

A Fire and EMS Facilities Plan for York Area United Fire and Rescue York, Pennsylvania



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October 20, 2009

Mr. William Schenck, Chairman
York Area United Fire and Rescue Commission
3321 Whiteford Road
York, Pennsylvania 17402

Dear Chairman Schenck:

I am pleased to submit with this letter our Fire and EMS Facilities Plan for the York Area United Fire and Rescue, York, Pennsylvania.

We would like to acknowledge the tremendous assistance that we received from officials in each Township, the Joint Fire Services Committee and the paid and volunteer service providers.

If you have any questions concerning this Plan, please contact Mr. Les Adams (301-580-1900), or my office.

Sincerely,

Brian Buracker
Vice President
bb/kf

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FIRE AND EMS FACILITIES

This Report reviews general concepts for fire and EMS station location planning and provides a risk analysis specific to YAUFR, a review of response times, an overview of the Study Team's approach to developing fire station location recommendations—including Insurance Services Office (ISO) criteria, NFPA criteria, current fire and EMS station facilities, and options and recommendations for current and future fire, rescue and EMS stations in YAUFR.

It should be noted that this Report builds on the fire and EMS station information, findings and recommendations provided in the 2006 Merger Study conducted for Spring Garden and Springettsbury Townships and the respective volunteer fire companies. As such, applicable material contained in that original Study is included in this Report as considered appropriate.

FIRE STATION LOCATION STANDARDS & CRITERIA

There are a number of criteria utilized in considering the location of fire, rescue and EMS stations.

CFAI Fixed Facilities Criteria

The Study Team considered criteria from the Commission on Fire Accreditation International (CFAI) as the fire and EMS facilities were assessed as part of this YAUFR planning Study.

The CFAI accreditation criteria related to fire department fixed facilities are as follows:

Fixed facility resources are designed, maintained, managed and adequate to meet the agency's goals and objectives.

1. Space allocations are adequate for agency functions such as operations, fire prevention, training, support services and administration.
2. Buildings and grounds are clean and in good repair. Maintenance is conducted in a systematic and planned fashion.



FIRE AND EMS FACILITIES

FIRE STATION LOCATION STANDARDS & CRITERIA (Continued)

3. Physical facilities are adequate and properly distributed in accordance with stated service level objectives and standards of cover.
4. Facilities are in compliance with federal, state and local regulations.

Insurance Services Office (ISO) Criteria

The fire suppression rating schedule utilized by the Insurance Services Office (ISO) in its evaluation of the performance of municipal fire suppression capabilities includes fire station location analysis with objective mileage-based criteria. Item 560 in the Fire Suppression Grading Schedule, Edition 6-80, reads as follows:

“The built-upon area of the city should have a first-due engine company within 1.5 miles and a ladder-service company within 2.5 miles.”

The ISO considers the optimum physical location of engine companies and ladder companies essential to earning the maximum number of credits under the fire department item in the rating schedule. Obviously, engine companies and ladder companies are placed in fire stations. Therefore, it is the location of the fire station that is important to the evaluation process used by the ISO.

NFPA 1710 Standard

There are a number of applicable NFPA standards and related practices important to fire officials nationwide that include response time considerations.

NFPA 1710 is an industry standard that serves as a benchmark for the fire department organization and deployment of services offered by firefighters. It is the standard for paid fire protection services. NFPA 1720 is the standard for combination volunteer/paid and



FIRE AND EMS FACILITIES

FIRE STATION LOCATION STANDARDS & CRITERIA (Continued)

volunteer fire departments that describes the requirements for delivery of services, response capabilities, incident management, and strategy.

NFPA 1710 includes the following benchmarks related to call receipt and processing time, turnout time, and response (travel) time:

1. Turnout time of one minute on fire suppression and EMS calls; and,
2. The fire department's fire suppression resources deployed to provide for the arrival of an engine company within a four-minute response time and/or the initial full alarm assignment within an eight-minute response time to 90 percent of the incidents.

It should be noted that the various standards and criteria discussed in previous sections place a high priority on both the effective delivery of fire and EMS service and the protection of life and property. Moreover, the safety of the firefighters and officers delivering the services and the safety of the customer and stakeholder were important considerations to the development of these standards and criteria and to their application for YAUFR by the Study Team.

Fire-based Response Time Goal

The time from ignition until water is applied to a fire should be no longer than the six to nine minutes it takes for flashover to occur with a free-burning fire. Flashover is defined as essentially the instant burning of an explosive mixture of heated air, smoke and gases which flashes back through openings around the fire area, such as doors and windows. This does not consider a smoldering fire, which can burn for hours before breaking out into the free-burning stage.



FIRE AND EMS FACILITIES

FIRE STATION LOCATION STANDARDS & CRITERIA (Continued)

Flashover is a critical stage of fire growth for two reasons. First, no living thing in the room of origin will survive, so the chances of saving lives drops dramatically. Second, flashover creates a quantum jump in the rate of combustion, and a significantly greater amount of water is needed to reduce the burning material below its ignition temperature.

A fire that has reached flashover means it is generally too late to save anyone in the room of origin, and substantially more staffing is required to handle the larger hose streams needed to extinguish the fire. A post-flashover fire burns hotter and moves faster, compounding the search and rescue problems to the remainder of the structure. At the same time more firefighters are needed for fire attack and the chance of injury to firefighters increases.

For these reasons, it is critical that fire suppression forces reach a fire structure and initiate effective suppression efforts prior to flashover.

EMS-Based Response Time Goal

Time is one of the most important factors relating to patient outcomes in emergency medical situations. Rapid delivery of EMS is essential in the acute situation of cardiorespiratory arrest; a measurable factor is the time from heart stoppage and cessation of breathing (clinical death) to when irreversible brain damage begins (biological death). Although the time varies with patients and conditions, **the generally recognized intervention time to prevent biological death is four to six minutes.**



FIRE AND EMS FACILITIES

FIRE STATION LOCATION DETERMINATION

The following sections relate to methodologies for the determination of fire station locations.

Overview

The location of the fire, rescue and EMS stations from which fire, rescue and EMS service is provided is a key element in the level of fire protection and rescue service provided by local governments. The decision to locate a new fire or rescue station or relocate an existing station has many components other than just its siting. These include:

- A. Cost of the facility and equipment;
- B. Apparatus;
- C. Staffing;
- D. Annual operating costs; and,
- E. Public reaction and support.

There is no magic formula for determining the location of fire, rescue and EMS stations in a community. While computerized programs can assist officials in these important decisions, the final determinations of many factors require human-based consideration.

Computerized Fire Station Locator System

In the National Fire Protection Association (NFPA) NFPA Fire Protection Handbook, one chapter entitled “Fire Department Facilities and Fire Training Facilities” notes a general trend in fire station planning. The authors, Emmanuel Mesagna and John Baroni relate:

“Over the past decade, fire station planning for location and design has become increasingly sophisticated and complex. With the use of computer programs and computer model studies, travel time analysis and fire station site evaluation has allowed the fire service to become more precise in its decision-making procedures.”



FIRE AND EMS FACILITIES

FIRE STATION LOCATION DETERMINATION (Continued)

The Study Team utilizes a computer model for purposes of conducting fire station location analysis. This Section describes the methods typically used for this analysis.

The Study Team's computerized fire station locator system is a geo-based planning tool that calculates and displays street network data. The street data resides in tables to include all the information necessary to perform fire station location studies. This street data is similar to the database typically used in Geographic Information System (GIS) for analysis and computer aided dispatch systems used for the dispatch of police, fire, and EMS units. The latitude/longitude coordinate system used is accurate to one millionth of a degree.

Fire stations and other points of interest are added to the database by entering an address or pointing to a location on a map. The travel possibilities are calculated from each fire station and every street block in the study area. The number and type of apparatus in each fire station are noted and the travel time for the first, second and third arriving fire apparatus is calculated.

Using this computer program, a travel time analysis typically involves every street in the service area being studied. Average travel time, total miles of roadway, average travel speed and "first in" response areas are generally developed for each fire station with color maps illustrating those areas. In addition, fire station location alternatives are modeled where appropriate. Data and maps developed as part of this modeling analysis are typically included by the Study Team to support the conclusions and recommendations of fire station location studies conducted.

It should be noted that all response area maps and charts generated by this program are based on travel time as projected by the Study Team's computer program. The travel time calculated by the program are based on the following:

1. An estimated 45 seconds for turnout time for each of the fire stations;



FIRE AND EMS FACILITIES

FIRE STATION LOCATION DETERMINATION (Continued)

2. A 15-second intersection turn delay for each intersection in the response route;
3. Street segment speeds are set from 25 to 55 miles per hour, in 5 mile per hour increments. For example, interstate highways are set at 55 miles per hour, while a street segment 300 feet long would be set at 25 miles per hour.

Based on these criteria, the computer program calculates response paths from the fire station sites entered in the computer to every street location. The program then projects each fire station's response area and calculates average apparatus travel time, average travel speed and total miles of streets in each fire station travel time-projected response area.

MAXIMUM TOTAL RESPONSE TIME

A key consideration in determining a fire, rescue and EMS station location for fire-related services is the maximum acceptable total response time. This section discusses fire response time concepts and components.

Fire-Related Response Time

One of the primary criteria used in determining adequate response time (and thus the location of a fire station) is the time from ignition to flashover (simultaneous ignition of all combustibles), at which time the spread of the fire will increase dramatically. The Study Team's experience, supported by various studies and research, has shown that the time from ignition to flashover in a structural fire will vary from six to nine minutes. To arrive on the scene within this time frame, the following time factors need to be taken into consideration:

1. Ignition to detection to communication notification;
2. Communications notification to fire department dispatch;
3. Fire department dispatch until apparatus is enroute;
4. Travel time to the scene; and,



FIRE AND EMS FACILITIES

MAXIMUM TOTAL RESPONSE TIME (continued)

5. Initiation of service, e.g., placing hose lines in service.

A description of these five factors may be useful for the reader.

1. Ignition to Detection to Communication Notification

Great strides have been made in reducing the time from ignition to detection of fires. For example, inexpensive smoke detectors, heat detectors, monitored alarm systems and sprinkler systems have become standard in most residential, commercial and industrial buildings.

This time factor can be reduced if the automatic suppression and detection system simultaneously notify the occupants and the communications center. This time factor can be significantly controlled by changing the local codes to require detection devices in all residential, commercial and industrial buildings, with automatic notifications in those facilities with large life or property loss potential.

2. Communications Notification to Fire Department Dispatch

The internal dispatch center processing time of a call for assistance is dependent upon the call load, the level of expertise of the communications operators and the type of communications equipment. Processing time of less than 60 seconds is the ideal and should be the goal of fire department communication and dispatch centers.

3. Fire Department Dispatch Until Apparatus is Enroute (Turnout Time)

Once a notification is received in a fire, rescue and EMS station, personnel must stop their activity, note the location and nature of the call, in some cases involving volunteers who respond to the station, don any protective clothing, open the doors, board the apparatus, start the apparatus, and exit the station. These factors are fairly stable and only small amounts of



FIRE AND EMS FACILITIES

MAXIMUM TOTAL RESPONSE TIME (continued)

time can be saved by automating the door opening process with the station alert, and placing information about the nature and location of the call on computer terminals in the vehicle.

4. Travel Time to the Scene

Travel to the scene generally requires the most time. It is dependent upon:

- A. Fire, rescue and EMS station location;
- B. Weather factors;
- C. Road conditions;
- D. Traffic conditions;
- E. Street layout and special access impediments;
- F. Size of service area;
- G. Training of personnel; and,
- H. Apparatus staffing approach.

Response time may be lessened as a result of installation of traffic control preemption devices.

5. Initiation of Service, e.g., Placing Hose Lines in Service (Set-up Time)

Upon arrival on the scene, water supply must be established, self-contained breathing apparatus donned, and attack hose lines stretched to the location of the fire. The effectiveness of the department's operation on the fire ground is dependent upon, among other things, the level of training and the physical condition of the personnel and the number of personnel arriving at the scene. Firefighting personnel then enter the structure, approach the fire, and initiate fire suppression activities while, at the same time, performing search and rescue activities, as necessary. The amount of time required for setup can vary significantly from



FIRE AND EMS FACILITIES

MAXIMUM TOTAL RESPONSE TIME (continued)

one incident to another. For purposes of this analysis, a two-minute set-up time after arrival on the scene is the goal.

Approaches Used by Other Communities

The establishment of response times for a specific community depends upon the geography, demographics, and distribution of commercial, industrial and residential properties.

The National Fire Protection Association (NFPA) has established criteria which state that in urban/suburban developed areas a pumper should be located within:

1. 2 miles of residential property;
2. 1-1/2 miles of commercial areas; and,
3. 1 mile of major industrial development which would require a flow of water of 5,000 gallons per minute or more.

While these are very conservative estimates, the problem with using mileage alone is that weather and road conditions are not taken into account.

Another way of approaching this issue is to define five levels of risk and then assign a response time requirement to each risk, rather than use just straight mileage response. These risks can be defined as follows:

1. Highest - Refineries, large industry, hospitals, school dormitories, lumber yards, and propane storage facilities without built-in suppression or detection systems.
2. High - High-rise hotels and residential, large shopping centers, and industrial facilities.



FIRE AND EMS FACILITIES

MAXIMUM TOTAL RESPONSE TIME (continued)

3. Medium - Commercial and industrial facilities with sprinkler systems, small shopping centers, and high density low-rise residential buildings.
4. Low - Single family dwellings with a separation of at least 100 feet between buildings.
5. Minimum - Wide separation of single family dwellings and farm land.

In the International City Management Association's (ICMA) study on Fire Station Location Analysis: A Comprehensive Approach, the following data on the response time requirements of some municipalities were provided in an article by Susan B. Benton and Neal B. Carpenter entitled, "A Computerized Approach to Fire Station Location." While these are large municipalities, the data can be useful indicators.

<u>City</u>	Risk Category				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
	Minutes				
San Antonio, TX	2.5	3.0	3.5	4.0	6.0
Salt Lake City, UT	2.5	3.0	3.5	4.0	6.0
Lynchburg, VA	3.0	4.0	5.0	6.0	7.0
Memphis, TN	2.3	2.7	3.3	4.3	5.8
Davenport, IA	3.0	3.5	4.0	4.5	5.0



FIRE AND EMS FACILITIES

AVAILABILITY OF RESPONSE TIME DATA

The availability of detailed response time data is an essential part of the process of analyzing the adequacy of fire protection service. A reduction in actual response times to emergency incidents is a measurable improvement in the service being delivered. For that reason, assessment of response time is not only an essential component of fire, rescue and EMS station location determination, it is an important ongoing function of fire, rescue and EMS department management and operations.

Response Time Components

Complete verified comparative response time data is not available at the national level. In addition, terms used to define the various time segments of response time vary among fire departments. One of the key elements of the International Association of Fire Chiefs (IAFC) National Fire Service Accreditation Project is response time analysis. In fact, one of the anticipated goals of this IAFC project is to establish valid national response time data for use by all fire departments.

For response time data to be available for comparison and service level evaluation purposes, consistent terminology must be used and detailed accurate response time data must be maintained and summarized.

This section provides definitions for the various components of response time. These definitions are those used by the IAFC Accreditation Project. For ease and accuracy of comparison of data from other fire, rescue and EMS departments, the Study Team considered it beneficial to outline nationally-accepted definitions in this Study.

Notification of Event - Notification of event is the point in time when the first electrical impulse or indicator that can be identified and recorded by the public safety agency occurs.



FIRE AND EMS FACILITIES

AVAILABILITY OF RESPONSE TIME DATA (continued)

Alarm Processing and Dispatch - The period of time required for the communications center to identify that an emergency is in progress, collect pertinent information to dispatch and to assess the methodology used by the agency to deploy resources.

Turnout Time - The period of time for on-duty emergency system personnel to discontinue their present activity, properly attire themselves and board the vehicle. This includes the elapsed time between being notified that an emergency is in progress and the vehicle beginning to respond to the identified location.

Travel Time - The period of time between the apparatus wheels beginning their uninterrupted response to the incident and the actual time that the emergency vehicle arrives at the address or location to which it was dispatched. Travel time includes driving distance, delays caused by misinformation in the dispatch, traffic obstruction, and geographic obstacles. Travel time ends when the vehicle is declared on-scene by the first arriving unit.

On-Scene Time - The point in time that the first arriving responding emergency vehicle or responsible command officer arrives at the scene of an emergency and who can begin to take immediate action or take command of the rest of the response.

Initiation of Action - The period of time of actual involvement by the individual crew members or companies in the reduction of the state of emergency at the scene. This period of time does not end until such time as the fire officer or other individual with jurisdiction, determines that the organized fire unit can be placed back in service and/or respond to an additional emergency.

Termination of Incident - The point in time when an emergency incident is declared terminated, and all deployed agency resources are available for another assignment.



FIRE AND EMS FACILITIES

AVAILABILITY OF RESPONSE TIME DATA (continued)

Time Segment Responsibility

The responsibility for the various components of response time in YAUFR is shared between the emergency dispatch function (YAUFR 9-1-1) and the fire, rescue and EMS service providers. The components shared by each of these agencies are as follows:

Communications Center Responsibility

1. Event occurs and continues until detected by human, electronic or mechanical means.
2. Emergency communications center receives notification of event.
3. Call taker qualifies the call; must determine type of incident, extent of event, location of event, and other pertinent information.
4. Call taker enters data and reviews, and transfers incident to dispatcher.
5. Information reviewed, response sequence reviewed and dispatch made.
6. Dispatch information received in fire, rescue and EMS station or on the fire apparatus.

Fire/Rescue/EMS Departments Responsibility

1. Turnout time: Personnel move to apparatus, don protective clothing, get on board apparatus and advise the communications center that the unit is responding;
2. Travel time;
3. On scene time; and,
4. Setup time.



FIRE AND EMS FACILITIES

AVAILABILITY OF RESPONSE TIME DATA (continued)

This listing of responsibilities is outlined to emphasize that the County dispatch staff and the fire, rescue and EMS service providers should participate in the review and analysis of their response time responsibilities so as to reduce processing time and errors.

YAUFR Response Times

The YAUFR fire, rescue and EMS units are dispatched by the York County Department of Emergency Services 9-1-1 Center. As part of this Study and previous work conducted in the County, the Study Team observed this emergency dispatch center and spoke to a number of dispatch staff.

The YAUFR Control Center seems to be progressive, with up-to-date automated technology, including a computer-aided dispatch system. Computer-aided dispatch systems typically maintain extensive time-related information, including comprehensive response time data. Although the County's current computer-aided dispatch (CAD) system must track valuable response time data, that data may not be directly and adequately provided to fire, rescue and EMS service providers dispatched by the Center.

Significant benefits may be obtained when the dispatch center and fire, rescue and EMS service providers review and assess comprehensive response time data to determine challenges and opportunities for reduced response times.

FIRE AND EMS RISKS

This section outlines the fire, rescue and EMS risks associated with the provision of fire, rescue and EMS services by the YAUFR fire and EMS services.



FIRE AND EMS FACILITIES

FIRE AND EMS RISKS (Continued)

Risk Categories

The fire, rescue and EMS risks within YAUFR are similar to those found in many communities of similar size and nature.

YAUFR is considered a bedroom community, comprised of single- and multi-family residential properties. YAUFR also includes a substantial amount of business and industry, as well as government development, including:

- A. Places of assembly;
- B. Educational institutions;
- C. Motels to accommodate local tourist and business travelers;
- D. Historic properties;
- E. Housing for senior citizens;
- F. Light industrial processing facilities;
- G. Major commercial shopping areas;
- H. Multi-family residential areas;
- I. Single-family residential areas;
- J. Major park and recreation areas;
- K. Large areas of brush and grass;
- L. Waterways and ponds; and,
- M. Medical treatment facilities.

Summary of Risk Assessment

This list description of selected major aspects of the fire and EMS risks is intended to provide an example of the extent and types of properties reportedly located in the service area. The YAUFR clearly includes a broad range of moderate to significant fire, rescue and EMS risks



FIRE AND EMS FACILITIES

FIRE AND EMS RISKS (Continued)

that must be protected and served by YAUFR volunteer and career fire, rescue and EMS service providers.

CURRENT STATION LOCATIONS

Current fire and EMS services in YAUFR and the adjacent York regional area are being provided from a number of fire and EMS stations as outlined in the following sections:

YAUFR Fire, Rescue & EMS Stations

The following table (Figure 2.1) is a listing of the current fire and EMS stations and their location in YAUFR.

Figure 2.1
CURRENT YAUFR FIRE AND EMS STATIONS

STATION	GIS STA. #	LOCATION
1. Station 89-1	16/86/88	3013 E. Market Street
2. Station 89-2	13/83/113	918 Virginia Avenue
3. Station 89-3	17/87	2045 N. Sherman Street
4. Station 89-4	15/85/115	421 Wheaton Street

Other Adjacent Regional Fire Stations

The following table (Figure 2.2) is a listing of the current fire and EMS stations and their location in areas adjacent to the areas served by YAUFR. The adjacent fire stations are included as part of this Study due to their proximity and day-to-day service delivery relationship with the YAUFR.



FIRE AND EMS FACILITIES

CURRENT FIRE STATION LOCATIONS (Continued)

Figure 2.2
CURRENT MUTUAL AID FIRE AND EMS STATIONS

MUNICIPALITY- STATION #	GIS STA. #	LOCATION
City of York		
1. Station 1	1	49 South Duke Street
2. Station 2	2	273 West Market Street
3. Station 5	5	833 East Market Street
4. Station 9	9	800 Roosevelt Avenue
West York Borough		
5. Station 11	11/101	1341 W. Market Street
Manchester Township		
6. Station 24	24	3200 Farmtrail Road
North York Borough		
7. Station 25	25	160 E. 8 th Avenue

The resources supported by these fire stations are utilized daily largely on a team basis with YAUFR in the provision of fire and EMS services to the York area.

FUTURE STATION LOCATION OPTIONS

The following sections provide information, analysis, conclusions and options for potential future fire and EMS station facilities.



FIRE AND EMS FACILITIES

FUTURE FIRE STATION LOCATION OPTIONS (Continued)

Fire Station Location Factors

To determine future fire, rescue and EMS station facility needs in the County where consideration may need to be given to adding, relocating or eliminating a fire or rescue station, the Study Team considered a number of factors, including:

- A. Current and projected development;
- B. Estimated typical turn-out time from dispatch to first unit responding;
- C. Potential limited number of volunteer drivers during certain hours;
- D. Historical nature of involvement of fire stations in communities;
- E. Current and projected service provider workload data;
- F. Response time projections using geographic information system (GIS) tools;
- G. Service provision by mutual aid companies; and,
- H. Input from service providers.

2006 Merger Plan Findings and Options

As stated in the 2006 Merger Plan, the assessment of projected response times, engine and ladder truck response areas and a comparison of current fire station/apparatus locations with ISO response area criteria for participating YAUFR and York regional fire stations seemed very good in consideration of the following goals:



FIRE AND EMS FACILITIES

FUTURE FIRE STATION LOCATION OPTIONS (Continued)

- Arriving at the scene of a fire prior to flashover occurring (generally between six and nine minutes after ignition);
- Arriving at the scene of an EMS incident on an EMS first responder basis within four to six minutes; and,
- Meeting the NFPA 1710/20 response time (turnout and travel time) standard of five minutes for the arrival of the first unit to fire and EMS incidents.

The fire stations, as presently located, appear to provide the basis for excellent response times to various geographic sections being considered. The remainder of this section will provide a number of illustrations resulting from this analysis and discuss the coverage to these areas and related options available to the YAUFR.

ISO-Related Analysis

The following figures illustrate the analysis conducted in relation to the ISO 1.5 mile engine response criteria and the 2.5 mile truck response area criteria. For these illustrations, response area circles are utilized for general visualization. It is understood that these circles are not a precise means of analysis, however, they are utilized to generally illustrate any significant over or under -covered geographic areas.

- Figure 2.3 illustrates the current engine company locations in the York region Study area in relation to the ISO 1.5 mile engine response distance.

When considering the location of fire stations in the two 2006 participating municipalities from an engine location perspective, it appears that there is slightly under-covered area in the northeast and southeast corners of Springettsbury; however, these areas are less developed. Further, there is over-coverage when considering Fire Stations 15 and 16, as well as Fire Station 13 in relation to York City and West York fire stations, which are included in this



FIRE AND EMS FACILITIES

FUTURE FIRE STATION LOCATION OPTIONS (Continued)

assessment due to the use of automatic mutual aid and possible inclusion in the Regional Fire Department.

- Figures 2.4 and 2.5, in relation to the ISO 2.5 mile response distance criteria, illustrate the location of the two ladder trucks in the participating municipalities and the location of the other ladder trucks in the York region area.

In considering the ISO criteria, there appears to be over-coverage involving the location of ladder trucks, particularly involving the location of the two ladder trucks operated by the participating fire departments.

In conducting fire station location analysis of this type, it is necessary for the Study Team to perform a “what if” review of various options in relation to over- and under-coverage areas to determine if there may be options for alternate fire station locations that might continue to provide appropriate response time coverage while, at the same time, affording options for more cost-effective service delivery. In that regard, the Study Team considered the implications of combining the fire and rescue service delivery functions into one, more centrally located fire station facility.

The Study Team also considered the option, from a truck coverage point of view, of the YAUFR operating one ladder truck. It appeared that a truck need not be in-service at Fire Station 15, given the location of other trucks in the immediate York area and the need to maintain truck coverage in Springettsbury

Based on these potential options, the Study Team conducted further analysis. The following graphics illustrate these options from the perspective of the ISO engine and ladder truck criteria.



FIRE AND EMS FACILITIES

FUTURE FIRE STATION LOCATION OPTIONS (Continued)

- Figure 2.6 illustrates the engine company locations in the York region Study area in relation to the ISO 1.5 mile engine response distance with fire and rescue service delivery functions relocated to a more central location in the Tri Hill Area.

A review of the results of this assessment of fire station locations from an engine response area view point seems to indicate that more than adequate coverage would continue to be provided while affording opportunities for improved cost-effective service provision.

- Figure 2.7 illustrates ISO truck coverage in the YAUFR area with the current ladder truck at Fire Station 15 taken out of day-to-day service.

This action involving in-service trucks seems to be appropriate in that more than adequate truck response coverage should continue to be provided, assuming continued automatic mutual aid.

Projected 2006 Fire Station (Engine) Response Areas

In assessing the options for YAUFR fire station locations, the Study Team conducted further analysis with the computerized GIS fire station location modeling program. The following graphics illustrate the results.

- Figure 2.8 illustrates the projected response areas for engines responding from the fire stations in the York region area.

There are a number of observations that seem appropriate. First, Fire Station 13's current response area is restricted by the proximity of the facility to the York City municipal line. Secondly, Fire Station 15's current response area



FIRE AND EMS FACILITIES

FUTURE FIRE STATION LOCATION OPTIONS (Continued)

seems relatively small due to its proximity to I-83 and the York City line. Finally, there appear to be areas of Spring Garden where other fire station units seem to be closer, from a projected travel time perspective, particularly York Fire Stations 1 and 5, and York Township Fire Station 19.

- Figure 2.9 illustrates the projected fire station response areas in Spring Garden from a centrally located fire station in the vicinity of the Tri Hill area. The reader should note that the green projected fire station response to the east of Springettsbury is Hellam Fire Station 1.

Based on the projected response areas with a merged centrally located fire station in the Tri Hill area, it appears that an engine at this location would adequately cover a majority of the YAUFR Spring Garden response area.

Based on this review of fire station, engine and truck locations in the YAUFR service area, the York area YAUFR could provide equivalent or improved service more cost effectively with a total of as few as three fire stations.

Primary 2006 Merger Plan Station Suggestions

In summary, the 2006 YAUFR merge plan outlined a number of fire station-related findings and options that include:

- Implementing a Tri-Hill area fire and EMS station;
- Providing YAUFR paid staffing for an engine at the suggested Tri-Hill station;
- Concentrating YAUFR paid staffing for a ladder truck at Fire Station 89-1 (GIS station #s 16/86/88);
- Considering a potential future fire station needs in the eastern YAUFR service area;



FIRE AND EMS FACILITIES

FUTURE FIRE STATION LOCATION OPTIONS (Continued)

- Encouraging the Grantley Volunteer Fire Company to relocate their operations to the suggested Tri-Hill fire station facility; and,
- Relocating Fire Station 89-1 (GIS #s 16/86/88) to the vicinity of the York Container Company.

Current Fire Station Findings and Options

With the merger implementation and the creation of the YAUFR the Board of Commissioners directed that an update to these findings and options be conducted given a number of changes to service delivery needs and information. The following sections present the analysis and provide current fire and EMS findings, including related options for consideration.

Tri-Hill Option

An option outlined in the 2006 merger Plan involved the construction of a new YAUFR fire and EMS station in the Tri-Hill area of Spring Garden Township. The suggestion was to consolidate YAUFR paid staffing, and potentially the operations of the Grantley Volunteer Fire Company, to a new consolidated fire station to provide more cost effectiveness and improved response coverage to a larger portion of the YAUFR service area, as outlined in a previous section.

A number of key issues indicated a need to re-evaluate the Tri-Hill fire station option. These include:

- A conclusion that available property and location were not as available as originally considered;
- Expansion plans and development opportunities involving York College of Pennsylvania Main and West Campuses;



FIRE AND EMS FACILITIES

FUTURE FIRE STATION LOCATION OPTIONS (Continued)

- Planning in process and potential for a major I-83 interchange at current location of I-83 and Mount Rose Avenue; and,
- Limited improvement in response capability from the Tri-Hill location into the Springettsbury Township part of the YAUFR service area.

These points and other input led to the reassessment of the Tri-Hill option and a “what-if” GIS modeling review of other alternative fire station location options in an effort to meet the future needs of the YAUFR in the southern service area.

In reviewing other potential optional locations and considering other related issues it became apparent that it would be beneficial to the YAUFR and its overall response capability if an alternate fire station site could be identified that could provide improved response into Springettsbury. In that regard the Study Team conducted GIS analysis and assessed projected travel times from the general vicinity of I-83 and Mount Rose Avenue while retaining YAUFR Fire Station 89-2 (Grantley) in the vicinity of its current location.

Figures 2.10 and 2.11 illustrate the projected response areas and ISO coverage of YAUFR and adjacent fire stations based on placing a potential new YAUFR fire station in the vicinity of I-83 and Mount Rose Avenue with YAUFR Fire Station 89-2 remaining in its current general vicinity near York College of Pennsylvania. Figure 2.12 illustrates that, with the exception of Manchester Fire Station 24, the current fire station locations provide the basis to maintain a projected average travel time of less than four minutes. Further, it illustrates the projected road miles and speed of apparatus for this option.

In reviewing this I-83/Mount Rose fire station option there appears to be a number of resource deployment benefits resulting from a fire station placed at this location. These include:

- Improved coverage into the southwestern area of Springettsbury;



FIRE AND EMS FACILITIES

FUTURE FIRE STATION LOCATION OPTIONS (Continued)

- Increase availability of property in this general area;
- Potential for improved access to I-83 with a new interchange in the future; and,
- Maintaining a fire station in the west end of Spring Garden Township for protection to the College and into the City, when appropriate.

Given the location of a potential I-83/Mount Rose fire station the Victory Volunteer Fire Company should be given the option to relocate to this new fire station for its various functions.

Relocation of E. Market Street Fire Station 89-1

As previously noted, the 2006 Merger Study pointed out the potential long-term need for a fire station in the eastern end of the YAUFR service area. This current projected under-coverage area involves the areas reportedly known as Stonewood and Orchard Hills adjacent to Hellam and Windsor Townships. It is illustrated in Figure 2.12 involving the ISO coverage circle related to Fire Station 89-1 (GIS # 86).

The 2006 Study suggested the relocation of Fire Station 89-1 potentially in the vicinity of York Container Company on Mount Zion Road. As part of conducting this Study a member of the leadership of the YAUFR Volunteer Fire Company discussed a number of potential locations for the relocation of this fire station. One of the potential options involved property on E. Market Street in the vicinity of the Stoneybrook Restaurant, west of Locust Grove Road.

The Study Team considered the various “what-if” options for a relocated Fire Station 89-1 with GIS modeling. It seemed that with the placement of a YAUFR fire station in the vicinity of I-83 and Mount Rose Avenue and the resulting improved coverage into Springettsbury provided by a fire station at that location Fire Station 89-1 should be relocated on East Market Street east of Mount Zion Road.



FIRE AND EMS FACILITIES

FUTURE FIRE STATION LOCATION OPTIONS (Continued)

Figures 2.13 and 2.14 illustrate the response areas and ISO circle coverage areas for YAUFR fire stations with Fire Station 89-1 relocated to the vicinity of the Stony Brook Restaurant. Further, Figure 2.15 illustrates the related average projected travel times, roadway miles and apparatus response speed for Fire Station 89-1 at this location. As shown, coverage into the eastern end of the YAUFR service area seems to meet NFPA 1710 travel time and ISO engine coverage criteria.

Adjacent Fire Stations

In conducting the GIS analysis for this Study a number of fire station location-related findings and potential options were apparent to the Study Team. These are outlined in the following sections.

North York Fire Station 25

Figure 2.11 illustrates areas of the York region that seem to be under covered in terms of ISO engine company coverage, e.g., the eastern end of the YAUFR area discussed in a previous section. The Study Team also noted that the west end and the more developed southern area of Manchester Township seem to be areas of short coverage relating to the ISO 1.5 mile engine company guideline.

Manchester Township seems to be quite large for proper coverage to be provided by one fire station. A substantial part of the Township is rural and would not justify an additional fire station to simply meet ISO guidelines. However, given the availability of mutual fire stations, particularly from YAUFR and North York Borough, the judicious use of these fire and EMS resources on an automatic closest available mutual aid basis should provide needed fire and EMS coverage to Manchester for the foreseeable future. Figure 2.13 illustrates the projected response areas and ISO coverage areas of Manchester Township with the response of North York Fire Station 25 and YAUFR Fire Station 89-3.



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FUTURE FIRE STATION LOCATION OPTIONS (Continued)

This apparent under coverage is mentioned simply in an effort to reinforce the use and importance of automatic mutual aid. It appears that reliance on YAUFR Fire Station 89-3 and North York Borough Fire Station 25 resources is essential for the provision of adequate fire and EMS services to the majority of Manchester Township. This fact could also provide further justification for Manchester and North York Borough (both with one fire station) and YAUFR to function as one in the delivery of fire and EMS services.

York Fire Stations

The City of York is comprised of just over 40,000 population in a geographic area of 5.3 square miles. It is served by the York Department of Fire/Rescue Services (DFRS), a traditional and very proud fire services delivery agency. The York DFRS includes a substantial paid staff of approximately 69 firefighters and officers and a number of volunteers who are reportedly members of nine volunteer fire companies that are part of the DFRS. The DFRS operates from four fire stations with four staffed engine companies and a ladder truck.

Figure 2.13 and 2.14 also illustrate the projected response areas and ISO coverage circles for the YFD fire stations. And, Figure 2.15 shows the excellent projected travel time from each of the three YFD stations with engines (91, 92, 95 and 99). The projected travel times are slightly more than two minutes, which is the best travel times seen by the Study Team in similar studies conducted. Also shown in Figure 2.16 are the ISO response area circles (in red) of the adjacent YAUFR and other fire stations that are in very close proximity to the City of York.

Given these projected travel times for the York area fire stations it seemed clear to the Study Team that one could conclude that the City of York is providing fire protection that is far above the established NFPA 1710 standard. When considering the DFRS fire stations and the adjacent YAUFR and other fire stations there appears to be over-coverage.



FIRE AND EMS FACILITIES

FUTURE FIRE STATION LOCATION OPTIONS (Continued)

Considering these findings and the typical cost of providing such a high level of fire protection and the current reportedly difficult financial issues facing the City of York and the Commonwealth the Study Team conducted a GIS “what-if” analysis to model the reduction of one fire station in the City while at the same time fully utilizing all other fire station resources.

- Figures 2.17 and 2.18 illustrates the projected response areas and ISO coverage circles and Figure 2.19 illustrates projected travel times, road miles and apparatus travel speed for a three engine company model for York not including Engine 1 (91);
- Figures 2.20, 2.21 and 2.22 illustrate a three engine company model not including Engine 2 (92); and
- Figures 2.23, 2.24 and 2.25 illustrate a three engine company model not including Engine 5 (95).

The Study Team was advised by York officials that each York DFRS engine and truck is staffed with 10.43 work years of firefighters and officers to provide minimum staffing of two for the budget year. As a point of information the estimated cost of staffing each unit at this level, given the Fiscal Year 2009 DFRS salaries, wages & overtime budget of \$6,148,979, is \$1,229,796 including 47% fringe benefits. This estimated annual cost information is provided to indicate the potential level of funding involved and to suggest that, given the apparent over-coverage when assessing all regional fire stations, the municipalities and YAUFR may wish to consider potentially more cost effective approaches. Any decision to change from present status would of course be made by the responsible municipality and should be accomplished through attrition and a phased approach.

Each of these figures illustrates service provision using all York area regional fire stations with the York Department of Fire Rescue Services operating with a three engine company model. As illustrated all fire stations directly serving the City have projected travel times



FIRE AND EMS FACILITIES

FUTURE FIRE STATION LOCATION OPTIONS (Continued)

of well under the NFPA 1710 four minute standard with the YDFRS stations having projected travel times of under 2 ½ minutes. These stations would continue to have excellent projected travel times and ISO coverage, well below accepted standards and guidelines.

MUTUAL AID

This Section conceptually reviews fire department mutual aid and its use by the YAUFR and adjacent fire and EMS agencies.

Mutual aid, as discussed in this Section, refers to the response of fire and rescue apparatus across jurisdictional or municipal boundaries. The effective use of mutual aid apparatus response has become a successful means of improving the level of fire protection service in participating jurisdictions without increased financial commitments. During a time when many municipalities are continuing to deal with severe fiscal constraints, the implementation of mutual aid, particularly automatic mutual aid, has become an accepted national trend.

The NFPA Fire Protection Handbook states the following regarding the implementation of mutual aid:

“Every fire department today should have mutual-aid or automatic-aid contracts with adjoining departments. These reciprocal agreements provide communities with the ability to share their personnel and equipment to provide sufficient resources to handle major emergencies in a timely and cost-effective manner.”

The Concept

Mutual aid is the means by which one fire department or group of fire departments assists another either upon request on an incident by incident basis, or on an automatic basis from the point of initial dispatch. It is virtually impossible for any local government to staff and



FIRE AND EMS FACILITIES

MUTUAL AID (continued)

equip its fire services to handle every potential major incident. This is especially true for small municipalities. The cost would be prohibitive, and is entirely unrealistic, especially considering fiscal constraints facing local jurisdictions today. As a result, it is very common for fire departments to implement mutual aid agreements with the surrounding jurisdictions and, as a result, for personnel and equipment to be jointly dispatched on certain types of major incidents.

There are essentially two types of mutual aid response approaches. One type of mutual aid is referred to as “special request” mutual aid and involves a request being made either by the incident commander or the dispatch center. The second type of mutual aid is “automatic” mutual aid that involves the automatic dispatch of the closest unit/s under established protocols for incidents and/or fill-in at a fire station.

Benefits of Automatic Mutual Aid

Improved fire protection service to the public can be attained in the following ways through the use of automatic mutual aid on incidents where mutual aid companies are closer:

- A. More timely arrival of apparatus on the scene of incidents;
- B. Improved firefighter safety as a result of the reduced time necessary for mutual aid units to arrive on the scene to provide needed assistance; and,
- C. Decreased response times.

Current Use of Mutual Aid

Currently, the Study Team understands that automatic mutual aid is used quite extensively; however, in some instances and locations, it is used on a selective basis. Reportedly, the dispatch policy is not that the closest appropriate type of unit will be dispatched. There are



FIRE AND EMS FACILITIES

apparently many instances when closer units may be available, but not dispatched automatically.

To improve fire protection service in the future through reduced response times, the YAUFR should consider taking steps to facilitate full automatic mutual aid response with the fire departments in neighboring jurisdictions and municipalities.

Ultimately the full benefit, in terms of reduced response times, cannot be attained unless "automatic" closest unit available mutual aid is implemented. Therefore, consideration should be given to implementing full "automatic" mutual aid with all adjacent fire departments on a region-wide basis.

COMMON YORK REGIONAL OPERATING PROCEDURES

As outlined above, the delivery of quality consistent fire, rescue and EMS services is facilitated via the use of automatic closest unit dispatched mutual aid. The implementation of common operating procedures goes hand-in-hand to provide further enhancement to the delivery of services by multiple fire and EMS agencies.

To a limited extent, the Study Team is aware that a number of common operating procedures have been adopted, particularly by the YAUFR and the Manchester Township Department of Fire Services. It is suggested that an aggressive effort be undertaken to include as many fire/EMS delivery agencies in the York region as possible and to develop a comprehensive York Regional Manual of Common Operating Procedures to include the following fire/EMS agencies:

- YAUFR;
- Manchester Township Department of Fire Services;
- York Department of Fire Rescue Services;
- North York Borough Fire Department;
- West York Borough Fire Department; and,



FIRE AND EMS FACILITIES

COMMON YORK REGIONAL OPERATING PROCEDURES (Continued)

- All other volunteer fire companies in York County.

It is suggested that common state-of-the-art operating procedures be developed and adopted for the following areas:

- Incident command procedures;
- Chain of command;
- Accountability;
- Rapid intervention team;
- Rescue-lost firefighter;
- Incident safety procedures;
- Incident evacuation;
- Post incident review;
- Standard company responsibilities;
- Tactical priorities;
- Fireground strategy;
- “May-Day” communications;
- Roof operations;
- Rehabilitation;
- Positive pressure ventilation operations;
- Water supply;
- Fire cause investigation;
- EMS responsibilities;
- Vehicle extrication;
- Medical safety officer;
- Hazardous materials;
- Flammable liquid incidents;
- Natural gas emergencies;
- Confined space rescue;



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- Trench rescue operations;
- Water rescue;
- Structural collapse operations;
- Overhaul and standby;
- Protective clothing;
- Pre-fire planning; and,
- Heat stress management.

YAUFR HEADQUARTERS FACILITY

With the organization and implementation of the YAUFR, Springettsbury Township arranged for the use of a small building as the initial Headquarters facility at the intersection of Mount Zion and Whiteford Roads. This facility has been beneficial to the YAUFR providing office spaces and support facilities for the Fire Chief and immediate staff.

For the long term, as suggested in the 2006 Merger Study, the Study Team envisions a YAUFR Headquarters that could, with the full build-out of the agency, include the following spaces:

1. Large conference/meeting room for Commission meetings;
2. Fire Chief's office;
3. Deputy fire chief's office;
4. Administrative assistant's office;
5. Budgeting office;
6. Other administrative offices;
7. Fire Prevention Bureau offices;
8. Training and group meeting room;
9. Break/kitchen area;
10. Office equipment and computer support space/s; and,
11. Storage area.



FIRE AND EMS FACILITIES

YAUFR HEADQUARTERS FACILITY (Continued)

The extent to which the above types of offices and other space will be needed will be dependent upon the future growth of the YAUFR. Since it is possible that in 15 to 20 years the YAUFR could be comprised of 12 to 15 fire stations with three to four geographic battalions, the eventual headquarters space requirements could be substantial. There will be a need for the Fire Chief and Commission to continually assess headquarters-related facility needs and plan accordingly in the future.

Subsequent to initial implementation of the YAUFR and possible use of the Market Street fire station use as the headquarters, there would need to be a more permanent Fire Department headquarters planned and implemented. At this time there appear to be two primary long-term options for a YAUFR Headquarters. These options include:

- A. Co-location with a new Fire Station 89-1, possibly on E. Market Street as suggested in this Study report; or,
- B. Co-location with a new fire station, possibly near I-83 and Mount Rose Avenue, as suggested in this Study report.

The placement of the YAUFR Headquarters in as central a location as possible to the service area and the partner municipalities would seem to be an important goal for a Headquarters facility. Therefore, the vicinity of I-83 and Mount Rose Avenue would seem to be preferred, in the opinion of the Study Team.

IMPACT OF FACILITIES ON VOLUNTEER STAFFING

It has been a stated goal of the YAUFR for fire, rescue and EMS service provision to be by YAUFR professional paid and volunteer personnel. Municipal officials, residents and business owner/operators have been fortunate to have been served in the past by dedicated volunteers providing these valuable emergency services. A YAUFR objective is to redevelop



FIRE AND EMS FACILITIES

the volunteer component of the organization to become a strong combination paid/volunteer fire agency for the future.

Through the years, the Study Team has noted that the condition of the apparatus and station facilities has an impact on the level of volunteerism in many fire, rescue and EMS services. It should not be surprising to know that up-to-date apparatus, equipment and station facilities have a very positive impact on volunteer recruitment and retention. Volunteer staff tend to spend more time at the stations if the facilities and apparatus are in good condition. There seems to be more of a desire on the part of people to spend time in and around newer facilities and equipment than would be the case if the facilities and apparatus were old and not well maintained. Many volunteer fire, rescue and EMS organizations have found that a new, or newly renovated, station is a very good recruitment and retention tool.

YAUFR is encouraged to consider this potential impact on volunteer recruitment and retention as requests for station and apparatus upgrades are reviewed in the future.

SUMMARY

The location of station facilities is a key element in the level of fire protection, rescue and EMS service. The decision to build a new station or relocate an existing one has many components other than its location. While computerized programs can assist officials in making decisions relative to station location, there is no magic formula for determining the location of fire/rescue stations. The final determinations require human-based consideration of many factors.

One key consideration in determining a fire, rescue and EMS station location for fire-related services is the maximum total response time (travel and turnout time) which is acceptable. In fires, response time should be kept short enough to ensure that the total average time does not exceed the six- to nine-minute flashover time.



FIRE AND EMS FACILITIES

SUMMARY (continued)

The availability and assessment of detailed response time data is an essential part of the process of analyzing the adequacy of the service. A reduction in actual response times to emergency incidents is a measurable improvement in service being delivered. For that reason, assessment of response time is not only an essential component of fire, rescue and EMS station location determination, it is an important ongoing function of fire and EMS management and operations. For the future, YAUFR fire, rescue and EMS service providers should participate in the review and analysis of their response time. The goal should be to reduce response times, to the extent possible.

Fire, rescue and EMS services in YAUFR have been provided from four fire stations. A review of the location of these facilities indicates a need to implement a number of fire and EMS station location improvements in the future.

RECOMMENDATIONS

1. The York County 9-1-1 Center and YAUFR Chief are encouraged to continue to monitor and assess response time data to determine opportunities for reducing response times.
2. The YAUFR should consider implementing a new Fire Station 89-4 in the vicinity of I-83 and Mount Rose Avenue.
3. The Victory Volunteer Fire Company is encouraged to team with the YAUFR in the implementation of the recommended fire station at I-83 and Mount Rose Avenue.
4. The YAUFR should consider including the implementation of the recommended Headquarters facility at the suggested I-83 and Mount Rose Avenue location with planning coordinated with YAUFR Volunteer Fire Company officials.



FIRE AND EMS FACILITIES

RECOMMENDATIONS (continued)

5. The YAUFR and the Springetts Volunteer Fire Company are encouraged to implement the relocation of Fire Station 89-1 to 3500/3600 block of E. Market Street in the vicinity of the Stoneybrook Restaurant.
6. The YAUFR and the Grantley Volunteer Fire Company are encouraged to identify an improved location and implement a new Fire Station 89-2 in the vicinity of the York College of Pennsylvania.
7. The YAUFR is encouraged to conduct a bunkroom facility assessment and place a priority on providing adequate upgraded bunkroom facilities in all stations to encourage and enhance volunteer staffing of fire apparatus.
8. The YAUFR should consider implementing these new facility recommendations in the following order: 89-4 at I-83 and Mount Rose Avenue first due to impact on service delivery coverage, 89-1 in the 3500/3600 block of E. Market Street second due to improved coverage in the southeast corner of Springettsbury and then 89-2 near the York College of Pennsylvania due to age, condition and size.
9. The YAUFR Chief is encourage to continue to pursue implementation of full automatic closest available unit dispatch type mutual aid with all surrounding fire agencies or municipalities.
10. The YAUFR Chief is encouraged to continue to work with all surrounding fire agencies in the development and implementation of common state-of-the-art operational policies and procedures.
11. The YAUFR is encouraged to coordinate YAUFR fire station plans and implementation with Manchester Township, City of York and North York Borough.



ILLUSTRATIONS



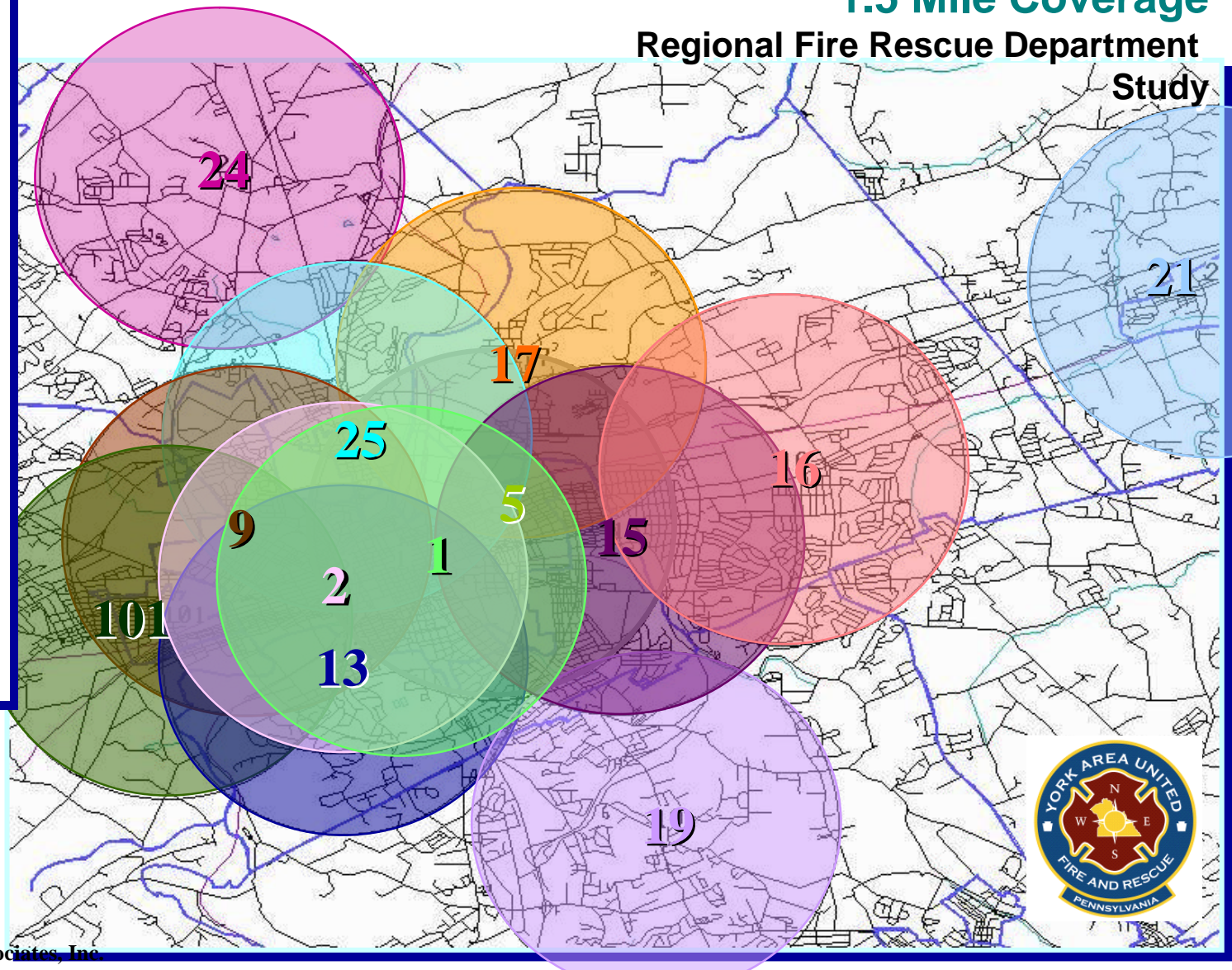
Figure 3

York Area Fire Stations Current Engine ISO 1.5 Mile Coverage

Regional Fire Rescue Department
Study

Station Numbers

- 1: York
- 2: York
- 5: York
- 9: York
- 11/101: West York
- 13: Spring Garden-Grantley
- 15: Spring Garden-Victory
- 16: Springettsbury-Springetts
- 17: Springettsbury-Commonwealth
- 19: York Township
- 21: Hellam
- 24: Manchester
- 25: North York



Spring Garden and Springettsbury Trucks

Current Truck ISO

2.5 Mile Coverage RFRD

Regional Fire Rescue Department Study

Figure 4

Station Numbers

15: Spring Garden-
Victory

16: Springettsbury-
Springetts

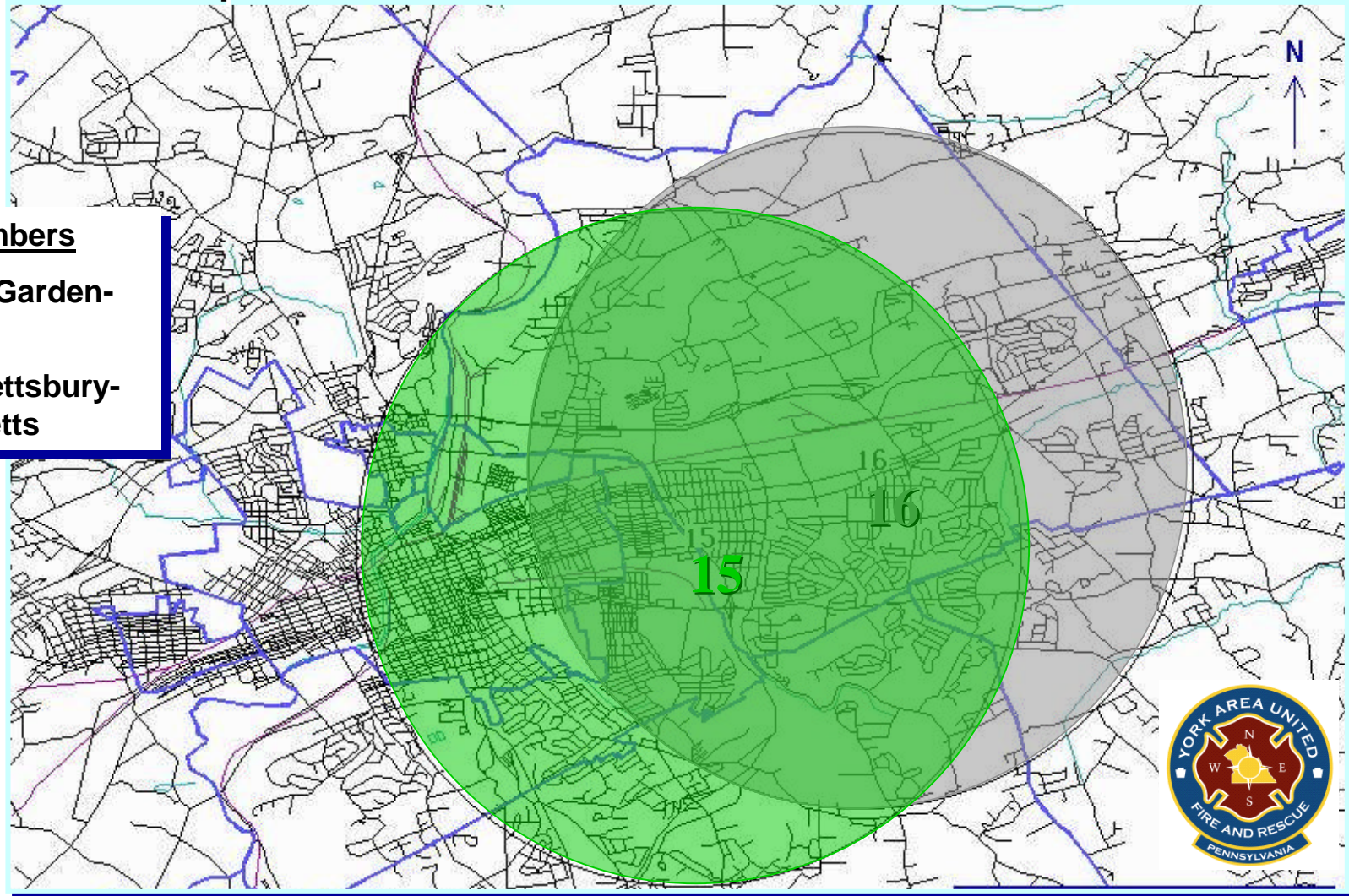


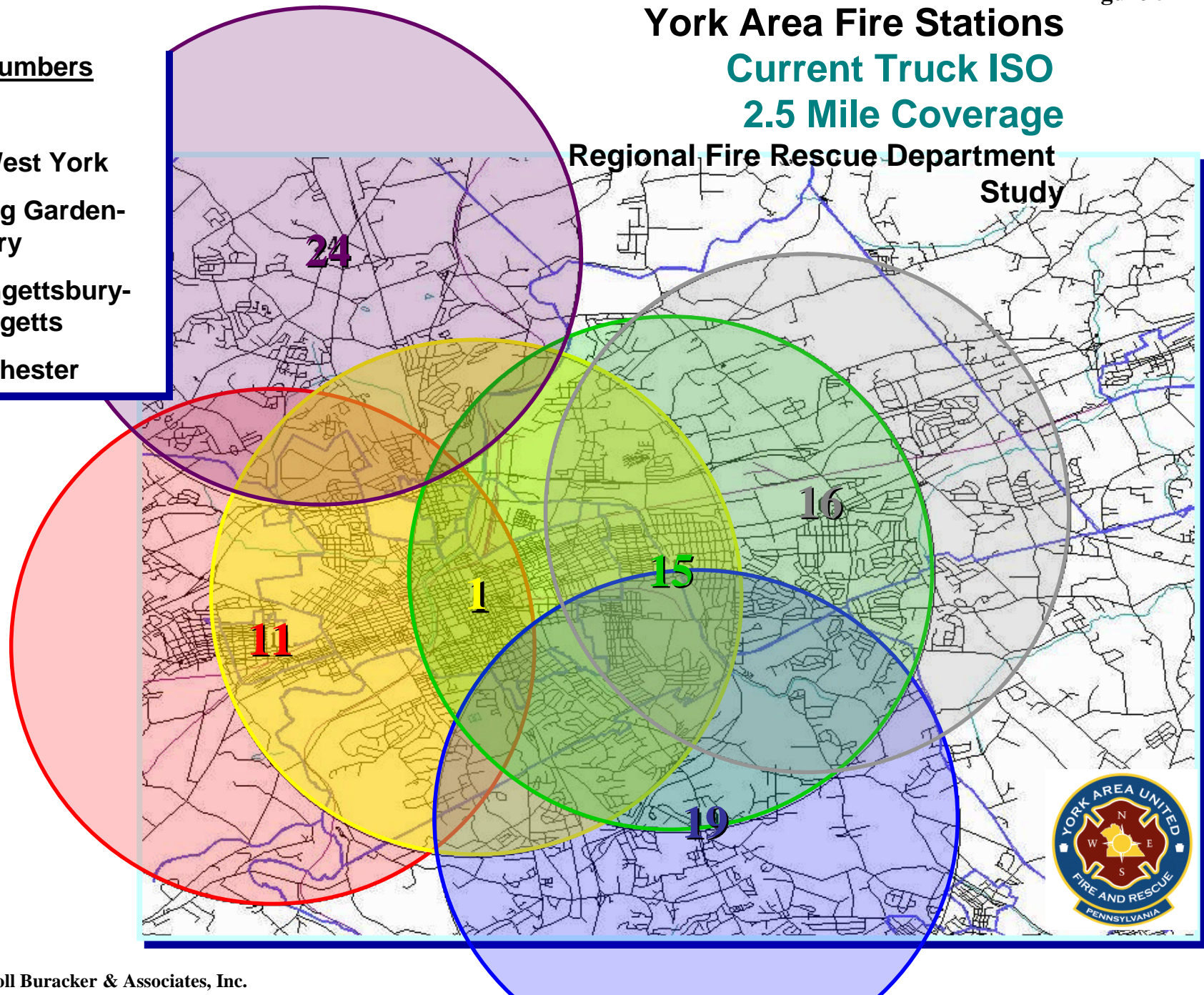
Figure 5

York Area Fire Stations Current Truck ISO 2.5 Mile Coverage

Regional Fire Rescue Department
Study

Station Numbers

- 1: York
- 11/101: West York
- 15: Spring Garden-Victory
- 16: Springettsbury-Springetts
- 24: Manchester



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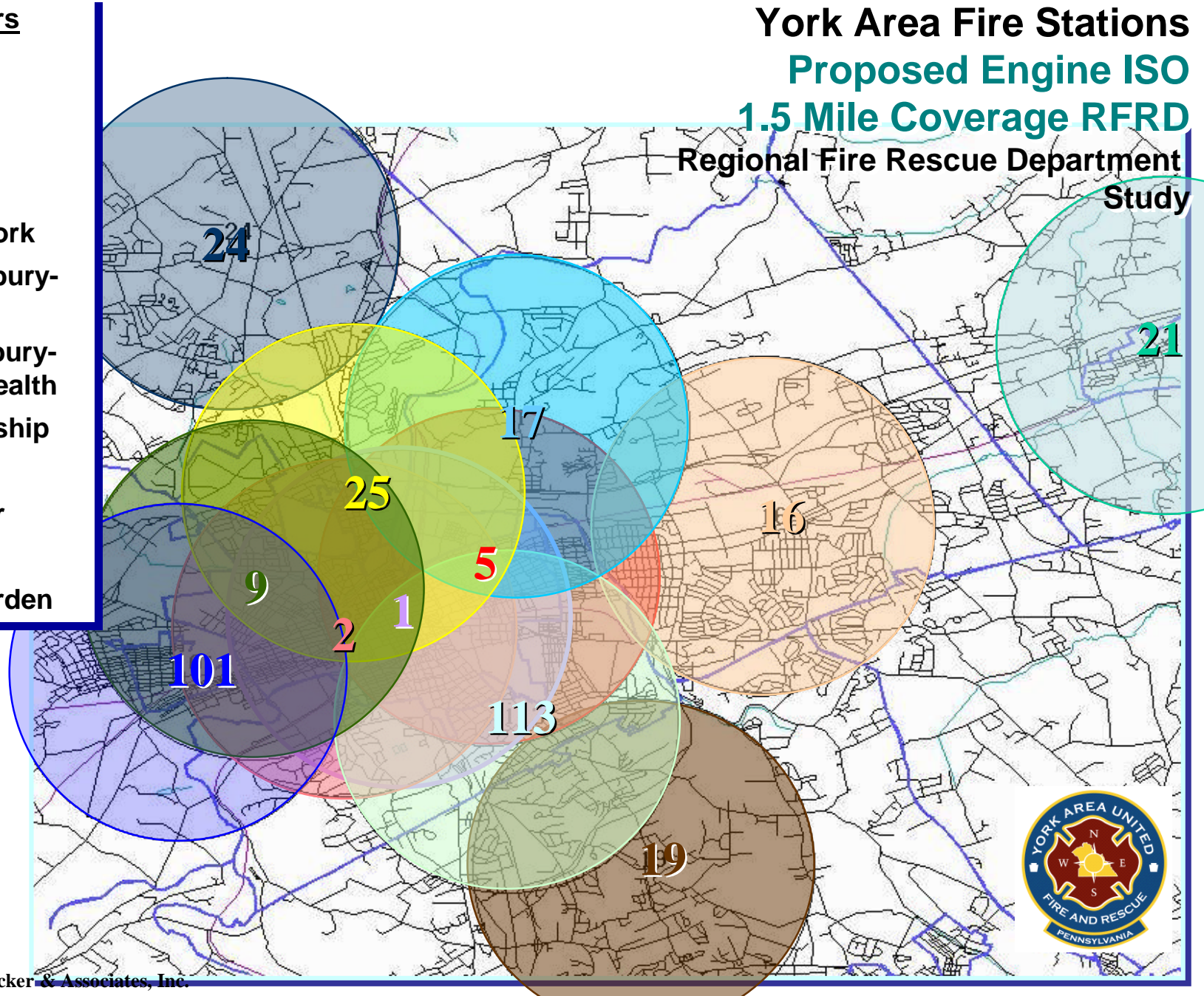
Figure 6

York Area Fire Stations Proposed Engine ISO 1.5 Mile Coverage RFRD

Regional Fire Rescue Department
Study

Station Numbers

- 1: York
- 2: York
- 5: York
- 9: York
- 11/101: West York
- 16: Springettsbury-Springetts
- 17: Springettsbury-Commonwealth
- 19: York Township
- 21: Hellam
- 24: Manchester
- 25: North York
- 113: Spring Garden



Station Numbers

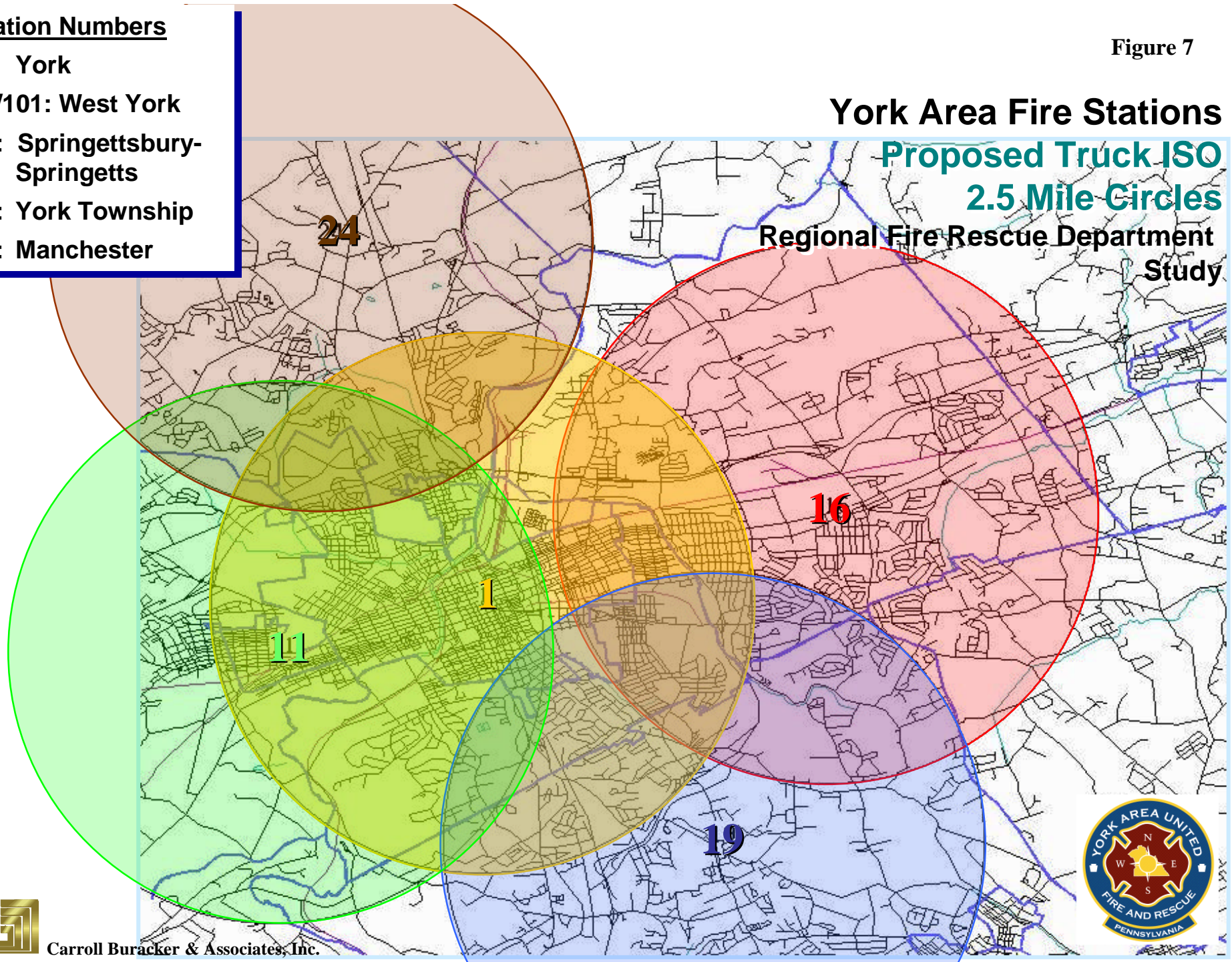
- 1: York
- 11/101: West York
- 16: Springettsbury-Springetts
- 19: York Township
- 24: Manchester

Figure 7

York Area Fire Stations

**Proposed Truck ISO
2.5 Mile Circles**

**Regional Fire Rescue Department
Study**



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Figure 8

York Area Fire Stations Current Projected Engine Response Areas Regional Fire Rescue Department Study

Station Numbers

- 1: York
- 2: York
- 5: York
- 9: York
- 11/101: West York
- 13: Spring Garden-Grantley
- 15: Spring Garden-Victory
- 16: Springettsbury-Springetts
- 17: Springettsbury-Commonwealth
- 19: York Township
- 21: Hellam
- 24: Manchester
- 25: North York

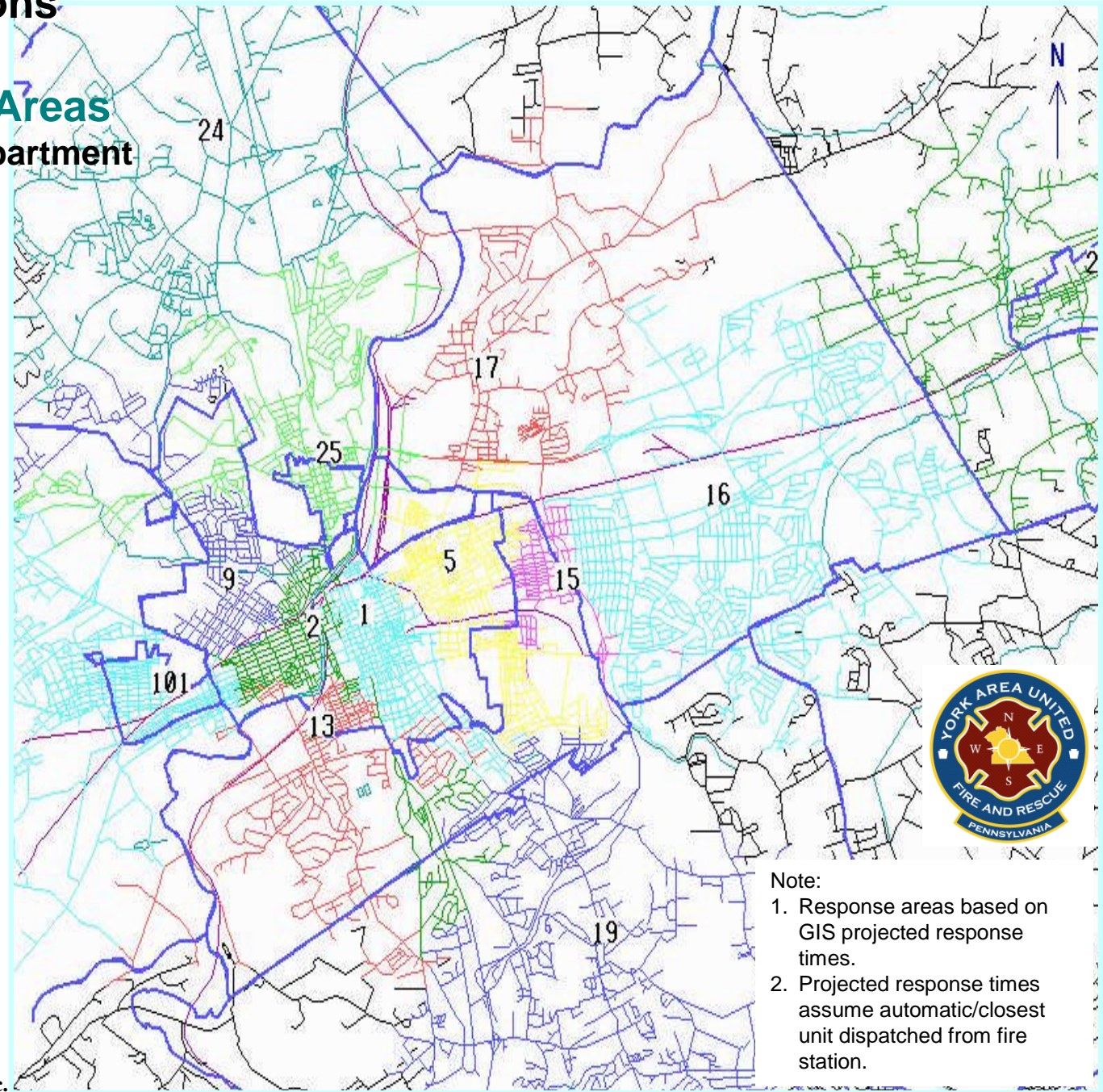


Figure 9

York Area Fire Stations Proposed Projected Engine Response Areas RFRD Regional Fire Rescue Department Study

Station Numbers

- 1: York
- 2: York
- 5: York
- 9: York
- 11/101: West York
- 13: Spring Garden-Grantley
- 15: Spring Garden-Victory
- 16: Springettsbury-Springetts
- 17: Springettsbury-Commonwealth
- 19: York Township
- 21: Hellam
- 24: Manchester
- 25: North York

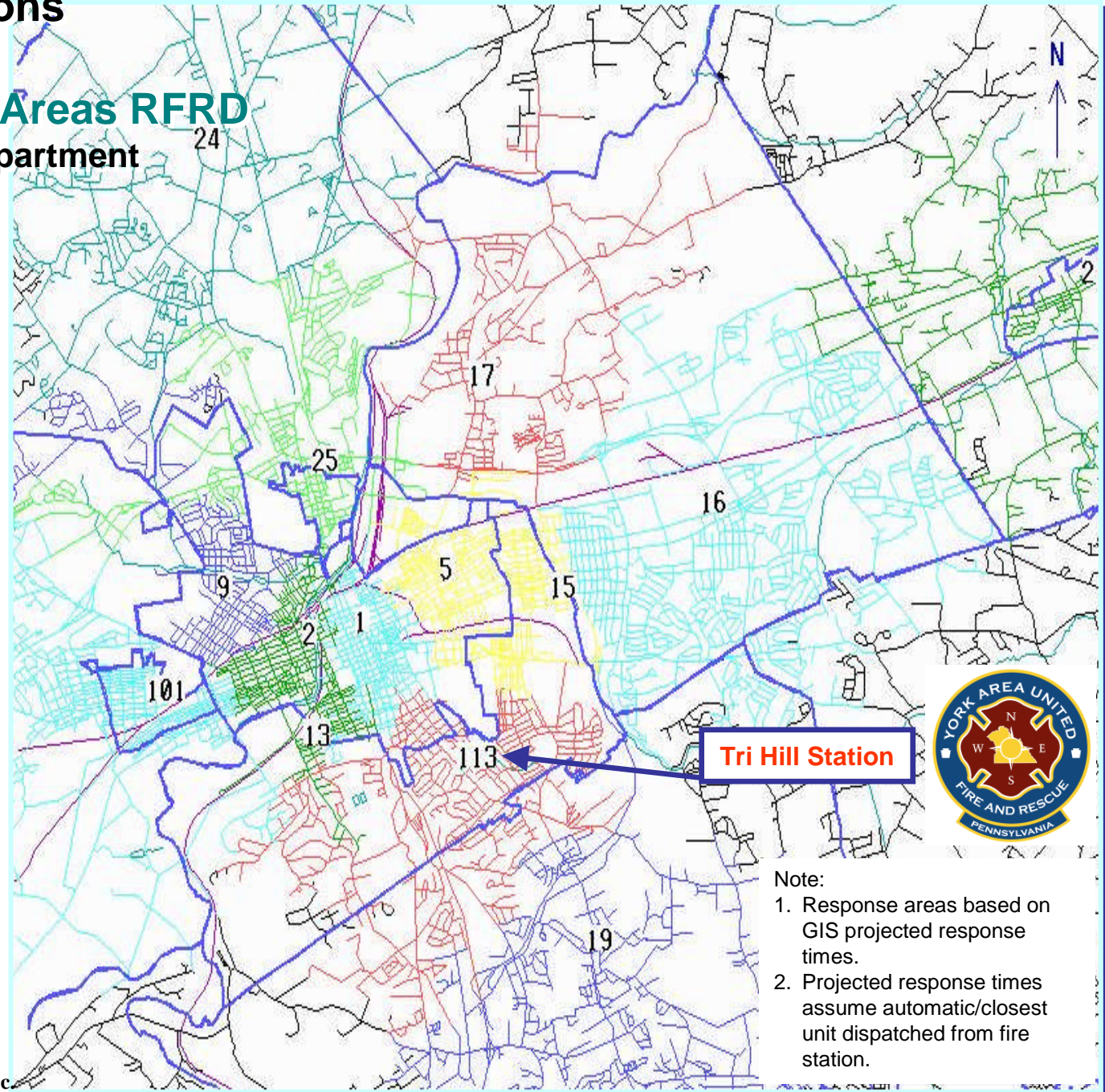


Figure 10

Response Area Projections w/ I-83 & Mt. Rose Ave. Station

Station Numbers

1:	West York
24:	Manchester
25:	North York
83:	YAUFR
115:	YAUFR
Proposed	
86/88:	YAUFR
87:	YAUFR
91:	York
92:	York
95:	York
99:	York

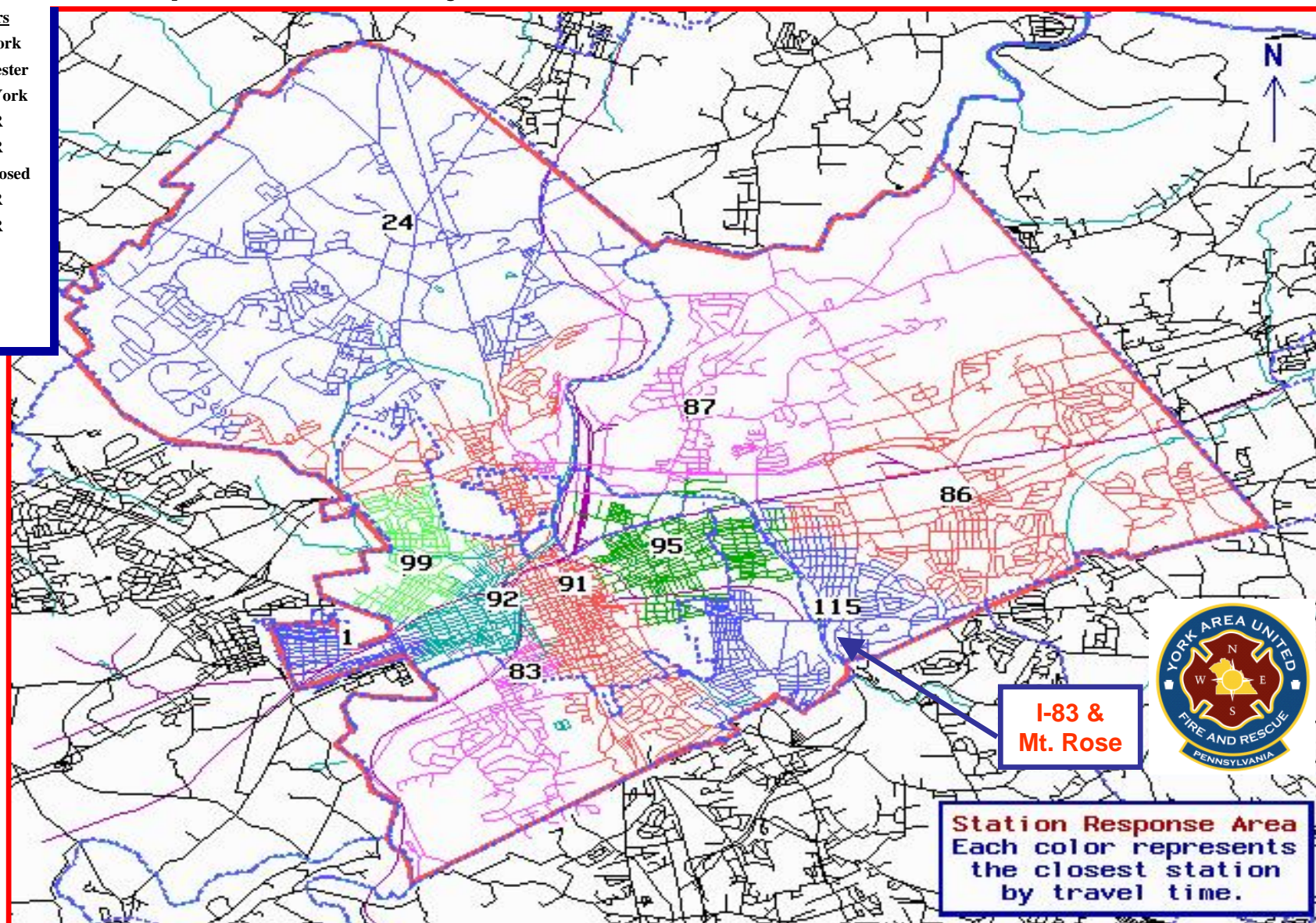


Figure 11

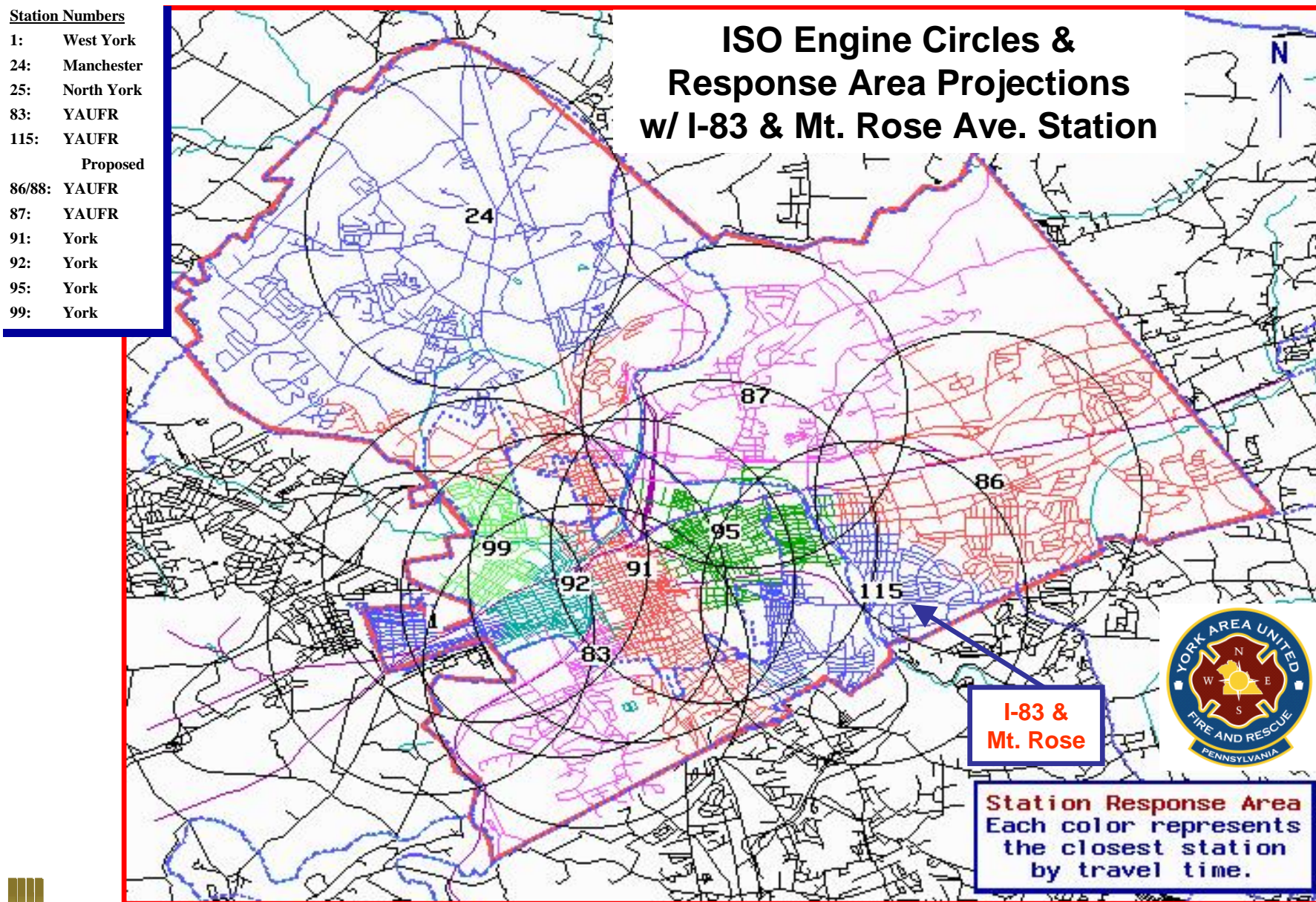


Figure 12

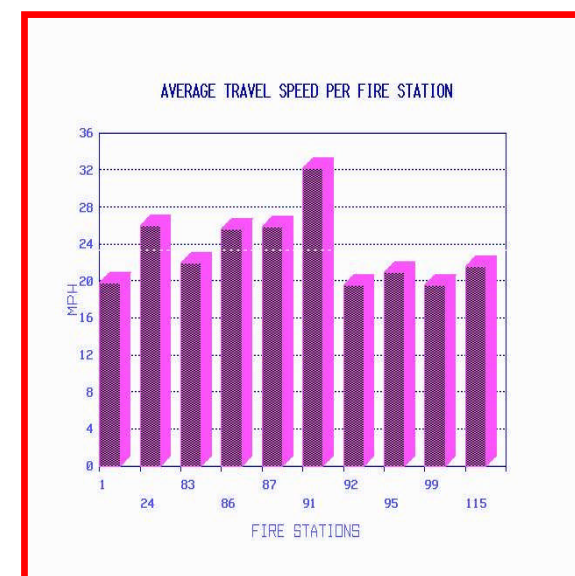
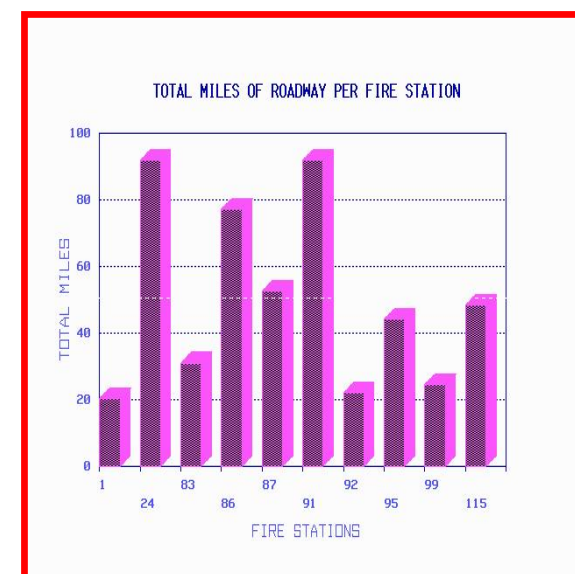


Figure 13

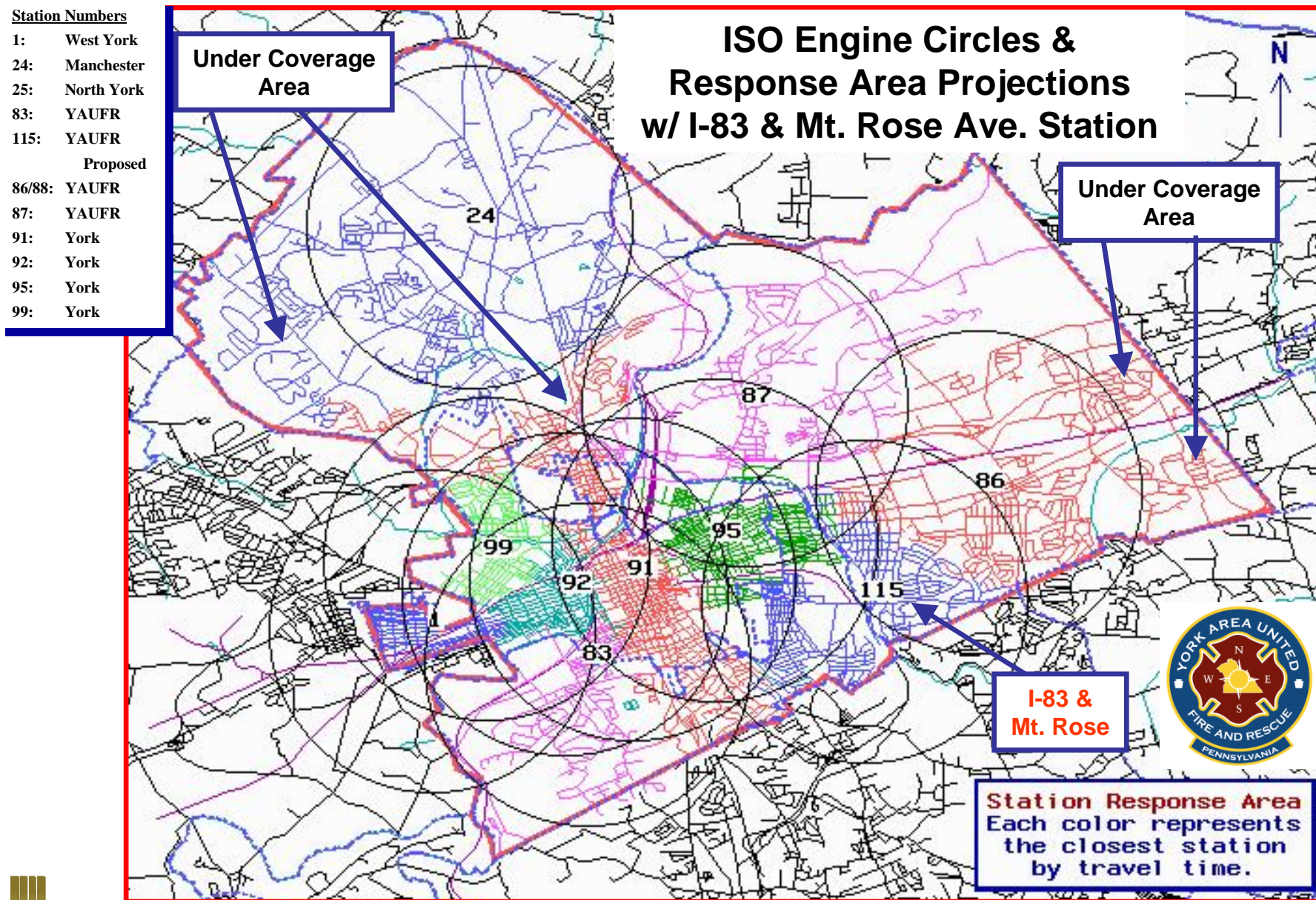


Figure 14

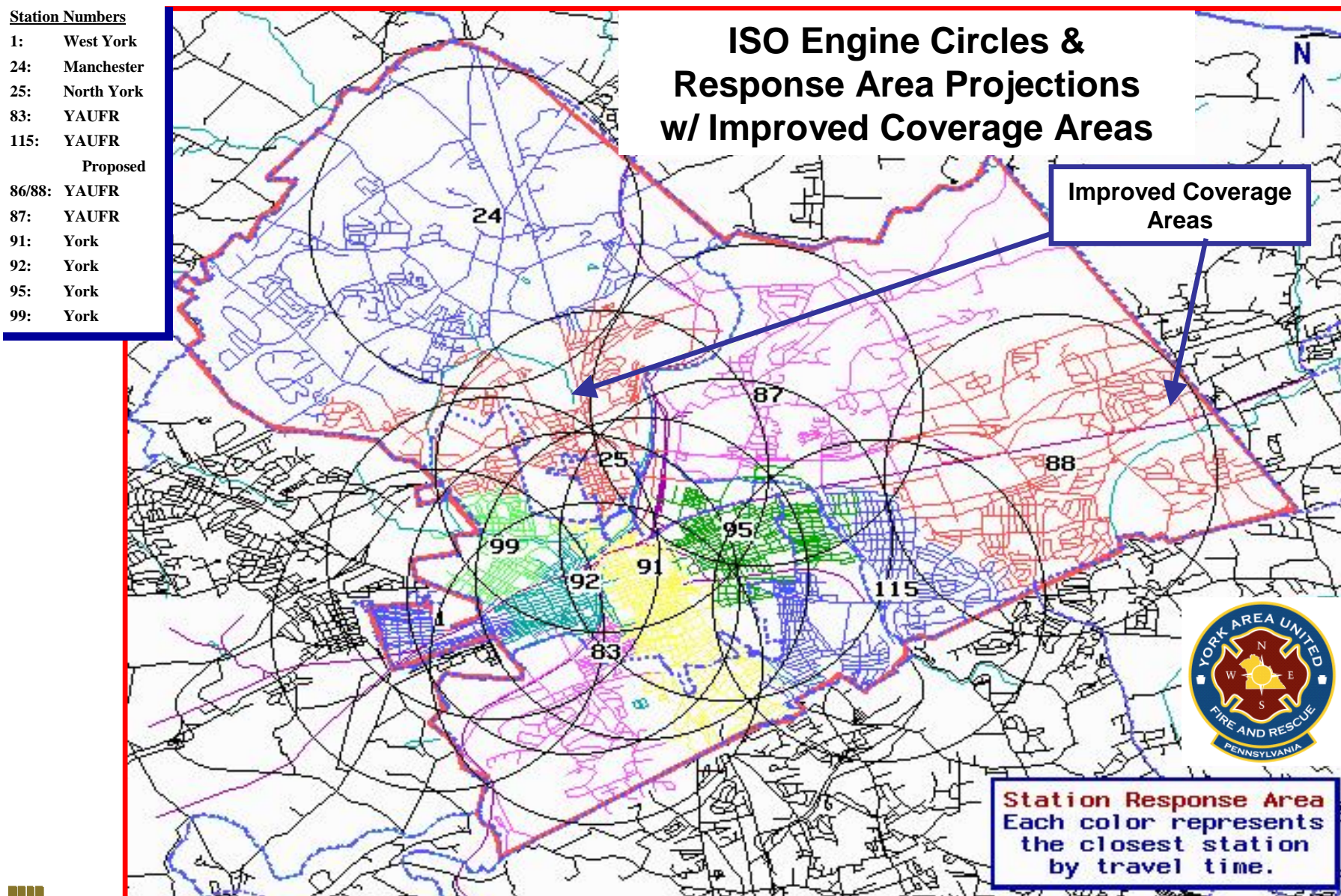
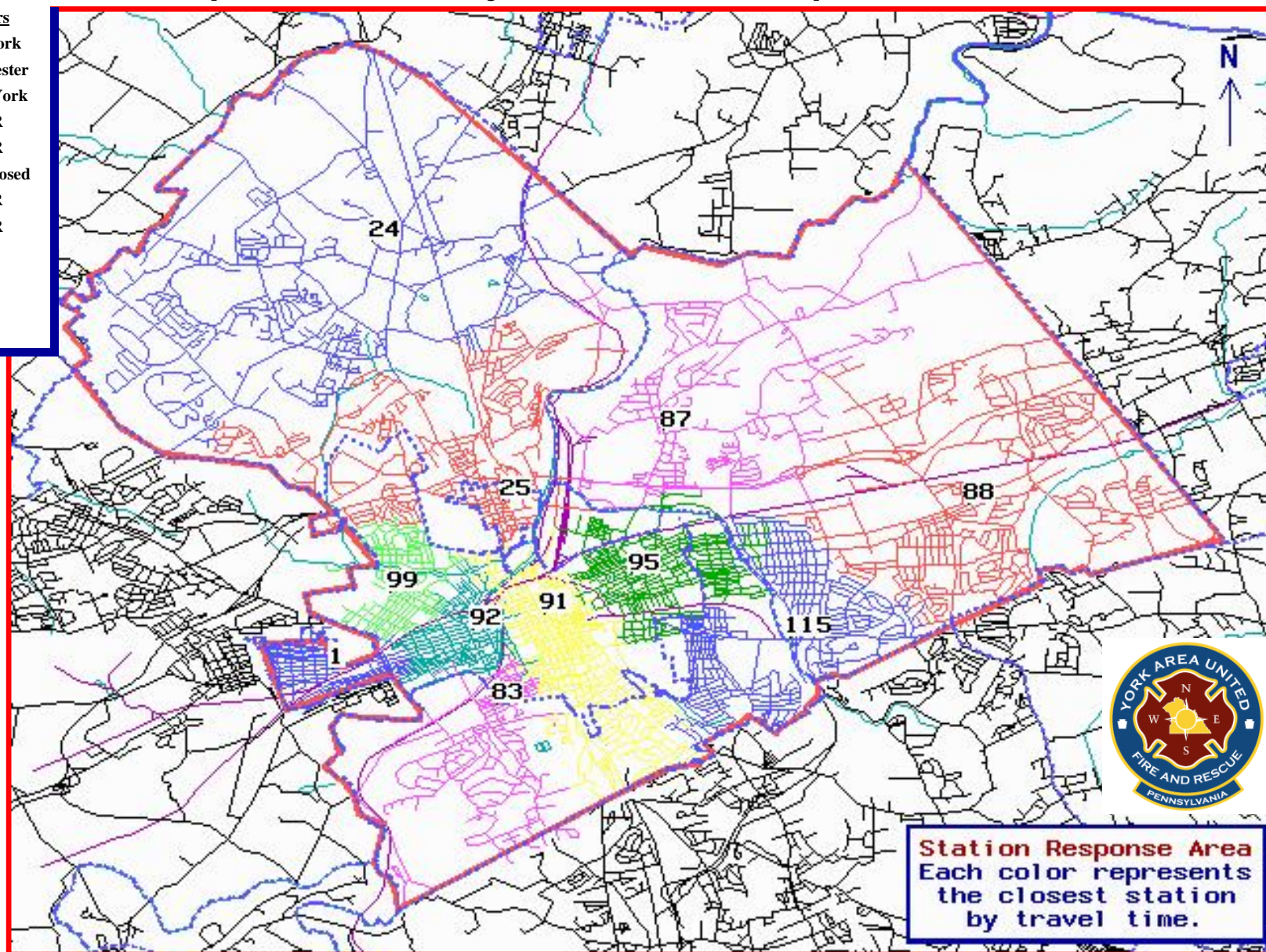


Figure 15

Response Area Projections w/ All Proposed Locations

Station Numbers

1: West York
 24: Manchester
 25: North York
 83: YAUFR
 115: YAUFR
 Proposed
 86/88: YAUFR
 87: YAUFR
 91: York
 92: York
 95: York
 99: York





AVERAGE TRAVEL TIME PER FIRE STATION

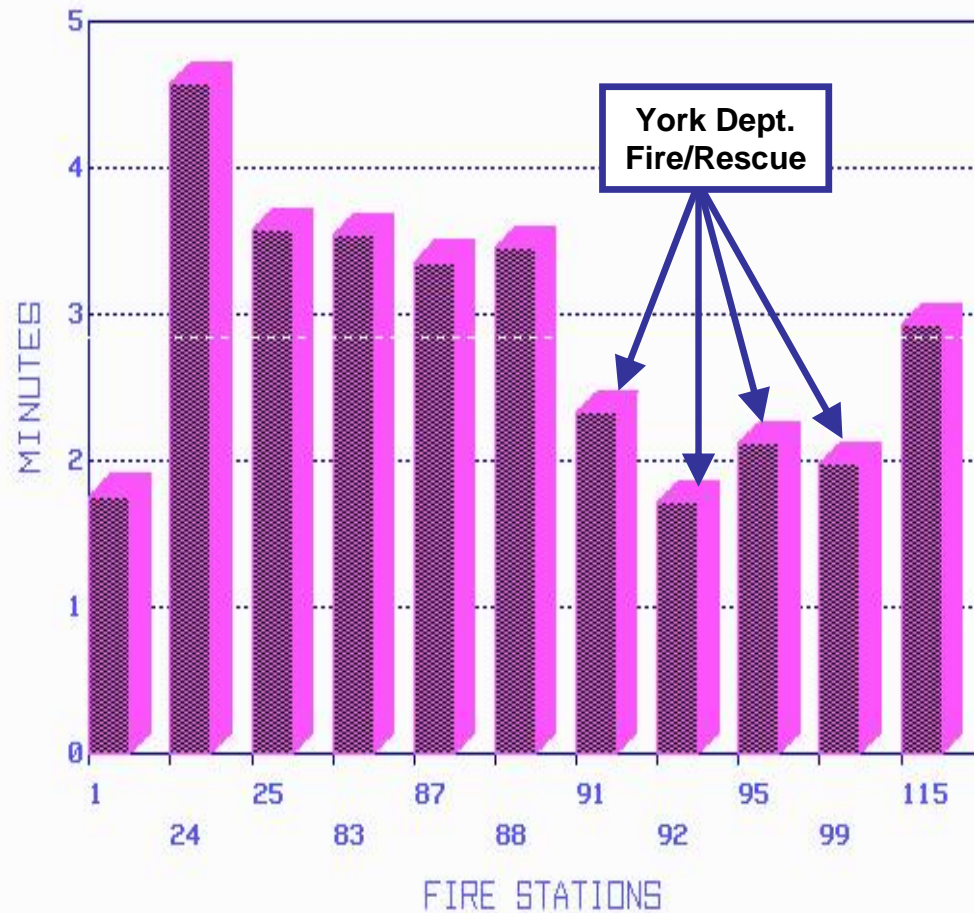
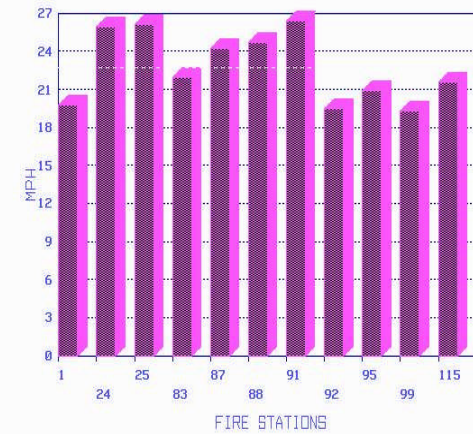


Figure 16

AVERAGE TRAVEL SPEED PER FIRE STATION



TOTAL MILES OF ROADWAY PER FIRE STATION

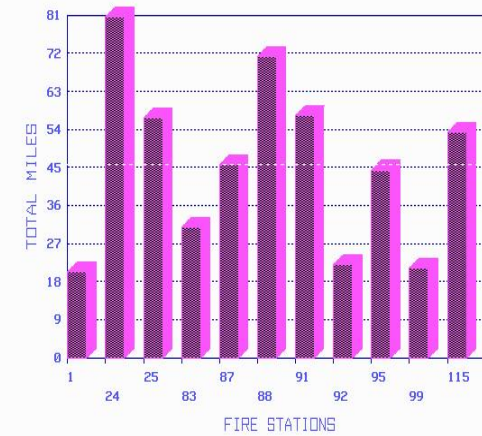


Figure 17

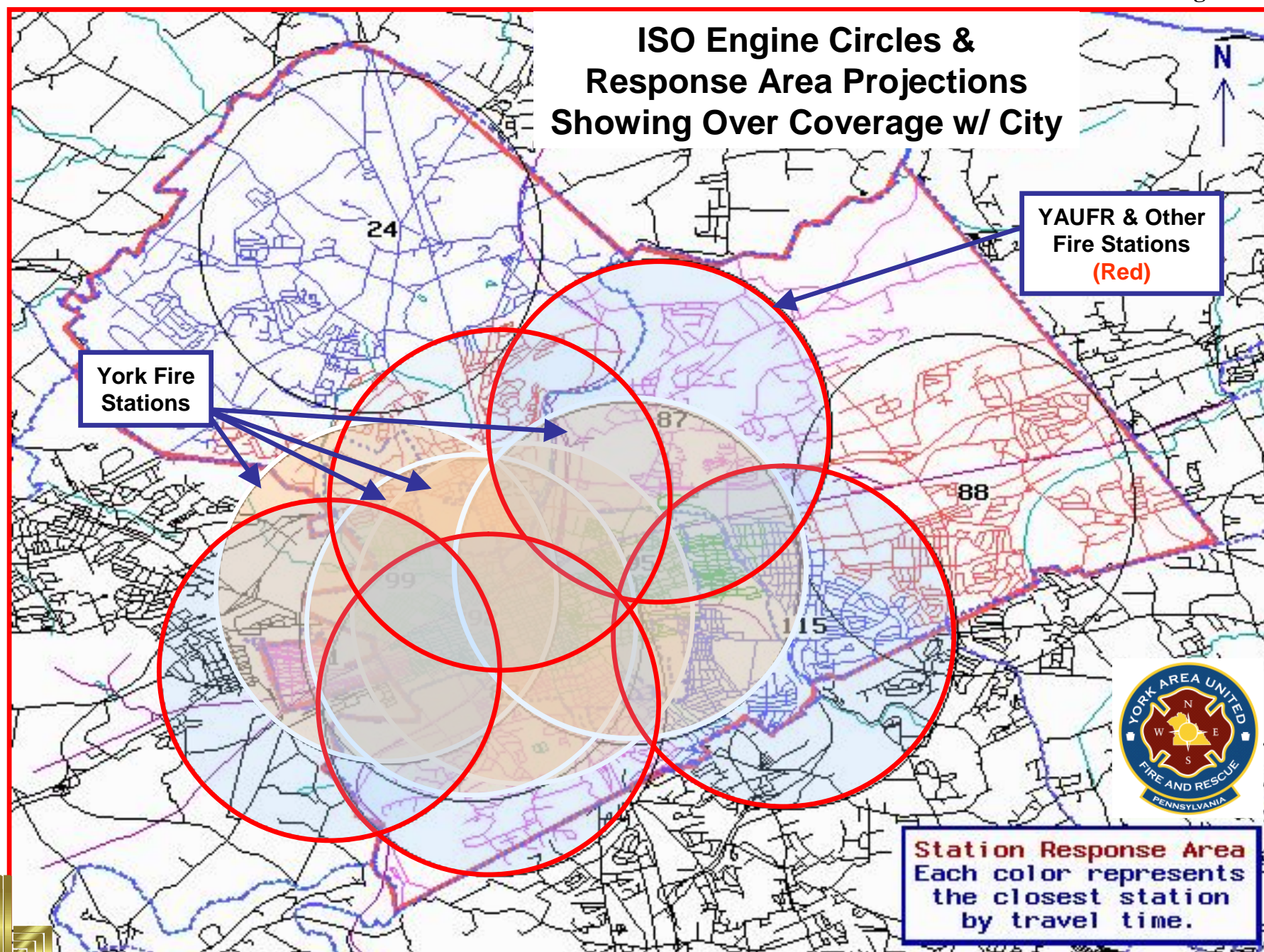


Figure 18

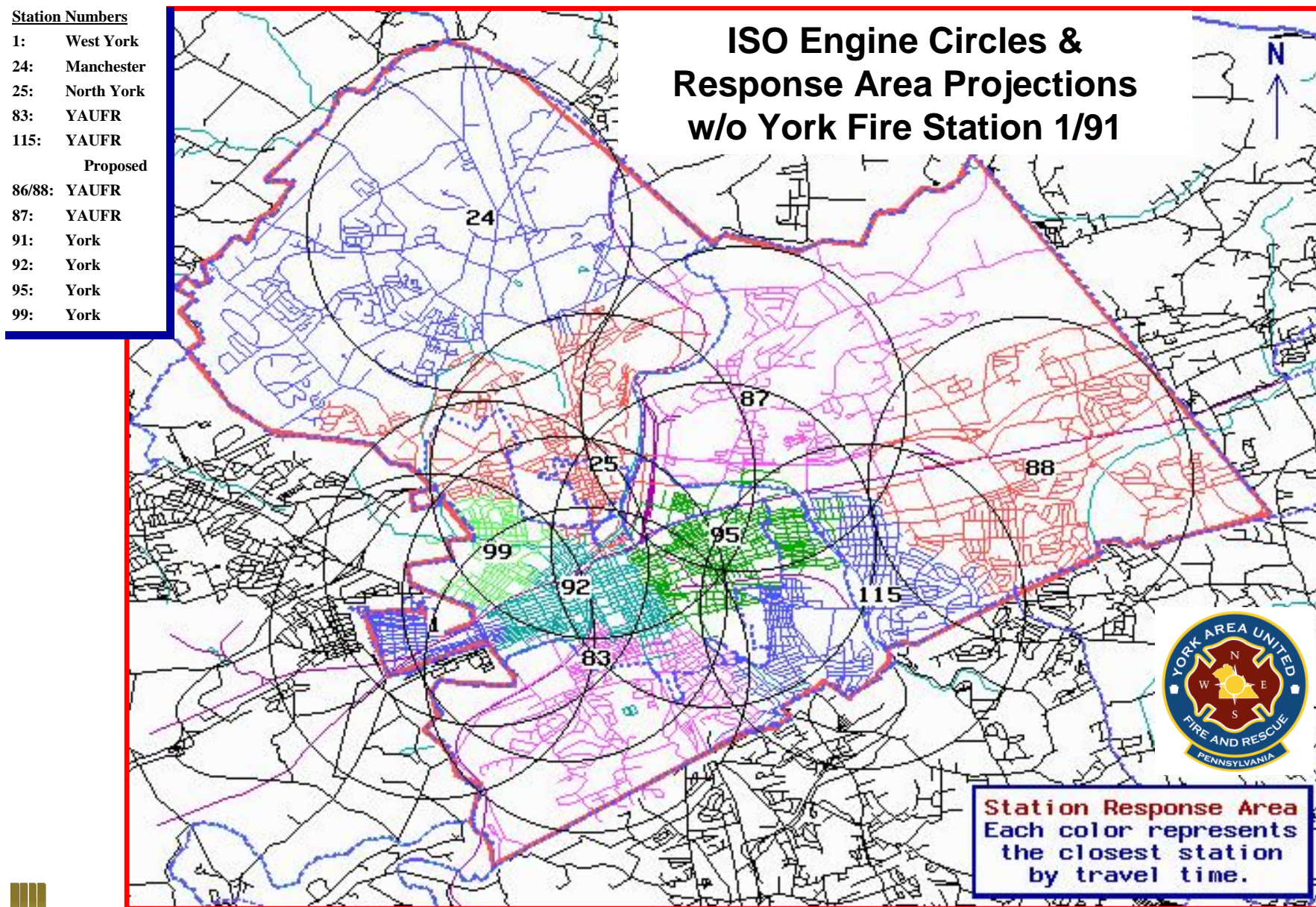
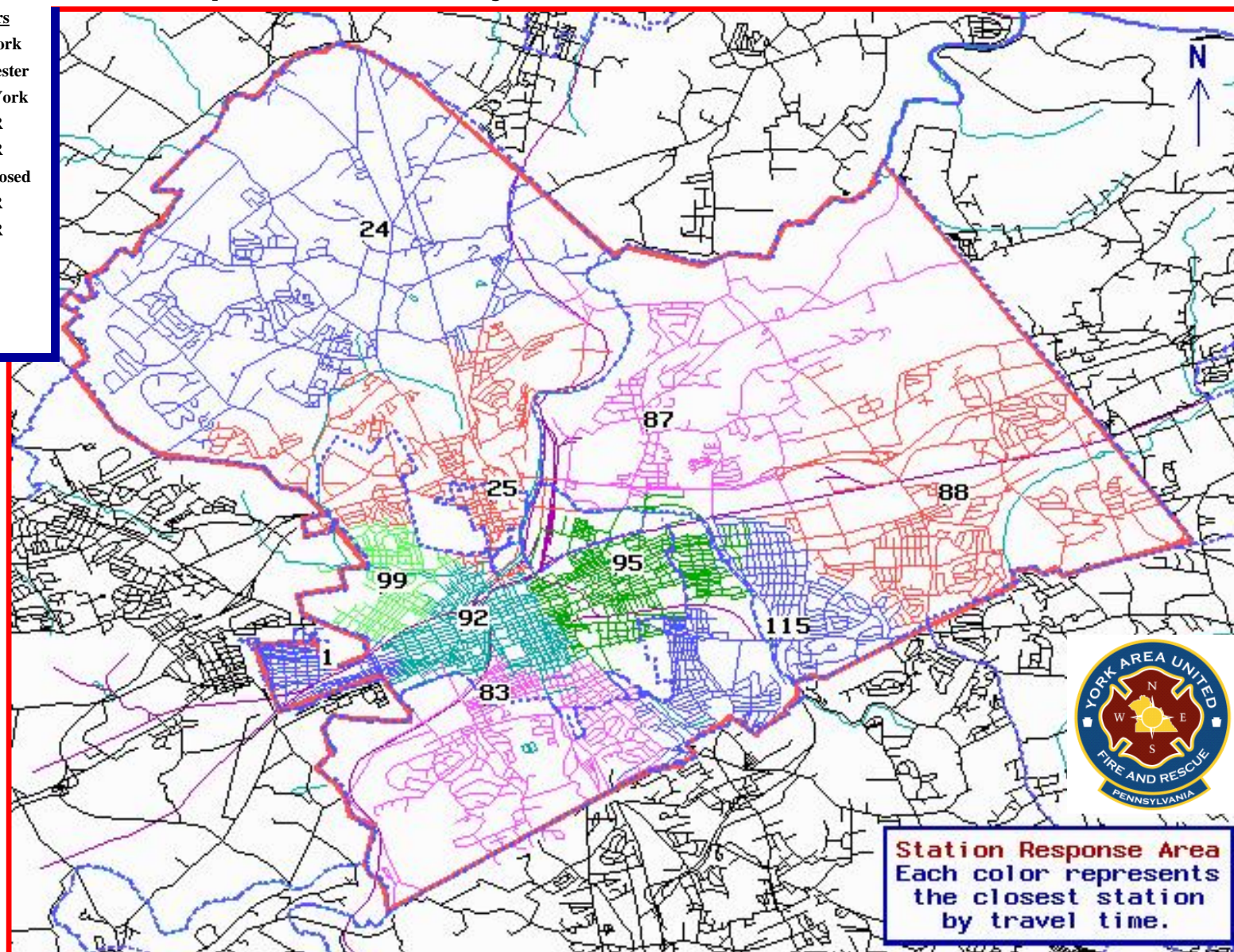


Figure 19

Response Area Projections w/o York Fire Station #1/91

Station Numbers

1: West York
 24: Manchester
 25: North York
 83: YAUFR
 115: YAUFR
 Proposed
 86/88: YAUFR
 87: YAUFR
 91: York
 92: York
 95: York
 99: York





AVERAGE TRAVEL TIME PER FIRE STATION

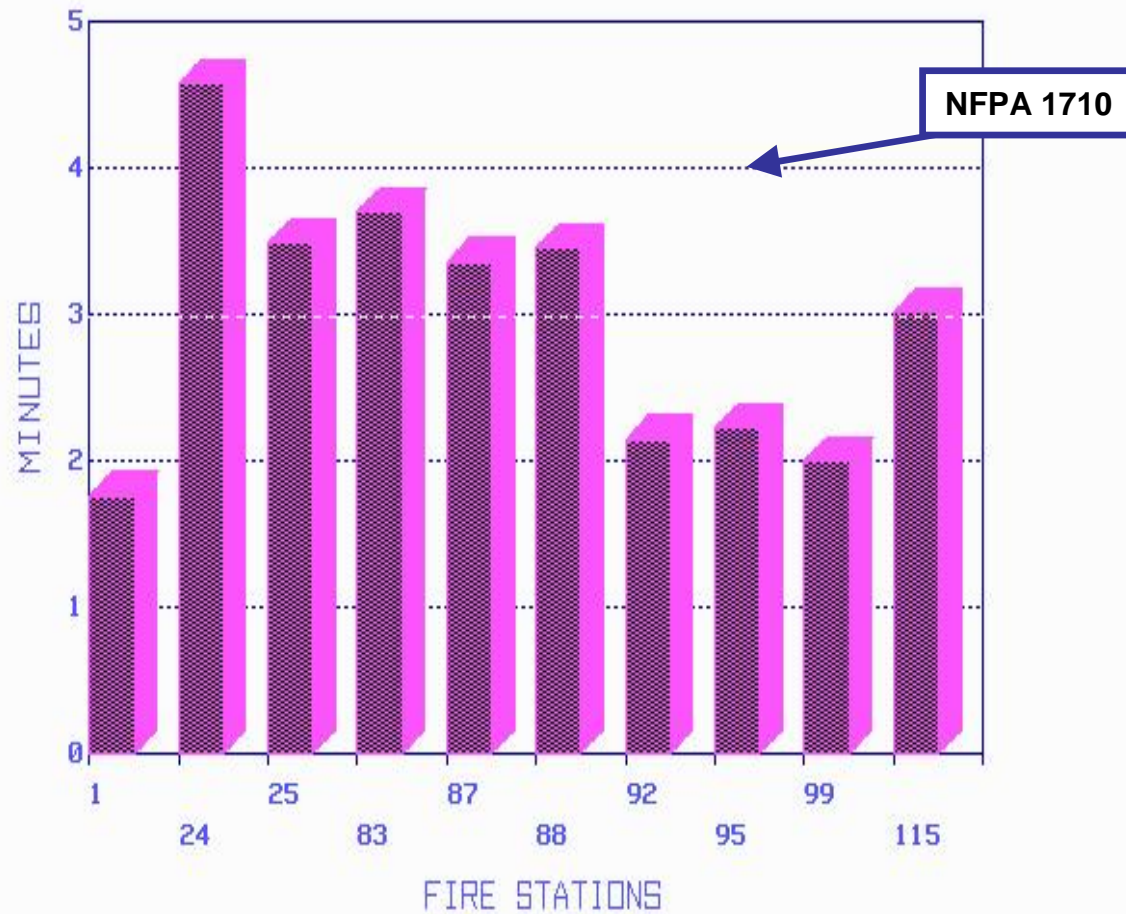
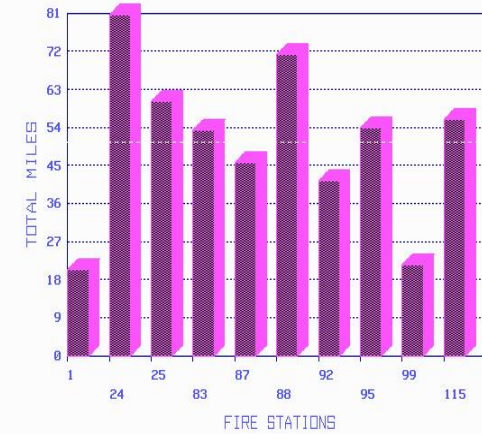


Figure 20

TOTAL MILES OF ROADWAY PER FIRE STATION



AVERAGE TRAVEL SPEED PER FIRE STATION

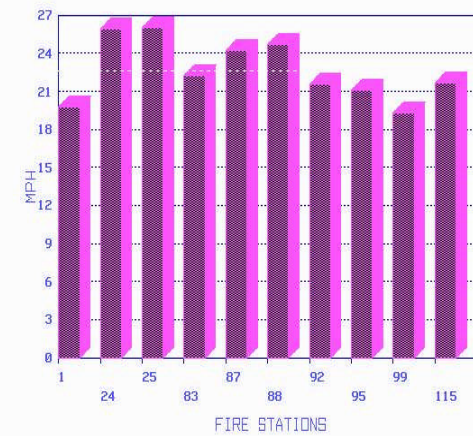
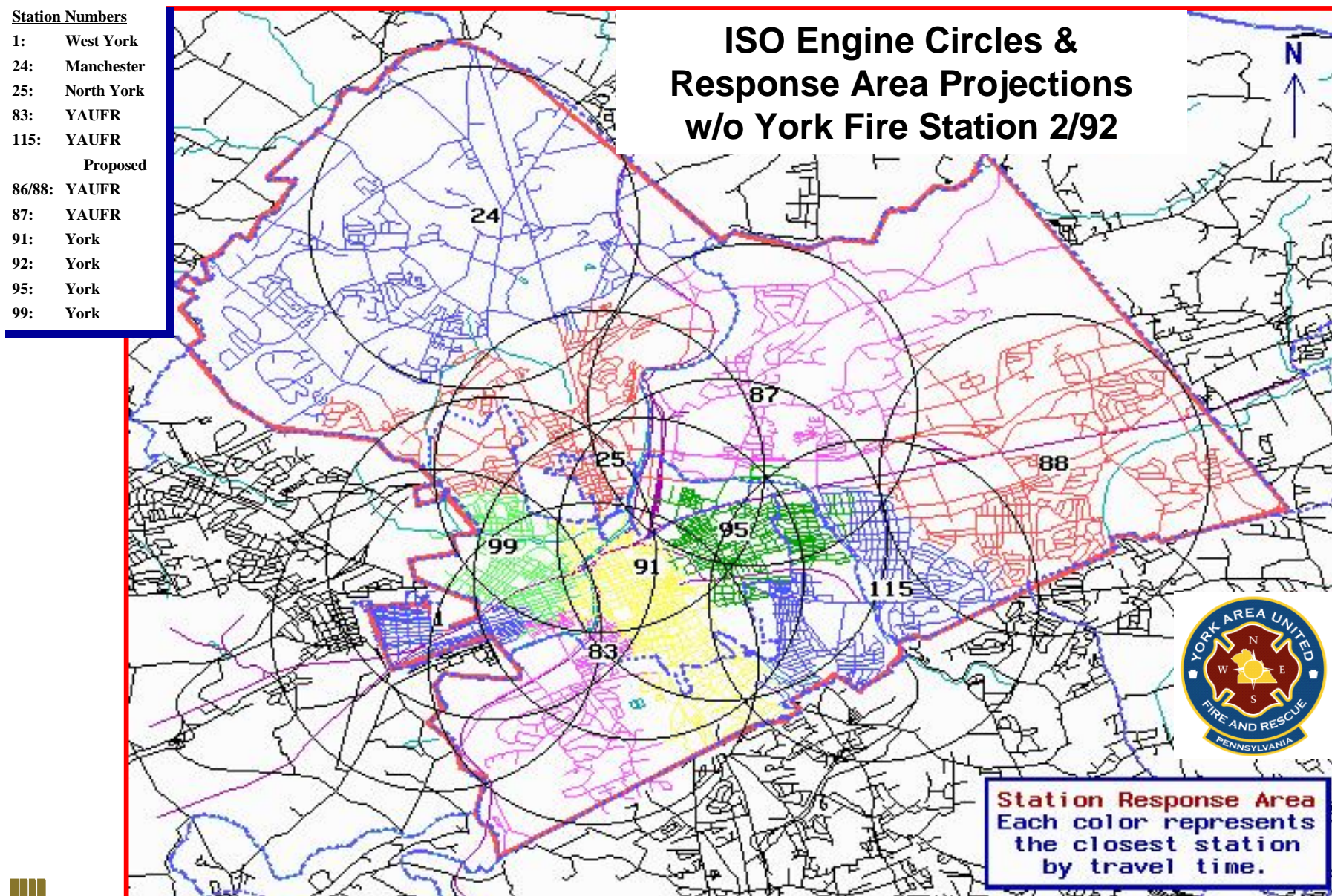


Figure 21



Response Area Projections w/o York Fire Station #2/92

Figure 22

Station Numbers

1: West York
24: Manchester
25: North York
83: YAUFR
115: YAUFR
Proposed
86/88: YAUFR
87: YAUFR
91: York
92: York
95: York
99: York

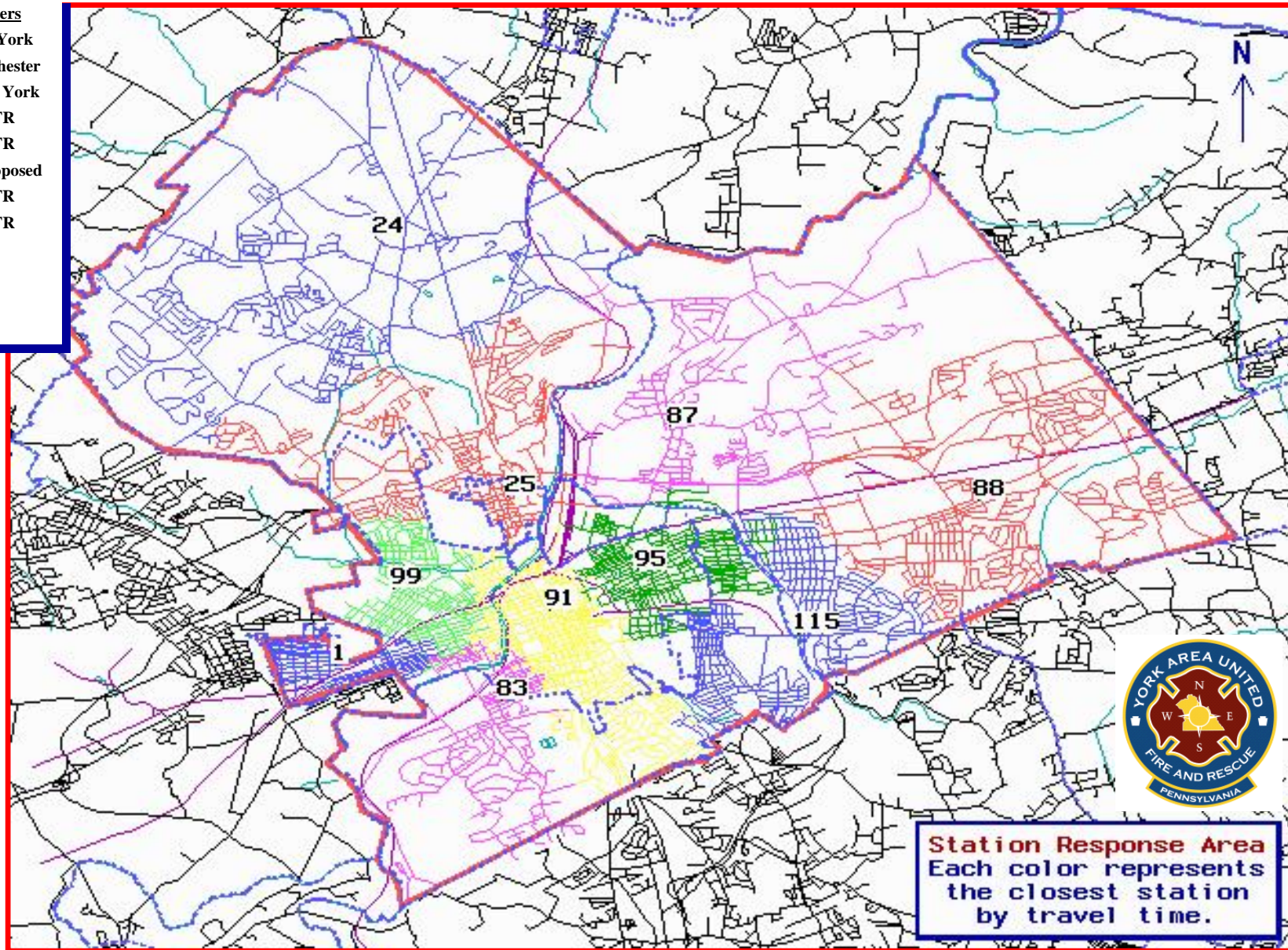


Figure 23

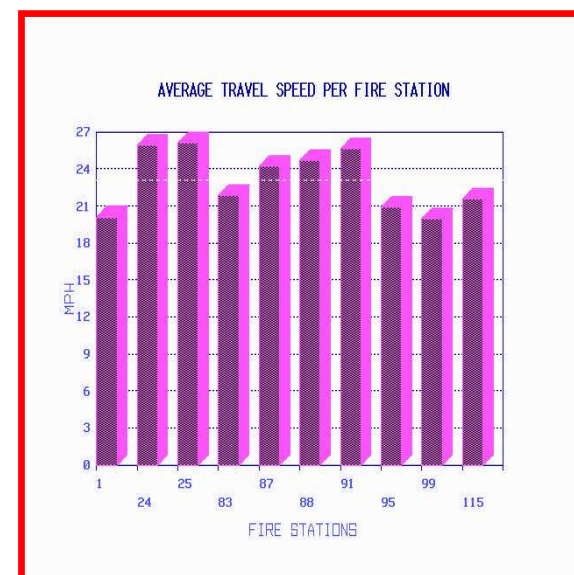
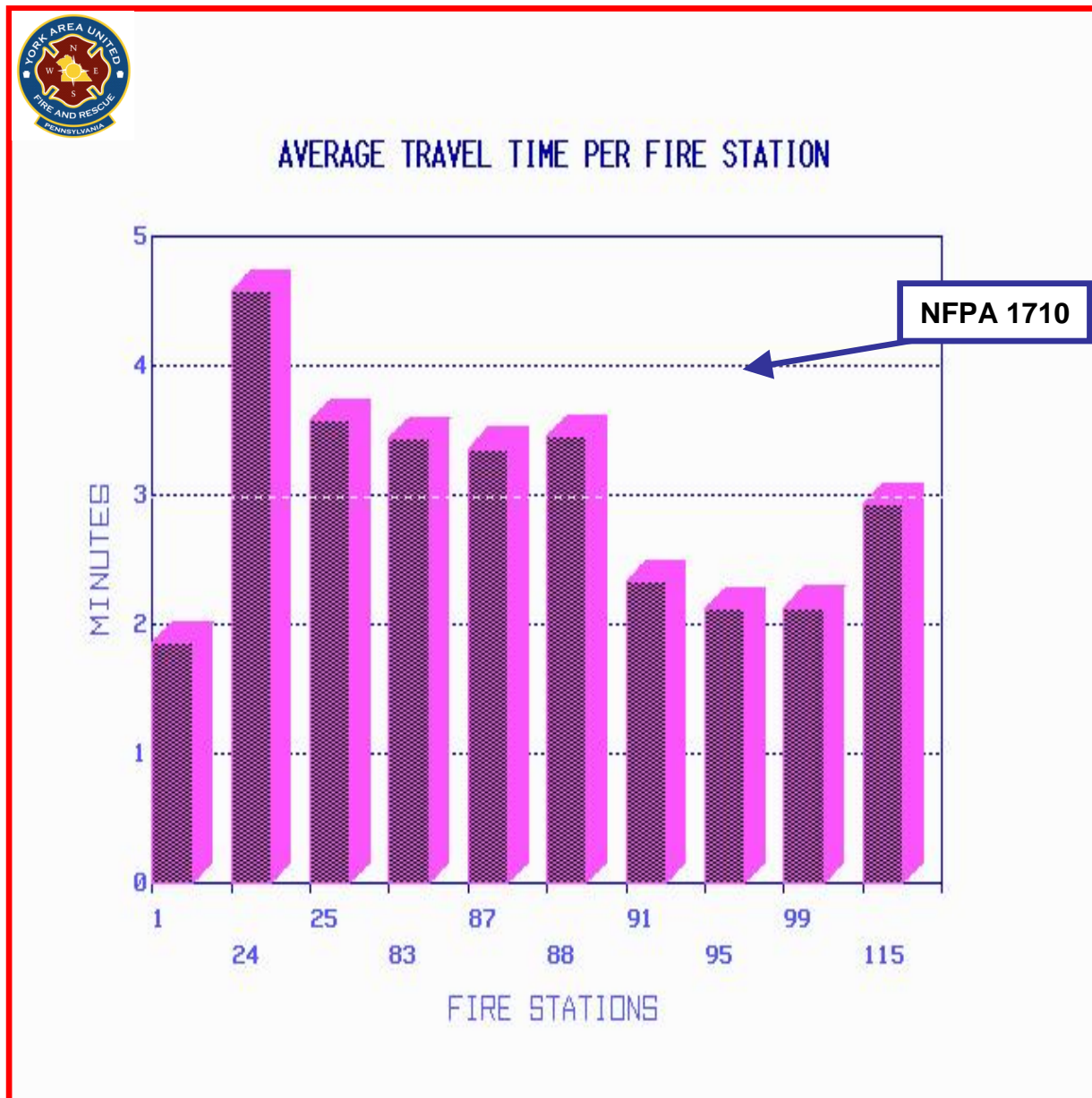
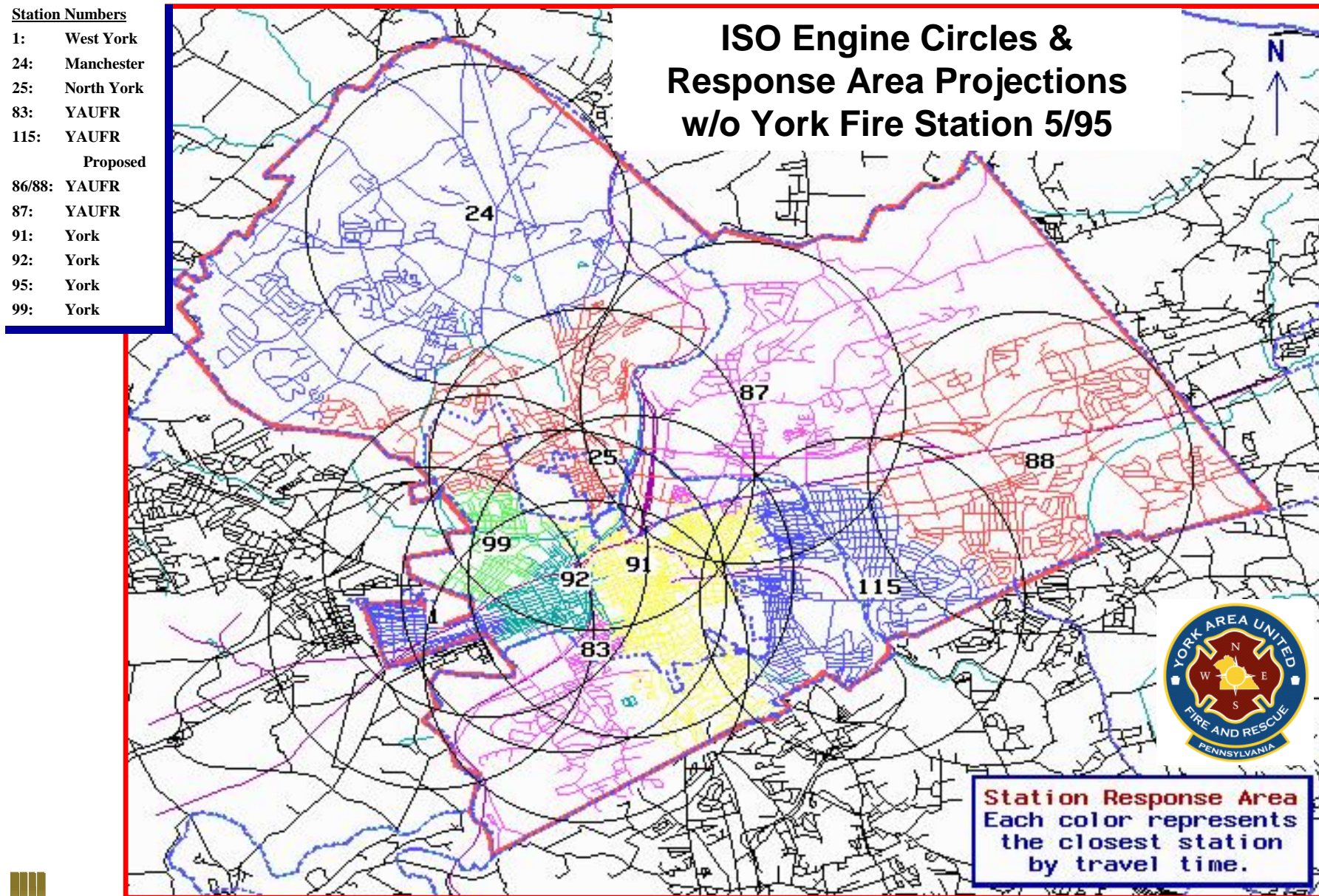


Figure 24



Response Area Projections w/o York Fire Station #5/95

Figure 25

Station Numbers

1: West York
24: Manchester
25: North York
83: YAUFR
115: YAUFR
Proposed
86/88: YAUFR
87: YAUFR
91: York
92: York
95: York
99: York

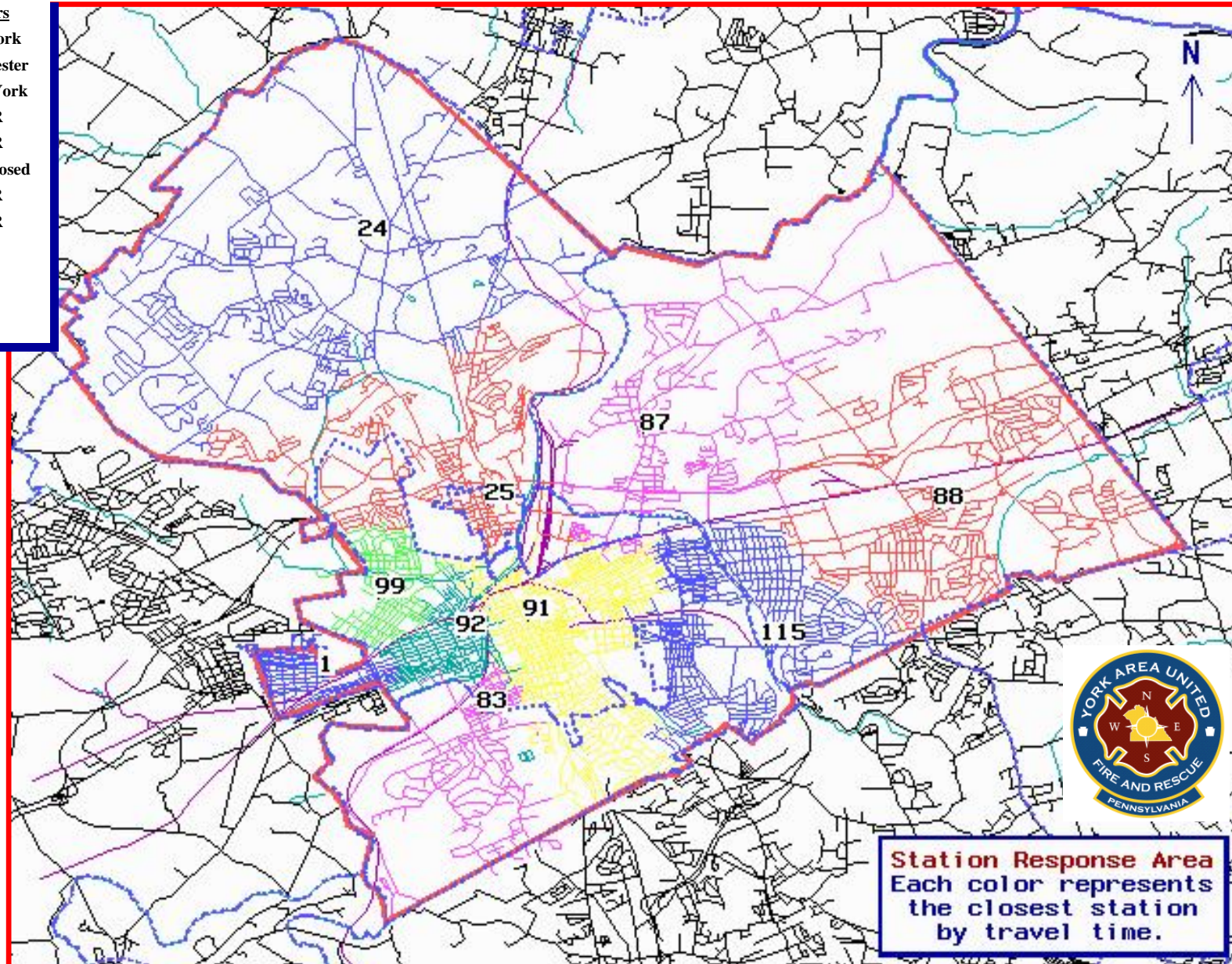
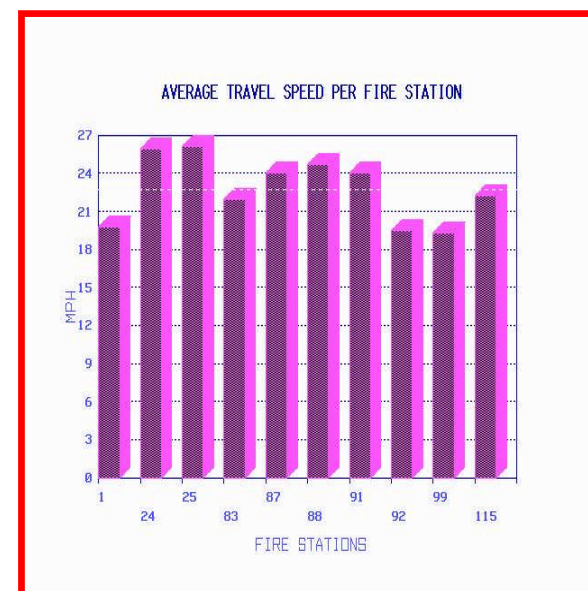
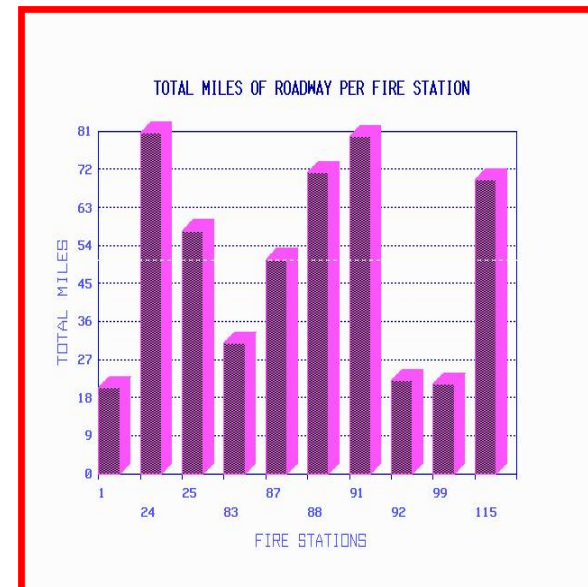
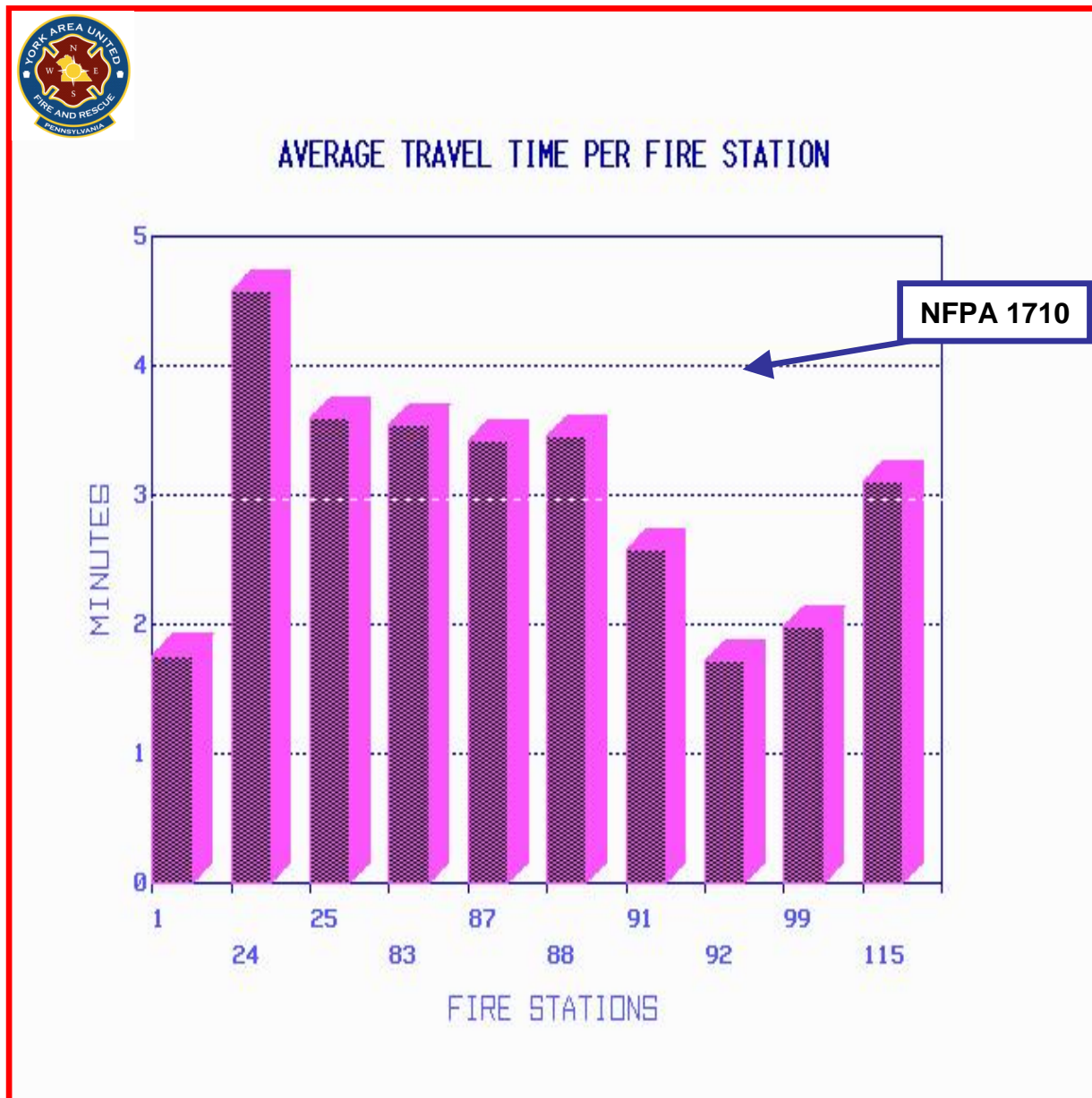


Figure 26





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