MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

PRINCIPALS
Robert J. Michaud, P.E.
Daniel J. Mills, P.E., PTOE

January 7, 2022

Karen Sherman, Town Planner
Town of Holliston
703 Washington Street
Holliston, MA 01746

Subject: Transportation Peer Review Comments
0 & 194 Lowland Street (ADESA Facility)
Holliston, MA

Dear Ms. Sherman:

MDM Transportation Consultants, Inc. (MDM) is pleased to provide you with the following initial transportation review comments for the above-referenced project. These comments have been prepared based on a site visit in January 2022 and review of the documents identified below. To facilitate response by Applicant, review items requiring response are noted in ***Bold Italic***.

Documents Reviewed

MDM has reviewed the following documents to gain an understanding of the project and to determine if industry standards have been applied in determining the potential impacts of the project. The following relevant documents were reviewed:

- *Traffic Impact Study, 194 Lowland Street and 0 Lowland Street, Holliston, Massachusetts,* prepared by Howard Stein Hudson dated October 2021
- *Site Development Plan, ADESA Boston, 194 Lowland Street, Holliston, Massachusetts,* prepared by Kimley Horn dated October 20, 2021.

MDM has also reviewed and considered the following supplemental correspondence as part of its review and commentary:

- Expert Disclosure of Robert J. Michaud, Commonwealth of Massachusetts Land Court Department, 17 MISC 000088 (KLC) dated November 3, 2017 (as this disclosure contains relevant data and analyses relative to roadways serving the subject property).

- Prior traffic impact studies, peer review documentation and Applicant responses for the ADESA facility as available on the Planning Board online archived records for October 22, 2020.

Proposed Development

The proposed site development, as presented in the TIS and associated Site Plan, consists of a vehicle storage facility with capacity for approximately 585 vehicles; no maintenance, repair, or sale of vehicles will occur at the Site. Operating hours of the facility are proposed to include weekdays from 8 AM to 5 PM and Saturdays 8 AM to Noon. The Site will be served by two one-way gated driveways along Lowland Street: an entry driveway along the easterly portion of the Site frontage and an exit driveway along the westerly portion the Site frontage. Construction of the surface lot that will be solely used to store vehicles will require removal of stockpiled soil. As the facility will solely serve as a supplemental vehicle storage lot serving the ADESA facility along Western Avenue in Framingham, on-site employment will be limited to a security detail to ensure secure facility operations.

Traffic Impact Study Comments

<u>Existing Conditions</u>

1. *Study Area*: The TIA presents a limited study area that includes only the Washington Street intersection at Whitney Street and Whitney Street corridor. This represents a reasonable focus of the TIS on the basis of anticipated Site trip activity, its primary trip orientation to/from the ADESA Framingham facility via Route 16, and prescribed truck routing for regional vehicle deliveries via Route 16. Relative Site trip impacts to area roadways represents less than a 5 percent change in traffic volumes beyond the primary study intersection.

We also note that historic traffic data (including vehicle classification data) are available for other nearby intersections that include Jeffrey Avenue at Lowland Street and Lowland Street at Woodland Street based on prior land court testimony for the subject property. These data and associated Expert Disclosure (attached for reference) provide some context for baseline traffic volume conditions proximate to the Site that augment the Applicant's 2020 data.

2. *Traffic Volumes*: Traffic volumes for study locations were conducted in October 2020 for the weekday AM and PM peak hours, which are confirmed to represent slightly above average

conditions based on seasonal indices published by MassDOT. Since data were collected during the Pandemic period, the TIS adjusts (increases) observed 2020 data by 50 percent based on review of pre-Pandemic MassDOT spot-count data for Route 16.

MDM has reviewed regional permanent count station data published by MassDOT to determine Pandemic-period traffic impacts as well as data collected by MDM for pre-Covid periods for similar roadways and communities in Massachusetts. These data indicate that 2020 Pandemic-period counts for the October 2020 timeframe are up to 28 percent lower than pre-Pandemic conditions. Therefore, the TIS application of a 50 percent adjustment factor to October 2020 data presents a reasonable baseline for analysis of project impacts along the Route 16 corridor. This adjustment also results in peak hour trip activity on Route 16 that is consistent with pre-Pandemic spot counts published by MassDOT for the hours that coincide with the Site operations.

Notwithstanding the above adjustments, MDM also notes that there are notable vacancies for several industrial buildings along Whitney Street and Jeffrey Avenue; future lease-out of industrial space and full on-site employment levels for currently operating facilities may produce additional trips at the primary study intersection. However, the somewhat conservative adjustment of 2020 count data in the TIS accounts for some of this future re-occupancy – at least to a degree that is reasonable for purposes of evaluating relative trip impacts of the subject Site.

3. *Accidents/Crash Data*: The TIA presents a safety analysis of the study intersection at Washington Street and the Whitney Street corridor based on MassDOT crash portal data. These data indicate a crash rate that are below district-wide average. MDM has also reviewed the MassDOT top crash locations database and has confirmed that there are no high crash cluster locations in the subject study area.

4. *Vehicle Speeds and Sight Lines*: Although no posted speed limits exist on Lowland Street, this roadway is subject to the town's blanket speed limit regulation of 25 mph unless otherwise posted. MDM field observation of travel speeds along Lowland Street indicate speeds generally in the 20-30 mph range in the immediate proximity of the Site based on multiple travel runs along the corridor during January 2022. MDM concurs that sight lines for the westerly Site driveway (the exit driveway) as documented in the TIS exceed 300 feet for eastbound travel and exceed 600 feet for westbound travel. These sight lines are adequate to meet applicable stopping sight distance (SSD) requirements published by AASHTO for 85th percentile travel speed of 40 mph or more.

6. *Public Transportation*: The MetroWest Regional Transit Authority (RTA) operates MWRTA Route 6 that includes service along the Washington Street corridor. Due to the unique nature of the Site as satellite vehicle storage facility for ADESA's Framingham facility and the lack of any meaningful employment at the Site, use of public transportation to support Site operations is not a salient factor.

Future Conditions

7. *Traffic Growth*: Future traffic volumes are projected to a 7-year horizon using 1 percent annualized growth plus permitted but unbuilt area projects that include (a) commercial development at 555 Hopping Brook Road; and (b) residential development at 245 Washington Street. MDM concurs that these growth factors are consistent with protocols customary to the industry and present a reasonable basis for estimating "No Build" traffic volume conditions for purposes of the Project TIS. As described under Comment No. 2, full occupancy/future leasing of currently underutilized or vacant commercial properties along Lowland Street and Jeffrey Avenue may increase trip activity on area roadways independent of the Site; however, adjustment of baseline traffic volumes in the TIS accounts for some of this future re-occupancy – at least to a degree that is reasonable for purposes of evaluating relative trip impacts of the subject Site.

8. *Trip Generation*: Trip estimates for the Project are based on anticipated daily vehicle deliveries and weekly vehicle sales projections provided by ADESA which are converted to equivalent hourly vehicle trips based on facility operating hours. Resulting trip estimates are 19 trips per hour (5 entering and 14 exiting) during facility operating hours. Key aspects of empirically derived trip generation are as follows:

- Vehicle deliveries to the Site will comprise 9-car haulers (typical articulated car carrier type vehicles) that originate to/from regional highways including I-90, I-495 and local arterial Route 16 (10 per day/1 per hour)

- Vehicle removal operations (retrieval of vehicles from the Site for sale/pickup at the Framingham ADESA facility) will comprise transport of sold vehicles to Framingham via smaller car carriers (2 per hour), employees driven to the Site via van (2 per hour) and employees driving sold vehicles to Framingham (9 per hour).

Empirically-derived trip estimates assume a constant average level of Site trip activity that result in a modest hourly trip generation (fewer than 20 trips per hour) with the vast majority comprising passenger vehicles, vans or smaller haul vehicles. While some variability in hourly

Site operations can be expected over the course of a typical day (a characteristic noted in the attached Expert Disclosure for other area commercial uses), the trip estimates present a reasonable basis for peak-period analysis. Even a doubling of these trips would not present a material change in traffic flow or associated operational analysis along the primary impacted roadways of Route 16 and Whitney Street.

9. *Trip Distribution:* Regional trip patterns for Site traffic presented in the TIS are based on anticipated routing for car hauler deliveries to the Site provided by ADESA; passenger vehicle trips are distributed based on current trip patterns at the primary study intersection.

MDM finds that the TIS assumption of passenger vehicle is likely to slightly overstate the likely number of trips travelling along Route 16 west and slightly underestimate the number of trips to/from Route 16 east. Passenger vehicles and vans destined to/from ADESA Framingham (the sole origin/destination of employee trips and transport vans) will be directed by the Applicant use the Route 16 east to Western Avenue route (and vice-versa). Notwithstanding this assumption, this modest shift in trip assignment does not present a material change and is not likely to present a material change in operational analysis results based on the relatively low trip numbers generated by the Site during peak hours.

Regional trip assignment of larger car haulers assumes that carriers will be instructed to follow specific routing to the Site and avoid use of Central Street and Fiske Street when arriving from or travelling to the I-495 corridor. We note that GPS-based routing (if used independent of specific routing instructions) would likely direct vehicles to the Central Street and Fiske Street corridors to Lowland Street.

It is the opinion of MDM that it is imperative that instructions be provided by ADESA and acknowledged by haulers in advance of arrival to the Site to expressly require use of Route 16 to Whitney Street as the designated vehicle delivery route. This advance notice should also expressly acknowledge the recently permitted Heavy Commercial Vehicle Exclusions (HCVE) for the Woodland Street corridor which was adopted in May 2021 (Permit No. 136-7235). Posting of supplemental truck routing signs at the Site exit and junction of Lowland Street and Jeffrey Avenue should also be considered to reinforce this route.

10. *Operations Analysis:* Operational analyses are presented in the TIA follow generally accepted traffic engineering practices and protocols, indicating longer delays (LOS F) for vehicles exiting Whitney Street onto Route 16 during peak hours. Incremental changes in queues for this approach due to the Site operations represents a 1-2 vehicle increase during peak periods. Operations along Route 16 are unconstrained (operate at LOS B or better) and are not expected

to be materially impacted by additional Site trips. MDM concurs with analysis results and concludes that the Site-related trips do not present a materially consequential impact to traffic operations at the primary impacted study intersection.

Parking, Access and Circulation Comments

The below comments augment commentary by CMG Engineering, Inc. identified in their review letter of December 21, 2021:

11. *Site Parking*: ***Designation of parking for security staff and temporary van/shuttle vehicles should be identified on the Site Plan to ensure that ample accommodation is provided in areas that do not impact site circulation.***

12. *Site Access Design*: ***MDM recommends that the applicable sight line triangles be shown on the Site Layout Plan at the westerly driveway location (both travel directions) for a setback of 14.5 feet of travel way. The Site Layout Plan should also include a note citing that "Signs, landscaping and other features located within sight triangle areas shall be designed, installed and maintained so as not to exceed 2.5-feet in height. Snow windrows located within sight triangle areas that exceed 3.5-feet in height or that would otherwise inhibit sight lines shall be promptly removed."***

13. *Site Circulation*: ***We note that prior swept-path analysis was provided for the Site based on a prior iteration of the Site Layout Plan; this should be updated to reflect the current plan, which includes revised driveway layouts. Applicant should also confirm that the Site Layout Plan provides sufficient maneuvering area to accommodate the Town's largest potential responding fire apparatus by conducting AutoTurn® vehicle turn analysis/exhibits.***

14. *Site Construction-Period Operations*: ***MDM advises that a construction management plan (CMP) be provided by the Applicant prior to construction activities that expressly identifies construction vehicle routes and restrictions. Given the stockpiling of soil on the site and the number of trucks likely to be needed to remove this soil, it is imperative that appropriate routes be identified for transport with appropriate notice to drivers as to local HCVE restrictions and routes and sensitive areas to be avoided (including but not limited to Woodland Street which recently has been granted a HCVE for its entire length, and which historically has been significantly impacted by commercial truck activity to/from Lowland Street).***

MDM appreciates the opportunity to provide Transportation Planning & Engineering Services to the Town of Holliston and we look forward to discussing our findings at the upcoming Planning Board hearing. If you have any questions or concerns, please feel free to contact this office.

Sincerely,

Robert J. Michaud, P.E.
Managing Principal

COMMONWEALTH OF MASSACHUSETTS
LAND COURT DEPARTMENT

MIDDLESEX, SS. 17 MISC 000088 (KCL)

MICHAEL BRUMBER, BARBARA DICARLO AND JUDY DICARLO Plaintiffs, v. DAVID THORN, WARREN CHAMBERLAIN GEOFFREY ZEAMER, NIKKI BORMAN AND JOSH SANTORO, AS THEY ARE MEMBERS OF THE HOLLISTON PLANNING BOARD Defendants.	)	Corrected DISCLOSURE OF ROBERT J. MICHAUD

I, Robert J. Michaud, hereby depose and state on personal knowledge, the following:

1. I serve as Managing Principal and President of MDM Transportation Consultants, Inc. (MDM), 28 Lord Road, Suite 280, Marlborough, MA 01752. MDM is a full-service transportation consulting firm that provides integrated planning, permitting, design and construction administration services to public and private sector clientele.

2. I have over twenty-nine years of experience working as a transportation engineer, including studies and design efforts encompassing traffic operations and analysis, highway engineering and design, signal system planning, parking studies, traffic impact studies, transportation planning, transportation air quality analysis. I am a Registered Professional Engineer in Massachusetts in the discipline of Civil Engineering, specializing in Transportation. I am a member of the Institute of Transportation Engineers and the American Society of Civil Engineers. A true and accurate copy of my resume is attached to this Affidavit as **Exhibit 1**.

3. I have served as an expert witness in the field of transportation engineering before courts in Massachusetts on at least seven occasions. My testimony has always been accepted by the courts.

4. MDM was retained by Attorney Mark Bobrowski and the Town of Holliston to assess potential traffic impacts from the operation of a facility to mix, recycle, remove and compost soil materials (the "Project") proposed by American Recycled Materials (ARM) at 194 Lowland Street, Holliston, MA. ARM currently conducts soil materials recycling

operations nearby at 157-165 Lowland Street. Throughout the course of this assignment, I was the Principal-in-Charge for all work undertaken by MDM. Our work included traffic counts of Lowland Street at primary locations including at the intersections of American Recycled Materials driveways, Jeffrey Avenue and Woodland Street.

5. As part of conducting my analysis and preparing my opinion, I reviewed documents provided to me by Mr. Bobrowski and the Town of Holliston, including permit applications, proposed site plans, planning board records and decisions, a legal complaint filing, and other related documents and correspondence.

6. MDM has conducted daily traffic counts to include vehicle classification along at the previously referenced locations along Lowland Street for a 24-hour weekday period to include September 26-27, 2017. These counts included video files that provide a basis for validating hourly and daily volumes (trucks and autos) at each of the count locations. The month of September is representative of average or above-average volume conditions based on MDM review of area permanent count station data maintained by MassDOT for area roadways; accordingly, the resulting count information is expected to be reasonably representative of typical traffic conditions along Lowland Street and primary count locations. A compendium of count data is provided in **Exhibit 2**.

7. The ARM facility at 157-165 Lowland Street is located opposite the subject property and is among several industrial properties in the area that generate heavy commercial vehicle trip activity along Lowland Street and area roadways. All of these commercial properties are located east of the Upper Charles Rail Trail which crosses Lowland Street approximately 1,080 feet west of Jeffrey Avenue.

8. A summary of daily truck trip activity on Lowland Street and primary connecting roadways that include Jeffrey Avenue and Woodland Street is presented in **Exhibit 3**. These data indicate daily truck activity on Lowland Street that ranges from 270 trips in the vicinity of the proposed ARM facility and 146 trips west of the Upper Charles Rail Trail. Daily truck trips on adjoining roadways include 245 trips on Jeffrey Avenue and between 212 and 198 trips on Woodland Street north and south of Lowland Street.

9. A summary of peak hour truck trip activity on Lowland Street and primary connecting roadways that include Jeffrey Avenue and Woodland Street is presented in **Exhibit 4**. These data indicate peak hourly truck activity ranging from 17 to 18 trips on Lowland Street in the vicinity of the Upper Charles Rail Trail crossing, 15 to 26 trips on Jeffrey Avenue, 17 to 24 trips on Woodland Street and 16 to 30 trips on Lowland Street in the vicinity of the proposed AMR facility.

10. Existing truck trip patterns documented in **Exhibit 3** and **Exhibit 4** indicate that Lowland Street between Jeffrey Avenue and Woodland Street carries approximately 33 percent of all truck trips generated through the intersection at Jeffrey Street.

11. The September 27, 2017 count data for the ARM facility indicate that it is a major truck generator along Lowland Street with a total daily truck generation of 245 truck-trips between of the hours of 6 AM and 6 PM. The AMR facility generates an average of 20

truck-trips per hour between the hours of 6 AM and 6 PM with peak hourly truck activity of up to 34 vehicle-trips. Peak hourly trip activity varies widely from the 20-vehicle trip average by as much as 70 percent. Hourly truck trip generation for the AMR facility is presented in **Exhibit 5**.

12. Existing trip patterns for the AMR facility indicate a predominant distribution to/from the west of 68 percent (168 daily trips to/from the west versus 75 daily trips to/from the east). Specific distribution patterns by hour of day for the AMR facility are shown in **Exhibit 6**.

13. Based on count data for the existing AMR facility operations conducted in September 2017 and associated truck trip patterns presented in **Exhibit 3** and **Exhibit 4**, the AMR facility is a major contributor to truck trip activity along Lowland Street west of Jeffrey Avenue, estimated to account for over 50 vehicle-trips daily and up to 8 vehicle-trips hourly to/from Woodland Street.

14. The proposed operations at the AMR 194 Lowland Street facility are described in the Site Plan and Special Permit Application as generating approximately 50 daily trucks on weekdays between the hours of 7 AM and 4 PM. Subsequently, the Applicant's Counsel in correspondence of July 30, 2015 corrects the operating parameters to assume up to 20 trucks per day with operating hours 7 AM to 7 PM Monday through Saturday, as well as a commitment that "…The trucks will use and abide by the proper truck routes by way of Jeffrey Ave…". The February 2017 Certificate of Action reflects an estimated 150-day (5-month) period of operation to remove all earth materials from the property. Vehicle types are assumed to include private contract haulers including 10-wheel trucks, 18-wheel trucks and trailer dump trucks. The record also reflects and estimated hourly truck activity of approximately 6 truck trips. No traffic impact report has been submitted by the Applicant that would substantiate the estimated daily and hourly trip activity for the proposed AMR operations at 194 Lowland Street.

15. Notwithstanding the unsubstantiated estimates of daily and peak hour truck activity for the proposed AMR facility, it is the opinion of MDM that the proposed facility will generate a material increase in truck traffic along Lowland Street and has the potential to generate substantial hourly fluctuation in truck trip activity as evidenced by operations at the 157-165 Lowland Street facility. For example, assuming a generation rate of 6 truck-trips per hour as cited in the record materials and applying observed hourly patterns at the 157-165 Lowland Street facility (up to a 70 percent hourly fluctuation relative to average) this would equate to a peak truck activity level of up to 10 truck trips per hour.

16. MDM further opines that in the absence of an effective enforcement protocol to restrict trucks to "proper truck routes via Jeffrey Avenue" as cited by Applicant, trip patterns for the facility (i.e., the distribution of trips on area roadways) are likely to be consistent with existing area truck trip patterns under which up to one-third of truck trips are oriented to/from the Woodland Street and Lowland Street routes. Assuming the facility generates 70 daily truck trips as cited in the Certificate of Action, application of existing area truck patterns would result in a daily trip increase of approximately 14 truck trips or more along Woodland Street and/or Lowland Street in the vicinity of the Upper Charles Rail Trail.

17. The Woodland Street and Lowland Street routes west of and including the Upper Charles Rail Trail represent land uses where heavy commercial vehicle trip activity raises heightened concern with regard to pedestrian and bicycle safety and that are particularly sensitive to increases in commercial vehicle trip activity. The proposed AMR facility at 194 Lowland Street stands to generate a material increase in heavy commercial vehicle trip activity that based on existing area patterns would result in a net truck increase of 10 percent or more at these sensitive residential and recreational areas.

Signed under the pains and penalties of perjury, this 13th day of November 2017.

Robert J. Michaud

□ Exhibit 1

Robert J. Michaud, P.E.
MDM Transportation Consultants, Inc.

Position: **Managing Principal, Transportation Planning & Permitting**

Years of Professional Experience: 29

Education Northeastern University, M.S.C.E., 1999; Worcester Polytechnic Institute, B.S.C.E., 1988

Affiliations American Society of Civil Engineers; Institute of Transportation Engineers; Boston Society of Civil Engineers - Transportation Committee, Chair 1999-2000 - Nominating Committee 2000-2002

Registration Registered Professional Engineer: Massachusetts #38101; Rhode Island # 9038; New Hampshire # 12925; Connecticut #29401

SUMMARY OF EXPERIENCE

Mr. Michaud has 29 years of experience directing and participating in numerous transportation planning and engineering projects in the New England States. Included in his experience are studies and design efforts encompassing traffic operations and analysis, highway engineering and design, signal system planning and design, parking studies, traffic impact studies, transportation planning, transportation air quality analysis, and transportation peer review for various municipalities. He has conducted these efforts for state governments, cities and towns, and private sector clients.

Transportation Studies

Mr. Michaud has directed and participated in more than 600 transportation impact studies identifying impacts and designing mitigation measures for residential, retail, commercial, office, industrial, institutional, recreational, medical, and hotel facilities throughout New England. He has presented testimony to over 200 Boards of Selectmen, City Councils, Planning Boards and Zoning Boards of Appeal.

Industrial Projects include: Palmer Renewable Energy & Batch Asphalt Plant facility (38mw), Springfield MA; Weavers Cove LNG facility (200,000 m^3 Tank), Fall River MA; Pioneer Renewable Energy biomass facility (50 mw), Greenfield MA; Hardwick Landfill Evaluation, Hardwick MA; Boston Beer Works manufacturing/distribution facility (315,000 sf), Freetown MA; National Grid Warehouse/Distribution facility (87,500 SF), Northbridge MA; Central Steel Warehouse/Distribution facility (58,000 sf), Marlborough, MA; American Ice Co Manufacturing facility (27,000 sf), Boston MA; Tresca Brothers Batch Concrete Facility (4 acres), Wilmington, MA.

Residential Projects include: Meadow Creek 200 unit Golf Course Subdivision, Dracut, MA; 50-unit residential subdivision, Stratham, NH; 54-unit condominium development; S. Boston, MA; 640 unit (40B) residential development - Archstone Communities, Woburn , MA; 436 unit (40B) residential development - Archstone Communities, Methuen, MA; 232 unit (40B) residential development – Archstone Communities, Reading, MA; 300-unit residential condominium development, S. Boston, MA; 404-unit (40B) residential development – Chrysler Apartments LLC, Natick, MA; 200 unit (40B) residential development, JPI Inc., Westford, MA; 196 Unit (40B) residential development – North Andover Holdings, North Andover, MA.

Institutional & School Projects include: Children's Hospital Clinical and Research Buildings, Boston; Harvard Institute of Medicine Research Tower, Boston, MA; Boston College Middle Campus Dormitory Expansion, Chestnut Hill, MA; Medi-Plex Nursing Home/Medical Building, Concord, MA; Massachusetts General Hospital Campus Expansion Program, Boston, MA; Northampton State Hospital Redevelopment, Northampton, MA; Biotechnology Park, Worcester Foundation, Shrewsbury, MA; UMass Lowell Campus Transit Master Plan; Next Generation Child Care Centers (NGCC), Hopkinton MA, Walpole MA and Acton, MA; LEAP Schools Concord MA and Lexington MA; Brooke Charter School Mattapan, MA; MATCH Public Charter Schools, Jamaica Plain and Roxbury, MA; Bresnahan Model School Newburyport MA; KIPP Academy Charter School, Lynn MA; Neighborhood House Charter School, Dorcheter MA; Excel Academy Charter School, E. Boston, MA; Algonquin Regional High School, Northborough, MA.

Mixed-Use projects include: Fan Pier development, S. Boston, MA (3 Million Square feet); Millennium Place Development, Boston, MA (1.4 million square feet); Mashpee Commons Neighborhood Development, Mashpee, MA; Boston Waterfront Hotel and Residences at Parcels F2, G and J, South Boston, MA.

Retail Projects include Wonderland Marketplace Shopping Center, Revere, MA; Costco Wholesale Warehouse, Dedham and Waltham, MA; The Home Depot, Shrewsbury and W. Roxbury, MA; Westpark Retail development, Framingham/ Natick, MA; Shaw's Supermarkets, Concord NH, Worcester, Wareham, Carver, and West Bridgewater; Stop & Shop Store fuel facility program - New England (various locations); Target Retail Center (200,000 sf retail), Hanover MA; Harrington Farms Shopping Center (113,000 sf retail), Shrewsbury MA; Walgreens Pharmacy locations in Holden, N. Reading, Worcester, Leominster and Lakeville MA.

Recreational Projects include: Hartford NFL Stadium Transportation Study, Hartford, CT; Nashawtuc Senior PGA Classic Traffic Management Plan, Concord, MA; Fore Kicks II Recreation Center, Marlborough MA; Recreational Field Complex, Town of Dedham, MA; Community Park Complex, Winchester Soccer Club, Winchester MA.

Highway Planning and Engineering

Mr. Michaud's highway planning and engineering expertise include numerous highway/ traffic operation and design studies including all phases of analysis and design from initial concept development stage to construction inspection. Project examples include:

Biddeford - Saco Short-term Corridor Planning Study, Biddeford and Saco, ME; Tewksbury Commons Transportation Improvement Project, Tewksbury, MA; Winchester Square Transportation Improvement Project, Springfield, MA; Route 140 Relocation Project, Franklin, MA; Rutland Bypass Corridor Design Project, Rutland, VT; US Route 1 Long-Range Safety Improvement Environmental Assessment, Walpole-Wrentham, MA; Metropolitan Springfield Integral Transportation Systems Strategic Deployment Plan, MA; MassPike Boston Extension Ramps Feasibility Study.

Transportation and Air Quality Modeling

Mr. Michaud has expertise in conducting mobile source air quality evaluations and transportation systems modeling for numerous private land development projects, and state departments of transportation. Representative projects include:

Great Hartford Carbon Monoxide Re-designation Request Transportation and Air Quality Modeling (Connecticut Department of Transportation); Rhode Island Congestion Management and Air Quality Analysis (Rhode Island Department of Transportation); Connecticut Department of Transportation Incident Management Program Transportation and Air Quality Evaluation (ConnDOT); Metro Boston Intelligent Vehicle Highway Systems Strategic Deployment Plan Transportation and Air Quality Coalition (MassHighway Department); Florida Department of Transportation 1-595 Advanced Traffic Management System Transportation and Air Quality Evaluation (FDOT); New Bedford/Fall River Commuter Rail Project Traffic and Air Quality Evaluation (Massachusetts Bay Transit Authority); Mesoscale and micro-scale transportation and air quality studies to support various mixed-use retail, commercial and office developments in Massachusetts, and Maine.

Expert Peer Review and Testimony

Mr. Michaud has conducted numerous peer-review studies on behalf of municipal governments in Massachusetts and Rhode Island, and has been recognized as a qualified expert in the area of transportation planning and engineering in the Commonwealth of Massachusetts, Connecticut, New Hampshire, and Rhode Island. Representative municipal governments include:

- Town of Burlington, Massachusetts
- Town of Dracut, Massachusetts
- Town of Westford, Massachusetts
- Town of Westborough, Massachusetts
- Town of Weston, Massachusetts

Mr. Michaud has also served as expert witness in the area of traffic engineering to law firms on various matters including motor vehicle incidents, land development projects before the Massachusetts Land Court, and matters before the Massachusetts Housing Appeal Commission (HAC).

□ Exhibit 2

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

WB: Lowland Street
N/S: Woodland Street
Holliston, MA

File Name : 944_Woodland_at_Lowland_1_09-26-2017
Site Code : 944
Start Date : 9/26/2017
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

	Woodland Street From North				Lowland Street From East				Woodland Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
07:00 AM	153	50	0	203	63	27	0	90	85	289	0	374	667
08:00 AM	162	43	0	205	53	30	0	83	75	304	0	379	667
09:00 AM	73	31	0	104	47	16	0	63	30	141	0	171	338
10:00 AM	64	34	0	98	29	24	0	53	17	90	0	107	258
11:00 AM	79	38	0	117	46	34	0	80	29	103	0	132	329
12:00 PM	89	51	0	140	52	20	0	72	30	113	0	143	355
01:00 PM	121	27	0	148	27	23	0	50	17	103	0	120	318
02:00 PM	189	38	0	227	36	24	0	60	34	153	0	187	474
03:00 PM	121	24	0	145	26	26	0	52	22	102	0	124	321
04:00 PM	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
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1051	336	0	1387	379	224	0	603	339	1398	0	1737	3727
Apprch %	75.8	24.2	0		62.9	37.1	0		19.5	80.5	0		
Total %	28.2	9	0	37.2	10.2	6	0	16.2	9.1	37.5	0	46.6	
Lights	994	306	0	1300	346	199	0	545	310	1342	0	1652	3497
% Lights	94.6	91.1	0	93.7	91.3	88.8	0	90.4	91.4	96	0	95.1	93.8
Mediums	56	20	0	76	26	25	0	51	28	52	0	80	207
% Mediums	5.3	6	0	5.5	6.9	11.2	0	8.5	8.3	3.7	0	4.6	5.6
Articulated Trucks	1	10	0	11	7	0	0	7	1	4	0	5	23
% Articulated Trucks	0.1	3	0	0.8	1.8	0	0	1.2	0.3	0.3	0	0.3	0.6

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

N/S: Woodland Street
WB: Lowland Street
Holliston, MA

File Name : 944_Woodland_at_Lowland_2_09-26-2017
Site Code : 944
Start Date : 9/26/2017
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

	Woodland Street From North				Lowland Street From East				Woodland Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
03:00 PM	78	13	0	91	9	9	0	18	12	40	0	52	161
04:00 PM	295	61	0	356	71	97	0	168	41	167	0	208	732
05:00 PM	325	55	0	380	55	77	1	133	21	163	0	184	697
06:00 PM	209	55	0	264	38	26	0	64	17	109	0	126	454
Grand Total	907	184	0	1091	173	209	1	383	91	479	0	570	2044
Apprch %	83.1	16.9	0		45.2	54.6	0.3		16	84	0		
Total %	44.4	9	0	53.4	8.5	10.2	0	18.7	4.5	23.4	0	27.9	
Lights	897	179	0	1076	161	203	1	365	85	470	0	555	1996
% Lights	98.9	97.3	0	98.6	93.1	97.1	100	95.3	93.4	98.1	0	97.4	97.7
Mediums	10	5	0	15	9	5	0	14	5	6	0	11	40
% Mediums	1.1	2.7	0	1.4	5.2	2.4	0	3.7	5.5	1.3	0	1.9	2
Articulated Trucks	0	0	0	0	3	1	0	4	1	3	0	4	8
% Articulated Trucks	0	0	0	0	1.7	0.5	0	1	1.1	0.6	0	0.7	0.4

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA

SB: Jeffrey Avenue
E/W: Lowland Street
Holliston, MA

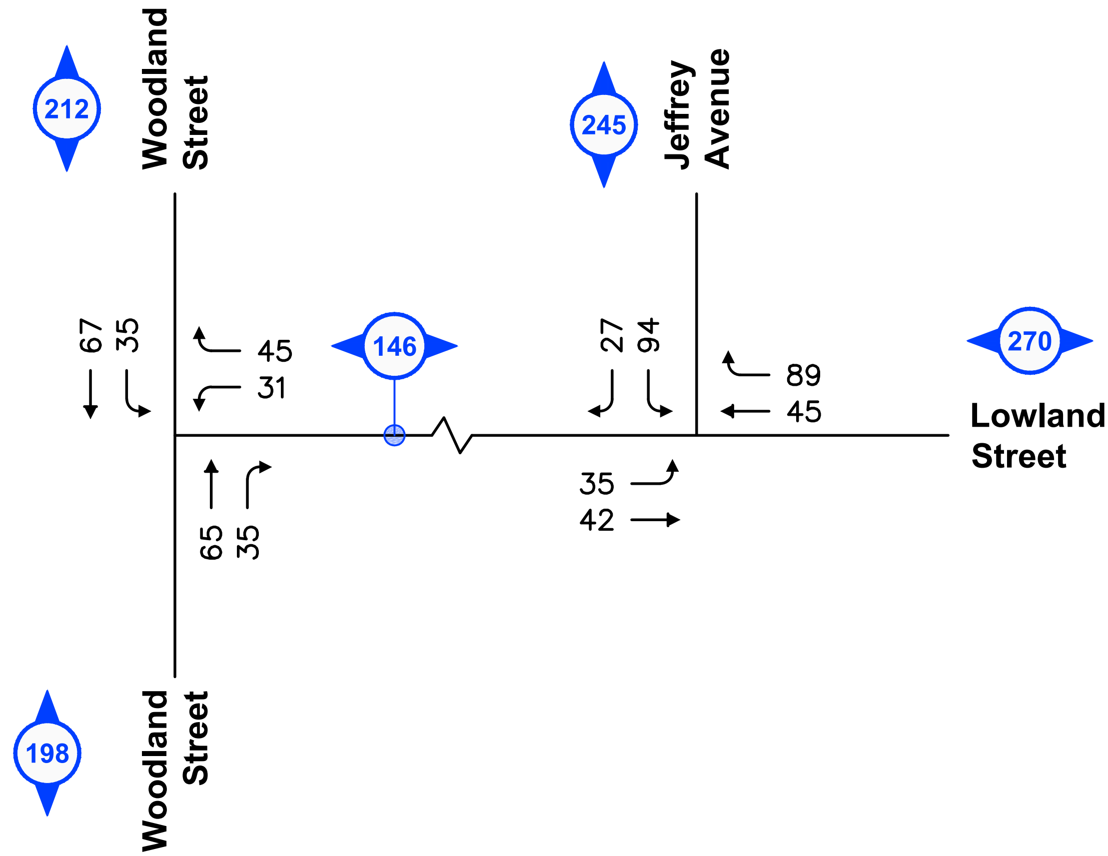
File Name : 944_Lowland_at_Jeffrey_09-26-2017
Site Code : 944
Start Date : 9/26/2017
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

	Jeffrey Avenue From North				Lowland Street From East				Lowland Street From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
07:00 AM	15	29	0	44	146	68	0	214	60	69	0	129	387
08:00 AM	15	28	0	43	104	68	0	172	38	72	0	110	325
09:00 AM	20	26	0	46	53	40	0	93	20	37	0	57	196
10:00 AM	25	30	0	55	39	24	0	63	29	18	0	47	165
11:00 AM	35	36	0	71	24	34	0	58	36	23	0	59	188
12:00 PM	22	30	0	52	40	34	0	74	37	29	0	66	192
01:00 PM	24	30	0	54	32	29	0	61	20	22	0	42	157
02:00 PM	24	51	0	75	26	29	0	55	35	31	0	66	196
03:00 PM	40	54	0	94	23	39	0	62	62	38	0	100	256
04:00 PM	87	123	0	210	28	58	0	86	86	39	0	125	421
05:00 PM	79	116	0	195	41	40	0	81	53	22	0	75	351
06:00 PM	32	55	0	87	13	23	0	36	44	16	0	60	183
Grand Total	418	608	0	1026	569	486	0	1055	520	416	0	936	3017
Apprch %	40.7	59.3	0		53.9	46.1	0		55.6	44.4	0		
Total %	13.9	20.2	0	34	18.9	16.1	0	35	17.2	13.8	0	31	
Lights	391	514	0	905	480	441	0	921	478	381	0	859	2685
% Lights	93.5	84.5	0	88.2	84.4	90.7	0	87.3	91.9	91.6	0	91.8	89
Mediums	18	80	0	98	75	37	0	112	32	21	0	53	263
% Mediums	4.3	13.2	0	9.6	13.2	7.6	0	10.6	6.2	5	0	5.7	8.7
Articulated Trucks	9	14	0	23	14	8	0	22	10	14	0	24	69
% Articulated Trucks	2.2	2.3	0	2.2	2.5	1.6	0	2.1	1.9	3.4	0	2.6	2.3

9/27/2017

	Entering From North			Entering From South			Exiting to North			Exiting To South			Truck Volumes		Truck Distribution	
	Lights	Mediums	Articulated	Lights	Mediums	Articulated Truc	Lights	Mediums	Articulated	Lights	Mediums	Articulated Trucks	Entering	Exiting	Left In-Right Out	Right In-Left Out
6:00 AM	0	0	0	0	1	0	0	0	0	0	1	0	1	1	2	0
7:00 AM	5	8	0	0	4	0	0	7	0	3	5	0	12	12	9	15
8:00 AM	4	8	0	0	4	0	4	5	0	0	6	0	12	11	10	13
9:00 AM	2	7	0	1	5	0	2	10	0	0	6	0	12	16	11	17
10:00 AM	3	10	0	0	5	0	1	10	0	2	3	0	15	13	8	20
11:00 AM	3	8	0	1	2	0	1	7	0	0	4	0	10	11	6	15
12:00 PM	3	8	0	0	1	0	1	7	0	1	3	0	9	10	4	15
1:00 PM	1	8	0	0	7	0	0	13	0	0	4	0	15	17	11	21
2:00 PM	1	12	0	0	5	0	1	13	0	1	4	0	17	17	9	25
3:00 PM	2	7	0	0	5	0	2	9	0	1	0	0	12	9	5	16
4:00 PM	1	3	0	0	0	0	5	6	0	0	1	0	3	7	1	9
5:00 PM	0	2	0	0	0	0	4	0	0	0	0	0	2	0	0	2
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total:	**25**	**81**	**0**	**2**	**39**	**0**	**21**	**87**	**0**	**8**	**37**	**0**	120	124	76	168



NOTES:
 # = Trucks

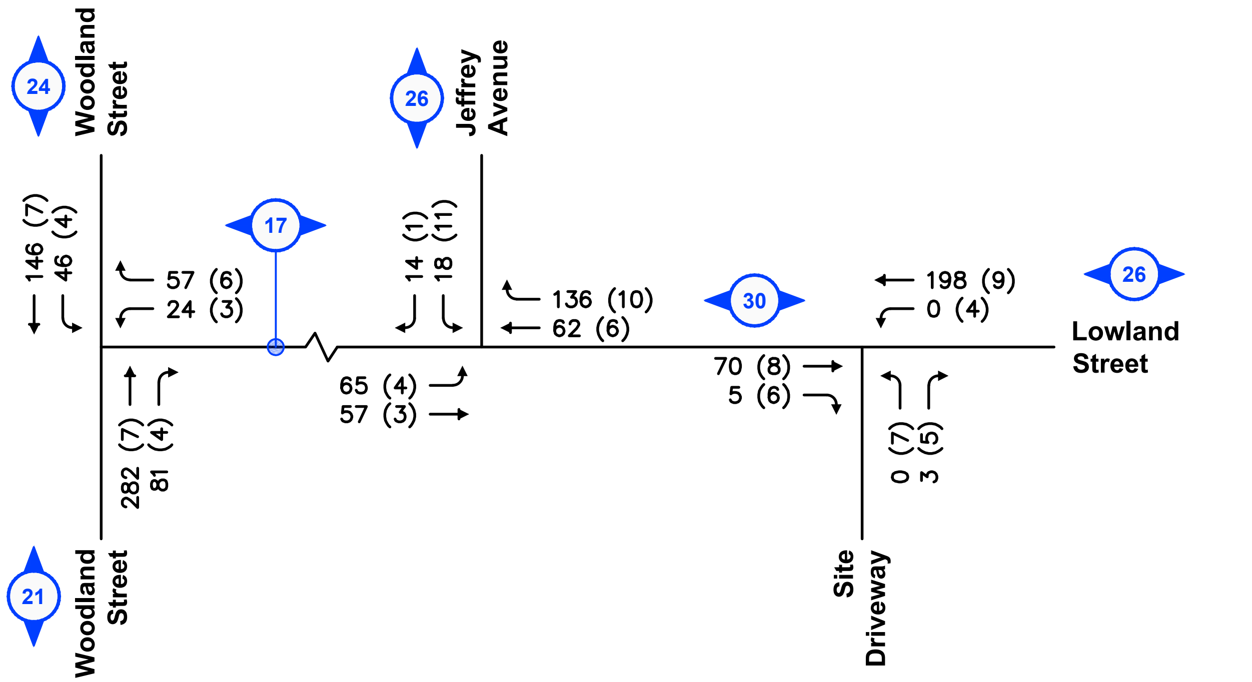
= Truck Distribution

Exhibit 3

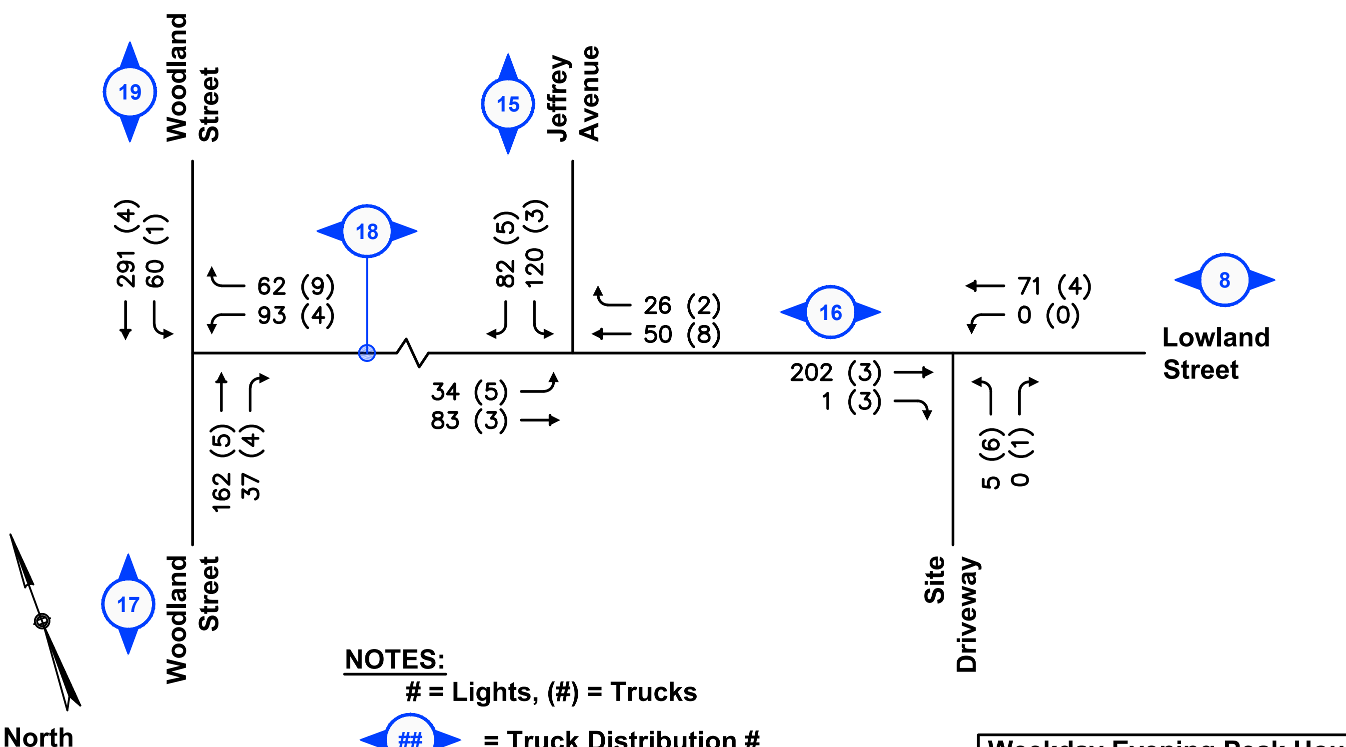
Daily Heavy Vehicle Volumes
Lowland Street Intersections

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Date: November 2017
Dwg No. 944 MR01.dwg



Weekday Morning Peak Hour



Scale: Not to Scale

NOTES:
 # = Lights, (#) = Trucks
= Truck Distribution

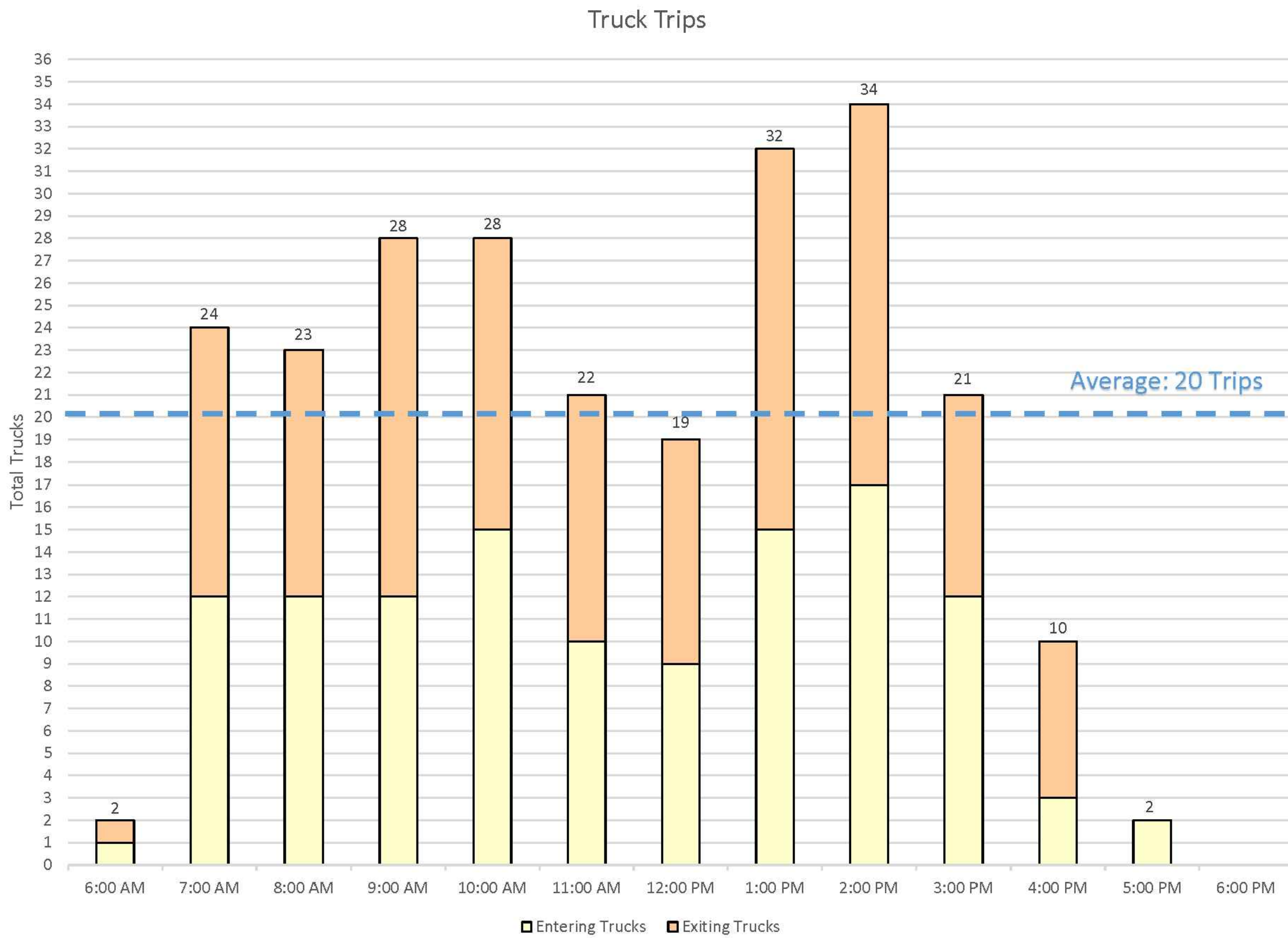
Weekday Evening Peak Hour

Exhibit 4

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

2017 Baseline Condition
Weekday Peak Hour Traffic Volumes

Date: November 2017
Dwg No. 944 MR01.dwg

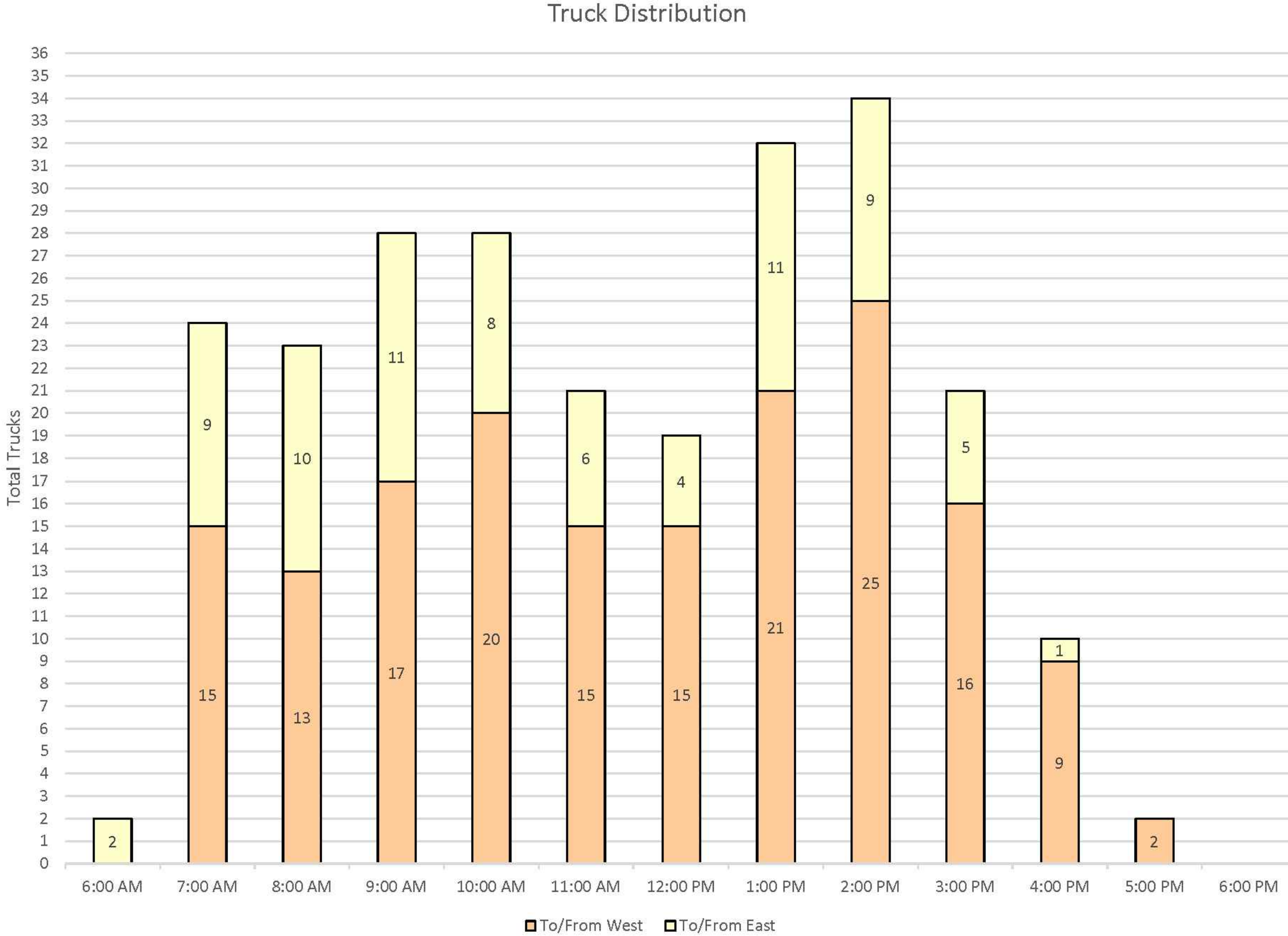


MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Exhibit 5

American Recycled Materials
Hourly Truck Volumes

Date: November 2017
Dwg No. 944 MR01.dwg



MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Exhibit 6

American Recycled Materials
Truck Distribution

Date: November 2017
Dwg No. 944 MR01.dwg