ATTACHMENT 8

Updated Evacuation Time Estimates for Peach Bottom Atomic Power Station Plume Exposure Pathway and ETE Review Criteria Checklist

Peach Bottom Atomic Power Station
ETE Review Criteria Checklist

Table B-1 ETE Review Criteria Checklist

	Criterion Addressed in ETE Analysis (Yes/No)	Comments
1.0 Introduction		
a. The emergency planning zone (EPZ) and surrounding area should be described.	yes	Sect 1.2
b. A map should be included that identifies primary features of the site, including major roadways, significant topographical features, boundaries of counties, and population centers within the EPZ.	yes	Figure 1-1, Figure 4-1
c. A comparison of the current and previous ETE should be provided and includes similar information as identified in Table 1-1, "ETE Comparison," of NUREG/CR-7002.	yes	Table 1-3
1.1 Approach		
a. A discussion of the approach and level of detail obtained during the field survey of the roadway network should be provided.	yes	Sect 4.3
b. Sources of demographic data for schools, special facilities, large employers, and special events should be identified.	yes	Sect 2.1, 3
c. Discussion should be presented on use of traffic control plans in the analysis.	yes	Sect 2.1
d. Traffic simulation models used for the analyses should be identified by name and version.	yes	Sect 5.5
e. Methods used to address data uncertainties should be described.	yes	Sect 6.6
1.2 Assumptions		
a. The planning basis for the ETE includes the assumption that the evacuation is ordered promptly and no early protective actions have been implemented.	yes	Sect 2.1, 3, 5.4
b. Assumptions consistent with Table 1-2, "General Assumptions," of NUREG/CR-7002 should be provided and include the basis to support their use.	yes	Sect 2.1
1.3 Scenario Development		
a. The ten scenarios in Table 1-3, Evacuation Scenarios, should be developed for the ETE analysis, or a reason should be provided for use of other scenarios.	yes	No "Special Event" see section 2.4.4

	Criterion Addressed in ETE Analysis (Yes/No)	Comments
1.3.1 Staged Evacuation		
a. A discussion should be provided on the approach used in development of a staged evacuation.	yes	Sect 6.4
1.4 Evacuation Planning Areas		
a. A map of the EPZ with emergency response planning areas (ERPAs) should be included.	yes	Figure 1-1
b. A table should be provided identifying the ERPAs considered for each ETE calculation by downwind direction in each sector.	yes	Table 6-2 & 6-3
c. A table similar to Table 1-4, "Evacuation Areas for a Staged Evacuation Keyhole," of NUREG/CR-7002 should be provided and includes the complete evacuation of the 2, 5, and 10 mile areas and for the 2 mile area/5 mile keyhole evacuations.	yes	Table 6-2 & 6-3
2.0 Demand Estimation		
a. Demand estimation should be developed for the four population groups, including permanent residents of the EPZ, transients, special facilities, and schools.	yes	Table 3-1 thru 3-4
2.1 Permanent Residents and Transient Population		
a. The US Census should be the source of the population values, or another credible source should be provided.	yes	Sect 2.1, 3
b. Population values should be adjusted as necessary for growth to reflect population estimates to the year of the ETE.	yes	2010 Census data used for ETE
c. A sector diagram should be included, similar to Figure 2-1, "Population by Sector," of NUREG/CR-7002, showing the population distribution for permanent residents.	yes	Figure 1-2
2.1.1 Permanent Residents with Vehicles		
a. The persons per vehicle value should be between 1 and 2 or justification should be provided for other values.	yes	Sect 3.1.1
b. Major employers should be listed.	yes	Table A-1
2.1.2 Transient Population		
a. A list of facilities which attract transient populations should be included, and peak and average attendance for these facilities should be listed. The source of information used to develop attendance values should be provided.	yes	Sect 3.3, Table A-1 & A-3
b. The average population during the season should be used,	yes	Sect 3.2

	Criterion Addressed in ETE Analysis (Yes/No)	Comments
itemized and totaled for each scenario.		
c. The percent of permanent residents assumed to be at facilities should be estimated.	yes	Sect 3.3
d. The number of people per vehicle should be provided. Numbers may vary by scenario, and if so, discussion on why values vary should be provided.	yes	Sect 2.1, 3.3
e. A sector diagram should be included, similar to Figure 2-1 of NUREG/CR-7002, showing the population distribution for the transient population.	yes	Table 3-2
2.2 Transit Dependent Permanent Residents		
a. The methodology used to determine the number of transit dependent residents should be discussed.	yes	Sect 3.1.2
b. Transportation resources needed to evacuate this group should be quantified.	yes	Sect 3.1.2
c. The county/local evacuation plans for transit dependent residents should be used in the analysis.	yes	Sect 3.1.2
d. The methodology used to determine the number of people with disabilities and those with access and functional needs who may need assistance and do not reside in special facilities should be provided. Data from local/county registration programs should be used in the estimate, but should not be the only set of data.	yes	Sect 3.1.2
e. Capacities should be provided for all types of transportation resources. Bus seating capacity of 50% should be used or justification should be provided for higher values.	yes	Sect 3.1.2
f. An estimate of this population should be provided and information should be provided that the existing registration programs were used in developing the estimate.	yes	Sect 3.1.2
g. A summary table of the total number of buses, ambulances, or other transport needed to support evacuation should be provided and the quantification of resources should be detailed enough to assure double counting has not occurred.	yes	Table 3-6
2.3 Special Facility Residents		
a. A list of special facilities, including the type of facility, location, and average population should be provided. Special facility staff should be included in the total special	yes	Table A-4

	Criterion Addressed in ETE Analysis (Yes/No)	Comments
facility population.		
b. A discussion should be provided on how special facility data was obtained.	yes	Sect 3.4
c. The number of wheelchair and bed-bound individuals should be provided.	yes	Table A-6
d. An estimate of the number and capacity of vehicles needed to support the evacuation of the facility should be provided.	yes	Table A-6
e. The logistics for mobilizing specially trained staff (e.g., medical support or security support for prisons, jails, and other correctional facilities) should be discussed when appropriate.	yes	Sect 5.2. Part of offsite agency planning process.
2.4 Schools		
a. A list of schools including name, location, student population, and transportation resources required to support the evacuation, should be provided. The source of this information should be provided.	yes	Sect 3.4.2, Table 3-4 & A-4
b. Transportation resources for elementary and middle schools are based on 100% of the school capacity.	yes	Sect 3.4.2
c. The estimate of high school students who will use their personal vehicle to evacuate should be provided and a basis for the values used should be provided.	yes	Sect 3. POV adjustment N/A
d. The need for return trips should be identified if necessary.	yes	Sect 6.7, Table 6-6
2.5.1 Special Events		
a. A complete list of special events should be provided and includes information on the population, estimated duration, and season of the event.	no	See Sect 2.4.4
b. The special event that encompasses the peak transient population should be analyzed in the ETE.	no	See Sect 2.4.4
c. The percent of permanent residents attending the event should be estimated.	no	See Sect 2.4.4
2.5.2 Shadow Evacuation		
a. A shadow evacuation of 20 percent should be included for areas outside the evacuation area extending to 15 miles from the NPP.	yes	Figure 1-2
b. Population estimates for the shadow evacuation in the 10 to 15 mile area beyond the EPZ are provided by sector.	yes	Figure 1-2

	Criterion Addressed in ETE Analysis (Yes/No)	Comments
c. The loading of the shadow evacuation onto the roadway network should be consistent with the trip generation time generated for the permanent resident population.	yes	Sect 5
2.5.3 Background and Pass Through Traffic		
a. The volume of background traffic and pass-through traffic should be based on the average daytime traffic. Values may be reduced for nighttime scenarios.	yes	Sect 2.1, 4.3
b. Pass-through traffic should be assumed to have stopped entering the EPZ about two hours after the initial notification.	yes	Sect 2.1, 4.3
2.6 Summary of Demand Estimation		
a. A summary table should be provided that identifies the total populations and total vehicles used in the analysis for permanent residents, transients, transit dependent residents, special facilities, schools, shadow population, and pass-through demand used in each scenario.	yes	Table 3-1 thru 3-4
3.0 Roadway Capacity		
a. The method(s) used to assess roadway capacity should be discussed.	yes	Sect 4
3.1 Roadway Characteristics		
a. A field survey of key routes within the EPZ has been conducted.	yes	Sect 4.1
b. Information should be provided describing the extent of the survey, and types of information gathered and used in the analysis.	yes	Sect 4.3
c. A table similar to that in Appendix A, "Roadway Characteristics," of NUREG/CR-7002 should be provided.	yes	Appendix C
d. Calculations for a representative roadway segment should be provided.	yes	Appendix C
e. A legible map of the roadway system that identifies node numbers and segments used to develop the ETE should be provided and should be similar to Figure 3-1, "Roadway Network Identifying Nodes and Segments," of NUREG/CR-7002.	yes	Appendix C
3.2 Capacity Analysis		
a. The approach used to calculate the roadway capacity for the transportation network should be described in detail and	yes	Sect 4

	Criterion Addressed in ETE Analysis (Yes/No)	Comments
identifies factors that are expressly used in the modeling.		
b. The capacity analysis identifies where field information should be used in the ETE calculation.	yes	Sect 4.3. Field information used to verify model
3.3 Intersection Control		
a. A list of intersections should be provided that includes the total numbers of intersections modeled that are unsignalized, signalized, or manned by response personnel.	yes	Appendix C
b. Characteristics for the 10 highest volume intersections within the EPZ are provided including the location, signal cycle length, and turn lane queue capacity.	yes	Table 7-1
c. Discussion should be provided on how time signal cycle is used in the calculations.	yes	Sect 4.3
3.4 Adverse Weather		
a. The adverse weather condition should be identified and the effect of adverse weather on mobilization should be considered.	yes	Sect 2.4
b. The speed and capacity reduction factors identified in Table 3-1, "Weather Capacity Factors," of NUREG/CR-7002 should be used or a basis should be provided for other values.	yes	Sect 2.4
c. The study identifies assumptions for snow removal on streets and driveways, when applicable.	N/A	impediments are part of the PAD process
4.0 Development of Evacuation Times		
4.1 Trip Generation Time		
a. The process used to develop trip generation times should be identified.	yes	Sect 5
b. When telephone surveys are used, the scope of the survey, area of the survey, number of participants, and statistical relevance should be provided.	yes	Appendix B
c. Data obtained from telephone surveys should be summarized.	yes	Appendix B
d. The trip generation time for each population group should be developed from site specific information.	yes	Sect 5
4.1.1 Permanent Residents and Transient Population		
a. Permanent residents are assumed to evacuate from their homes but are not assumed to be at home at all times. Trip	yes	Sect 5

	Criterion Addressed in ETE Analysis (Yes/No)	Comments
generation time includes the assumption that a percentage of residents will need to return home prior to evacuating.		
b. Discussion should be provided on the time and method used to notify transients. The trip generation time discusses any difficulties notifying persons in hard to reach areas such as on lakes or in campgrounds.	yes	Sect 5
c. The trip generation time accounts for transients potentially returning to hotels prior to evacuating.	yes	Sect 5
d. Effect of public transportation resources used during special events where a large number of transients are expected should be considered.	yes	See Sect 2.4.4 No "Special Event" scenario req'd
e. The trip generation time for the transient population should be integrated and loaded onto the transportation network with the general public.	yes	Sect 5
4.1.2 Transit Dependent Residents		
a. If available, existing plans and bus routes are used in the ETE analysis. If new plans are developed with the ETE, they should have been agreed upon by the responsible authorities.	yes	Sect 5.3, 3.1.2. Transportation assistance phone numbers and pickup point information is published for the public.
b. Discussion should be included on the means of evacuating ambulatory and non-ambulatory residents.	yes	Sect 5.3
c. The number, location and availability of buses, and other resources needed to support the demand estimation are provided.	yse	Table 3-6
d. Logistical details, such as the time to obtain buses, brief drivers and initiate the bus route are provided.	yes	Sect 5.4.3, 6.7
e. Discussion should identify the time estimated for transit dependent residents to prepare and then travel to a bus pickup point, and describes the expected means of travel to the pickup point.	yes	Sect 6.7
f. The number of bus stops and time needed to load passengers should be discussed.	yes	Sect 6.7
g. A map of bus routes should be included.	N/A	Pickup points are published. Routes are not scripted.
h. The trip generation time for non-ambulatory persons includes the time to mobilize ambulances or special vehicles, time to drive to the home of residents, loading time,	yes	Sect 6.7

	Criterion Addressed in ETE Analysis (Yes/No)	Comments
and time to drive out of the EPZ should be provided.		
i. Information should be provided to support analysis of return trips, if necessary.	yes	Sect 6.7
4.1.3 Special Facilities		
a. Information on evacuation logistics and mobilization times should be provided.	yes	Sect 6.7
b. Discussion should be provided on the inbound and outbound speeds.	yes	Sect 6.7
c. The number of wheelchair and bed-bound individuals should be provided, and the logistics of evacuating these residents should be discussed.	yes	page E-2, Sect 3.4, Table A-6
d. Time for loading of residents should be provided.	yes	Sect 6.7
e. Information should be provided that indicates whether the evacuation can be completed in a single trip or if additional trips are needed.	yes	Sect 2.1, 3.1.2, 3.6
f. If return trips are needed, the destination of vehicles should be provided.	yes	Sect 3.6, 6.7
g. Discussion should be provided on whether special facility residents are expected to pass through the reception center prior to being evacuated to their final destination.	yes	Sect 5.4.3
h. Supporting information should be provided to quantify the time elements for the return trips.	yes	Sect 6.7
4.1.4 Schools		
a. Information on evacuation logistics and mobilization times should be provided.	yes	Sect 6.7
b. Discussion should be provided on the inbound and outbound speeds.	yes	Sect 6.7
c. Time for loading of students should be provided.	yes	Sect 6.7
d. Information should be provided that indicates whether the evacuation can be completed in a single trip or if additional trips are needed.	yes	Sect 6.7, Table 6-6. PA and MD utilize a "single-lift" strategy.
e. If return trips are needed, the destination of school buses should be provided.	yes	Sect 6.7
f. If used, reception centers should be identified. Discussion should be provided on whether students are expected to pass through the reception center prior to being evacuated	yes	Sect 5.4.3; Schools evacuate directly to host schools

	Criterion Addressed in ETE Analysis (Yes/No)	Comments
to their final destination.		
g. Supporting information should be provided to quantify the time elements for the return trips.	yes	Sect 6.7
4.2 ETE Modeling		
a. General information about the model should be provided and demonstrates its use in ETE studies.	yes	Sect 5.5
b. If a traffic simulation model is not used to conduct the ETE calculation, sufficient detail should be provided to validate the analytical approach used. All criteria elements should have been met, as appropriate.	N/A	traffic simulation used
4.2.1 Traffic Simulation Model Input		
a. Traffic simulation model assumptions and a representative set of model inputs should be provided.	yes	Sect 5.5
b. A glossary of terms should be provided for the key performance measures and parameters used in the analysis.	yes	page v
4.2.2 Traffic Simulation Model Output		
a. A discussion regarding whether the traffic simulation model used must be in equilibration prior to calculating the ETE should be provided.	yes	Sect 5.5
b. The minimum following model outputs should be provided to support review: 1. Total volume and percent by hour at each EPZ exit mode. 2. Network wide average travel time. 3. Longest Queue length for the 10 intersections with the highest traffic volume. 4. Total vehicles exiting the network. 5. A plot that provides both the mobilization curve and evacuation curve identifying the cumulative percentage of evacuees who have mobilized and exited the EPZ. 6. Average speed for each major evacuation route that exits the EPZ.	yes	Sect 6, Table 7-1
c. Color coded roadway maps should be provided for various times (i.e., at 2, 4, 6 hrs., etc.) during a full EPZ evacuation scenario, identifying areas where long queues exist including level of service (LOS) "E" and LOS "F" conditions,	yes	Appendix D

	Criterion Addressed in ETE Analysis (Yes/No)	Comments
if they occur.		
4.3 Evacuation Time Estimates for the General Public		
a. The ETE should include the time to evacuate 90% and 100% of the total permanent resident and transient population.	yes	Sect 6
b. The ETE for 100% of the general public should include all members of the general public. Any reductions or truncated data should be explained.	yes	Sect 6
c. Tables should be provided for the 90 and 100 percent ETEs similar to Table 4-3, "ETEs for Staged Evacuation Keyhole," of NUREG/CR-7002.	yes	Sect 6
d. ETEs should be provided for the 100 percent evacuation of special facilities, transit dependent, and school populations.	yes	Sect 6
5.0 Other Considerations		
5.1 Development of Traffic Control Plans		
a. Information that responsible authorities have approved the traffic control plan used in the analysis should be provided.	yes	Sect 7
b. A discussion of adjustments or additions to the traffic control plan that affect the ETE should be provided.	yes	Sect 7
5.2 Enhancements in Evacuation Time		
a. The results of assessments for improvement of evacuation time should be provided.	yes	Sect 7
b. A statement or discussion regarding presentation of enhancements to local authorities should be provided.	yes	Sect 7
5.3 State and Local Review		
a. A list of agencies contacted and the extent of interaction with these agencies should be discussed.	yes	Sect 2.2
b. Information should be provided on any unresolved issues that may affect the ETE.	yes	no unresolved issues
5.4 Reviews and Updates		
a. A discussion of when an updated ETE analysis is required to be performed and submitted to the NRC.	yes	Sect 6.5
5.5 Reception Centers and Congregate Care Center		
a. A map of congregate care centers and reception centers should be provided.	yes	Figure 4-1; Cong. Care is an event specific part of RERP
b. If return trips are required, assumptions used to estimate	N/A	not required

	Criterion Addressed in ETE Analysis (Yes/No)	Comments
return times for buses should be provided.		
c. It should be clearly stated if it is assumed that passengers are left at the reception center and are taken by separate buses to the congregate care center.	yes	Sect 3.1.2

Exelon
Technical Reviewer _____ Date 8/14/13

Supervisory Review _____ Date 8/15/13

Peach Bottom Atomic Power Station
Evacuation Time Estimates

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Evacuation Time Estimates for the Peach Bottom Station Plume Exposure Pathway Emergency Planning Zone

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Executive Summary

This report documents the approach and presents the results of the Evacuation Time Estimate (ETE) study performed by ARCADIS for the Peach Bottom Atomic Power Station (PBAPS) in Peach Bottom Township, Pennsylvania. The study reflects the current definition of the Emergency Planning Zone, which is the region within a nominal 10-mile distance of PBAPS. The most recent previous study of evacuation time estimates for Peach Bottom was performed in 2003. The present study was performed using population data from the 2010 census.

PTV Vision™ software was used to perform evacuation modeling for different scenarios. The PTV Vision traffic simulation software package includes VISUM (macroscopic traffic simulation) and VISSIM (microscopic traffic simulation). VISUM is a comprehensive, flexible software system for transportation planning, travel demand modeling, and network data management. VISSIM is capable of performing detailed microscopic simulation of traffic and can model any type of traffic signal control and geometric configuration.

The road network used in the evacuation simulations consisted of designated evacuation routes plus any additional roadways needed to accurately simulate conditions during an evacuation. Roadway capacities were determined using NAVTEQ™ digital data, updated by ARCADIS based on actual road and intersection data collected in the field in 2011. Evacuees were generally assumed to proceed out of the Emergency Planning Zone (EPZ) via recommended evacuation routes and to make their way to designated reception centers after leaving the EPZ.

The EPZ for PBAPS includes parts of three counties in Pennsylvania (Chester, Lancaster and York) and two counties in Maryland (Harford and Cecil). The resident population of the Peach Bottom EPZ is estimated at 59,632 permanent residents. Based on housing data from the 2010 U.S. Census, the estimated number of seasonal (summer) residents in the Peach Bottom EPZ is 3,714. The 2010 U.S. Census data at Block Group level was used to determine population in each EPZ Sub-Area.

The transient population, which includes large workplaces, recreational facilities and hotels/motels, was estimated at 2,595 persons for a winter weekday and 8,288 persons for a summer weekend. The special facilities population, including nursing homes and hospitals, was estimated at 478 persons for all scenarios. The estimated population of schools and day care centers for a winter weekday is 12,006, including children and staff. These population estimates include intrinsic double counting, as some persons in the transient and special facility populations are also included in the permanent and seasonal resident counts. Thus, evacuation times using these population figures are considered conservative.

Vehicle demand for the resident population was developed based on estimated vehicle occupancy, using data obtained from a telephone survey of EPZ residents. The vehicle occupancy factor estimated from survey responses is 1.94 persons per vehicle, which represents 1.42 vehicles per household. For the 2003 study, two alternative vehicle demand estimates for the residential population were evaluated, with vehicle occupancy of 1.75 persons per vehicle ("high demand" alternative) and 3.0 persons per vehicle (one vehicle per household). For seasonal (summer) households, population is estimated at 6 persons per household, and vehicle demand at 2 vehicles per household.

Vehicle demand for the transient population was estimated using vehicle occupancy factors ranging from 1.0 person per vehicle for the workforce population up to 3.0 persons per vehicle for some recreational areas. Vehicle demand for the school population was based on bus occupancy of 48 persons. For nursing homes, vehicle occupancy is 20 persons per bus or van for residents, and two persons per ambulance for non-ambulatory patients. For nights and weekends, all facility staff would accompany patients; during weekdays, one vehicle per person was assigned for the additional staff. Total vehicle demand for all population categories ranges from 29,617 (winter night) to 33,597 (summer weekday).

Vehicle demand was also assigned to account for the potential "shadow evacuation" of the population residing immediately outside the EPZ, to a distance of 15 miles. The permanent resident population within this region is 86,613. It was assumed that 20% of the population in this region would evacuate. The occupancy factor for EPZ residents (1.94 persons per vehicle) was applied to estimate vehicle demand for this population. Shadow evacuees residing outside the EPZ add vehicle demand of 8,929 vehicles.

Evacuation times were estimated for evacuation of the entire EPZ for winter weekday (daytime and evening), winter weekend day, summer weekday (daytime and evening), and summer weekend cases under fair weather conditions. The weekday daytime cases were also evaluated for adverse weather conditions (snow and rain, respectively, for winter and summer).

A "staged evacuation" scenario was also evaluated for the winter daytime case. Under this scenario, only the population within the 2-mile zones closest to PBAPS would evacuate initially; evacuation of surrounding zones would be initiated after most traffic from the 2-mile zones has cleared. The purpose of this scenario is to assess the potential reduction in evacuation times that might be achieved for the population at greatest risk.

Simulations were also performed to assess the potential impact of population growth on predicted evacuation times. This sensitivity analysis is used to define a threshold population figure that would trigger another ETE update study.

With normal weather, evacuation times for the general population are up to 3 hours 40 minutes for 90% of vehicles to evacuate the full 10-mile EPZ, and 5 hours 10 minutes for 100% to evacuate. The case with the longest ETEs for the full EPZ is Summer Weekday. With adverse weather, the predicted ETEs increased by 5 to 10 minutes (Summer) and 10 to 30 minutes (Winter). The ETEs to evacuate only the 2-mile zone are about 2 hours (90%) and 3:15 (100%), with times varying 5 or 10 minutes by season and time of day. The ETEs to evacuate all zones out to 5-miles are about 3 hours (90%) and 4 hours (100%). These times are shorter than the ETEs from the 2003 study, which reflects the use of a more sophisticated traffic model and more detailed roadway network.

Table E-1: Evacuation Time Estimate Summary for Peach Bottom Station EPZ

	Summer				Winter			
	Midweek Daytime		Weekend Daytime	Evening	Midweek Daytime		Weekend Daytime	Evening
Scenario:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Weather:	Normal	Adverse	Normal	Normal	Normal	Adverse	Normal	Normal
Evacuation Area	90% evacuation time							
2-mile Zone	2:00	2:05	1:55	1:55	1:55	2:10	1:45	1:45
5-mile Zone	3:00	3:05	2:45	2:45	2:50	3:00	2:35	2:35
10-mile EPZ	3:40	3:50	3:30	3:30	3:35	3:55	3:25	3:20
Evacuation Area	100% evacuation time							
2-mile Zone	3:15	3:20	3:00	3:00	3:15	3:30	2:55	2:55
5-mile Zone	4:00	4:10	3:30	3:30	4:05	4:35	3:30	3:30
10-mile EPZ	5:10	5:20	5:00	5:00	5:00	5:15	4:45	4:45

Tables

Figures

Appendices

List of Acronyms and Abbreviations

ADT	Average daily traffic
BAO	ESRI Business Analyst Online
EAS	Emergency Alert System
EPZ	Exposure Pathway Emergency Planning Zone
ERPA	Emergency Response Protection Area
ETE	Evacuation time estimate
GIS	Geographic information system
GPS	Global Positioning System
LOS	Level-of-service
NRC	Nuclear Regulatory Commission
PAR	Protective Action Recommendation
PBAPS	Peach Bottom Atomic Power Station
PEMA	Pennsylvania Emergency Management Agency
TAR	Tone alert radios

1. Introduction

1.1 General

Evacuation time studies analyze the manner in which the population within the Plume Exposure Pathway Emergency Planning Zone (EPZ) surrounding a nuclear power plant site would evacuate during a radiological emergency. Evacuation time studies provide licensees and State and local governments with site-specific information helpful for protective action decision-making. The studies estimate the time necessary to evacuate the EPZ for a range of evacuation scenarios. Analysis of the evacuation simulation results also identifies locations where traffic management and control measures can facilitate the evacuation, and may identify unique evacuation constraints or conditions.

Estimates of the time required to evacuate from areas around nuclear power plant sites are required for all operating plants in the United States. Federal guidance has been prepared to outline the format and content of these evacuation time estimates (NUREG-0654, Rev. 1 (Nuclear Regulatory Commission (NRC), 1980), NUREG/CR-4831 (NRC, 1992) and NUREG/CR-7002 (NRC, 2011)).

Evacuation time estimate (ETE) studies were last updated for the Peach Bottom Atomic Power Station (PBAPS) Plume Exposure Pathway EPZ in 2003 (Earth Tech, 2003). The guidance presented in NUREG/CR-7002 indicates that the evacuation time estimates should be updated as local conditions change, but at least once each decade, following release of the federal census. The current update study was prompted by the issuance of revised ETE guidance (CR-7002) and the availability of population data from the 2010 census. Census data indicate that the population residing within the EPZ increased by about 5,000 between 2000 and 2010, which represents a 9% population increase. (Population data are discussed further below in section 1.4.)

The evacuation time estimates have been developed using current population, local roadway network characteristics and the PTV Vision™ traffic simulation software package to perform evacuation modeling for different scenarios. PTV Vision includes the VISSIM (microscopic traffic simulation) and VISUM (macroscopic traffic simulation) models. Evacuation times have been estimated for various areas, times and weather conditions, as outlined in CR-7002. These evacuation times represent the times required for completing the following actions:

- Public notification;

- Preparation and mobilization; and

- Actual movement out of the EPZ (i.e., on-road travel time, including delays associated with vehicle queuing).

1.2 Site Location and Emergency Planning Zone (EPZ)

This report describes the analyses undertaken, and the results obtained, in a study to update the existing Evacuation Time Estimates for PBAPS. The emergency response plan is designed to protect the health and safety of the public in the event that an evacuation is ordered as a protective action in response to an accident at PBAPS.

The Peach Bottom Station site is located on the west bank of the Susquehanna River in Peach Bottom Township, York County, Pennsylvania, about 2.5 miles north of the Pennsylvania-Maryland border. The location of the plant is shown in Figure 1-1.

The EPZ is the geographic area surrounding a nuclear power plant within which the NRC requires advance planning for evacuation or other short-term protective actions in the event of a radiological emergency. The Peach Bottom EPZ consists of the area within an approximate 10-mile radius of PBAPS. The EPZ includes parts of three Pennsylvania counties (Chester, Lancaster and York) and two Maryland counties (Cecil and Harford). The Peach Bottom EPZ is subdivided into a total of 11 Sub-Areas. As a rule, such Sub-Areas are the basic units for which protective action recommendations are issued. However, it is understood that current Pennsylvania policy requires the evacuation of the entire EPZ (or in this case, of the entire Pennsylvania portion of the EPZ) if an evacuation is recommended. Sub-Area boundaries generally follow geographic (township and borough) boundaries, and reflect distance and direction from PBAPS. The distance ranges of concern are 0-2 miles, 2-5 miles, and beyond 5 miles. EPZ and Sub-Area boundaries are shown in Figure 1-1. The Sub-Areas are described in more detail in Section 3.

A listing of the permanent resident population for 2000 and 2010 by county and by ERPA within the Peach Bottom EPZ is shown in Figure 1-1. Table 1-1 compares the EPZ population from the 2010 and the 2000 census. (A breakdown by Sub-Area was not provided in the 2003 study, so the comparison in Table 1-1 is at the county level.)

Lancaster County has the largest land area in the EPZ and accounts for 41% of the resident population; 22% of the EPZ population resides in Harford County and 20% in York County. The region is predominantly rural in character, with no large cities or towns

located in the EPZ. Population growth in the EPZ between 2000 and 2010 has occurred in all five counties, with the largest growth percentages in Cecil County (14% increase) and Lancaster County (10.5% increase).

The Susquehanna River borders the plant on the northeast and is more than a mile wide as it crosses the EPZ, flowing from northwest to southeast. The river is a barrier to travel within the EPZ, with only one bridge crossing in Pennsylvania and one in Maryland. The area in the immediate plant vicinity is sparsely populated. Fewer than 500 people reside within 2 miles of PBAPS. The zones from 2-5 miles contain about 25% of the EPZ permanent resident population, and the zones beyond 5 miles contain almost 75%.

NRC guidance requires consideration of potential "shadow evacuation" of the population residing immediately outside the EPZ, to a distance of 15 miles. The permanent resident population within this region is 86,613. Most of this population is located to the north of the EPZ, in the area south of Lancaster, PA, and to the south and southeast in Maryland, along the I-95 corridor. A map showing the population by distance and direction sector within 15 miles of PBAPS is provided in Figure 1-2. (Due to roundoff errors that propagate when sector boundaries cut across census block boundaries, the population numbers disagree slightly between Figure 1-1 and Figure 1-2. Figure 1-1 is more accurate for the EPZ population.)

1.3 Designated Reception Centers

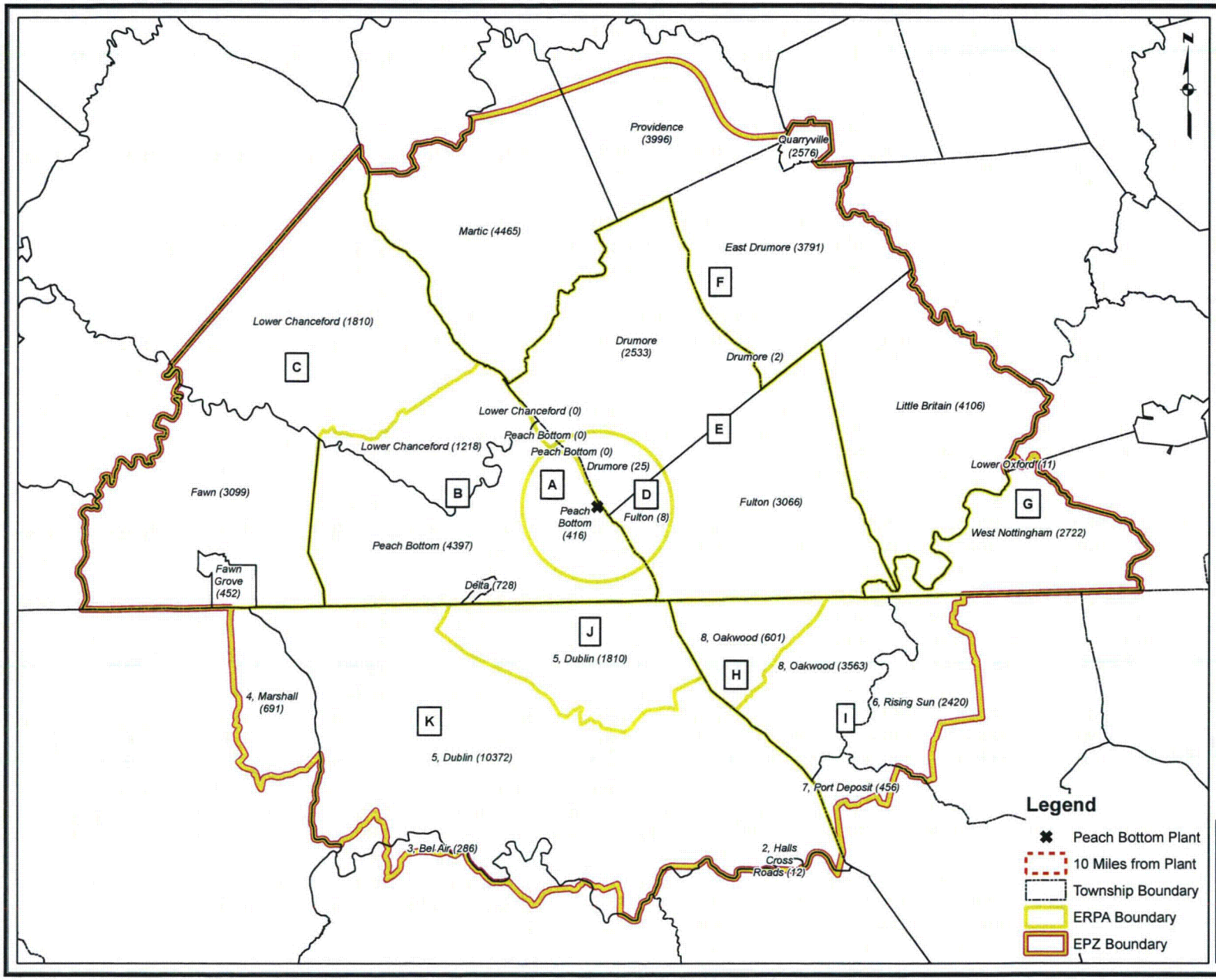
The Peach Bottom emergency response evacuation plan directs residents of each community within the EPZ to evacuate to specified reception centers. If evacuation is initiated while schools are in session, students will be transported directly to designated Host Schools, and families are instructed to meet up with the students at those locations.

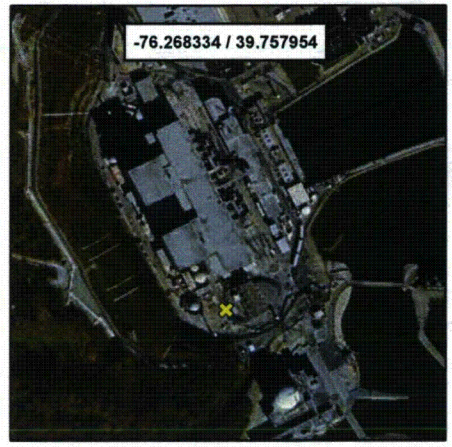
The designated reception centers for individual boroughs and townships within the Pennsylvania portion of the Peach Bottom EPZ are listed in Table 1-2. The roadway network used to develop evacuation time estimates includes the major roadways recommended to the public as evacuation routes from individual communities to designated reception centers. Reception centers for each Maryland County are also listed in Table 1-2. For the Maryland portion of the EPZ, the roadway network is designed to utilize all available major roadways, with traffic flow directed radially outward from the PBAPS toward the EPZ boundaries. The roadway network is described in detail in Section 4.

1.4 Overview of Changes from Previous ETE Study

The changes in residential population within the EPZ are summarized in Table 1-1. The revised NRC guidance and newly acquired data led to a number of other changes in the ETE methodology and assumptions. Table 1-3 provides a summary comparing the main features and assumptions of the current study to the 2003 ETE study. The telephone survey of EPZ residents provides a new basis for estimating vehicle occupancy and departure times, while new NRC guidance has specified different assumptions regarding background and "shadow" traffic. The ETE methodology and assumptions for the current study are discussed in greater detail in following sections of the report.

The revised vehicle occupancy for residents (1.94 persons per vehicle, based on survey), revised departure times for schools and special facilities (no "early warning") and the revised departure time curves for residents (based on survey responses and estimated time for warning diffusion) are expected to have the greatest influence on estimated evacuation times. The "shadow evacuation" adds vehicle demand of almost 9,000 vehicles in the area immediately outside the EPZ. Each of these issues is discussed in detail in following sections of the report.





ERPA	2010 Population
A	416
B	6,343
C	5,361
D	33
E	5,599
F	18,936
G	2,733
H	601
I	6,439
J	1,810
K	11,361
TOTAL:	**59,632**

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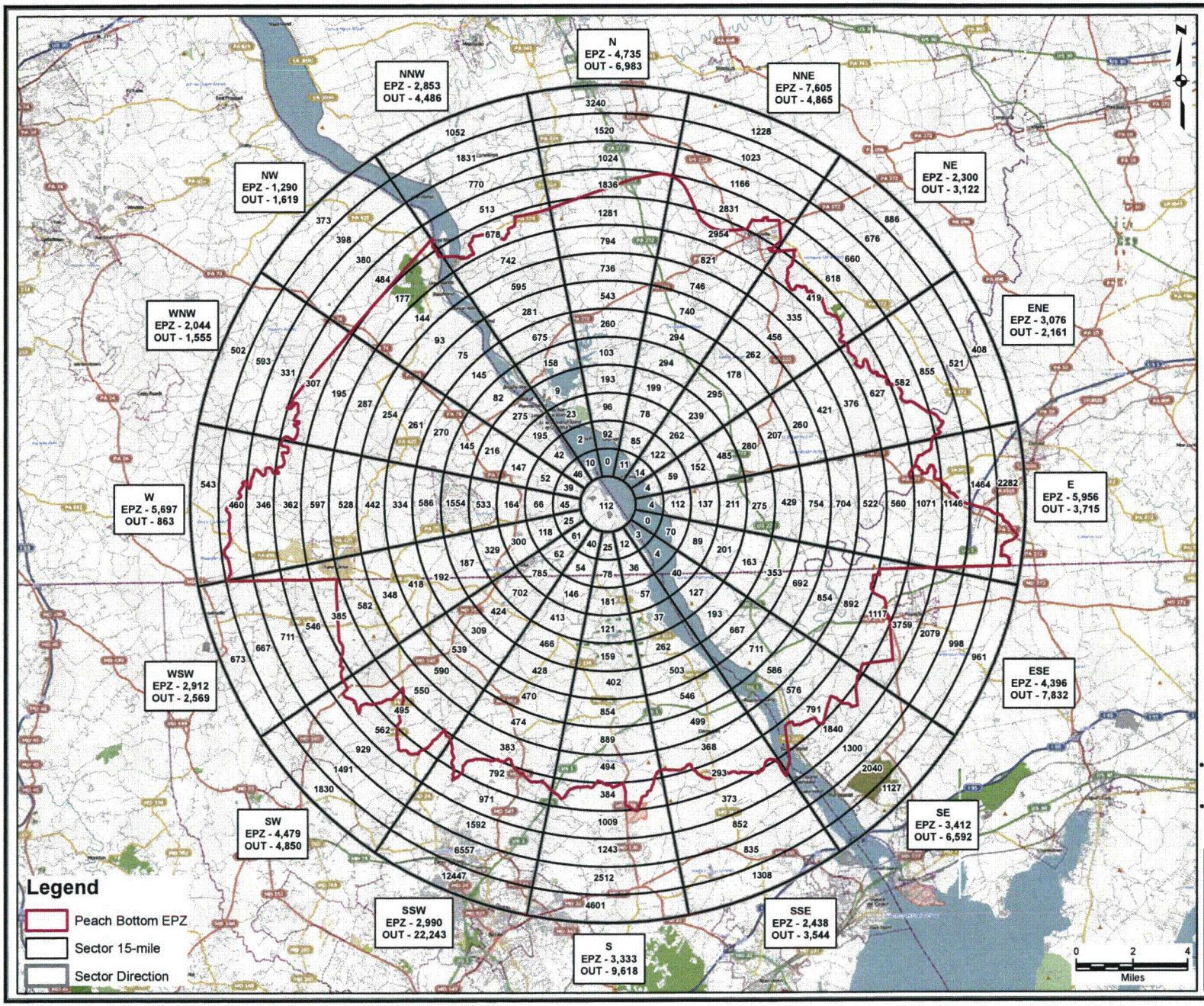
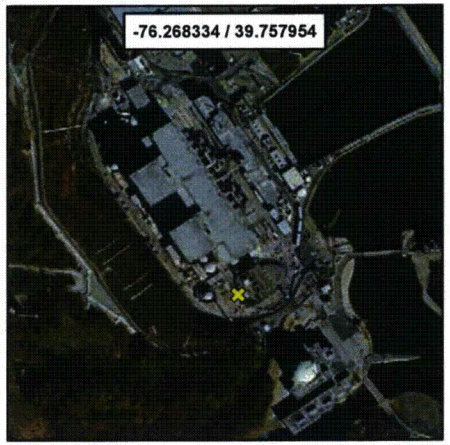
EXELON GENERATION

PEACH BOTTOM GENERATING STATION POPULATION DISTRIBUTION - ERPA

Figure 1-1





WITHIN EPZ		OUTSIDE EPZ	
DISTANCE	POPULATION	DISTANCE	POPULATION
EPZ 1	112	NA	
EPZ 2	339	NA	
EPZ 3	1,054	NA	
EPZ 4	2,852	NA	
EPZ 5	4,290	NA	
EPZ 6	5,040	NA	
EPZ 7	5,898	NA	
EPZ 8	7,740	NA	
EPZ 9	8,687	NA	
EPZ 10	8,358	OUT 10	35
EPZ 11	8,861	OUT 11	2,884
EPZ 12	4,602	OUT 12	13,062
EPZ 13	985	OUT 13	14,399
EPZ 14	680	OUT 14	22,906
EPZ 15	130	OUT 15	33,331
EPZ TOTAL:	59,628	OUT TOTAL:	86,617

NOTE:
- EPZ total population varies from 2011 draft report totals by less than1% due to the rounding of population calculations from additional block processing.
- Plant to 1 mile population not summarized in any sector direction.

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EXELON GENERATION

POPULATION DISTRIBUTION
EPZ & SECTORS 15-MILE
Figure 1-2

PEACH BOTTOM GENERATING STATION

Table 1-1: Permanent Resident Population in the Peach Bottom EPZ

County, ERPA	County Subdivision	Census 2000[a]	Census 2010[b]	Percent Change
York				
A (2-mi)	Peach Bottom township		416	
B (5-mi)	Lower Chanceford twp, Peach Bottom twp, Delta borough		6,343	
C (10-mi)	Lower Chanceford twp, Fawn twp, Fawn Grove borough		5,361	
	County subtotal	**11,242**	**12,120**	**7.8%**
Lancaster				
D (2-mi)	Drumore twp, Fulton twp		33	
E (5-mi)	Drumore twp, Fulton twp		5,599	
F (10-mi)	Providence twp, Quarryville borough, Martic twp, E Drumore twp, Little Britain twp		18,936	
	County subtotal	**22,225**	**24,568**	**10.5%**
Chester				
G (10-mi)	West Nottingham twp	**2,634**	**2,733**	**3.8%**
	Subtotal – Pennsylvania	**36,101**	**39,421**	**9.2%**
Cecil				
H (5-mi)		630	601	
I (10-mi)		5,546	6,439	
	County subtotal	**6,176**	**7,040**	**14.0%**
Harford				
J (5-mi)		1,886	1,810	
K (10-mi)		10,504	11,361	
	County subtotal	**12,390**	**13,171**	**6.3%**
	Subtotal – Maryland	**18,566**	**20,211**	**8.9%**
Peach Bottom EPZ Total		**54,667**	**59,632**	**9.1%**

Sources: a) 2000 census data from 2003 ETE study report

b) 2010 census data (block level); Pennsylvania contribution matches PEMA estimate.

Table 1-2: Designated Reception Centers for Evacuation

Reception Center	EPZ Townships and Boroughs
Octorara Middle School, Atglen, PA	West Nottingham Township, Chester County
Willow Street Career Technology Center, Willow Street, PA	Lancaster County (all municipalities)
Susquehannock High School, Glen Rock, PA	York County: Delta Borough, Fawn Grove Borough, Fawn Township, Peach Bottom Township
Red Lion High School, Red Lion, PA	York County: Lower Chanceford Township
Fallston High School, Fallston, MD; Harford Community College, Churchville, MD	Harford County EPZ
Rising Sun High School, Rising Sun, MD; Perryville High School, Perryville, MD	Cecil County EPZ

Table 1-3: ETE Comparison

ETE Element	2003 ETE	Current Study
Permanent Residents - Total population - Vehicle occupancy (persons per vehicle)	 - 54,667 - Two options (1.75 and 3.0)	 - 59,632 - 1.94
Transit-dependent - Population estimate - Number of buses - Number of ambulances	Evacuation of transit-dependent population was not addressed in 2003 study	 - 6,620 (primarily Amish); 54 non-ambulatory - 236 bus trips - 14 wheelchair bus, 6 ambulance
Transient facilities - Estimated population - Vehicle demand - Adjust for double-count	(winter day/summer weekend) - 3,664 / 5,592 - 2,668 / 2,035 - No adjustment	(winter day/summer weekend) - 2,595 / 8,288 - 2,356 / 3,347 - No adjustment
Special facilities - Estimated population - Number bus, van - Ambulance, other	(winter weekday) - 400 - 15 bus/van - Not identified	(winter weekday) - 478, 56 non-ambulatory - 16 buses - 15 ambulance, 9 wheelchair bus
Schools - student population - Number of buses	(winter weekday) - 11,455 - 254 buses	(winter weekday) - 10,779 (day care included) - 225 buses, 22 vans
Background traffic	None	Average traffic by time of day
Shadow evacuation (assumed basis)	None	20% of resident population outside designated zones
Special event(s)	None	None
Scenarios	- Winter weekday - Winter weeknight - Summer weekend - Both normal and adverse weather for all three cases	- Weekday (winter, summer) - Weeknight (winter, summer) - Weekend (winter, summer) - Adverse weather weekday only - Staged evacuation (weekday)
Adverse weather	Snow for winter, rain for summer	Snow for winter, rain for summer
Evacuation model name and version	NetVac2	PTV Vision VISUM, VISSIM
Departure times	- Residential based on literature - Transient based on literature - Specials based on notification at alert	- Warning based on literature - Residential based on survey - Transient based on survey - Specials notified with public
Evacuation times	Estimates provided for primarily for 100%	Estimates provided for 90 and 100%

2. Methodology and Assumptions

2.1 Sources of Data and General Assumptions

The following data sources were reviewed and assumptions made in order to develop the appropriate population and roadway databases used for the evacuation analysis:

- Population estimates for permanent residents were developed from 2010 U.S. Census Bureau data.

- Population estimates for seasonal residents were developed from 2010 United States Census Bureau data on housing units. Census data identify the number of seasonal housing units (vacant housing units for "seasonal or occasional use") at different geographic levels (e.g., by township, census tract, block group, block). A conservative estimate of seasonal population was developed by assigning six persons per seasonal housing unit.

- Population estimates for major employers were developed from ESRI list and the facility list from the 2003 study report. ARCADIS conducted internet searches and telephone surveys to estimate facility employment and staffing levels for different scenarios. Only facilities with potential staffing level of at least 50 persons per work shift were pursued.

- Information relating to hotels, motels and recreational facilities was obtained from tourism websites, 2011 AAA TourBook listings, and the 2003 study report, with telephone surveys to verify data and to assess seasonal occupancy. For parks, visitation information was obtained from state park agencies.

- Current population estimates for schools were obtained primarily from county emergency response agencies, plus enrollment information available on the internet. Some private schools and colleges were contacted by phone, using facility lists provided by county emergency management agencies.

- Lists of hospitals, rest homes and incarceration facilities were obtained from each county emergency management agency.

- The staffing levels at PBAPS reflect estimated peak personnel onsite during outage conditions. These data were provided by Exelon Generation.

- Initial estimates of roadway characteristics were obtained from the NAVTEQ database. Roadway geometric and operational data were compiled based on field surveys performed by ARCADIS in 2011.

- Average traffic volumes by time of day for weekday and weekend for designated evacuation routes were obtained from state and county transportation agencies. These data were used to assign background traffic volumes for the roadway network. It was assumed that access control would be established within 2 hours following the public notice to evacuate.

- Preparation and mobilization times for the permanent resident population were developed based on the results of a telephone survey, combined with published time estimates for warning diffusion. The survey provided estimates of the time to depart from home following notification, and commuting times for household members who would return from work before departing. Median departure times for residents are longer than the times assumed in the previous study.

- Departure times for transient facilities were estimated assuming relatively prompt evacuation of most workplaces and recreational facilities once notification is received. The distribution of departure times also reflects information gathered from the telephone survey of EPZ residents, as discussed in Section 3.

- The evacuation time estimates represent the time required to evacuate the Peach Bottom EPZ and designated analysis areas and include the time required for initial notification.

- Evacuation time estimates are presented for 90% and 100% of evacuating vehicles. It is assumed that all persons within the EPZ area will evacuate. For the 100% evacuation time, evacuation of the EPZ will be considered complete after all evacuating vehicles are outside of the EPZ or analysis area.

- The general public will evacuate using designated evacuation routes and will proceed to the reception centers listed in Table 1-2 after leaving the EPZ. When schools are in session, children attending school will be transported directly to designated Host Schools.

- It is assumed that existing lane utilization will prevail during the course of the evacuation. Traffic control signals will be over-ridden or converted to flashing mode as necessary to give preference to flow on all major outbound roadways. It

is also assumed that State and municipal personnel will restrict unauthorized access into the EPZ, consistent with existing traffic management plans.

- The evacuation analysis cases are described in Section 2.3 and represent a range of conditions, per guidance presented in CR-7002. These cases have been chosen to provide information for an appropriate range of conditions (i.e., low, typical and high population; fair and adverse weather) to guide the protective action decision-making process. Potential "special events" such as holiday parades and sporting events occurring within the EPZ were considered, based on input from state and county agencies. None of these events was judged to represent a major departure from the peak traffic assumptions reflected in the "standard" scenarios, so a Special Event scenario was not included in this study.

- Vehicle occupancy rates used for the various population categories are as follows:

  - Permanent residents – 1.94 persons per vehicle, based on telephone survey results

  - Major places of employment – 1 vehicle per employee.

  - Hotels/Motels – 1 vehicle (1 to 2 persons) per occupied room.

  - Recreational areas – 1 vehicle (3 persons) per campsite; 1.5 persons per vehicle at visitor centers and museums.

  - Schools – 45 students and 3 staff per bus; one vehicle per additional staff person.

  - Hospitals/ Nursing Homes/ Correctional Facilities – 2 persons per ambulance, 3 per wheelchair bus for non-ambulatory patients, and 20 people per bus or van for ambulatory residents.

  - Transit-dependent – 28 persons per bus (average bus capacity is 60 adults, but people will bring significant luggage), 3 non-ambulatory per wheelchair bus, 2 per ambulance.

- The transit-dependent population will be evacuated by bus or ambulance through efforts coordinated by state and municipal emergency preparedness officials.

- Adverse weather refers to moderate to heavy rainstorms for summer conditions, and a moderate snowstorm for winter conditions.

2.2 Interaction with Agencies

Emergency management agencies responsible for planning and implementing the emergency response procedures during a radiological emergency were consulted during the development of this ETE study. The Pennsylvania Emergency Management Agency (PEMA), emergency agencies for Lancaster, York and Chester Counties in Pennsylvania, and emergency agencies in Harford and Cecil Counties in Maryland were contacted to obtain information regarding special and transient facilities in the EPZ, transportation resources available to evacuate special facilities, and the transit-dependent general public. Those agencies were also consulted to identify any major events that take place within the EPZ that should be considered for a Special Event scenario. PEMA provided their own estimates of residential population for the Pennsylvania portion of the EPZ based on 2010 census data, and a map of designated evacuation routes and reception centers. PEMA and the county agencies reviewed the draft report and the facility databases used in this study.

Representative background traffic volumes for the EPZ roadway network were obtained from state and county transportation agencies.

2.3 Summary of Methodology for Traffic Simulation

The evacuation time estimates developed for the Peach Bottom EPZ are based upon a time distribution of evacuation events as opposed to a summation of sequential events. This methodology assumes that the various time components in an evacuation (i.e., the time associated with preparation, mobilization, etc.) overlap and occur within certain time ranges. The time distribution approach is based upon assumptions consistent with the NRC guidance of CR-7002.

Trip generation times are used to develop vehicle loading curves for different population types within the permanent, transient, and special facility populations. A trip generation time consists of two main components: warning diffusion time and mobilization time. Warning diffusion time is the time it takes for people to receive an emergency notification. The type of warning systems employed in the EPZ, such as emergency alert system (EAS), sirens, and tone alert radios (TARs) affects the distribution of warning times. Availability of more warning systems leads to faster warning diffusion to the public.

Mobilization time is the time between the receipt of notification and when individuals leave for evacuation. Mobilization time depends on the type of population and activity. Warning diffusion time and mobilization time distributions are used to develop composite loading distribution or trip generation curves for different population segments. Trip generation times for transit-dependent facilities, special facilities and schools were developed separately from those for the general public.

2.4 Conditions Modeled

Pursuant to the guidance in CR-7002 and NUREG-0654, Rev. 1, evacuation time estimates have been prepared for a range of temporal, seasonal and weather conditions. Estimates have been prepared for weekday, weeknight and weekend scenarios during winter and summer. All scenarios are simulated with fair weather conditions; weekday scenarios are also simulated assuming adverse weather. Fair weather refers to conditions where roadways are clear and dry, and visibility is not impaired. Adverse weather during summer periods is defined as heavy rain, with impaired visibility; roadway capacities are reduced by 10% and speeds are reduced by 15%. Adverse weather during winter periods is defined as a snowstorm condition where roadway capacities and speeds are reduced by 15%.

The various population components which have been incorporated in the evacuation scenarios are summarized below:

2.4.1 Week Day

This situation represents a typical weekday period with the work force is at a full daytime level. During winter, schools are in session. Vehicle demand estimates for weekday scenarios reflect the following conditions:

- Most permanent residents within the EPZ will evacuate from their places of residence;
- Major work places are fully staffed at typical daytime levels;
- PBAPS employment is at an estimated peak daytime level, representative of operation during outage conditions;
- Schools and daycares are at current enrollment;

- Hospitals and nursing homes are at current enrollment or typical occupancy;
- Hotel/motel facilities are occupied at peak (winter or summer) levels; and
- Recreational facilities are at winter or summer weekday levels.

2.4.2 Week Night

This situation reflects a typical night period when most permanent residents are home and the work force is at evening shift level. Assumptions on the population levels for this condition include the following:

- Permanent residents within the EPZ will evacuate from their places of residence;
- Major work places are at typical evening levels;
- PBAPS employment is at an estimated peak night-time level;
- Day schools and daycares are closed;
- Hospitals and nursing homes are at current enrollment or typical occupancy, and staffing is at typical night-time levels;
- Hotel and motel facilities are occupied at (winter or summer) weekday levels; and
- Recreational facilities are at typical (winter or summer) evening levels.

2.4.3 Weekend

The weekend scenario represents a daytime period when most residents are at home and major work places are at typical weekend levels. Assumptions on the population levels for this condition include the following:

- Residents within the EPZ will evacuate from their places of residence;
- Major work places are at typical weekend levels;
- Day schools and daycares are closed;

- Hospitals and nursing homes are occupied and staffed at weekend levels;
- Hotel and motel facilities are occupied at weekend (winter or summer) levels; and
- Recreational facilities are at (winter or summer) weekend levels.

2.4.4 Special Event Consideration

County agencies and PEMA were asked to identify events such as a county fair or Fourth of July observance that would bring a large number of visitors into the EPZ. No events were identified that are large enough to pose a significant challenge for an emergency evacuation, so a Special Event scenario was not developed for the Peach Bottom EPZ. (The same decision was made for the 2003 update study.)

2.4.5 Sensitivity to Population Growth and Roadway Impact

Additional scenarios were evaluated to assess the sensitivity of ETEs to population growth and roadway impact. These sensitivity cases used the Summer Weekday, Normal Weather case for the Full EPZ as the base case. The population growth analysis is used to determine how rapidly the ETE would increase as the resident population in the EPZ is increased.

For the roadway impact scenario, a major evacuation route is removed or reduced in capacity. Specifically, one of the five highest volume roadways is removed from service, or capacity is reduced by one lane (for a multi-lane, limited-access roadway such as an interstate highway). A more detailed description of the sensitivity analysis is provided in Section 6.5.

3. Population and Vehicle Demand Estimation

The development of vehicle demand estimates for the Peach Bottom EPZ consisted of two primary steps. The first step was the determination of the number and distribution of the population to be evacuated. The second step was the determination of the appropriate number of vehicles for each of the population categories. Federal guidance (CR-7002) indicates that three population categories should be considered: permanent residents, transients, and persons in schools and special facilities (such as medical facilities/ nursing homes, and day care facilities).

The methodology used to develop the total population and vehicle demand estimates within the Peach Bottom EPZ incorporates intrinsic double counting. For example, a portion of the identified employees and visitors to recreational areas are also permanent residents within the EPZ. In addition, school children are counted in the resident population, but are also counted in the special facility population. While population and vehicle demand estimates incorporate some adjustments for double-counting, the estimates are considered to be conservative (i.e., they over-estimate actual population and vehicle levels which may be in the area at any given time). Population and vehicle demand estimates for each of the population categories are summarized below.

3.1 Permanent Residents

Permanent residents are those persons identified by the census as having a permanent residence within the EPZ. The Census 2010 population data for census tracts, block groups and blocks were used to determine the permanent resident population within the EPZ and within each municipality and Sub-Area. The allocation of the resident population to entry nodes on the roadway network was based on detailed census block maps.

An estimated 59,632 persons reside permanently within the Peach Bottom EPZ. Table 3-1 presents the resident population and vehicle demand by Sub-Area. The eleven EPZ Sub-Areas are defined based on distance and direction from PBAPS; nine of the 11 generally follow geographic (township and borough) boundaries. The 2-mile ring Sub-Areas A and D have circular boundaries for the regions within 2 miles of PBAPS west and east, respectively, of the Susquehanna River. In York County, Sub-Area A falls within Peach Bottom Township, while the 5-mile Sub-Area B includes Delta Borough, the remainder of Peach Bottom Township, and part of Lower Chanceford Township. Sub-Area D includes parts of Drumore and Fulton Townships

in Lancaster County; the 5-mile Sub-Area E includes the remainder of the same two townships. In Maryland, the two 5-mile Sub-Areas are H in Cecil County and J in Harford County. Each county has a 10-mile Sub-Area: C in York, F in Lancaster, G in Chester, I in Cecil and K in Harford.

Sub-Area F, in Lancaster County, has the largest population, and K, in Harford County, has the second-largest. The 5-mile Sub-Areas with the largest population are B in York County and E in Lancaster County.

A telephone survey of EPZ residents was conducted to obtain information relating to how many vehicles residents would use to evacuate and how long it would take them to depart following notification. The survey questionnaire and a summary of survey results are provided in Appendix B.

3.1.1 Auto-Owning Permanent Population

Vehicle demand associated with the permanent resident population was estimated based on telephone survey responses. After adjustments to reflect the age distribution of the EPZ, the vehicle occupancy factor is 1.94 persons per vehicle, which corresponds to roughly 1.4 vehicles per household. Vehicle demand in Sub-Areas D and E was reduced to adjust for transit-dependent residents. (See below.) Total vehicle demand for EPZ residents for winter scenarios is 28,599. "Shadow evacuation" of 20% of the population residing outside the EPZ within 15 miles of PBAPS adds vehicle demand of another 8,929 vehicles.

For the 2003 ETE study, evacuation times were determined for two vehicle demand assumptions for permanent residents: 1.75 persons per vehicle and 3.0 persons per vehicle.

3.1.2 Transit-Dependent Permanent Population

A substantial Amish population resides in the EPZ, primarily in Lancaster County. The Lancaster County plan assumes that 5,620 Amish will travel via horse-drawn vehicles to local Amish schools, primarily using back roads. The county will provide bus transportation from those schools to the designated reception center. Horse-drawn vehicles are not explicitly modeled in the ETE simulations, but the buses are included. Vehicle demand for the residential population in Sub-Areas E and F was reduced, in recognition that over 20% of residents in these zones do not have motor vehicles.

Emergency response plans specify that the transit-dependent population will receive transportation assistance. Provisions for evacuating transit-dependent members of the general population in Pennsylvania and Maryland do not rely on published pickup points and bus routes. County emergency response planners maintain lists of residences (self-identified) requiring transportation assistance. For ETE analysis, the estimated size of the transit-dependent population was based on NRC guidance and results of the telephone survey. The NRC guidance in CR-7002 sets a target range between 1.5% and 5%. That population size is much higher than the number who have self-identified in advance.

Based on telephone survey results, about 3.6% of households (not including the Amish) have either no vehicle or no licensed driver. NRC guidance (CR-7002) indicates that between 1.5 and 5% of residents may require transportation and that up to half of these would plan to evacuate with a friend or neighbor. Evacuation times were estimated assuming up to 1,000 transit-dependent residents, or 1.8% of the population (not including the Amish). That estimate includes 54 non-ambulatory residents who would require transport, based on County lists.

Individuals requiring transit from reception centers to congregate care centers will be transported in a separate set of vehicles from those designated to transport the transit-dependent and special facilities out of the EPZ.

3.2 Seasonal Residents

The seasonal population category includes those who reside in the area on a temporary basis, particularly during the summer period. Seasonal residences are typically not insulated and are suitable for occupancy for only a portion of the year. These residences may include vacation homes and migrant workforce housing. The 2010 U.S. Census of Population and Housing reports the number of vacant households classified as "for seasonal or occasional use".

The number of seasonal housing units in the Peach Bottom EPZ is 619; most of these are in Pennsylvania, in areas along the Susquehanna River. The number of seasonal residents was estimated using an occupancy factor of six persons per seasonal housing unit. Vehicle demand was estimated using an occupancy factor of 3.0 persons per vehicle, which equates to 2 vehicles per household. (While it is reasonable to assume that permanent residents will leave some vehicles at home when evacuating, seasonal residents are more likely to evacuate taking all vehicles

and everything that is readily portable with them.) Seasonal population and vehicle demand by Sub-Area are also included in Table 3-1.

3.3 Transient Population

The transient population segment includes persons in the work force, hotels/motels, and recreational areas. Regional maps and mapping software were used to determine facility locations and assign entry nodes. Significant employers within the EPZ were identified using ESRI Business Analyst Online (BAO). BAO is a web-based analytical and mapping tool that facilitates location-specific queries about business and demographic data. Data available on BAO includes information on business location and number of employees. ESRI extracts business data from a comprehensive list of businesses (over 12 million U.S. businesses) licensed from Infogroup. ARCADIS used BAO to search for all employers with 50 or more employees located within an 11-mile radius of PBAPS. CR-7002 recommends consideration of "large employers" with 50 or more employees on a single shift.

The list from BAO was screened to eliminate businesses where workers do not remain on-site (e.g., transportation and trucking companies, construction, realtors, home health care). Employment at schools and special facilities (e.g., hospitals, nursing homes) is generally tracked as part of the special facilities database. Similarly, grocery or retail establishments are tracked along with the "shopping" population at large commercial establishments (e.g., shopping malls). The reduced list was then reviewed to exclude facilities located outside the EPZ, and to determine the ERPA for those located in the EPZ. The new list of employers was compared to the list from the 2003 study.

Telephone calls were made to selected large employers to verify employment numbers and to estimate staffing levels during weekday, weeknight and weekend periods. The results from those calls confirmed that BAO listings provided accurate locations and current, reliable employment numbers for most establishments. Workforce numbers for PBAPS were provided by Exelon Generation and reflect the peak work force during outage conditions.

Data for hotels, motels and recreational areas were obtained from the TripAdvisor website, the 2011 AAA TourBook for Pennsylvania, and from state and county tourism websites. Seasonal occupancy was estimated based on capacity figures (e.g., number of campsites) and a telephone survey of selected facilities. State and local parks agencies also provided visitation numbers for parks and campgrounds.

For purposes of estimating the total number of vehicles associated with the transient population segment, an occupancy factor of 1.0 employee per vehicle was used for most work places. For the hotel/motel and recreational populations, it was assumed that there would be 1.0 vehicle (1.5 or 2 persons) per hotel/motel unit and 1.0 vehicle (3 persons) per campsite. For parks, visitation numbers were generally obtained as numbers of vehicles, and an occupancy factor of 3.0 persons per vehicle was assumed. For museums and visitor centers, 1.5 persons per vehicle was assumed. Campgrounds were assumed to be fully occupied during summer weekends, and 80% on summer weekdays. Hotels and motels were assumed to be fully occupied for all scenarios.

Population data and vehicle demand estimates for the transient population segment, including the work force, hotels and motels, and recreational areas are presented by facility in Appendix A. Table 3-2 presents a summary of the transient population by Sub-Area for each scenario. A breakdown of population by distance and direction sectors was not developed for transient and special facilities, since state and county agencies rely on population by ERPAs for emergency response planning.

3.4 Special Facilities Population

The special facility population segment includes persons in schools, hospitals, nursing homes and correctional facilities who will require transportation assistance during an evacuation. The special facilities population is summarized in Table 3-3.

3.4.1 Medical, Nursing Care and Correctional Facilities

One nursing home is located within the EPZ, as identified in Appendix A. Vehicle occupancy for nursing home patients is two non-ambulatory patients and one staff per ambulance, 3 non-ambulatory and one staff per wheelchair bus, 20 residents or patients plus 3 staff per vehicle (bus or van) for ambulatory patients, plus one vehicle per staff person who does not evacuate with patients.

3.4.2 Schools and Day Care

Seventeen (17) school facilities have been identified within the Peach Bottom EPZ, with a total population of 11,536 students and staff. None of the identified schools is residential, so students are only present on weekdays during the school year. Vehicle occupancy for public schools is based on 48 persons (45 students, 3 staff) per bus, plus one vehicle per additional school staff. Current enrollment numbers for most

schools were provided by the county agencies; any gaps were filled using state-published enrollment information or calls to individual schools. The Amish schools will evacuate with the transit dependent Amish community, as discussed in Section 3.1.2, and are counted as part of that population group.

Ten (10) licensed daycare facilities were identified in the EPZ, with an estimated daytime population of 374. Pennsylvania facilities were identified from the database of licensed day care establishments maintained by the state Department of Public Welfare. A list of licensed Maryland child care facilities in the EPZ was provided by Harford and Cecil Counties. The population estimates represent the licensed capacity of each facility. For smaller day care facilities (up to 20 children), it was assumed that evacuation would be accomplished by private vehicles (staff). Larger facilities would evacuate via bus or van. Smaller home-based daycare facilities (capacity 10 or less) were not tabulated; those facilities contribute little vehicle demand beyond that assigned to EPZ residents.

Table 3-3 summarizes the special facility population by Sub-Area, for winter weekday, winter weeknight and summer weekend periods. A detailed listing of the population and associated vehicle demand for all identified special facilities within the Peach Bottom EPZ is presented in Appendix A.

3.5 Emergency Response Planning Area Population Totals

Population and vehicle demand totals for each Sub-Area are summarized in Table 3-4. The totals listed in the table represent the peak number of people to be evacuated for each analysis case discussed in Section 6 of this report.

The largest population and vehicle demand in the Peach Bottom EPZ are located in Sub-Area F in Lancaster County, for all cases. The differences in vehicle demand between the Weekday, Weeknight and Weekend scenarios (summer and winter) are relatively small, reflecting the dominant role of the permanent resident population, and the absence of any major tourist attractions in the EPZ. The vehicle demand listed in Tables 3-2, 3-3 and 3-4 reflects the data used as input for the ETE traffic simulations.

3.6 Transportation Resources

The estimated inventory of transportation resources available to support evacuation of special facilities and residents for the Peach Bottom EPZ was determined from information provided by county agencies, plus data developed by surveying school

systems, transportation companies and EMS providers in the surrounding region. Identified transportation resources are summarized and compared to identified vehicle demand in Table 3-5. The number of available vehicles in each category (bus, wheelchair bus or van, ambulance) is more than sufficient to evacuate facilities and EPZ residents in a single wave.

Table 3-1: Resident Population and Vehicle Demand by EPZ Subarea

County	Sub-Area	Distance	Permanent Resident Population	Seasonal Population (Summer)	Resident Population (Summer)	Vehicle Demand (Winter)	Vehicle Demand (Summer)
York	A	2 miles	416	702	1,118	214	448
	B	5 miles	6,343	1,224	7,567	3,270	3,678
	C	10 miles	5,361	300	5,661	2,763	2,863
Lancaster	D	2 miles	33	360	393	17	137
	E	5 miles	5,599	546	6,145	2,166	2,348
	F	10 miles	18,936	258	19,194	8,342	8,428
Chester	G	10 miles	2,733	0	2,733	1,409	1,409
Cecil	H	5 miles	601	6	607	310	312
	I	10 miles	6,439	114	6,553	3,319	3,357
Harford	J	5 miles	1,810	90	1,900	933	963
	K	10 miles	11,361	114	11,475	5,856	5,894
EPZ total			**59,632**	**3,714**	**63,346**	**28,599**	**29,837**

*vehicles in Sub-Areas E, F include buses for transit-dependent population

Table 3-2: Transient Population and Vehicle Demand within the Peach Bottom EPZ

Sub-Area	Population						Vehicles					
	Winter			Summer			Winter			Summer		
	Day	Night	Weekend	Day	Night	Weekend	Day	Night	Weekend	Day	Night	Weekend
A	1700	600	600	1720	600	620	1700	600	600	1710	600	610
B	36	36	48	36	36	48	24	24	24	24	24	24
C	0	0	280	400	270	910	0	0	105	155	90	385
D	0	0	0	0	0	0	0	0	0	0	0	0
E	32	2	142	172	142	190	31	1	36	66	36	60
F	300	50	800	1140	890	1595	300	50	200	510	260	399
G	125	75	300	1225	1175	2100	125	75	75	400	350	775
H	0	0	210	0	0	625	0	0	75	0	0	244
I	0	0	0	0	0	0	0	0	0	0	0	0
J	400	320	935	1510	1430	1510	175	95	311	555	475	505
K	2	2	200	192	192	690	1	1	100	96	96	345
EPZ total	**2595**	**1085**	**3515**	**6395**	**4735**	**8288**	**2356**	**846**	**1526**	**3516**	**1931**	**3347**

Table 3-3: Population and Vehicle Demand for Schools and Special Facilities in the Peach Bottom EPZ

Sub-Area	Population						Vehicles					
	Winter			Summer			Winter			Summer		
	Day	Night	Weekend	Day	Night	Weekend	Day	Night	Weekend	Day	Night	Weekend
A	0	0	0	0	0	0	0	0	0	0	0	0
B	587	0	0	161	0	0	81	0	0	30	0	0
C	2455	0	0	0	0	0	293	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	0	0
F	4393	478	478	552	478	478	624	172	172	188	172	172
G	0	0	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0	0	0	0
I	663	0	0	37	0	0	72	0	0	7	0	0
J	40	0	0	34	0	0	7	0	0	6	0	0
K	4346	0	0	77	0	0	540	0	0	13	0	0
EPZ total	**12,484**	**478**	**478**	**861**	**478**	**478**	**1,617**	**172**	**172**	**244**	**172**	**172**

Table 3-4: Summary of Population and Vehicle Demand within the Peach Bottom EPZ

Sub-Area	Population						Vehicles					
	Winter			Summer			Winter			Summer		
	Day	Night	Weekend	Day	Night	Weekend	Day	Night	Weekend	Day	Night	Weekend
A	2,116	1,016	1,016	2,838	1,718	1,738	1,914	814	814	2,158	1,048	1,058
B	6,966	6,379	6,391	7,764	7,603	7,615	3,375	3,294	3,294	3,732	3,702	3,702
C	7,816	5,361	5,641	6,061	5,931	6,571	3,056	2,763	2,868	3,018	2,953	3,248
D	33	33	33	393	393	393	17	17	17	137	137	137
E	5,631	5,601	5,741	6,317	6,287	6,335	2,197	2,167	2,202	2,414	2,384	2,408
F	23,629	19,464	20,214	20,886	20,562	21,267	9,266	8,564	8,714	9,126	8,860	8,999
G	2,858	2,808	3,033	3,958	3,908	4,833	1,534	1,484	1,484	1,809	1,759	2,184
H	601	601	811	607	607	1,232	310	310	385	312	312	556
I	7,102	6,439	6,439	6,590	6,553	6,553	3,391	3,319	3,319	3,364	3,357	3,357
J	2,250	2,130	2,745	3,444	3,330	3,410	1,115	1,028	1,244	1,524	1,438	1,468
K	15,709	11,363	11,561	11,744	11,667	12,165	6,397	5,857	5,956	6,003	5,990	6,239
EPZ total	**74,711**	**61,195**	**63,625**	**70,602**	**68,559**	**72,112**	**32,572**	**29,617**	**30,297**	**33,597**	**31,940**	**33,356**

* Population totals reflect double-counting between categories (residents, workforce, schools, etc.)

Table 3-5: Summary of Transportation Resources

County	Bus	Van	Wheelchair Bus/Van	Ambulance
Lancaster County	176	20	123	5
York County	122	13	3	10
Harford County, MD	400		100	4
Cecil County, MD	175	15	20	20
Total Available	**873**	**48**	**246**	**39**
Identified Vehicle Need				
Schools and Day Care	225	32		
Special Facilities	15	1		28
Amish Residents	200			
Transit-Dependent Public	36		14	6
Total Identified Need	**476**	**33**	**14**	**34**

4. Evacuation Roadway Network

4.1 Network Definition

In order to estimate evacuation times for the Peach Bottom EPZ, an evaluation of the roadway network likely to be used by departing vehicles was undertaken. ARCADIS relied on several sources of information to define the evacuation roadway network:

- Evacuation routes described in the existing State emergency response plan;
- Maps of highways and local roadways for the EPZ area;
- A field survey of the roadways in the Peach Bottom EPZ.

The primary evacuation routings used in the modeling are indicated in Figure 4.1.

4.2 Evacuation Route Descriptions

The evacuation routings were developed to simulate travel out of the EPZ using available roadways. For the Pennsylvania portion of the EPZ, the network relies primarily on the evacuation routings depicted in the Peach Bottom Generating Station Evacuation Plan Map (PEMA, 2006). Descriptions of the primary evacuation routes for different geographic areas within the EPZ are outlined in Table 4-1.

4.3 Characterizing the Evacuation Network

Roadway characteristics such as roadway class, number of lanes, lane and shoulder width, speed limit, lane configuration near intersections, and traffic control are key factors in determining how fast an evacuation can be completed. These roadway attributes control roadway capacity, which in turn governs operating traffic conditions measured in terms of level-of-service (LOS). LOS is measured from A to F for roadway segments and intersections. LOS A represents free-flow conditions, and LOS F represents force or breakdown flow conditions.

ARCADIS used NAVTEQ™ roadway data with detailed information, including local streets, to build the evacuation roadway network for the study. NAVTEQ data was imported into geographic information system (GIS) software (ESRI ArcGIS™) for conducting field surveys to verify evacuation roadway segment attributes. The information provided in the public information brochure for the site was used to

highlight evacuation routes in GIS. ARCADIS has developed an integrated GIS-Global Positioning System (GPS) tool that allows field personnel to record observations in an efficient and effective manner. The evacuation network, including traffic controls, was verified to a 15-mile radius from the plant, and along designated routes to the receptions centers. Once the NAVTEQ data was verified through the field survey, the evacuation roadway network was transferred to the traffic simulation software VISUM for modeling different evacuation scenarios.

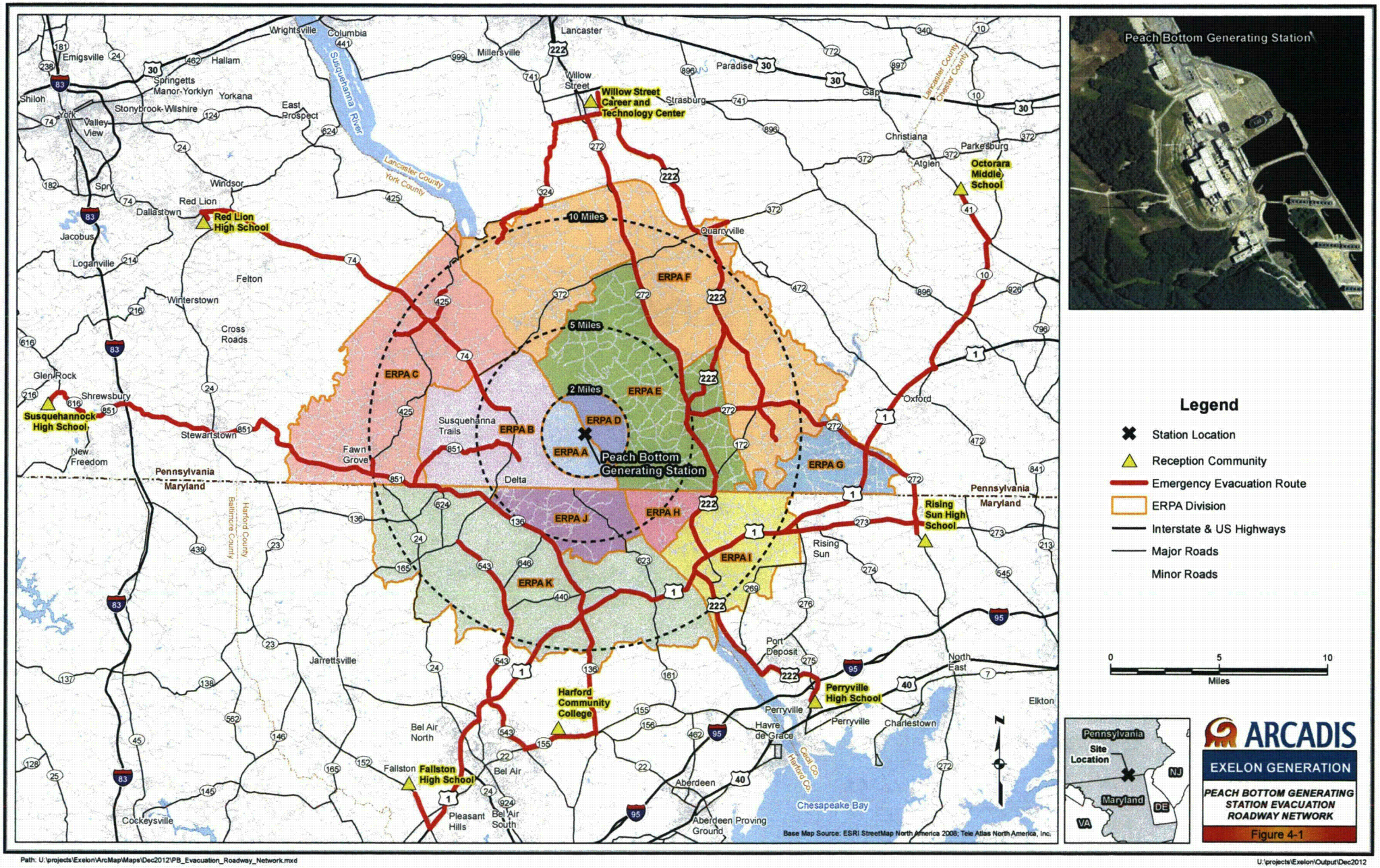
Having accurate traffic control information is important to accurately estimate evacuation times because intersections have potential to create bottleneck points. During an evacuation scenario, intersections might be manually controlled by officials, operated with existing traffic signal timing plans, or adjusted according to changing vehicular demand. In general, the emergency response plans for Peach Bottom call for signal override, i.e., signals set to flashing to give priority to outbound travel on designated evacuation routes. Traffic control information is coded as part of the evacuation network database.

Background and pass-through traffic in the EPZ could account for significant number of vehicles and could influence evacuation depending on the direction of travel. As recommended in CR-7002, average daily traffic (ADT) volumes, representative of typical background levels, were obtained from state and county transportation agencies. During the simulations, background traffic will be included during the initial 2-hours of the evacuation scenario, up to the time when access control is established to prevent vehicles from entering the EPZ.

A map of the evacuation network showing node numbers and links, as recommended by the latest guidance, is provided in Appendix C. Detailed attributes of each roadway segment, such as link number, number of lanes, speed limit, length, and roadway type are also tabulated in Appendix C, and traffic controls are listed for each intersection.

Table 4-1: Peach Bottom EPZ Primary Evacuation Routes

Township or Municipality	Evacuation Routes
York County	
Delta Borough, Peach Bottom Township, Fawn Grove, Fawn Township	PA Route 851 W
Lower Chanceford Township	PA Route 74 N
Lancaster County	
Martic Township	PA Route 324 N
Fulton Township, Drumore Township, Providence Township	PA Route 272 N
Little Britain Township	Roberts Road, Little Britain Road to US Route 222 N
East Drumore Township, Quarryville Borough	US Route 222 N
Chester County	
West Nottingham	US Route 1 N
Harford County	
Whiteford	MD Route 165 SW to MD Route 24 S
Pylesville	MD Route 165 SW to MD Route 24 S; MD Route 543 S to US 1 S
Dublin	MD Route 136 S to US 1 S
Darlington	US Route 1 S, MD Route 161 S
Cecil County	
Colora	US 222 S; US 1 N to MD 273 E


Peach Bottom Generating Station
Legend
Station Location
Reception Community
Emergency Evacuation Route
ERPA Division
Interstate & US Highways
Major Roads
Minor Roads
10 Miles
5 Miles
2 Miles
ERPA A
ERPA B
ERPA C
ERPA D
ERPA E
ERPA F
ERPA G
ERPA H
ERPA I
ERPA J
ERPA K
Peach Bottom Generating Station
Willow Street Career and Technology Center
Octorara Middle School
Red Lion High School
Susquehannock High School
Rising Sun High School
Perryville High School
Harford Community College
Fallston High School
Lancaster
Columbia
Wrightsville
Millersville
Willow Street
Strasburg
Paradise
Christiana
Parkesburg
Atglen
Quarryville
Red Lion
Dallastown
Windsor
Spry
Jacobus
Loganville
Felton
Winterstown
Cross Roads
Glen Rock
Shrewsbury
Stewartstown
New Freedom
Fawn Grove
Susquehanna Trails
Delta
Oxford
Rising Sun
Port Deposit
North East
Elkton
Perryville
Havre de Grace
Charlestown
Aberdeen
Aberdeen Proving Ground
Chesapeake Bay
Bel Air
Bel Air North
Bel Air South
Fallston
Pleasant Hills
Cockeysville
Jarrettsville
Harford County
Baltimore County
Lancaster County
York County
Chester County
Susquehanna River
Pennsylvania
Maryland
Delaware
Virginia
New Jersey
Site Location
0
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Base Map Source: ESRI StreetMap North America 2008; Tele Atlas North America, Inc.
ARCADIS
EXELON GENERATION
PEACH BOTTOM GENERATING STATION EVACUATION ROADWAY NETWORK
Figure 4-1
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5. Evacuation Time Estimate Methodology

5.1 Evacuation Analysis Cases

Time estimates have been prepared for a general evacuation scenario for each of these analysis cases:

- Winter Weekday, Fair Weather and Adverse Weather Conditions
- Winter Weeknight, Fair Weather Conditions
- Winter Weekend, Fair Weather Conditions
- Summer Weekday, Fair Weather and Adverse Weather Conditions
- Summer Weeknight, Fair Weather Conditions
- Summer Weekend, Fair Weather Conditions

In the Pennsylvania portion of the EPZ, all evacuation scenarios were applied to estimate evacuation times for the full EPZ, consistent with current Pennsylvania policy to evacuate the entire EPZ whenever an evacuation is initiated. During a general evacuation, all permanent residents, visitors and seasonal residents will be instructed to leave the EPZ. The primary means of transportation for evacuation will be the privately owned vehicles of the evacuees. Since most residents within the EPZ have access to private vehicles, and since there is little dependence on public transportation, primary reliance on private vehicles is reasonable.

Scenarios to evacuate only the zones within 2 miles distance (Sub-Areas A and D), and for all zones within 5 miles (Sub-Areas A, B, D, E, H and J) were also evaluated, to provide a context for the "staged evacuation" results.

For the Maryland portion of the EPZ, evacuation time estimates were also developed for partial-EPZ evacuation cases. These included evacuation of the following regions:

- 5-mile Southwest: Sub-Areas A, B, D and J
- 5-mile Southeast: Sub-Areas A, D, E and H

- 5-mile South: Sub-Areas A, B, D, E, H and J
- 10-mile Southwest: Sub-Areas A, B, D, J and K
- 10-mile Southeast: Sub-Areas A, D, E, H and I

For all partial-EPZ evacuation cases, "shadow" vehicle demand (20% of residents) is assigned to all Sub-Areas which are not included in the evacuation region, in addition to the region outside of the EPZ.

5.2 Initial Notification

The EPZ surrounding PBAPS has an outdoor siren notification system consistent with the requirements of NUREG-0654, Rev. 1/FEMA-REP-1 Appendix 3. This system will be used by state and local officials to alert the population to turn on their radios and television sets. Pursuant to NUREG 0654, Rev. 1 guidance, notification messages will commence on the designated television and Emergency Alert System (EAS) radio stations concurrent with sounding of the sirens. Within 15 minutes of alert notification, essentially all of the population within the EPZ will begin to receive an informational or instructional message. If evacuation is deemed necessary, the timing of the order to evacuate and notification measures will be controlled by the state and local emergency preparedness officials. Those officials may choose to alert and mobilize an emergency response work force to control and expedite evacuation prior to the evacuation order.

5.3 Transportation Dependent Population

The transportation dependent population includes individuals without access to transportation, as well as those requiring special transportation assistance. Transportation dependent persons will be notified of a protective action recommendation in the same manner as the general public. If evacuation is recommended, persons needing transportation assistance will be informed through the EAS to contact the appropriate officials for assistance. Evacuees who do not have access to transportation and confined persons who require special transportation assistance will be provided transportation by the appropriate agency.

5.4 Evacuation Preparation Times and Departure Distributions

It is assumed that no vehicles will begin to evacuate during the 15-minute initial notification period. Accordingly, in the model simulations, vehicles will begin to

evacuate at 15 minutes following the initial notification. After the initial 15-minute time period, vehicles are loaded at a linear rate over each 5-minute time interval, in accordance with the network loading distributions for each population type. For example, if 2% of 2500 vehicles (50 vehicles) are to be loaded at a specific location over a 5-minute period, PTV Vision will load 10 vehicles per minute at that location during the specified interval. Network loading distribution assumptions for the permanent population, transient population, and special facilities are based on the anticipated response of different population sectors to an evacuation order. Mobilization times for residents and workers reflect the data acquired by the telephone survey of EPZ residents, and are consistent with published data from actual historical events (ORNL, 1990). Loading distributions are explained below, and summarized in Figure 5-1.

5.4.1 Permanent and Seasonal Population

Permanent and seasonal residents with access to automobiles will take varying amounts of time to begin evacuating. Some persons will leave as quickly as possible; most will take some time to prepare, pack valuables and clothes and then depart; some will take added time to secure property before departing; and some may require transportation assistance. In addition, actual departure and preparation times may vary according to the perceived severity of a particular evacuation order.

Based upon these factors, it was assumed that there would be a 2-hour period over which the permanent residents would begin to evacuate. That is, permanent resident households would begin to evacuate between 15 and 135 minutes after the decision to notify the population to evacuate is made. It was further assumed that 15% of the permanent population would begin to evacuate between 15 and 45 minutes following the evacuation decision, 40% would depart between 45 and 75 minutes, an additional 40% would depart between 75 and 105 minutes, and the remaining 5% would depart between 105 and 135 minutes after the decision to evacuate. This time profile is generally consistent with the distribution of journey-to-work travel times and with observed behavior during evacuations for chemical releases.

5.4.2 Transient Population

It was assumed that the work force would receive initial notification promptly. It was also assumed that the majority of the work force would be released expeditiously (i.e., within 15 minutes subsequent to notification), with a smaller number remaining to secure businesses and/or shut down active operations. Therefore, it was assumed

that 90% of the work force would evacuate in the first 30-minute period (between 15 and 45 minutes following the decision to evacuate), and the remaining 10% in the next 30 minutes. For a few facilities, it may be necessary for a limited number of workers to remain on the job in order to safely shut down processes, secure the facility or maintain essential operations. The evacuation time estimates do not address those workers who remain behind, since there is no reliable basis for predicting whether or how soon they will evacuate. The assumption that all workers evacuate provides a conservative estimate of vehicle demand. Previous discussions with emergency preparedness officials indicated that the same time distribution is also reasonable for the other transient population categories within the EPZ, including shopping malls, hotels, motels and recreation areas.

5.4.3 Special Facilities

It was assumed that special facilities (i.e., schools, nursing homes) within the EPZ would also receive initial notification promptly. Based upon data obtained from previous studies, vehicle departure times were developed that reflect a distribution of notification, preparation and mobilization times.

Consistent with the current off-site emergency response plans, it was assumed that schools will be evacuated via bus to the designated host schools. For school facilities, it was assumed that up to 1 hour may be required to assemble buses, transport vehicles to schools and to load students onto buses. Vehicles stationed at the facilities at the time of the ordered evacuation could be loaded in as little as 15 minutes following notification. Accordingly, school buses were loaded onto the evacuation network from the period between 15 and 75 minutes following the decision to evacuate. The school time profile was also applied for daycare facilities.

Evacuation of nursing home facilities would also require additional time associated with preparation and transport of vehicles to the respective facilities. Nursing home facilities will also evacuate directly to designated host facilities. Based upon previous studies, it was assumed that these facilities would begin to evacuate between 30 minutes and 2 hours following notification. The first 25% will depart between 45 minutes and 75 minutes after the decision to evacuate; another 50% between 75 and 105 minutes; and the last 25% between 105 and 135 minutes, reflecting the longer times required for the population needing greater assistance or supervision.

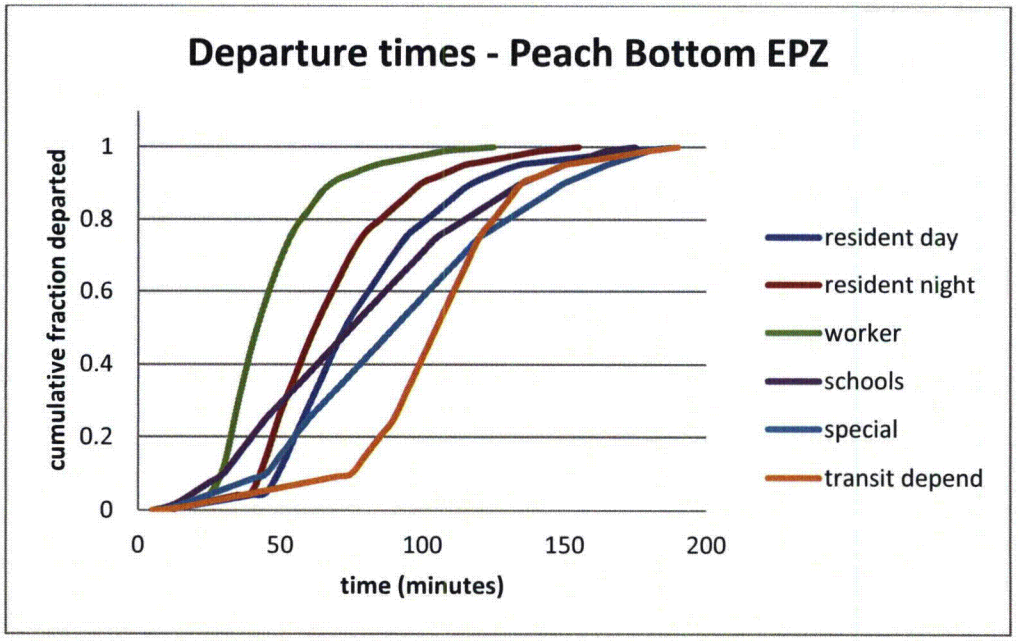

Figure 5-1. Departure Time Distributions for the Peach Bottom EPZ

5.5 Evacuation Simulation

Traffic simulation provides the ability to analyze evacuation of an area in great detail. In most traffic simulation models, there are two main inputs: supply (roadway) network data and demand (population and vehicular) data. Traffic models use different types of algorithms to predict traffic flow and provide measures of effectiveness (MOEs) such as average travel times, total number of vehicles exiting the system, and queue lengths at various times and points.

5.5.1 General Structure

ARCADIS used PTV Vision to perform evacuation modeling for different scenarios. The PTV Vision traffic simulation software package includes VISSIM (microscopic traffic simulation) and VISUM (macroscopic traffic simulation). VISUM is a comprehensive, flexible software system for transportation planning, travel demand modeling, and network data management. VISSIM is capable of performing detailed microscopic simulation of traffic, public transport, and pedestrian simulations, and can model any type of traffic control and geometric configuration. Both VISUM and VISSIM are capable of performing multi-modal analysis including car, commercial vehicle, bus, train, motorcycles, bicycles, and pedestrians. The two programs work together seamlessly, saving valuable time and resources.

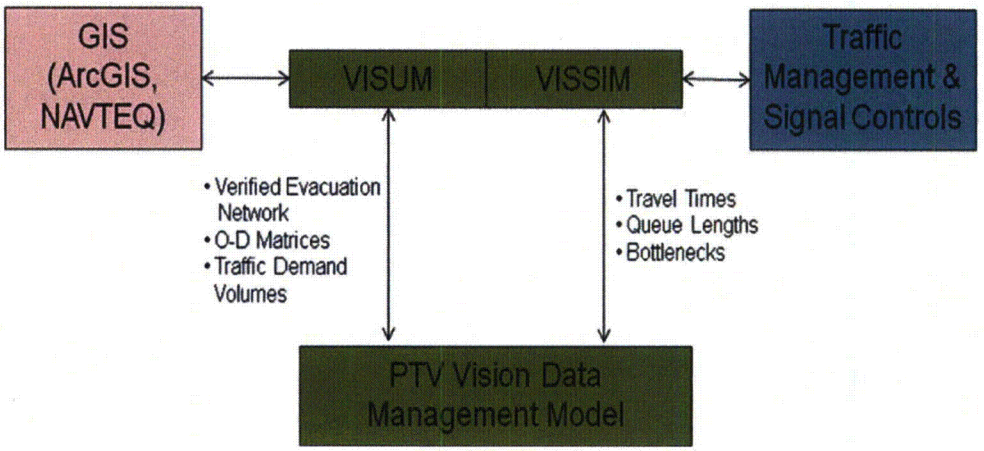

Figure 5-2. Evacuation Modeling and Simulation using PTV Vision Suite

VISUM was used to develop the evacuation network and population entry nodes (centroids). One of the key features of VISUM is its ability to interact seamlessly with GIS-data such as ESRI ArcGIS database. The field verified evacuation network data

and demand data developed in ArcGIS were imported directly into VISUM. Origin-Destination trip tables were developed for the evacuation and imported into VISUM. VISUM software was then used to route the Origin-Destination information on the network using a dynamic equilibrium algorithm. This algorithm ensured that traffic levels on the network were realistic given the capacities available on individual links. Once an initial solution was found in VISUM, the information was exported into VISSIM for microsimulation. A microsimulation was deemed a necessary step in order to obtain detailed and realistic results on queuing and average travel times. VISSIM can model intersection with different type of traffic control such as yield signs, stop signs, and signals. VISSIM also provides a better understating of critical and congested part of the network.

5.5.2 Simulation Process

The ETE results include the time to evacuate 90% and 100% of the total permanent and transient population. Based on the current guidance, ETEs for special facilities, schools, and the transit-dependent population are developed separately; only the time to evacuate 100% of these population groups was needed.

Consistent with current guidance, vehicle demand for each scenario was based on 100% of the population residing in areas designated for evacuation, plus 20% of the population residing in Sub-Areas outside the designated evacuation area, and 20% of the population residing outside of the EPZ, out to a distance of 15 miles. Vehicle demand outside of the designated evacuation area is intended to account for the impact of "shadow evacuees". A sensitivity analysis was performed to evaluate the impact of changes different input parameters and assumptions such as changes in lane closures, trip generation times, vehicular demand, evacuation routes, and background traffic.

The simulation process can be summarized as follows:

VISUM

1. Create every scenario based on
    a. Background traffic
    b. Time of day
    c. Day of week
    d. Weather condition

e. Season

f. Wind Direction

g. Shadow traffic

2. Run Dynamic Traffic Assign to and calculate Permanent and Transient, Shadow, Special Needs/Schools volumes
3. Assignment process will last until suitable convergence is reached. VISUM provides output on the goodness of convergence after assignment. The convergence fit is not as critical because this is an evacuation model of a no-notice event, therefore full user equilibrium cannot be expected.
4. Export to VISSIM.

VISSIM

1. Warm-up time built into background/pass-through traffic generation.
2. Check for any local calibration parameters.
3. Run the final multimodal Dynamic Traffic Assignment in VISSIM to consider queues and intersection delays
4. Sensitivity analysis and count evacuees at 2, 5, and 10 miles
5. Prepare ETE times

MOEs

1. 90% evacuation time (for all wind directions and scenarios, staged and normal evacuations)
    a. This applies to evacuation of the PUBLIC only
2. 100% evacuation time (for all wind directions and scenarios, stage and normal evacuations)
3. Color-coded roadway map at various times (2, 4, 6 hrs) which identifies where long queues exist, including LOS E and F conditions.

6. Analysis of Evacuation Times

6.1 Evacuation Time Estimate Summary

Predicted ETEs for the general population in the EPZ are summarized by scenario in Table 6-1 (times for 90% of vehicles to depart) and Table 6-2 (times for 100% of vehicles to depart). The pattern of evacuation times is consistent with the differences in vehicle demand and travel time for different scenarios. The 2-mile zone involves the shortest travel distance and the fewest vehicles; 90% ETEs for the 2-mile zone are approximately 2 hours, and 100% ETEs are 3 to 3.5 hours.

For the 2-mile plus all 5-mile zones, the 90% ETEs are 2:35 to 3 hours, and the 100% ETEs are 3:30 to 4:35 hours. For the full EPZ, the 90% ETEs are 3:20 to 3:50, while the 100% ETEs are 4:45 to 5:20. The 5-mile "keyhole" scenarios show relatively little variation with direction.

6.2 Comparison with Previous Study

The ETEs for the current study are somewhat shorter than the ETEs from the 2003 study. Vehicle demand for the current study (32,518 for Winter Weekday) is almost 50% higher than the "traditional demand" case from 2003 (21,645), but the new 90% ETE is 3:35, compared to 4:30 in 2003. The shorter ETEs are predicted despite the addition of background traffic and despite longer departure times (based on the survey of residents). The VISSIM traffic simulation model was able to find alternative routing options to avoid some points of predicted congestion.

6.3 All Conditions

The differences in vehicle demand between scenarios are 10 to 15% of total demand, and the predicted ETEs also vary by 10 or 15%. Adverse weather adds 5 to 10 minutes for the summer ETE, and 15 minutes for the winter ETE.

6.4 Staged Evacuation Scenarios

A series of staged evacuation scenarios were evaluated based on NRC guidance (CR-7002). In a staged evacuation, the 2-mile zone evacuates first, while surrounding zones shelter in place; after the population has evacuated the 2-mile zone, the outer zones would be instructed to evacuate. The "stage 1" time is determined by simulating evacuation of the 2-mile zone for the Winter Weekday, Normal Weather scenario, with

only background and shadow traffic in other parts of the EPZ. Once the Stage 1 time (1:55) was determined, a revised set of departure curves was developed for the outer (Stage 2) zones. The Stage 2 departure curves for Peach Bottom are shown in Figure 6-1. The departure curves are much steeper at the beginning of Stage 2, because people are returning home and preparing to depart during Stage 1.

Results for staged evacuation scenarios are summarized in Table 6-3. Within the accuracy of the model results, the ETEs for the staged scenarios are indistinguishable from the "unstaged" ETEs. The modeled results indicate that staged evacuation for Peach Bottom would result in little or no benefit, in terms of the time required to evacuate the 2-mile zone, and little or no penalty, in terms of increased ETEs for the zones which would initially be ordered to shelter.

6.5 Sensitivity to Population Growth and Roadway Impact

6.5.1 Population Growth

NRC guidance (CR-7002) for updating ETE studies more frequently than the 10-year federal census includes criteria based on population growth. Specifically, if the residential population growth in the EPZ since the last ETE update is sufficient to cause an increase in the ETE by 25% or by 30 minutes, whichever is less, then a full ETE update study must be performed.

A sensitivity analysis was performed by determining the 90% ETEs for increases of 5, 10, 15, 20 and 25% of the EPZ residential population for the Summer Weekday, Normal Weather scenario. This scenario produced the longest ETE by season or time of day. The population was increased in the same manner in the surrounding region, out to 15 miles. Results are illustrated in Figure 6-2. With a 25% increase in residential population above the 2010 census values, the 90% ETE for the full EPZ increased to 4:08, an increase of 28 minutes. Since the EPZ residential population for Peach Bottom changed by about 9% between 2000 and 2010, it appears unlikely that an increase of 25% will occur before 2020.

The 100% ETEs increased more rapidly than the 90% ETEs, consistent with the general pattern of all ETE results. With a 20% increase in population, the 100% ETE for the full EPZ increased by 36 minutes, from 5:10 to 5:46. NRC guidance (CR-7002) indicates that emergency planning decisions should be based on the 90% ETEs. The recommended "update threshold" for the Peach Bottom EPZ, based on population growth, is therefore 25%.

6.5.2 Roadway Impact

NRC guidance (CR-7002) also requires analysis of a "roadway impact" scenario. For this scenario, a major evacuation route is removed or reduced in capacity. Specifically, one of the 5 highest volume roadways is removed from service, or capacity is reduced by one lane (for a multi-lane, limited-access roadway such as an interstate highway). This scenario is specified as Summer Weekday, Normal Weather for the Full EPZ. For Peach Bottom, the five highest-volume roadways for this scenario are listed below:

- SR 851 WB – 5,164 vehicles
- SR 543 SB – 4,663 vehicles
- SR 272 NB – 4,077 vehicles
- SR 74 NW – 2,897 vehicles
- SR 273E – 2,218 vehicles

Predicted traffic volumes by link for the "base case" simulation with the full roadway network are shown in Figure 6-3.

One of the highest-volume roadways, SR 272 NB north of SR 372, was removed for the roadway impact scenario. The impact location is shown in Figure 6-4. With this roadway unavailable, the ETEs increased from 3:40 (90%) and 5:10 (100%) to 4:15 (90%) and 6:30 (100%). The traffic flow by link for the roadway impact scenario is shown in Figure 6-4. With SE 272 NB unavailable, traffic flow increases on US 222 NB.

6.6 Performance Metrics for Simulation Model

The performance of VISSIM is assessed using standard metrics, consistent with the guidance provided in CR-7002. Table 6-5 provides a summary of simulation parameters for Winter Day Normal Weather scenario for the full EPZ. Figure 6-5 illustrates the number of vehicles on the network over the course of the simulation, while Figure 6-6 compares the rate of vehicles loading onto the network to the frequency of departures.

6.7 ETE for Transit-Dependent, Special Facilities and Schools

The ETE for transit-dependent members of the general public is estimated based on the assumption of a single wave of bus runs from designated pickup points in more densely populated areas (Quarryville, Fawn Grove). The runs would begin 2 hours after the evacuation notice, allowing time for evacuees to prepare and to travel to designated pickup points. The time sequence would then proceed in the following steps:

- 56 minutes for a bus to traverse up to ten pickup points (8 miles at 30 mph) and load passengers (4 minutes per stop).

- 6 minutes to travel out of the EPZ (4 miles @ 40 mph). Evacuation complete at 3 hours 2 minutes.

The Amish community would require between 120 and 240 minutes to mobilize, up to 30 minutes for bus loading, and between 5 and 10 minutes travel time to exit the EPZ; total evacuation times would range from 155 to 280 minutes. There are sufficient bus resources for a single wave evacuation with up to 200 buses, but 100 buses could each make two trips within the same time frame (allowing 60 minutes turnaround time, including travel to reception center, unload, short driver break and return trip).

For non-ambulatory residents, ambulances and wheelchair vans would also mobilize within 2 hours. For a wheelchair van with three pickups, loading would take 15 minutes per stop, transit between stops could take up to 30 minutes (15 miles at 30 mph), and travel out of the EPZ another 12 minutes (8 miles at 40 mph): total time 3 hr 27 min. An ambulance making two pickups would take 15 to 30 minutes less time to evacuate.

Estimated evacuation times for special facilities, schools and daycares located in the EPZ are summarized in Tables 6-5 and 6-6. These times are shorter than the 100% ETEs for the general population. Facility-specific estimates are based on a three-step time sequence: (1) mobilization, (2) loading, and (3) travel out of the EPZ. Mobilization and loading times are generally the largest components. At Quarryville Presbyterian, each vehicle will require about 15 minutes to load, with multiple vehicles loading simultaneously. It would take 75 minutes to load 15 ambulances, assuming that three could be loaded simultaneously.

For schools, it will generally require on the order of 90 minutes to contact drivers, provide them with instructions and deploy them to assigned schools. For travel time,

average speeds were estimated for the anticipated evacuation route, based on the traffic simulation for the Winter Day scenario. The simplified stepwise methodology used to determine these estimates provides a typical evacuation time, rather than an upper bound 100% value.

Table 6-1: Evacuation Times for General Population (90%)

90% Evacuation of Affected Areas									
		Summer				Winter			
		Midweek Daytime		Weekend Daytime	Evening	Midweek Daytime		Weekend Daytime	Evening
Affected ERPAs	Scenario:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Weather:	Normal	Adverse	Normal	Normal	Normal	Adverse	Normal	Normal
A,D	2-mile Zone	2:00	2:05	1:55	1:55	1:55	2:10	1:45	1:45
A,B,D,E,H,J	5-mile Zone	3:00	3:05	2:45	2:45	2:50	3:00	2:35	2:35
A,B,C,D,E,F,G,H,I,J,K	10-mile EPZ	3:40	3:50	3:30	3:30	3:35	3:55	3:25	3:20
Evacuate 2-Mile Zone and 5 Miles Downwind									
A,B,D,J	N,NNE,NE,ENE	2:55	3:05	2:45	2:45	2:45	3:00	2:35	2:35
A,B,D	E,ESE	3:00	3:00	2:45	2:45	2:50	3:00	2:35	2:35
A,B,D,E	SE,SSE	2:55	3:00	2:45	2:45	2:45	3:00	2:35	2:35
A,D,E	S,SSW,SW,WSW	2:40	2:45	2:35	2:35	2:30	2:45	2:20	2:20
A,D,E,H	W,WNW	2:35	2:45	2:30	2:30	2:25	2:45	2:20	2:20
A,B,D,E,H,J	NW,NNW	3:00	3:05	2:45	2:45	2:50	3:00	2:35	2:35

Table 6-2: Evacuation Times for General Population (100%)

100% Evacuation of Affected Areas									
		Summer				Winter			
		Midweek Daytime		Weekend Daytime	Evening	Midweek Daytime		Weekend Daytime	Evening
Affected ERPAs	Scenario:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Weather:	Normal	Adverse	Normal	Normal	Normal	Adverse	Normal	Normal
A,D	2-mile Zone	3:15	3:20	3:00	3:00	3:15	3:30	2:55	2:55
A,B,D,E,H,J	5-mile Zone	4:00	4:10	3:30	3:30	4:05	4:35	3:30	3:30
A,B,C,D,E,F,G,H,I,J,K	10-mile EPZ	5:10	5:20	5:00	5:00	5:00	5:15	4:45	4:45
Evacuate 2-Mile Zone and 5 Miles Downwind									
A,B,D,J	N,NNE,NE,ENE	3:45	3:55	3:30	3:30	3:45	4:15	3:20	3:20
A,B,D	E,ESE	3:45	3:55	3:30	3:30	3:45	4:15	3:20	3:20
A,B,D,E	SE,SSE	4:00	4:10	3:30	3:30	4:05	4:35	3:30	3:30
A,D,E	S,SSW,SW,WSW	4:00	4:10	3:30	3:30	4:05	4:35	3:30	3:30
A,D,E,H	W,WNW	4:00	4:10	3:30	3:30	4:05	4:35	3:30	3:30
A,B,D,E,H,J	NW,NNW	4:00	4:10	3:30	3:30	4:05	4:35	3:30	3:30

Table 6-3: Results for Staged Evacuation for 5-Mile Downwind Zones (Stage 1 = 1 hour 55 minutes)

		Summer				Winter			
		Midweek Daytime		Weekend Daytime	Evening	Midweek Daytime		Weekend Daytime	Evening
Affected ERPAs	Scenario:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Weather:	Normal	Adverse	Normal	Normal	Normal	Adverse	Normal	Normal
90% Evacuation of Affected Areas									
A,B,D,J	N,NNE,NE,ENE	3:05	3:05	2:55	2:55	2:55	3:10	2:50	2:45
A,B,D	E,ESE	2:40	2:45	2:30	2:30	2:40	2:55	2:30	2:30
A,B,D,E	SE,SSE	2:55	3:00	2:40	2:40	2:45	3:00	2:35	2:35
A,D,E	S,SSW,SW,WSW	3:00	3:05	2:55	2:55	2:50	3:05	2:50	2:45
A,D,E,H	W,WNW	3:00	3:05	2:50	2:50	2:50	3:05	2:40	2:40
A,B,D,E,H,J	NW,NNW	3:10	3:15	2:55	2:55	2:55	3:10	2:50	2:45
100% Evacuation of Affected Areas									
A,B,D,J	N,NNE,NE,ENE	4:00	4:00	3:55	3:55	3:45	4:15	3:40	3:30
A,B,D	E,ESE	3:50	4:00	3:30	3:30	3:45	4:15	3:20	3:20
A,B,D,E	SE,SSE	3:50	4:00	3:30	3:30	3:45	4:15	3:20	3:20
A,D,E	S,SSW,SW,WSW	3:50	4:00	3:30	3:30	3:45	4:15	3:30	3:30
A,D,E,H	W,WNW	3:50	4:00	3:30	3:30	3:45	4:15	3:30	3:30
A,B,D,E,H,J	NW,NNW	4:00	4:00	3:50	3:50	3:45	4:15	3:40	3:25

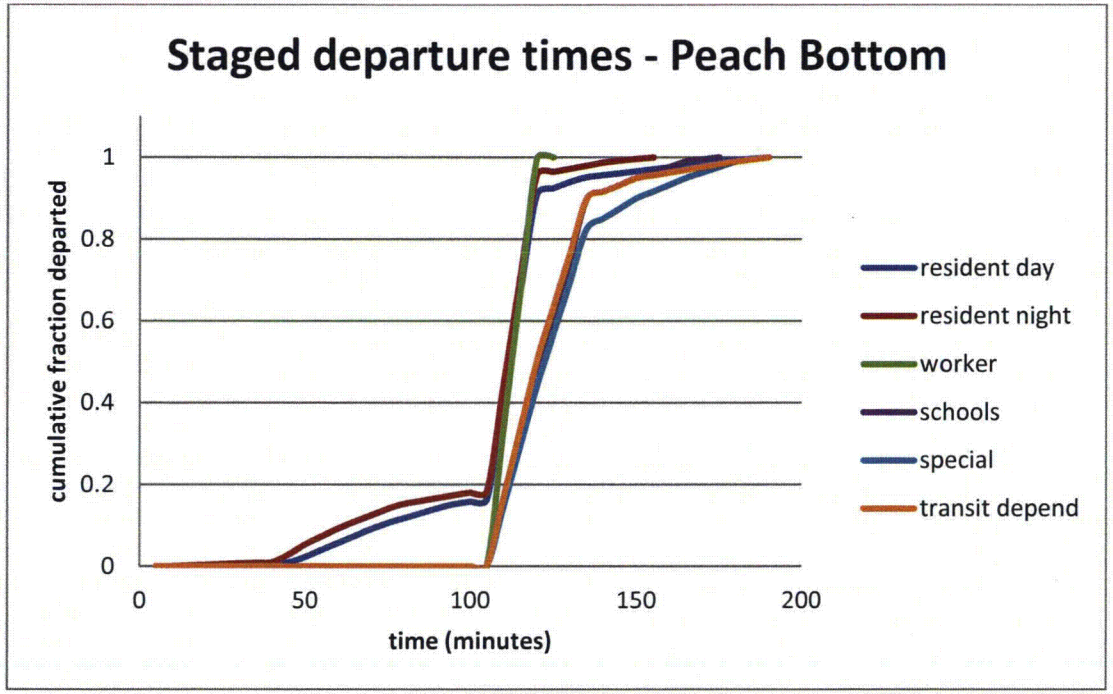

Figure 6-1. Departure Curves for Stage 2 Zones, Peach Bottom EPZ

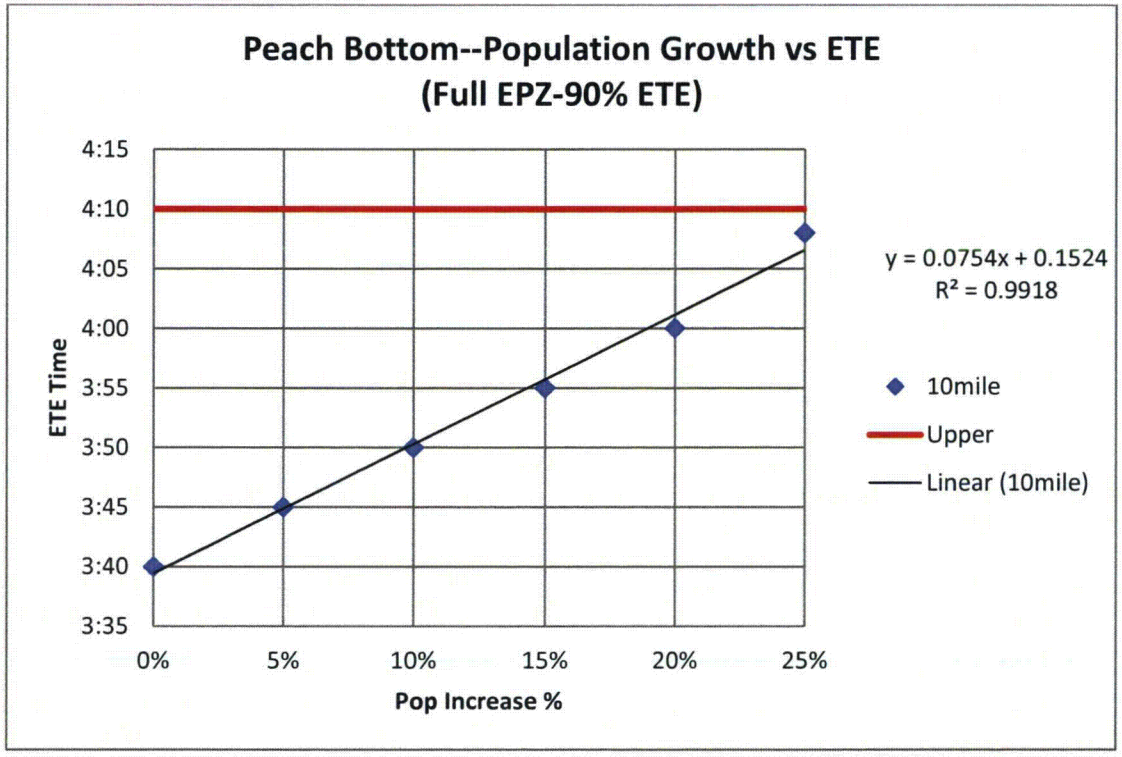

Figure 6-2. Peach Bottom Sensitivity of ETE to Population Growth (Summer Weekday, Normal Weather, Full EPZ)

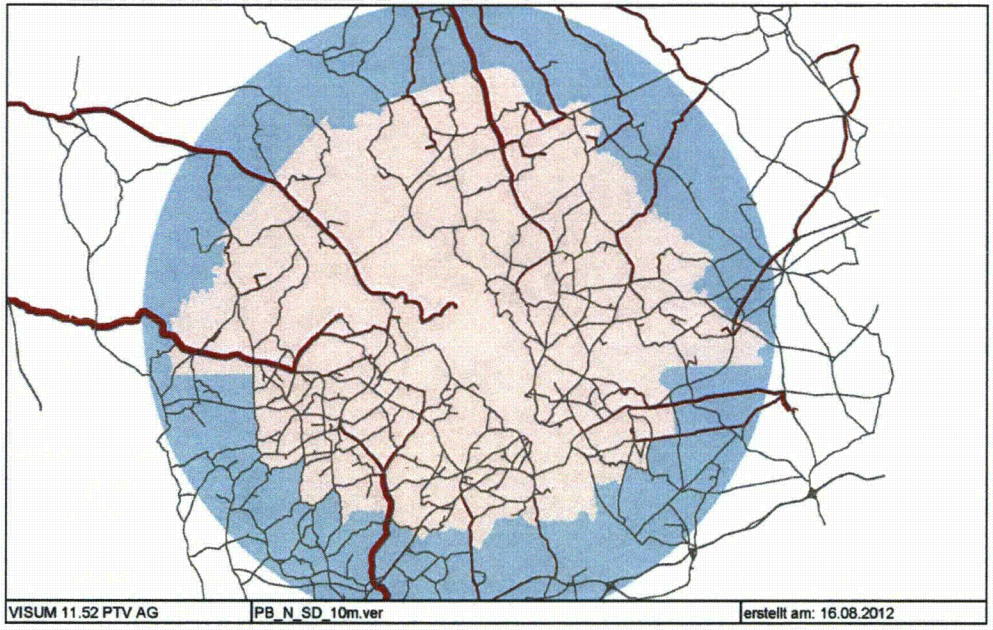

Figure 6-3. Peach Bottom Predicted Traffic Volume by Link with Full Network (Summer Weekday, Normal Weather, Full EPZ)

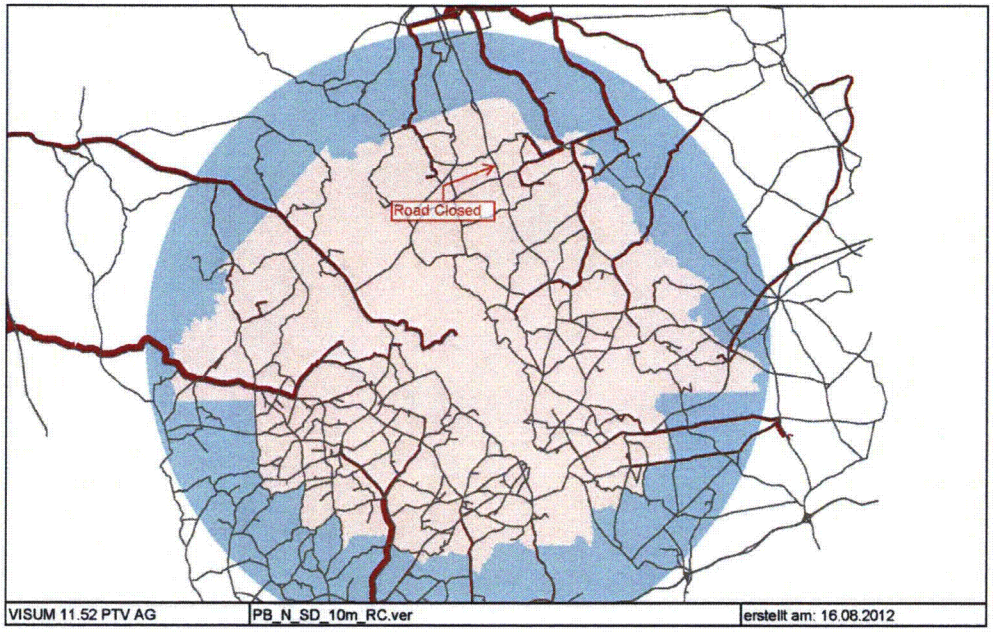

Figure 6-4. Peach Bottom Predicted Traffic Volume by Link with SR 272 NB north of SR 372 Link Removed (Summer Weekday, Normal Weather, Full EPZ)

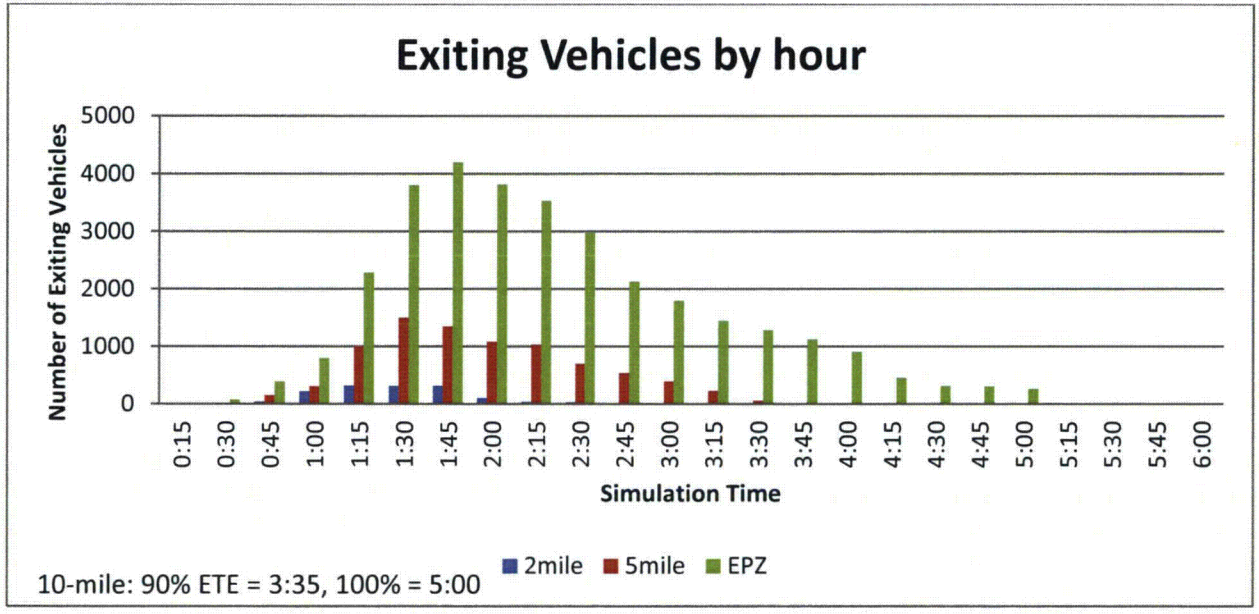

Figure 6-5. Time Distribution of Vehicles on the Network (Full 10-mile EPZ, Winter Weekday, Normal Weather)

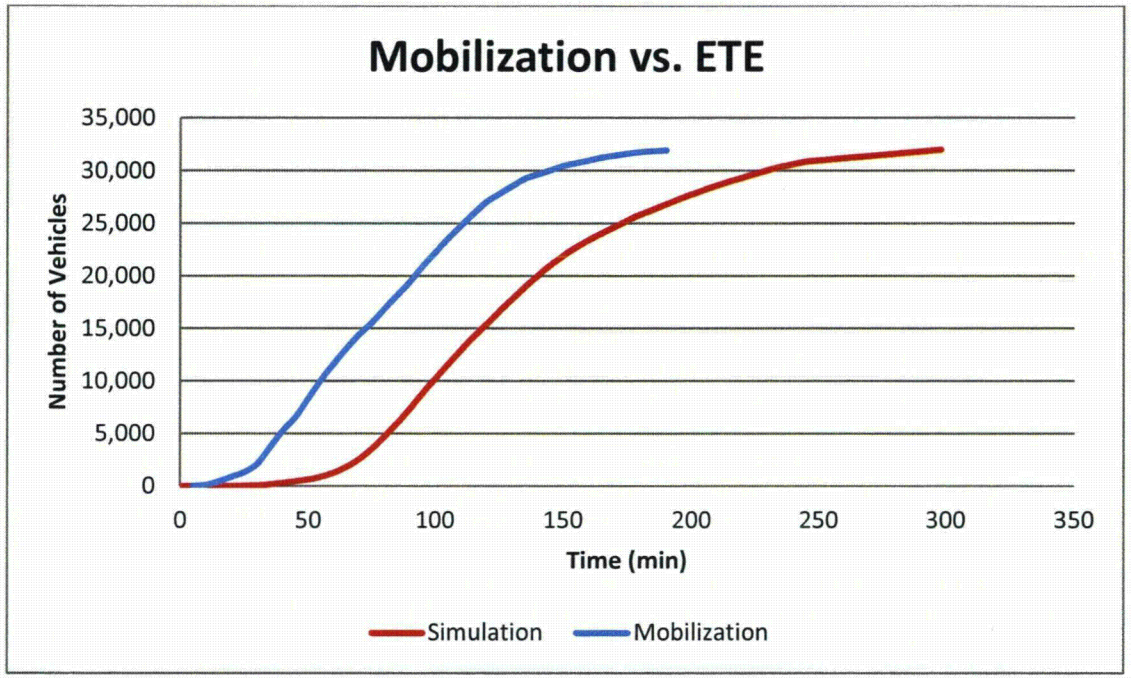

Figure 6-6. Comparison of Vehicle Mobilization and Departure Rates (total vehicles 31,934)

Table 6-4: Summary of Network Performance (Full 10-mile EPZ, Winter Weekday, Normal Weather)

Network Parameter	All Vehicles	Background and Shadow Traffic	Evacuation
Avg Delay (s)	4,163	2,421	5,254
Avg Stop Delay (s)	862	661	988
Avg # of Stops	492	330	594
Avg Speed (mph)	22.4	27.7	20.0
Avg Travel Time (min)	154	124	176
Vehicle Hours Traveled	135,987	42,522	93,465

Table 6-5: ETE for Special Facilities, Peach Bottom EPZ (Full 10-mile EPZ, Winter Weekday, Normal Weather)

Facility	Population	Vehicles		Mobilization Time (min)	Loading Time (min)	Distance to EPZ Boundary (mi)	Outbound Travel Speed (mph)	Travel Time to EPZ Boundary (min)	ETE (min)
		#	Type						
Quarryville Presbyterian Home	369	15	Bus	90	15 to 60	2	30	4	109 to 154
		9	Wheelchair Bus	120	15 to 45	2	30	4	139 to 169
		15	Ambulance	90 to 150	15 to 60	2	30	4	109 to 214
Country View Manor	24	1	Bus/Van	60	15	4	25	10	85

Table 6-6: ETE for School and Daycare Facilities in Peach Bottom EPZ (Full 10-mile EPZ, Winter Weekday, Normal Weather)

Facility	Population	Vehicles		Mobilization Time (min)	Loading Time (min)	Distance to EPZ Boundary (mi)	Outbound Travel Speed (mph)	Travel Time to EPZ Boundary (min)	ETE (min)
		#	Type						
Clermont E.S.	584	11	Bus	90	30	4	35	7	127
G. A. Smith M.S.	473	9	Bus	90	30	2	25	5	125
Martic Elementary	420	8	Bus	90	30	2	25	5	125
Quarryville E.S.	499	9	Bus	90	30	2	25	5	125
Solanco High School	1339	25	Bus	90	60	1	35	2	152
Swift Middle School	519	10	Bus	90	30	4	35	7	127
Delta-Peach Bottom E.S.	374	7	Bus	90	30	14	20	42	162
Fawn Elem School	353	7	Bus	90	30	4	20	12	132
South Eastern M.S.	1076	19	Bus	90	60	4	20	12	132
Kennard-Dale H.S.	1026	19	Bus	90	60	4	20	12	132
Conowingo E.S.	619	12	Bus	90	30	4	40	6	126
Dublin E.S.	282	8	Bus	90	30	3	30	6	126
Harford Friends	58	4	Van	90	30	2	30	4	124
North Harford M.S.	1221	26	Bus	90	60	2	30	4	154
North Harford H.S.	1513	30	Bus	90	60	2	30	4	154
Darlington E.S.	148	5	Bus	90	30	2	30	4	124
Harford Christian School	488	6	Bus	90	30	4	30	8	128
North Harford Elem	544	14	Bus	90	30	2	30	4	124

Table 6-6: ETE for School and Daycare Facilities in Peach Bottom EPZ (Full 10-mile EPZ, Winter Weekday, Normal Weather)

Facility	Population	Vehicles		Mobilization	Loading	Distance to	Outbound	Travel Time to	ETE
Delta Christian Academy	132	7	Van	60	15	12	20	36	111
Kidsville Junction	81	5	Van	60	15	4	20	12	87
Mechanic Grove CLASP	17	4	auto	15	10	5	35	2	27
Shining Stars	36	2	Van	60	15	1	25	2	77
The Crayon Box	13	3	Auto	15	10	3	35	2	27
Busy Hands Daycare	15	3	Auto	15	10	1	25	2	27
W Nottgham Child Care	44	3	Van	60	15	1	25	2	77
Childrens Ctr N Harford	58	3	Van	60	15	3	30	6	81
Christian Childcare Ctr	40	2	Van	60	15	6	30	12	87
Wilson Community Ctr	34	2	Van	60	15	4	30	8	83

7. Traffic Control Recommendations

7.1 General

Evacuation simulation results have been reviewed to assess access control locations, traffic management locations and recommendations for the Peach Bottom EPZ. Predicted queuing at intersections inside the EPZ is summarized in Table 7-1. The results indicate that average queue length is less than 200 feet at all intersections. The top three intersections, with average queue length of more than 100 feet, are located in Harford County, MD. The intersection at Prospect Rd/Ady Rd has a volume of 9,114 vehicles. The intersection of Holtwood Rd and Lancaster Pike in Lancaster County (average queue 99 ft) handles traffic volume of 7,506.

7.2 Evacuation Access Control Locations

Access control measures were not specifically addressed in the conduct of this study. Background traffic within the EPZ was not found to be a significant contributor to traffic congestion during the early stages of evacuation.

7.3 Traffic Management Locations and Tactics to Facilitate Evacuation

With the addition of shadow traffic from regions surrounding the EPZ, the traffic simulations show significant queuing outside of the EPZ on two major evacuation routes, U.S. 1 and Route 22 (Churchville Road) near Fountain Green, MD in Harford County. Measures to limit local access to these roadways and to assign priority to traffic evacuating the EPZ would enable that traffic to reach the designated reception centers more efficiently. The traffic flow maps provided in Appendix D and the data in Table 7-1 help to pinpoint locations where traffic management can be deployed to best effect.

Inside the EPZ, the primary locations where significant congestion is predicted are the intersection of Holtwood Rd and Lancaster Pike in Lancaster County and the intersection at Prospect Rd/Ady Rd in Harford County. Designated evacuation routes have been assigned to limit reliance on congested routes, and traffic control measures have already been designed for those locations. Further review is recommended to see whether additional options are available.

The simulations indicate that PA Route 74 northbound provides the best alternative for evacuating from most of the Sub-Areas in York County.

Table 7-1: Predicted Queuing at Major Intersections (Full 10-mile EPZ, Winter Weekday, Normal Weather)

Intersection Name	Type	County or City	Control Type	Average Queue (feet)	Volume
Conowingo Rd / Castleton Rd	4 leg	Harford County	Signalized	179	448
Prospect Rd / Ady Rd	4 leg	Harford County	Two-way stop	173	9114
Prospect Rd / Mill Green Rd	T	Harford County	Two-way stop	117	3672
Buck Rd / W 4th St	4 leg	Quarryville, PA	Signalized	105	3306
Bryansville Rd / Aubel Rd	T	York County	Two-way stop	100	5468
Holtwood Rd / Lancaster Pike	4 leg	Lancaster County	Two-way stop	99	7506
Rock Springs Rd / Conowingo Rd	4 leg	Harford County	Signalized	94	1784
Old Pylesville Rd / Ady Rd	4 leg	Harford County	Two-way stop	76	3634
Main St / New Park Rd	4 leg	York County	Two-way stop	73	9588
Nesbitt Rd / Love Run Rd	T	Colora, MD	Two-way stop	71	1798
E Christine Rd / Kennett Oxford Byp NB Ramp	Ramp	Oxford, PA	Two-way yield	60	3154
Ady Rd / Pylesville Rd	T	Harford County	Two-way stop	52	2514

8. References

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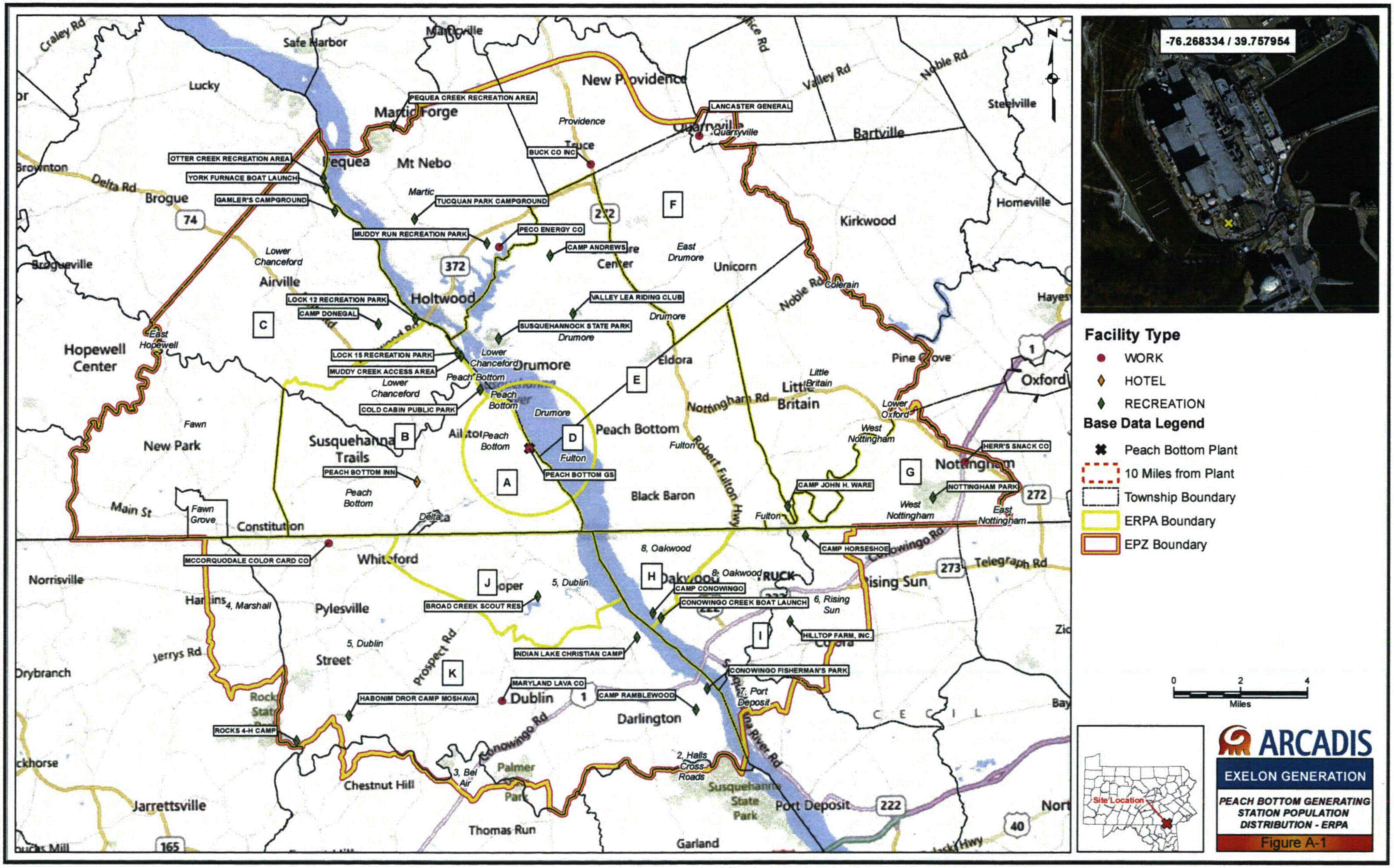
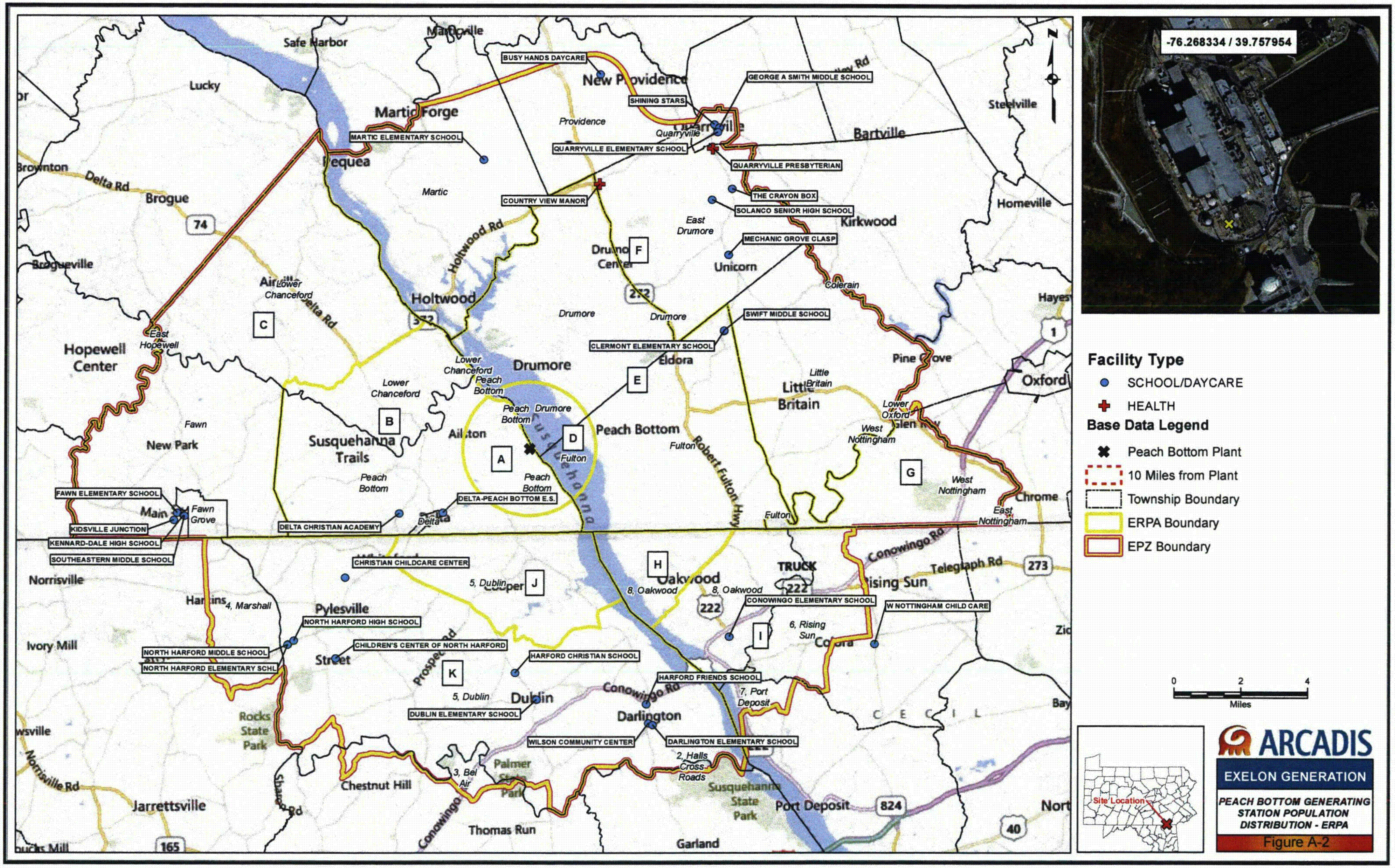
ARCADIS

Appendix A

Transient and Special Facility Population Data



-76.268334 / 39.757954
Facility Type
WORK
HOTEL
RECREATION
Base Data Legend
Peach Bottom Plant
10 Miles from Plant
Township Boundary
ERPA Boundary
EPZ Boundary
PEQUEA CREEK RECREATION AREA
OTTER CREEK RECREATION AREA
YORK FURNACE BOAT LAUNCH
GAMLER'S CAMPGROUND
TUCQUAN PARK CAMPGROUND
MUDDY RUN RECREATION PARK
PECO ENERGY CO
CAMP ANDREWS
LANCASTER GENERAL
BUCK CO INC
LOCK 12 RECREATION PARK
CAMP DONEGAL
VALLEY LEA RIDING CLUB
SUSQUEHANNOCK STATE PARK
LOCK 15 RECREATION PARK
MUDDY CREEK ACCESS AREA
COLD CABIN PUBLIC PARK
PEACH BOTTOM INN
PEACH BOTTOM GS
CAMP JOHN H. WARE
HERR'S SNACK CO
NOTTINGHAM PARK
CAMP HORSESHOE
MCCORQUODALE COLOR CARD CO
CAMP CONOWINGO
CONOWINGO CREEK BOAT LAUNCH
BROAD CREEK SCOUT RES
HILLTOP FARM, INC.
INDIAN LAKE CHRISTIAN CAMP
CONOWINGO FISHERMAN'S PARK
MARYLAND LAVA CO
CAMP RAMBLEWOOD
HABONIM DROR CAMP MOSHAVA
ROCKS 4-H CAMP
A
B
C
D
E
F
G
H
I
J
K
0
2
4
Miles
Site Location
ARCADIS
EXELON GENERATION
PEACH BOTTOM GENERATING STATION POPULATION DISTRIBUTION - ERPA
Figure A-1



-76.268334 / 39.757954
Facility Type
SCHOOL/DAYCARE
HEALTH
Base Data Legend
Peach Bottom Plant
10 Miles from Plant
Township Boundary
ERPA Boundary
EPZ Boundary
0 2 4
Miles
Site Location
ARCADIS
EXELON GENERATION
PEACH BOTTOM GENERATING STATION POPULATION DISTRIBUTION - ERPA
Figure A-2
BUSY HANDS DAYCARE
GEORGE A SMITH MIDDLE SCHOOL
SHINING STARS
MARTIC ELEMENTARY SCHOOL
QUARRYVILLE ELEMENTARY SCHOOL
QUARRYVILLE PRESBYTERIAN
THE CRAYON BOX
COUNTRY VIEW MANOR
SOLANCO SENIOR HIGH SCHOOL
MECHANIC GROVE CLASP
SWIFT MIDDLE SCHOOL
CLERMONT ELEMENTARY SCHOOL
FAWN ELEMENTARY SCHOOL
DELTA-PEACH BOTTOM E.S.
KIDSVILLE JUNCTION
DELTA CHRISTIAN ACADEMY
KENNARD-DALE HIGH SCHOOL
SOUTHEASTERN MIDDLE SCHOOL
CHRISTIAN CHILDCARE CENTER
CONOWINGO ELEMENTARY SCHOOL
W NOTTINGHAM CHILD CARE
NORTH HARFORD HIGH SCHOOL
CHILDREN'S CENTER OF NORTH HARFORD
NORTH HARFORD MIDDLE SCHOOL
NORTH HARFORD ELEMENTARY SCHL
HARFORD CHRISTIAN SCHOOL
HARFORD FRIENDS SCHOOL
DUBLIN ELEMENTARY SCHOOL
WILSON COMMUNITY CENTER
DARLINGTON ELEMENTARY SCHOOL
A
B
C
D
E
F
G
H
I
J
K
Safe Harbor
Martic Forge
New Providence
Providence
Quarryville
Bartville
Steelville
Lucky
Pequea
Martic
Brownton
Delta Rd
Brogue
Homeville
Kirkwood
East Drumore
Drumore Center
Unicorn
Holtwood
Holtwood Rd
Airville
Lower Chanceford
Colerain
Drumore
Hopewell Center
East Hopewell
Eldora
Pine Grove
Oxford
Little Britain
Peach Bottom
Susquehanna Trails
Aldington
Fulton
Lower Oxford
West Nottingham
Fawn
New Park
Fawn Grove
Robert Fulton Hwy
Chrome
East Nottingham
Main
Delta
Norrisville
Oakwood
8, Oakwood
5, Dublin
Rising Sun
6, Rising Sun
Telegraph Rd
Conowingo Rd
Pylesville
4, Marshall
Ivory Mill
Street
Dublin
Darlington
7, Port Deposit
Rocks State Park
Palmer State Park
3, Bel Air
2, Halls Cross Roads
Chestnut Hill
Jarrettsville
Norrisville Rd
Thomas Run
Susquehanna State Park
Port Deposit
Garland
CECIL
TRUCK

Table A-1. Transient Facilities for Peach Bottom EPZ

WORK

Facility Name	Sub-Area	Population						Vehicles					
		Winter			Summer			Winter			Summer		
		Week Day	Week Night	Week-end	Week Day	Week Night	Week-end	Week Day	Week Night	Week-end	Week Day	Week Night	Week-end
Peco Energy Co	E	30	0	0	30	0	0	30	0	0	30	0	0
Lancaster General	F	50	0	0	50	0	0	50	0	0	50	0	0
Buck Company	F	250	50	0	250	50	0	250	50	0	250	50	0
Herr's Snack Co	G	125	75	0	125	75	0	125	75	0	125	75	0
Peach Bottom GS	A	1700	600	600	1700	600	600	1700	600	600	1700	600	600
Maryland Lava	J	50	0	0	50	0	0	50	0	0	50	0	0
McCorquodale Color Card Co.	J	50	20	0	50	20	0	50	20	0	50	20	0

HOTEL

Facility Name	Sub-Area	Population						Vehicles					
		Winter			Summer			Winter			Summer		
		Week Day	Week Night	Week-end	Week Day	Week Night	Week-end	Week Day	Week Night	Week-end	Week Day	Week Night	Week-end
Peach Bottom Inn (24 units)	B	36	36	48	36	36	48	24	24	24	24	24	24

Table A-3
Recreation Facilities in Peach Bottom EPZ

RECREATION		Population						Vehicles					
		Winter			Summer			Winter			Summer		
Facility Name	**Sub-Area**	**Week Day**	**Week Night**	**Week-end**	**Week Day**	**Week Night**	**Week-end**	**Week Day**	**Week Night**	**Week-end**	**Week Day**	**Week Night**	**Week-end**
Camp Donegal	C	0	0	70	0	0	70	0	0	35	0	0	35
Gamler's Campground	C	0	0	210	270	270	420	0	0	70	90	90	140
Cold Cabin Public Park	A	0	0	0	20	0	20	0	0	0	10	0	10
Muddy Creek Access Area	C	0	0	0	20	0	30	0	0	0	10	0	15
Lock 12 Recreation Park	C	0	0	0	20	0	30	0	0	0	10	0	15
Lock 15 Recreation Park	C	0	0	0	20	0	30	0	0	0	10	0	15
York Furnace Boat Launch	C	0	0	0	20	0	30	0	0	0	10	0	15
Otter Creek Recreation Area	C	0	0	0	50	0	300	0	0	0	25	0	150
Camp Andrews	E	0	0	140	140	140	140	0	0	35	35	35	35
Muddy Run Recreation Park	F	0	0	480	240	240	720	0	0	120	60	60	180
Tucquan Park Campground	F	0	0	120	200	200	275	0	0	30	50	50	69
Pequea Creek Recreation Area	F	0	0	200	400	400	600	0	0	50	100	100	150
Susquehannock State Park	E	0	0	0	0	0	0	0	0	0	0	0	0
Valley Lea Riding Club	E	2	2	2	2	2	50	1	1	1	1	1	25
Nottingham Park	G	0	0	0	0	0	1000	0	0	0	0	0	500
Camp Horseshoe	G	0	0	200	800	800	800	0	0	50	200	200	200
Camp John H. Ware	G	0	0	100	300	300	300	0	0	25	75	75	75
Broad Creek Scout Res	J	300	300	625	1000	1000	1000	75	75	156	250	250	250
Indian Lake Christian Camp	J	0	0	110	110	110	110	0	0	55	55	55	55
Habonim Dror Camp Moshava	K	0	0	50	190	190	190	0	0	25	95	95	95
Camp Ramblewood	J	0	0	100	300	300	300	0	0	50	150	150	150
Conowingo Fisherman's Park	J	0	0	100	0	0	100	0	0	50	0	0	50
Rocks 4-H Camp	K	2	2	150	2	2	500	1	1	75	1	1	250
Camp Conowingo GSA	H	0	0	120	0	0	275	0	0	30	0	0	69
Hilltop Farm, Inc.	H	0	0	80	0	0	320	0	0	40	0	0	160
Conowingo Creek Boat Launch	H	0	0	10	0	0	30	0	0	5	0	0	15

Table A-4
Schools and Daycare in Peach Bottom EPZ

SCHOOL & DAYCARE		Population						Vehicles					
		Winter			Summer			Winter			Summer		
Facility Name	Sub-Area	Week Day	student	staff	Week Day	student	staff	Week Day	bus	auto	Week Day	bus	auto
Clermont Elementary School	F	584	532	52				63	11	19			
George A. Smith Middle School	F	473	421	52				61	9	25			
Martic Elementary School	F	420	374	46				54	8	22			
Quarryville Elementary School	F	499	459	40				49	9	13			
Solanco High School	F	1339	1219	120				145	25	45			
Swift Middle School	F	519	465	54				64	10	24			
Delta-Peach Bottom E.S.	B	374	330	44				51	7	23			
Fawn Elementary School	C	353	315	38				45	7	17			
South Eastern M.S.	C	1076	956	120				139	19	63			
Kennard-Dale Jr&Sr H.S.	C	1026	936	90				109	19	33			
Conowingo E.S.	I	619	567	52				64	12	16			
Dublin E.S.	K	282	247	35				43	8	11			
Harford Friends	K	58	40	18				18	0	18			
North Harford M.S.	K	1221	1113	108				134	26	30			
North Harford H.S.	K	1513	1393	120				150	30	30			
Darlington E.S.	K	148	123	25				30	5	10			
Harford Christian School	K	488	413	75				81	6	57			
North Harford Elementary	K	544	490	54				68	14	12			
Delta Christian Academy	B	132	110	22	96	80	16	16			16		
Kidsville Junction	B	81	66	15	65	52	13	14			14		
Mechanic Grove CLASP	F	17	13	4	10	8	2	4			4		
Shining Stars	F	36	30	6	36	30	6	6			6		
The Crayon Box	F	13	10	3	13	10	3	3			3		
Busy Hands Daycare	F	15	12	3	15	12	3	3			3		
W Nottingham Child Care	I	44	36	8	37	30	7	8			7		
Childrens Center of North Harford	K	58	48	10	48	40	8	10			8		
Christian Childcare Center	J	40	33	7	34	28	6	7			6		
Wilson Community Center	K	34	28	6	29	24	5	6			5		

Table A-5. Peach Bottom EPZ: Special Facilities Hospital and Nursing Home Facilities Population and Vehicle Demand Estimates

Location	Facility Name	Residents Day/Night/Weekend	Staff	Vehicles			
				Buses	ambulance	WC Bus	Autos
Lancaster	Quarryville Presbyterian Home	369	80	15	15	9	50
Lancaster	Country View Manor	24	5	1			2

Sub-Area F

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Appendix B

Telephone Survey of EPZ Residents

Peach Bottom EPZ

Summary of Telephone Survey Results

Completed surveys	381
Demographic	
total population	59632
total HH	21628
persons per HH	2.76
Results (after adjustment)	
vehicles used to evacuate	
when all at home	1.42
fraction taking 1 vehicle	0.64
fraction taking 2 veh	0.32
fraction taking 3 or more	0.05

Age Mix	SURVEY Response (percent)	census 2010 age for head of household (percent)	adjustment factor
under 24	1.35	2.41	
25-34	4.59	10.67	
35-44	8.92	18.12	
45-54	15.68	26.60	1.89
55-64	20.27	19.75	0.97
65 and over	49.19	22.45	0.46

Work Outside Home	(% of HH)
one or more work outside	74.4
Of those who work outside	percent
take vehicle	90.5
depart direct	25.6
stay outside EPZ	19.7
return home	54.7
one returns	28.2
2 or more return	16.9

Work Shifts	(percent)
Weekday	72.3
Swing shift	6.2
Graveyard	4.7
evening/weekend	8.8
rotate	8.1

time distribution (fraction)	**0 to 15** minutes	**15 to 30** minutes	**30 to 45** minutes	**45 to 60** minutes	**> 60** minutes
leave work after notice	0.67	0.23	0.05	0.02	0.03
travel home	0.41	0.27	0.16	0.12	0.03
depart after work return	0.33	0.38	0.13	0.11	0.05
	0 to 20	**20 to 40**	**40 to 60**	**60 to 90**	**> 90**
depart (all at home)	0.26	0.42	0.20	0.09	0.03

ARCADIS
Exelon Survey
Final v6 - August 23, 2011

INTRODUCTION

Hello, my name is _____ and I am calling from MDC Research, a public opinion firm. We are conducting a brief survey to gather information from households in your area about emergency response planning, and we'd like to include your opinions. This survey is being conducted on behalf of the (insert facility name) Nuclear Facility, and will take approximately 5 minutes to complete. We are not trying to sell you anything. The information gathered from this survey will help local agencies more effectively provide community assistance should an emergency situation arise.

Can I please speak with an adult member of the household?

SCREENER

S1. What is the zip code of your primary residence? This is the home where you live the majority of the time. DO NOT READ ZIP CODE LIST

List of appropriate zip codes will be displayed here
99999 Location outside the EPZ – **THANK & TERMINATE**

S2. Which of the following categories best describes your age?

11 Under 18 yrs of age – **ASK FOR REFERRAL or THANK & TERMINATE**
12 18 to 24
13 25 to 34
14 35 to 44
15 45 to 54
16 55 to 64
17 65 to 74
18 75 or older
98 (DO NOT READ) Refused

QUESTIONNAIRE

Q1 How many people currently reside in your household?

Record: _____ # of residents
998 **(DO NOT READ)** Refused – **THANK & TERMINATE**

Q2 How many motor vehicles are normally based at your home?

Record: _____ # of vehicles
997 None - **SKIP TO Q14**
998 **(DO NOT READ)** Refused

Q3 How many members of your household are over the age of 16?

Record: _____ # of residents
998 **(DO NOT READ)** Refused

Q4 How many members of your household are licensed drivers?

Record: _____ # of drivers
998 **(DO NOT READ)** Refused

Q5 How many of the adults in your household work outside the home?

Record _____ → **Skip to Q6A**
997 None – **Continue to Q5A**
998 **(DO NOT READ)** Refused
If refused, explain; The nature of this project is to estimate traffic volumes and flow in the event of an emergency evacuation, so this data is necessary in order for us to continue with the survey.
If still refused - **THANK & TERMINATE**

Q5A (ONLY ASK IF Q5=997) Which of the following best describes the non-working adults in your household? MULTIPLE MENTION – IP NOTE: No more mentions than Q3 mentions.

11 Currently unemployed/actively looking for work
12 Retired
13 On Disability or leave of absence
14 Student/continuing education
15 Homemaker
99 Other – please specify

SKIP TO Q11

Repeat the following Q6A-F sequence for each working adult cited in Q5

For each of the working adults you just referenced, I'd like to ask a few questions related to what their likely actions would be in the case of an emergency evacuation. I understand that I will be asking you to speculate on what other members of the household may do in this situation, but your best guesses are just fine for our purposes.

Q6A Who is the first working adult in the household that you are thinking about? What is their relationship to you?

1 Self
2 Spouse or significant other
3 Parent of child
4 Other relative or in-law
5 Roommate
6 Boarder
7 Other

Q6B Which of the following best describes this person's usual work schedule?

1 Monday – Friday, 8:00am to 5:00pm
2 Swing Shift
3 Graveyard
4 Evenings and weekends
5 Rotating shifts
6 Other or irregular schedule
7 **(DO NOT READ)** Don't know

Q6C Does this person generally use a personal vehicle to commute back and forth to work?

1 Yes
2 No
7 **(DO NOT READ)** Don't know

Q6D If an evacuation notice were given while this person was at work, do you think they would most likely…

1 Evacuate directly from work
2 Come home first and then evacuate, or
3 Stay outside the evacuation zone where they work → **Skip to Q7**
7 **(DO NOT READ)** Don't know

Q6E How long do you think it would take this person to get prepared and actually leave work? **(Read list if necessary)**

1 Less than 15 minutes
2 15 to 30 minutes
3 30 to 45 minutes
4 45 to 60 minutes
5 More than 60 minutes
7 **(DO NOT READ)** Don't know

If response at 6D is 1, skip from here to Q7

Q6F About how long does it take this household member to get from work to home? **(Read list if necessary)**

1 Less than 15 minutes
2 15 to 30 minutes
3 30 to 45 minutes
4 45 to 60 minutes
5 More than 60 minutes
7 **(DO NOT READ)** Don't know

Q7A-F Repeat Q6 sequence for worker #2

Q8A-F Repeat Q6 sequence for worker #3

Q9A-F Repeat Q6 sequence for worker #4

Q10 And once everyone who is coming home from work has arrived, how long would it take to prepare and depart from home, taking into consideration whether or not someone else is usually home who may be starting these preparation while they are travelling?

1 Less than 15 minutes
2 15 to 30 minutes
3 30 to 45 minutes
4 45 to 60 minutes
5 More than 60 minutes
7 **(DO NOT READ)** Don't know

Q11 Are any of the licensed drivers in your household restricted to **daytime driving** only?

1 Yes
2 No
9 **(DO NOT READ)** Refused

Q12 If an evacuation were ordered when all household members were at home (for example, at night or on a weekend), approximately how long would it take your household to

prepare to depart? Please assume that you are advised to plan to be away from your home for 3 days. Would you say that it would take… READ LIST

1 Less than 20 minutes to depart
2 20 to 40 minutes to depart
3 40 to 60 minutes to depart
4 60 to 90 minutes to depart; or
5 More than 90 minutes to depart

Q13 How many vehicles would your household take if an evacuation were ordered when all household members were at home?

Record: _____ # of vehicles
998 **(DO NOT READ)** Refused

Q14 Are any members of your household seasonal residents? And by seasonal we mean any people who do **not** reside in your home the majority of the year.

1 Yes
2 No - **SKIP TO Q15**
9 **(DO NOT READ)** Refused

Q14A (ASK IF Q14=1) How many of your <insert Q1 response> household members are seasonal?

Record: _____ # of seasonal household members
998 **(DO NOT READ)** Refused

Q14B (ASK IF Q14=1) What seasons do they live in another location away from your home? READ LIST – Multiple Mention

1 Spring
2 Summer
3 Fall
4 Winter

Q15 Would any member of your household require a specialized vehicle, such as a wheelchair, van or ambulance, to evacuate from your home in case of an emergency?

1 Yes
2 No

9 **(DO NOT READ)** Refused

This is all the questions we have for you today/tonight. Thank you for participating in this survey. Your responses will help us to make an accurate prediction of traffic conditions during an emergency situation. If you have any questions about this survey, please feel free to contact <insert contact name, job title, and phone number/email>.

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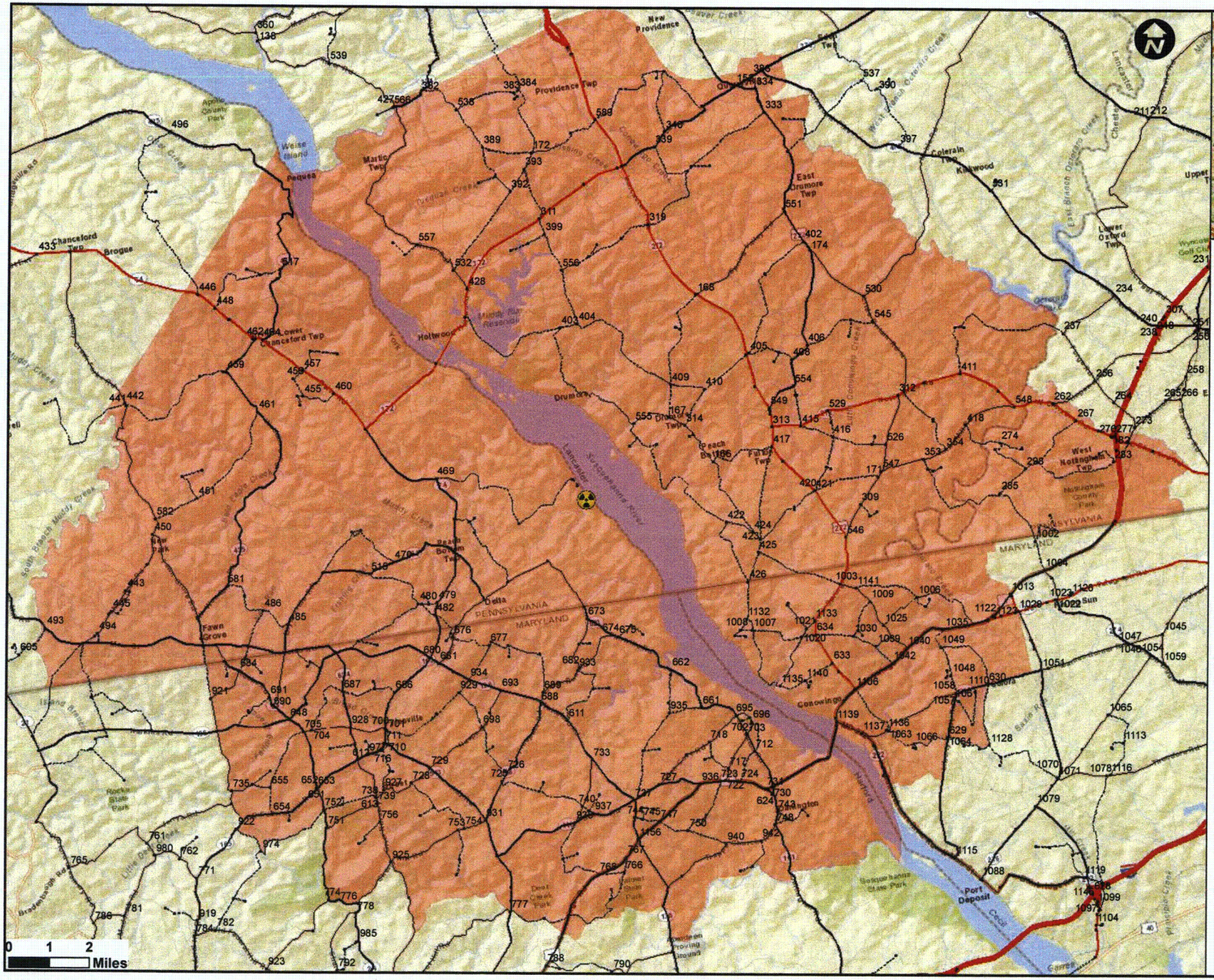
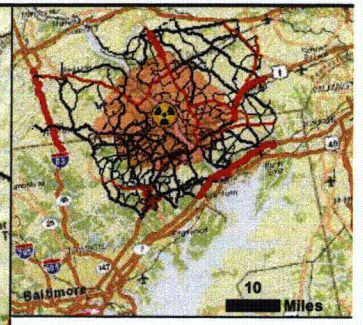
Appendix C

Roadway Network Map and Data Table





Roadway Network for Peach Bottom Station ETE Analysis

August 2012

Legend

- Peach Bottom Station
- Nodes

Road Classification

- Freeway
- Principal Arterial
- Major Arterial
- Minor Arterial
- Collector
- Local Rd
- Peach Bottom EPZ

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Exelon.

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1	135	136	0.536	11	2	Major Arterial	3100	45
2	136	135	0.536	11	2	Major Arterial	3100	45
3	140	141	0.701	12	2	Freeway	4100	65
4	142	143	0.094	12	1	Ramp	1500	35
5	144	145	0.081	11	1	Major Arterial	1700	45
6	145	144	0.081	11	1	Major Arterial	1700	45
7	147	146	1.21	12	2	Freeway	4100	65
8	148	144	0.08	12	1	Ramp	1500	35
9	149	146	0.559	12	1	Ramp	1500	35
10	150	151	0.634	12	1	Ramp	1500	35
11	155	156	0.094	12	1	Ramp	1500	35
12	155	157	0.093	11	1	Major Arterial	2000	45
13	157	155	0.093	11	1	Major Arterial	2000	45
14	157	156	0.064	12	1	Ramp	1500	35
15	159	158	0.077	12	1	Ramp	1500	35
16	157	158	0.152	11	1	Major Arterial	2000	45
17	158	157	0.152	11	1	Major Arterial	2000	45
18	158	160	0.096	11	1	Major Arterial	2000	45
19	160	158	0.096	11	1	Major Arterial	2000	45
20	159	160	0.092	12	1	Ramp	1500	35
21	161	155	0.087	12	1	Ramp	1500	35
22	161	157	0.068	12	1	Ramp	1500	35
23	158	162	0.073	12	1	Ramp	1500	35
24	160	162	0.109	12	1	Ramp	1500	35
25	163	161	0.506	12	1	Ramp	1500	35
26	162	164	0.721	12	1	Ramp	1500	35
27	147	148	0.488	12	1	Ramp	1500	35
28	148	145	0.049	12	1	Ramp	1500	35
29	144	149	0.116	12	1	Ramp	1500	35
30	145	149	0.108	12	1	Ramp	1500	35
31	151	169	0.101	12	1	Ramp	1500	35
32	151	170	0.076	12	1	Ramp	1500	35
33	143	140	0.457	12	1	Ramp	1500	35
34	625	626	0.323	11	1	Major Arterial	1700	45
35	626	625	0.323	11	1	Major Arterial	1700	45
36	179	180	0.447	11	1	Principal Arterial	1600	45
37	180	179	0.447	11	1	Principal Arterial	1600	45
38	181	182	0.501	12	1	Principal Arterial	1700	35
39	182	181	0.501	12	1	Principal Arterial	1700	35
40	636	637	0.576	11	1	Major Arterial	1300	45
41	637	636	0.576	11	1	Major Arterial	1300	45
42	639	636	1.256	12	1	Ramp	1500	35
43	640	639	0.505	12	1	Ramp	1500	35
44	639	641	0.667	12	1	Ramp	1500	35
45	643	642	0.298	12	1	Ramp	1500	35
46	626	644	0.714	11	1	Major Arterial	1700	45
47	644	626	0.714	11	1	Major Arterial	1700	45
48	645	646	0.474	11	1	Major Arterial	1700	45
49	646	645	0.474	11	1	Major Arterial	1700	45
50	644	645	0.102	11	1	Major Arterial	1700	45
51	645	644	0.102	11	1	Major Arterial	1700	45
52	647	643	0.73	12	1	Ramp	1500	35
53	641	647	0.588	12	1	Ramp	1500	35
54	647	644	0.928	12	1	Ramp	1500	35
55	645	641	0.994	12	1	Ramp	1500	35
56	650	651	0.047	11	1	Minor Arterial	1300	40

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
57	651	652	0.038	11	1	Minor Arterial	1300	40
58	652	653	0.046	11	1	Minor Arterial	1300	40
59	653	650	0.046	11	1	Minor Arterial	1300	40
60	659	660	5.297	11	1	Principal Arterial	1700	55
61	660	659	5.297	11	1	Principal Arterial	1700	55
62	658	659	0.494	11	1	Principal Arterial	1700	45
63	659	658	0.494	11	1	Principal Arterial	1700	45
64	665	666	0.06	11	1	Major Arterial	1700	45
65	666	665	0.06	11	1	Major Arterial	1700	45
66	667	668	2.135	11	1	Major Arterial	1700	50
67	668	667	2.135	11	1	Major Arterial	1700	50
68	667	669	0.436	11	1	Major Arterial	1700	50
69	669	667	0.436	11	1	Major Arterial	1700	50
70	658	670	0.694	11	1	Principal Arterial	1700	45
71	670	658	0.694	11	1	Principal Arterial	1700	45
72	670	671	0.037	11	1	Principal Arterial	1700	45
73	671	670	0.037	11	1	Principal Arterial	1700	45
74	674	675	0.464	11	1	Major Arterial	1300	45
75	675	674	0.464	11	1	Major Arterial	1300	45
76	677	678	0.322	10	1	Collector / Local Road	800	25
77	678	677	0.322	10	1	Collector / Local Road	800	25
78	521	679	0.904	10	1	Collector / Local Road	800	25
79	679	521	0.904	10	1	Collector / Local Road	800	25
80	676	681	2.427	10	1	Collector / Local Road	1800	25
81	681	676	2.427	10	1	Collector / Local Road	1800	25
82	649	683	1.848	11	1	Major Arterial	2000	45
83	683	649	1.848	11	1	Major Arterial	2000	45
84	587	684	1.142	10	1	Collector / Local Road	800	25
85	684	587	1.142	10	1	Collector / Local Road	800	25
86	575	684	1.436	11	1	Major Arterial	1300	45
87	684	575	1.436	11	1	Major Arterial	1300	45
88	688	689	0.733	11	1	Minor Arterial	1300	40
89	689	688	0.733	11	1	Minor Arterial	1300	40
90	690	691	0.699	11	1	Major Arterial	1300	45
91	691	690	0.699	11	1	Major Arterial	1300	45
92	692	693	2.097	11	1	Collector / Local Road	1300	40
93	693	692	2.097	11	1	Collector / Local Road	1300	40
94	694	695	1.3	10	1	Collector / Local Road	800	25
95	695	694	1.3	10	1	Collector / Local Road	800	25
96	694	696	0.359	10	1	Collector / Local Road	800	25
97	696	694	0.359	10	1	Collector / Local Road	800	25
98	648	690	1.725	11	1	Major Arterial	1300	45
99	690	648	1.725	11	1	Major Arterial	1300	45
100	692	698	1.313	11	1	Minor Arterial	1300	40
101	698	692	1.313	11	1	Minor Arterial	1300	40
102	695	702	1.748	11	1	Major Arterial	1300	45
103	702	695	1.748	11	1	Major Arterial	1300	45
104	702	703	0.062	11	1	Major Arterial	1300	45
105	703	702	0.062	11	1	Major Arterial	1300	45
106	704	705	0.712	11	1	Minor Arterial	2000	40
107	705	704	0.712	11	1	Minor Arterial	2000	40
108	699	706	1.863	11	1	Major Arterial	2000	45
109	706	699	1.863	11	1	Major Arterial	2000	45
110	710	711	0.306	11	1	Major Arterial	1800	40
111	711	710	0.306	11	1	Major Arterial	1800	40
112	703	712	1.426	11	1	Major Arterial	1300	45
113	712	703	1.426	11	1	Major Arterial	1300	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
114	710	713	0.667	10	1	Collector / Local Road	800	25
115	713	710	0.667	10	1	Collector / Local Road	800	25
116	711	716	1.236	11	1	Major Arterial	1800	45
117	716	711	1.236	11	1	Major Arterial	1800	45
118	719	720	4.283	10	1	Collector / Local Road	800	25
119	720	719	4.283	10	1	Collector / Local Road	800	25
120	719	721	1.288	11	1	Major Arterial	1300	45
121	721	719	1.288	11	1	Major Arterial	1300	45
122	717	722	0.935	11	1	Minor Arterial	1300	40
123	722	717	0.935	11	1	Minor Arterial	1300	40
124	722	723	0.473	11	1	Major Arterial	1300	50
125	723	722	0.473	11	1	Major Arterial	1300	50
126	725	726	0.789	11	1	Major Arterial	1300	45
127	726	725	0.789	11	1	Major Arterial	1300	45
128	728	729	1.933	11	1	Minor Arterial	1300	40
129	729	728	1.933	11	1	Minor Arterial	1300	40
130	730	731	0.578	11	1	Major Arterial	1300	50
131	731	730	0.578	11	1	Major Arterial	1300	50
132	732	733	3.095	11	1	Major Arterial	1300	40
133	733	732	3.095	11	1	Major Arterial	1300	40
134	655	734	1.486	10	1	Collector / Local Road	800	25
135	734	655	1.486	10	1	Collector / Local Road	800	25
136	736	737	0.39	11	1	Major Arterial	1300	45
137	737	736	0.39	11	1	Major Arterial	1300	45
138	613	738	0.045	11	1	Collector / Local Road	1300	40
139	738	613	0.045	11	1	Collector / Local Road	1300	40
140	738	739	0.437	11	1	Collector / Local Road	1300	40
141	739	738	0.437	11	1	Collector / Local Road	1300	40
142	741	749	1.678	11	1	Collector / Local Road	1800	40
143	749	741	1.678	11	1	Collector / Local Road	1800	40
144	751	752	1.498	11	1	Major Arterial	1300	45
145	752	751	1.498	11	1	Major Arterial	1300	45
146	753	754	0.519	11	1	Collector / Local Road	1300	40
147	754	753	0.519	11	1	Collector / Local Road	1300	40
148	755	756	2.045	10	1	Collector / Local Road	800	25
149	756	755	2.045	10	1	Collector / Local Road	800	25
150	760	761	1.078	11	1	Collector / Local Road	1300	40
151	761	760	1.078	11	1	Collector / Local Road	1300	40
152	762	763	0.808	10	1	Collector / Local Road	800	25
153	763	762	0.808	10	1	Collector / Local Road	800	25
154	764	765	0.062	11	1	Minor Arterial	1300	40
155	765	764	0.062	11	1	Minor Arterial	1300	40
156	766	767	1.234	10	1	Collector / Local Road	800	25
157	767	766	1.234	10	1	Collector / Local Road	800	25
158	766	768	2.104	10	1	Collector / Local Road	800	25
159	768	766	2.104	10	1	Collector / Local Road	800	25
160	772	773	0.334	11	1	Major Arterial	1300	50
161	773	772	0.334	11	1	Major Arterial	1300	45
162	776	778	0.886	11	1	Major Arterial	1300	45
163	778	776	0.886	11	1	Major Arterial	1300	45
164	785	786	1.35	11	1	Minor Arterial	1300	40
165	786	785	1.35	11	1	Minor Arterial	1300	40
166	791	792	0.475	10	1	Collector / Local Road	800	25
167	792	791	0.475	10	1	Collector / Local Road	800	25
168	794	793	1.374	12	1	Ramp	1500	35
169	793	795	0.578	12	1	Ramp	1500	35
170	795	796	0.088	11	1	Major Arterial	1300	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
171	796	795	0.088	11	1	Major Arterial	1300	45
172	793	798	0.255	12	1	Ramp	1500	35
173	796	798	0.355	11	1	Major Arterial	1300	45
174	798	796	0.355	11	1	Major Arterial	1300	45
175	798	799	0.154	11	1	Major Arterial	1300	45
176	799	798	0.154	11	1	Major Arterial	1300	45
177	792	800	0.38	11	1	Collector / Local Road	1300	40
178	800	792	0.38	11	1	Collector / Local Road	1300	40
179	803	804	0.962	12	1	Ramp	1500	35
180	799	806	0.294	12	1	Ramp	1500	35
181	796	806	0.643	12	1	Ramp	1500	35
182	805	807	0.532	11	1	Major Arterial	1300	45
183	807	805	0.532	11	1	Major Arterial	1300	45
184	808	803	0.195	12	1	Ramp	1500	35
185	808	809	0.227	11	1	Major Arterial	1300	45
186	809	808	0.227	11	1	Major Arterial	1300	45
187	789	810	0.266	10	1	Collector / Local Road	800	25
188	810	789	0.266	10	1	Collector / Local Road	800	25
189	808	811	0.226	11	1	Major Arterial	1300	45
190	811	808	0.226	11	1	Major Arterial	1300	45
191	812	811	0.608	12	1	Ramp	1500	35
192	812	809	0.327	12	1	Ramp	1500	35
193	813	803	0.508	12	1	Ramp	1500	35
194	811	813	0.188	11	1	Major Arterial	1300	45
195	813	811	0.188	11	1	Major Arterial	1300	45
196	810	814	0.41	10	1	Collector / Local Road	800	25
197	814	810	0.41	10	1	Collector / Local Road	800	25
198	816	812	0.703	12	1	Ramp	1500	35
199	806	818	0.718	12	1	Ramp	1500	35
200	819	820	0.069	11	1	Collector / Local Road	1300	40
201	820	819	0.069	11	1	Collector / Local Road	1300	40
202	820	821	0.102	11	1	Collector / Local Road	1300	40
203	821	820	0.102	11	1	Collector / Local Road	1300	40
204	819	821	0.09	11	1	Minor Arterial	1300	40
205	821	819	0.09	11	1	Minor Arterial	1300	40
206	815	823	0.651	11	1	Major Arterial	1300	45
207	823	815	0.651	11	1	Major Arterial	1300	45
208	826	827	1.048	11	1	Principal Arterial	1600	45
209	827	826	1.048	11	1	Principal Arterial	1600	45
210	668	831	3.915	11	1	Minor Arterial	1700	40
211	831	668	3.915	11	1	Minor Arterial	1700	40
212	833	834	1.087	11	1	Minor Arterial	1300	40
213	834	833	1.087	11	1	Minor Arterial	1300	40
214	838	839	0.164	11	1	Major Arterial	1300	45
215	839	838	0.164	11	1	Major Arterial	1300	45
216	841	842	0.451	10	1	Collector / Local Road	800	25
217	842	841	0.451	10	1	Collector / Local Road	800	25
218	847	848	0.184	11	1	Collector / Local Road	1300	40
219	848	847	0.184	11	1	Collector / Local Road	1300	40
220	849	850	0.498	11	1	Major Arterial	1300	45
221	850	849	0.498	11	1	Major Arterial	1300	45
222	857	858	0.229	11	1	Principal Arterial	1700	45
223	858	857	0.229	11	1	Principal Arterial	1700	45
224	860	859	0.536	12	1	Ramp	1500	35
225	860	862	0.611	11	1	Major Arterial	1700	50
226	862	860	0.611	11	1	Major Arterial	1700	50
227	858	863	0.174	11	1	Principal Arterial	1700	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
228	863	858	0.174	11	1	Principal Arterial	1700	45
229	859	863	0.185	12	1	Ramp	1500	35
230	858	864	0.112	12	1	Ramp	1500	35
231	857	864	0.257	12	1	Ramp	1500	35
232	859	865	0.127	12	1	Ramp	1500	35
233	863	865	0.147	11	1	Principal Arterial	1700	45
234	865	863	0.147	11	1	Principal Arterial	1700	45
235	862	866	1.111	12	1	Ramp	1500	35
236	868	869	0.13	12	1	Ramp	1500	35
237	866	868	0.301	11	1	Principal Arterial	1700	45
238	868	866	0.301	11	1	Principal Arterial	1700	45
239	871	869	0.233	12	1	Ramp	1500	35
240	868	871	0.193	11	1	Major Arterial	1700	45
241	871	868	0.193	11	1	Major Arterial	1700	45
242	871	872	0.096	11	1	Major Arterial	1700	45
243	872	871	0.096	11	1	Major Arterial	1700	45
244	619	873	0.531	11	1	Collector / Local Road	1700	40
245	873	619	0.531	11	1	Collector / Local Road	1700	40
246	864	877	1.2	12	1	Ramp	1500	35
247	877	880	0.29	11	2	Principal Arterial	3600	50
248	880	877	0.29	11	2	Principal Arterial	3600	50
249	885	886	0.182	11	1	Major Arterial	1700	45
250	886	885	0.182	11	1	Major Arterial	1700	45
251	888	887	0.114	11	1	Collector / Local Road	1700	40
252	891	890	0.21	11	1	Major Arterial	1700	45
253	890	892	0.219	11	1	Major Arterial	1700	45
254	893	891	0.228	11	1	Major Arterial	1700	45
255	892	893	0.223	11	1	Major Arterial	1700	45
256	889	894	0.303	11	1	Collector / Local Road	1700	40
257	894	889	0.303	11	1	Collector / Local Road	1700	40
258	893	895	0.32	11	1	Major Arterial	1700	45
259	895	893	0.32	11	1	Major Arterial	1700	45
260	896	897	0.138	11	1	Collector / Local Road	1700	40
261	897	896	0.138	11	1	Collector / Local Road	1700	40
262	898	899	0.048	11	1	Collector / Local Road	1700	40
263	896	900	0.223	11	1	Collector / Local Road	1700	40
264	900	896	0.223	11	1	Collector / Local Road	1700	40
265	896	901	0.286	11	1	Collector / Local Road	1700	40
266	901	896	0.286	11	1	Collector / Local Road	1700	40
267	900	901	0.231	11	1	Collector / Local Road	1700	40
268	901	900	0.231	11	1	Collector / Local Road	1700	40
269	902	904	0.379	11	1	Major Arterial	1300	45
270	904	902	0.379	11	1	Major Arterial	1300	45
271	905	989	0.427	11	2	Principal Arterial	3600	50
272	989	905	0.427	11	2	Principal Arterial	3600	50
273	907	910	1.188	11	1	Collector / Local Road	1700	40
274	910	907	1.188	11	1	Collector / Local Road	1700	40
275	913	914	0.156	11	1	Collector / Local Road	1700	40
276	913	915	0.163	11	1	Major Arterial	1700	45
277	915	913	0.163	11	1	Major Arterial	1700	45
278	914	915	0.136	11	2	Principal Arterial	3200	45
279	915	914	0.136	11	2	Principal Arterial	3600	50
280	623	917	0.311	11	1	Major Arterial	1700	45
281	917	623	0.311	11	1	Major Arterial	1700	45
282	663	917	0.109	11	1	Major Arterial	1300	45
283	917	663	0.109	11	1	Major Arterial	1300	45
284	784	919	1.232	11	1	Major Arterial	1300	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
285	919	784	1.232	11	1	Major Arterial	1300	45
286	762	771	2.227	11	1	Collector / Local Road	1300	40
287	771	762	2.227	11	1	Collector / Local Road	1300	40
288	706	921	2.686	11	1	Minor Arterial	1700	40
289	921	706	2.686	11	1	Minor Arterial	1700	40
290	924	925	3.347	11	1	Collector / Local Road	1300	40
291	925	924	3.347	11	1	Collector / Local Road	1300	40
292	753	926	2.504	10	1	Collector / Local Road	800	25
293	926	753	2.504	10	1	Collector / Local Road	800	25
294	739	756	1.519	11	1	Collector / Local Road	1300	40
295	756	739	1.519	11	1	Collector / Local Road	1300	40
296	738	927	0.946	11	1	Minor Arterial	1300	40
297	927	738	0.946	11	1	Minor Arterial	1300	40
298	650	752	1.791	11	1	Major Arterial	1300	45
299	752	650	1.791	11	1	Major Arterial	1300	45
300	429	690	4.372	11	1	Minor Arterial	2000	40
301	690	429	4.372	11	1	Minor Arterial	2000	40
302	679	683	1.289	11	1	Major Arterial	2000	45
303	683	679	1.289	11	1	Major Arterial	2000	45
304	680	681	0.864	12	1	Major Arterial	1800	30
305	681	680	0.864	12	1	Major Arterial	1800	30
306	683	687	3.321	11	1	Major Arterial	1300	45
307	687	683	3.321	11	1	Major Arterial	1300	45
308	704	928	3.134	11	1	Minor Arterial	2000	40
309	928	704	3.134	11	1	Minor Arterial	2000	40
310	729	930	1.517	11	1	Major Arterial	1800	50
311	930	729	1.517	11	1	Major Arterial	1800	50
312	713	716	0.831	10	1	Collector / Local Road	800	25
313	716	713	0.831	10	1	Collector / Local Road	800	25
314	476	673	1.017	11	1	Major Arterial	1300	45
315	673	476	1.017	11	1	Major Arterial	1300	45
316	929	934	1.313	10	1	Collector / Local Road	800	25
317	934	929	1.313	10	1	Collector / Local Road	800	25
318	693	934	2.66	11	1	Major Arterial	1300	50
319	934	693	2.66	11	1	Major Arterial	1300	50
320	611	688	2.732	11	1	Major Arterial	1300	50
321	688	611	2.732	11	1	Major Arterial	1300	50
322	661	935	2.624	10	1	Collector / Local Road	800	25
323	935	661	2.624	10	1	Collector / Local Road	800	25
324	732	737	1.655	12	1	Major Arterial	1800	30
325	737	732	1.655	12	1	Major Arterial	1800	30
326	759	931	3.05	11	1	Major Arterial	1300	50
327	931	759	3.05	11	1	Major Arterial	1300	50
328	754	931	1.83	11	1	Collector / Local Road	1300	40
329	931	754	1.83	11	1	Collector / Local Road	1300	40
330	767	768	2.662	11	1	Major Arterial	1300	50
331	768	767	2.662	11	1	Major Arterial	1300	50
332	769	939	0.521	11	1	Minor Arterial	1800	40
333	939	769	0.521	11	1	Minor Arterial	1800	40
334	750	940	3.202	10	1	Collector / Local Road	800	25
335	940	750	3.202	10	1	Collector / Local Road	800	25
336	703	717	3.103	11	1	Minor Arterial	1300	40
337	717	703	3.103	11	1	Minor Arterial	1300	40
338	723	936	1.573	11	1	Major Arterial	1300	50
339	936	723	1.573	11	1	Major Arterial	1300	50
340	723	941	2.931	10	1	Collector / Local Road	800	25
341	941	723	2.931	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
342	722	724	1.175	11	1	Major Arterial	1300	50
343	724	722	1.175	11	1	Major Arterial	1300	50
344	712	730	3.231	11	1	Major Arterial	1300	45
345	730	712	3.231	11	1	Major Arterial	1300	45
346	748	942	1.752	11	1	Collector / Local Road	1300	40
347	942	748	1.752	11	1	Collector / Local Road	1300	40
348	737	937	3.538	11	1	Major Arterial	1300	45
349	937	737	3.538	11	1	Major Arterial	1300	45
350	752	943	1.614	10	1	Collector / Local Road	800	25
351	943	752	1.614	10	1	Collector / Local Road	800	25
352	708	944	0.303	10	1	Collector / Local Road	800	25
353	944	708	0.303	10	1	Collector / Local Road	800	25
354	495	709	3.889	11	1	Major Arterial	2000	45
355	709	495	3.889	11	1	Major Arterial	2000	45
356	765	786	5.248	11	1	Minor Arterial	1300	40
357	786	765	5.248	11	1	Minor Arterial	1300	40
358	684	691	3.368	11	1	Major Arterial	1300	45
359	691	684	3.368	11	1	Major Arterial	1300	45
360	695	718	3.051	11	1	Minor Arterial	1300	40
361	718	695	3.051	11	1	Minor Arterial	1300	40
362	869	851	1.466	12	1	Ramp	1500	35
363	851	860	0.702	11	1	Major Arterial	1700	50
364	860	851	0.702	11	1	Major Arterial	1700	50
365	816	804	2.021	12	2	Freeway	4100	65
366	799	809	0.851	11	1	Major Arterial	1300	45
367	809	799	0.851	11	1	Major Arterial	1300	45
368	884	947	0.16	11	1	Major Arterial	1700	45
369	947	884	0.16	11	1	Major Arterial	1700	45
370	820	923	1.731	11	1	Collector / Local Road	1300	40
371	923	820	1.731	11	1	Collector / Local Road	1300	40
372	829	834	1.038	11	1	Minor Arterial	1300	40
373	834	829	1.038	11	1	Minor Arterial	1300	40
374	834	949	1.538	11	1	Minor Arterial	1300	40
375	949	834	1.538	11	1	Minor Arterial	1300	40
376	800	950	3.117	11	1	Minor Arterial	1300	40
377	950	800	3.117	11	1	Minor Arterial	1300	40
378	823	951	0.892	11	1	Major Arterial	1300	45
379	951	823	0.892	11	1	Major Arterial	1300	45
380	832	951	2.11	11	1	Major Arterial	1300	45
381	951	832	2.11	11	1	Major Arterial	1300	45
382	843	952	1.264	11	1	Collector / Local Road	1300	40
383	952	843	1.264	11	1	Collector / Local Road	1300	40
384	657	832	1.482	11	1	Collector / Local Road	1300	40
385	832	657	1.482	11	1	Collector / Local Road	1300	40
386	836	954	0.981	11	1	Major Arterial	1300	45
387	954	836	0.981	11	1	Major Arterial	1300	45
388	958	959	1.434	11	1	Major Arterial	1700	50
389	959	958	1.434	11	1	Major Arterial	1700	50
390	963	964	0.727	11	1	Major Arterial	1700	45
391	964	963	0.727	11	1	Major Arterial	1700	45
392	853	965	0.679	10	1	Collector / Local Road	800	25
393	965	853	0.679	10	1	Collector / Local Road	800	25
394	831	966	1.696	11	1	Collector / Local Road	1700	40
395	966	831	1.696	11	1	Collector / Local Road	1700	40
396	966	967	2.819	10	1	Collector / Local Road	1500	25
397	967	966	2.819	10	1	Collector / Local Road	1500	25
398	845	847	0.203	10	1	Collector / Local Road	1700	30

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
399	847	845	0.203	10	1	Collector / Local Road	1700	30
400	844	969	0.187	11	1	Major Arterial	1300	45
401	969	844	0.187	11	1	Major Arterial	1300	45
402	841	970	1.536	11	1	Major Arterial	1300	45
403	970	841	1.536	11	1	Major Arterial	1300	45
404	844	970	0.213	11	1	Major Arterial	1300	45
405	970	844	0.213	11	1	Major Arterial	1300	45
406	969	970	0.125	11	1	Collector / Local Road	1300	40
407	970	969	0.125	11	1	Collector / Local Road	1300	40
408	830	972	0.335	11	1	Major Arterial	1300	45
409	972	830	0.335	11	1	Major Arterial	1300	45
410	942	973	2.466	10	1	Collector / Local Road	800	25
411	973	942	2.466	10	1	Collector / Local Road	800	25
412	700	711	1.164	11	1	Major Arterial	1800	45
413	711	700	1.164	11	1	Major Arterial	1800	45
414	701	710	1.101	10	1	Collector / Local Road	800	25
415	710	701	1.101	10	1	Collector / Local Road	800	25
416	687	928	2.947	11	1	Major Arterial	1300	45
417	928	687	2.947	11	1	Major Arterial	1300	45
418	734	735	1.852	10	1	Collector / Local Road	800	25
419	735	734	1.852	10	1	Collector / Local Road	800	25
420	749	922	0.829	11	1	Major Arterial	1800	45
421	922	749	0.829	11	1	Major Arterial	1800	45
422	654	749	2.528	11	1	Major Arterial	1800	45
423	749	654	2.528	11	1	Major Arterial	1800	45
424	922	974	2.933	10	1	Collector / Local Road	800	25
425	974	922	2.933	10	1	Collector / Local Road	800	25
426	714	727	3.279	11	1	Collector / Local Road	1300	40
427	727	714	3.279	11	1	Collector / Local Road	1300	40
428	714	718	2.047	11	1	Minor Arterial	1300	40
429	718	714	2.047	11	1	Minor Arterial	1300	40
430	940	942	2.812	11	1	Collector / Local Road	1300	40
431	942	940	2.812	11	1	Collector / Local Road	1300	40
432	790	966	3.737	11	1	Collector / Local Road	1300	40
433	966	790	3.737	11	1	Collector / Local Road	1300	40
434	790	797	1.251	11	1	Collector / Local Road	1300	40
435	797	790	1.251	11	1	Collector / Local Road	1300	40
436	800	815	3.974	11	1	Minor Arterial	1300	40
437	815	800	3.974	11	1	Minor Arterial	1300	40
438	720	944	0.291	10	1	Collector / Local Road	800	25
439	944	720	0.291	10	1	Collector / Local Road	800	25
440	682	933	0.228	11	1	Collector / Local Road	1300	40
441	933	682	0.228	11	1	Collector / Local Road	1300	40
442	840	846	0.068	11	1	Collector / Local Road	1700	40
443	846	840	0.068	11	1	Collector / Local Road	1700	40
444	660	843	2.606	11	1	Principal Arterial	1600	55
445	843	660	2.606	11	1	Principal Arterial	1600	55
446	829	840	3.578	11	1	Collector / Local Road	1300	40
447	840	829	3.578	11	1	Collector / Local Road	1300	40
448	772	777	0.838	11	1	Major Arterial	1300	50
449	777	772	0.838	11	1	Major Arterial	1300	50
450	975	962	0.764	11	2	Principal Arterial	3600	60
451	698	729	5.362	11	1	Collector / Local Road	1800	40
452	729	698	5.362	11	1	Collector / Local Road	1800	40
453	775	974	4.929	10	1	Collector / Local Road	800	25
454	974	775	4.929	10	1	Collector / Local Road	800	25
455	833	949	1.165	11	1	Minor Arterial	1300	40

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
456	949	833	1.165	11	1	Minor Arterial	1300	40
457	862	877	0.99	11	1	Major Arterial	1700	50
458	877	862	0.99	11	1	Major Arterial	1700	50
459	865	866	0.259	11	1	Principal Arterial	1700	45
460	866	865	0.259	11	1	Principal Arterial	1700	45
461	894	909	1.585	11	1	Major Arterial	1300	45
462	909	894	1.585	11	1	Major Arterial	1300	45
463	777	779	3.089	10	1	Collector / Local Road	800	25
464	779	777	3.089	10	1	Collector / Local Road	800	25
465	684	921	3.459	11	1	Collector / Local Road	1700	40
466	921	684	3.459	11	1	Collector / Local Road	1700	40
467	612	977	0.99	11	1	Major Arterial	1800	45
468	977	612	0.99	11	1	Major Arterial	1800	45
469	716	977	0.409	11	1	Major Arterial	1800	45
470	977	716	0.409	11	1	Major Arterial	1800	45
471	977	978	0.709	10	1	Collector / Local Road	800	25
472	978	977	0.709	10	1	Collector / Local Road	800	25
473	762	979	2.224	11	1	Minor Arterial	1300	40
474	979	762	2.224	11	1	Minor Arterial	1300	40
475	760	980	0.068	11	1	Minor Arterial	1300	40
476	980	760	0.068	11	1	Minor Arterial	1300	40
477	979	980	0.079	11	1	Collector / Local Road	1300	40
478	980	979	0.079	11	1	Collector / Local Road	1300	40
479	698	929	3.429	10	1	Collector / Local Road	800	25
480	929	698	3.429	10	1	Collector / Local Road	800	25
481	615	955	0.304	10	1	Collector / Local Road	800	25
482	955	615	0.304	10	1	Collector / Local Road	800	25
483	915	916	1.016	11	2	Principal Arterial	3200	45
484	916	915	1.016	11	2	Principal Arterial	3200	45
485	656	981	0.621	11	1	Minor Arterial	1700	40
486	981	656	0.621	11	1	Minor Arterial	1700	40
487	657	981	1.558	11	1	Minor Arterial	1700	40
488	981	657	1.558	11	1	Minor Arterial	1700	40
489	892	982	0.276	12	1	Minor Arterial	1700	35
490	982	892	0.276	12	1	Minor Arterial	1700	35
491	983	984	0.476	10	2	Collector / Local Road	1500	25
492	984	983	0.476	10	1	Collector / Local Road	1500	25
493	985	986	0.228	10	1	Collector / Local Road	800	25
494	986	985	0.228	10	1	Collector / Local Road	800	25
495	905	990	0.584	11	2	Principal Arterial	3600	50
496	990	905	0.584	11	2	Principal Arterial	3600	50
497	988	960	0.4	11	1	Principal Arterial	1700	50
498	991	992	0.019	11	1	Collector / Local Road	1700	40
499	788	993	1.113	10	1	Collector / Local Road	800	25
500	993	788	1.113	10	1	Collector / Local Road	800	25
501	801	953	0.988	11	1	Major Arterial	1700	40
502	953	801	0.988	11	1	Major Arterial	1700	40
503	678	994	0.482	10	1	Collector / Local Road	800	25
504	994	678	0.482	10	1	Collector / Local Road	800	25
505	662	995	0.374	10	1	Collector / Local Road	800	25
506	995	662	0.374	10	1	Collector / Local Road	800	25
507	997	996	0.062	11	1	Collector / Local Road	1700	40
508	995	998	0.703	10	1	Collector / Local Road	800	25
509	998	995	0.703	10	1	Collector / Local Road	800	25
510	935	998	0.808	10	1	Collector / Local Road	800	25
511	998	935	0.808	10	1	Collector / Local Road	800	25
512	724	731	2.124	11	1	Major Arterial	1300	50

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
513	731	724	2.124	11	1	Major Arterial	1300	50
514	624	731	0.668	11	1	Major Arterial	1300	45
515	731	624	0.668	11	1	Major Arterial	1300	45
516	814	817	1.07	11	1	Major Arterial	1300	45
517	817	814	1.07	11	1	Major Arterial	1300	45
518	680	686	3.96	11	1	Major Arterial	2000	45
519	686	680	3.96	11	1	Major Arterial	2000	45
520	880	872	1.236	12	1	Ramp	1500	35
521	961	1000	0.841	11	1	Major Arterial	1700	50
522	1000	961	0.841	11	2	Principal Arterial	3600	50
523	649	1001	0.899	10	1	Collector / Local Road	800	25
524	1001	649	0.899	10	1	Collector / Local Road	800	25
525	610	1001	1.566	10	1	Collector / Local Road	800	25
526	1001	610	1.566	10	1	Collector / Local Road	800	25
527	1007	1008	0.932	10	1	Collector / Local Road	800	25
528	1008	1007	0.932	10	1	Collector / Local Road	800	25
529	1012	1013	0.103	11	1	Principal Arterial	1600	45
530	1013	1012	0.103	11	1	Principal Arterial	1600	45
531	1008	1014	0.73	10	1	Collector / Local Road	800	25
532	1014	1008	0.73	10	1	Collector / Local Road	800	25
533	1012	1016	0.017	11	1	Principal Arterial	1700	45
534	1016	1012	0.017	11	1	Principal Arterial	1700	45
535	1020	1021	0.754	10	1	Collector / Local Road	800	25
536	1021	1020	0.754	10	1	Collector / Local Road	800	25
537	1006	1025	3.732	10	1	Collector / Local Road	800	25
538	1025	1006	3.732	10	1	Collector / Local Road	800	25
539	1026	1027	1.081	11	1	Major Arterial	1500	50
540	1027	1026	1.081	11	1	Major Arterial	1500	50
541	1028	1029	0.184	11	1	Principal Arterial	1600	40
542	1029	1028	0.184	11	1	Principal Arterial	1600	40
543	1034	1035	0.192	11	1	Major Arterial	1300	40
544	1035	1034	0.192	11	1	Major Arterial	1300	40
545	1025	1036	1.062	11	1	Minor Arterial	1300	40
546	1036	1025	1.062	11	1	Minor Arterial	1300	40
547	1030	1039	2.06	10	1	Collector / Local Road	800	25
548	1039	1030	2.06	10	1	Collector / Local Road	800	25
549	1040	1042	1.694	11	1	Major Arterial	1300	50
550	1042	1040	1.694	11	1	Major Arterial	1300	50
551	1046	1047	0.168	11	1	Major Arterial	1300	45
552	1047	1046	0.168	11	1	Major Arterial	1300	45
553	1048	1049	2.478	10	1	Collector / Local Road	800	25
554	1049	1048	2.478	10	1	Collector / Local Road	800	25
555	1048	1050	0.4	10	1	Collector / Local Road	800	25
556	1050	1048	0.4	10	1	Collector / Local Road	800	25
557	1047	1054	1.968	11	1	Major Arterial	1300	45
558	1054	1047	1.968	11	1	Major Arterial	1300	45
559	1057	1058	0.08	11	1	Minor Arterial	1300	40
560	1058	1057	0.08	11	1	Minor Arterial	1300	40
561	1054	1059	1.215	11	1	Major Arterial	1300	45
562	1059	1054	1.215	11	1	Major Arterial	1300	45
563	1061	1062	0.389	10	1	Collector / Local Road	800	25
564	1062	1061	0.389	10	1	Collector / Local Road	800	25
565	629	1064	0.104	11	1	Major Arterial	1300	45
566	1064	629	0.104	11	1	Major Arterial	1300	45
567	636	646	0.316	11	1	Major Arterial	1300	45
568	646	636	0.316	11	1	Major Arterial	1300	45
569	1070	1071	0.533	11	1	Major Arterial	1300	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
570	1071	1070	0.533	11	1	Major Arterial	1300	45
571	646	643	1.295	12	1	Ramp	1500	35
572	1072	1073	1.002	12	1	Ramp	1500	35
573	1074	626	0.173	12	1	Ramp	1500	35
574	626	1072	0.317	12	1	Ramp	1500	35
575	1074	625	0.388	12	1	Ramp	1500	35
576	1076	1074	1.197	12	1	Ramp	1500	35
577	1077	1072	0.697	12	1	Ramp	1500	35
578	625	1077	0.265	11	1	Major Arterial	1300	45
579	1077	625	0.265	11	1	Major Arterial	1300	45
580	1089	1090	0.098	12	1	Major Arterial	1300	35
581	1090	1089	0.098	12	1	Major Arterial	1300	35
582	1090	1091	0.391	12	1	Major Arterial	1300	35
583	1091	1090	0.391	12	1	Major Arterial	1300	35
584	1092	1093	0.156	11	1	Ramp	1500	55
585	1092	1094	0.124	11	1	Ramp	1500	55
586	1095	1092	1.057	11	1	Ramp	1500	55
587	1097	1098	1.751	11	1	Ramp	1500	55
588	1099	1097	0.16	11	1	Ramp	1500	55
589	1100	1097	0.332	12	1	Ramp	1500	35
590	1096	1101	0.488	12	1	Minor Arterial	1300	35
591	1101	1096	0.488	12	1	Minor Arterial	1300	35
592	1102	1101	0.199	12	1	Minor Arterial	1300	35
593	1102	1103	0.265	12	1	Principal Arterial	1700	35
594	1103	1102	0.265	12	1	Principal Arterial	1700	35
595	1104	1105	0.416	11	1	Principal Arterial	1600	45
596	1105	1104	0.416	11	1	Principal Arterial	1600	45
597	1108	1109	0.573	11	1	Major Arterial	1300	50
598	1109	1108	0.573	11	1	Major Arterial	1300	50
599	630	1110	1.183	11	1	Major Arterial	1300	45
600	1110	630	1.183	11	1	Major Arterial	1300	45
601	1088	1112	0.196	10	1	Collector / Local Road	1300	25
602	1112	1088	0.196	11	1	Collector / Local Road	1300	45
603	1083	1115	0.339	11	1	Collector / Local Road	1300	40
604	1115	1083	0.339	11	1	Collector / Local Road	1300	40
605	1086	1087	0.214	10	1	Collector / Local Road	800	25
606	1087	1086	0.214	10	1	Collector / Local Road	800	25
607	1086	1117	2.14	11	1	Major Arterial	1300	45
608	1117	1086	2.14	11	1	Major Arterial	1300	45
609	1096	1118	0.423	11	1	Minor Arterial	1300	45
610	1118	1096	0.423	11	1	Minor Arterial	1300	45
611	1076	1073	2.382	12	2	Freeway	4100	65
612	640	642	2.786	12	2	Freeway	4100	65
613	1093	1117	0.769	11	1	Collector / Local Road	1300	45
614	1117	1093	0.769	11	1	Collector / Local Road	1300	45
615	1117	1119	0.247	11	1	Major Arterial	1700	45
616	1119	1117	0.247	11	1	Major Arterial	1700	45
617	1091	1112	0.609	10	1	Collector / Local Road	1300	25
618	1112	1091	0.609	10	1	Collector / Local Road	1300	25
619	1103	1104	0.885	11	1	Principal Arterial	1600	40
620	1104	1103	0.885	11	1	Principal Arterial	1600	40
621	1035	1049	1.877	10	1	Collector / Local Road	800	25
622	1049	1035	1.877	10	1	Collector / Local Road	800	25
623	1110	1120	0.391	10	1	Collector / Local Road	800	25
624	1120	1110	0.391	10	1	Collector / Local Road	800	25
625	1048	1058	1.412	10	1	Collector / Local Road	800	25
626	1058	1048	1.412	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
627	1057	1061	0.581	11	1	Major Arterial	1300	45
628	1061	1057	0.581	11	1	Major Arterial	1300	45
629	1051	1111	1.789	11	1	Major Arterial	1300	45
630	1111	1051	1.789	11	1	Major Arterial	1300	45
631	1032	1122	0.603	11	1	Major Arterial	1300	50
632	1122	1032	0.603	11	1	Major Arterial	1300	50
633	1122	1123	0.232	11	1	Major Arterial	1300	50
634	1123	1122	0.232	11	1	Major Arterial	1300	50
635	1031	1123	0.543	11	1	Principal Arterial	1600	40
636	1123	1031	0.543	11	1	Principal Arterial	1600	40
637	1032	1124	0.173	11	1	Principal Arterial	1600	40
638	1029	1041	2.422	11	1	Major Arterial	1300	45
639	1041	1029	2.422	11	1	Major Arterial	1300	45
640	1016	1029	1.426	11	1	Principal Arterial	1600	45
641	1029	1016	1.426	11	1	Principal Arterial	1600	45
642	1022	1023	0.206	12	1	Principal Arterial	1700	25
643	1023	1022	0.206	12	1	Principal Arterial	1700	25
644	1126	1127	0.163	10	1	Collector / Local Road	800	25
645	1127	1126	0.163	10	1	Collector / Local Road	800	25
646	629	1061	2.989	11	1	Major Arterial	1300	45
647	1061	629	2.989	11	1	Major Arterial	1300	45
648	1071	1075	0.732	11	1	Major Arterial	1300	45
649	1075	1071	0.732	11	1	Major Arterial	1300	45
650	1015	1130	1.419	11	1	Principal Arterial	1600	50
651	1130	1015	1.419	11	1	Principal Arterial	1600	50
652	1128	1131	0.869	10	1	Collector / Local Road	800	25
653	1131	1128	0.869	10	1	Collector / Local Road	800	25
654	1129	1131	0.42	10	1	Collector / Local Road	800	25
655	1131	1129	0.42	10	1	Collector / Local Road	800	25
656	1078	1116	0.278	11	1	Minor Arterial	1300	40
657	1116	1078	0.278	11	1	Minor Arterial	1300	40
658	1133	1134	0.074	11	1	Principal Arterial	1600	50
659	1134	1133	0.074	11	1	Principal Arterial	1600	45
660	634	1020	1.076	10	1	Collector / Local Road	800	25
661	1020	634	1.076	10	1	Collector / Local Road	800	25
662	1063	1136	0.164	11	1	Minor Arterial	1300	40
663	1136	1063	0.164	11	1	Minor Arterial	1300	40
664	1080	1109	1.837	11	1	Major Arterial	1300	50
665	1109	1080	1.837	11	1	Major Arterial	1300	50
666	1136	1137	2.24	11	1	Collector / Local Road	1300	40
667	1137	1136	2.24	11	1	Collector / Local Road	1300	40
668	1066	1138	0.372	10	1	Collector / Local Road	800	25
669	1138	1066	0.372	10	1	Collector / Local Road	800	25
670	1137	1139	2.281	11	1	Collector / Local Road	1300	50
671	1139	1137	2.281	11	1	Collector / Local Road	1300	50
672	1044	1140	0.562	10	1	Collector / Local Road	800	25
673	1140	1044	0.562	10	1	Collector / Local Road	800	25
674	1007	1020	4.406	10	1	Collector / Local Road	800	25
675	1020	1007	4.406	10	1	Collector / Local Road	800	25
676	634	1133	1.087	11	1	Principal Arterial	1600	50
677	1133	634	1.087	11	1	Principal Arterial	1600	50
678	1003	1141	1.329	11	1	Minor Arterial	1300	40
679	1141	1003	1.329	11	1	Minor Arterial	1300	40
680	1006	1141	5.249	10	1	Collector / Local Road	800	25
681	1141	1006	5.249	10	1	Collector / Local Road	800	25
682	1008	1132	0.977	10	1	Collector / Local Road	800	25
683	1132	1008	0.977	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
684	1027	1130	0.482	11	1	Major Arterial	1500	50
685	1130	1027	0.482	11	1	Major Arterial	1500	50
686	1093	1094	0.099	11	1	Collector / Local Road	1300	45
687	1094	1093	0.099	11	1	Collector / Local Road	1300	45
688	1094	1142	0.146	11	1	Ramp	1500	55
689	1142	628	0.682	11	1	Ramp	1500	55
690	1143	1142	0.249	11	1	Ramp	1500	55
691	1094	1143	0.231	11	1	Collector / Local Road	1300	45
692	1143	1094	0.231	11	1	Collector / Local Road	1300	45
693	1095	628	1.029	12	2	Freeway	4100	65
694	1144	1145	0.94	11	1	Ramp	1500	55
695	1143	1145	0.767	11	1	Collector / Local Road	1300	45
696	1145	1143	0.767	11	1	Collector / Local Road	1300	45
697	1099	1145	0.361	11	1	Collector / Local Road	1300	45
698	1145	1099	0.361	11	1	Collector / Local Road	1300	45
699	1026	1146	1.616	11	1	Major Arterial	1500	45
700	1146	1026	1.616	11	1	Major Arterial	1500	45
701	1146	1147	0.347	10	2	Collector / Local Road	1600	25
702	1147	1146	0.347	10	2	Collector / Local Road	1600	25
703	1115	1149	0.113	11	1	Major Arterial	1300	45
704	1149	1115	0.113	11	1	Major Arterial	1300	50
705	183	184	0.032	11	1	Major Arterial	1300	50
706	184	183	0.032	11	1	Major Arterial	1300	50
707	185	186	0.601	11	1	Minor Arterial	1700	40
708	186	185	0.601	11	1	Minor Arterial	1700	40
709	187	188	0.231	11	1	Principal Arterial	1700	45
710	188	187	0.231	11	1	Principal Arterial	1700	45
711	189	190	0.36	11	1	Minor Arterial	1300	40
712	190	189	0.36	11	1	Minor Arterial	1300	40
713	192	193	0.615	11	1	Major Arterial	1700	45
714	193	192	0.615	11	1	Major Arterial	1700	45
715	197	198	1.011	11	1	Minor Arterial	1300	40
716	198	197	1.011	11	1	Minor Arterial	1300	40
717	199	200	0.757	11	1	Minor Arterial	1300	40
718	200	199	0.757	11	1	Minor Arterial	1300	40
719	201	202	0.63	11	1	Principal Arterial	1600	40
720	202	201	0.63	11	1	Principal Arterial	1600	40
721	203	204	0.52	11	1	Principal Arterial	1600	40
722	204	203	0.52	11	1	Principal Arterial	1600	40
723	206	207	0.274	12	1	Principal Arterial	1600	35
724	207	206	0.274	12	1	Principal Arterial	1600	35
725	211	212	0.096	11	1	Major Arterial	1300	45
726	212	211	0.096	11	1	Major Arterial	1300	45
727	218	216	2.274	12	2	Freeway	4100	60
728	219	220	0.463	12	1	Ramp	1500	35
729	220	221	0.572	12	1	Ramp	1500	35
730	222	218	0.678	12	1	Ramp	1500	35
731	223	222	0.461	12	1	Ramp	1500	35
732	222	224	0.786	11	1	Major Arterial	1300	45
733	224	222	0.786	11	1	Major Arterial	1300	45
734	225	227	0.494	11	1	Minor Arterial	1300	40
735	227	225	0.494	11	1	Minor Arterial	1300	40
736	229	228	0.692	12	2	Freeway	4100	55
737	230	180	0.603	12	1	Ramp	1500	35
738	229	179	0.693	12	1	Ramp	1500	35
739	179	228	0.996	12	1	Ramp	1500	35
740	230	231	0.491	12	2	Freeway	4100	55

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
741	180	231	0.804	12	1	Ramp	1500	35
742	239	238	0.606	12	1	Ramp	1500	35
743	238	240	0.028	11	1	Major Arterial	1700	45
744	240	238	0.028	11	1	Major Arterial	1700	45
745	241	242	0.03	11	1	Major Arterial	1700	45
746	242	241	0.03	11	1	Major Arterial	1700	45
747	243	244	0.148	11	1	Major Arterial	1700	45
748	244	243	0.148	11	1	Major Arterial	1700	45
749	245	246	0.072	11	1	Major Arterial	1700	45
750	246	245	0.072	11	1	Major Arterial	1700	45
751	246	250	0.133	11	1	Minor Arterial	1700	40
752	250	246	0.133	11	1	Minor Arterial	1700	40
753	250	247	0.257	11	1	Minor Arterial	1700	40
754	262	263	0.059	11	1	Principal Arterial	1600	50
755	263	262	0.059	11	1	Principal Arterial	1600	45
756	261	266	0.859	11	1	Minor Arterial	1300	40
757	266	261	0.859	11	1	Minor Arterial	1300	40
758	268	269	0.102	11	1	Minor Arterial	1300	40
759	269	268	0.102	11	1	Minor Arterial	1300	40
760	260	270	0.734	11	1	Minor Arterial	1700	40
761	270	260	0.734	11	1	Minor Arterial	1700	40
762	267	272	2.024	12	1	Principal Arterial	1600	35
763	272	267	2.024	12	1	Principal Arterial	1600	35
764	268	273	1.362	11	1	Minor Arterial	1700	40
765	273	268	1.362	11	1	Minor Arterial	1700	40
766	272	276	1.058	12	1	Principal Arterial	1700	35
767	276	272	1.058	12	1	Principal Arterial	1700	35
768	182	276	0.093	12	1	Principal Arterial	1700	35
769	276	182	0.093	12	1	Principal Arterial	1700	35
770	182	277	0.517	12	1	Ramp	1500	35
771	181	275	0.551	12	1	Ramp	1500	35
772	280	181	0.823	12	1	Ramp	1500	35
773	283	284	1.735	10	1	Collector / Local Road	800	25
774	284	283	1.735	10	1	Collector / Local Road	800	25
775	285	286	0.193	11	1	Collector / Local Road	800	45
776	286	285	0.193	10	1	Collector / Local Road	800	25
777	287	288	0.056	11	1	Major Arterial	1300	45
778	288	287	0.056	11	1	Major Arterial	1300	45
779	290	292	0.965	11	1	Minor Arterial	1300	40
780	292	290	0.965	11	1	Minor Arterial	1300	40
781	293	294	0.252	12	1	Freeway	2051	50
782	294	293	0.252	12	1	Freeway	2051	50
783	205	207	0.311	12	1	Principal Arterial	1600	35
784	207	205	0.311	12	1	Principal Arterial	1600	35
785	208	296	2.819	11	1	Minor Arterial	1300	40
786	296	208	2.819	11	1	Minor Arterial	1300	40
787	203	205	1.982	12	1	Principal Arterial	1600	35
788	205	203	1.982	12	1	Principal Arterial	1600	35
789	202	204	2.085	11	1	Principal Arterial	1600	40
790	204	202	2.085	11	1	Principal Arterial	1600	40
791	192	194	0.446	11	1	Collector / Local Road	1700	40
792	194	192	0.446	11	1	Collector / Local Road	1700	40
793	185	189	1.853	11	1	Minor Arterial	1700	40
794	189	185	1.853	11	1	Minor Arterial	1700	40
795	183	185	4.34	11	1	Minor Arterial	1300	40
796	185	183	4.34	11	1	Minor Arterial	1300	40
797	285	298	2.797	11	1	Collector / Local Road	800	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
798	298	285	2.797	11	1	Collector / Local Road	800	45
799	274	300	1.854	10	1	Collector / Local Road	800	25
800	300	274	1.854	10	1	Collector / Local Road	800	25
801	264	301	3.641	10	1	Collector / Local Road	800	25
802	301	264	3.641	10	1	Collector / Local Road	800	25
803	265	269	1.664	11	1	Minor Arterial	1700	40
804	269	265	1.664	11	1	Minor Arterial	1700	40
805	299	302	0.2	11	1	Minor Arterial	1700	40
806	302	299	0.2	11	1	Minor Arterial	1700	40
807	254	257	0.682	11	1	Major Arterial	1300	45
808	257	254	0.682	11	1	Major Arterial	1300	45
809	238	242	0.289	11	1	Major Arterial	1700	45
810	242	238	0.289	11	1	Major Arterial	1700	45
811	220	222	0.466	11	1	Major Arterial	1300	45
812	222	220	0.466	11	1	Major Arterial	1300	45
813	308	275	0.266	12	2	Freeway	4100	55
814	280	308	1.103	12	2	Freeway	4100	50
815	315	316	0.068	11	1	Principal Arterial	1600	45
816	316	315	0.068	11	1	Principal Arterial	1600	45
817	317	318	2.654	11	1	Principal Arterial	1600	45
818	318	317	2.654	11	1	Principal Arterial	1600	45
819	172	324	3.448	10	1	Collector / Local Road	800	25
820	324	172	3.448	10	1	Collector / Local Road	800	25
821	335	336	0.052	12	1	Major Arterial	1300	35
822	336	335	0.052	12	1	Major Arterial	1300	35
823	342	343	0.203	12	1	Major Arterial	1300	35
824	343	342	0.203	12	1	Major Arterial	1300	35
825	344	345	1.685	11	1	Major Arterial	1300	45
826	345	344	1.685	11	1	Major Arterial	1300	45
827	345	349	0.571	11	1	Major Arterial	1300	45
828	349	345	0.571	11	1	Major Arterial	1300	45
829	351	352	1.721	11	1	Principal Arterial	1600	45
830	352	351	1.721	11	1	Principal Arterial	1600	45
831	356	357	0.245	11	1	Principal Arterial	1600	45
832	357	356	0.245	11	1	Principal Arterial	1600	45
833	138	360	0.7	11	1	Minor Arterial	1300	40
834	360	138	0.7	11	1	Minor Arterial	1300	40
835	329	362	0.842	10	1	Collector / Local Road	2000	25
836	362	329	0.842	10	1	Collector / Local Road	2000	25
837	363	364	1.223	11	1	Collector / Local Road	1800	40
838	364	363	1.223	11	1	Collector / Local Road	1800	40
839	367	368	0.378	10	1	Collector / Local Road	1300	35
840	368	367	0.378	10	1	Collector / Local Road	1300	35
841	326	370	0.126	10	1	Collector / Local Road	1700	35
842	370	326	0.126	11	1	Collector / Local Road	1700	40
843	383	384	0.429	10	1	Collector / Local Road	800	25
844	384	383	0.429	10	1	Collector / Local Road	800	25
845	324	389	0.579	11	1	Collector / Local Road	800	45
846	389	324	0.579	11	1	Collector / Local Road	800	45
847	392	393	2.115	10	1	Collector / Local Road	800	25
848	393	392	2.115	10	1	Collector / Local Road	800	25
849	395	396	0.145	10	1	Collector / Local Road	800	25
850	396	395	0.145	10	1	Collector / Local Road	800	25
851	398	399	1.469	10	1	Collector / Local Road	800	25
852	399	398	1.469	10	1	Collector / Local Road	800	25
853	319	400	2.617	11	1	Collector / Local Road	800	45
854	400	319	2.617	11	1	Collector / Local Road	800	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
855	403	404	1.425	10	1	Collector / Local Road	800	25
856	404	403	1.425	10	1	Collector / Local Road	800	25
857	318	405	0.247	10	1	Collector / Local Road	800	25
858	405	318	0.247	10	1	Collector / Local Road	800	25
859	420	421	0.097	10	1	Collector / Local Road	800	25
860	421	420	0.097	10	1	Collector / Local Road	800	25
861	423	424	0.798	10	1	Collector / Local Road	800	25
862	424	423	0.798	10	1	Collector / Local Road	800	25
863	312	351	0.599	11	1	Principal Arterial	1600	45
864	351	312	0.599	11	1	Principal Arterial	1600	45
865	431	432	0.551	11	1	Major Arterial	1300	45
866	432	431	0.551	11	1	Major Arterial	1300	45
867	165	436	0.336	11	1	Major Arterial	2000	45
868	436	165	0.336	11	1	Major Arterial	2000	45
869	437	438	0.006	12	1	Major Arterial	1700	25
870	438	437	0.006	11	1	Major Arterial	1700	45
871	441	442	0.245	11	1	Collector / Local Road	1300	40
872	442	441	0.245	11	1	Collector / Local Road	1300	40
873	443	445	2.016	11	1	Collector / Local Road	1300	45
874	445	443	2.016	11	1	Collector / Local Road	1300	45
875	443	444	0.576	11	1	Collector / Local Road	1300	45
876	444	443	0.576	11	1	Collector / Local Road	1300	45
877	447	449	0.619	11	1	Collector / Local Road	800	40
878	449	447	0.619	10	1	Collector / Local Road	800	25
879	455	456	1.628	10	1	Collector / Local Road	800	25
880	456	455	1.628	10	1	Collector / Local Road	800	25
881	457	458	0.084	11	1	Collector / Local Road	800	40
882	458	457	0.084	11	1	Collector / Local Road	800	40
883	449	459	0.154	11	1	Collector / Local Road	800	40
884	459	449	0.154	11	1	Collector / Local Road	800	40
885	456	457	0.973	11	1	Collector / Local Road	800	40
886	457	456	0.973	11	1	Collector / Local Road	800	40
887	462	463	0.202	11	1	Principal Arterial	1700	50
888	463	462	0.202	11	1	Principal Arterial	1700	50
889	479	482	1.05	11	1	Major Arterial	1300	45
890	482	479	1.05	11	1	Major Arterial	1300	45
891	480	484	0.295	10	1	Collector / Local Road	800	25
892	484	480	0.295	10	1	Collector / Local Road	800	25
893	429	485	2.252	11	1	Major Arterial	1800	45
894	485	429	2.252	11	1	Major Arterial	1800	45
895	488	489	0.587	12	1	Major Arterial	1300	25
896	489	488	0.587	12	1	Major Arterial	1300	25
897	491	492	0.21	11	1	Major Arterial	1800	45
898	492	491	0.21	11	1	Major Arterial	1800	45
899	490	494	0.737	10	1	Collector / Local Road	800	25
900	494	490	0.737	10	1	Collector / Local Road	800	25
901	507	508	0.104	12	1	Major Arterial	1300	35
902	508	507	0.104	11	1	Major Arterial	1300	45
903	500	509	0.003	12	1	Major Arterial	1700	30
904	509	500	0.003	11	1	Major Arterial	1700	45
905	516	517	1.7	10	1	Collector / Local Road	800	25
906	517	516	1.7	10	1	Collector / Local Road	800	25
907	493	518	1.605	10	1	Collector / Local Road	800	25
908	518	493	1.605	10	1	Collector / Local Road	800	25
909	365	523	0.373	11	1	Major Arterial	1700	45
910	523	365	0.373	11	1	Major Arterial	1700	45
911	523	524	0.085	11	1	Major Arterial	1300	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
912	524	523	0.085	11	1	Major Arterial	1300	45
913	327	135	1.458	11	2	Principal Arterial	3200	45
914	425	426	2.503	10	1	Collector / Local Road	800	25
915	426	425	2.503	10	1	Collector / Local Road	800	25
916	480	482	1.469	10	1	Collector / Local Road	800	25
917	482	480	1.469	10	1	Collector / Local Road	800	25
918	422	424	2.322	10	1	Collector / Local Road	800	25
919	424	422	2.322	10	1	Collector / Local Road	800	25
920	413	528	0.59	10	1	Collector / Local Road	800	25
921	528	413	0.59	10	1	Collector / Local Road	800	25
922	451	452	2.283	10	1	Collector / Local Road	800	25
923	452	451	2.283	10	1	Collector / Local Road	800	25
924	311	399	1.331	10	1	Collector / Local Road	800	25
925	399	311	1.331	10	1	Collector / Local Road	800	25
926	534	535	1.186	10	1	Collector / Local Road	800	25
927	535	534	1.186	10	1	Collector / Local Road	800	25
928	391	534	2.432	10	1	Collector / Local Road	800	25
929	534	391	2.432	10	1	Collector / Local Road	800	25
930	172	393	1.443	10	1	Collector / Local Road	800	25
931	393	172	1.443	10	1	Collector / Local Road	800	25
932	390	536	1.294	10	1	Collector / Local Road	800	25
933	536	390	1.294	10	1	Collector / Local Road	800	25
934	379	541	0.396	10	1	Collector / Local Road	800	25
935	541	379	0.396	10	1	Collector / Local Road	800	25
936	313	315	1.071	11	1	Principal Arterial	1600	40
937	315	313	1.071	11	1	Principal Arterial	1600	40
938	188	374	0.148	11	2	Principal Arterial	3200	45
939	374	188	0.148	11	2	Principal Arterial	3200	45
940	335	553	0.037	12	2	Major Arterial	2600	35
941	553	335	0.037	12	2	Major Arterial	2600	35
942	320	394	0.923	11	1	Principal Arterial	1600	45
943	394	320	0.923	11	1	Principal Arterial	1600	45
944	528	555	1.476	10	1	Collector / Local Road	800	25
945	555	528	1.476	10	1	Collector / Local Road	800	25
946	330	338	3.712	11	2	Major Arterial	3100	45
947	338	330	3.712	11	2	Major Arterial	3100	45
948	341	342	1.21	12	1	Major Arterial	1700	35
949	342	341	1.21	12	1	Major Arterial	1700	35
950	343	344	0.852	11	1	Major Arterial	1300	55
951	344	343	0.852	11	1	Major Arterial	1300	55
952	386	387	0.628	12	1	Major Arterial	1700	35
953	387	386	0.628	12	1	Major Arterial	1700	35
954	562	563	0.152	11	1	Major Arterial	1800	45
955	563	562	0.152	11	1	Major Arterial	1800	45
956	364	565	1.828	11	1	Minor Arterial	1800	40
957	565	364	1.828	11	1	Minor Arterial	1800	40
958	322	566	1.384	11	1	Minor Arterial	1300	40
959	566	322	1.384	12	1	Minor Arterial	1300	35
960	567	568	0.119	11	1	Major Arterial	1700	50
961	568	567	0.119	11	1	Major Arterial	1700	50
962	369	571	0.019	10	1	Collector / Local Road	1700	35
963	571	369	0.019	11	1	Collector / Local Road	1700	40
964	142	170	0.063	11	1	Major Arterial	2000	45
965	170	142	0.063	11	1	Major Arterial	2000	45
966	142	169	0.024	11	1	Major Arterial	2000	45
967	169	142	0.024	11	1	Major Arterial	2000	45
968	574	147	0.688	12	2	Freeway	4100	65

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
969	150	140	1.193	12	2	Freeway	4100	65
970	462	464	0.582	11	1	Principal Arterial	1700	50
971	464	462	0.582	11	1	Principal Arterial	1700	50
972	577	578	0.087	11	1	Major Arterial	1800	40
973	578	577	0.087	11	1	Major Arterial	1800	40
974	448	580	1.394	11	1	Principal Arterial	1800	55
975	580	448	1.394	11	1	Principal Arterial	1800	55
976	579	580	0.024	11	1	Principal Arterial	1600	55
977	580	579	0.024	11	1	Principal Arterial	1600	45
978	492	584	1.147	11	1	Collector / Local Road	1300	40
979	584	492	1.147	11	1	Collector / Local Road	1300	40
980	489	508	0.483	12	1	Major Arterial	1300	35
981	508	489	0.483	12	1	Major Arterial	1300	35
982	490	492	1.216	11	1	Major Arterial	1800	45
983	492	490	1.216	11	1	Major Arterial	1800	45
984	585	587	0.962	10	1	Collector / Local Road	800	25
985	587	585	0.962	10	1	Collector / Local Road	800	25
986	486	585	3.114	10	1	Collector / Local Road	800	25
987	585	486	3.114	10	1	Collector / Local Road	800	25
988	423	425	1.071	10	1	Collector / Local Road	800	25
989	425	423	1.071	10	1	Collector / Local Road	800	25
990	352	412	0.011	11	1	Principal Arterial	1600	50
991	412	352	0.011	11	1	Principal Arterial	1600	45
992	373	374	1.159	11	1	Principal Arterial	1700	45
993	374	373	1.159	11	1	Principal Arterial	1700	45
994	363	590	1.061	11	1	Major Arterial	1700	45
995	590	363	1.061	11	1	Major Arterial	1700	45
996	401	556	2.472	10	1	Collector / Local Road	800	25
997	556	401	2.472	10	1	Collector / Local Road	800	25
998	549	592	0.072	11	2	Major Arterial	3100	45
999	592	549	0.072	11	2	Major Arterial	3100	45
1000	549	593	0.11	11	1	Principal Arterial	1600	55
1001	593	549	0.11	11	2	Principal Arterial	3200	45
1002	316	593	0.039	11	1	Principal Arterial	1600	55
1003	593	316	0.039	11	1	Principal Arterial	1600	55
1004	313	417	1.57	11	1	Principal Arterial	1600	40
1005	417	313	1.57	11	1	Principal Arterial	1600	40
1006	529	594	0.975	10	1	Collector / Local Road	800	25
1007	594	529	0.975	10	1	Collector / Local Road	800	25
1008	416	594	1.128	10	1	Collector / Local Road	800	25
1009	594	416	1.128	10	1	Collector / Local Road	800	25
1010	545	595	1.793	10	1	Collector / Local Road	800	25
1011	595	545	1.793	10	1	Collector / Local Road	800	25
1012	526	596	1.109	10	1	Collector / Local Road	800	25
1013	596	526	1.109	10	1	Collector / Local Road	800	25
1014	323	371	2.673	10	1	Collector / Local Road	1800	35
1015	371	323	2.673	10	1	Collector / Local Road	1800	35
1016	326	371	1.661	10	1	Collector / Local Road	800	35
1017	371	326	1.661	10	1	Collector / Local Road	800	35
1018	458	597	0.575	10	1	Collector / Local Road	800	25
1019	597	458	0.575	10	1	Collector / Local Road	800	25
1020	383	598	0.52	10	1	Collector / Local Road	800	25
1021	598	383	0.52	10	1	Collector / Local Road	800	25
1022	362	368	3.13	10	1	Collector / Local Road	2000	35
1023	368	362	3.13	10	1	Collector / Local Road	2000	35
1024	566	600	0.109	11	1	Major Arterial	1800	40
1025	600	566	0.109	11	1	Major Arterial	1800	40

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1026	427	600	0.108	11	1	Major Arterial	1800	40
1027	600	427	0.108	11	1	Major Arterial	1800	40
1028	494	584	0.275	11	1	Collector / Local Road	1300	45
1029	584	494	0.275	11	1	Collector / Local Road	1300	40
1030	494	588	1.78	11	1	Collector / Local Road	1300	45
1031	588	494	1.78	11	1	Collector / Local Road	1300	45
1032	273	602	0.06	11	1	Minor Arterial	1700	40
1033	602	273	0.06	11	1	Minor Arterial	1700	40
1034	445	603	0.211	11	1	Collector / Local Road	1300	45
1035	603	445	0.211	11	1	Collector / Local Road	1300	40
1036	588	603	0.032	11	1	Collector / Local Road	1300	45
1037	603	588	0.032	11	1	Collector / Local Road	1300	40
1038	444	604	0.089	11	1	Collector / Local Road	1300	45
1039	604	444	0.089	11	1	Collector / Local Road	1300	40
1040	1139	1152	0.307	11	1	Collector / Local Road	1300	45
1041	1152	1139	0.307	11	1	Collector / Local Road	1300	45
1042	1139	1154	0.283	11	1	Major Arterial	1300	45
1043	1154	1139	0.283	11	1	Major Arterial	1300	45
1044	730	1155	1.441	11	1	Major Arterial	1300	50
1045	1155	730	1.441	11	1	Major Arterial	1300	50
1046	1157	666	0.865	11	2	Principal Arterial	3600	50
1047	669	1157	0.339	11	2	Principal Arterial	3600	50
1048	665	1158	0.63	11	2	Principal Arterial	3600	50
1049	1158	669	0.559	11	2	Principal Arterial	3600	50
1050	954	1159	0.702	11	2	Principal Arterial	3200	45
1051	1159	954	0.702	11	2	Principal Arterial	3200	45
1052	666	1159	0.081	11	2	Principal Arterial	3200	45
1053	1159	666	0.081	11	2	Principal Arterial	3200	45
1054	1160	670	1.813	11	2	Principal Arterial	3600	50
1055	671	1161	1.801	11	2	Principal Arterial	3600	50
1056	666	1160	0.071	11	2	Principal Arterial	3600	50
1057	1159	1160	0.096	10	1	Collector / Local Road	800	25
1058	1161	665	0.092	11	2	Principal Arterial	3600	50
1059	665	1162	0.116	11	1	Major Arterial	1700	45
1060	1162	665	0.116	11	1	Major Arterial	1700	45
1061	1161	1162	0.186	10	1	Collector / Local Road	800	25
1062	1164	1163	0.17	11	2	Principal Arterial	3600	50
1063	1163	1166	0.054	11	1	Major Arterial	1700	45
1064	1166	1163	0.054	11	1	Major Arterial	1700	45
1065	1164	1167	0.196	10	1	Collector / Local Road	800	25
1066	1163	1167	0.153	11	1	Major Arterial	1700	45
1067	1167	1163	0.153	11	1	Major Arterial	1700	45
1068	1166	1168	0.137	11	1	Major Arterial	1700	45
1069	1168	1166	0.137	11	1	Major Arterial	1700	45
1070	1169	1166	0.124	11	2	Principal Arterial	3600	50
1071	1169	1168	0.105	10	1	Collector / Local Road	800	25
1072	1163	1170	0.228	11	2	Principal Arterial	3600	50
1073	1171	1169	0.454	11	2	Principal Arterial	3600	50
1074	959	1173	0.583	11	1	Major Arterial	1700	50
1075	1173	959	0.583	11	1	Major Arterial	1700	50
1076	914	1174	1.838	11	2	Principal Arterial	3600	50
1077	1174	956	1.054	11	2	Principal Arterial	3600	50
1078	956	1175	0.908	11	1	Major Arterial	1700	50
1079	1175	956	0.908	11	1	Major Arterial	1700	50
1080	518	605	1.614	10	1	Collector / Local Road	800	25
1081	605	518	1.614	10	1	Collector / Local Road	800	25
1082	605	606	0.975	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1083	606	605	0.975	10	1	Collector / Local Road	800	25
1084	362	1176	0.653	10	2	Collector / Local Road	2000	25
1085	1176	362	0.653	10	1	Collector / Local Road	2000	25
1086	385	1179	0.181	10	1	Collector / Local Road	800	25
1087	1179	385	0.181	10	1	Collector / Local Road	800	25
1088	531	1180	0.974	10	1	Collector / Local Road	800	25
1089	1180	531	0.974	10	1	Collector / Local Road	800	25
1090	408	1182	1.283	10	1	Collector / Local Road	800	25
1091	1182	408	1.283	10	1	Collector / Local Road	800	25
1092	415	1183	2.514	10	1	Collector / Local Road	800	25
1093	1183	415	2.514	10	1	Collector / Local Road	800	25
1094	554	1183	0.748	10	1	Collector / Local Road	800	25
1095	1183	554	0.748	10	1	Collector / Local Road	800	25
1096	314	1184	1.009	10	1	Collector / Local Road	800	25
1097	1184	314	1.009	10	1	Collector / Local Road	800	25
1098	421	1185	2.1	10	1	Collector / Local Road	800	25
1099	1185	421	2.1	10	1	Collector / Local Road	800	25
1100	309	1186	1.201	10	1	Collector / Local Road	800	25
1101	1186	309	1.201	10	1	Collector / Local Road	800	25
1102	354	1187	2.652	11	1	Collector / Local Road	800	40
1103	1187	354	2.652	11	1	Collector / Local Road	800	40
1104	416	1190	2.503	10	1	Collector / Local Road	800	25
1105	1190	416	2.503	10	1	Collector / Local Road	800	25
1106	420	1190	2.088	10	1	Collector / Local Road	800	25
1107	1190	420	2.088	10	1	Collector / Local Road	800	25
1108	1030	1191	0.588	10	1	Collector / Local Road	800	25
1109	1191	1030	0.588	10	1	Collector / Local Road	800	25
1110	1104	1194	0.442	10	1	Collector / Local Road	800	25
1111	1194	1104	0.442	10	1	Collector / Local Road	800	25
1112	569	1195	0.185	10	1	Collector / Local Road	800	25
1113	1195	569	0.185	10	1	Collector / Local Road	800	25
1114	527	1196	0.796	11	1	Collector / Local Road	2000	40
1115	1196	527	0.796	11	1	Collector / Local Road	2000	40
1116	1196	1197	0.398	10	1	Collector / Local Road	2000	25
1117	1197	1196	0.398	10	1	Collector / Local Road	2000	25
1118	557	1199	1.25	10	1	Collector / Local Road	800	25
1119	1199	557	1.25	10	1	Collector / Local Road	800	25
1120	455	1201	0.436	10	1	Collector / Local Road	800	25
1121	1201	455	0.436	10	1	Collector / Local Road	800	25
1122	471	1202	0.307	10	1	Collector / Local Road	800	25
1123	1202	471	0.307	10	1	Collector / Local Road	800	25
1124	473	1202	1.216	10	1	Collector / Local Road	800	25
1125	1202	473	1.216	10	1	Collector / Local Road	800	25
1126	581	1203	2.022	10	1	Collector / Local Road	800	25
1127	1203	581	2.022	10	1	Collector / Local Road	800	25
1128	486	1203	2.499	10	1	Collector / Local Road	800	25
1129	1203	486	2.499	10	1	Collector / Local Road	800	25
1130	445	1204	0.548	10	1	Collector / Local Road	800	25
1131	1204	445	0.548	10	1	Collector / Local Road	800	25
1132	443	1205	0.313	10	1	Collector / Local Road	800	25
1133	1205	443	0.313	10	1	Collector / Local Road	800	25
1134	699	1207	1.42	10	1	Collector / Local Road	800	25
1135	1207	699	1.42	10	1	Collector / Local Road	800	25
1136	691	1207	2.174	10	1	Collector / Local Road	800	25
1137	1207	691	2.174	10	1	Collector / Local Road	800	25
1138	687	1208	2.506	10	1	Collector / Local Road	800	25
1139	1208	687	2.506	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1140	704	1208	3.023	10	1	Collector / Local Road	800	25
1141	1208	704	3.023	10	1	Collector / Local Road	800	25
1142	928	1209	1.419	11	1	Major Arterial	1300	45
1143	1209	928	1.419	11	1	Major Arterial	1300	45
1144	612	1209	1.277	11	1	Major Arterial	1300	45
1145	1209	612	1.277	11	1	Major Arterial	1300	45
1146	927	1210	1.714	10	1	Collector / Local Road	800	25
1147	1210	927	1.714	10	1	Collector / Local Road	800	25
1148	713	1210	1.678	10	1	Collector / Local Road	800	25
1149	1210	713	1.678	10	1	Collector / Local Road	800	25
1150	654	1211	1.299	11	1	Major Arterial	1800	45
1151	1211	654	1.299	11	1	Major Arterial	1800	45
1152	950	1212	1.787	10	1	Collector / Local Road	800	25
1153	1212	950	1.787	10	1	Collector / Local Road	800	25
1154	754	1214	3.633	10	1	Collector / Local Road	800	25
1155	1214	754	3.633	10	1	Collector / Local Road	800	25
1156	728	1214	2.743	10	1	Collector / Local Road	800	25
1157	1214	728	2.743	10	1	Collector / Local Road	800	25
1158	686	1215	1.751	10	1	Collector / Local Road	800	25
1159	1215	686	1.751	10	1	Collector / Local Road	800	25
1160	698	1216	1.958	10	1	Collector / Local Road	800	25
1161	1216	698	1.958	10	1	Collector / Local Road	800	25
1162	676	1217	0.324	10	1	Collector / Local Road	800	25
1163	1217	676	0.324	10	1	Collector / Local Road	800	25
1164	480	1218	0.533	10	1	Collector / Local Road	800	25
1165	1218	480	0.533	10	1	Collector / Local Road	800	25
1166	479	1218	0.715	10	1	Collector / Local Road	800	25
1167	1218	479	0.715	10	1	Collector / Local Road	800	25
1168	675	1220	1.447	10	1	Collector / Local Road	800	25
1169	1220	675	1.447	10	1	Collector / Local Road	800	25
1170	937	1223	0.464	10	1	Collector / Local Road	800	25
1171	1223	937	0.464	10	1	Collector / Local Road	800	25
1172	740	1223	0.638	10	1	Collector / Local Road	800	25
1173	1223	740	0.638	10	1	Collector / Local Road	800	25
1174	718	1224	1.24	10	1	Collector / Local Road	800	25
1175	1224	718	1.24	10	1	Collector / Local Road	800	25
1176	717	1224	1.683	10	1	Collector / Local Road	800	25
1177	1224	717	1.683	10	1	Collector / Local Road	800	25
1178	724	1225	1.305	10	1	Collector / Local Road	800	25
1179	1225	724	1.305	10	1	Collector / Local Road	800	25
1180	712	1225	1.43	10	1	Collector / Local Road	800	25
1181	1225	712	1.43	10	1	Collector / Local Road	800	25
1182	819	1228	0.96	11	1	Minor Arterial	1300	40
1183	1228	819	0.96	11	1	Minor Arterial	1300	40
1184	170	143	0.061	12	1	Ramp	1500	30
1185	1	591	0.608	10	1	Collector / Local Road	1500	25
1186	591	1	0.608	10	1	Collector / Local Road	1500	25
1187	2	1202	0.494	10	1	Collector / Local Road	800	25
1188	1202	2	0.494	10	1	Collector / Local Road	800	25
1189	3	1218	0.572	10	1	Collector / Local Road	800	25
1190	1218	3	0.572	10	1	Collector / Local Road	800	25
1191	4	454	0.75	10	1	Collector / Local Road	1200	25
1192	454	4	0.75	10	1	Collector / Local Road	1200	25
1193	5	597	2.17	10	1	Collector / Local Road	800	25
1194	597	5	2.17	10	1	Collector / Local Road	800	25
1195	6	516	1.175	10	1	Collector / Local Road	800	25
1196	516	6	1.175	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1197	7	1201	0.752	10	1	Collector / Local Road	800	25
1198	1201	7	0.752	10	1	Collector / Local Road	800	25
1199	8	452	1.668	10	1	Collector / Local Road	800	25
1200	452	8	1.668	10	1	Collector / Local Road	800	25
1201	9	1203	0.031	10	1	Collector / Local Road	800	25
1202	1203	9	0.031	10	1	Collector / Local Road	800	25
1203	10	1204	1.276	10	1	Collector / Local Road	800	25
1204	1204	10	1.276	10	1	Collector / Local Road	800	25
1205	10	1205	0.681	10	1	Collector / Local Road	800	25
1206	1205	10	0.681	10	1	Collector / Local Road	800	25
1207	11	528	0.875	10	1	Collector / Local Road	800	25
1208	528	11	0.875	10	1	Collector / Local Road	800	25
1209	12	1184	0.312	10	1	Collector / Local Road	800	25
1210	1184	12	0.312	10	1	Collector / Local Road	800	25
1211	13	401	1.204	10	1	Collector / Local Road	800	25
1212	401	13	1.204	10	1	Collector / Local Road	800	25
1213	14	1200	0.375	10	1	Collector / Local Road	800	25
1214	1200	14	0.375	10	1	Collector / Local Road	800	25
1215	15	1182	0.81	10	1	Collector / Local Road	800	25
1216	1182	15	0.81	10	1	Collector / Local Road	800	25
1217	16	1183	0.131	10	1	Collector / Local Road	800	25
1218	1183	16	0.131	10	1	Collector / Local Road	800	25
1219	17	1185	0.196	10	1	Collector / Local Road	800	25
1220	1185	17	0.196	10	1	Collector / Local Road	800	25
1221	18	1190	0.409	10	1	Collector / Local Road	800	25
1222	1190	18	0.409	10	1	Collector / Local Road	800	25
1223	19	1186	0.662	10	1	Collector / Local Road	800	25
1224	1186	19	0.662	10	1	Collector / Local Road	800	25
1225	20	398	1.513	10	1	Collector / Local Road	800	25
1226	398	20	1.513	10	1	Collector / Local Road	800	25
1227	21	407	0.68	10	1	Collector / Local Road	800	25
1228	407	21	0.68	10	1	Collector / Local Road	800	25
1229	22	596	0.669	10	1	Collector / Local Road	800	25
1230	596	22	0.669	10	1	Collector / Local Road	800	25
1231	23	1187	0.151	10	1	Collector / Local Road	800	25
1232	1187	23	0.151	10	1	Collector / Local Road	800	25
1233	24	1188	0.446	10	1	Collector / Local Road	800	25
1234	1188	24	0.446	10	1	Collector / Local Road	800	25
1235	24	1189	0.734	10	1	Collector / Local Road	800	25
1236	1189	24	0.734	10	1	Collector / Local Road	800	25
1237	25	1199	1.346	10	1	Collector / Local Road	800	25
1238	1199	25	1.346	10	1	Collector / Local Road	800	25
1239	26	599	1.43	10	1	Collector / Local Road	800	25
1240	599	26	1.43	10	1	Collector / Local Road	800	25
1241	27	598	0.612	10	1	Collector / Local Road	800	25
1242	598	27	0.612	10	1	Collector / Local Road	800	25
1243	28	1179	0.548	10	1	Collector / Local Road	800	25
1244	1179	28	0.548	10	1	Collector / Local Road	800	25
1245	29	395	1.408	10	1	Collector / Local Road	800	25
1246	395	29	1.408	10	1	Collector / Local Road	800	25
1247	30	1181	0.089	10	1	Collector / Local Road	800	25
1248	1181	30	0.089	10	1	Collector / Local Road	800	25
1249	31	535	1.702	10	1	Collector / Local Road	800	25
1250	535	31	1.702	10	1	Collector / Local Road	800	25
1251	32	595	1.282	10	1	Collector / Local Road	800	25
1252	595	32	1.282	10	1	Collector / Local Road	800	25
1253	33	300	0.088	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1254	300	33	0.088	10	1	Collector / Local Road	800	25
1255	34	295	1.207	10	1	Collector / Local Road	800	25
1256	295	34	1.207	10	1	Collector / Local Road	800	25
1257	35	284	0.531	10	1	Collector / Local Road	800	25
1258	284	35	0.531	10	1	Collector / Local Road	800	25
1259	36	1014	0.923	10	1	Collector / Local Road	800	25
1260	1014	36	0.923	10	1	Collector / Local Road	800	25
1261	37	1192	0.199	10	1	Collector / Local Road	800	25
1262	1192	37	0.199	10	1	Collector / Local Road	800	25
1263	38	1044	0.479	10	1	Collector / Local Road	800	25
1264	1044	38	0.479	10	1	Collector / Local Road	800	25
1265	39	1191	0.552	10	1	Collector / Local Road	800	25
1266	1191	39	0.552	10	1	Collector / Local Road	800	25
1267	40	1121	0.693	10	1	Collector / Local Road	800	25
1268	1121	40	0.693	10	1	Collector / Local Road	800	25
1269	41	1109	0.632	10	1	Collector / Local Road	800	25
1270	1109	41	0.632	10	1	Collector / Local Road	800	25
1271	42	1050	0.586	10	1	Collector / Local Road	800	25
1272	1050	42	0.586	10	1	Collector / Local Road	800	25
1273	43	1138	0.226	10	1	Collector / Local Road	800	25
1274	1138	43	0.226	10	1	Collector / Local Road	800	25
1275	44	1062	2.066	10	1	Collector / Local Road	800	25
1276	1062	44	2.066	10	1	Collector / Local Road	800	25
1277	44	1120	2.509	10	1	Collector / Local Road	800	25
1278	1120	44	2.509	10	1	Collector / Local Road	800	25
1279	45	1217	0.691	10	1	Collector / Local Road	800	25
1280	1217	45	0.691	10	1	Collector / Local Road	800	25
1281	46	994	0.893	10	1	Collector / Local Road	800	25
1282	994	46	0.893	10	1	Collector / Local Road	800	25
1283	47	1219	0.819	10	1	Collector / Local Road	800	25
1284	1219	47	0.819	10	1	Collector / Local Road	800	25
1285	48	1220	1.175	10	1	Collector / Local Road	800	25
1286	1220	48	1.175	10	1	Collector / Local Road	800	25
1287	49	1221	1.271	10	1	Collector / Local Road	800	25
1288	1221	49	1.271	10	1	Collector / Local Road	800	25
1289	50	521	1.507	10	1	Collector / Local Road	800	25
1290	521	50	1.507	10	1	Collector / Local Road	800	25
1291	51	1209	2.008	10	1	Collector / Local Road	800	25
1292	1209	51	2.008	10	1	Collector / Local Road	800	25
1293	52	978	0.525	10	1	Collector / Local Road	800	25
1294	978	52	0.525	10	1	Collector / Local Road	800	25
1295	53	943	0.508	10	1	Collector / Local Road	800	25
1296	943	53	0.508	10	1	Collector / Local Road	800	25
1297	54	1210	0.29	10	1	Collector / Local Road	800	25
1298	1210	54	0.29	10	1	Collector / Local Road	800	25
1299	55	755	0.618	10	1	Collector / Local Road	800	25
1300	755	55	0.618	10	1	Collector / Local Road	800	25
1301	56	697	0.454	10	1	Collector / Local Road	800	25
1302	697	56	0.454	10	1	Collector / Local Road	800	25
1303	57	1214	1.274	10	1	Collector / Local Road	800	25
1304	1214	57	1.274	10	1	Collector / Local Road	800	25
1305	58	1216	0.612	10	1	Collector / Local Road	800	25
1306	1216	58	0.612	10	1	Collector / Local Road	800	25
1307	59	926	1.199	10	1	Collector / Local Road	800	25
1308	926	59	1.199	10	1	Collector / Local Road	800	25
1309	60	1222	0.769	10	1	Collector / Local Road	800	25
1310	1222	60	0.769	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1311	61	1215	0.649	10	1	Collector / Local Road	800	25
1312	1215	61	0.649	10	1	Collector / Local Road	800	25
1313	62	1213	1.221	10	1	Collector / Local Road	800	25
1314	1213	62	1.221	10	1	Collector / Local Road	800	25
1315	63	1223	1.533	10	1	Collector / Local Road	800	25
1316	1223	63	1.533	10	1	Collector / Local Road	800	25
1317	64	1227	1.343	10	1	Collector / Local Road	800	25
1318	1227	64	1.343	10	1	Collector / Local Road	800	25
1319	65	742	1.053	10	1	Collector / Local Road	800	25
1320	742	65	1.053	10	1	Collector / Local Road	800	25
1321	66	770	0.762	10	1	Collector / Local Road	800	25
1322	770	66	0.762	10	1	Collector / Local Road	800	25
1323	67	973	0.991	10	1	Collector / Local Road	800	25
1324	973	67	0.991	10	1	Collector / Local Road	800	25
1325	68	941	0.794	10	1	Collector / Local Road	800	25
1326	941	68	0.794	10	1	Collector / Local Road	800	25
1327	69	1224	0.617	10	1	Collector / Local Road	800	25
1328	1224	69	0.617	10	1	Collector / Local Road	800	25
1329	70	1225	0.015	10	1	Collector / Local Road	800	25
1330	1225	70	0.015	10	1	Collector / Local Road	800	25
1331	71	694	0.61	10	1	Collector / Local Road	800	25
1332	694	71	0.61	10	1	Collector / Local Road	800	25
1333	72	1208	0.01	10	1	Collector / Local Road	800	25
1334	1208	72	0.01	10	1	Collector / Local Road	800	25
1335	73	1226	0.677	10	1	Collector / Local Road	800	25
1336	1226	73	0.677	10	1	Collector / Local Road	800	25
1337	74	1001	0.431	10	1	Collector / Local Road	800	25
1338	1001	74	0.431	10	1	Collector / Local Road	800	25
1339	75	587	1.786	10	1	Collector / Local Road	800	25
1340	587	75	1.786	10	1	Collector / Local Road	800	25
1341	76	575	1.231	10	1	Collector / Local Road	800	25
1342	575	76	1.231	10	1	Collector / Local Road	800	25
1343	77	1207	0.181	10	1	Collector / Local Road	800	25
1344	1207	77	0.181	10	1	Collector / Local Road	800	25
1345	78	734	1.853	10	1	Collector / Local Road	800	25
1346	734	78	1.853	10	1	Collector / Local Road	800	25
1347	79	1211	0.605	10	1	Collector / Local Road	800	25
1348	1211	79	0.605	10	1	Collector / Local Road	800	25
1349	80	1177	0.432	10	1	Collector / Local Road	800	25
1350	1177	80	0.432	10	1	Collector / Local Road	800	25
1351	80	1178	0.534	10	1	Collector / Local Road	800	25
1352	1178	80	0.534	10	1	Collector / Local Road	800	25
1353	81	1193	0.682	10	1	Collector / Local Road	800	25
1354	1193	81	0.682	10	1	Collector / Local Road	800	25
1355	82	1114	0.133	10	1	Collector / Local Road	800	25
1356	1114	82	0.133	10	1	Collector / Local Road	800	25
1357	83	1085	1.122	10	1	Collector / Local Road	800	25
1358	1085	83	1.122	10	1	Collector / Local Road	800	25
1359	84	789	2.382	10	1	Collector / Local Road	800	25
1360	789	84	2.382	10	1	Collector / Local Road	800	25
1361	85	824	0.363	10	1	Collector / Local Road	800	25
1362	824	85	0.363	10	1	Collector / Local Road	800	25
1363	86	842	0.968	10	1	Collector / Local Road	800	25
1364	842	86	0.968	10	1	Collector / Local Road	800	25
1365	87	993	0.784	10	1	Collector / Local Road	800	25
1366	993	87	0.784	10	1	Collector / Local Road	800	25
1367	88	965	0.812	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1368	965	88	0.812	10	1	Collector / Local Road	800	25
1369	89	616	1.083	10	1	Collector / Local Road	800	25
1370	616	89	1.083	10	1	Collector / Local Road	800	25
1371	90	615	0.575	10	1	Collector / Local Road	800	25
1372	615	90	0.575	10	1	Collector / Local Road	800	25
1373	91	541	0.412	10	1	Collector / Local Road	800	25
1374	541	91	0.412	10	1	Collector / Local Road	800	25
1375	92	1212	0.725	10	1	Collector / Local Road	800	25
1376	1212	92	0.725	10	1	Collector / Local Road	800	25
1377	93	791	1.633	10	1	Collector / Local Road	800	25
1378	791	93	1.633	10	1	Collector / Local Road	800	25
1379	93	986	1.093	10	1	Collector / Local Road	800	25
1380	986	93	1.093	10	1	Collector / Local Road	800	25
1381	94	1228	0.416	10	1	Collector / Local Road	800	25
1382	1228	94	0.416	10	1	Collector / Local Road	800	25
1383	95	775	1.019	10	1	Collector / Local Road	800	25
1384	775	95	1.019	10	1	Collector / Local Road	800	25
1385	96	920	0.852	10	1	Collector / Local Road	800	25
1386	920	96	0.852	10	1	Collector / Local Road	800	25
1387	97	763	1.511	10	1	Collector / Local Road	800	25
1388	763	97	1.511	10	1	Collector / Local Road	800	25
1389	98	720	3.579	10	1	Collector / Local Road	800	25
1390	720	98	3.579	10	1	Collector / Local Road	800	25
1391	99	1206	1.022	10	1	Collector / Local Road	800	25
1392	1206	99	1.022	10	1	Collector / Local Road	800	25
1393	100	606	0.201	10	1	Collector / Local Road	800	25
1394	606	100	0.201	10	1	Collector / Local Road	800	25
1395	101	380	0.858	10	1	Collector / Local Road	800	25
1396	380	101	0.858	10	1	Collector / Local Road	800	25
1397	102	536	0.755	10	1	Collector / Local Road	800	25
1398	536	102	0.755	10	1	Collector / Local Road	800	25
1399	103	1180	0.221	10	1	Collector / Local Road	800	25
1400	1180	103	0.221	10	1	Collector / Local Road	800	25
1401	104	301	0.581	10	1	Collector / Local Road	800	25
1402	301	104	0.581	10	1	Collector / Local Road	800	25
1403	105	435	0.881	10	1	Collector / Local Road	800	25
1404	435	105	0.881	10	1	Collector / Local Road	800	25
1405	106	1198	0.832	10	1	Collector / Local Road	800	25
1406	1198	106	0.832	10	1	Collector / Local Road	800	25
1407	107	1127	0.21	10	1	Collector / Local Road	800	25
1408	1127	107	0.21	10	1	Collector / Local Road	800	25
1409	108	297	0.948	10	1	Collector / Local Road	1500	25
1410	297	108	0.948	10	1	Collector / Local Road	1500	25
1411	109	1176	0.279	10	1	Collector / Local Road	2000	25
1412	1176	109	0.279	10	2	Collector / Local Road	2000	25
1413	110	1195	0.255	10	1	Collector / Local Road	800	25
1414	1195	110	0.255	10	1	Collector / Local Road	800	25
1415	111	1197	0.197	10	1	Collector / Local Road	2000	25
1416	1197	111	0.197	10	1	Collector / Local Road	2000	25
1417	112	1147	0.124	10	1	Collector / Local Road	800	25
1418	1147	112	0.124	10	1	Collector / Local Road	800	25
1419	113	984	0.226	10	1	Collector / Local Road	1500	25
1420	984	113	0.226	10	2	Collector / Local Road	1500	25
1421	114	911	0.274	10	1	Collector / Local Road	800	25
1422	911	114	0.274	10	1	Collector / Local Road	800	25
1423	115	1194	0.098	10	1	Collector / Local Road	800	25
1424	1194	115	0.098	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1425	116	879	0.946	10	1	Collector / Local Road	800	25
1426	879	116	0.946	10	1	Collector / Local Road	800	25
1427	116	881	0.964	10	1	Collector / Local Road	800	25
1428	881	116	0.964	10	1	Collector / Local Road	800	25
1429	116	999	0.88	10	1	Collector / Local Road	800	25
1430	999	116	0.88	10	1	Collector / Local Road	800	25
1431	117	1150	0.268	10	1	Collector / Local Road	800	25
1432	1150	117	0.268	10	1	Collector / Local Road	800	25
1433	117	1151	0.262	10	1	Collector / Local Road	800	25
1434	1151	117	0.262	10	1	Collector / Local Road	800	25
1435	118	620	1.181	10	1	Collector / Local Road	800	25
1436	620	118	1.181	10	1	Collector / Local Road	800	25
1437	118	621	0.83	10	1	Collector / Local Road	800	25
1438	621	118	0.83	10	1	Collector / Local Road	800	25
1439	118	908	2.242	10	1	Collector / Local Road	800	25
1440	908	118	2.242	10	1	Collector / Local Road	800	25
1441	118	975	0.84	10	1	Collector / Local Road	800	25
1442	975	118	0.84	10	1	Collector / Local Road	800	25
1443	607	119	0.292	10	2	Collector / Local Road	800	25
1444	119	608	0.254	10	2	Collector / Local Road	800	25
1445	120	519	0.185	10	2	Collector / Local Road	800	25
1446	520	120	0.189	10	2	Collector / Local Road	800	25
1447	121	511	0.44	10	1	Collector / Local Road	800	25
1448	511	121	0.44	10	1	Collector / Local Road	800	25
1449	122	215	1.022	10	1	Collector / Local Road	800	25
1450	215	122	1.022	10	1	Collector / Local Road	800	25
1451	122	216	1.037	10	1	Collector / Local Road	800	25
1452	216	122	1.037	10	1	Collector / Local Road	800	25
1453	123	359	2.388	10	1	Collector / Local Road	800	25
1454	359	123	2.388	10	1	Collector / Local Road	800	25
1455	123	542	2.987	10	1	Collector / Local Road	800	25
1456	542	123	2.987	10	1	Collector / Local Road	800	25
1457	124	635	3.984	10	1	Collector / Local Road	800	25
1458	635	124	3.984	10	1	Collector / Local Road	800	25
1459	124	825	4.107	10	1	Collector / Local Road	800	25
1460	825	124	4.107	10	1	Collector / Local Road	800	25
1461	125	1084	1.007	10	1	Collector / Local Road	800	25
1462	1084	125	1.007	10	1	Collector / Local Road	800	25
1463	126	572	1.984	10	1	Collector / Local Road	800	25
1464	572	126	1.984	10	1	Collector / Local Road	800	25
1465	127	601	1.766	10	1	Collector / Local Road	800	25
1466	601	127	1.766	10	1	Collector / Local Road	800	25
1467	128	663	2.132	10	1	Collector / Local Road	800	25
1468	663	128	2.132	10	1	Collector / Local Road	800	25
1469	128	918	1.976	10	1	Collector / Local Road	800	25
1470	918	128	1.976	10	1	Collector / Local Road	800	25
1471	129	867	0.454	10	1	Collector / Local Road	800	25
1472	867	129	0.454	10	1	Collector / Local Road	800	25
1473	130	328	0.657	10	1	Collector / Local Road	800	25
1474	328	130	0.657	10	1	Collector / Local Road	800	25
1475	130	525	5.585	10	1	Collector / Local Road	800	25
1476	525	130	5.585	10	1	Collector / Local Road	800	25
1477	130	590	5.546	10	1	Collector / Local Road	800	25
1478	590	130	5.546	10	1	Collector / Local Road	800	25
1479	131	289	2.885	10	1	Collector / Local Road	800	25
1480	289	131	2.885	10	1	Collector / Local Road	800	25
1481	131	1011	2.737	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1482	1011	131	2.737	10	1	Collector / Local Road	800	25
1483	132	176	2.613	10	1	Collector / Local Road	800	25
1484	176	132	2.613	10	1	Collector / Local Road	800	25
1485	132	361	10.393	10	1	Collector / Local Road	800	25
1486	361	132	10.393	10	1	Collector / Local Road	800	25
1487	133	903	1.115	10	1	Collector / Local Road	800	25
1488	903	133	1.115	10	1	Collector / Local Road	800	25
1489	133	909	1.204	10	1	Collector / Local Road	800	25
1490	909	133	1.204	10	1	Collector / Local Road	800	25
1491	167	409	2.638	10	1	Collector / Local Road	800	25
1492	409	167	2.638	10	1	Collector / Local Road	800	25
1493	166	1184	2.027	10	1	Collector / Local Road	800	25
1494	1184	166	2.027	10	1	Collector / Local Road	800	25
1495	145	170	0.179	11	1	Major Arterial	2000	45
1496	170	145	0.179	11	1	Major Arterial	2000	45
1497	173	332	0.587	11	1	Major Arterial	1700	45
1498	332	173	0.587	11	1	Major Arterial	1700	45
1499	348	522	0.046	11	1	Collector / Local Road	1700	40
1500	522	348	0.046	11	1	Collector / Local Road	1700	40
1501	326	372	1.181	11	2	Principal Arterial	3600	50
1502	186	187	1.229	11	1	Collector / Local Road	1700	40
1503	187	186	1.229	11	1	Collector / Local Road	1700	40
1504	190	191	1.002	11	1	Minor Arterial	1700	40
1505	191	190	1.002	11	1	Minor Arterial	1700	40
1506	191	192	0.372	11	1	Major Arterial	1700	45
1507	192	191	0.372	11	1	Major Arterial	1700	45
1508	191	376	1.312	11	1	Major Arterial	1700	45
1509	376	191	1.312	11	1	Major Arterial	1700	45
1510	194	196	0.299	11	1	Minor Arterial	1700	40
1511	196	194	0.299	11	1	Minor Arterial	1700	40
1512	193	197	4.019	11	1	Principal Arterial	1600	45
1513	197	193	4.019	11	1	Principal Arterial	1600	45
1514	195	297	1.807	11	1	Minor Arterial	1300	40
1515	297	195	1.807	11	1	Minor Arterial	1300	40
1516	196	198	3.101	11	1	Minor Arterial	1300	40
1517	198	196	3.101	11	1	Minor Arterial	1300	40
1518	197	297	0.383	11	1	Minor Arterial	1300	40
1519	297	197	0.383	11	1	Minor Arterial	1300	40
1520	195	200	2.743	11	1	Principal Arterial	1600	45
1521	200	195	2.743	11	1	Principal Arterial	1600	45
1522	197	201	4.209	11	1	Principal Arterial	1600	40
1523	201	197	4.209	11	1	Principal Arterial	1600	40
1524	198	201	3.197	11	1	Minor Arterial	1300	40
1525	201	198	3.197	11	1	Minor Arterial	1300	40
1526	200	202	3.461	11	1	Minor Arterial	1300	40
1527	202	200	3.461	11	1	Minor Arterial	1300	40
1528	200	205	3.974	11	1	Principal Arterial	1600	45
1529	205	200	3.974	11	1	Principal Arterial	1600	45
1530	206	209	1.131	12	1	Principal Arterial	1600	35
1531	209	206	1.131	12	1	Principal Arterial	1600	35
1532	206	212	6.26	11	1	Minor Arterial	1300	40
1533	212	206	6.26	11	1	Minor Arterial	1300	40
1534	210	213	3.447	11	1	Major Arterial	1300	45
1535	213	210	3.447	11	1	Major Arterial	1300	45
1536	213	214	1.735	11	1	Principal Arterial	1600	45
1537	214	213	1.735	11	1	Principal Arterial	1600	45
1538	212	214	3.997	11	1	Major Arterial	1300	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1539	214	212	3.997	11	1	Major Arterial	1300	45
1540	214	220	3.496	11	1	Major Arterial	1300	45
1541	220	214	3.496	11	1	Major Arterial	1300	45
1542	217	224	0.703	11	1	Minor Arterial	1300	40
1543	224	217	0.703	11	1	Minor Arterial	1300	40
1544	221	306	6.815	12	2	Freeway	4100	60
1545	224	225	1.745	11	1	Minor Arterial	1300	40
1546	225	224	1.745	11	1	Minor Arterial	1300	40
1547	225	226	0.31	11	1	Minor Arterial	1300	40
1548	226	225	0.31	11	1	Minor Arterial	1300	40
1549	226	233	1.6	11	1	Minor Arterial	1700	40
1550	233	226	1.6	11	1	Minor Arterial	1700	40
1551	227	232	0.718	11	1	Minor Arterial	1700	40
1552	232	227	0.718	11	1	Minor Arterial	1700	40
1553	179	235	1.531	11	1	Major Arterial	1300	45
1554	235	179	1.531	11	1	Major Arterial	1300	45
1555	232	304	0.684	11	1	Minor Arterial	1300	40
1556	304	232	0.684	11	1	Minor Arterial	1300	40
1557	233	303	1.233	11	1	Minor Arterial	1300	40
1558	303	233	1.233	11	1	Minor Arterial	1300	40
1559	234	237	5.213	11	1	Minor Arterial	1300	40
1560	237	234	5.213	11	1	Minor Arterial	1300	40
1561	236	243	0.645	11	1	Minor Arterial	1700	40
1562	243	236	0.645	11	1	Minor Arterial	1700	40
1563	235	244	0.644	11	1	Major Arterial	1700	45
1564	244	235	0.644	11	1	Major Arterial	1700	45
1565	245	303	0.733	11	1	Minor Arterial	1700	40
1566	303	245	0.733	11	1	Minor Arterial	1700	40
1567	249	242	0.757	12	1	Ramp	1500	35
1568	240	248	0.6	12	1	Ramp	1500	35
1569	245	251	0.462	11	1	Major Arterial	1700	45
1570	251	245	0.462	11	1	Major Arterial	1700	45
1571	251	252	1.21	11	1	Major Arterial	1700	45
1572	252	251	1.21	11	1	Major Arterial	1700	45
1573	252	254	1.296	11	1	Major Arterial	1700	45
1574	254	252	1.296	11	1	Major Arterial	1700	45
1575	251	255	1.094	11	1	Minor Arterial	1700	40
1576	255	251	1.094	11	1	Minor Arterial	1700	40
1577	257	259	0.369	11	1	Major Arterial	1700	45
1578	259	257	0.369	11	1	Major Arterial	1700	45
1579	256	264	2.382	11	1	Minor Arterial	1300	40
1580	264	256	2.382	11	1	Minor Arterial	1300	40
1581	258	261	0.796	11	1	Minor Arterial	1700	40
1582	261	258	0.796	11	1	Minor Arterial	1700	40
1583	256	262	3.248	11	1	Minor Arterial	1300	40
1584	262	256	3.248	11	1	Minor Arterial	1300	40
1585	265	266	1.125	11	1	Minor Arterial	1300	40
1586	266	265	1.125	11	1	Minor Arterial	1300	40
1587	270	279	0.545	11	1	Minor Arterial	1300	40
1588	279	270	0.545	11	1	Minor Arterial	1300	40
1589	248	271	3.95	12	2	Freeway	4100	55
1590	271	276	0.852	12	1	Ramp	1500	35
1591	267	282	4.235	11	1	Collector / Local Road	800	45
1592	282	267	4.235	11	1	Collector / Local Road	800	45
1593	274	278	0.609	10	1	Collector / Local Road	800	25
1594	278	274	0.609	10	1	Collector / Local Road	800	25
1595	278	298	2.746	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1596	298	278	2.746	10	1	Collector / Local Road	800	25
1597	281	299	2.062	12	1	Principal Arterial	1600	35
1598	299	281	2.062	12	1	Principal Arterial	1600	35
1599	282	298	1.331	11	1	Collector / Local Road	800	45
1600	298	282	1.331	11	1	Collector / Local Road	800	45
1601	290	291	0.962	11	1	Minor Arterial	1300	40
1602	291	290	0.962	11	1	Minor Arterial	1300	40
1603	291	292	1.033	11	1	Minor Arterial	1300	40
1604	292	291	1.033	11	1	Minor Arterial	1300	40
1605	285	1002	1.947	10	1	Collector / Local Road	800	25
1606	1002	285	1.947	10	1	Collector / Local Road	800	25
1607	187	193	3.825	11	1	Principal Arterial	1700	45
1608	193	187	3.825	11	1	Principal Arterial	1700	45
1609	247	253	0.809	11	1	Minor Arterial	1700	40
1610	253	247	0.809	11	1	Minor Arterial	1700	40
1611	282	283	3.964	10	1	Collector / Local Road	800	25
1612	283	282	3.964	10	1	Collector / Local Road	800	25
1613	224	305	0.671	11	1	Major Arterial	1300	45
1614	305	224	0.671	11	1	Major Arterial	1300	45
1615	205	208	1.777	11	1	Principal Arterial	1600	45
1616	208	205	1.777	11	1	Principal Arterial	1600	45
1617	207	296	3.255	11	1	Minor Arterial	1300	40
1618	296	207	3.255	11	1	Minor Arterial	1300	40
1619	283	299	1.091	10	1	Collector / Local Road	800	25
1620	299	283	1.091	10	1	Collector / Local Road	800	25
1621	181	299	0.913	12	1	Principal Arterial	1600	35
1622	299	181	0.913	12	1	Principal Arterial	1600	35
1623	263	267	1.429	11	1	Principal Arterial	1600	50
1624	267	263	1.429	11	1	Principal Arterial	1600	50
1625	237	256	2.75	11	1	Minor Arterial	1300	40
1626	256	237	2.75	11	1	Minor Arterial	1300	40
1627	253	256	3.957	11	1	Minor Arterial	1300	40
1628	256	253	3.957	11	1	Minor Arterial	1300	40
1629	287	290	3.998	11	1	Minor Arterial	1300	40
1630	290	287	3.998	11	1	Minor Arterial	1300	40
1631	255	290	6.729	11	1	Minor Arterial	1300	40
1632	290	255	6.729	11	1	Minor Arterial	1300	40
1633	279	291	2.65	11	1	Minor Arterial	1300	40
1634	291	279	2.65	11	1	Minor Arterial	1300	40
1635	266	287	3.101	11	1	Minor Arterial	1300	40
1636	287	266	3.101	11	1	Minor Arterial	1300	40
1637	241	243	1.035	11	1	Major Arterial	1700	45
1638	243	241	1.035	11	1	Major Arterial	1700	45
1639	209	213	3.488	11	1	Principal Arterial	1600	45
1640	213	209	3.488	11	1	Principal Arterial	1600	45
1641	210	296	1.469	11	1	Minor Arterial	1300	40
1642	296	210	1.469	11	1	Minor Arterial	1300	40
1643	215	219	1.056	12	2	Freeway	4100	60
1644	223	218	0.553	12	2	Freeway	4100	60
1645	219	221	0.998	12	2	Freeway	4100	60
1646	228	223	5.871	12	2	Freeway	4100	60
1647	306	230	0.992	12	2	Freeway	4100	55
1648	275	249	3.218	12	2	Freeway	4100	55
1649	271	277	0.547	12	2	Freeway	4100	55
1650	180	214	3.585	11	1	Principal Arterial	1600	45
1651	214	180	3.585	11	1	Principal Arterial	1600	45
1652	259	279	2.146	11	1	Major Arterial	1300	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1653	279	259	2.146	11	1	Major Arterial	1300	45
1654	171	309	2.597	11	1	Minor Arterial	1300	40
1655	309	171	2.597	11	1	Minor Arterial	1300	40
1656	310	428	2.266	11	2	Principal Arterial	3200	45
1657	428	310	2.266	11	2	Principal Arterial	3200	45
1658	311	394	2.032	11	2	Principal Arterial	3200	45
1659	394	311	2.032	11	2	Principal Arterial	3200	45
1660	167	314	1.427	10	1	Collector / Local Road	800	25
1661	314	167	1.427	10	1	Collector / Local Road	800	25
1662	168	319	4.867	11	1	Principal Arterial	1600	45
1663	319	168	4.867	11	1	Principal Arterial	1600	45
1664	153	320	0.32	12	1	Principal Arterial	1600	30
1665	320	153	0.32	12	1	Principal Arterial	1600	30
1666	389	599	1.066	10	1	Collector / Local Road	800	25
1667	599	389	1.066	10	1	Collector / Local Road	800	25
1668	172	325	1.735	10	1	Collector / Local Road	800	25
1669	325	172	1.735	10	1	Collector / Local Road	800	25
1670	327	328	1.118	11	2	Principal Arterial	3200	45
1671	328	327	1.118	11	2	Principal Arterial	3200	45
1672	136	329	2.404	11	2	Major Arterial	3100	45
1673	329	136	2.404	11	2	Major Arterial	3100	45
1674	329	330	1.706	11	2	Major Arterial	3100	45
1675	330	329	1.706	11	2	Major Arterial	3100	45
1676	330	331	1.134	11	1	Major Arterial	1800	45
1677	331	330	1.134	11	1	Major Arterial	1800	45
1678	334	336	0.496	12	1	Major Arterial	1700	35
1679	336	334	0.496	12	1	Major Arterial	1700	35
1680	378	559	1.333	11	1	Major Arterial	2000	50
1681	559	378	1.333	11	1	Major Arterial	2000	50
1682	347	550	0.392	11	2	Principal Arterial	3600	50
1683	550	347	0.392	11	2	Principal Arterial	3600	50
1684	134	348	0.515	11	1	Minor Arterial	1700	40
1685	348	134	0.515	11	1	Minor Arterial	1700	40
1686	134	175	0.747	11	1	Major Arterial	1700	45
1687	175	134	0.747	11	1	Major Arterial	1700	45
1688	175	176	1.052	11	1	Major Arterial	1300	45
1689	176	175	1.052	11	1	Major Arterial	1300	45
1690	351	545	3.262	11	1	Minor Arterial	1300	45
1691	545	351	3.262	11	1	Minor Arterial	1300	45
1692	353	547	3.565	11	1	Minor Arterial	1300	40
1693	547	353	3.565	11	1	Minor Arterial	1300	40
1694	353	354	1.547	11	1	Minor Arterial	1300	40
1695	354	353	1.547	11	1	Minor Arterial	1300	40
1696	354	418	2.265	11	1	Minor Arterial	1300	40
1697	418	354	2.265	11	1	Minor Arterial	1300	40
1698	356	542	0.413	11	1	Principal Arterial	1700	45
1699	542	356	0.413	11	1	Principal Arterial	1700	45
1700	338	368	2.198	11	1	Collector / Local Road	1300	45
1701	368	338	2.198	11	1	Collector / Local Road	1300	45
1702	137	369	0.598	10	1	Collector / Local Road	1700	35
1703	369	137	0.598	10	1	Collector / Local Road	1700	35
1704	137	370	0.355	10	1	Collector / Local Road	1700	35
1705	370	137	0.355	10	1	Collector / Local Road	1700	35
1706	372	1178	1.037	10	1	Collector / Local Road	800	25
1707	1178	372	1.037	10	1	Collector / Local Road	800	25
1708	379	539	1.334	10	1	Collector / Local Road	1200	25
1709	539	379	1.334	10	1	Collector / Local Road	1200	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1710	380	540	1.864	10	1	Collector / Local Road	800	25
1711	540	380	1.864	10	1	Collector / Local Road	800	25
1712	382	538	3.122	11	1	Collector / Local Road	800	40
1713	538	382	3.122	11	1	Collector / Local Road	800	40
1714	334	386	0.607	10	1	Collector / Local Road	800	35
1715	386	334	0.607	10	1	Collector / Local Road	800	35
1716	152	334	1.003	11	1	Major Arterial	1700	45
1717	334	152	1.003	11	1	Major Arterial	1700	45
1718	385	388	1.949	10	1	Collector / Local Road	800	25
1719	388	385	1.949	10	1	Collector / Local Road	800	25
1720	391	537	3.336	10	1	Collector / Local Road	800	25
1721	537	391	3.336	10	1	Collector / Local Road	800	25
1722	340	385	1.942	10	1	Collector / Local Road	800	25
1723	385	340	1.942	10	1	Collector / Local Road	800	25
1724	390	537	1.674	10	1	Collector / Local Road	800	25
1725	537	390	1.674	10	1	Collector / Local Road	800	25
1726	392	599	1.475	10	1	Collector / Local Road	800	25
1727	599	392	1.475	10	1	Collector / Local Road	800	25
1728	153	339	1.611	11	2	Major Arterial	3100	45
1729	339	153	1.611	11	2	Major Arterial	3100	45
1730	333	395	2.718	11	1	Collector / Local Road	800	45
1731	395	333	2.718	11	1	Collector / Local Road	800	45
1732	311	393	4.291	10	1	Collector / Local Road	800	25
1733	393	311	4.291	10	1	Collector / Local Road	800	25
1734	400	401	0.918	10	1	Collector / Local Road	800	25
1735	401	400	0.918	10	1	Collector / Local Road	800	25
1736	392	532	4.336	10	1	Collector / Local Road	800	25
1737	532	392	4.336	10	1	Collector / Local Road	800	25
1738	399	556	2.604	10	1	Collector / Local Road	800	25
1739	556	399	2.604	10	1	Collector / Local Road	800	25
1740	402	1181	2.782	10	1	Collector / Local Road	800	25
1741	1181	402	2.782	10	1	Collector / Local Road	800	25
1742	404	556	3.814	10	1	Collector / Local Road	800	25
1743	556	404	3.814	10	1	Collector / Local Road	800	25
1744	405	1182	0.767	10	1	Collector / Local Road	800	25
1745	1182	405	0.767	10	1	Collector / Local Road	800	25
1746	406	595	2.101	10	1	Collector / Local Road	800	25
1747	595	406	2.101	10	1	Collector / Local Road	800	25
1748	409	410	2.73	10	1	Collector / Local Road	800	25
1749	410	409	2.73	10	1	Collector / Local Road	800	25
1750	167	555	3.103	10	1	Collector / Local Road	800	25
1751	555	167	3.103	10	1	Collector / Local Road	800	25
1752	314	410	3.36	10	1	Collector / Local Road	800	25
1753	410	314	3.36	10	1	Collector / Local Road	800	25
1754	351	1187	2.292	11	1	Collector / Local Road	800	40
1755	1187	351	2.292	11	1	Collector / Local Road	800	40
1756	415	416	1.646	10	1	Collector / Local Road	800	25
1757	416	415	1.646	10	1	Collector / Local Road	800	25
1758	416	596	1.785	10	1	Collector / Local Road	800	25
1759	596	416	1.785	10	1	Collector / Local Road	800	25
1760	274	418	3.477	10	1	Collector / Local Road	800	25
1761	418	274	3.477	10	1	Collector / Local Road	800	25
1762	353	1188	0.538	10	1	Collector / Local Road	800	25
1763	1188	353	0.538	10	1	Collector / Local Road	800	25
1764	166	424	5.13	10	1	Collector / Local Road	800	25
1765	424	166	5.13	10	1	Collector / Local Road	800	25
1766	417	423	4.729	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1767	423	417	4.729	10	1	Collector / Local Road	800	25
1768	423	1185	1.195	10	1	Collector / Local Road	800	25
1769	1185	423	1.195	10	1	Collector / Local Road	800	25
1770	422	426	3.704	10	1	Collector / Local Road	800	25
1771	426	422	3.704	10	1	Collector / Local Road	800	25
1772	383	538	2.754	10	1	Collector / Local Road	800	25
1773	538	383	2.754	10	1	Collector / Local Road	800	25
1774	371	1177	1.399	10	1	Collector / Local Road	1800	25
1775	1177	371	1.399	10	1	Collector / Local Road	1800	25
1776	135	363	4.553	11	1	Major Arterial	1700	45
1777	363	135	4.553	11	1	Major Arterial	1700	45
1778	152	387	0.5	12	1	Major Arterial	1700	35
1779	387	152	0.5	12	1	Major Arterial	1700	35
1780	391	397	3.136	11	1	Major Arterial	1300	45
1781	397	391	3.136	11	1	Major Arterial	1300	45
1782	429	585	2.98	11	1	Major Arterial	1800	45
1783	585	429	2.98	11	1	Major Arterial	1800	45
1784	431	514	3.176	11	1	Collector / Local Road	1300	40
1785	514	431	3.176	11	1	Collector / Local Road	1300	40
1786	433	440	2.682	11	1	Principal Arterial	1800	55
1787	440	433	2.682	11	1	Principal Arterial	1800	55
1788	165	437	0.627	11	1	Major Arterial	2000	40
1789	437	165	0.627	11	1	Major Arterial	2000	40
1790	583	604	0.54	11	1	Collector / Local Road	1300	45
1791	604	583	0.54	11	1	Collector / Local Road	1300	45
1792	446	448	1.799	11	1	Principal Arterial	1800	55
1793	448	446	1.799	11	1	Principal Arterial	1800	55
1794	451	582	3.78	10	1	Collector / Local Road	800	25
1795	582	451	3.78	10	1	Collector / Local Road	800	25
1796	453	454	3.418	10	1	Collector / Local Road	1200	25
1797	454	453	3.418	10	1	Collector / Local Road	1200	25
1798	457	460	3.107	11	1	Principal Arterial	1700	50
1799	460	457	3.107	11	1	Principal Arterial	1700	50
1800	154	467	3.096	11	1	Principal Arterial	1600	45
1801	467	154	3.096	11	1	Principal Arterial	1600	45
1802	472	473	2.458	11	1	Major Arterial	1800	45
1803	473	472	2.458	11	1	Major Arterial	1800	45
1804	468	591	4.005	10	1	Collector / Local Road	1500	25
1805	591	468	4.005	10	1	Collector / Local Road	1500	25
1806	471	477	1.689	10	1	Collector / Local Road	800	25
1807	477	471	1.689	10	1	Collector / Local Road	800	25
1808	484	515	1.911	10	1	Collector / Local Road	800	25
1809	515	484	1.911	10	1	Collector / Local Road	800	25
1810	484	521	1.716	10	1	Collector / Local Road	800	25
1811	521	484	1.716	10	1	Collector / Local Road	800	25
1812	485	486	2.617	10	1	Collector / Local Road	800	25
1813	486	485	2.617	10	1	Collector / Local Road	800	25
1814	487	575	0.616	11	1	Collector / Local Road	1300	40
1815	575	487	0.616	11	1	Collector / Local Road	1300	40
1816	492	609	4.131	10	1	Collector / Local Road	800	25
1817	609	492	4.131	10	1	Collector / Local Road	800	25
1818	496	1198	2.693	10	1	Collector / Local Road	800	25
1819	1198	496	2.693	10	1	Collector / Local Road	800	25
1820	501	502	0.685	11	1	Major Arterial	2000	45
1821	502	501	0.685	11	1	Major Arterial	2000	45
1822	499	501	0.603	11	1	Collector / Local Road	1700	40
1823	501	499	0.603	11	1	Collector / Local Road	1700	40

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1824	501	504	0.397	11	1	Major Arterial	1700	45
1825	504	501	0.397	11	1	Major Arterial	1700	45
1826	432	504	1.599	11	1	Major Arterial	1700	45
1827	504	432	1.599	11	1	Major Arterial	1700	45
1828	502	505	0.543	12	1	Major Arterial	2000	25
1829	505	502	0.543	12	1	Major Arterial	2000	25
1830	144	511	0.595	11	1	Major Arterial	1700	45
1831	511	144	0.595	11	1	Major Arterial	1700	45
1832	513	514	0.201	11	1	Collector / Local Road	1700	40
1833	514	513	0.201	11	1	Collector / Local Road	1700	40
1834	510	513	1.175	11	1	Principal Arterial	2000	45
1835	513	510	1.175	11	1	Principal Arterial	2000	45
1836	441	447	2.588	10	1	Collector / Local Road	800	25
1837	447	441	2.588	10	1	Collector / Local Road	800	25
1838	156	178	0.511	12	1	Ramp	1500	35
1839	177	164	0.612	12	2	Freeway	4100	65
1840	177	159	0.535	12	1	Ramp	1500	35
1841	163	178	1.127	12	2	Freeway	4100	65
1842	448	516	3.962	10	1	Collector / Local Road	800	25
1843	516	448	3.962	10	1	Collector / Local Road	800	25
1844	134	524	0.532	11	1	Major Arterial	1700	45
1845	524	134	0.532	11	1	Major Arterial	1700	45
1846	184	359	1.015	11	2	Major Arterial	3480	50
1847	359	184	1.015	11	2	Major Arterial	3480	50
1848	567	137	0.603	11	2	Principal Arterial	3600	50
1849	166	417	3.799	10	1	Collector / Local Road	800	25
1850	417	166	3.799	10	1	Collector / Local Road	800	25
1851	407	411	1.277	10	1	Collector / Local Road	800	25
1852	411	407	1.277	10	1	Collector / Local Road	800	25
1853	405	1181	2.163	10	1	Collector / Local Road	800	25
1854	1181	405	2.163	10	1	Collector / Local Road	800	25
1855	533	534	2.069	10	1	Collector / Local Road	800	25
1856	534	533	2.069	10	1	Collector / Local Road	800	25
1857	389	538	3.397	11	1	Collector / Local Road	800	45
1858	538	389	3.397	11	1	Collector / Local Road	800	45
1859	357	373	2.668	11	1	Principal Arterial	1700	45
1860	373	357	2.668	11	1	Principal Arterial	1700	45
1861	358	543	0.337	11	1	Major Arterial	1700	45
1862	543	358	0.337	11	1	Major Arterial	1700	45
1863	358	376	0.697	11	1	Major Arterial	1700	45
1864	376	358	0.697	11	1	Major Arterial	1700	45
1865	376	377	0.272	11	1	Minor Arterial	1700	40
1866	377	376	0.272	11	1	Minor Arterial	1700	40
1867	543	544	5.349	11	1	Major Arterial	1300	45
1868	544	543	5.349	11	1	Major Arterial	1300	45
1869	355	377	5.563	11	1	Minor Arterial	1300	40
1870	377	355	5.563	11	1	Minor Arterial	1300	40
1871	350	355	7.485	11	1	Minor Arterial	1300	40
1872	355	350	7.485	11	1	Minor Arterial	1300	40
1873	139	355	2.211	11	1	Major Arterial	1300	45
1874	355	139	2.211	11	1	Major Arterial	1300	45
1875	139	544	1.306	11	1	Major Arterial	1300	45
1876	544	139	1.306	11	1	Major Arterial	1300	45
1877	365	544	6.195	11	1	Major Arterial	1300	45
1878	544	365	6.195	11	1	Major Arterial	1300	45
1879	346	391	2.385	11	1	Major Arterial	1300	45
1880	391	346	2.385	11	1	Major Arterial	1300	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1881	350	397	1.091	11	1	Major Arterial	1300	45
1882	397	350	1.091	11	1	Major Arterial	1300	45
1883	350	531	4.187	11	1	Major Arterial	1300	45
1884	531	350	4.187	11	1	Major Arterial	1300	45
1885	350	530	5.817	11	1	Minor Arterial	1300	40
1886	530	350	5.817	11	1	Minor Arterial	1300	40
1887	530	545	2.122	11	1	Minor Arterial	1300	40
1888	545	530	2.122	11	1	Minor Arterial	1300	40
1889	174	530	3.153	11	1	Minor Arterial	1300	45
1890	530	174	3.153	11	1	Minor Arterial	1300	45
1891	171	547	0.43	11	1	Minor Arterial	1300	40
1892	547	171	0.43	11	1	Minor Arterial	1300	40
1893	526	547	2.175	11	1	Minor Arterial	1300	40
1894	547	526	2.175	11	1	Minor Arterial	1300	40
1895	418	548	4.078	11	1	Minor Arterial	1300	40
1896	548	418	4.078	11	1	Minor Arterial	1300	40
1897	414	548	0.935	11	1	Principal Arterial	1600	40
1898	548	414	0.935	11	1	Principal Arterial	1600	40
1899	411	414	1.282	11	1	Principal Arterial	1600	50
1900	414	411	1.282	11	1	Principal Arterial	1600	50
1901	411	412	1.167	11	1	Principal Arterial	1600	50
1902	412	411	1.167	11	1	Principal Arterial	1600	50
1903	415	529	1.381	11	1	Principal Arterial	1600	45
1904	529	415	1.381	11	1	Principal Arterial	1600	45
1905	313	415	1.497	11	1	Principal Arterial	1600	45
1906	415	313	1.497	11	1	Principal Arterial	1600	45
1907	419	421	1.324	11	1	Principal Arterial	1600	50
1908	421	419	1.324	11	1	Principal Arterial	1600	50
1909	425	1003	5.332	10	1	Collector / Local Road	800	25
1910	1003	425	5.332	10	1	Collector / Local Road	800	25
1911	171	420	3.232	10	1	Collector / Local Road	800	25
1912	420	171	3.232	10	1	Collector / Local Road	800	25
1913	153	319	2.028	11	1	Principal Arterial	1600	45
1914	319	153	2.028	11	1	Principal Arterial	1600	45
1915	168	318	3.501	11	1	Principal Arterial	1600	45
1916	318	168	3.501	11	1	Principal Arterial	1600	45
1917	417	419	0.657	11	1	Principal Arterial	1600	40
1918	419	417	0.657	11	1	Principal Arterial	1600	40
1919	174	402	0.875	11	1	Major Arterial	1300	45
1920	402	174	0.875	11	1	Major Arterial	1300	45
1921	402	551	2.859	11	1	Major Arterial	1300	45
1922	551	402	2.859	11	1	Major Arterial	1300	45
1923	533	552	1.62	11	1	Major Arterial	1300	45
1924	552	533	1.62	11	1	Major Arterial	1300	45
1925	333	533	1.374	11	1	Major Arterial	1300	45
1926	533	333	1.374	11	1	Major Arterial	1300	45
1927	174	406	2.74	11	1	Major Arterial	1300	45
1928	406	174	2.74	11	1	Major Arterial	1300	45
1929	406	408	1.045	11	1	Major Arterial	1300	45
1930	408	406	1.045	11	1	Major Arterial	1300	45
1931	408	554	1.372	11	1	Major Arterial	1300	45
1932	554	408	1.372	11	1	Major Arterial	1300	45
1933	554	592	1.042	11	1	Major Arterial	1300	45
1934	592	554	1.042	11	1	Major Arterial	1300	45
1935	311	428	4.336	11	2	Principal Arterial	3200	45
1936	428	311	4.336	11	2	Principal Arterial	3200	45
1937	428	532	1.19	11	1	Minor Arterial	1300	40

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1938	532	428	1.19	11	1	Minor Arterial	1300	40
1939	532	557	2.65	11	1	Minor Arterial	1300	40
1940	557	532	2.65	11	1	Minor Arterial	1300	40
1941	173	331	0.642	11	1	Major Arterial	1700	45
1942	331	173	0.642	11	1	Major Arterial	1700	45
1943	332	558	0.851	11	1	Major Arterial	1300	45
1944	558	332	0.851	11	1	Major Arterial	1300	45
1945	134	558	2.766	11	1	Major Arterial	1700	45
1946	558	134	2.766	11	1	Major Arterial	1700	45
1947	340	388	2.028	11	2	Major Arterial	3100	45
1948	388	340	2.028	11	2	Major Arterial	3100	45
1949	339	340	0.68	11	2	Major Arterial	3100	45
1950	340	339	0.68	11	2	Major Arterial	3100	45
1951	323	363	1.798	11	1	Major Arterial	1700	45
1952	363	323	1.798	11	1	Major Arterial	1700	45
1953	561	563	0.893	12	1	Major Arterial	1800	35
1954	563	561	0.893	12	1	Major Arterial	1800	35
1955	364	525	0.619	11	1	Minor Arterial	1300	40
1956	525	364	0.619	11	1	Minor Arterial	1300	40
1957	381	539	1.137	11	1	Minor Arterial	1800	40
1958	539	381	1.137	11	1	Minor Arterial	1800	40
1959	360	364	6.537	11	1	Collector / Local Road	1300	40
1960	364	360	6.537	11	1	Collector / Local Road	1300	40
1961	372	568	0.549	11	2	Principal Arterial	3600	50
1962	136	327	1.525	11	2	Principal Arterial	3200	45
1963	504	569	1.098	11	1	Collector / Local Road	2000	40
1964	569	504	1.098	11	1	Collector / Local Road	2000	40
1965	349	570	1.881	11	1	Minor Arterial	1300	40
1966	570	349	1.881	11	1	Minor Arterial	1300	40
1967	173	366	1.506	11	1	Collector / Local Road	1700	40
1968	366	173	1.506	11	1	Collector / Local Road	1700	40
1969	338	366	1.3	11	1	Collector / Local Road	1300	40
1970	366	338	1.3	11	1	Collector / Local Road	1300	40
1971	360	572	6.614	11	1	Minor Arterial	1300	40
1972	572	360	6.614	11	1	Minor Arterial	1300	40
1973	465	573	0.159	11	1	Major Arterial	1300	40
1974	573	465	0.159	11	1	Major Arterial	1300	45
1975	517	573	0.205	11	1	Major Arterial	1300	45
1976	573	517	0.205	11	1	Major Arterial	1300	45
1977	464	465	2.527	11	1	Major Arterial	1300	40
1978	465	464	2.527	11	1	Major Arterial	1300	40
1979	496	517	6.446	11	1	Major Arterial	1300	45
1980	517	496	6.446	11	1	Major Arterial	1300	45
1981	497	498	5.383	11	1	Collector / Local Road	1300	40
1982	498	497	5.383	11	1	Collector / Local Road	1300	40
1983	506	601	1.918	11	1	Collector / Local Road	1700	40
1984	601	506	1.918	11	1	Collector / Local Road	1700	40
1985	505	506	0.738	11	1	Major Arterial	1700	45
1986	506	505	0.738	11	1	Major Arterial	1700	45
1987	475	476	1.519	11	1	Collector / Local Road	1300	40
1988	476	475	1.519	11	1	Collector / Local Road	1300	40
1989	478	481	0.938	11	1	Major Arterial	1300	45
1990	481	478	0.938	11	1	Major Arterial	1300	45
1991	472	481	1.008	11	1	Major Arterial	1300	40
1992	481	472	1.008	11	1	Major Arterial	1300	40
1993	474	576	0.538	11	1	Major Arterial	1800	40
1994	576	474	0.538	11	1	Major Arterial	1800	40

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
1995	470	515	2.174	11	1	Major Arterial	1800	45
1996	515	470	2.174	11	1	Major Arterial	1800	45
1997	453	515	2.704	11	1	Major Arterial	1800	45
1998	515	453	2.704	11	1	Major Arterial	1800	45
1999	453	485	2.348	11	1	Major Arterial	1800	45
2000	485	453	2.348	11	1	Major Arterial	1800	45
2001	463	579	0.747	11	1	Principal Arterial	1700	55
2002	579	463	0.747	11	1	Principal Arterial	1700	55
2003	459	462	1.915	11	1	Major Arterial	1300	40
2004	462	459	1.915	11	1	Major Arterial	1300	40
2005	459	461	1.893	11	1	Major Arterial	1300	45
2006	461	459	1.893	11	1	Major Arterial	1300	45
2007	461	581	5.575	11	1	Major Arterial	1300	45
2008	581	461	5.575	11	1	Major Arterial	1300	45
2009	507	581	3.409	11	1	Major Arterial	1300	45
2010	581	507	3.409	11	1	Major Arterial	1300	45
2011	440	442	5.107	11	1	Collector / Local Road	1300	40
2012	442	440	5.107	11	1	Collector / Local Road	1300	40
2013	441	582	3.927	11	1	Collector / Local Road	1300	40
2014	582	441	3.927	11	1	Collector / Local Road	1300	40
2015	450	582	1.316	11	1	Collector / Local Road	1300	40
2016	582	450	1.316	11	1	Collector / Local Road	1300	40
2017	450	583	0.882	11	1	Collector / Local Road	1300	40
2018	583	450	0.882	11	1	Collector / Local Road	1300	40
2019	450	507	4.044	11	1	Collector / Local Road	1300	40
2020	507	450	4.044	11	1	Collector / Local Road	1300	40
2021	439	466	0.409	11	1	Major Arterial	2000	45
2022	466	439	0.409	11	1	Major Arterial	2000	45
2023	472	479	2.302	11	1	Major Arterial	1300	45
2024	479	472	2.302	11	1	Major Arterial	1300	45
2025	475	477	1.835	11	1	Collector / Local Road	1300	40
2026	477	475	1.835	11	1	Collector / Local Road	1300	40
2027	519	574	1.237	11	2	Major Arterial	3100	45
2028	141	520	1.238	11	2	Major Arterial	3100	45
2029	310	403	6.145	10	1	Collector / Local Road	800	25
2030	403	310	6.145	10	1	Collector / Local Road	800	25
2031	390	397	3.641	10	1	Collector / Local Road	800	25
2032	397	390	3.641	10	1	Collector / Local Road	800	25
2033	358	375	0.652	11	1	Minor Arterial	1700	40
2034	375	358	0.652	11	1	Minor Arterial	1700	40
2035	139	349	5.234	11	1	Major Arterial	1300	45
2036	349	139	5.234	11	1	Major Arterial	1300	45
2037	321	564	0.827	11	1	Minor Arterial	1800	40
2038	564	321	0.827	11	1	Minor Arterial	1800	40
2039	379	564	1.812	10	1	Collector / Local Road	1200	25
2040	564	379	1.812	10	1	Collector / Local Road	1200	25
2041	539	566	2.157	11	1	Minor Arterial	1800	40
2042	566	539	2.157	11	1	Minor Arterial	1800	40
2043	138	381	1.58	11	1	Collector / Local Road	1800	40
2044	381	138	1.58	11	1	Collector / Local Road	1800	40
2045	312	526	2.423	11	1	Minor Arterial	1300	40
2046	526	312	2.423	11	1	Minor Arterial	1300	40
2047	345	537	3.029	10	1	Collector / Local Road	800	25
2048	537	345	3.029	10	1	Collector / Local Road	800	25
2049	357	524	8.382	11	1	Major Arterial	1300	45
2050	524	357	8.382	11	1	Major Arterial	1300	45
2051	211	355	9.813	11	1	Major Arterial	1300	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2052	355	211	9.813	11	1	Major Arterial	1300	45
2053	373	375	0.348	11	1	Collector / Local Road	1700	40
2054	375	373	0.348	11	1	Collector / Local Road	1700	40
2055	168	551	4.24	11	1	Minor Arterial	1300	40
2056	551	168	4.24	11	1	Minor Arterial	1300	40
2057	551	552	0.097	11	1	Major Arterial	1300	45
2058	552	551	0.097	11	1	Major Arterial	1300	45
2059	454	470	2.032	10	1	Collector / Local Road	1200	25
2060	470	454	2.032	10	1	Collector / Local Road	1200	25
2061	404	409	4.668	10	1	Collector / Local Road	800	25
2062	409	404	4.668	10	1	Collector / Local Road	800	25
2063	413	422	4.128	10	1	Collector / Local Road	800	25
2064	422	413	4.128	10	1	Collector / Local Road	800	25
2065	318	410	2.118	10	1	Collector / Local Road	800	25
2066	410	318	2.118	10	1	Collector / Local Road	800	25
2067	451	461	4.836	10	1	Collector / Local Road	800	25
2068	461	451	4.836	10	1	Collector / Local Road	800	25
2069	319	396	3.542	10	1	Collector / Local Road	800	25
2070	396	319	3.542	10	1	Collector / Local Road	800	25
2071	455	460	1.976	10	1	Collector / Local Road	800	25
2072	460	455	1.976	10	1	Collector / Local Road	800	25
2073	173	361	1.562	11	1	Collector / Local Road	1700	40
2074	361	173	1.562	11	1	Collector / Local Road	1700	40
2075	512	513	3.391	11	1	Principal Arterial	2000	45
2076	513	512	3.391	11	1	Principal Arterial	2000	45
2077	589	1179	2.581	10	1	Collector / Local Road	800	25
2078	1179	589	2.581	10	1	Collector / Local Road	800	25
2079	341	386	0.4	11	1	Major Arterial	1700	45
2080	386	341	0.4	11	1	Major Arterial	1700	45
2081	325	589	1.278	10	1	Collector / Local Road	800	35
2082	589	325	1.278	10	1	Collector / Local Road	800	35
2083	168	1200	1.819	10	1	Collector / Local Road	800	25
2084	1200	168	1.819	10	1	Collector / Local Road	800	25
2085	560	561	1.311	11	1	Major Arterial	1800	40
2086	561	560	1.311	11	1	Major Arterial	1800	40
2087	384	1177	4.115	10	1	Collector / Local Road	1800	25
2088	1177	384	4.115	10	1	Collector / Local Road	1800	25
2089	427	557	5.081	11	1	Minor Arterial	1800	40
2090	557	427	5.081	11	1	Minor Arterial	1800	40
2091	172	384	3.437	10	1	Collector / Local Road	800	25
2092	384	172	3.437	10	1	Collector / Local Road	800	25
2093	403	555	5.965	10	1	Collector / Local Road	800	25
2094	555	403	5.965	10	1	Collector / Local Road	800	25
2095	550	589	2.663	11	1	Principal Arterial	2000	45
2096	589	550	2.663	11	1	Principal Arterial	2000	45
2097	409	1200	1.937	10	1	Collector / Local Road	800	25
2098	1200	409	1.937	10	1	Collector / Local Road	800	25
2099	286	1188	2.555	10	1	Collector / Local Road	800	25
2100	1188	286	2.555	10	1	Collector / Local Road	800	25
2101	339	396	1.702	10	1	Collector / Local Road	800	25
2102	396	339	1.702	10	1	Collector / Local Road	800	25
2103	237	407	3.644	10	1	Collector / Local Road	800	25
2104	407	237	3.644	10	1	Collector / Local Road	800	25
2105	153	589	2.348	11	1	Principal Arterial	2000	45
2106	589	153	2.348	11	1	Principal Arterial	2000	45
2107	321	565	2.09	11	1	Minor Arterial	1800	40
2108	565	321	2.09	11	1	Minor Arterial	1800	40

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2109	434	499	2.823	11	1	Collector / Local Road	2000	40
2110	499	434	2.823	11	1	Collector / Local Road	2000	40
2111	446	1198	3.495	10	1	Collector / Local Road	800	25
2112	1198	446	3.495	10	1	Collector / Local Road	800	25
2113	503	505	1.048	12	1	Principal Arterial	2000	25
2114	505	503	1.048	12	1	Principal Arterial	2000	25
2115	505	510	1.172	11	1	Principal Arterial	2000	45
2116	510	505	1.172	11	1	Principal Arterial	2000	45
2117	510	569	1.404	11	1	Collector / Local Road	2000	40
2118	569	510	1.404	11	1	Collector / Local Road	2000	40
2119	495	605	2.425	10	1	Collector / Local Road	800	25
2120	605	495	2.425	10	1	Collector / Local Road	800	25
2121	211	236	8.358	11	1	Minor Arterial	1300	40
2122	236	211	8.358	11	1	Minor Arterial	1300	40
2123	234	240	2.475	11	1	Major Arterial	1300	45
2124	240	234	2.475	11	1	Major Arterial	1300	45
2125	241	307	0.73	12	1	Ramp	1500	35
2126	231	239	4.919	12	2	Freeway	4100	55
2127	307	229	2.641	12	2	Freeway	4100	55
2128	239	248	0.789	12	2	Freeway	4100	55
2129	249	307	0.778	12	2	Freeway	4100	55
2130	491	493	1.832	11	1	Major Arterial	1800	45
2131	493	491	1.832	11	1	Major Arterial	1800	45
2132	430	434	4.886	11	1	Collector / Local Road	1300	40
2133	434	430	4.886	11	1	Collector / Local Road	1300	40
2134	258	265	2.456	11	1	Minor Arterial	1700	40
2135	265	258	2.456	11	1	Minor Arterial	1700	40
2136	273	302	0.417	11	1	Minor Arterial	1300	40
2137	302	273	0.417	11	1	Minor Arterial	1300	40
2138	433	498	6.391	11	1	Principal Arterial	2200	55
2139	498	433	6.391	11	1	Principal Arterial	2200	55
2140	430	431	6.368	11	1	Major Arterial	1300	45
2141	431	430	6.368	11	1	Major Arterial	1300	45
2142	264	602	1.296	11	1	Minor Arterial	1300	40
2143	602	264	1.296	11	1	Minor Arterial	1300	40
2144	279	289	2.039	11	1	Major Arterial	1300	45
2145	289	279	2.039	11	1	Major Arterial	1300	45
2146	252	304	3.482	11	1	Minor Arterial	1700	40
2147	304	252	3.482	11	1	Minor Arterial	1700	40
2148	250	258	1.543	11	1	Minor Arterial	1700	40
2149	258	250	1.543	11	1	Minor Arterial	1700	40
2150	178	150	10.081	12	2	Freeway	4100	65
2151	146	177	10.741	12	2	Freeway	4100	65
2152	433	434	5.3	11	1	Collector / Local Road	2000	40
2153	434	433	5.3	11	1	Collector / Local Road	2000	40
2154	496	497	3.487	11	1	Major Arterial	1300	45
2155	497	496	3.487	11	1	Major Arterial	1300	45
2156	204	207	1.454	11	1	Minor Arterial	1300	40
2157	207	204	1.454	11	1	Minor Arterial	1300	40
2158	155	466	3.381	11	1	Major Arterial	2000	40
2159	466	155	3.381	11	1	Major Arterial	2000	40
2160	169	512	1.154	11	1	Major Arterial	2000	45
2161	512	169	1.154	11	1	Major Arterial	2000	45
2162	244	246	0.067	11	1	Major Arterial	1700	45
2163	246	244	0.067	11	1	Major Arterial	1700	45
2164	281	288	1.777	11	1	Principal Arterial	1600	45
2165	288	281	1.777	11	1	Principal Arterial	1600	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2166	429	610	1.029	11	1	Major Arterial	2000	45
2167	610	429	1.029	11	1	Major Arterial	2000	45
2168	611	1221	3.14	10	1	Collector / Local Road	800	25
2169	1221	611	3.14	10	1	Collector / Local Road	800	25
2170	933	1221	1.836	10	1	Collector / Local Road	800	25
2171	1221	933	1.836	10	1	Collector / Local Road	800	25
2172	757	761	2.533	11	1	Collector / Local Road	1300	40
2173	761	757	2.533	11	1	Collector / Local Road	1300	40
2174	612	613	3.645	11	1	Collector / Local Road	1300	40
2175	613	612	3.645	11	1	Collector / Local Road	1300	40
2176	616	981	1.468	10	1	Collector / Local Road	800	25
2177	981	616	1.468	10	1	Collector / Local Road	800	25
2178	899	617	0.118	11	1	Major Arterial	1700	45
2179	622	623	0.916	11	1	Major Arterial	1300	45
2180	623	622	0.916	11	1	Major Arterial	1300	45
2181	624	730	0.478	11	1	Major Arterial	1300	45
2182	730	624	0.478	11	1	Major Arterial	1300	45
2183	608	163	5.238	12	2	Freeway	4100	65
2184	164	607	6.915	12	2	Freeway	4100	65
2185	630	1049	4.91	10	1	Collector / Local Road	800	25
2186	1049	630	4.91	10	1	Collector / Local Road	800	25
2187	631	1056	0.577	11	1	Major Arterial	1300	45
2188	1056	631	0.577	11	1	Major Arterial	1300	45
2189	633	634	2.668	11	1	Principal Arterial	1600	50
2190	634	633	2.668	11	1	Principal Arterial	1600	50
2191	637	638	0.225	11	1	Major Arterial	1700	45
2192	638	637	0.225	11	1	Major Arterial	1700	45
2193	648	649	5.03	11	1	Major Arterial	2000	45
2194	649	648	5.03	11	1	Major Arterial	2000	45
2195	707	715	3.755	11	1	Major Arterial	2000	45
2196	715	707	3.755	11	1	Major Arterial	2000	45
2197	648	699	3.424	11	1	Major Arterial	2000	45
2198	699	648	3.424	11	1	Major Arterial	2000	45
2199	654	655	2.143	10	1	Collector / Local Road	800	25
2200	655	654	2.143	10	1	Collector / Local Road	800	25
2201	658	837	0.751	11	1	Major Arterial	1700	45
2202	837	658	0.751	11	1	Major Arterial	1700	45
2203	1170	1165	0.495	11	2	Principal Arterial	3600	50
2204	624	743	0.904	11	1	Major Arterial	1300	45
2205	743	624	0.904	11	1	Major Arterial	1300	45
2206	661	662	4.13	11	1	Major Arterial	1300	45
2207	662	661	4.13	11	1	Major Arterial	1300	45
2208	664	621	0.766	11	2	Principal Arterial	3600	60
2209	672	903	1.683	11	1	Major Arterial	1300	45
2210	903	672	1.683	11	1	Major Arterial	1300	45
2211	673	674	1.543	11	1	Major Arterial	1300	45
2212	674	673	1.543	11	1	Major Arterial	1300	45
2213	674	682	4.181	11	1	Collector / Local Road	1300	40
2214	682	674	4.181	11	1	Collector / Local Road	1300	40
2215	482	680	3.239	11	1	Major Arterial	1300	45
2216	680	482	3.239	11	1	Major Arterial	1300	45
2217	676	677	3.259	10	1	Collector / Local Road	800	25
2218	677	676	3.259	10	1	Collector / Local Road	800	25
2219	679	680	6.855	12	1	Major Arterial	2000	35
2220	680	679	6.855	12	1	Major Arterial	2000	35
2221	677	934	3.206	10	1	Collector / Local Road	800	25
2222	934	677	3.206	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2223	681	685	0.517	12	1	Major Arterial	1300	30
2224	685	681	0.517	12	1	Major Arterial	1300	30
2225	682	1219	1.4	11	1	Collector / Local Road	1300	40
2226	1219	682	1.4	11	1	Collector / Local Road	1300	40
2227	685	934	1.183	11	1	Major Arterial	1300	50
2228	934	685	1.183	11	1	Major Arterial	1300	50
2229	689	933	3.173	11	1	Collector / Local Road	1300	40
2230	933	689	3.173	11	1	Collector / Local Road	1300	40
2231	488	921	3.379	10	1	Collector / Local Road	800	25
2232	921	488	3.379	10	1	Collector / Local Road	800	25
2233	687	1215	2.051	10	1	Collector / Local Road	800	25
2234	1215	687	2.051	10	1	Collector / Local Road	800	25
2235	609	1206	1.565	10	1	Collector / Local Road	800	25
2236	1206	609	1.565	10	1	Collector / Local Road	800	25
2237	648	705	1.55	11	1	Major Arterial	2000	45
2238	705	648	1.55	11	1	Major Arterial	2000	45
2239	697	701	3.949	10	1	Collector / Local Road	800	25
2240	701	697	3.949	10	1	Collector / Local Road	800	25
2241	686	700	3.042	11	1	Major Arterial	2000	45
2242	700	686	3.042	11	1	Major Arterial	2000	45
2243	491	709	4.61	10	1	Collector / Local Road	800	25
2244	709	491	4.61	10	1	Collector / Local Road	800	25
2245	611	733	3.757	11	1	Major Arterial	1300	50
2246	733	611	3.757	11	1	Major Arterial	1300	50
2247	700	701	0.303	10	1	Collector / Local Road	800	25
2248	701	700	0.303	10	1	Collector / Local Road	800	25
2249	707	708	0.558	10	1	Collector / Local Road	800	25
2250	708	707	0.558	10	1	Collector / Local Road	800	25
2251	709	721	1.302	11	1	Major Arterial	2000	45
2252	721	709	1.302	11	1	Major Arterial	2000	45
2253	710	930	0.957	11	1	Major Arterial	1800	40
2254	930	710	0.957	11	1	Major Arterial	1800	40
2255	727	936	2.463	11	1	Major Arterial	1300	45
2256	936	727	2.463	11	1	Major Arterial	1300	45
2257	725	1222	1.071	10	1	Collector / Local Road	800	25
2258	1222	725	1.071	10	1	Collector / Local Road	800	25
2259	652	705	4.684	11	1	Major Arterial	1300	45
2260	705	652	4.684	11	1	Major Arterial	1300	45
2261	612	651	3.955	11	1	Major Arterial	1800	45
2262	651	612	3.955	11	1	Major Arterial	1800	45
2263	736	1227	1.573	10	1	Collector / Local Road	800	25
2264	1227	736	1.573	10	1	Collector / Local Road	800	25
2265	655	705	3.47	10	1	Collector / Local Road	800	25
2266	705	655	3.47	10	1	Collector / Local Road	800	25
2267	727	736	1.98	11	1	Major Arterial	1300	45
2268	736	727	1.98	11	1	Major Arterial	1300	45
2269	706	735	5.241	11	1	Collector / Local Road	1800	40
2270	735	706	5.241	11	1	Collector / Local Road	1800	40
2271	735	741	1.078	11	1	Collector / Local Road	1800	40
2272	741	735	1.078	11	1	Collector / Local Road	1800	40
2273	740	1222	2.476	10	1	Collector / Local Road	800	25
2274	1222	740	2.476	10	1	Collector / Local Road	800	25
2275	737	744	1.403	12	1	Major Arterial	1800	30
2276	744	737	1.403	12	1	Major Arterial	1800	30
2277	742	745	1.052	10	1	Collector / Local Road	800	25
2278	745	742	1.052	10	1	Collector / Local Road	800	25
2279	728	927	2.669	11	1	Collector / Local Road	1300	40

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2280	927	728	2.669	11	1	Collector / Local Road	1300	40
2281	740	938	1.422	11	1	Collector / Local Road	1300	40
2282	938	740	1.422	11	1	Collector / Local Road	1300	40
2283	743	748	1.046	11	1	Major Arterial	1300	45
2284	748	743	1.046	11	1	Major Arterial	1300	45
2285	937	938	1.69	11	1	Major Arterial	1300	45
2286	938	937	1.69	11	1	Major Arterial	1300	45
2287	744	745	0.671	10	1	Collector / Local Road	800	25
2288	745	744	0.671	10	1	Collector / Local Road	800	25
2289	746	748	1.153	10	1	Collector / Local Road	800	25
2290	748	746	1.153	10	1	Collector / Local Road	800	25
2291	747	750	2.523	10	1	Collector / Local Road	800	25
2292	750	747	2.523	10	1	Collector / Local Road	800	25
2293	750	941	1.186	10	1	Collector / Local Road	800	25
2294	941	750	1.186	10	1	Collector / Local Road	800	25
2295	739	751	2.639	11	1	Collector / Local Road	1300	40
2296	751	739	2.639	11	1	Collector / Local Road	1300	40
2297	758	764	1.539	11	1	Collector / Local Road	1300	40
2298	764	758	1.539	11	1	Collector / Local Road	1300	40
2299	757	765	1.933	11	1	Minor Arterial	1300	40
2300	765	757	1.933	11	1	Minor Arterial	1300	40
2301	766	770	1.148	10	1	Collector / Local Road	800	25
2302	770	766	1.148	10	1	Collector / Local Road	800	25
2303	751	774	4.471	11	1	Major Arterial	1300	45
2304	774	751	4.471	11	1	Major Arterial	1300	45
2305	774	776	1.736	11	1	Major Arterial	1300	45
2306	776	774	1.736	11	1	Major Arterial	1300	45
2307	778	985	2.261	11	1	Major Arterial	1300	45
2308	985	778	2.261	11	1	Major Arterial	1300	45
2309	779	780	1.795	10	1	Collector / Local Road	800	25
2310	780	779	1.795	10	1	Collector / Local Road	800	25
2311	770	780	3.044	10	1	Collector / Local Road	800	25
2312	780	770	3.044	10	1	Collector / Local Road	800	25
2313	783	923	4.423	11	1	Collector / Local Road	1300	40
2314	923	783	4.423	11	1	Collector / Local Road	1300	40
2315	782	784	1.156	11	1	Collector / Local Road	1300	40
2316	784	782	1.156	11	1	Collector / Local Road	1300	40
2317	781	802	3.506	11	1	Minor Arterial	1300	40
2318	802	781	3.506	11	1	Minor Arterial	1300	40
2319	823	924	5.652	11	1	Minor Arterial	1300	40
2320	924	823	5.652	11	1	Minor Arterial	1300	40
2321	790	993	2.696	10	1	Collector / Local Road	800	25
2322	993	790	2.696	10	1	Collector / Local Road	800	25
2323	777	801	3.16	11	1	Major Arterial	1700	50
2324	801	777	3.16	11	1	Major Arterial	1700	50
2325	802	822	0.612	11	1	Minor Arterial	1300	40
2326	822	802	0.612	11	1	Minor Arterial	1300	40
2327	795	814	3.029	11	1	Major Arterial	1300	45
2328	814	795	3.029	11	1	Major Arterial	1300	45
2329	810	817	0.565	10	1	Collector / Local Road	800	25
2330	817	810	0.565	10	1	Collector / Local Road	800	25
2331	815	985	3.819	11	1	Major Arterial	1300	45
2332	985	815	3.819	11	1	Major Arterial	1300	45
2333	813	971	0.841	11	1	Major Arterial	1300	45
2334	971	813	0.841	11	1	Major Arterial	1300	45
2335	668	788	2.978	11	1	Major Arterial	1700	50
2336	788	668	2.978	11	1	Major Arterial	1700	50

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2337	807	817	2.239	11	1	Major Arterial	1300	45
2338	817	807	2.239	11	1	Major Arterial	1300	45
2339	824	968	1.917	10	1	Collector / Local Road	800	25
2340	968	824	1.917	10	1	Collector / Local Road	800	25
2341	797	967	3.157	11	1	Minor Arterial	1300	40
2342	967	797	3.157	11	1	Minor Arterial	1300	40
2343	821	829	2.155	11	1	Minor Arterial	1300	40
2344	829	821	2.155	11	1	Minor Arterial	1300	40
2345	824	828	0.817	10	1	Collector / Local Road	800	25
2346	828	824	0.817	10	1	Collector / Local Road	800	25
2347	828	839	2.531	11	1	Major Arterial	2000	45
2348	839	828	2.531	11	1	Major Arterial	2000	45
2349	805	830	2.376	11	1	Collector / Local Road	1300	40
2350	830	805	2.376	11	1	Collector / Local Road	1300	40
2351	832	835	1.741	11	1	Collector / Local Road	1700	40
2352	835	832	1.741	11	1	Collector / Local Road	1700	40
2353	836	837	0.73	11	1	Major Arterial	1700	45
2354	837	836	0.73	11	1	Major Arterial	1700	45
2355	614	856	0.723	11	1	Principal Arterial	1600	45
2356	856	614	0.723	11	1	Principal Arterial	1600	45
2357	838	844	1.481	11	1	Major Arterial	1300	45
2358	844	838	1.481	11	1	Major Arterial	1300	45
2359	619	843	1.313	11	1	Collector / Local Road	1300	40
2360	843	619	1.313	11	1	Collector / Local Road	1300	40
2361	845	983	0.406	11	1	Collector / Local Road	2000	40
2362	983	845	0.406	11	1	Collector / Local Road	2000	40
2363	850	946	1.408	11	1	Major Arterial	1700	45
2364	946	850	1.408	11	1	Major Arterial	1700	45
2365	843	946	13.213	11	1	Principal Arterial	1600	55
2366	946	843	13.213	11	1	Principal Arterial	1600	55
2367	852	945	0.766	11	1	Major Arterial	1700	45
2368	945	852	0.766	11	1	Major Arterial	1700	45
2369	854	969	2.843	11	1	Major Arterial	1300	45
2370	969	854	2.843	11	1	Major Arterial	1300	45
2371	854	861	3.534	11	1	Major Arterial	1300	45
2372	861	854	3.534	11	1	Major Arterial	1300	45
2373	873	875	0.82	11	1	Collector / Local Road	1700	40
2374	875	873	0.82	11	1	Collector / Local Road	1700	40
2375	875	876	1.127	11	1	Collector / Local Road	1300	40
2376	876	875	1.127	11	1	Collector / Local Road	1300	40
2377	672	854	5.311	11	1	Collector / Local Road	1300	40
2378	854	672	5.311	11	1	Collector / Local Road	1300	40
2379	872	882	1.094	11	1	Major Arterial	1700	45
2380	882	872	1.094	11	1	Major Arterial	1700	45
2381	852	884	1.377	11	1	Major Arterial	1300	45
2382	884	852	1.377	11	1	Major Arterial	1300	45
2383	848	889	5.301	11	1	Collector / Local Road	1300	40
2384	889	848	5.301	11	1	Collector / Local Road	1300	40
2385	873	897	4.645	11	1	Collector / Local Road	1700	40
2386	897	873	4.645	11	1	Collector / Local Road	1700	40
2387	882	885	0.972	11	1	Major Arterial	1700	45
2388	885	882	0.972	11	1	Major Arterial	1700	45
2389	997	886	0.19	11	1	Major Arterial	1700	45
2390	886	996	0.196	11	1	Major Arterial	1700	45
2391	887	890	0.744	11	1	Major Arterial	1700	45
2392	890	997	0.816	11	1	Major Arterial	1700	45
2393	891	888	0.513	11	1	Major Arterial	1700	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2394	996	892	0.777	11	1	Major Arterial	1700	45
2395	617	891	0.478	11	1	Major Arterial	1700	45
2396	893	898	0.43	11	1	Major Arterial	1700	45
2397	895	905	0.706	11	1	Major Arterial	1700	45
2398	905	895	0.706	11	1	Major Arterial	1700	45
2399	620	992	0.923	11	1	Collector / Local Road	1700	40
2400	992	620	0.923	11	1	Collector / Local Road	1700	40
2401	911	912	0.449	11	1	Collector / Local Road	1700	40
2402	912	911	0.449	11	1	Collector / Local Road	1700	40
2403	622	912	2.349	11	1	Major Arterial	1700	45
2404	912	622	2.349	11	1	Major Arterial	1700	45
2405	623	915	2.14	11	1	Major Arterial	1700	45
2406	915	623	2.14	11	1	Major Arterial	1700	45
2407	719	758	2.303	11	1	Major Arterial	1300	45
2408	758	719	2.303	11	1	Major Arterial	1300	45
2409	785	802	2.226	11	1	Collector / Local Road	1300	40
2410	802	785	2.226	11	1	Collector / Local Road	1300	40
2411	919	920	1.003	10	1	Collector / Local Road	800	25
2412	920	919	1.003	10	1	Collector / Local Road	800	25
2413	741	761	4.762	11	1	Minor Arterial	2000	40
2414	761	741	4.762	11	1	Minor Arterial	2000	40
2415	715	1206	1.534	10	1	Collector / Local Road	800	25
2416	1206	715	1.534	10	1	Collector / Local Road	800	25
2417	771	919	2.935	11	1	Major Arterial	1300	45
2418	919	771	2.935	11	1	Major Arterial	1300	45
2419	771	922	5.164	11	1	Major Arterial	1800	45
2420	922	771	5.164	11	1	Major Arterial	1800	45
2421	782	923	4.799	11	1	Collector / Local Road	1300	40
2422	923	782	4.799	11	1	Collector / Local Road	1300	40
2423	775	782	1.472	10	1	Collector / Local Road	800	25
2424	782	775	1.472	10	1	Collector / Local Road	800	25
2425	776	925	4.323	11	1	Collector / Local Road	1300	40
2426	925	776	4.323	11	1	Collector / Local Road	1300	40
2427	753	925	6.182	11	1	Collector / Local Road	1300	40
2428	925	753	6.182	11	1	Collector / Local Road	1300	40
2429	752	974	3.833	10	1	Collector / Local Road	800	25
2430	974	752	3.833	10	1	Collector / Local Road	800	25
2431	700	928	2.936	11	1	Minor Arterial	2000	40
2432	928	700	2.936	11	1	Minor Arterial	2000	40
2433	697	929	2.014	10	1	Collector / Local Road	800	25
2434	929	697	2.014	10	1	Collector / Local Road	800	25
2435	729	931	4.741	11	1	Major Arterial	1300	50
2436	931	729	4.741	11	1	Major Arterial	1300	50
2437	483	676	0.563	12	1	Minor Arterial	1800	25
2438	676	483	0.563	12	1	Minor Arterial	1800	25
2439	932	994	0.843	10	1	Collector / Local Road	800	25
2440	994	932	0.843	10	1	Collector / Local Road	800	25
2441	673	1219	1.683	11	1	Collector / Local Road	1300	40
2442	1219	673	1.683	11	1	Collector / Local Road	1300	40
2443	689	932	1.987	10	1	Collector / Local Road	800	25
2444	932	689	1.987	10	1	Collector / Local Road	800	25
2445	688	726	6.596	11	1	Major Arterial	1300	45
2446	726	688	6.596	11	1	Major Arterial	1300	45
2447	661	695	3.128	11	1	Major Arterial	1300	45
2448	695	661	3.128	11	1	Major Arterial	1300	45
2449	935	1227	3.08	10	1	Collector / Local Road	800	25
2450	1227	935	3.08	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2451	733	740	3.853	11	1	Collector / Local Road	1300	40
2452	740	733	3.853	11	1	Collector / Local Road	1300	40
2453	759	938	5.532	11	1	Major Arterial	1300	45
2454	938	759	5.532	11	1	Major Arterial	1300	45
2455	759	773	1.463	11	1	Major Arterial	1300	50
2456	773	759	1.463	11	1	Major Arterial	1300	50
2457	780	788	3.462	11	1	Major Arterial	1700	50
2458	788	780	3.462	11	1	Major Arterial	1700	50
2459	938	1213	2.798	10	1	Collector / Local Road	800	25
2460	1213	938	2.798	10	1	Collector / Local Road	800	25
2461	725	931	2.352	11	1	Major Arterial	1300	45
2462	931	725	2.352	11	1	Major Arterial	1300	45
2463	726	1216	1.925	10	1	Collector / Local Road	800	25
2464	1216	726	1.925	10	1	Collector / Local Road	800	25
2465	939	940	2.507	11	1	Collector / Local Road	1800	40
2466	940	939	2.507	11	1	Collector / Local Road	1800	40
2467	613	943	2.555	10	1	Collector / Local Road	800	25
2468	943	613	2.555	10	1	Collector / Local Road	800	25
2469	707	721	4.771	11	1	Major Arterial	2000	45
2470	721	707	4.771	11	1	Major Arterial	2000	45
2471	609	707	2.778	10	1	Collector / Local Road	800	25
2472	707	609	2.778	10	1	Collector / Local Road	800	25
2473	618	867	0.442	11	1	Major Arterial	1700	45
2474	867	618	0.442	11	1	Major Arterial	1700	45
2475	861	999	1.185	11	1	Major Arterial	1300	45
2476	999	861	1.185	11	1	Major Arterial	1300	45
2477	902	947	2.143	11	1	Major Arterial	1300	45
2478	947	902	2.143	11	1	Major Arterial	1300	45
2479	849	870	1.412	11	1	Major Arterial	1300	45
2480	870	849	1.412	11	1	Major Arterial	1300	45
2481	870	902	3.522	11	1	Major Arterial	1300	45
2482	902	870	3.522	11	1	Major Arterial	1300	45
2483	902	907	4.6	11	1	Major Arterial	1300	45
2484	907	902	4.6	11	1	Major Arterial	1300	45
2485	907	948	2.122	11	1	Collector / Local Road	1300	40
2486	948	907	2.122	11	1	Collector / Local Road	1300	40
2487	827	1228	2.25	11	1	Minor Arterial	1300	40
2488	1228	827	2.25	11	1	Minor Arterial	1300	40
2489	949	950	1.07	11	1	Minor Arterial	1300	40
2490	950	949	1.07	11	1	Minor Arterial	1300	40
2491	833	952	4.391	11	1	Minor Arterial	1300	40
2492	952	833	4.391	11	1	Minor Arterial	1300	40
2493	876	883	0.588	11	1	Collector / Local Road	1700	40
2494	883	876	0.588	11	1	Collector / Local Road	1700	40
2495	857	955	1.286	11	1	Principal Arterial	1700	45
2496	955	857	1.286	11	1	Principal Arterial	1700	45
2497	956	914	2.915	11	2	Principal Arterial	3600	50
2498	897	957	2.527	11	1	Collector / Local Road	1700	40
2499	957	897	2.527	11	1	Collector / Local Road	1700	40
2500	906	991	0.416	11	1	Collector / Local Road	1700	40
2501	991	906	0.416	11	1	Collector / Local Road	1700	40
2502	878	885	1.509	11	1	Major Arterial	1700	45
2503	885	878	1.509	11	1	Major Arterial	1700	45
2504	901	906	3.709	11	1	Collector / Local Road	1700	40
2505	906	901	3.709	11	1	Collector / Local Road	1700	40
2506	958	1175	0.423	11	1	Major Arterial	1700	50
2507	1175	958	0.423	11	1	Major Arterial	1700	50

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2508	959	960	0.635	11	1	Major Arterial	1700	50
2509	960	959	0.635	11	1	Major Arterial	1700	50
2510	958	987	1.764	11	1	Major Arterial	1700	50
2511	989	1172	0.937	11	2	Principal Arterial	3600	50
2512	907	912	3.926	11	1	Major Arterial	1700	45
2513	912	907	3.926	11	1	Major Arterial	1700	45
2514	856	945	0.3	11	1	Major Arterial	1300	45
2515	945	856	0.3	11	1	Major Arterial	1300	45
2516	614	826	5.003	11	1	Collector / Local Road	1300	40
2517	826	614	5.003	11	1	Collector / Local Road	1300	40
2518	953	954	0.867	11	2	Major Arterial	3100	45
2519	954	953	0.867	11	2	Major Arterial	3100	45
2520	743	746	1.064	10	1	Collector / Local Road	800	25
2521	746	743	1.064	10	1	Collector / Local Road	800	25
2522	874	964	1.401	11	1	Major Arterial	1700	45
2523	964	874	1.401	11	1	Major Arterial	1700	45
2524	964	976	1.815	11	1	Collector / Local Road	1700	40
2525	976	964	1.815	11	1	Collector / Local Road	1700	40
2526	853	976	2.612	10	1	Collector / Local Road	800	25
2527	976	853	2.612	10	1	Collector / Local Road	800	25
2528	848	855	1.204	11	1	Major Arterial	1500	45
2529	855	848	1.204	11	1	Major Arterial	1500	45
2530	828	968	2.42	11	1	Major Arterial	2000	45
2531	968	828	2.42	11	1	Major Arterial	2000	45
2532	787	797	2.458	11	1	Collector / Local Road	1300	40
2533	797	787	2.458	11	1	Collector / Local Road	1300	40
2534	861	972	6.674	11	1	Minor Arterial	1300	40
2535	972	861	6.674	11	1	Minor Arterial	1300	40
2536	672	839	3.794	11	1	Major Arterial	1300	45
2537	839	672	3.794	11	1	Major Arterial	1300	45
2538	618	814	3.478	11	1	Major Arterial	1300	45
2539	814	618	3.478	11	1	Major Arterial	1300	45
2540	841	972	4.155	11	1	Major Arterial	1300	45
2541	972	841	4.155	11	1	Major Arterial	1300	45
2542	962	990	0.838	11	2	Principal Arterial	3600	50
2543	745	747	1.29	10	1	Collector / Local Road	800	25
2544	747	745	1.29	10	1	Collector / Local Road	800	25
2545	768	1213	1.539	10	1	Collector / Local Road	800	25
2546	1213	768	1.539	10	1	Collector / Local Road	800	25
2547	846	849	1.053	11	1	Minor Arterial	1300	40
2548	849	846	1.053	11	1	Minor Arterial	1300	40
2549	656	837	1.488	11	1	Collector / Local Road	1700	40
2550	837	656	1.488	11	1	Collector / Local Road	1700	40
2551	982	895	0.232	12	1	Minor Arterial	1700	35
2552	882	957	1.222	11	1	Minor Arterial	1700	40
2553	957	882	1.222	11	1	Minor Arterial	1700	40
2554	853	874	1.575	11	1	Major Arterial	1700	45
2555	874	853	1.575	11	1	Major Arterial	1700	45
2556	855	874	1.195	11	1	Major Arterial	1700	45
2557	874	855	1.195	11	1	Major Arterial	1700	45
2558	878	882	0.916	11	1	Collector / Local Road	1700	40
2559	882	878	0.916	11	1	Collector / Local Road	1700	40
2560	878	976	0.865	11	1	Collector / Local Road	1700	40
2561	976	878	0.865	11	1	Collector / Local Road	1700	40
2562	878	1168	1.886	11	1	Major Arterial	1700	45
2563	1168	878	1.886	11	1	Major Arterial	1700	45
2564	825	971	0.544	11	1	Major Arterial	1700	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2565	971	825	0.544	11	1	Major Arterial	1700	45
2566	784	827	3.772	11	1	Major Arterial	1300	45
2567	827	784	3.772	11	1	Major Arterial	1300	45
2568	827	946	2.756	11	1	Principal Arterial	1600	45
2569	946	827	2.756	11	1	Principal Arterial	1600	45
2570	987	989	1.344	11	2	Principal Arterial	3600	50
2571	905	906	0.777	11	1	Major Arterial	1700	45
2572	906	905	0.777	11	1	Major Arterial	1700	45
2573	990	664	0.837	11	2	Principal Arterial	3600	50
2574	835	1212	1.387	10	1	Collector / Local Road	800	25
2575	1212	835	1.387	10	1	Collector / Local Road	800	25
2576	900	911	3.458	11	1	Collector / Local Road	1700	40
2577	911	900	3.458	11	1	Collector / Local Road	1700	40
2578	769	787	4.98	11	1	Major Arterial	2000	45
2579	787	769	4.98	11	1	Major Arterial	2000	45
2580	660	832	1.633	11	1	Major Arterial	1700	45
2581	832	660	1.633	11	1	Major Arterial	1700	45
2582	777	951	6.03	11	1	Collector / Local Road	1300	40
2583	951	777	6.03	11	1	Collector / Local Road	1300	40
2584	835	952	0.959	11	1	Minor Arterial	1300	40
2585	952	835	0.959	11	1	Minor Arterial	1300	40
2586	747	936	2.342	11	1	Major Arterial	1800	50
2587	936	747	2.342	11	1	Major Arterial	1800	50
2588	696	712	2.671	10	1	Collector / Local Road	800	25
2589	712	696	2.671	10	1	Collector / Local Road	800	25
2590	696	702	1.099	10	1	Collector / Local Road	800	25
2591	702	696	1.099	10	1	Collector / Local Road	800	25
2592	817	830	3.26	11	1	Major Arterial	1300	45
2593	830	817	3.26	11	1	Major Arterial	1300	45
2594	746	1226	0.656	10	1	Collector / Local Road	800	25
2595	1226	746	0.656	10	1	Collector / Local Road	800	25
2596	906	913	2.89	11	1	Major Arterial	1700	45
2597	913	906	2.89	11	1	Major Arterial	1700	45
2598	916	918	0.741	11	2	Major Arterial	3100	45
2599	918	916	0.741	11	2	Major Arterial	3100	45
2600	888	963	1.279	11	1	Major Arterial	1700	45
2601	617	908	1.291	11	1	Major Arterial	1700	45
2602	908	617	1.291	11	1	Major Arterial	1700	45
2603	662	675	2.908	11	1	Major Arterial	1300	45
2604	675	662	2.908	11	1	Major Arterial	1300	45
2605	774	783	1.638	11	1	Minor Arterial	1300	40
2606	783	774	1.638	11	1	Minor Arterial	1300	40
2607	781	786	2.661	11	1	Minor Arterial	1300	40
2608	786	781	2.661	11	1	Minor Arterial	1300	40
2609	883	948	1.985	11	1	Collector / Local Road	1300	40
2610	948	883	1.985	11	1	Collector / Local Road	1300	40
2611	781	980	4.484	11	1	Minor Arterial	1300	40
2612	980	781	4.484	11	1	Minor Arterial	1300	40
2613	963	887	1.254	11	1	Major Arterial	1700	45
2614	870	948	3.282	11	1	Minor Arterial	1300	40
2615	948	870	3.282	11	1	Minor Arterial	1300	40
2616	794	818	2.236	12	2	Freeway	4100	65
2617	1172	988	0.217	11	1	Principal Arterial	1700	50
2618	960	987	0.525	11	1	Principal Arterial	1700	50
2619	756	925	2.322	11	1	Collector / Local Road	1300	40
2620	925	756	2.322	11	1	Collector / Local Road	1300	40
2621	831	965	1.81	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2622	965	831	1.81	10	1	Collector / Local Road	800	25
2623	778	792	2.819	11	1	Collector / Local Road	1300	40
2624	792	778	2.819	11	1	Collector / Local Road	1300	40
2625	546	1003	1.995	11	1	Principal Arterial	1600	50
2626	1003	546	1.995	11	1	Principal Arterial	1600	50
2627	426	1132	2.931	10	1	Collector / Local Road	800	25
2628	1132	426	2.931	10	1	Collector / Local Road	800	25
2629	1002	1004	1.809	10	1	Collector / Local Road	800	25
2630	1004	1002	1.809	10	1	Collector / Local Road	800	25
2631	1004	1005	0.414	11	1	Collector / Local Road	1300	40
2632	1005	1004	0.414	11	1	Collector / Local Road	1300	40
2633	1021	1192	1.804	10	1	Collector / Local Road	800	25
2634	1192	1021	1.804	10	1	Collector / Local Road	800	25
2635	1009	1025	2.307	11	1	Minor Arterial	1300	40
2636	1025	1009	2.307	11	1	Minor Arterial	1300	40
2637	1011	1019	1.111	11	1	Principal Arterial	1600	45
2638	1019	1011	1.111	11	1	Principal Arterial	1600	45
2639	1015	1017	2.75	11	1	Principal Arterial	1600	45
2640	1017	1015	2.75	11	1	Principal Arterial	1600	45
2641	1005	1022	0.742	11	1	Collector / Local Road	1700	40
2642	1022	1005	0.742	11	1	Collector / Local Road	1700	40
2643	1018	1126	0.493	12	1	Principal Arterial	1600	30
2644	1126	1018	0.493	12	1	Principal Arterial	1600	30
2645	1022	1126	1.138	12	1	Principal Arterial	1700	25
2646	1126	1022	1.138	12	1	Principal Arterial	1700	25
2647	1023	1024	0.42	12	1	Principal Arterial	1700	25
2648	1024	1023	0.42	12	1	Principal Arterial	1700	25
2649	1029	1125	1.647	11	1	Principal Arterial	1600	40
2650	1125	1029	1.647	11	1	Principal Arterial	1600	40
2651	1032	1033	1.15	11	1	Major Arterial	1300	40
2652	1033	1032	1.15	11	1	Major Arterial	1300	40
2653	1037	1148	0.356	11	1	Major Arterial	1300	45
2654	1148	1037	0.356	11	1	Major Arterial	1300	45
2655	1039	1042	2.022	10	1	Collector / Local Road	800	25
2656	1042	1039	2.022	10	1	Collector / Local Road	800	25
2657	1034	1040	2.193	11	1	Major Arterial	1300	50
2658	1040	1034	2.193	11	1	Major Arterial	1300	50
2659	1019	1052	2.403	11	1	Minor Arterial	1300	40
2660	1052	1019	2.403	11	1	Minor Arterial	1300	40
2661	633	1043	0.621	11	1	Principal Arterial	1600	50
2662	1043	633	0.621	11	1	Principal Arterial	1600	50
2663	1020	1135	3.47	10	1	Collector / Local Road	800	25
2664	1135	1020	3.47	10	1	Collector / Local Road	800	25
2665	1045	1047	2.809	11	1	Minor Arterial	1300	40
2666	1047	1045	2.809	11	1	Minor Arterial	1300	40
2667	632	1046	3.884	11	1	Minor Arterial	1300	40
2668	1046	632	3.884	11	1	Minor Arterial	1300	40
2669	632	1051	0.387	11	1	Minor Arterial	1700	40
2670	1051	632	0.387	11	1	Minor Arterial	1700	40
2671	1052	1053	0.44	11	1	Collector / Local Road	1300	40
2672	1053	1052	0.44	11	1	Collector / Local Road	1300	40
2673	630	631	0.431	11	1	Major Arterial	1700	45
2674	631	630	0.431	11	1	Major Arterial	1700	45
2675	1057	1110	1.491	11	1	Major Arterial	1300	45
2676	1110	1057	1.491	11	1	Major Arterial	1300	45
2677	1051	1060	0.668	11	1	Major Arterial	1700	45
2678	1060	1051	0.668	11	1	Major Arterial	1700	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2679	1063	1066	3.107	10	1	Collector / Local Road	800	25
2680	1066	1063	3.107	10	1	Collector / Local Road	800	25
2681	1108	1137	0.95	11	1	Collector / Local Road	1300	50
2682	1137	1108	0.95	11	1	Collector / Local Road	1300	50
2683	1054	1065	5.851	11	1	Minor Arterial	1300	40
2684	1065	1054	5.851	11	1	Minor Arterial	1300	40
2685	1064	1066	3.28	10	1	Collector / Local Road	800	25
2686	1066	1064	3.28	10	1	Collector / Local Road	800	25
2687	630	1128	2.202	10	1	Collector / Local Road	800	25
2688	1128	630	2.202	10	1	Collector / Local Road	800	25
2689	627	1068	1.141	11	1	Collector / Local Road	1300	40
2690	1068	627	1.141	11	1	Collector / Local Road	1300	40
2691	638	1067	2.184	11	1	Major Arterial	1500	45
2692	1067	638	2.184	11	1	Major Arterial	1500	45
2693	638	1068	1.386	11	1	Major Arterial	1700	45
2694	1068	638	1.386	11	1	Major Arterial	1700	45
2695	627	1116	6.043	11	1	Minor Arterial	1300	40
2696	1116	627	6.043	11	1	Minor Arterial	1300	40
2697	1075	1079	1.16	11	1	Major Arterial	1700	45
2698	1079	1075	1.16	11	1	Major Arterial	1700	45
2699	1085	1087	0.773	10	1	Collector / Local Road	800	25
2700	1087	1085	0.773	10	1	Collector / Local Road	800	25
2701	1082	1088	1.998	11	1	Major Arterial	1300	45
2702	1088	1082	1.998	11	1	Major Arterial	1300	45
2703	1087	1119	1.245	10	1	Collector / Local Road	800	25
2704	1119	1087	1.245	10	1	Collector / Local Road	800	25
2705	1099	1100	0.254	11	1	Principal Arterial	1600	45
2706	1100	1099	0.254	11	1	Principal Arterial	1600	45
2707	1100	1102	0.405	11	1	Principal Arterial	1600	45
2708	1102	1100	0.405	11	1	Principal Arterial	1600	45
2709	635	1105	0.673	11	1	Principal Arterial	1700	45
2710	1105	635	0.673	11	1	Principal Arterial	1700	45
2711	1006	1121	0.736	10	1	Collector / Local Road	800	25
2712	1121	1006	0.736	10	1	Collector / Local Road	800	25
2713	1036	1039	1.401	10	1	Collector / Local Road	800	25
2714	1039	1036	1.401	10	1	Collector / Local Road	800	25
2715	1106	1136	3.509	10	1	Collector / Local Road	800	25
2716	1136	1106	3.509	10	1	Collector / Local Road	800	25
2717	1055	1106	1.018	11	1	Major Arterial	1300	50
2718	1106	1055	1.018	11	1	Major Arterial	1300	50
2719	1024	1125	0.194	11	1	Principal Arterial	1700	40
2720	1125	1024	0.194	11	1	Principal Arterial	1700	40
2721	294	1004	4.411	11	1	Major Arterial	1300	50
2722	1004	294	4.411	11	1	Major Arterial	1300	50
2723	1017	1019	2.291	11	1	Principal Arterial	1600	45
2724	1019	1017	2.291	11	1	Principal Arterial	1600	45
2725	1038	1046	3.162	11	1	Major Arterial	1300	45
2726	1046	1038	3.162	11	1	Major Arterial	1300	45
2727	1051	1056	0.602	11	1	Major Arterial	1700	45
2728	1056	1051	0.602	11	1	Major Arterial	1700	45
2729	1021	1133	0.665	10	1	Collector / Local Road	800	25
2730	1133	1021	0.665	10	1	Collector / Local Road	800	25
2731	1003	1134	2.004	11	1	Principal Arterial	1600	50
2732	1134	1003	2.004	11	1	Principal Arterial	1600	50
2733	633	1140	2.624	10	1	Collector / Local Road	800	25
2734	1140	633	2.624	10	1	Collector / Local Road	800	25
2735	295	1002	0.886	10	1	Collector / Local Road	800	25

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2736	1002	295	0.886	10	1	Collector / Local Road	800	25
2737	1023	1148	0.367	11	1	Major Arterial	1700	45
2738	1148	1023	0.367	11	1	Major Arterial	1700	45
2739	1028	1031	0.372	11	1	Principal Arterial	1700	40
2740	1031	1028	0.372	11	1	Principal Arterial	1700	40
2741	1123	1124	0.251	11	1	Principal Arterial	1600	40
2742	1124	1123	0.251	11	1	Principal Arterial	1600	40
2743	1041	1111	0.251	11	1	Major Arterial	1700	45
2744	1111	1041	0.251	11	1	Major Arterial	1700	45
2745	1064	1083	3.806	11	1	Major Arterial	1300	45
2746	1083	1064	3.806	11	1	Major Arterial	1300	45
2747	1088	1115	2.63	10	1	Collector / Local Road	1300	25
2748	1115	1088	2.63	10	1	Collector / Local Road	1300	25
2749	1079	1082	0.896	11	1	Major Arterial	1700	45
2750	1082	1079	0.896	11	1	Major Arterial	1700	45
2751	1113	1114	1.014	10	1	Collector / Local Road	800	25
2752	1114	1113	1.014	10	1	Collector / Local Road	800	25
2753	1045	1059	2.449	11	1	Minor Arterial	1300	40
2754	1059	1045	2.449	11	1	Minor Arterial	1300	40
2755	1045	1107	4.475	11	1	Minor Arterial	1300	40
2756	1107	1045	4.475	11	1	Minor Arterial	1300	40
2757	288	1130	4.219	11	1	Principal Arterial	1600	50
2758	1130	288	4.219	11	1	Principal Arterial	1600	50
2759	1078	1118	4.213	10	1	Collector / Local Road	800	25
2760	1118	1078	4.213	10	1	Collector / Local Road	800	25
2761	1089	1119	2.515	11	1	Major Arterial	1300	45
2762	1119	1089	2.515	11	1	Major Arterial	1300	45
2763	1117	1118	1.339	11	1	Minor Arterial	1300	45
2764	1118	1117	1.339	11	1	Minor Arterial	1300	45
2765	1006	1033	3.752	10	1	Collector / Local Road	800	25
2766	1033	1006	3.752	10	1	Collector / Local Road	800	25
2767	1128	1193	0.907	10	1	Collector / Local Road	800	25
2768	1193	1128	0.907	10	1	Collector / Local Road	800	25
2769	1071	1193	3.46	10	1	Collector / Local Road	800	25
2770	1193	1071	3.46	10	1	Collector / Local Road	800	25
2771	1065	1113	3.378	10	1	Collector / Local Road	800	25
2772	1113	1065	3.378	10	1	Collector / Local Road	800	25
2773	1069	1070	0.953	11	1	Collector / Local Road	1300	40
2774	1070	1069	0.953	11	1	Collector / Local Road	1300	40
2775	1113	1116	2.923	10	1	Collector / Local Road	800	25
2776	1116	1113	2.923	10	1	Collector / Local Road	800	25
2777	1017	1053	5.915	11	1	Minor Arterial	1300	40
2778	1053	1017	5.915	11	1	Minor Arterial	1300	40
2779	1007	1135	2.9	10	1	Collector / Local Road	800	25
2780	1135	1007	2.9	10	1	Collector / Local Road	800	25
2781	1135	1140	1.928	10	1	Collector / Local Road	800	25
2782	1140	1135	1.928	10	1	Collector / Local Road	800	25
2783	1058	1063	2.122	11	1	Minor Arterial	1300	40
2784	1063	1058	2.122	11	1	Minor Arterial	1300	40
2785	1053	1067	7.199	11	1	Minor Arterial	1300	40
2786	1067	1053	7.199	11	1	Minor Arterial	1300	40
2787	1007	1132	1.061	10	1	Collector / Local Road	800	25
2788	1132	1007	1.061	10	1	Collector / Local Road	800	25
2789	1036	1040	1.62	11	1	Minor Arterial	1300	40
2790	1040	1036	1.62	11	1	Minor Arterial	1300	40
2791	1009	1141	0.956	11	1	Minor Arterial	1300	40
2792	1141	1009	0.956	11	1	Minor Arterial	1300	40

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2793	1077	1081	1.059	11	1	Major Arterial	1300	45
2794	1081	1077	1.059	11	1	Major Arterial	1300	45
2795	1081	1084	0.508	11	1	Major Arterial	1700	45
2796	1084	1081	0.508	11	1	Major Arterial	1700	45
2797	1027	1107	0.399	11	1	Collector / Local Road	1300	40
2798	1107	1027	0.399	11	1	Collector / Local Road	1300	40
2799	1144	1098	1.393	12	2	Freeway	4100	65
2800	292	1017	2.264	11	1	Minor Arterial	1300	40
2801	1017	292	2.264	11	1	Minor Arterial	1300	40
2802	629	1129	0.6	10	1	Collector / Local Road	800	25
2803	1129	629	0.6	10	1	Collector / Local Road	800	25
2804	1009	1191	1.313	10	1	Collector / Local Road	800	25
2805	1191	1009	1.313	10	1	Collector / Local Road	800	25
2806	1037	1038	0.179	11	1	Major Arterial	1700	45
2807	1038	1037	0.179	11	1	Major Arterial	1700	45
2808	1065	1069	1.24	11	1	Minor Arterial	1300	40
2809	1069	1065	1.24	11	1	Minor Arterial	1300	40
2810	634	1030	1.968	10	1	Collector / Local Road	800	25
2811	1030	634	1.968	10	1	Collector / Local Road	800	25
2812	1067	1146	5.023	11	1	Major Arterial	1500	45
2813	1146	1067	5.023	11	1	Major Arterial	1500	45
2814	1010	1130	4.877	11	1	Principal Arterial	1600	50
2815	1130	1010	4.877	11	1	Principal Arterial	1600	50
2816	610	683	2.054	11	1	Major Arterial	2000	45
2817	683	610	2.054	11	1	Major Arterial	2000	45
2818	874	894	2.396	11	1	Major Arterial	1700	45
2819	894	874	2.396	11	1	Major Arterial	1700	45
2820	1059	1068	4.143	11	1	Major Arterial	1300	45
2821	1068	1059	4.143	11	1	Major Arterial	1300	45
2822	967	983	2.885	11	1	Minor Arterial	1800	40
2823	983	967	2.885	11	1	Minor Arterial	1800	40
2824	660	955	1.971	11	1	Principal Arterial	1700	45
2825	955	660	1.971	11	1	Principal Arterial	1700	45
2826	667	954	0.866	11	1	Major Arterial	1300	45
2827	954	667	0.866	11	1	Major Arterial	1300	45
2828	1151	640	4.859	12	2	Freeway	4100	65
2829	1073	1150	5.257	12	2	Freeway	4100	65
2830	628	794	6.039	12	2	Freeway	4100	65
2831	804	1144	4.79	12	2	Freeway	4100	65
2832	818	879	7.217	12	2	Freeway	4100	65
2833	881	816	7.237	12	2	Freeway	4100	65
2834	1004	1013	3.349	11	1	Major Arterial	1300	50
2835	1013	1004	3.349	11	1	Major Arterial	1300	50
2836	1042	1106	2.643	11	1	Major Arterial	1300	50
2837	1106	1042	2.643	11	1	Major Arterial	1300	50
2838	1013	1122	1.057	11	1	Major Arterial	1300	50
2839	1122	1013	1.057	11	1	Major Arterial	1300	50
2840	1055	1152	0.476	11	1	Collector / Local Road	1300	45
2841	1152	1055	0.476	11	1	Collector / Local Road	1300	45
2842	1153	1155	1.106	11	1	Major Arterial	1300	50
2843	1155	1153	1.106	11	1	Major Arterial	1300	50
2844	747	1156	1.664	11	1	Major Arterial	1800	50
2845	1156	747	1.664	11	1	Major Arterial	1800	50
2846	767	1156	0.853	11	1	Major Arterial	1300	50
2847	1156	767	0.853	11	1	Major Arterial	1300	50
2848	769	1156	1.523	11	1	Major Arterial	1800	45
2849	1156	769	1.523	11	1	Major Arterial	1800	45

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2850	1165	1171	0.38	11	2	Principal Arterial	3600	50
2851	988	961	2.175	11	1	Major Arterial	1700	50
2852	1000	1173	0.237	11	1	Major Arterial	1700	50
2853	1173	1000	0.237	11	1	Major Arterial	1700	50
2854	642	1095	7.44	12	2	Freeway	4100	65
2855	1098	1076	7.978	12	2	Freeway	4100	65
2856	658	1167	0.582	11	1	Major Arterial	1700	45
2857	1167	658	0.582	11	1	Major Arterial	1700	45
2858	614	822	2.296	11	1	Principal Arterial	1600	45
2859	822	614	2.296	11	1	Principal Arterial	1600	45
2860	880	961	1.625	11	2	Principal Arterial	3600	50
2861	961	880	1.625	11	2	Principal Arterial	3600	50
2862	670	1164	0.674	11	2	Principal Arterial	3600	50
2863	1166	671	0.877	11	2	Principal Arterial	3600	50
2864	154	310	3.327	11	2	Principal Arterial	3200	45
2865	310	154	3.327	11	2	Principal Arterial	3200	45
2866	234	531	6.166	11	1	Major Arterial	1300	45
2867	531	234	6.166	11	1	Major Arterial	1300	45
2868	277	293	3.281	12	2	Freeway	4100	50
2869	262	548	3.022	11	1	Principal Arterial	1600	40
2870	548	262	3.022	11	1	Principal Arterial	1600	40
2871	293	280	4.535	12	2	Freeway	4100	50
2872	309	546	2.915	11	1	Minor Arterial	1300	40
2873	546	309	2.915	11	1	Minor Arterial	1300	40
2874	135	326	2.758	11	2	Principal Arterial	3200	45
2875	137	136	2.096	11	2	Principal Arterial	3200	45
2876	333	553	0.405	11	1	Major Arterial	1700	45
2877	553	333	0.405	11	1	Major Arterial	1700	45
2878	341	346	0.95	11	1	Major Arterial	1700	45
2879	346	341	0.95	11	1	Major Arterial	1700	45
2880	347	567	4.82	11	2	Principal Arterial	3600	50
2881	367	571	0.368	10	1	Collector / Local Road	1700	35
2882	571	367	0.368	10	1	Collector / Local Road	1700	35
2883	152	388	1.351	11	2	Major Arterial	3100	45
2884	388	152	1.351	11	2	Major Arterial	3100	45
2885	312	529	3.278	11	1	Principal Arterial	1600	45
2886	529	312	3.278	11	1	Principal Arterial	1600	45
2887	435	442	5.525	10	1	Collector / Local Road	800	25
2888	442	435	5.525	10	1	Collector / Local Road	800	25
2889	436	586	1.253	11	1	Major Arterial	2000	45
2890	586	436	1.253	11	1	Major Arterial	2000	45
2891	438	439	0.672	11	1	Major Arterial	2000	40
2892	439	438	0.672	11	1	Major Arterial	2000	40
2893	468	469	5.126	10	1	Collector / Local Road	1500	25
2894	469	468	5.126	10	1	Collector / Local Road	1500	25
2895	467	469	4.556	11	1	Major Arterial	1700	50
2896	469	467	4.556	11	1	Major Arterial	1700	50
2897	498	503	0.942	11	1	Principal Arterial	2000	45
2898	503	498	0.942	11	1	Principal Arterial	2000	45
2899	421	546	1.835	11	1	Principal Arterial	1600	50
2900	546	421	1.835	11	1	Principal Arterial	1600	50
2901	317	549	1.687	11	1	Principal Arterial	1600	55
2902	549	317	1.687	11	1	Principal Arterial	1600	55
2903	568	347	4.487	11	2	Principal Arterial	3600	50
2904	522	570	5.249	11	1	Collector / Local Road	1300	40
2905	570	522	5.249	11	1	Collector / Local Road	1300	40
2906	323	560	1.446	12	1	Major Arterial	1800	30

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2907	560	323	1.446	12	1	Major Arterial	1800	30
2908	138	564	2.707	11	1	Minor Arterial	1800	40
2909	564	138	2.707	11	1	Minor Arterial	1800	40
2910	382	427	1.617	11	1	Major Arterial	1300	40
2911	427	382	1.617	11	1	Major Arterial	1300	40
2912	487	585	1.843	11	1	Major Arterial	1800	45
2913	585	487	1.843	11	1	Major Arterial	1800	45
2914	487	488	1.004	11	1	Major Arterial	1800	45
2915	488	487	1.004	11	1	Major Arterial	1800	45
2916	436	495	4.119	11	1	Major Arterial	2000	45
2917	495	436	4.119	11	1	Major Arterial	2000	45
2918	851	1165	1.146	11	1	Major Arterial	1700	50
2919	1165	851	1.146	11	1	Major Arterial	1700	50
2920	853	1162	2.511	11	1	Major Arterial	1700	45
2921	1162	853	2.511	11	1	Major Arterial	1700	45
2922	688	693	3.292	11	1	Major Arterial	1300	50
2923	693	688	3.292	11	1	Major Arterial	1300	50
2924	706	715	4.693	11	1	Major Arterial	2000	45
2925	715	706	4.693	11	1	Major Arterial	2000	45
2926	653	1211	1.281	11	1	Major Arterial	1800	45
2927	1211	653	1.281	11	1	Major Arterial	1800	45
2928	768	780	4.261	11	1	Major Arterial	1300	50
2929	780	768	4.261	11	1	Major Arterial	1300	50
2930	805	838	5.783	11	1	Major Arterial	1300	45
2931	838	805	5.783	11	1	Major Arterial	1300	45
2932	839	848	3.722	11	1	Major Arterial	2000	45
2933	848	839	3.722	11	1	Major Arterial	2000	45
2934	787	968	1.982	11	1	Major Arterial	2000	45
2935	968	787	1.982	11	1	Major Arterial	2000	45
2936	748	807	6.252	11	1	Major Arterial	1300	45
2937	807	748	6.252	11	1	Major Arterial	1300	45
2938	1153	1154	0.794	11	1	Major Arterial	1300	50
2939	1154	1153	0.794	11	1	Major Arterial	1300	50
2940	1010	1018	1.072	11	1	Principal Arterial	1600	40
2941	1018	1010	1.072	11	1	Principal Arterial	1600	40
2942	1043	1106	1.126	12	1	Principal Arterial	1600	35
2943	1106	1043	1.126	12	1	Principal Arterial	1600	35
2944	1060	1070	2.795	11	1	Major Arterial	1300	45
2945	1070	1060	2.795	11	1	Major Arterial	1300	45
2946	1079	1086	2.845	11	1	Major Arterial	1300	45
2947	1086	1079	2.845	11	1	Major Arterial	1300	45
2948	1080	1149	1.229	11	1	Major Arterial	1300	45
2949	1149	1080	1.229	11	1	Major Arterial	1300	45
2950	1071	1078	1.883	11	1	Minor Arterial	1300	40
2951	1078	1071	1.883	11	1	Minor Arterial	1300	40
2952	1033	1035	1.339	11	1	Major Arterial	1300	40
2953	1035	1033	1.339	11	1	Major Arterial	1300	40
2954	337	540	2.333	11	1	Major Arterial	2000	55
2955	540	337	2.333	11	1	Major Arterial	2000	55
2956	493	586	5.078	11	1	Major Arterial	1800	45
2957	586	493	5.078	11	1	Major Arterial	1800	45
2958	165	430	3.931	11	1	Major Arterial	1300	45
2959	430	165	3.931	11	1	Major Arterial	1300	45
2960	440	446	5.14	11	1	Principal Arterial	1800	55
2961	446	440	5.14	11	1	Principal Arterial	1800	55
2962	457	464	2.82	11	1	Principal Arterial	1700	55
2963	464	457	2.82	11	1	Principal Arterial	1700	55

Link #	U-Node	D-Node	Length (mi)	Lane Width (ft)	Number of Lanes	Roadway Type	Saturation Flow Rate (veh/hr)	FFS (mph)
2964	460	467	2.13	11	1	Principal Arterial	1700	50
2965	467	460	2.13	11	1	Principal Arterial	1700	50
2966	160	500	1.406	11	1	Major Arterial	2000	45
2967	500	160	1.406	11	1	Major Arterial	2000	45
2968	477	478	1.622	11	1	Collector / Local Road	1800	40
2969	478	477	1.622	11	1	Collector / Local Road	1800	40
2970	488	490	4.246	11	1	Major Arterial	1800	45
2971	490	488	4.246	11	1	Major Arterial	1800	45
2972	378	540	1.149	11	1	Major Arterial	2000	55
2973	540	378	1.149	11	1	Major Arterial	2000	55
2974	382	562	1.233	11	1	Major Arterial	1800	40
2975	562	382	1.233	11	1	Major Arterial	1800	40
2976	472	474	0.555	11	1	Major Arterial	1800	45
2977	474	472	0.555	11	1	Major Arterial	1800	45
2978	576	577	0.201	11	1	Major Arterial	1800	45
2979	577	576	0.201	11	1	Major Arterial	1800	45
2980	470	578	1.469	11	1	Major Arterial	1800	45
2981	578	470	1.469	11	1	Major Arterial	1800	45
2982	509	527	3.002	11	1	Major Arterial	2000	45
2983	527	509	3.002	11	1	Major Arterial	2000	45
2984	338	559	3.897	11	1	Major Arterial	2000	55
2985	559	338	3.897	11	1	Major Arterial	2000	55
2986	152	337	1.38	11	1	Major Arterial	2000	50
2987	337	152	1.38	11	1	Major Arterial	2000	50
2988	478	483	1.257	10	1	Collector / Local Road	1800	25
2989	483	478	1.257	10	1	Collector / Local Road	1800	25
2990	482	1217	2.149	10	1	Collector / Local Road	800	25
2991	1217	482	2.149	10	1	Collector / Local Road	800	25
2992	744	1156	1.187	11	1	Major Arterial	1800	40
2993	1156	744	1.187	11	1	Major Arterial	1800	40
2994	469	473	3.919	11	1	Major Arterial	1300	45
2995	473	469	3.919	11	1	Major Arterial	1300	45

Note: Coordinates in NAD83 State Plane Pennsylvania South

Node #	X-Coord	Y-Coord	Control Type
134	2408933.6	240529.99	Signalized - Flashing
137	2382405.7	235577.82	Two-way yield
138	2351086.2	222458.95	Two-way stop
139	2440175.5	220070.99	Two-way yield
140	2262019.9	212734.74	Two-way yield
142	2262363.6	211954.93	Diverge - Uncontrolled
143	2262232.3	212030.59	Two-way yield
144	2261853.1	211857.38	Two-way yield
145	2261979.8	211889.29	Signalized - Flashing
146	2262024.4	210816.27	Two-way yield
147	2261939.2	212740.31	Diverge - Uncontrolled
148	2261936	211954.93	Diverge - Uncontrolled
149	2261974.3	211715.16	Two-way yield
150	2262100.1	210827.4	Diverge - Uncontrolled
151	2262312.6	211824.56	Diverge - Uncontrolled
152	2411359.6	208435.9	Signalized - Actuated
155	2273055.5	161335.14	Two-way stop
156	2272938.7	161432	Two-way yield
157	2272905.9	161335.14	Signalized - Flashing
158	2272660.9	161322.32	Signalized - Flashing
159	2272603.9	161432	Diverge - Uncontrolled
161	2272955.8	161236.85	Diverge - Uncontrolled
162	2272641	161206.94	Two-way yield
163	2273077.8	160431.9	Diverge - Uncontrolled
164	2273063.9	160125.85	Two-way yield
166	2402046.3	161031.08	Two-way stop
167	2397181.7	167405.84	Two-way stop
168	2402766	182585.08	Two-way stop
169	2262401	211961.31	Two-way yield
170	2262263.6	211937.24	Signalized - Flashing
171	2422741.6	156200.7	Two-way stop
172	2384083.8	203519.95	All-way stop
173	2391612.1	242887.37	Signalized - Flashing
174	2417930.9	186231.02	Two-way stop
177	2272486.6	162285.53	Diverge - Uncontrolled
178	2272597.9	162181.2	Two-way yield
180	2469360.8	178098.15	Two-way stop
182	2453343.2	157196.2	Two-way yield
185	2467751	236442.53	Two-way stop
187	2462746.6	233923.41	Two-way stop
191	2466572.1	229469.62	All-way stop
192	2466893.1	228601.64	Two-way stop

Node #	X-Coord	Y-Coord	Control Type
193	2467871.2	228757.45	Signalized - Flashing
197	2473648.8	221757.13	Signalized - Flashing
198	2472427.9	220681.23	Two-way stop
200	2483667.2	218081.99	Two-way stop
201	2477047.7	215898.03	Two-way stop
202	2477618.3	215059.72	Two-way stop
204	2479473.4	212263.2	Two-way stop
205	2481966.9	209102.79	Signalized - Flashing
206	2481250	208494.14	Two-way stop
207	2481574.6	208791.7	Signalized - Flashing
211	2463472.6	197092.05	Two-way stop
212	2463574.6	197207.29	Two-way stop
213	2478048.1	192767.59	Two-way stop
214	2476668.4	190356.86	Two-way stop
218	2485026.4	183241.86	Two-way yield
219	2484454.7	183153.22	Diverge - Uncontrolled
220	2483710.1	183117.76	Two-way stop
221	2482943.4	182608.08	Two-way yield
222	2484206.5	182554.9	Two-way stop
223	2484184.4	182953.78	Diverge - Uncontrolled
224	2485057.5	181619.74	Signalized - Flashing
225	2481277.6	179589.58	Two-way stop
228	2470637.3	178204.52	Two-way yield
229	2469617.9	177756.89	Diverge - Uncontrolled
230	2469174.7	177619.5	Diverge - Uncontrolled
231	2468492.2	177220.61	Two-way yield
234	2456177.3	175187.66	Two-way stop
237	2448833.4	171330.79	Two-way stop
238	2461156.1	170626.54	Two-way stop
239	2461865.2	171295.95	Diverge - Uncontrolled
240	2461110.7	170632.21	Two-way yield
241	2461663.2	170549.37	Two-way yield
242	2461615.6	170552.79	Two-way stop
243	2466098.2	169874.11	Two-way stop
244	2466227.6	169674.42	Two-way stop
245	2466320.6	169536	Two-way stop
246	2466209.4	169567.77	Signalized - Flashing
248	2460776	169727.37	Two-way yield
249	2460812.9	169636.6	Diverge - Uncontrolled
250	2466164.6	169358.23	Two-way yield
251	2467191.7	169253.08	Two-way stop
252	2471079.6	168662.4	Two-way stop
256	2452169.6	164691.99	Two-way stop
258	2463847.7	163562.98	Two-way stop

Node #	X-Coord	Y-Coord	Control Type
262	2446360.5	162488.34	Two-way stop
264	2454258.7	161507.8	Two-way stop
265	2460921.9	160922.82	Two-way stop
266	2462722.4	160741.04	Two-way stop
267	2449041.2	159908.9	Two-way yield
271	2454056.5	158359.6	Diverge - Uncontrolled
273	2456383.3	157978.73	Two-way stop
274	2439005.3	158365.3	Two-way stop
276	2453218.6	157279.3	Two-way stop
277	2453786.4	157230.82	Two-way yield
280	2453724.1	155416.47	Diverge - Uncontrolled
282	2443467.9	155291.65	Two-way stop
283	2453192.6	153979.68	Two-way stop
285	2438144.7	151998.62	Two-way stop
287	2465574.6	150717.77	Two-way stop
288	2465592.3	150629.13	Two-way yield
290	2477977.2	148263.95	All-way stop
291	2479512.7	148058.4	Two-way stop
292	2478448.1	146784.77	Two-way stop
293	2452313.8	146469.65	Diverge - Uncontrolled
296	2484817.4	201947.46	Two-way stop
298	2441760.9	154638.37	Two-way stop
307	2462194.3	171593.78	Two-way yield
309	2420040.7	153012.08	Two-way stop
311	2383981.1	194954.53	Two-way stop
312	2426695.9	166250.77	Two-way stop
313	2410052	164419.03	Two-way yield
314	2399080.1	166125.14	Two-way stop
319	2397817.8	192305.04	Two-way stop
333	2414458.7	204641.99	Two-way yield
334	2413774.9	207714.1	Signalized - Actuated
338	2389654.4	237381.42	Two-way yield
339	2399937.6	202093.91	Two-way yield
340	2401534.5	203779.55	Two-way yield
341	2414811.7	209933	Two-way yield
347	2390476.3	216290.53	Diverge - Uncontrolled
353	2428837.5	157643.38	Two-way stop
354	2431897.7	158505.63	Two-way stop
355	2446729.1	215965.87	Two-way stop
357	2453870.5	242285.94	Two-way stop
358	2460005.9	230952.19	Two-way stop
360	2350959.4	223579.03	Two-way stop
364	2369767	239232.28	Signalized - Flashing
372	2382501.8	233820.08	Two-way stop

Node #	X-Coord	Y-Coord	Control Type
373	2459754.1	234329.18	Signalized - Flashing
376	2461291.2	228964.91	Two-way stop
382	2371003	213033.25	Two-way yield
383	2382865.7	211469.18	Two-way yield
384	2383508.2	211722.79	Two-way yield
386	2413610.6	209389.33	Two-way yield
389	2377900.6	205084.32	Two-way stop
390	2429318.6	205538.95	Two-way stop
392	2380666.1	198934.14	Two-way stop
393	2382812.5	201575.83	Two-way stop
397	2431076.9	197916.95	Two-way stop
399	2384322.3	192881.82	Two-way stop
402	2417270.9	187475.36	Two-way stop
403	2384774.3	180788.84	Two-way stop
404	2387060.1	180978.2	Two-way stop
405	2408466.2	174215.1	Two-way yield
406	2415928.1	174277.7	Two-way stop
408	2413758.1	172703.34	Two-way stop
409	2397998	171569.95	Two-way stop
410	2402171.1	170421.08	Two-way stop
411	2435046.6	167897.7	Two-way stop
415	2413750	164013.92	Two-way stop
416	2417676	162114.3	All-way stop
417	2409775	161929.49	Two-way stop
418	2434856.4	161261.44	Two-way stop
420	2414569.5	155574.74	Two-way stop
421	2414423.2	155521.55	Two-way stop
422	2402681.1	153044.94	Two-way stop
423	2406729.1	150311.03	Two-way stop
424	2405889.9	151282.95	Two-way stop
425	2406224.8	148662.7	Two-way stop
426	2404415.6	145064.39	Two-way stop
427	2367590.3	211681.49	Two-way yield
428	2373564.1	187339.55	Two-way yield
430	2292380.8	172645.65	Two-way stop
431	2287384.4	199317.94	Two-way stop
433	2319338	199171.61	Two-way stop
434	2299915.8	192606.49	Two-way stop
441	2328081.8	178313.9	Two-way stop
442	2327962.3	178688.85	Two-way stop
443	2324877.9	154759.3	Two-way stop
445	2322705.5	152354.74	Two-way stop
446	2339040.7	191291.68	Two-way stop
448	2341103.3	189262.86	Two-way yield

Node #	X-Coord	Y-Coord	Control Type
450	2329265.9	161479.44	Two-way stop
451	2335527.7	165300.2	Two-way stop
455	2350825.1	176471.31	Two-way stop
456	2349868.4	178910.3	Two-way stop
457	2351209.1	179719.15	Two-way stop
459	2341360.2	180907.43	Two-way stop
460	2354832.9	176289.53	Two-way stop
461	2344762.1	175266.05	Two-way stop
462	2345703.1	184659.48	Two-way stop
464	2346586.1	184391.13	Two-way stop
469	2366365.4	163666.55	Two-way stop
470	2359568.2	153712.6	Two-way stop
479	2364431.7	147829.51	Two-way stop
480	2362458	147933.38	Two-way stop
482	2363981.5	146254.06	Two-way stop
485	2344996.8	147601.71	Two-way stop
486	2342061.6	149790.69	Two-way stop
493	2314002.2	151349.05	Two-way stop
494	2320599.7	149736.32	Two-way stop
496	2338293.7	212411.19	Two-way stop
498	2297327.9	208968.81	Two-way stop
501	2292220.5	204698.05	Signalized - Flashing
504	2291507.2	204392.39	Two-way stop
505	2289458.8	208833.92	Signalized - Flashing
510	2284932.6	207194.7	Signalized - Flashing
513	2281912	208140.18	Signalized - Flashing
515	2356329.3	152650.24	Two-way stop
517	2350148.4	192982.36	Two-way stop
526	2424293.3	160171.71	Two-way stop
529	2417473.1	165482.13	Two-way stop
530	2424024.6	179474.06	Two-way stop
531	2442087.7	190652.74	Two-way stop
532	2372128.9	189888.54	Two-way stop
537	2427458.9	206870.37	Two-way yield
538	2375204.8	210328.5	Signalized - Actuated
539	2359808.6	218386.62	Two-way stop
540	2404405.9	219703.75	Two-way stop
544	2437920.7	224727.98	Two-way stop
545	2424764.3	176145.53	Two-way stop
546	2417579.1	149049.13	Two-way stop
547	2423248.8	156855.84	Two-way stop
548	2441367.6	162716.87	Two-way stop
549	2410050.3	166873.21	Two-way stop
551	2415308.4	191627.25	Two-way stop

Node #	X-Coord	Y-Coord	Control Type
554	2413507.1	169258.14	Two-way stop
555	2392612	167232.52	Two-way stop
556	2385867.2	188038.02	Two-way stop
557	2367982.6	193793.34	Two-way yield
566	2367241.3	211687.03	Two-way yield
567	2383395.8	233432.04	Two-way stop
569	2289556.2	205696.24	Two-way stop
581	2337750	153521.9	Two-way stop
582	2329807.2	163400.43	Two-way stop
589	2392731.5	206572.66	Signalized - Actuated
605	2310167.3	148426.27	Two-way stop
611	2379007.4	130548.69	Two-way stop
612	2351568.9	129150.55	Two-way stop
613	2353295.1	124078.22	Two-way stop
614	2317421	98069.505	Two-way stop
617	2365054.8	75375.014	Diverge - Uncontrolled
623	2350080.3	63136.289	Signalized - Flashing
624	2403862.5	117619.93	Two-way stop
625	2474467.1	112841.8	Two-way yield
626	2474134.7	113240.68	Signalized - Flashing
628	2443126.5	99406.546	Two-way yield
629	2427284	121774.94	Two-way stop
630	2433285.4	127821.3	Two-way stop
633	2413768.4	133255.23	Two-way stop
634	2412055.4	137169.6	Two-way stop
636	2473176.3	115595.19	Two-way yield
638	2473040.7	117111.71	Signalized - Flashing
639	2474976.8	115052.27	Diverge - Uncontrolled
640	2475658.2	115495.47	Diverge - Uncontrolled
641	2474112.5	114415.17	Two-way yield
642	2472012.8	112886.12	Two-way yield
643	2472372.9	113201.9	Two-way yield
644	2473508.7	114204.65	Two-way yield
645	2473453.3	114359.77	Diverge - Uncontrolled
646	2473237.2	115091.05	Diverge - Uncontrolled
647	2473336.9	113872.24	Diverge - Uncontrolled
648	2343501.9	135560.14	Two-way yield
650	2345935	126261.27	Two-way yield
651	2345956.3	126333.92	Two-way yield
652	2345897.9	126352.43	Two-way yield
653	2345865.2	126285.48	Two-way yield
654	2339729.3	123782.78	Two-way stop
655	2339944.9	127137.77	Two-way stop
658	2361985.9	89591.388	Signalized - Flashing

Node #	X-Coord	Y-Coord	Control Type
660	2352933.2	91414.264	Signalized - Flashing
661	2396384.7	129872.07	Two-way stop
662	2393130.1	135176.58	Two-way stop
665	2365229.6	91390.508	Signalized - Flashing
666	2365150.2	91444.401	Signalized - Flashing
667	2367036.6	93251.866	Two-way stop
668	2369097.1	96000.702	Two-way stop
669	2366655.9	92661.761	Diverge - Uncontrolled
670	2363026	89292.465	Signalized - Flashing
671	2363072.5	89255.287	Signalized - Flashing
672	2388690	77084.412	Two-way stop
673	2383200.9	143177.42	Two-way stop
674	2386220.2	140622.09	Two-way stop
675	2386878.1	140268.91	Two-way stop
676	2365736.7	143128.98	Two-way stop
677	2370242.8	141476.83	Two-way stop
680	2362519.2	140926.85	Signalized - Actuated
681	2363590.5	140039.58	Two-way stop
682	2381421.1	137055.7	Two-way stop
684	2337871	142577.23	Two-way stop
686	2357437.8	137144.15	Two-way stop
687	2350860.8	138130.59	Two-way stop
688	2375815.4	133483.71	Two-way stop
689	2376315.8	134552.22	Two-way stop
690	2341631.4	137611.39	Two-way stop
691	2341344.9	138672.71	Two-way stop
693	2370965	135593.26	Two-way stop
695	2400602.5	128261.14	Two-way stop
696	2402498.6	127173.91	Two-way stop
698	2367946.5	131218.56	Two-way stop
700	2355655.3	132694.6	Two-way stop
701	2355882.4	132323.42	Two-way stop
702	2401643.9	125647.95	Two-way stop
703	2401673.4	125552.64	Two-way stop
704	2346253	133719.45	Two-way stop
705	2345106.8	133719.45	Two-way stop
710	2355721.8	130600.47	Two-way stop
711	2355300.7	130855.31	Two-way stop
712	2402367	123365.15	Two-way stop
713	2354946.2	129858.11	Two-way stop
716	2353716.3	129786.09	Two-way stop
717	2398702.6	121577.63	Two-way stop
718	2396758.3	125339.4	Two-way stop
722	2398195.4	120161.69	Two-way stop

Node #	X-Coord	Y-Coord	Control Type
723	2397434.6	120161.69	Two-way stop
724	2400055.1	119823.55	Two-way stop
725	2369557	124010.39	Two-way stop
726	2370286.9	125048.71	Two-way stop
727	2389644.7	120784.58	Two-way stop
728	2358086.4	125294.42	Two-way stop
729	2360669.8	126903.94	Two-way stop
730	2404026.5	118537.36	Signalized - Actuated
731	2403109.1	118386.67	Two-way stop
733	2381504.3	125106.04	Two-way stop
735	2334870.5	127419.68	Two-way stop
736	2386740.5	119474.99	Two-way stop
737	2386169.7	119215.04	Signalized - Actuated
738	2353306.2	124006.2	Two-way stop
739	2353322.8	123302.61	Two-way stop
740	2379398.8	119377.52	Two-way stop
743	2404184	115286.14	Two-way stop
744	2385906.8	117034.54	Two-way stop
745	2386931.7	116696.59	Two-way stop
746	2405493.3	114182.47	Two-way stop
747	2389083.9	116066.4	Two-way stop
748	2403707.9	113673.91	Two-way stop
749	2335853	123388.93	Two-way stop
750	2392583.6	114451.8	Two-way stop
751	2346475.2	121063.36	Two-way stop
752	2346371.7	123432.76	Two-way stop
753	2363068	118513.1	Two-way stop
754	2363896.4	118614.54	Two-way stop
756	2353400.3	120859.46	Two-way stop
761	2323245.2	122203.71	Two-way stop
762	2327153.7	119693.8	Two-way stop
765	2312956.1	120431.22	Two-way stop
766	2383715.9	110212.42	Two-way stop
767	2384239.8	112128.09	Two-way stop
768	2380381.2	110437.3	Two-way stop
771	2328977.8	116916.12	Two-way stop
774	2345526.1	111904.62	Two-way stop
776	2349259.2	110896.86	Two-way stop
777	2368329.5	107255.65	Two-way stop
778	2348763.4	109687.8	Two-way stop
781	2319076.8	113366.03	Two-way stop
782	2330489.5	110005.62	Two-way stop
784	2327736.7	109624.2	Two-way stop
786	2315123.4	112901.71	Two-way stop

Node #	X-Coord	Y-Coord	Control Type
788	2372061.9	99766.185	Two-way stop
790	2380452.9	97845.095	Two-way stop
792	2345414.1	102782.14	Two-way stop
793	2422445.1	91657.899	Diverge - Uncontrolled
794	2424550.3	92282.814	Diverge - Uncontrolled
795	2421514.4	91671.195	Two-way yield
796	2421647.3	91622.443	Diverge - Uncontrolled
798	2422157	91365.386	Two-way stop
799	2422365.3	91232.426	Two-way yield
800	2345546.8	102185.15	Two-way stop
802	2316342.2	106627.47	Two-way stop
803	2423952.9	90695.109	Two-way yield
804	2424342	92039.053	Diverge - Uncontrolled
805	2408326.3	92854.348	Two-way stop
806	2422223.5	90780.36	Two-way yield
807	2409137.8	92583.839	All-way stop
808	2423881.1	90390.342	Two-way yield
809	2423562	90567.623	Two-way stop
811	2424191.3	90199.766	Two-way yield
813	2424452.8	90049.077	Diverge - Uncontrolled
814	2414094.5	91140.404	Two-way stop
815	2350890.6	100157.3	Two-way stop
816	2422254.5	89583.715	Diverge - Uncontrolled
817	2412383.9	91062.227	Two-way stop
818	2422174.8	89636.9	Diverge - Uncontrolled
819	2337089.3	101539.02	Two-way stop
820	2337185.3	101594.24	Two-way stop
821	2337185.3	101430.09	Two-way stop
823	2351386.5	99233.525	Two-way stop
827	2326922.2	101394.08	Signalized - Flashing
828	2389930.6	90778.774	Two-way stop
829	2337934.5	98087.233	Two-way stop
830	2406727.2	87935.365	Two-way stop
832	2352508.7	94598.227	Signalized - Flashing
833	2340451.1	95882.89	Two-way stop
834	2339241.2	97071.57	Two-way stop
835	2349156	93624.139	Two-way stop
837	2362024.7	90799.112	Signalized - Flashing
838	2391162.2	85878.959	Two-way stop
839	2390899	85851.259	Signalized - Flashing
841	2397473.6	84074.662	Two-way stop
843	2348754.4	91158.83	Two-way stop
844	2394714.1	84179.146	Two-way yield
848	2381187.6	84196.624	Signalized - Flashing

Node #	X-Coord	Y-Coord	Control Type
849	2330651.5	91002.081	Two-way stop
851	2359720.1	85641.1	Two-way yield
853	2369485.9	84015.921	Signalized - Flashing
854	2396078.6	79697.18	Two-way stop
857	2357620.5	84754.697	Diverge - Uncontrolled
858	2357864.2	84477.696	Two-way yield
859	2358335.1	84211.775	Diverge - Uncontrolled
860	2358972.2	84793.477	Diverge - Uncontrolled
861	2402277.2	78070.642	Two-way stop
862	2358445.9	83962.474	Diverge - Uncontrolled
863	2358041.5	84261.635	Two-way yield
864	2357731.3	84355.815	Two-way yield
865	2358185.6	84073.274	Two-way stop
866	2358451.5	83751.953	Two-way yield
868	2358761.7	83380.771	Two-way yield
869	2358939	83491.572	Two-way yield
870	2332045.7	87208.947	Two-way stop
871	2358966.7	83148.09	Diverge - Uncontrolled
872	2359060.9	83026.21	Two-way yield
873	2349695.6	84376.371	Two-way stop
874	2373692.3	81094.425	Signalized - Flashing
877	2357930.7	82455.588	Diverge - Uncontrolled
878	2363372.4	81354.79	Signalized - Flashing
880	2357853.1	81995.766	Diverge - Uncontrolled
882	2360177.5	80304.867	Signalized - Flashing
885	2362034	78103.659	Signalized - Flashing
886	2362303.3	77988.878	Diverge - Uncontrolled
887	2365508.9	77489.617	Two-way yield
888	2365586.8	77322.686	Diverge - Uncontrolled
890	2364074.1	76526.145	Signalized - Flashing
891	2364296.7	76272.27	Signalized - Flashing
892	2363823.7	76279.226	Signalized - Flashing
893	2364049.8	76001.007	Signalized - Flashing
894	2381354.4	73087.035	Signalized - Flashing
895	2363743.7	75587.156	All-way stop
896	2351374.2	77298.745	Two-way stop
897	2351435.1	77511.757	Two-way stop
900	2351148.1	77020.526	Two-way stop
901	2351478.5	76850.987	Two-way stop
902	2328563.9	79314.141	Signalized - Flashing
905	2362228.5	73454.048	Signalized - Flashing
906	2361475.8	72453.981	Signalized - Flashing
907	2336225.4	75182.793	Signalized - Flashing
912	2345219.3	70785.494	Signalized - Flashing

Node #	X-Coord	Y-Coord	Control Type
913	2354878	66745.789	Diverge - Uncontrolled
914	2354679.7	66801.432	Two-way yield
915	2354672.8	66582.335	Signalized - Flashing
919	2328333.7	111514.68	Two-way stop
921	2333741.8	139542.52	Two-way stop
922	2334878.8	122476.86	Two-way stop
923	2336392.4	104162.34	Two-way stop
925	2354110.5	115562.8	Two-way stop
927	2354417.2	124930.43	Two-way stop
928	2351257.2	133435.41	Two-way stop
929	2365598.9	135985.43	Two-way stop
931	2366715.9	119300.68	Two-way yield
933	2381164.9	136792.55	Two-way stop
934	2367093.4	137419.19	Two-way stop
935	2392203.2	129724	Two-way stop
936	2394933.6	120118.05	Two-way stop
937	2380768.3	118251.79	Two-way stop
938	2378202.2	117427.44	Two-way stop
940	2397148.4	112101.76	Two-way stop
942	2401641.2	111931.83	Two-way stop
946	2328528.8	94865.953	Signalized - Flashing
948	2337475.6	80043.112	Two-way stop
949	2341714.1	97177.702	Two-way stop
950	2343146.9	98111.664	Two-way stop
951	2351957	97915.789	Two-way stop
952	2347778	92931.637	Two-way stop
954	2364504.8	92481.803	Signalized - Flashing
955	2356261	87443.123	Signalized - Flashing
956	2356807.8	70925.381	Diverge - Uncontrolled
958	2358234.4	73588.729	Diverge - Uncontrolled
959	2358347.6	75872.586	Signalized - Flashing
960	2359349.7	75760.744	Diverge - Uncontrolled
961	2357941.6	79382.905	Diverge - Uncontrolled
963	2369707	79593.193	Diverge - Uncontrolled
964	2370730.2	80161.169	Signalized - Flashing
966	2376014.9	93787.462	Two-way stop
967	2379607.6	91209.174	Two-way stop
968	2388874	94408.753	Two-way stop
969	2394901.3	83943.717	Two-way stop
970	2395043.1	84085.542	Two-way stop
972	2406199.1	87822.833	Two-way stop
974	2337718.6	119160.23	Two-way stop
976	2366253.3	82017.537	Two-way stop
977	2353068.1	129669.75	Two-way stop

Node #	X-Coord	Y-Coord	Control Type
980	2323977.8	120515.11	Two-way stop
981	2357029.8	92830.358	Two-way stop
983	2381035.2	86606.534	Two-way stop
985	2348655.8	106141.66	Two-way stop
987	2359985.5	75211.913	Diverge - Uncontrolled
988	2359903.9	75434.706	Diverge - Uncontrolled
989	2361674.9	73860.248	Diverge - Uncontrolled
990	2362968.6	72875.353	Diverge - Uncontrolled
996	2362528.7	77769.085	Two-way stop
997	2362578.8	77855.333	Two-way stop
1002	2441759	145267.36	Two-way stop
1003	2416118.1	143202.05	Two-way stop
1004	2442367.6	141395.7	Two-way stop
1006	2425720.6	140175.15	Two-way stop
1007	2404152.6	138855.61	All-way stop
1008	2402673.3	139088.07	Two-way stop
1009	2419569.2	140434.75	Two-way stop
1013	2437692.2	138971.84	Two-way stop
1017	2480127.6	138940.88	Two-way stop
1019	2490789.5	138697.84	Two-way stop
1020	2410324.1	137121.12	Two-way stop
1021	2411016.6	138118.33	Two-way stop
1022	2443554	137443.38	Two-way stop
1023	2443226.1	137399.06	Signalized - Flashing
1025	2420921.8	137112.9	Two-way stop
1027	2466760.9	138903.65	Two-way yield
1029	2438372.7	136543.87	Two-way yield
1030	2416842.5	136333.84	Two-way stop
1032	2434219.7	135994.69	Diverge - Uncontrolled
1035	2428625.8	135558.83	Two-way stop
1036	2421598	135591.29	Two-way stop
1039	2419636.8	134603.93	Two-way stop
1040	2423500.4	133829.79	Two-way stop
1042	2421339.7	132195.48	Two-way stop
1045	2456498.9	131217.88	Two-way stop
1046	2451796.8	130719.28	Two-way yield
1047	2452025.4	130573.85	Two-way yield
1048	2428730	129574.19	Two-way stop
1049	2427895.5	133394.76	Two-way stop
1051	2440308.1	128717.02	Signalized - Flashing
1053	2487756.3	129017.5	All-way stop
1054	2454597.7	128758.47	Two-way stop
1057	2429043.8	127193.72	Two-way yield
1058	2429026.9	127321.83	Two-way yield

Node #	X-Coord	Y-Coord	Control Type
1059	2455966	127362.38	Two-way stop
1061	2428665.1	126338.91	Two-way stop
1063	2419731.4	123667.12	Two-way stop
1064	2427225.9	121618.82	Two-way stop
1065	2448179.3	121900.08	Two-way stop
1066	2422828	121537.95	Two-way stop
1067	2474399.6	121086.26	Two-way stop
1068	2471256.3	118254.03	Two-way yield
1070	2440941.2	115453.67	Two-way stop
1071	2440498.7	114719.02	All-way stop
1072	2474472.6	113622.94	Two-way yield
1073	2475176.2	115013.49	Two-way yield
1074	2473896.5	113096.64	Diverge - Uncontrolled
1076	2472068.2	112769.78	Diverge - Uncontrolled
1077	2474771.8	112542.64	Diverge - Uncontrolled
1078	2446950.8	114160.28	Two-way stop
1079	2437298	111525.06	Signalized - Flashing
1088	2429047.2	103231.95	Two-way stop
1092	2442831.3	100178.16	Diverge - Uncontrolled
1093	2442607.9	100291.62	Two-way yield
1094	2442636.3	100135.61	Signalized - Flashing
1095	2444517.3	100277.96	Diverge - Uncontrolled
1097	2443675.9	98273.592	Two-way yield
1098	2445083.7	100375.99	Two-way yield
1099	2443469.7	98118.198	Two-way yield
1100	2443628	97742.056	Diverge - Uncontrolled
1102	2443572.6	97093.865	Diverge - Uncontrolled
1104	2442969.6	95352.331	Signalized - Flashing
1106	2416223.7	129523.92	Signalized - Actuated
1110	2431391.8	127626.53	Two-way yield
1113	2449682.8	118039.57	Two-way stop
1115	2426164.5	106322.31	Two-way stop
1116	2447398.4	114169.14	All-way stop
1117	2442621.1	101528.68	Signalized - Flashing
1118	2444451.6	100447.63	Two-way stop
1119	2442229	101590.4	Two-way stop
1122	2435062.5	136474.62	Two-way stop
1123	2435256.4	136156.07	Two-way stop
1126	2445349	137731.46	Signalized - Flashing
1128	2432458.3	120014.17	Two-way stop
1130	2466747.1	139679.25	Signalized - Flashing
1132	2403603.1	140356.08	Two-way stop
1133	2412166.2	138914.7	Two-way stop
1135	2406667.5	131205.28	Two-way stop

Node #	X-Coord	Y-Coord	Control Type
1136	2419495.9	123784.85	Two-way stop
1137	2416314.6	123791.46	Two-way stop
1139	2413212.2	125719.89	Two-way stop
1140	2409943.2	131501.15	Two-way stop
1141	2418088.3	142384.75	Two-way stop
1142	2442866.7	100093.07	Two-way yield
1143	2442735.6	99777.506	Diverge - Uncontrolled
1144	2443139.8	99309.042	Diverge - Uncontrolled
1145	2443237.5	98649.918	Signalized - Flashing
1146	2468381	134998.65	Signalized - Flashing
1156	2386036.4	114138.84	Signalized - Actuated
1159	2365045.2	91520.986	Diverge - Uncontrolled
1160	2365065.1	91367.816	Two-way yield
1161	2365107.6	91305.413	Diverge - Uncontrolled
1162	2365405.4	91328.105	Two-way yield
1163	2362154.2	88250.412	Signalized - Flashing
1164	2362330	88460.313	Diverge - Uncontrolled
1165	2361040.8	86927.898	Diverge - Uncontrolled
1166	2362174	88165.318	Signalized - Flashing
1167	2362103.1	88491.514	Diverge - Uncontrolled
1168	2362202.4	87946.908	Two-way yield
1169	2362046.4	88012.147	Diverge - Uncontrolled

Note: Coordinates in NAD83 State Plane Pennsylvania South
Nodes which reflect changes in roadway properties (number of lanes, speed limit, capacity, etc.) at points along the link are omitted from this list.

ARCADIS

Appendix D

Maps of Roadway Network Showing Average Hourly Travel Speed by Road Link (Full EPZ, Winter Day, Fair Weather)

Evacuation Hour 1
Avg Speed (mph)
Links
<= 0
<= 20
<= 40
<= 60
> 60

VISUM 11.52 PTV AG	PB_Speed.ver	erstellt am: 24.07.2012

Evacuation Hour 2
Avg Speed (mph)
Links
<= 0
<= 20
<= 40
<= 60
> 60

VISUM 11.52 PTV AG	PB_Speed.ver	erstellt am: 24.07.2012

Evacuation Hour 3
Avg Speed (mph)
Links
<= 0
<= 20
<= 40
<= 60
> 60

VISUM 11.52 PTV AG	PB_Speed.ver	erstellt am: 24.07.2012

VISUM 11.52 PTV AG	PB_Speed.ver	erstellt am: 24.07.2012

Evacuation Hour 5
Avg Speed (mph)
Links
<= 0
<= 20
<= 40
<= 60
> 60

VISUM 11.52 PTV AG	PB_Speed.ver	erstellt am: 24.07.2012

Evacuation Hour 6
Avg Speed (mph)
Links
<= 0
<= 20
<= 40
<= 60
> 60

VISUM 11.52 PTV AG	PB_Speed.ver	erstellt am: 24.07.2012

Evacuation Hour 7
Avg Speed (mph)
Links
<= 0
<= 20
<= 40
<= 60
> 60

VISUM 11.52 PTV AG	PB_Speed.ver	erstellt am: 24.07.2012

Evacuation Hour 8
Avg Speed (mph)
Links
<= 0
<= 20
<= 40
<= 60
> 60

VISUM 11.52 PTV AG	PB_Speed.ver	erstellt am: 24.07.2012

Evacuation Hour 9
Avg Speed (mph)
Links
<= 0
<= 20
<= 40
<= 60
> 60

VISUM 11.52 PTV AG	PB_Speed.ver	erstellt am: 24.07.2012

Evacuation Hour 10
Avg Speed (mph)
Links
<= 0
<= 20
<= 40
<= 60
> 60

VISUM 11.52 PTV AG	PB_Speed.ver	erstellt am: 24.07.2012