

# Preliminary Transportation Alternatives

## J. N. "Ding" Darling National Wildlife Refuge



### **CHAPTER 3:** CARRYING CAPACITY

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## INTRODUCTION

The J.N. “Ding” Darling National Wildlife Refuge (herewith known as “Refuge”) is one of the most visited National Parks in the country. As a result of its popularity, the Refuge experiences high vehicle-traffic volumes on a regular basis. The Refuge Alternative Transportation study is designed to explore appropriate and environmentally sensitive solutions for managing the volume of visitors and their transportation needs in order to achieve a balance between the visitor experience and the potential resultant disturbance of wildlife.

The process of selecting a suitable alternative transportation system to improve mobility in the Refuge and on Sanibel Island is best initiated by identifying the carrying capacity of the island’s existing transportation system. Carrying capacity serves as a benchmark that helps define which future actions are acceptable, based on the anticipated impacts resulting from their implementation. Provided in this chapter is a summary describing the purpose and benefit of developing carrying capacity thresholds, which in the context of this study, support the development and evaluation of any proposed transportation alternatives.

It must be stressed that carrying capacity is a management concept, not a scientific theory. Highlighted below are the steps in measuring carrying capacity as they apply to this Alternative Transportation study.

## CARRYING CAPACITY DEFINITION IN THE CONTEXT OF THIS STUDY

Loosely defined, carrying capacity is the volume of activity or use that can be handled by a system before it begins to deteriorate. In other words, carrying capacity determines how much use a system can absorb before quality of service is impacted. With regards to this study, transportation carrying capacity can be defined as what volume of use the transportation infrastructure of the Island and Refuge can sustain (carry) in the long term.

Carrying capacity provides the baseline for examining several important interactions: supply and demand considerations; concerns about resource conditions and perceived quality of impacted resources; and the quantity of opportunities supplied and the quality of the experience derived from them. The carrying capacity strategy is supplanted by thresholds identified and developed by project stakeholders. Carrying capacity should form the basis of all management decisions and resulting actions; carrying capacity thresholds will be referenced as key decision making tools throughout the development of preferred alternative transportation recommendations alternatives.

Understanding the carrying capacity constraints of the Island’s transportation system will help project partners make informed decisions on the desirability of alternatives that are identified during the planning stages of this project given the desire to balance the needs for effective visitor and resident transportation and protection of the sensitive wildlife habitats on the Island. It must also be remembered that the purpose of the study is to provide alternative transportation solutions that sustain quality of life and protect the Sanibel barrier island sanctuary.

## CARRYING CAPACITY OVERVIEW

Stakeholders and project partners alike realize that the transportation infrastructure on Sanibel Island is nearing its maximum capacity. This reality necessitates the identification of a clear set



of issues and solutions and the introduction of alternative transportation options that will alleviate congestion and improve mobility.

Using the following conditions, the definition of carrying capacity thresholds for this project have been identified and applied to the preliminary alternative transportation systems. Carrying capacity thresholds are the mechanism by which the impacts of each preliminary alternative are evaluated. It must also be remembered that carrying capacity in the context of this project is a management tool that allows decision makers to make decisions that can prevent and avoid unacceptable impacts.

The decision process is based on the following premises:

- ❖ The traffic carrying capacity benchmark is represented by the traffic congestion conditions experienced in 2000 to 2001;
- ❖ The years 2000 to 2001 represents a period when traffic carrying capacity on the island was observed to have unacceptable impacts;
- ❖ Carrying capacity is a cumulative concept that must include recognition of the carrying capacities of other uses (i.e. natural habitats);
- ❖ Current levels of traffic do not exceed the islands carrying capacity, though there are seasonal variations that do cause carrying capacity to be reached or exceeded;
- ❖ Implemented solutions should temper the strain on traffic carrying capacity of the Island; and
- ❖ Any solutions will require flexibility so that peak-hour congestion levels are addressed appropriately, along with times of lesser overall capacity demand.

<b>STEP 1</b>
Define How Carrying Capacity is used for this Project
<b>STEP 2</b>
Identify a Carrying Capacity Benchmark
<b>STEP 3</b>
Define Carrying Capacity Thresholds
<b>STEP 4</b>
Carrying Capacity Evaluation
<b>STEP 5</b>
Develop Implementation Plan in Phases Over Time, with Pilot Program
<b>STEP 6</b>
Regular Monitoring of Implemented Recommendations

### STEP 1: HOW CARRYING CAPACITY IS DEFINED FOR THIS PROJECT

For this study carrying capacity is defined as a benchmark level of transportation infrastructure use that the Refuge and islands (Sanibel/Captiva) can absorb before undesirable impacts occur. This benchmark is supported by thresholds or triggers covering many different subject areas, including natural and man-made environments. Once a threshold has been exceeded, steps will be taken to minimize impacts. Preliminary carrying capacity thresholds have been developed though data collected, observations identified by the project stakeholders, and guidance from public input. These thresholds are also guided by existing policies and will continue to be refined throughout the project.

### STEP 2: HOW THE CARRYING CAPACITY BENCHMARK IS ESTABLISHED

The City of Sanibel clearly acknowledges in its vision statement (Sanibel Plan) that it has worked over the past 20 years to ensure that its diverse population lives in harmony with the island's wildlife and natural habitats. It has remained vigilant in the protection and enhancement of its sanctuary-like characteristics and has resisted pressures to accommodate further development that is often inconsistent with its vision statement. Between 1990 and 2008, the peak level of human activity occurred on the islands in 2001. This peak of human activity was observed to negatively impact the natural environment and the existing infrastructure, demonstrated by disturbances to coastal birds' nesting behaviors and increased congestion on local streets.

The project stakeholders, including representatives from the Refuge and the City of Sanibel, utilized the policies expressed in the Sanibel Plan, Refuge management policies, and data from 1990 to 2008 to identify 2001 as a clear carrying capacity benchmark year. Carrying capacity thresholds can be determined using this benchmark as a goal; not exceeding or exacerbating the human footprint beyond the conditions that existed in 2001.

### STEP 3: HOW CARRYING CAPACITY THRESHOLDS ARE ESTABLISHED

All proposed mobility solutions for the Refuge and the City will be evaluated against the carrying capacity benchmark. This evaluation uses carrying capacity thresholds or triggers designed to ensure that future conditions do not exceed the 2001 benchmark. Carrying capacity thresholds cover several different topographical areas (natural and man-made) and reinforce the City's and Refuge's respective visions of preservation through alternative transportation recommendations that support the Refuge's management objectives and the City's policies.

### STEP 4: CARRYING CAPACITY EVALUATION

Each proposed transportation alternative and the potential impacts of its implementation are weighed against the carrying capacity thresholds or policies. If the human footprint of any transportation recommendation exceeds any of the identified thresholds, mitigation measures are identified to correct the unacceptable impact so that it is back within the carrying capacity benchmark. If a proposed alternative could not mitigate the proposed impacts, it was removed from selection or modified to eliminate the undesirable effects.

### STEP 5: HOW ALTERNATIVES ARE IMPLEMENTED

Project stakeholders, including the Refuge and the City of Sanibel, select a preferred alternative transportation scenario based on its performance during the carrying capacity evaluation (Step 4) and its ability to satisfy project goals of improving mobility within the Refuge, to/from the

Refuge, and within the City. This preferred transportation scenario is then further evaluated through the identified Federal (FTA) alternatives analysis guidelines. Once chosen, a preferred alternative with a detailed implementation plan will identify the actions (e.g. ridership goals, cost efficiency, subsidies, etc.) required to fund, build, and operate/maintain preferred alternative transportation recommendations. This plan may establish implementation phases over time, starting with a pilot project to test the effectiveness of recommendations. Should the pilot study prove to be successful, further phases will then be considered for implementation.



## STEP 6: HOW ALTERNATIVES ARE MONITORED

Carrying capacity thresholds are also used to monitor the success of implemented recommendations. A regularly scheduled monitoring plan determines when and if a carrying capacity threshold is exceeded. If a threshold is exceeded, mitigation measures are identified or the recommendation is abandoned.

## CARRYING CAPACITY AS A MANAGEMENT TOOL

This alternative transportation study will provide the island residents, natural resource managers, and area stakeholders with the opportunity to collaboratively direct and manage transportation patterns and find solutions to the traffic congestion experienced periodically on the Island. Using 2001 as the recognized carrying capacity benchmark, the opportunity exists to make sound transportation management decisions that will contribute to the preservation of an environmentally sustainable island community.

Factors that should be considered while determining transportation carrying capacity include:

- ❖ Impacts to natural resources which include physical and biological (habitat) constraints;
- ❖ Social factors that consider the needs and wants of the local community; and
- ❖ Managerial factors which include legal directives and agency (stakeholder) missions which can play a major role in determining appropriate actions.

It is difficult to define a truly balanced “natural state” goal for Sanibel Island. The public view of what this means ranges from a reversion to historic conditions to full acceptance of current development levels. The widely held conviction that Sanibel should remain a “barrier island sanctuary” has set a high sensitivity level on carrying capacity expectations regarding what should be allowed on Sanibel Island before impacts are considered unacceptable.

At every stage of the planning and implementation of this study, it should be remembered that carrying capacity is a management concept, not a scientific theory. Carrying capacity decisions are driven by community perceptions, data collection, existing policies and observations.

In summary, the following should be considered when determining the carrying capacity for various activities on the island:

- ❖ A clear description of the desired conditions;
- ❖ An identification of indicators or benchmark of the desired condition;
- ❖ Establishment of standards or thresholds; and
- ❖ Development of management actions and decisions

## CARRYING CAPACITY CONDITIONS

Carrying capacity thresholds or polices contain specific physical, ecological, and social indicators (variables) that reflect the desired overall condition of a zone or an area. Thresholds are conditions which support management actions and objectives to ensure that impacts do not exceed those that are acceptable. Project managers ultimately make carrying capacity decisions that will be used to decide which specific uses are appropriate and acceptable and that the resulting impacts can be tolerated.

Each of the island's jurisdictional areas has thresholds that have been identified as relevant and acceptable by their managers and island residents. For natural island areas, threshold decisions are more restrictive on human activities than those adopted for residential areas on the island. These decisions are closely tied to environmental sustainability goals that have been identified by stakeholders. However, it must be remembered that if the island is considered a single entity, threshold decisions need to be evaluated in the context of their cumulative outcomes.

Determining carrying capacity thresholds for the island requires the recognition that carrying capacity is determined by a set of community and stakeholder threshold decisions (indicators) that are qualitative (subjective/visionary) and quantitative (objective/management). These thresholds may vary for each of the different jurisdictional areas of the island.

## ESTABLISHMENT OF STANDARDS

The statements given by the City and Refuge define carrying capacity thresholds for this study. The Sanibel Island vision serves as a useful reference to the standards that the community expects for carrying capacity threshold decisions. The vision states that:

*"Sanibel is and shall remain a barrier island sanctuary, in on in which a diverse population lives in harmony with the island's wildlife and natural habitats. The Sanibel community must be vigilant in the protection and enhancement of its sanctuary characteristics. The City of Sanibel will resist pressures to accommodate increased development and redevelopment that is inconsistent with the Sanibel Plan, including this Vision Statement. The City of Sanibel will guard against and, where advisable, oppose human activities in other jurisdictions that might harm the island's sensitive habitats, including the islands surrounding aquatic ecosystems."*

The Refuge purposes provide the foundation upon which carrying capacity thresholds can be evaluated. They are:

- ❖ For use as an inviolate sanctuary, or for any other management purpose, for migratory birds;
- ❖ To conserve ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend;
- ❖ To promote wetlands conservation for the public benefit;
- ❖ To maintain the Refuge's biological integrity, diversity, and environmental health;
- ❖ To monitor the status and trends of refuge fish, wildlife, and plants;
- ❖ For recreational use, when such uses do not interfere with the (refuge's) primary purposes; and
- ❖ To give priority consideration to compatible wildlife-dependent recreational uses over all other general public uses.



The Refuge's management objectives also provide insights into the expectations for carrying capacity thresholds. They are:

- ❖ To join in partnership with the residents of Sanibel and Captiva Islands, Lee County and State of Florida aim to safeguard and enhance over 7,300 acres of pristine subtropical habitat for the benefit of wildlife;
- ❖ To protect and provide suitable habitat for endangered and threatened species including the American crocodile, west Indian manatee, wood stork, eastern indigo snake and bald eagle;
- ❖ To implement sound wildlife management techniques to provide feeding, nesting and roosting habitat for a wide diversity of shore birds, wading birds, waterfowl, raptors and neo-tropical migratory species;
- ❖ To provide high quality interpretive and environmental education programs in order to provide each refuge visitor with an appreciation of fish and wildlife ecology and to provide quality wildlife-oriented recreation compatible with the purposes for which the refuge was established;
- ❖ To maintain native fish populations that contribute to the integrity of the estuary, provide a food source to sustain wildlife foraging opportunities, and to support a recreational sport fishery;
- ❖ To maintain native wildlife and plant populations that contribute to the ecological diversity and integrity of the refuge; and
- ❖ To maintain healthy and diverse natural habitats through protection, restoration, exotic plant control, and fire management.

The City of Sanibel's Comprehensive Land Use Plan or the Sanibel Plan (1997 & 2007 Revised Versions) provides detailed descriptions of carrying capacity threshold management decisions that support the establishment of standards as laid out in the City and Refuge visions. Article 3 of the Sanibel City Plan prescribes management actions that have a direct bearing on the determination of thresholds. These thresholds will be used as the basis for development and performance measurement of project alternatives. Currently the Refuge Management Team is rewriting its Comprehensive Conservation Plan (CCP) that will provide management decisions and clearly define carrying capacity thresholds.

## PROTECTION OF SENSITIVE AREAS

If carrying capacity thresholds are exceeded on Sanibel Island for any period of time, it is most certain that the resulting cumulative impacts to island habitats and environment will degrade living conditions for wildlife, residents and visitors. A stated goal of this project should be one that recognizes that this scenario should be avoided at all cost

## ISLAND AREA HABITATS

On Sanibel Island, the carrying capacity of island area habitats is the sum of an accumulation of individual carrying capacities. These habitats are susceptible to various factors which can change over time. Factors may include water supply, water quality, climatic conditions, human intervention, and seasonal influences.

For purposes of this study, island area habitats can be broadly defined as island natural habitat areas (the Refuge and city conservation zones) and human altered areas (the urban, recreations and commercial zones of the City of Sanibel). The interconnectivity between these distinct areas cannot be overlooked, as Sanibel Island and its constituent parts function as a whole and should be treated as such. For purposes of the alternative transportation study, the vision of an

environmentally sustainable island requires that carrying capacity thresholds for the Refuge and the City of Sanibel are also considered cumulatively.

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## ISLAND NATURAL AREAS

There are distinct natural ecological zones (e.g. Gulf Beach Zone, Bay Beach Zone, Mangrove Zone, Gulf Beach Ridge Zone, Mid-Island Ridge Zone, and the Freshwater Wetland Zone), conservation lands (including the Refuge), and conservation districts on the island, each of which are sensitive to different factors that influence their specific carrying capacities (**see Figure 1**).

The most stringent environmental carrying capacity thresholds are found in the Refuge where management decisions exist to protect impacts to threatened and endangered species and sensitive habitat. Federal guidelines underpin many threshold decisions and directly impact carrying capacity considerations (i.e. certain Refuge areas are closed to all activities that might disturb the natural environment). The CCP currently being written, along with subsequent step-down management plans, will provide clear guidance on management decisions that address impact thresholds and carrying capacity. Current decisions to manage impacts to Refuge habitat and wildlife are discretionary and are based on scientific monitoring methods employed by the Refuge. Clearly demarcated restricted areas form part of the activity threshold determinations that allow or restrict access for certain public uses (**see Figure 2**). These restricted areas must be considered when decisions are made on alternative transportation corridors as they will influence where they are located.

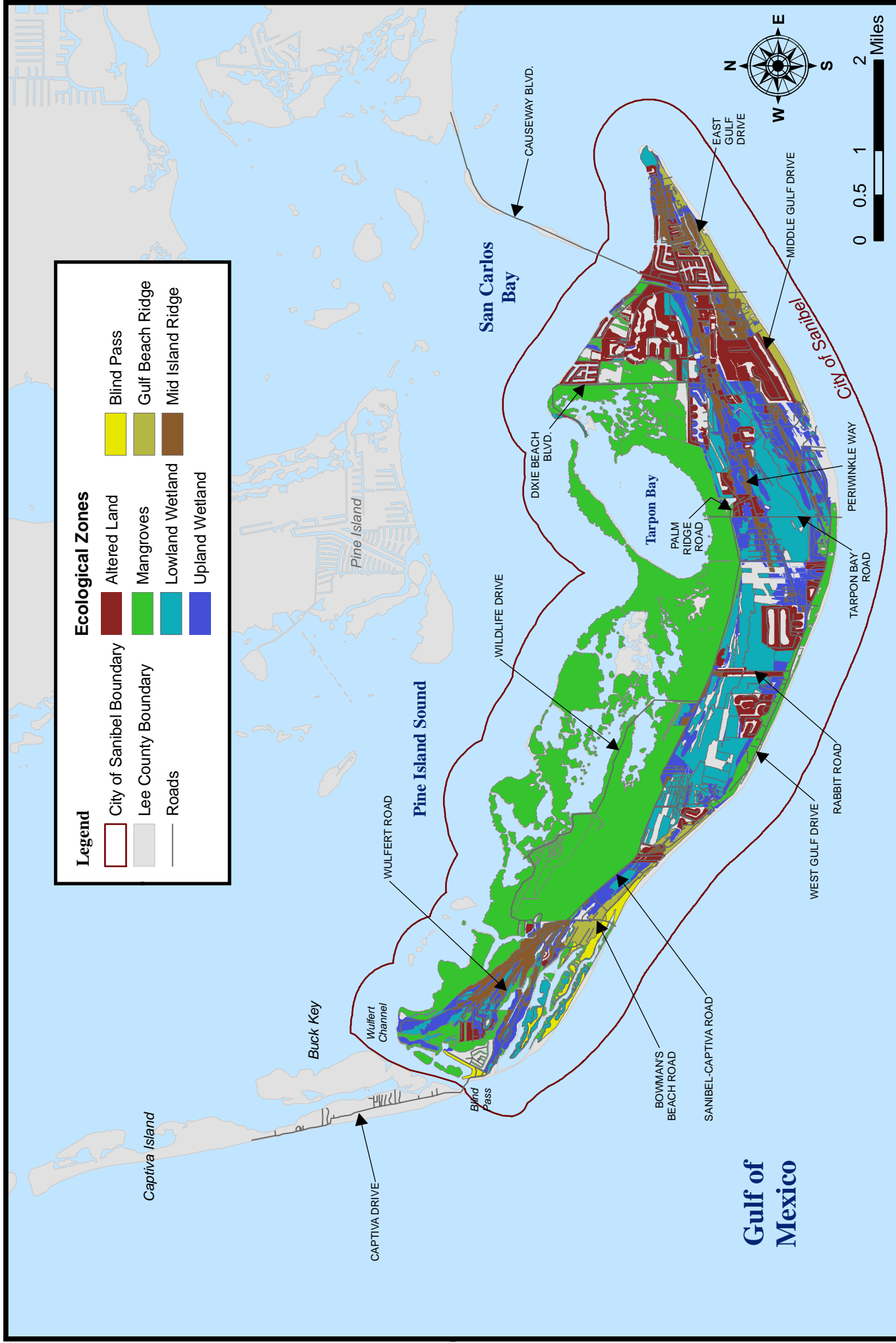
Overall, any development recommendations within Refuge and conservation areas that expand current impact footprints will be limited to the level acceptable to the Refuge and conservation area managers, based on their assessment of impact thresholds and carrying capacity. These conditions will be identified during the planning and implementation phases of this project.

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## CITY OF SANIBEL

The guidelines laid out in the Sanibel Plan can be directly applied to City-managed residential, recreational, and commercial areas of Sanibel Island (**see Figure 3**). Although these guidelines may at times be less stringent than those for the Refuge and Sanibel Island conservation areas, they do establish use thresholds that are focused on protecting the island's sensitive environment.

Planning decisions and city codes are based on policy decisions that support the communities' vision of a sustainable barrier island environment. These codified policies are comprehensive. Article 3, Part 3.2 (Protection of Natural, Environmental, Economic and Scenic Resources) provides clear guidelines for the protection of natural resources (**see Appendix C**). These guidelines identify acceptable activity thresholds for carrying capacity determinations. The city's policy on road widths and limited parking areas, for example, plays a large role in defining the transportation carrying capacity of the island and what modes of transportation would be appropriate under this alternative transportation study.



**Figure 1: Ecological Zones**  
 Alternative Transportation in Parks and Public Lands

Sources:  
 Sanibel City (Ecological Zone Boundaries)  
 Florida Department of Transportation (Roads)

This map is for illustrative purposes only



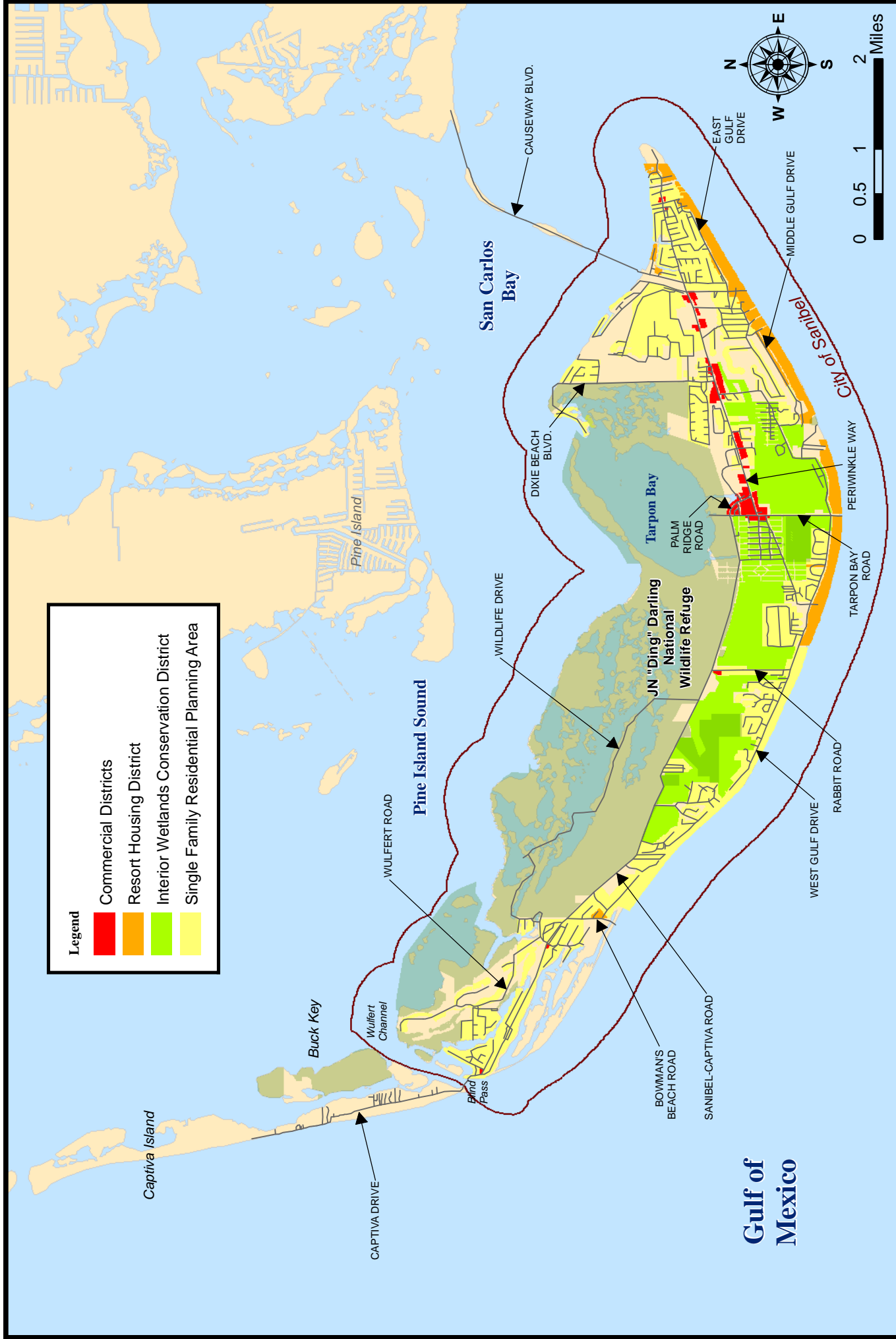
**Figure 2: Study Area Conservation Lands and Managed Lands**

Alternative Transportation in Parks and Public Lands



Sources:  
Lee County GIS Department (Parcels)  
Florida Department of Transportation (Roads)

This map is for illustrative purposes only



**Figure 3: City of Sanibel Districts**

Alternative Transportation in Parks and Public Lands



Sources:  
The Sanibel Plan (Future Land Use Elements)  
Florida Department of Transportation (Roads)

This map is for illustrative purposes only

As described in **Appendix C**, The following carrying capacity threshold statements pertaining to environmental impacts have been identified and must be considered when any decisions are made during the development of transportation alternatives:

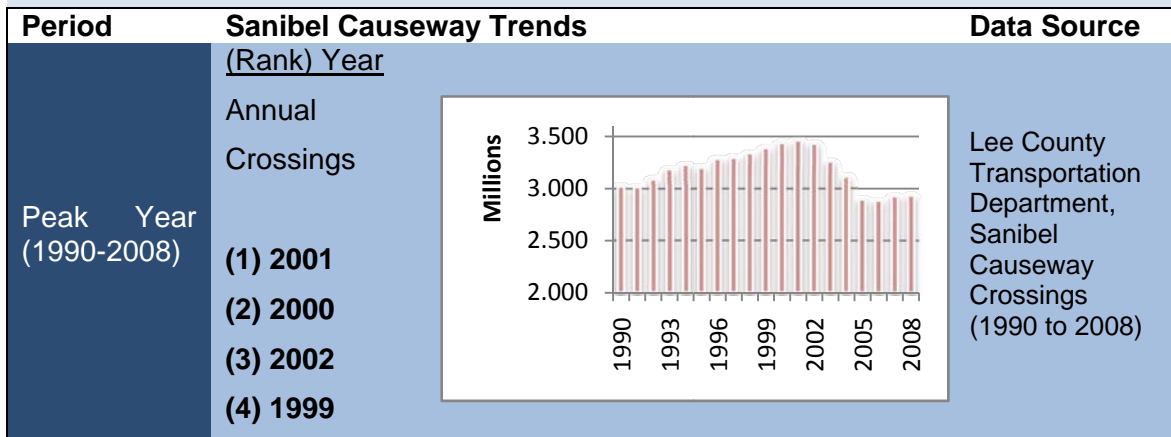
- ❖ Increases in current noise, air, or water pollution must be avoided;
- ❖ When unacceptable levels of pollution are identified as resultant of a transportation action, they must be mitigated;
- ❖ Potential traffic impacts to the environment of the island caused by residents and visitors will be monitored and impacts will be mitigated;
- ❖ Short term impacts must be mitigated so that the natural environment can return to its natural state;
- ❖ Long term impacts that will damage the natural environment will not be allowed;
- ❖ Encroachment on protected natural environments must be avoided;
- ❖ Every effort will be made to restore natural areas that have been impacted by human activity; and
- ❖ Every effort will be made to ensure that native species (fauna and flora) are not endangered by the introduction of exotic and invasive species.

#### SEASONAL HUMAN ACTIVITY IMPACTS ON ISLAND CARRYING CAPACITY

The year round residential population of Sanibel Island is approximately 6,300. During the high season the island population swells by approximately 14,000 to a peak of nearly 20,500 inhabitants. The impacts of this 225% seasonal increase of Island inhabitants on the natural environment is further compounded by the addition of daily Island visitors (approximately 13,000 per day) and daily Refuge visitors (621,000 in 2007). The seasonal increases in resident and visitor numbers (when the island carrying capacity is exceeded) place tremendous seasonal pressure on island resources that often requires seasonal management decisions. Variations in the island population and the resulting fluctuation in demand imposed on island services and the environment must be considered when decisions are made on alternative transportation modes. With such ebbs and flows, flexibility is required when it comes to making choices of a suitable alternative transportation system for the island. This is especially true for the Refuge where the number of visitors can vary from a high of 25,000 per month during the high season to a low of 9,000 per month in the low season. The high season is generally defined as the months of November through April with peak visitation concentrated around the days between the New Year and Easter.

This seasonal fluctuation had its greatest impact to the Island in 2001 when Island facilities experienced excessive congestion and overuse. Since this peak or benchmark year, several factors have lead to a general decrease in transportation infrastructure demand. One such factor is the opening of the refurbished Sanibel Causeway in 2007, which alleviated congestion on the bridges as well as on the roads leading to and from the bridges. Another possible factor leading to a decrease in demand occurred when Hurricane Charley, a Category 4 hurricane, made landfall on Sanibel Island on August 13, 2004. It was the strongest hurricane to hit Southwest Florida since 1960, negatively impacting visitor numbers in subsequent months. As a result, 2001 as been identified as a benchmark of peak transportation demand that carrying capacity thresholds will use to measure the impacts of preferred transportation alternatives (see **Figure 4 & Chapter 2**).

FIGURE 4



The human environment carrying capacity is supported by factors identified by stakeholders and project partners. The following carrying capacity threshold statements have been identified and must be considered when any decisions are made during the development of transportation alternatives:

- ❖ ***Impacts of transportation activity to the native fauna and flora on Sanibel Island must be avoided and mitigated if they occur;***
  - Implementation of any preferred transportation scenario element will adhere to policies established by the City of Sanibel Plan and Refuge management plan which clearly outlines necessary measures to protect native fauna and flora. No decline in the quality of native fauna and flora will be accepted.
- ❖ ***Seasonal fluctuations in impacts to the islands resources should be considered and accommodated;***
  - Implementation of any preferred alternative transportation scenario element will clearly identify strategies and service plans that fluctuate to meet seasonal demands. Strategies may include increased alternative transportation circulator service or closures of certain visitation destinations due to over-congestion or encroachment on sensitive environmental resources.
- ❖ ***Conservation lands (currently 54.8% of Sanibel Island land use) will not be lost due to development pressure;***
  - Implementation of any preferred transportation scenario element will adhere to policies established by the City of Sanibel Plan and Refuge decisions which clearly guides development and allows no loss of conservation lands. Any cumulative impacts will also be mitigated.
- ❖ ***Human activity and development needs must be sensitive to sustainable environmental practices; and***
  - Implementation of any preferred transportation scenario element will also establish a monitoring plan that evaluates environmental impact over time. Protect areas will receive additional consideration.
  - Implementation of any preferred transportation scenario element will also establish strategies that monitor seasonal impact on fauna (example: human activities at a point of interest can be restricted during avian breeding seasons).
- ❖ ***Future growth in island resident and visitor numbers must be monitored and mitigated so that environmentally sensitive areas are not impacted. Future Island growth in visitation will be monitored. Decisions on acceptable visitation levels will be made collaboratively between project partners when impacts are observed and identified.***

## TRANSPORTATION CARRYING CAPACITY

Carrying capacity thresholds pertaining to transportation have been clearly defined by the City of Sanibel Plan. According to The Sanibel Plan, "...the city is to address its traffic problems through traffic calming techniques and measures to: first, implement intersection capacity enhancement improvements so as to effectively manage the projected traffic volume increases within the City and second to reduce auto ridership rather than to pursue measures to expand roadway capacity." The City also "... manages traffic congestion at beaches by limiting parking opportunities; however, this may exacerbate congestion in beach areas, during the high season, as day-visitors drive around the island looking for alternative parking opportunities."

The island policy to avoid any increase in roadway capacity expansion sets a clear transportation threshold that requires auto ridership reductions on the island if congestion and its impacts are to be mitigated. Reducing auto ridership must be a goal of the study. Island residents are also concerned about future increases in the number of visitors to the island and the impacts they would induce upon environmental resources. Project stakeholders have also identified that any measures introduced to reduce auto ridership must not also introduce a system that brings more visitors to the island, thereby exacerbating visitor pressure on the environmentally sensitive areas of the island. Any alternative transportation system that is introduced must however allow voluntary use.

The Refuge is also faced with mobility issues, such as limited parking capacity and congestion at the Refuge Visitor Center and increased auto traffic on Wildlife Drive. Impacts to wildlife are of concern and at times the Refuge staff takes measures to prevent any impacts, closing portions of the Refuge to visitation. These closures follow Refuge management policies that establish transportation carrying capacity thresholds and transportation policies within the Refuge. In the context of this study all transportation carrying capacity thresholds are regulated by policies identified by the Sanibel Plan and the Refuge management. These thresholds generally include following:

- ❖ Supporting infrastructure should be contained within existing rights-of-way;
- ❖ There should be no associated increase in the environmental footprint of any adopted system;
- ❖ Green propulsion systems for transportation modes are preferable;
- ❖ Small vehicles are preferred;
- ❖ An adopted transportation system should be compatible with the island's sustainability goals and should not be invasive of nature (non-polluting, quiet, not block traffic);
- ❖ The adopted system must be flexible and be able to accommodate daily and seasonal fluctuations in demand;
- ❖ Passenger pickup areas should be contained in existing parking areas and not impede traffic flow on the island; and
- ❖ The adopted transportation system should focus on alleviating existing traffic congestion on the island and in the refuge while continuing to allow the use of private vehicles.

The following goals have been identified that contribute to addressing the traffic carrying capacity constraints on Sanibel Island:

- ❖ Increases in traffic volumes and the associated air and noise pollution must be mitigated within the Refuge, and on Sanibel and Captiva Islands;
- ❖ Increases in traffic on the Sanibel Island's road network must be mitigated;
- ❖ Single occupant vehicle use should be discouraged where possible;



- ❖ Non-motorized forms of transport should be encouraged as recommended in the City of Sanibel's Shared Use Path Master Plan;
- ❖ Current parking spaces on the island should serve as a parking benchmark; and
- ❖ Any adopted transportation system should be flexible enough to accommodate seasonal changes and future demands for transportation on the island.

### PRELIMINARY CARRYING CAPACITY THRESHOLDS

Carrying capacity thresholds have been compiled from existing City of Sanibel policies, Refuge management policies, and State and Federal policies. These thresholds will identify preliminary alternative impacts, mitigation needs, and assist in screening elements of each preliminary alternative during future detailed study. These preliminary carrying capacity thresholds can be found in **Appendix C**.