



# COMPREHENSIVE PLAN

**2017**  
update

## TECHNICAL DOCUMENT

Data & Analysis

## DATA & ANALYSIS INTRODUCTION

This document provides background information concerning the location, historical development and socio-economic data of the Village of Tequesta. In addition, this chapter serves as the framework for developing the Village of Tequesta's 2017 Evaluation and Appraisal Review (EAR) based Comprehensive Plan update.

Per Florida Statutes, Chapter 163.3177 *"the comprehensive plan shall provide the principles, guidelines, standards, and strategies for the orderly and balanced future economic, social, physical, environmental, and fiscal development of the area that reflects community commitments to implement the plan and its elements. These principles and strategies shall guide future decisions in a consistent manner and shall contain programs and activities to ensure comprehensive plans are implemented."*

Pursuant to Chapter 163.3191, Florida Statutes (F.S.), local governments are required to evaluate their local comprehensive plan every seven years to determine if plan amendments are necessary since the last update of the Comprehensive Plan, and notify the State Land Planning agency as to its determination. In 2016, the Village of Tequesta determined it necessary to conduct a review and evaluation of its current Comprehensive Plan to reflect changes in state requirements, current Village's conditions, challenges and future community trends.

The vision and guiding principles of the Village of Tequesta Comprehensive Plan embrace the following "sustainable community" concept: *An urban area with a long-term planning and management vision that incorporates a multi-modal transportation network; walkable, mixed use patterns of development; denser development where infrastructure exists; civic spaces and interconnected open spaces for recreation; economic vitality and job choices; choices in housing price and size; a robust educational system; and a unique identity.* As indicated in the adjacent illustration, the Village's sustainable community concept serves as an umbrella under which all the elements of the Comprehensive Plan are developed.



### **Comprehensive Planning Process – Evaluation and Appraisal Review**

The purpose of this EAR is to examine the Comprehensive Plan over the past years since the last update to the Comprehensive Plan, and to assess how well the Plan is serving the Village. This EAR will identify what changes have occurred and propose how the Plan can be modified to accommodate them. Specifically, the Purpose is to:

- Identify major local issues that are important to the Village;
- Assess how the Comprehensive Plan has guided planning, growth and redevelopment since the last EAR-based amendments;
- Identify changes that have occurred in Tequesta and past Village or other governmental actions that have prompted changes in the community;
- Identify and evaluate changing conditions and trends as they relate to the major issues identified;
- Assess both successes and shortcomings of the Plan;
- Identify what changes need to be made to the Plan to reflect current conditions and direction;
- Determine financial feasibility of the Village Comprehensive Plan and determine to what extent adopted Level of Service (LOS) Standards have been met;
- Respond to changes in Florida Statutes and the Florida Administrative Code in regard to growth management and development;
- Respond to changes to the State Comprehensive Plan and the Treasure Coast Regional Planning Council Strategic Regional Policy Plan as it affects Tequesta's Comprehensive Plan;
- Prepare updated population estimates and projections;
- Assess the success or failure of coordinating residential development in Tequesta with school capacities and in the siting of public school facilities; and
- Identify changes to the Plan to effectively manage growth, redevelopment, and anticipated impacts into the future.

The history of the Village's Comprehensive Plan dates back to its original adoption in October 1988, with subsequent revisions adopted in September, 1989, pursuant to the 1985 Local Government Comprehensive Planning and Land Development Regulation Act (Florida Statutes, Chapter 163). Next, the Village prepared and adopted an EAR-based Comprehensive Plan amendment in August, 1996. Ordinance No. 541 (adopted July 22, 1999) amended the Comprehensive Plan by incorporating new, revised and/or updated text, tables, maps, figures, analysis, as well as goals, objectives and policies in various elements of the Plan. Since these major revisions in 1999, the Village adopted a new Public School Facilities element in 2001 with subsequent revisions. Furthermore, various amendments to the Future Land Use element were adopted in 2002, 2004 and 2005.

The last EAR-based update to the Village's Comprehensive Plan was adopted in February 2009, per Ordinance No. 16-08. The existing Village's Comprehensive Plan encompasses the following ten (10) elements:

- Future Land Use
- Transportation
- Housing
- Infrastructure

- Coastal Management
- Conservation
- Recreation and Open Space
- Intergovernmental Coordination
- Capital Improvement
- Public School Facilities (Per F. S. this is an optional element)

Most recently, in 2016, the Village determined it necessary to conduct a review and evaluation of its current Comprehensive Plan. A notification letter was transmitted to the Department of Economic Opportunity (DEO) in January, 2016.

The current proposed amendment to the Comprehensive Plan is based on in depth review of each element including required legislation, demographics data, information that reflects existing Village's conditions, and future community trends. Additionally, the adopted 2009 Evaluation and Appraisal Report, updated census, and planning and policy provisions provided the basis for preparing amendments to the existing Comprehensive Plan. The subject Comprehensive Plan amendment also includes an update of the following map series:

- Future Land Use
- Existing Land Use
- Transportation Map
- Coastal Soil and Conservation
- Soil
- Flood Zone
- Hurricane Surge

One of the proposed changes to the Comprehensive Plan is the removal of the Public School Facilities Element, an optional element per Florida Statutes. There are no existing or planned public school facilities within the Village limits, and the existing and projected population will not have an impact on school attendance. The Village is concurrently requesting to be exempt from joining the Public Schools Interlocal Agreement for Coordinated Planning, pursuant to criteria set forth in Chapter 163.31777(3), F.S. Detailed information on this topic is presented in the Intergovernmental Coordination Element's data and analysis section.

This EAR-based amendment to the Village's Comprehensive Plan is subject to the State Coordinated Review process, pursuant to Section 163.3184(4), F.S. A summary of this process is outlined below:

1. After initial local hearings (Local Planning Agency and Village Council) approving the proposed amendments to the Comprehensive Plan, the Village is required to transmit the complete proposed plan amendment to the State Land Planning Agency.



2. Next, within 60 days of receiving the complete amendment proposal, the State Land Planning Agency issues an Objection, Recommendation, and Comments Report (ORC) to the local government.
3. The Village is required to hold a second public hearing to adopt the amendment to the Comprehensive Plan.
4. The complete adopted Comprehensive Plan amendment must then be submitted back to the State.
5. Finally, within 45 days of receiving the complete adopted plan amendment, the State Land Planning Agency issues a Notice of Intent to find the plan in compliance or not in compliance, which is posted on their website.

As part of the Village's community participation process, a number of workshops were held to discuss the proposed Comprehensive Plan amendments. The Planning & Zoning Board, sitting as the Local Planning Agency (LPA) Board, had a total of two workshops prior to the LPA transmittal hearing. One took place September 21, 2017 and a second was held November 16, 2017. In addition, the Village Council also had two workshops which took place October 30, 2017 and December 4, 2017.

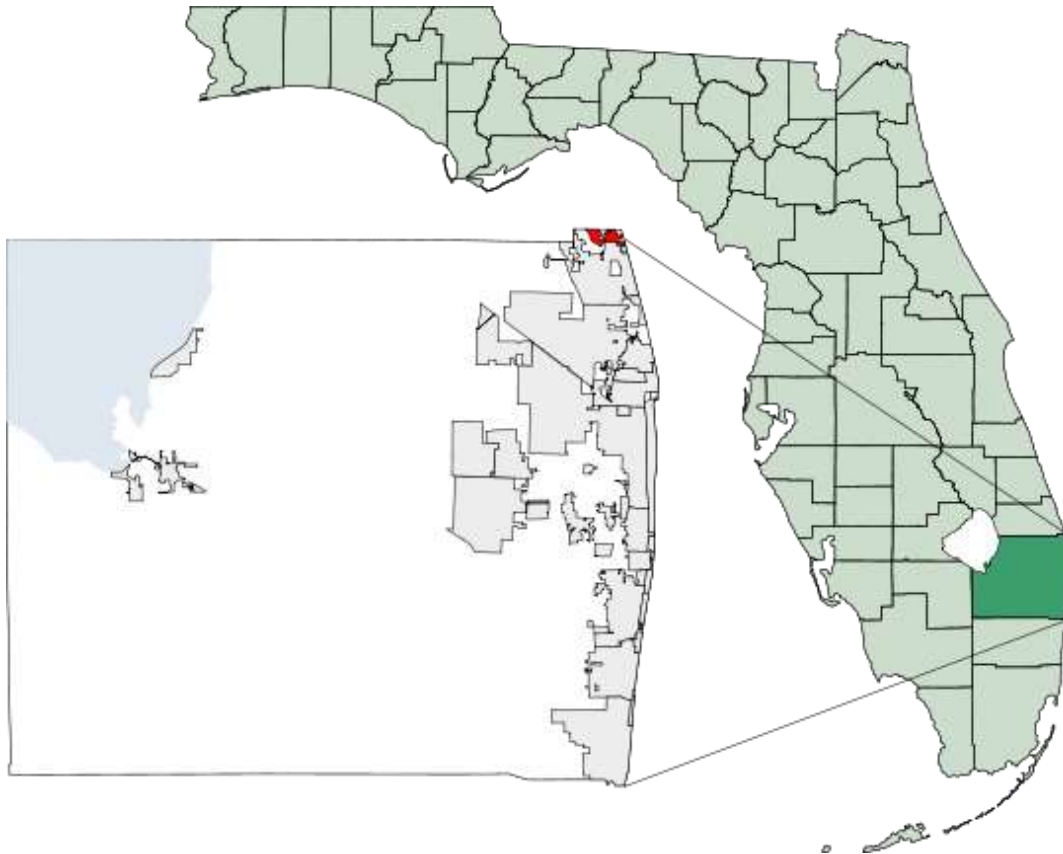
Next, public hearings are required to transmit the proposed amendments to the State Land Planning Agency, including a Local Planning Agency (LPA) hearing followed by a Village Council hearing. The LPA hearing is scheduled for December 21, 2017, followed by the Village Council transmittal hearing on January 11, 2018.

## **EXISTING CONDITIONS**

The Village of Tequesta is located in the northern portion of Palm Beach County along the County's eastern seaboard. Incorporated in 1957, the Village encompasses 2.3 square miles (2014) bounded by: Martin County to the north; the Town of Jupiter, Town of Jupiter Inlet County, unincorporated Palm Beach County, and the Loxahatchee River to the south; the Atlantic Ocean, incorporated Palm Beach County, and the intracoastal waterway to the east, and; the northwest fork of the Loxahatchee River to the west.



**Figure 1: Village of Tequesta Location**



### **History and Development**

The information contained in this section was taken direction from the History of Tequesta 25 Year Anniversary and History of Tequesta 50 Years Anniversary publications, which can be found on the Document Center accessed through the Village’s website.

### **Our Indian Story**

The following excerpts are from an intriguingly thorough study on Indians of the area as they relate to the election of the name Tequesta" for our Village. The material is part of a comprehensive manuscript by Gwyn Corbett. Contrary to popular belief, the Tequesta Indians never lived here permanently. That bit of folklore which led to the selection of the charming name for the Village seems to be historically disproved.

The Tequesta Indians were a southern Florida aboriginal tribe that occupied most of the present Dade County and as far north as Pompano in Broward County. To the west and south their lands merged with the Calusa and boundaries wavered from time to time as that more powerful tribe dominated Tequesta settlements." At various times the Tequesta were also in the Keys. They occupied the Everglades only around the edges. Their preference was the Miami area, with the

largest settlements on Biscayne Bay (Chequesha). They liked to live at the mouth of streams, inlet, and among coastal beaches.

The Jaega and the Jobe (Hobe) are of the same tribe. A small group comprised of three villages, not industrious or powerful, they were spring-offs from the major sophisticated Argonomic Timucuan Indians. They lived as semi-nomads relying entirely on wild foods. The largest settlement in this area was located on the South side of the Jupiter Inlet, where the Dubois homestead is located.

Florida was the home of more than 100,000 Indians when Christopher Columbus first sailed to the new world in 1492. The Indians were descendants of nomadic Indian hunters who had entered the state in search of game at least 10,000 years earlier. But today there are no living descendants of these first Floridians. European diseases, warfare, and enslavement completely destroyed these aboriginal people during the 200 years following the founding of St. Augustine in 1565. By 1720, the northern Florida Indian was non-existent and by 1763 the south Florida Indian had also disappeared. Indians who survived were taken by the Spaniards on ships to Cuba for slavery.

### Historic Jupiter-Tequesta

Archeologists tell us that Jupiter on the lower east coast of Florida has been inhabited for nearly 2,500 years. The name Jupiter Inlet has appeared on early Florida maps since 1770. Certainly this place, with its winding rivers and blue-green tides, has a warm, lived-in atmosphere and a feeling of antiquity that has an unfailing attraction for new residents and holds the old ones wedded to its charms.

Since the name is odd and intriguing, many people are interested in its origin, which dates back to the first Spanish explorers who visited the coast of Florida. The Herrera account of Ponce de Leon's first voyage in 1513 seems to indicate he came into Jupiter inlet for wood and water, and to investigate the Indians. Menendez visited the inlet in December and January of 1555-1556. Here, they found a tribe of Jaega Indians who called themselves Jobes, living on a high shell-mound near the inlet. It was custom to name rivers for the nearest Indians, so the river flowing into the Inlet became Jobes Rivers, pronounced by the Spaniards "Hoe-bay". The town 8 miles north of Jupiter is still known as Hobe Sound. When the English arrived in 1763, the Hoe-bay seemed the Spanish version of Jove, which they in turned changed to Jupiter, from which it has never been altered.

An iconic Jupiter landmark is the red brick lighthouse which stands at the junction of the Indian and Loxahatchee Rivers and the Jupiter Inlet channel. The busy traffic of the Inland Waterway passes before it and there is a breathtaking view from a 105-foot tower. The three branches of the Loxahatchee River winding best, the Indian River and the Jupiter Island Resort on the north, the Atlantic Ocean on the east, the inland waterway, Juno and West Palm Beach south, present a panorama encompassing one of the most beautiful parts of Florida.

The lighthouse was built shortly before the Civil War and celebrated the centennial of its first lighting July 10, 1960. It stands on a 61 acre tract, which was part of the 9,088 acres of Fort Jupiter Reservation, set aside after the Seminole Indian War. One of the engagements of the war was fought on the Loxahatchee river on January 24, 1838.

To most pioneers, the 1890's when the Jupiter area was the transportation center of southeast Florida, and Juno was the county seat of Dade County, had all the enchantment of a Rovers and Hammerstein musical. Indian River steamers docked across from the Lighthouse. Another steamer, found too large to navigate the shallows was tied up here and became a floating hotel. The steamers were met by a narrow gauge train known from its stations of Jupiter, Juno, Venus and Mars, as the Celestial Railroad.

### Tequesta is Chartered – 1957

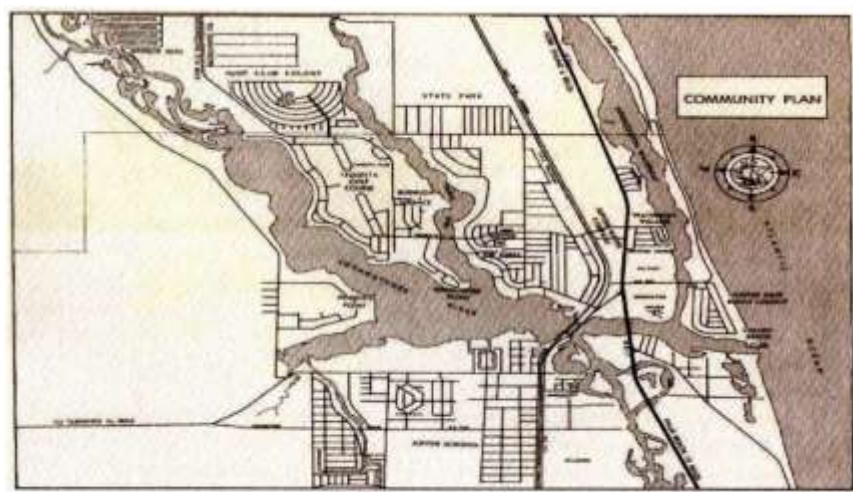
After an early, but abortive, attempt to create an all-encompassing "Village of Jupiter Beach," Charles Martyn and friends moved to incorporate the confines of the present day Tequesta Country Club community. (Jupiter Beach would have included all land north of Jupiter proper to the Martin County line, and from the middle of the Loxahatchee River to the Atlantic Ocean.)

Hence, under "Chapter 57-1915, House Bill No. 1492," The Village of Tequesta was created. It was merely a piece of legislation enacted by the State of Florida, which "became as law without the governor's approval," an inauspicious but legally acceptable beginning.

Immediately after following the July 4, 1957 incorporation date, the Village began getting organized and adopting regulations.

### The Sixties

Initially developed as a retirement golf community, the Village eventually expanded beyond this original vision. Though development was slower in the beginning, it increased more rapidly throughout the first decade. The 1960's saw the rapid development of the Country Club Community and surrounding pockets of county land. Pratt & Whitney was in its prime,



Tequesta street map from a 1960's brochure designed to sell property in the newly formed Village.  
— Courtesy of Punch Martyn

which drew numerous families to the area for new job opportunities when they relocated to northern Palm Beach County from Connecticut.

By 1967, the Tequesta Country Club was already expanding its facilities to better serve the community. By the end of the decade, the Village had a bowling alley, two movie theaters, and a growing number of families.

### The Seventies, Eighties, Nineties, and New Millennium

In the 1970's more merchants opened for business. By this time, Tequesta had a movie theater and a K-Mart in a shopping plaza. There were also two grocery stores, a hardware store, a variety store, and many other shops to accommodate the needs of a growing community.

By the 1980's, the Village of Tequesta continued to attract families to the area and was rapidly evolving as a community. The first "skyscraper" was built on US Highway One, which remains the only building of this sort. County Line Plaza was built, which drew large anchor stores to this location.

The urban fabric of the Village evolved in the Nineties, as new multi-family developments appeared, offering a more affordable living option for the younger generation. Older, outdated shopping centers were replaced with newer plazas and office complexes.

### Today

Over the past 58 years, the Village of Tequesta has transformed from a crude, at best, settlement of strong-willed and strong-bodied pioneers to a thriving, modern small Village. Today, Tequesta boasts a population of over 6,500, including seasonal residents, still small in comparison to the neighboring Jupiter, with over 50,000 residents. As of 2014, the median age was 49.3 years, considerably less than when the Village was incorporated, as it was originally developed as a retirement golf community.

Although small in size, the Village of Tequesta continues to stand out in Palm Beach County and around the state. In 2017, the Village was the recipient of three awards related to the Village of Tequesta U.S. Highway 1 (US-1) Master Plan and Complete Streets Project. This \$3.2 million project includes resurfacing and safety improvements along a 1.4 mile stretch of U.S. Highway 1, which is further detailed in the Transportation Element of the Data and Analysis document provides more detail of this project.

During the October 12<sup>th</sup>, 2017, Village Council meeting, Michael Busha, Executive Director of Treasure Coast Regional Planning Council, presented Mayor Abby Brennan with three awards.

The awards included "Outstanding Infrastructure Award" from the Florida Planning & Zoning Association; Award of Merit: Best Practices Category from the Florida Chapter of the American



Planning Association; and an Innovation Award from the National Association of Development Organization.



The Village is committed to making Tequesta a safe and enjoyable community for both residents and visitors. This important transportation project will transform a major corridor into a safe, accessible, and aesthetically pleasing roadway which will accommodate all users, whether on foot, bike, bus, private vehicle, or other mode of transit.

### **Land Use**

With its extensive waterfront property, high quality residential development, extensive park system, and natural beauty, the Village of Tequesta offers its residents a high quality of life and small-town ambiance in a major metropolitan region. Within the five, ten, and twenty year planning periods, the Village does not project significant new development or redevelopment to occur within its boundaries, or significant population growth.

Redevelopment needs are minimal, and are primarily limited to the remaining handful of vacant parcels and streetscape improvements in the commercial areas along U.S. Highway 1. Because of these factors, no major



issues were identified in the Evaluation and Appraisal Review. The amendments are generally intended to update dates and references, delete obsolete objectives and policies, provide new or amend existing objectives and policies to address new statutory requirements or addressing changing conditions and improve readability and organization.

## **SOCIO-ECONOMIC ANALYSIS**

### **Population**

Table 1, Historic Population Trends, presents historic population trends for the Village of Tequesta. Palm Beach County data is also presented for comparison. Incorporated in 1957, the Village experienced rapid growth during the sixties and seventies. Large industries arrived to this northern area of Palm Beach County during this time, which resulted in the development of multiple subdivisions to accommodate new job opportunities.

Throughout the 1980, 1990s, and 2000s, Village experienced a steady population increase. However, the growth rate was on a steady decline, as the Village became almost fully developed. Multi-family developments during this time mark some of the last developments in the area, as the Village became almost fully built-out. Besides potential development opportunities on the few remaining vacant lots, the population is not expected to see much more significant increases to the population from new development. According to the Bureau of Economic and Business Research (BEBR) of the University of Florida, the population of the Village had increased to 5,665 people by 2015. Additional population analysis and estimates of permanent and seasonal population 2015-2040 are presented at the end of this document.

**Table 1. Historic Population Trends**

Year	Historic Population Trends					
	Village of Tequesta			Palm Beach County		
	Population Estimate	Total Change	Percent Change	Population Estimate	Total Change	Percent Change
1960	199	-	-	228,106	-	-
1970	2,642	2,443	1227.6%	348,993	120,887	53.0%
1980	3,685	1,043	39.5%	576,863	227,870	65.3%
1990	4,499	814	22.1%	863,518	286,655	49.7%
2000	5,273	774	17.2%	1,131,186	267,668	31.0%
2010	5,629	356	6.8%	1,320,241	189,055	16.7%
2014	5,756	68	1.2%	1,397,710	77,469	5.9%
2015	5,665	-	-	1,378,417	-	-

Sources: U.S. Census Bureau; 1980 & 1990 Decennial Census; Bureau of Economic and Business Research (BEBR), University of Florida.

## 2010 U.S. Census

According to the U.S. 2010 Census, there were an estimated 5,629 people, 3,257 housing units, and 1,567 families residing in 2,490 households in the Village of Tequesta. The racial makeup of the Village was 90.4% White, 0.6% African American, 0.00% Native American, 1.8% Asian, 0.00% Pacific Islander, 0.8% from other races, and 0.9% from two or more races. Hispanics or Latinos of any race were 6.3% of the population.

Of the 2,490 households, 23.7% included children under the age of 18, 51.4% were married couples living together, 7.9% were female householders with no husband present, and 37.1% were non-families. 16.6% of the households had a person living alone who was 65 years of age or older, 2.2% being 85 years and older. The average household size was 2.27 and the average family size was 2.89.

In the Village, the population included 17.6% under the age of 18, 82.4% 18 and over, 5.5% from 15 to 19, 4.1% from 20 to 24, 7.0% from 25 to 34, and 16.6% who were 65 years of age or older. The median age was 49.3 years. The population consisted of 52.7% females and 47.3% males.

## **Characteristics of the Population**

This section examines the socioeconomic characteristics of the population. The following analysis is based on the American Community Survey (ACS) of the U.S. Census Bureau which includes estimates based on a sample of households over a 5-year period. The data provided by the ACS allows an in depth analysis of socioeconomic variables and trends. The following tables reflect the most recent data provided by the ACS and are organized in columns, each representing a 5-year period: the first provides data from 2006-2010, and the second from 2010-2014.

### Households

Table 2 presents the number of households and persons per household according to the American Community Survey (ACS) from the U.S. Census Bureau. A household is defined as the person or persons occupying a dwelling unit.

As the average household size decreases, the number of households or required dwelling units increases relative to the population. Due to several factors, average household size is decreasing throughout the United States. These factors include families having fewer children and delaying the birth of children; young adults no longer living with parents but moving out on their own, and older persons living longer independently and not returning to their children in their later years. Combined, these factors have led to a decrease in the average household size.

Conversely, the average household size in the Village of Tequesta as almost remained the same, with a slight increase from 2.27 to 2.28 between 2010 and 2014, as indicated in Table 2. These numbers are slightly lower than the 2014 Palm Beach County average household size of 2.51



persons. In 2014, there were an estimated 2,519 households in the Village, with the majority (62.3%) of those households being families, while 37.8% were non-family households.

Similarly, of Palm Beach County's estimated 529,729 households, 61.9% were family households and 38.1% were non-family households. The Village has a higher percentage of households with one or more people 60 years and over, 44.7%, compared to Palm Beach County, which has 38.6%.

Between 2010 and 2014, the percentage of married-couple families in the Village decreased from 51.4% to 43%, while the number of single-parent households increased during this time.

**Table 2. Households by Type**

Households by Type	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
<i>Total Households</i>	2,490	(X)	2,519	(X)	529,729	(X)
Family households (families)	1,567	62.9%	1,566	62.3%	327,716	61.9%
With own children under 18 years	590	23.7%	609	24.2%	126,113	23.8%
Married-couple family	1,281	51.4%	1,084	43.0%	239,754	45.3%
With own children under 18 years	438	17.6%	367	14.6%	80,469	15.2%
Male householder, no wife present, family	90	3.6%	156	6.2%	23,840	4.5%
With own children under 18 years	50	2.0%	51	2.0%	11,117	2.1%
Female householder, no husband present, family	196	7.9%	326	12.9%	64,122	12.1%
With own children under 18 years	102	4.1%	191	7.6%	34,527	6.5%
Nonfamily households	923	37.1%	953	37.8%	202,013	38.1%
Householder living alone	824	33.1%	877	34.8%	166,476	31.4%
65 years and over	414	16.6%	358	14.2%	83,902	15.8%
Households with one or more people under 18 years	653	26.2%	675	26.8%	139,762	26.4%
Households with one or more people 60 years and over	1,021	41.0%	1,126	44.7%	204,327	38.6%
<i>Average Household Size:</i>	2.27	(X)	2.28	(X)	2.51	(X)

Source: U.S. Census Bureau; 2006-2010 5-Year American Community Survey & 2010-2014 5-Year American Community Survey.

### Population Age

Table 3 shows the numerical and percentage breakdown of the Village's population by age in 2010 and 2014 according to the American Community Survey (ACS) from the U.S. Census Bureau. The 45-54-year-old age group is the largest in both years (16.7% and 20%). In both 2010 and 2014, the second largest age group was 65-74-year-olds. However, the population in this age

group decreased between 2010 and 2014, from 15.5% to 12.9%. Overall, Tequesta's population 65 and over has decreased, with the most growth seen in the 45 to 59-year age groups.

Palm Beach County's 2014 population trends reflect a growing younger population, with the largest percentage of the population between the ages of 45-54 years (14%); the second largest age group was 35-44 years (12%); and 11.4% was between 25 to 34 years of age.

**Table 3. Population Age**

Population by Age	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
<b>Total Population</b>	5,642	(X)	5,756	(X)	1,359,074	1,359,074
<b>Male</b>	2,669	47.3%	2,842	49.4%	657,406	48.4%
<b>Female</b>	2,973	52.7%	2,914	50.6%	701,668	51.6%
<b>Under 5 years</b>	106	1.9%	256	4.4%	70,776	5.2%
<b>5 to 9 years</b>	366	6.5%	235	4.1%	74,723	5.5%
<b>10 to 14 years</b>	381	6.8%	365	6.3%	76,842	5.7%
<b>15 to 19 years</b>	310	5.5%	338	5.9%	80,236	5.9%
<b>20 to 24 years</b>	230	4.1%	161	2.8%	78,467	5.8%
<b>25 to 34 years</b>	393	7.0%	375	6.5%	154,437	11.4%
<b>35 to 44 years</b>	642	11.4%	635	11.0%	163,625	12.0%
<b>45 to 54 years</b>	941	16.7%	1,153	20.0%	190,337	14.0%
<b>55 to 59 years</b>	465	8.2%	580	10.1%	89,148	6.6%
<b>60 to 64 years</b>	301	5.3%	373	6.5%	79,773	5.9%
<b>65 to 74 years</b>	872	15.5%	743	12.9%	141,317	10.4%
<b>75 to 84 years</b>	512	9.1%	432	7.5%	105,232	7.7%
<b>85 years and over</b>	123	2.2%	110	1.9%	54,161	4.0%
<b>Median age (years)</b>	49.3	(X)	49.3	(X)	43.9	(X)

Source: U.S. Census Bureau; 2006-2010 American Community Survey & 2010-2014 5-Year American Community Survey.

### Population Race

Tables 4 and 5 present the racial characteristics of the Village's population according to the American the Community Survey (ACS) from the U.S. Census Bureau. At 92.8%, the largest portion of the population in the Village of Tequesta is White. While the White population decreased between 2010 and 2014, the second largest race population, Hispanic or Latino of any race, increased from 6.3% to 10.2%. The Village's Asian population increased from 1.8% to 4.4% between 2010 and 2014, which is higher than that of Palm Beach County. Palm Beach County

data reflects a slightly different racial breakdown. At the county level, 75.5% percent of the population was white (including persons of any origin) in 2014. Hispanic or Latino of any race accounted for 20% of the population, while Black or African American was 17.7%.

**Table 4. Population Race**

Population by Race	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
<i>Total Population</i>	5,642	(X)	5,756	(X)	1,359,074	1,359,074
White	5,412	95.9%	5,343	92.8%	1,025,542	75.5%
Black or African American	35	0.6%	92	1.6%	241,136	17.7%
American Indian and Alaska Native	0	0.0%	0	0.0%	2,506	0.2%
Asian	101	1.8%	252	4.4%	33,688	2.5%
Native Hawaiian and Other Pacific Islander	0	0.0%	0	0.0%	702	0.1%
<i>Some other race</i>	43	0.8%	0	0.0%	28,167	2.1%

Source: U.S. Census Bureau; 2006-2010 American Community Survey & 2010-2014 5-Year American Community Survey.

**Table 5. Population Origin and Race**

Population by Origin & Race	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
<i>Total Population</i>	5,642	-	5,756	-	1,359,074	1,359,074
White alone	5,100	90.4%	4,764	82.8%	793,341	58.4%
Black or African American alone	35	0.6%	92	1.6%	234,736	17.3%
Hispanic or Latino (of any race)	355	6.3%	588	10.2%	271,524	20.0%
American Indian and Alaska Native alone	0	0.0%	0	0.0%	1,543	0.1%
Native Hawaiian and Other Pacific Islander alone	0	0.0%	0	0.0%	608	0.0%
Asian alone	101	1.8%	252	4.4%	33,506	2.5%
<i>Some other race alone</i>	0	0.0%	0	0.0%	5,048	0.4%

Source: U.S. Census Bureau; 2006-2010 American Community Survey & 2010-2014 5-Year American Community Survey.

## Education

Table 6 indicates the education attainment level of the Village's population according to the American Community Survey (ACS) from the U.S. Census Bureau. Achievement levels are broken down into different categories. The college level groups are further broken down to show those that had some college (no degree), an associate's degree, a bachelor's degree, and a graduate or professional degree. Achievement levels recorded are the highest level (years completed) reached by an individual.

According to Table 6, 93.8% of the population had a high school diploma or higher educational level in the 2006-2010 period. The Village of Tequesta experienced a small increase to 94.4 % in the period 2010-2014. That figure is just slightly higher than the 87.7% of the population in Palm Beach County who had a high school diploma or higher education level. The number of individuals with a graduate or professional degree increased from 11.8% in 2010 to 15.8 % in 2014 in the Village, compared to 12.3% in 2014 for Palm Beach County.

**Table 6. Educational Attainment**

Educational Attainment	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Population 25 years and over	4,249	(X)	4,401	(X)	978,030	(X)
Less than 9th grade	97	2.3%	198	4.5%	57,704	5.9%
9th to 12th grade, no diploma	165	3.9%	48	1.1%	63,572	6.5%
High school graduate (includes equivalency)	1,087	25.6%	1,047	23.8%	256,244	26.2%
Some college, no degree	941	22.1%	665	15.1%	199,518	20.4%
Associate's degree	287	6.8%	462	10.5%	81,177	8.3%
Bachelor's degree	1,169	27.5%	1,285	29.2%	199,518	20.4%
Graduate or professional degree	503	11.8%	695	15.8%	120,298	12.3%
Percent high school graduate or higher	(X)	93.8%	(X)	94.4%	(X)	87.7%
Percent bachelor's degree or higher	(X)	39.4%	(X)	45.0%	(X)	32.8%

Source: U.S. Census Bureau; 2006-2010 American Community Survey & 2010-2014 5-Year American Community Survey.

## Employment

Tables 7 and 8 provide employment and occupation data according to the American Community Survey (ACS) from the U.S. Census Bureau. Between 2010 and 2014, the Village's population that was in labor force increased from 59.8% to 64.8%. Countywide, 60.2% of the population was part

of the labor force in 2014, while 39.8% were not in the labor force. The Village labor force unemployment rate in 2010 was 1.8% which increased to 3.2% in 2014, compared to 6.5% in Palm Beach County.

In 2010, 34.2% of the labor force was engaged in management, business, science, and arts occupations, which increased to 50.1% in 2014. Service occupations increased from 14.5% to 17.1%, while natural resources, construction, and maintenance occupations experienced an increase from 9.9% to 12.5%. Other occupations in the village decreased between 2010 and 2014. Sales and office occupations decreased from 35.4% to 19.2%; Production, transportation, and material moving occupations saw a decline from 6% to 1.1%. In 2014, 35.4% of the labor force in Palm Beach County was engaged in management, business, science, and arts occupations, which was lower than that of the Village. Palm Beach County had a higher percentage of the population engaged in sales and office occupations at 26.4% than the Village, which saw a decrease in this occupation between 2010 and 2014.

**Table 7. Employment Status**

Employment Status	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Population 16 years and over	4,730	(X)	4,833	(X)	1,120,841	(X)
In labor force	2,828	59.8%	3,134	64.8%	675,048	60.2%
Civilian labor force	2,828	59.8%	3,134	64.8%	674,589	60.2%
Employed	2,745	58.0%	2,980	61.7%	601,783	53.7%
Unemployed	83	1.8%	154	3.2%	72,806	6.5%
Armed Forces	0	0.0%	0	0.0%	459	0.0%
Not in labor force	1,902	40.2%	1,699	35.2%	445,793	39.8%

Source: U.S. Census Bureau; 2006-2010 American Community Survey & 2010-2014 5-Year American Community Survey.



**Table 8. Occupation**

Occupation	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Civilian employed population 16 years and over	2,745	(X)	2,980	(X)	601,783	(X)
Management, business, science and arts occupations	938	34.2%	1,494	50.1%	212,979	35.4%
Service occupations	398	14.5%	509	17.1%	132,674	22.0%
Sales and Office occupations	971	35.4%	571	19.2%	159,098	26.4%
Natural resources, construction, and maintenance occupations	273	9.9%	373	12.5%	53,981	9.0%
Production, transportation, and material moving occupations	165	6.0%	33	1.1%	43,051	7.2%

Source: U.S. Census Bureau; 2006-2010 American Community Survey & 2010-2014 5-Year American Community Survey.



Table 9 presents top employers in Palm Beach County according to Palm Beach County's 2014 Comprehensive Annual Financial Report.



**Table 9. Palm Beach County Principal Employers**

Palm Beach County Principal Employers 2014		
Number	Employer	Number of Employees
1	Palm Beach County School Board	21,449
2	Palm Beach County Government	11,626
3	Tenet Healthcare Corp	6,100
4	NextEra Energy (Florida Power & Light)	3,804
5	G4S (Wackenhut Corp)	3,000
6	Florida Atlantic University	2,980
7	Hospital Corporation of America (HCA)	2,714
8	Veterans Health Administration	2,700
9	Bethesda Memorial Hospital	2,643
10	Boca Raton Regional Hospital	2,250

Source: Palm Beach County's 2014 Comprehensive Annual Financial Report.

### Income

Table 10 shows income and benefits data according to the American Community Survey (ACS) from the U.S. Census Bureau. The median income per household declined between 2010 and 2014, possibly due to the economic downturn that characterized the great recession years. The median household income in the Village declined between 2010 and 2014, from \$63,800 to \$54,787. However, the mean household income increased from \$82,843 to 87,390 during this time. In Palm Beach County, the 2014 median household income was \$52,878, while the mean household income was \$80,961.

During the 2006-2010 time period, 20.9% of total households in Tequesta earned an income between \$50,000 and \$74,000. However, by 2014, an estimated 18% of the total households earned an income between \$100,000 and \$149,999, which was the highest percentage of all income levels. As for Palm Beach County, the highest percentage of total households, 17.3%, earned \$50,000 to \$74,999, while 12.5% of total households earned between \$100,000 and \$149,999, in 2014.

Between 2006 and 2010, 6.2% of the population of the Village earned more than \$200,000, which increased to 8.1% during the 2010-2014 period. This percentage is higher than the 6.4% earning more than \$200,000 in Palm Beach County during the same period. Overall, the Village of Tequesta household income was higher than that of Palm Beach County between 2010 and 2014.

**Table 10. Income and Benefit**

Income & Benefit	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
<i>Total Households</i>	2,490	(X)	2,519	(X)	529,729	(X)
<i>Less than \$10,000</i>	106	4.3%	73	2.9%	34,021	6.4%
<i>\$10,000 to \$14,999</i>	131	5.3%	131	5.2%	27,469	5.2%
<i>\$15,000 to \$24,999</i>	183	7.3%	234	9.3%	58,443	11.0%
<i>\$25,000 to \$34,999</i>	191	7.7%	268	10.6%	56,755	10.7%
<i>\$35,000 to \$49,999</i>	346	13.9%	395	15.7%	74,889	14.1%
<i>\$50,000 to \$74,999</i>	521	20.9%	358	14.2%	91,492	17.3%
<i>\$75,000 to \$99,999</i>	323	13.0%	292	11.6%	60,504	11.4%
<i>\$100,000 to \$149,999</i>	412	16.5%	454	18.0%	66,224	12.5%
<i>\$150,000 to \$199,999</i>	122	4.9%	109	4.3%	26,179	4.9%
<i>\$200,000 or more</i>	155	6.2%	205	8.1%	33,753	6.4%
<i>Median household income (dollars)</i>	63,800	(X)	54,787	(X)	52,878	(X)
<i>Mean household income (dollars)</i>	82,843	(X)	87,390	(X)	80,961	(X)

Source: U.S. Census Bureau; 2006-2010 American Community Survey & 2010-2014 5-Year American Community Survey.

### Poverty Level

Table 11 presents the percentage of families and people whose income in the past calendar year was below the poverty level. Federal poverty levels are used to determine eligibility for certain programs and benefits. Poverty level is a measure of income level issued annually by the Department of Health and Human Services. The economic downturn and high level of unemployment during the great recession impacted income and raised the number of families and people under poverty level in Tequesta as experienced elsewhere.

Overall, the Village of Tequesta has lower poverty levels than Palm Beach County. However, the number of families and people below the poverty level in the Village increased from 2010 to 2014. All families below the poverty level increased from 1.6% to 3.9%; and all people from 3.4% to 5.4%. As for Palm Beach County, 10.5% of all families, and 14.6% of all people were below the poverty level in 2014. On the contrary, the number of families in the Village with female householders (no husband present) decreased from 10.7% to 5.8% during this time period, whereas 26.2% of these families were below the poverty level in Palm Beach County. In both the Village and the county, more families with female householders (no husband present) were under the poverty level in comparison with married couple families.



**Table 11. Poverty Level**

Poverty Level	Village of Tequesta		Palm Beach County
	2010 (2006-2010)	2014 (2010-2014)	2014 (2010-2014)
	Percent	Percent	Percent
<i>All families</i>	1.6%	3.9%	10.5%
With related children under 18 years	3.8%	5.5%	17.8%
With related children under 5 years only	0.0%	0.0%	17.2%
Married couple families	0.0%	3.9%	5.8%
With related children under 18 years	0.0%	4.8%	9.2%
With related children under 5 years only	0.0%	0.0%	6.6%
Families with female householder, no husband present	10.7%	5.8%	26.2%
With related children under 18 years	18.6%	8.0%	34.7%
With related children under 5 years only	0.0%	0.0%	38.1%
<i>All People</i>	3.4%	5.4%	14.6%
Under 18 years	3.1%	6.0%	22.3%
Related children under 18 years	3.1%	6.0%	22.0%
Related children under 5 years	0.0%	0.0%	25.3%
Related children 5 to 17 years	3.4%	7.8%	20.8%
18 years and over	3.5%	5.3%	12.6%
18 to 64 years	2.9%	5.6%	14.1%
65 years and over	4.8%	4.6%	8.8%
<i>People in families</i>	1.3%	4.2%	12.5%
Unrelated individuals 15 years and over	12.1%	10.0%	21.8%

Source: U.S. Census Bureau; 2006-2010 American Community Survey & 2010-2014 5-Year American Community Survey.

### **Population Projections**

As indicated in Table 12, the most recent estimate of the permanent population for the Village is 6,119 residents for 2040, according to the Shimberg Center for Housing Studies Clearing, which are based on University of Florida's Bureau of Economic and Business Research (BEBR) and the center's housing data. Seasonal population presented an actual increase of 325 people between the last decennial censuses. That represented a 54% increase in seasonal residents. That growth coincided with a peak in Condo construction where the majority of seasonal residents own or rent property today. Since then, the Village has essentially reached a built-out status. It has been assumed that seasonal population may continue to grow but at the same pace of the permanent population. Table 12 presents a total population, including seasonal, of 7,128 people for the year 2040.

Therefore, both permanent and seasonal population are expected to remain stable over the next 20 years given the built-out status mentioned above, unless the Village chooses to pursue a new major annexation program, which has been rejected in the recent past by residents of those areas, or attract considerable higher density redevelopment in the future. Although the University of Florida's BEBR is projecting a 358,117 increase in the number of permanent residents living in Palm Beach County between 2015 and 2035, it is unlikely that the Village's growth will be impacted without some significant change in anticipated conditions.

In conclusion, Table 12 presents actual population growth increase between the last two decennial censuses. Since then, the Village has experienced very little population growth, which is estimated to continue, as shown in the projected population 2015-2040. A factor that has certainly contributed to the Village's slowing growth rate include the lack of available land for new development, since the Village is basically built out. Future estimated population growth could be accommodated in the remaining vacant land, potential annexation of unincorporated enclaves scattered throughout the Village or potential higher density redevelopment of existing areas.

While the Village of Tequesta's growth rate has decreased overtime, Palm Beach County's population is projected to increase steadily over the next 20 years, reaching an estimated 1,736,534 people by 2035, as indicated in Table 13.

**Table 12. Projected Total Population, Village of Tequesta, 2015-2040**

Year	2000	2010	2015	2020	2025	2030	2035	2040
Permanent	5273	5629	5665	5808	5916	5977	6063	6119
Seasonal	603	928	934	958	976	986	1000	1009
<b>TOTAL:</b>	5876	6557	6599	6766	6892	6963	7063	7128

Sources: University of Florida Bureau of Economic and Business Research, Population Projections; U.S. Census Bureau, 2000 and 2010 Decennial Census; Palm Beach County Planning Zoning & Building Department: 2016 County Profile-2010 Seasonal figure for Tequesta; Shimberg 2010-40 projections, Accessed Nov 28, 2017.

**Table 13. Projected Total Population, Palm Beach County, 2015-2035**

Year	2000	2010	2015	2020	2030	2035
<b>Palm Beach County</b>	1,131,186	1,320,241	1,378,417	1,463,928	1,615,147	1,736,534

Sources: University of Florida Bureau of Economic and Business Research, Population Projections; U.S. Census Bureau, 2000 and 2010 Decennial Census.

## REFERENCES AND SOURCES

History of Tequesta 25 Year Anniversary (Village of Tequesta Document Center)

History of Tequesta 50 Years Anniversary (Village of Tequesta Document Center)

University of Florida Bureau of Economic and Business Research.

U.S. Census Bureau, 1980 & 1990 Decennial Census

U.S. Census Bureau, 2006-2010 American Community Survey; 2010-2014 5-Year American Community Survey.

## **DATA & ANALYSIS**

### **CHAPTER 1: FUTURE LAND USE ELEMENT**

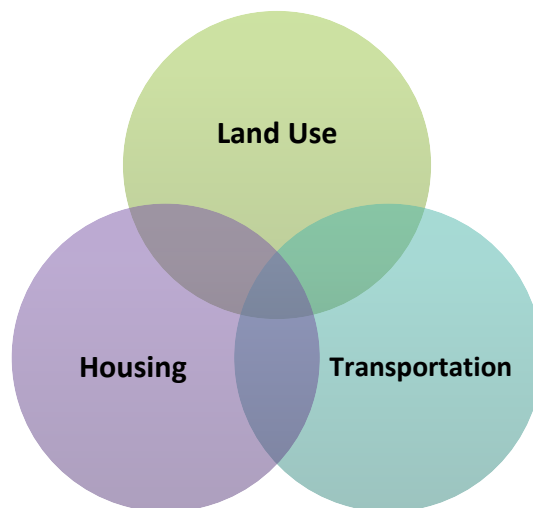
#### **INTRODUCTION**

This chapter presents an inventory and analysis of background data for preparation of the Land Use Element and Future Land Use Map for the Village of Tequesta pursuant to Section 163.3177(6), Florida Statutes. This Data and Analysis document provides the framework for evaluation of key land use issues and preparation of the Future Land Use Map and goals, objectives, and policies presented in the Policy Document.

The purpose of the Land Use Element of the Comprehensive Plan is to influence existing and future land use patterns by designating appropriate locations for future land uses and establishing a policy framework for managing future growth and development to accommodate anticipated employment and population. These policies focus not only on the location of land uses and the density and intensity of these uses, but also on the form and character of the physical development.

Long range sustainable community planning recognizes the interrelationship between land use, housing and transportation (Figure 1-1). The Future Land Use Element provides the policy mechanism to coordinate these three factors to provide a mix of housing and land uses that will satisfy demand and support a balanced, inclusive community.

**Figure 1-1. Relationship between Land Use, Housing and Transportation**



The Land Use Element is the critical policy mechanism for integrating the policies and strategies of the other elements of the Comprehensive Plan into a coherent and consistent set of land use goals, objectives, and policies. As such, the element must be consistent with all other elements of the Comprehensive Plan and incorporate the concepts and principles of these elements in its land use policies in a manner that minimizes impacts on natural and historic resources, provides and maintains public services and facilities at adequate levels of service, enhances community character and the quality of life of the Village's residents, businesses, and visitors.

The Future Land Use Map and policies of this element provide the policy framework and rationale basis for Village's land development regulations and programs to implement the Comprehensive Plan. Pursuant to Chapter 163, Florida Statutes (F.S.), all land development regulations and development permitting actions are required to be consistent with the Future Land Use Element and other elements of the Comprehensive Plan.

## EXISTING CONDITIONS

### Existing Land Uses

The current land uses within the Village of Tequesta reflect its historical development pattern. The total acreage for existing land uses, including vacant lands and rights-of-way is 1,172.26 acres. Not included in this total are the 296.19 acres within the Village limits that are occupied by open water. Therefore, the Village limits cover approximately 2.29 square miles. The distribution of existing land uses by acreage are tabulated in Table 1-1 below.

**Table 1-1. Existing Land Use 2016**

Designation	Square feet	Acres	Percentage
Commercial	3,019,685	69.32	4.70%
Conservation	351,962	8.08	0.60%
Low Density	19,367,578	444.62	30.30%
Medium Density	3,090,493	70.95	4.80%
Mixed Use	3,937,361	90.39	6.20%
Other Public Facilities	613,396	14.08	1.00%
Public Buildings and Grounds	898,132	20.62	1.40%
Recreation and Open Space	9,529,489	218.77	14.90%
Roads	9,134,927	209.71	14.30%
Water	12,902,044	296.19	20.20%
Vacant	1,120,494	25.72	1.80%
<b>Total</b>	<b>63,965,561</b>	<b>1,468.45</b>	<b>100.00%</b>

Sources: Community Development Department, Existing Land Use Map, Village of Tequesta, 2016.

### Residential

Residential land use constitutes 35.10% percent of the land acreage within the corporate limits and is the major land use within the village. The residential land use category contains single-

family, duplex, and multi-family units. This category does not include motels, hotels, or mixed residential-commercial projects.

Of the total land in residential use, 30.30 percent is in single family use. The maximum net density (including right-of-way) for single-family use 5.4 units per acre.

Multi-family uses, which include duplex and multiple dwellings on a single parcel/lot, account for 4.80 percent of total residential acreage. The maximum net density for multi-family uses is 12 units per acre. Not included in this category are residential units mixed with commercial uses, but included are condominium projects that include dwelling units occupied for seasonal and transient residential uses.

### Commercial

Commercial uses account for 4.70 percent of total existing land use acreage. Major commercial uses are located mainly in linear strips along U.S. Highway 1 (US-1), the major commercial corridor in Tequesta. Minor commercial uses are located along Old Dixie Highway, Tequesta Drive and Cypress Drive.

Commercial uses include retail/personal sales and services, finance, insurance, real estate, professional and legal administrative offices.

### Transportation

Transportation accounts for 14.30 percent of total existing land use. The vast majority of this acreage is occupied by local roads.

### Mixed Use

Mixed residential and commercial uses constitute 6.20 percent of total land use acreage in the Village. The Mixed Use area is located east of Old Dixie Highway, west of U.S. Highway 1, largely between Bridge Road and Village Boulevard. There are 90.39 Mixed Use acres just north of Village Boulevard boarding Old Dixie Highway. The Mixed Use category includes a mix of single and multi-family residential uses; small scale retail sales and services, business services and professional services primarily designed to serve residential use buildings; and recreation and open space

### Public Buildings and Grounds

This land use category includes land and structures owned, leased or operated by a government entity, and/or privately-owned but used for a public purpose. 2.62 acres; 1.40 percent.

### Other Public Facilities

Public or private facilities or institutions such as churches, schools, fraternal organizations, and nursing homes. 14.08 acres; 1.00 percent

### Recreation and Open Space

Recreation and open space areas, which account for 14.90 percent of total land use in the Village, include active or passive recreational use. Public parks and facilities include Tequesta Park, Constitution Park, the Skate Park, and Tequesta Recreation Center. A private golf club, The Tequesta Country Club Golf Course, accounts for a large portion (125.36 acres) of the total 218.77 acres in this category. At 50.89 acres, the U.S. Government Lighthouse Reservation is another large tract in the Recreation and Open Space category.

### Conservation

Conservation lands (8.08 acres) account for 0.60 percent of total existing land use and includes land used for the conservation and preservation of natural resource.

### Vacant

Those lands that are not currently developed are classified as vacant land. Approximately 8.10 percent of land use acreage in the Village is in this category.

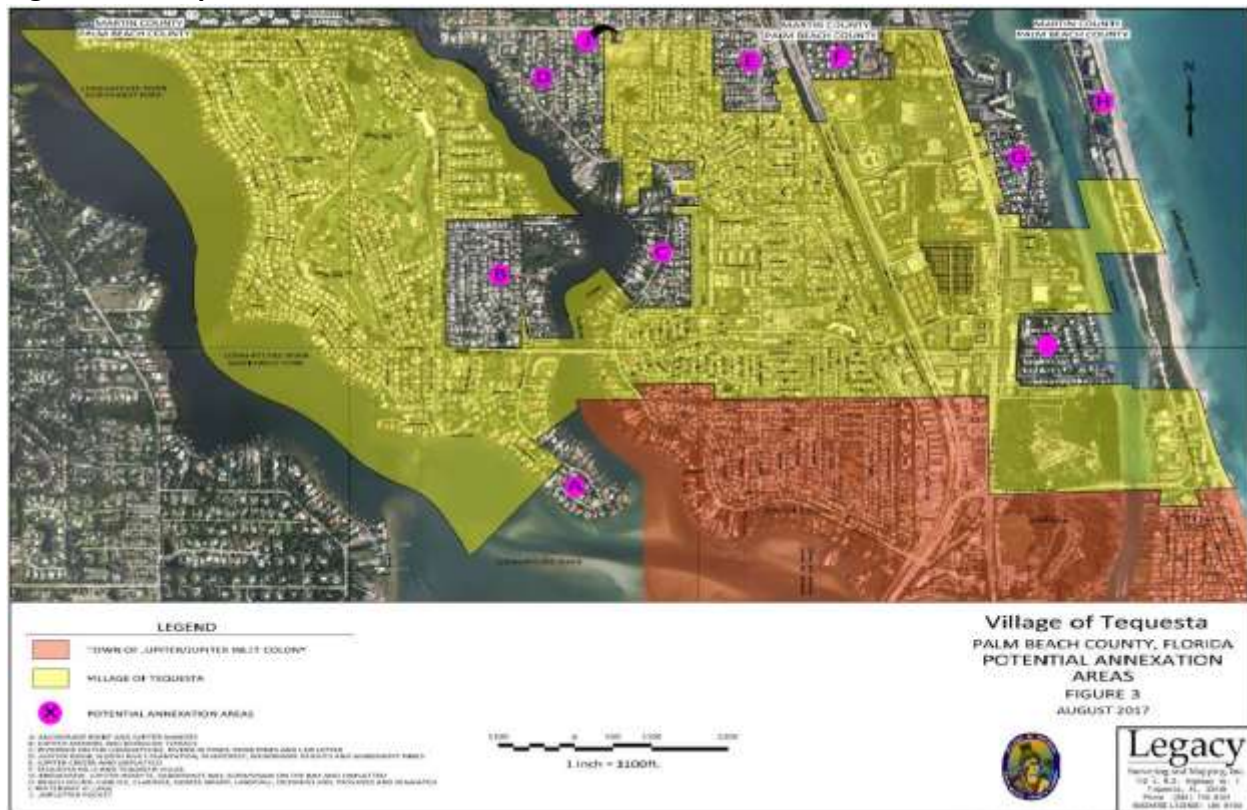
### Change in Land Area

In 2011, the Village of Tequesta developed an Annexation Strategic Plan Analysis (ASPA) to guide the process of annexing surrounding properties, both commercial and residential. The ASPA provided the Village with critical information for making decisions regarding the future growth of the Village of Tequesta. The final purpose of the annexation analysis was to evaluate the costs and benefits of annexing potential adjoining areas, and to define a suitable implementation strategy to annex specific areas. The ASPA identified ten (10) unincorporated surrounding pocket areas as presented in Figure 1-2.

On August 27, 2013 there was an annexation special election for residents located in Area C and Sandpointe Bay Condominium; neither initiative was successful since the majority of residents voted not to be annexed into Tequesta. Prior to the referendum, the Village conducted extensive community outreach efforts that consisted of a series of informational workshops where residents had the opportunity to ask Village staff and elected officials questions about services, applicable taxes and fees related to joining the Village.



**Figure 1-2. Map of Potential Annexation Areas**



This effort was supported by communication through direct letters, an annexation brochure, web site, social media, and articles in newsletters (hard copy and e-mail based).



Throughout this proactive approach, the Village hosted the following Informational Annexation Workshops with residents of Area C in 2012 and Sandpointe Bay in 2013:

- Riverside Pines (Colette Drive and Nicole Circle) – August 13, 2012
- River Pines and Unplatted Area – October 22, 2012



- Riverside on the Loxahatchee – October 24, 2012
- Sandpointe Bay – April 4, 2013

Table 1-2 presents annexation trends from 1996 to 2016. The present analysis focuses on annexation initiatives conducted since 2007. Four (4) annexation actions were initiated between 2007 and 2016 comprising 5.5642 acres.

**Table 1-2. Annexation Trends 2007 to 2016**

Ordinance No./ Adoption Date	Brief Description	Size (Acres)
<i>1996 to 2006</i>		
Ordinance No. 546 September 21, 1999	Parcel generally known as the Zainos property located at 801 U.S. Hwy. 1, just south of Canal Court	0.660
Ordinance No.561 September 27, 2001	Parcel generally known as the Rood property located at 4546 County Line Road.	15.230
Ordinance No. 566 January 10, 2002	Parcel generally known as the Morgan property located at 19654 N. Riverside Drive	0.290
Ordinance No. 567 January 10, 2002	Parcel generally known as the Glendenning property located on the north side of Riverside Drive just south of the Rood property.	0.340
Ordinance No.586 April 8, 2004	Parcel generally known as Turtle Beach located east of U.S. Hwy. 1 between Palm Court N. and Harbor Road.	0.495
Ordinance No. 592 December 9, 2004	Parcels located east of U.S. Hwy. 1 just north of Canal Court	1.330
Ordinance No.611-06/07 January 11, 2007	One (1) parcel on US Highway 1 (American Legion)	1.58
Resolution No. 13-12 (Enclave Interlocal Agreement) June 14, 2012	Four (4) Parcels on County Line Road (Single Homes and Lift Station Site)	1.463
Ordinance No. 15-12 October 11, 2012	Three (3) Parcels on US Highway 1 (Budget Rental and Judy's Café)	0.7278
Ordinance 19-14 November 13, 2014	Three (3) Parcels on County Line Road (Bella Villagio)	1.7934
<b>Total</b>		<b>23.91</b>

The American Legion parcel (1.58 acres) located at 725 US Highway One was annexed into Tequesta on January 11, 2007. A “Commercial” land use designation was officially applied to this site in 2009. This action constituted a small-scale amendment to the Future Land Use element and Map (Ordinance 4-09).

On June 14, 2012, five (5) parcels located on County Line Road were annexed into Tequesta; four of them were single family homes and one was a lift station owned by the Loxahatchee River District.

This annexation was conducted as an Enclave Interlocal Agreement between Palm Beach County and the Village. The parcel located at 4518 County Line Road returned to Palm Beach County in 2013. A “Low Density Residential” land use designation was applied to 4412 and 4480 County Line Road; a “Medium Density Residential” land use designation was applied to the 4534 and 4518 County Line Road parcels. These actions constituted a small-scale amendment to the Future Land Use element and Map (Ordinances 10-12 and 12-12 respectively).

On October 11, 2012, three (3) parcels located on US Highway One were annexed into Tequesta: Budget Rental and Judy’s Café. This annexation was through a voluntary/involuntary process where more than 50% of land owners agreed to annexation. A “Commercial” land use designation was officially applied to this site in 2009. This action also constituted a small-scale amendment to the Future Land Use element and Map, (Ordinance 12-12).

The most recent annexation was a 1.7934 acre area of land located on County Line Road. It was a voluntary annexation to develop a condominium initiative called “Bella Villagio.” This area was annexed in November 13, 2014. The Village classified this property “Medium Density Residential” through the small-scale amendment process (Ordinance 21-14).

The Village of Tequesta has extensively analyzed a number of unincorporated pocket and enclave areas lying adjacent to its corporate limits for potential annexation into the Village. Consultants and staff have worked cooperatively with Palm Beach County in these efforts. Cost/benefit analyses have been prepared for each of the potential annexation areas for presentation to the respective neighborhood groups and for Village Council consideration. Efforts toward annexation of these identified areas have not come to fruition as of this date.



The Village has adopted Level of Service (LOS) Standards in its Comprehensive Plan and land development regulations which are utilized in the site plan review and building processes to ensure that adequate facilities and services will accommodate proposed growth and development. The annexation of enclave and adjacent areas would not only “square off” the Village corporate boundaries, but allow for more efficient provision of various urban facilities and services.

The Village has developed and coordinated relationships with Palm Beach County, neighboring municipalities, Treasure Coast Regional Planning Council (TCRPC), South Florida Water Management District (SFWMD), Loxahatchee River District (LRD), and a other entities/jurisdictions in reviewing land use and annexation issues of common interest. These agencies and entities continue to be included in the land use decision-making process, where applicable, through the Village's development review processes.

### **Vacant Land Available for Future Development**

There are only 25.723 acres currently Vacant and available for future development within the existing corporate limits of Tequesta. This compares to 84.5 acres reported as Vacant in 1996. Vacant lands are defined as those lands that are currently undeveloped (including parcels with development order approval, but have yet to commence development) and which do not carry any other land use designation (such as Conservation use) as of the December 2016 Existing Land Use survey conducted for this EAR.

Vacant lands currently represent 1.8% of the total land area in Tequesta. This is down from the nearly 6% reported in 1996. This decrease in vacant lands is explained by increased development in the Village and also by changes in the way land uses are reported in the current December 2016 existing land use analysis. For example, some lands located between Tequesta Drive and Bridge Road, and between Old Dixie Highway and U.S. Highway 1, while reported as Commercial use in 1996 are now classified as Vacant. Likewise, some lands fronting U.S. Highway 1 at the north end of the Village (e.g. old car dealership) were also reported as Commercial in 1996, but this use has since been discontinued and these lands are currently designated as Vacant.

Infill development of existing residential and commercial areas and extensive development of the Mixed Use designated areas are responsible for the substantial decrease in vacant lands reported in Tequesta today. For example, the residential area located along Cypress Drive North has developed substantially since the 1996 existing land use analysis was conducted.

There has been in-fill of single family lots in established residential areas such as the Country Club, Tequesta Pines and the older established neighborhoods in Tequesta. There has been some limited, new Commercial development such as the Palm Court office complex located at the northeast corner of Cypress Drive North and Tequesta Drive; the gas station/convenience store at County Line Road and U.S. Highway 1; and the Commercial office portion of the Casa Del Sol mixed use development located south and west of the gas station/convenience store facility just cited.

The remaining new Residential and Commercial development has occurred in the annexation areas discussed above. The most significant development of previously vacant properties, however, has been in the Mixed Use designated area in the Village. Since 1996, the following major residential developments have been located within the Mixed Use area:

- Tequesta Oaks (158 units);

- Sterling House (84 units);
- Tequesta Terrace (100 beds),
- Tequesta Trace (134 units);
- Lighthouse Cove (192 units);
- Tequesta Cay (58 units);
- The Crossings site was redeveloped as a Rehabilitation Facility “Futures of Palm Beach” (75 units) in 2011.

Most recently, on January 12, 2017, Village Council approved a 96-unit adult congregate living facility to be located on a vacant 8 acres site on County Line Road (Key Estates Senior Housing Living), which is pictured here.



## TRENDS AND CHALLENGES

### Changes in Land Use

#### Residential Land Use

There has been a very modest change in total land area of the Village of Tequesta. Today, there are approximately 1,468.44 acres within the corporate limits of Tequesta including a 296.19 acres of water of bodies. As reported above annexations have added just over twenty (23) acres to the municipal limits.

*The largest use of land in the Village continues to be Residential.* Residential use increased from approximately 473 acres in 1996 to 515.56 acres in December 2016. This represents an 8.9% increase in Residential land use over that time period. In 2016, Residential areas represent 35.10% the total land area of the Village.

Most Residential development continues to be single family, low density development (maximum 5.4 dwelling units/acre). About 444.62 acres of the 515.56 acres of Residential use is single family, low density development. The amount of land occupied by medium density Residential development (maximum 12 dwelling units/acre) has not changed significantly. Approximately seventy one-71 acres are currently used for medium density Residential, as compared to 65.4 acres in 1996.

A substantial amount of Mixed Use development in Tequesta has been Residential. There are over ninety (90.39) Mixed Use acres in the existing land use analysis reported in Table 2-1. Much of the Mixed Use acreage is developed primarily and exclusively for residential purposes. The residential density in the Mixed Use category allows up to a maximum of eighteen (18) dwelling units/acre thus representing the highest-density residential areas in the Village.

All development in the Village continues to be consistent with the Future Land Use Map and the Official Zoning Map of the Village. Commercial and high density residential are prohibited from locating in low density residential areas. This trend and direction should continue in the future.



### Commercial Land Use

The amount of Commercial acreage in Tequesta has actually decreased since 1996. The current existing land use analysis as indicated in Table 2-1 reports 69.32 acres of Commercial development in Tequesta, which is down from the 97.5 acres reported in the 1996. The reason for this difference is easily explained. The area (approximately 15 acres) occupied by the Tequesta Oaks residential area today was an older major commercial shopping center. Likewise, there were nearly five (5) acres reported in the downtown area that no longer exists, while a car dealership on U.S. Highway 1 has been discontinued and closed, as well. Only 4.7 % the total land area in Tequesta is occupied by Commercial development.





### Recreation Land Use

The amount of Recreation and Open Space acreage has increased since the 1996 land use analysis. The increase comprises certain private open space areas (1.26 acres); a Village-maintained detention area on Cypress Drive North (approximately 0.4 acres); an open area on Point Drive; nearly eighteen (18) acres within the FEC Railroad right-of-way; and the addition of the green open space in Seabrook Road (Remembrance Park) in 2012. The existing total Recreation and Open Space is 218.76 acres representing 14.9 percent of the total land area (December 2016).

The major recreational areas in Tequesta are: the Tequesta Country Club, a 120 acre private golf course; Coral Cove park, a County-owned and maintained beachfront community park on the Atlantic Ocean; Village Green Park, a neighborhood park owned by the Village and located at the Village Hall complex on Tequesta Drive; Constitution Park, another neighborhood park; and, nearly fifty (50) acres of State-owned land located north of CR 707 and east of U.S. Highway 1.



### Conservation Land Use

The amount of land identified as Conservation use has not changed since the last update. There are 8.08 acres of Conservation use designated in the Village which represents only 0.6 % of the total land area within the Village (Table 2-2). Conservation uses consist of one upland areas which are identified as areas of environmental concern, and the beaches and shoreline areas throughout the Village. Conservation is discussed in greater detail under in the Conservation element.



### Public Buildings and Grounds

The amount of land used for Public Buildings and Grounds has changed minimally since the last update. The change in area is the result of a land use designation change to the Palm Beach County Fire Rescue site which was previously designated as low density residential, and the Village Recreation Center that was previously designated in the Other Public Facilities category. Otherwise, the land uses for Public Buildings and Grounds has remained relatively the same. There are approximately twenty one (21) acres in the Village used for these purposes, representing 1.4% of the total area.

Other major Public Buildings and Grounds uses include the Tequesta Police and Fire Department facility, the U.S. Post Office, and the Library.

### Other Public Facilities

The amount of land areas utilized for Other Public Facilities has not changed. This land use classification includes uses for churches, clubs, fraternal organizations, educational uses and other similar uses. There are approximately fourteen acres (14.08) in the Village used for these purposes, representing 1 % of the total area.

### Roads

Transportation use has increased slightly with the annexation and development of new areas. The acreage dedicated to public rights-of-way for roads and streets accounts for the slight increase in acreage for transportation purposes. Approximately 209.71 acres, or 14.3% of the total area of the Village are dedicated to streets and roadways (Table 2-2).

### Water Bodies

There are nearly 300 acres of Water Bodies located within the corporate limits of Tequesta. Water Bodies represent over 20% of the developed and total area of the Village. The North and Northwest Forks of the Loxahatchee River, a portion of the Intracoastal Waterway (ICWW); and canals serving residential areas lie within the boundaries of Tequesta. This has not changed since 1996 land use inventory.

### Vacant Land

The amount of vacant land in the Village has decreased significantly. There are only 25.723 acres currently Vacant and available for future development within the existing corporate limits of Tequesta. This compares to 84.5 acres reported as Vacant in 1996. It is expected that the remaining vacant lands will be entirely build-out within the long range planning period of the Comprehensive Plan update. On January 12, 2017, Village Council approved a 96-unit adult congregate living facility to be located on a vacant 8-acre site on County Line Road (Key Estates



Senior Housing Living). As of November 2017, the parcel is still vacant and the applicant is considering a time extension. As a result, the property was considered as vacant for this analysis.

There are no agricultural or industrial land uses in Tequesta. These uses are strictly prohibited since neither the Future Land Use Map nor the Village's Official Zoning Ordinance provide for such uses.

There are no public school facilities, recognized historic sites, or areas of critical state concern in the Village of Tequesta. The Village has been found to be "exempt" from State school siting and co-location requirements by the Palm Beach County School District. Even though the School District does not have any plans for locating any public school facilities within the corporate limits of Tequesta during the short term (5-Year) or long term (10-Year) planning periods of the updated Comprehensive Plan, the Village has adopted Objective 2.1.0 and Policies 2.1.1 and 2.1.2 in the Future Land Use element in the unlikely event a school facility may be deemed necessary in future planning periods or as a result of future annexation.

### **Future Land Use Projections**

Table 1-3 and Figure 1-3 present Future Land Use designations acreage and percentages. Because there is very little land that is currently Vacant and available for future development within the Village of Tequesta (25.72 acres, or 1.8% of the total land area); future development in Tequesta will be limited. Most future low-density residential development will be in-fill development of individual single-family lots. Likewise, there is an insignificant amount of land available for medium density development. There are less than five (5) acres within the Mixed Use area that has not yet been developed that could potentially be developed at the higher densities allowed in the Mixed Use district. So, little difference is anticipated in the short (5-Year) and long (10-Year) term land use projections for new Residential development.

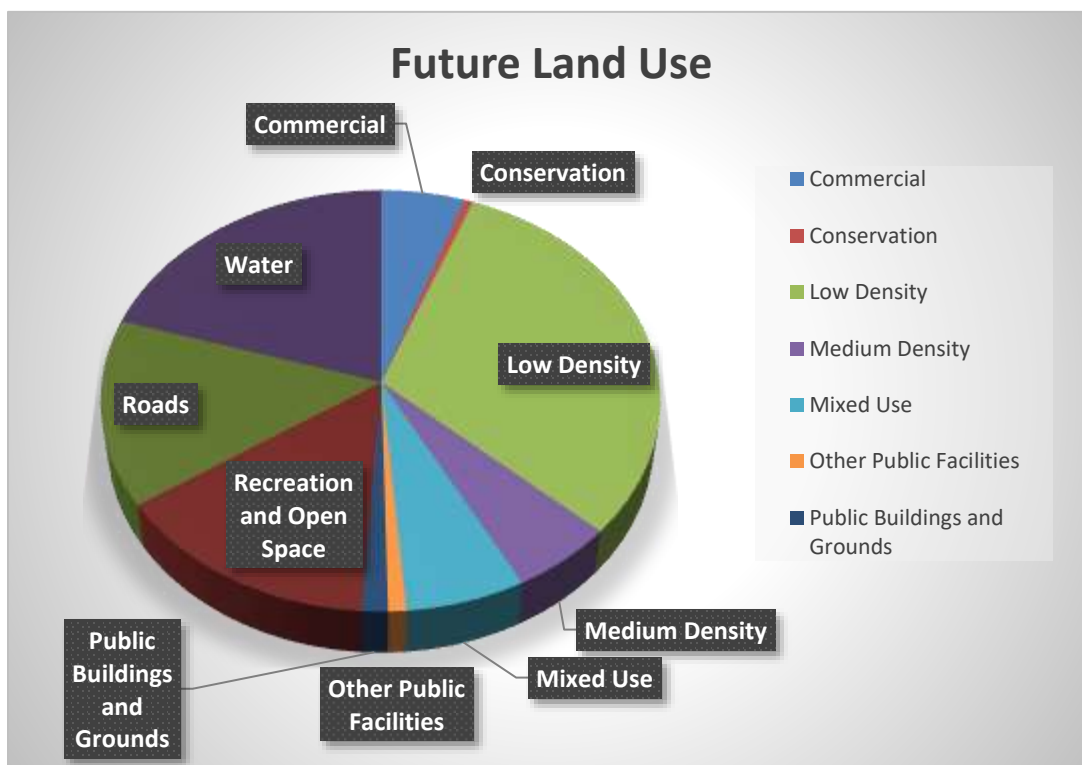
**Table 1-3. Future Land Use**

Designation	Square Feet	Acres	Percentage
Commercial	3,367,752	77.313	5.30%
Conservation	353,359	8.112	0.60%
Low Density	19,758,505	453.593	30.90%
Medium Density	3,555,040	81.612	5.60%
Mixed Use	4,099,194	94.105	6.40%
Other Public Facilities	620,676	14.249	1.00%
Public Buildings and Grounds	892,083	20.479	1.40%
Recreation and Open Space	9,281,981	213.085	14.50%
Roads	9,134,927	209.709	14.30%
Water	12,902,044	296.190	20.20%
<i>Total</i>	63,965,561	1,468.447	100.00%

There is land available within the commercially zoned areas for some new commercial development in US Highway One (North of County Line Plaza). It is not expected that Recreation

and Open Space (parks, beaches, eco-sites), Conservation, Public Buildings and Grounds, Other Public Facilities (churches, clubs, homes for the aged and infirm) uses will increase in the future within the existing corporate limits. It is not expected that Transportation (roads, streets, railroad rights-of-way) and Water Bodies will change in the near or long term planning periods either. Redevelopment or subdivision of land that would cause a substantial change in land use is not anticipated within the Village.

**Figure 1-3- Future Land Use**



It is projected that build-out within the existing corporate limits of Tequesta will occur within a 5 to 10-Year planning period of the updated Comprehensive Plan. Based on this analysis, future land use projections as presented in Table 1-3 are reasonably predictable and will be the same for the short-term (5 to 10 years) and long-term (30 years) planning periods of the updated Plan. However, annexation of surrounding pocket areas could impact residential land use designations and acreages. The Future Land Use Map is presented as part of the Map Series.

### **Infill & Redevelopment**

The Village of Tequesta could accommodate infill and redevelopment growth. Commercial and mixed use developments along US Highway One are potential areas to be redeveloped in the future. For example, Tequesta Shoppes was redeveloped in 2013. The initiative improved the aesthetics of the commercial plaza by upgrading building elevations, landscaping, parking resurfacing and signage.

Infill & redevelopment should promote superior projects within the village' urban landscape. Propose buildings are encouraged to be mixed use, energy efficient, appropriately landscaped, and aesthetically pleasing. Limitations upon the land; lot size, parking requirements, height restrictions, etc. should be flexible and not a hindrance in superior design. Infill redevelopment should allow flexible design while maximizing the potential use of a building or site.

The very nature of infill redevelopment promotes higher and best uses while discouraging sprawling development upon green space, suburban, and rural land. Infill redevelopment encourages the following positive planning characteristics:

- Existing infrastructure use
- Conserving natural land instead of sprawl
- Reduced commuting time
- Minimized traffic congestion
- Physical activity and healthy lifestyles
- Increased property values
- Open space preservation
- Vacant land rehabilitation
- Energy conservation
- Public/Private partnerships
- Workforce housing for teachers, police officers, and fire fighters



Infill redevelopment is positive in numerous aspects, however, becomes unachievable due to some of the following:

- Inflexible building and development code regulations
- Neighborhood opposition
- Prolonged permit processes
- Financial challenges
- Acquisition and land assembly

Creative design and the anticipation of healthier lifestyles create superior infill redevelopment projects. The ability to live, work, and play within one's own neighborhood is vital for infill redevelopment's success. The use of energy efficient appliances, environmentally friendly materials, superior architecture, and native landscaping provide the foundation for infill redevelopment initiatives.

The US Highway One reconfiguration project that will commence in 2017 will encourage significant redevelopment activity in that corridor. The Village supports for complete street concept encourages redevelopment and sustainable initiatives. For example, the BB&T Bank is currently undergoing redevelopment of its site by demolishing the existing building and proposing a new structure and providing a more significant landscaping on site.

## **Urban Forestry**

The Village of Tequesta will benefit by embracing urban forestry policies in its residential neighborhoods and commercial areas. Urban forestry is the careful care and management of tree populations in urban settings for the purpose of improving the urban environment. Urban forestry advocates the role of trees as a critical part of the urban infrastructure. Urban foresters plant and maintain trees, support appropriate tree and forest preservation, conduct research and promote the many benefits trees provide.

Urban forests bring many environmental and economic benefits to cities. Among these are energy benefits in the form of reduced air conditioning by shading buildings, homes and roads, absorbing sunlight, reducing ultraviolet light, cooling the air, and reducing wind speed – in short improvement of the microclimate and air quality.



There are also economic benefits associated with urban trees such as increased land, property, and rental value. Well-maintained trees and landscaped business districts have been shown to encourage consumer purchases and attract increased residential, commercial and public investments. Numerous studies have shown the direct relationship between home value, public health, and street trees. In her article “City Trees and Property Values,” Kathleen L. Wolf writes that there is a home price increase between 6-9 percent when there is good tree cover in a neighborhood, and a 10-15 percent increase when there are mature trees in a high income neighborhood.

Urban forests also improve air quality, absorb rainwater, improve biodiversity and potentially allow recycling to 20% of waste which is wood-based. Many cities today are dealing with stormwater management system issues where their existing systems can no longer hold the volume of water that falls in storms. One sustainable solution to this is planting street trees with grates underneath them to hold water. Trees and their soils work to filter runoff pollution and soil contaminants by absorbing them and processing them into less harmful substances. They



also collect water in their limbs and release it back into the atmosphere over time. This makes trees a solution to stormwater runoff issues and urban heating issues.

Urban forestry can be subject to NIMBY (not in my backyard) arguments as people occasionally experience trees as a nuisance or as a cause for disputes between neighbors. Frequent citizen complaints include too much shade; leaf litter; low hanging and falling branches; undesirable seeds, pods or fruits; and bird droppings. Many of these objections can be overcome by good educational efforts and by careful selection, placement, and routine maintenance of trees. The benefits of trees in our communities far outweigh any real or perceived inconveniences.

Another area of concern is the damage to homes and buildings that can result from tree roots or falling trees. Cases of damage to building foundations from invasive roots are typically the result of improper siting of trees and buildings relative to each other. The young sapling planted by the front door today will be the giant oak of tomorrow with roots damaging walkways and foundation. Proper education about site and species selection is critical. Falling trees often result from unstable root systems and/or severe storms. It is important understand regional soil types and the routine maintenance necessary to promote healthy root systems and to reduce the other circumstances that would cause a tree to fall (disease, rotten wood, a too-heavy crown, etc.) Nonetheless, the damage from trees remains low in proportion to the number of trees and the many direct and indirect benefits they provide.

The following should be considered when formulating codes and standards for Urban Forestry:

- Include clear and concise definitions of key terms
- Include risk assessment evaluation requirements
- Define minimum landscape standards and mitigation requirements
- Specify what type of trees are required in certain locations
- Provide incentives or penalties to developers, landscape architects, etc.
- Provide educational opportunities for the community



A number of cities in South Florida supports Urban Forestry and they also qualify as a *Tree City USA* community. The following cities are Tree Cities in the state of Florida: Boca Raton, Boynton Beach, Delray Beach, Palm Beach Gardens, Royal Palm Beach and Lantana.

The sustainability and long term quality of life of the community will benefit by including urban forestry policies and code language in the Village's Comprehensive Plan and Land Development Regulations.



### **Green Roofs**

On hot summer days, the surface temperature of a vegetated rooftop can be cooler than the air temperature, whereas the surface of a traditional rooftop can be up to 90°F (50°C) warmer (Environmental Protection Agency).

Green roofs prohibit the majority of ultraviolet radiation from penetrating the rooftop which equates to air conditioning savings and longer roof replacement periods. They also provide habitat for butterflies and birds while filtering the rooftop water and creating less strain on storm water systems. Vegetated roofs use and filter the excess water while traditional roofs typically acquire pollutants and contribute to nonpoint source pollution which ultimately goes into the Atlantic Ocean. Green roofs can be used to mitigate storm water runoff requirements while providing for an aesthetically pleasing built environment. Basic green roof systems can be installed with little or no additional engineered structural support and add about 80-150 pounds/sq. ft. for intensive green roofs while extensive green roofs add about 12-50 pounds/square feet.

Green roofs have been successful at several locations throughout Florida. The photos below include projects in Jacksonville (Breaking Ground Contracting Green Roof & Rooftop Garden); Orlando (Orlando Health MD Anderson Cancer Center Labyrinth Vegetated Roof Garden); Clermont (Honda Headquarters); and Miami (FIU College of Nursing & Health Sciences, Modesto A. Maidique Campus).





## **Sea Level Rise Considerations**

### **Adaptation and Resiliency**

Sea level rise has long been recognized by the South Florida Water Management District and by the U.S. Army Corps of Engineers as an increasing threat to low lying, porous South Florida. Organizations such as the Southeast Florida Regional Climate Compact have provided reports and publications that have increased awareness and expanded the knowledge of the impacts of sea level rise on coastal communities in South Florida.

Rising sea levels due to the melting of the polar ice caps contribute to greater storm damage; warming ocean temperatures are associated with stronger and more frequent storms; additional rainfall, particularly during severe weather events, leads to flooding and other damage; an increase in the incidence and severity of wildfires threatens habitats, homes, and lives; and heat waves contribute to human deaths and other consequences.

Given the geography of Florida, coastal communities in Southeast Florida have long known how to incorporate hazard mitigation with long-term planning to reduce the loss of life and property

and lessen the impact of disasters (hurricanes, severe weather events, flooding, etc.). The challenge of adaptive planning for sea level rise goes beyond hazard mitigation. Rather than preparing for a specific disaster or event, a resilient community is one that can face an array of unpredictable challenges and disturbances with minimal long-term impacts. Certain communities, especially in coastal areas, must be prepared for future conditions that may not allow the same development intensity, location, type, or access. Through the use of innovative tools and strategies it is possible to transition these economies and the built environment into resilient communities that adapt to these adverse impacts.

With the currently accepted sea level rise projections and known climate impacts, long-range planning must now incorporate resiliency strategies that balance mitigation and adaptation for the protection of the natural systems and to sustain the socio-economic characteristics of the community. Understanding how mitigation and adaptation act as interconnected relationships to building resilient and sustainable coastal communities is vital for adaptive planning.

Due to impacts from sea level rise, the following initiatives are encouraged to address sea level rise and promote sustainable growth:

- Conserve, reuse, recycle
- Walk, bike, carpool, or use mass transit
- Building 'green' energy efficient buildings
- Encourage mixed land uses
- Provide incentives for business/residential responsibility
- Sustain water quality
- Limit dependence on oil
- Educate individuals on the aforementioned items

Many states, including Florida, and businesses within the state, have incentives and programs available for residents, businesses, governments, non-profits, schools, institutions, etc. The funds can be used to install energy efficient products such as the following; photovoltaic cells, solar hot water heaters, solar pool heaters, and fuel cells. The incentives generally pay by kilowatt hour for installed products which will conserve electricity over the lifetime of the product.

So far, the effects of sea level rise have been most visible in Fort Lauderdale, Miami Beach, and in the Florida Key. Moreover, even nearby Delray Beach is already seeing "King tide" flooding. Portions of Fort Lauderdale experiences flooding and has built "Adaptation Action Areas" (AAA) into their planning process.

Due to its southern location, Miami Beach is experiencing problems with severe flooding, which has led to an aggressive sea level rise prevention and adaptation program. Understanding this vulnerability has allowed for the development of both short-term and long-term adaptation strategies that would further strengthen this city's resilience.

One such strategy is the Miami Beach Rising Above Resiliency Strategy, which will guide the community as it survives, adapts, and grows amidst both chronic stresses, including sea level rise, coastal erosion, transportation, and lack of affordable housing, and occasional shocks, such as hurricanes, infrastructure failure, coastal flooding, rainfall flooding. Miami Beach will prioritize actions that provide benefits and results from investments to make us both resilient and sustainable day to day and in the face of disruptions. Based on data and expertise, and including employees, committees, residents, businesses, peer cities, and the Compact, the strategy will be built on the City's own unique successes, strengths, capabilities, challenges, and gaps.

The ultimate goal of these actions is to leverage existing resources to develop a mutually-beneficial solution that helps combat sea level rise challenges in Miami Beach and other coastal municipalities.

With higher sea levels, stormwater systems no longer drains as quickly, increasing the frequency and depth of flooding in some streets. The threat of salt water intrusion into the aquifer is another important and growing concern. As sea level continues to rise, salt water from the sea pushes further inland, coming ever closer to contaminating surficial drinking water wells. Scientists and engineers predict that within 40 to 50 years, Florida could be inundated with problems related to sea level rise.

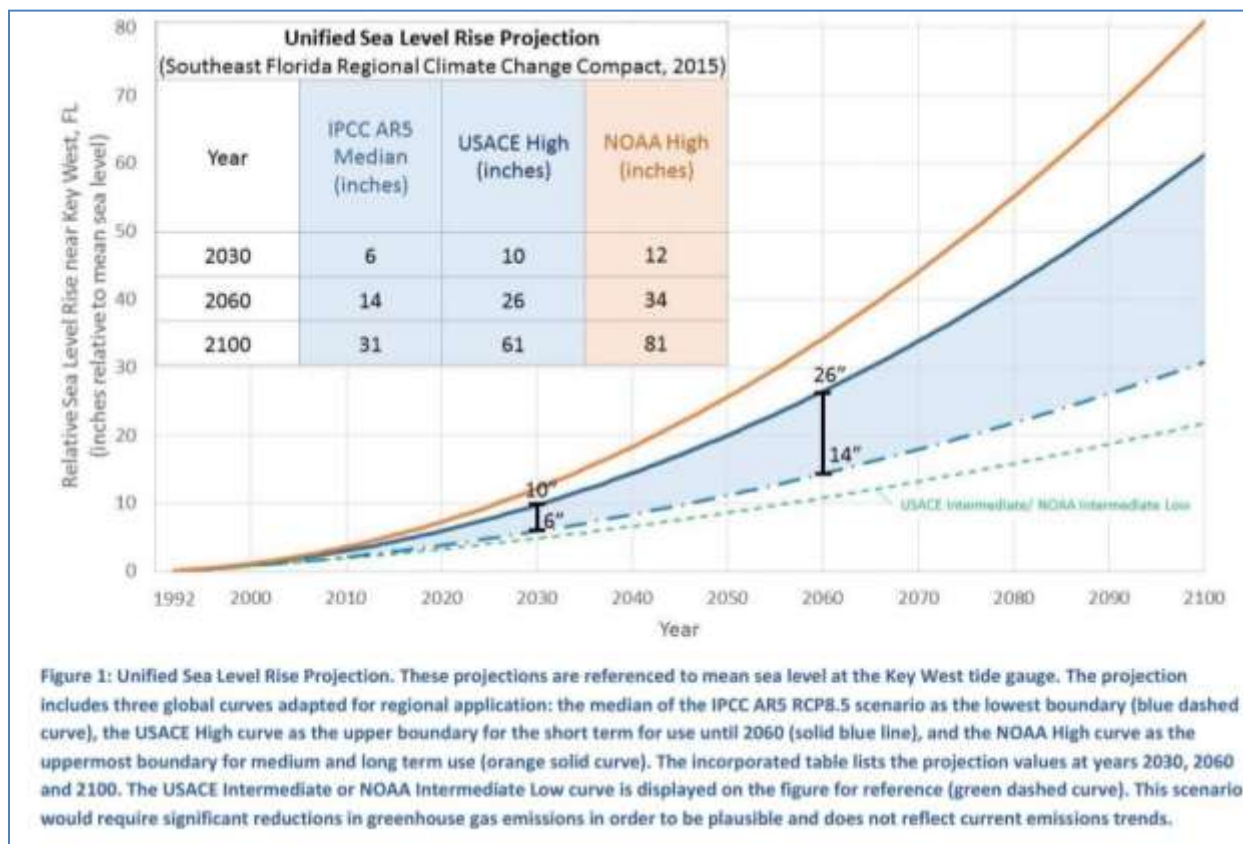
#### *Southeast Florida Regional Climate Change Compact*

The Southeast Florida Regional Climate Change Compact was executed by Broward, Miami-Dade, Monroe, and Palm Beach Counties in January 2010 to coordinate mitigation and adaptation activities across county lines. The Compact represents a new form of regional climate governance designed to allow local governments to set the agenda for adaptation while providing an efficient means for state and federal agencies to engage with technical assistance and support. It is in that spirit that this plan provides the common integrated framework for a stronger and more resilient Southeast Florida starting today and for tomorrow.

In order to better coordinate local planning, the Southeast Florida Regional Climate Change Compact (the Compact) developed unified regional sea level rise projection for Southeast Florida. The Unified Sea Level Rise Projection (unified projections) were originally prepared in 2011 by the Compact's Sea Level Rise Technical Advisory Group, comprised of representatives from county governments, United States Army Corps of Engineers (USACE), National Oceanic and Atmospheric Association (NOAA), United States Geological Survey (USGS), the South Florida Water Management District, and climate scientists from Florida Atlantic University and University of Miami.

The Unified Sea Level Rise Projections are the only regionally-coordinated and locally-specific sea level rise projections for the Southeast Florida region. The projections are updated regularly by a qualified group of scientists and experts, so planners should consider the projections to be both scientifically sound and timely.

**Figure 1-4. Unified Sea Level Rise Projection for Southeast Florida, 2015.**



Source: Southeast Florida Regional Climate Change Compact, 2015.

### Florida Senate Bill (SB) 1094

Recognizing the priority to integrate sea level rise into local government planning, Florida Governor Rick Scott signed S.B. 1094 in May 2015, amending the state comprehensive planning laws (F.S. 163.3178(2)(f) that had stipulated local governments, required to have a coastal management element in their comprehensive plan, include a redevelopment component to “eliminate inappropriate and unsafe development in coastal areas”.

Furthermore, SB 1094 requires coastal management plans to include the reduction of flood risks and losses. It also creates new requirements related to flood elevation certificates, and revises requirements related to flood insurance.

Specifically, SB 1094, Section 1, amends s. 163.3178(2)(f), F.S., to require local governments when drafting their comprehensive coastal management plans to:

- Include development and redevelopment principles, strategies, and engineering solutions that reduce the flood risk in the coastal zone which results from high-tide events, storm surge, flash floods, stormwater runoff, and the related impacts of sea-level rise.



- Encourage the use of best-practices development and redevelopment principles, strategies, and engineering solutions that will result in the removal of coastal real property from flood zone designations established by the Federal Emergency Management Agency.
- Identify site development techniques and best practices that may reduce losses due to flooding and claims made under flood insurance policies issued in this state.

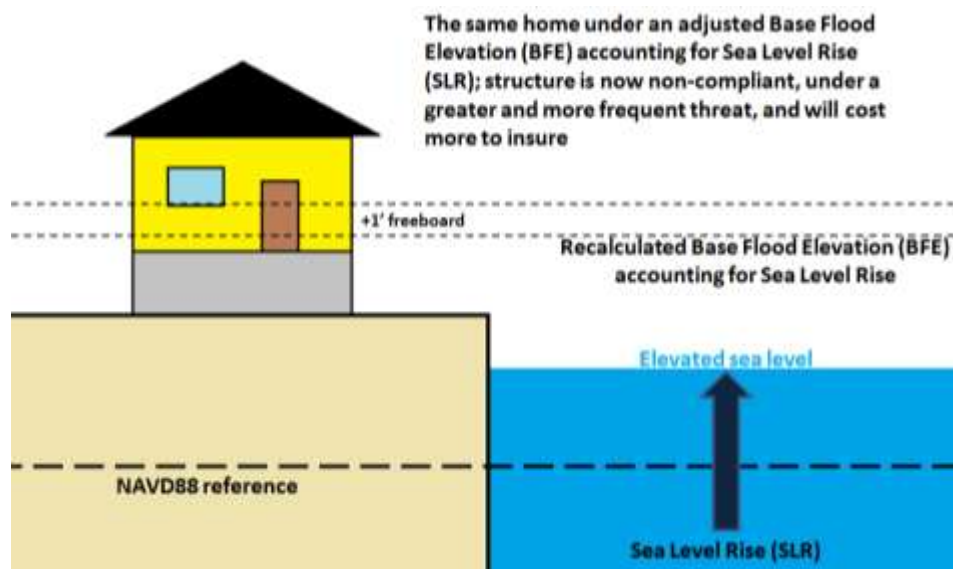
### Local Flood-Related Ordinances

The Village seeks to develop techniques and best practices that may reduce losses due to flooding and claims made under flood insurance policies issued in this state. In addition to state agencies, the Village's Building Department regulates the building of structures in flood-prone areas so that flood damage can be minimized or avoided. The Village has continued to support these programs and work with residents and businesses in regard to program requirements. Moreover, the Village recently passed an ordinance related to FEMA's updated flood zone maps and is considering passing an ordinance related to flood hazard prevention techniques that will increase the "freeboard" height requirements, as detailed below.

On July 13, 2017, the Village of Tequesta Council adopted Ordinance 7-17 providing that the Federal Emergency Management Agency has revised and reissued the Flood Insurance Study and Flood Insurance Rate Map for Palm Beach County, Florida, and Incorporated Areas, effective October 5, 2017. The Village of Tequesta participates in the National Flood Insurance Program (NFIP) and the Village Council of the Village of Tequesta desires to continue to meet the requirements of Title 44 Code of Federal Regulations, Sections 59 and 60, necessary for participation.

As discussed in the previous section, NFIP provides federally backed flood insurance within communities that enact and enforce floodplain regulations. The Community Rating System (CRS) is a national program developed by the Federal Emergency Management Agency (FEMA). To be covered by a flood insurance policy a property must be in a community that participates in the NFIP. To qualify for the NFIP, a community adopts and enforces a floodplain management ordinance to regulate development in flood hazard areas. The CRS Program recognizes, encourages and rewards communities that go beyond the minimum required by the NFIP. Under the CRS, the flood insurance premiums of a community's residents and businesses are discounted. A community receives a CRS classification based upon the total credit for activities such as Public Information; Mapping and Regulations; Flood Damage Reduction; and Warning and Response. The Village of Tequesta is part of the CRS Program, "Class 7" rating which allows residents to receive 15% discount of their flood insurance.

**Figure 1-5: Adjusted Base Flood Elevation, Accounting for Sea Level Rise**



Currently, the Village of Tequesta is reviewing a potential ordinance amendment to Chapter 14 of the Village's Code of Ordinances to require 18 inches of freeboard above the base floor elevation in flood zone areas. This provision will contribute to mitigating sea level rise flooding effects that continue to threaten coastal areas Tequesta.

Freeboard refers to the height of a building above the Base Flood Elevation for a specific site. Florida regulations often require at least one-foot of freeboard for elevated buildings. Each foot of freeboard (up to a maximum of three feet), lowers flood insurance rates significantly. Since elevations on FIRMs do not include sea level rise, freeboard will help keep structures above floodwaters as storm surge elevations increase, thus reducing flood insurance premiums. The graphic below shows an example on how to implement this concept.

The Village of Tequesta contains several parcels on the barrier island that contain multi-family condominium developments. While there are not currently any single family homes along the ocean front within Tequesta, the freeboard technique could be considered for future development or redevelopment in this area.

#### Adaptation Action Areas (AAA)

The Community Planning Act (CPA) made changes to the state's growth management laws in 2011, including the optional adaptation planning for coastal hazards and the potential impacts of sea level rise. The Adaptation Action Area, as defined in the CPA, is an optional comprehensive plan designation for areas that experience coastal flooding and that are vulnerable to the related impacts of rising sea levels for prioritizing funding for infrastructure and adaptation planning.

Local governments that adopt an adaptation action area may consider policies within the coastal management element in their comprehensive plan to improve resilience to coastal flooding.



Criteria for the adaptation action area may include: areas below, at, or near mean higher high water; areas which have a hydrological connection to coastal waters; or areas designated as evacuation zones for storm surge.

Florida Statute (163.3164(1)) states, *“Adaptation action area” or “adaptation area” means a designation in the coastal management element of a local government’s comprehensive plan which identifies one or more areas that experience coastal flooding due to extreme high tides and storm surge, and that are vulnerable to the related impacts of rising sea levels for the purpose of prioritizing funding for infrastructure needs and adaptation planning.”*

Florida Statute (163.3177(6)(g)(10)) states, *“At the option of the local government, develop an adaptation action area designation for those low-lying coastal zones that are experiencing coastal flooding due to extreme high tides and storm surge and are vulnerable to the impacts of rising sea level. Local governments that adopt an adaptation action area may consider policies within the coastal management element to improve resilience to coastal flooding resulting from high-tide events, storm surge, flash floods, stormwater runoff, and related impacts of sea-level rise. Criteria for the adaptation action area may include, but need not be limited to, areas for which the land elevations are below, at, or near mean higher high water, which have a hydrologic connection to coastal waters, or which are designated as evacuation zones for storm surge.”*

## **FINAL REMARKS**

Based on the present analysis, the Village should continue to implement specific strategies and policies to encourage and promote compact development patterns, which include the following:

- Promoting infill and redevelopment in appropriate locations in major commercial corridors and increased flexibility in the Village’s land development regulations;
- Promoting walkable and connected neighborhoods that provides for a mix of uses at urban densities and intensities that support a range of housing choices and a multi-modal transportation system;
- Improving non-auto dependent connectivity between residential, shopping, entertainment and employment areas through the provision of interconnected sidewalks, bike lanes/paths and expanded transit service;
- Directing future economic growth and associated development to areas of the Village in a manner that does not have an adverse impact on and protects natural resources and ecosystems through specific policies in the Comprehensive Plan and implementation through the Village’s zoning and land development regulations;
- Continuing supporting green and energy efficient policies;
- Continue promoting and implementing techniques and strategies that reduce the risk of flood hazards and enhance stormwater management facilities;
- Supporting urban forestry policies and land development regulations; and
- Continuing proactive annexation approach.

## **DATA & ANALYSIS**

### **CHAPTER 2: TRANSPORTATION ELEMENT**

#### **INTRODUCTION**

The Village of Tequesta is committed to providing safe and efficient street network while maintaining the identity of Tequesta. The purpose of the transportation element is to focus on all local transportation-related improvements and accommodate for future transportation needs of the Village. This chapter examines existing conditions, identifies trends and future transportation challenges, and provide specific recommendations to address them.

Pursuant to Chapter 163, Florida Statutes, all land development regulations and development permitting actions are required to be consistent with the Transportation Element and other elements of the Comprehensive Plan.

This document provides the relevant data, inventory and analysis of transportation conditions in support of the Village's Transportation Element of the Comprehensive Plan, as described in Florida Statutes (FS) 163.3177(1)(f). This information was considered in developing the Goals, Objectives and Policies in the Village's Transportation Element.



#### **EXISTING CONDITIONS**

To effectively guide and direct future transportation plans within the Village of Tequesta, it is necessary to have a clear understanding of existing transportation conditions. This section examines the existing transportation conditions including an inventory of complete streets, public parking, bicycle facilities, transit service, functional classification, and jurisdiction. This information was used to identify existing levels of service for the roadways.

## **Jurisdiction**

Tequesta is served by a network of state, county, and local roads which range from U.S. Highway 1 (US-1) to local neighborhood streets. The jurisdiction refers to the “ownership” of the roadway. For example, the Florida Department of Transportation (FDOT) has the responsibility to maintain roadways within their jurisdiction, and also must control access to these roads. Palm Beach County and the Village have similar responsibilities for roads within their jurisdiction. It should be noted that the Village has the authority to establish the level of service standard for all roads within its municipal boundaries, regardless of jurisdiction. In addition, jurisdictions can be transferred between FDOT, Palm Beach County and the Village upon the parties reaching agreement as to the transfer.

## **Functional Classification**

With regard to the Village’s transportation, the roads within the municipal limits of Tequesta accommodate for daily travels from Jupiter through Tequesta as well as connect Martin County to Palm Beach County.

All roadways within Tequesta are assigned a Functional Classification based on the agreement of the Florida Department of Transportation, the Palm Beach Metropolitan Planning Organization (MPO) and the Federal Highway Administration. Functional classification is the process when streets and highways are grouped into classes, or systems, per the character of service they provide. The designation of functional classification is made at least once every 10 years following the decennial Census. Five functional classification categories are common to roadways: Principal Arterial, Major Arterial, Major Collector, Minor Collector, and Local Street.

The roadways within the Village are classified as either “Principal Arterials” or “City Urban Collectors.” Additionally, the Village contains local streets, found mostly in its neighborhoods. Principal Arterial roads are typically major or main roads with high volume of travelers. City Urban Collector roads, often known as distributor roads, experience low-to-moderate capacity and move traffic from local streets to arterials. The Village also contains both major and minor collectors, referred to as “urban” collectors and “city” collectors, respectively.

### **Principal Arterials**

Primary north-south access to, from and through various portions of the Village continues to be provided by US-1, CR 707, Old Dixie Highway, Seabrook Road and Country Club Drive.

US-1 carries the most volume of traffic and continues to be classified as an “urban principal arterial”. US-1 is a



State owned and operated roadway which continues to be a six-lane divided facility. US-1 traverses Tequesta and continues in a north-south direction through Palm Beach County and the entire State of Florida.

### City Urban Collectors

Old Dixie Highway, County Line Road, and CR 707 (Beach Road) all continue to be categorized by the federal functional classification system as “urban,” or major, collectors, which carry much less traffic than US-1. Similarly, Tequesta Drive, Country Club Drive, and Seabrook Road are classified as “city,” or minor, collectors.



Old Dixie Highway has been expanded since last reported in the 1996 EAR and subsequent Plan amendments. Today, Old Dixie Highway is a four-lane, undivided roadway between Tequesta Drive and CR 707, with a left hand turning lane at its intersection with Tequesta Drive. North of Tequesta Drive, Old Dixie Highway continues as a four-lane undivided roadway until Village Boulevard where it continues north to County Line Road as a two-lane, undivided road. There is also a left turn lane on Old Dixie Highway where it intersects Tequesta Drive from the north.

County Line Road, which constitutes the boundary between Palm Beach and Martin Counties, continues to be a two-lane, undivided road running in an east-west direction at the north end of the Village. County Line Road extends westward from US-1 approximately one mile before it turns north and extends into Martin County.



CR 707 continues to be a two-lane, undivided road within the corporate limits of Tequesta. CR 707 intersects with US-1 at the Village’s southern boundary and extends easterly a short distance then northerly up the Atlantic coast into neighboring Martin County. Old Dixie Highway lies west of and runs parallel to US-1.



Tequesta Drive, Seabrook Road and Country Club Road continue to be identified as “City Collectors”, a minor collector. Tequesta Drive provides the primary east-west access through the Village. Tequesta Drive remains a four (4) lane, divided road from US-1 west to Old Dixie Highway, then narrowing to a two-lane, undivided road from there west to Country Club Drive.



Seabrook Road is still a two-lane undivided roadway extending between County Line Road and Tequesta Drive, while Country Club Drive remains the westerly most north-south city collector running from Tequesta Drive north into Martin County.

### **U.S. Highway 1 Corridor**

A 1.4-mile portion of US-1 passes through the Village of Tequesta, serving as the community’s principal commercial corridor. In its current configuration, this section of US-1 is a six-lane thoroughfare with narrow sidewalks and no bicycle facilities.

In late 2014, the Florida Department of Transportation (FDOT) was in the process of evaluating the roadway for a resurfacing and safety improvement project planned for implementation in fall of 2018, when both the Village and the Palm Beach Metropolitan Planning Organization (MPO) noted an inconsistency between current capacity needs and roadway design. Further research revealed long-term growth projections did not necessitate a six-lane roadway design.



As a result, the Village of Tequesta requested FDOT delay completion of its resurfacing plans to allow an opportunity to evaluate the possibility of reconfiguring the road into a multi-modal thoroughfare, while also engaging the public in the decision-making process.

While the FDOT supported reconsideration of the corridor design, the planning process was already underway at the time of the Village's request. In effect, the Village was provided a narrow window of time to complete its evaluation. The full extent of the resurfacing project included a small portion of the corridor to the south located within the Town of Jupiter and concluded to the north at the border with Martin County.

The Village directly engaged the Town of Jupiter, Town of Jupiter Inlet Colony, Palm Beach County and both the Palm Beach and Martin Metropolitan Planning Organizations as part of the process. To coordinate among multiple jurisdictions and agency interests, the Treasure Coast Regional Planning Council was also engaged to lead the re-evaluation effort within an aggressive schedule, with reconfiguration proposal to be received by FDOT by March 31, 2015, in order to maintain the project's planned construction timing.

**Figure 2-1. US Highway One within Village of Tequesta**



### Current Conditions

US-1 traverses the Village of Tequesta, connecting Martin County to the north to the Town of Jupiter to the south. In its current configuration, the road has six vehicular travel lanes with alternating turn lanes in each direction, center medians with sporadic landscaping, and fairly consistent sidewalks on both sides. Bicycle facilities are not provided in the current right-of-way configuration.



Traveling southbound from Martin County, the road changes at County Line Road from a four-lane thoroughfare with a 55-mph speed limit to a six-lane road with a posted speed limit of 45 mph within the Village. In addition, Martin County has bike lanes which do not continue into the Village of Tequesta.



Crossing Beach Road to the south, US-1 narrows back to a four-lane road before the Jupiter Federal Bridge. The bridge is scheduled for reconstruction in FY 2021 with plans that maintain four vehicular travel lanes and add bicycle lanes.



### Citizen Involvement with Village of Tequesta US-1 Project

On January 10, 2015, the Village of Tequesta held a public workshop focused on the US-1 Corridor. The objective of the workshop was to receive community feedback regarding opportunities, design ideas and concerns. The workshop was held in the Village of Tequesta's Village Hall and had approximately 80 people in attendance. The workshop allowed residents, staff, elected officials and others to voice their opinions as well as draw out their individual ideas and thoughts.

There were six (6) major topics that the participants discussed during the workshop. These six items include:

- The number of lanes
- Beautification
- Bike Lanes
- Troubling Intersections
- Need for Street Lights
- Concern about Cost to the Village

In addition to street lights and median landscaping, other enhancements to improve both safety and aesthetics were considered. The Village is located close to the coast and should change the traffic signal poles to mast arms to better withstand future windstorms. Changing the pavement color and texture of crosswalks provides visual cues to drivers to watch for pedestrians. In the event that lanes are eliminated, narrowing the crossing distance at main intersections through the use of curb extensions could improve pedestrian comfort and shorten crossing times.

Based on cost and impact considerations, the ultimate decision for the corridor design is a 4-lane road with buffered bike lanes, curb extensions and cross walk enhancements at the major intersections, additional street lighting and landscaping, and the expansion of the sidewalk along the JILONA property to a multi-use path.

On February 12, 2015, the Village of Tequesta unanimously approved a resolution to proceed with the request to FDOT for a lane elimination on US-1. Similarly, the Town of Jupiter unanimously approved a resolution supporting the request to FDOT for a lane elimination on US-1 on February 17, 2015.

On June 15, 2015, the Florida Department of Transportation sent notices to both municipalities stating a multi-disciplinary process had determined no adverse impact would result from the lane elimination and that the request was approved.

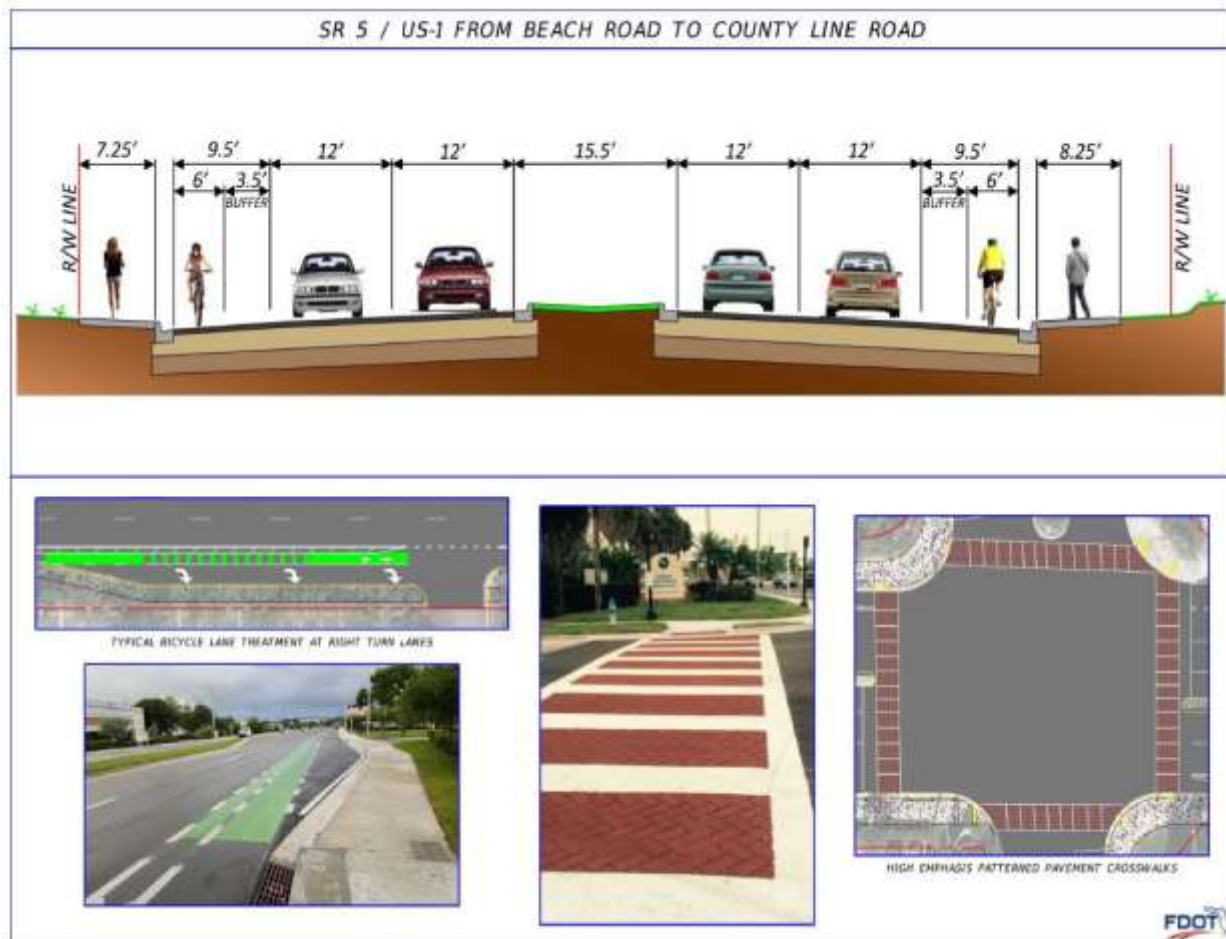


#### Summary of the Recommendations

- 1) **Number of Lanes**
  - Differing Opinions on 4 vs. 6 Lanes
  - Concerns About Congestion
  - Want Turn Lanes into Main Destinations
- 2) **Beautification**
  - Less Landscaping in Medians (Visibility Concerns)
  - Pretty and Park-like
  - Low Maintenance Costs
  - Appearance of Businesses (More Cohesive & Neater)
  - Should Know When You've Arrived in Tequesta!
- 3) **Bike Lanes**
  - Should be Separated from Pedestrians
  - Should be Separated from Cars
- 4) **Troubling Intersections**
  - US 1 & Beach Rd
  - US1 & Tequesta Dr
  - Alt A1A & Old Dixie Hwy
  - County Line Rd & Old Dixie Hwy
- 5) **Need for Street Lights**
  - Concerns about Safety
  - Speed, Visibility & Access
- 6) **Concern about Cost to the Village**

With regard to the US-1 improvement project, plans are moving forward in 2017. FDOT is expecting to initiate construction in November 2017 which should be completed by fall 2018, weather permitting. This \$3.2 million project includes lane elimination, widening turn lanes, adding buffered bike lanes and patterned pavement crosswalks, milling and resurfacing of the roadway, sidewalk and drainage improvements, pedestrian lighting, and installation of pedestrian mast arm signalization, vehicle detection systems, and signage and pavement marking upgrades.

The rendering below was provided by FDOT in preparation for an open house event in the Village of Tequesta



The photos below illustrate a potential “existing” and “proposed” design scenario of the US-1 and Tequesta Drive intersection.





Thus far, the Village of Tequesta US-1 Master Plan and Complete Streets Project has had a positive impact on the community. During the October 12, 2017, Village Council meeting, the Village was recognized for its commitment to this innovative project. Michael Busha, Executive Director of Treasure Coast Regional Planning Council (TCRCP), presented Village Mayor Abby Brennan with three awards related to the Village of Tequesta US-1 Master Plan and Complete Streets Project.



The awards included “Outstanding Infrastructure Award” from the Florida Planning & Zoning Association; Award of Merit: Best Practices Category from the Florida Chapter of the American Planning Association; and an Innovation Award from the National Association of Development Organization.

The Village is committed to making Tequesta a safe and enjoyable a community for both residents and visitors. The US-1 Master Plan and Complete Streets Project will transform this major corridor into a safe, accessible, and aesthetically pleasing roadway which will accommodate all users, whether on foot, bike, bus, private vehicle, or other mode of transit.





## TRENDS AND CHALLENGES

### COMPLETE STREETS

Complete Streets are a natural complement to sustainability efforts, ensuring benefits for mobility, community, and the environment. Complete Streets is a nationally recognized term referring to streets and sidewalks that are designed, operated and maintained to enable safe and convenient access and travel for all users – pedestrians, bicyclists, transit riders, and people of all ages and abilities, as well as freight and motor vehicle drivers.

Complete streets that have utilized road diets have been proven to be safer, increase walking and connectivity. A road diet, also referred to as lane reduction/elimination is when the average daily trips and the predicted daily trips are calculated and determine whether or not the number of traveling lanes and widths are effective.

#### Characteristics of Complete Streets

- *Pedestrian infrastructure* such as sidewalks; traditional and raised crosswalks; median crossing islands; which are compliant with the Americans with Disabilities Act (ADA) including audible cues for people with low vision, pushbuttons reachable by people in wheelchairs, and curb cuts; and curb extensions.
- *Traffic calming measures* to lower speeds of automobiles and define the edges of automobile travel lanes, including a road diet, center medians, shorter curb corner radii, elimination of free-flow right-turn lanes, angled, face-out parking, street trees, planter strips and ground cover.
- *Bicycle accommodations*, such as protected or dedicated bicycle lanes, neighborhood greenways, wide paved shoulders, and bicycle parking.
- *Public transit accommodations*, such as Bus Rapid Transit, bus pullouts, transit signal priority, bus shelters, and dedicated bus lanes
- *Roundabouts* which allow pedestrians to have a safer crossing and lower the amount of crashes.

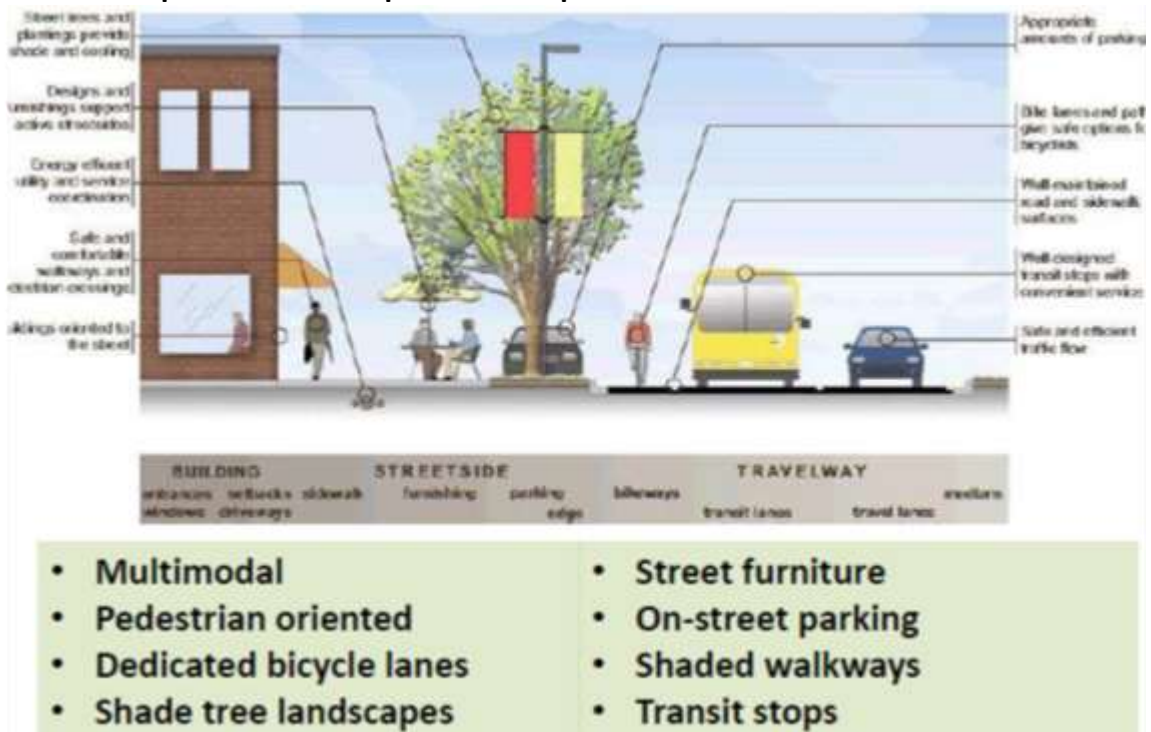
The table below summarizes common elements of complete streets:

**Table 2-1. Common Elements of Complete Streets**

Bike Lanes	Pedestrian Hybrid Beacon
Buffered Bike Lanes	Curb Extensions/Bulb-outs
Neighborhood Greenway	Median Islands/Refuges
Multi-Use Trails/Shared Use Paths	Lighting
Cycle Tracks	On-Street Parking
Good Sidewalk Design	Shading/Trees
Crosswalks	Bus Shelters
Interactive Flashing Beacon	Road Diets

The following figures illustrate possible components of complete streets:

**Figure 2-2. Complete Street Component Examples**



**Figure 2-3. Complete Street Concept Rendering Example**



## **Traffic Calming Techniques and Cross Connections**

Traffic conditions on residential streets can greatly affect neighborhood livability. When streets are safe and pleasant; the quality of life is enhanced. When traffic problems become a daily occurrence, the sense of community and personal well-being are threatened.

Traffic calming techniques may be designed to be sensitive to emergency vehicle access and maintain cross-connectivity. Traffic calming techniques are aimed toward reducing vehicular speeds, promoting a safe and pleasant condition for motorists, bicyclists, pedestrians and residents, improving the livability and multi-modality of the street, improving real and perceived safety for non-motorized users, and discouraging the use of residential streets by cut-through vehicular traffic.

The following techniques are the common examples of traffic calming:

- Bike Lanes. A portion of the roadway is designated for the preferential or exclusive use of bicyclists.
- Bulb outs/neck downs/chokers. Curb extensions at intersections reduce curb-to-curb roadway travel lane widths so that pedestrians have fewer lanes to cross traffic.
- Center islands. Raised islands located along the centerline of a roadway that allow pedestrians a chance to cross a single direction of traffic and stop safely in the center and observe the opposite direction before completely crossing.
- Chicanes/lateral shifts. Curb extensions that alternate from one side of the roadway to the other, forming S-shaped curves that are affective at slowing down traffic.
- Diverters and forced turn lanes. Raised islands located on approaches to an intersection that block certain movements.
- Median barriers. Raised islands located along the centerline of a roadway and continuing through an intersection to block cross traffic.
- Police Enforcement. Employing law enforcement techniques, such as posted speeds and traffic signal/signs.
- Realigned intersections. Changes in alignment that convert T-intersection with straight approaches into curving roadways meeting at right angles.
- Roundabouts and traffic circles. Barriers placed in the middle of an intersection directing all traffic in the same direction
- Speed humps. Rounded raised pavement devices placed across roadways to slow vehicle speeds or discourage cut- through traffic.
- Speed tables/textured pavement/raised crossings. Flat topped speed humps often constructed with a brick or other textured material to slow traffic in areas that pedestrians typically cross the street.

## **Bicycle, Pedestrian Network and Parking**

As bikeways, pathways and sidewalk plans are implemented, they will include signing and marking to delineate the limits of these facilities particularly where interaction between various modes of transportation occur. Signing and marking shall be in conformance with the Manual on Uniform Traffic Control Devices, FDOT, and other state, county, and local standards.

## **Roundabouts and Traffic Circles**

Several features of roundabouts and traffic circles promote safety. At traditional intersections with stop signs or traffic signals, some of the most common types of crashes are right-angle, left-turn, and head-on collisions. These types of collisions can be severe because vehicles may be traveling through the intersection at high speeds. With roundabouts and traffic circles, these types of potentially serious crashes essentially are eliminated because vehicles travel in the same direction. Installing roundabouts and traffic circles in place of traffic signals can also reduce the likelihood of rear-end crashes and their severity by removing the incentive for drivers to speed up as they approach green lights and by reducing abrupt stops at red lights. The vehicle-to-vehicle conflicts that occur at roundabouts and traffic circles generally involve a vehicle merging into the circular roadway, with both vehicles traveling at low speeds — generally less than 20 mph in urban areas and less than 30-35 mph in rural areas.

Several studies have concluded that roundabouts and traffic circles have several benefits:

- Reduce incident of all crashes, and at an even greater rate crashes that cause injury. (Reduction of approximately 80% of injurious accidents)
- Significant traffic flow improvement. Reduction of vehicle delays (reduced by 30- 90% reduction of average vehicle delay depending on design type, volume and speeds)
- Increased safety for non-motorized users, due to effects related to proper traffic
- Calming design and decreased number of potential accident conflict points.

## **Benefits of Complete Streets Strategies**

Complete streets provide the following benefits:

- Grow economy and enhance tax base – Transportation options increase access to shops, restaurants, and jobs and raise property values by creating more inviting communities.
- Improve safety and mobility – Streets designed for multiple modes of transportation are safer for all users and increase mobility by allowing everyone including children, the elderly, and residents with disabilities to travel with the same level of safety and convenience.

- Improve health – Complete streets promote physical activity and decrease the number of cars on the road thereby improving air quality.
- Lower transportation costs – Transportation options allow families to spend less of their income on gasoline thereby increasing household savings and/or disposable income.
- Ease congestion and increasing road capacity – Complete streets reduce short-distance car trips thereby increasing the street's overall capacity to accommodate more travelers.
- Decrease overall municipal budget – Complete streets can incorporate green infrastructure features that reduce stormwater runoff and lower overall transit costs by reducing usage of short-distance curb-to-curb transit service.

### **Examples of Complete Street Policies & Guidelines**

Major cities throughout the US have implemented complete street policies and guidelines to have safer roads and transportation. Cities such as: Boston, San Francisco, New York, Chicago, Atlanta, Portland, Minneapolis and Louisville are examples of complete streets implemented correctly.

A popular city notorious for complete streets is the City of Boston. Boston has the following:

- Electric Vehicle Charging Stations support the adoption of a new generation of clean-fuel vehicles. Linked to smart electric grids that use alternative energy sources such as solar and wind, they will help reduce dependence on fossil fuels and combat climate change.
- Ease of Maintenance informs the design of roadways and sidewalks, favoring durable materials and maintenance agreements for special features to enhance the life and upkeep of Boston's streets.
- Accessible Surfaces with smooth slip-resistant materials for sidewalks and crosswalks create comfortable walking environments that make streets welcoming for people of all ages and abilities.
- Bus Lanes and Transit Prioritization at intersections improve the reliability of routes with high passenger volumes. Shelters with amenities and next bus information improve convenience for passengers.
- Intelligent Signals and Traffic Cameras manage traffic flow in real-time. They facilitate vehicle progression and reduce wait times, improving fuel efficiency and reducing GHG emissions.
- Permeable Surfaces for roadways and sidewalks help reduce flooding and erosion and preserve capacity in storm drains and combined sewers.



- Bicycle- and Car-Share Stations provide the convenience of personal transportation, low costs, and energy savings without the need for car ownership.
- Smart Meters that accept prepaid cards, payment by mobile phones, and allow for variable pricing facilitate more efficient use of limited curbside space.
- Minimum Lane Widths assist in the accommodation of pedestrians and bicyclists when the available public right-of-way is limited in width. Narrower roadways also result in safer vehicle speeds.
- Bicycle Lanes and Cycle Tracks create a citywide network that increases safety and encourages more people to bicycle.
- Rain Gardens and other greenscape elements at key locations divert stormwater directly to the soil. Maintainable rain gardens can filter pollutants, improve air quality, and provide greenery on the street.
- Digital Tags and Information Panels integrated with street furniture and building facades enable wayfinding, community bulletin boards, trip planning, and place-based social networking.
- Wide Sidewalks with unobstructed accessible pathways encourage walking. When combined with proper lighting, street trees, and vibrant street walls, they are inviting, safer, and contribute to placemaking.
- Street Trees with sufficient rooting volume to thrive provide shade and beauty, support wildlife habitat, and reduce air pollution and energy consumption.

### Complete Street Examples in Florida

There are also many examples of municipalities within the state of Florida that have implemented complete street design. In Tallahassee, the city implemented a complete streets policy and utilized a road diet for Robinson Street. Robinson Street was a 4-lane street which was reduced to a 3-lane cross section providing turn lanes. This reduced the amount of side swipe accidents, speed reduction, and overall road safety.

In South Florida, the City of Fort Lauderdale has also implemented complete streets policies, in an effort to create a mobility system that will realize long-term cost savings in terms of improved public health, reduced fuel consumption, reduced demand for single occupancy motor vehicles, and increased public safety through the implementation of this Complete Streets Policy. In addition, implementing complete streets techniques will contribute to walkable, livable neighborhoods which can build community and create a sense of community pride and improved quality of life.

The City will plan for, design, construct, operate and maintain appropriate facilities for pedestrians, bicyclists, motor vehicles, transit vehicles and transit riders, freight carriers, emergency responders, and adjacent land users. All users will experience a safe, functional, and visually appealing environment while traveling safely and conveniently on and across all surface roadways in Fort Lauderdale. This policy will apply to all development and redevelopment in the public domain.

The City will use the Complete Streets Design Manual to guide the design of new and modified streets in Fort Lauderdale while ensuring a context sensitive approach to unique circumstances of different streets and communities. All relevant city plans, manuals, rules, regulations and programs will incorporate Complete Streets Design Principles.

The City will also:

- (A) Provide well-designed pedestrian accommodations on all streets and crossings. Pedestrian accommodations can take numerous forms, including, but not limited to, traffic signals, access management, lighting, enhanced crosswalks, roundabouts, bulb-outs, curb extensions, sidewalks, buffer zones, shared-use pathways, and perpendicular curb ramps, among others.

- (B) Provide well-designed bicycle accommodations along all streets. Bicycle accommodations can take numerous forms, including, but not limited to, the use of bicycle lanes, sharrows, shared use paths, slow speeds, education, enforcement, bicycle storage, traffic calming, signs, and pavement markings, among others.

- (C) Where physical conditions warrant, landscaping shall be planted or other shading devices installed whenever a street is improved (such as the addition of medians or wider sidewalks), newly constructed, reconstructed, or relocated. An emphasis shall be placed on the addition of native trees that provide shade for pedestrians.



- (D) Provide transit amenities when transit services are provided on the corridor including shelters, bus bulb-outs, safe pedestrian and bike access, benches, and bike racks, etc. An emphasis shall be placed on provided connectivity between transit stops and destinations.

## **FINAL REMARKS**

### **Complete Streets**

As discussed in the previous section, complete streets are streets that are meant for everyone and are designed to accommodate all users of the roadway: pedestrians, bicyclists, motorists, and transit riders. There is no specific characteristic of a complete street because each is unique and is developed to respond to the needs of the community. However, some common elements of a complete street in a downtown area may include sidewalks (with adequate lighting and width), bike lanes (or wide paved shoulders), public transportation, pedestrian refuge islands, road diets, bulb-outs, streetscapes, on-street parking, buildings framing the street, crosswalk signage, and various forms of landscaping.

Municipalities throughout the nation, including many in South Florida, are incorporating complete street principles into their planning processes and visions. By establishing and implementing complete streets, the Village's roadway network can simultaneously accommodate users (pedestrians, bicyclists, transit riders, and motorists) of all ages and abilities, improve public health and safety, active mobility and environmental quality.

To best identify the implementation strategies, locations, and types of complete streets, a Complete Streets Policy is recommended. As such, The Village should consider adding a new policy requiring the development of a Complete Streets Policy. A Complete Streets Policy should include strategies for identifying the locations of complete streets, a strategy for determining which components are appropriate, identification of potential funding sources, and strategies for determining the retrofitting of existing streets and implementation concurrent with new development.

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## **DATA & ANALYSIS**

### **CHAPTER 3: HOUSING ELEMENT**

#### **INTRODUCTION**

This chapter presents an inventory and analysis of housing in the Village of Tequesta. The purpose of the housing element is to guide the preparation of plans and policies necessary to assure the availability of safe, sanitary, affordable and otherwise adequate housing for projected growth and future needs of the Village. This chapter examines existing conditions and identifies projected demand in the supply of housing and provides an analysis of the internal and external factors affecting the Tequesta housing market.

Pursuant to Chapter 163, Florida Statutes, all land development regulations and development permitting actions are required to be consistent with the Housing Element and other elements of the Comprehensive Plan.



#### **Housing in Tequesta**

Tequesta is a coastal community located on Florida's East Coast, along the northern border of Palm Beach County. The area is popular among retirees which results in a low average number of persons per household. Tequesta is also a popular resort and second-home community.

The Village of Tequesta is almost entirely built out. The Village is 98.2% developed at the present time, Vacant lands currently represent 1.8% of the total land area in Tequesta. This is down from the nearly 6% reported in 1996. The amount of Vacant land in the Village has decreased significantly.

There are only 25.723 acres currently vacant land available for future development within the existing corporate limits of Tequesta. This compares to 84.5 acres reported as Vacant in 1996. It is expected that the remaining Vacant lands will be entirely build-out within the long-range planning period of the Comprehensive Plan update. On January 12, 2017, Village Council

approved a 96-unit adult congregate living facility to be located on a vacant 8-acre site on County Line Road (Key Estates Senior Housing Living). As of November 2017, the parcel is still vacant and the applicant is considering a time extension. As a result, the property was considered as vacant for this analysis.



The largest use of land in the Village continues to be Residential. Residential use increased from approximately 473 acres in 1996 to 515.57 acres in December 2016. This represents an 8.9% increase in Residential land use over that time period. In 2016, Residential areas represented 35.10% the total land area of the Village.

Most Residential development continues to be single family, low density development (maximum 5.4 dwelling units/acre). About 444.62 acres of the 515.57 acres of Residential use is single family, low density development. The amount of land occupied by medium density Residential development (maximum 12 dwelling units/acre) has not changed significantly. Approximately seventy-one (71) acres are currently used for medium density Residential, as compared to 65.4 acres in 1996.

It is projected that build-out within the existing corporate limits of Tequesta will occur within 5-Five to 10-Year planning period of the updated Comprehensive Plan. Based on this analysis, future land use projections. With the limited amount of growth and development projected in the Population Estimates and Projections section of this Report, very little change is expected in the mix, and type of residential units over the 5- and 10-Year planning periods of the updated Comprehensive Plan. However, annexation of surrounding pocket areas could impact residential land use designations and acreages.

The 2003-2005 nationwide “housing bubble” caused a meteoric rise in home prices that resulted in a severe imbalance between housing supply and demand in South Florida. Palm Beach County’s affordable housing shortage was largely due to several key factors:



- Inflationary housing values that exceed the income of most County residents;
- substantial loss of multi-family rental housing through condominium conversions;
- rising interest rates, construction costs and materials; and
- increasing costs associated with homeownership (taxes, insurance, etc.).

After the “bust,” the housing market was impacted by the foreclosure crisis, more stringent requirements from lenders to qualify for mortgages because of sub-prime mortgage meltdown, slowing of the economy, increased rate of unemployment, and high gas prices.

Generally, a high number of foreclosures creates several problems. First, foreclosures create housing affordability problems for those whose homes are foreclosed on. Second, foreclosed properties often are not maintained, turning into eyesores, and adversely affecting the value of properties in the surrounding neighborhood. Third, foreclosed properties usually sell at lower-than-actual-value which also devalues properties in the surrounding neighborhood. Finally, foreclosures impact banks and lending institutions which often reduce the credit available to individuals and businesses. Overall, foreclosed properties negatively impact the entire community as well as the owners of those properties.

In general, in Palm Beach County, with the recent decrease in housing costs, the focus has shifted to very-low and low-income households, with less emphasis on moderate income households and workforce housing. This allows resources to be concentrated on a smaller segment of the population, resulting in a higher percentage of that smaller segment receiving assistance.



## EXISTING CONDITIONS

In order to effectively guide and direct future land uses within the Village of Tequesta, it is necessary to have a clear understanding of existing housing conditions. This section examines the characteristics of existing housing in Tequesta, and presents an inventory of all housing-related data as required by Chapter 163 Florida Statutes.

The following analysis is based on the American Community Survey (ACS) of the U.S. Census Bureau which includes estimates based on a sample of households over a 5-year period. The data provided by the ACS allows an in-depth analysis of housing variables and trends. The following tables are organized in columns, each representing a 5-year period from 2006-2010 or 2010-2014: the first two columns provide data for Tequesta during two 5-year periods, and the third column focusses on Palm Beach County.

## HOUSING CONDITIONS

This analysis recognizes that *“Housing is most Americans’ largest expense. Decent and affordable housing has a demonstrable impact on family stability and the life outcomes of children. Decent housing is an indispensable building block of healthy neighborhoods, and this shapes the quality of life...better housing can lead to better outcomes for individuals, communities, and American society as a whole. In short, housing matters.”* Bart Harvey, 2006, Joint Center of Housing Studies of Harvard University.

### Occupancy and Tenure

As summarized in Table 3-1, in 2014 there were 3,194 housing units in Tequesta, a decrease from 3,326 housing units in 2010. Of that number, 2,519 (78.9 percent) were classified as occupied, compared to 79.2 percent in Palm Beach County. The percentage of vacant housing units in Tequesta (21.1 percent) was similar to that of the County (20.8 percent) in 2014.

**Table 3-1. Housing Occupancy**

Housing Occupancy	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Total housing units	3,326	100%	3,194	100%	668,464	100%
Occupied housing units	2,490	74.9%	2,519	78.9%	529,729	79.2%
Vacant housing units	836	25.1%	675	21.1%	138,735	20.8%
Vacant for sale	4.9	(X)	0.4	(X)	2.7	(X)
Vacant for rent	20.5	(X)	8.1	(X)	8.5	(X)

Source: U.S. Census Bureau; 2006-2010 & 2010-2014 5-Year American Community Survey.



Table 3-2 indicates that between 2010 and 2014, Tequesta saw a slight shift in the number of owner-occupied and renter-occupied units. Owner-occupied units decreased by 2.8 percent, while renter-occupied units increase by 2.8 percent during that time. By 2014, 79.6 percent of all occupied housing units in Tequesta were owner-occupied, in contrast with 20.4 percent occupied by renters. This trend is consistent with the County where there are more owner-occupied units than renter-occupied units. The average number of persons per household, both owner- and renter-occupied, is slightly over two (2.25 and 2.39, respectively) in Tequesta, which is just barely lower than in Palm Beach County (2.47 and 2.67). This is consistent with the larger concentration of retirees and “empty nesters” in Tequesta.

**Table 3-2. Housing Tenure**

Housing Tenure	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Occupied housing units	2,490	100%	2,519	100%	529,729	100%
Owner-occupied	2,053	82.4%	2,004	79.6%	371,761	70.2%
Renter-occupied	437	17.6%	515	20.4%	157,968	29.8%
Average household size of owner-occupied unit	2.31	(X)	2.25	(X)	2.47	(X)
Average household size of renter-occupied unit	2.04	(X)	2.39	(X)	2.67	(X)

Source: U.S. Census Bureau; 2006-2010 & 2010-2014 5-Year American Community Survey.

### **Type of Housing**

Table 3-3 shows that in 2014, 52 percent of Tequesta’s housing supply were single-family units, while 48.1 percent were duplexes and multifamily units. Between 2010 and 2014, the number of single-family units in Tequesta increased by 5.4 percent. The larger proportion of single-family

home units in Tequesta is consistent with the County where single-family homes are 56.3 percent of all housing units.

**Table 3-3. Number of Units in Structure**

Number of Units in Structure	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Total housing units	3,326	100%	3,194	100%	668,464	100%
1-unit, detached	1,366	41.1%	1,506	47.2%	308,555	46.2%
1-unit, attached	184	5.5%	154	4.8%	67,811	10.1%
2 units	33	1.0%	56	1.8%	19,758	3.0%
3 or 4 units	160	4.8%	212	6.6%	46,528	7.0%
5 to 9 units	382	11.5%	353	11.1%	41,317	6.2%
10 to 19 units	449	13.5%	457	14.3%	41,329	6.2%
20 or more units	739	22.2%	456	14.3%	124,293	18.6%
Mobile Home	13	0.4%	0	0.0%	18,644	2.8%
Boat, RV, van, etc.	0	0.0%	0	0.0%	229	0.0%

Source: U.S. Census Bureau 2006-2010 & 2010-2014 5-Year American Community Survey.



### **Number of Bedrooms and Overcrowding**

As shown in Table 3-4, three-bedroom units make up the largest supply of housing in Tequesta (44 percent), whereas the majority of housing in Palm Beach County (39.5 percent) are two-bedroom units. In Tequesta, 60.5 percent of the housing units have more than two bedrooms, while 48.8 percent of the County's total housing units have more than two bedrooms.

Overcrowding is indicated by the presence of more than one person per room. Table 3-5 shows that the number of overcrowded units within the Village is negligible, with 99.8 percent of the units having no more than one person per room. This is consistent with figures for the County (97.1 percent). In 2014, Tequesta had only 5 units or 0.2 percent overcrowding, in contrast to the County's 15,344 units or 2.9 percent overcrowding.

**Table 3-4. Number of Bedrooms**

Number of Bedrooms	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Total housing units	3,326	3,326	3,194	3,194	668,464	668,464
No bedroom	0	0.0%	0	0.0%	8,253	1.2%
1 bedroom	87	2.6%	191	6.0%	70,724	10.6%
2 bedrooms	1,323	39.8%	1,071	33.5%	263,810	39.5%
3 bedrooms	1,521	45.7%	1,404	44.0%	226,968	34.0%
4 bedrooms	339	10.2%	515	16.1%	75,501	11.3%
5 or more bedrooms	56	1.7%	13	0.4%	23,208	3.5%

Source: U.S. Census Bureau; 2006-2010 & 2010-2014 5-Year American Community Survey.

**Table 3-5. Occupants per Room and Overcrowding**

Occupants Per Room and Overcrowding	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Occupied housing units	2,490	2,490	2,519	2,519	529,729	529,729
1.00 or less	2,490	100.0%	2,514	99.8%	514,385	97.1%
1.01 to 1.50	0	0.0%	0	0.0%	11,538	2.2%
1.51 or more	0	0.0%	5	0.2%	3,806	0.7%

Source: U.S. Census Bureau; 2006-2010 & 2010-2014 5-Year American Community Survey.

As summarized in Table 3-6, the majority of Tequesta's housing supply (28 percent) was built in the 1970s. Founded in 1957 as a country club community, Tequesta witnessed rapid growth throughout the next two decades, due to the expansion of the golf community and surrounding neighborhoods, as well as new job opportunities brought to the area by Pratt & Whitney and other companies. Approximately 49 percent of Tequesta's housing was built after 1979.

In contrast, the largest percentage (28.3%) of the County's housing supply was built during the 1980s, and 65 percent was built prior to 1980. Less than four percent of Tequesta's housing stock



was built prior to 1960, which means that those structures have been in the housing market for more than 55 years. In contrast, 8.1 percent of the County’s housing stock was built prior to 1960.

**Table 3-6. Year Structure Built**

Year Structure Built	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Total housing units	3,326	100%	3,194	100%	668,464	100%
Built 2010 or later	20	0.6%	0	0.0%	3,069	0.5%
Built 2000 to 2009	397	11.9%	563	17.6%	112,229	16.8%
Built 1990 to 1999	358	10.8%	495	15.5%	118,507	17.7%
Built 1980 to 1989	575	17.3%	511	16.0%	188,862	28.3%
Built 1970 to 1979	1,026	30.8%	919	28.8%	134,345	20.1%
Built 1960 to 1969	724	21.8%	581	18.2%	56,614	8.5%
Built 1950 to 1959	187	5.6%	95	3.0%	34,866	5.2%
Built 1940 to 1949	28	0.8%	30	0.9%	8,948	1.3%
Built 1939 or earlier	11	0.3%	0	0.0%	11,024	1.6%

Source: U.S. Census Bureau; 2006-2010 & 2010-2014 5-Year American Community Survey.



Table 3-7 indicates that 100 percent of the housing stock in the Village includes plumbing and kitchen facilities, as does nearly all of the County’s: 99.6 % with complete plumbing facilities and 99.3% with complete kitchen facilities.

**Table 3-7. Plumbing and Other Services**

Plumbing & Other Services	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Occupied housing units	2,490	2,490	2,519	2,519	529,729	529,729
Lacking complete plumbing facilities	0	0.0%	0	0.0%	1,915	0.4%
Lacking complete kitchen facilities	10	0.4%	0	0.0%	3,792	0.7%

Source: U.S. Census Bureau; 2006-2010 & 2010-2014 5-Year American Community Survey.



### **Housing Cost and Affordability**

Table 3-8 indicates the value of owner-occupied housing. The value of housing continues to be higher in Tequesta than in Palm Beach County as a whole. In 2014, approximately 30.6 percent of the homes in Tequesta were valued at less than \$200,000, compared to 51.2 percent at the County level. However, over 20 percent of the Village's homes were valued at over \$500,000, compared to approximately 11 percent in Palm Beach County. These numbers are consistent with the 2014 median home values, which were higher in the Village (\$287,400) than in the County (\$194,600).

**Table 3-8. Housing Value**

Housing Value	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
<i>Owner-occupied units</i>	2,053	2,053	2,004	2,004	371,761	371,761
Less than \$50,000	25	1.2%	54	2.7%	34,834	9.4%
\$50,000 to \$99,999	50	2.4%	224	11.2%	55,156	14.8%
\$100,000 to \$149,999	79	3.8%	103	5.1%	50,153	13.5%
\$150,000 to \$199,999	233	11.3%	233	11.6%	50,054	13.5%
\$200,000 to \$299,999	624	30.4%	459	22.9%	73,507	19.8%
\$300,000 to \$499,999	802	39.1%	527	26.3%	65,407	17.6%
\$500,000 to \$999,999	180	8.8%	322	16.1%	29,890	8.0%
\$1,000,000 or more	60	2.9%	82	4.1%	12,760	3.4%
<i>Median (dollars)</i>	303,500	(X)	287,400	(X)	194,600	(X)

Source: U.S. Census Bureau; 2006-2010 & 2010-2014 5-Year American Community Survey

The majority of owner-occupied housing units in Tequesta are mortgaged. Table 3-9 indicates that in 2014, 40.3 percent of owner-occupied housing units in the Tequesta did *not* have a mortgage, while 59.7 percent of housing units did have a mortgage. Between 2010 and 2014, the number of housing units with a mortgage increased by 4.7 percent. These figures are comparable with the County's housing mortgage status where 58.2 percent of the housing units have a mortgage, and only 41.8 percent are without a mortgage. The Village's housing mortgage status is consistent with the demographic and socio-economic characteristics presented in Chapter 1. Approximately 29 percent of the population was over 60 years old in 2014. Age structure and higher income levels impact the Village's ownership status.

**Table 3-9. Mortgage Status**

Mortgage Status	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
<i>Owner-occupied units</i>	2,053	2,053	2,004	2,004	371,761	371,761
Housing units with a mortgage	1,129	55.0%	1,197	59.7%	216,384	58.2%
Housing units without a mortgage	924	45.0%	807	40.3%	155,377	41.8%

Source: U.S. Census Bureau; 2006-2010 & 2010-2014 5-Year American Community Survey.

Table 3-10 indicates a median contract rent of \$1205 for Tequesta, compared with \$1158 for the County in 2014. In Tequesta, 31.3 percent of occupied rental units cost less than \$1,000 in 2014,

compared to 34.8 percent in the County. . At 68.6 percent, the majority of rental housing units in the Village have rental values higher than \$1,000, which is comparable to those in Palm Beach County (65.3 percent). These figures are consistent with the age of the housing stock in Tequesta.

**Table 3-10. Gross Rent**

Gross Rent	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
<i>Occupied units paying rent</i>	423	423	488	488	150,748	150,748
Less than \$200	0	0.0%	0	0.0%	1,180	0.8%
\$200 to \$299	0	0.0%	0	0.0%	2,083	1.4%
\$300 to \$499	0	0.0%	26	5.3%	3,855	2.6%
\$500 to \$749	0	0.0%	0	0.0%	13,540	9.0%
\$750 to \$999	33	7.8%	127	26.0%	31,661	21.0%
\$1,000 to \$1,499	263	62.2%	203	41.6%	60,530	40.2%
\$1,500 or more	127	30.00%	132	27.0%	37,899	25.1%
No rent paid	14	(X)	27	(X)	7,220	(X)
<i>Median (dollars)</i>	1,318	(X)	1,205	(X)	1,158	(X)

Source: U.S. Census Bureau; 2006-2010 & 2010-2014 5-Year American Community Survey.

Table 3-11 shows the percentage or proportion of income that households pay for housing in Tequesta. Based on the definition of affordable housing, a housing unit is affordable if a household's monthly housing expenses do not exceed 30% of the household's gross income. For owner-occupied households, housing cost includes principal, interest, taxes, and insurance.

**Table 3-11. Selected Monthly Owner Costs as a Percentage of Household Income (SMOCAPI)**

Selected Monthly Owner Costs as a Percentage of Household Income (SMOCAPI)	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
<i>Housing units with a mortgage</i>	1,129	1,129	1,184	1,184	214,765	214,765
Less than 20.0 percent	163	14.4%	255	21.5%	60,348	28.1%
20.0 to 24.0 percent	144	12.8%	222	18.8%	29,766	13.9%
25.0 to 29.9 percent	183	16.2%	141	11.9%	24,161	11.2%
30.0 to 34.9 percent	99	8.8%	70	5.9%	17,738	8.3%
35.0 percent or more	540	47.8%	496	41.9%	82,752	38.5%
Not computed	0	(X)	13	(X)	1,619	(X)

Source: U.S. Census Bureau; 2006-2010 & 2010-2014 5-Year American Community Survey.

In 2014, an estimated 47.8 percent of Tequesta homeowners spent more than 30 percent of their income on housing cost, in comparison with 46.8 percent in the County. These figures are consistent with the Village's higher median value for housing (\$287,400) compared to the County's (\$194,600).



The 2014 owner costs percentages are lower than the 2010 estimates: 56.6 percent of homeowners spent more than 30 percent of their income on housing costs in 2010, while the median income was higher (\$303,500).

Table 3-12 indicates that 69.9 percent of Tequesta renters spent more than 30 percent of their income toward rent in 2014, compared to 60.5 percent at the County level.

**Table 3-12. Gross Rent as a Percentage of Household Income (GRPI)**

Gross Rent as a Percentage of Household Income (GRPI)	Village of Tequesta				Palm Beach County	
	2010 (2006-2010)		2014 (2010-2014)		2014 (2010-2014)	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
<i>Occupied units paying rent (excluding units where GRPI cannot be computed)</i>	423	423	488	488	147,766	147,766
Less than 15.0 percent	88	20.8%	60	12.3%	11,352	7.7%
15.0 to 19.9 percent	91	21.5%	14	2.9%	14,116	9.6%
20.0 to 24.0 percent	7	1.7%	73	15.0%	17,290	11.7%
25.0 to 29.9 percent	2	0.5%	0	0.0%	15,713	10.6%
30.0 to 34.9 percent	46	10.9%	52	10.7%	12,958	8.8%
35.0 percent or more	189	44.7%	289	59.2%	76,337	51.7%
Not computed	14	(X)	27	(X)	10,202	(X)

Source: U.S. Census Bureau, 2006-2010 & 2010-2014 5-Year American Community Survey.



## AFFORDABLE HOUSING NEEDS SUMMARY

According to the U. S. Department of Housing and Urban Development (HUD), households spending more than 30 percent of income for housing costs are considered to be "cost-burdened." Households spending more than 50 percent are considered to be "severely cost-burdened." Housing is generally considered to be affordable if the household pays less than 30 percent of income for housing costs.

As a summary indicator of local affordable housing need, the Florida Housing Data Clearinghouse, Shimberg Center for Housing Studies, provides the number of households that are low-income (incomes below 80% of area median) and severely cost-burdened (paying 50% or more for mortgage costs or rent) for each county and jurisdiction. The Clearinghouse provides estimates and projections of the number of these households by tenure for the years 2010-2040.

This indicator encompasses a broad range of households likely experiencing distress because of their housing costs. With their low incomes, the large portion of income taken up by housing costs is likely to limit these households' ability to afford other necessities. Moreover, the 80% of median income figure is a traditional measure of eligibility for programmatic housing assistance. For example, all beneficiaries of the federal public housing program and federal HOME program must have incomes below this amount.



The need indicator serves as an approximation of the total number of households that would benefit from some type of housing assistance, particularly if homeless and migrant households are added. Such assistance could include the construction of new affordable housing units, but it could also include the provision of subsidies to make current units more affordable.

In addition to this summary level of information, a more detailed understanding of the presence of low-income and cost-burdened households can help local governments plan for and target assistance. The following supplemental tables provide this additional level of detail for Tequesta. Note, however, that the

number does not include homeless individuals and families, as they are not included in household enumerations. It also does not include the many migrant farmworker households missed by Census counts.

As Table 3-13 indicates, the number of severely cost-burdened households with income less than 80% of the Area Median Income (AMI) is greater for owner-households, than for renter-households at present and for each five-year projection. As a whole, a minimal increase is projected in the number of severely cost burdened households over the next 20 years for both owner- and renter-households in Tequesta.

**Table 3-13. Affordable Housing Need Summary 2010-2040 in Tequesta**

Number of severely cost burdened (50%+) households with income less than 80% AMI								
Tenure	2010	2014	2015	2020	2025	2030	2035	2040
Owner	348	353	355	368	378	389	393	397
Renter	176	175	175	182	186	188	192	190

Source: Florida Housing Data Clearinghouse. Shimberg Center for Housing Studies.

While the summary indicator provides a measure of overall housing need, targeting housing assistance appropriately requires more detail about income variation within the total number of low-income, severely cost-burdened households, for two reasons:

- 1) If needs are to be addressed through construction of new units, income variation within low-income households means that not all new rent- or price-restricted units will be affordable to all households. For example, a household at 30% Annual Median Income (AMI) would still pay more than half of its income for rent in an apartment with rent set for households with incomes of 60% AMI.
- 2) A number of housing programs, such as the Low Income Housing Tax Credit and, in most cases, Section 8 Housing Vouchers, set income limits below 80% of area median.

The following tables provide more detail on the income categories that make up the summary need indicator.

Table 3-14 indicates that the largest number of renter-households is projected to be at or below incomes of 30% AMI at each five-year interval. There are significantly fewer (less than half) cost-burdened households with projected incomes between 30.1% and 50% AMI, and fewer still between 50.1% and 80% AMI. This data suggests that Tequesta's affordable housing initiative would be best targeted at the cost-burdened and the severely cost-burdened households, even though they represent a relatively smaller number of total renter-households.

**Table 3-14. Affordable Housing Need Detail 2010-2040 in Tequesta (Renter)**

Number of Renter-Households by Cost Burden								
Household Income as % of AMI	2010	2014	2015	2020	2025	2030	2035	2040
30% AMI or less	108	107	107	111	115	118	119	117
30.1-50% AMI	41	41	41	42	42	40	42	42
50.1-80% AMI	27	27	27	29	29	30	31	31
<b>Total</b>	176	175	175	182	186	188	192	190

Source: Florida Housing Data Clearinghouse. Shimberg Center for Housing Studies

Table 3-15 indicates that, similar to renter-households, the greatest number of owner-households is projected to be at or below the 30% AMI. However, cost-burdened households with incomes between 30.1% to 50% AMI and severely cost-burdened owner-households with incomes of 50.1% to 80% AMI, are a much larger portion (roughly one third) of total owner-households than in renter-households. These numbers reflect the larger concentration of elderly households in Tequesta.

**Table 3-15. Affordable Housing Need Detail 2010-2040 in Tequesta (Owner)**

Number of Owner-Households by Cost Burden								
Household Income as % of AMI	2010	2014	2015	2020	2025	2030	2035	2040
30% AMI or less	138	141	142	148	152	159	160	163
30.1-50% AMI	110	112	113	117	121	125	127	128
50.1-80% AMI	100	100	100	103	105	105	106	106
<b>Total</b>	348	353	355	368	378	389	393	397

Source: Florida Housing Data Clearinghouse. Shimberg Center for Housing Studies.

Table 3-16 shows that in Tequesta, only 15.8% of households headed by the elderly are cost-burdened, which is lower than the 19.8 percent Countywide. This may be attributed to the higher proportion of homes owned, as opposed to rented, by the elderly.

**Table 3-16. Households with Cost Burden Above 30% and Income Below 50% AMI – Elderly-Headed Only, 2014**

	Households	Percent of All Elderly Households
Palm Beach County	40,921	19.8%
Tequesta	177	15.8%

Source: Florida Housing Data Clearinghouse. Shimberg Center for Housing Studies.

As Table 3-17 indicates, 1018 households in Tequesta (38.4%) were headed by a person age 65 or older in 2014; of those elderly households, 420 (41%) paid more than 30% of income for rent or mortgage costs. By comparison, 29.4% of households statewide were headed by elderly persons during the same year. In Tequesta, 905 (88.9%) of elderly households owned their homes in 2014.

**Table 3-17. Elderly Households by Age and Cost Burden, 2014 in Tequesta**

Age of Householder	Amount of Income Paid for Housing		
	0-30%	30-49.9%	50+%
65 or more	598	179	241

Table 3-18 presents population not living in households and classified as living in group quarters. Group quarters are facilities such as domestic violence shelters or youth shelters that would not be counted as households in the Census.

**Table 3-18. Group Quarters Population**

Group Quarters Population		
Palm Beach County	Estimate	Estimate
Tequesta	19,402	15

Source: U.S. Census Bureau, 2010-2014 5-Year American Community Survey

The Goals, Objectives and Policies for this Housing Element include additional provisions for addressing the Village's affordable/workforce housing needs.



## TRENDS AND CHALLENGES

It is projected that build-out within the existing corporate limits of Tequesta will occur within 5-Five to 10-Year planning period of the updated Comprehensive Plan. With the limited amount of growth and development projected in the Population Estimates and Projections section of this

Report, very little change is expected in the mix, and type of residential units over the 5- and 10-Year planning periods of the updated Comprehensive Plan. However, redevelopment of existing parcels; and, annexation of surrounding pocket areas could impact residential land use designations and acreages.

The Village of Tequesta could accommodate infill and redevelopment growth in the future. Commercial and mixed use developments along U.S. Highway 1 are potential areas to be redeveloped in the future accommodating residential initiatives. Infill and redevelopment should promote superior projects within the Village's urban landscape.

Proposed buildings are encouraged to be mixed use, energy efficient, appropriately landscaped, and aesthetically pleasing. Limitations upon the land, lot size, parking requirements, height restrictions, and more, should be flexible and not a hindrance to superior design. Moreover, infill redevelopment should allow flexible design while maximizing the potential use of a building or site.

### **Housing and Supportive Services for Elderly and Special Need Residents**

An age-sensitive community is a people-sensitive community. A balanced community will ensure that alternatives are made available to the entire population. Local governments that are serious about meeting the housing needs of older people must recognize that most prefer to age in place within their own homes rather than move to specialized housing where they have to comprehend an unfamiliar environment in a new community.

Aging in place is more feasible where land-use patterns enable walking and transit use as alternatives to driving and where alternatives in housing are offered such as multifamily housing, accessory apartments. A community that offers these alternatives will provide an environment that is supportive of a wide range of individual and household needs including young couples with limited income, young professionals, and persons with disabilities.

The aging of the population creates an increasing need for housing that is accessible for occupants as well as visitors. The census Bureau reports that the U.S. population 65 years and older is expected to double with 25 years. By 2030, 72 million people (1 out of 5 Americans) will be 65 years and older.

Approximately 18% of all elderly households in Florida (65 years of age and older) live at or below the poverty level (U.S. Census, 200). According to the Shimberg Center for Affordable Housing, Florida Housing Finance Corporation 2004 Rental Market Study of the 174,316 lower income, cost-burdened, (renter households paying more than 30% of their income on housing with incomes at or below 60 percent of area median) aged 55 and over in Florida, 62% are paying more than 50% of their income toward housing costs.

Accessibility can be improved with the concept of "visitability" and universal design. "Visitability" is a housing design strategy to provide a basic level of accessibility for single family housing



allowing people of all abilities to interact with each other. “Visitability” standards do not require that all features be made accessible. Universal design incorporates features that make homes adaptable to persons who require handicapped access without negatively impacting curb appeal or value.

Affordable housing is also needed by people with physical or mental disabilities. These populations may be the very lowest income in a community. For example, a person living on supplemental security income may be living on less than \$7,700 per year. There are a number of non-profit organizations throughout the state of Florida in the business of providing housing in partnership with other for these special needs populations. The developers of affordable housing whether for profit or nonprofit will usually include a mix of units in a development to meet the needs of a continuum of extremely low to low income families.

### **Accessory Dwelling Units (ADUs)**

An accessory dwelling unit (ADU) or “granny flat” is a residential unit that is secondary to the primary residence of the homeowner. It can be an apartment within the primary residence or it can be an attached or freestanding home on the same lot as the primary residence.

Section 163.31771 (2)(a), F.S., defines an accessory dwelling unit as “an ancillary or secondary living unit, that has a separate kitchen, bathroom, and sleeping area, existing either within the same structure, or on the same lot, as the primary dwelling unit.”

An accessory dwelling unit creates affordable housing in two ways: the “granny flat” is a small rental unit that will become an affordable rental; and the rental income from the accessory dwelling unit can provide extra income to the primary residence owner.

ADUs are well suited for lower income elderly because in addition to increasing affordability, the elderly homeowner may also obtain companionship and needed services from the tenant in the ADU.

Regulatory barriers and public perception prevent accessory dwelling units from being built. Removing land use barriers can have an impact in providing affordable housing; for example, review traditional zoning that prohibits more than one single residence on a platter lot. Promoting public education awareness can provide a decisive positive influence toward neighborhoods accepting accessory dwelling units in their community.

### **Green Housing Solutions**

Sustainable housing refers to the ability to provide housing options which meet the needs of present citizens without compromising the needs of future citizens while at the same time facilitating the social, environmental, and economic vitality of the community.

Integrating basic building strategies that consider easy access to jobs to minimize commuting, building orientation, water and energy efficient appliances, and appropriate landscaping will help make housing more affordable by increasing savings on transportation, operational, and maintenance costs.

Energy efficient goals and green building standards need to be included in guidelines that impact the design and construction of all new residential development or adaptive reuse developments, including affordable housing. The Village's Land Development Regulation will be reviewed to include green building standards and redevelopment friendlier regulations to supports green design.

The Village will consider the development of a Green Building Ordinance and a green building certification programs, such as LEED, Florida Green Building Coalition (FGBC), Green Globes, Living Building Challenge, for development and redevelopment. The ordinance may include the development of a Neighborhood Development Rating System that integrates the principles of smart growth, urbanism and green building into a national system for neighborhood design.

The State of Florida and private energy companies such as FPL have incentives and programs available for residents, businesses, governments, non-profits, schools, institutions, etc. The funds can be used to install energy efficient products such as the following; photovoltaic cells, solar hot water heaters, solar pool heaters, and fuel cells. The incentives generally pay by kilowatt hour for installed products which will conserve electricity over the lifetime of the product.



## FINAL REMARKS

Based on the present analysis, the Village should continue to implement specific strategies and policies to encourage and promote compact development patterns, which include the following:

- With regard to housing diversity and sustainability, the Village will promote infill development, redevelopment, and flexible zoning regulations, and designate adequate sites and appropriate land use designations to ensure a diverse housing stock for all its residents.
- The Village will continue to support neighborhood enhancement projects. Mixed-use zoning will be promoted to provide the flexibility necessary to stabilize and revitalize older neighborhoods while protecting those neighborhoods from incompatible uses and encouraging compatibility through context-sensitive building and site design.
- The Village will continue to promote resource conservation programs and energy-efficient construction. Proximity to transit services and pedestrian and bicycle interconnectivity will be emphasized. Furthermore, the Village will consider providing development incentives for projects that meet or exceed the Green Building standards.

## **DATA & ANALYSIS**

### **CHAPTER 4: UTILITIES ELEMENT**

#### **INTRODUCTION**

The Utilities element of the Comprehensive Plan contains the sub-elements of Sanitary Sewer, Solid Waste, Stormwater Management, Potable Water, and Natural Groundwater Aquifer Recharge. Each sub-section is addressed separately below.

Pursuant to Chapter 163, Florida Statutes, all land development regulations and development permitting actions are required to be consistent with the Utilities Element and other elements of the Comprehensive Plan.

#### **SANITARY SEWER**

The purpose of the sanitary sewer sub-element is to guide the preparation of plans and policies necessary to assure the availability of capacity, treatment and disposal of wastewater for projected growth and future needs of the Village of Tequesta. This sub-element will analyze the Village's existing sanitary sewer collection system and facilities, and also discuss future generation levels. The Village Level of Service Standards for central wastewater service is 108 gallons per capita per day.

It is noted that references are made throughout this Sanitary Sewer sub-element of the EAR to the Loxahatchee River Environmental Control District, or ENCON as it consistently appears in the currently adopted Comprehensive Plan of the Village. Since the last EAR and subsequent amendments to the Plan, the name of ENCON has been officially changed to the "Loxahatchee River District", or "LRD". The title Loxahatchee River District (LRD) is used in this discussion when referring to current situations and for future planning purposes.

The Village does not own or operate a central sanitary sewer system. The Loxahatchee River District (LRD) owns, operates and maintains the sanitary sewer system serving Tequesta. Wastewater collection, transmission, treatment and disposal services are provided to the Village by the LRD. After the sewer service expansion of the Tequesta Country Club and surrounding areas that previously did not have collection and transmission facilities available to them, central service is now available to the entire Village.

Due to limitations of the physical location of Tequesta, expansion of its boundaries is limited; therefore, the future possibility of urban sprawl type development is almost non-existent. Tequesta cannot expand northward into Martin County by annexation because it is not allowed by Florida Annexation law. East/west expansion of the Village limits is constrained by adjacent water bodies (ICWW and Northwest Fork of the Loxahatchee River, respectively), and the southern boundary of Tequesta abuts either the Loxahatchee River or a portion of the Town of Jupiter lying north of the River. This physiography allows for the efficient provision of sanitary sewer service throughout the Village.

Even though central sanitary sewer facilities are available, not all properties in the Village have connected to the system and still utilize septic tank systems (less than 20 residences). The predominant soil type in the septic tank areas is the St. Lucie sand. While St. Lucie sand is well drained and has slight limitations to transmissivity, it has few organics that retain bacteria to provide the needed treatment as leachate passes through the soil. The sand and gravels typical of this soil type have slight limitations to the use of septic tanks.

The Village continues to utilize the LRD in the site plan review and permitting process, requesting comments from the LRD on new proposed projects and developments regarding wastewater system requirements, as part of its site plan review requirements. Also, the Village requests LRD's approval, or approval with conditions, of proposed projects and developments prior to the issuance of building permits.

The site plan review and building processes established by the Village and the requirements established in the Policies of the Comprehensive Plan, provide an effective way to coordinate with developers in the planning and phasing of development to meet wastewater collection and treatment needs.

The Village does encourage and make themselves available for preliminary/pre-application meetings to inform developers of code requirements. Developers are encouraged to meet with LRD representatives in the preliminary stages to clarify LRD requirements and standards. These opportunities are on-going practices of both the Village and the LRD, and they continue to be available to developers.

The LRD Federal and State standards to regulate the central sanitary sewer system serving Tequesta and septic tank systems are regulated by the Palm Beach County Health Department, which is a State agency. Discharges into surface waters are monitored and reported through the Village's participation in the NPDES (National Pollution Discharge and Elimination System) Stormwater Permitting Program.

## **SOLID WASTE**

The purpose of the solid waste sub-element is to guide the preparation of plans and policies necessary to assure the availability of solid waste resources for projected growth and future needs of the Village of Tequesta. This sub-element will analyze the Village's existing solid waste and hazardous waste management services and facilities, project future waste generation levels and provide alternatives to lower waste generation per capita.

The majority of solid waste in Tequesta continues to be generated by residential areas. The Village of Tequesta is developed primarily as a residential community. Therefore, the residential population in Tequesta continues to be the primary generator of wastes in the Village. Commercial and other uses are not as significant a factor to overall solid waste generation as are the residential uses.



Since population projections indicate that there will be modest growth in Tequesta during the 5 and 10-Year planning periods, it is projected that there will be modest increases to the solid wastes generated in the Village. The Village continues to be provided solid waste disposal services by the Palm Beach County Solid Waste Authority (PBCSWA). Their North County Regional Resource Recovery and Solid Waste Disposal Facility satisfies the disposal needs of the entire County, including Tequesta. The Village also continues to contribute a minor share of the total solid waste disposed of at this Regional facility. The Village continues to maintain an effective liaison with the PBCSWA, and also continues to implement a successful recycling and resource recovery program.

The PBCSWA has adopted an Integrated Solid Waste Management Plan (ISWMP) that secures sufficient county-wide landfill capacity in the foreseeable future. The adopted County-wide average disposal capacity sufficient for a per capita generation rate of solid waste delivered to Authority facilities is 7.13 lbs. per person per day. Although the county-wide solid waste generation is higher, significant quantities of recyclable materials, particularly construction and demolition debris and vegetation are diverted to private recycling facilities. The above figure includes only the portion of the waste stream the Authority reasonably expects to receive based on decades of projections.

Solid wastes continue to be collected by a private hauler who is granted the right, privilege and franchise by the Village to collect residential (both single family and multiple family developments) garbage, trash and other wastes within the Village limits. Waste Management is currently providing service to the Village. A new contract to continue providing service was awarded on August 10, 2017 by the Village Council, which will be effective on October 1, 2017. Commercial and other uses in Tequesta contract privately for collection services.

Under terms of the franchise agreement the contractor makes two (2) weekly collections from single family residences. Per terms of the agreement, collection of garbage, yard and other trash is collected at the street line between the side lot lines of single family residences. The location of waste collection facilities continues to be scrutinized for ease and safety in access in the site plan review process for multiple family developments.

Accordingly, the following solid waste Levels of Service for residential and non-residential collection have been established by the Village:

Residential Collection:        Twice per week garbage collection,  
   Twice per week yard waste collection,  
   Once per week recyclable collection

Non-Residential Collection:   Private contracts

The Village's private hauler focuses on sustainability and recycling policies. In doing so, they are contributing to a more sustainable world by:

- Advancing technologies to reduce waste
- Increasing recycling and reuse
- Creating even safer treatment and disposal options
- Developing sources of renewable energy
- Sharing the benefits of learning and innovation with their clients and collaborators



Capital improvements are identified in the 5-Year Capital Improvement Schedule presented in the Capital Improvement Element. Capital improvements related to the provision of solid waste collection and disposal services are not the responsibility of the Village. Instead, these responsibilities lie with the private contract hauler and PBCSWA.

## **Recycling**

“Recycling” refers to any process by which solid waste, or materials which would otherwise become solid waste, are collected, separated, or processed and reused or returned to use in the form of raw materials or products.

Generally accepted items include: \*

- Tin cans
- Aluminum cans
- Steel cans

Generally accepted items include: \*

- Office paper
- Magazines
- Flattened cardboard
- Newspaper
- Phonebooks
- Flattened cereal boxes
- Junk mail
- Paperboard



Generally accepted items (cont'd): \*

- Flattened snack boxes

Generally accepted items include: \*

- Food containers and jars
- Soft drink and beer bottles
- Wine and liquor bottles

#### Florida's 75% Recycling Goal



The Florida Legislature has established a new statewide recycling goal—reduce the disposal of recyclables 75% by 2020.

## **STORMWATER MANAGEMENT**

The purpose of this sub-element is to analyze the Village's natural conditions that affect the quantity and quality of stormwater runoff, and the existing stormwater collection and treatment system.

The drainage/stormwater management system serving Tequesta continues to rely on a combination of surface water discharge and natural infiltration by the use of swales and retention and/or detention areas for handling stormwater runoff.

The Village's drainage and stormwater management system has been constructed in a piecemeal fashion over time with the majority of the system having been constructed between 1961 and 1978. Therefore, the major portion of the stormwater drainage system was constructed prior to any discharge regulations.

There are three (3) main water bodies to which the Village discharges stormwater: The Northwest Fork of the Loxahatchee River, the North Fork of the Loxahatchee River and the Intracoastal Waterway (ICWW). The Dover canal located along the southern limits that runs in an east/west direction to the North Fork of the River that is tidally influenced. Another drainage canal located on the north side of Tequesta Drive carries stormwater runoff from the Bermuda Terrace-Tequesta Drive area east to the North Fork of the River. Additionally, land developers have provided secondary drainage systems within their respective developments. There are also four (4) parcels in the Village that are dedicated to drainage and retention/detention purposes. They are referred to as parcels B, C, Russell Road and Unit of Development #39 Cypress Drive North that is still active. There is also a drainage easement located in the Bayview area.

Minimum landscape and open space requirements are established in each zoning district while preservation of native vegetation and the amount of allowable impervious areas are established in the site plan review process and requirements. All of these requirements continue to be strictly enforced and scrutinized in the site plan review and building processes.

As a general drainage requirement, each proposed development project and/or site in the Village must maintain 95% of all stormwater runoff on -site. This requirement is established in the Site Plan Review section of the Village's Official Zoning Ordinance (Ref. Division 2. Site Plan Review, Sec.78-331 required; development standards; required facilities and infrastructure (8) (c)) and in

the Subdivisions Ordinance (Ref. Article V. Design Standards, Division 1. Generally, Sec. 66-161 General Standards; level of service standards (g) (2)). Limiting post-development runoff to pre-development conditions is also a requirement of site plan review and subdivision requirements.

Protection from the degree of flooding that would result from a twenty-five (25) year frequency, twenty-four (24) hour duration storm event has been adopted as the Village's Level of Service Standard for stormwater drainage facilities, and shall be used as the basis of estimating the availability of capacity and demand generated by a proposed development project.

The Village of Tequesta is a co-permittee in the Countywide NPDES (National Pollution Discharge and Elimination System) Stormwater Permitting Program. The Stormwater Management sub-element must be consistent with any requirements of this program. The Village has participated in the NPDES program since its inception in the early 1990's, and Policies have been added to the sub-element to address some of the NPDES program issues.

All of the practices and requirements cited in the Policies above are implemented and presented in the Village's NPDES Annual Report. These represent on-going activities and requirements of the NPDES program.

## **POTABLE WATER**

This sub-section will analyze the Village's existing potable water distribution system, project future demand levels, and analyze the existing facilities.

### **Background History**

The Village owns and operates a central potable water system. Since 1968, the Village of Tequesta has served its residents and businesses with facilities for the withdrawal, treatment and distribution of potable water. Prior to 1968, the central water system was owned and operated by Jupiter Utility Company, Inc. The Village purchased the water system to provide a quality service to the customers within the Village and franchise area. The entire Village of Tequesta is provided central potable water service, and all properties are connected to the system.

### **Village of Tequesta Service Area**

The Tequesta water system service area extends beyond the Village corporate boundaries. The present service area encompasses more than 2500 acres. The current Village water system serves portions of unincorporated Palm Beach County north of the Loxahatchee River and south of the Martin County line; a portion of Southern Martin County including north to Jonathan Dickinson Park including Jupiter Hills, Rolling Hills and a part of southern Jupiter Island; and, the entire Town of Jupiter Inlet Colony, a peninsula lying adjacent to the Intracoastal Waterway, Jupiter Inlet and Atlantic Ocean.

The Village service area is not expected to expand its physical boundaries through the Year 2030. The Village service area boundaries are indicated in Figure 4-1, which was sourced from the Village of Tequesta 10-Year Water Supply Facilities Work Plan, 2015.

### **Village of Tequesta Water System**

The Village water system consists of public wells, a distribution system and treatment facilities. The composition of the overall Village water system has changed significantly since reported in the last EAR and subsequent Plan updates. The existing well facilities, as most recently described in the Village of Tequesta Water Use Permit (WUP) Renewal Application, Permit No. 50-00046-W, October 2011, include: seven (7) active surficial wells on the eastern peninsula (well numbers 18, 19, 20, 23, 24, 7 and 8); three (3) active surficial wells on the western peninsula (well numbers 25, 26 and 27); and, four (4) active Floridan wells on the eastern peninsula (1R, 2R, 3R, and 4R). There are also two (2) other proposed wells, all located on the eastern peninsula as follows: Well 28 (surficial, proposed future) and, Well 5R (proposed future). The easements for these two wells are already in place.

In addition, the Village is subject to, and a participant in, the Palm Beach County Wellfield Protection Ordinance. This Countywide Wellfield Protection Ordinance regulates land use activities within travel time contours of the Village's wellfields. These travel time contours (zones of influence) are identified and overlaid on the Coastal Zone and Conservation Map in the Comprehensive Plan.





**VILLAGE OF TEQUESTA SERVICE AREA BOUNDARIES MAP**

**LEGEND**

— VILLAGE OF TEQUESTA SERVICE AREA BOUNDARY

**SCALE**

1 MILE = 3200 FEET

**PROJECT INFORMATION**

PROJECT MANAGER: T. JENSEN  
 DEPARTMENT MANAGER: T. JENSEN  
 LEAD DESIGN PROF.: T. STEFFER  
 CHECKED BY: T. STEFFER

**SHEET TITLE**

VILLAGE OF TEQUESTA  
 SERVICE AREA BOUNDARIES MAP

**TASK / PHASE NUMBER**

.00001

**PROJECT NUMBER**

RF05-106.14

**DRAWING NUMBER**

FIG. 3-1

## **Village of Tequesta Water Supply Strategy**

The Village had historically been dependent on the Surficial Aquifer for potable water supply. The potable water allocation for the Tequesta water system is increasingly dependent on the Floridan Aquifer coupled with the continued use of the Surficial Aquifer. The Village has taken significant steps and incurred substantial expense over the past thirty (30) years to reduce its use of the Surficial Aquifer. These steps included: abandonment of seven (7) wells on the eastern peninsula; construction of a western peninsula wellfield; construction of four (4) Floridan Aquifer wells, and construction of a reverse osmosis treatment facility.

The Village has worked cooperatively with the South Florida Water Management District (SFWMD) in developing this long-term program. The Village realizes that a permanent, albeit proportionately reducing dependency on the Surficial Aquifer is needed in order to achieve a suitable finished water quality and, not insignificantly, to be fiscally responsible to its water customers.

The Water Use Permit Renewal Application stated that it was reasonable to conclude that the Surficial Aquifer allocation over the previous permit cycle had not yielded any indication of saltwater intrusion on either peninsula or that conductivity levels for all Surficial Aquifer monitoring wells have remained within acceptable ranges. Monitoring of potential saltwater intrusion is an ongoing program of the Village. The Water Use Permit renewal anticipated that the proposed allocation would be adequate through the year 2031. More detailed information on the Water Use Permit (WUP) is presented later in this document

## **Water Treatment Facilities**

The Village operates two (2) plants at the water treatment plant site. The plants share some common elements and function as a single facility, but the two (2) processes are rated separately. The pressurized filter plant treats all of the water from the Surficial Aquifer and is rated at 2.7 MGD. The reverse osmosis plant has a current capacity of 3.6 MGD with three (3) trains.

Section 78-143, Schedule of Site Regulations, of the Village's Code of Ordinances, establishes site regulations within each zoning district to provide for increased impervious areas which, in turn, are established to protect groundwater quality and water resources (e.g. maximum lot coverage, minimum landscape and open space and yard requirements). The site plan review process is utilized to review proposed systems to assure that maximum retention of rainfall and stormwater runoff are retained on site.

Other best management practices are employed by the Village in the site plan and development approval processes to ensure that the quality of water resources is protected and recharge to the groundwater supplies are maximized.

The Tequesta potable water supply and central system must meet strict standards The Village continues to adhere to, and be subject, to various standards of other agencies and levels of

government. The Village potable water system must meet the standards established in the Federal Safe Drinking Water Act of 1974, Public law 93-523, Florida Administrative Code, Florida Department of Environmental Protection, and the Local Department of Health.

The Village Water Department also requires that certain industry design standards that meet acceptable fire flow and water quality requirements be met in the construction of and/or expansion of water supply and distribution systems.



### **Water Conservation**

The Village currently has in effect a multi-element water conservation program. This program has been in place over most of the previous Water Use Permit period (20 years). Moreover, the Village of Tequesta instituted a water conservation rate structuring program that charged incrementally higher rates for higher usage of the potable water system. The improvement since 2000 has been materially impacted by the implementation of this water conservation rate structuring. It is anticipated that the success of the program will continue, and the Village is committed to the vigorous pursuit of all efforts toward water conservation.

The Village continues to implement a leak detection program. The program is based on the concept of comparing the volume of water produced for consumption and the volume billed. This calculation is performed monthly and the yearly results are submitted to the SFWMD. Action levels have been established. As part of the program and to improve the accuracy of the calculations, the Village has adopted a residential and commercial meter replacement program.

The Village has adopted, and continues to implement various regulations that improve water conservation. The Village has adopted water protection and conservation measures in Article VI.

Water Protection and Conservation of Chapter 50, Natural Resources Protection in the Village Code of Ordinances. Specifically, Article VI, Sec. 50-187 requires the use of low volume plumbing fixtures and Article VI, Sec.50-189 requires rain sensor overrides for all irrigation systems and recognizes SFWMD criteria related to limiting irrigation hours for lawns and ornamentals.

The use of reclaimed water for irrigation purposes is an effective water conservation measure. The Village does not own or operate a wastewater treatment facility and, as such, does not manufacture reclaimed water. The Village, however, is located within the LRD service area, and the LRD does produce reclaimed water. The Village continues to work with the LRD to encourage its use. There are customers within the Village water service area that currently use reclaimed water for these purposes.

The Village makes water conservation literature available to all customers. In addition, the Village improves public awareness of water conservation through distribution of related information in water bill messages, the Village Newsletter and other literature displayed in information racks at Village buildings. There are some water conservation related issues addressed in the Coastal Management element of the Village's Comprehensive Plan which are addressed in the Coastal Management.

#### **Potable Water Level of Service**

The Village's current level of service standards for potable water facilities are presented bellow in Table 4-1.

**Table 4-1. Potable Water Level of Service Standard**

	Average Day	Maximum Day	Storage Capacity
Residential (gpcd)	120	180	--
Non-Residential (gpd)	2,020	3,030	--
Storage Capacity (MG)	--	--	2.75

#### **Village of Tequesta Water Use Permit and Water Supply Plan Information**

The Village is currently permitted under SFWMD Water Use Permit (WUP) number 50-00046-W to withdraw a total annual allocation of 1,594 million gallons (MG) and a maximum monthly allocation of 230.11 MGM. The WUP allows the Village to withdraw raw water from both the Surficial and Floridan aquifers. Currently, there are a total of ten (10) active surficial aquifer wells and four (4) active Floridan aquifer wells. The allocations also include a provision of one additional surficial well (No. 28) and one Floridan aquifer well (No. 5R) at some point in the future, as warranted. A summary of the existing raw water supply wellfield's and permitted capacities based on the current WUP are provided in Table 4-2.

**Table 4-2: SFWMD WUP: Raw Water Supply Wellfield & Permitted Allocations through 2031**

Location	Max Month (MG)	Annual Allocation (MG)
<b>Eastern Peninsular Surficial Aquifer</b>		
Well No. 7	6.0	--
Well No. 8	6.0	--
Wells No. 18, 19 and 20	13.5	--
Well No. 23	12.0	--
Well No. 24	3.0	--
Well No. 28 (Future)	9.0	--
<b>Total:</b>	<b>49.5</b>	<b>--</b>
<b>Western Peninsular Surficial Aquifer</b>		
Wells No. 25, 26 and 27	27.0	--
<b>Total for Surficial Aquifer:</b>	<b>62</b>	<b>401</b>
<b>Floridan Aquifer</b>		
Wells No. 1R - 4R Existing & 5R Future	168	1,251
<b>Total Raw Water from Surficial and Floridan:</b>	<b>230</b>	<b>1,594</b>

The annual withdrawal allocations from both the surficial aquifer and Floridan aquifer represent a decrease from the previous Water Use Permit. It should be noted that the total (i.e. surficial plus Floridan) annual and maximum month raw water allocations are less than the sum of the requested annual and maximum month allocations irrespective of the aquifer source.

The approved WUP was based on the population projections shown in Table 4-3, which indicates population and potable water demand projections by each local government or utility.

**Table 4-3. Projected Populations of the Service Area – WUP 50-00046-W**

Projected Year	Village of Tequesta	Unincorporated Palm Beach County	Jupiter Inlet Colony	Jupiter Island	Unincorporated Martin County	Total Estimated Projections
2010	6146	2153	318	99	3230	11946
2015	6565	2194	391	20	3461	12631
2020	6946	2296	391	20	3478	13128
2025	7293	2345	391	20	3495	13544
2030	7598	2390	391	20	3513	13912

Table 4-4 presents population and finished water demand according to the 2013 Lower East Coast Water Supply Plan (LEC-WSP) update adopted by SFWMD on September 12, 2013. The data presented below is included in Chapter Six, "Water Supply Development Status and Projects," of the LEC-WSP)



**Table 4-4. Village of Tequesta: 2013 LEC-WSP Updates – Tequesta Service Area – Population and Finished Water Demand**

POPULATION AND FINISHED WATER DEMAND			
	Existing	Projected	
	2010	2020	2030
Population	11,581	13,345	15,108
Per Capita (gallons per day finished water)	235	235	235
Potable Water Demands (daily average annual finished water in D)	2.72	3.14	3.55
<b>SFWMD WATER USE PERMITTED (50-00046-W) ALLOCATION (MGD)</b>			
Potable Water Service	Existing	Projected	
	2010	2020	2030
Fresh Water	2.70a	1.10	1.10
Brackish Water	4.40a	3.43	3.43
<b>Total Allocation</b>	<b>4.84</b>	<b>4.37</b>	<b>4.37</b>
<b>POTABLE WATER TREATMENT CAPACITY</b>			
FDEP Permitted Capacity	Existing	Projected	
	2010	2020	2030
Fresh Water	2.73	2.73	2.73
Brackish Water	3.60	3.60	3.60
Planned Project Capacity	0.00	0.00	0.00
<b>Total Capacity</b>	<b>6.33</b>	<b>6.33</b>	<b>6.33</b>
<b>NONPOTABLE WATER TREATMENT CAPACITY</b>			
	Existing	Projected	
	2010	2020	2030
Reclaimed water	0.00	0.00	0.00

The permit in effect in 2010 did not have annual or monthly source limits for the SAS or FAS. The numbers shown here are maximum day allocations, which are further limited by the total annual allocation or both sources of 4.84 MGD.

Table 4-5, on the following page, presents the population projection based on the 2010 US Census, the University of Florida Bureau of Economic and Business Research (BEBR), the Palm Beach County Water Supply Plan, and the Martin County MPO.

Table 4-6, on the following page, presents projections for both the service area boundary population as well as the potable water demand through the year 2030.

**Table 4-5: Projected Populations of the Service Area**

Year	Village of Tequesta	Unincorporated Palm Beach County	Jupiter Inlet Colony	Jupiter Island	Unincorporated Martin County	Total Estimated Projections
2010	5,629	2,176	400	27	4,011	<b>12,243</b>
2015	6,061	2,199	411	28	4,151	<b>12,850</b>
2020	6,196	2,228	416	29	4,371	<b>13,240</b>
2025	6,344	2,264	422	30	4,567	<b>13,627</b>
2030	<b>6,522</b>	<b>2,310</b>	<b>433</b>	<b>31</b>	<b>4,745</b>	<b>14,041</b>

Source: Village of Tequesta 10-Year Water Supply Facilities Work Plan, 2015.

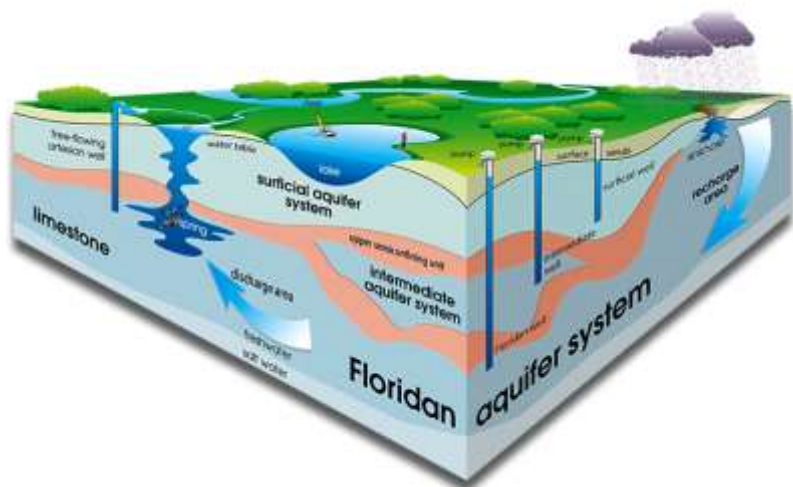
**Table 4-6: VOT – Population and Potable Water Demand Projections**

Year	2010	2015	2020	2025	2030
Projected Population (Persons)	12,243	12,850	13,240	13,627	14,041
Per Capita Usage (GPD)	247	247	247	247	247
Per Capita Usage (GPY)	90,155	90,155	90,155	90,155	90,155
Total Annual Usage (MGY)	1,103	1,158	1,193	1,228	1,265
Avg. Monthly Usage (MGM)	92	97	99	102	106
Max. Monthly Usage (MGM)	108	112	117	120	125

### Natural Groundwater Aquifer Recharge (NGAR)

The Natural Groundwater Aquifer Recharge sub-element analyzes the Village's existing quality and quantity of natural groundwater, project future demands, and analyze the existing facilities.

The Surficial Aquifer continues to provide most of the groundwater supply used in Palm Beach County, including Tequesta; however, as revealed in the Potable Water sub-element of this Element, the Village is experiencing an increasing dependence on the Floridan Aquifer. The Village of Tequesta Water Use Renewal Permit Application (Permit No.50-00046-W), October 2011, recognizes a phased-in increasing dependence on the Floridan Aquifer



coupled with, and supplemental to, continued use of the Surficial Aquifer. The Village realizes that a permanent, albeit proportionately reducing dependency on the Surficial Aquifer is needed to achieve a suitable finished water quality.

The Village of Tequesta is situated on the coastal ridge which parallels the Atlantic Ocean. Elevations across most of the Village range from five (5) to ten (10) feet msl; however, elevations in isolated areas can be twenty-five (25) feet, or more. Specifically, these elevations occur along the crest of the coastal ridge west of U.S. Highway 1 (US-1). These basic topographic features have not changed since the last EAR and subsequent Plan amendments.

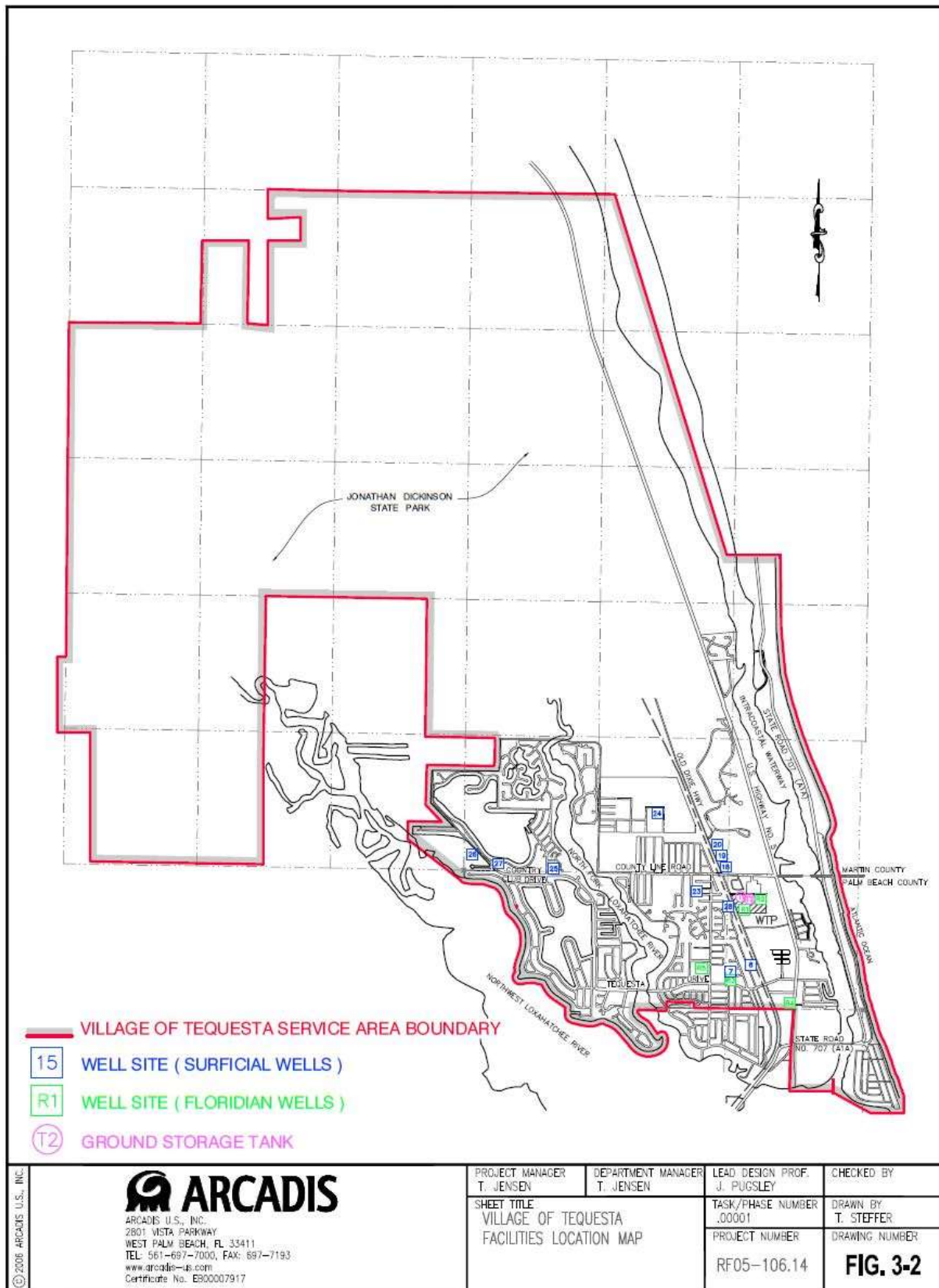
As identified in the Sanitary Sewer sub-section of this Element, there are a few isolated properties in the Village remain without the capability to connect to the central sewer system. General soil types within the Village are relatively favorable for septic tank use. They consist primarily of deep, well drained sands and gravels and have a high rate of water transmission. Therefore, there continues to be no major detrimental impacts created by the use of septic tanks (that are in proper operating condition) either to the soils or to the groundwater aquifer recharge capability.

Wellfield protection is important to preserving the quality of groundwater supplies. As described in more detail in the Potable Water sub-section, there are currently seven (7) active surficial wells on the eastern peninsula, three (3) active surficial wells on the western peninsula and four (4) active Floridan wells on the eastern peninsula. The Village continues to be a participant in, and subject to, the Palm Beach County Wellfield Protection Ordinance, which regulates existing and new non-residential uses, handling, storage and production of hazardous and toxic materials within zones of influence of the major potable water wellfields throughout the County, including Tequesta.

The source of groundwater recharge continues to be predominantly rainfall. All undeveloped and open space surfaces are considered recharge areas for the surficial aquifer. Some additional recharge is provided by the wetlands located to the north of Tequesta because their location is up gradient of the Tequesta wellfields. The wetland recharges, however, are also controlled by rainfall.

Figure 4-2 on the following page illustrates the location of the Village's Floridan and surficial wells, as well as groundwater storage facilities within the context of the Village's utility service area boundaries. This map was taken from the Village of Tequesta 10-Year Water Supply Facilities Work Plan, 2015.

Figure 4-2. Village of Tequesta Utility Facilities (Wells, Groundwater Storage) Location Map



## **REFERENCES AND SOURCES**

Village of Tequesta 10-Year Water Supply Facilities Work Plan, 2015.



## **DATA & ANALYSIS**

### **CHAPTER 5: CONSERVATION ELEMENT**

#### **INTRODUCTION**

The purpose of the Conservation Element is to promote the responsible use, protection, and restoration of the Village of Tequesta's natural resources. Pursuant to Chapter 163.3177 Florida Statutes (F.S.), the Village of Tequesta is required to provide a Conservation Element. The protection and conservation of natural resources is of paramount importance in maintaining and improving the high quality of life that Village residents demand.

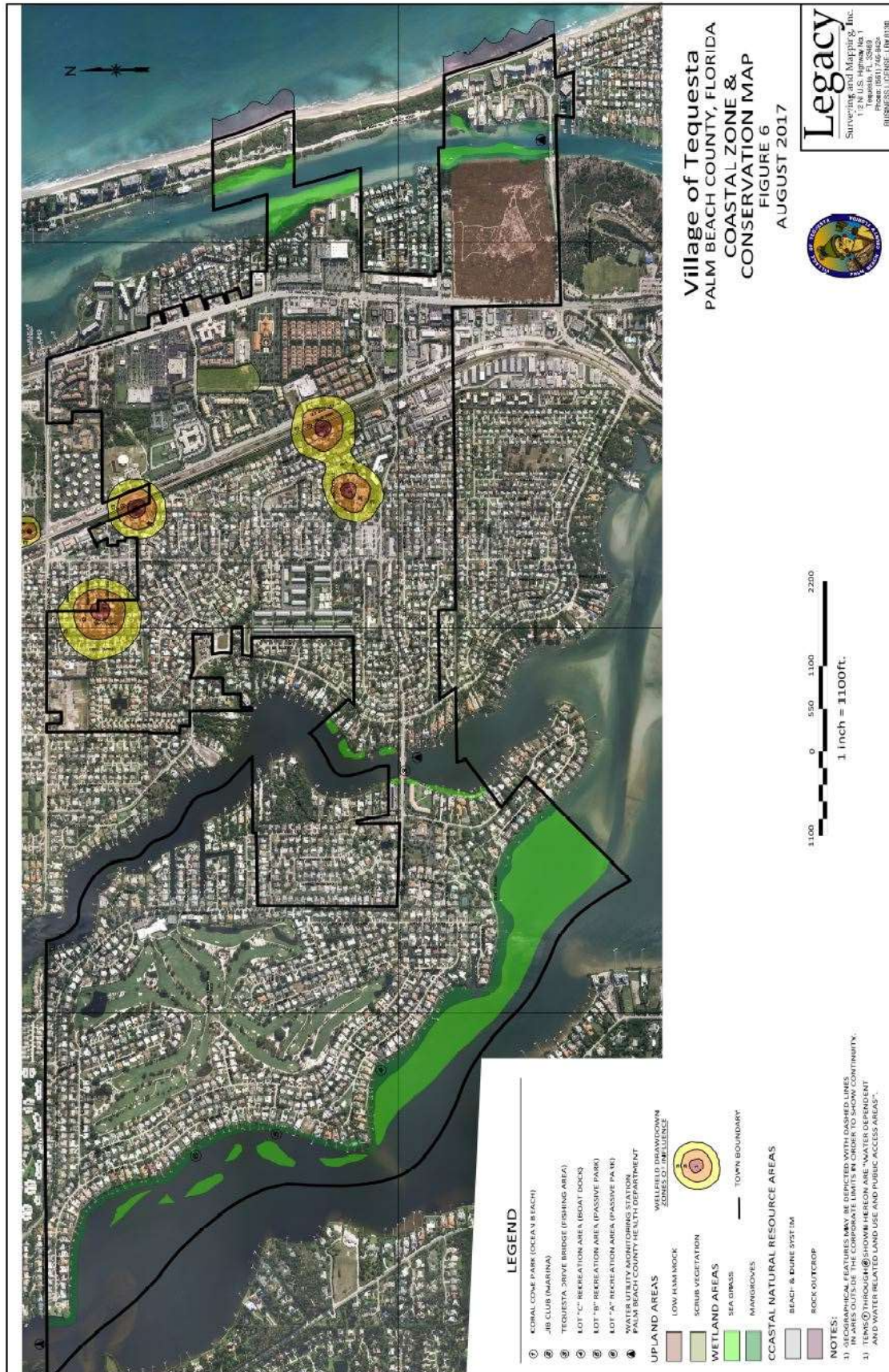
This chapter of the data and analysis document focuses on natural resources and contains guidance and strategies necessary for, or related to, the protection and preservation of such resources. The natural features and resources assessed in this document include: surface waters and the estuarine system; wetlands and the coastal system; floodplains; air quality; aquatic and wildlife habitats; landscape and recreational opportunities of the natural features; and, other associated features. A description of these resources and their significance to the Village, as well as the region, is also presented. The Conservation Element was developed from the data and analysis of existing and future conditions regarding the Village's natural communities and resources.

In addition to this Element of the Comprehensive Plan, the Village has adopted various ordinances and regulations in its Code of Ordinances that address protecting and conserving the environmental resources and systems identified in the Objectives and Policy cited above. Chapter 50, Natural Resource Protection of the Village's Code of Ordinances contains regulations to protect and conserve coastal resources. The Village has adopted by reference Palm Beach County's Coastal Protection Ordinance, which establishes measures to protect and conserve the coastal environment and is subject Palm Beach County Boat Facilities Siting Plan. Additionally, other natural resource-related Ordinances and regulations are discussed later in this section that further protect and conserve the natural resources in Tequesta.

The Coastal Zone & Conservation Map, which is shown as Figure 6-1 on the following page, identifies water bodies, wetlands, upland vegetation communities, submerged lands and various other natural resources found within the Village.



Figure 6-1. Coastal Zone and Conservation Map





## **EXISTING CONDITIONS**

The Village of Tequesta is part of Palm Beach County, and enjoys the subtropical climate available on the Southeastern coast of Florida. The summers are hot and humid, but somewhat tempered by Gulfstream breezes, while winters are generally very mild.

Tequesta hosts a variety of natural resources, which provide habitats for numerous fish and wildlife species. The Atlantic Ocean, Indian River Lagoon (IRL) and Intracoastal Waterway (ICWW), Loxahatchee River, and the other lakes, rivers, and canals that flow into them, the associated shorelines and wetlands, and other communities throughout the Village comprise the robust system of ecological communities that reside in the Tequesta area. A full discussion of these valuable resources and their significance to the Village and region is provided in this Element's data and analysis.

## **ABIOTIC FEATURES**

Abiotic features are the non-living chemical and physical parts of the environment. For the purposes of this Comprehensive Plan these features include the following: topography, soils, and soil erosion; shoreline erosion; and minerals.

### **Topography**

The Village is situated on the "coastal ridge" which parallels the Atlantic Ocean. Although the Village is smaller in land area (1,453 acres or 2.3 square miles), there is some variation in elevations throughout Tequesta. Elevations generally range between ten and fifteen feet above sea level (msl); however, higher elevations occur in isolated areas. The coastal ridge is bisected by the Loxahatchee River and the Jupiter Inlet. Land areas east of the coastal ridge slope gradually to the Intracoastal Waterway (ICWW), with most areas at less than five feet above sea level.

### **Soils**

The land beneath the Village consists of five basic soil associations: Indicated in orange, St. Lucie sand comprises the majority of the soil in the Village. Areas of fine sand known as, Bassinger, Lmmokalee, and Paola are located elsewhere throughout the Village. There are also areas of urban land complex, known as Arents, Myakka, Palm Beach, and St. Lucie. Other soil types include beaches, tidal swamps, shaped quartz, and urban land. The approximate locations of these soil associations are shown on the Soils Map in Figure 2.

### **Soil Erosion**

It is likely the only significant erosion in the Village would be due to water flow, but there is no data regarding this phenomenon. The South Florida Water Management District reports the same. Also, there is no significant agricultural use of land in the Village.

In addition, the Village's Code of Ordinances contains regulations to address potential soil erosion resulting from development activities.

### **Shoreline Erosion**

Shoreline erosion occurs as a result of the natural processes of the Atlantic Ocean on shoreline beaches and dunes. This erosion is further exacerbated by hurricanes and other storm events. As of 2014, the Florida Department of Environmental Protection had designated eight critically eroded area, spanning 33.6 miles, in Palm Beach County. The County also contains two non-critically eroded areas (0.9 mile) and one critically eroded inlet shoreline (0.8 mile).

Per FDEP's rule 62B-36.002 (5), "critically eroded shoreline" is defined as *"a segment of the shoreline where natural processes or human activity have caused or contributed to erosion and recession of the beach or dune system to such a degree that upland development, recreational interests, wildlife habitat, or important cultural resources are threatened or lost. Critically eroded areas may also include peripheral segments or gaps between identified critically eroded areas which, although they may be stable or slightly erosional now, their inclusion is necessary for continuity of management of the coastal system or for the design integrity of adjacent beach management projects"*.

Erosion is "critical" if there is a threat to or loss of one of four specific interests – upland development, recreation, wildlife habitat, or important cultural resources. Many areas have significant historic or contemporary erosion conditions, yet the erosion processes do not currently threaten public or private interests. These areas are therefore designated as non-critically eroded areas and require close monitoring in case conditions become critical. In contrast, in some areas the erosion processes are not particularly significant, except to the extent that adjacent public or private interest may be threatened. If there is no threat to interests in need of protection, then an erosion condition is not critical. The listings of critically and non-critically eroded areas in this report are identified by the Department's reference monument system (R numbers) or by virtual stations (V numbers).

The area of critically eroded shoreline in northern Palm Beach County includes Coral Cove Beach and the other beachfront properties in Tequesta, occurring between monuments R1 through R10. A full discussion of beach and dune nourishment programs in Palm Beach County, along with information regarding the regulation of erosion setbacks, including the Coastal Construction Control Line (CCCL), are discussed in the Coastal Management Element.

### **Minerals**

There are no known sources of commercially valuable minerals within the Village limits of Tequesta.

Figure 6-2. Village of Tequesta Generalized Soils Map





## **WATER RESOURCES**

The Village of Tequesta has a number of major water resources. The Atlantic Ocean meets the Village's eastern boundary along Jupiter Island. The Intracoastal Waterway/Indian River Lagoon separate a portion of Tequesta's mainland from the barrier island. The North Fork of the Loxahatchee River separates the mainland into two large areas, while the Northwest Fork of the River creates the Village's western boundary. The Village also contains canals and lakes that flow into these larger water bodies. These water resources and their impact of the Village of Tequesta are discussed in further detail throughout this section.

### **Class II & III Waters**

The Village contains both Class II and Class III water within its jurisdiction. Class II waters are those coastal waters which have either actual or potential capability of supporting shellfish propagation and harvesting. Class II waters are the most stringent water classification. The portion of the Loxahatchee River located within the Village of Tequesta, and its tributaries, are classified as a Class II



water system. Portions of the Loxahatchee River that flow through the Village have been designated as Outstanding Florida Waters (OFW) by the State. The North Fork of the River traverses the Village with the Tequesta Country Club are lying to the west and the mainland of Tequesta to the east. The Northwest Fork of the River flows adjacent to the western corporate limits, also along the Tequesta Country Club area. The State has designated the Loxahatchee River and its tributaries Class II waters based on the extensive support it provides to a variety of wildlife, shellfish propagation and sport fishing.

Class III waters include all coastal and inland waters not otherwise classified. The Intracoastal Waterway (ICWW) and the mouth of the Loxahatchee River at the Jupiter Inlet are classified Class III waters. These waters continue to be used extensively for recreational activities.

### **Surface Waters & Estuarine System**

Besides Class II and Class III water, the Village also contains surface waters that are designated as aquatic preserves. Aquatic preserves represent exceptional biologically, aesthetically,

educationally and/or scientifically valuable waters set aside by the State for special management purposes. The Loxahatchee River and the ICWW continue to be designated Aquatic Preserves.

The ICWW and a portion of the Loxahatchee River at its confluence with the ICWW are located within the Indian River Lagoon Aquatic Preserve (IRLAP). The Village recognizes the importance of preserving the unique estuarine environment of the Indian River Lagoon Aquatic Preserve and prohibits development along its shores that would destroy or disturb the vital sea grasses within its jurisdiction through its Code of Ordinances. Management plans for the Indian River Lagoon Aquatic Preserve are discussed in more detail in the following section.

### **Water Quality**

Water quality is important in protecting estuarine and oceanic sources, and must be protected to avoid detrimental impacts to the natural environment. New developments or site plan modifications to lands within the Village are subject to the site plan review process which requires drainage statements and environmental statements/assessments for proposed developments to determine potential impacts on Class III waters. In addition, the Village restricts activities and land uses known to adversely affect the quality and quantity of identified water sources such as natural ground water recharge areas and wellhead protection areas. The Village has identified wellfield cones of influence and their travel time contours, which are illustrated in Figure 1: Coastal Zone & Conservation Map.

### **Point Source and Non-Point Source Pollution**

Threats to water quality come from a variety of sources that can fall within two categories: point source pollution or non-point source pollution. Point source pollution includes sources where discharge is usually through an identifiable point, such as wastewater management treatment plants. Non-point source pollution is typically the result of stormwater runoff entering the Indian River Lagoon through overland or stream flow. As discussed throughout several elements of the Comprehensive Plan, managing stormwater runoff and flood zones is imperative to managing water quality.

### **Wetlands and Coastal System**

Aside from the aquatic preserve, other surface water resources applicable to the Village are the isolated wetlands that are associated with the Lagoon, ICWW, and Loxahatchee River, as well as those on the mainland. Wetlands have many functions which include providing essential habitat and breeding grounds for a variety of terrestrial and marine species, serving to filter many pollutants that may enter the Lagoon, and helping to absorb floodwaters and protect adjacent lands from flooding and storm surges.

Though wetlands are most often associated with waterfowl and bird species, they provide essential habitat for a wide variety of species, such as birds, mammals, reptiles, amphibians, fish, and insects,

many of which are rare and endangered. Loss of wetlands has contributed to the endangered status of many species.

Tequesta will protect and conserve mangroves, wetlands and sea grasses to ensure that there will be no net loss of the existing natural resources within the Village. Many Village policies and regulations concerning mangroves, wetlands, sea grasses and other estuarine system issues directly emanate from the Palm Beach County Unified Land Development Code and Mangrove Protection Ordinance.

In regard to wetlands protection, the Village continues to implement the Wetlands Protection Section of the Unified Land Development Code. The Village further regulates the construction of all piers and docks within the Village through Article XIII, Uniform Waterway Control in Chapter 78, Zoning of the Village's Code of Ordinances. These regulations concern the construction of piers, docks and walkways over submerged lands containing mangroves wetlands and sea grasses. Construction in such sensitive areas must have minimal impact and be code compliant in order to protect and conserve these natural resources.

In order to further conserve and protect wetlands, the Village must also direct incompatible future land uses away from wetlands; or where incompatible uses are allowed, mitigation shall be a means to compensate for loss of wetland function. The site plan review and land development processes continue to scrutinize the conservation and protection of all natural resources, including wetlands.



Wetlands identified on the current Coastal Zone & Conservation Map have been preserved as intended in the related policies. Ecosites #61 is recognized as a low hammock area on the Coastal Zone & Conservation Map and Ecosite #63, which is technically lo is identified as scrub vegetation.

The Village has adopted, and continues to enforce, an environmentally sensitive lands Ordinance in Article II, Environmentally Sensitive Lands under Chapter 50, Natural Resource Protection of the Village's Code of Ordinances. Also, the site plan review process continues to be utilized to require an environmental assessment of a proposed development area to assure that natural wildlife habitats are protected, if such endangered and threatened habitats exist at the site.

### **Mangrove Protection**

As illustrated in Figure 6-1, Coastal Zone & Conservation Map, coastal mangrove stands are found in various locations along the ICWW and Northwest Fork of the Loxahatchee River. Mangrove areas provide habitats for numerous birds and other wildlife and are a vital part of the food chain from aquatic organisms to man himself. In addition to the mangrove's contribution to the food chain, they provide a habitat for birds.



Mangroves also contribute greatly to stabilizing the shoreline by providing a buffer against wave erosion and allowing sedimentation to occur.

The Village has adopted the Palm Beach County Mangrove Ordinance in Article IV, Mangrove Protection under Chapter 50, Natural Resource Protection of its Code of Ordinances as the mangrove protection Ordinance for the Village. *Article IV, Mangrove Protection* specifically adopts the Palm Beach County Mangrove Protection Ordinance as the mangrove protection ordinance of the Village with the additional restriction to *Section 5* of that *Ordinance* prohibiting the disturbance of mangroves in high marsh areas adjacent to the Indian River Lagoon Aquatic Preserve except when necessary for public health and safety. This ordinance also restricts public works projects from disturbing existing mangroves except where such work is essential to the continued health, safety and welfare of the public

### **Seagrass Protection**

Seagrass plays an important role in marine habitats, providing benefits for a variety of areas, including biodiversity, coastal shoreline protection, regulation of nutrient cycling and water



quality, fisheries, climate regulation through carbon sequestration, social and cultural value, and tourism and recreation.

In addition, seagrass serves as a prime nursery for fish and other marine life, it provides substrate, habitat, and protection from predators for fish and invertebrates. It also provides food for herbivores and the detritus food web. Aside from the many benefits listed above, seagrass is an indicator of the Lagoon's health. According to 2009 data by the Florida Fish and Wildlife Conservation Commission, the estimated economic value of seagrass is \$16,594 per acre per year.

As discussed in the Conservation element of this document, the Village implements the Wetland Protection Section of the Palm Beach County Unified Land Development Code, which requires the protection of sea grasses.

### **Floodplains**

Flooding in Florida can come at any time with little warning. Flooding in Tequesta comes from different sources, including tidal surges from hurricanes and tropical storms, heavy rains, and clogged or blocked drainage pipes and ditches.

Storm surge caused by hurricane systems poses the greatest threat to life and property. All coastal property and inhabitants are subject to severe damage and loss of life resulting from flooding caused by tidal surge associated with hurricanes and tropical storms. Inland flooding can accompany any hurricane due to the low elevation of much of the Village. During extended periods of heavy rainfall, certain low-lying neighborhoods within the Village are subject to considerable flood damage and isolation caused by inability of natural and mechanical drainage systems to effectively remove the water.

The Village of Tequesta is identified as a flood hazard area by the Federal Insurance Administration under the Department of Housing and Urban Development. The FEMA Flood Zones Map illustrates those areas within the Village that can expect to have a one percent chance of flooding in any given year.

Both the wetland areas along the Intracoastal in the Village of Tequesta and buffer areas adjacent to open spaces help reduce flood damage because floodwaters in a natural floodplain are permitted to spread over a large area and open spaces provide flood water storage. These natural areas also filter nutrients and impurities from stormwater runoff and promote infiltration and aquifer recharge. By preserving natural floodplain areas, fish and wildlife habitats are protected to provide breeding and feeding grounds.

### **Flood Zones**

Flooding poses a huge threat to coastal communities. The Village contains various flood-prone areas with the majority being located along the Atlantic Ocean on the barrier island, the ICWW



and fringe areas along the North and Northwest Forks of the Loxahatchee River, which are subject to inundation during the 100-year flood event. The only VE Zone within or contiguous to the Village limits continues to be along the Atlantic beaches, while Zone AE is located along the ICWW and Loxahatchee River at the fringe areas of the western peninsular and small portions in Tequesta Pines subdivision and the east part of the North Fork within the Village limits.

#### Local Flood-Related Ordinances & Programs

The Village seeks to develop techniques and best practices that may reduce losses due to flooding and claims made under flood insurance policies issued in this state. Residents and businesses in flood-prone areas are encouraged to utilize the National Flood Insurance Program (NFIP) and the Community Rating System (CRS).

More specifically, the NFIP is a federal program enabling property owner(s) to purchase flood insurance. It is based on an agreement between the Village of Tequesta and the federal government, which states that the Village will adopt and enforce floodplain management regulations that at least meet minimum federal requirements, and in return, the federal government will make flood insurance available to the citizens of the Village. Essentially, all development is required to comply with existing Federal and State laws related to flood prone areas. A full description of floodplain development and the Village's involvement with flood protection programs is provided in the Coastal Management Element.

In addition to state agencies, the Village's Building Department regulates the building of structures in flood-prone areas so that flood damage can be minimized or avoided. The Village has continued to support these programs and work with residents and businesses in regard to program requirements. Moreover, the Village recently passed an ordinance related to FEMA's updated flood zone maps and is considering passing an ordinance related to flood hazard prevention techniques that will increase the "freeboard" height requirements, as detailed below.

On July 13, 2017, the Village of Tequesta Council adopted Ordinance 7-17 providing that the Federal Emergency Management Agency has revised and reissued the Flood Insurance Study and Flood Insurance Rate Map for Palm Beach County, Florida, and Incorporated Areas, effective October 5, 2017. The Village of Tequesta participates in the National Flood Insurance Program (NFIP) and the Village Council of the Village of Tequesta desires to continue to meet the requirements of Title 44 Code of Federal Regulations, Sections 59 and 60, necessary for participation.

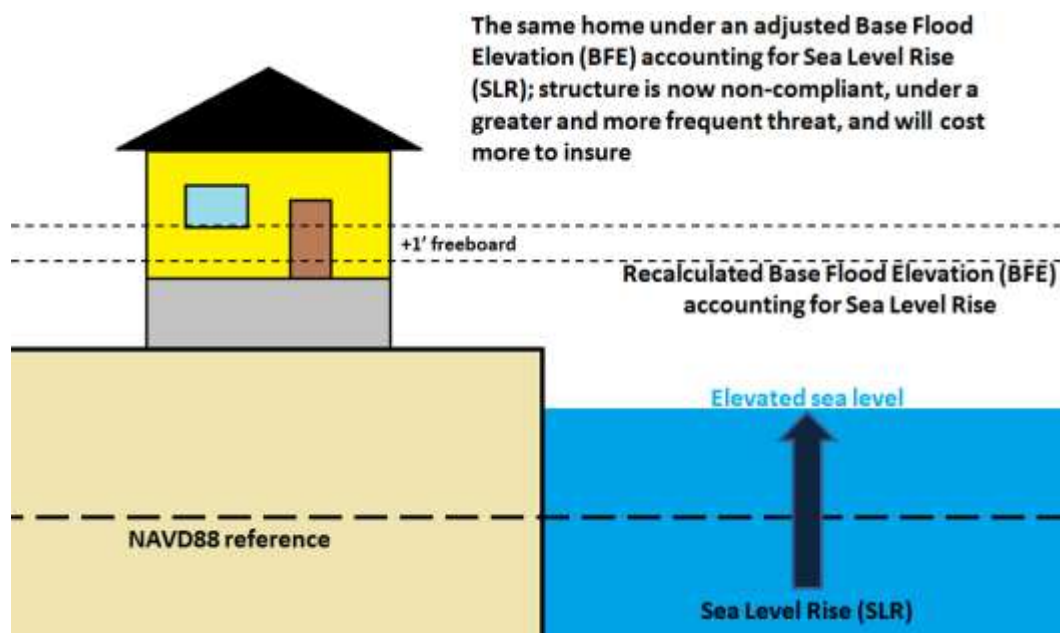
As discussed in the Coastal Management Element, NFIP provides federally backed flood insurance within communities that enact and enforce floodplain regulations. The Community Rating System (CRS) is a national program developed by the Federal Emergency Management Agency (FEMA). To be covered by a flood insurance policy a property must be in a community that participates in the NFIP. To qualify for the NFIP, a community adopts and enforces a floodplain management ordinance to regulate development in flood hazard areas.

The CRS Program recognizes, encourages and rewards communities that go beyond the minimum required by the NFIP. Under the CRS, the flood insurance premiums of a community's residents and businesses are discounted. A community receives a CRS classification based upon the total credit for activities such as Public Information; Mapping and Regulations; Flood Damage Reduction; and Warning and Response. The Village of Tequesta is part of the CRS Program, "Class 7" rating which allows residents to receive 15% discount of their flood insurance.

Currently, the Village of Tequesta is reviewing a potential ordinance amendment to Chapter 14 of the Village's Code of Ordinances that would require 18 inches of freeboard above the base floor elevation in flood zone areas. This provision will contribute to mitigating sea level rise flooding effects that continue to threaten coastal areas Tequesta.

As illustrated in the following graphic, freeboard refers to the height of a building above the Base Flood Elevation for a specific site. Florida regulations often require at least one-foot of freeboard for elevated buildings. Each foot of freeboard (up to a maximum of three feet), lowers flood insurance rates significantly. Since elevations on FIRMs do not include sea level rise, freeboard will help keep structures above floodwaters as storm surge elevations increase, thus reducing flood insurance premiums. The graphic below shows an example on how to implement this concept.

**Figure 6-3. Adjusted Base Flood Elevation, Accounting for Sea Level Rise.**



The Village of Tequesta contains several parcels on the barrier island that contain multi-family condominium developments. While there are not currently any single family homes along the ocean front within Tequesta, the freeboard technique could be considered for future development or redevelopment in this area.

## **Stormwater Management**

Adopting and maintaining standards and criteria to provide proper relief from flooding and restricting off-site of stormwater pollutants are important elements of proper stormwater management. Pollutants from stormwater and runoff adversely affect water quality and aquatic ecosystems, which is why effective management of stormwater is so important.

In its Policies, the Village specifically requires that minimum off-site runoff of stormwater pollutants and on-site stormwater retention/detention criteria, established by the SFWMD, be restricted. These criteria are analyzed in the site plan review and land development processes, and evidence must be provided that these criteria will, and can, be met. Additionally, Landscape Requirements as they related to stormwater management are discussed further under the Landscape Regulation section of this element.

## **Indian River Lagoon**

The Indian River Lagoon is one of the most biologically diverse estuaries in the Nation. One of the 28 estuaries in the country in Environmental Protection Agency's National Estuary Program, the Indian River Lagoon is the only estuary on the east coast of Florida. The Lagoon supports seagrass beds, mangroves, drift algae, salt marshes, oyster bars, tidal flats, and spoil islands which serve as important spawning and/or nursery grounds for commercial important species including shrimp, grouper, snapper, and drum.

It is important to note the quality and resource values of the Lagoon as they relate to conservation efforts. Because it is in an urban area, the Lagoon is subject to impacts from both urban and agricultural stormwater runoff. The Lagoon is an important recreational and commercial resource for the community. It is also a significant habitat area for fish and wildlife. As an aquatic preserve, it is accorded a high degree of protection, second only to drinking water supplies.

## **Indian River Lagoon Aquatic Preserve System Management Plan**

Information in this section is based on the Indian River Lagoon Aquatic Preserve Management Plan (IRLAP). Developed by the Florida Department of Environmental Protection's (DEP) Florida Coastal Office (FCO), the Indian River Lagoon Aquatic Preserve Management Plan aims to preserve and protect this invaluable aquatic resource and estuarine system in the midst of increasing development, recreation, and economic pressures along the coast.

As a guide to minimizing potential negative impacts, management plans for the aquatic preserves are essential to preserving the health and viability of ecosystems within these areas. The Indian

**Figure 6-4. Indian River Lagoon Aquatic Preserve System**



River Lagoon Aquatic Preserve Management Plan strives to incorporate, evaluate and prioritize all relevant information about the site into a cohesive management strategy, allowing for appropriate access to the managed areas while protecting the long-term health of the ecosystems and their resources.

As shown in Figure 6-4, this management plan focuses on the Indian River Lagoon Aquatic Preserves System (IRLAP System), which encompasses four aquatic preserves: IR-Malabar to Vero Beach, IR-Vero Beach to Ft. Pierce, Jensen Beach to Jupiter Inlet, and Banana River aquatic preserves. The IRLAP Management Plan provides individual plans for each preserve. The Village of Tequesta contains portions of the Jensen Beach to Jupiter Island aquatic preserve, which is further detailed in this section and shown in Figure 6-6.

Florida's expansive coastline and wealth of aquatic resources has attracted millions of residents and visitors, and the businesses that serve them. Florida's submerged lands play important roles in maintaining good water quality, hosting a diversity of wildlife and habitats (including economically and ecologically valuable nursery areas), and supporting a highly valued quality of life for all. Any threat to or degradation of the condition IRLAP System, may also pose economic impacts to the state and region, as this system is a major attraction for both tourists and recreational activities. As illustrated in Figure 6-1, Coastal Zone & Conservation Map, the Village of

Tequesta offers an abundance of aquatic resources, including access to the IRLAP, and must take necessary steps to maintain the health of the lagoon, while also sustaining economic growth and development.

### Governing Entities & Statutes

In the sixties, as Florida was experiencing rapid growth along the coast and in sensitive, ecologically important areas, it became apparent that science-based resource protection and

management for such areas would be necessary. In order to provide extra protection for certain exceptional aquatic areas such as the IRLAP, state legislators designated them “aquatic preserves.” Now established by law, aquatic preserves are submerged lands of exceptional biological, aesthetic, and scientific values as sanctuaries that are to be maintained in their natural or existing conditions, for the benefit of future generations.

The IRLAP must be managed and treated as a system by the entities which have jurisdiction relative to maintaining its quality. Today, The Florida Department of Environmental Protection’s Florida Coastal Office (FCO) acts as the management agency for the

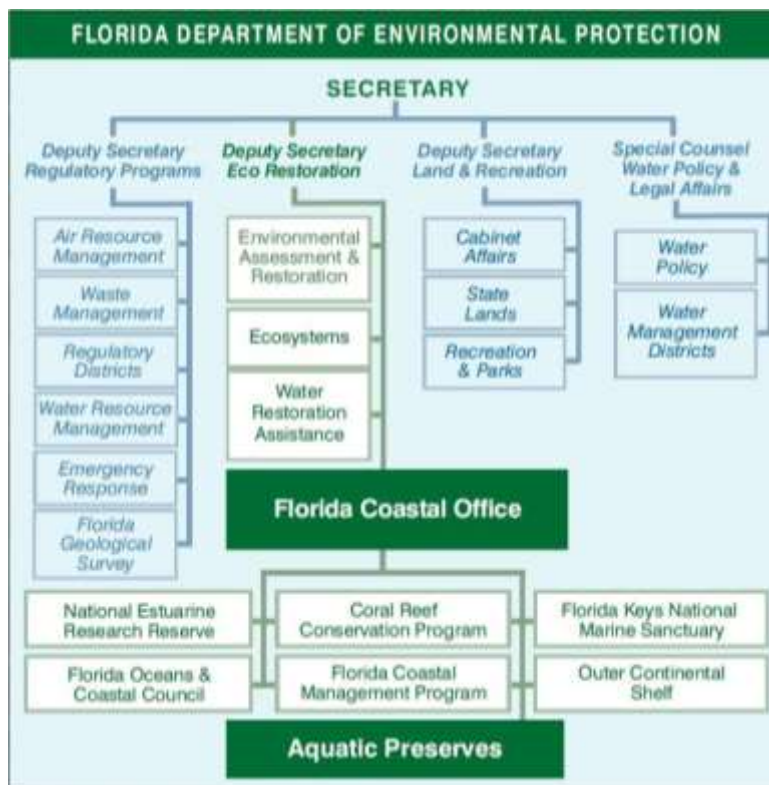
IRLAP System Management Plan. This provides for a system of significant protections to ensure that the Indian River Lagoon and other sensitive areas are managed with strategies based on local resources, issues and conditions. This section provides information regarding [key governing entities and legislature related to the development, maintenance, and enforcement of the IRLAP Systems Management Plan.

**Florida Department of Environmental Protection (DEP):** The DEP is the lead state agency for environmental management and stewardship, and is dedicated to protecting Florida’s air, water and land. The DEP protects, conserves and manages Florida’s natural resources and enforces the state’s environmental laws.

The chart from the IRLAP System Management Plan, Figure 6-5, illustrates the role of key entities in developing management plan for aquatic preserves.

**Florida Coastal Office (FCO):** The FCO is the unit within DEP that manages more than four million acres of submerged lands and select coastal uplands, which include 41 aquatic preserves, three National Estuarine Research Reserves (NERRs), the Florida Keys National Marine Sanctuary and the Coral Reef Conservation Program. FCO manages sites in Florida for the conservation and

**Figure 6-5. State Structure for Managing Aquatic Preserves**



Source: IRLAP System Management Plan, 2015



protection of natural and historical resources and resource-based public use that is compatible with the conservation and protection of these lands.

*Aquatic Preserve Program:* Established by the Florida Aquatic Preserve Act and managed through the FCO, this program has the following long-term goals:

1. “To protect and enhance the ecological integrity of the aquatic preserves;
2. To restore areas to their natural condition;
3. To encourage sustainable use and foster active stewardship by engaging local communities in the protection of aquatic preserves; and
4. To improve management effectiveness through a process based on sound science, consistent evaluation, and continual reassessment.”

*Board of Trustees of the Internal Improvement Trust Fund (the Trustees):* Per F.S. 253.03, the Trustees are charged with governing use of public lands, including aquatic preserves: “The Board of Trustees of the Internal Improvement Trust Fund of the state is vested and charged with the acquisition, administration, management, control, supervision, conservation, protection, and disposition of all lands owned by, or which may hereafter inure to, the state or any of its agencies, departments, boards, or commissions...”

*Acquisition and Restoration Council (ARC):* A 10-member group with representatives from four state agencies, four appointees of the Governor, one appointee by the Fish and Wildlife Conservation Commission (FWC), and one appointee by the Commissioner of Agriculture and Consumer Services (DACs). The ARC is responsible for the evaluation, selection and ranking of state land acquisition projects on the *Florida Forever* priority list, as well as the review of management plans and land uses for all state-owned conservation lands.

### Key State Statutes & Legislature

State statutes and regulations are enforced by the Florida Fish and Wildlife Conservation Commission law enforcement and local law enforcement agencies. Enforcement of administrative remedies rests with FCO, DEP Districts, and Water Management Districts. Additionally, other Florida Statutes play a role in site management.

*Florida Aquatic Preserve Act of 1975:* The Aquatic Preserve Act (F.S. 258.35-258.46) officially established a Florida Aquatic Preserves Program under the FDEP. Essentially this statute helped bring existing preserves under a standard set of management criteria to ensure that the natural condition of aquatic preserves will be preserved for future generations

*Florida Administrative Code (F.A.C.):* The mandate for developing aquatic preserve management plans is outlined in Section 18-20.013 and Subsection 18-18.013(2) of the F.A.C. As discussed in the IRLAP System Management Plan, Chapters 18-18, 18-20 and 18-21, F.A.C., are the three

administrative rules directly applicable to the uses allowed in aquatic preserves specifically and sovereignty lands generally, and are intended to be cumulative.

### IRLAP Plan Structure & Key Components

The Management Plan is a collaboration between FCO managers and staff, area stakeholders, and the general public, who collect and analyze data, information, and input from various sources. Next, threats and potential weakness are identified in the site, boundaries, and surrounding areas. Initial drafts of such management plans are developed by FCO staff and reviewed by an advisory committee comprised of key stakeholders. Staff then conducts multiple public meetings to gather feedback and further develop the plan. The final draft is reviewed by the Acquisition and Restoration Council and the Trustees for final approval.

The Management Plan follows four comprehensive management programs, which each contain information specific to a site, as needs or issues typically vary from one location to another. These management programs are:

- Ecosystem Science
- Resource Management
- Education & Outreach
- Public Use

The following chart, taken from the IRLAP System Management Plan, summarizes these four management programs.

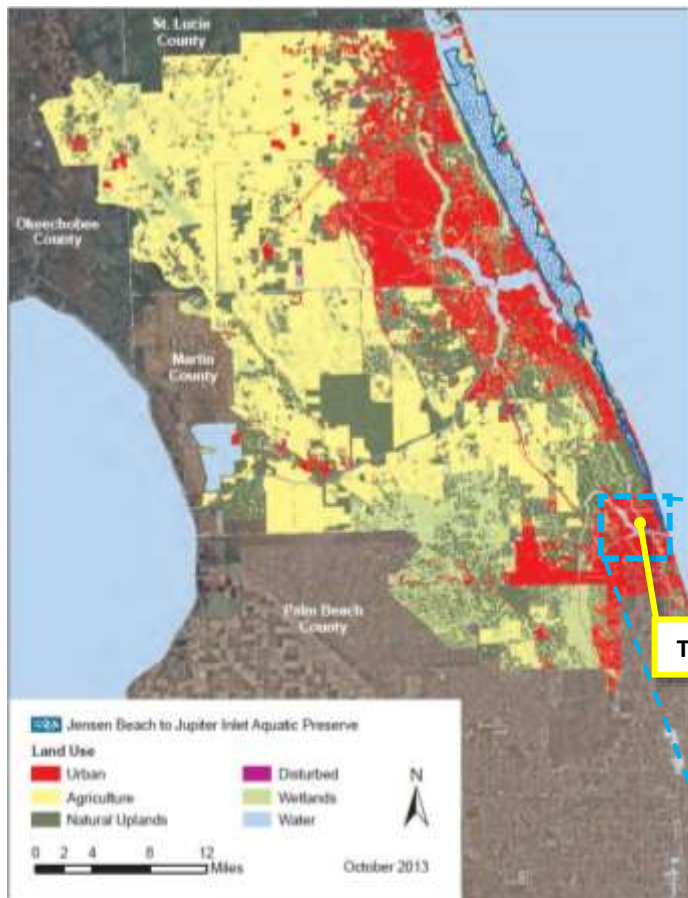
<b>Ecosystem Science</b>	There is a very large and committed group of research institutions and agencies that conduct extensive monitoring, research, and modelling in the Indian River Lagoon. The aquatic preserve fosters strong working partnerships with these research institutions and agencies, and assists with equipment and staff as needed to support research and monitoring projects. These programs provide the basis for making sound resource management decisions.
<b>Resource Management</b>	Continue to focus on protecting natural resources by restoring altered areas that contribute to reduced water quality and implementing management practices that maintain or improve viable habitats and populations within the aquatic preserve.
<b>Education &amp; Outreach</b>	Continue volunteer island enhancement work days, Eagle scout projects, Adopt-A-Spoil Island Program, volunteer shoreline planting and oyster reef deployment events. Improve signage at boat ramps. Continue participation in the Indian River Lagoon Envirothon for middle and high school classrooms and Adopt-A-Mangrove workshops.
<b>Public Use</b>	Rapid population growth is expected to return to coastal areas of Florida. Information and data contained within this Plan is intended to assist aquatic preserve managers, working closely with other state entities and local governments, to make decisions that will assure a balance between sustainable resource protection and waterway management.

In addition, unique local and regional issues are identified, and goals, objectives and strategies are established to address these issues. Finally, the program and facility needs required to meet these goals are identified. These components are all key elements in an effective coastal management program and for achieving the mission of the sites.

### Jensen Beach to Jupiter Inlet Aquatic Preserve

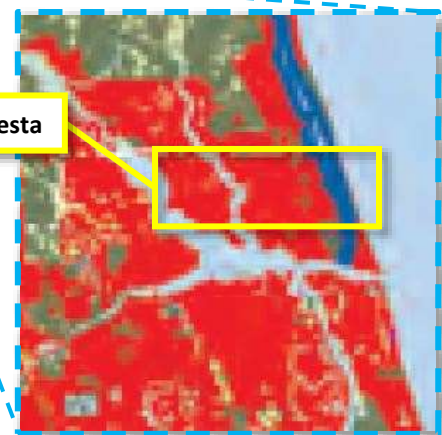
According to the IRLAP Systems Management Plan, the Jensen Beach to Jupiter Aquatic Preserve stretches 37 miles and encompasses 22,000 acres through three coastal counties, which include St. Lucie, Martin, and extreme northern Palm Beach County, which encompasses Tequesta and Jupiter Inlet Colony.

**Figure 6-7. Land Use in Jensen Beach to Jupiter Inlet Aquatic Preserve Watershed**



Source: IRLAP System Management Plan, 2015

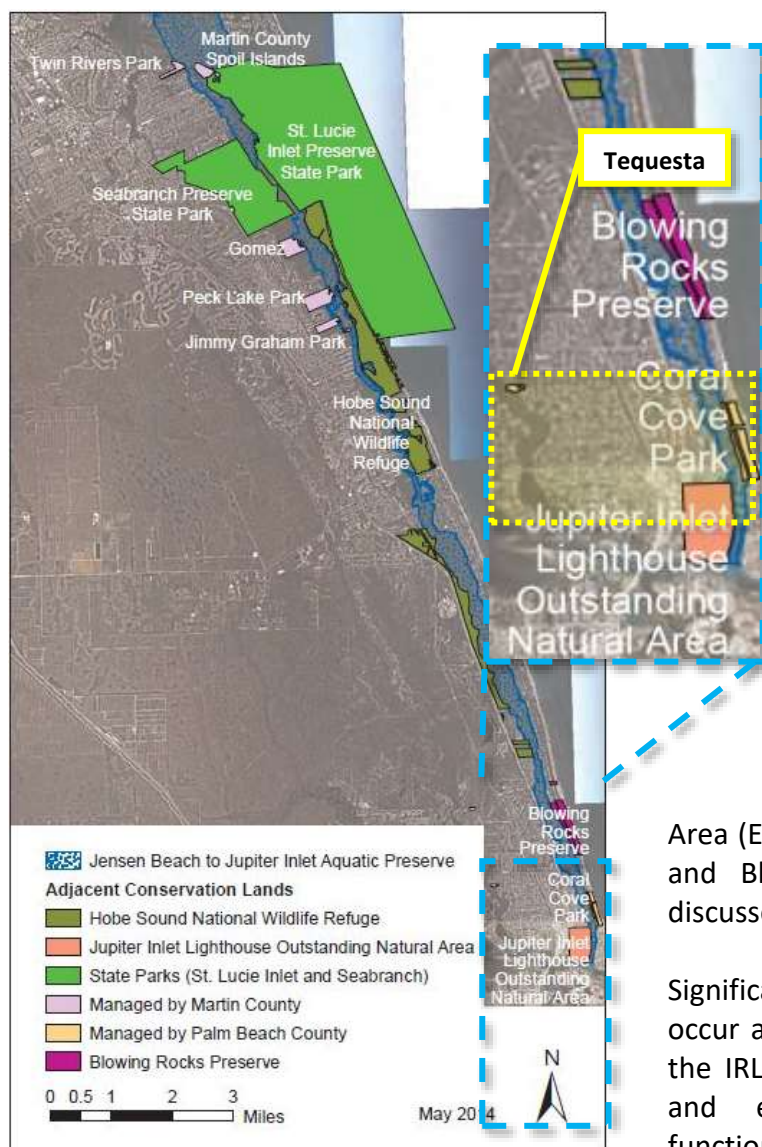
**Figure 6-6. Jensen Beach to Jupiter Inlet Aquatic Preserve**



The aquatic preserve is accessible from the west by U.S. Highway 1 (US-1) and from the east by Beach Road. Despite the length of the Jensen Beach to Jupiter Inlet Aquatic Preserve, public access points are more restricted in this preserve, than the other three preserves in the IRLAP System.

The IRLAP System is separated from the Atlantic Ocean by a barrier island chain that is currently intersected by five inlets that have been either stabilized or man-made, and which represent the only connection between the IRLAP System and the Atlantic Ocean. Located just south of Tequesta's boundary, the Jupiter Inlet is the only historically natural connection to the ocean.

**Figure 6-8. Conservation Lands adjacent to Jensen Beach to Jupiter Inlet Aquatic Preserve (South Section)**



Source: IRLAP System Management Plan, 2015

As indicated on the Land Use map in Figure 6-7, most of the land use within the Village and along the coast is developed and designated as urban, aside from a few natural upland and wetland areas. The majority of urban areas appear along the coast and IRLAP, which is why it is so essential to support efforts to preserve and protect these important natural resources. In addition, agricultural land use areas within the IRLAP watershed can also affect water quality.

#### Conservation Lands

As indicated in Figure 6-8, there are three designated conservation lands within or adjacent to the Village. These areas include, Jupiter Inlet Lighthouse Outstanding Natural

Area (Ecosite #61 and #63), Coral Cove Park, and Blowing Rocks Preserve, which are discussed in further detail below.

Significant wetland losses and alterations occur along the shorelines of all counties in the IRLAP System, which is why protection and enhancement of the remaining functional upland-wetland-lagoon linkages is critical to the long-term protection of the



quality and biological resources of the IRL. However, management of these critical habitats can prove difficult since many of these are privately owned. The simplest way to ensure proper management of these areas is through property acquisition or easements. Passage of the Preservation 2000 Act in 1990, along with acquisition initiatives funded by local interests, Water Management Districts, and the Conservation and Recreation Lands program greatly strengthened the state's ability to acquire endangered lands. Local governments within the IRLAP System responded to this funding availability by passing local land acquisition referendums. Conservation lands within or adjacent to the Village are described below.

### Federal Conservation Lands

Jupiter Inlet Lighthouse Outstanding Natural Area: Located in two large parcels to the north and south of Beach Road, the 120-acre site contains lands owned by the U.S. Department of the Interior, Bureau of Land Management; the U.S. Coast Guard; and the Town of Jupiter. The northern parcel is located within Tequesta limits, while the southern parcel is located in the Town of Jupiter and contains the historic 1860 Jupiter Inlet Lighthouse and Museum, the George Washington Tindall Pioneer House, and the Town of Jupiter Lighthouse Park.



Palm Beach County manages 78 acres of the natural area under a cooperative agreement with the Bureau of Land Management, with the assistance of the Village of Tequesta. The managed area contains Florida scrub, maritime hammock and mangrove swamp natural communities. Volunteers planted more than 6,000 mangrove seedlings as part of a two-acre tidal wetland restoration project on the north side of Beach Road. The entire 120-acre site has received federal designation as an outstanding natural area through the Bureau of Land Management's National Landscape Conservation Area Program.

### Private Conservation Lands

Blowing Rocks Preserve: Blowing Rocks Preserve began in 1969, when residents of Jupiter Island donated 73 acres of their island to The Nature Conservancy. The preserve was named for its rocky shoreline – the largest on the U.S. Atlantic coast. During extreme high tides and after winter storms, seas break against the rocks. The preserve runs for one mile from north to south and connects the Atlantic Ocean to the IRL on the west. Today, the restored preserve reflects what South Florida barrier islands looked like a century ago. Native habitats include beach dune,



coastal strand, mangrove swamp and tropical hardwood hammock. Facilities include an education center, native plant demonstration garden, hiking trails, boardwalks, and restrooms.

#### Lands Managed by County

Coral Cove Park: Located within the Village of Tequesta and managed by Palm Beach County, Coral Cove Park continues to be an asset to the community. The park provides access both to the ocean as well as to the IRLAP/ICWW. In addition, the park provides public facilities, including a parking lot, playground, restroom facilities, picnic tables, and boardwalks.



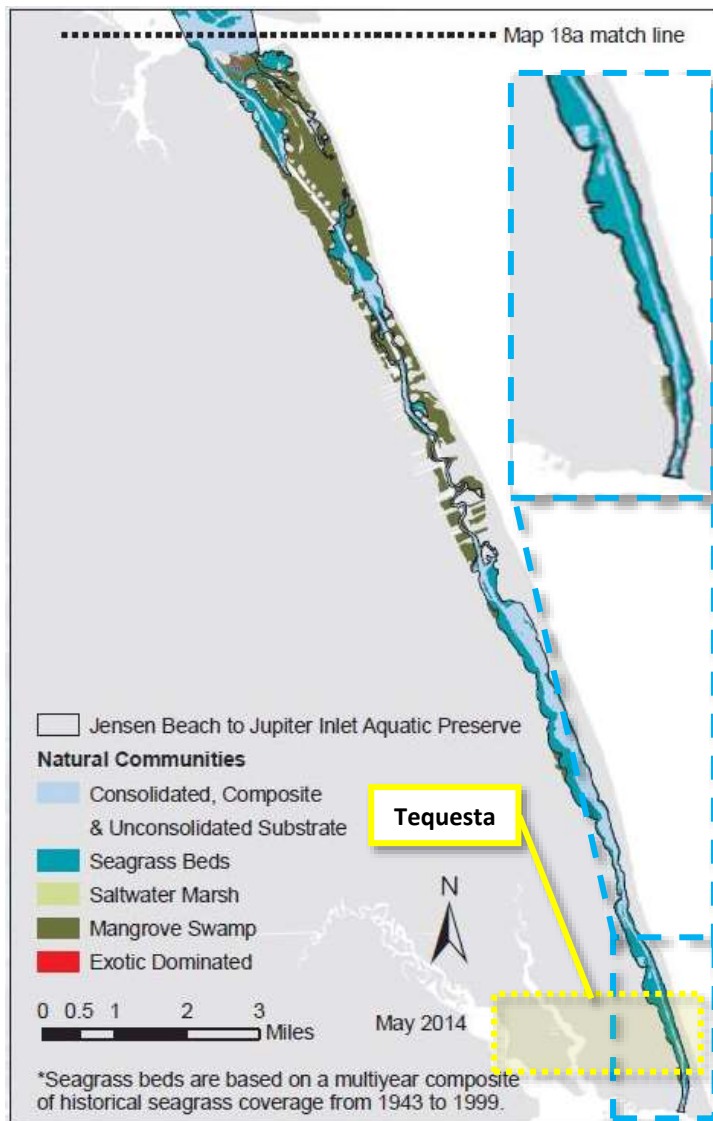
#### Natural Communities in Tequesta within IRLAP

As shown on the Natural Communities Map in Figure 6-9, the main natural resource in the IRLAP area within Tequesta is seagrass beds, with areas of consolidated composite and unconsolidated substrate and mangrove swamp. Sea grass beds serve as a food source and nursery for many species, including manatees. Water pollutants, turbid waters, dock or pier structures, and boat propellers are just a few of the threats that seagrasses face. Without proper light, seagrass cannot complete photosynthesis, which can be detrimental to seagrass beds.

Similarly, mangroves also provide habitats for numerous birds and other wildlife and are a vital part of the food chain from aquatic organisms to humans. Mangroves also contribute greatly to stabilizing the shoreline by providing a buffer against wave erosion and allowing sedimentation to occur.



**Figure 6-9. Natural Communities in Jensen Beach to Jupiter Inlet Aquatic Preserve**



Source: IRLAP System Management Plan, 2015

As discussed earlier, both agriculture and urban land uses within the IRLAP System watershed can affect water quality. Runoff associated with these land uses is characterized by high turbidity, high nutrients and low dissolved oxygen.

Agriculture stormwater runoff is diverted to the IRL System by way of large conveyance canals. Urban stormwater runoff is diverted to the IRLAP System through local drainage canals and stormwater collection systems. In both cases, untreated stormwater runoff has heavily impacted the IRLAP System by introducing unwanted pollutants and impacting water quality.

The importance of these particular resources and others is further described throughout this Element.

#### Impacts of Sea Level Rise on IRLAP Resources

Due to the low elevations of the mangrove and marsh systems (100-year floodplain) of the IRLAP System, predicted trends such as global warming or increasing ocean water levels, will influence the habitat structure and species distribution in the lagoon.

Sea level rise threatens to inundate many coastal wetlands, with little room to move inland because of coastal development. Rising sea level would allow saltwater to penetrate farther inland and upstream. Increasing salinity could cause an up-estuary advance of marine and estuarine species and a retreat of freshwater species. Sea level rise is discussed in more detail later in these element.

### Public Access to Indian River Lagoon Aquatic Preserve

While public access is most limited within the Jensen Beach to Jupiter Inlet Aquatic Preserve, future public access must continue to be closely scrutinized. Rapid population growth rates of coastal areas in Florida are expected to continue. Throughout the lifetime of this plan, decisions vital to the balance between sustainable resource protection and waterway management will need to be made by IRLAP managers working closely with other state entities and local governments.

It is beneficial for staff to stay actively engaged in the local planning processes when new marine facilities such as boat ramps, marinas, mooring fields and similar siting decisions are being considered by local government and municipalities. IRLAP staff involvement early in planning processes for marine siting can aid local government by providing expertise in permitting requirements and result in less environmental impact to the IRLAP System.

### Tequesta's Support of IRLAP System Management Plan

The Village has ordinances in place to ensure the preservation and protection of this valuable aquatic preserve, which are briefly described here. The Village shall provide for the protection of the Indian River Lagoon Aquatic Preserve by prohibiting development in the area that will degrade or otherwise adversely affect the water quality or wetlands of this unique estuarine environment through its Code of Ordinances.

More specifically, development or modification of the shorelines within the Indian River lagoon Aquatic Preserve shall be prohibited, unless this modification or development is necessary for the continued health, safety and welfare of the public. Development that provides for water-dependent and water-related land uses such as marinas, are acceptable, provided that the siting of such shall be consistent with the marina siting ordinance upon application to the Village.

## **GROUNDWATER RESOURCES**

### **Aquifer System**

Most counties along the Indian River Lagoon utilize both the Floridan Aquifer and surficial aquifer through wells as their source for obtaining potable water. However, due to the brackish nature of the southern portion of the Floridan Aquifer, Palm Beach County must rely on only the Surficial Aquifer System for its potable water supply. Thus, impact to wetlands, saltwater intrusion, and other threats to water quality are major concerns for the Tequesta-Jupiter area, as such impacts could also jeopardize the potable water supply.

The primary source for potable water use in Tequesta is the Surficial Aquifer System, which is sometimes referred to as the "Turnpike" aquifer. The term "Turnpike" is derived from the flow pattern of this aquifer. In southeastern Palm Beach County, groundwater flows eastward from the Turnpike towards the coast.

The most productive portion of the Surficial Aquifer System is the zone of secondary permeability, which is composed of limestone, cemented shell, and sandstone in which much of the cementing materials have been dissolved. The zone generally extends from about 45 feet to 137 feet below sea level. The water quality in the Surficial Aquifer System is usually best in this zone of secondary permeability.

The Surficial Aquifer System is generally recharged from local rainfall and it has a high recharge potential. Approximately 10" of rain annually, directly recharges to the Surficial Aquifer System. Water from this source is generally treated before use by the Tequesta's Water Utilities. There is no significant agricultural or industrial use of water in the Village.

Below the Surficial Aquifer System lies the Floridan Aquifer System, which is composed of limestone dolomite. Water quality is poor with dissolved solids generally greater than 3000 mg/l. The Floridan Aquifer System is now used as a secondary source of blend water in the Village and is treated by the Village's Water Treatment Plant.

Despite the threat of saltwater intrusion or groundwater pollution within the wellfields, the Village seems well suited to adapt to any potential influence, as described in the Natural Groundwater Recharge Sub-Element.

### **Current and Projected Water Needs**

The Village's current and projected water needs are based on data provided by the Village's Utilities Department. Currently, 14 wells within the service area provide the water source for the Village's Water Treatment Plant (see Utilities Element). Additionally, the average water demand is 120 gallons per capital daily (gpcd). The Village's water is regularly analyzed using Environmental Protection Agency and Department of Environmental Regulation approved methods, and conforms to Florida Administrative Codes.

Projections demonstrate that if the population of Tequesta increases minimally, as anticipated, then the average amount of finished water will have to increase very little for each of the next five year increments. The amounts of raw water being supplied by the Village's well systems would also be sufficient for the next ten year period, other than for reasons of extensive annexation or for replacing deteriorating wells.

Currently, there are no significant agricultural or industrial uses in the Village, and none are expected in the future.

### **Water Supply Facilities Work Plan**

The following information is taken from the Village's 10 Year Water Supply Facilities Work Plan, which was adopted February 12, 2015. The Village has been proactive in the practice of water conservation for a number of years through the enactment of multiple Village ordinances,

institutional controls and community outreach and education programs. The Village's current water conservation plan consists of the following elements:

- *Permanent Irrigation Ordinance:* An ordinance which restricts landscape irrigation to the hours of 4:00 p.m. to 10:00 a.m., seven days per week has been in effect for several years within the Village service area. This ordinance is enforced along with any irrigation restrictions imposed by the SFWMD.

As a new requirement since the last Work Plan update, the Village has implemented the Mandatory Year-Round Irrigation Conservation Measures as detailed in 40E-24 Florida Administrative Code. The Village of Tequesta's Code of Ordinances includes requirements for restrictions on water use during times of an "emergency situation" as declared by SFWMD or when the Village of Tequesta Council determines a reduction in water consumption is necessary to alleviate a local water shortage within the Village of Tequesta's water system. Water restrictions may include reduction of hours and days allowed for irrigation, washing of vehicles, washing of outdoor surfaces, operation of ornamental fountains, operation of air conditioning without a recirculation system, limitations on filling and use of swimming pools, limitations on leakage of water through defective plumbing, restrictions on hotels and restaurants as to the minimum amount of water necessary to conduct operations and other restrictions as necessary.

- *Florida-friendly Landscaping Ordinance:* An ordinance which requires the use of Florida-friendly landscaping materials and the minimum percent of required pervious area that must follow the principles of Florida Friendly Landscape provisions as set forth in the SFWMD's Xeriscape Plant Guide II. The Village of Tequesta adopted Ordinance No. 6-12 "Florida Friendly Landscaping" on April 12, 2012.
- *Ultra-Low Volume Plumbing Fixture Ordinance:* An ordinance which requires ultra-low volume plumbing fixtures on all new construction is in effect for the Village service area.

As a new requirement, the Village has adopted the Florida Building Code (FBC) which contains plumbing flow restriction requirements. The Village of Tequesta's Building and Inspection Services Division also includes in their provisions for new construction to have water conservation control devices installed per the Florida Plumbing Code, as a condition for granting certificates of occupancy.

- *Rain Sensor Device Ordinance:* An ordinance which requires any person who purchases and installs an automatic lawn sprinkler system to install, operate and maintain a rain sensor device or automatic switch which will override the irrigation system with the occurrence of adequate rainfall is in effect for the Village service area.
- *Water Conservation Rate Structure:* The Village has a conservation-based rate structure which includes an increasing block rate structures as a means of encouraging users to



minimize water usage.

- **Leak Detection Program:** The Village has an unaccounted for water and leak detection program. The program includes water auditing procedures, in-field leak detection efforts and repair. The average annual estimated unaccounted for water loss, for the years 2009-2013 was approximately 8.0 percent.
- **Water Conservation Education Program:** The Village regularly distributes flyers to employees and customers. Information signs, press releases and messages regarding water conservation are also printed on customer bills.

As a new requirement, the Village of Tequesta has to provide an Annual progress Report to the District by November 15th of each year. The Village's Annual Consumer Confidence Report (2012) is presented as Exhibit 3-1.

- **Reuse Water:** Wastewater treatment within the service area is provided by either onsite septic systems or the Loxahatchee River Environmental Control District (the District). The District provides reuse water to several golf courses within the Village service area. A discussion of the reuse system is provided under subsequent sections of this Work Plan.

### **Water Conservation**

Village ordinances maintain that the Village shall maintain water conservation measures to provide for emergency conservation of water services. Additionally, the Village shall develop its water utilities rate structure to provide for a surcharge for heavy users of water and institute a program designed to cooperate with the South Florida Water Management District in times of water conservation emergencies through its Code of Ordinances.

Similar water conservation issues are discussed in the Potable Water sub-section of the Utilities Element of the Plan.

### **WILDLIFE HABITATS & ECOLOGICAL COMMUNITIES**

Palm Beach County is enriched by a diversity of upland and wetland ecological communities that vary in composition, extending from the Atlantic Ocean and Indian River Lagoon westward to the western county limits. These wildlife habitats and ecological communities found in Palm Beach County and potentially Tequesta are described in the following sections.

Many Village policies and regulations concerning the protection of native wildlife habitats and environmentally sensitive lands are consistent with the Palm Beach County regulations. In addition, the site plan review process for potential developments require an in-depth evaluation of the site conditions, including an updated environmental assessment of the site to ensure that existing wildlife habits or environmentally sensitive areas will be protected.

## **Natural Habitats**

With regard to these natural habitats, the Village intends to preserve all existing wetland areas identified on the Coastal Management/Conservation Map through the adoption of regulations that require the protection of existing native vegetation buffers adjacent to the Loxahatchee River and Indian River Lagoon estuaries.

For example Ecosites #61 and #63 described in the support documentation and identified in the Coastal Zone and Conservation Map are designated as environmentally sensitive lands, which is enforced by Village Code of Ordinances to provide for their protection and preservation.

Major habitats that support the growth and development of a various of common, rare, threatened and endangered species include cypress swamp, pine uplands and scrub, freshwater marshes, hardwood hammock, mangrove swamp, seagrass beds, oyster reefs or beds, estuary (lagoons and inlets), coastal dunes.

The Village shall restrict development activities that may adversely affect the survival of endangered and threatened wildlife species and provide for the mitigation of development impacts on their habitats and food sources by requiring an environmental assessment at the time of a development or redevelopment proposal as part of the site plan review process.

## **Vegetative Communities**

Most of the Village's acreage is developed and there are remains only a single extensive area of natural vegetative cover, which is the federally-owned Ecosite #61 that cannot be developed. Existing vegetative coverage is typical of most South Florida cities. Numerous trees and shrubs populate neighborhood streets and provide shade and natural beauty around dwelling units. Predominant trees, plants and shrubs including those located along streets, parks, and throughout residential areas may include, but are not limited to:

Cypress ( <i>Cupressus</i> )	Fern ( <i>Nephrolepis</i> )
Mangrove ( <i>Rhizophora</i> )	Banyan ( <i>Ficus</i> )
Gumbo Limbo ( <i>Bursera simaruba</i> )	Sea Grape ( <i>Coccoloba uvifera</i> )
Pin Oak ( <i>Quercus palustris</i> )	Cabbage Palm ( <i>Sabal palmetto</i> )
Live Oak ( <i>Quercus virginiana</i> )	Laurel Oak ( <i>Quercus laurifolia</i> )
Slash Pine ( <i>Pinus elliottii</i> )	Royal Palm ( <i>Roystonea elata</i> )
Caribbean Pine ( <i>Pinus caribaea</i> )	Chinese Fan Palm ( <i>Livistona chinensis</i> )
Australian Pine ( <i>Casuarina</i> )	Malayan Palm ( <i>Cocos nucifera</i> )
Melaleuca ( <i>Melaleuca</i> )	Brazilian Pepper ( <i>Schinus terebinthifolia</i> )

The parks and other landscaped areas that constitute areas of vegetative cover throughout the Village are shown on indicated Recreation and Open Space Map, and discussed in the Recreation and Open Space data and analysis document. The protection of native vegetation and wildlife

habitats is a major focus of the Coastal Management and Conservation elements of the Village's Comprehensive Plan.

Trees are a vital component of the infrastructure in our community and provide many environmental and economic benefits. These benefits include cleaner air, soil and water conservation, climate moderation, energy conservation, human health and longevity, increased property values, traffic calming, enhanced biodiversity, and many more.



The two predominant causes for loss of tree vegetation include land development and disease. Some South Florida communities including the Village require preservation or replacement of existing trees, especially those indigenous to the area, when development occurs.

With regard to invasive species, Brazilian Pepper, Australian Pine, and Malaleuca are among such species in the area and have been mostly eradicated from the South Florida region, including the Village of Tequesta. However, a few trees remain in certain areas. When the opportunity arises, these invasive species are replaced with a native alternative.



The urban forest is a resource that provides services to the Village and its residents and businesses. Because the canopy consists of living organisms that grow, change and respond to environmental factors, this valuable natural resource requires management to thrive. Therefore, urban forestry encourages the care and management of single trees and tree populations in

an urban setting and seeks to embrace trees as a vital part of urban infrastructure. The concept of urban forestry is further described in Trends and Challenges of this Element.

In summary, the Village intends to regulate the removal, relocation, and replacement of trees and to prevent the abuse of the trees within Village limits to ensure the adequacy and improvement of Tequesta's tree canopy. The Village's commitment to improving its tree canopy

is further reflected in its interest in urban forestry, which encourages the care and management of single trees and tree populations in an urban setting and seeks to embrace trees as a vital part of urban infrastructure. The Village's goals in urban forestry are discussed in the Conservation and Future Land Use Elements.

### Local Landscape Regulations

Since the last update to the Comprehensive Plan, the Village has added ordinances that regulate the installation and maintenance of landscaping within the Village. This also includes the preservation and protection of trees for new developments and redevelopments. The Village intends to regulate the removal, relocation, and replacement of trees and to prevent the abuse of the trees within Village limits in order to ensure the adequacy and improvement of Tequesta's tree canopy. The Village's commitment to improving its tree canopy is further reflected in its interest in urban forestry, which is described later in this document.

With regard to development, the Village Code specifically states that amount of impervious area permitted per site is limited. The landscape regulations establish maximum ground coverage and minimum landscape and open space area requirements to minimize impervious areas. Limiting impervious areas helps contain water on-site which minimizes stormwater runoff.

In addition, native landscaping indigenous to South Florida should be preserved or installed for new developments or redevelopments, so that it comprises at least 50% of the total landscaping. Landscape materials and design should follow Florida-Friendly Landscaping guidelines. While preserving native species, the spread of exotic species should be prohibited.



The Village Code provides the principles of Florida-friendly landscaping: planting the right plant in the right place; efficient watering; appropriate fertilization; mulching; attraction of wildlife; responsible management of yard pests; recycling yard waste; reduction of stormwater runoff; and waterfront protections. Additional components of Florida-friendly landscape include planning and design, soil analysis, the uses of solid waste compost, practical use of turf, and proper maintenance.



The landscaping regulations adopted in the Village's Zoning Ordinance require the use and preservation of native vegetation. Specifically, Sec.78-402, Chapter 78, Zoning in the Village's Code of Ordinances requires the use of native vegetation as referenced in the South Florida Water Management District Waterwise Guide. These landscape regulations require, and the Village continues to enforce, a minimum 50% native landscaping be provided that is consistent with the Waterwise Guide.

#### Jupiter Inlet Lighthouse Outstanding Natural Area (Ecosite #61)

The Village continues to preserve Jupiter Inlet Lighthouse Outstanding Natural Area (Ecosite #61) by implementing appropriate zoning regulations. Ecosite #61 is identified on the Future Land Use Map as Recreation and Open Space and designated on the Village's Official Zoning Map as R/OP, Recreation and Open Space. The Village also identifies any public-owned spoil islands as conservation areas on the Future Land Use Map. The spoil island located in ICWW right-of-way just north of the CR 707 (Beach Road) bridge to the barrier island is identified as Conservation use on the Future Land Use Map.



#### Fisheries

The Florida Fish and Wildlife and Conservation Commission (FWC) indicates the following fish species are commonly present in Palm Beach County: Largemouth/Sunshine/Butterfly Peacock Bass; Black Crappie; Bluegill; Redbreast/Redear/Spotted Sunfish; Warmouth; Channel/White Catfish; Brown/Yellow Bullhead; Longnose/Florida Gar; Chain Pickerel; Mayan Cichlid; Blue Tilapia; and Bowfin.

Marine and Estuarine fish species are found in the multiple water bodies within or adjacent to the Village. These include, but are not limited to, the Atlantic Ocean, Indian River Lagoon/Intracoastal Waterway, Loxahatchee, and canals.

#### Atlantic Ocean

As discussed in the Coastal Management data and analysis document, nearshore and offshore reefs in the Atlantic Ocean provide habitat for diverse fish species. These oceanic reef habitats found off the coast of Palm Beach County are known to accommodate a variety of Caribbean tropical fish, commercial fish, and shellfish types. Fish species include a variety of sport and



commercial fish, such as grouper, snapper, mackerel, bluefish, dolphin, kingfish and jack. The Coastal Management Element further details oceanic fish species found around offshore and nearshore reefs near Tequesta.

#### Indian River Lagoon/Intracoastal Waterway

Recent studies indicate that there are over 700 documented fish species in the Indian River Lagoon. Some of these species live permanently in the Lagoon, while others migrate through the rivers and inlets towards oceanic waters. The Lagoon's protected waters make it an ideal location for fish breeding and nursery grounds. Moreover, the broad range of salinity within the IRL coupled with the emergent vegetation and red mangroves create productive nursery habitat for commercially important fish species.

Fish species commonly found throughout the area include grey (mangrove) snapper (*Lutjanus griseus*), common snook (*Centropomus* spp.), Atlantic tarpon (*Megalops atlanticus*), mullet (*Mugilidae*), drum (*Sciaenidae*), sheepshead (*Archosargus probatocephalus*), spotted seatrout (*Cynoscion nebulosus*), pompano (*Carangidae*), jack (*Carangidae*), barracuda (*Sphyræna barracouta*), sea catfish (*Ariopsis*), mojarra (*Eucinostomus* spp.), and lookdown fish (*Selene vomer*). Some of these species are carried from the Gulf Stream in the ocean into the Lagoon through the inlets. Freshwater species in the upper reaches of tributaries include black crappie (*Pomoxis nigromaculatus*), bass (*Centrarchidae*), and sunfish (*Lepomis* spp.).

#### Loxahatchee River

In addition to the Lagoon, a variety of fish species are also present in the Loxahatchee River. Common species found in the river include, common snook (*Centropomus* spp.), grey (mangrove) snapper (*Lutjanus griseus*), mullet (*Mugilidae*), bass (*Micropterus*), Atlantic tarpon (*Megalops atlanticus*), and jack (*Carangidae*).

#### **Invertebrates**

Data collected in the Lagoon indicates that the distribution of the most abundant species of shrimp and crabs in Tequesta was related to the distribution of vegetative communities, especially seagrass, found at certain collection and monitoring stations. Common species include the blue crab (*Callinectes sapidus*), cinnamon river shrimp (*Machrobrachium acanthurus*), penaeid shrimp (pink (*Farfantepenaeus duorarum*), brown shrimp (*F. aztecus*), and white shrimp (*Litopenaeus setiferus*).

#### **Impact of Development on Natural Resources**

##### Existing Uses of Natural Resources

The Atlantic Ocean, Indian River Lagoon and Intracoastal Waterway, the Loxahatchee River, and related canals and water bodies are used for fishing, boating, and other recreational activities.

Small-scale direct habitat loss also occurs in the IRL and Loxahatchee River and the cumulative impact of such damage is significant. One example is prop scarring of slow-growing seagrass beds by motorized watercraft. Increased utilization of the lagoon by recreational users exposes sensitive, vital habitats to accidental damage.

Through policies and regulations, the Village strives to provide for the continued use of the natural resources in the community, and ensure that adequate services are available to serve Village residents and the public, especially in areas surrounding these sensitive natural resources.



### Future Uses of Natural Resources

Based on a projected development of future land uses in accordance with the Village's current land use map and zoning map, its present and desired future character, no additional adverse effects on the Village's natural resources are expected. Population growth, especially in the more sensitive coastal and intracoastal areas, is projected to proceed at a low rate, according to recent trends and the fact that the Village is basically built-out, and is not expected to be accompanied by rapid development.

### Development Impact

Village policy requires coordination with the County and State regarding impacts of development, as they may affect the Loxahatchee River Estuary and Indian River Lagoon Aquatic Preserve. Similarly, coordination among these entities is also required to ensure that any park improvements or other development projects are sensitive to the mangrove and other vegetative, wildlife, and marine habitats.

There are several sources of direct habitat loss within the Lagoon. Development of the Indian River Lagoon shoreline has sometimes necessitated the removal of mangrove stands, salt marsh vegetation, or seagrass meadows. Various state permitting processes aim to minimize such habitat loss. In addition, the Village continues to coordinate with the State and County to assure

that development regulations are enforced in all areas in an effort to protect vegetative, wildlife and marine habitats.



In the Coastal Area, the coastal construction setback and coastal high hazard area are two techniques that are meant to protect and preserve the Village's natural and built resources, while also planning for the safety of residents and visitors.

With regard to groundwater resources, land use activities within the travel time contours are subject to restrictions established in Article V, Wellfield Protection under Chapter 50, Natural Resource Protection of the Village's Code of Ordinances. Similarly, the Village has adopted the Palm Beach County Wellfield Protection Ordinance by reference.

Land use and development impact are discussed in more detail throughout this element, including coastal construction limitations, development limitations around the IRLAP, the impacts of sea level rise on development, and land use and development issues in sensitive natural areas.

### **RARE, THREATENED, AND ENDANGERED SPECIES**

The Indian River Lagoon, Loxahatchee River, and Atlantic Ocean provides a habitat for many endangered and threatened species, including Florida manatees, sea turtles, and seagrass. These species are sensitive to activities such as shoreline development, dredging, filling, and even some recreational activities.

While dominant species of wildlife in the Village of Tequesta have not been identified, probable endangered and threatened species and species of special concern that occur along the shorelines, in nearshore and offshore area, and within Indian River Lagoon/Intracoastal Waterway and Loxahatchee River within Palm Beach County, have been identified by the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS) and the Florida Fish and Wildlife Conservation Commission (FWC).

These species are identified in Tables 6-1 and 6-2 below by species, habitat, designated status as Endangered (E), Threatened (T), or Species of Special Concern (SSC), and agency of jurisdiction.

**Table 6-1. Status of Threatened and Endangered Flora Species in Palm Beach County**

GROUP	COMMON NAME	Designated Status (FWC/FWS)
Scrub	Johnson Seagrass (( <i>Halophila johnsonii</i> ))	E
Flowering Plants	Okeechobee gourd ( <i>Cucurbita okeechobeensis</i> )	E
	Beach jacquemontia ( <i>Jacquemontia reclinata</i> )	E
	Tiny polygala ( <i>Polygala smallii</i> )	E
	Four-petal pawpaw ( <i>Asimina tetramera</i> )	E

Sources: Florida Fish and Wildlife Conservation Commission (FWC); US Fish and Wildlife Services (FWS)

**Table 6-2. Status of Threatened and Endangered Fauna Species in Palm Beach County**

GROUP	COMMON NAME	Designated Status (FWC/FWS)
Amphibians and Reptiles	Lakes and Ponds	
	American Alligator ( <i>Alligator mississippiensis</i> )	T (S/A)
	American Crocodile ( <i>Crocodylus acutus</i> )	T
	Beach/Coastal Areas	
	Atlantic Loggerhead Sea Turtle ( <i>Caretta caretta</i> )	T
	Atlantic Green Sea Turtle ( <i>Chelonia mydas</i> )	E
	Leatherback Sea Turtle ( <i>Dermochelys coriacea</i> )	E
	Atlantic Hawksbill Sea Turtle ( <i>Eretmochelys imbricate</i> )	E
	Kemp's ridley ( <i>Lepidochelys kempii</i> )	E
	Sand Pine scrubs	
	Gopher Tortoise ( <i>Gopherus Polyphemus</i> )	SSC
	Eastern Indigo Snake ( <i>Drymarchon corais couperi</i> )	T
Birds	Beach/Coastal Areas	
	Least Tern ( <i>Sternula antillarum</i> )	T
	Roseate Tern ( <i>Sterna dougallii dougallii</i> )	T
	Southeastern Snowy Plover ( <i>Charadrius nivosus</i> )	T
	Piping Plover ( <i>Charadrius melodus</i> )	T
	Arctic Peregrine Falcon ( <i>Falco peregrinus</i> )	E
	Red Knot ( <i>Calidris canutus rufa</i> )	T
	Black Skimmer ( <i>Rynchops niger</i> )	T (State)
	American oystercatcher ( <i>Haematopus palliatus</i> )	T (State)
	Other water	
	Little Blue Heron ( <i>Egretta caerulea</i> )	T (State)
	Tricolored Heron (Tricolored Heron)	T (State)
	Wood Stork ( <i>Mycteria Americana</i> )	T
	Kirtland's Warbler ( <i>Dendroica kirtlandii</i> )	E
	Everglade Snail Kite ( <i>Rostrhamus sociabilis plumbeus</i> )	
	Whooping Crane ( <i>Grus Americana</i> )	E
	Florida Sandhill Crane ( <i>Grus canadensis pratensis</i> )	T (State)

GROUP	COMMON NAME	Designated Status (FWC/FWS)
	Any Environment/Other	
	Florida Scrub Jay ( <i>Aphelocoma coerulescens</i> )	T
	Burrowing Owl ( <i>Athene cunicularia</i> )	SSC
	Red-cockaded woodpecker ( <i>Picoides borealis</i> )	E
Mammals	Beach/Coastal Area	
	Finback whale ( <i>Balaenoptera phsalus</i> )	E
	Humpback whale ( <i>Megaptera novaengliae</i> )	E
	Right whale ( <i>Eubalaena glacialis</i> )	E
	Sei whale ( <i>Balaenoptera borealis</i> )	E
	Sperm whale ( <i>Physeter catadon</i> )	E
	Intracoastal	
	West Indian Manatee ( <i>Trichechus manatus</i> )	T
	Scrubs	
	Florida panther ( <i>Puma concolor coryi</i> )	E

Sources: Florida Fish and Wildlife Conservation Commission (FWC); US Fish and Wildlife Services (FWS)

*\*Note: The designated status abbreviations for the above species are defined as follows:*

- **E=Endangered:** as designated by the FWC, a species, subspecies, or isolated population which is so few or depleted in number, or so restricted in range or habitat due to any man-made or natural factors that it is in imminent danger of extinction, or extirpation from the state, or which may attain such a status within the immediate future.
- **T=Threatened:** As designated by the FWC, a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration. Declining in number at a rapid rate, or whose range or habitat is declining in area at a rapid rate and as a consequence, is destined or very likely to become an endangered species within the foreseeable future.
- **T(S/A)=Threatened due to similarity of appearance**
- **SSC=State Species of Special Concern:** As designated by FWC, a species, subspecies, or isolated population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species; may already meet certain criteria for designation as a threatened species but for which conclusive data are limited or lacking; may occupy such an unusually vital and essential ecological niche that should it decline significantly in numbers, or distribution other species would be adversely affected to a significant degree; or has not sufficiently recovered from past population depletion.

*\*In 2010, the FWC revised its imperiled species management system to abolish the species of special concern (SSC) category once all species on that list are reclassified as State-designated Threatened, found to not meet any of the State's listing criteria, or become Federally listed. Until then, the FWC will continue to maintain a separate Species of Special Concern list.*



## **Birds**

Loss of breeding and feeding habitat to urban development of saltmarsh and freshwater wetlands has stressed recovering colonial waterbird species. Many of these waterbirds are listed as SSC and include little blue heron, tricolored heron, reddish egret (*Egretta rufescens*), snowy egret, and white ibis. Threatened or endangered species include the sandhill crane, peregrine falcon, and wood stork.



The wood stork, both federally and state listed as threatened, primarily uses the IRLAP System as a breeding ground from February through July each year. The brown pelican (SSC) uses the mangroves in the IRLAP System as a roosting and nesting ground. Current recreation on and around islands and shoals in the IRLAP System and surrounding areas continue to negatively impact waterbird colonies.



Other bird species commonly found around the Loxahatchee River areas include osprey, limpkin, and various owl species.

## **Manatees**

Manatees inhabit shallow coastal waters, bays, lagoon, estuaries, rivers and lakes throughout its range. These animals prefer warmer temperatures and tend to migrate to the warm water discharge area at the Florida Power and Light Riviera Beach Power Plant, which is located approximately 16 miles south of the Village. Otherwise, manatees are commonly found in shallow coastal waters and seagrass beds.



Collisions of boats and barges with manatees has historically been one of the major causes of manatee injury and death. Within the Indian River Lagoon and throughout the ICWW in Palm Beach County, boating slow speed limits are posted in order to protect the manatee population from injury.

The IRL and associated water bodies provide a critical habitat for the West Indian Manatee. Although original population levels of manatees in Florida are unknown, studies indicate that peninsular Florida has been the center of the manatee's range in the continental United States. Current data by the Florida Fish and Wildlife Commission indicates the Florida manatee population has grown to over 6,000 animals today.

In order to further restore and protect manatee populations, the PBC Manatee Protection Plan (MPP) was incorporated into the County's Comprehensive Plan in 2008. The MPP provides guidance to PBC and municipalities in developing policies and guidelines for comprehensive manatee protection in local waterways.

### **Sea Turtles**

The Palm Beach County ocean shoreline is a major nesting area for sea turtles, with approximately 2,000,000 sea turtles hatching on its beaches every year. Palm Beach County has more sea turtle nests per mile than anywhere else in the United States. The 2016 sea turtle counts provided by the Florida Fish and Wildlife Conservation Commission indicated there were 33,892 loggerhead nests, 1,582 green turtle nests, and 377 leatherback nests, which totals to 35,851 documented sea turtle nests on the County's beaches.

Four species of sea turtles commonly found in the County's coastal waters, reefs, and the lagoon. Three species are considered endangered and include green, leatherback, and hawksbill sea turtles. The loggerhead sea turtle is considered threatened, and is the most common sea turtle found in the area. The majority of sea turtle nests found in PBC are loggerhead nests. The sea turtle nesting season in PBC is from the first of March through the end of October.



The Lagoon provides a developmental habitat for endangered and threatened sea turtles, especially juvenile green turtles. Turtles often use the Lagoon waters for several years before migrating to other feeding grounds. Because sea turtles can function as an indicator species of habitat conditions, it is important to know the characteristics of the sea turtle population utilizing the IRL.

### **Seagrass**

Seagrasses act as ecological engineers in coastal waters, providing valuable ecological services to the marine environment. These services include provision of physical habitat structure/shelter, alteration of water flow, nutrient cycling, organic carbon production and export, sediment stabilization, enhancement of biodiversity, trophic transfers to adjacent habitats, and food web structure.

While seagrass does provide a valuable food source for endangered species such as manatees and sea turtles, it may be more important to the food web when it decomposes. Dead, decaying plant matter forms the base of the food chain and is an important food source for crustaceans, worms, mollusks, and mullet.

### **Mangroves**

Mangroves serve very important functions in the ecology of the Indian River Lagoon, Loxahatchee River, and surrounding waterways. Mangroves have a high ecological role as nursery grounds and as a physical habitat for a wide variety of vertebrates and invertebrates. They recycle nutrients and the nutrient mass balance of estuarine ecosystems. Mangrove leaves, wood, roots, and detrital material provide essential food chain resources and provide habitat for many wildlife including mammals, birds, reptiles, amphibians, and arthropods.



Moreover, they have a special ecological function for endangered species, threatened species, and species of special concern. They also serve as storm buffers; their roots stabilize shorelines and fine substrates, reducing potential turbidity and enhancing water clarity. One of the greatest values of mangroves swamps in Florida is their aesthetic appeal.

Although much of the mangrove habitat, which once dominated the Lagoon's shorelines, has been replaced with seawalls, multiple restoration efforts have implemented to restore this valuable resource and mangrove coverage continues to increase as a result of these efforts.

Regulations to protect mangroves are enforced by several agencies including, the Florida Department of Environmental Protection and the Village's Land Development Regulations.

### **AIR QUALITY**

Air quality conditions in Palm Beach County, including Tequesta, continue to be rated generally as good. Air quality is monitored at various locations throughout the County and various air monitoring programs are encouraged throughout the area by local pollution control agencies in an effort to preserve air quality. For example, the Palm Beach County Metropolitan Planning Organization (MPO) measures and provides means to reduce automobile emissions while the Palm Beach County Health Department measures and provides means to reduce emissions from fixed sources.

In order to maintain proper air quality, the Village should continue to support air quality monitoring efforts of local pollution control agencies, and should coordinate and cooperate with local pollution control agencies to assure appropriate local input.

### **Greenhouse Gas Emissions**

The Village seeks to reduce greenhouse gas emissions and conserve energy resources. Greenhouse gases pose a threat to the environment as they trap heat in the air, which then warms the planet and can negatively impact natural habitats. With human activity largely responsible for increasing greenhouse gas emissions, the largest source of emissions in the U.S. is from burning fossil fuels for electricity, heat, and transportation. By promoting mixed use developments, low-impact development techniques, green building standards, and strategies to reduce reliance on vehicles for transportation, the Village seeks to increase energy efficiency and reduce greenhouse gas emissions.

Mixed use developments, defined as a mixture of residential and non-residential land uses in a design-unified, pedestrian friendly environment with multi-modal transportation connectivity to other areas, at appropriate locations, provide opportunities to live, work, shop and recreate in a walkable area, and to reduce automobile dependence and greenhouse gas emissions.

Aside from mixed use developments, low impact development techniques and green building standards are also instrumental in reducing greenhouse gas emissions. These techniques and standards reduce negative environmental impacts of development and redevelopment by:

- Locating building sites away from environmentally sensitive areas; promoting the preservation of natural resources;
- Providing for on-site mitigation of impacts (i.e. retention and treatment of stormwater runoff, water reuse, Master Stormwater Management Systems);
- Promoting energy conservation through design, landscaping and building techniques (i.e. solar power, increased tree canopies);
- Promoting water conservation through landscaping and building design;



- Ensuring environmentally friendly building practices (i.e. use of environmentally friendly building materials, recycled materials), and;
- Considering the development of a Green Building Ordinance and a related LEED Certification Program for development and redevelopment, including the development of a Neighborhood Development Rating System that integrates the principles of smart growth, urbanism and green building into a national system for neighborhood design.

Transportation, including cars, trucks, trains, ships, planes, and other vehicles, is a leading source of greenhouse gas emissions. According to the Environmental Protection Agency greenhouse gas emissions website, private automobiles, such as passenger cars, light-duty trucks, pick-up trucks, and minivans account for over half of the emissions from the transportation category.

Through the implementing strategies to reduce the number of vehicle miles travelled, the Village seeks to limit greenhouse gas emissions. These strategies may include the:

- Promoting mixed use developments that provide for a mixture of residential and non-residential land uses in a pedestrian friendly environment with multi-modal transportation connectivity to other areas;
- Promoting the use of alternate transportation modes as specified herein, including mass transit, bicycles, and pedestrianism, and;
- Requiring Transportation Demand Management Programs as a condition for development approvals.

Encouraging walkable communities, alternative transportation, energy efficient design techniques, water conservation practices, and enforcing green building standards and techniques, will benefit the community, natural resources, and the overall health well-being and of residents and tourists in Tequesta and surrounding areas.

### **Hazardous Materials & Waste Management**

The Village maintains regulations and measures to manage hazardous wastes and materials, which includes an ordinance regulating the storage and disposal of hazardous wastes and materials. The Village has adopted, and enforces, Article V, Toxic and Hazardous Materials under Chapter 30, Environment of the Village's Code of Ordinances whose purpose is to, "...properly regulate the use, handling, storage and disposal of toxic and hazardous substances and materials within the Village.." In order to protect natural resources, the Village's Haz-Mat team provides management of hazardous wastes.

Although the Village does not have any industrial land uses and, thus, does not generate the typical hazardous wastes associated with such land uses, many of the common household and commercial waste products requiring care in disposal are generated including car batteries, pesticides, degreasing solvents and petroleum waste products. In addition, service stations and marinas are potential sources of fuel and solvent waste products and leaks. Any developments proposed for land that has potential contamination concerns must go through a rigorous process



during the site plan review phase to ensure these contaminants will be properly mitigated prior to obtaining project approval.

## **TRENDS AND CHALLENGES**

### **SEA LEVEL RISE CONSIDERATIONS**

#### **Adaptation and Resiliency**

Sea level rise has long been recognized by the South Florida Water Management District and by the U.S. Army Corps of Engineers as an increasing threat to low lying, porous South Florida. Organizations such as the Southeast Florida Regional Climate Compact have provided reports and publications that have increased awareness and expanded the knowledge of the impacts of sea level rise on coastal communities in South Florida.

Rising sea levels due to the melting of the polar ice caps contribute to greater storm damage; warming ocean temperatures are associated with stronger and more frequent storms; additional rainfall, particularly during severe weather events, leads to flooding and other damage; an increase in the incidence and severity of wildfires threatens habitats, homes, and lives; and heat waves contribute to human deaths and other consequences.

Given the geography of Florida, coastal communities in Southeast Florida have long known how to incorporate hazard mitigation with long-term planning to reduce the loss of life and property and lessen the impact of disasters (hurricanes, severe weather events, flooding, etc.). The challenge of adaptive planning for sea level rise goes beyond hazard mitigation. Rather than preparing for a specific disaster or event, a resilient community is one that can face an array of unpredictable challenges and disturbances with minimal long-term impacts. Certain communities, especially in coastal areas, must be prepared for future conditions that may not allow the same development intensity, location, type, or access. Through the use of innovative tools and strategies it is possible to transition these economies and the built environment into resilient communities that adapt to these adverse impacts.

With the currently accepted sea level rise projections and known climate impacts, long-range planning must now incorporate resiliency strategies that balance mitigation and adaptation for the protection of the natural systems and to sustain the socio-economic characteristics of the community. Understanding how mitigation and adaptation act as interconnected relationships to building resilient and sustainable coastal communities is vital for adaptive planning.

Although many other Florida cities and towns have yet to experience damage, scientists and engineers have predicted that within 40 to 50 years, Florida will be inundated with problems related to sea level rise.

## **Southeast Florida Regional Climate Change Compact**

The Southeast Florida Regional Climate Change Compact (SEFRCCC) was executed by Broward, Miami-Dade, Monroe, and Palm Beach Counties in January 2010 to coordinate mitigation and adaptation activities across county lines. The Compact represents a new form of regional climate governance designed to allow local governments to set the agenda for adaptation while providing an efficient means for state and federal agencies to engage with technical assistance and support. It is in that spirit that this plan provides the common integrated framework for a stronger and more resilient Southeast Florida starting today and for tomorrow.

In order to better coordinate local planning, the Southeast Florida Regional Climate Change Compact (the Compact) developed unified regional sea level rise projection for Southeast Florida. The Unified Sea Level Rise Projection (unified projections) were originally prepared in 2011 by the Compact's Sea Level Rise Technical Advisory Group, comprised of representatives from county governments, United States Army Corps of Engineers (USACE), National Oceanic and Atmospheric Association (NOAA), United States Geological Survey (USGS), the South Florida Water Management District, and climate scientists from Florida Atlantic University and University of Miami. Moreover, this provision of the unified sea level rise projection for the Southeast region allows for consistent long-range planning by the more than 115 local governments within the Lower East Coast of Florida.

The Unified Sea Level Rise Projections are the only regionally-coordinated and locally-specific sea level rise projections for the Southeast Florida region. The projections are updated regularly by a qualified group of scientists and experts, so planners should consider the projections to be both scientifically sound and timely. This unified sea level rise projection has been formally adopted by Palm Beach, Broward, Miami-Dade and Monroe Counties and is now being used to inform planning process and project design throughout the region.

The 2012 NOAA Technical Report, Global Sea Level Rise Scenarios for the United States National Climate Assessment noted that given the past few decades of increased the height of storm surge and wind-waves, assessing the combination of different weather events combined with scenarios of sea level rise is crucial in developing hazard profiles for emergency planning and vulnerability, impact, and adaptation assessments.

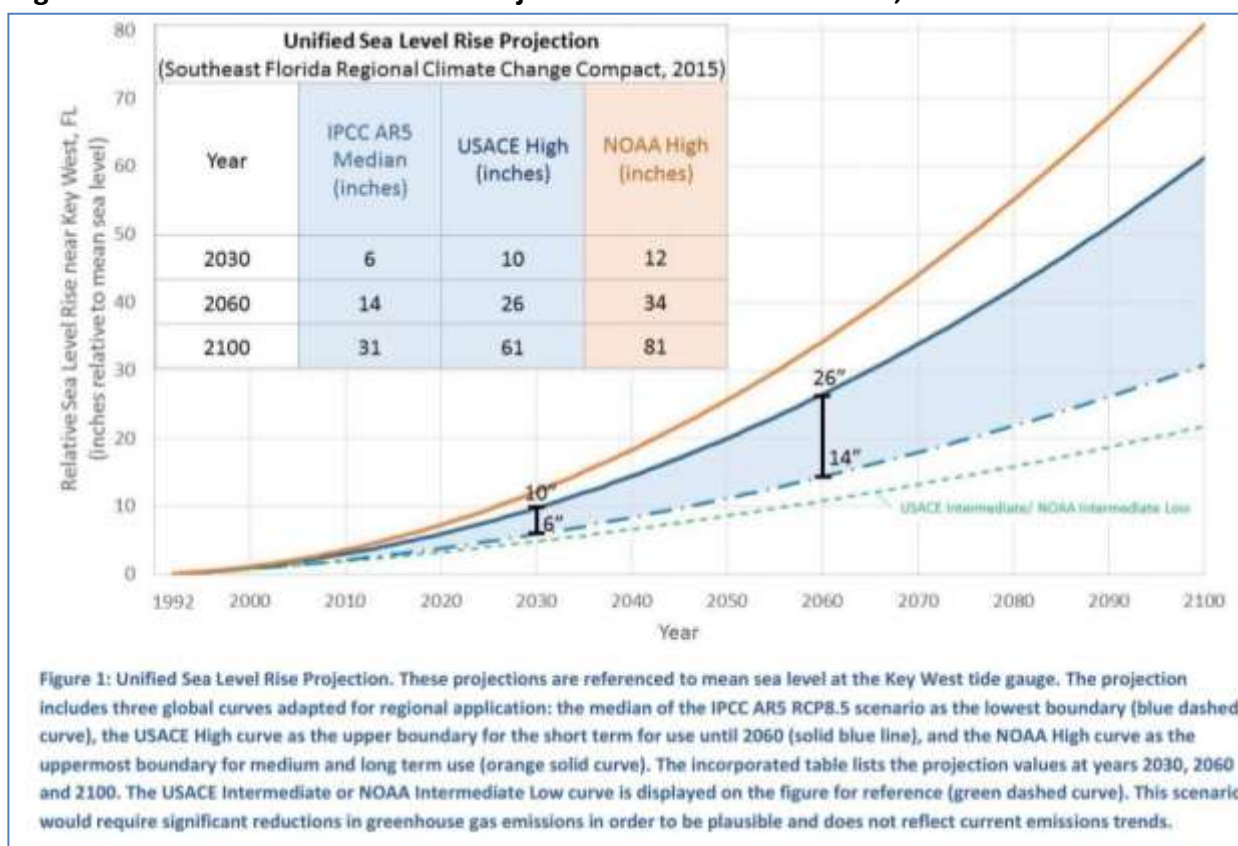
The 2015 update of the Southeast Florida Regional Climate Change Compact's Sea Level Rise Work Group made date changes to the starting point of the projections to use local tide station data and stay consistent with the current guidance from the U.S. Army Corps of Engineers (USACE) and the National Oceanographic and Atmospheric Agency (NOAA) and extended the projections out to 2100 in recognition of the need for longer range guidance for major infrastructure and other long term investments now being planned.

The Unified Sea Level Rise Projection for Southeast Florida is intended to be used for planning purposes by a variety of audiences and disciplines when considering sea level rise in reference to both short and long-term planning horizons and infrastructure design in the Southeast Florida

area. The authors also note that Sea level rise in South Florida has been of similar magnitude over the same period (NOAA, 2015) but is anticipated to outpace the global average due to ongoing variations in the Florida Currents and Gulf Stream. Given the uncertainty of all the factors affecting the rate of sea level rise in climate models and the limitations of current climate models to predict the future, the Work Group recommends that the unified sea level rise projection include three curves, in descending order, the NOAA High Curve, the USACE High Curve and a curve corresponding to the median of the IPCC AR5 RCP8.5 scenario, with specific guidance as to how and when they should be used in planning.

These scenarios provide a useful tool for coastal managers in assessing vulnerability, impacts, and adaptation strategies when coupled with local and regional specific information on climatic, physical, ecological, and biological processes and on the culture and economy of coastal communities.

**Figure 6-10. Unified Sea Level Rise Projection for Southeast Florida, 2015**



Source: Southeast Florida Regional Climate Change Compact, 2015.

The Unified Sea Level Rise Projections are the only regionally-coordinated and locally-specific sea level rise projections for the Southeast Florida region. The projections are updated regularly by a qualified group of scientists and experts, so planners should consider the projections to be both scientifically sound and timely.

In summary, this Unified Sea Level Rise projection for Southeast Florida updated in 2015 projects the anticipated range of sea level rise for the region from 1992 to 2100 (Figure 6-10).

The projection highlights three planning horizons:

- 1) Short term, by 2030, sea level is projected to rise 6 to 10 inches above 1992 mean sea level,
- 2) Medium term, by 2060, sea level is projected to rise 14 to 34 inches above 1992 mean sea level,
- 3) Long term, by 2100, sea level is projected to rise 31 to 81 inches above 1992 mean sea level.

The following are examples of overarching strategies that local governments within the Southeast Florida Regional Climate Change Compact (Palm Beach, Broward, Miami-Dade and Monroe Counties) have now adopted.

- Ensure a sustainable, adaptive and resilient community
- Incorporate the best available data and science, into policy and planning decisions for infrastructure
- Protect coastal buffers, natural recharge areas to create a resilient environment
- Improve resiliency through the development of adaptation strategies for vulnerable areas
- Create and maintain effective intergovernmental coordination and on-going communicating that supports sustainability and resource protections while maintaining flood protection
- Conduct vulnerability and risk analysis for; public infrastructure and facilities, economic, land use and natural systems
- Incorporate sea level rise impacts, indicators, benchmarks and targets in planning elements and land use development reviews and capital development projects
- Adopt Overlay Zones, Adaptation Overlay Districts or Adaptation Action Areas in a Coastal Management Element to improve resilience to coastal flooding resulting from high-tide events, storm surge, flash floods, stormwater runoff, and related impacts of sea level rise
- Provide 5 yr. review of the Unified Sea Level Rise Projection for Southeast Florida

#### **Florida Senate Bill 1094 (S.B. 1094)**

Recognizing the priority to integrate sea level rise into local government planning, Florida Governor's Rick Scott signed (May, 2015) S.B. 1094 amending the state comprehensive planning laws (F.S. 163.3178(2)(f) that had stipulated local governments were required to have a coastal management element in their comprehensive plan, including a redevelopment component to "eliminate inappropriate and unsafe development in coastal areas".

Florida S.B. 1094, which became effective on July 1, 2015, requires coastal management plans to include the reduction of flood risks and losses. It also creates new requirements related to flood elevation certificates and revises requirements related to flood insurance.

This new law now includes “sea-level-rise”:

*“1. Includ[ing] development and redevelopment principles, strategies, and engineering solutions that reduce the flood risk in coastal areas which results from high-tide events, storm surge, flash floods, stormwater runoff, and the related impacts of sea-level rise.”*

*- SB 1094 (emphasis added)*

Specifically, S.B. 1094, Section 1, amends s. 163.3178(2)(f), F.S., to require local governments when drafting their comprehensive coastal management plans to:

- Include development and redevelopment principles, strategies, and engineering solutions that reduce the flood risk in the coastal zone which results from high-tide events, storm surge, flash floods, stormwater runoff, and the related impacts of sea-level rise.
- Encourage the use of best-practices development and redevelopment principles, strategies, and engineering solutions that will result in the removal of coastal real property from flood zone designations established by the Federal Emergency Management Agency.
- Identify site development techniques and best practices that may reduce losses due to flooding and claims made under flood insurance policies issued in this state.

As discussed earlier in the document, the Village recently updated its Code of Ordinances to reflect FEMA’s updated Flood Insurance Maps and to increase its freeboard requirements, a technique to reduce losses and claims related to flooding.

In addition to the consideration of related impacts of sea level, SB 1094 amendment of s. 163.3178 (2) (f), F.S. also includes the following effective changes:

- Encourage the use of best practices development and redevelopment principles, strategies, and engineering solutions that will result in the removal of coastal real property from flood zone designations established by the Federal Emergency Management Agency.
- Identify site development techniques and best practices that may reduce losses due to flooding and claims made under flood insurance policies issued in this state.
- Be consistent with, or more stringent than, the flood-resistant construction requirements in the Florida Building Code and applicable flood plain management regulations set forth in 44 C.F.R. part 60.
- Require construction activities seaward of the coastal construction control lines established pursuant to s. 161.053, F.S., be consistent with Ch. 161, F.S.



- Encourage local governments to participate in the National Flood Insurance Program Community Rating System administered by the Federal Emergency Management Agency to achieve flood insurance premium discounts for their residents

### **Related Florida Statutes**

To support the implementation of the Southeast Florida Regional Climate Change Compact and the Regional Action Plan, and recognizing the importance of integrating sea level rise directly into municipal and county planning, the Regional Climate Action Plan (RCAP) Workshop #10: “Essential Tools: Integrating the Southeast Florida Sea Level Rise Projections into Community Planning” was held in July, 2016 in Broward County. The report, *Integrating the Unified Sea Level Rise Projection into Local Plans* that followed this workshop is available at the SEFRCC website. The following legislative history is taken directly from that report.

Support for using these sea level rise projections exists currently with Florida State laws requiring that comprehensive plans use “relevant and appropriate data,” according to Statute 163.3177(1)(f):

*“All mandatory and optional elements of the comprehensive plan and plan amendments must be based upon relevant and appropriate data and an analysis by the local government that may include, but not be limited to, surveys, studies, community goals and vision, and other data available at the time of adoption of the comprehensive plan or plan amendment.”*

Relevant data that may have been used to write the plan is not considered formally adopted and embedded in the plan unless it is included directly in the planning document:

*“Surveys, studies, and data utilized in the preparation of the comprehensive plan may not be deemed a part of the comprehensive plan unless adopted as a part of it.”*

- Florida Statute (163.3177(1)(f)1

Additionally, coordination and alignment between local comprehensive planning efforts is an explicit goal of Florida state law:

*“Coordination of the local comprehensive plan with the comprehensive plans of adjacent municipalities, the county, adjacent counties, or the region; with the appropriate water management district’s regional water supply plans approved pursuant to s. 373.709; and with adopted rules pertaining to designated areas of critical state concern must be a major objective of the local comprehensive planning process.”*

- Florida Statute (163.3177(4)(a)

The Unified Sea Level Rise Projection are the only regionally-coordinated and locally-specific sea level rise projections for the Southeast Florida region. The projections are updated regularly by a qualified group of scientists and experts, so planners should consider the projections to be both scientifically sound and timely.

### **Coastal High Hazard Areas**

In response to devastating hurricanes and coastal storms in 2004 and 2005, bills were introduced to address the permitting processes, levels of service thresholds and to revise the definition of the Coastal High Hazard Areas. This changed the definition of the Coastal High Hazard Area from the category 1 hurricane evacuation zone to “the area below the category 1 storm surge line as established by the Sea, Lake and Overland Surges from Hurricanes (SLOSH) computerized storm surge model.” The SLOSH model combines topographic and bathymetric data with hurricane models to delineate land areas that are prone to storm surge inundation.

A 2008 report, Assessment of Redefining Florida’s Coastal High Hazard Area reviewing the consequences of this change recommended a more holistically consideration of the environmental, hazard mitigation, land use, and economic development issues related to coastal planning. This report called for broadening the application of CHHA to embrace diverse aspects of natural hazard mitigation.

Per the above definition for a CHHA, the Village considers all areas below the category 1 storm surge line within the Coastal High Hazard Area. The category 1 storm surge area is indicated on the Hurricane Surge Map, which is presented in the Coastal Management Element. This criteria is intended to guide future development and redevelopment in an effort to further protect Tequesta’s residents and its natural, economic, and cultural resources.

### **Adaptation Action Areas**

In addition to designating a Coastal High Hazard Area, defining Adaptation Action Areas (AAA) are another step local municipalities can take to protect areas in their communities that are especially vulnerable to flooding due to sea level rise. While the Coastal High Hazard Area is standardized delineated area, there is no standard boundary for Adaptation Action Areas. The Coastal High Hazard Area considers current coastal flooding conditions while the Adaptation Action Area encourages planning for future vulnerability.

The Community Planning Act (CPA) made changes to the state’s growth management laws in 2011, including the optional adaptation planning for coastal hazards and the potential impacts of sea level rise. The Adaptation Action Area, as defined in the CPA, is an optional comprehensive plan designation for areas that experience coastal flooding and that are vulnerable to the related impacts of rising sea levels for prioritizing funding for infrastructure and adaptation planning.

Local governments that adopt an adaptation action area may consider policies within the coastal management element in their comprehensive plan to improve resilience to coastal flooding.

Criteria for the adaptation action area may include: areas below, at, or near mean higher high water; areas which have a hydrological connection to coastal waters; or areas designated as evacuation zones for storm surge.

*“(1) “Adaptation action area” or “adaptation area” means a designation in the coastal management element of a local government's comprehensive plan which identifies one or more areas that experience coastal flooding due to extreme high tides and storm surge, and that are vulnerable to the related impacts of rising sea levels for the purpose of prioritizing funding for infrastructure needs and adaptation planning.”*

*- Florida Statute (163.3164(1))*

*“At the option of the local government, develop an adaptation action area designation for those low-lying coastal zones that are experiencing coastal flooding due to extreme high tides and storm surge and are vulnerable to the impacts of rising sea level. Local governments that adopt an adaptation action area may consider policies within the coastal management element to improve resilience to coastal flooding resulting from high-tide events, storm surge, flash floods, stormwater runoff, and related impacts of sea-level rise. Criteria for the adaptation action area may include, but need not be limited to, areas for which the land elevations are below, at, or near mean higher high water, which have a hydrologic connection to coastal waters, or which are designated as evacuation zones for storm surge.”*

*- Florida Statute (163.3177(6)(g)(10)),*

In future hazard mitigation planning initiatives, the Village should consider designating areas that are particularly susceptible to flooding and other sea level rise impacts as Adaption Action Areas. These may include areas along the water front, properties in the Tequesta Country Club neighborhood, where many properties would be at risk for flooding during a category 4 or 5 hurricane, and other areas that are within a hurricane surge area.

### **Urban Forestry**

The Village of Tequesta will benefit by embracing urban forestry policies in its residential neighborhoods and commercial areas. Urban forestry is the careful care and management of tree populations in urban settings for the purpose of improving the urban environment. Urban forestry advocates the role of trees as a critical part of the urban infrastructure. Urban foresters plant and maintain trees, support appropriate tree and forest preservation, conduct research and promote the many benefits trees provide.

Urban forests bring many environmental and economic benefits to cities. Among these are energy benefits in the form of reduced air conditioning by shading buildings, homes and roads, absorbing sunlight, reducing ultraviolet light, cooling the air, and reducing wind speed - in short improvement of the microclimate and air quality.

There are also economic benefits associated with urban trees such as increased land, property, and rental value. Well-maintained trees and landscaped business districts have been shown to encourage consumer purchases and attract increased residential, commercial and public investments. Numerous studies have shown the direct relationship between home value, public health, and street trees. In her article “City Trees and Property Values,” Kathleen L. Wolf writes that there is a home price increase between 6 to 9 percent when there is good tree cover in a neighborhood, and a 10 to 15 percent increase when there are mature trees in a high-income neighborhood.

Urban forests also improve air quality, absorb rainwater, improve biodiversity and potentially allow recycling to 20% of waste which is wood-based. Many cities today are dealing with stormwater management system issues where their existing systems can no longer hold the volume of water that falls in storms. One sustainable solution to this is planting street trees with grates underneath them to hold water. Trees and their soils work to filter runoff pollution and soil contaminants by absorbing them and processing them into less harmful substances. They also collect water in their limbs and release it back into the atmosphere over time. This makes trees a solution to stormwater runoff issues and urban heating issues.



Urban forestry can be subject to NIMBY (not in my backyard) arguments as people occasionally experience trees as a nuisance or as a cause for disputes between neighbors. Frequent citizen complaints include too much shade; leaf litter; low hanging and falling branches; undesirable seeds, pods or fruits; and bird droppings. Many of these objections can be overcome by good educational efforts and by careful selection, placement, and routine maintenance of trees. The benefits of trees in our communities far outweigh any real or perceived inconveniences.

Another area of concern is the damage to homes and buildings that can result from tree roots or falling trees. Cases of damage to building foundations from invasive roots are typically the result of improper siting of trees and buildings relative to each other. The young sapling planted by the front door today will be the giant oak of tomorrow with roots damaging walkways and



foundation. Proper education about site and species selection is critical. Falling trees often result from unstable root systems and/or severe storms. It is important understand regional soil types and the routine maintenance necessary to promote healthy root systems and to reduce the other circumstances that would cause a tree to fall (disease, rotten wood, a too-heavy crown, etc.). Nonetheless, the damage from trees remains low in proportion to the number of trees and the many direct and indirect benefits they provide.

The following should be considered when formulating codes and standards for Urban Forestry:

- Include clear and concise definitions of key terms
- Include risk assessment evaluation requirements
- Define minimum landscape standards and mitigation requirements
- Specify what type of trees are required in certain locations
- Provide incentives or penalties to developers, landscape architects, etc.
- Provide educational opportunities for the community



A number of cities in South Florida supports Urban Forestry and they also qualify as a *Tree City USA* community. The following cities are Tree Cities in the state of Florida: Boca Raton, Boynton Beach, Delray Beach, Palm Beach Gardens, Royal Palm Beach and Lantana.

The sustainability and long term quality of life of the community will benefit by including urban forestry policies and code language in the Village's Comprehensive Plan and Land Development Regulations.





## **Green Building and Sustainable Practices**

The Conservation Element is an integral component to fulfilling the green building concept. Green building standards furthermore encourage quality site design measures including clustering to allow for the preservation of the natural areas that may exist on that promote mixed use developments with multi-modal transportation opportunities. The Village of Tequesta should consider integrating green building standards into its Comprehensive Plan and Land Development Regulations, through promoting and providing incentives for energy efficient developments.

Infill development and redevelopment will play an important role in the future of Tequesta's growth and development, as discussed in the Future Land Use Element. Altogether, infill and redevelopment and mixed-use development should promote superior projects within the cities' urban landscape. Infill redevelopment should allow flexible design while maximizing the potential use of a building or site. The very nature of infill redevelopment promotes higher and best uses while discouraging sprawling development upon green space, suburban, and rural land.

Creative design and the anticipation of healthier lifestyles create superior infill redevelopment projects. The ability to live, work, and play within one's own neighborhood is vital for infill redevelopment's success. The use of energy efficient appliances, environmentally friendly materials, superior architecture, and native landscaping provide the foundation for infill redevelopment initiatives.

On-site water quality can also be significantly improved by infill redevelopment. Surface water from impervious surfaces (rooftops, sidewalks, and parking lots) currently is diverted to water retention and/or detention areas. Developers are capable of reversing the negative effects by heavily planting these areas with natural and colorful vegetation which filters water biologically. These types of treatment areas are aesthetically pleasing, cleaner, absorb cancerous heavy metals, limit algal blooms, and increase property values by the use of wetland/aquatic and upland/land plants. Infill and redevelopment can offset these types of environmental issues while providing quality urban buildings in context with their neighbors.

## **Green Roofs**

Green roofs prohibit the majority of ultraviolet radiation from penetrating the rooftop which equates to air conditioning savings and longer roof replacement periods. They also provide habitat for butterflies and birds while filtering the rooftop water and creating less strain on storm water systems. Vegetated roofs use and filter the excess water while traditional roofs typically acquire pollutants and contribute to nonpoint source pollution which ultimately goes into the Atlantic Ocean. Green roofs can be used to mitigate storm water runoff requirements while providing for an aesthetically pleasing built environment. Basic green roof systems can be installed with little or no additional engineered structural support and add about 80-150 pounds/sq. ft. for intensive green roofs while extensive green roofs add about 12-50 pounds/square feet.

Green roofs have been successful at several locations throughout Florida. The photos below include projects in Jacksonville (Breaking Ground Contracting Green Roof & Rooftop Garden); Orlando (Orlando Health MD Anderson Cancer Center Labyrinth Vegetated Roof Garden); Clermont (Honda Headquarters); and Miami (FIU College of Nursing & Health Sciences, Modesto A. Maidique Campus).



## FINAL REMARKS

Due to its location along the coast, the Village of Tequesta and its resources are vulnerable to various natural disasters. This element provides insight into the Village's coastal resources and emphasizes the importance of building and maintaining a resilient community to preserve and protect these resources and associated areas.

### Sea Level Rise

Increasing sea levels are expected to significantly challenge regional long-term planning for coastal communities in South Florida, including Tequesta. In order to minimize the threat

imposed by these challenges, it is imperative the Village take necessary steps in adaptive planning and work to develop a policy framework that is integrated into the local planning system.

Steps to take include adding goals and policies that address adaptation or sustainability issues into existing plans, ensuring consistency across all municipal operations and their guiding plans and programs, and even educating residents and visitors on the importance of the challenges posed by impacts of sea level rise, and how to work as a community to lessen the impact. These steps lay the foundation toward building a more resilient community, and together with informed public and committed elected officials, reaching the community's established goals and strategies are achievable.

Sea level rise remains a significant threat to the coastal communities in South Florida as rising sea levels are expected to significantly challenge regional long-term planning for these areas. These challenges include:

- Increased flooding and drainage problems,
- Destruction of natural resource habitats,
- Higher storms surge, increased evacuation areas and evacuation time frames,
- Increased shoreline erosion,
- Saltwater Intrusion, and
- Loss of infrastructure and existing development.

Throughout the extensive review of recent climate data and rising sea levels, the importance of adaptive planning has been abundantly clear. And while adaptation planning strategies may be developed into differently for differently effected communities, working to develop a policy framework that is integrated into the local planning system is imperative. Future steps to take include; adding goals and policies that address adaptation or sustainability issues into existing plans, developing a new "Sustainability" or similar element within the comprehensive plan, and/or ensuring consistency across all municipal operations and their guiding plans and programs.

Moreover, the following initiatives are encouraged to address these impacts and promote sustainable growth:

- Conserve, reuse, recycle
- Walk, bike, carpool, or use mass transit
- Building 'green' energy efficient buildings
- Encourage mixed land uses
- Provide incentives for business/residential responsibility
- Sustain water quality
- Limit dependence on oil
- Educate individuals on the aforementioned items

These steps lay the foundation toward building a more resilient community and together with informed public and committed elected officials, reaching the community's established goals and strategies are achievable.

### **Stormwater Management**

A number of guidelines should be incorporated as Village-wide policies to be implemented in conjunction with neighborhood contact organizations, property owners, residents, and businesses. These actions, consistent with the constraints on the Village's financial and personnel resources, should include:

- Water quality protection and improvement for discharges to the Indian River Lagoon, Loxahatchee River, and canals consistent with state water quality standards and numeric nutrient criteria
- Flood control and relief of nuisance problem areas
- Aquifer recharge to protect and replenish potable groundwater supplies and to reduce salt water intrusion
- Harvesting and reuse of stormwater
- Multi-benefit solutions for parks, roads and green area restoration.

### **Water Quality**

- Continue the water quality ambient monitoring program in the IRL for baseline purposes and trend analysis
- Increase focus on decreasing inputs of suspended materials, and nutrients from point and non-point sources
- Identify and reduce anthropogenic loadings of fecal contaminants and other pathogens
- Increase additional sanity sewer, wastewater, and stormwater retrofit projects
- Manage sediments

### **Habitat Enhancement and Restoration Program – Indian River Lagoon**

The targets within the next five years are to restore the area's natural resources including, seagrass, tidal marsh, oyster reef, artificial reef, and to protect and enhance the lagoon's existing mangrove and seagrass areas. These goals may be accomplished through enhancement, restoration and monitoring concepts, which may include the following projects:

- Restore and enhance seagrass beds, oyster habitat, emergent mangrove wetlands, coastal hammock habitat, and protective upland buffer zones.
- Add Living Shorelines to vertical seawalls to reduce wave-generated sediment resuspension and provide additional upland buffer zones

- Construct artificial reefs that provide juvenile, intermediate and adult habitats required by the life cycle of estuarine and marine dependent fish and invertebrate species
- Evaluate the status and protect sea turtles, manatees, and other endangered, threatened, and rare species, and species of special concern using the IRL.

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## **DATA & ANALYSIS**

### **CHAPTER 6: RECREATION AND OPEN SPACE ELEMENT**

#### **INTRODUCTION**

The Village of Tequesta Parks and Recreation Department is committed to providing safe, state-of-the-art park and recreation facilities to enhance the quality of life for the Village's residents and visitors. The Department offers leisure, educational, and physical activities to promote cultural, community and family fellowship.

Recreation and open spaces are vital to making the Village of Tequesta a desirable place to live, work, play, and visit. Besides their intrinsic functional value for leisure time pursuits or passive enjoyment, recreation and open spaces provide opportunities to improve the health and fitness of residents, enhance the Village's aesthetic quality, and promote resource protection and development management. For instance, the acquisition of sites required for habitat protection and stormwater management can also be used for passive or compatible active recreational purposes.

The two components of Recreation and Open Space, produce different benefits and meet different needs. The recreation component relates to recreation sites and facilities which meet the recreational needs of the Village's permanent and seasonal population, while the open space component is oriented to meeting quality of life issues and enhancing the Village's aesthetic quality. Therefore, this Recreation and Open Space Element includes guidelines for the development of recreation and open space facilities.

This chapter also provides an inventory of existing recreation and open sites and facilities, identifies applicable standards and guidelines, and assesses current and projected needs for recreation and open space. The data and analysis provide the framework for identifying and establishing specific goals, objectives, and policies to ensure that an adequate system of parks, recreational facilities, and open space is available for Village residents and visitors both now and in the future.



## EXISTING CONDITIONS AND INVENTORY

The Parks and Recreation Department oversees and manages the recreation program and park facilities of the Village of Tequesta. The Village offers a wide range of leisure, educational and physical activities and programs, such as:

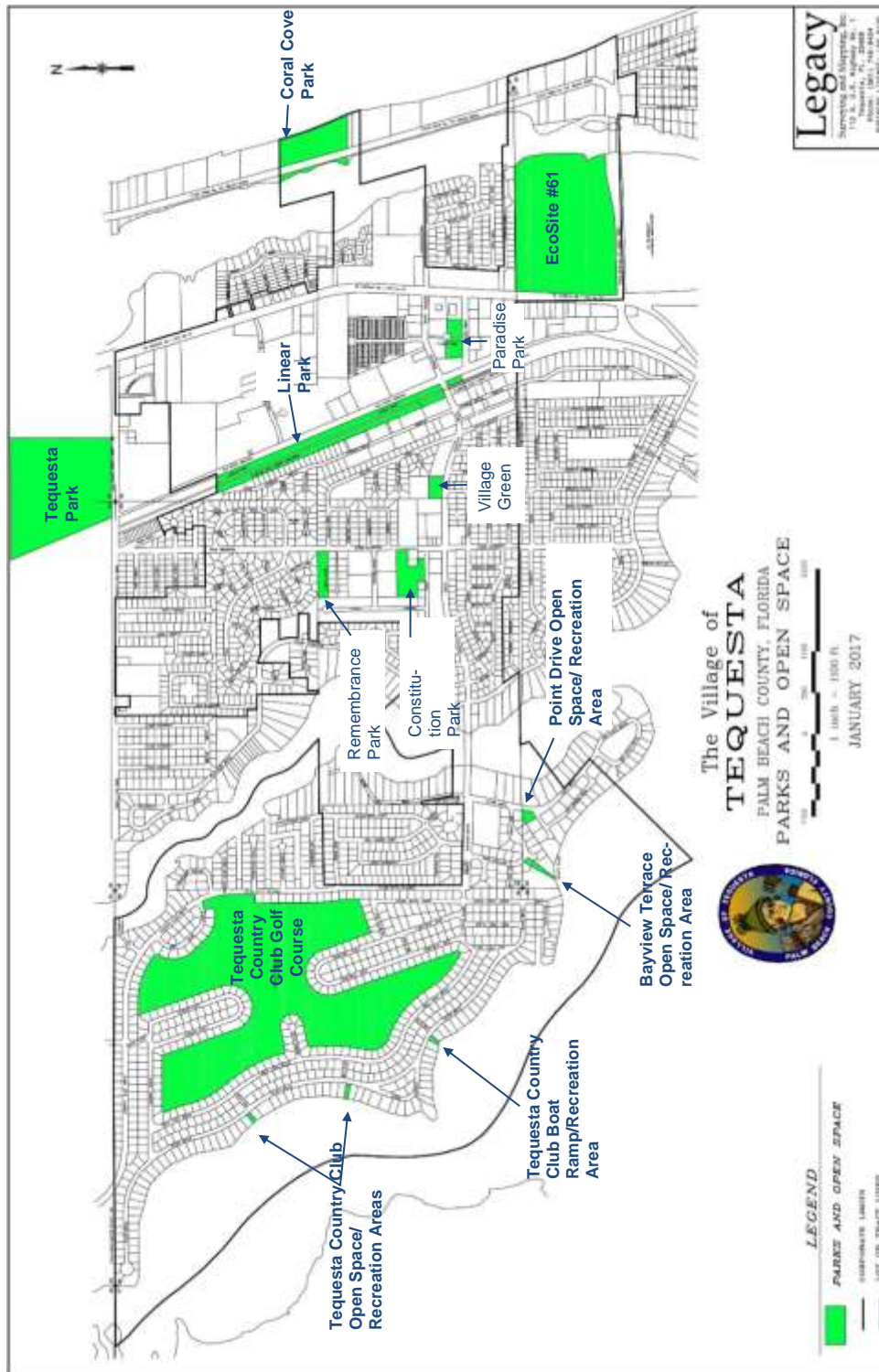
- Community Wide Special Events
- After School Programs
- Athletic Programs
- Tequesta Fest
- Movies in the Park
- Food Truck Pow Wow
- Passive and Active Parks



### Inventory of Public Recreation and Open Space Parks

The Goal of the Recreation and Open Space element of the current Comprehensive Plan is the “development of an open space system that adequately provides for the recreational needs of the Village and enhances the overall environmental characteristics of the area”. There is an array of recreation and open space opportunities available within and outside of the corporate limits of Tequesta. This section contains an inventory of the Village’s existing recreation and open space sites and facilities which provides the basis for analysis and assessment of the Village’s recreation and open space system needs and opportunities. These sites and facilities are classified according to type and function. Figure 7-1 below illustrates the location of the public parks that serve the Village population:

Figure 7-1. Public Parks and Open Space



## **Classification of Parks and Recreational Facilities**

In addition to the Village's current open space and recreation system, there are an array of recreation and open space opportunities available within and outside the corporate limits of Tequesta. That may include "mini-parks", "eco-oriented facilities" and general open space areas, in addition to neighborhood and community parks. Standards and guidelines for all existing and potential parks and recreational facilities will be analyzed in this section. Recreation areas and facilities provided by the Village today are classified as either "active" or "passive" and as "neighborhood" or "community" facilities.

"Active" facilities often require specially constructed fields, courts or other apparatus which lend themselves to a particular user-oriented activity. "Passive" recreation facilities require a resource base, either natural or man-made, with which the user interacts. Oceans, beaches, woodlands and other natural areas offer a variety of passive recreational experiences. "Neighborhood" parks are facilities that typically are located within or near residential areas, and are primarily designed to serve Village residents. "Community" facilities are designed to serve, both Tequesta residents and the non-resident population. The Village strives to maintain community and neighborhood parks and facilities to meet the current and future needs of all age groups in Tequesta.

### **Mini-Parks (Tot-lots and pocket parks)**

Mini-parks are small facilities that serve a concentrated or limited population, and when designed with a tot-lot, are geared toward toddlers. Mini-parks are designed to serve the needs of a neighborhood within a radius of up to six (6) blocks. A minimum of one half (1/2) acre for each stand-alone park is recommended. Mini-parks primarily offer passive recreation and typical facilities provided include playground areas, benches, open space, picnic tables, shade trees and landscaping.



Private mini-parks could be required within planned residential neighborhoods. Since most of the neighborhood and community parks offer the facilities typically found in mini-parks on a larger scale, the Village has not established a level of service standard based on population for this category of park. Adequate provision of mini-parks could be measured through requirements for new development and redevelopment.

### **Neighborhood Parks**

The neighborhood park is a "walk to" park generally located along streets where people can walk or bicycle without encountering heavy traffic. It serves the population of a neighborhood in a radius of up to one-half mile and generally has 2 acres for each 1,000 population.



The Village owns, leases, or has easements from other agencies for neighborhood parks. The three Village-owned parks include the Village Green, Constitution Park, and Remembrance Park. The Village Green is a one-acre passive park located adjacent to the Village Hall complex. The park is softly lighted and features walkways, benches, a fountain, and a monument honoring First Responders. Another Village-owned neighborhood park, Constitution Park, offers a variety of passive and active activities on a 3.94 acre, including playgrounds, basketball courts, nature trails, a skate park, a putt-putt course, a picnic pavilion, benches, and shade trees. Surrounded on all sides by a residential area, Remembrance Park is a small, passive neighborhood park that has not yet been fully developed. The Village should consider adding more defined park elements, such as a trail, benches, or a pavilion in order to maximize the functionality of the park to better accommodate neighborhood residents.

The Village received an easement from the FEC Railroad to utilize a portion of its right-of-way for a linear park. Now known as Linear Park, this passive park includes sidewalk facilities, landscaping, and a pergola located at the intersection of Old Dixie Highway and Village Boulevard. A majority of the remaining portion of the FEC Railroad right-of-way is reserved as open space. A small portion of the easement, south of Tequesta Drive and abutting Old Dixie Highway, is retained for Commercial use.

Aside from the five neighborhood parks mentioned above, the Village also owns various lands that serve specific neighborhoods, including an open space area and a boat ramp.

Country Club, and two recreation and open space areas in both Bayview Terrace and Point Drive neighborhood areas.



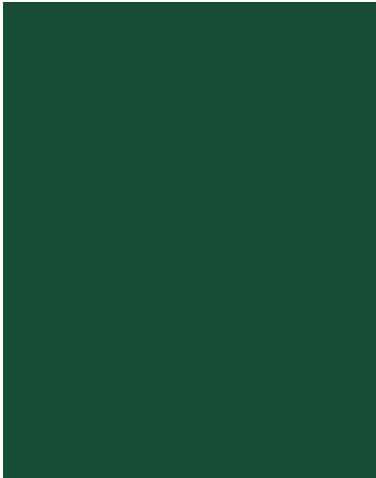




**Village Green**



**Constitution Park**







## NEIGHBORHOOD PARKS



**Linear Park**



**Remembrance Park**



## **Community Parks**

A community park is a "ride to" park located near major streets or arterials. It is designed to serve community residents within a radius of up to three miles. Multi-modal access to community parks is strongly encouraged. Multi-modal access can be enhanced by bike paths and pedestrian walkways.

Typical facilities found in community parks are designed to serve the entire family and include both passive and active recreation opportunities such as playground areas, recreation buildings, sports fields, paved multipurpose courts, picnic areas, open or free play areas, swimming pools, and landscaping. Adequate off-street parking may be needed to contain parking overflow. Just as a neighborhood park fulfills the recreation needs of a neighborhood, a community park is designed to meet the recreation needs of an entire community and generally has 2 acres for each 1,000 population.

The Village operates Tequesta Park, a 45-acre community park located outside the Village, in southern Martin County. It includes a variety of community facilities: tennis courts, basketball courts, baseball and softball fields, a multi-purpose field that can accommodate activities such as soccer or football, a walking trail, a dog park, and a picnic pavilion. This facility is leased from the State Department of Environmental Protection (FDEP). Tequesta operates the facility and directs the recreation programs at the park.



Paradise Park is the only Village-managed community park located within the Village boundaries. The Village leases this privately-owned property and utilizes as park. This centrally located, two-acre park accommodates several Village-sponsored events throughout the year. The Village may consider purchasing this property in the future.

Coral Cove Park is a County-owned and operated community park located within the corporate limits of Tequesta. This park is a 6.21-acre beachfront park located on the barrier island portion of Tequesta. Coral Cove Park was annexed into the Village in 1985. The park has 955.5 feet of beach, one mile of nature trail, a fishing site, a picnic table area, and a playground.

**Figure 7-2: Public & Private Beach Frontage**



As illustrated in the Figure 7-2, Tequesta also has public and private beach frontage along the Ocean and the Intracoastal Waterway. As indicated in Table 7-1 below, there are 3271 linear feet of public beach frontage within the Village limits, and a total of 5173 linear feet of private beach frontage.

**Table 7-1. Beach Frontage Assessment**

Beach Frontage Assessment: Village of Tequesta				
Areas	Beach Frontage	Length (L.F.)	Length (miles)	Notes
A	Private Beach	1703.1	0.32	Measured along shoreline
B	Public Beach	955.5	0.18	Measured along shoreline
	<b>Total Beach Front:</b>	<b>2658.6</b>	<b>0.50</b>	
C	Private Intracoastal	3470	0.66	Measured along shoreline
D	Public Intracoastal	2315.5	0.44	Measured along shoreline
	<b>Total Intracoastal Front:</b>	<b>5785.5</b>	<b>1.10</b>	
	Beach Access	15 access easements		
	<b>Total public frontage: (Beach &amp; Intracoastal)</b>	<b>3271</b>	<b>0.62</b>	
	<b>Total private frontage: (Beach &amp; Intracoastal)</b>	<b>5173.1</b>	<b>1.00</b>	
	<b>TOTAL FRONTAGE:</b>	<b>8444.10</b>	<b>1.60</b>	



The photos shown on the left and right depict the County's Coral Cove Park located within the Village boundaries. Selected pictures of the Village's Community Parks are shown on the next page.







**Paradise Park**

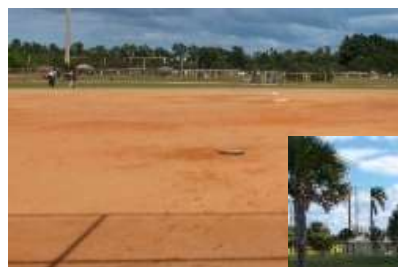


## COMMUNITY PARKS

Paradise Park and Tequesta Park are the two Village's Community Parks that provide active and passive recreational spaces.



**Tequesta Park**





## Open Space Areas

Open space is defined as any land or water surface that affords unobstructed physical movement, and is relatively free of human-made structural mass, except for structures indented to serve the use of the open space for passive recreation. Open space can be classified in two ways, as either green open space or as urban open space. Green open space may include greenways, Eco-Oriented parks, or private Golf Courses

Urban open space, on the other hand, exists principally to intersperse congested urban environments with aesthetically pleasing buffer areas, to protect natural resources, and to provide passive recreation opportunities. Urban open space may include plazas, squares, courtyards, linear parks, and also the area covered by lakes, streams and canals. These areas are typically located within built-up areas and, in some cases, may offer benches, commemorative structures, art in public places, trails, or paths.

Either type of open space can be publicly or privately owned. Since open space is a fundamental element in land classification, as well as land use planning and resource management, these areas are not considered public parks but have been included in the level of service standard calculations as part of the overall recreation and open space.

In addition to the parks identified above, there are various other public recreation and open space areas in Tequesta. Pictures of these areas and facilities are provided on page thirteen.

- a. A 50-acre natural area with trails owned by the U.S. Department of Interior, located east of U.S. Highway 1 and north of CR 707, which is the north portion of the 120-acre *Jupiter Inlet Lighthouse Outstanding Natural Area (ONA)*. This is one of three ONA's in the United States. This area includes a nature trail that winds throughout a portion of the property along the river. This site is shown in the Village's Zoning Map as Ecosite #61.

*The Jupiter Inlet Lighthouse (ONA)* is part of the Bureau of Land Management's 27-million-acre National Conservation Lands; and the only complete unit east of the Mississippi River. In close proximity to several million people, and embedded in Florida's urbanized Treasure Coast, the 120-acre site in northern Palm Beach County is so recognized for its remarkable array of natural and cultural resources. Its location at the confluence of the Loxahatchee River and Indian River Lagoon, just one and a half miles from the Atlantic Ocean, has made the site a popular and strategic site of human occupation for the past 5,000 years.



The ONA designation was established by Congress primarily to protect unique scenic, scientific, educational, and recreational values. The Jupiter Inlet Lighthouse ONA is one of three sites afforded this designation. Congress established Oregon's Yaquina Head in 1980; the Jupiter Inlet Lighthouse and the Piedras Blancas Light Station in California were established in May of 2008. Besides visiting the historic Jupiter Inlet Lighthouse, the ONA offers a variety of other visitor experiences. The area includes a hardened trail and boardwalk through native and restored Florida coastal habitats, and exciting interpretive programs regarding the site's unique military history and its important role in World War II.

- b. There are three open space easements established in the Tequesta Country Club area off of River Drive, abutting the Northwest Fork of the Loxahatchee River. One of these easements includes a dock and boat ramp, while the other easements provide access to the River for passive recreational use.
- c. In addition, an open space area in the Bayview Terrace and Shady Lane neighborhood provides a passive recreation space for residents, with a paved walking trail that leads to the waterfront. Another open space area along Point Drive, also located in the Shady Lane neighborhood, is officially titled to the Village. This greenspace contains a large Banyan Tree and serves as a passive recreation area for the neighborhood residents.
- d. There are four additional parcels in Tequesta, identified as parcels B, C and Russell Road, which are retained as open space and used for drainage retention/detention purposes. In addition, a parcel on Cypress Drive North, also used for drainage and retention/detention purposes, which was dedicated to the Village since the last EAR.



*Coral Cove Park*



**Eco Site #61**



**Bayview Terrace & Shady Lane Open Space/ Recreation Area**

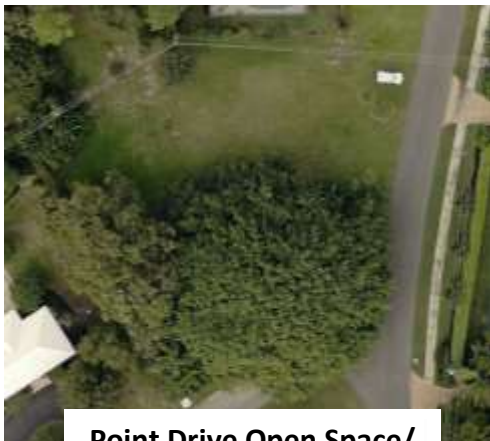
## OPEN SPACE PARK & RECREATION AREAS



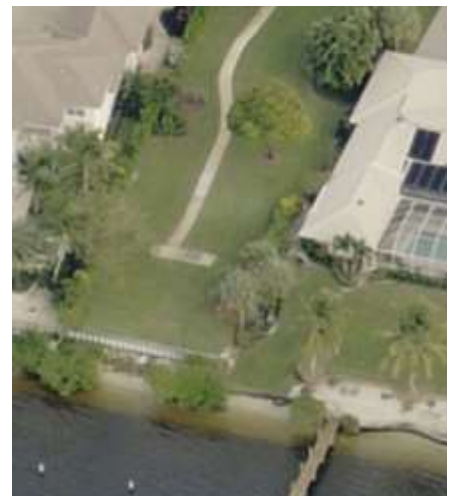
**Tequesta Country Club Boat Ramp**



**Tequesta Country Club Neighborhood Open Space/ Recreation Areas**



**Point Drive Open Space/ Recreation Area**





## **Recreation and Open Space Inventory**

### **Beach Parks and Beach Access**

Beach parks and access areas are natural-resource based or open space lands. These are lands that are valuable to the community for a number of reasons, all of which should be used as criteria in the evaluation of potential beach access areas.



The majority of beaches and beach parks within the Village of Tequesta are owned and managed by other entities, as discussed ahead in this document. Coral Cove Park with access to the Ocean and the Intracoastal Waterway is owned and managed by Palm Beach County. There are several private beaches and access areas to the Loxahatchee River and the Intracoastal Waterway in the Tequesta Country Club.

### **Eco-Oriented Park**

The Village recognizes the importance of protecting the diverse ecosystem, while embracing the natural resources available to our residents. Eco-oriented parks provide residents enjoyment and awareness of our natural environment and shall utilize eco-friendly design to minimize the impact to the environment. These sites are unique in function and location; therefore, these sites vary widely in size and number of residents served. The major natural area within Village limits is known as “Ecosite #61”, which is actually the northern portion of the federally owned and managed “*Jupiter Inlet Lighthouse Outstanding Natural Area (ONA)*”. For those reasons, the Village has not established a level of service standard based on population for this category of park.

The most important aspect of an eco-oriented park is its relationship to the natural environment, thus providing awareness to our residents about our natural environment. Eco-oriented parks may include recreation activities (such as kayak rental facilities, hiking and biking trails and learning centers), so long as the impacts on the surrounding eco-system are limited.







## Inventory and Level of Service

Because of the limited amount of land available for future development in Tequesta, the opportunity for expansion of recreational and open space lands is limited. Table 7-2 below lists the existing Village and County-owned recreation and open space parks in Tequesta, which are grouped according to type of park or activity area.

**Table 7-2. Existing Inventory**

INVENTORY (Classification Area/Activity)	EXISTING (Acres)
<b>NEIGHBORHOOD PARKS</b>	
Constitution Park	3.94
Village Green Park	1.50
Remembrance Park	1.76
Linear Park	7.12
Point Drive Open Space/Recreation Area (Banyan Tree)	.46
<i>Total</i>	<b>14.78</b>
<b>COMMUNITY PARKS</b>	
Tequesta Park	45.00
Paradise Park	2.21
<i>Total</i>	<b>47.21</b>



*Village Green Park*

### **Level of Service Analysis**

The following tables analyze current demand and available capacity, comparing current level of service standards for existing and projected population. According to the Village Comprehensive Plan the Village adopted a Level-of-Service (LOS) standard of two (2) acres of park space for every 1,000 population for both community and neighborhood parks.

The demand and capacity for community and neighborhood parks and other activity areas is calculated in Table 7-3 below, which shows the Village's current park area/activity demand and capacity according to a total population estimate of 6,599 (US Census Quickfacts dated July 1, 2015 and NZ Consultants).

**Table 7- 3. Demand\* and Capacity for Current LOS Standards**

Park Classification	Existing Inventory* (acres)	LOS Standards (acres/population)	2015 Population	Demand (acres)	Surplus (acres)
Community Parks	47.21	2/1,000	6,599	13.19	34.02
Neighborhood Park	14.78	2/1,000	6,599	13.19	1.59

*\*Supply based on the Village's direct ownership and or management of parks. County and Federal parks are not included.*

Table 7-4 depicts the demand and capacity for projected 2040 population. While current LOS standards are equivalent to Palm Beach County's, this update to the Comprehensive Plan provides an opportunity to assess these standards and propose standards that are more realistic for Tequesta's population. These changes will enable the Village to accurately assess its strengths and weaknesses to properly accommodate future growth demands for parks and open space.

**Table 7-4. Demand\* and Capacity for Proposed LOS Standards**

Park Classification	Existing Inventory* (acres)	LOS Standards (unit/population)	2040 Population	Demand (acres)	Surplus (acres)
Community Parks	47.21	2/1,000	7,128	14.3	32.91
Neighborhood Parks	14.78	2/1,000	7,128	14.3	0.48

*\*Supply based on the Village's direct ownership and or management of parks. County and Federal parks are not included.*

Current and future demand are based on population estimates discussed in detail in the overall Introduction to the Data & Analysis documents. Existing supply of Village-owned and managed parks, continue to show a sufficient surplus of park area, particularly for community parks.

## **Level of Service Conclusions and Recommendations**

As previously discussed, parks and open spaces owned and managed by other entities, were not included in the park LOS analysis. Specifically, the open space area known as Eco Site No. 61, which corresponds to the approx. 50-acre north portion of the federally owned and managed 120-acre *Jupiter Inlet Lighthouse Outstanding Natural Area (ONA)*, which is located within the Village boundaries. This federally-owned open space area provides a walking trail and beach frontage along the Intracoastal Waterway, which is used by Village residents and non-residents, including tourists.

Likewise, Coral Cove Park is a County-owned and operated community park located within the corporate limits of Tequesta. This park is a 6.21-acre beachfront park located on the barrier island portion of Village. The park has 955.5 feet of beach, one mile of nature trail, a fishing site, a picnic table area, and a playground, and is used by Village residents and non-residents as well.

There are also private beach front areas along the ocean and the Intracoastal Waterway, which do not provide public access.

The Village may consider the feasibility of utilizing portions of the Community Parks to develop additional neighborhood parks, given their surplus of 32.91 acres, if future changes in demand require the construction of additional neighborhood parks. The Village could also explore potential small sites for the construction of mini-parks (tot-lots and pocket parks) in the future, with the purpose of enhancing the quality of life of residents.

## **Private Park and Recreation Facilities**

While the Village provides residents and visitors with abundant recreational opportunities, the private sector also has provides numerous recreational facilities. The private sector offers an array of recreational opportunities in certain areas for the population it serves. Private developments often include recreational amenities, although these facilities are typically not available to the general public.

The Village's primary private recreational facility is the 120-acre Tequesta Country Club which offers an 18-hole golf course, tennis and other club activities; however, it is only available for use by members of the Club.





In addition, several health and fitness clubs located throughout the Village are available to the public with memberships open on a monthly fee basis.

### **Commitment to Greenways, Blueways and Preserving Natural Areas**

The State of Florida is encouraging the creation and strengthening its greenway and blueway trails as nature-based tourist attractions and economic development engine for local governments. This trend could offer many opportunities for the Village, and this section will focus on current initiatives and upcoming challenges regarding these two forms of recreation and open space initiatives.



### **Greenways & Trails**

By definition, greenways are “corridors of undeveloped land preserved for recreational use or environmental protection” (Merriam-Webster). Greenways are designed to provide connectivity between parks, nature reserves, cultural and historic sites, and waterfront areas as an alternative means of transportation for bicyclists, pedestrians, and others. Additionally, greenways and trail systems can connect to state and regional trail systems.

The Palm Beach Metropolitan Planning Organization (MPO) has taken major steps to facilitate the coordination between local, state, and regional trail systems in Palm Beach County and surrounding areas. Developed by the Palm Beach MPO with assistance from the Treasure Coast Regional Planning Council, the Southeast Florida Regional Greenways and Trails Plan, often referred to as “The Plan,” intends to serve as a conceptual guideline for the Palm Beach MPO and others in planning efforts to develop an integrated network of non-motorized connections throughout the region. As discussed in the Plan, greenways and trails are a growing part of multi-modal transportation networks across Florida and the U.S. This Plan provides a desired vision for a greenways and trails system in Palm Beach County with consideration of the Southeast Florida regional context (from Indian River County to Monroe County).

As indicated in the Southeast Florida Regional Greenways and Trails Plan, the Palm Beach MPO encourages local governments and agencies to adopt this Plan, in order to collaborate on the implementation of regional facilities that extend from Palm Beach County into adjacent counties, which can produce multi-county facilities and provide an enhanced return on these investments for the traveling public. Accordingly, Tequesta's location in the northeast corner of Palm Beach County, allows it to serve as the gateway between Palm Beach and Martin Counties and the surrounding areas. As shown in Figure 7-3, the Plan proposes a paved multi-use trail that runs north-south, adjacent to U.S. Highway 1 (US-1) in Tequesta. This corridor will connect to other trails systems located north and south of the Village.

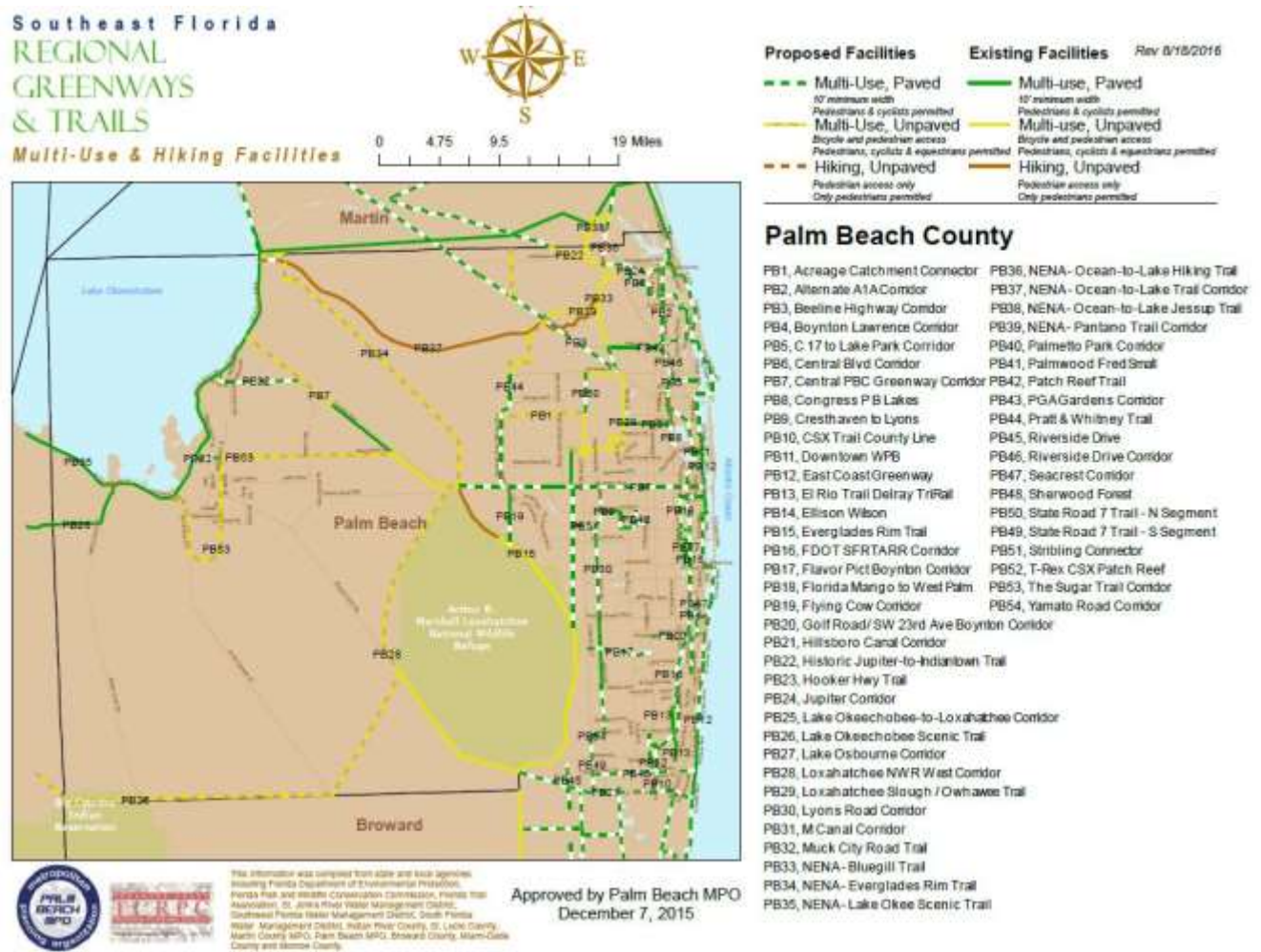
This Plan provides an excellent guideline for Tequesta to connect to the existing county and regional greenways and trails system. Developing a local system of its own will enhance the Villages' connectivity, circulation, recreation opportunities, and potential economic development. Residents living in the western area of the Village could utilize greenway corridors to safely cross the Village to access the parks and beach access areas on the eastern side. Similarly, an organized, developed trail system would enable residents to walk or bike to restaurants, businesses, schools, churches, and park and open space areas. Such a greenway and trail system would offer an alternative form of transportation for residents and visitors alike, not only within the Village, but the County and region, as well.

With regard to economic benefits, the Plan indicates that trail development stimulates local economies, increases local tax revenue, attracts visitors seeking new recreational opportunities and revitalizes business districts. In addition, residential and commercial property values located near the trail system or park areas are likely to rise, as multi-use trails are considered critical amenities for home buyers and business owners. Moreover, communities that offer trails and open space are more attractive to businesses and corporations when choosing where to locate or expand (Southeast Florida Regional Greenways and Trails Plan).

Tequesta's adoption of the Southeast Florida Regional Greenways and Trails Plan would not only provide a safe transportation network for pedestrians, bicyclists, and others, but it would also provide environmental, health, and economic benefits for the Village and its residents.



**Figure 7-3. Southeast Florida Regional Greenways and Trails Plan**



## Blueway Trails

The blueway trails are intended for paddling activity and guest's leisure and entertainment could be part of the Village's economic development engine to attract tourist and visitors throughout the year. The Village should further support its existing blueways (Loxahatchee River, Intracoastal Waterway and the Atlantic Ocean) by considering joining the Florida Paddling Trails Association that promotes communities to participate in the Florida Paddling Trails Blueway Community Program. Since Tequesta offers basic tourism amenities, then FPTA can help to market the Village's resources to outdoor recreation enthusiasts as a nature-based tourism destination, resulting in local economic stimulus and increased public awareness of natural Florida.



For a community to apply for Florida Blueway Community status, key criteria include:



- Proximity to a Florida paddling trail or Blueway
- Availability of accommodations, from hotels to B&Bs to campgrounds
- Availability of restaurants and places to eat
- Additional outdoor recreation opportunities such as hiking and biking trails, birding, boating, fishing, beaches or traditional visitor draws such as historic districts, museums, shopping and major attractions

The process of being designated a Blueway Community begins by bringing together local community leaders, tourism affiliates, business leaders, and members of the Florida Paddling Trails Association to discuss the communities' nature-based tourism ideas and needs.

By working together on promotional products, educational resources and special events, FPTA and the Blueway Community can increase the ability to apply for



targeted grants to assist in the community's efforts towards nature-based tourism development, economic development, and trail related infrastructure development. FPTA provide the know-how and volunteer support, and the Village provides the destination and community support.

Based on the above information, the Village should consider conducting an analysis in terms of the Village's role and participation on the South East Regional Blueway Trails and how this initiative becomes an opportunity for economic development as nature-based tourist attraction.

### **Church and Recreation Facilities**

Some churches and youth centers provide neighborhood-oriented recreation facilities and programs in the Village. Many of the churches provide playgrounds and offer recreational programs on a limited basis for their congregations.

### **Regional Public Park and Recreation Facilities**

There are numerous public facilities outside the Village of Tequesta which offer a variety of recreational opportunities to Tequesta residents as well as the general public. Jonathan Dickinson State Park and Blowing Rocks Preserve are located just north of the Village, in southern Martin County. In the Jupiter-Tequesta area, recreation and open space facilities include Jupiter Beach Park, DuBois Park, Carlin Park, Burt Reynolds Park, Jupiter Island Park and Lighthouse Park,



all within close proximity to each other. To the south, in the Juno Beach area, park and recreation facilities include Loggerhead Park, Juno Park, Juno Beach Park, and Bert Winters Park. Even further south, Phil Foster Park and Ocean Reef Park also offer a variety of recreational opportunities. There are also a number of public and private golf courses in close proximity to Tequesta.

### **Village Recreation Department and Funding**

The Village of Tequesta Parks and Recreation Department is responsible for providing recreational services and programs and operating the Village's recreational facilities. The Village encourages citizen participation and continually assesses citizen needs and develops its recreation programs accordingly. The Village should seek alternative means to expand facilities to accommodate the needs of the community.

### **Adapting Open Space Areas for Climate Resiliency**

In order to sustain and develop a healthy environment, it is important that municipalities ensure necessary actions are taken to reduce the negative impact of environmental changes. Maintaining and preserving parks, open space, and natural areas enhances the Village's green infrastructure system, an important element in developing the community's climate resiliency. A community's level of climate resiliency is not only important for a healthy environment, but also for economic sustainability.

Tequesta should develop and maintain a green infrastructure system to protect the community against inevitable negative environmental impacts. Such a system would strengthen the Village's resiliency and economic stability by providing natural flood management, lowering building energy demands, lowering water management costs, and protecting coastal areas. In addition, the Village should encourage developers to incorporate green infrastructure practices into their site designs. [See the Environmental Protection Agency's (EPA) website].

### **FINAL REMARKS**

With the modest population growth projected for Tequesta in the 5- and 10-Year planning periods, the combination of Village-owned neighborhood and community parks, County-owned and operated Coral Cove Park, Tequesta Park, other public recreation and open space facilities available nearby for use of Village residents, and other facilities provided by churches and the private sector provides recreation and open space facilities adequate to meet future needs of the community.



However, there are several considerations regarding recreation and open space facilities that the Village should explore in order to further enhance its overall parks and recreation system. Such considerations include, but are not limited to:

1. *Adding more defined park elements:*  
Adding defined park elements such as trails, benches, or a pavilion, help to maximize the functionality of the park so that it can better accommodate neighborhood residents.
2. *Purchasing property for public recreation areas:*  
Purchasing property for public recreation purposes will enable the Village to enhance its already adequate park and recreation system, while also allowing the Village more control over these properties.
3. *Developing additional neighborhood parks & pocket parks:*  
The Village may consider the feasibility of utilizing portions of the Community Parks to develop additional neighborhood parks, given their surplus of 32.91 acres, if future changes in demand require the construction of additional neighborhood parks. The Village could also explore potential small sites for the construction of mini-parks (tot-lots and pocket parks) in the future, with the purpose of enhancing the quality of life of residents.
4. *Adopting the Southeast Florida Regional Greenways and Trails Plan:*  
Adopting this plan would not only provide a safe transportation network for pedestrians, bicyclists, and others, but it would also provide environmental, health, and economic benefits for the Village and its residents.
5. *Participation in the South East Regional Blueway Trails initiative:*  
With its proximity to three major water bodies in the area, the Village should explore future participation in this initiative for economic development opportunities as a nature-based tourist attraction.

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## **DATA & ANALYSIS**

### **CHAPTER 7: INTERGOVERNMENTAL COORDINATION ELEMENT**

#### **INTRODUCTION**

Chapter 163.3177, Florida Statutes (F.S.), requires that the various comprehensive plans of local governments within the State of Florida be coordinated between the state and various public agencies. This coordination would minimize incompatible endeavors, and promote cooperation and efficiency. This statute requires each comprehensive plan to include a formal Intergovernmental Coordination Element, or chapter. It is the purpose of the Intergovernmental Coordination Element to "identify and resolve incompatible goals, objectives, policies and development proposed in local government comprehensive plans and to determine and respond to the needs for coordination processes and procedures" with Palm Beach County, adjacent municipalities and various quasi-public, private, regional and state agencies which provide services to the Village of Tequesta's residents.

The primary purpose of this element is to formulate improved coordination processes among local governments, and with local, regional, state and federal agencies that make direct or indirect decisions influencing land use decisions in the Village of Tequesta. The establishment, maintenance and utilization of channels of communication between governmental bodies, for information exchange and problem resolution is basic to the planning process. This element will establish the necessary relationships and provide principles and guidelines for use in effective coordination between the Village of Tequesta and governmental bodies with which the Village shares common boundaries and/or common planning interests.

The Village of Tequesta Comprehensive Plan, pursuant to State planning law, must be consistent with the State Comprehensive Plan, which states, "the State Comprehensive Plan should be reviewed to determine if it implies a need for intergovernmental coordination at the local level." At the time of the last EAR amendment and subsequent amendments, it was determined that the Village Comprehensive Plan was consistent with the State Comprehensive Plan. Since there has been no changes to the State Comprehensive Plan that affects Tequesta, the Village of Tequesta Comprehensive Plan is still consistent with the State plan.

Also, pursuant to State planning law, the Village's Comprehensive Plan must be consistent with the regional plan of its area. The Village of Tequesta is located within the Treasure Coast Regional Planning Council (TCRPC) jurisdiction and must consider regional goals and objectives during the land development decision-making process. At the time of the last EAR and subsequent amendments, it was determined that the Village of Tequesta Comprehensive Plan was consistent the TCRPC regional plan. Since there have not been any changes to the TCRPC Strategic Regional Policy Plan that affects Tequesta, the Village's Plan is still consistent with the regional plan.

According to Section 163.3177(6)(h), Florida Statutes, the Intergovernmental Coordination Element must show relationships and provide guidelines to be used in coordinating the Village's

Comprehensive Plan with the comprehensive plans of adjacent municipalities and, the plans of school boards and other units of local government providing services but not having regulatory authority over the use of land, and the plans of regional agencies and the state.

## EXISTING CONDITIONS

The Village of Tequesta operates a Council-Manager form of government. Authority is vested in an elected governing body of the Village consisting of a five member Village Council responsible for enacting ordinances, resolutions and regulations governing the Village, adopting budgets, determining policies, as well as appointing the members of various advisory boards and the Village Manager. The Village Manager executes the laws and administers the government while also tending to the day-to-day affairs of the Village.



The Village is one of 39 independent municipalities within Palm Beach County. In addition to portions of unincorporated Palm Beach County, the Village is surrounded by two other municipalities including: Town of Jupiter to the south, Martin County to the north. Tequesta is largely surrounded by bodies of water, including the Atlantic Ocean, Loxahatchee River, and Indian River.



When appropriate, the Village of Tequesta elected and appointed officials and staff interact and coordinate with the county and the municipalities regarding various issues of mutual concern. In addition, there are other governmental jurisdictions which interact with the Village. Federal, state, regional, and local agencies have legislative authority to carry out various activities in the Village. These agency functions may be regulatory, jurisdictional, or advisory. These agencies are involved at different levels and are divided into primary agencies and other agencies and jurisdictions.

Many formal and informal networks of information and coordination currently exist between the Village of Tequesta and other governmental units and agencies. The Village will continue to participate in and cooperate with the Intergovernmental Plan Amendment Review Committee (IPARC) for the sharing of its comprehensive plan goals, objectives and policies. These units and agencies often participate in some phase of planning involving land use and/or provision of services necessitating coordination with the Village. For example, primary agencies are those



governmental bodies having jurisdiction and responsibilities within the Village limits that provide services or permitting affecting land development or land dependent development.

The following table provides a list of various local, regional, and State governmental units or agencies identified as interacting with the Village. Many of these are multifunctional with continually changing responsibilities.

**Table 8-1: Federal, State, Regional, County, and Local Agencies**

AGENCY TYPE	AGENCY NAME
Federal	U.S. Army Corps of Engineers (USACOE)
	U.S. Fish and Wildlife Service (FWS)
State	Florida Department of Transportation (FDOT)
	Florida Department of Environmental Protection (FDEP)
	Florida Fish and Wildlife Conservation Commission (FWC)
Regional	Treasure Coast Regional Planning Council (TCRPC)
	South Florida Water Management District (SFWMD)
	Metropolitan Planning Organization (MPO)
	Intergovernmental Plan Amendment Review Committee (IPARC)
	Loxahatchee River District (LRD)
Palm Beach County	Palm Beach County (PBC)
	Palm Beach County Public Safety
	Palm Beach County Environmental Resources Management (ERM)
	Palm Beach County Solid Waste Authority
	Palm Beach County Property Appraiser (PAPA)
Local	Village of Tequesta Water Utilities

### **Federal Agencies**

*U.S. Army Corps of Engineers (COE):* The COE is responsible for maintenance of the Intracoastal Waterway including regulating construction, dredging, and filling in navigable waters and alteration of estuarine wetlands.

*U.S. Fish and Wildlife Service (FWS):* The FWS, along with the Florida Fish and Wildlife Conservation Commission, is involved in the protection and preservation of wildlife and endangered species. Of importance to the Village, this agency approves habitat conservation plans for marine turtles, Florida Scrub Jays, and other managed species, while also overseeing the maintenance of these plans.

### **State Agencies**

*Florida Department of Transportation (FDOT):* The Village's transportation system is coordinated with Federal Department of Transportation, FDOT, County, and other

municipalities through the Palm Beach Metropolitan Planning Organization (MPO), which is discussed further under the Regional Agencies sub-title. Countywide transportation planning is coordinated by the Palm Beach County MPO, which maintains agreements for transportation planning with FDOT, the county, and all municipalities in the County.

In addition to its responsibilities in the regional transportation planning process, FDOT maintains and constructs state roads and provides fiscal assistance in the construction of major road and airport facilities.

The FDOT also issues permits for drainage, median and driveway cuts, and sidewalks in FDOT rights-of-way. For development projects, those FDOT permits must be issued before a building permit is issued.

*Florida Department of Environmental Protection (FDEP):* The FDEP is responsible for regulating and issuing permits for development within the coastal construction control line, dredging and fill, construction of docks and other structures over sovereign state waters, air quality, wells, and wetlands under five acres in area, and beach stabilization/re-nourishment.

*Florida Fish and Wildlife Conservation Commission (FWC):* This commission is responsible for protecting the state's wildlife resources through issuance of hunting and fishing licenses and permits for protected and managed species such as the gopher tortoise, manatee, sea turtles, and other species.

### **Regional Agencies**

*Treasure Coast Regional Planning Council (TCRPC):* TCRPC is a not-for-profit organization created by and for local governments to provide planning and technical assistance services and assist in carrying out Florida's growth management programs. It was established in 1976 through an interlocal agreement between Indian River, St. Lucie, Martin, and Palm Beach counties. Membership includes all four counties and 50 municipalities. Regional planning councils are recognized as Florida's only multipurpose regional entity in a position to plan for and coordinate intergovernmental solutions to growth-related problems on greater-than-local issues, provide technical assistance to local governments, and meet other needs of its communities. Chapter 186.502 (4) Florida Statutes.

The responsibilities of the Treasure Coast Regional Planning Council are to ensure that future growth within the region occurs in a manner consistent with state and regional planning objectives and that a high quality of life be maintained. For implementation of plans and programs which address regional issues and problems, the council acts as an information clearinghouse and an intergovernmental data source, conducts research for the purpose of developing and maintaining regional goals, objectives, and policies, and assists in the implementation of local, state, and federal programs. To guide its policy decisions the TCPRC

developed a Strategic Regional Policy Plan. According to state laws, local comprehensive plans must be consistent with the goals, objectives and policies of the Regional Plan.

*South Florida Water Management District (SFWMD):* The South Florida Water Management District is a regional governmental agency that manages the water resources in the southeastern part of the state. Created in 1949, the agency is responsible for managing and protecting water resources of South Florida by balancing and improving flood control, water supply, water quality and natural systems. This special taxing district has the power to collect property taxes and other sources such as state appropriations; federal and local revenue; licenses; and permits for the operation and maintenance of drainage facilities.

The Florida Legislature established the South Florida Water Management District to manage and protect water resources in our region. The District's work fits broadly into four categories: flood control, water supply planning, water quality improvement, and ecosystem restoration. The types of permits issued by this agency are listed below:

- Environmental Resource Permits
- Consumptive Water Use Permits
- Well Construction Permits
- Everglades Works of the District (EWOD) Permits
- Right of Way (ROW) Permits
- Key Permit Access

The FDEP and water management districts issue a variety of permits to manage and protect Florida's water resources. These resources include wetlands, rivers, streams, lakes, ponds, estuaries, coastal systems, springs, groundwater and surface water supplies.

Authorizations may be needed for activities including construction or abandonment of wells and systems, large volume water usage, development or new construction, stormwater management and wastewater discharges and activities in, on or near wetlands and other water resources.

*Palm Beach Metropolitan Planning Organization (MPO):* The Village of Tequesta is a member of the Palm Beach MPO, which plans, prioritizes, and funds transportation projects and programs. Every five years, the MPO updates a Long-Range Transportation Plan (LRTP) that forecasts transportation demands and identifies cost-feasible projects for the next 25 years. The MPO then annually adopts a 5-year funding program that allocates federal and state transportation dollars to the projects in the LRTP that are most important to the MPO.

The MPO is responsible for transportation planning in Palm Beach County, Florida. Each urban area in the United States is part of an MPO which acts as a liaison between local communities, their citizens, and the state and federal departments of transportation (DOTs). MPOs currently operate under the FAST Act (Fixing America's Surface Transportation).

Below is a list of the goals which guide the MPOs' efforts:

1. Provide an efficient and reliable vehicular transportation system;
2. Prioritize an efficient and interconnected mass transit system;
3. Prioritize a safe and convenient non-motorized transportation network;
4. Maximize the efficient movement of freight through the region; and
5. Preserve and enhance social and environmental resources.

The Palm Beach MPO maintains relations with various federal, state, regional, and local agencies, which include, the U.S. Department of Transportation (USDOT), Federal Highway Administration (FHWA), Federal Transit Administration (FTA), Florida Department of Transportation (FDOT), Southeast Florida Transportation Council (SEFTC), Treasure Coast Regional Planning Council (TCRPC), South Florida Regional Transportation Authority (SFRTA), and Palm Beach County (PBC).

*Intergovernmental Plan Amendment Review Committee (IPARC):* In order to establish a countywide Comprehensive Plan Amendment Coordinated Review process in Palm Beach County, the Intergovernmental Plan Amendment Review Committee (IPARC) was formed. A process was developed that is designed to provide coordination of proposed plan amendments, cooperation between affected local governments and service providers, and opportunities to resolve potential disputes only within the Plan Amendment Process with the least amount of infringement upon existing processes, without undue processing delays and without the necessity of significant staffing or consultant costs. Specifically, the Comprehensive Plan Amendment Coordinated Review Process will accomplish the following:

1. Proposed plan amendments shall have sufficient distribution and dissemination to ensure that initial transmittal and final approval will not occur without adequate notice to local governments and service providers who may be adversely affected by the action.
2. An avenue for discussion and evaluation of the proposed plan amendments is created so that the governing body is aware of objections, the basis for them, and the reasonableness of the objection.
3. An opportunity is created for conflict resolution of an item which, if approved, may result in a potential problem for another local government or service provider.
4. The comprehensive plan amendment coordinated review process does not diminish or transfer existing authority with respect to planning and implementation decisions of the participants.

The Village entered into interlocal agreement with other municipalities, the County, special districts and service providers to assure mutual coordination among entities in the comprehensive planning process. IPARC oversees two programs, including participation in the "Comprehensive Plan Amendment Interlocal Agreement", and the "Multi-Jurisdictional Issues Coordination Forum Interlocal Agreement".

The Village entered into the Comprehensive Plan Amendment Interlocal Agreement in 2003. Under this agreement, it is the purpose of IPARC to review proposed amendments to



comprehensive plans of adjacent local governments and the plans of other units of local government providing services, but not having regulatory authority over the use of land. The Village shall continue to participate in this Agreement.

In 2003, the Village is also entered into the Multi-Jurisdictional Issues Coordination Forum Interlocal Agreement. The purpose of this Agreement is for cities, the County, SFWMD and special districts to participate in a formalized effort to create a multi-jurisdictional issues forum which facilitates the identification, and possible resolution, of Countywide issues by providing a vehicle for consensus building through the joint research of issues and debate on same.

*Loxahatchee River District (LRD):* Formerly known as the Loxahatchee River Environmental Control District (ENCON), the Loxahatchee River District is an Independent Special District created by the Florida Legislature in 1971. It is governed by a five-member publicly elected Governing Board. The LRD operates an award-winning facility that collects wastewater from the community and recycles it for irrigation needs, preserving fresh water supplies for the environment. By engaging the public with relevant and compelling environmental education opportunities, such as the River Center and Busch Wildlife Sanctuary, this agency fosters stewardship among residents and visitors. As the leading authority on the Loxahatchee River, it also spearheads ongoing water quality studies and collaborate on river restoration projects.

Within the Village, the LRD owns, operates, and maintains the sanitary sewer system service, and also provides wastewater collection, transmission, treatment, and disposal services.

### **Palm Beach County Agencies**

*Palm Beach County (PBC):* The Village is a participant in the County's road concurrency process with the County serving as the administrator of the process. All proposed projects that require a traffic impact study are submitted to the County for concurrency purposes. The County maintains certain roads, drainage systems and rights-of-way under its jurisdiction within the Village limits.

There are several existing committees that have representatives from the Village, County, and the other municipalities. Additionally, the Village supports the efforts of many of these entities. These include, but are not limited to the following: the Metropolitan Planning Organization, the Economic Development Council, the Beach and Shores Preservation Advisory Committee, the Palm Beach National Lagoon Estuary Program, the Local Mitigation Strategy Working Group.

*Palm Beach County Public Safety:* Palm Beach County Public Safety Department coordinates and dispatches Fire and Emergency Medical Services, in response to fire, flood, and natural disasters. The Department of Public Safety's Division of Emergency Management seeks to minimize the impact of emergencies and disasters to our community through education, planning, and response by coordinating information and resources. In addition, this Division is responsible for requisitioning equipment and supplies that support daily and disaster operations, maintaining

equipment and facilities for Palm Beach County's Division of Emergency Management, and coordinating points of distribution and logistics staging areas.

**Palm Beach County Environmental Resources Management (ERM):** ERM administers a range of environmental programs designed to protect, preserve, and enhance Palm Beach County's natural resources, both on land and water. ERM programs help assist in the following areas including fresh drinking water, unpolluted waterways, a large tree canopy, and controlling mosquito populations, providing for outdoor experiences to snorkel and dive, visit sandy beaches, fresh or saltwater fish, kayak waterways, hike in the woods all while viewing wildlife in their natural habitat. From Lake Okeechobee to the Atlantic Ocean, ERM's programs cover the County.

**Palm Beach County Solid Waste Authority:** The Solid Waste Authority of Palm Beach County (SWA) is the governmental agency responsible for providing an economical and environmentally conscious Integrated Solid Waste Management System for Palm Beach County, Florida. The SWA provides solid waste disposal and recycling services and programs to residents and businesses throughout the County. The agency engages in processing permit applications for new facilities and ensuring that existing facilities are operated in conformance with permit requirements and in compliance with water quality objectives.

### **Local Agencies**

**Village of Tequesta Water Utilities Department:** Since 1968, the Village has owned and operated a central potable water system, that's serves residents and businesses within its service area boundaries for the withdrawal, treatment, and distribution of potable water. The service area boundary extends beyond the Village limits and encompasses over 2,500 acres. Aside from providing service to residents, businesses, and other uses located within the Village, the water system also serves portions of unincorporated Palm Beach County, north of the Loxahatchee River and south of the Martin County line; a portion of southern Martin County, stretching north to Jonathan Dickinson Park, including Jupiter Hills, Rolling Hills, and a part of southern Jupiter Island; and the entire Town of Jupiter Inlet Colony, the peninsula lying adjacent to the Intracoastal Waterway, Jupiter Inlet, and the Atlantic Ocean.

### **Agencies Involved with Land Development**

At the local level, the Village coordinates with several state agencies with respect to site plan review and permitting. Through the permitting process, an applicant must secure appropriate permits from applicable federal and state review agencies or obtain an exemption letter.

As part of its natural resource protection regulations, the Village closely coordinates with the following agencies: Florida Department of Environmental Protection (FDEP), Army Corps of Engineers (ACOE), South Florida Water Management District (SFWMD), Florida Fish and Wildlife Conservation Commission, U.S. Fish and Wildlife Service, and others.

With regard to development that affects roads and rights-of-way within Village boundaries, the Village must coordinate with FDOT or the County, if another agency has jurisdiction over the right-of-way.

Many of these state and federal agencies have more technical expertise in their particular area of responsibility than the Village, a factor resulting in coordination even when formal permitting is not required. Therefore, the Village staff consults with these agencies in matters beyond its expertise as necessary in the development review process.

### **Intergovernmental Coordination Agreements**

Intergovernmental agreements serve as coordination mechanisms in cases where the Village receives a service from another unit of local government or provides a service to a unit of local government outside the Village's jurisdiction. The Village has numerous interlocal coordination agreements with state, regional, county, and local agencies, many of which are identified in Table 8-1. Additionally, the Village has agreements with FDOT and the County regarding maintenance of state roads and rights-of-way.

### **Dispute Resolution**

Section 186.509, F.S. requires each regional planning council to establish a dispute resolution process to reconcile differences on planning and growth management issues between local governments, regional agencies, and private interests. It also requires that the dispute resolution process bring intergovernmental disputes to closure in a timely manner. The Village shall continue to participate in the Palm Beach County IPARC Process and shall cooperate with the Treasure Coast Regional Planning Council (TCRPC) and all other local governments in TCRPC's dispute resolution process, for the purpose of facilitating intergovernmental coordination. As necessary, the Village shall defer to the Treasure Coast Regional Planning Council's process in this Plan as the preferred process to use in mandatory dispute resolutions, as required by 163.3177(6)(h)(1)(c).

### **Intergovernmental Relations and the Comprehensive Plan**

The Village has entered into interlocal agreement with other municipalities, the County, special districts and service providers to assure mutual coordination among entities in the comprehensive planning process.

The Village of Tequesta provides a full range of services to its residents, businesses, and service areas, including police and fire protection; the construction and maintenance of streets and other infrastructure; recreational and cultural activities; water and stormwater utilities and contracts for sanitation services. The Village's basic operating unit is in the form of departments, which concentrate their activities on various functions including, general government, public safety, transportation, and leisure services.

The Village continues to provide and receive certain essential services to and from other jurisdictions/entities. The following analysis provides an overview of intergovernmental coordination relations between the Village, County, surrounding municipalities, and other governmental entities. Moreover, it focuses on specific intergovernmental issues and opportunities related to many elements presented in the Village of Tequesta's Comprehensive Plan.

### Future Land Use

In order to promote orderly development and redevelopment, including annexation, the Village will need to identify future planning areas in coordination with Palm Beach County and adjacent municipalities and ensure that services to be provided will be consistent with existing level of service standards. In addition, Village shall continue to regulate the compatibility of land developments and redevelopments with existing and surround uses, in order to ensure the Village's infrastructure has the capacity to expand and meet future needs.

With regard to the provision of essential services to other jurisdictions, the Village has effectively maintained high standards in the execution of service agreements over the years. To this end when considering a development or redevelopment proposal, the Village of Tequesta is committed to assessing the effect of rezoning, annexation and development activities on existing interlocal agreements which exist between the Village and other jurisdictions, in order to determine any effect on the ability to provide the services which are the subject of the interlocal agreements. Affected jurisdictions are contacted and requested to comment on any development activities as part of the site plan and building review processes if such development matter affects the provision of services to them.

Similarly, the Village utilizes its site plan review process to inform and coordinate with neighboring or affected jurisdictions/entities of proposed development and any potential impacts. Developers are required to submit a number of copies of site plan proposals so that they may be distributed to affected jurisdictions/entities for review and comment in the site plan and development approval processes.

As necessary, the Village should also facilitate necessary studies and citizen surveys to determine the optimum approaches for redevelopment. To this end, opportunities for public involvement in redevelopment projects should also be provided to local residents, business owners, and interested citizens.

### Transportation

In order to ensure the overall transportation system effectively meets the needs and level of service standards of the Village and surrounding areas, the Village must continue coordinating with county and regional agencies regarding transportation management. Such agencies include,



but are not limited to, Palm Beach County, Treasure Coastal Regional Planning Council, Palm Beach Metropolitan Planning Organization, as well as the Florida Department of Transportation.

In order to remain consistent with FDOT regulations, the Village shall establish right-of-way dedication requirements for arterial and collector streets which are consistent with those established by FDOT.

With regard to transportation related projects throughout the Village, various levels of coordination between agencies are required, depending on the project scale and location. On a regional level, the Village will support regional multimodal transportation systems through coordinating routes and schedules, with Palm Tran and Tri Rail, and with participation in the Metropolitan Planning Organization and in coordination with adjacent municipalities.

With regard to development projects within the Village, all new nonresidential development, rezoning for nonresidential uses, and change of use of existing structures for nonresidential purposes will include obtaining letters of compliance with Palm Beach County's Traffic Performance Standards.

As for roadway maintenance, interlocal agreements have been established between the Village's Grounds Maintenance Division and the FDOT or the County, for the maintenance of medians and right of ways, many of which are not owned by the Village or are out of the Village limits.

### Housing

Housing is another area where the development decisions of the County and municipalities may impact each other. Coordination with state and federal agencies is a significant element in any strategy as these are a major sources of tax credits and funding for affordable housing and supporting infrastructure projects.

Adult congregate living facilities, group homes, housing for low and moderate-income households, mobile homes, and foster homes shall be located in a manner consistent with State Laws and in conformity with Florida Statutes, and where applicable, near supporting institutional and other uses, appropriate for the clientele served by the facilities.

Currently, there is no identified need to provide housing for low and moderate-income households in Tequesta. However, if the need should arise in the future, the Village may coordinate with Palm Beach County in identifying housing needs, determining how these needs may be met, and developing mechanisms to mitigate impacts.

### Infrastructure

Managing and maintaining the Village's infrastructure requires coordination between Village utilities departments and various county, regional, and state agencies. The means for this coordination shall include review of documents, formal and informal meetings and letters of objection/no objection to proposed policies, activities or annexations and through the IPARC

(Intergovernmental Plan Amendment Review Committee) process for plan amendments and use of the Countywide Issues Forum. The Utilities Director is responsible for the operation of the system and coordination with those jurisdictions that it serves.

Tequesta will coordinate through Palm Beach County and/or neighboring jurisdictions with all local governments within the Village's designated utility service areas to ensure that their comprehensive plans and development permit procedures are compatible with Village policies. Additional agencies and programs with which coordination is necessary include: United States Environmental Protection Agency (US EPA), Federal Emergency Management Agency (FEMA), FEMA, United States Army Corps of Engineers (USACE), South Florida Water Management District (SFWMD), Florida Department of Environmental Protection (FDEP), FDEP TMDL Program As required by Section 303 (d) of the Federal Clean Water Act, US EPA/FDEP Numeric Nutrient Rules, SFWMD and FDEP Unified Statewide Stormwater Rule.

**Solid Waste Management:** Solid waste collection services for garbage, trash and other wastes, continue to be provided by a private hauler. The Village has granted an exclusive franchise to the hauler for collection of solid wastes in Tequesta. The Village Manager is the local official responsible for its administration.

Likewise, solid waste disposal services continue to be provided by the Palm Beach County Solid Waste Authority (PBCSWA) at their facilities. The PBCSWA was established by special act of the Legislature and is responsible for providing these facilities to serve the entire County. The Village Manager is the liaison with the Authority.

The Village will continue to work with PBCSWA, to implement an effective recycling and resource recovery program, ensure adequate regional landfill capacity for future disposal of oversized or special waste materials, and provide hazardous waste collection points accessible to the Village

**Sanitary Sewer:** As identified in the Sanitary Sewer sub-element of the Comprehensive Plan, the Loxahatchee River District (LRD) provides central sanitary sewer service to Village residents, businesses and other users. The LRD is established as a special district that was created by the Florid Legislature with the legislative authority to provide central sanitary sewer service within its identified service area. Central sewer is now available to the entire Village although some individual properties are still utilizing septic tanks. Coordination and liaison with the LRD lies primarily with the Utilities Director.

With regard to the establishment of Level of Service standards for such facilities, the Village shall continue to coordinate with other agencies having maintenance and/or operational responsibility of facilities within and affecting the Village. As stated in the Sanitary Sewer and Solid Waste sub-sections, the Village will continue review the LOS Standards currently established for sanitary sewer and solid waste for current applicability with the LRD and the PBCSWA, respectively, and will revise those LOS Standards, as necessary in the update to the Comprehensive Plan.

Potable Water: As indicated in the Potable Water sub-section, the Village continues to provide certain essential services to other jurisdictions, including the withdrawal, treatment, and distribution of potable water. The Village Water Utilities Department provides central water service to portions of unincorporated Palm Beach and Martin Counties, and the Town of Jupiter Inlet Colony.

The Tequesta potable water supply and central system must meet strict standards The Village continues to adhere to, and be subject, to various standards of other agencies and levels of government. Specifically, the Village potable water system must meet the standards established in the federal Safe Drinking Water Act of 1974, Public law 93-523. Additionally, the Village is subject to, and a participant in, the Palm Beach County Wellfield Protection Ordinance. This Countywide Wellfield Protection Ordinance regulates land use activities within travel time contours of the Village's wellfields.

In order to effectively manage and conserve its water resources, the Village has worked cooperatively with the South Florida Water Management District (SFWMD) in developing a long term water supply program focused on reducing dependency on the Surficial Aquifer.

Stormwater Management: The Village's stormwater system is regulated by federal, state, and local agencies, making it a significant governmental concern. Therefore, any modifications or improvements to the Village's stormwater system need to be developed following the applicable regulatory framework and regulations.

As noted in the Stormwater Management sub-section, the Village is a co-permittee in the Countywide National Pollution Discharges Elimination System (NPDES) Stormwater Permitting Program. The Village should continue to be a cooperative and coordinating partner in this program in the future.

### Conservation and Coastal Management

Land use decisions of the County and municipalities can impact the coastal and environmental resources of another jurisdiction or shared by many jurisdictions. Coordination is needed to mitigate, restore, and manage natural resources and to avoid land use and development decisions that may adversely affect these resources.

Given its proximity to the Loxahatchee River, Intracoastal Waterway, and Atlantic Ocean, the Village will need to be cognizant of and plan for climate change and sea level rise. The Village can begin mitigating sea level rise, in part, through cooperation with Southeast Florida Regional Climate Change Compact, which was executed by Broward, Miami-Dade, Monroe, and Palm Beach Counties in January 2010 to coordinate mitigation and adaptation activities across county lines. The Compact represents a new form of regional climate governance designed to allow local governments to set the agenda for adaptation while providing an efficient means for state and federal agencies to engage with technical assistance and support.

The Village, in cooperation with appropriate local agencies, shall evaluate water and stormwater management operation strategies in the context of sea level rise, in order to lessen negative impacts to open spaces, wetland mitigation areas, and natural systems, improve the ability of these systems to adapt to climate change, and optimize the ability of these systems to create additional benefits to the Village's residents and visitors.

Land use decisions may produce impacts on the natural resources on another jurisdiction, such as impacts affecting environmentally sensitive lands, water quality, endangered species, and aquifer recharge areas in another jurisdiction. As such, the Village may take steps to cooperate in the monitoring of various environmental areas such as air and water quality, greenhouse gas emission and sea level rise with governmental entities including the Palm Beach County Health Department, Southeast Florida Regional Climate Change Compact, Florida Department of Environmental Protection, and South Florida Water Management District.

The Village shall continue to work locally and cooperate regionally to improve energy conservation, reduce greenhouse gas (GHG) emissions from government operations and the community, and work to minimize air quality and ecosystem impacts in order to reduce the carbon footprint and enhance economic and community resiliency.

Various land use or environmental planning and permitting activities within the Village continue to require coordination with State planning agencies. Tequesta is mandated to prepare this EAR and Comprehensive Plan pursuant to the "Local Government Comprehensive Planning and Land Development Regulation Act (LGCP/LDRA)". Likewise, any development of unique environmental features often requires obtaining permits from appropriate State environmental planning and permitting agencies. In those instances, the appropriate Village staff person is assigned to coordinate activities depending on the particular program or activity being pursued.

**Emergency Management:** Another major area for intergovernmental coordination is emergency management, which is also discussed in the Coastal Management Element of this Plan. As detailed in the Coastal Management Element, natural disasters in the form of and severe weather disturbances including hurricanes, floods, and droughts are generally intra-jurisdictional. Other, typically manmade threats, such as hazardous material spills, terrorism, vehicle/airplane crashes, may overwhelm the Village's resources. Both natural and manmade calamities typically require coordination with adjacent localities, County, State and Federal agencies, and other stakeholders, through mutual aid and/or stand-by agreements, which are necessary to successfully locate, deploy, and coordinate use of resources.

The Village continues to provide fire protection and emergency medical services to the Town of Jupiter Inlet Colony, which is formalized through an interlocal agreement. With regard to emergencies, the Village Code of Ordinances designates the Fire Chief as the Emergency Management Director. The Fire Chief, Village Manager, and the Mayor will accomplish all coordination, direction, and implementation of all disaster management functions cooperatively to maintain continuity of government.



The Village of Tequesta Emergency Operations Center will serve as the nerve center for the coordination and control of the Village's response and recovery efforts. As necessary, the Village of Tequesta will support the County and the American Red Cross by assigning security and emergency medical personnel, if needed, to shelters as they are opened by the County.

When necessary, evacuation of certain areas of the Village will be initiated following a decision by the local governing body in accordance with the Palm Beach County Comprehensive Emergency Management Manual. In addition, the Village coordinates its emergency plans and procedures with the Palm Beach County Office of Emergency Management. Furthermore, Hurricane evacuation planning is coordinated with the Treasure Coast Regional Planning Council and other jurisdictions within the council's jurisdiction.

### Recreation and Open Space

The Village, Palm Beach County, other municipalities, and state agencies can impact the recreation and open resources of each other through land use and zoning decisions and development approvals. Such impacts include adverse impacts on sensitive natural resources from a development project or increased demand on recreational facilities in an adjacent jurisdiction from a development project approved in another jurisdiction. Additionally, the establishment of trails, greenways and even blueways that cross jurisdictions will require coordination with adjacent municipalities, county, regional and state agencies. The Village could also benefit by identifying and applying for federal recreation grant opportunities for funding of recreation facilities.

Moreover, the Village shall coordinate the provision of recreational services and facilities with public and private organizations and enter into appropriate interlocal and license agreements, as appropriate. The development and maintenance of recreation facilities must comply with Chapter 553 Florida Statutes and the Accessibility Requirement Manual of the Department of Community Affairs, in order to ensure that neighborhood park facilities provide access ways for pedestrians and handicapped persons where feasible.

### Capital Improvement

Aside from the Elements discussed above, intergovernmental coordination is also important when developing the Village of Tequesta's Capital Improvement Plan and implementing related projects.

The Village shall, in conjunction with other affected parties, evaluate the Capital Improvements Element when it is undergoing annual review to determine if current funding is proportional to services rendered. In doing so, the Village should continue to coordinate level of service standards regarding state, county, or regional public facilities within Village boundaries. The Village can accomplish this through meeting with local governments within the area of concern and, communicating with applicable state agencies to coordinate level of service standards for

shared or adjoining facilities, to determine how to deal with differences in level of service standards for these public facilities

### Public Schools Interlocal Agreement

The School District of Palm Beach County is responsible for public education throughout the county. To fulfill that responsibility, the School District must occasionally site and construct new schools or expand existing facilities in the Village, in compliance with local comprehensive plans and local zoning regulations. Moreover, the state encourages public school planning between the county, municipalities, and school district and has outlined a formal coordination mechanism for school planning, site selection, and concurrency.

In 2015 the Palm Beach School district adopted a Public Schools Interlocal Agreement. While a number of municipalities adopted the subject agreement by resolution, Chapter 163.31777(3), F.S., Public Schools Interlocal Agreement, provides criteria for municipalities to qualify for exemption, if applicable. According to these criteria, a municipality is exempt from the requirements of subsections (1) and (2) if the municipality meets all of the following criteria for having no significant impact on school attendance.

In order to qualify for exemption, the Village is required to demonstrate that it met the criteria set forth in section 163.31777(3) and obtain approval from various agencies including, the Department of Economic Opportunity (DEO), Department of Education, and Palm Beach County School District. However, final determination is ultimately determined by the DEO, upon final review.

The Village has followed necessary steps through a series of phone and email correspondence to verify that the Village qualifies for exemption from entering the Public Schools Interlocal Agreement. A summary of this process is provided below.

In April 2017, the Village's Director of Community Development contacted Florida's Department of Economic Opportunity (Adam Biblo, Regional Planning Administrator, Florida Department of Economic Opportunity; Dan Pennington, Community/Environmental Planner) indicating that the Village met the criteria to be exempt from entering the subject interlocal agreement, and requested approval for exemption status. Next, the DEO reached out to the Department of Education (Tracy Suber, Educational Facilities Construction Planning and Training Manager, Florida Department of Education) and the Palm Beach County School District (Joyce Cai, Senior Planner, School District of Palm Beach County; Kristin Garrison, Planning Director, School District of Palm Beach County) to confirm the opinion that the Village could qualify for exemption.

At the request of these agencies, the Village provided an explanation and supporting documentation which addressed each of the criteria set forth in Chapter 163.31777(3), F.S. The subject criteria are indicated in italics below, followed by an explanation from the Village, which demonstrates the Village's qualifications for exemption from the agreement.

Florida Statutes Chapter 163.31777:

(3) A municipality is exempt from the requirements of subsections (1) and (2) if the municipality meets all of the following criteria for having no significant impact on school attendance:

(a) The municipality has issued development orders for fewer than 50 residential dwelling units during the preceding 5 years, or the municipality has generated fewer than 25 additional public school students during the preceding 5 years.

The Village of Tequesta is almost built-out (98.2%), and records indicate that the Village has issued fewer than 50 residential dwelling units in the last 5 years. Specifically, Village records show that only twelve building permits for new construction single family homes have been issued since 2012. Moreover, a 16-unit condominium development is currently under construction within the Village. In total, 28 residential dwelling units (12 single family homes and 16 condominium units) have been added to the Village in the past five years.

With regard to public school students, information provided by the Palm Beach County School District shows that the Village has generated fewer than 25 additional public school students during the preceding 5 years, with the number of students actually having decreased since 2012. The table below, which was provided by the County School District, indicates the number of students residing in the Village of Tequesta during a five year period, from 2012 to 2017.

**Table 8-2: Students Residing in the Village of Tequesta – SY 2012-13 – SY 2016-17**

School Year	PK-12 Students	K-12 Students
2016-17	646	636
2015-16	624	618
2014-15	619	616
2013-14	687	685
2012-13	691	683

Source: Palm Beach County School District

While the Village recognizes that the number of public school students has increased slightly since SY2014-15, by a total of 27 PK-12 students and 20 K-12 students, the overall number of students has actually decreased since 2012. As indicated in the table above, the number of students has decreased from 691 to 646 for PK-12 students (45 total) and from 683 to 636 for K-12 students (47 total), since the 2012-13 school year.

Due to the fact that the Village is almost completely built-out, the Village does not expect that any future development of the remaining 25.72 acres (1.80%) of vacant land to affect public school attendance, as most of this land is designated as commercial on the both Future Land Use and current zoning maps. Additionally, while the 16-unit condominium development is not age restricted as housing for older persons, data from the Palm Beach County School District, presented in the table above, projects that any student generation from this development will not affect nearby schools.

*(b) The municipality has not annexed new land during the preceding 5 years in land use categories that permit residential uses that will affect school attendance rates.*

In 2014, the Village of Tequesta annexed 1.54 acres in the R-2 Multiple Family Dwelling district, which is currently under construction as a 16-unit condominium development, as described previously. However, this will not affect the school attendance rate.

*(c) The municipality has no public schools located within its boundaries.*

As confirmed by the Palm Beach School District, there are no public schools located within the Village of Tequesta, nor are there any planned during the 5- or 10-Year planning periods of the updated Comprehensive Plan.

However, if in the future it is deemed necessary for the Village to enter into the Public Schools Interlocal Agreement, it will comply with Chapter 163.31777 accordingly. In doing so, the Village would also revise its Comprehensive Plan and coordinate with public schools within its jurisdiction regarding their development, in accordance with Section 240.155, F.S. Local government signatories of the agreement are required to incorporate annually the School Board 5-Year Capital Facilities Plan into their Comprehensive Plans without any funding obligation; coordinate and share information for planning purposes, including school's population projections and local governments' development and redevelopment proposals.

*(d) At least 80 percent of the developable land within the boundaries of the municipality has been built upon.*

As indicated in the table below, the Village of Tequesta includes approximately 2.29 square miles and is almost completely build out (98.2%), with only 1.80% or 25.72 acres of vacant land available.

**Table 8-3. Existing Land Use 2016**

Designation	Square feet	Acres	Percentage
Commercial	3,019,685	69.32	4.70%
Conservation	351,962	8.08	0.60%
Low Density	19,367,578	444.62	30.30%
Medium Density	3,090,493	70.95	4.80%
Mixed Use	3,937,361	90.39	6.20%
Other Public Facilities	613,396	14.08	1.00%
Public Buildings and Grounds	898,132	20.62	1.40%
Recreation and Open Space	9,529,489	218.77	14.90%
Roads	9,134,927	209.71	14.30%
Vacant	1,120,494	25.72	1.80%
<b>Total</b>	<b>63,965,561</b>	<b>1,468.45</b>	<b>100.00%</b>

Source: U.S. Census Bureau



With regard to potential future development of vacant properties, the Future Land Use Map identifies the majority of vacant land uses as commercial, located along US Highway One, while a smaller percentage (approx. 5-6 parcels) are designated as single family residential, located in existing single family neighborhoods.

Once the Palm Beach County School District had received and reviewed the Village's explanation and supporting documents, a representative (Joyce Cai, Senior Planner, School District of Palm Beach County) provided a response to the Village's request for consideration:

*"Please be advised that the School District has reviewed the request to provide opinion as to whether the Village of Tequesta meets the criteria for exemption.*

*Based on our enrollment record and the information you have provided, the School District offers an opinion that the Village of Tequesta qualifies for exemption from the Public Schools Interlocal Agreement, as provided at Section 163.31777(3), Florida Statutes."*

While the School District offered the opinion that the Village met the criteria for exemption, the final determination must be provided by the DEO.

In closing, there are no existing or planned public school facilities within the Village limits, and the existing and projected population will not have an impact on school attendance. The Village is concurrently requesting to be exempt from joining the Public Schools Interlocal Agreement pursuant to criteria set forth in Chapter 163.3777(3), F.S.

## **FINAL REMARKS**

In summary, the Village of Tequesta should continue to coordinate and collaborate with appropriate federal, state, regional, local governmental agencies, along with other public and private agencies, to establish and resolve goals, objectives, and policies of the Comprehensive Plan, to develop and maintain public facilities and utilities, to coordinate land development and redevelopment, and to strategically manage the future expansion of the Village.

## **DATA & ANALYSIS**

### **CHAPTER 8: COASTAL MANAGEMENT ELEMENT**

#### **INTRODUCTION**

The purpose of the Coastal Management Element is to plan for, and where appropriate, restrict development activities where such activities would damage or destroy coastal resources. Where it is determined the coastal resources would be damaged or destroyed by this development, appropriate measures will be suggested for limiting or removing these negative impacts. This element is also required to formulate guidelines which protect human life from storm events and limit public expenditures in areas subject to destruction by natural disasters.

The Village of Tequesta is located along the coastline of the Intracoastal Waterway, also known as the Indian River Lagoon, which is an estuary between the barrier island of Jupiter Island and the mainland. The Village limits also include a portion of Jupiter Island with direct access to the Atlantic Ocean beaches and natural resources. Therefore, the Village of Tequesta is required under Chapter 380.24, Florida Statutes (F.S.), to include a Coastal Management Element in its Comprehensive Plan, pursuant to Chapter 163.3178. The Coastal Management element shall set forth the principles, guidelines, standards, and strategies that shall guide the local government's decisions.

Because coastal resources are highly affected by man's activities, this element is significantly related to current and future land use, infrastructure (including stormwater management, transportation and utilities), recreation and open space, conservation, economic considerations and intergovernmental coordination. Besides those items, the coastal management element also addresses coastal issues relating to water-dependent and water-related uses, marina/boat facilities siting, the Coastal High Hazard Area (CHHA), and contingency planning for hurricane evacuation and post-disaster redevelopment.

Coastal management and coastal management-related issues are addressed in both the Coastal Management and Conservation elements of the existing Comprehensive Plan, and many of the common issues are discussed in this section. This Coastal Management section of the EAR should be reviewed in conjunction with the Conservation section.

There are six (6) separate goals established in the current Coastal Management element of the Comprehensive Plan. Many of the objectives and supporting policies of the Coastal Management goals interface with each other and with corresponding objectives and policies in the Conservation element. Each of the goals are discussed herein.



## **THE COASTAL ENVIRONMENT**

### **Barrier Islands**

The portion of the barrier island located within the Village of Tequesta is called Jupiter Island. Jupiter Island is approximately two miles in length within Palm Beach County and over half a mile within Village boundaries. As components of the barrier island, the nearshore Atlantic and beach/dune systems dissipate wave and wind energy, forming the first line of defense against coastal storms. In addition, the barrier island environment provides a variety of recreation opportunities and aesthetic qualities for the enjoyment of Village residents and visitors.



### **Coastal Zone**

The Village's Coastal Zone is defined to include:

1. The land uses and facilities dependent upon or related to the Indian River Lagoon and Loxahatchee River;
2. The Village's marine and estuarine wetlands, including the waters and submerged lands of the Indian River Lagoon estuary, Loxahatchee River, and the Atlantic Ocean;
3. The living marine resources supported by the Village's marine and estuarine wetlands;
4. The portion of Jupiter Island, a coastal barrier island, within the Village's municipal limits, including the coastal construction zone;
5. The shorelines adjacent to the Atlantic Ocean and land uses and facilities dependent upon the ocean; and
6. The Village's coastal high hazard areas and category 1 storm surge zone.

The Coastal Zone is based on the hurricane surge potential and generally coincides with the shoreline areas along the Atlantic Ocean, Indian River Lagoon/Intracoastal Waterway, and Loxahatchee River. Specifically, all upland areas, shoreline, submerged lands, and waters within the jurisdiction of the Village of Tequesta that are contained in the category 1 storm surge zone shown in Figure 5-1, Hurricane Surge Map, are considered to be within the Coastal Zone.

As discussed, the category 1 surge line defines one of the boundaries of the Coastal Zone. The northern and southern boundaries of the Coastal Zone are generally congruent with the municipal limits in these areas. Other boundaries of the Coastal Zone are coterminous with the jurisdictional limit of the Village along the ocean shoreline and waters.

In addition, the “coastal area” is referred to throughout this section. In general, the coastal area refers to the Coastal Zone and directly adjacent areas that may extend just beyond the category 1 surge level.



### **Coastal Zone & Shoreline Land Uses**

As shown in the Figures 5-1 and 5-2, the coastal zone of the Village consists primarily of upland areas, wetland areas, and coastal resource areas. Oceanfront uses are limited to multi-family residential developments and a public recreation area, Coral Cove Park. There are no commercial uses located in the coastal zone.

The residential uses located along the Village’s Intracoastal Waterway and Loxahatchee River shorelines, are almost entirely single-family with a couple multi-family residential parcels. Other major uses in these areas include Recreational and Open Space, which includes Ecosite #61, and various neighborhood parks located in the Tequesta Country Club and Bayview Terrace neighborhoods. There are no conflicts among these existing land uses on the barrier island and along the shoreline.



Intergovernmental Coordination with Jupiter Inlet District is required throughout a portion of the coastal zone and conservation area to ensure proper management and regulated development in coastal areas.

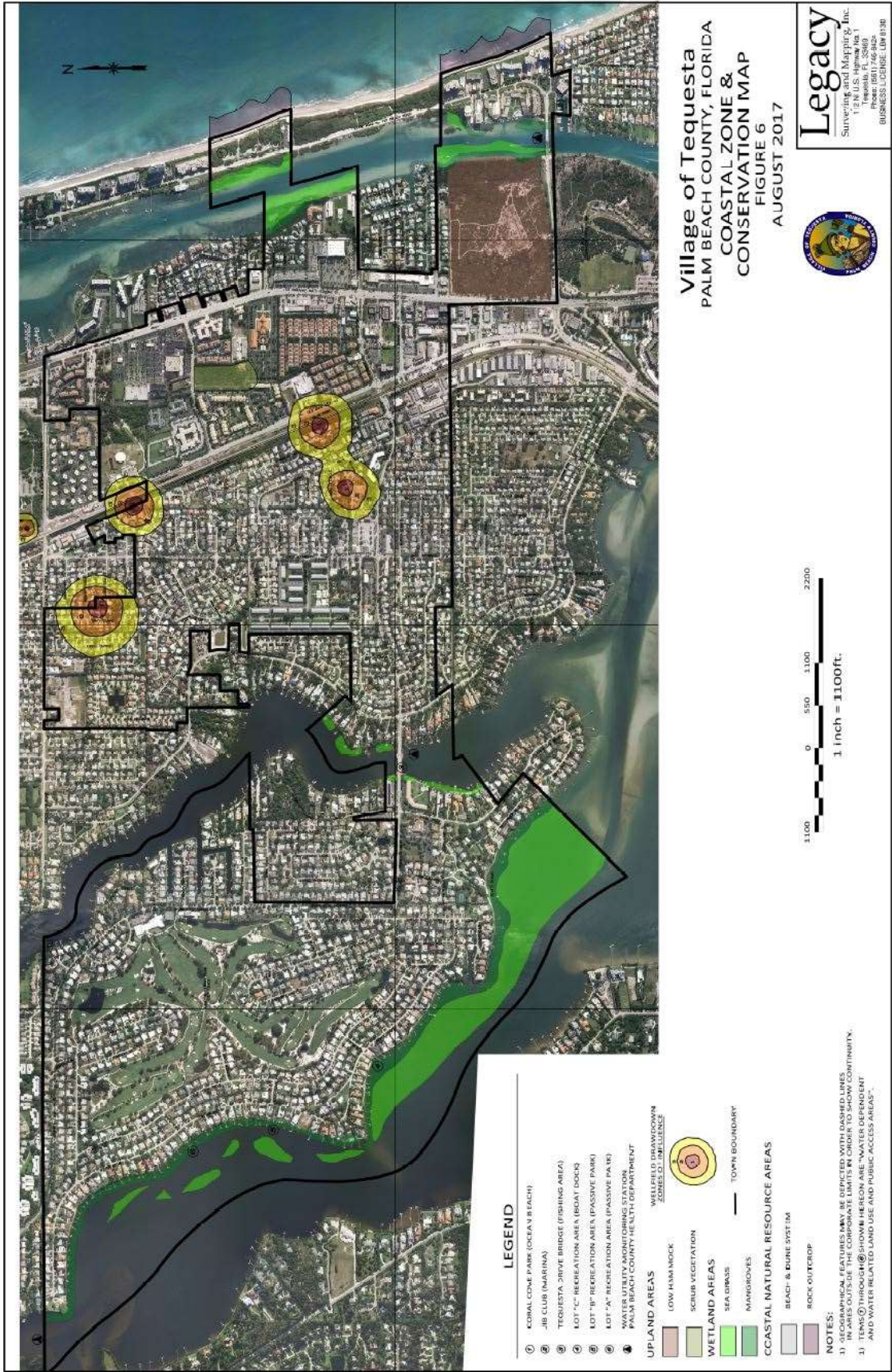


Figure 5-1. Hurricane Surge Map





Figure 5-2. Coastal Zone and Conservation Map



### Water-Dependent & Water-Related Uses

Water-dependent uses are defined by Chapter 163, F.S., as activities that can be carried out only on, in, or adjacent to water areas because the uses require access to the waterbody for one of the following purposes: waterborne transportation, including ports and marinas; recreation; electrical generating facilities; or, water supply.

Water-related uses are defined as activities that are not directly dependent upon access to a waterbody, but provide goods and services directly associated with water-dependent or waterway uses.

The beach and shoreline recreational uses, including the J.I.B. Yacht Club and Marina facilities, are the only water-dependent and water-related uses within the Village. There are no ports, electrical generating facilities, or water supply utilities dependent on surface waters, or other water-related uses in the Village. This circumstance has not changed since the last EAR or in subsequent Comprehensive Plan amendments. At this time no future water-dependent or water-related uses are planned for either the short or long-range timeframes of the updated Comprehensive Plan.

### **Public Access Facilities in Coastal Zone**

Public access as used in this element, is defined as the ability of the public to physically reach or use recreation sites, including beaches and shores. Facilities such as marinas, boardwalks, boat ramps, waterside parks and fishing piers allow residents to enjoy the advantages of coastal living. The resources of the Tequesta's coast and shoreline are readily accessible to the Village's residents and visitors.

There are 15 public access easements to the beaches and shoreline areas within the Village. Coral Cove Park is Tequesta's only public beachfront park. The Village continues to coordinate with the County to ensure that adequate parking, access and other related issues are mutually addressed where necessary. Also, the Village continues to provide police protection services to the Park area.

Additionally, there are multiple access points to the Indian River Lagoon/Intracoastal Waterway opposite Coral Cove Park. Jupiter Inlet Lighthouse Outstanding Natural Area, referred to on the map as Ecosite #61, is also situated along the western shoreline of the Intracoastal Waterway. Other neighborhood parks in Tequesta provide access to the River, including three open space areas in the Tequesta Country Club subdivision and a small park in the Shady Lane and Bayview Terrace subdivision. One of these neighborhood parks in the Tequesta Country Club has a boat ramp available for residents of the subdivision.

Aside from the aforementioned facilities, there are no marinas, public docks, private property open to the general public, or other public access facilities located within the Coastal Area of the Village. Public access facilities are further addressed in the Recreation and Open Space Element.



### **Recreational Facilities**

The Village must balance the maintenance and expansion of the outdoor recreational facilities in the coastal zone with the need to establish and maintain appropriate land use controls for such expansion of these facilities. Park and recreational areas in the Village are designated, and are being preserved, as Recreation and Open Space areas on the Future Land Use Map. These areas are also zoned R/OP, Recreation and Open Space on the Village's Official Zoning Map to assure their preservation. The Recreation and Open Space element of this EAR speaks in more detail to the recreational value of these areas.

### **Coastal Resource Use Limitations**

The Village considers use limitation in coastal zone planning and management decisions to ensure the protection of mangroves, sensitive sea grass beds and other wildlife habitat through native landscaping requirements and other regulations. This is discussed in detail in the Conservation Element of this plan.

The Village enforces Article IV, Vehicles on Beaches, Chapter 46, Motor Vehicles and Traffic in its Code of Ordinances which prohibits the use of motor vehicles on the beaches and dune area with the exception of emergency vehicles in the performance of their duties.

In addition, the Village supports protection of preservation areas to the maximum degree possible while consistent with private property rights. The protection, conservation and maintenance of coastal resources and the coastal environment must be balanced with, and consistent with, private property rights and property values to the maximum degree possible. The Village has not taken any action since the last EAR and subsequent amendments to the Comprehensive Plan that would affect or diminish individual property rights or the value of property within the CHHA of Tequesta. Neither residential densities nor non-residential intensities have been amended, decreased or in any way changed that would directly affect or diminish said property rights or property values.

### **Coastal Economy**

The economic base of the Coastal Area is now and will continue to be primarily oriented toward tourism and recreation. Condominiums throughout the area host both permanent and seasonal residents. Retail and service establishments serve the needs of both residents and tourists, as well.





### Primary Coastal Attractions

The water resources of the Village are the primary attractions of the Coastal Area. Coral Cove Park and its rocky beaches is an important attraction for both residents and visitors to Tequesta throughout the year. In addition to the beach, the Indian River Lagoon, Loxahatchee River, and other recreational opportunities along these shorelines also contribute to the economy of the Coastal Area.



### Coastal Area Infrastructure

Infrastructure is defined by Chapter 163, F.S., as those man-made structures which serve the common needs of the population, such as: sewage disposal systems, potable water systems, potable water wells serving a system, solid waste disposal sites or retention area, stormwater systems, utilities piers, docks, wharves, breakwaters, bulkheads, seawalls, bulwarks, revetments, causeways, marinas, navigation channels, bridges and roadways. A detailed inventory and analysis of the sanitary sewer, potable water supply, and stormwater drainage systems is presented in the Utilities Data and Analysis document.

A brief inventory and analysis of the traffic circulation system in the Coastal Area is presented later in this section. More detailed analysis is presented in the Transportation Data and Analysis document. The only major transportation facilities or causeways within the coastal or shoreline areas are the Beach Road Bridge that connects the mainland with the barrier island, and the Tequesta Bridge that connects the Tequesta Country Club neighborhood to the mainland.

Additionally, a brief discussion of the Intracoastal Waterway, (a navigable channel), is presented below. Shore protection structures and other coastal access structures of the Coastal Area are discussed elsewhere in this document. There are currently no public docks, wharves or marinas within the Coastal Area. There are multiple private docks on individual homes and developments located along the Intracoastal Waterway.

The Village intends to avoid an increase in infrastructure capacity unless public safety should require it. In doing so, densities in the defined coastal zone shall be maintained so as not to jeopardize hurricane evacuation times.

### Coastal Area Roadways and Bridges

One of the most vulnerable roadways within the Village of Tequesta Coastal Area is Beach Road, which connects the barrier island residents to the mainland, and Tequesta Drive, a central east-west corridor which connects residents to other major roadways including U.S. Highway One and

Old Dixie Highway. These roadways serve not only the Village Coastal area, but are important elements in the traffic circulation system serving the Village and the surrounding communities. A full discussion of these roadways is provided in the Transportation Element.

#### Navigation Channels: Intracoastal Waterway

The Intracoastal Waterway (ICWW) is within Indian River Lagoon adjacent to the Village of Tequesta. The ICWW was dredged for the purpose of navigation and connects the coastal basins or lakes of Palm Beach County. The Intracoastal Waterway System was authorized by Congress in 1939 for use as a navigable channel between the barrier islands of the east coast of Florida and the mainland. In 1942, the US Army Corps of Engineers began dredging a deep channel for water-based transportation.

The ICWW is a mixed-use transportation corridor in Palm Beach County used by commercial and recreational boaters sailing in large ships and small boats as well as freight carriers operating barges. The entire length of the corridor extends from north of Jacksonville south to Key West, a total of 370 miles. The portion of the ICWW in Palm Beach County is 43 miles long. This federally-maintained waterway provides between seven and fifteen feet of water depth; however, ongoing dredging programs aim to keep the waterway north of Miami at its federally authorized depth of twelve feet.

The inlets serving to connect the ICWW and the Atlantic Ocean are the Jupiter Inlet, just south of Jupiter Island and Tequesta, Lake Worth Inlet, located at the northern tip of the Palm Beach Island, and the South Lake Worth Inlet, also referred to as the Boynton Inlet, located at the southern tip.

#### **WATER QUALITY**

The Village of Tequesta encourages the protection and enhancement of its estuarine environment and natural resources. In order to adequately accomplish these goals, it is imperative that the Village take steps to the protection and proper management of the quality of its water bodies.

Due to its location within an urban area, the Lagoon is subject to impacts from urban stormwater runoff. However, it is also subject to the impacts of runoff from the agricultural lands in the interior of the County. These types of runoff are the major sources of water quality degradation in the Lagoon, and because of its shallow, narrow configuration with limited flushing characteristics, the Indian River Lagoon is vulnerable to nutrient eutrophication. High nutrient inputs to the waters of the Lagoon ecosystem also result, in part, from seeping septic and drain field wastewater disposal systems.

Decline in water quality is visibly characterized by loss of seagrass coverage and depth, algal blooms, and decrease in the amount and diversity of wildlife. The Indian River Lagoon

Management Plan, which is described in the subsequent sections, aims to address water quality issues in order to protect the future of Lagoon habitat.

In order to continue protecting the water quality of the estuarine environment, the Village is a participating member in the Palm Beach County National Pollutant Discharge Elimination System (NPDES) Program. The major goal of this program is to monitor stormwater runoff into surface waters and to implement measures to assure that runoff entering surface waters meets State Water Quality Standards.

### **Surface Water Classification System**

The Clean Water Act requires that the surface waters of each state be classified according to designated uses. The Indian River Lagoon and the Intracoastal Waterway are classified as Class III Waters according to the State's surface water classification system, per Chapter 62.302, Florida Administrative Code (F.A.C). Class III Waters, which include all of the Atlantic coastal waters, are intended to be use for swimming, fishing, boating and other recreational uses. Their water quality should be maintained at a level that is suitable for recreation and the propagation of fish and wildlife.

### **Point and Non-Point Source Pollution**

Threats to water quality come from a variety of sources that can fall within two categories: point source pollution or non-point source pollution. Point source pollution includes sources where discharge is usually through an identifiable point, such as wastewater management treatment plants.

Non-point source pollution is typically the result of stormwater runoff entering the Indian River Lagoon through overland or stream flow. Unlike pollution coming from a factory or water treatment facility, non-point source pollution cannot be traced back to a single point of origin. It includes the dilute discharges of contaminant-laden water from residential and agricultural sources, nutrient inputs from septic drainage fields, and pollutants carried to the lagoon as stormwater runoff. As discussed throughout several elements of the Comprehensive Plan, managing stormwater runoff and flood zones is imperative to managing water quality.

### **Water Quality Rating System**

The Florida department of Environmental Protection monitors Class III water quality according to the following system: A water quality rating of "Good" indicates that waters can fully support the uses for which they are classified; a rating of "Fair" indicates that waters can only partially support the uses for which they are classified; and a rating of "Poor" indicates that waters cannot support the uses for which they are classified.

## **Indian River Lagoon**

The Indian River Lagoon is one of the most biologically diverse estuaries in the Nation. One of the 28 estuaries in the country in Environmental Protection Agency's National Estuary Program, the Indian River Lagoon is the only estuary on the east coast of Florida. The Lagoon supports seagrass beds, mangroves, drift algae, salt marshes, oyster bars, tidal flats, and spoil islands which serve as important spawning and/or nursery grounds for commercial important species including shrimp, grouper, snapper, and drum.

It is important to note the quality and resource values of the Lagoon as they relate to conservation efforts. Because it is in an urban area, the Lagoon is subject to impacts from both urban and agricultural stormwater runoff. The Lagoon is an important recreational and commercial resource for the community. It is also a significant habitat area for fish and wildlife. As an aquatic preserve, it is accorded a high degree of protection, second only to drinking water supplies.

### **Historic Trends in Estuarine Water Quality: Indian River Lagoon**

Human activities over the past 100 years have degraded the Lagoon's habitat and water quality. Examples include the construction of permanent inlets, dredging and filling of wetlands along the shoreline, channel dredging, wastewater discharges, and the construction of seawalls, canals, bridges, causeways, docks, marinas, the port, and power plant. While the Lagoon faces many challenges, significant natural resources remain that are worth preserving, enhancing, and restoring. The following sections will detail restoration projects in and near Tequesta focused on shoreline restoration and water quality treatment.

Until the 1970's, the water quality of the Intracoastal waterways of Palm Beach County were in a state of decline due to sewage discharge and runoff from surrounding communities. During the 1970's clean-up campaign, all sewage was required to have secondary treatment prior to discharge. Since then, the water quality of coastal lagoons and the Intracoastal Waterway has generally improved. However, a lack of historical data may preclude definition of a trend in water quality for specific locations in the Intracoastal system.

The health of estuaries is threatened by land use changes, habitat loss, pollution, resource conflicts and other issues. In 1987, Congress established the National Estuary Program (NEP) as a non-regulatory, community-based program to protect and restore the water quality of estuaries. The U.S. Environmental Protection Agency (EPA) administers the NEP, identifies Estuaries of National Significance and supports the development of comprehensive management plans to assure that estuaries maintain their ecological integrity.

The Indian River Lagoon was nominated as an Estuary of National Significance and joined the NEP in 1990 under the sponsorship of the St. Johns and South Florida Water Management Districts. The Program's Comprehensive Conservation and Management Plan (CCMP) was published in 1997 and updated in 2008.



## Current Trends in Estuarine Water Quality: Indian River Lagoon

For many decades, human activity has greatly increased the amount of freshwater that drains to the IRL. A network of agricultural and drainage canals has been created that discharges large volumes of freshwater, such that the lagoon currently receives two-and-a-half times more freshwater than the system was naturally required to handle. The natural volume and timing freshwater inputs to the lagoon have been greatly altered and the health of the estuary has been measurably impacted.

Moreover, the most serious threats to the health of the IRL include reduced water quality due to manmade hydrologic changes, non-point source pollution, loss and fragmentation of habitats, overuse/overharvest of resources, and the threat of invasive exotic species.

Today, the IRL National Estuary Program is sponsored by the IRL Council, which was established in February 2015 as a special district of Florida. The IRL Council includes representatives of five counties bordering the lagoon (Volusia, Brevard, the Indian River County Lagoon Coalition, St. Lucie and Martin counties), the St. Johns River and South Florida Water Management Districts, and the Florida Department of Environmental Protection (DEP). The U.S. EPA provides guidance to the Council.

The primary goal of the Indian River Lagoon National Estuary Program (IRLNEP) is to protect this ecologically significant estuary that is threatened by degradation caused by human activity. IRLNEP coordinates watershed management at the local level, building community-based processes to implement protection programs with specific actions to address environmental problems. The IRL is also designated as an aquatic preserve, an Outstanding Florida Waterway, and a Surface Water Improvement and Management (SWIM) Program Water Body.

## Indian River Lagoon Aquatic Preserve System Management Plan

Information in this section was derived from the Indian River Lagoon Aquatic Preserve Management Plan. Developed by the Florida Department of Environmental Protection's (DEP) Florida Coastal Office (FCO), the Indian River Lagoon Aquatic Preserve Management Plan aims to preserve and protect this invaluable aquatic resource and estuarine system in the midst of increasing development, recreation, and economic pressures along the coast.

As a guide to minimizing potential negative impacts, management plans for the aquatic preserves are essential to preserving the health and viability of ecosystems within these areas. The Indian River Lagoon Aquatic Preserve Management Plan strives to incorporate, evaluate and prioritize all relevant information about the site into a cohesive management strategy, allowing for appropriate access to the managed areas while protecting the long-term health of the ecosystems and their resources.

As shown in Figure 5-3, this management plan focuses on the Indian River Lagoon Aquatic Preserves System (IRLAP System), which encompasses four aquatic preserves: IR-Malabar to

Vero Beach, IR-Vero Beach to Ft. Pierce, Jensen Beach to Jupiter Inlet, and Banana River aquatic preserves. The IRLAP Management Plan provides individual plans for each preserve. The Village of Tequesta contains portions of the Jensen Beach to Jupiter Island aquatic preserve, which is further detailed in this section, which is shown in Figure 5-5.

Florida's expansive coastline and wealth of aquatic resources has attracted millions of residents and visitors, and the businesses that serve them. Florida's submerged lands play important roles in maintaining good water quality, hosting a diversity of wildlife and habitats (including economically and ecologically valuable nursery areas), and supporting a highly valued quality of life for all. Any threat to or degradation of the condition IRLAP System, may also pose economic impacts to the state and region, as this system is a major attraction for both tourists and recreational activities. As illustrated in Figure 5-2, Coastal Zone & Conservation Map, the Village of Tequesta offers an abundance of aquatic resources, including access to the IRLAP, and must take necessary steps to maintain the health of the lagoon, while also sustaining economic growth and development.

### Governing Entities & Statutes

In the sixties, as Florida was experiencing rapid growth along the coast and in sensitive, ecologically important areas, it became apparent that science-based resource protection and management for such areas would be necessary. In order to provide extra protection for certain exceptional aquatic areas, such as the IRLAP, state legislators designated them "aquatic preserves." Now established by law, aquatic preserves are submerged lands of exceptional biological, aesthetic, and scientific values as sanctuaries that are to be maintained in their natural or existing conditions, for the benefit of future generations.

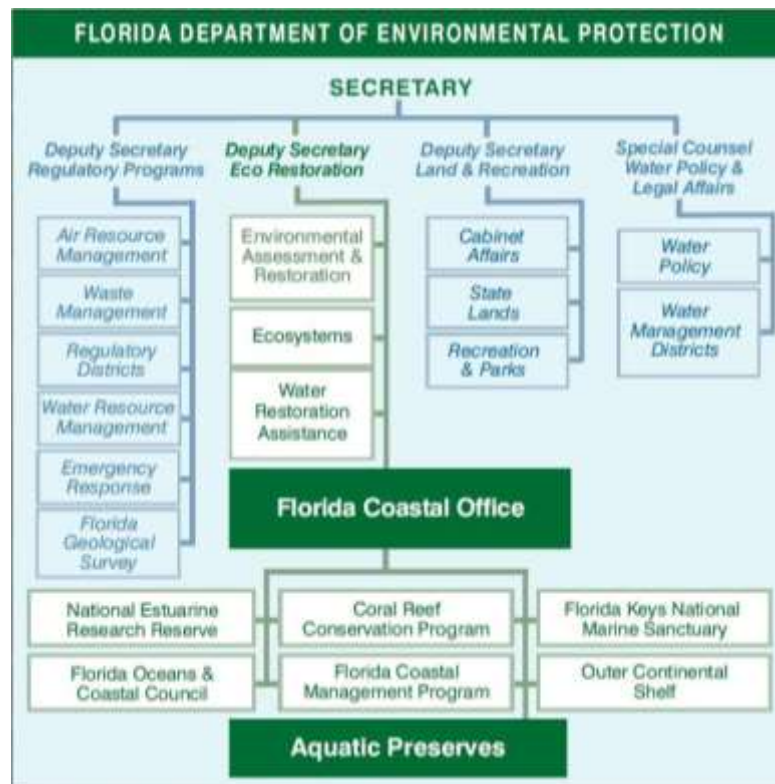
**Figure 5-3. Indian River Lagoon Aquatic Preserve System**



Source: IRLAP System Management Plan, 2015

The IRLAP must be managed and treated as a system by the entities which have jurisdiction relative to maintaining its quality. Today, The Florida Department of Environmental Protection's Florida Coastal Office (FCO) acts as the management agency for the IRLAP System Management Plan. This provides for a system of significant protections to ensure that the Indian River Lagoon and other sensitive areas are managed with strategies based on local resources, issues and conditions. This section provides information regarding key governing entities and legislature related to the development, maintenance, and enforcement of the IRLAP Systems Management Plan.

**Figure 5-4. State Structure for Managing Aquatic Preserves**



Source: IRLAP System Management Plan, 2015

**Florida Department of Environmental Protection (DEP):** The DEP is the lead state agency for environmental management and stewardship, and is dedicated to protecting Florida's air, water and land. The DEP protects, conserves and manages Florida's natural resources and enforces the state's environmental laws.

**Florida Coastal Office (FCO):** The FCO is the unit within DEP that manages more than four million acres of submerged lands and select coastal uplands, which include 41 aquatic preserves, three National Estuarine Research Reserves (NERRs), the Florida Keys National Marine Sanctuary and the Coral Reef Conservation Program. FCO manages sites in Florida for the conservation and protection of natural and historical resources and resource-based public use that is compatible with the conservation and protection of these lands.

**Aquatic Preserve Program:** Established by the Florida Aquatic Preserve Act and managed through the FCO, this program has the following long-term goals:

1. *To protect and enhance the ecological integrity of the aquatic preserves;*
2. *To restore areas to their natural condition;*
3. *To encourage sustainable use and foster active stewardship by engaging local communities in the protection of aquatic preserves; and*

4. *To improve management effectiveness through a process based on sound science, consistent evaluation, and continual reassessment.*

*Board of Trustees of the Internal Improvement Trust Fund (the Trustees)*: Per F.S. 253.03, the Trustees are charged with governing use of public lands, including aquatic preserves: “The Board of Trustees of the Internal Improvement Trust Fund of the state is vested and charged with the acquisition, administration, management, control, supervision, conservation, protection, and disposition of all lands owned by, or which may hereafter inure to, the state or any of its agencies, departments, boards, or commissions...”

*Acquisition and Restoration Council (ARC)*: A 10-member group with representatives from four state agencies, four appointees of the Governor, one appointee by the Fish and Wildlife Conservation Commission (FWC), and one appointee by the Commissioner of Agriculture and Consumer Services (DACs). The ARC is responsible for the evaluation, selection and ranking of state land acquisition projects on the *Florida Forever* priority list, as well as the review of management plans and land uses for all state-owned conservation lands.

#### Key State Statutes & Legislature

State statutes and regulations are enforced by the Florida Fish and Wildlife Conservation Commission law enforcement and local law enforcement agencies. Enforcement of administrative remedies rests with FCO, DEP Districts, and Water Management Districts. Additionally, other Florida Statutes play a role in site management.

*The Florida Aquatic Preserve Act of 1975*: The Aquatic Preserve Act (F.S. 258.35-258.46) officially established a Florida Aquatic Preserves Program under the FDEP. Essentially this statute helped bring existing preserves under a standard set of management criteria to ensure that the natural condition of aquatic preserves will be preserved for future generations

*Florida Administrative Code (F.A.C.)*: The mandate for developing aquatic preserve management plans is outlined in Section 18-20.013 and Subsection 18-18.013(2) of the Florida Administrative Code (F.A.C.). As discussed in the IRLAP System Management Plan, Chapters 18-18, 18-20 and 18-21, F.A.C., are the three administrative rules directly applicable to the uses allowed in aquatic preserves specifically and sovereignty lands generally, and are intended to be cumulative.

#### IRLAP Plan Structure & Key Components

The Management Plan is a collaboration between FCO managers and staff, area stakeholders, and the general public, who collect and analyze data, information, and input from various sources. Next, threats and potential weakness are identified in the site, boundaries, and surrounding areas. Initial drafts of such management plans are developed by FCO staff and reviewed by an advisory committee comprised of key stakeholders. Staff then conducts multiple public meetings to gather feedback and further develop the plan. The final draft is reviewed by the Acquisition and Restoration Council and the Trustees for final approval.



The Management Plan follows four comprehensive management programs, which each contain information specific to a site, as needs or issues typically vary from one location to another. These management programs are:

- Ecosystem Science
- Resource Management
- Education & Outreach
- Public Use

The following chart, taken from the IRLAP System Management Plan, summarizes these four management programs.

<b>Ecosystem Science</b>	There is a very large and committed group of research institutions and agencies that conduct extensive monitoring, research, and modelling in the Indian River Lagoon. The aquatic preserve fosters strong working partnerships with these research institutions and agencies, and assists with equipment and staff as needed to support research and monitoring projects. These programs provide the basis for making sound resource management decisions.
<b>Resource Management</b>	Continue to focus on protecting natural resources by restoring altered areas that contribute to reduced water quality and implementing management practices that maintain or improve viable habitats and populations within the aquatic preserve.
<b>Education &amp; Outreach</b>	Continue volunteer island enhancement work days, Eagle scout projects, Adopt-A-Spoil Island Program, volunteer shoreline planting and oyster reef deployment events. Improve signage at boat ramps. Continue participation in the Indian River Lagoon Envirothon for middle and high school classrooms and Adopt-A-Mangrove workshops.
<b>Public Use</b>	Rapid population growth is expected to return to coastal areas of Florida. Information and data contained within this Plan is intended to assist aquatic preserve managers, working closely with other state entities and local governments, to make decisions that will assure a balance between sustainable resource protection and waterway management.

In addition, unique local and regional issues are identified, and goals, objectives and strategies are established to address these issues. Finally, the program and facility needs required to meet these goals are identified. These components are all key elements in an effective coastal management program and for achieving the mission of the sites.

### **Jensen Beach to Jupiter Inlet Aquatic Preserve**

According to the IRLAP Systems Management Plan, the Jensen Beach to Jupiter Aquatic Preserve stretches 37 miles and encompasses 22,000 acres through three coastal counties, which include St. Lucie, Martin and extreme northern Palm Beach County (Figure 5-5). The aquatic preserve is accessible from the west by U.S. Highway 1 and from the east by Beach Road. Despite the length

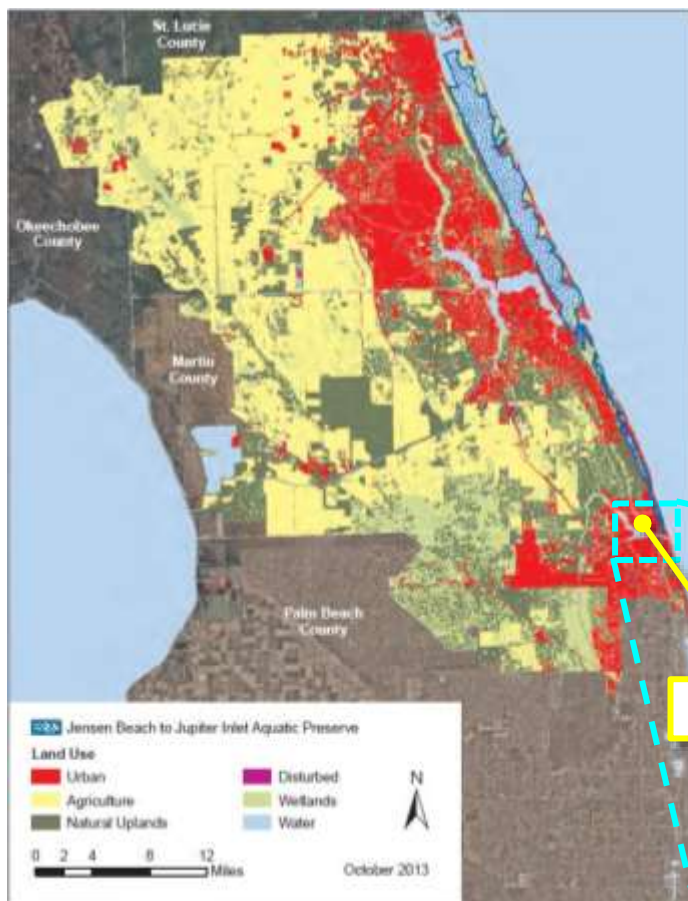
of the Jensen Beach to Jupiter Inlet Aquatic Preserve, public access points are more restricted in this preserve, than the other three preserves in the IRLAP System.

The IRLAP System is separated from the Atlantic Ocean by a barrier island chain that is currently intersected by five inlets that have been either stabilized or man-made, and which represent the only connection between the IRLAP System and the Atlantic Ocean. Located just south of Tequesta's boundary, the Jupiter Inlet is the only historically natural connection to the ocean.

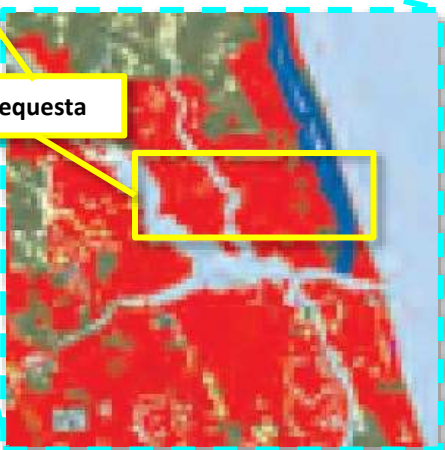
**Figure 5-5. Jensen Beach to Jupiter Inlet Aquatic Preserve (South Section)**



**Figure 5-6. Land Use in Jensen Beach to Jupiter Inlet Aquatic Preserve Watershed**

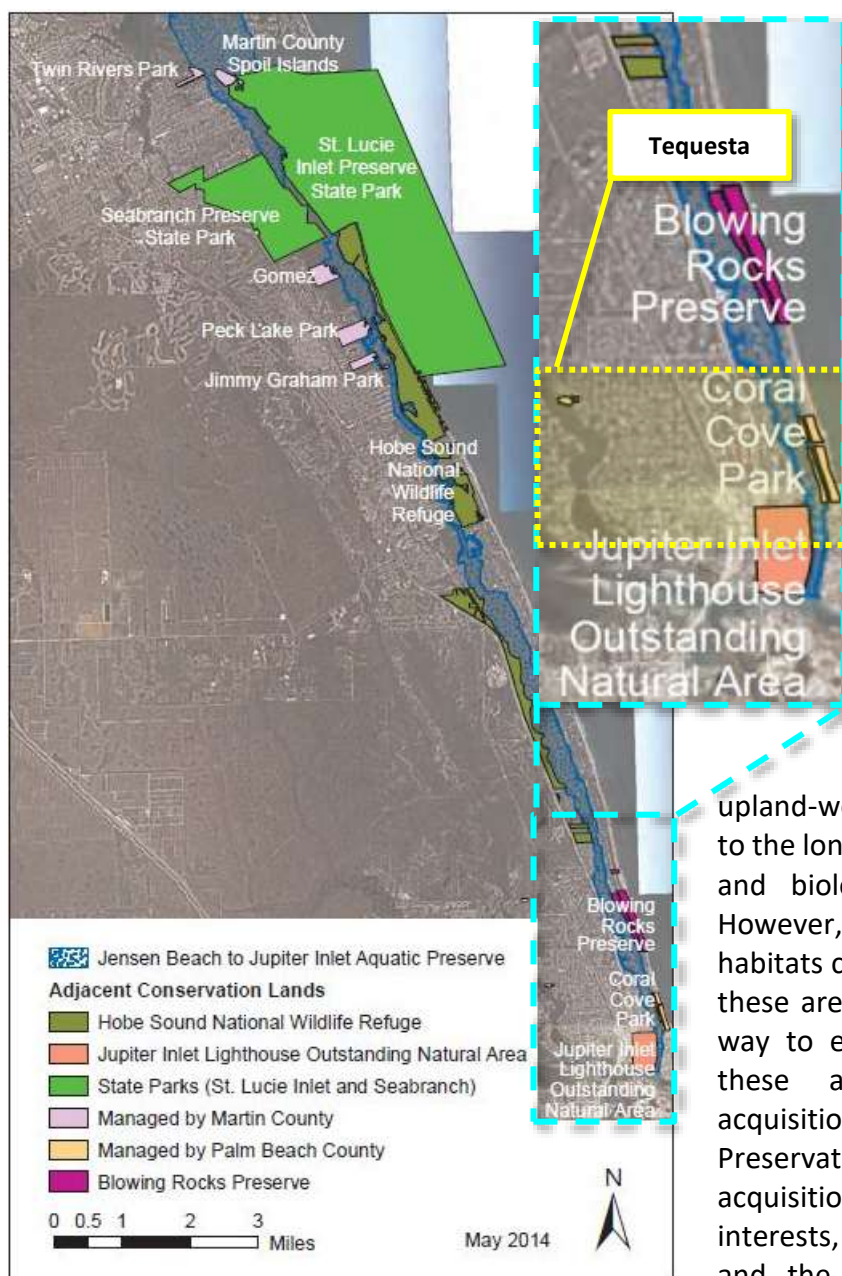


Source: IRLAP System Management Plan, 2015



As indicated on the Land Use map in Figure 5-6, most of the land use within the Village and along the coast is developed and designated as Urban, aside from a few natural upland areas. According to the IRLAP System Management Plan, land use in the Jensen Beach to Jupiter Inlet Aquatic Preserve watershed is 19 percent urban, 37 percent agriculture, and 37 percent natural upland and wetlands. The majority of urban areas appear along the coast and IRLAP, which is why it is so essential to support efforts to preserve and protect these important natural resources. In addition, agriculture land use areas within the IRLAP watershed can affect water quality, as well.

**Figure 5-7. Conservation Lands adjacent to Jensen Beach to Jupiter Inlet Aquatic Preserve (South Section)**



Source: IRLAP System Management Plan, 2015

### Conservation Lands

As indicated in Figure 5-7, there are three designated conservation lands within or adjacent to the Village. These areas include, Jupiter Inlet Lighthouse Outstanding Natural Area (Ecosite #61 and #63), Coral Cove Park, and Blowing Rocks Preserve, which are discussed in further detail below.

Significant wetland losses and alterations occur along the shorelines of all counties in the IRLAP System, which is why protection and enhancement of the remaining functional upland-wetland-lagoon linkages is critical to the long-term protection of the quality and biological resources of the IRL. However, management of these critical habitats can prove difficult since many of these are privately owned. The simplest way to ensure proper management of these areas is through property acquisition or easements. Passage of the Preservation 2000 Act in 1990, along with acquisition initiatives funded by local interests, Water Management Districts, and the Conservation and Recreation Lands program greatly strengthened the



state's ability to acquire endangered lands. Local governments within the IRLAP System responded to this funding availability by passing local land acquisition referendums. Conservation lands within or adjacent to the Village are described below.

### Federal Conservation Lands

*Jupiter Inlet Lighthouse Outstanding Natural Area:* Located in two large parcels to the north and south of Beach Road, the 120-acre site contains lands owned by the U.S. Department of the Interior, Bureau of Land Management; the U.S. Coast Guard; and the Town of Jupiter. The northern parcel is located within Tequesta limits, while the southern parcel is located in the Town of Jupiter and contains the historic 1860 Jupiter Inlet Lighthouse and Museum, the George Washington Tindall Pioneer House and the Town of Jupiter Lighthouse Park.



Palm Beach County manages 78 acres of the natural area under a cooperative agreement with the Bureau of Land Management, with the assistance of the Village of Tequesta. The managed area contains Florida scrub, maritime hammock and mangrove swamp natural communities. Volunteers planted more than 6,000 mangrove seedlings as part of a two-acre tidal wetland restoration project on the north side of Beach Road. The entire 120-acre site has received federal designation as an outstanding natural area through the Bureau of Land Management's National Landscape Conservation Area Program.

### Private Conservation Lands

*Blowing Rocks Preserve:* Blowing Rocks Preserve began in 1969, when residents of Jupiter Island donated 73 acres of their island to The Nature Conservancy. The preserve was named for its rocky shoreline – the largest on the U.S. Atlantic coast. During extreme high tides and after winter storms, seas break against the rocks. The preserve runs for one mile from north to south and connects the Atlantic Ocean to the IRL on the west. Today, the restored preserve reflects what South Florida barrier islands looked like a century ago. Native habitats include beach dune, coastal strand, mangrove swamp and tropical hardwood hammock. Facilities include an education center, native plant demonstration garden, hiking trails, boardwalks, and restrooms.



## Lands Managed by County

*Coral Cove Park:* Located within the Village of Tequesta and managed by Palm Beach County, Coral Cove Park continues to be an asset to the community. The park provides access both to the ocean as well as to the IRLAP/ICWW. In addition, the park provides public facilities, including a parking lot, playground, restroom facilities, picnic tables, and boardwalks.



## Natural Resource Description

*Hydrology & Watershed:* Tequesta is located within Loxahatchee Watershed, with St Lucie Watershed to the north. As discussed in the IRLAP System Management Plan, much of the western watershed of the Jensen Beach to Jupiter Inlet Preserve region historically flowed into the Okeechobee basin. As a result of major water control projects, the Jensen Beach to Jupiter Inlet Aquatic Preserve watershed now extends up to 30 miles west. Approximately 60 percent of the watershed has been artificially expanded.

Tidal flow helps flush pollutants out of the rivers, and prevents nutrients and sediment build-up that can negatively impact existing natural conditions. Tidal flow is present everywhere in Jensen Beach to Jupiter Inlet Aquatic Preserve, with tidal action most pronounced within three to five miles of the Ft. Pierce, St. Lucie and Jupiter inlets.

*Water pollutants:* As mentioned earlier, both agriculture and urban land use within the IRLAP System watershed can affect water quality. Runoff associated with these land uses is characterized by high turbidity, high nutrients and low dissolved oxygen. Agriculture stormwater runoff is diverted to the IRL System by way of large conveyance canals. Urban stormwater runoff is diverted to the IRLAP System through local drainage canals and stormwater collection systems. In both cases, untreated stormwater runoff has heavily impacted the IRLAP System by introducing unwanted pollutants and impacting water quality.

*Groundwater & Wells:* Most of the counties along the IRLAP utilize both the Florida Aquifer and surficial aquifer through wells as their source for obtaining potable water. However, due to the brackish nature of the southern portion of the Florida aquifer, Palm Beach County must rely on only the surficial aquifer system for its potable water supply. Thus, impact to wetlands, saltwater intrusion, and other threats to water quality are major concerns for the Tequesta-Jupiter area, as such impacts could also jeopardize the potable water supply.

*Natural Communities in Tequesta within IRLAP:* As shown on the Natural Communities Map, the main natural resource in the IRLAP area within Tequesta is seagrass beds, with areas of consolidated composite and unconsolidated substrate and mangrove swamp. Sea grass beds serve as a food source and nursery for many species, including manatees. Water pollutants, turbid waters, dock or pier structures, and boat propellers are just a few of the threats that sea grasses face. Without proper light, seagrass cannot complete photosynthesis, which can be detrimental to seagrass beds.

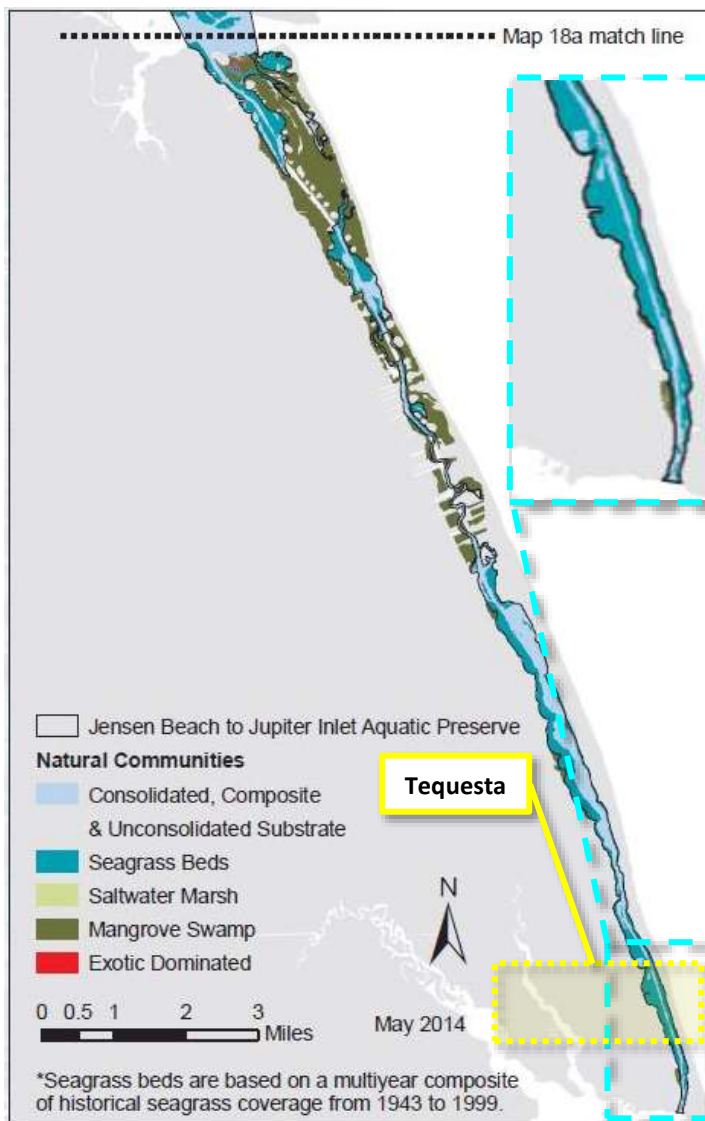
Mangroves provide habitats for numerous birds and other wildlife and are a vital part of the food chain from aquatic organisms to humans. Mangroves also contribute greatly to stabilizing the shoreline by providing a buffer against wave erosion and allowing sedimentation to occur. The importance of these particular resources is further described throughout the Coastal Management and Conservation Elements.

#### Impacts of Sea Level Rise on IRLAP Resources

Due to the low elevations of the mangrove and marsh systems (100-year floodplain) of the IRLAP System, predicted trends such as global warming or increasing ocean water levels, will influence the habitat structure and species distribution in the lagoon.

Sea level rise threatens to inundate many coastal wetlands, with little room to move inland because of coastal development. Rising sea level would allow saltwater to penetrate farther inland and upstream. Increasing salinity could cause an up-estuary advance of marine and estuarine species and a retreat of freshwater species. Sea level rise is discussed in more detail later in these elements.

**Figure 5-8. Natural Communities in Jensen Beach to Jupiter Inlet Aquatic Preserve (South Section)**



Source: IRLAP System Management Plan, 2015

## Public Access

While public access is most limited within the Jensen Beach to Jupiter Inlet Aquatic Preserve, future public access must continue to be closely scrutinized. Rapid population growth rates of coastal areas in Florida are expected to continue. Throughout the lifetime of this plan, decisions vital to the balance between sustainable resource protection and waterway management will need to be made by IRLAP managers working closely with other state entities and local governments.

It is beneficial for staff to stay actively engaged in the local planning processes when new marine facilities such as boat ramps, marinas, mooring fields and similar siting decisions are being considered by local government and municipalities. IRLAP staff involvement early in planning processes for marine siting can aid local government by providing expertise in permitting requirements and result in less environmental impact to the IRLAP System.

## Tequesta's Support of IRLAP System Management Plan

The Village has ordinances in place to ensure the preservation and protection of this valuable aquatic preserve, which are briefly described here. The Village shall provide for the protection of the Indian River Lagoon Aquatic Preserve by prohibiting development in the area that will degrade or otherwise adversely affect the water quality or wetlands of this unique estuarine environment through its Code of Ordinances. More specifically, development or modification of the shorelines within the Indian River lagoon Aquatic Preserve shall be prohibited, unless this modification or development is necessary for the continued health, safety and welfare of the public. Development that provides for water-dependent and water-related land uses such as marinas, are acceptable, provided that the siting of such shall be consistent with the marina Siting Ordinance upon application to the Village.

## **COASTAL AREA NATURAL RESOURCES**

Intergovernmental coordination is imperative to the success of protecting, preserving, and conserving natural coastal resources in the community and surrounding areas. The Village continues to cooperate with the appropriate agencies and adjacent municipalities in implementing and maintaining management plans and policies for the protection of the Loxahatchee River and Indian River Lagoon Aquatic Preserve (IRLAP).

The current Comprehensive Plan establishes LOS Standards for beach access, infrastructure, and water-dependent and water-related land uses, which have been incorporated in both the Zoning and Subdivision Ordinances of the Village. LOS Standards are identified in Division 2., Site Plan Review, Article IX, Supplemental Regulations of Chapter 78, Zoning and in Sec. 66-161, General standards; level of service standards, Division 1, Generally, Article V, Design Standards of Chapter 66, Subdivisions in the Village's Code of Ordinances. These LOS Standards are identified in the Recreation and Open Space element.

## Vegetative Cover

Most of the Village's acreage is developed and there remains only a single extensive area of natural vegetative cover, which is the federally-owned Ecosite #61 that cannot be developed. Existing vegetative

coverage is typical of most South Florida coastal municipalities. Trees and shrubs have been planted along residential streets and provide shade and natural beauty around dwelling units. The parks and other landscaped areas that constitute areas of

vegetative cover within the Coastal area are shown on the Recreation and Open Space Map. Predominant trees located along streets, parks, and throughout residential areas may include, but are not limited to:



Cypress (*Cupressus*)

Mangrove (*Rhizophora*)

Gumbo Limbo (*Bursera simaruba*)

Pin Oak (*Quercus palustris*)

Live Oak (*Quercus virginiana*)

Slash Pine (*Pinus elliottii*)

Caribbean Pine (*Pinus caribaea*)

Australian Pine (*Casuarina*)

Melaleuca (*Melaleuca*)

Fern (*Nephrolepis*)

Banyan (*Ficus*)

Sea Grape (*Coccoloba uvifera*)

Cabbage Palm (*Sabal palmetto*)

Laurel Oak (*Quercus laurifolia*)

Royal Palm (*Roystonea elata*)

Chinese Fan Palm (*Livistona chinensis*)

Malayan Palm (*Cocos nucifera*)

Brazilian Pepper (*Schinus terebinthifolia*)

The parks and other landscaped areas that constitute areas of vegetative cover throughout the Village are shown on indicated Recreation and Open Space Map, and discussed in the Recreation and Open Space data and analysis document. The protection of native vegetation and wildlife habitats is a major focus of the Coastal Management and Conservation elements of the Village's Comprehensive Plan.

Trees are a vital component of the infrastructure in our community and provide many environmental and economic benefits. These benefits include cleaner air, soil and water conservation, climate moderation, energy conservation, human health and longevity, increased property values, traffic calming, enhanced biodiversity, and many more. The two predominant causes for loss of tree vegetation include land development and disease. Some South Florida communities including the Village require preservation or replacement of existing trees, especially those indigenous to the area, when development occurs.



With regard to invasive species, Brazilian Pepper, Australian Pine and Melaleuca are invasive species and have been mostly eradicated from the South Florida region, including the Village of Tequesta. However, a few trees remain in certain areas. When the opportunity arises, these invasive species are replaced with a native alternative.



The Village's landscape regulations require the maintenance of pervious areas and the removal of exotics to protect mangrove areas and beach and dune systems. As indicated in the Conservation element, the Village landscape regulations prohibit certain non-native or invasive species, and require a minimum 50% of all vegetation to be species native to the South Florida area. Also, the Village Zoning

Ordinance establishes a minimum landscape and open space requirement that will preserve pervious areas in all developments.

In summary, the Village intends to regulate the removal, relocation, and replacement of trees and to prevent the abuse of the trees within Village limits to ensure the adequacy and improvement of Tequesta's tree canopy. The Village's commitment to improving its tree canopy is further reflected in its interest in urban forestry, which encourages the care and management of single trees and tree populations in an urban setting and seeks to embrace trees as a vital part of urban infrastructure. The Village's goals in urban forestry are discussed in the Conservation and Future Land Use Elements.

### Mangroves

With regard to mangrove protection, the Village works with County and State park officials to assure any park improvements are sensitive to the mangrove and other vegetative/wildlife/marine habitats. Moreover, the Village coordinates with other agencies, including the Department of Environmental Protection, to ensure local regulations are enforced in the development or redevelopment of any areas.





Additionally, the Village aims to protect mangroves from public works activities such as road and drainage improvements. The Village also expressly prohibits the expenditure of public funds on projects that would adversely impact existing mangrove areas. As indicated on the Coastal Zone and Conservation Map, The Village's mangrove areas are located in already developed areas along the fringes of the ICWW and the Northwest Fork of the Loxahatchee River; thus, the protection of these mangrove areas is assured.

As discussed earlier, it is also important that the Village maintain landscaping regulations to require the use of native vegetation, such as mangroves, which helps with dune stabilization and preserving natural resources.

#### Jupiter Inlet Lighthouse Natural Outstanding Area (Ecosite #61)

The Village continues to preserve Ecosite #61 of the Jupiter Inlet Lighthouse Natural Outstanding Area by implementing appropriate zoning regulations. Ecosite #61 is identified on the Future Land Use Map as Recreation and Open Space and designated on the Village's Official Zoning Map as R/OP, Recreation and Open Space. The Village also identifies any public-owned spoil islands as conservation areas on the Future Land Use Map. The spoil island located in ICWW right-of-way just north of the CR 707 bridge to the barrier island is identified as Conservation use on the Future Land Use Map.



#### Wetlands

Wetlands refer to land where the water table is usually at or near the surface. Some wetlands contain water year-round; others may remain relatively dry for months, becoming moist only during periods of heavy rain. Wetlands are vital habitats for many species of plants and animals and are protected by local, state, and federal regulations.

The wetlands of the Village of Tequesta Coastal Area primarily include the marine wetlands of the Atlantic Ocean and shoreline and the estuarine wetlands of the Indian River Lagoon and Loxahatchee River. The riverine wetlands of the canal drainage system occur primarily in areas



west of the Coastal Area as defined, but are discussed here because of their impact on coastal estuarine waters.



### Marine Wetlands

The marine wetlands of the Coastal Area occur along the Atlantic shoreline of Palm Beach Island and include intertidal wetlands [with unconsolidated bottom that are regularly or irregularly flooded or exposed. Along a major portion of the Atlantic Shore there are also subtidal wetlands containing rooted vascular aquatic beds.

### Estuarine Wetlands

The estuarine wetlands of the Coastal Area occur along the shores of the Indian River Lagoon. Within the lagoon there are also intertidal wetlands with unconsolidated bottoms that are flooded irregularly.



### Riverine Wetlands

The main riverine wetlands of the region's coastal area are the major canals of the Lower East Coast Area Water Management System, which are maintained by the South Florida Water Management District and the associated smaller drainage canals, which are maintained by local water conservation districts.



### Wetland Protection Programs

The environmental quality of wetlands and estuaries is protected by a number of existing and proposed regulatory programs. The following federal, state, regional and local programs seek to protect wetland and estuaries through permitting procedures regulation land uses and activities that could adversely impact environmental quality

## Federal Programs

The federal government implements wetland regulations through section 404 of the Clean Water Act. The U.S. Army Corps of Engineers (USCOE) and the Environmental Protection Agency (EPA) both have active roles in implementing the Clean Water Act.

Section 404 of the Clean Water Act regulates the discharge of dredged or fill material into waters of the United States. The goal of this section is to “restore and maintain the chemical, physical, and biological integrity of the nation’s waters”, which includes all rivers, streams, lakes, wetlands, and coastal waters. Before conducting any activity that will result in the discharge of dredged or fill material, a Section 404 Permit usually must be obtained from the US Army Corps of Engineers prior to beginning activity.

*U.S. Army Corps of Engineers:* USCOE has regulatory authority and jurisdiction over dredge, fill and construction activities that occur within all inland (non-tidal) waterways used for transport of interstate commerce (currently, in the past or potentially in the future). The Corps jurisdiction extends to all navigable waters of the United States, and any adjacent wetlands and tributaries that have surface water or hydrologic connection to any navigable waters.

Review of application for permits that would allow alteration, degradation or destruction of wetland habitats is based on evaluation and balancing of the probable short-term and cumulative impacts of the proposed activity and its intended use on the public interest. Generally, permits that would result in destruction of wetlands are not granted unless the benefits of the proposed activity are deemed to outweigh the damage to the wetland resource. Although mitigation of damage is not required as a matter of policy, it is often necessary where wetland loss is involved in order to shift the balance of the impact evaluation in a more favorable direction.

## State Programs

*Florida Department of Environmental Protection (FDEP):* The FDEP regulates wetlands under its Environmental Resource Permit (ERP) Program. Part IV of Chapter 373 of the applicable state statutes covers the State’s surface water regulatory program. In addition, FDEP has regulatory authority and jurisdiction over dredge, fill and construction activities and activities affecting water quality that occur within wetlands defined to be waters of the state pursuant to Chapters 17.3 and 17.4 of the Florida Administrative Code.

The FDEP performs inspections, delineates jurisdictional wetland boundaries, and enforces state wetland regulations on parcels of land less than five acres in area. For parcels larger than five acres, wetland delineations, inspections, and enforcement responsibility has been delegated by FDEP to the South Florida Water Management District (SFWMD).

The FDEP may deny or limit permission for activities within navigable waters that would negatively impact water quality or habitat value. Within tributaries or wetlands connected to navigable waters, the FDEP’s authority is limited to activities affecting water quality. Review of



applications for permits that would allow alteration, degradation or destruction of wetlands is based on water quality and habitat impacts, including cumulative impacts on the environment. Permits are not generally granted for activities that would destroy wetlands, but wetland loss can occur due to jurisdictional limitations, public interest considerations and mitigation. Mitigation of habitat loss or degradation of water quality is often required by the FDEP on a case-by-case basis.

Similarly, the FDEP has regulatory and jurisdiction over coastal construction and use of lands owned by the State, including submerged lands. Most of these lands are also within the jurisdiction of the USCOE. Review of proposed activities is based on conformance with the guidelines and policies of the State's land management plans. Activities that would have significant negative impact on habitat value, the natural environment or recreational use are generally not permitted.

Mitigation is not considered by the FDEP as a basis for allowing activities that would destroy habitats and is not required as a matter of policy.

### Regional Programs

*South Florida Water Management District (SFWMD):* The SFWMD has jurisdiction over Palm Beach, Martin, and St. Lucie Counties. The District has regulatory authority over the following activities that could impact wetlands:

1. Construction of surface water management systems;
2. Construction of stormwater management systems;
3. Certain activities affecting water quality (as delegated by DEP; and
4. Withdrawal of groundwater.

*Treasure Coast Regional Planning Council (TCRPC):* The Wetland and Deepwater Habitat Policy of the TCRPC seeks to go beyond existing federal, state, and regional programs in protection of the region's valuable wetland habitat resources through the development of Regional Impact Review process and through advisory comments to agencies, entities persons with implementing capability. The policy outlines the regulatory proposals relative to each existing regulatory program as follows:

- U.S. Army Corps of Engineers (USCOE)
  1. To address wetland areas not within the jurisdiction of the USCOE; and
  2. To require mitigation in all cases where protected habitats are altered, degraded or destroyed, and where functions and values of regional significance are lost.
- Florida Department of Environmental Protection (FDEP)
  1. To address wetland areas not within the jurisdiction of the FDEP; and
  2. To determine the extent to which mitigation would be required for lost wetland functions and values.

- Water Management Districts
  1. To prohibit removal of vegetation or clearing of habitats unless approved by exception;
  2. To consider all wetland habitats as regionally important until proven otherwise; and
  3. To prohibit consideration of mitigation as a basis for allowing an activity within regionally important habitats.

### Local Programs

Palm Beach County: Palm Beach County has broad authority to regulate development and use of land, including wetlands, through local ordinances, building codes and the County's Comprehensive Plan. Through its Department of Emergency Resource Management, it administers a range of environmental programs designed to protect, preserve, and enhance Palm Beach County's natural resources, both on land and water. Fresh drinking water, unpolluted waterways, a large tree canopy, and controlling mosquito populations provide a welcoming outdoor tropical experience to snorkel and dive, visit sandy beaches, fresh or saltwater fish, kayak waterways, hike in the woods all while viewing wildlife in their natural habitat.

Regarding dredge and fill permits issued by the USCOE, the County's recommendation is that no such activities be allowed within estuarine marsh areas.

Under the current Palm Beach County Comprehensive Plan, marine grass beds, mangrove areas, and the Intracoastal have been identified as specific natural resource areas requiring careful management and conservation. The policies of the County's current Conservation and Coastal Zone Element include recognition of the significance of coastal zone resources and provide for their protection, enhancement, restoration and management.

Village of Tequesta: The Village's Land Development Regulations contains requirements for development review of the projects impacting wetlands. Where mitigation is required, the Village also defers to federal, state, and regional agencies in determining mitigation for wetlands.

### **Marine Wildlife Habitats and Living Marine Resources**

The Village of Tequesta contains a number of water-based wildlife habitats that support mammals, reptiles and a variety of shore and wading birds. The main habitats are the marine habitats of the Atlantic Ocean and beaches and the estuarine habitats of the Indian River Lagoon and the Intracoastal Waterway. The most important living marine resources of the coastal area are the endangered and threatened species whose habitats along the



Southeast Florida Coast are central to their habitat range in the State or in the United States.

## **Marine Wildlife Habitats and Species**

### **Beach Fauna**

The Atlantic beaches along the Palm Beach County Coast are typical of other sandy beaches. While the diversity of beach fauna on such beaches is low, the populations of individual species may often be very great. These species include specialized types, such as coquina clams, ghost shrimp, annelid worms, and mole crabs that are adapted to the harsh environment of a beach subject to the full force of ocean waves. Because these populations contain small, short-lived organisms, they recover quickly from most environmental disturbances.

### **Nearshore Reefs**

Low profile nearshore rock reefs occur at various locations along Palm Beach County's coast. These rock reefs were formed during the Anastasia period. Commonly known as coquina rock, this rock formation consists of a conglomeration of sand and shell fragments. Characterized by numerous crevices and providing varying degrees of relief, these reefs provide a habitat for diverse flora and fauna. The reefs provide nursery grounds, feeding locations and protective niches for juveniles or smaller fishes. The sabellarid worm (*Phragmatopoma lapidosa*), which requires hard substrate for attachment, constructs honey-combed, wave-resistant colonies commonly called worm-rock reef. In addition to being utilized by over 80 species of tropical and commercially valuable fish, nearshore reefs also provide habitats for the species listed in Table 5-1, shown below.

**Table 5-1. Nearshore Reef Species**

COMMON NAME	SPECIES
<b>Commercially Valuable Shellfish</b>	
Stone Crab	<i>Menippe mercenaria</i>
Blue Crab	<i>Callinectes sapidus</i>
Spanish Lobster	<i>Scyllarides aequinoctialis</i>
Spiny Lobster	<i>Panularis argus</i>
<b>Hard Corals</b>	
Star corals	<i>Siderastrea radians</i>
	<i>Siderastrea sidereal</i>
	<i>Favia fragum</i>
Brain Coral	<i>Diploria strigosa</i>
<b>Other Invertebrates</b>	
Wine-Glass Hydroid	<i>Campanularia</i> sp.
Fire Coral	<i>Millepora alcicornis</i>
Boring Sponge	<i>Cliona celata</i>
Gorgonian	(Various species)
Sponge	(Various species)

## Offshore Reefs

Several offshore reef ridges occur along the County's Atlantic shoreline beginning south of Jupiter Inlet. They are found in water depths ranging from 35 to 40 feet out to a depth of 100 feet. These deep reefs support a diversity of benthic fauna, including hard corals, seaweeds, sea fans, and sponges. In addition, the reefs offer a wide range of habitats for almost all known Caribbean tropical fish and shellfish types, including the species that also utilize nearshore reefs. Fish species include a variety of sport and commercial fish, such as grouper, snapper, mackerel, bluefish, dolphin, kingfish and jack. Offshore reefs also provide shelter and food sources for three species of sea turtles that are endangered or threatened, which include the Green (*Chelonia mydas*), Loggerhead (*Caretta caretta*) and Leatherback (*Dermochelys coriacea*).

Both nearshore and offshore reefs in the Atlantic Ocean provide habitat for diverse fish species. These oceanic reef habitats found off the coast of Palm Beach County are known to accommodate a variety of Caribbean tropical fish, commercial fish, and shellfish types. Fish species include a variety of sport and commercial fish, such as grouper, snapper, mackerel, bluefish, dolphin, kingfish and jack.

## Estuarine Wildlife Habitats and Species

The Village of Tequesta interacts with two major estuarine environments, including the Indian River Lagoon/Intracoastal Waterway, and the Loxahatchee River. These important estuarine habitats are discussed in detail below.

Like all estuaries, the Indian River Lagoon is a semi-confined water body characterized by a mixture of saltwater from the ocean and freshwater from upland sources. Water is exchanged between the IRL and Atlantic through five ocean inlets, which are cuts in the barrier island chain. The salinity, tidal influence, and degree of flushing characteristic of a particular portion of the lagoon depend in large part on its proximity to an inlet and to freshwater inputs from streams, rivers, ditches, and canals. Within the Lagoon is the deep channel of the Intracoastal Waterway. Evaluation of the characteristics of this complex habitat by the US Fish and Wildlife Service indicates that it is home to a variety of aquatic species.

Due to its location between a warm, temperate climate to the north and a subtropical climate to the south, the IRL has been cited as among the most biologically diverse estuaries in North America. The influence of these two distinct biogeographical provinces is one of the factors underlying the spectacular biodiversity found within the Lagoon. High biodiversity is also fostered by the presence of a number of distinct habitats that serve as home to the plants and animals of the IRL. Seagrass meadows, mangrove forests, and saltmarshes are foremost among IRL habitats whose continued health is essential for a healthy lagoon.

The IRL watershed is home to over 2,100 different species of plants and more than 2,200 animal species, including some 700 fish species and 310 bird species. Furthermore, approximately 50



threatened or endangered species can be found in the IRL regional, including 12 plants and 36 animals.

Aside from the Indian River Lagoon, the Loxahatchee River Watershed also has a wide variety of habitats and is home to many rare and endangered species, such as the manatee and woodstork. This 260 square mile ecosystem includes the communities of Jupiter, Tequesta, Juno Beach, Jupiter Island, Jupiter Inlet Colony, Jupiter Farms, Hobe Sound and Palm Beach Gardens. One of Florida's most unique treasures, the Loxahatchee River meanders through freshwater creeks, down into a brackish estuary, and finally empties through the Jupiter Inlet into the Atlantic Ocean.

A brief description of aquatic communities that have been determined to be present in or near Tequesta, are provided below.

### Benthic Communities

A benthic community refers to the community of animals living in and on the bottom sediments of a body of water. Benthic macroinvertebrates have specific habitat preferences, limited mobility, and provide important ecological functions. These characteristics allow benthic macroinvertebrate communities to serve as bioindicators of estuary health, providing information on habitat degradation associated with anthropogenic sources.

The creation of intertidal habitats carry an ecological importance with regard to food web functions. Benthic communities are an important food source for shorebirds and other species. Sediment and muck build-up from adjacent canals and other sources can negatively impact benthic organism, and the species that rely on them. Restoration projects aim to improve water quality and benthic habitats by reducing sediment and nutrient loading into the IRL and Loxahatchee River.

### Phytoplankton

The productivity of phytoplankton is the basis of the estuarine food chain. Its maintenance is essential to populations of fish and crustacean larvae.

### Fish

The Florida Fish and Wildlife and Conservation Commission (FWC) indicates the following fish species are commonly present in Palm Beach County: Largemouth/Sunshine/Butterfly Peacock Bass; Black Crappie; Bluegill; Redbreast/Redear/Spotted Sunfish; Warmouth; Channel/White Catfish; Brown/Yellow Bullhead; Longnose/Florida Gar; Chain Pickerel; Mayan Cichlid; Blue Tilapia; and Bowfin.

### Indian River Lagoon/Intracoastal Waterway

Recent studies indicate that there are over 700 documented fish species in the Indian River Lagoon. Some of these species live permanently in the Lagoon, while others migrate through the rivers and inlets towards oceanic waters. The Lagoon's protected waters make it an ideal location for fish breeding and nursery grounds. Moreover, the broad range of salinity within the IRL coupled with the emergent vegetation and red mangroves create productive nursery habitat for commercially important fish species.

Fish species commonly found throughout the area include grey (mangrove) snapper (*Lutjanus griseus*), common snook (*Centropomus* spp.), Atlantic tarpon (*Megalops atlanticus*), mullet (*Mugilidae*), drum (*Sciaenidae*), sheepshead (*Archosargus probatocephalus*), spotted seatrout (*Cynoscion nebulosus*), pompano (*Carangidae*), jack (*Carangidae*), barracuda (*Sphyraena barracouta*), sea catfish (*Ariopsis*), mojarra (*Eucinostomus* spp.), and lookdown fish (*Selene vomer*). Some of these species are carried from the Gulf Stream in the ocean into the Lagoon through the inlets. Freshwater species in the upper reaches of tributaries include black crappie (*Pomoxis nigromaculatus*), bass (*Centrarchidae*), and sunfish (*Lepomis* spp.).

### Loxahatchee River

In addition to the Lagoon, a variety of fish species are also present in the Loxahatchee River. Common species found in the river include, common snook (*Centropomus* spp.), grey (mangrove) snapper (*Lutjanus griseus*), mullet (*Mugilidae*), bass (*Micropterus*), Atlantic tarpon (*Megalops atlanticus*), and jack (*Carangidae*).

### Invertebrates

Data collected in the Lagoon indicates that the distribution of the most abundant species of shrimp and crabs in Tequesta was related to the distribution of vegetative communities, especially seagrass, found at certain collection and monitoring stations. Common species include the blue crab (*Callinectes sapidus*), cinnamon river shrimp (*Machrobrachium acanthurus*), penaeid shrimp (pink (*Farfantepenaeus duorarum*), brown shrimp (*F. aztecus*), and white shrimp (*Litopenaeus setiferus*).

### Seagrass

Seagrasses play an important role in marine habitats, providing benefits for a variety of areas, including biodiversity, coastal shoreline protection, regulation of nutrient cycling and water quality, fisheries, climate regulation through carbon sequestration, social and cultural value, and tourism and recreation.



Seagrass is a prime nursery for fish and other marine life, it provides substrate, habitat, and protection from predators for fish and invertebrates. It also provides food for herbivores and the detritus food web.



Additionally, seagrass is important in nutrient cycles and helps to stabilize sediments. According to 2009 data by the Florida Fish and Wildlife Conservation Commission, the estimated economic value of seagrass is \$16,594 per acre per year.

As discussed in the Conservation element of this document, the Village implements the Wetland Protection Section of the Palm Beach County Unified Land Development Code, which requires the protection of sea grasses.



#### **Threatened and Endangered Species and Species of Special Concern**

The Indian River Lagoon, Loxahatchee River, and Atlantic Ocean provides a habitat for many endangered and threatened species, including Florida manatees, sea turtles, and seagrass. These species are sensitive to activities such as shoreline development, dredging, filling, and even some recreational activities.

Endangered and threatened species and species of special concern that occur along the shorelines, in nearshore and offshore area, and within the water bodies named above have been identified by the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS) and the Florida Fish and Wildlife Conservation Commission (FWC).

These species are identified in Table 5-2 below by species, designated status as Endangered (E), Threatened (T) or Species of Special Concern (SSC), and agency of jurisdiction.

**Table 5-2. Threatened and Endangered Coastal Species in Palm Beach County**

GROUP	COMMON NAME	Designated Status (FWC/FWS)
Amphibians and Reptiles	Lakes and Ponds	
	American Alligator ( <i>Alligator mississippiensis</i> )	T (S/A)
	American Crocodile ( <i>Crocodylus acutus</i> )	T
	Beach/Coastal Areas	
	Atlantic Loggerhead Sea Turtle ( <i>Caretta caretta</i> )	T
	Atlantic Green Sea Turtle ( <i>Chelonia mydas</i> )	E
	Leatherback Sea Turtle ( <i>Dermochelys coriacea</i> )	E
	Atlantic Hawksbill Sea Turtle ( <i>Eretmochelys imbricate</i> )	E
	Kemp's ridley ( <i>Lepidochelys kempii</i> )	E
	Sand Pine scrubs	
Birds	Gopher Tortoise ( <i>Gopherus Polyphemus</i> )	SSC
	Eastern Indigo Snake ( <i>Drymarchon corais couperi</i> )	T
	Beach/Coastal Areas	
	Least Tern ( <i>Sternula antillarum</i> )	T
	Roseate Tern ( <i>Sterna dougallii dougallii</i> )	T
	Southeastern Snowy Plover ( <i>Charadrius nivosus</i> )	T
	Piping Plover ( <i>Charadrius melodus</i> )	T
	Arctic Peregrine Falcon ( <i>Galco peregrinus</i> )	E
	Red Knot ( <i>Calidris canutus rufa</i> )	T
	Black Skimmer ( <i>Rynchops niger</i> )	T (State)
	American oystercatcher ( <i>Haematopus palliates</i> )	T (State)
	Other water	
	Little Blue Heron ( <i>Egretta caerulea</i> )	T (State)
	Tricolored Heron (Tricolored Heron)	T (State)
	Wood Stork ( <i>Mycteria Americana</i> )	T
	Kirtland's Warbler ( <i>Dendroica kirtlandii</i> )	E
	Everglade Snail Kite ( <i>Rostrhamus sociabilis plumbeus</i> )	
	Whooping Crane ( <i>Grus Americana</i> )	E
	Florida Sandhill Crane ( <i>Grus canadensis pratensis</i> )	T (State)
	Any Environment/Other	
	Florida Scrub Jay ( <i>Aphelocoma coerulescens</i> )	T
	Burrowing Owl ( <i>Athene cunicularia</i> )	SSC
	Red-cockaded woodpecker ( <i>Picoides borealis</i> )	E
Mammals	Beach/Coastal Area	
	Finback whale ( <i>Balanenoptera phsalus</i> )	E
	Humpback whale ( <i>Megaptera novaengliae</i> )	E
	Right whale ( <i>Eubalaena glacialis</i> )	E
	Sei whale ( <i>Balaenoptera borealis</i> )	E



GROUP	COMMON NAME	Designated Status (FWC/FWS)
Mammals (cont'd)	Sperm whale ( <i>Physeter catodon</i> )	E
	Intracoastal	
	West Indian Manatee ( <i>Trichechus manatus</i> )	T
	Scrubs	
	Florida panther ( <i>Puma concolor coryi</i> )	E

Sources: Florida Fish and Wildlife Conservation Commission (FWC); US Fish and Wildlife Services (FWS)

*\*Note: The designated status abbreviations for the above species are defined as follows:*

- **E=Endangered:** as designated by the FWC, a species, subspecies, or isolated population which is so few or depleted in number, or so restricted in range or habitat due to any man-made or natural factors that it is in imminent danger of extinction, or extirpation from the state, or which may attain such a status within the immediate future.
- **T=Threatened:** As designated by the FWC, a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration. Declining in number at a rapid rate, or whose range or habitat is declining in area at a rapid rate and as a consequence, is destined or very likely to become an endangered species within the foreseeable future.
- **T(S/A)=Threatened due to similarity of appearance**
- **SSC=State Species of Special Concern:** As designated by FWC, a species, subspecies, or isolated population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species; may already meet certain criteria for designation as a threatened species but for which conclusive data are limited or lacking; may occupy such an unusually vital and essential ecological niche that should it decline significantly in numbers, or distribution other species would be adversely affected to a significant degree; or has not sufficiently recovered from past population depletion.

*\*In 2010, the FWC revised its imperiled species management system to abolish the species of special concern (SSC) category once all species on that list are reclassified as State-designated Threatened, found to not meet any of the State's listing criteria, or become Federally listed. Until then, the FWC will continue to maintain a separate Species of Special Concern list.*

## **Habitats of Threatened and Endangered Species**

### **Sea Turtle Nesting Areas**

The Palm Beach County ocean shoreline is a major nesting area for sea turtles, with approximately 2,000,000 sea turtles hatching on its beaches every year. Palm Beach County has more sea turtle nests per mile than anywhere else in the United States. The 2016 sea turtle counts provided by the Florida Fish and Wildlife Conservation Commission indicated there were 33,892 loggerhead nests, 1,582 green turtle nests, and 377 leatherback nests, which totals to 35,851 documented sea turtle nests on the County's beaches.

Four species of sea turtles commonly found in the County's coastal waters, reefs, and the lagoon. Three species are considered endangered and include green, leatherback, and hawksbill sea turtles. The loggerhead sea turtle is considered threatened, and is the most common sea turtle found in the area. The majority of sea turtle nests found in PBC are loggerhead nests. The sea turtle nesting season in PBC is from the first of March through the end of October.



#### West Indian (Florida) Manatee Critical Habitat

Manatees inhabit shallow coastal waters, bays, lagoon, estuaries, rivers and lakes throughout its range. These animals prefer warmer temperatures and tend to migrate to the warm water discharge area at the Florida Power and Light Riviera Beach Power Plant, which is located approximately 16 miles south of Tequesta. Otherwise, manatees are commonly found in shallow coastal waters and seagrass beds.

Collisions of boats and barges with manatees has historically been one of the major causes of manatee injury and death. Within the Indian River Lagoon and throughout the ICWW in Palm Beach County, boating slow speed limits are posted in order to protect the manatee population from injury.

The IRL and associated water bodies provide a critical habitat for the West Indian Manatee. Although original population levels of manatees in Florida are unknown, studies indicate that peninsular Florida has been the center of the manatee's range in the continental United States. Current data by the Florida Fish and Wildlife Commission indicates the Florida manatee



population has grown to over 6,000 animals today.

In order to further restore and protect manatee populations, the PBC Manatee Protection Plan (MPP) was incorporated into the County's Comprehensive Plan in 2008. The MPP provides guidance to PBC and municipalities in developing policies and guidelines for comprehensive manatee protection in local waterways.

### **Coastal Area Historic Resources**

Historic resources and sites are defined by Chapter 163, F.S., as areas listed on the Florida Site File on the National Register of Historic Places, or those designated by the local government as historically, architecturally or archeologically significant.

While no historic preservation or historic resource sites have been identified within the Village of Tequesta, the site plan review process is available to review such archaeological and historic resources, if the need arises in the future.

### **Existing Uses of Natural Resources**

The Atlantic Ocean, Indian River Lagoon and Intracoastal Waterway, the Loxahatchee River, and related canals and water bodies are used for fishing, boating, and other recreational activities.

Small-scale direct habitat loss also occurs in the IRL and the cumulative impact of such damage is significant. One example is prop scarring of slow-growing seagrass beds by motorized watercraft. Increased utilization of the lagoon by recreational users exposes sensitive, vital habitats to accidental damage.

Through policies and regulations, the Village strives to provide for the continued use of the natural resources in the community, and ensure that adequate services are available to serve Village residents and the public in the coastal area.

### **Future Uses of Natural Resources**

Based on a projected development of future land uses in accordance with the Village's current land use map and zoning map, its present and desired future character, no additional adverse effects on the Village's natural resources are expected. Population growth, especially in the designated Coastal Area, is projected to proceed at a low rate, according to recent trends and the fact that this area Coastal Area is basically built-out, and is not expected to be accompanied by rapid development.

Potential residential and non-residential additional development is not expected to interfere with the Coastal Area, and therefore, should not have any impact on the Coastal Area natural resources.

## **Impact of Development on Natural Resources**

The Village “Works with the County and State park officials to assure that any park improvements are sensitive to the mangrove and other vegetative/wildlife/marine habitats”. The Village also coordinates with other governments to assure that development regulations are enforced in all areas in an effort to protect vegetative, wildlife and marine habitats.

There are several sources of direct habitat loss within the Lagoon. Development of the Indian River Lagoon shoreline has sometimes necessitated the removal of mangrove stands, salt marsh vegetation, or seagrass meadows. Various state permitting processes aim to minimize such habitat loss.



## **Coastal Construction Control Line**

The coastal construction control line was established for the Palm Beach County coastline by the Department of Environmental Protection (DEP) pursuant to Chapter 161.053, Florida Statutes. Establishment of the line was based on study and analysis of historical data and a field program that collected current data on the effects of tides, winds, and waves on the shoreline. The objective of setback line analysis was to prevent beach encroachment that would endanger the existing beach and dune systems and to help prevent existing and future structures from being unreasonably subject to great or irreparable harm.

This analysis considered measured topographic factors, including dune elevations, foreshore and offshore slopes, beach widths and adjacent profiles, and upland development and vegetation



bluff lines and computed dynamic factors, including storm surge elevations, erosion trends, wave uprush and fluctuations of beach profiles.

The State administers the Coastal Construction Control Line (CCCL) program and 30-year erosion setback through the Department of Natural Resources, Division of Beaches and Shores. FDEP regulates all development seaward of the CCCL to ensure that the proposed development has minimal impact on the beach and dune system and can survive a major storm.

As part of the coastal construction permitting process, 30 years' worth of erosion must be considered, and Florida law prohibits (with limited exceptions) construction of buildings that will be in the water in 30 years. FDEP's jurisdiction is limited to areas seaward of the CCCL. In most cases, the CCCL now runs through, or west of the majority of beach front structures in the State.

The adjacent graphic provides the location of the CCCL, indicated by a red line, within the municipal boundaries of the Village of Tequesta, which are indicated by a solid yellow line. As depicted, the CCCL runs through the beach front properties along the barrier island.

The Village prohibits construction seaward of the State-designated coastal construction control line (CCCL), except as may be approved by the state (FDEP), in order to preserve and protect the existing natural habitats, while also preventing future development in these sensitive areas. The Village's Comprehensive Plan contains policies that encourage the Village to establish new setback lines if the State lines prove to be inadequate. Also, it is recommended that coastal construction regulations be reviewed from time to time based on natural disaster mitigation techniques and redevelopment plans.



### Coastal High Hazard Area

Pursuant to Ch. 163.3178(3)(c)(2), F.S., the coastal area was redefined as the “coastal high hazard area” (CHHA) which refers to the area below the category 1 storm surge line. The barrier islands of Palm Beach County, including in portion of Jupiter Island within the Village, may be expected to experience storm tide flooding or storm surge, and possible damage during storms of hurricane strength. Similarly, areas along the North and Northwest Forks of the Loxahatchee River in Tequesta could experience similar flooding.

The existing land uses in the CHHA in Tequesta are primarily residential and recreation uses. The only recreational facility located in the CHHA within the Village continues to be Coral Cove Park. Some residential areas that abut the Forks of the River and ICWW lie in the CHHA and are subject to coastal construction regulations of the Village. The coastal high hazard area is discussed in greater detail in the “Natural Disaster Planning” and “Sea Level Rise” sections of this document.

### Stormwater Management & Flood Control

Stormwater runoff and associated flooding problems are compounded in urbanized areas. In undeveloped portions of the watershed, rainfall percolates down into porous soil and nutrients and other contaminants are mechanically and biologically filtered out before stormwater reaches the lagoon. As more and more land is de-vegetated and paved over, this important natural process is lost.

Through various policies, the Village encourages proper stormwater management practices in order to preserve and enhance Tequesta’s significant natural features. These policies aim to reduce stormwater runoff, require development to retain/detain substantial portion of runoff on-site, and reduce non-point source pollutant loading to the Loxahatchee River and ICWW. The NPDES Program discussed above and in other parts of this document, is aimed at maintaining a stormwater management system that meets State Water Quality Standards by reducing pollutants into the surface waters within Tequesta. The Village requires that a minimum 95% of stormwater emanating from developments be retained on-site. The Village also maintains four (4) drainage easements (Parcels A and B, Russell Street and N. Cypress Drive) for retention/detention purposes.

Flood control in Palm Beach County is dependent on a complex, integrated system of canals, waterways and flood control devices operated by the South Florida Water Management District, 20 drainage districts, and thousands of privately owned canals, retention/detention lakes and ponds. The County's drainage system is designed to handle excess surface water in three stages. The "neighborhood or tertiary drainage systems" (made up of community lakes, ponds, street and yard drainage grates or culverts, ditches and canals) flow into the "local or secondary drainage system" (made up canals, structures, pumping stations and storage areas) and then into the "primary flood control system" (consisting of South Florida Water Management District canals and natural waterways and rivers), ultimately reaching the Atlantic Ocean.

## **BEACH & DUNE SYSTEMS**

Beaches are defined by Chapter 163, F.S., as the zone of unconsolidated material extending from the mean low water line to the place where there is a marked change in material or physiographic form, or the or to the line of permanent vegetation, usually the effective limit of storm waves. For the purposes of the Coastal Management Element, beaches are limited to oceanic and estuarine shorelines. Dune is



defined as a mound or ridge of loose sediments, usually sand-sized sediments, lying landward of the beach and extending inland to the landward toe of the dune which intercepts the 100-year coastal storm surge.

The Atlantic beach and dune systems of Tequesta extend approximately half a mile along the length of the Village's eastern corporate limit on Jupiter Island. The general conditions of the beaches and dunes are discussed in the sections that follow.

### **General Overview**

Beaches define the coastline of the barrier island. The half mile of Atlantic Coast shoreline within Tequesta municipal limits is almost entirely dedicated to residential and both public and private recreational uses. Subject to winds, tides, waves, and currents, a beach is a constantly changing boundary. Its primary value to the barrier island is its capacity to absorb and dissipate wave energy, thus stabilizing the coastline. The beach consists of sand and shell materials with some vegetation in the dunes. Beaches are subject to constant change due to the continual drift and movement of sand. Littoral drift is the sand which is moved by the process of being washed away by waves and redeposited downdrift of its origin. When this process is interrupted, for example by jetties and groins, the sand is deposited unevenly in one area and eroded in others.

Dunes are divided into two zones, the primary dune (foredune) and secondary dune (backdune). The primary dune extends landward of the backshore. It varies in height and may be only slightly higher than the backshore. The dune community, while tolerant of environmental stresses such as desiccation and salt spray, is particularly sensitive to physical alteration. The dune flora is intolerant of trampling, requiring long periods of stabilization before complete recovery.

Even more destructive to dune integrity is the historic practice of dune-line construction, which destroys the native dune flora and fauna, and ultimately the beach-dune structure itself. Attempts to stabilize dunes with such features as bulkheads often accelerate dune erosion because wave energy is no longer dissipated over a dune-fed beach, but concentrated at the wave-bulkhead interface. Due to the expense of beach nourishment or alternative shore stabilization techniques, it is imperative that beach-dune communities be preserved or redeveloped.



### **Historic Shoreline Changes in Palm Beach County**

The major forces in the shaping of the Palm Beach County coastline are the combined effects of the wind, waves, tides and sea level rise. During storm conditions, these forces increase and pose a threat to structures and property bordering beaches of insufficient width and slope to provide natural protection. In addition, coastal currents and inlet dynamics exacerbate the erosion problem.

Comparison of Palm Beach County beach and offshore surveys between the years 1929 and 1977 show substantial recession and advance of the shoreline, with advance occurring primarily as a result of impoundment north of the county's four inlets and as a result of local beach nourishment projects. In 1986, in an attempt to address growing concerns of beach erosion throughout the state, the FDEP, Division of Water Resource Management was charged with the responsibility to identify those beaches of the state which were critically eroding and to develop and maintain a comprehensive long-term management plan for their restoration. An initial list of erosion areas was developed and continues to be updated and maintained, as necessary.

According to PBC's Comprehensive Emergency Management Plan updated in 2016, 58 storms of hurricane intensity have passed within 125 miles of the County since 1886. Hurricanes and tropical storms that have directly impacted Palm Beach County and Tequesta are detailed later in this document.

Today, various plans are in plan to manage coastal areas and protect dunes and beaches, including the PBC Shoreline Protection Plan, FDEP's Strategic Beach Management Plan, Southeast Atlantic Coast Region, PBC's Shoreline Enhancement and Restoration Program, and various other programs and studies. These initiatives identify critical areas and prioritize and develop action plans to enhance and restore areas that are at risk.



## **Public Beach Access**

Level of Service standards for public beach access are established in the Recreation and Open Space element of the Comprehensive Plan which establishes standards for all recreation and open space facilities. Public beach access is somewhat limited in the Village, however Coral Cove Park provides access to both the ocean and ICWW. Limited access to coastal resources helps protect conservation lands and allows for dune stability as these areas are not disturbed as frequently.

## **Inlet Dynamics and Inlet Protection Structures**

Trends in accretion and erosion of the Palm Beach County shoreline have been profoundly affected by inlet dynamics and the structures erected to stabilize inlet locations. All of the County's four inlets have been stabilized and improved in order to support navigation and circulation. The structures erected in this effort have had a major impact on adjacent shorelines both to the north and south of the inlets because of their interruption of the natural littoral drift of sands. Inlet protection structures generally increase accretion of beaches on the north side and erosion of beaches on the south side of the inlets. Jetties and other structures erected to stabilize inlets act as a barrier to the natural littoral drift of sand, which is normally distributed evenly along the coast by means of a sandbar.

In Palm Beach County, the dominate littoral drift is to the south the effect of inlet protection structures is the impoundment of sand on the north side of the inlet and a corresponding loss of sand on the south side. An inlet sandbar system creates a "shadow" effect around the inlet, creating littoral drift towards the inlet on both north and south sides.

The impoundment of sand on the north side of an inlet in effect deprives the south side of the inlet of its normal share. The critical problem area is the reach directly downdrift of the inlet, which may extend from 1,000 to 2,000 feet or more to the south. The limit of this "shadow" zone is often determined by the location where the inlet sand bar reconnects to the shore. The zone is characterized by a nodal point from which the direction of net littoral drift is outward, creating an area of beach that continuously loses sand. Thus, downdrift beaches are always in a state of sediment deficit.

### **Jupiter Inlet**

The Jupiter Inlet, which is maintained by the Jupiter Inlet District, connects the Atlantic Ocean to the waters lying behind the coastal barrier islands. The 0.8 miles



of inlet shoreline to the north and south of Jupiter Inlet have been designated as critically eroded inlet shoreline. This inlet, like Palm Beach County's three other inlets, has been stabilized in order to support navigation and circulation. The structures erected in this effort had a major impact on adjacent shorelines and the natural littoral drift of sands.

### **Coastal and Shore Protection Structures**

In addition to inlet protection structures, coastal and shore protection structures also have an effect on beach erosion. Coastal and shore protection structures are defined by Chapter 163, F.S., as revetments, rock mounds, seawalls, bulkheads, retaining walls and sandbags.

Generally, seawalls and bulkheads are erected along the dune line to protect upland areas and structures. While these structures are successful in protecting the lands behind them, they do not create or maintain bathing beaches along the shore. Many protective structures have an adverse effect on the natural beaches by depriving them of their natural defenses, including sediment material and dune vegetation. When built close to the ocean, seawalls and bulkheads are subject to direct attack by high waves. When reflected back, these high energy waves result in a lowered beach profile and accelerated erosion of the beach.

### **Trends in Erosion and Accretion on Jupiter Island**

The potential impacts of erosion on recreational beaches, dune habitat, or upland public property is the primary consideration used to determine project limits. Erosion can be a long term process resulting from a combination of sea level rise and high frequency/low intensity storms, or it can be a short term response to seasonal weather changes or major storm events. Generally, beach nourishment (usually with a dune restoration component) is proposed where long term erosion causes a reduction of sand volume in the beach profile. Dune restoration projects are typically recommended where erosion events have resulted in the loss of the dune or when potential environmental impacts preclude the use of extensive fill.

Palm Beach County's forty-six (46) miles of ocean shoreline has been subjected to coastal erosion for many years due to the stabilization of inlets, residential and commercial development, and natural forces. The coastal strand ecosystem is one of the most threatened natural systems in Florida due to over-development. Presently, 31 of the County's 46 miles are listed as critically eroded by Florida's Department of Environmental Protection (FDEP). Florida's Department of Natural Resources studies show erosion losses for many sections of Jupiter Island, including areas in northern Palm Beach County in Tequesta and Jupiter Inlet Colony.

However, even while erosion losses have been reported, aerial surveys have shown an accretion of shoreline dimensions in some areas. The indication is that offshore erosion is occurring, with the offshore beach profile becoming steeper. This steepening of the offshore profiles contributes to the increasing vulnerability of upland structures to storm damage. The FDEP has found that the impact of a ten-year coastal storm would involve damage to 13.3 miles of Palm Beach Island structures.

## **Beach and Dune Nourishment & Restoration**

Beach erosion has longed plagued coastal communities, and Palm Beach County is no stranger to these challenges. In light of increasing beach erosion documented in the 1950s, Palm Beach County took action towards the restoration and preservation of its beaches. Beginning in the 1980s Army Corps of Engineers (USACOE) prepared studies for the development of beach nourishment plans for Palm Beach County.

Palm Beach County and other agencies continue to work together to protect and manage the future of its dune and beach resources. While there is no one solution to beach erosion, several methods are utilized by Palm Beach County, each with its own merits and drawbacks. The first approach is to facilitate



sand transfer at the inlets in order to restore the natural flow of sand. The second approach includes protecting the existing dunes and beaches and restoring the portions of shoreline that are already degraded. The last approach includes evaluating erosion control structures for use along beaches that may not qualify for a traditional beach fill project or may experience an erosional hot spot.

All approaches include environmental monitoring of the resources to ensure that our effort to restore sand is accomplished in a manner that protects the natural environment to the greatest extent possible. Through the Shoreline Enhancement & Restoration Program, the County is able to provide publicly accessible beaches, support the tourist-based economy, restore beach habitat and protect upland property.

### **Beach Nourishment**

To date, 14.5 miles of shoreline within Palm Beach County are managed with beach nourishment. Another 5 miles is maintained by dune restoration. In order to supplement the natural littoral transport of coastal sediments, the County and its municipal partners maintain a feeder beach system. The planning, engineering, design, construction, monitoring and funding of a multi-million dollar beach nourishment project is a long process that can take from four to seven years to complete.

## Dune Restoration

Sand dunes provide additional protection to the upland from the sea by acting as buffers against high storm surge and waves, protecting upland areas from flooding. In addition, they provide a reserve supply of sand to replenish the beach during times of severe erosion. Where feasible, the County re-establishes viable dune systems planted with native vegetation. Native, salt-resistant dune vegetation traps wind-blown sand, collects it around the plant, and builds up the dune and surrounding beach. Dunes also provide a habitat for sea turtle nesting and other wildlife. To date, 112 acres of dune have been restored at Coral Cove Park, Jupiter Beach Park, Carlin Park, Juno Beach, Loggerhead Park, Singer Island, Riviera Beach, Lake Worth, South Palm Beach, Lantana Municipal Beach, Ocean Inlet Park, Ocean Ridge, Gulfstream Park and South Inlet Park.

### Coral Cove Dune Restoration Project

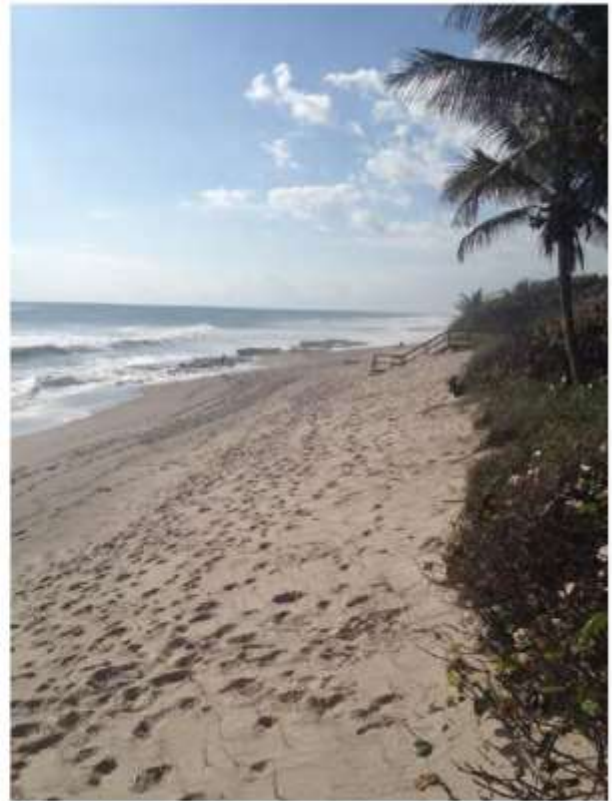
Palm Beach County's dunes are vulnerable to severe storm impacts, human activity, and invasive nonnative vegetation. In order to address these issues, Palm Beach County works with appropriate entities to develop a solution, which typically includes adding sand to damaged dunes, stabilizing dunes with native vegetation, removing invasive nonnative vegetation, and creating beach access with dune crossovers to minimize disturbance.

Coral Cove Beach is located in the Village of Tequesta, approximately one mile north of the Jupiter Inlet, at monuments R5-R7.6. Over the years, this area has suffered from the effects of storm surge and hurricanes. In 1989, Coral Cove Dune Restoration was first initiated. This initiative included removal of nonnative vegetation, filling dune with sand to restore natural dune elevation, installation of 9.6 acres of native dune vegetation, and construction of 4 dune walkovers.



Subsequent dune restoration was completed in 1993, 2005, 2013, and most recently in 2017 after Hurricane Matthew. Armoring has since been constructed along private development in Tequesta. Following the 2004 hurricane season, emergency protective berms were constructed in 2005. Similarly, after Hurricane Sandy in 2012, approximately 35,000 tons of sand was used to rebuild the dune, which was completed in 2014. Native vegetation was also installed to stabilize the dune slope and limit erosion. The photos show Coral Cove Beach both before and after the dune restoration project that took place as a result of Hurricane Sandy. Hurricane Matthew caused damage to the dunes in this area as well, and dune restoration plans for affected beaches are once again in place.





### **Potential Biological Impacts of Beach Nourishment**

In order to design and construct beach projects with minimal environmental impacts, PBC staff are responsible for developing and implementing extensive environmental monitoring programs for beach projects. Monitoring efforts include, but are not limited to, taking annual coastal aerial photos, measuring the amount of exposed nearshore reef, obtaining beach profiles, tracking the County's threatened and endangered nesting sea turtle populations and performing pre & post storm beach assessments.

Recommendation for approval and construction of erosion control projects will be based not only upon the amount of erosion evidenced in a given reach of the study area, but also the potential biological impacts of beach nourishment measures. Following design of the project, permit applications are submitted to the Florida Department of Environmental Protection (FDEP) and the United States Army Corps of Engineers (USACE). These agencies in turn seek input from the Florida Fish and Wildlife Conservation Commission (FWC), Environmental Protection Agency (EPA), National Marine Fisheries Service (NMFS) and U.S. Fish & Wildlife Service (FWS).

Potential short-term and long-term impacts associated with beach nourishment proposals include alteration of specific area, including nearshore and borrowing sites within each proposed nourishment project reach, as a result of dredging activities. Drastic alterations in these areas

could create adverse environmental impacts resulting in reduction of fish populations and damaged or destroyed soft and hard coral reef communities.

The resuspension of silts and clays winnowing from dredged material could continue to produce turbidities after construction. Such turbidities could cause the degradation of water quality and possibly smother or stress organisms such as corals, sponges and polychaetes. Turbidities could also reduce the amount of sunlight available to photosynthetic plants that are essential to the functioning of the community food chain.

Proposed beach nourishment projects will be closely monitored and possibly modified, if necessary, in order to address the following specific potential impacts:

1. Burial of nearshore reef systems;
2. Short-term and long-term water quality impacts;
3. Sea turtle nesting impacts;
4. Mechanical damage to patch reefs and deep reefs; and
5. Elimination of infaunal communities in borrow sites.

## **NATURAL DISASTER PLANNING**

The goals and policies in this section are designed to strengthen coastal resiliency in the region in order to protect human life and limit public expenditures in areas subject to destruction by natural disasters.

### **Local Mitigation Strategies (LMS)**

According to state law, local governments are required to prepare Local Mitigation Strategies (LMS) to identify actions that permanently reduce or eliminate the long term risk to people and property from the different types of hazards faced by Florida residents. Mitigation planning allows communities to consider the vulnerability of land that is currently undeveloped but may be developed in the future, as well as the risk to people and property on existing developed land. The consideration of the potential for damage to properties in vulnerable areas and implementation of actions to reduce the impact can go a long way towards eliminating the disruption a disaster occurrence creates in the community.

As such, the Village of Tequesta is also a part of and subject to, the Palm Beach County LMS. The original PBC LMS was formally adopted by the County, municipalities, and the LMS Steering Committee in 1999, and most recently adopted the 2016 revisions. The LMS was established and continues to operate in accordance with prevailing federal, state, and local guidelines and requirements. The purpose of the LMS is to develop and execute an ongoing strategy for reducing the community's vulnerability to identified natural, technological, and human caused hazards. The strategy provides a rational, managed basis for considering and prioritizing hazard-specific mitigation options and for developing and executing sound, cost-effective mitigation projects.

Additionally, the LMS provides a basis for justifying the solicitation and use of local, state, federal, and other funding to support hazard mitigation projects and initiatives.

The Palm Beach County Local Mitigation Strategy Working Group and sub-committees are coordinated by the Palm Beach County Department of Public Safety's Division of Emergency Management. The LMS Working Group is comprised of county, municipal, private sector, and community partners, including the general public, that prepare and promote local strategies and projects to reduce long-term risks to life and property from natural, technological, and human caused disasters. The resulting pre- and post-disaster mitigation strategies and projects are supported by a variety of state and federal programs and funding sources, in accordance with the Disaster Mitigation Act of 2000.

Mitigation projects carried on the LMS Prioritized Project List (PPL) may be eligible for funding under a variety of programs, such as the Pre Disaster Mitigation (PDM) Program, Public Assistance (PA), Flood Mitigation Assistance (FMA) Program, and Hazard Mitigation Grant Program (HMGP). The PPL is updated at least twice a year in anticipation of funding opportunities.

LMS Working Group meetings serve as the primary mechanism and forum for exchanging information, planning implementation of updating the Palm Beach County Local Mitigation Strategy, and mobilizing the vast experience and resources of the community. Public attendance and comments are welcomed and encouraged.

### **Coastal High Hazard Area**

As discussed in a previous section, in response to devastating hurricanes and coastal storms in the past 15 years, state bills were introduced to address the permitting processes, levels of service thresholds, and to revise the definition of the Coastal High Hazard Area.

Thus, the definition of Coastal High Hazard Area changed from the category 1 hurricane evacuation zone to “The area below the Category 1 storm surge line as established by the Sea, Lake and Overland Surges from Hurricanes (SLOSH) computerized storm surge model.” The SLOSH model combines topographic and bathymetric data with hurricane models to delineate land areas that are prone to storm surge inundation.

Establishing coastal high hazard areas is an important component to hazard mitigation planning, as it enhances life safety of residents and visitors and guides future development and redevelopment in areas susceptible to flooding from storm surge.

Per the above definition for a CHHA, the Village considers all areas below the category 1 storm surge line within the Coastal High Hazard Area. The category 1 storm surge area is indicated on the Hurricane Surge Map, presented in Figure 5-1 of this Element. This criteria is intended to guide future development and redevelopment in an effort to further protect Tequesta’s residents and its natural, economic, and cultural resources.

## **Floodplain Development**

Flooding in Florida can come at any time with little warning. Hurricane season runs from June 1<sup>st</sup> through November 30<sup>th</sup>. Flooding in our Village can come from different sources, including tidal surges from hurricanes and tropical storms, heavy rains, and clogged or blocked drainage pipes and ditches.

Storm surge caused by hurricane systems poses the greatest threat to life and property. All coastal property and inhabitants are subject to severe damage and loss of life resulting from flooding caused by tidal surge associated with hurricanes and tropical storms. Inland flooding can accompany any hurricane due to the low elevation of much of the Village. During extended periods of heavy rainfall, certain low-lying neighborhoods within the Village are subject to considerable flood damage and isolation caused by inability of natural and mechanical drainage systems to effectively remove the water.

## **Natural and Beneficial Functions of Floodplains**

Wetland areas along the Intracoastal in the Village of Tequesta and buffer areas adjacent to open spaces help reduce flood damage because floodwaters in a natural floodplain are permitted to spread over a large area and open spaces provide flood water storage. These natural areas also filter nutrients and impurities from stormwater runoff and promote infiltration and aquifer recharge. By preserving natural areas, fish and wildlife habitats are protected to provide breeding and feeding grounds.

All development within the Village is subject floodplain regulations and must comply with the Village's Land Development Regulations, Chapter 78, Article XII, Flood Damage Prevention. This chapter includes requirements for all development wholly within or partially within any flood hazard area to safeguard the public health, safety, and general welfare and to minimize public and private losses due to flooding through regulation of development in flood hazard areas. This article is intended to be administered and enforced in conjunction with the Florida Building Code. Where cited, ASCE 24 refers to the edition of the standard that is referenced by the Florida Building Code.

## **Flood Protection Programs**

### **National Flood Insurance Program (NFIP)**

The U.S. Congress established the NFIP with the passage of the National Flood Insurance Act of 1968. The NFIP is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the Federal government will make flood insurance available within



the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods.

The Village of Tequesta participates in the National Flood Insurance Program (NFIP). In return for NFIP making flood insurance available to property owners, the Village is required to adopt ordinances to manage development within 100-year floodplains to prevent increased flooding and minimize future flood damage. Flood Insurance Rate Maps, published by the Federal Emergency Management Agency (FEMA), are used as the basis for delineating the 100-year floodplain and identifying regulated land. To this end, the Village adopted two ordinances in 2017 related to FEMA's updated flood insurance maps and flood hazard prevention, which are discussed in detail later in this document.

Development in flood zone areas must also meet the requirements of the NFIP. The Village contains various flood-prone areas (Zones A and V) with the majority being located along the Atlantic Ocean on the barrier island, the ICWW and fringe areas along the North and Northwest Forks of the Loxahatchee River.

#### Community Rating System (CRS)

The NFIP's CRS was implemented in 1990 as a program for recognizing and encouraging community floodplain management activities that exceed the minimum NFIP standards. Palm Beach County joined the National Flood Insurance Program's (NFIP) Community Rating System (CRS) in 1991. The CRS is the County's primary floodplain management program. It is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed minimum NFIP requirements.

Resident flood insurance premium rates are discounted to reflect the reduced flood risk resulting from community actions that: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance. Palm Beach County has recently qualified for a Class 6 rating, placing it in the top 10% of programs nation-wide. By virtue of its ratings increase, the residents of Unincorporated Palm Beach County will see a 20% annual savings in insurance premiums.

Under the CRS, flood insurance premium rates are adjusted to reflect the reduced flood risk resulting from community activities that meet the three goals of the CRS:

- 1) Reduce flood losses;
- 2) Facilitate accurate insurance rating; and
- 3) Promote the awareness of flood insurance.

There are ten CRS classes: Class 1 requires the most credit points and gives the largest premium reduction; Class 10 receives no premium reduction. The CRS recognizes 18 creditable activities, organized under four categories numbered 300 through 600: Public Information, Mapping and

Regulations, Flood Damage Reduction, and Flood Preparedness. Through various flood plain management activities and coordination with FEMA, the Village of Tequesta has lowered its CRS class to 7 and will continue to participate in activities to comply with NFIP requirements.

#### Local Flood-Related Ordinances

The Village seeks to develop techniques and best practices that may reduce losses due to flooding and claims made under flood insurance policies issued in this state. Residents and businesses in flood-prone areas are encouraged to utilize the National Flood Insurance Program (NFIP) and the Community Rating System (CRS), which are briefly discussed below.

In addition to state agencies, the Village's Building Department regulates the building of structures in flood-prone areas so that flood damage can be minimized or avoided. The Village has continued to support these programs and work with residents and businesses in regard to program requirements. Moreover, the Village recently passed an ordinance related to FEMA's updated flood zone maps and is considering passing an ordinance related to flood hazard prevention techniques that will increase the "freeboard" height requirements, as detailed below.

On July 13, 2017, the Village of Tequesta Council adopted Ordinance 7-17 providing that the Federal Emergency Management Agency has revised and reissued the Flood Insurance Study and Flood Insurance Rate Map for Palm Beach County, Florida, and Incorporated Areas, effective October 5, 2017. The Village of Tequesta participates in the National Flood Insurance Program (NFIP) and the Village Council of the Village of Tequesta desires to continue to meet the requirements of Title 44 Code of Federal Regulations, Sections 59 and 60, necessary for participation.

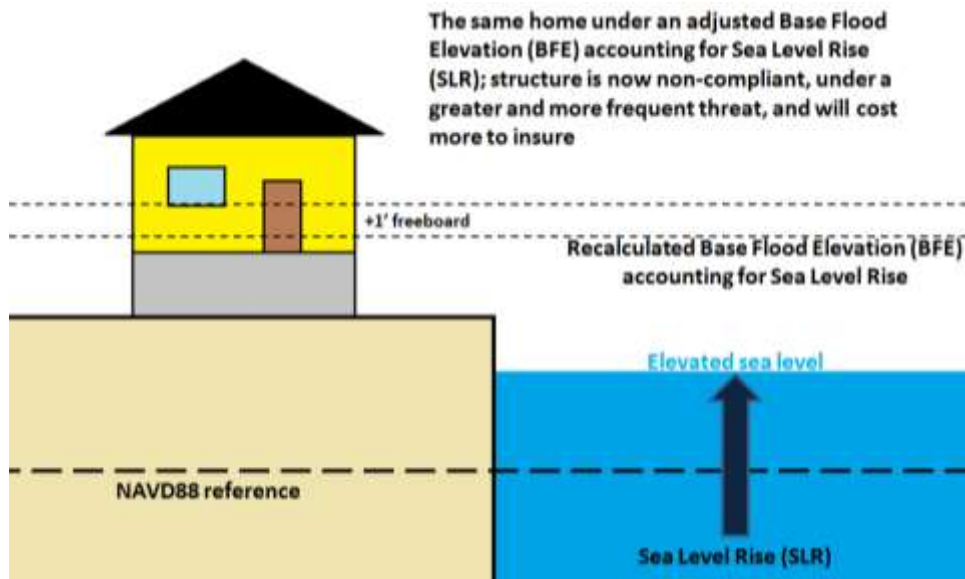
As discussed in the previous section, NFIP provides federally backed flood insurance within communities that enact and enforce floodplain regulations. The Community Rating System (CRS) is a national program developed by the Federal Emergency Management Agency (FEMA). To be covered by a flood insurance policy a property must be in a community that participates in the NFIP. To qualify for the NFIP, a community adopts and enforces a floodplain management ordinance to regulate development in flood hazard areas.

The CRS Program recognizes, encourages and rewards communities that go beyond the minimum required by the NFIP. Under the CRS, the flood insurance premiums of a community's residents and businesses are discounted. A community receives a CRS classification based upon the total credit for activities such as Public Information; Mapping and Regulations; Flood Damage Reduction; and Warning and Response. The Village of Tequesta is part of the CRS Program, "Class 7" rating which allows residents to receive 15% discount of their flood insurance.

Currently, the Village of Tequesta is reviewing a potential ordinance amendment to Chapter 14 of the Village's Code of Ordinances that would require 18 inches of freeboard above the base floor elevation in flood zone areas. This provision will contribute to mitigating sea level rise flooding effects that continue to threaten coastal areas Tequesta.

As illustrated in the following figure, freeboard refers to the height of a building above the Base Flood Elevation for a specific site. Florida regulations often require at least one-foot of freeboard for elevated buildings. Each foot of freeboard (up to a maximum of three feet), lowers flood insurance rates significantly. Since elevations on FIRMs do not include sea level rise, freeboard will help keep structures above floodwaters as storm surge elevations increase, thus reducing flood insurance premiums. The graphic below shows an example on how to implement this concept.

**Figure 5-9. Adjusted Base Flood Elevation, Accounting for Sea Level Rise.**



The Village of Tequesta contains several parcels on the barrier island that contain multi-family condominium developments. While there are not currently any single family homes along the ocean front within Tequesta, the freeboard technique could be considered for future development or redevelopment in this area.

### Flood Zones

The following table presents a brief description of flood zones found in the Village of Tequesta, based on FEMA Flood Zone Maps. The descriptions include updates to the designated flood zones since the latest FEMA flood map updates.

**Table 5-3. Village of Tequesta Flood Zone Descriptions**

FLOOD ZONE	DESCRIPTION
<b>Zone AE (EL. 5)</b>	<i>[EL. 5: 1% annual chance flood (100 year flood)]</i> Areas subject to inundation by the 1% annual chance flood event. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown.
<b>Zone X</b>	<i>[0.2% chance flood (100 year flood)]</i> Moderate risk areas within the 0.2-percent-annual-chance floodplain, areas of 1% annual chance flooding where average depths are less than 1 foot, areas of 1% annual chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1% annual chance flood by a levee. No BFEs or base flood depths are shown within these zones. (Zone X is used on new and revised maps in place of Zone B.)
<b>Zone X</b>	<i>[Areas of minimal flooding – outside the 0.2% annual chance (100 year flood)]</i> Minimal risk areas outside the 1% and 0.2 % annual chance floodplains. No BFEs or base flood depths are shown within these zones. (Zone X is used on new and revised maps in place of Zone C.)
<b>Zone VE (EL. 10)</b>	<i>[EL. 10: Coastal flood zone – wave action]</i> Areas along coasts subject to inundation by the 1% annual chance flood event with additional hazards due to storm-induced velocity wave action. BFEs derived from detailed hydraulic coastal analyses are shown within these zones. (Zone VE is used on new and revised maps in place of Zones V1–V30.)
<b>Zone VE (EL. 12)</b>	<i>[EL.12: Coastal flood zone – wave action]</i> Areas along coasts subject to inundation by the 1% annual chance flood event with additional hazards due to storm-induced velocity wave action. BFEs derived from detailed hydraulic coastal analyses are shown within these zones. (Zone VE is used on new and revised maps in place of Zones V1–V30.)

Source: FEMA Flood Zone Descriptions

The beachfront areas on Jupiter Island are within VE Zones, EL. 10 & EL. 12, while the areas along the Indian River Lagoon/Intracoastal Waterway and Loxahatchee River shoreline are in Zone AE, EL. 5. Zone X, indicated in yellow on the Flood Zone Map (Figure 5-10), includes portions of the Tequesta Country Club neighborhood peninsula, especially areas adjacent to Zones VE and AE, as well as interior areas north and south of Tequesta Drive.



Figure 5-10. Village of Tequesta Flood Zone Map



## **Comprehensive Emergency Management Plan**

The Comprehensive Emergency Management Plan (CEMP) establishes the framework to ensure Palm Beach County will be adequately prepared to respond to, and recover from any hazards that threaten the lives and property of residents and visitors to the area. The CEMP outlines the responsibilities and coordination mechanisms of County agencies, municipalities, and constitutional officers.

The CEMP is the guiding document for the County's response to and recovery from a disaster. It is supported by additional plans and procedures including the Local Mitigation Strategy, Disaster Recovery Plan, Post Disaster Redevelopment Plan, Section Coordinating Procedures, Hazard Specific Plans, Incident Support Plans, program plans, and Standard Operating Guides. Together, they provide the framework for all phases of emergency management.

In addition, the CEMP establishes the official emergency policies for those municipalities that have not developed and attained approval of their own CEMP in accordance with Rule 9G-6 and 9G-7 pursuant to Chapter 252 of the Florida Statutes. Accordingly, the Village of Tequesta is also a part of and subject to, the Palm Beach County CEMP.

## **Hurricanes & Tropical Storms**

Florida is the most vulnerable state in the nation to the impacts of hurricanes and tropical storms. South Florida is particularly exposed to the dangers presented by hurricanes, due to its topography. The region is largely a flat, low lying plain. Moreover, the potential for property damage and human casualties in PBC has been increased by the rapid growth and development over the past few decades, particularly along the coastline. As discussed earlier in this document, about 58 storms of hurricane intensity have passed within 125 miles of PBC, which represents an average of one hurricane every two years.

Hurricanes are tropical cyclones with winds that exceed 74 mph and blow counter-clockwise about their centers in the Northern Hemisphere. They are essentially heat pumping mechanisms that transfer the sun's heat energy from the tropical to the temperate and polar regions. This helps to maintain the global heat budget and sustain life. Hurricanes are formed from thunderstorms that form over tropical oceans with surface temperatures warmer than 81°F (26.5°C).

The ambient heat in the sea's surface and moisture in the rising air column set up a low pressure center and convective conditions that allow formation of self-sustaining circular wind patterns. Under the right conditions, these winds may continue to intensify until they reach hurricane strength. This heat and moisture from the warm ocean water is the energy source of a hurricane. Hurricanes weaken rapidly when deprived of their energy source by traveling over land or entering cooler waters. When a hurricane threatens the coast, advisories are issued by the NHC. The storm's current location and intensity are described along with its projected path.

In addition to advisories, the NHC may issue a hurricane watch or warning. A Hurricane Watch is issued 48 hours in advance of the anticipated arrival of tropical-storm force winds. A Hurricane Warning is issued 36 hours in advance of the anticipated onset of tropical-storm-force winds. Advisories and hurricane watches and warnings will frequently refer to the category of a storm.

#### Saffir/Simpson Hurricane Scale

The Saffir/Simpson Hurricane scale is utilized by the National Weather Service to provide an initial and continuing assessment of potential wind and storm-surge damage from a hurricane in progress. The scale numbers are first made available when a hurricane is within 72 hours of landfall and are revised regularly based on new observations. The categories of the scale are based on maximum sustained winds in miles per hour, as shown in Table 5-4 below.

**Table 5-4. Hurricane Category Descriptions**

CATEGORY	WIND SPEEDS	POTENTIAL DAMAGE
Category 1	Sustained winds 74 to 95 mph	Very dangerous winds will produce some damage
Category 2	Sustained winds 96 to 110 mph	Extremely dangerous winds will cause extensive damage
Category 3	Sustained winds 111 to 129 mph	Devastating damage will occur
Category 4	Sustained winds 130 to 156 mph	Catastrophic damage will occur
Category 5	Sustained winds of 157 mph or higher	Catastrophic damage will occur

Source: National Hurricane Center (NOAA)

#### Potential Hurricane Damage

Hurricane damage occurs through two means – high winds and storm surge. Generally it is the wind that produces most of the property damage associated with hurricanes, while the greatest threat to life is from flooding and storm surge. Although hurricane winds can exert tremendous pressure against a structure, a large percentage of hurricane damage is caused not from the wind itself, but from flying debris. Tree limbs, signs and sign posts, roof tiles, metal siding, and other loose objects can become airborne missiles that penetrate the outer shells of buildings, destroying their structural integrity and allowing hurricane winds to act against interior walls not designed to withstand such forces. Once a structure's integrity is breached, the driving rains associated with hurricanes can enter the structure and completely destroy its contents.

Tropical storm/hurricane events can have the following potential impacts within a community: Excessive wind; Excessive water; Soil/beach erosion; Electric power outage; Surface and air transportation disruption; Navigable waterway impairment; Potable water system loss or disruption; Sewer system outage; Telecommunications system outage; Human health and safety; Psychological hardship; Economic disruption; Disruption of community services; Agricultural/fisheries damage; Damage to critical environmental resources; Damage to identified historical resources; Fire; Toxic releases; and Stormwater drainage impairment.

Additionally, floods are one of the most common and widespread of all natural disasters, accounting for ninety percent of all presidentially declared natural disasters. Florida, and especially PBC, are highly susceptible to localized flooding. In Palm Beach County, the most common forms of flooding are rain-induced inland flooding and storm driven coastal storm surge.

Palm Beach County averages over 60 inches of rain per year and encounters over 130 rain days. Due to the flat topography of the region, with most areas at or only slightly above sea level, even moderate rains can accumulate quickly.

### Vulnerable Communities

All communities within Palm Beach County are highly vulnerable to hurricanes, but they are not all vulnerable for the same reasons. The barrier island communities, including Jupiter Island, are obviously highly vulnerable to both wind and storm surge damage from hurricanes. The communities fronting on Palm Beach County's estuaries and rivers, such as the Village of Tequesta, are also highly vulnerable to flooding associated with hurricane winds and storm surge. Inland communities may have less hurricane vulnerability from flooding but more hurricane vulnerability from wind damage due to their older or less substantial type of construction.

The Village coordinates with Palm Beach County in hurricane planning and management efforts. These on-going management and coordination efforts continue to be refined, as necessary, and have been implemented several times in recent years.

### Areas Historically Experiencing Storm Damage in Palm Beach County

Storms can have devastating effects on shorelines since they redistribute large volumes of sand in a short period of time. Palm Beach Island has experience severe damage from hurricanes in the past. One of the most violent storms to strike coastal Florida was the hurricane in September 1928. It made landfall in the vicinity of the Town of Palm Beach, just south of Tequesta and Jupiter, and resulted in 1,700 deaths in Palm Beach County. Damages were estimated to be in the range of \$11.5 to \$25.0 million. The mid-century saw damaging hurricanes as well, that had a detrimental affect along the coast of Palm Beach County.

Since then, coastal communities around Palm Beach County have experienced even more damaging hurricanes and tropical storm events. Since the year 2000, Palm Beach County has endured the direct impact of three major hurricanes. In 2004, Hurricanes Frances (Category 2) and Jeanne (Category 3) both made landfall just north of Palm Beach County within the same month. The following year, Hurricane Wilma, a Category 3 storm, impacted the already battered beaches of Palm Beach County. Natural recovery of the beaches has been slowed by the numerous tropical and nor'easter storm events that have occurred since 2004. Subtropical Storm Andrea, which impacted County beaches in 2007, required an emergency declaration due to the extent of the erosion. Within the County's Jupiter Beach Park, a maintenance building and 1.3 acres of a healthy dune system were lost and the Park's parking lot was breached.



It is these tropical storms and more common winter storms that produce high seas for days at a time, with considerable cumulative effects. The Shoreline Enhancement & Restoration program is designed to respond to emergency response scenarios, however substantial damage cannot always be addressed through emergency measures and often alters long term planning. Hurricanes that have impacted Palm Beach County's coastline since the seventies are listed below.

- 1979: Hurricane David
- 1984: Thanksgiving Day Northeaster
- 1992: Hurricane Andrew
- 1999: Hurricane Irene
- 2004: Hurricane Frances, Hurricane Jeanne
- 2005: Hurricane Wilma
- 2007: Tropical Storm Andrea; October Northeasters (unnamed); Tropical Storm Noel
- 2008: Tropical Storm Fay; September Storm (unnamed); Tropical Storm Hannah
- 2011: Hurricane Irene (swell only)
- 2012: Hurricane Sandy
- 2016: Hurricane Matthew
- 2017: Irma

Most of these storms resulted in significant increases in the amount of critically eroded beaches in PBC and surrounding coastal counties.

### Regional Hurricane Hazards

The lower southeast Florida region has been identified by the National Oceanic and Atmospheric Administration as one of the most hurricane-vulnerable areas in the country. Hurricane-strength storms have impacted this region about once every three years since 1900. The hurricane season lasts from June to November, with most events occurring during the months of September and October.

### Local Hurricane Hazard

Located along the Intracoastal Waterway and on a coastal barrier island, the Village of Tequesta contains areas subject to hazards during storms of all categories. Local hurricane hazards have been determined in regional hurricane contingency and evacuation studies.

### Hurricane Response & Evacuation Procedures

With regard to response procedures for hurricanes and other natural disasters, the County and Village can implement post-disaster redevelopment plans which reduce or eliminate the exposure of human life and public and private property to natural hazards. The Village will continue to coordinate with the County in hurricane and disaster planning and management

efforts. In addition, these ongoing management and coordination efforts continue to be redefined, as necessary, and have been implemented several times in recent years.

#### Official Hurricane Warning System

The official warning process for an approaching hurricane begins with issuance of a hurricane watch by the National Hurricane Center. A hurricane watch, alerts residents of a specified area to the potential of a hurricane and advises them to monitor hurricane advisories, which are issued every six hours. A hurricane watch suggests that residents begin preparations for a possible evacuation. Some residents will evacuate when a hurricane watch has been issued, based on previous experience in hurricane situations.

The second step in the warning process is issuance of a hurricane warning for a large geographical area. A hurricane warning is issued when a hurricane is expected to make landfall within 24 hours with sustained winds of 74 miles per hour or more and/or dangerously high water or a combination of high water and high waves. Many residents begin evacuating after issuance of a Municipal officials in low-lying or barrier island areas may issue local evacuation orders when a hurricane warning has been issued for their area.

#### Hurricane Evacuation Order

Issuance of a hurricane evacuation order is the most important step in the hurricane warning system. Determination of the appropriate time for issuance of an evacuation order is critical to safe and effective evacuation of threatened area. The earlier an order is issued, the more time residents will have to evacuate. But if an order is issued too early, there is a possibility the storm will change course, making the evacuation unnecessary or putting evacuees in a more hazardous location.

The legal authority for ordering and coordination evacuations in the State of Florida resides with the Governor. The Governor has delegated this authority to local governments. Thus, an evacuation order may be issued by a municipality in the absence or an order by a higher level of government. However, an order issued by a higher level of government takes precedence.

#### Activation of County Emergency Response Plan

If a disaster threatens prior to the Governor's decision to issue an Executive Order of Proclamation of a State of Emergency, the Emergency Management Director, or his designee, may activate this plan, subject to Board approval; this may be followed by a declaration of a local State of Emergency as outlined in Palm Beach County's Code of Ordinances. In this situation, the DEM will coordinate any emergency response actions that may be necessary for the immediate protection of life and property.

When an emergency or disaster has occurred or is imminent, the Governor may issue an Executive Order or Proclamation of a State of Emergency, activating the emergency response,

recovery, and mitigation aspects of state, local, and interjurisdictional disaster plans that apply to the state, local, and interjurisdictional disaster plans that apply to the affected areas. Such orders or proclamations are needed for the deployment and use of state personnel, supplies, equipment, materials, and/or facilities that are available.

The Palm Beach County Evacuation Plan is part of the County's Peacetime Emergency Plan, administered by the Division of Emergency Management. Under the current Hurricane Evacuation Plan, an Emergency Operations Center is activated upon issuance of a hurricane warning by the National Hurricane Center, as described previously.

#### Village of Tequesta Procedure & Emergency Operations Center (EOC)

Chapter 18-33 of the Village Code of Ordinances designates the Fire Chief as the Emergency Management Director. The Fire Chief, Village Manager, and the Mayor will accomplish all coordination, direction, and implementation of all disaster management functions cooperatively to maintain continuity of government. When necessary, evacuation of certain areas of the Village will be initiated following a decision by the local governing body in accordance with the Palm Beach County Comprehensive Emergency Management Manual.

The Village of Tequesta will support the County and the Red Cross by assigning security and emergency medical personnel, if needed, to shelters as they are opened by the County. The Village of Tequesta Emergency Operations Center will serve as the nerve center for the coordination and control of the Village's response and recovery efforts. The EOC will be activated by the Emergency Management Director upon determination of a significant and immediate threat to life and property.

#### Evacuation Order Time

Evacuation order time is the time in hours prior to hurricane eye landfall by which an evacuation order must be issued in order to allow all evacuees to reach their chosen destinations. Determining the appropriate time to issue an evacuation order involves not only calculation of total evacuation time, or clearance time, but also consideration of the following:

The Palm Beach County Hurricane Evacuation Plan provides a mechanical "Evacuation Order Time Calculator" and an Implementation Guide by which the appropriate evacuation order time for a given storm a scenario can be determined. The first step in calculating the evacuation order time is evaluation of the storm's path, wind velocity, forward speed and maximum wind radius. Then the time concepts described above are calculated, with modifications as necessary. The calculator also provides "Action Guides" to aid public officials in the appropriate timing of actions that must be taken prior to issuance of an evacuation order.

## Hurricane Shelters

Palm Beach County, in cooperation with the American Red Cross (ARC), currently operates 15 hurricane evacuation shelters. All hurricane evacuation shelters meet current ARC 4496 design standard to withstand hurricane force winds, including window strength and protection, wind and debris exposure, and storm surge inundation. Shelter capacity is continuing to expand as new high schools and select middle schools are built to ARC 4496 standards and Enhanced Hurricane Protection Area Standards.

Red Cross public shelter assignments are subject to change and are announced by the Red Cross when appropriate. It should also be noted that in some cases, these shelters serve more than one evacuation zone. However, using a capacity formula of 20 square feet per evacuee as required by the Red Cross, it has been determined that these shelters would not experience a deficit in the event of the evacuation of the high hazard area.

The number of persons requiring public hurricane shelter varies depending upon the preferences of evacuees and their opportunities to reach their desired destinations. According to staff at the Palm Beach County Emergency Operations Center, shelter demand is equal to about 10 percent of the evacuation population.

## Special Needs of the Elderly and Handicapped

The large elderly and disabled population residing in this region presents special problems in that these residents do not always receive preparedness instructions because of hearing or other disabilities. Furthermore, they may be unable because of physical limitations to effect evacuation within the required amount of time.

Local disaster preparedness agencies are required to provide for voluntary registration of disabled citizens who require special assistance for evacuation. Accordingly, the Village of Tequesta cooperates with and assists the Palm Beach County program for voluntary registration and early evacuation of the disabled.

## Projected Impact of Future Population Density

The projected impact of the future population density of the Village is minimal since the projected population growth in the designated Coastal Area is relatively low. The additional persons who will be at risk and required to evacuate in the future should not add significantly to local evacuation times.

## **Post Disaster Redevelopment**

### Request for Federal and State Assistance



When disaster effects become such that the resources of Palm Beach County and/or its municipalities are inadequate to fulfill the needs of the citizens, then aid and assistance may be requested from the State of Florida and the Federal Government. Such requests for State and Federal assistance will be made through the Palm Beach County Emergency Management Division to the Florida Division of Emergency Management. Assistance required may be in the form of information, technical expertise or substantial financial material or resource needs. A Declaration of State of Local Emergency is a prerequisite to received State and Federal disaster assistance.

When the County is under a warning or threatened by an impending disaster, emergency workers will be relieved in shifts to prepare their families and property. While no special provisions have been made for the safety and welfare of families of emergency workers, they have been encouraged to develop their own family disaster plan. The Emergency Management Director, or his designee, is responsible for establishing a liaison with the state response and recovery agencies and teams. ESFs will interface with State RIAT and RRTs to assist in the impact assessment and rescue/recovery operations.

In accordance with Palm Beach County Emergency Management Division and the Palm Beach County Comprehensive Emergency Management Plan, evacuation routes for the County have been identified, including the Village of Tequesta, and is available on the County website.

## **TRENDS AND CHALLENGES**

### **Sea Level Rise Considerations**

Sea level rise has long been recognized by the South Florida Water Management District and by the U.S. Army Corps of Engineers as an increasing threat to low lying, porous South Florida. Organizations such as the Southeast Florida Regional Climate Compact have provided reports and publications that have increased awareness and expanded the knowledge of the impacts of sea level rise on coastal communities in South Florida.

Rising sea levels due to the melting of the polar ice caps contribute to greater storm damage; warming ocean temperatures are associated with stronger and more frequent storms; additional rainfall, particularly during severe weather events, leads to flooding and other damage; an increase in the incidence and severity of wildfires threatens habitats, homes, and lives; and heat waves contribute to human deaths and other consequences.

Given the geography of Florida, coastal communities in Southeast Florida have long known how to incorporate hazard mitigation with long-term planning to reduce the loss of life and property and lessen the impact of disasters (hurricanes, severe weather events, flooding, etc.). The challenge of adaptive planning for sea level rise goes beyond hazard mitigation. Rather than preparing for a specific disaster or event, a resilient community is one that can face an array of unpredictable challenges and disturbances with minimal long-term impacts. Certain communities, especially in coastal areas, must be prepared for future conditions that may not allow the same development

intensity, location, type, or access. Through the use of innovative tools and strategies it is possible to transition these economies and the built environment into resilient communities that adapt to these adverse impacts.

With the currently accepted sea level rise projections and known climate impacts, long-range planning must now incorporate resiliency strategies that balance mitigation and adaptation for the protection of the natural systems and to sustain the socio-economic characteristics of the community. Understanding how mitigation and adaptation act as interconnected relationships to building resilient and sustainable coastal communities is vital for adaptive planning.

Adaptive planning in response to global impacts begins with a 'Top-Down' approach that relies on broad climate data and scientific forecasting models from which climate scenarios are developed. While the 'Bottom-Up' approach focuses on understanding and managing the community's level risk and vulnerability to these external drivers. To effectively implement adaptive planning, both must work together to inform decision-makers, and potential stakeholders with information that may influence their communities' adaptation priorities.

Although many other Florida cities and towns have yet to experience damage, scientists and engineers have predicted that within 40 to 50 years, Florida will be inundated with problems related to sea level rise.

#### Federal Agencies Initiatives

The U. S. Global Change Research Program (USGCRP) was mandated by Congress in 1990 and has been advancing Earth system science and growing the knowledge base needed to respond to a changing climate by providing the world's largest scientific investment in the areas of climate science and global change research. There are thirteen Federal entities that conduct or use research on global change and its impacts on society.

The United States' President's Task Force on Climate Preparedness and Resilience was established by Executive Order 13653 on November 1, 2013 and outlined the President's Climate Action Plan (CAP). In November 2014, the Task Force released a 49 pg. Report that invoked, in part, the critical role of U.S. Global Change Research Program (USCRP) in developing sound science to manage climate change impact.

Within the report, 35 key recommendations are organized into seven cross-cutting themes:

- Resilient communities;
- Infrastructure resilience;
- Natural resources resilience;
- Human health and population resilience;
- Climate-smart hazard mitigation,
- Disaster preparedness and recovery;
- The economics of resilience; and

- Building capacity for resilience.

In addition, the White House released Climate Resilience Toolkit website in 2014, to provide access to dozens of tools cities can use to better understand climate change impacts on their communities.

The development of these planning tools, using current data reflective of the changing climate conditions and sea level rise has been integrated into many Federal and State Programs that work together to reduce hazards and to build more resilient communities. The following section outlines this integration.

#### Federal Emergency Management Agency (FEMA)

FEMA identifies flood hazards, assesses flood risks, and partners with States and communities to provide accurate flood hazard and risk data to encourage communities to take mitigation actions. Maps identifying flood hazards provide citizens with flood risk information and enable communities to make informed development decisions. With this information, communities are able to adopt and enforce minimum floodplain management regulations that reduce the loss of life and property. Flood mapping information and resources are available on the FEMA website.

Flood hazard mapping is an important part of the National Flood Insurance Program (NFIP) (established in 1968) as it is the basis of the NFIP regulations and flood insurance requirements. FEMA maintains and updates data through Flood Insurance Rate Maps (FIRMs) and risk assessments.

#### U.S. Department of Transportation

The U.S. Department of Transportation (DOT) has also submitted a Climate Adaptation Plan pursuant to Executive Orders No. 13514 and 13653, as well as Council on Environmental Quality (CEQ) Implementing Instructions. DOT recognizes sea level rise and climate change present threats to the transportation system and infrastructure to U.S. including roadway deterioration, flooding, limited waterway access, and weakened structures. Severe conditions may reduce the life of capital assets and increase operational disruptions. Rising sea level can directly affect transit agencies on the US coasts. These systems may experience more downtime due to flooding, requiring system users to be rerouted and possibly making obsolete earlier transportation investments in low-lying coastal areas.

#### Federal Highway Administration

The Federal Highway Administration (FHWA) has several initiatives designed to develop information, tools, and procedures necessary to support the consideration of the impacts of climate change on the development of transportation projects. FHWA has provided seed funding to State Departments of Transportation (DOTs), Metropolitan Planning Organizations (MPOs), and Federal Land Management Agencies (FLMAs) to pilot approaches to conduct climate change

and extreme weather vulnerability assessments of transportation infrastructure and to analyze options for adapting and improving resiliency.

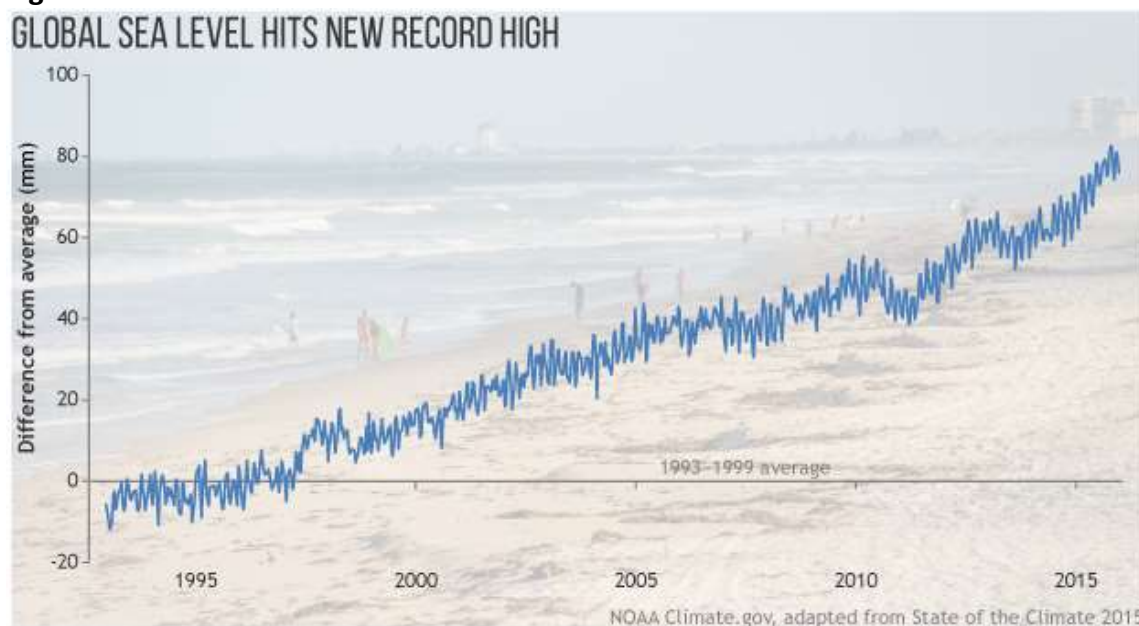
### U.S. Army Corps of Engineers

U.S. Army Corps of Engineers (USACE) developed a Sea-Level Change Calculator to assist in developing information to support its sea-level change policy which supports the USACE overarching climate change adaptation policy. This tool has been modified to NOAA scenarios to help people rapidly assess what the coming changes could look like. The USACE undertakes climate change preparedness and resilience planning, in consultation with internal and external experts and implement the results of that planning using the best available – and actionable – climate science and climate change information. The USACE also works with other agencies to develop the science and engineering research on climate change information into the actionable basis for adapting to climate change impacts.

### National Oceanic and Atmospheric Administration

The National Oceanic and Atmospheric Administration (NOAA) Climate Program Office had published a report about global sea level rise with a synthesis of the scientific literature on global sea level rise, and a set of four scenarios of future global sea level rise. The report was produced in collaboration with twelve contributing authors from ten different federal and academic science institutions including NOAA, NASA, the U.S. Geological Survey, the Scripps Institution of Oceanography, the U.S. Department of Defense, the U.S. Army Corps of Engineers, Columbia University, the University of Maryland, the University of Florida, and the South Florida Water Management District.

**Figure 5-11. Global Sea Levels**



Source: NOAA, State of Climate, 2015.



Annual summaries on global climate are also provided by NOAA with the most recent 2015 State of the Climate Report confirming that 2015 surpassed 2014 as the warmest year since at least the mid-to-late 19th century and noted that most indicators of climate change continued to reflect trends consistent with a warming planet. Several markers, such as land and ocean temperatures, sea levels, and greenhouse gases, broke records set just one year prior.

The graph below shows yearly global sea level since 1993 compared to the 1993–1999 average line (gray line at zero). Sea level has risen at an average rate of 0.33 centimeters (0.1 inches) per year since the satellite altimeter record began in 1993, which is faster than the rate of rise in the early part of the twentieth century.

### State (Florida) Agencies Initiatives

#### *Southeast Florida Regional Climate Change Compact*

The Southeast Florida Regional Climate Change Compact (SEFRCCC) was executed by Broward, Miami-Dade, Monroe, and Palm Beach Counties in January 2010 to coordinate mitigation and adaptation activities across county lines. The Compact represents a new form of regional climate governance designed to allow local governments to set the agenda for adaptation while providing an efficient means for state and federal agencies to engage with technical assistance and support. It is in that spirit that this plan provides the common integrated framework for a stronger and more resilient Southeast Florida starting today and for tomorrow.

In order to better coordinate local planning, the Southeast Florida Regional Climate Change Compact (the Compact) developed unified regional sea level rise projection for Southeast Florida. The Unified Sea Level Rise Projection (unified projections) were originally prepared in 2011 by the Compact's Sea Level Rise Technical Advisory Group, comprised of representatives from county governments, United States Army Corps of Engineers (USACE), National Oceanic and Atmospheric Association (NOAA), United States Geological Survey (USGS), the South Florida Water Management District, and climate scientists from Florida Atlantic University and University of Miami. Moreover, this provision of the unified sea level rise projection for the Southeast region allows for consistent long-range planning by the more than 115 local governments within the Lower East Coast of Florida.

The Unified Sea Level Rise Projections are the only regionally-coordinated and locally-specific sea level rise projections for the Southeast Florida region. The projections are updated regularly by a qualified group of scientists and experts, so planners should consider the projections to be both scientifically sound and timely. This unified sea level rise projection has been formally adopted by Palm Beach, Broward, Miami-Dade and Monroe Counties and is now being used to inform planning process and project design throughout the region.

The 2012 NOAA Technical Report: Global Sea Level Rise Scenarios for the United States National Climate Assessment noted that given the past few decades of increased the height of storm surge and wind-waves, assessing the combination of different weather events combined with scenarios

of sea level rise is crucial in developing hazard profiles for emergency planning and vulnerability, impact, and adaptation assessments.

The 2015 update of the Southeast Florida Regional Climate Change Compact's Sea Level Rise Work Group made date changes to the starting point of the projections to use local tide station data and stay consistent with the current guidance from the U.S. Army Corps of Engineers (USACE) and the National Oceanographic and Atmospheric Agency (NOAA) and extended the projections out to 2100 in recognition of the need for longer range guidance for major infrastructure and other long term investments now being planned.

The Unified Sea Level Rise Projection for Southeast Florida is intended to be used for planning purposes by a variety of audiences and disciplines when considering sea level rise in reference to both short and long-term planning horizons and infrastructure design in the Southeast Florida area. The authors also note that Sea level rise in South Florida has been of similar magnitude over the same period (NOAA, 2015) but is anticipated to outpace the global average due to ongoing variations in the Florida Currents and Gulf Stream. Given the uncertainty of all the factors affecting the rate of sea level rise in climate models and the limitations of current climate models to predict the future, the Work Group recommends that the unified sea level rise projection include three curves, in descending order, the NOAA High Curve, the USACE High Curve and a curve corresponding to the median of the IPCC AR5 RCP8.5 scenario, with specific guidance as to how and when they should be used in planning.

These scenarios provide a useful tool for coastal managers in assessing vulnerability, impacts, and adaptation strategies when coupled with local and regional specific information on climatic, physical, ecological, and biological processes and on the culture and economy of coastal communities.

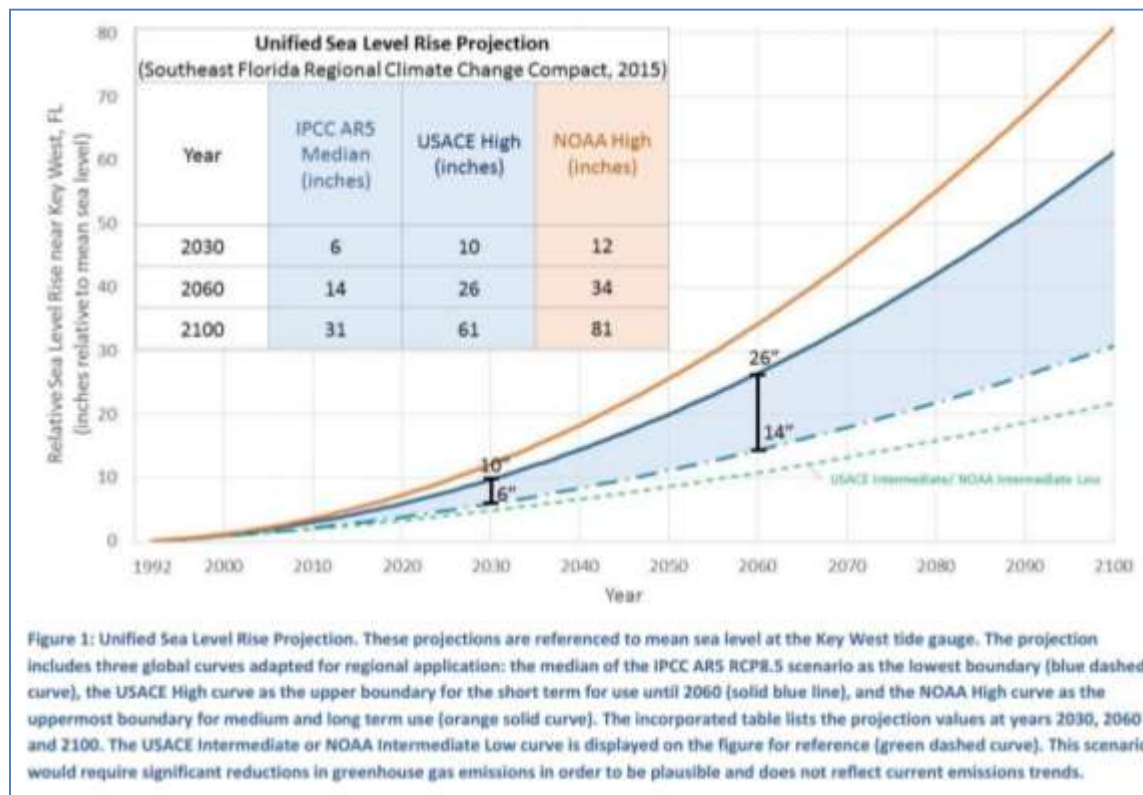
The Unified Sea Level Rise Projections are the only regionally-coordinated and locally-specific sea level rise projections for the Southeast Florida region. The projections are updated regularly by a qualified group of scientists and experts, so planners should consider the projections to be both scientifically sound and timely.

In summary, this Unified Sea Level Rise projection for Southeast Florida updated in 2015 projects the anticipated range of sea level rise for the region from 1992 to 2100 (Figure 5-12).

The projection highlights three planning horizons:

- 1) Short term, by 2030, sea level is projected to rise 6 to 10 inches above 1992 mean sea level,
- 2) Medium term, by 2060, sea level is projected to rise 14 to 34 inches above 1992 mean sea level,
- 3) Long term, by 2100, sea level is projected to rise 31 to 81 inches above 1992 mean sea level.

**Figure 5-12. Unified Sea Level Rise Projection for Southeast Florida, 2015. South Florida Regional Climate Change Compact**



Source: Southeast Florida Regional Climate Change Compact, 2015

#### Florida Senate Bill 1094 (S.B. 1094)

Recognizing the priority to integrate sea level rise into local government planning, Florida Governor Rick Scott signed S.B. 1094 in May 2015, amending the state comprehensive planning laws (F.S. 163.3178(2)(f) that had stipulated local governments, required to have a coastal management element in their comprehensive plan, include a redevelopment component to “eliminate inappropriate and unsafe development in coastal areas”.

Florida S.B. 1094, which became effective on July 1, 2015, requires coastal management plans to include the reduction of flood risks and losses. It also creates new requirements related to flood elevation certificates and revises requirements related to flood insurance.

This new law now includes “sea-level-rise”:

1. Including development and redevelopment principles, strategies, and engineering solutions that reduce the flood risk in coastal areas which results from high-tide events, storm surge, flash floods, stormwater runoff, and the related impacts of sea-level rise.  
—SB 1094 (underline added)

Specifically, S.B. 1094, Section 1, amends s. 163.3178(2)(f), F.S., to require local governments when drafting their comprehensive coastal management plans to:

- Include development and redevelopment principles, strategies, and engineering solutions that reduce the flood risk in the coastal zone which results from high-tide events, storm surge, flash floods, stormwater runoff, and the related impacts of sea-level rise.
- Encourage the use of best-practices development and redevelopment principles, strategies, and engineering solutions that will result in the removal of coastal real property from flood zone designations established by the Federal Emergency Management Agency.
- Identify site development techniques and best practices that may reduce losses due to flooding and claims made under flood insurance policies issued in this state.

As discussed earlier in the document, the Village recently updated its Code of Ordinances to reflect FEMA's updated Flood Insurance Maps and to increase its freeboard requirements, a technique to reduce losses and claims related to flooding.

In addition to the consideration of related impacts of sea level, SB 1094 amendment of F.S. 163.3178 (2) (f), F.S. also includes the following effective changes:

- Encourage the use of best practices development and redevelopment principles, strategies, and engineering solutions that will result in the removal of coastal real property from flood zone designations established by the Federal Emergency Management Agency.
- Identify site development techniques and best practices that may reduce losses due to flooding and claims made under flood insurance policies issued in this state.
- Be consistent with, or more stringent than, the flood-resistant construction requirements in the Florida Building Code and applicable flood plain management regulations set forth in 44 C.F.R. part 60.
- Require construction activities seaward of the coastal construction control lines established pursuant to s. 161.053, F.S., be consistent with ch. 161, F.S.
- Encourage local governments to participate in the National Flood Insurance Program Community Rating System administered by the Federal Emergency Management Agency to achieve flood insurance premium discounts for their residents

### Related Florida Statutes

To support the implementation of the Southeast Florida Regional Climate Change Compact and the Regional Action Plan, and recognizing the importance of integrating sea level rise directly into municipal and county planning, the Regional Climate Action Plan (RCAP) Workshop #10: "Essential Tools: Integrating the Southeast Florida Sea Level Rise Projections into Community Planning" was held in July, 2016 in Broward County. The report, *Integrating the Unified Sea Level*



*Rise Projection into Local Plans*, that followed this workshop is available at the SEFRCC website. The following legislative history is taken directly from that report.

Support for using these sea level rise projections exists currently with Florida State laws requiring that comprehensive plans use “relevant and appropriate data,” according to Statute 163.3177(1)(f):

*All mandatory and optional elements of the comprehensive plan and plan amendments must be based upon relevant and appropriate data and an analysis by the local government that may include, but not be limited to, surveys, studies, community goals and vision, and other data available at the time of adoption of the comprehensive plan or plan amendment.*

Relevant data that may have been used to write the plan is not considered formally adopted and embedded in the plan unless it is included directly in the planning document:

*Surveys, studies, and data utilized in the preparation of the comprehensive plan may not be deemed a part of the comprehensive plan unless adopted as a part of it.*

–Florida Statute (163.3177(1)(f)1

Additionally, coordination and alignment between local comprehensive planning efforts is an explicit goal of Florida state law:

*Coordination of the local comprehensive plan with the comprehensive plans of adjacent municipalities, the county, adjacent counties, or the region; with the appropriate water management district’s regional water supply plans approved pursuant to s. 373.709; and with adopted rules pertaining to designated areas of critical state concern must be a major objective of the local comprehensive planning process.*

– Florida Statute (163.3177(4)(a)

### Local Mitigation Initiatives

In light of these adopted projection, long-range (50 yrs.) adaptive measures have taken the forefront for many local governments planning initiatives. To effect this planning in a meaningful way, the community must work together to understand the short and long-term costs and risks associated with the establishment of coastal protection. Planners should be proactively setting (and communicating) appropriate level of service for maintaining services for the community’s infrastructure services under projected sea level rise. The establishment of Goals, Objectives and Policies with measurable and tangible outcomes in local government Comprehensive Plans (that have the force of law in Florida) provides for an effective means of avoiding conflicts, and maximizing key resources that build a resilient community.

Thus far, the effects of sea level rise have been most visible in Fort Lauderdale, Miami Beach, and in the Florida Keys; however, even nearby Delray Beach is already seeing “King tide” flooding. Portions of Fort Lauderdale are experiencing flooding and the Village has incorporated “Adaptation Action Areas” (AAA) into their planning process. AAA’s will be discussed in more detail in the following sections. Miami’s initiatives regarding sea level rise are discussed in more detail in the Future Land Use Element.

With higher sea levels, cities have seen that their stormwater systems no longer drain as quickly, increasing the frequency and depth of flooding in some streets. In addition, saltwater intrusion into aquifers is another important and growing concern, particularly in the wells located near water bodies, such as the Intracoastal Waterway. As sea level continues to rise in the future, the threat of salt water contamination even further inland becomes a major challenge.

Although many other Florida cities and towns have yet to experience damage, scientists and engineers have predicted that within 40 to 50 years, Florida will be inundated with problems related to sea level rise. With Tequesta being surrounded by various bodies of water, the Village should continue to develop and implement stormwater management strategies to effectively maintain water quality standards and minimize potential damage from flooding and storm surge.

#### Coastal High Hazard Areas

Coastal High Hazard Areas have been discussed in detail throughout this Element, due to their importance in coastal communities like Tequesta, which contains a large number of waterfront properties. Moreover, the Village is unique in that it interfaces three major water bodies, including the Atlantic Ocean, Intracoastal Waterway, and Loxahatchee River.

#### Adaptation Action Areas

In addition to Coastal High Hazard Areas which have been discussed in detail in previous sections, Adaptation Action Areas (AAA) are another step local municipalities can take to protect areas in their communities that are especially vulnerable to flooding due to sea level rise. While the Coastal High-Hazard Area is standardized delineated area, there is no standard boundary for Adaptation Action Areas. The Coastal High-Hazard Area considers current coastal flooding conditions while the Adaptation Action Area encourages planning for future vulnerability.

The Community Planning Act (CPA) made changes to the state’s growth management laws in 2011, including the optional adaptation planning for coastal hazards and the potential impacts of sea level rise. The Adaptation Action Area, as defined in the CPA, is an optional comprehensive plan designation for areas that experience coastal flooding and that are vulnerable to the related impacts of rising sea levels for prioritizing funding for infrastructure and adaptation planning.

Local governments that adopt an adaptation action area may consider policies within the coastal management element in their comprehensive plan to improve resilience to coastal flooding. Criteria for the adaptation action area may include: areas below, at, or near mean higher high

water; areas which have a hydrological connection to coastal waters; or areas designated as evacuation zones for storm surge.

Florida Statute (163.3164(1)) states:

*“Adaptation action area” or “adaptation area” means a designation in the coastal management element of a local government's comprehensive plan which identifies one or more areas that experience coastal flooding due to extreme high tides and storm surge, and that are vulnerable to the related impacts of rising sea levels for the purpose of prioritizing funding for infrastructure needs and adaptation planning.*

Florida Statute (163.3177(6)(g)(10)) states:

*At the option of the local government, develop an adaptation action area designation for those low-lying coastal zones that are experiencing coastal flooding due to extreme high tides and storm surge and are vulnerable to the impacts of rising sea level. Local governments that adopt an adaptation action area may consider policies within the coastal management element to improve resilience to coastal flooding resulting from high-tide events, storm surge, flash floods, stormwater runoff, and related impacts of sea-level rise. Criteria for the adaptation action area may include, but need not be limited to, areas for which the land elevations are below, at, or near mean higher high water, which have a hydrologic connection to coastal waters, or which are designated as evacuation zones for storm surge.*

In future hazard mitigation planning initiatives, the Village should consider designating areas that are particularly susceptible to flooding and other sea level rise impacts as Adaption Action Areas. These may include areas along the water front, properties in the Tequesta Country Club neighborhood, where many properties would be at risk for flooding during a category 4 or 5 hurricane, and other areas that are within a hurricane surge area.

#### Palm Beach County Policy Development

As written in the Palm Beach County Comprehensive Plan (9/22/2016), Palm Beach County shall adopt, implement, and encourage strategies which increase community resiliency and protect property, infrastructure, and cultural and natural resources from the impacts of climate change, including sea level rise, changes in rainfall patterns, and extreme weather events.

#### Village of Tequesta Policy Development

As part of the Village’s 2017 Comprehensive Plan update, proposed goals, objectives, and policies regarding sea level rise are proposed for adoption.

## FINAL REMARKS

Due to its location along the coast, the Village of Tequesta and its resources are vulnerable to various natural disasters. This element provides insight into the Village's coastal resources and emphasizes the importance of building and maintaining a resilient community to preserve and protect these resources and associated areas.

### **Sea Level Rise Considerations**

Increasing sea levels are expected to significantly challenge regional long-term planning for coastal communities in South Florida, including Tequesta. In order to minimize the threat imposed by these challenges, it is imperative that the Village take necessary steps in adaptive planning and work to develop a policy framework that is integrated into its local planning system.

Steps to take include adding goals and policies that address adaptation or sustainability issues into existing plans, ensuring consistency across all municipal operations and their guiding plans and programs, and even educating residents and visitors on the importance of the challenges posed by storm surge and major flooding from rising sea levels, and finally, how to work as a community to address these challenges. These steps lay the foundation toward building a more resilient community, and together with informed public and committed elected officials, reaching the community's established goals and strategies are achievable.

Sea level rise remains a significant threat to the coastal communities in South Florida as increasing sea levels are expected to significantly challenge regional long-term planning for these areas. These challenges include:

- Increased flooding and drainage problems,
- Destruction of natural resource habitats,
- Higher storms surge, increased evacuation areas and evacuation time frames,
- Increased shoreline erosion,
- Saltwater Intrusion, and
- Loss of infrastructure and existing development.

Throughout the extensive review of recent climate data and rising sea levels, the importance of adaptive planning has been abundantly clear. And while adaptation planning strategies may be developed into differently for differently effected communities, working to develop a policy framework that is integrated into the local planning system is imperative. Future steps to take include; adding goals and policies that address adaptation or sustainability issues into existing plans, developing a new "Sustainability" or similar element within the comprehensive plan, and/or ensuring consistency across all municipal operations and their guiding plans and programs.

Moreover, the following initiatives are encouraged to address these impacts and promote sustainable growth:

- Conserve, reuse, recycle
- Walk, bike, carpool, or use mass transit
- Building 'green' energy efficient buildings
- Encourage mixed land uses
- Provide incentives for business/residential responsibility
- Sustain water quality
- Limit dependence on oil
- Educate individuals on the aforementioned items

These steps lay the foundation toward building a more resilient community and together with informed public and committed elected officials, reaching the community's established goals and strategies are achievable.

### **Stormwater Management**

A number of guidelines should be incorporated as Village-wide policies to be implemented in conjunction with neighborhood contact organizations, property owners, residents, and businesses. These actions, consistent with the constraints on the Village's financial and personnel resources, should include:

- Water quality protection and improvement for discharges to the Indian River Lagoon, Loxahatchee River, and canals consistent with state water quality standards and numeric nutrient criteria
- Flood control and relief of nuisance problem areas
- Aquifer recharge to protect and replenish potable groundwater supplies and to reduce salt water intrusion
- Harvesting and reuse of stormwater
- Multi-benefit solutions for parks, roads and green area restoration.

### **Water Quality**

- Continue the water quality ambient monitoring program in the IRL for baseline purposes and trend analysis
- Increase focus on decreasing inputs of suspended materials, and nutrients from point and non-point sources
- Identify and reduce anthropogenic loadings of fecal contaminants and other pathogens
- Increase additional sanity sewer, wastewater, and stormwater retrofit projects
- Manage sediments



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## **DATA & ANALYSIS**

### **CHAPTER 9: CAPITAL IMPROVEMENT ELEMENT**

#### **INTRODUCTION**

The Capital Improvement Element (CIE) is a required element of a municipality's Comprehensive Plan. The CIE is a central component in the Comprehensive Plan as it enables a municipality to set forth its capital improvement program, including construction, extension, and capacity increases in public facilities and services necessary to support development concurrent with the impacts of said development.

The Capital Improvement Element identifies capital improvements needed to implement the comprehensive plan and ensure that the adopted level of service (LOS) standards are achieved and maintained for concurrency related facilities, and to implement specific objectives and policies of this Comprehensive Plan.

As stated in Section 163.3177(3), F.S., the Capital Improvement Element is intended "to consider the need for and location of public facilities in order to encourage the efficient use of such facilities."

The data and analysis contained in this chapter provide the basis for specific amendments to the existing set of goals, objectives, and policies (GOPs) in this Comprehensive Plan update, and to prepare the annual Capital Improvement Schedule (CIS) as explained later in this document.

#### **Purpose and Components of the Capital Improvement Element**

The Village's Capital Improvement Element is used as a means to assess the Village's public facility deficiencies or arrange for others to provide capital improvements necessary to correct deficiencies in existing public facilities; to serve projected future growth; and to replace obsolete and worn-out facilities, in accordance with an adopted Capital Improvement Schedule.

The purpose of the Capital Improvement Element is to:

- Evaluate the need for facilities identified in the other Comprehensive Plan Elements and as defined in the applicable definitions for each type of public facility;
- To estimate the cost of improvements for which the Village of Tequesta has fiscal responsibility;
- To analyze the fiscal capability of the Village to finance and construct improvements;
- To adopt financial policies to guide the funding of improvements; and
- To schedule the funding and construction of improvements in a manner necessary to ensure that capital improvements are provided when required, based on needs identified in other plan elements.

## **Components of the Capital Improvement Element**

The Capital Improvement Element contains the following components as stipulated in Chapter 163.3177(3)(a), F.S.:

- An outline of the principles for construction, extension, or increase in capacity of public facilities;
- An outline of principles for correcting existing public facility deficiencies
- A review and evaluation of the concurrency management system needed to ensure that the LOS standards are maintained.
- Identification of needed capital improvement projects to maintain LOS standards and implement specific Comprehensive Plan policies for stormwater, solid waste, sanitary sewer, potable water, and roads.
- A schedule of capital improvements which may include any publicly funded projects of federal, state or local government (County, School District, water supply plan projects, etc.), and which may include privately funded projects for which local government has no fiscal responsibility. Projects to make sure LOS standards are met in the 5-Year planning period.
- The schedule also must include transportation improvements included in the County MPO and for County roads, to the extent that those projects are relied upon to meet the LOS standards.

The CIE and its Capital Improvement Schedule (CIS) must be reviewed annually by each local government.

In 2011, the Florida Legislature adopted major revisions to Chapter 163, F.S. regarding the CIE that were incorporated in this update to the Comprehensive Plan and this element. The required annual update of the five-year CIS must no longer be adopted and transmitted to the Department of Economic Opportunity as a comprehensive plan amendment. Instead, it now may be accomplished by ordinance and not as a comprehensive plan amendment.

## **EXISTING CONDITIONS**

Through its Capital Improvement Element and related plans, the Village of Tequesta seeks to undertake capital improvement necessary to keep the Village's present public facilities in good condition and to accommodate new development guided by sustainable and sound fiscal practices.

## **Village of Tequesta Capital Improvement Plan Update**

The Village has developed a 5-year Capital Improvement Schedule for fiscal years 2018-2022, which includes projects supported by the General Fund, Capital Project Fund, Water Utility Fund, Storm Water Utility Fund, and Fiduciary Funds.

As defined in the Policy Document of the Comprehensive Plan, capital improvement projects refer to those projects that may include land and/or improvements and any studies oriented to defining the initial need for land and/or facilities. In addition, priority is given to projects in the Capital Improvement Schedule which are designed to correct existing public facility deficiencies.

The Village provides capital improvements to:

1. Correct existing deficiencies;
2. Accommodate desired future growth; and/or
3. Replace worn-out or obsolete facilities.

Furthermore, capital improvement policies specifically indicate how capital improvement will be evaluated, ranked and what conditions must be met. The evaluation and prioritization of capital improvement projects is a part of the normal budgetary and capital improvement programming process.

At the end of each fiscal year another year of projected capital improvements will be added to the end of each short and long-term planning period. This logical progression will utilize the same parameters and requirements established in the CIE of the Comprehensive Plan. This practice will, in turn, provide the Village with an on-going current projected schedule of improvements. Beginning in December, 2007 State planning law requires that capital improvement program be updated on an annual basis. Both the short range (1-5 Years) and long range (6-10 Years) estimated schedules are provided as an Addendum to this CIE section.

### **Capital Improvement Project Overview**

The current CIE of the Comprehensive Plan established a five (5) year CIP for the General Fund, Capital Projects Fund, the Village Water Department, as well the Fire Rescue Department. The capital improvement projects identified in the Village Capital Projects Fund are related to transportation facilities (roads, bridges and landscaping), stormwater management facilities, and recreation facilities. Many of these projects were accomplished while others were carried over to subsequent years.

The majority of the projects in the CIS are contained in three departments, most notably Public Works, Water Utilities, and Fire Rescue. Most of these departments have developed individual 5-year Capital Improvement Schedules to ensure the needs of the community and level of service (LOS) standards continue to be met.

Major infrastructure systems including sanitary sewer, potable water, stormwater management facilities, roadways, solid waste, and recreation and open spaces are currently in place to meet existing demands. With the limited growth projected for the 5 and 10-Year planning periods, these public facilities are expected to meet future needs of the community, as well. There continues to be no public-school facilities located in Tequesta and none are planned for the future.

As previously discussed in this EAR, the Village is dependent on other entities for the provision of central sanitary sewer service, solid waste disposal facilities, the maintenance and operation of County and State roads and in the provision of public schools. The major capital improvement responsibilities of the Village are in the operation and maintenance of its local road network, stormwater/drainage system, Village-owned buildings and facilities, Police and Fire facilities, recreation facilities and public works.

Not all capital improvements will incur Village costs. Village regulations require that future development bear a proportionate cost of facility improvements in order to maintain adopted Tequesta Level of Service Standards". The Village has established a variety of impact fees in its land development regulations that the developer must pay as part of the development process. Chapter 38, Impact Fees of the Village's Code of Ordinances establishes impact fees for Fire Rescue, Police, and Park and Recreational Services.

Similarly, the Village requires local street, drainage, sewage collection, and potable water distribution systems improvements, as required by the application of the Tequesta Level of Service Standards, of any development necessitated by such development. This has been, and continues to be, standard procedure for new development.

With regard to facilities in coastal areas, Village expenditures in high hazard coastal areas shall be limited to 100% of those post disaster improvement costs for facilities over which Tequesta has operational responsibility (e.g. potable water systems and public streets and recreational facilities).

### **CONCURRENCY MANAGEMENT SYSTEM**

Level of service standards are indicators of the extent or degree of service provided by, or proposed to be provided by, a public facility based on and related to the operational characteristics of the facilities.

The continued goal of the Village is to maintain a consistently high quality of services to the residents, while protecting the assets, the level of service, and the quality of life that the residents have come to expect.

The Village's Capital Improvement Schedule includes facilities that promote public health and safety and all facilities for which the level of service standard has been adopted: sanitary sewer facilities; solid waste facilities, stormwater facilities, potable water facilities, transportation facilities, and park facilities. The Capital Improvement Schedule may also include other facilities that enhance the quality of life for Village residents.

The following level of service standards should be adopted and used as the basis for determining the availability of facility capacity and the demand generated by a development. For each facility, LOS is a measure of the relationship between demand for the service and capacity of the facility.



Capacity is measured differently for each type of facility. These LOS Standards are presently established in the CIE of the Village of Tequesta Comprehensive Plan.

### **Concurrency Requirements**

The State of Florida Legislature made significant changes in 2011 to the Growth Management Act of 1985. Sections 9J-5 and 9J-11.023, of the Florida Administrative Code were repealed, with portions of both rules incorporated into the new 2011 Community Planning Act. Among the changes, “concurrency” was made voluntary. Palm Beach County decided to continue with concurrency, including traffic concurrency, which applies county-wide, and several municipalities have opted to continue with some components of concurrency, including the Village of Tequesta.

Concurrency requires that each facility within the geographic scope of a proposed project's impact have sufficient capacity to accommodate the project's demand. If capacity is not available, the project cannot be approved. The Village has adopted, and continues to enforce, a concurrency management system that is contained in Article IV, Adequate Facilities and Concurrency Management in Chapter 62, Planning and Development of its Code of Ordinances. Developers must exhibit that all requirements of this Article can be met and that the LOS Standards adopted in this Article and in the Comprehensive Plan will be satisfied before any development order or permit will be issued by the Village.

In order to maintain an adequate level of service for Village facilities, the Future Land Use Plan, financial analyses, and level of service standards should serve as the basis for reviewing development applications. LOS standards affect the timing and location of development by guiding development to areas where facilities have sufficient capacity and away from areas with insufficient capacity. The standards are administered through the concurrency management system. The LOS standards are depicted in Table 9-1.

Moreover, no development permit shall be issued unless the public facilities necessitated by the project (in order to meet level of service standards) will be in place concurrent with the impacts from the development. During the site plan review process developers are required to provide evidence that service providers have available capacities to serve the proposed development.



Letters from those service providers must be provided as part of the application and review process.

**Table 9-1. Level of Service Standards**

Public Facility	Level of Service (LOS) Standards
Sanitary Sewer	108 gallons/capita/day
Solid Waste (1)	7.13 lbs./person/day.
Potable Water	Residential: 180 gallons/capita/day
	Non-Residential: 3030 gallons/day
	Storage capacity: 2.75 MG
Stormwater Management	Design Storm: 25 Year, 24 Hr. duration
Transportation	Collector Roadways: LOS C, Peak D
	Urban Minor Arterials: LOS C, Peak D
	Urban Principal Arterials: LOS C, Peak D
Recreation and Open Space	Neighborhood parks: 2 acres/1000
	Community Parks: 2 acres/1000

Source: Village of Tequesta, PBCSWA, 2017

(1): Per PBCSWA County-wide Average

Prior to the issuance of a development order or a building permit, the Concurrency review shall establish the following:

- Finding on the impacts created by the proposed development
- Finding as to whether the public facilities covered under the Concurrency Management System will be available concurrent with the impacts of new development at the adopted Level of Service
- Finding of facility(s) improvements or additions that are required to ensure the finding of concurrency; and
- Finding of the entity responsible for the implementation of all required facility(s) improvements or additions

Only sanitary sewer, solid waste, drainage (stormwater management facilities), and potable water are subject to the voluntary statutory concurrency requirements. The Village, along with Palm Beach County and other municipalities in the county, has opted to continue concurrency requirements for transportation and for other components of the concurrency management system.

The School District of Palm Beach County (SDPBC) and the County decided to terminate school concurrency. Therefore, it is no longer addressed in this element.

Instead of School Concurrency the SCPBC, the County and qualified municipalities decided to sign a Public Schools Interlocal Agreement for Coordinated School Planning. Chapter 163.31777(3),

F.S., Public Schools Interlocal Agreement, provides criteria for municipalities to qualify for exemption. According to these criteria, Tequesta believes it is qualified for this exemption and has initiated a request with extensive documentation to the appropriate authorities. Detailed discussion and supporting data has been included in the Intergovernmental Coordination Element Data and Analysis. Final approval will come from the Department of Economic Opportunity, upon review of the Comprehensive Plan.

## **SUMMARY OF MAJOR CAPITAL PROJECTS AND FACILITIES**

The following sections provide a summary of major capital improvement projects for the 5-year planning period FY 2018-2022. The projects are organized according to capital facilities in the LOS Standards Table.

### **Sanitary Sewer Facilities**

The Sanitary Sewer LOS Standards shall be reviewed with the Land Development Regulations and revised, if necessary, in the updated Sanitary Sewer sub-element and CIE of the Comprehensive Plan. The central sanitary sewer system serving Tequesta is owned and operated by the Loxahatchee River District. This system and service is available to all of Tequesta; however, some properties have not yet connected to the central system and remain on individual septic tank systems.

The Sanitary Sewer LOS Standards should be reviewed with the Land Development Regulations to assure that there will be adequate facilities to serve the limited growth and development projected for Tequesta in the next 5 and 10-Year planning periods of the updated Comprehensive Plan. Those properties still using septic tanks must meet Palm Beach County Environmental Control Rules for septic tank usage. In addition, septic tank systems must also meet State Water Quality standards or else they will be required to connect to the central sanitary sewer system.

The Palm Beach County Solid Waste Authority (PBCSWA) has indicated to the Village that, for comprehensive planning purposes, there are adequate capacities at their disposal facilities to meet the solid waste disposal needs of the entire County for the 5 and 10-Year planning periods.

### **Solid Waste Facilities**

As discussed in the Solid Waste Sub- Element, at the current solid waste generation rate, the amount of garbage generated is expected to increase minimally, tempered by increased efforts to reduce waste through recycling and other waste management alternatives.

The future demand of solid waste should be adequately handled by current Village staff and equipment. However, any significant changes in growth, annexation, or development would require re-evaluation of existing resources to adequately handle projected demand.

### **Stormwater Management Facilities**

The Stormwater Management Design Storm LOS Standards established in the Comprehensive Plan may be reviewed by the Village Utilities Department for current applicability and revised, if appropriate, for inclusion in the updated Stormwater Management sub-element and CIE of the updated Plan. Protection from the degree of flooding that would result from a twenty-five (25) year frequency, twenty-four (24) hour duration storm duration LOS continuous to be an adequate standard for development in Tequesta.

### **Potable Water & Groundwater Facilities**

The Village shall review the LOS Standards for Potable Water adopted in the Comprehensive Plan for current applicability and revised, if necessary, in the update process. As identified in the Potable Water sub-section of this EAR, the Village owns and operates its own central potable water system. The Village not only serves all properties in Tequesta, but it also serves certain unincorporated areas of Palm Beach and Martin Counties, as well as, the entire Town of Jupiter Inlet Colony. The only use of private individual wells is exclusively for irrigation purposes.

As a water supplier to a service area that extends beyond its own corporate boundaries, the Village will be required to coordinate with the other jurisdictions that it serves in updating LOS Standards for inclusion in their respective Comprehensive Plans and to provide assurances that future capacities will be available to serve their areas. When the SFWMD Lower East Coast Regional Water Supply Plan is adopted, the Village will have to coordinate regional water supply issues with SFWMD and those jurisdictions that it serves (See Regional Water Supply section in this EAR).

**Renewal & Replacement Program:** While the Village does not expect any expansion projects in the current five-year planning period, it is preparing for ongoing renewal and replacement program for its water utilities system.

- Jupiter Inlet Pipe Replacement (\$1.5 million) - 2016
- Water Well and Treatment Improvements
- Ongoing Utility Plan Replacements
- New Meter Replacements
- Large Valve Replacements

### **Transportation Facilities**

The LOS Standards for roadways are established in the Transportation element of the Comprehensive Plan. The LOS Standards established for State and County roadways should be reviewed against their respective standards and nomenclatures for arterials and collectors, and revised, if necessary, in the Transportation element and CIE of the updated Plan.

U.S. Highway 1 (US-1) is currently identified in the Village of Tequesta Comprehensive Plan as a State FDOT-owned and maintained arterial roadway, while CR 707 (Beach Road) and Old Dixie Highway are categorized as County-owned and maintained county urban collectors. Local streets and city collectors are the responsibility of the Village.

Transportation projects planned for the Village include various roadway and sidewalk improvements, as well as street maintenance, throughout Tequesta. Maintenance of the transportation network requires collaboration between the various entities that have jurisdiction over these roads and right-of-ways. The Village coordinates traffic improvements planning with Palm Beach County and the Florida Department of Transportation in order to accomplish the improvements needed to attain a future LOS standard of Level D for streets within Village municipal limits.

The Public Works Department provides general maintenance for Village roadways, pathways, buildings, right-of-ways, medians, and signage, which includes repairing potholes, milling, resurfacing, and paving. The maintenance is provided both by Village staff and through contractual services. The Department has an annual program to asphalt overlay the Village streets. New landscaping is added annually through Capital Improvement projects.

The limited growth and development potential for the 5 and 10-Year planning periods of the updated Comprehensive Plan will create insignificant traffic impacts on the existing local roads serving Tequesta. Additionally, growth outside of the corporate limits could create more significant impacts on the arterial and collector roads serving the Village.

**Roadway Resurfacing Projects:** Under leadership and supervision of the Village Public Works Department, plans for milling, paving, resurfacing, and striping of roadways is in place for various roads throughout the Village. This seven-year phased project began in 2013. The maps below indicate the location and type of repairs needed.





[illegible][illegible]

**5-Year Sidewalk Rehabilitation & Repair Plan:** A 5-year Sidewalk Rehabilitation & Repair plan was developed for FY 2018-2022. plans for sidewalk repair and ADA improvements are in place for sidewalks in the project area which includes Tequesta Drive, Country Club Drive, and Willow Drive. The map below provides an overview of the condition of the Village's sidewalks. The different color dots represent various sidewalk defect categories. According to the map legend, red indicates a trip hazard, orange indicates ADA issues, yellow represents sidewalk degradation, lime green indicates a non-structural issue, and dark green represents other miscellaneous issues. In total, 453 defects were recorded throughout the project area, with the majority of them categorized as trip hazards.

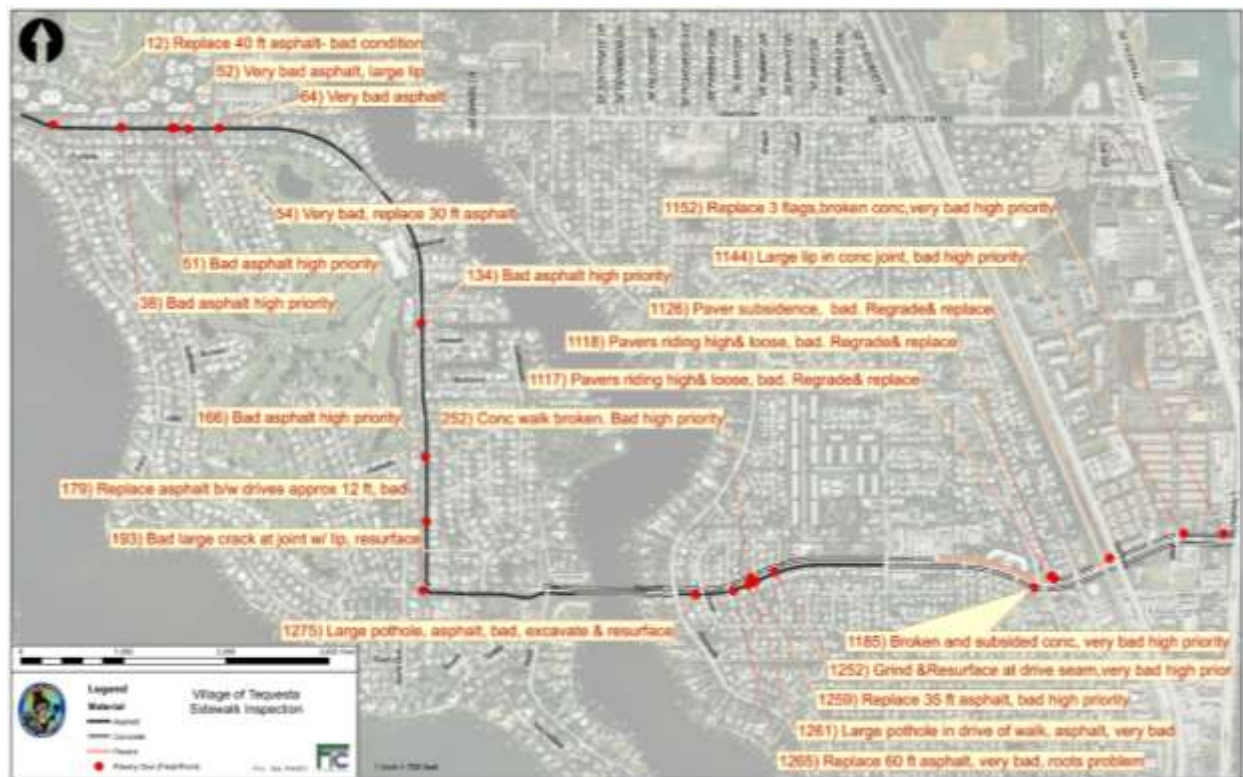
**Figure 9-3. Sidewalk Inspection: Defect Assessment**





The following map provides detail on the highest priority sidewalk repairs needed.

**Figure 9-4. Sidewalk Inspection: High Priority Repairs**



Due to the particularly poor condition of asphalt sidewalk sections which contained the majority of defects, it was recommended that all asphaltic sidewalk material be replaced with concrete at one time. This mitigates all risk hazards associated with identified defects that fall within the replaced sections, regardless of priority level.

**Right-of-Way Enhancements:** Right-of-way (ROW) enhancements will provide standard maintenance and improvements along the Village’s main corridors, in order to maintain Level of Service standard requirements. Generally, these improvements include implementing traffic calming techniques, enhancing streetscapes (landscaping), and installing signalized crosswalks to create a safe environment for pedestrians and bicyclists.

**Tequesta Bridge Lighting Improvements:**

In 2017, the Public Works Department installed new LED lights on the columns on the Tequesta Drive Bridge. Additionally, inline fuses were added to the recessed junction boxes on the walk-way to protect the column lights from surges. This will protect the LED lamps and reduce the need to utilize the boat for repairs. Boaters will no longer be able to tie off to the lights or adjust them downward. All of the existing lights were broken beyond repair and replaced with LED lights that have a 5-year warranty.



For this project, a total of eight (8) lights were installed in the following locations:

- Outer columns: 2 blue lights (each side of the bridge)
- Center columns: 2 clear lights (each side of the bridge)

**Palm Beach Metropolitan Planning Organization Transportation Improvement Program**

In addressing the maintenance of LOS standards for roads within Village limits, Chapter 163, Florida Statutes, requires that not only Village-sponsored capital road projects must be included in the annual CIS, but also projects from the Palm Beach Metropolitan Planning Organization (MPO) five-year Transportation Improvement Program (TIP) that are relied upon to meet concurrency. The TIP identifies transportation improvements funded by Federal, State and local sources in order to assist local governments within the Palm Beach MPO area with their transportation planning efforts.

The Transportation Improvement Program (TIP) is a staged program encompassing a five-year period consisting of all regionally significant transportation improvements to all modes of travel in Palm Beach County. The most recent TIP for fiscal year 2018-2022 was adopted June 15, 2017. The TIP is developed through a continuing, cooperative, comprehensive and coordinated

effort involving the Florida Department of Transportation, the Board of County Commissioners, the Port of Palm Beach, South Florida Regional Transportation Authority (Tri-Rail) and municipalities within the County. Consultation is also carried out with the Miami-Dade and Broward MPOs during the TIP process.

The TIP contains transportation projects funded by Federal, State and local sources located primarily on the State Highway System. The TIP is based on and reflects the Florida Department of Transportation's FY 2017-2021 Five-Year Work Program for Palm Beach County, and generally moves forward the projects in the time frame from previous Work Programs. The County Five-Year Road Program is also included. Since projects are subject to limited change due to unforeseen issues, the DOT program and the TIP may be modified throughout the year.

The Transportation Alternatives Program is one of twelve major project categories of the TIP. Active transportation projects are submitted to the MPO annually by local agencies and prioritized through the Bicycle Trailways Pedestrian Advisory Committee (BTPAC). One of these projects is located within Tequesta's municipal boundaries along its most prominent corridor, US-1.

**U.S. Highway 1 Master Plan & Complete Streets:** As discussed in the Transportation Element, this complete street project encompasses a 1.4 mile stretch of U.S. Highway 1 (from Beach Road north to the Martin County Line). The scope of work for the entire project includes resurfacing and safety improvements along U.S. Highway 1, which is further detailed in the Transportation Element of the Data and Analysis document provides more detail of this project. Lead by Florida Department of Transportation (FDOT), a portion of the U.S. Highway 1 Master Plan & Complete Streets Project will be funded in FY 2018 by the Transportation Alternatives Program.

With regard to the U.S. Highway 1 improvement project, plans are moving forward in 2017. FDOT is expecting to initiate construction in November 2017 which should be completed by fall 2018, weather permitting. This \$3.2 million project includes lane elimination, widening turn lanes, adding buffered bike lanes and patterned pavement crosswalks, milling and resurfacing of the roadway, sidewalk and





drainage improvements, pedestrian lighting, and installation of pedestrian mast arm signalization, vehicle detection systems, and signage and pavement marking upgrades.

### **Recreation & Open Space Facilities**

The Village's public park and open space system is comprised of both passive and active parks with a developing greenway and bikeway network that intends to connect the park system throughout the Village. From established parks, to sports fields, to greenways and sidewalks, to bike lanes, to pocket parks, to neighborhood parks, to plazas, and beyond, these recreation and open space facilities are a valuable asset to the community.



The Recreation and Open Space element establishes LOS Standards for recreation and open space facilities in Tequesta. These standards were updated as part of this amendment to the Comprehensive Plan.



The current five-year planning period (FY 2018-2022) includes improvements to Tequesta Park sports fields, tennis courts, basketball courts, and facility bathrooms.

### **Public Works – Miscellaneous Projects**

As described previously, the Village's Public Works department is responsible for

**LED Street Lights:** Cities around the world are switching to LED lights as a way to save both money and energy. LEDs use approximately 80-90% less energy compared to their high-pressure sodium luminaries' predecessors. LEDs provide better service reliability and lower maintenance costs. Additionally, the old lights on Village streets are approaching the end of their useful life and need replacing.

**5-Year HVAC Capital Expense Plan:** This plan provides an assessment of HVAC systems throughout Village facilities for FY 2018-2022. It describes the estimated life of different parts of the system, and provides an estimated repair and replacement schedule based on the assessment.

### Village Building Facilities:

Improvements to various Village building facilities are necessary to maintain high quality standards for residents and Village staff. These regulatory tasks include roof repair and replacement, HVAC repair and renewal, painting, and flooring repair, as necessary, throughout all Village facilities.



### **REVENUES & FINANCIAL FEASIBILITY**

Overall priority for fiscal planning shall be those projects that enhance residential neighborhoods, compatible business activities, and redevelopment initiatives, as described in the Future Land Use Element. Priority should also be given to projects that address major safety concerns.

In setting priorities for expenditures to be included in the Capital Improvement Element, the Village should use the following criteria:

1. Public safety implications: A project to address immediate threats to public safety will receive first priority.
2. Level of service or capacity problems: Next in priority would be projects needed to maintain the stated Levels of Service.
3. Ability to finance: A third criterion is the budgetary impact.
4. Quality of life projects: The next level of priority shall be given to those projects not in categories 1 or 2 but that would enhance the quality of life for residents of Village.

The plan for capital improvements must be affordable and within the realm of the Village's ability to finance. This section recognizes the various forms of revenue presently available to the Village as well as potential future sources of revenue during the five-year planning period. The major source of revenue identified in the General Fund continues to be generated from taxes. Ad valorem (property) taxes is, by far, the major tax revenue generated in the Village.

### **TRENDS AND CHALLENGES**

The continued goal of the Village is to maintain a consistently high quality of services to the residents, while protecting the assets, the level of service and the quality of life that the residents have come to expect. It is the result of hard work by the Village staff, and fiscally sound, responsible decisions by the Village Council that allows the Village to meet service demands while minimizing the financial burden on its residents.

The Village's primary focus is providing exceptional municipal services to its residents in the most efficient and cost effected manner possible. Continued economic challenges require innovative approaches on both sides of the balance sheet. Efforts to expand contractual services to generate additional revenue should continue to be considered.

In order to ensure level of service requirements for Tequesta's public facilities can accommodate existing and project population demands, it is important that the CIP be reviewed by the local government on an annual basis. Modifications to update the five-year capital improvement schedule may be accomplished by the standard ordinance amendment or adoption process.

In addition, the Village should prepare to reassess the LOS standards in the future as it grows and evolves. With potential future development or redevelopment, the Village must prioritize capital improvement projects in this area to ensure the Village's public facilities will continue to meet LOS requirements.

With regard to capital improvement planning, major initiatives include:

- To fully develop and implement a 6-year capital improvement/capital replacement plan
- To keep on track with maintenance and improvements outlined in a utility revenue sufficiency and rate adequacy study to meet the Village's objectives for a sustained high-quality utility service by providing a stable funding plan.
- To develop plans and specifications for the construction of the new Community Center.
- To Implement 5- year automatic read meters and technology for the Village Water Utility.

## **FINAL REMARKS**

A comprehensive Five-Year Capital Improvement Plan affords the Village the opportunity to strategize on how best to implement and execute capital projects. Furthermore, the CIP constructively reflects current critical needs and projects future critical needs of the Village to ensure level of service standards and other needs continue to be met as the Village grows and evolves. The development of this plan requires collaboration between the Village Manager's Office, Village departments, and Budget Team. Additionally, the Village must coordinate certain projects with the County and State.

Annual updates to the Village's CIP and CIS will help to ensure level of service standards of public facilities continue to be met and any issues that arise be addressed, as the Village grows and evolves.