7. GENERAL POPULATION EVACUATION TIME ESTIMATES (ETE)

This section presents the current results of the computer analyses using the IDYNEV System described in Appendices B, C and D. These results cover 22 regions within the WLS EPZ and the 12 Evacuation Scenarios discussed in Section 6.

The ETE for all Evacuation Cases are presented in Tables 7-1A through 7-1D. **These tables present the estimated times to clear the indicated population percentages from the Evacuation Regions for all Evacuation Scenarios.** The tabulated values of ETE are obtained by interpolating the PC-DYNEV simulation model outputs which are generated at 10-minute intervals, then rounding these data to the nearest 5 minutes.

7.1 Voluntary Evacuation and Shadow Evacuation

We define “voluntary evacuees” as people who are within the EPZ in ERPAs for which an Advisory to Evacuate *has not* been issued, yet who nevertheless elect to evacuate. We define “shadow evacuation” as the movement of people from areas *outside* the EPZ for whom no protective action recommendation has been issued. Both voluntary and shadow evacuations are assumed to take place over the same time frame as the evacuation from within the impacted Evacuation Region.

The ETE for WLS addresses the issue of voluntary evacuees in the manner shown in Figure 7-1. Within the circle defined by the farthest radial distance of the Evacuation Region, 50 percent of those people located in ERPAs not advised to evacuate, are assumed to do so. Within the annular ring extending from the furthest distance of the Evacuation Region (if less than 10 miles), to the EPZ boundary, it is assumed that 35 percent of the people located there will elect to evacuate.

Figure 7-2 presents the area identified as the Shadow Evacuation Region. This region extends radially from the plant to a distance of 15 miles.

Traffic generated within this Shadow Evacuation Region, traveling away from the WLS location, has a potential for impeding evacuating vehicles from within the Evacuation Region. We assume that the traffic volumes emitted within the Shadow Evacuation Region correspond to 30 percent of the residents there plus a proportionate number of employees in that region. **All ETE calculations include this shadow traffic movement.**

7.2 Patterns of Traffic Congestion During Evacuation

Figures 7-3 through 7-6 illustrate the patterns of traffic congestion that arise for the case when the entire EPZ (Region R03) is advised to evacuate during the summer, midweek, midday period under good weather conditions (Scenario 1).

Traffic congestion, as the term is used here, is defined as Level of Service (LOS) F. LOS F is defined as follows (2000 HCM):

> Level of Service F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount that can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop-and-go waves, and they are extremely unstable. Vehicles may progress at reasonable speeds for several hundred feet or more, then be required to stop in a cyclic fashion. Level of Service F is used to describe the operating conditions within the queue, as well as the point of the breakdown. It should be noted, however, that in many cases operating conditions of vehicles or pedestrians discharged from the queue may be quite good. Nevertheless, it is the point at which arrival flow exceeds discharge flow, which causes the queue to form, and Level of Service F is an appropriate designation for such points.

This definition is general and conceptual in nature, and applies primarily to uninterrupted flow. Levels of Service for interrupted flow facilities vary widely in terms of both the user's perception of service quality and the operational variables used to describe them.

All highway "links" which experience LOS F are delineated in these Figures by a red line; all others are lightly indicated. Congestion develops rapidly around concentrations of population and traffic bottlenecks. Many of the routes out of Gaffney are congested one hour (Figure 7-3) after Advisory to Evacuate, including:

- All entrance ramps to Interstate 85 southbound
- Southbound US Route 29
- Westbound Route 11

Figure 7-4 presents the congestion pattern two hours after the Advisory to Evacuate. Congestion continues to grow in the routes leading out of Gaffney and within Gaffney, while congestion begins to build on the following routes:

- Route 329 – northbound approaches to I-85
- Route 150 southbound and Route 18 southbound out of Gaffney
- Northbound routes toward Shelby, NC

Congestion persists on the routes out of Gaffney at 3 hours after the start of evacuation, as illustrated in Figure 7-5. Figure 7-6 shows that much of the congestion in the EPZ has eased at 4 hours after the Advisory to Evacuate; however, congestion still persists in the shadow area outside of Gaffney.

The absence of congestion on network links implies that traffic demand there has decreased below the roadway capacity for a period of time sufficient to dissipate any traffic queues. It does not imply that traffic has completely cleared from these roadway sections.

7.3 Evacuation Rates

Evacuation is a continuous process, as implied by Figures 7-3 through 7-6. Another format for displaying the dynamics of evacuation is depicted in Figure 7-7. This plot indicates the rate at which traffic flows out of the indicated areas for the case of an evacuation of the full EPZ (Region R03) under the indicated conditions. Appendix J presents these plots for all Evacuation Scenarios for Region R03.

As indicated in Figure 7-7, there is typically a long "tail" to these distributions. Vehicles evacuate an area slowly at the beginning, as people respond to the Advisory to Evacuate at different rates. Then traffic demand builds rapidly (slopes of curves increase). When the system becomes congested, traffic exits the EPZ at rates somewhat below capacity until some evacuation routes have cleared. As more routes clear, the aggregate rate of egress slows since many vehicles have already left the EPZ. Towards the end of the process, relatively few evacuation routes service the remaining demand.

This decline in aggregate flow rate, towards the end of the process, is characterized by these curves flattening and gradually becoming horizontal. Ideally, it would be desirable to fully saturate all evacuation routes equally so that all will service traffic near capacity levels and all will clear at the same time. For this ideal situation, all curves would retain the same slope until the end -- thus minimizing evacuation time. In the real world, this ideal is generally unattainable reflecting the variation in population density and in highway capacity over the EPZ.

7.4 Guidance on Using ETE Tables

Tables 7-1A through 7-1D present the ETE values for all 22 Evacuation Regions and all 12 Evacuation Scenarios. They are organized as follows:

Table	Contents
7-1A	ETE represents the elapsed time required for 50 percent of the population within a Region, to evacuate from that Region.
7-1B	ETE represents the elapsed time required for 90 percent of the population within a Region, to evacuate from that Region.
7-1C	ETE represents the elapsed time required for 95 percent of the population within a Region, to evacuate from that Region.
7-1D	ETE represents the elapsed time required for 100 percent of the population within a Region, to evacuate from that Region.

The user first determines the percentile of population for which the ETE is sought. The applicable value of ETE within the chosen Table may then be identified using the following procedure:

1. Identify the applicable **Scenario**:
    - The Season
        - Summer
        - Winter (also Autumn and Spring)
    - The Day of Week
        - Midweek
        - Weekend
    - The Time of Day
        - Midday
        - Evening
    - Weather Condition
        - Good Weather
        - Rain
        - Ice
    - Special Event
        - New Plant Construction

While these Scenarios are designed, in aggregate, to represent conditions throughout the year, some further clarification is warranted:

- The conditions of a summer evening (either midweek or weekend) and rain are not explicitly identified in Tables 7-1A through 7-1D. For these conditions, Scenario (4) applies.
- The conditions of a winter evening (either midweek or weekend) and rain are not explicitly identified in Tables 7-1A through 7-1D. For these conditions, Scenarios (7) and (10) for rain apply.
- The seasons are defined as follows:
    - Summer implies that public schools are *not* in session.
    - Winter, Spring and Autumn imply that public schools *are* in session.
- Time of Day: Midday implies the time over which most commuters are at work.

2. With the Scenario identified, now identify the **Evacuation Region**:
    - Determine the projected azimuth direction of the plume (coincident with the wind direction). This direction is expressed in terms of compass orientation: *towards* N, NNE, NE, …
    - Determine the distance that the Evacuation Region will extend from the Lee Nuclear Station. The applicable distances and their associated candidate Regions are given below:
        - 2 Miles (Region R01)
        - 5 Miles (Regions R02 and R04 through R10)
        - to EPZ Boundary (Regions R03 and R11 through R22)

- Enter Table 7-2 and identify the applicable group of candidate Regions based on the distance that the selected Region extends from WLS. Select the Evacuation Region identifier in that row from the first column of the Table.

3. Determine the **ETE for the Scenario** identified in Step 1 and the Region identified in Step 2, as follows:
   - The columns of Table 7-1 are labeled with the Scenario numbers. Identify the proper column in the selected Table using the Scenario number determined in Step 1.
   - Identify the row in this table that provides ETE values for the Region identified in Step 2.
   - The unique data cell defined by the column and row so determined contains the desired value of ETE expressed in Hours:Minutes.

Example

It is desired to identify the ETE for the following conditions:

- Sunday, August 10th at 4:00 AM.
- It is raining.
- Wind direction is *to* the northeast (NE).
- Wind speed is such that the distance to be evacuated is judged to be 10 miles (to EPZ boundary).
- The desired ETE is that value needed to evacuate 95 percent of the population from within the impacted Region.

Table 7-1C is applicable because the 95th-percentile population is desired. Proceed as follows:

1. Identify the Scenario as summer, weekend, evening and raining. Entering Table 7-1C, it is seen that there is no match for these descriptors. However, the clarification given above assigns this combination of circumstances to Scenario 4.

2. Enter Table 7-2 and locate the Region described as “5-mile Ring and Downwind to EPZ Boundary” for wind direction toward the NE and read REGION R13 in the first column of that row.

3. Enter Table 7-1C to locate the data cell containing the value of ETE for Scenario 4 and Region R13. This data cell is in column (4) and in the row for Region R13; it contains the ETE value of **2:20**.

Table 7-1A. Time To Clear The Indicated Area of 50 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter		Winter		Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend		Midweek Weekend		Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	(11)	Scenario:	(12)
	Midday		Midday		Evening		Midday			Midday		Evening		Midday
Region Wind Toward:	Good Weather	Rain	Good Weather	Rain	Good Weather	Region Wind Toward:	Good Weather	Rain	Ice	Good Weather	Rain	Good Weather	Region Wind Toward:	New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	0:55	0:55	0:50	0:50	0:50	R01 2-mile ring	0:55	0:55	0:55	0:50	0:50	0:50	R01 2-mile ring	1:45
R02 5-mile ring	1:20	1:20	0:55	1:00	0:55	R02 5-mile ring	1:20	1:20	1:25	0:55	1:00	0:55	R02 5-mile ring	1:35
R03 Entire EPZ	1:40	1:45	1:25	1:25	1:15	R03 Entire EPZ	1:45	1:45	1:45	1:25	1:25	1:15	R03 Entire EPZ	1:45
2-Mile Ring and Downwind to 5 Miles														
R04 N,NNE,NE	1:15	1:15	0:55	0:55	0:55	R04 N,NNE,NE	1:15	1:15	1:15	0:55	0:55	0:55	R04 N,NNE,NE	1:35
R05 ENE,E	1:15	1:15	0:55	0:55	0:55	R05 ENE,E	1:15	1:15	1:15	0:55	0:55	0:55	R05 ENE,E	1:40
R06 ESE	1:00	1:00	0:50	0:50	0:55	R06 ESE	1:00	1:00	1:00	0:50	0:50	0:55	R06 ESE	1:40
R07 SE,SSE,S	1:10	1:10	0:55	0:55	0:55	R07 SE,SSE,S	1:10	1:10	1:10	0:55	0:55	0:55	R07 SE,SSE,S	1:45
R08 SSW,SW	1:10	1:10	0:55	0:55	0:55	R08 SSW,SW	1:10	1:10	1:10	0:55	0:55	0:55	R08 SSW,SW	1:45
R09 WSW,W,WNW	1:15	1:15	0:55	1:00	0:55	R09 WSW,W,WNW	1:15	1:15	1:20	0:55	1:00	0:55	R09 WSW,W,WNW	1:35
R10 NW,NNW	1:20	1:20	0:55	0:55	0:55	R10 NW,NNW	1:20	1:20	1:20	0:55	0:55	0:55	R10 NW,NNW	1:30
5-Mile Ring and Downwind to EPZ Boundary														
R11 N	1:20	1:20	1:05	1:05	1:05	R11 N	1:20	1:20	1:25	1:05	1:05	1:05	R11 N	1:25
R12 NNE	1:20	1:20	1:05	1:05	1:05	R12 NNE	1:20	1:20	1:25	1:05	1:05	1:05	R12 NNE	1:25
R13 NE	1:20	1:20	1:05	1:05	1:05	R13 NE	1:20	1:20	1:25	1:05	1:05	1:05	R13 NE	1:25
R14 ENE,E	1:20	1:20	1:00	1:00	1:00	R14 ENE,E	1:20	1:25	1:25	1:00	1:00	1:00	R14 ENE,E	1:30
R15 ESE	1:20	1:20	1:00	1:00	0:55	R15 ESE	1:20	1:20	1:25	1:00	1:00	0:55	R15 ESE	1:30
R16 SE	1:20	1:20	0:55	1:00	0:55	R16 SE	1:20	1:20	1:25	0:55	1:00	0:55	R16 SE	1:30
R17 SSE	1:25	1:25	1:00	1:05	1:00	R17 SSE	1:25	1:25	1:30	1:00	1:05	1:00	R17 SSE	1:35
R18 S	1:25	1:25	1:00	1:05	1:00	R18 S	1:25	1:25	1:30	1:00	1:05	1:00	R18 S	1:35
R19 SSW,SW	1:25	1:25	1:05	1:05	1:05	R19 SSW,SW	1:25	1:25	1:30	1:05	1:05	1:05	R19 SSW,SW	1:35
R20 WSW	1:40	1:45	1:25	1:25	1:15	R20 WSW	1:45	1:45	1:45	1:25	1:25	1:15	R20 WSW	1:45
R21 W,WNW	1:40	1:40	1:25	1:25	1:15	R21 W,WNW	1:40	1:45	1:45	1:25	1:25	1:15	R21 W,WNW	1:45
R22 NW,NNW	1:40	1:40	1:25	1:25	1:15	R22 NW,NNW	1:40	1:40	1:45	1:20	1:25	1:15	R22 NW,NNW	1:45

Table 7-1B. Time To Clear The Indicated Area of 90 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter		Winter		Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend		Midweek Weekend		Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	(11)	Scenario:	(12)
Region Wind Toward:	Midday		Midday		Evening	Region Wind Toward:	Midday			Midday		Evening	Region Wind Toward:	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather		Good Weather	Rain	Ice	Good Weather	Rain	Good Weather		New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	1:50	1:50	1:30	1:30	1:50	R01 2-mile ring	1:50	1:50	1:50	1:30	1:30	1:50	R01 2-mile ring	3:00
R02 5-mile ring	2:30	2:30	1:50	1:50	1:50	R02 5-mile ring	2:30	2:30	2:30	1:50	1:50	1:50	R02 5-mile ring	3:00
R03 Entire EPZ	3:25	3:25	2:55	3:00	2:30	R03 Entire EPZ	3:25	3:30	3:35	2:50	2:50	2:30	R03 Entire EPZ	3:35
2-Mile Ring and Downwind to 5 Miles														
R04 N,NNE,NE	2:25	2:30	1:50	1:50	1:50	R04 N,NNE,NE	2:25	2:30	2:30	1:50	1:50	1:50	R04 N,NNE,NE	3:00
R05 ENE,E	2:30	2:30	1:50	1:50	1:50	R05 ENE,E	2:30	2:30	2:30	1:50	1:50	1:50	R05 ENE,E	3:00
R06 ESE	2:00	2:00	1:40	1:40	1:50	R06 ESE	2:00	2:00	2:00	1:40	1:40	1:50	R06 ESE	3:00
R07 SE,SSE,S	2:20	2:20	1:50	1:50	1:50	R07 SE,SSE,S	2:20	2:20	2:20	1:50	1:50	1:50	R07 SE,SSE,S	3:05
R08 SSW,SW	2:10	2:20	1:50	1:50	1:50	R08 SSW,SW	2:10	2:10	2:20	1:50	1:50	1:50	R08 SSW,SW	3:05
R09 WSW,W,WNW	2:30	2:30	1:50	1:50	1:50	R09 WSW,W,WNW	2:30	2:30	2:30	1:50	1:50	1:50	R09 WSW,W,WNW	3:05
R10 NW,NNW	2:30	2:30	1:50	1:50	1:50	R10 NW,NNW	2:30	2:30	2:30	1:50	1:50	1:50	R10 NW,NNW	3:00
5-Mile Ring and Downwind to EPZ Boundary														
R11 N	2:30	2:30	2:05	2:05	2:00	R11 N	2:30	2:30	2:40	2:05	2:05	2:00	R11 N	2:45
R12 NNE	2:30	2:30	2:05	2:10	2:00	R12 NNE	2:30	2:30	2:40	2:05	2:05	2:00	R12 NNE	2:45
R13 NE	2:30	2:30	2:10	2:10	2:00	R13 NE	2:30	2:30	2:40	2:05	2:05	2:00	R13 NE	2:45
R14 ENE,E	2:30	2:30	2:00	2:00	1:55	R14 ENE,E	2:30	2:30	2:30	2:00	2:00	1:50	R14 ENE,E	2:50
R15 ESE	2:30	2:30	2:00	2:00	1:50	R15 ESE	2:30	2:30	2:30	2:00	2:00	1:50	R15 ESE	2:55
R16 SE	2:30	2:30	1:50	1:50	1:50	R16 SE	2:30	2:30	2:30	1:50	1:50	1:50	R16 SE	2:55
R17 SSE	2:40	2:40	2:00	2:00	2:00	R17 SSE	2:40	2:40	2:40	2:00	2:00	2:00	R17 SSE	3:10
R18 S	2:40	2:40	2:00	2:00	2:00	R18 S	2:40	2:40	2:40	2:00	2:00	2:00	R18 S	3:10
R19 SSW,SW	2:40	2:45	2:20	2:20	2:15	R19 SSW,SW	2:40	2:45	2:50	2:20	2:20	2:15	R19 SSW,SW	3:10
R20 WSW	3:25	3:25	2:55	3:00	2:30	R20 WSW	3:25	3:30	3:35	2:50	2:50	2:30	R20 WSW	3:35
R21 W,WNW	3:25	3:25	2:55	3:00	2:30	R21 W,WNW	3:25	3:30	3:30	2:50	2:50	2:30	R21 W,WNW	3:25
R22 NW,NNW	3:15	3:20	2:50	2:50	2:25	R22 NW,NNW	3:20	3:20	3:25	2:45	2:45	2:25	R22 NW,NNW	3:20

Table 7-1C. Time To Clear The Indicated Area of 95 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter		Winter		Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend		Midweek Weekend		Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	(11)	Scenario:	(12)
	Midday		Midday		Evening		Midday			Midday		Evening		Midday
Region Wind Toward:	Good Weather	Rain	Good Weather	Rain	Good Weather	Region Wind Toward:	Good Weather	Rain	Ice	Good Weather	Rain	Good Weather	Region Wind Toward:	New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	2:30	2:30	1:50	1:50	2:10	R01 2-mile ring	2:20	2:30	2:30	1:50	1:50	2:10	R01 2-mile ring	3:10
R02 5-mile ring	3:10	3:10	2:10	2:10	2:10	R02 5-mile ring	3:10	3:10	3:10	2:10	2:10	2:10	R02 5-mile ring	3:15
R03 Entire EPZ	3:40	3:40	3:15	3:20	2:50	R03 Entire EPZ	3:45	3:45	3:50	3:10	3:10	2:50	R03 Entire EPZ	3:55
2-Mile Ring and Downwind to 5 Miles														
R04 N,NNE,NE	3:00	3:00	2:10	2:10	2:10	R04 N,NNE,NE	3:00	3:00	3:00	2:10	2:10	2:10	R04 N,NNE,NE	3:10
R05 ENE,E	3:00	3:00	2:10	2:10	2:10	R05 ENE,E	3:00	3:00	3:00	2:10	2:10	2:10	R05 ENE,E	3:10
R06 ESE	2:40	2:40	2:00	2:00	2:10	R06 ESE	2:40	2:40	2:40	2:00	2:00	2:10	R06 ESE	3:10
R07 SE,SSE,S	2:50	2:50	2:10	2:10	2:10	R07 SE,SSE,S	2:50	2:50	2:50	2:10	2:10	2:10	R07 SE,SSE,S	3:15
R08 SSW,SW	2:50	2:50	2:10	2:10	2:10	R08 SSW,SW	2:50	2:50	2:50	2:10	2:10	2:10	R08 SSW,SW	3:15
R09 WSW,W,WNW	3:00	3:00	2:10	2:10	2:10	R09 WSW,W,WNW	3:00	3:00	3:00	2:10	2:10	2:10	R09 WSW,W,WNW	3:15
R10 NW,NNW	3:00	3:00	2:10	2:10	2:10	R10 NW,NNW	3:00	3:00	3:00	2:10	2:10	2:10	R10 NW,NNW	3:10
5-Mile Ring and Downwind to EPZ Boundary														
R11 N	3:10	3:10	2:20	2:20	2:20	R11 N	3:10	3:10	3:10	2:20	2:20	2:20	R11 N	3:10
R12 NNE	3:10	3:10	2:20	2:20	2:20	R12 NNE	3:10	3:10	3:10	2:20	2:20	2:20	R12 NNE	3:10
R13 NE	3:10	3:10	2:20	2:20	2:20	R13 NE	3:10	3:10	3:10	2:20	2:20	2:20	R13 NE	3:10
R14 ENE,E	3:10	3:10	2:20	2:20	2:10	R14 ENE,E	3:10	3:10	3:10	2:10	2:10	2:10	R14 ENE,E	3:10
R15 ESE	3:10	3:10	2:20	2:20	2:10	R15 ESE	3:10	3:10	3:10	2:10	2:10	2:10	R15 ESE	3:15
R16 SE	3:10	3:10	2:10	2:10	2:10	R16 SE	3:10	3:10	3:10	2:10	2:10	2:10	R16 SE	3:15
R17 SSE	3:10	3:10	2:20	2:20	2:20	R17 SSE	3:10	3:10	3:10	2:20	2:20	2:20	R17 SSE	3:30
R18 S	3:10	3:10	2:20	2:20	2:20	R18 S	3:10	3:10	3:10	2:20	2:20	2:20	R18 S	3:30
R19 SSW,SW	3:10	3:10	2:30	2:40	2:30	R19 SSW,SW	3:10	3:10	3:10	2:30	2:40	2:30	R19 SSW,SW	3:30
R20 WSW	3:40	3:40	3:15	3:20	2:50	R20 WSW	3:45	3:45	3:50	3:10	3:10	2:50	R20 WSW	3:55
R21 W,WNW	3:40	3:40	3:10	3:20	2:50	R21 W,WNW	3:45	3:45	3:50	3:10	3:10	2:50	R21 W,WNW	3:45
R22 NW,NNW	3:35	3:40	3:10	3:10	2:40	R22 NW,NNW	3:40	3:40	3:45	3:00	3:00	2:40	R22 NW,NNW	3:40

Table 7-1D. Time To Clear The Indicated Area of 100 Percent of the Affected Population

	Summer		Summer		Summer		Winter			Winter		Winter		Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend		Midweek Weekend		Midweek
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	(11)	Scenario:	(12)
Region Wind Toward:	Midday		Midday		Evening	Region Wind Toward:	Midday			Midday		Evening	Region Wind Toward:	Midday
	Good Weather	Rain	Good Weather	Rain	Good Weather		Good Weather	Rain	Ice	Good Weather	Rain	Good Weather		New Plant Construction
Entire 2-Mile Region, 5-Mile Region, and EPZ														
R01 2-mile ring	4:00	4:00	3:00	3:00	3:00	R01 2-mile ring	4:00	4:00	4:00	3:00	3:00	3:00	R01 2-mile ring	4:00
R02 5-mile ring	4:05	4:05	3:20	3:30	3:30	R02 5-mile ring	4:05	4:05	4:10	3:20	3:30	3:30	R02 5-mile ring	4:05
R03 Entire EPZ	4:20	4:20	4:20	4:20	4:10	R03 Entire EPZ	4:20	4:20	4:40	4:00	4:00	4:10	R03 Entire EPZ	4:50
2-Mile Ring and Downwind to 5 Miles														
R04 N,NNE,NE	4:00	4:00	3:20	3:20	3:20	R04 N,NNE,NE	4:00	4:00	4:10	3:20	3:20	3:20	R04 N,NNE,NE	4:00
R05 ENE,E	4:00	4:00	3:20	3:20	3:20	R05 ENE,E	4:00	4:00	4:10	3:20	3:20	3:20	R05 ENE,E	4:00
R06 ESE	4:00	4:00	3:00	3:00	3:10	R06 ESE	4:00	4:00	4:00	3:00	3:00	3:00	R06 ESE	4:00
R07 SE,SSE,S	4:00	4:00	3:00	3:00	3:00	R07 SE,SSE,S	4:00	4:10	4:10	3:00	3:00	3:00	R07 SE,SSE,S	4:00
R08 SSW,SW	4:00	4:00	3:00	3:00	3:00	R08 SSW,SW	4:00	4:10	4:10	3:00	3:00	3:00	R08 SSW,SW	4:00
R09 WSW,W,WNW	4:00	4:00	3:20	3:30	3:30	R09 WSW,W,WNW	4:00	4:10	4:10	3:20	3:30	3:30	R09 WSW,W,WNW	4:00
R10 NW,NNW	4:00	4:00	3:20	3:20	3:30	R10 NW,NNW	4:00	4:00	4:10	3:20	3:20	3:30	R10 NW,NNW	4:00
5-Mile Ring and Downwind to EPZ Boundary														
R11 N	4:10	4:10	4:00	4:00	4:00	R11 N	4:10	4:10	4:10	4:00	4:00	4:00	R11 N	4:10
R12 NNE	4:10	4:10	4:00	4:00	4:00	R12 NNE	4:10	4:10	4:10	4:00	4:00	4:00	R12 NNE	4:10
R13 NE	4:10	4:10	4:00	4:00	4:00	R13 NE	4:10	4:10	4:10	4:00	4:00	4:00	R13 NE	4:10
R14 ENE,E	4:10	4:10	3:30	3:40	3:30	R14 ENE,E	4:10	4:10	4:10	3:30	3:40	3:30	R14 ENE,E	4:10
R15 ESE	4:10	4:10	3:30	3:40	3:30	R15 ESE	4:10	4:10	4:10	3:30	3:40	3:30	R15 ESE	4:10
R16 SE	4:05	4:05	3:30	3:40	3:30	R16 SE	4:05	4:05	4:10	3:30	3:40	3:30	R16 SE	4:05
R17 SSE	4:10	4:10	3:50	3:50	3:50	R17 SSE	4:10	4:20	4:20	3:50	3:50	3:50	R17 SSE	4:10
R18 S	4:10	4:10	3:50	3:50	3:50	R18 S	4:10	4:20	4:20	3:50	3:50	3:50	R18 S	4:10
R19 SSW,SW	4:10	4:10	4:00	4:00	4:00	R19 SSW,SW	4:10	4:10	4:20	4:00	4:00	4:00	R19 SSW,SW	4:20
R20 WSW	4:10	4:20	4:20	4:20	4:10	R20 WSW	4:20	4:20	4:40	4:00	4:00	4:10	R20 WSW	4:50
R21 W,WNW	4:10	4:20	4:20	4:20	4:00	R21 W,WNW	4:20	4:20	4:40	4:00	4:00	4:00	R21 W,WNW	4:40
R22 NW,NNW	4:10	4:20	4:20	4:20	4:00	R22 NW,NNW	4:20	4:20	4:30	4:00	4:00	4:00	R22 NW,NNW	4:20

Table 7-2. Description of Evacuation Regions														
Region	Description	ERPA												
		A-0	A-1	A-2	A-3	B-1	B-2	C-1	C-2	D-1	D-2	E-2	F-2	G-2	H-2
R01	2 mile ring	X													
R02	5-mile ring	X	X			X		X		X					
R03	Full EPZ	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Evacuate 2 mile ring and 5 miles downwind															
Region	Wind Direction Toward:	ERPA													
		A-0	A-1	A-2	A-3	B-1	B-2	C-1	C-2	D-1	D-2	E-2	F-2	G-2	H-2
R04	N, NNE, NE	X	X												
R05	ENE, E	X	X			X									
R06	ESE	X				X									
R07	SE,SSE,S	X				X		X							
R08	SSW, SW	X						X							
R09	WSW,W, WNW	X						X		X					
R10	NW,NNW	X	X							X					
Evacuate 5 mile ring and downwind to EPZ boundary															
Region	Wind Direction Toward:	ERPA													
		A-0	A-1	A-2	A-3	B-1	B-2	C-1	C-2	D-1	D-2	E-2	F-2	G-2	H-2
R11	N	X	X	X	X	X	X	X		X					
R12	NNE	X	X	X	X	X	X	X	X	X					
R13	NE	X	X	X	X	X	X	X	X	X	X				
R14	ENE, E	X	X			X	X	X	X	X	X				
R15	ESE	X	X			X		X	X	X	X	X			
R16	SE	X	X			X		X		X	X	X			
R17	SSE	X	X			X		X		X	X	X	X		
R18	S	X	X			X		X		X		X	X		
R19	SSW, SW	X	X			X		X		X			X	X	
R20	WSW	X	X			X		X		X			X	X	X
R21	W, WNW	X	X			X		X		X				X	X
R22	NW,NNW	X	X	X	X	X		X		X					X

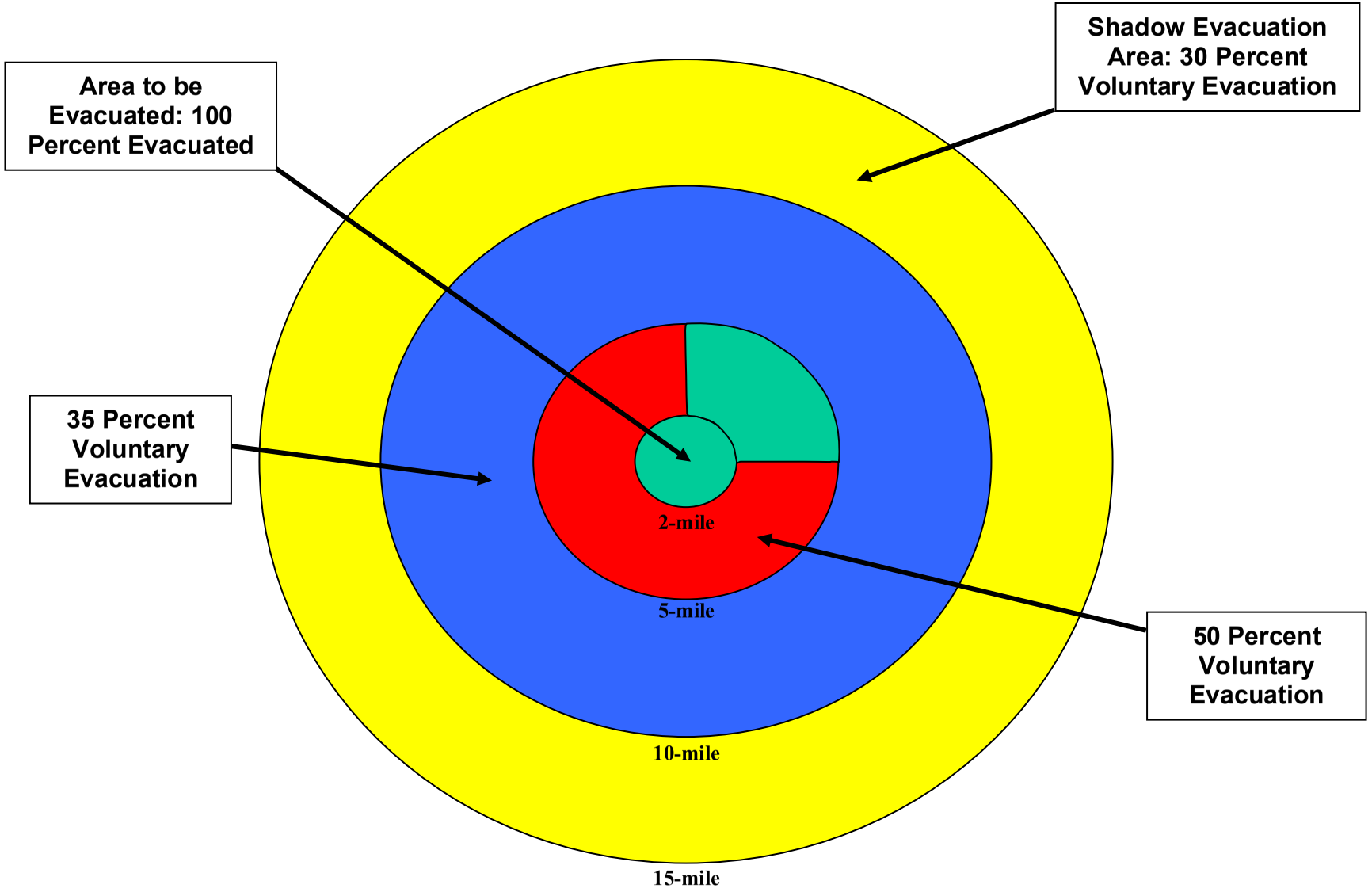

Figure 7-1. Assumed Evacuation Response

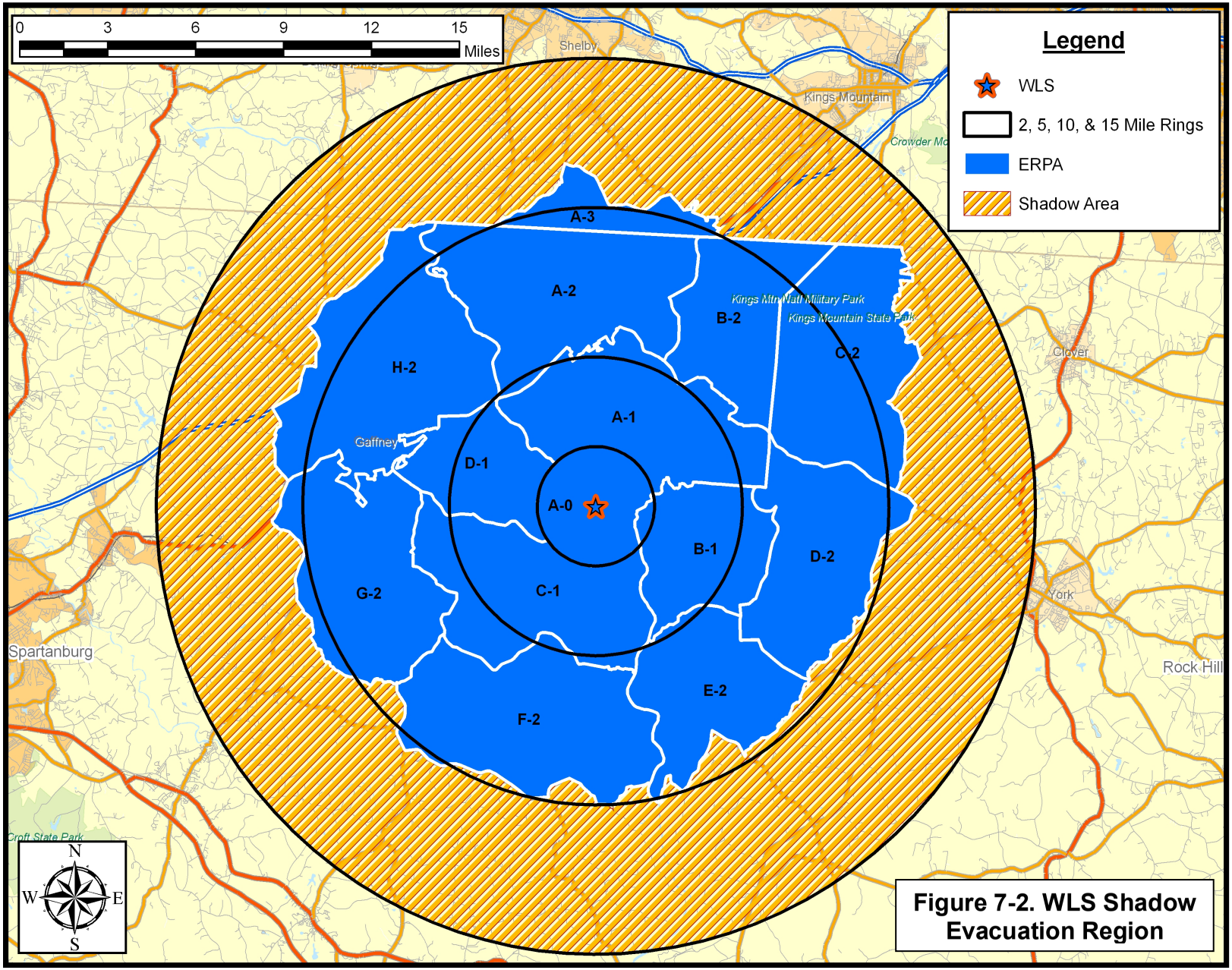

Figure 7-2. WLS Shadow Evacuation Region

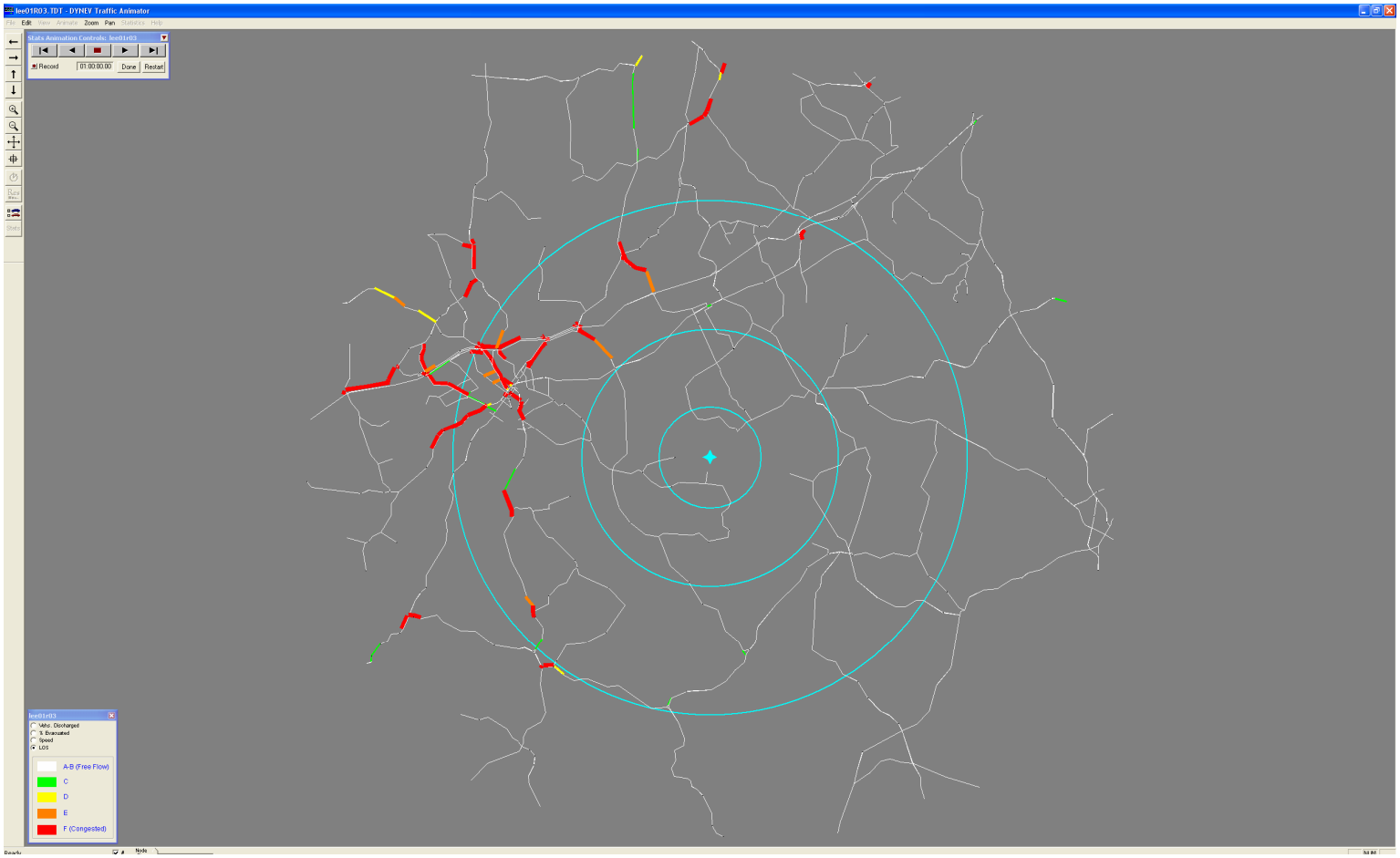

Figure 7-3. Areas of Traffic Congestion
1 Hour after the Advisory to Evacuate

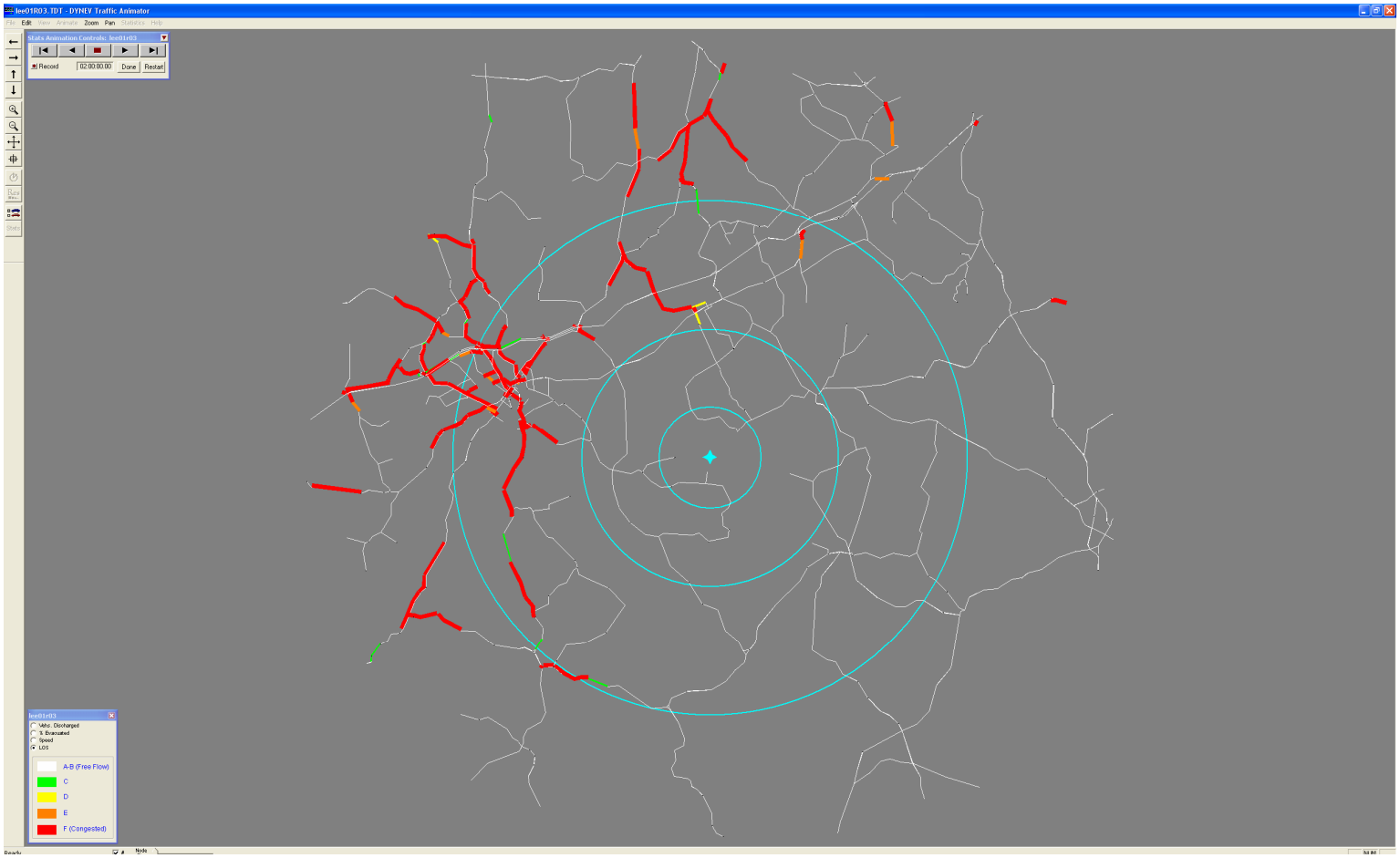

Figure 7-4. Areas of Traffic Congestion
2 Hours after the Advisory to Evacuate

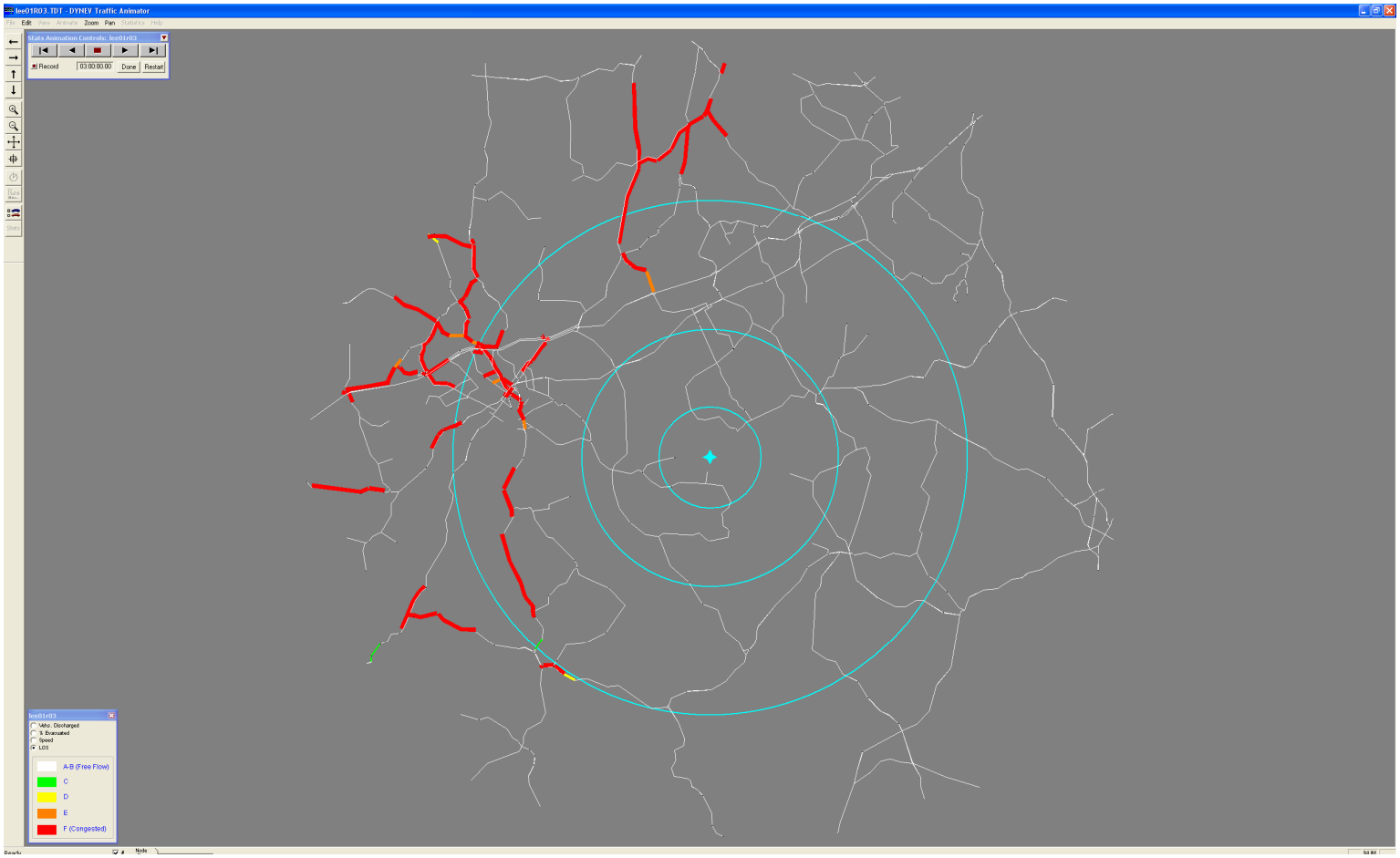

Figure 7-5. Areas of Traffic Congestion
3 Hours after the Advisory to Evacuate

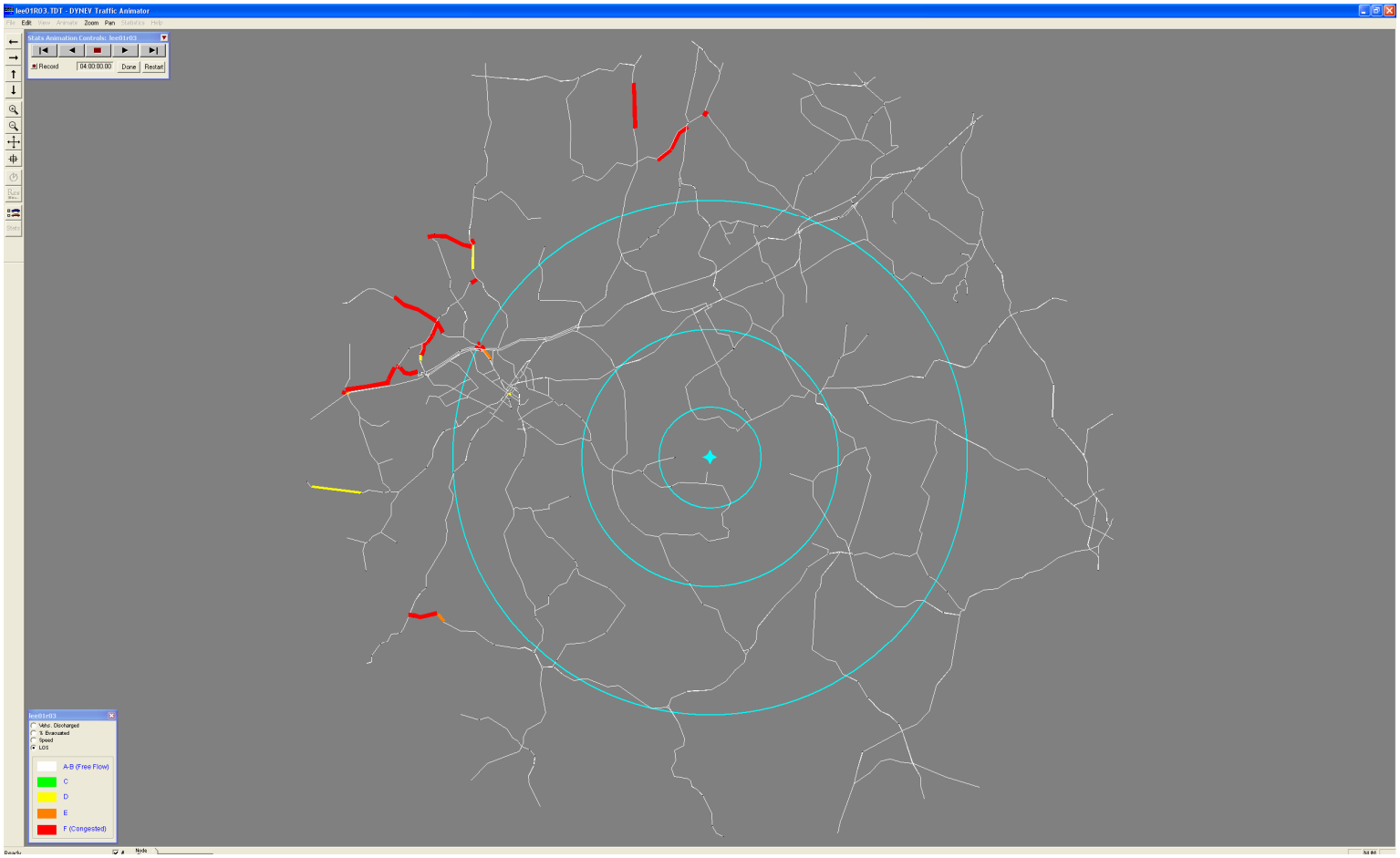

Figure 7-6. Areas of Traffic Congestion
4 Hours after the Advisory to Evacuate

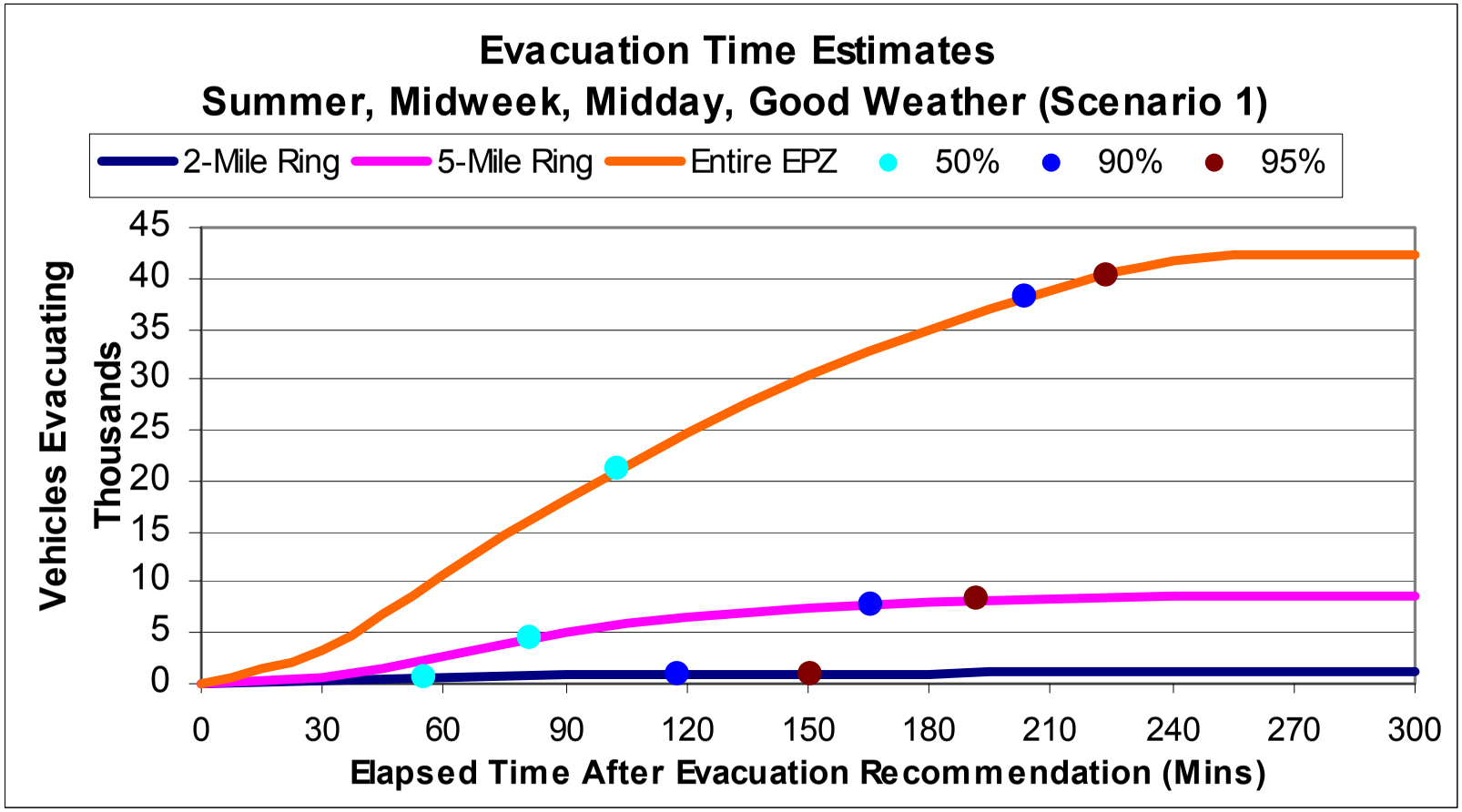

Figure 7-7. Evacuation Time Estimates for WLS Summer, Midweek, Midday, Good Weather Evacuation of Region R03 (Entire EPZ)