.19 cfs 0.014 af

Pond CB29: CB-29 Peak Elev=214.95' Inflow=0.32 cfs 0.023 af
Outflow=0.32 cfs 0.023 af

Pond CB3: CB-3 Peak Elev=216.94' Inflow=0.18 cfs 0.015 af
Outflow=0.18 cfs 0.015 af

Pond CB30: CB-30 Peak Elev=215.04' Inflow=0.45 cfs 0.037 af
Outflow=0.45 cfs 0.037 af

Pond CB31: CB-31 Peak Elev=214.04' Inflow=0.24 cfs 0.019 af
Outflow=0.24 cfs 0.019 af

Pond CB32: CB-32 Peak Elev=214.75' Inflow=0.27 cfs 0.026 af
Outflow=0.27 cfs 0.026 af

Pond CB33: CB-33 Peak Elev=215.06' Inflow=0.36 cfs 0.028 af
Outflow=0.36 cfs 0.028 af

Pond CB34: CB-34 Peak Elev=211.24' Inflow=0.22 cfs 0.016 af
Outflow=0.22 cfs 0.016 af

Pond CB35: CB-35 Peak Elev=212.46' Inflow=0.34 cfs 0.028 af
Outflow=0.34 cfs 0.028 af

Pond CB36: CB-36 Peak Elev=214.06' Inflow=0.40 cfs 0.029 af
Outflow=0.40 cfs 0.029 af

Pond CB37: CB-37 Peak Elev=215.05' Inflow=0.32 cfs 0.025 af
Outflow=0.32 cfs 0.025 af

Pond CB38: CB-38 Peak Elev=206.07' Inflow=0.51 cfs 0.037 af
Outflow=0.51 cfs 0.037 af

Pond CB39: CB-39 Peak Elev=206.09' Inflow=0.65 cfs 0.048 af
Outflow=0.65 cfs 0.048 af

Pond CB4: CB-4 Peak Elev=216.93' Inflow=0.17 cfs 0.014 af
Outflow=0.17 cfs 0.014 af

Pond CB40: CB-40 Peak Elev=215.93' Inflow=0.12 cfs 0.009 af
Outflow=0.12 cfs 0.009 af

Pond CB41: CB-41 Peak Elev=215.66' Inflow=0.85 cfs 0.067 af
Outflow=0.85 cfs 0.067 af

Pond CB42: CB-4 Peak Elev=215.68' Inflow=1.13 cfs 0.094 af
Outflow=1.13 cfs 0.094 af

Pond CB43: CB-43 Peak Elev=215.68' Inflow=1.13 cfs 0.093 af
Outflow=1.13 cfs 0.093 af

Pond CB44: CB-44 Peak Elev=215.69' Inflow=0.69 cfs 0.057 af
Outflow=0.69 cfs 0.057 af

Pond CB45: CB-45 Peak Elev=208.72' Inflow=0.08 cfs 0.040 af
Outflow=0.08 cfs 0.040 af

Pond CB46: CB-46 Peak Elev=214.93' Inflow=0.12 cfs 0.031 af
Outflow=0.12 cfs 0.031 af

Pond CB47: CB-47 Peak Elev=206.08' Inflow=0.57 cfs 0.043 af
Outflow=0.57 cfs 0.043 af

Pond CB48: CB-48 Peak Elev=206.04' Inflow=0.35 cfs 0.029 af
Outflow=0.35 cfs 0.029 af

Pond CB49: CB-49 Peak Elev=206.07' Inflow=1.02 cfs 0.084 af
Outflow=1.02 cfs 0.084 af

Pond CB5: CB-5 Peak Elev=217.54' Inflow=0.21 cfs 0.015 af
Outflow=0.21 cfs 0.015 af

Pond CB50: CB-4 Peak Elev=205.07' Inflow=1.05 cfs 0.087 af
Outflow=1.05 cfs 0.087 af

Pond CB51: CB-51 Peak Elev=205.57' Inflow=1.05 cfs 0.087 af
Outflow=1.05 cfs 0.087 af

Pond CB52: CB-52 Peak Elev=206.06' Inflow=0.74 cfs 0.061 af
Outflow=0.74 cfs 0.061 af

Pond CB6: CB-6 Peak Elev=217.63' Inflow=0.16 cfs 0.012 af
Outflow=0.16 cfs 0.012 af

Pond CB7: CB-7 Peak Elev=213.64' Inflow=0.20 cfs 0.015 af
Outflow=0.20 cfs 0.015 af

Pond CB8: CB-8 Peak Elev=213.63' Inflow=0.15 cfs 0.011 af
Outflow=0.15 cfs 0.011 af

Pond CB9: CB-9 Peak Elev=210.63' Inflow=0.17 cfs 0.014 af
Outflow=0.17 cfs 0.014 af

Pond MH1: DMH-1 Peak Elev=213.92' Inflow=0.35 cfs 0.029 af
15.0" Round Culvert n=0.013 L=32.0' S=0.0050 '/' Outflow=0.35 cfs 0.029 af

Pond MH10: CB-31 Peak Elev=207.48' Inflow=1.54 cfs 0.118 af
18.0" Round Culvert n=0.013 L=69.0' S=0.0049 '/' Outflow=1.54 cfs 0.118 af

Pond MH11: CB-31 Peak Elev=207.01' Inflow=1.54 cfs 0.118 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=1.54 cfs 0.118 af

Pond MH12: DMH-12 Peak Elev=210.81' Inflow=0.87 cfs 0.066 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=0.87 cfs 0.066 af

Pond MH13: DMH-13 Peak Elev=210.29' Inflow=1.19 cfs 0.090 af
18.0" Round Culvert n=0.013 L=91.0' S=0.0051 '/' Outflow=1.19 cfs 0.090 af

Pond MH14: DMH-14 Peak Elev=209.76' Inflow=1.87 cfs 0.146 af
24.0" Round Culvert n=0.013 L=35.0' S=0.0051 '/' Outflow=1.87 cfs 0.146 af

Pond MH15: DMH-15 Peak Elev=208.90' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.013 L=185.0' S=0.0050 '/' Outflow=0.00 cfs 0.000 af

Pond MH16: DMH-16 Peak Elev=208.15' Inflow=0.27 cfs 0.026 af
18.0" Round Culvert n=0.013 L=95.0' S=0.0049 '/' Outflow=0.27 cfs 0.026 af

Pond MH17: DMH-17 Peak Elev=207.74' Inflow=0.59 cfs 0.054 af
18.0" Round Culvert n=0.013 L=126.0' S=0.0103 '/' Outflow=0.59 cfs 0.054 af

Pond MH18: DMH-18 Peak Elev=206.51' Inflow=1.52 cfs 0.127 af
24.0" Round Culvert n=0.013 L=46.0' S=0.0478 '/' Outflow=1.52 cfs 0.127 af

Pond MH19: DMH-19 Peak Elev=204.30' Inflow=1.83 cfs 0.153 af
30.0" Round Culvert n=0.013 L=80.0' S=0.0050 '/' Outflow=1.83 cfs 0.153 af

Pond MH2: DMH-2 Peak Elev=207.79' Inflow=0.52 cfs 0.043 af
12.0" Round Culvert n=0.013 L=12.8' S=0.0047 '/' Outflow=0.52 cfs 0.043 af

Pond MH20: DMH-20 Peak Elev=211.83' Inflow=1.11 cfs 0.088 af
18.0" Round Culvert n=0.013 L=73.0' S=0.0049 '/' Outflow=1.11 cfs 0.088 af

Pond MH21: DMH-21 Peak Elev=211.53' Inflow=2.24 cfs 0.182 af
18.0" Round Culvert n=0.013 L=85.0' S=0.0051 '/' Outflow=2.24 cfs 0.182 af

Pond MH22: DMH-22 Peak Elev=212.80' Inflow=2.03 cfs 0.287 af
18.0" Round Culvert n=0.013 L=10.0' S=0.0050 '/' Outflow=2.03 cfs 0.287 af

Pond MH24: DMH-24 Peak Elev=209.88' Inflow=0.00 cfs 0.000 af
18.0" Round Culvert n=0.013 L=156.0' S=0.0371 '/' Outflow=0.00 cfs 0.000 af

Pond MH25: DMH-25 Peak Elev=204.20' Inflow=0.15 cfs 0.071 af
18.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.15 cfs 0.071 af

Pond MH26: DMH-26 Peak Elev=202.48' Inflow=1.79 cfs 0.148 af
18.0" Round Culvert n=0.013 L=80.0' S=0.0050 '/' Outflow=1.79 cfs 0.148 af

Pond MH27: DMH-27 Peak Elev=202.01' Inflow=1.58 cfs 0.266 af
18.0" Round Culvert n=0.013 L=86.0' S=0.0050 '/' Outflow=1.58 cfs 0.266 af

Pond MH3: DMH-3 Peak Elev=214.30' Inflow=0.37 cfs 0.028 af
18.0" Round Culvert n=0.013 L=395.0' S=0.0050 '/' Outflow=0.37 cfs 0.028 af

Pond MH4: DMH-4 Peak Elev=210.43' Inflow=0.72 cfs 0.054 af
18.0" Round Culvert n=0.013 L=198.0' S=0.0050 '/' Outflow=0.72 cfs 0.054 af

Pond MH5: DMH-5 Peak Elev=207.54' Inflow=1.06 cfs 0.082 af
18.0" Round Culvert n=0.013 L=34.3' S=0.0050 '/' Outflow=1.06 cfs 0.082 af

Pond MH6: DMH-6 Peak Elev=206.83' Inflow=1.20 cfs 0.099 af
12.0" Round Culvert x 2.00 n=0.013 L=10.0' S=0.0050 '/' Outflow=1.20 cfs 0.099 af

Pond MH7: DMH-7 Peak Elev=210.39' Inflow=0.60 cfs 0.049 af
18.0" Round Culvert n=0.013 L=75.0' S=0.0340 '/' Outflow=0.60 cfs 0.049 af

Pond MH8: DMH-8 Peak Elev=209.15' Inflow=1.03 cfs 0.081 af
18.0" Round Culvert n=0.013 L=133.0' S=0.0050 '/' Outflow=1.03 cfs 0.081 af

Pond MH9: CB-31 Peak Elev=208.42' Inflow=1.14 cfs 0.089 af
18.0" Round Culvert n=0.013 L=190.0' S=0.0050 '/' Outflow=1.14 cfs 0.089 af

Pond R1: R-1 Peak Elev=215.22' Storage=0 cf Inflow=0.61 cfs 0.137 af
Outflow=0.61 cfs 0.137 af

Pond R2: R-2 Peak Elev=205.20' Storage=0 cf Inflow=0.61 cfs 0.153 af
Outflow=0.61 cfs 0.153 af

Pond R3: R-3 Peak Elev=214.23' Storage=0 cf Inflow=0.14 cfs 0.012 af
Outflow=0.14 cfs 0.012 af

Total Runoff Area = 18.355 ac Runoff Volume = 2.062 af Average Runoff Depth = 1.35"
55.52% Pervious = 10.190 ac 44.48% Impervious = 8.165 ac

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 100S: 100S Runoff Area=16,048 sf 1.48% Impervious Runoff Depth>0.46"
Flow Length=271' Slope=0.2676 '/' Tc=5.5 min CN=45 Runoff=0.07 cfs 0.014 af

Subcatchment 101S: 101S Runoff Area=4,604 sf 99.20% Impervious Runoff Depth>4.82"
Flow Length=250' Slope=0.0454 '/' Tc=5.0 min CN=98 Runoff=0.50 cfs 0.042 af

Subcatchment 102S: 102S Runoff Area=4,972 sf 99.97% Impervious Runoff Depth>4.82"
Flow Length=191' Slope=0.0647 '/' Tc=5.0 min CN=98 Runoff=0.54 cfs 0.046 af

Subcatchment 103S: 103S Runoff Area=2,524 sf 99.84% Impervious Runoff Depth>4.82"
Flow Length=190' Slope=0.0262 '/' Tc=5.0 min CN=98 Runoff=0.28 cfs 0.023 af

Subcatchment 104S: 104S Runoff Area=2,369 sf 99.85% Impervious Runoff Depth>4.82"
Flow Length=193' Slope=0.0531 '/' Tc=5.0 min CN=98 Runoff=0.26 cfs 0.022 af

Subcatchment 200S: 200S Runoff Area=5,107 sf 0.04% Impervious Runoff Depth>1.07"
Flow Length=86' Slope=0.3119 '/' Tc=5.0 min CN=56 Runoff=0.13 cfs 0.010 af

Subcatchment 201S: 201S Runoff Area=13,023 sf 0.00% Impervious Runoff Depth>1.07"
Flow Length=580' Slope=0.1372 '/' Tc=10.6 min CN=56 Runoff=0.25 cfs 0.027 af

Subcatchment 202S: 202S Runoff Area=3,513 sf 65.30% Impervious Runoff Depth>3.93"
Flow Length=188' Slope=0.0633 '/' Tc=5.0 min CN=90 Runoff=0.35 cfs 0.026 af

Subcatchment 203S: 203S Runoff Area=2,381 sf 88.01% Impervious Runoff Depth>4.47"
Flow Length=195' Slope=0.0357 '/' Tc=5.0 min CN=95 Runoff=0.25 cfs 0.020 af

Subcatchment 204S: 204S Runoff Area=3,342 sf 71.56% Impervious Runoff Depth>4.04"
Flow Length=199' Slope=0.0581 '/' Tc=5.0 min CN=91 Runoff=0.34 cfs 0.026 af

Subcatchment 205S: 205S Runoff Area=2,387 sf 70.63% Impervious Runoff Depth>4.14"
Flow Length=198' Slope=0.0233 '/' Tc=5.0 min CN=92 Runoff=0.24 cfs 0.019 af

Subcatchment 206S: 206S Runoff Area=2,446 sf 98.11% Impervious Runoff Depth>4.70"
Flow Length=198' Slope=0.0272 '/' Tc=5.0 min CN=97 Runoff=0.27 cfs 0.022 af

Subcatchment 207S: 207S Runoff Area=2,467 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=198' Slope=0.0178 '/' Tc=5.0 min CN=98 Runoff=0.27 cfs 0.023 af

Subcatchment 208S: 208S Runoff Area=2,368 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=75' Slope=0.0259 '/' Tc=5.0 min CN=98 Runoff=0.26 cfs 0.022 af

Subcatchment 209S: 209S Runoff Area=2,142 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=66' Slope=0.0272 '/' Tc=5.0 min CN=98 Runoff=0.23 cfs 0.020 af

Subcatchment 210S: 210S Runoff Area=3,634 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=182' Slope=0.0066 '/' Tc=5.0 min CN=98 Runoff=0.40 cfs 0.033 af

Subcatchment 211S: 211S Runoff Area=3,726 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=192' Slope=0.0364 '/' Tc=5.0 min CN=98 Runoff=0.41 cfs 0.034 af

Subcatchment 300S: 300S Runoff Area=5,728 sf 1.00% Impervious Runoff Depth>0.61"
Flow Length=60' Slope=0.3181 '/' Tc=5.0 min CN=48 Runoff=0.06 cfs 0.007 af

Subcatchment 301S: 301S Runoff Area=7,393 sf 25.16% Impervious Runoff Depth>1.01"
Flow Length=90' Slope=0.0369 '/' Tc=5.0 min UI Adjusted CN=55 Runoff=0.17 cfs 0.014 af

Subcatchment 302S: 302S Runoff Area=4,293 sf 91.05% Impervious Runoff Depth>4.36"
Flow Length=102' Slope=0.0024 '/' Tc=6.1 min CN=94 Runoff=0.43 cfs 0.036 af

Subcatchment 303S: 303S Runoff Area=4,892 sf 90.09% Impervious Runoff Depth>4.25"
Flow Length=116' Slope=0.0087 '/' Tc=5.0 min CN=93 Runoff=0.51 cfs 0.040 af

Subcatchment 304S: 304S Runoff Area=2,534 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=81' Slope=0.0080 '/' Tc=5.0 min CN=98 Runoff=0.28 cfs 0.023 af

Subcatchment 305S: 305S Runoff Area=9,974 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=127' Slope=0.0042 '/' Tc=5.0 min CN=98 Runoff=1.09 cfs 0.092 af

Subcatchment 306S: 306S Runoff Area=5,568 sf 93.75% Impervious Runoff Depth>4.47"
Flow Length=129' Slope=0.0516 '/' Tc=5.0 min CN=95 Runoff=0.59 cfs 0.048 af

Subcatchment 307S: 307S Runoff Area=4,466 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=97' Slope=0.1504 '/' Tc=5.0 min CN=98 Runoff=0.49 cfs 0.041 af

Subcatchment 400S: 400S Runoff Area=12,752 sf 0.00% Impervious Runoff Depth>0.66"
Flow Length=118' Slope=0.5000 '/' Tc=5.0 min CN=49 Runoff=0.15 cfs 0.016 af

Subcatchment 401S: 401S Runoff Area=9,676 sf 91.33% Impervious Runoff Depth>4.36"
Flow Length=277' Slope=0.0262 '/' Tc=5.0 min CN=94 Runoff=1.02 cfs 0.081 af

Subcatchment 402S: 402S Runoff Area=5,699 sf 98.17% Impervious Runoff Depth>4.70"
Flow Length=189' Slope=0.0230 '/' Tc=5.0 min CN=97 Runoff=0.62 cfs 0.051 af

Subcatchment 403S: 403S Runoff Area=3,356 sf 57.17% Impervious Runoff Depth>2.67"
Flow Length=93' Slope=0.0420 '/' Tc=5.0 min CN=77 Runoff=0.24 cfs 0.017 af

Subcatchment 404S: 404S Runoff Area=10,254 sf 63.96% Impervious Runoff Depth>2.94"
Flow Length=193' Slope=0.0236 '/' Tc=5.5 min CN=80 Runoff=0.79 cfs 0.058 af

Subcatchment 500S: 500S Runoff Area=23,945 sf 25.10% Impervious Runoff Depth>2.32"
Flow Length=119' Slope=0.1593 '/' Tc=5.0 min UI Adjusted CN=73 Runoff=1.49 cfs 0.106 af

Subcatchment 501S: 501S Runoff Area=5,785 sf 85.28% Impervious Runoff Depth>4.04"
Flow Length=69' Slope=0.0081 '/' Tc=5.0 min CN=91 Runoff=0.58 cfs 0.045 af

Subcatchment 502S: 502S Runoff Area=5,884 sf 84.95% Impervious Runoff Depth>4.03"
Flow Length=162' Slope=0.0053 '/' Tc=6.9 min CN=91 Runoff=0.55 cfs 0.045 af

Subcatchment 503S: 503S Runoff Area=5,683 sf 81.04% Impervious Runoff Depth>3.82"
Flow Length=122' Slope=0.0101 '/' Tc=5.0 min CN=89 Runoff=0.55 cfs 0.042 af

Subcatchment 504S: 504S Runoff Area=3,171 sf 85.31% Impervious Runoff Depth>4.04"
Flow Length=140' Slope=0.0105 '/' Tc=5.0 min CN=91 Runoff=0.32 cfs 0.024 af

Subcatchment 505S: 505S Runoff Area=7,640 sf 89.34% Impervious Runoff Depth>4.25"
Flow Length=189' Slope=0.0052 '/' Tc=7.2 min CN=93 Runoff=0.73 cfs 0.062 af

Subcatchment 506S: 506S Runoff Area=7,342 sf 77.95% Impervious Runoff Depth>3.62"
Flow Length=237' Slope=0.0122 '/' Tc=7.2 min CN=87 Runoff=0.63 cfs 0.051 af

Subcatchment 507S: 507S Runoff Area=10,148 sf 58.61% Impervious Runoff Depth>2.75"
Flow Length=138' Slope=0.0031 '/' Tc=12.4 min CN=78 Runoff=0.56 cfs 0.053 af

Subcatchment 508S: 508S Runoff Area=4,639 sf 96.02% Impervious Runoff Depth>4.59"
Flow Length=47' Slope=0.0332 '/' Tc=5.0 min CN=96 Runoff=0.50 cfs 0.041 af

Subcatchment 509S: 509S Runoff Area=7,021 sf 81.27% Impervious Runoff Depth>3.82"
Flow Length=81' Slope=0.0254 '/' Tc=5.0 min CN=89 Runoff=0.68 cfs 0.051 af

Subcatchment 510S: 510S Runoff Area=7,367 sf 54.04% Impervious Runoff Depth>2.49"
Flow Length=181' Slope=0.0487 '/' Tc=5.0 min CN=75 Runoff=0.49 cfs 0.035 af

Subcatchment 511S: 511S Runoff Area=11,919 sf 66.76% Impervious Runoff Depth>3.13"
Flow Length=165' Slope=0.1792 '/' Tc=5.0 min CN=82 Runoff=0.99 cfs 0.071 af

Subcatchment 512S: 512S Runoff Area=4,847 sf 99.72% Impervious Runoff Depth>4.82"
Flow Length=135' Slope=0.0492 '/' Tc=5.0 min CN=98 Runoff=0.53 cfs 0.045 af

Subcatchment 513S: 513S Runoff Area=3,621 sf 93.15% Impervious Runoff Depth>4.47"
Flow Length=120' Slope=0.0111 '/' Tc=5.0 min CN=95 Runoff=0.39 cfs 0.031 af

Subcatchment 600S: 600S Runoff Area=11,097 sf 0.00% Impervious Runoff Depth>0.19"
Flow Length=440' Slope=0.0020 '/' Tc=109.7 min CN=39 Runoff=0.01 cfs 0.004 af

Subcatchment 601S: 601S Runoff Area=4,934 sf 99.24% Impervious Runoff Depth>4.82"
Flow Length=190' Slope=0.0460 '/' Tc=5.0 min CN=98 Runoff=0.54 cfs 0.045 af

Subcatchment 602S: 602S Runoff Area=14,445 sf 98.07% Impervious Runoff Depth>4.82"
Flow Length=89' Slope=0.1108 '/' Tc=5.0 min CN=98 Runoff=1.58 cfs 0.133 af

Subcatchment 603S: 603S Runoff Area=14,930 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=84' Slope=0.0144 '/' Tc=5.0 min CN=98 Runoff=1.63 cfs 0.138 af

Subcatchment 604S: 604S Runoff Area=14,934 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=71' Slope=0.0188 '/' Tc=5.0 min CN=98 Runoff=1.63 cfs 0.138 af

Subcatchment 605S: 605S Runoff Area=10,448 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=84' Slope=0.0102 '/' Tc=5.0 min CN=98 Runoff=1.14 cfs 0.096 af

Subcatchment 606S: 606S Runoff Area=4,304 sf 51.34% Impervious Runoff Depth>2.41"
Flow Length=87' Slope=0.0093 '/' Tc=5.6 min CN=74 Runoff=0.27 cfs 0.020 af

Subcatchment 607S: 607S Runoff Area=12,360 sf 96.48% Impervious Runoff Depth>4.59"
Flow Length=77' Slope=0.0196 '/' Tc=5.0 min CN=96 Runoff=1.33 cfs 0.108 af

Subcatchment 608S: 608S Runoff Area=16,074 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=76' Slope=0.0189 '/' Tc=5.0 min CN=98 Runoff=1.75 cfs 0.148 af

Subcatchment 609S: 609S Runoff Area=15,970 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=74' Slope=0.0190 '/' Tc=5.0 min CN=98 Runoff=1.74 cfs 0.147 af

Subcatchment 610S: 610S Runoff Area=9,740 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=84' Slope=0.0161 '/' Tc=5.0 min CN=98 Runoff=1.06 cfs 0.090 af

Subcatchment 611S: 611S Runoff Area=7,305 sf 99.80% Impervious Runoff Depth>4.50"
Tc=244.9 min CN=98 Runoff=0.12 cfs 0.063 af

Subcatchment 612S: 612S Runoff Area=1,999 sf 100.00% Impervious Runoff Depth>4.82"
Flow Length=45' Slope=0.0440 '/' Tc=5.0 min CN=98 Runoff=0.22 cfs 0.018 af

Subcatchment 613S: 613S Runoff Area=23,737 sf 100.00% Impervious Runoff Depth>4.76"
Flow Length=70' Slope=0.0000 '/' Tc=56.7 min CN=98 Runoff=0.94 cfs 0.216 af

Subcatchment 614S: 614S Runoff Area=5,458 sf 99.28% Impervious Runoff Depth>4.74"
Tc=68.9 min CN=98 Runoff=0.19 cfs 0.050 af

Subcatchment 615S: 615S Runoff Area=26,616 sf 99.90% Impervious Runoff Depth>4.75"
Flow Length=370' Slope=0.0001 '/' Tc=68.0 min CN=98 Runoff=0.95 cfs 0.242 af

Subcatchment 616S: 616S Runoff Area=8,937 sf 75.92% Impervious Runoff Depth>4.25"
Flow Length=195' Slope=0.0133 '/' Tc=5.0 min CN=93 Runoff=0.93 cfs 0.073 af

Subcatchment 617S: 617S Runoff Area=10,344 sf 0.07% Impervious Runoff Depth>2.24"
Flow Length=216' Slope=0.2648 '/' Tc=5.0 min CN=72 Runoff=0.62 cfs 0.044 af

Subcatchment 701S: 701S Runoff Area=21,147 sf 0.01% Impervious Runoff Depth>0.32"
Flow Length=153' Slope=0.0344 '/' Tc=10.5 min CN=42 Runoff=0.03 cfs 0.013 af

Subcatchment 702S: 702S Runoff Area=256,529 sf 0.50% Impervious Runoff Depth>0.28"
Flow Length=714' Slope=0.0674 '/' Tc=26.4 min CN=41 Runoff=0.24 cfs 0.137 af

Subcatchment 703S: 703S Runoff Area=6,055 sf 0.20% Impervious Runoff Depth>1.20"
Flow Length=11' Slope=0.3294 '/' Tc=5.0 min CN=58 Runoff=0.18 cfs 0.014 af

Subcatchment 704S: 704S Runoff Area=29,520 sf 0.00% Impervious Runoff Depth>1.07"
Flow Length=274' Slope=0.2098 '/' Tc=5.0 min CN=56 Runoff=0.75 cfs 0.060 af

Reach 10R: Diversion Berm Avg. Flow Depth=0.25' Max Vel=0.49 fps Inflow=0.18 cfs 0.014 af
n=0.030 L=580.0' S=0.0017 '/' Capacity=3.08 cfs Outflow=0.08 cfs 0.014 af

Reach DP-1: Wetland
Outflow=0.00 cfs 0.000 af

Reach DP-2: Police/DPW Facility Inflow=0.03 cfs 0.013 af
Outflow=0.03 cfs 0.013 af

Reach DP-3: WWTP Perimeter Swale Inflow=0.75 cfs 0.198 af
Outflow=0.75 cfs 0.198 af

Reach DP-4: Wetland Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 1D: ADS Subsurface Detention Peak Elev=210.62' Storage=14,571 cf Inflow=6.72 cfs 0.748 af
Discarded=0.33 cfs 0.482 af Primary=0.16 cfs 0.030 af Outflow=0.49 cfs 0.512 af

Pond 1P: Basin 1 Peak Elev=211.58' Storage=1,817 cf Inflow=1.13 cfs 0.105 af
Outflow=0.08 cfs 0.087 af

Pond 1SS: SSMH-1 Peak Elev=210.62' Inflow=6.72 cfs 0.748 af
24.0" Round Culvert n=0.013 L=5.0' S=0.0020 '/' Outflow=6.72 cfs 0.748 af

Pond 2D: ADS Subsurface Detention Peak Elev=201.20' Storage=7,974 cf Inflow=4.07 cfs 0.558 af
Outflow=0.47 cfs 0.558 af

Pond 2P: Basin 2 Peak Elev=207.64' Storage=6,556 cf Inflow=3.33 cfs 0.283 af
Discarded=0.15 cfs 0.170 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.170 af

Pond 2SS: SSMH-2 Peak Elev=201.60' Inflow=4.07 cfs 0.558 af
24.0" Round Culvert n=0.013 L=5.0' S=0.0000 '/' Outflow=4.07 cfs 0.558 af

Pond 3D: ADS Subsurface Detention Peak Elev=208.56' Storage=4,746 cf Inflow=3.10 cfs 0.249 af
Discarded=0.15 cfs 0.195 af Primary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.195 af

Pond 3P: Basin 3 Peak Elev=206.36' Storage=6,240 cf Inflow=3.66 cfs 0.314 af
Discarded=0.21 cfs 0.233 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.21 cfs 0.233 af

Pond 3SS: SSMH-3 Peak Elev=209.63' Inflow=3.10 cfs 0.249 af
24.0" Round Culvert n=0.013 L=5.0' S=0.3280 '/' Outflow=3.10 cfs 0.249 af

Pond 4D: ADS Subsurface Detention Peak Elev=206.46' Storage=537 cf Inflow=0.50 cfs 0.042 af
Outflow=0.05 cfs 0.042 af

Pond 4P: Basin 4 Peak Elev=203.71' Storage=4,180 cf Inflow=2.81 cfs 0.223 af
Outflow=0.16 cfs 0.175 af

Pond 4SS: SSMH-4 Peak Elev=207.12' Inflow=0.50 cfs 0.042 af
24.0" Round Culvert n=0.013 L=5.0' S=0.1660 '/' Outflow=0.50 cfs 0.042 af

Pond 5P: Basin 5 Peak Elev=201.36' Storage=9,747 cf Inflow=5.74 cfs 0.454 af
Outflow=0.27 cfs 0.300 af

Pond 6P: Basin 6 Peak Elev=202.21' Storage=10,169 cf Inflow=3.80 cfs 0.453 af
Outflow=0.27 cfs 0.290 af

Pond 7P: Basin 7 Peak Elev=202.62' Storage=642 cf Inflow=0.62 cfs 0.044 af
Outflow=0.06 cfs 0.044 af

Pond CB1: CB-1 Peak Elev=211.40' Inflow=0.50 cfs 0.042 af
Outflow=0.50 cfs 0.042 af

Pond CB10: CB-10 Peak Elev=210.65' Inflow=0.27 cfs 0.023 af
Outflow=0.27 cfs 0.023 af

Pond CB11: CB-11 Peak Elev=211.76' Inflow=0.40 cfs 0.033 af
Outflow=0.40 cfs 0.033 af

Pond CB12: CB-12 Peak Elev=210.54' Inflow=0.41 cfs 0.034 af
Outflow=0.41 cfs 0.034 af

Pond CB13: CB-13 Peak Elev=210.05' Inflow=0.26 cfs 0.022 af
Outflow=0.26 cfs 0.022 af

Pond CB14: CB-14 Peak Elev=210.04' Inflow=0.23 cfs 0.020 af
Outflow=0.23 cfs 0.020 af

Pond CB15: CB-15 Peak Elev=214.27' Inflow=0.43 cfs 0.036 af
Outflow=0.43 cfs 0.036 af

Pond CB16: CB-16 Peak Elev=214.57' Inflow=0.51 cfs 0.040 af
Outflow=0.51 cfs 0.040 af

Pond CB17: CB-17 Peak Elev=213.04' Inflow=0.17 cfs 0.014 af
Outflow=0.17 cfs 0.014 af

Pond CB18: CB-18 Peak Elev=214.05' Inflow=0.28 cfs 0.023 af
Outflow=0.28 cfs 0.023 af

Pond CB19: CB-19 Peak Elev=209.57' Inflow=0.49 cfs 0.041 af
Outflow=0.49 cfs 0.041 af

Pond CB2: CB-2 Peak Elev=214.05' Inflow=0.54 cfs 0.046 af
Outflow=0.54 cfs 0.046 af

Pond CB20: CB-20 Peak Elev=214.08' Inflow=1.09 cfs 0.092 af
Outflow=1.09 cfs 0.092 af

Pond CB21: CB-21 Peak Elev=212.28' Inflow=0.59 cfs 0.048 af
Outflow=0.59 cfs 0.048 af

Pond CB22: CB-22 Peak Elev=212.08' Inflow=0.62 cfs 0.051 af
Outflow=0.62 cfs 0.051 af

Pond CB23: CB-23 Peak Elev=212.09' Inflow=1.02 cfs 0.081 af
Outflow=1.02 cfs 0.081 af

Pond CB24: CB-24 Peak Elev=214.04' Inflow=0.24 cfs 0.017 af
Outflow=0.24 cfs 0.017 af

Pond CB25: CB-25 Peak Elev=212.46' Inflow=0.79 cfs 0.058 af
Outflow=0.79 cfs 0.058 af

Pond CB26: CB-26 Peak Elev=214.08' Inflow=0.58 cfs 0.045 af
Outflow=0.58 cfs 0.045 af

Pond CB27: CB-27 Peak Elev=214.58' Inflow=0.55 cfs 0.045 af
Outflow=0.55 cfs 0.045 af

Pond CB28: CB-28 Peak Elev=214.05' Inflow=0.32 cfs 0.024 af
Outflow=0.32 cfs 0.024 af

Pond CB29: CB-29 Peak Elev=214.98' Inflow=0.55 cfs 0.042 af
Outflow=0.55 cfs 0.042 af

Pond CB3: CB-3 Peak Elev=216.95' Inflow=0.28 cfs 0.023 af
Outflow=0.28 cfs 0.023 af

Pond CB30: CB-30 Peak Elev=215.06' Inflow=0.73 cfs 0.062 af
Outflow=0.73 cfs 0.062 af

Pond CB31: CB-31 Peak Elev=214.06' Inflow=0.39 cfs 0.031 af
Outflow=0.39 cfs 0.031 af

Pond CB32: CB-32 Peak Elev=214.78' Inflow=0.56 cfs 0.053 af
Outflow=0.56 cfs 0.053 af

Pond CB33: CB-33 Peak Elev=215.08' Inflow=0.63 cfs 0.051 af
Outflow=0.63 cfs 0.051 af

Pond CB34: CB-34 Peak Elev=211.27' Inflow=0.49 cfs 0.035 af
Outflow=0.49 cfs 0.035 af

Pond CB35: CB-35 Peak Elev=212.47' Inflow=0.53 cfs 0.045 af
Outflow=0.53 cfs 0.045 af

Pond CB36: CB-36 Peak Elev=214.09' Inflow=0.68 cfs 0.051 af
Outflow=0.68 cfs 0.051 af

Pond CB37: CB-37 Peak Elev=215.07' Inflow=0.50 cfs 0.041 af
Outflow=0.50 cfs 0.041 af

Pond CB38: CB-38 Peak Elev=206.11' Inflow=0.99 cfs 0.071 af
Outflow=0.99 cfs 0.071 af

Pond CB39: CB-39 Peak Elev=206.15' Inflow=1.49 cfs 0.106 af
Outflow=1.49 cfs 0.106 af

Pond CB4: CB-4 Peak Elev=216.95' Inflow=0.26 cfs 0.022 af
Outflow=0.26 cfs 0.022 af

Pond CB40: CB-40 Peak Elev=215.95' Inflow=0.27 cfs 0.020 af
Outflow=0.27 cfs 0.020 af

Pond CB41: CB-41 Peak Elev=215.69' Inflow=1.33 cfs 0.108 af
Outflow=1.33 cfs 0.108 af

Pond CB42: CB-4 Peak Elev=215.70' Inflow=1.75 cfs 0.148 af
Outflow=1.75 cfs 0.148 af

Pond CB43: CB-43 Peak Elev=215.70' Inflow=1.74 cfs 0.147 af
Outflow=1.74 cfs 0.147 af

Pond CB44: CB-44 Peak Elev=215.72' Inflow=1.06 cfs 0.090 af
Outflow=1.06 cfs 0.090 af

Pond CB45: CB-45 Peak Elev=208.73' Inflow=0.12 cfs 0.063 af
Outflow=0.12 cfs 0.063 af

Pond CB46: CB-46 Peak Elev=214.94' Inflow=0.19 cfs 0.050 af
Outflow=0.19 cfs 0.050 af

Pond CB47: CB-47 Peak Elev=206.11' Inflow=0.93 cfs 0.073 af
Outflow=0.93 cfs 0.073 af

Pond CB48: CB-48 Peak Elev=206.05' Inflow=0.54 cfs 0.045 af
Outflow=0.54 cfs 0.045 af

Pond CB49: CB-49 Peak Elev=206.10' Inflow=1.58 cfs 0.133 af
Outflow=1.58 cfs 0.133 af

Pond CB5: CB-5 Peak Elev=217.56' Inflow=0.35 cfs 0.026 af
Outflow=0.35 cfs 0.026 af

Pond CB50: CB-4 Peak Elev=205.10' Inflow=1.63 cfs 0.138 af
Outflow=1.63 cfs 0.138 af

Pond CB51: CB-51 Peak Elev=205.60' Inflow=1.63 cfs 0.138 af
Outflow=1.63 cfs 0.138 af

Pond CB52: CB-52 Peak Elev=206.08' Inflow=1.14 cfs 0.096 af
Outflow=1.14 cfs 0.096 af

Pond CB6: CB-6 Peak Elev=217.65' Inflow=0.25 cfs 0.020 af
Outflow=0.25 cfs 0.020 af

Pond CB7: CB-7 Peak Elev=213.65' Inflow=0.34 cfs 0.026 af
Outflow=0.34 cfs 0.026 af

Pond CB8: CB-8 Peak Elev=213.64' Inflow=0.24 cfs 0.019 af
Outflow=0.24 cfs 0.019 af

Pond CB9: CB-9 Peak Elev=210.65' Inflow=0.27 cfs 0.022 af
Outflow=0.27 cfs 0.022 af

Pond MH1: DMH-1 Peak Elev=214.00' Inflow=0.53 cfs 0.045 af
15.0" Round Culvert n=0.013 L=32.0' S=0.0050 '/' Outflow=0.53 cfs 0.045 af

Pond MH10: CB-31 Peak Elev=207.73' Inflow=2.66 cfs 0.207 af
18.0" Round Culvert n=0.013 L=69.0' S=0.0049 '/' Outflow=2.66 cfs 0.207 af

Pond MH11: CB-31 Peak Elev=207.24' Inflow=2.66 cfs 0.207 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=2.66 cfs 0.207 af

Pond MH12: DMH-12 Peak Elev=210.99' Inflow=1.44 cfs 0.115 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=1.44 cfs 0.115 af

Pond MH13: DMH-13 Peak Elev=210.50' Inflow=2.00 cfs 0.156 af
18.0" Round Culvert n=0.013 L=91.0' S=0.0051 '/' Outflow=2.00 cfs 0.156 af

Pond MH14: DMH-14 Peak Elev=209.98' Inflow=3.10 cfs 0.249 af
24.0" Round Culvert n=0.013 L=35.0' S=0.0051 '/' Outflow=3.10 cfs 0.249 af

Pond MH15: DMH-15 Peak Elev=208.90' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.013 L=185.0' S=0.0050 '/' Outflow=0.00 cfs 0.000 af

Pond MH16: DMH-16 Peak Elev=208.28' Inflow=0.56 cfs 0.053 af
18.0" Round Culvert n=0.013 L=95.0' S=0.0049 '/' Outflow=0.56 cfs 0.053 af

Pond MH17: DMH-17 Peak Elev=207.88' Inflow=1.13 cfs 0.104 af
18.0" Round Culvert n=0.013 L=126.0' S=0.0103 '/' Outflow=1.13 cfs 0.104 af

Pond MH18: DMH-18 Peak Elev=206.70' Inflow=2.77 cfs 0.235 af
24.0" Round Culvert n=0.013 L=46.0' S=0.0478 '/' Outflow=2.77 cfs 0.235 af

Pond MH19: DMH-19 Peak Elev=204.51' Inflow=3.26 cfs 0.276 af
30.0" Round Culvert n=0.013 L=80.0' S=0.0050 '/' Outflow=3.26 cfs 0.276 af

Pond MH2: DMH-2 Peak Elev=207.91' Inflow=0.80 cfs 0.068 af
12.0" Round Culvert n=0.013 L=12.8' S=0.0047 '/' Outflow=0.80 cfs 0.068 af

Pond MH20: DMH-20 Peak Elev=212.07' Inflow=1.82 cfs 0.147 af
18.0" Round Culvert n=0.013 L=73.0' S=0.0049 '/' Outflow=1.82 cfs 0.147 af

Pond MH21: DMH-21 Peak Elev=211.78' Inflow=3.57 cfs 0.295 af
18.0" Round Culvert n=0.013 L=85.0' S=0.0051 '/' Outflow=3.57 cfs 0.295 af

Pond MH22: DMH-22 Peak Elev=213.03' Inflow=3.15 cfs 0.453 af
18.0" Round Culvert n=0.013 L=10.0' S=0.0050 '/' Outflow=3.15 cfs 0.453 af

Pond MH24: DMH-24 Peak Elev=210.06' Inflow=0.16 cfs 0.030 af
18.0" Round Culvert n=0.013 L=156.0' S=0.0371 '/' Outflow=0.16 cfs 0.030 af

Pond MH25: DMH-25 Peak Elev=204.30' Inflow=0.32 cfs 0.142 af
18.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.32 cfs 0.142 af

Pond MH26: DMH-26 Peak Elev=202.68' Inflow=2.77 cfs 0.234 af
18.0" Round Culvert n=0.013 L=80.0' S=0.0050 '/' Outflow=2.77 cfs 0.234 af

Pond MH27: DMH-27 Peak Elev=202.21' Inflow=2.44 cfs 0.420 af
18.0" Round Culvert n=0.013 L=86.0' S=0.0050 '/' Outflow=2.44 cfs 0.420 af

Pond MH3: DMH-3 Peak Elev=214.39' Inflow=0.60 cfs 0.047 af
18.0" Round Culvert n=0.013 L=395.0' S=0.0050 '/' Outflow=0.60 cfs 0.047 af

Pond MH4: DMH-4 Peak Elev=210.55' Inflow=1.18 cfs 0.092 af
18.0" Round Culvert n=0.013 L=198.0' S=0.0050 '/' Outflow=1.18 cfs 0.092 af

Pond MH5: DMH-5 Peak Elev=207.71' Inflow=1.72 cfs 0.136 af
18.0" Round Culvert n=0.013 L=34.3' S=0.0050 '/' Outflow=1.72 cfs 0.136 af

Pond MH6: DMH-6 Peak Elev=206.96' Inflow=1.85 cfs 0.156 af
12.0" Round Culvert x 2.00 n=0.013 L=10.0' S=0.0050 '/' Outflow=1.85 cfs 0.156 af

Pond MH7: DMH-7 Peak Elev=210.52' Inflow=1.11 cfs 0.090 af
18.0" Round Culvert n=0.013 L=75.0' S=0.0340 '/' Outflow=1.11 cfs 0.090 af

Pond MH8: DMH-8 Peak Elev=209.31' Inflow=1.64 cfs 0.132 af
18.0" Round Culvert n=0.013 L=133.0' S=0.0050 '/' Outflow=1.64 cfs 0.132 af

Pond MH9: CB-31 Peak Elev=208.62' Inflow=1.88 cfs 0.149 af
18.0" Round Culvert n=0.013 L=190.0' S=0.0050 '/' Outflow=1.88 cfs 0.149 af

Pond R1: R-1 Peak Elev=217.36' Storage=1 cf Inflow=0.94 cfs 0.216 af
Outflow=0.94 cfs 0.216 af

Pond R2: R-2 Peak Elev=206.84' Storage=1 cf Inflow=0.95 cfs 0.242 af
Outflow=0.95 cfs 0.242 af

Pond R3: R-3 Peak Elev=214.29' Storage=0 cf Inflow=0.22 cfs 0.018 af
Outflow=0.22 cfs 0.018 af

Total Runoff Area = 18.355 ac Runoff Volume = 3.655 af Average Runoff Depth = 2.39"
55.52% Pervious = 10.190 ac 44.48% Impervious = 8.165 ac

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 100S: 100S Runoff Area=16,048 sf 1.48% Impervious Runoff Depth>0.87"
Flow Length=271' Slope=0.2676 '/' Tc=5.5 min CN=45 Runoff=0.26 cfs 0.027 af

Subcatchment 101S: 101S Runoff Area=4,604 sf 99.20% Impervious Runoff Depth>5.93"
Flow Length=250' Slope=0.0454 '/' Tc=5.0 min CN=98 Runoff=0.61 cfs 0.052 af

Subcatchment 102S: 102S Runoff Area=4,972 sf 99.97% Impervious Runoff Depth>5.93"
Flow Length=191' Slope=0.0647 '/' Tc=5.0 min CN=98 Runoff=0.66 cfs 0.056 af

Subcatchment 103S: 103S Runoff Area=2,524 sf 99.84% Impervious Runoff Depth>5.93"
Flow Length=190' Slope=0.0262 '/' Tc=5.0 min CN=98 Runoff=0.34 cfs 0.029 af

Subcatchment 104S: 104S Runoff Area=2,369 sf 99.85% Impervious Runoff Depth>5.93"
Flow Length=193' Slope=0.0531 '/' Tc=5.0 min CN=98 Runoff=0.32 cfs 0.027 af

Subcatchment 200S: 200S Runoff Area=5,107 sf 0.04% Impervious Runoff Depth>1.69"
Flow Length=86' Slope=0.3119 '/' Tc=5.0 min CN=56 Runoff=0.22 cfs 0.017 af

Subcatchment 201S: 201S Runoff Area=13,023 sf 0.00% Impervious Runoff Depth>1.69"
Flow Length=580' Slope=0.1372 '/' Tc=10.6 min CN=56 Runoff=0.44 cfs 0.042 af

Subcatchment 202S: 202S Runoff Area=3,513 sf 65.30% Impervious Runoff Depth>5.01"
Flow Length=188' Slope=0.0633 '/' Tc=5.0 min CN=90 Runoff=0.44 cfs 0.034 af

Subcatchment 203S: 203S Runoff Area=2,381 sf 88.01% Impervious Runoff Depth>5.57"
Flow Length=195' Slope=0.0357 '/' Tc=5.0 min CN=95 Runoff=0.31 cfs 0.025 af

Subcatchment 204S: 204S Runoff Area=3,342 sf 71.56% Impervious Runoff Depth>5.12"
Flow Length=199' Slope=0.0581 '/' Tc=5.0 min CN=91 Runoff=0.42 cfs 0.033 af

Subcatchment 205S: 205S Runoff Area=2,387 sf 70.63% Impervious Runoff Depth>5.23"
Flow Length=198' Slope=0.0233 '/' Tc=5.0 min CN=92 Runoff=0.30 cfs 0.024 af

Subcatchment 206S: 206S Runoff Area=2,446 sf 98.11% Impervious Runoff Depth>5.81"
Flow Length=198' Slope=0.0272 '/' Tc=5.0 min CN=97 Runoff=0.32 cfs 0.027 af

Subcatchment 207S: 207S Runoff Area=2,467 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=198' Slope=0.0178 '/' Tc=5.0 min CN=98 Runoff=0.33 cfs 0.028 af

Subcatchment 208S: 208S Runoff Area=2,368 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=75' Slope=0.0259 '/' Tc=5.0 min CN=98 Runoff=0.32 cfs 0.027 af

Subcatchment 209S: 209S Runoff Area=2,142 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=66' Slope=0.0272 '/' Tc=5.0 min CN=98 Runoff=0.29 cfs 0.024 af

Subcatchment 210S: 210S Runoff Area=3,634 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=182' Slope=0.0066 '/' Tc=5.0 min CN=98 Runoff=0.48 cfs 0.041 af

Subcatchment 211S: 211S Runoff Area=3,726 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=192' Slope=0.0364 '/' Tc=5.0 min CN=98 Runoff=0.50 cfs 0.042 af

Subcatchment 300S: 300S Runoff Area=5,728 sf 1.00% Impervious Runoff Depth>1.08"
Flow Length=60' Slope=0.3181 '/' Tc=5.0 min CN=48 Runoff=0.14 cfs 0.012 af

Subcatchment 301S: 301S Runoff Area=7,393 sf 25.16% Impervious Runoff Depth>1.61"
Flow Length=90' Slope=0.0369 '/' Tc=5.0 min UI Adjusted CN=55 Runoff=0.30 cfs 0.023 af

Subcatchment 302S: 302S Runoff Area=4,293 sf 91.05% Impervious Runoff Depth>5.46"
Flow Length=102' Slope=0.0024 '/' Tc=6.1 min CN=94 Runoff=0.54 cfs 0.045 af

Subcatchment 303S: 303S Runoff Area=4,892 sf 90.09% Impervious Runoff Depth>5.34"
Flow Length=116' Slope=0.0087 '/' Tc=5.0 min CN=93 Runoff=0.63 cfs 0.050 af

Subcatchment 304S: 304S Runoff Area=2,534 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=81' Slope=0.0080 '/' Tc=5.0 min CN=98 Runoff=0.34 cfs 0.029 af

Subcatchment 305S: 305S Runoff Area=9,974 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=127' Slope=0.0042 '/' Tc=5.0 min CN=98 Runoff=1.33 cfs 0.113 af

Subcatchment 306S: 306S Runoff Area=5,568 sf 93.75% Impervious Runoff Depth>5.57"
Flow Length=129' Slope=0.0516 '/' Tc=5.0 min CN=95 Runoff=0.73 cfs 0.059 af

Subcatchment 307S: 307S Runoff Area=4,466 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=97' Slope=0.1504 '/' Tc=5.0 min CN=98 Runoff=0.60 cfs 0.051 af

Subcatchment 400S: 400S Runoff Area=12,752 sf 0.00% Impervious Runoff Depth>1.15"
Flow Length=118' Slope=0.5000 '/' Tc=5.0 min CN=49 Runoff=0.33 cfs 0.028 af

Subcatchment 401S: 401S Runoff Area=9,676 sf 91.33% Impervious Runoff Depth>5.46"
Flow Length=277' Slope=0.0262 '/' Tc=5.0 min CN=94 Runoff=1.26 cfs 0.101 af

Subcatchment 402S: 402S Runoff Area=5,699 sf 98.17% Impervious Runoff Depth>5.81"
Flow Length=189' Slope=0.0230 '/' Tc=5.0 min CN=97 Runoff=0.76 cfs 0.063 af

Subcatchment 403S: 403S Runoff Area=3,356 sf 57.17% Impervious Runoff Depth>3.62"
Flow Length=93' Slope=0.0420 '/' Tc=5.0 min CN=77 Runoff=0.32 cfs 0.023 af

Subcatchment 404S: 404S Runoff Area=10,254 sf 63.96% Impervious Runoff Depth>3.93"
Flow Length=193' Slope=0.0236 '/' Tc=5.5 min CN=80 Runoff=1.04 cfs 0.077 af

Subcatchment 500S: 500S Runoff Area=23,945 sf 25.10% Impervious Runoff Depth>3.22"
Flow Length=119' Slope=0.1593 '/' Tc=5.0 min UI Adjusted CN=73 Runoff=2.07 cfs 0.148 af

Subcatchment 501S: 501S Runoff Area=5,785 sf 85.28% Impervious Runoff Depth>5.12"
Flow Length=69' Slope=0.0081 '/' Tc=5.0 min CN=91 Runoff=0.73 cfs 0.057 af

Subcatchment 502S: 502S Runoff Area=5,884 sf 84.95% Impervious Runoff Depth>5.11"
Flow Length=162' Slope=0.0053 '/' Tc=6.9 min CN=91 Runoff=0.69 cfs 0.058 af

Subcatchment 503S: 503S Runoff Area=5,683 sf 81.04% Impervious Runoff Depth>4.89"
Flow Length=122' Slope=0.0101 '/' Tc=5.0 min CN=89 Runoff=0.70 cfs 0.053 af

Subcatchment 504S: 504S Runoff Area=3,171 sf 85.31% Impervious Runoff Depth>5.12"
Flow Length=140' Slope=0.0105 '/' Tc=5.0 min CN=91 Runoff=0.40 cfs 0.031 af

Subcatchment 505S: 505S Runoff Area=7,640 sf 89.34% Impervious Runoff Depth>5.34"
Flow Length=189' Slope=0.0052 '/' Tc=7.2 min CN=93 Runoff=0.91 cfs 0.078 af

Subcatchment 506S: 506S Runoff Area=7,342 sf 77.95% Impervious Runoff Depth>4.67"
Flow Length=237' Slope=0.0122 '/' Tc=7.2 min CN=87 Runoff=0.80 cfs 0.066 af

Subcatchment 507S: 507S Runoff Area=10,148 sf 58.61% Impervious Runoff Depth>3.71"
Flow Length=138' Slope=0.0031 '/' Tc=12.4 min CN=78 Runoff=0.76 cfs 0.072 af

Subcatchment 508S: 508S Runoff Area=4,639 sf 96.02% Impervious Runoff Depth>5.69"
Flow Length=47' Slope=0.0332 '/' Tc=5.0 min CN=96 Runoff=0.61 cfs 0.050 af

Subcatchment 509S: 509S Runoff Area=7,021 sf 81.27% Impervious Runoff Depth>4.89"
Flow Length=81' Slope=0.0254 '/' Tc=5.0 min CN=89 Runoff=0.86 cfs 0.066 af

Subcatchment 510S: 510S Runoff Area=7,367 sf 54.04% Impervious Runoff Depth>3.42"
Flow Length=181' Slope=0.0487 '/' Tc=5.0 min CN=75 Runoff=0.67 cfs 0.048 af

Subcatchment 511S: 511S Runoff Area=11,919 sf 66.76% Impervious Runoff Depth>4.14"
Flow Length=165' Slope=0.1792 '/' Tc=5.0 min CN=82 Runoff=1.29 cfs 0.094 af

Subcatchment 512S: 512S Runoff Area=4,847 sf 99.72% Impervious Runoff Depth>5.93"
Flow Length=135' Slope=0.0492 '/' Tc=5.0 min CN=98 Runoff=0.65 cfs 0.055 af

Subcatchment 513S: 513S Runoff Area=3,621 sf 93.15% Impervious Runoff Depth>5.57"
Flow Length=120' Slope=0.0111 '/' Tc=5.0 min CN=95 Runoff=0.47 cfs 0.039 af

Subcatchment 600S: 600S Runoff Area=11,097 sf 0.00% Impervious Runoff Depth>0.45"
Flow Length=440' Slope=0.0020 '/' Tc=109.7 min CN=39 Runoff=0.02 cfs 0.010 af

Subcatchment 601S: 601S Runoff Area=4,934 sf 99.24% Impervious Runoff Depth>5.93"
Flow Length=190' Slope=0.0460 '/' Tc=5.0 min CN=98 Runoff=0.66 cfs 0.056 af

Subcatchment 602S: 602S Runoff Area=14,445 sf 98.07% Impervious Runoff Depth>5.93"
Flow Length=89' Slope=0.1108 '/' Tc=5.0 min CN=98 Runoff=1.93 cfs 0.164 af

Subcatchment 603S: 603S Runoff Area=14,930 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=84' Slope=0.0144 '/' Tc=5.0 min CN=98 Runoff=1.99 cfs 0.169 af

Subcatchment 604S: 604S Runoff Area=14,934 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=71' Slope=0.0188 '/' Tc=5.0 min CN=98 Runoff=1.99 cfs 0.169 af

Subcatchment 605S: 605S Runoff Area=10,448 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=84' Slope=0.0102 '/' Tc=5.0 min CN=98 Runoff=1.39 cfs 0.118 af

Subcatchment 606S: 606S Runoff Area=4,304 sf 51.34% Impervious Runoff Depth>3.32"
Flow Length=87' Slope=0.0093 '/' Tc=5.6 min CN=74 Runoff=0.37 cfs 0.027 af

Subcatchment 607S: 607S Runoff Area=12,360 sf 96.48% Impervious Runoff Depth>5.69"
Flow Length=77' Slope=0.0196 '/' Tc=5.0 min CN=96 Runoff=1.63 cfs 0.135 af

Subcatchment 608S: 608S Runoff Area=16,074 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=76' Slope=0.0189 '/' Tc=5.0 min CN=98 Runoff=2.14 cfs 0.182 af

Subcatchment 609S: 609S Runoff Area=15,970 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=74' Slope=0.0190 '/' Tc=5.0 min CN=98 Runoff=2.13 cfs 0.181 af

Subcatchment 610S: 610S Runoff Area=9,740 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=84' Slope=0.0161 '/' Tc=5.0 min CN=98 Runoff=1.30 cfs 0.110 af

Subcatchment 611S: 611S Runoff Area=7,305 sf 99.80% Impervious Runoff Depth>5.54"
Tc=244.9 min CN=98 Runoff=0.14 cfs 0.077 af

Subcatchment 612S: 612S Runoff Area=1,999 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=45' Slope=0.0440 '/' Tc=5.0 min CN=98 Runoff=0.27 cfs 0.023 af

Subcatchment 613S: 613S Runoff Area=23,737 sf 100.00% Impervious Runoff Depth>5.85"
Flow Length=70' Slope=0.0000 '/' Tc=56.7 min CN=98 Runoff=1.15 cfs 0.266 af

Subcatchment 614S: 614S Runoff Area=5,458 sf 99.28% Impervious Runoff Depth>5.84"
Tc=68.9 min CN=98 Runoff=0.24 cfs 0.061 af

Subcatchment 615S: 615S Runoff Area=26,616 sf 99.90% Impervious Runoff Depth>5.84"
Flow Length=370' Slope=0.0001 '/' Tc=68.0 min CN=98 Runoff=1.16 cfs 0.297 af

Subcatchment 616S: 616S Runoff Area=8,937 sf 75.92% Impervious Runoff Depth>5.34"
Flow Length=195' Slope=0.0133 '/' Tc=5.0 min CN=93 Runoff=1.15 cfs 0.091 af

Subcatchment 617S: 617S Runoff Area=10,344 sf 0.07% Impervious Runoff Depth>3.13"
Flow Length=216' Slope=0.2648 '/' Tc=5.0 min CN=72 Runoff=0.87 cfs 0.062 af

Subcatchment 701S: 701S Runoff Area=21,147 sf 0.01% Impervious Runoff Depth>0.67"
Flow Length=153' Slope=0.0344 '/' Tc=10.5 min CN=42 Runoff=0.15 cfs 0.027 af

Subcatchment 702S: 702S Runoff Area=256,529 sf 0.50% Impervious Runoff Depth>0.60"
Flow Length=714' Slope=0.0674 '/' Tc=26.4 min CN=41 Runoff=0.97 cfs 0.295 af

Subcatchment 703S: 703S Runoff Area=6,055 sf 0.20% Impervious Runoff Depth>1.86"
Flow Length=11' Slope=0.3294 '/' Tc=5.0 min CN=58 Runoff=0.29 cfs 0.022 af

Subcatchment 704S: 704S Runoff Area=29,520 sf 0.00% Impervious Runoff Depth>1.69"
Flow Length=274' Slope=0.2098 '/' Tc=5.0 min CN=56 Runoff=1.28 cfs 0.096 af

Reach 10R: Diversion Berm Avg. Flow Depth=0.32' Max Vel=0.57 fps Inflow=0.29 cfs 0.022 af
n=0.030 L=580.0' S=0.0017 '/' Capacity=3.08 cfs Outflow=0.14 cfs 0.021 af

Reach DP-1: Wetland
Outflow=0.00 cfs 0.000 af

Reach DP-2: Police/DPW Facility Inflow=0.15 cfs 0.027 af
Outflow=0.15 cfs 0.027 af

Reach DP-3: WWTP Perimeter Swale Inflow=1.31 cfs 0.391 af
Outflow=1.31 cfs 0.391 af

Reach DP-4: Wetland Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 1D: ADS Subsurface Detention Peak Elev=210.91' Storage=16,298 cf Inflow=8.26 cfs 0.924 af
Discarded=0.33 cfs 0.510 af Primary=0.94 cfs 0.153 af Outflow=1.27 cfs 0.662 af

Pond 1P: Basin 1 Peak Elev=212.01' Storage=2,549 cf Inflow=1.56 cfs 0.138 af
Outflow=0.10 cfs 0.108 af

Pond 1SS: SSMH-1 Peak Elev=210.91' Inflow=8.26 cfs 0.924 af
24.0" Round Culvert n=0.013 L=5.0' S=0.0020 '/' Outflow=8.26 cfs 0.924 af

Pond 2D: ADS Subsurface Detention Peak Elev=201.54' Storage=10,777 cf Inflow=4.97 cfs 0.686 af
Outflow=0.51 cfs 0.636 af

Pond 2P: Basin 2 Peak Elev=208.41' Storage=8,764 cf Inflow=4.27 cfs 0.364 af
Discarded=0.18 cfs 0.206 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.206 af

Pond 2SS: SSMH-2 Peak Elev=201.72' Inflow=4.97 cfs 0.686 af
24.0" Round Culvert n=0.013 L=5.0' S=0.0000 '/' Outflow=4.97 cfs 0.686 af

Pond 3D: ADS Subsurface Detention Peak Elev=209.20' Storage=6,464 cf Inflow=3.86 cfs 0.315 af
Discarded=0.17 cfs 0.218 af Primary=0.00 cfs 0.000 af Outflow=0.17 cfs 0.218 af

Pond 3P: Basin 3 Peak Elev=206.96' Storage=8,410 cf Inflow=4.69 cfs 0.402 af
Discarded=0.25 cfs 0.282 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.25 cfs 0.282 af

Pond 3SS: SSMH-3 Peak Elev=209.72' Inflow=3.86 cfs 0.315 af
24.0" Round Culvert n=0.013 L=5.0' S=0.3280 '/' Outflow=3.86 cfs 0.315 af

Pond 4D: ADS Subsurface Detention Peak Elev=206.70' Storage=713 cf Inflow=0.61 cfs 0.052 af
Outflow=0.06 cfs 0.052 af

Pond 4P: Basin 4 Peak Elev=204.26' Storage=5,850 cf Inflow=3.70 cfs 0.293 af
Outflow=0.20 cfs 0.215 af

Pond 4SS: SSMH-4 Peak Elev=207.15' Inflow=0.61 cfs 0.052 af
24.0" Round Culvert n=0.013 L=5.0' S=0.1660 '/' Outflow=0.61 cfs 0.052 af

Pond 5P: Basin 5 Peak Elev=202.05' Storage=13,607 cf Inflow=7.53 cfs 0.599 af
Outflow=0.33 cfs 0.368 af

Pond 6P: Basin 6 Peak Elev=203.38' Storage=17,073 cf Inflow=4.65 cfs 0.680 af
Outflow=0.38 cfs 0.398 af

Pond 7P: Basin 7 Peak Elev=202.88' Storage=987 cf Inflow=0.87 cfs 0.062 af
Outflow=0.08 cfs 0.060 af

Pond CB1: CB-1 Peak Elev=211.41' Inflow=0.61 cfs 0.052 af
Outflow=0.61 cfs 0.052 af

Pond CB10: CB-10 Peak Elev=210.65' Inflow=0.33 cfs 0.028 af
Outflow=0.33 cfs 0.028 af

Pond CB11: CB-11 Peak Elev=211.77' Inflow=0.48 cfs 0.041 af
Outflow=0.48 cfs 0.041 af

Pond CB12: CB-12 Peak Elev=210.54' Inflow=0.50 cfs 0.042 af
Outflow=0.50 cfs 0.042 af

Pond CB13: CB-13 Peak Elev=210.05' Inflow=0.32 cfs 0.027 af
Outflow=0.32 cfs 0.027 af

Pond CB14: CB-14 Peak Elev=210.05' Inflow=0.29 cfs 0.024 af
Outflow=0.29 cfs 0.024 af

Pond CB15: CB-15 Peak Elev=214.27' Inflow=0.54 cfs 0.045 af
Outflow=0.54 cfs 0.045 af

Pond CB16: CB-16 Peak Elev=214.58' Inflow=0.63 cfs 0.050 af
Outflow=0.63 cfs 0.050 af

Pond CB17: CB-17 Peak Elev=213.05' Inflow=0.30 cfs 0.023 af
Outflow=0.30 cfs 0.023 af

Pond CB18: CB-18 Peak Elev=214.06' Inflow=0.34 cfs 0.029 af
Outflow=0.34 cfs 0.029 af

Pond CB19: CB-19 Peak Elev=209.58' Inflow=0.60 cfs 0.051 af
Outflow=0.60 cfs 0.051 af

Pond CB2: CB-2 Peak Elev=214.05' Inflow=0.66 cfs 0.056 af
Outflow=0.66 cfs 0.056 af

Pond CB20: CB-20 Peak Elev=214.09' Inflow=1.33 cfs 0.113 af
Outflow=1.33 cfs 0.113 af

Pond CB21: CB-21 Peak Elev=212.29' Inflow=0.73 cfs 0.059 af
Outflow=0.73 cfs 0.059 af

Pond CB22: CB-22 Peak Elev=212.09' Inflow=0.76 cfs 0.063 af
Outflow=0.76 cfs 0.063 af

Pond CB23: CB-23 Peak Elev=212.10' Inflow=1.26 cfs 0.101 af
Outflow=1.26 cfs 0.101 af

Pond CB24: CB-24 Peak Elev=214.05' Inflow=0.32 cfs 0.023 af
Outflow=0.32 cfs 0.023 af

Pond CB25: CB-25 Peak Elev=212.47' Inflow=1.04 cfs 0.077 af
Outflow=1.04 cfs 0.077 af

Pond CB26: CB-26 Peak Elev=214.09' Inflow=0.73 cfs 0.057 af
Outflow=0.73 cfs 0.057 af

Pond CB27: CB-27 Peak Elev=214.59' Inflow=0.69 cfs 0.058 af
Outflow=0.69 cfs 0.058 af

Pond CB28: CB-28 Peak Elev=214.06' Inflow=0.40 cfs 0.031 af
Outflow=0.40 cfs 0.031 af

Pond CB29: CB-29 Peak Elev=214.99' Inflow=0.70 cfs 0.053 af
Outflow=0.70 cfs 0.053 af

Pond CB3: CB-3 Peak Elev=216.95' Inflow=0.34 cfs 0.029 af
Outflow=0.34 cfs 0.029 af

Pond CB30: CB-30 Peak Elev=215.07' Inflow=0.91 cfs 0.078 af
Outflow=0.91 cfs 0.078 af

Pond CB31: CB-31 Peak Elev=214.07' Inflow=0.47 cfs 0.039 af
Outflow=0.47 cfs 0.039 af

Pond CB32: CB-32 Peak Elev=214.79' Inflow=0.76 cfs 0.072 af
Outflow=0.76 cfs 0.072 af

Pond CB33: CB-33 Peak Elev=215.10' Inflow=0.80 cfs 0.066 af
Outflow=0.80 cfs 0.066 af

Pond CB34: CB-34 Peak Elev=211.29' Inflow=0.67 cfs 0.048 af
Outflow=0.67 cfs 0.048 af

Pond CB35: CB-35 Peak Elev=212.48' Inflow=0.65 cfs 0.055 af
Outflow=0.65 cfs 0.055 af

Pond CB36: CB-36 Peak Elev=214.10' Inflow=0.86 cfs 0.066 af
Outflow=0.86 cfs 0.066 af

Pond CB37: CB-37 Peak Elev=215.08' Inflow=0.61 cfs 0.050 af
Outflow=0.61 cfs 0.050 af

Pond CB38: CB-38 Peak Elev=206.13' Inflow=1.29 cfs 0.094 af
Outflow=1.29 cfs 0.094 af

Pond CB39: CB-39 Peak Elev=206.18' Inflow=2.07 cfs 0.148 af
Outflow=2.07 cfs 0.148 af

Pond CB4: CB-4 Peak Elev=216.95' Inflow=0.32 cfs 0.027 af
Outflow=0.32 cfs 0.027 af

Pond CB40: CB-40 Peak Elev=215.96' Inflow=0.37 cfs 0.027 af
Outflow=0.37 cfs 0.027 af

Pond CB41: CB-41 Peak Elev=215.70' Inflow=1.63 cfs 0.135 af
Outflow=1.63 cfs 0.135 af

Pond CB42: CB-4 Peak Elev=215.72' Inflow=2.14 cfs 0.182 af
Outflow=2.14 cfs 0.182 af

Pond CB43: CB-43 Peak Elev=215.72' Inflow=2.13 cfs 0.181 af
Outflow=2.13 cfs 0.181 af

Pond CB44: CB-44 Peak Elev=215.74' Inflow=1.30 cfs 0.110 af
Outflow=1.30 cfs 0.110 af

Pond CB45: CB-45 Peak Elev=208.73' Inflow=0.14 cfs 0.077 af
Outflow=0.14 cfs 0.077 af

Pond CB46: CB-46 Peak Elev=214.94' Inflow=0.24 cfs 0.061 af
Outflow=0.24 cfs 0.061 af

Pond CB47: CB-47 Peak Elev=206.12' Inflow=1.15 cfs 0.091 af
Outflow=1.15 cfs 0.091 af

Pond CB48: CB-48 Peak Elev=206.05' Inflow=0.66 cfs 0.056 af
Outflow=0.66 cfs 0.056 af

Pond CB49: CB-49 Peak Elev=206.11' Inflow=1.93 cfs 0.164 af
Outflow=1.93 cfs 0.164 af

Pond CB5: CB-5 Peak Elev=217.57' Inflow=0.44 cfs 0.034 af
Outflow=0.44 cfs 0.034 af

Pond CB50: CB-4 Peak Elev=205.11' Inflow=1.99 cfs 0.169 af
Outflow=1.99 cfs 0.169 af

Pond CB51: CB-51 Peak Elev=205.61' Inflow=1.99 cfs 0.169 af
Outflow=1.99 cfs 0.169 af

Pond CB52: CB-52 Peak Elev=206.09' Inflow=1.39 cfs 0.118 af
Outflow=1.39 cfs 0.118 af

Pond CB6: CB-6 Peak Elev=217.65' Inflow=0.31 cfs 0.025 af
Outflow=0.31 cfs 0.025 af

Pond CB7: CB-7 Peak Elev=213.66' Inflow=0.42 cfs 0.033 af
Outflow=0.42 cfs 0.033 af

Pond CB8: CB-8 Peak Elev=213.65' Inflow=0.30 cfs 0.024 af
Outflow=0.30 cfs 0.024 af

Pond CB9: CB-9 Peak Elev=210.65' Inflow=0.32 cfs 0.027 af
Outflow=0.32 cfs 0.027 af

Pond MH1: DMH-1 Peak Elev=214.05' Inflow=0.65 cfs 0.055 af
15.0" Round Culvert n=0.013 L=32.0' S=0.0050 '/' Outflow=0.65 cfs 0.055 af

Pond MH10: CB-31 Peak Elev=207.88' Inflow=3.37 cfs 0.265 af
18.0" Round Culvert n=0.013 L=69.0' S=0.0049 '/' Outflow=3.37 cfs 0.265 af

Pond MH11: CB-31 Peak Elev=207.37' Inflow=3.37 cfs 0.265 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=3.37 cfs 0.265 af

Pond MH12: DMH-12 Peak Elev=211.09' Inflow=1.80 cfs 0.145 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=1.80 cfs 0.145 af

Pond MH13: DMH-13 Peak Elev=210.62' Inflow=2.50 cfs 0.198 af
18.0" Round Culvert n=0.013 L=91.0' S=0.0051 '/' Outflow=2.50 cfs 0.198 af

Pond MH14: DMH-14 Peak Elev=210.10' Inflow=3.86 cfs 0.315 af
24.0" Round Culvert n=0.013 L=35.0' S=0.0051 '/' Outflow=3.86 cfs 0.315 af

Pond MH15: DMH-15 Peak Elev=208.90' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.013 L=185.0' S=0.0050 '/' Outflow=0.00 cfs 0.000 af

Pond MH16: DMH-16 Peak Elev=208.35' Inflow=0.76 cfs 0.072 af
18.0" Round Culvert n=0.013 L=95.0' S=0.0049 '/' Outflow=0.76 cfs 0.072 af

Pond MH17: DMH-17 Peak Elev=207.96' Inflow=1.48 cfs 0.138 af
18.0" Round Culvert n=0.013 L=126.0' S=0.0103 '/' Outflow=1.48 cfs 0.138 af

Pond MH18: DMH-18 Peak Elev=206.80' Inflow=3.57 cfs 0.307 af
24.0" Round Culvert n=0.013 L=46.0' S=0.0478 '/' Outflow=3.57 cfs 0.307 af

Pond MH19: DMH-19 Peak Elev=204.62' Inflow=4.18 cfs 0.357 af
30.0" Round Culvert n=0.013 L=80.0' S=0.0050 '/' Outflow=4.18 cfs 0.357 af

Pond MH2: DMH-2 Peak Elev=208.41' Inflow=0.98 cfs 0.083 af
12.0" Round Culvert n=0.013 L=12.8' S=0.0047 '/' Outflow=0.98 cfs 0.083 af

Pond MH20: DMH-20 Peak Elev=212.21' Inflow=2.27 cfs 0.185 af
18.0" Round Culvert n=0.013 L=73.0' S=0.0049 '/' Outflow=2.27 cfs 0.185 af

Pond MH21: DMH-21 Peak Elev=211.93' Inflow=4.41 cfs 0.367 af
18.0" Round Culvert n=0.013 L=85.0' S=0.0051 '/' Outflow=4.41 cfs 0.367 af

Pond MH22: DMH-22 Peak Elev=213.16' Inflow=3.85 cfs 0.557 af
18.0" Round Culvert n=0.013 L=10.0' S=0.0050 '/' Outflow=3.85 cfs 0.557 af

Pond MH24: DMH-24 Peak Elev=210.31' Inflow=0.94 cfs 0.153 af
18.0" Round Culvert n=0.013 L=156.0' S=0.0371 '/' Outflow=0.94 cfs 0.153 af

Pond MH25: DMH-25 Peak Elev=204.59' Inflow=1.20 cfs 0.291 af
18.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=1.20 cfs 0.291 af

Pond MH26: DMH-26 Peak Elev=203.38' Inflow=3.38 cfs 0.288 af
18.0" Round Culvert n=0.013 L=80.0' S=0.0050 '/' Outflow=3.38 cfs 0.288 af

Pond MH27: DMH-27 Peak Elev=202.33' Inflow=2.98 cfs 0.517 af
18.0" Round Culvert n=0.013 L=86.0' S=0.0050 '/' Outflow=2.98 cfs 0.517 af

Pond MH3: DMH-3 Peak Elev=214.43' Inflow=0.75 cfs 0.059 af
18.0" Round Culvert n=0.013 L=395.0' S=0.0050 '/' Outflow=0.75 cfs 0.059 af

Pond MH4: DMH-4 Peak Elev=210.62' Inflow=1.47 cfs 0.116 af
18.0" Round Culvert n=0.013 L=198.0' S=0.0050 '/' Outflow=1.47 cfs 0.116 af

Pond MH5: DMH-5 Peak Elev=208.41' Inflow=2.13 cfs 0.171 af
18.0" Round Culvert n=0.013 L=34.3' S=0.0050 '/' Outflow=2.13 cfs 0.171 af

Pond MH6: DMH-6 Peak Elev=207.03' Inflow=2.26 cfs 0.192 af
12.0" Round Culvert x 2.00 n=0.013 L=10.0' S=0.0050 '/' Outflow=2.26 cfs 0.192 af

Pond MH7: DMH-7 Peak Elev=210.60' Inflow=1.46 cfs 0.118 af
18.0" Round Culvert n=0.013 L=75.0' S=0.0340 '/' Outflow=1.46 cfs 0.118 af

Pond MH8: DMH-8 Peak Elev=209.41' Inflow=2.01 cfs 0.164 af
18.0" Round Culvert n=0.013 L=133.0' S=0.0050 '/' Outflow=2.01 cfs 0.164 af

Pond MH9: CB-31 Peak Elev=208.73' Inflow=2.34 cfs 0.188 af
18.0" Round Culvert n=0.013 L=190.0' S=0.0050 '/' Outflow=2.34 cfs 0.188 af

Pond R1: R-1 Peak Elev=219.16' Storage=1 cf Inflow=1.15 cfs 0.266 af
Outflow=1.15 cfs 0.266 af

Pond R2: R-2 Peak Elev=208.22' Storage=1 cf Inflow=1.16 cfs 0.297 af
Outflow=1.16 cfs 0.297 af

Pond R3: R-3 Peak Elev=214.33' Storage=0 cf Inflow=0.27 cfs 0.023 af
Outflow=0.27 cfs 0.023 af

Total Runoff Area = 18.355 ac Runoff Volume = 4.781 af Average Runoff Depth = 3.13"
55.52% Pervious = 10.190 ac 44.48% Impervious = 8.165 ac

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 100S: 100S Runoff Area=16,048 sf 1.48% Impervious Runoff Depth>1.67"
Flow Length=271' Slope=0.2676 '/' Tc=5.5 min CN=45 Runoff=0.62 cfs 0.051 af

Subcatchment 101S: 101S Runoff Area=4,604 sf 99.20% Impervious Runoff Depth>7.63"
Flow Length=250' Slope=0.0454 '/' Tc=5.0 min CN=98 Runoff=0.79 cfs 0.067 af

Subcatchment 102S: 102S Runoff Area=4,972 sf 99.97% Impervious Runoff Depth>7.63"
Flow Length=191' Slope=0.0647 '/' Tc=5.0 min CN=98 Runoff=0.85 cfs 0.073 af

Subcatchment 103S: 103S Runoff Area=2,524 sf 99.84% Impervious Runoff Depth>7.63"
Flow Length=190' Slope=0.0262 '/' Tc=5.0 min CN=98 Runoff=0.43 cfs 0.037 af

Subcatchment 104S: 104S Runoff Area=2,369 sf 99.85% Impervious Runoff Depth>7.63"
Flow Length=193' Slope=0.0531 '/' Tc=5.0 min CN=98 Runoff=0.40 cfs 0.035 af

Subcatchment 200S: 200S Runoff Area=5,107 sf 0.04% Impervious Runoff Depth>2.80"
Flow Length=86' Slope=0.3119 '/' Tc=5.0 min CN=56 Runoff=0.38 cfs 0.027 af

Subcatchment 201S: 201S Runoff Area=13,023 sf 0.00% Impervious Runoff Depth>2.80"
Flow Length=580' Slope=0.1372 '/' Tc=10.6 min CN=56 Runoff=0.76 cfs 0.070 af

Subcatchment 202S: 202S Runoff Area=3,513 sf 65.30% Impervious Runoff Depth>6.68"
Flow Length=188' Slope=0.0633 '/' Tc=5.0 min CN=90 Runoff=0.57 cfs 0.045 af

Subcatchment 203S: 203S Runoff Area=2,381 sf 88.01% Impervious Runoff Depth>7.27"
Flow Length=195' Slope=0.0357 '/' Tc=5.0 min CN=95 Runoff=0.40 cfs 0.033 af

Subcatchment 204S: 204S Runoff Area=3,342 sf 71.56% Impervious Runoff Depth>6.80"
Flow Length=199' Slope=0.0581 '/' Tc=5.0 min CN=91 Runoff=0.55 cfs 0.043 af

Subcatchment 205S: 205S Runoff Area=2,387 sf 70.63% Impervious Runoff Depth>6.92"
Flow Length=198' Slope=0.0233 '/' Tc=5.0 min CN=92 Runoff=0.39 cfs 0.032 af

Subcatchment 206S: 206S Runoff Area=2,446 sf 98.11% Impervious Runoff Depth>7.51"
Flow Length=198' Slope=0.0272 '/' Tc=5.0 min CN=97 Runoff=0.42 cfs 0.035 af

Subcatchment 207S: 207S Runoff Area=2,467 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=198' Slope=0.0178 '/' Tc=5.0 min CN=98 Runoff=0.42 cfs 0.036 af

Subcatchment 208S: 208S Runoff Area=2,368 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=75' Slope=0.0259 '/' Tc=5.0 min CN=98 Runoff=0.40 cfs 0.035 af

Subcatchment 209S: 209S Runoff Area=2,142 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=66' Slope=0.0272 '/' Tc=5.0 min CN=98 Runoff=0.37 cfs 0.031 af

Subcatchment 210S: 210S Runoff Area=3,634 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=182' Slope=0.0066 '/' Tc=5.0 min CN=98 Runoff=0.62 cfs 0.053 af

Subcatchment 211S: 211S Runoff Area=3,726 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=192' Slope=0.0364 '/' Tc=5.0 min CN=98 Runoff=0.64 cfs 0.054 af

Subcatchment 300S: 300S Runoff Area=5,728 sf 1.00% Impervious Runoff Depth>1.97"
Flow Length=60' Slope=0.3181 '/' Tc=5.0 min CN=48 Runoff=0.28 cfs 0.022 af

Subcatchment 301S: 301S Runoff Area=7,393 sf 25.16% Impervious Runoff Depth>2.70"
Flow Length=90' Slope=0.0369 '/' Tc=5.0 min UI Adjusted CN=55 Runoff=0.53 cfs 0.038 af

Subcatchment 302S: 302S Runoff Area=4,293 sf 91.05% Impervious Runoff Depth>7.15"
Flow Length=102' Slope=0.0024 '/' Tc=6.1 min CN=94 Runoff=0.69 cfs 0.059 af

Subcatchment 303S: 303S Runoff Area=4,892 sf 90.09% Impervious Runoff Depth>7.04"
Flow Length=116' Slope=0.0087 '/' Tc=5.0 min CN=93 Runoff=0.81 cfs 0.066 af

Subcatchment 304S: 304S Runoff Area=2,534 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=81' Slope=0.0080 '/' Tc=5.0 min CN=98 Runoff=0.43 cfs 0.037 af

Subcatchment 305S: 305S Runoff Area=9,974 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=127' Slope=0.0042 '/' Tc=5.0 min CN=98 Runoff=1.70 cfs 0.146 af

Subcatchment 306S: 306S Runoff Area=5,568 sf 93.75% Impervious Runoff Depth>7.27"
Flow Length=129' Slope=0.0516 '/' Tc=5.0 min CN=95 Runoff=0.94 cfs 0.077 af

Subcatchment 307S: 307S Runoff Area=4,466 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=97' Slope=0.1504 '/' Tc=5.0 min CN=98 Runoff=0.76 cfs 0.065 af

Subcatchment 400S: 400S Runoff Area=12,752 sf 0.00% Impervious Runoff Depth>2.07"
Flow Length=118' Slope=0.5000 '/' Tc=5.0 min CN=49 Runoff=0.67 cfs 0.050 af

Subcatchment 401S: 401S Runoff Area=9,676 sf 91.33% Impervious Runoff Depth>7.15"
Flow Length=277' Slope=0.0262 '/' Tc=5.0 min CN=94 Runoff=1.62 cfs 0.132 af

Subcatchment 402S: 402S Runoff Area=5,699 sf 98.17% Impervious Runoff Depth>7.51"
Flow Length=189' Slope=0.0230 '/' Tc=5.0 min CN=97 Runoff=0.97 cfs 0.082 af

Subcatchment 403S: 403S Runoff Area=3,356 sf 57.17% Impervious Runoff Depth>5.16"
Flow Length=93' Slope=0.0420 '/' Tc=5.0 min CN=77 Runoff=0.45 cfs 0.033 af

Subcatchment 404S: 404S Runoff Area=10,254 sf 63.96% Impervious Runoff Depth>5.50"
Flow Length=193' Slope=0.0236 '/' Tc=5.5 min CN=80 Runoff=1.44 cfs 0.108 af

Subcatchment 500S: 500S Runoff Area=23,945 sf 25.10% Impervious Runoff Depth>4.70"
Flow Length=119' Slope=0.1593 '/' Tc=5.0 min UI Adjusted CN=73 Runoff=2.98 cfs 0.215 af

Subcatchment 501S: 501S Runoff Area=5,785 sf 85.28% Impervious Runoff Depth>6.80"
Flow Length=69' Slope=0.0081 '/' Tc=5.0 min CN=91 Runoff=0.95 cfs 0.075 af

Subcatchment 502S: 502S Runoff Area=5,884 sf 84.95% Impervious Runoff Depth>6.79"
Flow Length=162' Slope=0.0053 '/' Tc=6.9 min CN=91 Runoff=0.90 cfs 0.076 af

Subcatchment 503S: 503S Runoff Area=5,683 sf 81.04% Impervious Runoff Depth>6.56"
Flow Length=122' Slope=0.0101 '/' Tc=5.0 min CN=89 Runoff=0.91 cfs 0.071 af

Subcatchment 504S: 504S Runoff Area=3,171 sf 85.31% Impervious Runoff Depth>6.80"
Flow Length=140' Slope=0.0105 '/' Tc=5.0 min CN=91 Runoff=0.52 cfs 0.041 af

Subcatchment 505S: 505S Runoff Area=7,640 sf 89.34% Impervious Runoff Depth>7.03"
Flow Length=189' Slope=0.0052 '/' Tc=7.2 min CN=93 Runoff=1.18 cfs 0.103 af

Subcatchment 506S: 506S Runoff Area=7,342 sf 77.95% Impervious Runoff Depth>6.32"
Flow Length=237' Slope=0.0122 '/' Tc=7.2 min CN=87 Runoff=1.07 cfs 0.089 af

Subcatchment 507S: 507S Runoff Area=10,148 sf 58.61% Impervious Runoff Depth>5.26"
Flow Length=138' Slope=0.0031 '/' Tc=12.4 min CN=78 Runoff=1.06 cfs 0.102 af

Subcatchment 508S: 508S Runoff Area=4,639 sf 96.02% Impervious Runoff Depth>7.39"
Flow Length=47' Slope=0.0332 '/' Tc=5.0 min CN=96 Runoff=0.79 cfs 0.066 af

Subcatchment 509S: 509S Runoff Area=7,021 sf 81.27% Impervious Runoff Depth>6.56"
Flow Length=81' Slope=0.0254 '/' Tc=5.0 min CN=89 Runoff=1.13 cfs 0.088 af

Subcatchment 510S: 510S Runoff Area=7,367 sf 54.04% Impervious Runoff Depth>4.93"
Flow Length=181' Slope=0.0487 '/' Tc=5.0 min CN=75 Runoff=0.96 cfs 0.069 af

Subcatchment 511S: 511S Runoff Area=11,919 sf 66.76% Impervious Runoff Depth>5.74"
Flow Length=165' Slope=0.1792 '/' Tc=5.0 min CN=82 Runoff=1.75 cfs 0.131 af

Subcatchment 512S: 512S Runoff Area=4,847 sf 99.72% Impervious Runoff Depth>7.63"
Flow Length=135' Slope=0.0492 '/' Tc=5.0 min CN=98 Runoff=0.83 cfs 0.071 af

Subcatchment 513S: 513S Runoff Area=3,621 sf 93.15% Impervious Runoff Depth>7.27"
Flow Length=120' Slope=0.0111 '/' Tc=5.0 min CN=95 Runoff=0.61 cfs 0.050 af

Subcatchment 600S: 600S Runoff Area=11,097 sf 0.00% Impervious Runoff Depth>1.03"
Flow Length=440' Slope=0.0020 '/' Tc=109.7 min CN=39 Runoff=0.05 cfs 0.022 af

Subcatchment 601S: 601S Runoff Area=4,934 sf 99.24% Impervious Runoff Depth>7.63"
Flow Length=190' Slope=0.0460 '/' Tc=5.0 min CN=98 Runoff=0.84 cfs 0.072 af

Subcatchment 602S: 602S Runoff Area=14,445 sf 98.07% Impervious Runoff Depth>7.63"
Flow Length=89' Slope=0.1108 '/' Tc=5.0 min CN=98 Runoff=2.46 cfs 0.211 af

Subcatchment 603S: 603S Runoff Area=14,930 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=84' Slope=0.0144 '/' Tc=5.0 min CN=98 Runoff=2.55 cfs 0.218 af

Subcatchment 604S: 604S Runoff Area=14,934 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=71' Slope=0.0188 '/' Tc=5.0 min CN=98 Runoff=2.55 cfs 0.218 af

Subcatchment 605S: 605S Runoff Area=10,448 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=84' Slope=0.0102 '/' Tc=5.0 min CN=98 Runoff=1.78 cfs 0.153 af

Subcatchment 606S: 606S Runoff Area=4,304 sf 51.34% Impervious Runoff Depth>4.81"
Flow Length=87' Slope=0.0093 '/' Tc=5.6 min CN=74 Runoff=0.53 cfs 0.040 af

Subcatchment 607S: 607S Runoff Area=12,360 sf 96.48% Impervious Runoff Depth>7.39"
Flow Length=77' Slope=0.0196 '/' Tc=5.0 min CN=96 Runoff=2.09 cfs 0.175 af

Subcatchment 608S: 608S Runoff Area=16,074 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=76' Slope=0.0189 '/' Tc=5.0 min CN=98 Runoff=2.74 cfs 0.235 af

Subcatchment 609S: 609S Runoff Area=15,970 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=74' Slope=0.0190 '/' Tc=5.0 min CN=98 Runoff=2.72 cfs 0.233 af

Subcatchment 610S: 610S Runoff Area=9,740 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=84' Slope=0.0161 '/' Tc=5.0 min CN=98 Runoff=1.66 cfs 0.142 af

Subcatchment 611S: 611S Runoff Area=7,305 sf 99.80% Impervious Runoff Depth>7.14"
Tc=244.9 min CN=98 Runoff=0.18 cfs 0.100 af

Subcatchment 612S: 612S Runoff Area=1,999 sf 100.00% Impervious Runoff Depth>7.63"
Flow Length=45' Slope=0.0440 '/' Tc=5.0 min CN=98 Runoff=0.34 cfs 0.029 af

Subcatchment 613S: 613S Runoff Area=23,737 sf 100.00% Impervious Runoff Depth>7.54"
Flow Length=70' Slope=0.0000 '/' Tc=56.7 min CN=98 Runoff=1.47 cfs 0.342 af

Subcatchment 614S: 614S Runoff Area=5,458 sf 99.28% Impervious Runoff Depth>7.52"
Tc=68.9 min CN=98 Runoff=0.30 cfs 0.078 af

Subcatchment 615S: 615S Runoff Area=26,616 sf 99.90% Impervious Runoff Depth>7.52"
Flow Length=370' Slope=0.0001 '/' Tc=68.0 min CN=98 Runoff=1.48 cfs 0.383 af

Subcatchment 616S: 616S Runoff Area=8,937 sf 75.92% Impervious Runoff Depth>7.04"
Flow Length=195' Slope=0.0133 '/' Tc=5.0 min CN=93 Runoff=1.49 cfs 0.120 af

Subcatchment 617S: 617S Runoff Area=10,344 sf 0.07% Impervious Runoff Depth>4.58"
Flow Length=216' Slope=0.2648 '/' Tc=5.0 min CN=72 Runoff=1.26 cfs 0.091 af

Subcatchment 701S: 701S Runoff Area=21,147 sf 0.01% Impervious Runoff Depth>1.38"
Flow Length=153' Slope=0.0344 '/' Tc=10.5 min CN=42 Runoff=0.49 cfs 0.056 af

Subcatchment 702S: 702S Runoff Area=256,529 sf 0.50% Impervious Runoff Depth>1.27"
Flow Length=714' Slope=0.0674 '/' Tc=26.4 min CN=41 Runoff=3.31 cfs 0.623 af

Subcatchment 703S: 703S Runoff Area=6,055 sf 0.20% Impervious Runoff Depth>3.02"
Flow Length=11' Slope=0.3294 '/' Tc=5.0 min CN=58 Runoff=0.49 cfs 0.035 af

Subcatchment 704S: 704S Runoff Area=29,520 sf 0.00% Impervious Runoff Depth>2.80"
Flow Length=274' Slope=0.2098 '/' Tc=5.0 min CN=56 Runoff=2.19 cfs 0.158 af

Reach 10R: Diversion Berm Avg. Flow Depth=0.40' Max Vel=0.67 fps Inflow=0.49 cfs 0.035 af
n=0.030 L=580.0' S=0.0017 '/' Capacity=3.08 cfs Outflow=0.27 cfs 0.034 af

Reach DP-1: Wetland
Outflow=0.00 cfs 0.000 af

Reach DP-2: Police/DPW Facility Inflow=0.49 cfs 0.056 af
Outflow=0.49 cfs 0.056 af

Reach DP-3: WWTP Perimeter Swale Inflow=3.78 cfs 0.781 af
Outflow=3.78 cfs 0.781 af

Reach DP-4: Wetland Inflow=1.02 cfs 0.123 af
Outflow=1.02 cfs 0.123 af

Pond 1D: ADS Subsurface Detention Peak Elev=211.20' Storage=17,957 cf Inflow=10.63 cfs 1.196 af
Discarded=0.34 cfs 0.542 af Primary=2.19 cfs 0.363 af Outflow=2.53 cfs 0.905 af

Pond 1P: Basin 1 Peak Elev=212.64' Storage=3,869 cf Inflow=2.29 cfs 0.195 af
Outflow=0.13 cfs 0.141 af

Pond 1SS: SSMH-1 Peak Elev=211.22' Inflow=10.63 cfs 1.196 af
24.0" Round Culvert n=0.013 L=5.0' S=0.0020 '/' Outflow=10.63 cfs 1.196 af

Pond 2D: ADS Subsurface Detention Peak Elev=202.15' Storage=15,326 cf Inflow=6.36 cfs 0.884 af
Outflow=0.58 cfs 0.735 af

Pond 2P: Basin 2 Peak Elev=208.88' Storage=10,264 cf Inflow=5.76 cfs 0.495 af
Discarded=0.20 cfs 0.229 af Primary=0.53 cfs 0.082 af Secondary=0.00 cfs 0.000 af Outflow=0.74 cfs 0.311 af

Pond 2SS: SSMH-2 Peak Elev=202.15' Inflow=6.36 cfs 0.884 af
24.0" Round Culvert n=0.013 L=5.0' S=0.0000 '/' Outflow=6.36 cfs 0.884 af

Pond 3D: ADS Subsurface Detention Peak Elev=209.61' Storage=7,493 cf Inflow=5.03 cfs 0.417 af
Discarded=0.18 cfs 0.237 af Primary=0.49 cfs 0.064 af Outflow=0.66 cfs 0.301 af

Pond 3P: Basin 3 Peak Elev=207.55' Storage=10,785 cf Inflow=6.35 cfs 0.544 af
Discarded=0.29 cfs 0.337 af Primary=0.08 cfs 0.014 af Secondary=0.41 cfs 0.027 af Outflow=0.78 cfs 0.378 af

Pond 3SS: SSMH-3 Peak Elev=209.86' Inflow=5.03 cfs 0.417 af
24.0" Round Culvert n=0.013 L=5.0' S=0.3280 '/' Outflow=5.03 cfs 0.417 af

Pond 4D: ADS Subsurface Detention Peak Elev=207.11' Storage=1,003 cf Inflow=0.79 cfs 0.067 af
Outflow=0.06 cfs 0.067 af

Pond 4P: Basin 4 Peak Elev=205.07' Storage=8,670 cf Inflow=5.14 cfs 0.406 af
Outflow=0.25 cfs 0.277 af

Pond 4SS: SSMH-4 Peak Elev=207.19' Inflow=0.79 cfs 0.067 af
24.0" Round Culvert n=0.013 L=5.0' S=0.1660 '/' Outflow=0.79 cfs 0.067 af

Pond 5P: Basin 5 Peak Elev=203.33' Storage=22,247 cf Inflow=10.33 cfs 0.894 af
Outflow=0.46 cfs 0.501 af

Pond 6P: Basin 6 Peak Elev=204.83' Storage=28,490 cf Inflow=5.97 cfs 1.054 af
Outflow=0.54 cfs 0.557 af

Pond 7P: Basin 7 Peak Elev=203.26' Storage=1,581 cf Inflow=1.26 cfs 0.091 af
Outflow=0.10 cfs 0.084 af

Pond CB1: CB-1 Peak Elev=211.43' Inflow=0.79 cfs 0.067 af
Outflow=0.79 cfs 0.067 af

Pond CB10: CB-10 Peak Elev=210.66' Inflow=0.42 cfs 0.036 af
Outflow=0.42 cfs 0.036 af

Pond CB11: CB-11 Peak Elev=211.78' Inflow=0.62 cfs 0.053 af
Outflow=0.62 cfs 0.053 af

Pond CB12: CB-12 Peak Elev=210.55' Inflow=0.64 cfs 0.054 af
Outflow=0.64 cfs 0.054 af

Pond CB13: CB-13 Peak Elev=210.06' Inflow=0.40 cfs 0.035 af
Outflow=0.40 cfs 0.035 af

Pond CB14: CB-14 Peak Elev=210.06' Inflow=0.37 cfs 0.031 af
Outflow=0.37 cfs 0.031 af

Pond CB15: CB-15 Peak Elev=214.29' Inflow=0.69 cfs 0.059 af
Outflow=0.69 cfs 0.059 af

Pond CB16: CB-16 Peak Elev=214.60' Inflow=0.81 cfs 0.066 af
Outflow=0.81 cfs 0.066 af

Pond CB17: CB-17 Peak Elev=213.07' Inflow=0.53 cfs 0.038 af
Outflow=0.53 cfs 0.038 af

Pond CB18: CB-18 Peak Elev=214.06' Inflow=0.43 cfs 0.037 af
Outflow=0.43 cfs 0.037 af

Pond CB19: CB-19 Peak Elev=209.59' Inflow=0.76 cfs 0.065 af
Outflow=0.76 cfs 0.065 af

Pond CB2: CB-2 Peak Elev=214.06' Inflow=0.85 cfs 0.073 af
Outflow=0.85 cfs 0.073 af

Pond CB20: CB-20 Peak Elev=214.10' Inflow=1.70 cfs 0.146 af
Outflow=1.70 cfs 0.146 af

Pond CB21: CB-21 Peak Elev=212.31' Inflow=0.94 cfs 0.077 af
Outflow=0.94 cfs 0.077 af

Pond CB22: CB-22 Peak Elev=212.11' Inflow=0.97 cfs 0.082 af
Outflow=0.97 cfs 0.082 af

Pond CB23: CB-23 Peak Elev=212.12' Inflow=1.62 cfs 0.132 af
Outflow=1.62 cfs 0.132 af

Pond CB24: CB-24 Peak Elev=214.07' Inflow=0.45 cfs 0.033 af
Outflow=0.45 cfs 0.033 af

Pond CB25: CB-25 Peak Elev=212.49' Inflow=1.44 cfs 0.108 af
Outflow=1.44 cfs 0.108 af

Pond CB26: CB-26 Peak Elev=214.11' Inflow=0.95 cfs 0.075 af
Outflow=0.95 cfs 0.075 af

Pond CB27: CB-27 Peak Elev=214.61' Inflow=0.90 cfs 0.076 af
Outflow=0.90 cfs 0.076 af

Pond CB28: CB-28 Peak Elev=214.07' Inflow=0.52 cfs 0.041 af
Outflow=0.52 cfs 0.041 af

Pond CB29: CB-29 Peak Elev=215.01' Inflow=0.91 cfs 0.071 af
Outflow=0.91 cfs 0.071 af

Pond CB3: CB-3 Peak Elev=216.96' Inflow=0.43 cfs 0.037 af
Outflow=0.43 cfs 0.037 af

Pond CB30: CB-30 Peak Elev=215.08' Inflow=1.18 cfs 0.103 af
Outflow=1.18 cfs 0.103 af

Pond CB31: CB-31 Peak Elev=214.08' Inflow=0.61 cfs 0.050 af
Outflow=0.61 cfs 0.050 af

Pond CB32: CB-32 Peak Elev=214.82' Inflow=1.06 cfs 0.102 af
Outflow=1.06 cfs 0.102 af

Pond CB33: CB-33 Peak Elev=215.12' Inflow=1.07 cfs 0.089 af
Outflow=1.07 cfs 0.089 af

Pond CB34: CB-34 Peak Elev=211.31' Inflow=0.96 cfs 0.069 af
Outflow=0.96 cfs 0.069 af

Pond CB35: CB-35 Peak Elev=212.50' Inflow=0.83 cfs 0.071 af
Outflow=0.83 cfs 0.071 af

Pond CB36: CB-36 Peak Elev=214.12' Inflow=1.13 cfs 0.088 af
Outflow=1.13 cfs 0.088 af

Pond CB37: CB-37 Peak Elev=215.10' Inflow=0.79 cfs 0.066 af
Outflow=0.79 cfs 0.066 af

Pond CB38: CB-38 Peak Elev=206.17' Inflow=1.75 cfs 0.131 af
Outflow=1.75 cfs 0.131 af

Pond CB39: CB-39 Peak Elev=206.24' Inflow=2.98 cfs 0.215 af
Outflow=2.98 cfs 0.215 af

Pond CB4: CB-4 Peak Elev=216.96' Inflow=0.40 cfs 0.035 af
Outflow=0.40 cfs 0.035 af

Pond CB40: CB-40 Peak Elev=215.97' Inflow=0.53 cfs 0.040 af
Outflow=0.53 cfs 0.040 af

Pond CB41: CB-41 Peak Elev=215.72' Inflow=2.09 cfs 0.175 af
Outflow=2.09 cfs 0.175 af

Pond CB42: CB-4 Peak Elev=215.74' Inflow=2.74 cfs 0.235 af
Outflow=2.74 cfs 0.235 af

Pond CB43: CB-43 Peak Elev=215.74' Inflow=2.72 cfs 0.233 af
Outflow=2.72 cfs 0.233 af

Pond CB44: CB-44 Peak Elev=215.76' Inflow=1.66 cfs 0.142 af
Outflow=1.66 cfs 0.142 af

Pond CB45: CB-45 Peak Elev=208.74' Inflow=0.18 cfs 0.100 af
Outflow=0.18 cfs 0.100 af

Pond CB46: CB-46 Peak Elev=214.95' Inflow=0.30 cfs 0.078 af
Outflow=0.30 cfs 0.078 af

Pond CB47: CB-47 Peak Elev=206.15' Inflow=1.49 cfs 0.120 af
Outflow=1.49 cfs 0.120 af

Pond CB48: CB-48 Peak Elev=206.06' Inflow=0.84 cfs 0.072 af
Outflow=0.84 cfs 0.072 af

Pond CB49: CB-49 Peak Elev=206.13' Inflow=2.46 cfs 0.211 af
Outflow=2.46 cfs 0.211 af

Pond CB5: CB-5 Peak Elev=217.58' Inflow=0.57 cfs 0.045 af
Outflow=0.57 cfs 0.045 af

Pond CB50: CB-4 Peak Elev=205.13' Inflow=2.55 cfs 0.218 af
Outflow=2.55 cfs 0.218 af

Pond CB51: CB-51 Peak Elev=205.63' Inflow=2.55 cfs 0.218 af
Outflow=2.55 cfs 0.218 af

Pond CB52: CB-52 Peak Elev=206.11' Inflow=1.78 cfs 0.153 af
Outflow=1.78 cfs 0.153 af

Pond CB6: CB-6 Peak Elev=217.66' Inflow=0.40 cfs 0.033 af
Outflow=0.40 cfs 0.033 af

Pond CB7: CB-7 Peak Elev=213.68' Inflow=0.55 cfs 0.043 af
Outflow=0.55 cfs 0.043 af

Pond CB8: CB-8 Peak Elev=213.66' Inflow=0.39 cfs 0.032 af
Outflow=0.39 cfs 0.032 af

Pond CB9: CB-9 Peak Elev=210.66' Inflow=0.42 cfs 0.035 af
Outflow=0.42 cfs 0.035 af

Pond MH1: DMH-1 Peak Elev=214.11' Inflow=0.83 cfs 0.071 af
15.0" Round Culvert n=0.013 L=32.0' S=0.0050 '/' Outflow=0.83 cfs 0.071 af

Pond MH10: CB-31 Peak Elev=208.10' Inflow=4.48 cfs 0.355 af
18.0" Round Culvert n=0.013 L=69.0' S=0.0049 '/' Outflow=4.48 cfs 0.355 af

Pond MH11: CB-31 Peak Elev=207.56' Inflow=4.48 cfs 0.355 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=4.48 cfs 0.355 af

Pond MH12: DMH-12 Peak Elev=211.25' Inflow=2.35 cfs 0.193 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=2.35 cfs 0.193 af

Pond MH13: DMH-13 Peak Elev=210.80' Inflow=3.26 cfs 0.264 af
18.0" Round Culvert n=0.013 L=91.0' S=0.0051 '/' Outflow=3.26 cfs 0.264 af

Pond MH14: DMH-14 Peak Elev=210.27' Inflow=5.03 cfs 0.417 af
24.0" Round Culvert n=0.013 L=35.0' S=0.0051 '/' Outflow=5.03 cfs 0.417 af

Pond MH15: DMH-15 Peak Elev=209.31' Inflow=0.49 cfs 0.064 af
12.0" Round Culvert n=0.013 L=185.0' S=0.0050 '/' Outflow=0.49 cfs 0.064 af

Pond MH16: DMH-16 Peak Elev=208.46' Inflow=1.06 cfs 0.166 af
18.0" Round Culvert n=0.013 L=95.0' S=0.0049 '/' Outflow=1.06 cfs 0.166 af

Pond MH17: DMH-17 Peak Elev=208.07' Inflow=2.02 cfs 0.255 af
18.0" Round Culvert n=0.013 L=126.0' S=0.0103 '/' Outflow=2.02 cfs 0.255 af

Pond MH18: DMH-18 Peak Elev=206.94' Inflow=4.81 cfs 0.483 af
24.0" Round Culvert n=0.013 L=46.0' S=0.0478 '/' Outflow=4.81 cfs 0.483 af

Pond MH19: DMH-19 Peak Elev=204.78' Inflow=5.59 cfs 0.548 af
30.0" Round Culvert n=0.013 L=80.0' S=0.0050 '/' Outflow=5.59 cfs 0.548 af

Pond MH2: DMH-2 Peak Elev=208.88' Inflow=1.26 cfs 0.107 af
12.0" Round Culvert n=0.013 L=12.8' S=0.0047 '/' Outflow=1.26 cfs 0.107 af

Pond MH20: DMH-20 Peak Elev=212.43' Inflow=2.97 cfs 0.244 af
18.0" Round Culvert n=0.013 L=73.0' S=0.0049 '/' Outflow=2.97 cfs 0.244 af

Pond MH21: DMH-21 Peak Elev=212.15' Inflow=5.71 cfs 0.478 af
18.0" Round Culvert n=0.013 L=85.0' S=0.0051 '/' Outflow=5.71 cfs 0.478 af

Pond MH22: DMH-22 Peak Elev=213.35' Inflow=4.92 cfs 0.718 af
18.0" Round Culvert n=0.013 L=10.0' S=0.0050 '/' Outflow=4.92 cfs 0.718 af

Pond MH24: DMH-24 Peak Elev=210.56' Inflow=2.19 cfs 0.363 af
18.0" Round Culvert n=0.013 L=156.0' S=0.0371 '/' Outflow=2.19 cfs 0.363 af

Pond MH25: DMH-25 Peak Elev=204.90' Inflow=2.56 cfs 0.541 af
18.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=2.56 cfs 0.541 af

Pond MH26: DMH-26 Peak Elev=204.83' Inflow=4.33 cfs 0.371 af
18.0" Round Culvert n=0.013 L=80.0' S=0.0050 '/' Outflow=4.33 cfs 0.371 af

Pond MH27: DMH-27 Peak Elev=202.50' Inflow=3.81 cfs 0.666 af
18.0" Round Culvert n=0.013 L=86.0' S=0.0050 '/' Outflow=3.81 cfs 0.666 af

Pond MH3: DMH-3 Peak Elev=214.49' Inflow=0.97 cfs 0.078 af
18.0" Round Culvert n=0.013 L=395.0' S=0.0050 '/' Outflow=0.97 cfs 0.078 af

Pond MH4: DMH-4 Peak Elev=210.71' Inflow=1.92 cfs 0.153 af
18.0" Round Culvert n=0.013 L=198.0' S=0.0050 '/' Outflow=1.92 cfs 0.153 af

Pond MH5: DMH-5 Peak Elev=208.88' Inflow=2.75 cfs 0.224 af
18.0" Round Culvert n=0.013 L=34.3' S=0.0050 '/' Outflow=2.75 cfs 0.224 af

Pond MH6: DMH-6 Peak Elev=207.55' Inflow=2.89 cfs 0.248 af
12.0" Round Culvert x 2.00 n=0.013 L=10.0' S=0.0050 '/' Outflow=2.89 cfs 0.248 af

Pond MH7: DMH-7 Peak Elev=210.70' Inflow=2.03 cfs 0.163 af
18.0" Round Culvert n=0.013 L=75.0' S=0.0340 '/' Outflow=2.03 cfs 0.163 af

Pond MH8: DMH-8 Peak Elev=209.55' Inflow=2.59 cfs 0.214 af
18.0" Round Culvert n=0.013 L=133.0' S=0.0050 '/' Outflow=2.59 cfs 0.214 af

Pond MH9: CB-31 Peak Elev=208.90' Inflow=3.05 cfs 0.247 af
18.0" Round Culvert n=0.013 L=190.0' S=0.0050 '/' Outflow=3.05 cfs 0.247 af

Pond R1: R-1 Peak Elev=222.64' Storage=2 cf Inflow=1.47 cfs 0.342 af
Outflow=1.47 cfs 0.342 af

Pond R2: R-2 Peak Elev=210.89' Storage=1 cf Inflow=1.48 cfs 0.383 af
Outflow=1.48 cfs 0.383 af

Pond R3: R-3 Peak Elev=214.38' Storage=0 cf Inflow=0.34 cfs 0.029 af
Outflow=0.34 cfs 0.029 af

Total Runoff Area = 18.355 ac Runoff Volume = 6.654 af Average Runoff Depth = 4.35"
55.52% Pervious = 10.190 ac 44.48% Impervious = 8.165 ac

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 100S: 100S Runoff Area=16,048 sf 1.48% Impervious Runoff Depth>0.87"
Flow Length=271' Slope=0.2676 '/' Tc=5.5 min CN=45 Runoff=0.26 cfs 0.027 af

Subcatchment 101S: 101S Runoff Area=4,604 sf 99.20% Impervious Runoff Depth>5.93"
Flow Length=250' Slope=0.0454 '/' Tc=5.0 min CN=98 Runoff=0.61 cfs 0.052 af

Subcatchment 102S: 102S Runoff Area=4,972 sf 99.97% Impervious Runoff Depth>5.93"
Flow Length=191' Slope=0.0647 '/' Tc=5.0 min CN=98 Runoff=0.66 cfs 0.056 af

Subcatchment 103S: 103S Runoff Area=2,524 sf 99.84% Impervious Runoff Depth>5.93"
Flow Length=190' Slope=0.0262 '/' Tc=5.0 min CN=98 Runoff=0.34 cfs 0.029 af

Subcatchment 104S: 104S Runoff Area=2,369 sf 99.85% Impervious Runoff Depth>5.93"
Flow Length=193' Slope=0.0531 '/' Tc=5.0 min CN=98 Runoff=0.32 cfs 0.027 af

Subcatchment 200S: 200S Runoff Area=5,107 sf 0.04% Impervious Runoff Depth>1.69"
Flow Length=86' Slope=0.3119 '/' Tc=5.0 min CN=56 Runoff=0.22 cfs 0.017 af

Subcatchment 201S: 201S Runoff Area=13,023 sf 0.00% Impervious Runoff Depth>1.69"
Flow Length=580' Slope=0.1372 '/' Tc=10.6 min CN=56 Runoff=0.44 cfs 0.042 af

Subcatchment 202S: 202S Runoff Area=3,513 sf 65.30% Impervious Runoff Depth>5.01"
Flow Length=188' Slope=0.0633 '/' Tc=5.0 min CN=90 Runoff=0.44 cfs 0.034 af

Subcatchment 203S: 203S Runoff Area=2,381 sf 88.01% Impervious Runoff Depth>5.57"
Flow Length=195' Slope=0.0357 '/' Tc=5.0 min CN=95 Runoff=0.31 cfs 0.025 af

Subcatchment 204S: 204S Runoff Area=3,342 sf 71.56% Impervious Runoff Depth>5.12"
Flow Length=199' Slope=0.0581 '/' Tc=5.0 min CN=91 Runoff=0.42 cfs 0.033 af

Subcatchment 205S: 205S Runoff Area=2,387 sf 70.63% Impervious Runoff Depth>5.23"
Flow Length=198' Slope=0.0233 '/' Tc=5.0 min CN=92 Runoff=0.30 cfs 0.024 af

Subcatchment 206S: 206S Runoff Area=2,446 sf 98.11% Impervious Runoff Depth>5.81"
Flow Length=198' Slope=0.0272 '/' Tc=5.0 min CN=97 Runoff=0.32 cfs 0.027 af

Subcatchment 207S: 207S Runoff Area=2,467 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=198' Slope=0.0178 '/' Tc=5.0 min CN=98 Runoff=0.33 cfs 0.028 af

Subcatchment 208S: 208S Runoff Area=2,368 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=75' Slope=0.0259 '/' Tc=5.0 min CN=98 Runoff=0.32 cfs 0.027 af

Subcatchment 209S: 209S Runoff Area=2,142 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=66' Slope=0.0272 '/' Tc=5.0 min CN=98 Runoff=0.29 cfs 0.024 af

Subcatchment 210S: 210S Runoff Area=3,634 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=182' Slope=0.0066 '/' Tc=5.0 min CN=98 Runoff=0.48 cfs 0.041 af

Subcatchment 211S: 211S Runoff Area=3,726 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=192' Slope=0.0364 '/' Tc=5.0 min CN=98 Runoff=0.50 cfs 0.042 af

Subcatchment 300S: 300S Runoff Area=5,728 sf 1.00% Impervious Runoff Depth>1.08"
Flow Length=60' Slope=0.3181 '/' Tc=5.0 min CN=48 Runoff=0.14 cfs 0.012 af

Subcatchment 301S: 301S Runoff Area=7,393 sf 25.16% Impervious Runoff Depth>1.61"
Flow Length=90' Slope=0.0369 '/' Tc=5.0 min UI Adjusted CN=55 Runoff=0.30 cfs 0.023 af

Subcatchment 302S: 302S Runoff Area=4,293 sf 91.05% Impervious Runoff Depth>5.46"
Flow Length=102' Slope=0.0024 '/' Tc=6.1 min CN=94 Runoff=0.54 cfs 0.045 af

Subcatchment 303S: 303S Runoff Area=4,892 sf 90.09% Impervious Runoff Depth>5.34"
Flow Length=116' Slope=0.0087 '/' Tc=5.0 min CN=93 Runoff=0.63 cfs 0.050 af

Subcatchment 304S: 304S Runoff Area=2,534 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=81' Slope=0.0080 '/' Tc=5.0 min CN=98 Runoff=0.34 cfs 0.029 af

Subcatchment 305S: 305S Runoff Area=9,974 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=127' Slope=0.0042 '/' Tc=5.0 min CN=98 Runoff=1.33 cfs 0.113 af

Subcatchment 306S: 306S Runoff Area=5,568 sf 93.75% Impervious Runoff Depth>5.57"
Flow Length=129' Slope=0.0516 '/' Tc=5.0 min CN=95 Runoff=0.73 cfs 0.059 af

Subcatchment 307S: 307S Runoff Area=4,466 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=97' Slope=0.1504 '/' Tc=5.0 min CN=98 Runoff=0.60 cfs 0.051 af

Subcatchment 400S: 400S Runoff Area=12,752 sf 0.00% Impervious Runoff Depth>1.15"
Flow Length=118' Slope=0.5000 '/' Tc=5.0 min CN=49 Runoff=0.33 cfs 0.028 af

Subcatchment 401S: 401S Runoff Area=9,676 sf 91.33% Impervious Runoff Depth>5.46"
Flow Length=277' Slope=0.0262 '/' Tc=5.0 min CN=94 Runoff=1.26 cfs 0.101 af

Subcatchment 402S: 402S Runoff Area=5,699 sf 98.17% Impervious Runoff Depth>5.81"
Flow Length=189' Slope=0.0230 '/' Tc=5.0 min CN=97 Runoff=0.76 cfs 0.063 af

Subcatchment 403S: 403S Runoff Area=3,356 sf 57.17% Impervious Runoff Depth>3.62"
Flow Length=93' Slope=0.0420 '/' Tc=5.0 min CN=77 Runoff=0.32 cfs 0.023 af

Subcatchment 404S: 404S Runoff Area=10,254 sf 63.96% Impervious Runoff Depth>3.93"
Flow Length=193' Slope=0.0236 '/' Tc=5.5 min CN=80 Runoff=1.04 cfs 0.077 af

Subcatchment 500S: 500S Runoff Area=23,945 sf 25.10% Impervious Runoff Depth>3.22"
Flow Length=119' Slope=0.1593 '/' Tc=5.0 min UI Adjusted CN=73 Runoff=2.07 cfs 0.148 af

Subcatchment 501S: 501S Runoff Area=5,785 sf 85.28% Impervious Runoff Depth>5.12"
Flow Length=69' Slope=0.0081 '/' Tc=5.0 min CN=91 Runoff=0.73 cfs 0.057 af

Subcatchment 502S: 502S Runoff Area=5,884 sf 84.95% Impervious Runoff Depth>5.11"
Flow Length=162' Slope=0.0053 '/' Tc=6.9 min CN=91 Runoff=0.69 cfs 0.058 af

Subcatchment 503S: 503S Runoff Area=5,683 sf 81.04% Impervious Runoff Depth>4.89"
Flow Length=122' Slope=0.0101 '/' Tc=5.0 min CN=89 Runoff=0.70 cfs 0.053 af

Subcatchment 504S: 504S Runoff Area=3,171 sf 85.31% Impervious Runoff Depth>5.12"
Flow Length=140' Slope=0.0105 '/' Tc=5.0 min CN=91 Runoff=0.40 cfs 0.031 af

Subcatchment 505S: 505S Runoff Area=7,640 sf 89.34% Impervious Runoff Depth>5.34"
Flow Length=189' Slope=0.0052 '/' Tc=7.2 min CN=93 Runoff=0.91 cfs 0.078 af

Subcatchment 506S: 506S Runoff Area=7,342 sf 77.95% Impervious Runoff Depth>4.67"
Flow Length=237' Slope=0.0122 '/' Tc=7.2 min CN=87 Runoff=0.80 cfs 0.066 af

Subcatchment 507S: 507S Runoff Area=10,148 sf 58.61% Impervious Runoff Depth>3.71"
Flow Length=138' Slope=0.0031 '/' Tc=12.4 min CN=78 Runoff=0.76 cfs 0.072 af

Subcatchment 508S: 508S Runoff Area=4,639 sf 96.02% Impervious Runoff Depth>5.69"
Flow Length=47' Slope=0.0332 '/' Tc=5.0 min CN=96 Runoff=0.61 cfs 0.050 af

Subcatchment 509S: 509S Runoff Area=7,021 sf 81.27% Impervious Runoff Depth>4.89"
Flow Length=81' Slope=0.0254 '/' Tc=5.0 min CN=89 Runoff=0.86 cfs 0.066 af

Subcatchment 510S: 510S Runoff Area=7,367 sf 54.04% Impervious Runoff Depth>3.42"
Flow Length=181' Slope=0.0487 '/' Tc=5.0 min CN=75 Runoff=0.67 cfs 0.048 af

Subcatchment 511S: 511S Runoff Area=11,919 sf 66.76% Impervious Runoff Depth>4.14"
Flow Length=165' Slope=0.1792 '/' Tc=5.0 min CN=82 Runoff=1.29 cfs 0.094 af

Subcatchment 512S: 512S Runoff Area=4,847 sf 99.72% Impervious Runoff Depth>5.93"
Flow Length=135' Slope=0.0492 '/' Tc=5.0 min CN=98 Runoff=0.65 cfs 0.055 af

Subcatchment 513S: 513S Runoff Area=3,621 sf 93.15% Impervious Runoff Depth>5.57"
Flow Length=120' Slope=0.0111 '/' Tc=5.0 min CN=95 Runoff=0.47 cfs 0.039 af

Subcatchment 600S: 600S Runoff Area=11,097 sf 0.00% Impervious Runoff Depth>0.45"
Flow Length=440' Slope=0.0020 '/' Tc=109.7 min CN=39 Runoff=0.02 cfs 0.010 af

Subcatchment 601S: 601S Runoff Area=4,934 sf 99.24% Impervious Runoff Depth>5.93"
Flow Length=190' Slope=0.0460 '/' Tc=5.0 min CN=98 Runoff=0.66 cfs 0.056 af

Subcatchment 602S: 602S Runoff Area=14,445 sf 98.07% Impervious Runoff Depth>5.93"
Flow Length=89' Slope=0.1108 '/' Tc=5.0 min CN=98 Runoff=1.93 cfs 0.164 af

Subcatchment 603S: 603S Runoff Area=14,930 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=84' Slope=0.0144 '/' Tc=5.0 min CN=98 Runoff=1.99 cfs 0.169 af

Subcatchment 604S: 604S Runoff Area=14,934 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=71' Slope=0.0188 '/' Tc=5.0 min CN=98 Runoff=1.99 cfs 0.169 af

Subcatchment 605S: 605S Runoff Area=10,448 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=84' Slope=0.0102 '/' Tc=5.0 min CN=98 Runoff=1.39 cfs 0.118 af

Subcatchment 606S: 606S Runoff Area=4,304 sf 51.34% Impervious Runoff Depth>3.32"
Flow Length=87' Slope=0.0093 '/' Tc=5.6 min CN=74 Runoff=0.37 cfs 0.027 af

Subcatchment 607S: 607S Runoff Area=12,360 sf 96.48% Impervious Runoff Depth>5.69"
Flow Length=77' Slope=0.0196 '/' Tc=5.0 min CN=96 Runoff=1.63 cfs 0.135 af

Subcatchment 608S: 608S Runoff Area=16,074 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=76' Slope=0.0189 '/' Tc=5.0 min CN=98 Runoff=2.14 cfs 0.182 af

Subcatchment 609S: 609S Runoff Area=15,970 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=74' Slope=0.0190 '/' Tc=5.0 min CN=98 Runoff=2.13 cfs 0.181 af

Subcatchment 610S: 610S Runoff Area=9,740 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=84' Slope=0.0161 '/' Tc=5.0 min CN=98 Runoff=1.30 cfs 0.110 af

Subcatchment 611S: 611S Runoff Area=7,305 sf 99.80% Impervious Runoff Depth>5.54"
Tc=244.9 min CN=98 Runoff=0.14 cfs 0.077 af

Subcatchment 612S: 612S Runoff Area=1,999 sf 100.00% Impervious Runoff Depth>5.93"
Flow Length=45' Slope=0.0440 '/' Tc=5.0 min CN=98 Runoff=0.27 cfs 0.023 af

Subcatchment 613S: 613S Runoff Area=23,737 sf 100.00% Impervious Runoff Depth>5.85"
Flow Length=70' Slope=0.0000 '/' Tc=56.7 min CN=98 Runoff=1.15 cfs 0.266 af

Subcatchment 614S: 614S Runoff Area=5,458 sf 99.28% Impervious Runoff Depth>5.84"
Tc=68.9 min CN=98 Runoff=0.24 cfs 0.061 af

Subcatchment 615S: 615S Runoff Area=26,616 sf 99.90% Impervious Runoff Depth>5.84"
Flow Length=370' Slope=0.0001 '/' Tc=68.0 min CN=98 Runoff=1.16 cfs 0.297 af

Subcatchment 616S: 616S Runoff Area=8,937 sf 75.92% Impervious Runoff Depth>5.34"
Flow Length=195' Slope=0.0133 '/' Tc=5.0 min CN=93 Runoff=1.15 cfs 0.091 af

Subcatchment 617S: 617S Runoff Area=10,344 sf 0.07% Impervious Runoff Depth>3.13"
Flow Length=216' Slope=0.2648 '/' Tc=5.0 min CN=72 Runoff=0.87 cfs 0.062 af

Subcatchment 701S: 701S Runoff Area=21,147 sf 0.01% Impervious Runoff Depth>0.67"
Flow Length=153' Slope=0.0344 '/' Tc=10.5 min CN=42 Runoff=0.15 cfs 0.027 af

Subcatchment 702S: 702S Runoff Area=256,529 sf 0.50% Impervious Runoff Depth>0.60"
Flow Length=714' Slope=0.0674 '/' Tc=26.4 min CN=41 Runoff=0.97 cfs 0.295 af

Subcatchment 703S: 703S Runoff Area=6,055 sf 0.20% Impervious Runoff Depth>1.86"
Flow Length=11' Slope=0.3294 '/' Tc=5.0 min CN=58 Runoff=0.29 cfs 0.022 af

Subcatchment 704S: 704S Runoff Area=29,520 sf 0.00% Impervious Runoff Depth>1.69"
Flow Length=274' Slope=0.2098 '/' Tc=5.0 min CN=56 Runoff=1.28 cfs 0.096 af

Reach 10R: Diversion Berm Avg. Flow Depth=0.32' Max Vel=0.57 fps Inflow=0.29 cfs 0.022 af
n=0.030 L=580.0' S=0.0017 '/' Capacity=3.08 cfs Outflow=0.14 cfs 0.021 af

Reach DP-1: Wetland
Outflow=0.00 cfs 0.000 af

Reach DP-2: Police/DPW Facility Inflow=0.15 cfs 0.027 af
Outflow=0.15 cfs 0.027 af

Reach DP-3: WWTP Perimeter Swale Inflow=1.31 cfs 0.391 af
Outflow=1.31 cfs 0.391 af

Reach DP-4: Wetland Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 1D: ADS Subsurface Detention Peak Elev=210.91' Storage=16,298 cf Inflow=8.26 cfs 0.924 af
Discarded=0.33 cfs 0.510 af Primary=0.94 cfs 0.153 af Outflow=1.27 cfs 0.662 af

Pond 1P: Basin 1 Peak Elev=212.01' Storage=2,549 cf Inflow=1.56 cfs 0.138 af
Outflow=0.10 cfs 0.108 af

Pond 1SS: SSMH-1 Peak Elev=210.91' Inflow=8.26 cfs 0.924 af
24.0" Round Culvert n=0.013 L=5.0' S=0.0020 '/' Outflow=8.26 cfs 0.924 af

Pond 2D: ADS Subsurface Detention Peak Elev=201.54' Storage=10,777 cf Inflow=4.97 cfs 0.686 af
Outflow=0.51 cfs 0.636 af

Pond 2P: Basin 2 Peak Elev=208.41' Storage=8,764 cf Inflow=4.27 cfs 0.364 af
Discarded=0.18 cfs 0.206 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.206 af

Pond 2SS: SSMH-2 Peak Elev=201.72' Inflow=4.97 cfs 0.686 af
24.0" Round Culvert n=0.013 L=5.0' S=0.0000 '/' Outflow=4.97 cfs 0.686 af

Pond 3D: ADS Subsurface Detention Peak Elev=209.20' Storage=6,464 cf Inflow=3.86 cfs 0.315 af
Discarded=0.17 cfs 0.218 af Primary=0.00 cfs 0.000 af Outflow=0.17 cfs 0.218 af

Pond 3P: Basin 3 Peak Elev=206.96' Storage=8,410 cf Inflow=4.69 cfs 0.402 af
Discarded=0.25 cfs 0.282 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.25 cfs 0.282 af

Pond 3SS: SSMH-3 Peak Elev=209.72' Inflow=3.86 cfs 0.315 af
24.0" Round Culvert n=0.013 L=5.0' S=0.3280 '/' Outflow=3.86 cfs 0.315 af

Pond 4D: ADS Subsurface Detention Peak Elev=206.70' Storage=713 cf Inflow=0.61 cfs 0.052 af
Outflow=0.06 cfs 0.052 af

Pond 4P: Basin 4 Peak Elev=204.26' Storage=5,850 cf Inflow=3.70 cfs 0.293 af
Outflow=0.20 cfs 0.215 af

Pond 4SS: SSMH-4 Peak Elev=207.15' Inflow=0.61 cfs 0.052 af
24.0" Round Culvert n=0.013 L=5.0' S=0.1660 '/' Outflow=0.61 cfs 0.052 af

Pond 5P: Basin 5 Peak Elev=202.05' Storage=13,607 cf Inflow=7.53 cfs 0.599 af
Outflow=0.33 cfs 0.368 af

Pond 6P: Basin 6 Peak Elev=203.38' Storage=17,073 cf Inflow=4.65 cfs 0.680 af
Outflow=0.38 cfs 0.398 af

Pond 7P: Basin 7 Peak Elev=202.88' Storage=987 cf Inflow=0.87 cfs 0.062 af
Outflow=0.08 cfs 0.060 af

Pond CB1: CB-1 Peak Elev=211.41' Inflow=0.61 cfs 0.052 af
Outflow=0.61 cfs 0.052 af

Pond CB10: CB-10 Peak Elev=210.65' Inflow=0.33 cfs 0.028 af
Outflow=0.33 cfs 0.028 af

Pond CB11: CB-11 Peak Elev=211.77' Inflow=0.48 cfs 0.041 af
Outflow=0.48 cfs 0.041 af

Pond CB12: CB-12 Peak Elev=210.54' Inflow=0.50 cfs 0.042 af
Outflow=0.50 cfs 0.042 af

Pond CB13: CB-13 Peak Elev=210.05' Inflow=0.32 cfs 0.027 af
Outflow=0.32 cfs 0.027 af

Pond CB14: CB-14 Peak Elev=210.05' Inflow=0.29 cfs 0.024 af
Outflow=0.29 cfs 0.024 af

Pond CB15: CB-15 Peak Elev=214.27' Inflow=0.54 cfs 0.045 af
Outflow=0.54 cfs 0.045 af

Pond CB16: CB-16 Peak Elev=214.58' Inflow=0.63 cfs 0.050 af
Outflow=0.63 cfs 0.050 af

Pond CB17: CB-17 Peak Elev=213.05' Inflow=0.30 cfs 0.023 af
Outflow=0.30 cfs 0.023 af

Pond CB18: CB-18 Peak Elev=214.06' Inflow=0.34 cfs 0.029 af
Outflow=0.34 cfs 0.029 af

Pond CB19: CB-19 Peak Elev=209.58' Inflow=0.60 cfs 0.051 af
Outflow=0.60 cfs 0.051 af

Pond CB2: CB-2 Peak Elev=214.05' Inflow=0.66 cfs 0.056 af
Outflow=0.66 cfs 0.056 af

Pond CB20: CB-20 Peak Elev=214.09' Inflow=1.33 cfs 0.113 af
Outflow=1.33 cfs 0.113 af

Pond CB21: CB-21 Peak Elev=212.29' Inflow=0.73 cfs 0.059 af
Outflow=0.73 cfs 0.059 af

Pond CB22: CB-22 Peak Elev=212.09' Inflow=0.76 cfs 0.063 af
Outflow=0.76 cfs 0.063 af

Pond CB23: CB-23 Peak Elev=212.10' Inflow=1.26 cfs 0.101 af
Outflow=1.26 cfs 0.101 af

Pond CB24: CB-24 Peak Elev=214.05' Inflow=0.32 cfs 0.023 af
Outflow=0.32 cfs 0.023 af

Pond CB25: CB-25 Peak Elev=212.47' Inflow=1.04 cfs 0.077 af
Outflow=1.04 cfs 0.077 af

Pond CB26: CB-26 Peak Elev=214.09' Inflow=0.73 cfs 0.057 af
Outflow=0.73 cfs 0.057 af

Pond CB27: CB-27 Peak Elev=214.59' Inflow=0.69 cfs 0.058 af
Outflow=0.69 cfs 0.058 af

Pond CB28: CB-28 Peak Elev=214.06' Inflow=0.40 cfs 0.031 af
Outflow=0.40 cfs 0.031 af

Pond CB29: CB-29 Peak Elev=214.99' Inflow=0.70 cfs 0.053 af
Outflow=0.70 cfs 0.053 af

Pond CB3: CB-3 Peak Elev=216.95' Inflow=0.34 cfs 0.029 af
Outflow=0.34 cfs 0.029 af

Pond CB30: CB-30 Peak Elev=215.07' Inflow=0.91 cfs 0.078 af
Outflow=0.91 cfs 0.078 af

Pond CB31: CB-31 Peak Elev=214.07' Inflow=0.47 cfs 0.039 af
Outflow=0.47 cfs 0.039 af

Pond CB32: CB-32 Peak Elev=214.79' Inflow=0.76 cfs 0.072 af
Outflow=0.76 cfs 0.072 af

Pond CB33: CB-33 Peak Elev=215.10' Inflow=0.80 cfs 0.066 af
Outflow=0.80 cfs 0.066 af

Pond CB34: CB-34 Peak Elev=211.29' Inflow=0.67 cfs 0.048 af
Outflow=0.67 cfs 0.048 af

Pond CB35: CB-35 Peak Elev=212.48' Inflow=0.65 cfs 0.055 af
Outflow=0.65 cfs 0.055 af

Pond CB36: CB-36 Peak Elev=214.10' Inflow=0.86 cfs 0.066 af
Outflow=0.86 cfs 0.066 af

Pond CB37: CB-37 Peak Elev=215.08' Inflow=0.61 cfs 0.050 af
Outflow=0.61 cfs 0.050 af

Pond CB38: CB-38 Peak Elev=206.13' Inflow=1.29 cfs 0.094 af
Outflow=1.29 cfs 0.094 af

Pond CB39: CB-39 Peak Elev=206.18' Inflow=2.07 cfs 0.148 af
Outflow=2.07 cfs 0.148 af

Pond CB4: CB-4 Peak Elev=216.95' Inflow=0.32 cfs 0.027 af
Outflow=0.32 cfs 0.027 af

Pond CB40: CB-40 Peak Elev=215.96' Inflow=0.37 cfs 0.027 af
Outflow=0.37 cfs 0.027 af

Pond CB41: CB-41 Peak Elev=215.70' Inflow=1.63 cfs 0.135 af
Outflow=1.63 cfs 0.135 af

Pond CB42: CB-4 Peak Elev=215.72' Inflow=2.14 cfs 0.182 af
Outflow=2.14 cfs 0.182 af

Pond CB43: CB-43 Peak Elev=215.72' Inflow=2.13 cfs 0.181 af
Outflow=2.13 cfs 0.181 af

Pond CB44: CB-44 Peak Elev=215.74' Inflow=1.30 cfs 0.110 af
Outflow=1.30 cfs 0.110 af

Pond CB45: CB-45 Peak Elev=208.73' Inflow=0.14 cfs 0.077 af
Outflow=0.14 cfs 0.077 af

Pond CB46: CB-46 Peak Elev=214.94' Inflow=0.24 cfs 0.061 af
Outflow=0.24 cfs 0.061 af

Pond CB47: CB-47 Peak Elev=206.12' Inflow=1.15 cfs 0.091 af
Outflow=1.15 cfs 0.091 af

Pond CB48: CB-48 Peak Elev=206.05' Inflow=0.66 cfs 0.056 af
Outflow=0.66 cfs 0.056 af

Pond CB49: CB-49 Peak Elev=206.11' Inflow=1.93 cfs 0.164 af
Outflow=1.93 cfs 0.164 af

Pond CB5: CB-5 Peak Elev=217.57' Inflow=0.44 cfs 0.034 af
Outflow=0.44 cfs 0.034 af

Pond CB50: CB-4 Peak Elev=205.11' Inflow=1.99 cfs 0.169 af
Outflow=1.99 cfs 0.169 af

Pond CB51: CB-51 Peak Elev=205.61' Inflow=1.99 cfs 0.169 af
Outflow=1.99 cfs 0.169 af

Pond CB52: CB-52 Peak Elev=206.09' Inflow=1.39 cfs 0.118 af
Outflow=1.39 cfs 0.118 af

Pond CB6: CB-6 Peak Elev=217.65' Inflow=0.31 cfs 0.025 af
Outflow=0.31 cfs 0.025 af

Pond CB7: CB-7 Peak Elev=213.66' Inflow=0.42 cfs 0.033 af
Outflow=0.42 cfs 0.033 af

Pond CB8: CB-8 Peak Elev=213.65' Inflow=0.30 cfs 0.024 af
Outflow=0.30 cfs 0.024 af

Pond CB9: CB-9 Peak Elev=210.65' Inflow=0.32 cfs 0.027 af
Outflow=0.32 cfs 0.027 af

Pond MH1: DMH-1 Peak Elev=214.05' Inflow=0.65 cfs 0.055 af
15.0" Round Culvert n=0.013 L=32.0' S=0.0050 '/' Outflow=0.65 cfs 0.055 af

Pond MH10: CB-31 Peak Elev=207.88' Inflow=3.37 cfs 0.265 af
18.0" Round Culvert n=0.013 L=69.0' S=0.0049 '/' Outflow=3.37 cfs 0.265 af

Pond MH11: CB-31 Peak Elev=207.37' Inflow=3.37 cfs 0.265 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=3.37 cfs 0.265 af

Pond MH12: DMH-12 Peak Elev=211.09' Inflow=1.80 cfs 0.145 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=1.80 cfs 0.145 af

Pond MH13: DMH-13 Peak Elev=210.62' Inflow=2.50 cfs 0.198 af
18.0" Round Culvert n=0.013 L=91.0' S=0.0051 '/' Outflow=2.50 cfs 0.198 af

Pond MH14: DMH-14 Peak Elev=210.10' Inflow=3.86 cfs 0.315 af
24.0" Round Culvert n=0.013 L=35.0' S=0.0051 '/' Outflow=3.86 cfs 0.315 af

Pond MH15: DMH-15 Peak Elev=208.90' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.013 L=185.0' S=0.0050 '/' Outflow=0.00 cfs 0.000 af

Pond MH16: DMH-16 Peak Elev=208.35' Inflow=0.76 cfs 0.072 af
18.0" Round Culvert n=0.013 L=95.0' S=0.0049 '/' Outflow=0.76 cfs 0.072 af

Pond MH17: DMH-17 Peak Elev=207.96' Inflow=1.48 cfs 0.138 af
18.0" Round Culvert n=0.013 L=126.0' S=0.0103 '/' Outflow=1.48 cfs 0.138 af

Pond MH18: DMH-18 Peak Elev=206.80' Inflow=3.57 cfs 0.307 af
24.0" Round Culvert n=0.013 L=46.0' S=0.0478 '/' Outflow=3.57 cfs 0.307 af

Pond MH19: DMH-19 Peak Elev=204.62' Inflow=4.18 cfs 0.357 af
30.0" Round Culvert n=0.013 L=80.0' S=0.0050 '/' Outflow=4.18 cfs 0.357 af

Pond MH2: DMH-2 Peak Elev=208.41' Inflow=0.98 cfs 0.083 af
12.0" Round Culvert n=0.013 L=12.8' S=0.0047 '/' Outflow=0.98 cfs 0.083 af

Pond MH20: DMH-20 Peak Elev=212.21' Inflow=2.27 cfs 0.185 af
18.0" Round Culvert n=0.013 L=73.0' S=0.0049 '/' Outflow=2.27 cfs 0.185 af

Pond MH21: DMH-21 Peak Elev=211.93' Inflow=4.41 cfs 0.367 af
18.0" Round Culvert n=0.013 L=85.0' S=0.0051 '/' Outflow=4.41 cfs 0.367 af

Pond MH22: DMH-22 Peak Elev=213.16' Inflow=3.85 cfs 0.557 af
18.0" Round Culvert n=0.013 L=10.0' S=0.0050 '/' Outflow=3.85 cfs 0.557 af

Pond MH24: DMH-24 Peak Elev=210.31' Inflow=0.94 cfs 0.153 af
18.0" Round Culvert n=0.013 L=156.0' S=0.0371 '/' Outflow=0.94 cfs 0.153 af

Pond MH25: DMH-25 Peak Elev=204.59' Inflow=1.20 cfs 0.291 af
18.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=1.20 cfs 0.291 af

Pond MH26: DMH-26 Peak Elev=203.38' Inflow=3.38 cfs 0.288 af
18.0" Round Culvert n=0.013 L=80.0' S=0.0050 '/' Outflow=3.38 cfs 0.288 af

Pond MH27: DMH-27 Peak Elev=202.33' Inflow=2.98 cfs 0.517 af
18.0" Round Culvert n=0.013 L=86.0' S=0.0050 '/' Outflow=2.98 cfs 0.517 af

Pond MH3: DMH-3 Peak Elev=214.43' Inflow=0.75 cfs 0.059 af
18.0" Round Culvert n=0.013 L=395.0' S=0.0050 '/' Outflow=0.75 cfs 0.059 af

Pond MH4: DMH-4 Peak Elev=210.62' Inflow=1.47 cfs 0.116 af
18.0" Round Culvert n=0.013 L=198.0' S=0.0050 '/' Outflow=1.47 cfs 0.116 af

Pond MH5: DMH-5 Peak Elev=208.41' Inflow=2.13 cfs 0.171 af
18.0" Round Culvert n=0.013 L=34.3' S=0.0050 '/' Outflow=2.13 cfs 0.171 af

Pond MH6: DMH-6 Peak Elev=207.03' Inflow=2.26 cfs 0.192 af
12.0" Round Culvert x 2.00 n=0.013 L=10.0' S=0.0050 '/' Outflow=2.26 cfs 0.192 af

Pond MH7: DMH-7 Peak Elev=210.60' Inflow=1.46 cfs 0.118 af
18.0" Round Culvert n=0.013 L=75.0' S=0.0340 '/' Outflow=1.46 cfs 0.118 af

Pond MH8: DMH-8 Peak Elev=209.41' Inflow=2.01 cfs 0.164 af
18.0" Round Culvert n=0.013 L=133.0' S=0.0050 '/' Outflow=2.01 cfs 0.164 af

Pond MH9: CB-31 Peak Elev=208.73' Inflow=2.34 cfs 0.188 af
18.0" Round Culvert n=0.013 L=190.0' S=0.0050 '/' Outflow=2.34 cfs 0.188 af

Pond R1: R-1 Peak Elev=219.16' Storage=1 cf Inflow=1.15 cfs 0.266 af
Outflow=1.15 cfs 0.266 af

Pond R2: R-2 Peak Elev=208.22' Storage=1 cf Inflow=1.16 cfs 0.297 af
Outflow=1.16 cfs 0.297 af

Pond R3: R-3 Peak Elev=214.33' Storage=0 cf Inflow=0.27 cfs 0.023 af
Outflow=0.27 cfs 0.023 af

Total Runoff Area = 18.355 ac Runoff Volume = 4.781 af Average Runoff Depth = 3.13"
55.52% Pervious = 10.190 ac 44.48% Impervious = 8.165 ac

Summary for Subcatchment 100S: 100S

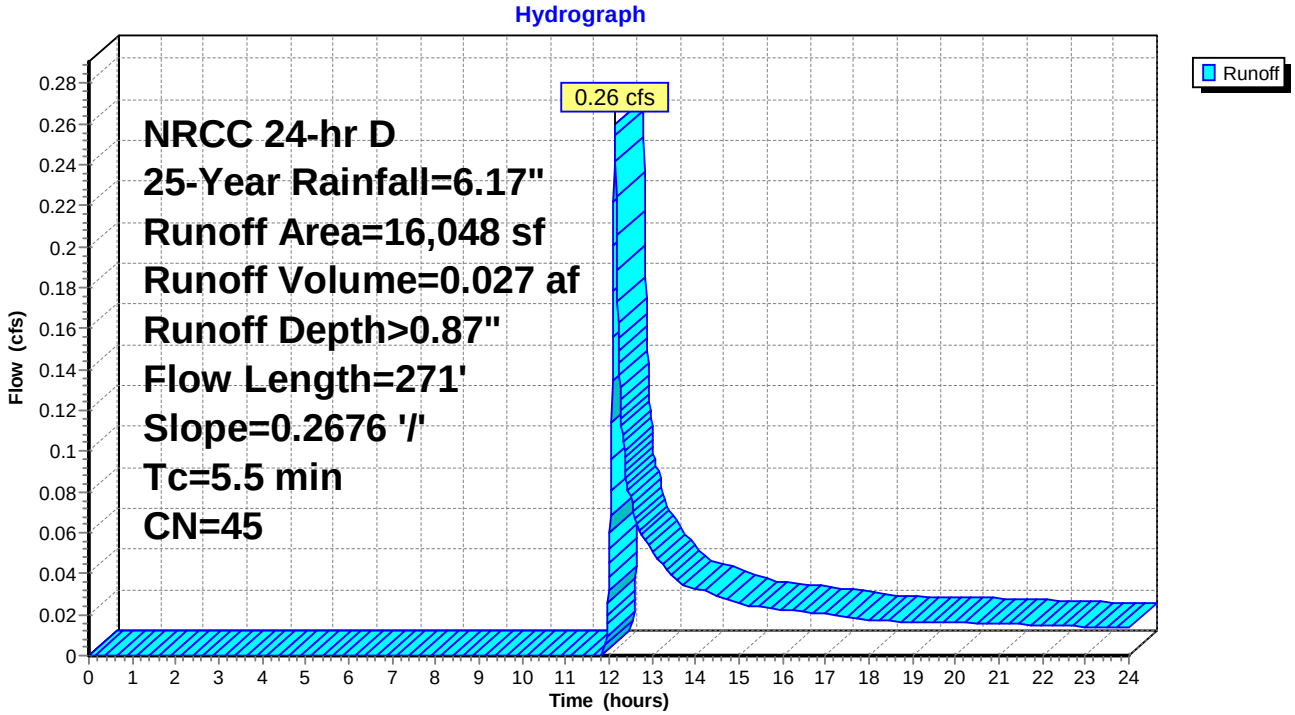
Runoff = 0.26 cfs @ 12.14 hrs, Volume= 0.027 af, Depth> 0.87"
Routed to Pond 1P : Basin 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	2	98	Unconnected pavement HSG A
	4,395	49	50-75% Grass cover, Fair HSG A
	5,566	36	Woods, Fair HSG A
	236	98	Roofs HSG A
*	5,848	49	Open Space-Fair (50% to 75% grass) HSG A
	16,048	45	Weighted Average
	15,810		98.52% Pervious Area
	238		1.48% Impervious Area
	2		0.88% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	271	0.2676	0.82		**Lag/CN Method,**

Subcatchment 100S: 100S



Summary for Subcatchment 101S: 101S

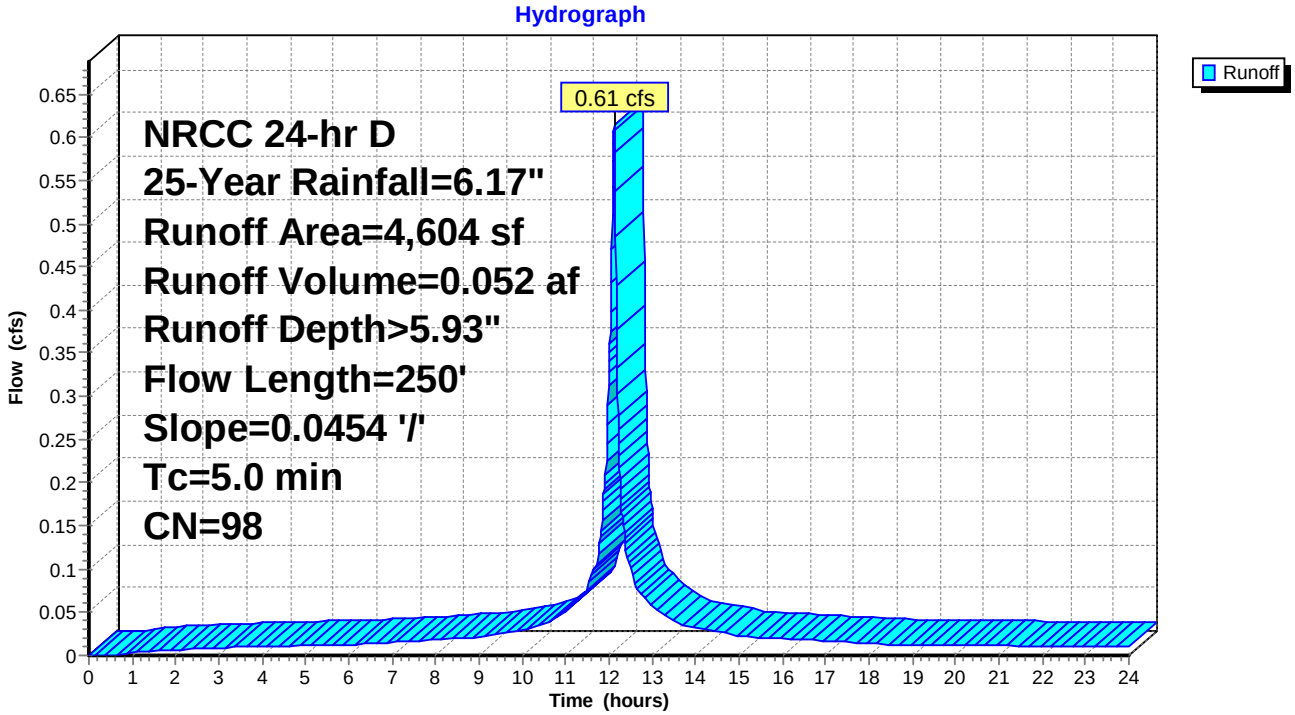
Runoff = 0.61 cfs @ 12.12 hrs, Volume= 0.052 af, Depth> 5.93"
Routed to Pond CB1 : CB-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	4,567	98	Unconnected pavement HSG A
	1	36	Woods, Fair HSG A
*	36	49	Open Space-Fair (50% to 75% grass) HSG A
	4,604	98	Weighted Average
	37		0.80% Pervious Area
	4,567		99.20% Impervious Area
	4,567		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	250	0.0454	1.79		**Lag/CN Method,**
2.3	250	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 101S: 101S



Summary for Subcatchment 102S: 102S

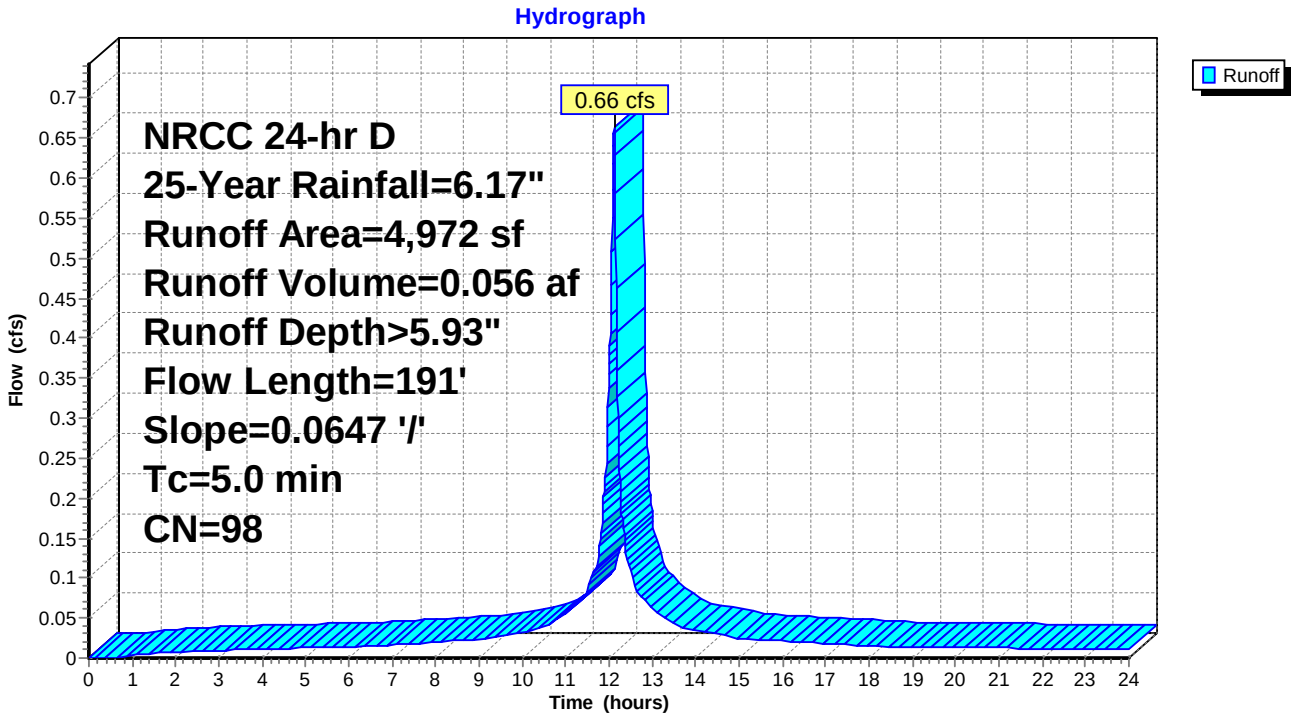
Runoff = 0.66 cfs @ 12.12 hrs, Volume= 0.056 af, Depth> 5.93"
Routed to Pond CB2 : CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
4,970	98	Unconnected pavement HSG A
2	36	Woods, Fair HSG A
4,972	98	Weighted Average
2		0.03% Pervious Area
4,970		99.97% Impervious Area
4,970		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	191	0.0647	2.02		**Lag/CN Method,**
1.6	191	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 102S: 102S



Summary for Subcatchment 103S: 103S

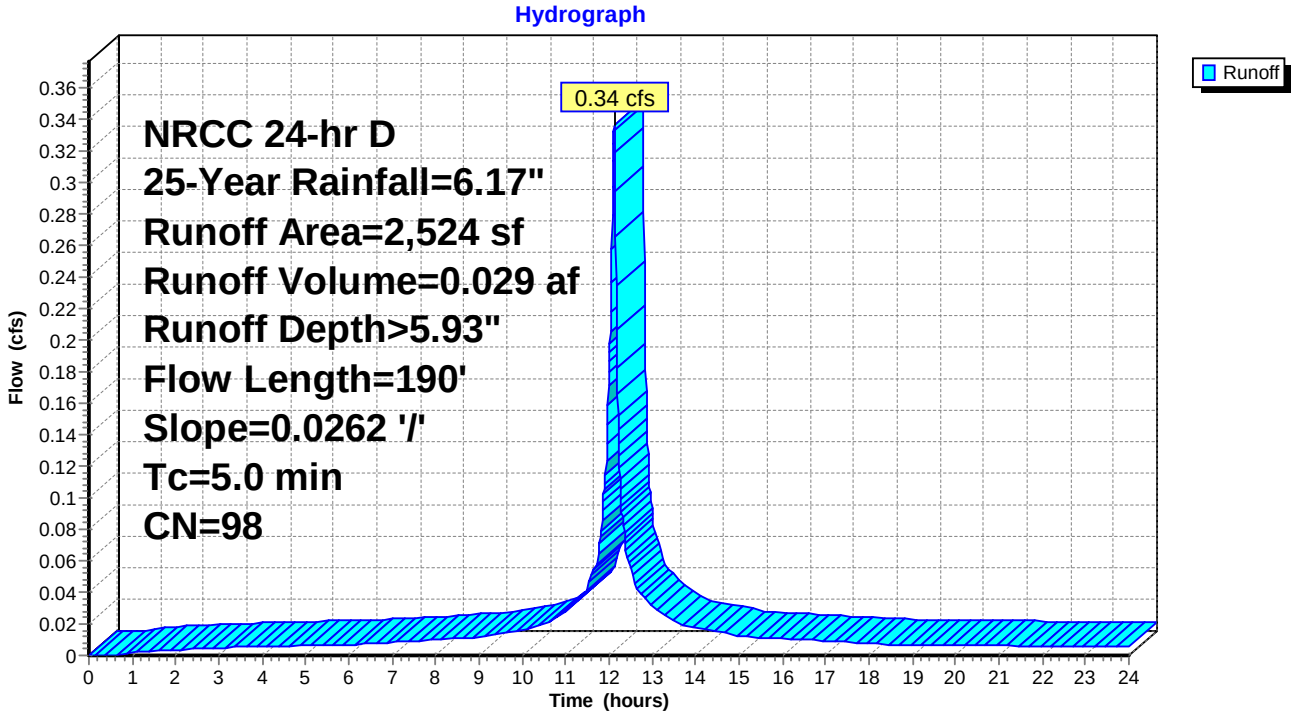
Runoff = 0.34 cfs @ 12.12 hrs, Volume= 0.029 af, Depth> 5.93"
Routed to Pond CB3 : CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	2,427	98	Unconnected pavement HSG A
	93	98	Roofs HSG A
*	4	49	Open Space-Fair (50% to 75% grass) HSG A
	2,524	98	Weighted Average
	4		0.16% Pervious Area
	2,520		99.84% Impervious Area
	2,427		96.31% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	190	0.0262	1.29		**Lag/CN Method,**
2.5	190	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 103S: 103S



Summary for Subcatchment 104S: 104S

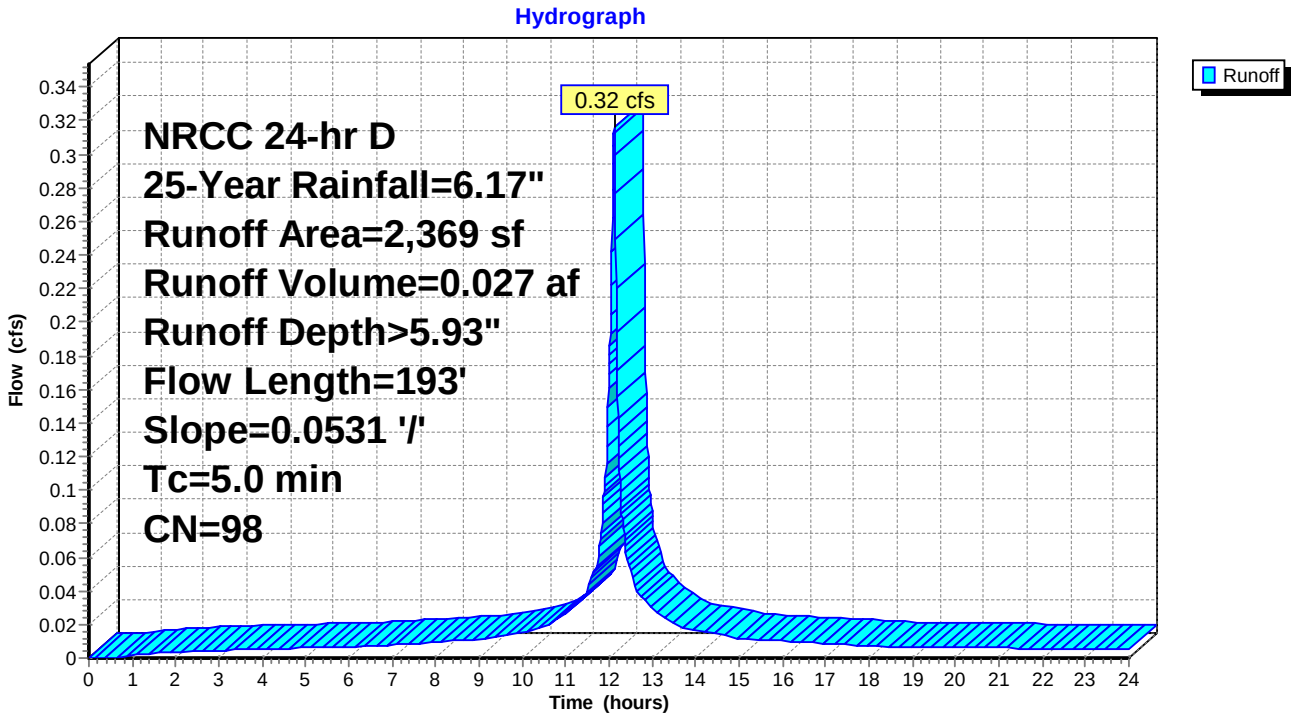
Runoff = 0.32 cfs @ 12.12 hrs, Volume= 0.027 af, Depth> 5.93"
Routed to Pond CB4 : CB-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
2,365	98	Unconnected pavement HSG A
4	36	Woods, Fair HSG A
2,369	98	Weighted Average
4		0.15% Pervious Area
2,365		99.85% Impervious Area
2,365		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	193	0.0531	1.84		**Lag/CN Method,**
1.8	193	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 104S: 104S



Summary for Subcatchment 200S: 200S

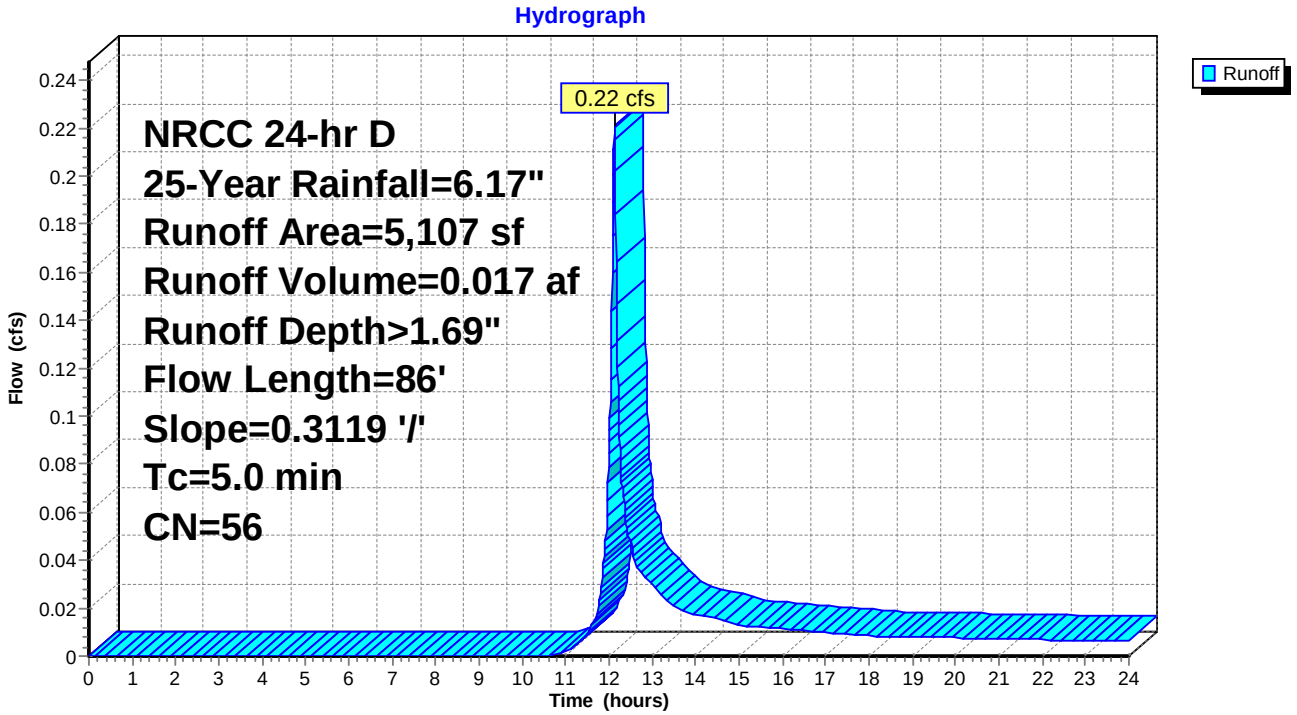
Runoff = 0.22 cfs @ 12.13 hrs, Volume= 0.017 af, Depth> 1.69"
Routed to Pond 2P : Basin 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
996	36	Woods, Fair HSG A
1,466	49	50-75% Grass cover, Fair HSG A
2	98	Unconnected pavement HSG A
2,340	69	50-75% Grass cover, Fair HSG B
303	60	Woods, Fair HSG B
5,107	56	Weighted Average
5,105		99.96% Pervious Area
2		0.04% Impervious Area
2		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	86	0.3119	0.94		**Lag/CN Method,**
1.5	86	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 200S: 200S



Summary for Subcatchment 201S: 201S

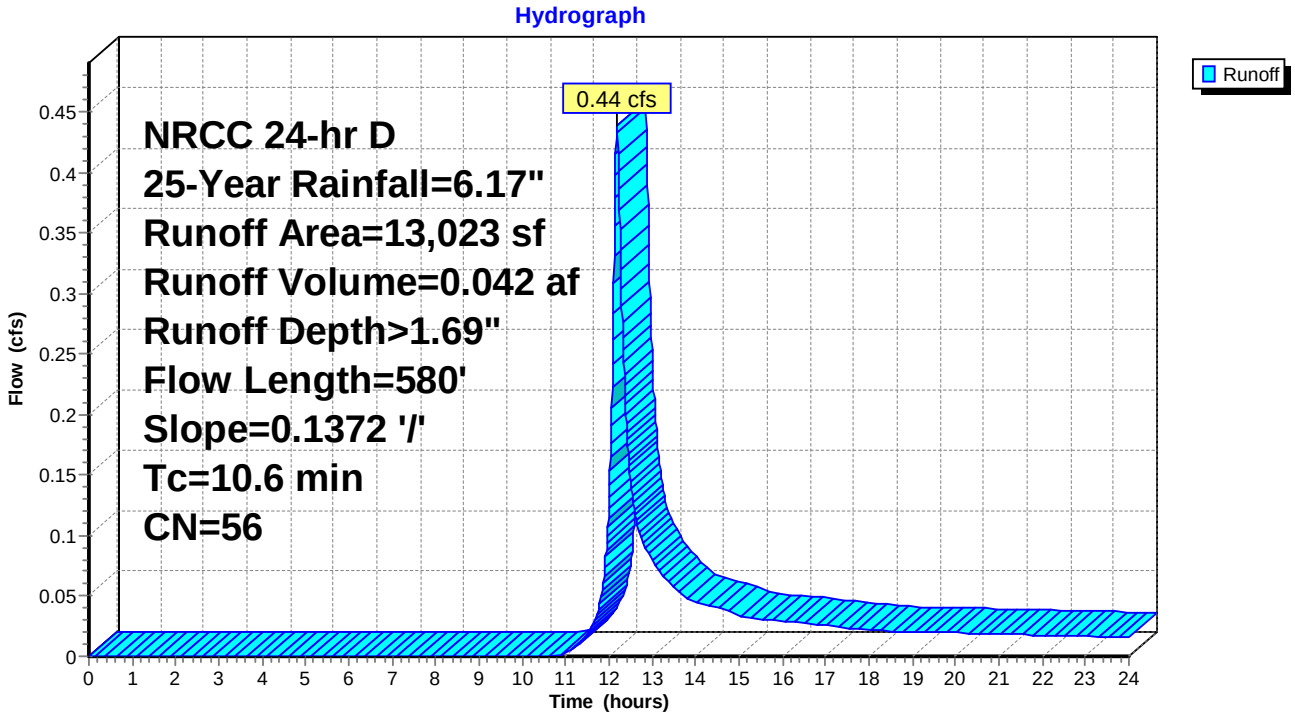
Runoff = 0.44 cfs @ 12.19 hrs, Volume= 0.042 af, Depth> 1.69"
Routed to Pond 2P : Basin 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	2,275	36	Woods, Fair HSG A
	319	76	Gravel roads HSG A
	493	69	50-75% Grass cover, Fair HSG B
	9,299	60	Woods, Fair HSG B
*	637	49	Open Space-Fair (50% to 75% grass) HSG A
	13,023	56	Weighted Average
	13,023		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	580	0.1372	0.91		**Lag/CN Method,**

Subcatchment 201S: 201S



Summary for Subcatchment 202S: 202S

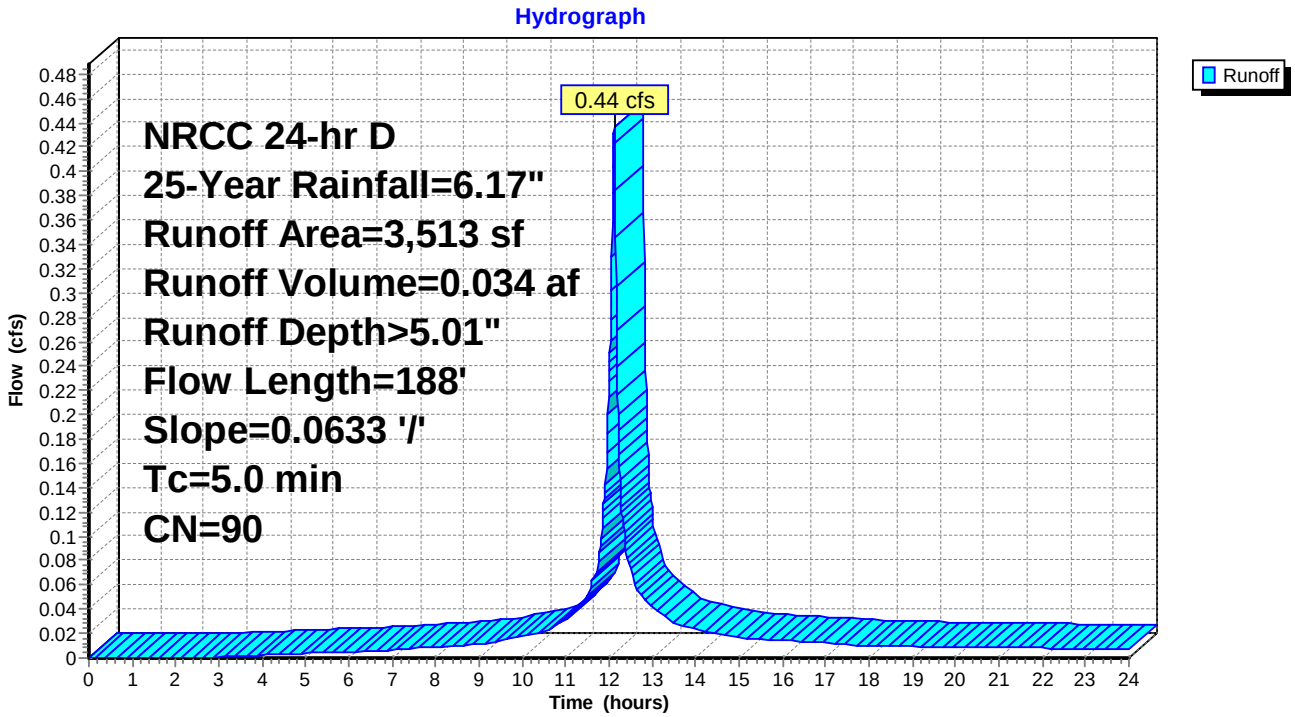
Runoff = 0.44 cfs @ 12.12 hrs, Volume= 0.034 af, Depth> 5.01"
Routed to Pond CB5 : CB-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
1,219	76	Gravel roads HSG A
2,294	98	Unconnected pavement HSG A
3,513	90	Weighted Average
1,219		34.70% Pervious Area
2,294		65.30% Impervious Area
2,294		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	188	0.0633	1.35		**Lag/CN Method,**
2.3	188	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 202S: 202S



Summary for Subcatchment 203S: 203S

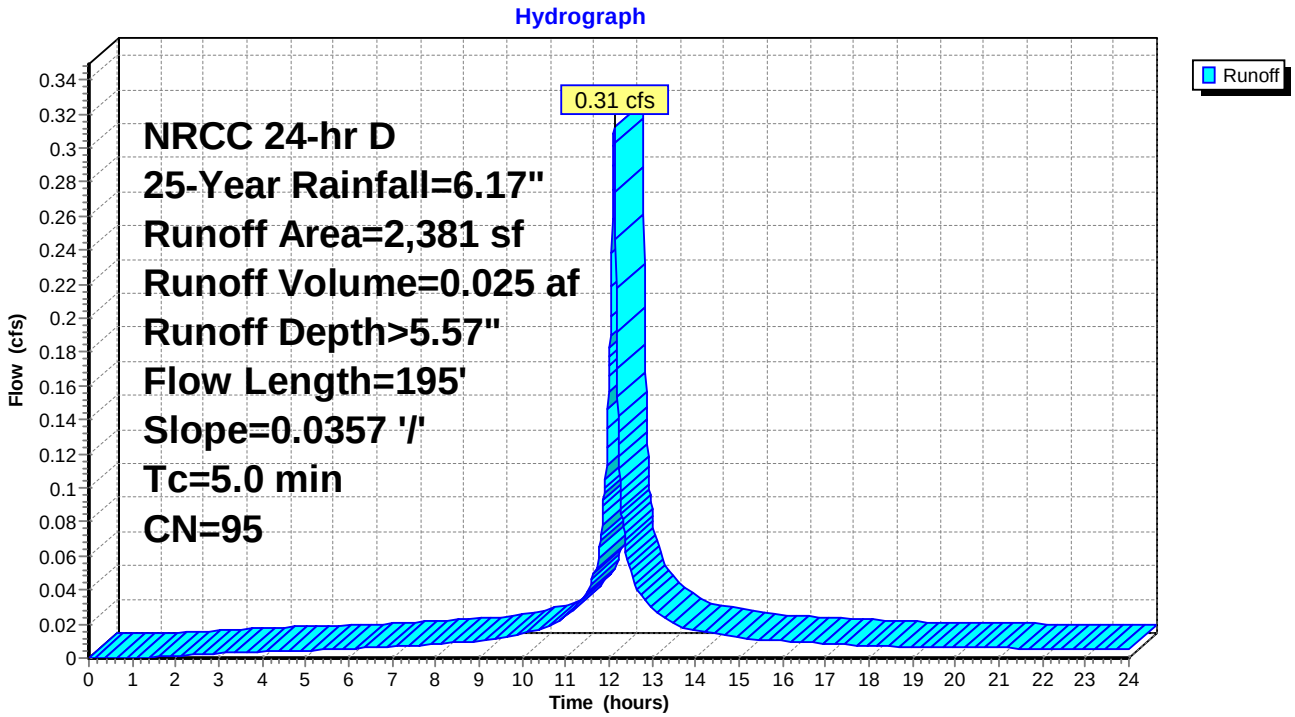
Runoff = 0.31 cfs @ 12.12 hrs, Volume= 0.025 af, Depth> 5.57"
Routed to Pond CB6 : CB-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
285	76	Gravel roads HSG A
2,096	98	Unconnected pavement HSG A
2,381	95	Weighted Average
285		11.99% Pervious Area
2,096		88.01% Impervious Area
2,096		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	195	0.0357	1.28		**Lag/CN Method,**
2.5	195	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 203S: 203S



Summary for Subcatchment 204S: 204S

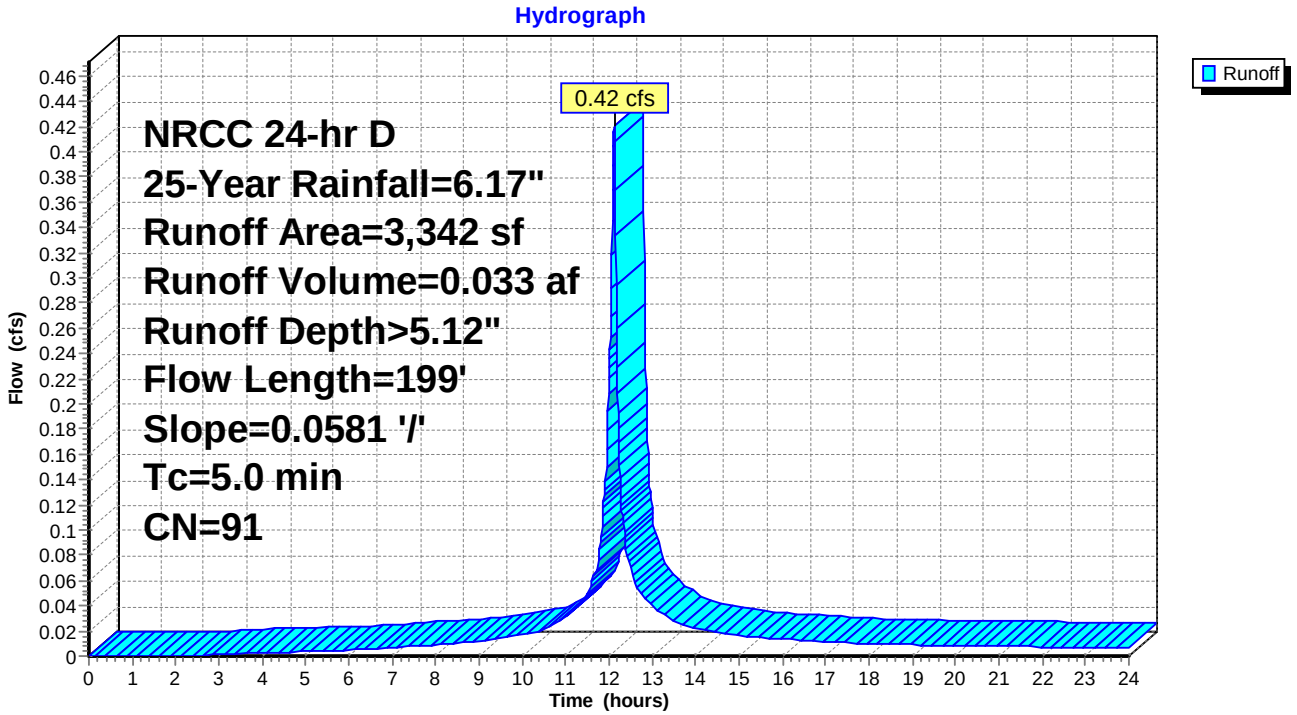
Runoff = 0.42 cfs @ 12.12 hrs, Volume= 0.033 af, Depth> 5.12"
Routed to Pond CB7 : CB-7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
819	76	Gravel roads HSG A
783	98	Unconnected pavement HSG A
1,608	98	Unconnected pavement HSG B
9	85	Gravel roads HSG B
122	60	Woods, Fair HSG B
3,342	91	Weighted Average
951		28.44% Pervious Area
2,392		71.56% Impervious Area
2,392		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	199	0.0581	1.36		**Lag/CN Method,**
2.4	199	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 204S: 204S



Summary for Subcatchment 205S: 205S

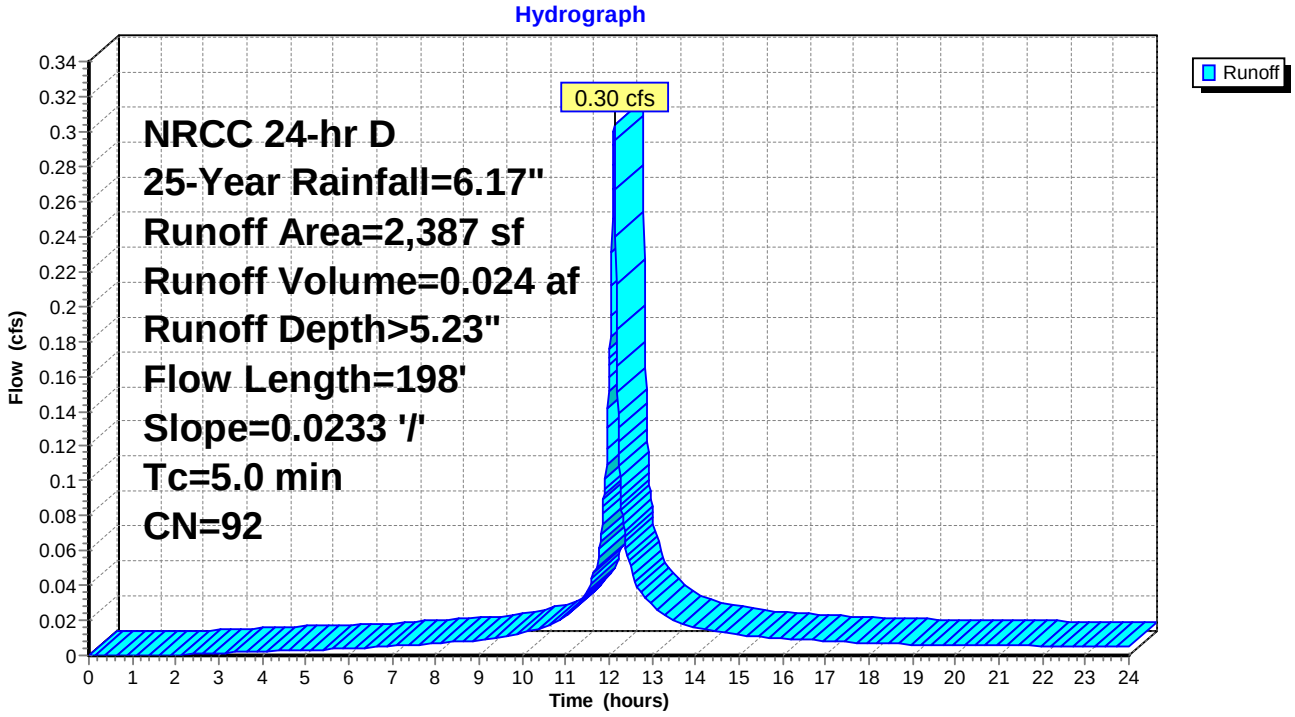
Runoff = 0.30 cfs @ 12.12 hrs, Volume= 0.024 af, Depth> 5.23"
Routed to Pond CB8 : CB-8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
173	98	Unconnected pavement HSG A
1,514	98	Unconnected pavement HSG B
701	76	Gravel roads HSG A
2,387	92	Weighted Average
701		29.37% Pervious Area
1,686		70.63% Impervious Area
1,686		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	198	0.0233	0.90		**Lag/CN Method,**
3.7	198	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 205S: 205S



Summary for Subcatchment 206S: 206S

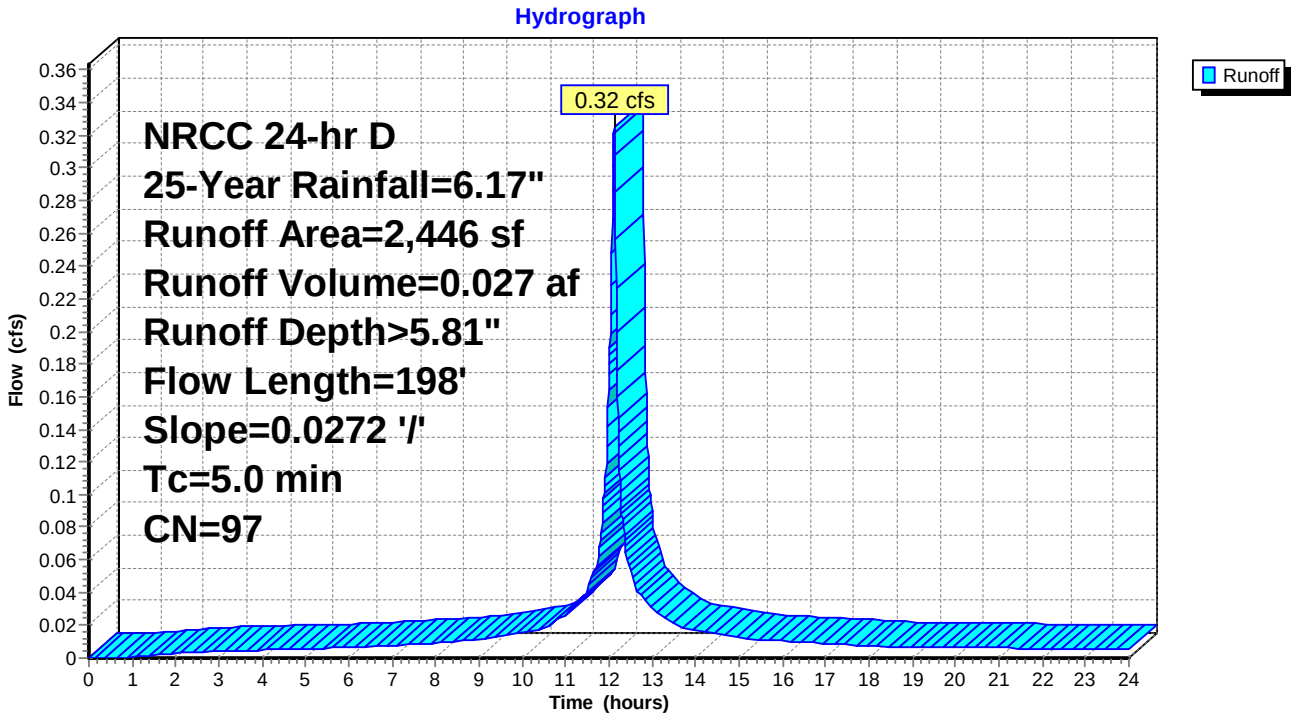
Runoff = 0.32 cfs @ 12.12 hrs, Volume= 0.027 af, Depth> 5.81"
Routed to Pond CB9 : CB-9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
2,400	98	Unconnected pavement HSG B
46	60	Woods, Fair HSG B
2,446	97	Weighted Average
46		1.89% Pervious Area
2,400		98.11% Impervious Area
2,400		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	198	0.0272	1.24		**Lag/CN Method,**
2.7	198	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 206S: 206S



Summary for Subcatchment 207S: 207S

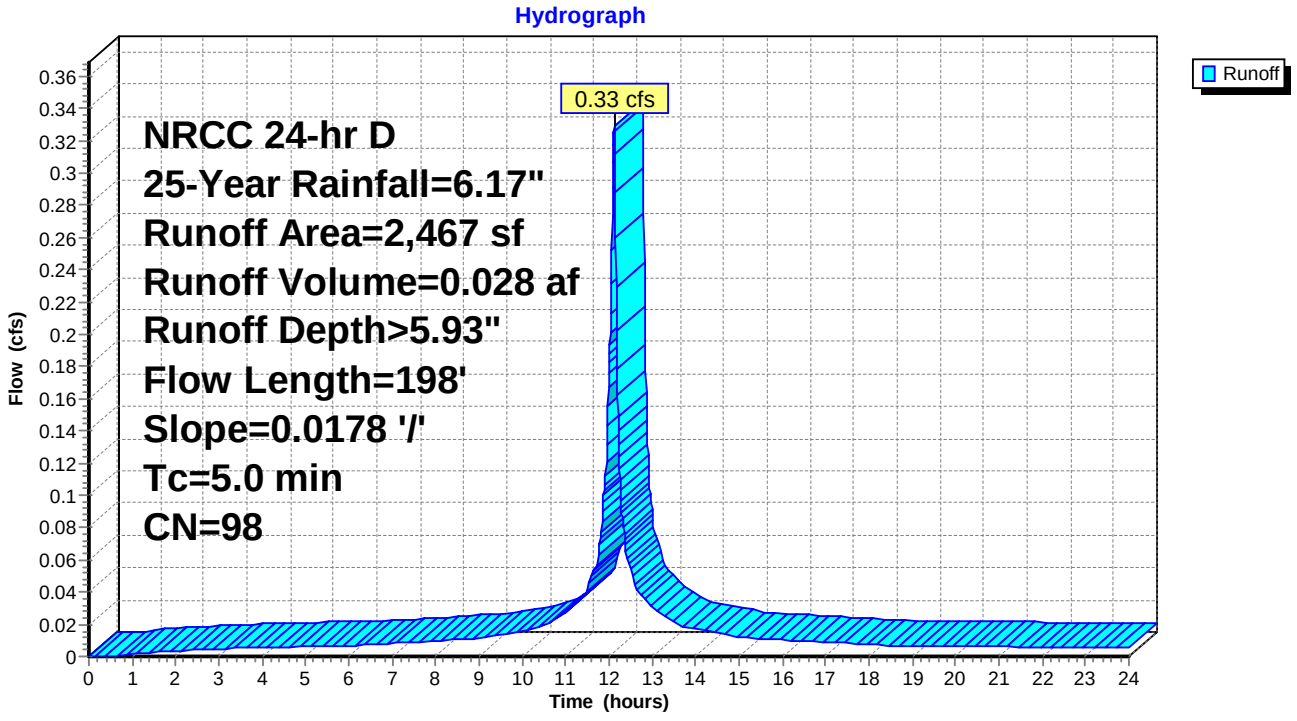
Runoff = 0.33 cfs @ 12.12 hrs, Volume= 0.028 af, Depth> 5.93"
Routed to Pond CB10 : CB-10

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
2,467	98	Unconnected pavement HSG B
2,467		100.00% Impervious Area
2,467		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	198	0.0178	1.07		**Lag/CN Method,**
3.1	198	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 207S: 207S



Summary for Subcatchment 208S: 208S

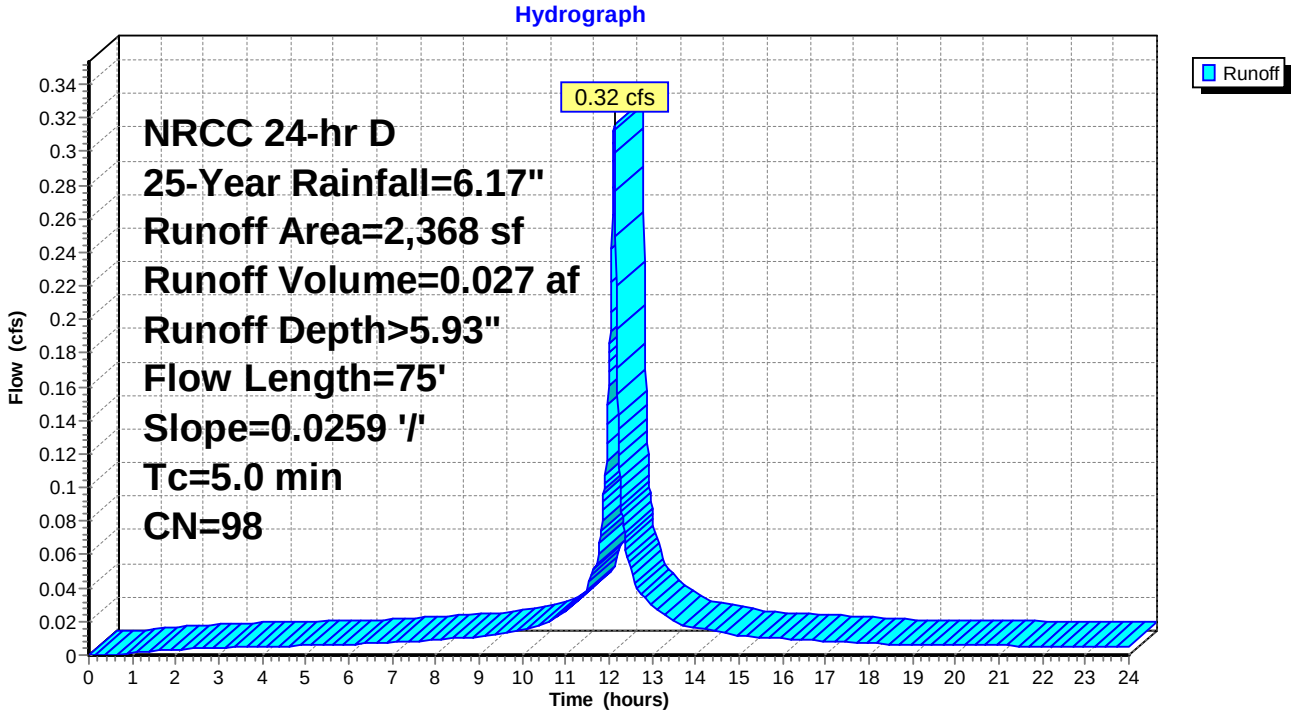
Runoff = 0.32 cfs @ 12.12 hrs, Volume= 0.027 af, Depth> 5.93"
Routed to Pond CB13 : CB-13

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
511	98	Unconnected pavement HSG B
1,857	98	Unconnected pavement HSG A
2,368	98	Weighted Average
2,368		100.00% Impervious Area
2,368		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	75	0.0259	1.06		**Lag/CN Method,**
1.2	75	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 208S: 208S



Summary for Subcatchment 209S: 209S

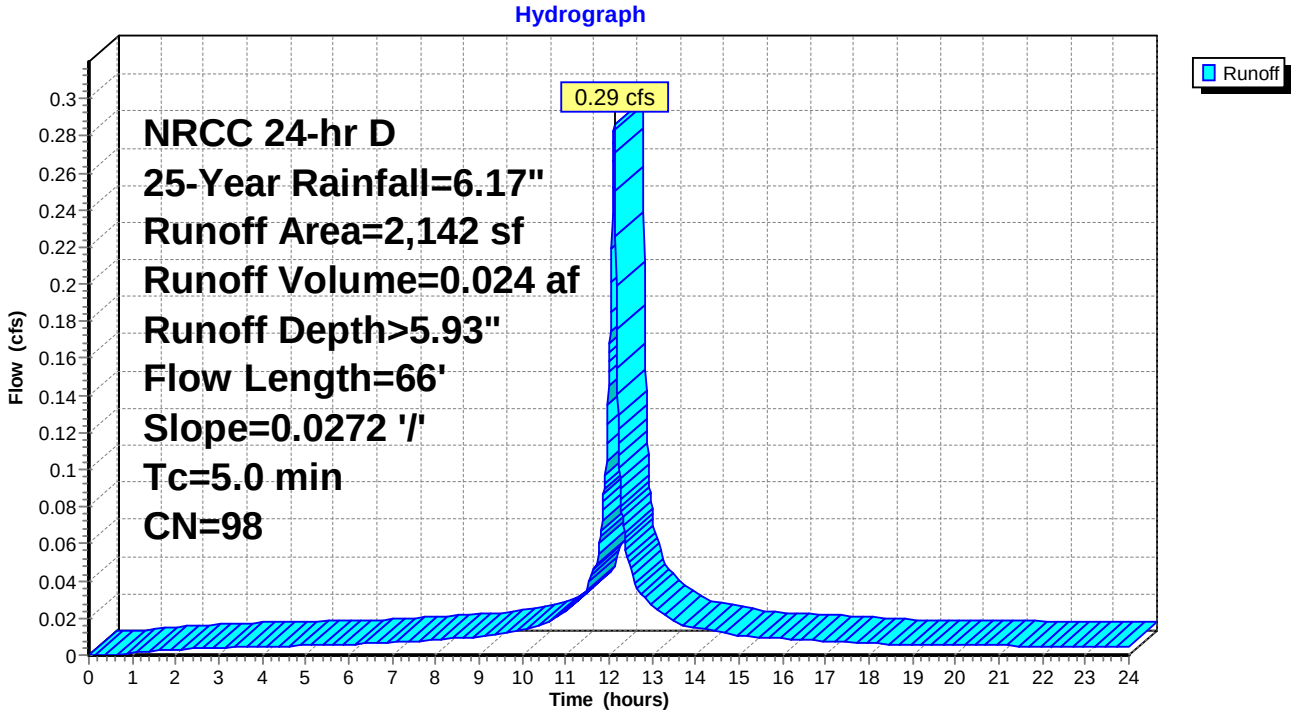
Runoff = 0.29 cfs @ 12.12 hrs, Volume= 0.024 af, Depth> 5.93"
Routed to Pond CB14 : CB-14

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
574	98	Unconnected pavement HSG B
1,569	98	Unconnected pavement HSG A
2,142	98	Weighted Average
2,142		100.00% Impervious Area
2,142		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	66	0.0272	1.06		**Lag/CN Method,**
1.0	66	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 209S: 209S



Summary for Subcatchment 210S: 210S

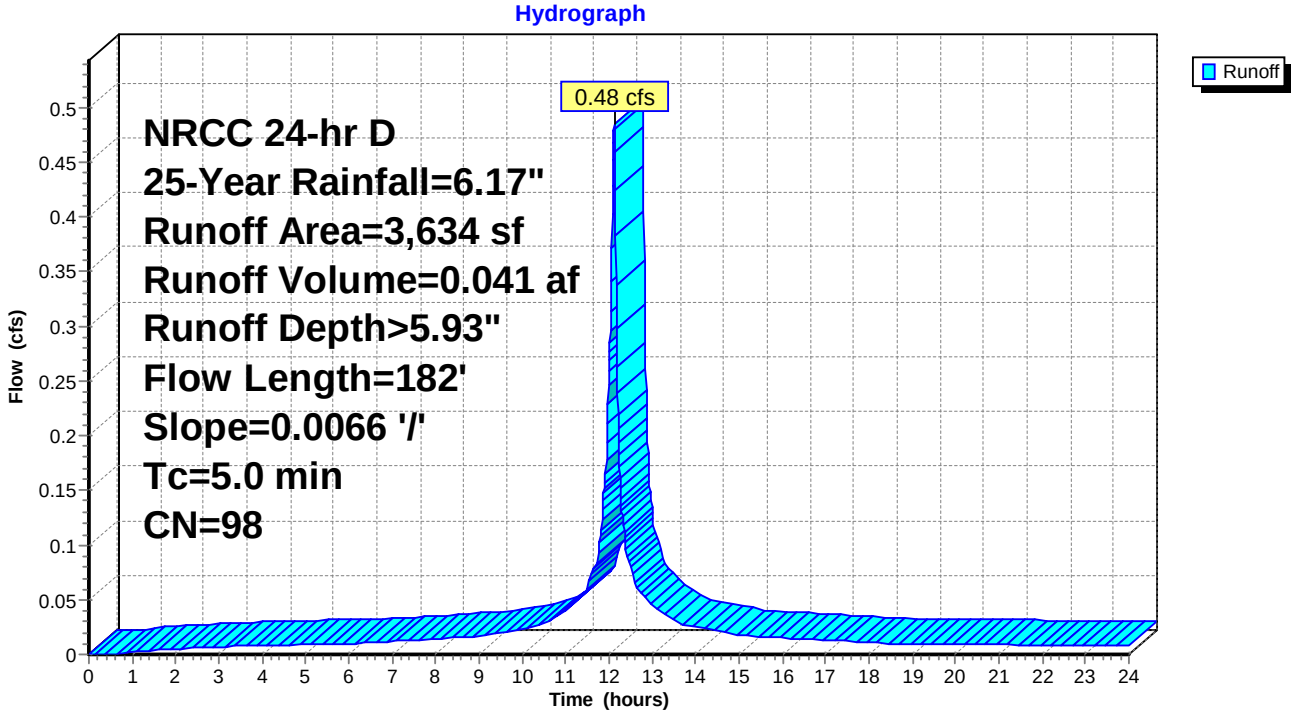
Runoff = 0.48 cfs @ 12.12 hrs, Volume= 0.041 af, Depth> 5.93"
Routed to Pond CB11 : CB-11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
3,634	98	Unconnected pavement HSG A
3,634		100.00% Impervious Area
3,634		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	182	0.0066	0.64		**Lag/CN Method,**
4.7	182	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 210S: 210S



Summary for Subcatchment 211S: 211S

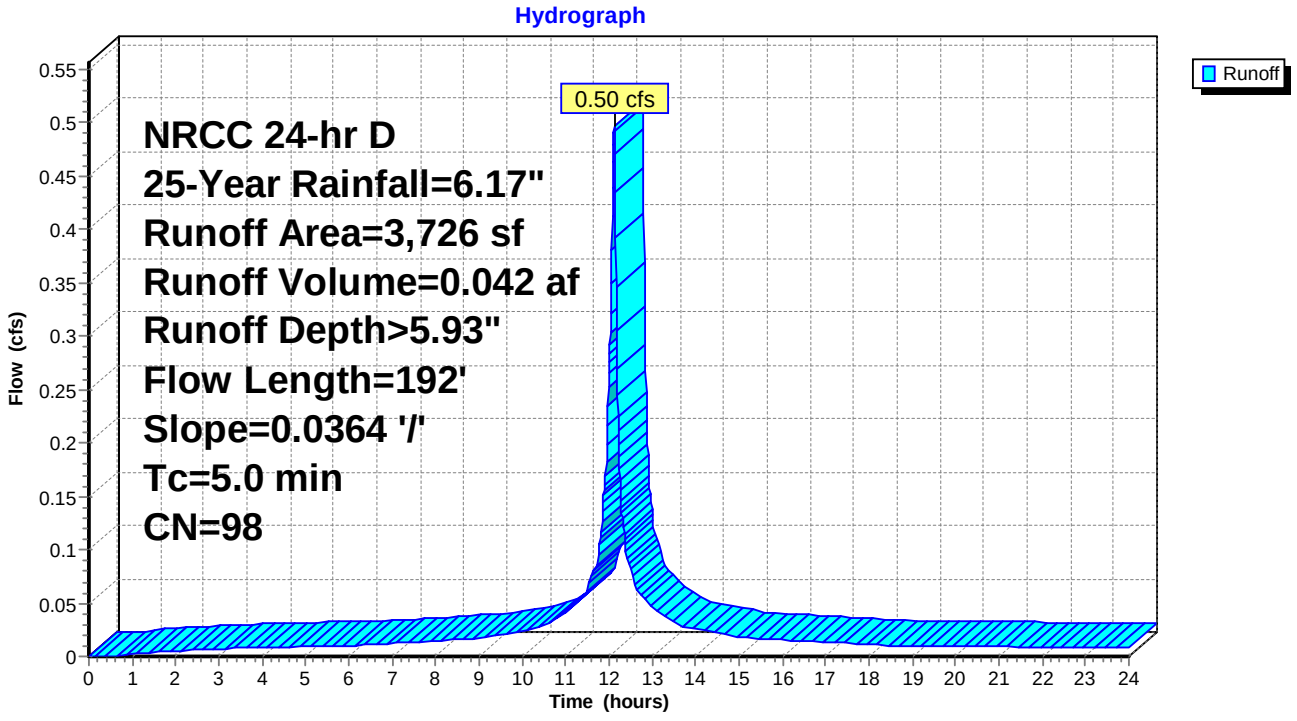
Runoff = 0.50 cfs @ 12.12 hrs, Volume= 0.042 af, Depth> 5.93"
Routed to Pond CB12 : CB-12

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
3,726	98	Unconnected pavement HSG A
3,726		100.00% Impervious Area
3,726		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	192	0.0364	1.52		**Lag/CN Method,**
2.1	192	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 211S: 211S



Summary for Subcatchment 300S: 300S

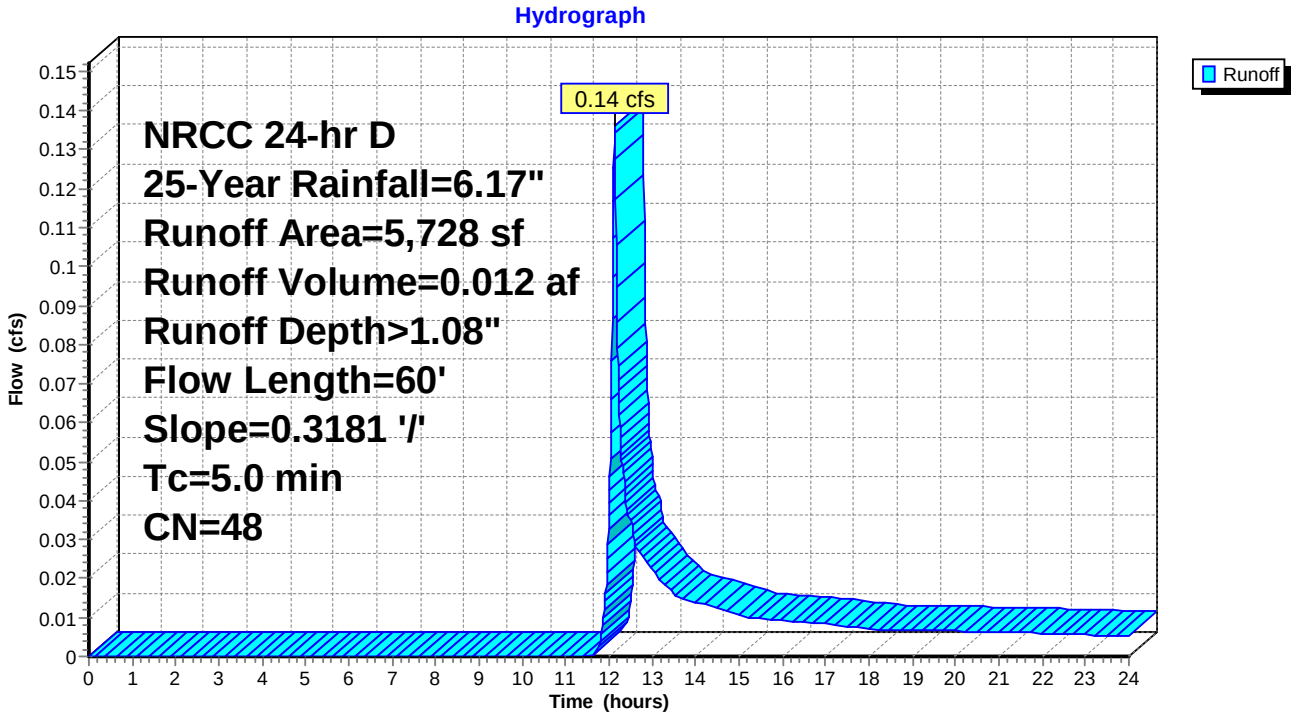
Runoff = 0.14 cfs @ 12.13 hrs, Volume= 0.012 af, Depth> 1.08"
Routed to Pond 3P : Basin 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	1,086	36	Woods, Fair HSG A
	4,269	49	50-75% Grass cover, Fair HSG A
	57	98	Unconnected pavement HSG A
	228	69	50-75% Grass cover, Fair HSG B
	87	60	Woods, Fair HSG B
*	1	49	Open Space-Fair (50% to 75% grass) HSG A
	5,728	48	Weighted Average
	5,671		99.00% Pervious Area
	57		1.00% Impervious Area
	57		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	60	0.3181	0.72		**Lag/CN Method,**
1.4	60	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 300S: 300S



Summary for Subcatchment 301S: 301S

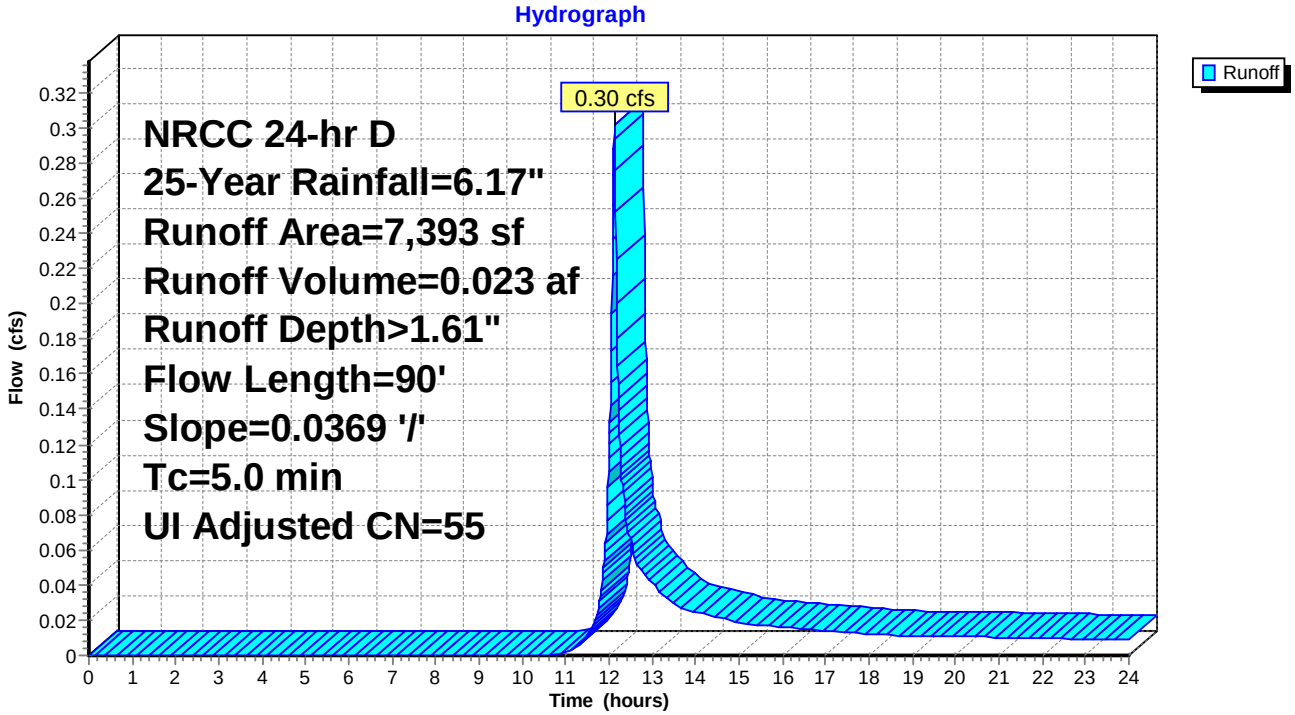
Runoff = 0.30 cfs @ 12.13 hrs, Volume= 0.023 af, Depth> 1.61"
Routed to Pond CB17 : CB-17

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Adj	Description
	1,860	98		Unconnected pavement HSG A
	5,469	49		50-75% Grass cover, Fair HSG A
*	64	49		Open Space-Fair (50% to 75% grass) HSG A
	7,393	61	55	Weighted Average, UI Adjusted
	5,533			74.84% Pervious Area
	1,860			25.16% Impervious Area
	1,860			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	90	0.0369	0.37		**Lag/CN Method,**
4.1	90	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 301S: 301S



Summary for Subcatchment 302S: 302S

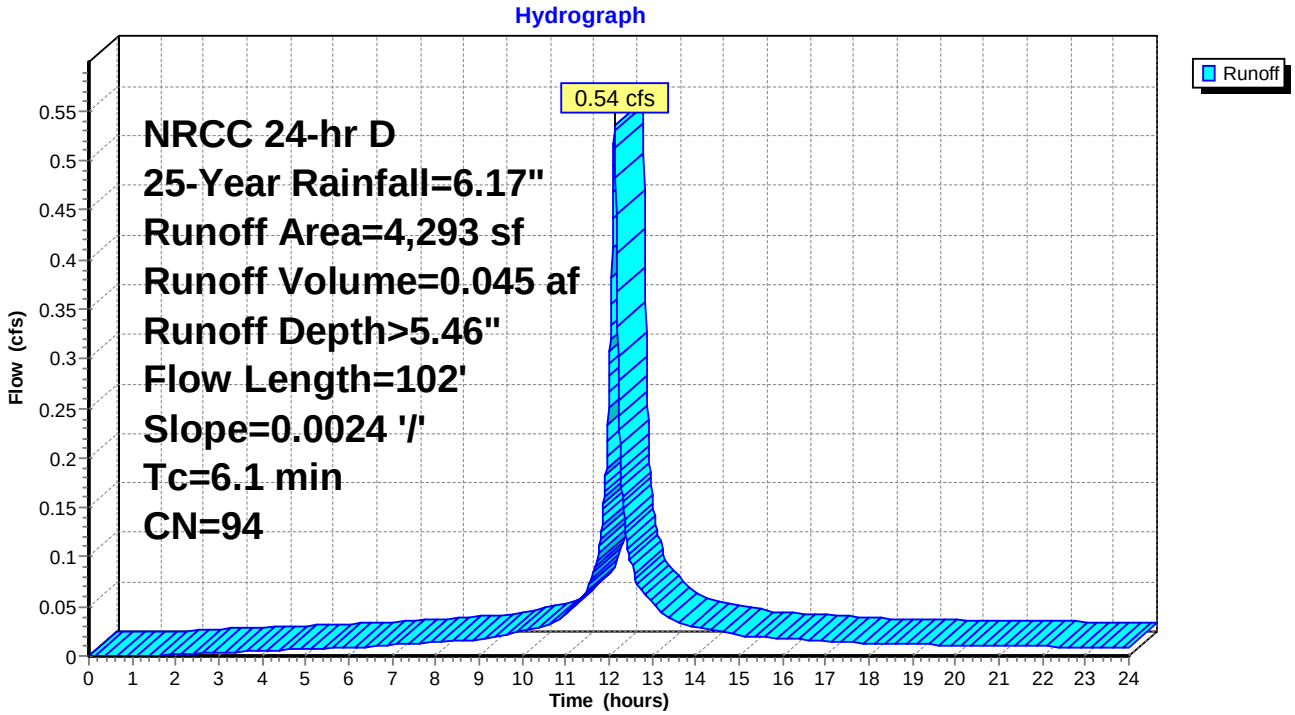
Runoff = 0.54 cfs @ 12.13 hrs, Volume= 0.045 af, Depth> 5.46"
Routed to Pond CB15 : CB-15

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
3,909	98	Unconnected pavement HSG A
384	49	50-75% Grass cover, Fair HSG A
4,293	94	Weighted Average
384		8.95% Pervious Area
3,909		91.05% Impervious Area
3,909		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	102	0.0024	0.28		**Lag/CN Method,**

Subcatchment 302S: 302S



Summary for Subcatchment 303S: 303S

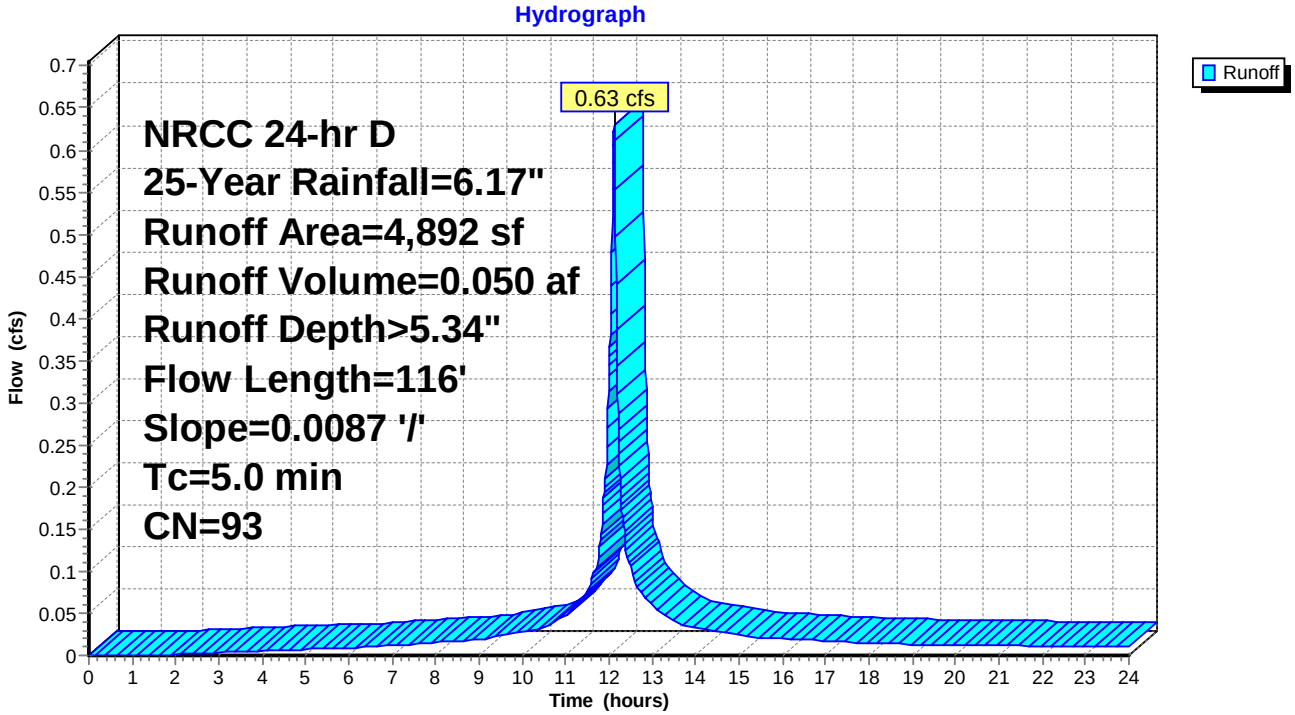
Runoff = 0.63 cfs @ 12.12 hrs, Volume= 0.050 af, Depth> 5.34"
Routed to Pond CB16 : CB-16

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
4,391	98	Unconnected pavement HSG A
16	98	Unconnected pavement HSG B
485	49	50-75% Grass cover, Fair HSG A
4,892	93	Weighted Average
485		9.91% Pervious Area
4,407		90.09% Impervious Area
4,407		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	116	0.0087	0.52		**Lag/CN Method,**
3.8	116	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 303S: 303S



Summary for Subcatchment 304S: 304S

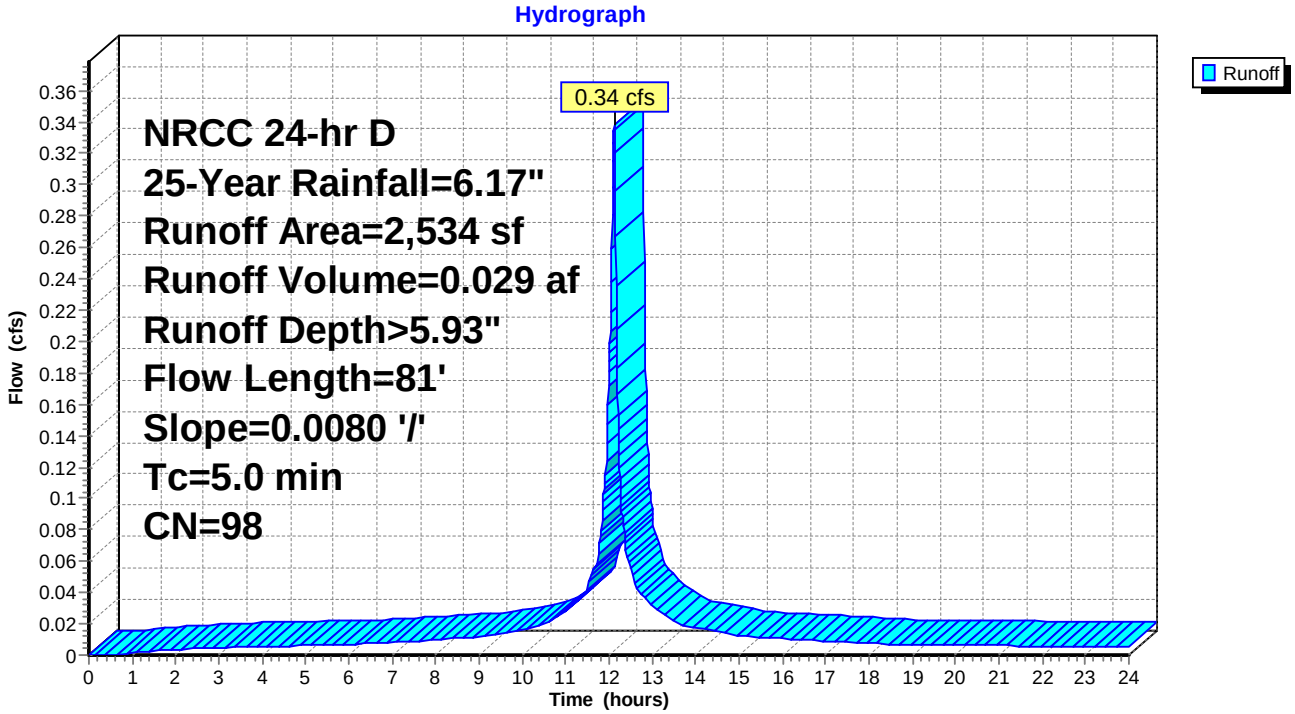
Runoff = 0.34 cfs @ 12.12 hrs, Volume= 0.029 af, Depth> 5.93"
Routed to Pond CB18 : CB-18

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
1,633	98	Unconnected pavement HSG A
902	98	Unconnected pavement HSG B
2,534	98	Weighted Average
2,534		100.00% Impervious Area
2,534		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	81	0.0080	0.60		**Lag/CN Method,**
2.3	81	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 304S: 304S



Summary for Subcatchment 305S: 305S

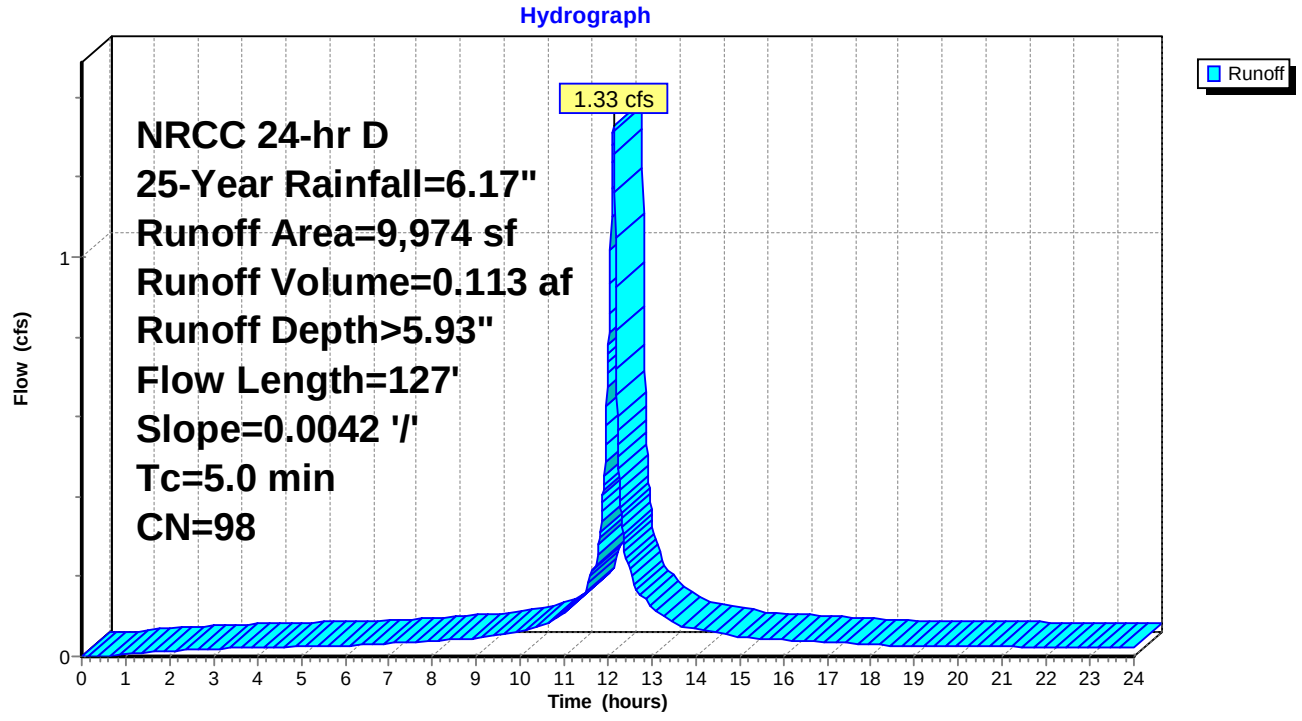
Runoff = 1.33 cfs @ 12.12 hrs, Volume= 0.113 af, Depth> 5.93"
Routed to Pond CB20 : CB-20

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
9,974	98	Unconnected pavement HSG A
9,974		100.00% Impervious Area
9,974		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	127	0.0042	0.47		**Lag/CN Method,**
4.5	127	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 305S: 305S



Summary for Subcatchment 306S: 306S

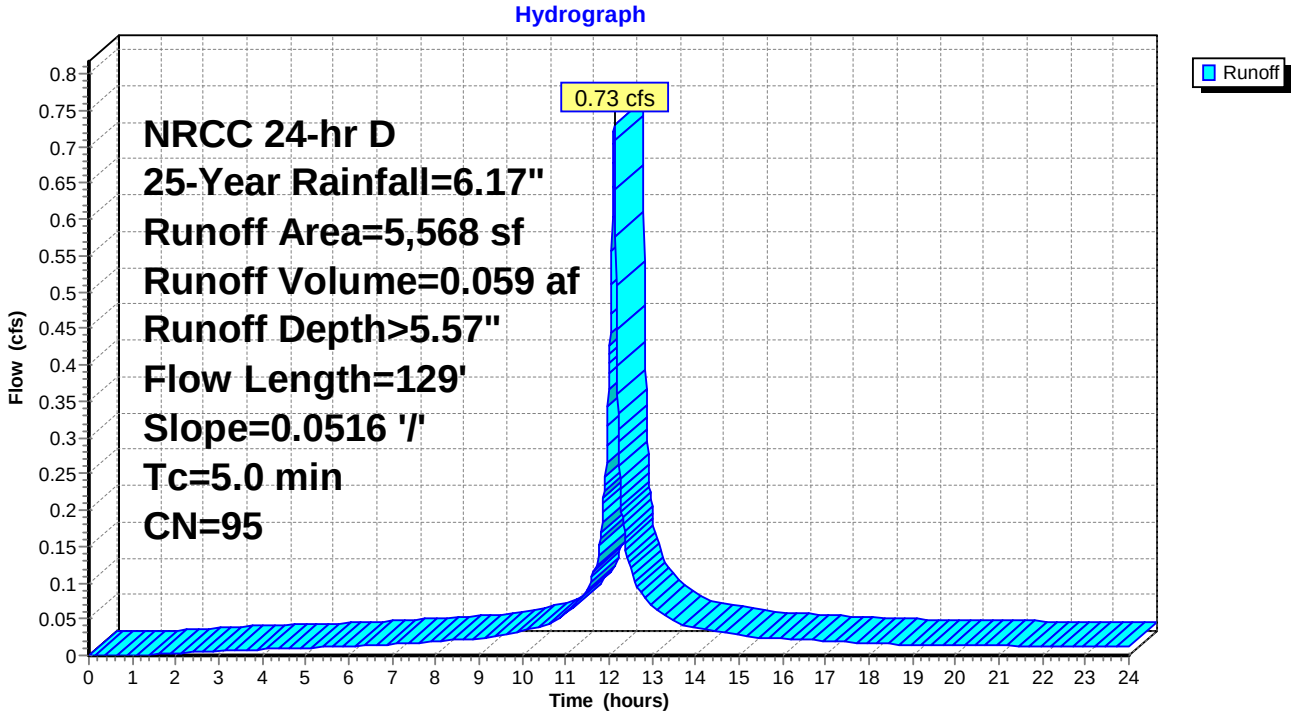
Runoff = 0.73 cfs @ 12.12 hrs, Volume= 0.059 af, Depth> 5.57"
Routed to Pond CB21 : CB-21

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	5,220	98	Unconnected pavement HSG A
	347	49	50-75% Grass cover, Fair HSG A
*	1	49	Open Space-Fair (50% to 75% grass) HSG A
	5,568	95	Weighted Average
	348		6.25% Pervious Area
	5,220		93.75% Impervious Area
	5,220		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	129	0.0516	1.41		**Lag/CN Method,**
1.5	129	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 306S: 306S



Summary for Subcatchment 307S: 307S

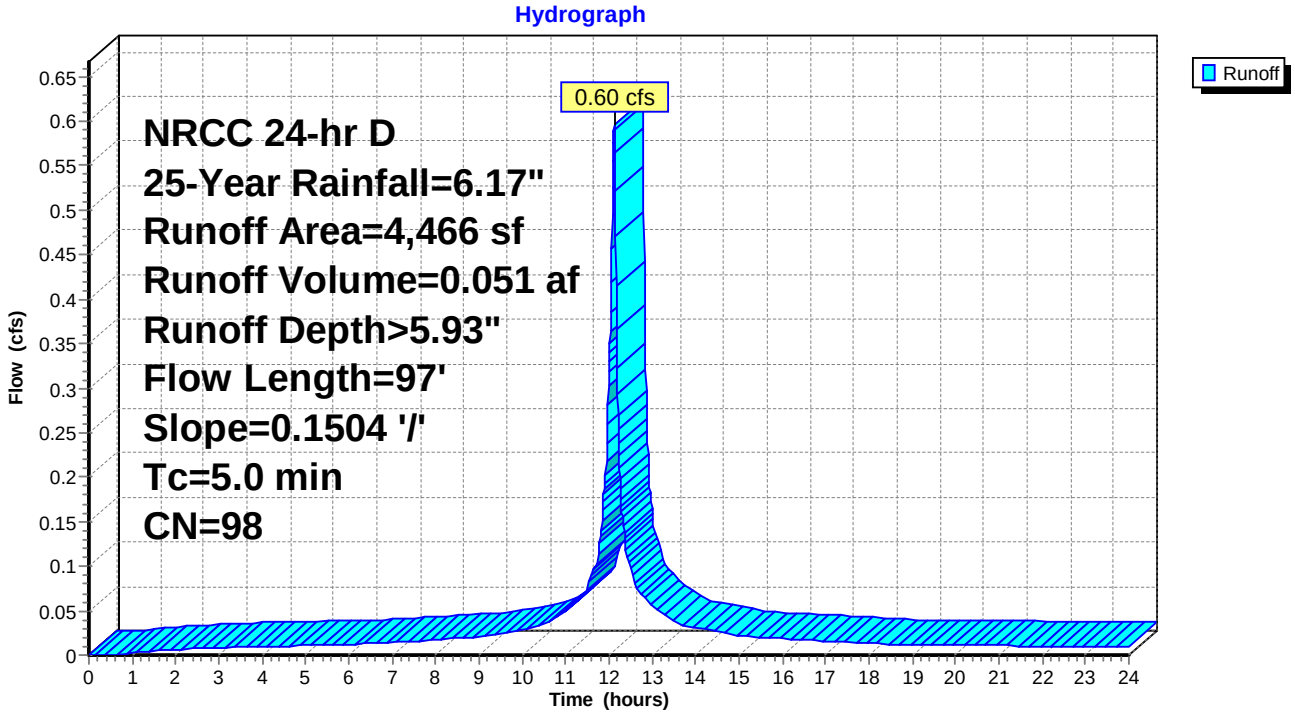
Runoff = 0.60 cfs @ 12.12 hrs, Volume= 0.051 af, Depth> 5.93"
Routed to Pond CB19 : CB-19

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
4,336	98	Unconnected pavement HSG A
130	98	Unconnected pavement HSG B
4,466	98	Weighted Average
4,466		100.00% Impervious Area
4,466		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	97	0.1504	2.69		**Lag/CN Method,**
0.6	97	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 307S: 307S



Summary for Subcatchment 400S: 400S

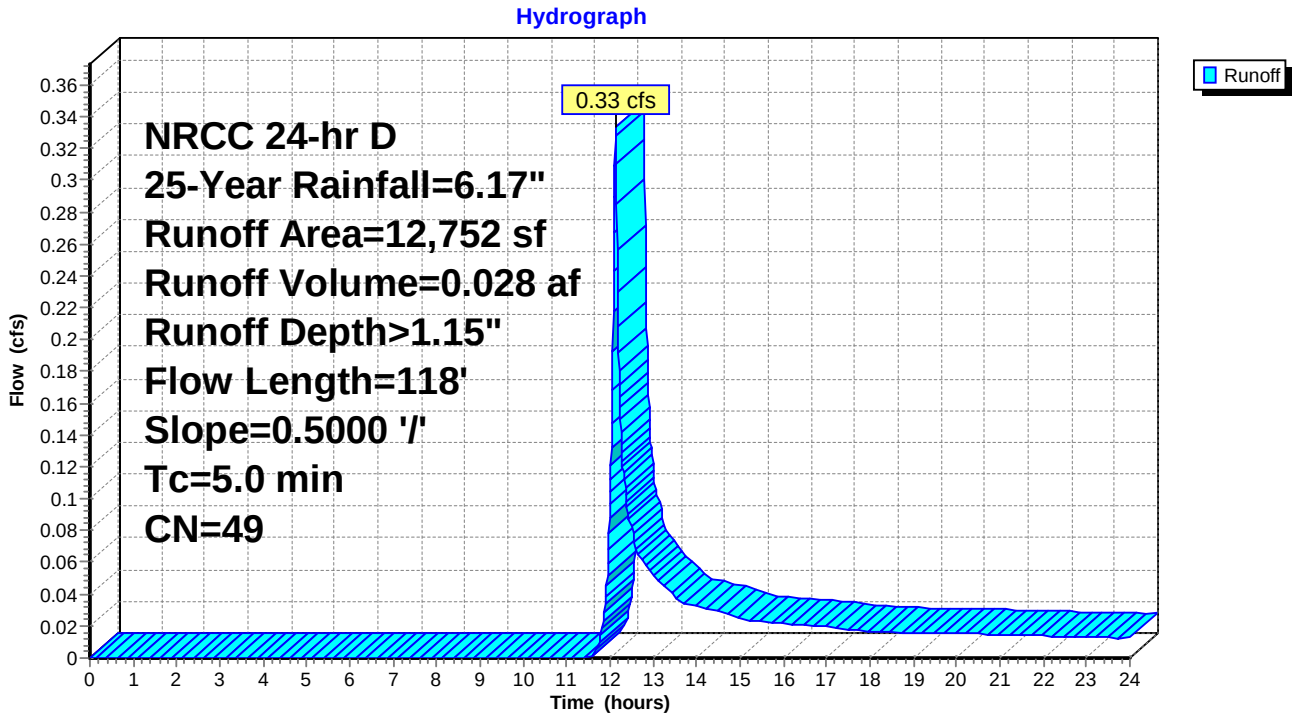
Runoff = 0.33 cfs @ 12.13 hrs, Volume= 0.028 af, Depth> 1.15"
Routed to Pond 4P : Basin 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
*	7,663	49	Open Space-Fair (50% to 75% grass) HSG A
*	1,396	49	Open Space-Fair (50% to 75% grass) HSG A
*	3,348	49	Open Space-Fair (50% to 75% grass) HSG A
*	345	49	Open Space-Fair (50% to 75% grass) HSG A
	12,752	49	Weighted Average
	12,752		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	118	0.5000	1.06		**Lag/CN Method,**
1.9	118	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 400S: 400S



Summary for Subcatchment 401S: 401S

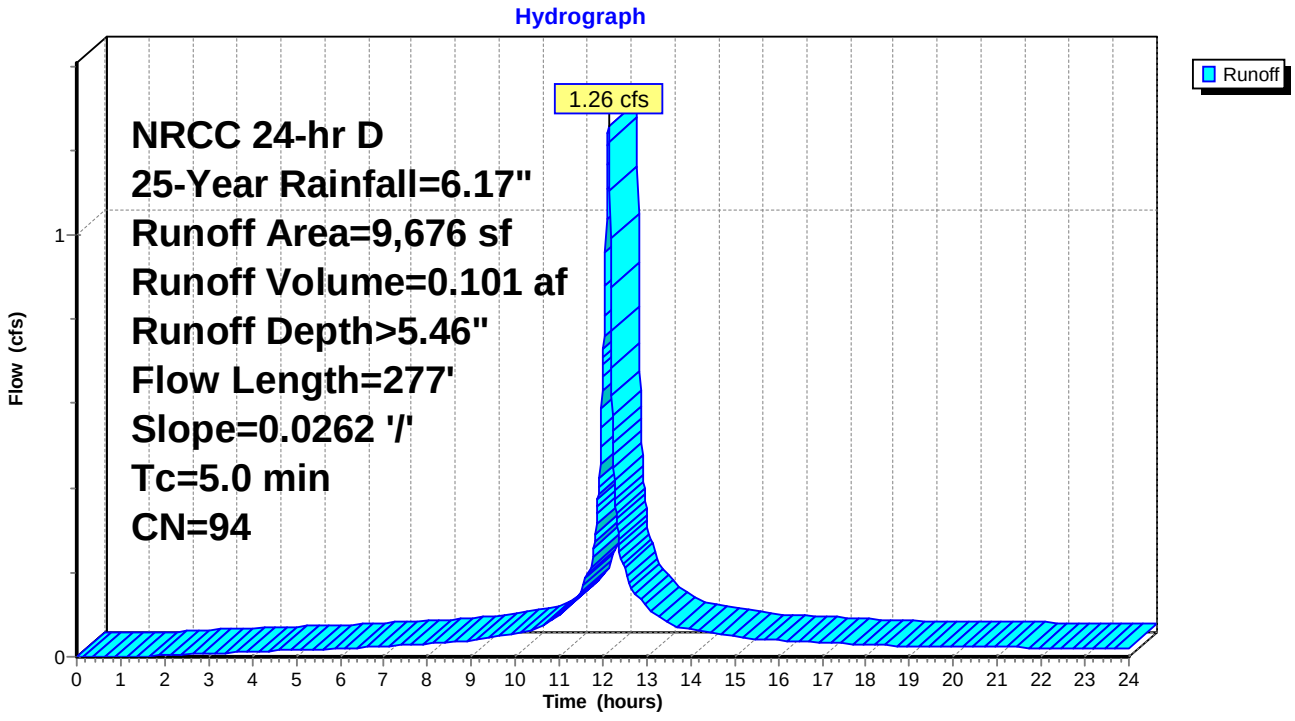
Runoff = 1.26 cfs @ 12.12 hrs, Volume= 0.101 af, Depth> 5.46"
Routed to Pond CB23 : CB-23

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
8,350	98	Unconnected pavement HSG A
487	98	Unconnected pavement HSG B
3	69	50-75% Grass cover, Fair HSG B
836	49	50-75% Grass cover, Fair HSG A
9,676	94	Weighted Average
839		8.67% Pervious Area
8,837		91.33% Impervious Area
8,837		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	277	0.0262	1.12		**Lag/CN Method,**
4.1	277	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 401S: 401S



Summary for Subcatchment 402S: 402S

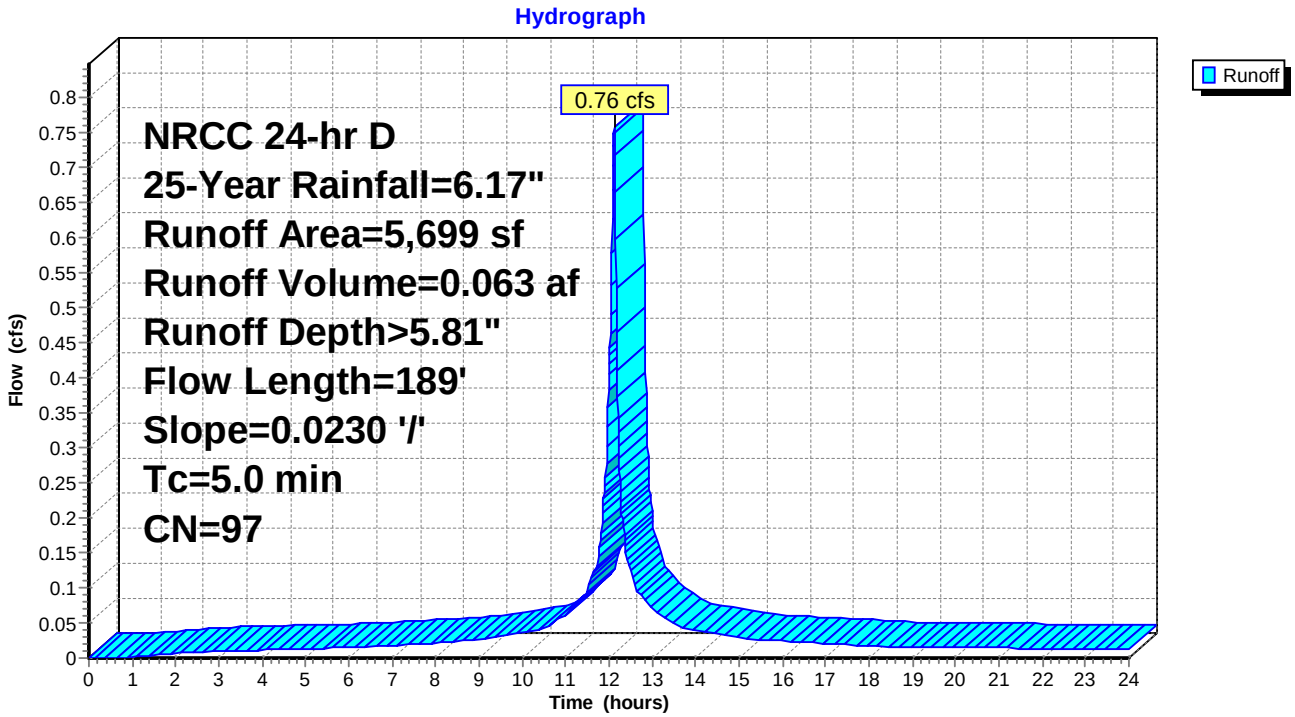
Runoff = 0.76 cfs @ 12.12 hrs, Volume= 0.063 af, Depth> 5.81"
Routed to Pond CB22 : CB-22

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
5,595	98	Unconnected pavement HSG A
104	49	50-75% Grass cover, Fair HSG A
5,699	97	Weighted Average
104		1.83% Pervious Area
5,595		98.17% Impervious Area
5,595		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	189	0.0230	1.13		**Lag/CN Method,**
2.8	189	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 402S: 402S



Summary for Subcatchment 403S: 403S

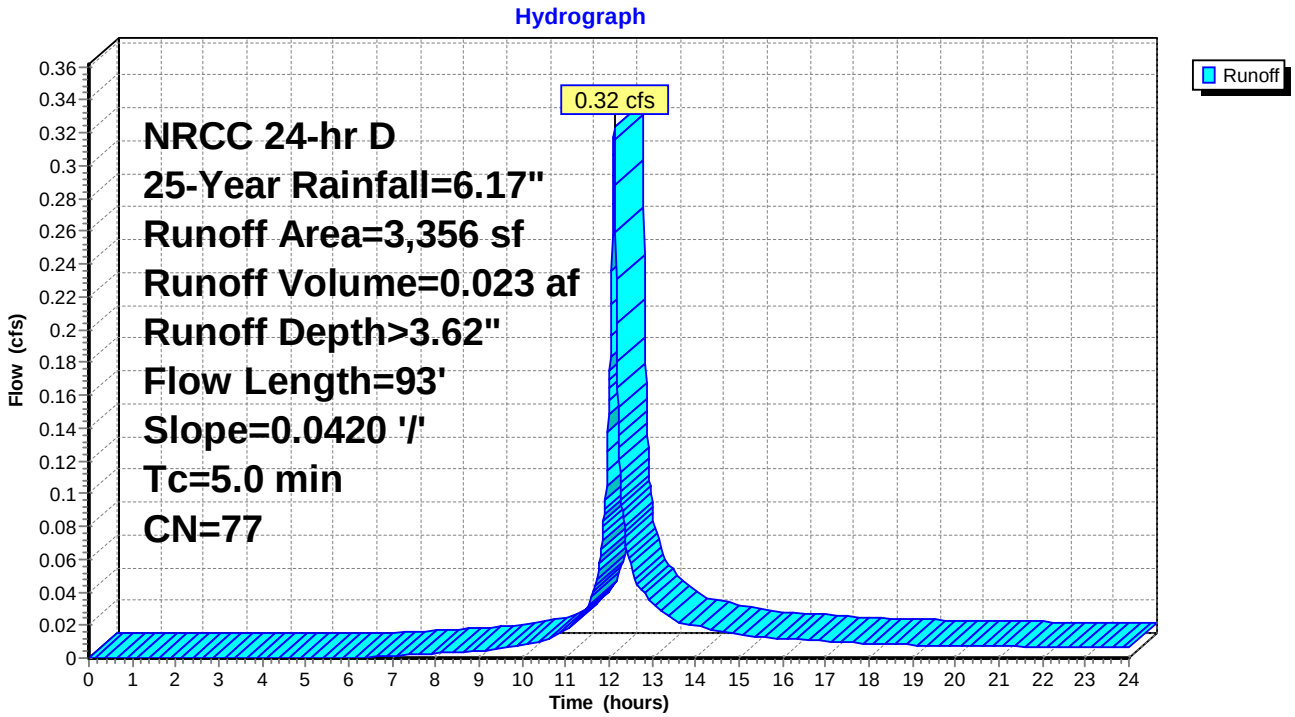
Runoff = 0.32 cfs @ 12.12 hrs, Volume= 0.023 af, Depth> 3.62"
Routed to Pond CB24 : CB-24

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
1,919	98	Unconnected pavement HSG A
1,437	49	50-75% Grass cover, Fair HSG A
3,356	77	Weighted Average
1,437		42.83% Pervious Area
1,919		57.17% Impervious Area
1,919		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	93	0.0420	0.61		**Lag/CN Method,**
2.5	93	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 403S: 403S



Summary for Subcatchment 404S: 404S

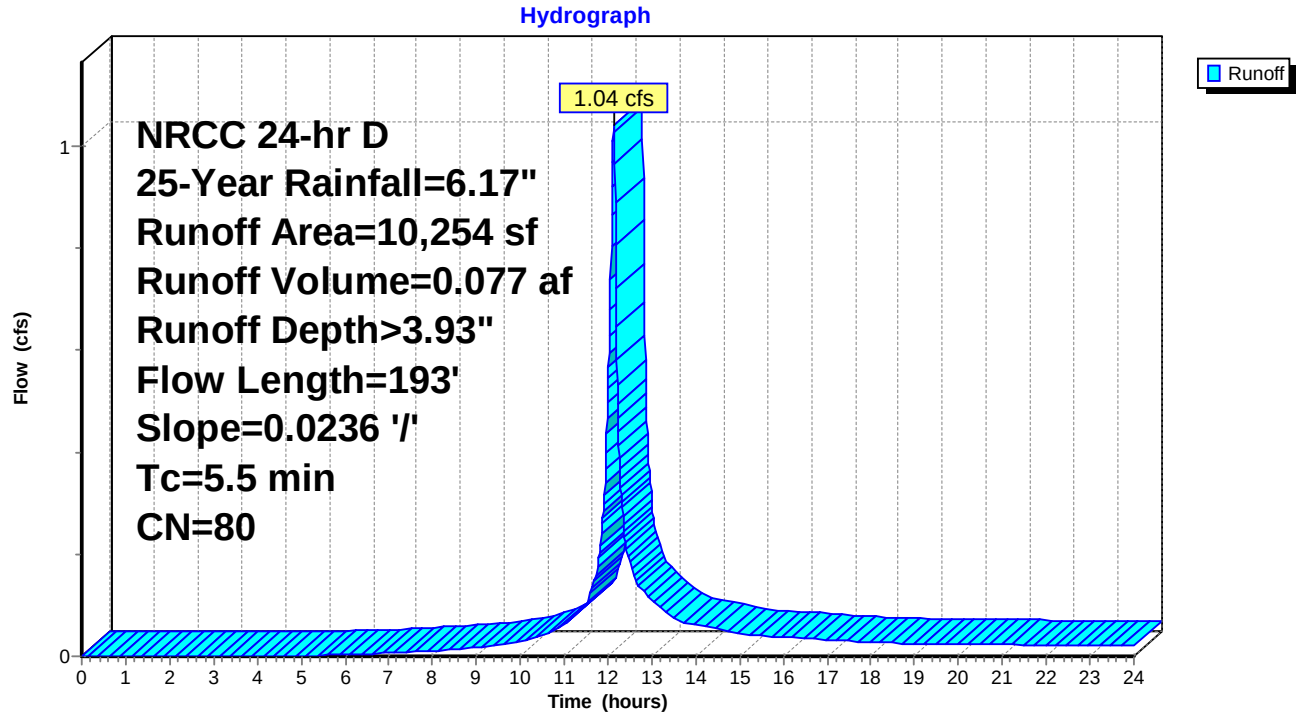
Runoff = 1.04 cfs @ 12.13 hrs, Volume= 0.077 af, Depth> 3.93"
Routed to Pond CB25 : CB-25

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	6,558	98	Unconnected pavement HSG A
	3,687	49	50-75% Grass cover, Fair HSG A
	8	36	Woods, Fair HSG A
*	1	49	Open Space-Fair (50% to 75% grass) HSG A
	10,254	80	Weighted Average
	3,696		36.04% Pervious Area
	6,558		63.96% Impervious Area
	6,558		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	193	0.0236	0.58		**Lag/CN Method,**

Subcatchment 404S: 404S



Summary for Subcatchment 500S: 500S

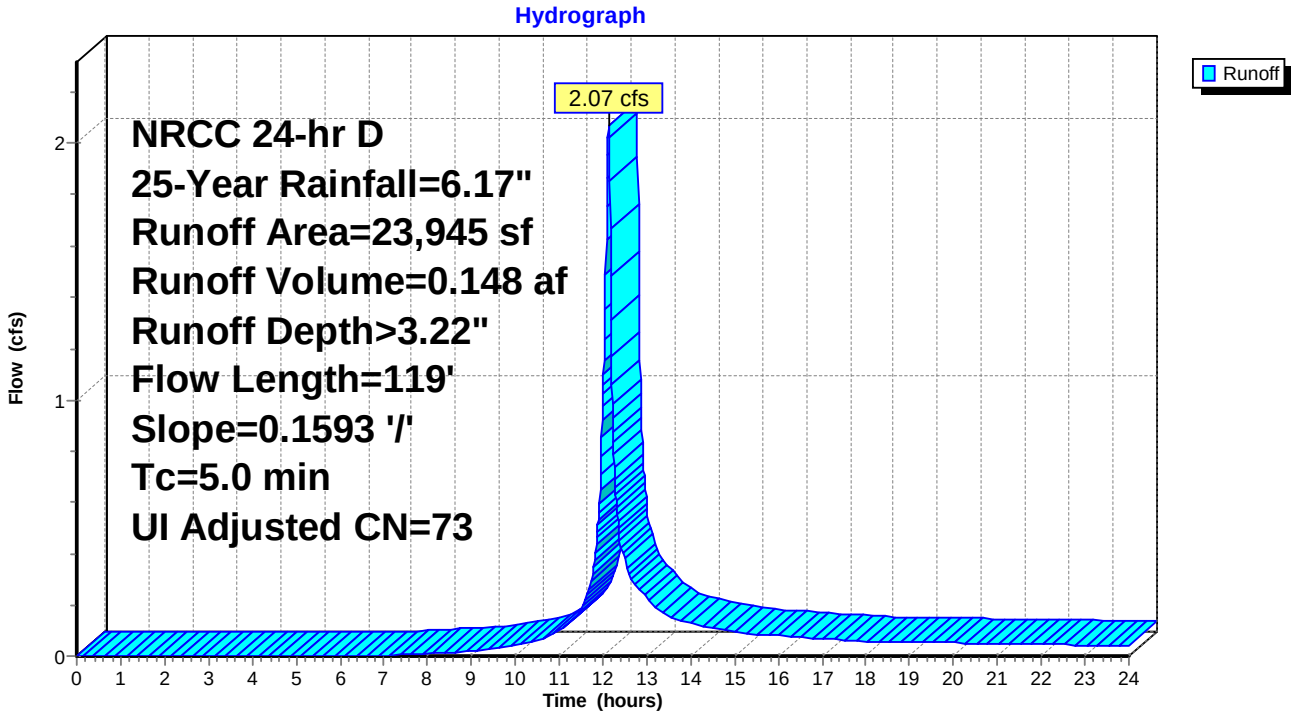
Runoff = 2.07 cfs @ 12.12 hrs, Volume= 0.148 af, Depth> 3.22"
Routed to Pond CB39 : CB-39

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Adj	Description
11,944	79		50-75% Grass cover, Fair HSG C
6,002	98		Unconnected pavement HSG C
4	98		Unconnected pavement HSG A
5,991	49		50-75% Grass cover, Fair HSG A
3	98		Roofs HSG C
23,945	76	73	Weighted Average, UI Adjusted
17,935			74.90% Pervious Area
6,010			25.10% Impervious Area
6,006			99.94% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	119	0.1593	1.21		**Lag/CN Method,**
1.6	119	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 500S: 500S



Summary for Subcatchment 501S: 501S

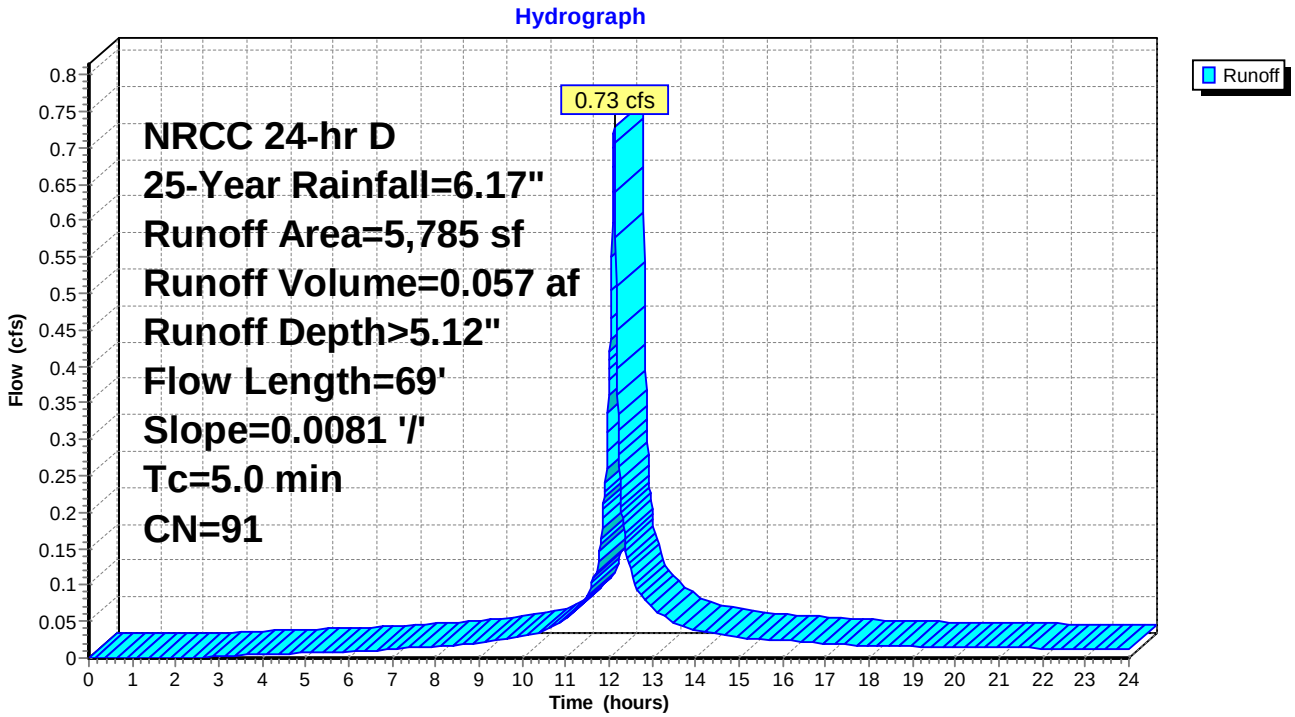
Runoff = 0.73 cfs @ 12.12 hrs, Volume= 0.057 af, Depth> 5.12"
Routed to Pond CB26 : CB-26

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
4,934	98	Unconnected pavement HSG A
851	49	50-75% Grass cover, Fair HSG A
5,785	91	Weighted Average
851		14.72% Pervious Area
4,934		85.28% Impervious Area
4,934		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	69	0.0081	0.41		**Lag/CN Method,**
2.8	69	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 501S: 501S



Summary for Subcatchment 502S: 502S

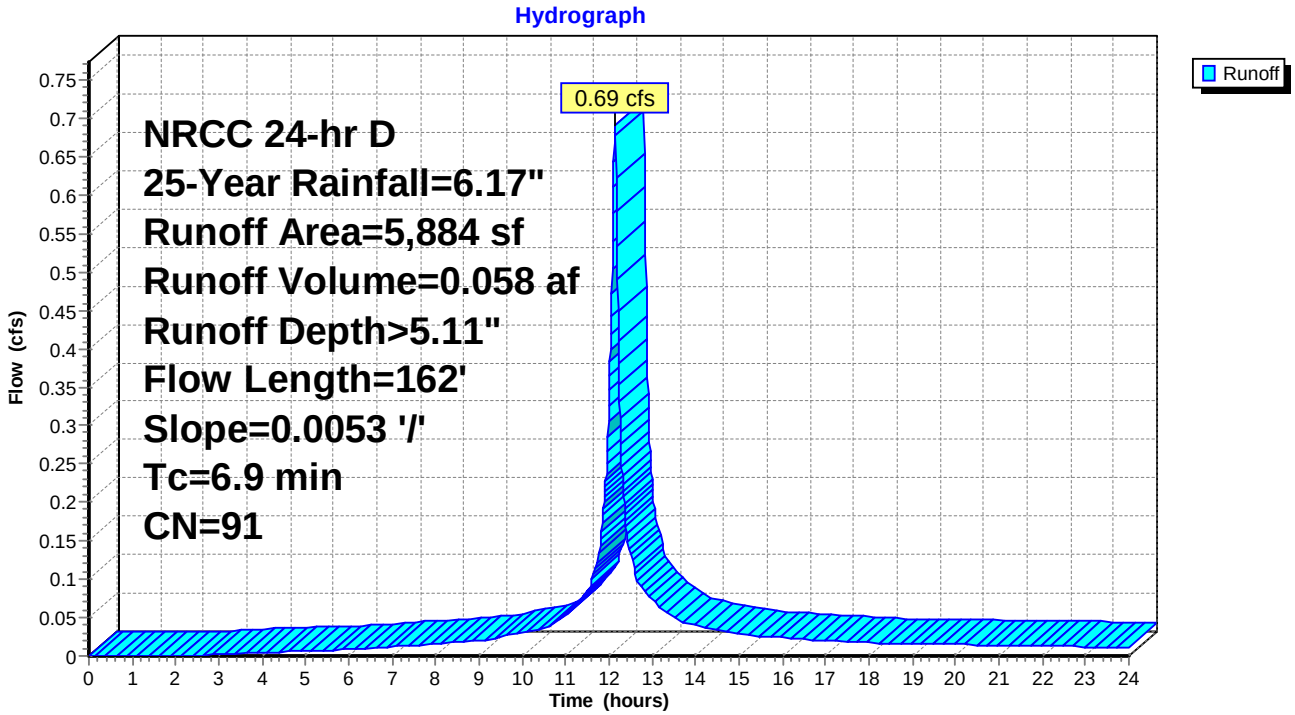
Runoff = 0.69 cfs @ 12.14 hrs, Volume= 0.058 af, Depth> 5.11"
Routed to Pond CB27 : CB-27

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
4,998	98	Unconnected pavement HSG A
885	49	50-75% Grass cover, Fair HSG A
5,884	91	Weighted Average
885		15.05% Pervious Area
4,998		84.95% Impervious Area
4,998		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	162	0.0053	0.39		**Lag/CN Method,**

Subcatchment 502S: 502S



Summary for Subcatchment 503S: 503S

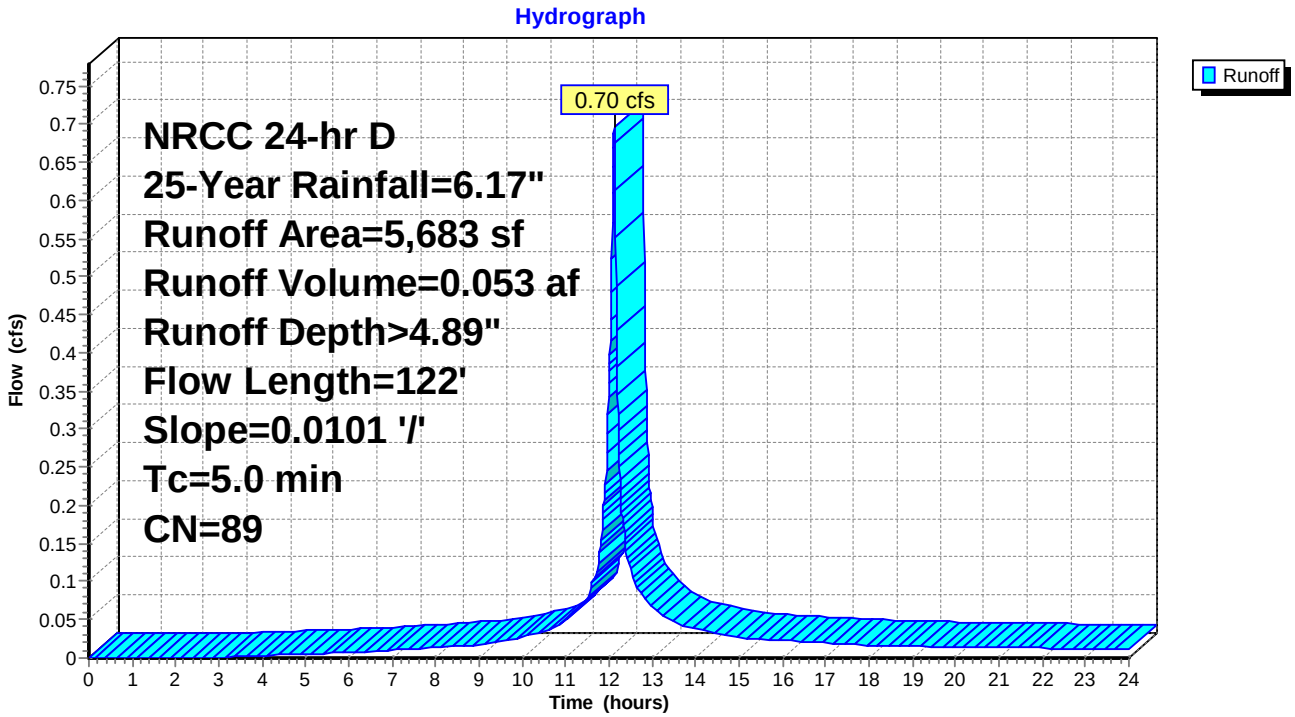
Runoff = 0.70 cfs @ 12.12 hrs, Volume= 0.053 af, Depth> 4.89"
Routed to Pond CB29 : CB-29

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
4,605	98	Unconnected pavement HSG A
1,078	49	50-75% Grass cover, Fair HSG A
5,683	89	Weighted Average
1,078		18.96% Pervious Area
4,605		81.04% Impervious Area
4,605		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	122	0.0101	0.47		**Lag/CN Method,**
4.3	122	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 503S: 503S



Summary for Subcatchment 504S: 504S

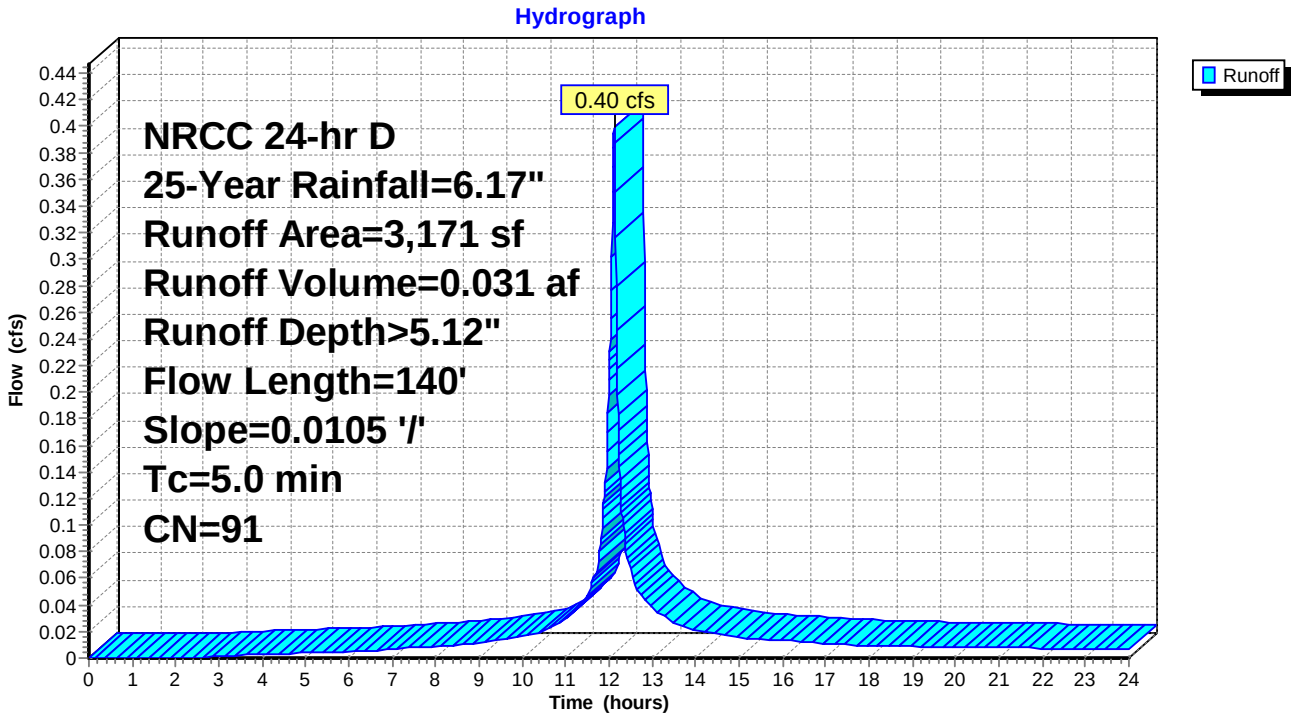
Runoff = 0.40 cfs @ 12.12 hrs, Volume= 0.031 af, Depth> 5.12"
Routed to Pond CB28 : CB-28

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
2,705	98	Unconnected pavement HSG A
466	49	50-75% Grass cover, Fair HSG A
3,171	91	Weighted Average
466		14.69% Pervious Area
2,705		85.31% Impervious Area
2,705		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	140	0.0105	0.54		**Lag/CN Method,**
4.3	140	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 504S: 504S



Summary for Subcatchment 505S: 505S

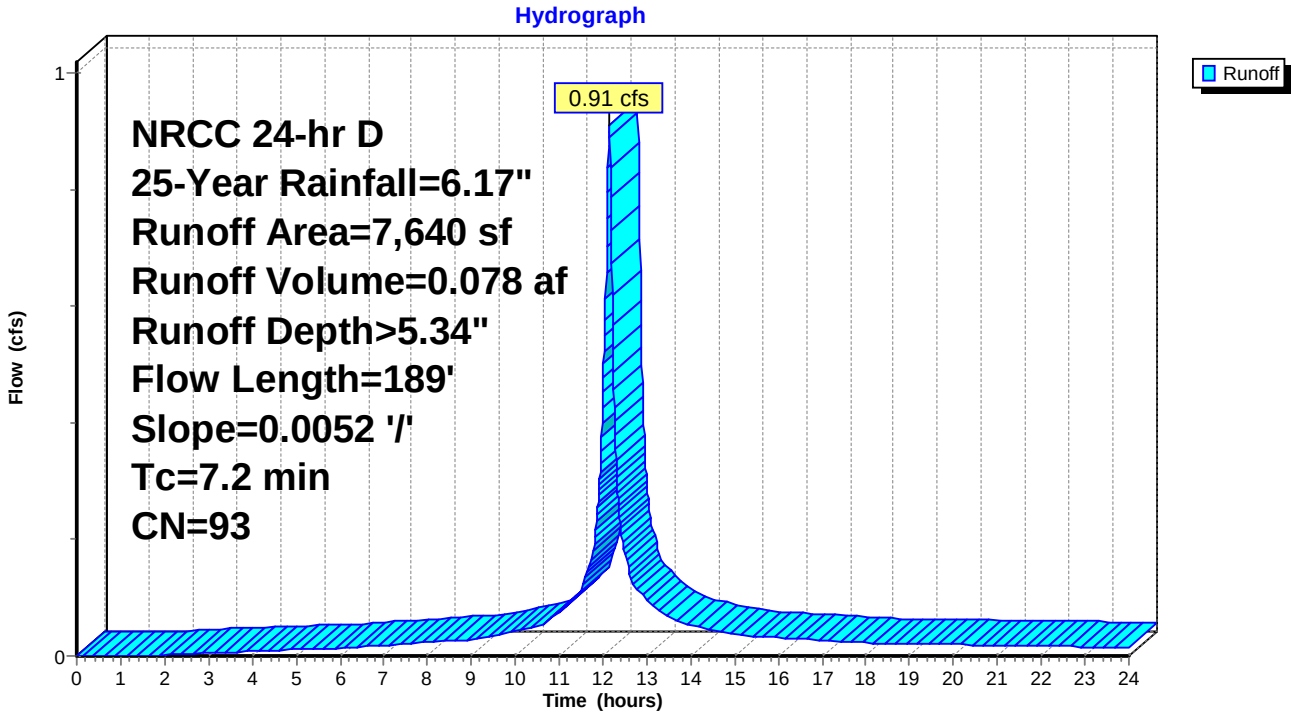
Runoff = 0.91 cfs @ 12.14 hrs, Volume= 0.078 af, Depth> 5.34"
Routed to Pond CB30 : CB-30

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
6,826	98	Unconnected pavement HSG A
814	49	50-75% Grass cover, Fair HSG A
7,640	93	Weighted Average
814		10.66% Pervious Area
6,826		89.34% Impervious Area
6,826		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	189	0.0052	0.44		**Lag/CN Method,**

Subcatchment 505S: 505S



Summary for Subcatchment 506S: 506S

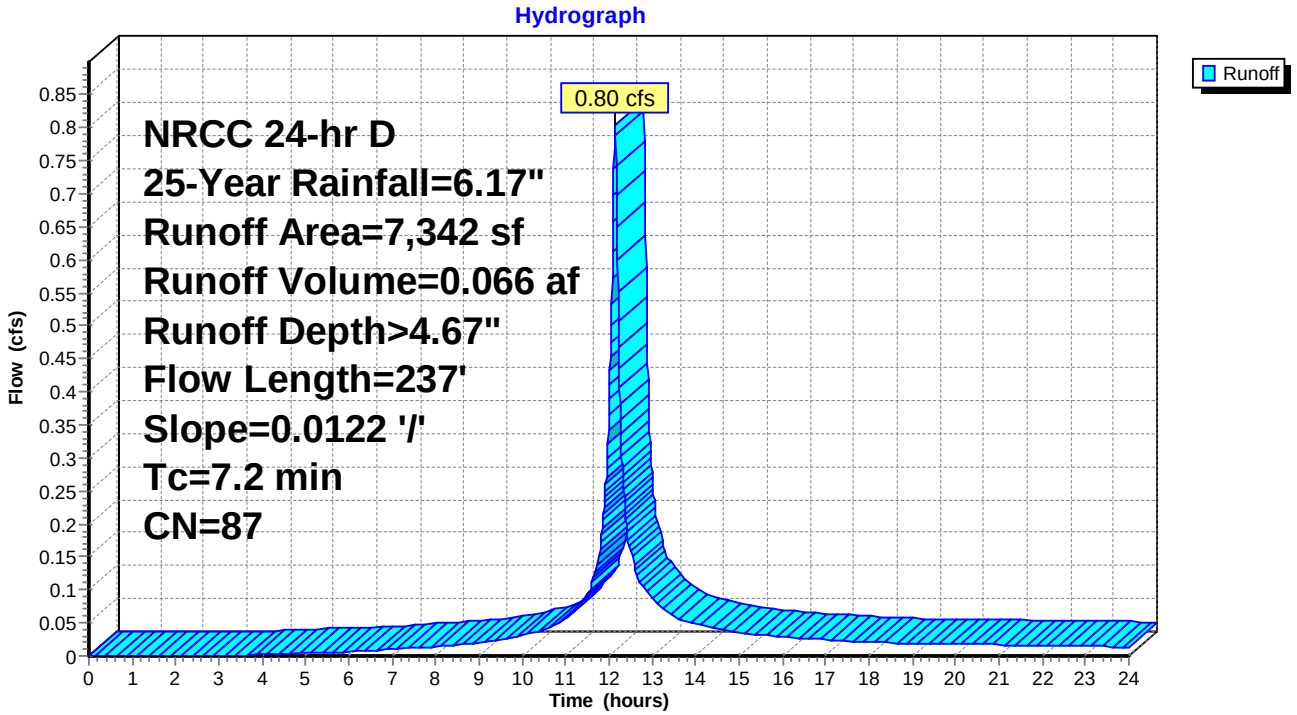
Runoff = 0.80 cfs @ 12.14 hrs, Volume= 0.066 af, Depth> 4.67"
Routed to Pond CB33 : CB-33

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
5,724	98	Unconnected pavement HSG A
1,619	49	50-75% Grass cover, Fair HSG A
7,342	87	Weighted Average
1,619		22.05% Pervious Area
5,724		77.95% Impervious Area
5,724		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	237	0.0122	0.55		**Lag/CN Method,**

Subcatchment 506S: 506S



Summary for Subcatchment 507S: 507S

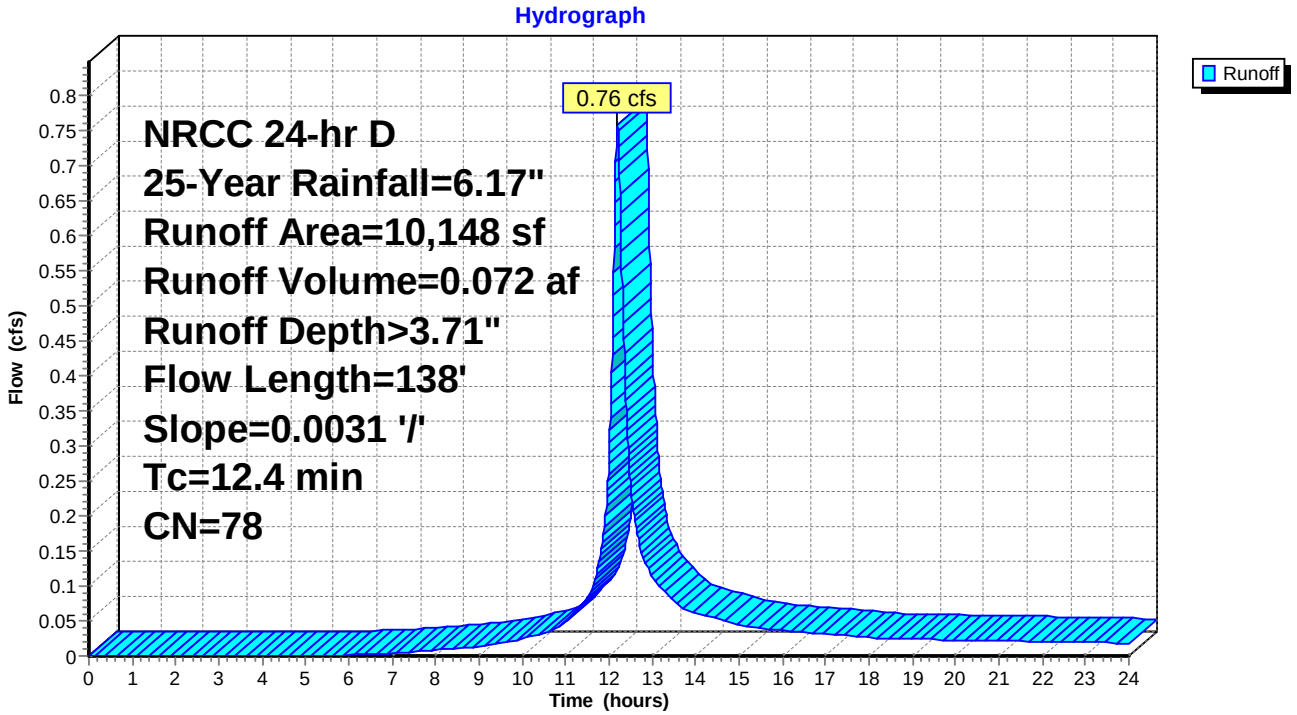
Runoff = 0.76 cfs @ 12.20 hrs, Volume= 0.072 af, Depth> 3.71"
Routed to Pond CB32 : CB-32

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
5,948	98	Unconnected pavement HSG A
4,200	49	50-75% Grass cover, Fair HSG A
10,148	78	Weighted Average
4,200		41.39% Pervious Area
5,948		58.61% Impervious Area
5,948		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	138	0.0031	0.19		**Lag/CN Method,**

Subcatchment 507S: 507S



Summary for Subcatchment 508S: 508S

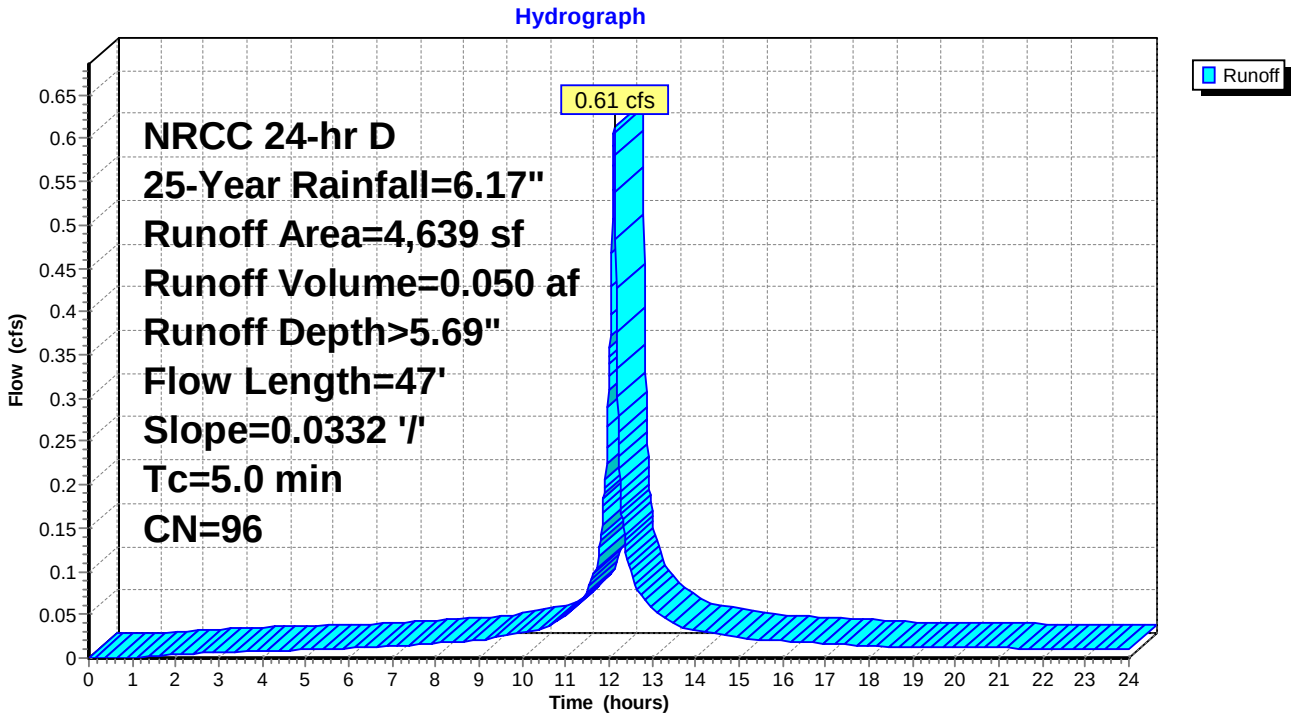
Runoff = 0.61 cfs @ 12.12 hrs, Volume= 0.050 af, Depth> 5.69"
Routed to Pond CB37 : CB-37

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
4,454	98	Unconnected pavement HSG A
184	49	50-75% Grass cover, Fair HSG A
4,639	96	Weighted Average
184		3.98% Pervious Area
4,454		96.02% Impervious Area
4,454		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	47	0.0332	0.98		**Lag/CN Method,**
0.8	47	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 508S: 508S



Summary for Subcatchment 509S: 509S

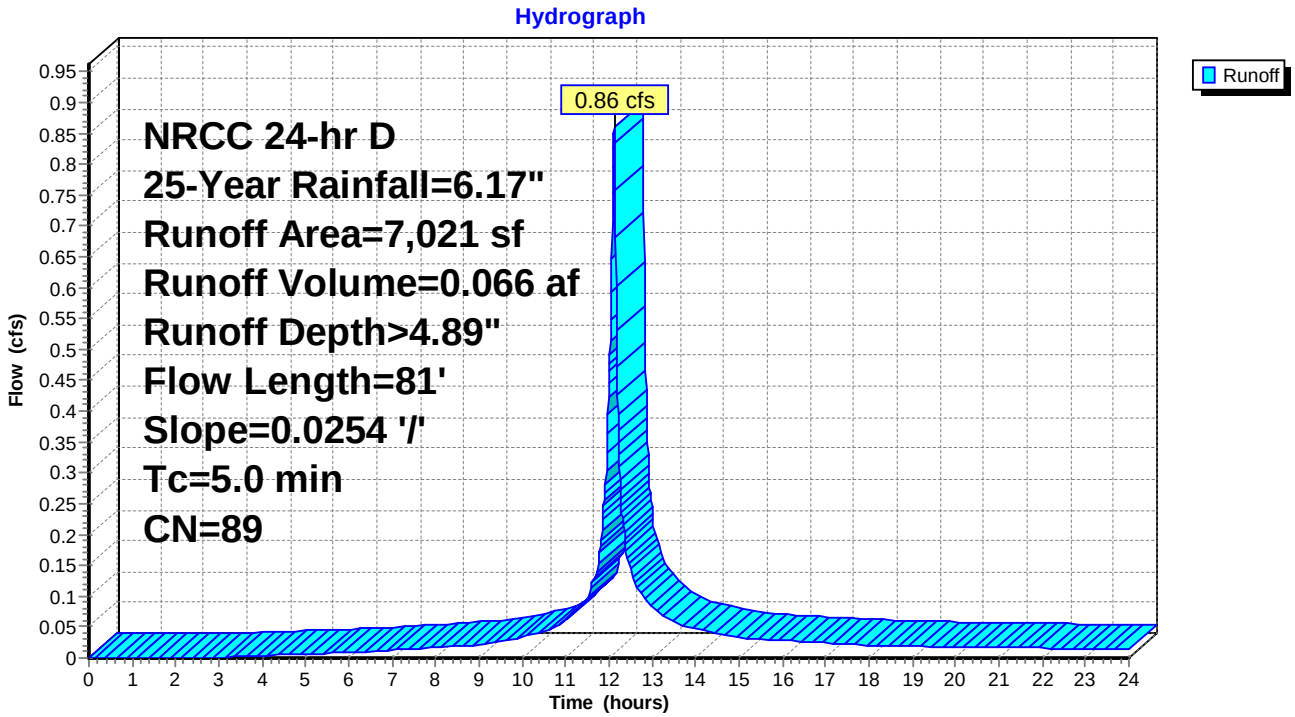
Runoff = 0.86 cfs @ 12.12 hrs, Volume= 0.066 af, Depth> 4.89"
Routed to Pond CB36 : CB-36

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
5,706	98	Unconnected pavement HSG A
1,315	49	50-75% Grass cover, Fair HSG A
7,021	89	Weighted Average
1,315		18.73% Pervious Area
5,706		81.27% Impervious Area
5,706		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	81	0.0254	0.69		**Lag/CN Method,**
1.9	81	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 509S: 509S



Summary for Subcatchment 510S: 510S

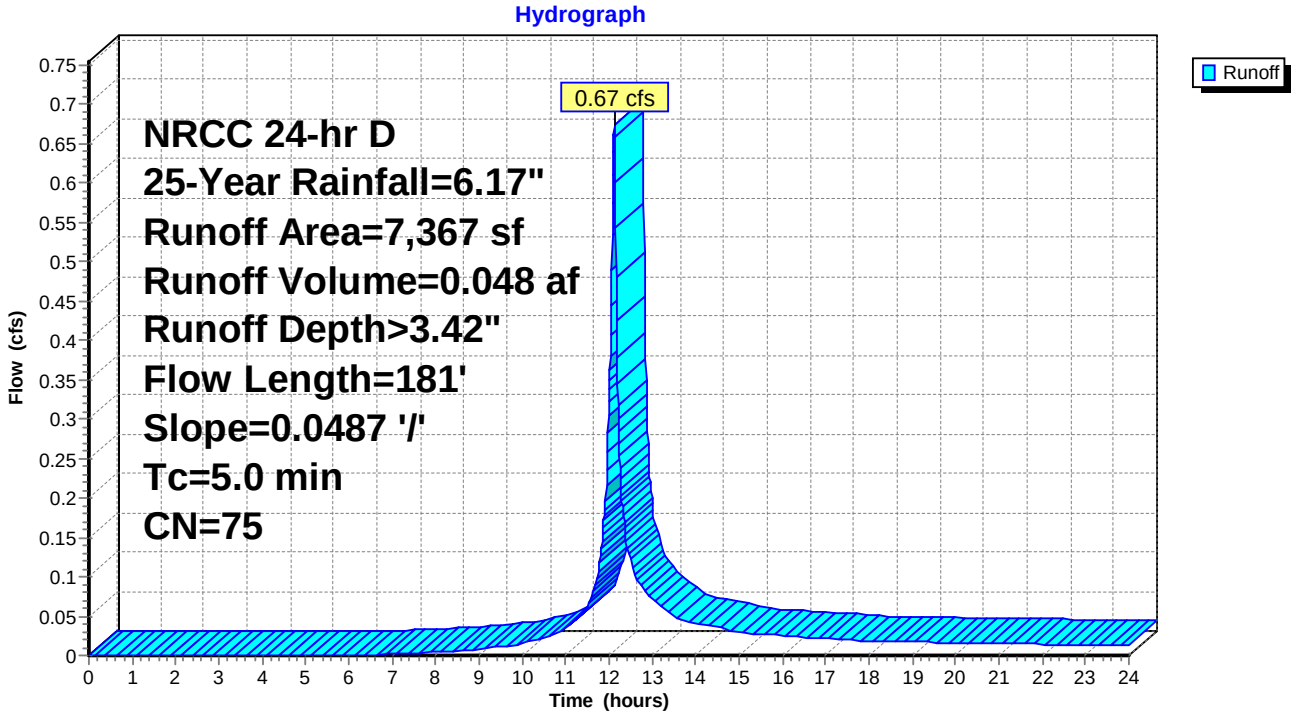
Runoff = 0.67 cfs @ 12.12 hrs, Volume= 0.048 af, Depth> 3.42"
Routed to Pond CB34 : CB-34

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	3,981	98	Unconnected pavement HSG A
	3,384	49	50-75% Grass cover, Fair HSG A
*	1	49	Open Space-Fair (50% to 75% grass) HSG A
	7,367	75	Weighted Average
	3,386		45.96% Pervious Area
	3,981		54.04% Impervious Area
	3,981		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	181	0.0487	0.71		**Lag/CN Method,**
4.3	181	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 510S: 510S



Summary for Subcatchment 511S: 511S

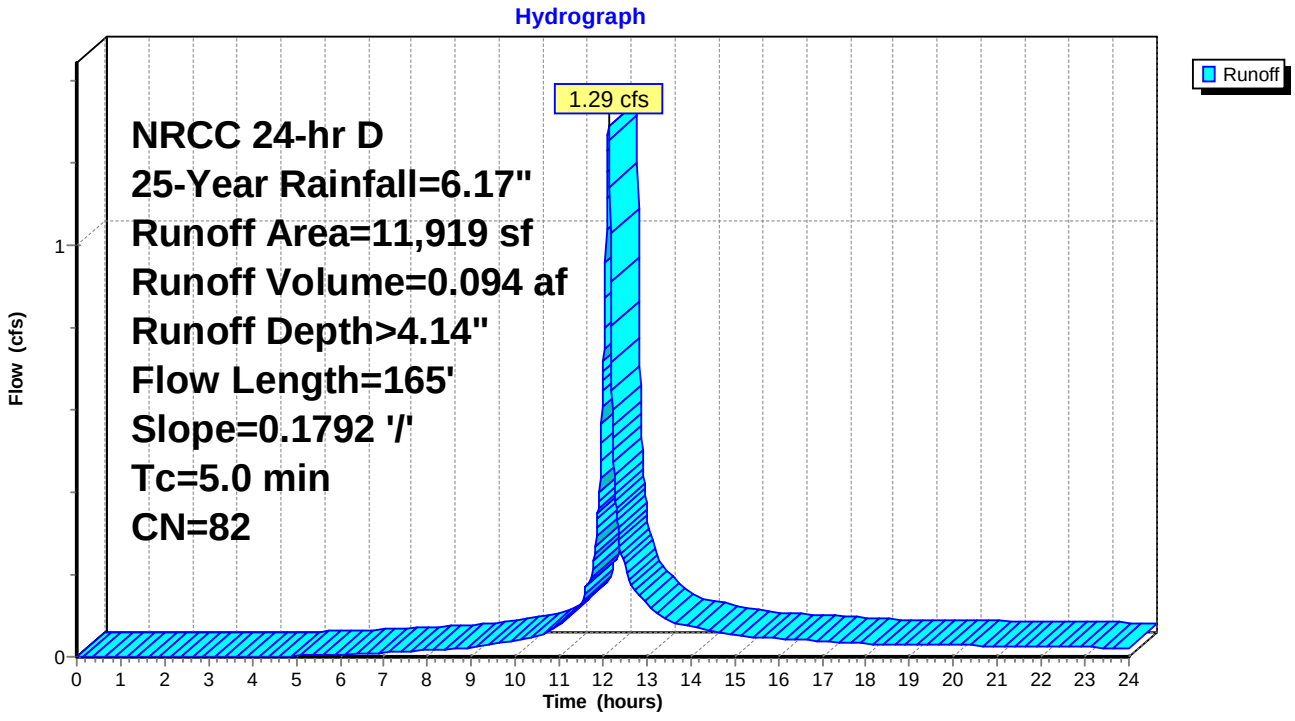
Runoff = 1.29 cfs @ 12.12 hrs, Volume= 0.094 af, Depth> 4.14"
Routed to Pond CB38 : CB-38

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
239	79	50-75% Grass cover, Fair HSG C
479	98	Unconnected pavement HSG C
7,478	98	Unconnected pavement HSG A
3,723	49	50-75% Grass cover, Fair HSG A
11,919	82	Weighted Average
3,962		33.24% Pervious Area
7,957		66.76% Impervious Area
7,957		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	165	0.1792	1.65		**Lag/CN Method,**
1.7	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 511S: 511S



Summary for Subcatchment 512S: 512S

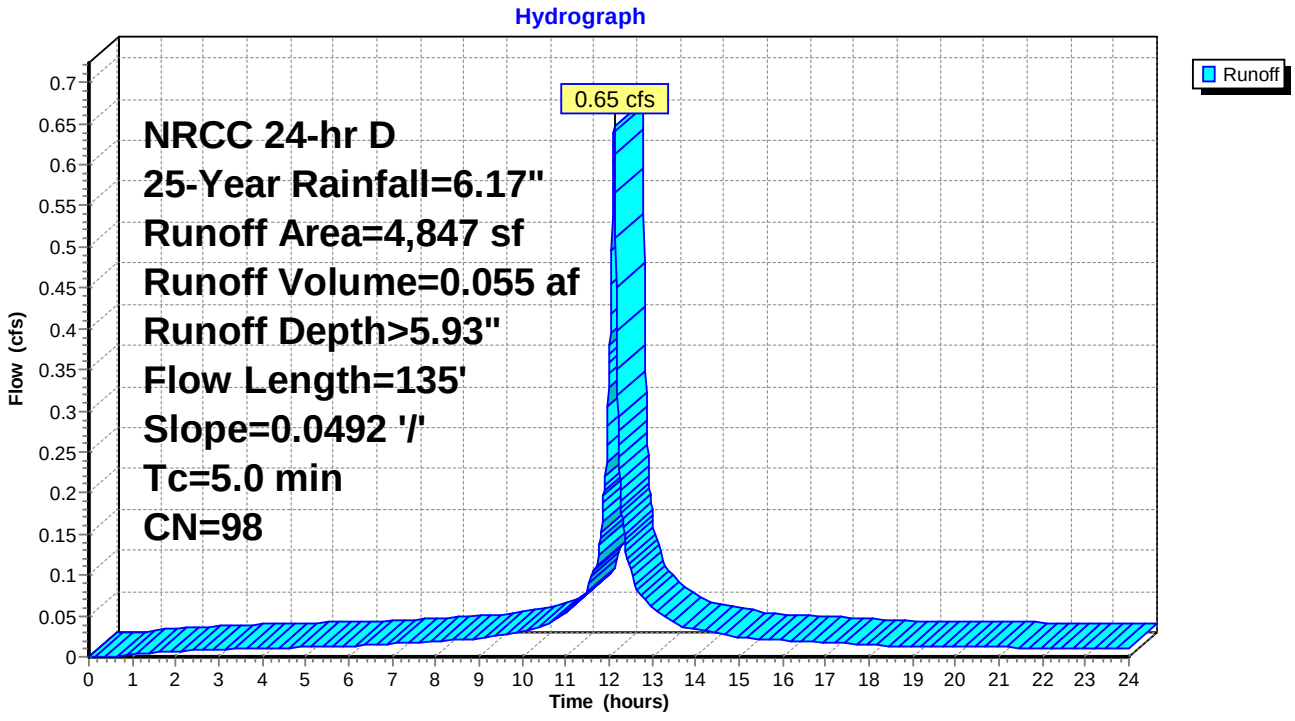
Runoff = 0.65 cfs @ 12.12 hrs, Volume= 0.055 af, Depth> 5.93"
Routed to Pond CB35 : CB-35

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
563	98	Unconnected pavement HSG C
4,271	98	Unconnected pavement HSG A
11	49	50-75% Grass cover, Fair HSG A
2	79	50-75% Grass cover, Fair HSG C
4,847	98	Weighted Average
13		0.28% Pervious Area
4,834		99.72% Impervious Area
4,834		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	135	0.0492	1.65		**Lag/CN Method,**
1.4	135	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 512S: 512S



Summary for Subcatchment 513S: 513S

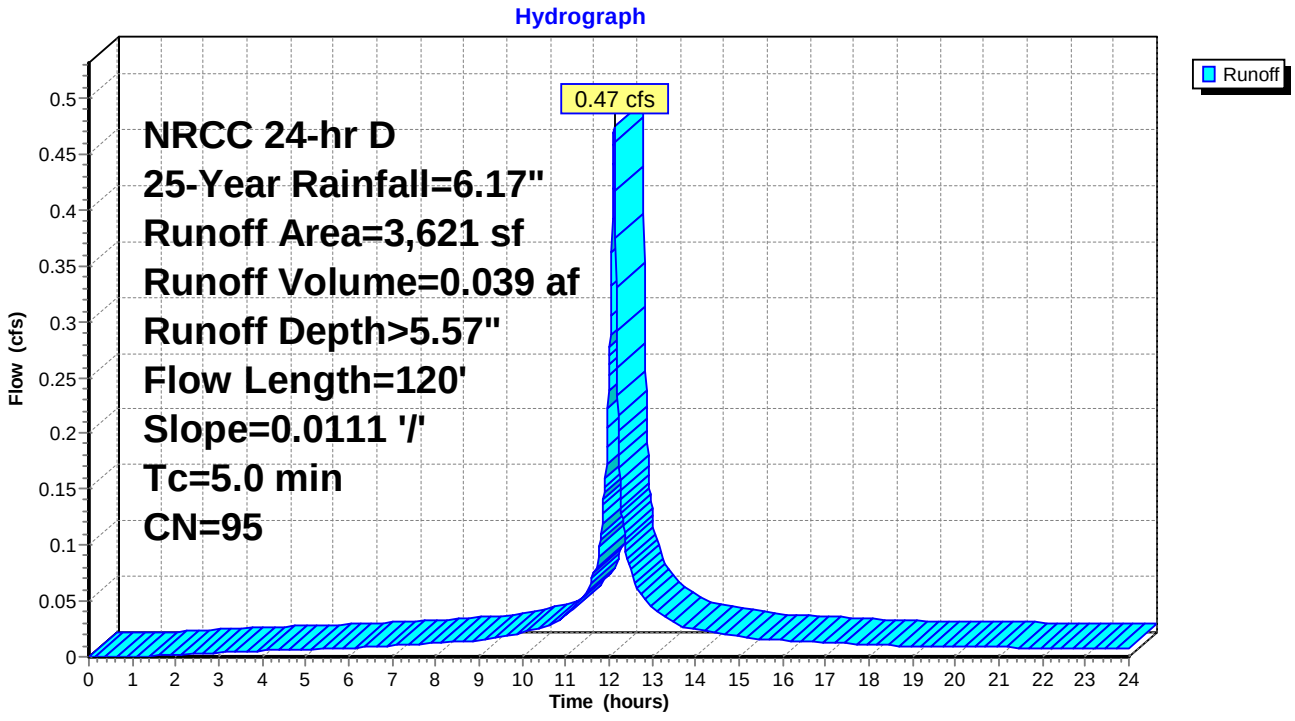
Runoff = 0.47 cfs @ 12.12 hrs, Volume= 0.039 af, Depth> 5.57"
Routed to Pond CB31 : CB-31

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
205	49	50-75% Grass cover, Fair HSG A
789	98	Unconnected pavement HSG A
2,584	98	Unconnected pavement HSG B
43	69	50-75% Grass cover, Fair HSG B
3,621	95	Weighted Average
248		6.85% Pervious Area
3,373		93.15% Impervious Area
3,373		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	120	0.0111	0.65		**Lag/CN Method,**
3.1	120	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 513S: 513S



Summary for Subcatchment 600S: 600S

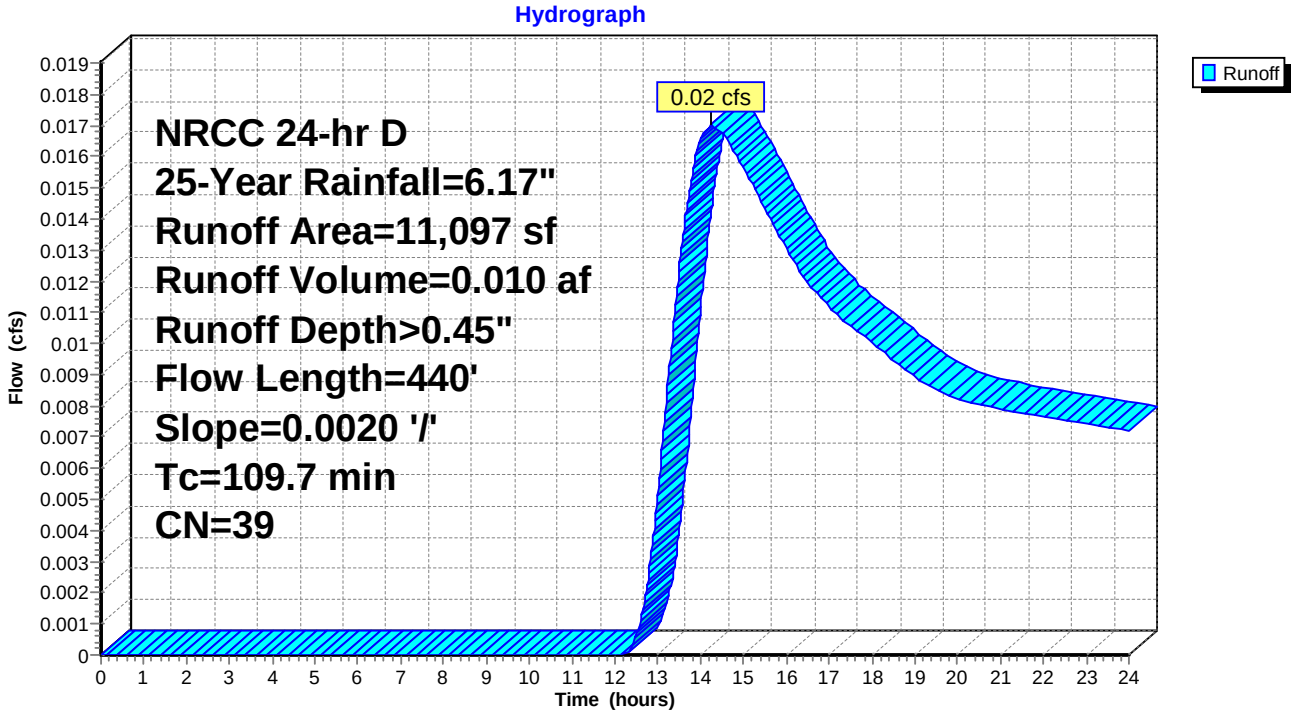
Runoff = 0.02 cfs @ 14.26 hrs, Volume= 0.010 af, Depth> 0.45"
Routed to Pond 6P : Basin 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
11,097	39	>75% Grass cover, Good, HSG A
11,097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
109.7	440	0.0020	0.07		**Lag/CN Method,**

Subcatchment 600S: 600S



Summary for Subcatchment 601S: 601S

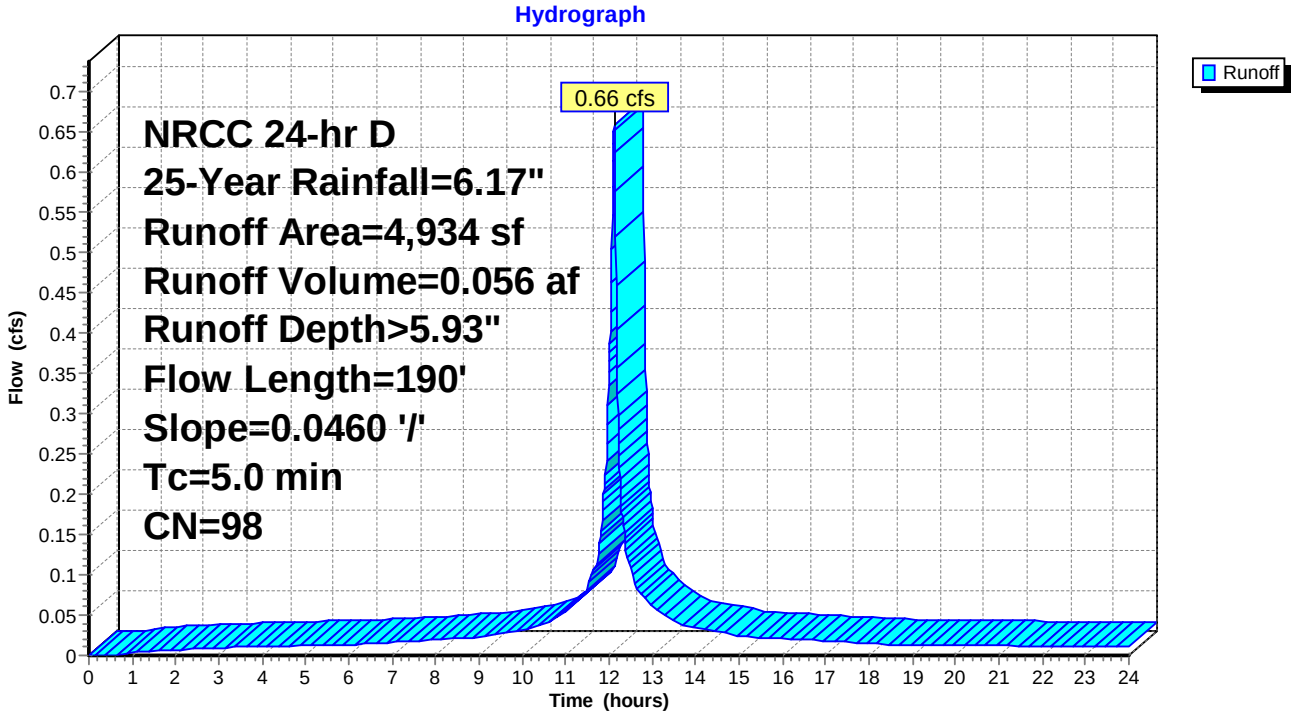
Runoff = 0.66 cfs @ 12.12 hrs, Volume= 0.056 af, Depth> 5.93"
Routed to Pond CB48 : CB-48

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
4,897	98	Unconnected pavement HSG C
37	79	50-75% Grass cover, Fair HSG C
1	89	Gravel roads HSG C
4,934	98	Weighted Average
38		0.76% Pervious Area
4,897		99.24% Impervious Area
4,897		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	190	0.0460	1.70		**Lag/CN Method,**
1.9	190	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 601S: 601S



Summary for Subcatchment 602S: 602S

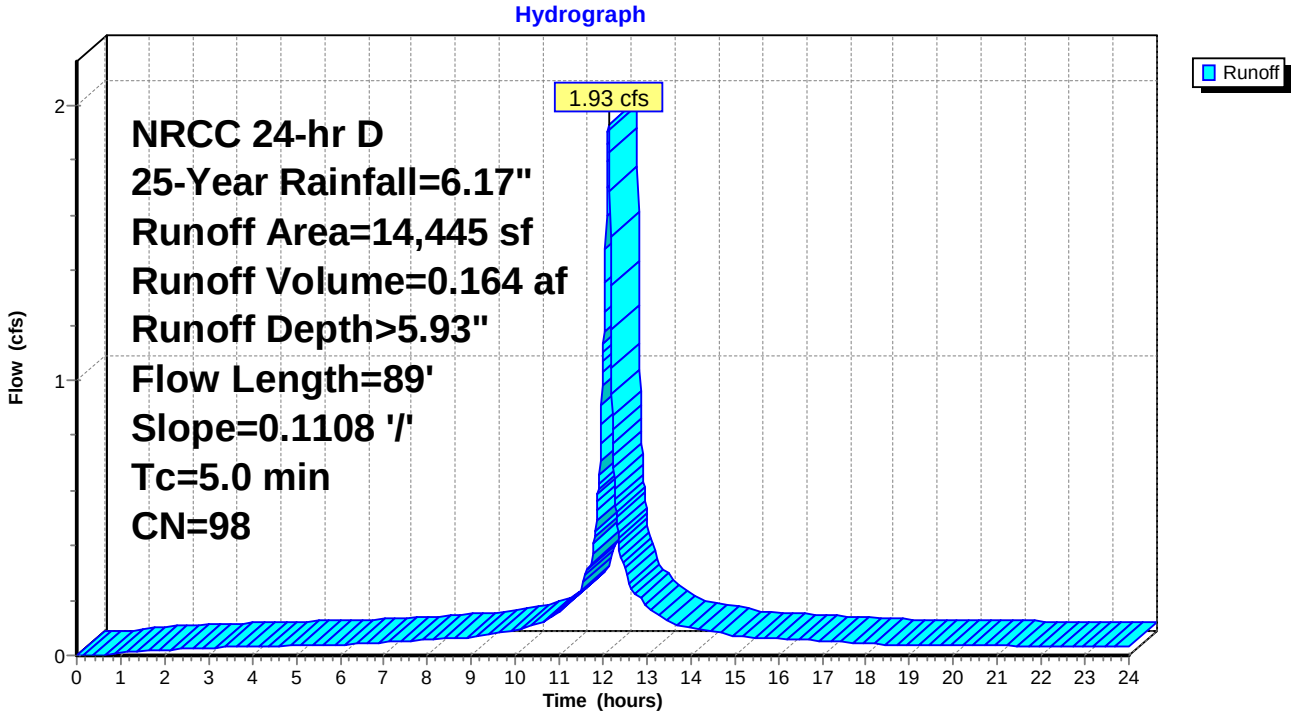
Runoff = 1.93 cfs @ 12.12 hrs, Volume= 0.164 af, Depth> 5.93"
Routed to Pond CB49 : CB-49

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
14,165	98	Unconnected pavement HSG C
278	79	50-75% Grass cover, Fair HSG C
2	89	Gravel roads HSG C
14,445	98	Weighted Average
279		1.93% Pervious Area
14,165		98.07% Impervious Area
14,165		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	89	0.1108	2.27		**Lag/CN Method,**
0.7	89	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 602S: 602S



Summary for Subcatchment 603S: 603S

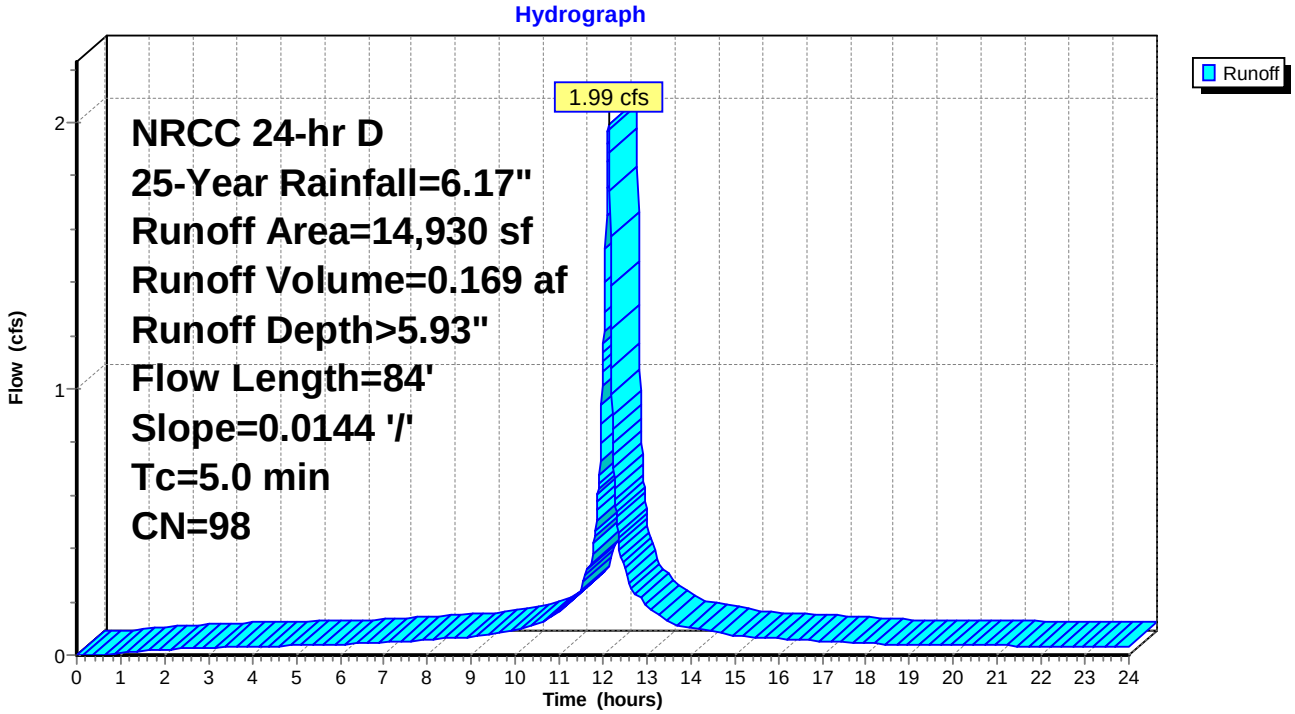
Runoff = 1.99 cfs @ 12.12 hrs, Volume= 0.169 af, Depth> 5.93"
Routed to Pond CB50 : CB-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
13,929	98	Unconnected pavement HSG C
1,001	98	Roofs HSG C
14,930	98	Weighted Average
14,930		100.00% Impervious Area
13,929		93.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	84	0.0144	0.81		**Lag/CN Method,**
1.7	84	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 603S: 603S



Summary for Subcatchment 604S: 604S

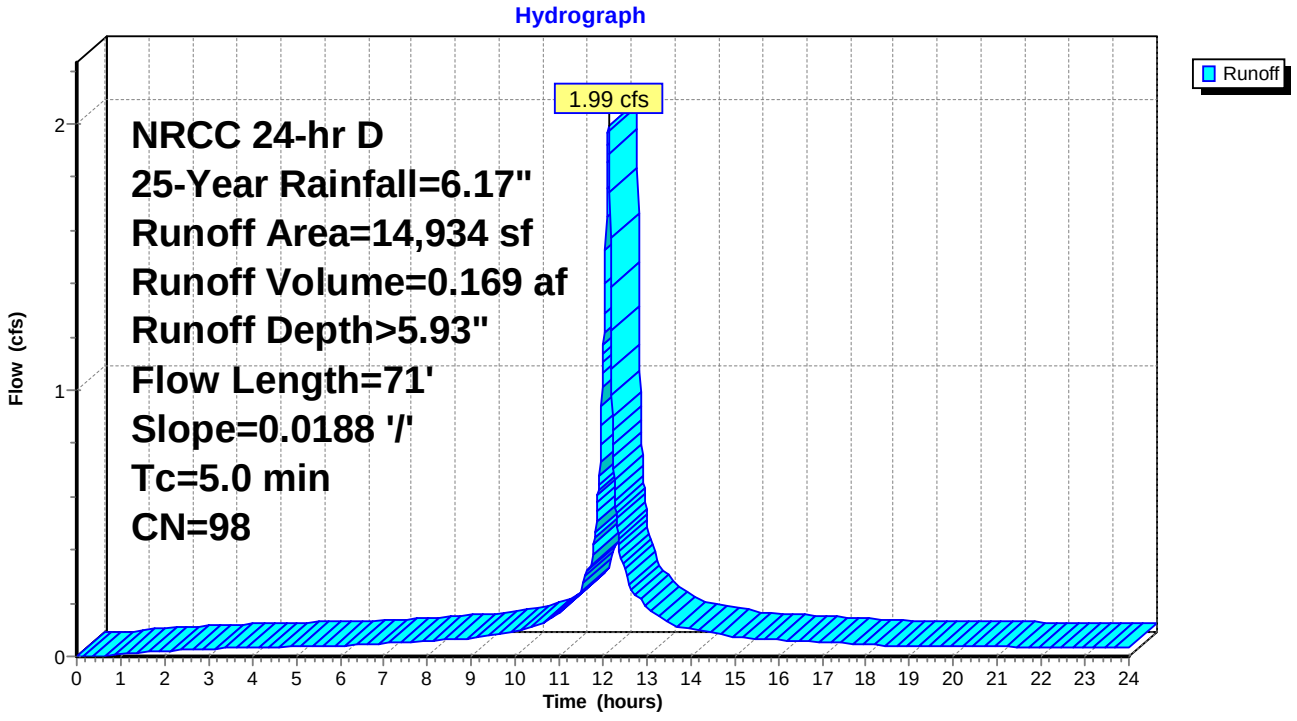
Runoff = 1.99 cfs @ 12.12 hrs, Volume= 0.169 af, Depth> 5.93"
Routed to Pond CB51 : CB-51

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
14,934	98	Unconnected pavement HSG C
14,934		100.00% Impervious Area
14,934		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	71	0.0188	0.90		**Lag/CN Method,**
1.3	71	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 604S: 604S



Summary for Subcatchment 605S: 605S

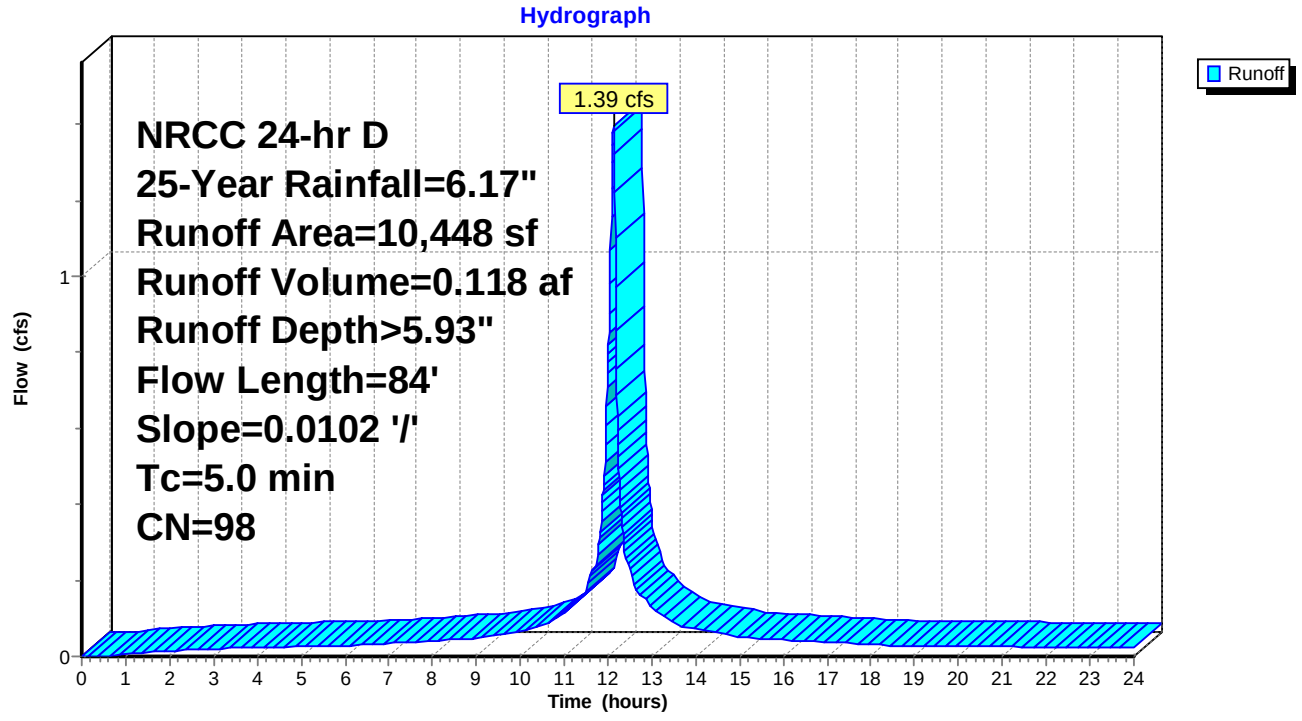
Runoff = 1.39 cfs @ 12.12 hrs, Volume= 0.118 af, Depth> 5.93"
Routed to Pond CB52 : CB-52

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
10,448	98	Unconnected pavement HSG C
10,448		100.00% Impervious Area
10,448		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	84	0.0102	0.68		**Lag/CN Method,**
2.1	84	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 605S: 605S



Summary for Subcatchment 606S: 606S

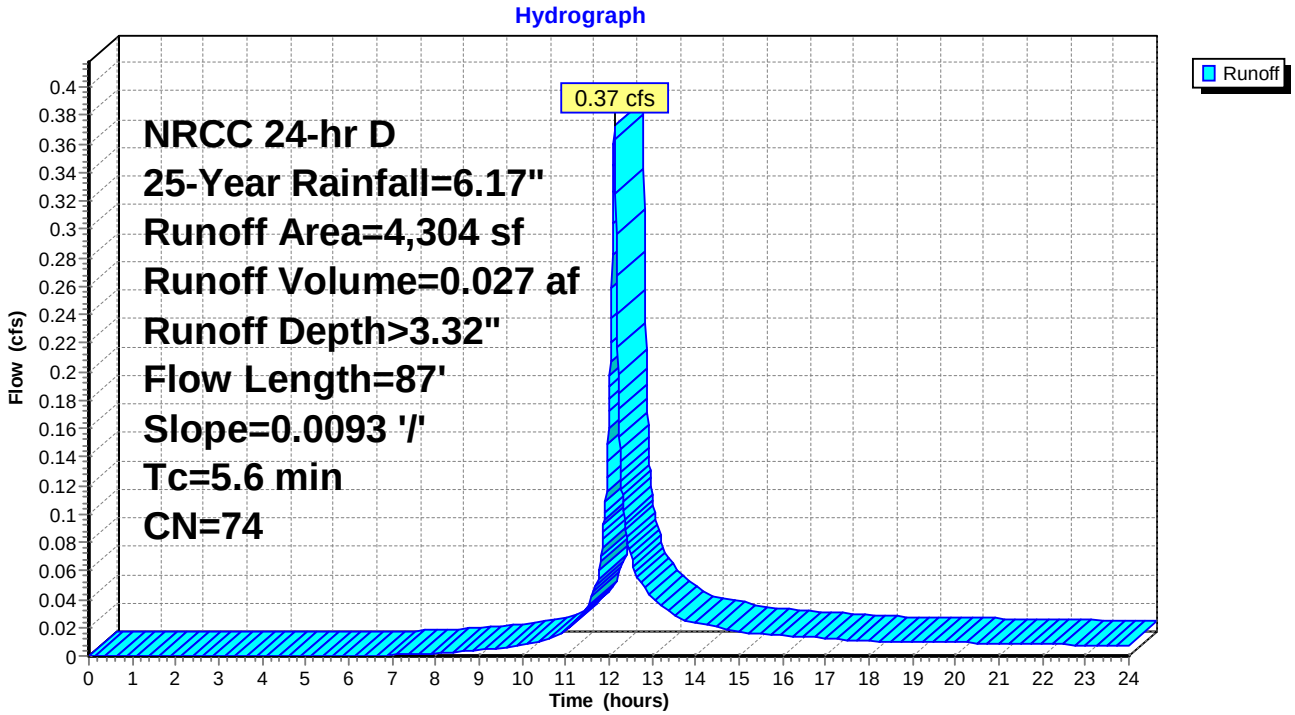
Runoff = 0.37 cfs @ 12.13 hrs, Volume= 0.027 af, Depth> 3.32"
Routed to Pond CB40 : CB-40

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
2,210	98	Unconnected pavement HSG A
2,094	49	50-75% Grass cover, Fair HSG A
4,304	74	Weighted Average
2,094		48.66% Pervious Area
2,210		51.34% Impervious Area
2,210		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	87	0.0093	0.26		**Lag/CN Method,**

Subcatchment 606S: 606S



Summary for Subcatchment 607S: 607S

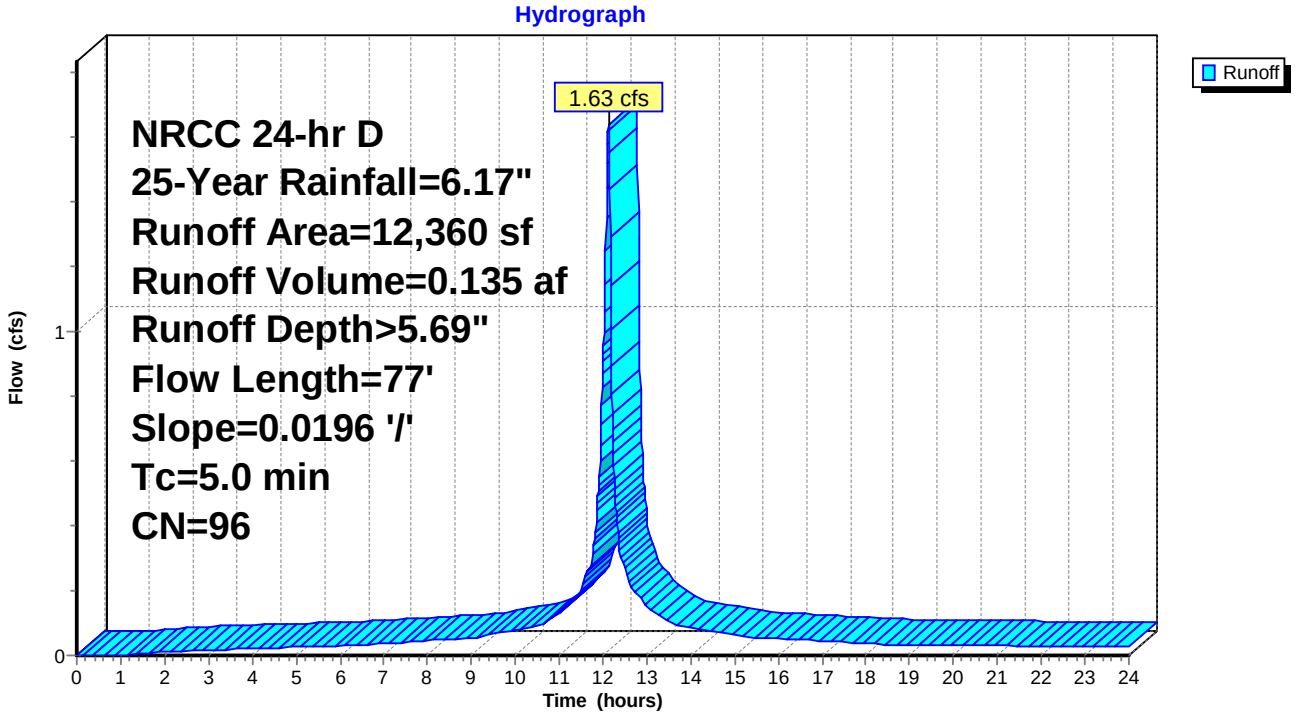
Runoff = 1.63 cfs @ 12.12 hrs, Volume= 0.135 af, Depth> 5.69"
Routed to Pond CB41 : CB-41

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
27	98	Unconnected pavement HSG C
11,898	98	Unconnected pavement HSG A
436	49	50-75% Grass cover, Fair HSG A
12,360	96	Weighted Average
436		3.52% Pervious Area
11,925		96.48% Impervious Area
11,925		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	77	0.0196	0.83		**Lag/CN Method,**
1.5	77	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 607S: 607S



Summary for Subcatchment 608S: 608S

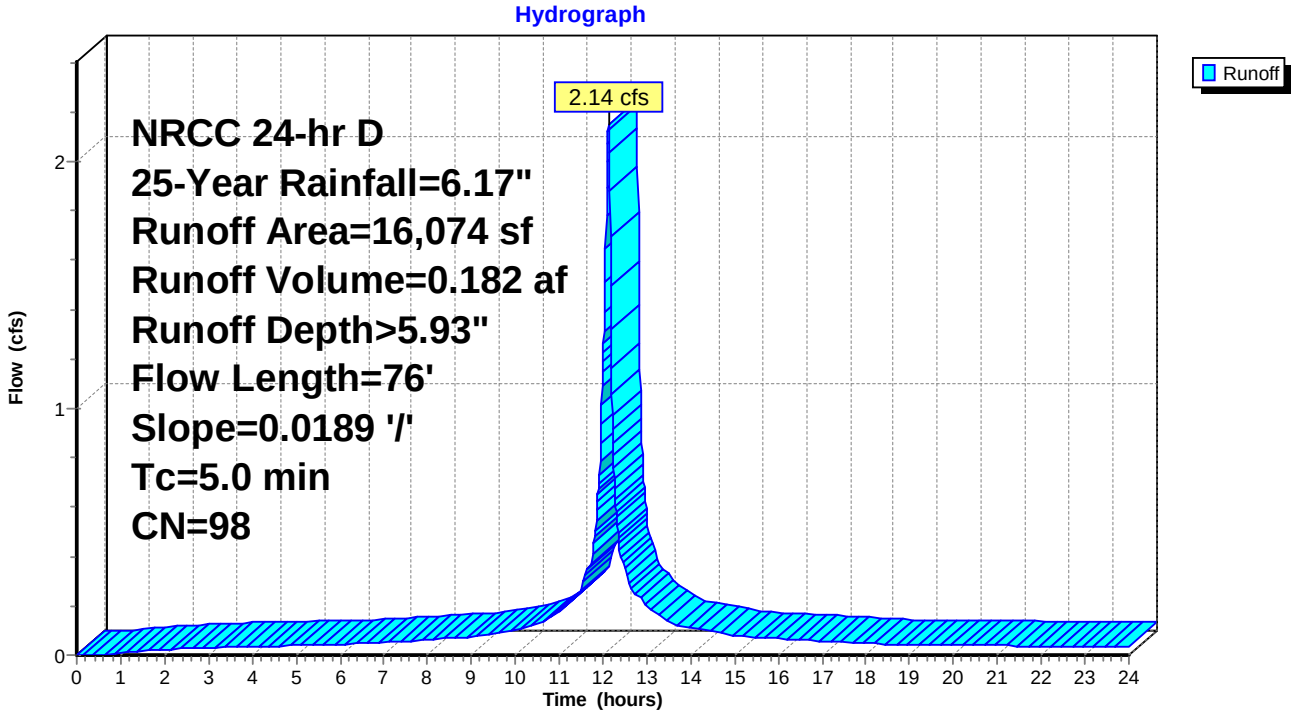
Runoff = 2.14 cfs @ 12.12 hrs, Volume= 0.182 af, Depth> 5.93"
Routed to Pond CB42 : CB-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
109	98	Unconnected pavement HSG C
15,965	98	Unconnected pavement HSG A
16,074	98	Weighted Average
16,074		100.00% Impervious Area
16,074		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	76	0.0189	0.91		**Lag/CN Method,**
1.4	76	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 608S: 608S



Summary for Subcatchment 609S: 609S

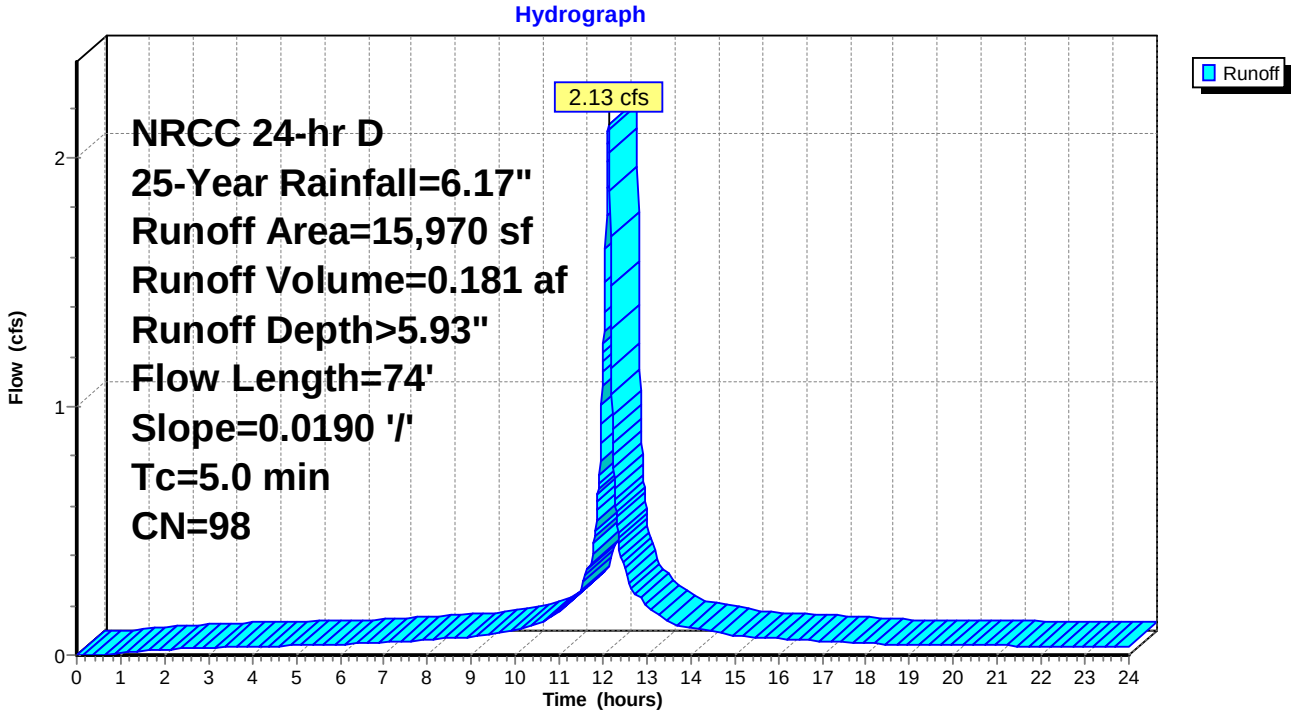
Runoff = 2.13 cfs @ 12.12 hrs, Volume= 0.181 af, Depth> 5.93"
Routed to Pond CB43 : CB-43

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
107	98	Unconnected pavement HSG C
15,863	98	Unconnected pavement HSG A
15,970	98	Weighted Average
15,970		100.00% Impervious Area
15,970		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	74	0.0190	0.91		**Lag/CN Method,**
1.4	74	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 609S: 609S



Summary for Subcatchment 610S: 610S

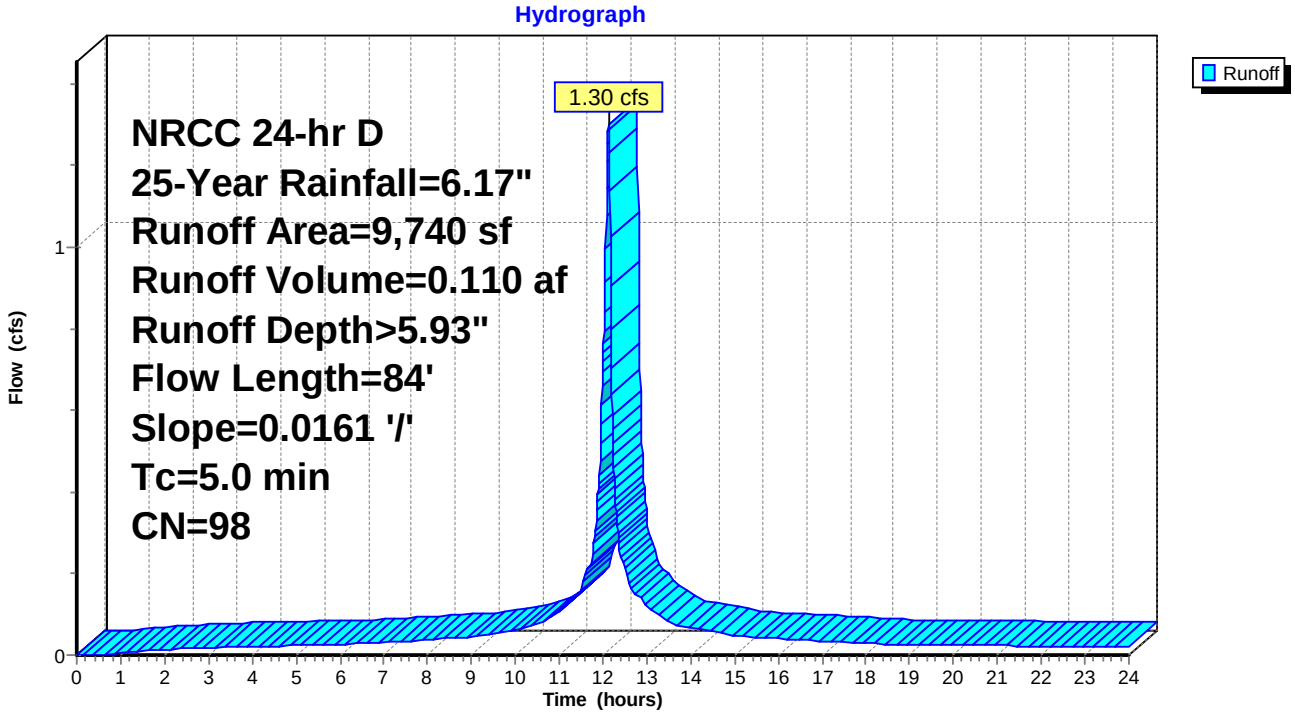
Runoff = 1.30 cfs @ 12.12 hrs, Volume= 0.110 af, Depth> 5.93"
Routed to Pond CB44 : CB-44

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
427	98	Unconnected pavement HSG C
9,313	98	Unconnected pavement HSG A
9,740	98	Weighted Average
9,740		100.00% Impervious Area
9,740		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	84	0.0161	0.86		**Lag/CN Method,**
1.6	84	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 610S: 610S



Summary for Subcatchment 611S: 611S

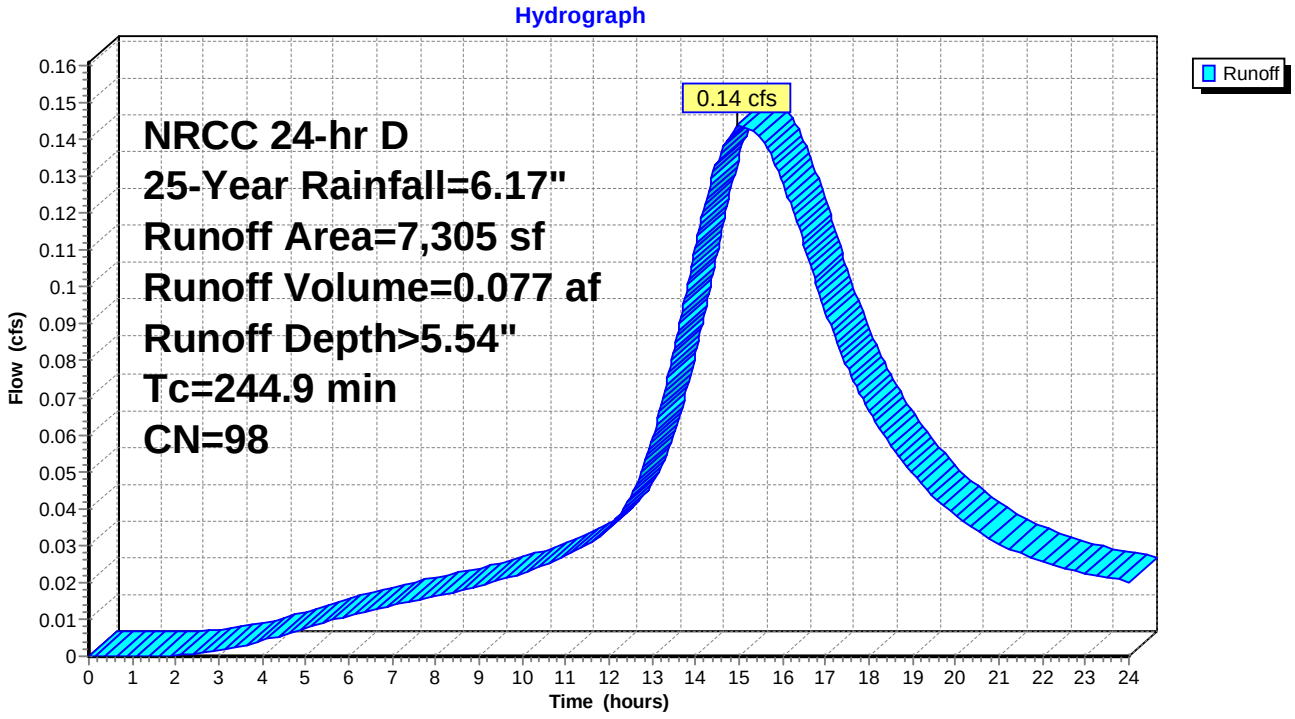
Runoff = 0.14 cfs @ 14.97 hrs, Volume= 0.077 af, Depth> 5.54"
Routed to Pond CB45 : CB-45

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
863	98	Unconnected pavement HSG C
1	36	Woods, Fair HSG A
14	49	50-75% Grass cover, Fair HSG A
6,428	98	Unconnected pavement HSG A
7,305	98	Weighted Average
15		0.20% Pervious Area
7,291		99.80% Impervious Area
7,291		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
244.9					**Direct Entry,**

Subcatchment 611S: 611S



Summary for Subcatchment 612S: 612S

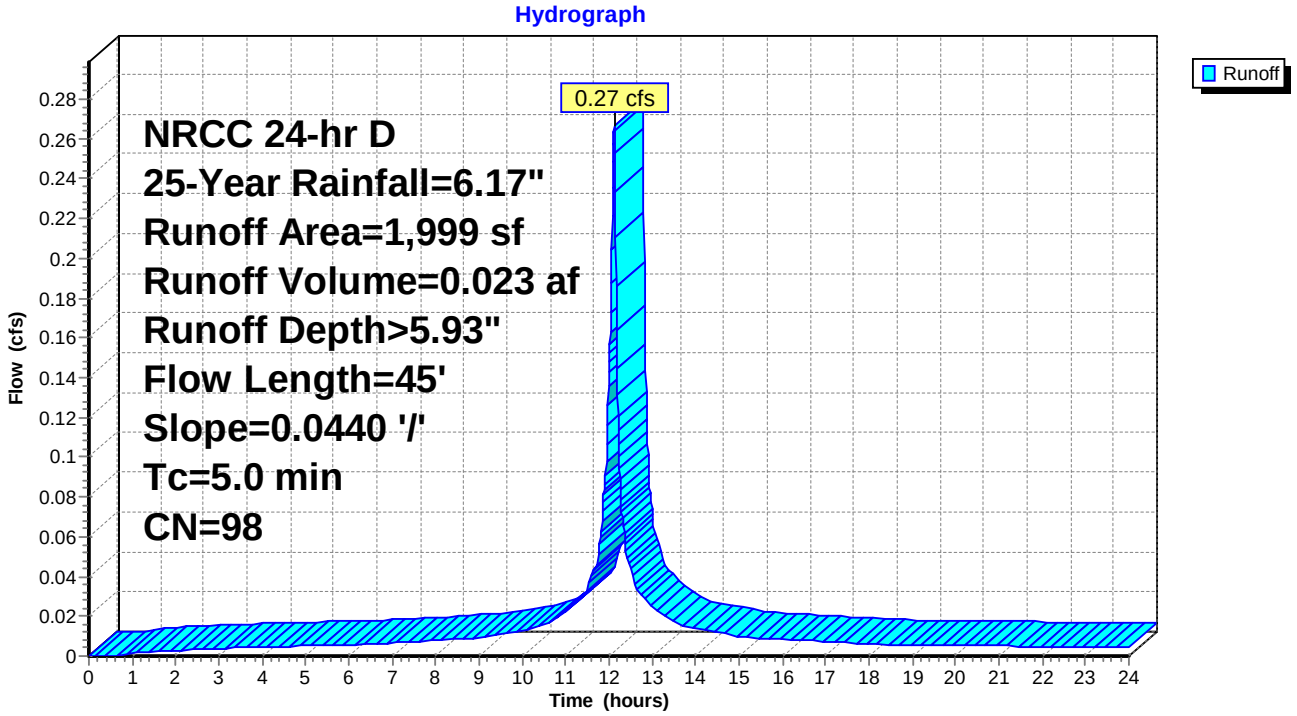
Runoff = 0.27 cfs @ 12.12 hrs, Volume= 0.023 af, Depth> 5.93"
Routed to Pond R3 : R-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
1,999	98	Roofs HSG A
1,999		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0440	1.25		**Lag/CN Method,**
0.6	45	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 612S: 612S



Summary for Subcatchment 613S: 613S

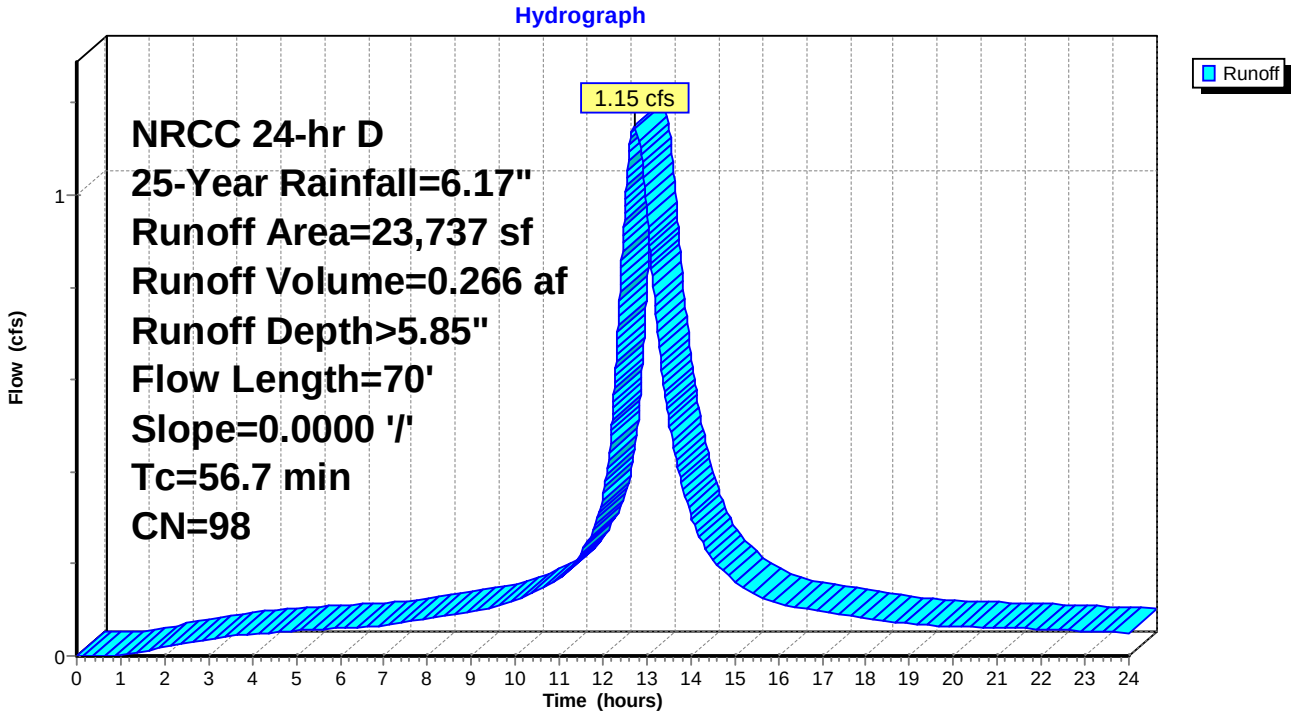
Runoff = 1.15 cfs @ 12.73 hrs, Volume= 0.266 af, Depth> 5.85"
Routed to Pond R1 : R-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
22,050	98	Roofs HSG C
3	98	Unconnected pavement HSG C
1,684	98	Unconnected pavement HSG A
23,737	98	Weighted Average
23,737		100.00% Impervious Area
1,687		7.11% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
56.7	70	0.0000	0.02		**Lag/CN Method,**

Subcatchment 613S: 613S



Summary for Subcatchment 614S: 614S

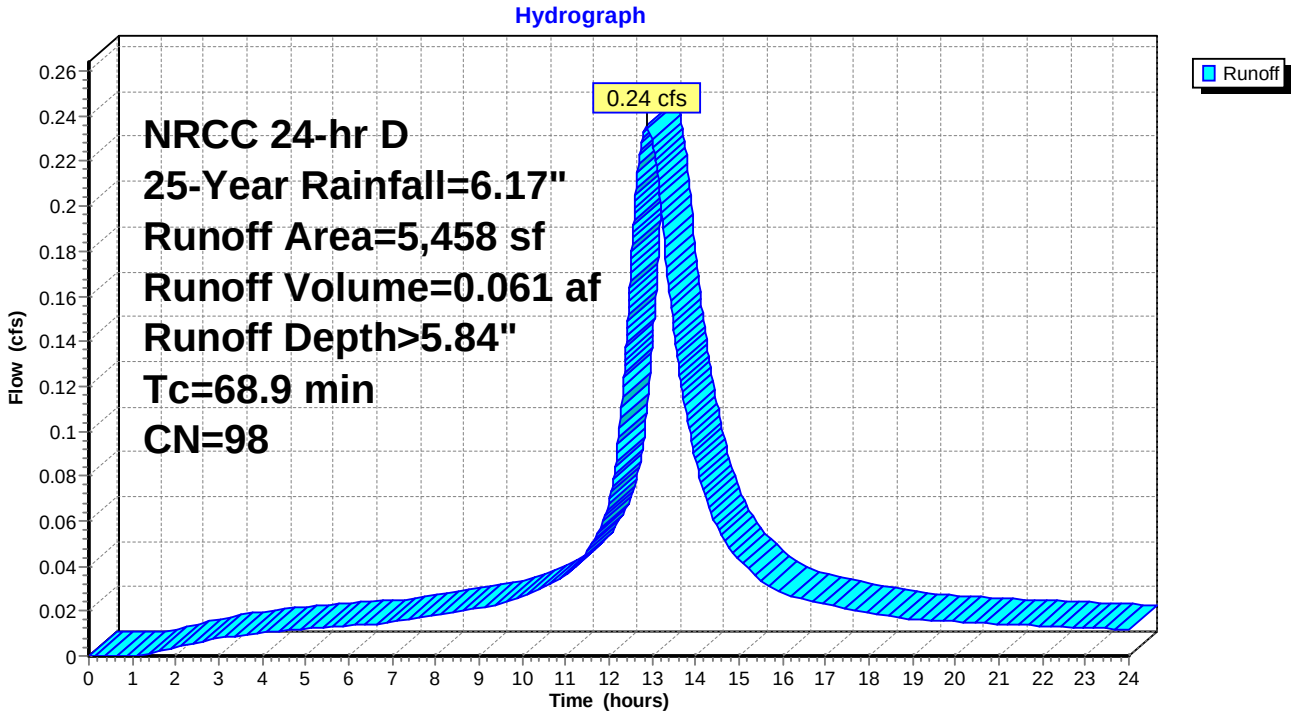
Runoff = 0.24 cfs @ 12.87 hrs, Volume= 0.061 af, Depth> 5.84"
Routed to Pond CB46 : CB-46

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
40	79	50-75% Grass cover, Fair HSG C
5,418	98	Unconnected pavement HSG C
5,458	98	Weighted Average
40		0.72% Pervious Area
5,418		99.28% Impervious Area
5,418		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
68.9					**Direct Entry,**

Subcatchment 614S: 614S



Summary for Subcatchment 615S: 615S

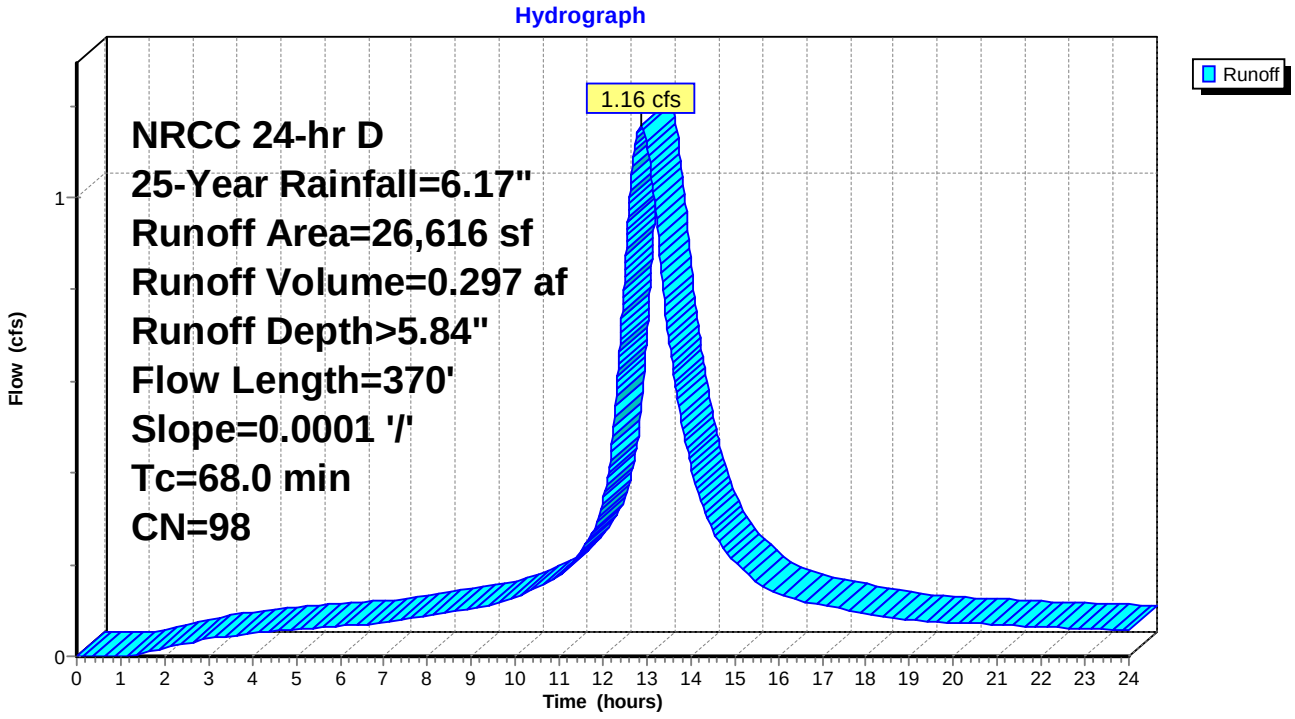
Runoff = 1.16 cfs @ 12.85 hrs, Volume= 0.297 af, Depth> 5.84"
Routed to Pond R2 : R-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
109	98	Unconnected pavement HSG C
26	79	50-75% Grass cover, Fair HSG C
26,481	98	Roofs HSG C
26,616	98	Weighted Average
26		0.10% Pervious Area
26,590		99.90% Impervious Area
109		0.41% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
68.0	370	0.0001	0.09		**Lag/CN Method,**

Subcatchment 615S: 615S



Summary for Subcatchment 616S: 616S

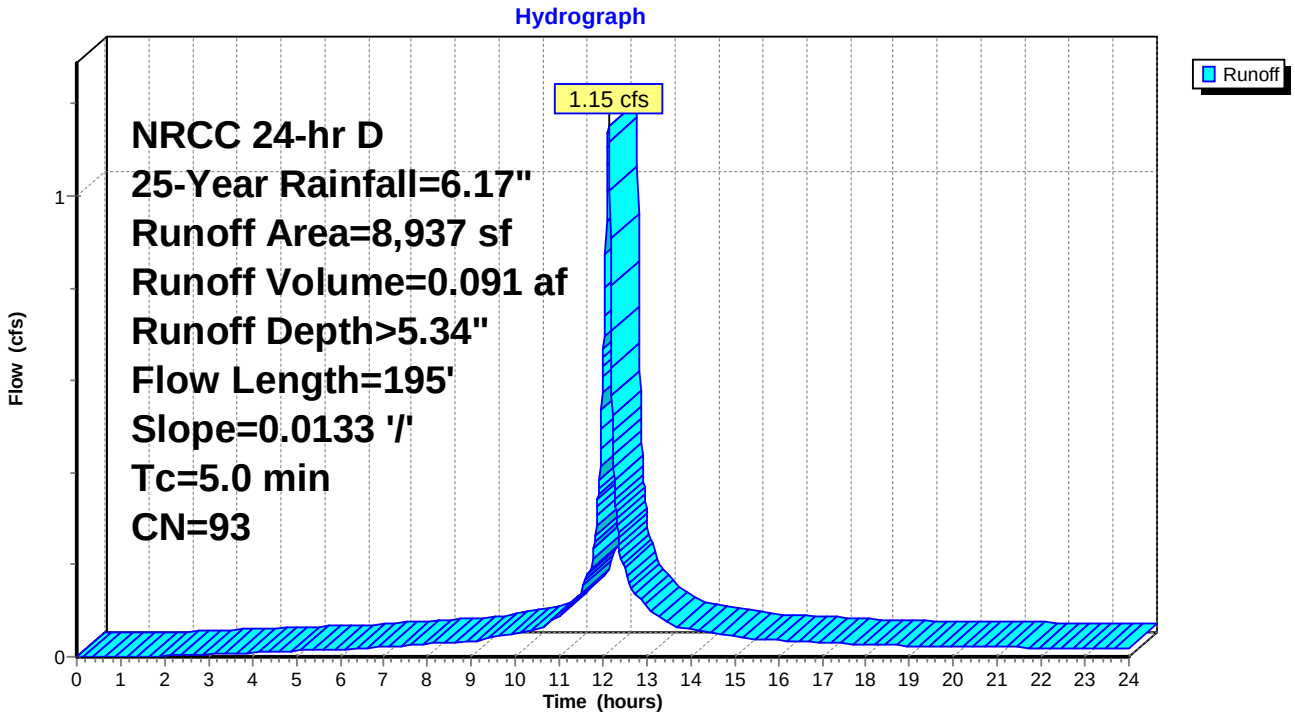
Runoff = 1.15 cfs @ 12.12 hrs, Volume= 0.091 af, Depth> 5.34"
Routed to Pond CB47 : CB-47

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
4,101	98	Unconnected pavement HSG C
2,685	98	Unconnected pavement HSG A
2,141	79	50-75% Grass cover, Fair HSG C
11	36	Woods, Fair HSG A
8,937	93	Weighted Average
2,152		24.08% Pervious Area
6,785		75.92% Impervious Area
6,785		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	195	0.0133	0.71		**Lag/CN Method,**
4.6	195	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 616S: 616S



Summary for Subcatchment 617S: 617S

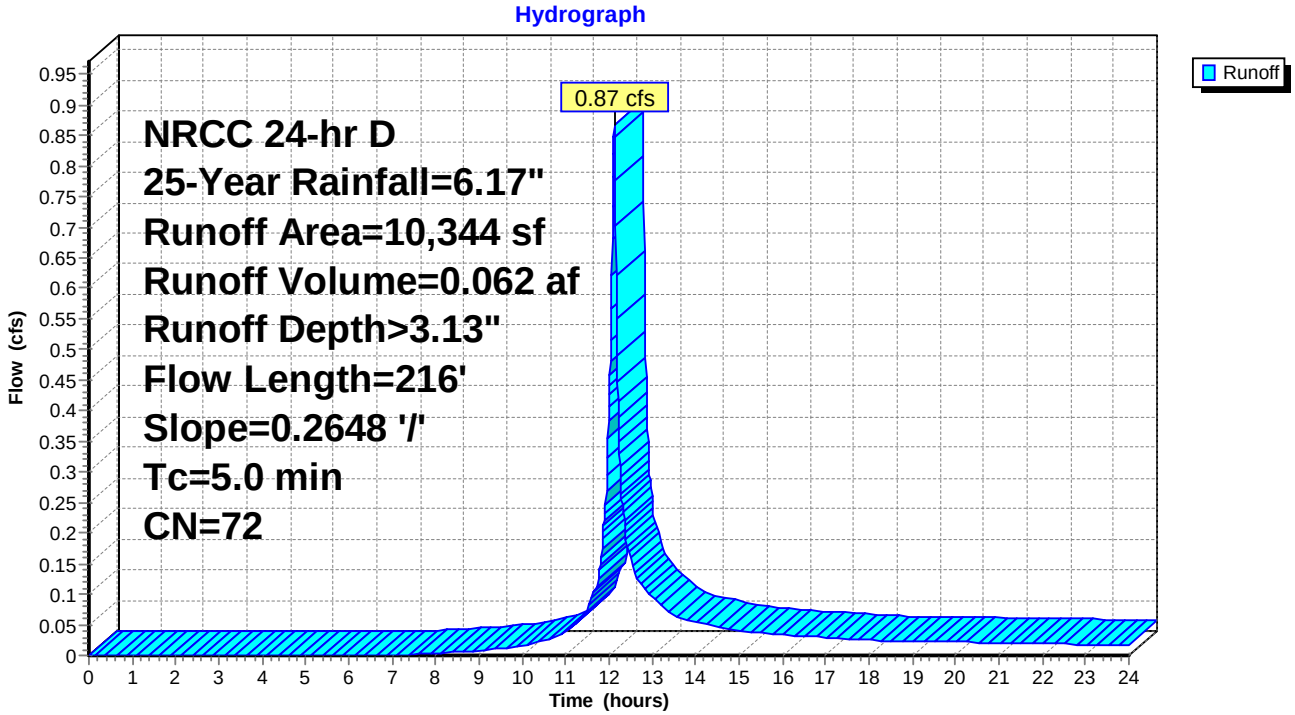
Runoff = 0.87 cfs @ 12.12 hrs, Volume= 0.062 af, Depth> 3.13"
Routed to Pond 7P : Basin 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
7,959	79	50-75% Grass cover, Fair HSG C
7	98	Unconnected pavement HSG C
2,377	49	50-75% Grass cover, Fair HSG A
10,344	72	Weighted Average
10,336		99.93% Pervious Area
7		0.07% Impervious Area
7		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	216	0.2648	1.57		**Lag/CN Method,**
2.3	216	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 617S: 617S



Summary for Subcatchment 701S: 701S

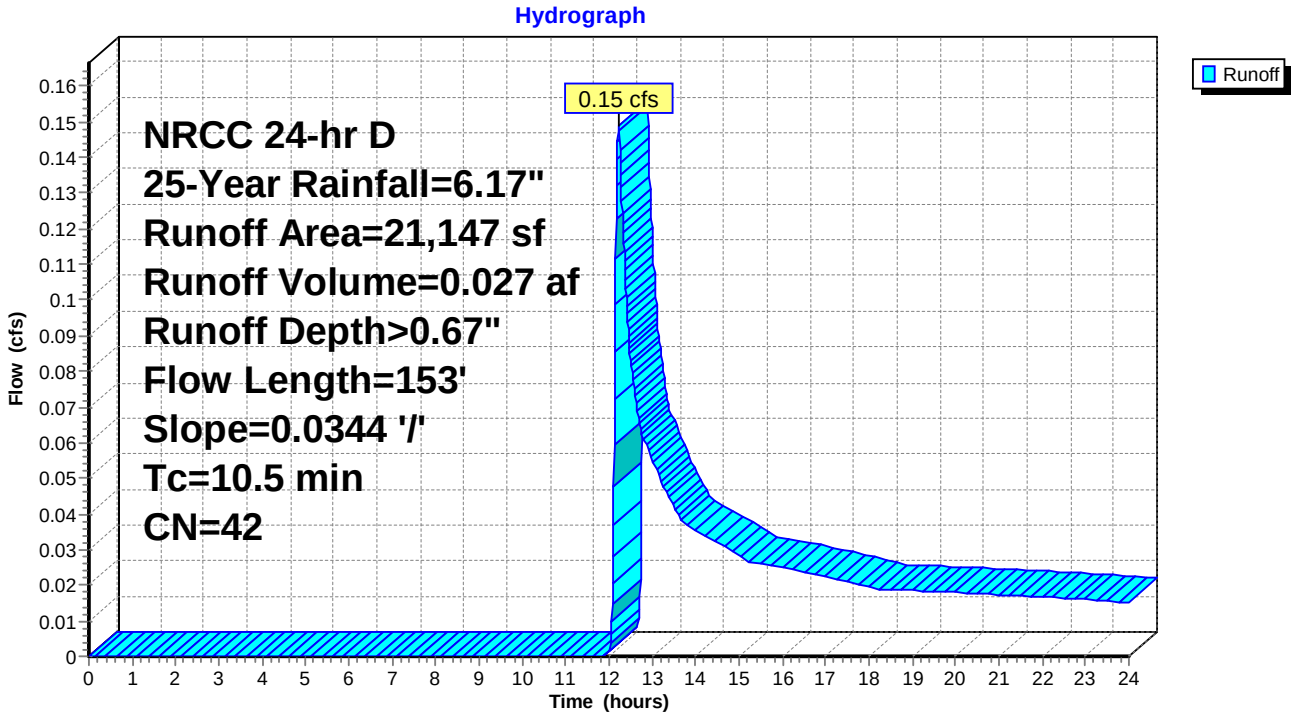
Runoff = 0.15 cfs @ 12.22 hrs, Volume= 0.027 af, Depth> 0.67"
Routed to Reach DP-2 : Police/DPW Facility

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	556	60	Woods, Fair HSG B
	11,706	36	Woods, Fair HSG A
	2	98	Roofs HSG A
*	8,883	49	Open Space-Fair (50% to 75% grass) HSG A
	21,147	42	Weighted Average
	21,145		99.99% Pervious Area
	2		0.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	153	0.0344	0.24		**Lag/CN Method,**

Subcatchment 701S: 701S



Summary for Subcatchment 702S: 702S

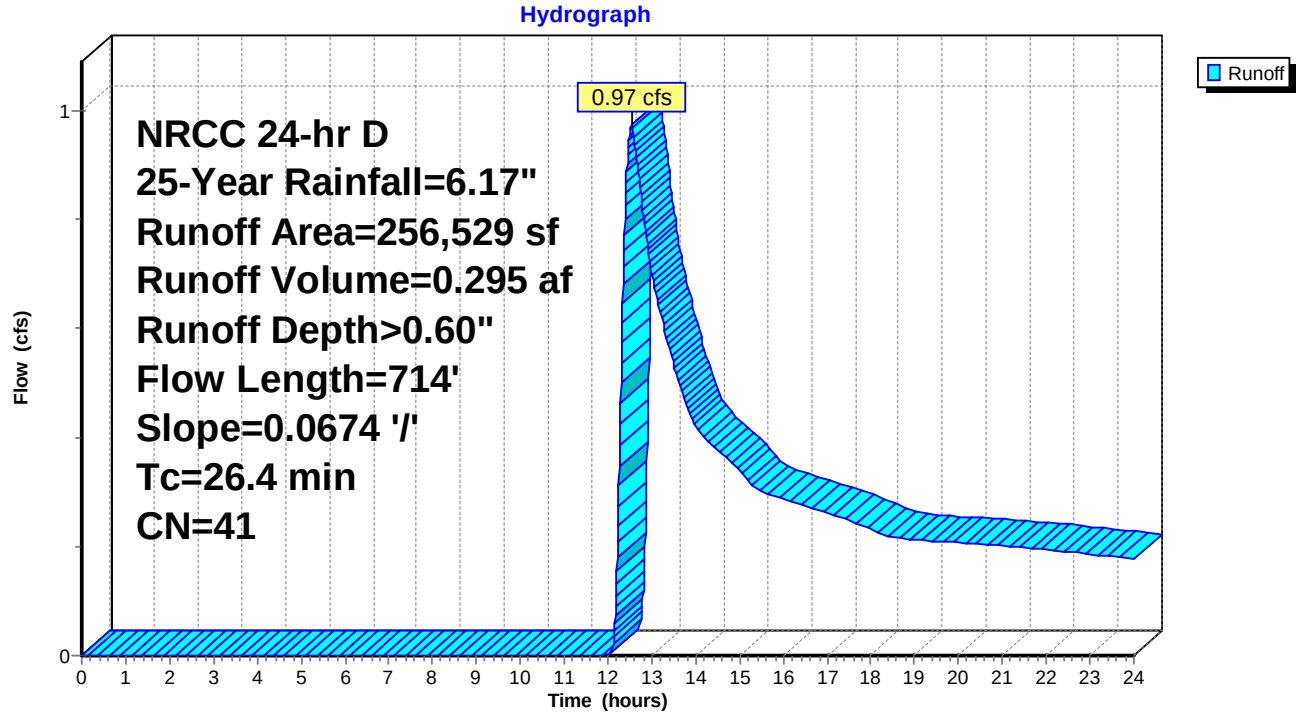
Runoff = 0.97 cfs @ 12.53 hrs, Volume= 0.295 af, Depth> 0.60"
Routed to Reach DP-3 : WWTP Perimeter Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	1,235	98	Unconnected pavement HSG A
	58	49	50-75% Grass cover, Fair HSG A
	44	98	Roofs HSG A
	164,916	36	Woods, Fair HSG A
*	90,276	49	Open Space-Fair (50% to 75% grass) HSG A
	256,529	41	Weighted Average
	255,250		99.50% Pervious Area
	1,279		0.50% Impervious Area
	1,235		96.56% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.4	714	0.0674	0.45		**Lag/CN Method,**

Subcatchment 702S: 702S



Summary for Subcatchment 703S: 703S

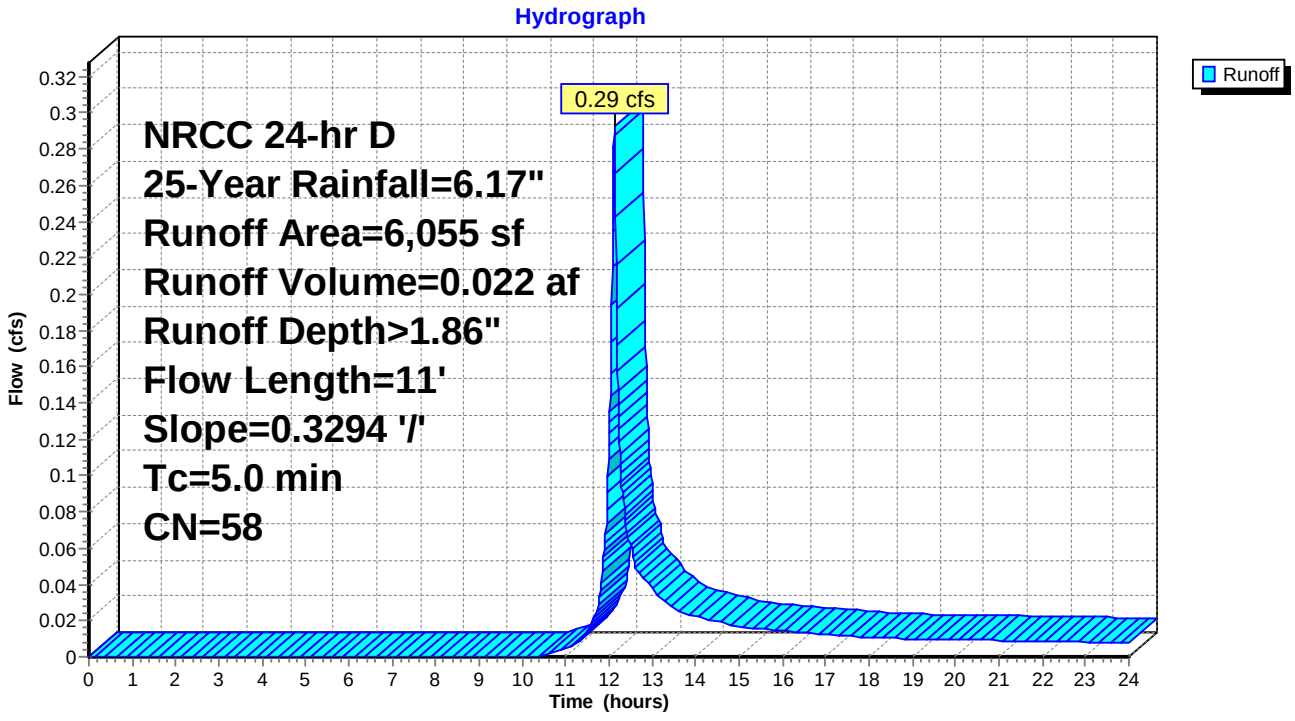
Runoff = 0.29 cfs @ 12.13 hrs, Volume= 0.022 af, Depth> 1.86"
Routed to Reach 10R : Diversion Berm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

Area (sf)	CN	Description
563	36	Woods, Fair HSG A
2	98	Unconnected pavement HSG A
10	98	Unconnected pavement HSG B
5,480	60	Woods, Fair HSG B
6,055	58	Weighted Average
6,043		99.80% Pervious Area
12		0.20% Impervious Area
12		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	11	0.3294	0.67		**Lag/CN Method,**
0.3	11	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 703S: 703S



Summary for Subcatchment 704S: 704S

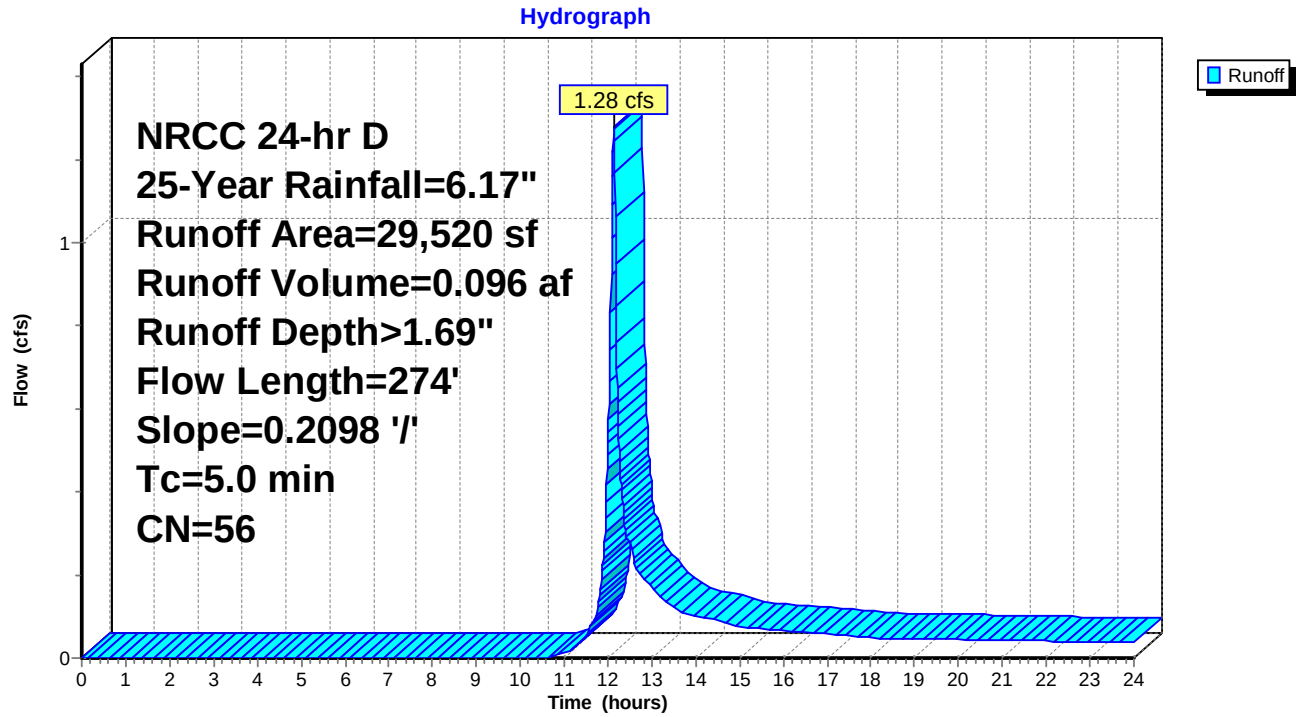
Runoff = 1.28 cfs @ 12.13 hrs, Volume= 0.096 af, Depth> 1.69"
Routed to Reach DP-3 : WWTP Perimeter Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.17"

	Area (sf)	CN	Description
	5,383	89	Gravel roads HSG C
	4,301	36	Woods, Fair HSG A
*	17,942	49	Open Space-Fair (50% to 75% grass) HSG A
*	1,894	79	Open Space-Fair (50% to 75% grass) HSG C
	29,520	56	Weighted Average
	29,520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	274	0.2098	0.97		**Lag/CN Method,**
4.7	274	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 704S: 704S



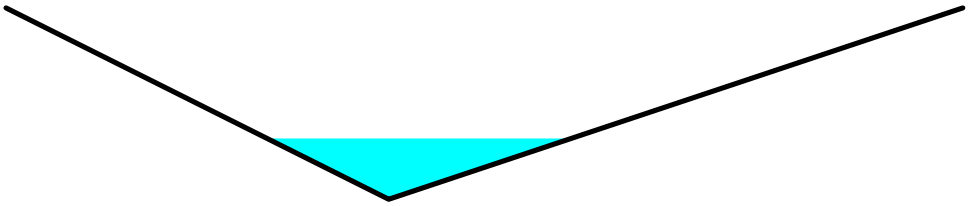
Summary for Reach 10R: Diversion Berm

Inflow Area = 0.139 ac, 0.20% Impervious, Inflow Depth > 1.86" for 25-Year event
Inflow = 0.29 cfs @ 12.13 hrs, Volume= 0.022 af
Outflow = 0.14 cfs @ 12.21 hrs, Volume= 0.021 af, Atten= 51%, Lag= 5.2 min
Routed to Pond 3P : Basin 3

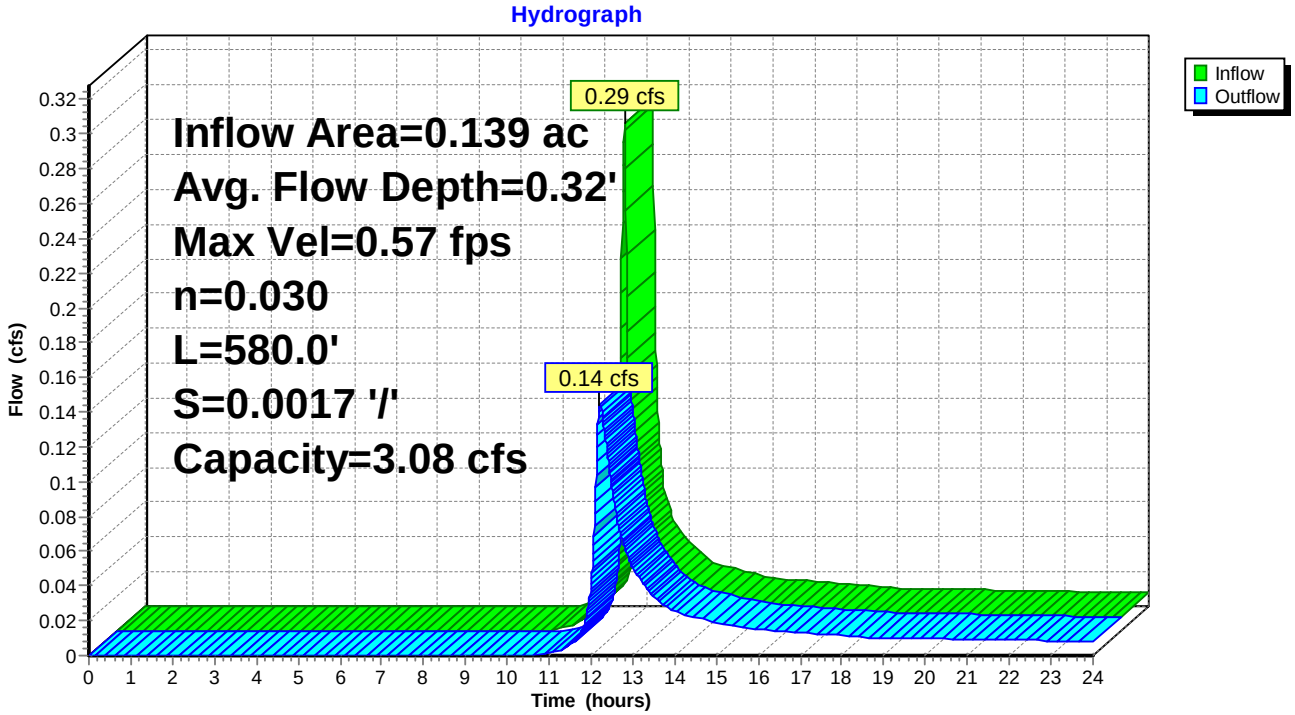
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.57 fps, Min. Travel Time= 16.9 min
Avg. Velocity = 0.32 fps, Avg. Travel Time= 30.6 min

Peak Storage= 146 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.32' , Surface Width= 1.58'
Bank-Full Depth= 1.00' Flow Area= 2.5 sf, Capacity= 3.08 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 3.0 '/' Top Width= 5.00'
Length= 580.0' Slope= 0.0017 '/'
Inlet Invert= 209.00', Outlet Invert= 208.00'

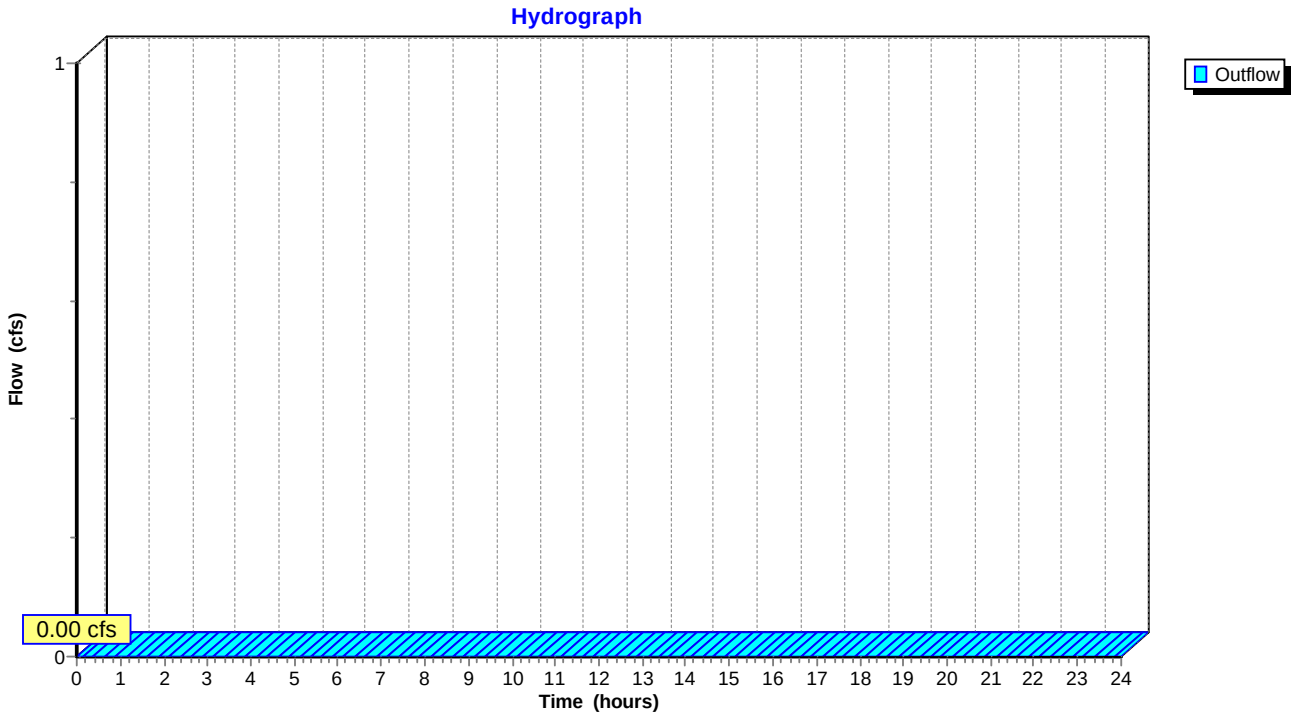


Reach 10R: Diversion Berm



Summary for Reach DP-1: Wetland

Reach DP-1: Wetland

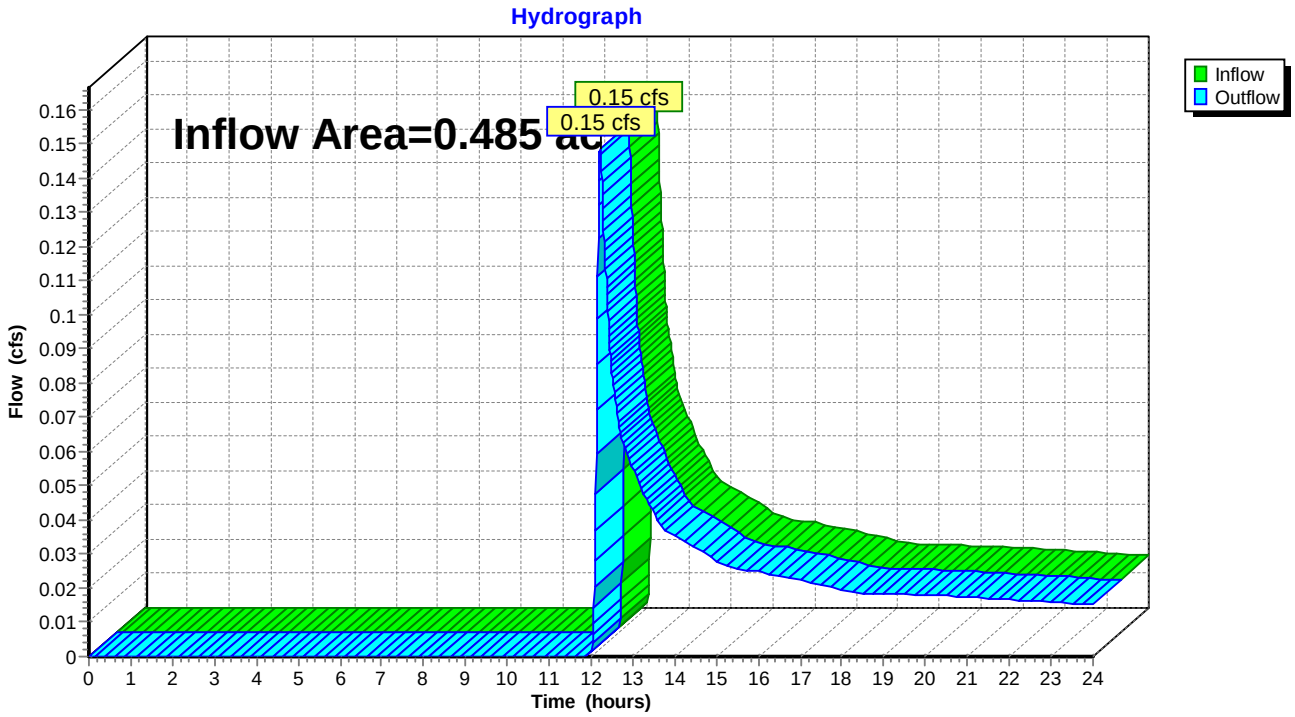


Summary for Reach DP-2: Police/DPW Facility

Inflow Area = 0.485 ac, 0.01% Impervious, Inflow Depth > 0.67" for 25-Year event
Inflow = 0.15 cfs @ 12.22 hrs, Volume= 0.027 af
Outflow = 0.15 cfs @ 12.22 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach DP-2: Police/DPW Facility

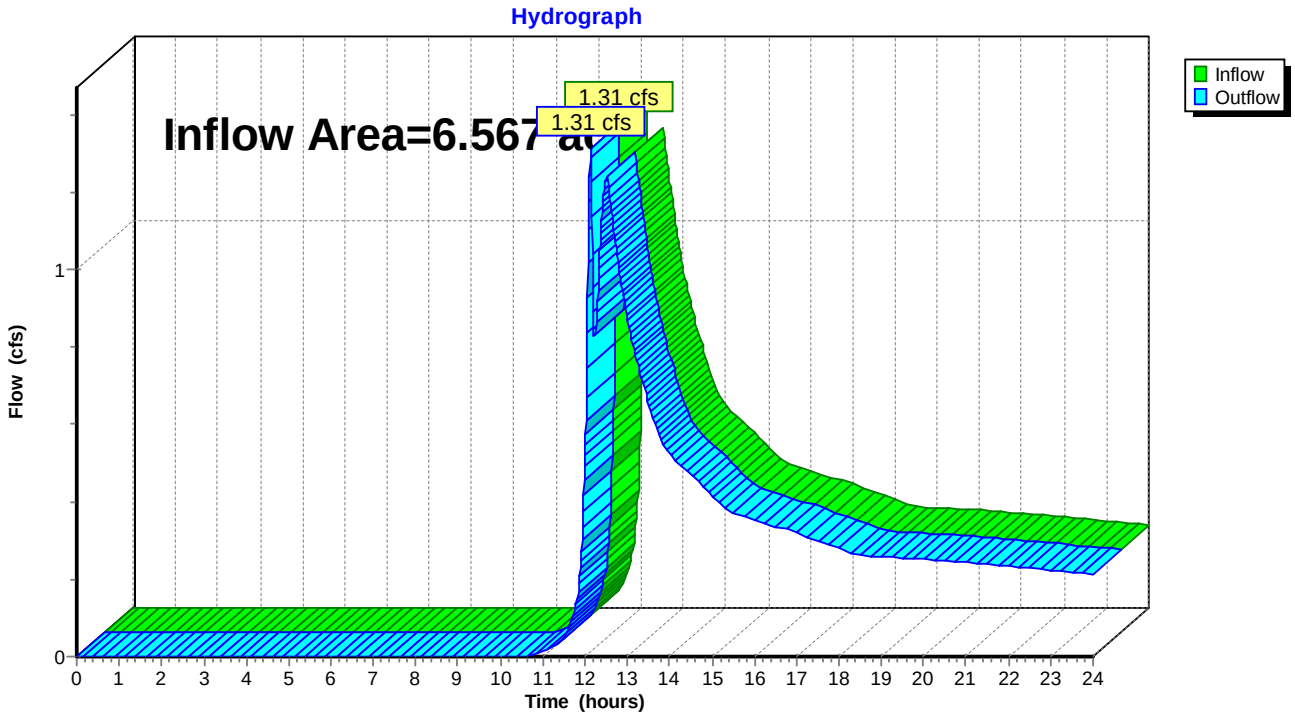


Summary for Reach DP-3: WWTP Perimeter Swale

Inflow Area = 6.567 ac, 0.45% Impervious, Inflow Depth > 0.71" for 25-Year event
Inflow = 1.31 cfs @ 12.13 hrs, Volume= 0.391 af
Outflow = 1.31 cfs @ 12.13 hrs, Volume= 0.391 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach DP-3: WWTP Perimeter Swale

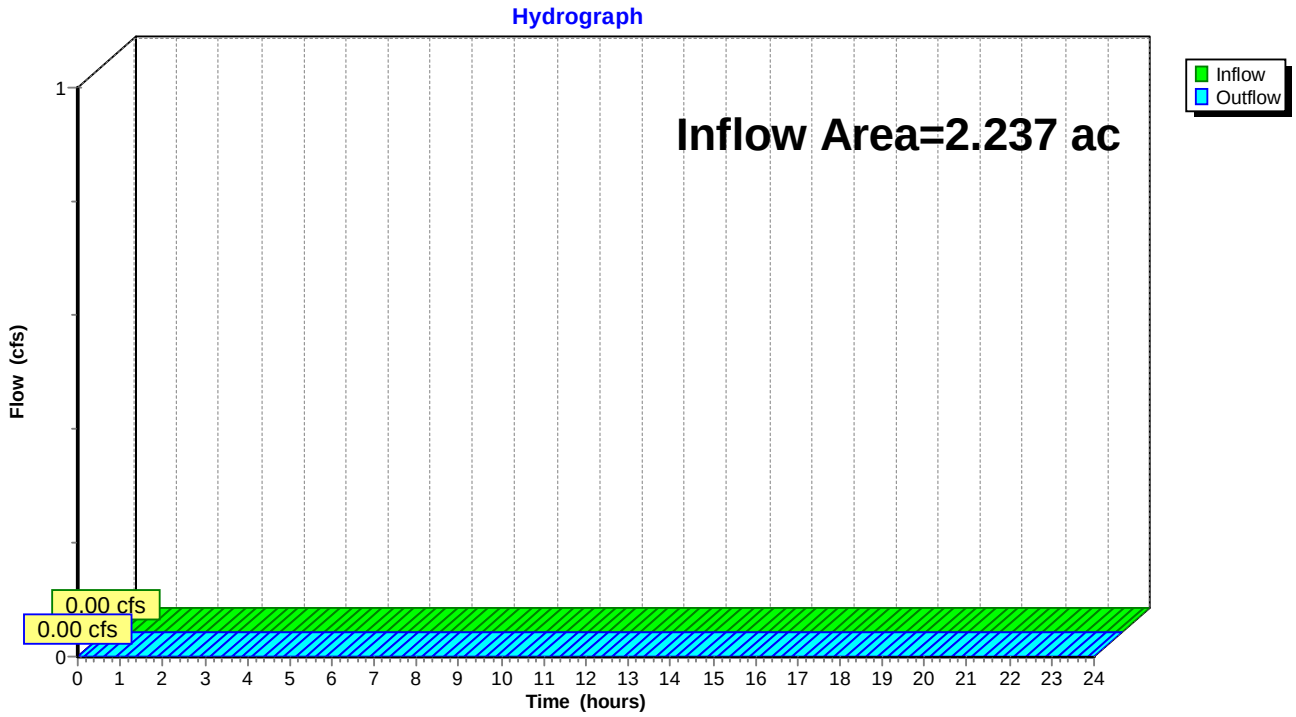


Summary for Reach DP-4: Wetland

Inflow Area = 2.237 ac, 59.16% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach DP-4: Wetland



Summary for Pond 1D: ADS Subsurface Detention

Inflow Area = 1.933 ac, 96.99% Impervious, Inflow Depth > 5.74" for 25-Year event
Inflow = 8.26 cfs @ 12.12 hrs, Volume= 0.924 af
Outflow = 1.27 cfs @ 13.28 hrs, Volume= 0.662 af, Atten= 85%, Lag= 69.4 min
Discarded = 0.33 cfs @ 13.28 hrs, Volume= 0.510 af
Primary = 0.94 cfs @ 13.28 hrs, Volume= 0.153 af
Routed to Pond MH24 : DMH-24

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.91' @ 13.28 hrs Surf.Area= 7,895 sf Storage= 16,298 cf
Flood Elev= 213.10' Surf.Area= 7,895 sf Storage= 25,748 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 84.7 min (846.4 - 761.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	10,940 cf	**58.58'W x 134.76'L x 5.50'H Field A** 43,421 cf Overall - 16,071 cf Embedded = 27,349 cf x 40.0% Voids
#2A	208.75'	16,071 cf	**ADS_StormTech MC-3500 d +Cap** x 144 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 144 Chambers in 8 Rows Cap Storage= 14.9 cf x 2 x 8 rows = 238.4 cf
		27,011 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	208.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 198.00'
#2	Primary	210.41'	**18.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.41' / 210.01' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Discarded OutFlow Max=0.33 cfs @ 13.28 hrs HW=210.91' (Free Discharge)
1=Exfiltration (Controls 0.33 cfs)

Primary OutFlow Max=0.94 cfs @ 13.28 hrs HW=210.91' TW=210.31' (Dynamic Tailwater)
2=Culvert (Barrel Controls 0.94 cfs @ 2.74 fps)

Pond 1D: ADS Subsurface Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 8 rows = 238.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

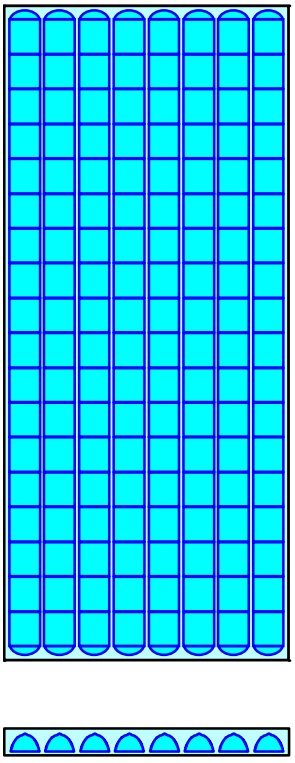
18 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 132.76' Row Length +12.0" End Stone x 2 = 134.76' Base Length
8 Rows x 77.0" Wide + 9.0" Spacing x 7 + 12.0" Side Stone x 2 = 58.58' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

144 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 8 Rows = 16,071.5 cf Chamber Storage

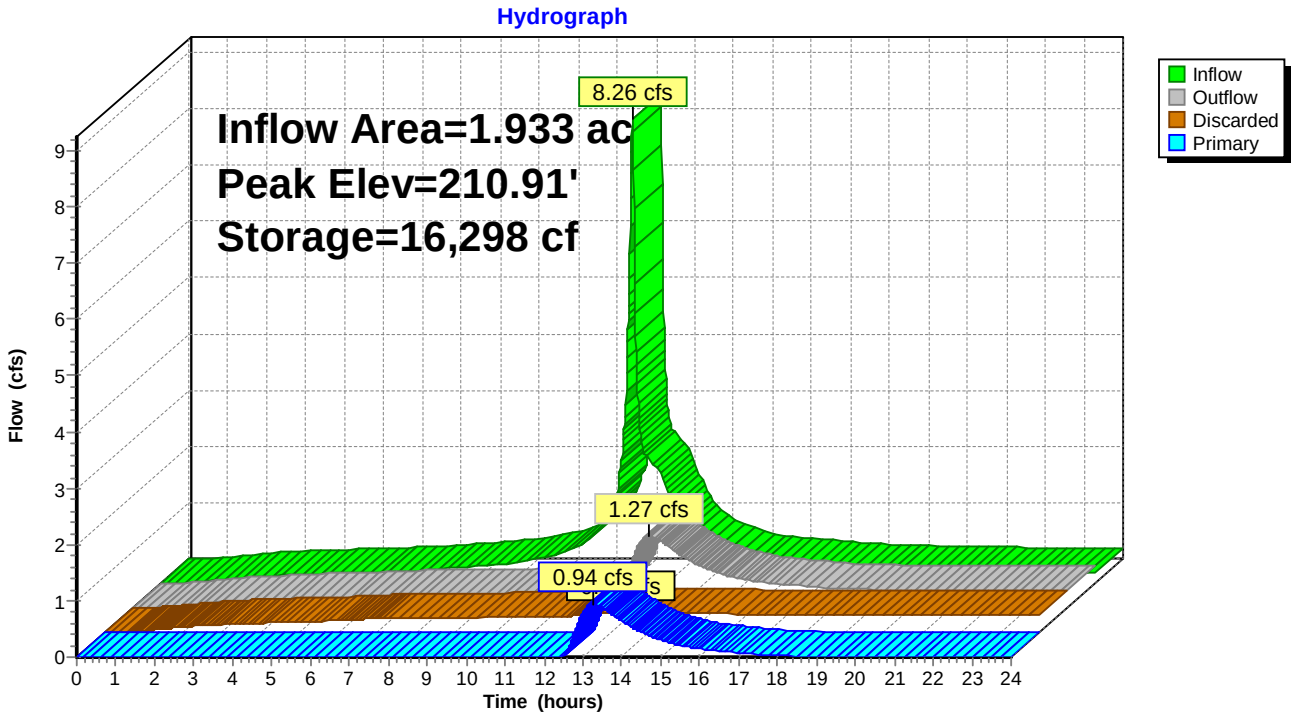
43,420.8 cf Field - 16,071.5 cf Chambers = 27,349.3 cf Stone x 40.0% Voids = 10,939.7 cf Stone Storage

Chamber Storage + Stone Storage = 27,011.2 cf = 0.620 af
Overall Storage Efficiency = 62.2%
Overall System Size = 134.76' x 58.58' x 5.50'

144 Chambers
1,608.2 cy Field
1,012.9 cy Stone



Pond 1D: ADS Subsurface Detention



Summary for Pond 1P: Basin 1

Inflow Area = 0.595 ac, 38.95% Impervious, Inflow Depth > 2.79" for 25-Year event
Inflow = 1.56 cfs @ 12.12 hrs, Volume= 0.138 af
Outflow = 0.10 cfs @ 14.15 hrs, Volume= 0.108 af, Atten= 94%, Lag= 121.4 min
Discarded = 0.10 cfs @ 14.15 hrs, Volume= 0.108 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 212.01' @ 14.15 hrs Surf.Area= 1,847 sf Storage= 2,549 cf
Flood Elev= 216.00' Surf.Area= 5,109 sf Storage= 16,142 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 143.1 min (928.6 - 785.5)

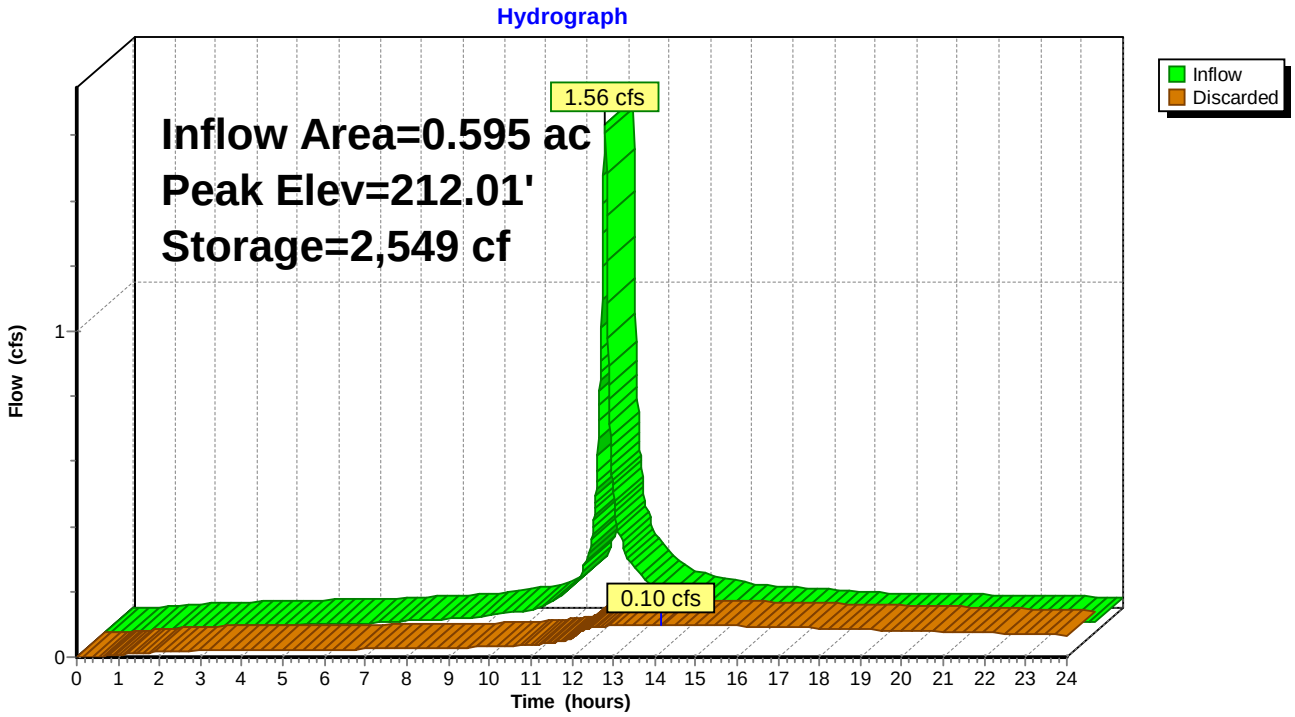
Volume	Invert	Avail.Storage	Storage Description
#1	210.00'	16,142 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
210.00	697	0	0
212.00	1,843	2,540	2,540
214.00	3,325	5,168	7,708
216.00	5,109	8,434	16,142

Device	Routing	Invert	Outlet Devices
#1	Discarded	210.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 208.00'

Discarded OutFlow Max=0.10 cfs @ 14.15 hrs HW=212.01' (Free Discharge)
1=Exfiltration (Controls 0.10 cfs)

Pond 1P: Basin 1



Summary for Pond 1SS: SSMH-1

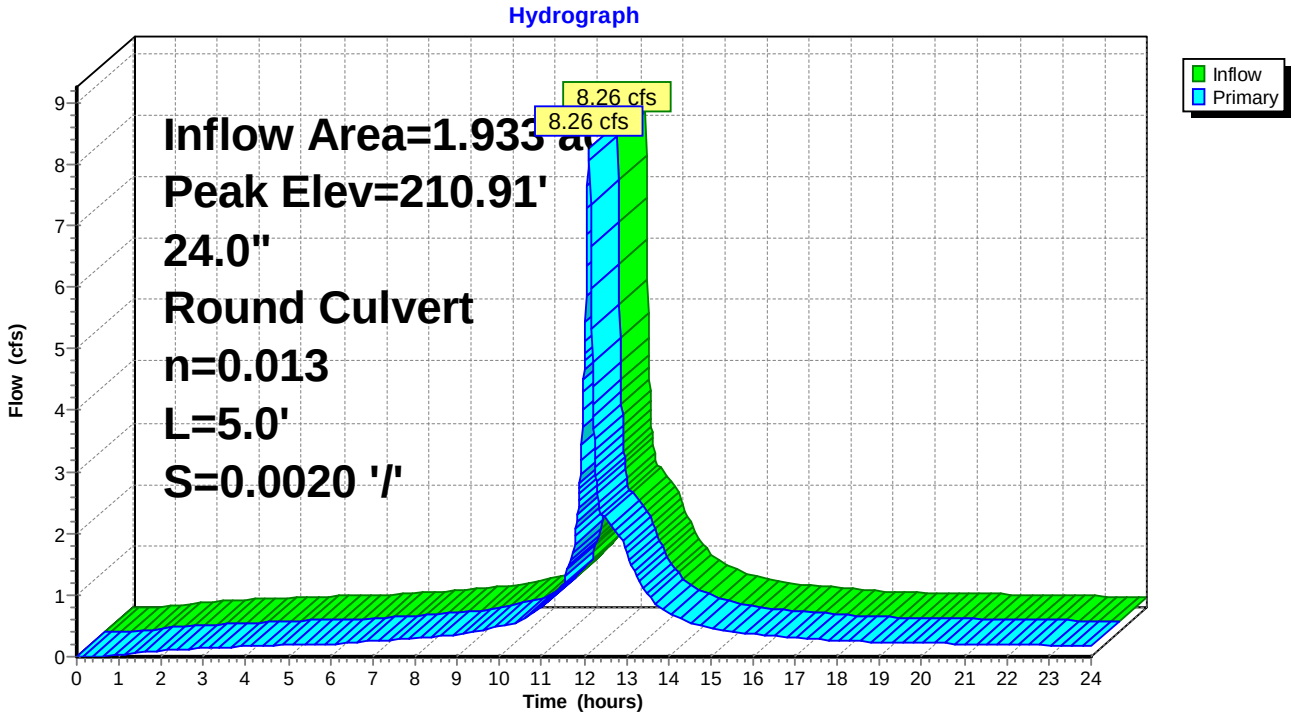
Inflow Area = 1.933 ac, 96.99% Impervious, Inflow Depth > 5.74" for 25-Year event
Inflow = 8.26 cfs @ 12.12 hrs, Volume= 0.924 af
Outflow = 8.26 cfs @ 12.12 hrs, Volume= 0.924 af, Atten= 0%, Lag= 0.0 min
Primary = 8.26 cfs @ 12.12 hrs, Volume= 0.924 af
Routed to Pond 1D : ADS Subsurface Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.91' @ 13.26 hrs
Flood Elev= 215.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	208.76'	**24.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.76' / 208.75' S= 0.0020 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=8.25 cfs @ 12.12 hrs HW=210.38' TW=209.77' (Dynamic Tailwater)
1=Culvert (Barrel Controls 8.25 cfs @ 4.14 fps)

Pond 1SS: SSMH-1



Summary for Pond 2D: ADS Subsurface Detention

Inflow Area = 1.399 ac, 99.44% Impervious, Inflow Depth > 5.89" for 25-Year event
Inflow = 4.97 cfs @ 12.12 hrs, Volume= 0.686 af
Outflow = 0.51 cfs @ 14.40 hrs, Volume= 0.636 af, Atten= 90%, Lag= 136.6 min
Discarded = 0.51 cfs @ 14.40 hrs, Volume= 0.636 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 201.54' @ 14.40 hrs Surf.Area= 10,208 sf Storage= 10,777 cf
Flood Elev= 203.00' Surf.Area= 10,208 sf Storage= 20,188 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 136.9 min (902.7 - 765.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	200.00'	8,999 cf	**58.50'W x 174.50'L x 3.50'H Field A** 35,728 cf Overall - 13,231 cf Embedded = 22,497 cf x 40.0% Voids
#2A	200.50'	13,231 cf	**ADS_StormTech SC-740 +Cap** x 288 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 288 Chambers in 12 Rows
		22,230 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	200.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 197.00'

Discarded OutFlow Max=0.51 cfs @ 14.40 hrs HW=201.54' (Free Discharge)
1=Exfiltration (Controls 0.51 cfs)

Pond 2D: ADS Subsurface Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

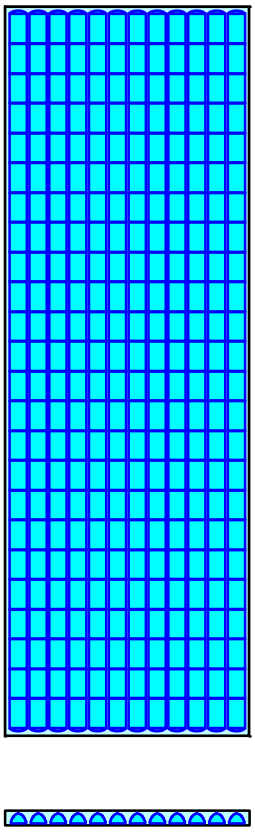
24 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 172.50' Row Length +12.0" End Stone x 2 = 174.50' Base Length
12 Rows x 51.0" Wide + 6.0" Spacing x 11 + 12.0" Side Stone x 2 = 58.50' Base Width
6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

288 Chambers x 45.9 cf = 13,230.7 cf Chamber Storage

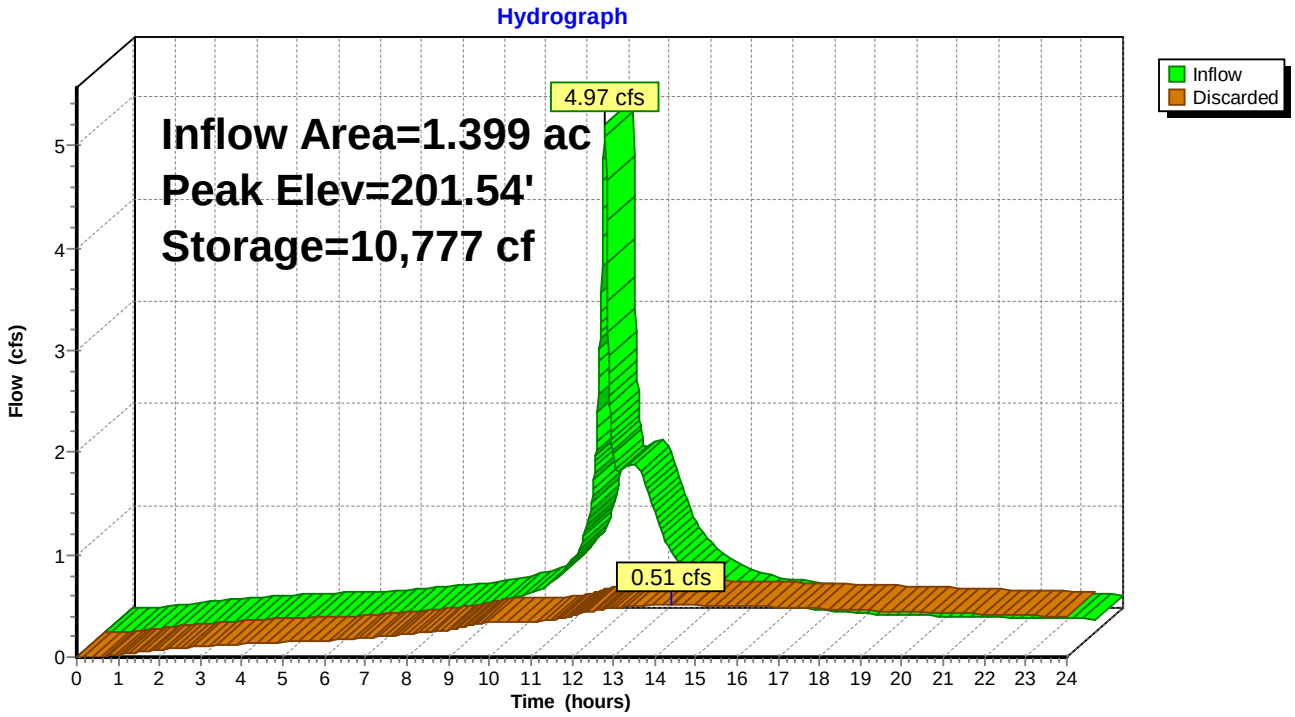
35,728.2 cf Field - 13,230.7 cf Chambers = 22,497.5 cf Stone x 40.0% Voids = 8,999.0 cf Stone Storage

Chamber Storage + Stone Storage = 22,229.7 cf = 0.510 af
Overall Storage Efficiency = 62.2%
Overall System Size = 174.50' x 58.50' x 3.50'

288 Chambers
1,323.3 cy Field
833.2 cy Stone



Pond 2D: ADS Subsurface Detention



Summary for Pond 2P: Basin 2

Inflow Area = 1.068 ac, 54.17% Impervious, Inflow Depth > 4.09" for 25-Year event
Inflow = 4.27 cfs @ 12.12 hrs, Volume= 0.364 af
Outflow = 0.18 cfs @ 15.07 hrs, Volume= 0.206 af, Atten= 96%, Lag= 176.7 min
Discarded = 0.18 cfs @ 15.07 hrs, Volume= 0.206 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach DP-4 : Wetland
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach DP-4 : Wetland

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 208.41' @ 15.07 hrs Surf.Area= 3,081 sf Storage= 8,764 cf
Flood Elev= 210.00' Surf.Area= 3,991 sf Storage= 14,369 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 181.6 min (965.7 - 784.1)

Volume	Invert	Avail.Storage	Storage Description
#1	204.00'	14,369 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
204.00	1,002	0	0
206.00	1,845	2,847	2,847
208.00	2,843	4,688	7,535
210.00	3,991	6,834	14,369

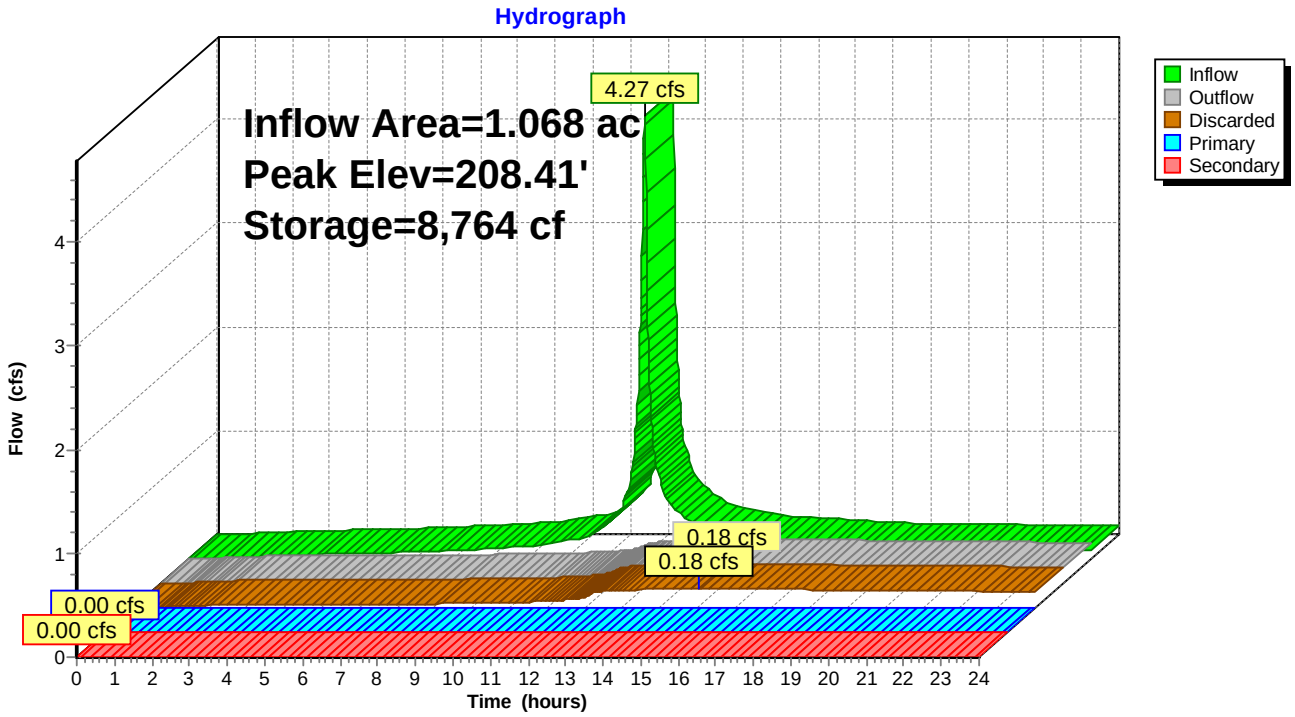
Device	Routing	Invert	Outlet Devices
#1	Discarded	204.00'	**1.190 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 202.00'
#2	Secondary	209.50'	**15.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#3	Primary	208.50'	**6.0" Round Culvert X 2.00** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 208.50' / 208.00' S= 0.0091 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.18 cfs @ 15.07 hrs HW=208.41' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=204.00' TW=0.00' (Dynamic Tailwater)
↑—**3=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=204.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Basin 2



Summary for Pond 2SS: SSMH-2

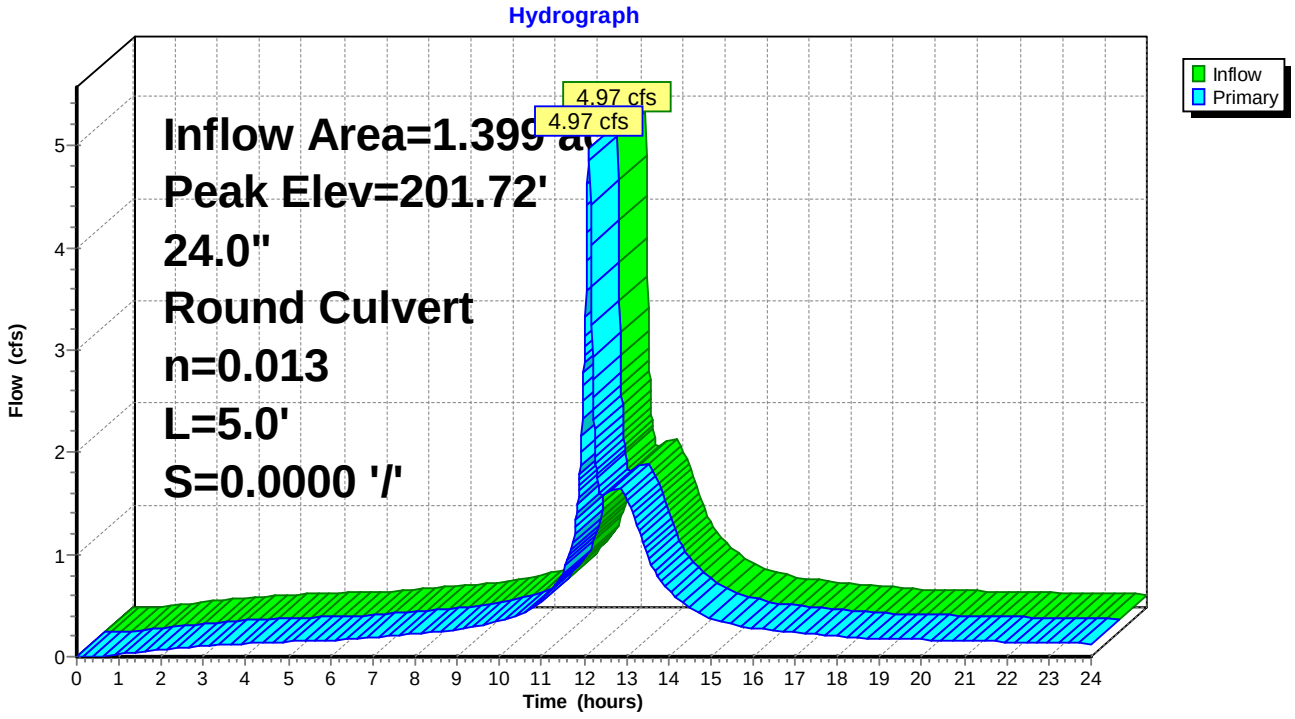
Inflow Area = 1.399 ac, 99.44% Impervious, Inflow Depth > 5.89" for 25-Year event
Inflow = 4.97 cfs @ 12.12 hrs, Volume= 0.686 af
Outflow = 4.97 cfs @ 12.12 hrs, Volume= 0.686 af, Atten= 0%, Lag= 0.0 min
Primary = 4.97 cfs @ 12.12 hrs, Volume= 0.686 af
Routed to Pond 2D : ADS Subsurface Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 201.72' @ 12.12 hrs
Flood Elev= 204.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	200.50'	**24.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 200.50' / 200.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=4.97 cfs @ 12.12 hrs HW=201.72' TW=200.75' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.97 cfs @ 3.54 fps)

Pond 2SS: SSMH-2



Summary for Pond 3D: ADS Subsurface Detention

Inflow Area = 0.730 ac, 86.34% Impervious, Inflow Depth > 5.18" for 25-Year event
Inflow = 3.86 cfs @ 12.13 hrs, Volume= 0.315 af
Outflow = 0.17 cfs @ 14.78 hrs, Volume= 0.218 af, Atten= 96%, Lag= 159.1 min
Discarded = 0.17 cfs @ 14.78 hrs, Volume= 0.218 af
Primary = 0.00 cfs @ 14.56 hrs, Volume= 0.000 af
Routed to Pond MH15 : DMH-15

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 209.20' @ 14.78 hrs Surf.Area= 3,425 sf Storage= 6,464 cf
Flood Elev= 211.00' Surf.Area= 3,425 sf Storage= 10,230 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 141.7 min (926.9 - 785.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	206.50'	4,825 cf	**44.25'W x 77.40'L x 5.50'H Field A** 18,837 cf Overall - 6,776 cf Embedded = 12,061 cf x 40.0% Voids
#2A	207.25'	6,776 cf	**ADS_StormTech MC-3500 d +Cap** x 60 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 60 Chambers in 6 Rows Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf
		11,600 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	206.50'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 201.00'
#2	Primary	209.20'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.20' / 209.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Discarded OutFlow Max=0.17 cfs @ 14.78 hrs HW=209.20' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.17 cfs)

Primary OutFlow Max=0.00 cfs @ 14.56 hrs HW=209.20' TW=208.90' (Dynamic Tailwater)
↑—**2=Culvert** (Barrel Controls 0.00 cfs @ 0.02 fps)

Pond 3D: ADS Subsurface Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

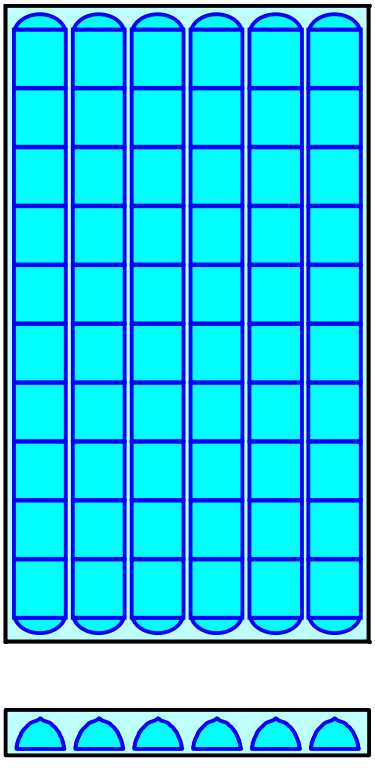
10 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 75.40' Row Length +12.0" End Stone x 2 = 77.40' Base Length
6 Rows x 77.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 44.25' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

60 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 6 Rows = 6,775.9 cf Chamber Storage

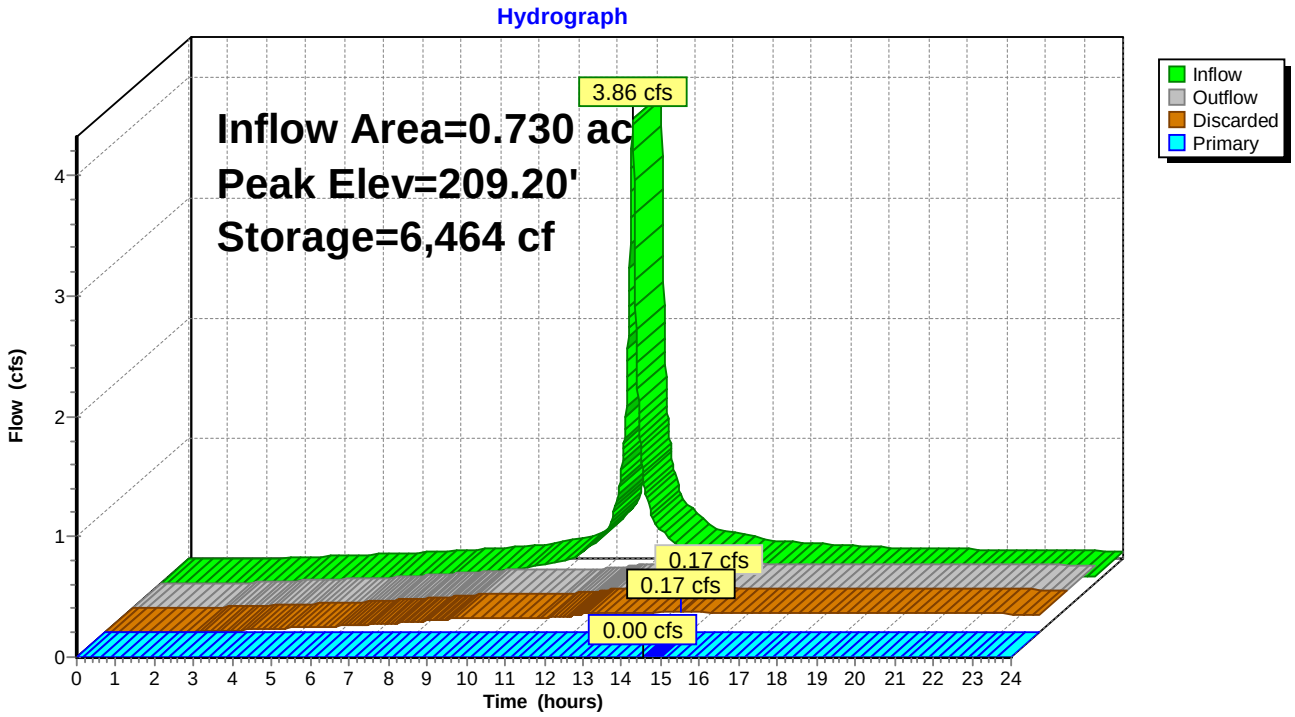
18,837.2 cf Field - 6,775.9 cf Chambers = 12,061.3 cf Stone x 40.0% Voids = 4,824.5 cf Stone Storage

Chamber Storage + Stone Storage = 11,600.4 cf = 0.266 af
Overall Storage Efficiency = 61.6%
Overall System Size = 77.40' x 44.25' x 5.50'

60 Chambers
697.7 cy Field
446.7 cy Stone



Pond 3D: ADS Subsurface Detention



Summary for Pond 3P: Basin 3

Inflow Area = 1.169 ac, 63.73% Impervious, Inflow Depth > 4.13" for 25-Year event
Inflow = 4.69 cfs @ 12.12 hrs, Volume= 0.402 af
Outflow = 0.25 cfs @ 14.41 hrs, Volume= 0.282 af, Atten= 95%, Lag= 137.5 min
Discarded = 0.25 cfs @ 14.41 hrs, Volume= 0.282 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach DP-4 : Wetland
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach DP-4 : Wetland

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.96' @ 14.41 hrs Surf.Area= 3,816 sf Storage= 8,410 cf
Flood Elev= 208.00' Surf.Area= 4,568 sf Storage= 12,769 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 155.6 min (935.0 - 779.3)

Volume	Invert	Avail.Storage	Storage Description
#1	204.00'	12,769 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
204.00	1,959	0	0
206.00	3,121	5,080	5,080
208.00	4,568	7,689	12,769

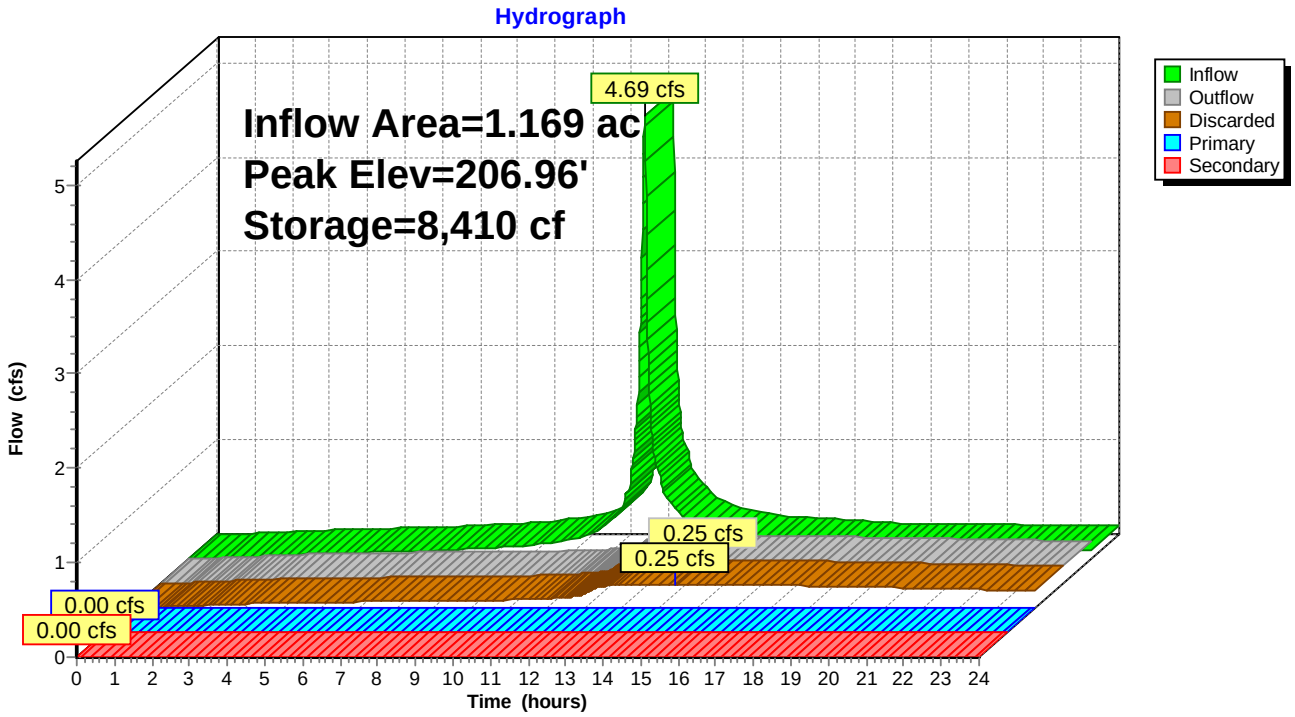
Device	Routing	Invert	Outlet Devices
#1	Primary	207.35'	**6.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 207.35' / 207.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Discarded	204.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 202.00'
#3	Secondary	207.50'	**15.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.25 cfs @ 14.41 hrs HW=206.96' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=204.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=204.00' TW=0.00' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Basin 3



Summary for Pond 3SS: SSMH-3

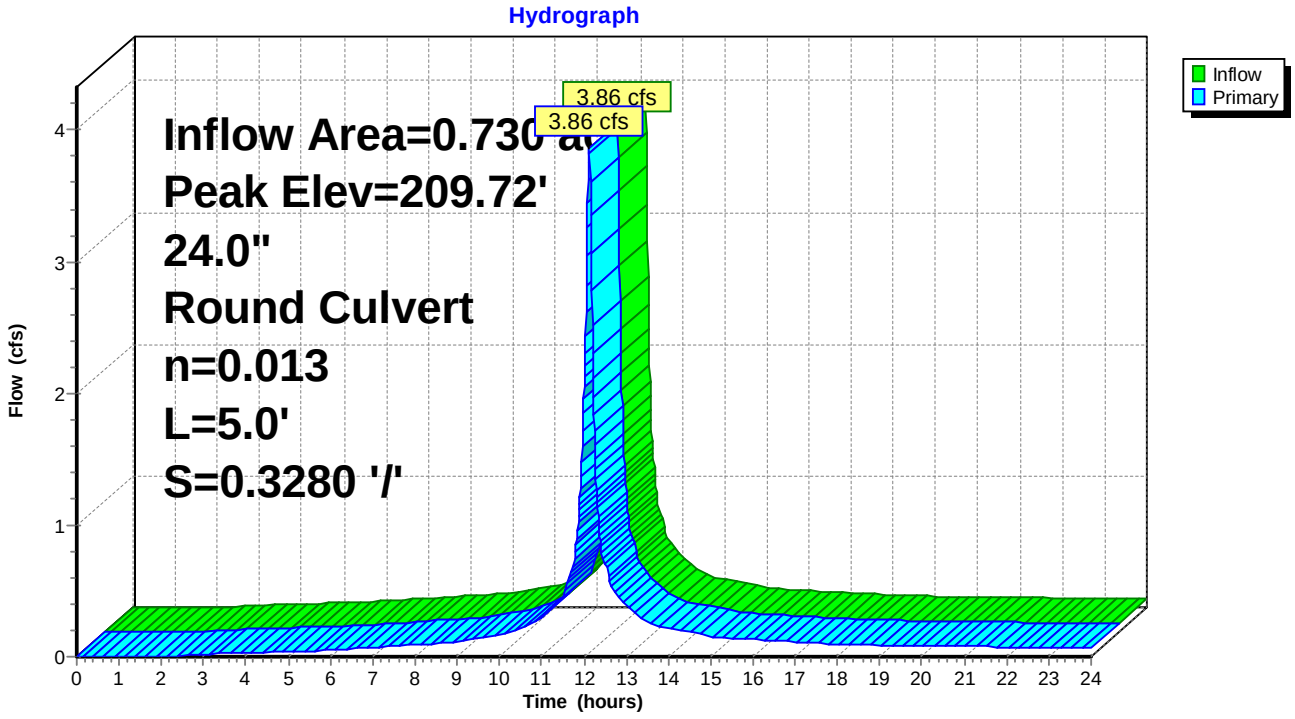
Inflow Area = 0.730 ac, 86.34% Impervious, Inflow Depth > 5.18" for 25-Year event
Inflow = 3.86 cfs @ 12.13 hrs, Volume= 0.315 af
Outflow = 3.86 cfs @ 12.13 hrs, Volume= 0.315 af, Atten= 0%, Lag= 0.0 min
Primary = 3.86 cfs @ 12.13 hrs, Volume= 0.315 af
Routed to Pond 3D : ADS Subsurface Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 209.72' @ 12.13 hrs
Flood Elev= 214.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	208.89'	**24.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.89' / 207.25' S= 0.3280 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=3.85 cfs @ 12.13 hrs HW=209.72' TW=208.12' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.85 cfs @ 3.11 fps)

Pond 3SS: SSMH-3



Summary for Pond 4D: ADS Subsurface Detention

Inflow Area = 0.106 ac, 99.20% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.61 cfs @ 12.12 hrs, Volume= 0.052 af
Outflow = 0.06 cfs @ 13.04 hrs, Volume= 0.052 af, Atten= 91%, Lag= 55.3 min
Discarded = 0.06 cfs @ 13.04 hrs, Volume= 0.052 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.70' @ 13.04 hrs Surf.Area= 950 sf Storage= 713 cf
Flood Elev= 208.50' Surf.Area= 950 sf Storage= 1,801 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 94.1 min (839.1 - 745.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	205.50'	889 cf	**20.50'W x 46.34'L x 3.50'H Field A** 3,325 cf Overall - 1,103 cf Embedded = 2,222 cf x 40.0% Voids
#2A	206.00'	1,103 cf	**ADS_StormTech SC-740 +Cap** x 24 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 24 Chambers in 4 Rows
		1,991 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	205.50'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 204.00'

Discarded OutFlow Max=0.06 cfs @ 13.04 hrs HW=206.70' (Free Discharge)
1=Exfiltration (Controls 0.06 cfs)

Pond 4D: ADS Subsurface Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

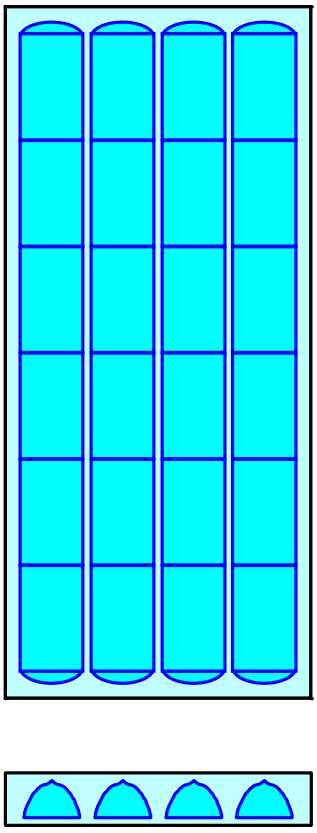
6 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 44.34' Row Length +12.0" End Stone x 2 = 46.34' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

24 Chambers x 45.9 cf = 1,102.6 cf Chamber Storage

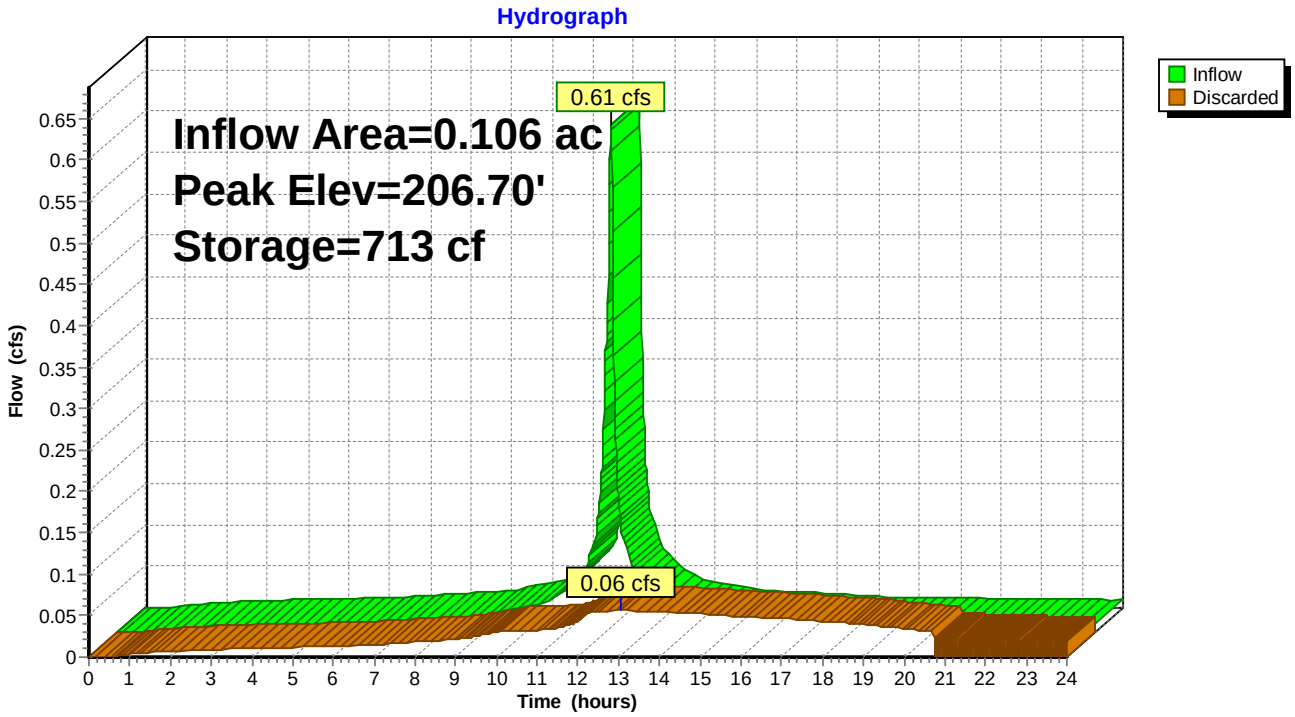
3,324.7 cf Field - 1,102.6 cf Chambers = 2,222.1 cf Stone x 40.0% Voids = 888.8 cf Stone Storage

Chamber Storage + Stone Storage = 1,991.4 cf = 0.046 af
Overall Storage Efficiency = 59.9%
Overall System Size = 46.34' x 20.50' x 3.50'

24 Chambers
123.1 cy Field
82.3 cy Stone



Pond 4D: ADS Subsurface Detention



Summary for Pond 4P: Basin 4

Inflow Area = 0.958 ac, 54.89% Impervious, Inflow Depth > 3.67" for 25-Year event
Inflow = 3.70 cfs @ 12.12 hrs, Volume= 0.293 af
Outflow = 0.20 cfs @ 14.39 hrs, Volume= 0.215 af, Atten= 95%, Lag= 135.9 min
Discarded = 0.20 cfs @ 14.39 hrs, Volume= 0.215 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 204.26' @ 14.39 hrs Surf.Area= 3,211 sf Storage= 5,850 cf
Flood Elev= 206.00' Surf.Area= 4,359 sf Storage= 12,435 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 152.1 min (956.6 - 804.5)

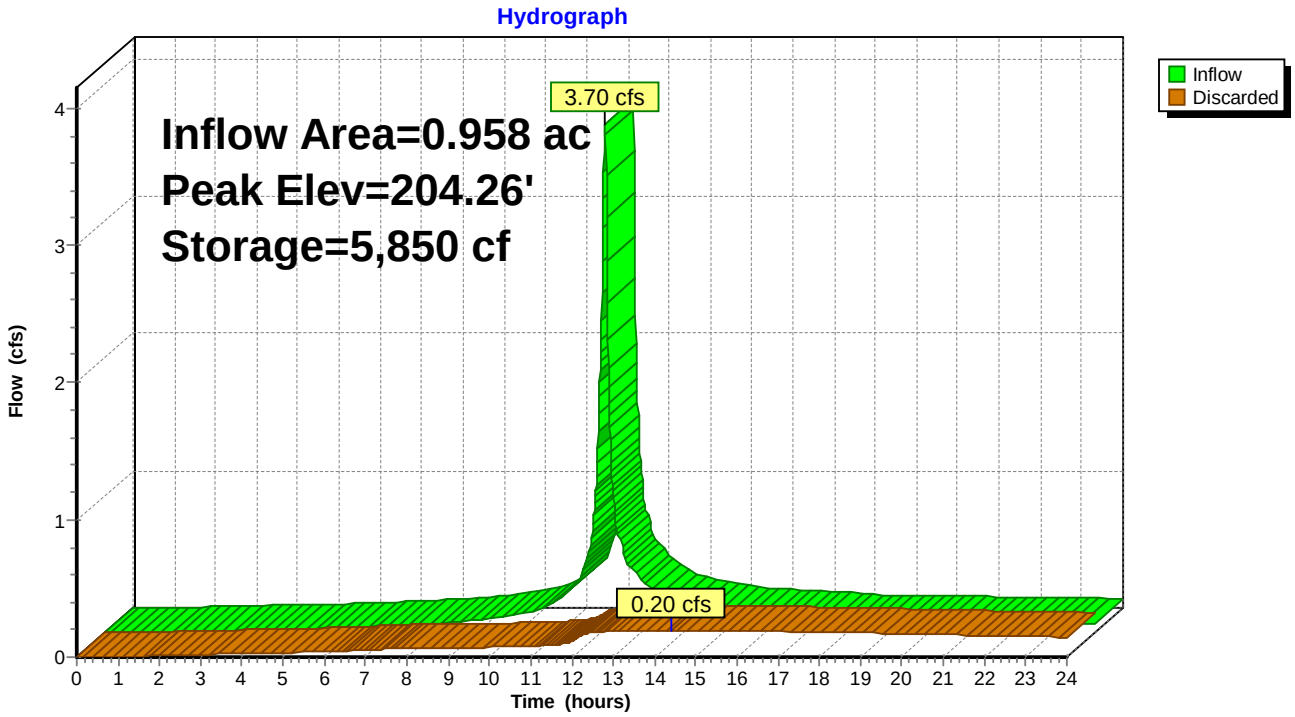
Volume	Invert	Avail.Storage	Storage Description
#1	202.00'	12,435 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.00	1,998	0	0
204.00	3,039	5,037	5,037
206.00	4,359	7,398	12,435

Device	Routing	Invert	Outlet Devices
#1	Discarded	202.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.20 cfs @ 14.39 hrs HW=204.26' (Free Discharge)
↑**1=Exfiltration** (Controls 0.20 cfs)

Pond 4P: Basin 4



Summary for Pond 4SS: SSMH-4

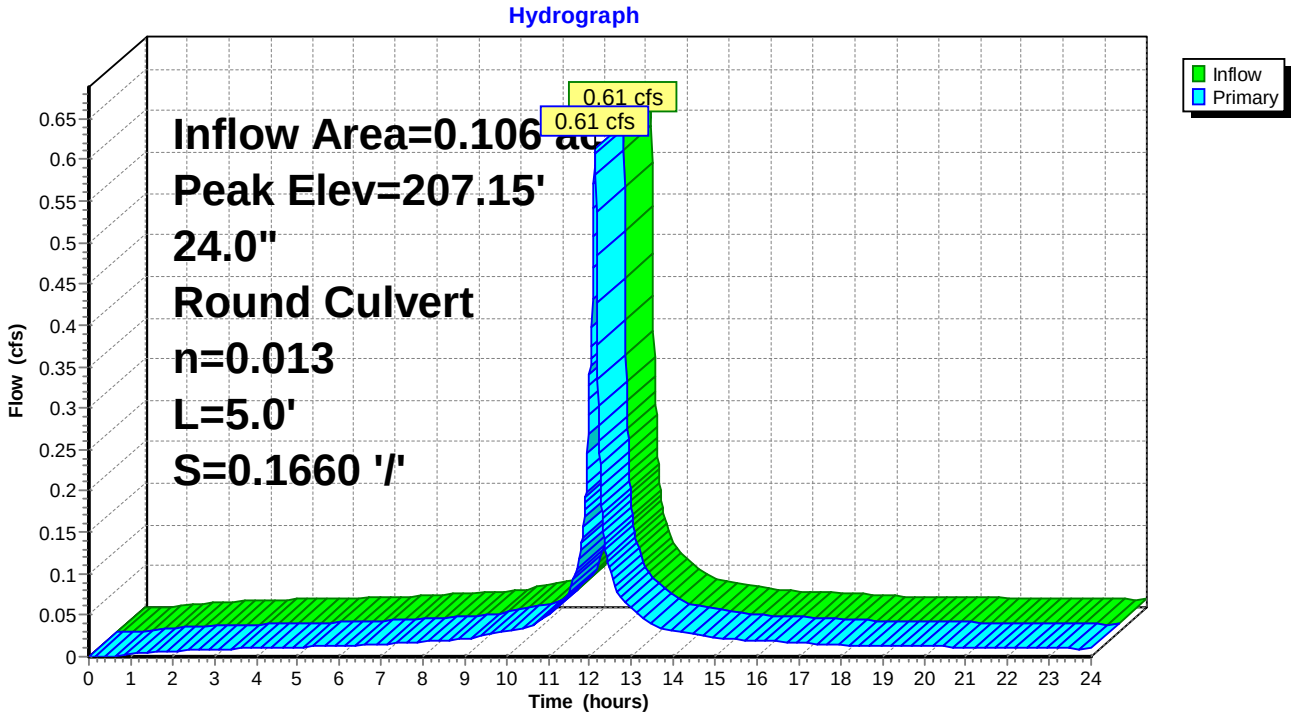
Inflow Area = 0.106 ac, 99.20% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.61 cfs @ 12.12 hrs, Volume= 0.052 af
Outflow = 0.61 cfs @ 12.12 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.12 hrs, Volume= 0.052 af
Routed to Pond 4D : ADS Subsurface Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 207.15' @ 12.12 hrs
Flood Elev= 212.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.83'	**24.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.83' / 206.00' S= 0.1660 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=0.61 cfs @ 12.12 hrs HW=207.15' TW=206.34' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.61 cfs @ 1.92 fps)

Pond 4SS: SSMH-4



Summary for Pond 5P: Basin 5

Inflow Area = 2.503 ac, 66.10% Impervious, Inflow Depth > 2.87" for 25-Year event
Inflow = 7.53 cfs @ 12.13 hrs, Volume= 0.599 af
Outflow = 0.33 cfs @ 15.03 hrs, Volume= 0.368 af, Atten= 96%, Lag= 174.0 min
Discarded = 0.33 cfs @ 15.03 hrs, Volume= 0.368 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 202.05' @ 15.03 hrs Surf.Area= 5,964 sf Storage= 13,607 cf
Flood Elev= 205.00' Surf.Area= 9,735 sf Storage= 36,707 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 167.4 min (984.8 - 817.4)

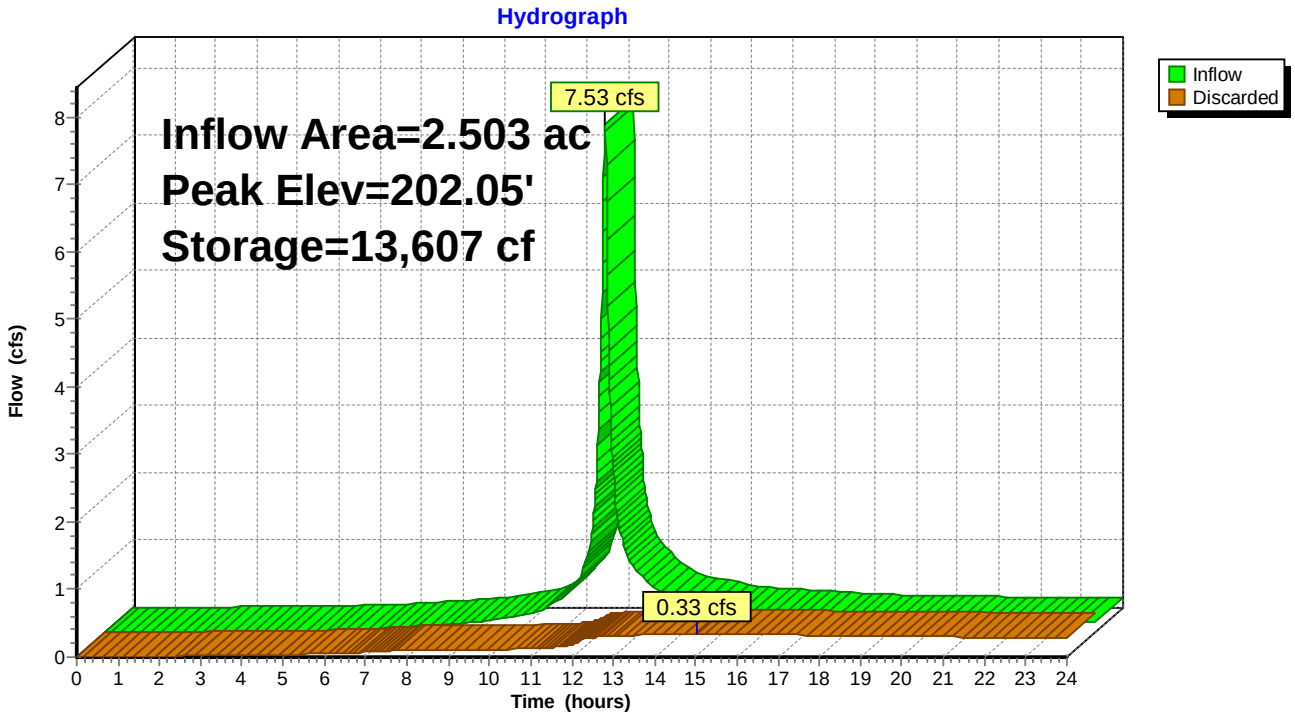
Volume	Invert	Avail.Storage	Storage Description
#1	199.00'	36,707 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
199.00	3,064	0	0
200.00	3,911	3,488	3,488
202.00	5,897	9,808	13,296
204.00	8,431	14,328	27,624
205.00	9,735	9,083	36,707

Device	Routing	Invert	Outlet Devices
#1	Discarded	199.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 196.00'

Discarded OutFlow Max=0.33 cfs @ 15.03 hrs HW=202.05' (Free Discharge)
↑**1=Exfiltration** (Controls 0.33 cfs)

Pond 5P: Basin 5



Summary for Pond 6P: Basin 6

Inflow Area = 3.268 ac, 88.88% Impervious, Inflow Depth > 2.50" for 25-Year event
Inflow = 4.65 cfs @ 12.12 hrs, Volume= 0.680 af
Outflow = 0.38 cfs @ 16.51 hrs, Volume= 0.398 af, Atten= 92%, Lag= 263.4 min
Discarded = 0.38 cfs @ 16.51 hrs, Volume= 0.398 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 203.38' @ 16.51 hrs Surf.Area= 6,759 sf Storage= 17,073 cf
Flood Elev= 206.00' Surf.Area= 11,097 sf Storage= 40,338 cf

Plug-Flow detention time= 335.3 min calculated for 0.398 af (59% of inflow)
Center-of-Mass det. time= 199.4 min (1,002.1 - 802.7)

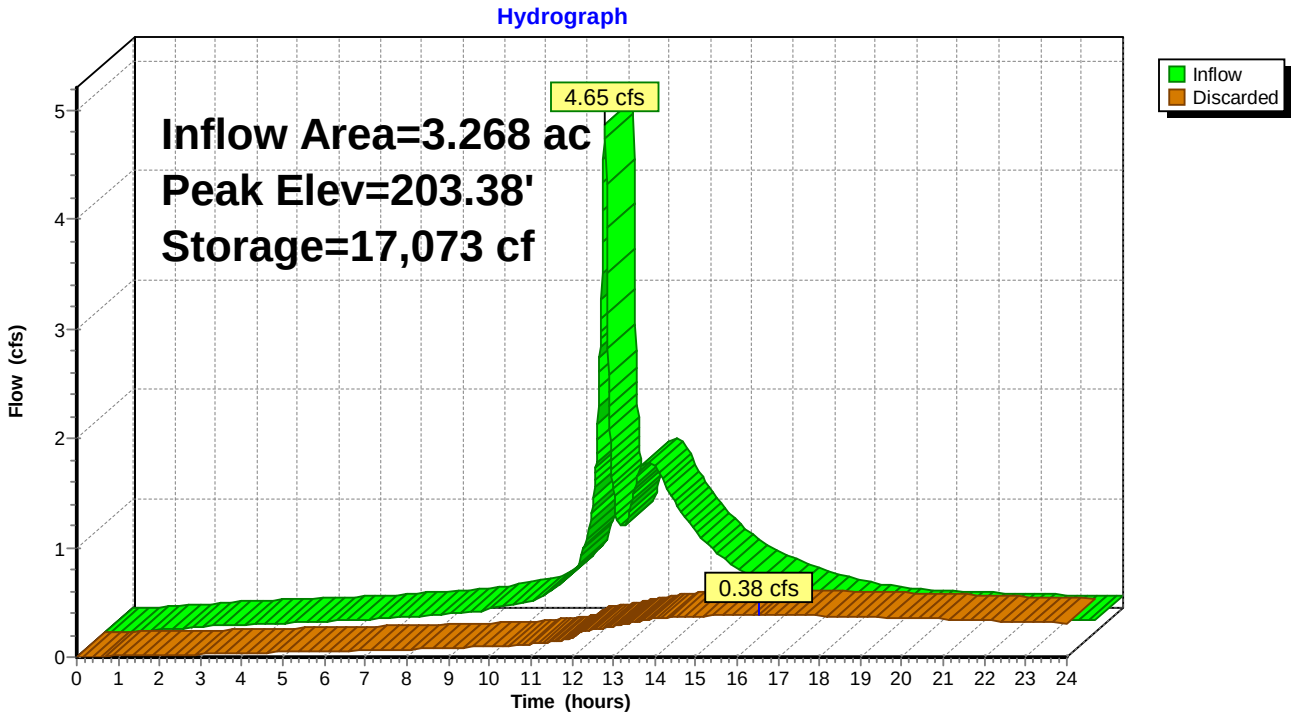
Volume	Invert	Avail.Storage	Storage Description
#1	198.04'	40,338 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
198.04	273	0	0
200.00	2,111	2,336	2,336
202.00	4,717	6,828	9,164
204.00	7,680	12,397	21,561
206.00	11,097	18,777	40,338

Device	Routing	Invert	Outlet Devices
#1	Discarded	198.04'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 196.00'

Discarded OutFlow Max=0.38 cfs @ 16.51 hrs HW=203.38' (Free Discharge)
1=Exfiltration (Controls 0.38 cfs)

Pond 6P: Basin 6



Summary for Pond 7P: Basin 7

Inflow Area = 0.237 ac, 0.07% Impervious, Inflow Depth > 3.13" for 25-Year event
Inflow = 0.87 cfs @ 12.12 hrs, Volume= 0.062 af
Outflow = 0.08 cfs @ 13.27 hrs, Volume= 0.060 af, Atten= 91%, Lag= 68.9 min
Discarded = 0.08 cfs @ 13.27 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 202.88' @ 13.27 hrs Surf.Area= 1,441 sf Storage= 987 cf
Flood Elev= 206.00' Surf.Area= 4,012 sf Storage= 9,324 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 130.8 min (985.9 - 855.1)

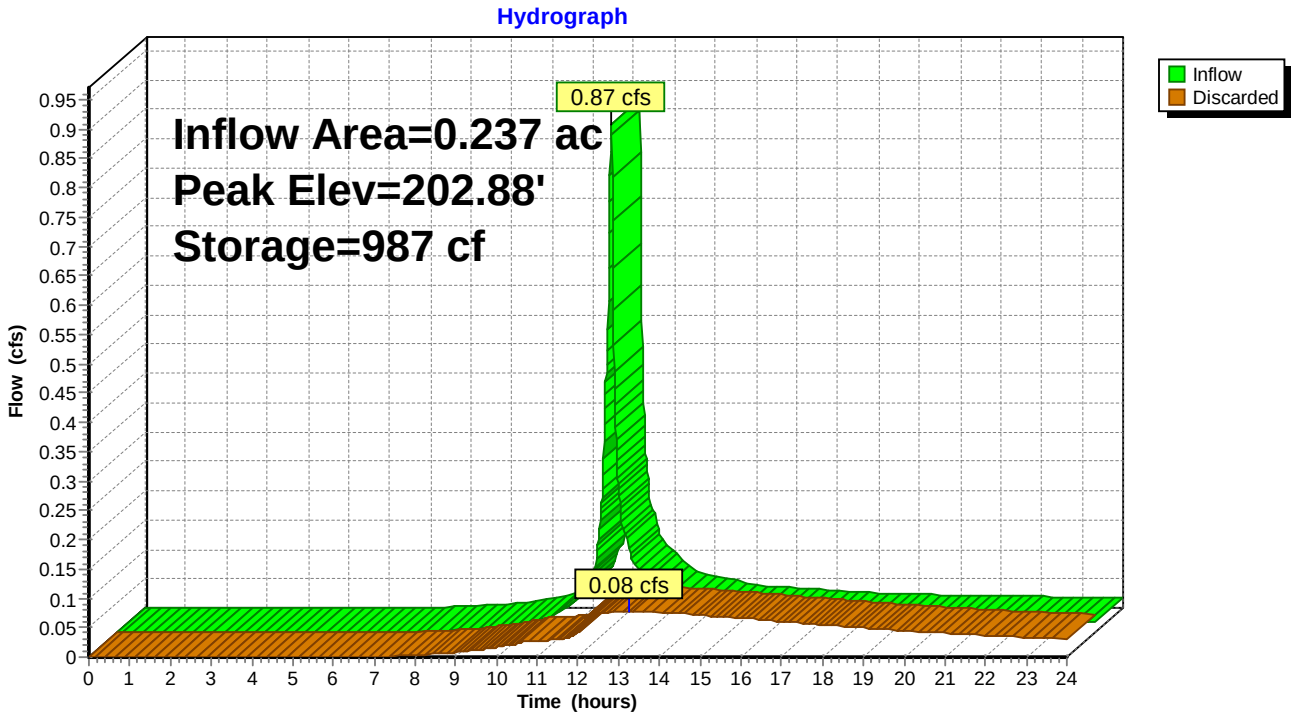
Volume	Invert	Avail.Storage	Storage Description
#1	202.00'	9,324 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.00	802	0	0
204.00	2,255	3,057	3,057
206.00	4,012	6,267	9,324

Device	Routing	Invert	Outlet Devices
#1	Discarded	202.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 201.00'

Discarded OutFlow Max=0.08 cfs @ 13.27 hrs HW=202.88' (Free Discharge)
↑**1=Exfiltration** (Controls 0.08 cfs)

Pond 7P: Basin 7



Summary for Pond CB1: CB-1

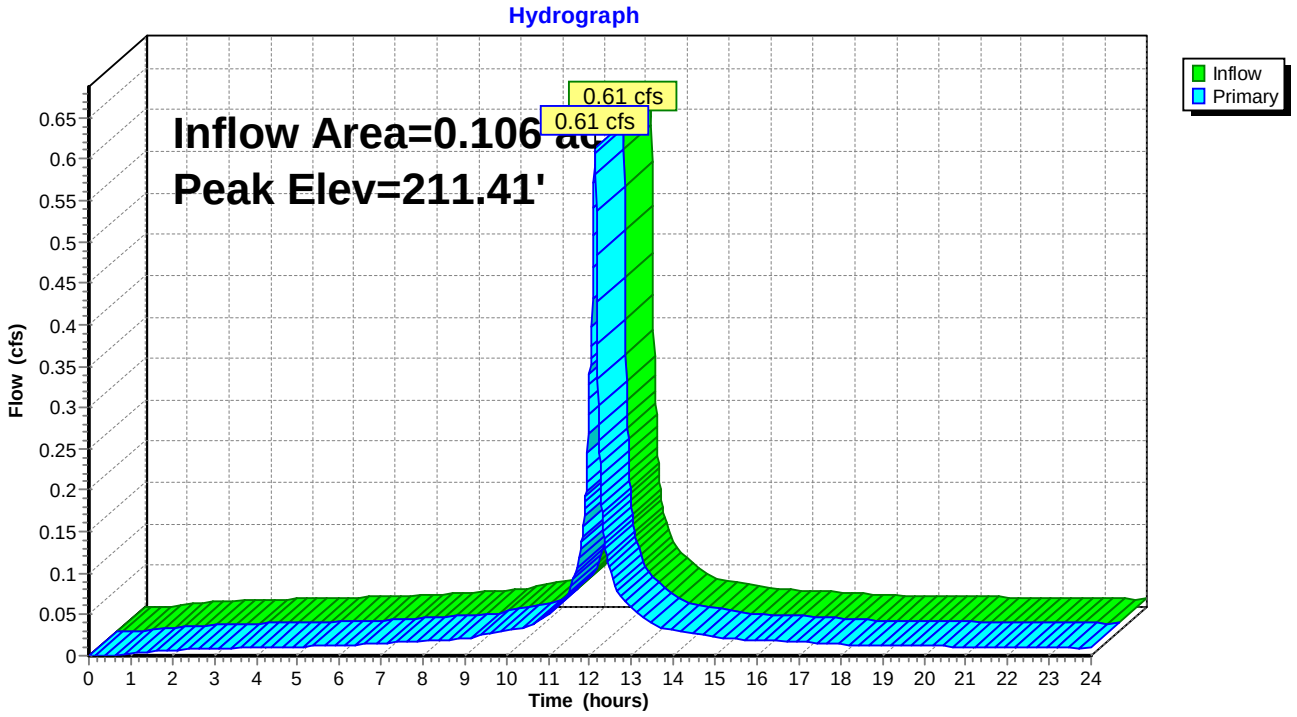
Inflow Area = 0.106 ac, 99.20% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.61 cfs @ 12.12 hrs, Volume= 0.052 af
Outflow = 0.61 cfs @ 12.12 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.12 hrs, Volume= 0.052 af
Routed to Pond 4SS : SSMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 211.41' @ 12.12 hrs
Flood Elev= 211.43'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.33'	**8.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.33' / 206.93' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	211.33'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.61 cfs @ 12.12 hrs HW=211.41' TW=207.15' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.61 cfs of 2.27 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.61 cfs @ 0.94 fps)

Pond CB1: CB-1



Summary for Pond CB10: CB-10

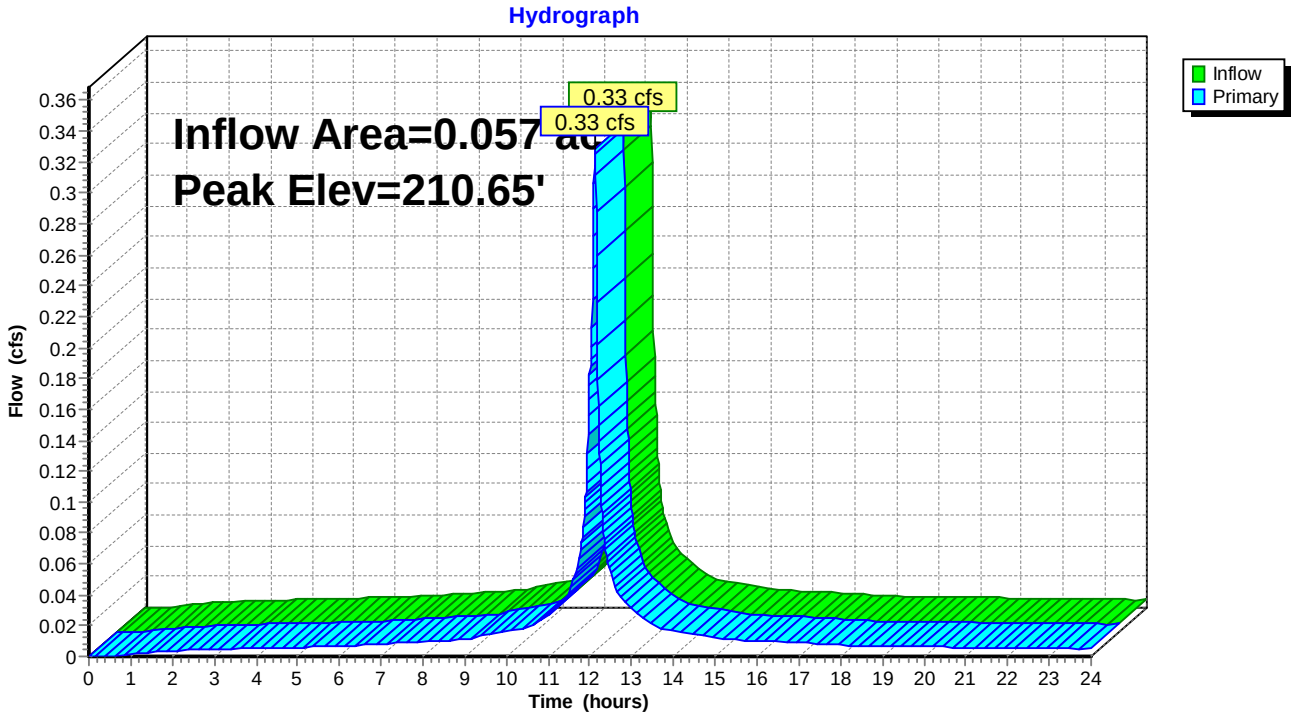
Inflow Area = 0.057 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.33 cfs @ 12.12 hrs, Volume= 0.028 af
Outflow = 0.33 cfs @ 12.12 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 12.12 hrs, Volume= 0.028 af
Routed to Pond MH5 : DMH-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.65' @ 12.12 hrs
Flood Elev= 210.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.60'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.60' / 207.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	210.60'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.33 cfs @ 12.12 hrs HW=210.65' TW=207.80' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.33 cfs of 6.04 cfs potential flow)
↑**2=Grate** (Weir Controls 0.33 cfs @ 0.76 fps)

Pond CB10: CB-10



Summary for Pond CB11: CB-11

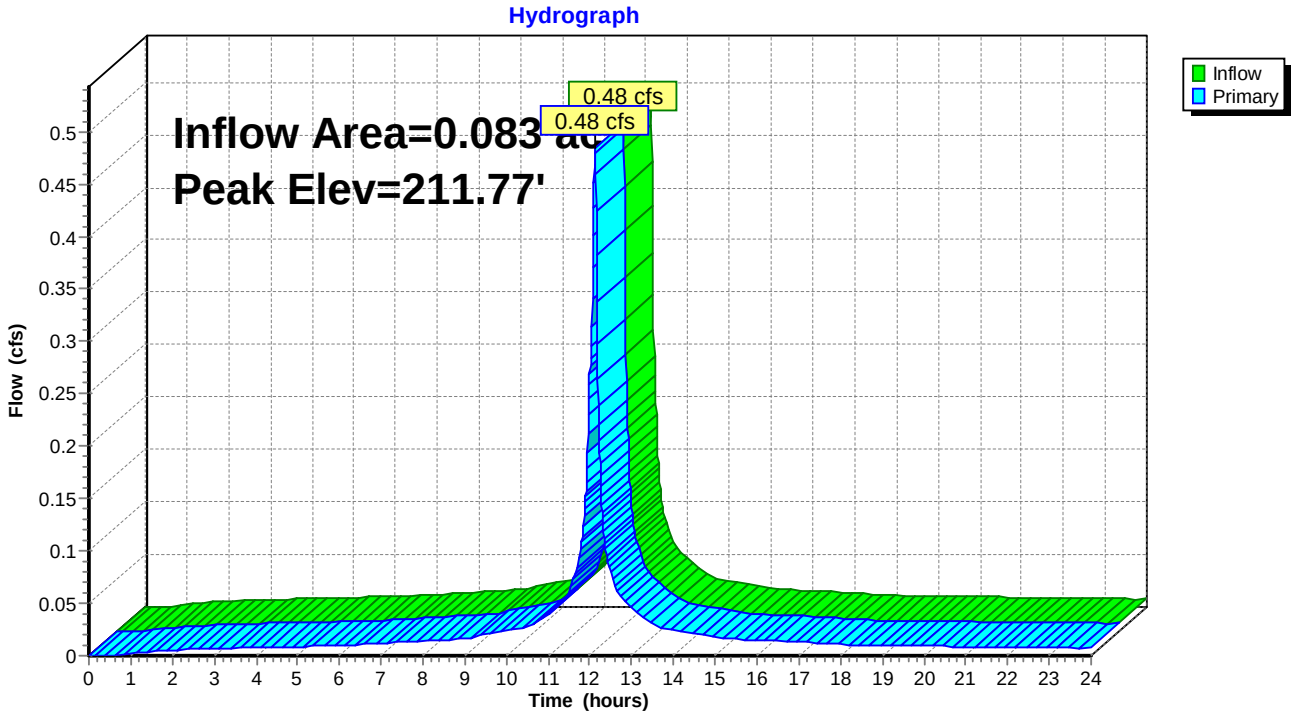
Inflow Area = 0.083 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.48 cfs @ 12.12 hrs, Volume= 0.041 af
Outflow = 0.48 cfs @ 12.12 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.48 cfs @ 12.12 hrs, Volume= 0.041 af
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 211.77' @ 12.12 hrs
Flood Elev= 211.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	208.70'	**12.0" Round Culvert** L= 34.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.70' / 208.53' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	211.70'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.48 cfs @ 12.12 hrs HW=211.77' TW=207.98' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.48 cfs of 5.86 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.48 cfs @ 0.87 fps)

Pond CB11: CB-11



Summary for Pond CB12: CB-12

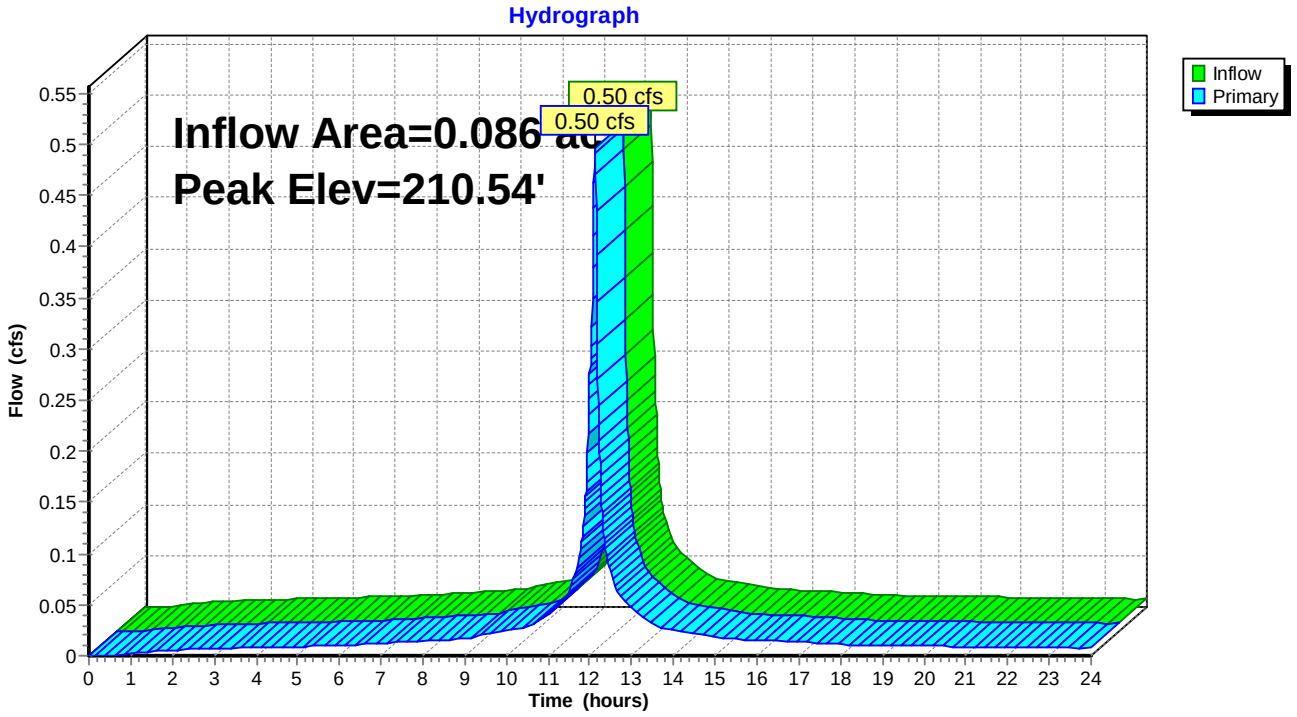
Inflow Area = 0.086 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.50 cfs @ 12.12 hrs, Volume= 0.042 af
Outflow = 0.50 cfs @ 12.12 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min
Primary = 0.50 cfs @ 12.12 hrs, Volume= 0.042 af
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.54' @ 12.12 hrs
Flood Elev= 210.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.50'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.50' / 207.45' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	210.50'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.50 cfs @ 12.12 hrs HW=210.54' TW=207.98' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.50 cfs of 6.03 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.50 cfs @ 0.69 fps)

Pond CB12: CB-12



Summary for Pond CB13: CB-13

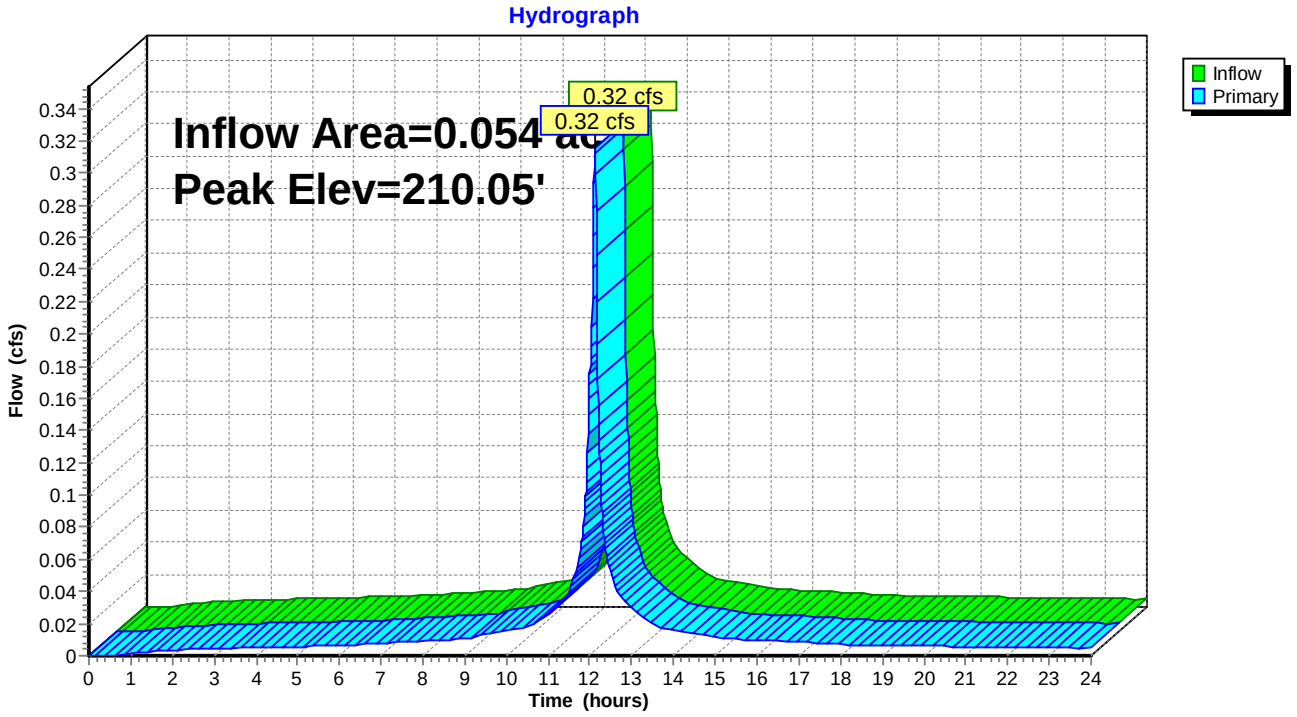
Inflow Area = 0.054 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.32 cfs @ 12.12 hrs, Volume= 0.027 af
Outflow = 0.32 cfs @ 12.12 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
Primary = 0.32 cfs @ 12.12 hrs, Volume= 0.027 af
Routed to Pond 2P : Basin 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.05' @ 12.12 hrs
Flood Elev= 210.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.10'	**12.0" Round Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.10' / 206.92' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	210.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.32 cfs @ 12.12 hrs HW=210.05' TW=207.08' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.32 cfs of 5.71 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.32 cfs @ 0.75 fps)

Pond CB13: CB-13



Summary for Pond CB14: CB-14

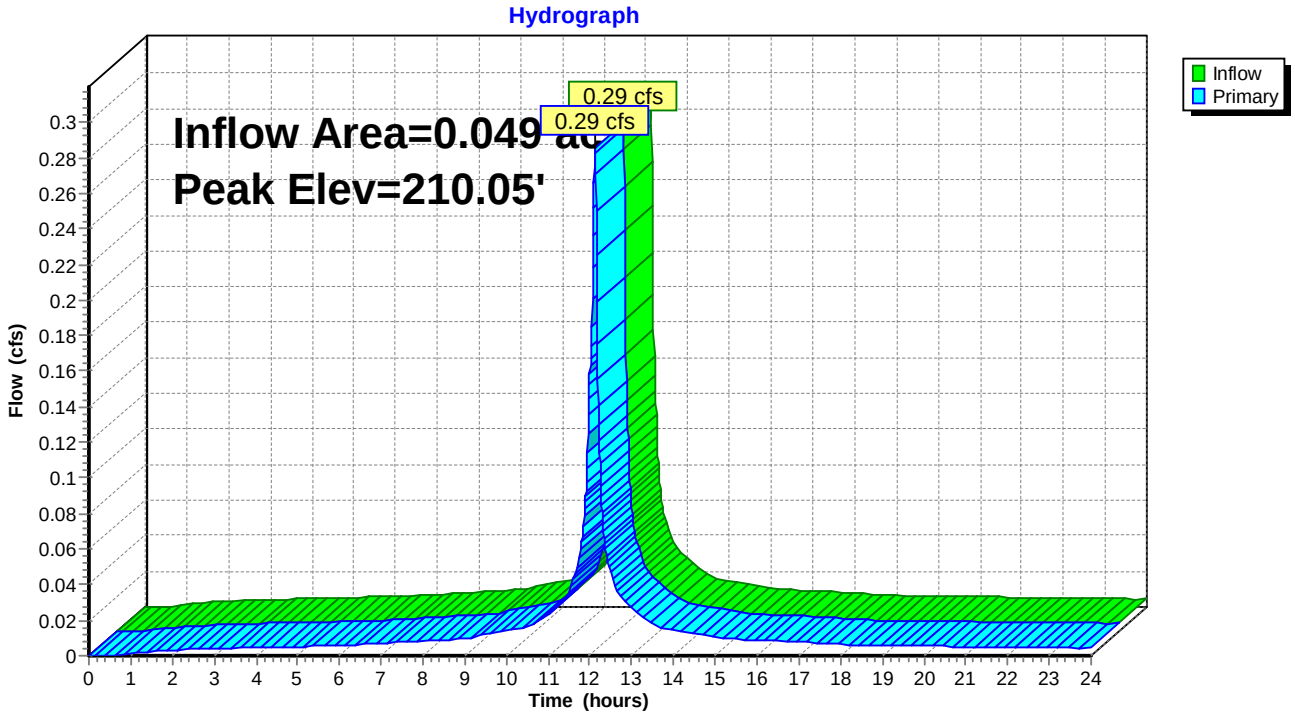
Inflow Area = 0.049 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.29 cfs @ 12.12 hrs, Volume= 0.024 af
Outflow = 0.29 cfs @ 12.12 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min
Primary = 0.29 cfs @ 12.12 hrs, Volume= 0.024 af
Routed to Pond 2P : Basin 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.05' @ 12.12 hrs
Flood Elev= 210.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.00'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.00' / 206.90' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	210.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.29 cfs @ 12.12 hrs HW=210.05' TW=207.08' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.29 cfs of 6.04 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.29 cfs @ 0.73 fps)

Pond CB14: CB-14



Summary for Pond CB15: CB-15

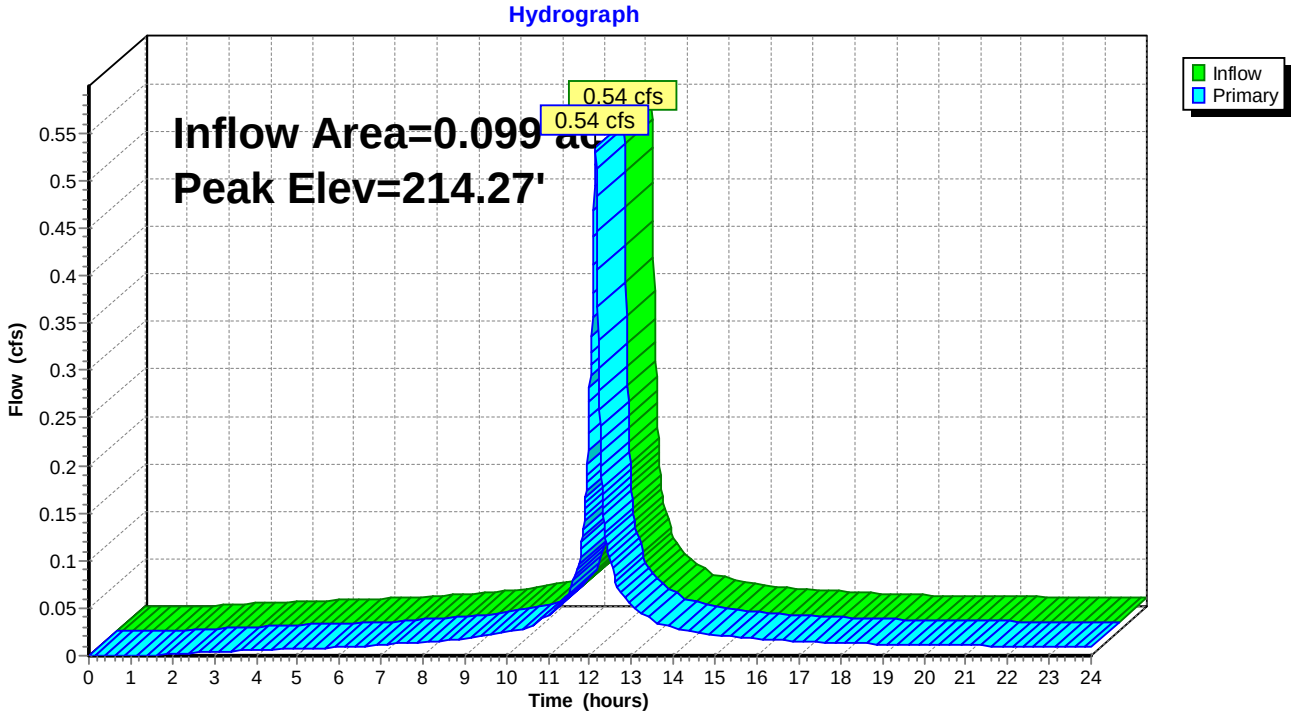
Inflow Area = 0.099 ac, 91.05% Impervious, Inflow Depth > 5.46" for 25-Year event
Inflow = 0.54 cfs @ 12.13 hrs, Volume= 0.045 af
Outflow = 0.54 cfs @ 12.13 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 12.13 hrs, Volume= 0.045 af
Routed to Pond MH7 : DMH-7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.27' @ 12.13 hrs
Flood Elev= 214.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.20'	**12.0" Round Culvert** L= 165.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.20' / 210.38' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.20'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.54 cfs @ 12.13 hrs HW=214.27' TW=210.60' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.54 cfs of 4.15 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.54 cfs @ 0.89 fps)

Pond CB15: CB-15



Summary for Pond CB16: CB-16

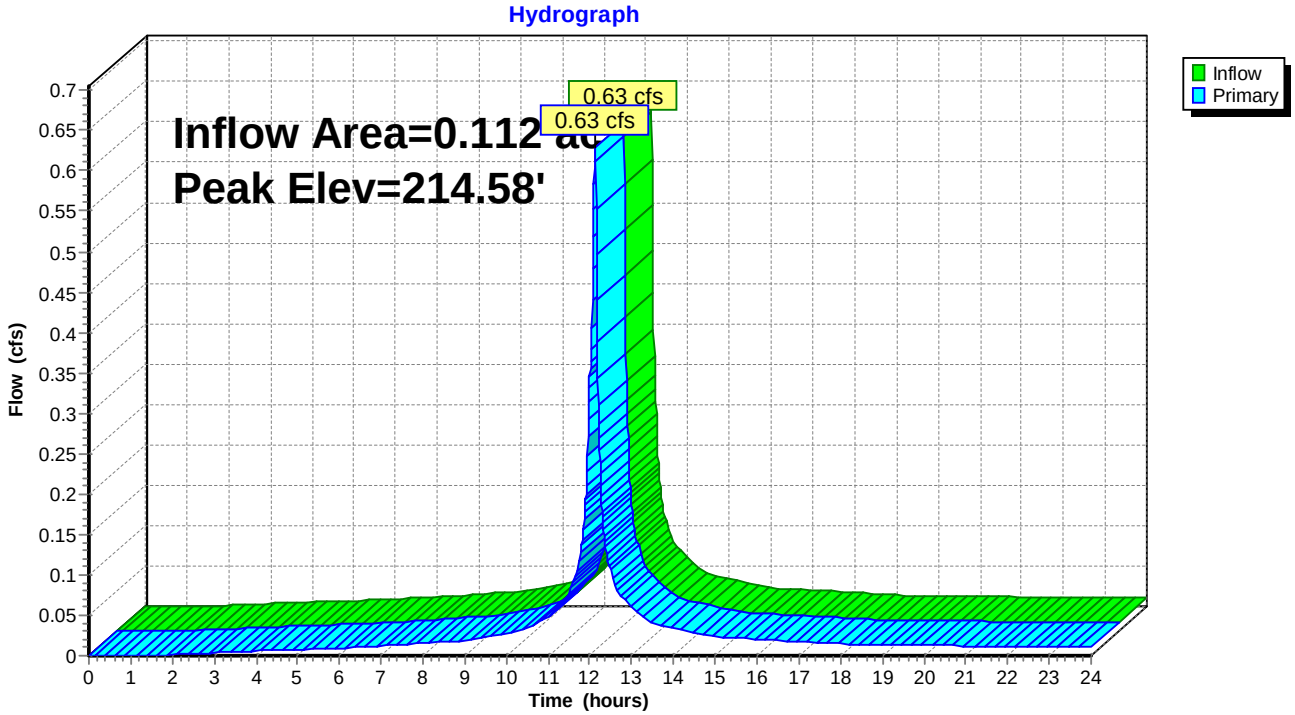
Inflow Area = 0.112 ac, 90.09% Impervious, Inflow Depth > 5.34" for 25-Year event
Inflow = 0.63 cfs @ 12.12 hrs, Volume= 0.050 af
Outflow = 0.63 cfs @ 12.12 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Primary = 0.63 cfs @ 12.12 hrs, Volume= 0.050 af
Routed to Pond MH7 : DMH-7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.58' @ 12.12 hrs
Flood Elev= 214.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.50'	**12.0" Round Culvert** L= 250.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.50' / 210.25' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.63 cfs @ 12.12 hrs HW=214.58' TW=210.59' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.63 cfs of 3.76 cfs potential flow)
└─**2=Orifice/Grate** (Weir Controls 0.63 cfs @ 0.94 fps)

Pond CB16: CB-16



Summary for Pond CB17: CB-17

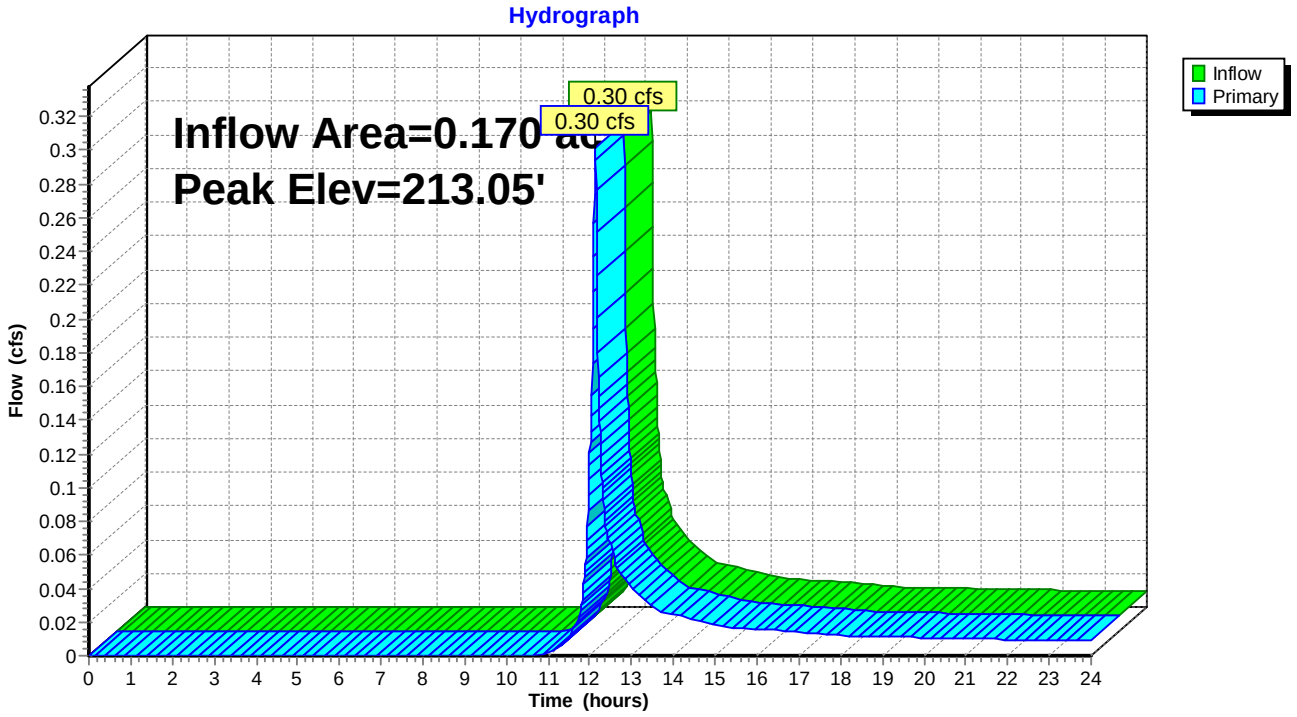
Inflow Area = 0.170 ac, 25.16% Impervious, Inflow Depth > 1.61" for 25-Year event
Inflow = 0.30 cfs @ 12.13 hrs, Volume= 0.023 af
Outflow = 0.30 cfs @ 12.13 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min
Primary = 0.30 cfs @ 12.13 hrs, Volume= 0.023 af
Routed to Pond MH7 : DMH-7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 213.05' @ 12.13 hrs
Flood Elev= 213.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 210.61' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	213.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.30 cfs @ 12.13 hrs HW=213.05' TW=210.60' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.30 cfs of 3.81 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.30 cfs @ 0.74 fps)

Pond CB17: CB-17



Summary for Pond CB18: CB-18

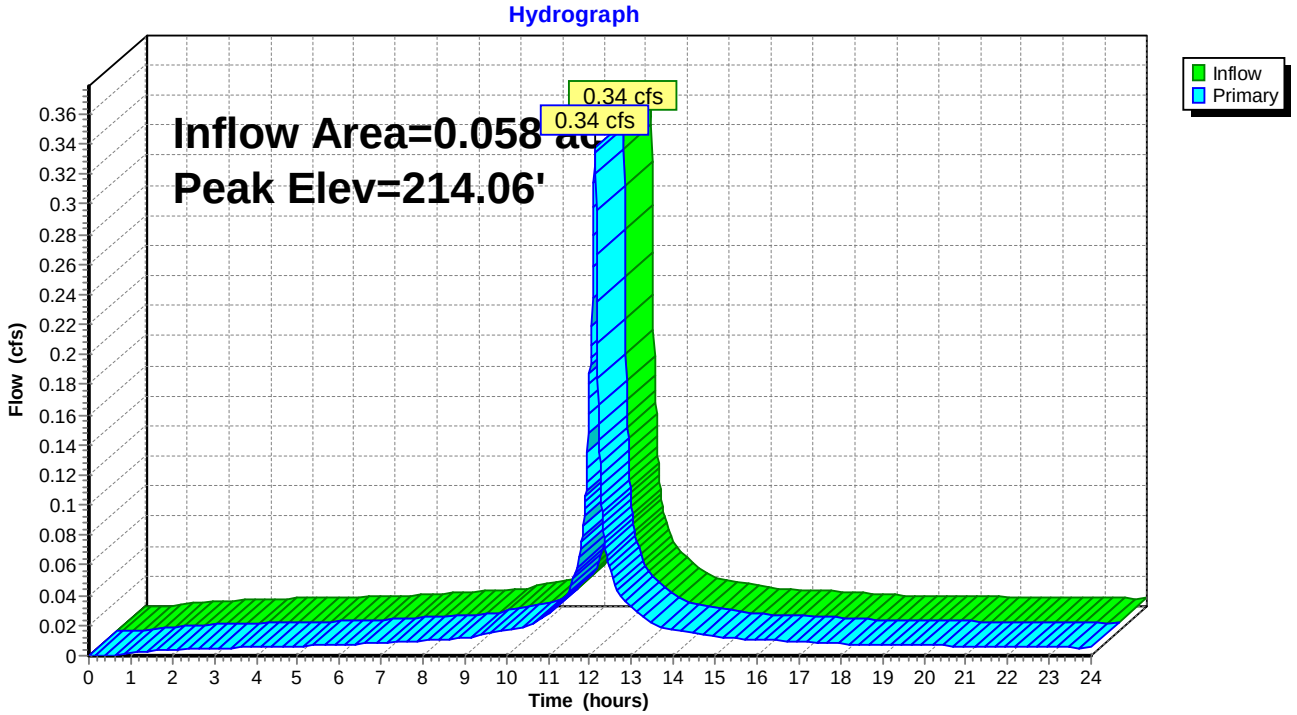
Inflow Area = 0.058 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.34 cfs @ 12.12 hrs, Volume= 0.029 af
Outflow = 0.34 cfs @ 12.12 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 12.12 hrs, Volume= 0.029 af
Routed to Pond MH6 : DMH-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.06' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 206.40' S= 0.0460 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.34 cfs @ 12.12 hrs HW=214.06' TW=207.03' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.34 cfs of 6.04 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.34 cfs @ 0.77 fps)

Pond CB18: CB-18



Summary for Pond CB19: CB-19

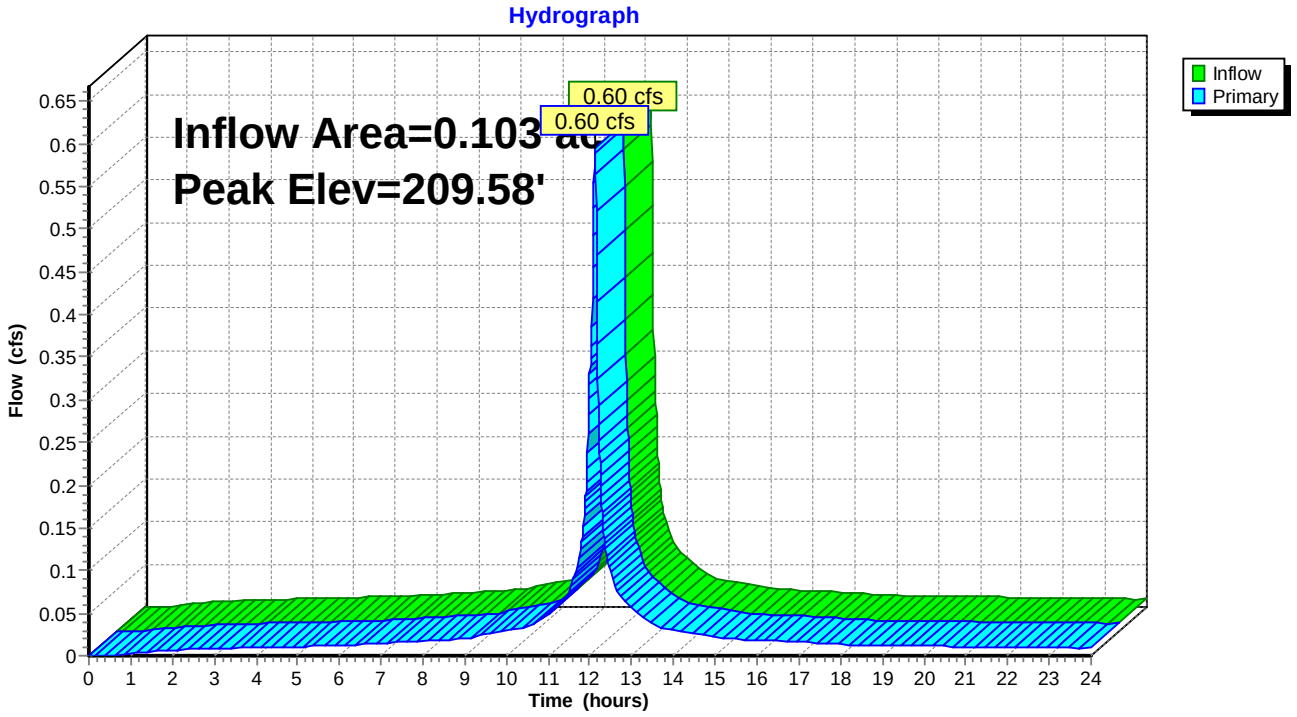
Inflow Area = 0.103 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.60 cfs @ 12.12 hrs, Volume= 0.051 af
Outflow = 0.60 cfs @ 12.12 hrs, Volume= 0.051 af, Atten= 0%, Lag= 0.0 min
Primary = 0.60 cfs @ 12.12 hrs, Volume= 0.051 af
Routed to Pond MH6 : DMH-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 209.58' @ 12.12 hrs
Flood Elev= 209.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.50'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.50' / 206.40' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	209.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.60 cfs @ 12.12 hrs HW=209.58' TW=207.03' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.60 cfs of 6.04 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.60 cfs @ 0.93 fps)

Pond CB19: CB-19



Summary for Pond CB2: CB-2

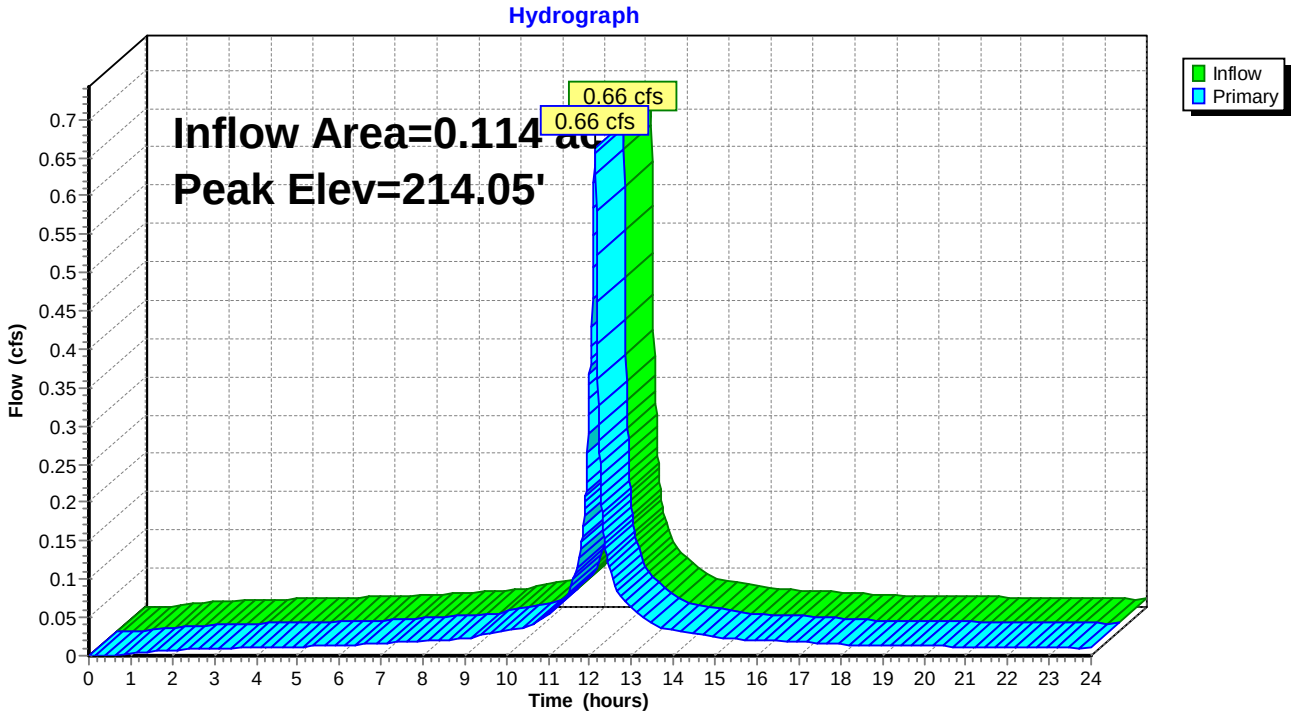
Inflow Area = 0.114 ac, 99.97% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.66 cfs @ 12.12 hrs, Volume= 0.056 af
Outflow = 0.66 cfs @ 12.12 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 0.66 cfs @ 12.12 hrs, Volume= 0.056 af
Routed to Pond 1P : Basin 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.05' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.10'	**12.0" Round Culvert** L= 21.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.10' / 210.98' S= 0.0057 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.66 cfs @ 12.12 hrs HW=214.05' TW=211.37' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.66 cfs of 5.92 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.66 cfs @ 0.76 fps)

Pond CB2: CB-2



Summary for Pond CB20: CB-20

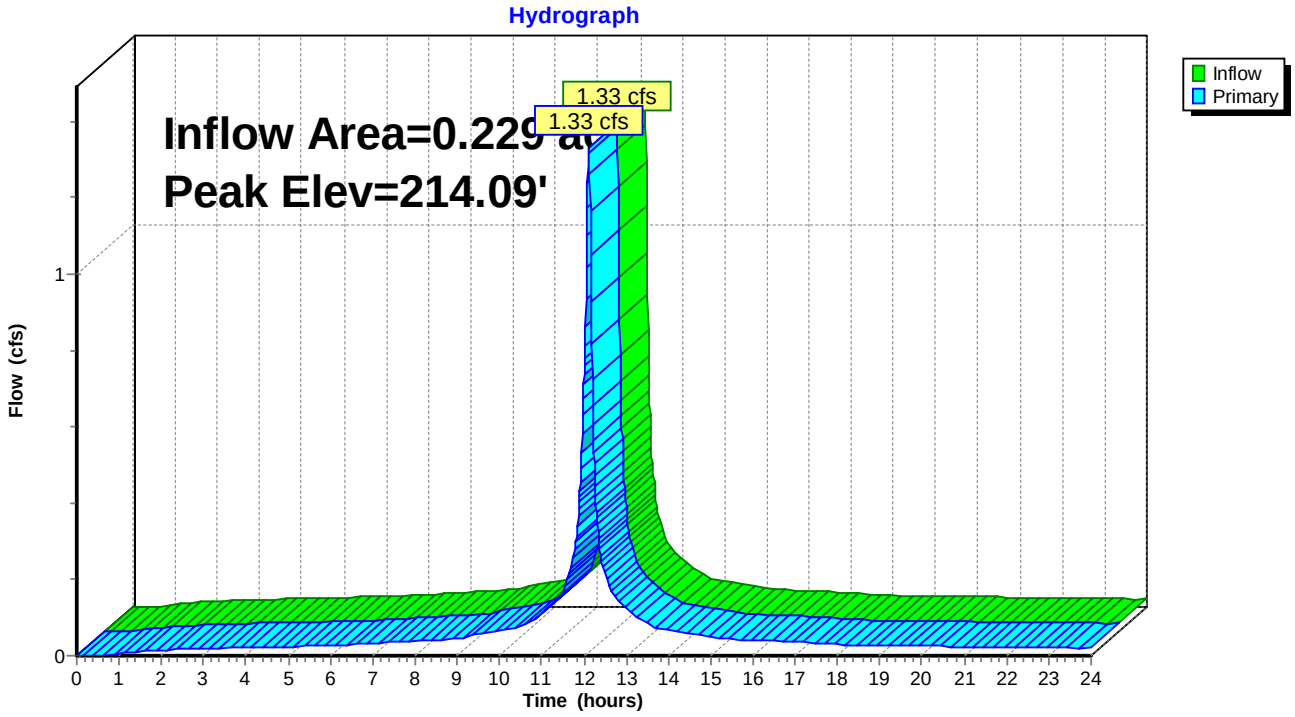
Inflow Area = 0.229 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 1.33 cfs @ 12.12 hrs, Volume= 0.113 af
Outflow = 1.33 cfs @ 12.12 hrs, Volume= 0.113 af, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 12.12 hrs, Volume= 0.113 af
Routed to Pond MH6 : DMH-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.09' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 46.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 206.40' S= 0.1000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.33 cfs @ 12.12 hrs HW=214.09' TW=207.03' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.33 cfs of 6.08 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.33 cfs @ 0.96 fps)

Pond CB20: CB-20



Summary for Pond CB21: CB-21

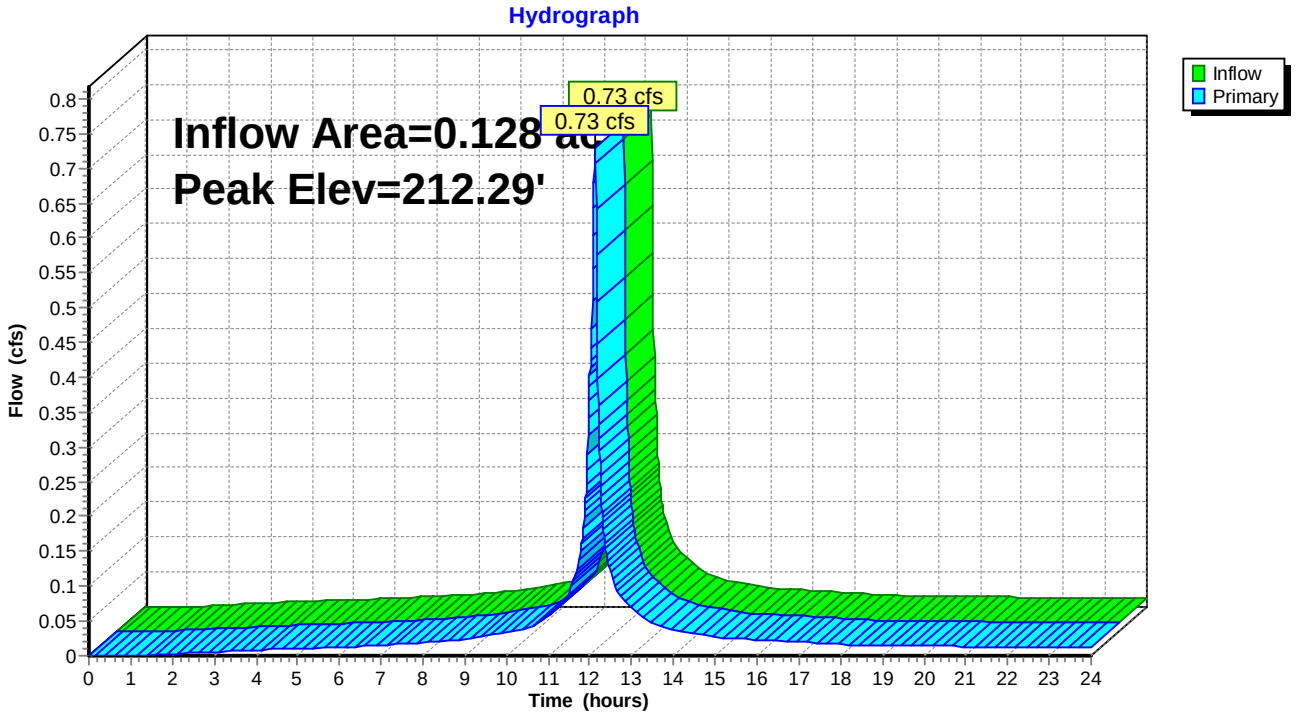
Inflow Area = 0.128 ac, 93.75% Impervious, Inflow Depth > 5.57" for 25-Year event
Inflow = 0.73 cfs @ 12.12 hrs, Volume= 0.059 af
Outflow = 0.73 cfs @ 12.12 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 12.12 hrs, Volume= 0.059 af
Routed to Pond 3P : Basin 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 212.29' @ 12.12 hrs
Flood Elev= 212.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.20'	**12.0" Round Culvert** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.20' / 209.13' S= 0.0047 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	212.20'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.73 cfs @ 12.12 hrs HW=212.29' TW=205.96' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.73 cfs of 6.09 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.73 cfs @ 0.99 fps)

Pond CB21: CB-21



Summary for Pond CB22: CB-22

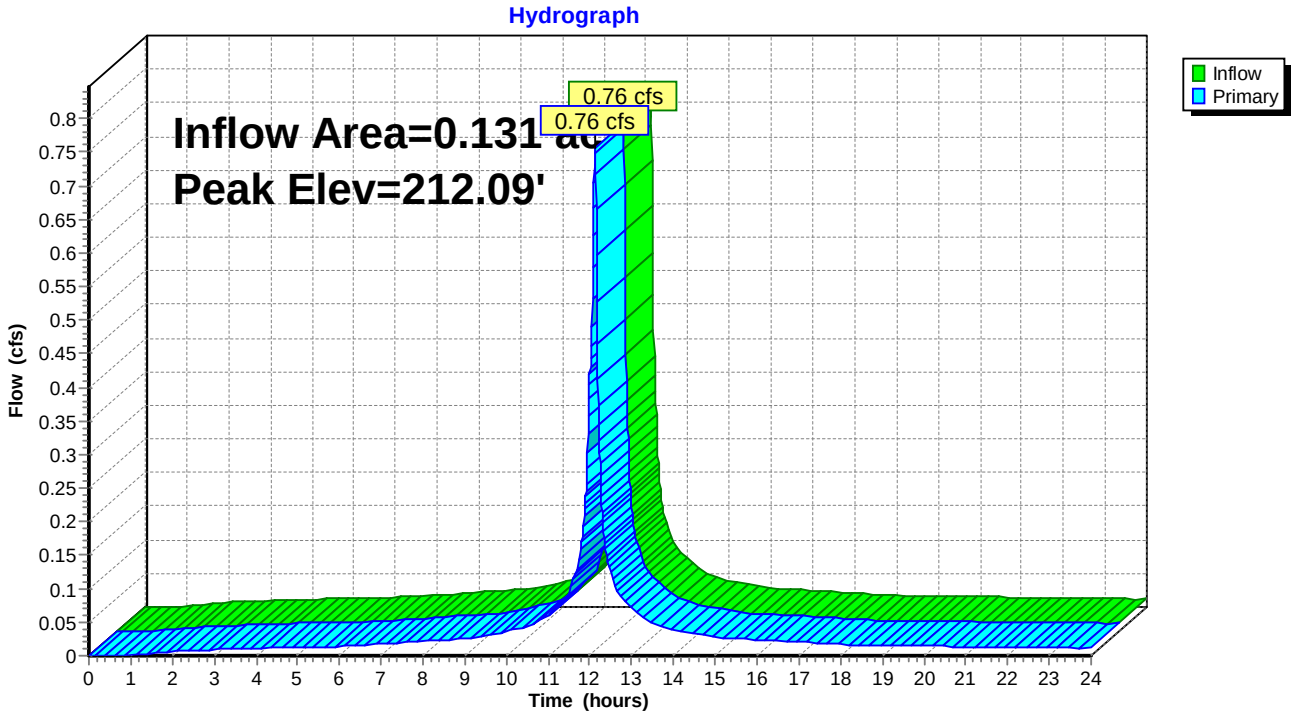
Inflow Area = 0.131 ac, 98.17% Impervious, Inflow Depth > 5.81" for 25-Year event
Inflow = 0.76 cfs @ 12.12 hrs, Volume= 0.063 af
Outflow = 0.76 cfs @ 12.12 hrs, Volume= 0.063 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 12.12 hrs, Volume= 0.063 af
Routed to Pond MH8 : DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 212.09' @ 12.12 hrs
Flood Elev= 212.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.00'	**12.0" Round Culvert** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.00' / 208.72' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	212.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.76 cfs @ 12.12 hrs HW=212.09' TW=209.41' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.76 cfs of 5.41 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.76 cfs @ 1.00 fps)

Pond CB22: CB-22



Summary for Pond CB23: CB-23

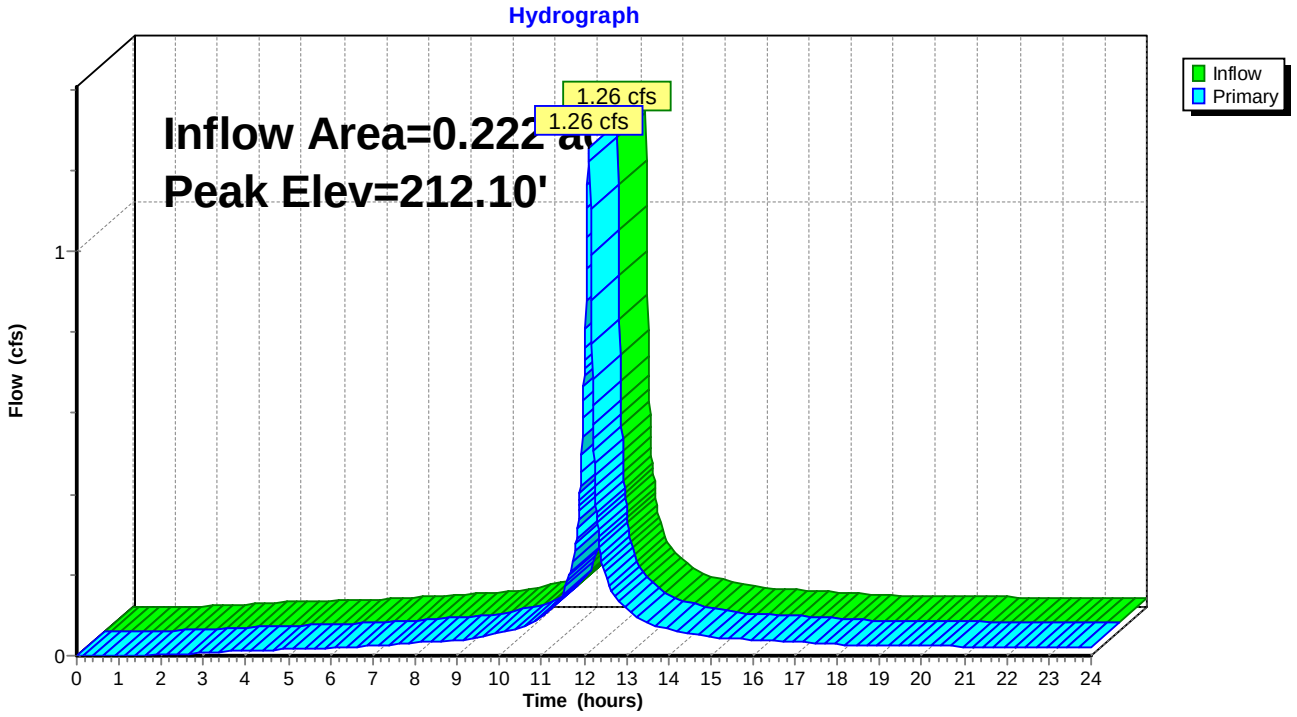
Inflow Area = 0.222 ac, 91.33% Impervious, Inflow Depth > 5.46" for 25-Year event
Inflow = 1.26 cfs @ 12.12 hrs, Volume= 0.101 af
Outflow = 1.26 cfs @ 12.12 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
Primary = 1.26 cfs @ 12.12 hrs, Volume= 0.101 af
Routed to Pond MH8 : DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 212.10' @ 12.12 hrs
Flood Elev= 212.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.00'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.00' / 208.80' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	212.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 1.50** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.26 cfs @ 12.12 hrs HW=212.10' TW=209.41' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.26 cfs of 5.76 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.26 cfs @ 1.56 fps)

Pond CB23: CB-23



Summary for Pond CB24: CB-24

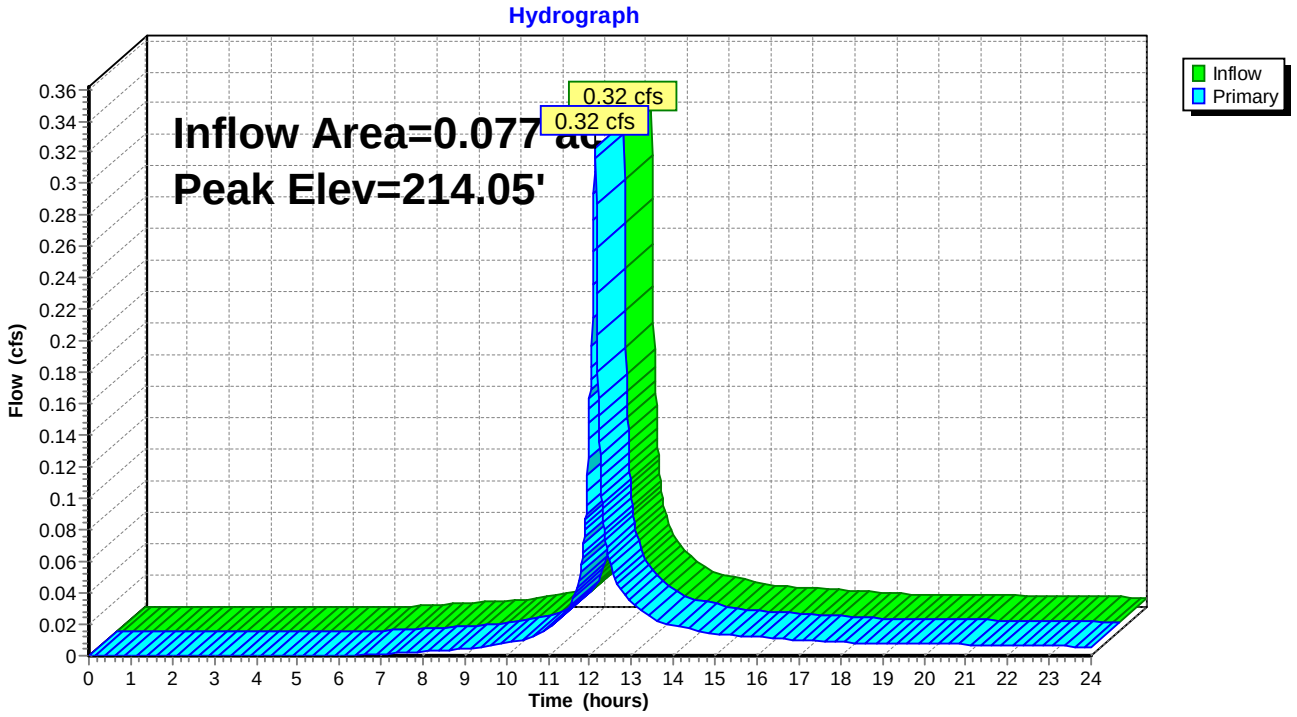
Inflow Area = 0.077 ac, 57.17% Impervious, Inflow Depth > 3.62" for 25-Year event
Inflow = 0.32 cfs @ 12.12 hrs, Volume= 0.023 af
Outflow = 0.32 cfs @ 12.12 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min
Primary = 0.32 cfs @ 12.12 hrs, Volume= 0.023 af
Routed to Pond MH9 : CB-31

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.05' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 210.86' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.32 cfs @ 12.12 hrs HW=214.05' TW=208.73' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.32 cfs of 6.04 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.32 cfs @ 0.76 fps)

Pond CB24: CB-24



Summary for Pond CB25: CB-25

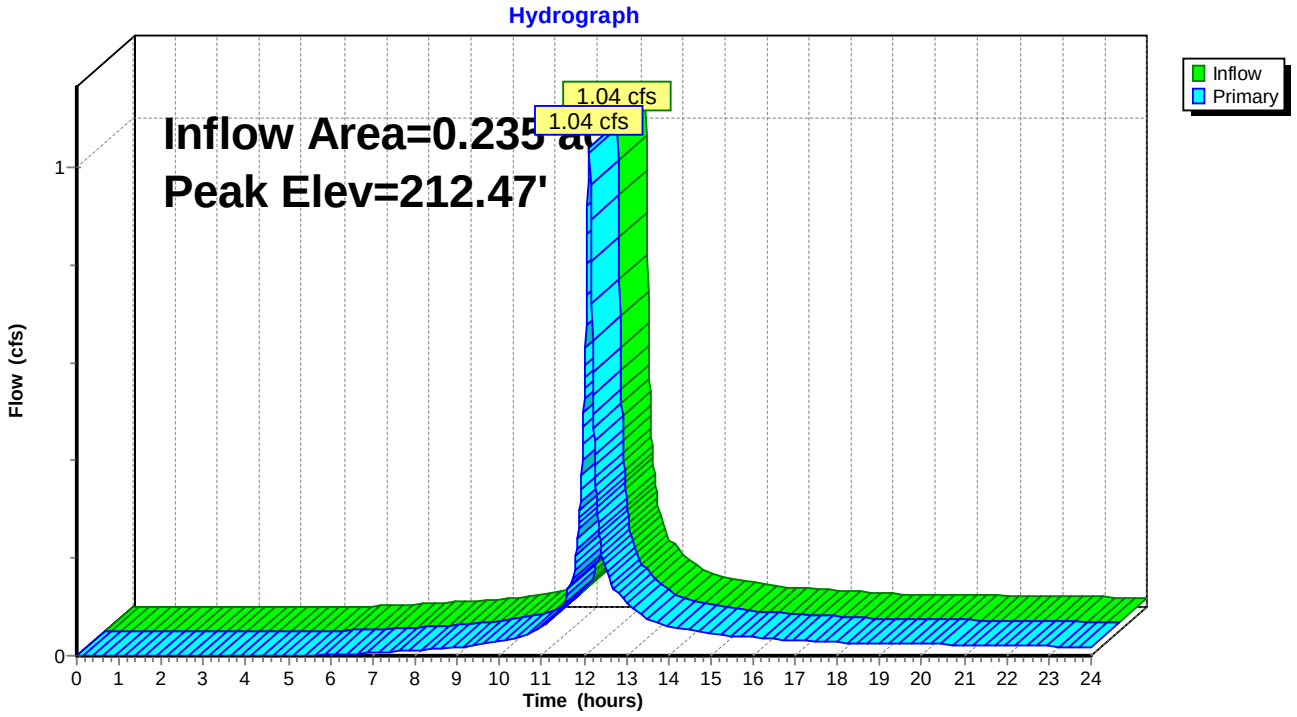
Inflow Area = 0.235 ac, 63.96% Impervious, Inflow Depth > 3.93" for 25-Year event
Inflow = 1.04 cfs @ 12.13 hrs, Volume= 0.077 af
Outflow = 1.04 cfs @ 12.13 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min
Primary = 1.04 cfs @ 12.13 hrs, Volume= 0.077 af
Routed to Pond MH10 : CB-31

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 212.47' @ 12.13 hrs
Flood Elev= 212.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.40'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.40' / 209.30' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	212.40'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.04 cfs @ 12.13 hrs HW=212.47' TW=207.88' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.04 cfs of 6.07 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.04 cfs @ 0.89 fps)

Pond CB25: CB-25



Summary for Pond CB26: CB-26

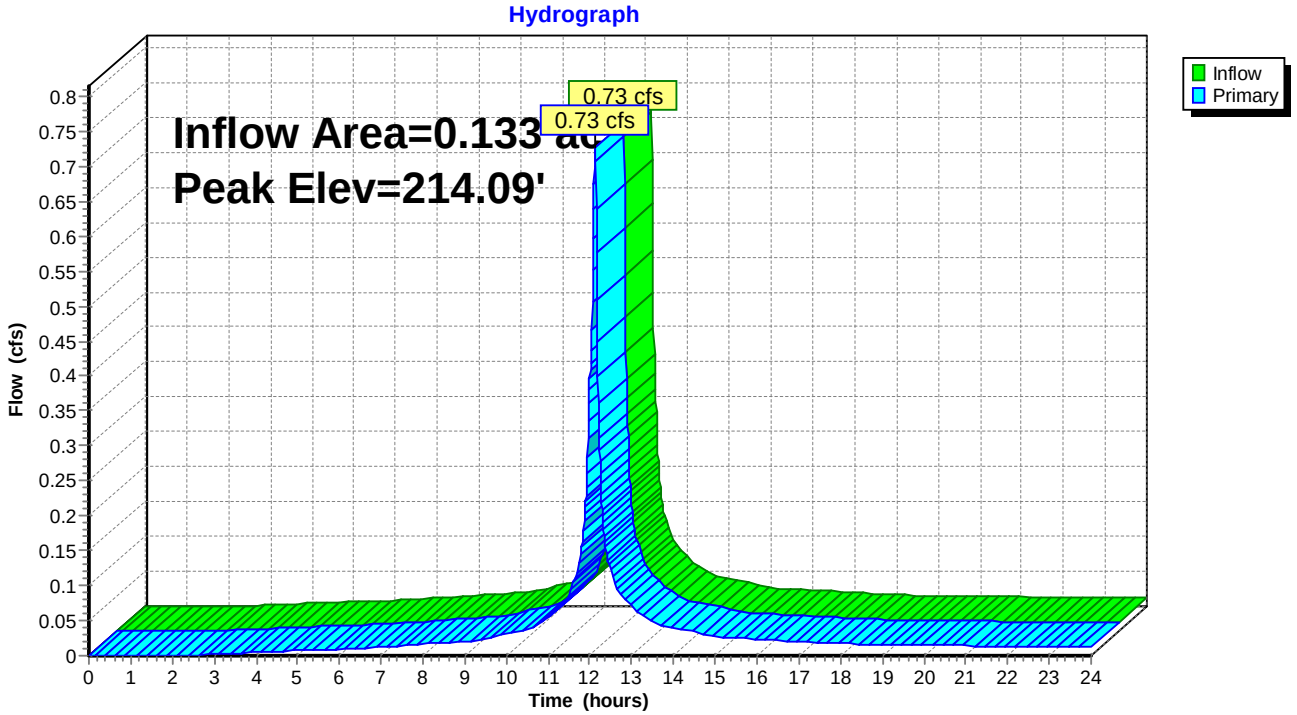
Inflow Area = 0.133 ac, 85.28% Impervious, Inflow Depth > 5.12" for 25-Year event
Inflow = 0.73 cfs @ 12.12 hrs, Volume= 0.057 af
Outflow = 0.73 cfs @ 12.12 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 12.12 hrs, Volume= 0.057 af
Routed to Pond MH12 : DMH-12

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.09' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 118.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 210.41' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.73 cfs @ 12.12 hrs HW=214.09' TW=211.09' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.73 cfs of 4.52 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.73 cfs @ 0.99 fps)

Pond CB26: CB-26



Summary for Pond CB27: CB-27

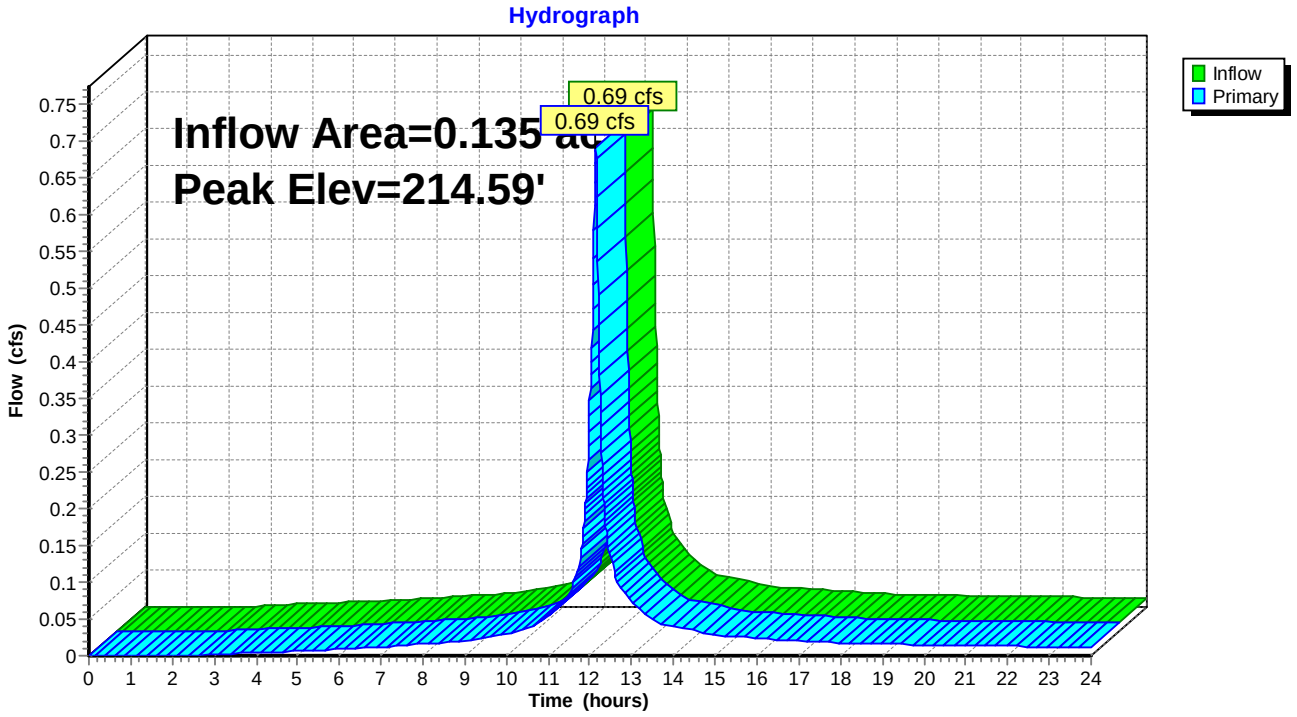
Inflow Area = 0.135 ac, 84.95% Impervious, Inflow Depth > 5.11" for 25-Year event
Inflow = 0.69 cfs @ 12.14 hrs, Volume= 0.058 af
Outflow = 0.69 cfs @ 12.14 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.0 min
Primary = 0.69 cfs @ 12.14 hrs, Volume= 0.058 af
Routed to Pond MH12 : DMH-12

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.59' @ 12.14 hrs
Flood Elev= 214.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.50'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.50' / 211.41' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.69 cfs @ 12.14 hrs HW=214.59' TW=211.08' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.69 cfs of 6.08 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.69 cfs @ 0.97 fps)

Pond CB27: CB-27



Summary for Pond CB28: CB-28

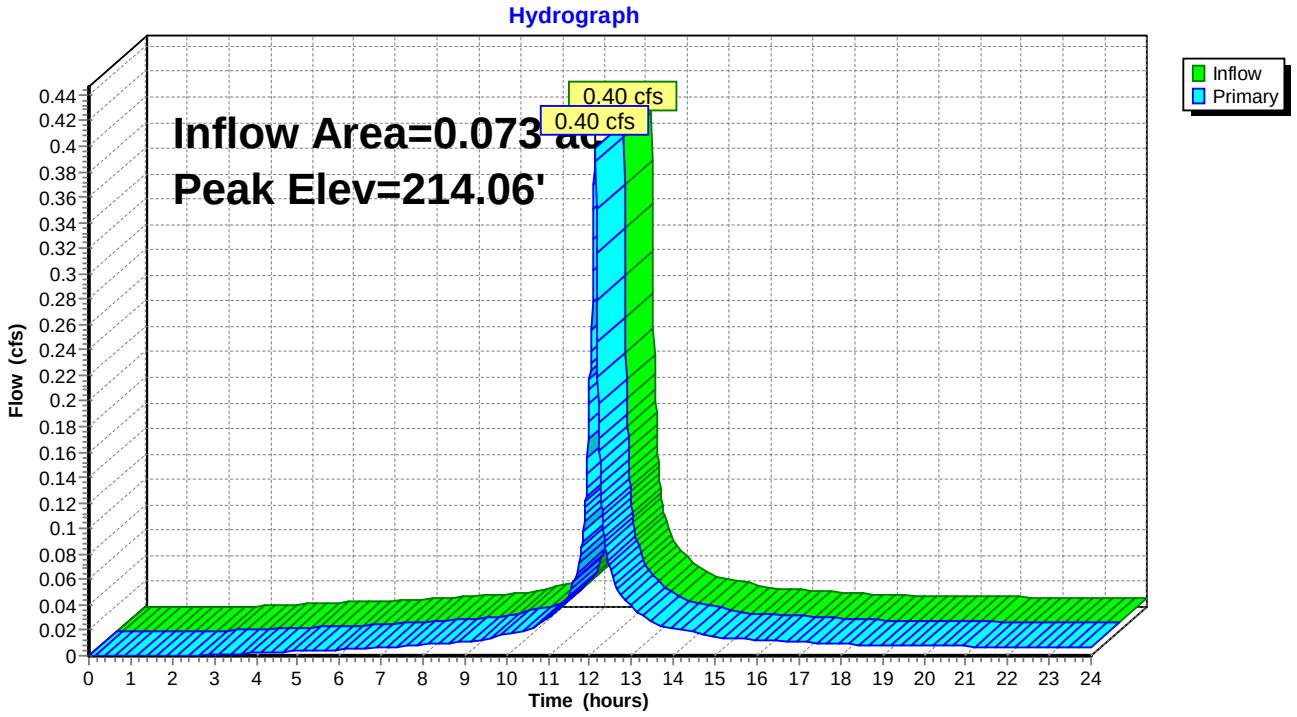
Inflow Area = 0.073 ac, 85.31% Impervious, Inflow Depth > 5.12" for 25-Year event
Inflow = 0.40 cfs @ 12.12 hrs, Volume= 0.031 af
Outflow = 0.40 cfs @ 12.12 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min
Primary = 0.40 cfs @ 12.12 hrs, Volume= 0.031 af
Routed to Pond MH12 : DMH-12

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.06' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 210.78' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.40 cfs @ 12.12 hrs HW=214.06' TW=211.09' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.40 cfs of 5.58 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.40 cfs @ 0.81 fps)

Pond CB28: CB-28



Summary for Pond CB29: CB-29

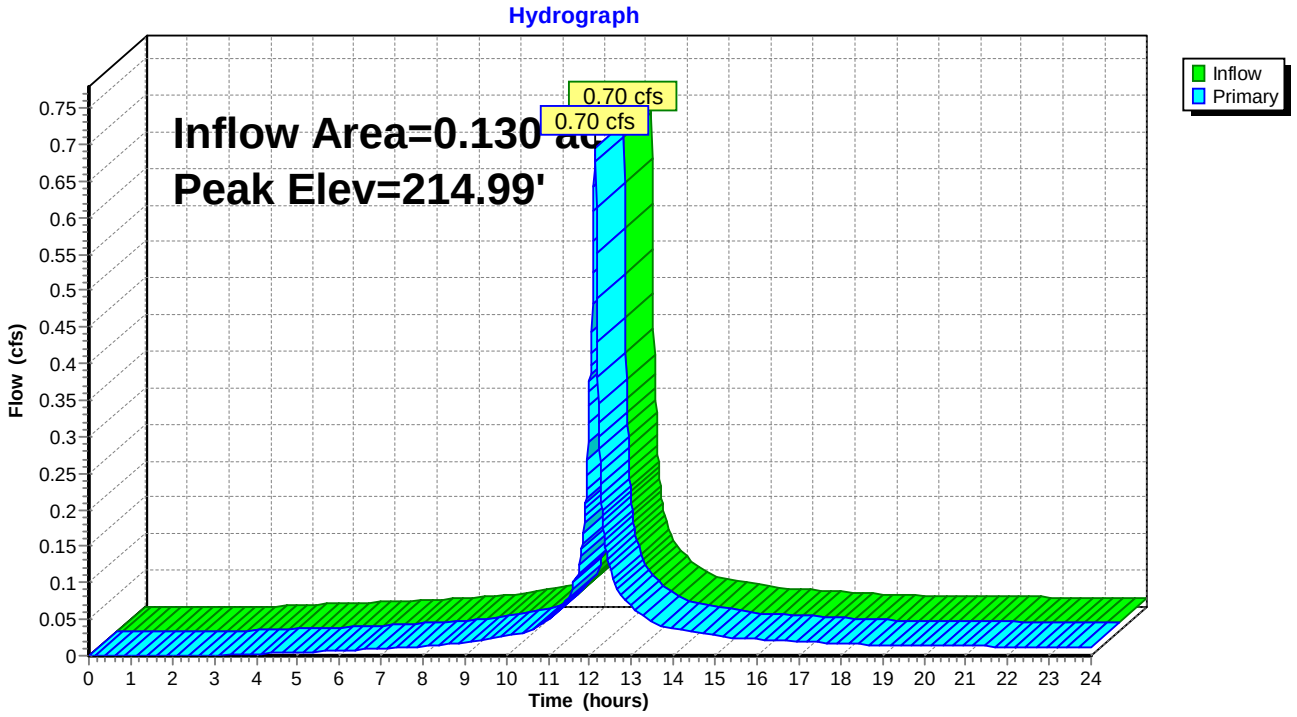
Inflow Area = 0.130 ac, 81.04% Impervious, Inflow Depth > 4.89" for 25-Year event
Inflow = 0.70 cfs @ 12.12 hrs, Volume= 0.053 af
Outflow = 0.70 cfs @ 12.12 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.0 min
Primary = 0.70 cfs @ 12.12 hrs, Volume= 0.053 af
Routed to Pond MH13 : DMH-13

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.99' @ 12.12 hrs
Flood Elev= 215.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.90'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.90' / 211.80' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.90'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.69 cfs @ 12.12 hrs HW=214.99' TW=210.62' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.69 cfs of 6.08 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.69 cfs @ 0.98 fps)

Pond CB29: CB-29



Summary for Pond CB3: CB-3

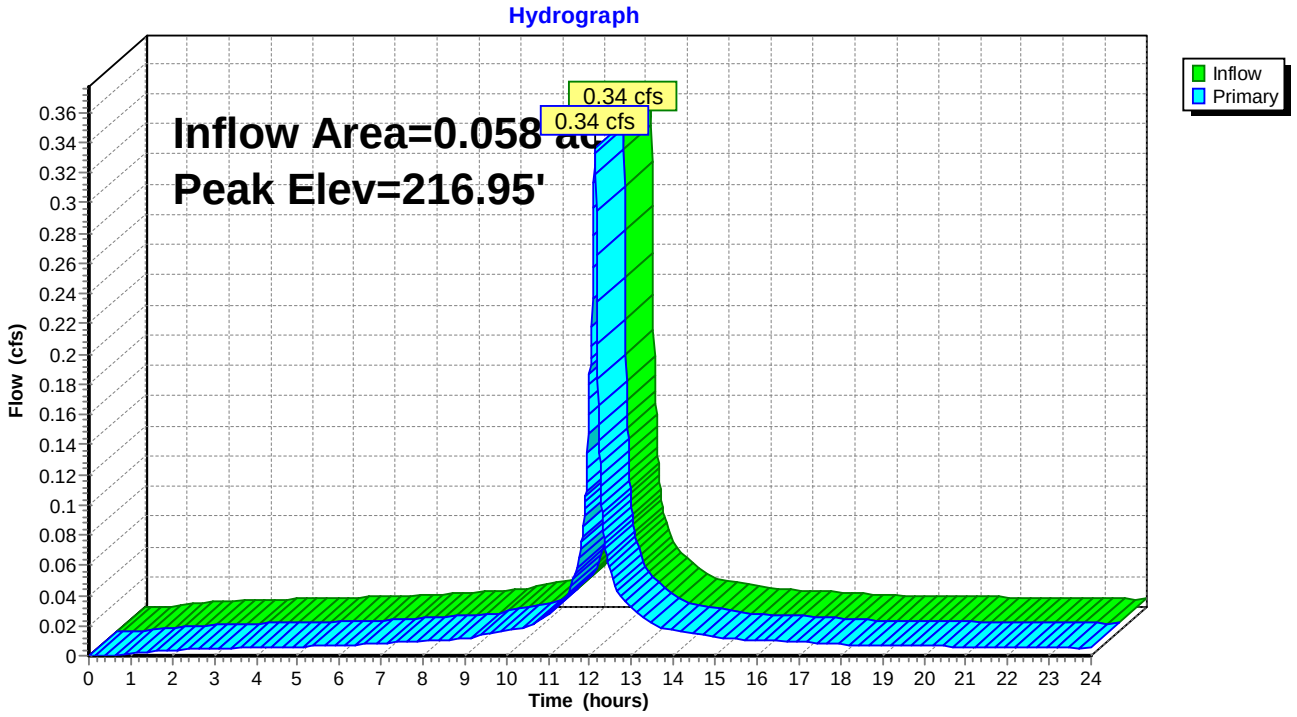
Inflow Area = 0.058 ac, 99.84% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.34 cfs @ 12.12 hrs, Volume= 0.029 af
Outflow = 0.34 cfs @ 12.12 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 12.12 hrs, Volume= 0.029 af
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 216.95' @ 12.12 hrs
Flood Elev= 217.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 213.85' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	216.90'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.34 cfs @ 12.12 hrs HW=216.95' TW=214.05' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.34 cfs of 5.93 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.34 cfs @ 0.77 fps)

Pond CB3: CB-3



Summary for Pond CB30: CB-30

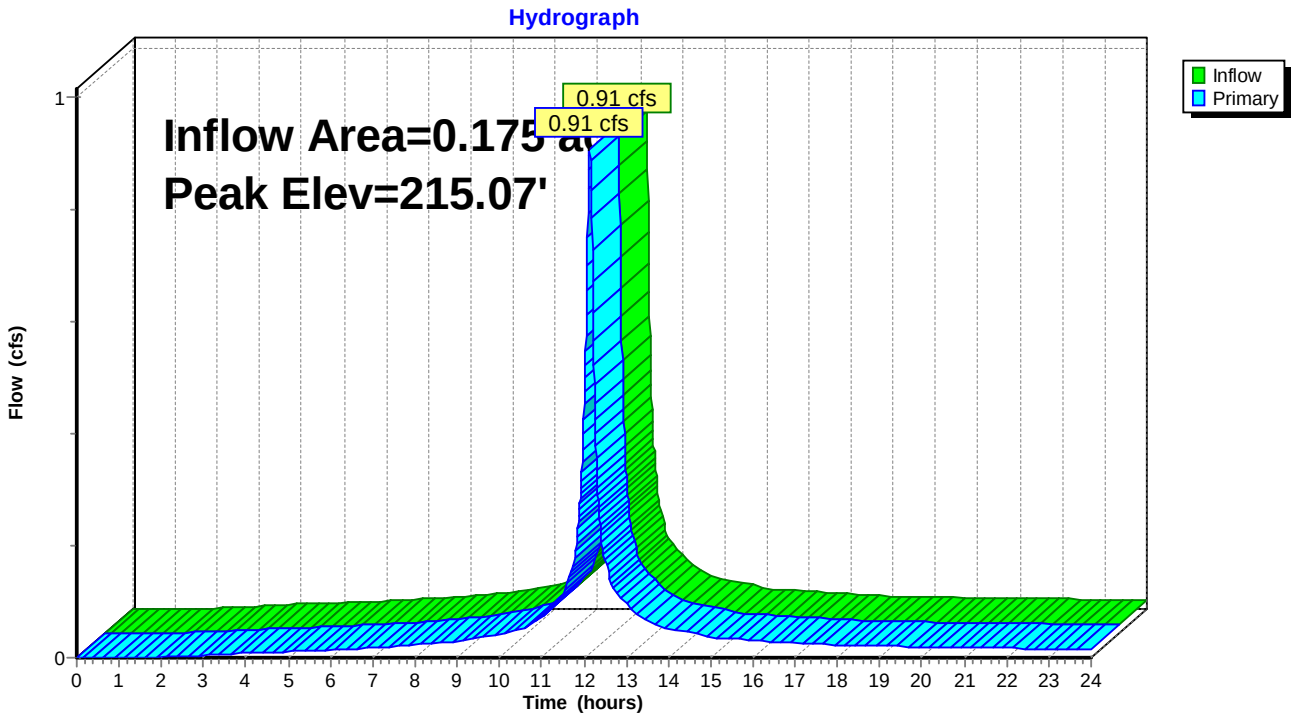
Inflow Area = 0.175 ac, 89.34% Impervious, Inflow Depth > 5.34" for 25-Year event
Inflow = 0.91 cfs @ 12.14 hrs, Volume= 0.078 af
Outflow = 0.91 cfs @ 12.14 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min
Primary = 0.91 cfs @ 12.14 hrs, Volume= 0.078 af
Routed to Pond MH14 : DMH-14

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.07' @ 12.14 hrs
Flood Elev= 215.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.00'	**12.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.00' / 211.70' S= 0.0083 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.91 cfs @ 12.14 hrs HW=215.07' TW=210.09' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.91 cfs of 5.98 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.91 cfs @ 0.85 fps)

Pond CB30: CB-30



Summary for Pond CB31: CB-31

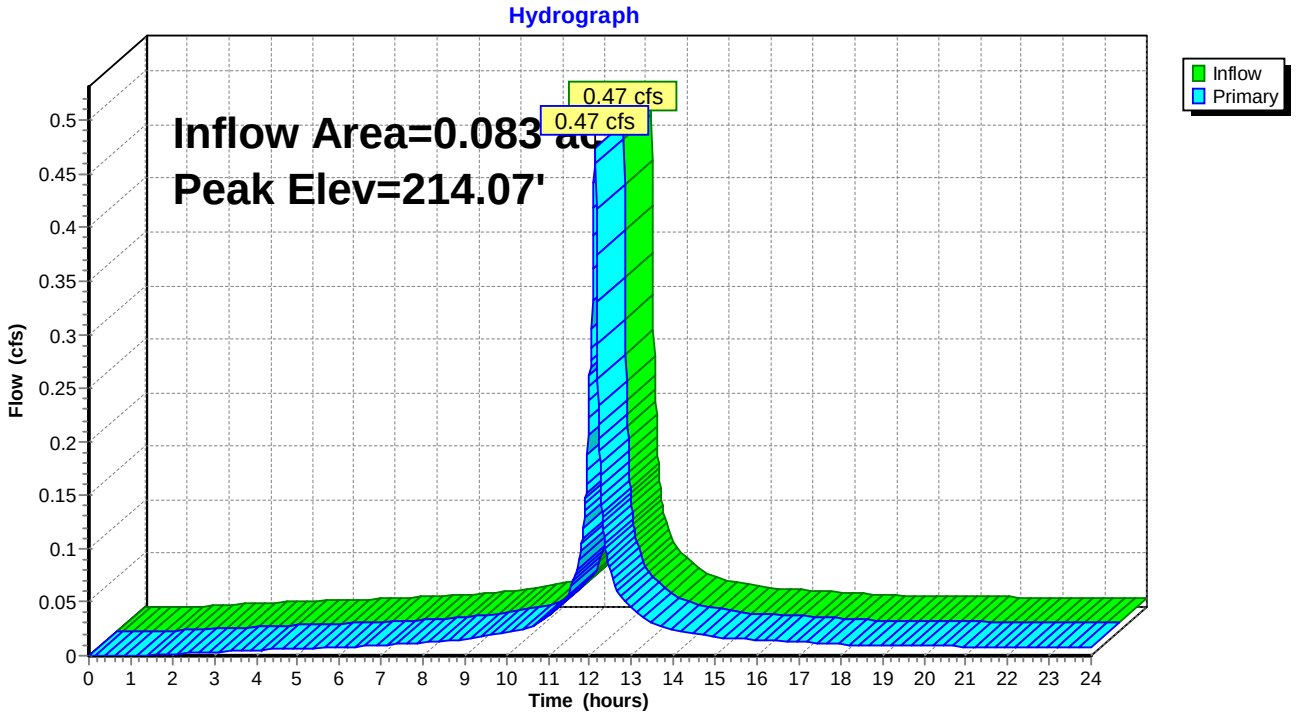
Inflow Area = 0.083 ac, 93.15% Impervious, Inflow Depth > 5.57" for 25-Year event
Inflow = 0.47 cfs @ 12.12 hrs, Volume= 0.039 af
Outflow = 0.47 cfs @ 12.12 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min
Primary = 0.47 cfs @ 12.12 hrs, Volume= 0.039 af
Routed to Pond MH14 : DMH-14

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.07' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 210.82' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.47 cfs @ 12.12 hrs HW=214.07' TW=210.10' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.47 cfs of 5.86 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.47 cfs @ 0.86 fps)

Pond CB31: CB-31



Summary for Pond CB32: CB-32

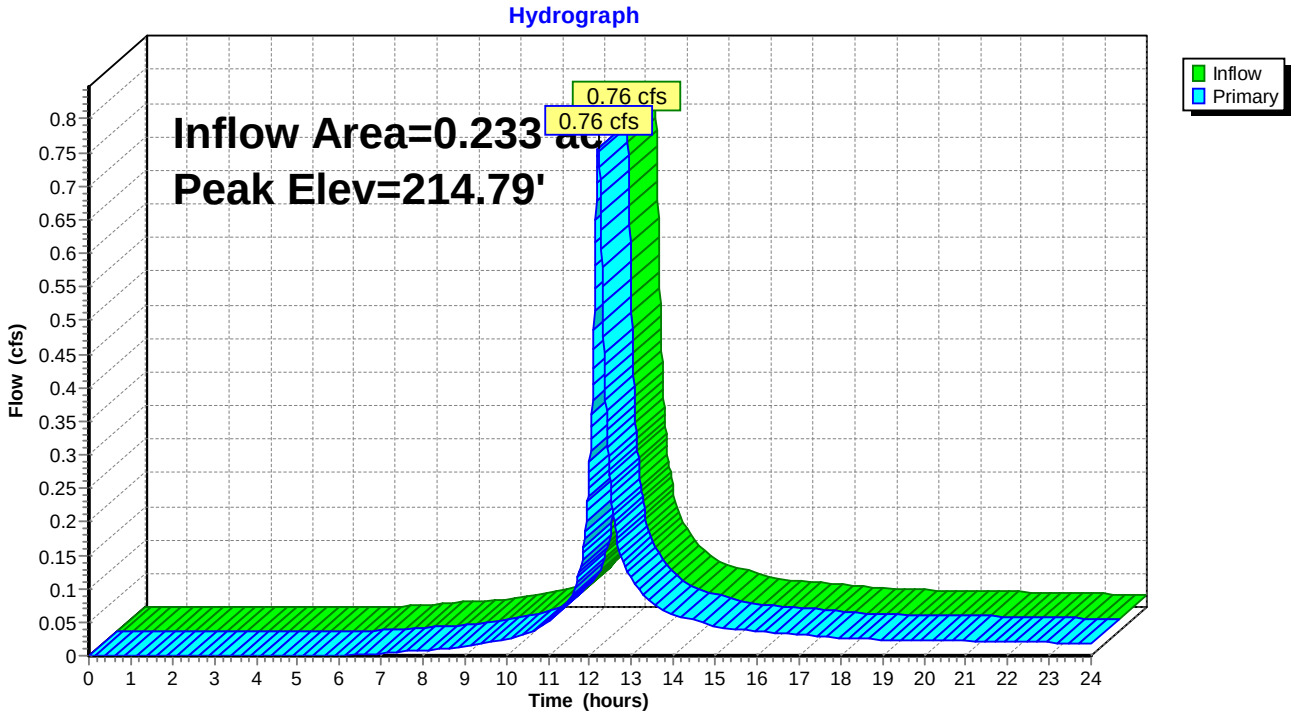
Inflow Area = 0.233 ac, 58.61% Impervious, Inflow Depth > 3.71" for 25-Year event
Inflow = 0.76 cfs @ 12.20 hrs, Volume= 0.072 af
Outflow = 0.76 cfs @ 12.20 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 12.20 hrs, Volume= 0.072 af
Routed to Pond MH16 : DMH-16

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.79' @ 12.20 hrs
Flood Elev= 214.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.70'	**12.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.70' / 211.00' S= 0.0259 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.70'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.76 cfs @ 12.20 hrs HW=214.79' TW=208.35' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.76 cfs of 6.09 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.76 cfs @ 1.00 fps)

Pond CB32: CB-32



Summary for Pond CB33: CB-33

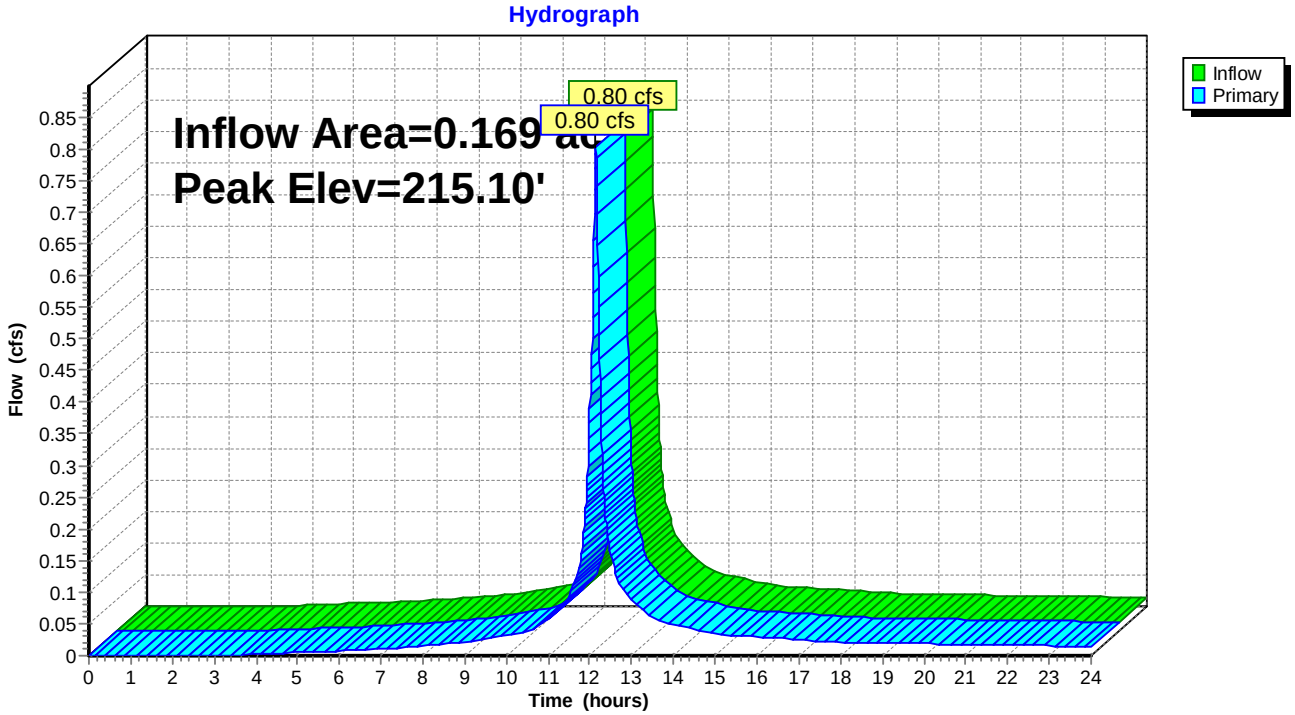
Inflow Area = 0.169 ac, 77.95% Impervious, Inflow Depth > 4.67" for 25-Year event
Inflow = 0.80 cfs @ 12.14 hrs, Volume= 0.066 af
Outflow = 0.80 cfs @ 12.14 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min
Primary = 0.80 cfs @ 12.14 hrs, Volume= 0.066 af
Routed to Pond MH17 : DMH-17

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.10' @ 12.14 hrs
Flood Elev= 215.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.00'	**12.0" Round Culvert** L= 104.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.00' / 209.70' S= 0.0221 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.80 cfs @ 12.14 hrs HW=215.10' TW=207.96' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.80 cfs of 6.05 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.80 cfs @ 1.02 fps)

Pond CB33: CB-33



Summary for Pond CB34: CB-34

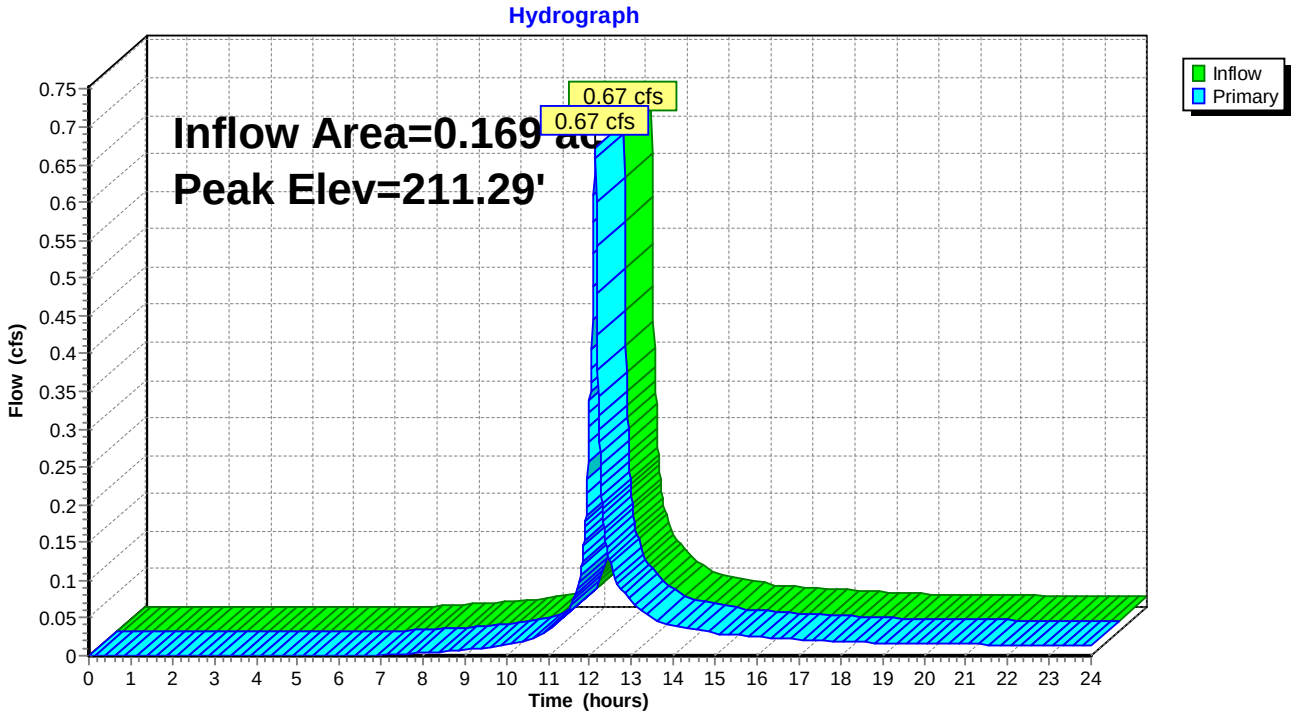
Inflow Area = 0.169 ac, 54.04% Impervious, Inflow Depth > 3.42" for 25-Year event
Inflow = 0.67 cfs @ 12.12 hrs, Volume= 0.048 af
Outflow = 0.67 cfs @ 12.12 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
Primary = 0.67 cfs @ 12.12 hrs, Volume= 0.048 af
Routed to Pond MH18 : DMH-18

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 211.29' @ 12.12 hrs
Flood Elev= 211.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	208.20'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.20' / 206.60' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	211.20'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.67 cfs @ 12.12 hrs HW=211.29' TW=206.80' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.67 cfs of 6.08 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.67 cfs @ 0.96 fps)

Pond CB34: CB-34



Summary for Pond CB35: CB-35

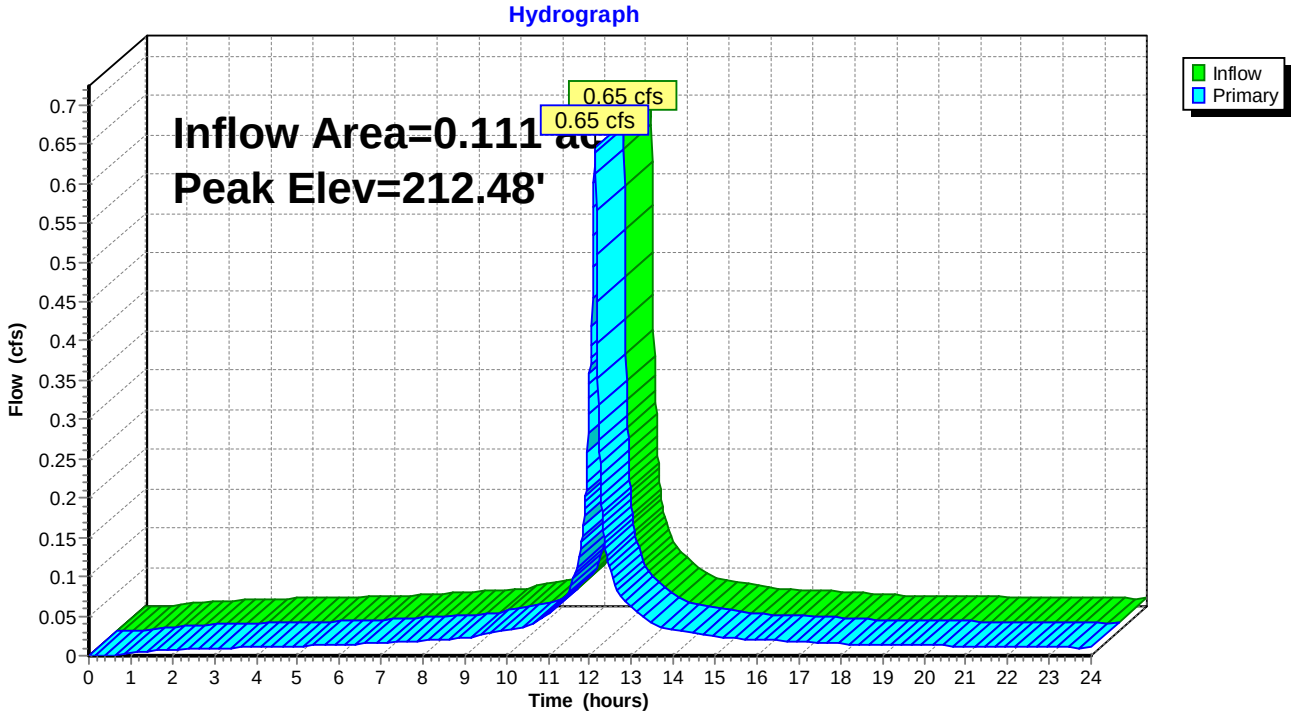
Inflow Area = 0.111 ac, 99.72% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.65 cfs @ 12.12 hrs, Volume= 0.055 af
Outflow = 0.65 cfs @ 12.12 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min
Primary = 0.65 cfs @ 12.12 hrs, Volume= 0.055 af
Routed to Pond MH18 : DMH-18

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 212.48' @ 12.12 hrs
Flood Elev= 212.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.40'	**12.0" Round Culvert** L= 157.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.40' / 206.60' S= 0.0178 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	212.40'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.65 cfs @ 12.12 hrs HW=212.48' TW=206.79' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.65 cfs of 5.49 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.65 cfs @ 0.95 fps)

Pond CB35: CB-35



Summary for Pond CB36: CB-36

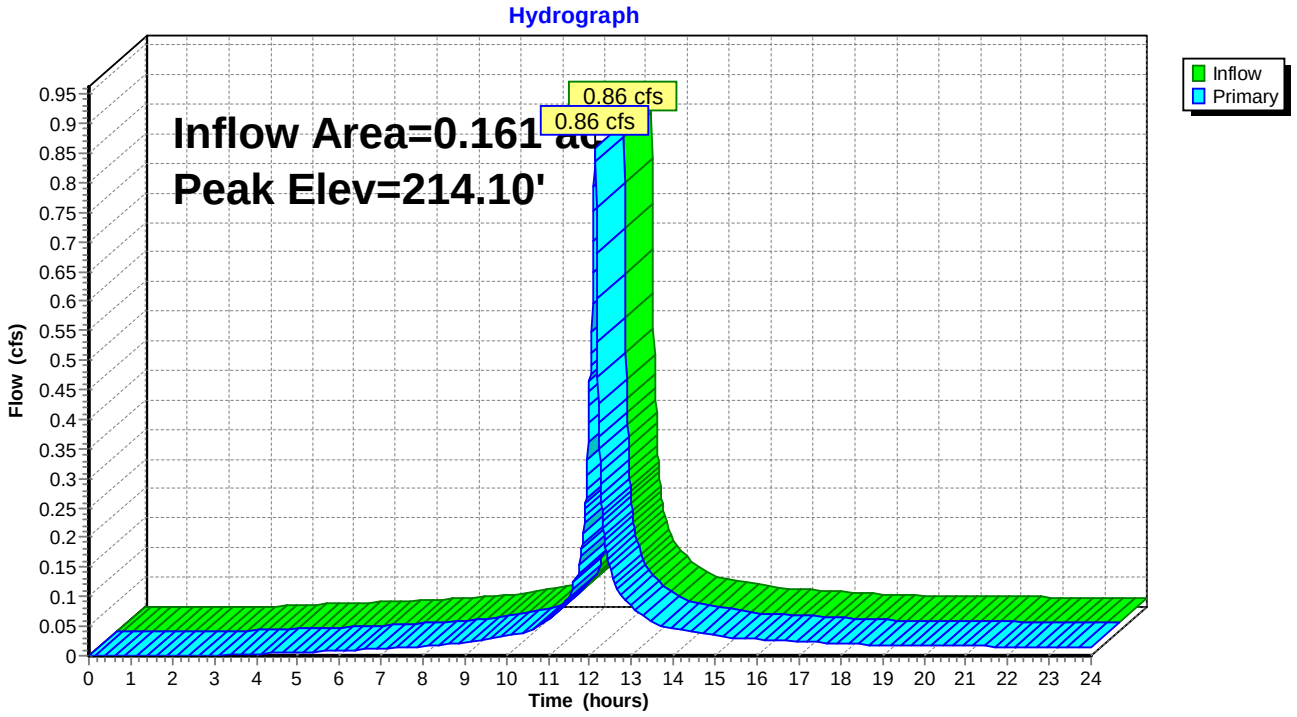
Inflow Area = 0.161 ac, 81.27% Impervious, Inflow Depth > 4.89" for 25-Year event
Inflow = 0.86 cfs @ 12.12 hrs, Volume= 0.066 af
Outflow = 0.86 cfs @ 12.12 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min
Primary = 0.86 cfs @ 12.12 hrs, Volume= 0.066 af
Routed to Pond MH18 : DMH-18

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.10' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 206.60' S= 0.0564 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.86 cfs @ 12.12 hrs HW=214.10' TW=206.79' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.86 cfs of 6.10 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.86 cfs @ 1.05 fps)

Pond CB36: CB-36



Summary for Pond CB37: CB-37

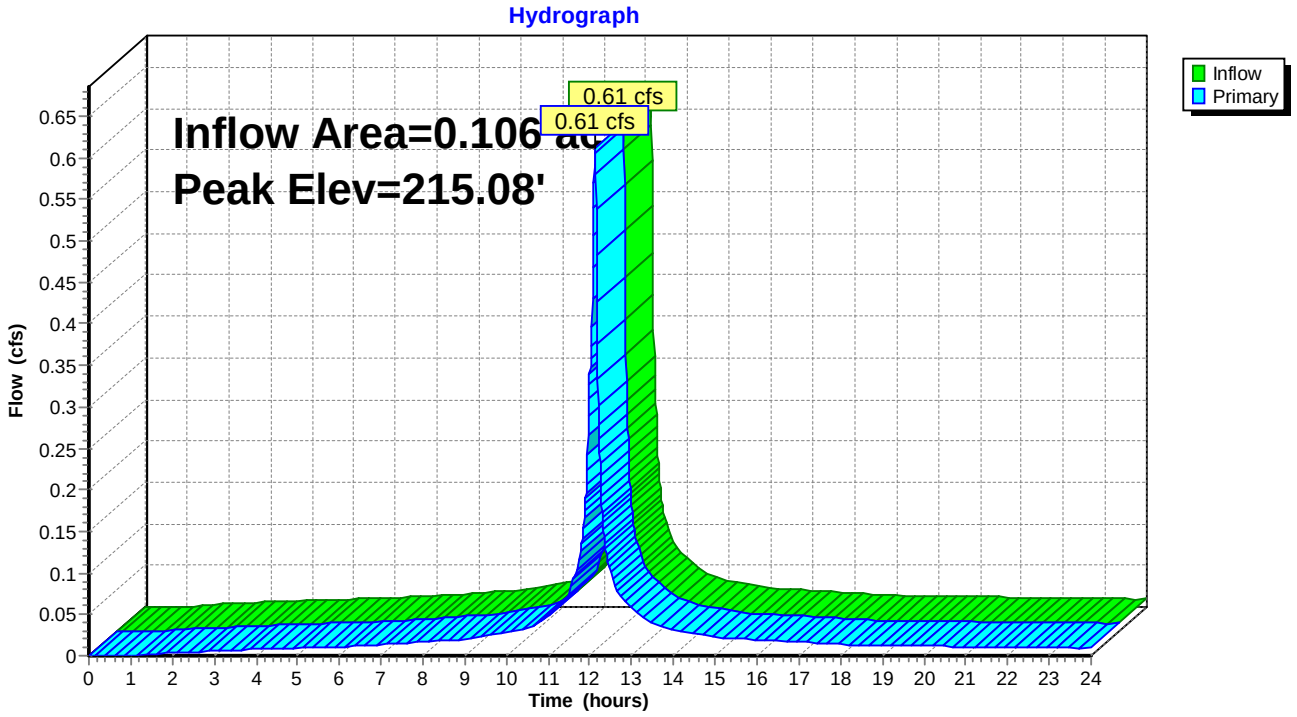
Inflow Area = 0.106 ac, 96.02% Impervious, Inflow Depth > 5.69" for 25-Year event
Inflow = 0.61 cfs @ 12.12 hrs, Volume= 0.050 af
Outflow = 0.61 cfs @ 12.12 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.12 hrs, Volume= 0.050 af
Routed to Pond MH19 : DMH-19

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.08' @ 12.12 hrs
Flood Elev= 215.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.00'	**12.0" Round Culvert** L= 56.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.00' / 204.80' S= 0.1286 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.61 cfs @ 12.12 hrs HW=215.08' TW=204.62' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.61 cfs of 6.08 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.61 cfs @ 0.94 fps)

Pond CB37: CB-37



Summary for Pond CB38: CB-38

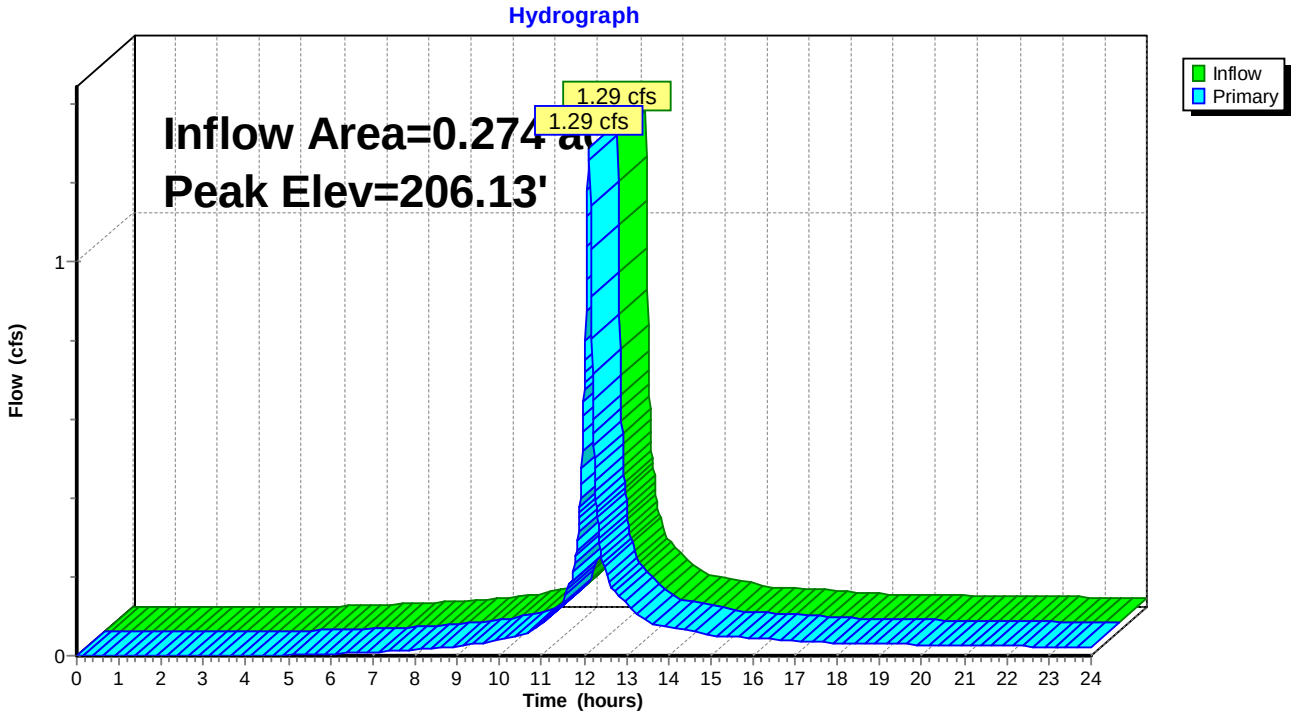
Inflow Area = 0.274 ac, 66.76% Impervious, Inflow Depth > 4.14" for 25-Year event
Inflow = 1.29 cfs @ 12.12 hrs, Volume= 0.094 af
Outflow = 1.29 cfs @ 12.12 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min
Primary = 1.29 cfs @ 12.12 hrs, Volume= 0.094 af
Routed to Pond 5P : Basin 5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.13' @ 12.12 hrs
Flood Elev= 206.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	203.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 203.00' / 202.95' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	206.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.29 cfs @ 12.12 hrs HW=206.13' TW=200.82' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.29 cfs of 6.14 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.29 cfs @ 1.20 fps)

Pond CB38: CB-38



Summary for Pond CB39: CB-39

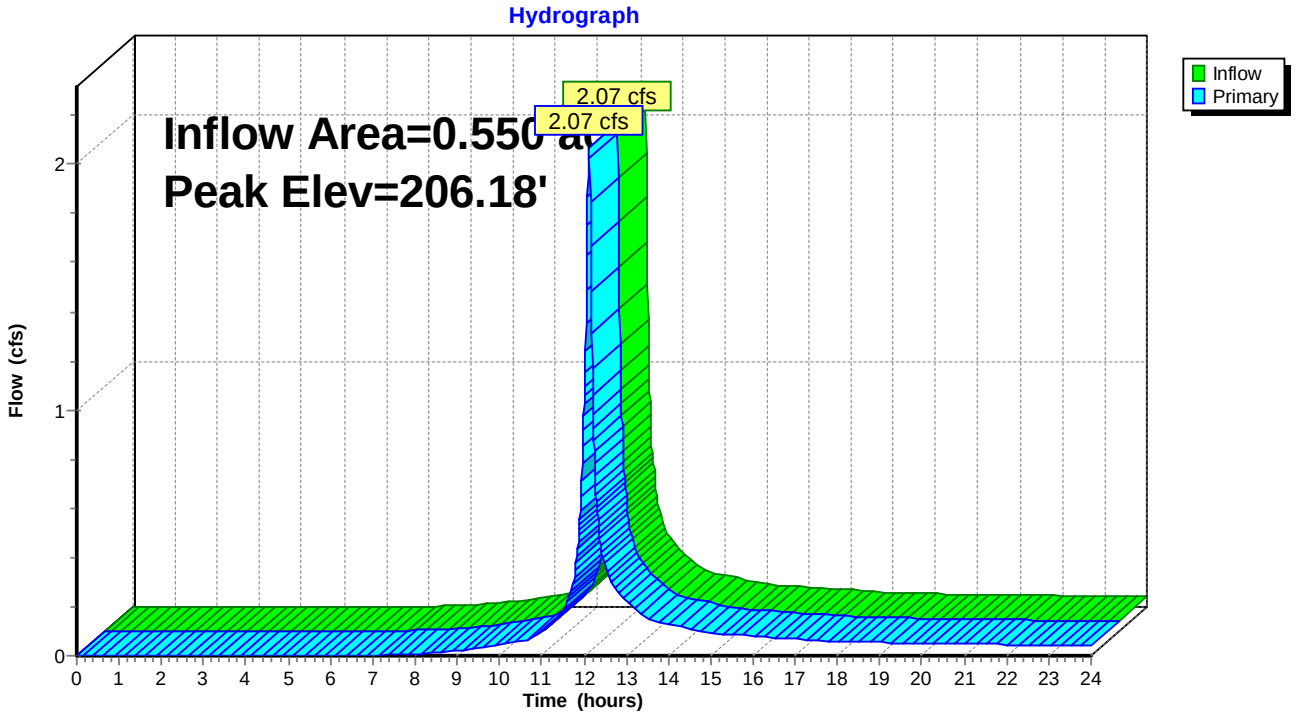
Inflow Area = 0.550 ac, 25.10% Impervious, Inflow Depth > 3.22" for 25-Year event
Inflow = 2.07 cfs @ 12.12 hrs, Volume= 0.148 af
Outflow = 2.07 cfs @ 12.12 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min
Primary = 2.07 cfs @ 12.12 hrs, Volume= 0.148 af
Routed to Pond 5P : Basin 5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.18' @ 12.12 hrs
Flood Elev= 206.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	203.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 203.00' / 202.95' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	206.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.06 cfs @ 12.12 hrs HW=206.18' TW=200.83' (Dynamic Tailwater)
↑**1=Culvert** (Passes 2.06 cfs of 6.20 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 2.06 cfs @ 1.40 fps)

Pond CB39: CB-39



Summary for Pond CB4: CB-4

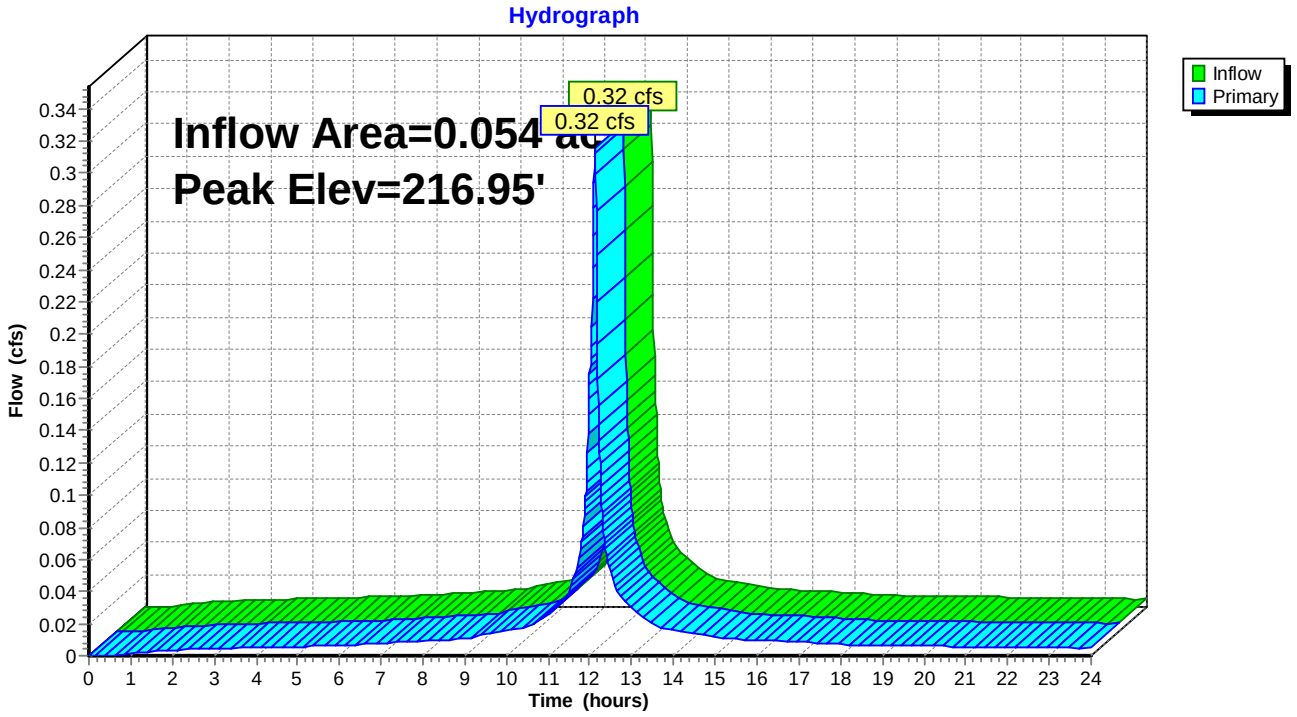
Inflow Area = 0.054 ac, 99.85% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.32 cfs @ 12.12 hrs, Volume= 0.027 af
Outflow = 0.32 cfs @ 12.12 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
Primary = 0.32 cfs @ 12.12 hrs, Volume= 0.027 af
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 216.95' @ 12.12 hrs
Flood Elev= 217.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 213.85' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	216.90'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.32 cfs @ 12.12 hrs HW=216.95' TW=214.05' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.32 cfs of 5.92 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.32 cfs @ 0.75 fps)

Pond CB4: CB-4



Summary for Pond CB40: CB-40

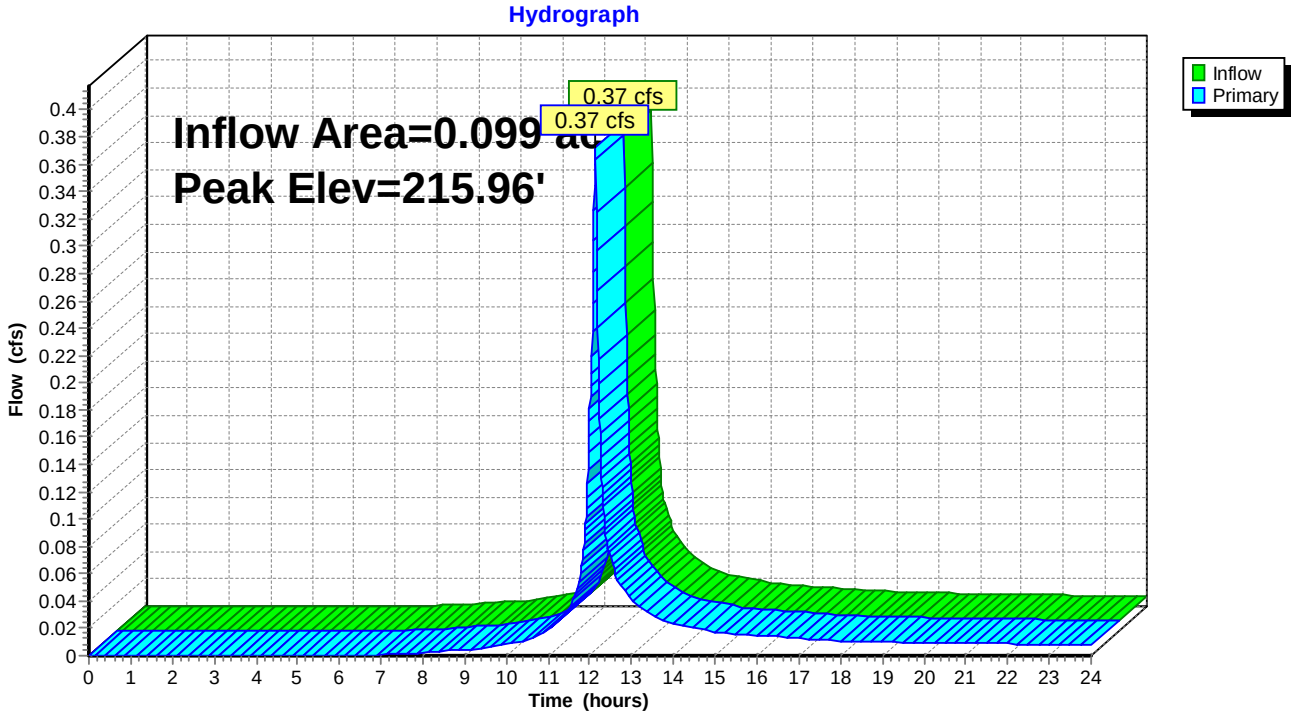
Inflow Area = 0.099 ac, 51.34% Impervious, Inflow Depth > 3.32" for 25-Year event
Inflow = 0.37 cfs @ 12.13 hrs, Volume= 0.027 af
Outflow = 0.37 cfs @ 12.13 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 12.13 hrs, Volume= 0.027 af
Routed to Pond MH20 : DMH-20

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.96' @ 12.13 hrs
Flood Elev= 216.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.90'	**12.0" Round Culvert** L= 139.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.90' / 212.21' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.90'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.37 cfs @ 12.13 hrs HW=215.96' TW=212.20' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.37 cfs of 4.32 cfs potential flow)
└─**2=Orifice/Grate** (Weir Controls 0.37 cfs @ 0.79 fps)

Pond CB40: CB-40



Summary for Pond CB41: CB-41

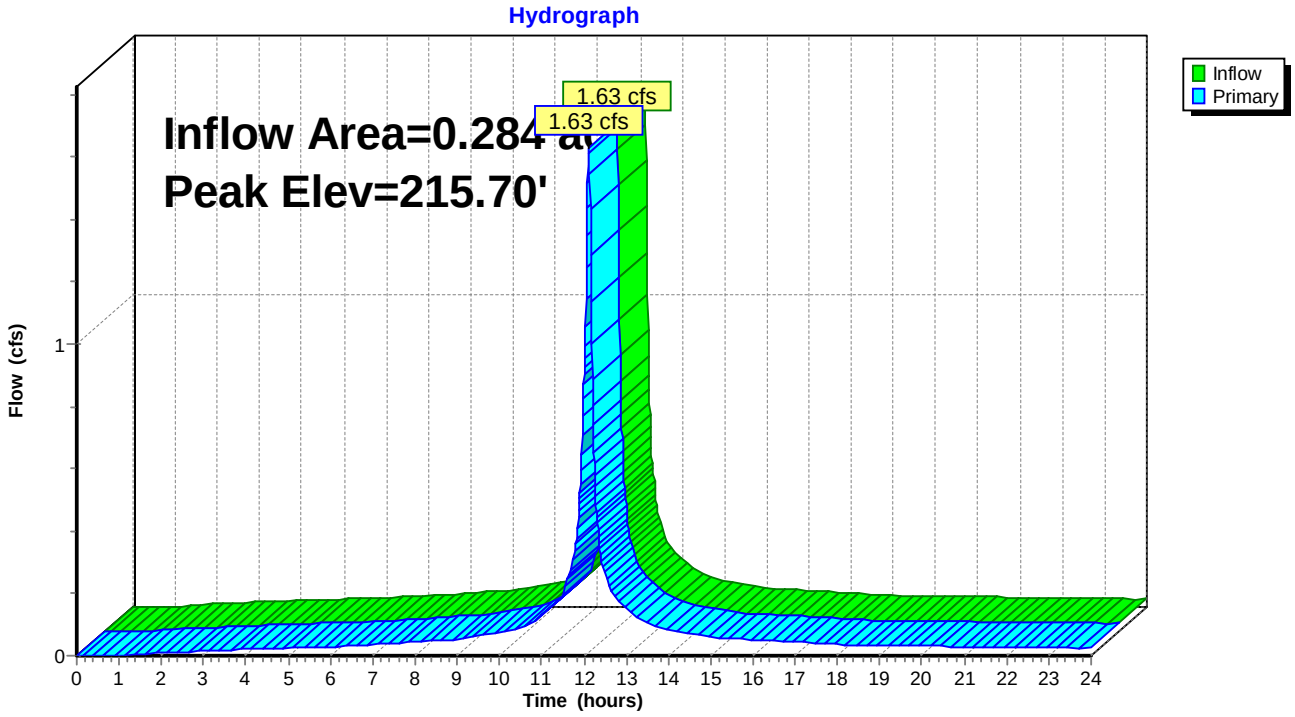
Inflow Area = 0.284 ac, 96.48% Impervious, Inflow Depth > 5.69" for 25-Year event
Inflow = 1.63 cfs @ 12.12 hrs, Volume= 0.135 af
Outflow = 1.63 cfs @ 12.12 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.0 min
Primary = 1.63 cfs @ 12.12 hrs, Volume= 0.135 af
Routed to Pond MH20 : DMH-20

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.70' @ 12.12 hrs
Flood Elev= 215.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.60'	**12.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.60' / 211.30' S= 0.0310 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.60'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.63 cfs @ 12.12 hrs HW=215.70' TW=212.21' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.63 cfs of 6.10 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.63 cfs @ 1.03 fps)

Pond CB41: CB-41



Summary for Pond CB42: CB-4

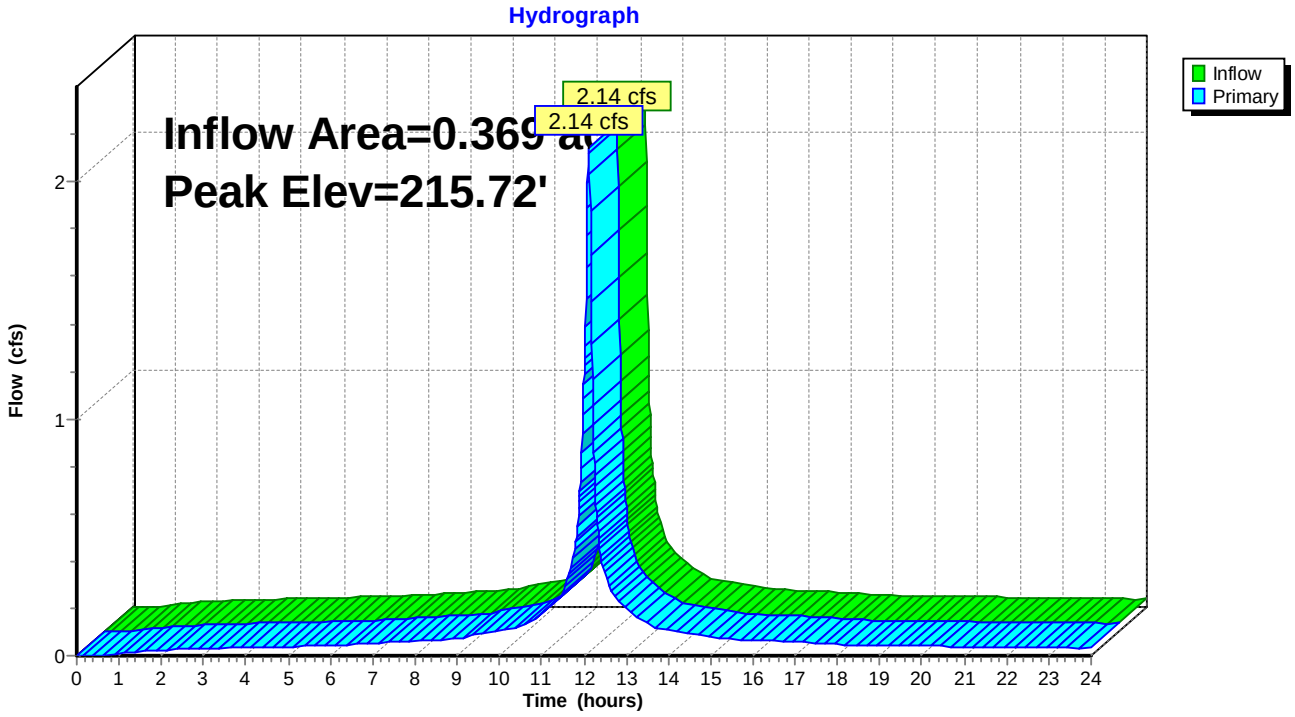
Inflow Area = 0.369 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 2.14 cfs @ 12.12 hrs, Volume= 0.182 af
Outflow = 2.14 cfs @ 12.12 hrs, Volume= 0.182 af, Atten= 0%, Lag= 0.0 min
Primary = 2.14 cfs @ 12.12 hrs, Volume= 0.182 af
Routed to Pond MH21 : DMH-21

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.72' @ 12.12 hrs
Flood Elev= 215.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.60'	**12.0" Round Culvert** L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.60' / 211.52' S= 0.0675 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.60'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.14 cfs @ 12.12 hrs HW=215.72' TW=211.93' (Dynamic Tailwater)
↑**1=Culvert** (Passes 2.14 cfs of 6.12 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 2.14 cfs @ 1.13 fps)

Pond CB42: CB-4



Summary for Pond CB43: CB-43

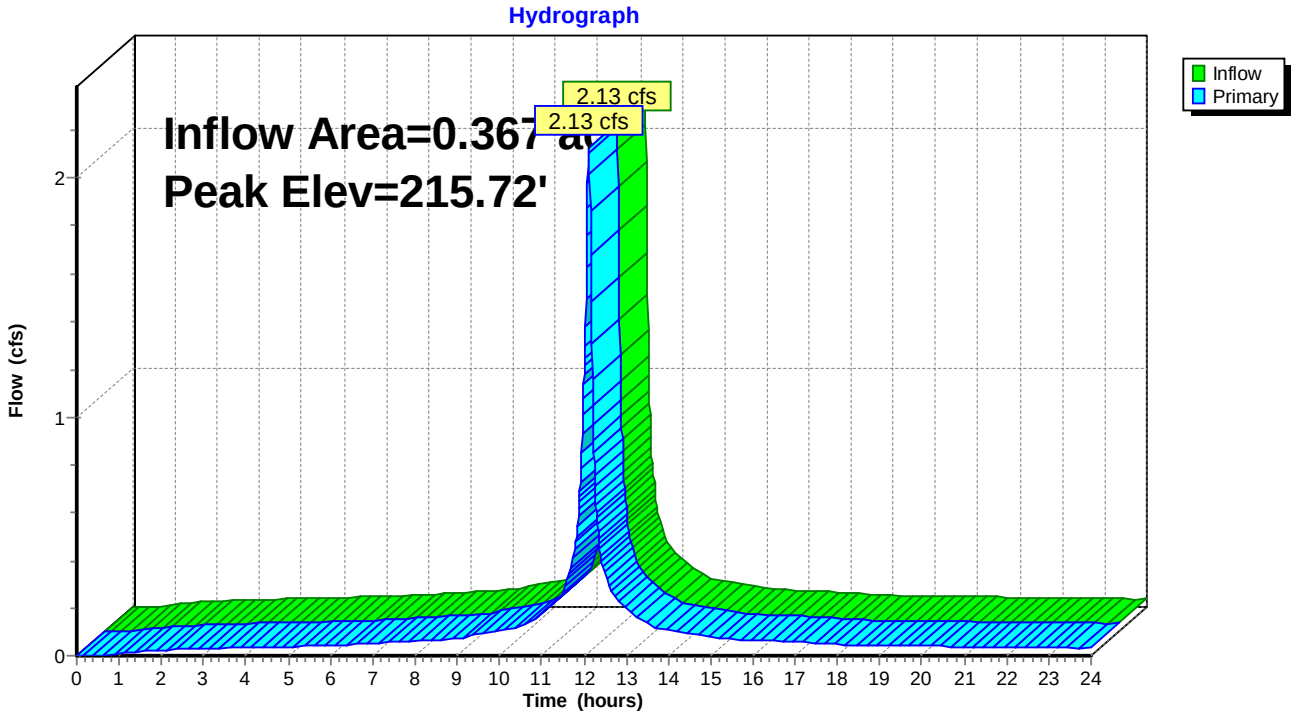
Inflow Area = 0.367 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 2.13 cfs @ 12.12 hrs, Volume= 0.181 af
Outflow = 2.13 cfs @ 12.12 hrs, Volume= 0.181 af, Atten= 0%, Lag= 0.0 min
Primary = 2.13 cfs @ 12.12 hrs, Volume= 0.181 af
Routed to Pond MH22 : DMH-22

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.72' @ 12.12 hrs
Flood Elev= 215.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.60'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.60' / 212.55' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.60'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.13 cfs @ 12.12 hrs HW=215.72' TW=213.16' (Dynamic Tailwater)
↑**1=Culvert** (Passes 2.13 cfs of 6.05 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 2.13 cfs @ 1.12 fps)

Pond CB43: CB-43



Summary for Pond CB44: CB-44

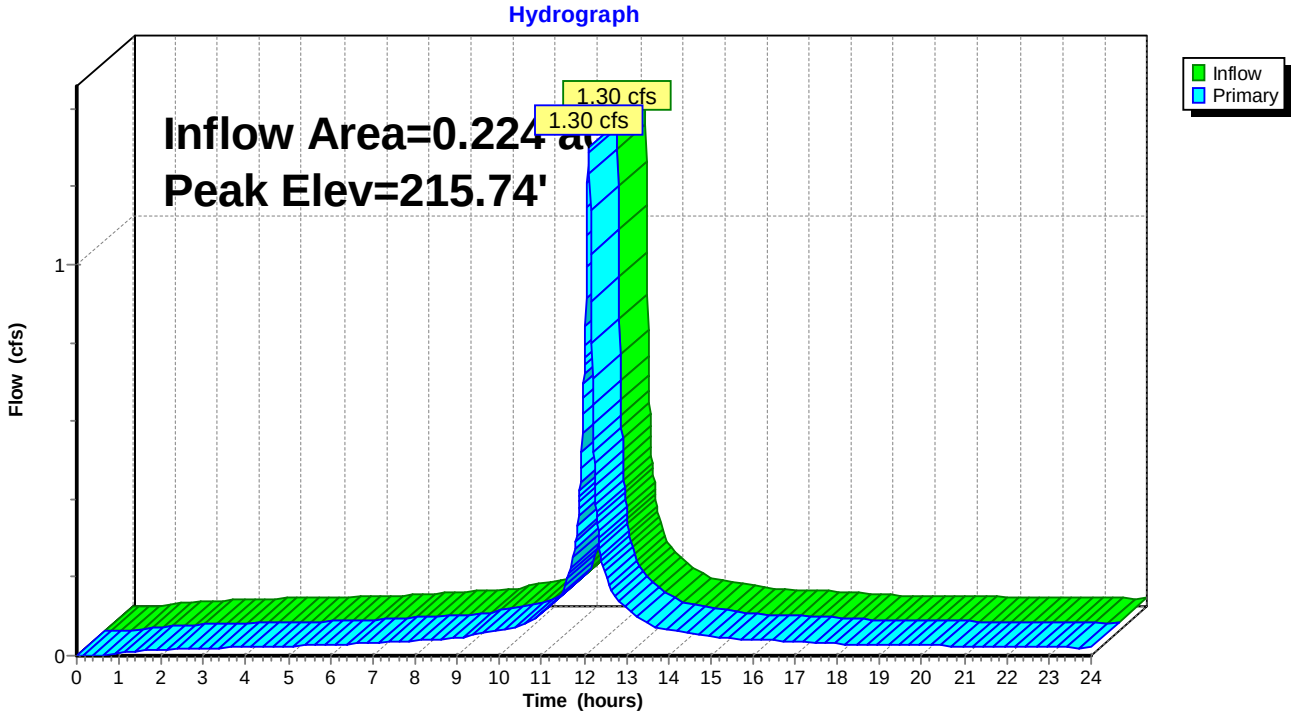
Inflow Area = 0.224 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 1.30 cfs @ 12.12 hrs, Volume= 0.110 af
Outflow = 1.30 cfs @ 12.12 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min
Primary = 1.30 cfs @ 12.12 hrs, Volume= 0.110 af
Routed to Pond MH22 : DMH-22

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.74' @ 12.12 hrs
Flood Elev= 215.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.60'	**12.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.60' / 212.10' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.60'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.30 cfs @ 12.12 hrs HW=215.74' TW=213.16' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.30 cfs of 4.70 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 1.30 cfs @ 1.20 fps)

Pond CB44: CB-44



Summary for Pond CB45: CB-45

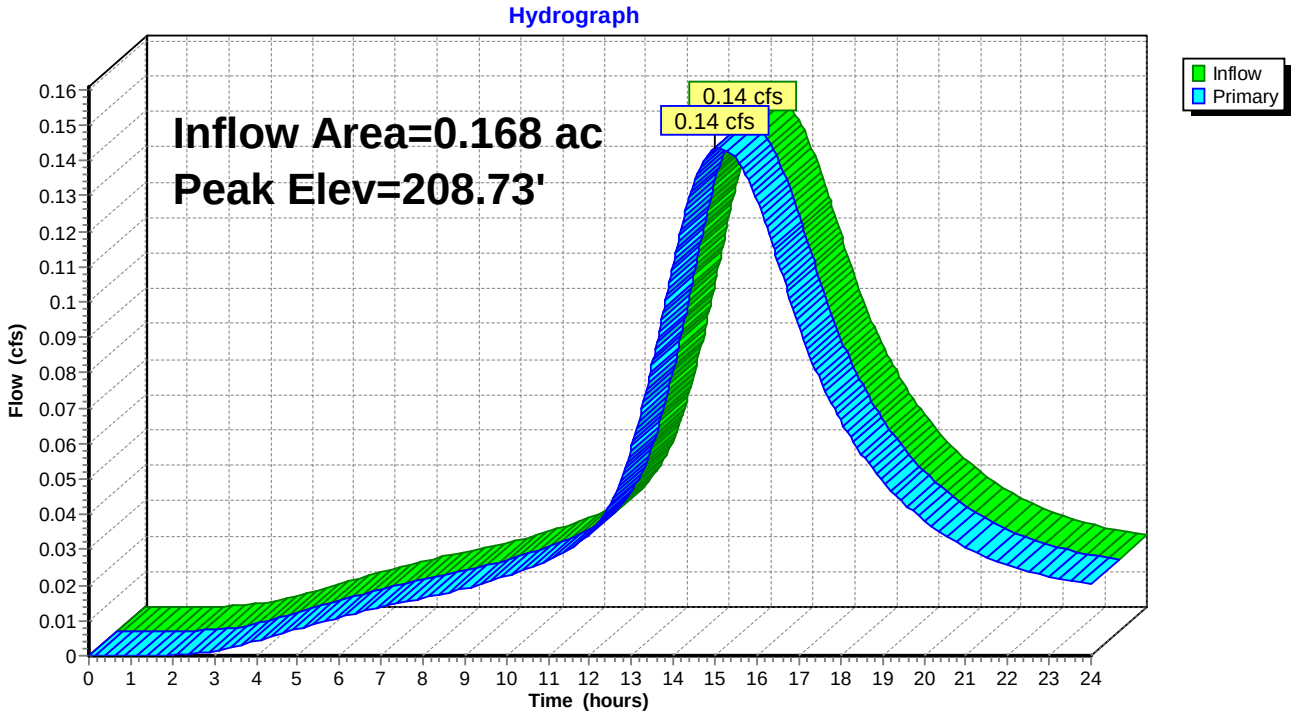
Inflow Area = 0.168 ac, 99.80% Impervious, Inflow Depth > 5.54" for 25-Year event
Inflow = 0.14 cfs @ 14.97 hrs, Volume= 0.077 af
Outflow = 0.14 cfs @ 14.97 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min
Primary = 0.14 cfs @ 14.97 hrs, Volume= 0.077 af
Routed to Pond MH25 : DMH-25

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 208.73' @ 14.97 hrs
Flood Elev= 208.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	205.70'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 205.70' / 204.60' S= 0.0440 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	208.70'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.14 cfs @ 14.97 hrs HW=208.73' TW=204.37' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.14 cfs of 6.02 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.14 cfs @ 0.58 fps)

Pond CB45: CB-45



Summary for Pond CB46: CB-46

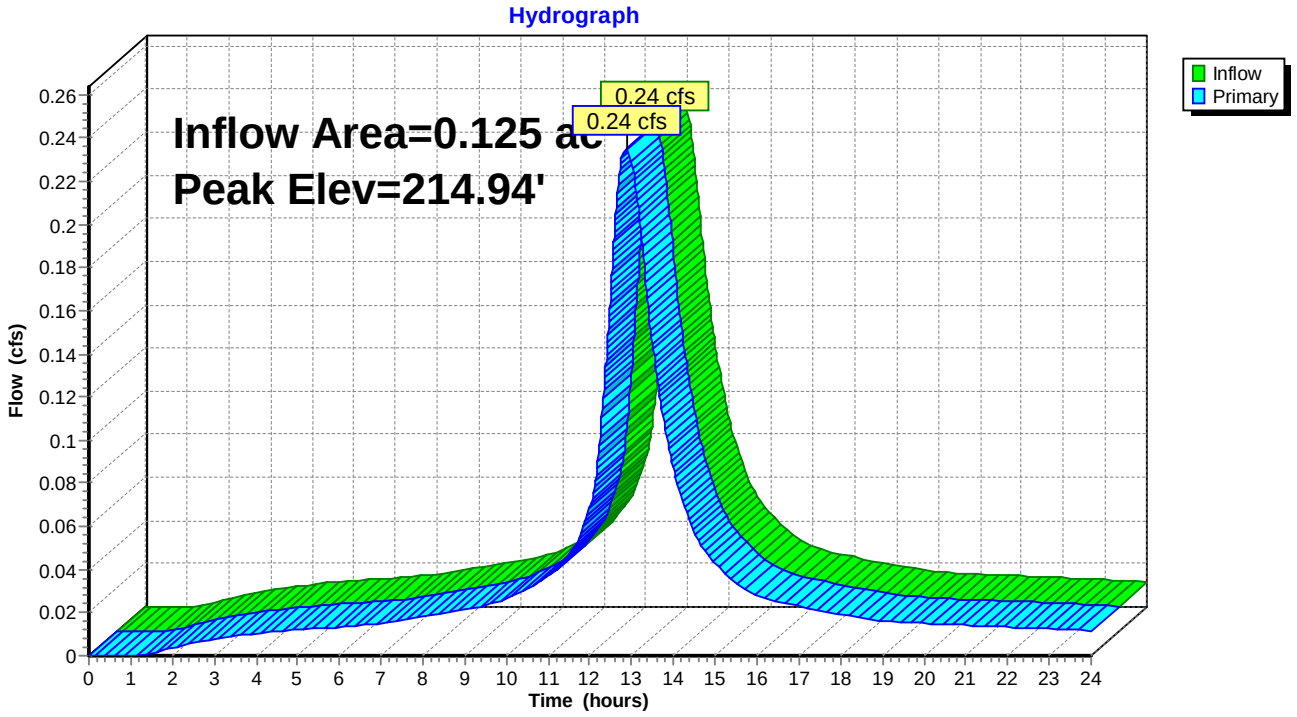
Inflow Area = 0.125 ac, 99.28% Impervious, Inflow Depth > 5.84" for 25-Year event
Inflow = 0.24 cfs @ 12.87 hrs, Volume= 0.061 af
Outflow = 0.24 cfs @ 12.87 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min
Primary = 0.24 cfs @ 12.87 hrs, Volume= 0.061 af
Routed to Pond MH25 : DMH-25

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.94' @ 12.87 hrs
Flood Elev= 215.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.90'	**12.0" Round Culvert** L= 51.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.90' / 204.60' S= 0.1235 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.90'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.24 cfs @ 12.87 hrs HW=214.94' TW=204.50' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.24 cfs of 7.12 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.24 cfs @ 0.68 fps)

Pond CB46: CB-46



Summary for Pond CB47: CB-47

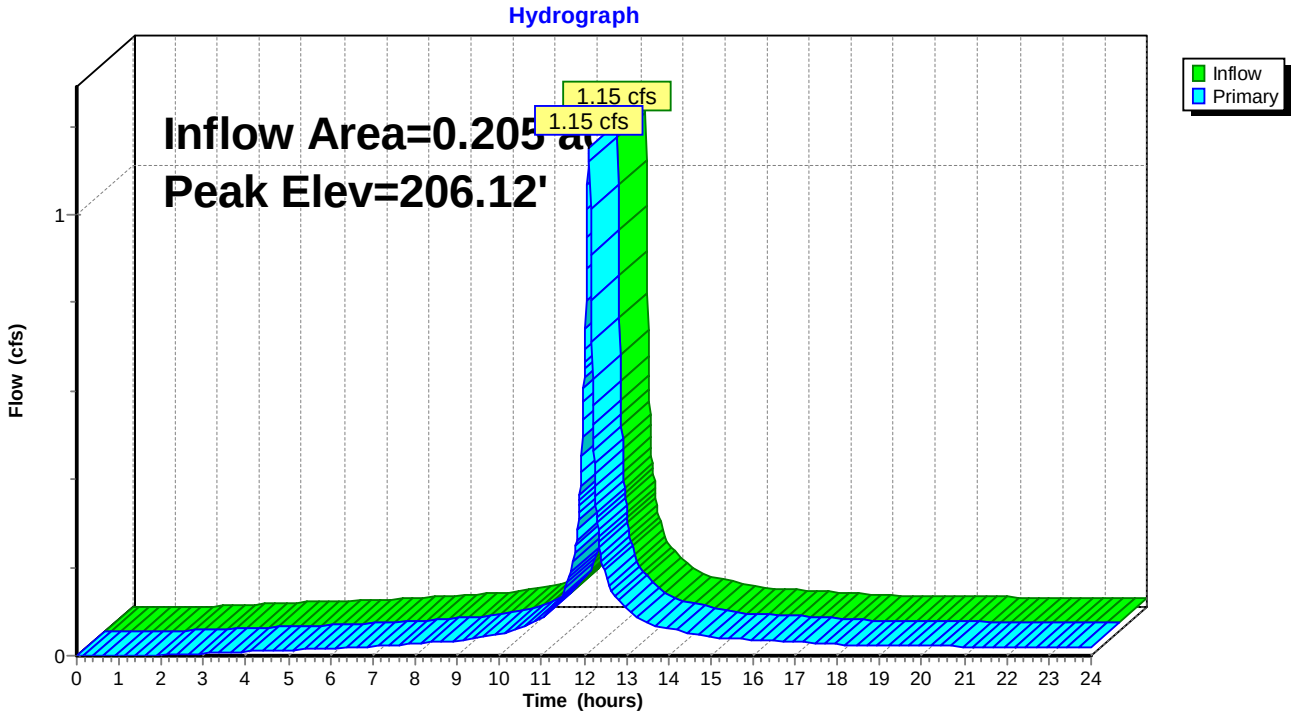
Inflow Area = 0.205 ac, 75.92% Impervious, Inflow Depth > 5.34" for 25-Year event
Inflow = 1.15 cfs @ 12.12 hrs, Volume= 0.091 af
Outflow = 1.15 cfs @ 12.12 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min
Primary = 1.15 cfs @ 12.12 hrs, Volume= 0.091 af
Routed to Pond 6P : Basin 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.12' @ 12.12 hrs
Flood Elev= 206.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	202.00'	**24.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 202.00' / 201.88' S= 0.0048 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	206.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.15 cfs @ 12.12 hrs HW=206.12' TW=201.49' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.15 cfs of 26.74 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.15 cfs @ 1.15 fps)

Pond CB47: CB-47



Summary for Pond CB48: CB-48

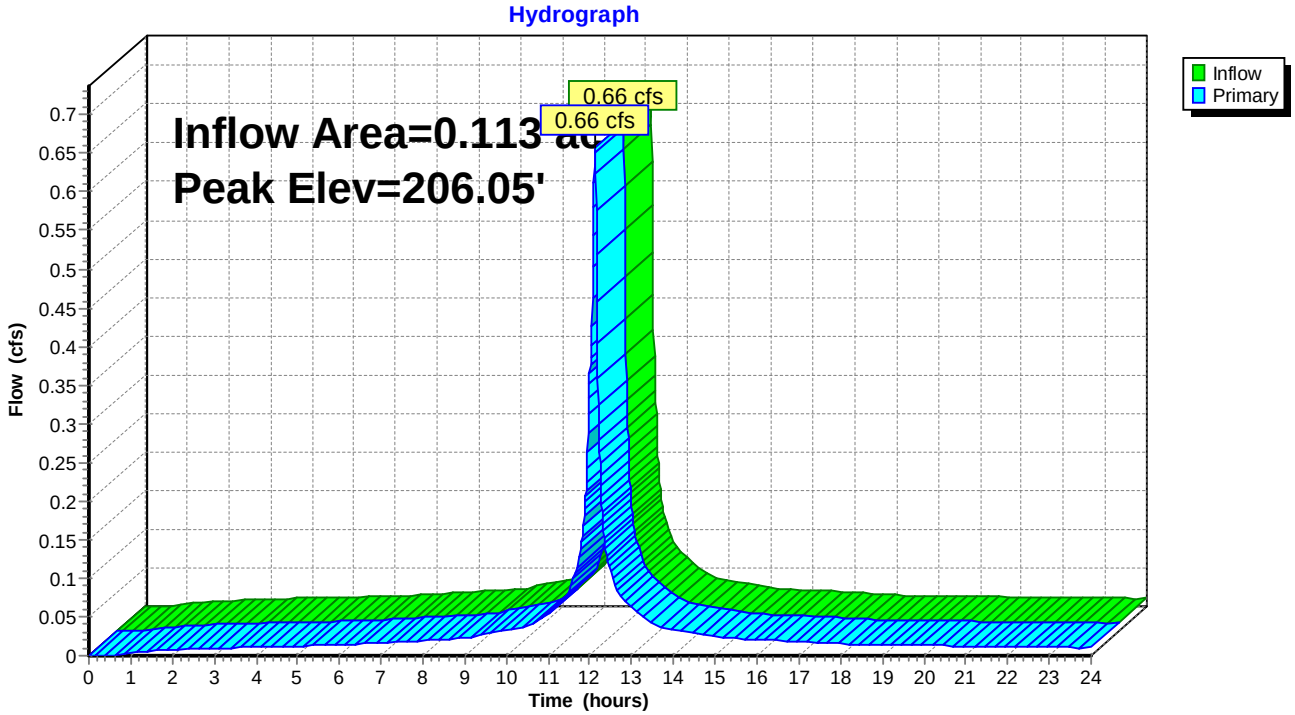
Inflow Area = 0.113 ac, 99.24% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.66 cfs @ 12.12 hrs, Volume= 0.056 af
Outflow = 0.66 cfs @ 12.12 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 0.66 cfs @ 12.12 hrs, Volume= 0.056 af
Routed to Pond MH27 : DMH-27

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.05' @ 12.12 hrs
Flood Elev= 206.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	203.00'	**12.0" Round Culvert** L= 108.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 203.00' / 202.46' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	206.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.66 cfs @ 12.12 hrs HW=206.05' TW=202.33' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.66 cfs of 4.59 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.66 cfs @ 0.76 fps)

Pond CB48: CB-48



Summary for Pond CB49: CB-49

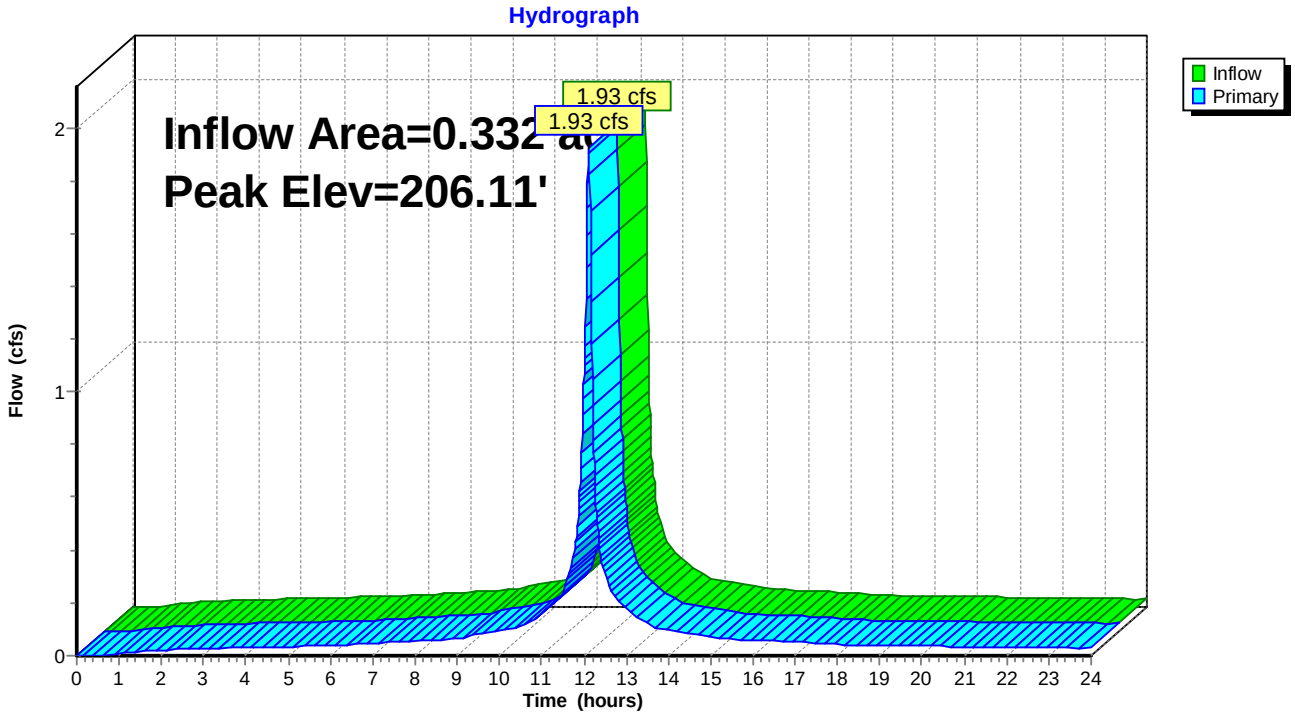
Inflow Area = 0.332 ac, 98.07% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 1.93 cfs @ 12.12 hrs, Volume= 0.164 af
Outflow = 1.93 cfs @ 12.12 hrs, Volume= 0.164 af, Atten= 0%, Lag= 0.0 min
Primary = 1.93 cfs @ 12.12 hrs, Volume= 0.164 af
Routed to Pond MH27 : DMH-27

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.11' @ 12.12 hrs
Flood Elev= 206.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	203.00'	**12.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 203.00' / 202.83' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	206.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.93 cfs @ 12.12 hrs HW=206.11' TW=202.33' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.93 cfs of 5.94 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.93 cfs @ 1.09 fps)

Pond CB49: CB-49



Summary for Pond CB5: CB-5

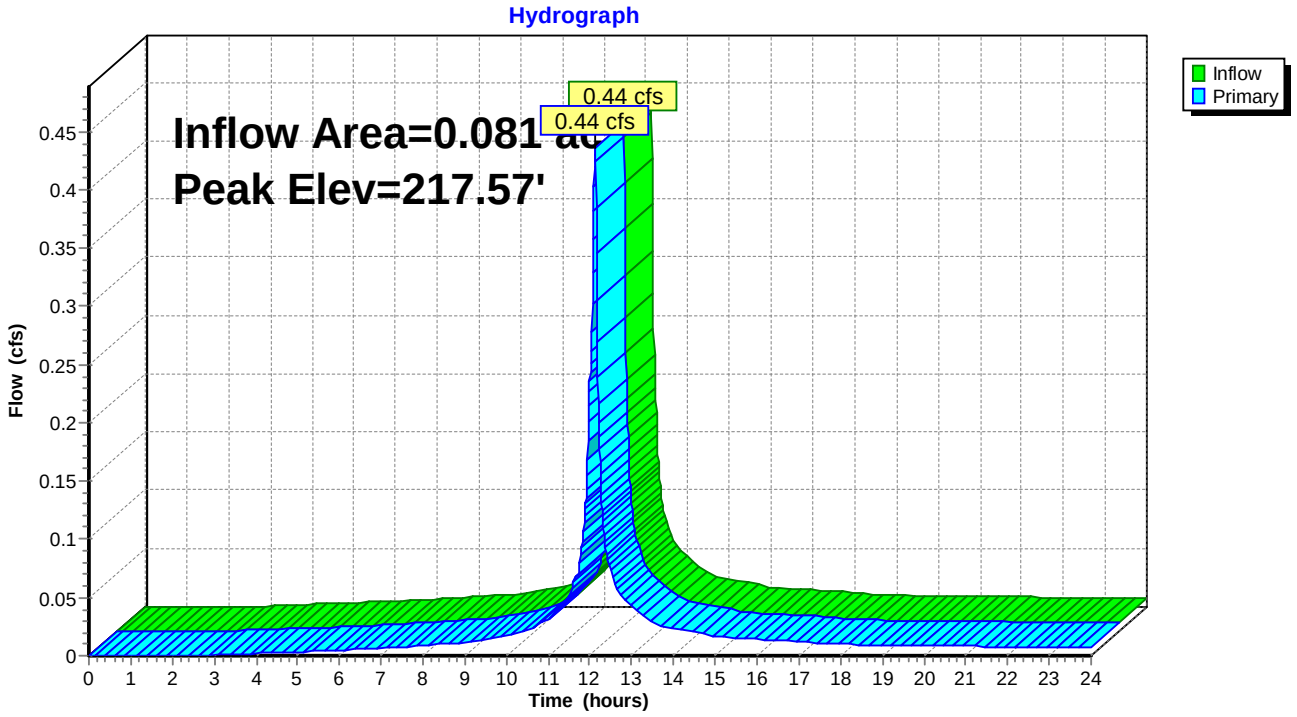
Inflow Area = 0.081 ac, 65.30% Impervious, Inflow Depth > 5.01" for 25-Year event
Inflow = 0.44 cfs @ 12.12 hrs, Volume= 0.034 af
Outflow = 0.44 cfs @ 12.12 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 12.12 hrs, Volume= 0.034 af
Routed to Pond MH3 : DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 217.57' @ 12.12 hrs
Flood Elev= 217.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	214.50'	**12.0" Round Culvert** L= 9.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.50' / 214.45' S= 0.0052 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	217.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.44 cfs @ 12.12 hrs HW=217.57' TW=214.43' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.44 cfs of 6.06 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.44 cfs @ 0.84 fps)

Pond CB5: CB-5



Summary for Pond CB50: CB-4

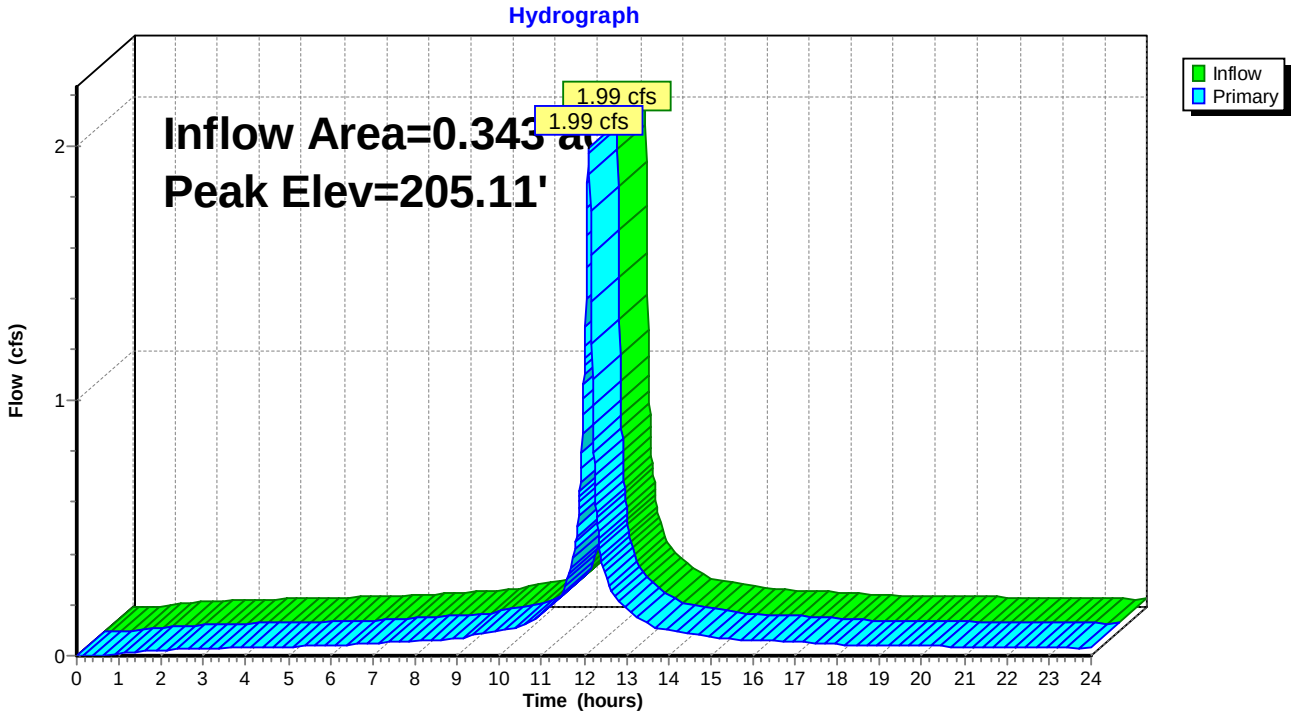
Inflow Area = 0.343 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 1.99 cfs @ 12.12 hrs, Volume= 0.169 af
Outflow = 1.99 cfs @ 12.12 hrs, Volume= 0.169 af, Atten= 0%, Lag= 0.0 min
Primary = 1.99 cfs @ 12.12 hrs, Volume= 0.169 af
Routed to Pond 2SS : SSMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 205.11' @ 12.12 hrs
Flood Elev= 205.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	201.75'	**15.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 201.75' / 201.63' S= 0.0048 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	205.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.99 cfs @ 12.12 hrs HW=205.11' TW=201.72' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.99 cfs of 9.78 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.99 cfs @ 1.10 fps)

Pond CB50: CB-4



Summary for Pond CB51: CB-51

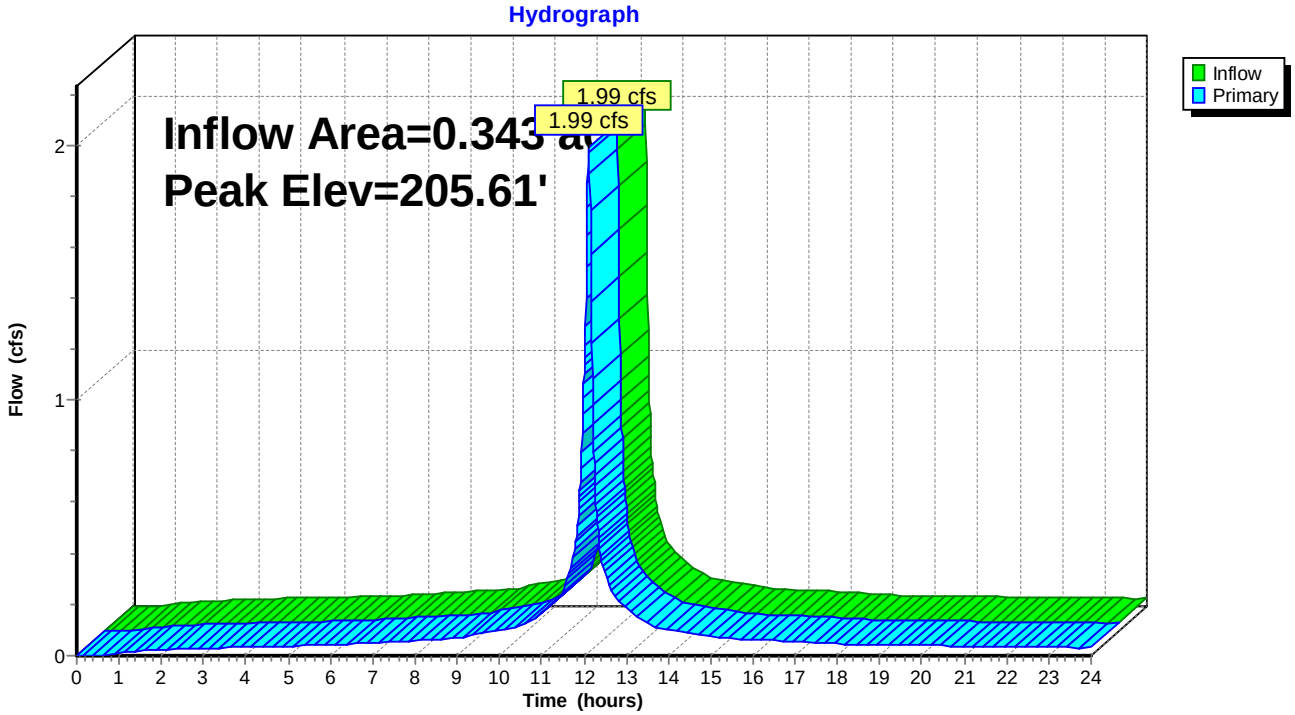
Inflow Area = 0.343 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 1.99 cfs @ 12.12 hrs, Volume= 0.169 af
Outflow = 1.99 cfs @ 12.12 hrs, Volume= 0.169 af, Atten= 0%, Lag= 0.0 min
Primary = 1.99 cfs @ 12.12 hrs, Volume= 0.169 af
Routed to Pond MH26 : DMH-26

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 205.61' @ 12.12 hrs
Flood Elev= 205.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	202.50'	**12.0" Round Culvert** L= 125.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 202.50' / 201.88' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	205.50'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.99 cfs @ 12.12 hrs HW=205.61' TW=202.79' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.99 cfs of 4.47 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 1.99 cfs @ 1.10 fps)

Pond CB51: CB-51



Summary for Pond CB52: CB-52

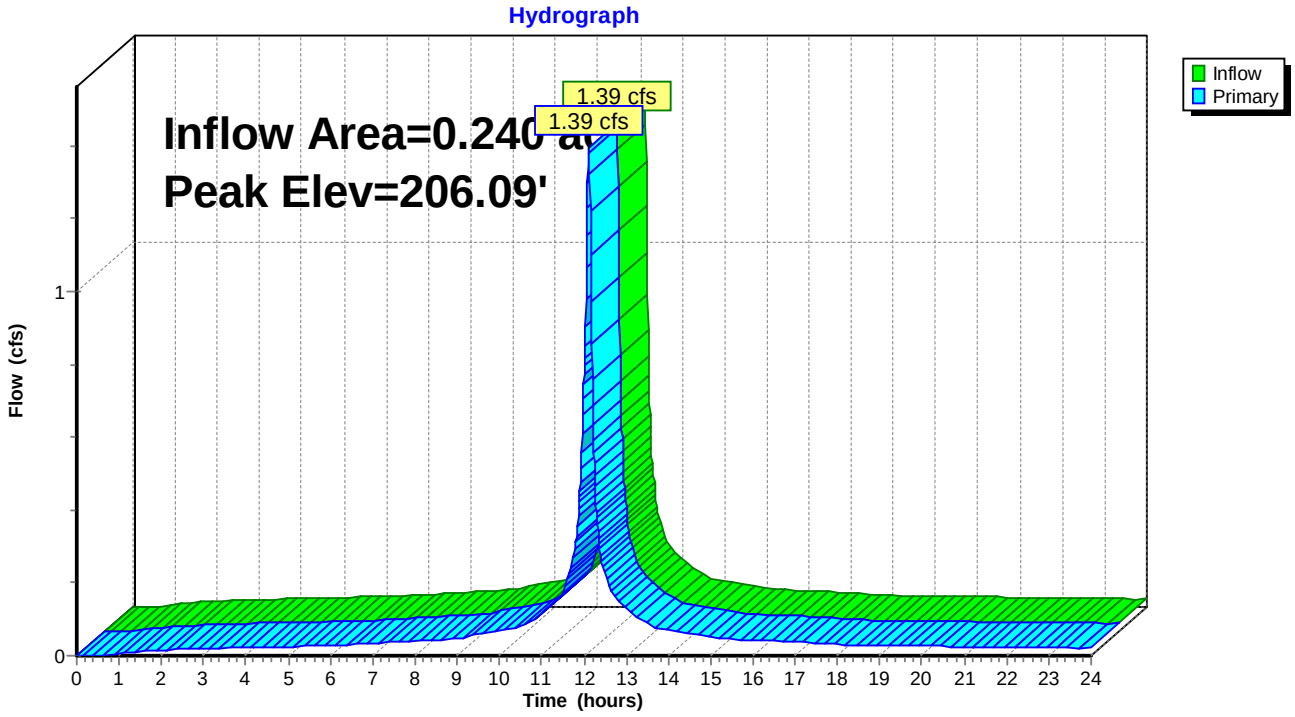
Inflow Area = 0.240 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 1.39 cfs @ 12.12 hrs, Volume= 0.118 af
Outflow = 1.39 cfs @ 12.12 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min
Primary = 1.39 cfs @ 12.12 hrs, Volume= 0.118 af
Routed to Pond MH26 : DMH-26

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.09' @ 12.12 hrs
Flood Elev= 206.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	203.00'	**12.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 203.00' / 202.86' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	206.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.39 cfs @ 12.12 hrs HW=206.09' TW=202.79' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.39 cfs of 6.09 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.39 cfs @ 0.98 fps)

Pond CB52: CB-52



Summary for Pond CB6: CB-6

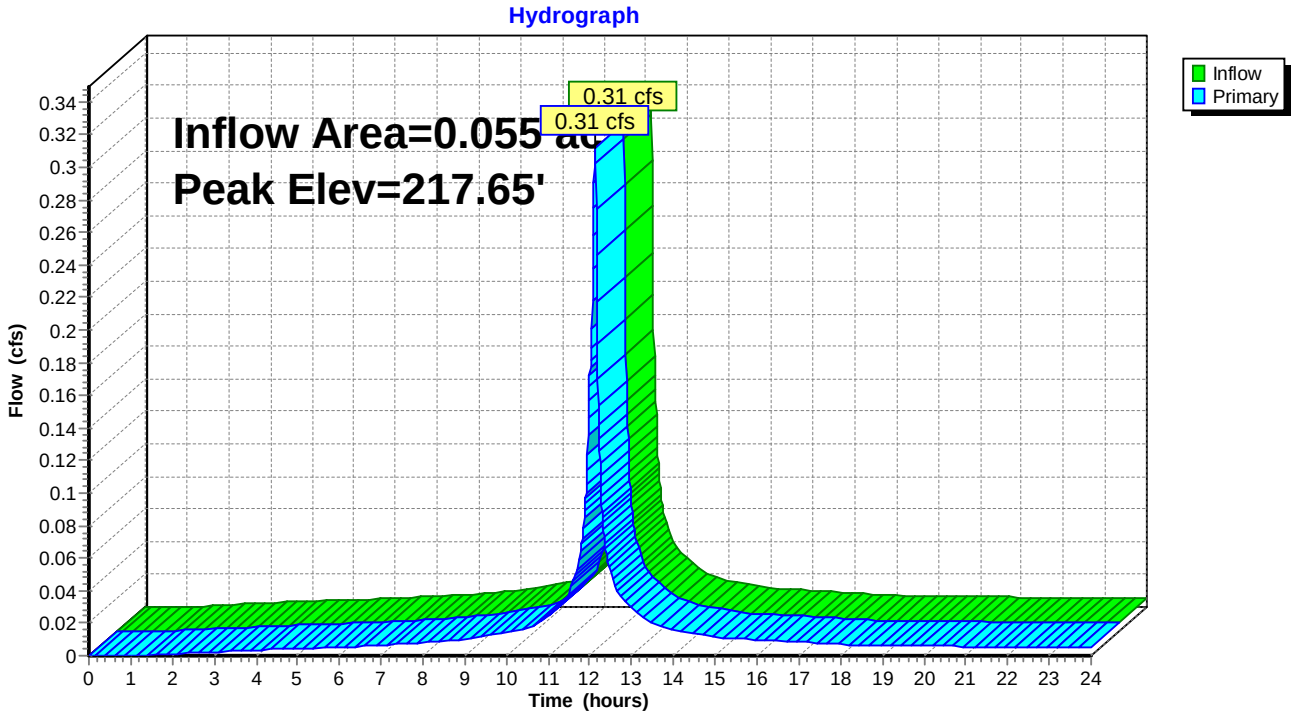
Inflow Area = 0.055 ac, 88.01% Impervious, Inflow Depth > 5.57" for 25-Year event
Inflow = 0.31 cfs @ 12.12 hrs, Volume= 0.025 af
Outflow = 0.31 cfs @ 12.12 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 12.12 hrs, Volume= 0.025 af
Routed to Pond MH3 : DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 217.65' @ 12.12 hrs
Flood Elev= 217.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	214.60'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.60' / 214.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	217.60'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.31 cfs @ 12.12 hrs HW=217.65' TW=214.43' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.31 cfs of 6.04 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.31 cfs @ 0.75 fps)

Pond CB6: CB-6



Summary for Pond CB7: CB-7

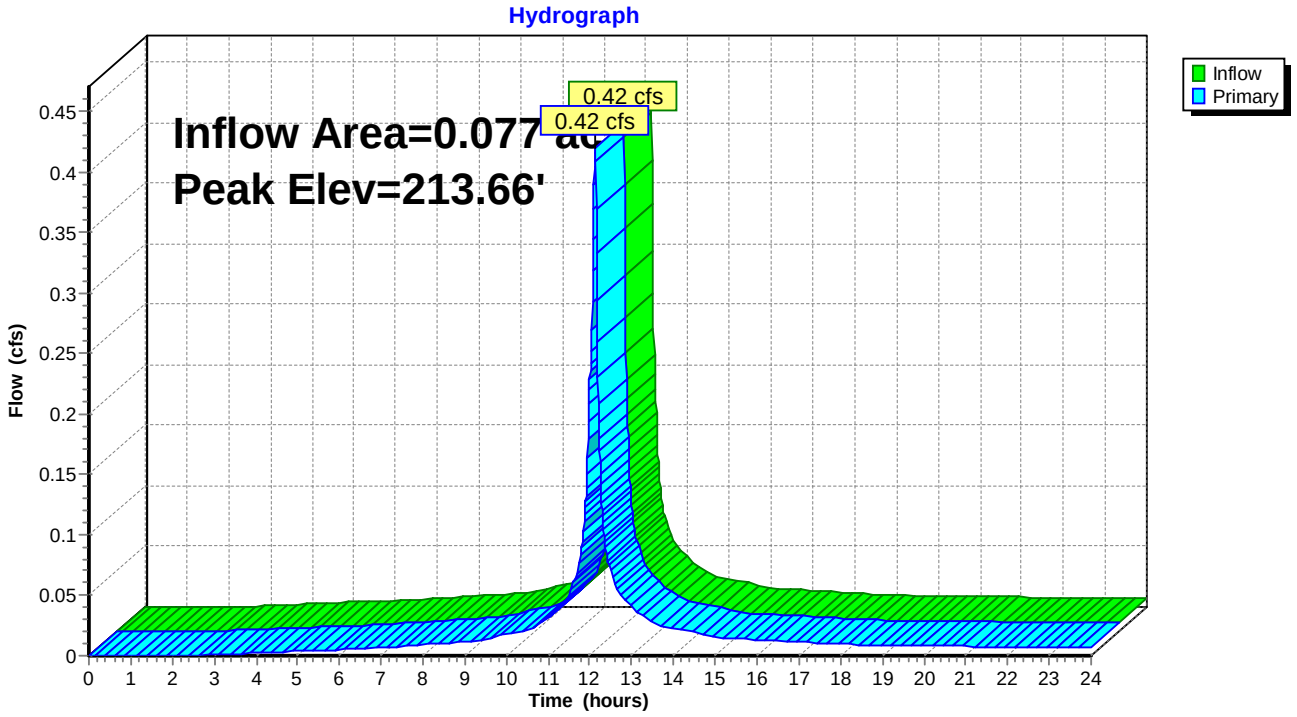
Inflow Area = 0.077 ac, 71.56% Impervious, Inflow Depth > 5.12" for 25-Year event
Inflow = 0.42 cfs @ 12.12 hrs, Volume= 0.033 af
Outflow = 0.42 cfs @ 12.12 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min
Primary = 0.42 cfs @ 12.12 hrs, Volume= 0.033 af
Routed to Pond MH4 : DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 213.66' @ 12.12 hrs
Flood Elev= 213.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.60'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.60' / 210.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	213.60'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.42 cfs @ 12.12 hrs HW=213.66' TW=210.62' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.42 cfs of 6.05 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.42 cfs @ 0.82 fps)

Pond CB7: CB-7



Summary for Pond CB8: CB-8

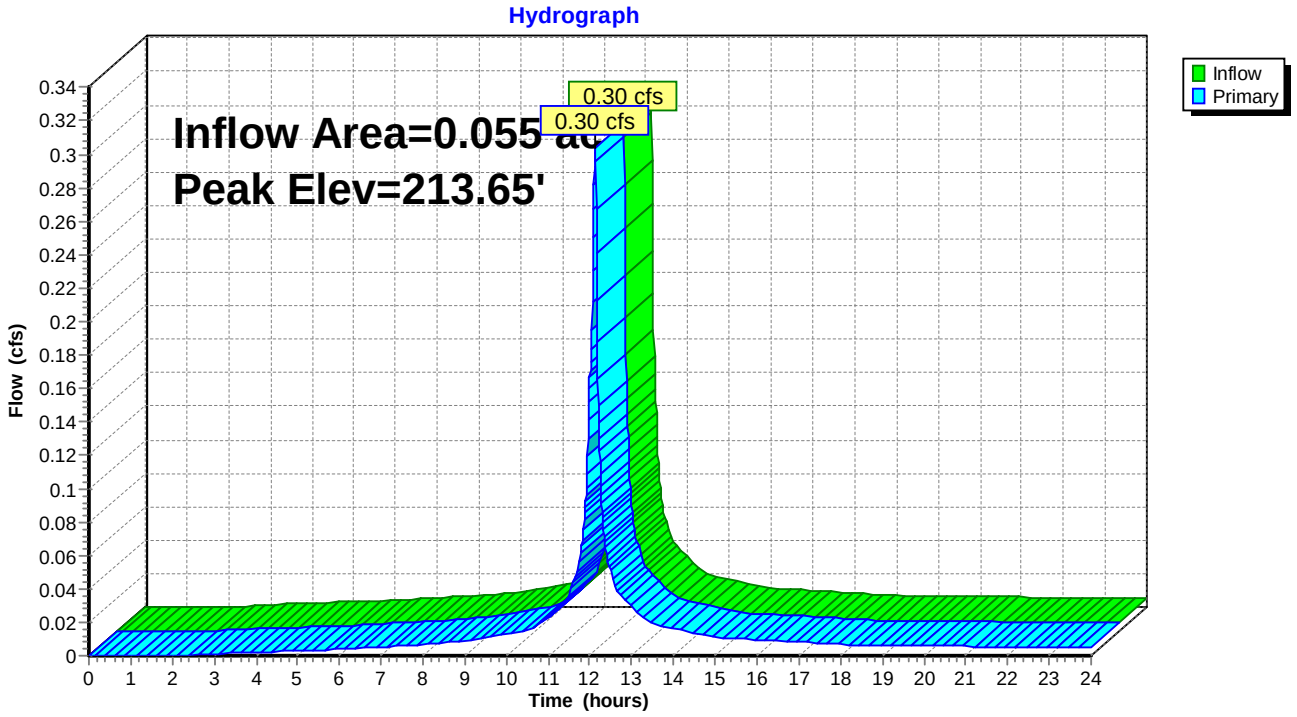
Inflow Area = 0.055 ac, 70.63% Impervious, Inflow Depth > 5.23" for 25-Year event
Inflow = 0.30 cfs @ 12.12 hrs, Volume= 0.024 af
Outflow = 0.30 cfs @ 12.12 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min
Primary = 0.30 cfs @ 12.12 hrs, Volume= 0.024 af
Routed to Pond MH4 : DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 213.65' @ 12.12 hrs
Flood Elev= 213.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.60'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.60' / 210.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	213.60'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.30 cfs @ 12.12 hrs HW=213.65' TW=210.62' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.30 cfs of 6.04 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.30 cfs @ 0.74 fps)

Pond CB8: CB-8



Summary for Pond CB9: CB-9

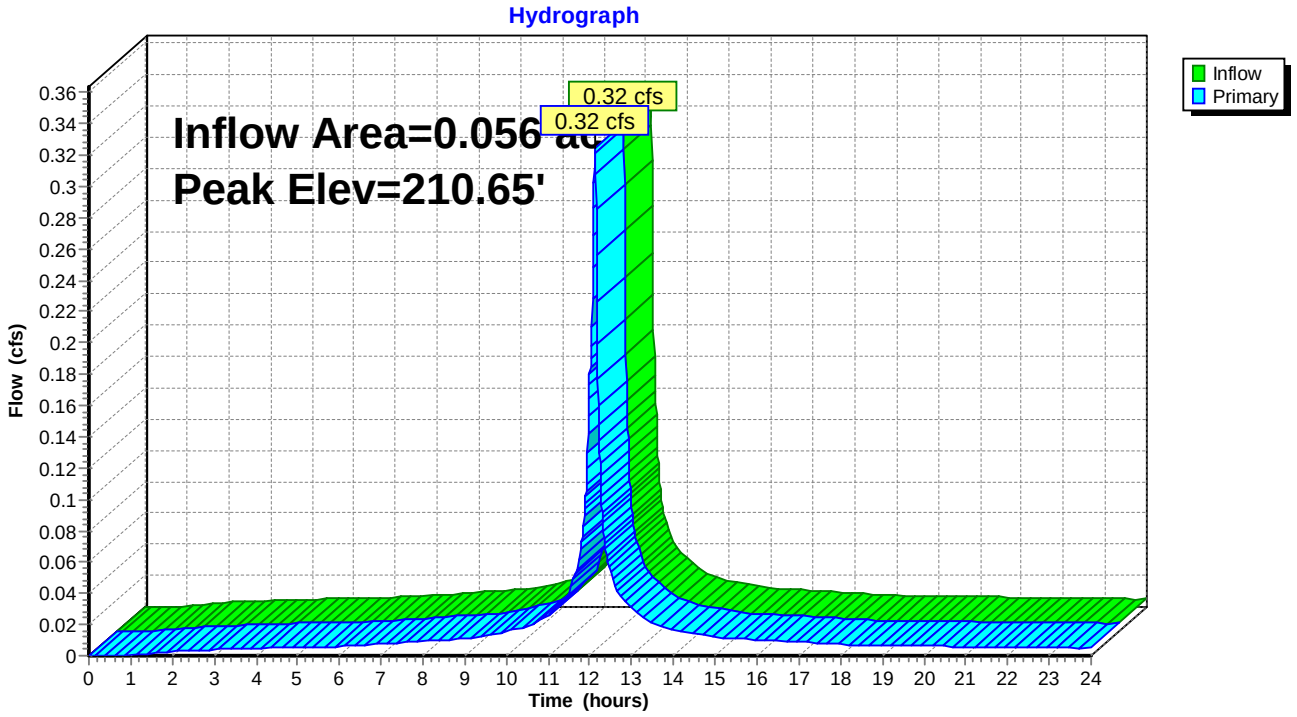
Inflow Area = 0.056 ac, 98.11% Impervious, Inflow Depth > 5.81" for 25-Year event
Inflow = 0.32 cfs @ 12.12 hrs, Volume= 0.027 af
Outflow = 0.32 cfs @ 12.12 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
Primary = 0.32 cfs @ 12.12 hrs, Volume= 0.027 af
Routed to Pond MH5 : DMH-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.65' @ 12.12 hrs
Flood Elev= 210.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.60'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.60' / 207.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	210.60'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.32 cfs @ 12.12 hrs HW=210.65' TW=207.80' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.32 cfs of 6.04 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.32 cfs @ 0.76 fps)

Pond CB9: CB-9



Summary for Pond MH1: DMH-1

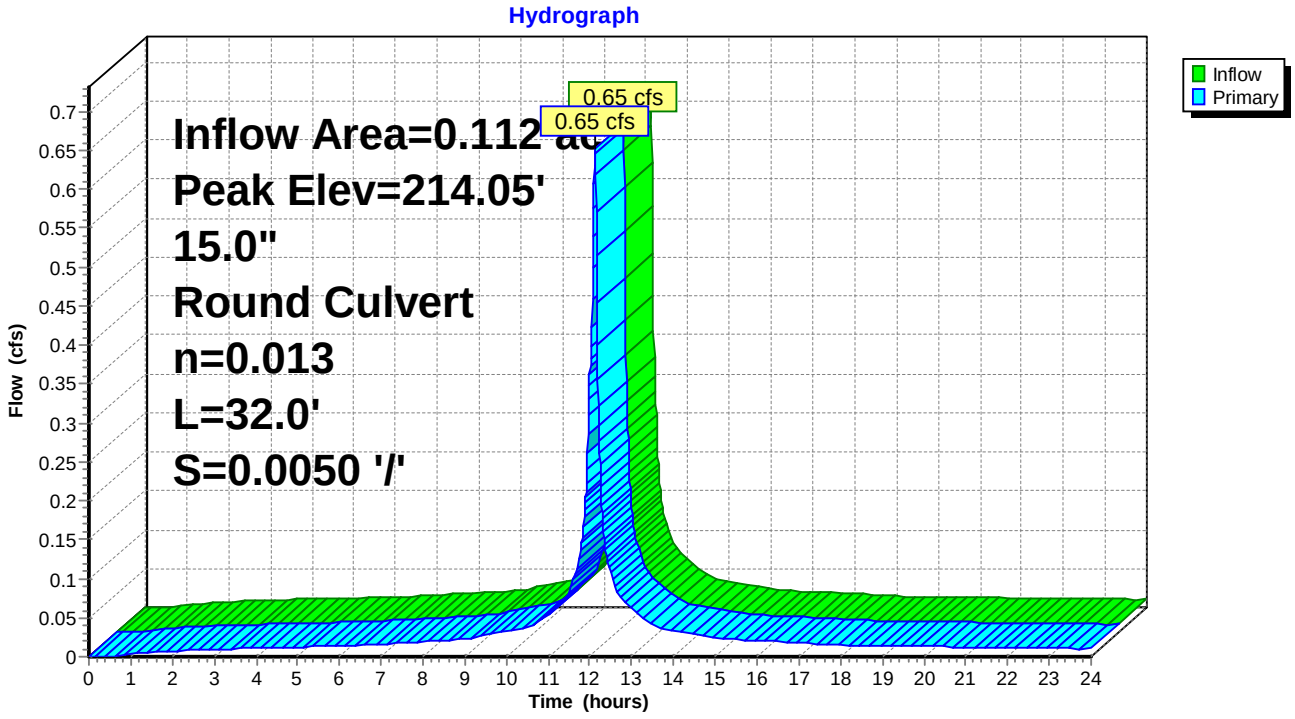
Inflow Area = 0.112 ac, 99.84% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.65 cfs @ 12.12 hrs, Volume= 0.055 af
Outflow = 0.65 cfs @ 12.12 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min
Primary = 0.65 cfs @ 12.12 hrs, Volume= 0.055 af
Routed to Pond 1P : Basin 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.05' @ 12.12 hrs
Flood Elev= 216.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	213.60'	**15.0" Round Culvert** L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 213.60' / 213.44' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.65 cfs @ 12.12 hrs HW=214.05' TW=211.37' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.65 cfs @ 2.46 fps)

Pond MH1: DMH-1



Summary for Pond MH10: CB-31

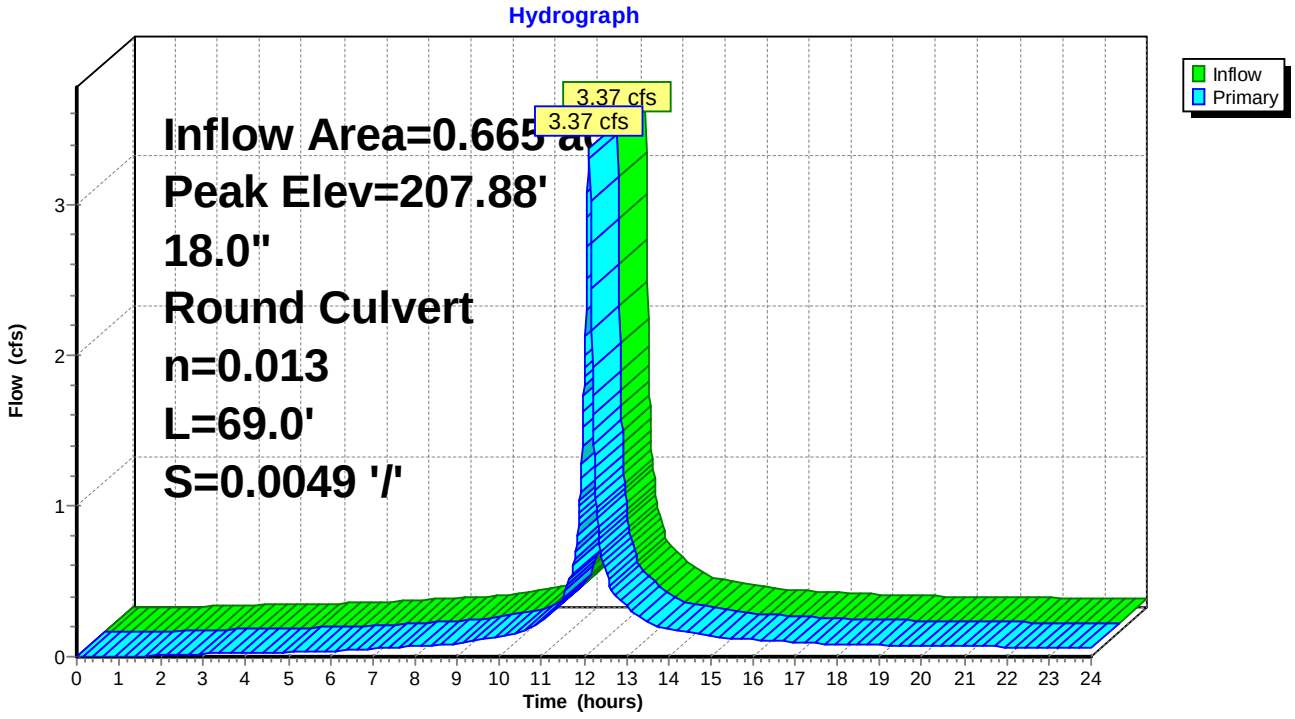
Inflow Area = 0.665 ac, 79.04% Impervious, Inflow Depth > 4.77" for 25-Year event
Inflow = 3.37 cfs @ 12.12 hrs, Volume= 0.265 af
Outflow = 3.37 cfs @ 12.12 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min
Primary = 3.37 cfs @ 12.12 hrs, Volume= 0.265 af
Routed to Pond MH11 : CB-31

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 207.88' @ 12.12 hrs
Flood Elev= 212.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.81'	**18.0" Round Culvert** L= 69.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.81' / 206.47' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.37 cfs @ 12.12 hrs HW=207.88' TW=207.37' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.37 cfs @ 3.50 fps)

Pond MH10: CB-31



Summary for Pond MH11: CB-31

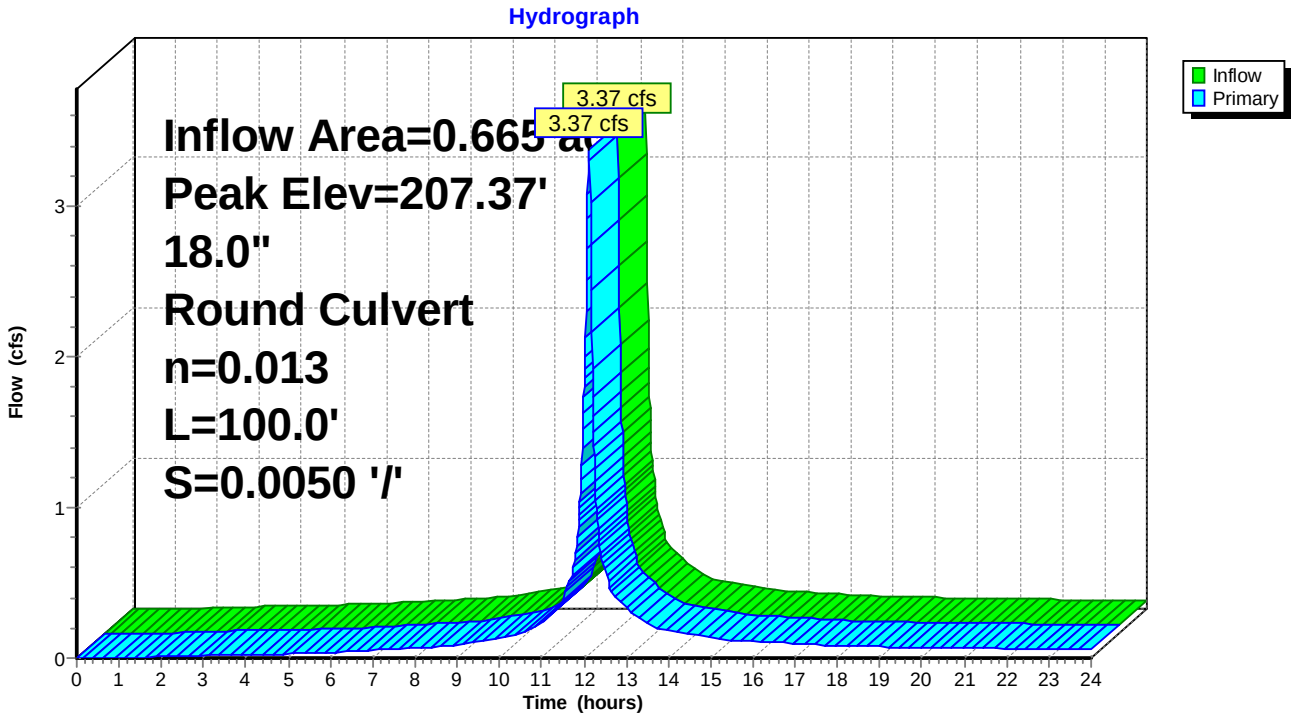
Inflow Area = 0.665 ac, 79.04% Impervious, Inflow Depth > 4.77" for 25-Year event
Inflow = 3.37 cfs @ 12.12 hrs, Volume= 0.265 af
Outflow = 3.37 cfs @ 12.12 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min
Primary = 3.37 cfs @ 12.12 hrs, Volume= 0.265 af
Routed to Pond 4P : Basin 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 207.37' @ 12.12 hrs
Flood Elev= 212.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.37'	**18.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.37' / 205.87' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.37 cfs @ 12.12 hrs HW=207.37' TW=203.39' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.37 cfs @ 3.81 fps)

Pond MH11: CB-31



Summary for Pond MH12: DMH-12

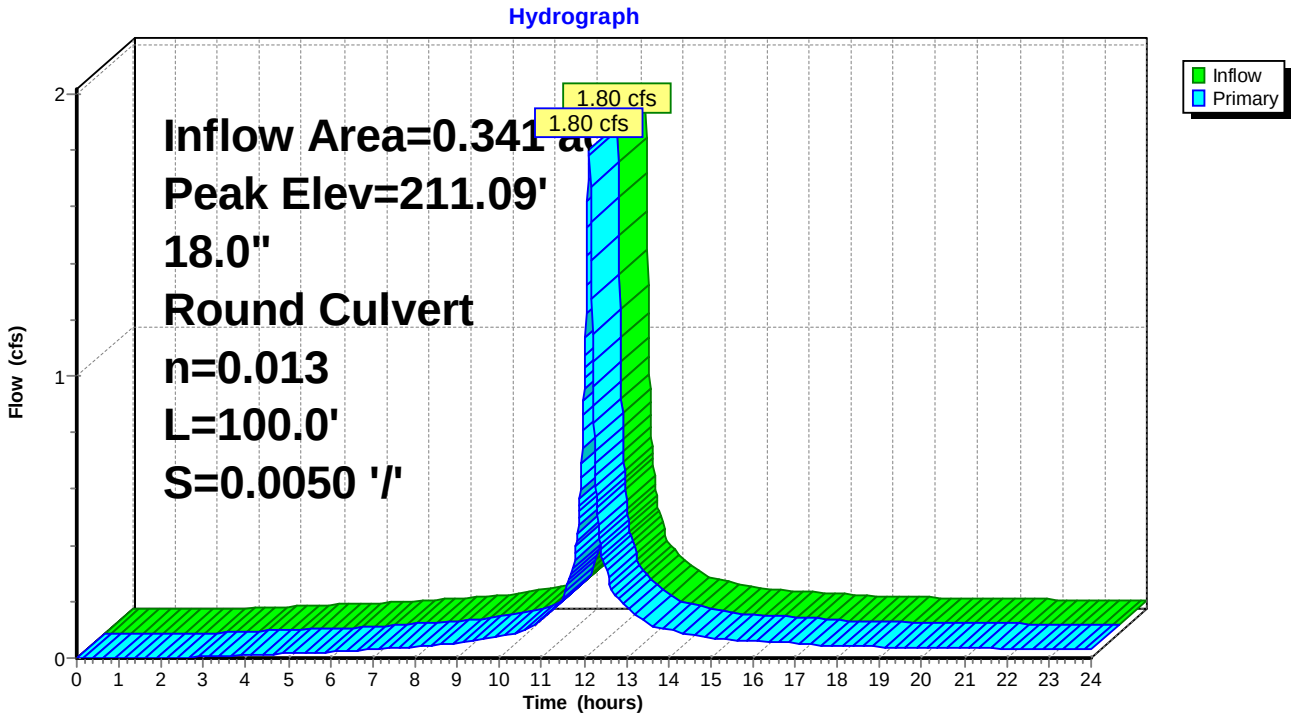
Inflow Area = 0.341 ac, 85.16% Impervious, Inflow Depth > 5.12" for 25-Year event
Inflow = 1.80 cfs @ 12.13 hrs, Volume= 0.145 af
Outflow = 1.80 cfs @ 12.13 hrs, Volume= 0.145 af, Atten= 0%, Lag= 0.0 min
Primary = 1.80 cfs @ 12.13 hrs, Volume= 0.145 af
Routed to Pond MH13 : DMH-13

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 211.09' @ 12.13 hrs
Flood Elev= 214.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.31'	**18.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.31' / 209.81' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=1.80 cfs @ 12.13 hrs HW=211.09' TW=210.62' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.80 cfs @ 2.82 fps)

Pond MH12: DMH-12



Summary for Pond MH13: DMH-13

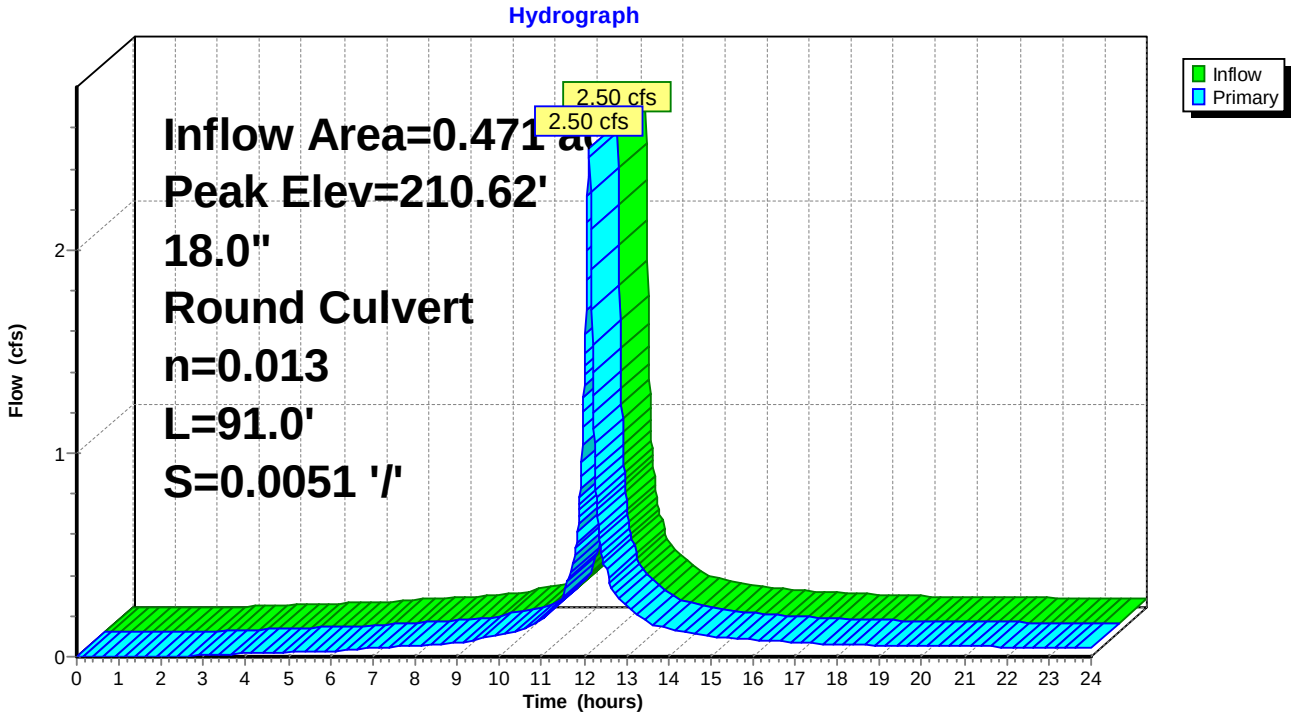
Inflow Area = 0.471 ac, 84.02% Impervious, Inflow Depth > 5.05" for 25-Year event
Inflow = 2.50 cfs @ 12.13 hrs, Volume= 0.198 af
Outflow = 2.50 cfs @ 12.13 hrs, Volume= 0.198 af, Atten= 0%, Lag= 0.0 min
Primary = 2.50 cfs @ 12.13 hrs, Volume= 0.198 af
Routed to Pond MH14 : DMH-14

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.62' @ 12.13 hrs
Flood Elev= 214.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.71'	**18.0" Round Culvert** L= 91.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.71' / 209.25' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.49 cfs @ 12.13 hrs HW=210.62' TW=210.10' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.49 cfs @ 3.18 fps)

Pond MH13: DMH-13



Summary for Pond MH14: DMH-14

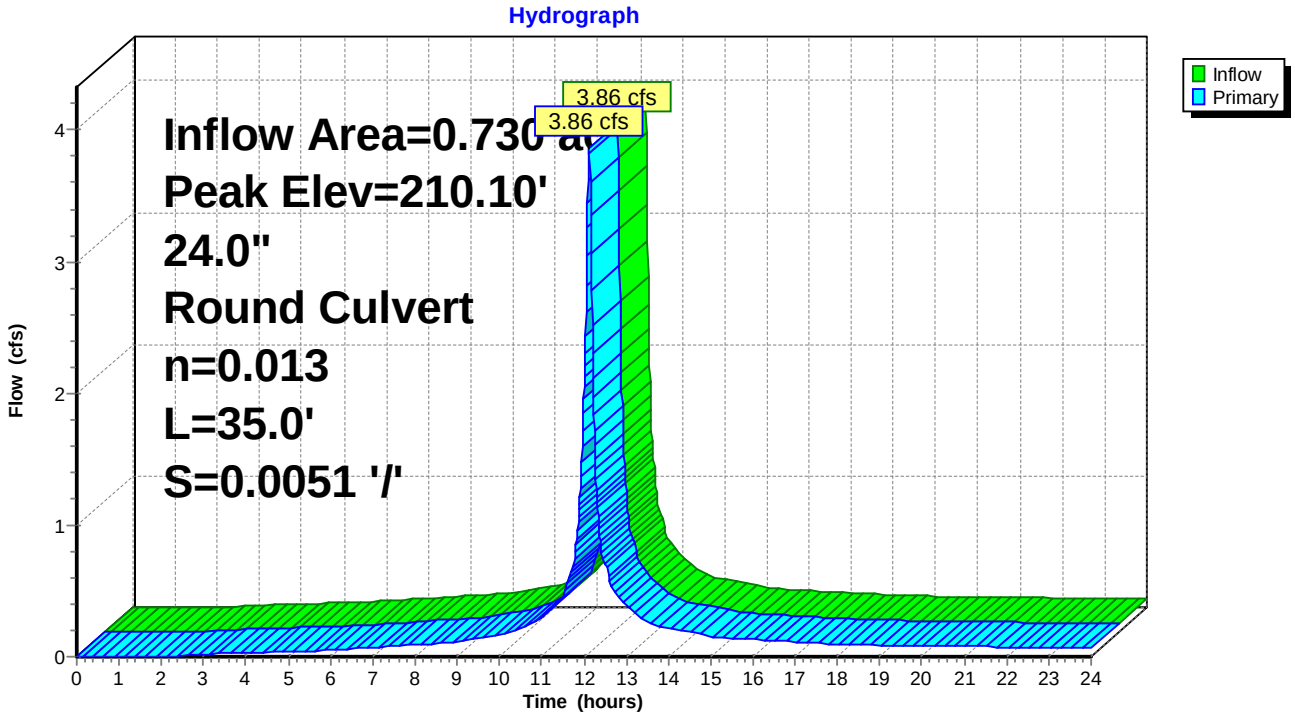
Inflow Area = 0.730 ac, 86.34% Impervious, Inflow Depth > 5.18" for 25-Year event
Inflow = 3.86 cfs @ 12.13 hrs, Volume= 0.315 af
Outflow = 3.86 cfs @ 12.13 hrs, Volume= 0.315 af, Atten= 0%, Lag= 0.0 min
Primary = 3.86 cfs @ 12.13 hrs, Volume= 0.315 af
Routed to Pond 3SS : SSMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.10' @ 12.13 hrs
Flood Elev= 214.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.07'	**24.0" Round Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.07' / 208.89' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=3.85 cfs @ 12.13 hrs HW=210.10' TW=209.72' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.85 cfs @ 3.44 fps)

Pond MH14: DMH-14



Summary for Pond MH15: DMH-15

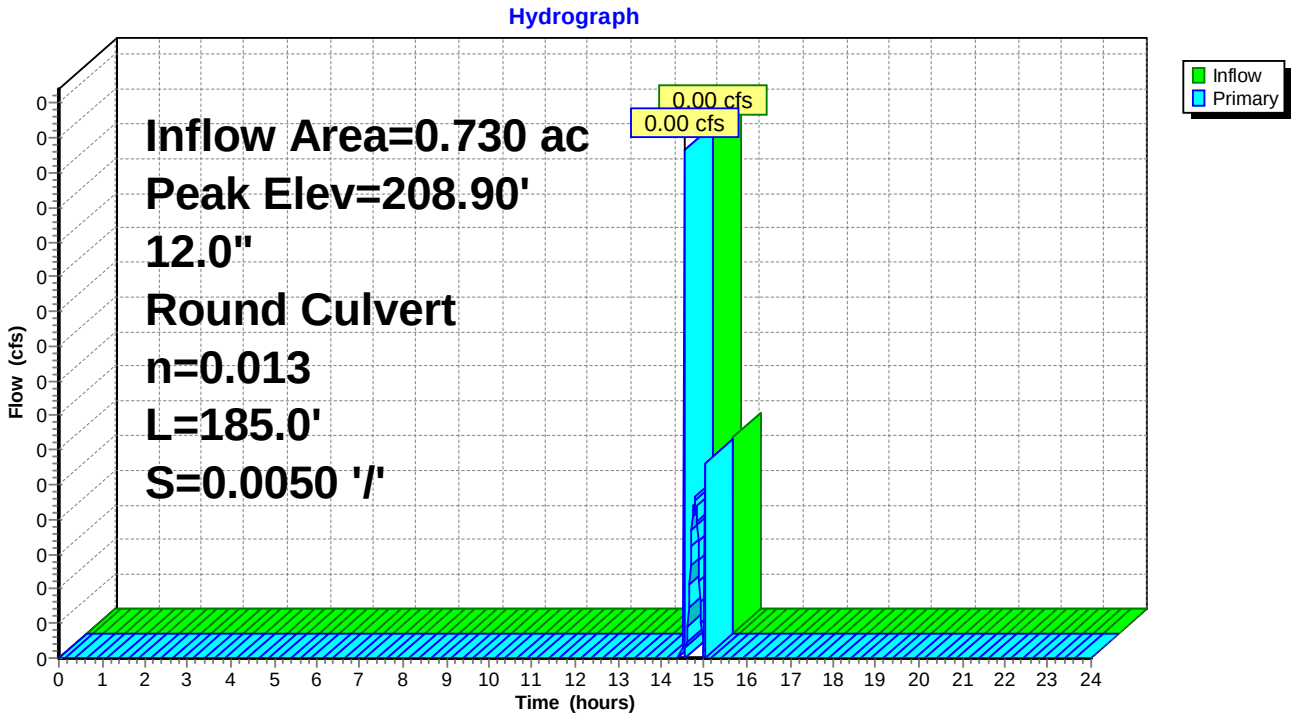
Inflow Area = 0.730 ac, 86.34% Impervious, Inflow Depth = 0.00" for 25-Year event
Inflow = 0.00 cfs @ 14.56 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 14.56 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 14.56 hrs, Volume= 0.000 af
Routed to Pond MH16 : DMH-16

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 208.90' @ 14.56 hrs
Flood Elev= 213.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	208.90'	**12.0" Round Culvert** L= 185.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.90' / 207.97' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 14.56 hrs HW=208.90' TW=207.99' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.00 cfs @ 0.12 fps)

Pond MH15: DMH-15



Summary for Pond MH16: DMH-16

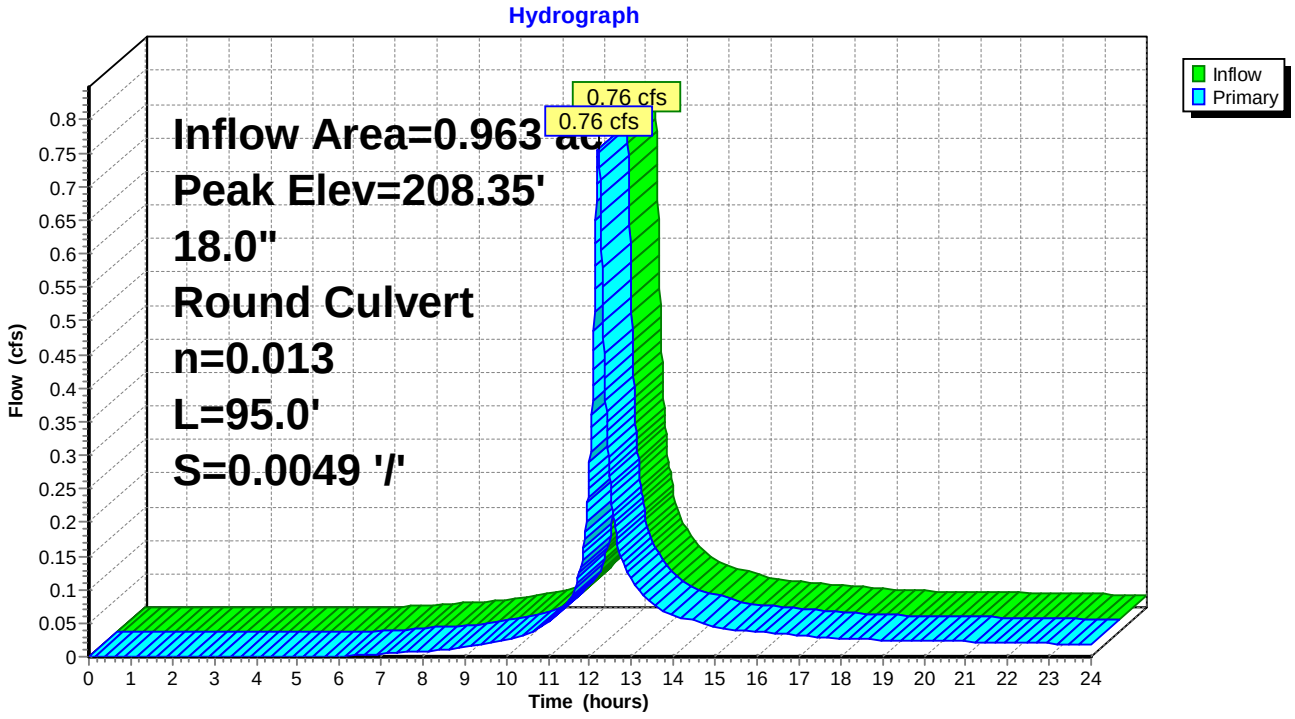
Inflow Area = 0.963 ac, 79.63% Impervious, Inflow Depth > 0.90" for 25-Year event
Inflow = 0.76 cfs @ 12.20 hrs, Volume= 0.072 af
Outflow = 0.76 cfs @ 12.20 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 12.20 hrs, Volume= 0.072 af
Routed to Pond MH17 : DMH-17

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 208.35' @ 12.19 hrs
Flood Elev= 214.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.87'	**18.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.87' / 207.40' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=0.76 cfs @ 12.20 hrs HW=208.35' TW=207.93' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.76 cfs @ 2.30 fps)

Pond MH16: DMH-16



Summary for Pond MH17: DMH-17

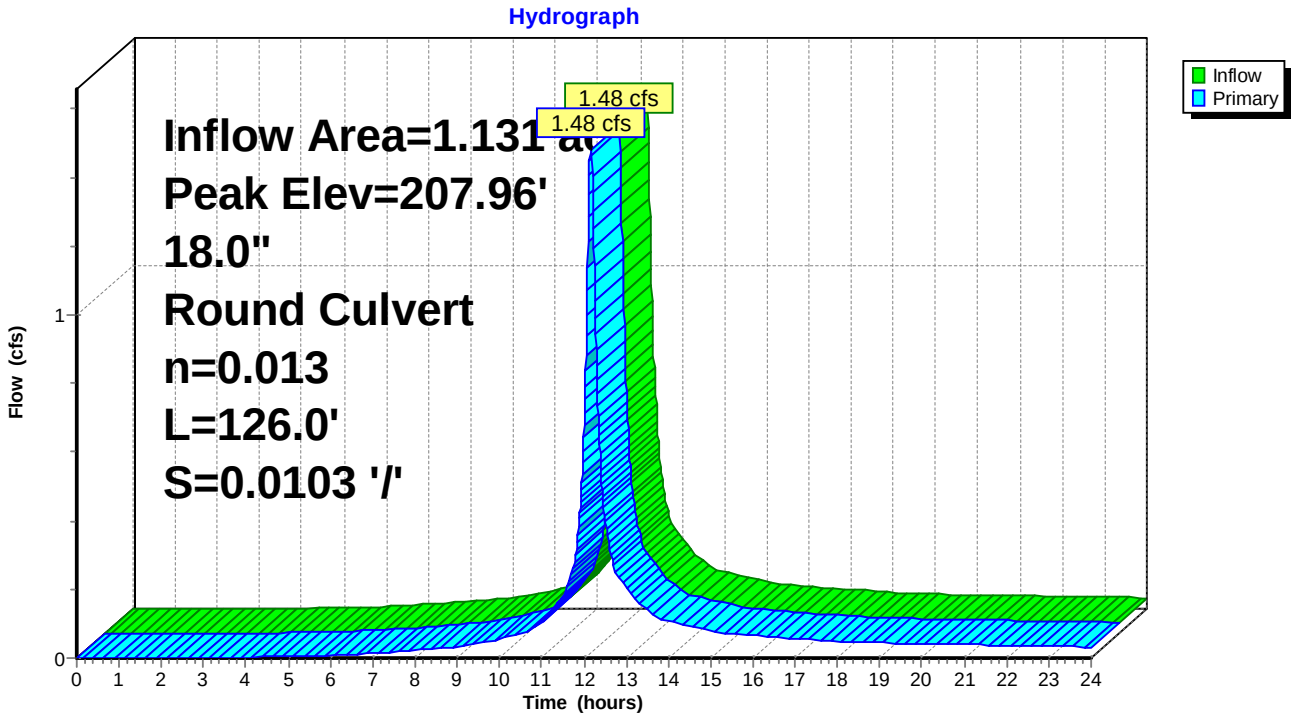
Inflow Area = 1.131 ac, 79.38% Impervious, Inflow Depth > 1.46" for 25-Year event
Inflow = 1.48 cfs @ 12.16 hrs, Volume= 0.138 af
Outflow = 1.48 cfs @ 12.16 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min
Primary = 1.48 cfs @ 12.16 hrs, Volume= 0.138 af
Routed to Pond MH18 : DMH-18

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 207.96' @ 12.15 hrs
Flood Elev= 212.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.40'	**18.0" Round Culvert** L= 126.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.40' / 206.10' S= 0.0103 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=1.48 cfs @ 12.16 hrs HW=207.96' TW=206.76' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.48 cfs @ 3.69 fps)

Pond MH17: DMH-17



Summary for Pond MH18: DMH-18

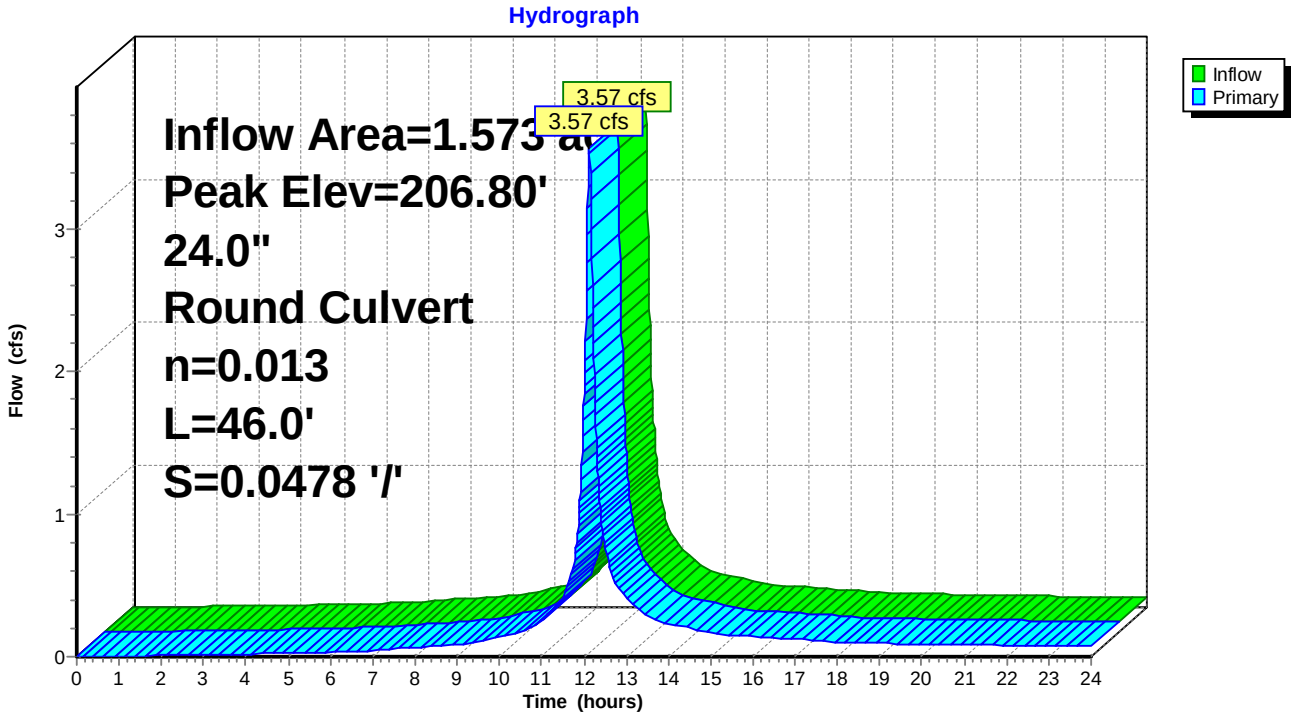
Inflow Area = 1.573 ac, 78.29% Impervious, Inflow Depth > 2.34" for 25-Year event
Inflow = 3.57 cfs @ 12.13 hrs, Volume= 0.307 af
Outflow = 3.57 cfs @ 12.13 hrs, Volume= 0.307 af, Atten= 0%, Lag= 0.0 min
Primary = 3.57 cfs @ 12.13 hrs, Volume= 0.307 af
Routed to Pond MH19 : DMH-19

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.80' @ 12.13 hrs
Flood Elev= 209.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.00'	**24.0" Round Culvert** L= 46.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.00' / 203.80' S= 0.0478 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=3.57 cfs @ 12.13 hrs HW=206.80' TW=204.62' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.57 cfs @ 3.04 fps)

Pond MH18: DMH-18



Summary for Pond MH19: DMH-19

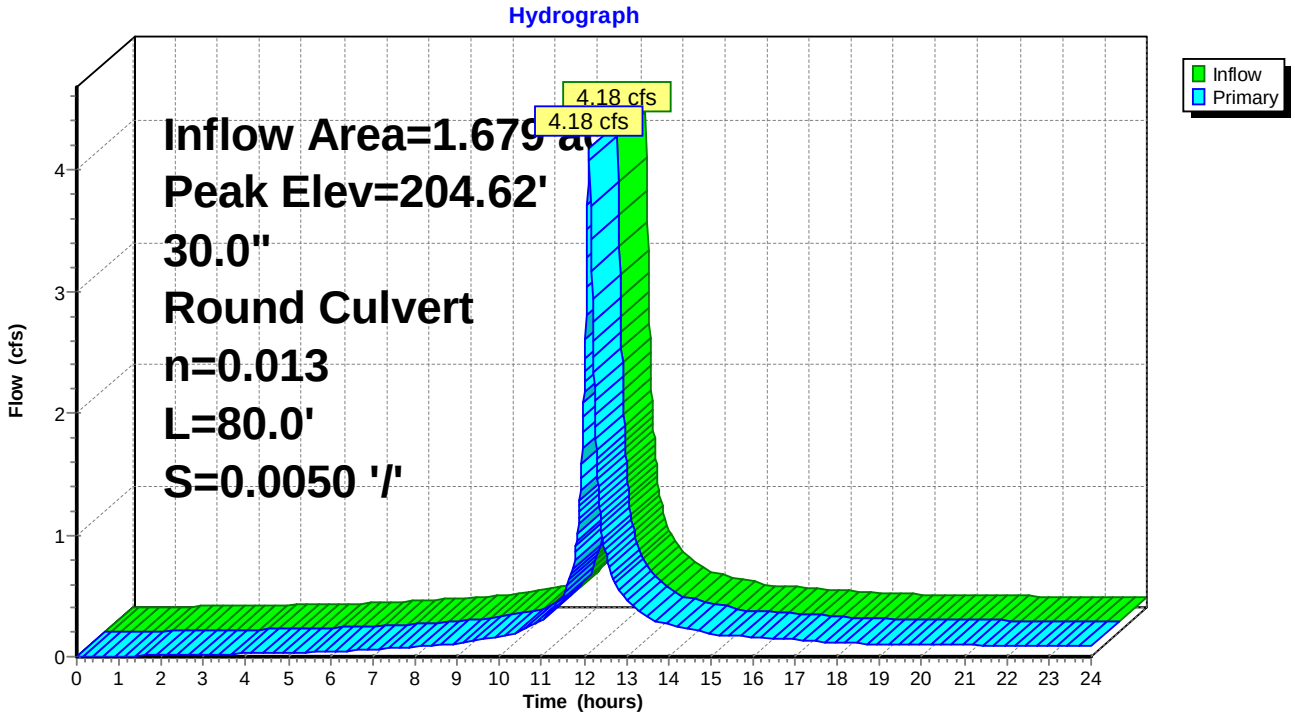
Inflow Area = 1.679 ac, 79.41% Impervious, Inflow Depth > 2.55" for 25-Year event
Inflow = 4.18 cfs @ 12.13 hrs, Volume= 0.357 af
Outflow = 4.18 cfs @ 12.13 hrs, Volume= 0.357 af, Atten= 0%, Lag= 0.0 min
Primary = 4.18 cfs @ 12.13 hrs, Volume= 0.357 af
Routed to Pond 5P : Basin 5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 204.62' @ 12.13 hrs
Flood Elev= 207.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	203.70'	**30.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 203.70' / 203.30' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=4.17 cfs @ 12.13 hrs HW=204.62' TW=200.86' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.17 cfs @ 3.78 fps)

Pond MH19: DMH-19



Summary for Pond MH2: DMH-2

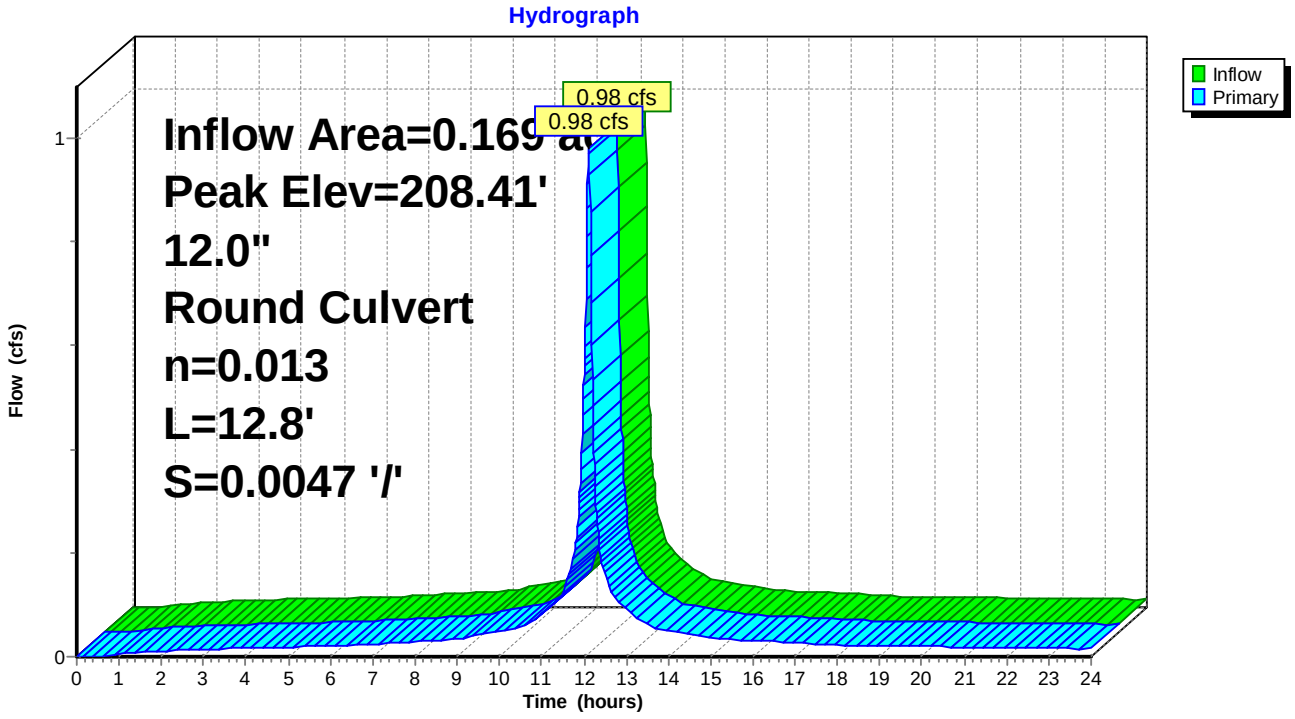
Inflow Area = 0.169 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.98 cfs @ 12.12 hrs, Volume= 0.083 af
Outflow = 0.98 cfs @ 12.12 hrs, Volume= 0.083 af, Atten= 0%, Lag= 0.0 min
Primary = 0.98 cfs @ 12.12 hrs, Volume= 0.083 af
Routed to Pond 2P : Basin 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 208.41' @ 15.07 hrs
Flood Elev= 211.34'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.35'	**12.0" Round Culvert** L= 12.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.35' / 207.29' S= 0.0047 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.98 cfs @ 12.12 hrs HW=207.98' TW=207.08' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.98 cfs @ 2.70 fps)

Pond MH2: DMH-2



Summary for Pond MH20: DMH-20

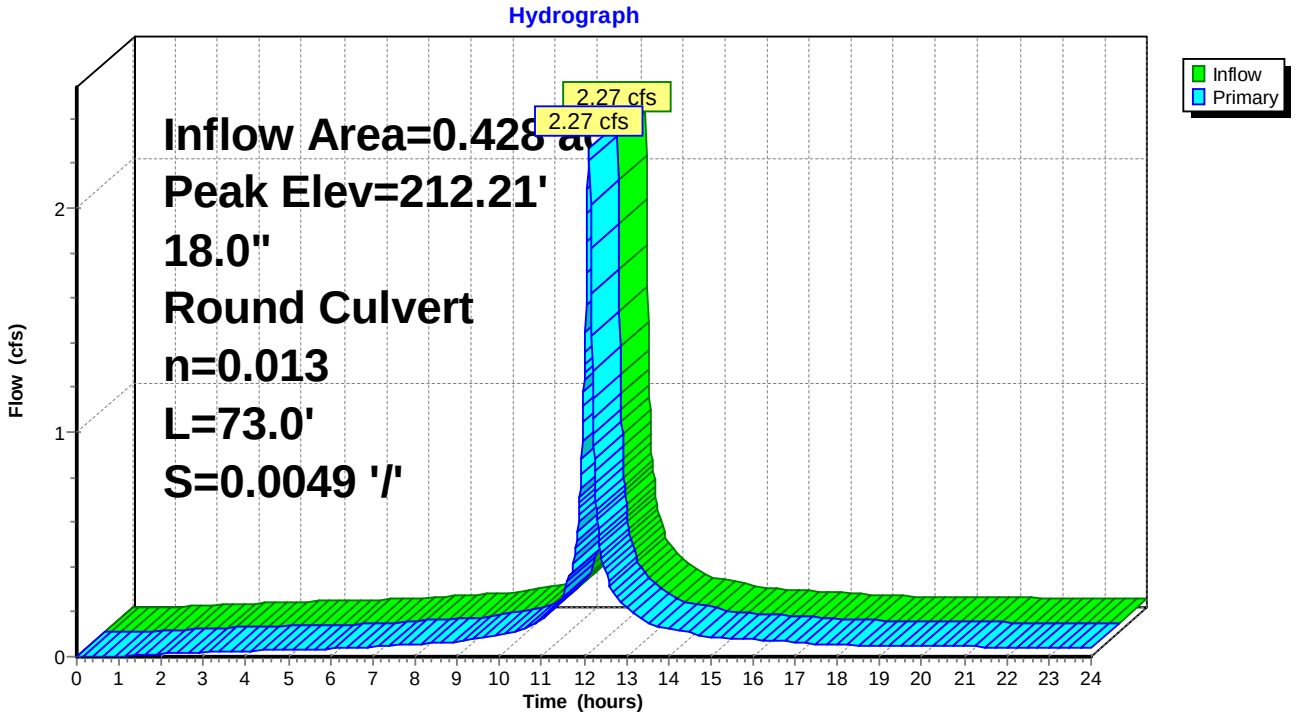
Inflow Area = 0.428 ac, 86.44% Impervious, Inflow Depth > 5.17" for 25-Year event
Inflow = 2.27 cfs @ 12.12 hrs, Volume= 0.185 af
Outflow = 2.27 cfs @ 12.12 hrs, Volume= 0.185 af, Atten= 0%, Lag= 0.0 min
Primary = 2.27 cfs @ 12.12 hrs, Volume= 0.185 af
Routed to Pond MH21 : DMH-21

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 212.21' @ 12.12 hrs
Flood Elev= 215.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.20'	**18.0" Round Culvert** L= 73.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.20' / 210.84' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.26 cfs @ 12.12 hrs HW=212.21' TW=211.92' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.26 cfs @ 2.54 fps)

Pond MH20: DMH-20



Summary for Pond MH21: DMH-21

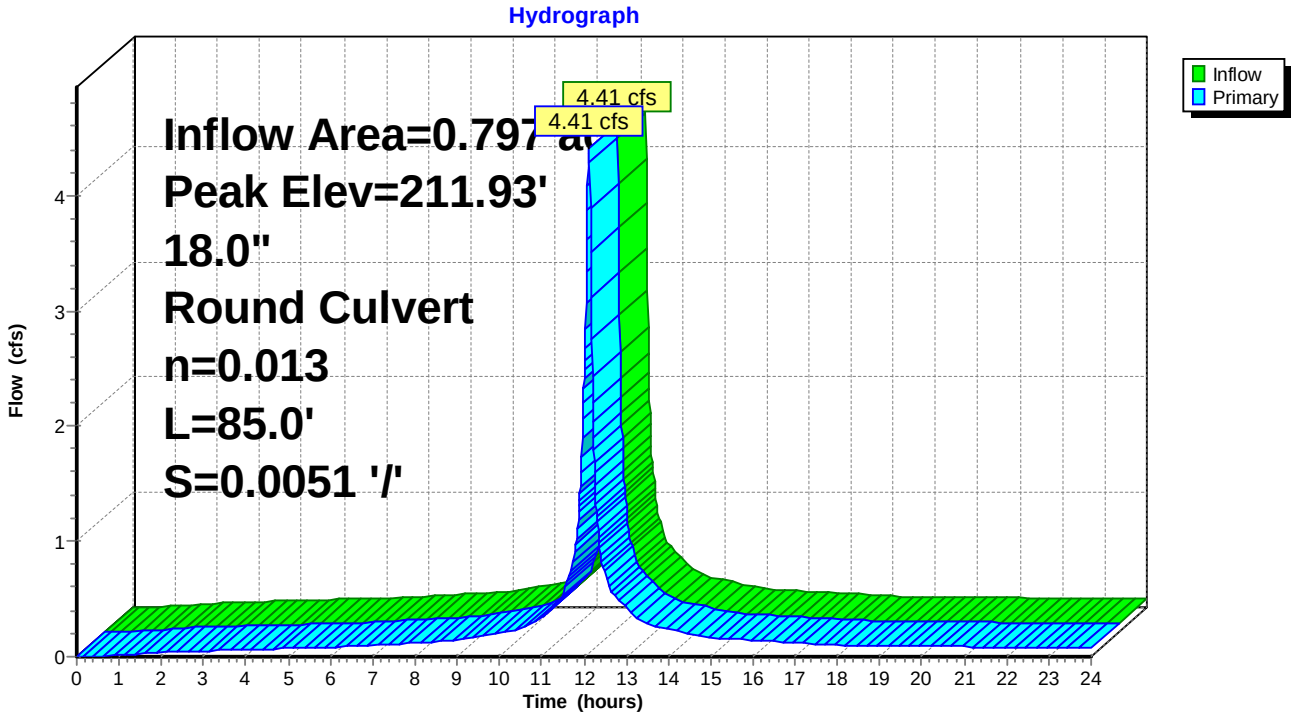
Inflow Area = 0.797 ac, 92.72% Impervious, Inflow Depth > 5.52" for 25-Year event
Inflow = 4.41 cfs @ 12.12 hrs, Volume= 0.367 af
Outflow = 4.41 cfs @ 12.12 hrs, Volume= 0.367 af, Atten= 0%, Lag= 0.0 min
Primary = 4.41 cfs @ 12.12 hrs, Volume= 0.367 af
Routed to Pond 1SS : SSMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 211.93' @ 12.12 hrs
Flood Elev= 215.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.74'	**18.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.74' / 210.31' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=4.41 cfs @ 12.12 hrs HW=211.93' TW=210.38' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.41 cfs @ 4.04 fps)

Pond MH21: DMH-21



Summary for Pond MH22: DMH-22

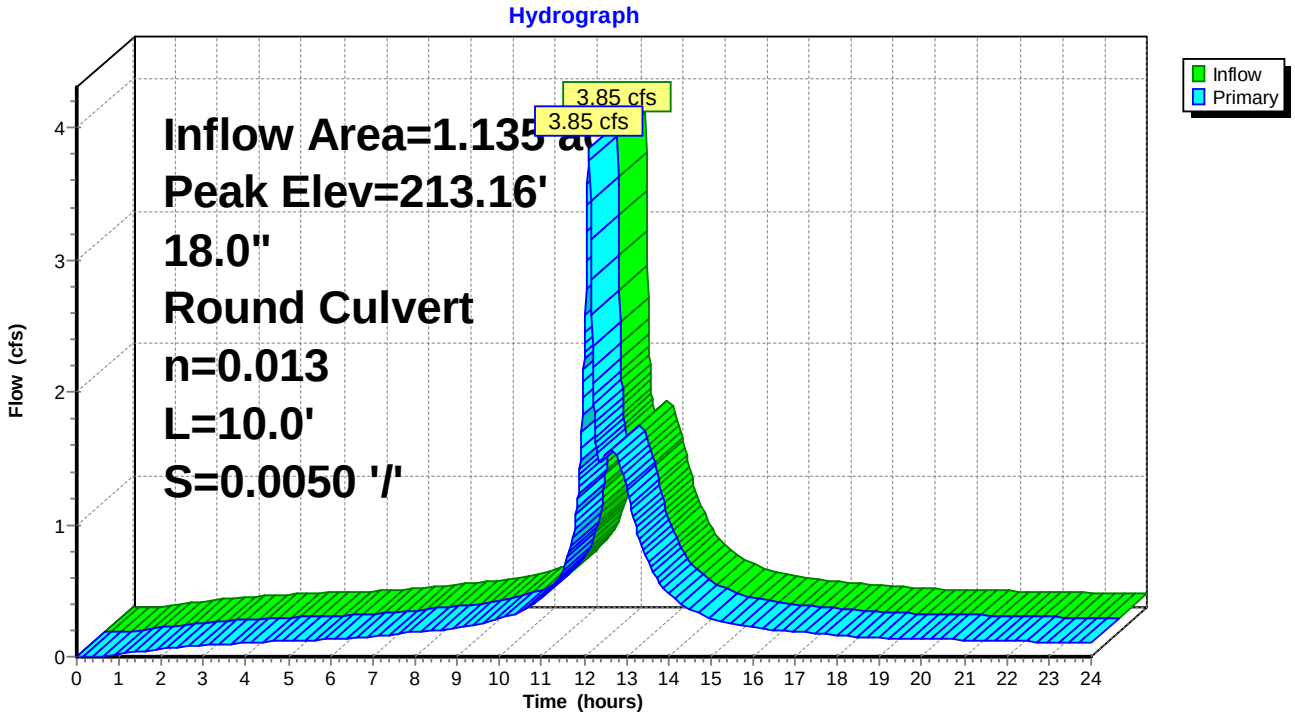
Inflow Area = 1.135 ac,100.00% Impervious, Inflow Depth > 5.89" for 25-Year event
Inflow = 3.85 cfs @ 12.12 hrs, Volume= 0.557 af
Outflow = 3.85 cfs @ 12.12 hrs, Volume= 0.557 af, Atten= 0%, Lag= 0.0 min
Primary = 3.85 cfs @ 12.12 hrs, Volume= 0.557 af
Routed to Pond 1SS : SSMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 213.16' @ 12.12 hrs
Flood Elev= 215.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.00'	**18.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.00' / 211.95' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.85 cfs @ 12.12 hrs HW=213.16' TW=210.38' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.85 cfs @ 3.63 fps)

Pond MH22: DMH-22



Summary for Pond MH24: DMH-24

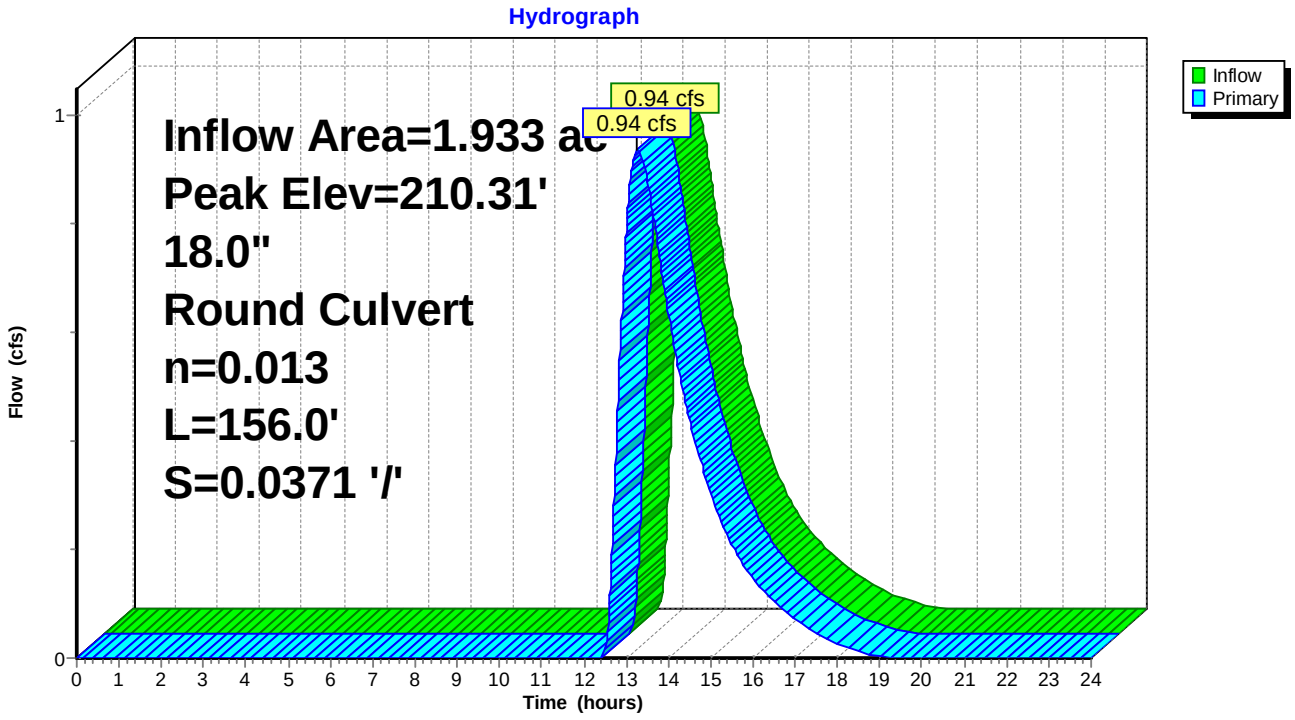
Inflow Area = 1.933 ac, 96.99% Impervious, Inflow Depth = 0.95" for 25-Year event
Inflow = 0.94 cfs @ 13.28 hrs, Volume= 0.153 af
Outflow = 0.94 cfs @ 13.28 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.0 min
Primary = 0.94 cfs @ 13.28 hrs, Volume= 0.153 af
Routed to Pond MH25 : DMH-25

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.31' @ 13.28 hrs
Flood Elev= 214.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.88'	**18.0" Round Culvert** L= 156.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.88' / 204.10' S= 0.0371 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=0.94 cfs @ 13.28 hrs HW=210.31' TW=204.59' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.94 cfs @ 2.23 fps)

Pond MH24: DMH-24



Summary for Pond MH25: DMH-25

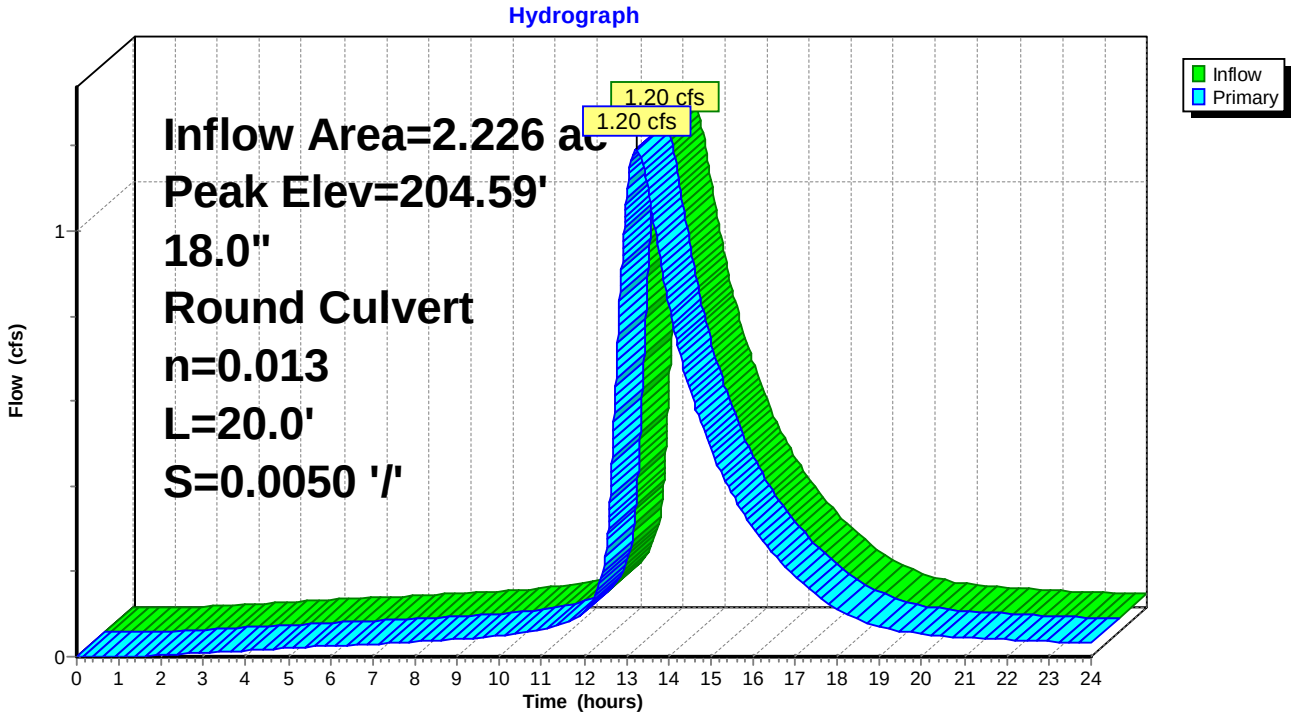
Inflow Area = 2.226 ac, 97.33% Impervious, Inflow Depth > 1.57" for 25-Year event
Inflow = 1.20 cfs @ 13.24 hrs, Volume= 0.291 af
Outflow = 1.20 cfs @ 13.24 hrs, Volume= 0.291 af, Atten= 0%, Lag= 0.0 min
Primary = 1.20 cfs @ 13.24 hrs, Volume= 0.291 af
Routed to Pond 6P : Basin 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 204.59' @ 13.24 hrs
Flood Elev= 207.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	204.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 204.00' / 203.90' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=1.20 cfs @ 13.24 hrs HW=204.59' TW=202.52' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.20 cfs @ 2.74 fps)

Pond MH25: DMH-25



Summary for Pond MH26: DMH-26

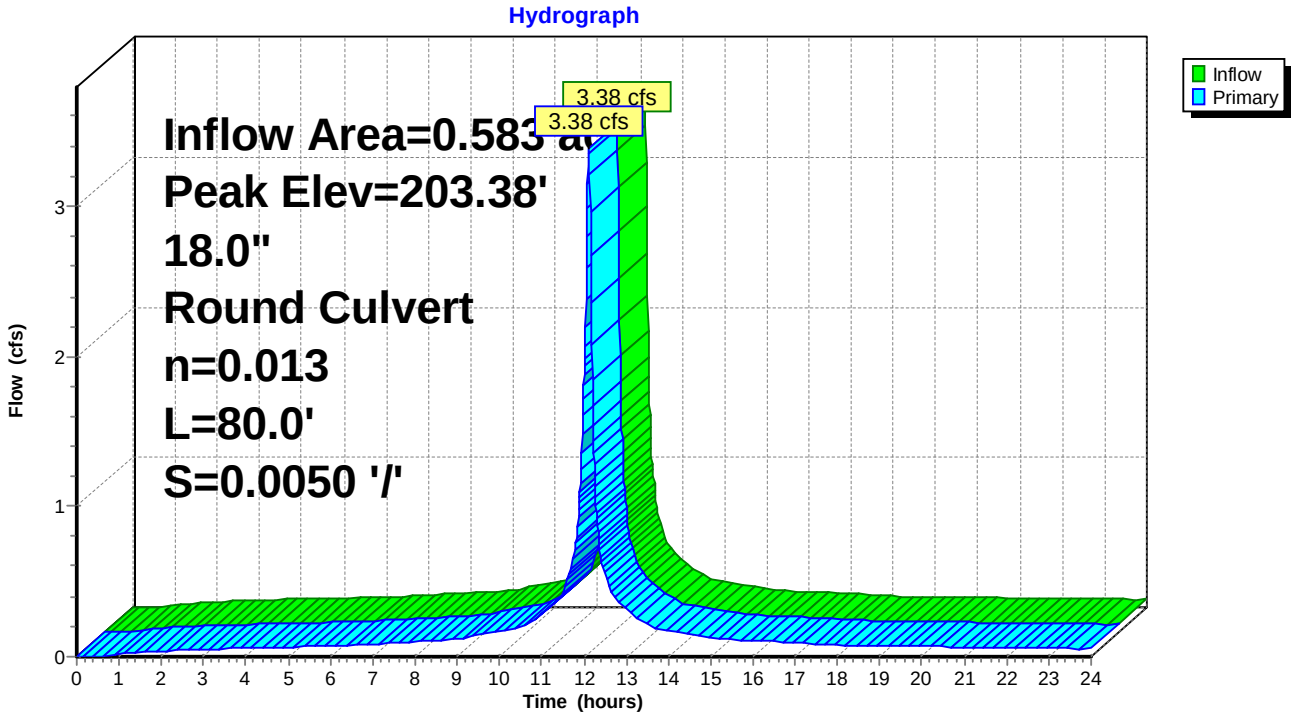
Inflow Area = 0.583 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 3.38 cfs @ 12.12 hrs, Volume= 0.288 af
Outflow = 3.38 cfs @ 12.12 hrs, Volume= 0.288 af, Atten= 0%, Lag= 0.0 min
Primary = 3.38 cfs @ 12.12 hrs, Volume= 0.288 af
Routed to Pond 6P : Basin 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 203.38' @ 16.51 hrs
Flood Elev= 205.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	201.78'	**18.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 201.78' / 201.38' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.38 cfs @ 12.12 hrs HW=202.79' TW=201.49' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.38 cfs @ 3.78 fps)

Pond MH26: DMH-26



Summary for Pond MH27: DMH-27

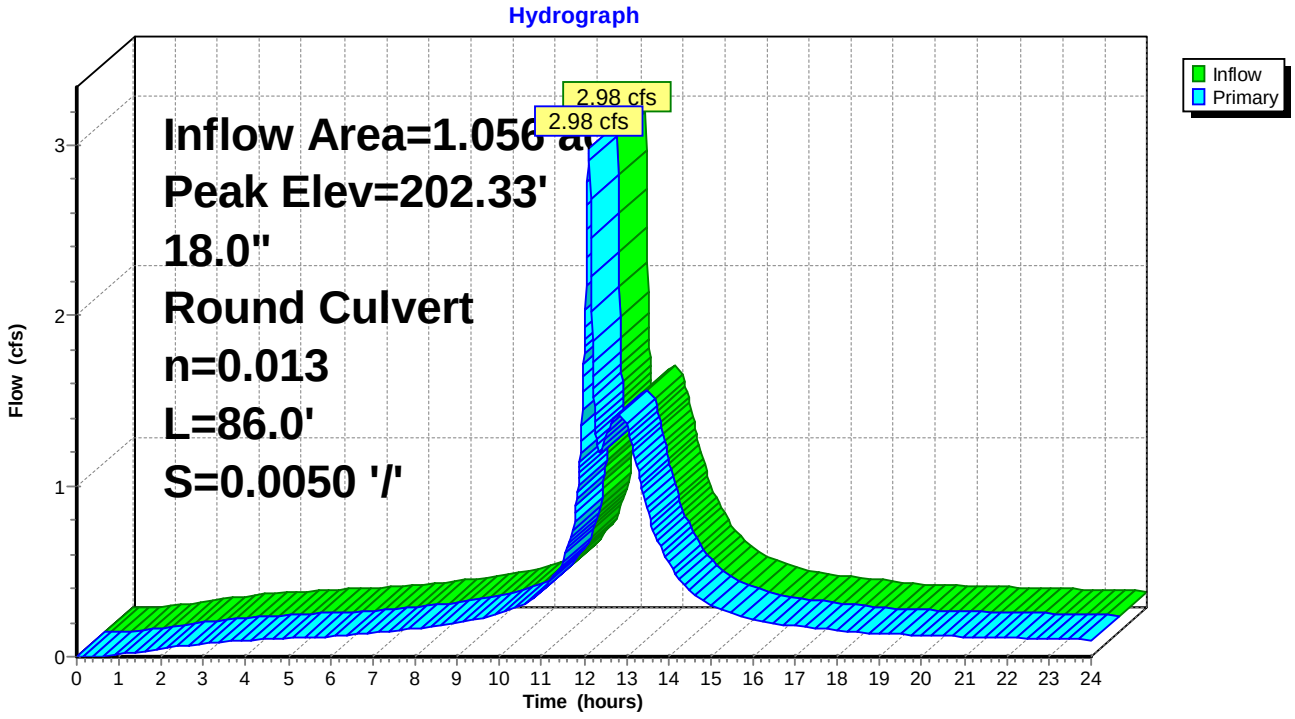
Inflow Area = 1.056 ac, 99.25% Impervious, Inflow Depth > 5.87" for 25-Year event
Inflow = 2.98 cfs @ 12.12 hrs, Volume= 0.517 af
Outflow = 2.98 cfs @ 12.12 hrs, Volume= 0.517 af, Atten= 0%, Lag= 0.0 min
Primary = 2.98 cfs @ 12.12 hrs, Volume= 0.517 af
Routed to Pond 2SS : SSMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 202.33' @ 12.12 hrs
Flood Elev= 205.61'

Device	Routing	Invert	Outlet Devices
#1	Primary	201.36'	**18.0" Round Culvert** L= 86.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 201.36' / 200.93' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.98 cfs @ 12.12 hrs HW=202.33' TW=201.72' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.98 cfs @ 3.53 fps)

Pond MH27: DMH-27



Summary for Pond MH3: DMH-3

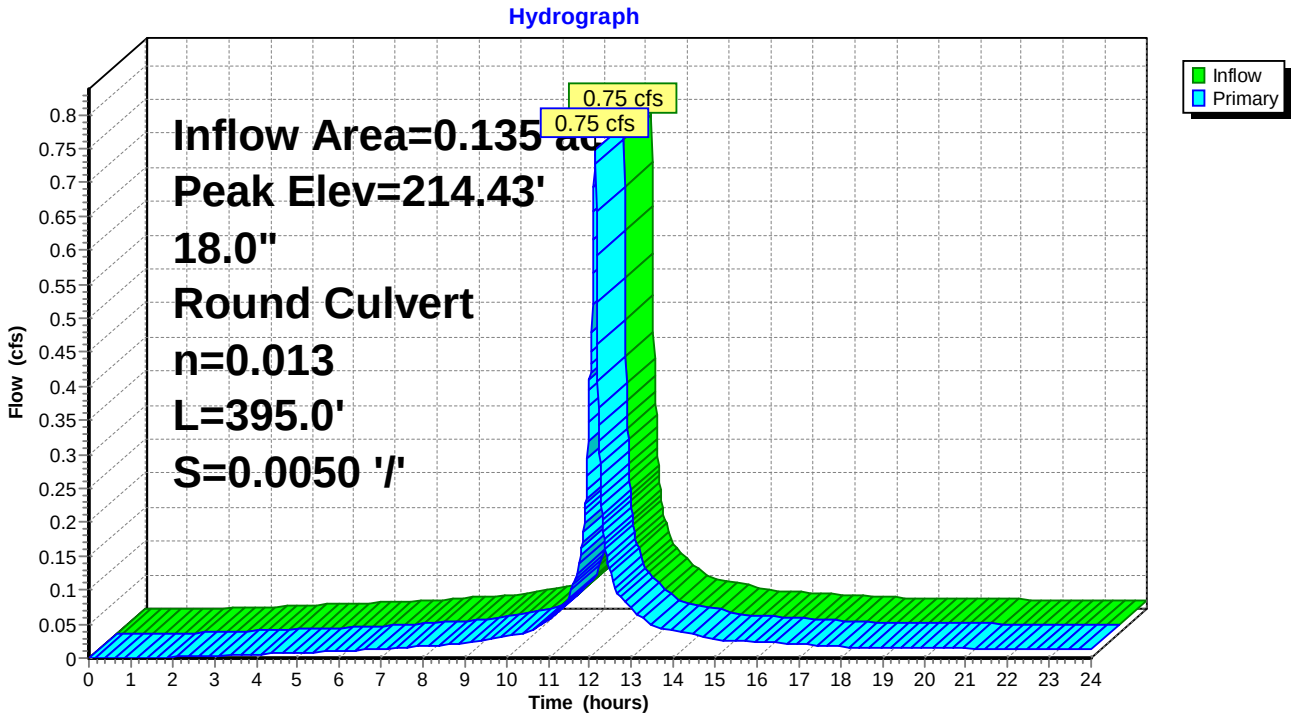
Inflow Area = 0.135 ac, 74.47% Impervious, Inflow Depth > 5.24" for 25-Year event
Inflow = 0.75 cfs @ 12.12 hrs, Volume= 0.059 af
Outflow = 0.75 cfs @ 12.12 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min
Primary = 0.75 cfs @ 12.12 hrs, Volume= 0.059 af
Routed to Pond MH4 : DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.43' @ 12.12 hrs
Flood Elev= 217.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**18.0" Round Culvert** L= 395.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 212.03' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=0.75 cfs @ 12.12 hrs HW=214.43' TW=210.62' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.75 cfs @ 2.66 fps)

Pond MH3: DMH-3



Summary for Pond MH4: DMH-4

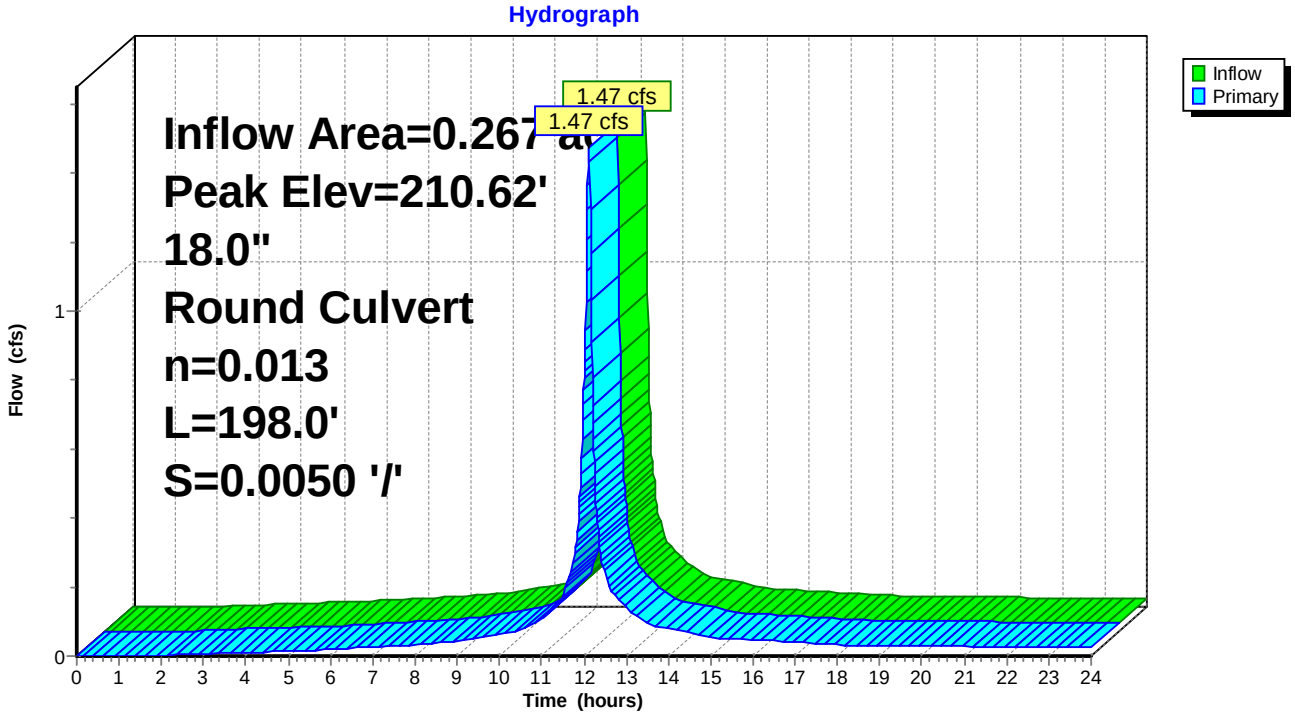
Inflow Area = 0.267 ac, 72.85% Impervious, Inflow Depth > 5.20" for 25-Year event
Inflow = 1.47 cfs @ 12.12 hrs, Volume= 0.116 af
Outflow = 1.47 cfs @ 12.12 hrs, Volume= 0.116 af, Atten= 0%, Lag= 0.0 min
Primary = 1.47 cfs @ 12.12 hrs, Volume= 0.116 af
Routed to Pond MH5 : DMH-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.62' @ 12.12 hrs
Flood Elev= 213.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.00'	**18.0" Round Culvert** L= 198.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.00' / 209.01' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=1.47 cfs @ 12.12 hrs HW=210.62' TW=207.80' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.47 cfs @ 3.17 fps)

Pond MH4: DMH-4



Summary for Pond MH5: DMH-5

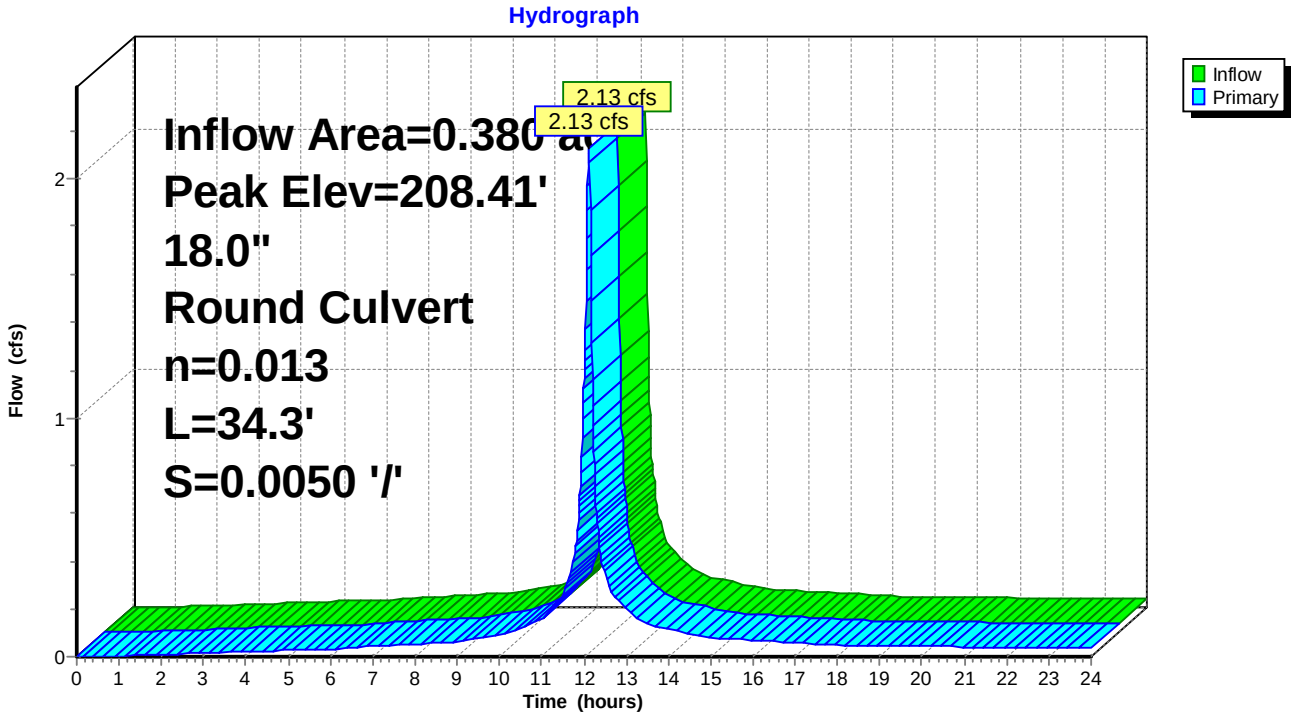
Inflow Area = 0.380 ac, 80.63% Impervious, Inflow Depth > 5.40" for 25-Year event
Inflow = 2.13 cfs @ 12.12 hrs, Volume= 0.171 af
Outflow = 2.13 cfs @ 12.12 hrs, Volume= 0.171 af, Atten= 0%, Lag= 0.0 min
Primary = 2.13 cfs @ 12.12 hrs, Volume= 0.171 af
Routed to Pond 2P : Basin 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 208.41' @ 15.07 hrs
Flood Elev= 210.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.00'	**18.0" Round Culvert** L= 34.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.00' / 206.83' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.12 cfs @ 12.12 hrs HW=207.80' TW=207.08' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.12 cfs @ 3.23 fps)

Pond MH5: DMH-5



Summary for Pond MH6: DMH-6

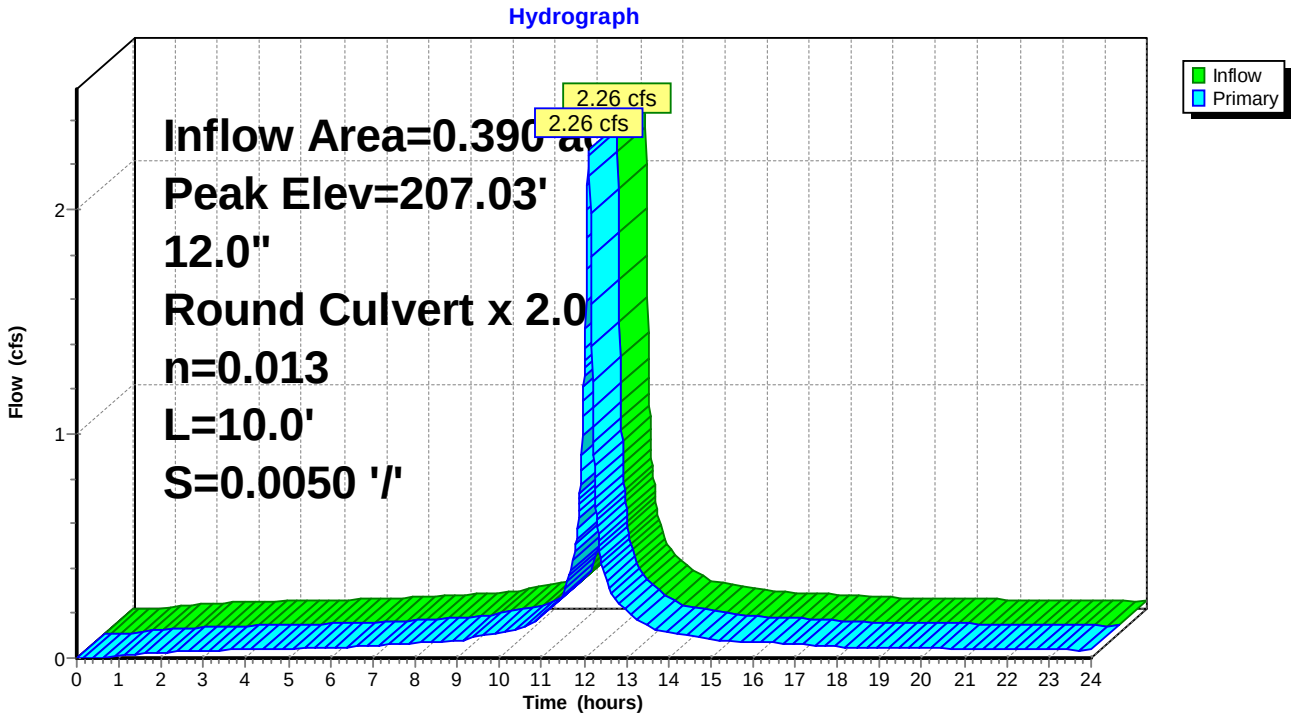
Inflow Area = 0.390 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 2.26 cfs @ 12.12 hrs, Volume= 0.192 af
Outflow = 2.26 cfs @ 12.12 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min
Primary = 2.26 cfs @ 12.12 hrs, Volume= 0.192 af
Routed to Pond 3P : Basin 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 207.03' @ 12.12 hrs
Flood Elev= 209.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.35'	**12.0" Round Culvert X 2.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.35' / 206.30' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.26 cfs @ 12.12 hrs HW=207.03' TW=205.96' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.26 cfs @ 2.80 fps)

Pond MH6: DMH-6



Summary for Pond MH7: DMH-7

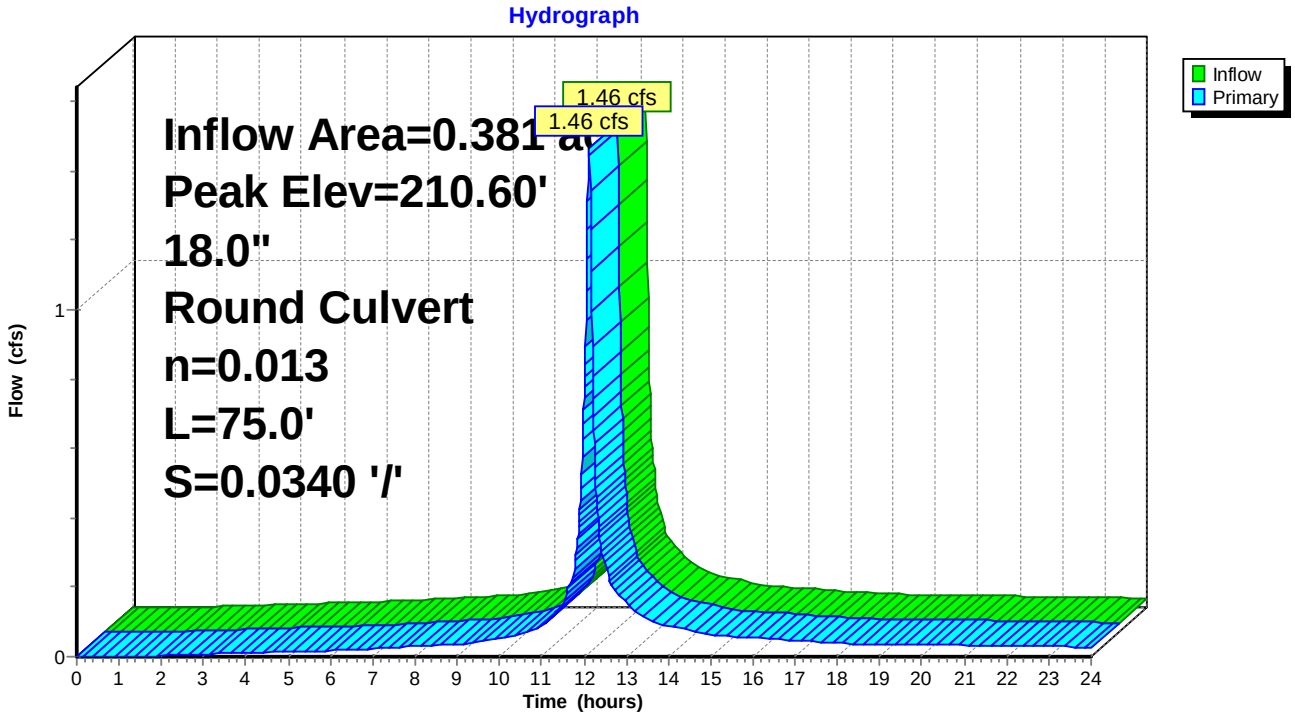
Inflow Area = 0.381 ac, 61.38% Impervious, Inflow Depth > 3.71" for 25-Year event
Inflow = 1.46 cfs @ 12.13 hrs, Volume= 0.118 af
Outflow = 1.46 cfs @ 12.13 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min
Primary = 1.46 cfs @ 12.13 hrs, Volume= 0.118 af
Routed to Pond 3P : Basin 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.60' @ 12.13 hrs
Flood Elev= 214.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.05'	**18.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.05' / 207.50' S= 0.0340 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=1.46 cfs @ 12.13 hrs HW=210.60' TW=205.99' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.46 cfs @ 2.51 fps)

Pond MH7: DMH-7



Summary for Pond MH8: DMH-8

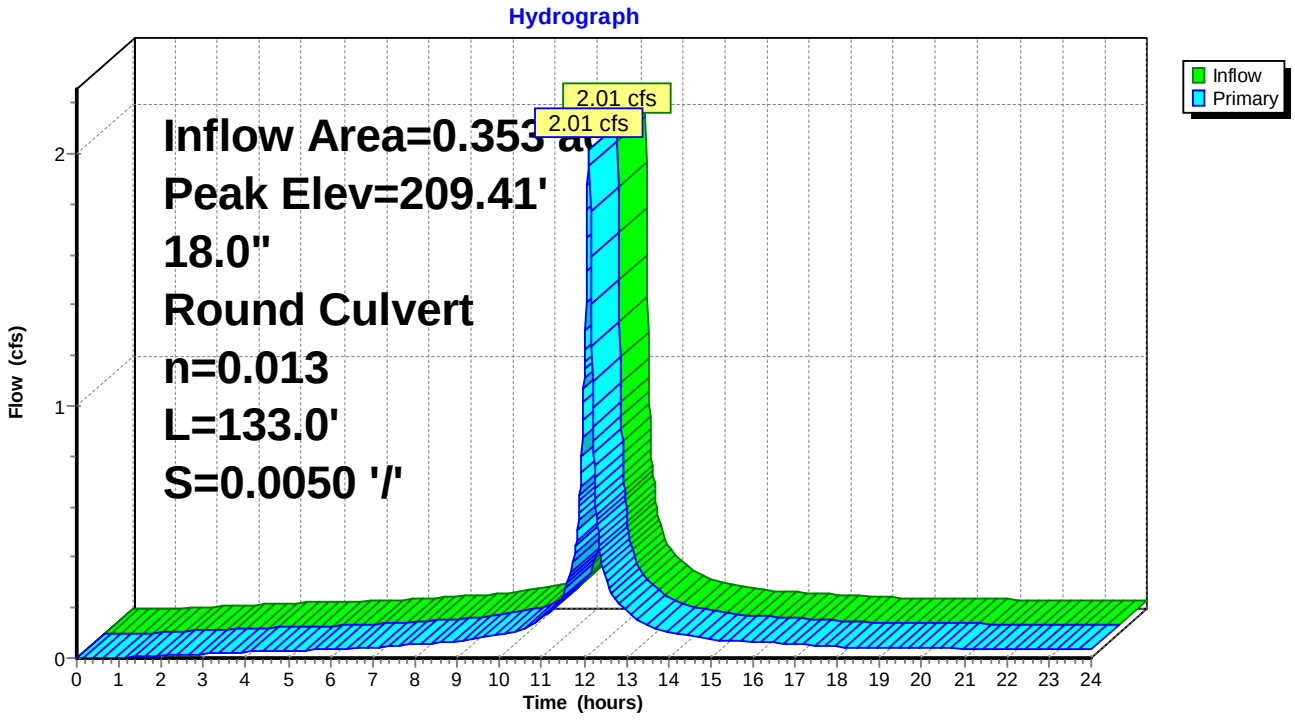
Inflow Area = 0.353 ac, 93.86% Impervious, Inflow Depth > 5.59" for 25-Year event
Inflow = 2.01 cfs @ 12.12 hrs, Volume= 0.164 af
Outflow = 2.01 cfs @ 12.12 hrs, Volume= 0.164 af, Atten= 0%, Lag= 0.0 min
Primary = 2.01 cfs @ 12.12 hrs, Volume= 0.164 af
Routed to Pond MH9 : CB-31

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 209.41' @ 12.12 hrs
Flood Elev= 212.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	208.62'	**18.0" Round Culvert** L= 133.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.62' / 207.96' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.01 cfs @ 12.12 hrs HW=209.41' TW=208.73' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.01 cfs @ 3.11 fps)

Pond MH8: DMH-8



Summary for Pond MH9: CB-31

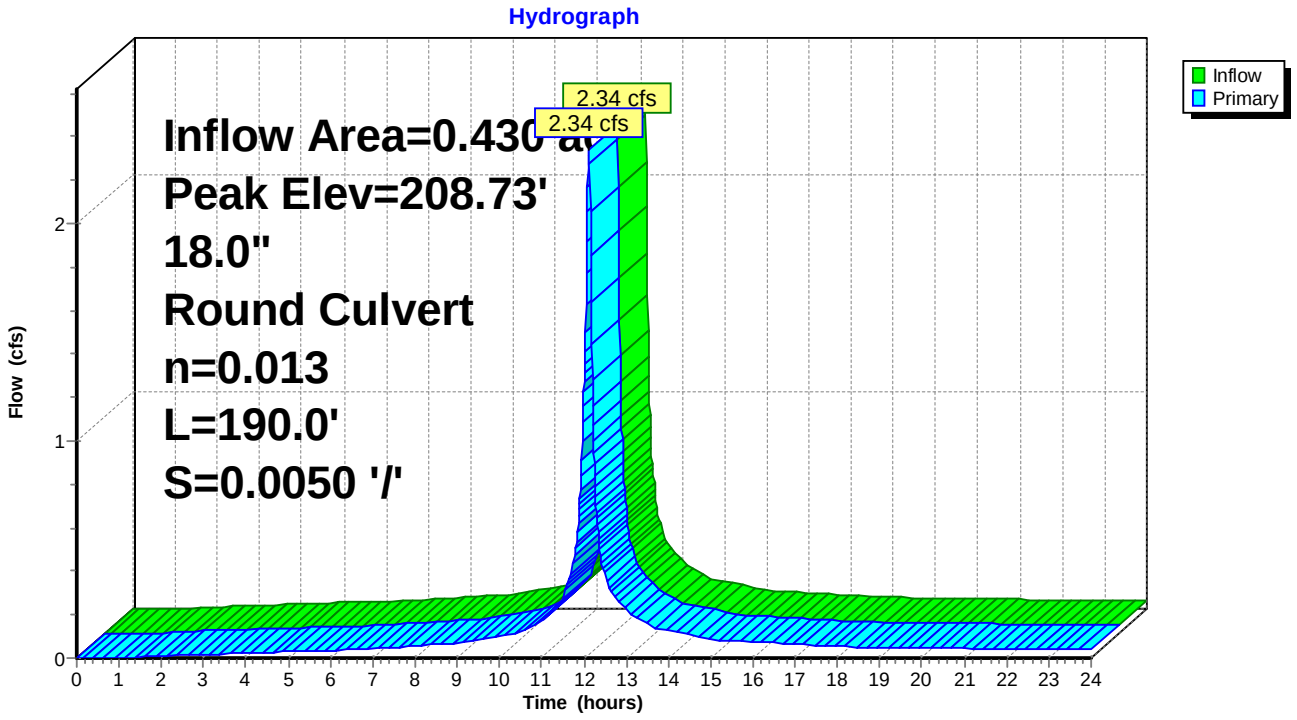
Inflow Area = 0.430 ac, 87.29% Impervious, Inflow Depth > 5.24" for 25-Year event
Inflow = 2.34 cfs @ 12.12 hrs, Volume= 0.188 af
Outflow = 2.34 cfs @ 12.12 hrs, Volume= 0.188 af, Atten= 0%, Lag= 0.0 min
Primary = 2.34 cfs @ 12.12 hrs, Volume= 0.188 af
Routed to Pond MH10 : CB-31

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 208.73' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.86'	**18.0" Round Culvert** L= 190.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.86' / 206.91' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.34 cfs @ 12.12 hrs HW=208.73' TW=207.88' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.34 cfs @ 3.17 fps)

Pond MH9: CB-31



Summary for Pond R1: R-1

Inflow Area = 0.545 ac,100.00% Impervious, Inflow Depth > 5.85" for 25-Year event
Inflow = 1.15 cfs @ 12.73 hrs, Volume= 0.266 af
Outflow = 1.15 cfs @ 12.73 hrs, Volume= 0.266 af, Atten= 0%, Lag= 0.0 min
Primary = 1.15 cfs @ 12.73 hrs, Volume= 0.266 af
Routed to Pond MH22 : DMH-22

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 219.16' @ 12.73 hrs Surf.Area= 0 sf Storage= 1 cf
Flood Elev= 237.00' Surf.Area= 0 sf Storage= 5 cf

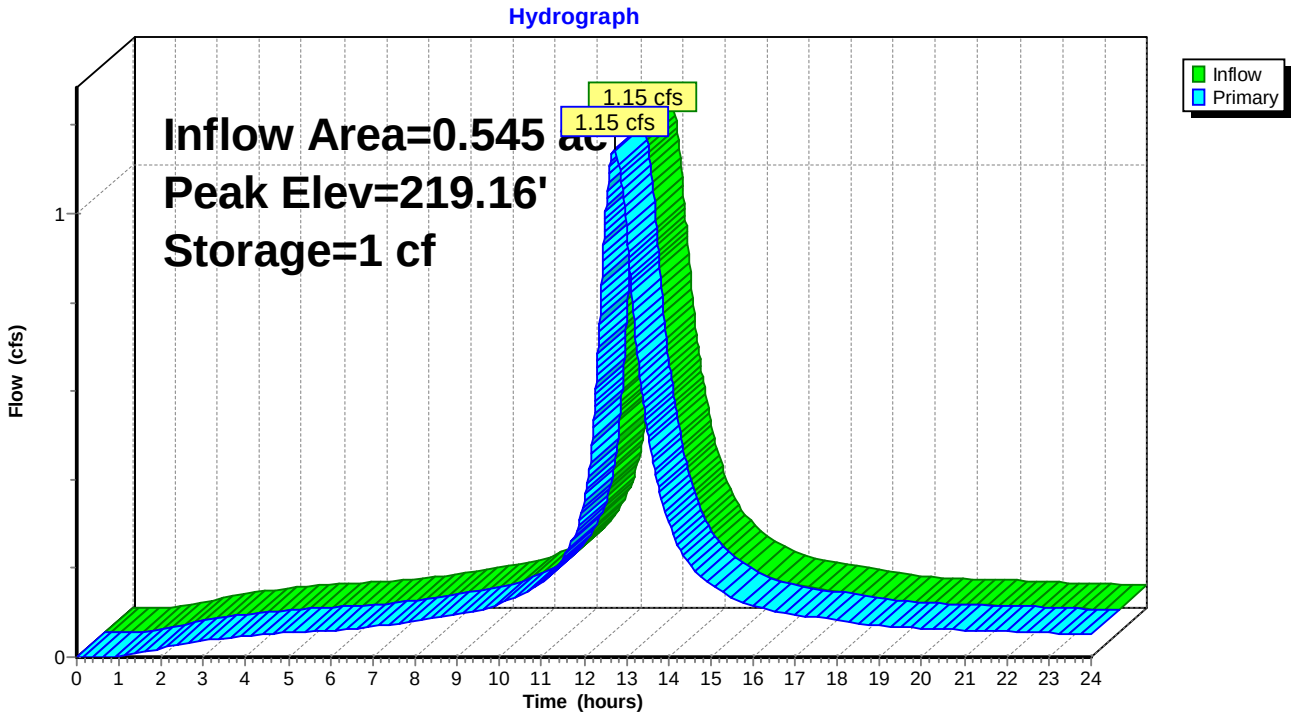
Plug-Flow detention time= 0.0 min calculated for 0.266 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (784.6 - 784.6)

Volume	Invert	Avail.Storage	Storage Description
#1	214.00'	5 cf	**0.50'D x 23.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**6.0" Round Culvert** L= 111.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 213.20' S= 0.0072 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Device 1	214.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.15 cfs @ 12.73 hrs HW=219.16' TW=212.69' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 1.15 cfs @ 5.85 fps)
↑**2=Orifice/Grate** (Passes 1.15 cfs of 2.15 cfs potential flow)

Pond R1: R-1


Hydrograph
Inflow Area=0.545 ac
Peak Elev=219.16'
Storage=1 cf
1.15 cfs
1.15 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Summary for Pond R2: R-2

Inflow Area = 0.611 ac, 99.90% Impervious, Inflow Depth > 5.84" for 25-Year event
Inflow = 1.16 cfs @ 12.85 hrs, Volume= 0.297 af
Outflow = 1.16 cfs @ 12.85 hrs, Volume= 0.297 af, Atten= 0%, Lag= 0.0 min
Primary = 1.16 cfs @ 12.85 hrs, Volume= 0.297 af
Routed to Pond MH27 : DMH-27

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 208.22' @ 12.85 hrs Surf.Area= 0 sf Storage= 1 cf
Flood Elev= 237.00' Surf.Area= 0 sf Storage= 6 cf

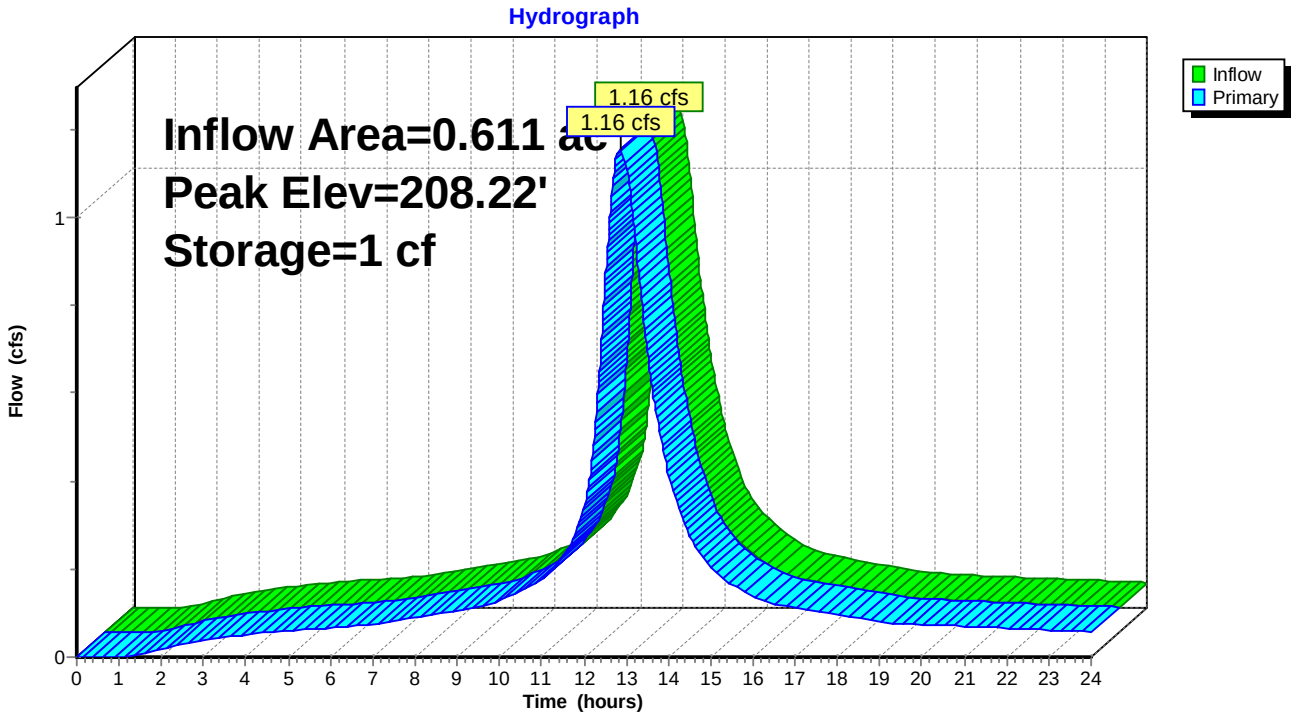
Plug-Flow detention time= 0.0 min calculated for 0.297 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (793.2 - 793.2)

Volume	Invert	Avail.Storage	Storage Description
#1	204.00'	6 cf	**0.50'D x 32.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	204.00'	**6.0" Round Culvert** L= 93.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 204.00' / 203.53' S= 0.0051 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Device 1	204.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.16 cfs @ 12.85 hrs HW=208.22' TW=201.98' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 1.16 cfs @ 5.89 fps)
↑**2=Orifice/Grate** (Passes 1.16 cfs of 1.94 cfs potential flow)

Pond R2: R-2


Hydrograph
Inflow Area=0.611 ac
Peak Elev=208.22'
Storage=1 cf
1.16 cfs
1.16 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Summary for Pond R3: R-3

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth > 5.93" for 25-Year event
Inflow = 0.27 cfs @ 12.12 hrs, Volume= 0.023 af
Outflow = 0.27 cfs @ 12.12 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min
Primary = 0.27 cfs @ 12.12 hrs, Volume= 0.023 af
Routed to Pond MH20 : DMH-20

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.33' @ 12.12 hrs Surf.Area= 0 sf Storage= 0 cf
Flood Elev= 237.00' Surf.Area= 0 sf Storage= 5 cf

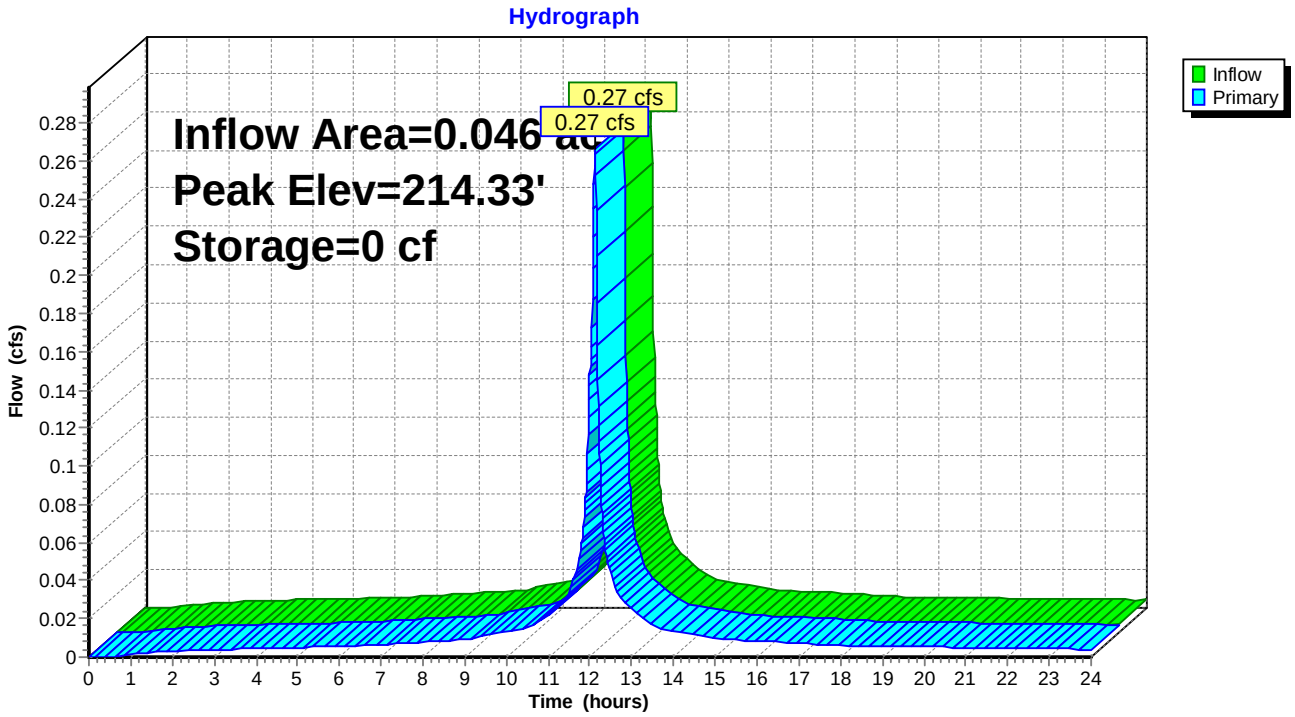
Plug-Flow detention time= 0.0 min calculated for 0.023 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (745.0 - 745.0)

Volume	Invert	Avail.Storage	Storage Description
#1	214.00'	5 cf	**0.50'D x 23.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**6.0" Round Culvert** L= 91.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 212.30' S= 0.0187 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Device 1	214.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.27 cfs @ 12.12 hrs HW=214.33' TW=212.21' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.27 cfs @ 1.95 fps)
↑**2=Orifice/Grate** (Passes 0.27 cfs of 0.54 cfs potential flow)

Pond R3: R-3


Hydrograph
Inflow
Primary
0.27 cfs
0.27 cfs
Inflow Area=0.046 ac
Peak Elev=214.33'
Storage=0 cf
Flow (cfs)
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
0.22
0.24
0.26
0.28
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Post-Development Stormwater Model
RMAT Climate Resiliency Storm Event

SANBORN HEAD

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 100S: 100S Runoff Area=16,048 sf 1.48% Impervious Runoff Depth>2.58"
Flow Length=271' Slope=0.2676 '/' Tc=5.5 min CN=45 Runoff=1.03 cfs 0.079 af

Subcatchment 101S: 101S Runoff Area=4,604 sf 99.20% Impervious Runoff Depth>9.25"
Flow Length=250' Slope=0.0454 '/' Tc=5.0 min CN=98 Runoff=0.95 cfs 0.081 af

Subcatchment 102S: 102S Runoff Area=4,972 sf 99.97% Impervious Runoff Depth>9.25"
Flow Length=191' Slope=0.0647 '/' Tc=5.0 min CN=98 Runoff=1.02 cfs 0.088 af

Subcatchment 103S: 103S Runoff Area=2,524 sf 99.84% Impervious Runoff Depth>9.25"
Flow Length=190' Slope=0.0262 '/' Tc=5.0 min CN=98 Runoff=0.52 cfs 0.045 af

Subcatchment 104S: 104S Runoff Area=2,369 sf 99.85% Impervious Runoff Depth>9.25"
Flow Length=193' Slope=0.0531 '/' Tc=5.0 min CN=98 Runoff=0.49 cfs 0.042 af

Subcatchment 200S: 200S Runoff Area=5,107 sf 0.04% Impervious Runoff Depth>3.97"
Flow Length=86' Slope=0.3119 '/' Tc=5.0 min CN=56 Runoff=0.54 cfs 0.039 af

Subcatchment 201S: 201S Runoff Area=13,023 sf 0.00% Impervious Runoff Depth>3.97"
Flow Length=580' Slope=0.1372 '/' Tc=10.6 min CN=56 Runoff=1.10 cfs 0.099 af

Subcatchment 202S: 202S Runoff Area=3,513 sf 65.30% Impervious Runoff Depth>8.28"
Flow Length=188' Slope=0.0633 '/' Tc=5.0 min CN=90 Runoff=0.70 cfs 0.056 af

Subcatchment 203S: 203S Runoff Area=2,381 sf 88.01% Impervious Runoff Depth>8.89"
Flow Length=195' Slope=0.0357 '/' Tc=5.0 min CN=95 Runoff=0.49 cfs 0.040 af

Subcatchment 204S: 204S Runoff Area=3,342 sf 71.56% Impervious Runoff Depth>8.40"
Flow Length=199' Slope=0.0581 '/' Tc=5.0 min CN=91 Runoff=0.67 cfs 0.054 af

Subcatchment 205S: 205S Runoff Area=2,387 sf 70.63% Impervious Runoff Depth>8.52"
Flow Length=198' Slope=0.0233 '/' Tc=5.0 min CN=92 Runoff=0.48 cfs 0.039 af

Subcatchment 206S: 206S Runoff Area=2,446 sf 98.11% Impervious Runoff Depth>9.13"
Flow Length=198' Slope=0.0272 '/' Tc=5.0 min CN=97 Runoff=0.50 cfs 0.043 af

Subcatchment 207S: 207S Runoff Area=2,467 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=198' Slope=0.0178 '/' Tc=5.0 min CN=98 Runoff=0.51 cfs 0.044 af

Subcatchment 208S: 208S Runoff Area=2,368 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=75' Slope=0.0259 '/' Tc=5.0 min CN=98 Runoff=0.49 cfs 0.042 af

Subcatchment 209S: 209S Runoff Area=2,142 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=66' Slope=0.0272 '/' Tc=5.0 min CN=98 Runoff=0.44 cfs 0.038 af

Subcatchment 210S: 210S Runoff Area=3,634 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=182' Slope=0.0066 '/' Tc=5.0 min CN=98 Runoff=0.75 cfs 0.064 af

Subcatchment 211S: 211S Runoff Area=3,726 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=192' Slope=0.0364 '/' Tc=5.0 min CN=98 Runoff=0.77 cfs 0.066 af

Subcatchment 300S: 300S Runoff Area=5,728 sf 1.00% Impervious Runoff Depth>2.95"
Flow Length=60' Slope=0.3181 '/' Tc=5.0 min CN=48 Runoff=0.44 cfs 0.032 af

Subcatchment 301S: 301S Runoff Area=7,393 sf 25.16% Impervious Runoff Depth>3.85"
Flow Length=90' Slope=0.0369 '/' Tc=5.0 min UI Adjusted CN=55 Runoff=0.76 cfs 0.054 af

Subcatchment 302S: 302S Runoff Area=4,293 sf 91.05% Impervious Runoff Depth>8.76"
Flow Length=102' Slope=0.0024 '/' Tc=6.1 min CN=94 Runoff=0.84 cfs 0.072 af

Subcatchment 303S: 303S Runoff Area=4,892 sf 90.09% Impervious Runoff Depth>8.64"
Flow Length=116' Slope=0.0087 '/' Tc=5.0 min CN=93 Runoff=0.99 cfs 0.081 af

Subcatchment 304S: 304S Runoff Area=2,534 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=81' Slope=0.0080 '/' Tc=5.0 min CN=98 Runoff=0.52 cfs 0.045 af

Subcatchment 305S: 305S Runoff Area=9,974 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=127' Slope=0.0042 '/' Tc=5.0 min CN=98 Runoff=2.05 cfs 0.176 af

Subcatchment 306S: 306S Runoff Area=5,568 sf 93.75% Impervious Runoff Depth>8.89"
Flow Length=129' Slope=0.0516 '/' Tc=5.0 min CN=95 Runoff=1.14 cfs 0.095 af

Subcatchment 307S: 307S Runoff Area=4,466 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=97' Slope=0.1504 '/' Tc=5.0 min CN=98 Runoff=0.92 cfs 0.079 af

Subcatchment 400S: 400S Runoff Area=12,752 sf 0.00% Impervious Runoff Depth>3.08"
Flow Length=118' Slope=0.5000 '/' Tc=5.0 min CN=49 Runoff=1.03 cfs 0.075 af

Subcatchment 401S: 401S Runoff Area=9,676 sf 91.33% Impervious Runoff Depth>8.76"
Flow Length=277' Slope=0.0262 '/' Tc=5.0 min CN=94 Runoff=1.97 cfs 0.162 af

Subcatchment 402S: 402S Runoff Area=5,699 sf 98.17% Impervious Runoff Depth>9.13"
Flow Length=189' Slope=0.0230 '/' Tc=5.0 min CN=97 Runoff=1.17 cfs 0.100 af

Subcatchment 403S: 403S Runoff Area=3,356 sf 57.17% Impervious Runoff Depth>6.66"
Flow Length=93' Slope=0.0420 '/' Tc=5.0 min CN=77 Runoff=0.58 cfs 0.043 af

Subcatchment 404S: 404S Runoff Area=10,254 sf 63.96% Impervious Runoff Depth>7.03"
Flow Length=193' Slope=0.0236 '/' Tc=5.5 min CN=80 Runoff=1.81 cfs 0.138 af

Subcatchment 500S: 500S Runoff Area=23,945 sf 25.10% Impervious Runoff Depth>6.15"
Flow Length=119' Slope=0.1593 '/' Tc=5.0 min UI Adjusted CN=73 Runoff=3.87 cfs 0.282 af

Subcatchment 501S: 501S Runoff Area=5,785 sf 85.28% Impervious Runoff Depth>8.40"
Flow Length=69' Slope=0.0081 '/' Tc=5.0 min CN=91 Runoff=1.16 cfs 0.093 af

Subcatchment 502S: 502S Runoff Area=5,884 sf 84.95% Impervious Runoff Depth>8.39"
Flow Length=162' Slope=0.0053 '/' Tc=6.9 min CN=91 Runoff=1.10 cfs 0.094 af

Subcatchment 503S: 503S Runoff Area=5,683 sf 81.04% Impervious Runoff Depth>8.15"
Flow Length=122' Slope=0.0101 '/' Tc=5.0 min CN=89 Runoff=1.12 cfs 0.089 af

Subcatchment 504S: 504S Runoff Area=3,171 sf 85.31% Impervious Runoff Depth>8.40"
Flow Length=140' Slope=0.0105 '/' Tc=5.0 min CN=91 Runoff=0.63 cfs 0.051 af

Subcatchment 505S: 505S Runoff Area=7,640 sf 89.34% Impervious Runoff Depth>8.64"
Flow Length=189' Slope=0.0052 '/' Tc=7.2 min CN=93 Runoff=1.43 cfs 0.126 af

Subcatchment 506S: 506S Runoff Area=7,342 sf 77.95% Impervious Runoff Depth>7.90"
Flow Length=237' Slope=0.0122 '/' Tc=7.2 min CN=87 Runoff=1.31 cfs 0.111 af

Subcatchment 507S: 507S Runoff Area=10,148 sf 58.61% Impervious Runoff Depth>6.77"
Flow Length=138' Slope=0.0031 '/' Tc=12.4 min CN=78 Runoff=1.35 cfs 0.131 af

Subcatchment 508S: 508S Runoff Area=4,639 sf 96.02% Impervious Runoff Depth>9.01"
Flow Length=47' Slope=0.0332 '/' Tc=5.0 min CN=96 Runoff=0.95 cfs 0.080 af

Subcatchment 509S: 509S Runoff Area=7,021 sf 81.27% Impervious Runoff Depth>8.15"
Flow Length=81' Slope=0.0254 '/' Tc=5.0 min CN=89 Runoff=1.38 cfs 0.110 af

Subcatchment 510S: 510S Runoff Area=7,367 sf 54.04% Impervious Runoff Depth>6.40"
Flow Length=181' Slope=0.0487 '/' Tc=5.0 min CN=75 Runoff=1.23 cfs 0.090 af

Subcatchment 511S: 511S Runoff Area=11,919 sf 66.76% Impervious Runoff Depth>7.28"
Flow Length=165' Slope=0.1792 '/' Tc=5.0 min CN=82 Runoff=2.20 cfs 0.166 af

Subcatchment 512S: 512S Runoff Area=4,847 sf 99.72% Impervious Runoff Depth>9.25"
Flow Length=135' Slope=0.0492 '/' Tc=5.0 min CN=98 Runoff=1.00 cfs 0.086 af

Subcatchment 513S: 513S Runoff Area=3,621 sf 93.15% Impervious Runoff Depth>8.89"
Flow Length=120' Slope=0.0111 '/' Tc=5.0 min CN=95 Runoff=0.74 cfs 0.062 af

Subcatchment 600S: 600S Runoff Area=11,097 sf 0.00% Impervious Runoff Depth>1.73"
Flow Length=440' Slope=0.0020 '/' Tc=109.7 min CN=39 Runoff=0.10 cfs 0.037 af

Subcatchment 601S: 601S Runoff Area=4,934 sf 99.24% Impervious Runoff Depth>9.25"
Flow Length=190' Slope=0.0460 '/' Tc=5.0 min CN=98 Runoff=1.02 cfs 0.087 af

Subcatchment 602S: 602S Runoff Area=14,445 sf 98.07% Impervious Runoff Depth>9.25"
Flow Length=89' Slope=0.1108 '/' Tc=5.0 min CN=98 Runoff=2.97 cfs 0.256 af

Subcatchment 603S: 603S Runoff Area=14,930 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=84' Slope=0.0144 '/' Tc=5.0 min CN=98 Runoff=3.07 cfs 0.264 af

Subcatchment 604S: 604S Runoff Area=14,934 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=71' Slope=0.0188 '/' Tc=5.0 min CN=98 Runoff=3.07 cfs 0.264 af

Subcatchment 605S: 605S Runoff Area=10,448 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=84' Slope=0.0102 '/' Tc=5.0 min CN=98 Runoff=2.15 cfs 0.185 af

Subcatchment 606S: 606S Runoff Area=4,304 sf 51.34% Impervious Runoff Depth>6.28"
Flow Length=87' Slope=0.0093 '/' Tc=5.6 min CN=74 Runoff=0.69 cfs 0.052 af

Subcatchment 607S: 607S Runoff Area=12,360 sf 96.48% Impervious Runoff Depth>9.01"
Flow Length=77' Slope=0.0196 '/' Tc=5.0 min CN=96 Runoff=2.53 cfs 0.213 af

Subcatchment 608S: 608S Runoff Area=16,074 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=76' Slope=0.0189 '/' Tc=5.0 min CN=98 Runoff=3.31 cfs 0.284 af

Subcatchment 609S: 609S Runoff Area=15,970 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=74' Slope=0.0190 '/' Tc=5.0 min CN=98 Runoff=3.29 cfs 0.283 af

Subcatchment 610S: 610S Runoff Area=9,740 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=84' Slope=0.0161 '/' Tc=5.0 min CN=98 Runoff=2.00 cfs 0.172 af

Subcatchment 611S: 611S Runoff Area=7,305 sf 99.80% Impervious Runoff Depth>8.65"
Tc=244.9 min CN=98 Runoff=0.22 cfs 0.121 af

Subcatchment 612S: 612S Runoff Area=1,999 sf 100.00% Impervious Runoff Depth>9.25"
Flow Length=45' Slope=0.0440 '/' Tc=5.0 min CN=98 Runoff=0.41 cfs 0.035 af

Subcatchment 613S: 613S Runoff Area=23,737 sf 100.00% Impervious Runoff Depth>9.14"
Flow Length=70' Slope=0.0000 '/' Tc=56.7 min CN=98 Runoff=1.77 cfs 0.415 af

Subcatchment 614S: 614S Runoff Area=5,458 sf 99.28% Impervious Runoff Depth>9.11"
Tc=68.9 min CN=98 Runoff=0.36 cfs 0.095 af

Subcatchment 615S: 615S Runoff Area=26,616 sf 99.90% Impervious Runoff Depth>9.11"
Flow Length=370' Slope=0.0001 '/' Tc=68.0 min CN=98 Runoff=1.79 cfs 0.464 af

Subcatchment 616S: 616S Runoff Area=8,937 sf 75.92% Impervious Runoff Depth>8.64"
Flow Length=195' Slope=0.0133 '/' Tc=5.0 min CN=93 Runoff=1.81 cfs 0.148 af

Subcatchment 617S: 617S Runoff Area=10,344 sf 0.07% Impervious Runoff Depth>6.02"
Flow Length=216' Slope=0.2648 '/' Tc=5.0 min CN=72 Runoff=1.64 cfs 0.119 af

Subcatchment 701S: 701S Runoff Area=21,147 sf 0.01% Impervious Runoff Depth>2.20"
Flow Length=153' Slope=0.0344 '/' Tc=10.5 min CN=42 Runoff=0.88 cfs 0.089 af

Subcatchment 702S: 702S Runoff Area=256,529 sf 0.50% Impervious Runoff Depth>2.06"
Flow Length=714' Slope=0.0674 '/' Tc=26.4 min CN=41 Runoff=6.33 cfs 1.010 af

Subcatchment 703S: 703S Runoff Area=6,055 sf 0.20% Impervious Runoff Depth>4.23"
Flow Length=11' Slope=0.3294 '/' Tc=5.0 min CN=58 Runoff=0.69 cfs 0.049 af

Subcatchment 704S: 704S Runoff Area=29,520 sf 0.00% Impervious Runoff Depth>3.97"
Flow Length=274' Slope=0.2098 '/' Tc=5.0 min CN=56 Runoff=3.14 cfs 0.224 af

Reach 10R: Diversion Berm Avg. Flow Depth=0.47' Max Vel=0.74 fps Inflow=0.69 cfs 0.049 af
n=0.030 L=580.0' S=0.0017 '/' Capacity=3.08 cfs Outflow=0.40 cfs 0.048 af

Reach DP-1: Wetland
Outflow=0.00 cfs 0.000 af

Reach DP-2: Police/DPW Facility Inflow=0.88 cfs 0.089 af
Outflow=0.88 cfs 0.089 af

Reach DP-3: WWTP Perimeter Swale Inflow=7.00 cfs 1.234 af
Outflow=7.00 cfs 1.234 af

Reach DP-4: Wetland Inflow=3.75 cfs 0.323 af
Outflow=3.75 cfs 0.323 af

Pond 1D: ADS Subsurface Detention Peak Elev=211.55' Storage=19,879 cf Inflow=12.88 cfs 1.454 af
Discarded=0.35 cfs 0.562 af Primary=4.13 cfs 0.584 af Outflow=4.48 cfs 1.146 af

Pond 1P: Basin 1 Peak Elev=213.20' Storage=5,297 cf Inflow=3.05 cfs 0.254 af
Outflow=0.16 cfs 0.175 af

Pond 1SS: SSMH-1 Peak Elev=211.91' Inflow=12.88 cfs 1.454 af
24.0" Round Culvert n=0.013 L=5.0' S=0.0020 '/' Outflow=12.88 cfs 1.454 af

Pond 2D: ADS Subsurface Detention Peak Elev=202.90' Storage=19,787 cf Inflow=7.68 cfs 1.071 af
Outflow=0.66 cfs 0.831 af

Pond 2P: Basin 2 Peak Elev=209.36' Storage=11,932 cf Inflow=7.22 cfs 0.623 af
Discarded=0.22 cfs 0.242 af Primary=1.17 cfs 0.183 af Secondary=0.00 cfs 0.000 af Outflow=1.39 cfs 0.425 af

Pond 2SS: SSMH-2 Peak Elev=202.91' Inflow=7.68 cfs 1.071 af
24.0" Round Culvert n=0.013 L=5.0' S=0.0000 '/' Outflow=7.68 cfs 1.071 af

Pond 3D: ADS Subsurface Detention Peak Elev=210.02' Storage=8,446 cf Inflow=6.13 cfs 0.515 af
Discarded=0.18 cfs 0.250 af Primary=1.47 cfs 0.136 af Outflow=1.65 cfs 0.386 af

Pond 3P: Basin 3 Peak Elev=207.67' Storage=11,287 cf Inflow=7.97 cfs 0.683 af
Discarded=0.30 cfs 0.357 af Primary=0.17 cfs 0.024 af Secondary=2.54 cfs 0.116 af Outflow=3.02 cfs 0.497 af

Pond 3SS: SSMH-3 Peak Elev=210.06' Inflow=6.13 cfs 0.515 af
24.0" Round Culvert n=0.013 L=5.0' S=0.3280 '/' Outflow=6.13 cfs 0.515 af

Pond 4D: ADS Subsurface Detention Peak Elev=207.53' Storage=1,287 cf Inflow=0.95 cfs 0.081 af
Outflow=0.07 cfs 0.079 af

Pond 4P: Basin 4 Peak Elev=205.79' Storage=11,552 cf Inflow=6.55 cfs 0.518 af
Outflow=0.30 cfs 0.336 af

Pond 4SS: SSMH-4 Peak Elev=207.53' Inflow=0.95 cfs 0.081 af
24.0" Round Culvert n=0.013 L=5.0' S=0.1660 '/' Outflow=0.95 cfs 0.081 af

Pond 5P: Basin 5 Peak Elev=204.40' Storage=31,138 cf Inflow=13.06 cfs 1.192 af
Outflow=0.58 cfs 0.626 af

Pond 6P: Basin 6 Peak Elev=205.97' Storage=40,042 cf Inflow=9.34 cfs 1.433 af
Outflow=0.68 cfs 0.703 af

Pond 7P: Basin 7 Peak Elev=203.59' Storage=2,194 cf Inflow=1.64 cfs 0.119 af
Outflow=0.13 cfs 0.106 af

Pond CB1: CB-1 Peak Elev=211.44' Inflow=0.95 cfs 0.081 af
Outflow=0.95 cfs 0.081 af

Pond CB10: CB-10 Peak Elev=210.67' Inflow=0.51 cfs 0.044 af
Outflow=0.51 cfs 0.044 af

Pond CB11: CB-11 Peak Elev=211.79' Inflow=0.75 cfs 0.064 af
Outflow=0.75 cfs 0.064 af

Pond CB12: CB-12 Peak Elev=210.56' Inflow=0.77 cfs 0.066 af
Outflow=0.77 cfs 0.066 af

Pond CB13: CB-13 Peak Elev=210.07' Inflow=0.49 cfs 0.042 af
Outflow=0.49 cfs 0.042 af

Pond CB14: CB-14 Peak Elev=210.07' Inflow=0.44 cfs 0.038 af
Outflow=0.44 cfs 0.038 af

Pond CB15: CB-15 Peak Elev=214.30' Inflow=0.84 cfs 0.072 af
Outflow=0.84 cfs 0.072 af

Pond CB16: CB-16 Peak Elev=214.61' Inflow=0.99 cfs 0.081 af
Outflow=0.99 cfs 0.081 af

Pond CB17: CB-17 Peak Elev=213.09' Inflow=0.76 cfs 0.054 af
Outflow=0.76 cfs 0.054 af

Pond CB18: CB-18 Peak Elev=214.07' Inflow=0.52 cfs 0.045 af
Outflow=0.52 cfs 0.045 af

Pond CB19: CB-19 Peak Elev=209.61' Inflow=0.92 cfs 0.079 af
Outflow=0.92 cfs 0.079 af

Pond CB2: CB-2 Peak Elev=214.07' Inflow=1.02 cfs 0.088 af
Outflow=1.02 cfs 0.088 af

Pond CB20: CB-20 Peak Elev=214.12' Inflow=2.05 cfs 0.176 af
Outflow=2.05 cfs 0.176 af

Pond CB21: CB-21 Peak Elev=212.32' Inflow=1.14 cfs 0.095 af
Outflow=1.14 cfs 0.095 af

Pond CB22: CB-22 Peak Elev=212.13' Inflow=1.17 cfs 0.100 af
Outflow=1.17 cfs 0.100 af

Pond CB23: CB-23 Peak Elev=212.14' Inflow=1.97 cfs 0.162 af
Outflow=1.97 cfs 0.162 af

Pond CB24: CB-24 Peak Elev=214.08' Inflow=0.58 cfs 0.043 af
Outflow=0.58 cfs 0.043 af

Pond CB25: CB-25 Peak Elev=212.51' Inflow=1.81 cfs 0.138 af
Outflow=1.81 cfs 0.138 af

Pond CB26: CB-26 Peak Elev=214.13' Inflow=1.16 cfs 0.093 af
Outflow=1.16 cfs 0.093 af

Pond CB27: CB-27 Peak Elev=214.62' Inflow=1.10 cfs 0.094 af
Outflow=1.10 cfs 0.094 af

Pond CB28: CB-28 Peak Elev=214.08' Inflow=0.63 cfs 0.051 af
Outflow=0.63 cfs 0.051 af

Pond CB29: CB-29 Peak Elev=215.02' Inflow=1.12 cfs 0.089 af
Outflow=1.12 cfs 0.089 af

Pond CB3: CB-3 Peak Elev=216.97' Inflow=0.52 cfs 0.045 af
Outflow=0.52 cfs 0.045 af

Pond CB30: CB-30 Peak Elev=215.09' Inflow=1.43 cfs 0.126 af
Outflow=1.43 cfs 0.126 af

Pond CB31: CB-31 Peak Elev=214.09' Inflow=0.74 cfs 0.062 af
Outflow=0.74 cfs 0.062 af

Pond CB32: CB-32 Peak Elev=214.84' Inflow=1.35 cfs 0.131 af
Outflow=1.35 cfs 0.131 af

Pond CB33: CB-33 Peak Elev=215.14' Inflow=1.31 cfs 0.111 af
Outflow=1.31 cfs 0.111 af

Pond CB34: CB-34 Peak Elev=211.33' Inflow=1.23 cfs 0.090 af
Outflow=1.23 cfs 0.090 af

Pond CB35: CB-35 Peak Elev=212.51' Inflow=1.00 cfs 0.086 af
Outflow=1.00 cfs 0.086 af

Pond CB36: CB-36 Peak Elev=214.14' Inflow=1.38 cfs 0.110 af
Outflow=1.38 cfs 0.110 af

Pond CB37: CB-37 Peak Elev=215.11' Inflow=0.95 cfs 0.080 af
Outflow=0.95 cfs 0.080 af

Pond CB38: CB-38 Peak Elev=206.19' Inflow=2.20 cfs 0.166 af
Outflow=2.20 cfs 0.166 af

Pond CB39: CB-39 Peak Elev=206.28' Inflow=3.87 cfs 0.282 af
Outflow=3.87 cfs 0.282 af

Pond CB4: CB-4 Peak Elev=216.97' Inflow=0.49 cfs 0.042 af
Outflow=0.49 cfs 0.042 af

Pond CB40: CB-40 Peak Elev=215.99' Inflow=0.69 cfs 0.052 af
Outflow=0.69 cfs 0.052 af

Pond CB41: CB-41 Peak Elev=215.73' Inflow=2.53 cfs 0.213 af
Outflow=2.53 cfs 0.213 af

Pond CB42: CB-4 Peak Elev=215.76' Inflow=3.31 cfs 0.284 af
Outflow=3.31 cfs 0.284 af

Pond CB43: CB-43 Peak Elev=215.76' Inflow=3.29 cfs 0.283 af
Outflow=3.29 cfs 0.283 af

Pond CB44: CB-44 Peak Elev=215.78' Inflow=2.00 cfs 0.172 af
Outflow=2.00 cfs 0.172 af

Pond CB45: CB-45 Peak Elev=208.74' Inflow=0.22 cfs 0.121 af
Outflow=0.22 cfs 0.121 af

Pond CB46: CB-46 Peak Elev=214.96' Inflow=0.36 cfs 0.095 af
Outflow=0.36 cfs 0.095 af

Pond CB47: CB-47 Peak Elev=206.17' Inflow=1.81 cfs 0.148 af
Outflow=1.81 cfs 0.148 af

Pond CB48: CB-48 Peak Elev=206.07' Inflow=1.02 cfs 0.087 af
Outflow=1.02 cfs 0.087 af

Pond CB49: CB-49 Peak Elev=206.15' Inflow=2.97 cfs 0.256 af
Outflow=2.97 cfs 0.256 af

Pond CB5: CB-5 Peak Elev=217.59' Inflow=0.70 cfs 0.056 af
Outflow=0.70 cfs 0.056 af

Pond CB50: CB-4 Peak Elev=205.15' Inflow=3.07 cfs 0.264 af
Outflow=3.07 cfs 0.264 af

Pond CB51: CB-51 Peak Elev=205.97' Inflow=3.07 cfs 0.264 af
Outflow=3.07 cfs 0.264 af

Pond CB52: CB-52 Peak Elev=206.12' Inflow=2.15 cfs 0.185 af
Outflow=2.15 cfs 0.185 af

Pond CB6: CB-6 Peak Elev=217.67' Inflow=0.49 cfs 0.040 af
Outflow=0.49 cfs 0.040 af

Pond CB7: CB-7 Peak Elev=213.69' Inflow=0.67 cfs 0.054 af
Outflow=0.67 cfs 0.054 af

Pond CB8: CB-8 Peak Elev=213.67' Inflow=0.48 cfs 0.039 af
Outflow=0.48 cfs 0.039 af

Pond CB9: CB-9 Peak Elev=210.67' Inflow=0.50 cfs 0.043 af
Outflow=0.50 cfs 0.043 af

Pond MH1: DMH-1 Peak Elev=214.17' Inflow=1.01 cfs 0.087 af
15.0" Round Culvert n=0.013 L=32.0' S=0.0050 '/' Outflow=1.01 cfs 0.087 af

Pond MH10: CB-31 Peak Elev=208.32' Inflow=5.52 cfs 0.442 af
18.0" Round Culvert n=0.013 L=69.0' S=0.0049 '/' Outflow=5.52 cfs 0.442 af

Pond MH11: CB-31 Peak Elev=207.74' Inflow=5.52 cfs 0.442 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=5.52 cfs 0.442 af

Pond MH12: DMH-12 Peak Elev=211.39' Inflow=2.87 cfs 0.238 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=2.87 cfs 0.238 af

Pond MH13: DMH-13 Peak Elev=210.95' Inflow=3.99 cfs 0.327 af
18.0" Round Culvert n=0.013 L=91.0' S=0.0051 '/' Outflow=3.99 cfs 0.327 af

Pond MH14: DMH-14 Peak Elev=210.43' Inflow=6.13 cfs 0.515 af
24.0" Round Culvert n=0.013 L=35.0' S=0.0051 '/' Outflow=6.13 cfs 0.515 af

Pond MH15: DMH-15 Peak Elev=209.68' Inflow=1.47 cfs 0.136 af
12.0" Round Culvert n=0.013 L=185.0' S=0.0050 '/' Outflow=1.47 cfs 0.136 af

Pond MH16: DMH-16 Peak Elev=208.78' Inflow=2.51 cfs 0.267 af
18.0" Round Culvert n=0.013 L=95.0' S=0.0049 '/' Outflow=2.51 cfs 0.267 af

Pond MH17: DMH-17 Peak Elev=208.26' Inflow=3.28 cfs 0.378 af
18.0" Round Culvert n=0.013 L=126.0' S=0.0103 '/' Outflow=3.28 cfs 0.378 af

Pond MH18: DMH-18 Peak Elev=207.08' Inflow=6.13 cfs 0.664 af
24.0" Round Culvert n=0.013 L=46.0' S=0.0478 '/' Outflow=6.13 cfs 0.664 af

Pond MH19: DMH-19 Peak Elev=204.93' Inflow=7.05 cfs 0.744 af
30.0" Round Culvert n=0.013 L=80.0' S=0.0050 '/' Outflow=7.05 cfs 0.744 af

Pond MH2: DMH-2 Peak Elev=209.36' Inflow=1.51 cfs 0.130 af
12.0" Round Culvert n=0.013 L=12.8' S=0.0047 '/' Outflow=1.51 cfs 0.130 af

Pond MH20: DMH-20 Peak Elev=212.77' Inflow=3.63 cfs 0.300 af
18.0" Round Culvert n=0.013 L=73.0' S=0.0049 '/' Outflow=3.63 cfs 0.300 af

Pond MH21: DMH-21 Peak Elev=212.59' Inflow=6.94 cfs 0.584 af
18.0" Round Culvert n=0.013 L=85.0' S=0.0051 '/' Outflow=6.94 cfs 0.584 af

Pond MH22: DMH-22 Peak Elev=213.52' Inflow=5.94 cfs 0.870 af
18.0" Round Culvert n=0.013 L=10.0' S=0.0050 '/' Outflow=5.94 cfs 0.870 af

Pond MH24: DMH-24 Peak Elev=210.86' Inflow=4.13 cfs 0.584 af
18.0" Round Culvert n=0.013 L=156.0' S=0.0371 '/' Outflow=4.13 cfs 0.584 af

Pond MH25: DMH-25 Peak Elev=205.98' Inflow=4.36 cfs 0.800 af
18.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=4.36 cfs 0.800 af

Pond MH26: DMH-26 Peak Elev=205.97' Inflow=5.22 cfs 0.449 af
18.0" Round Culvert n=0.013 L=80.0' S=0.0050 '/' Outflow=5.22 cfs 0.449 af

Pond MH27: DMH-27 Peak Elev=202.91' Inflow=4.60 cfs 0.807 af
18.0" Round Culvert n=0.013 L=86.0' S=0.0050 '/' Outflow=4.60 cfs 0.807 af

Pond MH3: DMH-3 Peak Elev=214.55' Inflow=1.18 cfs 0.096 af
18.0" Round Culvert n=0.013 L=395.0' S=0.0050 '/' Outflow=1.18 cfs 0.096 af

Pond MH4: DMH-4 Peak Elev=210.79' Inflow=2.33 cfs 0.189 af
18.0" Round Culvert n=0.013 L=198.0' S=0.0050 '/' Outflow=2.33 cfs 0.189 af

Pond MH5: DMH-5 Peak Elev=209.36' Inflow=3.34 cfs 0.275 af
18.0" Round Culvert n=0.013 L=34.3' S=0.0050 '/' Outflow=3.34 cfs 0.275 af

Pond MH6: DMH-6 Peak Elev=207.69' Inflow=3.49 cfs 0.300 af
12.0" Round Culvert x 2.00 n=0.013 L=10.0' S=0.0050 '/' Outflow=3.49 cfs 0.300 af

Pond MH7: DMH-7 Peak Elev=210.80' Inflow=2.58 cfs 0.207 af
18.0" Round Culvert n=0.013 L=75.0' S=0.0340 '/' Outflow=2.58 cfs 0.207 af

Pond MH8: DMH-8 Peak Elev=209.69' Inflow=3.14 cfs 0.262 af
18.0" Round Culvert n=0.013 L=133.0' S=0.0050 '/' Outflow=3.14 cfs 0.262 af

Pond MH9: CB-31 Peak Elev=209.08' Inflow=3.72 cfs 0.305 af
18.0" Round Culvert n=0.013 L=190.0' S=0.0050 '/' Outflow=3.72 cfs 0.305 af

Pond R1: R-1 Peak Elev=226.72' Storage=2 cf Inflow=1.77 cfs 0.415 af
Outflow=1.77 cfs 0.415 af

Pond R2: R-2 Peak Elev=214.02' Storage=2 cf Inflow=1.79 cfs 0.464 af
Outflow=1.79 cfs 0.464 af

Pond R3: R-3 Peak Elev=214.44' Storage=0 cf Inflow=0.41 cfs 0.035 af
Outflow=0.41 cfs 0.035 af

Total Runoff Area = 18.355 ac Runoff Volume = 8.547 af Average Runoff Depth = 5.59"
55.52% Pervious = 10.190 ac 44.48% Impervious = 8.165 ac

Summary for Subcatchment 100S: 100S

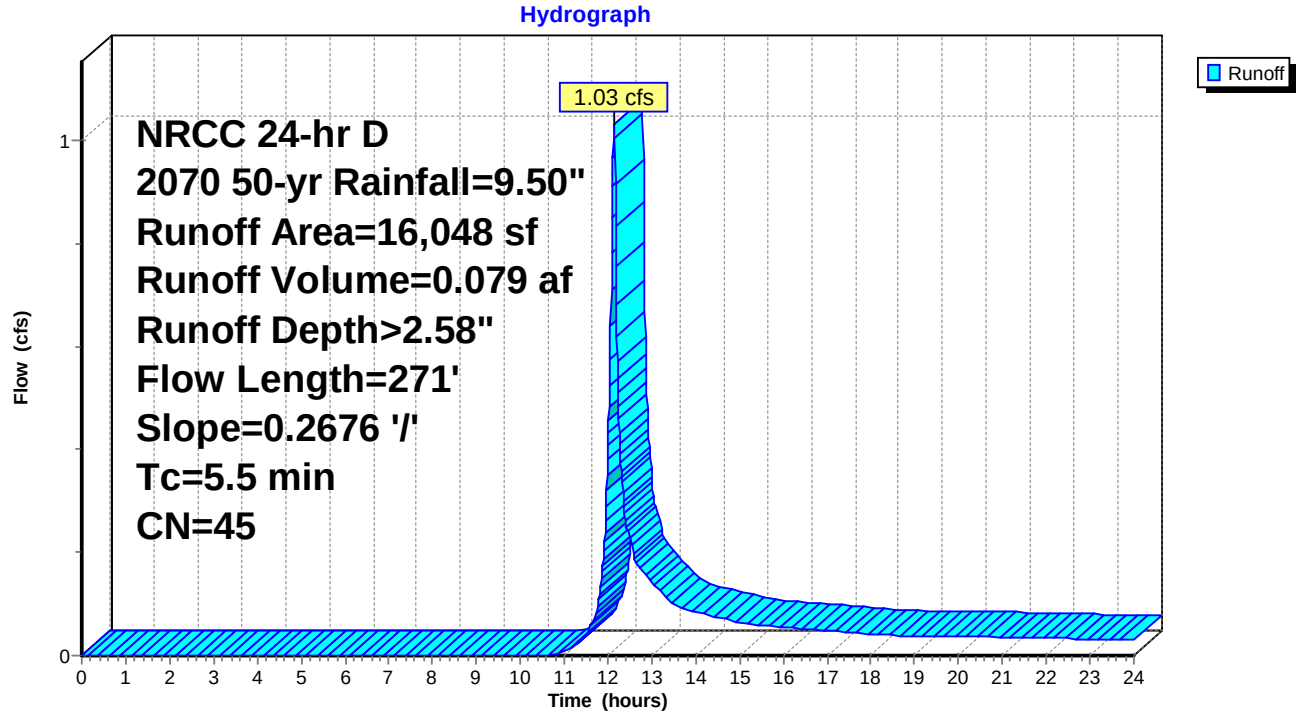
Runoff = 1.03 cfs @ 12.13 hrs, Volume= 0.079 af, Depth> 2.58"
Routed to Pond 1P : Basin 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

	Area (sf)	CN	Description
	2	98	Unconnected pavement HSG A
	4,395	49	50-75% Grass cover, Fair HSG A
	5,566	36	Woods, Fair HSG A
	236	98	Roofs HSG A
*	5,848	49	Open Space-Fair (50% to 75% grass) HSG A
	16,048	45	Weighted Average
	15,810		98.52% Pervious Area
	238		1.48% Impervious Area
	2		0.88% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	271	0.2676	0.82		**Lag/CN Method,**

Subcatchment 100S: 100S



Summary for Subcatchment 101S: 101S

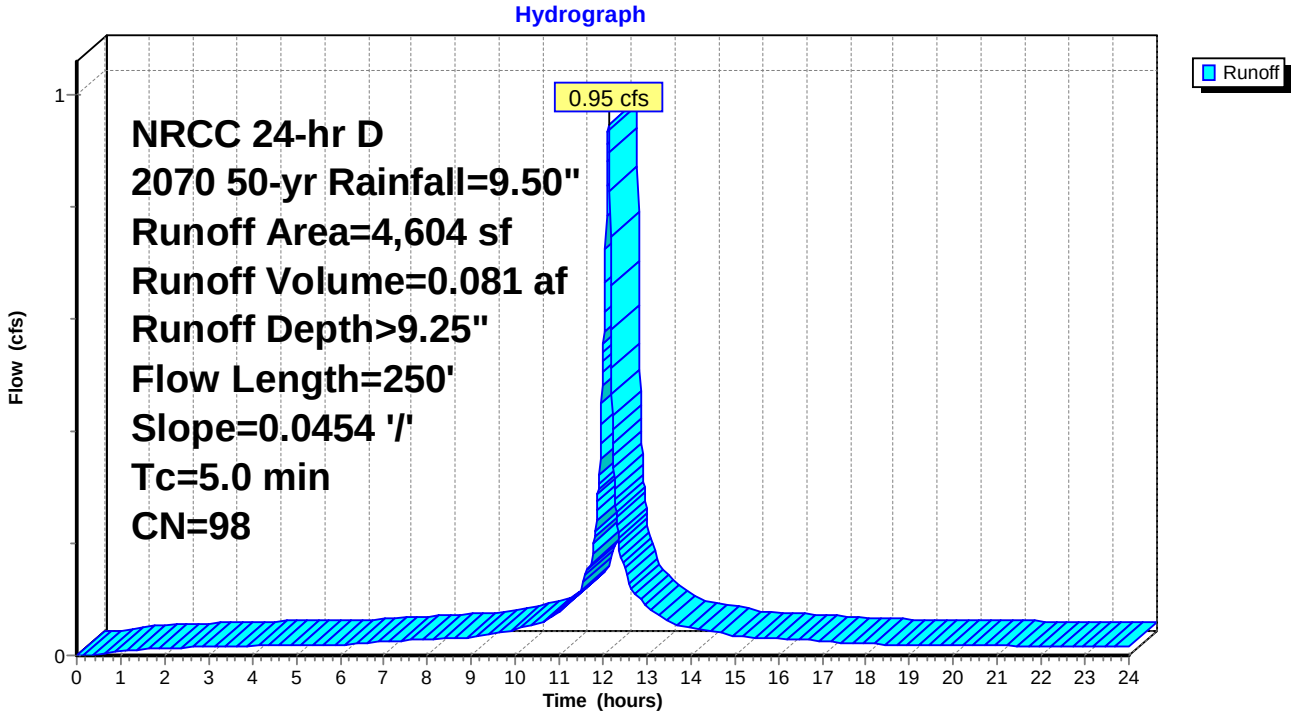
Runoff = 0.95 cfs @ 12.12 hrs, Volume= 0.081 af, Depth> 9.25"
Routed to Pond CB1 : CB-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

	Area (sf)	CN	Description
	4,567	98	Unconnected pavement HSG A
	1	36	Woods, Fair HSG A
*	36	49	Open Space-Fair (50% to 75% grass) HSG A
	4,604	98	Weighted Average
	37		0.80% Pervious Area
	4,567		99.20% Impervious Area
	4,567		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	250	0.0454	1.79		**Lag/CN Method,**
2.3	250	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 101S: 101S



Summary for Subcatchment 102S: 102S

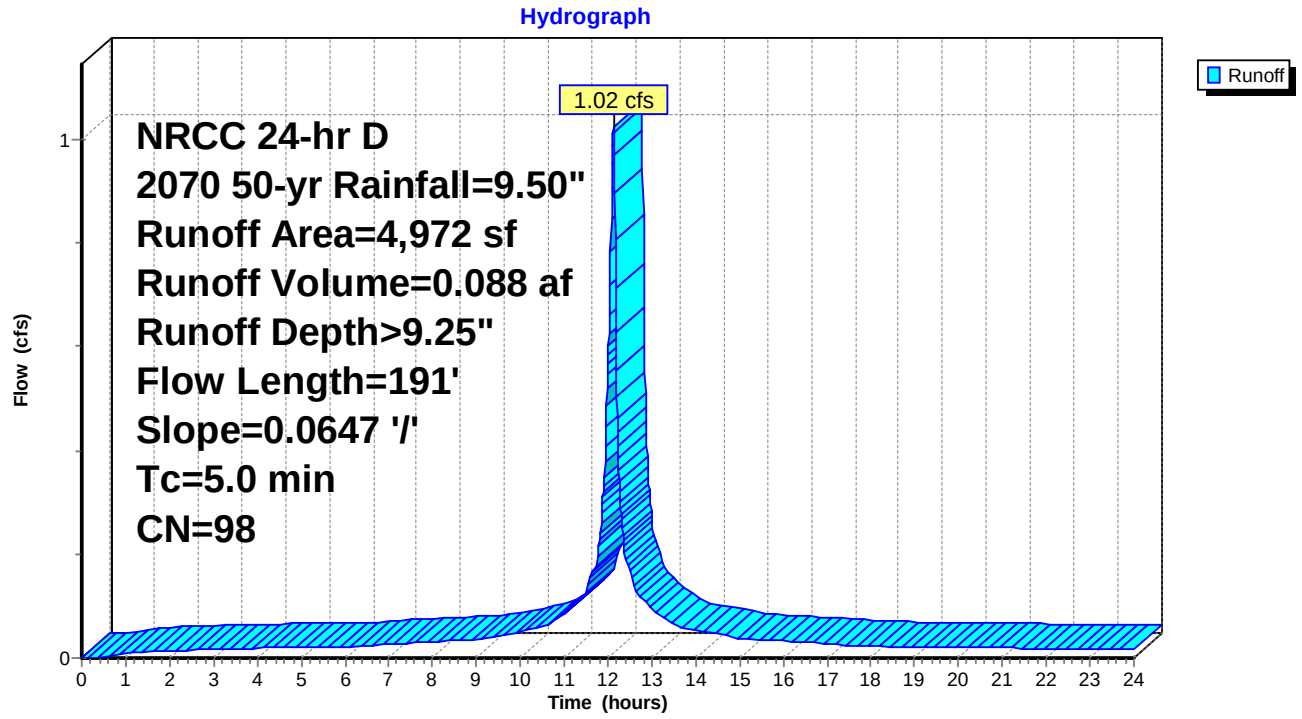
Runoff = 1.02 cfs @ 12.12 hrs, Volume= 0.088 af, Depth> 9.25"
Routed to Pond CB2 : CB-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
4,970	98	Unconnected pavement HSG A
2	36	Woods, Fair HSG A
4,972	98	Weighted Average
2		0.03% Pervious Area
4,970		99.97% Impervious Area
4,970		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	191	0.0647	2.02		**Lag/CN Method,**
1.6	191	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 102S: 102S



Summary for Subcatchment 103S: 103S

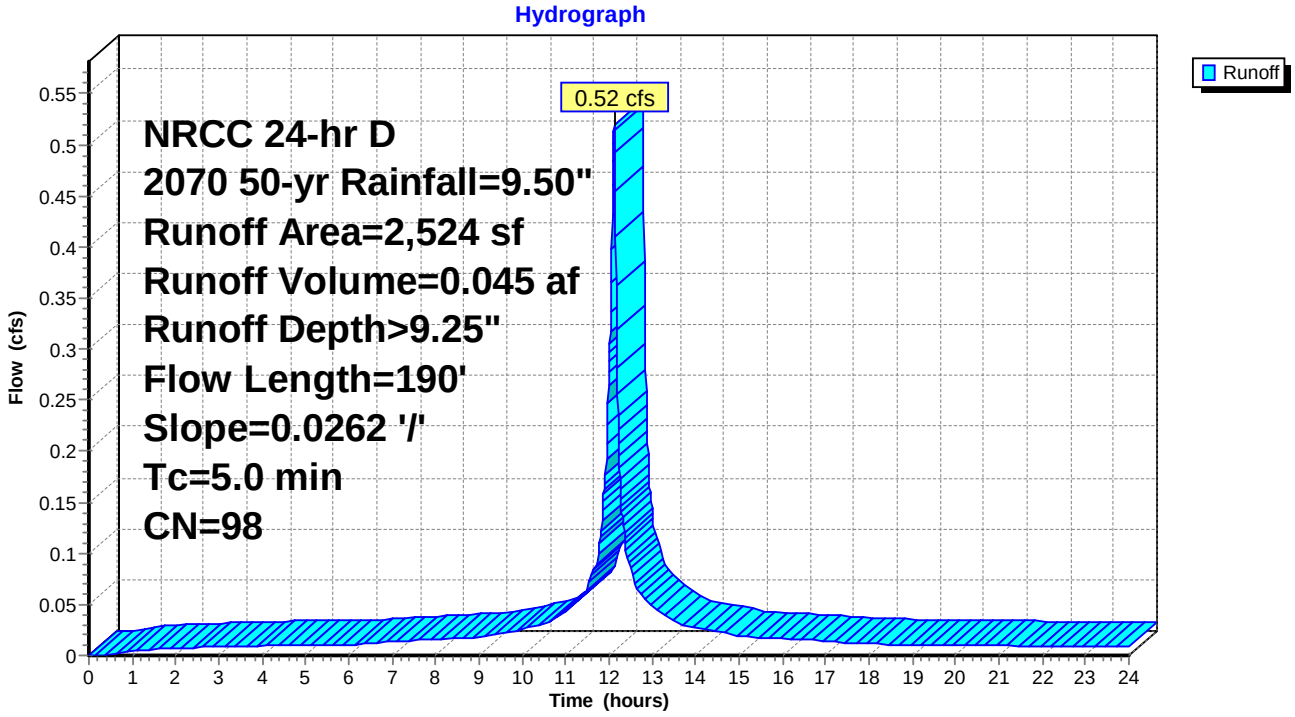
Runoff = 0.52 cfs @ 12.12 hrs, Volume= 0.045 af, Depth> 9.25"
Routed to Pond CB3 : CB-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

	Area (sf)	CN	Description
	2,427	98	Unconnected pavement HSG A
	93	98	Roofs HSG A
*	4	49	Open Space-Fair (50% to 75% grass) HSG A
	2,524	98	Weighted Average
	4		0.16% Pervious Area
	2,520		99.84% Impervious Area
	2,427		96.31% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	190	0.0262	1.29		**Lag/CN Method,**
2.5	190	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 103S: 103S



Summary for Subcatchment 104S: 104S

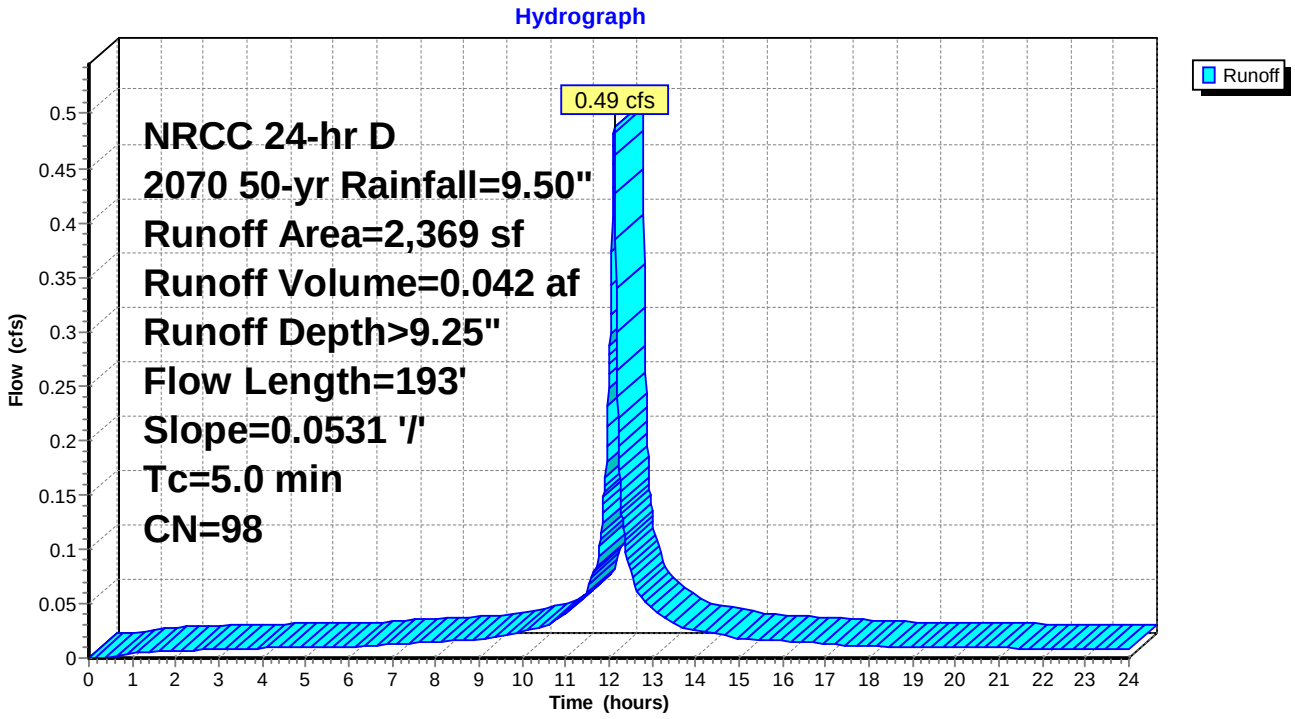
Runoff = 0.49 cfs @ 12.12 hrs, Volume= 0.042 af, Depth> 9.25"
Routed to Pond CB4 : CB-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
2,365	98	Unconnected pavement HSG A
4	36	Woods, Fair HSG A
2,369	98	Weighted Average
4		0.15% Pervious Area
2,365		99.85% Impervious Area
2,365		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	193	0.0531	1.84		**Lag/CN Method,**
1.8	193	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 104S: 104S



Summary for Subcatchment 200S: 200S

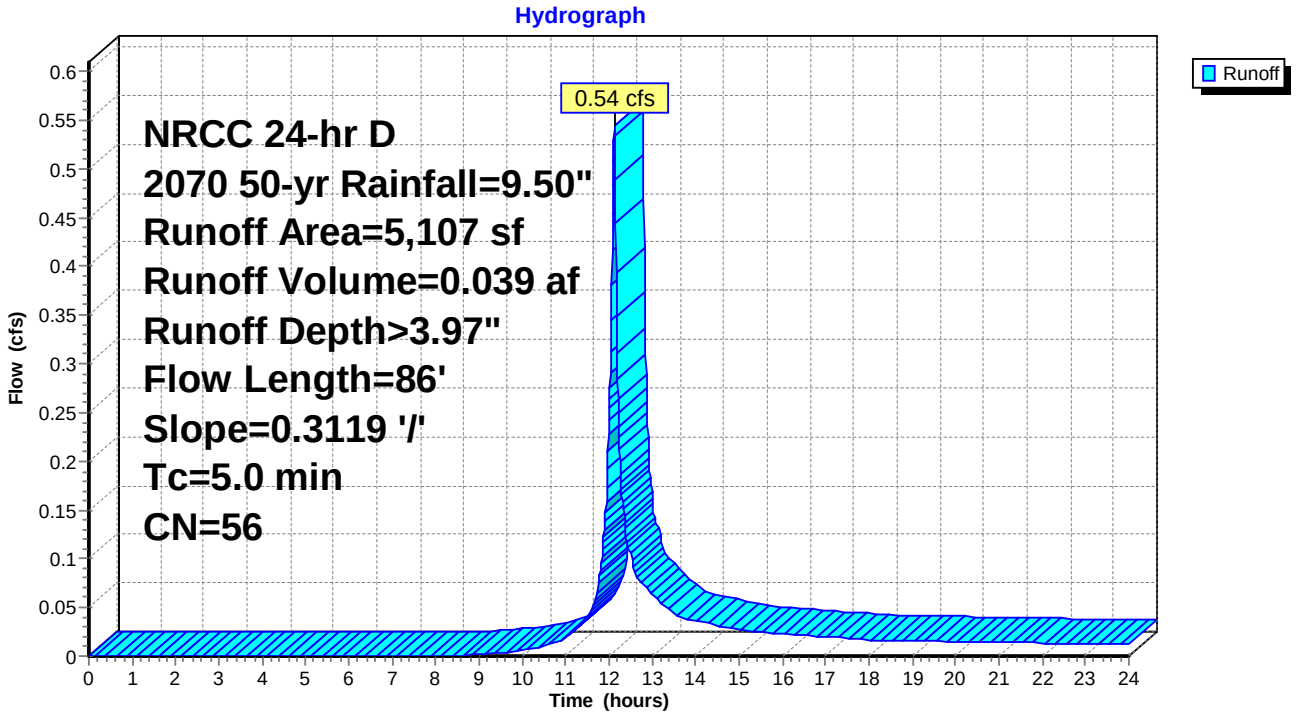
Runoff = 0.54 cfs @ 12.13 hrs, Volume= 0.039 af, Depth> 3.97"
Routed to Pond 2P : Basin 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
996	36	Woods, Fair HSG A
1,466	49	50-75% Grass cover, Fair HSG A
2	98	Unconnected pavement HSG A
2,340	69	50-75% Grass cover, Fair HSG B
303	60	Woods, Fair HSG B
5,107	56	Weighted Average
5,105		99.96% Pervious Area
2		0.04% Impervious Area
2		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	86	0.3119	0.94		**Lag/CN Method,**
1.5	86	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 200S: 200S



Summary for Subcatchment 201S: 201S

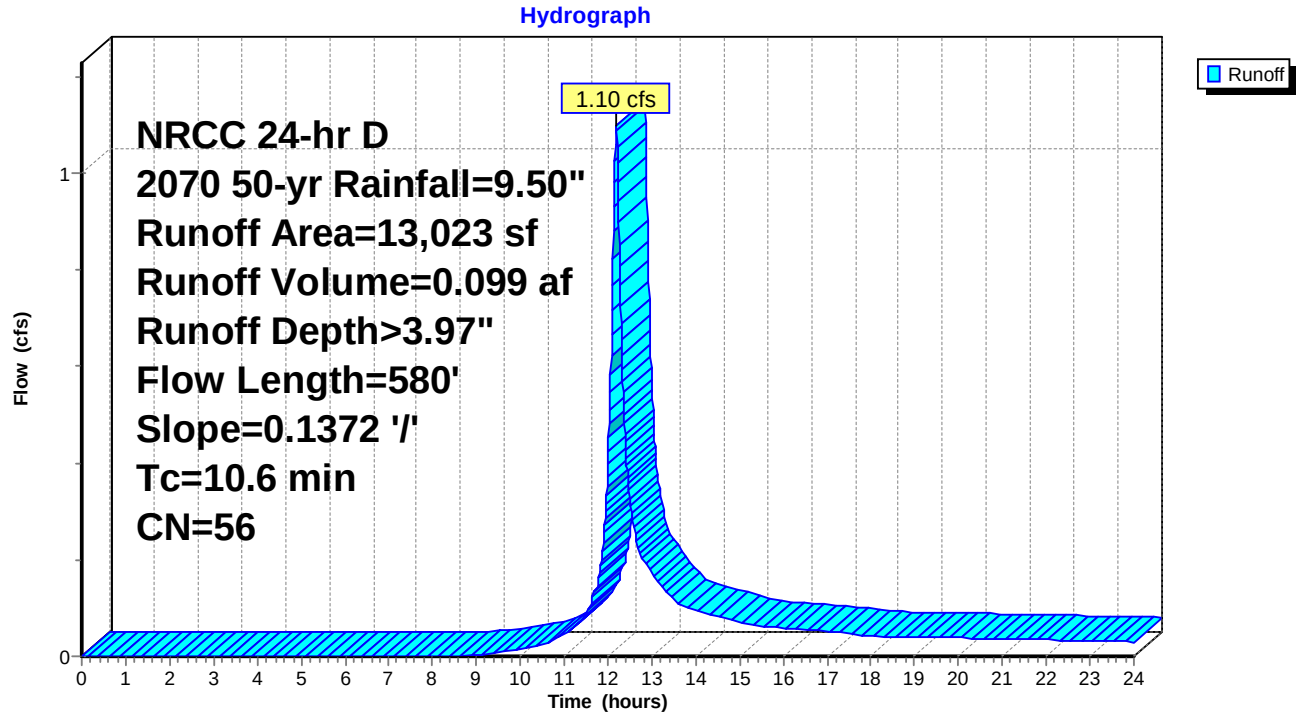
Runoff = 1.10 cfs @ 12.18 hrs, Volume= 0.099 af, Depth> 3.97"
Routed to Pond 2P : Basin 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

	Area (sf)	CN	Description
	2,275	36	Woods, Fair HSG A
	319	76	Gravel roads HSG A
	493	69	50-75% Grass cover, Fair HSG B
	9,299	60	Woods, Fair HSG B
*	637	49	Open Space-Fair (50% to 75% grass) HSG A
	13,023	56	Weighted Average
	13,023		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	580	0.1372	0.91		**Lag/CN Method,**

Subcatchment 201S: 201S



Summary for Subcatchment 202S: 202S

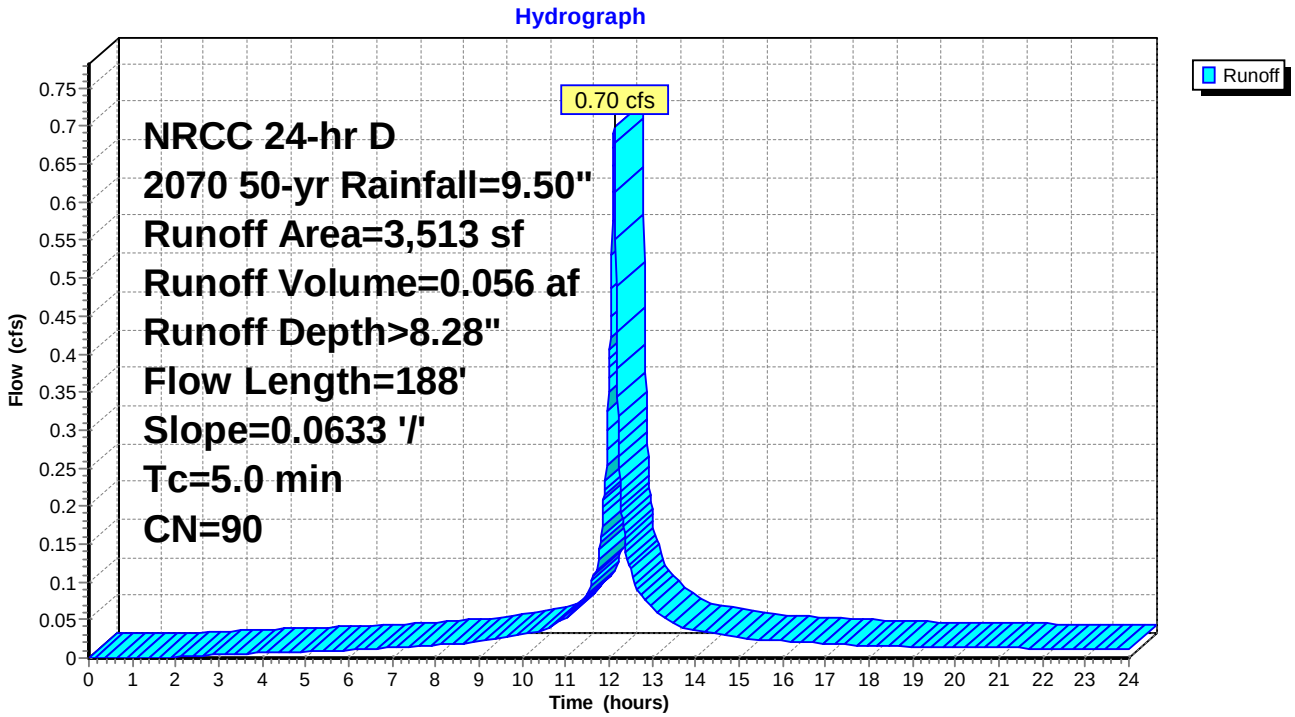
Runoff = 0.70 cfs @ 12.12 hrs, Volume= 0.056 af, Depth> 8.28"
Routed to Pond CB5 : CB-5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
1,219	76	Gravel roads HSG A
2,294	98	Unconnected pavement HSG A
3,513	90	Weighted Average
1,219		34.70% Pervious Area
2,294		65.30% Impervious Area
2,294		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	188	0.0633	1.35		**Lag/CN Method,**
2.3	188	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 202S: 202S



Summary for Subcatchment 203S: 203S

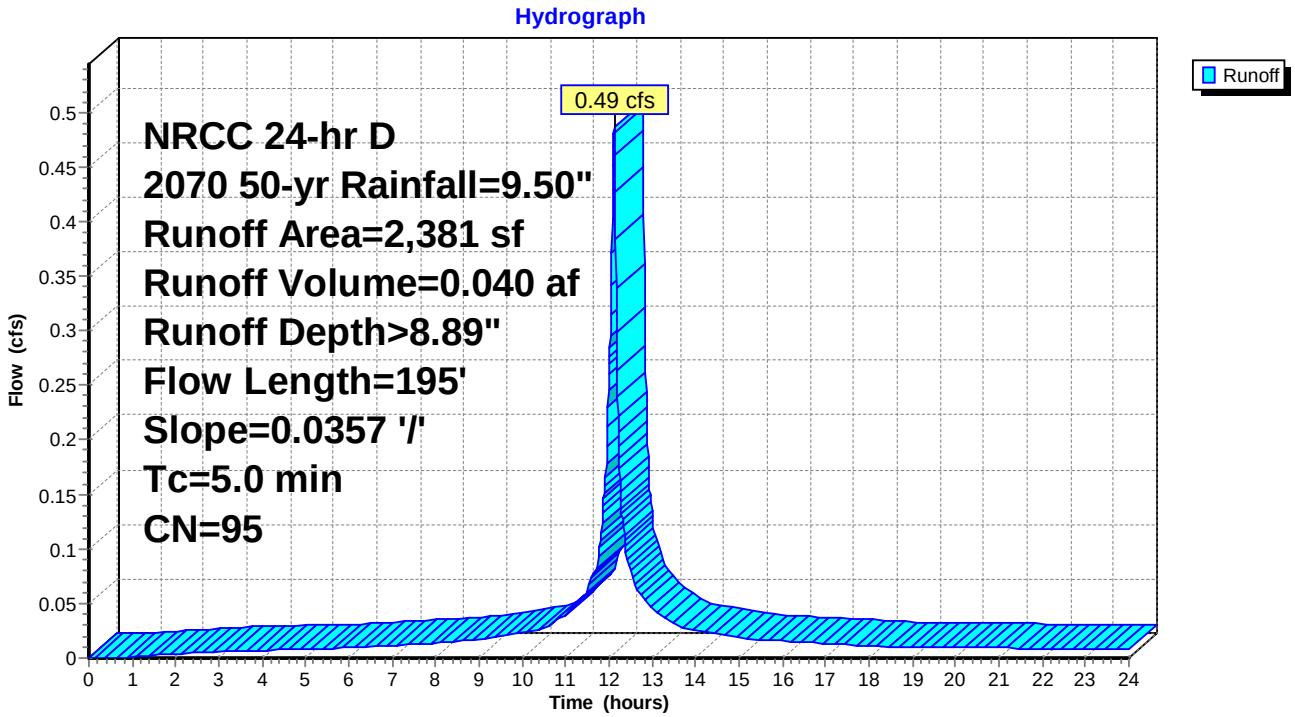
Runoff = 0.49 cfs @ 12.12 hrs, Volume= 0.040 af, Depth> 8.89"
Routed to Pond CB6 : CB-6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
285	76	Gravel roads HSG A
2,096	98	Unconnected pavement HSG A
2,381	95	Weighted Average
285		11.99% Pervious Area
2,096		88.01% Impervious Area
2,096		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	195	0.0357	1.28		**Lag/CN Method,**
2.5	195	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 203S: 203S



Summary for Subcatchment 204S: 204S

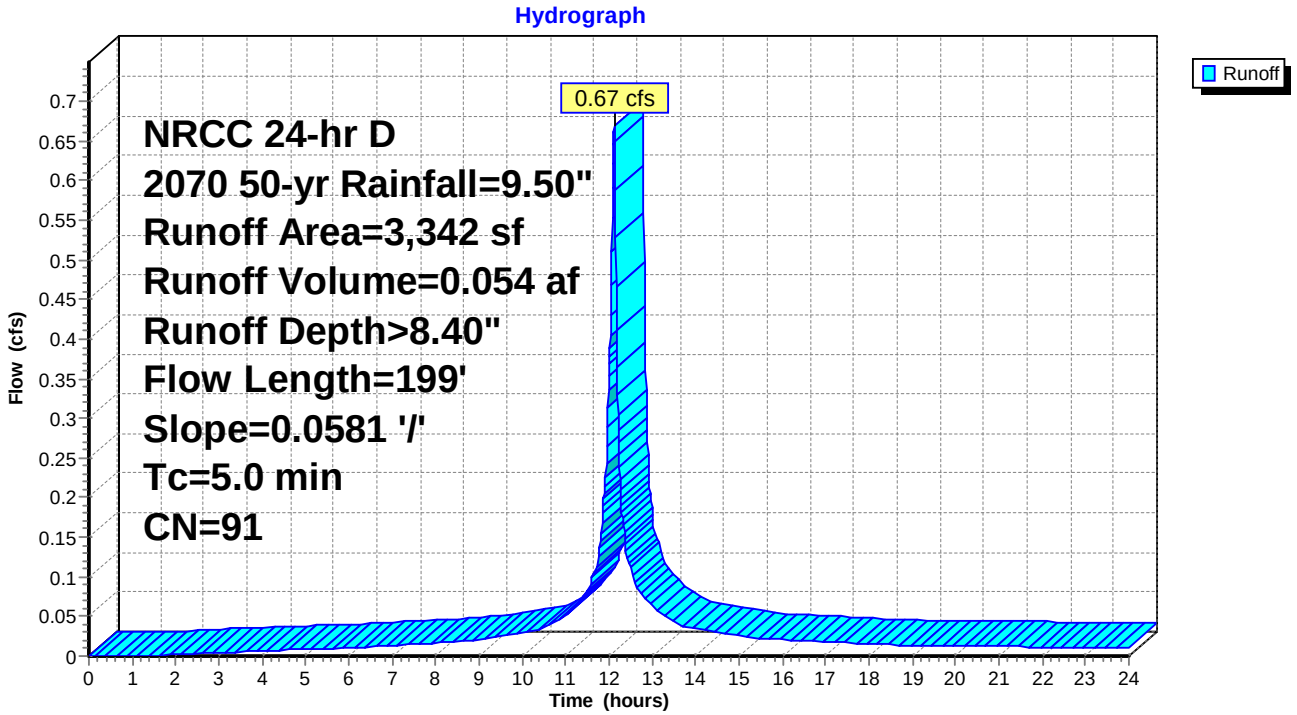
Runoff = 0.67 cfs @ 12.12 hrs, Volume= 0.054 af, Depth> 8.40"
Routed to Pond CB7 : CB-7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
819	76	Gravel roads HSG A
783	98	Unconnected pavement HSG A
1,608	98	Unconnected pavement HSG B
9	85	Gravel roads HSG B
122	60	Woods, Fair HSG B
3,342	91	Weighted Average
951		28.44% Pervious Area
2,392		71.56% Impervious Area
2,392		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	199	0.0581	1.36		**Lag/CN Method,**
2.4	199	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 204S: 204S



Summary for Subcatchment 205S: 205S

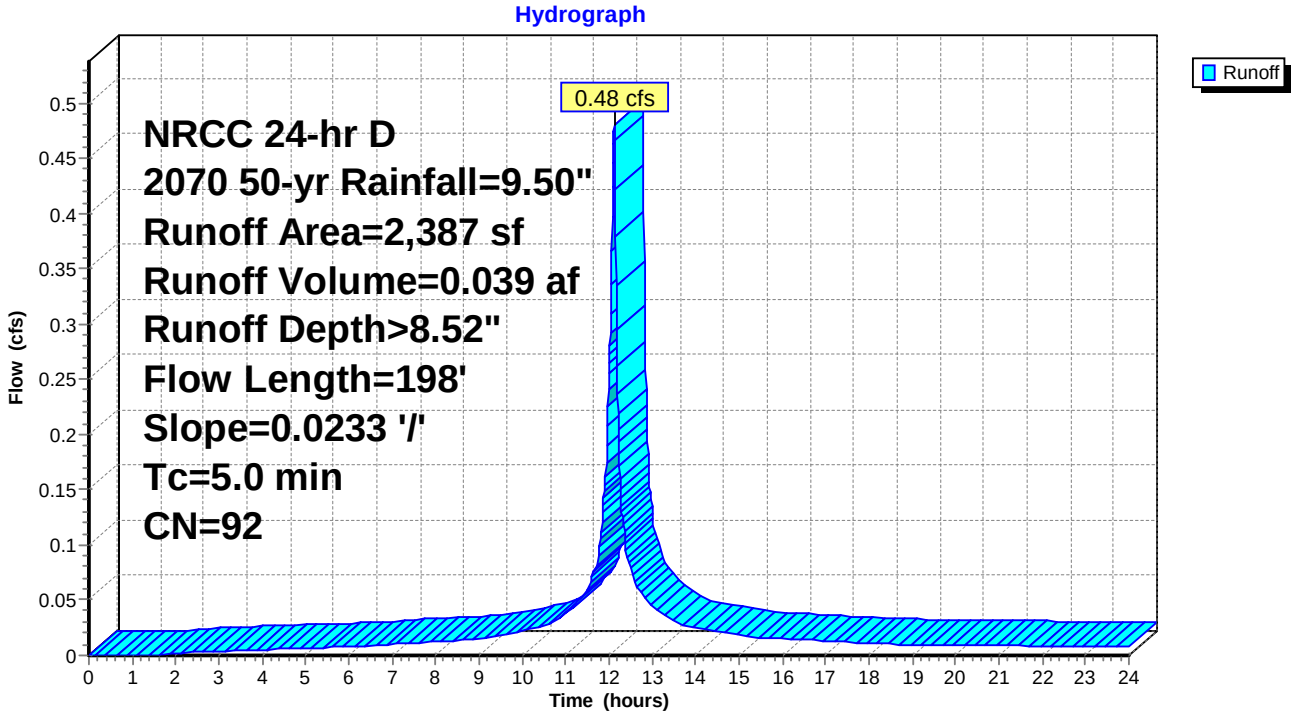
Runoff = 0.48 cfs @ 12.12 hrs, Volume= 0.039 af, Depth> 8.52"
Routed to Pond CB8 : CB-8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
173	98	Unconnected pavement HSG A
1,514	98	Unconnected pavement HSG B
701	76	Gravel roads HSG A
2,387	92	Weighted Average
701		29.37% Pervious Area
1,686		70.63% Impervious Area
1,686		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	198	0.0233	0.90		**Lag/CN Method,**
3.7	198	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 205S: 205S



Summary for Subcatchment 206S: 206S

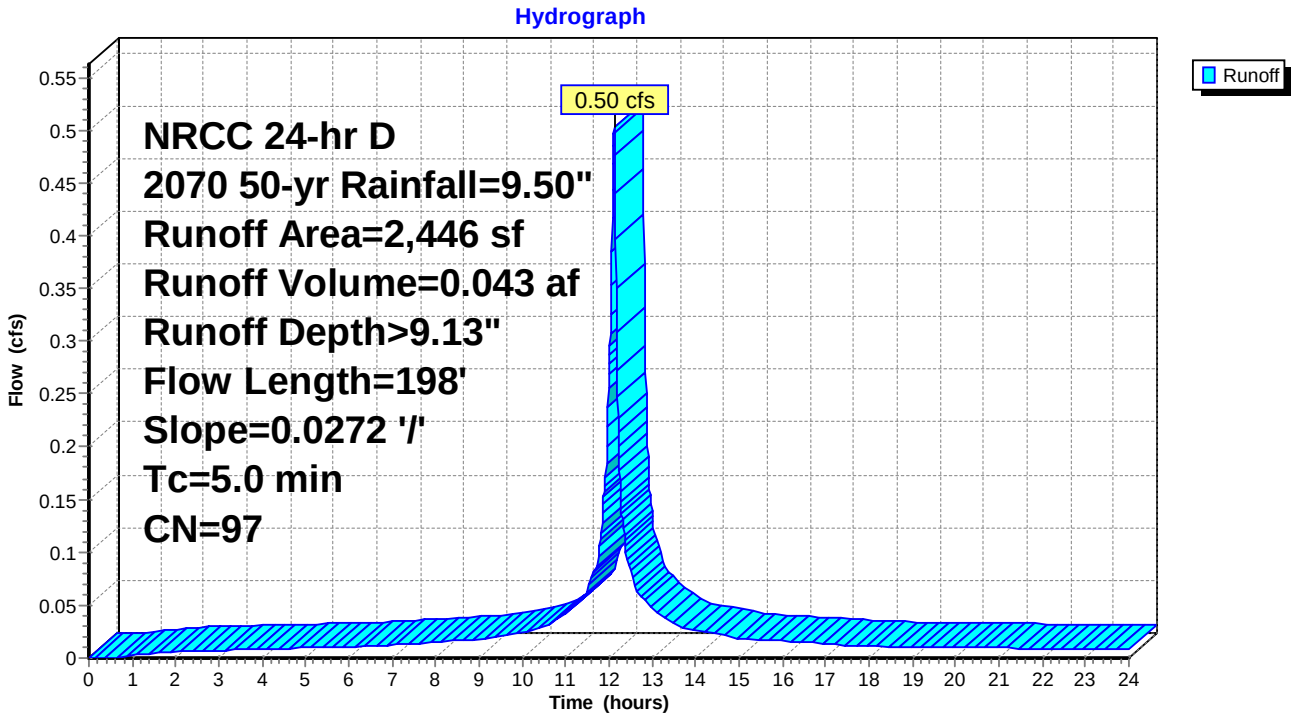
Runoff = 0.50 cfs @ 12.12 hrs, Volume= 0.043 af, Depth> 9.13"
Routed to Pond CB9 : CB-9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
2,400	98	Unconnected pavement HSG B
46	60	Woods, Fair HSG B
2,446	97	Weighted Average
46		1.89% Pervious Area
2,400		98.11% Impervious Area
2,400		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	198	0.0272	1.24		**Lag/CN Method,**
2.7	198	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 206S: 206S



Summary for Subcatchment 207S: 207S

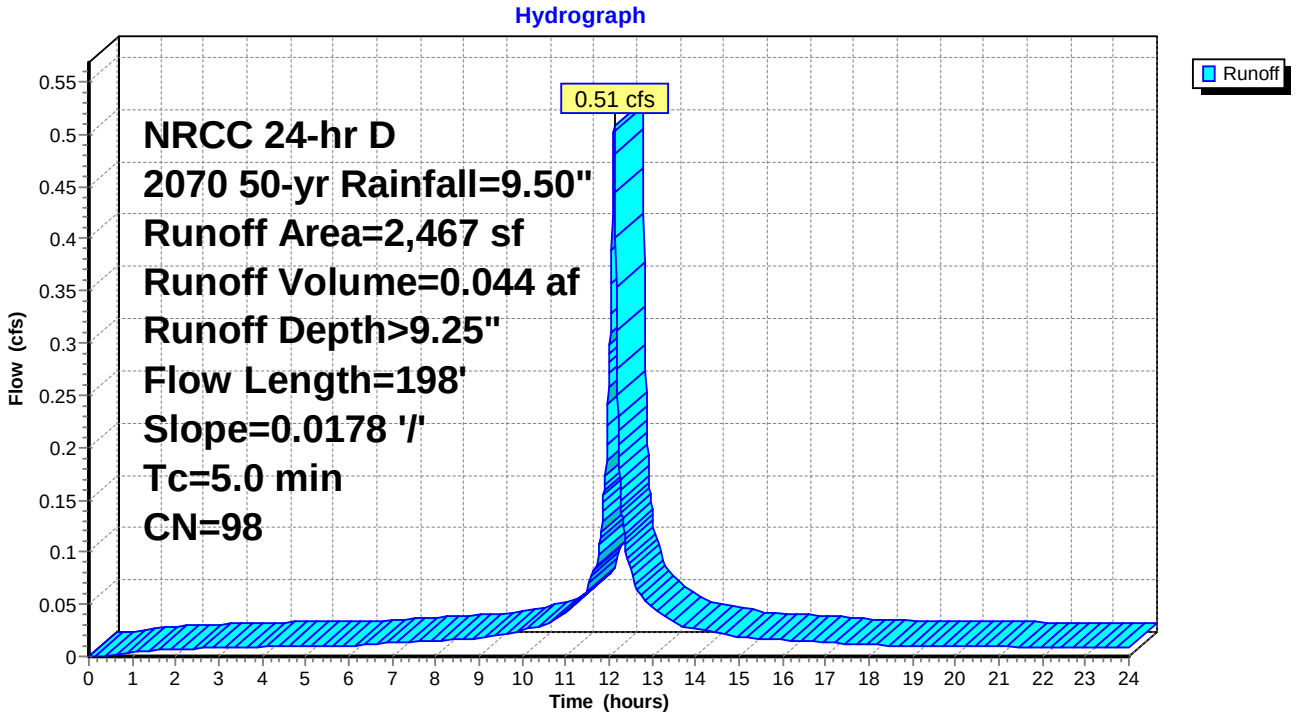
Runoff = 0.51 cfs @ 12.12 hrs, Volume= 0.044 af, Depth> 9.25"
Routed to Pond CB10 : CB-10

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
2,467	98	Unconnected pavement HSG B
2,467		100.00% Impervious Area
2,467		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	198	0.0178	1.07		**Lag/CN Method,**
3.1	198	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 207S: 207S



Summary for Subcatchment 208S: 208S

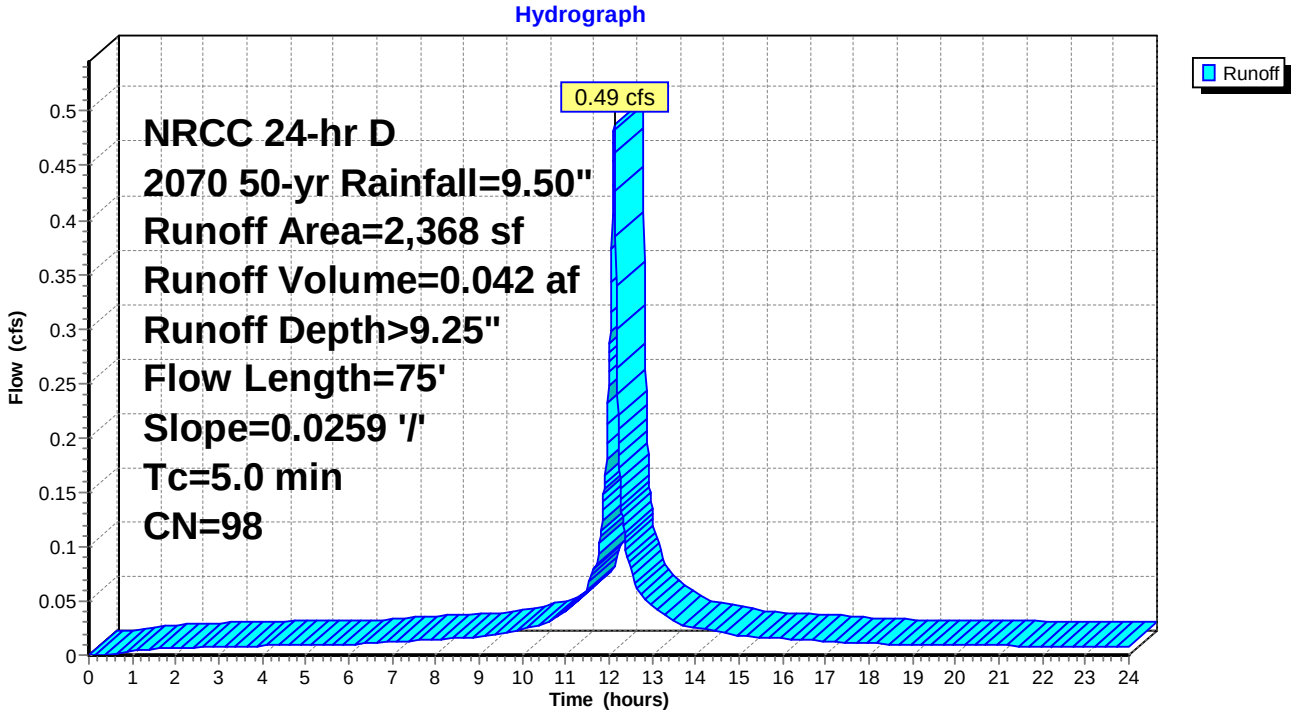
Runoff = 0.49 cfs @ 12.12 hrs, Volume= 0.042 af, Depth> 9.25"
Routed to Pond CB13 : CB-13

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
511	98	Unconnected pavement HSG B
1,857	98	Unconnected pavement HSG A
2,368	98	Weighted Average
2,368		100.00% Impervious Area
2,368		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	75	0.0259	1.06		**Lag/CN Method,**
1.2	75	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 208S: 208S



Summary for Subcatchment 209S: 209S

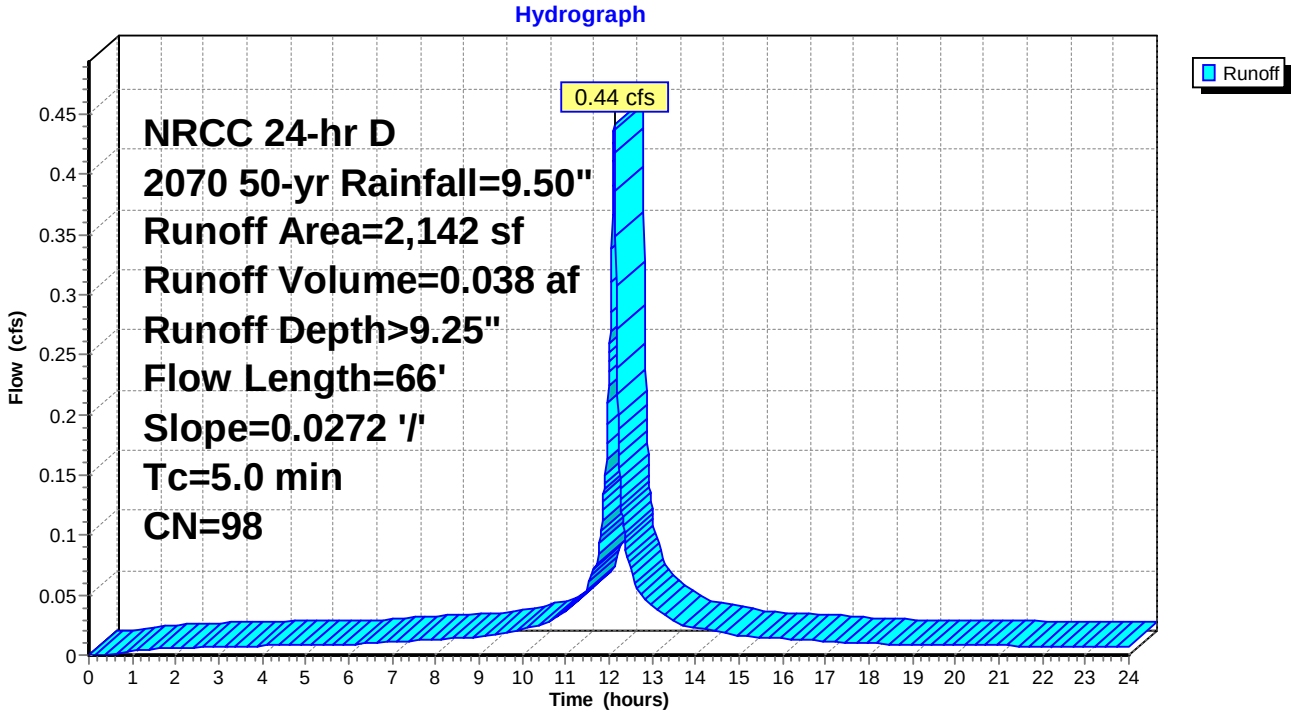
Runoff = 0.44 cfs @ 12.12 hrs, Volume= 0.038 af, Depth> 9.25"
Routed to Pond CB14 : CB-14

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
574	98	Unconnected pavement HSG B
1,569	98	Unconnected pavement HSG A
2,142	98	Weighted Average
2,142		100.00% Impervious Area
2,142		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	66	0.0272	1.06		**Lag/CN Method,**
1.0	66	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 209S: 209S



Summary for Subcatchment 210S: 210S

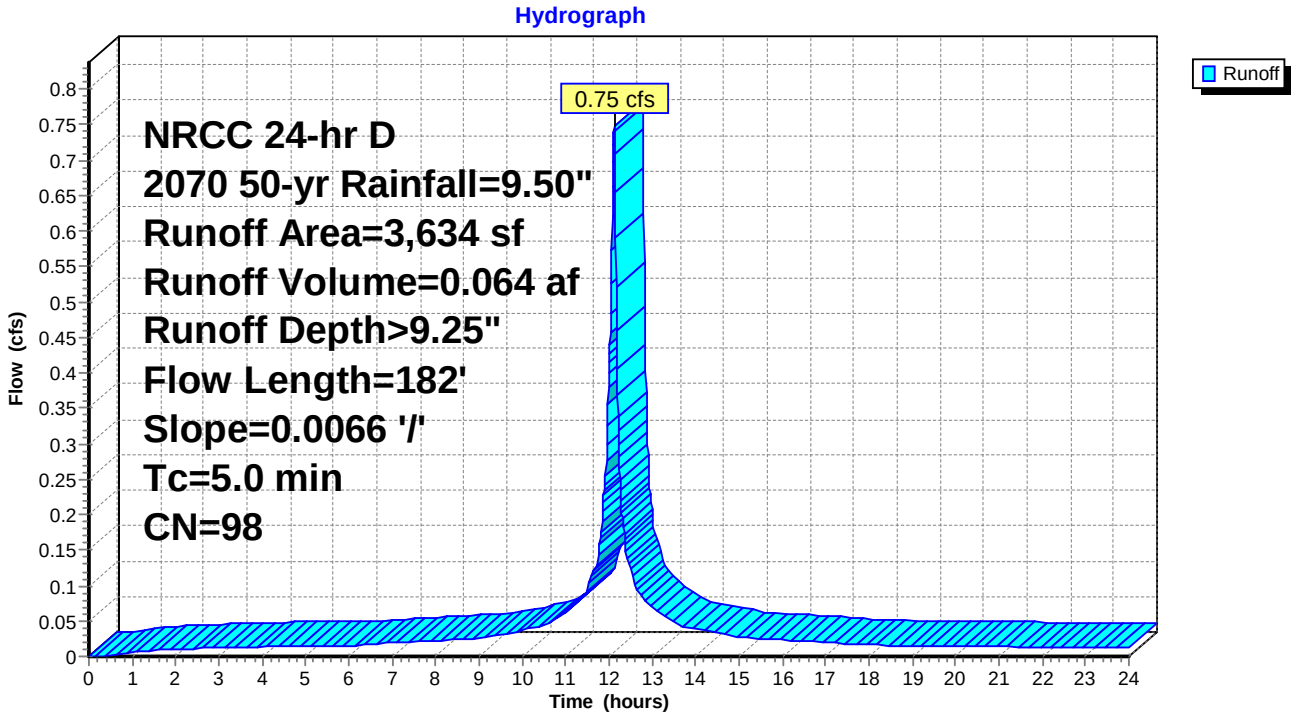
Runoff = 0.75 cfs @ 12.12 hrs, Volume= 0.064 af, Depth> 9.25"
Routed to Pond CB11 : CB-11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
3,634	98	Unconnected pavement HSG A
3,634		100.00% Impervious Area
3,634		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	182	0.0066	0.64		**Lag/CN Method,**
4.7	182	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 210S: 210S



Summary for Subcatchment 211S: 211S

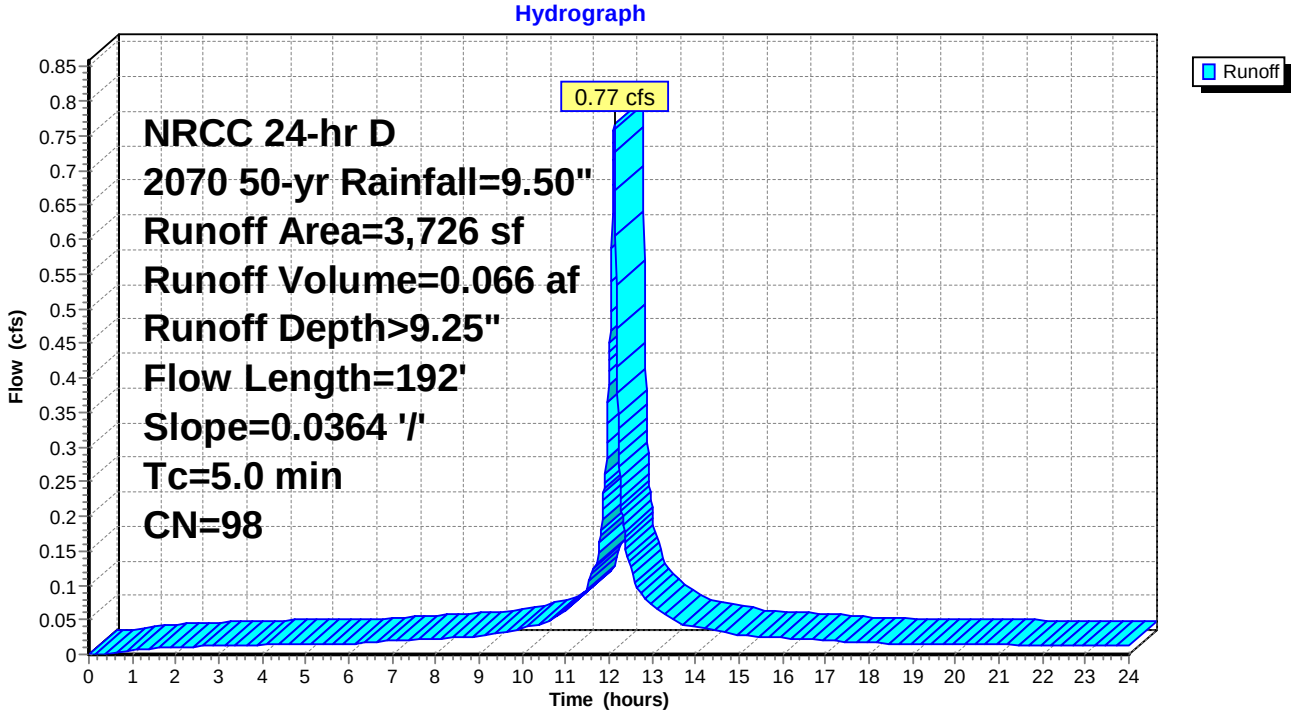
Runoff = 0.77 cfs @ 12.12 hrs, Volume= 0.066 af, Depth> 9.25"
Routed to Pond CB12 : CB-12

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
3,726	98	Unconnected pavement HSG A
3,726		100.00% Impervious Area
3,726		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	192	0.0364	1.52		**Lag/CN Method,**
2.1	192	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 211S: 211S



Summary for Subcatchment 300S: 300S

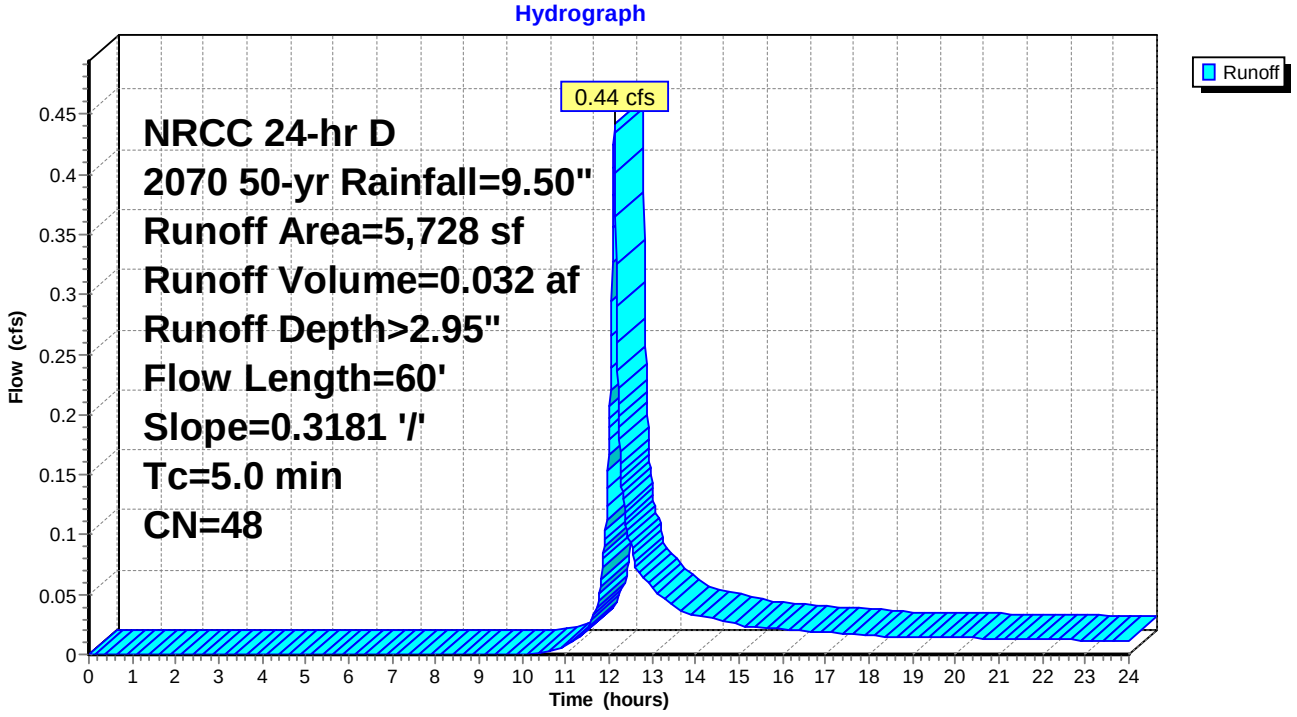
Runoff = 0.44 cfs @ 12.13 hrs, Volume= 0.032 af, Depth> 2.95"
Routed to Pond 3P : Basin 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

	Area (sf)	CN	Description
	1,086	36	Woods, Fair HSG A
	4,269	49	50-75% Grass cover, Fair HSG A
	57	98	Unconnected pavement HSG A
	228	69	50-75% Grass cover, Fair HSG B
	87	60	Woods, Fair HSG B
*	1	49	Open Space-Fair (50% to 75% grass) HSG A
	5,728	48	Weighted Average
	5,671		99.00% Pervious Area
	57		1.00% Impervious Area
	57		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	60	0.3181	0.72		**Lag/CN Method,**
1.4	60	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 300S: 300S



Summary for Subcatchment 301S: 301S

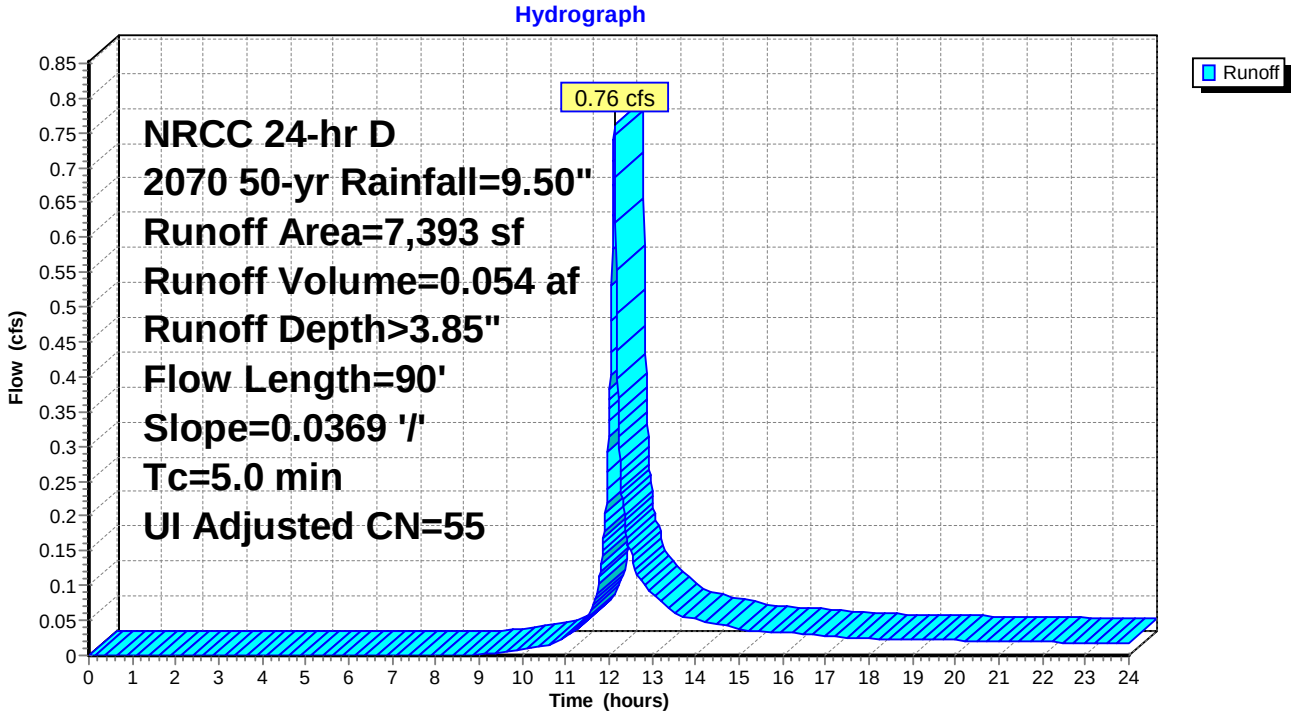
Runoff = 0.76 cfs @ 12.13 hrs, Volume= 0.054 af, Depth> 3.85"
Routed to Pond CB17 : CB-17

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

	Area (sf)	CN	Adj	Description
	1,860	98		Unconnected pavement HSG A
	5,469	49		50-75% Grass cover, Fair HSG A
*	64	49		Open Space-Fair (50% to 75% grass) HSG A
	7,393	61	55	Weighted Average, UI Adjusted
	5,533			74.84% Pervious Area
	1,860			25.16% Impervious Area
	1,860			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	90	0.0369	0.37		**Lag/CN Method,**
4.1	90	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 301S: 301S



Summary for Subcatchment 302S: 302S

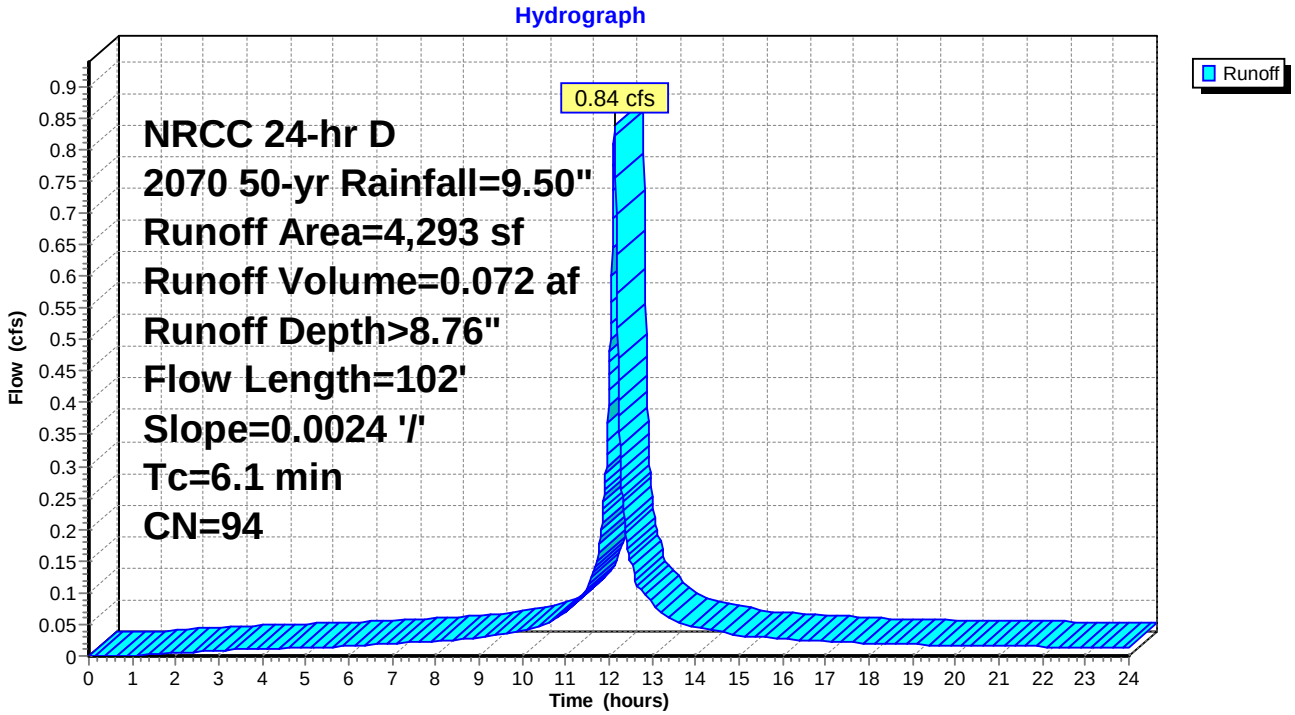
Runoff = 0.84 cfs @ 12.13 hrs, Volume= 0.072 af, Depth> 8.76"
Routed to Pond CB15 : CB-15

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
3,909	98	Unconnected pavement HSG A
384	49	50-75% Grass cover, Fair HSG A
4,293	94	Weighted Average
384		8.95% Pervious Area
3,909		91.05% Impervious Area
3,909		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	102	0.0024	0.28		**Lag/CN Method,**

Subcatchment 302S: 302S



Summary for Subcatchment 303S: 303S

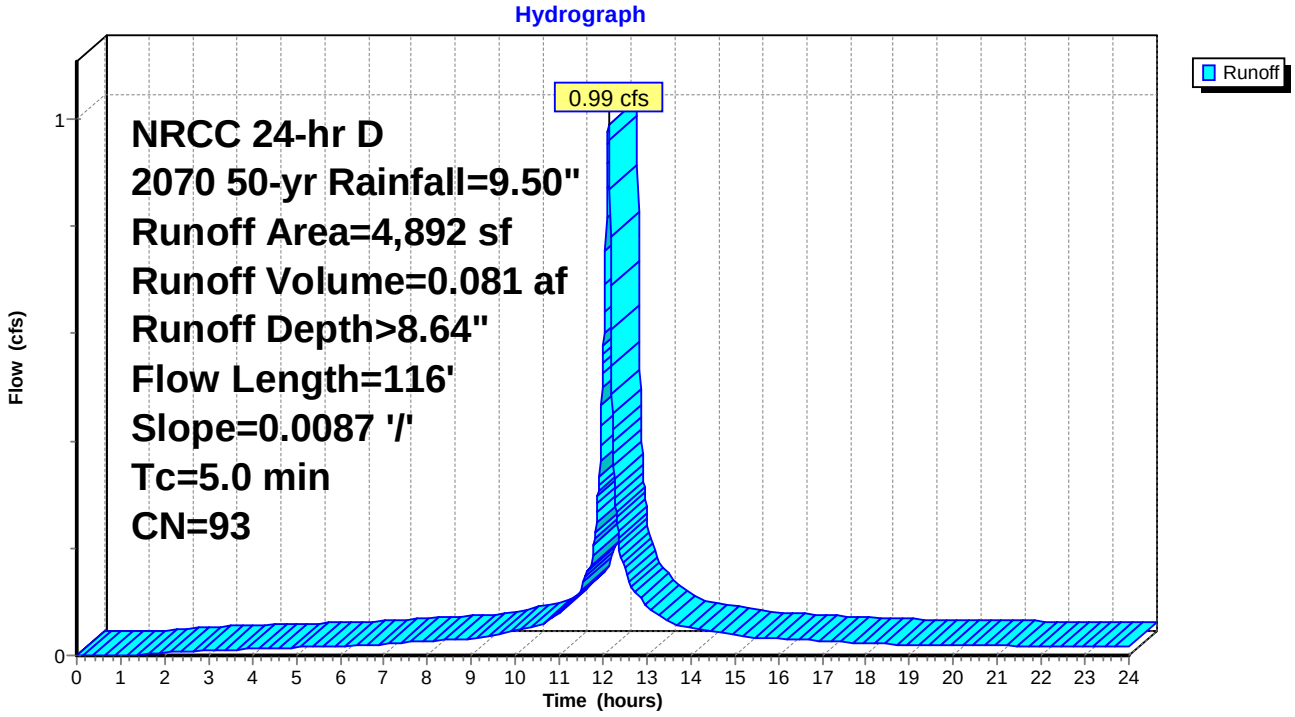
Runoff = 0.99 cfs @ 12.12 hrs, Volume= 0.081 af, Depth> 8.64"
Routed to Pond CB16 : CB-16

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
4,391	98	Unconnected pavement HSG A
16	98	Unconnected pavement HSG B
485	49	50-75% Grass cover, Fair HSG A
4,892	93	Weighted Average
485		9.91% Pervious Area
4,407		90.09% Impervious Area
4,407		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	116	0.0087	0.52		**Lag/CN Method,**
3.8	116	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 303S: 303S



Summary for Subcatchment 304S: 304S

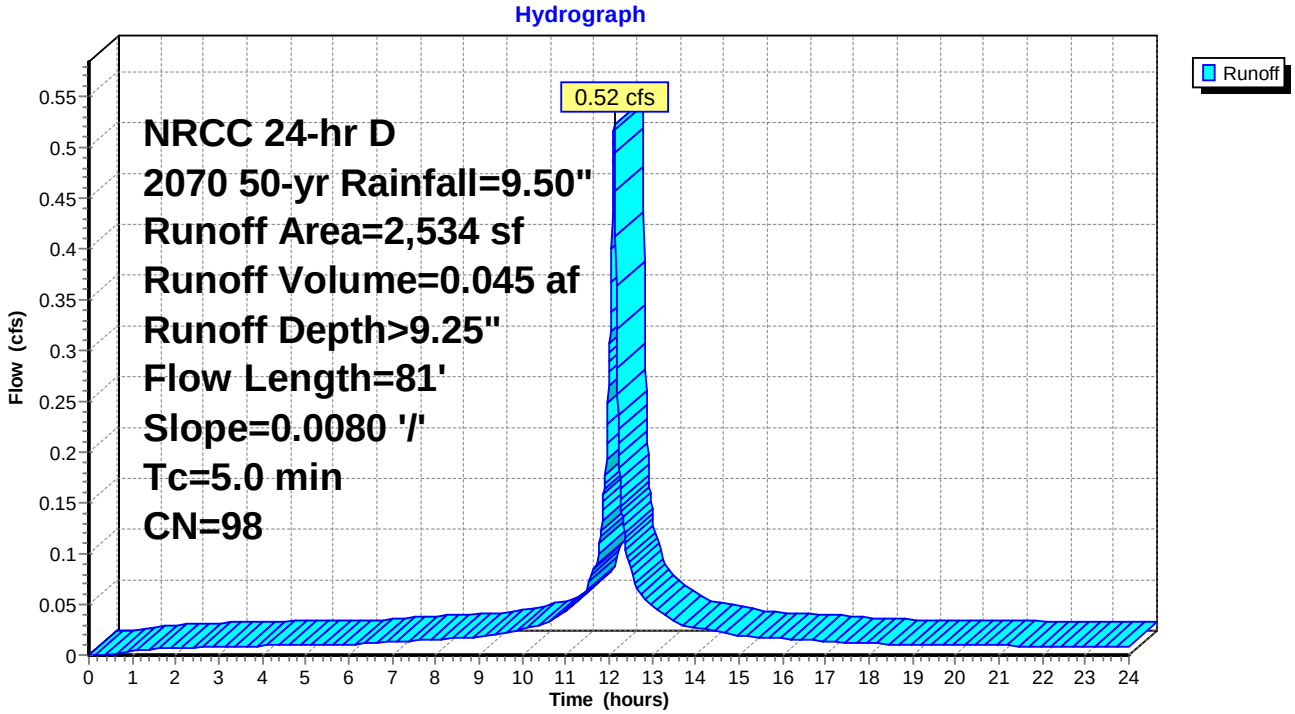
Runoff = 0.52 cfs @ 12.12 hrs, Volume= 0.045 af, Depth> 9.25"
Routed to Pond CB18 : CB-18

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
1,633	98	Unconnected pavement HSG A
902	98	Unconnected pavement HSG B
2,534	98	Weighted Average
2,534		100.00% Impervious Area
2,534		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	81	0.0080	0.60		**Lag/CN Method,**
2.3	81	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 304S: 304S



Summary for Subcatchment 305S: 305S

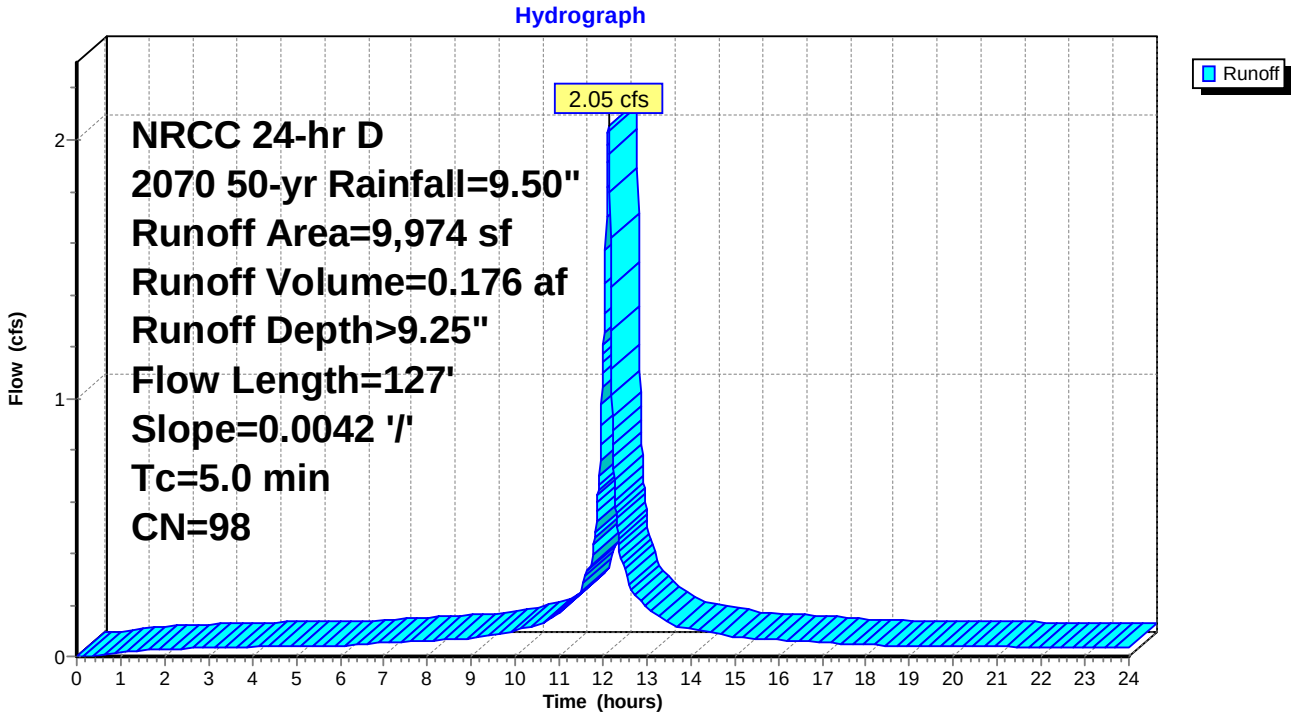
Runoff = 2.05 cfs @ 12.12 hrs, Volume= 0.176 af, Depth> 9.25"
Routed to Pond CB20 : CB-20

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
9,974	98	Unconnected pavement HSG A
9,974		100.00% Impervious Area
9,974		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	127	0.0042	0.47		**Lag/CN Method,**
4.5	127	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 305S: 305S



Summary for Subcatchment 306S: 306S

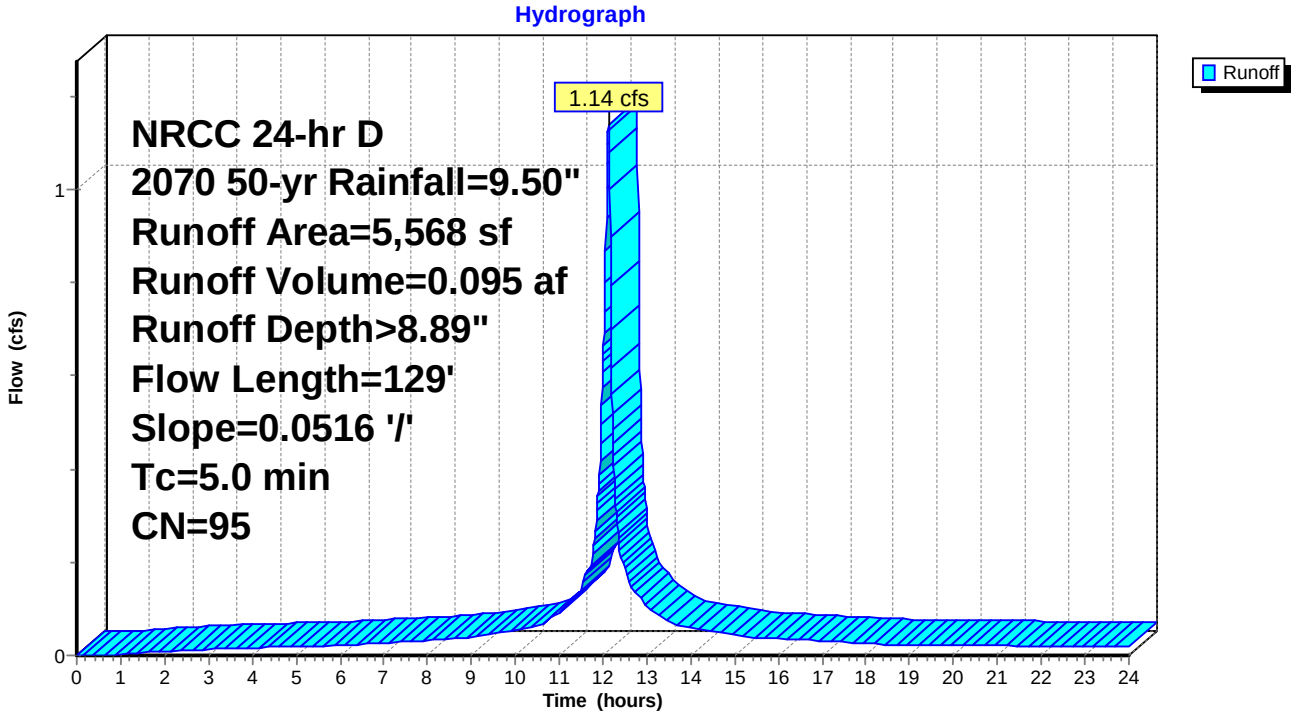
Runoff = 1.14 cfs @ 12.12 hrs, Volume= 0.095 af, Depth> 8.89"
Routed to Pond CB21 : CB-21

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

	Area (sf)	CN	Description
	5,220	98	Unconnected pavement HSG A
	347	49	50-75% Grass cover, Fair HSG A
*	1	49	Open Space-Fair (50% to 75% grass) HSG A
	5,568	95	Weighted Average
	348		6.25% Pervious Area
	5,220		93.75% Impervious Area
	5,220		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	129	0.0516	1.41		**Lag/CN Method,**
1.5	129	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 306S: 306S



Summary for Subcatchment 307S: 307S

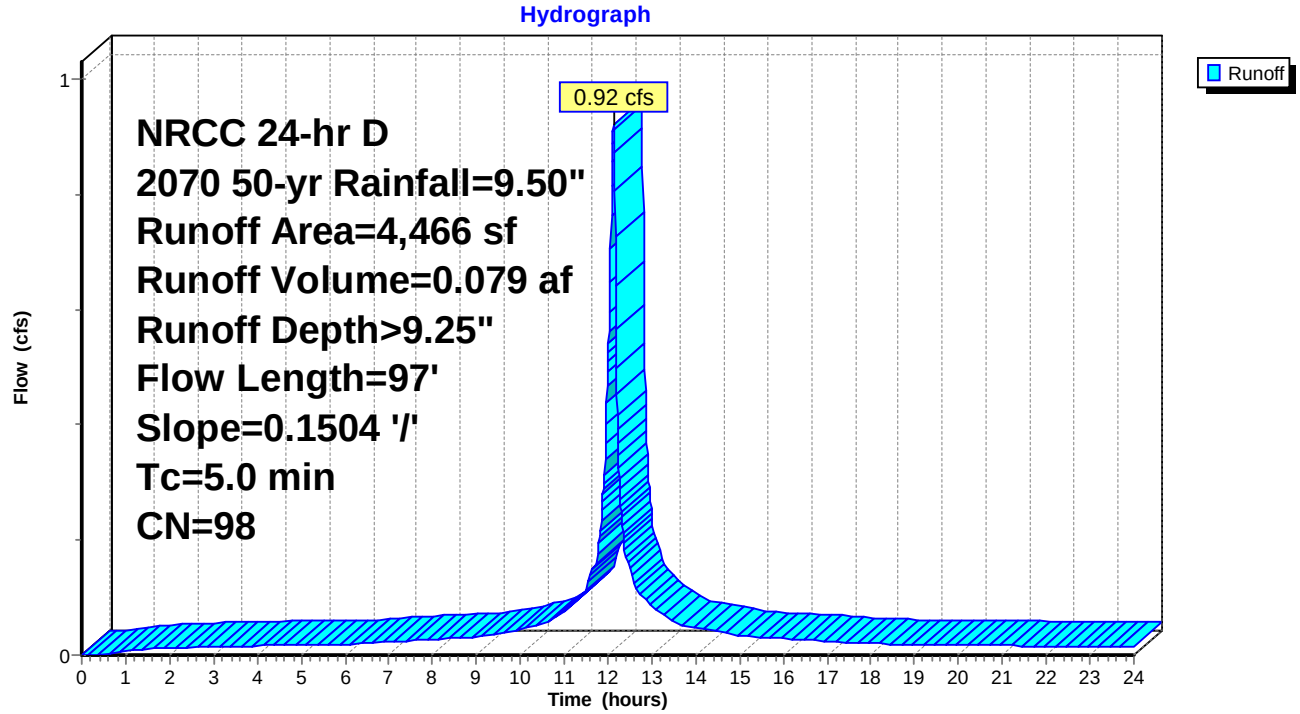
Runoff = 0.92 cfs @ 12.12 hrs, Volume= 0.079 af, Depth> 9.25"
Routed to Pond CB19 : CB-19

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
4,336	98	Unconnected pavement HSG A
130	98	Unconnected pavement HSG B
4,466	98	Weighted Average
4,466		100.00% Impervious Area
4,466		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	97	0.1504	2.69		**Lag/CN Method,**
0.6	97	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 307S: 307S



Summary for Subcatchment 400S: 400S

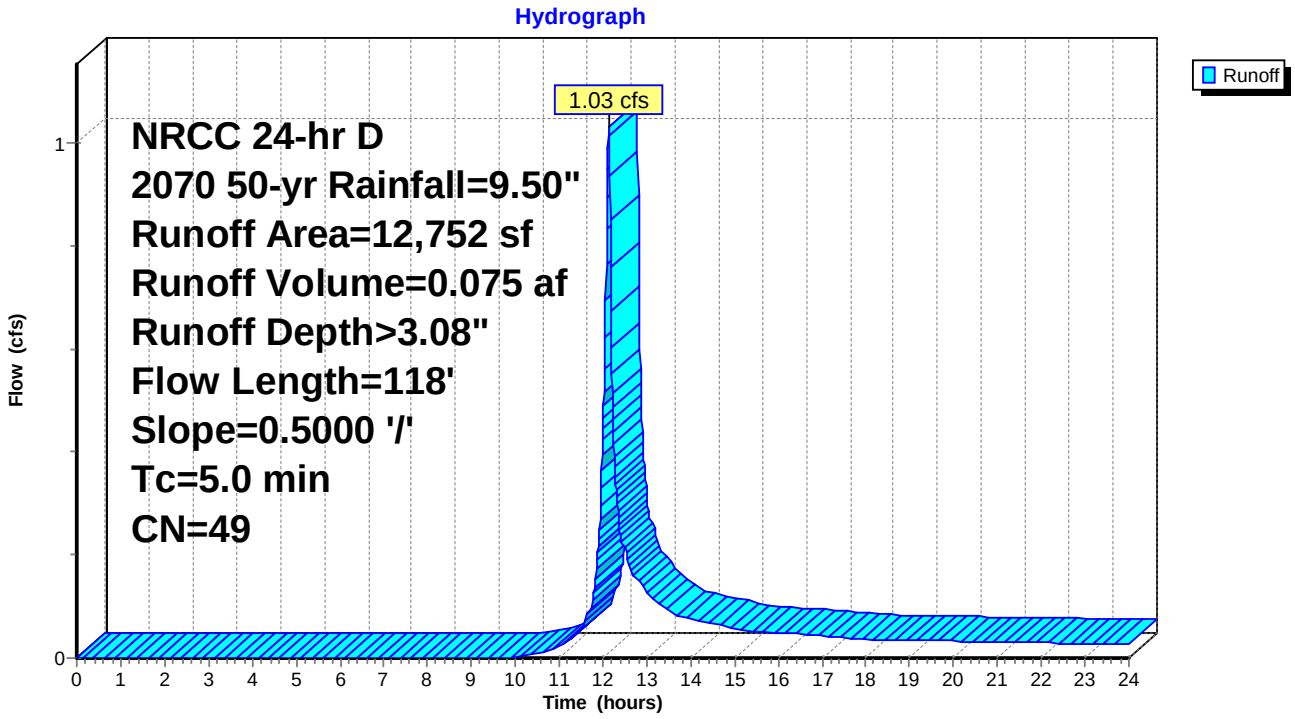
Runoff = 1.03 cfs @ 12.13 hrs, Volume= 0.075 af, Depth> 3.08"
Routed to Pond 4P : Basin 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

	Area (sf)	CN	Description
*	7,663	49	Open Space-Fair (50% to 75% grass) HSG A
*	1,396	49	Open Space-Fair (50% to 75% grass) HSG A
*	3,348	49	Open Space-Fair (50% to 75% grass) HSG A
*	345	49	Open Space-Fair (50% to 75% grass) HSG A
	12,752	49	Weighted Average
	12,752		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	118	0.5000	1.06		**Lag/CN Method,**
1.9	118	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 400S: 400S



Summary for Subcatchment 401S: 401S

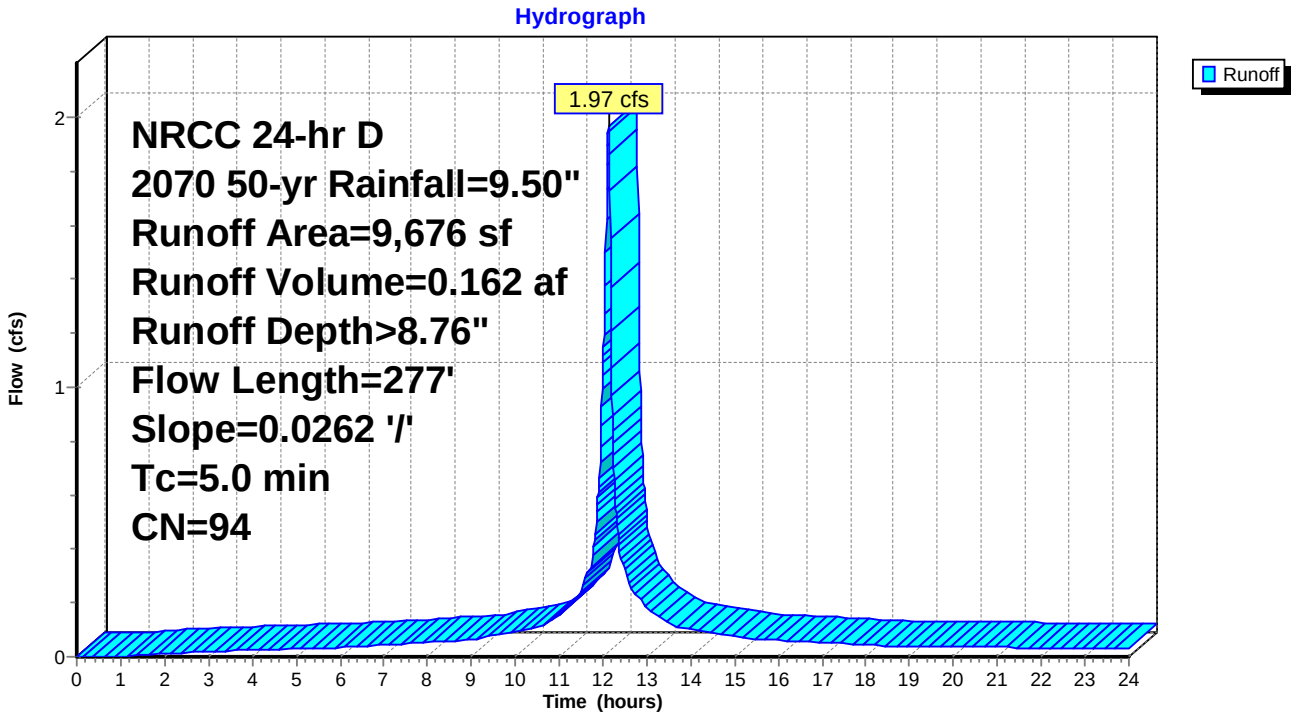
Runoff = 1.97 cfs @ 12.12 hrs, Volume= 0.162 af, Depth> 8.76"
Routed to Pond CB23 : CB-23

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
8,350	98	Unconnected pavement HSG A
487	98	Unconnected pavement HSG B
3	69	50-75% Grass cover, Fair HSG B
836	49	50-75% Grass cover, Fair HSG A
9,676	94	Weighted Average
839		8.67% Pervious Area
8,837		91.33% Impervious Area
8,837		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	277	0.0262	1.12		**Lag/CN Method,**
4.1	277	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 401S: 401S



Summary for Subcatchment 402S: 402S

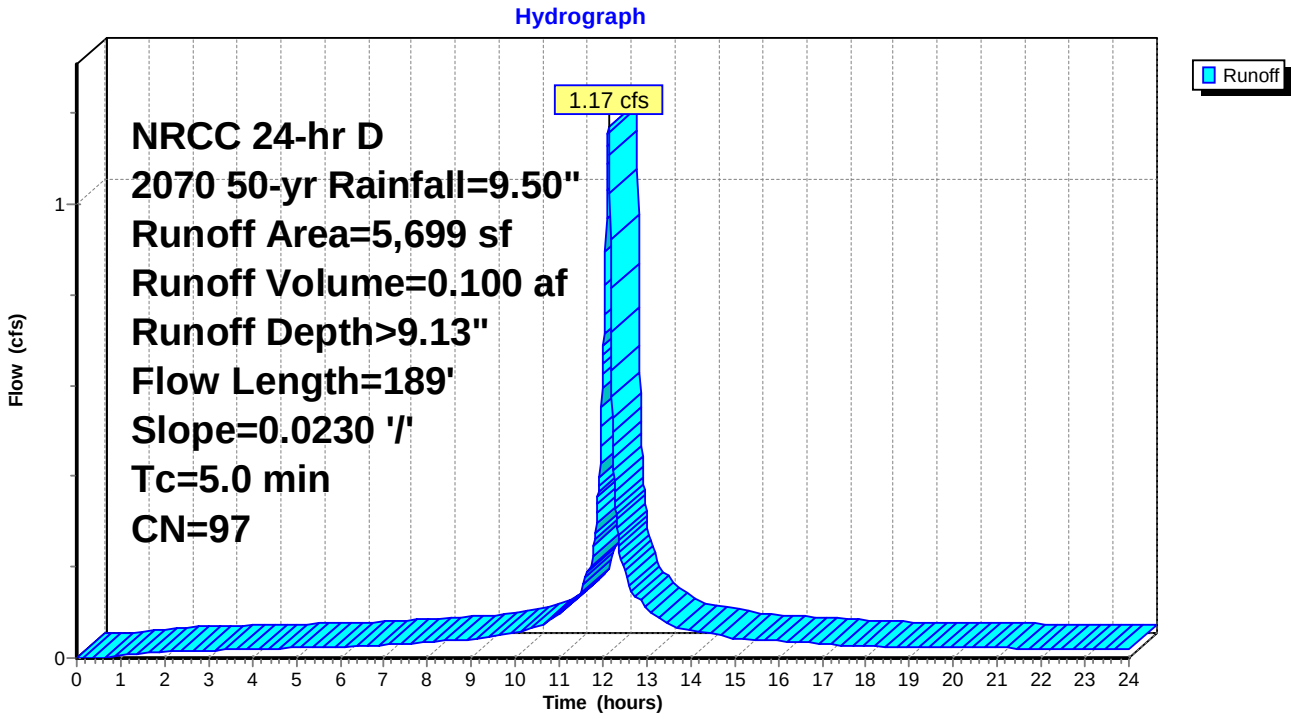
Runoff = 1.17 cfs @ 12.12 hrs, Volume= 0.100 af, Depth> 9.13"
Routed to Pond CB22 : CB-22

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
5,595	98	Unconnected pavement HSG A
104	49	50-75% Grass cover, Fair HSG A
5,699	97	Weighted Average
104		1.83% Pervious Area
5,595		98.17% Impervious Area
5,595		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	189	0.0230	1.13		**Lag/CN Method,**
2.8	189	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 402S: 402S



Summary for Subcatchment 403S: 403S

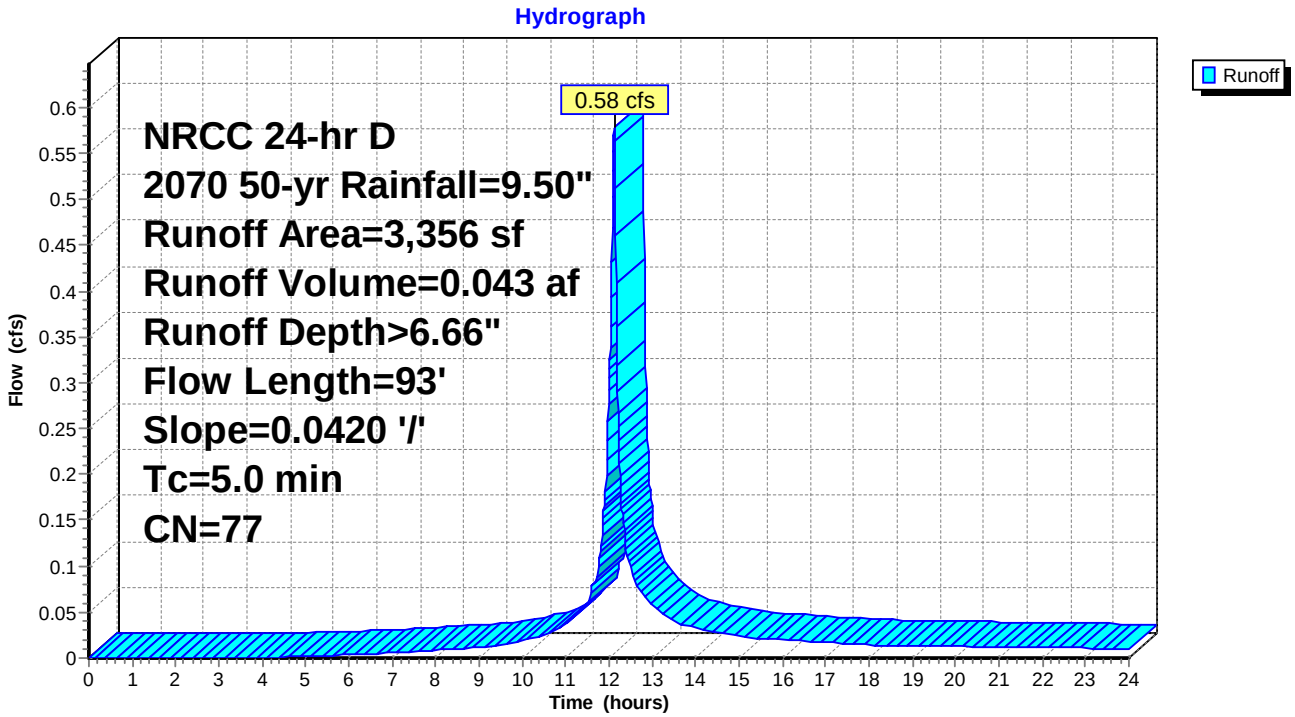
Runoff = 0.58 cfs @ 12.12 hrs, Volume= 0.043 af, Depth> 6.66"
Routed to Pond CB24 : CB-24

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
1,919	98	Unconnected pavement HSG A
1,437	49	50-75% Grass cover, Fair HSG A
3,356	77	Weighted Average
1,437		42.83% Pervious Area
1,919		57.17% Impervious Area
1,919		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	93	0.0420	0.61		**Lag/CN Method,**
2.5	93	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 403S: 403S



Summary for Subcatchment 404S: 404S

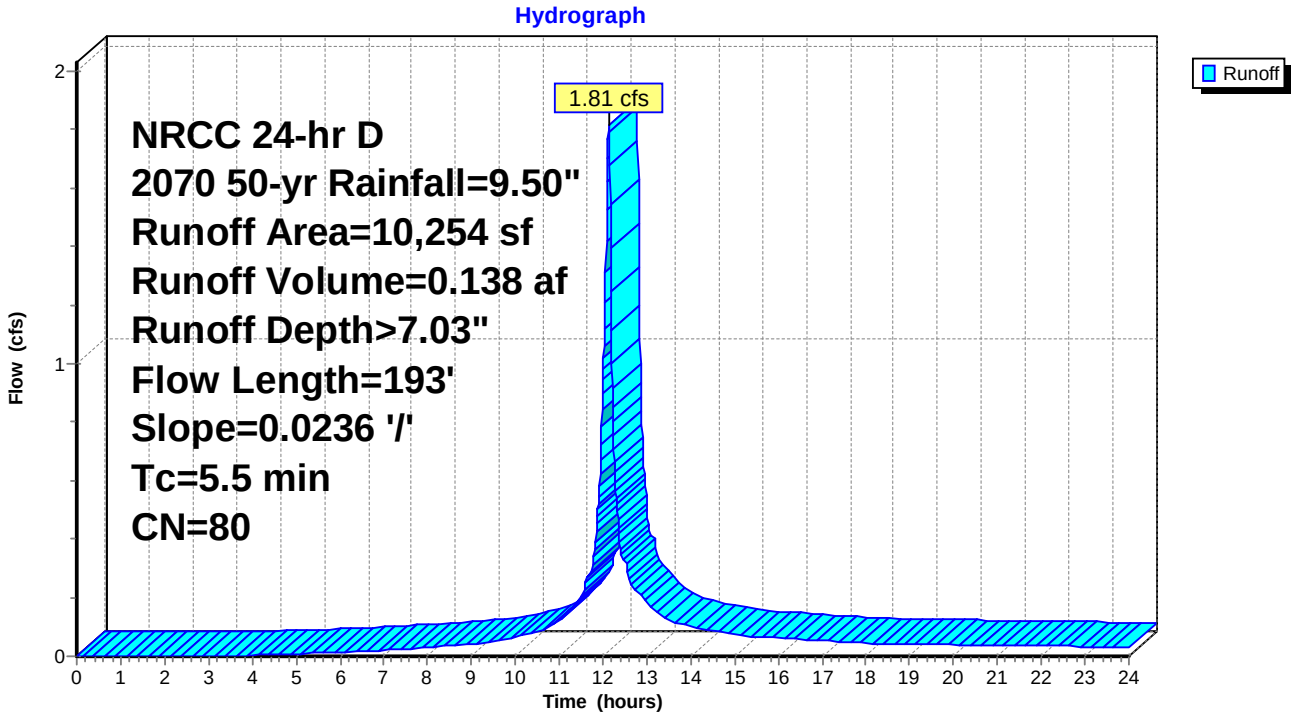
Runoff = 1.81 cfs @ 12.13 hrs, Volume= 0.138 af, Depth> 7.03"
Routed to Pond CB25 : CB-25

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

	Area (sf)	CN	Description
	6,558	98	Unconnected pavement HSG A
	3,687	49	50-75% Grass cover, Fair HSG A
	8	36	Woods, Fair HSG A
*	1	49	Open Space-Fair (50% to 75% grass) HSG A
	10,254	80	Weighted Average
	3,696		36.04% Pervious Area
	6,558		63.96% Impervious Area
	6,558		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	193	0.0236	0.58		**Lag/CN Method,**

Subcatchment 404S: 404S



Summary for Subcatchment 500S: 500S

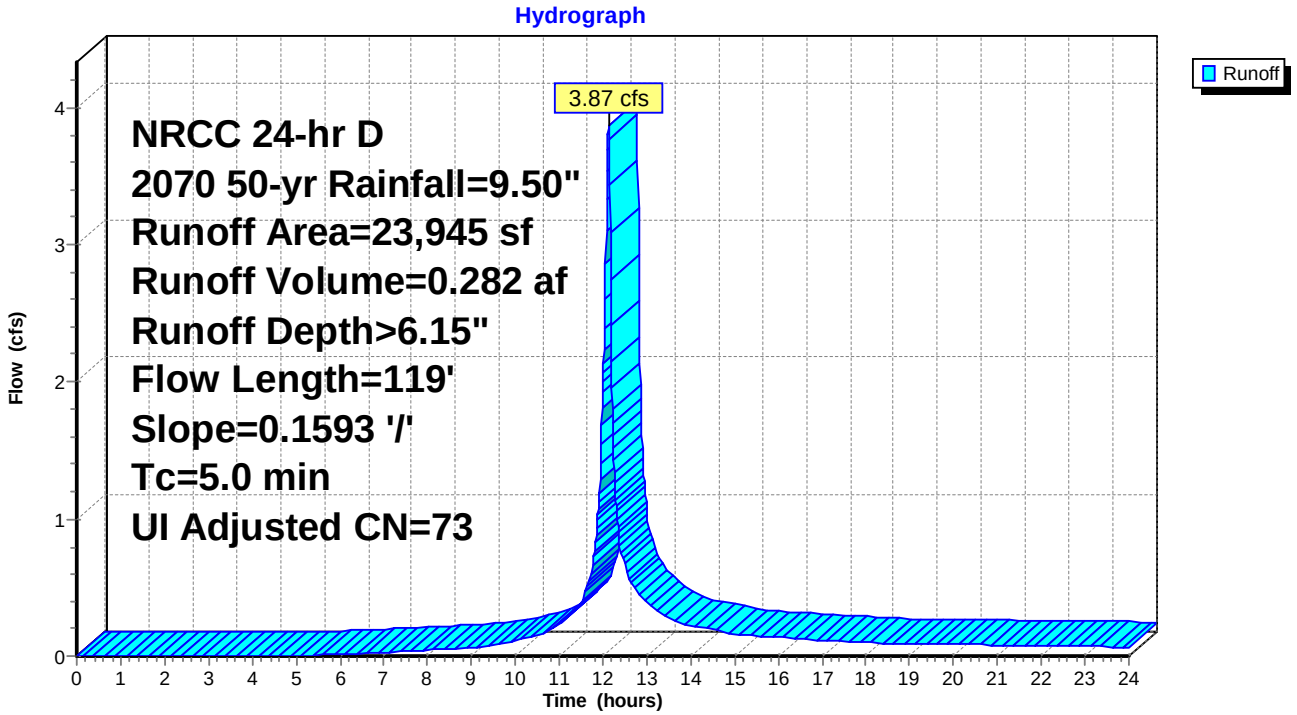
Runoff = 3.87 cfs @ 12.12 hrs, Volume= 0.282 af, Depth> 6.15"
Routed to Pond CB39 : CB-39

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Adj	Description
11,944	79		50-75% Grass cover, Fair HSG C
6,002	98		Unconnected pavement HSG C
4	98		Unconnected pavement HSG A
5,991	49		50-75% Grass cover, Fair HSG A
3	98		Roofs HSG C
23,945	76	73	Weighted Average, UI Adjusted
17,935			74.90% Pervious Area
6,010			25.10% Impervious Area
6,006			99.94% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	119	0.1593	1.21		**Lag/CN Method,**
1.6	119	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 500S: 500S



Summary for Subcatchment 501S: 501S

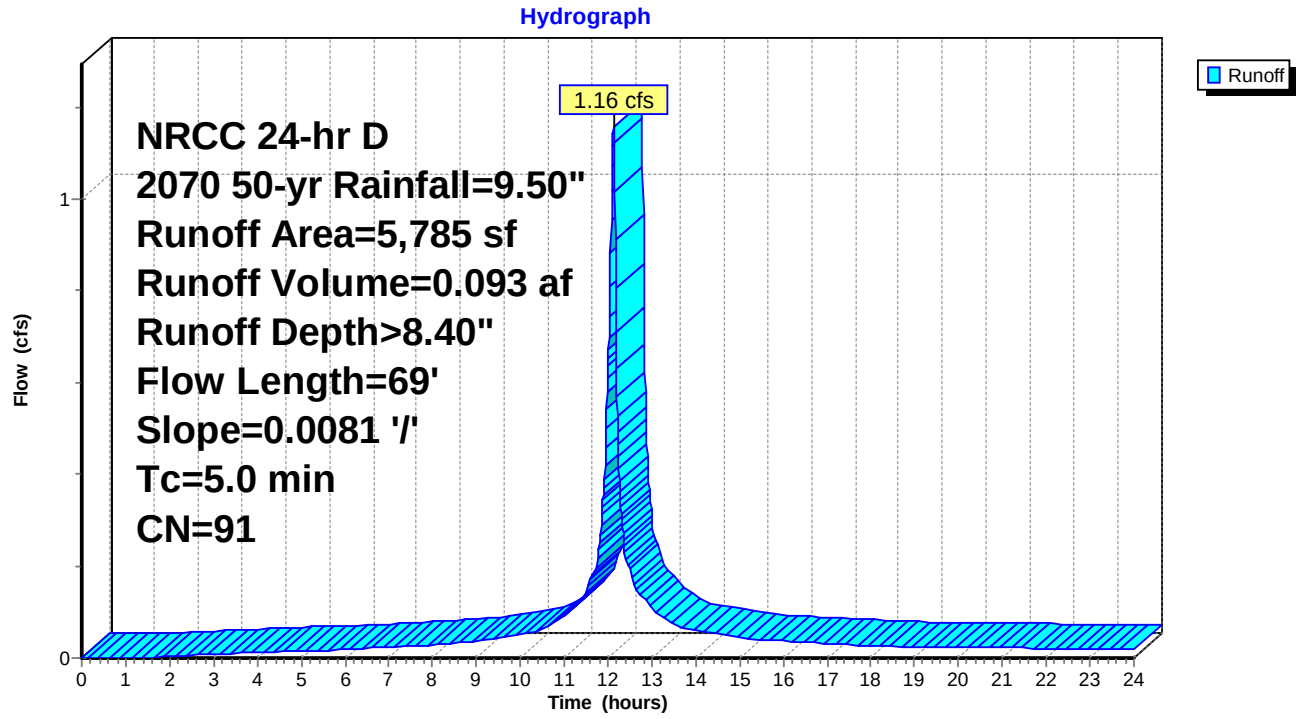
Runoff = 1.16 cfs @ 12.12 hrs, Volume= 0.093 af, Depth> 8.40"
Routed to Pond CB26 : CB-26

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
4,934	98	Unconnected pavement HSG A
851	49	50-75% Grass cover, Fair HSG A
5,785	91	Weighted Average
851		14.72% Pervious Area
4,934		85.28% Impervious Area
4,934		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	69	0.0081	0.41		**Lag/CN Method,**
2.8	69	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 501S: 501S



Summary for Subcatchment 502S: 502S

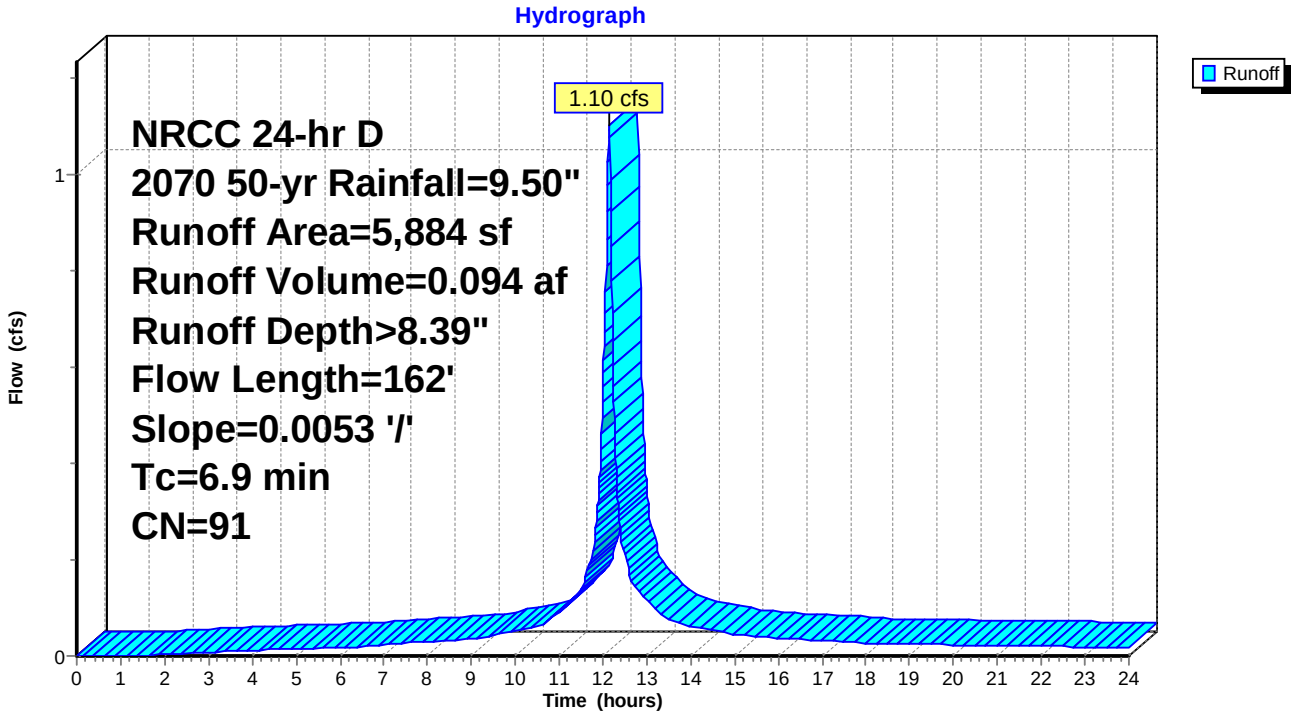
Runoff = 1.10 cfs @ 12.14 hrs, Volume= 0.094 af, Depth> 8.39"
Routed to Pond CB27 : CB-27

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
4,998	98	Unconnected pavement HSG A
885	49	50-75% Grass cover, Fair HSG A
5,884	91	Weighted Average
885		15.05% Pervious Area
4,998		84.95% Impervious Area
4,998		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	162	0.0053	0.39		**Lag/CN Method,**

Subcatchment 502S: 502S



Summary for Subcatchment 503S: 503S

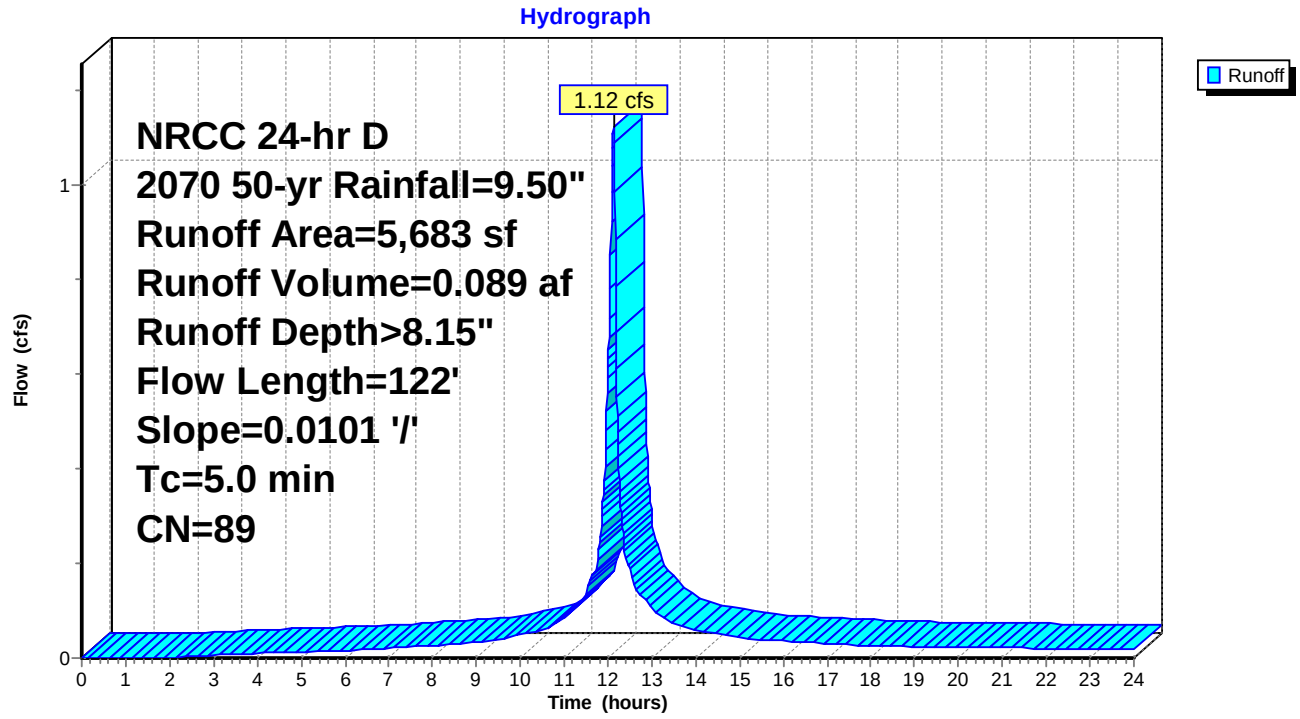
Runoff = 1.12 cfs @ 12.12 hrs, Volume= 0.089 af, Depth> 8.15"
Routed to Pond CB29 : CB-29

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
4,605	98	Unconnected pavement HSG A
1,078	49	50-75% Grass cover, Fair HSG A
5,683	89	Weighted Average
1,078		18.96% Pervious Area
4,605		81.04% Impervious Area
4,605		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	122	0.0101	0.47		**Lag/CN Method,**
4.3	122	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 503S: 503S



Summary for Subcatchment 504S: 504S

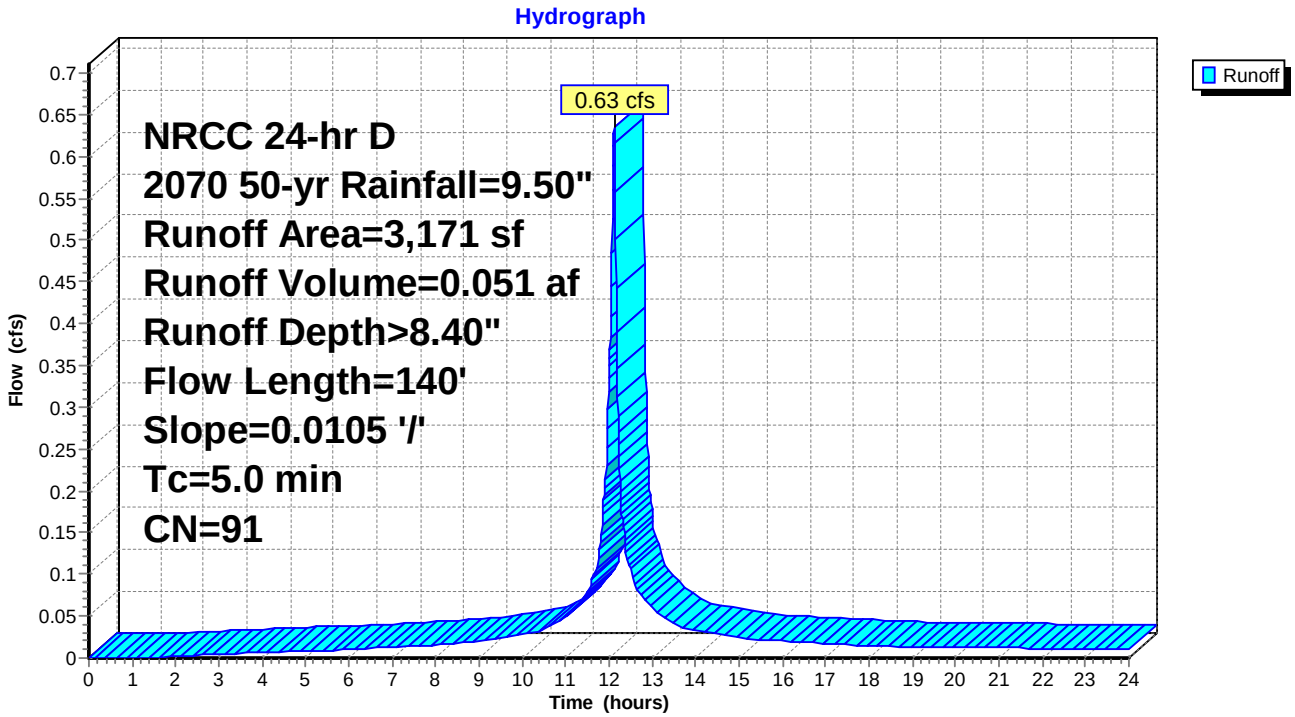
Runoff = 0.63 cfs @ 12.12 hrs, Volume= 0.051 af, Depth> 8.40"
Routed to Pond CB28 : CB-28

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
2,705	98	Unconnected pavement HSG A
466	49	50-75% Grass cover, Fair HSG A
3,171	91	Weighted Average
466		14.69% Pervious Area
2,705		85.31% Impervious Area
2,705		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	140	0.0105	0.54		**Lag/CN Method,**
4.3	140	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 504S: 504S



Summary for Subcatchment 505S: 505S

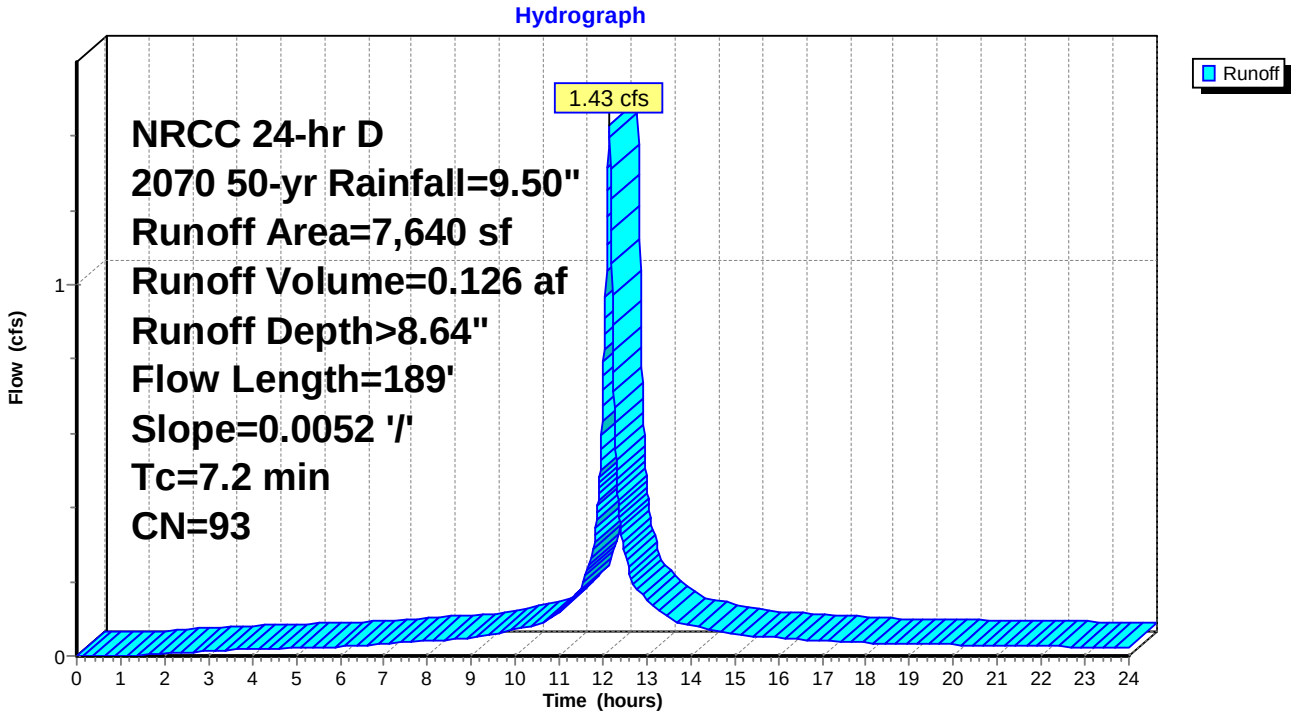
Runoff = 1.43 cfs @ 12.14 hrs, Volume= 0.126 af, Depth> 8.64"
Routed to Pond CB30 : CB-30

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
6,826	98	Unconnected pavement HSG A
814	49	50-75% Grass cover, Fair HSG A
7,640	93	Weighted Average
814		10.66% Pervious Area
6,826		89.34% Impervious Area
6,826		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	189	0.0052	0.44		**Lag/CN Method,**

Subcatchment 505S: 505S



Summary for Subcatchment 506S: 506S

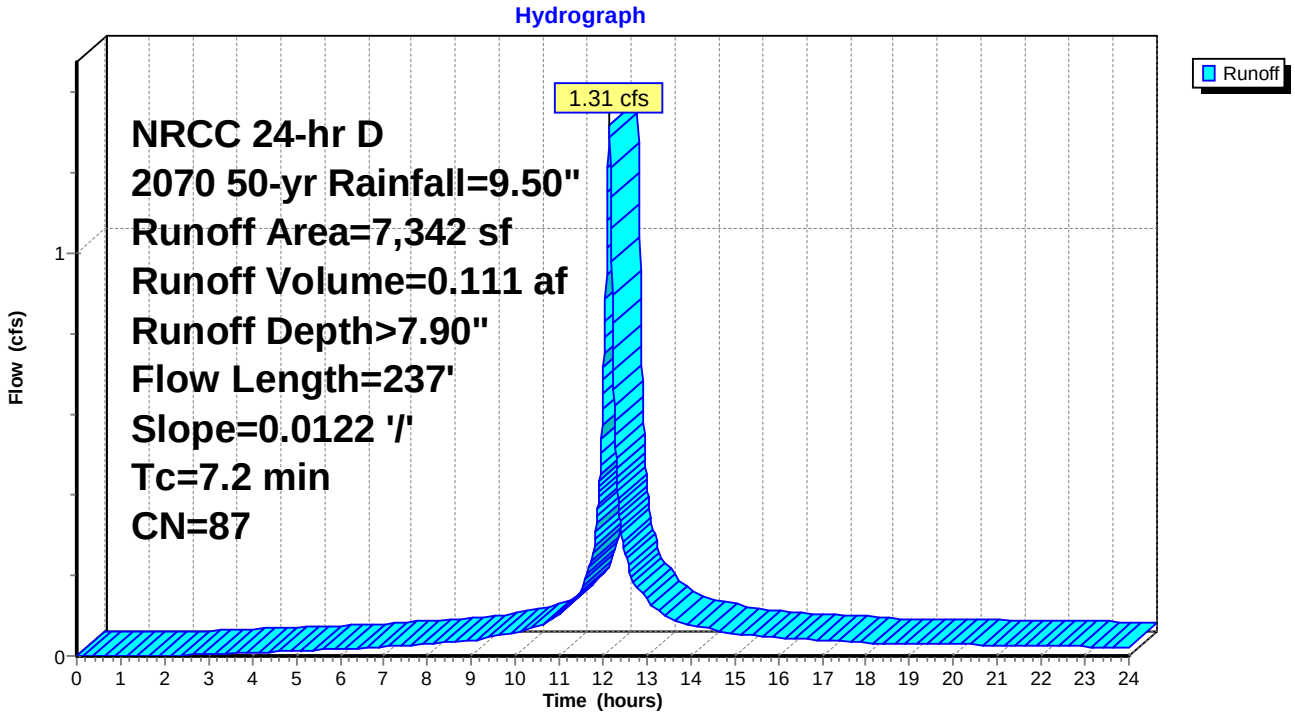
Runoff = 1.31 cfs @ 12.14 hrs, Volume= 0.111 af, Depth> 7.90"
Routed to Pond CB33 : CB-33

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
5,724	98	Unconnected pavement HSG A
1,619	49	50-75% Grass cover, Fair HSG A
7,342	87	Weighted Average
1,619		22.05% Pervious Area
5,724		77.95% Impervious Area
5,724		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	237	0.0122	0.55		**Lag/CN Method,**

Subcatchment 506S: 506S



Summary for Subcatchment 507S: 507S

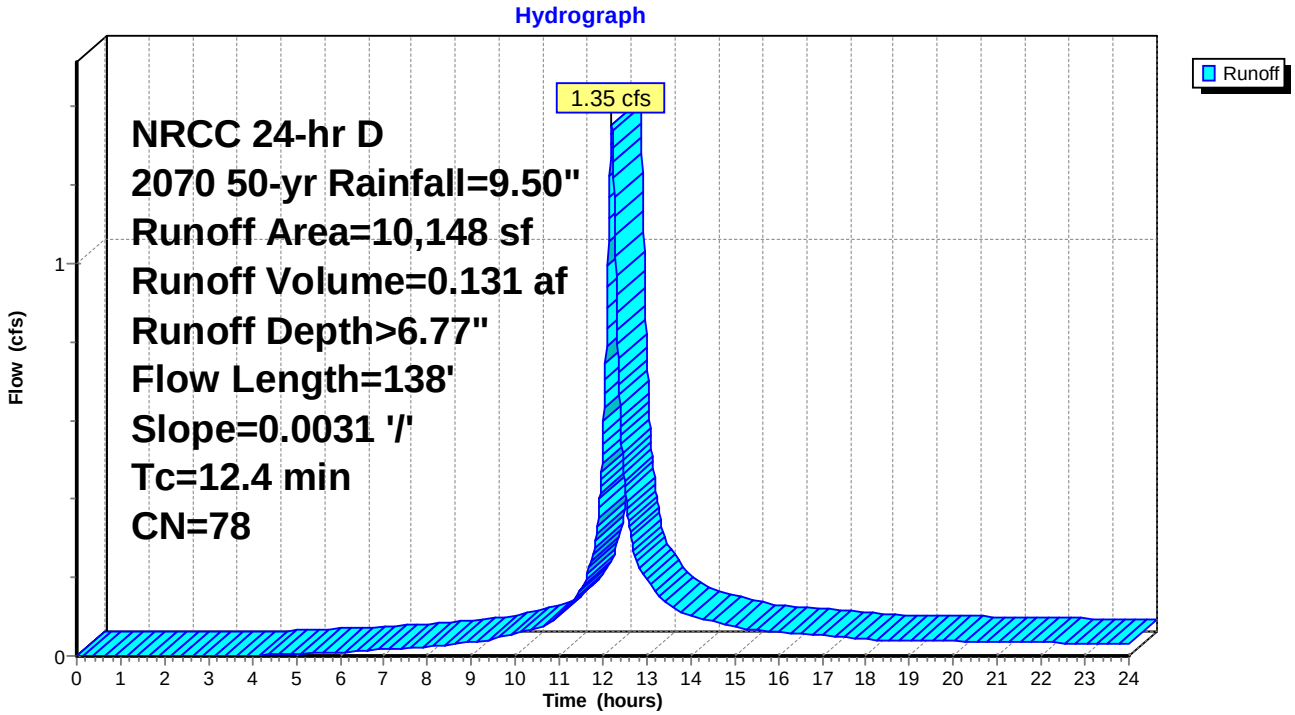
Runoff = 1.35 cfs @ 12.20 hrs, Volume= 0.131 af, Depth> 6.77"
Routed to Pond CB32 : CB-32

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
5,948	98	Unconnected pavement HSG A
4,200	49	50-75% Grass cover, Fair HSG A
10,148	78	Weighted Average
4,200		41.39% Pervious Area
5,948		58.61% Impervious Area
5,948		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	138	0.0031	0.19		**Lag/CN Method,**

Subcatchment 507S: 507S



Summary for Subcatchment 508S: 508S

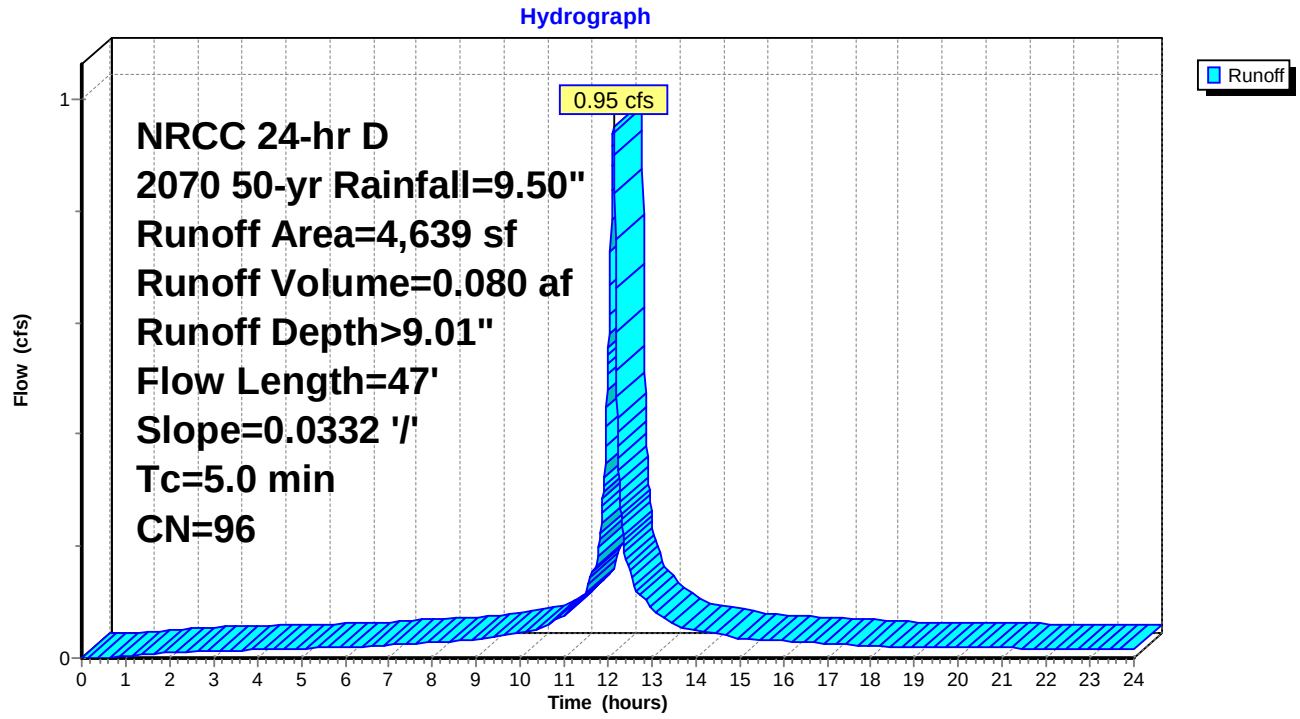
Runoff = 0.95 cfs @ 12.12 hrs, Volume= 0.080 af, Depth> 9.01"
Routed to Pond CB37 : CB-37

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
4,454	98	Unconnected pavement HSG A
184	49	50-75% Grass cover, Fair HSG A
4,639	96	Weighted Average
184		3.98% Pervious Area
4,454		96.02% Impervious Area
4,454		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	47	0.0332	0.98		**Lag/CN Method,**
0.8	47	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 508S: 508S



Summary for Subcatchment 509S: 509S

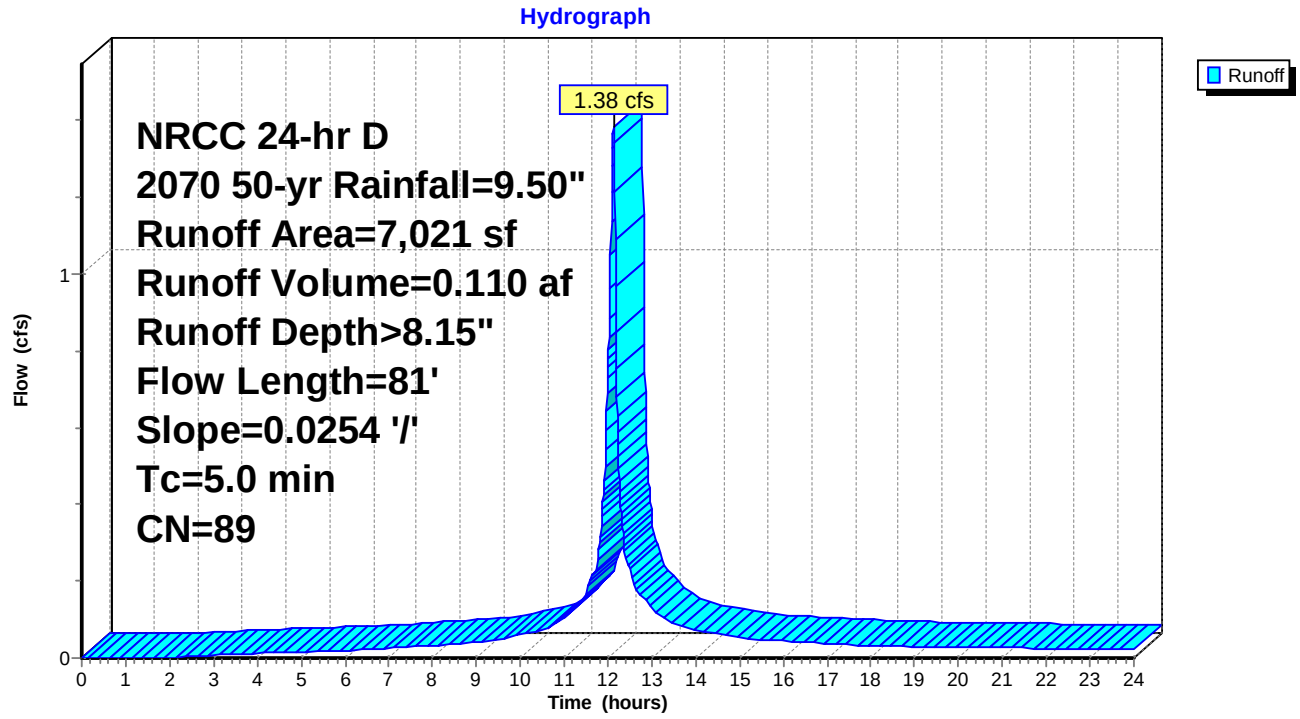
Runoff = 1.38 cfs @ 12.12 hrs, Volume= 0.110 af, Depth> 8.15"
Routed to Pond CB36 : CB-36

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
5,706	98	Unconnected pavement HSG A
1,315	49	50-75% Grass cover, Fair HSG A
7,021	89	Weighted Average
1,315		18.73% Pervious Area
5,706		81.27% Impervious Area
5,706		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	81	0.0254	0.69		**Lag/CN Method,**
1.9	81	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 509S: 509S



Summary for Subcatchment 510S: 510S

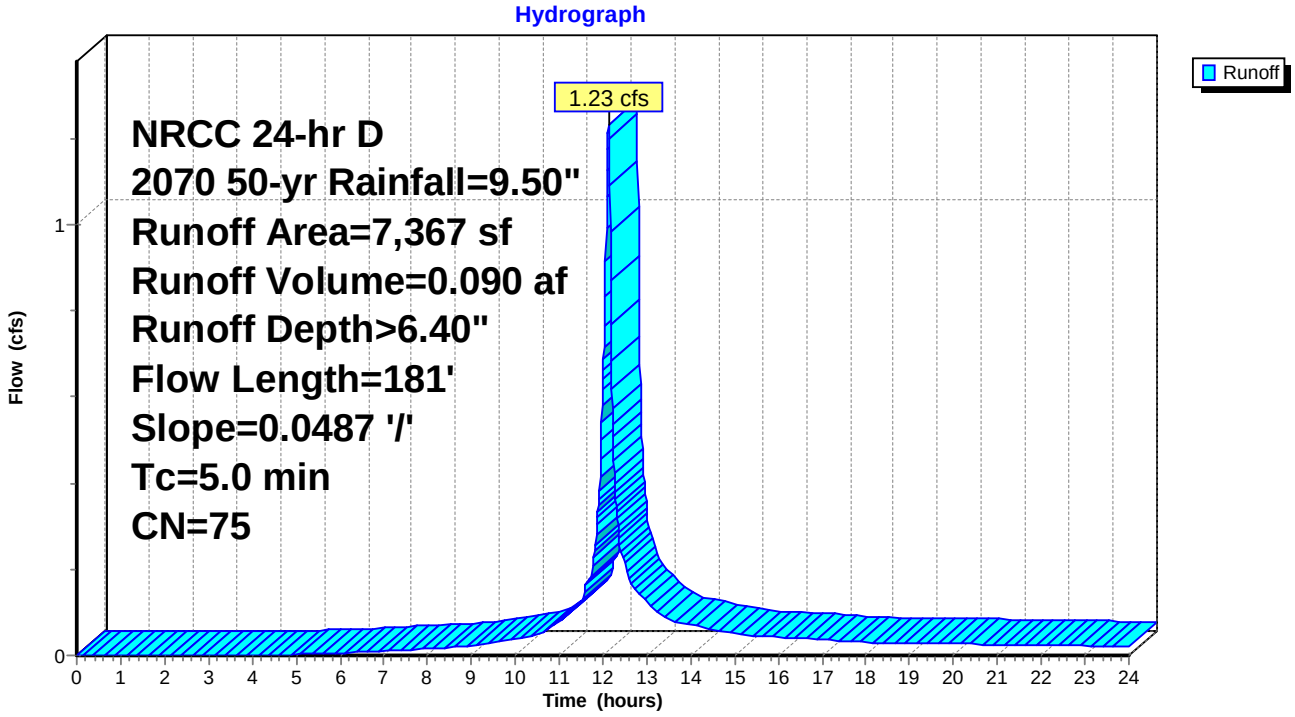
Runoff = 1.23 cfs @ 12.12 hrs, Volume= 0.090 af, Depth> 6.40"
Routed to Pond CB34 : CB-34

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

	Area (sf)	CN	Description
	3,981	98	Unconnected pavement HSG A
	3,384	49	50-75% Grass cover, Fair HSG A
*	1	49	Open Space-Fair (50% to 75% grass) HSG A
	7,367	75	Weighted Average
	3,386		45.96% Pervious Area
	3,981		54.04% Impervious Area
	3,981		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	181	0.0487	0.71		**Lag/CN Method,**
4.3	181	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 510S: 510S



Summary for Subcatchment 511S: 511S

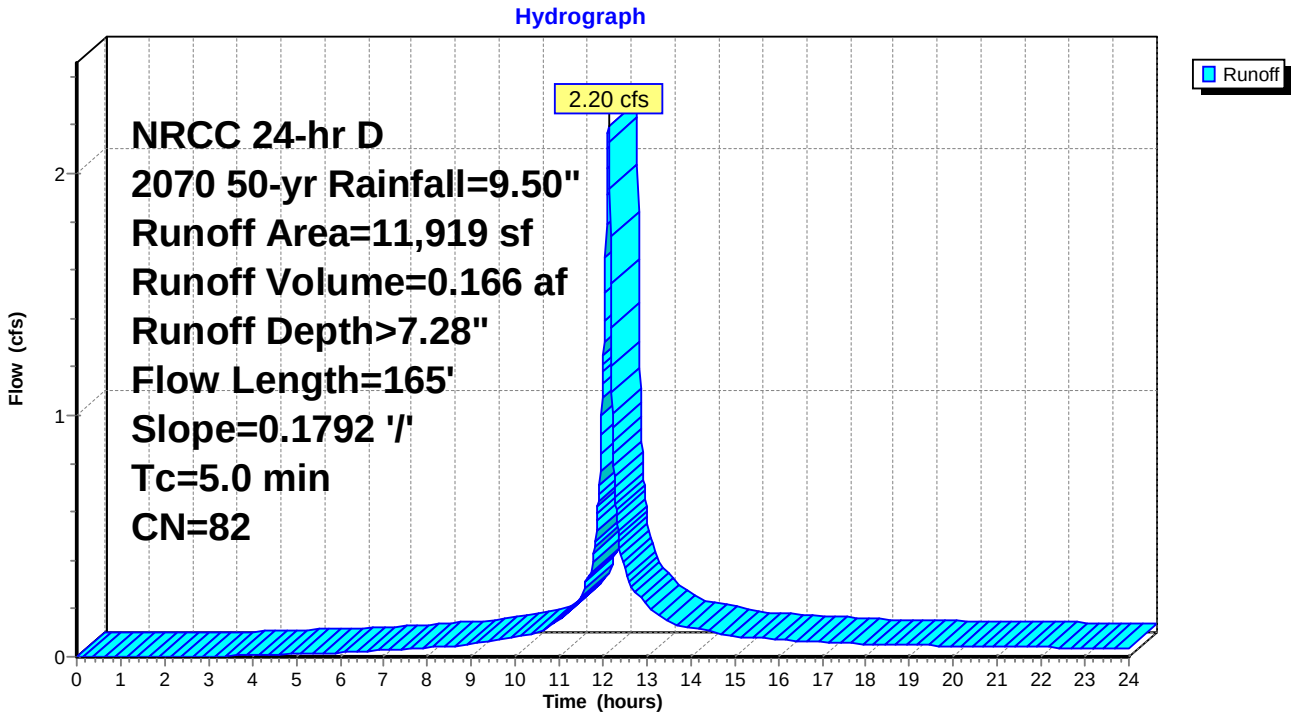
Runoff = 2.20 cfs @ 12.12 hrs, Volume= 0.166 af, Depth> 7.28"
Routed to Pond CB38 : CB-38

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
239	79	50-75% Grass cover, Fair HSG C
479	98	Unconnected pavement HSG C
7,478	98	Unconnected pavement HSG A
3,723	49	50-75% Grass cover, Fair HSG A
11,919	82	Weighted Average
3,962		33.24% Pervious Area
7,957		66.76% Impervious Area
7,957		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	165	0.1792	1.65		**Lag/CN Method,**
1.7	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 511S: 511S



Summary for Subcatchment 512S: 512S

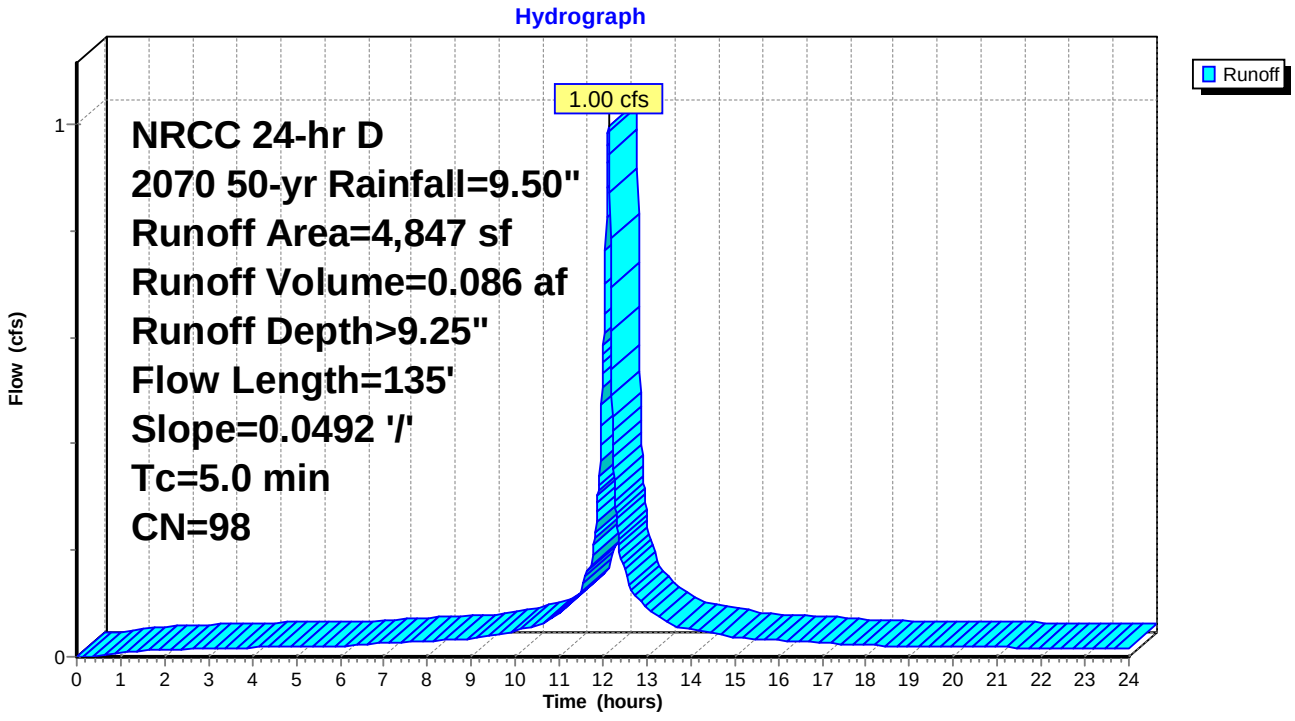
Runoff = 1.00 cfs @ 12.12 hrs, Volume= 0.086 af, Depth> 9.25"
Routed to Pond CB35 : CB-35

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
563	98	Unconnected pavement HSG C
4,271	98	Unconnected pavement HSG A
11	49	50-75% Grass cover, Fair HSG A
2	79	50-75% Grass cover, Fair HSG C
4,847	98	Weighted Average
13		0.28% Pervious Area
4,834		99.72% Impervious Area
4,834		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	135	0.0492	1.65		**Lag/CN Method,**
1.4	135	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 512S: 512S



Summary for Subcatchment 513S: 513S

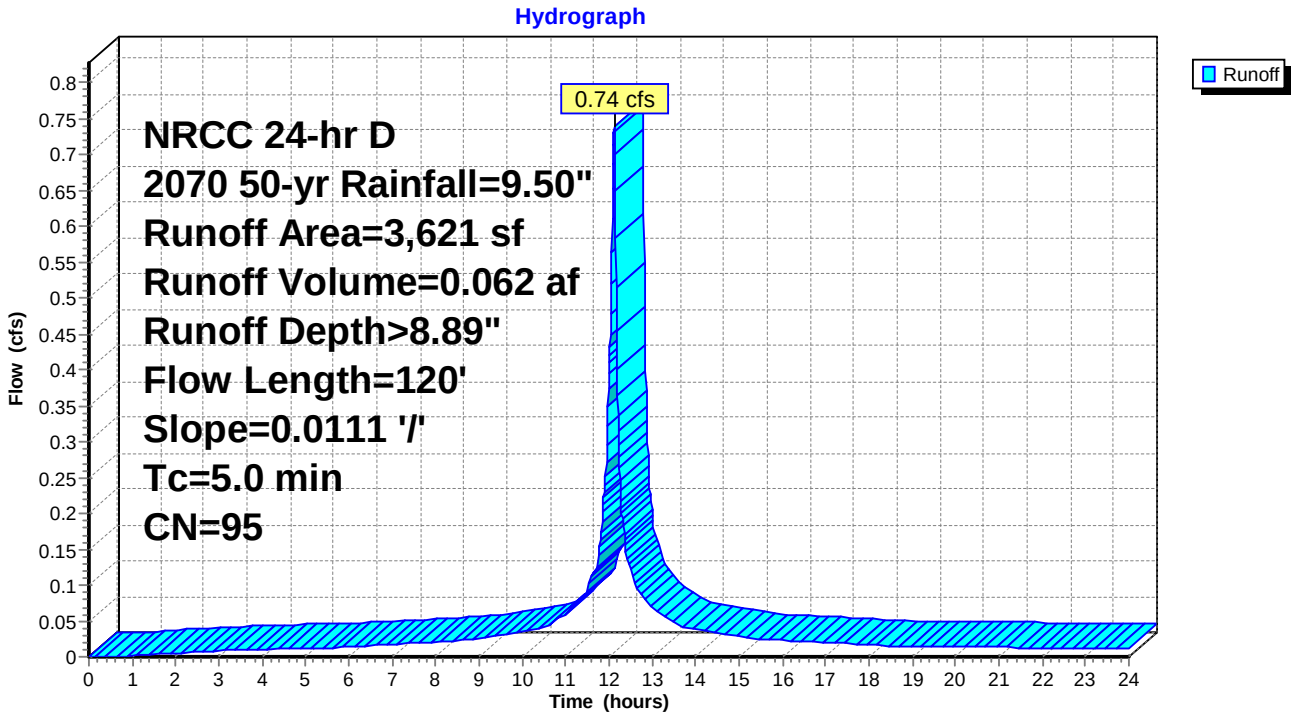
Runoff = 0.74 cfs @ 12.12 hrs, Volume= 0.062 af, Depth> 8.89"
Routed to Pond CB31 : CB-31

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
205	49	50-75% Grass cover, Fair HSG A
789	98	Unconnected pavement HSG A
2,584	98	Unconnected pavement HSG B
43	69	50-75% Grass cover, Fair HSG B
3,621	95	Weighted Average
248		6.85% Pervious Area
3,373		93.15% Impervious Area
3,373		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	120	0.0111	0.65		**Lag/CN Method,**
3.1	120	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 513S: 513S



Summary for Subcatchment 600S: 600S

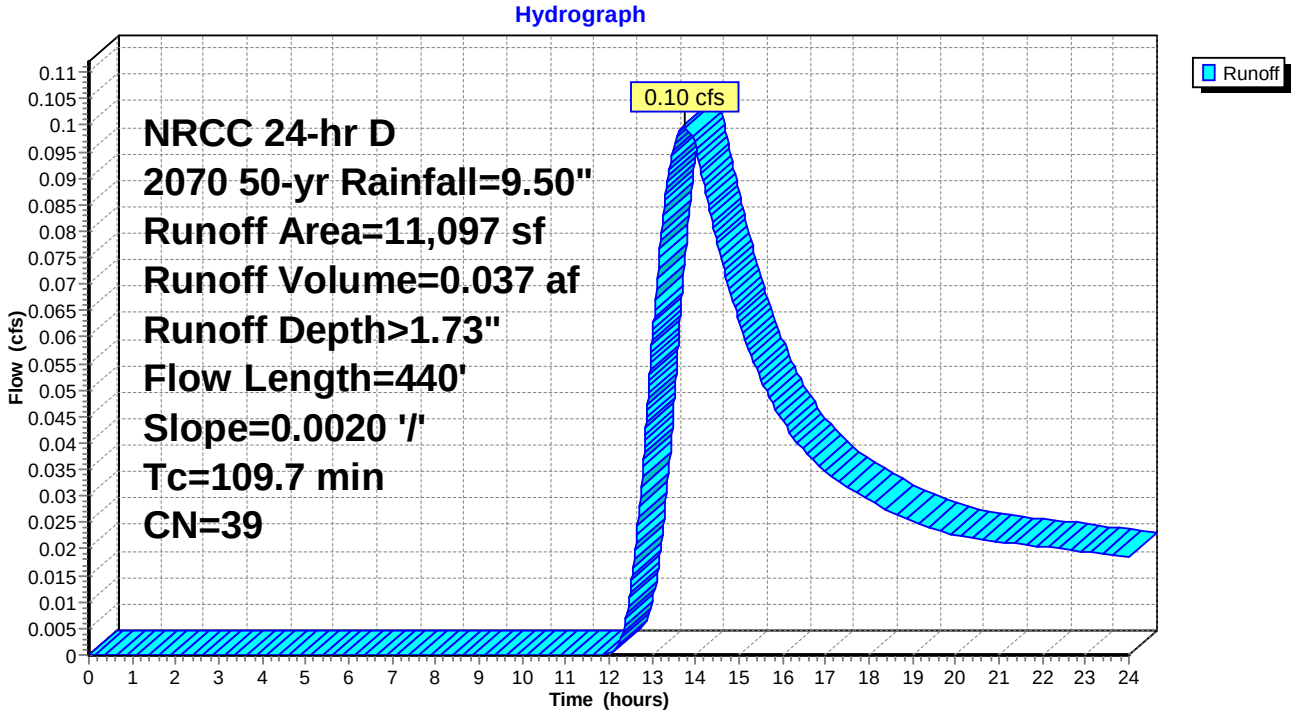
Runoff = 0.10 cfs @ 13.77 hrs, Volume= 0.037 af, Depth> 1.73"
Routed to Pond 6P : Basin 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
11,097	39	>75% Grass cover, Good, HSG A
11,097		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
109.7	440	0.0020	0.07		**Lag/CN Method,**

Subcatchment 600S: 600S



Summary for Subcatchment 601S: 601S

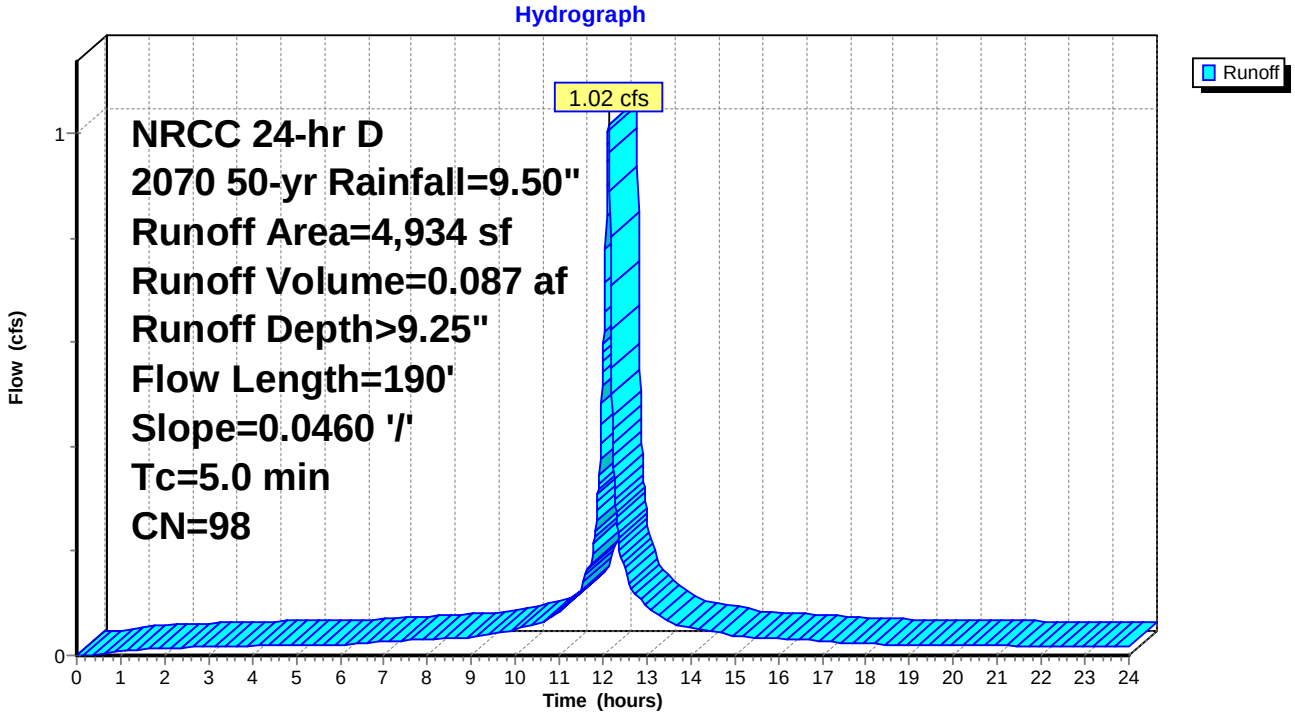
Runoff = 1.02 cfs @ 12.12 hrs, Volume= 0.087 af, Depth> 9.25"
Routed to Pond CB48 : CB-48

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
4,897	98	Unconnected pavement HSG C
37	79	50-75% Grass cover, Fair HSG C
1	89	Gravel roads HSG C
4,934	98	Weighted Average
38		0.76% Pervious Area
4,897		99.24% Impervious Area
4,897		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	190	0.0460	1.70		**Lag/CN Method,**
1.9	190	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 601S: 601S



Summary for Subcatchment 602S: 602S

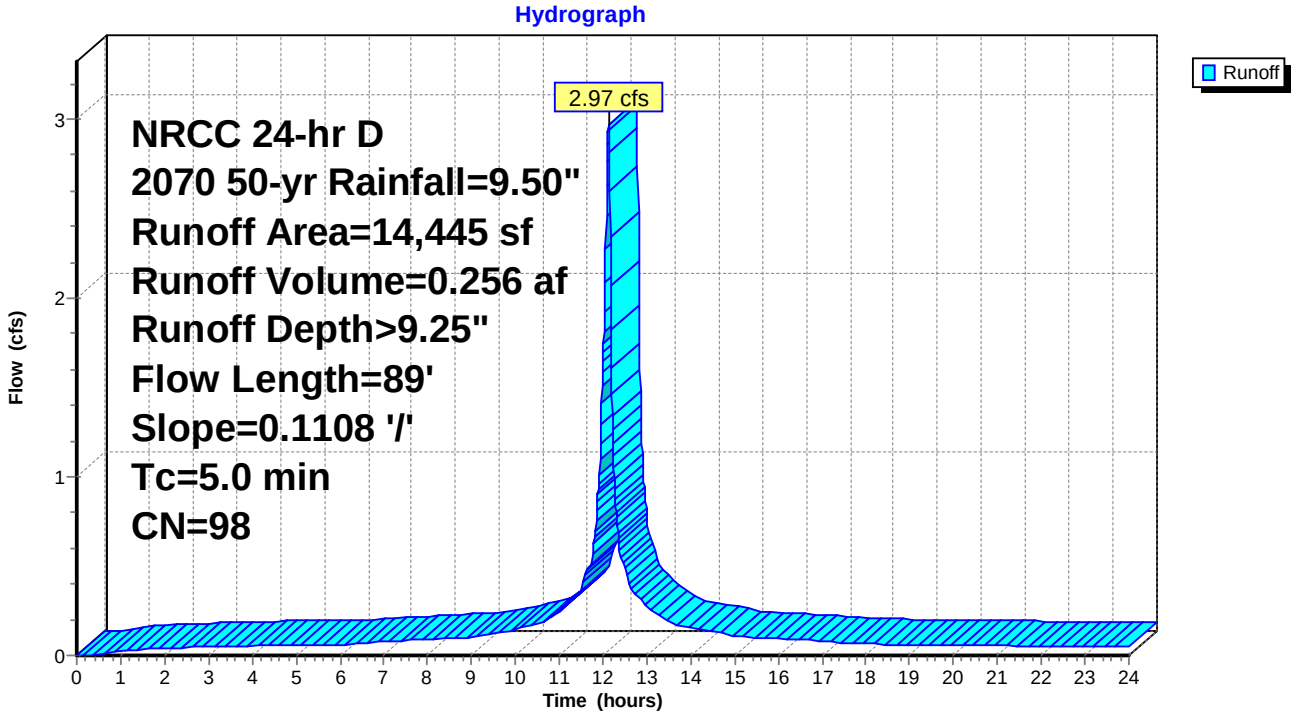
Runoff = 2.97 cfs @ 12.12 hrs, Volume= 0.256 af, Depth> 9.25"
Routed to Pond CB49 : CB-49

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
14,165	98	Unconnected pavement HSG C
278	79	50-75% Grass cover, Fair HSG C
2	89	Gravel roads HSG C
14,445	98	Weighted Average
279		1.93% Pervious Area
14,165		98.07% Impervious Area
14,165		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	89	0.1108	2.27		**Lag/CN Method,**
0.7	89	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 602S: 602S



Summary for Subcatchment 603S: 603S

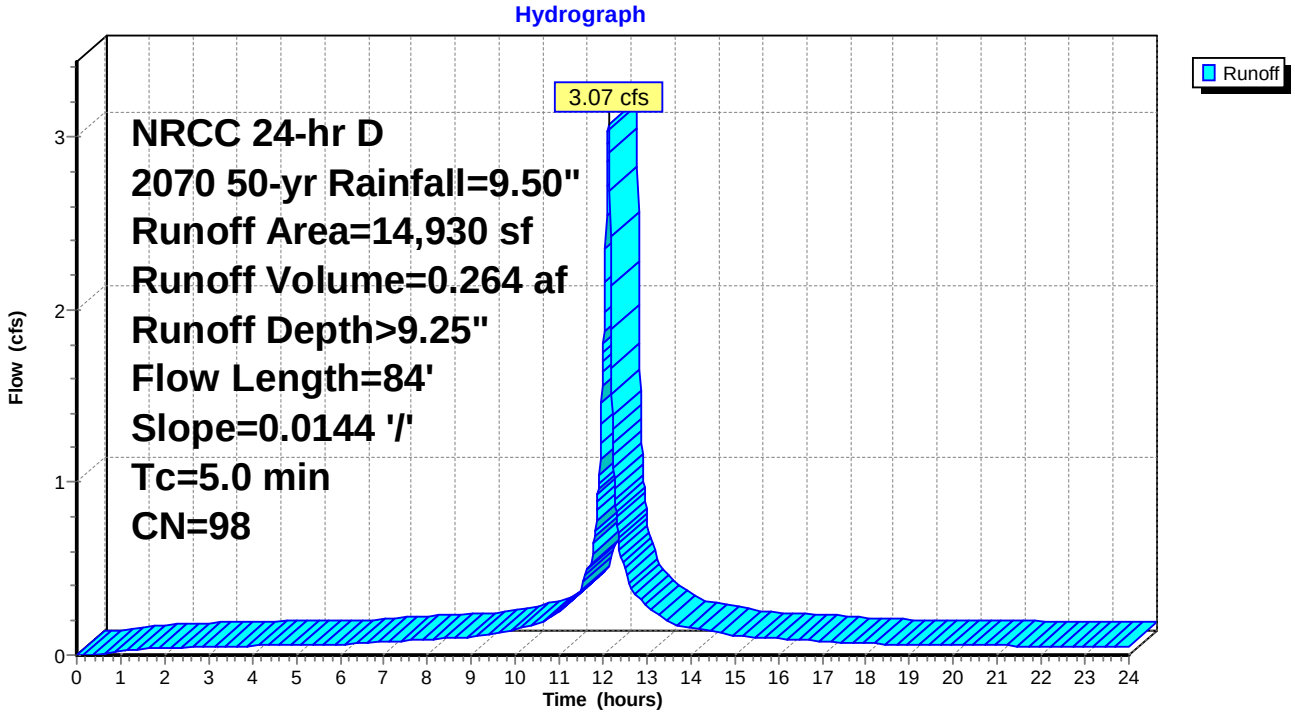
Runoff = 3.07 cfs @ 12.12 hrs, Volume= 0.264 af, Depth> 9.25"
Routed to Pond CB50 : CB-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
13,929	98	Unconnected pavement HSG C
1,001	98	Roofs HSG C
14,930	98	Weighted Average
14,930		100.00% Impervious Area
13,929		93.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	84	0.0144	0.81		**Lag/CN Method,**
1.7	84	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 603S: 603S



Summary for Subcatchment 604S: 604S

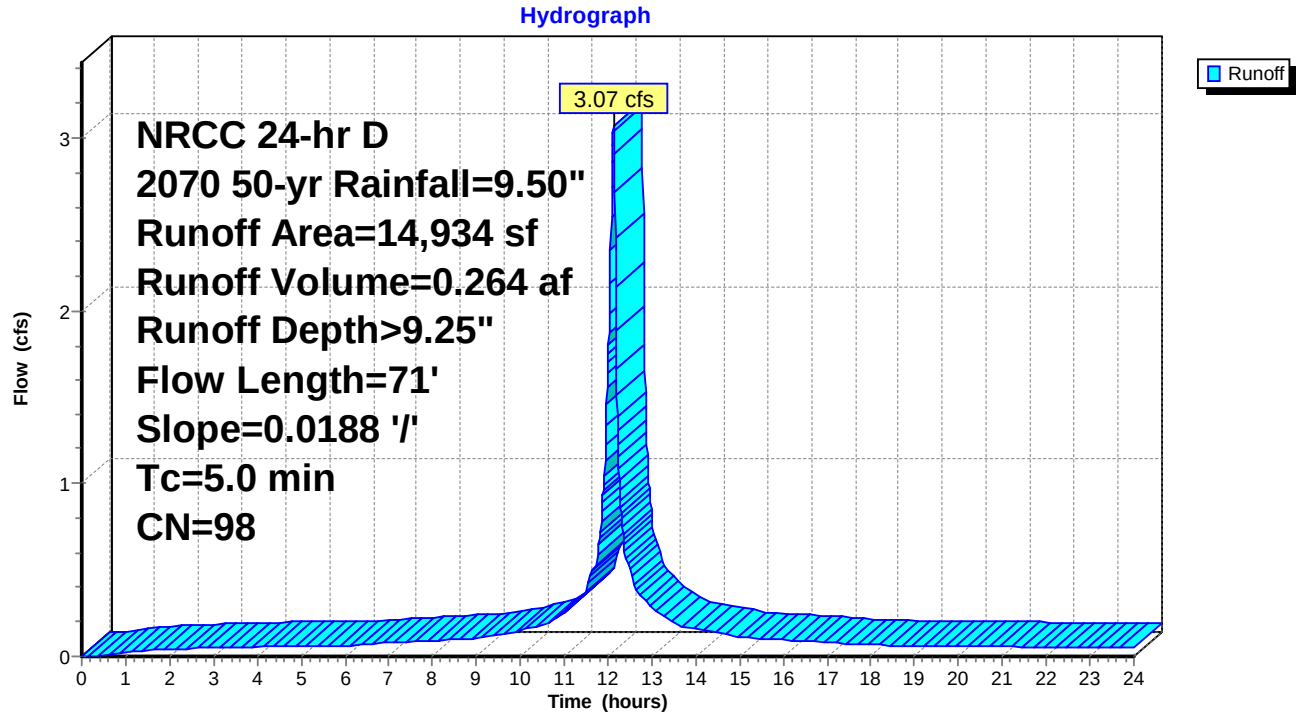
Runoff = 3.07 cfs @ 12.12 hrs, Volume= 0.264 af, Depth> 9.25"
Routed to Pond CB51 : CB-51

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
14,934	98	Unconnected pavement HSG C
14,934		100.00% Impervious Area
14,934		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	71	0.0188	0.90		**Lag/CN Method,**
1.3	71	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 604S: 604S



Summary for Subcatchment 605S: 605S

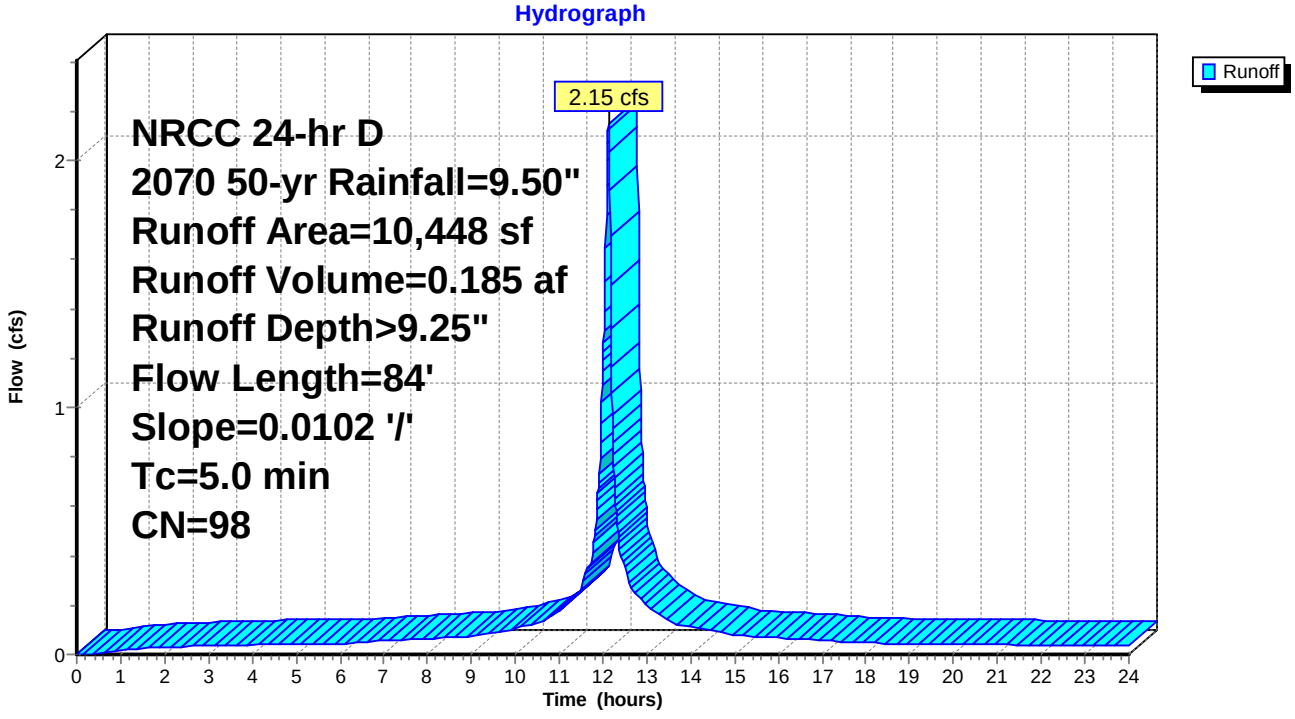
Runoff = 2.15 cfs @ 12.12 hrs, Volume= 0.185 af, Depth> 9.25"
Routed to Pond CB52 : CB-52

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
10,448	98	Unconnected pavement HSG C
10,448		100.00% Impervious Area
10,448		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	84	0.0102	0.68		**Lag/CN Method,**
2.1	84	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 605S: 605S



Summary for Subcatchment 606S: 606S

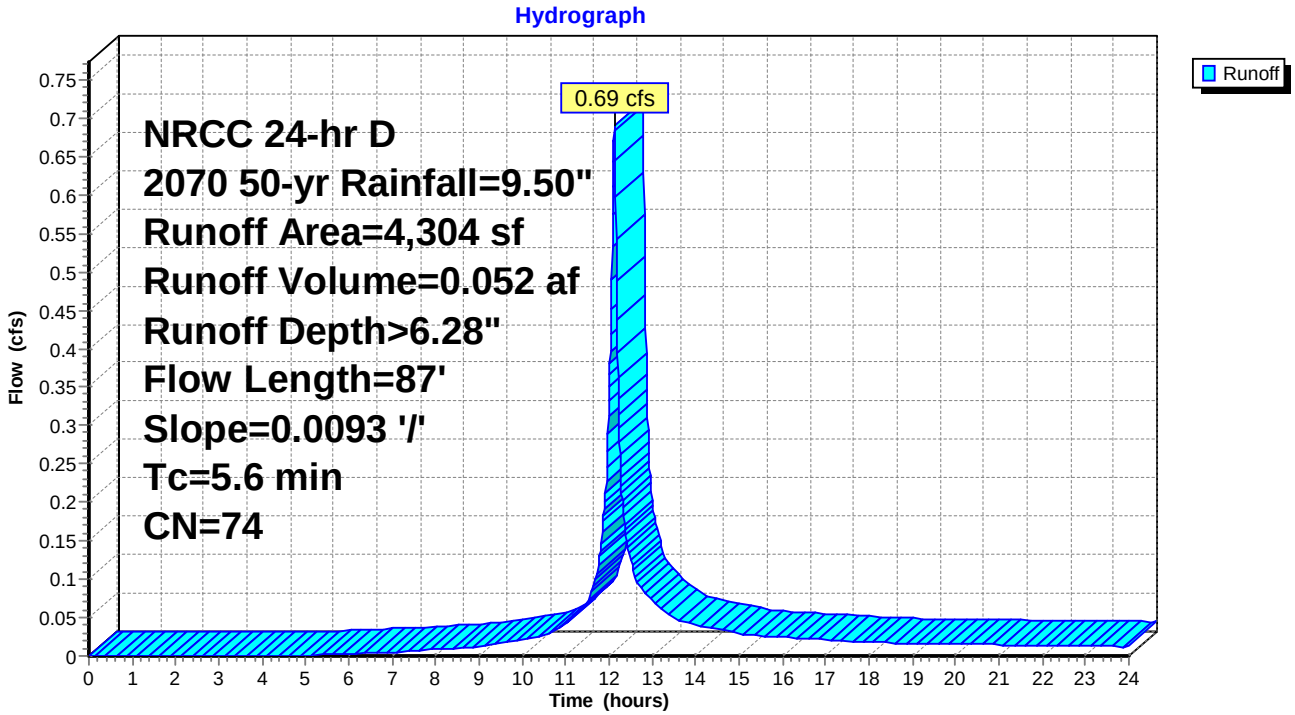
Runoff = 0.69 cfs @ 12.13 hrs, Volume= 0.052 af, Depth> 6.28"
Routed to Pond CB40 : CB-40

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
2,210	98	Unconnected pavement HSG A
2,094	49	50-75% Grass cover, Fair HSG A
4,304	74	Weighted Average
2,094		48.66% Pervious Area
2,210		51.34% Impervious Area
2,210		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	87	0.0093	0.26		**Lag/CN Method,**

Subcatchment 606S: 606S



Summary for Subcatchment 607S: 607S

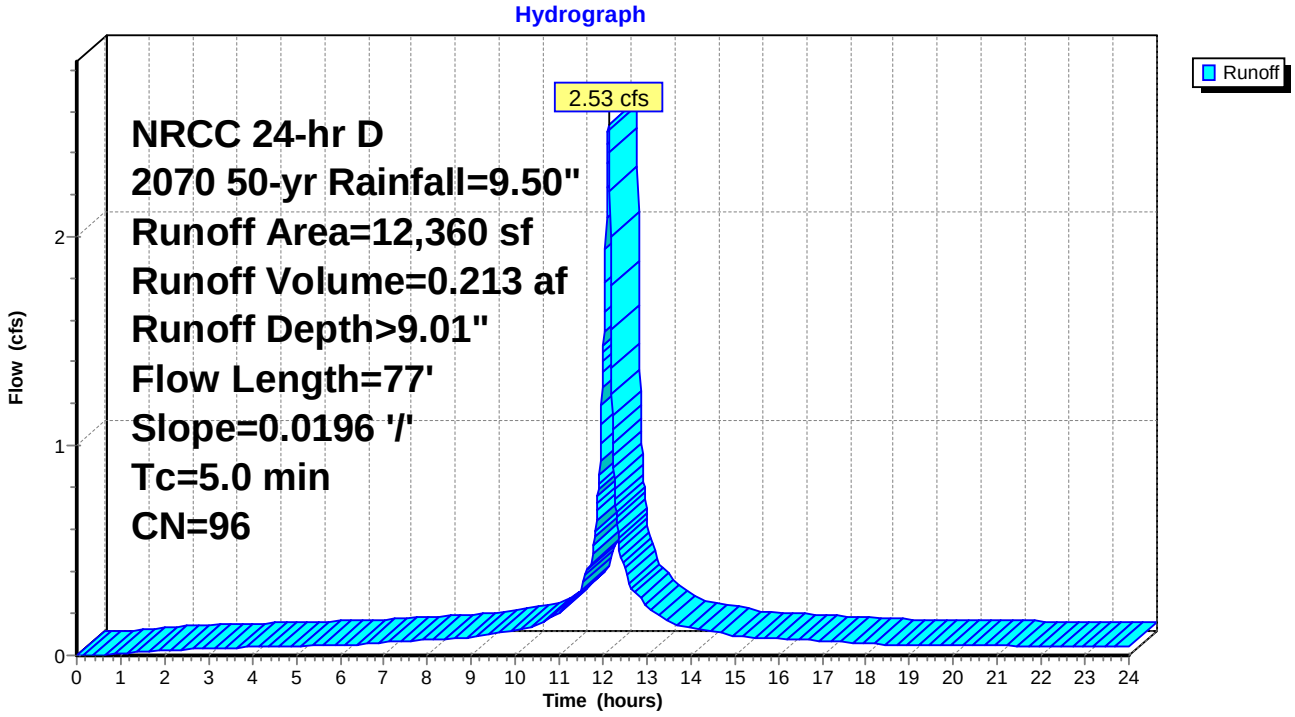
Runoff = 2.53 cfs @ 12.12 hrs, Volume= 0.213 af, Depth> 9.01"
Routed to Pond CB41 : CB-41

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
27	98	Unconnected pavement HSG C
11,898	98	Unconnected pavement HSG A
436	49	50-75% Grass cover, Fair HSG A
12,360	96	Weighted Average
436		3.52% Pervious Area
11,925		96.48% Impervious Area
11,925		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	77	0.0196	0.83		**Lag/CN Method,**
1.5	77	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 607S: 607S



Summary for Subcatchment 608S: 608S

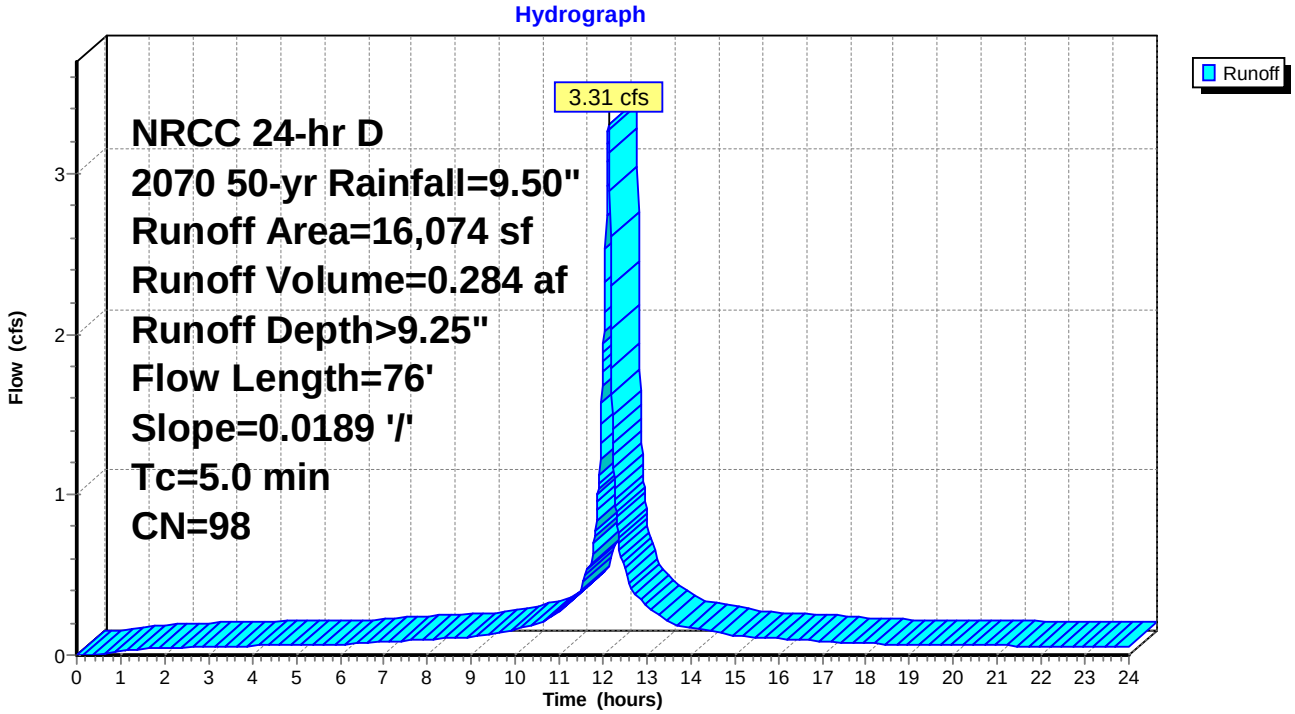
Runoff = 3.31 cfs @ 12.12 hrs, Volume= 0.284 af, Depth> 9.25"
Routed to Pond CB42 : CB-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
109	98	Unconnected pavement HSG C
15,965	98	Unconnected pavement HSG A
16,074	98	Weighted Average
16,074		100.00% Impervious Area
16,074		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	76	0.0189	0.91		**Lag/CN Method,**
1.4	76	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 608S: 608S



Summary for Subcatchment 609S: 609S

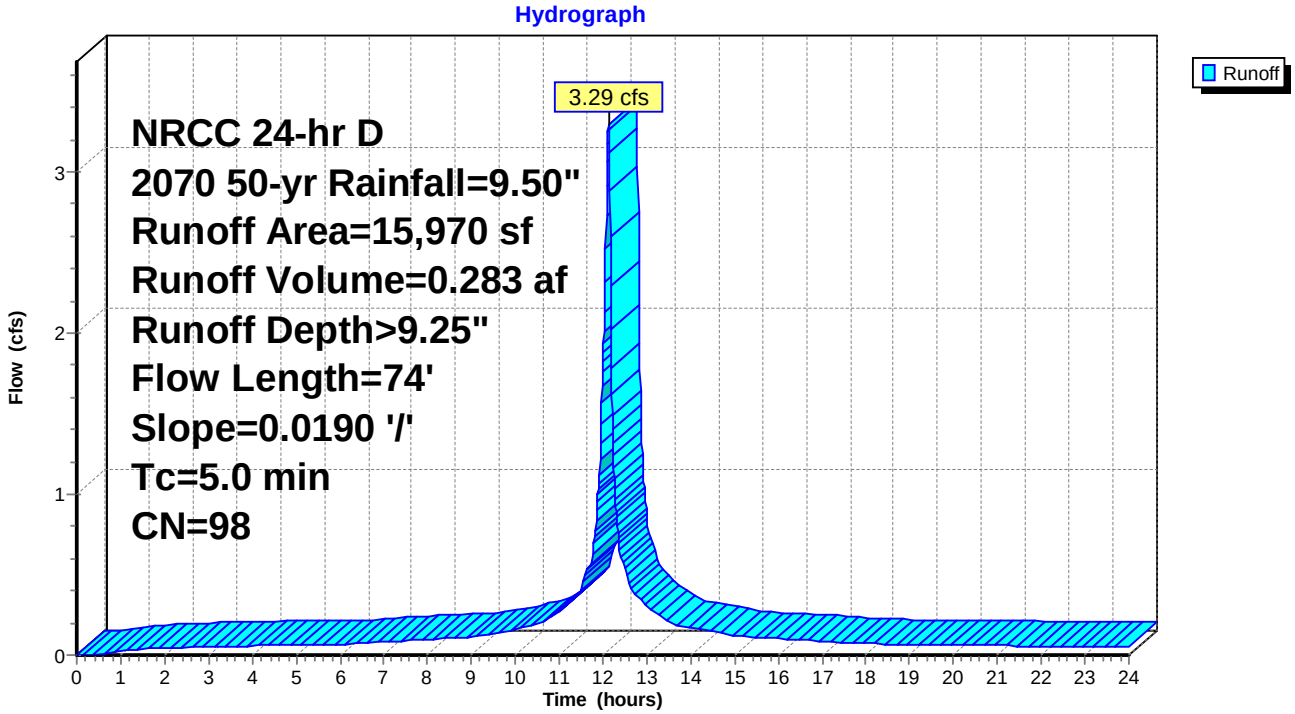
Runoff = 3.29 cfs @ 12.12 hrs, Volume= 0.283 af, Depth> 9.25"
Routed to Pond CB43 : CB-43

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
107	98	Unconnected pavement HSG C
15,863	98	Unconnected pavement HSG A
15,970	98	Weighted Average
15,970		100.00% Impervious Area
15,970		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	74	0.0190	0.91		**Lag/CN Method,**
1.4	74	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 609S: 609S



Summary for Subcatchment 610S: 610S

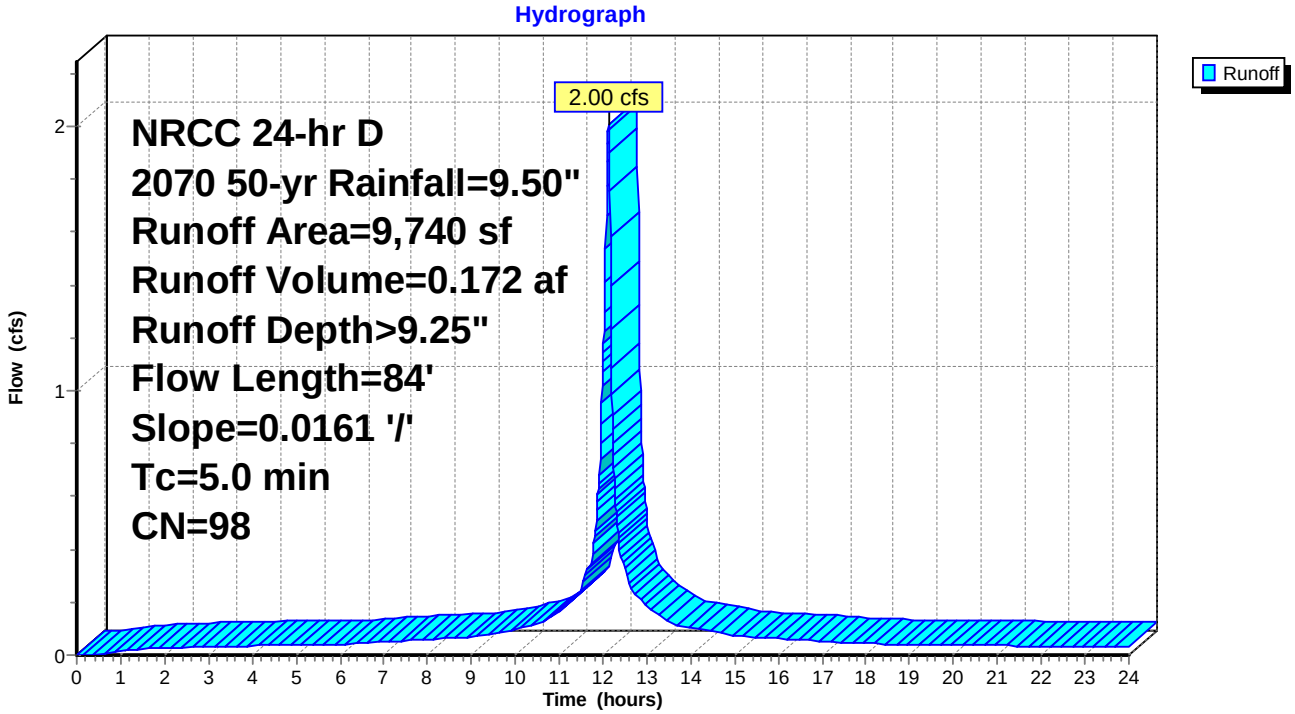
Runoff = 2.00 cfs @ 12.12 hrs, Volume= 0.172 af, Depth> 9.25"
Routed to Pond CB44 : CB-44

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
427	98	Unconnected pavement HSG C
9,313	98	Unconnected pavement HSG A
9,740	98	Weighted Average
9,740		100.00% Impervious Area
9,740		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	84	0.0161	0.86		**Lag/CN Method,**
1.6	84	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 610S: 610S



Summary for Subcatchment 611S: 611S

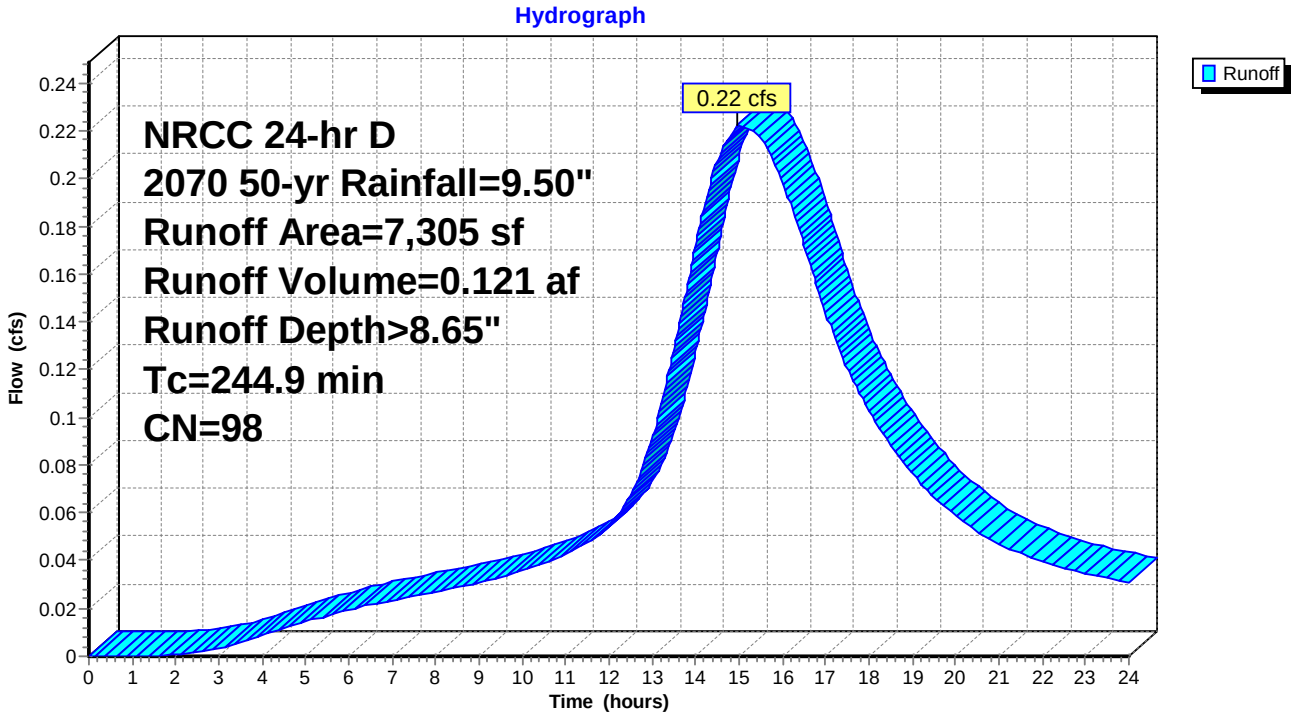
Runoff = 0.22 cfs @ 14.97 hrs, Volume= 0.121 af, Depth> 8.65"
Routed to Pond CB45 : CB-45

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
863	98	Unconnected pavement HSG C
1	36	Woods, Fair HSG A
14	49	50-75% Grass cover, Fair HSG A
6,428	98	Unconnected pavement HSG A
7,305	98	Weighted Average
15		0.20% Pervious Area
7,291		99.80% Impervious Area
7,291		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
244.9					**Direct Entry,**

Subcatchment 611S: 611S



Summary for Subcatchment 612S: 612S

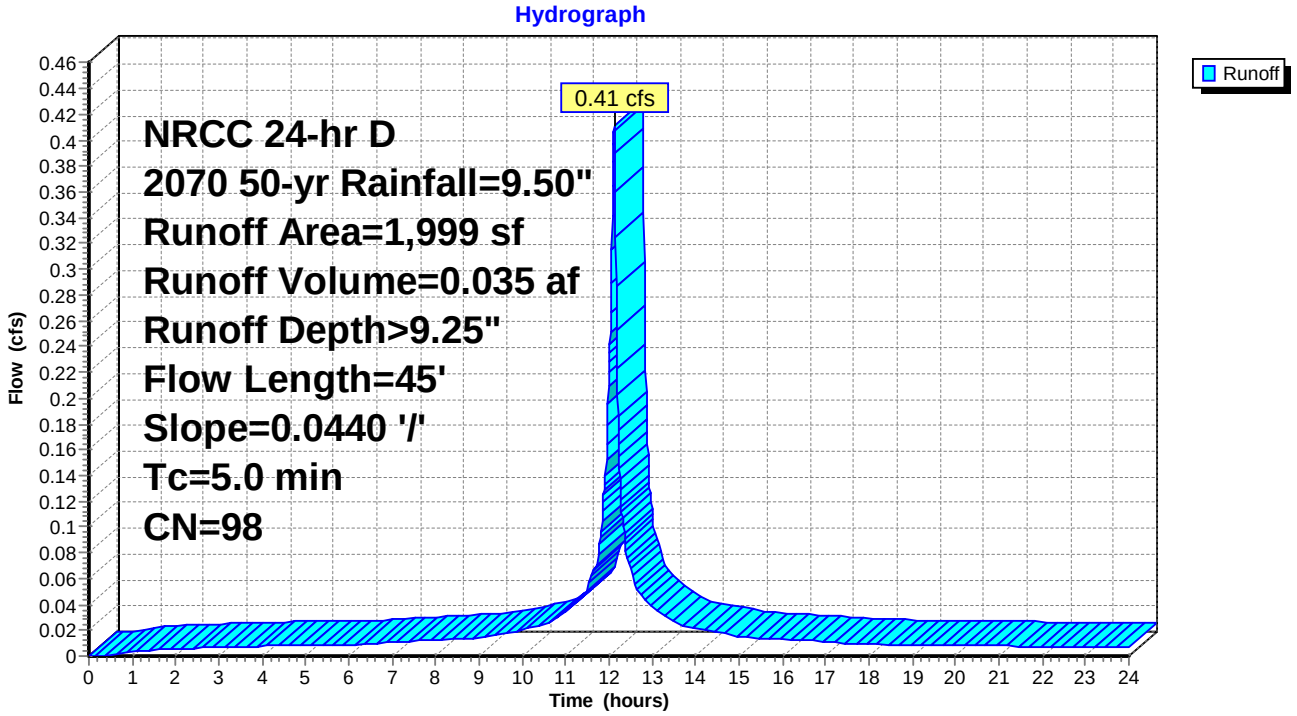
Runoff = 0.41 cfs @ 12.12 hrs, Volume= 0.035 af, Depth> 9.25"
Routed to Pond R3 : R-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
1,999	98	Roofs HSG A
1,999		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0440	1.25		**Lag/CN Method,**
0.6	45	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 612S: 612S



Summary for Subcatchment 613S: 613S

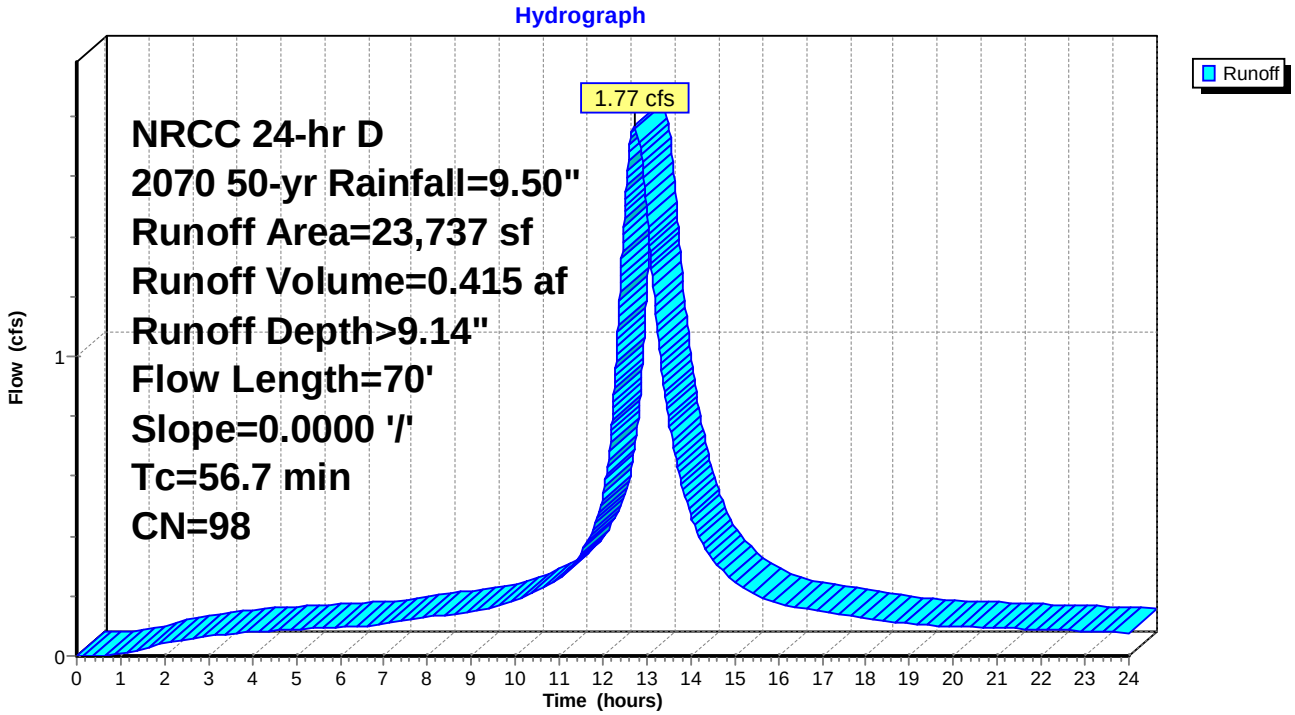
Runoff = 1.77 cfs @ 12.73 hrs, Volume= 0.415 af, Depth> 9.14"
Routed to Pond R1 : R-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
22,050	98	Roofs HSG C
3	98	Unconnected pavement HSG C
1,684	98	Unconnected pavement HSG A
23,737	98	Weighted Average
23,737		100.00% Impervious Area
1,687		7.11% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
56.7	70	0.0000	0.02		**Lag/CN Method,**

Subcatchment 613S: 613S



Summary for Subcatchment 614S: 614S

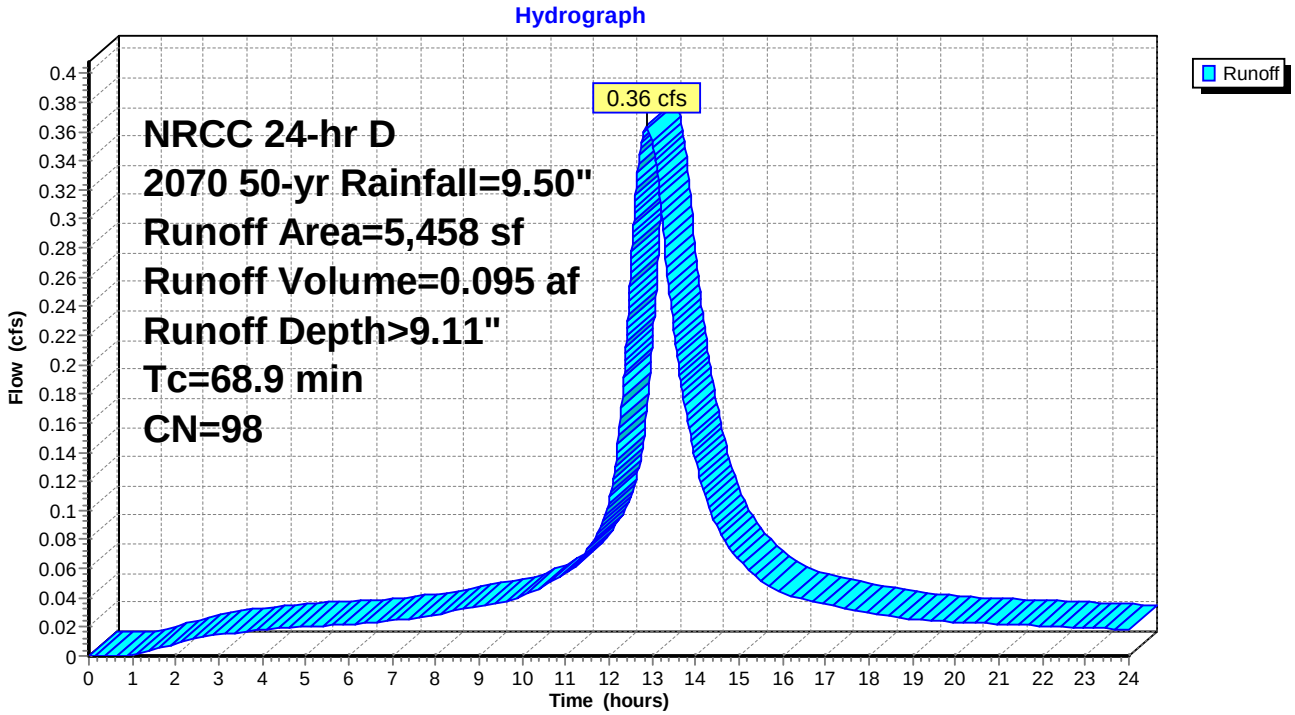
Runoff = 0.36 cfs @ 12.86 hrs, Volume= 0.095 af, Depth> 9.11"
Routed to Pond CB46 : CB-46

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
40	79	50-75% Grass cover, Fair HSG C
5,418	98	Unconnected pavement HSG C
5,458	98	Weighted Average
40		0.72% Pervious Area
5,418		99.28% Impervious Area
5,418		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
68.9					**Direct Entry,**

Subcatchment 614S: 614S



Summary for Subcatchment 615S: 615S

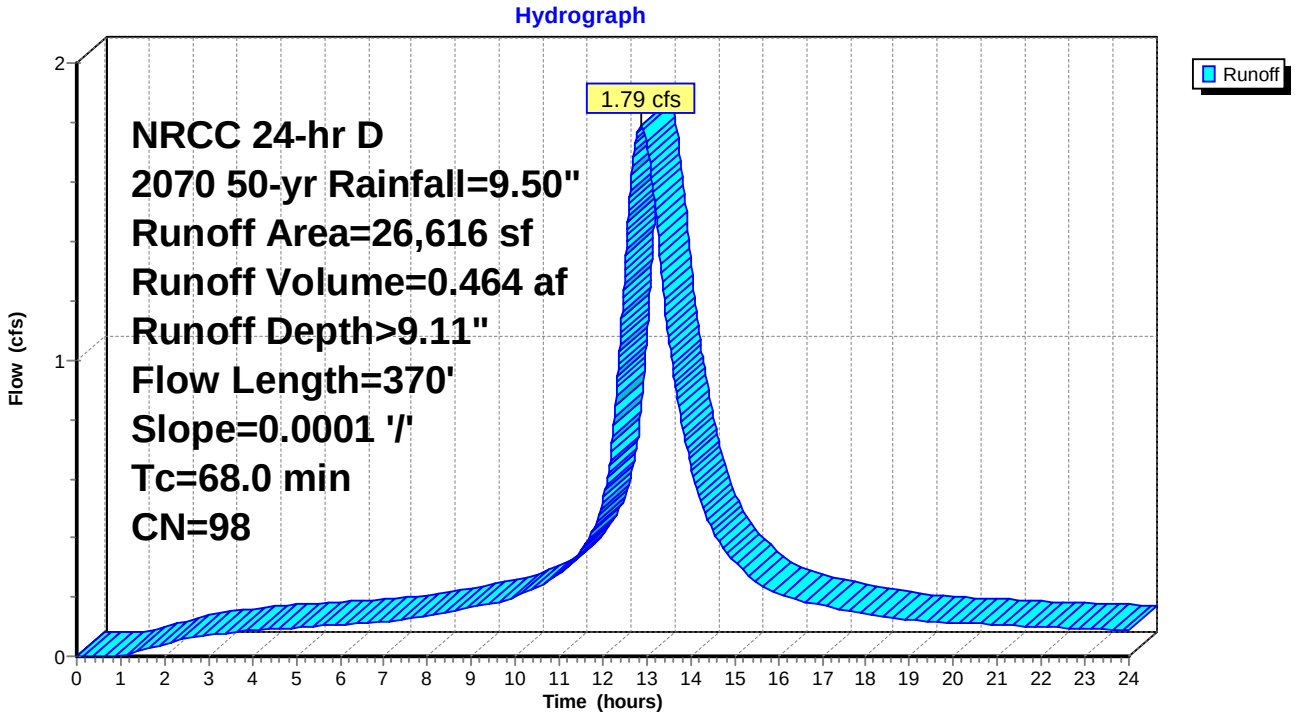
Runoff = 1.79 cfs @ 12.85 hrs, Volume= 0.464 af, Depth> 9.11"
Routed to Pond R2 : R-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
109	98	Unconnected pavement HSG C
26	79	50-75% Grass cover, Fair HSG C
26,481	98	Roofs HSG C
26,616	98	Weighted Average
26		0.10% Pervious Area
26,590		99.90% Impervious Area
109		0.41% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
68.0	370	0.0001	0.09		**Lag/CN Method,**

Subcatchment 615S: 615S



Summary for Subcatchment 616S: 616S

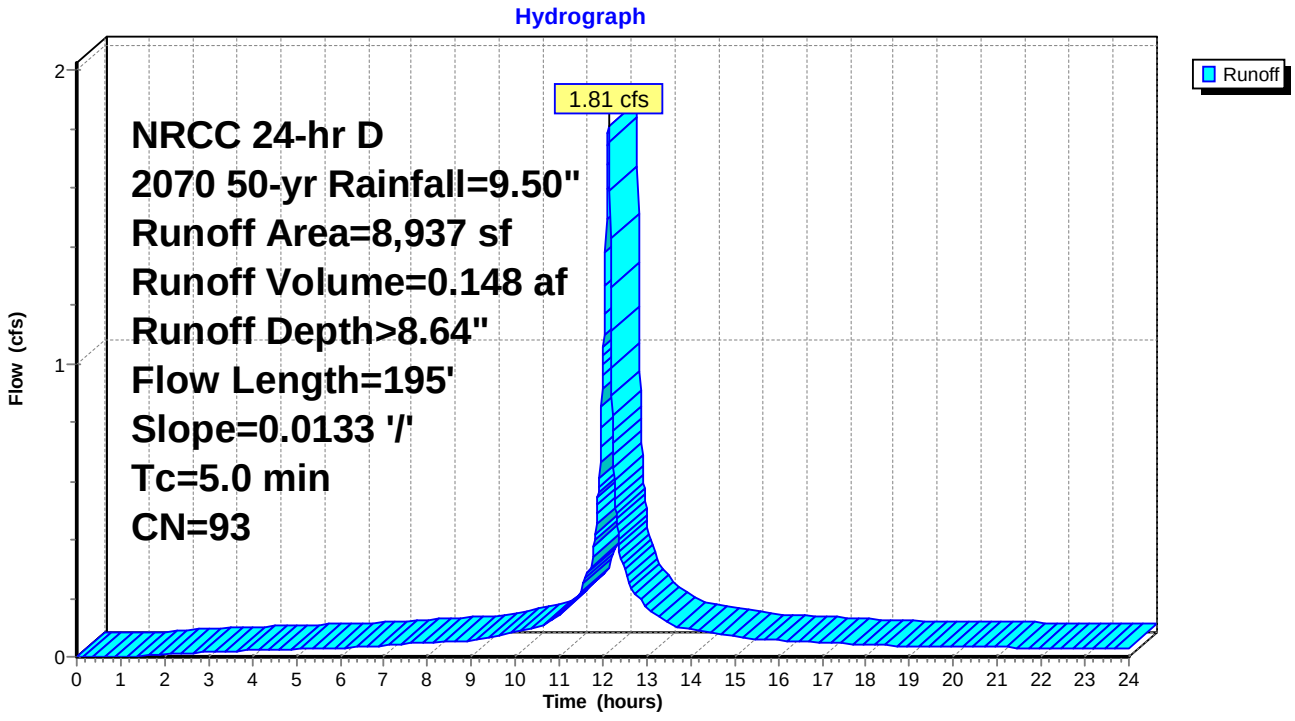
Runoff = 1.81 cfs @ 12.12 hrs, Volume= 0.148 af, Depth> 8.64"
Routed to Pond CB47 : CB-47

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
4,101	98	Unconnected pavement HSG C
2,685	98	Unconnected pavement HSG A
2,141	79	50-75% Grass cover, Fair HSG C
11	36	Woods, Fair HSG A
8,937	93	Weighted Average
2,152		24.08% Pervious Area
6,785		75.92% Impervious Area
6,785		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	195	0.0133	0.71		**Lag/CN Method,**
4.6	195	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 616S: 616S



Summary for Subcatchment 617S: 617S

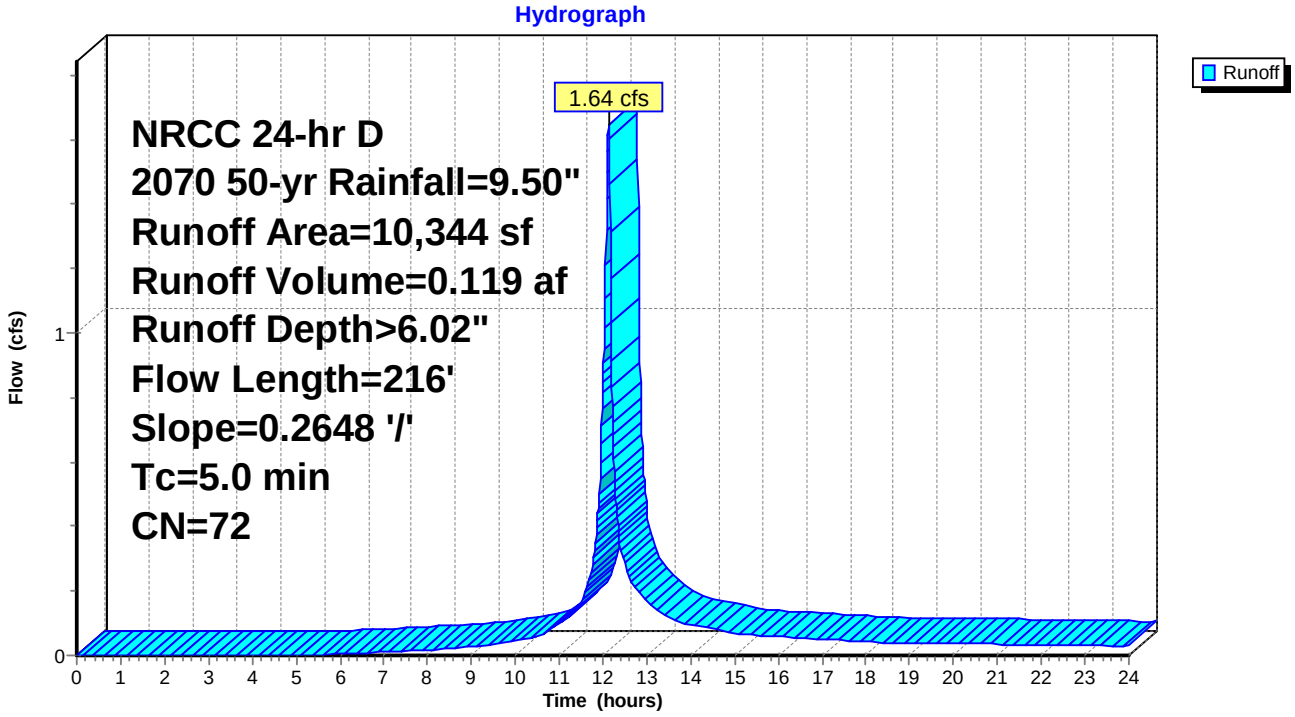
Runoff = 1.64 cfs @ 12.12 hrs, Volume= 0.119 af, Depth> 6.02"
Routed to Pond 7P : Basin 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
7,959	79	50-75% Grass cover, Fair HSG C
7	98	Unconnected pavement HSG C
2,377	49	50-75% Grass cover, Fair HSG A
10,344	72	Weighted Average
10,336		99.93% Pervious Area
7		0.07% Impervious Area
7		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	216	0.2648	1.57		**Lag/CN Method,**
2.3	216	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 617S: 617S



Summary for Subcatchment 701S: 701S

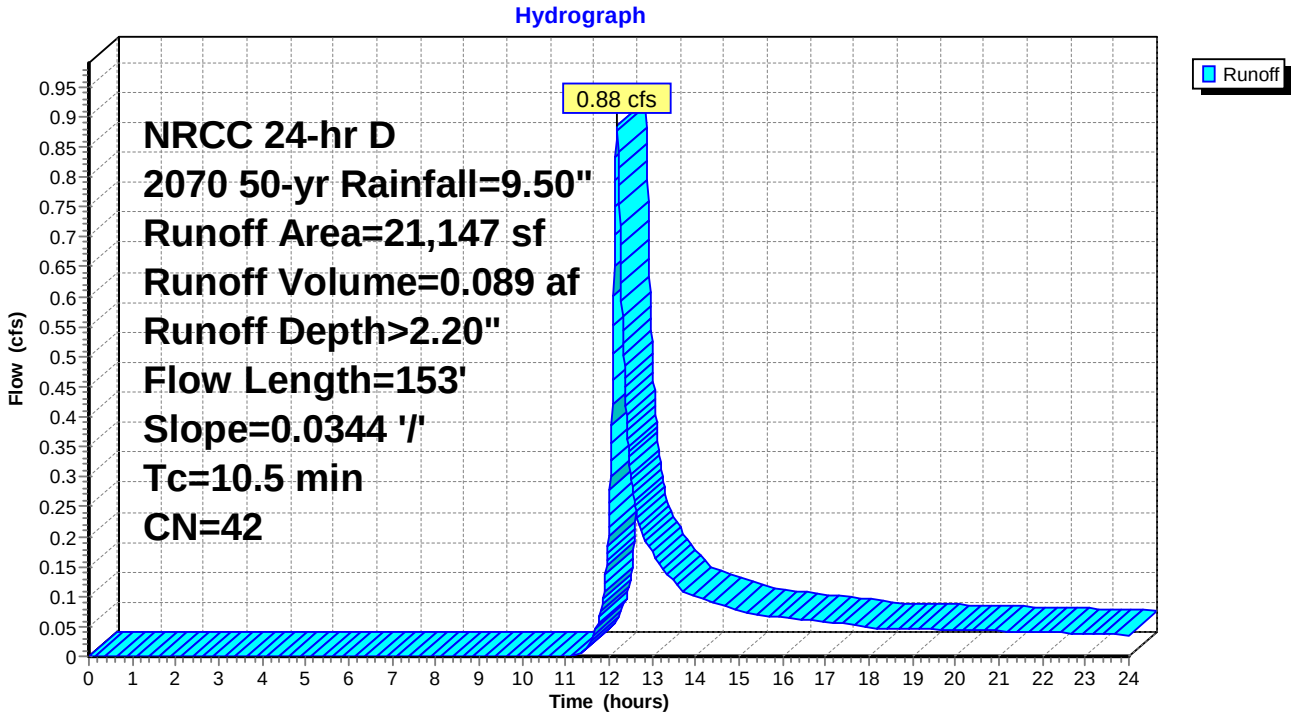
Runoff = 0.88 cfs @ 12.19 hrs, Volume= 0.089 af, Depth> 2.20"
Routed to Reach DP-2 : Police/DPW Facility

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

	Area (sf)	CN	Description
	556	60	Woods, Fair HSG B
	11,706	36	Woods, Fair HSG A
	2	98	Roofs HSG A
*	8,883	49	Open Space-Fair (50% to 75% grass) HSG A
	21,147	42	Weighted Average
	21,145		99.99% Pervious Area
	2		0.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	153	0.0344	0.24		**Lag/CN Method,**

Subcatchment 701S: 701S



Summary for Subcatchment 702S: 702S

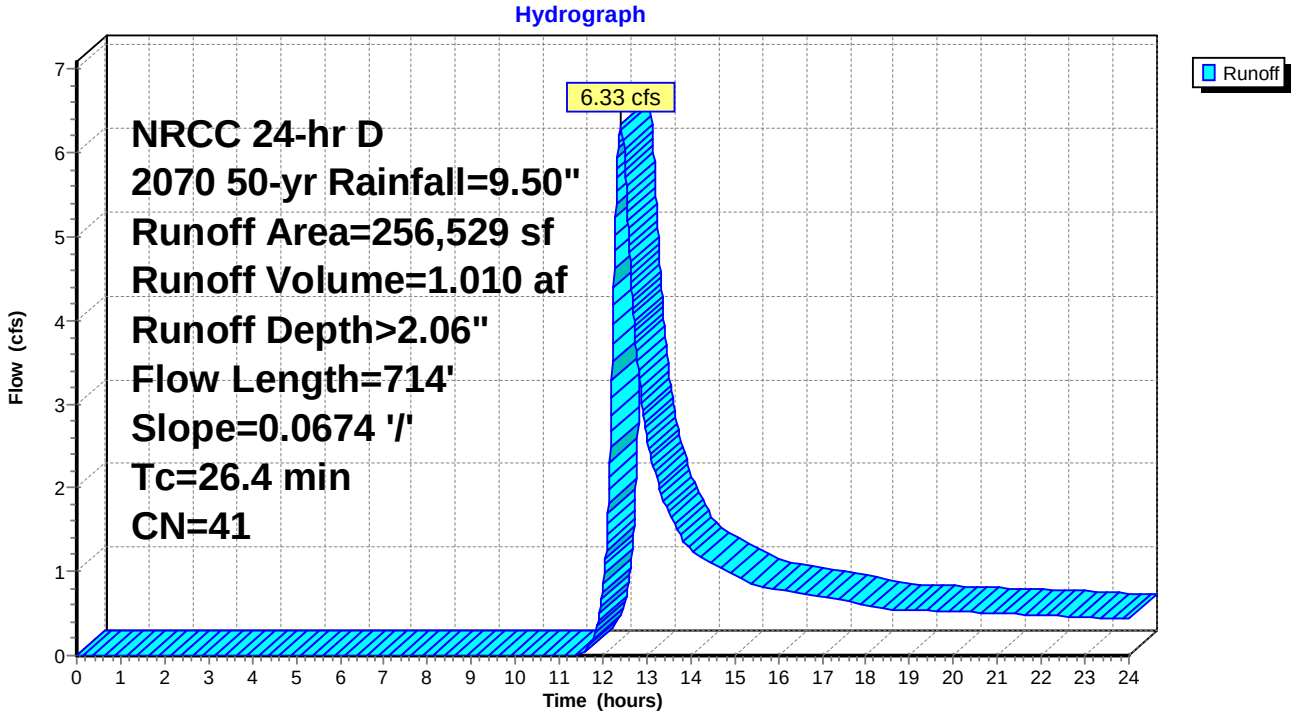
Runoff = 6.33 cfs @ 12.41 hrs, Volume= 1.010 af, Depth> 2.06"
Routed to Reach DP-3 : WWTP Perimeter Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

	Area (sf)	CN	Description
	1,235	98	Unconnected pavement HSG A
	58	49	50-75% Grass cover, Fair HSG A
	44	98	Roofs HSG A
	164,916	36	Woods, Fair HSG A
*	90,276	49	Open Space-Fair (50% to 75% grass) HSG A
	256,529	41	Weighted Average
	255,250		99.50% Pervious Area
	1,279		0.50% Impervious Area
	1,235		96.56% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.4	714	0.0674	0.45		**Lag/CN Method,**

Subcatchment 702S: 702S



Summary for Subcatchment 703S: 703S

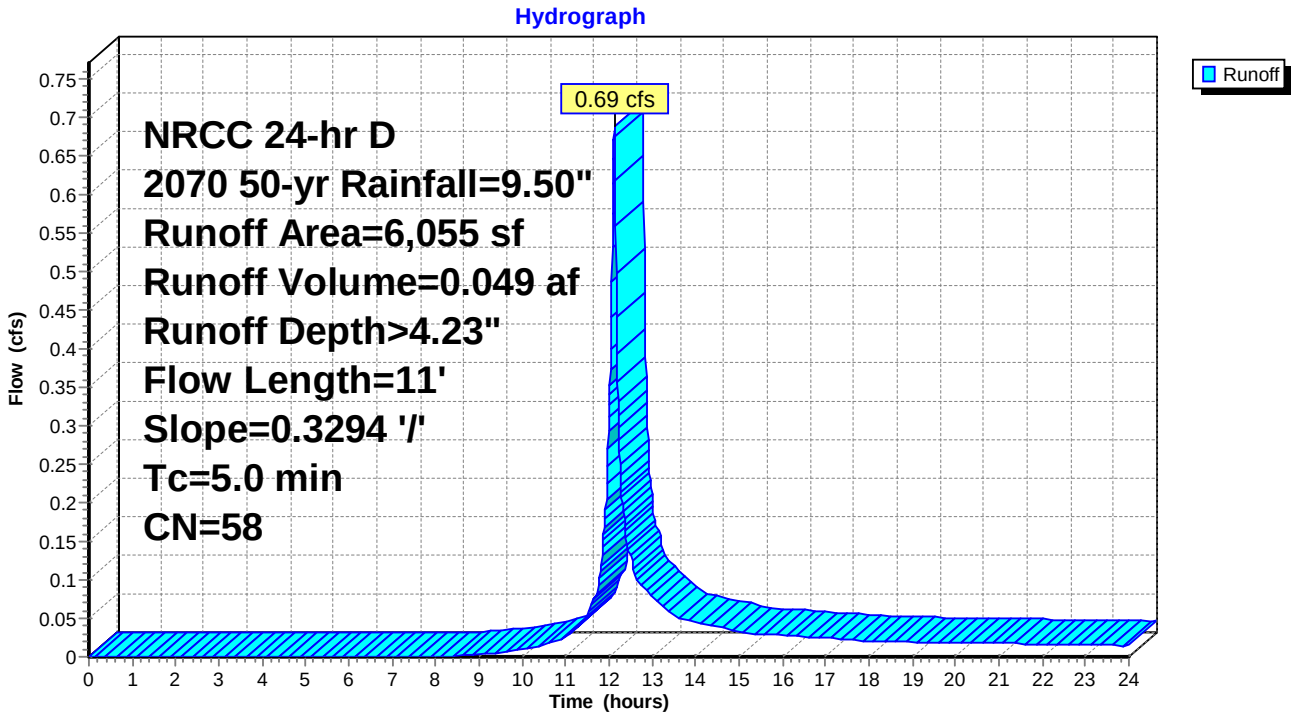
Runoff = 0.69 cfs @ 12.13 hrs, Volume= 0.049 af, Depth> 4.23"
Routed to Reach 10R : Diversion Berm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

Area (sf)	CN	Description
563	36	Woods, Fair HSG A
2	98	Unconnected pavement HSG A
10	98	Unconnected pavement HSG B
5,480	60	Woods, Fair HSG B
6,055	58	Weighted Average
6,043		99.80% Pervious Area
12		0.20% Impervious Area
12		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	11	0.3294	0.67		**Lag/CN Method,**
0.3	11	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 703S: 703S



Summary for Subcatchment 704S: 704S

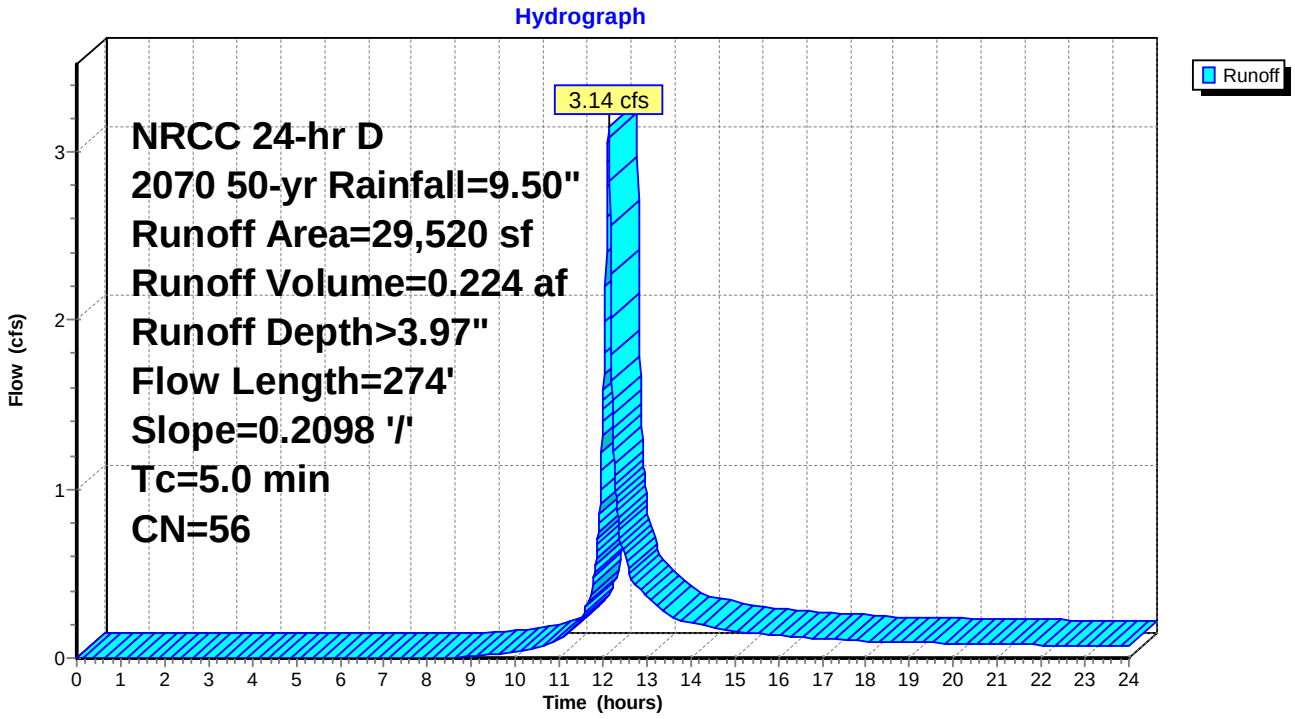
Runoff = 3.14 cfs @ 12.13 hrs, Volume= 0.224 af, Depth> 3.97"
Routed to Reach DP-3 : WWTP Perimeter Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2070 50-yr Rainfall=9.50"

	Area (sf)	CN	Description
	5,383	89	Gravel roads HSG C
	4,301	36	Woods, Fair HSG A
*	17,942	49	Open Space-Fair (50% to 75% grass) HSG A
*	1,894	79	Open Space-Fair (50% to 75% grass) HSG C
	29,520	56	Weighted Average
	29,520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	274	0.2098	0.97		**Lag/CN Method,**
4.7	274	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 704S: 704S



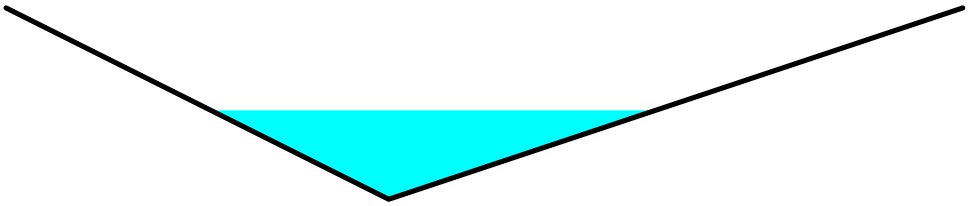
Summary for Reach 10R: Diversion Berm

Inflow Area = 0.139 ac, 0.20% Impervious, Inflow Depth > 4.23" for 2070 50-yr event
Inflow = 0.69 cfs @ 12.13 hrs, Volume= 0.049 af
Outflow = 0.40 cfs @ 12.19 hrs, Volume= 0.048 af, Atten= 41%, Lag= 3.8 min
Routed to Pond 3P : Basin 3

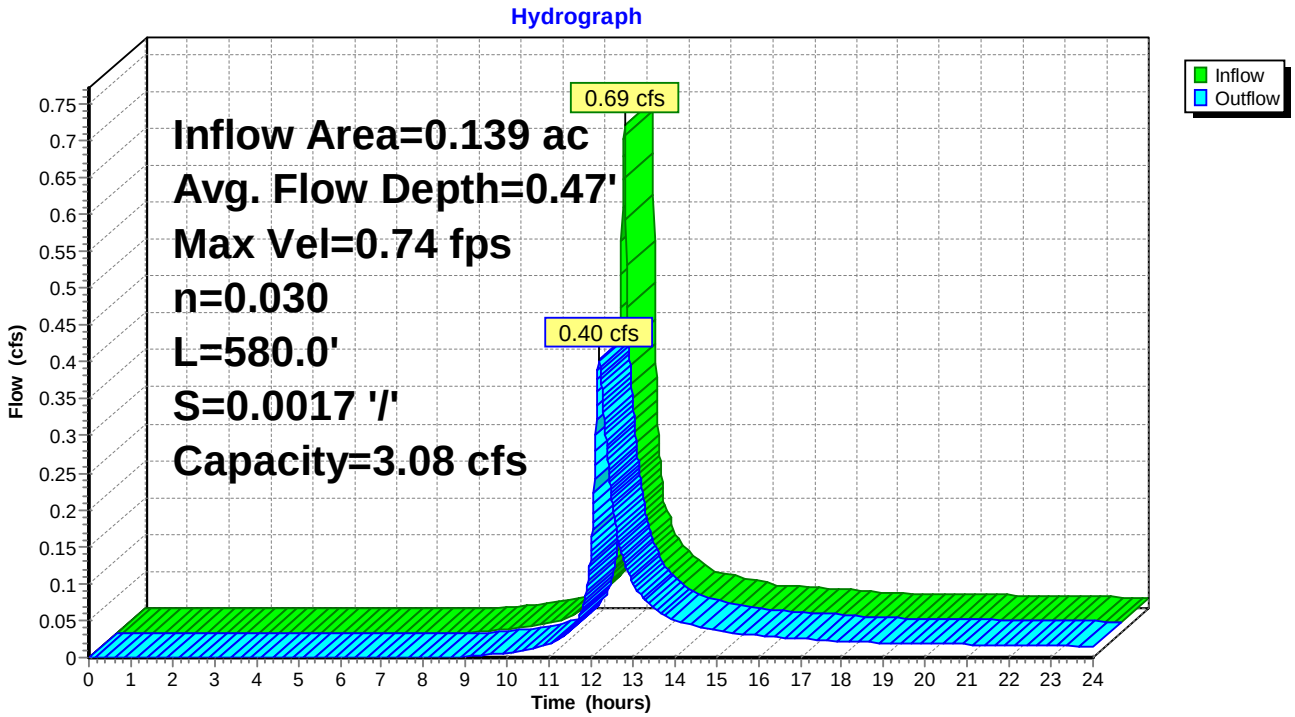
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.74 fps, Min. Travel Time= 13.1 min
Avg. Velocity = 0.36 fps, Avg. Travel Time= 26.7 min

Peak Storage= 316 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.47' , Surface Width= 2.33'
Bank-Full Depth= 1.00' Flow Area= 2.5 sf, Capacity= 3.08 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 2.0 3.0 '/' Top Width= 5.00'
Length= 580.0' Slope= 0.0017 '/'
Inlet Invert= 209.00', Outlet Invert= 208.00'

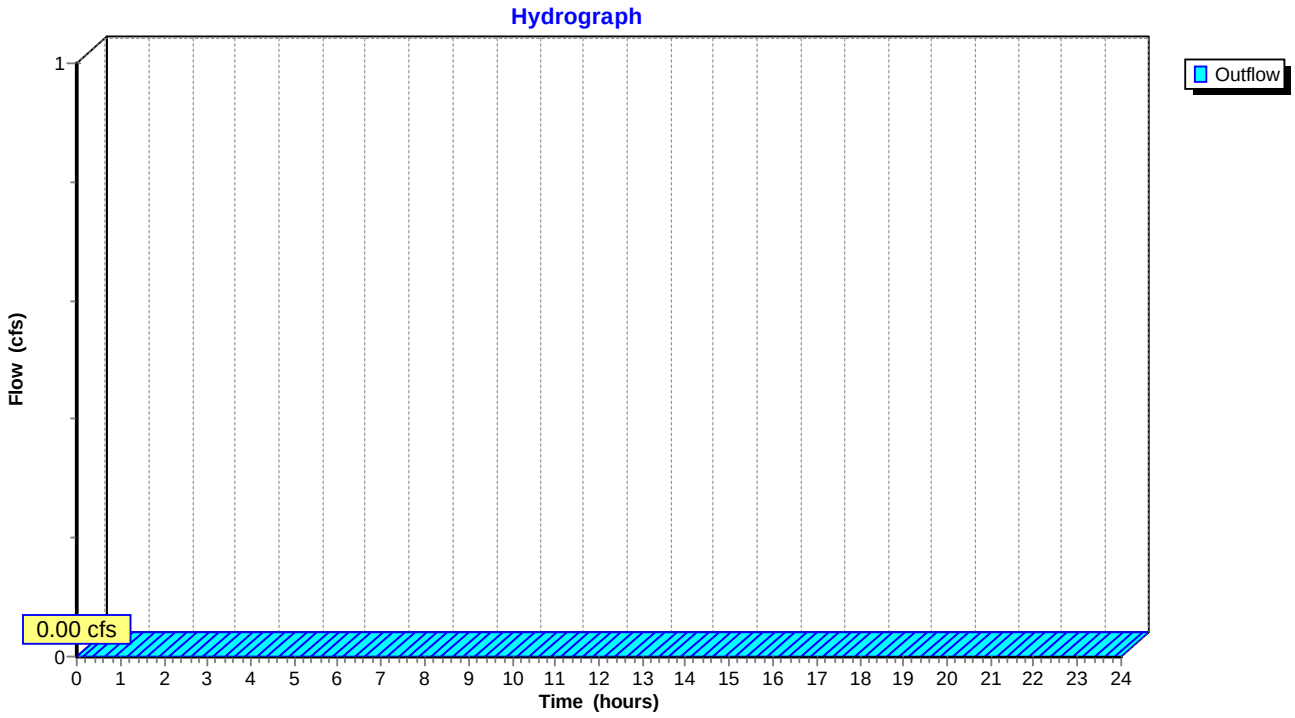


Reach 10R: Diversion Berm



Summary for Reach DP-1: Wetland

Reach DP-1: Wetland

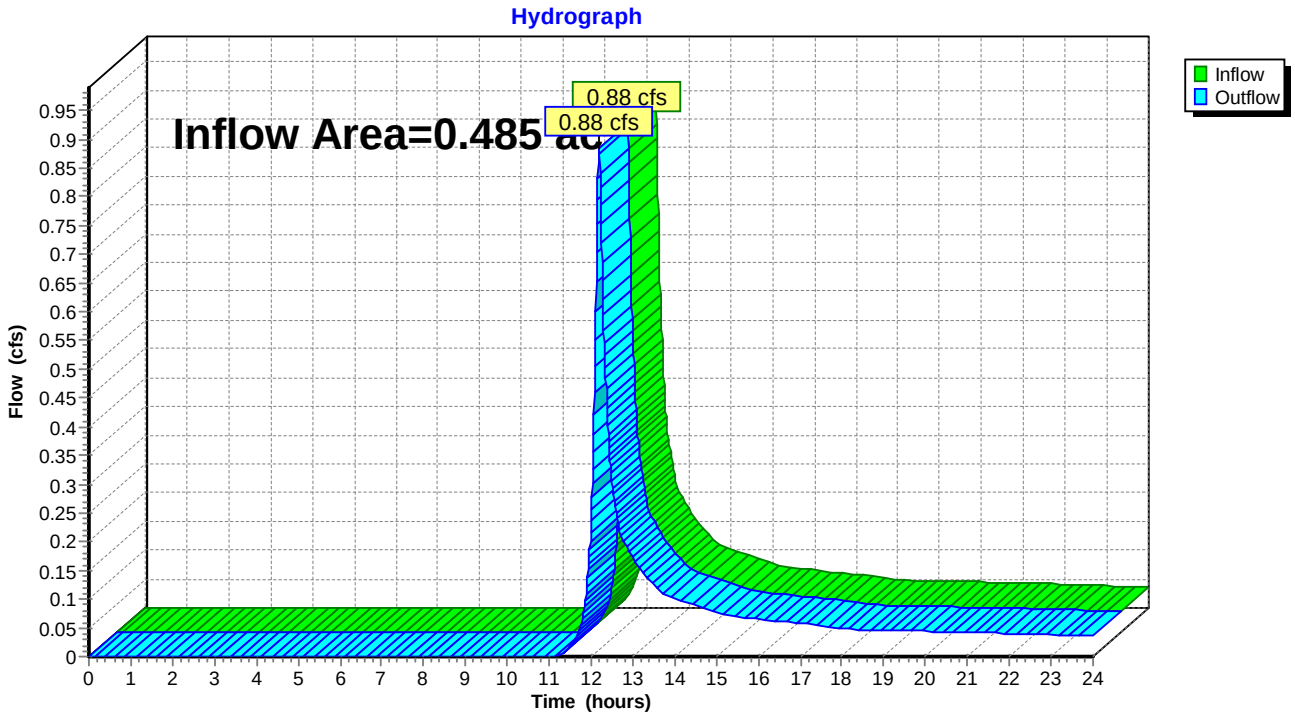


Summary for Reach DP-2: Police/DPW Facility

Inflow Area = 0.485 ac, 0.01% Impervious, Inflow Depth > 2.20" for 2070 50-yr event
Inflow = 0.88 cfs @ 12.19 hrs, Volume= 0.089 af
Outflow = 0.88 cfs @ 12.19 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach DP-2: Police/DPW Facility

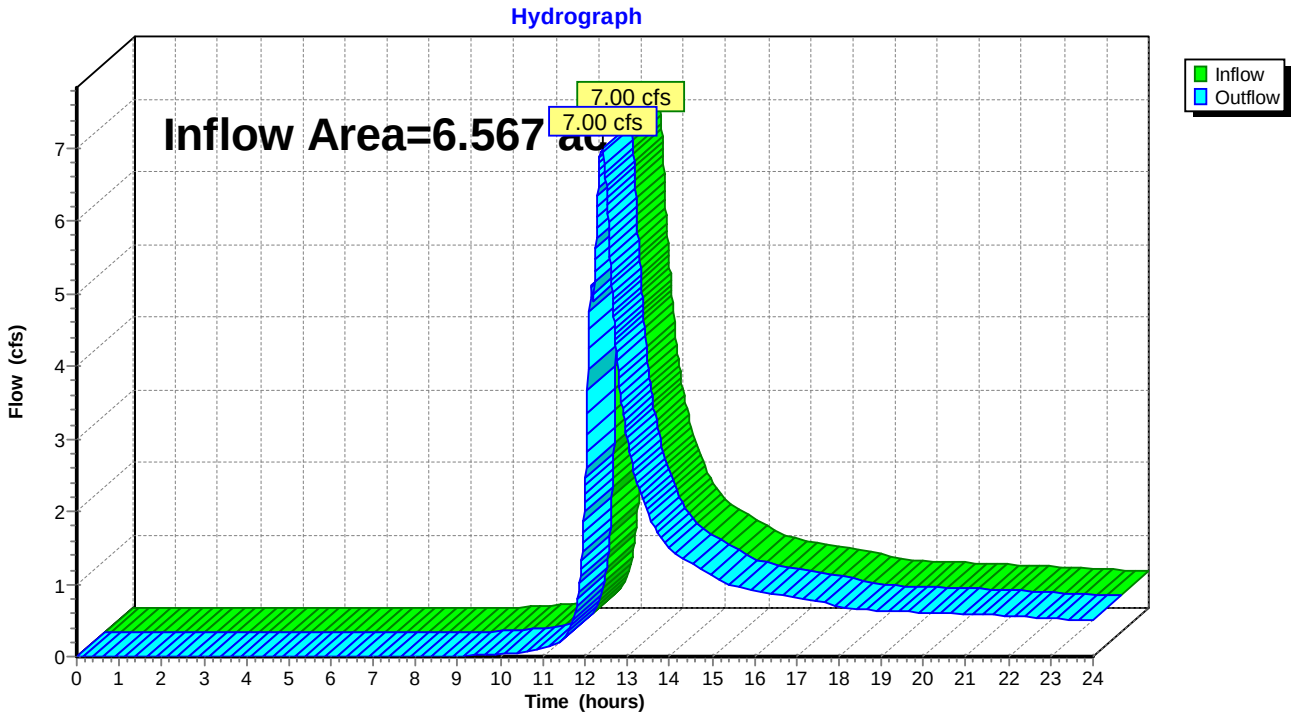


Summary for Reach DP-3: WWTP Perimeter Swale

Inflow Area = 6.567 ac, 0.45% Impervious, Inflow Depth > 2.26" for 2070 50-yr event
Inflow = 7.00 cfs @ 12.41 hrs, Volume= 1.234 af
Outflow = 7.00 cfs @ 12.41 hrs, Volume= 1.234 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach DP-3: WWTP Perimeter Swale

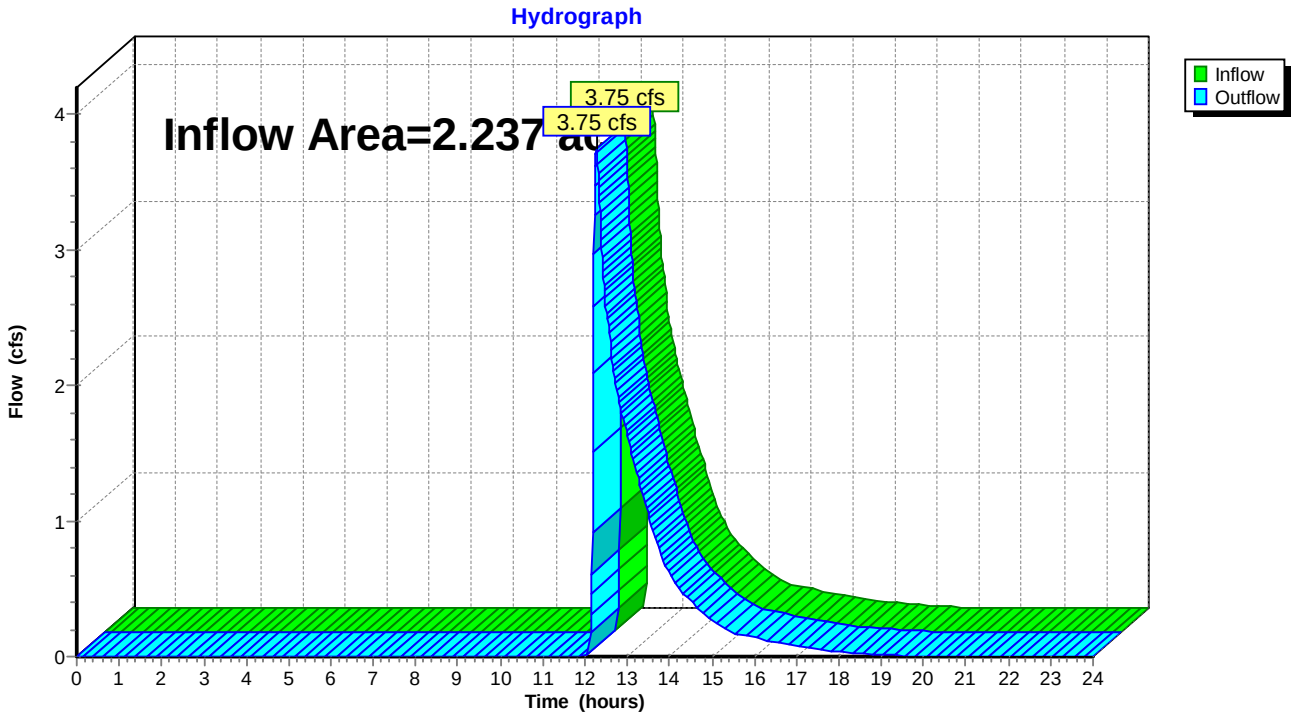


Summary for Reach DP-4: Wetland

Inflow Area = 2.237 ac, 59.16% Impervious, Inflow Depth = 1.74" for 2070 50-yr event
Inflow = 3.75 cfs @ 12.27 hrs, Volume= 0.323 af
Outflow = 3.75 cfs @ 12.27 hrs, Volume= 0.323 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach DP-4: Wetland



Summary for Pond 1D: ADS Subsurface Detention

Inflow Area = 1.933 ac, 96.99% Impervious, Inflow Depth > 9.03" for 2070 50-yr event
Inflow = 12.88 cfs @ 12.12 hrs, Volume= 1.454 af
Outflow = 4.48 cfs @ 12.29 hrs, Volume= 1.146 af, Atten= 65%, Lag= 10.0 min
Discarded = 0.35 cfs @ 12.29 hrs, Volume= 0.562 af
Primary = 4.13 cfs @ 12.29 hrs, Volume= 0.584 af
Routed to Pond MH24 : DMH-24

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 211.55' @ 12.29 hrs Surf.Area= 7,895 sf Storage= 19,879 cf
Flood Elev= 213.10' Surf.Area= 7,895 sf Storage= 25,748 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 57.6 min (812.4 - 754.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	10,940 cf	**58.58'W x 134.76'L x 5.50'H Field A** 43,421 cf Overall - 16,071 cf Embedded = 27,349 cf x 40.0% Voids
#2A	208.75'	16,071 cf	**ADS_StormTech MC-3500 d +Cap** x 144 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 144 Chambers in 8 Rows Cap Storage= 14.9 cf x 2 x 8 rows = 238.4 cf
		27,011 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	208.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 198.00'
#2	Primary	210.41'	**18.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.41' / 210.01' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Discarded OutFlow Max=0.35 cfs @ 12.29 hrs HW=211.55' (Free Discharge)
1=Exfiltration (Controls 0.35 cfs)

Primary OutFlow Max=4.12 cfs @ 12.29 hrs HW=211.55' TW=210.86' (Dynamic Tailwater)
2=Culvert (Barrel Controls 4.12 cfs @ 3.96 fps)

Pond 1D: ADS Subsurface Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 8 rows = 238.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

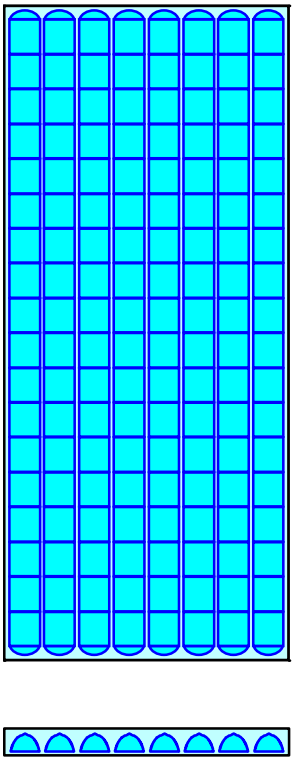
18 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 132.76' Row Length +12.0" End Stone x 2 = 134.76' Base Length
8 Rows x 77.0" Wide + 9.0" Spacing x 7 + 12.0" Side Stone x 2 = 58.58' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

144 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 8 Rows = 16,071.5 cf Chamber Storage

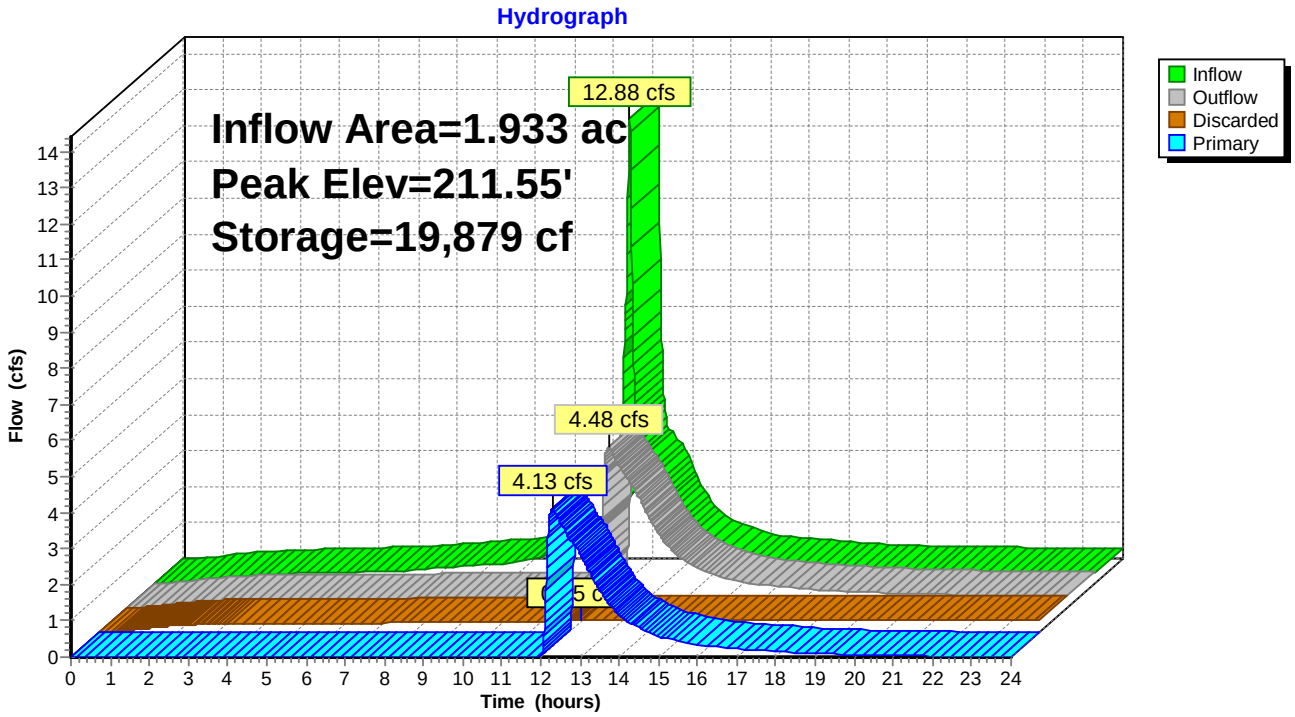
43,420.8 cf Field - 16,071.5 cf Chambers = 27,349.3 cf Stone x 40.0% Voids = 10,939.7 cf Stone Storage

Chamber Storage + Stone Storage = 27,011.2 cf = 0.620 af
Overall Storage Efficiency = 62.2%
Overall System Size = 134.76' x 58.58' x 5.50'

144 Chambers
1,608.2 cy Field
1,012.9 cy Stone



Pond 1D: ADS Subsurface Detention



Summary for Pond 1P: Basin 1

Inflow Area = 0.595 ac, 38.95% Impervious, Inflow Depth > 5.12" for 2070 50-yr event
Inflow = 3.05 cfs @ 12.13 hrs, Volume= 0.254 af
Outflow = 0.16 cfs @ 14.59 hrs, Volume= 0.175 af, Atten= 95%, Lag= 147.7 min
Discarded = 0.16 cfs @ 14.59 hrs, Volume= 0.175 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 213.20' @ 14.59 hrs Surf.Area= 2,736 sf Storage= 5,297 cf
Flood Elev= 216.00' Surf.Area= 5,109 sf Storage= 16,142 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 163.4 min (954.4 - 791.0)

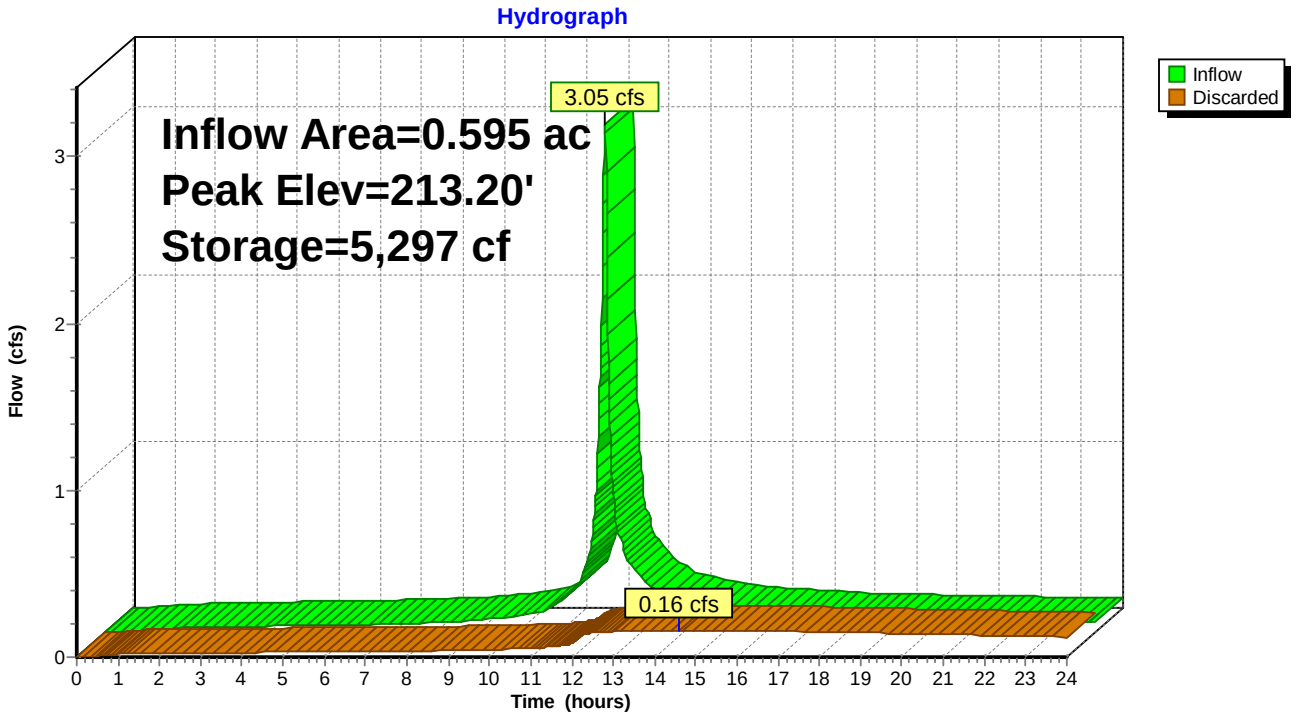
Volume	Invert	Avail.Storage	Storage Description
#1	210.00'	16,142 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
210.00	697	0	0
212.00	1,843	2,540	2,540
214.00	3,325	5,168	7,708
216.00	5,109	8,434	16,142

Device	Routing	Invert	Outlet Devices
#1	Discarded	210.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 208.00'

Discarded OutFlow Max=0.16 cfs @ 14.59 hrs HW=213.20' (Free Discharge)
1=Exfiltration (Controls 0.16 cfs)

Pond 1P: Basin 1



Summary for Pond 1SS: SSMH-1

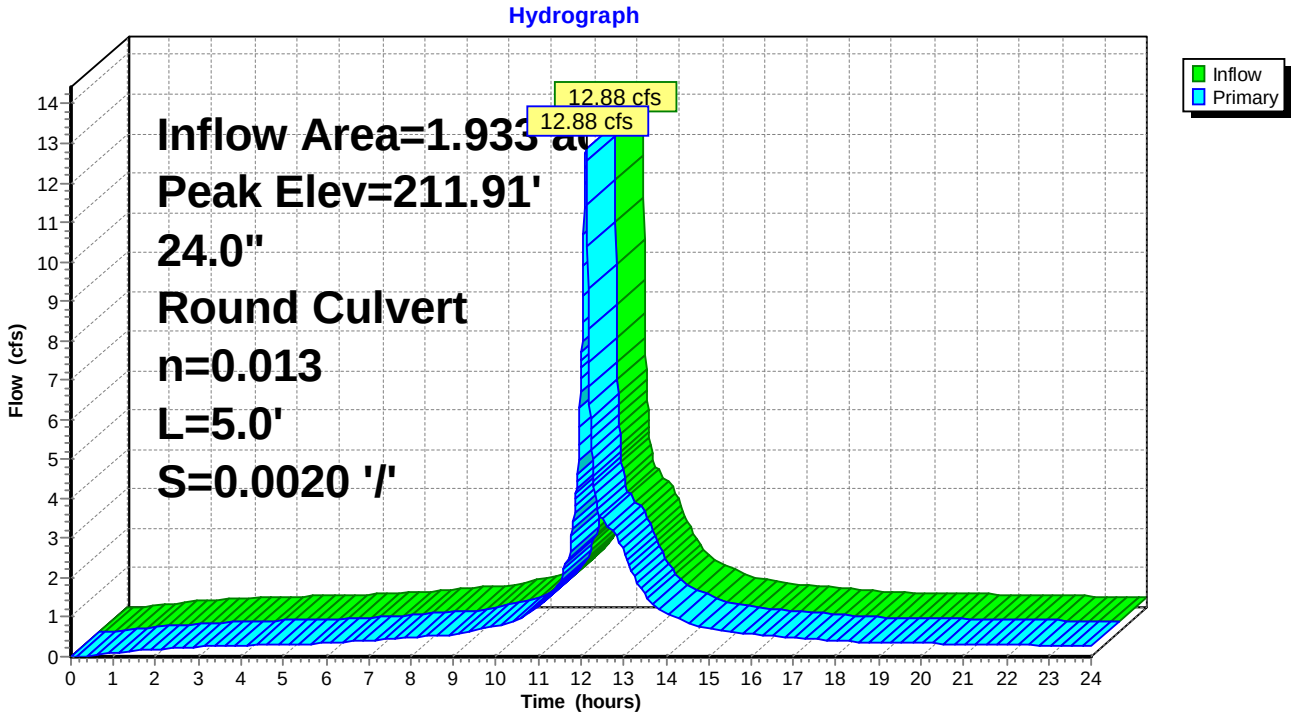
Inflow Area = 1.933 ac, 96.99% Impervious, Inflow Depth > 9.03" for 2070 50-yr event
Inflow = 12.88 cfs @ 12.12 hrs, Volume= 1.454 af
Outflow = 12.88 cfs @ 12.12 hrs, Volume= 1.454 af, Atten= 0%, Lag= 0.0 min
Primary = 12.88 cfs @ 12.12 hrs, Volume= 1.454 af
Routed to Pond 1D : ADS Subsurface Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 211.91' @ 12.14 hrs
Flood Elev= 215.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	208.76'	**24.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.76' / 208.75' S= 0.0020 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=12.86 cfs @ 12.12 hrs HW=211.85' TW=211.13' (Dynamic Tailwater)
1=Culvert (Inlet Controls 12.86 cfs @ 4.09 fps)

Pond 1SS: SSMH-1



Summary for Pond 2D: ADS Subsurface Detention

Inflow Area = 1.399 ac, 99.44% Impervious, Inflow Depth > 9.19" for 2070 50-yr event
Inflow = 7.68 cfs @ 12.12 hrs, Volume= 1.071 af
Outflow = 0.66 cfs @ 14.73 hrs, Volume= 0.831 af, Atten= 91%, Lag= 156.3 min
Discarded = 0.66 cfs @ 14.73 hrs, Volume= 0.831 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 202.90' @ 14.73 hrs Surf.Area= 10,208 sf Storage= 19,787 cf
Flood Elev= 203.00' Surf.Area= 10,208 sf Storage= 20,188 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 124.3 min (883.9 - 759.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	200.00'	8,999 cf	**58.50'W x 174.50'L x 3.50'H Field A** 35,728 cf Overall - 13,231 cf Embedded = 22,497 cf x 40.0% Voids
#2A	200.50'	13,231 cf	**ADS_StormTech SC-740 +Cap** x 288 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 288 Chambers in 12 Rows
		22,230 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	200.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 197.00'

Discarded OutFlow Max=0.66 cfs @ 14.73 hrs HW=202.90' (Free Discharge)
1=Exfiltration (Controls 0.66 cfs)

Pond 2D: ADS Subsurface Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

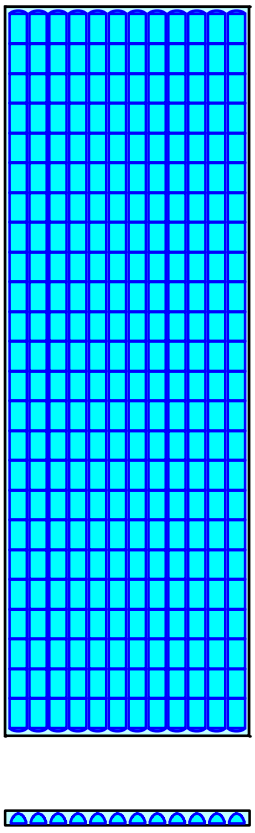
24 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 172.50' Row Length +12.0" End Stone x 2 = 174.50' Base Length
12 Rows x 51.0" Wide + 6.0" Spacing x 11 + 12.0" Side Stone x 2 = 58.50' Base Width
6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

288 Chambers x 45.9 cf = 13,230.7 cf Chamber Storage

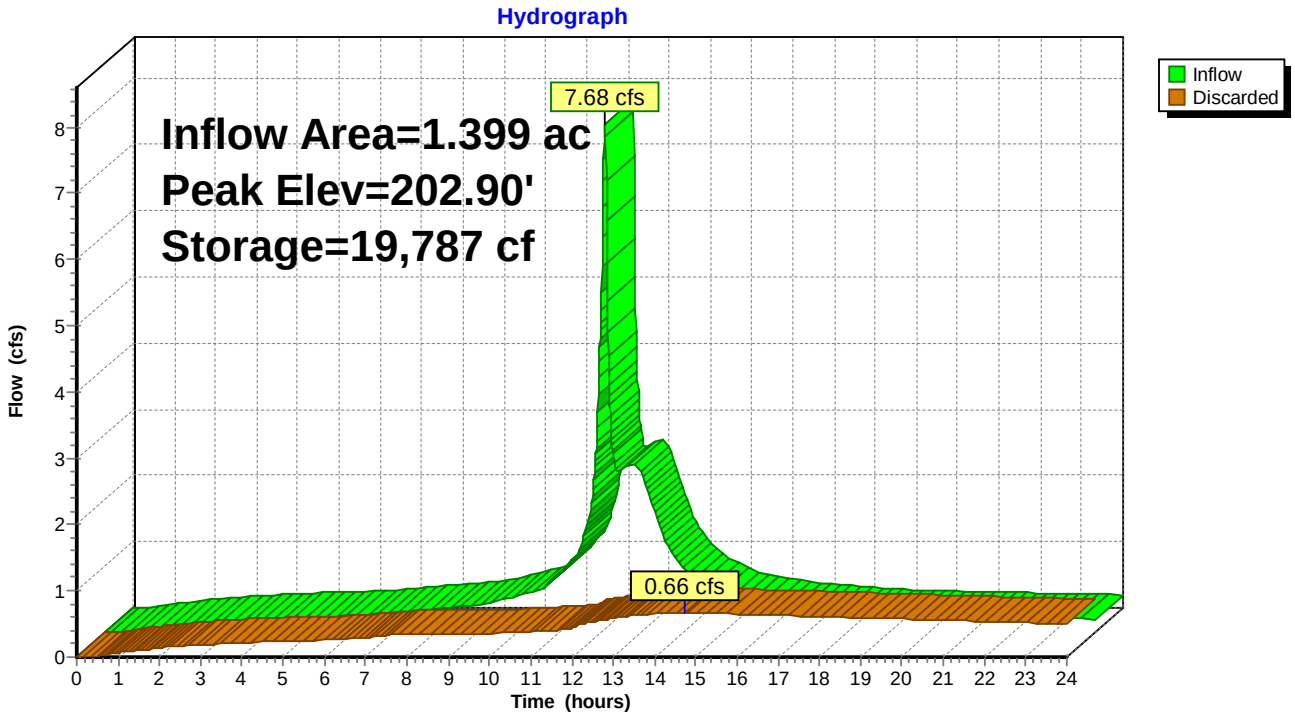
35,728.2 cf Field - 13,230.7 cf Chambers = 22,497.5 cf Stone x 40.0% Voids = 8,999.0 cf Stone Storage

Chamber Storage + Stone Storage = 22,229.7 cf = 0.510 af
Overall Storage Efficiency = 62.2%
Overall System Size = 174.50' x 58.50' x 3.50'

288 Chambers
1,323.3 cy Field
833.2 cy Stone



Pond 2D: ADS Subsurface Detention



Summary for Pond 2P: Basin 2

Inflow Area = 1.068 ac, 54.17% Impervious, Inflow Depth > 7.00" for 2070 50-yr event
Inflow = 7.22 cfs @ 12.12 hrs, Volume= 0.623 af
Outflow = 1.39 cfs @ 12.50 hrs, Volume= 0.425 af, Atten= 81%, Lag= 22.8 min
Discarded = 0.22 cfs @ 12.50 hrs, Volume= 0.242 af
Primary = 1.17 cfs @ 12.50 hrs, Volume= 0.183 af
Routed to Reach DP-4 : Wetland
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach DP-4 : Wetland

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 209.36' @ 12.50 hrs Surf.Area= 3,624 sf Storage= 11,932 cf
Flood Elev= 210.00' Surf.Area= 3,991 sf Storage= 14,369 cf

Plug-Flow detention time= 234.6 min calculated for 0.425 af (68% of inflow)
Center-of-Mass det. time= 109.5 min (888.1 - 778.6)

Volume	Invert	Avail.Storage	Storage Description
#1	204.00'	14,369 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
204.00	1,002	0	0
206.00	1,845	2,847	2,847
208.00	2,843	4,688	7,535
210.00	3,991	6,834	14,369

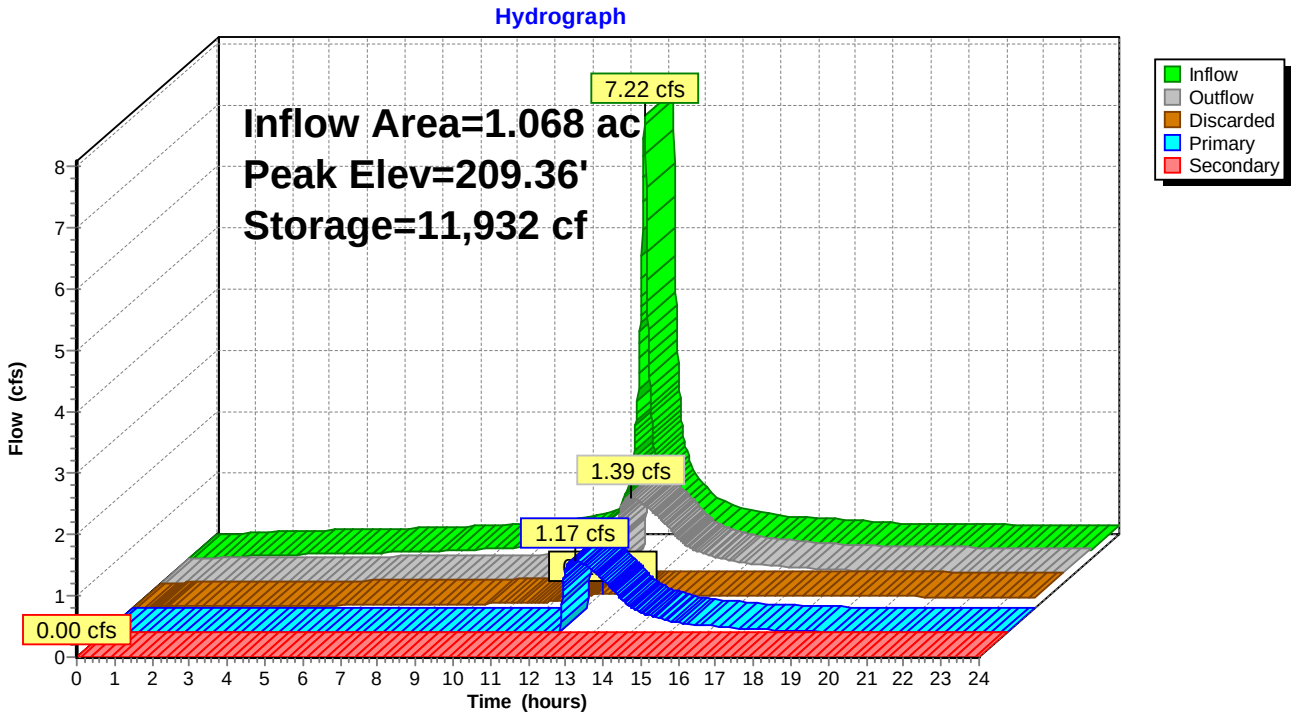
Device	Routing	Invert	Outlet Devices
#1	Discarded	204.00'	**1.190 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 202.00'
#2	Secondary	209.50'	**15.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#3	Primary	208.50'	**6.0" Round Culvert X 2.00** L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 208.50' / 208.00' S= 0.0091 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.22 cfs @ 12.50 hrs HW=209.36' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.22 cfs)

Primary OutFlow Max=1.17 cfs @ 12.50 hrs HW=209.36' TW=0.00' (Dynamic Tailwater)
↑—**3=Culvert** (Inlet Controls 1.17 cfs @ 2.97 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=204.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Basin 2



Summary for Pond 2SS: SSMH-2

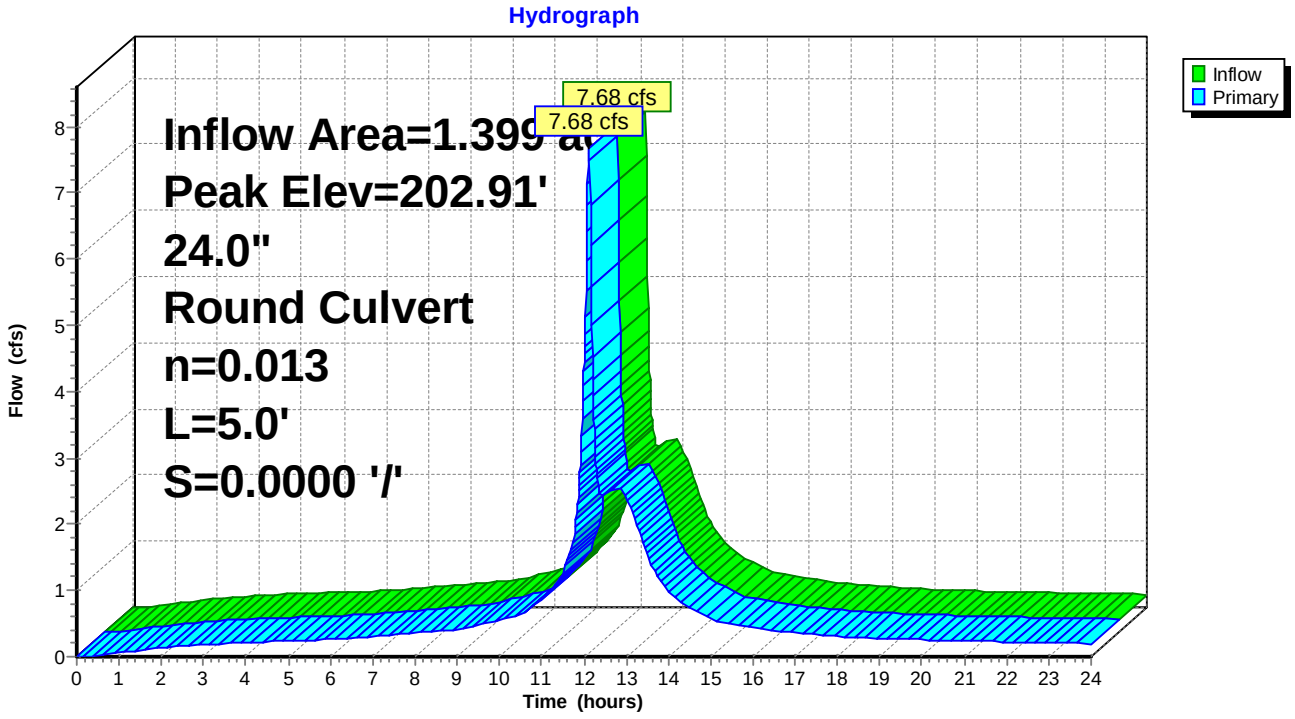
Inflow Area = 1.399 ac, 99.44% Impervious, Inflow Depth > 9.19" for 2070 50-yr event
Inflow = 7.68 cfs @ 12.12 hrs, Volume= 1.071 af
Outflow = 7.68 cfs @ 12.12 hrs, Volume= 1.071 af, Atten= 0%, Lag= 0.0 min
Primary = 7.68 cfs @ 12.12 hrs, Volume= 1.071 af
Routed to Pond 2D : ADS Subsurface Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 202.91' @ 14.72 hrs
Flood Elev= 204.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	200.50'	**24.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 200.50' / 200.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=7.67 cfs @ 12.12 hrs HW=202.06' TW=201.24' (Dynamic Tailwater)
1=Culvert (Barrel Controls 7.67 cfs @ 4.02 fps)

Pond 2SS: SSMH-2



Summary for Pond 3D: ADS Subsurface Detention

Inflow Area = 0.730 ac, 86.34% Impervious, Inflow Depth > 8.47" for 2070 50-yr event
Inflow = 6.13 cfs @ 12.13 hrs, Volume= 0.515 af
Outflow = 1.65 cfs @ 12.35 hrs, Volume= 0.386 af, Atten= 73%, Lag= 13.2 min
Discarded = 0.18 cfs @ 12.34 hrs, Volume= 0.250 af
Primary = 1.47 cfs @ 12.35 hrs, Volume= 0.136 af
Routed to Pond MH15 : DMH-15

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.02' @ 12.34 hrs Surf.Area= 3,425 sf Storage= 8,446 cf
Flood Elev= 211.00' Surf.Area= 3,425 sf Storage= 10,230 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 77.7 min (848.3 - 770.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	206.50'	4,825 cf	**44.25'W x 77.40'L x 5.50'H Field A** 18,837 cf Overall - 6,776 cf Embedded = 12,061 cf x 40.0% Voids
#2A	207.25'	6,776 cf	**ADS_StormTech MC-3500 d +Cap** x 60 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 60 Chambers in 6 Rows Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf
		11,600 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	206.50'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 201.00'
#2	Primary	209.20'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.20' / 209.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Discarded OutFlow Max=0.18 cfs @ 12.34 hrs HW=210.02' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.18 cfs)

Primary OutFlow Max=1.47 cfs @ 12.35 hrs HW=210.02' TW=209.68' (Dynamic Tailwater)
↑—**2=Culvert** (Outlet Controls 1.47 cfs @ 2.90 fps)

Pond 3D: ADS Subsurface Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 6 rows = 178.8 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

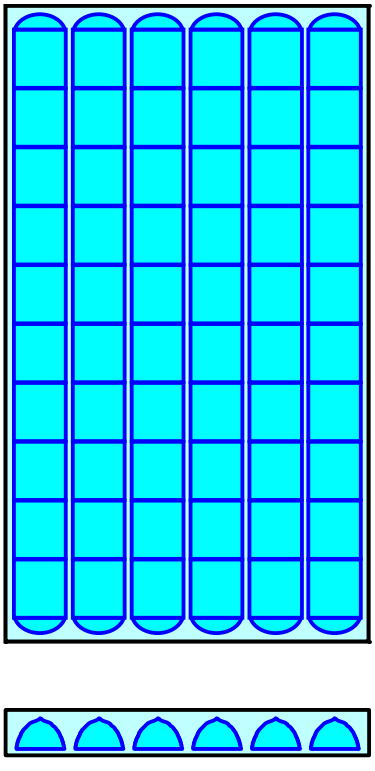
10 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 75.40' Row Length +12.0" End Stone x 2 = 77.40' Base Length
6 Rows x 77.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 44.25' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

60 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 6 Rows = 6,775.9 cf Chamber Storage

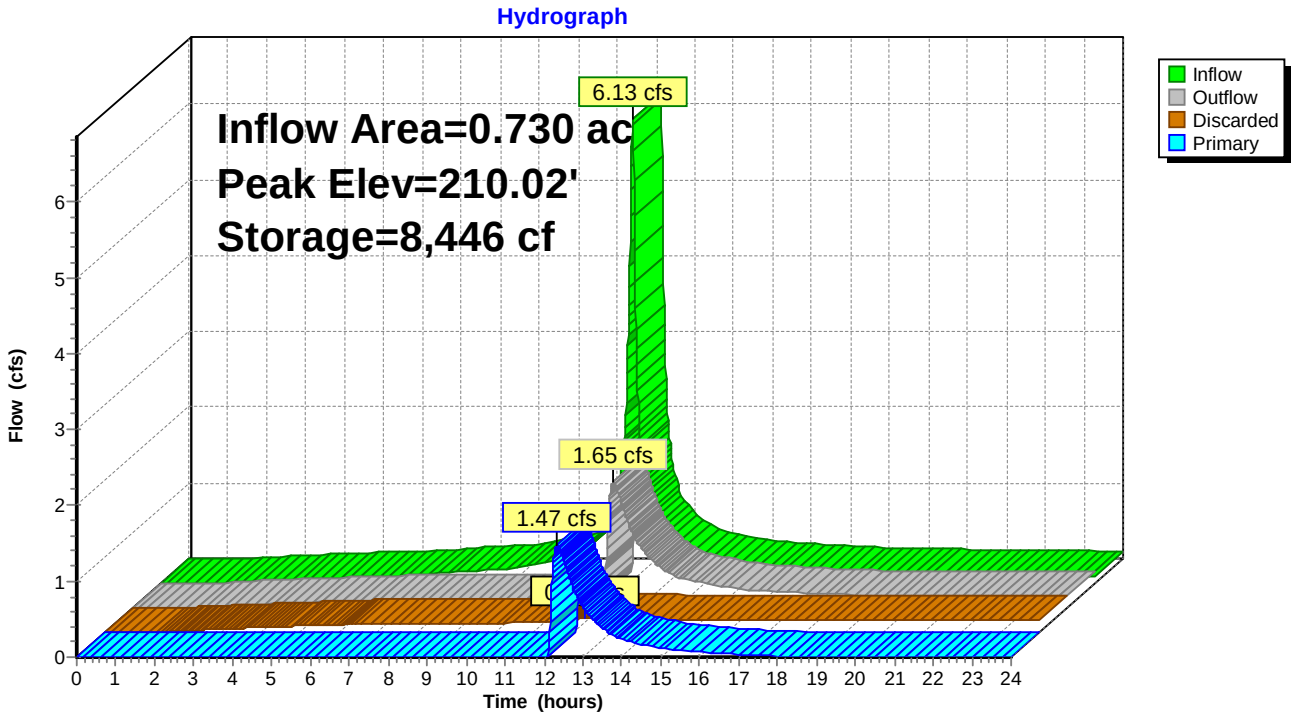
18,837.2 cf Field - 6,775.9 cf Chambers = 12,061.3 cf Stone x 40.0% Voids = 4,824.5 cf Stone Storage

Chamber Storage + Stone Storage = 11,600.4 cf = 0.266 af
Overall Storage Efficiency = 61.6%
Overall System Size = 77.40' x 44.25' x 5.50'

60 Chambers
697.7 cy Field
446.7 cy Stone



Pond 3D: ADS Subsurface Detention



Summary for Pond 3P: Basin 3

Inflow Area = 1.169 ac, 63.73% Impervious, Inflow Depth > 7.01" for 2070 50-yr event
Inflow = 7.97 cfs @ 12.12 hrs, Volume= 0.683 af
Outflow = 3.02 cfs @ 12.26 hrs, Volume= 0.497 af, Atten= 62%, Lag= 8.2 min
Discarded = 0.30 cfs @ 12.26 hrs, Volume= 0.357 af
Primary = 0.17 cfs @ 12.26 hrs, Volume= 0.024 af
Routed to Reach DP-4 : Wetland
Secondary = 2.54 cfs @ 12.26 hrs, Volume= 0.116 af
Routed to Reach DP-4 : Wetland

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 207.67' @ 12.26 hrs Surf.Area= 4,327 sf Storage= 11,287 cf
Flood Elev= 208.00' Surf.Area= 4,568 sf Storage= 12,769 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 110.7 min (885.5 - 774.8)

Volume	Invert	Avail.Storage	Storage Description
#1	204.00'	12,769 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
204.00	1,959	0	0
206.00	3,121	5,080	5,080
208.00	4,568	7,689	12,769

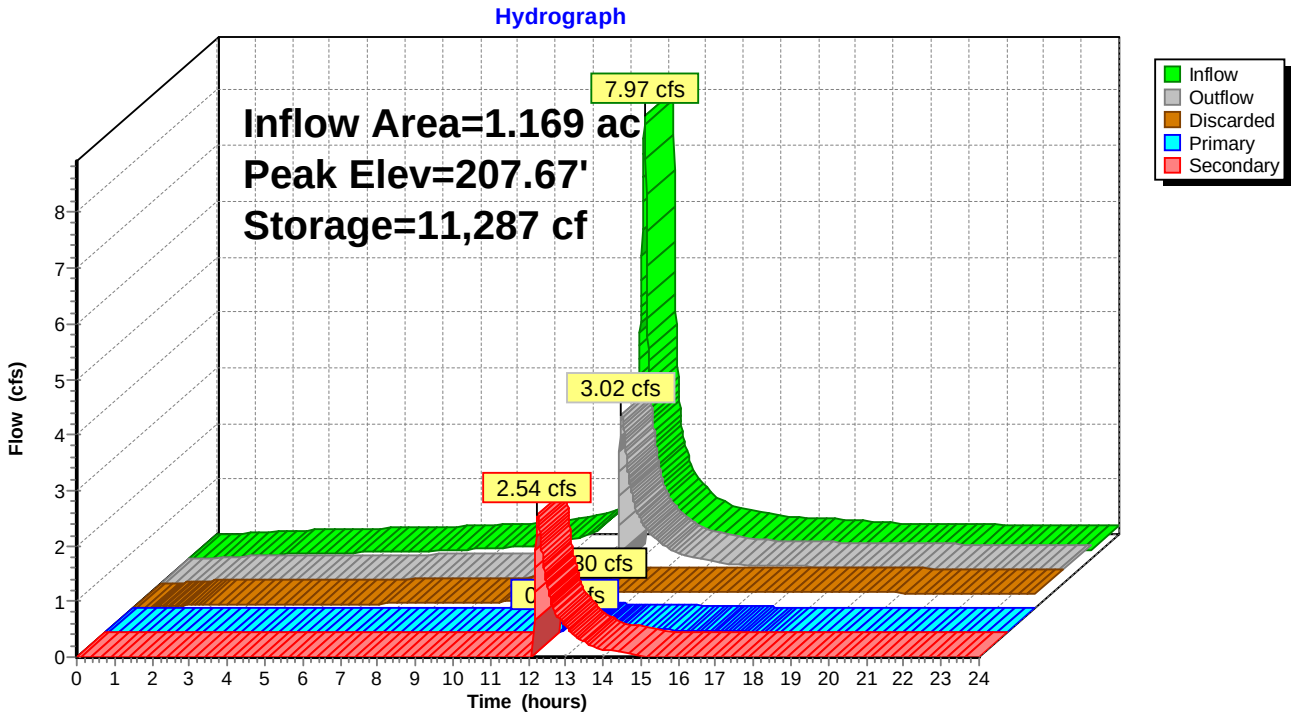
Device	Routing	Invert	Outlet Devices
#1	Primary	207.35'	**6.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 207.35' / 207.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Discarded	204.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 202.00'
#3	Secondary	207.50'	**15.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.30 cfs @ 12.26 hrs HW=207.67' (Free Discharge)
2=Exfiltration (Controls 0.30 cfs)

Primary OutFlow Max=0.17 cfs @ 12.26 hrs HW=207.67' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.17 cfs @ 1.90 fps)

Secondary OutFlow Max=2.54 cfs @ 12.26 hrs HW=207.67' TW=0.00' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Weir Controls 2.54 cfs @ 1.02 fps)

Pond 3P: Basin 3



Summary for Pond 3SS: SSMH-3

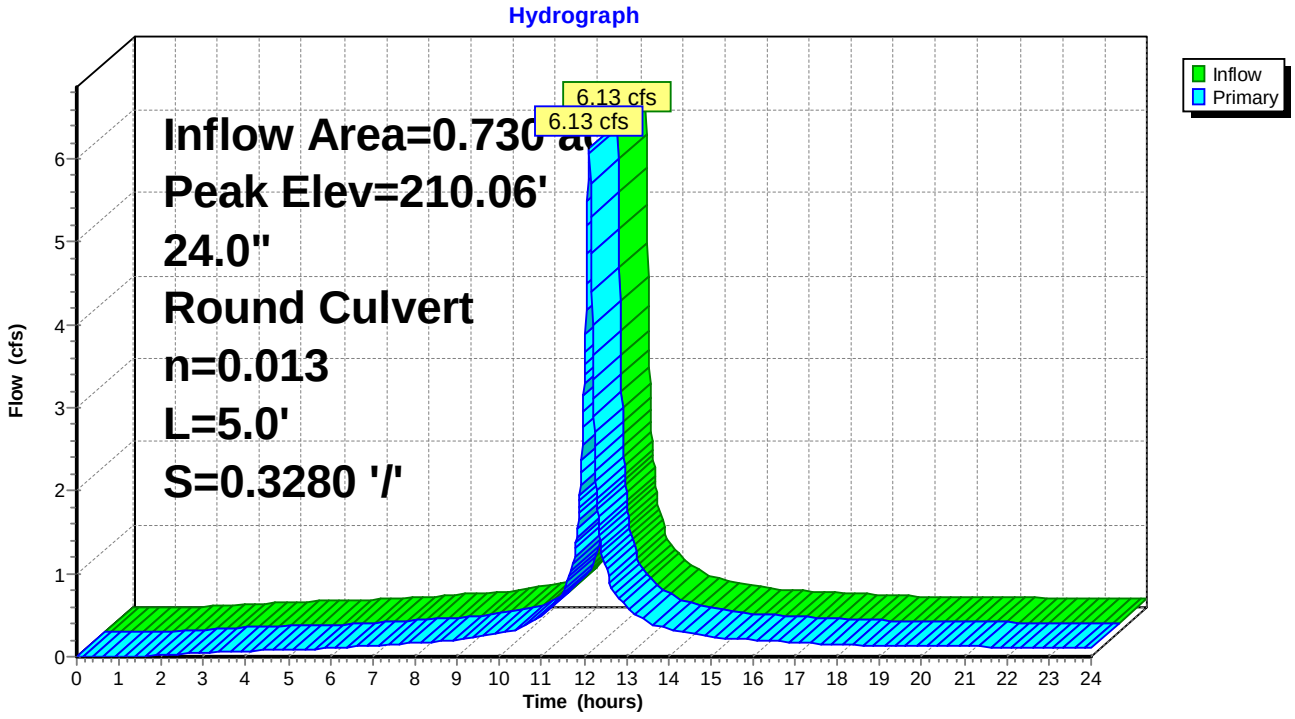
Inflow Area = 0.730 ac, 86.34% Impervious, Inflow Depth > 8.47" for 2070 50-yr event
Inflow = 6.13 cfs @ 12.13 hrs, Volume= 0.515 af
Outflow = 6.13 cfs @ 12.13 hrs, Volume= 0.515 af, Atten= 0%, Lag= 0.0 min
Primary = 6.13 cfs @ 12.13 hrs, Volume= 0.515 af
Routed to Pond 3D : ADS Subsurface Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.06' @ 12.31 hrs
Flood Elev= 214.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	208.89'	**24.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.89' / 207.25' S= 0.3280 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=6.15 cfs @ 12.13 hrs HW=209.98' TW=209.35' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.15 cfs @ 5.07 fps)

Pond 3SS: SSMH-3



Summary for Pond 4D: ADS Subsurface Detention

Inflow Area = 0.106 ac, 99.20% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 0.95 cfs @ 12.12 hrs, Volume= 0.081 af
Outflow = 0.07 cfs @ 13.25 hrs, Volume= 0.079 af, Atten= 92%, Lag= 67.7 min
Discarded = 0.07 cfs @ 13.25 hrs, Volume= 0.079 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 207.53' @ 13.25 hrs Surf.Area= 950 sf Storage= 1,287 cf
Flood Elev= 208.50' Surf.Area= 950 sf Storage= 1,801 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 139.1 min (877.8 - 738.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	205.50'	889 cf	**20.50'W x 46.34'L x 3.50'H Field A** 3,325 cf Overall - 1,103 cf Embedded = 2,222 cf x 40.0% Voids
#2A	206.00'	1,103 cf	**ADS_StormTech SC-740 +Cap** x 24 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 24 Chambers in 4 Rows
		1,991 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	205.50'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 204.00'

Discarded OutFlow Max=0.07 cfs @ 13.25 hrs HW=207.53' (Free Discharge)
↑**1=Exfiltration** (Controls 0.07 cfs)

Pond 4D: ADS Subsurface Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

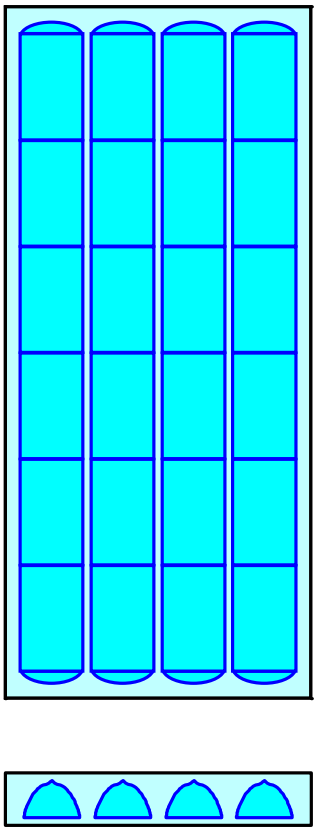
6 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 44.34' Row Length +12.0" End Stone x 2 = 46.34' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

24 Chambers x 45.9 cf = 1,102.6 cf Chamber Storage

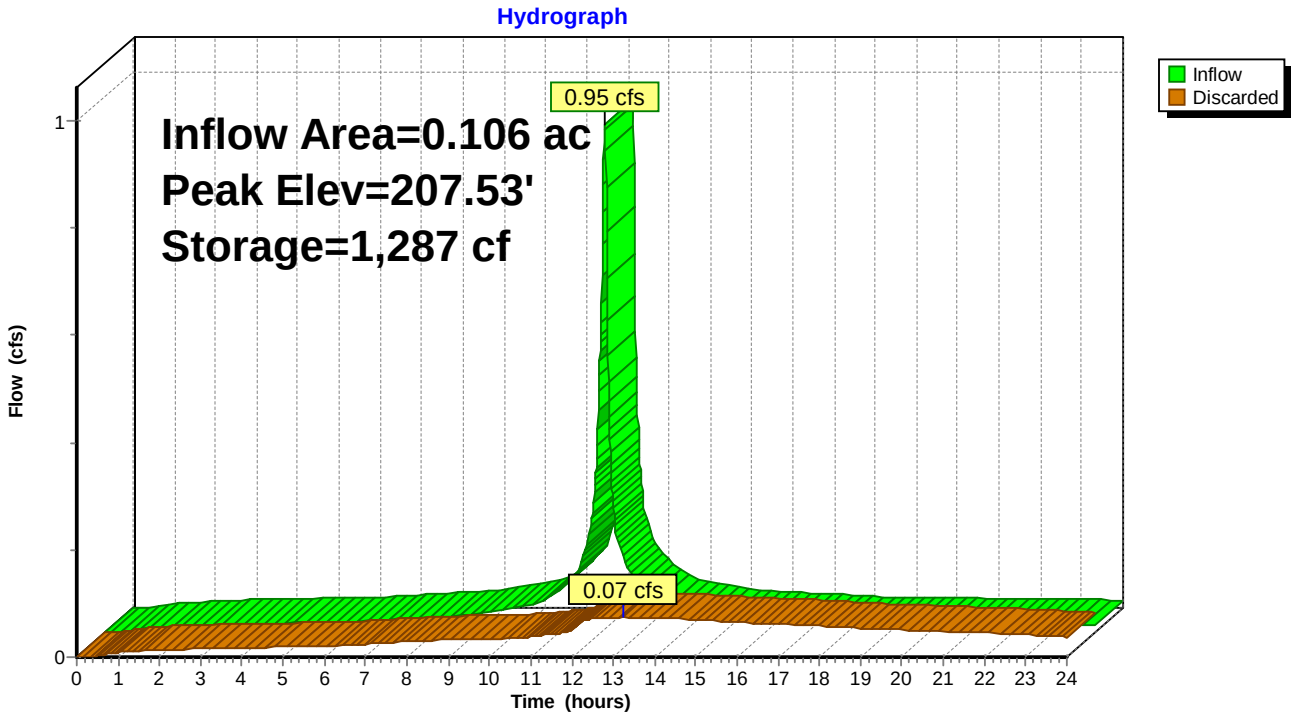
3,324.7 cf Field - 1,102.6 cf Chambers = 2,222.1 cf Stone x 40.0% Voids = 888.8 cf Stone Storage

Chamber Storage + Stone Storage = 1,991.4 cf = 0.046 af
Overall Storage Efficiency = 59.9%
Overall System Size = 46.34' x 20.50' x 3.50'

24 Chambers
123.1 cy Field
82.3 cy Stone



Pond 4D: ADS Subsurface Detention



Summary for Pond 4P: Basin 4

Inflow Area = 0.958 ac, 54.89% Impervious, Inflow Depth > 6.48" for 2070 50-yr event
Inflow = 6.55 cfs @ 12.12 hrs, Volume= 0.518 af
Outflow = 0.30 cfs @ 14.67 hrs, Volume= 0.336 af, Atten= 95%, Lag= 153.0 min
Discarded = 0.30 cfs @ 14.67 hrs, Volume= 0.336 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 205.79' @ 14.67 hrs Surf.Area= 4,223 sf Storage= 11,552 cf
Flood Elev= 206.00' Surf.Area= 4,359 sf Storage= 12,435 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 167.9 min (962.2 - 794.3)

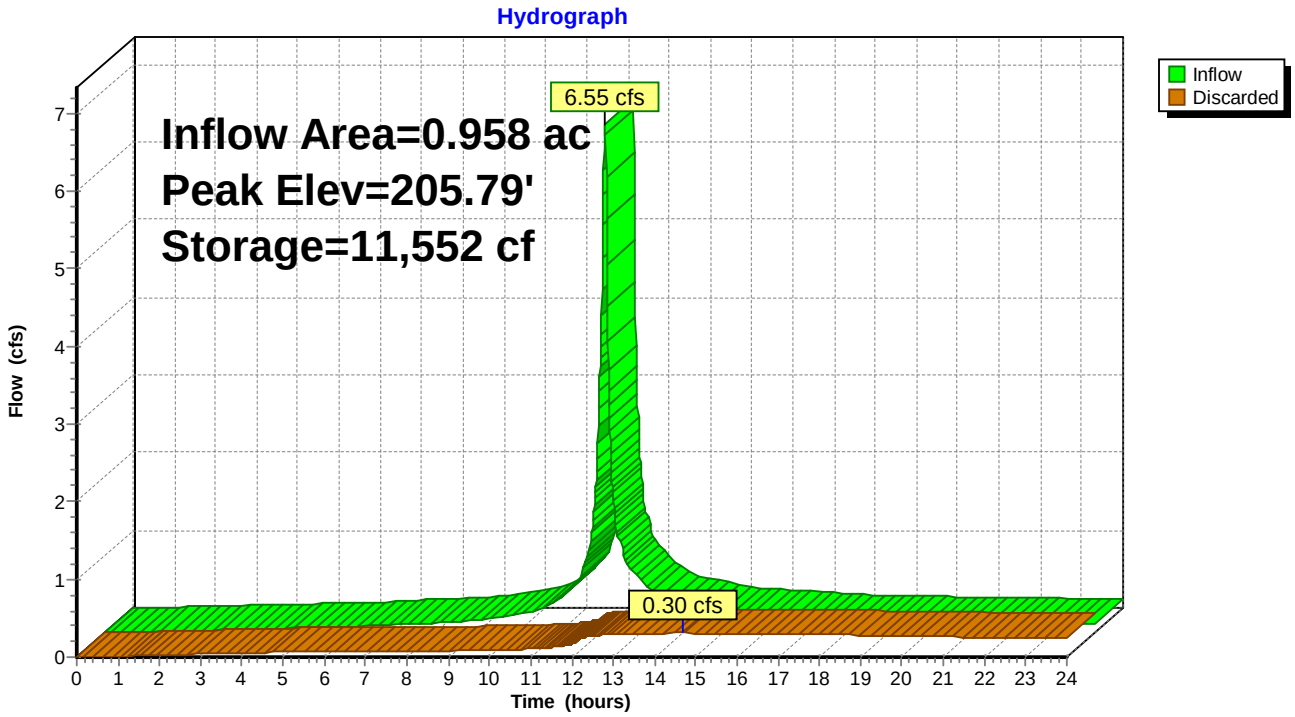
Volume	Invert	Avail.Storage	Storage Description
#1	202.00'	12,435 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.00	1,998	0	0
204.00	3,039	5,037	5,037
206.00	4,359	7,398	12,435

Device	Routing	Invert	Outlet Devices
#1	Discarded	202.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.30 cfs @ 14.67 hrs HW=205.79' (Free Discharge)
↑**1=Exfiltration** (Controls 0.30 cfs)

Pond 4P: Basin 4



Summary for Pond 4SS: SSMH-4

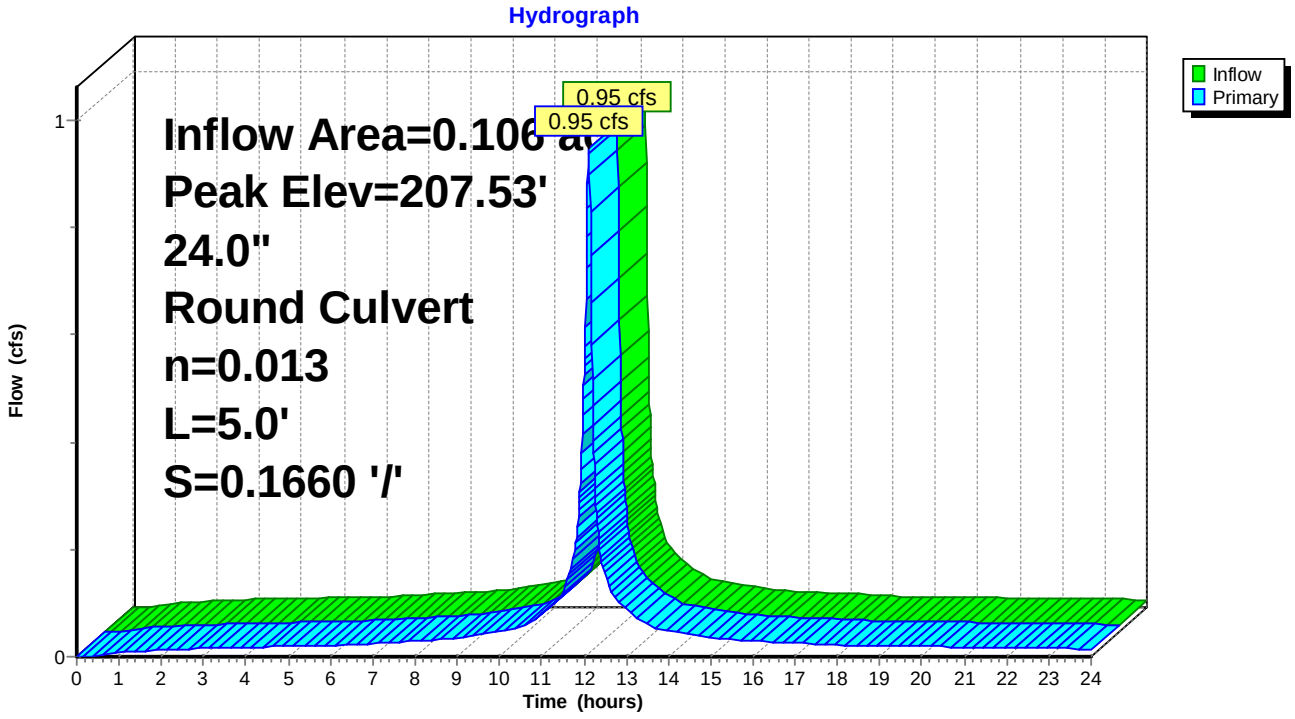
Inflow Area = 0.106 ac, 99.20% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 0.95 cfs @ 12.12 hrs, Volume= 0.081 af
Outflow = 0.95 cfs @ 12.12 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min
Primary = 0.95 cfs @ 12.12 hrs, Volume= 0.081 af
Routed to Pond 4D : ADS Subsurface Detention

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 207.53' @ 13.25 hrs
Flood Elev= 212.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.83'	**24.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.83' / 206.00' S= 0.1660 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=0.95 cfs @ 12.12 hrs HW=207.23' TW=206.86' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.95 cfs @ 2.14 fps)

Pond 4SS: SSMH-4



Summary for Pond 5P: Basin 5

Inflow Area = 2.503 ac, 66.10% Impervious, Inflow Depth > 5.71" for 2070 50-yr event
Inflow = 13.06 cfs @ 12.13 hrs, Volume= 1.192 af
Outflow = 0.58 cfs @ 15.55 hrs, Volume= 0.626 af, Atten= 96%, Lag= 205.1 min
Discarded = 0.58 cfs @ 15.55 hrs, Volume= 0.626 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 204.40' @ 15.55 hrs Surf.Area= 8,958 sf Storage= 31,138 cf
Flood Elev= 205.00' Surf.Area= 9,735 sf Storage= 36,707 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 192.8 min (993.1 - 800.2)

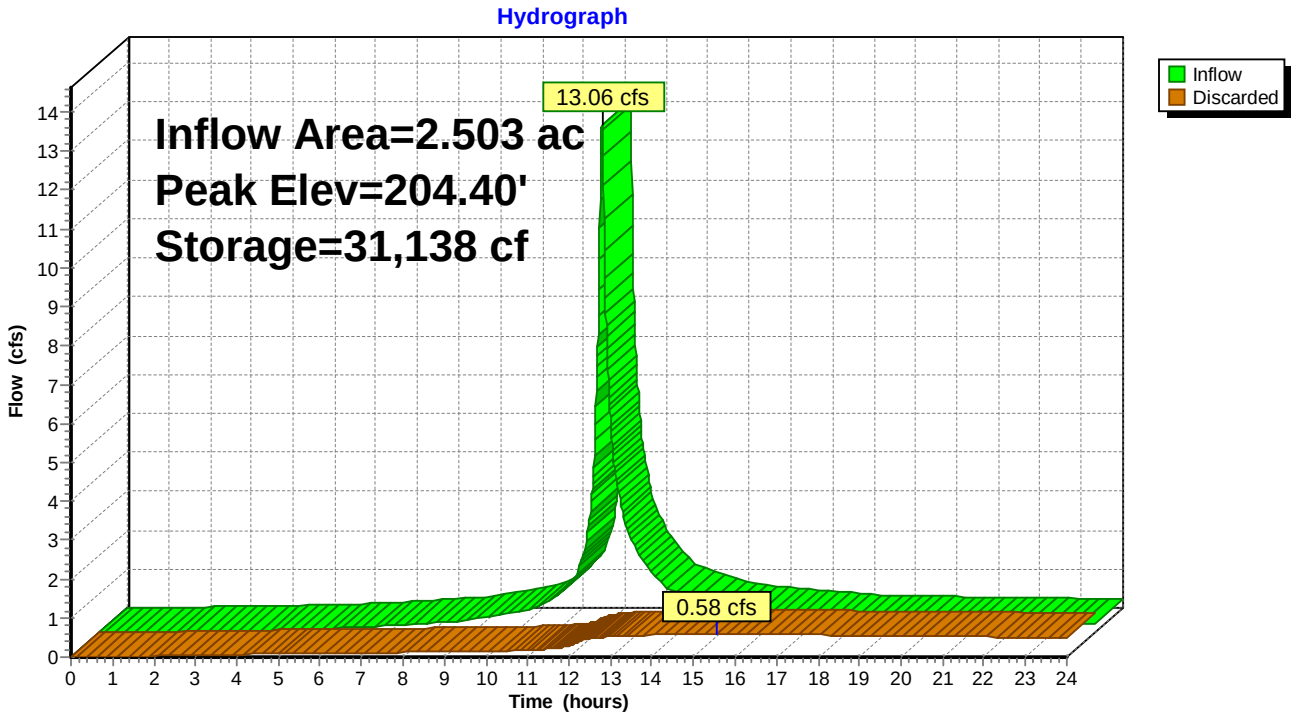
Volume	Invert	Avail.Storage	Storage Description
#1	199.00'	36,707 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
199.00	3,064	0	0
200.00	3,911	3,488	3,488
202.00	5,897	9,808	13,296
204.00	8,431	14,328	27,624
205.00	9,735	9,083	36,707

Device	Routing	Invert	Outlet Devices
#1	Discarded	199.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 196.00'

Discarded OutFlow Max=0.58 cfs @ 15.55 hrs HW=204.40' (Free Discharge)
1=Exfiltration (Controls 0.58 cfs)

Pond 5P: Basin 5



Summary for Pond 6P: Basin 6

Inflow Area = 3.268 ac, 88.88% Impervious, Inflow Depth > 5.26" for 2070 50-yr event
Inflow = 9.34 cfs @ 12.14 hrs, Volume= 1.433 af
Outflow = 0.68 cfs @ 16.74 hrs, Volume= 0.703 af, Atten= 93%, Lag= 276.4 min
Discarded = 0.68 cfs @ 16.74 hrs, Volume= 0.703 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 205.97' @ 16.74 hrs Surf.Area= 11,051 sf Storage= 40,042 cf
Flood Elev= 206.00' Surf.Area= 11,097 sf Storage= 40,338 cf

Plug-Flow detention time= 357.9 min calculated for 0.703 af (49% of inflow)
Center-of-Mass det. time= 215.7 min (1,017.7 - 802.0)

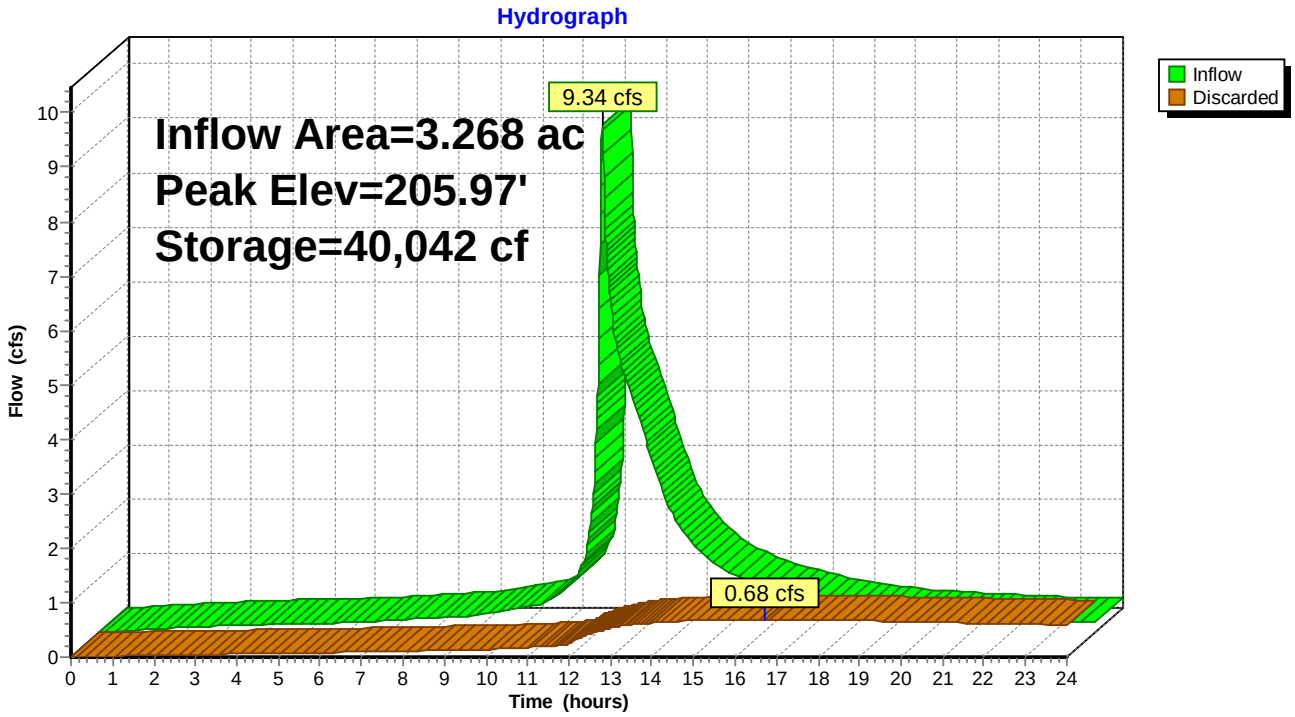
Volume	Invert	Avail.Storage	Storage Description
#1	198.04'	40,338 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
198.04	273	0	0
200.00	2,111	2,336	2,336
202.00	4,717	6,828	9,164
204.00	7,680	12,397	21,561
206.00	11,097	18,777	40,338

Device	Routing	Invert	Outlet Devices
#1	Discarded	198.04'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 196.00'

Discarded OutFlow Max=0.68 cfs @ 16.74 hrs HW=205.97' (Free Discharge)
1=Exfiltration (Controls 0.68 cfs)

Pond 6P: Basin 6



Summary for Pond 7P: Basin 7

Inflow Area = 0.237 ac, 0.07% Impervious, Inflow Depth > 6.02" for 2070 50-yr event
Inflow = 1.64 cfs @ 12.12 hrs, Volume= 0.119 af
Outflow = 0.13 cfs @ 13.39 hrs, Volume= 0.106 af, Atten= 92%, Lag= 76.0 min
Discarded = 0.13 cfs @ 13.39 hrs, Volume= 0.106 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 203.59' @ 13.39 hrs Surf.Area= 1,957 sf Storage= 2,194 cf
Flood Elev= 206.00' Surf.Area= 4,012 sf Storage= 9,324 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 151.7 min (982.6 - 830.9)

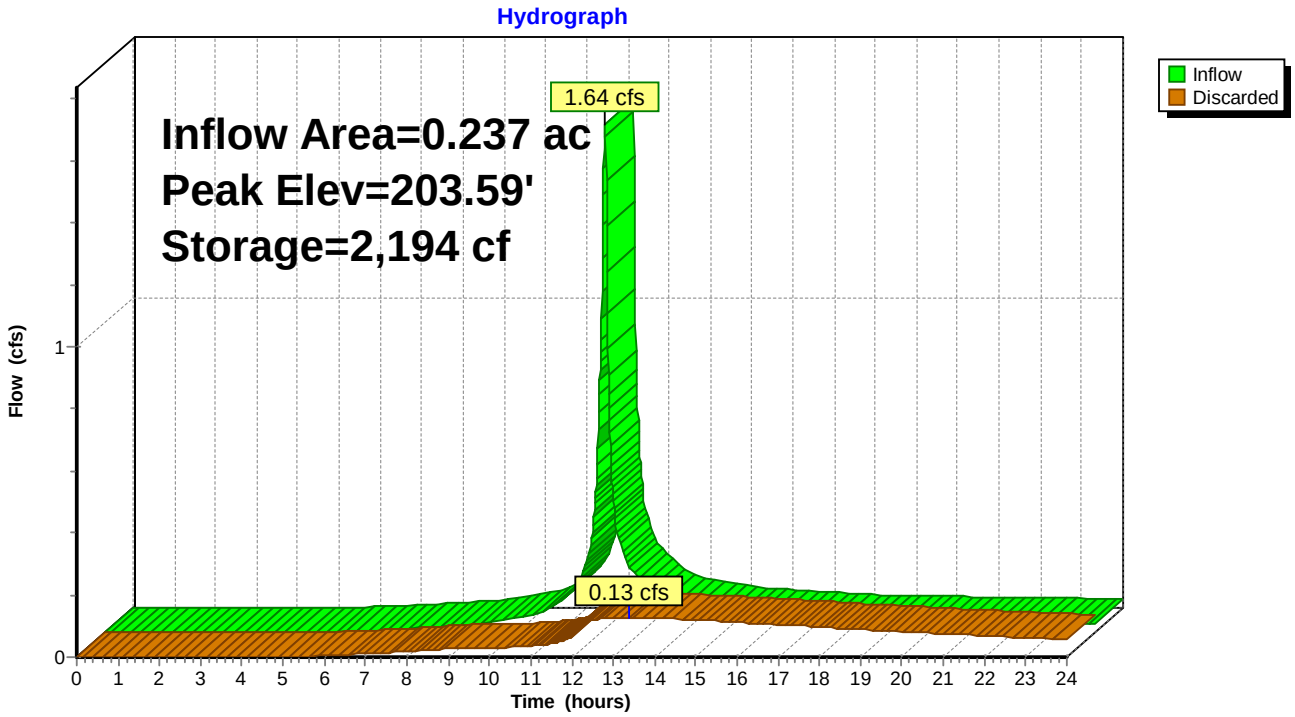
Volume	Invert	Avail.Storage	Storage Description
#1	202.00'	9,324 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.00	802	0	0
204.00	2,255	3,057	3,057
206.00	4,012	6,267	9,324

Device	Routing	Invert	Outlet Devices
#1	Discarded	202.00'	**1.420 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 201.00'

Discarded OutFlow Max=0.13 cfs @ 13.39 hrs HW=203.59' (Free Discharge)
↑**1=Exfiltration** (Controls 0.13 cfs)

Pond 7P: Basin 7



Summary for Pond CB1: CB-1

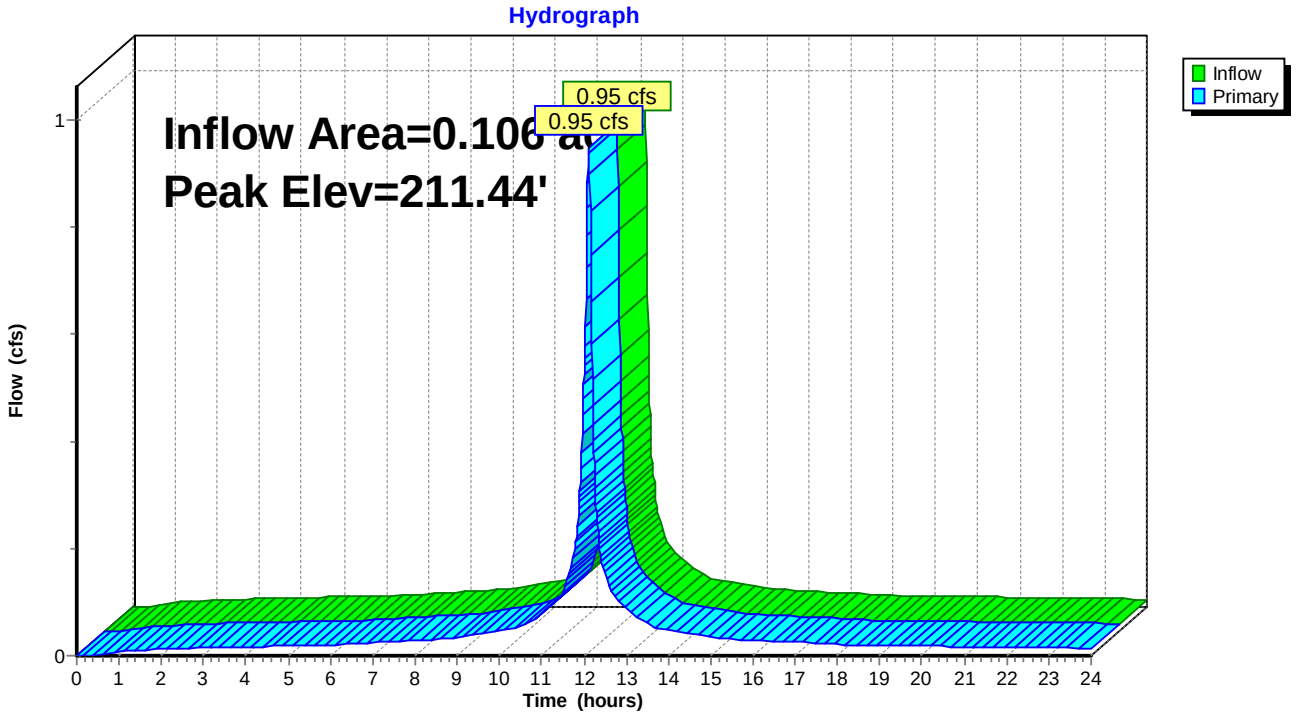
Inflow Area = 0.106 ac, 99.20% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 0.95 cfs @ 12.12 hrs, Volume= 0.081 af
Outflow = 0.95 cfs @ 12.12 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min
Primary = 0.95 cfs @ 12.12 hrs, Volume= 0.081 af
Routed to Pond 4SS : SSMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 211.44' @ 12.12 hrs
Flood Elev= 211.43'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.33'	**8.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.33' / 206.93' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	211.33'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.95 cfs @ 12.12 hrs HW=211.44' TW=207.23' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.95 cfs of 2.28 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.95 cfs @ 1.08 fps)

Pond CB1: CB-1



Summary for Pond CB10: CB-10

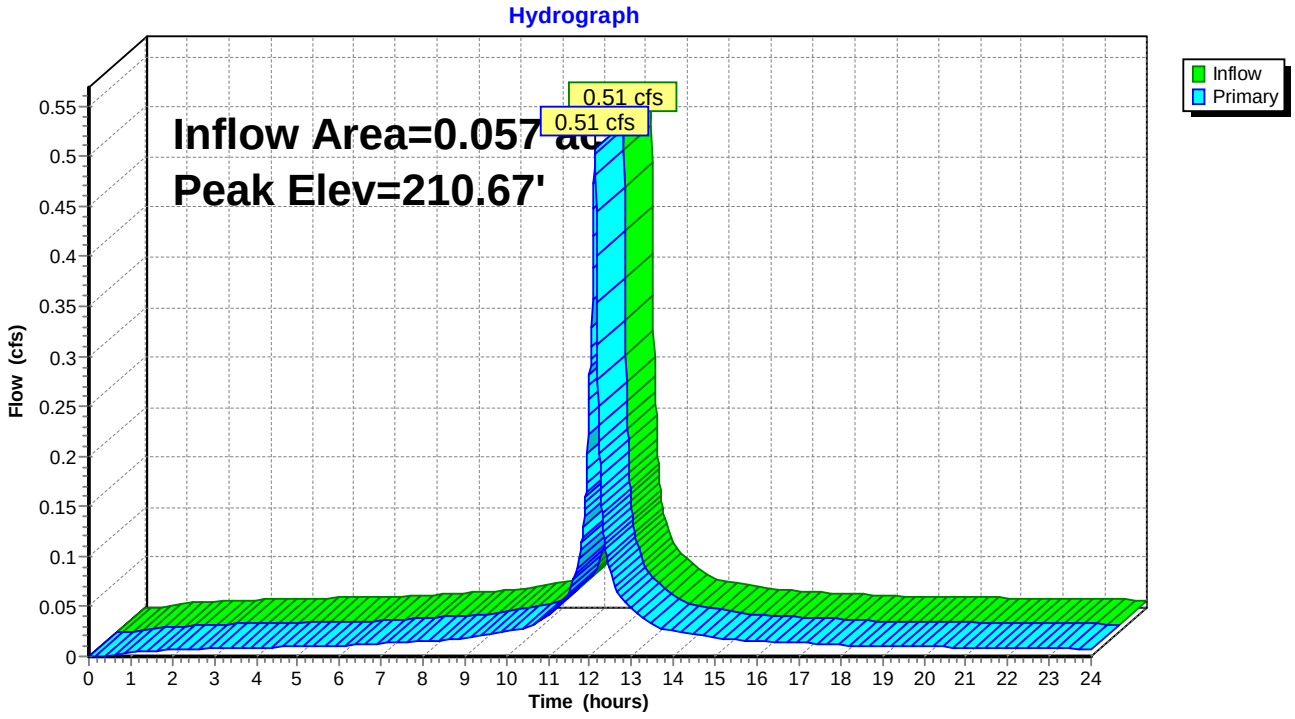
Inflow Area = 0.057 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 0.51 cfs @ 12.12 hrs, Volume= 0.044 af
Outflow = 0.51 cfs @ 12.12 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min
Primary = 0.51 cfs @ 12.12 hrs, Volume= 0.044 af
Routed to Pond MH5 : DMH-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.67' @ 12.12 hrs
Flood Elev= 210.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.60'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.60' / 207.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	210.60'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.51 cfs @ 12.12 hrs HW=210.67' TW=208.78' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.51 cfs of 5.20 cfs potential flow)
↑**2=Grate** (Weir Controls 0.51 cfs @ 0.88 fps)

Pond CB10: CB-10



Summary for Pond CB11: CB-11

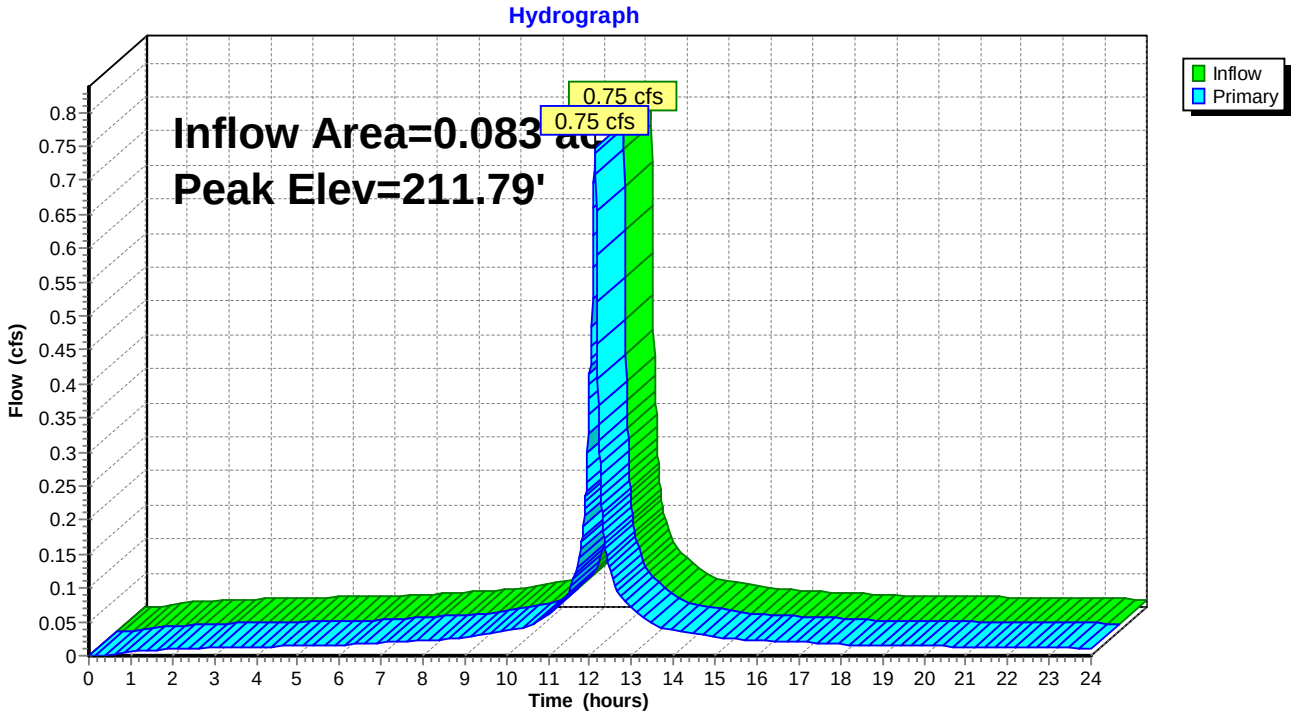
Inflow Area = 0.083 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 0.75 cfs @ 12.12 hrs, Volume= 0.064 af
Outflow = 0.75 cfs @ 12.12 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.0 min
Primary = 0.75 cfs @ 12.12 hrs, Volume= 0.064 af
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 211.79' @ 12.12 hrs
Flood Elev= 211.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	208.70'	**12.0" Round Culvert** L= 34.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.70' / 208.53' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	211.70'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.75 cfs @ 12.12 hrs HW=211.79' TW=208.79' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.75 cfs of 5.89 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.75 cfs @ 1.00 fps)

Pond CB11: CB-11



Summary for Pond CB12: CB-12

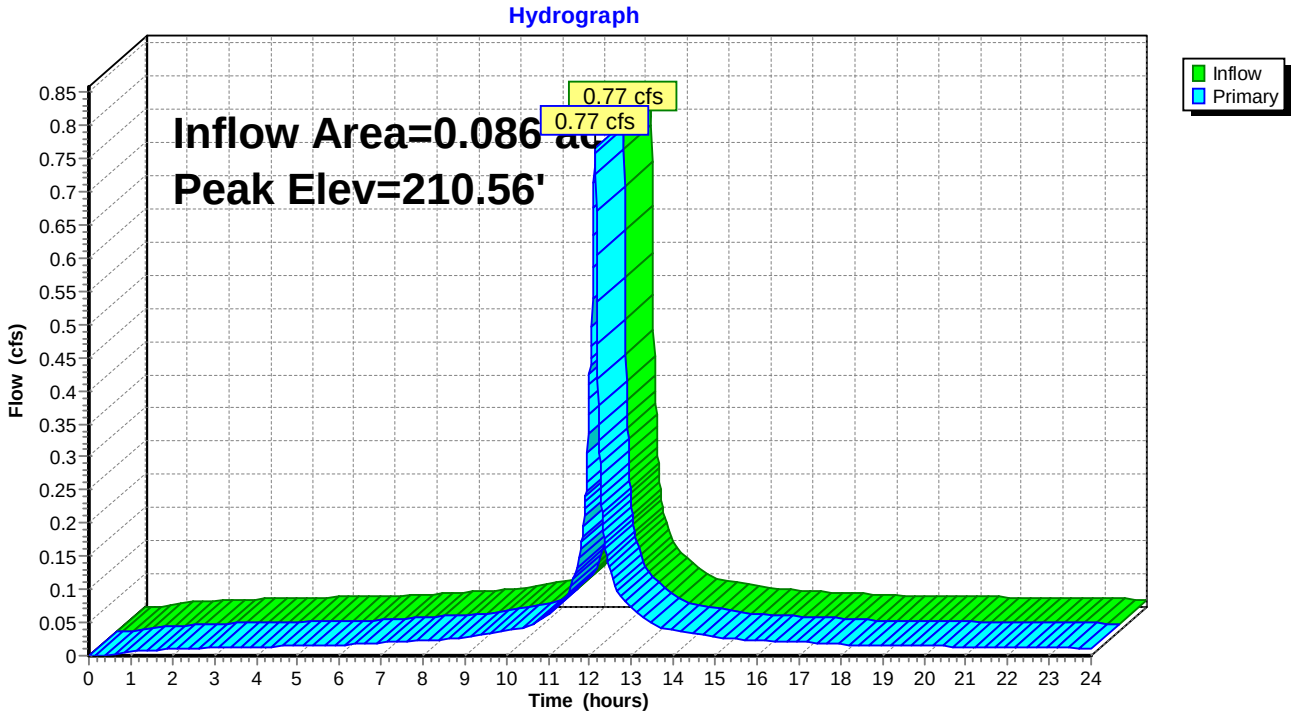
Inflow Area = 0.086 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 0.77 cfs @ 12.12 hrs, Volume= 0.066 af
Outflow = 0.77 cfs @ 12.12 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min
Primary = 0.77 cfs @ 12.12 hrs, Volume= 0.066 af
Routed to Pond MH2 : DMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.56' @ 12.12 hrs
Flood Elev= 210.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.50'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.50' / 207.45' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	210.50'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.77 cfs @ 12.12 hrs HW=210.56' TW=208.79' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.77 cfs of 5.04 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.77 cfs @ 0.80 fps)

Pond CB12: CB-12



Summary for Pond CB13: CB-13

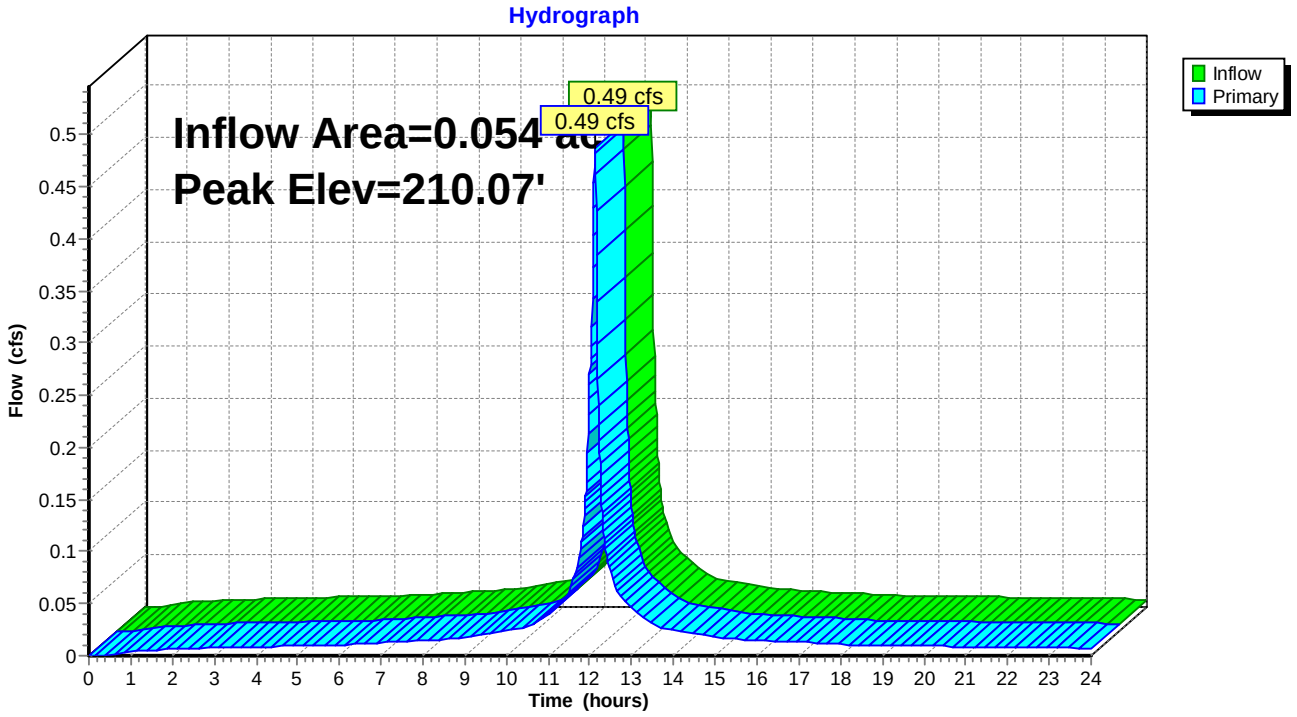
Inflow Area = 0.054 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 0.49 cfs @ 12.12 hrs, Volume= 0.042 af
Outflow = 0.49 cfs @ 12.12 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min
Primary = 0.49 cfs @ 12.12 hrs, Volume= 0.042 af
Routed to Pond 2P : Basin 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.07' @ 12.12 hrs
Flood Elev= 210.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.10'	**12.0" Round Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.10' / 206.92' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	210.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.49 cfs @ 12.12 hrs HW=210.07' TW=208.63' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.49 cfs of 4.54 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.49 cfs @ 0.87 fps)

Pond CB13: CB-13



Summary for Pond CB14: CB-14

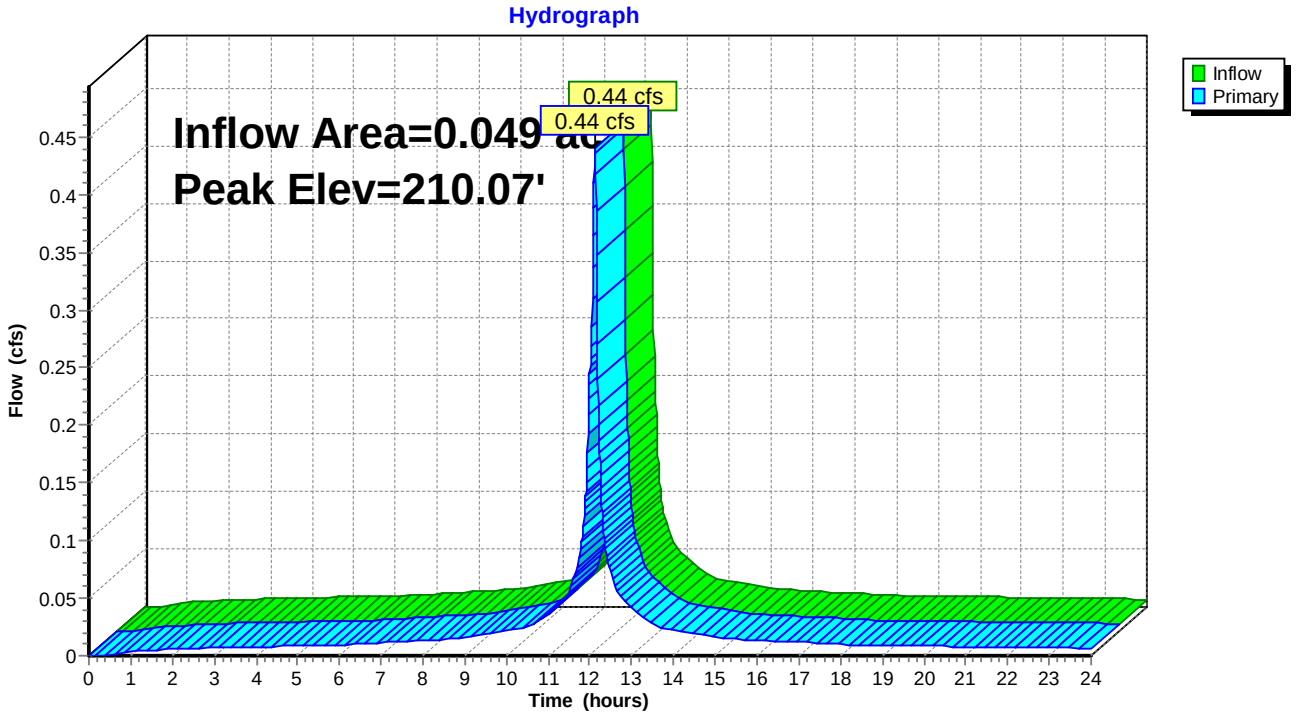
Inflow Area = 0.049 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 0.44 cfs @ 12.12 hrs, Volume= 0.038 af
Outflow = 0.44 cfs @ 12.12 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 12.12 hrs, Volume= 0.038 af
Routed to Pond 2P : Basin 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.07' @ 12.12 hrs
Flood Elev= 210.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.00'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.00' / 206.90' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	210.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.44 cfs @ 12.12 hrs HW=210.07' TW=208.63' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.44 cfs of 4.54 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.44 cfs @ 0.84 fps)

Pond CB14: CB-14



Summary for Pond CB15: CB-15

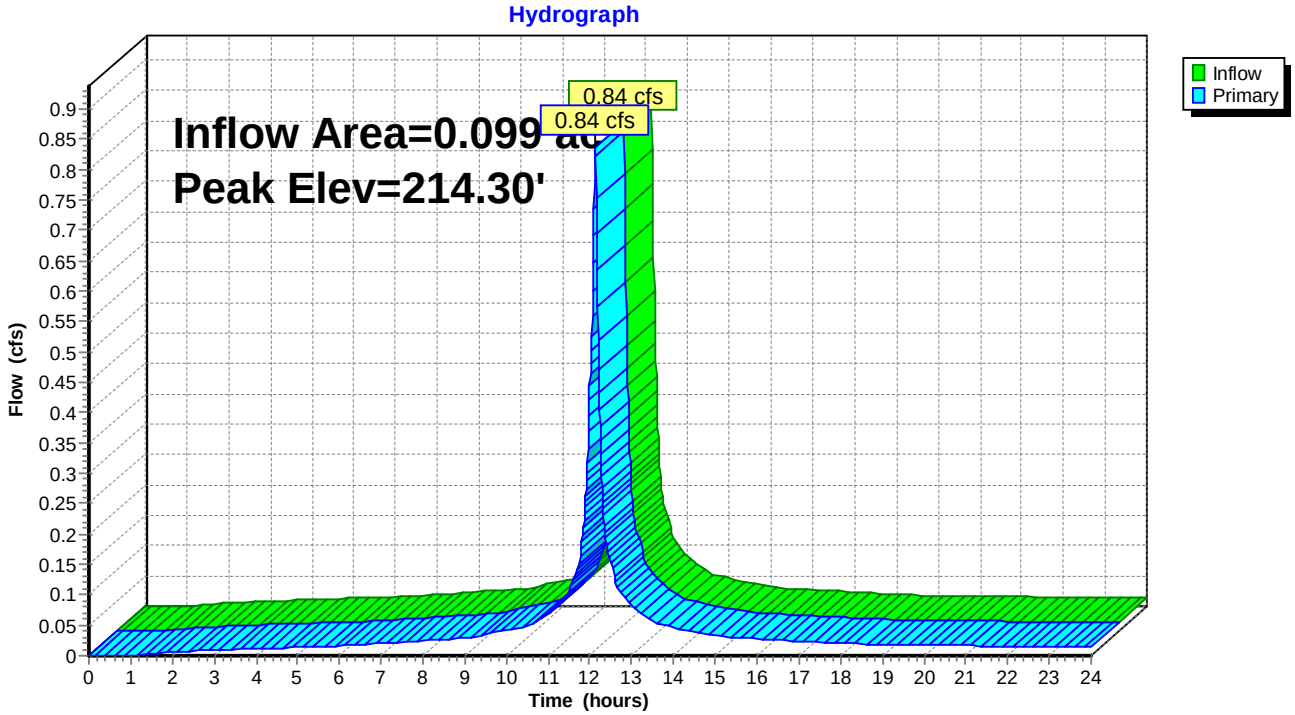
Inflow Area = 0.099 ac, 91.05% Impervious, Inflow Depth > 8.76" for 2070 50-yr event
Inflow = 0.84 cfs @ 12.13 hrs, Volume= 0.072 af
Outflow = 0.84 cfs @ 12.13 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.13 hrs, Volume= 0.072 af
Routed to Pond MH7 : DMH-7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.30' @ 12.13 hrs
Flood Elev= 214.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.20'	**12.0" Round Culvert** L= 165.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.20' / 210.38' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.20'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.84 cfs @ 12.13 hrs HW=214.30' TW=210.80' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.84 cfs of 4.17 cfs potential flow)
└─**2=Orifice/Grate** (Weir Controls 0.84 cfs @ 1.04 fps)

Pond CB15: CB-15



Summary for Pond CB16: CB-16

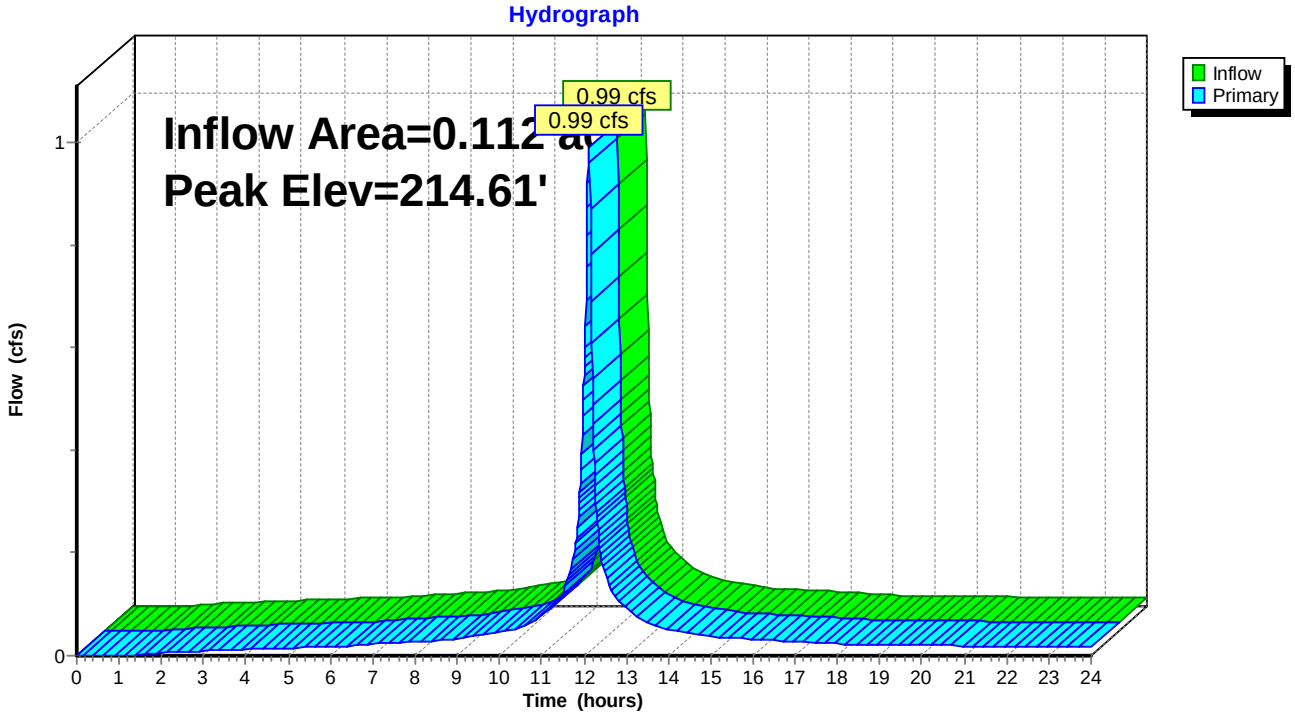
Inflow Area = 0.112 ac, 90.09% Impervious, Inflow Depth > 8.64" for 2070 50-yr event
Inflow = 0.99 cfs @ 12.12 hrs, Volume= 0.081 af
Outflow = 0.99 cfs @ 12.12 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min
Primary = 0.99 cfs @ 12.12 hrs, Volume= 0.081 af
Routed to Pond MH7 : DMH-7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.61' @ 12.12 hrs
Flood Elev= 214.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.50'	**12.0" Round Culvert** L= 250.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.50' / 210.25' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.99 cfs @ 12.12 hrs HW=214.61' TW=210.80' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.99 cfs of 3.78 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.99 cfs @ 1.10 fps)

Pond CB16: CB-16



Summary for Pond CB17: CB-17

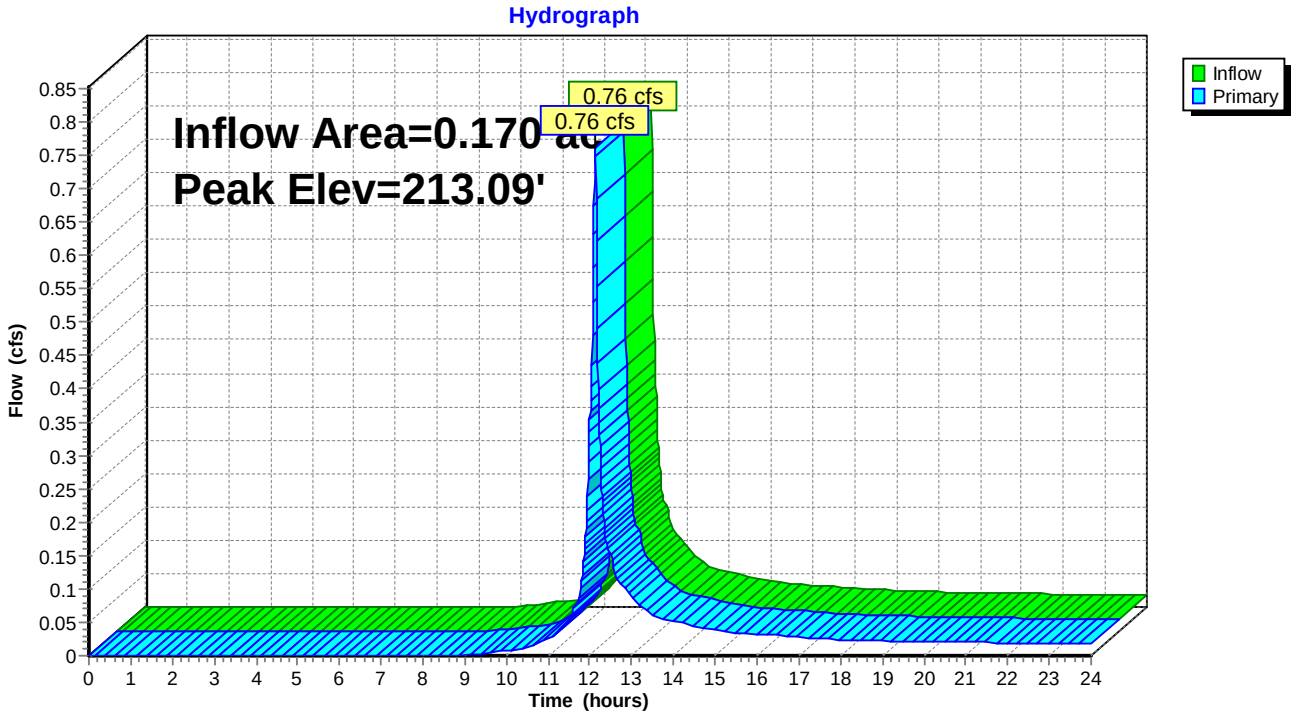
Inflow Area = 0.170 ac, 25.16% Impervious, Inflow Depth > 3.85" for 2070 50-yr event
Inflow = 0.76 cfs @ 12.13 hrs, Volume= 0.054 af
Outflow = 0.76 cfs @ 12.13 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 12.13 hrs, Volume= 0.054 af
Routed to Pond MH7 : DMH-7

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 213.09' @ 12.13 hrs
Flood Elev= 213.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 210.61' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	213.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.76 cfs @ 12.13 hrs HW=213.09' TW=210.80' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.76 cfs of 3.86 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.76 cfs @ 1.00 fps)

Pond CB17: CB-17



Summary for Pond CB18: CB-18

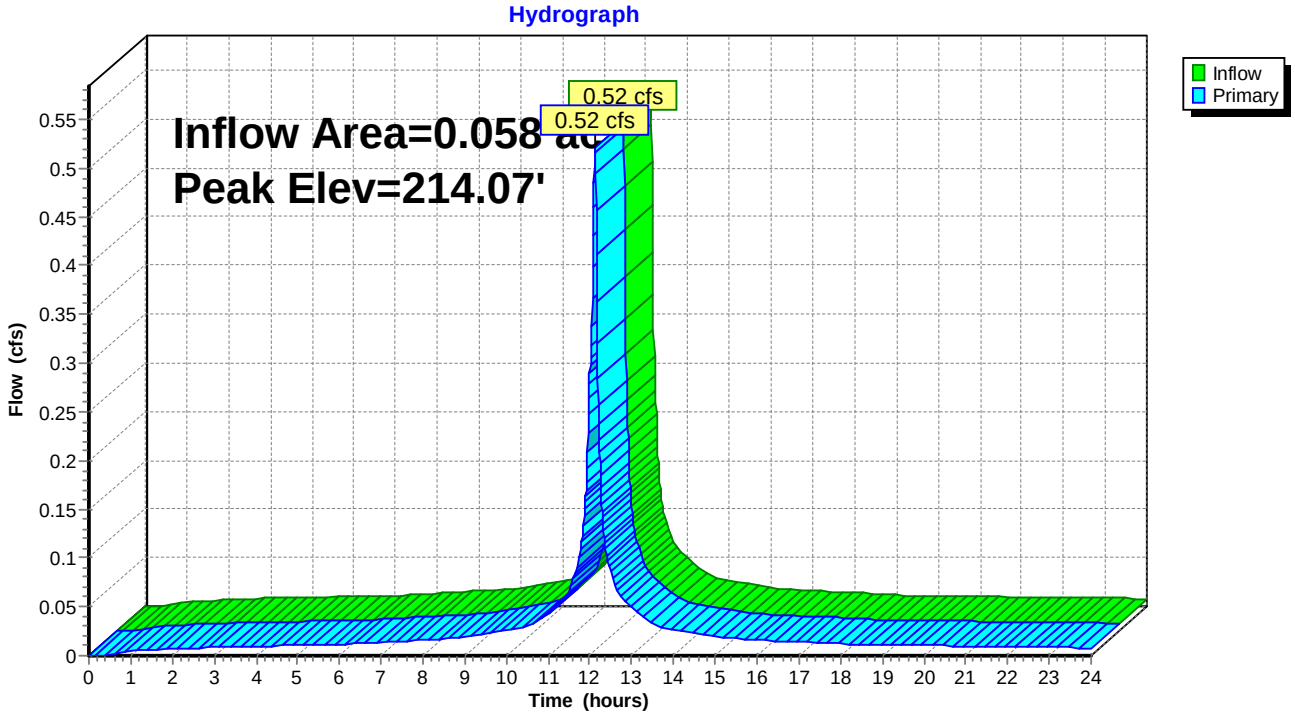
Inflow Area = 0.058 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 0.52 cfs @ 12.12 hrs, Volume= 0.045 af
Outflow = 0.52 cfs @ 12.12 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.12 hrs, Volume= 0.045 af
Routed to Pond MH6 : DMH-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.07' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 206.40' S= 0.0460 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.52 cfs @ 12.12 hrs HW=214.07' TW=207.44' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.52 cfs of 6.07 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.52 cfs @ 0.89 fps)

Pond CB18: CB-18



Summary for Pond CB19: CB-19

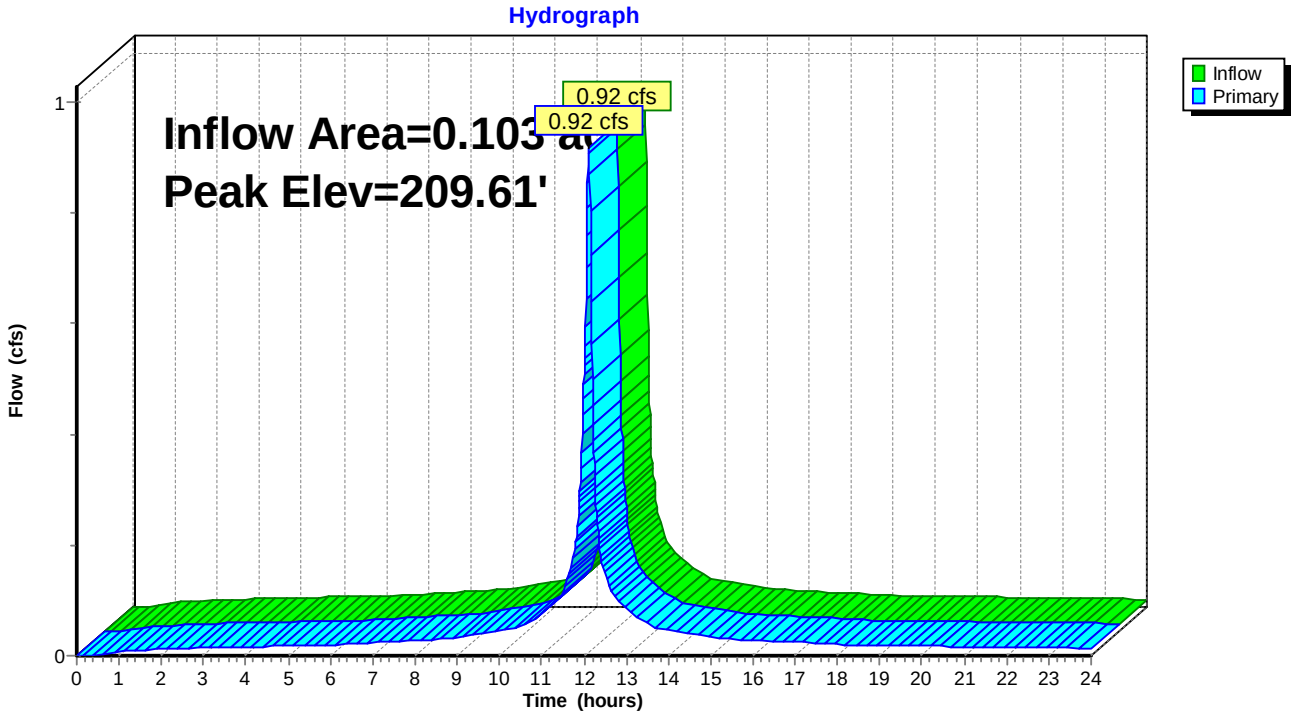
Inflow Area = 0.103 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 0.92 cfs @ 12.12 hrs, Volume= 0.079 af
Outflow = 0.92 cfs @ 12.12 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min
Primary = 0.92 cfs @ 12.12 hrs, Volume= 0.079 af
Routed to Pond MH6 : DMH-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 209.61' @ 12.12 hrs
Flood Elev= 209.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.50'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.50' / 206.40' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	209.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.92 cfs @ 12.12 hrs HW=209.61' TW=207.44' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.92 cfs of 5.57 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.92 cfs @ 1.07 fps)

Pond CB19: CB-19



Summary for Pond CB2: CB-2

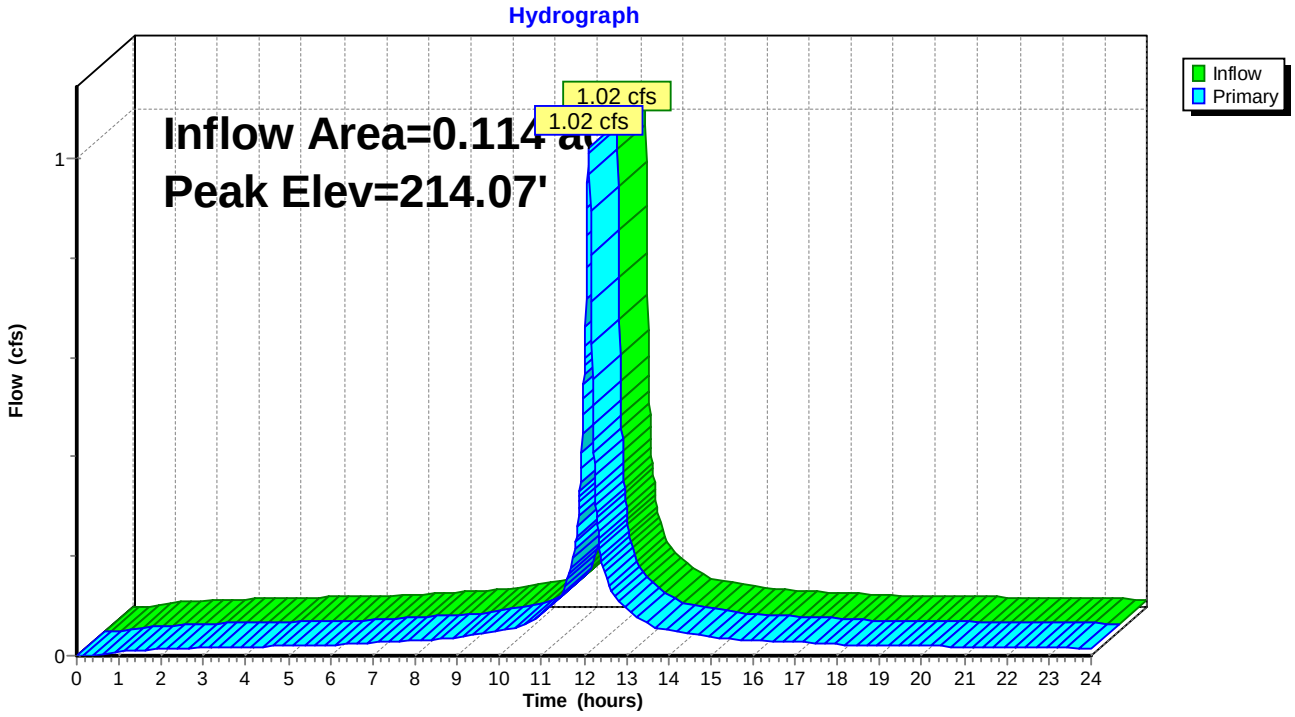
Inflow Area = 0.114 ac, 99.97% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 1.02 cfs @ 12.12 hrs, Volume= 0.088 af
Outflow = 1.02 cfs @ 12.12 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min
Primary = 1.02 cfs @ 12.12 hrs, Volume= 0.088 af
Routed to Pond 1P : Basin 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.07' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.10'	**12.0" Round Culvert** L= 21.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.10' / 210.98' S= 0.0057 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.02 cfs @ 12.12 hrs HW=214.07' TW=212.25' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.02 cfs of 5.10 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.02 cfs @ 0.88 fps)

Pond CB2: CB-2



Summary for Pond CB20: CB-20

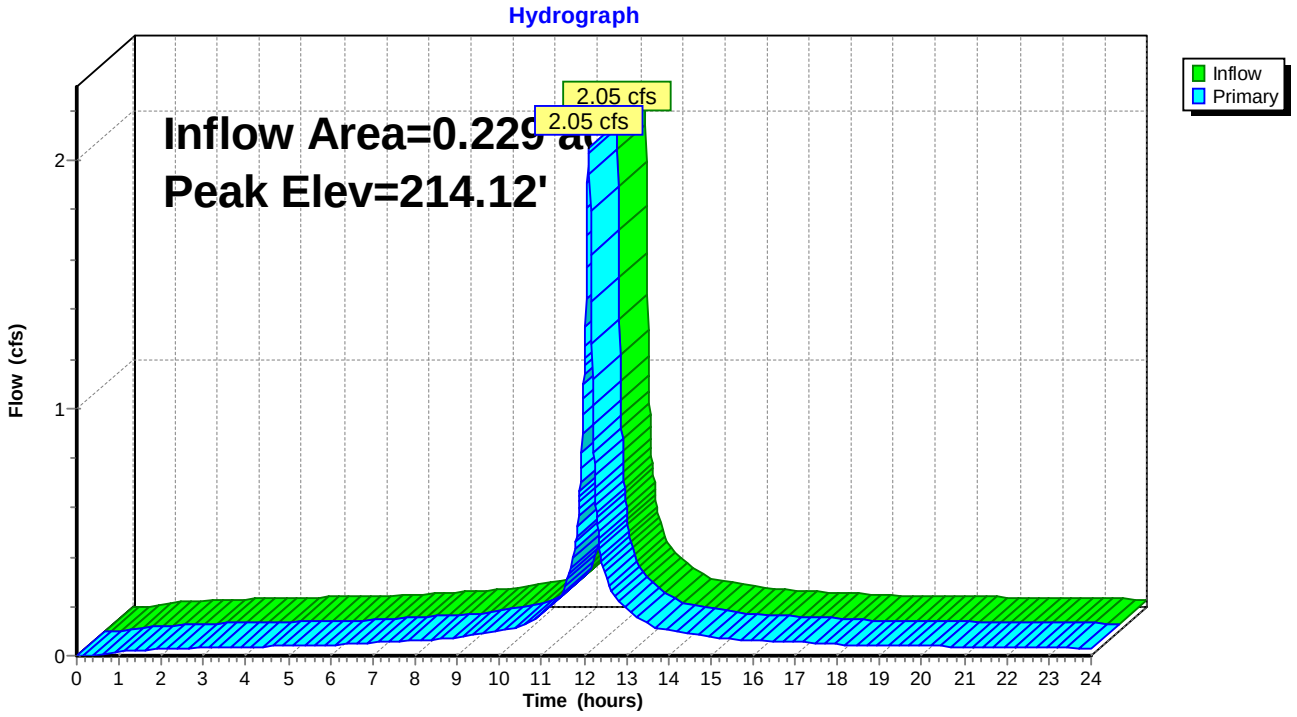
Inflow Area = 0.229 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 2.05 cfs @ 12.12 hrs, Volume= 0.176 af
Outflow = 2.05 cfs @ 12.12 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.0 min
Primary = 2.05 cfs @ 12.12 hrs, Volume= 0.176 af
Routed to Pond MH6 : DMH-6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.12' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 46.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 206.40' S= 0.1000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.05 cfs @ 12.12 hrs HW=214.12' TW=207.44' (Dynamic Tailwater)
↑**1=Culvert** (Passes 2.05 cfs of 6.12 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 2.05 cfs @ 1.11 fps)

Pond CB20: CB-20



Summary for Pond CB21: CB-21

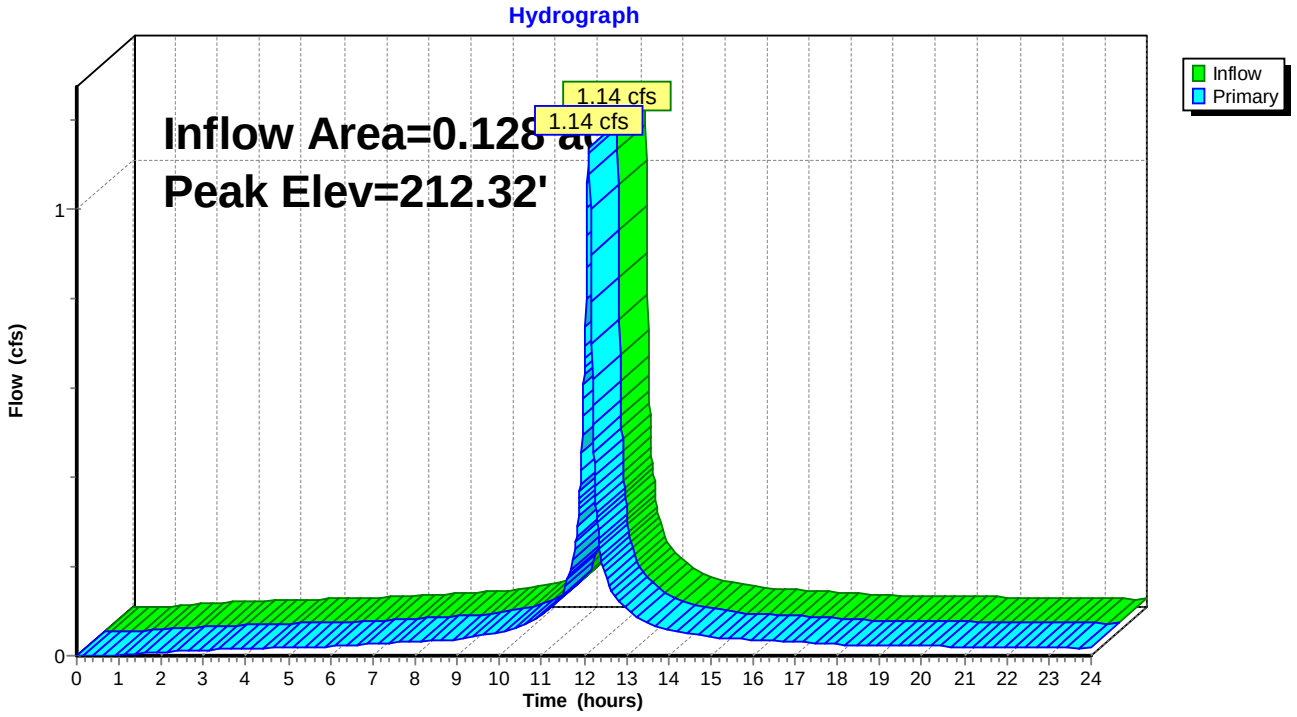
Inflow Area = 0.128 ac, 93.75% Impervious, Inflow Depth > 8.89" for 2070 50-yr event
Inflow = 1.14 cfs @ 12.12 hrs, Volume= 0.095 af
Outflow = 1.14 cfs @ 12.12 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.0 min
Primary = 1.14 cfs @ 12.12 hrs, Volume= 0.095 af
Routed to Pond 3P : Basin 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 212.32' @ 12.12 hrs
Flood Elev= 212.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.20'	**12.0" Round Culvert** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.20' / 209.13' S= 0.0047 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	212.20'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.14 cfs @ 12.12 hrs HW=212.32' TW=207.23' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.14 cfs of 6.13 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.14 cfs @ 1.15 fps)

Pond CB21: CB-21



Summary for Pond CB22: CB-22

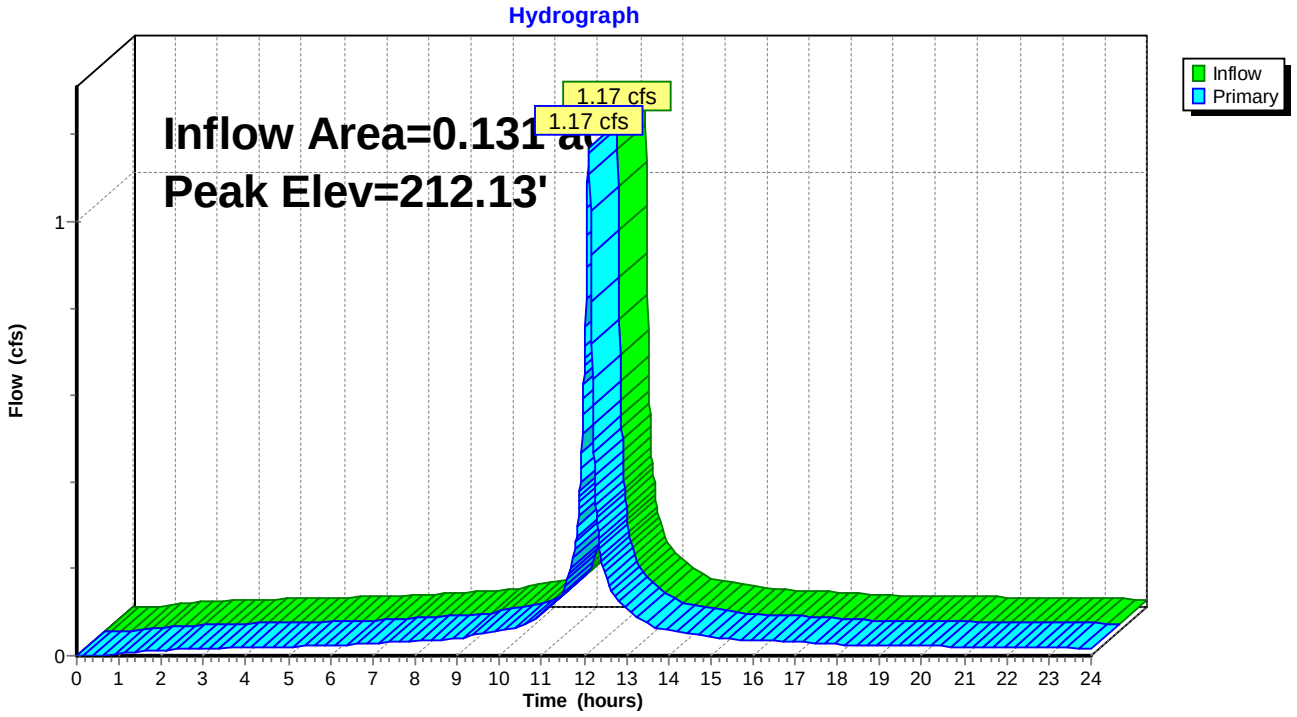
Inflow Area = 0.131 ac, 98.17% Impervious, Inflow Depth > 9.13" for 2070 50-yr event
Inflow = 1.17 cfs @ 12.12 hrs, Volume= 0.100 af
Outflow = 1.17 cfs @ 12.12 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min
Primary = 1.17 cfs @ 12.12 hrs, Volume= 0.100 af
Routed to Pond MH8 : DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 212.13' @ 12.12 hrs
Flood Elev= 212.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.00'	**12.0" Round Culvert** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.00' / 208.72' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	212.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.17 cfs @ 12.12 hrs HW=212.13' TW=209.69' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.17 cfs of 5.44 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.17 cfs @ 1.16 fps)

Pond CB22: CB-22



Summary for Pond CB23: CB-23

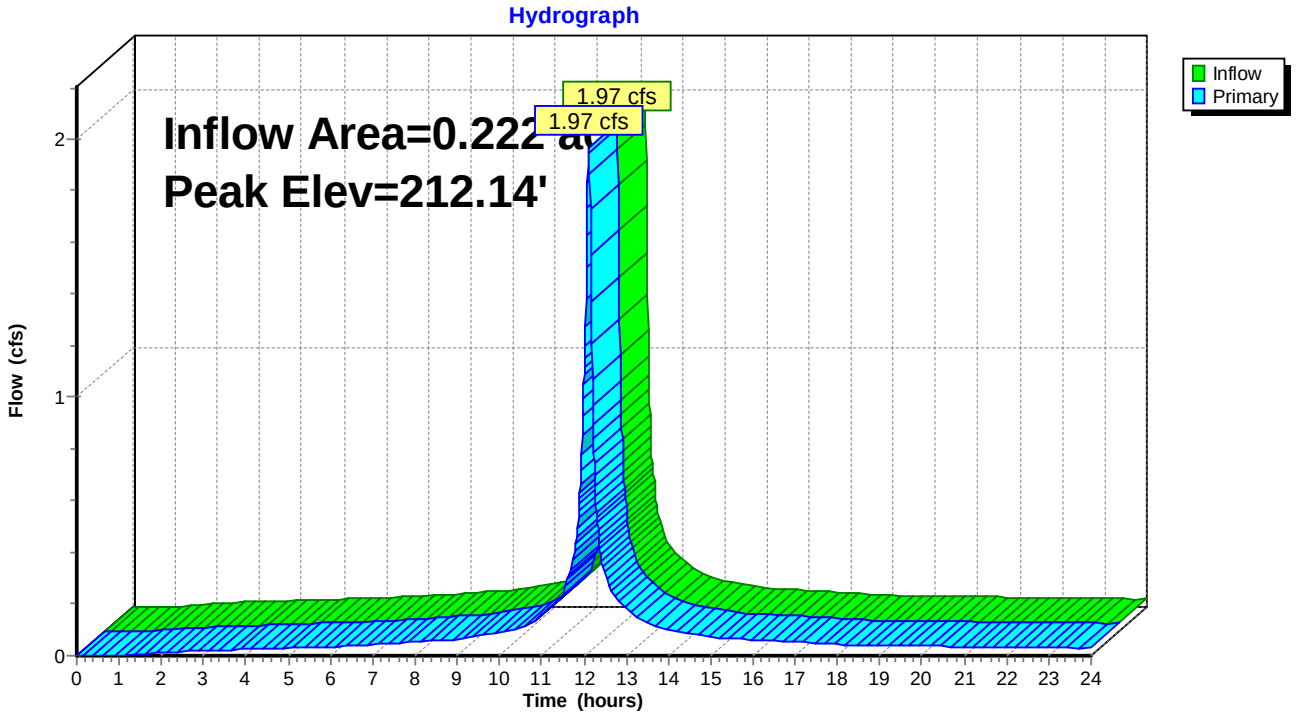
Inflow Area = 0.222 ac, 91.33% Impervious, Inflow Depth > 8.76" for 2070 50-yr event
Inflow = 1.97 cfs @ 12.12 hrs, Volume= 0.162 af
Outflow = 1.97 cfs @ 12.12 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.0 min
Primary = 1.97 cfs @ 12.12 hrs, Volume= 0.162 af
Routed to Pond MH8 : DMH-8

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 212.14' @ 12.12 hrs
Flood Elev= 212.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.00'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.00' / 208.80' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	212.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 1.50** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.97 cfs @ 12.12 hrs HW=212.14' TW=209.69' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.97 cfs of 5.80 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.97 cfs @ 1.81 fps)

Pond CB23: CB-23



Summary for Pond CB24: CB-24

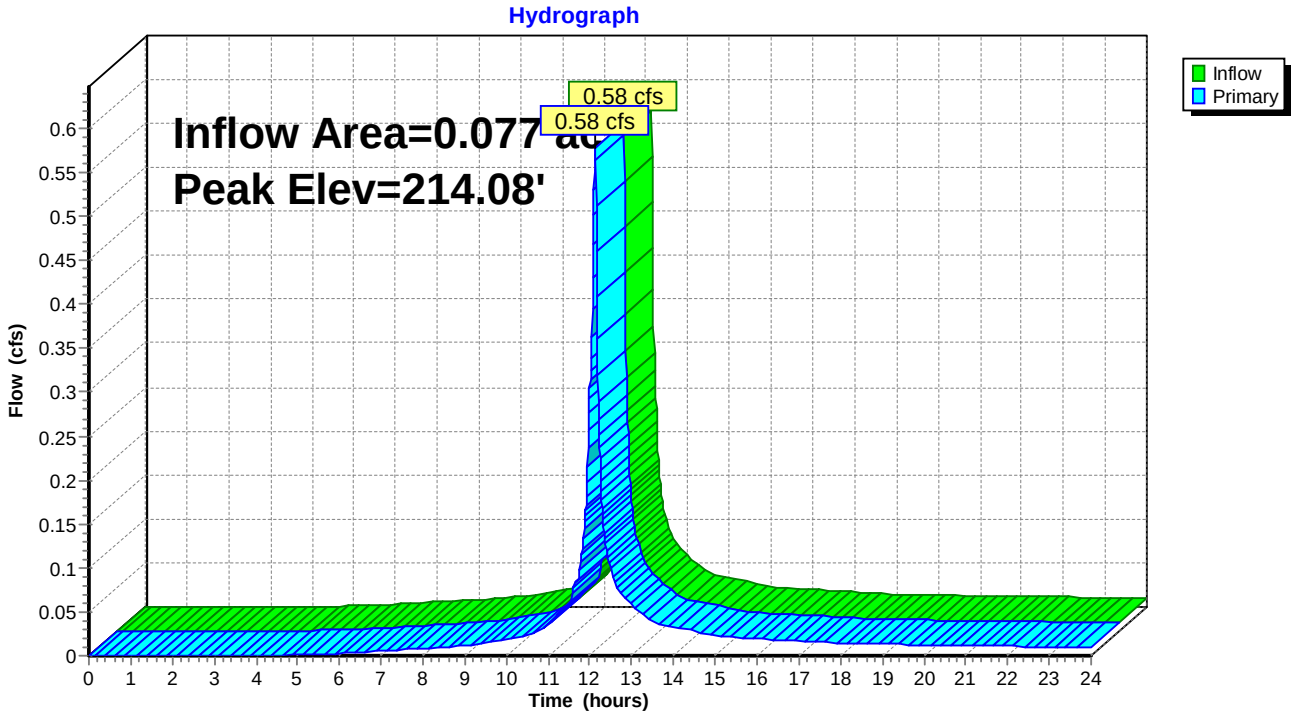
Inflow Area = 0.077 ac, 57.17% Impervious, Inflow Depth > 6.66" for 2070 50-yr event
Inflow = 0.58 cfs @ 12.12 hrs, Volume= 0.043 af
Outflow = 0.58 cfs @ 12.12 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min
Primary = 0.58 cfs @ 12.12 hrs, Volume= 0.043 af
Routed to Pond MH9 : CB-31

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.08' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 210.86' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.58 cfs @ 12.12 hrs HW=214.08' TW=209.08' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.58 cfs of 6.07 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.58 cfs @ 0.92 fps)

Pond CB24: CB-24



Summary for Pond CB25: CB-25

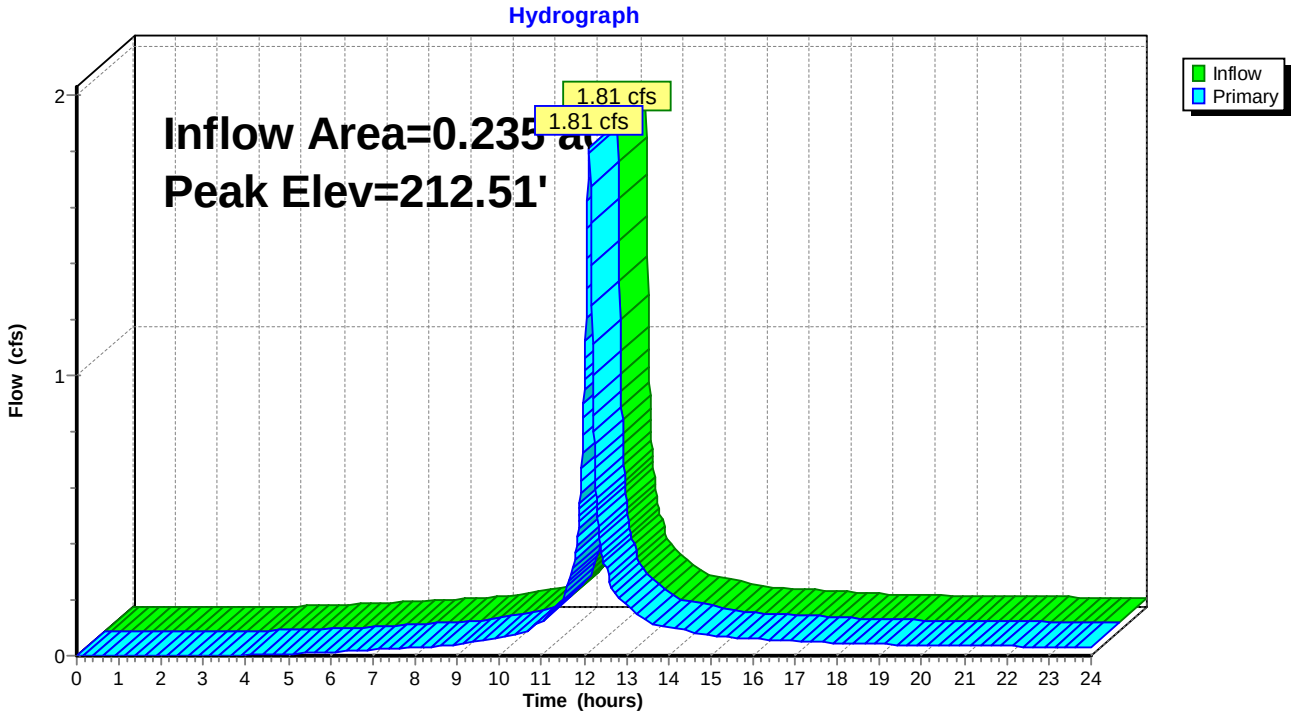
Inflow Area = 0.235 ac, 63.96% Impervious, Inflow Depth > 7.03" for 2070 50-yr event
Inflow = 1.81 cfs @ 12.13 hrs, Volume= 0.138 af
Outflow = 1.81 cfs @ 12.13 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min
Primary = 1.81 cfs @ 12.13 hrs, Volume= 0.138 af
Routed to Pond MH10 : CB-31

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 212.51' @ 12.13 hrs
Flood Elev= 212.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.40'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.40' / 209.30' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	212.40'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.81 cfs @ 12.13 hrs HW=212.51' TW=208.31' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.81 cfs of 6.10 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.81 cfs @ 1.06 fps)

Pond CB25: CB-25



Summary for Pond CB26: CB-26

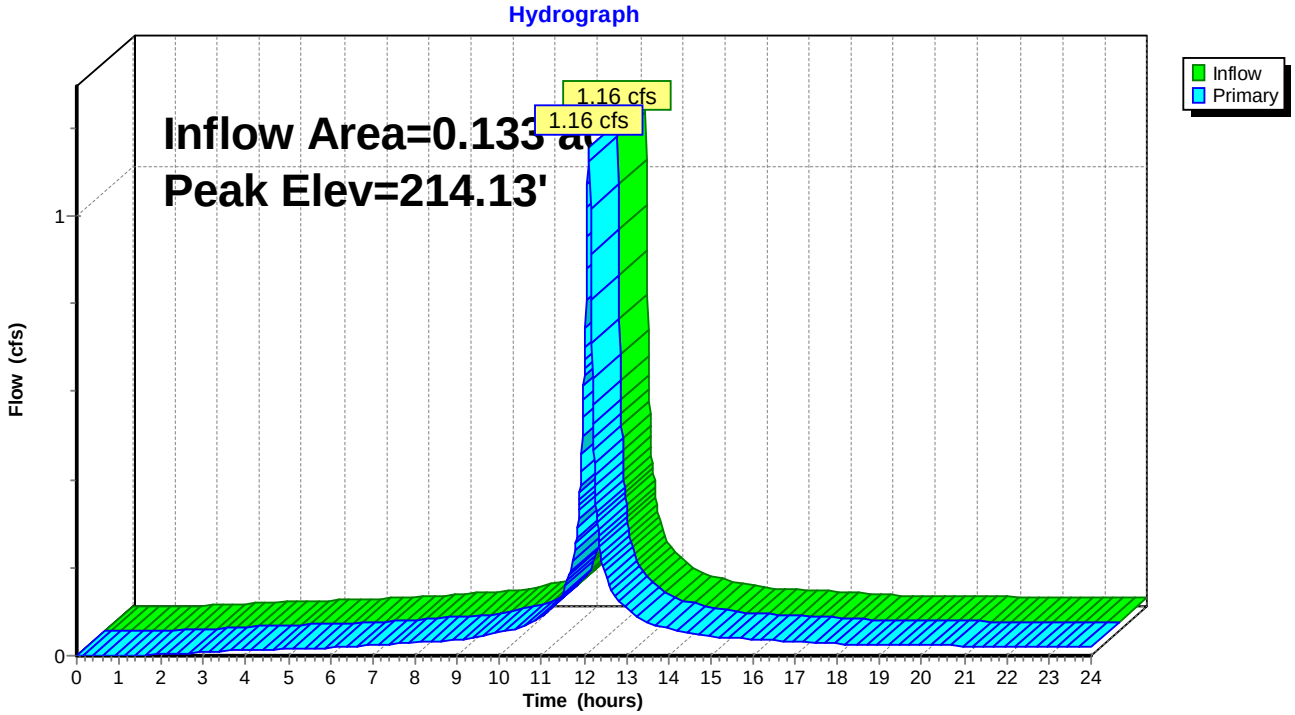
Inflow Area = 0.133 ac, 85.28% Impervious, Inflow Depth > 8.40" for 2070 50-yr event
Inflow = 1.16 cfs @ 12.12 hrs, Volume= 0.093 af
Outflow = 1.16 cfs @ 12.12 hrs, Volume= 0.093 af, Atten= 0%, Lag= 0.0 min
Primary = 1.16 cfs @ 12.12 hrs, Volume= 0.093 af
Routed to Pond MH12 : DMH-12

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.13' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 118.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 210.41' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.16 cfs @ 12.12 hrs HW=214.13' TW=211.38' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.16 cfs of 4.55 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 1.16 cfs @ 1.16 fps)

Pond CB26: CB-26



Summary for Pond CB27: CB-27

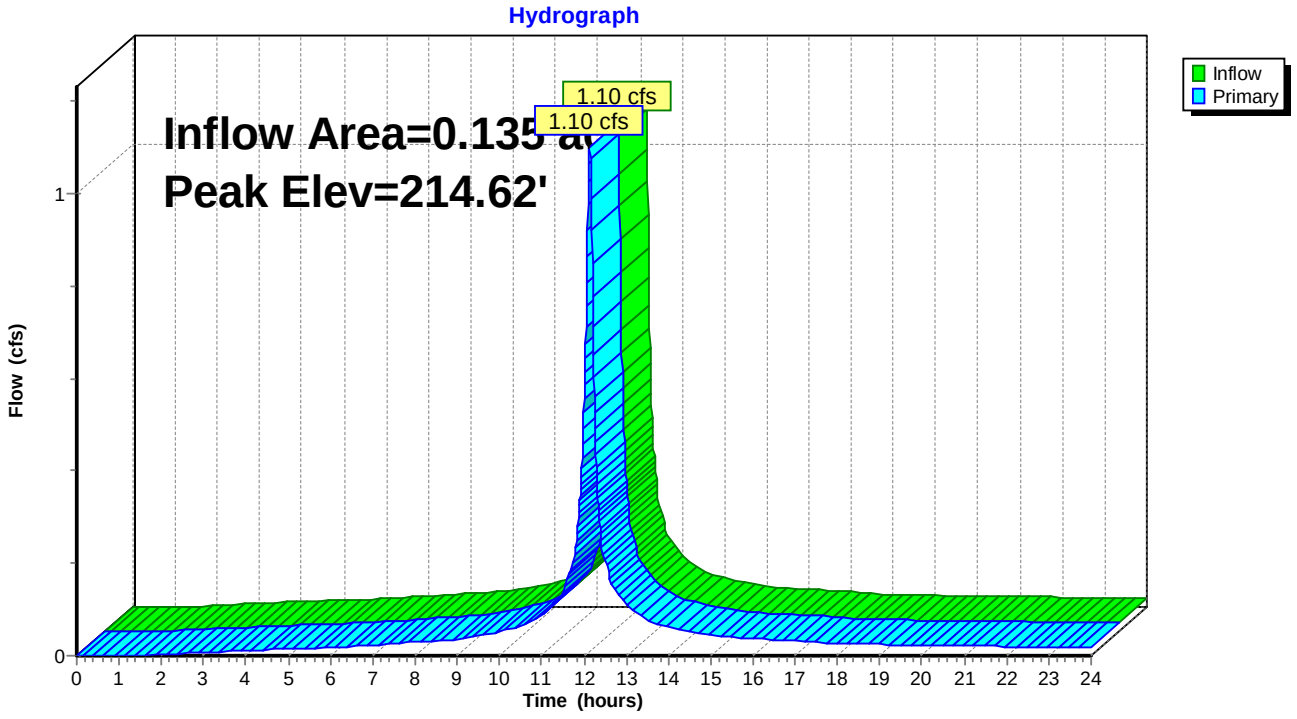
Inflow Area = 0.135 ac, 84.95% Impervious, Inflow Depth > 8.39" for 2070 50-yr event
Inflow = 1.10 cfs @ 12.14 hrs, Volume= 0.094 af
Outflow = 1.10 cfs @ 12.14 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min
Primary = 1.10 cfs @ 12.14 hrs, Volume= 0.094 af
Routed to Pond MH12 : DMH-12

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.62' @ 12.14 hrs
Flood Elev= 214.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.50'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.50' / 211.41' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.10 cfs @ 12.14 hrs HW=214.62' TW=211.38' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.10 cfs of 6.12 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.10 cfs @ 1.14 fps)

Pond CB27: CB-27



Summary for Pond CB28: CB-28

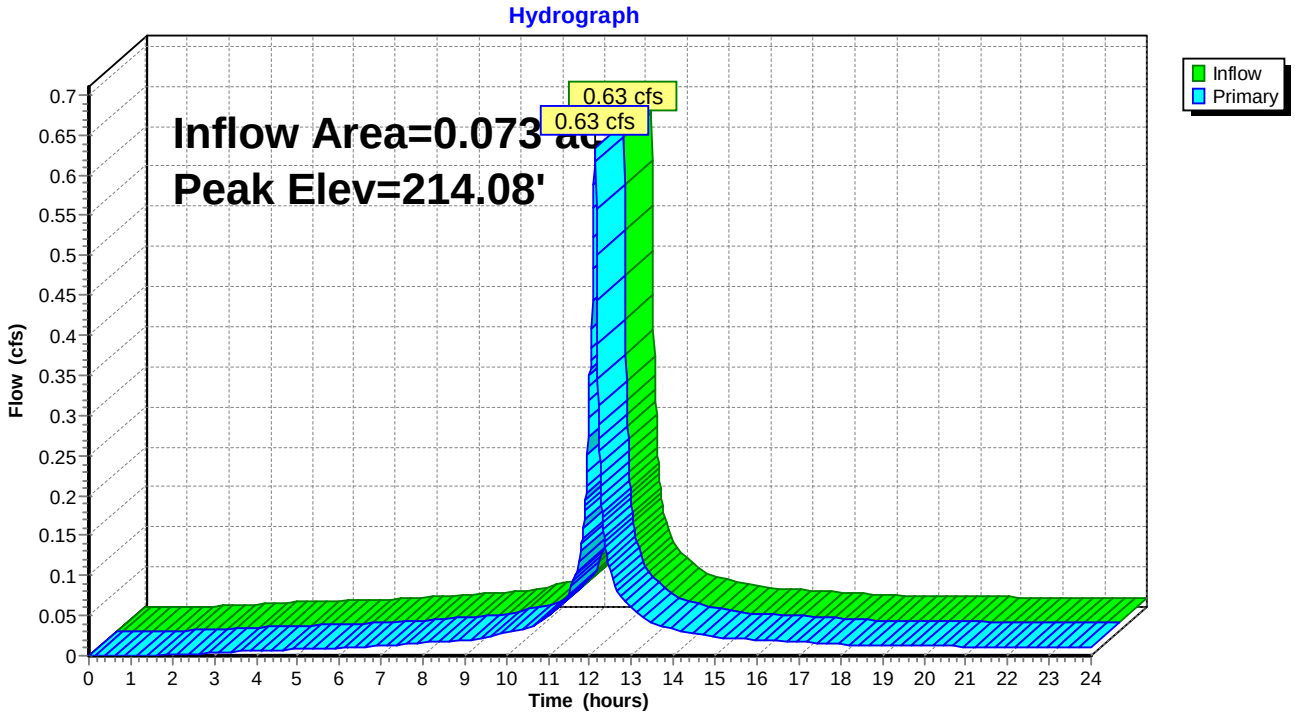
Inflow Area = 0.073 ac, 85.31% Impervious, Inflow Depth > 8.40" for 2070 50-yr event
Inflow = 0.63 cfs @ 12.12 hrs, Volume= 0.051 af
Outflow = 0.63 cfs @ 12.12 hrs, Volume= 0.051 af, Atten= 0%, Lag= 0.0 min
Primary = 0.63 cfs @ 12.12 hrs, Volume= 0.051 af
Routed to Pond MH12 : DMH-12

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.08' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 210.78' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.63 cfs @ 12.12 hrs HW=214.08' TW=211.38' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.63 cfs of 5.61 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.63 cfs @ 0.95 fps)

Pond CB28: CB-28



Summary for Pond CB29: CB-29

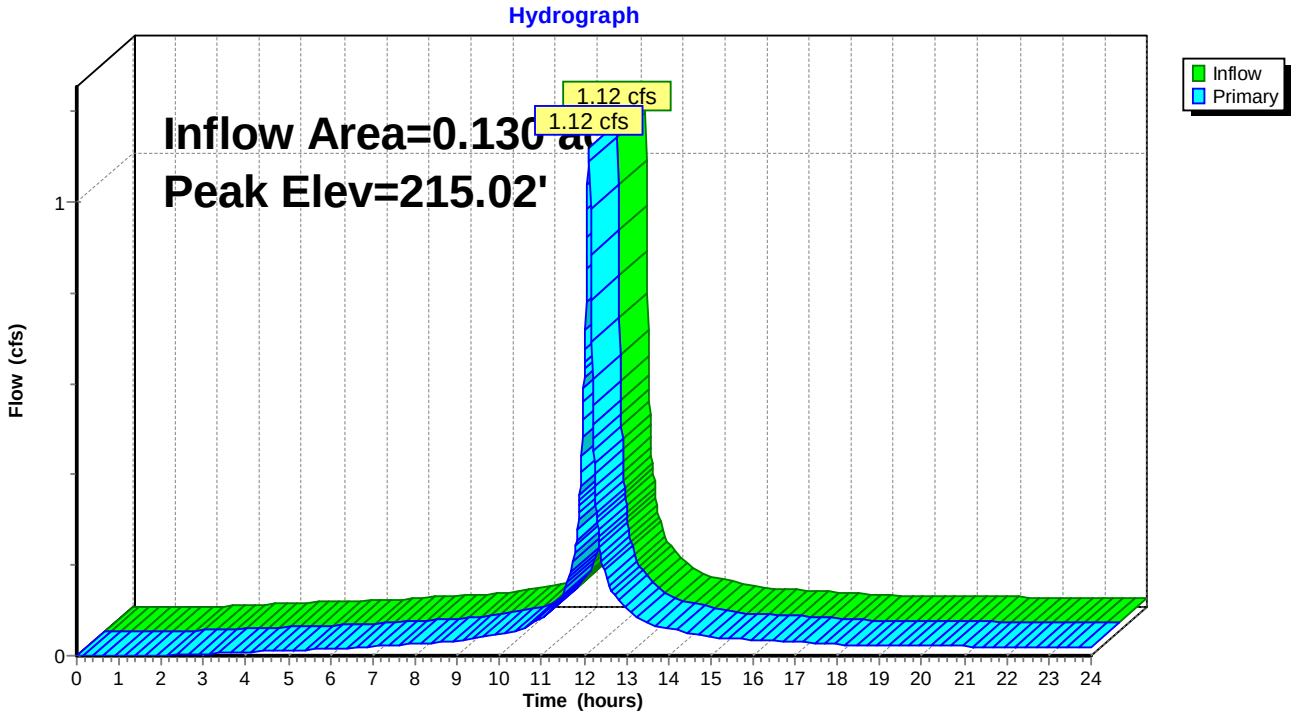
Inflow Area = 0.130 ac, 81.04% Impervious, Inflow Depth > 8.15" for 2070 50-yr event
Inflow = 1.12 cfs @ 12.12 hrs, Volume= 0.089 af
Outflow = 1.12 cfs @ 12.12 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.0 min
Primary = 1.12 cfs @ 12.12 hrs, Volume= 0.089 af
Routed to Pond MH13 : DMH-13

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.02' @ 12.12 hrs
Flood Elev= 215.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.90'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.90' / 211.80' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.90'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.12 cfs @ 12.12 hrs HW=215.02' TW=210.95' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.12 cfs of 6.12 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.12 cfs @ 1.14 fps)

Pond CB29: CB-29



Summary for Pond CB3: CB-3

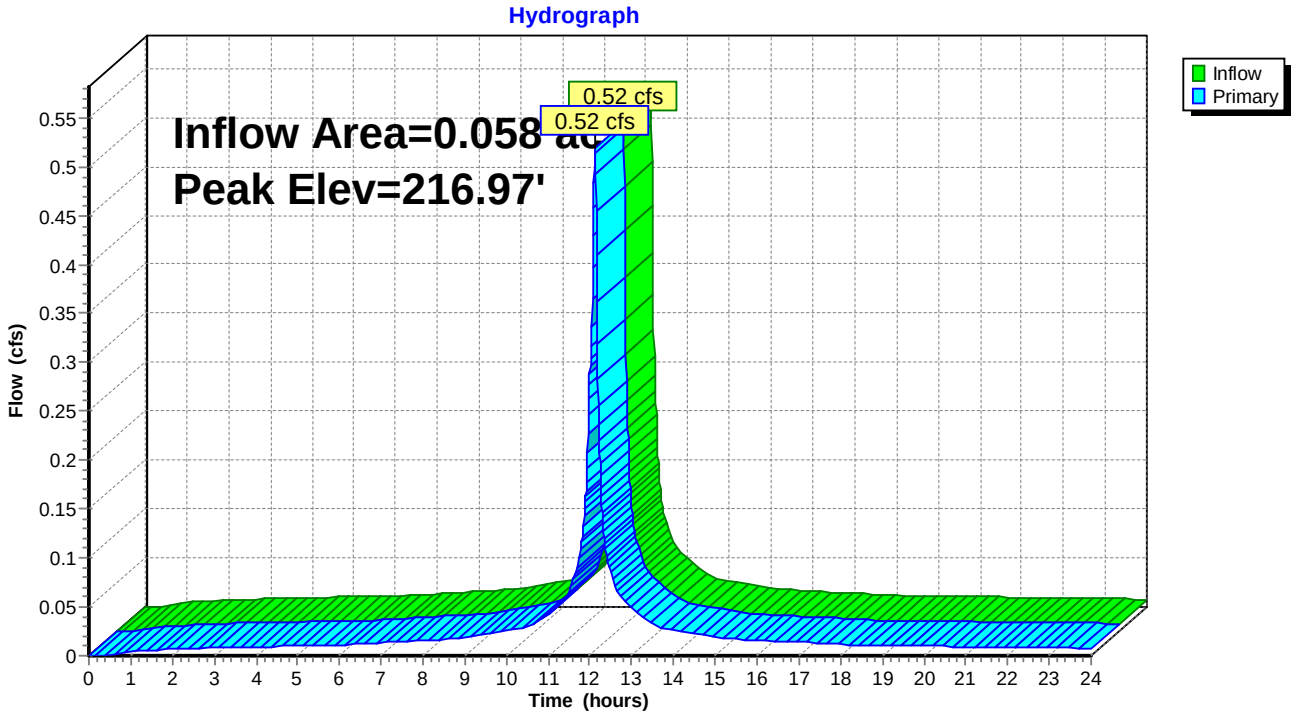
Inflow Area = 0.058 ac, 99.84% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 0.52 cfs @ 12.12 hrs, Volume= 0.045 af
Outflow = 0.52 cfs @ 12.12 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.12 hrs, Volume= 0.045 af
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 216.97' @ 12.12 hrs
Flood Elev= 217.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 213.85' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	216.90'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.52 cfs @ 12.12 hrs HW=216.97' TW=214.17' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.52 cfs of 5.95 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.52 cfs @ 0.89 fps)

Pond CB3: CB-3



Summary for Pond CB30: CB-30

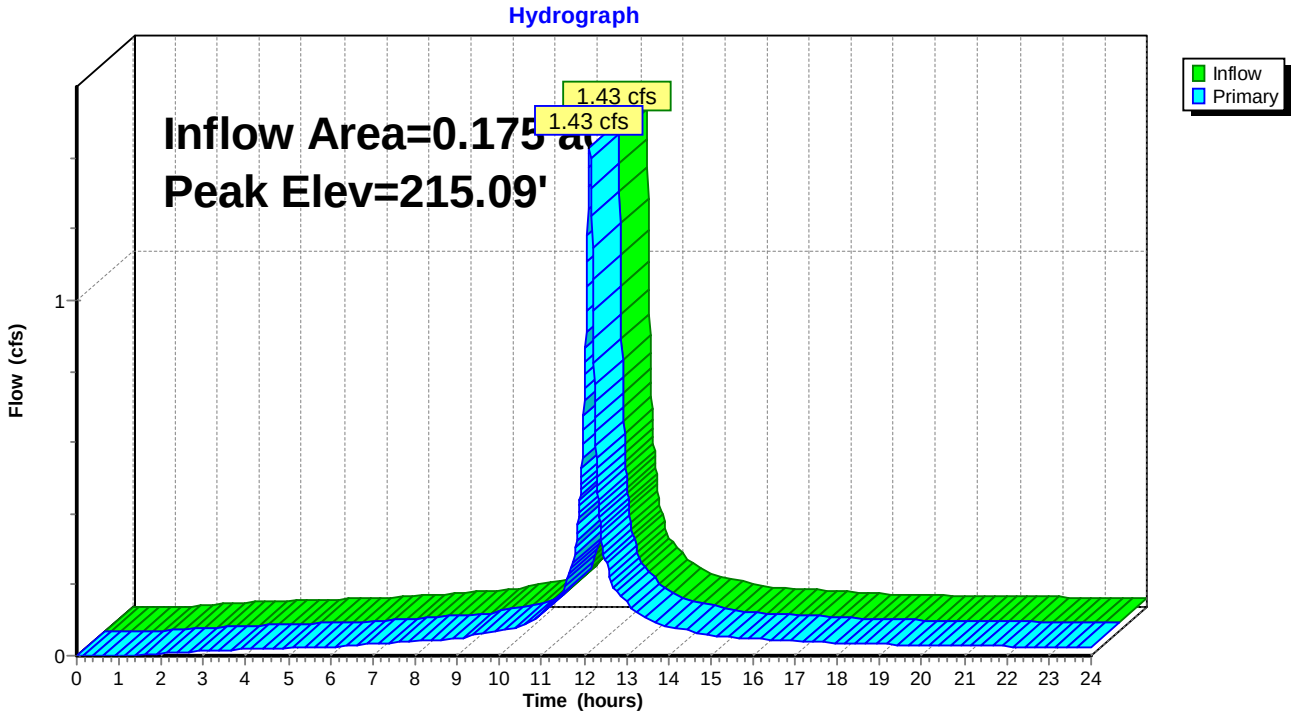
Inflow Area = 0.175 ac, 89.34% Impervious, Inflow Depth > 8.64" for 2070 50-yr event
Inflow = 1.43 cfs @ 12.14 hrs, Volume= 0.126 af
Outflow = 1.43 cfs @ 12.14 hrs, Volume= 0.126 af, Atten= 0%, Lag= 0.0 min
Primary = 1.43 cfs @ 12.14 hrs, Volume= 0.126 af
Routed to Pond MH14 : DMH-14

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.09' @ 12.14 hrs
Flood Elev= 215.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.00'	**12.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.00' / 211.70' S= 0.0083 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.43 cfs @ 12.14 hrs HW=215.09' TW=210.43' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.43 cfs of 6.01 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.43 cfs @ 0.98 fps)

Pond CB30: CB-30



Summary for Pond CB31: CB-31

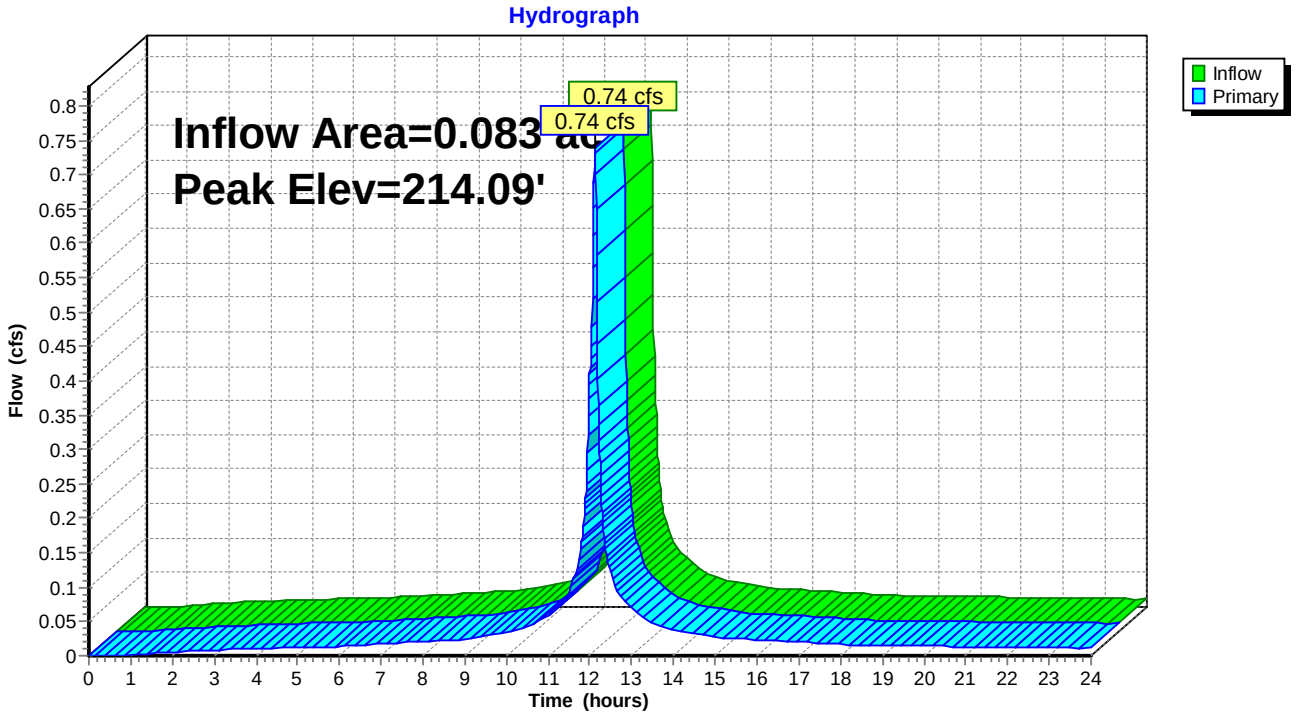
Inflow Area = 0.083 ac, 93.15% Impervious, Inflow Depth > 8.89" for 2070 50-yr event
Inflow = 0.74 cfs @ 12.12 hrs, Volume= 0.062 af
Outflow = 0.74 cfs @ 12.12 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min
Primary = 0.74 cfs @ 12.12 hrs, Volume= 0.062 af
Routed to Pond MH14 : DMH-14

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.09' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 210.82' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.74 cfs @ 12.12 hrs HW=214.09' TW=210.41' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.74 cfs of 5.89 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.74 cfs @ 1.00 fps)

Pond CB31: CB-31



Summary for Pond CB32: CB-32

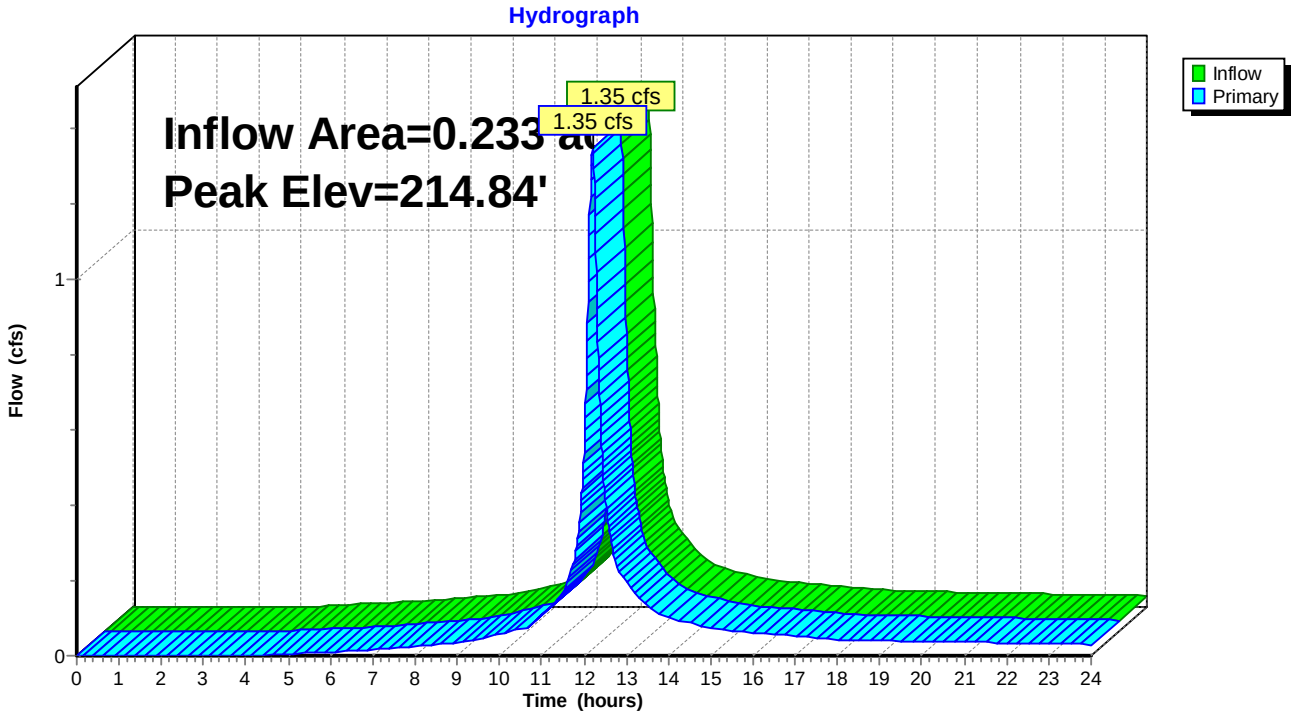
Inflow Area = 0.233 ac, 58.61% Impervious, Inflow Depth > 6.77" for 2070 50-yr event
Inflow = 1.35 cfs @ 12.20 hrs, Volume= 0.131 af
Outflow = 1.35 cfs @ 12.20 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min
Primary = 1.35 cfs @ 12.20 hrs, Volume= 0.131 af
Routed to Pond MH16 : DMH-16

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.84' @ 12.20 hrs
Flood Elev= 214.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.70'	**12.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.70' / 211.00' S= 0.0259 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.70'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.35 cfs @ 12.20 hrs HW=214.84' TW=208.75' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.35 cfs of 6.14 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.35 cfs @ 1.22 fps)

Pond CB32: CB-32



Summary for Pond CB33: CB-33

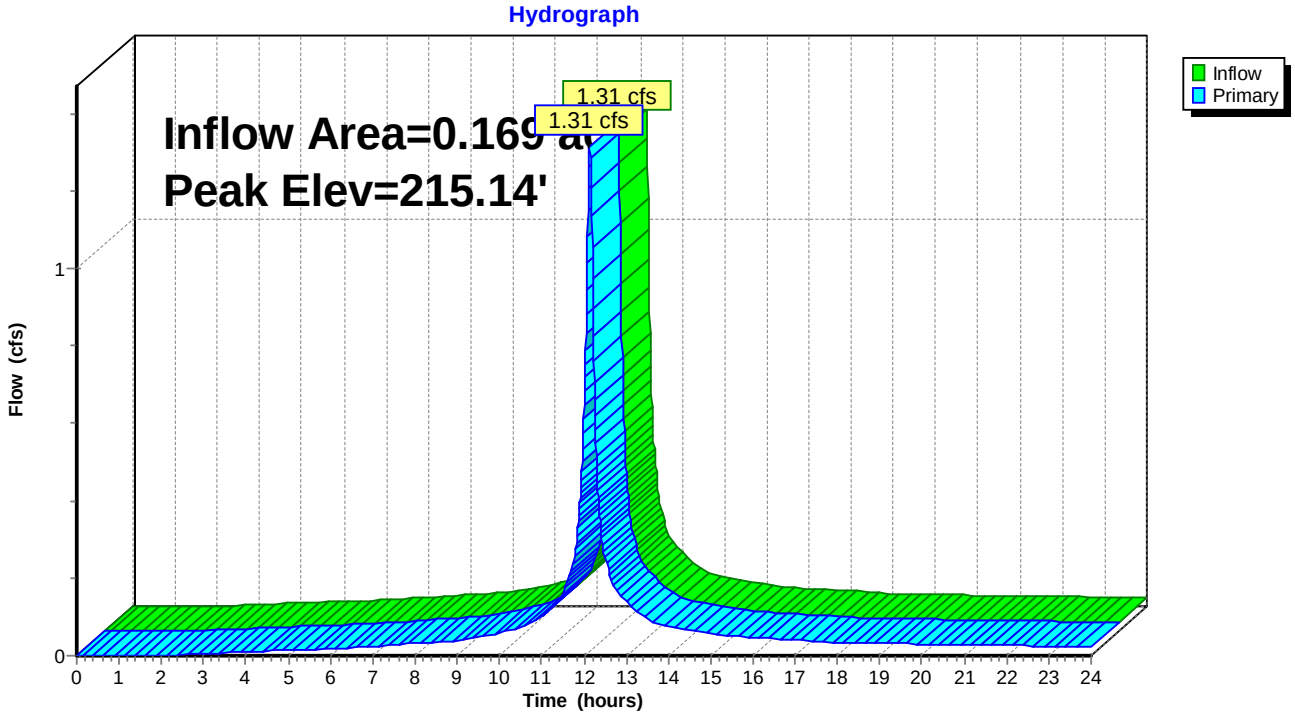
Inflow Area = 0.169 ac, 77.95% Impervious, Inflow Depth > 7.90" for 2070 50-yr event
Inflow = 1.31 cfs @ 12.14 hrs, Volume= 0.111 af
Outflow = 1.31 cfs @ 12.14 hrs, Volume= 0.111 af, Atten= 0%, Lag= 0.0 min
Primary = 1.31 cfs @ 12.14 hrs, Volume= 0.111 af
Routed to Pond MH17 : DMH-17

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.14' @ 12.14 hrs
Flood Elev= 215.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.00'	**12.0" Round Culvert** L= 104.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.00' / 209.70' S= 0.0221 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.31 cfs @ 12.14 hrs HW=215.14' TW=208.20' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.31 cfs of 6.08 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 1.31 cfs @ 1.21 fps)

Pond CB33: CB-33



Summary for Pond CB34: CB-34

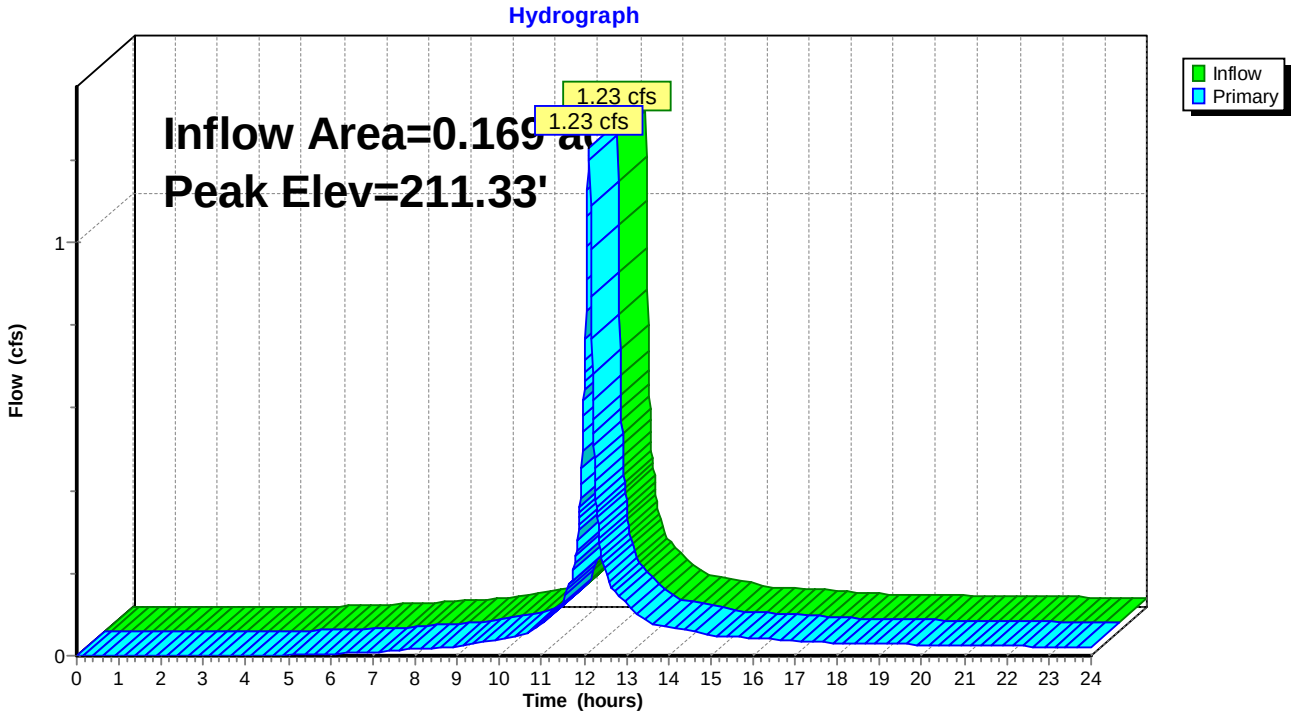
Inflow Area = 0.169 ac, 54.04% Impervious, Inflow Depth > 6.40" for 2070 50-yr event
Inflow = 1.23 cfs @ 12.12 hrs, Volume= 0.090 af
Outflow = 1.23 cfs @ 12.12 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min
Primary = 1.23 cfs @ 12.12 hrs, Volume= 0.090 af
Routed to Pond MH18 : DMH-18

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 211.33' @ 12.12 hrs
Flood Elev= 211.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	208.20'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.20' / 206.60' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	211.20'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.23 cfs @ 12.12 hrs HW=211.33' TW=207.07' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.23 cfs of 6.13 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.23 cfs @ 1.18 fps)

Pond CB34: CB-34



Summary for Pond CB35: CB-35

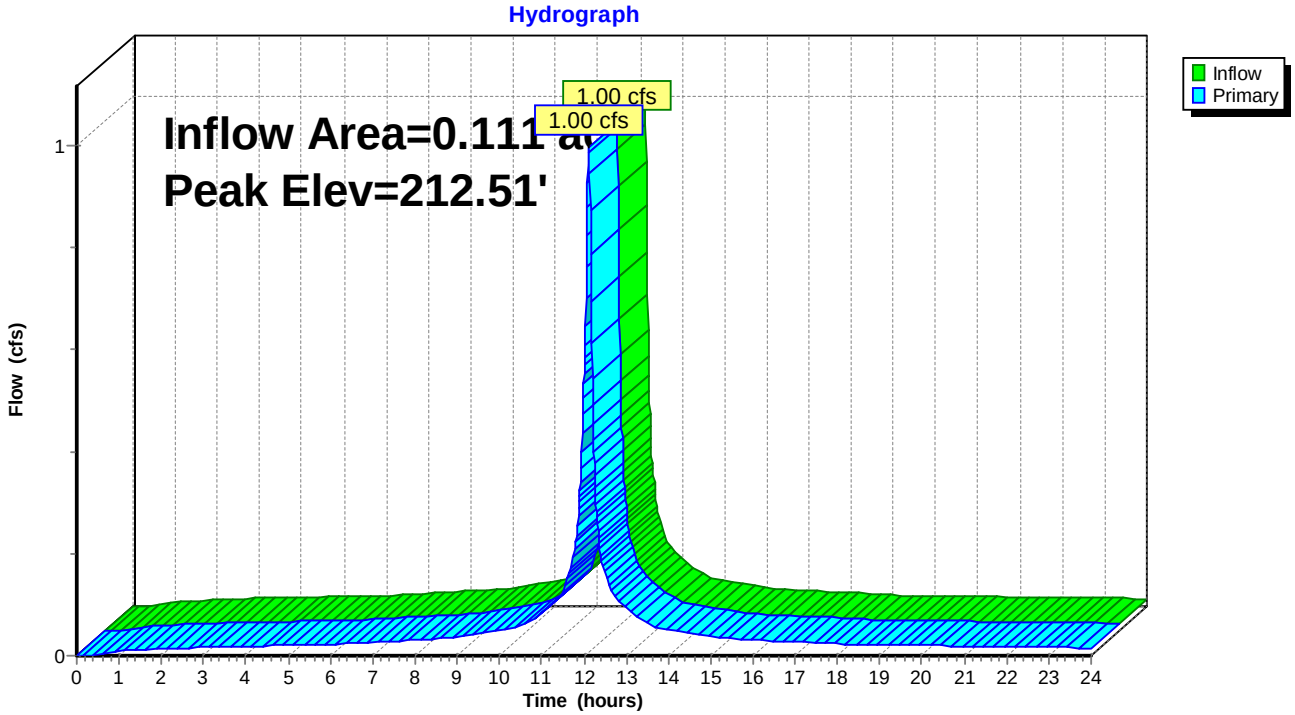
Inflow Area = 0.111 ac, 99.72% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 1.00 cfs @ 12.12 hrs, Volume= 0.086 af
Outflow = 1.00 cfs @ 12.12 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min
Primary = 1.00 cfs @ 12.12 hrs, Volume= 0.086 af
Routed to Pond MH18 : DMH-18

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 212.51' @ 12.12 hrs
Flood Elev= 212.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.40'	**12.0" Round Culvert** L= 157.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.40' / 206.60' S= 0.0178 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	212.40'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.00 cfs @ 12.12 hrs HW=212.51' TW=207.06' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.00 cfs of 5.51 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 1.00 cfs @ 1.10 fps)

Pond CB35: CB-35



Summary for Pond CB36: CB-36

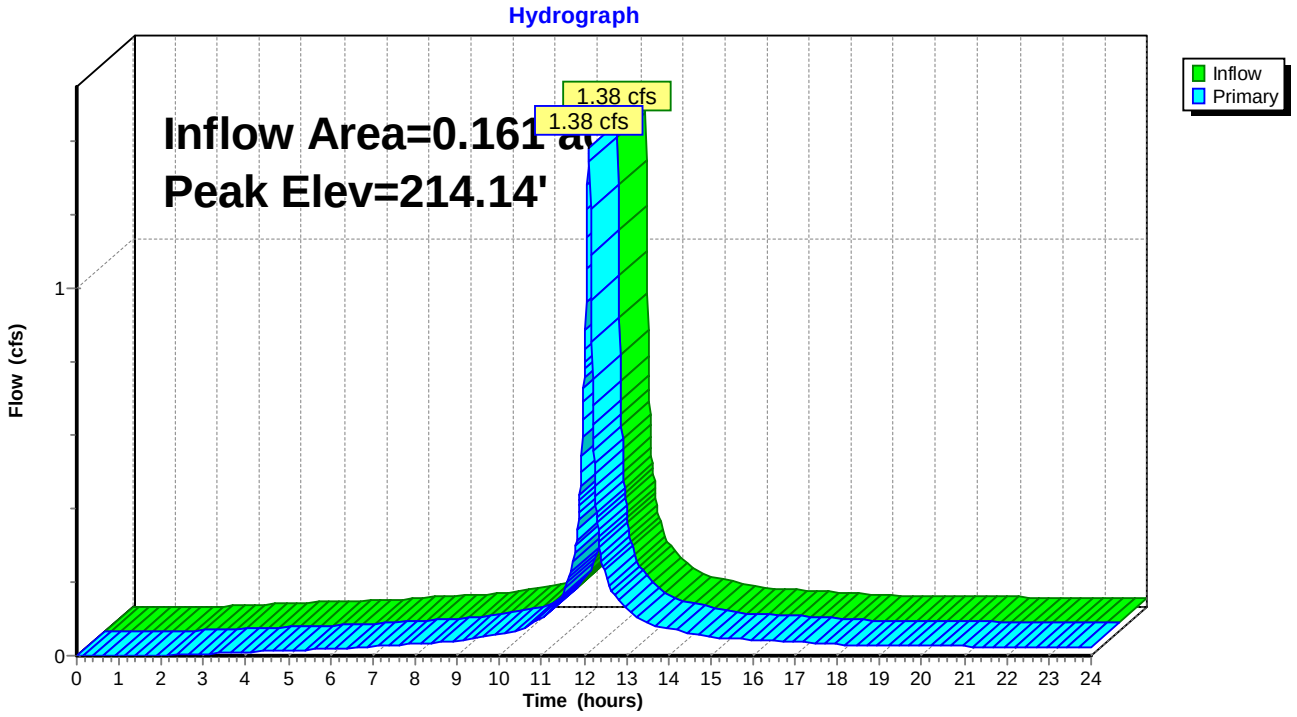
Inflow Area = 0.161 ac, 81.27% Impervious, Inflow Depth > 8.15" for 2070 50-yr event
Inflow = 1.38 cfs @ 12.12 hrs, Volume= 0.110 af
Outflow = 1.38 cfs @ 12.12 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min
Primary = 1.38 cfs @ 12.12 hrs, Volume= 0.110 af
Routed to Pond MH18 : DMH-18

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.14' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.00'	**12.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.00' / 206.60' S= 0.0564 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.38 cfs @ 12.12 hrs HW=214.14' TW=207.06' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.38 cfs of 6.15 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.38 cfs @ 1.23 fps)

Pond CB36: CB-36



Summary for Pond CB37: CB-37

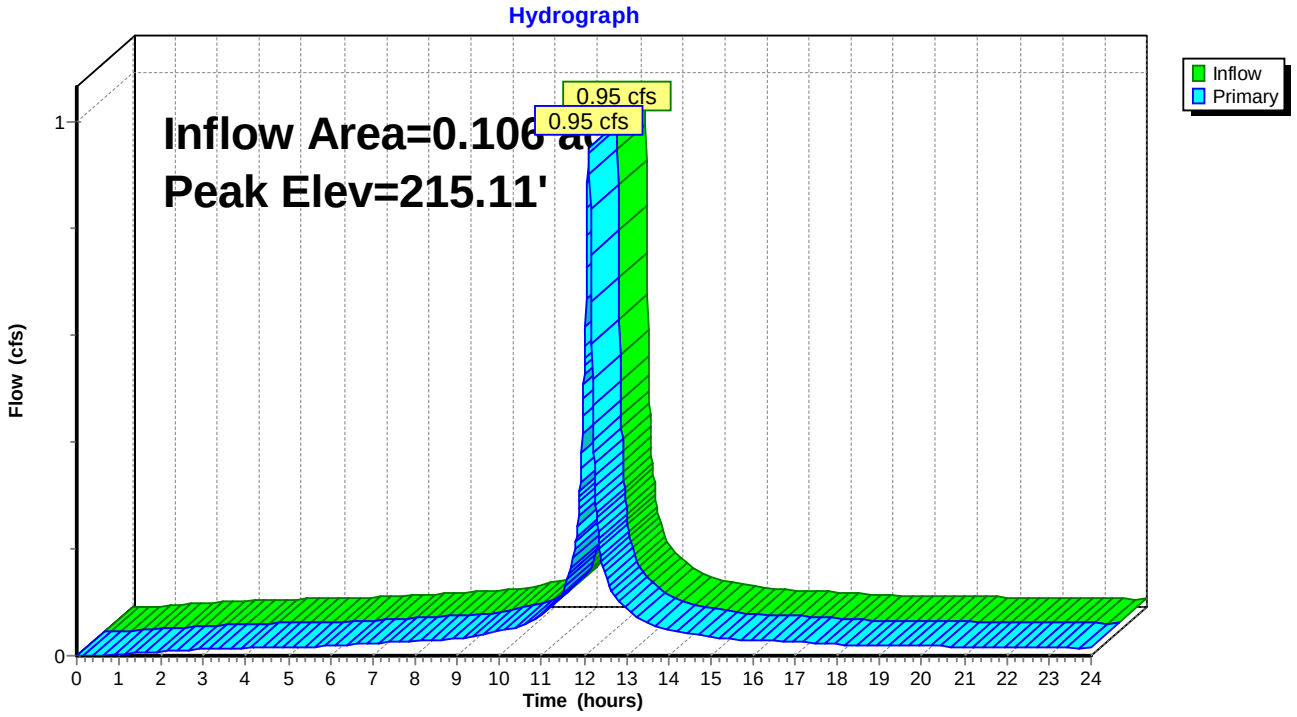
Inflow Area = 0.106 ac, 96.02% Impervious, Inflow Depth > 9.01" for 2070 50-yr event
Inflow = 0.95 cfs @ 12.12 hrs, Volume= 0.080 af
Outflow = 0.95 cfs @ 12.12 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min
Primary = 0.95 cfs @ 12.12 hrs, Volume= 0.080 af
Routed to Pond MH19 : DMH-19

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.11' @ 12.12 hrs
Flood Elev= 215.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.00'	**12.0" Round Culvert** L= 56.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.00' / 204.80' S= 0.1286 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.95 cfs @ 12.12 hrs HW=215.11' TW=204.92' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.95 cfs of 6.11 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.95 cfs @ 1.08 fps)

Pond CB37: CB-37



Summary for Pond CB38: CB-38

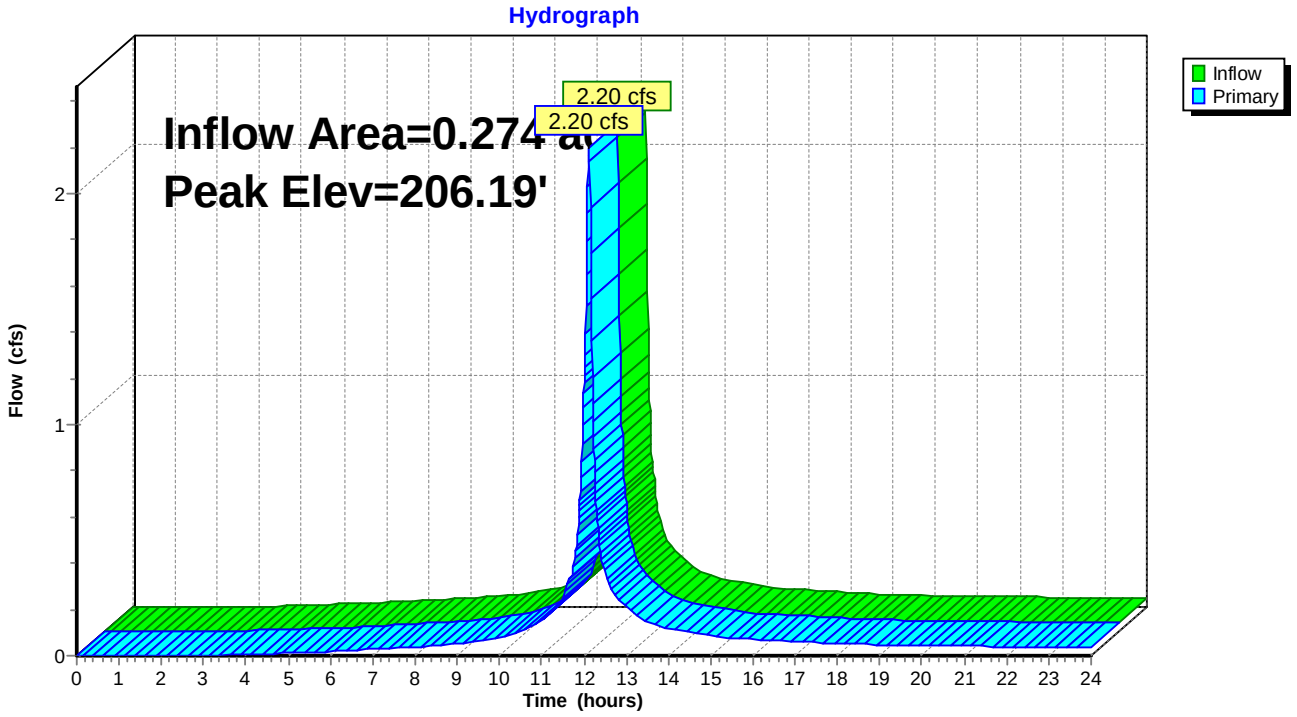
Inflow Area = 0.274 ac, 66.76% Impervious, Inflow Depth > 7.28" for 2070 50-yr event
Inflow = 2.20 cfs @ 12.12 hrs, Volume= 0.166 af
Outflow = 2.20 cfs @ 12.12 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min
Primary = 2.20 cfs @ 12.12 hrs, Volume= 0.166 af
Routed to Pond 5P : Basin 5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.19' @ 12.12 hrs
Flood Elev= 206.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	203.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 203.00' / 202.95' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	206.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.19 cfs @ 12.12 hrs HW=206.19' TW=202.22' (Dynamic Tailwater)
↑**1=Culvert** (Passes 2.19 cfs of 6.20 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 2.19 cfs @ 1.43 fps)

Pond CB38: CB-38



Summary for Pond CB39: CB-39

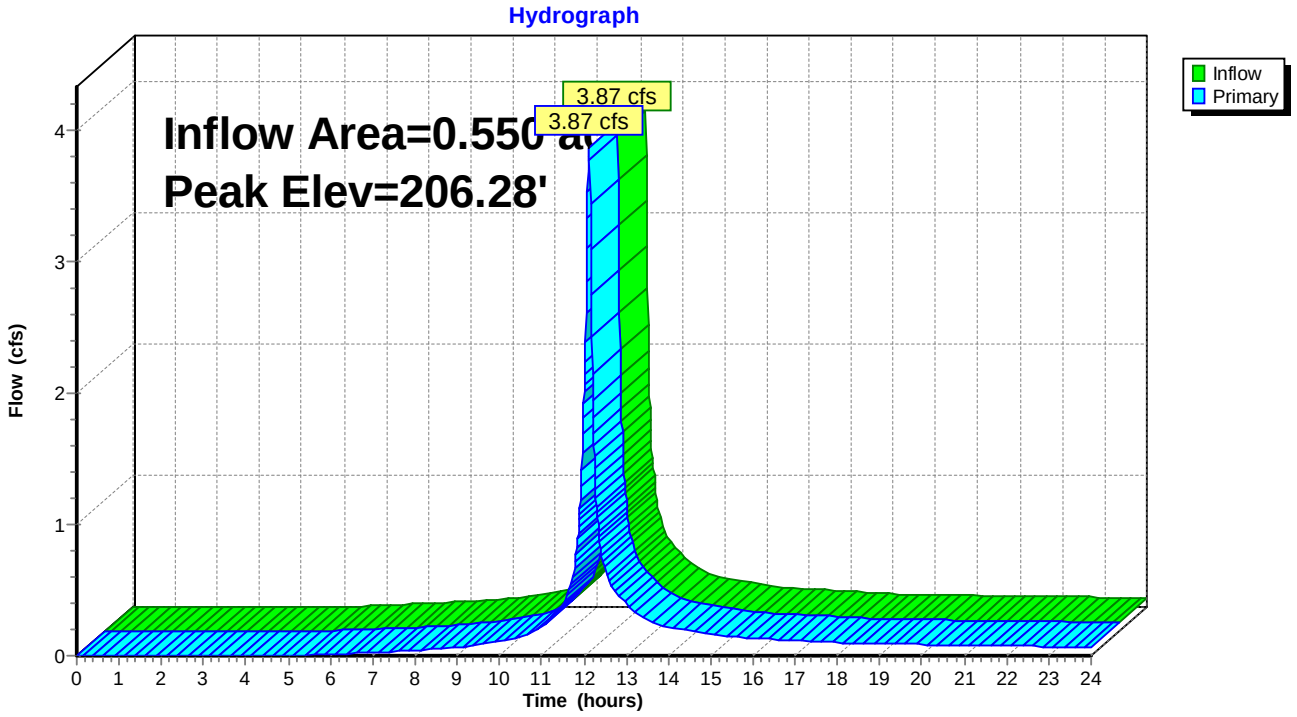
Inflow Area = 0.550 ac, 25.10% Impervious, Inflow Depth > 6.15" for 2070 50-yr event
Inflow = 3.87 cfs @ 12.12 hrs, Volume= 0.282 af
Outflow = 3.87 cfs @ 12.12 hrs, Volume= 0.282 af, Atten= 0%, Lag= 0.0 min
Primary = 3.87 cfs @ 12.12 hrs, Volume= 0.282 af
Routed to Pond 5P : Basin 5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.28' @ 12.12 hrs
Flood Elev= 206.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	203.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 203.00' / 202.95' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	206.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.86 cfs @ 12.12 hrs HW=206.28' TW=202.23' (Dynamic Tailwater)
↑**1=Culvert** (Passes 3.86 cfs of 6.30 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 3.86 cfs @ 1.73 fps)

Pond CB39: CB-39



Summary for Pond CB4: CB-4

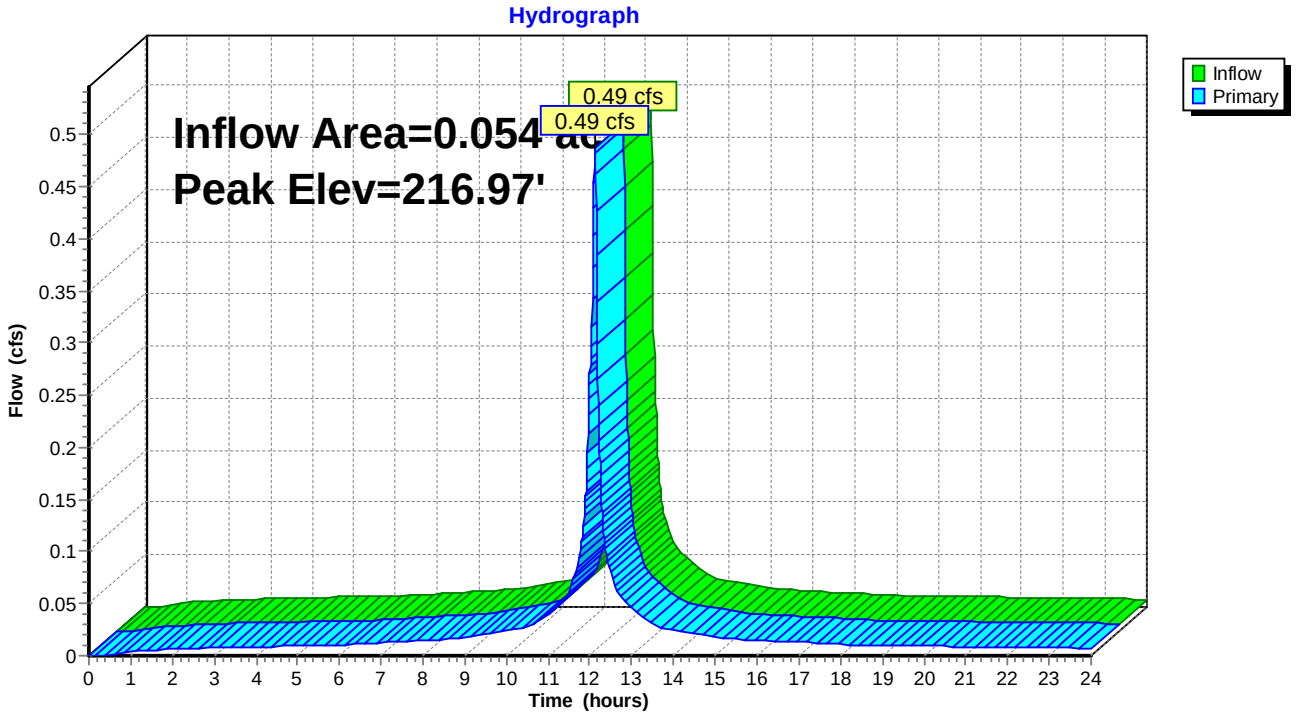
Inflow Area = 0.054 ac, 99.85% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 0.49 cfs @ 12.12 hrs, Volume= 0.042 af
Outflow = 0.49 cfs @ 12.12 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min
Primary = 0.49 cfs @ 12.12 hrs, Volume= 0.042 af
Routed to Pond MH1 : DMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 216.97' @ 12.12 hrs
Flood Elev= 217.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 213.85' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	216.90'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.49 cfs @ 12.12 hrs HW=216.97' TW=214.17' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.49 cfs of 5.94 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.49 cfs @ 0.87 fps)

Pond CB4: CB-4



Summary for Pond CB40: CB-40

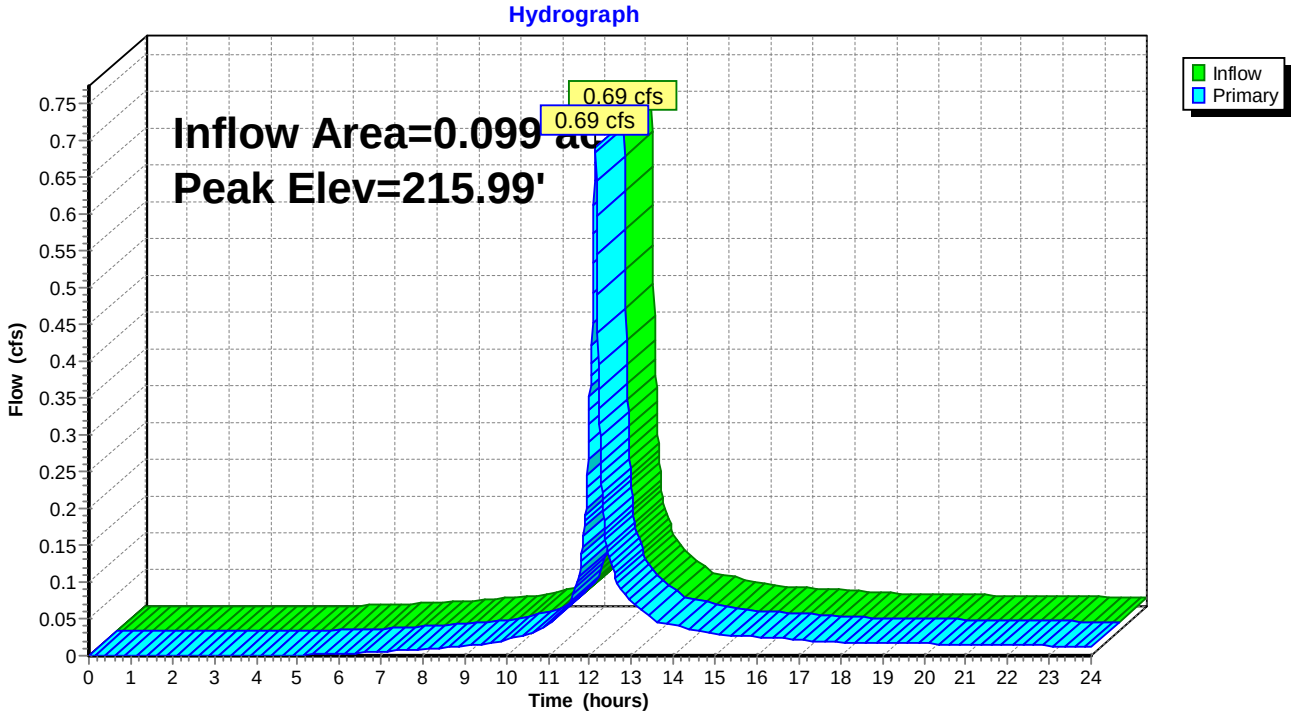
Inflow Area = 0.099 ac, 51.34% Impervious, Inflow Depth > 6.28" for 2070 50-yr event
Inflow = 0.69 cfs @ 12.13 hrs, Volume= 0.052 af
Outflow = 0.69 cfs @ 12.13 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.0 min
Primary = 0.69 cfs @ 12.13 hrs, Volume= 0.052 af
Routed to Pond MH20 : DMH-20

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.99' @ 12.13 hrs
Flood Elev= 216.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.90'	**12.0" Round Culvert** L= 139.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.90' / 212.21' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.90'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.69 cfs @ 12.13 hrs HW=215.99' TW=212.77' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.69 cfs of 4.34 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.69 cfs @ 0.97 fps)

Pond CB40: CB-40



Summary for Pond CB41: CB-41

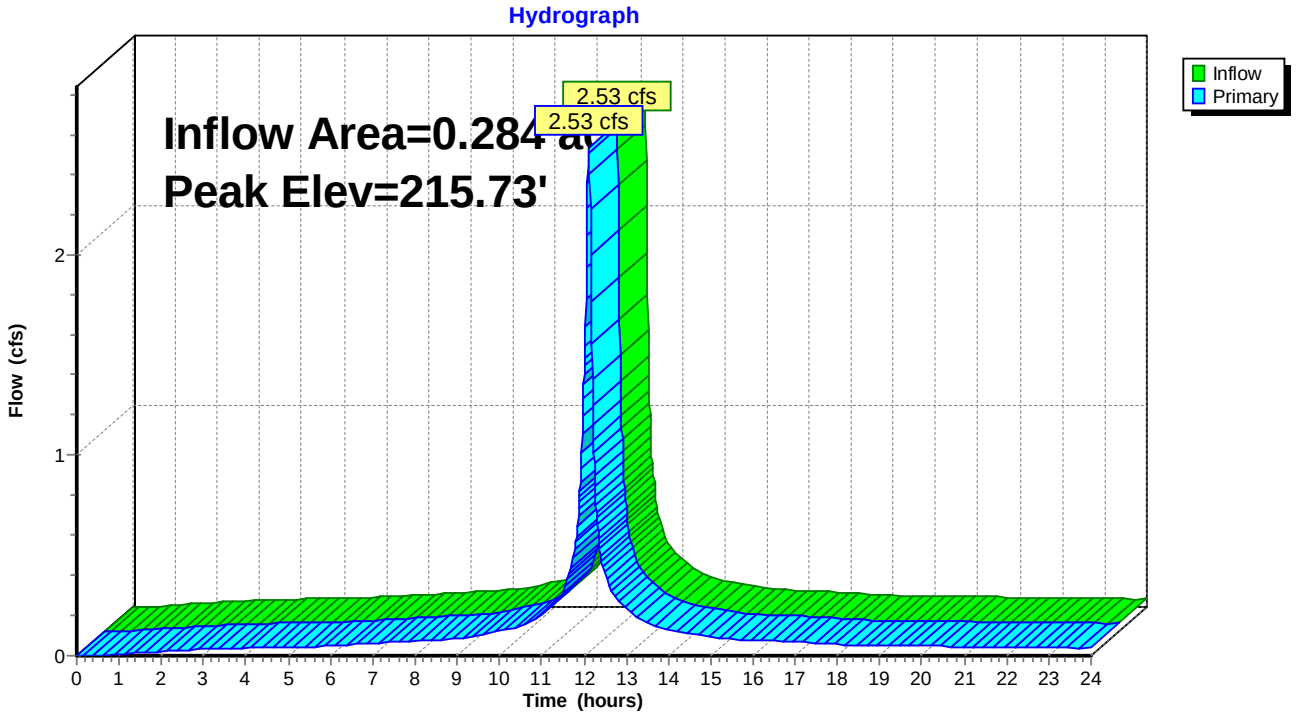
Inflow Area = 0.284 ac, 96.48% Impervious, Inflow Depth > 9.01" for 2070 50-yr event
Inflow = 2.53 cfs @ 12.12 hrs, Volume= 0.213 af
Outflow = 2.53 cfs @ 12.12 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min
Primary = 2.53 cfs @ 12.12 hrs, Volume= 0.213 af
Routed to Pond MH20 : DMH-20

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.73' @ 12.12 hrs
Flood Elev= 215.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.60'	**12.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.60' / 211.30' S= 0.0310 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.60'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.53 cfs @ 12.12 hrs HW=215.73' TW=212.75' (Dynamic Tailwater)
↑**1=Culvert** (Passes 2.53 cfs of 6.14 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 2.53 cfs @ 1.19 fps)

Pond CB41: CB-41



Summary for Pond CB42: CB-4

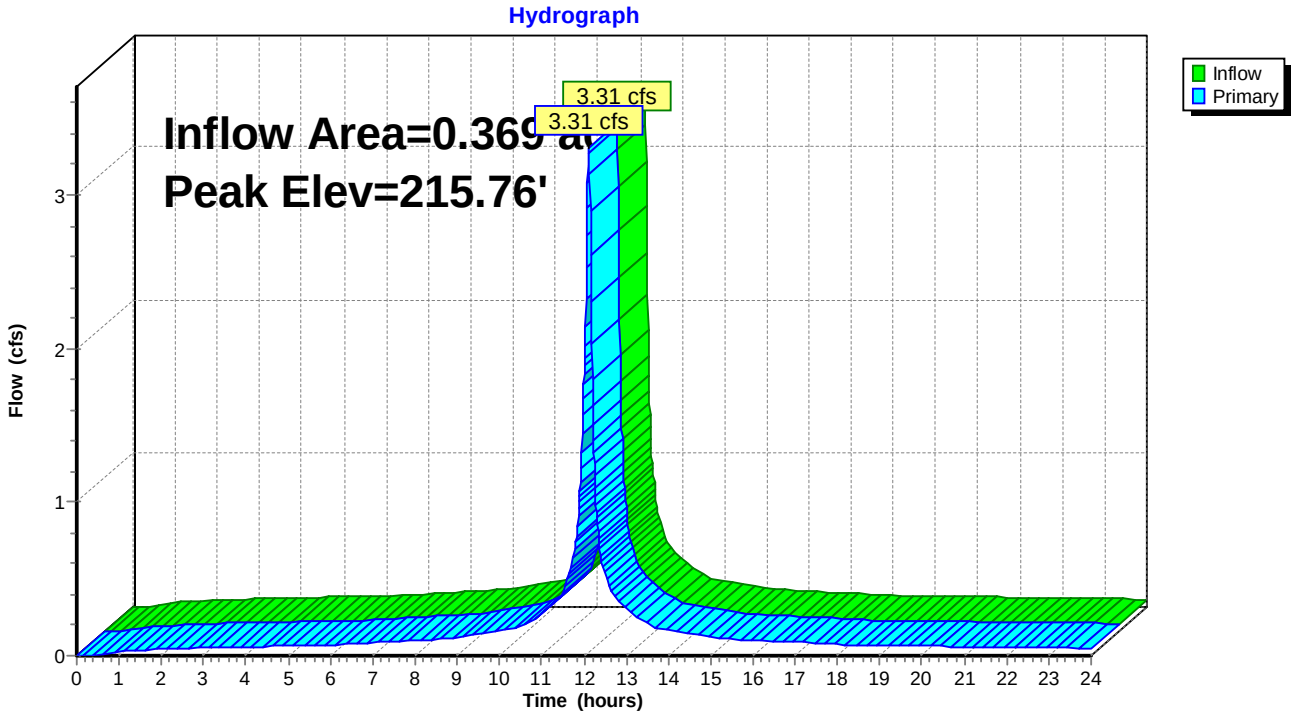
Inflow Area = 0.369 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 3.31 cfs @ 12.12 hrs, Volume= 0.284 af
Outflow = 3.31 cfs @ 12.12 hrs, Volume= 0.284 af, Atten= 0%, Lag= 0.0 min
Primary = 3.31 cfs @ 12.12 hrs, Volume= 0.284 af
Routed to Pond MH21 : DMH-21

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.76' @ 12.12 hrs
Flood Elev= 215.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.60'	**12.0" Round Culvert** L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.60' / 211.52' S= 0.0675 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.60'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.31 cfs @ 12.12 hrs HW=215.76' TW=212.56' (Dynamic Tailwater)
↑**1=Culvert** (Passes 3.31 cfs of 6.17 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 3.31 cfs @ 1.30 fps)

Pond CB42: CB-4



Summary for Pond CB43: CB-43

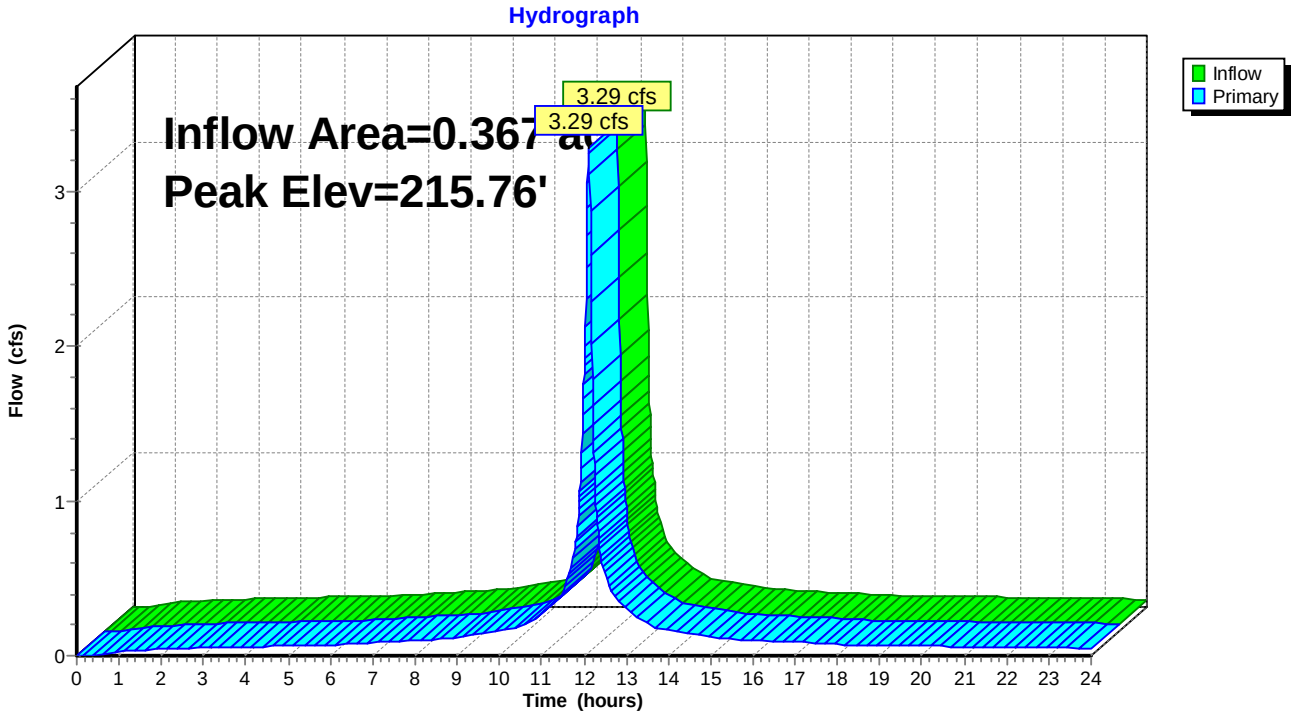
Inflow Area = 0.367 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 3.29 cfs @ 12.12 hrs, Volume= 0.283 af
Outflow = 3.29 cfs @ 12.12 hrs, Volume= 0.283 af, Atten= 0%, Lag= 0.0 min
Primary = 3.29 cfs @ 12.12 hrs, Volume= 0.283 af
Routed to Pond MH22 : DMH-22

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.76' @ 12.12 hrs
Flood Elev= 215.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.60'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.60' / 212.55' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.60'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.29 cfs @ 12.12 hrs HW=215.76' TW=213.52' (Dynamic Tailwater)
↑**1=Culvert** (Passes 3.29 cfs of 5.65 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 3.29 cfs @ 1.30 fps)

Pond CB43: CB-43



Summary for Pond CB44: CB-44

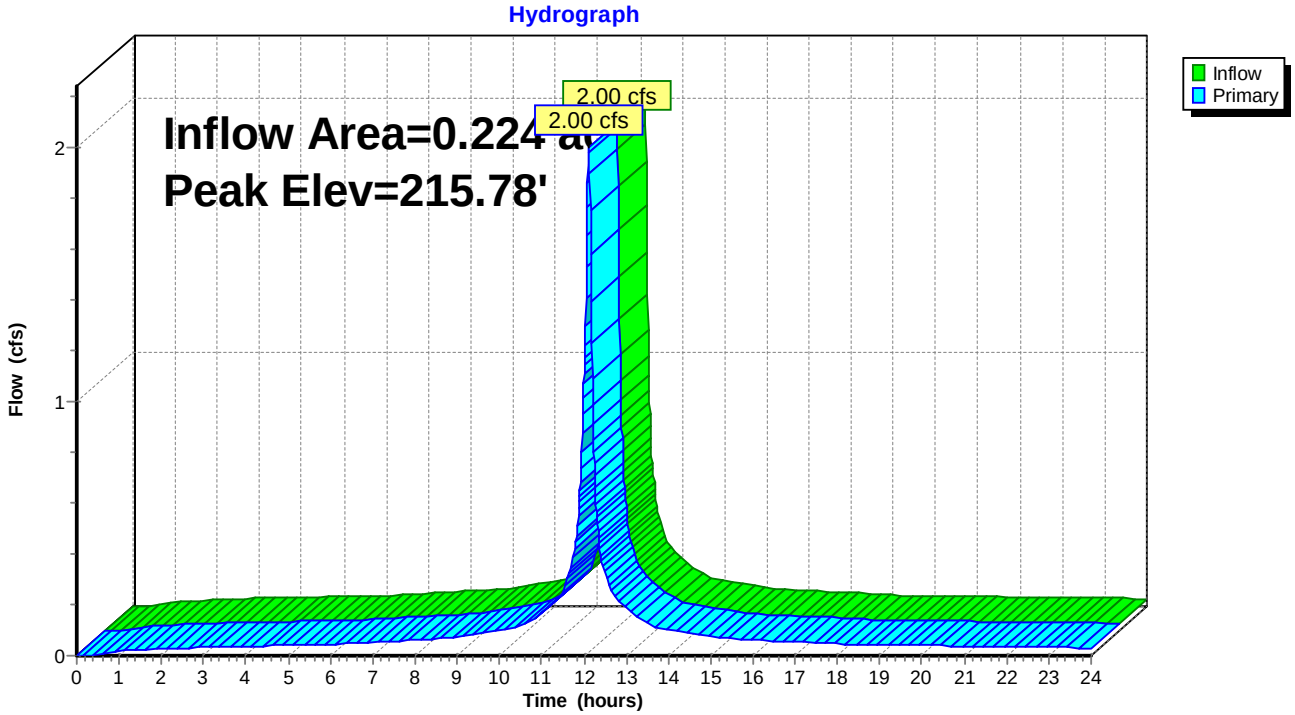
Inflow Area = 0.224 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 2.00 cfs @ 12.12 hrs, Volume= 0.172 af
Outflow = 2.00 cfs @ 12.12 hrs, Volume= 0.172 af, Atten= 0%, Lag= 0.0 min
Primary = 2.00 cfs @ 12.12 hrs, Volume= 0.172 af
Routed to Pond MH22 : DMH-22

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 215.78' @ 12.12 hrs
Flood Elev= 215.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.60'	**12.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.60' / 212.10' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	215.60'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.00 cfs @ 12.12 hrs HW=215.78' TW=213.52' (Dynamic Tailwater)
└**1=Culvert** (Passes 2.00 cfs of 4.40 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 2.00 cfs @ 1.39 fps)

Pond CB44: CB-44



Summary for Pond CB45: CB-45

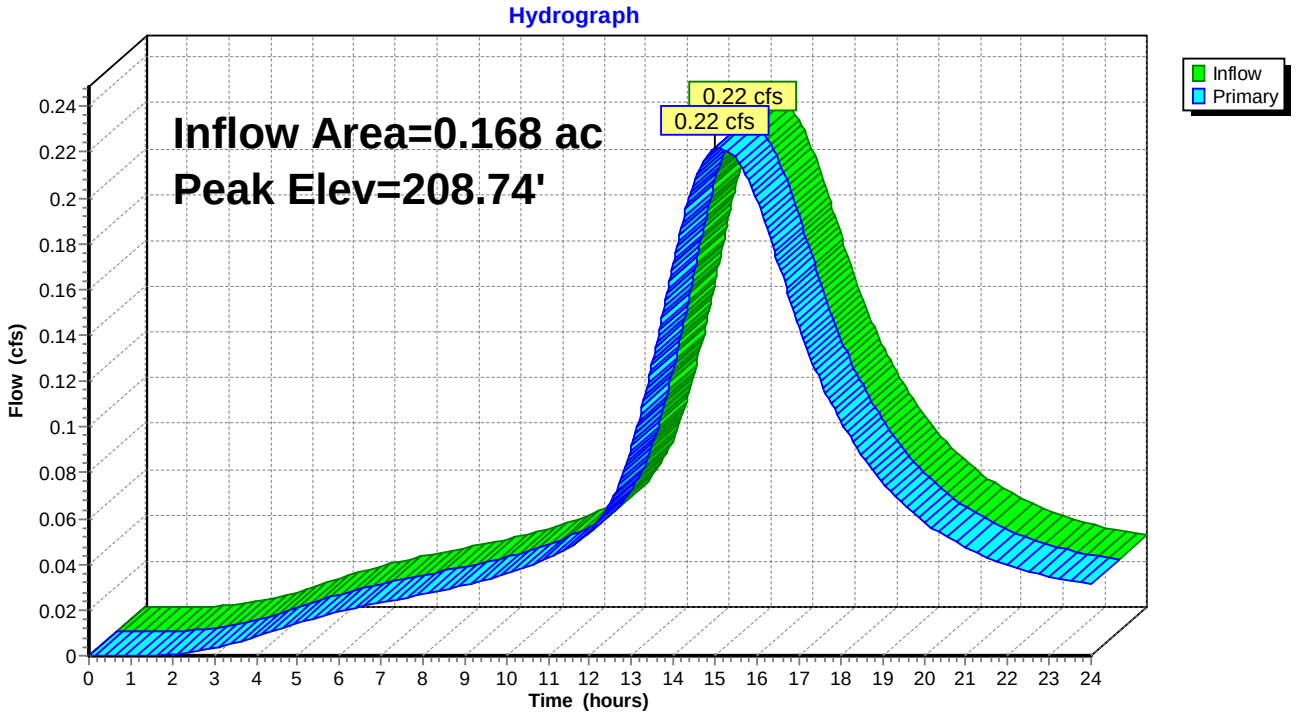
Inflow Area = 0.168 ac, 99.80% Impervious, Inflow Depth > 8.65" for 2070 50-yr event
Inflow = 0.22 cfs @ 14.97 hrs, Volume= 0.121 af
Outflow = 0.22 cfs @ 14.97 hrs, Volume= 0.121 af, Atten= 0%, Lag= 0.0 min
Primary = 0.22 cfs @ 14.97 hrs, Volume= 0.121 af
Routed to Pond MH25 : DMH-25

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 208.74' @ 14.97 hrs
Flood Elev= 208.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	205.70'	**12.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 205.70' / 204.60' S= 0.0440 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	208.70'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.22 cfs @ 14.97 hrs HW=208.74' TW=205.85' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.22 cfs of 6.03 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.22 cfs @ 0.67 fps)

Pond CB45: CB-45



Summary for Pond CB46: CB-46

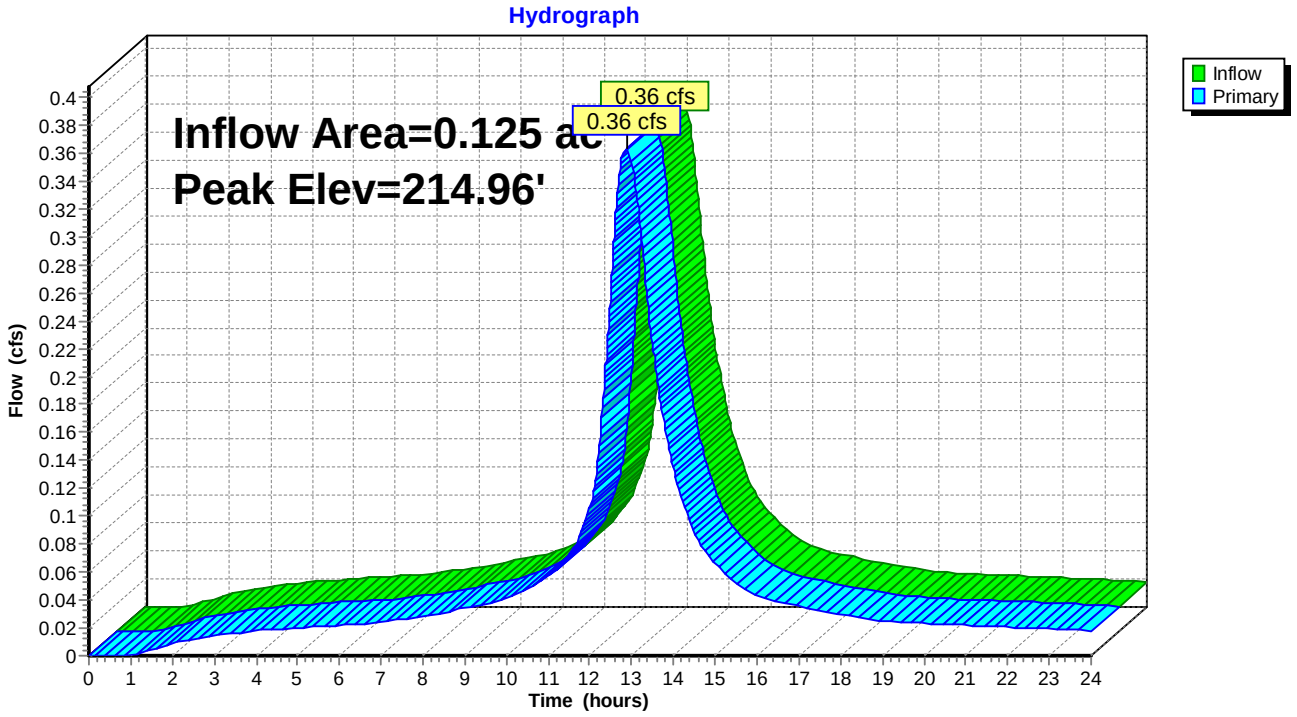
Inflow Area = 0.125 ac, 99.28% Impervious, Inflow Depth > 9.11" for 2070 50-yr event
Inflow = 0.36 cfs @ 12.86 hrs, Volume= 0.095 af
Outflow = 0.36 cfs @ 12.86 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.0 min
Primary = 0.36 cfs @ 12.86 hrs, Volume= 0.095 af
Routed to Pond MH25 : DMH-25

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.96' @ 12.86 hrs
Flood Elev= 215.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.90'	**12.0" Round Culvert** L= 51.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.90' / 204.60' S= 0.1235 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	214.90'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.36 cfs @ 12.86 hrs HW=214.96' TW=205.09' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.36 cfs of 7.13 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.36 cfs @ 0.79 fps)

Pond CB46: CB-46



Summary for Pond CB47: CB-47

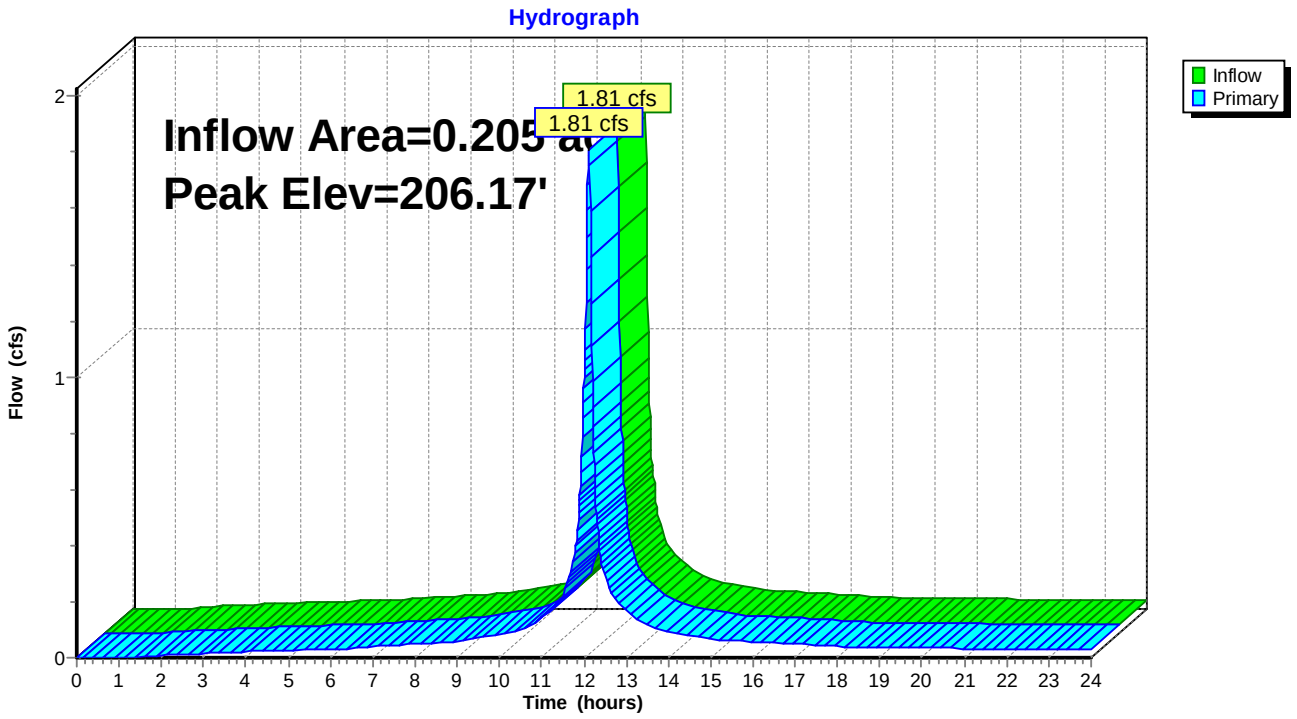
Inflow Area = 0.205 ac, 75.92% Impervious, Inflow Depth > 8.64" for 2070 50-yr event
Inflow = 1.81 cfs @ 12.12 hrs, Volume= 0.148 af
Outflow = 1.81 cfs @ 12.12 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min
Primary = 1.81 cfs @ 12.12 hrs, Volume= 0.148 af
Routed to Pond 6P : Basin 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.17' @ 12.12 hrs
Flood Elev= 206.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	202.00'	**24.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 202.00' / 201.88' S= 0.0048 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	206.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.81 cfs @ 12.12 hrs HW=206.17' TW=202.50' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.81 cfs of 26.93 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.81 cfs @ 1.34 fps)

Pond CB47: CB-47



Summary for Pond CB48: CB-48

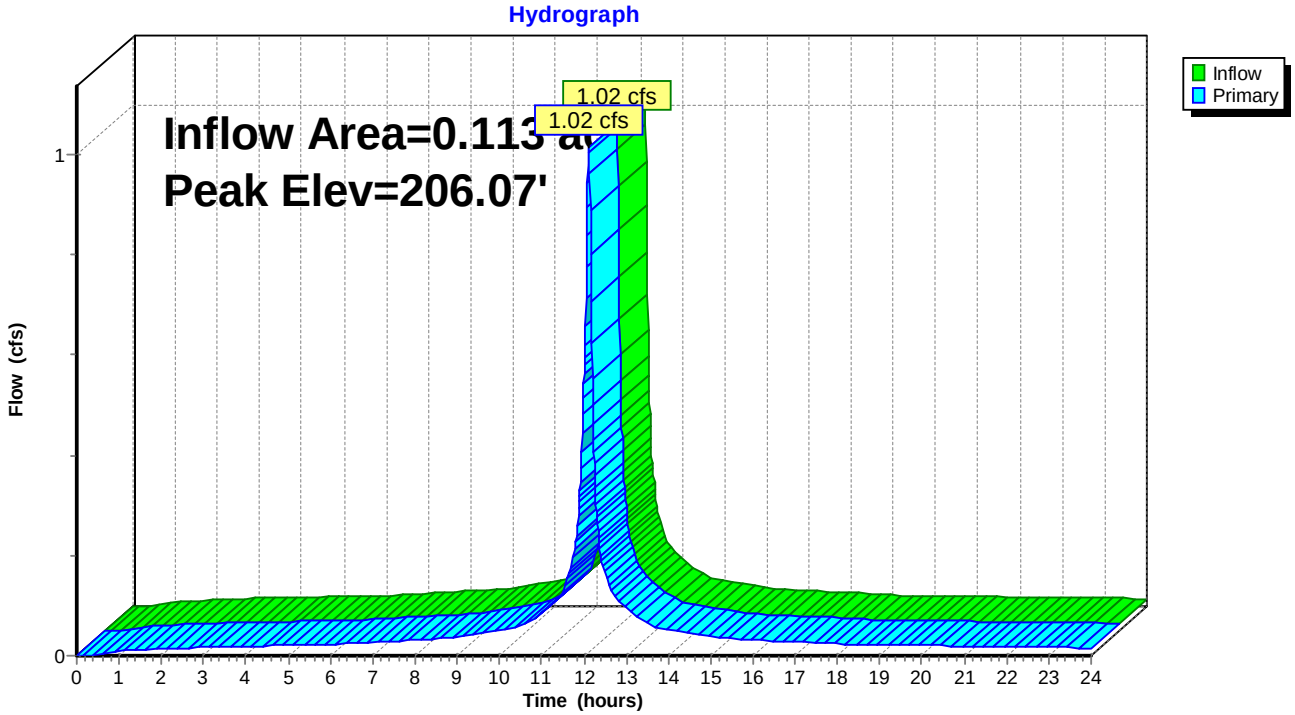
Inflow Area = 0.113 ac, 99.24% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 1.02 cfs @ 12.12 hrs, Volume= 0.087 af
Outflow = 1.02 cfs @ 12.12 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min
Primary = 1.02 cfs @ 12.12 hrs, Volume= 0.087 af
Routed to Pond MH27 : DMH-27

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.07' @ 12.12 hrs
Flood Elev= 206.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	203.00'	**12.0" Round Culvert** L= 108.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 203.00' / 202.46' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	206.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.02 cfs @ 12.12 hrs HW=206.07' TW=202.67' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.02 cfs of 4.61 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 1.02 cfs @ 0.88 fps)

Pond CB48: CB-48



Summary for Pond CB49: CB-49

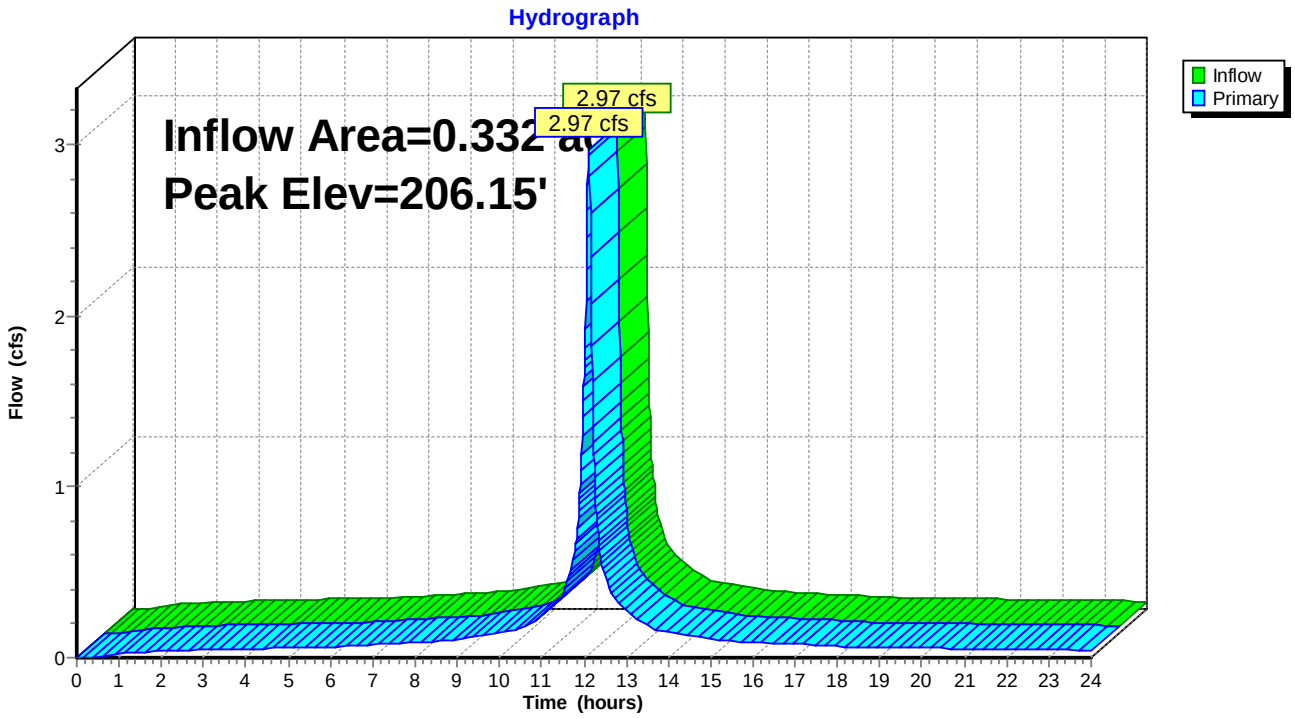
Inflow Area = 0.332 ac, 98.07% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 2.97 cfs @ 12.12 hrs, Volume= 0.256 af
Outflow = 2.97 cfs @ 12.12 hrs, Volume= 0.256 af, Atten= 0%, Lag= 0.0 min
Primary = 2.97 cfs @ 12.12 hrs, Volume= 0.256 af
Routed to Pond MH27 : DMH-27

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.15' @ 12.12 hrs
Flood Elev= 206.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	203.00'	**12.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 203.00' / 202.83' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	206.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.97 cfs @ 12.12 hrs HW=206.15' TW=202.67' (Dynamic Tailwater)
↑**1=Culvert** (Passes 2.97 cfs of 5.99 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 2.97 cfs @ 1.26 fps)

Pond CB49: CB-49



Summary for Pond CB5: CB-5

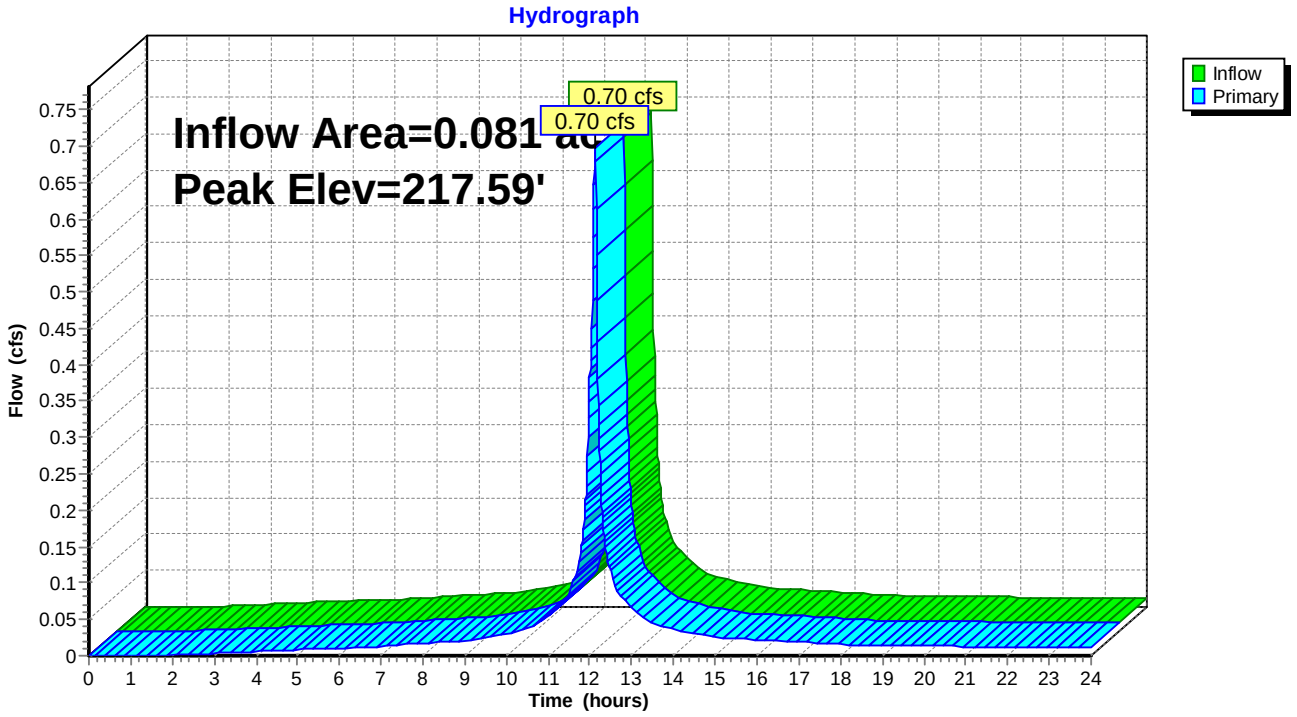
Inflow Area = 0.081 ac, 65.30% Impervious, Inflow Depth > 8.28" for 2070 50-yr event
Inflow = 0.70 cfs @ 12.12 hrs, Volume= 0.056 af
Outflow = 0.70 cfs @ 12.12 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 0.70 cfs @ 12.12 hrs, Volume= 0.056 af
Routed to Pond MH3 : DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 217.59' @ 12.12 hrs
Flood Elev= 217.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	214.50'	**12.0" Round Culvert** L= 9.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.50' / 214.45' S= 0.0052 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	217.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.70 cfs @ 12.12 hrs HW=217.59' TW=214.55' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.70 cfs of 6.09 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.70 cfs @ 0.98 fps)

Pond CB5: CB-5



Summary for Pond CB50: CB-4

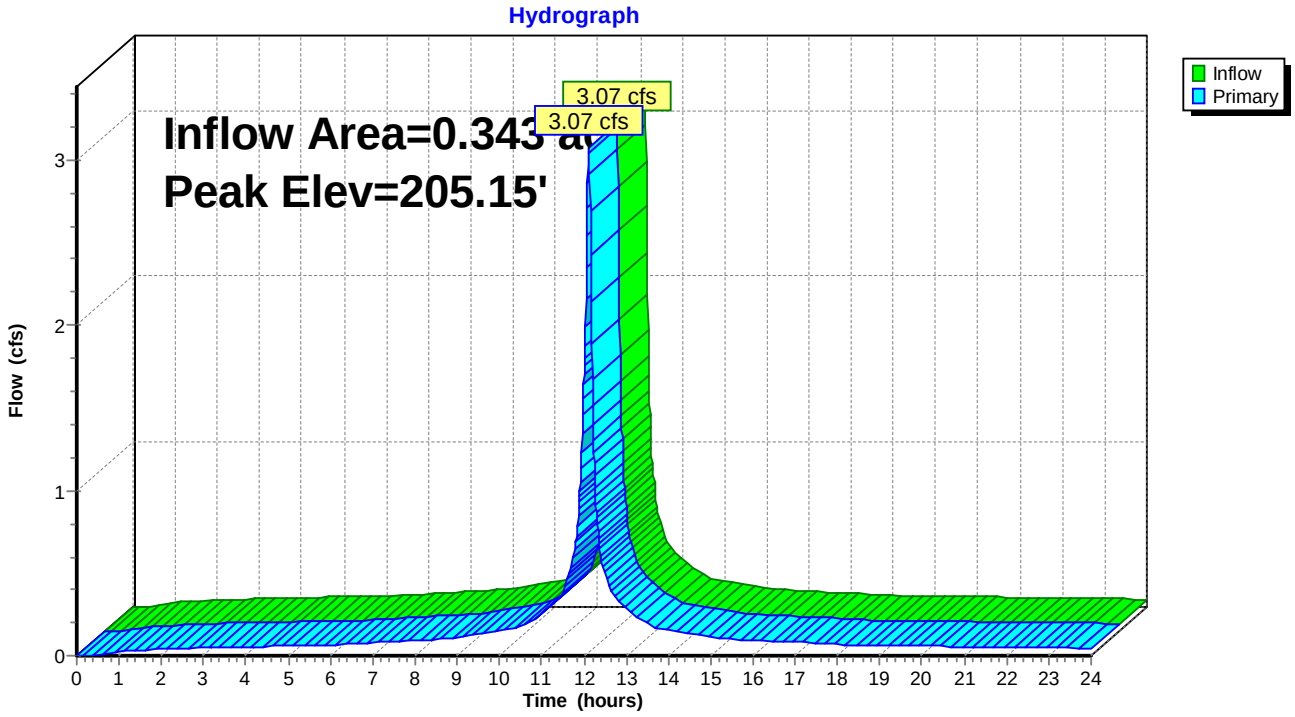
Inflow Area = 0.343 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 3.07 cfs @ 12.12 hrs, Volume= 0.264 af
Outflow = 3.07 cfs @ 12.12 hrs, Volume= 0.264 af, Atten= 0%, Lag= 0.0 min
Primary = 3.07 cfs @ 12.12 hrs, Volume= 0.264 af
Routed to Pond 2SS : SSMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 205.15' @ 12.12 hrs
Flood Elev= 205.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	201.75'	**15.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 201.75' / 201.63' S= 0.0048 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	205.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.07 cfs @ 12.12 hrs HW=205.15' TW=202.06' (Dynamic Tailwater)
↑**1=Culvert** (Passes 3.07 cfs of 9.85 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 3.07 cfs @ 1.27 fps)

Pond CB50: CB-4



Summary for Pond CB51: CB-51

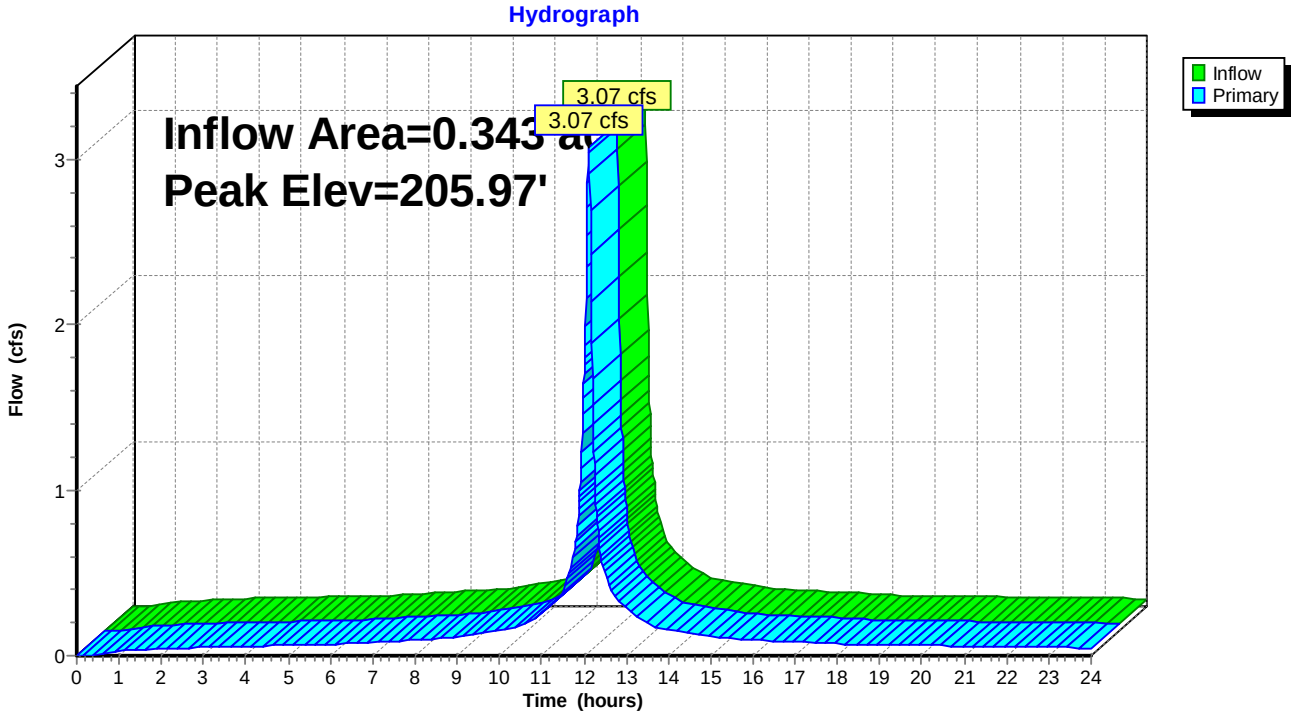
Inflow Area = 0.343 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 3.07 cfs @ 12.12 hrs, Volume= 0.264 af
Outflow = 3.07 cfs @ 12.12 hrs, Volume= 0.264 af, Atten= 0%, Lag= 0.0 min
Primary = 3.07 cfs @ 12.12 hrs, Volume= 0.264 af
Routed to Pond MH26 : DMH-26

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 205.97' @ 16.74 hrs
Flood Elev= 205.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	202.50'	**12.0" Round Culvert** L= 125.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 202.50' / 201.88' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	205.50'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.07 cfs @ 12.12 hrs HW=205.65' TW=203.16' (Dynamic Tailwater)
└**1=Culvert** (Passes 3.07 cfs of 4.27 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 3.07 cfs @ 1.27 fps)

Pond CB51: CB-51



Summary for Pond CB52: CB-52

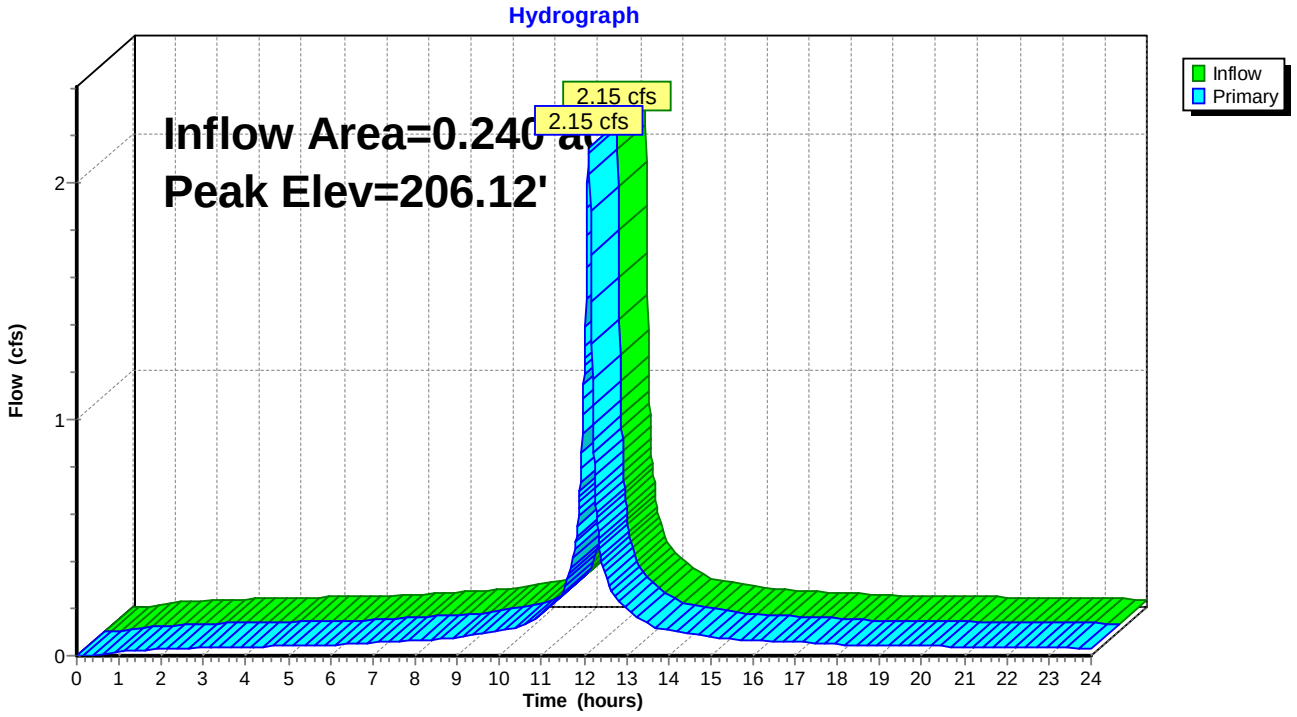
Inflow Area = 0.240 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 2.15 cfs @ 12.12 hrs, Volume= 0.185 af
Outflow = 2.15 cfs @ 12.12 hrs, Volume= 0.185 af, Atten= 0%, Lag= 0.0 min
Primary = 2.15 cfs @ 12.12 hrs, Volume= 0.185 af
Routed to Pond MH26 : DMH-26

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 206.12' @ 12.12 hrs
Flood Elev= 206.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	203.00'	**12.0" Round Culvert** L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 203.00' / 202.86' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	206.00'	**24.0" x 24.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.15 cfs @ 12.12 hrs HW=206.12' TW=203.16' (Dynamic Tailwater)
↑**1=Culvert** (Passes 2.15 cfs of 6.12 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 2.15 cfs @ 1.13 fps)

Pond CB52: CB-52



Summary for Pond CB6: CB-6

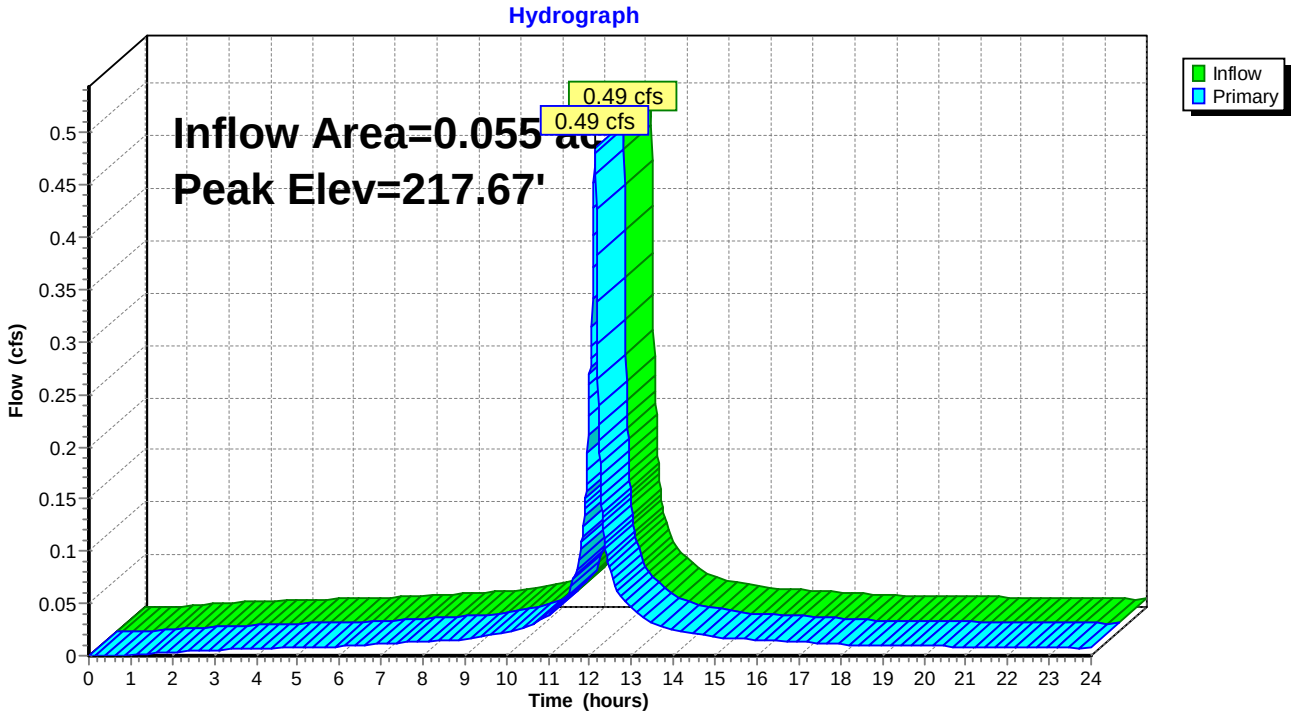
Inflow Area = 0.055 ac, 88.01% Impervious, Inflow Depth > 8.89" for 2070 50-yr event
Inflow = 0.49 cfs @ 12.12 hrs, Volume= 0.040 af
Outflow = 0.49 cfs @ 12.12 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min
Primary = 0.49 cfs @ 12.12 hrs, Volume= 0.040 af
Routed to Pond MH3 : DMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 217.67' @ 12.12 hrs
Flood Elev= 217.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	214.60'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.60' / 214.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	217.60'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.49 cfs @ 12.12 hrs HW=217.67' TW=214.55' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.49 cfs of 6.06 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.49 cfs @ 0.87 fps)

Pond CB6: CB-6



Summary for Pond CB7: CB-7

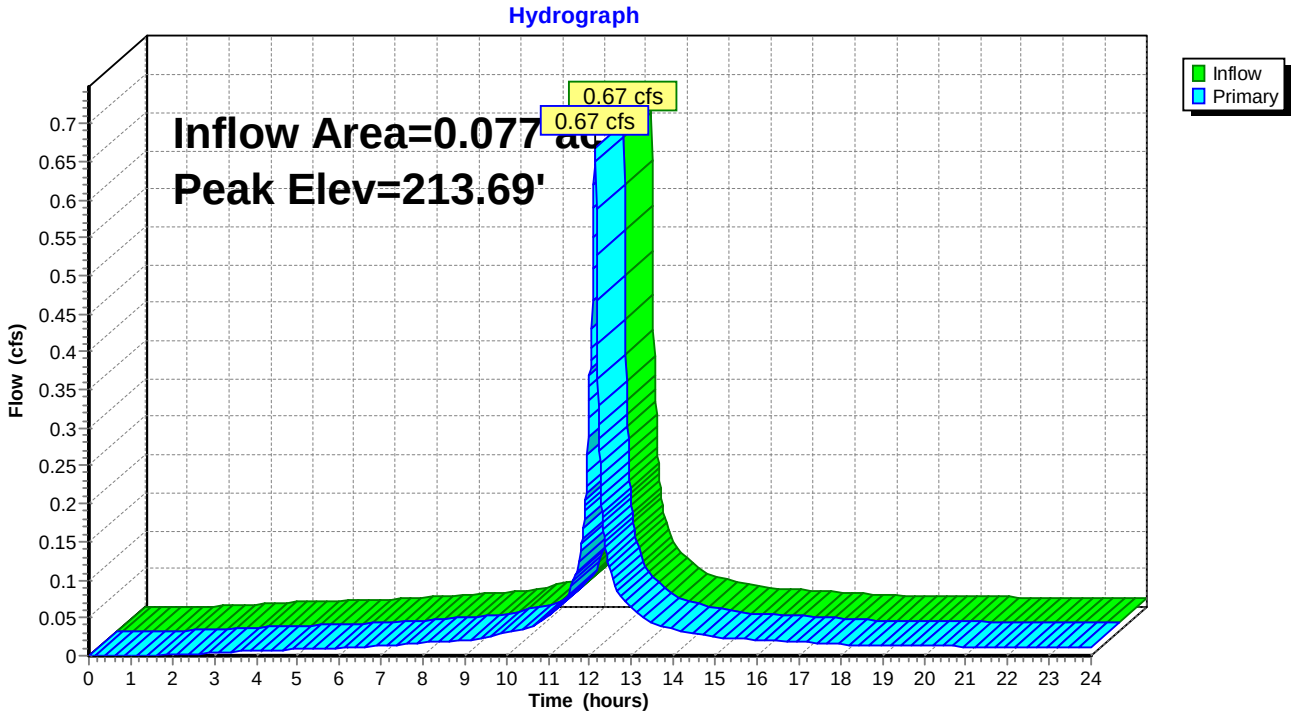
Inflow Area = 0.077 ac, 71.56% Impervious, Inflow Depth > 8.40" for 2070 50-yr event
Inflow = 0.67 cfs @ 12.12 hrs, Volume= 0.054 af
Outflow = 0.67 cfs @ 12.12 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 0.67 cfs @ 12.12 hrs, Volume= 0.054 af
Routed to Pond MH4 : DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 213.69' @ 12.12 hrs
Flood Elev= 213.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.60'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.60' / 210.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	213.60'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.67 cfs @ 12.12 hrs HW=213.69' TW=210.79' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.67 cfs of 6.08 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.67 cfs @ 0.96 fps)

Pond CB7: CB-7



Summary for Pond CB8: CB-8

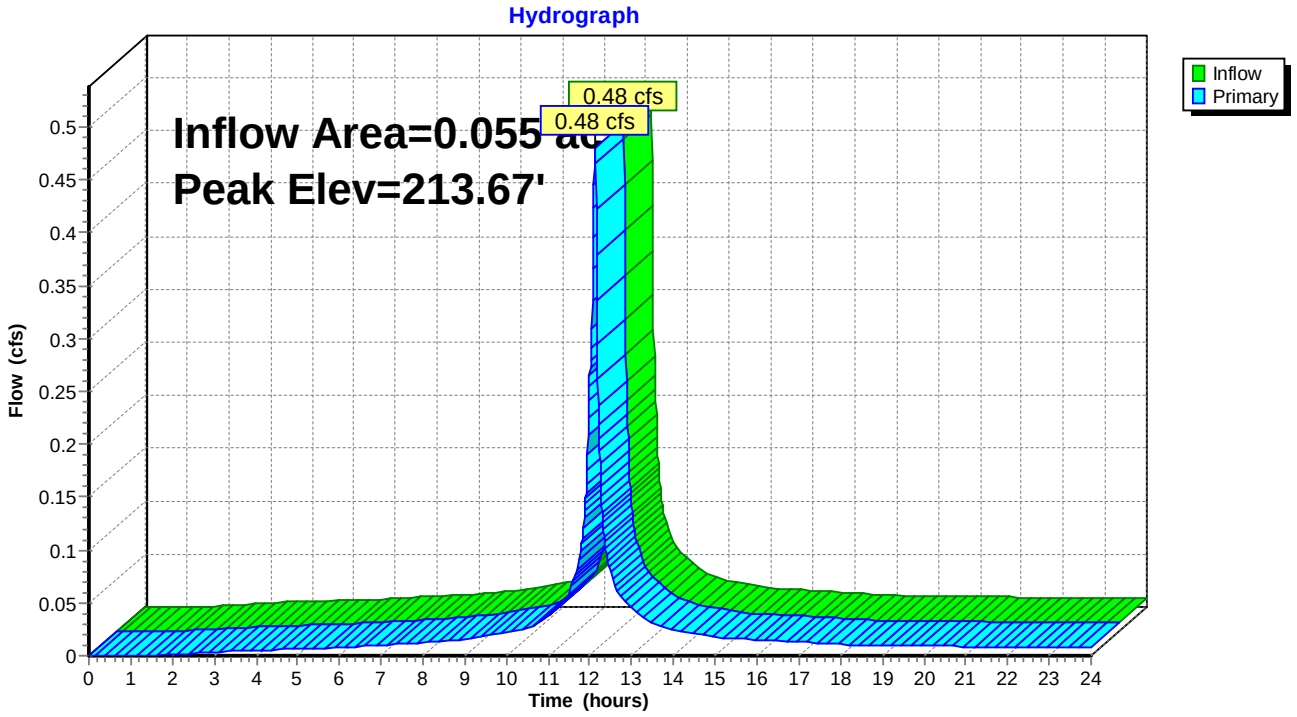
Inflow Area = 0.055 ac, 70.63% Impervious, Inflow Depth > 8.52" for 2070 50-yr event
Inflow = 0.48 cfs @ 12.12 hrs, Volume= 0.039 af
Outflow = 0.48 cfs @ 12.12 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min
Primary = 0.48 cfs @ 12.12 hrs, Volume= 0.039 af
Routed to Pond MH4 : DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 213.67' @ 12.12 hrs
Flood Elev= 213.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.60'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.60' / 210.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	213.60'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.48 cfs @ 12.12 hrs HW=213.67' TW=210.79' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.48 cfs of 6.06 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.48 cfs @ 0.86 fps)

Pond CB8: CB-8



Summary for Pond CB9: CB-9

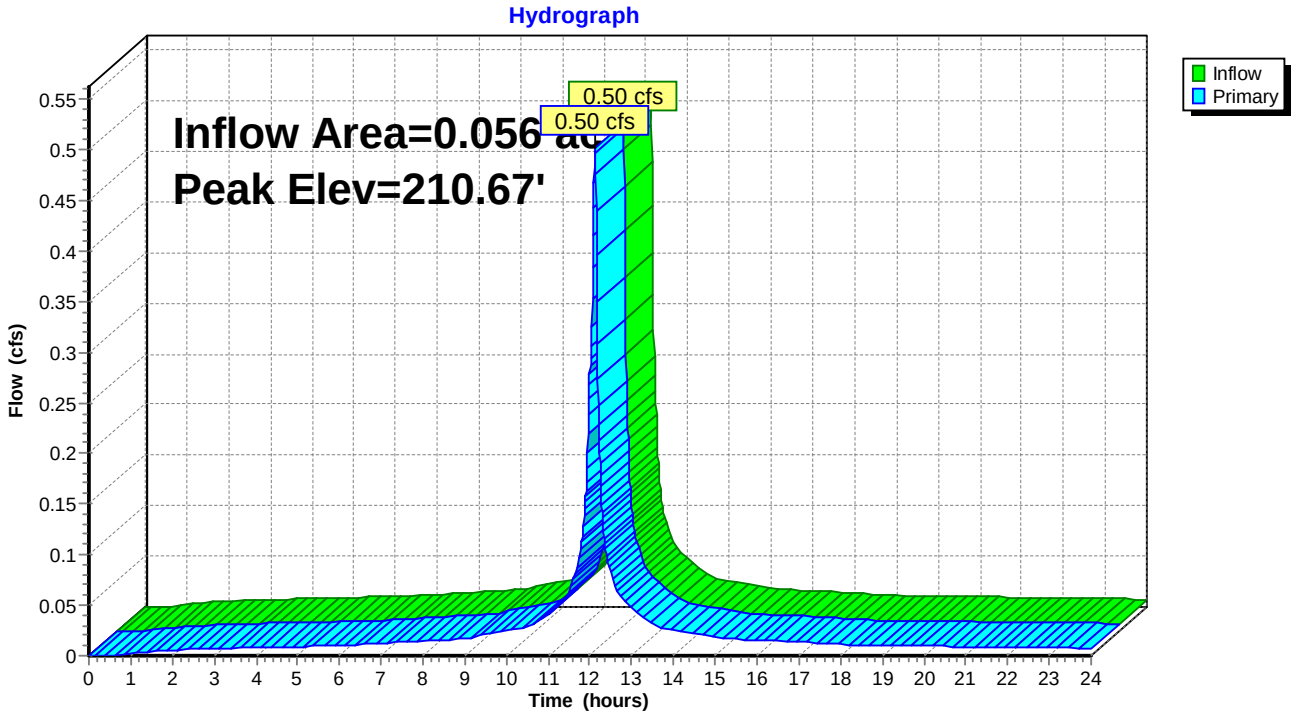
Inflow Area = 0.056 ac, 98.11% Impervious, Inflow Depth > 9.13" for 2070 50-yr event
Inflow = 0.50 cfs @ 12.12 hrs, Volume= 0.043 af
Outflow = 0.50 cfs @ 12.12 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min
Primary = 0.50 cfs @ 12.12 hrs, Volume= 0.043 af
Routed to Pond MH5 : DMH-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.67' @ 12.12 hrs
Flood Elev= 210.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.60'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.60' / 207.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	210.60'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.50 cfs @ 12.12 hrs HW=210.67' TW=208.78' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.50 cfs of 5.20 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.50 cfs @ 0.88 fps)

Pond CB9: CB-9



Summary for Pond MH1: DMH-1

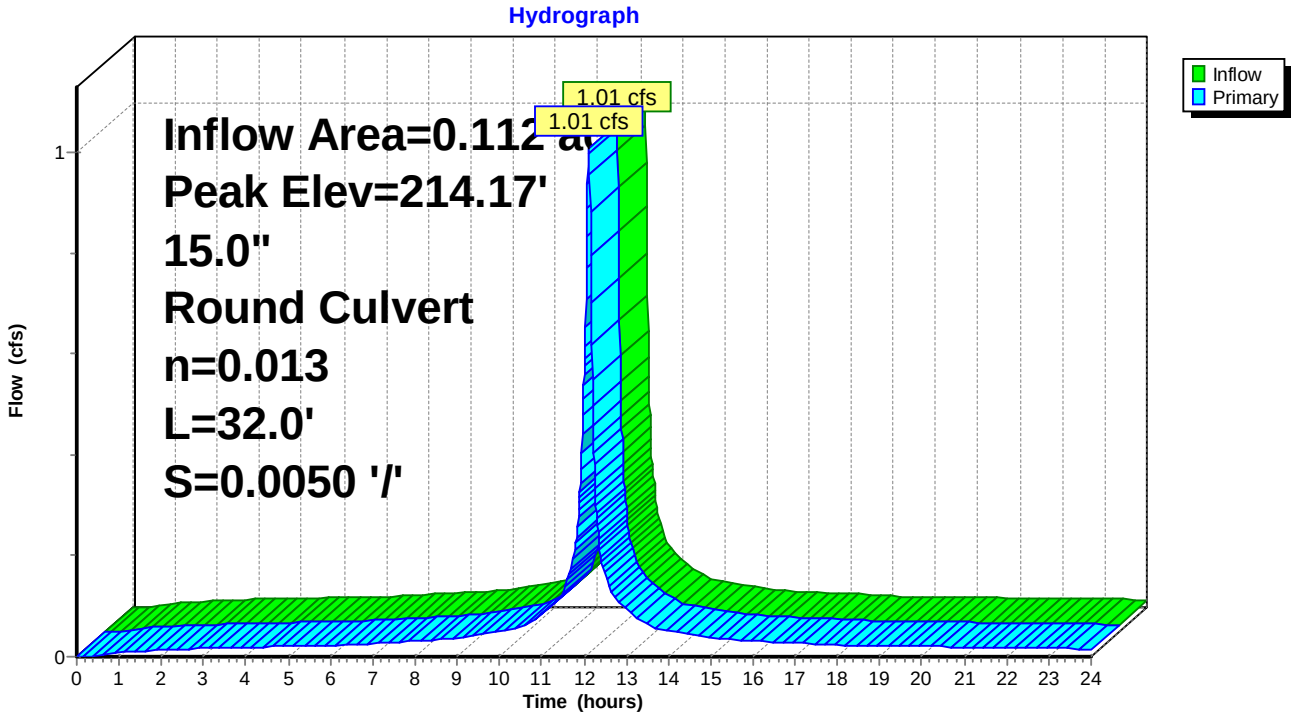
Inflow Area = 0.112 ac, 99.84% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 1.01 cfs @ 12.12 hrs, Volume= 0.087 af
Outflow = 1.01 cfs @ 12.12 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min
Primary = 1.01 cfs @ 12.12 hrs, Volume= 0.087 af
Routed to Pond 1P : Basin 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.17' @ 12.12 hrs
Flood Elev= 216.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	213.60'	**15.0" Round Culvert** L= 32.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 213.60' / 213.44' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.01 cfs @ 12.12 hrs HW=214.17' TW=212.25' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.01 cfs @ 2.74 fps)

Pond MH1: DMH-1



Summary for Pond MH10: CB-31

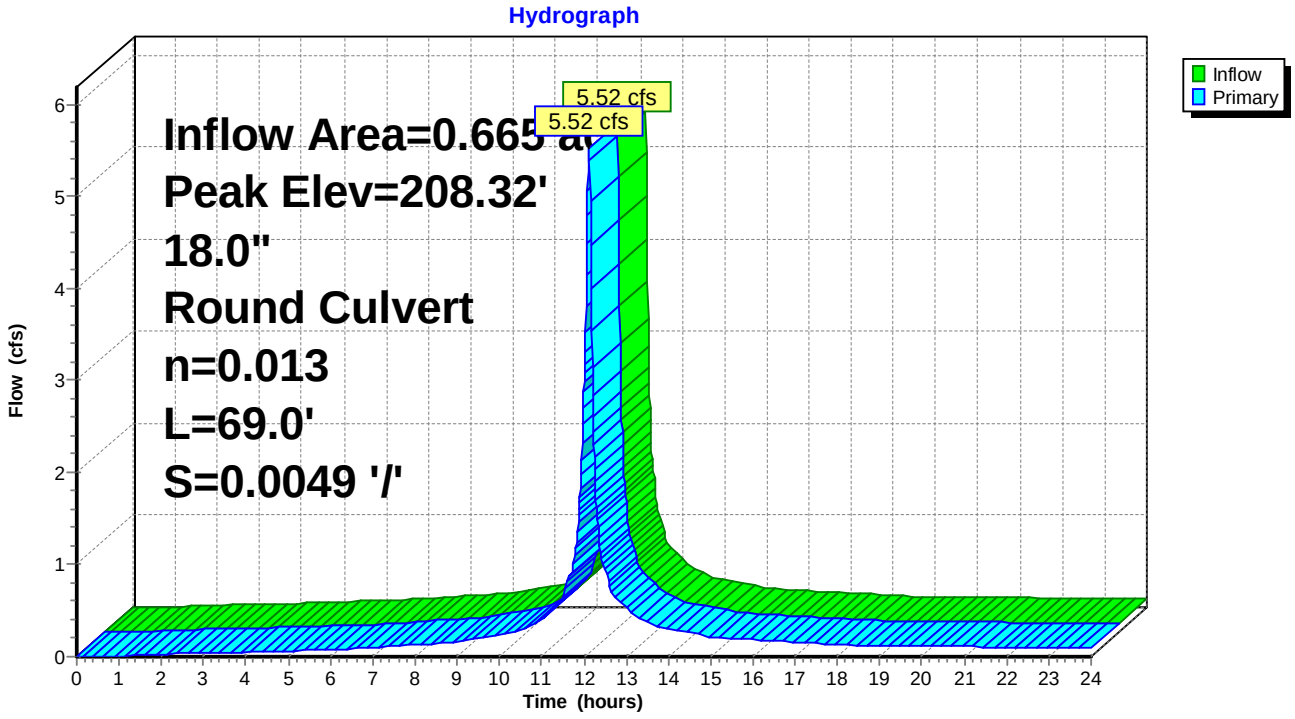
Inflow Area = 0.665 ac, 79.04% Impervious, Inflow Depth > 7.98" for 2070 50-yr event
Inflow = 5.52 cfs @ 12.12 hrs, Volume= 0.442 af
Outflow = 5.52 cfs @ 12.12 hrs, Volume= 0.442 af, Atten= 0%, Lag= 0.0 min
Primary = 5.52 cfs @ 12.12 hrs, Volume= 0.442 af
Routed to Pond MH11 : CB-31

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 208.32' @ 12.12 hrs
Flood Elev= 212.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.81'	**18.0" Round Culvert** L= 69.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.81' / 206.47' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.51 cfs @ 12.12 hrs HW=208.32' TW=207.74' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.51 cfs @ 3.86 fps)

Pond MH10: CB-31



Summary for Pond MH11: CB-31

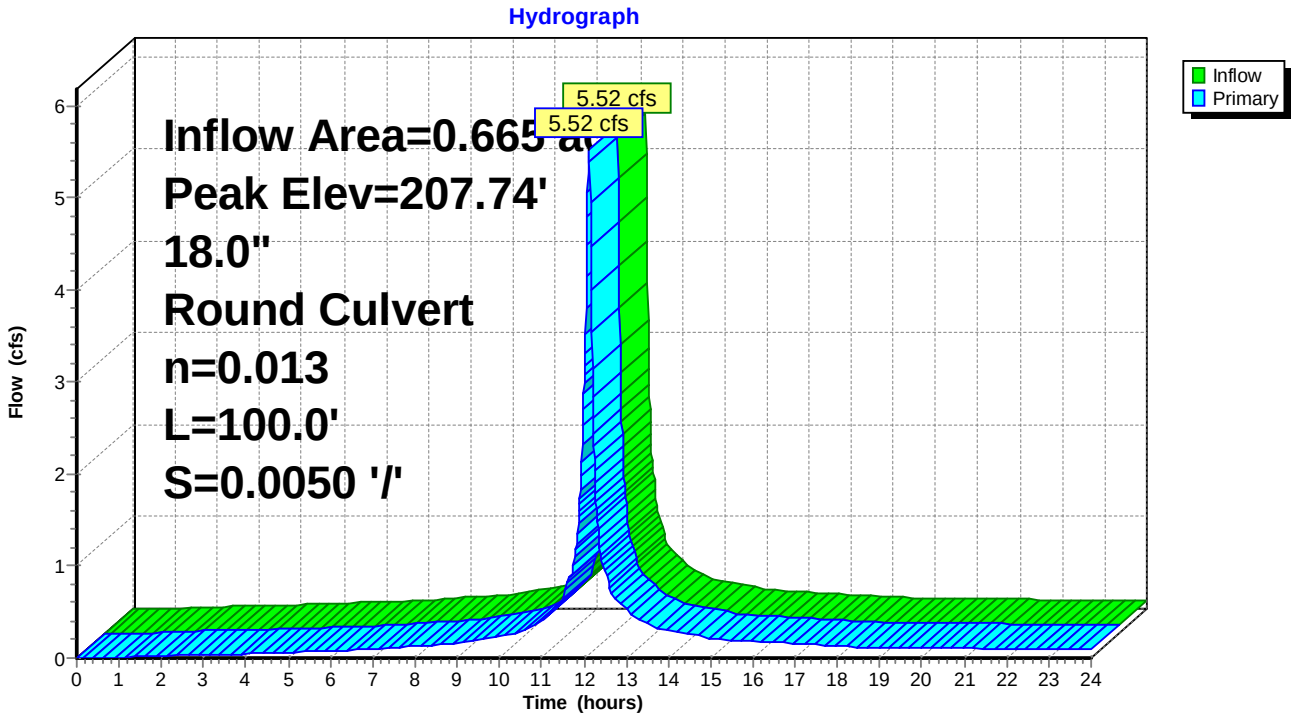
Inflow Area = 0.665 ac, 79.04% Impervious, Inflow Depth > 7.98" for 2070 50-yr event
Inflow = 5.52 cfs @ 12.12 hrs, Volume= 0.442 af
Outflow = 5.52 cfs @ 12.12 hrs, Volume= 0.442 af, Atten= 0%, Lag= 0.0 min
Primary = 5.52 cfs @ 12.12 hrs, Volume= 0.442 af
Routed to Pond 4P : Basin 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 207.74' @ 12.12 hrs
Flood Elev= 212.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.37'	**18.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.37' / 205.87' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.51 cfs @ 12.12 hrs HW=207.74' TW=204.55' (Dynamic Tailwater)
1=Culvert (Barrel Controls 5.51 cfs @ 4.27 fps)

Pond MH11: CB-31



Summary for Pond MH12: DMH-12

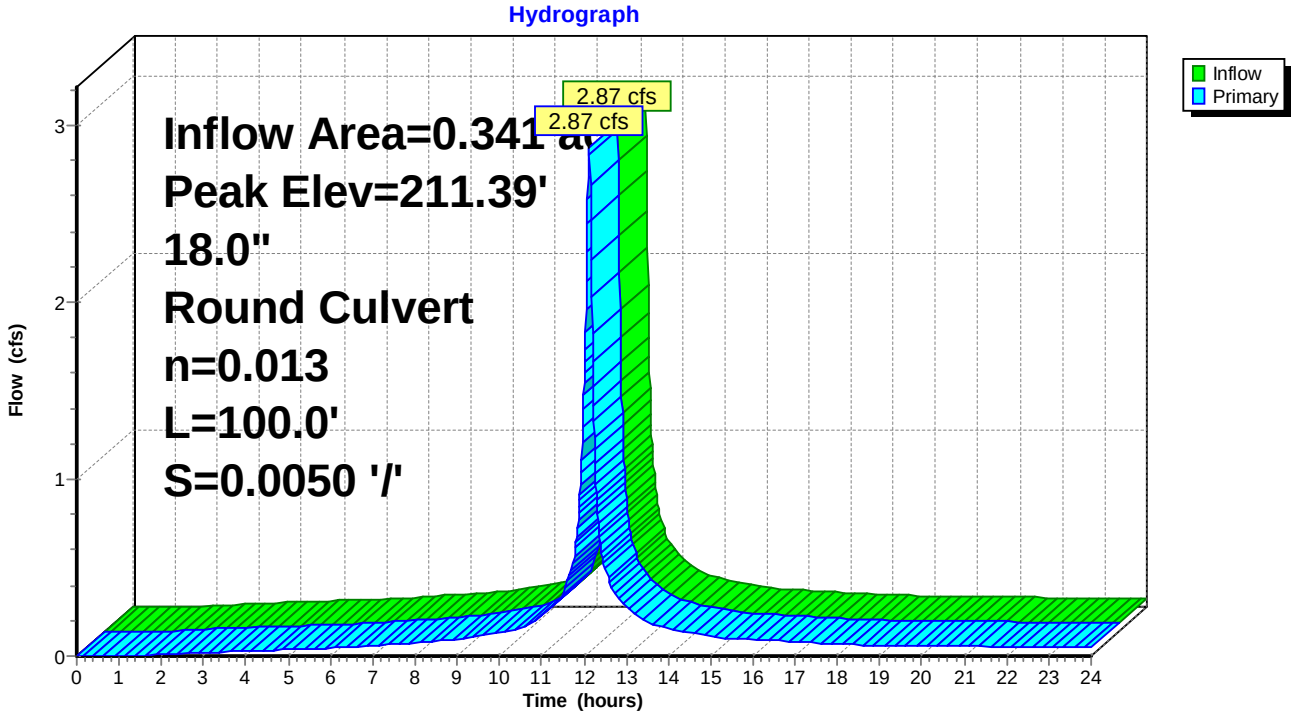
Inflow Area = 0.341 ac, 85.16% Impervious, Inflow Depth > 8.40" for 2070 50-yr event
Inflow = 2.87 cfs @ 12.13 hrs, Volume= 0.238 af
Outflow = 2.87 cfs @ 12.13 hrs, Volume= 0.238 af, Atten= 0%, Lag= 0.0 min
Primary = 2.87 cfs @ 12.13 hrs, Volume= 0.238 af
Routed to Pond MH13 : DMH-13

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 211.39' @ 12.13 hrs
Flood Elev= 214.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.31'	**18.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.31' / 209.81' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.86 cfs @ 12.13 hrs HW=211.39' TW=210.95' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.86 cfs @ 2.95 fps)

Pond MH12: DMH-12



Summary for Pond MH13: DMH-13

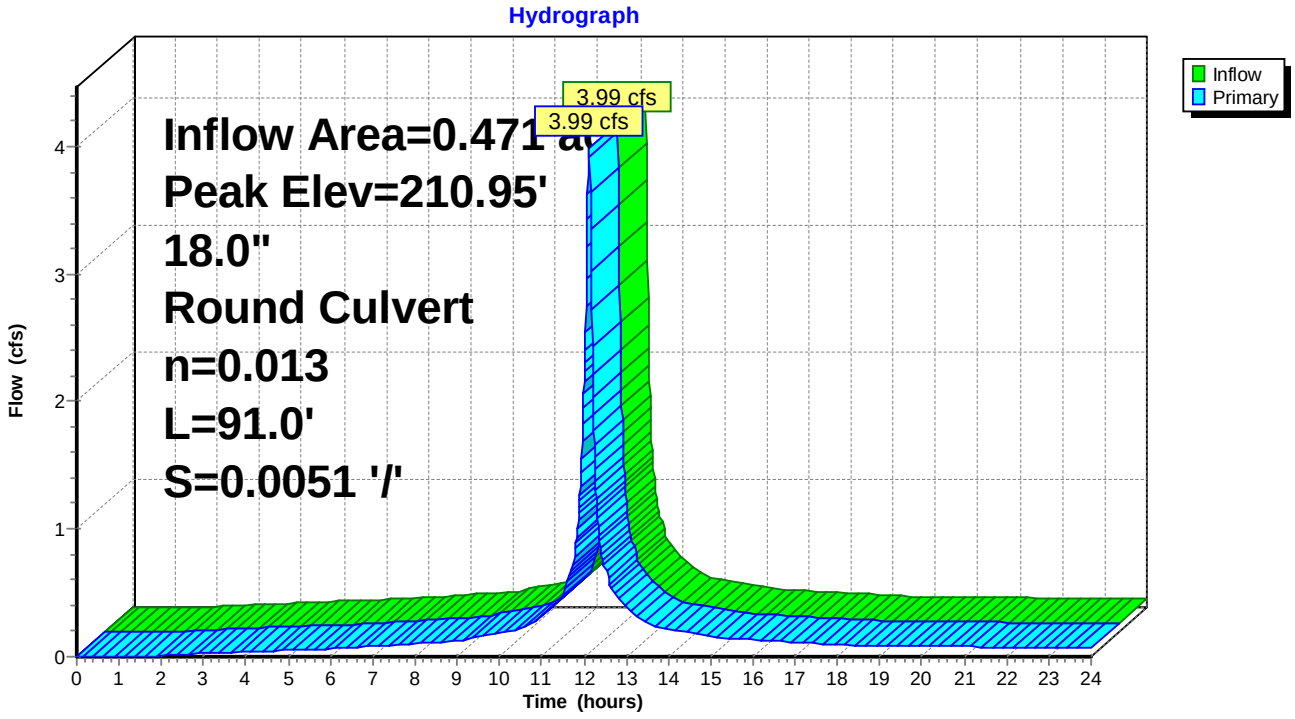
Inflow Area = 0.471 ac, 84.02% Impervious, Inflow Depth > 8.33" for 2070 50-yr event
Inflow = 3.99 cfs @ 12.12 hrs, Volume= 0.327 af
Outflow = 3.99 cfs @ 12.12 hrs, Volume= 0.327 af, Atten= 0%, Lag= 0.0 min
Primary = 3.99 cfs @ 12.12 hrs, Volume= 0.327 af
Routed to Pond MH14 : DMH-14

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.95' @ 12.13 hrs
Flood Elev= 214.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.71'	**18.0" Round Culvert** L= 91.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.71' / 209.25' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.96 cfs @ 12.12 hrs HW=210.95' TW=210.42' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.96 cfs @ 3.43 fps)

Pond MH13: DMH-13



Summary for Pond MH14: DMH-14

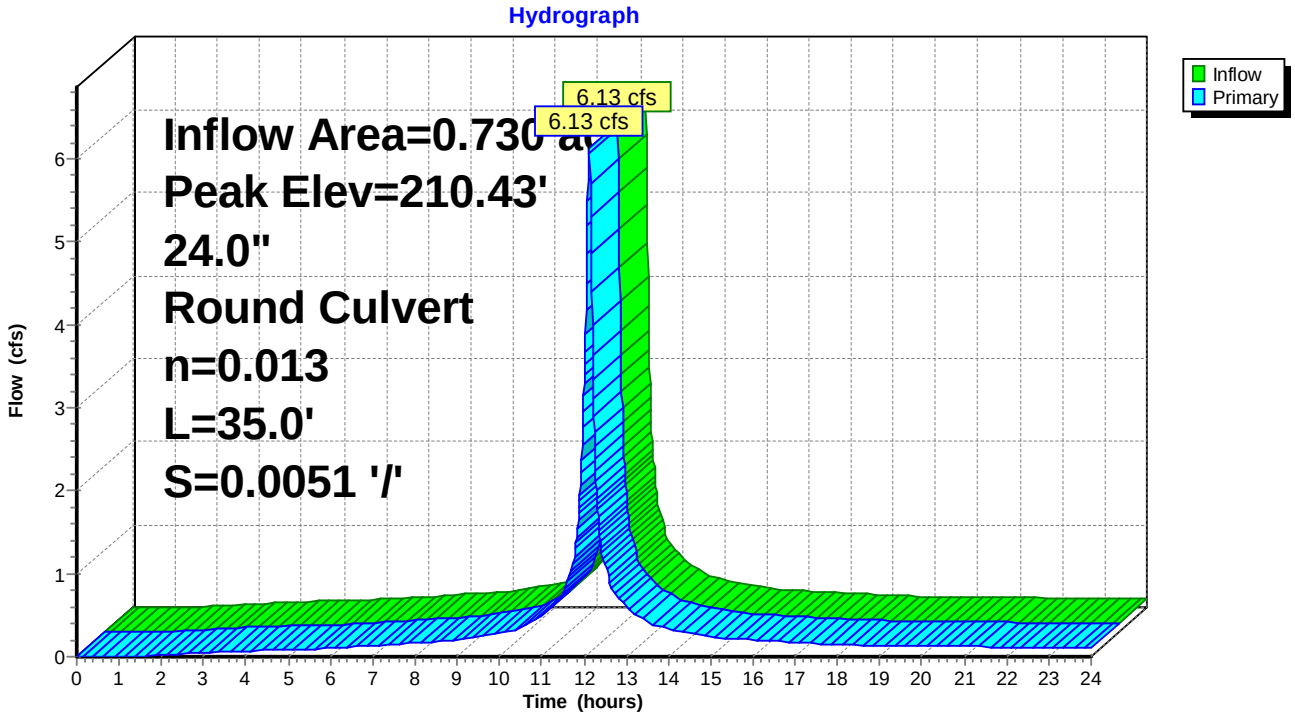
Inflow Area = 0.730 ac, 86.34% Impervious, Inflow Depth > 8.47" for 2070 50-yr event
Inflow = 6.13 cfs @ 12.13 hrs, Volume= 0.515 af
Outflow = 6.13 cfs @ 12.13 hrs, Volume= 0.515 af, Atten= 0%, Lag= 0.0 min
Primary = 6.13 cfs @ 12.13 hrs, Volume= 0.515 af
Routed to Pond 3SS : SSMH-3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.43' @ 12.14 hrs
Flood Elev= 214.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.07'	**24.0" Round Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.07' / 208.89' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=6.11 cfs @ 12.13 hrs HW=210.42' TW=209.98' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.11 cfs @ 3.82 fps)

Pond MH14: DMH-14



Summary for Pond MH15: DMH-15

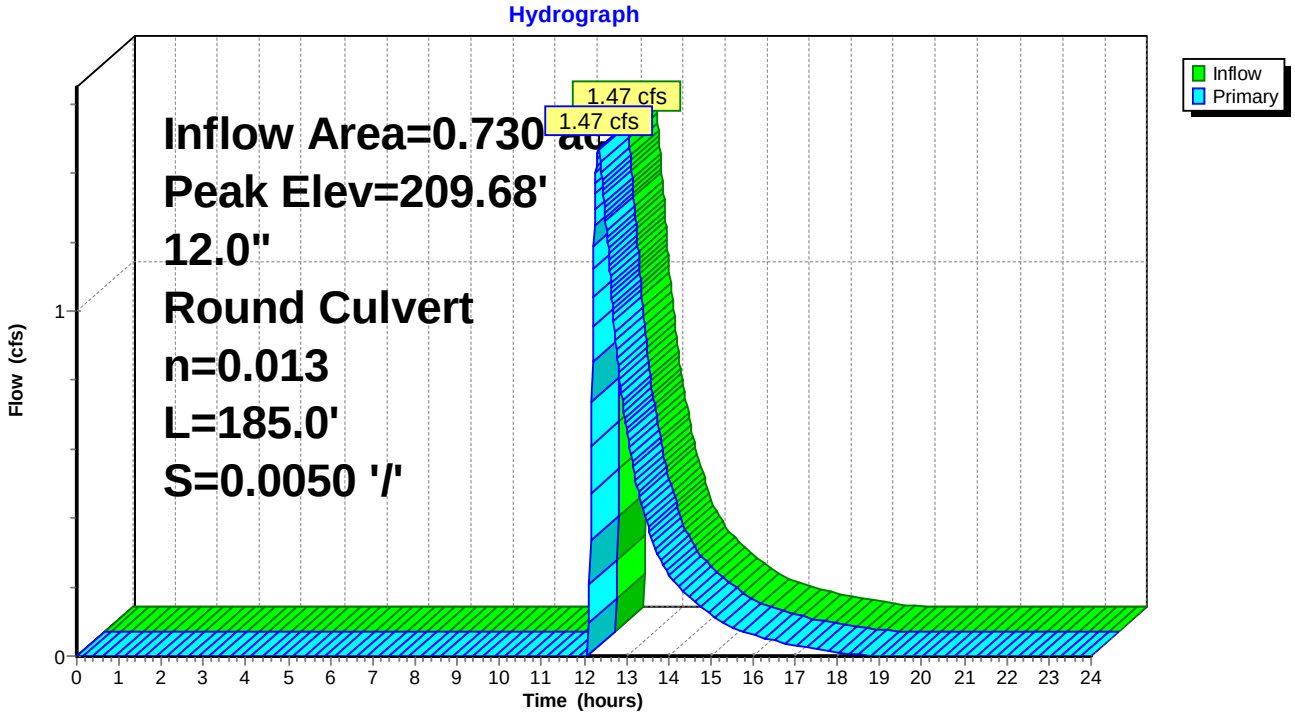
Inflow Area = 0.730 ac, 86.34% Impervious, Inflow Depth = 2.23" for 2070 50-yr event
Inflow = 1.47 cfs @ 12.35 hrs, Volume= 0.136 af
Outflow = 1.47 cfs @ 12.35 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min
Primary = 1.47 cfs @ 12.35 hrs, Volume= 0.136 af
Routed to Pond MH16 : DMH-16

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 209.68' @ 12.33 hrs
Flood Elev= 213.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	208.90'	**12.0" Round Culvert** L= 185.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.90' / 207.97' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.47 cfs @ 12.35 hrs HW=209.68' TW=208.71' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.47 cfs @ 3.07 fps)

Pond MH15: DMH-15



Summary for Pond MH16: DMH-16

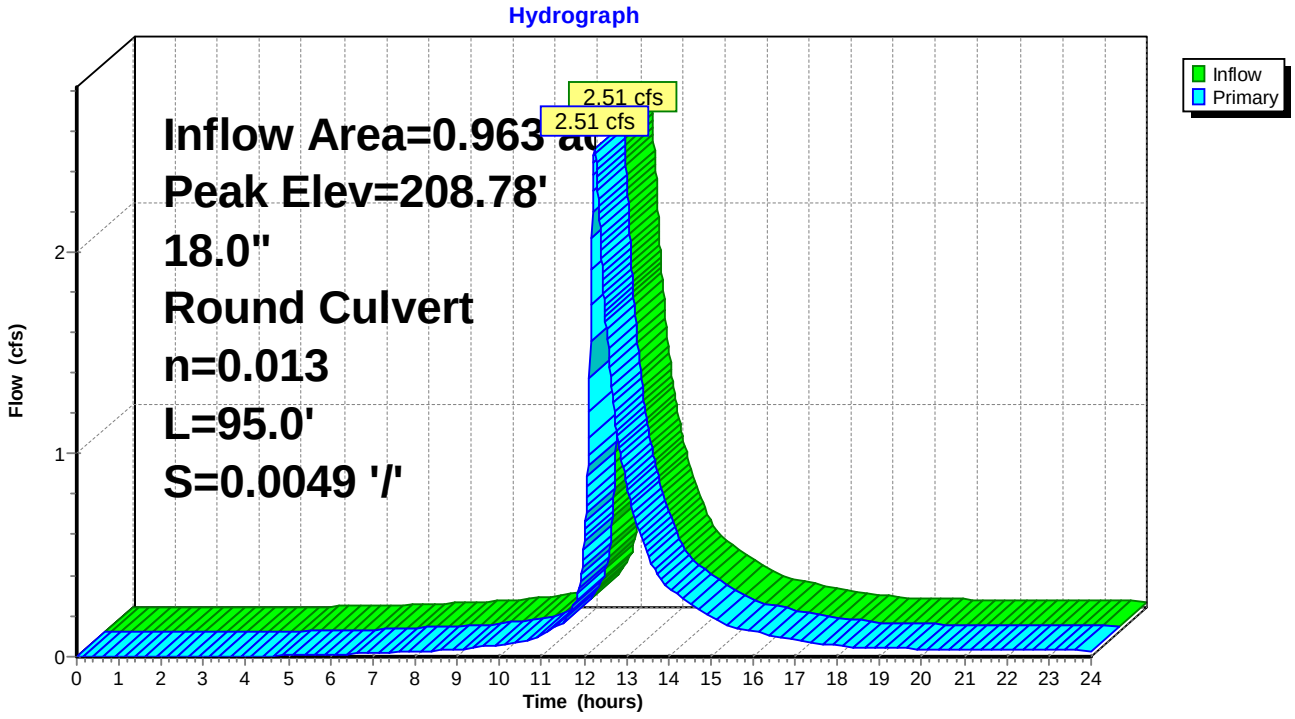
Inflow Area = 0.963 ac, 79.63% Impervious, Inflow Depth > 3.33" for 2070 50-yr event
Inflow = 2.51 cfs @ 12.25 hrs, Volume= 0.267 af
Outflow = 2.51 cfs @ 12.25 hrs, Volume= 0.267 af, Atten= 0%, Lag= 0.0 min
Primary = 2.51 cfs @ 12.25 hrs, Volume= 0.267 af
Routed to Pond MH17 : DMH-17

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 208.78' @ 12.24 hrs
Flood Elev= 214.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.87'	**18.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.87' / 207.40' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.50 cfs @ 12.25 hrs HW=208.78' TW=208.24' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.50 cfs @ 3.20 fps)

Pond MH16: DMH-16



Summary for Pond MH17: DMH-17

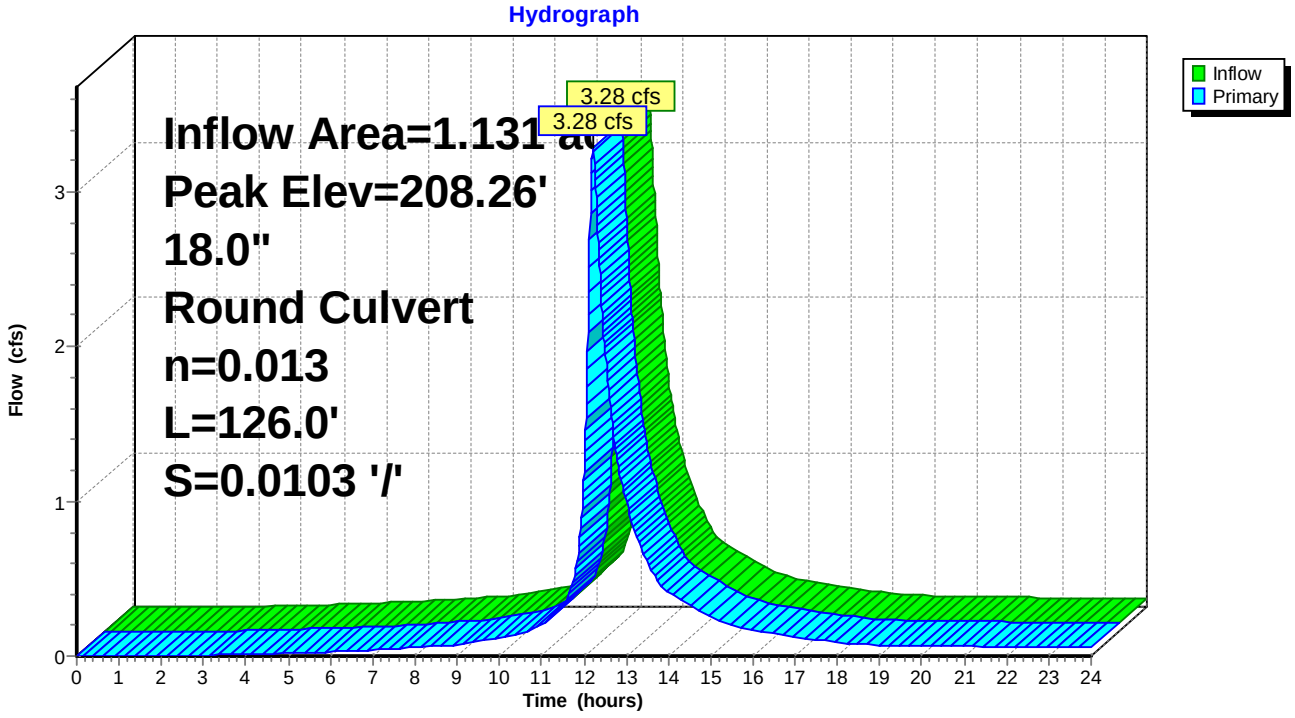
Inflow Area = 1.131 ac, 79.38% Impervious, Inflow Depth > 4.01" for 2070 50-yr event
Inflow = 3.28 cfs @ 12.21 hrs, Volume= 0.378 af
Outflow = 3.28 cfs @ 12.21 hrs, Volume= 0.378 af, Atten= 0%, Lag= 0.0 min
Primary = 3.28 cfs @ 12.21 hrs, Volume= 0.378 af
Routed to Pond MH18 : DMH-18

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 208.26' @ 12.19 hrs
Flood Elev= 212.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.40'	**18.0" Round Culvert** L= 126.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.40' / 206.10' S= 0.0103 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.27 cfs @ 12.21 hrs HW=208.26' TW=206.96' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.27 cfs @ 4.50 fps)

Pond MH17: DMH-17



Summary for Pond MH18: DMH-18

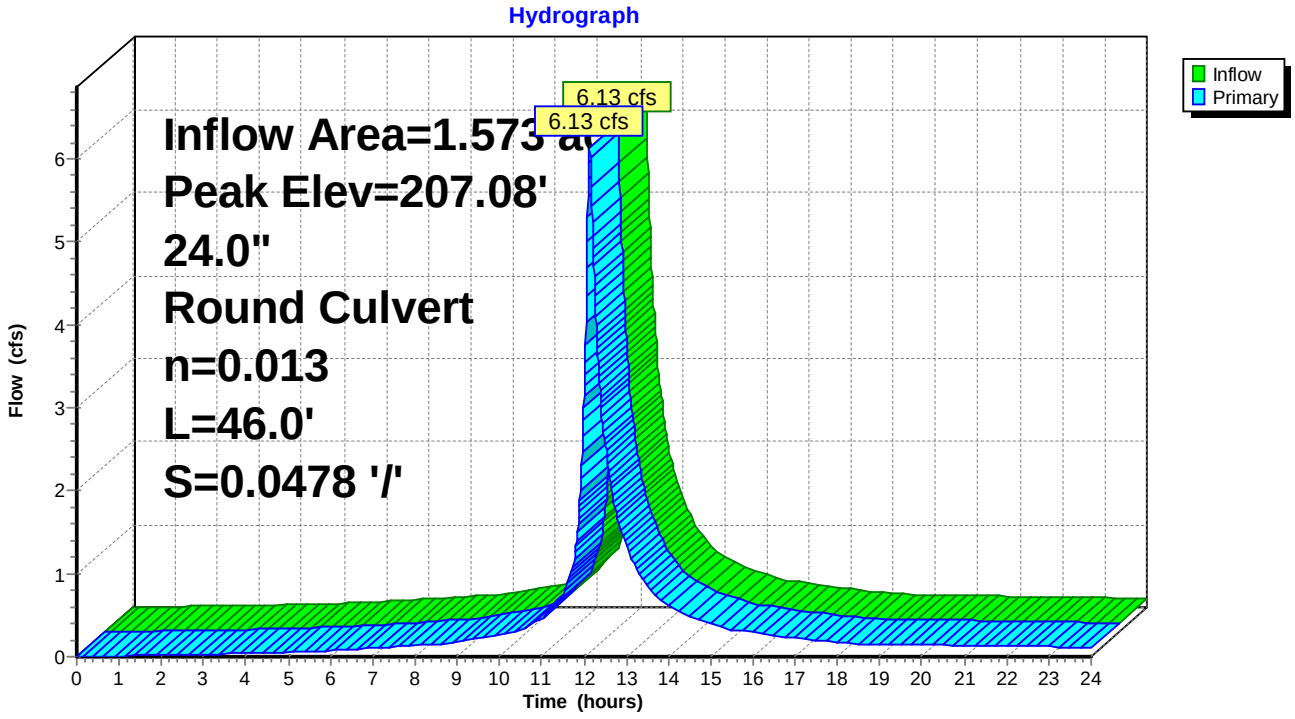
Inflow Area = 1.573 ac, 78.29% Impervious, Inflow Depth > 5.06" for 2070 50-yr event
Inflow = 6.13 cfs @ 12.14 hrs, Volume= 0.664 af
Outflow = 6.13 cfs @ 12.14 hrs, Volume= 0.664 af, Atten= 0%, Lag= 0.0 min
Primary = 6.13 cfs @ 12.14 hrs, Volume= 0.664 af
Routed to Pond MH19 : DMH-19

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 207.08' @ 12.14 hrs
Flood Elev= 209.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.00'	**24.0" Round Culvert** L= 46.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.00' / 203.80' S= 0.0478 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=6.12 cfs @ 12.14 hrs HW=207.08' TW=204.93' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.12 cfs @ 3.54 fps)

Pond MH18: DMH-18



Summary for Pond MH19: DMH-19

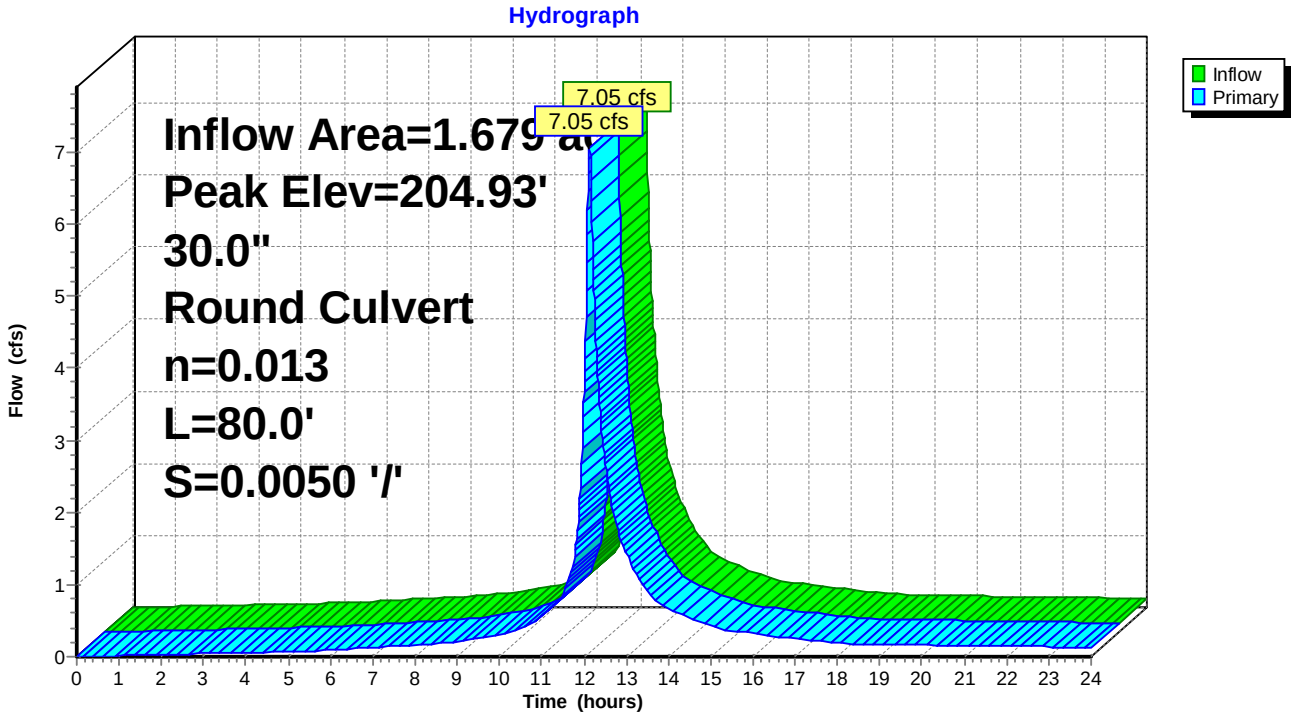
Inflow Area = 1.679 ac, 79.41% Impervious, Inflow Depth > 5.31" for 2070 50-yr event
Inflow = 7.05 cfs @ 12.14 hrs, Volume= 0.744 af
Outflow = 7.05 cfs @ 12.14 hrs, Volume= 0.744 af, Atten= 0%, Lag= 0.0 min
Primary = 7.05 cfs @ 12.14 hrs, Volume= 0.744 af
Routed to Pond 5P : Basin 5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 204.93' @ 12.14 hrs
Flood Elev= 207.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	203.70'	**30.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 203.70' / 203.30' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=7.03 cfs @ 12.14 hrs HW=204.93' TW=202.32' (Dynamic Tailwater)
1=Culvert (Barrel Controls 7.03 cfs @ 4.28 fps)

Pond MH19: DMH-19



Summary for Pond MH2: DMH-2

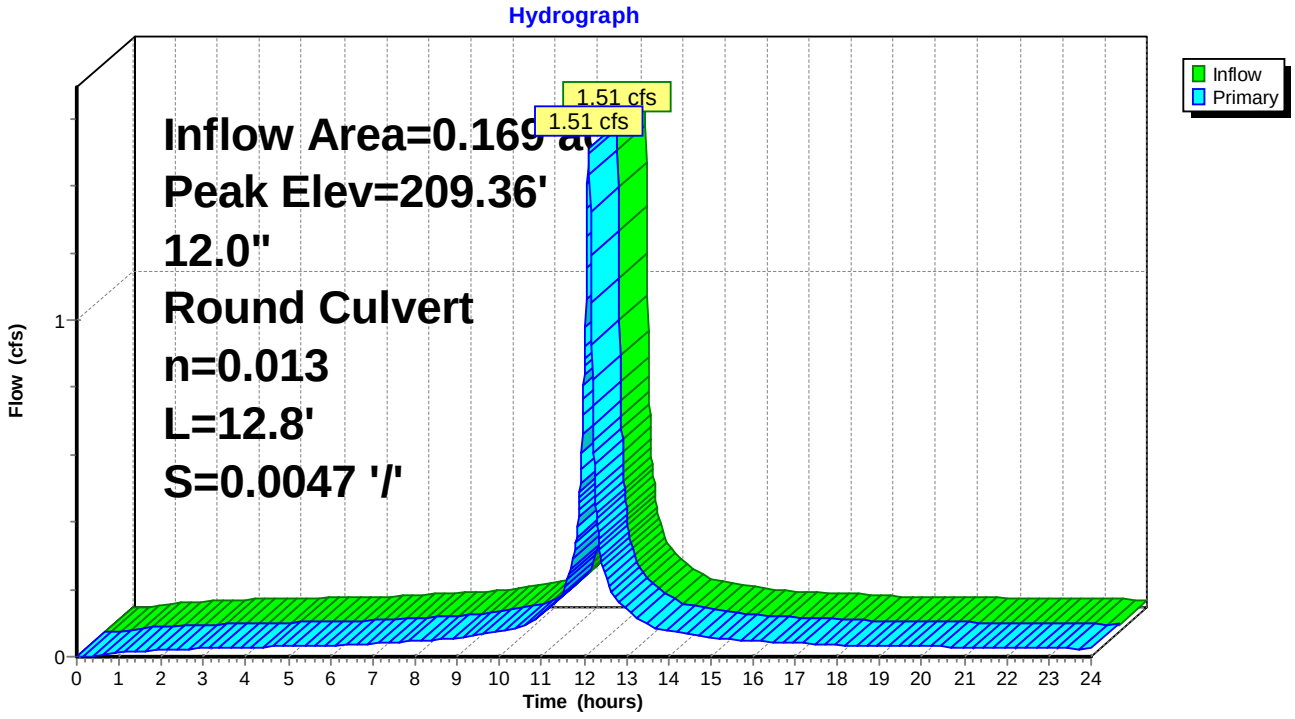
Inflow Area = 0.169 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 1.51 cfs @ 12.12 hrs, Volume= 0.130 af
Outflow = 1.51 cfs @ 12.12 hrs, Volume= 0.130 af, Atten= 0%, Lag= 0.0 min
Primary = 1.51 cfs @ 12.12 hrs, Volume= 0.130 af
Routed to Pond 2P : Basin 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 209.36' @ 12.50 hrs
Flood Elev= 211.34'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.35'	**12.0" Round Culvert** L= 12.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.35' / 207.29' S= 0.0047 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.51 cfs @ 12.12 hrs HW=208.79' TW=208.63' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.51 cfs @ 1.93 fps)

Pond MH2: DMH-2



Summary for Pond MH20: DMH-20

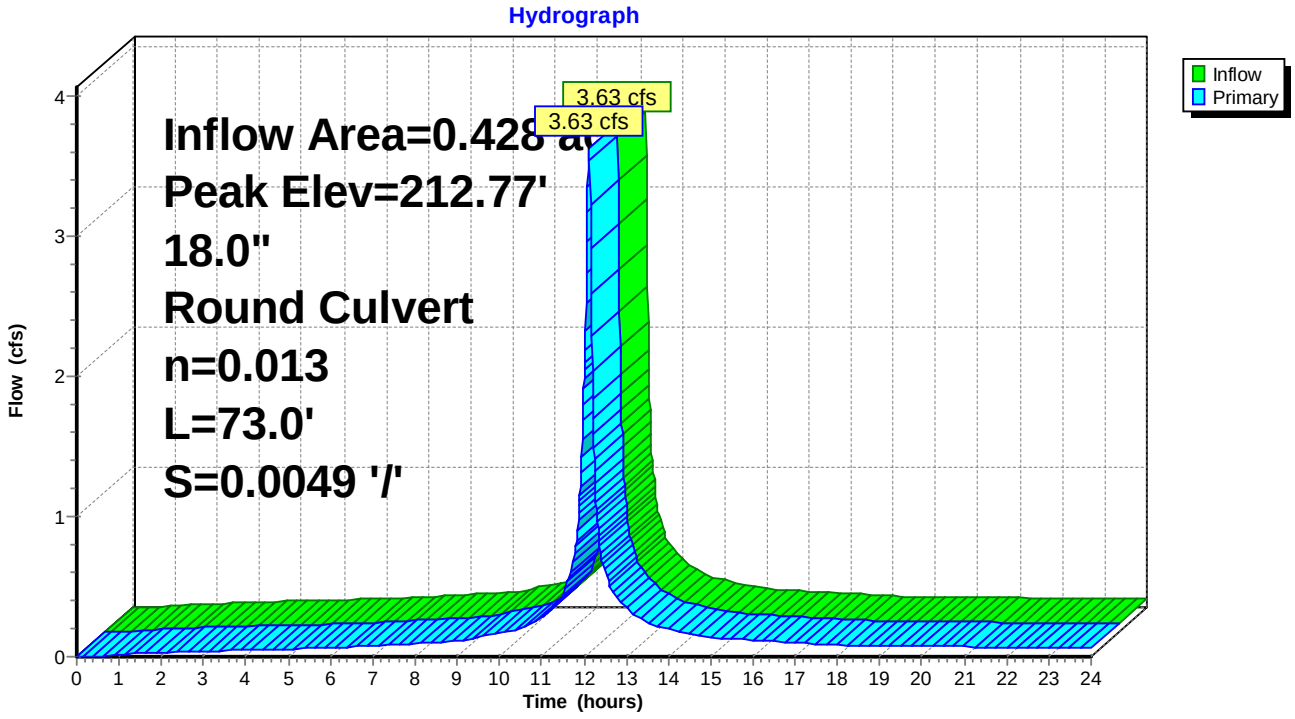
Inflow Area = 0.428 ac, 86.44% Impervious, Inflow Depth > 8.40" for 2070 50-yr event
Inflow = 3.63 cfs @ 12.12 hrs, Volume= 0.300 af
Outflow = 3.63 cfs @ 12.12 hrs, Volume= 0.300 af, Atten= 0%, Lag= 0.0 min
Primary = 3.63 cfs @ 12.12 hrs, Volume= 0.300 af
Routed to Pond MH21 : DMH-21

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 212.77' @ 12.13 hrs
Flood Elev= 215.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	211.20'	**18.0" Round Culvert** L= 73.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 211.20' / 210.84' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.25 cfs @ 12.12 hrs HW=212.76' TW=212.57' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.25 cfs @ 2.20 fps)

Pond MH20: DMH-20



Summary for Pond MH21: DMH-21

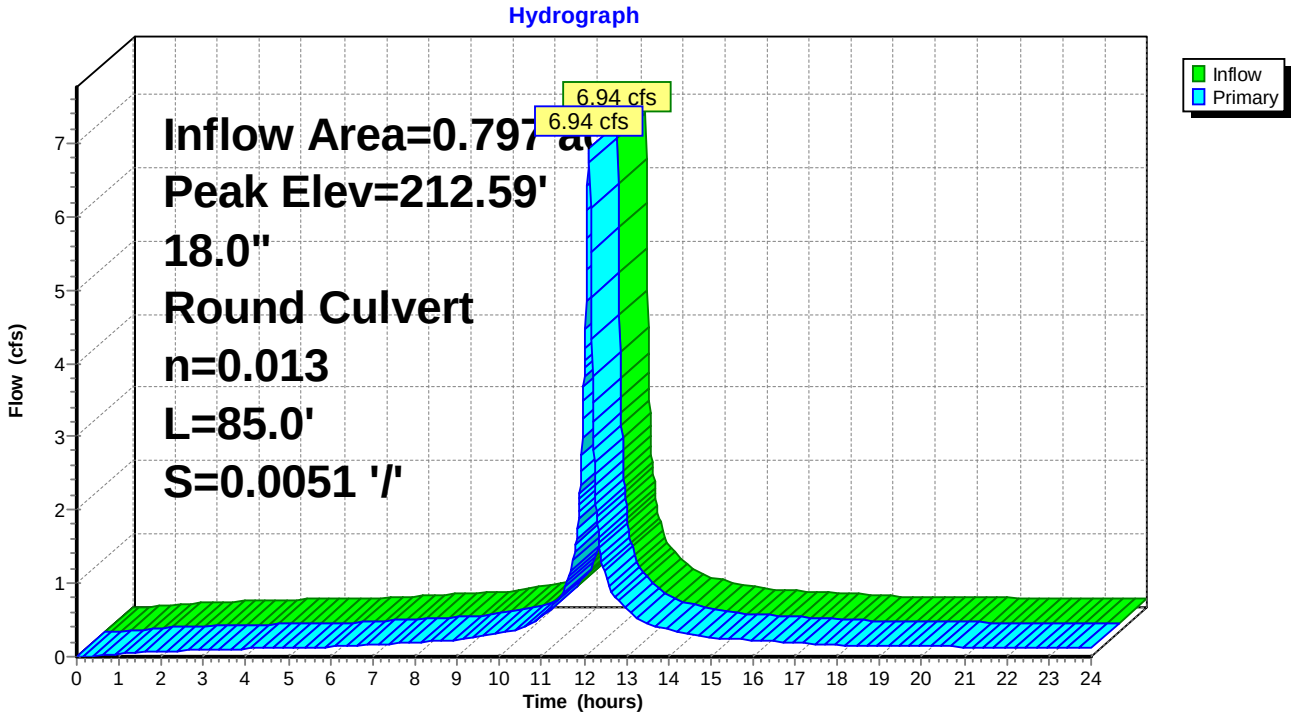
Inflow Area = 0.797 ac, 92.72% Impervious, Inflow Depth > 8.80" for 2070 50-yr event
Inflow = 6.94 cfs @ 12.12 hrs, Volume= 0.584 af
Outflow = 6.94 cfs @ 12.12 hrs, Volume= 0.584 af, Atten= 0%, Lag= 0.0 min
Primary = 6.94 cfs @ 12.12 hrs, Volume= 0.584 af
Routed to Pond 1SS : SSMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 212.59' @ 12.13 hrs
Flood Elev= 215.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.74'	**18.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.74' / 210.31' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=6.93 cfs @ 12.12 hrs HW=212.56' TW=211.85' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.93 cfs @ 4.10 fps)

Pond MH21: DMH-21



Summary for Pond MH22: DMH-22

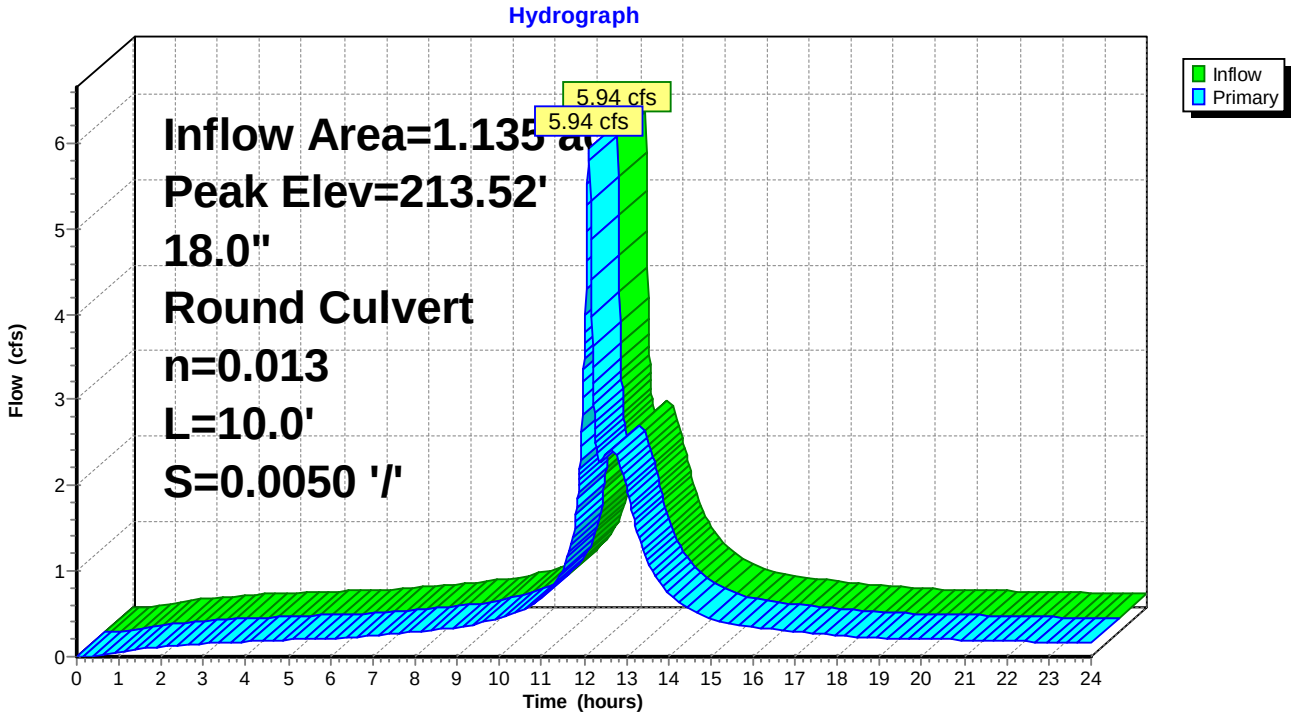
Inflow Area = 1.135 ac,100.00% Impervious, Inflow Depth > 9.20" for 2070 50-yr event
Inflow = 5.94 cfs @ 12.12 hrs, Volume= 0.870 af
Outflow = 5.94 cfs @ 12.12 hrs, Volume= 0.870 af, Atten= 0%, Lag= 0.0 min
Primary = 5.94 cfs @ 12.12 hrs, Volume= 0.870 af
Routed to Pond 1SS : SSMH-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 213.52' @ 12.12 hrs
Flood Elev= 215.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	212.00'	**18.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 212.00' / 211.95' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.93 cfs @ 12.12 hrs HW=213.52' TW=211.85' (Dynamic Tailwater)
1=Culvert (Barrel Controls 5.93 cfs @ 4.11 fps)

Pond MH22: DMH-22



Summary for Pond MH24: DMH-24

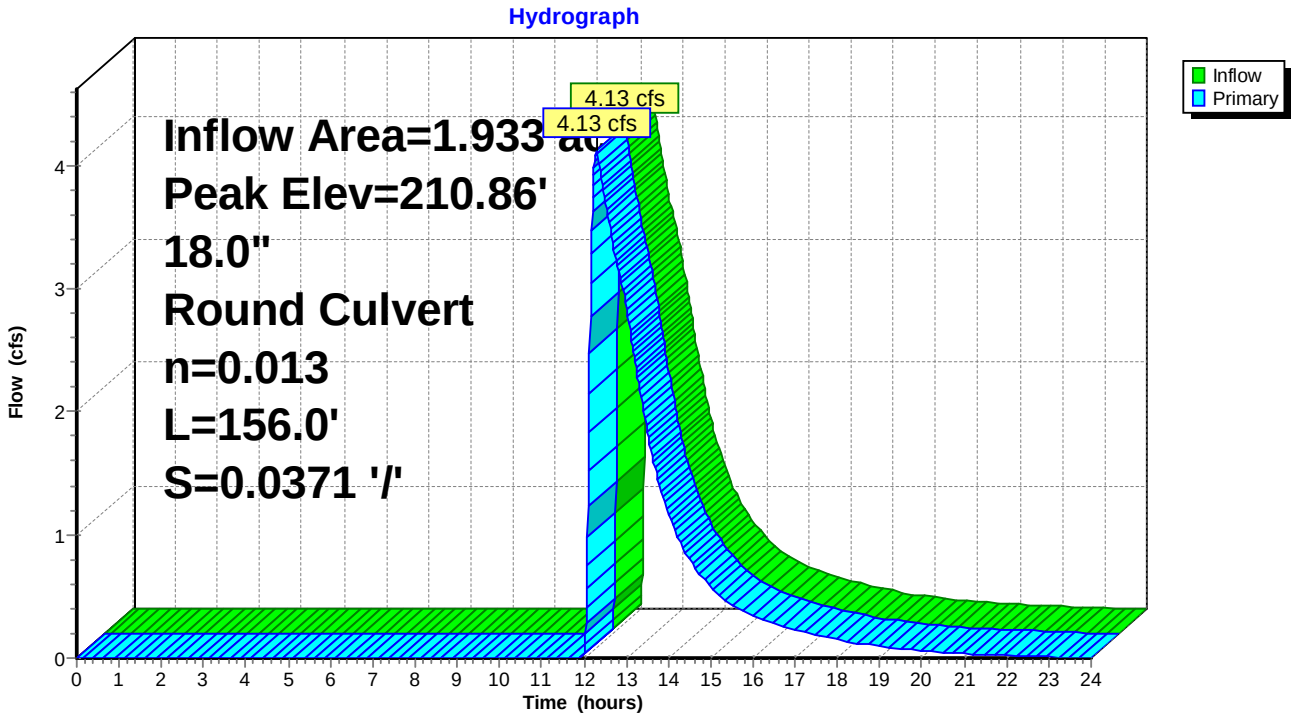
Inflow Area = 1.933 ac, 96.99% Impervious, Inflow Depth > 3.62" for 2070 50-yr event
Inflow = 4.13 cfs @ 12.29 hrs, Volume= 0.584 af
Outflow = 4.13 cfs @ 12.29 hrs, Volume= 0.584 af, Atten= 0%, Lag= 0.0 min
Primary = 4.13 cfs @ 12.29 hrs, Volume= 0.584 af
Routed to Pond MH25 : DMH-25

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.86' @ 12.29 hrs
Flood Elev= 214.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	209.88'	**18.0" Round Culvert** L= 156.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.88' / 204.10' S= 0.0371 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=4.12 cfs @ 12.29 hrs HW=210.86' TW=205.23' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.12 cfs @ 3.37 fps)

Pond MH24: DMH-24



Summary for Pond MH25: DMH-25

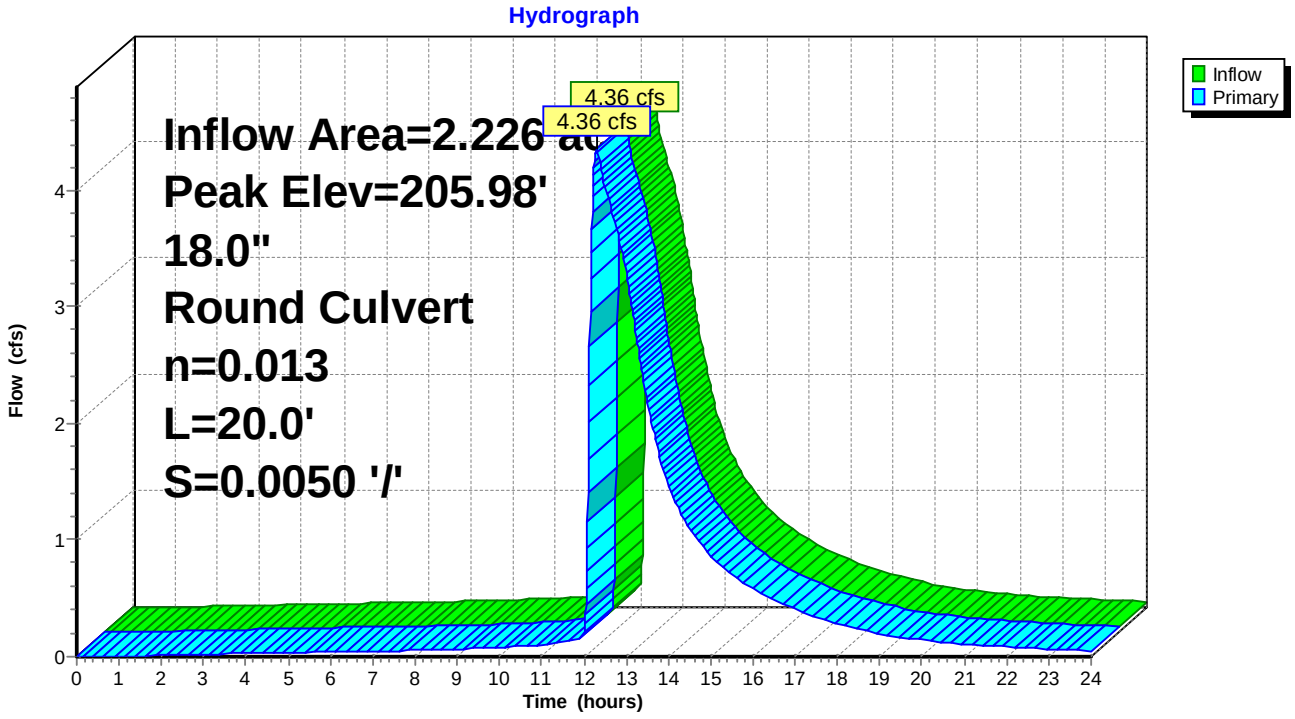
Inflow Area = 2.226 ac, 97.33% Impervious, Inflow Depth > 4.31" for 2070 50-yr event
Inflow = 4.36 cfs @ 12.29 hrs, Volume= 0.800 af
Outflow = 4.36 cfs @ 12.29 hrs, Volume= 0.800 af, Atten= 0%, Lag= 0.0 min
Primary = 4.36 cfs @ 12.29 hrs, Volume= 0.800 af
Routed to Pond 6P : Basin 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 205.98' @ 16.71 hrs
Flood Elev= 207.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	204.00'	**18.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 204.00' / 203.90' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=4.36 cfs @ 12.29 hrs HW=205.23' TW=203.26' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.36 cfs @ 3.81 fps)

Pond MH25: DMH-25



Summary for Pond MH26: DMH-26

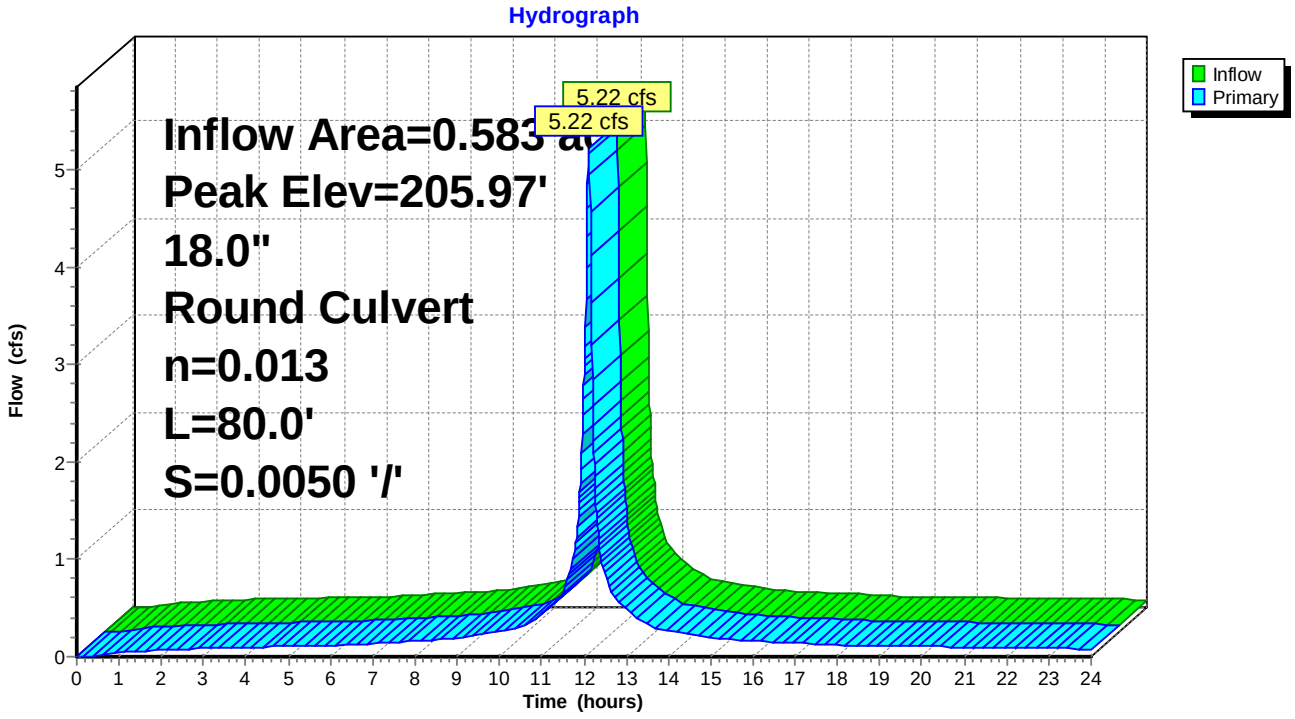
Inflow Area = 0.583 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 5.22 cfs @ 12.12 hrs, Volume= 0.449 af
Outflow = 5.22 cfs @ 12.12 hrs, Volume= 0.449 af, Atten= 0%, Lag= 0.0 min
Primary = 5.22 cfs @ 12.12 hrs, Volume= 0.449 af
Routed to Pond 6P : Basin 6

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 205.97' @ 16.74 hrs
Flood Elev= 205.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	201.78'	**18.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 201.78' / 201.38' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.22 cfs @ 12.12 hrs HW=203.16' TW=202.49' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.22 cfs @ 4.01 fps)

Pond MH26: DMH-26



Summary for Pond MH27: DMH-27

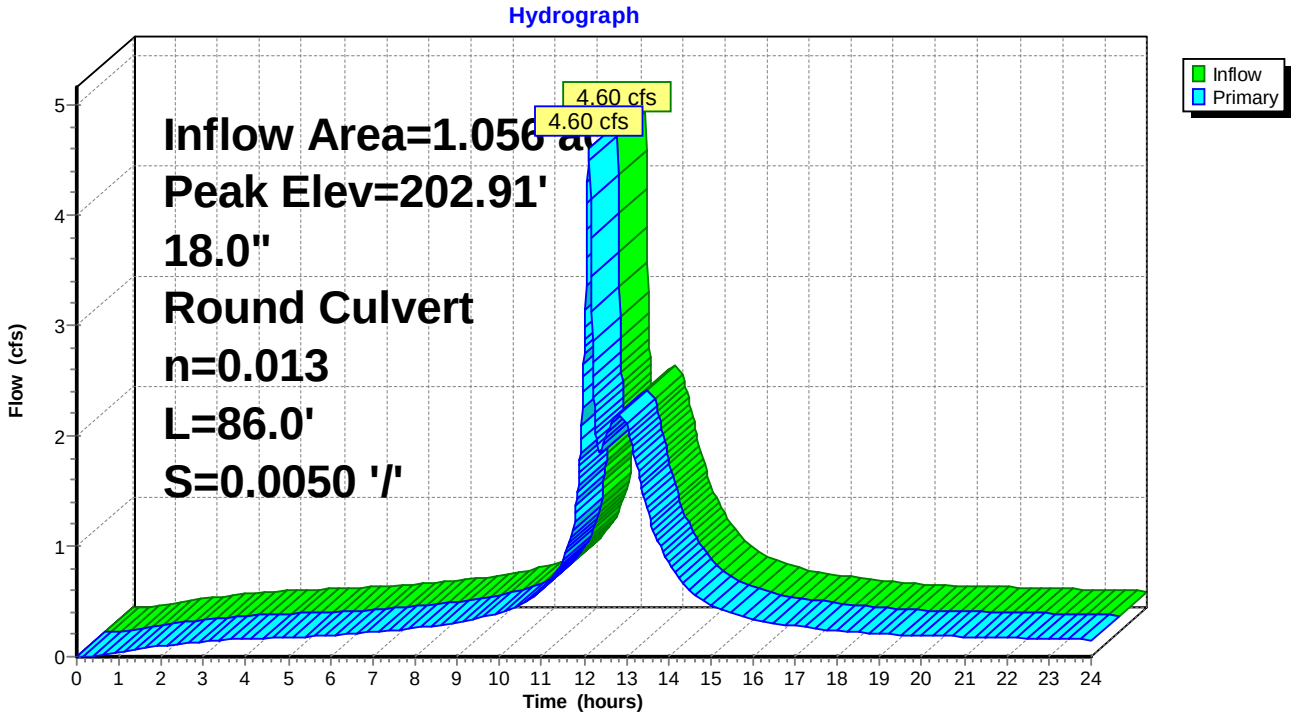
Inflow Area = 1.056 ac, 99.25% Impervious, Inflow Depth > 9.17" for 2070 50-yr event
Inflow = 4.60 cfs @ 12.12 hrs, Volume= 0.807 af
Outflow = 4.60 cfs @ 12.12 hrs, Volume= 0.807 af, Atten= 0%, Lag= 0.0 min
Primary = 4.60 cfs @ 12.12 hrs, Volume= 0.807 af
Routed to Pond 2SS : SSMH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 202.91' @ 14.70 hrs
Flood Elev= 205.61'

Device	Routing	Invert	Outlet Devices
#1	Primary	201.36'	**18.0" Round Culvert** L= 86.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 201.36' / 200.93' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=4.60 cfs @ 12.12 hrs HW=202.67' TW=202.06' (Dynamic Tailwater)
1=Culvert (Outlet Controls 4.60 cfs @ 3.75 fps)

Pond MH27: DMH-27



Summary for Pond MH3: DMH-3

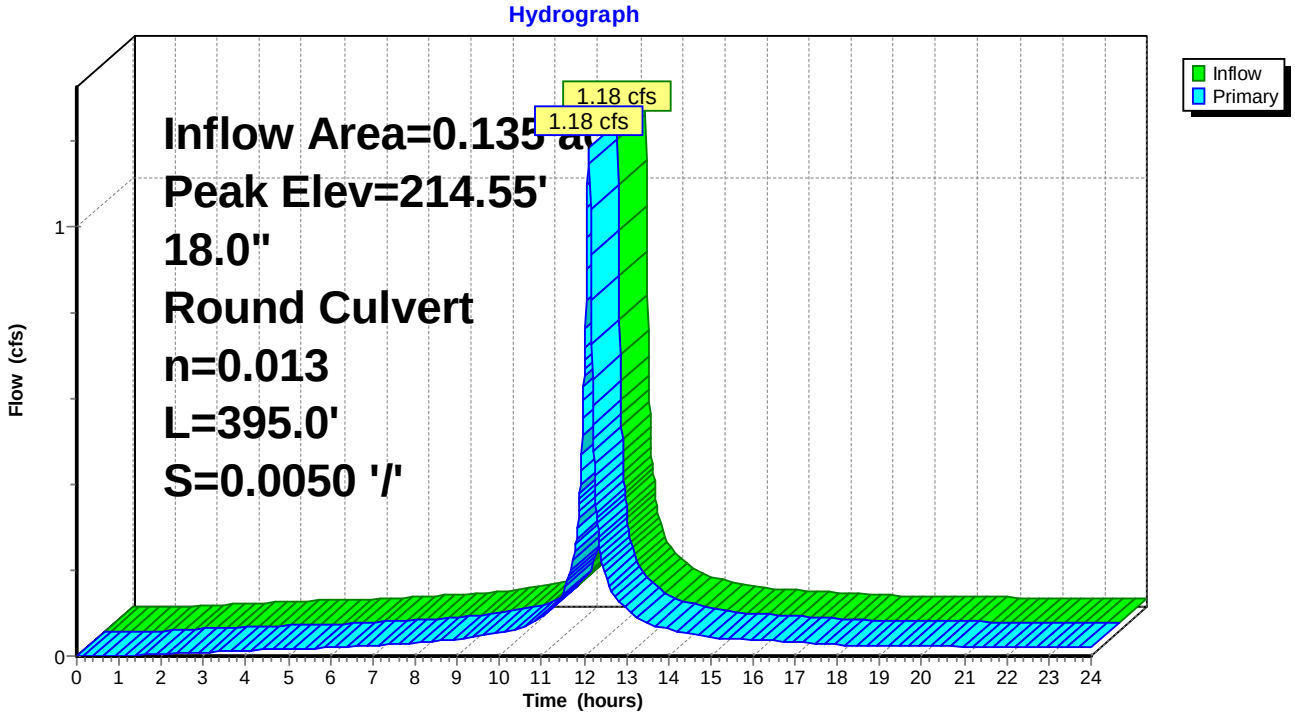
Inflow Area = 0.135 ac, 74.47% Impervious, Inflow Depth > 8.52" for 2070 50-yr event
Inflow = 1.18 cfs @ 12.12 hrs, Volume= 0.096 af
Outflow = 1.18 cfs @ 12.12 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.0 min
Primary = 1.18 cfs @ 12.12 hrs, Volume= 0.096 af
Routed to Pond MH4 : DMH-4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.55' @ 12.12 hrs
Flood Elev= 217.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**18.0" Round Culvert** L= 395.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 212.03' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=1.18 cfs @ 12.12 hrs HW=214.55' TW=210.79' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.18 cfs @ 3.03 fps)

Pond MH3: DMH-3



Summary for Pond MH4: DMH-4

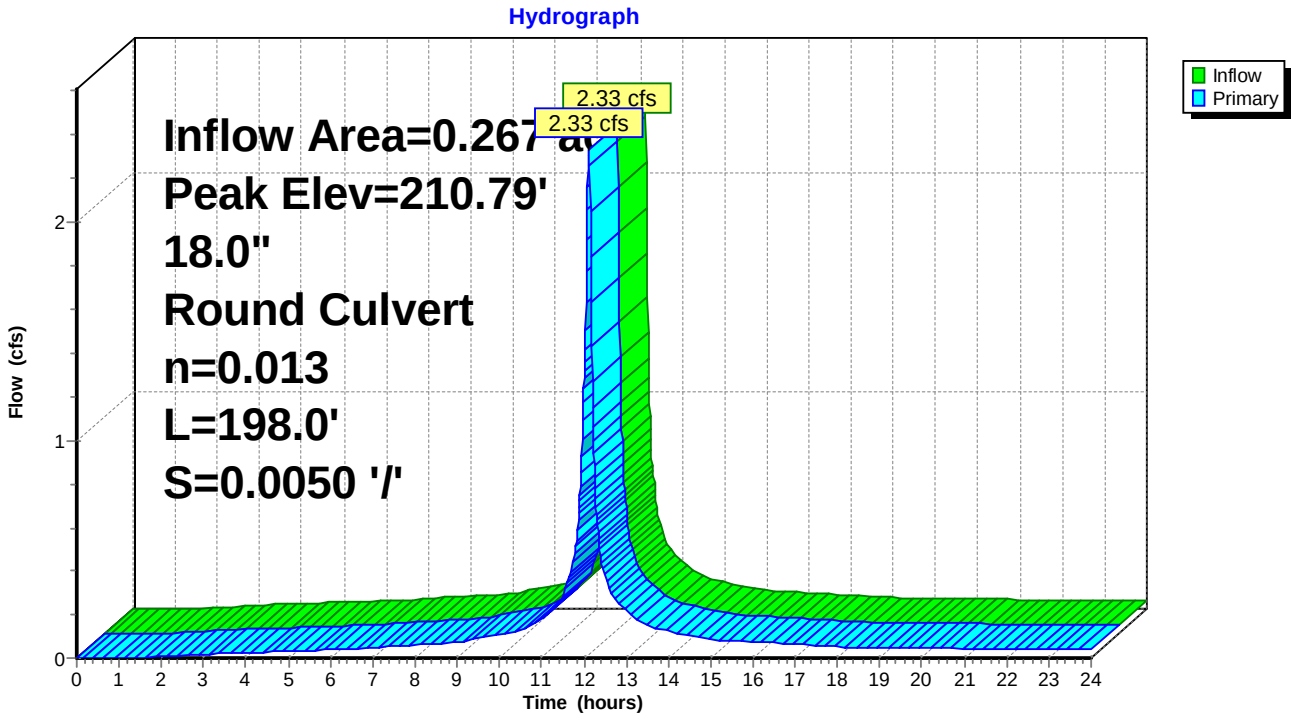
Inflow Area = 0.267 ac, 72.85% Impervious, Inflow Depth > 8.49" for 2070 50-yr event
Inflow = 2.33 cfs @ 12.12 hrs, Volume= 0.189 af
Outflow = 2.33 cfs @ 12.12 hrs, Volume= 0.189 af, Atten= 0%, Lag= 0.0 min
Primary = 2.33 cfs @ 12.12 hrs, Volume= 0.189 af
Routed to Pond MH5 : DMH-5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.79' @ 12.12 hrs
Flood Elev= 213.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.00'	**18.0" Round Culvert** L= 198.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.00' / 209.01' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.33 cfs @ 12.12 hrs HW=210.79' TW=208.78' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.33 cfs @ 3.57 fps)

Pond MH4: DMH-4



Summary for Pond MH5: DMH-5

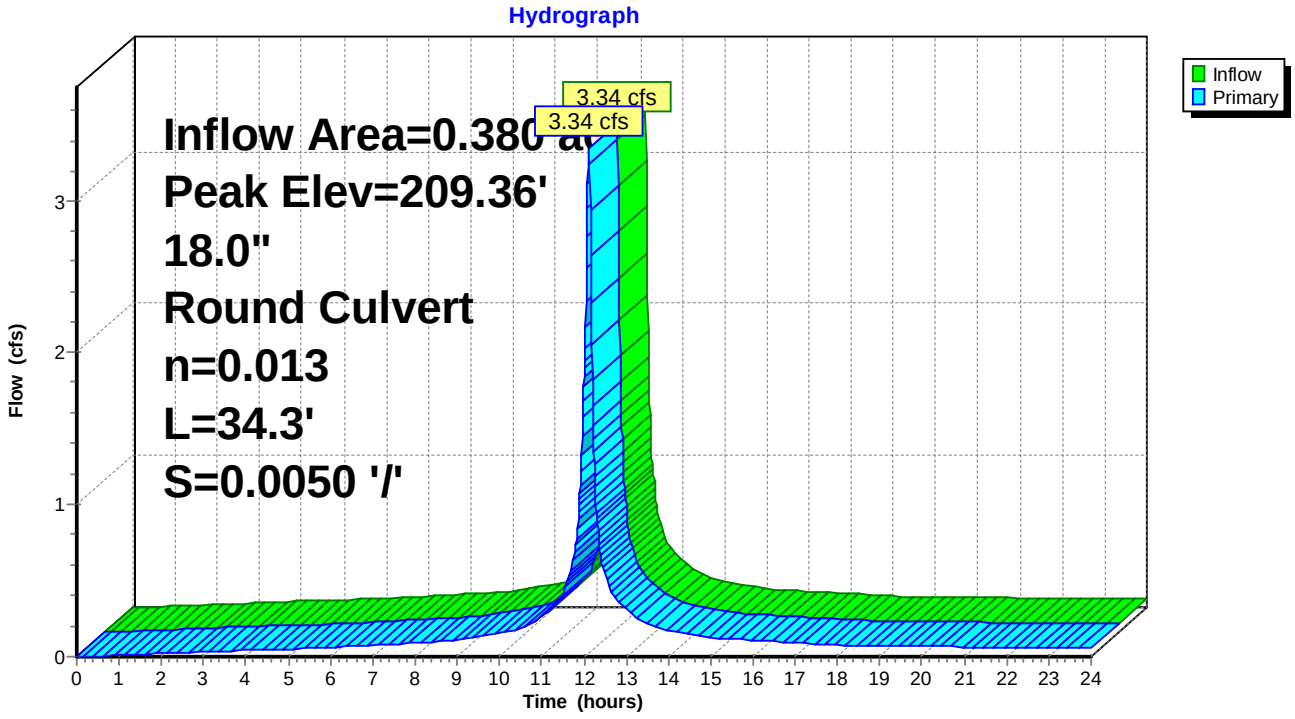
Inflow Area = 0.380 ac, 80.63% Impervious, Inflow Depth > 8.70" for 2070 50-yr event
Inflow = 3.34 cfs @ 12.12 hrs, Volume= 0.275 af
Outflow = 3.34 cfs @ 12.12 hrs, Volume= 0.275 af, Atten= 0%, Lag= 0.0 min
Primary = 3.34 cfs @ 12.12 hrs, Volume= 0.275 af
Routed to Pond 2P : Basin 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 209.36' @ 12.50 hrs
Flood Elev= 210.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.00'	**18.0" Round Culvert** L= 34.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.00' / 206.83' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.34 cfs @ 12.12 hrs HW=208.78' TW=208.63' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.34 cfs @ 1.89 fps)

Pond MH5: DMH-5



Summary for Pond MH6: DMH-6

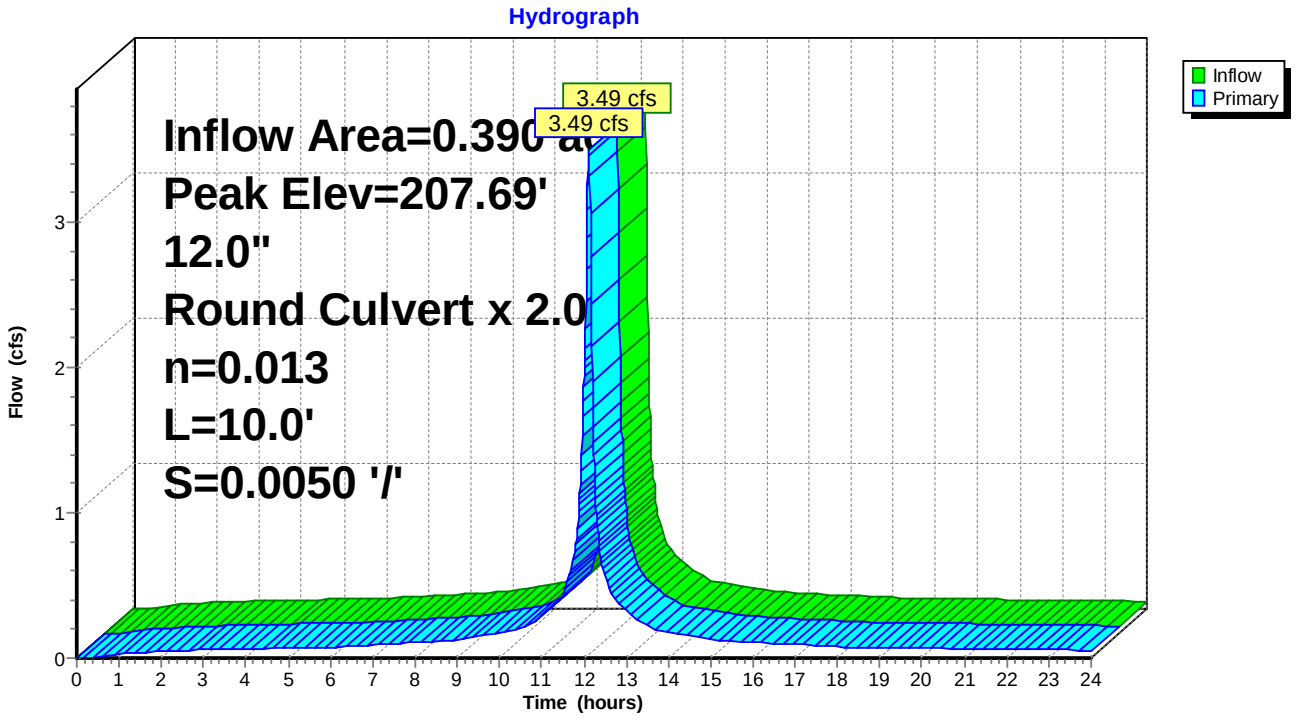
Inflow Area = 0.390 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 3.49 cfs @ 12.12 hrs, Volume= 0.300 af
Outflow = 3.49 cfs @ 12.12 hrs, Volume= 0.300 af, Atten= 0%, Lag= 0.0 min
Primary = 3.49 cfs @ 12.12 hrs, Volume= 0.300 af
Routed to Pond 3P : Basin 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 207.69' @ 12.24 hrs
Flood Elev= 209.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.35'	**12.0" Round Culvert X 2.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.35' / 206.30' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=3.49 cfs @ 12.12 hrs HW=207.44' TW=207.22' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.49 cfs @ 2.22 fps)

Pond MH6: DMH-6



Summary for Pond MH7: DMH-7

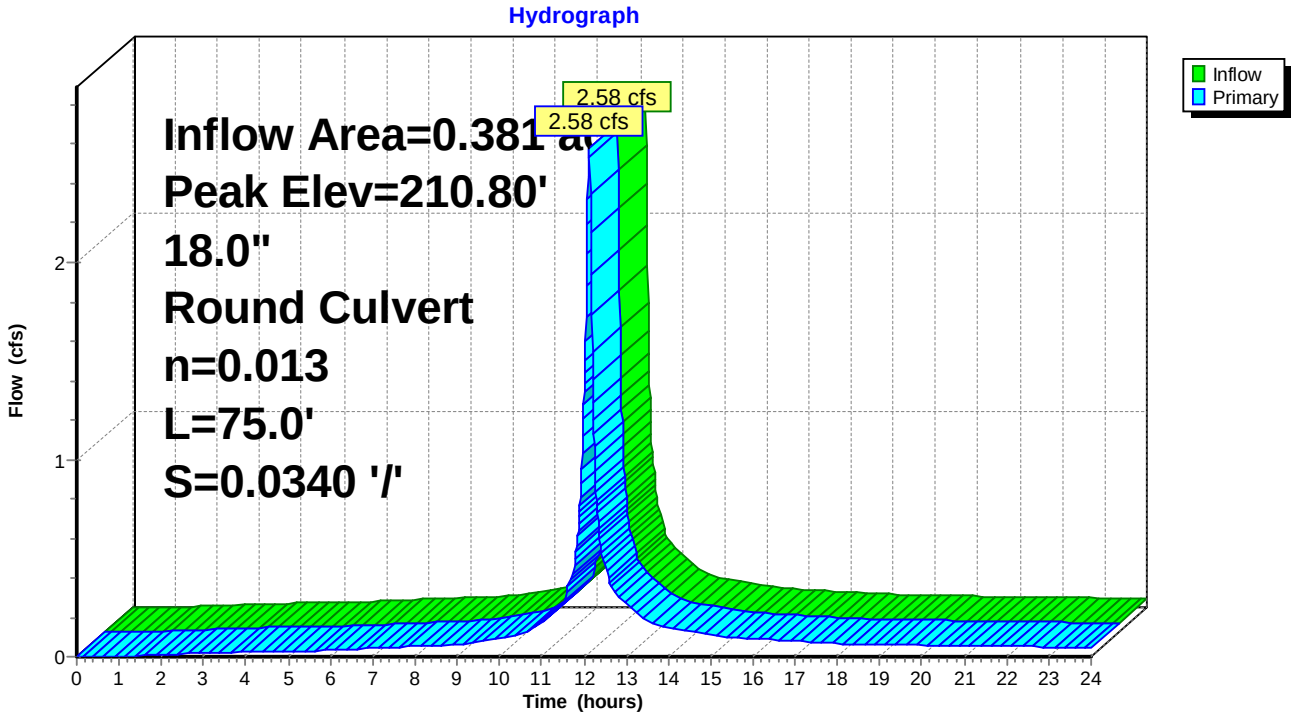
Inflow Area = 0.381 ac, 61.38% Impervious, Inflow Depth > 6.53" for 2070 50-yr event
Inflow = 2.58 cfs @ 12.13 hrs, Volume= 0.207 af
Outflow = 2.58 cfs @ 12.13 hrs, Volume= 0.207 af, Atten= 0%, Lag= 0.0 min
Primary = 2.58 cfs @ 12.13 hrs, Volume= 0.207 af
Routed to Pond 3P : Basin 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 210.80' @ 12.13 hrs
Flood Elev= 214.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	210.05'	**18.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 210.05' / 207.50' S= 0.0340 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.58 cfs @ 12.13 hrs HW=210.80' TW=207.26' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.58 cfs @ 2.94 fps)

Pond MH7: DMH-7



Summary for Pond MH8: DMH-8

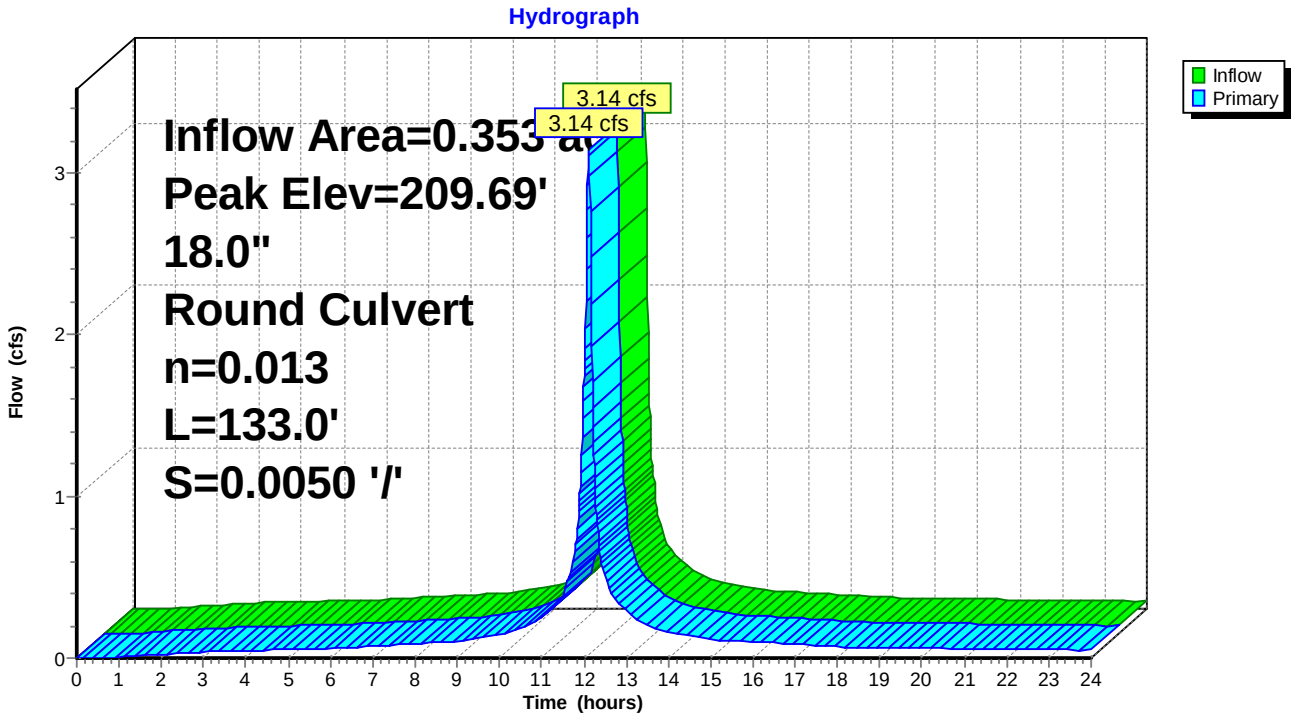
Inflow Area = 0.353 ac, 93.86% Impervious, Inflow Depth > 8.90" for 2070 50-yr event
Inflow = 3.14 cfs @ 12.12 hrs, Volume= 0.262 af
Outflow = 3.14 cfs @ 12.12 hrs, Volume= 0.262 af, Atten= 0%, Lag= 0.0 min
Primary = 3.14 cfs @ 12.12 hrs, Volume= 0.262 af
Routed to Pond MH9 : CB-31

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 209.69' @ 12.12 hrs
Flood Elev= 212.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	208.62'	**18.0" Round Culvert** L= 133.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.62' / 207.96' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.13 cfs @ 12.12 hrs HW=209.69' TW=209.08' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.13 cfs @ 3.24 fps)

Pond MH8: DMH-8



Summary for Pond MH9: CB-31

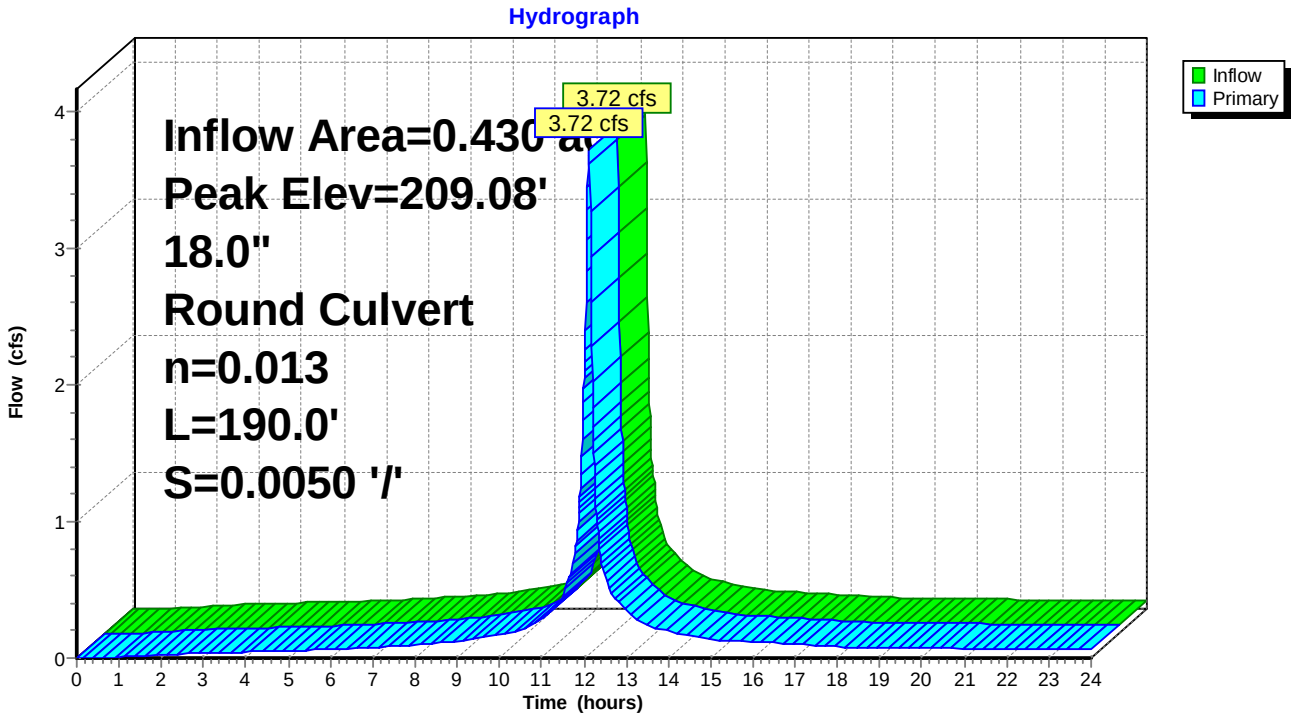
Inflow Area = 0.430 ac, 87.29% Impervious, Inflow Depth > 8.50" for 2070 50-yr event
Inflow = 3.72 cfs @ 12.12 hrs, Volume= 0.305 af
Outflow = 3.72 cfs @ 12.12 hrs, Volume= 0.305 af, Atten= 0%, Lag= 0.0 min
Primary = 3.72 cfs @ 12.12 hrs, Volume= 0.305 af
Routed to Pond MH10 : CB-31

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 209.08' @ 12.12 hrs
Flood Elev= 214.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.86'	**18.0" Round Culvert** L= 190.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.86' / 206.91' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.71 cfs @ 12.12 hrs HW=209.08' TW=208.32' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.71 cfs @ 3.30 fps)

Pond MH9: CB-31



Summary for Pond R1: R-1

Inflow Area = 0.545 ac,100.00% Impervious, Inflow Depth > 9.14" for 2070 50-yr event
Inflow = 1.77 cfs @ 12.73 hrs, Volume= 0.415 af
Outflow = 1.77 cfs @ 12.73 hrs, Volume= 0.415 af, Atten= 0%, Lag= 0.1 min
Primary = 1.77 cfs @ 12.73 hrs, Volume= 0.415 af
Routed to Pond MH22 : DMH-22

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 226.72' @ 12.73 hrs Surf.Area= 0 sf Storage= 2 cf
Flood Elev= 237.00' Surf.Area= 0 sf Storage= 5 cf

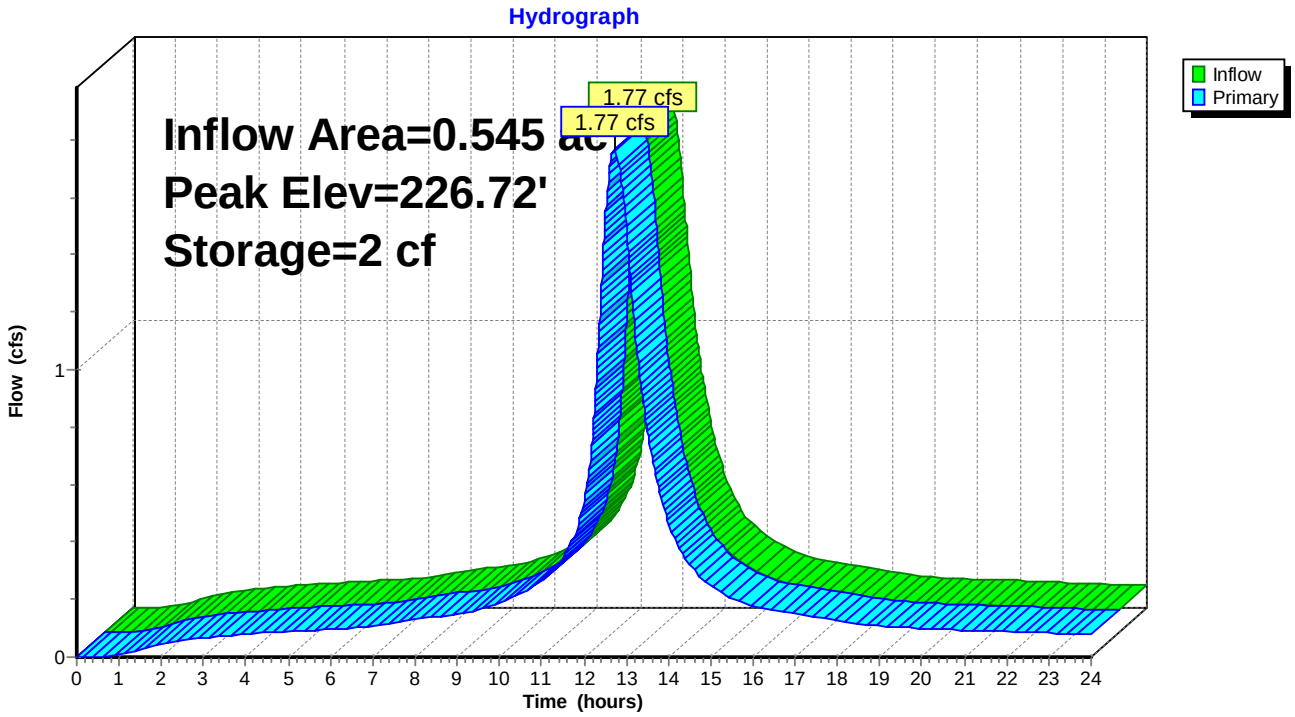
Plug-Flow detention time= 0.0 min calculated for 0.415 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (778.3 - 778.3)

Volume	Invert	Avail.Storage	Storage Description
#1	214.00'	5 cf	**0.50'D x 23.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**6.0" Round Culvert** L= 111.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 213.20' S= 0.0072 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Device 1	214.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.77 cfs @ 12.73 hrs HW=226.72' TW=212.88' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 1.77 cfs @ 9.03 fps)
↑**2=Orifice/Grate** (Passes 1.77 cfs of 3.37 cfs potential flow)

Pond R1: R-1


Hydrograph
Inflow Area=0.545 ac
Peak Elev=226.72'
Storage=2 cf
1.77 cfs
1.77 cfs
Inflow
Primary
Flow (cfs)
0
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Summary for Pond R2: R-2

Inflow Area = 0.611 ac, 99.90% Impervious, Inflow Depth > 9.11" for 2070 50-yr event
Inflow = 1.79 cfs @ 12.85 hrs, Volume= 0.464 af
Outflow = 1.79 cfs @ 12.85 hrs, Volume= 0.464 af, Atten= 0%, Lag= 0.0 min
Primary = 1.79 cfs @ 12.85 hrs, Volume= 0.464 af
Routed to Pond MH27 : DMH-27

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.02' @ 12.85 hrs Surf.Area= 0 sf Storage= 2 cf
Flood Elev= 237.00' Surf.Area= 0 sf Storage= 6 cf

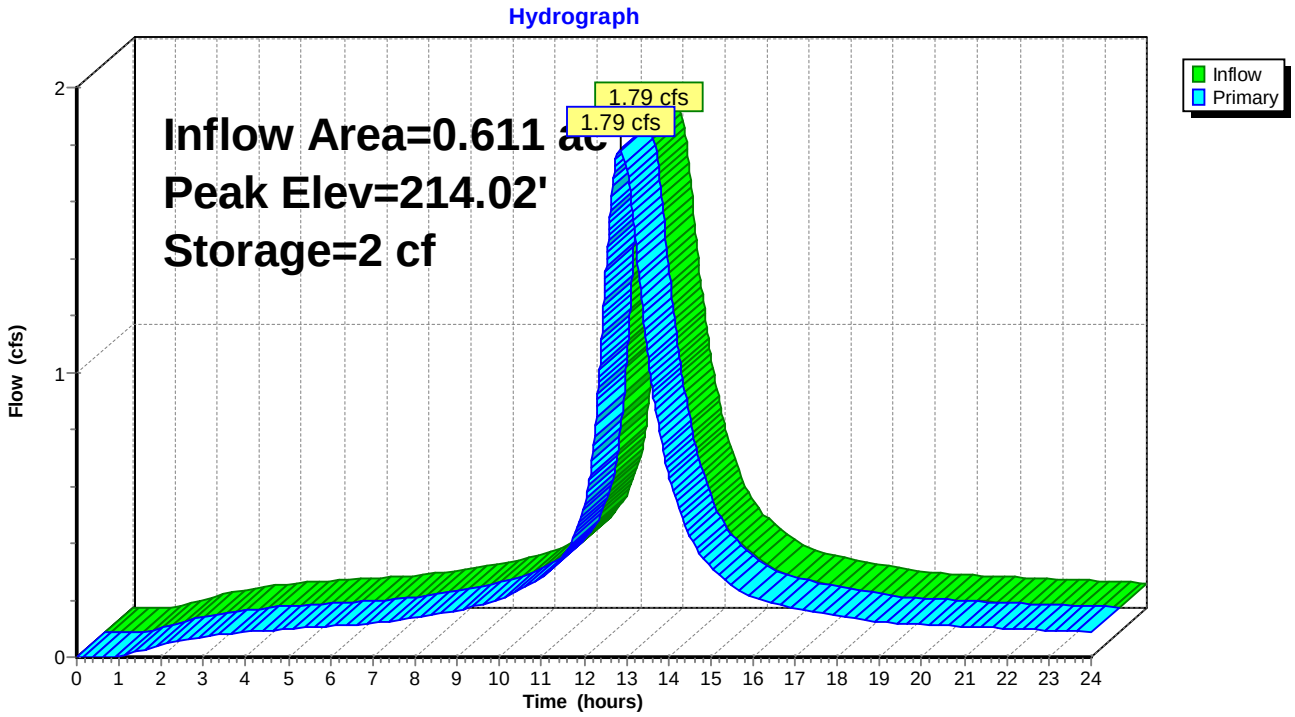
Plug-Flow detention time= 0.0 min calculated for 0.464 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (786.9 - 786.9)

Volume	Invert	Avail.Storage	Storage Description
#1	204.00'	6 cf	**0.50'D x 32.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	204.00'	**6.0" Round Culvert** L= 93.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 204.00' / 203.53' S= 0.0051 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Device 1	204.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.79 cfs @ 12.85 hrs HW=214.01' TW=202.39' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 1.79 cfs @ 9.10 fps)
↑**2=Orifice/Grate** (Passes 1.79 cfs of 2.99 cfs potential flow)

Pond R2: R-2


Hydrograph
Inflow Area=0.611 ac
Peak Elev=214.02'
Storage=2 cf
1.79 cfs
1.79 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Summary for Pond R3: R-3

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth > 9.25" for 2070 50-yr event
Inflow = 0.41 cfs @ 12.12 hrs, Volume= 0.035 af
Outflow = 0.41 cfs @ 12.12 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Primary = 0.41 cfs @ 12.12 hrs, Volume= 0.035 af
Routed to Pond MH20 : DMH-20

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 214.44' @ 12.12 hrs Surf.Area= 0 sf Storage= 0 cf
Flood Elev= 237.00' Surf.Area= 0 sf Storage= 5 cf

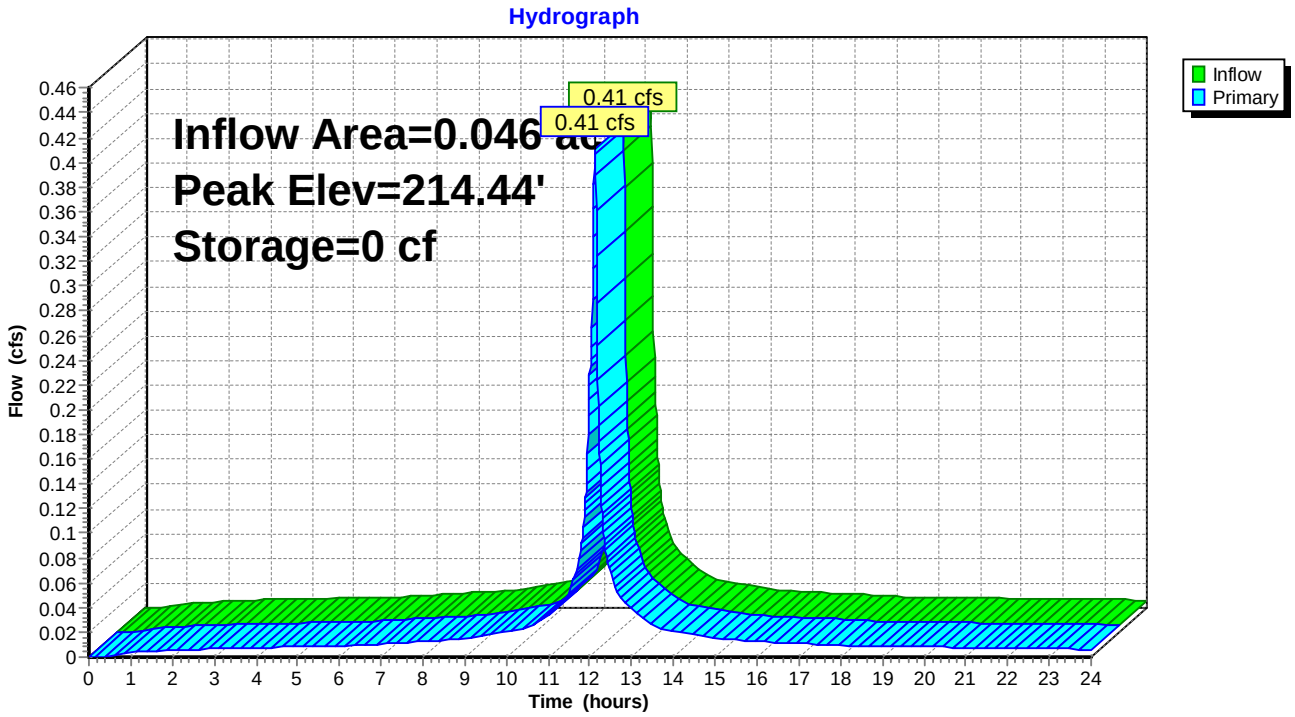
Plug-Flow detention time= 0.0 min calculated for 0.035 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (738.7 - 738.7)

Volume	Invert	Avail.Storage	Storage Description
#1	214.00'	5 cf	**0.50'D x 23.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	214.00'	**6.0" Round Culvert** L= 91.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 212.30' S= 0.0187 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Device 1	214.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.41 cfs @ 12.12 hrs HW=214.44' TW=212.75' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.41 cfs @ 2.25 fps)
↑**2=Orifice/Grate** (Passes 0.41 cfs of 0.63 cfs potential flow)

Pond R3: R-3


Hydrograph
Inflow
Primary
0.41 cfs
0.41 cfs
Inflow Area=0.046 ac
Peak Elev=214.44'
Storage=0 cf
Flow (cfs)
Time (hours)

Web Soil Survey

SANBORN HEAD

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Middlesex County, Massachusetts

June 22, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:5,520 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 21, Sep 2, 2021

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

Date(s) aerial images were photographed: Sep 9, 2020—Oct 15, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Water	3.7	2.3%
32B	Wareham loamy fine sand, 0 to 5 percent slopes	0.1	0.1%
36A	Saco mucky silt loam, frequently ponded, 0 to 1 percent slopes, frequently flooded	5.1	3.2%
52A	Freetown muck, 0 to 1 percent slopes	34.2	21.7%
53A	Freetown muck, ponded, 0 to 1 percent slopes	0.5	0.3%
253B	Hinckley loamy sand, 3 to 8 percent slopes	9.0	5.7%
254A	Merrimac fine sandy loam, 0 to 3 percent slopes	31.9	20.3%
255C	Windsor loamy sand, 8 to 15 percent slopes	4.0	2.6%
256A	Deerfield loamy fine sand, 0 to 3 percent slopes	14.6	9.2%
260B	Sudbury fine sandy loam, 3 to 8 percent slopes	9.0	5.7%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	15.8	10.0%
655	Udorthents, wet substratum	29.6	18.8%
Totals for Area of Interest		**157.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion

of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Middlesex County, Massachusetts

1—Water

Map Unit Setting

National map unit symbol: 996p
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear

32B—Wareham loamy fine sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: vqnd
Elevation: 0 to 2,100 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Wareham and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wareham

Setting

Landform: Terraces, deltas, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loose sandy glaciofluvial deposits

Typical profile

H1 - 0 to 10 inches: loamy fine sand
H2 - 10 to 24 inches: loamy sand
H3 - 24 to 34 inches: stratified sand to fine sand
H4 - 34 to 65 inches: stratified coarse sand to sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Minor Components

Sudbury

Percent of map unit: 10 percent
Landform: Plains, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Scarboro

Percent of map unit: 5 percent
Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Deerfield

Percent of map unit: 5 percent
Landform: Depressions, stream terraces, deltas
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

36A—Saco mucky silt loam, frequently ponded, 0 to 1 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2zvfl
Elevation: 30 to 500 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Saco and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Saco

Setting

Landform: Terraces, alluvial flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Silty alluvium

Typical profile

H1 - 0 to 13 inches: mucky silt loam
H2 - 13 to 30 inches: silt loam
H3 - 30 to 45 inches: silt loam
H4 - 45 to 65 inches: loamy sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 2 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D
Ecological site: F144AY016MA - Very Wet Low Floodplain
Hydric soil rating: Yes

Minor Components

Swansea

Percent of map unit: 8 percent
Landform: Depressions, bogs
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Freetown

Percent of map unit: 8 percent
Landform: Bogs, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Limerick

Percent of map unit: 4 percent
Landform: Terraces, alluvial flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

52A—Freetown muck, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2t2q9
Elevation: 0 to 1,110 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Freetown and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freetown

Setting

Landform: Depressions, depressions, swamps, kettles, marshes, bogs
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip

Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material

Typical profile

Oe - 0 to 2 inches: mucky peat
Oa - 2 to 79 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 19.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Minor Components

Whitman

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Swansea

Percent of map unit: 5 percent
Landform: Bogs, swamps, marshes, depressions, depressions, kettles
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

53A—Freetown muck, ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2t2qc
Elevation: 0 to 1,140 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Freetown, ponded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freetown, Ponded

Setting

Landform: Kettles, marshes, depressions, depressions, bogs, swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material

Typical profile

Oe - 0 to 2 inches: mucky peat
Oa - 2 to 79 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 19.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Minor Components

Whitman, ponded

Percent of map unit: 5 percent
Landform: Depressions on ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Swansea, ponded

Percent of map unit: 5 percent
Landform: Bogs, swamps, marshes, depressions, depressions, kettles
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

253B—Hinckley loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svm8
Elevation: 0 to 1,430 feet
Mean annual precipitation: 36 to 53 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hinckley and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Outwash deltas, outwash terraces, kames, kame terraces, moraines, eskers, outwash plains
Landform position (two-dimensional): Summit, backslope, footslope, shoulder

Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 8 percent
Landform: Outwash deltas, outwash terraces, moraines, eskers, kames, outwash plains, kame terraces
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Outwash deltas, outwash terraces, moraines, outwash plains, kame terraces
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, base slope, head slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Agawam

Percent of map unit: 2 percent
Landform: Outwash deltas, outwash terraces, moraines, eskers, kames, outwash plains, kame terraces
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Crest, base slope, side slope, nose slope, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

254A—Merrimac fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tyqr
Elevation: 0 to 1,100 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Merrimac and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Outwash plains, outwash terraces, moraines, eskers, kames
Landform position (two-dimensional): Backslope, footslope, summit, shoulder
Landform position (three-dimensional): Crest, side slope, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Hinckley

Percent of map unit: 5 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Agawam

Percent of map unit: 3 percent
Landform: Stream terraces, outwash terraces, outwash plains, moraines, eskers, kames
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Windsor

Percent of map unit: 2 percent
Landform: Dunes, deltas, outwash terraces, outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

255C—Windsor loamy sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2svkq
Elevation: 0 to 1,260 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Windsor and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor

Setting

Landform: — error in exists on —
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, riser
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
Ap - 1 to 11 inches: loamy sand
Bw - 11 to 31 inches: loamy sand
C - 31 to 65 inches: sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A

Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Hinckley

Percent of map unit: 10 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Deerfield

Percent of map unit: 5 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

256A—Deerfield loamy fine sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2xfg8
Elevation: 0 to 1,100 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Deerfield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deerfield

Setting

Landform: Outwash terraces, outwash deltas, outwash plains, kame terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand
Bw - 9 to 25 inches: loamy fine sand

BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 15 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 7 percent
Landform: Outwash terraces, kame terraces, outwash deltas, outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Wareham

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sudbury

Percent of map unit: 2 percent
Landform: Outwash plains, kame terraces, outwash deltas, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Ninigret

Percent of map unit: 1 percent
Landform: Kame terraces, outwash plains, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex, linear
Across-slope shape: Convex, concave
Hydric soil rating: No

260B—Sudbury fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9915
Elevation: 0 to 2,100 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sudbury and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sudbury

Setting

Landform: Plains, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Friable loamy eolian deposits over loose sandy glaciofluvial deposits

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 20 inches: fine sandy loam
H3 - 20 to 27 inches: loamy sand
H4 - 27 to 65 inches: stratified gravelly coarse sand to sand

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 8 percent
Landform: Terraces, plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Wareham

Percent of map unit: 4 percent
Landform: Depressions, deltas, terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Windsor

Percent of map unit: 2 percent
Landform: Flats, deltas, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent

626B—Merrimac-Urban land complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tyr9
Elevation: 0 to 820 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Merrimac and similar soils: 45 percent
Urban land: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Outwash plains, outwash terraces, moraines, eskers, kames
Landform position (two-dimensional): Backslope, footslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Description of Urban Land

Typical profile

M - 0 to 10 inches: cemented material

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D

Hydric soil rating: Unranked

Minor Components

Hinckley

Percent of map unit: 5 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, crest, head slope, side slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Windsor

Percent of map unit: 5 percent
Landform: Outwash terraces, dunes, outwash plains, deltas
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

655—Udorthents, wet substratum

Map Unit Setting

National map unit symbol: vr1n
Elevation: 0 to 3,000 feet
Mean annual precipitation: 32 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 110 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, wet substratum, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Wet Substratum

Setting

Parent material: Loamy alluvium and/or sandy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy marine deposits and/or loamy basal till and/or loamy lodgment till

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Minor Components

Urban land

Percent of map unit: 8 percent
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

Freetown

Percent of map unit: 4 percent
Landform: Depressions, bogs
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Swansea

Percent of map unit: 3 percent
Landform: Depressions, bogs
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

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Precipitation Estimates

NOAA Atlas 14, Volume 10, Version 3
Location name: Hudson, Massachusetts, USA*
Latitude: 42.398°, Longitude: -71.5428°
Elevation: 212 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

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	**0.334** (0.256-0.426)	**0.398** (0.304-0.508)	**0.503** (0.383-0.643)	**0.589** (0.448-0.759)	**0.709** (0.523-0.954)	**0.799** (0.578-1.10)	**0.894** (0.631-1.27)	**1.00** (0.671-1.46)	**1.15** (0.747-1.74)	**1.28** (0.810-1.97)
10-min	**0.473** (0.362-0.603)	**0.564** (0.431-0.720)	**0.713** (0.543-0.914)	**0.836** (0.634-1.08)	**1.00** (0.741-1.35)	**1.13** (0.819-1.56)	**1.27** (0.893-1.80)	**1.42** (0.950-2.06)	**1.64** (1.06-2.46)	**1.81** (1.15-2.78)
15-min	**0.556** (0.426-0.710)	**0.663** (0.507-0.847)	**0.838** (0.639-1.07)	**0.983** (0.746-1.26)	**1.18** (0.872-1.59)	**1.33** (0.964-1.83)	**1.49** (1.05-2.12)	**1.67** (1.12-2.43)	**1.92** (1.24-2.90)	**2.13** (1.35-3.28)
30-min	**0.754** (0.578-0.963)	**0.900** (0.689-1.15)	**1.14** (0.869-1.46)	**1.34** (1.01-1.72)	**1.61** (1.18-2.16)	**1.81** (1.31-2.49)	**2.02** (1.43-2.88)	**2.27** (1.52-3.30)	**2.61** (1.69-3.93)	**2.90** (1.83-4.45)
60-min	**0.953** (0.730-1.22)	**1.14** (0.870-1.45)	**1.44** (1.10-1.84)	**1.69** (1.28-2.17)	**2.03** (1.50-2.73)	**2.29** (1.66-3.14)	**2.56** (1.80-3.64)	**2.86** (1.92-4.17)	**3.30** (2.14-4.97)	**3.66** (2.32-5.62)
2-hr	**1.20** (0.930-1.52)	**1.45** (1.12-1.84)	**1.86** (1.43-2.37)	**2.20** (1.69-2.82)	**2.67** (1.99-3.58)	**3.02** (2.21-4.13)	**3.39** (2.42-4.83)	**3.84** (2.58-5.54)	**4.50** (2.92-6.72)	**5.06** (3.21-7.70)
3-hr	**1.38** (1.08-1.74)	**1.68** (1.30-2.12)	**2.16** (1.67-2.74)	**2.57** (1.97-3.26)	**3.12** (2.33-4.16)	**3.53** (2.60-4.82)	**3.97** (2.85-5.64)	**4.51** (3.04-6.48)	**5.32** (3.46-7.90)	**6.01** (3.82-9.10)
6-hr	**1.77** (1.39-2.21)	**2.16** (1.69-2.70)	**2.78** (2.17-3.49)	**3.30** (2.56-4.17)	**4.02** (3.03-5.32)	**4.55** (3.37-6.16)	**5.12** (3.70-7.22)	**5.82** (3.94-8.29)	**6.88** (4.49-10.1)	**7.79** (4.97-11.7)
12-hr	**2.25** (1.78-2.79)	**2.74** (2.16-3.39)	**3.52** (2.77-4.38)	**4.17** (3.26-5.22)	**5.07** (3.85-6.65)	**5.74** (4.27-7.69)	**6.46** (4.69-9.01)	**7.32** (4.98-10.3)	**8.62** (5.65-12.6)	**9.74** (6.23-14.5)
24-hr	**2.69** (2.15-3.31)	**3.29** (2.62-4.04)	**4.26** (3.38-5.25)	**5.06** (3.99-6.28)	**6.17** (4.72-8.02)	**6.99** (5.24-9.30)	**7.88** (5.76-10.9)	**8.96** (6.12-12.5)	**10.6** (6.96-15.3)	**12.0** (7.71-17.7)
2-day	**3.02** (2.43-3.68)	**3.73** (3.00-4.55)	**4.90** (3.92-6.00)	**5.87** (4.67-7.22)	**7.21** (5.56-9.31)	**8.19** (6.20-10.8)	**9.26** (6.84-12.8)	**10.6** (7.28-14.7)	**12.7** (8.37-18.2)	**14.5** (9.34-21.2)
3-day	**3.28** (2.65-3.98)	**4.05** (3.27-4.91)	**5.31** (4.27-6.46)	**6.35** (5.08-7.77)	**7.78** (6.03-10.0)	**8.84** (6.72-11.6)	**10.0** (7.41-13.7)	**11.4** (7.88-15.8)	**13.7** (9.05-19.5)	**15.7** (10.1-22.7)
4-day	**3.53** (2.87-4.26)	**4.33** (3.51-5.23)	**5.64** (4.55-6.83)	**6.72** (5.39-8.19)	**8.21** (6.38-10.5)	**9.31** (7.09-12.2)	**10.5** (7.80-14.4)	**12.0** (8.28-16.5)	**14.3** (9.47-20.3)	**16.3** (10.5-23.6)
7-day	**4.24** (3.47-5.09)	**5.09** (4.15-6.11)	**6.47** (5.26-7.79)	**7.62** (6.16-9.22)	**9.20** (7.19-11.7)	**10.4** (7.93-13.4)	**11.6** (8.64-15.7)	**13.2** (9.12-17.9)	**15.5** (10.3-21.8)	**17.4** (11.3-25.0)
10-day	**4.93** (4.04-5.88)	**5.80** (4.76-6.93)	**7.23** (5.90-8.66)	**8.42** (6.83-10.1)	**10.0** (7.87-12.6)	**11.3** (8.63-14.5)	**12.6** (9.32-16.8)	**14.1** (9.79-19.1)	**16.3** (10.9-22.9)	**18.2** (11.8-26.0)
20-day	**6.96** (5.77-8.23)	**7.90** (6.54-9.35)	**9.44** (7.78-11.2)	**10.7** (8.77-12.8)	**12.5** (9.82-15.4)	**13.8** (10.6-17.4)	**15.2** (11.2-19.8)	**16.6** (11.7-22.3)	**18.7** (12.5-25.9)	**20.3** (13.2-28.7)
30-day	**8.65** (7.20-10.2)	**9.63** (8.01-11.3)	**11.2** (9.32-13.3)	**12.6** (10.4-15.0)	**14.4** (11.4-17.7)	**15.8** (12.2-19.8)	**17.3** (12.8-22.2)	**18.7** (13.1-24.9)	**20.6** (13.8-28.4)	**22.0** (14.3-30.9)
45-day	**10.7** (9.00-12.6)	**11.8** (9.86-13.8)	**13.5** (11.2-15.9)	**14.9** (12.3-17.6)	**16.8** (13.4-20.5)	**18.4** (14.2-22.8)	**19.8** (14.7-25.3)	**21.2** (15.0-28.1)	**23.0** (15.5-31.4)	**24.2** (15.8-33.8)
60-day	**12.5** (10.5-14.6)	**13.6** (11.4-15.9)	**15.4** (12.8-18.0)	**16.8** (14.0-19.8)	**18.9** (15.0-22.9)	**20.5** (15.8-25.3)	**22.0** (16.3-27.8)	**23.4** (16.5-30.8)	**25.0** (16.9-34.1)	**26.1** (17.0-36.3)

[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.

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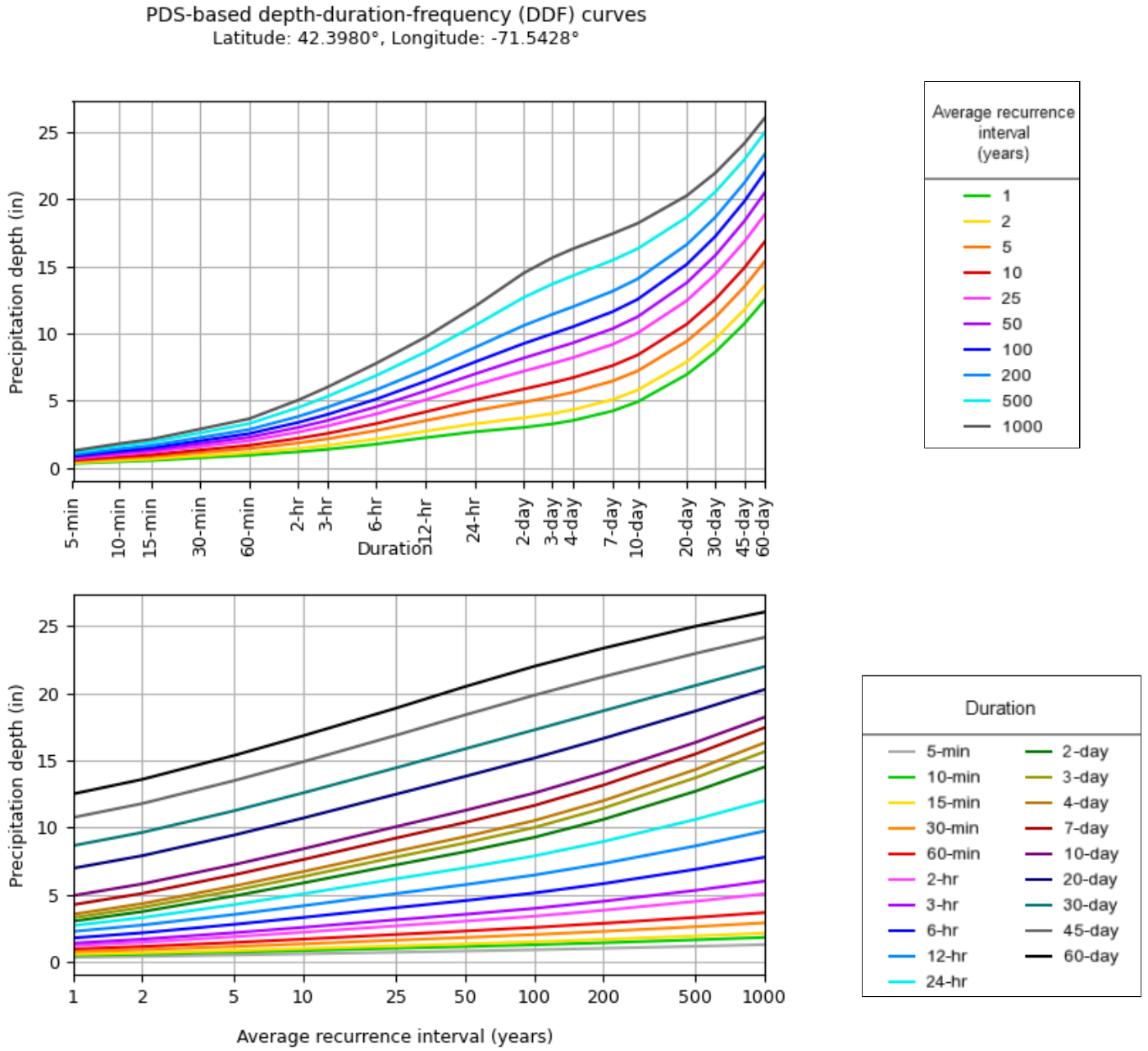
PF graphical



NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Wed Jan 24 18:21:35 2024

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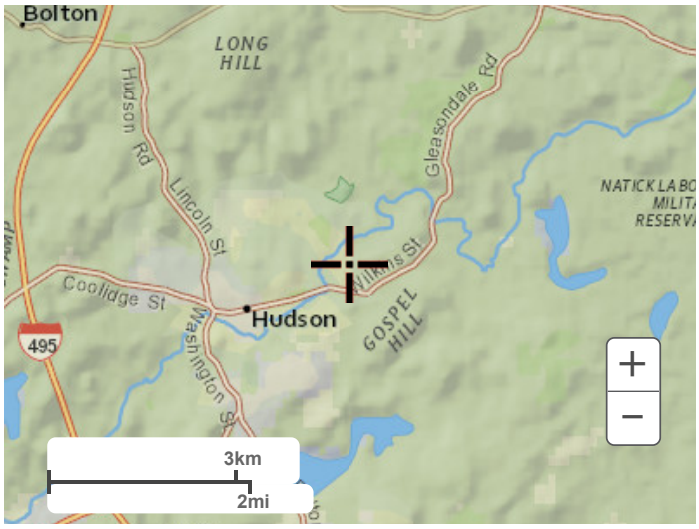
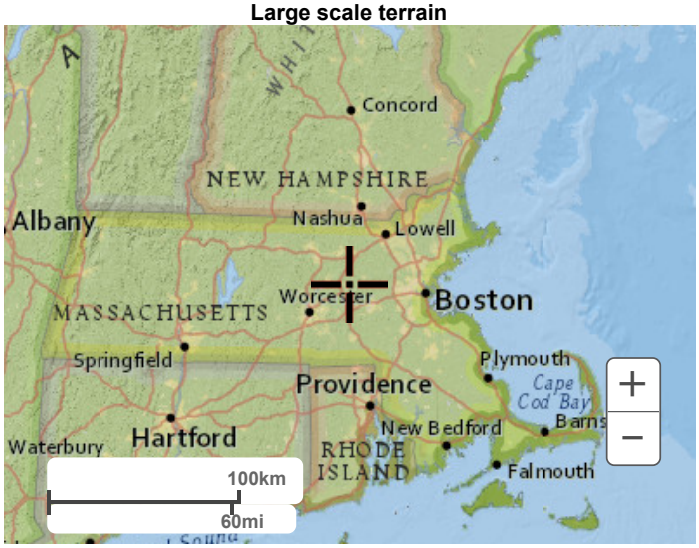
Maps & aerials

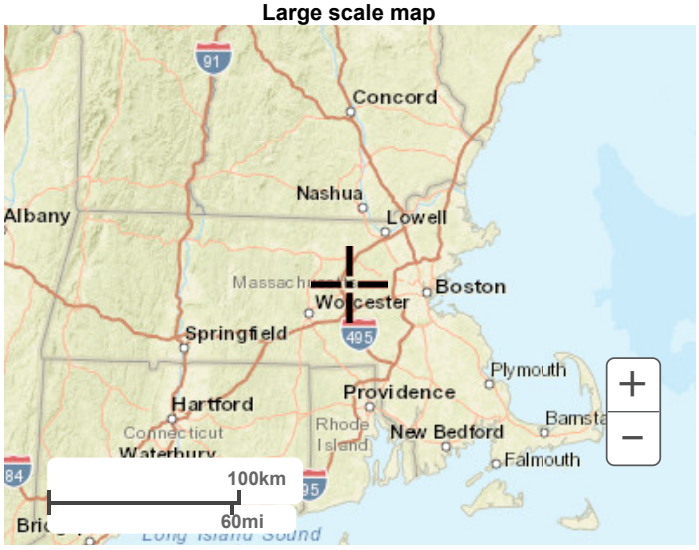
Small scale terrain



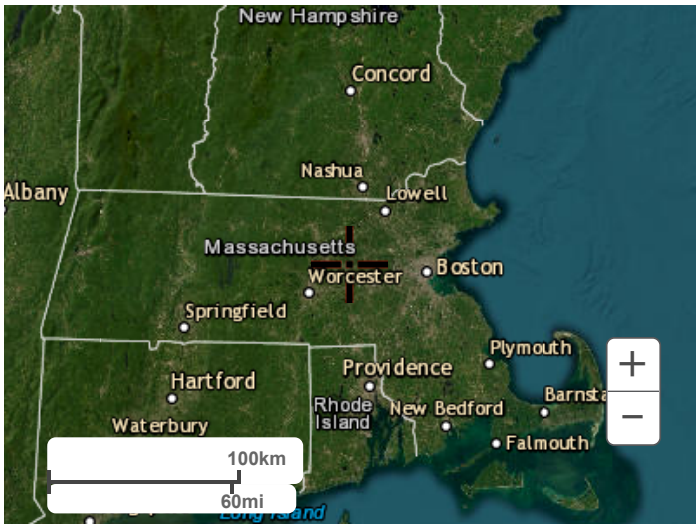
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

RMAT Climate Resilience Design Standards Tool Project Report

SANBORN HEAD

RMAT Climate Resilience Design Standards Tool Project Report

Hudson Waste Transfer Station
Date Created: 7/26/2022 12:11:05 PM Created By: fvardy [Download]

Project Summary

Link to Project

Estimated Construction Cost: $10000000.00
End of Life Year: 2084
Project within mapped Environmental Justice neighborhood: No

Ecosystem Benefits	Scores
Project Score	Low
Exposure	**Scores**
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	High Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure

Asset Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Waste Transfer Station	Low Risk	High Risk	High Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
Waste Transfer Station					
Extreme Precipitation					
Waste Transfer Station	2070			50-yr (2%)	Tier 3
Extreme Heat					
Waste Transfer Station	2070		90th		Tier 3

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "High Exposure" because of the following:

- Increased impervious area
- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site

- Existing impervious area of the project site is between 10% and 50%

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- Part of the project is within 500ft of a waterbody and less than 20ft above the waterbody
- Project is potentially susceptible to riverine erosion
- No historic riverine flooding at project site

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Increased impervious area
- Existing impervious area of the project site is between 10% and 50%
- Located within 100 ft of existing water body
- No tree removal

Scoring Rationale - Asset Risk Scoring

Asset - Waste Transfer Station
Primary asset criticality factors influencing risk ratings for this asset:

- Asset can be inaccessible/inoperable more than a week after natural hazard event without consequences
- Greater than 10,000 people would be directly affected by the loss/inoperability of the asset
- The building/facility provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
- Few alternative programs and/or services are available to support the community
- Cost to replace is between $10 million and $30 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Design Standards Output

Asset: Waste Transfer Station — Building/Facility

Sea Level Rise/Storm Surge — Low Risk

Applicable Design Criteria

Projected Tidal Datums: No
Projected Water Surface Elevation: No
Projected Wave Action Water Elevation: No
Projected Wave Heights: No
Projected Duration of Flooding: No
Projected Design Flood Velocity: No
Projected Scour & Erosion: No

Extreme Precipitation — High Risk

Target Planning Horizon: 2070
Return Period: 50-yr (2%)

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: Yes

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
Waste Transfer Station	2070	50-Year (2%)	9.5	Downloadable Methodology PDF

Limitations: While precipitation depth is useful for project planning and design, rainfall distribution and peak intensity of the design storm is recommended to also be considered. Lower-intensity, longer-duration storms allow time for infiltration and reduce the load on the infrastructure system over the duration of the storm. Higher-intensity, shorter-duration storms often have higher runoff volumes because the water does not have enough

time to infiltrate and infrastructure systems (e.g., catch basins) and may overflow or back up during such storms. In the Northeast, short -duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. These events can result in the rapid inundation of the asset project location. Design should consider both short- and long-duration precipitation events and how they may impact the asset.

The precipitation values provided by this Tool (version 1) are recommended to inform planning and design, but they do not guarantee that the asset will be protected from or be able to withstand an extreme precipitation event. The planning, design, and review guidance accompanying these values is general and projects are encouraged to do their own due diligence to understand the vulnerability of their asset.

Projected Riverine Peak Discharge & Peak Flood Elevation: Yes

Extreme Heat High Risk

Target Planning Horizon: 2070
Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Annual/Summer/Winter Average Temperatures: Yes
Projected Heat Index: Yes
Projected Growing Degree Days: No
Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: Yes
Projected Number of Heat Waves Per Year & Average Heat Wave Duration: Yes
Projected Cooling Degree Days & Heating Degree Days (base = 65°F): Yes

Project Inputs

Core Project Information

Name:	Hudson Waste Transfer Station
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2084
Location of Project:	Hudson
Estimated Capital Cost:	$10,000,000
Who is the Submitting Entity?	Private Other B-P Trucking, Inc. Stephen DePaolo (stephen.depaolo@bptrucking.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Planning
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	Please refer to the ENF for a Project Description.
Project Submission Comments:	

Project Ecosystem Benefits

Factors Influencing Output

✓ Project provides flood protection through nature-based solutions

Factors to Improve Output

✓ Incorporate nature-based solutions that may reduce storm damage
✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
✓ Incorporate green infrastructure to filter stormwater
✓ Incorporate nature-based solutions that improve water quality
✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
✓ Identify opportunities to prevent pollutants from impacting ecosystems

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	Yes
Reduces storm damage	Maybe
Recharges groundwater	Maybe
Protects public water supply	No
Filters stormwater using green infrastructure	Maybe
Improves water quality	Maybe
Promotes decarbonization	No
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	Maybe
Prevents pollution	Maybe

Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	No
Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	Yes
Are existing trees being removed as part of the proposed project?	Unsure

Project Assets

Asset: Waste Transfer Station
Asset Type: Typically Unoccupied
Asset Sub-Type: Other
Construction Type: New Construction
Construction Year: 2024
Useful Life: 60

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Building may be inaccessible/inoperable more than a week after natural hazard event without consequences

Identify the geographic area directly affected by permanent loss or significant inoperability of the building/facility.
Impacts would be limited to local area and/or municipality

Identify the population directly served that would be affected by the permanent loss of use or inoperability of the building/facility.
Greater than 10,000 people

Identify if the building/facility provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
The building/facility provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

If the building/facility became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the building/facility would not be expected to result in injuries

If there are hazardous materials in your building/facility, what are the extent of impacts related to spills/releases of these materials?
Spills and/or releases of hazardous materials would be relatively easy to clean up

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Moderate – Inoperability may impact other facilities, assets, or buildings, but is not expected to affect their ability to operate

If this building/facility was damaged beyond repair, how much would it approximately cost to replace?
Between $10 million and $30 million

Is this a recreational facility which can be vacated during a natural hazard event?
No

If the building/facility became inoperable for longer than acceptable in Question 1, what are the public and/or social services impacts?
Few alternative programs and/or services are available to support the community

If the building/facility became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
No impact on surrounding natural resources is expected

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the building is not able to serve or operate its intended users or function)?
Loss of building is not expected to reduce the ability to maintain government services.

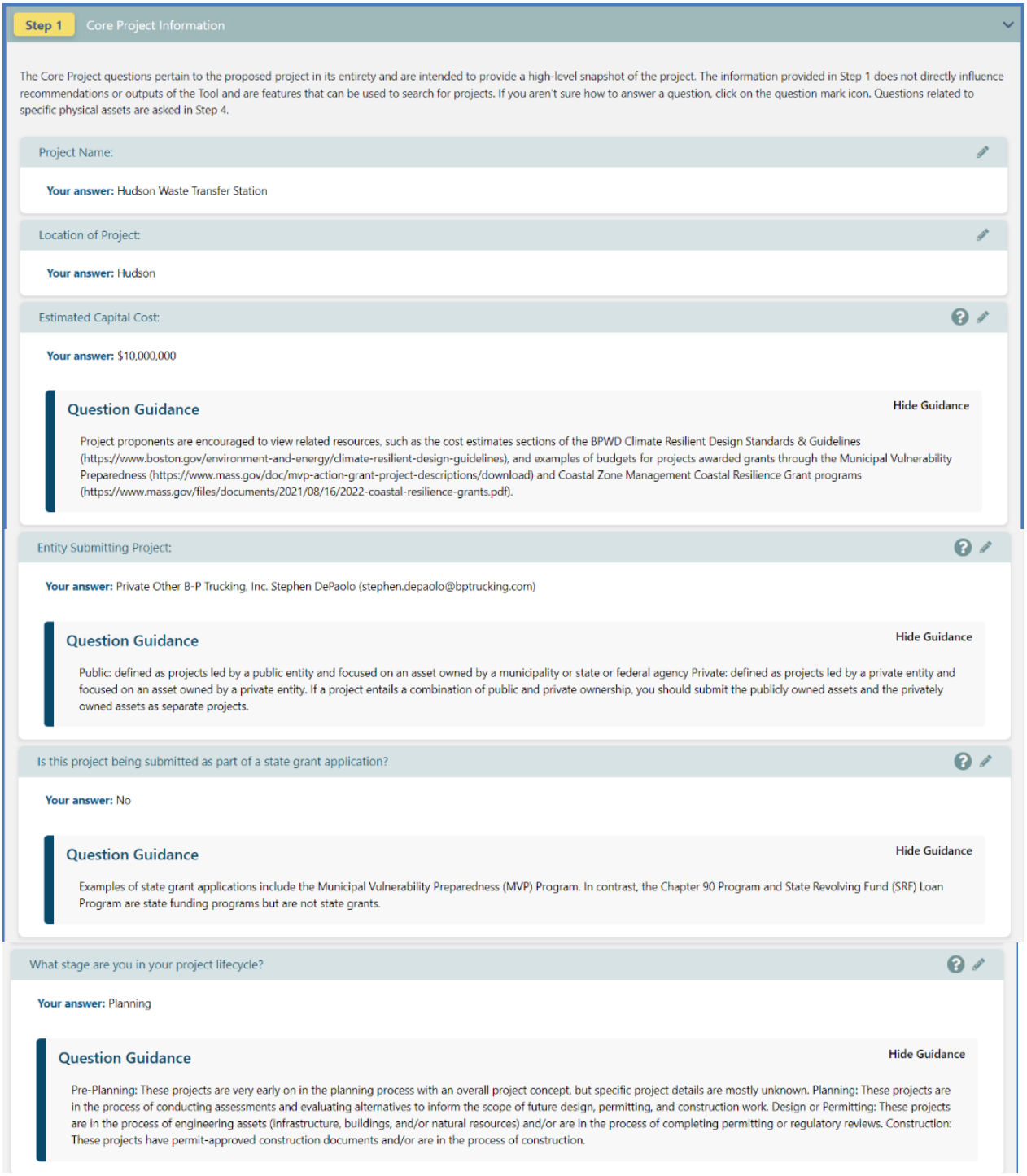
If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts to loss of confidence in government (i.e. the building is not able to serve or operate its intended users or function)?
No Impact

Report Comments

N/A

ATTACHMENT D RMAT OUTPUT REPORT

This attachment includes the questionnaire guidance provided by the Resilient MA Action Team (RMAT) Climate Resilience Design Standards Tool for the Project



Step 1 Core Project Information

The Core Project questions pertain to the proposed project in its entirety and are intended to provide a high-level snapshot of the project. The information provided in Step 1 does not directly influence recommendations or outputs of the Tool and are features that can be used to search for projects. If you aren't sure how to answer a question, click on the question mark icon. Questions related to specific physical assets are asked in Step 4.

Project Name:

Your answer: Hudson Waste Transfer Station

Location of Project:

Your answer: Hudson

Estimated Capital Cost:

Your answer: $10,000,000

Question Guidance Hide Guidance

Project proponents are encouraged to view related resources, such as the cost estimates sections of the BPWD Climate Resilient Design Standards & Guidelines (https://www.boston.gov/environment-and-energy/climate-resilient-design-guidelines), and examples of budgets for projects awarded grants through the Municipal Vulnerability Preparedness (https://www.mass.gov/doc/mvp-action-grant-project-descriptions/download) and Coastal Zone Management Coastal Resilience Grant programs (https://www.mass.gov/files/documents/2021/08/16/2022-coastal-resilience-grants.pdf).

Entity Submitting Project:

Your answer: Private Other B-P Trucking, Inc. Stephen DePaolo (stephen.depaolo@bptrucking.com)

Question Guidance Hide Guidance

Public: defined as projects led by a public entity and focused on an asset owned by a municipality or state or federal agency Private: defined as projects led by a private entity and focused on an asset owned by a private entity. If a project entails a combination of public and private ownership, you should submit the publicly owned assets and the privately owned assets as separate projects.

Is this project being submitted as part of a state grant application?

Your answer: No

Question Guidance Hide Guidance

Examples of state grant applications include the Municipal Vulnerability Preparedness (MVP) Program. In contrast, the Chapter 90 Program and State Revolving Fund (SRF) Loan Program are state funding programs but are not state grants.

What stage are you in your project lifecycle?

Your answer: Planning

Question Guidance Hide Guidance

Pre-Planning: These projects are very early on in the planning process with an overall project concept, but specific project details are mostly unknown. Planning: These projects are in the process of conducting assessments and evaluating alternatives to inform the scope of future design, permitting, and construction work. Design or Permitting: These projects are in the process of engineering assets (infrastructure, buildings, and/or natural resources) and/or are in the process of completing permitting or regulatory reviews. Construction: These projects have permit-approved construction documents and/or are in the process of construction.

Is climate resiliency a core objective of this project?

Your answer: No

Question Guidance Hide Guidance

Resilience is the ability to withstand and recover from an extreme event. Ideally, resilient systems "bounce forward" to create healthier, greener, and more equitable systems and spaces. Projects that incorporate climate resilience as a core objective adapt assets to changing climate conditions, and prioritize designing above and beyond regulatory requirements by leveraging available resources such as the RMAT Climate Resilience Design Guidelines and Standards.

Is this project being submitted as part of the state capital planning process?

Your answer: No

Question Guidance Hide Guidance

The State Capital Planning Process identifies the budget and financing needed to support the State's assets, which can include infrastructure and natural resources. In Massachusetts, capital planning is led by the State's Executive Office for Administration and Finance (A&F). The state capital planning process does not include municipal grant applications.

Is this project being submitted as part of a regulatory review process or permitting?

Your answer: Yes *Please include a description of the review process (eg. MEPA) in the description below.*

Question Guidance Hide Guidance

For example, an applicable regulatory review process could include MEPA environmental review. Please note that the RMAT tool assumes that projects submitted already meet baseline regulatory requirements, for example the Massachusetts Stormwater Management Standards. The RMAT guidance is intended to assist projects in incorporating climate resilient considerations that exceed baseline requirements.

Is the primary purpose of this project ecological restoration? No

Question Guidance Hide Guidance

Projects that restore rivers, streams, wetlands, and watersheds, improving habitat for wildlife, as described by the Division of Ecological Restoration (DER). Do not select yes if physical assets other than natural resources are proposed by the project.

Does the project provide the following benefits?	Yes	No	Maybe
Provides flood protection through nature-based solutions	◉		
Reduces storm damage			◉
Recharges groundwater			◉
Protects public water supply		◉	
Filters stormwater using green infrastructure			◉
Improves water quality			◉
Promotes decarbonization		◉	
Enables carbon sequestration		◉	

Provides oxygen production			◉		
Improves air quality				◉	
Prevents pollution				◉	
Remediates existing sources of pollution			◉		
Protects fisheries, wildlife, and plant habitat			◉		
Protects land containing shellfish			◉		
Provides pollinator habitat			◉		
Provides recreation			◉		
Provides cultural resources/education			◉		

Does the project site have a history of coastal flooding?

Your answer: No

Question Guidance Hide Guidance

Projects that have evidence of flooding since 1990, as indicated by State and/or local hazard mitigation plans, the NOAA Storm Events Database, or Town/ local historical records. This does not include flooding caused by utility infrastructure failure (e.g. sewer, water, etc.). Coastal flooding examples include inundation of roads, infrastructure or structures due to spring tides, King tides, nor'easters, tropical storms, etc.

Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?

Your answer: No

Question Guidance Hide Guidance

Projects that have evidence of flooding since 1990, as indicated by State and/or local hazard mitigation plans, the NOAA Storm Events Database, or Town/ local historical records. This does not include flooding caused by utility infrastructure failure (e.g., sewer, water main breaks, etc.), but does include flooding from overwhelmed sewer or drainage infrastructure, excessive stormwater runoff, inundation of built structures, etc.

Does the project site have a history of riverine flooding?

Your answer: No

Question Guidance Hide Guidance

Projects that have evidence of flooding since 1990, as indicated by State and/or local hazard mitigation plans, the NOAA Storm Events Database, or Town/ local historical records. This does not include flooding caused by utility infrastructure failure (e.g. sewer, water main breaks, etc.). Riverine flooding examples include inundation of roads, infrastructure or structures due to overbank flooding, flash flooding, etc.

Does the project result in a net increase in impervious area of the site?

Your answer: Yes

Question Guidance Hide Guidance

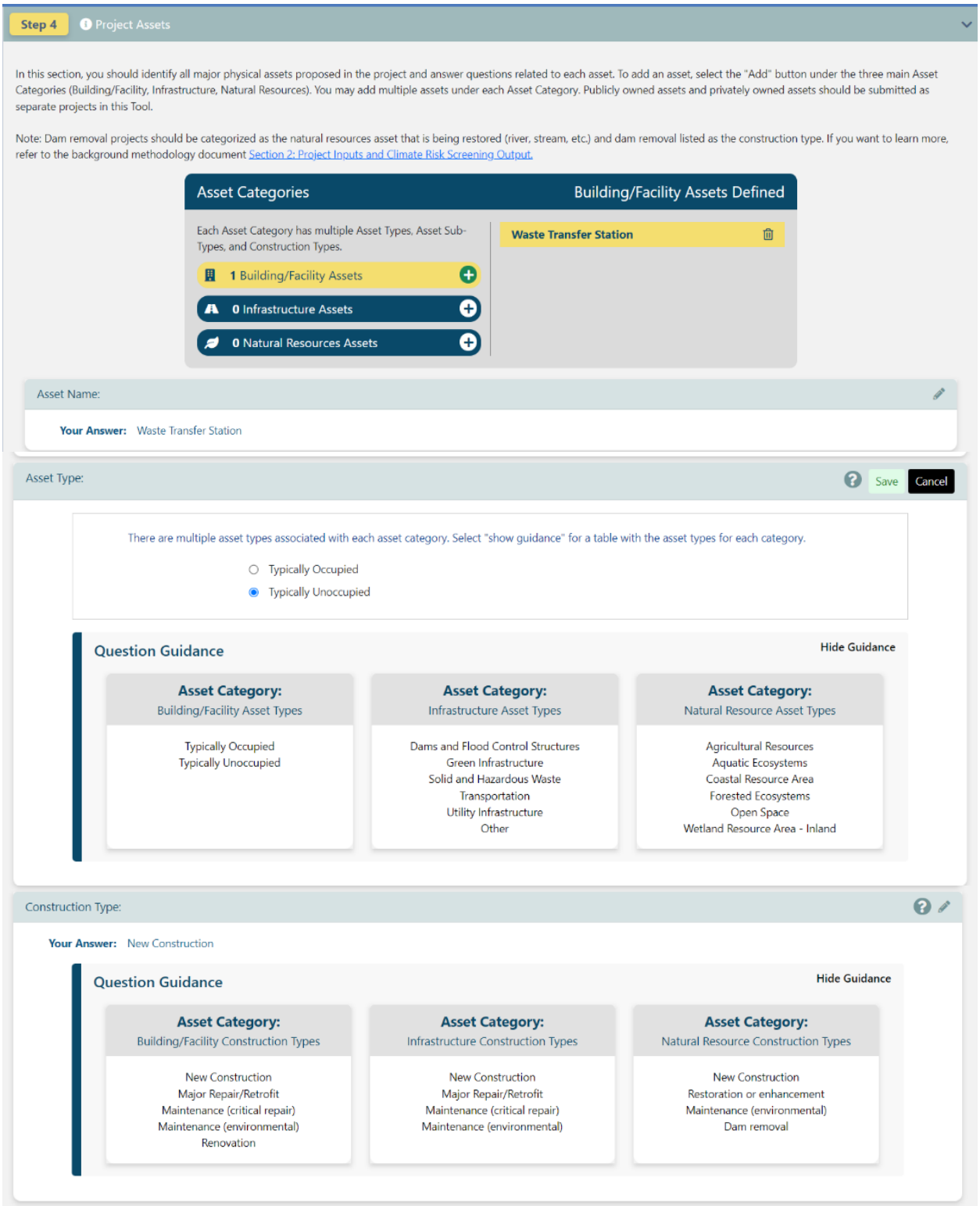
Projects that increase the area on-site with paved or hard surfaces which decrease infiltration of stormwater.

Are existing trees being removed as part of the proposed project?

Your answer: Unsure

Question Guidance Hide Guidance

Projects that are removing trees, even if the project is proposing a net increase in trees following construction, should answer yes.


Step 4
Project Assets
In this section, you should identify all major physical assets proposed in the project and answer questions related to each asset. To add an asset, select the "Add" button under the three main Asset Categories (Building/Facility, Infrastructure, Natural Resources). You may add multiple assets under each Asset Category. Publicly owned assets and privately owned assets should be submitted as separate projects in this Tool.
Note: Dam removal projects should be categorized as the natural resources asset that is being restored (river, stream, etc.) and dam removal listed as the construction type. If you want to learn more, refer to the background methodology document Section 2: Project Inputs and Climate Risk Screening Output.
Asset Categories
Building/Facility Assets Defined
Each Asset Category has multiple Asset Types, Asset Sub-Types, and Construction Types.
1 Building/Facility Assets
0 Infrastructure Assets
0 Natural Resources Assets
Waste Transfer Station
Asset Name:
Your Answer: Waste Transfer Station
Asset Type:
Save
Cancel
There are multiple asset types associated with each asset category. Select "show guidance" for a table with the asset types for each category.
Typically Occupied
Typically Unoccupied
Question Guidance
Hide Guidance
Asset Category:
Building/Facility Asset Types
Typically Occupied
Typically Unoccupied
Asset Category:
Infrastructure Asset Types
Dams and Flood Control Structures
Green Infrastructure
Solid and Hazardous Waste
Transportation
Utility Infrastructure
Other
Asset Category:
Natural Resource Asset Types
Agricultural Resources
Aquatic Ecosystems
Coastal Resource Area
Forested Ecosystems
Open Space
Wetland Resource Area - Inland
Construction Type:
Your Answer: New Construction
Question Guidance
Hide Guidance
Asset Category:
Building/Facility Construction Types
New Construction
Major Repair/Retrofit
Maintenance (critical repair)
Maintenance (environmental)
Renovation
Asset Category:
Infrastructure Construction Types
New Construction
Major Repair/Retrofit
Maintenance (critical repair)
Maintenance (environmental)
Asset Category:
Natural Resource Construction Types
New Construction
Restoration or enhancement
Maintenance (environmental)
Dam removal

Question Guidance

Hide Guidance

Not sure how to estimate your asset useful life? Refer to the guidance table below.

Typical Useful Life	Project Types	Building/Facilities
0 to 20 years	Temporary assets or assets with rapidly replaced components	• Temporary building structures • Storage Facilities • Developing Technology components (e.g. telecommunications equipment, batteries, solar photovoltaics, fuel cells, etc.)
20 to 40 years	Facility improvements and assets with a regular replacement cycle	• Electrical, HVAC, and mechanical components • Most building retrofits (substantial improvements) • Outdoor recreational facilities (e.g. ballfields, courts, playgrounds) • At-site energy equipment (e.g. fuel tanks, conduits, emergency generators) • Infrastructural mechanical components (e.g. compressors, lifts, pumps)
40 to 60 years	Long-lived buildings and infrastructure	• Most building new construction • On-site energy generation or co-generation plants • Water treatment facilities
60 to 80 years	Assets that are very unlikely to be relocated	• Major infrastructure facilities (e.g. wastewater treatment plants) • Most monumental building foundations

Criticality 1. Identify the length of time the asset can be inaccessible/inoperable without significant consequences.

Your Answer: Building may be inaccessible/inoperable more than a week after natural hazard event without consequences

Question Guidance

Hide Guidance

According to the SHMCAP, Consequence is defined as "the effect of a hazard occurrence. Consequence is demonstrated by the impact on population, physical property (e.g., state facilities, local jurisdiction assets and general building stock, and critical facilities), responders, operations, the environment, the economy, and public confidence in state governance. A consequence analysis meets the EMAP standard for hazards identified in state plans." [citation: Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan, 2018. https://www.mass.gov/service-details/massachusetts-integrated-state-hazard-mitigation-and-climate-adaptation-plan]?

Criticality 2. Identify the geographic area directly affected by permanent loss or significant inoperability of the building/facility.

Your Answer: Impacts would be limited to local area and/or municipality

Question Guidance

Hide Guidance

Geographic area: the physical region impacted by the permanent loss or significant inoperability of the asset. For example, the loss of a rural public town library may only have local impacts, whereas the inoperability of a hospital could have regional impacts. Significant inoperability is defined as the inability to access a building/facility, or the inability of that asset to carry out its critical functions.

Criticality 3. Identify the population directly served that would be affected by the permanent loss of use or inoperability of the building/facility.

Your Answer: Greater than 10,000 people

Question Guidance

Hide Guidance

Population directly served: the number of people who directly use or receive services from this asset. For example, in a residential building, the number of people directly served or affected by the building are the number of residents. Significant inoperability is defined as the inability to access a building/facility, or the inability of that asset to carry out its critical functions.

Criticality 4. Identify if the building/facility provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

Your Answer: The building/facility provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

Question Guidance Hide Guidance

Buildings or facilities that serve Environmental Justice (EJ) or climate vulnerable populations could include schools, medical facilities, childcare facilities, libraries, food pantries, shelters, Housing Authorities, organizations providing language access, and more. EJ populations in MA are defined as meeting one or more of the following criteria: (1) the annual median household income is not more than 65 percent of the statewide annual median household income; (2) minorities comprise 40 percent or more of the population; (3) 25 percent or more of households lack English language proficiency; or (4) minorities comprise 25 percent or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150 percent of the statewide annual median household income. Find out more here https://www.mass.gov/info-details/environmental-justice-populations-in-massachusetts

Criticality 5. If the building/facility became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?

Your Answer: Inoperability of the building/facility would not be expected to result in injuries

Question Guidance Hide Guidance

Health and safety refers to potential physical impacts ranging from minor injuries or illness to possible loss of life. Chronic illnesses, such as asthma and trauma, are also included in this category.

Criticality 6. If there are hazardous materials in your building/facility, what are the extent of impacts related to spills/releases of these materials?

Your Answer: Spills and/or releases of hazardous materials would be relatively easy to clean up

Question Guidance Hide Guidance

Hazardous materials include those in buildings (such chemical or hazardous waste), fuel stations or storage, and/or industrial facilities.

Criticality 7. If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?

Your Answer: Moderate – Inoperability may impact other facilities, assets, or buildings, but is not expected to affect their ability to operate

Question Guidance Hide Guidance

There may be assets that have cascading impacts on other facilities and/or infrastructure if inoperable. For example, a stormwater pump station failing could result in flooding to surrounding buildings or facilities.

Criticality 8. If this building/facility was damaged beyond repair, how much would it approximately cost to replace?

Your Answer: Between $10 million and $30 million

Criticality 9. Is this a recreational facility which can be vacated during a natural hazard event?

Your Answer: No

Question Guidance Hide Guidance

Recreational facilities may include but are not limited to gynasiums, field houses, and/or stadiums.

Criticality 10. If the building/facility became inoperable for longer than acceptable in Question 1, what are the public and/or social services impacts?

Your Answer: Few alternative programs and/or services are available to support the community

Question Guidance **Hide Guidance**

There may be assets that have cascading impacts on other facilities and/or infrastructure if inoperable. For example, a hospital being inaccessible in an urban setting may stress other hospitals less since there are likely more nearby hospitals that can provide similar services, versus a remote or rural hospital where there are not other services nearby.

Criticality 11. If the building/facility became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?

Your Answer: No impact on surrounding natural resources is expected

Question Guidance **Hide Guidance**

There may be assets that have cascading impacts on natural resources, such as wastewater treatment plants, which if inoperable could result in untreated sewage discharging into waterbodies.

Criticality 12. If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the building is not able to serve or operate its intended users or function)?

Your Answer: Loss of building is not expected to reduce the ability to maintain government services.

Question Guidance **Hide Guidance**

There may be assets that if inoperable, result in a loss of ability for government to perform key services, such as an IT data center.

Criticality 13. If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts to loss of confidence in government (i.e. the building is not able to serve or operate its intended users or function)?

Your Answer: No Impact

Question Guidance **Hide Guidance**

There may be assets that if inaccessible or inoperable would impact public morale and/or confidence in our institutions. For example, if an emergency operations center was inoperable, it could lead to a loss in confidence in the local government capacity to respond to an extreme event.

Water Quality Calculations

SANBORN HEAD

PURPOSE:

Per the Massachusetts Stormwater Handbook Volume 2, Chapter 2, Stormwater Best Management Practices, Infiltration Basins must meet certain design criteria. This calculation addresses the forebay sizing design criteria.

GIVEN:

The water quality rain event for Massachusetts is 1 inch for a Type III 24-hour storm event. The impervious areas tributary to the seven proposed infiltration basins are as follows:

Basin 1: 9,855 square feet (sf)
Basin 2: 25,208 sf
Basin 3: 32,428 sf
Basin 4: 22,909 sf
Basin 5: 72,054 sf
Basin 6: 126,532 sf
Basin 7: 7 sf

METHOD:

Using the Massachusetts Stormwater Treatment Standards worksheet, calculate the required forebay size in cubic feet for Basin 1.

CALCULATION:

1. Basin 1 Water Quality Treatment Standard, WQ_v

$WQv = (D/12 \text{ inches/foot}) \times (A)$

Required Water Quality Depth, D (in) =	1 in
Impervious Area, A (sf) =	10,095 sf
WQ_v = (1/12 inches/foot) × (10,095 square feet)	821.3 cf
Required Sediment Forebay Size (10% of WQ_v) =	82.1 cf

RESULTS:

Stormwater Treatment Standards Volume Summary

Stormwater Treatment Standard	Water Quality Volume, WQ_v	Required Sediment Forebay Sizing
	cubic feet (cf)	cubic feet (cf)
Basin 1	821.3	82.1
Basin 2	2,100.7	210.1
Basin 3	2,702.3	270.2
Basin 4	1,909.1	190.9
Basin 5	6,004.5	600.5
Basin 6	10,544.3	1,054.4
Basin 7	0.6	0.1

CONCLUSIONS:

The calculation shows the required water quality volume for stormwater treatment and that the forebay volumes for the proposed basins will exceed the Massachusetts Stormwater Treatment Standards minimum for infiltration basins.

REFERENCES:

1. State of Massachusetts, Energy and Environmental Affairs, Department of Environmental Protection. Volume 2 Chapter 2: Structural BMP Specifications for the Massachusetts Stormwater Handbook, 1996.

2. State of Massachusetts, Energy and Environmental Affairs, Department of Environmental Protection. Mass Stormwater Treatment Standard, WQv excel file worksheet.

PURPOSE:

Per the Massachusetts Stormwater Handbook Volume 2, Chapter 2, Stormwater Best Management Practices, Infiltration Basins must meet certain design criteria. This calculation addresses the recharge volume design criteria.

GIVEN:

The recharge volume equals a depth of runoff corresponding to the soil type times the impervious area.

NRCS HYDROLOGIC SOIL TYPE	APPROX. SOIL TEXTURE	TARGET DEPTH FACTOR (F)
A	sand	**0.6-inch**
B	loam	**0.35-inch**
C	silty loam	**0.25-inch**
D	clay	**0.1-inch**

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group [Ref. 1]

The impervious areas tributary to the seven proposed infiltration basins are as follows:

Basin	Tributary Impervious Area – square feet (sf)				
	Type A Soil	Type B Soil	Type C Soil	Type D Soil	Total
Basin 1	9,855	-	-	-	9,855
Basin 2	16,134	9,074	-	-	25,208
Basin 3	31,380	1,048	-	-	32,428
Basin 4	22,422	487	-	-	22,909
Basin 5	62,423	2,584	7,047	-	72,054
Basin 6	68,045	58,487	-	-	126,532
Basin 7	-	-	7	-	7

METHOD:

Using Table 2.3.2 above, and the web soil survey mapping for the project area, calculate the required recharge volume in cubic feet for Basin 1.

CALCULATION:

1. Basin 1 Required Recharge Volume, R_v

$$Rv = F \times (A)$$

Target Depth Factor from Table 2.3.2, F (in) = 0.6 in

9,855 sf

Impervious Area, A (sf) =

R_v = (0.6/12 inches/foot) × (10,095 square feet) | 492.8 cf

RESULTS:

Stormwater Treatment Standards Volume Summary

Stormwater Treatment Standard	Required Recharge Volume, R_v	Provided Volume
	cubic feet (cf)	cubic feet (cf)
Basin 1	492.8	17,935.6
Basin 2	1,071.4	8,718.0
Basin 3	1,599.6	9,749.0
Basin 4	1,135.3	11,191.5
Basin 5	3,343.3	33,036.3
Basin 6	4,620.7	34,726.5
Basin 7	0.2	8,391.6

CONCLUSIONS:

The calculation shows the required recharge volume for stormwater treatment and that the storage volumes below the lowest outlet orifice, for the proposed basins, exceeds the Massachusetts Stormwater Treatment Standards minimum for infiltration basins.

REFERENCES:

1. State of Massachusetts, Energy and Environmental Affairs, Department of Environmental Protection. Volume 3 Chapter 1: Documenting Compliance with the Massachusetts Stormwater Management Standards, 1996.

2. United Staes Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey.

BMP Worksheets

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Pretreatment for proposed Basins 1 through 7

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Sediment Forebay	**0.25**	**0.75**	**0.19**	**0.56**
	0.00	**0.56**	**0.00**	**0.56**
	0.00	**0.56**	**0.00**	**0.56**
	0.00	**0.56**	**0.00**	**0.56**

Total TSS Removal = **44%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 3984.01

Prepared By: A. Wilker

Date: 2/14/2024

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Proposed Basins 1 through 7

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 3984.01

Prepared By: A. Wilker

Date: 2/14/2024

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Subsurface Systems 1 through 4

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Oil Grit Separator	**0.25**	**0.75**	**0.19**	**0.56**
Subsurface Infiltration Structure	**0.80**	**0.56**	**0.45**	**0.11**
	0.00	**0.11**	**0.00**	**0.11**
	0.00	**0.11**	**0.00**	**0.11**

Total TSS Removal = **89%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 3984.01

Prepared By: A. Wilker

Date: 2/14/2024

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

Appendix G

Greenhouse Gas

March 28, 2024

Tori Kim, Director
Massachusetts Environmental Policy Act Office

Subject: B-P Trucking, GHG Analysis Opt-Out EEA Number 16586

Dear Ms. Kim:

This memo details the GHG reduction commitments proposed by the Proponent. As detailed in the ENF, the Project will include no more than 3,000 square feet of conditioned (office) space, which will abut the transfer station building itself. The transfer station will be unconditioned (with no freeze protection). As such, the Proponent requests your concurrence that building energy modeling is not required for the EIR GHG analysis.

1. Space Heating

The EIR will commit to air-source heat pump electric space heating of the office space.

2. Water Heating

The EIR will commit to air-source heat pump electric heating of domestic hot-water.

Per the GHG Policy Opt-Out Provision, the Proponent requests that the Project be allowed to forego the quantification analysis.

Sincerely,

EPSILON ASSOCIATES, INC.

Alex J. Brooks

Alex Brooks, CEM
Senior Engineer

Appendix H

Circulation List

APPENDIX H CIRCULATION LIST

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