TRANSPORTATION ELEMENT CHAPTER 5

PLANNING DEPARTMENT

Contains all Amendments adopted through February 6, 2003.

TRANSPORTATION ELEMENT

TABLE OF CONTENTS

SECTION **PAGE**

LIST OF FIGURES

LIST OF TABLES

TRANSPORTATION ELEMENT

I. INTRODUCTION

Based upon the results of the 1995 Special Census, the City of West Palm Beach has a population of 76,341. The City is approximately 56 square miles and centrally located in a rapidly developing metropolitan area within Palm Beach County and Southeast Florida. West Palm Beach is the historic, cultural and political center of the area, being the seat of government for both the City and Palm Beach County.

West Palm Beach's central location within Palm Beach County makes its street network and the County's public transit system a significant factor in the City's development. The location and type of transportation have a direct effect on the development and redevelopment potential and the quality of life within the City. Historically, the role of West Palm Beach as a major urban and governmental center led to the development of large office and commercial areas throughout the City. The growth and redevelopment of the City's Downtown are also directly associated with the City's waterfront, accessibility, quality of life, safety and the increased promotion and recognition of the Downtown and related activities.

The rapid development of the County and competing residential, commercial, and other interests have increased transportation challenges that have affected the City as well as the County's entire coastal area. Up to now, the transportation system has focused on a system of motor vehicle infrastructure designed solely for transporting people and goods throughout West Palm Beach and the surrounding area via the motor vehicle. The expansion of the street network and highways has been gradual. Over the course of several decades and in conjunction with other factors, this has incrementally contributed to the deterioration of significant portions of the City. The focus of this Element will address the effects of automobile dependence by redesigning the Transportation Element and the Transportation Division's focus on altering the street network and highways to better meet the needs of the City's residents, neighborhoods, visitors, and businesses at a human scale. As Lewis Mumford, city planning theorist, wrote "that a city exists, not for the constant passage of motor cars, but for the care and culture of men." This refocus of priorities will be accomplished through the following sections:

II. STATE REQUIREMENTS

Chapter 163, of the Florida Statutes (FS), states that the comprehensive plan for a local government which has all or part of its jurisdiction included within the urbanized Metropolitan Planning Organization (MPO) pursuant to Section 339.175, FS, shall prepare and adopt a transportation element. The transportation element shall replace the required traffic circulation, mass transit, and ports, aviation, and related facilities elements. The State's minimum criteria for reviewing this element is contained in Rule 9J-5 of the Florida Administrative Code (FAC). The City of West Palm Beach's Comprehensive Plan combines the three referenced elements under one title, "Transportation Element." As per Rule 9J-5.019, FAC:

> Within a designated MPO area, the transportation elements of the local plans shall be coordinated with the long-range transportation plan of the MPO of Palm Beach County. In addition, the purpose of the transportation element shall be to plan for an intermodal transportation system that emphasizes public transportation systems.

This Element ensures that the City continues to implement a comprehensive, coordinated and continuous transportation planning process. It establishes policies to guide the delivery of transportation infrastructure and related services with respect to transportation initiatives or policies affecting transportation policy and provision. In addition, it establishes the City's Transportation Vision and serves as a guide for future street modifications and for the direction of the Transportation Division and all other City Departments.

The City's Transportation Division is developing a long-range plan based upon a hierarchy of users. The hierarchy will be: 1) the pedestrian; 2) the cyclist; 3) the forms of public transportation; 4) the modes of transportation other than the single-occupancy automobile; and finally, 5) the single-occupancy automobile. The transportation priorities will attempt to reverse the current transportation paradigm, which has to a great extent neglected all users except the automobile, and begin a shift toward balance and equity. It also emphasizes that we cannot succeed with transit, ride sharing, or other environmentally-friendly modes of transportation until the City can fully develop a walkable community, focusing on the oldest, simplest mode of transportation, the pedestrian. It can be argued that by establishing a truly walkable community, we are in fact emphasizing the most public of transportation systems.

III. TRANSPORTATION LANGUAGE

For many, the Transportation Vision will require a reorientation of the thinking process. Thinking has its roots in language, and the use of language is very important with regard to the palatability of ideas and concepts. In this case, for modifications to conventional transportation planning to be thought of objectively, unbiased or neutral language is required. Also, speaking the same language is necessary to communicate effectively. This section describes the bias in conventional transportation language and it provides neutral or unbiased substitutes. The neutral terms are summarized at the end of the section in the form of a glossary.

A. Biased Language

Much of the technical vocabulary regarding transportation and traffic engineering was developed in the 1950s and 1960s. The foreword of the Highway Capacity Manual, which was first published in 1965, states, "Knowledgeable professionals, acting in concert, have provided the value judgments needed to quantify these flow-quality relationships and have established the common vocabulary and techniques for estimating the effect of one on the other."

The 1950s and 1960s represented a unique period in transportation history. It was the golden age of automobiles. Automobiles were equated to freedom, mobility, and success. Therefore, accommodating automobiles and maximizing mobility was a major priority in society and thus a major priority for the transportation engineering profession. Naturally, much of the conventional vocabulary is reflective of the social values of the time (i.e., pro-automobile and pro-mobility).

Since the golden age of automobiles, serious problems associated with motor vehicle dependence and overuse have surfaced and altered social values. The unabated provisions for the automobile, popular in the 1950s and 1960s, are no longer acceptable, especially in urban areas. The transportation profession has been slow to react and its vocabulary is particularly out-of-date. In fact, some terminology has become so out-of-date it is misleading.

Through continued exposure to biased vocabulary and euphemisms, many professionals and the public have become influenced themselves. While the bias remains unrecognized, it affects transportation and land use planning and associated decisions. Biased vocabulary allows planning to remain in favor of motor vehicles longer and to a higher degree than would otherwise be the case. The historic influence has an effect on the palatability of progressive ideas such as traffic calming and traditional town planning.

B. Objective Translations

The City of West Palm Beach is implementing traffic calming and altering the priorities of transportation planning. Therefore, it is important to use unbiased language in the policies. The following are examples of conventional vocabulary, shown in **bold** letters, and some discussion as to why it is biased. Unbiased replacements are provided in *Italics*, or in some cases, a different term or different way of using the term is suggested.

Desirable/Undesirable and **acceptable/unacceptable** are often used to qualify levels of service, development patterns, street design geometrics, etc. When qualifiers such as "for automobiles" are not used, it shows a bias toward the unstated benefactor, normally the motor vehicle. These subjective terms are often misleading because they are used in a general manner as if the statement were complete. However, if these subject terms were considered from the pedestrians' perspective then the adjective **desirable/undesirable** might not apply. Therefore, when these qualifiers are used, a descriptor is required to indicate from whose perspective the conclusions are drawn.

Improvement and **improved** are widely misused. Commonly, when **improvements** are associated with intersections or streets, the professionals are referring to adding through lanes, turn lanes, channelization, or other means of increasing automobile capacity. **Improvement** implies making the situation better. However, the aforementioned examples, more often than not, make the situation worse from many other perspectives. For example, pedestrians are required to cross a wider intersection when lanes are added. Using **improvement** in these circumstances indicates a distinct bias toward motor vehicles and their mobility. The word *modification* or *change* should be used instead.

Enhancement or **enhanced** shows a bias in a similar way as improvement. For example, "The motor vehicle capacity of the intersection is **enhanced**." Either *increased* or *decreased* would be a better choice of vocabulary. **Enhanced** denotes that the situation has become better, which is a matter of opinion and perspective.

Upgrade is the term frequently used to describe what happens when a local street is reconstructed as a collector street, when a two-lane highway is expanded to a four-lane highway, etc. **Upgrade** implies a change for the better. Again, this is a matter of opinion and perspective, typically the motor vehicle users' perspective. Residents, bicyclists, pedestrians may not feel that these changes are for the better. There is no need to use a subjective word like **upgrade** when there are several objective words such as *expansion* or *reconstruction*.

Improvement, **enhancement**, and **upgrade** are obvious examples of biased vocabulary that should be replaced. However, there are fewer obvious aspects of transportation vocabulary, which require attention as well. The less obvious vocabulary includes biased names/expressions that are commonly used to describe or title important and useful transportation concepts. However, because of changing social values and increased environmental awareness, many of these names/expressions are out of date or have become mild, indirect, or subtly misleading.

Level of service is supposed to be a qualitative measure describing operational conditions from the perspective of the users (drivers, occupants, pedestrians, cyclists, etc.) This meaning is not self-evident to most people and requires explanation. Unless one adds the appropriate modifier such as, "for motor vehicle drivers and passengers," or, "for pedestrians," after **level of service**, it remains unclear as to who is being considered. Particularly biased is the common assumption that if the mode were not stated, then, "for motor vehicle drivers and passengers," is implied.

Traffic **impact** commonly refers to the effect of a change in traffic volumes, land use, traffic control, etc. on existing levels of service (for motor vehicle drivers and passengers) for a given facility. Commonly used expressions include, "The traffic **impact** on the intersection, due to the proposed development, will be negligible to small." or "The traffic **impact** on Street 'X' will result in a change from level of service 'C' to level of service 'D'." The word **impact** actually connotes a forceful effect or dramatic effect. Therefore, a negligible or small dramatic effect does not make sense. **Impact** implies a greater degree or importance regarding the issue at hand, or the *effect*, than is warranted. In most situations, the word *effect* would suffice but, when the effect is large, then *large effect* could be used.

Transportation planners attempt to increase the safety of streets through engineering "better" barriers, cushioning devices, warning signs, lights, traffic control devices, etc. Their automotive colleagues do the same for the safety of automobile passengers through changes to the automobile design (air bags, anti-lock brakes, etc.) Meanwhile, little is done to cause drivers to improve their driving skills and attitude. In fact, through the use of biased vocabulary, the incentive to take appropriate action is removed by downplaying the severity of problems. A particularly good example of poor vocabulary in this regard is **accident**. An **accident** means something harmful or unlucky that happens unexpectedly or by chance. **Accident** implies no fault. However, we know that the vast majority of **accidents** are preventable; fault can be assigned. Saying, "John Doe caused the fatal accident," is like saying, "John Doe caused his lottery ticket to win." People do not have the power to control the results of a random event. The example should be restated, "John Doe caused the death when he crashed his automobile." The use of **accident** tends to reduce the degree of responsibility and severity associated with the situation. **Accident** also invokes a degree of sympathy for the person responsible. Terms such as *collision* or *crash* are much more objective.

It is no wonder that society accepts tens of thousands of deaths, hundreds of thousands of injuries, and billions of dollars in property damage, annually. It is a sobering thought that in 1995 there were 15,411 people injured and 200 people killed in Palm Beach County in *collisions* (1996 Florida Statistical Abstract). If equivalent quantities of death, pain, and destruction were a result of using and abusing other popular consumer products such as telephones, toilets, food, and houses, the situation would not be tolerated. Also, the use of **accident** to modify words such as investigation, prevention, statistics, etc. should be avoided for similar reasons.

Our society sometimes considers **roads** as synonymous with the automobile. For example, the 1987 West Palm Beach Comprehensive Plan stated:

> An inventory and analysis of the City's existing **traffic circulation system** have been conducted to examine existing and projected **roadway needs**.

In this example, the City previously used **roadway needs** and **traffic** assuming it was understood these are related to the automobile. As if roadways have "needs." To communicate clearly, the sentence should have discussed the "projected *motor vehicle use*." Again, vocabulary used in the example indicates a bias toward motor vehicles. Public transit, bicycle and pedestrian modes all use the **roadway** (*street*), but are specifically identified. Only the automobile has the special status of remaining anonymous.

Other terms are also misused and are typical in conventional planning circles. **Deficiency** is a term that could only be understood by someone who shares conventional, automobile-oriented transportation values. Transportation engineers often refer to *automobile trips* as **movements**. In addition, people often talk about **traffic demand**, fluctuations in **traffic demand**, etc. There is no such thing as a "demand for traffic." Traffic is not a commodity or product which most people desire. **Demand** is an overly strong word that implies an authoritative and imperative claim. It connotes a sense of urgency that does not necessarily apply. **Traffic demand** is a euphemism for *motor vehicle use*. For example, "meeting the forecasted **traffic demands**" should be replaced with "accommodating the forecasted *motor vehicle use*." With regard to the word traffic, conventionalists assume that it means *motor*

vehicle traffic. However, without the mode of transportation being specified, traffic should mean all traffic: pedestrian, bicycle, bus, truck, motor vehicle, etc.

Many times the term, **alternative** modes of transportation, is used. It is alternative to what, several other modes, or one other mode? The normal inference includes modes other than the automobile, but which ones, jets, trucks, horses? The normal inference includes the pedestrian mode, bicycle mode, and various modes of public transit. The bias of the adjective, **alternative,** exists due to the inherent assumption that these other modes are not ordinary or are odd in some way. The people who use the terms assuming that the audience will automatically understand the intended inferences show further bias. Only audiences who either share or recognize the automobile bias would automatically understand. A better adjective would relate to some common characteristic to the **alternative** modes (e.g., *human-powered, non-polluting, sustainable,* etc.). If the intention were really to say "non-automobile modes" then use the term *non-automobile* modes rather than the conventional term, **alternative** modes.

Protect means shielding from harm. However, when we discuss **protecting** land for a right-of-way for a road, the intent is not to shield the land from harm, but to construct a road over it. Objective words include *designate* and *purchase*. So instead of saying, "We have **protected** this right-of-way," we need to say "We have *designated (purchased)* this right-of-way."

Everyone should strive to make the transportation systems operate as **efficiently** as possible. However, we must be careful how we use **efficient** because that word is frequently confused with the word *faster*. Typically, **efficiency** issues are raised when dealing with motor vehicles operating at slow speeds. The assumption is that if changes are made that increase the speeds of motor vehicles, then efficiency rises. However, this assumption is flawed. For example, high motor vehicle speeds lead to urban sprawl, motor vehicle dependence, and high resource use (land, metal, rubber, etc.) which reduce efficiency. Motor vehicles burn the least fuel at about 30 miles per hour; speeds above this result in inefficiencies. In urban areas, accelerating and decelerating from stopped conditions to high-speed results in inefficiencies when compared to slow and steady speeds. There are also efficiency debates about people's travel time and other issues as well. Therefore, care is needed for use of the word **efficient**. If one really intends *faster*, then use *faster*. *Faster* is not necessarily more **efficient**. Similarly, if one means *slower*, then use *slower*. One often hears, "The traffic signal timings were adjusted to increase motor vehicle **efficiency**," or "Let us widen the road so that cars operate more **efficiently**." Objective translations include, "The traffic signal timings were adjusted to *increase* motor vehicle *speeds*," or "Let us widen the road so that cars operate *faster*."

The **capacity** of the street has also been affected by pro-automobile biases. In the past, this **capacity** was defined as the maximum number of automobiles that can move past a given point over a fixed period of time, usually an hour. It was as if the streets had no other purpose than to move automobiles. Recently, transportation professionals have made the leap to using *people capacity* which was defined as the maximum number of people that can move past a given point over a fixed period of time by any mode of transportation. Though more open-minded than before, it still shows a bias toward the concept that the sole purpose for streets was movement. Also, it still showed a high level of fixed-use thinking, when streets also function as social, recreational, cultural, historic, and commercial spaces.

Finally, of particular bias is the term **capacity deficient**. The inference is that a particular street section or intersection is operating at a lower level of service for motor vehicle users during the peak hour of motor vehicle use than was adopted as the minimum by the governing agency. The bias is fourfold. First, **capacity** is used with the premise that the audience will automatically understand that *motor vehicle capacity* was meant. Second, the actual motor vehicle capacity of the street segment or intersection may not be what is meant at all; many conventional transportation planners misuse the word **capacity** to mean a threshold number of motor vehicle trips per hour or per day that represents a level of service for motor vehicle users of C or D which is higher than a threshold at E, which is generally thought of as the capacity. In addition, these thresholds are often a general number from a general table and has little to do with the actual street or intersection involved. Third, **deficient** means that there is something wrong with the street section or intersection, even though the problem could be related to excessive motor vehicle use induced by poor land use planning, street widening elsewhere, inadequate public transit, automobile parking subsidies, or a policy of providing too high a level of service for motor vehicles, etc. Finally, the implication is that the course of action to follow is to increase the motor vehicle capacity of the street section or intersection. The objective substitute is to say that *motor vehicle use exceeds the motor vehicle volume policy threshold*.

C. Glossary

Due to the biased nature of common transportation vocabulary toward the automobile, automobile-oriented solutions tend to result. Therefore, in order to remain neutral and unbiased, the Transportation Element will substitute these words with unbiased phrases and words. To ensure maximum clarity in communication, a glossary of automobile-oriented words and phrases and their unbiased substitutes are provided on the next page. However, this is not inclusive of all biased words or phrases, but it is a good start and should be used as a guide for future transportation related documents and correspondence. In 1996, the City Administrator adopted a language policy for use by all City staff for all City correspondence and documents.

This space left intentionally blank.

TRANSPORTATION GLOSSARY

Conventional word/Phrase	**Substitute (Unbiased) Word/Phrase**
Accident	*Collision/Crash*
Alternative	*Human-powered/Non-polluting/Non-automobile*
Capacity	*Motor vehicle volume policy threshold*
Capacity deficient	*Motor vehicle use exceeds the motor vehicle volume policy threshold.*
Demand	*Use*
Desirable/Acceptable	*Desirable (for whom)/Acceptable (for whom)*
Efficient/Efficiency	*Increase speeds or faster*
Enhanced	*Increase*
Impact	*Effect*
Improvement	*Modification/Change*
Level of service	*Level of service for (insert mode of transportation here)*
Movements	*Motor vehicle trips*
Protect	*Designate or Purchase*
Road system	*Motor vehicle*
Roadway	*Street*
Traffic	*Motor vehicle traffic*
Traffic demand	*Motor vehicle use, travel demand*
Undesirable/Unacceptable	*Undesirable (for whom)/Unacceptable (for whom)*
Upgrade	*Expansion/Reconstruction*

IV. CONVENTIONAL TRANSPORTATION PLANNING

A. Increased Automobile Capacity, Increased Automobile Traffic

If we build the automobile-oriented streets, they will come (the automobiles). Increasing a street's car-carrying capacity for automobiles induces latent automobile travel demand. Simply put, additional automobile capacity encourages automobile use. Worldwide experience has demonstrated that simply increasing a street's capacity for motor vehicles is not the only solution available and usually does not produce the intended results. Typically, as soon as the new or wider streets are built, they fill up with motor vehicle traffic, and the process starts all over again, taking more urban space and developable land. This is referred to as "induced [motor vehicle] traffic." Building up car-carrying capacity in urban areas is also self-defeating. Automobile ownership is growing faster than automobile capacity. In other words, the City of West Palm

Beach must accept that it cannot build its way out of congestion, nor can it afford to think that it is even a possibility.

For years, traffic engineers have been trying to solve the problem of congestion with a number of techniques, all designed to increase a street's car-carrying capacity and thereby alleviate congestion. The City accepts and now promotes the principle that congestion is not the problem, and increases in car-carrying capacity, more often than not, are not the solution. However, the historic response to congestion by governments is to increase car-carrying capacity: widen the road, channelize the intersection, limit the access, eliminate the bottleneck, or expand the interchange. Capital "improvement" programs are filled with projects justified as increases in motor vehicle capacity to "satisfy demand" and "eliminate" congestion. This is rarely the result. Usually, the modifications to increase car-carrying capacity often spur a new wave of development, a change in driver behavior, a further suburb, increased motor vehicle use, and the ultimate return of congestion or the problem is shifted to the next bottleneck or intersection. The usual result is that the number of persons and automobiles that participate in the congestion is increased, further adding to auto-dependency. For more information, refer to Technical Paper No. 1 in Appendix B.

It is time for the City of West Palm Beach to accept that it is virtually futile to continue the practice of trying to keep pace with congestion by expanding streets. The City must accept that the amount of land dedicated to motor vehicle infrastructure is at a maximum, in most areas, and cannot afford to dedicate any more. Further increases in the motor vehicle infrastructure will only subtract from the amount of developable and taxable land within the Corporate Limits. The City of West Palm Beach has made a choice: to create a lively, interesting and enjoyable city for its residents to live, work and play; not to continue to provide fast conduits and large storage spaces for motor vehicles.

The City has begun to move toward this commitment. An excellent example is the resurrection of Clematis Street through the funding of an extensive streetscaping program. The design principles of CityPlace are also an indication of the City's dedication to creating exciting, lively public spaces and a unique pedestrian experience. Northwood Road is another example of the City's role in returning the street and public realm to the residents and business owners, making their needs paramount over those of the automobile and drivers. However, this type of development and planning activity cannot be viewed as a trend. It must become the rule rather than the exception.

B. Forecast Modeling

A tremendous amount of money is spent each year on forecasting motor vehicle use in the City of West Palm Beach and within Palm Beach County. Most utilize computer models to help prepare forecasts of motor vehicle use with seemingly "scientific" validity. But these models, especially when forecasting use for the long term, suffer from two main problems: error and lack of scope. When one considers the multitude of layers of complex assumptions used in the modeling process, each with its own level of uncertainty, the validity of the model's result is low. By their very nature, models attempt to approximate systems as if they were self-contained or closed. What they tend to ignore is that the transportation world is an open system where complex internal and external forces are at work. For example, models tend to ignore the natural

realities of self-regulating equilibrium that cannot sustain continuous growth. The typical steps of modeling for motor vehicle traffic are described below:

> The core of the transportation planning process (modeling) consists of four distinct, but related activities. The first is "Trip Generation." In urban transportation planning, 24-hour person-trips are projected for [motor vehicle] traffic generating zones to some horizon year, say 20 years into the future. Regression equations or category analysis techniques are used to do the forecasting . . . The end product is a *potential* for [motor vehicle] travel associated with a given zone or site.
>
> The next activity is called "Modal Split." This is where the person-trips in an urban area are separated into public (transit) and private (auto) trips. Usually a mathematical model is used to achieve the split. The person-trips are then converted to vehicle trips with the use of occupancy factors . . . If a sufficient number of people are expected to take transit, then the number of auto trips has to be reduced. The result of this activity is the potential for trip making is basically split into two parts, auto and transit.
>
> The next activity is to distribute the potential number of trips or vehicles to various zones. This activity is called "Trip Distribution." In urban transportation planning, trips are distributed using some form of mathematical model. The "gravity" model is a common model used to distribute urban trips among zones.
>
> The last activity is called "Trip Assignment." This is where the distributed [motor vehicle] traffic is allocated to specific streets and intersections. In urban transportation planning, [motor vehicle] traffic is assigned to street networks on the basis of travel time . . . Once the total number of motor vehicles is known, impact analysis can be done on the streets and intersections.

The steps in this procedure seem very credible on the surface. However, models contain the biases of the models' creators and the biases of people using the model that is reflected in the assumptions and inputs. In addition, models tend to have limited goal descriptions (determine motor vehicle volumes), and a concentration on only limited parts of the system (i.e., streets and intersections). They ignore negative feedback systems that cause self-regulation (i.e., quality of life, health costs). The models lack opportunity for initiatives through other modes of transportation due to specific product orientation (i.e., motor vehicles). Finally, in some cases, due to the flexibility of the inputs, manipulation of the models often occurs which support a particular position, further proving the inherent bias within the procedure. For example, in motor vehicle concurrency review, it can invariably be the determining factor in whether a project is approved or denied for development.

Typically, the models predict the need for more automobile capacity on the streets, the streets are expanded, and the predictions appear to come true, more motor vehicles using the streets. The models become self-fulfilling prophecies. The phenomena discussed earlier of streets filling up automatically would also explain the increase in the number of motor vehicles. In other words, without the continual increases in motor vehicle capacity, it is likely that in

reality the number of motor vehicles would never exceed a certain threshold volume, regardless of the changes in land use. The changes would occur in how well the streets are being used by all forms of transportation. Nevertheless, decision-makers generally believe the forecasts of models when the forecasts support decisions that have already been taken for other reasons. Today, modeling for motor vehicle traffic is practically mandatory. Typically, [motor vehicle] traffic studies are submitted to provide the motor vehicle traffic figures required to justify a project (regardless of the models' validity).

The City of West Palm Beach is relatively built-out and an extensive street network is in place. The typical practice of most areas would be to simply continue to expand the streets within the network, attempting to keep pace with the growing "problem" of congestion. However, the City is reversing this trend in an attempt to reduce motor vehicle dominance on City streets and return them to the residents, business people, workers, children, etc. This does not imply creating an automobile-free environment. That would be impossible and impractical. As stated earlier, the idea is to change the prioritization of the current street network. This accepts that a certain amount of the street network is used for vehicular mobility; however, the remainder should serve more to promote access and the quality of life of the residents and businesses adjacent to and affected by the streets. Previously, the design of all streets has placed the motor vehicle and its passengers at the top of the priority list ignoring all other aspects of the environment in which the street is placed. For some streets, this is acceptable (e.g., Interstate 95 and the Florida Turnpike). The problem lies with placing these same or similar design standards and measurements (LOS) on smaller streets within West Palm Beach, which share competing interests such as commercial, residential, educational, and a high level of pedestrian activity, etc. (e.g., Parker Avenue and Flagler Drive).

As a side note, much of this is being addressed through the City's traffic calming policy. The City is addressing these issues at every opportunity, particularly during street reconstruction resulting from replacement of the drainage and storm sewer systems or during repaving projects. However, this is only the beginning. The City must continue to consciously strive to establish a balance among street users.

C. Transportation Planning's Focus on Motor Vehicles

Conventional transportation planning is too focused on providing for motor vehicle use, to the exclusion of the other users of the streets: pedestrians, cyclists, transit riders, residents, merchants, employees, customers, and children. The focus can be attributed to the reaction of the conventional planners to two categories of concerns: first order concerns and second order concerns. First order concerns are of a technical, more immediate nature. They deal with such things as intersection motor vehicle capacity and level of service for automobile drivers and passengers. Second order concerns are more of a planning nature with long-term effects and include such things as a desirable future, fairness, use of energy, the environment, and the long-term cumulative effect of individual decisions.

Delays to motor vehicles, average travel speeds, level of service for motor vehicles and passengers, and weekday peak periods can be readily measured or estimated. These are all first-order concerns. Conventional transportation engineering strategies are normally applied to maintain a level of service "D," during the peak of motor vehicle. The conventional strategies are numerous and include building new streets, adding through-lanes or turn-lanes, removing on-

street parking, changing signal timings, converting to one-way operation, etc. Normally, current motor vehicle traffic volumes are monitored, future volumes are predicted, and changes are effectuated to accommodate the projected total of motor vehicles in the future to try to ensure a level of service "D" is provided. The tendency for transportation planners to address the first-order concerns is natural because these concerns are relatively simple to measure and have short termed results. Also, they are relatively tangible when compared to second-order concerns. This makes addressing first-order concerns politically appealing to the decision-makers and easy to sell to the lay person.

Official long-range plans whether the MPO's, Palm Beach County's or the City's, by their nature contain more second-order concerns than first-order concerns. Second-order concerns are difficult to measure and the means of achieving them are numerous and debatable. Typical goals which are second-order concerns include respecting the capacity of the natural environment to assimilate the effect of human activities, enhancing the aesthetic quality of the built and natural environment, and minimizing dependence on non-renewable energy resources. The second-order concerns are not attainable if conventional transportation planning continues. Second-order concerns are overshadowed by the immediate and perceived importance of first-order concerns. In other words, the incremental effect of years of solving first-order concerns makes the second-order concerns impossible to solve.

The goal of the Transportation Element is to establish a framework to reverse the order of concerns. There is currently an adequate street network within West Palm Beach, providing a traditional grid network east of I-95 and a modified grid west of I-95. The street network is currently sufficient enough that we no longer should concentrate resources on increasing the system for motor vehicles. The time has come to refocus the attention to the street users that have been neglected up to this point: pedestrians, cyclists, transit riders, residents, merchants, employees, customers, and children. In fact, the City has begun to reclaim space previously devoted to motor vehicles which has gone unused or is excessive. The City must continue these activities and progressive thinking in order to achieve its ultimate goal of being sustainable, livable, and economically successful.

D. Dealing with Motor Vehicle Dependence

The more new motor vehicle infrastructure is built, the more people in and around West Palm Beach become dependent on it, the more harm will come to the City (evident in several areas of the City), and the harder the job will be to reduce the dependence on motor vehicles. Dealing with the dependence on automobiles is critical in the redevelopment and renaissance of West Palm Beach. It is interesting to note that dependence on non-transportation technology and infrastructure (electrical, water, sewer, cable, non-cellular telephone) has never been so high in West Palm Beach as it is today. However, these technologies are less intrusive, less space demanding, less costly and tend to improve our health and the standard of living in West Palm Beach. More motor vehicle infrastructure and its associated ills need not further degrade the City of West Palm Beach's human environment. Unless sustainable practices are adopted and followed, West Palm Beach and Palm Beach County will find itself more dependent on motor vehicles than it already is and stuck with a City where people who do not have access to automobiles cannot participate effectively in society. This becomes a growing concern as our population ages. For more information, refer to Technical Paper No.1 in Appendix B.

E. Effects of Increased Motor Vehicle Capacity

1. Effects on Transit

Transit services are particularly sensitive to capacity changes that favor the automobile. Mr. Joel Woodhull states:

> It is often claimed that raising the speed of the entire traffic stream assists bus transit. While it is true that higher transit speed means lower cost per vehicle mile, the incentive to use transit is diminished by a general speed-up [of all motor vehicles], and the overall effectiveness of transit is worsened. This is because the incentive to use transit is based on its performance relative to the automobile, and its relative performance worsens as [motor vehicle] traffic speeds increase.
>
> To see how speeding the general flow of motor vehicle traffic harms transit's relative performance, we have to look at the time components of a trip. For a trip in an automobile, it is essentially just the same time spent in the traffic stream. With the bus, it is the time in the traffic stream, plus the time spent waiting for a bus, plus the delays incurred while the bus is picking up other passengers along the route. Frequency of service can be increased somewhat by faster traffic speeds, but passenger induced delay is not. Thus, by whatever factor auto trip time is reduced, transit trip time is reduced by a smaller factor. It is not mere coincidence that in the cities (and in districts within cities) where traffic moves the slowest, transit is more productive. [Woodhull, Joel. "Calmer, Not Faster: A New Direction for the Streets of L.A." Prepared for the 70th Annual Meeting, Transportation Research Board, Washington, D.C. January 13-17, 1991.]

2. Effects on Pedestrians

Increasing car-carrying capacity of streets also has detrimental effects for pedestrians. Almost without exception, measures that improve the situation for motor vehicles make the situation worse for pedestrians, e.g., right turn channels at intersections, pedestrian overpasses, pedestrian push buttons at signalized intersections, additional motor vehicle lanes, and narrow sidewalks. Mr. Richard Retting states:

> This is further compounded by the lack of attention given to pedestrians' crossing needs in the design of urban streets. Transportation engineers and planners have traditionally focused on optimization of [motor vehicle] traffic flow (increased capacity and reduced motor vehicle delay), and more recently, fuel conservation and air quality. Street design schemes typically satisfy minimum (least acceptable) standards for pedestrian access and maximize arterial car-carrying capacity. Congestion relief strategies such as roadway widening (sidewalk narrowing) and signal timing may adversely affect pedestrian safety by increasing crossing distance, exposure, crossing delay, and vehicle speeds. [Retting, Richard A. "Urban Pedestrian Safety: A Multidisciplinary Challenge." ITE 1989 Compendium of Technical Papers. September 1989.]

People will walk more when walking is made safer and more pleasant. Increasing motor vehicle traffic volumes or speeds degrades the pedestrian environment by increasing danger and/or by making walking inconvenient and unpleasant.

Children are arguably the primary victims of deteriorated pedestrian environments. This has put pressure on families with children to abandon the central city if they are able. Even in the suburbs, the dangers of street crossings and the distances to the locations of children's activities have caused parents to become chauffeurs, creating auto trips that would be completely unnecessary in an environment that is less hostile to pedestrians and less auto-oriented. Many studies have found a direct relationship between the volume of motor vehicles and the perception of danger by pedestrians, etc.

3. Effects on the Use of Bicycles

The design of the streets and the speed of the motor vehicles also affect cyclists. Both high motor vehicle speeds and circuity negatively affect cyclists. High-speed differentials between motor vehicles and bicycles are dangerous and intimidating. Other motor vehicle-oriented street operations, such as one-waying, makes the route inconvenient for cyclists or promotes illegal cycling. Cycling can never be a serious mode of transportation until treated as such. Today, bicycles are a severely underutilized and a neglected mode of transportation in West Palm Beach.

The common response to bicycling as a mode of transportation in West Palm Beach is "Who would ride on these streets, they are too dangerous." This mentality has been developed through the years of bias created by the neglect of transportation planners to design for all potential users. The streets are perceived as too dangerous for cycling (not so for automobiles).

There is also an argument that the tropical climate of West Palm Beach affects individuals' mode choice, with respect to non-automobile modes. This stems from the lack of proper support facilities beyond the street, i.e., showers, lockers, secure bicycle lockers/parking, covered/shaded sidewalks, etc. Once all of the necessary ingredients are in place, non-automobile mode choices will likely increase.

The City has the ability to address these problems. Streets that are reconstructed will be safer for cycling. Codes will be rewritten that promote choices in transportation modes. Developers will be provided incentives for providing showers, lockers, and secure bicycle areas. Employers and employees will be offered additional incentives for choosing a non-automobile mode of transportation, i.e., additional income, flextime, etc.

V. TRANSPORTATION VISION FOR WEST PALM BEACH

Concerns regarding pollution, frustration, financial costs, deaths, injuries, and congestion that accompany urban transportation are not unique to the City of West Palm Beach. They are the norm in most mid-sized to large urban areas in North America. For the last several decades, cities have taken "technical" approaches to addressing the aforementioned transportation challenges. Unfortunately, the "expand the motor vehicle infrastructure approaches" have simply postponed sustainable solutions and have magnified the challenges further. People in cities across North America and within West Palm Beach are realizing that these past trends are unsustainable and undesirable, and that real solutions are required.

Many people are recognizing that the transportation problems are not technical but institutional in nature. This vision is a means of switching from a technical-based approach to a sustainable, community-oriented approach.

The vision distinguishes between real needs and "wants" when allocating resources (i.e., land, money, and other resources). It replaces the conventional set of conflicting objectives (increasing automobile mobility versus sustainability) with complementary objectives. The vision is a departure from past practices, requires cooperation from many interest groups, and demonstrates leadership in transportation planning. Lastly, the vision is intended to provide the direction to change past trends and produce a city that is:

- More economically competitive;
- More socially desirable;
- More environmentally responsible; and
- A place where residents and businesses are proud and where others come to visit and aspire to live.

Transportation Vision Statement

To provide transportation systems that achieve the economic, social, and environmental goals of the City of West Palm Beach which fosters sustainability, livability, and economic success.

Vision Statement Goals:

- Increase the quality of City life for all;
- Improve the conditions for residents and visitors (cleaner air, friendlier surroundings, etc.);
- Provide a wider choice of transportation and urban lifestyle options;
- Be sensitive to, and incorporate, the preferences and requirements of the people using the area (residing, working, playing, etc.);
- Create safe and attractive streets;
- Reduce the negative effects of motor vehicles on the environment;
- Promote pedestrian, bicycle, transit use, and other non-automobile use;
- Conserve natural resources including energy and land; and
- Build an equitable transportation system.

Vision Statement Objectives:

1. Increase access for all transportation modes;
2. Recognize and encourage planning for the environmental hierarchy of transportation modes: pedestrians, cycles, transit, high occupancy vehicles and taxis, motorcycles, and lastly, single-occupancy automobiles;
3. Allow reasonable mobility for motor vehicles (i.e., level of service "E" for motor vehicle users on City Streets during the peak hours of automobile use). Achieved through or benefits the following actions:
   a) encourage shorter trips and denser urban forms;
   b) allow higher utilization of existing streets for more hours during the day;
   c) reduce pollution;
   d) create incentives for modal shifting, time shifting, and transportation demand management;
   e) save valuable space for other uses including landscaping and pedestrian amenities;
   f) reduce capital and maintenance costs;
   g) reduce off-peak speeding;
   h) allow shorter pedestrian crossings;
   i) free up money from street widening, etc., for the benefit of the other street users;
4. Achieve slower and steadier speeds for motor vehicles through design; Achieved through or benefits the following actions:
   a) reduce collision frequency and severity;
   b) improve the safety and perception of safety for non-motorized users of the streets;
   c) allow for slower "design speeds"/less expensive streets;
5. Reduce dependency on automobiles;
6. Reduce the need for motor vehicles related police service through good (self-enforcing) design;
7. Provide beautiful streets including more greenery: trees, shrubs, grass, etc.;
8. Work in concert with land use changes to achieve the goals (i.e., allow transportation to help shape urban form);
9. Enhance the provision of transportation facilities for physically and financially challenged individuals and create a more equitable transportation system; and
10. Provide decision-makers with an additional means for assessing all transportation, land use, and related decisions.

The Transportation Vision outlines and guides the direction of transportation planning for West Palm Beach. The goals and objectives provide guidelines in order to ensure that the Vision is a self-fulfilling prophecy. However, the Vision still requires some basic underlying direction or "decision making principles." Each decision-making principle is supported by several results, which provide the justification for such principles, followed by required actions for such principles. These principles are recommended for any type of planning or development within West Palm Beach, but particularly for transportation:

DECISION MAKING PRINCIPLES:

1. **Plan for increased densities and more mixed land use.**

Justification

- reduces automobile-dependence
- results in shorter trip lengths
- encourages modal shifts to walking, cycling, and transit
- applies to macro and micro scales
- intensification and infill
- neo-traditional, New Urbanist planning
- suburban multiuse town centers integrated with regional transit
- high density, mixed-use development near major transit services

Actions

- develop/provide compact, mixed-use, pedestrian-oriented communities offering a range of housing types
- pursue a transportation concurrency exception area for the Eastward Ho! area
- encourage the elimination of impact fees in the Eastward Ho! area and other initiatives which reduce the cost of infill and redevelopment

2. **Promote the pedestrian mode as the preferred mode of transportation.**

Justification

- the pedestrian mode is part of every trip
- healthy
- non-polluting
- requires little space and public infrastructure
- nothing to park
- low cost, low maintenance

Actions

- improve quality of pedestrian environment (pedestrian amenities, slower motor vehicle speeds, seating, shade, etc.)
- bring origins and destinations closer together by increasing densities and mixed land uses
- provide adequately wide, barrier-free, interconnected network of sidewalks and pathways
- provide weather protection (shade trees, wind breaks, arcades, awnings or shades)
- provide adequate, pedestrian-scaled lighting
- increase feeling of safety/security through traffic calmed streets and Crime Prevention Through Environmental Design (CPTED)
- street level retail establishments close to sidewalks
- no vertical separation (i.e., relegating pedestrians to tunnels or overpasses)

3. **Promote cycling.**

Justification

- healthy
- non-polluting
- requires little space and public infrastructure
- little to park
- low cost, low maintenance

Actions

- cycle lanes, routes, and paths/wider right-hand lanes
- traffic calmed streets
- exceptions from traffic management techniques aimed at motor vehicles (turn restrictions, closures, etc.)
- provide secure storage facilities at transit facilities (bike and ride)
- provide secure storage facilities elsewhere
- allow bikes on transit
- require shower facilities in businesses, flextime, etc.

4. **Promote transit.**

Justification

- reduce automobile dependency
- less polluting
- nothing to park

Actions

- establish primary transit routes
- provide HOV lanes
- improve service (comfort, routing, frequency, reliability, geographic coverage, access for the physically challenged, public information services, etc.)
- provide park-and-ride, kiss-and-ride, bike-and-ride facilities
- integrate stations, fares, and schedules (train, bus, light rail, trolley)
- provide economic incentives (employer provided passes, TDM programs, tax incentives)
- free shuttle service in Downtown
- pursue light rail transit for the F.E.C. right-of-way, in Downtown, and along other potential routes
- support principles 1 to 3

5. **Reduce automobile dependence.**

Justification	*Actions*
• economic, social, and environmental benefits	• design new land uses, developments, and redevelopment projects to promote non-automobile modes of transportation • employ TDM programs (ride sharing, flexible work hours, etc.) beginning with major employers (50 or more employees) • internalize external costs (pay for true costs of parking, remove hidden subsidies, etc.) • promote measures which reduce automobile use (TDM, shared parking, creative land use planning, etc.) with incentives (e.g., lower parking requirements) • allow levels of service E during peak hours of automobile use • encourage reductions in sprawl development outside of the City Limits

6. **Use changes to automobile parking supply and price to support goals.**

Justification	*Actions*
• pedestrian-friendly urban design • reduction in air pollution • reduction in solo driving • better market for transit • tax revenues resulting in increased density	• encourage short-term parking over long-term parking in the Downtown • price on-street parking higher than off-street parking • allow on-street parking during peak hours of automobile use (access to businesses) • promote park-and-ride and bike-and-ride with transit facilities • encourage shared parking • link areas with surplus parking with busier motor vehicle areas with pedestrian, cycle, and transit corridors

7. **Encourage sustainable, efficient, and community-oriented goods movement.**

Justification

- increased customer parking
- maximum utilization of trucks
- simple, logical loading system

Actions

- encourage off-street loading
- have on-street loading occur before peak retail activity in shared parking/loading zones (e.g., loading before 8:00 A.M., short term parking afterwards)
- encourage consolidated delivery services
- discourage big box retail (to avoid shifting distribution costs to local providers of streets)
- encourage appropriately sized trucks and fleet sizes (reduce underutilized space in trucks and allow tighter corner radii and narrower streets)

8. **Promote intermodal trips.**

Justification

- passengers and goods movement
- increased convenience
- low costs
- increased attractiveness over alternatives

Actions

- provide multimodal stations
- provide transfer points (quick, easy, and weather protected)
- recommend integrated fares and services among all modes of public transit

9. **Use new technologies to achieve goals.**

Justification

- flexibility
- reduced automobile use

Actions

- promote telecommuting
- promote efficient transit scheduling
- promote signal control (transit priority)
- promote pollution control and detection/testing (noise and air)
- promote smart cards (multipurpose passes for transit passes, parking, etc.)
- promote congestion pricing
- promote fuel substitution and decreased consumption of petroleum

10. **Maximize the utilization of the existing automobile infrastructure to avoid expanding.**

Justification

- encourages modal shifts to walking, cycling, transit
- reduces automobile dependency
- tax revenues resulting from increased density
- encourages transportation demand management (flextime, ride-sharing, etc.)

Actions

- recognize streets as multiuse facilities (recognize the needs of all users)
- promote ways to flatten peaks in motor vehicle use, "planned congestion"
- promote public transit
- promote traffic calming
- remove/reuse surplus motor vehicle infrastructure

11. **Provide equitable transportation services to meet the spectrum of users (physically challenged, economically disadvantaged, young, old, infirm, etc.)**

Justification

- increases transportation choices
- increases accessibility for all residents
- reduces automobile dependency

Actions

- use ADA approved designs
- use traffic calming
- promote safe routes to school programs
- provide an accessible transit system
- promote slower motor vehicle speeds

12. **Protect and enhance the environment.**

Justification

- healthy
- sustainable, livable
- lowers pollution levels

Actions

- support objectives 1 to 10
- consider long term environmental effects of decisions
- provide funding priority to environmentally friendly developments and projects
- support regular inspections of all motor vehicles for air and noise pollution

13. **Create new ways to pay for transportation.**

Justification

- transparent (open and easily understood by the public and decision makers)
- increasingly derived from users who contribute to the problems (pollution, congestion, deaths and injuries, use of urban space, etc.)

Actions

- provide economic incentives/disincentives to promote switching modes from the bottom of the environmental hierarchy of modes (single occupancy automobiles) toward the top
- redistribute public funds away from expanding automobile infrastructure to sustainable modes of transportation
- internalize external costs of motor vehicle travel (health care costs, environmental costs, energy-related costs, parking subsidies, road construction and repair costs, etc.)

14. **Promote cooperation, coordination and leadership to allow Objectives 1 to 13 to occur.**

Justification

- benefits City, County and Treasure Coast region
- ensures cooperation, not competition
- establishes increased public participation

Actions

- promote lateral lines of communications between departments (planning, engineering, legal, tax, transit, utilities, etc.)
- develop mechanisms for coordinating and integrating innovations in multi-jurisdictional situations
- conduct public education on issues
- develop checks to ensure day-to-day decisions are compatible with the transportation vision

VI. TRANSPORTATION USERS AND THEIR CHARACTERISTICS

An understanding of the main users of the street and their characteristics is important to transportation planning. This understanding, the appropriateness of such programs as traffic calming becomes self-evident. An understanding of the users and their characteristics will demonstrate that the traffic-calmed street is the type of street that achieves a desired balanced set of benefits and drawbacks for all street users.

A. Who are the Users?

To avoid over complicating the section, the set of users will be limited to automobiles, pedestrians, cyclists, in-line skaters, heavy vehicles, and non-travelers (people playing, residing in yards and houses, workers, etc.) The discussion is intended to be general, even though it is understood that there are exceptions.

1. Automobiles and Drivers

When compared to pedestrians, the motor vehicle is large and heavy. Even a "small" automobile, weighing 2,000 pounds, can outweigh a large pedestrian weighing 250 pounds. The motor vehicle is comparatively unmaneuverable because it can travel in only two directions, forward and backwards, and it requires a lot of room to make turns. Therefore, any route that the driver wants to follow is limited by the automobile's maneuverability.

Stationary motor vehicles tend to become obstacles for moving motor vehicles. The effect of stationary vehicles on moving ones is so pronounced that guidance and restrictions are provided in the form of painted parking lines, painted parking stalls, signs, no parking zones, etc.

Motor vehicles generally rely on fossil fuels to power them. As a result, they produce a variety of air pollutants, as well as noise, vibration, and light pollution.

Risk homeostasis theory indicates that drivers tend to drive at a speed that maintains a constant level of personal risk. When one considers the tendency for the posted speed limits to be set at approximately 10 miles per hour (mph) lower than the design speed of the street, it is no wonder that most drivers tend to drive at five to 10 mph over the posted speed limit. In addition, due to scarce enforcement resources, lenient ticketing practices by the enforcement authority (not ticketing until more than 5 mph, etc.), and the desire not to be the slowest car on the street, the incentive to obey the posted speed limit is small. It is often jokingly referred to as a "suggestion."

What drivers perceive is a safe speed and what is a safe speed are different. Automobiles regularly go out of control and/or collide with other automobiles, objects, pedestrians, cyclists, and trucks. There is normally expensive damage to the automobile and occasionally injury or death to the occupants. Also, there is damage, injury, or death for whatever or whoever else was involved. Speeding is one of the most important contributing factors in causing collisions, and it has a great deal to do with the severity of the injuries and damage.

Because collisions are so frequent and the consequences to the occupants so grave, modern automobiles are designed for colliding. The car bodies crush to absorb impacts and they come with air bags, seat belts, anti-lock brakes, etc. Despite the design considerations, thousands of people are killed every year and many more injured as a result of collisions. There is also a great deal of property damage.

Automobiles are also designed to avoid collisions. They come with a variety of exterior lights: head lights, brake lights, taillights, sidelights, and signal lights. The purpose of these lights is to increase the visibility of the automobile and to increase the driver's ability to see. Other features to help the driver see include windshield wipers, window defrosters, visors, and side and rear view mirrors. Some automobiles are more maneuverable than others are and some have anti-lock brakes to increase the driver's ability to avoid colliding by turning or stopping. However, in the case of anti-lock brakes, drivers whose cars are equipped with them tend to allow less time to stop and may even drive more recklessly than drivers whose cars do not have them.

Immediately following collisions, the automobiles involved are normally left in their resting positions so that fault can be assigned and/or so that the injured can be removed and treated. In the meantime, the collision site becomes an obstacle to other automobiles. In many cities, this collision/obstacle phenomenon is such a problem that quick response procedures have been developed to remove the "obstacles" as fast as possible to reduce the delays to other drivers using the streets.

Automobiles are also designed to be comfortable. Creature comforts include temperature control (e.g., heating and cooling), comfortable seats, carpeting, adjustable steering wheels, noise dampening, etc. They can be equipped to reduce boredom via a radio that may include a tape deck or a compact disk player. Designers provide devices to hold drinks to prevent tipping, ash trays for smokers, coin trays for miscellaneous expenses (e.g., parking, phone calls, tolls, etc.), map lights, compasses to let drivers know which way they are going, and special compartments for documents and small objects. From a sensory perspective, drivers are limited to sight, and to a small extent, sound to interact with the environment.

Designers try to make cars easy to use by providing a myriad of laborsaving devices. Automatic gas cap release devices are provided to make fill-ups more convenient. Other devices include motorized windows, motorized seat adjustments, motorized mirrors, motorized antennae, cruise control, and detectors to tell the driver if one of the car's doors is open. Many of these devices make driving easier and more enjoyable.

Cars are designed to inform the driver of the status of the car's condition as well as the environment with a variety of gauges and warning lights. They let the driver know the oil temperature, oil pressure, travel speed, trip distance, accumulated distance, temperature (interior and exterior), time, etc. Devices exist to let the driver know if the keys were forgotten in the ignition.

Telephones and, to a lesser extent, facsimile equipment are being installed in cars. These help drivers keep in touch. They have an emergency response role as well; drivers can call for help in emergencies. However, communication between car drivers and other people in the street is limited to flashing lights, horn blasts, and exaggerated arm gestures. Depending on the circumstances, these communications can convey a variety of messages. Drivers can also communicate to others through the use of "car language" which is somewhat like body language with people. For example, when two drivers driving side by side have to merge into one lane and they both want to be first, it is often "car language" which determines who will go first and who will give in and go second.

Automobiles have cargo space for transporting small and medium sized objects such as groceries, boxes, luggage, etc. Automobiles allow people to carry belongings or equipment around with them that they desire from time to time (e.g., golf clubs, tools, etc.) Folding down or removing some of the passenger seats can sometimes expand the cargo space. Automobiles can be fitted with exterior racks and hitches to expand their carrying and hauling capacity.

Like clothes and jewelry, automobiles indicate something about their owners. There are automobiles designed to cater to those with medium to high incomes, while other cars cater to those with low income. However, purchasing, insuring, maintaining, and operating a car often

exceeds what many low-income people can afford. For those who can afford them, and to a small extent for those who cannot afford them, car purchases are personal decisions based on the biases and desires of the purchaser. To some people, the car is a status symbol. To many people, the design of the car provides an extension of their self image, occupation, lifestyle, and interests: luxurious, fast, practical, rich, rugged, fun, powerful, family-oriented, etc. The various models of cars are carefully named to reinforce these images as part of the marketing strategy for these products (e.g., Dodge Ram, Bonneville, Viper, Saturn, Mustang, etc.)

To many people the car has become a necessity. It allows them to organize their lives beyond the confines of bus routes, bike routes, and walking. It provides a high level of mobility that is an advantage that people without cars do not have. Other people have physical disabilities or limitations which make walking and cycling undesirable or impossible. In other cases, transit is not available or convenient. Then again, some people are too lazy to use any other mode of transportation other than the car, regardless of what is offered.

Because drivers control cars, their behavioral characteristics have a great deal to do with how they are driving. Drivers have varying degrees of eyesight, reaction time, strength, etc. They drive in a variety of moods and conditions of health. They have varying degrees of driving experience, maturity, respect for others, etc. The cars they are driving may also be in a variety of states of repair, i.e., worn tires, dirty windows, malfunctioning brakes, etc. Though there are a variety of drivers, there are many people who do not or cannot drive for several reasons: personal choice, age, financial reasons, physical reasons, or legal reasons.

The automobile mode has grown to enjoy a myriad of public and private subsidies. There are also huge industries and government departments that plan, design, and build facilities for cars (e.g., streets, bridges, parking lots, and garages). These facilities consume a large portion of urban space and government budgets. Maintaining and expanding facilities requires large government subsidies. Employers also subsidize the automobile and merchants by providing “free” parking. Automobile use for business purposes is also subsidized by taxpayers.

2. Pedestrians

Pedestrian travel is the oldest mode of transportation. It is reliable, available to most people, inexpensive, and environmentally sound. Some trips are purely pedestrian trips, while trips by other modes of transportation are multimodal because they involve a pedestrian trip at some point (to and from the bus stop, car, bike rack, etc.). Pedestrians are generally very maneuverable; they can stop, start and turn quickly. Pedestrians come in all ages, sizes, and levels of physical ability. Pedestrian speeds are relatively slow compared with vehicular modes of transportation. Practically everyone is a pedestrian on a daily basis. Pedestrians are physically vulnerable and the quality and safety of their walking environment are important to their enjoyment and willingness to walk (somewhat like the comfort provided in a car’s interior is important to the driver). From a sensory perspective, pedestrians use sight, touch, smell, and hearing to interact with the environment.

3. Cyclists

Though a more recent mode than the pedestrian mode, cycling has been around for about 160 years. Like pedestrian travel, cycling is also inexpensive and environmentally sound. Cyclists have a great deal of maneuverability; they can stop, start and turn very quickly. Cyclists can become pedestrians very quickly by dismounting. This provides cyclists with all the versatility of pedestrians but with the ability to travel at moderate speeds. Cyclists also come in all ages, sizes, and levels of physical ability. Like pedestrians, cyclists are physically vulnerable and the quality and safety of their environment is also important to their enjoyment and willingness to cycle.

Bicycles have lights for visibility and bells to communicate with others. Cyclists can use a great deal of body language as well as verbally communicate with others. Bicycles require little space to park. But due to their lack of built-in security devices, bicycles are easy to steal and require locking. Due to their lightweight, bicycles should be locked to something heavy or immovable. Cyclists use sight, smell, hearing and to a small extent touch, to interact with the environment.

4. In-line skaters

In-line skaters have characteristics that are similar to both pedestrians and cyclists: degree of vulnerability; importance of quality and safety of environment; and individual physical abilities and sensory perspective. They are also able to travel with similar maneuverability and speed as both the pedestrian and cyclist with the same sensory perception.

5. Heavy Vehicles

Heavy vehicles are somewhat like cars, except that they are generally larger, noisier, and more powerful. They are heavy in order to carry many people (buses) or have large cargo carrying abilities. Despite their more powerful engines, heavy vehicles accelerate and decelerate more slowly than cars. Due to their large wheelbases, heavy vehicles require large amounts of space to turn. With the exception of expensive “rigs” for semi-trailers and some recreational vehicles, heavy vehicles are less status-oriented than cars. The sides of heavy vehicles are often used for advertising purposes.

6. Static Users

There are many static users of the streets. They include people playing or socializing in the streets, merchants selling in the streets, people celebrating in the streets, etc. There are other people who are not physically on the street, but they have a relationship with the street. They include all the people residing along the street, the workers in and outside of offices along the street, merchants in their stores, children in the schools and on the school grounds, people using the adjacent parks and yards, etc. Static users share many of the characteristics of pedestrians.

B. Users and Their Orientation Toward Mobility and Access

Often people discuss the role of streets as either access-oriented, like narrow residential streets, or mobility-oriented, like highways. Some streets fall somewhere between providing a mix of mobility and access. In the same way, the various users of streets can be discussed according to their orientation to either mobility or access. For example, at the extreme of the access-oriented user, would be the non-travelers or static users. They have accessed the space that they occupy and are not traveling. A pedestrian is the next closest type of user to the access end of the scale. Bicycles and in-line skaters fall somewhere in the middle of access and mobility. Cars and heavy vehicles are at the mobility end of the scale. Orientation of the users from the perspective of access and mobility is important because the street design can vary to suit either access or mobility or a mix.

C. Mixing of the Users of the Street

Mixing of the users of the street is inevitable. Ideally, all the users would exist in harmony but they cannot when the "natural order" between the users is out of balance. The imbalance causes one or more users to suffer which then affects the whole street. For example, if pedestrians suffered while everything else was fine, then the street would eventually suffer. Over time, people would abandon walking along the street, social contacts would decrease, shopping would decrease, crime would increase, etc. This is evident in several sections of West Palm Beach.

The difference between mobility and access is a key concept for transportation planning in West Palm Beach. Historically, providing mobility for motor vehicles was the driving force. Measures of success for mobility were emphasized as important (i.e., automobile capacity, volume to capacity ratios, level of service for motor vehicles, motor vehicle delay and travel time). Streets were designed to have higher automobile capacities and higher speeds/less delay for motor vehicle users. Access-oriented users were not supported by equivalent measures of success and consequently their needs were neglected. Measures of street connectivity, walkability, accessibility, and proximity were not developed.

In recent years, it has become increasingly obvious that the current situation is out of balance due to excessive importance being afforded to the mobility of automobiles. To help shift the balance, the streets will be rebuilt or modified through traffic calming so that the users can mix successfully. But, in order for a successful rebuilding, it is important that the people planning the changes have an understanding of the users, the role of the street as their host, and the difference between access and mobility.

VII. PEDESTRIAN AND BICYCLE CIRCULATION

A. Pedestrian Circulation

Walkable communities are cornerstones to all forms of efficient ground transportation. As stated in the "Users and Their Characteristics" section, every trip begins and ends with walking. It remains the cheapest and most readily available form of transportation for all people. In addition, the construction of a walkable community is the most affordable component in the

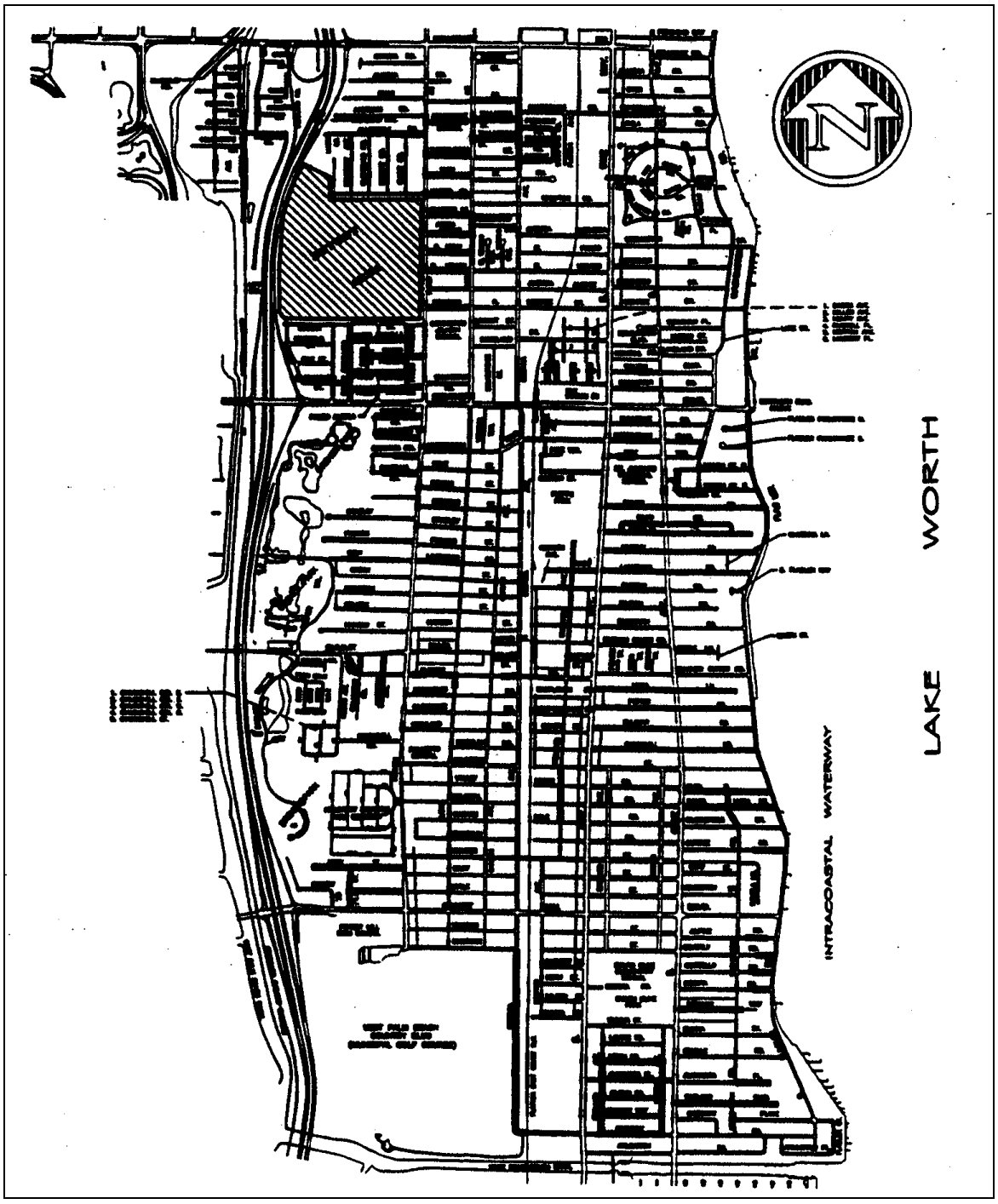
intermodal system in any community, including West Palm Beach, and it is easy to plan, design, construct and maintain.

The City of West Palm Beach is well on its way to becoming a walkable community. The Engineering Services Division has conducted an inventory of the existing sidewalks and those areas of the City which do not possess sidewalks or whose sidewalks need repair (Figure 5-1). In 1998, the City will begin to construct and repair all City sidewalks in several phases, as funding becomes available. The City is also planning an 11-foot wide recreational path along Poinsettia Avenue. This path will eventually lead all the way to Downtown and will provide a convenient means for cyclists, walkers, joggers, and in-line skaters to enjoy the waterfront and travel. In addition, the City's traffic calming approach to transportation planning will reinforce the pedestrian environment by reducing the length of crosswalks, reducing the speed of motor vehicles, and increasing the protection and comfort of pedestrians through increased landscaping.

However, to date, the City does not have a unified pedestrian circulation "system." Throughout the City, sidewalks (a minimum four feet wide) are provided on one or both sides of all public streets. The City has also equipped Flagler Drive, from Currie Park south to Monceaux Park, with wider sidewalks and several benches and gazebos. The goal is that by placing sidewalks on all streets within West Palm Beach, eventually a system will be generated which will foster much more walking.

To further improve the pedestrian environment and truly make a walkable community, it is recommended that the City establish policies that require sidewalks on all streets with a protective landscape barrier or on-street parking, including those within private "gated" communities. The sidewalks should have a minimum of five feet clear width excluding the area for street furniture, lighting, signage, etc. The width of the sidewalk should also be based upon anticipated pedestrian traffic. For example, sidewalks in Downtown should be a minimum of 10 to 12 feet wide to accommodate large volumes of pedestrians and other sidewalk activities. The sidewalks should also be designed with the pedestrian's comfort in mind and include seating, shaded areas, trashcans, pedestrian scale lighting, etc.

FIGURE 5-1
EXISTING AND FUTURE PEDESTRIAN FACILITIES



LEGEND

Public streets without sidewalks or having partial sidewalks that are scheduled in the City's Capital Improvements Plan for construction of sidewalks.
*All other public streets have sidewalks.

Source: City of West Palm Beach, Public Utilities Department, January 1999.

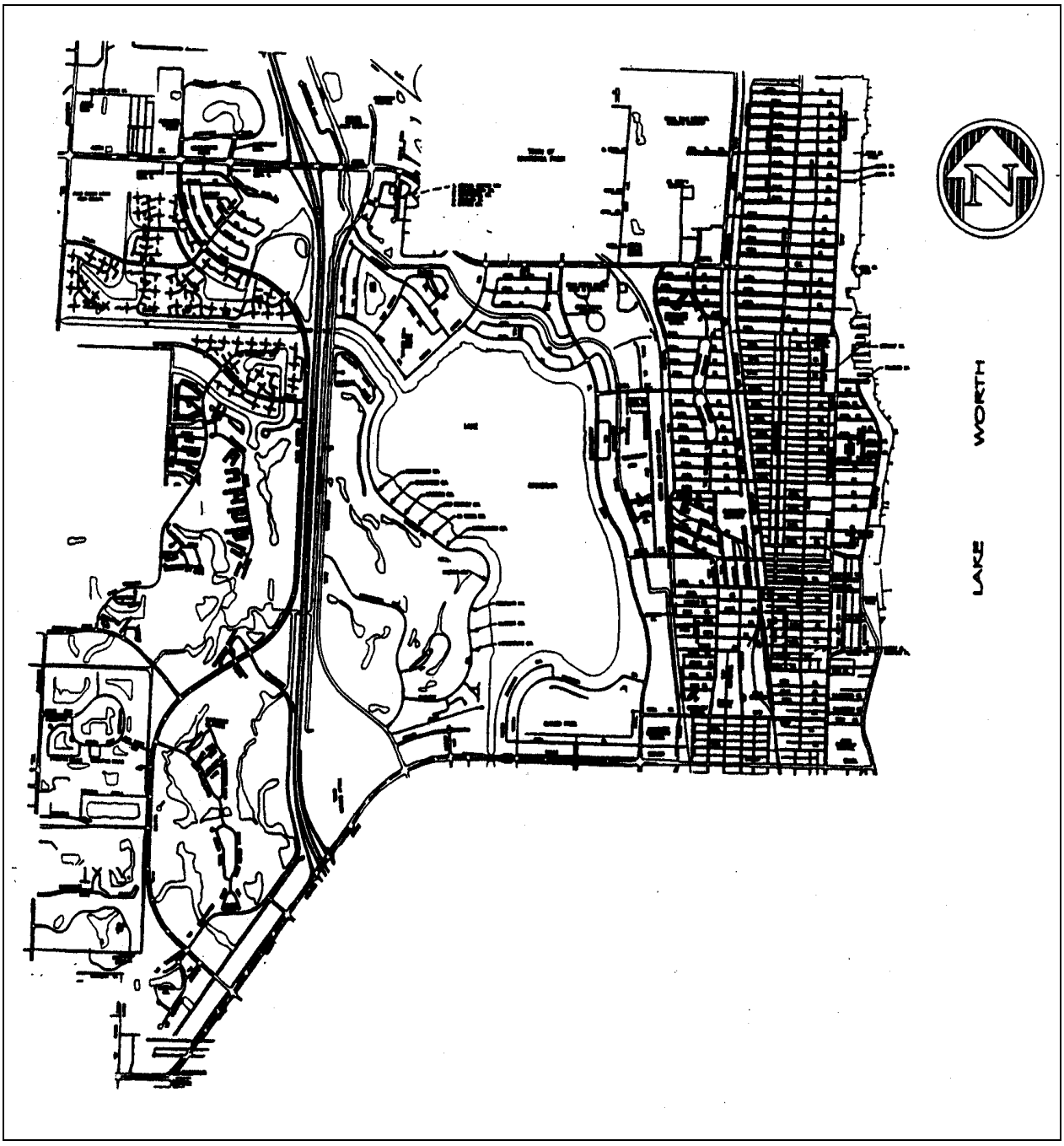
FIGURE 5-1 CONTINUED
EXISTING AND FUTURE PEDESTRIAN FACILITIES

LEGEND

Public streets without sidewalks or having partial sidewalks that are scheduled in the City's Capital Improvements Plan for construction of sidewalks.
*All other public streets have sidewalks.

Source: City of West Palm Beach, Public Utilities Department, January 1999.

FIGURE 5-1 CONTINUED
EXISTING AND FUTURE PEDESTRIAN FACILITIES



LEGEND

Public streets without sidewalks or having partial sidewalks that are scheduled in the City's Capital Improvements Plan for construction of sidewalks.
*All other public streets have sidewalks.

Source: City of West Palm Beach, Public Utilities Department, January 1999.

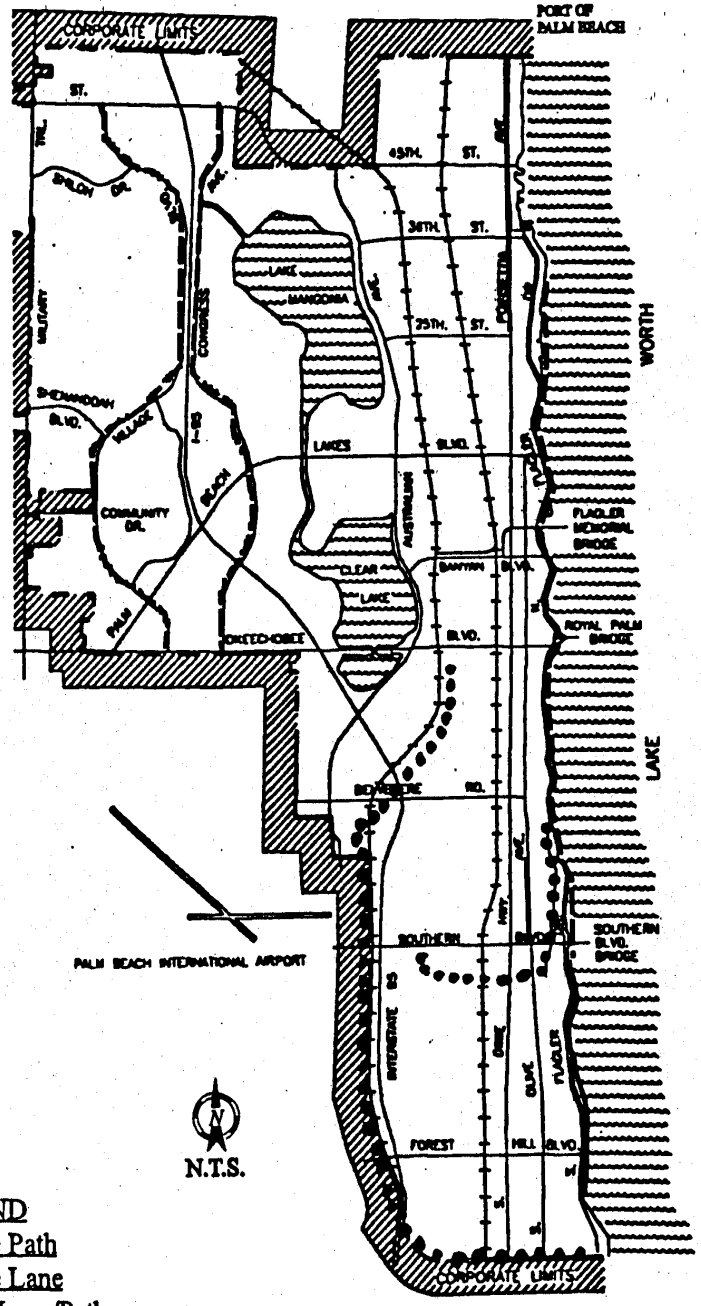
B. Bicycle Circulation

The City currently has no designated bikeway system, although one is proposed. The City does contain segments of bike routes and bicycle-friendly streets that have simply not been connected into a "system" (Figure 5-2). Currently, segments of South Olive Avenue, Poinsettia Avenue and Flagler Drive experiences heavy bike traffic. A bicycle circulation plan for West Palm Beach is proposed in the Recreation and Open Space Element of this Plan and is scheduled for completion in the year 2000. Such a plan is intended to address access to schools, shopping areas, public transportation facilities, and recreational opportunities.

For future developments and modifications to existing roadways, it is recommended that the proposed designs include sidewalks and allow for an outside motor vehicle lane of 14 to 15 feet in width to accommodate bicycles. The cost of including bicycle and pedestrian facilities on all proposed streets should be accounted for within the cost of the project. On multi-laned streets, a wider right-hand lane may be provided by decreasing the width of the inside lane by simply shifting the lane line inwards. Traffic calmed streets can have narrower right-hand lanes less than 14 to 15 feet wide due to their slower speeds of motor vehicles.

Bicycles are currently an underutilized mode of transportation in West Palm Beach. If all streets excluding limited access highways (I-95 and the Turnpike) are made to be more conducive to bicycling, it will become more widely used. In addition, to encourage bicycling and walking, it is recommended that the City, through its transportation management association (TMA) activities, establish a policy encouraging medium to large employers to provide showers, locker facilities, and secure bicycle parking.

FIGURE 5-2
EXISTING AND FUTURE BICYCLE FACILITIES



LEGEND
- Bicycle Path
- Bicycle Lane
- Future Lane/Path

Note: All City streets are considered bicycle routes, i.e., safe streets for cycling.

Source: City of West Palm Beach, Planning, Zoning, and Building Department, January 1999.

C. Turquoise Necklace Proposal

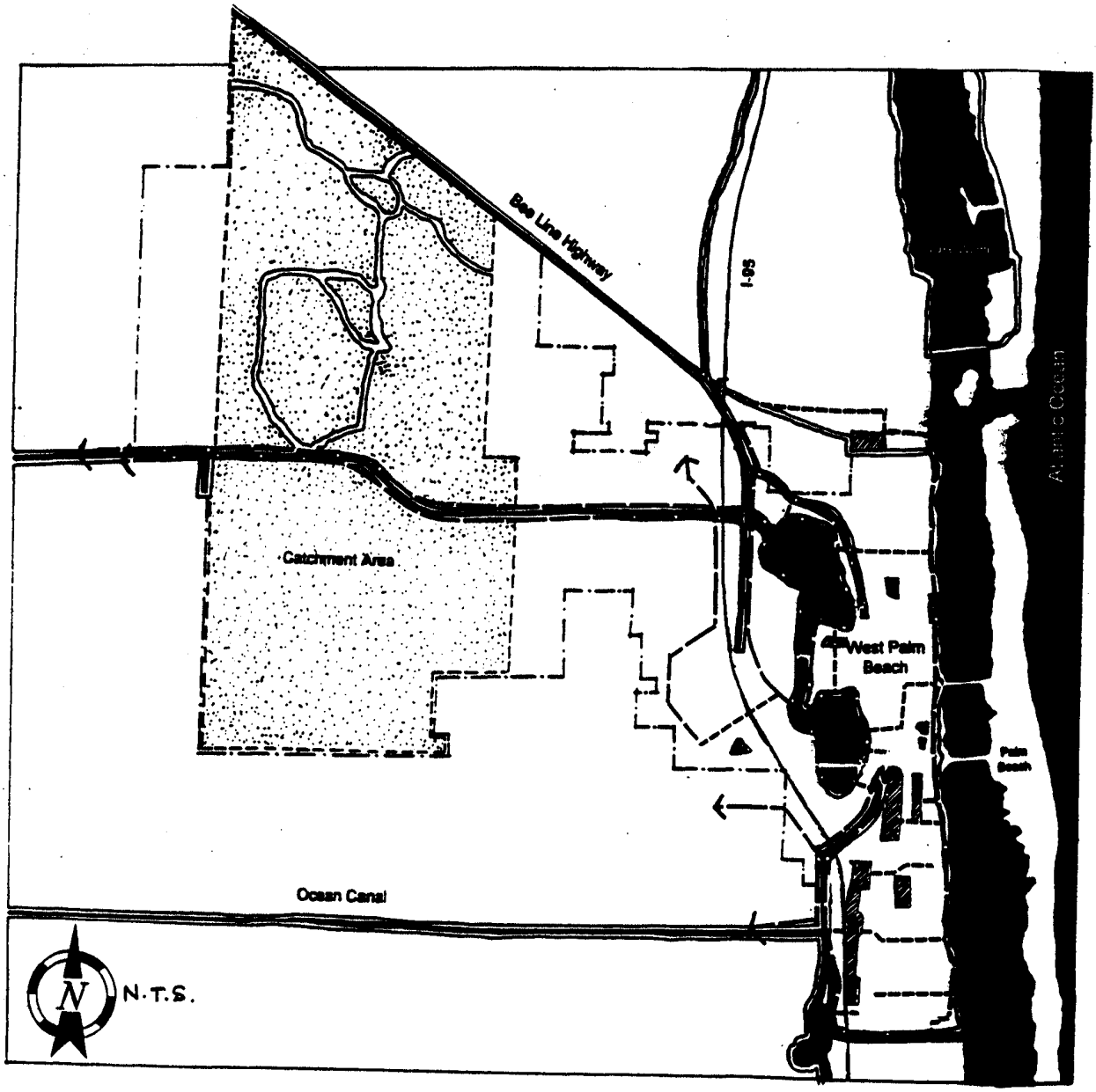
Excerpt from the Urban Design Division's Open Space Proposal for the Turquoise Necklace (Figure 5-3),

> Imagine canoeing from Downtown to the Everglades. Imagine cycling along the Intracoastal to the Water Catchment Area. Imagine walking, experiencing, and enjoying our City through an interconnected network of neighborhood open spaces. Imagine the "Turquoise Necklace."

The Turquoise Necklace will create an unbroken string of natural and recreational opportunities extending from the Everglades to Downtown West Palm Beach. It is an open space proposal to link and expand existing urban parklands into the periphery of the surrounding ecosystems of South Florida. The project will enhance the current rail and canal rights-of-way (Figure 5-4) and the extension of linear parks and trails along existing streets and public lands. The ultimate goal is to achieve a fully integrated and networked park and open space system.

As the City becomes more densely populated, this unique recreational opportunity and conservation effort will be extremely beneficial to the County. It will promote the enjoyment of our natural environment, while providing an excellent amenity for a world-class city. The linking of the parks and waterways will also provide an excellent network for non-automobile forms of transportation. For a copy of the open space proposal or more information regarding the Turquoise Necklace, contact the City's Urban Design Division.

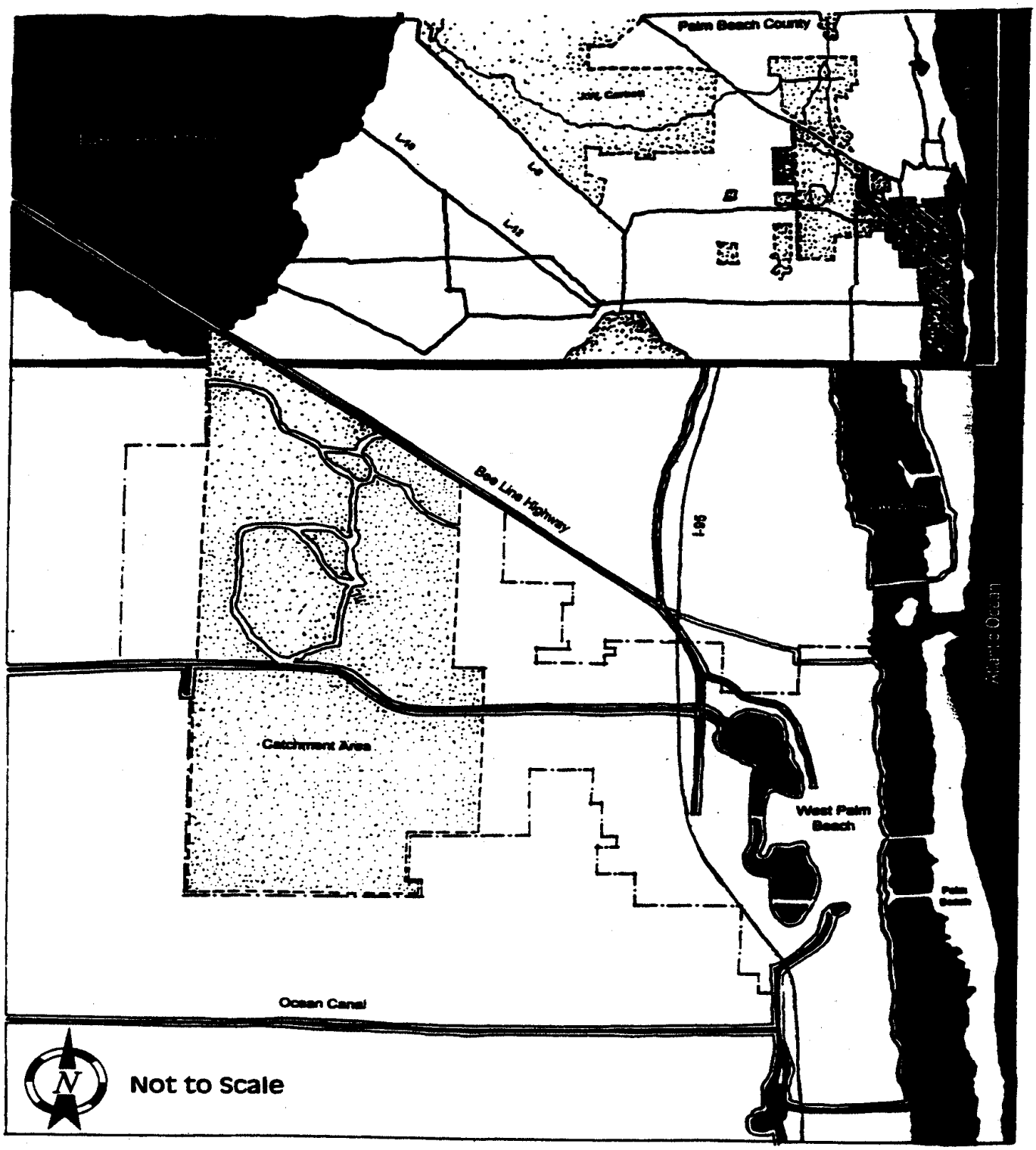
FIGURE 5-3
CONCEPTUAL PLAN FOR THE TURQUOISE NECKLACE



Paths adjacent to canals, lakes, and other water bodies
Connections (on-street and off-street) to paths, routes, open spaces, etc.
Large open spaces/parks

Source: City of West Palm Beach, Planning, Zoning and Building Department, January 1999.

FIGURE 5-4
CITY OF WEST PALM BEACH AND PALM BEACH COUNTY (INSET AT TOP)
CANAL SYSTEM



Source: City of West Palm Beach, Planning, Zoning and Building Department, January 1999.

VIII. PUBLIC TRANSIT

Several different types of transit services that include commuter rail, express and local fixed route buses serve the City of West Palm Beach. The objective of this Section is to provide documentation and establish standards and policies for the utilization and increase of transportation options. The City recognizes these options as an integral part of the public transportation system. The major providers of public transit services within Palm Beach County and the City of West Palm Beach are PalmTran, Tri-Rail, and the Downtown shuttle. Greyhound and Amtrak also provide transit service within West Palm Beach; however, their service area extends outside the Treasure Coast region.

A. Existing Transit Services Provided in the City of West Palm Beach

Presently, there are two modes of public transportation serving the City of West Palm Beach: fixed rail and express/local fixed route bus. The City does not operate a public transportation system; therefore, West Palm Beach must cooperate with the appropriate agencies in providing a high-quality public transportation system. Those agencies and the location of the local headquarters for each are provided below:

1. *Tri-Rail*

   Tri-County Commuter Rail Authority
   305 South Andrews, Suite 200
   Fort Lauderdale, Florida 33301

   Tri-Rail was established in 1989 and is operated by the Tri-County Commuter Rail Authority, an agency of the State of Florida. The Florida Department of Transportation (FDOT) first started the service as an alternative to I-95 during a five-year construction phase. The service was so successful that it was continued after the construction was completed. Tri-Rail provides service to 18 stations from the Miami International Airport north to Mangonia Park with seven of those stations in Palm Beach County.

2. *Amtrak*

   Amtrak
   Seaboard Train Station, 201 South Tamarind Avenue
   West Palm Beach, Florida 33401

   Amtrak provides rail service from the City-owned Multimodal Seaboard Train Station to other cities throughout Florida and the Continental United States. Amtrak is not considered a major provider of local transit service.

3. *Greyhound (Express Bus)*

   Greyhound Bus Lines
   Seaboard Train Station, 201 South Tamarind Avenue
   West Palm Beach, Florida 33401

Greyhound Bus Lines purchased the Trailways Bus System, merging the two bus systems in order to provide a more efficient service and a greater availability of rider options. However, each bus system has retained its original distinct name. The local office of the Trailways Bus System now operates from the Greyhound Bus Lines terminal located at the Multimodal Station at 201 South Tamarind Avenue in Downtown West Palm Beach. The combined systems now provide coach bus service to cities throughout Florida in addition to cities in all 48 contiguous states. Greyhound also provides an express package service designed exclusively for bulky and heavy packages that are shipped from and delivered to any bus station in the combined Greyhound and Trailways system.

Greyhound Bus Lines just recently relocated its operation to the Seaboard Train Station. The move gave the bus service better access to I-95. In addition, a larger intermodal facility is proposed at the station. Therefore, the relocation is an excellent transition while the remaining design, funding and construction details of the future multimodal facility are completed.

4. *Additional Private Carrier Services*

Taxicabs and Limousines - Private

Currently, there are approximately 83 licensed taxi and limousine companies that provide service in the West Palm Beach area. All companies provide service to Palm Beach International Airport and the Port of Palm Beach, with many operating 24 hours per day. Rates vary widely depending on the type of vehicle (e.g., cab, luxury station wagon, passenger van, minibus or stretch limousine), the type of service (e.g., courier service, business account, local pick-up and drop-off, out of town trips, or tour and sightseeing trips), and the individual company. Many companies also offer senior citizen and frequent traveler discounts. Despite a relatively high cost of utilizing private carrier services, they are a beneficial service to the City because they can be used during hours when no other transportation services are available. When a trip outside the main service area becomes necessary, when a higher level of service is desired, and the same vehicle can be used by a sequence of different people with little or no parking needs.

5. *PalmTran*

PalmTran
Palm Beach County Surface Transportation Authority
Building S-1440 Palm Beach International Airport
West Palm Beach, Florida 33406

PalmTran (Palm Beach County Surface Transportation Department) provides public bus transportation throughout all of Palm Beach County. The Palm Beach County Commission serves as the Transportation Authority and is assisted with operations of the transit system by the Director of PalmTran. PalmTran provides three types of transit services in the City of West Palm Beach and urbanized unincorporated areas of Palm Beach County. The services include:

a. Fixed-route, Fixed-schedule Main Bus Service

b. Demand-responsive Minibus Service for Disabled Residents

c. Private Charters

For getting a group of people from one point to another by bus, PalmTran provides a charter bus service, as available, for social functions and group activities. Charter service is provided only within Palm Beach County. Since the demand-responsive minibus and charter services are very specialized, and designed to satisfy the transportation needs of particular segments of the general public, primary emphasis of this section is placed on the main bus service.

Total ridership for the PalmTran routes which serve the City of West Palm Beach and all of Palm Beach County are provided below:

TABLE 5-1
PALMTRAN RIDERSHIP IN WPB & PBC: YEARS 1990-1994

Year*	WPB	Percent Change	PBC	Percent Change
1994	1,678,998	-1.1%	2,518,691	-2.6%
1993	1,698,053	0.1%	2,584,057	-0.02%
1992	1,696,029	-2.8%	2,584,594	0.2%
1991	1,743,275	3.3%	2,579,524	14.4%
1990	1,687,967	-	2,255,312	-

* For the fiscal years ending September 30.

Note: West Palm Beach ridership figures are based on total passengers using the ten PalmTran routes that serve West Palm Beach, which also serve portions of Palm Beach County. Thus the figures reflect higher numbers than the actual boardings and alight within West Palm Beach.

Source: West Palm Beach Planning, Zoning and Building Department. Derived from data obtained from PalmTran. July 1997.

6. *Additional Transportation Service*

SpecTran Dial-A-Ride Service
1440 Palm Beach International Airport
West Palm Beach, Florida 33405

The SpecTran Dial-A-Ride service began in September 1987 and uses Federal, State and County Funds. The service is primarily for educational and medical trips for people over the age of 60. The service has 15 vans and contracts services out to the local taxicab companies. There is no cost for the SpecTran Dial-A-Ride service to registered clients. Persons may register for the service over the phone; there is no charge to register. There are more than 1,180 registered clients in Palm Beach County. SpecTran Dial-A-Ride operates during regular business hours. A voucher program has been established to serve

seniors, disabled and low-income residents. The voucher program offers service after hours or when SpecTran Dial-A-Ride is busy, and charges $2.00 for the first 15 miles, and $1.25 for each additional mile.

SpecTran Dial-A-Ride is demand responsive and serves the entire County, an area of 2,023 square miles. Clients are picked up at their home or other designated points and dropped off at their respective destinations. SpecTran Dial-A-Ride does sell its service to other agencies at a reasonable fee: $5.21 for trips less than 40 miles and $9.85 for trips greater than 40 miles within Palm Beach County.

7. *Transportation Disadvantaged Service*

The Transportation Disadvantaged Service is a State program that receives 90 percent of its funding from the state and 10 percent from the local government. The service is run by the Metropolitan Planning Organization and contracts services within the County. This program serves the elderly, the disabled, the low income and children at risk.

Many companies exist which provide transportation for seniors; however, the primary providers are the Division of Senior Services and The Mae Volen Senior Center inc., both of which are funded by the Older Americans Act.

B. Route System

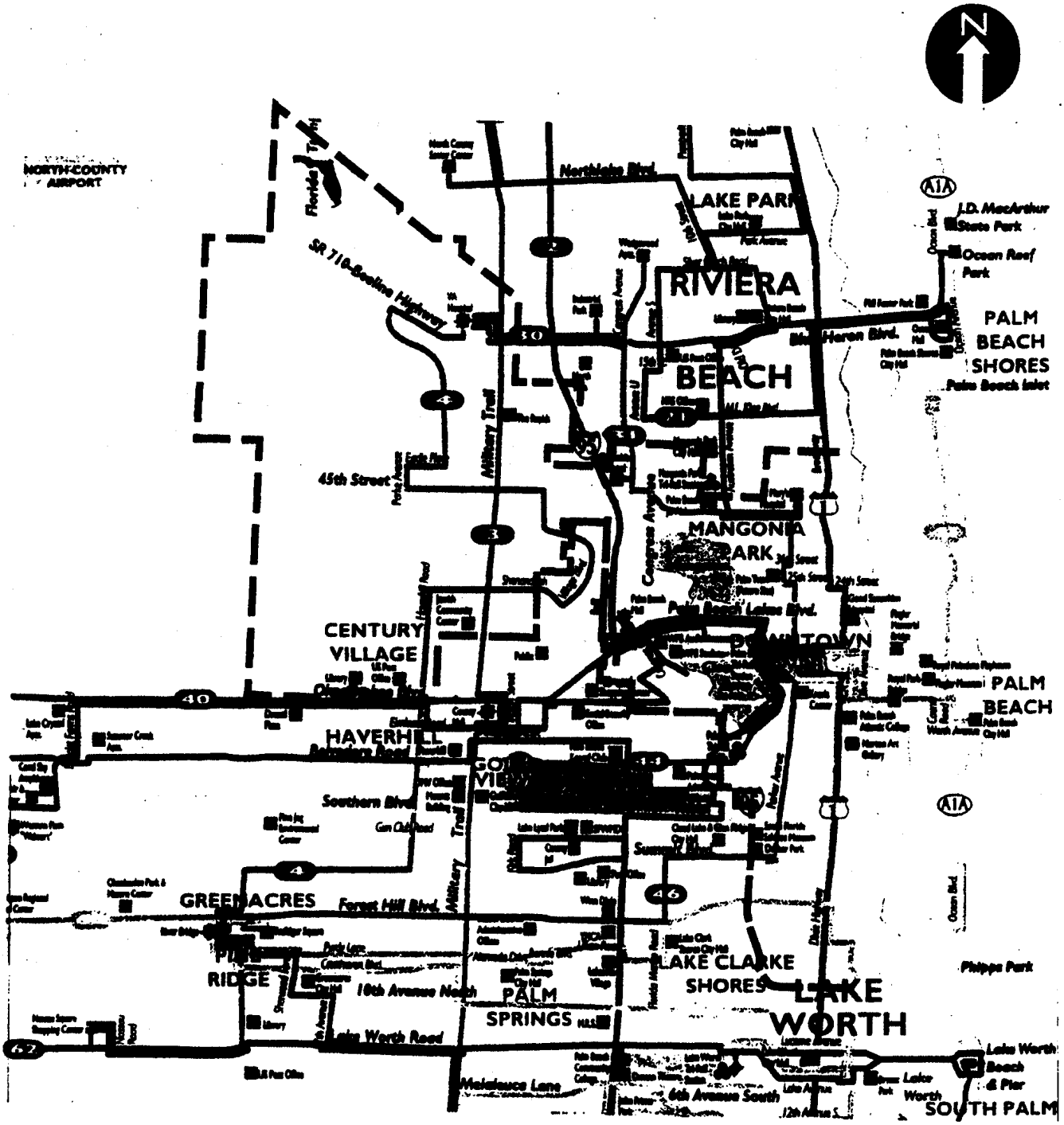
The PalmTran routing system is designed to provide transportation opportunities to residents of Palm Beach County; therefore, it reflects a linear configuration along the coast where population density is greatest. The routes generally extend from Tequesta in the northern part of Palm Beach County to Boca Raton in the southern section with one route linking the Glades with the coastal communities to the east.

Figures 5-5 and 5-6 indicate the PalmTran bus routes in West Palm Beach and the City's Downtown, respectively. As depicted on the two maps, the City is thoroughly traversed by PalmTran service routes. The fixed-route, fixed-schedule bus service has more than 4,000 stops with 18 transfer stations. Due to its central location, more PalmTran service routes serve the City of West Palm Beach than any other municipality in Palm Beach County.

PalmTran's existing fleet consists of 150 buses. Service routes begin as early as 5:30 a.m. or as late as 10:10 a.m. with most routes beginning service between 6:00 a.m. and 8:00 a.m. Service routes end as early as 4:15 p.m. or as late as 8:50 p.m., with most routes ending service between 5:00 p.m. and 7:00 p.m. All routes which serve the City of West Palm Beach operate Monday through Saturday except Route 10 which only operates Monday through Friday and the Mall Express routes which runs only on Saturdays. Saturday service is generally the same as weekday service except some of the late running weekday routes end earlier on Saturday.
Trip cycles vary widely with the particular service route.

FIGURE 5-5

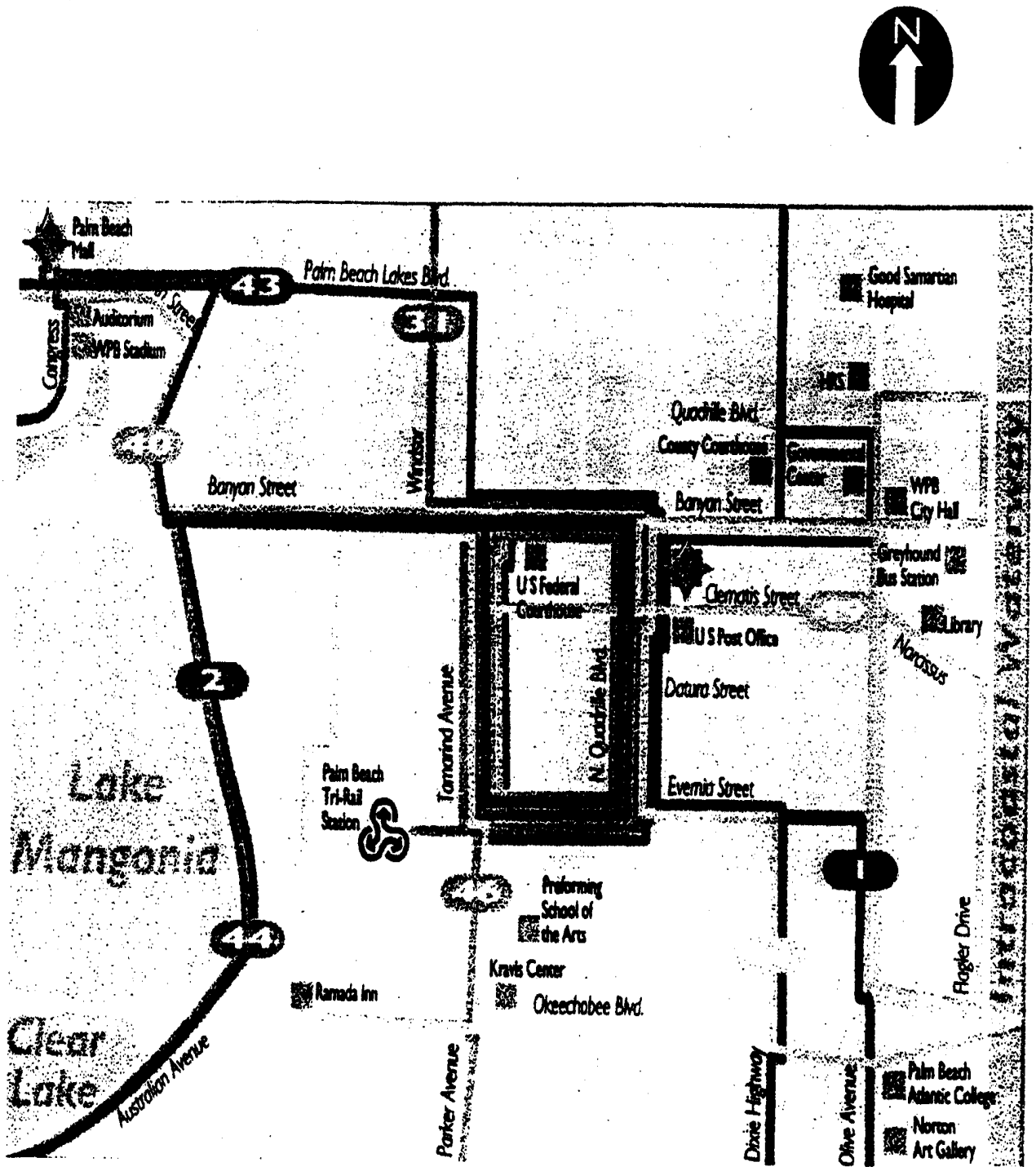
EXISTING PUBLIC TRANSIT MAP
FOR WEST PALM BEACH



NOT TO SCALE
Source: PalmTran, June 1995. Refer to the PalmTran System Map provided by PalmTran.

FIGURE 5-6

DOWNTOWN WEST PALM BEACH
PUBLIC TRANSIT MAP



NOT TO SCALE
Source: PalmTran, June 1995. Refer to PalmTran System Map provided by PalmTran.

C. Overall Growth Trends

The City of West Palm Beach, located in one of the nation's fastest growing counties (Palm Beach County), is also experiencing a rapid growth rate. Between 1980 and 1990 Palm Beach County's population grew by 50.7 percent and the City of West Palm Beach's population grew by 8.2 percent [Source: City of West Palm Beach Planning, Zoning and Building Department, based on information obtained from the U.S. Bureau of the Census and Palm Beach County]. Table 5-2 depicts historical and present population information for the City of West Palm Beach.

TABLE 5-2
RESIDENT POPULATION
CITY OF WEST PALM BEACH 1970 - 1995

Year	Population	Percent Increase
1995	76,341	12.9
1990	67,643	8.2
1980	62,530	9.0
1970	57,375	-

Source: 1995 West Palm Beach Special Census, 1990 Census, and 1980 Census.

D. Private Motor Vehicle Ownership

The distribution of private motor vehicles by household within the City of West Palm Beach is shown in Table 5-3. Based on the 1990 U.S. Census, 14.3 percent of households in the City of West Palm Beach have no motor vehicles and are dependent upon non-automobile modes of transportation. This figure is notably less within Palm Beach County.

TABLE 5-3
PRIVATE MOTOR VEHICLE OWNERSHIP
FOR THE CITY OF WEST PALM BEACH AND
PALM BEACH COUNTY 1990

	City of West Palm Beach		Palm Beach County	
Households	**Motor Vehicles**	**Percent**	**Motor Vehicles**	**Percent**
With No Vehicles	4,115	14.3	29,875	8.2
With 1 Vehicle	12,785	44.4	161,277	44.1
With 2 Vehicles	9,281	32.2	133,938	36.6
3 Or More Vehicles	2,606	9.1	40,468	11.1
Total Households	**28,787**	**100.0**	**365,558**	**100.0**

Source: 1990 Census: Selected Structural Characteristics of Housing Units.

E. Transportation to Work and Private Motor Vehicle Occupancy

Table 5-4 provides the mode of transportation used for workers aged 16 and older to reach their place of employment in 1990. Also, depicted is the average person per private motor vehicle or occupancy. In West Palm Beach, only 3.4 percent of persons employed use public transportation. This translates to a total of just over 1,100 persons.

TABLE 5-4
THE MEANS OF TRANSPORTATION TO WORK AND PRIVATE MOTOR VEHICLE OCCUPANCY FOR THE CITY OF WEST PALM BEACH AND PALM BEACH COUNTY FOR EMPLOYED PERSONS AGED 16 AND OVER, 1990

	City of West Palm Beach		Palm Beach County	
Mode of Transportation	**Employed**	**Percent**	**Employed**	**Percent**
Single Occupancy Motor Vehicle	24,685	74.8	301,976	79.4
Car pool	4,806	14.6	48,613	12.8
Public Transportation	1,125	3.4	5,118	1.3
Walk	938	2.8	7,580	2.0
Other Means	908	2.8	6,983	1.8
Telecommute	534	1.6	10,170	2.7
Total Employed	**32,996**	**100.0**	**380,260**	**100.0**
Persons Per Private Motor Vehicle	1.10		1.08	

Source: 1990 Census: Social Characteristics of Persons.

F. Age Distribution

The distribution of age groups in the City of West Palm Beach is shown in Table 5-5. This table reveals 59 percent of the population is within the working age category.

TABLE 5-5
AGE DISTRIBUTION IN THE CITY OF WEST PALM BEACH, 1995

Age	1995	Percent
Under 5 Years	4,775	6.3
5 To 14 Years	8,547	11.2
15 To 59 Years	45,305	59.3
60 To 64 Years	3,317	4.3
65 Years and Over	14,397	18.9
Total Population	76,341	100.0

Source: 1995 West Palm Beach Special Census.

G. Transportation Disadvantaged Population

Providing adequate transportation services for the area's disadvantaged population is an ongoing concern. The population targeted to receive such services includes the total population 60 years and over, as well as the transportation-disadvantaged population less than 60 years of age. The transportation disadvantaged population is defined as "any person who, by reason of illness, injury, age, congenital malfunction, or other permanent or temporary incapacity or disability is unable, without special facilities, planning, or design, to utilize transportation facilities and services as effectively as persons who are not so affected." Table 5-6 lists the estimated transportation disadvantaged population for Palm Beach County. As the table indicates, there is a major difference in the number of eligible transportation disadvantaged persons who meet their own needs and those persons who cannot.

TABLE 5-6
ESTIMATED TRANSPORTATION DISADVANTAGED POPULATION FOR PALM BEACH COUNTY, 1995

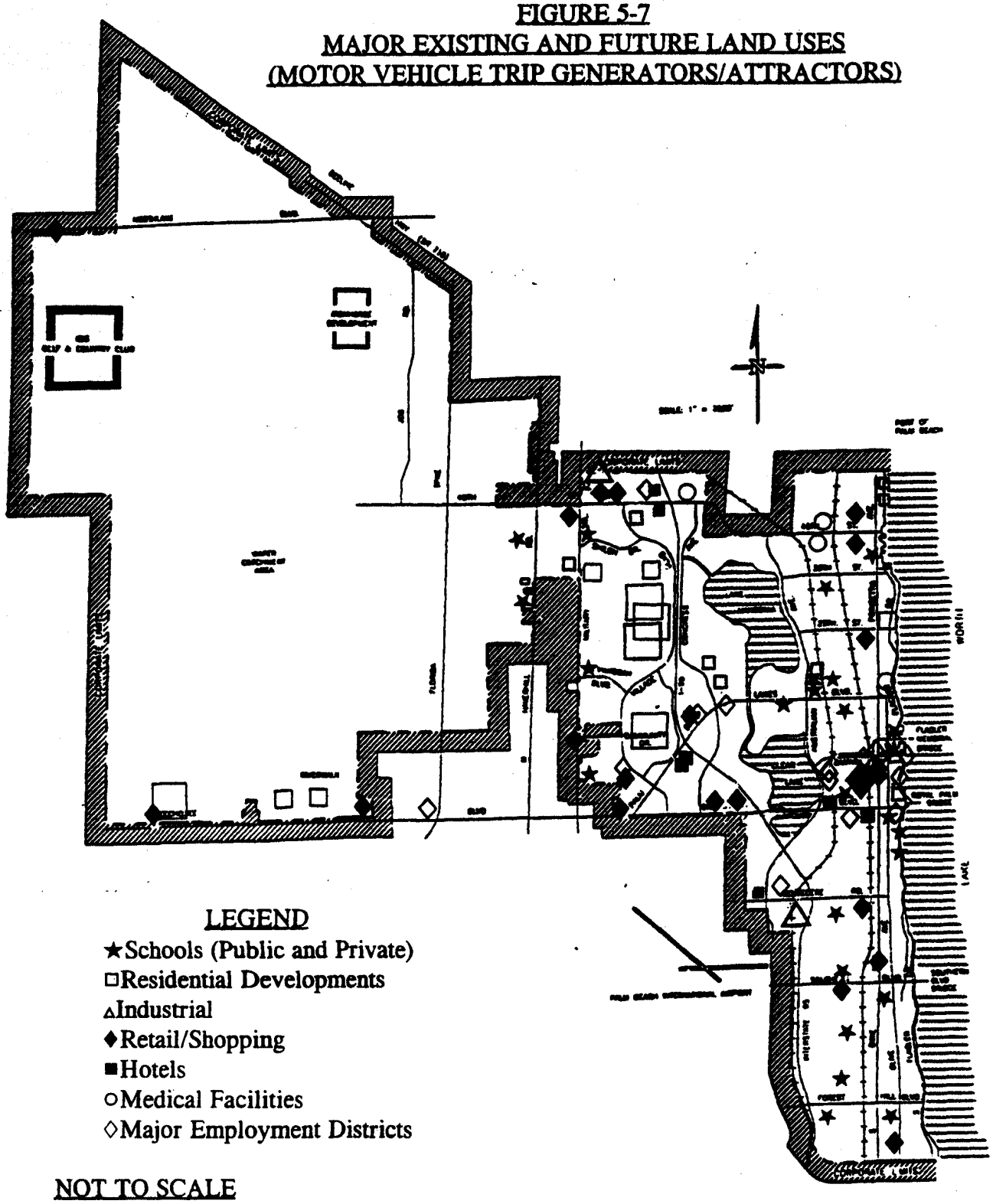
Total Population, Palm Beach County	745,900
Eligible Disadvantaged and Low Income Children Population	304,700
Elderly, Disabled, and Children at Risk who meet own needs	258,800
Disadvantaged Population who cannot meet own needs	**45,900**

Source: Transportation Disadvantaged Assessment conducted by Gallop for the Health and Human Services Planning Association and the Palm Beach County Metropolitan Planning Organization, December 1995.

H. Major Existing and Future Land Uses [Motor Vehicle Traffic Generators/Attractors]

Figure 5-7 indicates the major existing and future land uses (trip generators/attractors) for the City of West Palm Beach. Many of the newest land uses are located in the western areas of the City.

FIGURE 5-7
MAJOR EXISTING AND FUTURE LAND USES
(MOTOR VEHICLE TRIP GENERATORS/ATTRACTORS)



Source: City of West Palm Beach Planning, Zoning and Building Department, December 1998.

I. Transit Development Program For PalmTran

Both Palm Beach County and the City of West Palm Beach are experiencing a steady growth in population. As the population grows, the provision of convenient and accessible public transit becomes increasingly important.

The past development pattern within Southeast Florida and West Palm Beach has not been conducive to the utilization of public transit. The density of past and present developments is not high enough to adequately support any type of transit system. In addition, existing transportation policies outside of the City discourage the use of public transit. Therefore, in order for PalmTran to be able to provide an effective, efficient and convenient service, West Palm Beach and the surrounding areas will need to establish transit-oriented development standards, denser development, development incentives for transit and commuter-related activities, and other transportation demand management activities. The City is moving in this direction with the Transportation Vision and the use of New Urbanist principles. The use of public transportation is very low, less than 2 percent of all motorized trip making. For public transportation to be effective, both land use and transportation policy changes are necessary to increase the attractiveness of public transit.

PalmTran implemented an expansion of its fixed-route system in August 1996. There are a total of 32 routes, which represents a 160 percent increase in service over the previous fixed route system. The system distinguishes between peak and off-peak service by providing 122 buses during peak hours and 90 buses during off-peak hours. Saturday service utilizes 74 buses to provide service. The system offers Sunday service with 68 buses in operation. PalmTran is in the process of researching service reductions in areas where transit use is extremely low.

Frequency of service (headways) should be increased. For six days a week (Monday through Saturday), all routes will operate on one-hour or less headways. In comparison, the existing system has some routes that operate on two-hour headways. North-south routes utilize 30-minute headways during both peak hours and off-peak hours. East-west routes provide 30 to 60 minute headways during peak hours and 60-minute headways during off-peak hours. Routes are scheduled as close as possible to allow for timed transfers at major attractors (i.e., malls, hospitals, and employment centers) to provide for increased safety of passengers and faster service. Timed transfer is important to commuters who need to plan their schedules. This will play a major role in attracting choice riders.

The new system has 32 routes. PalmTran implemented some of the new routes in August 1996 to allow the overall transition to occur more smoothly.

In addition, the City of West Palm Beach has worked with the Downtown Development Authority (DDA), the Community Redevelopment Agency (CRA) and the private sector to develop a Downtown bus loop, which would link the major land uses in the Downtown. This was completed and implemented in August 1993. The City is also working with the Downtown Development Authority to increase exposure and simplify routing of the shuttle.

J. Level of Service for PalmTran

TABLE 5-7
FOR FISCAL YEARS 1998 - 2000
PROJECTED OPERATING EXPENSE FOR PALMTRAN

Fiscal Year	Operating Expense
1998	$20,227,000
1999	$20,906,000
2000	$21,607,000

Source: Palm Beach County Transit Development Plan Update, May 1995.

TABLE 5-8
PROJECTED PASSENGERS FOR PALMTRAN
FOR FISCAL YEARS 1998 - 2000

Fiscal Year	Patronage
1998	7,398,000
1999	7,590,000
2000	7,833,000

Source: Palm Beach County Transit Development Plan Update, May 1995.

Three variables were utilized in estimating revenue estimates: revenue hours, passengers per hour and average fare. Two assumptions were made regarding average fare and passengers per hour in the peak period. Ridership was determined by using a load factor of 35 percent during off-peak and 50 percent during peak, a 42 percent increase. The same percentage increases are used for average fare and passengers per hour during peak periods, as it is anticipated that the additional passengers during peak periods will be mostly full fare commuters. The average fare is assumed at $0.81 per peak hour passenger and $0.63 per off-peak hour per passenger. It is assumed that the system will carry 22 passengers per hour during peak hours and 15 passengers per hour during off-peak hours. An increase of 2.6 percent per year is assumed for FY97 to FY99 for both revenue and ridership. An increase of 3.2 percent is assumed for FY 2000 for revenue and ridership. [Information provided by PalmTran.]

TABLE 5-9
PROJECTED REVENUE FOR PALMTRAN
FOR FISCAL YEARS 1998 - 2000

Fiscal Year	**Revenue**
1998	$5,752,000
1999	$5,906,000
2000	$6,098,000

Source: Palm Beach County Transit Development Plan Update, May 1995.

TABLE 5-10
PROJECTED DEFICIT FOR PALMTRAN
FOR FISCAL YEARS 1998 - 2000

Fiscal Year	Deficit
1998	$14,475,000
1999	$15,000,000
2000	$15,509,000

Source: Palm Beach County Transit Development Plan Update, May 1995.

K. Funding

Funds for urban transit operating costs usually come from four sources: federal, state, local funds, as well as transit fares. Federal funds represent the dominant transit subsidy source and are provided by the Federal Transit Administration (FTA) under the Federal Transit Act Amendments of 1991 (part of ISTEA). FTA provides both capital and operating assistance. FDOT also provides capital and operating assistance. Federal, state and local funds fund the current operating deficit for the existing transit system. A maximum level is set for federal and state funds based on formulas established by FTA and FDOT, respectively.

The Board of County Commissioners made a long-term commitment to funding public transit by passing a six-cent gas tax in August 1993. As of April 17, 1995, the portion of gas tax funds set aside for transit has grown to about $9.8 million annually. Of the $9.8 million, up to $1.7 Million is allotted to the Tri-County Commuter Rail Authority (TCRA) to be used for Tri-Rail operations and $1 million is set aside for SpecTran. The remaining $7.1 million will be used to expand the fixed-route bus system. For fiscal year 1994 and 1995, some gas tax funds generated have been used to match Federal grants for the acquisition of buses and facilities.

L. Private Sector Participation

The private sector is encouraged to become involved in planning for public transportation as well as the actual implementation of service within the area. In the West Palm Beach Urban Study Area, the MPO is working in cooperation with the County and PalmTran in order to identify opportunities for the private sector and provide means for private sector input.

PalmTran has made attempts to partner with private agencies for the provision of public transportation services in the past. A private provider, Palm Beach County Paratransit Corporation, operates SpecTran through a contract with PalmTran. PalmTran is proposing to privatize four routes of the new system (routes serving Belle Glade, Wellington, Royal Palm Beach and West Palm Beach).

PalmTran is also proposing to privatize a new van service for “gated communities.” These communities are located inside enclosed gates or walls and do not provide easy access for PalmTran buses. If residents in the “gated communities” decide to contract with PalmTran for service, they will pay a small monthly fee to support privatized van service in their community to

bring residents out to bus routes located outside the development. This type of service will offer the communities personalized service and allow PalmTran to maintain minimal headways.

M. Capital Projects Program

A Motorola signpost system has been installed. PalmTran implemented the PacTel Telemark system in FY95. There has also been a proposal for an expanded multimodal transit transfer center, located across the CSX tracks from the Seaboard Train Station. It will accommodate public and private carrier buses, bicycles and pedestrians. It is to be part of a multimodal transit transfer center functioning as the central hub of Palm Beach County connecting airport, seaport, and rail facilities. It is meant to provide an integration of transportation modes, with service by PalmTran, Tri-Rail, Amtrak, Greyhound and possibly the future high-speed rail. The 6.8-acre site is located south of Banyan Boulevard between Clearwater Place and Tamarind Avenue.

As of September 1997, the MPO Technical Advisory Committee has recommended approval of the preliminary design of the intermodal facility to the MPO Board. However, funding for the project has not been determined. In addition, the City has identified several problems with the preliminary design. For example, the preliminary design showed a railway track on the east side of the historic station, which is unacceptable to the City. Also, many of the station's functions were located on the west side of the tracks making them inconvenient to the Downtown, and add expense to the operation, particularly PalmTran.

N. Marketing

The success of any transit system depends upon enhancing public awareness. PalmTran currently allocates about $100,000 per year to its marketing program. In 1995, PalmTran created a marketing department, and commenced to prepare a complete and ongoing marketing program, using a yearly budget of two to three percent of the proposed fixed-route operating budget. For FY96/97, PalmTran spent about $1 million in marketing its new system.

Formerly known as CoTran, PalmTran was given a new name and look. Changing the color schemes and expanding the service helped to increase PalmTran's awareness and visibility in the community. Each bus was equipped with video cameras tied to security equipment at the central office for increased passenger safety.

O. Tri-County Commuter Rail (Tri-Rail)

Tri-Rail operates trains throughout the day on weekdays, all day on Saturday (however, with limited morning service) and with limited service all day Sunday. Trains stop at 18 stations stretching from the Miami International Airport to Mangonia Park between 4:45 a.m. and 10:30 p.m., with a total travel time of about one hour and 45 minutes over the entire route. The average weekday passengers for 1997 (January to May) is approximately 7,803. Seven stations are in Palm Beach County, two of which are located within the City limits of West Palm Beach. [Information provided by Tri-Rail.]

The following are the Palm Beach County Tri-Rail Stations:

1. Mangonia Park
2. West Palm Beach Flagler Station
3. Palm Beach International Airport Station
4. Lake Worth Station
5. Boynton Beach Station
6. Delray Beach Station
7. Boca Raton Station

P. Transportation Plan Effects on Public Transit

Future street and highway modifications may affect the fixed-route bus system. Listed in Table 5-11 are the street modifications listed in the Florida Department of Transportation Five Year Construction Plan for 1997/98 (FY98) through 2001-02 (FY02) and in Table 5-12 the Transportation "Improvement" Program for the Metropolitan Planning Organization of Palm Beach County for fiscal years 1997-2001.

The addition of motor vehicle lanes to the existing streets will generally result in the closing of that thoroughfare to motor vehicle traffic or at least the closing of some lanes for an extended period of time while construction takes place. It is anticipated that effects on bus schedules resulting from the projects listed will be in the form of minor route deviations and/or schedule changes. When these projects begin, it is important to have an established notification procedure to help minimize the inconvenience to system patrons. In order to help alleviate some of these problems, the Palm Beach County Transit Authority should receive notification of street construction projects, which may affect their transit routes, at least 30 days before construction begins. This notification should specify the extent and duration of the construction activity.

PalmTran's fixed-route service in Palm Beach County currently consists primarily of a fleet of 91 buses running on scheduled service through a modified grid system. The existing fixed-route bus system is too small to be able to function effectively. Compared to other areas in the United States of similar size and density, it appears that 2.5 to 5 times the present number of buses should be utilized in Palm Beach County, with ridership levels 3 to 9 times as high as currently achieved today. Service of 30 to 60 minute headways will not be sufficient to attract those people with a choice of travel mode. However, simply putting more buses on the existing network may not be the most cost-effective strategy either.

TABLE 5-11
STATE HIGHWAY CONSTRUCTION PROJECTS FOR WEST PALM BEACH

PROJECT LOCATION	PROJECT DESCRIPTION	TYPE OF WORK	BEGIN
Southern Blvd.	Congress Ave to I-95	Add Lane & Reconstruct	FY00/01
Broadway Ave.	Northwood Rd to 59th St	Resurfacing	FY97/98
Skypass	Port of Palm Beach to Elevated US 1	P.D.&E/EMO Study	tba
Olive Ave.	Gregory Rd to SR 80	Resurfacing	FY98/99
Dixie Highway	Belvedere Rd to Palm Beach Lakes Blvd	Resurfacing	FY98/99
Olive Ave	Okeechobee Blvd to Belvedere Rd	Resurfacing	FY00/01
Dixie Highway	Palm Beach Lakes Blvd to Broadway Ave	Resurfacing	FY00/01
Dixie Highway	WPB Canal to Southern Blvd	Resurfacing	FY98/99
45th Street	Rail Crossing "Improvements"	Rail Crossing "Improvements"	FY97/98
El Camino Real	Rail Crossing "Improvements"	Rail Crossing "Improvements"	FY97/98
Interstate 95	Palm Beach Lakes to 45th St	Resurfacing	FY97/98
I-95/PBIA Interchange	Southern Blvd to Belvedere Rd	New Road Construction	FY98/99
I-95/Aux Lanes	Belvedere Rd to Okeechobee Blvd	Interchange	FY97/98
P.B. Intermodal Center		Capital for Fixed Route	tba

Source: State of Florida Department of Transportation Five Year Construction Plan for FY 1997/98 through FY 2001/02, March 1997.

TABLE 5-12
TRANSPORTATION "IMPROVEMENT" PROGRAM, MPO, 1997-2001

PROJECT LOCATION	PROJECT LOCATION	TYPE OF WORK	BEGIN
Congress Avenue	Bridge over Palm Beach Canal	Replace Low Level Bridge	FY98/99
Military Trail	Okeechobee Blvd to Blue Heron Blvd	Add Lanes & Reconstruct	FY00/01
I-95	Southern Blvd to Belvedere Rd	New Construction	FY98/99
I-95	Forest Hill Blvd to Okeechobee Blvd	Add Lanes & Reconstruct	FY99/00
I-95	45th St to Blue Heron Blvd	Add Lanes & Resurface	FY99/00
I-95	Belvedere Rd to Okeechobee Blvd	Interchange	FY97/98
I-95	Palm Beach Lakes Blvd to 45th St	Mill & Resurface	FY97/98
I-95	Forest Hill Blvd to Southern Blvd	Add Lanes & Resurface	FY97/98
Dixie Highway	Okeechobee Blvd to Belvedere Rd	State Resurface/Repave	FY97/98
Dixie Highway	Quadrille Blvd to Palm Beach Lakes Blvd	Mill & Resurface	FY99/00
Dixie Highway	WPB Canal Bridge to Southern Blvd	Mill & Resurface	FY00/01
Dixie Highway	Palm Beach Lakes Blvd to Okeechobee Blvd	Mill & Resurface	FY97/98
Olive Ave	Gregory Rd to Southern Blvd	Mill & Resurface	FY98/99
Olive Ave	Belvedere Rd to Palm Beach Lakes Blvd	Mill & Resurface	FY97/98
Dixie Hwy	Broadway to Palm Beach Lakes Blvd	Mill & Resurface	FY00/01
Broadway	Northwood Rd to 59th St	Road Reconstruction	FY97/98
Broadway	Northwood Rd to 59th St	Road Reconstruction	FY97/98
Military Trail	Okeechobee Blvd to Blue Heron Blvd	Add Lanes & Reconstruct	FY96/97
Olive Avenue	Gregory Rd to Southern Blvd	Mill & Resurface	FY98/99

Source: FY 1997-2001, Transportation "Improvement" Program, Metropolitan Planning Organization of Palm Beach County, June 1996.

Note: All projects listed in above tables consist of one or more: planning, design, construction, right-of-way acquisition, and/construction inspection.

There does appear to be potential markets for increased use of public transportation in Palm Beach County, including the City of West Palm Beach, and there are certain essential and complementary roles for public transportation to play in the overall transportation system. Given the suburban nature of Palm Beach County and South Florida, it is virtually impossible to assume that public transit can serve as a replacement of the automobile without excessive capital outlays. Although public transportation, with Palm Beach County's current attention to street building, cannot be expected to compete effectively with motor vehicle use, public transportation

provides other benefits that, although harder to measure, are just as real. These benefits include opportunities to bypass congestion, the provision of mobility and access for those without easy access to an automobile, modest reductions in the adverse effects of automobiles (air pollution, energy consumption, traffic collisions, etc.), and spurs for economic development. Public transportation's potential role will only be achieved only if Palm Beach County and the City of West Palm Beach governments take the lead and set the example. The City should work with the County to ensure that public transportation functions both efficiently and in a cost-effective manner. Some of the steps that the City and County will have to take if public transportation is to be an integral part of the City's and the County's transportation system, are as follows:

1. Develop a framework within which public transportation can succeed, through higher densities, priority for transit in the motor vehicle traffic stream, shorter headways, etc.

2. Recognize government's role as a major employer and set an example of proper recognition of public transportation, through ridership incentives, discount passes, etc.

3. Upgrade fixed-route bus system.

4. Set Policies to encourage unconventional, innovative service. This may include transportation management associations, transportation demand management, "planned congestion," etc.

Nontraditional markets for public transportation such as Palm Beach County require nontraditional approaches. Although many will fail, those that succeed will be the corner stone of public transportation service.

People must be given incentives to switch to transit or ridesharing. Although transit use has been declining nationwide, exceptions to this trend can be found in areas where measures have been taken to give transit and ridesharing vehicles a time and predictability advantage over single passenger cars. Another common ingredient of successful programs has been employer and private sector support. The City and County should set policies to encourage employers and the private sector to take supportive actions. This can be accomplished through voluntary actions. Some of the actions that should be offered to increase vehicle occupancy by encouraging transit use and car-pool participation include:

1. Car-pooling programs administered by employers and the private sector.

2. Parking management programs such as preferred parking for car-pools, locating parking for such vehicles closest to the building, premium parking charges for single-occupancy vehicles or cash-out parking policies.

3. Site development design and layout that are amendable to transit and ridesharing.

4. Subscription or "club" buses to serve commuter markets.

5. A preemptive measure to favor car-pools and transit at congested street intersections.

6. Requiring residential developers to provide small buses to serve developments that exceed certain threshold levels, as part of their motor vehicle traffic mitigation program.

One of the techniques for implementing these options is the establishment of a TMA. TMAs are being formed around the country in major activity centers and specific corridors to provide policy leadership and advocacy, demand management and transportation services. The private sector, acting through TMAs, can provide direct incentives to employees to change their travel behavior. For example, flexible work hours, ridesharing programs and employer subsidies to users of public transportation can be implemented through TMAs both on an individual company basis and on an areawide basis to help reduce the motor vehicle use on the street system during the most congested peak periods.

One of the keys to increasing transit use and efficiency is to stop providing very high levels of service for its main competition, the automobile. There are many other incentives and disincentives that should be used to change travel behavior and affect land use choices and development so that transit is used at higher levels.

IX. PRIVATE VEHICLE CIRCULATION

A. Traffic Calming in West Palm Beach

In many neighborhoods and districts throughout the City, excessive motor vehicle speeds and cut-through motor vehicle traffic are common sources of complaint. In response, the City has begun to employ various techniques or measures to slow motor vehicle traffic and/or shift to more appropriate routes. These techniques are commonly referred to as "traffic calming." Recently, the Institute of Transportation Engineers (ITE) defined traffic calming as:

> *... the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users.* 1997 ITE International Conference Compendium.

Traffic calming concepts were first used in Germany, Holland, and Australia several decades ago. Over the past 20 years, an increasing number of cities throughout Europe, Australia, Japan and the United States have used a variety of measures to reduce the negative effects of automobiles.

The categories of traffic calming measures include: vertical changes in the street (e.g., speed humps, speed tables, raised intersections), lateral changes in the street (e.g., chicanes, offset intersections, lateral shifts), constrictions (e.g., narrowings, pinch points, islands), narrow pavement widths (e.g., medians, edge treatments), entrance features, traffic circles, and small corner radii and related streetscaping (e.g., surface textures, edge treatments and colors, landscaping, street trees and furniture). Developing categories of traffic calming measures allows traffic calming to remain innovative and capable of being adapted to numerous settings/situations.

Traffic calming goals include: increasing the quality of life; incorporating the preferences and requirements of the people using the area (e.g., working, playing, residing) along the

street(s) or at the intersection(s); creating safe and attractive streets; helping to reduce the negative effects of motor vehicles on the environment (e.g., pollution, sprawl); and promoting pedestrian, bicycle, and transit use. Traffic calming objectives include: achieving slow speeds for motor vehicles; reducing collision frequency and severity; increasing the safety and the perception of safety for non-motorized users of the street(s); reducing the need for police enforcement; enhancing the street environment (e.g., streetscaping); encouraging water infiltration into the ground; increasing access for all modes of transportation; and reducing cut-through motor vehicle traffic.

Despite the great deal of flexibility inherent in traffic calming, there are some principles that apply to traffic calming. Traffic calming must be community-based and supported. Through design, traffic calming must incorporate a degree of self-enforcement of motor vehicle speeds. Driver behavior must be directly affected by the traffic calming measures. Traffic calming must improve the safety of street users, particularly the vulnerable users including the children, disabled, elderly, pedestrians, and cyclists. These principles can be thought of as a test of minimum criteria to determine if a candidate street modification is actually traffic calming; if the principles are not met, then it is truly not traffic calming. Additional principles and fundamental planning concepts related to traffic calming include:

1. Streets help determine the form and character of neighborhoods; street design should be considered a part of neighborhood design.

2. The most sensitive streets should be designed to carry low volumes of motor vehicles at low speeds and to function efficiently and safely, yet minimize the need for extensive regulation, traffic control devices, and enforcement.

3. The expected driver behavior should be readily apparent to the driver through the street's appearance and design in order to reduce non-local through traffic on residential streets.

4. The streets should be interconnected to reduce travel distance, promote the use of non-motorized modes, provide for provision of utilities and emergency services, and provide for more even dispersal of motor vehicles. Route modification techniques such as street closure, diverters, and turn prohibitions are highly discouraged.

5. The pavement area of streets should be minimized, consistent with efforts to reduce street construction and maintenance costs, stormwater runoff, and environmental effects of street construction. Street widths also provide guidance to drivers as to the type of behavior that is expected by them, travel speeds, and the role of the street with respect to mobility and access.

Several additional definitions of related words are required to be clarified in order to understand and promote the principles of traffic calming. These definitions are:

- **Traffic calming measures** are designed elements in and/or along the street or intersection that conform to the definition and principles of traffic calming. The measures are part of the street, similar to the curb, etc. and should not be referred to as devices.

- **Route modification** (or traffic management) is the combination of measures that alters the available routes for motor vehicles and their flow. Examples include one-way streets, diverters, closures and turn prohibitions. *Route modification and traffic calming are frequently confused. Although both often share the common goal of improving the quality of life by preventing cut-through, route modification is an attempt to change routing or flow on the street network, while traffic calming is an attempt to alter driver behavior. It often transfers problems from one location to another. Route modification is highly discouraged in the City of West Palm Beach.*

- **Traffic control devices** are signs, signals and markings designed to regulate, warn, guide and provide information. Examples include stop signs, speed limit signs and traffic signals.

- **Streetscaping** includes planning and placing distinctive lighting, furniture, art, trees, other landscaping, etc. along streets and at intersections. Streetscaping can occur successfully without traffic calming, but traffic calming is most successful when done in conjunction with streetscaping.

- **Traffic calming plans** affect one or more streets and/or intersections and involve traffic calming measures.

- **Neighborhood traffic calming plans** are traffic calming plans for whole neighborhoods.

- **Areawide traffic calming plans** are traffic calming plans for large areas, districts, or several neighborhoods.

- **Route modification (or traffic management) plans** affect one or more streets and/or intersections and involve route modifications.

- **Neighborhood route modification (or traffic management) plans** are traffic management plans for whole neighborhoods.

- **Street modification plans** affect one or more streets and associated intersections and involve traffic calming, route modification/traffic management, streetscaping, traffic control, provisions for non-automobile modes (sidewalks, contra-flow cycle lanes, etc.) or on-street parking.

It is important to understand that even though traffic calming is primarily geared toward existing streets by retrofitting, traffic calming measures can also be employed in the construction of new streets to prevent problems in newly constructed developments. In addition, application of these techniques must be evaluated on a case-by-case basis using competent judgment. Planning and design should be coordinated with all parties (e.g., neighborhood and business associations, emergency/police services, municipal services, engineering, etc.) that may be affected by its implementation.

The future potential of traffic calming is exciting. Its implications can be far reaching and its implementation has a wide range of possibilities. The City supports traffic calming and related activities. The City also recognizes that traffic calming is a departure from the conventional practices of transportation planners. However, this does not imply that the City is abandoning prudent and logical engineering principles. It simply means that the inherent flexibility of traffic calming should not be restrained, so that its practical use and implications can be fully realized by the City and its residents.

In 1998, the City adopted a new traffic calming policy outlining the previously described principles. A copy of the policy, adopted by Resolution No. 230-98, can be obtained from the Transportation Division or the City Clerk.

B. Level of Service, Capacity, Functional Classification and Methodology for Analysis

1. Conventional Approach and State Requirements

Transportation professionals currently measure the (success and) failure of streets by how well they serve the needs of the automobile. The most popular and widely used measure is called "level of service." Its scale is similar to those used for grading students, ranging from "A" to "F," with "A" being the best for automobiles (no congestion/excellent mobility), and "F" being the worst for automobiles (traffic jam/poor mobility).

This approach defines "level of service (LOS)" [for motor vehicles] as the ability of a maximum number of vehicles to travel a section of roadway or through an intersection during a specified period of time, while maintaining a given operating condition. Below are expanded descriptions of the definitions of motor vehicle levels of service which were taken from the "Model" [Motor Vehicle] Traffic Circulation Element prepared by the Florida Department of Community Affairs in May 1987 and in *italics* are the West Palm Beach Transportation Division's comments regarding such levels:

LOS A	Highest LOS which describes primarily free-flow [motor vehicle] traffic operations at average [motor vehicle] travel speeds. [Motor] Vehicles are completely unimpeded in their ability to maneuver within the [motor vehicle] traffic stream. The delay [for motor vehicles] at intersections is minimal.
LOS B	Represents reasonably unimpeded [motor vehicle] traffic operations at average travel speeds. The ability to maneuver in [motor vehicle] traffic is only slightly restricted and delays [to motor vehicles] are not bothersome [to the driver and occupants].
LOS C	Represents stable [motor vehicle] traffic flow operations. However, ability to maneuver and change lanes may be more restricted than in LOS B, and longer queues and/or "adverse" signal coordination may contribute to lower average [motor vehicle] travel speeds.
LOS D	Borders on a range in which small increases in [motor vehicle] traffic flow may cause substantial increases in approach delay [to motor vehicle users] and, hence, decreases in [motor vehicle] speed. This may be due to adverse signal progression, inappropriate signal timing, high motor vehicle volumes, or some combinations of these. *This LOS is commonly used in Florida as the "capacity" of a street even though it is not.*
LOS E	[Motor vehicle] Traffic flow is characterized by significant delays and lower operating speeds [for motor vehicles]. Such operations are caused by some combination or "adverse" progression, high signal density, extensive queuing at critical intersections, and "inappropriate" signal timing [for motor vehicles]. *This LOS is the true motor vehicle capacity of a given street section or intersection.*
LOS F	This represents [motor vehicle] traffic flow characterized by extremely low speeds. Intersection congestion is likely at critical, signalized locations, with high approach delays [for motor vehicles] resulting.

These levels of service are inappropriately used for all streets. They do not take into consideration adjacent land uses (residential, commercial, etc., other users (pedestrian, cyclist, children, etc.), and function of the street (mobility, access, amenity, recreation, celebration, shopping, etc.).

The ability of a street to accommodate motor vehicle users is estimated using the default tables included in the Florida Highway System Plan LOS Standards and Guidelines Manual prepared by the Florida Department of Transportation. For ease of reference, the "Generalized Level of Service [for motor vehicles] Maximum Volumes for Florida's Urban/Urbanized (5,000+) Areas" default table is presented as Table 5-13 of this Section. The 1994 Highway Capacity Manual (HCM) Update and Florida Traffic, Roadway and Signalization Data (Transportation Research Board, National Research Council) serves as the basis for this table. Previous estimates performed by the City of West Palm Beach have utilized motor vehicle capacity tables based upon the 1985 HCM. The following narrative describes the methodology previously used in applying this default table to determine LOS standards [for motor vehicles] for the City's street network, prior to 1997.

Each year, the City of West Palm Beach records the daily motor vehicle volumes at nearly 100 locations. These counts are taken two times a year over a period of 24 hours. One count is taken during January and February (representing the "peak" season); one count is taken during July and August (representing the "off-peak" season). Counts from these two time periods are then averaged to determine the average annual daily motor vehicle volumes for each street segment. In response to a concern voiced by FDOT, each average daily volume is multiplied by 1.10 to better reflect "30th highest hour" conditions. It is this adjusted figure that is the basis used for determining the LOS for motor vehicle users for planning purposes.

The procedure deserves a brief description. "Capacity" represents the LOS standard for motor vehicle users, which corresponds to the motor vehicle volumes equated with LOS "D" in all categories. The "V/C Ratio" is the predicted average daily motor vehicle volume divided by the motor vehicle capacity threshold. This is provided for information only and is not a determinant of LOS. The "LOS" is determined by matching the average daily motor vehicle volume with the maximum achievable motor vehicle volume for a given "LOS standard" and street classification. Where average daily motor vehicle volume exceeds the maximum motor vehicle volume of LOS "E," then LOS "F" is substituted. "Peak Hour" is the estimated peak hour motor vehicle volume based on eight percent of average daily motor vehicle volume.

Figure 5-8, "Existing Street Functional Classification," depicts the street classification in the City. Figure 5-9, "Future Street Functional Classification," depicts the future street classification in the City.

It is obvious that this procedure involves several steps narrowly focused on the number of motor vehicle trips. Each step, from the original count to the multiplication factors to categorizing the type of street, to the numbers in the tables is flawed. This process has the guise of rigor and science, but simply amounts to a pseudo-science. The error of each step does not cancel statistically they multiply. An equally valid method to estimate the level of service for car users would be to go to the street section or intersection, observe it for the "analysis" period and estimate A, B, C, D, E, or F, without ever counting a thing. Or one could poll a statistically valid sample of drivers and get a true estimate on how well they feel they are being accommodated. The point is that conventional transportation planners have taken the level of service [for motor vehicle users] concept to extremes, to the detriment of other factors and common judgment.

TABLE 5-13
GENERALIZED PEAK HOUR DIRECTIONAL VOLUMES FOR FLORIDA'S URBAN/URBANIZED (5000+) AREA

INPUT VALUE ASSUMPTIONS

	FREEWAYS Group		STATE TWO-WAY ARTERIALS					NON-STATE ROADWAYS	
	1	2	Two-Lane Undivided*	Uninterrupted	Ia	Ib	II	III	Major	Other Significant
TRAFFIC CHARACTERISTICS			-							
Peak hour factor (PHF)	.950	.950	-	.925	.925	.925	.925	.925	.925	.925
Adjusted saturation flow rate										
2 lane facility	2125	2050	-	1850	1850	1850	1850	1800	1850	1800
4 to 6 lane facility	2225	2150	-	2000	1850	1850	1850	1800	1850	1800
8 lane facility	2225	2150	-	N/A	1700	1700	1700	1650	N/A	N/A
10 lane facility	2225	2150	-	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12 lane facility	2125	2050	-	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Turns from exclusive lanes	N/A	N/A	-	N/A	.12	.12	.12	.12	.12	.16
ROADWAY CHARACTERISTICS										
Through lanes	4-12	4-12	-	2-6	2-8	2-8	2-8	2-8	2-6	2-6
Arterial classification	N/A	N/A	-	N/A	I	I	II	III	I	N/A
Free flow speed	60	60	-	50	45	40	35	30	45	N/A
Medians	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Left turn bays	N/A	N/A	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SIGNAL CHARACTERISTICS										
Signalized intersections/mile	N/A	N/A	-	N/A	1.5	3.0	5.0	7.5	2.5	N/A
Arrival type	N/A	N/A	-	N/A	3	4	4	4	4	3
Signal type	N/A	N/A	-	N/A	All	Semi	Semi	Semi	Semi	Semi
Cycle length (C)	N/A	N/A	-	N/A	120	120	120	120	120	120
Weighted effectiveness green ratios (g/C)	N/A	N/A	-	N/A	.45	.45	.45	.45	.42	.32

*Same as corresponding input assumptions for multilane arterials.

LEVEL OF SERVICE

LOS	FREEWAYS		UNINTERRUPTED MULTILANE	STATE TWO-WAY ARTERIALS				NON-STATE ROADWAYS	
	4 Lane	6+ Lane		Class I	Class II	Class III	All	Arterials*	Other Significant Roadways
	(v/c)		(v/c)	(average travel speed)			(intersection v/c)	(average travel speed)	(stripped delay)
A	≤0.272	≤0.261	≤0.30	≥35 mph	≥30 mph	≥25 mph	≤1.00	-	≤5 sec
B	≤0.436	≤0.417	≤0.50	≥28 mph	≥24 mph	≥19 mph	≤1.00	-	≤15 sec
C	≤0.655	≤0.626	≤0.70	≥22 mph	≥18 mph	≥13 mph	≤1.00	-	≤25 sec
D	≤0.829	≤0.793	≤0.84	≥17 mph	≥14 mph	≥9 mph	≤1.00	-	≤40 sec
E	≤1.00	≤1.00	≤1.00	≥13 mph	≥10 mph	≥7 mph	≤1.00	-	≤60 sec
F	>1.00	>1.00	>1.00	<13 mph	<10 mph	<7 mph	>1.00	-	>60 sec

*Same as state arterials.

TABLE 5-13 (CONTINUED)
GENERALIZED PEAK HOUR DIRECTIONAL VOLUMES
FOR FLORIDA'S URBAN/URBANIZED (5000+) AREA

STATE TWO-WAY ARTERIALS
UNINTERRUPTED FLOW

Unsignalized

Lanes	Level of Service A	B	C	D	E
2 Undiv.	460	720	980	1,280	1,710
4 Div.	1,110	1,850	2,590	3,110	3,700
6 Div.	1,670	2,780	3,890	4,660	5,550

INTERRUPTED FLOW

Class Ia (>0.00 to 2.49 signalized intersections per mile)

Lanes	Level of Service A**	B	C	D***	E***
2 Undiv.	-	660	810	880	900
4 Div.	-	1,470	1,760	1,890	1,890
6 Div.	-	2,280	2,660	2,840	2,840
8 Div.	-	2,840	3,280	3,480	3,480

Class Ib (2.50 to 4.50 signalized intersections per mile)

Lanes/	Level of Service A**	B**	C	D	E
2 Undiv.	-	-	460	760	840
4 Div.	-	-	1,020	1,640	1,800
6 Div.	-	-	1,550	2,510	2,710
8 Div.	-	-	1,890	3,060	3,320

Class II (more than 4.50 signalized intersections per mile and not within primary city central business district of urbanized area over 500,000)

Lanes	Level of Service A**	B**	C**	D	E
2 Undiv.	-	-	-	620	800
4 Div.	-	-	-	1,390	1,740
6 Div.	-	-	-	2,130	2,640
8 Div.	-	-	-	2,600	3,230

Class III (more than 4.50 signalized intersections per mile and within primary city central business district of urbanized area over 500,000)

Lanes/ Divided	Level of Service A**	B**	C**	D	E
2 Undiv.	-	-	-	690	780
4 Div.	-	-	-	1,540	1,700
6 Div.	-	-	-	2,340	2,570
8 Div.	-	-	-	2,860	3,140

FREEWAYS

Group 1 (within urbanized area over 500,000 and leading to or within 5 miles of primary city central business district)

Lanes	Level of Service A	B	C	D	E
4	1,100	1,760	2,640	3,350	4,040
6	1,660	2,640	3,970	5,030	6,340
8	2,210	3,530	5,290	6,700	8,460
10	2,760	4,410	6,620	8,380	10,570
12	3,160	5,050	7,580	9,610	12,100

Group 2 (within urbanized area and not in Group 1)

Lanes	Level of Service A	B	C	D	E
4	1,060	1,700	2,550	3,230	3,900
6	1,600	2,560	3,840	4,860	6,130
8	2,130	3,410	5,110	6,480	8,170
10	2,670	4,260	6,390	8,100	10,210
12	3,050	4,870	7,310	9,270	11,690

NON-STATE ROADWAYS
MAJOR CITY/COUNTY ROADWAYS

Lanes	Level of Service A**	B**	C	D	E
2Undiv.	-	-	560	730	800
4 Div.	-	-	1,260	1,600	1,720
6 Div.	-	-	1,950	2,450	2,600

OTHER SIGNALIZED ROADWAYS
(signalized intersection analysis)

Lanes	Level of Service A**	B**	C	D	E
2Undiv.	-	-	270	530	600
4 Div.	-	-	590	1,170	1,300

ADJUSTMENTS
DIVIDED/UNDIVIDED
(alter corresponding directional volume indicated percent)

Lanes	Median	Left Turn Bays	Adjustment Factors
2	Divided	Yes	+5%
2	Undivided	No	-20%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

ONE-WAY
(alter corresponding directional volume indicated percent)

One-Way Lanes	Corresponding Two-Way Lanes	Adjustment Factor
2	4	+20%
3	6	+20%
4	8	+20%
5	8	+50%

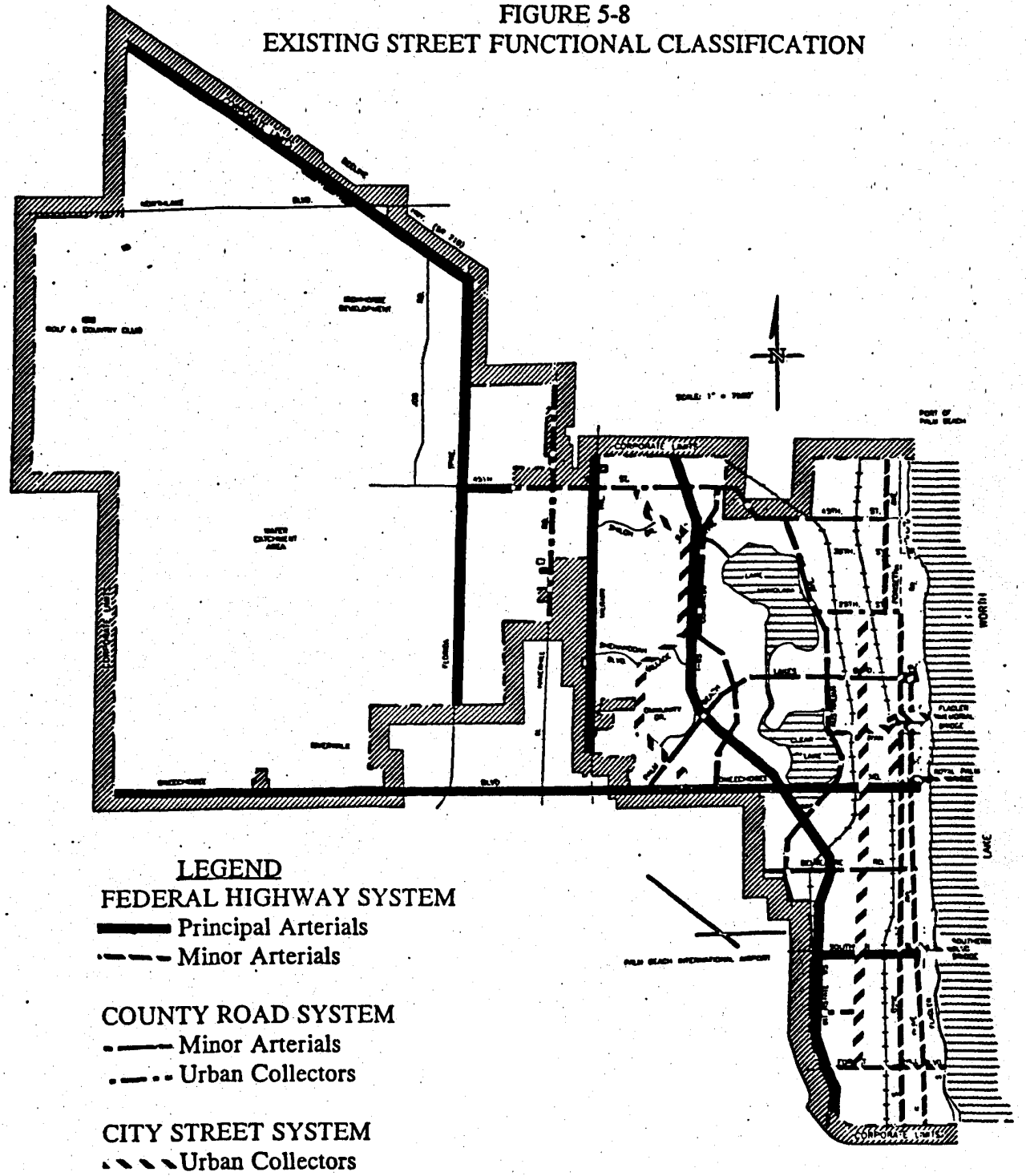
* The table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and derived computer models should not be used for corridor or intersection design, where more refined techniques exist. Values shown are hourly directional volumes based on the 1994 Highway Capacity Manual Update and Florida traffic, roadway and signalization data. To convert to annual average daily traffic volumes, these values must be divided by an appropriate D factor and K_{100} factor (Warning: do not use a peak to daily traffic ratio; a K_{100} must be used). The table's input value assumptions and level of service criteria appear on the back.

** Cannot be achieved.

*** Volumes are comparable because intersection capacities are reached.

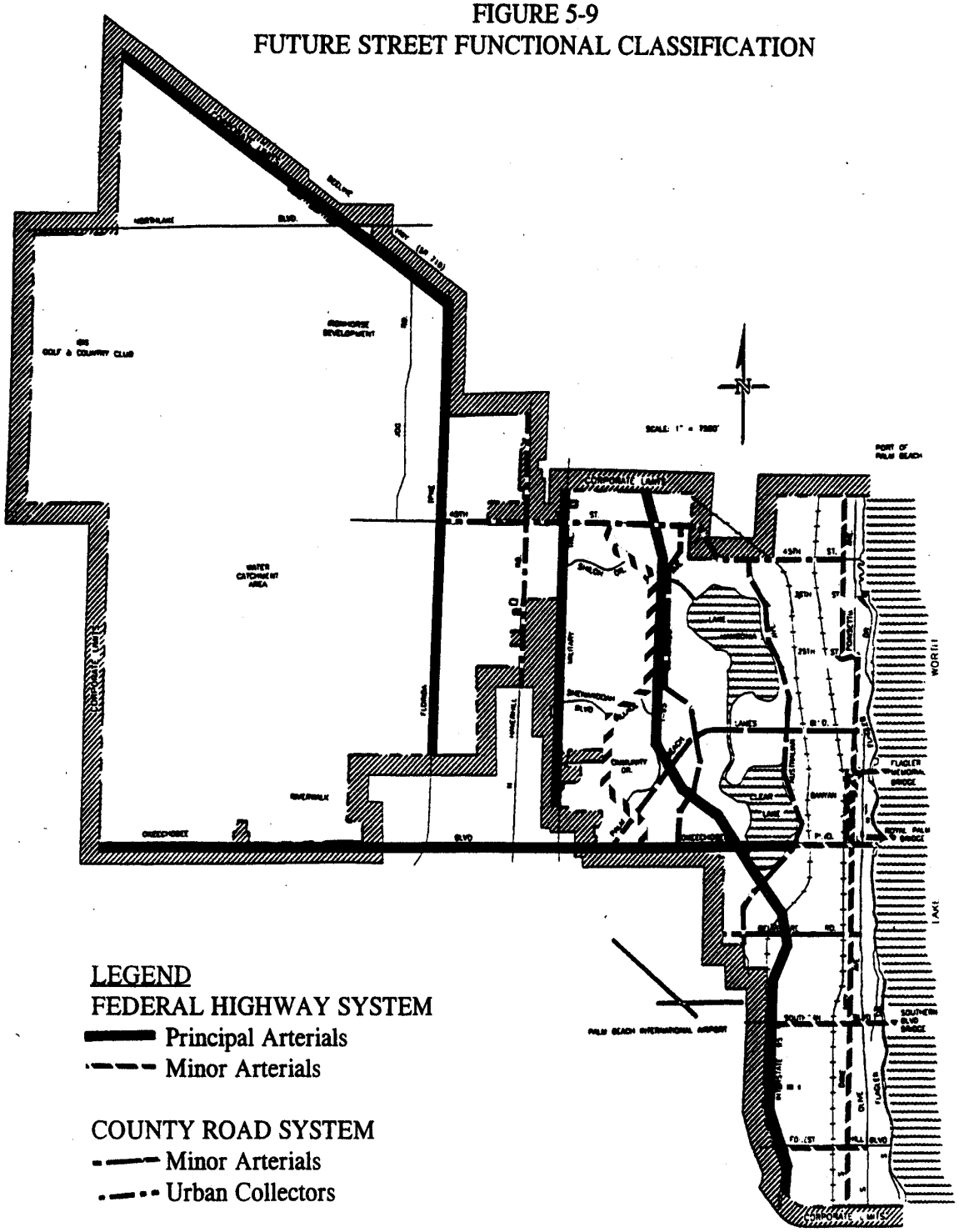
Source: Florida Department of Transportation, 1995.

FIGURE 5-8
EXISTING STREET FUNCTIONAL CLASSIFICATION



Source: U.S. Department of Transportation, January 1996.

FIGURE 5-9
FUTURE STREET FUNCTIONAL CLASSIFICATION



LEGEND

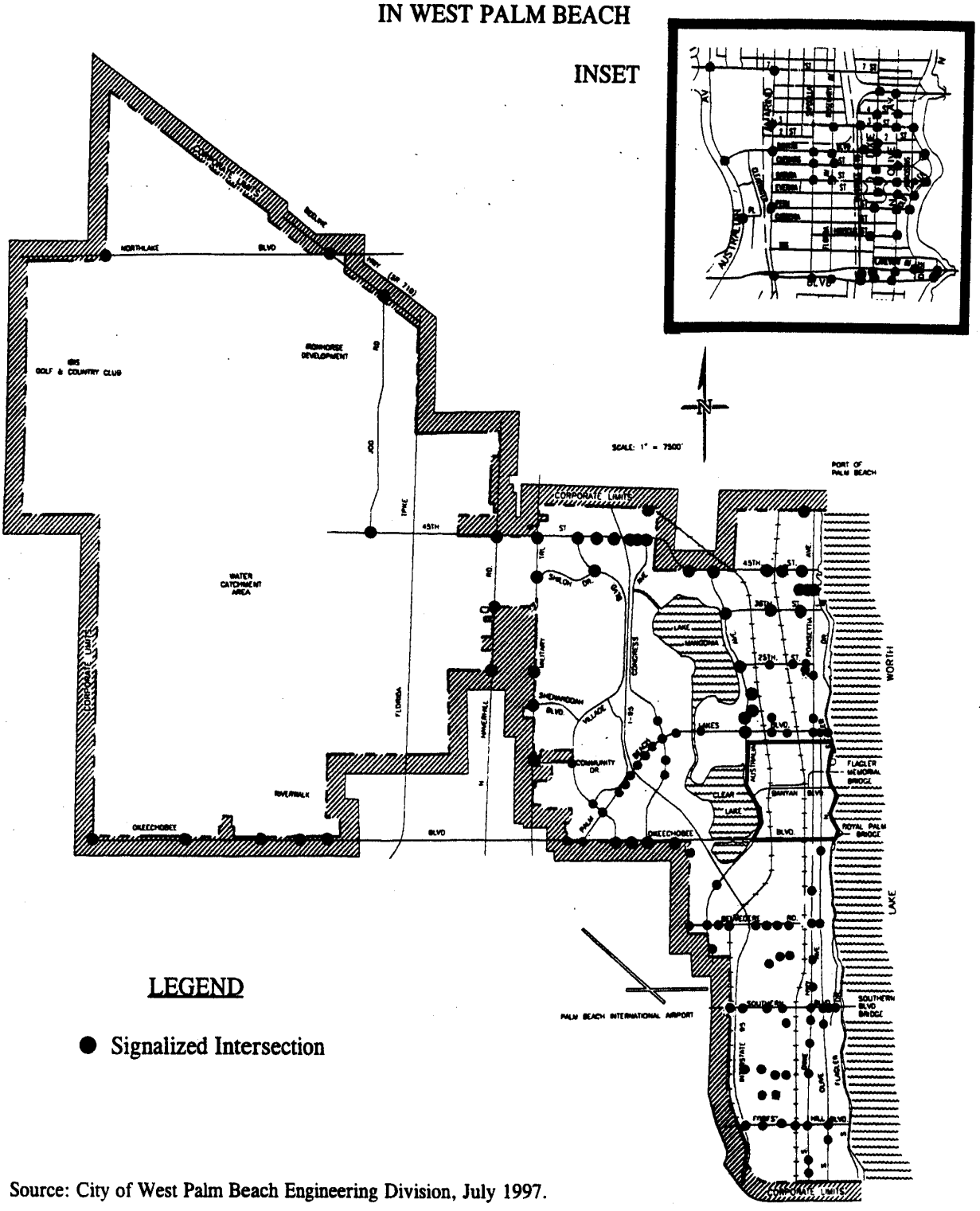
FEDERAL HIGHWAY SYSTEM
- Principal Arterials
- Minor Arterials

COUNTY ROAD SYSTEM
- Minor Arterials
- Urban Collectors

CITY STREET SYSTEM
- Urban Collectors

Source: U.S. Department of Transportation, January 1996.

FIGURE 5-10
SIGNALIZED INTERSECTIONS
IN WEST PALM BEACH



Source: City of West Palm Beach Engineering Division, July 1997.

2. Transportation Planning Paradigm Shift

One of the goals of the Transportation Element is to address first and second order transportation challenges. Critics of this strategy would prefer to allocate resources only to first order challenges. For example, conventional transportation planners would feel that an increase in level of service from E to C for automobile drivers and occupants is an example of solving a real problem. They support their position with elaborate calculations involving automobile delay, motor vehicle volume to capacity ratios, and various other simulation models. Conventional transportation planners feel that they are solving real problems, and that quality of life and other second order challenges are only perceptions. What they fail to realize is that levels of service [for motor vehicles] were derived from the perceptions of the drivers and occupants in automobiles. So in reality, they are solving perceived problems. The only difference between the perceptions of automobile drivers and automobile occupants and the perceptions of people who will not ride a bicycle or walk because they perceive that the streets are too dangerous, is that there has been a lot of engineering effort spent developing pseudoscientific ways of estimating how drivers and occupants feel.

So it really does not matter if a problem is real or perceived, the difference depends entirely on one's perspective and biases. Many people perceive an unpleasant pedestrian environment and consequently avoid walking. The conventional engineering approach of attempting to measure, quantify, and compare to some standard has not developed far enough to include many of these second order challenges in the equations (i.e., automobile dependence, walkability, accessibility, etc.).

Until the perceived problem areas are included in the equations, judgment is required. This makes conventional thinkers very uncomfortable because judgment is based on perceptions that everybody possesses. Lost is the monopoly of conventionalists and their conventional models and tables with regard to the success or failure of the streets based on conventional criteria. The success and failure of the streets is based on the collective opinions of the users, and/or measured against qualitative criteria and principles.

Pro-automobile measures of success for streets include average automobile speed, average automobile delay, average travel time for automobile users, level of service for automobile users, and the ratio of automobile volumes to the street's automobile-carrying capacity (v/c ratio). Notice that these measures are all related to speed and mobility in some way. This preoccupation with speed in pro-automobile cultures needs to be examined. Pro-automobile thinkers equate increased speed, less delay, and increased mobility with success. Many of these people have made careers out of expanding and lengthening highway networks to achieve this aim. However, more and more research shows that the efforts of increased mobility were misguided. For example, the Department of Community Affairs, Florida Energy Office funded several fact sheets entitled "Merge Lanes Ahead," produced by 1000 Friends of Florida and the Florida State University Department of Urban and Regional Planning related to the relationships between transportation, land use, energy and our future. Specifically, one of the reports stated:

> ...with time savings which are generally the major perceived community benefit, it is not a simple matter of predicting vehicle times before and after a new road is

> constructed and concluding that the road will save x hours of travel time. It has been amply demonstrated over the years that cars expand to fill the available road space and our data certainly suggest that time is not saved in cities with the biggest and best road systems. What appears to be necessary is a more dynamic feedback process built into land use/transport modeling which incorporates the fact that the new road will influence land use, which will in turn detract from the initial time savings predicted by the model. Without such real world effects predicted, time savings will be illusory.

Rather than being something which must always be eliminated, congestion can actually be creatively exploited as a tool in helping a city progress toward lower car dependency and lower energy use through a better balance between cars, public transit, walking and bicycling. This concept is sometimes referred to as "planned congestion." In the process of simply trying to eliminate congestion and maintain free-flowing streets and highways, transportation professionals forgot why they were doing what they were doing. Lewis Mumford reflected on this situation when he wrote:

> What is transportation for? This is a question that highway engineers apparently never ask themselves: probably because they take for granted the belief that transportation exists for the purpose of providing outlets for the motorcar industry. To increase the number of cars, to enable motorists to go longer distances, to more places, at higher speeds, has become an end in itself . . . The purpose of transportation is to bring people or goods to places where they are needed, and to concentrate the greatest variety of goods and people within a limited area, in order to widen the possibility of choice without making it necessary to travel. A good transportation system minimizes unnecessary transportation; and in any event, it offers a change of speed and mode for a diversity of human purposes. *The Lewis Mumford Reader*.

Measures of success to replace the outdated motor vehicle mobility goals obviously include measures related to access. However, many other measures would be important, such as those related to the reduction of collisions, quality of life, aesthetics, compact urban form, energy conservation, reduction of vehicle miles traveled, reduced automobile dependence, community values, culture, history, social exchange, recreational potential, etc. Obviously, the list of measures of success to replace the pro-automobile set are numerous, hard to measure, very complex, and difficult to consider simultaneously. However, the City is proposing such a departure from conventional thinking.

An example of the proposed system of measuring street success is borrowed from the biologists. When biologists examine complex problems, like monitoring a wetland, they choose an indicator species, like a frog. If the frog population is doing well, the biologists conclude that the wetland is doing well. If the frog population is doing poorly, then the biologists conclude that there is a problem in the wetland. The trick is to choose the correct indicator species.

Conventionally, in the urban equivalent of the wetland, the city, transportation professionals picked the wrong indicator species, the automobile. It would be like the biologist choosing to model a plant that kills wetlands when the emphasis should be placed on the wetland

and not the killer plant. The correct indicator species would have been the pedestrian, particularly vulnerable pedestrians: the young, elderly, disabled, etc.

Previously the City's LOS standard was LOS "D" for average daily [motor vehicle] traffic of each major street based on default tables from the Florida Department of Transportation (FDOT) [Motor Vehicle] Level of Service Guidelines Manual for Planning. This convention/practice is also consistent with Palm Beach County. Because the City is obliged by law to adopt a level of service for motor vehicle users, the City's policy LOS "standard" for City streets is now LOS "E" to reflect the true capacity of streets. For County and State maintained streets, the standard LOS for motor vehicle users continue to be LOS "D," except on streets where a lower LOS for motor vehicle users is permitted through the use of a Transportation Concurrency Exception Area (TCEA) or a Constrained Roadway At a Lower Level of Service (CRALLS) designation. The two methods of concurrency exception are detailed later. For clarity, the definition of City streets refers to all streets maintained and under the jurisdiction of the City of West Palm Beach. City streets **do not** include County or State streets, nor do they include the Florida Intrastate Highway System (FIHS). For a complete discussion of this information, please refer to Technical Paper No. 1 in the appendices.

So convinced were transportation professionals that streets were only for moving automobiles, they established voluminous books of standards, recipe books for designing streets for automobiles. These books spent few pages on pedestrians and cyclists, and they completely ignored the social, recreational, cultural, historic, and commercial functions of streets. It is as if these other functions did not exist. These standards were conveniently referred to by legislation governing the construction of streets, which had the effect of turning transportation professionals into transportation technicians, obediently following the recipe books for fear of litigation and galvanizing the dominance of the automobile culture. The result: artificially designed criteria severely impacted the sense of community and destroyed neighborhoods and districts within cities by totally ignoring important social values.

The standards have been followed for too long, virtually ignoring all other functions. This naturally had incremental negative effects on the other functions of the streets to the point where automobiles almost gained a complete monopoly over the streets. The design and rules of the road were heavily biased in favor of automobiles, differential speeds and the sheer numbers of automobiles dominated. The pro-automobile thinkers rationalized this domination by using arguments based on the separate and segregate land use philosophy, claiming that other urban spaces were designated for other purposes (e.g. parks were for recreation, community centers were for socializing, etc.). They also used the unsubstantiated claim that a person's decision to use an automobile equated to democratic support for pro-automobile practices, when the truth is that the separate and segregate practices over the last 50 years had given them little choice but to use automobiles. Sir Winston Churchill said that we shape our buildings and then they shape us. Similarly, transportation planners shape our street and highway networks and then they shape us. If we design our communities to be automobile-oriented, that is what we will get. If we design them with a balanced system, we will get a balanced system. Americans are very adaptable people; wherever we go on our vacations and other travels, we adapt quickly to the land use patterns and transportation systems of the area. Consequently, if we change our cities in the United States, we can and will adapt accordingly.

The Transportation Division is creating a system of street analysis similar to that of the biologists using an indicator species. However, this does not imply that the Division will not use any or all of the conventional procedures from time to time. The Division is simply altering them to reflect their true definition. For example, [motor vehicle] volume over [motor vehicle] capacity (V/C) is merely being equated with V/C_E ($V/C = V/C_E$), where C is the maximum motor vehicle carrying capacity of the facility (i.e., as a function of LOS E). In addition, LOS will continue to be used. However, rather than routinely recommending street expansion projects when the LOS for motor vehicle users reaches "E," LOS will be used as an indicator similar to V/C regarding how well motor vehicle users are accommodated.

For example, conventionally if a street reached a V/C approaching one, it was almost a reflex for transportation professionals to expand the street or make modifications to the intersections in order to "increase" [motor vehicle] capacity. The Transportation Division will use the V/C and LOS for motor vehicles merely as indicators rather than justification for projects. This means that should a street reach a $V/C > 0.9$, the Division will investigate the situation further. This will involve determining whether this is only a peak hour occurrence, whether the volumes are distributed over the entire day, and also determine acceptable actions to address the situation. An acceptable action may be "no action." However, it is important to remember that the action will consider all the users of the street, as well as the automobile users, and the action's consistency with the Transportation Vision and the promotion of the environmental hierarchy of modes of transportation. Please note that the procedure is based upon the fact that, by definition, V/C cannot be greater than one.

At the other end, the Division will also investigate streets with a V/C less than or equal to 0.6. This low ratio may be an indicator that the street or intersection design is excessive, even for motor vehicle users. It may be an indicator that a narrowing or other traffic calming measure may be suitable. It may also indicate that there are portions of the street underutilized by the automobile that may be converted back to useable space for other users. Reducing motor vehicle infrastructure, even in places where it is underutilized or wasted, is not a common practice by transportation professionals.

Basically, the Division will continue to monitor streets based on their motor vehicle volume to capacity ratios. In instances where the V/C ratio is outside the range 0.6 to 0.9 (i.e., $0.9 < V/C < 0.6$), further investigation and possible action may be warranted.

How does this change affect the use of LOS concept? The Division will not recommend street modifications exclusively due to a particular LOS label. The reason is simply the biased nature of this type of measure. For instance, street segments within the City's Downtown are reaching LOS "E" or a V/C approaching one and will become more congested as redevelopment continues. The City does not believe that lower levels of service for motor vehicle users will effect the existing operations. In fact, this approach has a positive affect on transportation. It helps change people's modal choice, making non-automobile modes competitive. It allows for the widening of sidewalks, the removal of one-way streets, and many other initiatives that result in a connected and walkable street system that also encourages the use of transit.

Though the City will monitor motor vehicle accommodation, the City intends to allocate future resources more equitably and toward increased sustainability. It also effectively promotes

the Transportation Vision and the existence of multiple street users. Much like the change in language and communication, with respect to transportation, this change requires a shift from conventional thinking.

The City, through the Transportation Division, is also in the process of developing a revised street classification (street types, similar to the building types in the City's Downtown Master Plan) and regulating system for street modification and future street design. The new classifications and regulations will be designed to incorporate the different variables that have been discussed in this Element. The variables include, but are not limited to, motor vehicle speeds (desired and designed), adjacent land uses, mobility, access, traffic calming, characteristics of all street users (e.g., pedestrians, cyclists, static users, etc.), community preferences, motor vehicle lane widths and numbers, overall function of the street, location, and general common sense. Basically, the street types will provide a framework for future street modification and construction that will ensure that the City fulfills its Transportation Vision. The Transportation Vision will be implemented incrementally and over time using every feasible opportunity. For example, the City requires that streets be traffic calmed when any significant utility work is done as part of the utility project. Maintenance work on sidewalks, repaving, and other work must be considered holistically and combined with traffic calming when feasible. It is analogous to renovating a house and having to bring it up to code. Now, any street modifications or works need to fulfill the Transportation Vision.

C. Inventory of the Existing Street System

1. Conventional Approach and State Requirements

An inventory and an analysis of the City's existing street network were conducted to examine existing and projected motor vehicle use. The inventory is required by the State to include all primary streets in the City. These roadways include those that are the jurisdictional responsibility of the City, Palm Beach County and the FDOT. Figure 5-11 is a map of streets in West Palm Beach that are maintained by the County and the FDOT.

The data for the following inventory were obtained from the City's Engineering Services Division, the MPO, and the FDOT. For clarification purposes, the definitions of "arterial" and "collector" streets, from Chapter 334, FS, are as follows:

Arterial Street: "A route providing service [for motor vehicles] which is relatively continuous and of relatively high motor vehicle volume, long average trip length, high operating speed, and high mobility importance. In addition, every United States numbered highway is an arterial street."

Collector Street: "A route providing service [for motor vehicles] which is of relatively moderate average motor vehicle volume, moderately average trip length, and moderately average operating speed. Such a route also collects and distributes motor vehicles between local roads or arterial roads and serves as a linkage between land access and mobility needs."

The existing street network in the City of West Palm Beach is well established and generally provides for fast movement of motor vehicles. The street network in the Downtown consists primarily of the standard grid pattern that is accessed by several major streets. Access into the City limits from the west is provided by: 45th Street, Palm Beach Lakes Boulevard, Okeechobee Boulevard (State Road (SR) 704), Belvedere Road, Southern Boulevard (SR 80), and Forest Hill Boulevard (SR 882). Three bridges provide access to the east across the Intracoastal Waterway (Lake Worth) to Palm Beach. The bridges, from north to south, are the Flagler Memorial Bridge, the Royal Park Bridge and the Southern Boulevard Bridge. Major highways providing access from the north and south are Dixie Highway and Olive Avenue (U.S. Route 1/SR 5 and SR 805, respectively), Australian Avenue, Congress Avenue, Interstate Highway 95 (I-95), Ronald Reagan Turnpike, Military Trail (SR 809), Haverhill Road, and Jog Road.

As the map indicates, the Intracoastal Waterway, I-95, and existing land uses pose constraints to increasing the number of lanes and motor vehicle capacity of mobility-oriented streets (arterials) in and adjacent to most of the City. Also indicated on the map are the Palm Beach International Airport (PBIA, also referred to as the "Airport"), the Port of Palm Beach and the two rail lines that are located in the City (i.e., FEC and CSX/DOT).

2. Transportation Division's Strategy

The inventory of the City's street network will be affected by changing the classifications and street types, as proposed by the Transportation Division. As mentioned, the current street classification and inventory is entirely automobile-oriented. Streets within the City serve additional functions, beyond mobility. Many of them serve as meeting areas for neighbors and play areas for children and adults; retail areas for business people; as waterfront areas for special events; and as public spaces for block parties, charitable events, and holiday celebrations.

When the street reclassification is complete, the inventory will reflect the various street types in relation to the classification variables: design speed, adjacent properties, etc.

D. Analysis of Projections and 2005/2015 Projections of Motor Vehicle Use
Conventional Approach, State Requirements and West Palm Beach's Strategy

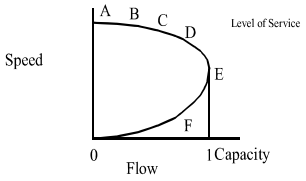
Projected motor vehicle volumes for the years 2005 and 2015 have been derived by the West Palm Beach Planning, Zoning and Building Department using projected motor vehicle volumes from the "2015 Cost Feasible Plan" (FDOT and MPO). That plan was developed using a computerized motor vehicle model to project future motor vehicle use utilizing population and employment projections and proposed street modifications from the local governments in the urban area of Palm Beach County, along with the proposed street modifications from the FDOT.

All of the street segments shown in Figures 5-14, 5-15 and 5-16 are State or County streets with a V/C ratio more than 0.9 that may warrant further investigation.

For sustainability purposes and livability reasons, the City of West Palm Beach fundamentally disagrees with this conventional approach to expanding streets for more and more motor vehicles. The process is flawed. Any forecast that predicts motor vehicle use on a

particular street that exceeds the street's capacity cannot come true unless the street's capacity is increased. Showing V/C ratios that exceed 1.0 is impossible because, by definition, volume is less than capacity for Levels of Service A, B, C, D, and F; and volume is equal to capacity at Level of Service E.

Motor Vehicle Flow/Speed Relationship



Note: Volume at LOS E equals motor vehicle capacity.

E. Proposed Modifications

1. Conventional Approach and State Requirements

There are several street modifications, for existing and predicted levels of motor vehicle use, which are scheduled by the City, County, and State. Most of these proposed roadway modifications are for State and County-maintained streets. Therefore, coordination with those units of government will be needed to make the modifications. Such coordination is generally provided by the MPO of Palm Beach County.

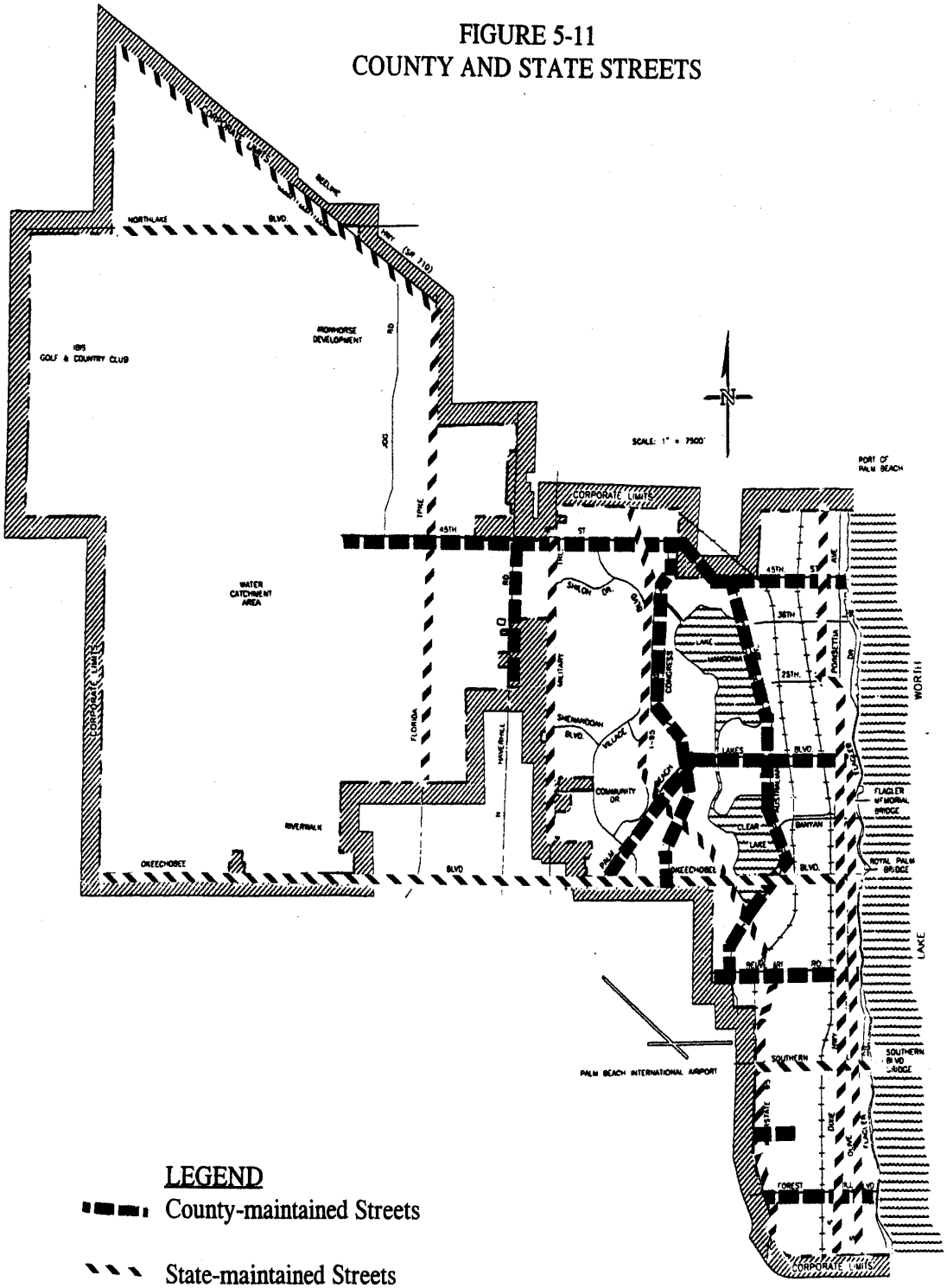
2. The City's New Approach

Street modifications within the City are reviewed and approved by the Transportation Division, prior to City Commission approval. Prior to that, the Engineering Services Division handled them based upon relatively conventional procedures. Now the Transportation Division reviews all modifications based upon consistency with the Transportation Vision, the City's Traffic Calming Policy and community preferences.

West Palm Beach is aggressively pursuing several traffic calming plans within several neighborhoods, districts, and corridors. The City Transportation Planner is working with neighborhood and business associations to develop and implement the plans. These areas have continually lobbied the City to reduce the amount of cut-through motor vehicle traffic and speeding along the respective streets. For example, traffic calming is being constructed or planned within Northwood, Northboro, Southside and Northwood Hills neighborhoods.

In addition, the Transportation Division is redesigning streets within the City that are subject to reconstruction for storm water, drainage and other utility related issues. The Division is coordinating these efforts with the Engineering Services Division. The underlying premise is that the streets, for instance, Division Avenue and 3rd Street, do not need to be reconstructed at their previous widths and dimensions. The neighborhood, district, or corridor benefits from the reconstruction, but using a traffic calmed design they also receive additional benefits: reduced automobile cut-through and speeding, increased streetscaping, increased sidewalk widths and an increased perception of safety, community, and neighborhood pride.

FIGURE 5-11
COUNTY AND STATE STREETS



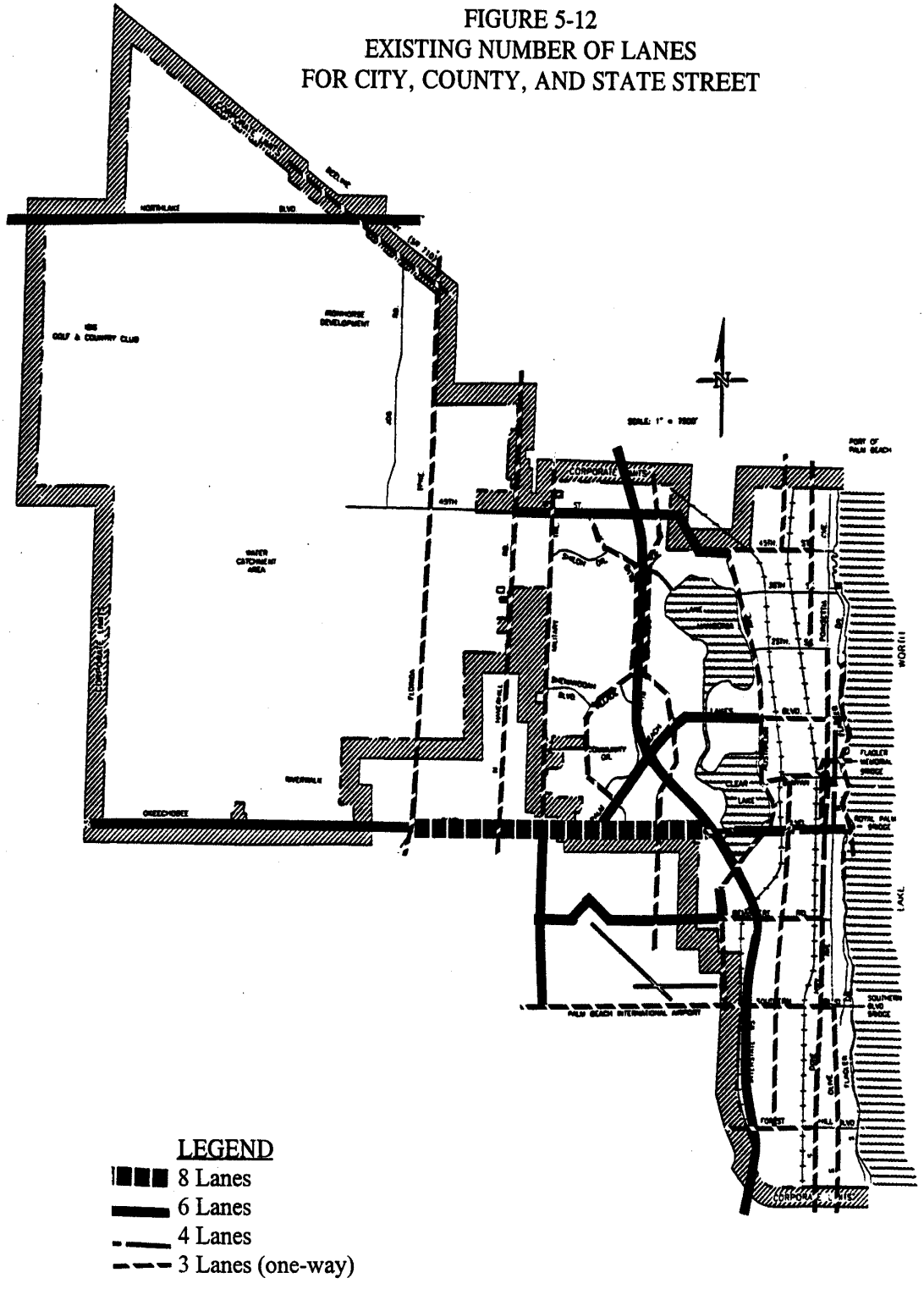
LEGEND

County-maintained Streets

State-maintained Streets

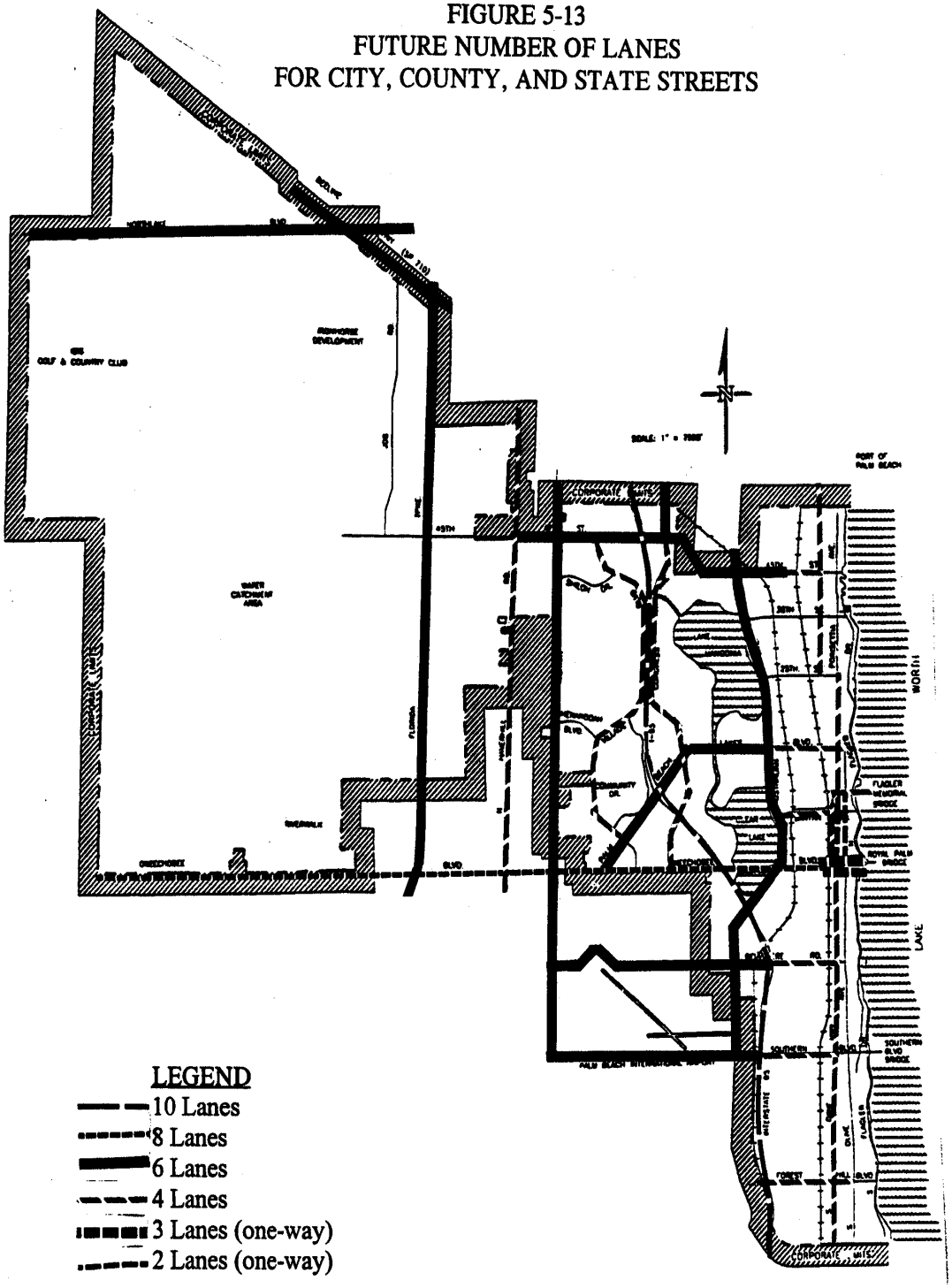
Source: City of West Palm Beach Planning, Zoning and Building Department, July 1997.

FIGURE 5-12
EXISTING NUMBER OF LANES
FOR CITY, COUNTY, AND STATE STREET



Source: City of West Palm Beach, Planning, Zoning and Building Department, January 1999.

FIGURE 5-13
FUTURE NUMBER OF LANES
FOR CITY, COUNTY, AND STATE STREETS



Source: City of West Palm Beach, Planning, Zoning and Building Department and the Metropolitan Planning Organization Year 2020 West Palm Beach Urban Study Area Long Range Transportation Plan, December 1999.

The Transportation Division is also working with Palm Beach County and the FDOT to reconstruct several streets within the City with the same principles of traffic calming. For example, FDOT will be reconstructing Olive and Dixie Avenues beginning in 2001. The City is working with the FDOT to provide narrower and fewer lanes, to provide two-way circulation, and narrowings at intersections with side streets, and beautify the area. The FDOT has been very cooperative with regard to the modifications. The Division will continue to help and coordinate efforts of reconstruction of other streets, such as Broadway, Southern Boulevard and Forest Hill Boulevard.

It is the intent of the Transportation Division to monitor and evaluate all future street modifications, large and small, to ensure that the Transportation Vision of the City is achieved. The idea is to incrementally reclaim the streets in the City, for a better quality of life, just as the automobile-oriented modifications incrementally caused them to decline over the course of several decades.

F. Right-of-Way Designation

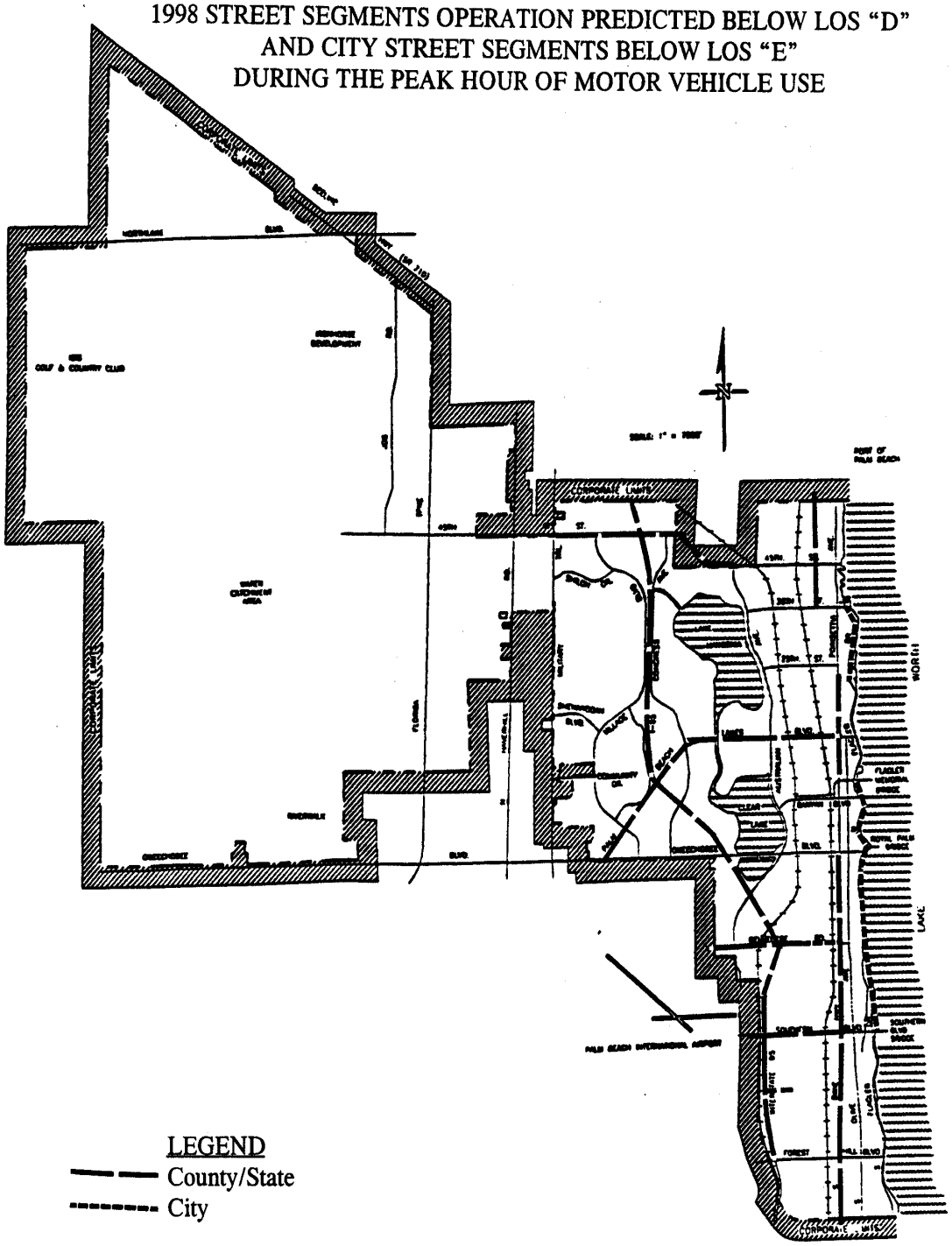
The designation of rights-of-way for potential future street modifications is essential for the future motor vehicle circulation system. This designation is accomplished in Appendix A that indicates the required setback lines for right-of-way designation for streets in the City, and also by a policy in the "Goals, Objectives and Policies" indicating the minimum right-of-way requirements for new streets. These required setbacks are also intended to meet the right-of-way requirements for State and County streets in the City, and should be amended, when necessary, to do so. When discussing rights-of-way, please refer to the Transportation Language section related to this subject to ensure that the language used does not conceal the reality of the situation.

Collision Data

Chapter 9J-5, FAC, requires local governments to examine available motor vehicle collision data for their jurisdictions. Such data are available for all State streets from the Accident [Collision] Records and Research Division of the FDOT in Tallahassee, Florida. Motor vehicle collision data for streets in Palm Beach County are available from the Palm Beach County Accident [Collision] Record Department.

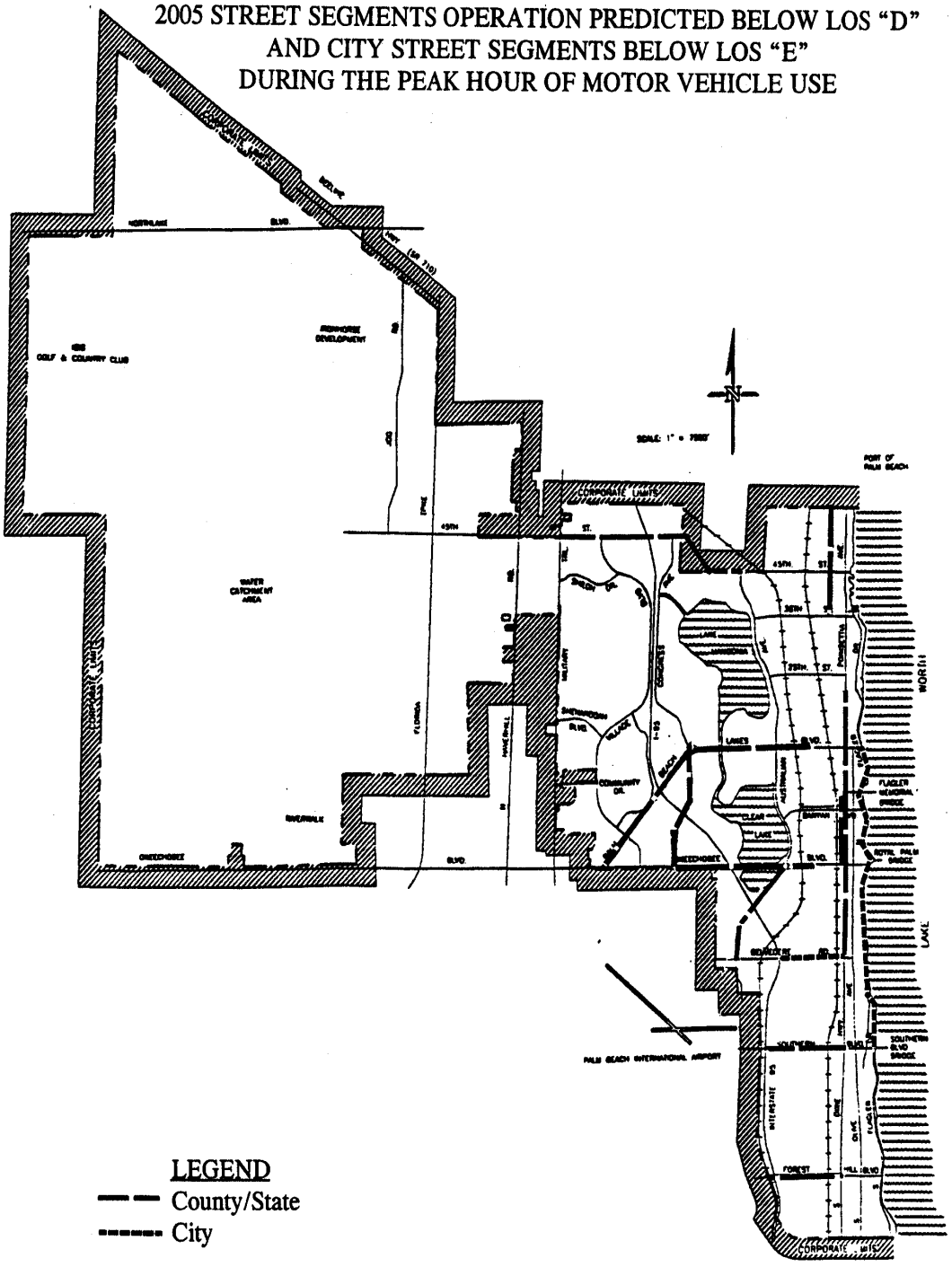
Two methods are used to analyze motor vehicle collision data at intersections. The first, represented in Table 5-14 quantifies the absolute number of collisions at various intersections throughout the City. At least 10 motor vehicle collisions occurred at these locations during 1994. While this table shows the number of collisions, it does not show the rate at which collisions occur. Given that the number of collisions typically increase as motor vehicle volume increases, certain operational, design, or planning "deficiencies" can be identified when specific intersections have a higher number of collisions per million vehicles entering the intersection. Such a rate can be determined by dividing the number of collisions at a given intersection by the number of motor vehicles entering the intersection during a year and multiplying the result by one million.

FIGURE 5-14
CITY OF WEST PALM BEACH
1998 STREET SEGMENTS OPERATION PREDICTED BELOW LOS "D"
AND CITY STREET SEGMENTS BELOW LOS "E"
DURING THE PEAK HOUR OF MOTOR VEHICLE USE



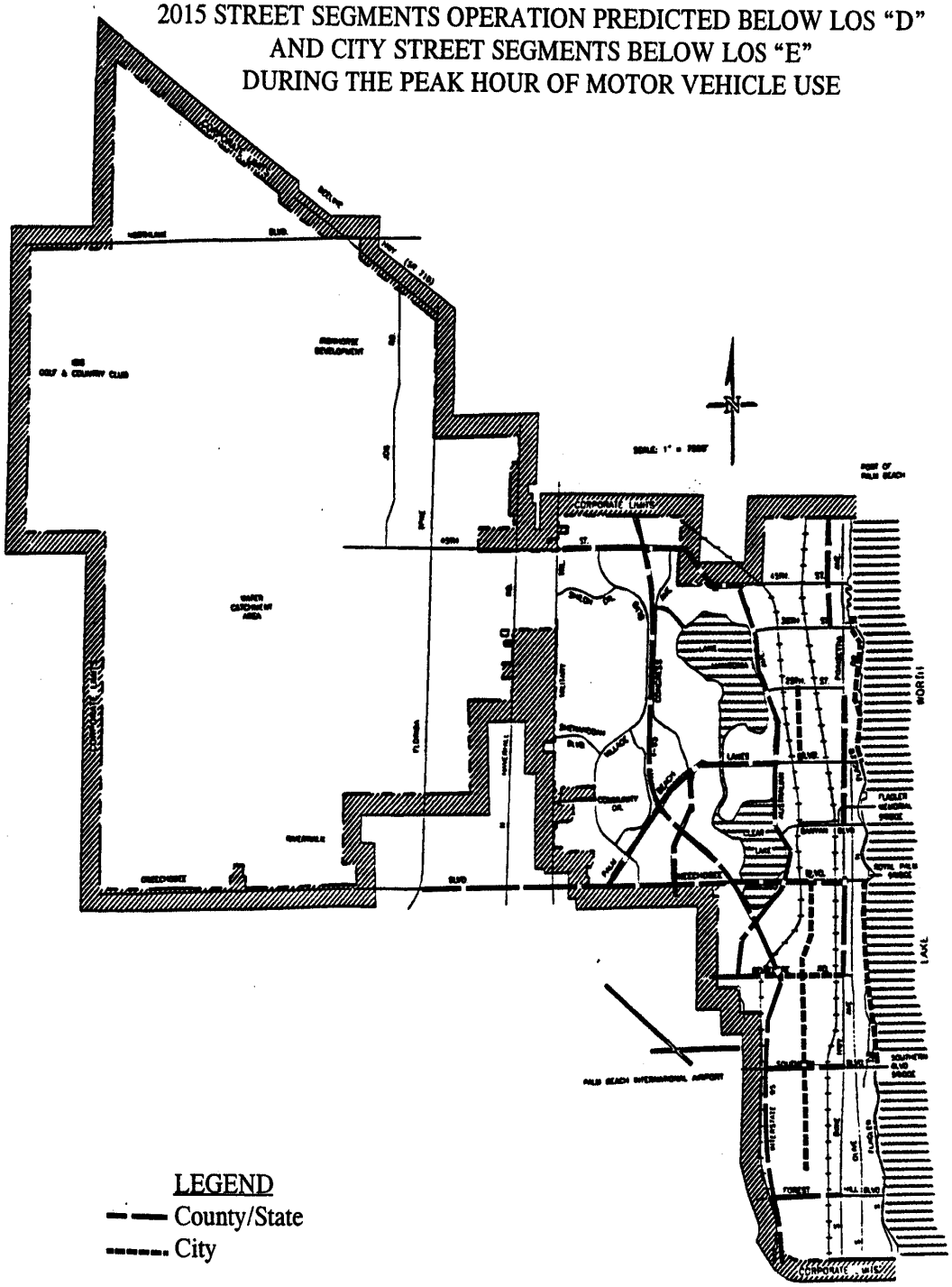
Source: City of West Palm Beach, Planning, Zoning and Building Department, January 1999.

FIGURE 5-15
CITY OF WEST PALM BEACH
2005 STREET SEGMENTS OPERATION PREDICTED BELOW LOS "D"
AND CITY STREET SEGMENTS BELOW LOS "E"
DURING THE PEAK HOUR OF MOTOR VEHICLE USE



Source: City of West Palm Beach, Planning, Zoning and Building Department, January 1999.

FIGURE 5-16
CITY OF WEST PALM BEACH
2015 STREET SEGMENTS OPERATION PREDICTED BELOW LOS "D"
AND CITY STREET SEGMENTS BELOW LOS "E"
DURING THE PEAK HOUR OF MOTOR VEHICLE USE



Source: City of West Palm Beach, Planning, Zoning and Building Department, January 1999.

Modifications are sometimes necessary at these locations in order to reduce the frequency of motor vehicle traffic-related collisions. Intersections with higher collision rates receive priority for modification. Such modifications include motor vehicle signal modification, extraordinary roadway maintenance, establishment of pedestrian crossing signals, segments of bicycle and pedestrian ways, narrowings, or traffic calming. These modifications are programmed on an as needed basis since cost of the individual modifications rarely exceeds $50,000 per project. In this regard, only capital projects of more than $50,000 are included in the Capital "Improvements" Element of this Plan. Therefore, the types of modifications mentioned above are beyond the scope of this Element, but are addressed in the City's five-year capital improvements program and annual budget.

H. TCEA/CRALLS

In 1985, the State of Florida Legislature added concurrency provisions to Florida's Growth Management Law. These concurrency provisions are intended to help local governments ensure adequate public facility capacity is available at the time the effects of development occur. Experience with concurrency implementation has revealed that urban infill projects are frequently denied approval due to the inability to meet the motor vehicle concurrency requirements, while adequate motor vehicle capacity is available in outlying areas. This has created a situation whereby concurrency has become an obstacle to local and State promotion of compact growth and the preservation of agricultural land and open space. Concurrency requirements have encouraged urban sprawl, the type of development that the growth management legislation was intended to discourage.

Subsequently, legislators studied other options for local governments to be able to promote urban infill and redevelopment. In 1993 the Environmental Land Management Study Committee (ELMS III) created new transportation concurrency options to encourage more efficient and sustainable urban development patterns, i.e. transportation concurrency exception areas (TCEA). The TCEA is a designation, which provides a tradeoff between transportation concurrency requirements, and local desires for urban infill, urban redevelopment, and downtown revitalization. The TCEA allows local governments to delineate a specific geographic area in their comprehensive plan and demonstrate that the area meets applicable standards, including the availability of urban transportation services to the designated area. Local governments must adopt policies in their comprehensive plan which specify programs to address transportation needs within the area and any effects on the Florida Intrastate Highway System (FIHS).

TABLE 5-14
INTERSECTIONS WHERE MORE THAN TEN MOTOR VEHICLE COLLISIONS OCCURRED IN THE YEAR 1994

INTERSECTION	NUMBER OF COLLISIONS
PALM BEACH LAKES BLVD. / OKEECHOBEE BLVD. (SR 704)	50
INTERSTATE-95 / PALM BEACH LAKES BLVD.	46
CONGRESS AVE. (SR 807) / PALM BEACH LAKES BLVD.	35
SPENCER DR / OKEECHOBEE BLVD. (SR 704)	34
CONGRESS AVE. (SR 807) / OKEECHOBEE BLVD. (SR 704)	32
OKEECHOBEE BLVD. (SR 807) / SOUTH DIXIE HWY.	30
AUSTRALIAN AVE. / PALM BEACH LAKES BLVD.	29
AUSTRALIAN AVE. / BELVEDERE RD.	29
45TH ST. / INTERSTATE-95	26
45TH ST. / BROADWAY	26
SOUTH DIXIE HWY. / BELVEDERE RD.	25
45TH ST. / CONGRESS AVE. (SR 807)	24
CORPORATE WAY / 45TH ST.	23
TAMARIND AVE. / PALM BEACH LAKES BLVD.	23
VILLAGE BLVD. / PALM BEACH LAKES BLVD.	23
25TH ST. / BROADWAY	21
VILLAGE BLVD. / 45TH ST.	21
FOREST. HILL BLVD. / SOUTH DIXIE HWY.	21
QUADRILLE BLVD. / NORTH OLIVE AVE.	20
SOUTH DIXIE HWY. / SOUTHERN BLVD. (SR 80)	20
CHILLINGWORTH DR / OKEECHOBEE BLVD. (SR 704)	20
INTERSTATE-95 / BELVEDERE RD.	20
GREENWOOD AVE. / 45TH ST.	20
PARKER AVE. / OKEECHOBEE BLVD. (SR 704)	20
PALM BEACH LAKES BLVD. / ROBBINS DR	20
NORTH DIXIE HWY. / PALM BEACH LAKES BLVD.	20
COMMUNITY DR / VILLAGE BLVD.	20
CHILLINGWORTH DR / CONGRESS AVE. (SR 807)	20
OKEECHOBEE BLVD. (SR 704) / SOUTH OLIVE AVE.	19
PALM BEACH LAKES BLVD. / PALM BEACH MALL WEST.	18
PARKER AVE. / SOUTHERN BLVD. (SR 80)	18
INTERSTATE-95 / SOUTHERN BLVD. (SR 80)	18
SPENCER DR / PALM BEACH LAKES BLVD.	16
TAMARIND AVE. / OKEECHOBEE BLVD. (SR 704)	16
FOREST. HILL BLVD. / GEORGIA AVE.	14
7TH ST. / TAMARIND AVE.	13

INTERSECTION	NUMBER OF COLLISIONS
SOUTH DIXIE HWY. / LAKEVIEW AVE.	13
BANYAN BLVD. / AUSTRALIAN AVE.	13
VILLAGE BLVD. / BRANDYWINE RD.	12
MILITARY TRL. (SR 809) / 45TH ST.	12
FERN ST. / SOUTH DIXIE HWY.	12
SOUTH DIXIE HWY. / NOTTINGHAM BLVD.	12
SOUTH OLIVE AVE. / LAKEVIEW AVE.	12
MERCER AVE. / BELVEDERE RD.	11
PALM BEACH LAKES BLVD. / PALM BEACH MALL	11
25TH ST. / TAMARIND AVE.	11
SOUTH DIXIE HWY. / EVERNIA ST.	10
FOREST. HILL BLVD. / INTERSTATE-95	10
FORUM WAY / PALM BEACH LAKES BLVD.	10
25TH ST. / AUSTRALIAN AVE.	10
SOUTH OLIVE AVE. / CLEMATIS ST.	10
LAKE AVE. / SUMMIT BLVD.	10
SOUTH OLIVE AVE. / FLAMINGO DR	10

SOURCE: Palm Beach County "Accident" Record Department, March 1996.

TABLE 5-15
WEST PALM BEACH COLLISION RATE TABLE -- MAJOR INTERSECTIONS -- 1996
(Rates based on collisions per million of entering motor vehicles)

COLLISION INTERSECTION	RATE
PALM BEACH LAKES BLVD./OKEECHOBEE BLVD.(SR 704)	2.708
INTERSTATE-95 / PALM BEACH LAKES BLVD.	2.161
CONGRESS AVE. (SR 807) / PALM BEACH LAKES BLVD.	1.731
SPENCER DR / OKEECHOBEE BLVD. (SR 704)	2.240
CONGRESS AVE. (SR 807) / OKEECHOBEE BLVD. (SR 704)	1.680
OKEECHOBEE BLVD. (SR 807) / SOUTH DIXIE HWY.	3.065
AUSTRALIAN AVE. / PALM BEACH LAKES BLVD.	1.551
AUSTRALIAN AVE. / BELVEDERE RD.	1.182
45TH ST. / INTERSTATE-95	1.236
45TH ST. / BROADWAY	1.396
SOUTH DIXIE HWY. / BELVEDERE RD.	1.578
45TH ST. / CONGRESS AVE. (SR 807)	1.205
CORPORATE WAY / 45TH ST.	0.995
TAMARIND AVE. / PALM BEACH LAKES BLVD.	1.747
VILLAGE BLVD. / PALM BEACH LAKES BLVD.	1.141
25TH ST. / BROADWAY	2.542
VILLAGE BLVD. / 45TH ST.	1.062

COLLISION INTERSECTION	RATE
FOREST. HILL BLVD. / SOUTH DIXIE HWY.	1.711
QUADRILLE BLVD. / NORTH OLIVE AVE.	3.414
SOUTH DIXIE HWY. / SOUTHERN BLVD. (SR 80)	1.260
CHILLINGWORTH DR / OKEECHOBEE BLVD. (SR 704)	1.082
INTERSTATE-95 / BELVEDERE RD.	1.164
GREENWOOD AVE. / 45TH ST.	1.163
PARKER AVE. / OKEECHOBEE BLVD. (SR 704)	1.598
PALM BEACH LAKES BLVD. / ROBBINS DR	0.925
NORTH DIXIE HWY. / PALM BEACH LAKES BLVD.	1.169
COMMUNITY DR / VILLAGE BLVD.	1.579
CHILLINGWORTH DR / CONGRESS AVE. (SR 807)	2.537
OKEECHOBEE BLVD. (SR 704) / SOUTH OLIVE AVE.	2.196
PALM BEACH LAKES BLVD. / PALM BEACH MALL WEST.	0.839
PARKER AVE. / SOUTHERN BLVD. (SR 80)	1.440
INTERSTATE-95 / SOUTHERN BLVD. (SR 80)	0.915
SPENCER DR / PALM BEACH LAKES BLVD.	1.048
TAMARIND AVE. / OKEECHOBEE BLVD. (SR 704)	1.454
FOREST. HILL BLVD. / GEORGIA AVE.	2.113
7TH ST. / TAMARIND AVE.	2.985
SOUTH DIXIE HWY. / LAKEVIEW AVE.	1.979
BANYAN BLVD. / AUSTRALIAN AVE.	1.164
VILLAGE BLVD. / BRANDYWINE RD.	1.370
MILITARY TRL (SR 809) / 45TH ST.	0.564
FERN ST. / SOUTH DIXIE HWY.	1.934
SOUTH DIXIE HWY. / NOTTINGHAM BLVD.	1.538
SOUTH OLIVE AVE. / LAKEVIEW AVE.	3.540
MERCER AVE. / BELVEDERE RD.	0.585
PALM BEACH LAKES BLVD. / PALM BEACH MALL	0.514
25TH ST. / TAMARIND AVE.	1.840
SOUTH DIXIE HWY. / EVERNIA ST.	1.118
FOREST. HILL BLVD. / INTERSTATE-95	0.641
FORUM WAY / PALM BEACH LAKES BLVD.	0.816
25TH ST. / AUSTRALIAN AVE.	0.833
SOUTH OLIVE AVE. / CLEMATIS ST.	1.751
LAKE AVE. / SUMMIT BLVD.	0.000
SOUTH OLIVE AVE. / FLAMINGO DR	2.668

SOURCE: City of West Palm Beach Engineering Division, March 1997.

The City of West Palm Beach has designated a TCEA for the purposes of downtown revitalization and urban redevelopment. This area, called the "Downtown," is bounded to the north by Palm Beach Lakes Boulevard; to the east by the Intracoastal Waterway; to the south by Okeechobee Boulevard, including Howard Park and the CityPlace Development; and to the west by the CSX Railroad between Palm Beach Lakes Boulevard and Banyan Boulevard, and by

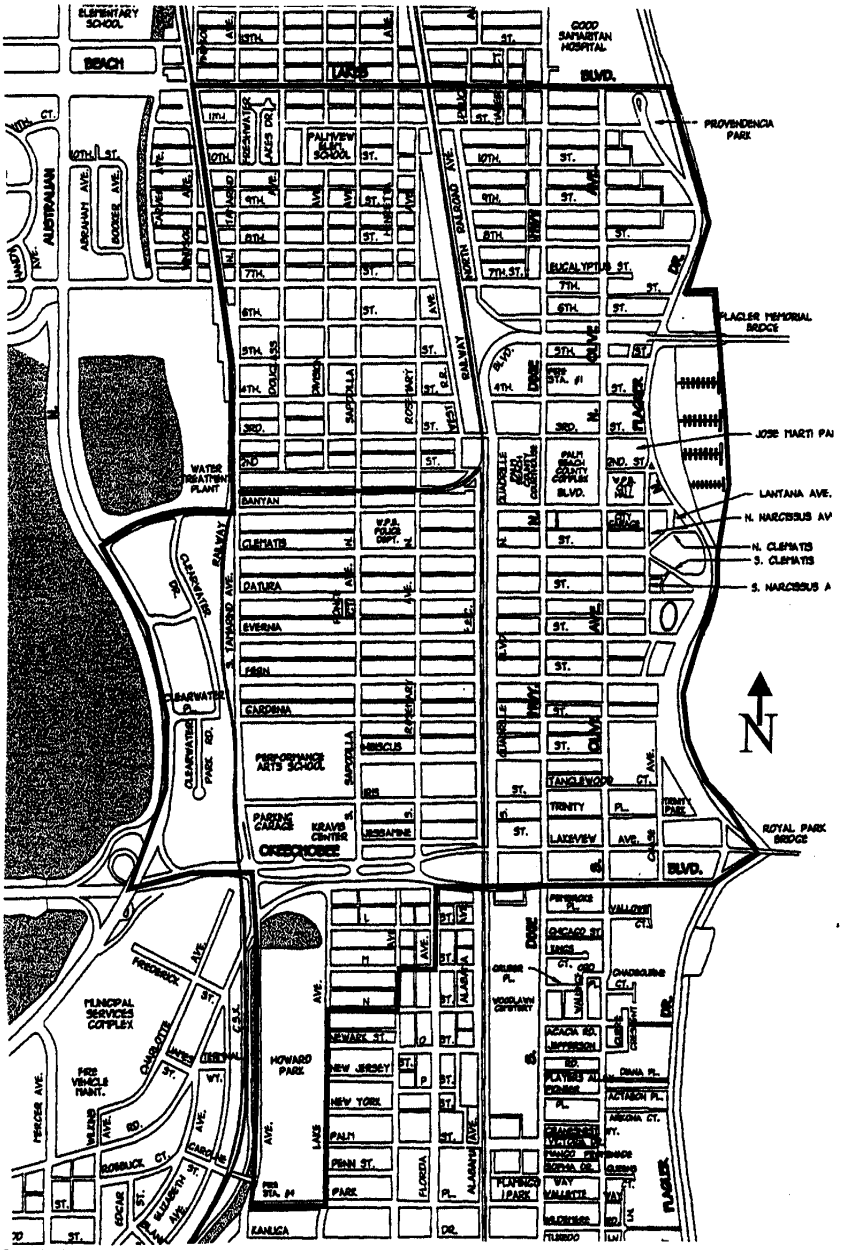
Australian Avenue between Banyan Boulevard and Okeechobee Boulevard. Within the Downtown, there are no transportation concurrency requirements for development. The City will pursue the Goals, Objectives, and Policies established in the Motor Vehicle Circulation Section which specify the programs and monitoring system to address the transportation needs within the Downtown. A map of the TCEA boundaries is depicted in Figure 5-17.

The City of West Palm Beach recently adopted the Downtown Master Plan that replaced the City Center sections of both the Zoning Code and the Comprehensive Plan. The City is also partnering with private developers for a redevelopment project in Downtown, named CityPlace. CityPlace is a multi-use project situated on 77 acres between the Kravis Center and Clematis Street. The project includes commercial, residential, cultural and entertainment facilities that are designed using the principles of New Urbanism. These principles include mixed uses, pedestrian scale, public realm, and other urban design principles. The street network within the project will maintain the existing grid pattern within the Downtown as much as possible. In addition, on-street parking and traffic calming will be utilized. Within the project, Palm Beach County is also proposing a convention center. The project's anticipated completion date is January 2000.

In Palm Beach County, in addition to the TCEA, local governments are permitted to request a Constrained Roadway at a Lower Level of Service (CRALLS) designation for particular street segments within their jurisdictions that exceed the adopted level of service [for motor vehicles]. The CRALLS designation allows for development or redevelopment of land directly affected by the constraints imposed by adhering to a policy of not exceeding adopted levels of service for motor vehicles on a specific street segment. A street given a CRALLS designation is permitted to operate at a lower level of service [for motor vehicles], as provided by Palm Beach County, to allow infill or other development to continue. For example, in 1996 Palm Beach County initiated a CRALLS designation for a section of 45th Street from Village Boulevard east to Australian Avenue. This section of 45th Street [a Palm Beach County street] was continually operating below LOS D for motor vehicle users [Palm Beach County LOS Standard]. In addition, several vacant tracts of land within the City and the Eastward Ho! area is directly affected by the transportation concurrency rules that prohibit their development. It seems obvious to the City that the transportation concurrency rules are a direct conflict with the infill and redevelopment goals of the Eastward Ho! Initiative and that a TCEA for the Eastward Ho! area is necessary to address this challenge.

The City is also requesting a CRALLS designation for Palm Beach Lakes Boulevard, between Tamarind Avenue and Village Boulevard. The CRALLS is anticipated to support redevelopment of the Palm Beach Mall and the surrounding properties.

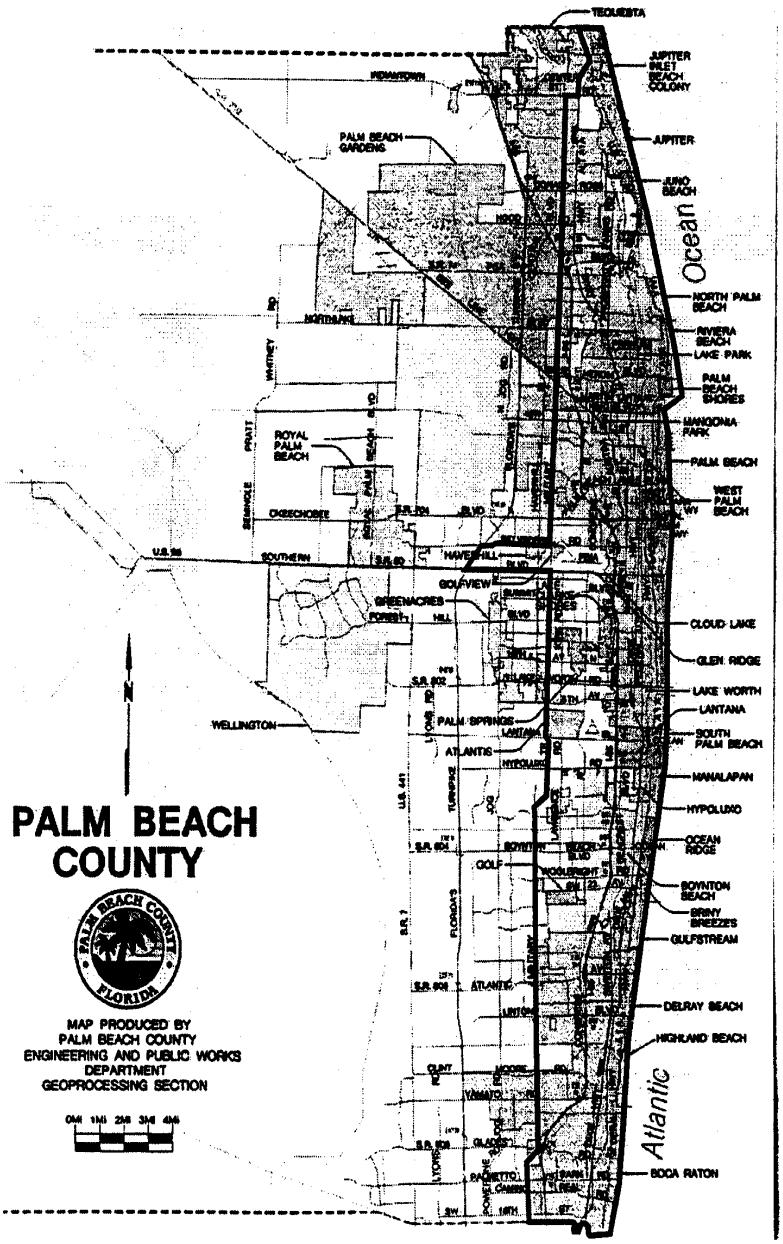
FIGURE 5-17
TRANSPORTATION CONCURRENCY EXCEPTION AREA (TCEA)
FOR DOWNTOWN WEST PALM BEACH



NOT TO SCALE

Source: City of West Palm Beach, Planning, Zoning and Building Department, December 1998.

FIGURE 5-18
POTENTIAL EASTWARD HO! AREA
TRANSPORTATION CONCURRENCY EXCEPTION AREA (TCEA)



Source: City of West Palm Beach, Planning, Zoning and Building Department and the Department of Community Affairs, January 1999.

I. Parking Facilities

The City's Downtown provides significant automobile parking facilities through the use of public and private automobile parking structures and surface parking lots. Figure 5-19 shows the location of parking facilities that provide 50 or more parking spaces. As of July 1997, there are a total of 12,777 parking spaces in Downtown West Palm Beach. Of those, private parking facilities account for the majority of spaces with 9,165 spaces. The private parking spaces are primarily long-term. Public parking facilities constitute the remaining 3,264 spaces, which are for short and/or long-term parking. There are also 1,215 on-street parking spaces designated as short-term through use of meters or limited to two-hour periods.

Future focus on automobile parking will be placed on proper management in the Downtown and throughout the City. Parking supply and demand relate to automobile dependency as much as the other pro-automobile measures discussed earlier. Perceived "free" parking and abundant parking facilities add to the auto dependency. The Transportation Division is in the process of revising the City's parking code to reflect the changes in parking supply and demand and the issue of automobile dependency.

The automobile parking supply is currently dictated by minimum requirements in the Zoning Code, which are based upon national averages. This has produced an oversupply of parking for some uses and an under supply of parking for other uses. The Division is developing several changes to the parking code. The proposed changes include establishing minimum and maximum parking requirements; promoting transportation demand management, and also establishing design guidelines to promote better designs of parking lots. In addition, the Division is examining the beneficial effects that the design guidelines will have on site design. In order to promote better designs in the future, parking regulations will be developed to promote transportation demand management such as ridesharing, car-pooling, and other programs such as cash-out parking and increased transit usage.

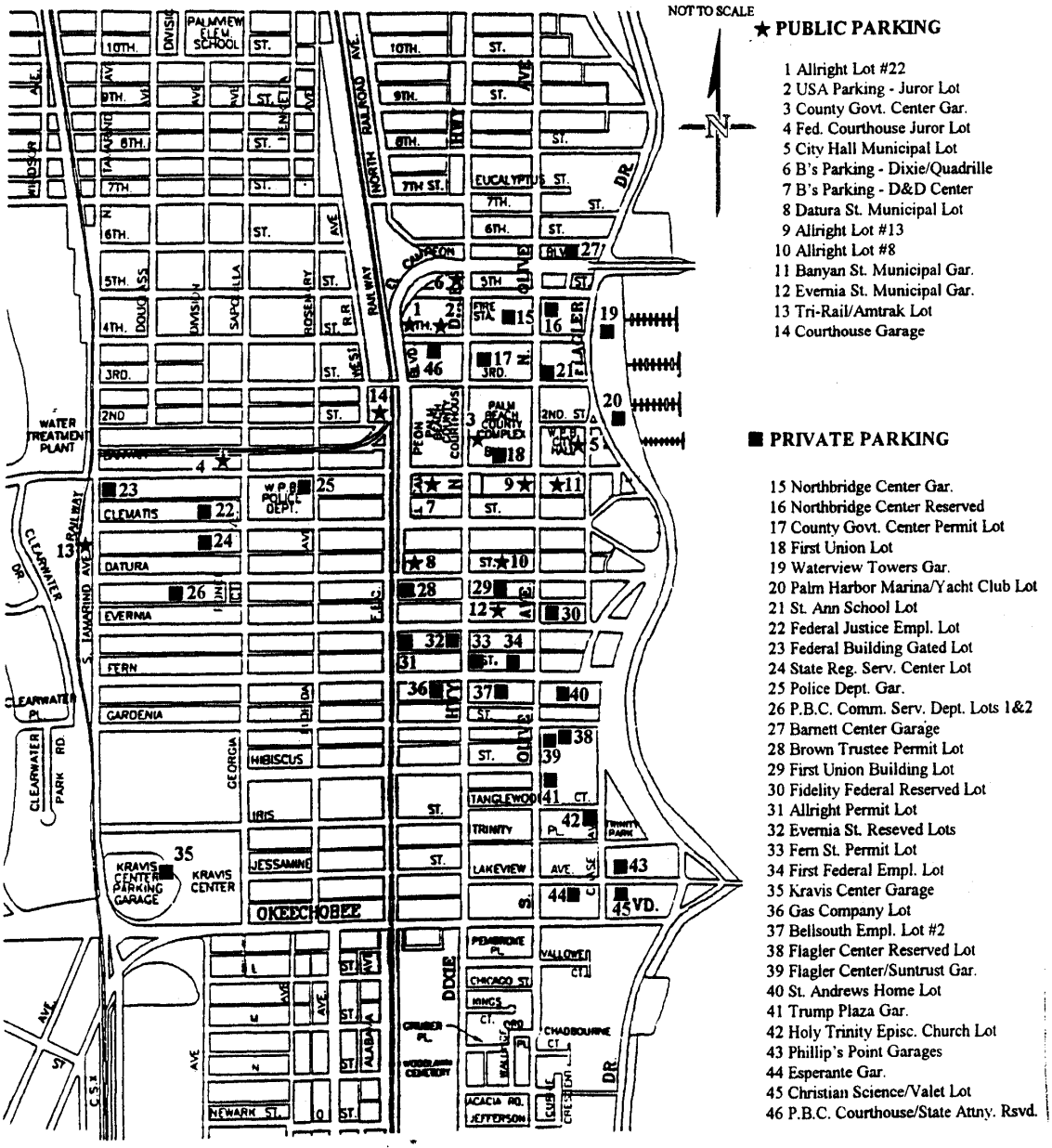
J. Hurricane Evacuation Routes

West Palm Beach is a coastal community with the Intracoastal Waterway along its entire eastern boundary. Therefore, hurricane evacuation is of great importance. For evacuation purposes there are no designated routes since the City is not a barrier island and has immediate access to I-95, however, primary routes are indicated on Figure 5-20. Any street within the City which leads residents west and/or north is considered an evacuation route. Specifically, there are six main arterials that lead to I-95. These include Forest Hill Boulevard, Southern Boulevard, Belvedere Road, Okeechobee Boulevard, Palm Beach Lakes Boulevard and 45th Street. However, any northern route may be utilized.

The Emergency Management Division of the City, County and State are refocusing their attention on hurricane survival. The current thought is that the highway system would not be able to handle the numbers of automobiles on the highway for a mass evacuation, particularly when one considers the fact that the number of lanes leading to I-95 greatly exceeds the number of lanes on I-95. Instead, they recommend those that are adequately inland stock their houses with the necessary survival supplies and secure their homes and belongings for high velocity winds. Those that are within the coastal areas and must evacuate should seek shelter inland

wherever possible. Please refer to the Coastal Management Element or contact the local emergency management division for further information.

FIGURE 5-19
LOCATION OF SIGNIFICANT MOTOR VEHICLE PARKING FACILITIES
IN THE CITY OF WEST PALM BEACH



Source: Downtown West Palm Beach Parking STUDY, David Plummer and Associates, May 1997.

K. Concurrency Management

In October 1990, the City adopted a concurrency management system to ensure the provision of public facilities were available concurrent with development. The intent of the system is to provide:

1. A monitoring system which enables the City to determine whether it is adhering to the adopted LOS standards and proposed schedule of capital improvements.
2. A regulating program that ensures each public facility, including streets, is available to serve the public concurrent with the impacts of development on those facilities.

With respect to concurrency management on streets within West Palm Beach, there are two situations:

1. Non-city streets, i.e., under the jurisdiction of Palm Beach County or the Florida Department of Transportation.
2. City-maintained streets.

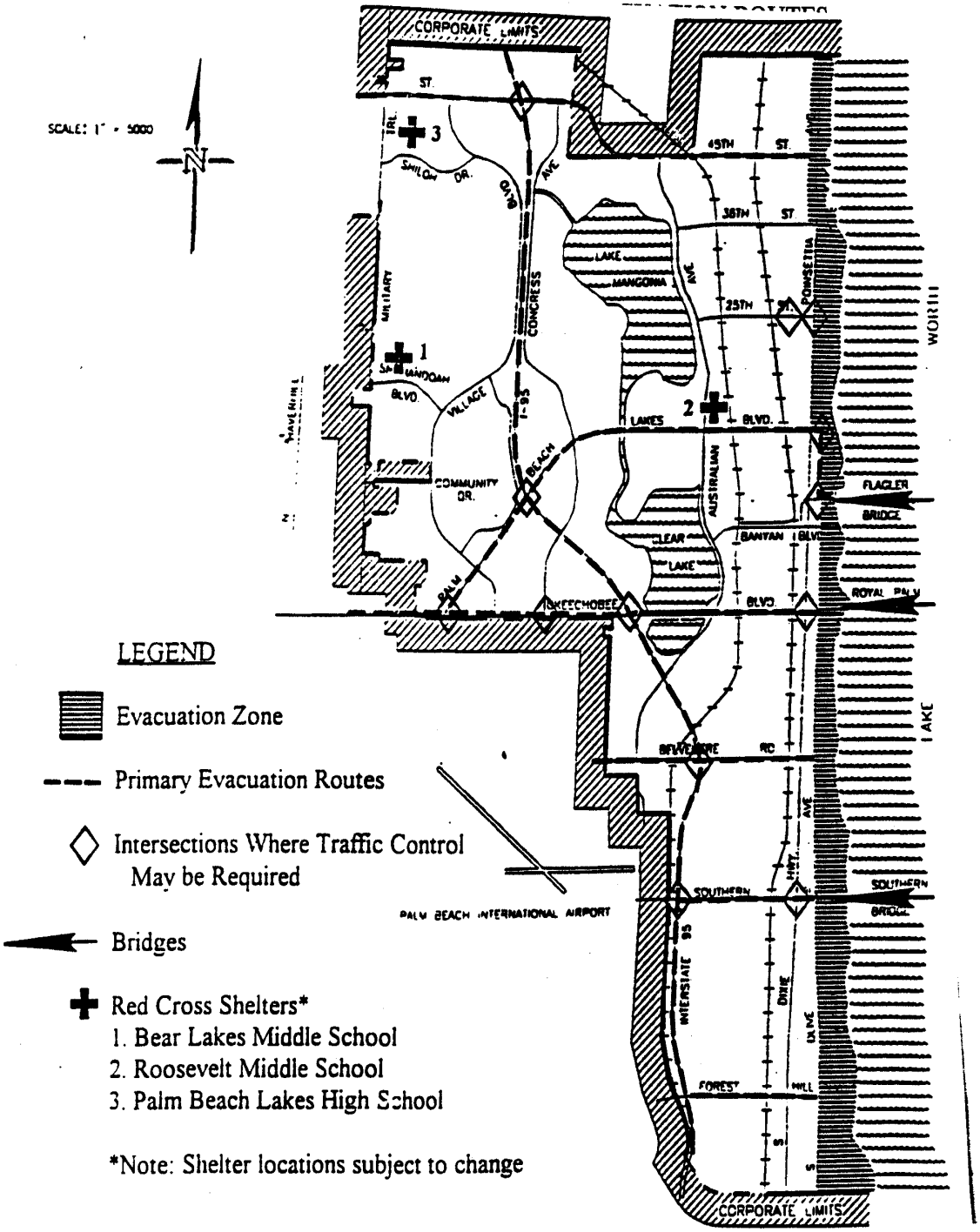
For non-city streets, the County's Traffic Performance Standards Ordinance (TPSO) imposes certain LOS standards on developments within the City. If a development is subject to the County's TPSO, the project must submit written documents to the Palm Beach County Engineering Department evidencing that the project complies with the TPSO requirements. In addition, a concurrency determination by the Palm Beach County Engineering Department is required if a proposed project is projected to generate more than 1,000 vehicle trips per day. In this case, a traffic study may be required.

For City streets, the Transportation Division analyzes streets where the motor vehicle volume to motor vehicle capacity ratio is more than 0.9 and less than 0.6, where capacity is a function of the level of service E. The analysis involves determining whether it is only a peak hour occurrence, whether the volumes are distributed over the entire day, and also determine acceptable actions to address the situation. This does not automatically justify street expansion, but may be used as an indicator for other options.

The Palm Beach International Airport (PBIA, also referred to as the "Airport") and the Port of Palm Beach (also referred to as the "Port") are both located just outside the City limits of West Palm Beach (Figure 5-21). PBIA is located in an unincorporated area of Palm Beach County, and the Port of Palm Beach is located in the City of Riviera Beach to the north. The Palm Beach County Board of County Commissioners administers PBIA and the Port District Commission administers the Port; therefore, the City has no jurisdiction over either operation. However, it is in the City's best interest to influence the development of these facilities, coordinate the City's Comprehensive Plan with their master plans and address their effects on the City of West Palm Beach and its residents.

The Airport is located immediately west of the City of West Palm Beach and serves primarily Palm Beach County, Martin County and some portions of Broward County. The Airport property encompasses 1,489 acres that is generally bounded by Belvedere Road, I-95, Southern Boulevard (State Road 80), and Military Trail.

FIGURE 5-20



Source: City of West Palm Beach, Planning, Zoning and Building Department, July 1997.

X. PORTS & AVIATION

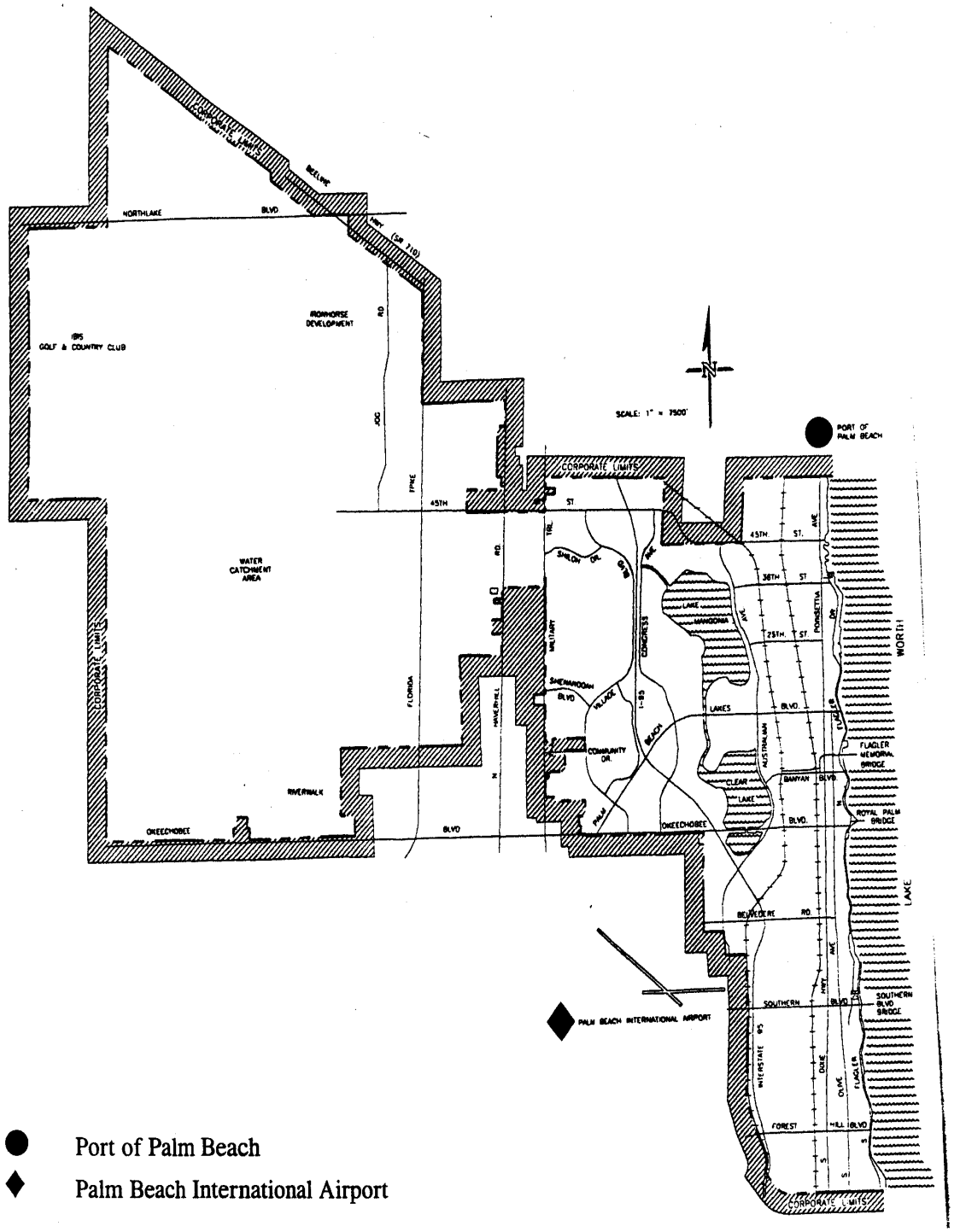
The Palm Beach International Airport (PBIA, also referred to as the "Airport") and the Port of Palm Beach (also referred to as the "Port") are both located just outside the City limits of West Palm Beach (Figure 5-21). PBIA is located in an unincorporated area of Palm Beach County, and the Port of Palm Beach is located in the City of Riviera Beach to the north. The Palm Beach County Board of County Commissioners administers PBIA and the Port District Commission administers the Port; therefore, the City has no jurisdiction over either operation. However, it is in the City's best interest to influence the development of these facilities, coordinate the City's Comprehensive Plan with their master plans and address their effects on the City of West Palm Beach and its residents.

The Airport is located immediately west of the City of West Palm Beach and serves primarily Palm Beach County, Martin County, and some portions of Broward County. The Airport property encompasses 1,489 acres that is generally bounded by Belvedere Road, I-95, Southern Boulevard (State Road 80), and Military Trail.

Originally named Morrison Field, the Airport opened in 1936. From 1940 to 1947 and from 1952 to 1961, the Airport was leased to the U.S. Army as a base during World War II and the Korean War. During those years, the Airport contributed substantially to stabilizing the local economy. Palm Beach County regained full administrative control of PBIA in 1961. In December 1966, construction of a new passenger terminal was completed. In 1975, a smaller passenger terminal for Delta Airlines was completed. The first phase of a new terminal building for PBIA was completed in October 1988. The new terminal building, the Captain McCampbell Terminal Building, named after a World War II flying ace, is described in the Existing Facilities section. In 199, the Airport served approximately 2.5 million enplaning passengers (boarding and connecting flight passengers).

The Port District was created in 1915 by the Florida Legislature and includes the area from the southern point of Juno Beach, extending south along the ocean to Southern Boulevard (SR 80) in West Palm Beach, with the western boundary extending to Lake Okeechobee. The Port District includes about one-half of Palm Beach County, or approximately 1,000 square miles. A number of municipalities and a large area of unincorporated lands lie within the District, as shown on the map on Figure 5-8. About half of Palm Beach County's population lives within the District. The Port of Palm Beach, located in the City of Riviera Beach, lies approximately 850 feet north of the City of West Palm Beach Corporate Limits and abuts Lake Worth (Intracoastal Waterway).

FIGURE 5-21
LOCATION OF PBIA AND PORT OF PALM BEACH

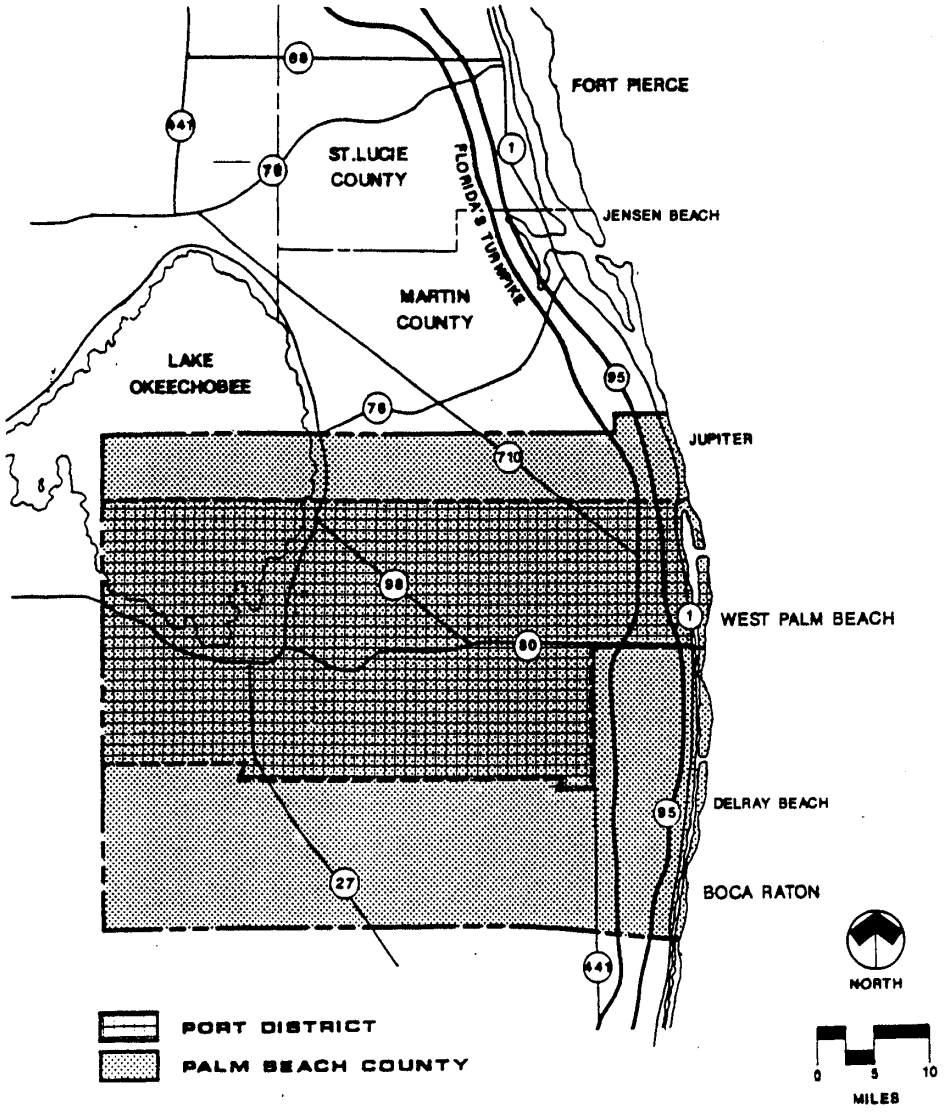


● Port of Palm Beach

♦ Palm Beach International Airport

Source: City of West Palm Beach, Planning, Zoning and Building Department, July 1997.

FIGURE 5-22
PORT DISTRICT



Source: Port of Palm Beach Comprehensive Plan

A. Palm Beach International Airport

1. Existing Facilities

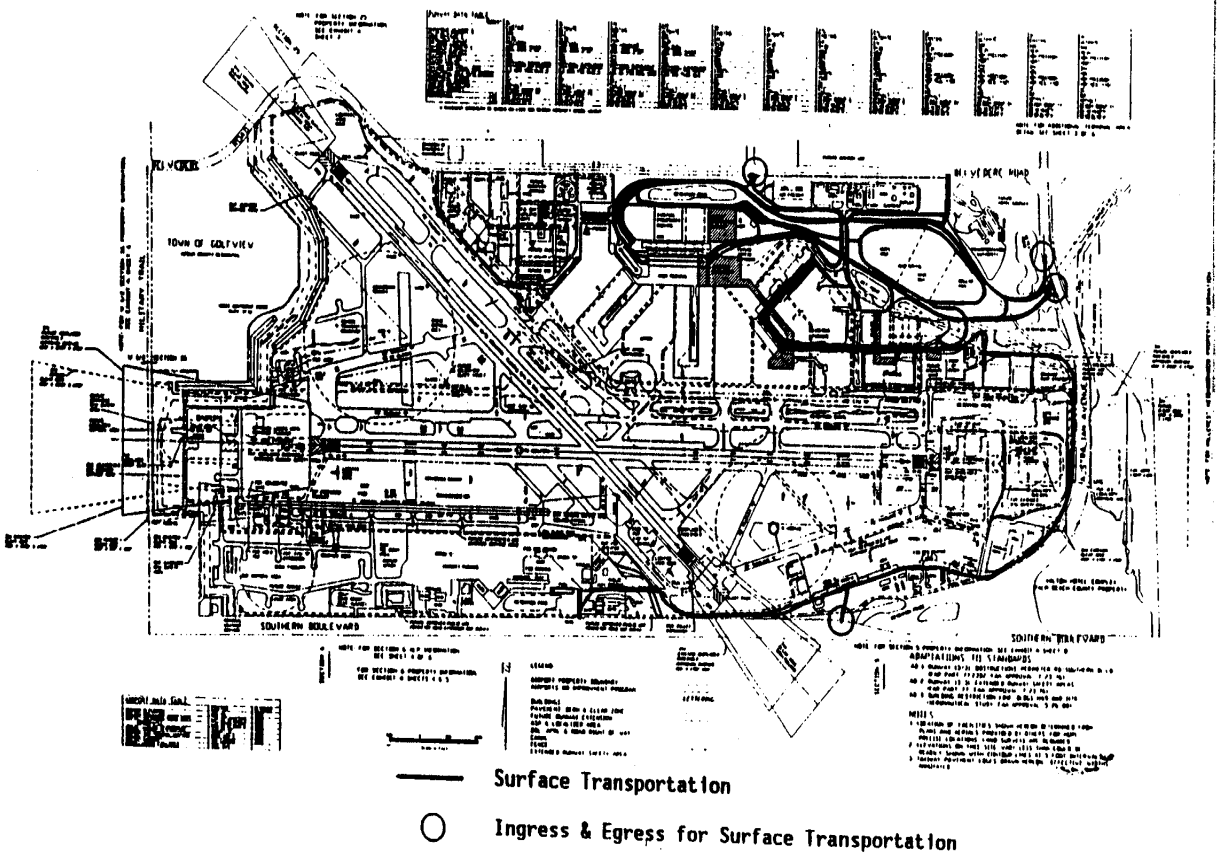
The Palm Beach County Department of Airports (PBCDOA) is responsible for operating PBIA as well as three other general aviation airports in the County. In 1990, the Airport served approximately 5.0 million passengers and 25 airlines (10 major/national, 10 regional/commuter and five foreign carriers).

PBIA's new terminal building, Phase One, was completed in October 1988. Phase One includes: a new centralized, two-level terminal encompassing approximately 560,000 square feet, two pedestrian tubes directly connecting the building with public parking areas, and two second-level concourses accommodating 24 aircraft gates plus commuter and international arrival facilities. The new terminal has vertically-separated enplane/deplane roadways with ticketing/concourse facilities in the upper level, and baggage claim/pick-up facilities on the lower level. Over 2,300 on-grade automobile parking spaces and a 1,000-space automobile parking deck are provided. New aircraft taxiway and apron areas to accommodate the new terminal facilities have been constructed.

The Airport is also proposing to construct a runway extension for the primary runway 9L-27R. The proposed extension is approximately 1,200 feet in length and, if it goes ahead, it will handle larger cargo and transcontinental/international flights. The Airport will also be designated as an overflow airport for the Ft. Lauderdale Airport. As of November 1997, the Federal Aviation Administration (FAA) determined that the runway extension did not constitute a significant environmental impact and subsequently did not require an environmental impact statement. This decision was based upon the analysis provided in the Preliminary Draft Environmental Impact Statement (PDEIS). The Airport prepared an environmental assessment (EA) proposed completed in spring 1998. On April 23, the FAA made the determination that the EA did not constitute "a significant impact." (See Figure 5-23 for the location of existing facilities on the circulation map and Figure 5-24 for the location of clear zones). There are no obstructions located in West Palm Beach. The PBCDOA intends to expand when the PBIA reaches certain levels of service for airline passengers, based on increases in annual enplanements. As each projected level is reached, the Airport's intent is that the facilities be expanded to meet demand. This may or may not occur depending on what happens with a growing number of stakeholders that feel that the Airport and its negative effects on quality of life around it are growing excessively.

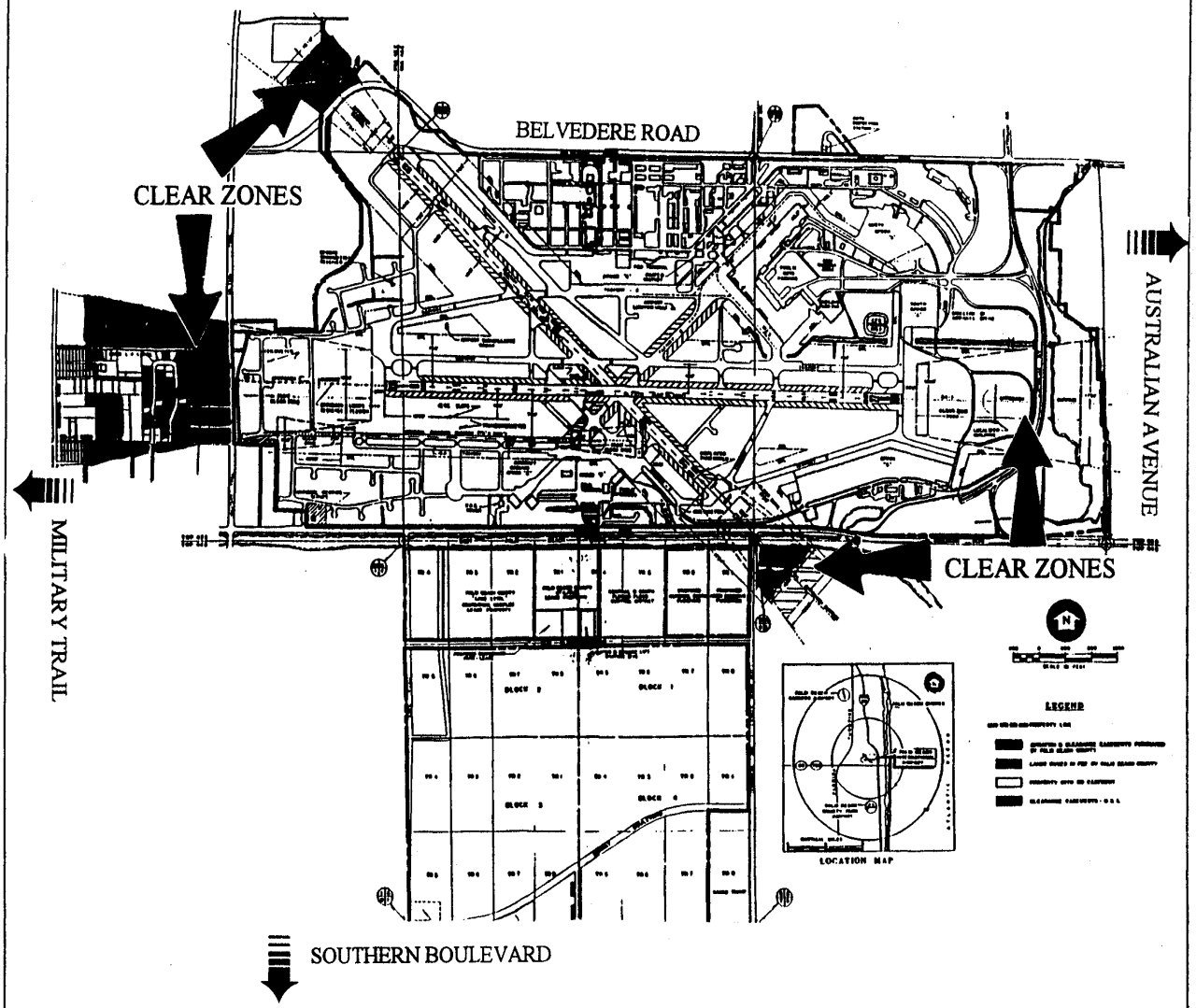
Other aviation-related facilities include a 43,000 square foot air cargo facility, a fuel farm, four general aviation fixed-base operators, two flight kitchens, airport maintenance facilities, offices, and three on-site rental car operations, ready/return spaces and storage spaces. Nonaviation-related facilities located on Airport property include a County water treatment plant, miscellaneous County agencies, a bus maintenance facility and a restaurant. The airfield consists of three runways and associated taxiways. Major air carriers utilize the main 7,991 lineal-foot east/west runway (proposed to be extended to 10,000 feet) and the 6,930 lineal-foot crosswind runway. A third, 3,152 lineal-foot general aviation runway is located in an east/west direction. Other airfield located facilities include a Crash-Fire-Rescue building and an FAA air traffic control tower.

FIGURE 5-23
PBIA EXISTING CIRCULATION



Source: Palm Beach International Airport, Landside Master Plan, and December 1993.

FIGURE 5-24
LOCATION OF CLEAR ZONES



Source: Palm Beach International Airport, Landside Master Plan, December 1993.

2. Existing and Future Airport Use

Over the past twenty years, passenger activity at PBIA has grown at an average annual rate of 9.4 percent, nearly twice as fast as that for the United States as a whole. The growth rate over the next 20 years is not expected to be as dramatic. (Enplanements are the number of revenue passengers boarding aircraft, including originating and connecting passengers.) PBIA's enplanement activity will increase as Palm Beach County's population and economic diversification continues to expand. Total PBIA enplanements are expected to reach 3,939,000 in 2001 and increase to 4,817,000 by 2010, an average annual increase of 4.0 percent between 2001 and 2010. This information is based upon information provided by the PBCDOA. The figures are based upon concurrent expansion of Airport facilities and the ultimate effect of the Interconnect, a connection between I-95 and the Airport. The forecasts will not come true if the Airport activity and growth are capped and if the Interconnect is not built.

3. Current Plans to Meet Future Airport Use

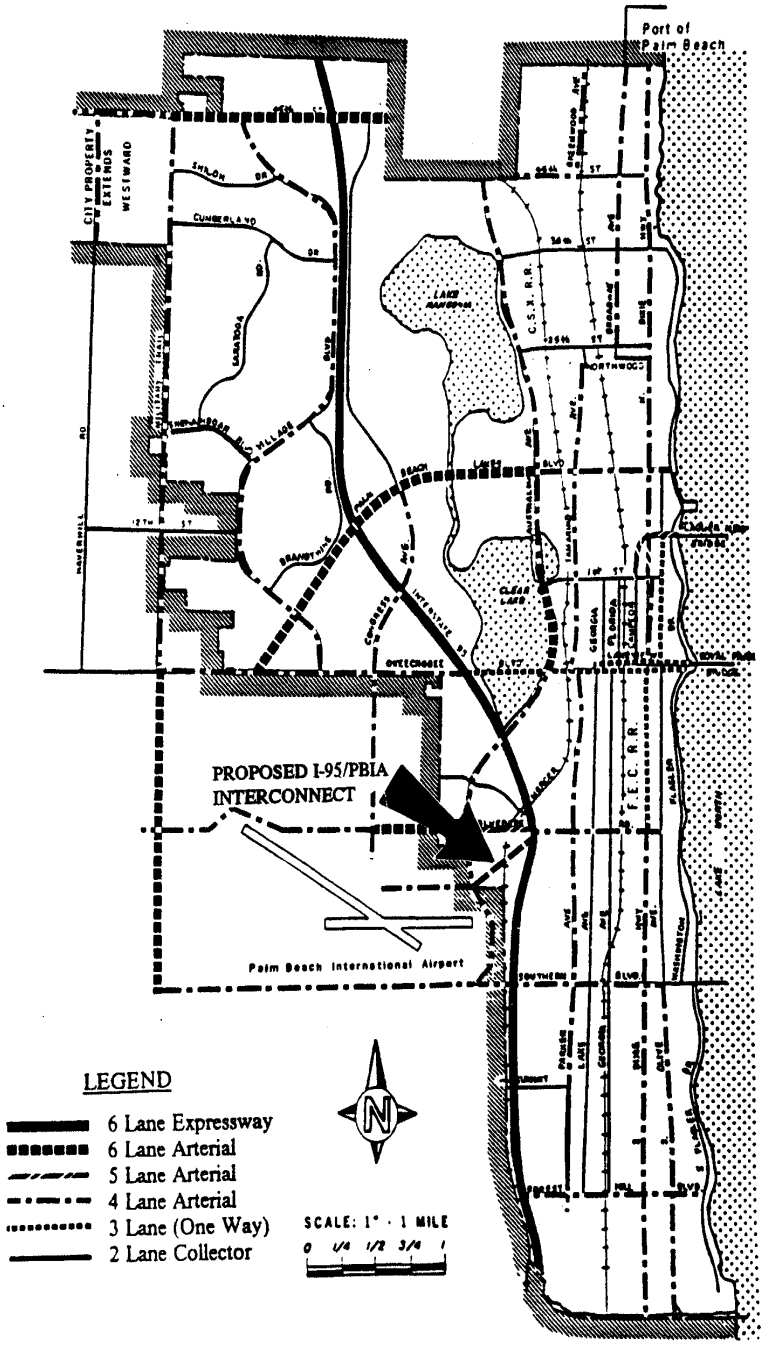
In order to meet the Airport's current and projected use, the County completed an extensive review and update of its long-term facility plans. To establish future Airport use, the airfield was determined as the ultimate constraint. Based on this information, maximum passenger projections were calculated from existing and anticipated aircraft flight constraints. A maximum design level of 6.2 million enplanements per year was established. This projection was translated into a terminal, airside and landside program requirements. The results indicated a maximum terminal size of approximately 840,000 square feet with 46 air carrier gates and 8,000 new parking spaces would be needed to match the 6.2 million enplanements per year.

These projections indicated a need for a new terminal building to be built in a series of phases. A new terminal building was completed in October 1988. It was designed to accommodate projected passenger activity through 1990, as well as modifications to the automobile parking and access (e.g., Airport infrastructure) designed to accommodate Airport use well beyond the year 1990. Future expansions of the facilities are planned for each time a targeted level of yearly passenger enplanements is reached.

As mentioned previously, the Airport is proposing the extension of Runway 9L/27R to 10,000 feet in length. This will allow PBIA to receive larger aircraft, passenger and freight. As of January 1997, the PBCDOA and the FAA, in conjunction with the DOAs consultants (Greiner and Associates, Inc.), have completed the PDEIS and the FAA determined that the extension requires only an EA. The EA is also completed. The FAA will ultimately determine whether the extension constitutes a significant environmental impact. As of December 1997, the PBCDOA selected CH2M Hill to design and construct the extension if the FAA approves it.

In addition, PBIA has reevaluated the future use of the Airport. The PBCDOA has determined that the original projections for Airport use were higher than actual use. Therefore, the facility expansions have been revised to reflect lower passenger figures. This is being accomplished through a substantial deviation to the PBIA Development of Regional Impact (DRI) procedure. As of March 1997, PBIA and Treasure Coast Regional Planning Council (TCRPC) were establishing the requirements of the substantial deviation determinations. The changes to the DRI may even require an entirely new DRI.

FIGURE 5-25
EXISTING MOTOR VEHICLE CIRCULATION AROUND PBIA
AND PROPOSED INTERSTATE 95 INTERCONNECT



Source: City of West Palm Beach, Planning, Zoning and Building Department, July 1997.

Other Department of Airport projects include Airport System expansions such as the development of the third general aviation airport, noise-related expenditures, and ongoing renewal and replacement expenditures. The new North County General Aviation Airport, which opened in April 1994, is located in northern Palm Beach County, west of the intersection of Beeline Highway and PGA Boulevard. It was built to provide relief for the PBIA general aviation traffic. General aviation traffic is encouraged at the North County General Aviation Airport, while major commercial air carrier passenger flights are currently banned there. The new general aviation airport is anticipated to not only better serve the area's general aviation needs but to cause PBIA to serve primarily as a commercial facility.

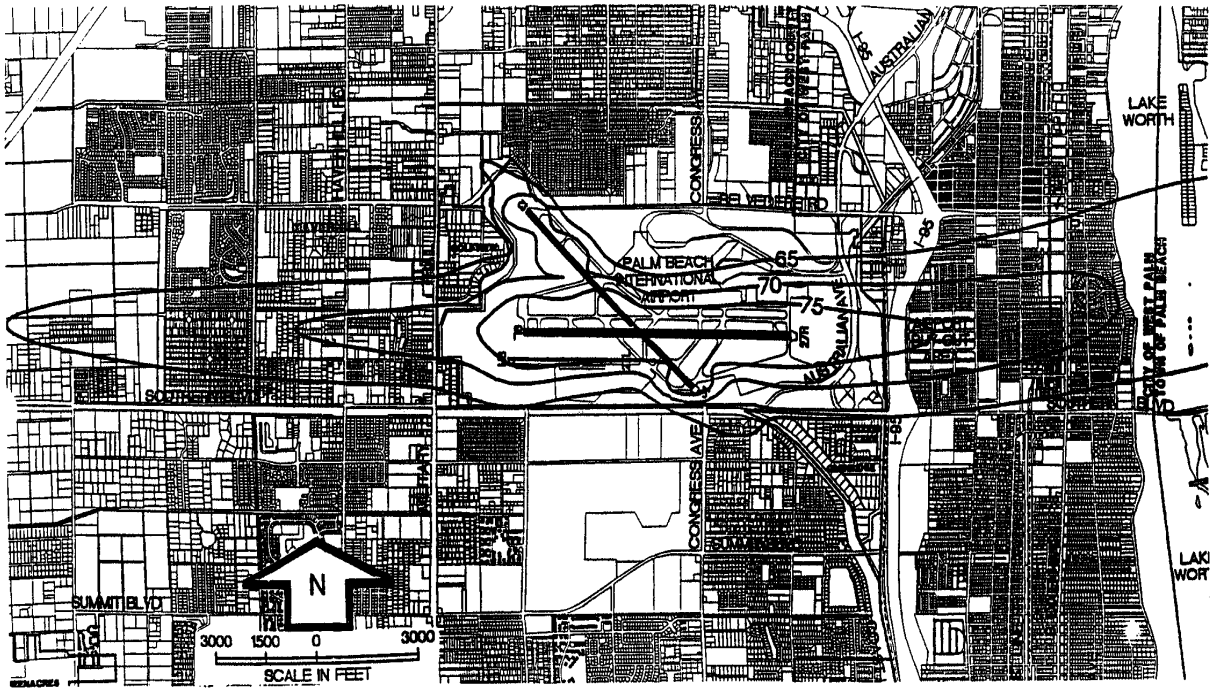
4. Transportation Effects

Motor vehicle transportation effects from the Airport expansion will be on Belvedere Road, Congress Avenue, Australian Avenue, Southern Boulevard, and the proposed PBIA/I-95 Interchange, should it ever be built (Figure 5-25 for "Existing Motor Vehicle Circulation Around PBIA"). Points of ingress and egress for motor vehicles to PBIA include a four-lane loop road that originates and terminates at Australian Avenue east of the terminal. There are also two vehicle access points into the inbound terminal loop from Belvedere Road, at Florida Mango Road and Congress Avenue.

A direct connection from I-95 to PBIA is proposed by FDOT as a long-range highway expansion and is still in the review and approval phase. This project would utilize approximately 30 acres east of I-95 in the City of West Palm Beach's Hillcrest Neighborhood. The FDOT has purchased a total of approximately 230 residences by eminent domain. Approximately 115 of those residences are included in the nearly 360 homes to be acquired by the County as part of its Noise Abatement Program as described in the Residential Noise Impacts Section. The City Commission has continually expressed its concern over the project. In addition, several neighborhood groups, the City's Airport Advisory Committee and the Palm Beach Civic Association have expressed their objection to the project.

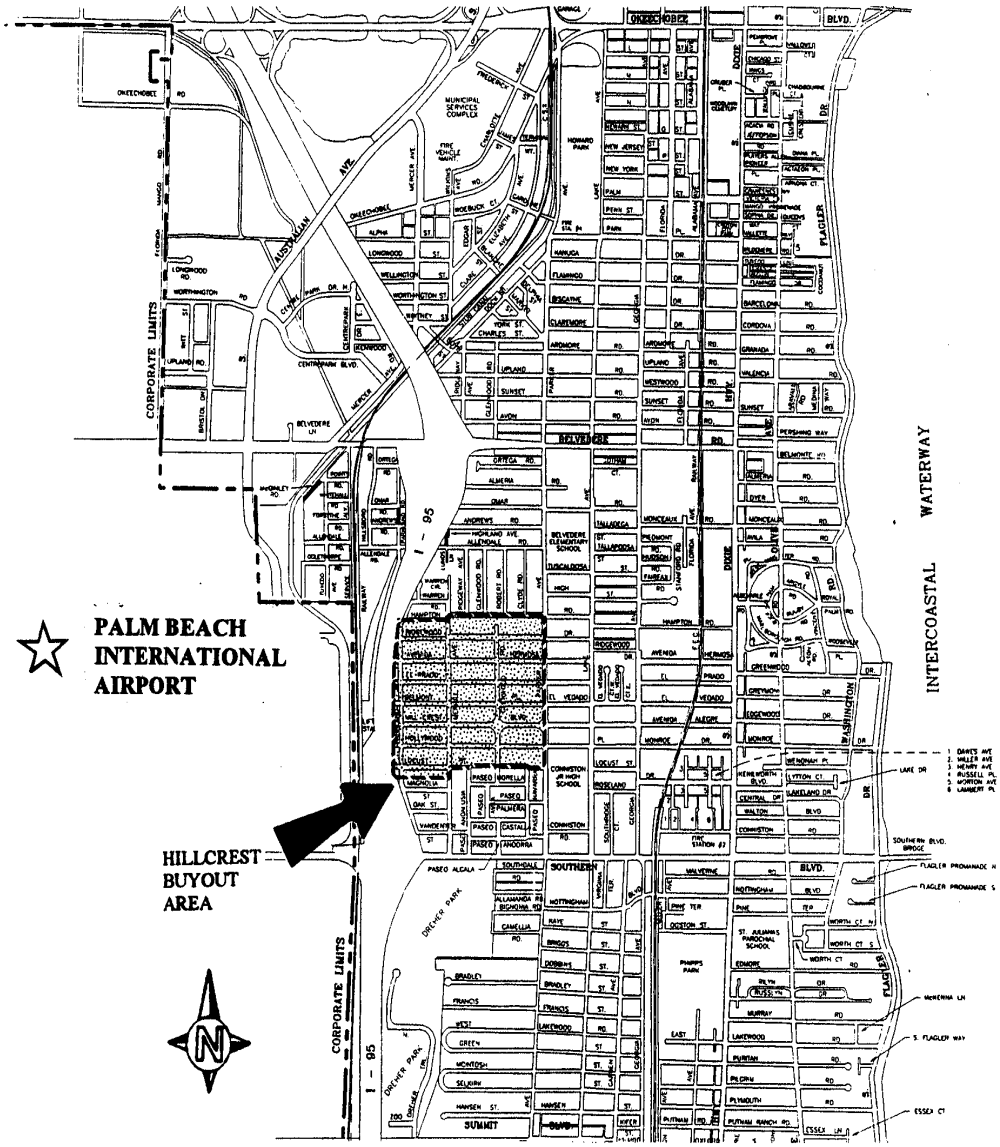
The Tri-County Commuter Rail discussed in the Public Transit Section, and the proposed High Speed Rail will most likely not affect airport passenger traffic greatly. However, a Tri-Rail station, located near the Airport north of Belvedere Road on Mercer Avenue, provides access to the Airport. PalmTran provides a shuttle service from this station to the Airport. Public transit to the Airport could be increased dramatically if the rail line were extended to the terminal building.

FIGURE 5-26
AIRCRAFT NOISE LEVEL CONTOUR MAP



Note: Noise Contour Lines indicate decibel levels.
Source: Palm Beach International Airport, Part 150 Noise Study Update, 1993.

FIGURE 5-27
HILLCREST BUYOUT AREA



Source: City of West Palm Beach, Planning, Zoning and Building Department, July 1997.

5. Effects of Airport Noise in Residential Areas

The Department of Airports has a Noise Abatement and Mitigation Program for those areas greatly affected by air traffic noise. In residential areas with noise levels above 75 Ldn (average decibel noise level day and night), the Department of Airports is acquiring homes, and in areas with a noise level between 70 and 75 Ldn, the Department of Airports plans to insulate homes from noise and purchase air rights. (See noise level map on Figure 5-26.) The Department of Airports has acquired 358 homes (5 remaining) in the Hillcrest neighborhood (Buyout Area). The acquisition area boundary has since been extended to Hampton Road, where there are still some existing homes, but most are in the process of demolition. The City has also taken action to close the streets within the Hillcrest Buyout Area in an effort to reduce trespassing and other illegal activities occurring on the now vacant properties. Palm Beach County has issued a request for proposals (RFP) for a golf course on the Hillcrest Buyout property. The County received one entry for the RFP. The development group, Hillcrest/Frankel Golf Partners, Inc., has been selected and began negotiations with Palm Beach County regarding a lease for the buyout area.

6. Natural Resources

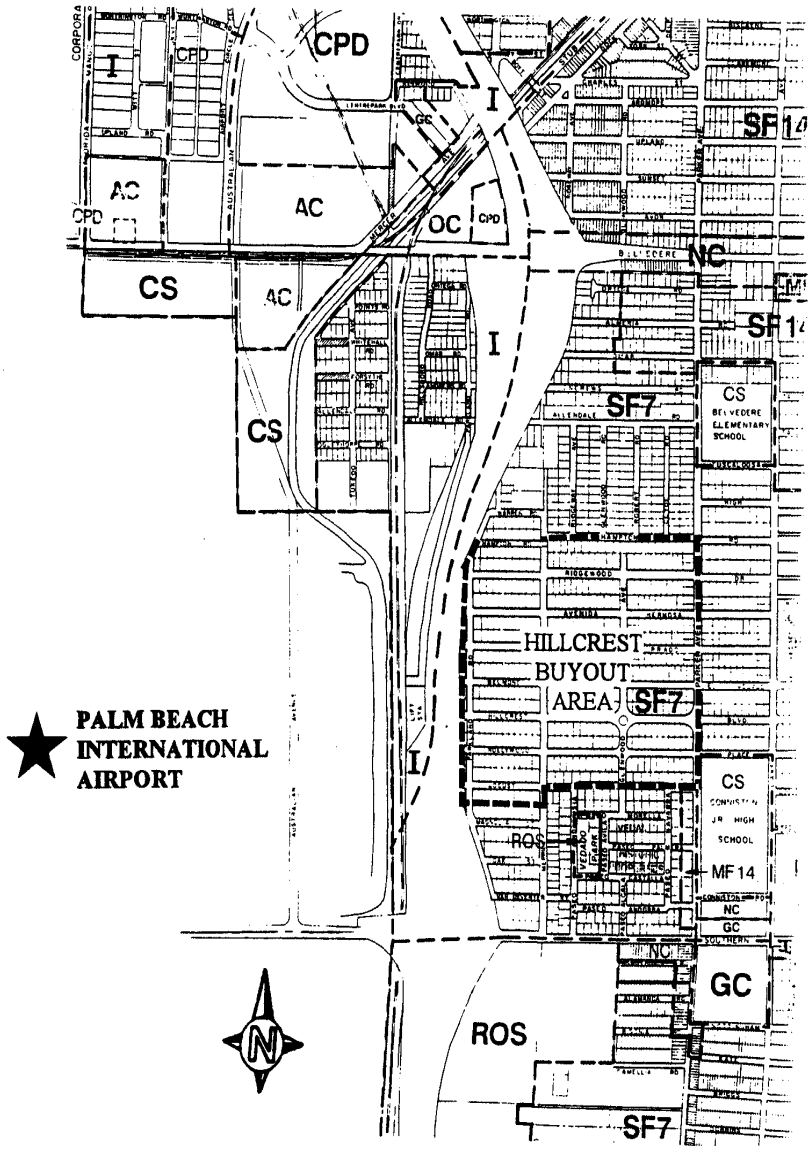
Water resources near PBIA include the Stub Canal Right-of-Way (ROW) east of Australian Avenue (west of the City Limits, but the City maintains control over the canal) and the West Palm Beach Canal adjacent to the south side of Southern Boulevard (which runs into the City and eventually into Lake Worth). An aquifer lies underneath the Stub Canal ROW that contributes to the City's water supply. The Airport has a stormwater drainage system that retains the northern half of the airport's stormwater runoff on site. The northern half of the Airport has an oil separator system as a part of its stormwater drainage system. The southern half of the airport's stormwater runoff is stored in a retention pond that flows into the West Palm Beach Canal.

7. Land Use

Land uses adjacent to the Airport consist of commercial and industrial to the north; industrial, mobile homes, and single family to the east; single family and multi-family to the south; and single family and commercial to the west. City land uses adjacent to the Airport consist of community service (open space), commercial and industrial to the north; and single-family residential to the east. An existing land use map, detailing adjacent land uses, is provided on Figure 5-28.

As mentioned above, the PBCDOA issued an RFP, selected a developer and is negotiating lease terms. However, the golf course will require a rezoning and a large scale future land use plan amendment. The property is zoned Single-Family Low Density Residential (SF7). In order to accommodate the golf course, the land will likely be rezoned to Recreation and Open Space (ROS) district. The other future land uses surrounding the Airport will only change in relation to the proposed PBIA/I-95 Interconnect, discussed in the Transportation Effects Section, and in the Hillcrest Buyout area. These future land uses are detailed in the Future Land Use Element of the Comprehensive Plan.

FIGURE 5-28
EXISTING LAND USES AND NATURAL
RESOURCES ADJACENT TO PBIA



SF7 - Single Family
SF14 - Single Family
MF14 - Multifamily
MF20 - Multifamily
NC - Neighborhood Commercial
AC - Airport Commercial
GC - General Commercial
OC - Office Commercial
CPD - Commercial Planned Development
CS - Community Service
ROS - Recreation and Open Space
I - Industrial

Source: City of West Palm Beach, Planning, Zoning and Building Department, July 1997.

The City must also ensure that any new development does not create obstructions that intersect the clear zones, approach surfaces, conical surfaces, horizontal surfaces, or transitional surfaces of the Airport. The FAA regulates height limits for all structures adjacent to all airports. The City shall continue to enforce the Flight Path Protection Ordinance as adopted on October 15, 1990, and outlined in Chapter 333, Florida Statues, as amended from time to time.

TABLE 5-16
PBIA SUMMARY ECONOMIC EFFECTS, 1990

Total 1990 Economic Impact	$2.2 Billion
Total Regional Annual Household Earnings	$644.1 Million
Total Regional Employment	55,359 Jobs
Annual Air Carrier Operations	61,391
Total Passengers	5.8 Million
Airlines Serving	25
Tourist Impact	$1.6 Billion
1990 Tourists	1.7 Million
Annual Capital "Improvement" Expenditures	$37.6 Million

Source: Palm Beach County Airport System 1990 Economic Impact Study, July 1992.

B. Port of Palm Beach

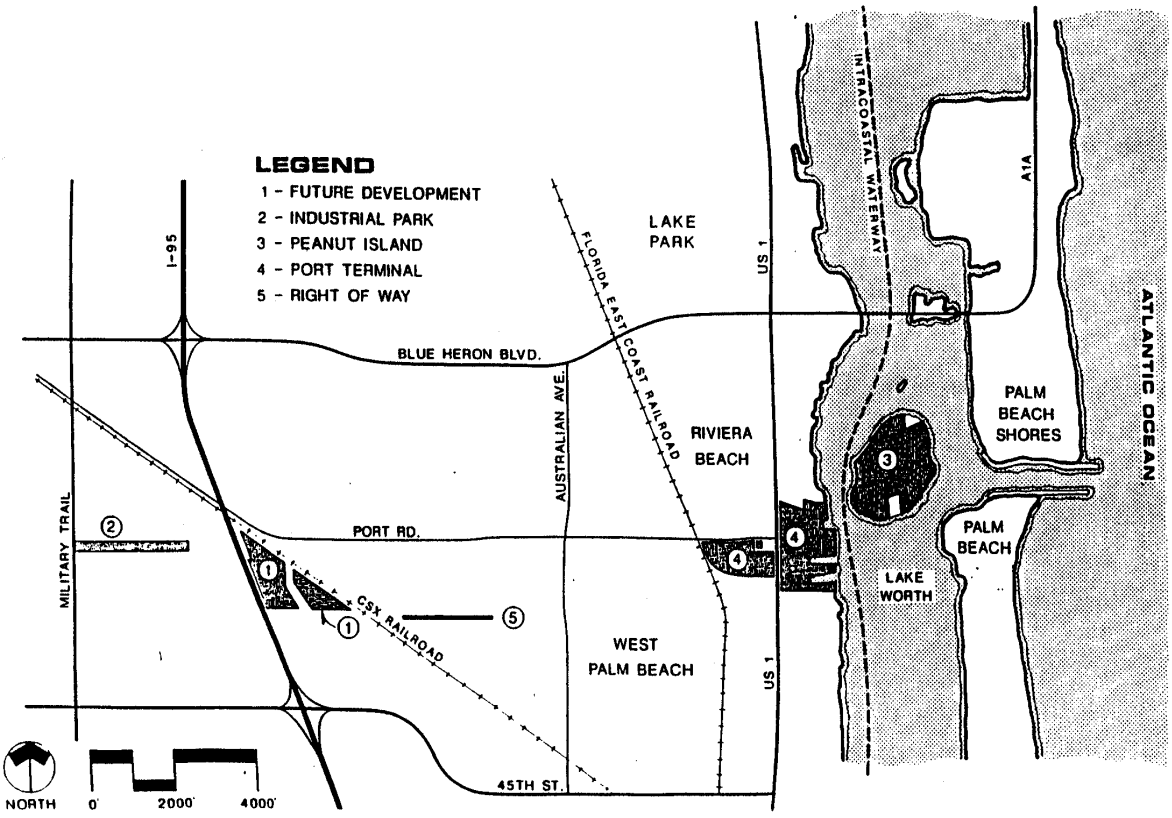
1. Existing Facilities

Five commissioners elected at large from the Port District, each serving a four-year term, administer the Port. The Port Commission employs a Port director and support staff to oversee day-to-day business, including operation, maintenance and capital projects.

In fiscal year 1993, the Port handled 3,907,927 tons of cargo, 2,028 rail cars, and 2,033 vessels. The terminal accommodates activities in petroleum handling, bulk cement, bulk molasses, general cargo, bulk sugar, and furfural (a sugar by-product). The Port's major income is from bulk shipments of sugar, cement, fuel oil, and general cargo shipped in containers - the large, standardized receptacles used in shipping, trucking, and rail transportation. The fastest-growing activities at the Port are general cargo handling, cement handling and the shipment of sugar and molasses. As individual shippers show interest in expansion, the Port may consider more facilities and equipment for these activities.

Major Port operations are situated on a 65-acre parcel abutting Lake Worth (Intracoastal Waterway) and on 58.3 acres west of U.S. 1 (Broadway), known as the Main Terminal. These two properties are located in Riviera Beach just south of the Lake Worth Inlet and approximately 850 feet north of the City of West Palm Beach. Three islands, Palm Beach, Singer, and Peanut, aid in protecting operations in the channel and turning basin from the sometimes-rough Atlantic Ocean waters. Additional Port properties include 63 acres of unused property at Portwest Industrial Park, located at Military Trail and Portwest Boulevard between 45th Street and State Road 710, and undeveloped property directly east of I-95 between 45th Street and State Road 710 (Port Road), and 72 acres on Peanut Island, centered in Lake Worth north of the inlet (See Figure 5-29 for the location of Port properties).

FIGURE 5-29
LOCATION OF PORT PROPERTIES



Source: Port of Palm Beach, Master Plan Update, April 1995.

The Port's main terminal, located east and west of U.S. 1, is devoted primarily to the handling and storage of goods. In addition, office space, a cruise terminal and dock space is provided. The Port has no plans to develop Peanut Island, and may consider selling the island at fair market value. The Port's western properties, Portwest Industrial Park and property directly east of I-95, are undeveloped. The western properties directly east of I-95, however, are currently being planned for development as a foreign trade zone when market demand warrants its use.

2. Main Terminal

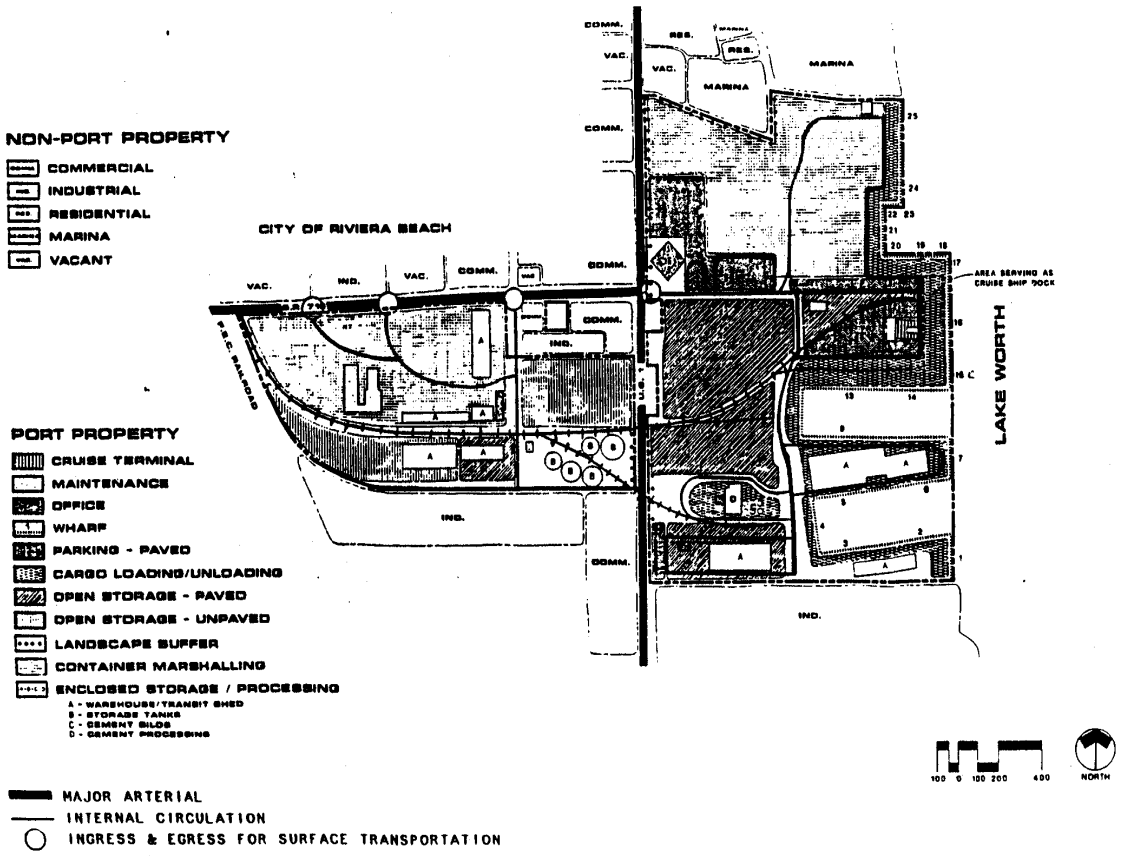
In May 1982, the Port built a five-story maritime office building which fronts on Port Road and Broadway. This facility consolidated offices and tenants that were previously located in four other buildings, in addition to other new Port tenants. This facility has allowed the development of a Maritime Center where those governmental and private offices that are maritime-oriented can operate in closer coordination with one another. The opening of the maritime office building allowed the Port to raze three older buildings which were closer to the wharves and to reuse the space for paved open storage and container operating areas, a visitors parking area, and a new railroad spur. This spur allows for more efficient unloading of containers from rail cars and better access to the main marginal wharf.

TABLE 5-17
PORT FACILITY LAND, BERTHS AND STORAGE

Land			
	At Terminal (east of U.S. 1)		65.6 Acres
	At Terminal (west of U.S. 1)		58.3 Acres
	Peanut Island (disposal area only)		17.5 Acres
	C.S.X./I-95 Tract		35.0 Acres
	Right of Way		1.5 Acres
	Total		**177.9 Acres**
Berths			
	Marginal Wharf		1,885 Feet
	Roll-On/Roll-Off Ramps (Berths 10,11,12,20,21,22)		400 Feet
	Slips (2)		2,880 Feet
	Total		**5,165 Feet**
Storage			
	Covered:	Warehouses	200,000 Sq. Ft.
	Open:	Paved	43 Acres
	Special Purpose:	Cement Storage	12,500,000 Gallons
		Sugar	20,000 Tons
		Freezer/chill facility	17,600 Sq. Ft
		Bonded Storage	9,600 Sq. Ft.
		Cruise Terminal at Slip 1	20,000 Sq. Ft.

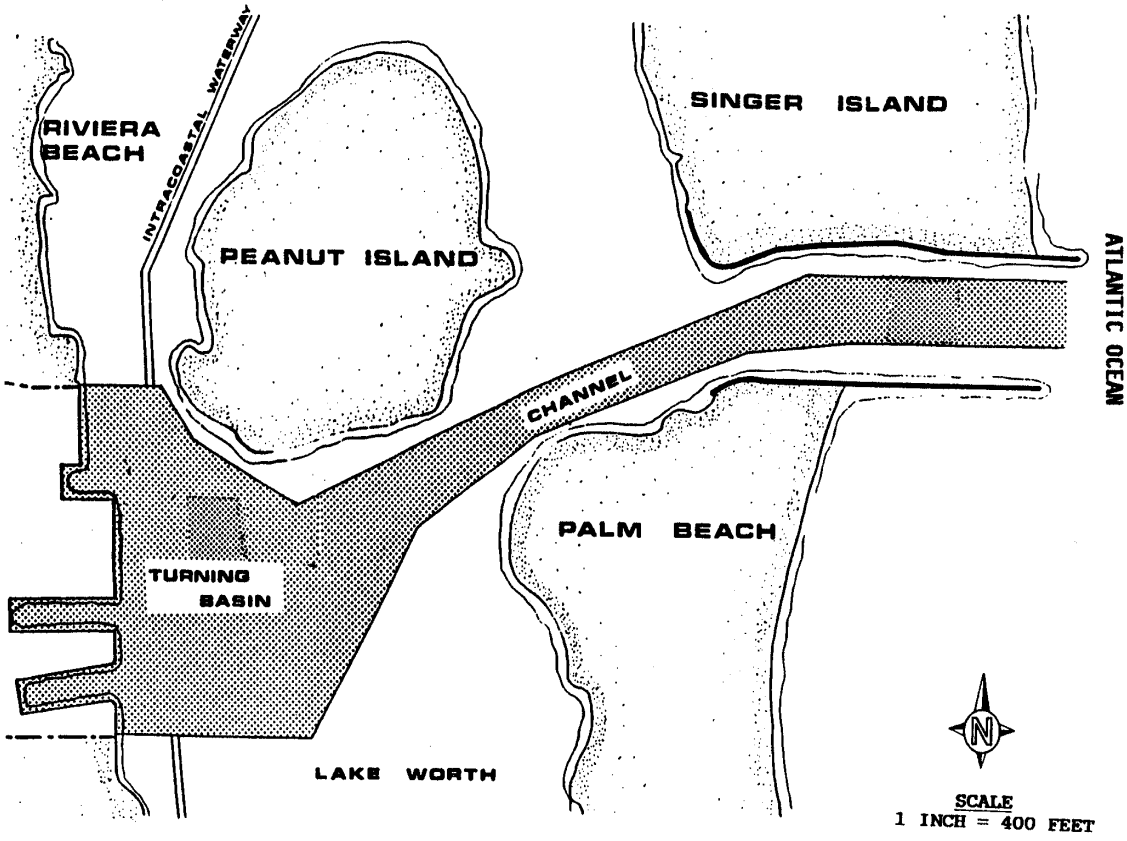
Source: Amendments to the Port of Palm Beach Master Plan, April 1995.

FIGURE 5-30
PORT OF PALM BEACH
MAIN TERMINAL SITE PLAN



Source: Port of Palm Beach, Master Plan Update, April 1995.

FIGURE 5-31
NAVIGATION CHANNEL FOR PORT OF PALM BEACH



Source: Port of Palm Beach, Master Plan Update, April 1995.

Presently, 25 berths totaling 5,165 linear feet of dock space serve the Port; three marginal wharves contain four berths, with the remaining 13 located along two slips. Storage facilities include 200,000 square feet of warehouse space for bulk and breakbulk cargoes along with 43 acres of open storage.

In December 1985, a 7,500 square foot cruise line facility was opened. It has since been expanded to a 20,000 square foot cruise terminal. Currently, Palm Beach Cruises is the sole tenant. The cruise line offers day cruises to the Bahamas and along the Florida coastline as well as longer cruises. Cruise passengers dropped from 339,534 in 1993 to 248,832 in 1994, reflecting the fact that Palm Beach Cruises now only operates one cruise vessel, the Viking Princess, out of the Port. (See Figure 5-30 for a site plan of the main terminal.)

The entrance channel and turning basin that serve the Port are 33 feet deep. There are no plans in the Port Master Plan, published in July 1988, or Amendments to the Port Master Plan, published in February 1995, to dredge the channel any deeper. Only biannual maintenance projects for the channel are expected. Figure 5-31 shows the navigational channel for the Port.

In March 1987, a federal grant was issued, authorizing the Port to establish a Foreign Trade Zone (FTZ) on several parcels of land. The FTZ allows for duty-free light manufacturing and material handling of products shipped through the Port. The Port engaged a private firm, CHO Properties, to develop the FTZ. The FTZ is on eight acres of property located behind and adjacent to the Port Executive Plaza which is south of the Port Main Terminal, west of U.S. 1. A warehouse containing 200,000 square feet has been built on the property for use of the FTZ. The Port is in the process of redesignating additional Port owned properties for use for FTZ operations, as well as redesignating all properties.

3. Existing and Future Port Use

The Port of Palm Beach competes for large shipments as the state's fourth largest container port, but its limited expansion space and shallow channel have worked to its disadvantage. The Port has been physically unable to expand its 65.6 waterfront acres because it is constrained on all sides by the City of Riviera Beach and the Florida Power and Light Company. Additionally, its 33-foot channel cannot handle many of the larger vessels that sail through the 42-foot depth of the Ft. Lauderdale and Miami ports. The Port's land limitations foster dissatisfaction with Port operations. For example, when a British shipping firm announced it wanted to run a Hovercraft service between the Port and Freeport in the Bahamas, Port commissioners rejected it because of space problems. The decision allowed the cruise line to maintain its exclusive access to the Port.

The pace of development of a Port terminal is dependent upon shipping trends, the relative attractiveness of a seaport to shipping lines, the pace of regional economic growth, the availability of rail and highway transportation facilities, economic fluctuation in the nation, and a host of other factors. The Port of Palm Beach is fortunate to be located in a rapidly growing region. As the data on population growth shows in the Port's 1984 Revised Comprehensive Plan, the eight county economic impact region will increase in population by an aggregate 154 percent from 1970 to 2000. This growth will generate additional cargo handling and storage

activities at the Port, necessitating more intensive use of the existing terminal, and acquisition of additional land.

4. Current Plans to Meet Projected Port Use

The Port plans to continue expanding in order to meet its forecasted use generated from this rapidly growing region. Its future land use plan depicts the properties that it may acquire. (See Figure 5-32 for the Port's future land use plans.) Generalized land uses and locations of major new expansions are indicated. The plan does not address density of development because the Port adapts to the needs of shippers who seek use of the terminal. As seen in Figure 5-32, the Port will examine the feasibility of acquiring various properties by 2000. Properties to be acquired will provide expansion space to accommodate various Port activities. The only proposed waterfront property to be acquired is land located south of the FPL plant. The proposed acquisition plan envisions acquiring all non-Port owned property between SR 710 and 10th Street, west of Broadway in Riviera Beach. Vacant property at the north east corner of 11th Street and U.S. 1 is proposed to be acquired and could be utilized for cruise terminal-related functions.

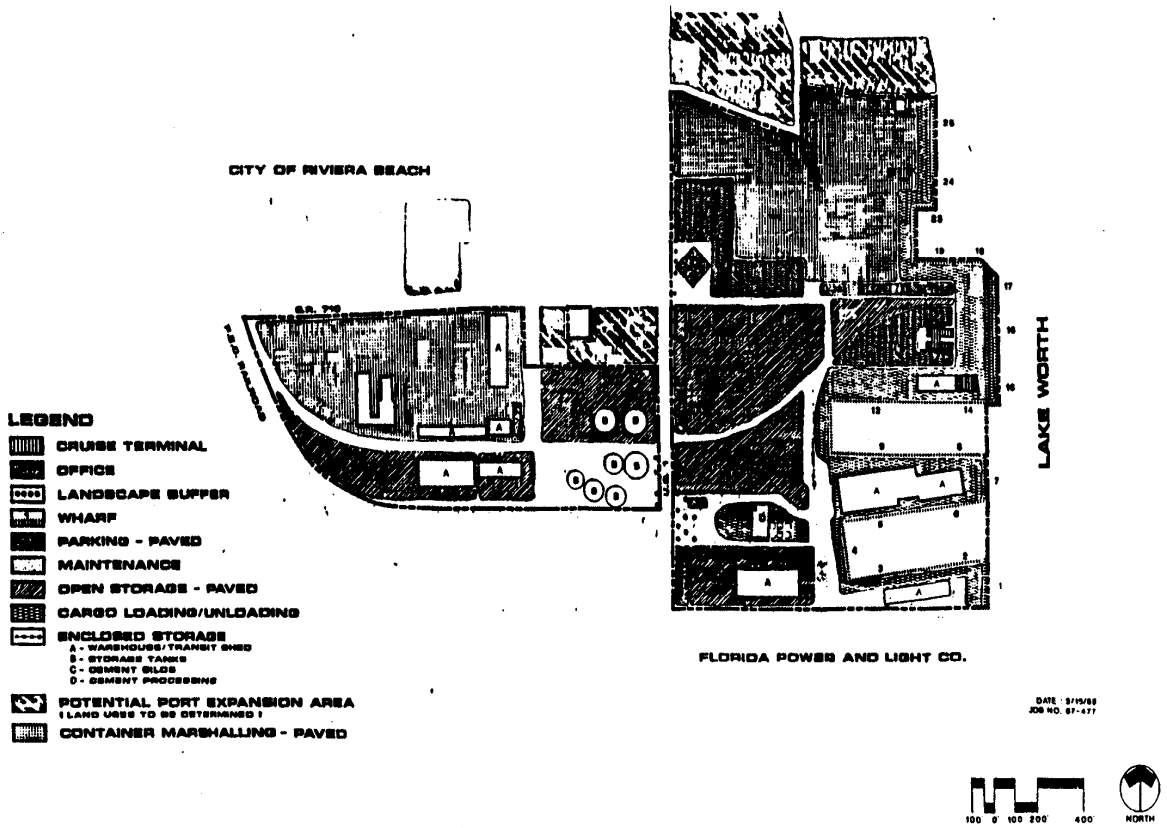
A new cruise terminal building is proposed for the northeast corner of the Port property. This location would have the advantage of separating cruise-related activities at the Port from the cargo handling activities located along the bulkhead to the south. A new slip (Slip 3) is proposed immediately south of the cruise terminal. The slip will have a minimum width of 250 feet, to accommodate both cruise vessels and cargo vessels simultaneously. The bulkhead at berths 15, 16 and 17 will be completed with a sixty-foot seaward relocation, and realignment of railroad spurs will be completed.

The long range development program for the Port calls for at least one additional slip, continuation of a building development program, extension and upgrade of utility systems, provisions for an upgraded internal circulation system and the development of a modern cruise terminal. Further land acquisitions within the five-year period 1995-2000 may be required.

Although indicated as a future land use objective, the potential acquisition of the FPL plant property is recognized as being very long range in nature. The development of a vegetated spoil island is predicated on the long-range potential of expanding Port operations to include the FPL property. There is little likelihood of the FPL property being available for acquisition based on the recent capital investments in the FPL facilities.

The Port has paved all unpaved storage areas at the Main Terminal and plans to construct additional facilities.

FIGURE 5-32
PORT OF PALM BEACH
FUTURE LAND USE PLAN



Source: Port of Palm Beach, Master Plan Update, April 1995.

The street network within West Palm Beach utilized by Port users is I-95, 45th Street, U.S. Route 1, Australian Avenue, Military Trail, and the F.E.C. and C.S.X. railroads. U.S. 1 passes directly by the Port terminal and 45th Street connects the Port terminal to the Portwest Industrial Park at Military Trail. Within the City of Riviera Beach, State Road 710 (known as Port Road and Beeline Highway) connects the Port terminal to Military Trail. Most of the annual volume by tenants is moved by truck. The lack of an interchange on I-95 at SR 710 forces trucks going to the Port to detour to 45th Street in West Palm Beach or to Blue Heron Boulevard in Riviera Beach. From 45th Street, most trucks access the Port terminal by way of Australian Avenue and Port Road. Consequently, the Port supports the northward relocation of SR 710 to 11th Street, between Old Dixie Highway and U.S. 1, and an interchange at the intersection of I-95 and the proposed relocation of SR 710. In the Amendments to the Port of Palm Beach Master Plan, February 1995, it was estimated that motor vehicle traffic to and from the Port generated approximately 4 percent of the motor vehicle traffic volume on U.S. 1 in 1994.

The Port is equipped with its own system of streets and paved areas serving as streets. These streets reach all ship wharves and storage areas, and Berths 4 through 16 are accessible directly by rail. Portwest Blvd accesses the Portwest Industrial Park. The Port property just east of I-95 is as yet undeveloped with no maintained motor vehicle access.

All of the Port properties, except for Portwest Industrial Park, are either connected to, or have mainline railway tracks running through the property. The Port owns and operates its own belt line railroad, including a diesel locomotive, a switching yard located west of U.S. 1, and several miles of track connecting the terminal to the F.E.C. Railway. Because of switching difficulties involved in reaching the C.S.X. railway via the junction to the south, the Port recommends opening a secondary junction on current rail lines immediately west of the Port main terminal. In addition, the ground separation of U.S. 1 to eliminate rail/street conflicts, is extremely desirable inasmuch as rail shipments to and from the Port are expected to increase as Caribbean trade increases in the future. As of January 1998, the Port had received approval for construction of the grade separated U.S. 1, called the Skypass. U.S. 1 will be raised just north of 59th Street into the City of Riviera Beach, creating an overpass to allow freight to move unobstructed on the Port property

The Port is also proposing a southern realignment adjacent to the Port Executive Center or south of the Executive Center connecting Old Dixie Highway and U.S. 1 at Port Road (SR 710). This realignment will shift most motor vehicle traffic entering and leaving the Port. At this time the Port is evaluating three alternatives for ingress and egress: (1) at the east-west connector of Port Road, 500 feet east of F.E.C. Railroad, (2) on the current alignment of Port Road immediately east of F.E.C. Railroad, and (3) both (1) and (2). An interchange with I-95 and the new northward relocation of SR 710 has been proposed. The amended Future [Motor Vehicle] Traffic Circulation 2000 Plan for the Port also proposes a potential site for a future Tri-Rail station in the southeast quadrant of the intersection of Old Dixie Highway/F.E.C. Railroad and 11th Street in Riviera Beach.

5. Estuarine Conditions

The activities of the existing Port and its expansion will inevitably affect the water quality of Lake Worth and the marine and natural resources within Lake Worth. The Port does, however, have a high quality oil spill prevention program in operation to reduce the possibility of environmental damage from petroleum products spillage. However, stormwater runoff from paved areas at the main terminal empties directly into Lake Worth. A new requirement that pollutants be removed from urban runoff into Lake Worth spurred the Port to develop a unique oil-water separator system. The system, installed to serve the newest paved area (adjoining Berths 20 through 25), is designed to settle out solids and to separate oil from water on a continuing basis. Any new paved areas added at the Port will be connected with the oil-water separator system.

The waters around the Port shelter many tropical fish species and the endangered sea turtle and manatee. Manatees find refuge near the discharge pipes of the Florida Power and Light Company located directly south of the Port. The Port has stated in its policies that it will take steps to lessen the hazards to manatees while complying with State and Federal laws. Dredging of the inlet causes high turbidity levels, which harms aquatic vegetation such as seagrass beds, which provide an important marine habitat. Wildlife and marine species found in Lake Worth are detailed in the Coastal Management and Conservation Elements of the City's Comprehensive Plan.

6. Land Use (Zoning Districts)

Current land uses at the Port, with the exception of office space, cruise terminal and vacant areas are devoted to the handling and storage of goods. This encompasses mainly warehouses and paved and unpaved open storage spaces. Land uses around the Port (within the City of Riviera Beach) consist of a boat repair yard, single family homes, and industrial uses to the north; Lake Worth to the east; electrical power facilities, commercial, foreign trade zone, and mobile homes to the south; and industrial and medium density residential uses to the west. Land uses in West Palm Beach closest to the Port consist of single family low density residential between U.S. 1 and the F.E.C. railway to the west; neighborhood commercial along U.S. 1; single family low density residential between U.S. 1 and Dixie Avenue to the east; and multi-family high density residential between Poinsettia Avenue and Lake Worth. See the land use map on Figure 5-18.

Existing land uses along Broadway (U.S. 1), within the City of West Palm Beach south of the Port, consist of a variety of neighborhood commercial businesses. The Port has acquired a strip development south of Port Road on the east side of U.S. 1, for turning. Long range development plans call for acquiring properties south of the terminal to the West Palm Beach City limits. These properties would be used for cargo handling, container cargo, and storage. The Port states in its comprehensive plan that, where possible, when conflicts do exist among land uses, it provides berms, trees, bushes, and fencing as screening devices. The City continually works/negotiates with the Port concerning these issues.

The Port's western properties north of 45th Street are currently not contiguous with the City of West Palm Beach. The Florida Power and Light Company (FP&L) recently annexed

property south of Portwest Industrial Park into the City of West Palm Beach. This property will house FPL's collection services. The most proximate City properties to the Port western properties are designated for industrial use.

7. Economy

The Port and its expansion will have a tremendous affect the local and regional economy. The increase in cruise line facilities may affect the tourist industry, and increases in Port activity, especially from the FTZs, will most likely increase industrial and commercial activity. According to the Port's Comprehensive Plan, the Port, located within the highly urbanized, rapidly growing region of southeast Florida exerts a significant economic impact on this area. The manufacturing, trades, services, and government sectors are growing more in this region than anywhere else in Florida. The Port, strongly related to these economic indicators, is experiencing a substantial increase in the use of its facilities.

TABLE 5-18
TENANTS AT THE PORT

1.	Birdsall, Inc. (Tropical Shipping Co.)
2.	Eagle Cement Company (leased to Lafarge)
3.	Southdown Inc.
4.	Florida Sugar Marketing and Terminal Association
5.	General Service Administration:
	a. Border Patrol/Customs
	b. Department of Agriculture
	c. Immigration
6.	Heavy Lift Services
7.	Lund and Pullara
8.	Palm Beach Steamship Company
9.	Palm Beach Bar Pilots
10.	Lafarge Corporation (Florida Cement)
11.	Teeters Brothers Steamship
12.	Florida Molasses Exchange
13.	Palm Beach Cruise Line (Grundstad Maritime Overseas Inc.)
14.	Gulfstream Lines
15.	M.S.A.S. Custom Broker
16.	PORT OF PALM BEACH

Source: Port of Palm Beach 1995.

TABLE 5-19
1993 ECONOMIC IMPACT OF THE PORT OF PALM BEACH

Total 1993 Economic Impact	$191,000,000
Total Countywide Annual Household Earnings (Jobs and service related)	$433,000,000
Total Countywide Employment	1750 Jobs

ECONOMIC ACTIVITY RELATING TO THE LOCAL PURCHASES

Goods	$29,000,000	Local Taxes	$265,000
Services	$6,600,000	Fees	$1,600,000
Leases	$640,000		

Source: Port of Palm Beach September 1994.

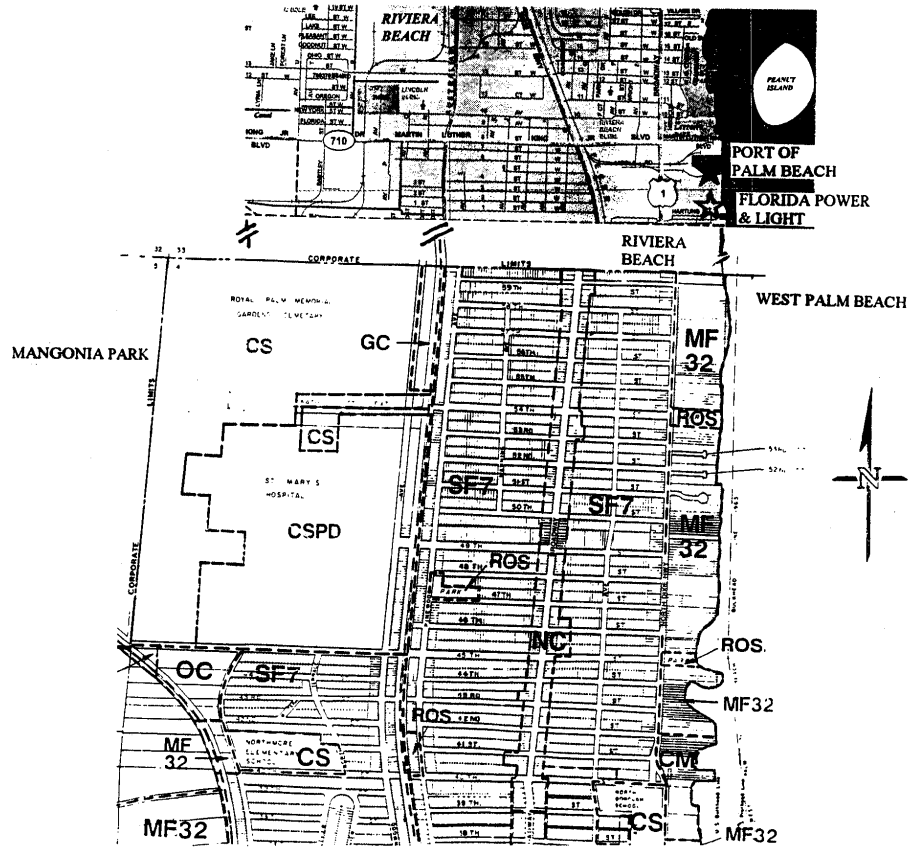
C. SUMMARY

With the expansions of Phases I and II, the Airport will handle approximately 12 million passengers (total enplanements and deplanements) per year, the amount of passenger traffic anticipated around the year 2007. Airport officials project that the fully expanded Airport will accommodate Palm Beach County passengers well into the 21st century, based on their assumption that the County will reach its growth potential in another quarter-century. The future Airport, when fully completed, will be four times the size of the Airport in 1987, but there is only one runway large enough for commercial flights, and it cannot continue to serve Palm Beach, Martin, and St. Lucie Counties adequately.

As mentioned previously, future expansion of the Airport facilities depends on when projected passenger levels are reached. When each projected level is reached, expansions of facilities are proposed to take place. The best case scenario projects total passengers (total enplanements and deplanements) to be at 9.6 million in the year 2011, requiring a modest expansion of facilities. The high international scenario projects total passengers to be at 10.5 million in the year 2011, requiring most present facilities to be expanded to nearly double. All of which is contingent on the extension of the Airport's main runway.

The Port plans to acquire additional land near the main terminal. The Port has paved all unpaved open storage areas. New storage facilities have been constructed, and maintenance and infrastructure projects, as major new construction are planned, including a new cruise terminal building. The Port has developed an FTZ adjacent to the Port Executive Plaza, west of U.S. 1, and is currently in the process of redesignating additional properties for the FTZ. The Port plans to eventually develop the Portwest Industrial Park for light industry and material handling. A new slip is proposed to be located immediately south of the cruise terminal location, and the bulkhead at berths 15, 16 and 17 will be completed with a 60-foot seaward relocation.

FIGURE 5-33
EXISTING LAND USES AND NATURAL RESOURCES
ADJACENT TO THE PORT OF PALM BEACH



SF7 - Single Family
SF14 - Single Family
MF14 - Multifamily
MF20 - Multifamily
NC - Neighborhood Commercial
AC - Airport Commercial
GC - General Commercial
OC - Office Commercial
CPD - Commercial Planned Development
CS - Community Service
ROS - Recreation and Open Space
I - Industrial

Source: City of West Palm Beach, Planning, Zoning and Building Department, May 1997.

TRANSPORTATION ELEMENT

GOALS, OBJECTIVES AND POLICIES

1.0 PUBLIC TRANSIT

GOAL 1.1: THE CITY OF WEST PALM BEACH SHALL ASSIST PALMTRAN IN PROVIDING RESIDENTS AND VISITORS (I.E. NONRESIDENTS WORKING, PLAYING OR PASSING THROUGH WEST PALM BEACH), AS WELL AS THE IDENTIFIED "TRANSPORTATION DISADVANTAGED" POPULATION OF WEST PALM BEACH WITH AN EFFICIENT PUBLIC TRANSPORTATION SYSTEM.

Objective 1.1.1: The City shall assist PalmTran in the planning, development and implementation of a more direct routing system to serve more people and to cover a greater service area in the western areas of the City (i.e., areas west of I-95).

Policy 1.1.1(a): The City shall require future developments in the western areas to plan for public transit facilities. By 2000, the City shall amend the Zoning Code to require future developments to provide transit facilities based upon the number of access points, type of access (i.e., gated or non-gated), and the overall size of the development. This shall be done in accordance with the PalmTran plans for the area. For projects along State roads, future developments shall coordinate with the Florida Department of Transportation (FDOT) Public Transit Organization (PTO).

Objective 1.1.2: By participating in the Technical Advisory Committee (TAC) of the Metropolitan Planning Organization (MPO) of Palm Beach County, the City shall develop a coordinated and integrated approach to transportation service provision in conjunction with the MPO and the Florida Department of Transportation, influencing the MPO short range Transit Development Plan and the FDOT Five-year Transportation Plan.

Policy 1.1.2(a): By 2002, the City shall achieve a modal split equivalent to the goals of the MPO for Palm Beach County. In addition, the City shall seek to determine the modal split for West Palm Beach and set respective goals, objectives, and policies. At such time that the City plans street modifications, PalmTran shall be invited to meet with the City to coordinate the location of transit-related facilities and other design requirements. The City shall continue to coordinate planning efforts with PalmTran, Tri-Rail, the MPO, Palm Beach County, and the FDOT to achieve a higher modal split.

Objective 1.1.3: The City of West Palm Beach shall support the efforts of the Downtown Development Authority (DDA), the Community Redevelopment Agency (CRA) and the private sector in the successful operation of the Downtown shuttle.

Policy 1.1.3(a): The City shall assist PalmTran in increasing public transit service in the Downtown. The City shall implement assistance programs, as approved by the City Commission, which may include, but are not limited to, public relations/marketing and service provision and may be in the form of a financial or in-kind contribution.

Policy 1.1.3(b): By 2001, the Planning, Zoning and Building Department will complete a study of the feasibility of employer-based incentives to promote public transit use. The feasibility study shall be coordinated with the development of the Transportation Management System, as required by the TCEA and shall be done in cooperation with the Palm Beach County, PalmTran and Tri-Rail.

Objective 1.1.4: The City shall designate existing and future public transit rights-of-way by requiring the following minimum street right-of-way standards and other related policies.

Policy 1.1.4(a): The City shall continue to enforce minimum right-of-way requirements for new streets that are suitable to the City, Palm Beach County, and Florida Department of Transportation, in keeping with the Transportation Vision.

Policy 1.1.4(b): The City hereby adopts the right-of-way setback requirements, in Appendix A, to designate existing and future rights-of-way in West Palm Beach.

Policy 1.1.4(c): Palm Beach County, or the City, at this time, shall assess new development an equitable pro rata share of the costs to provide street modifications to serve the development, as established in the Countywide [motor vehicle] traffic "impact" fee ordinance. However, the City will work to have the [motor vehicle] traffic impact fee eliminated in the Eastward Ho! area to encourage infill and redevelopment and to reduce urban sprawl and the degradation of farmland and wet lands.

GOAL 1.2: THE CITY OF WEST PALM BEACH SHALL INCREASE UTILIZATION OF PALMTRAN BY CITY OF WEST PALM BEACH RESIDENTS AND VISITORS IN ORDER TO REDUCE MOTOR VEHICLE USE AND THE LEVEL OF POLLUTION IN THE AREA AND IN ORDER TO REDUCE THE OPERATION DEFICITS OF PALMTRAN.

Objective 1.2.1: The City shall continue to work with PalmTran and private developers in increasing the transit modal split for all trips and also for work trips in the City of West Palm Beach.

Policy 1.2.1(a): The City of West Palm Beach shall continue to provide incentives, such as higher density, to industrial and commercial developers who place public transit facilities within their complexes.

Policy 1.2.1(b): The City shall assist PalmTran with the design of a marketing and community relations program aimed at increasing transit usage.

Policy 1.2.1(c): The City of West Palm Beach shall encourage the adoption of PalmTran's fixed-route system involving an increase in the number of routes, frequency of service, accuracy of scheduling, and timed transfers at selected major land uses such as malls and office centers.

Policy 1.2.1(d): The City of West Palm Beach shall provide assistance to PalmTran and its representatives in the design and implementation of the Downtown West Palm Beach multimodal station. The City shall provide assistance from the Transportation, the Urban

Design, and the Planning and Zoning Divisions to ensure a timely review process for all stages of planning for the multimodal station to meet the development objectives of PalmTran and the MPO.

Policy 1.2.1(e): By 2002, the City shall implement assistance programs, as approved by the City Commission, which may include, but are not limited to, public relations/marketing and service provision and may be in the form of a financial or in-kind contribution to provide express and feeder services to the Tri-County Commuter Rail, and selected major employment centers in the City.

Policy 1.2.1(f): The City shall assist PalmTran with advertising through radio and television spots, as well as regularly-scheduled newspaper inserts showing the route system schedule. These brochures shall also be distributed at County and City Libraries.

GOAL 1.3: THE CITY OF WEST PALM BEACH SHALL PRESERVE AND ENHANCE DESIRABLE LAND USE PATTERNS IN CONJUNCTION WITH GREATER TRANSIT AVAILABILITY.

Objective 1.3.1: The City shall coordinate with PalmTran to increase the number of major land uses served presently by public transit by 10 percent by the year 2000.

Policy 1.3.1(a): The City shall encourage PalmTran to coordinate all new transit routes or route changes with established development plans and land use plans in order to serve existing and future major land uses.

Policy 1.3.1(b): The City shall permit increased land use densities, where appropriate, based upon the Future Land Use Element and along major streets in growth areas served by public transit.

GOAL 1.4: THE CITY OF WEST PALM BEACH SHALL ENCOURAGE AND PROMOTE THE UTILIZATION OF TRI-COUNTY RAIL BY CITY OF WEST PALM BEACH RESIDENTS AND VISITORS IN ORDER TO REDUCE THE LEVEL OF MOTOR VEHICLE USE AND POLLUTION.

Objective 1.4.1: The City shall encourage increased Tri-County Rail ridership by City of West Palm Beach residents and visitors.

Policy 1.4.1(a): The City shall assist Tri-County Rail with advertising and promotional activities of the Tri-County Commuter Schedule.

Policy 1.4.1(b): The City shall work with members of the private sector to encourage employees to use the Tri-County Rail system.

GOAL 1.5: THE CITY OF WEST PALM BEACH SHALL, IF IMPLEMENTED, ENCOURAGE AND PROMOTE THE UTILIZATION OF THE HIGH SPEED RAIL SYSTEM BY CITY OF WEST PALM BEACH RESIDENTS AND VISITORS IN ORDER TO REDUCE THE LEVEL OF MOTOR VEHICLE CONGESTION AND POLLUTION IN THE STATE.

Objective 1.5.1: The City shall encourage ridership of the High Speed Rail System by residents of, and visitors to, West Palm Beach.

Policy 1.5.1(a): The City of West Palm Beach shall promote the High Speed Rail System consistent with all related Transportation Goals, Objectives and Policies.

Objective 1.5.2: The City shall encourage and promote itself and regional facilities as an ideal location and as an optimal choice for a High-Speed Rail station.

Policy 1.5.2(a): The City shall work with the Chamber of Commerce, the Downtown Development Authority (DDA), the Community Redevelopment Agency (CRA) and the private sector to promote the City of West Palm Beach as an ideal choice for a High Speed Rail Station.

2.0 PRIVATE VEHICLE CIRCULATION

GOAL 2.1: TO FULFILL THE GOALS IN KEEPING WITH THE TRANSPORTATION VISION STATEMENT FOR THE CITY OF WEST PALM BEACH.

Transportation Vision Statement

To provide transportation systems that achieves the economic, social, and environmental goals of the City of West Palm Beach that fosters sustainability, livability, and economic success.

The goals of the vision statement are:
Increase the quality of City life;
Improve the conditions for residents and visitors (cleaner air, friendlier surroundings, etc.);
Provide a wider choice of transportation and urban life-style options;
Be sensitive to, and incorporate, the preferences and requirements of the people using the area (residing, working, playing, etc.), along the street(s) or at the intersections;
Create safe and attractive streets;
Reduce the negative effects of motor vehicles on the environment;
Promote pedestrian, bicycle, and transit use;
Conserve natural resources including energy and land; and
Build an equitable transportation system.

Objective 2.1.1: To fulfill the objectives of the City's the Transportation Vision Statement. The City shall:

1. Increase access for all transportation modes. By 2001, the City shall require the design of all street modifications on City streets in West Palm Beach to be designed with consideration of all street users.
2. Allow reasonable mobility for motor vehicles on City streets. The City shall adopt level of service E for automobiles during the peak hours of automobile. For analysis of the effects of the LOS at E, refer to Technical Paper No. 1 in the appendices of the Element.
3. On City streets, achieve slower and steadier speeds for motor vehicles through design. By 2001, the City shall require traffic calming principles to be considered and/or incorporated into all future street modifications on City streets. This shall be done on a continuous basis until 100 percent of City streets have achieved an equitable balance for all street users. The City shall work with Palm Beach County, FDOT, and the MPO to further this objective on other streets within West Palm Beach. This objective is related to several sub-objectives; it will help reduce collision frequency and severity, improve the safety and perception of safety for non-motorized users of the streets, and allow for slower "design speeds"/less expensive streets.
4. Reduce dependency on automobiles. The City shall create a balance for all transportation modes on all City streets. The City shall strive for a reduction in automobile dependency and increase of modal splits equivalent to the goals of the MPO, by the year 2002, and higher based upon Policy 1.1.2(a). Refer to Technical Paper No. 1 in the appendices for an analysis.
5. Reduce the need for motor vehicle related police service through good (self-enforcing) design on City street. By 2001, the City shall require traffic calming principles to be considered and/or incorporated into all future street modifications on City streets. This shall be done on a continuous basis until 100 percent of City streets have achieved an equitable balance for all street users.
6. Provide beautiful streets including more landscaping/streetcscaping: trees, shrubs, grass, etc. By 2001, the City shall require traffic calming principles to be considered and/or incorporated into all future street modifications on City streets. This shall be done on a continuous basis until 100 percent of City streets have achieved an equitable balance for all street users.
7. Work in concert with future land use changes to achieve the goals (i.e. allow transportation to help shape urban form). The City shall revise all sections of City Codes by 2005 to provide the necessary regulations to effectively shape the urban form through transportation planning. This shall include, but is not limited to, the parking code, the concurrency management system, the truck route, etc.

Policy 2.1.1(a): The City hereby adopts LOS "E" for motor vehicle users as its policy level of service "standard" on City streets, except in the designated Downtown Transportation Concurrency Exception Area (TCEA) and approved Constrained Roadways at a Lower Level of Service (CRALLS). Information regarding the effect of the level of service change is provided in Technical Paper No. 1 within the appendices of the Element.

Policy 2.1.1(b): The City shall review all proposed street modifications to ensure that the proposals are consistent with and support the City's Transportation Vision. All street projects, within the street right-of-way, will be considered holistically and combined with traffic calming whenever feasible.

Policy 2.1.1(c): Development orders shall be consistent with the provisions of the Palm Beach County [Motor Vehicle] Traffic Performance Standards on County streets which ensures that motor vehicle capacity shall be provided to accommodate development-related effects on the County adopted level of service for motor vehicles, except in the designated Downtown Transportation Concurrency Exception Area and approved CRALLS. The Palm Beach County Traffic Division is responsible for determinations as to whether proposed developments within the City of West Palm Beach that affect County streets meet the County's Traffic Performance Standards (TPS). The County's determination is then forwarded to the City. City streets shall be monitored by the City's Transportation Division with support from the Engineering Services Division.

Policy 2.1.1(e): The City shall work with FDOT, Palm Beach County, the MPO, and agency providers of public transit to utilize the following principles and actions to reduce motor vehicular use and their negative effects.

Policy 2.1.1(f): The City shall adopt a designation of a Constrained Roadways At A Lower Level of Service (CRALLS), through the Florida Department of Community Affairs and Palm Beach County, for the street section of Palm Beach Lakes Boulevard, between Tamarind Avenue and Village Boulevard and associated street sections and intersections.

Policy 2.1.1(g): The City shall annually identify those streets operating below the adopted level of service for motor vehicles. The Traffic Performance Standard shall provide constraints on development activity that increase motor vehicle use on County streets. Streets within the City with a volume/capacity ratio (as defined by the Transportation Division) more than 0.9 or less than 0.6 will warrant further investigation.

Policy 2.1.1(h): Proposed street modifications shall be evaluated and ranked in order of priority according to the following guidelines:

a. Whether the modification fulfills the intent and direction of the Transportation Vision; or

b. Whether the modification fulfills a legal commitment.

Policy 2.1.1(i): The City shall provide existing street network map and create motor vehicle LOS projections for the years 2005 and 2015, in accord with the conventional process outlined previously in this Element, that are consistent with proposed future land uses.

Policy 2.1.1(j): The City shall require, through its regular development review process, modifications to the street network where existing conditions are either hazardous, made worse by the effect, of the particular development, or are not consistent with Transportation Vision. These modifications, which would be conditions of approval, may include one or

more of the following: altering the site plan or development, traffic calming, changes to traffic control devices, the geometric changes to the streets and the intersections, transportation demand management programs and/or partnerships with the transportation management association.

Policy 2.1.1(k): By 2001, the City shall revise the Article XV (Parking Code) of the Zoning Code to reflect the changes in motor vehicle use trends and the principles of the Transportation Vision.

Policy 2.1.1(l): By 2001, the City shall revise the functional classification system of streets to incorporate truck routes, fire/emergency routes, mobility routes, and traffic calming areas.

Policy 2.1.1(m): The City shall oppose the Interstate 95/Palm Beach International Airport Interconnect. The City shall oppose the Interconnect because of the adverse effects it will have on the City, including the deterioration of adjacent neighborhoods, the use of valuable land in an urban area, as well as numerous other impacts on land use in the Airport area.

Policy 2.1.1(n): The City hereby adopts the level of service standard for the Florida Intrastate Highway System (FIHS) as established by the Department of Transportation by rule, consistent with Section 163.3180(10), Florida Statutes, and Rule 9J-5.0055(2)(a) and 2(c), and (J-5.019(4)(c)1., Florida Administrative Code.

GOAL 2.2: THE CITY SHALL ADOPT AND ENFORCE MINIMUM RIGHT-OF-WAY REQUIREMENTS.

Objective 2.2.1: A priority schedule for right-of-way acquisition and reservation shall be prepared prior to 2000. Furthermore, the City shall continue to administer the program which prevents building encroachments onto rights-of-way.

Policy 2.2.1(a): The City shall enforce minimum right-of-way requirements through the special setback requirements, as presented in the City's Zoning Code and Appendix A of this Element, for new and existing streets that are generally suitable to the City, Palm Beach County and FDOT.

Policy 2.2.1(b): The City hereby adopts the right-of-way setback requirements to designate existing and future rights-of-way, under its jurisdiction, from building encroachments in West Palm Beach. The right-of-way widths anticipated in Appendix A are consistent with those included in the City's Land Development Regulations.

Policy 2.2.1(c): The City or Palm Beach County shall assess new development an equitable pro rata share of the costs to provide street modifications to serve the development, as established in the City's "Fair Share Transportation 'Improvements' Fee Ordinance" or in the proposed Countywide motor vehicle impact fee ordinance. The City will work to have these fees eliminated within the Eastward Ho! area for sustainability reasons.

Policy 2.2.1(d): The City shall continue to enforce mandatory dedications as a condition of plat approval for acquiring necessary rights-of-way.

Objective 2.2.2: The provision of parking for motorized and non-motorized vehicles, and the provision of bicycle and pedestrian ways will be regulated by the City's Transportation Division.

Policy 2.2.2(a): The City shall, whenever appropriate, encourage on-street parking east of Interstate 95, particularly within the boundaries of the Downtown Master Plan and along commercial corridors.

Policy 2.2.2(b): The City shall provide or require bicycle and pedestrian ways for connecting residential areas to recreational areas, schools, shopping areas, and employment areas. The City shall adopt a pedestrian and cycle master plan by 2000 and complete the major system by 2010. The Master Plan shall include types, locations and details of existing and proposed bicycle and pedestrian provisions.

Policy 2.2.2(c): The City shall review all proposed development for its accommodation of safe on-site motor vehicle flow and parking. The City will develop site planning guidelines to result in better site plans. This shall be done through revisions to the City's Parking Code (Article XV of the Zoning Code), by 2000.

Objective 2.2.3: The City's transportation system shall emphasize safety and aesthetics through implementation of the following policies.

Policy 2.2.3(a): The City shall continuously strive to reduce or eliminate hazardous street conditions by:

a. systematically implementing the Transportation Vision;

b. considering street modifications at intersections or other initiatives where the collision rate is higher than 1.5 collisions per million of entering vehicles. The City will also track collision frequency data within the City;

c. prohibiting the direct connection of driveways and local streets onto high-speed highways or ramps;

d. continuing to review private and public development plans in light of their ability to provide for the least amount of modal conflict possible, given the unique characteristics of each site and plan; and

e. reorienting the street functional classification to serve multiple users and to be consistent with the City's Transportation Vision.

Policy 2.2.3(b): The City shall require or provide pedestrian crossing displays at all signalized intersections.

Policy 2.2.3(c): The City shall continue its coordination with FDOT, MPO, Beautiful Palm Beach, Inc. and other appropriate government agencies to seek adequate funding to

implement the Dynamic Visions Master Plan, as adopted by the City, for modifications in the aesthetic nature of streets in West Palm Beach. Included in these efforts will be annual grant requests to the Florida Highway Beautification Council Grants Program.

Policy 2.2.3(d): The City shall pursue additional funding from County, State, and Federal grants available for traffic calming streetscape and landscape projects that are consistent with the Dynamic Visions Master Plan and the Transportation Vision.

Objective 2.2.4: The City's motor vehicle circulation planning shall be coordinated with the future land uses shown on the Future Land Use Map of this Plan, and the Five-Year Transportation Plans of the FDOT and the MPO of Palm Beach County.

Policy 2.2.4(a): The City's Planning, Zoning and Building Department shall review subsequent versions of the City's Five-Year Capital "Improvement" Programs and the Five-Year Transportation "Improvement" Plans of the FDOT and the MPO of Palm Beach County, in order to update or modify this Element, as necessary.

Policy 2.2.4(b): The City shall review for compatibility with this Section, the motor vehicle circulation plans and programs of Palm Beach County and the adjacent municipalities as they may be amended in the future. The City is taking a leadership role in sustainable transportation practices through its Transportation Vision. This policy will increase in importance as the City works with the County and other municipalities to follow suit.

Policy 2.2.4(c): The City shall continue to work with FDOT and the County to modify State and County streets to ensure pedestrian access and safety, including adequate streetscape elements to increase pedestrian comfort, Though this is important throughout the City, it is crucial to the success of the Downtown and commercial corridors elsewhere.

OBJECTIVE 2.2.5: A Transportation Concurrency Exception Area (TCEA) is hereby established for the purpose of Downtown revitalization. This area, called "the Downtown" for the purposes of the TCEA, is bounded to the north by Palm Beach Lakes Boulevard; to the east by the Intracoastal Waterway; to the south by Okeechobee Boulevard, including Howard Park and the proposed CityPlace DRI; and to the west by CSX Railroad between Palm Beach Lakes Boulevard and Banyan Boulevard, and by Australian Avenue between Banyan Boulevard and Okeechobee Boulevard. Within the Downtown, there shall be no motor vehicle concurrency requirements. The City will actively pursue the goals, objectives, and decision making principles of the Transportation Vision, to provide a transportation system that achieves the economic, social, and environmental goals of the City. Transportation and mobility needs within the Downtown shall be met through the implementation of the following policies:

Policy 2.2.5(a): The City shall monitor vehicular traffic operations within the Downtown. By May, the City shall develop a Traffic Management System (TMS) for the purpose of monitoring motor vehicle operations within the Downtown. The City shall prepare an annual report to determine the necessary measures to effectively manage vehicular traffic operations and evaluate the Traffic Management System. The City shall distribute the report to the Florida Department of Community Affairs, Palm Beach County, and other interested agencies, within three months of the anniversary of the effective date of the TCEA. Based on

the results of the traffic monitoring report, the City will pursue strategies including, but not limited to, the following:

(a) change motor vehicle signalization devices;
(b) promote public transit services;
(c) encourage transportation mode options;
(d) implement an employer-based Transportation Demand Management (TDM) activities;
(e) develop a centrally-managed system of strategically located parking facilities; and
(f) facilitate capital projects and street modifications in keeping with the Transportation Vision.

Policy 2.2.5(b): Potential increases to motor vehicle capacity are limited to the intersections and roadways listed below. The County and City recognize that modifications to increase motor vehicle capacity can vary from changing signal timings to adding lanes. City and County promotion of transportation modes and behavior that reduce the use of motor vehicles, particularly single occupancy automobiles, shall occur prior to making any motor vehicle capacity increases. Further, no capacity increases at a particular intersection or roadway segment can be made until Level of Service E is exceeded, unless the change is specifically agreed to by both City and County, and if enough time has passed to allow non-automobile initiatives to have an effect.

Roadways
(a) Palm Beach Lakes Boulevard from Dixie Highway to Australian Avenue
(b) Australian Avenue from Palm Beach Lakes Boulevard to Old Okeechobee Road
(c) Okeechobee Boulevard from Tamarind Avenue to I-95

Intersections
(a) Palm Beach Lakes Boulevard and Dixie Highway
(b) Quadrille Boulevard and Dixie Highway
(c) Banyan Boulevard and Australian Avenue
(d) Okeechobee Boulevard and Tamarind Avenue
(e) Okeechobee Boulevard and Dixie Highway
(f) Okeechobee Boulevard and Olive Avenue
(g) Belvedere Road and Dixie Highway
(h) Okeechobee Boulevard and Quadrille Boulevard

This policy does not imply that motor vehicle capacity reductions are prohibited nor discouraged at these locations.

Policy 2.2.5(c): The City and County shall coordinate with PalmTran, the Downtown Shuttle, Tri-Rail, and the MPO, through the Traffic Management System (TMS), to increase the number of buses, shuttles, and trains on their respective routes to reduce headways in the peak and off-peak hours. The CityPlace developers have agreed to contribute $100,000 annually to the Downtown Shuttle. The City will encourage all other development in the Downtown to provide subsidies to non-automobile transportation.

Policy 2.2.5(d): In cooperation with the FDOT Regional Commuter Assistance Program and the Transportation Management Association (TMA) of the Downtown Development Authority (DDA), the City and County shall conduct and analyze transportation surveys within the Downtown to determine barriers to and appropriate goals for employer-based TDM activities, including but not limited to ride sharing, van pooling, and flexible work hours. These surveys shall be completed within two years after the TCEA becomes effective [May 15, 1997].

Policy 2.2.5(e): Within three years after the TCEA becomes effective [May 15, 1997], the City shall require new employers of more than 50 employees locating within the Downtown to submit a program for and implement employer-based Transportation Demand Management (TDM) activities. The employers shall also be required to prepare an annual report evaluating the TDM activities, including measures to increase employee participation.

Policy 2.2.5(f): The City and County shall coordinate and implement intermodal transportation linkages within two years after the TCEA becomes effective [May 15, 1997]. These may include a shuttle between governmental, institutional, residential, office, and shopping areas, as well as parking facilities. In addition, the City will continue to support the County's efforts to develop an intermodal facility in the Downtown for PalmTran, Tri-Rail, and the Downtown Shuttle.

Policy 2.2.5(g): The City shall participate in, monitor, and support the planning efforts involved in the development of the I-95 Master Plan by the Florida Department of Transportation (FDOT) and other roadway facilities within the Florida Intrastate Highway System (FIHS).

Policy 2.2.5(h): The City's "Buildable Areas Monitoring Table" is a projection of how the Downtown Master Plan will be developed. At least every five years, the City shall evaluate the Table to determine whether an amendment to the Downtown Master Plan and/or the "Buildable Areas Monitoring Table" is required to reflect actual development trends. This amendment shall be consistent with the goals, objectives, and policies of the Downtown Master Plan and Comprehensive Plan.

TABLE 20
BUILDABLE AREAS MONITORING TABLE
Revised January 2003

Nonresidential (Square Feet)	1995 Existing	**8,126,945**
	Development Gap	**6,947,025**
	Total 2010 Projection	**15,073,970**

Residential (Units)	1995 Existing	**2,689**
	Development Gap	**4,566**
	Total 2010 Projection	**7,255**

Hotel (Rooms)	1995 Existing	**349**
	Development Gap	**2,100**
	Total 2010 Projection	**2,449**

Notes:

1. The table has been revised to reflect the final approved CityPlace Development of Regional Impact (DRI).
2. For planning purposes, the Subarea development caps are available in the Downtown Master Plan Element.
3. Residential information is provided for planning purposes only. Residential development is currently exempt from the Palm Beach County Traffic Performance Standards through the Coastal Exception provisions.
4. The revisions to the "Buildable Areas Monitoring Table" do not alter the requirements of the residential to non-residential ratio requirement of the Transportation Concurrency Exception Area. The Table provides the total projected build-out of non-residential square footage for in the downtown.

Policy 2.2.5(i): The DMP and TCEA are predicated on a set of assumptions needed to provide and implement the transportation goals, increase the number of residential dwelling units, and increase the density of nonresidential land uses. This balance of land uses is essential in achieving shorter trip lengths and reduced dependence on automobiles, as envisioned by the DMP and TCEA. This balance shall be maintained by the following actions:

(a) The City shall implement the DMP to increase the number of residential units in and near the Downtown;
(b) The City shall increase the density and mix of land uses in Downtown; and
(c) The City shall increase the ratio of residential to nonresidential land uses.

The ratio is the total number of built residential dwelling units divided by the total amount of built nonresidential development (1,000 square feet) in the Downtown (for purposes of this calculation, built units or nonresidential floor space are those having been issued a certificate of occupancy). The 1995 ratio (based on 1995 data), as calculated by the Buildable Areas Monitoring Table, is 0.33, and the DMP projects development within the boundaries of the TCEA to reach a built ratio of 0.46 by year 2010.

Five years from the effective date of the City's TCEA [May 15, 1997], the City shall achieve a built ratio of no less than the 1995 ratio of 0.33 (the baseline ratio). If the built ratio is lower than 0.33 at that time, no building permits shall be issued for new development (not including renovation) in Downtown which represent a ratio lower than the next baseline, until such time that a recalculation of built units and floor space yields at least a built ratio of 0.33.

Every two years ("reporting period") following the fifth year from the effective date of the City's TCEA [May 15, 1997], the City shall increase its baseline ratio by 0.03 until the baseline ratio reaches 0.46. Thereafter, 0.46 will be the baseline ratio, as indicated in the table below. If the baseline ratio is not met by the end of each reporting period, then no building permits shall be issued for new development in the Downtown which represent a ratio lower than the next baseline ratio, until such time that a recalculation of built units and floor space yields at least the baseline ratio. This annual report shall be based on total built units as of one month prior to the end of the reporting period.

TABLE 21
DOWNTOWN BASELINE RATIOS

Years After Effective Date	Baseline Ratio
5	0.33
7	0.36
9	0.39
11	0.42
13	0.45
14+	0.46

Policy 2.2.5(j): The City shall initiate a request for proposals (RFP) within one year after the TCEA becomes effective [May 15, 1997] to identify target areas for the installation of additional bicycle facilities in the Downtown so as to accommodate and encourage the use of bicycles as an alternative mode of transportation. The additional facilities include, but are not limited to, bike paths, bike lanes, bike routes, bike racks, bike lockers, and other bicycle parking and travel facilities. Within two years after the RFP is issued, the City Commission shall approve and implement a financing plan for the installation of additional bicycle facilities.

Policy 2.2.5(k): The City shall initiate a request for proposals by January 1, 1998, to conduct inventories of existing parking facilities, determine occupancy rates of on- and off-street parking, as well as provide forecasts and occupancies considering anticipated developments. The study shall also provide recommendations for parking strategies for leasing arrangements and future parking facilities. Within 12 months of the completion and acceptance of the parking study by the City Commission, the City shall adopt specific recommendations, as appropriate, to implement the parking study. In addition, the City and County shall continue to encourage the use of the existing governmental parking facilities in the Downtown through improved signage and public awareness. This task shall be accomplished within 18 months after the TCEA becomes effective [May 15, 1997].

Policy 2.2.5(l): Within one year after the TCEA becomes effective [May 15, 1997], the City shall determine the missing segments in the sidewalk network throughout the Downtown and within one-quarter mile of its boundaries and eliminate the missing segments within six years after the TCEA becomes effective.

Policy 2.2.5(m): In the event the City seeks to reduce the number of lanes on Okeechobee Boulevard from Tamarind Avenue to Dixie Highway, the City acknowledges that a CRALLS designation is required.

Policy 2.2.5(n): It is the intent of the City to restore Dixie and Olive to two-way operation. Prior to such action, the City agrees to investigate in conjunction with Palm Beach County and the Florida Department of Transportation potential alternatives which would increase sidewalk width while reducing travel lane width on Dixie and Olive.

GOAL 2.3: THE CITY OF WEST PALM BEACH SHALL PROMOTE AND IMPLEMENT TRAFFIC CALMING.

Objective 2.3.1: The City shall promote traffic calming nationwide and implement traffic calming plans within the City in areas determined appropriate by the City and the Transportation Division. The Transportation Division shall submit at least one abstract for presentation at a national engineering or planning conference to promote the City's Traffic Calming Program. Until 2001, the traffic calming projects shall be based upon the City's 3-year Capital Improvements Plan, and as directed by the City Commission. The project's are listed below:

TABLE 22
CAPITAL IMPROVEMENTS PLAN 1998-2001
CITYWIDE TRAFFIC CALMING PROJECTS

FY 1998-1999	FY 1999-2000	FY 2000-2001
Arlington/Gregory Road	Central Park to Greenwood	Belvedere to Ridgewood
Flamingo/Grandview/Sunshine	Greenwood Ave	El Cid/Monceaux/Prospect Park
Nottingham Blvd	Poinsettia Ave	Flagler/Northwood Shores
Northwood Hills	Pinewood Ave	Providencia Park (Ph 2)
Northwood Preserve	Pleasant City	Southside/Broadmoor
Palm Beach Lakes South	Providencia Park	Tamarind/Twin Lakes
Washington Road	Southside Neighborhood	Vallete Way/Winter Street
Westfield/Northshore/Echo	Southwest Neighborhood	Miscellaneous
	Vedado Park Neighborhood	
	T-intersection Research	

Policy 2.3.1(a): The City shall be a leader and innovator in the use of traffic calming and related design principles and the promotion of non-conventional transportation planning principles.

Objective 2.3.2: Beginning 1999, the City shall utilize the principles of traffic calming to increase pedestrian comfort and safety, lower motor vehicle speeds, and improve the quality of life for residents, visitors and businesses. Pedestrian safety and comfort shall be achieved by shortening pedestrian crossing distances, increasing sidewalk widths, and lowering motor vehicle speeds to reduce the potential for injury to pedestrians. Motor vehicle speeds shall also be lowered on all City-maintained streets to the posted speed limit or lower by means of traffic calming. All of these objectives assist in the enhancement of the quality of life for residents, visitors, and businesses. Additional factors to measure quality of life include: residential property value trends, neighborhood/property turnover, commercial vacancy rates, commercial property rent trends, and attitudinal surveys.

Policy 2.3.2(a): The City shall implement traffic calming measures and design principles to physically alter driver behavior, reduce the negative effects of motor vehicle use, and improve conditions for non-motorized users.

Policy 2.3.2(b): The City shall incorporate traffic calming in all its redevelopment, maintenance, utility, and related works and require other agencies that dig up the streets or modify them to incorporate traffic calming. The incremental cost of incorporating traffic calming into other projects will be born by those undertaking the works.

Policy 2.3.2(c): The City shall actively promote and work with the County, State, and private agencies who have jurisdiction over streets in West Palm Beach to also implement traffic calming measures and design principles.

GOAL 2.4: THE CITY OF WEST PALM BEACH SHALL PROMOTE THE PLANNING EFFORTS OF THE EASTWARD HO! INITIATIVE AS IT RELATES TO TRANSPORTATION PLANNING.

Objective 2.4.1: The City, in conjunction with other municipalities with the Eastward Ho! area of Palm Beach County, shall pursue a Transportation Concurrency Exception Area for the Eastward Ho! area within Palm Beach County to encourage redevelopment of the coastal communities.

Policy 2.4.1(a): The City shall actively work with Palm Beach County, municipalities within the Eastward Ho! boundary, the Florida Department of Community Affairs, the Florida Department of Transportation and the Metropolitan Planning Organization to institute a Transportation Concurrency Exception Area for the Eastward Ho! area with Palm Beach County to encourage redevelopment of the coastal area and maximization of land use.

GOAL 2.5: THE CITY OF WEST PALM BEACH SHALL STUDY THE IMPLEMENTATION OF THE TURQUOISE NECKLACE, AN OPEN SPACE PROPOSAL. THE TURQUOISE NECKLACE IS AN INTERCONNECTED NETWORK OF NEIGHBORHOOD OPEN SPACES WHICH INCLUDES CANALS AND WATERWAYS NAVIGABLE BY CANOE OR KAYAK AND PATHS ALONG THE CANAL RIGHTS-OF-WAY OR CONNECTING VARIOUS PARTS OF THE CITY AS AN INTEGRAL PART OF THE NON-MOTORIZED TRANSPORTATION CORRIDOR.

Objective 2.5.1: By 2002, the City shall establish corridors and utilize existing rights-of-way that connect the parks, linear parks, canals and waterways to increase the non-motorized transportation network.

Policy 2.5.1(a): By 2002, the City shall coordinate and actively work with the Florida Department of Transportation and other agencies to raise Interstate 95 at the M Canal to allow clearance for kayaking, canoeing, and a bicycle/pedestrian path within the canal right-of-way to connect the eastern portion of the City with the west via a barrier-free greenway.

Policy 2.5.1(b): By 2001, the City shall coordinate and actively work with Palm Beach County and other agencies to provide clearance through all canal culverts for kayaking, canoeing, and a bicycle/pedestrian path within the respective rights-of-way for greenway linkages.

Policy 2.5.1(c): At such a time that Parker Avenue is modified or reconstructed, the City shall construct a bridge, providing clearance for kayaking, canoeing and a bicycle/pedestrian path to connect the canal to the turning basin.

Objective 2.5.2: The City shall analyze and prepare a strategy for adding land, corridors, rights-of-way, or easements for the Turquoise Necklace to create more linkages between the City's greenways to increase the non-motorized transportation network.

Policy 2.5.2(a): By 2001, the City shall conduct public hearings to formalize a master plan incorporate bicycle/pedestrian paths along canal, rail, and I-95 rights-of-way as part of the Turquoise Necklace interconnected network of greenways, parks, and open spaces, connecting various parts of the City for use by non-motorized transportation.

Policy 2.5.2(b): The City shall pursue grants and other funding available for land acquisition for trails, greenways, and parks.

Objective 2.5.3: The City shall work with Palm Beach County Planning, Environmental Protection, and Greenways and Trails to connect the City's network with the Palm Beach County and regional network of greenways and trails.

Policy 2.5.3(a): The City shall meet on an ad hoc basis with the County's various departments to coordinate, plan, and implement the connection between the City's and the County's greenways and trails.

3.0. PORTS, AVIATION AND RELATED FACILITIES

GOAL 3.1: ACCESS TO THE AIRPORT AND THE PORT SHALL BE PROVIDED.

Objective 3.1.1: The City shall coordinate its street network with the Port and the Airport to ensure that sufficient ground access to these facilities is provided.

Policy 3.1.1(a): The City shall support increased access to the Airport. However, this does not imply that the City supports increased mobility between the Airport and I-95.

Policy 3.1.1(b): As the Port's and the Airport's cargo handling increases, the City shall discourage truck traffic through adjacent residential neighborhoods.

Policy 3.1.1(c): The City shall encourage and support a connection between the Airport, the Downtown Multimodal facility, and the Port with the Tri-County rail and the bus system (PalmTran and Greyhound), and possibly the high speed rail.

Policy 3.1.1(d): The City shall maintain control of the Stub Canal right-of-way.

GOAL 3.2: MODIFICATIONS TO AND OPERATION OF THE PORT AND THE AIRPORT SHALL BE CARRIED OUT IN A MANNER WHICH MINIMIZES THE NEGATIVE EFFECTS ON THE ENVIRONMENT AND WHICH MINIMIZES THE CONFLICTS BETWEEN THE PORT AND THE AIRPORT FACILITIES AND THE AREAS WITHIN THE CITY AFFECTED BY THESE FACILITIES.

Objective 3.2.1: Operation and expansion of the Port and the Airport shall be coordinated with the City of West Palm Beach Comprehensive Plan, particularly with the Future Land Use, Coastal Management and Conservation Elements.

Policy 3.2.1(a): The City shall encourage the Port to expand its oil-water separator system to include the entire main terminal area, so that all runoff is treated before draining into Lake Worth.

Policy 3.2.1(b): The City shall request that Palm Beach County supply the City with air quality data on an annual basis to ensure that jet fuel pollution from the Airport does not exceed federal air quality standards.

Policy 3.2.1(c): The City shall oppose any Airport plans that may increase existing aircraft noise levels greater than those originally recommended in the Development of Regional Impact Assessment Report for PBIA, Palm Beach County, Florida, dated December 18, 1981 and approved by Resolution No. R-82-199 of the Board of County Commissioners of Palm Beach County, Florida, authorizing Development Order for PBIA.

Policy 3.2.1(d): The City shall cooperate with the Department of Airports in their noise mitigation plan.

Policy 3.2.1(e): If the Port expands onto property adjacent to West Palm Beach's City Limits, the City shall ensure that its uses are compatible with or sufficiently screened from surrounding properties.

Objective 3.2.2: The City shall amend the Comprehensive Plan one year after the Evaluation and Appraisal Report is found sufficient by the DCA, to include a transportation element, pursuant to FS section 163.3177.

Policy 3.2.2(a): One year after the EAR is found sufficient by the DCA, the Comprehensive plan shall be amended to include a transportation element, which shall address:

(1) Traffic circulation.
(2) Non-automobile modes of travel, such as public transportation, pedestrian and bicycle.
(3) Parking facilities.
(4) Aviation, rail, and seaport facilities.
(5) Availability of facilities and services to serve existing land uses and the compatibility between future land use and transportation elements.
(6) Capability to evacuate the coastal population.

(7) Airports, projected aviation development, and land use around airports.
(8) Identification of land use densities, building intensities and transportation management programs to promote public transportation systems in designated public transportation corridors.

GOAL 3.3: THE CITY SHALL STIMULATE ECONOMIC DEVELOPMENT IN WEST PALM BEACH BY ENCOURAGING AND SUPPORTING PORT PLANS TO MEET EXISTING AND FUTURE DEMAND.

Objective 3.3.1: The City shall support Airport and Port activities which increase economic opportunities in West Palm Beach; provided the opportunities do not increase the negative effects beyond an acceptable level.

Policy 3.3.1(a): The City shall consider the recommendations of the City/County economic and environmental study for the Hillcrest/Vedado area to determine if land use changes are warranted in the area bounded by Belvedere Road, Southern Boulevard, Parker Avenue, and Interstate 95.

Policy 3.3.1(b): The City shall encourage retail and service establishments along Broadway (U.S. 1) which cater to the Port and Foreign Trade Zones as long as the adjacent residential areas are not negatively affected.

Policy 3.3.1(c): The City shall support the expansion of cruise line facilities at the Port.

GOAL 3.4: THE CITY SHALL ABIDE BY FEDERAL AVIATION ADMINISTRATION (FAA) REGULATIONS TO ENSURE PUBLIC SAFETY AROUND THE AIRPORT.

Objective 3.4.1: No obstructions to aircraft operations shall be erected in the Airport's clear zones nor be allowed to penetrate the Airport's approach surfaces, transition surfaces, horizontal surfaces or conical surfaces.

Policy 3.4.1(a): The City shall continue to enforce the Flight Path Protection Ordinance as adopted on October 15, 1990, and outlined in Chapter 333, Florida Statues, as amended from time to time.

Policy 3.4.1(b): The City's Building Division shall ensure that applications for all structures (temporary or permanent, i.e. construction cranes) which exceed FAA guidelines and which might negatively affect PBIA or the proposed north county general aviation airport will be processed in accordance with Federal Aviation Regulations Part 77.

APPENDIX A
LIST OF REQUIRED SETBACK LINES (FOR RIGHT-OF-WAY DESIGNATION)
AND REQUIRED STREET WIDTHS (NUMBER OF LANES)

Street Name	Setback in Zoning Code (From Centerline)	Number of Lanes -(Thoroughfare Plan)
Australian Avenue	53 feet - entire length	6 lanes Avenue
Belvedere Road	53 feet - I-95 to West City Limits	6 lanes - west of I-95
	40 feet- Olive Avenue to I-95	4 lanes - I-95 to Dixie Hwy 2 lanes - Dixie Hwy to OliveAve
Broadway	40 feet - entire length	4 lanes
Centrepark Place	25 feet - entire length	2 lanes
Chase Avenue	30 feet - Okeechobee Blvd. to Flagler Dr.	
Clematis Street	40 feet - Sapodilla Ave. to Tamarind Ave.	
	33 feet - Sapodilla Ave.	
Congress Avenue	53 feet - Palm Beach Lakes Blvd to North City Limits	4 lanes
	40 feet - Palm Beach Lakes Blvd to South City Limits	4 lanes
Datura Street	30 feet - South Dixie Hwy. to Tamarind Ave.	
	33 feet - South Dixie Hwy. to Narcissus Ave.	
Dixie Hwy	40 feet - entire length to Okeechobee (3 lanes) and Quadrille Blvd to 1st St. (5 lanes)	4 lanes - south of Okeechobee 2 lanes - Okeechobee to Banyan 3 lanes - Banyan to Quadrille
Quadrille Boulevard	100 feet - Loftin St. extension to Okeechobee Blvd	4 lanes
Evernia Street	40 feet - South Olive Ave. to Tamarind Ave	
Evernia Street	33 feet - Olive Ave to Flagler Dr.	2 lanes
Fern Street	40 feet - South Olive Ave. to Tamarind Ave	
	30 feet - Olive Ave. to Flagler Dr.	2 lanes
Flagler Drive	40 feet - 36th St. south to City Limits	2 lanes
Florida Avenue	30 feet - Okeechobee Blvd to Clematis St.	2 lanes
Forest Hill	40 feet - Flagler Dr. to West City Limits	4 lanes - w. of Dixie Hwy 2 lanes - e. of Dixie Hwy
Georgia Avenue	30 feet - Clematis St to Okeechobee Blvd	2 lanes - Okeechobee. Blvd to Forest Hill
	25 feet - Okeechobee to South City Limits	2 lanes - Clematis to Okeechobee
Haverhill Rd	60 feet	4 lanes Road
Jessamine Street	30 feet - Dixie Hwy. to Lake Ave	2 lanes
Jog Road	120 feet - 240 feet (entire - right-of-way width)	
Lakeview Avenue	30 feet - Dixie Hwy. to Flagler Dr.	2lanes - one way
Loftin Street	50 feet - Flagler Dr. to the F.E.C. Railroad	5 lanes - west to Quadrille Blvd
Military Trail	60 feet	4 lanes
Okeechobee Blvd	40 feet - Flagler Dr. to Dixie Hwy	2 lanes (one way)
	40 feet - Dixie Hwy to Lake Avenue	3 lanes (one way)
	60 feet - Lake Ave. to PBL Blvd	6 lanes

Street Name	Setback in Zoning Code (From Centerline)	Number of Lanes -(Thoroughfare Plan)
	70 feet - PBL Blvd. to West City Limits	8 lanes
Olive Avenue	30 feet - PBL Blvd. to Southern Blvd	2 lanes - PBL Blvd to Okeechobee
	35 feet - Southern Blvd to South City Limits	2 lanes - Okeechobee to Southern
		2 lanes - Southern to S. City Limits
Palm Beach Lakes Blvd	100 feet - Okeechobee Blvd to Carver Ave.	6 lanes
	60 feet - Carver Ave to Dixie Hwy	4 lanes
	40 feet - Dixie Hwy. to Flagler Dr.	2 lanes
Palmetto St.	30 feet - entire length	
Parker Avenue	40 feet - Kanuga to 300 feet north of Park Place	4 lanes - entire length
	40 feet- Sunset to Allendale	
	40 feet - Hillcrest to Kay	
	40 feet - Glen Ridge to Valley Forge	
Parker Avenue	40 feet -Franklin to Maddox	
	30 feet - Remainder of Parker Ave	
Roebuck Road	120 ft. - 240 ft from State Road 7 to Jog Road	(entire right-of-way width)
Rosemary	30 feet - Clematis St. to 11th St.	4 lanes Avenue
	30 feet - 25th St. to north terminus	
Southern Blvd	53 feet - Parker Ave to West City Limits	4 lanes
	40 feet - Flagler Dr. to Parker Ave	4 lanes Parker to Dixie Hwy
		2 lanes Dixie Hwy to Flagler Dr
State Road 7	160 feet (entire right-of-way width) north of Okeechobee Blvd	
Tamarind	40 feet - Okeechobee Blvd to 25th St.	2 lanes - Gardenia to 25th Street
		2 lanes - Okeechobee Blvd to Gardenia Street
Tanglewood Court	15 feet - Dixie Hwy. to Flagler Dr.	
Trinity Place	20 feet - Dixie Hwy. to Flagler Dr.	
Worthington Road	25 feet - entire length	
Banyan Blvd	40 feet - Australian Ave to Quadrille Blvd	5 lanes
	27 feet - Quadrille Blvd to Flagler Dr	3 lanes
15th Street	40 feet - Dixie Hwy. to the CSX Railroad	
23rd Street	40 feet - Flagler Dr. to Dixie Hwy	
	30 feet - Dixie Hwy. to Seaboard Airline Railroad	
45th Street	60 feet - I-95 to Haverhill Road	
54th Street	40 feet - entire length	
Two-laned collectors in the Villages of Palm Beach Lakes Planned Community	30 feet - entire length	

Note: The development of Roebuck Road, State Road 7, and Jog Road will be subject to all necessary environmental permitting processes.

APPENDIX B

TECHNICAL PAPER NO. 1

TECHNICAL PAPER NUMBER ONE:

Justification and Data/Analysis for
West Palm Beach's Policy Change
From Level of Service "D" to "E"
For Motor Vehicle Users

Intent

The intent of this document is to provide justification, supported by data and analysis, for the City's proposed policy change with respect to the City's policy level of service for motor vehicle users (PLOSFMVU) on City streets. The City is proposing to change the PLOSFMVU from "D" to "E" on City streets. This shall also serve as a response to the Objections, Recommendations, and Comments (ORC) Report by the Department of Community Affairs (DCA).

For information purposes and to assist in the clarity of the following, "City streets" are those streets under the jurisdiction of the City of West Palm Beach. They are maintained solely by the City and do not include any County streets, State Roads, or any portion of the Florida Intrastate Highway System (FIHS).

Introduction

West Palm Beach's cultural attractions, employment base, and its central location within Palm Beach County make the City a major urban and governmental center for the City and the County. The downtown is home to the West Palm Beach City Hall, the Palm Beach County Court House and Government Center, the State Attorney's Office, the Kravis Center for Performing Arts, and various other large offices and commercial areas. The future development of the City and the downtown will increase the City's role as the major urban center for the County and the region.

The developments within the City and the County have increased the transportation challenges of the City. These challenges, any response to the challenges, and the City's approach to land use regulation have a tremendous effect on the City's development, its waterfront and the quality of life in West Palm Beach. The effects to date required the City to seek a Transportation Concurrency Exception Area (TCEA) for its downtown to allow infill development. For similar reasons of infill and redevelopment opportunities, the City is seeking to change its PLOSFMVU elsewhere in the City. Furthermore, it is through these challenges that the City has chosen to apply the lessons from other cities across the Country and around the World who have faced similar challenges. The City's ultimate goal is best stated through the City's Transportation Vision Statement:

> ***"To provide transportation systems that achieve the economic, social, and environmental goals of the City of West Palm Beach which fosters sustainability, livability, and economic success."***

How the PLOSFMVU policy change will further Goal #1 of the City's Transportation Vision Statement

GOAL 1: TO FULFILL THE GOALS IN KEEPING WITH THE TRANSPORTATION VISION STATEMENT FOR THE CITY OF WEST PALM BEACH.

The goals of the vision statement are:

1. Increase the quality of City life;
2. Improve the conditions for residents and visitors (cleaner air, friendlier sur roundings, etc.);
3. Provide a wider choice of transportation and urban life-style options;
4. Be sensitive to, and incorporate, the preferences and requirements of the people using the area (residing, working, playing, etc.), along the street(s) or at the intersections;
5. Create safe and attractive streets;
6. Reduce the negative effects of motor vehicles on the environment;
7. Promote pedestrian, bicycle, and transit use;
8. Conserve natural resources including energy and land; and
9. Build an equitable transportation system.

In the ORC Report, the Florida Department of Transportation (FDOT) objected to the proposed change by questioning how the City will meet goals number 1, 2, 4, 5, 6, and 8, "given the detrimental effect that LOS "E" will have on the air quality, time delays, congestion, and fuel consumption."

The City of West Palm Beach is not dealing with a new phenomenon. Congestion has been around a long time and is costing the United States more than $40 billion annually. However, without efforts and initiatives that attempt to reduce automobile dependency, the losses would be more than $55 billion annually (Federal Transit Authority). To add to the costs, congestion is also contributing to the nation's environmental problems of air quality and fuel consumption.

From the perspective of the assumed effects of a lower policy level of service, conventional transportation engineers consider congestion to be a negative, something which must be eliminated either through the construction of more streets or motor vehicle traffic management techniques which allow more free flowing movement of motor vehicles. The conventional practitioners also assert that increases in congestion will make cars use more fuel and be more detrimental to the environment. This theory seems logical when analyzing the function and efficiency of a single automobile, but there are significant flaws when these assumptions are translated to the entire city.

A recent publication addressed the issue of congestion and the results of the conventional approach to dealing with the "problem" of congestion. The Texas Transportation Institute's annual report on metropolitan congestion shows that the most common strategy of building new roads and expanding existing roads has had virtually no impact on motor vehicle traffic congestion in major urban areas in the last 15 years. The research shows that cities that spent billions of dollars adding new lanes are no less congested than the cities that practically did nothing.

The study which analyzed data from 70 metropolitan areas over 15 years testified that areas that invested heavily in car-carrying capacity expansions did not ease congestion more than those that invested nothing. If increasing car-carrying capacity and building new roads is the solution to easing

congestion, there should have been a correlation between the two, but there was not. Therefore, the data demonstrates that the conventional assumption is incorrect and a new approach needs to replace it. A complete copy of the report can be found on the Surface Transportation Policy Project's web site at www.transact.org.

The issue of congestion and its effects are also addressed in the book, Cities and Automobile Dependence: A sourcebook. In this book, Newman and Kenworthy explain the flaws of the conventional engineering approach of applying the assumptions of single automobile engine efficiency to the function of the total urban transportation system. The following information was taken from Cities and Automobile Dependency.

There are four levels of research involving the vehicle and the city:

1. *Within the vehicle* — measuring how engines use fuel and produce emissions under different motor vehicle traffic conditions.

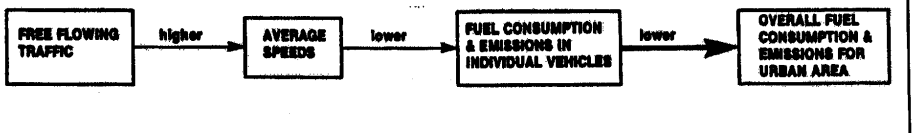
2. *Vehicle to vehicle* — measuring how motor vehicle traffic patterns can be characterized and what quantities of fuel and emissions these represent.

3. *City zone level* – modeling and predicting motor vehicle traffic patterns due to changes in the system and linking them to fuel and emissions.

4. *Whole city level* – measuring total fuel and emissions quantities and how they relate under spatial strategies.

The basic problem is that the research in the first two levels is accepted as valid in the higher levels involving the whole city. This is the "conventional approach" in North America. The complex systems involved in the higher levels include elements that affect all modes of transportation, the patterns of land use (density and mixture of uses), and travel distances and behavior. These are clearly not simply due to how fast vehicles move through a street section or how efficiently an engine operates at a given speed.

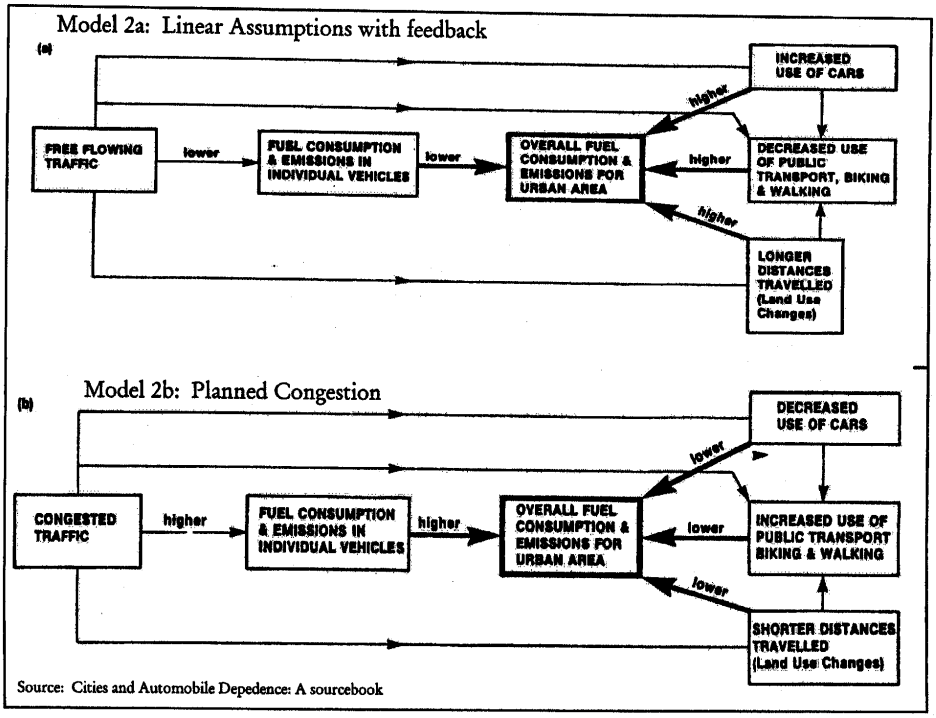
Conventional transportation analysis assumes a simple, linear flow of effects (Model 1) from raising average motor vehicle speeds, extrapolated from the assumptions of engine efficiency. Urban systems and cities are not that simple. A set of feedback effects needs to be added to the conventional model to provide a better understanding of how the system works in the aggregate. Model 2a exhibits a more realistic analysis of the total urban transportation system by including system feed-



Model 1: Linear Assumptions Source: Cities and Automobile Depedence: A sourcebook

back results with the conventional approach. Model 2b shows the feedback results using congestion as a planning tool.

The models are interesting when trying to understand the effects of various levels of congestion, motor vehicle travel speeds, and efficiency issues on a citywide basis. However, the facts are very compelling and have helped West Palm Beach conclude that its course of action is on the right track.



Source: Cities and Automobile Depedence: A sourcebook

Newman and Kenworthy analyzed data from 32 cities, from North America and around the world. The data included average motor vehicle traffic network speeds and gasoline use. The objective of the analysis was to determine whether free-flowing conditions actually attributed to lower fuel use.

Table 5.1: Gasoline Use v. Average Speed

City	Gasoline Use (MJ per person)	Average speed of motor vehicle traffic (km/h)
Houston	74510	51
Phoenix	69908	42
Detroit	65978	44
Denver	63466	45
Los Angeles	58474	45
San Francisco	55365	46
Boston	54185	39
Washington	51241	39
Chicago	48246	41
New York	44033	35
Average	*58541*	*43*

Source: Cities and Automobile Depedence: A sourcebook

As evidenced in the North American data summarized in Table 5.1, the speed of motor vehicle traffic does not correlate to fuel conservation. In fact, it shows that the cities with the highest average speeds of motor vehicles also have the highest consumption of gasoline. Newman and Kenworthy contend that it is part of a "broader urban process which creates greater automobile dependency in cities, through progressively less dense, less centralised land use patterns, greater overall provision for cars and diminishing viability of public transport, walking, and bicycling."

Table 5.5 (opposite page) concludes that density is also a factor in fuel consumption, emissions, and lower vehicle miles traveled. The analysis indicates that the higher the density, the lower the fuel consumption as well as vehicles miles traveled. Currently, West Palm Beach is even less dense than the Class I city, as described in Table 5.5. West Palm Beach has a person per hectare ratio of only 8.2. (Note: the Water Catchment Area was excluded from this calculation.) The ultimate objective of making the City more livable, sustainable, and economically successful is to bring it into the category of the Class IV and V cities with higher densities. Higher densities offer three benefits to improve transit service, 1) routes to greater numbers of destinations, 2) cost per rider is reduced when ridership increases, and 3) increased density allows transit service to be provided more frequently. A widely used study of U.S. urbanized areas revealed that densities of at least seven dwelling units per acre are needed to generate significant transit ridership. Pushkarev and Zupan reported that as densities approached 30 units per acre, transit demand nearly tripled. According to the 1995 Special Census, West Palm Beach has only 1.6 units per acre, well under the necessary density to properly support transit service.

Fuel efficiency, consumption, and emissions relate to the urban system in the same way. The two graphs created from data from Perth, Australian, (Figure 5.15 and 5.17) indicate that the spatial system of the city and the amount of infrastructure provided for automobiles is directly correlated to the amount of fuel consumed, the distances traveled, and the amount of emission generated. The conclusions from this analysis indicate that higher average motor vehicle speeds have the effect of raising fuel consumption and emissions. In fact, it contributes to lowering the density of cities,

Table 5.5

Transportation and land use characteristics and the co-existence of transportation modes in principal world cities (1980).

Factors and variables / Category of city	Class I - Very high automobile dependence almost no role for public transport, walking or cycling, very high gasoline use.	Class II - High automobile dependence, minor though significant role for public transport, walking and cycling, high gasoline use.	Class III - Moderate automobile dependence, important role for public transport, walking, and cycling moderate gasoline use.	Class IV - Low automobile dependence, public transport, walking and cycling equal with cars, low gasoline use.	Class V - Very low automobile dependence, public transport, walking and cycling more important than cars, very low gasoline use.
Land use intensity					
Urban density (persons/ha)	13.2	15.4	42.1	58.0	117.9
Employment density (jobs/ha)	6.0	7.5	23.2	32.9	80.9
Outer area density (persons/ha)	30.7	12.8	32.8	48.7	83.9
Outer area employment density (jobs/ha)	4.3	5.0	12.5	18.8	28.5
Inner area density (persons/ha)	23.7	45.1	91.7	83.8	201.4
Inner area employment density (jobs/ha)	19.5	37.2	65.4	67.1	211.3
Orientation to non-automobile modes					
Total vehicles per 1000 people	684	570	422	366	254
Cars per 1000 people	599	479	367	318	192
Per capita car passenger kms	12,822	11,369	7,396	5,185	2,846
Per capita public transportation passenger kms	362	887	1,444	1,899	2,919
Proportion of passenger kms on public transportion (%)	2.9	7.4	18.6	27.2	49.2
Proportion of workers using public transportation (%)	8.6	19.3	32.9	33.3	32.5
Proportion of workers using private transportation (%)	87.2	74.4	51.7	45.4	23.7
Proportion of workers using foot and bicycle (%)	4.2	6.3	16.3	21.3	23.8
Level of traffic restraint					
Length of road per person (m)	8.8	9.7	3.8	1.9	1.1
Parking spaces per 1000 CBD jobs	514	208	160	185	127
Vehicles per km of road	91	105	139	195	247
Car kms per km of road	1,068,857	1,064,836	1,723,132	1,723,685	1,645,405
Degree of centralization					
CBD population density (persons/ha)	14.2	45.8	78.2	89.2	158.6
Proportion of population in CBD (%)	0.3	0.7	1.5	2.2	3.9
Proportion of jobs in CBD (%)	11.4	15.0	18.6	20.7	19.8
Public transportation performance					
Vehicle kms per person	29.6	47.9	76.1	84.6	86.3
Passenger trips per person	68.1	106.3	229.6	324.3	371.6
Passenger trips per vehicle km	1.5	2.3	3.3	3.9	4.4
System average speed (km/h)	24.0	31.3	30.2	30.9	31.2
Energy use per passenger km (MJ)	2.12	1.13	0.88	0.78	0.82
Proportion public transport passenger kms on trains(%)	13.3	53.0	34.0	51.0	51.4
Transportation energy conservation status	Very poor	Generally poor but a few positive features	Significant conservation	Strongly conserving	Very strongly conserving
Gasoline use per capita (MJ)	33,049	44,395	23,846	12,443	8,588

Cities in each category and their cluster scores based on all factors.	Cluster score	Cities	Cluster score	Cities	Cluster score	Cities	Cluster score	Cities	Cluster score
Phoenix	95	Washington	288	Toronto	433	Amsterdam	574	Munich	641
Houston	98	Melbourne	302	New York	464	Frankfurt	595	Singapore	643
Denver	148	Boston	310	Copenhagen	496	West Berlin	598	Paris	648
Detroit	151	Chicago	349	Hamburg	549	Vienna	605	Hong Kong	694
Perth	168	San Francisco	357	Zürich	567	London	612	Tokyo	721
Adelaide	209	Sydney	361	Brussels	579	Stockholm	614		
Los Angeles	221								
Brisbane	223								

Source: Cities and Automobile Depedence: A sourcebook

Source: Cities and Automobile Depedence: A sourcebook

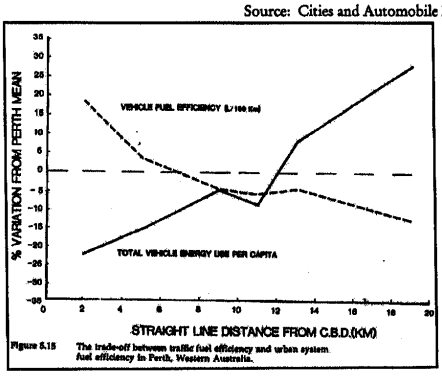


Figure 5.15 The trade-off between traffic fuel efficiency and urban system fuel efficiency in Perth, Western Australia.

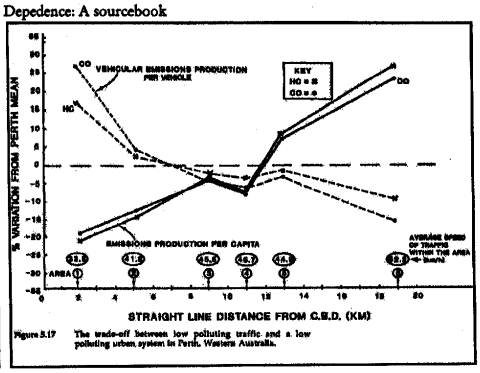


Figure 5.17 The trade-off between low polluting traffic and a low polluting urban system in Perth, Western Australia.

creating greater need for cars, promoting longer travel distances, and reducing the use of less polluting or nonpolluting modes of transportation.

Newman and Kenworthy also address the issue of congestion with respect to timesaving by motorists. In their analysis, the same 32 cities were examined and the results were connected to the previous discussion. The results indicated that as the speed of the motor vehicle traffic system increases, so to does the time commitment in cars, which is in excess of the time saved by traveling in the system at a faster rate. Any timesaving is short term. Eventually, the induced motor vehicle traffic (discussed earlier) fills the new facility and congestion returns. The long-term effects on the land use and on the mode choices alter the entire system that furthers automobile dependency and the associated byproducts of increased fuel consumption, increased emissions, and an increased time commitment required to participate in the transportation system. The data clearly demonstrates what many people have speculated for years, that the fuel use, pollution, car dependency, etc., increase at a faster rate than the increase in motor vehicle travel speeds. Cities cannot build themselves out of congestion and slowing down motor vehicle speeds on urban streets has opposite and beneficial effects.

Another publication discusses the disadvantages to public transit (bus service) by increasing the speeds of the general motor vehicle traffic stream. "Calmer, Not Faster: A New Direction for the Streets of LA," by Joel Woodhull, shows evidence that raising the speed of the entire motor vehicle traffic stream does not assist bus transit as it is often claimed. It is true that higher transit speeds means lower cost per vehicle per mile, but the incentive to use transit is weakened by the general increase in speed of the entire system which reduces the overall effectiveness of public transit. Mr. Woodhull states that the incentive to use transit is based on its performance relative to the automobile, and its relative performance worsens as motor vehicle traffic speeds increase. He suggests that it is not mere coincidence that in the cities where motor vehicle traffic moves the slowest, transit is more effective. [The article was prepared for the 70Th Annual Meeting, Transportation Research Board, Washington, D.C. January 13-17, 1991.]

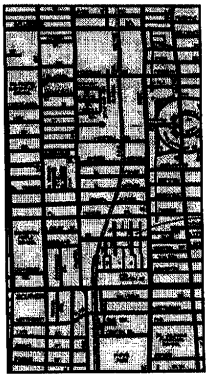
Impacts of the proposed PLOSFMVU "E" on City streets within the City's street network

In addition to the supportive data and analysis provided above, the the change in the PLOSFMVU will have a positive effect on the entire City street network for the following reasons:

1. The majority of the City's street network is a grid network.

The City is fortunate to be a relatively older, coastal community that was developed with a grid street network. The grid street pattern provides many alternate travel routes. The interconnected grid also provides the opportunity for diffusion of the numbers of motor vehicles over the entire network, reducing pressure on the arterials ("mobility-oriented") streets, such as the County streets, State Roads, and the FIHS, as shown on page 9. The grid network provides great access to properties within the City, which is the primary role of the City street network.

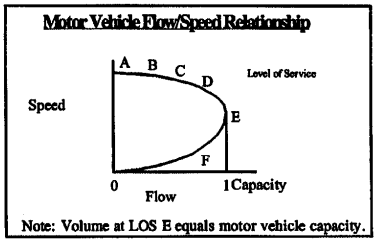
Example of street grid between Belvedere Road and Southern Boulevard



The City grid network also has many advantages for non-automobile modes of transportation. Walking and bicycling are easier with the provision of many route choices. The interconnected streets provide many choices that help shorten travel distances for these modes and encourage people to walk or cycle. Additionally, by making the City more walkable, the grid also promotes public transit by making it more convenient and easier to access stops.

Another issue, with respect to the grid network and the role of City streets, is that there is an antisocial trend in North America and South Florida of gating communities or isolating existing communities through street closures. The trend for street closures is in response to cut-through motor vehicle traffic and poor driver behavior in residential areas. The effects deteriorate the quality of life for residents in those areas. The City no longer supports street closures and is discouraging future gated communities. By making the City streets more mobility-oriented, (i.e., maintaining or increasing the PLOSFMVU), the City would fuel requests for separating residential streets by gates or closures from other streets used for mobility, such as the County and State arterials. If granted, the closures would increase pressure on the remaining [mobility] streets and limit the usefulness of the entire network by limiting route choice and access. If not granted, the quality of life would decrease, people would move out, infill development would be discouraged, and motor vehicle miles traveled would increase. The bottom line is that the City streets need to operate at slower motor vehicle speeds than the mobility-oriented streets to avoid cut-through and driver behavior problems.

2. The proposed change reflects the true capacity of the street.

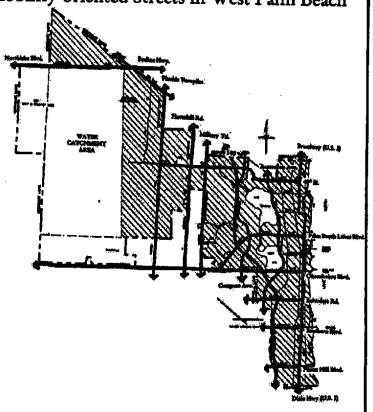


The [motor vehicle] volume to [motor vehicle] capacity ratio is calculated by dividing the volume of motor vehicles by the theoretical capacity of the street. This ratio is often used to estimate the level of service for motor vehicle users. In Palm Beach County, the denominator that is used for the estimation is the motor vehicle volume at LOS "D," i.e., LOS = function(volume/capacity at "D"). The City has simply changed the equation from the capacity at "D" to the capacity at "E," the actual capacity of the street. This provides a more correct estimate of the LOS of a particular street section. That is to say that the use of the volume at "D" for the denominator of the volume to capacity ratio is flawed because it can result in ratios that exceed 1.0. Any forecasts which predicts motor vehicle use on a particular street that exceeds the street's capacity cannot come true unless the street's capacity is increased. Showing a volume/capacity ratio that exceeds 1.0 is impossible because, by definition, volume is less than capacity for LOS A, B, C, D, and F; and volume is equal to capacity only at LOS E, as indicated in the graphic, "Motor Vehicle Flow/Speed Relationship."

Many conventional transportation planners misuse the word "capacity" to mean a threshold number of motor vehicle trips per hour or per day that represents a level of service for motor vehicle users of "C" or "D" which is higher than the volume at "E," which is the capacity of the street. In addition, these thresholds are often taken from a general number from a general table and has little to do with the actual street or intersection involved.

3. The majority of City streets are access-oriented.

Mobility-oriented Streets in West Palm Beach



Several County streets, State Roads, and portions of the FIHS bisect the City's street network. These streets or "arterials" provide the largest mobility role within the City. As indicated by the thick lines in the figure, these streets include east-west streets such as 45Th Street, Palm Beach Lakes Boulevard, Okeechobee Boulevard, Belvedere Road, Southern Boulevard, and Forest Hill Boulevard. The streets in a north-south orientation are U.S. 1, Australian Avenue, Interstate-95, Congress Avenue, Military Trail, Haverhill Road, and the Florida Turnpike. Other streets that bisect a portion of the City include Jog Road, Roebuck Road, Northlake Road, and Beeline Highway. All of these streets are situated in such a way as to provide a network of mobility within the City's access-oriented grid. In general, widening the City streets, within the areas shown by hatched lines, and altering their respective roles as access streets would diminish and reduce the quality of life of the areas accessed by the City streets.

All streets should not be considered only for one function, i.e., mobility. There needs to be allowance for diversity and hierarchy in the role that streets play within the system. The measurement of LOS is solely a mobility measurement that analyzes the performance of City streets from the perspective of the motor vehicle users in the same way that Interstate -95 is measured, both of which have different functions and different roles.

4. Building automobile capacity in urban areas is self-defeating.

This is not a new concept. Conventional engineers have been reluctant to support the evidence that "widening roads to ease motor vehicle traffic congestion is ineffective and expensive at the same time," as stated by Roy Kienitz, Executive Director of the Surface Transportation Policy Project (STPP). "It's like trying to cure obesity by loosening your belt." Widening streets encourages more automobile use and attracts more motorists. This is through "induced [motor vehicle] traffic." Motorists adapt to their environment. When there is the perception of increased travel time or cost, motorists react by altering their route choice, changing the time at which they travel, switch to another form or mode, or travel less. The opposite holds true. When streets are expanded or added to the system, motorists utilize the new facilities hoping to reduce their travel time or costs. It even encourages those on the margin, which may have chosen to switch modes or travel less, to use the new facilities, which adds more motor vehicles to the total amount in the region.

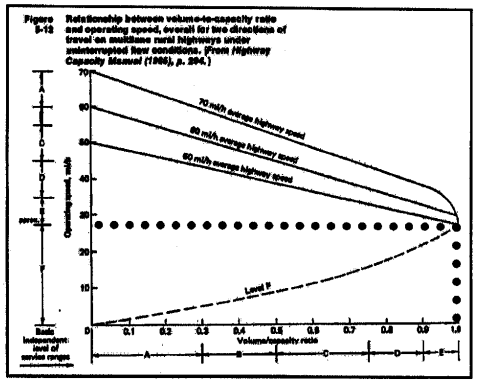
The "induced [motor vehicle] traffic" phenomenon has been verified through empirical research. The Federal Highway Administration (FHA) found evidence of induced motor vehicle traffic in a recent study in Milwaukee, Wisconsin. Researchers in this case estimated that induced motor vehicle traffic accounted for 11 to 22 percent of the city's motor vehicle traffic growth between 1963 and 1991. The University of California at Berkeley researchers Mark Hansen and Yuanlin Huang

also found that at the metropolitan level, every 1.0 percent increase in new lane-miles generated a 0.9 percent increase in motor vehicle traffic over a four-year period.

These results and their assumptions are often discredited as academic. However, the existing modeling is no less academic when considered that the results only come true if the respective widening projects are implemented. It does not take into account the effects of induced motor vehicle traffic nor does it consider the evidence that increasing the speed of the motor vehicle traffic stream effects choices on location, travel and mode, and contributes to automobile dependency.

5. Opportunity costs and the economic reality.

Based upon the data and analysis and other evidence that the City has compiled regarding congestion, car-carrying capacity, and related issues, the City has decided not to wait for other agencies or policies to catch up. The City is choosing to use the opportunity costs of expanding and adding streets toward measures to manage congestion. This is often referred to as "planned congestion." The measures may include, but are not limited to, allowing lower levels of service for motor vehicle users, a combination of travel demand management, incentives for public transit, walking, and bicycling, and complementing the program through land use policies that encourage higher densities and reduce automobile dependence. The overall assumption is that lowering the PLOSFMVU will maintain or raise the actual and/or relative level of service for all other modes, i.e., walking, bicycling, public transit, etc.



The City is also concerned about the high costs of maintaining a higher PLOSFMVU. These costs are not simply the financial costs of construction, but are also the costs to the city's fabric, neighborhoods, and existing buildings, as well as property values. Particularly, given the City's central location and attractiveness, it is inequitable and undesirable for the City to require its residents to shoulder the burden of maintaining a high level of service for motor vehicle users for the entire County.

In a similar vein, the City cannot continue to fuel the escalating expectations of motor vehicle users for higher LOS. This is particular evident as the population and the numbers of vehicles continue to escalate. Instead, the City has decided through a policy change to set a "maximum" on automobile usage within West Palm Beach; in this case, during peak hour. The City intends to parlay the opportunity costs to transportation and land use initiatives that promote livability, walkability, sustainability, and economic success.

6. Motor vehicle speeds at the proposed PLOSFMVU "E."

The City chose to lower the PLOSFMVU for two reasons. Not only do motor vehicle speeds at "E" cap the number of automobiles that can use a particular street section , but it also lowers operating

speeds of motor vehicles. The lower speeds of motor vehicles are safer for motorists. Reduced motor vehicle speeds lowers the frequency and severity of collisions. Lower motor vehicle speeds are also safer for more vulnerable users of the street, the pedestrian. The lower motor vehicle speeds also reduces the differential speeds between motor vehicles and bicycles. The lower the speed differentials between motor vehicles and bicycles, the more bicycling and other non-automobile modes become viable.

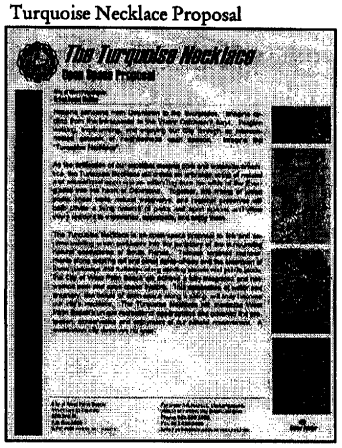
Impacts of the proposed PLOSFMVU "E" for motor vehicle users on City streets on the County, the State and the FIHS facilities

There will be negligible short-term effects of the proposed change on the County streets, the State Roads, and the FIHS facilities. The projected long term effects should benefit these non-City facilities through reduced automobile dependence, lower gasoline use, lower emissions, higher densities, and more efficient use of public transit and other modes.

Other Initiatives and Policy Changes

It is evident that altering the City's approach to provisions for motor vehicle use and congestion will have a major positive impact on the City's development evidenced by the growing private sector interest and investment in the City. Reducing the PLOSFMVU for motorists is a policy change is part of a larger change in the planning philosophy of the City. West Palm Beach is promoting principles of New Urbanism, higher densities, and a more walkable community. In addition to the proposed policy change, the City has been actively working towards a proposal for a downtown light rail system, a light rail system along the Florida East Coast rail corridor, the Turquoise Necklace, and traffic calming.

Turquoise Necklace Proposal



Conclusion

Engineers, planners, and the public alike continually state the truism that "you can't build your way out of congestion". However, the institutions where transportation professionals are employed have not embraced this reality. At this moment and historically, the institutions that control the majority of the transportation funds is dedicated to building wider roads. The metropolitan planning organizations (MPO) and state departments of transportation tend to ignore the evidence and tools provided for change. It should come as no surprise that this sort of paradigm shift is being lead by a local government, such as West Palm Beach.

West Palm Beach has the data and analysis to support its policy shift to lower the City's PLOSFMVU on City streets. West Palm Beach does not subscribe to the conventional model because the data/ facts and historical evidence indicates that the modeling is fundamentally flawed. The facts show that speeding up the motor vehicle traffic results in higher fuel use, more pollution, and more time spent in cars. Furthermore, cities that spend money on expanding car-carrying capacities are no further ahead from a congestion perspective than those that did nothing.

The conventional approach depicts congestion as a problem or negative that must be simply eliminated. The City is proposing to use congestion as an opportunity to achieve reductions in pollution, automobile dependency, sprawl development, and ultimately more congestion. The data and analysis supports the City's direction and it is the hope of West Palm Beach that other cities interested in sustainability and livability will follow this example.

REFERENCES

1. Newman, Peter W.G. and Jeffrey Kenworthy, Cities and Automobile Dependency: A sourcebook. Avebury Technical. 1991. Pp 142-168.

2. Woodhull, Joel. "Calmer, Not Faster: A New Direction for the Streets of L.A. Prepared for the 70th Annual Meeting of the Transportation Research Board. January 13-17, 1991, Washington, D.C.

3. "An Analysis of the Relationship between Highway Expansion and Congestion in Metropolitan Areas." Surface Transportation Policy Project. November 1998. Washington, D.C.

4. Dittmar, Hank. "Do New Roads Cause Congestion?" Surface Transportation Policy Project Progress. Volume VIII, Number 1, March 1998.

5. Hansen, Mark and Yuanlin Huang. "Road Supply and Traffic in California Urban Areas." Transportation Research. Volume 31, Number 3, 1997. Pp. 205-218.

6. Heanue, Kevin. "Highway Capacity and Induced Travel: Issues, Evidence and Implications." Presented at the Transportation Research Board Annual Meeting, January 1997.

7. Frank, Lawrence and Gary Pivo. "Relationships between Land Use and Travel Behavior in the Puget Sound Region, Final Summary Report." Prepared for the Washington State Transportation Commission.

8. Pushkarev, Boris and Jeffrey Zupan. "The Role of Density in Development." Public Transportation and Land Use Policy. Bloomington, Indiana. Indiana University Press. 1997.