Sand Pine Scrub

This community occurs on nearly level to steeply sloping land. Water moves rapidly through the soil. It is identified by the even-aged stands of sand pine or by the thick scrubby oak growth. Native trees often found in this community include blue-jack oak, chapman oak, myrtle oak, sand-live oak, and sand pine. This is a fire-based community with fires occurring every 20-40 years. Coarse textured, excessively well-drained soils make the community valuable for aquifer recharge. Soils found in these communities have few limitations for urban development.

Upland Hardwood Hammocks

This community occurs on rolling terrain with nearly level to steep slopes. It can be readily identified by the occurrence of thick stands of shade tolerant hardwoods and few pines. Some of the trees found in this community include American beech, American holly, black cherry, eastern hophornbeam, flowering dogwood, hawthorns, laurel oak, live oak, pignut hickory, southern magnolia, and sweetgum. Upland hardwood hammocks are valuable for watershed protection, hardwood products, and make aesthetic residential areas. There are few limitations to urban development in this community.

Mixed Hardwood and Pine

This community is found on rolling upland. Water movement is gradual to the natural drainage ways. It can be easily identified by the mixed hardwood and pine vegetation occurring in a predominantly well-drained area. As this system matures, the hardwoods replace pines. Unlike most communities, the mixed hardwood and pine do not have a dominant stress factor. These communities are important for flood control on watersheds. It is a good producer of timber and many areas are used for timber production. There are few limitations for urban development.

Swamp Hardwoods

The vegetation in this community is primarily deciduous trees. Periodic flooding is characteristic of this community. It does not include cypress swamps or bottomland hardwood areas. Common trees in this community include red maple, elm, black gum, water tupelo, and cypress. Periodic flooding is essential to maintain this ecosystem and is the dominant factor for providing needed nutrients. These areas are very important for maintaining good water quality and quantity, and for wildlife value. The swamp forest is not a prime area for intensive agricultural or residential development. Costly water management facilities are needed for any use that modifies the existing natural vegetation.

Wetland Hardwood Hammocks

This community is a wetland forest on poorly-drained soils, soils subject to constant seepage, or soils with high water tables. It has an evergreen appearance since it is dominated by the laurel, live and water oaks, magnolia, and cabbage palm. This community supports a wide variety of vegetation with a diversity of species. These areas have high recreational values for hunting, hiking, and nature study. This community is subject to high water tables during the rainy seasons and has limitations for urban development. Water management systems are required for urban uses.

Cypress Swamp

This community is poorly-drained and water is at or above ground level a good portion of the year. Bald cypress is the dominant tree and is often the only plant which occurs in significant numbers. The diversity of trees is low in the cypress heads, but increases in the strands and stream margins.

Cypress swamps are an extremely valuable resource for environmental educational study, scientific research, recreation, and water quality. These swamps provide water storage areas by holding excess water and slowly releasing it into the water table. Water quality is enhanced by the community, which functions like a waste treatment plant by absorbing nutrients from the water. This association functions as a very important environmental community more suited to diverse ecological activities than residential development.

Freshwater Marsh and Ponds

This community appears as an open expanse of grasses, sedges, rushes, and other herbaceous plants in areas where the soil is usually saturated or covered with surface water for two or more months during the year. These communities serve as a filter system for rivers and lakes which protects the rivers and lakes from eutrophication and provides the marsh with nutrients that are used in the vegetative growth process. This community is subject to periodic flooding and has severe limitations for urban development.

Shrub Bogs - Bay Swamps

This community may be found perched on hillsides, in depressions in pine flatwoods, filling ravines, or as linear strips along the edges of creek swamps. This community is dominated by evergreen vegetation. Shrub bogs are predominantly dense masses of evergreen shrubby vegetation, while bay swamps are forested wetlands dominated by one or two species of evergreen trees. Shrub bogs are important as fire buffers. This community is subject to periodic flooding and has severe limitations for urban development.

Pitcher Plant Bog

This community appears as an open expanse of grasses, sedges, and pitcher plants with scattered, stunted pine and cypress. At times, the bogs are flamboyant with wild flowers. There is a predominance of pitcher plants in this community. Fire is necessary to prevent invasion by shrubs and succession to shrub bogs. These areas are rapidly being destroyed by drainage and for the planting of pine or improved pasture. This community is subject to high water tables and has severe limitations for urban development.

Figure 1 – Vegetation Map

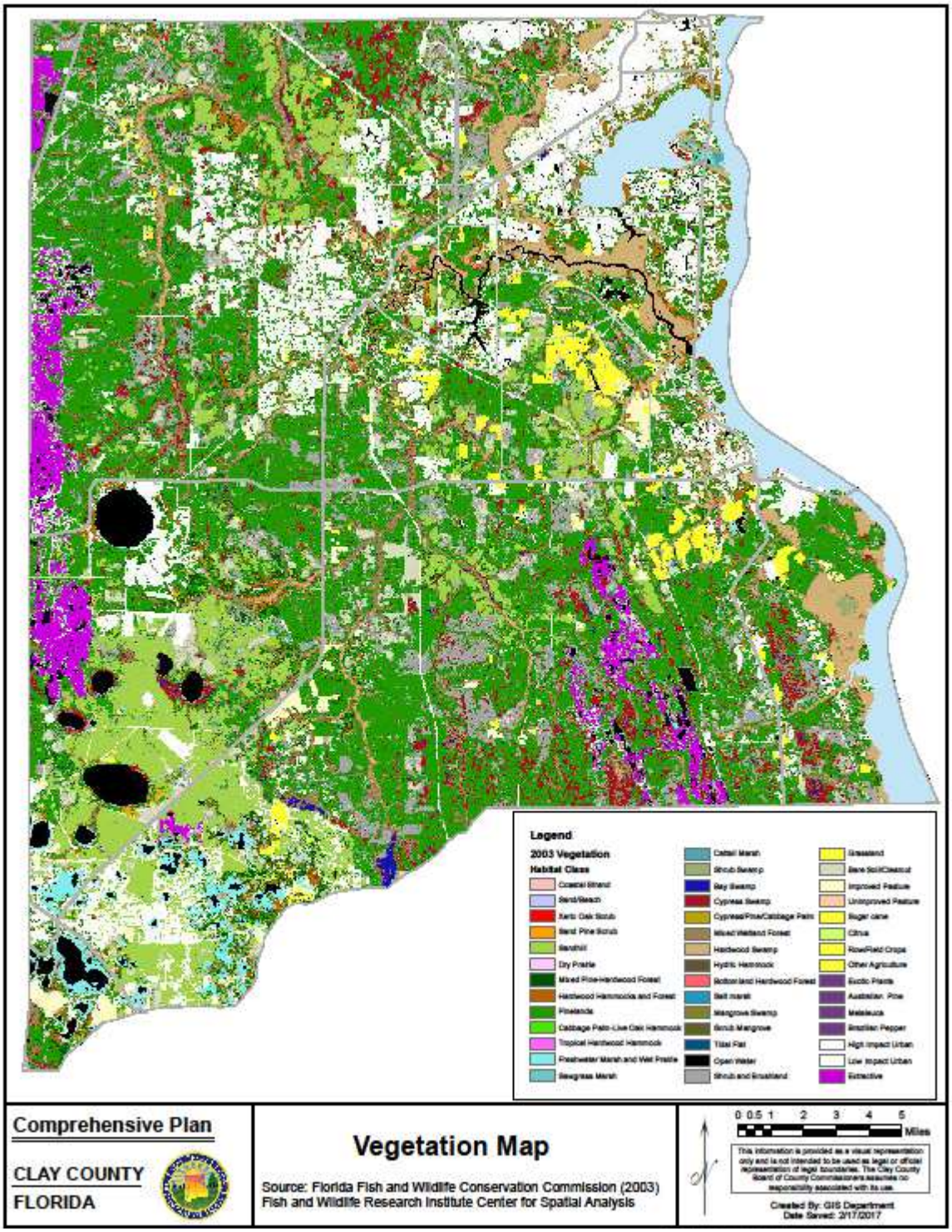


Table 1 – Correlation between Vegetative Community and Soil Series

Vegetative Community	Soil Series																		
	Kershaw	Ortega	Centenary	Hurricane	Leon	Mandarin	Albany	Blanton	Newnan	Osier	Plummer	Pelham	Meggett	Pottsburg	Sapelo	Maurepas	Pamlico	Allanton	Rutlege
Longleaf Pine - Turkey Oak Hills	X	X	X	X															
North Florida Flatwoods					X	X				X		X	X	X	X				
Sand Pine Scrub						X													
Upland Hardwood Hammock							X	X	X										
Mixed Hardwood and Pine		X					X	X											
Swamp Hardwoods										X		X					X	X	X
Wetland Hardwood Hammock											X		X						
Cypress Swamp																X			X
Freshwater Marsh																X			
Shrub Bogs - Bay Swamps and Pitcher Plant Bog																			X

Source: Soil Conservation Service "26 Ecological Communities of Florida"

Aquifer Recharge Areas

The Floridan Aquifer is the deep fresh water aquifer that supplies much of North Florida with its potable water supply. According to information supplied by the St. Johns River Water Management District, (SJRWMD) a large area in the southwest corner of the County (Keystone Heights and Camp Blanding) functions as high recharge for this aquifer. Surface water percolates through the sandy soils located in this area to resupply the aquifer. The Aquifer Recharge Map shows areas with eight inches or greater recharge to the Floridan Aquifer. This area of high recharge potential is restricted to the southwestern portion of the County. In this area, rainwater percolates directly into the limestone formation that is the aquifer. Reduction in the amount of percolation would have a direct effect on the aquifer's potential to supply future growth in Clay County as well as other areas in Northeast Florida. Therefore, it is recommended that urban ground coverage (e.g. buildings, parking lots) be minimized so that this natural percolation continues to safeguard the common source of potable water.

The Florida Department of Environmental Protection (FDEP) is the State agency responsible for regulating surface and groundwater quality to protect aquifer recharge areas. To implement the Florida Safe Drinking Water Act, Chapter 403 of the Florida Statues, the FDEP has developed rules classifying aquifers and regulating their use (Chapter 62-520) and Chapter 62-522, Florida Administrative Code). The FDEP also established regulatory requirements for facilities which discharge to groundwater and which inject materials directly underground (Chapter 62-528, Florida Administrative Code).

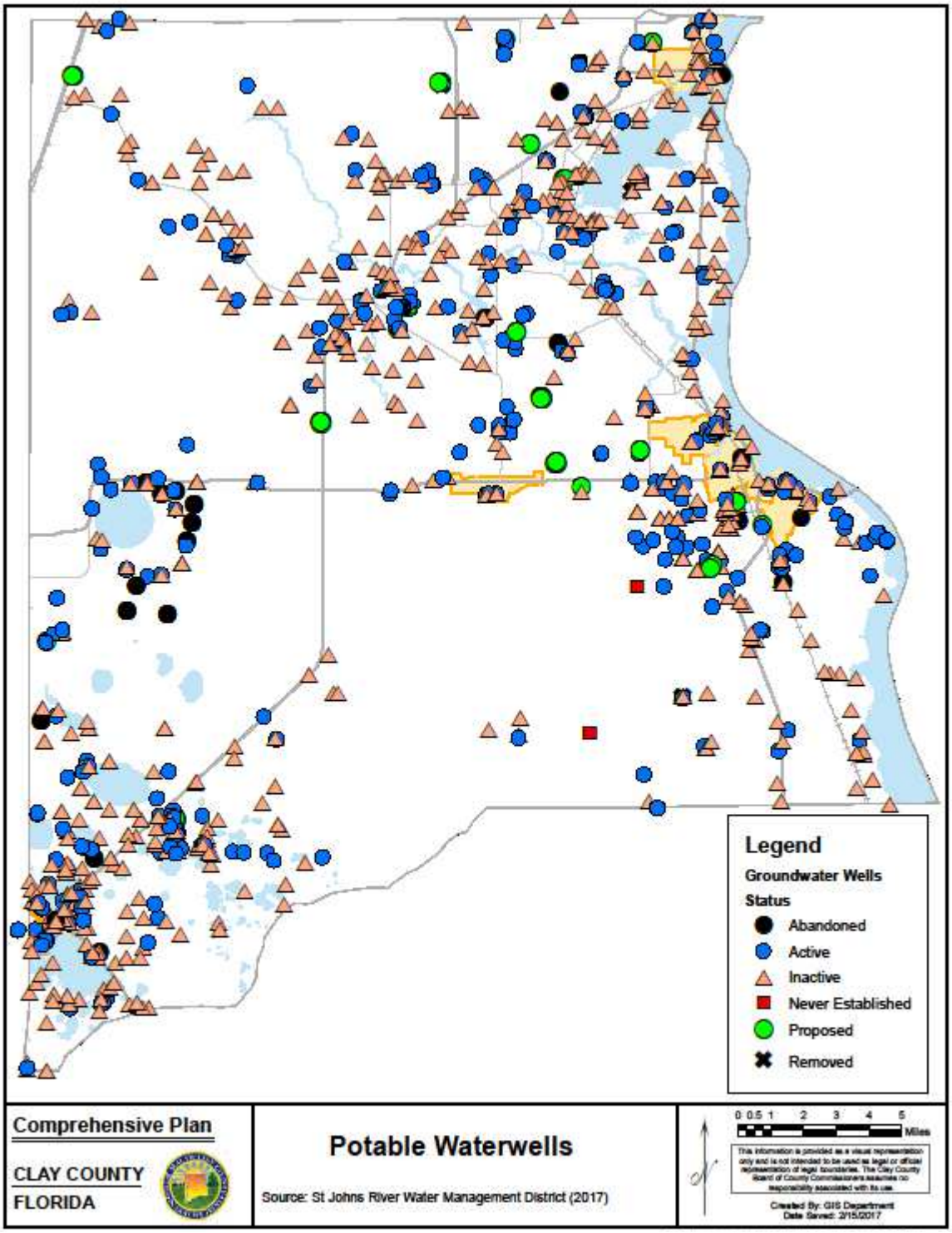
At the present time, Clay County has no special regulatory programs related to protection of natural groundwater aquifer recharge areas. However, Policy 6.1 in the Community Facilities Element states that high recharge areas which have a recharge rate of eight (8) inches or more per year to the Floridan Aquifer and which are designated for development shall have lot coverage of impervious materials restricted to 60 percent providing that at least 25% of the site is dedicated to native and/or drought-resistant vegetation areas, and the site shall achieve 100-percent retention of stormwater. In addition, the following land uses are generally prohibited: wastewater treatment plants, wastewater percolation ponds, landfills, mines, feedlots, chicken farms, activities that require the storage, use, handling or processing of materials identified as Chemical Hazards and Toxic Substances by the U.S. Department of Labor, agricultural chemicals, petroleum products, hazardous waste, toxic waste, industrial chemicals or medical waste. Certain exceptions to the prohibited uses shall be explored and identified in the Land Development Regulation.

Potential well yields from the water table aquifer depend on the thickness and nature of the aquifer. Thick beds of relatively coarse sand will yield considerably more water than beds which contain large quantities of clay and silt. In most areas, the aquifer yields sufficient quantities of water for domestic and stock purposes.

According to the SJRWMD, the quantity and quality of artesian groundwater underlying Clay County is expected to be adequate for the expected demand during the remainder of the planning period.

The U.S. Geological Survey has collected and chemically analyzed water samples from wells (**Figure 9**) that tap the Floridan Aquifer in Clay County. In general, water from the Floridan Aquifer in Clay County is of good chemical quality and meets the standards recommended by the Florida Department of Environmental Protection (FDEP) and the U.S. Environmental Protection Agency (EPA).

Figure 2 – Potable Waterwell Location Map



Groundwater recharge protection measures will be required for future development proposed within high recharge areas. (See **Figure 10**) The regulations include a requirement for 100 percent 25-year/24-hour storm retention with maximum 60% impervious surfaces and minimum 25% open spaces for all developments within high recharge areas. Such a measure, combined with appropriate clustering options, restrictions on percentage of impervious surfaces, transfer of development rights, and innovative retention and detention methods for development could prevent further loss of recharge potential due to the physical loss of high recharge lands. Further, the expansion of a centralized potable water system to the unincorporated area around Keystone Heights should be viewed as a priority. Connection to a central water system would encourage water conservation and reduce the need for additional private wells, which are susceptible to contamination.

There are numerous methods by which the functions of groundwater recharge areas may be protected. Much of the implementing authority already rests with the County through its broad powers to regulate land use. Some of these protection methods are briefly described as follows:

Performance Standards Incorporated into Land Development Regulations or Permit Criteria

- Density limits
- Impervious surface coverage limits
- Balanced water budget requirements
- Stormwater retention design considerations
- Vegetation preservation/enhancement

The performance standards enumerated above are intended to minimize or mitigate the loss of natural recharge capacity caused by clearing of vegetation and development of impervious surface area. Performance standards can be employed through overlay zoning districts, land development regulations, and other regulatory techniques.

Aquifer Protection Ordinances

To protect the quality of local water resources, local governments may choose to identify sensitive areas and regulate land uses in those areas accordingly. Areas up-gradient from public supply wells normally have the highest priority.

Conservation or Agriculture Zoning

Restrictive zoning prohibits incompatible development. Only low intensity uses are permitted, minimizing the loss of natural recharge capacity.

Fee Simple Acquisition

Outright purchase of land by government or private agencies for preservation purposes is the most direct method of recharge area protection. Acquired lands can also be used for recharge-compatible activities such as certain types of recreation.

Conservation Easements

This method involves incentives offered to a landowner in exchange for an agreement to maintain the land in such a state that the natural recharge function is preserved. Tax incentives may also be available through State and County programs.

Transfer of Development Rights

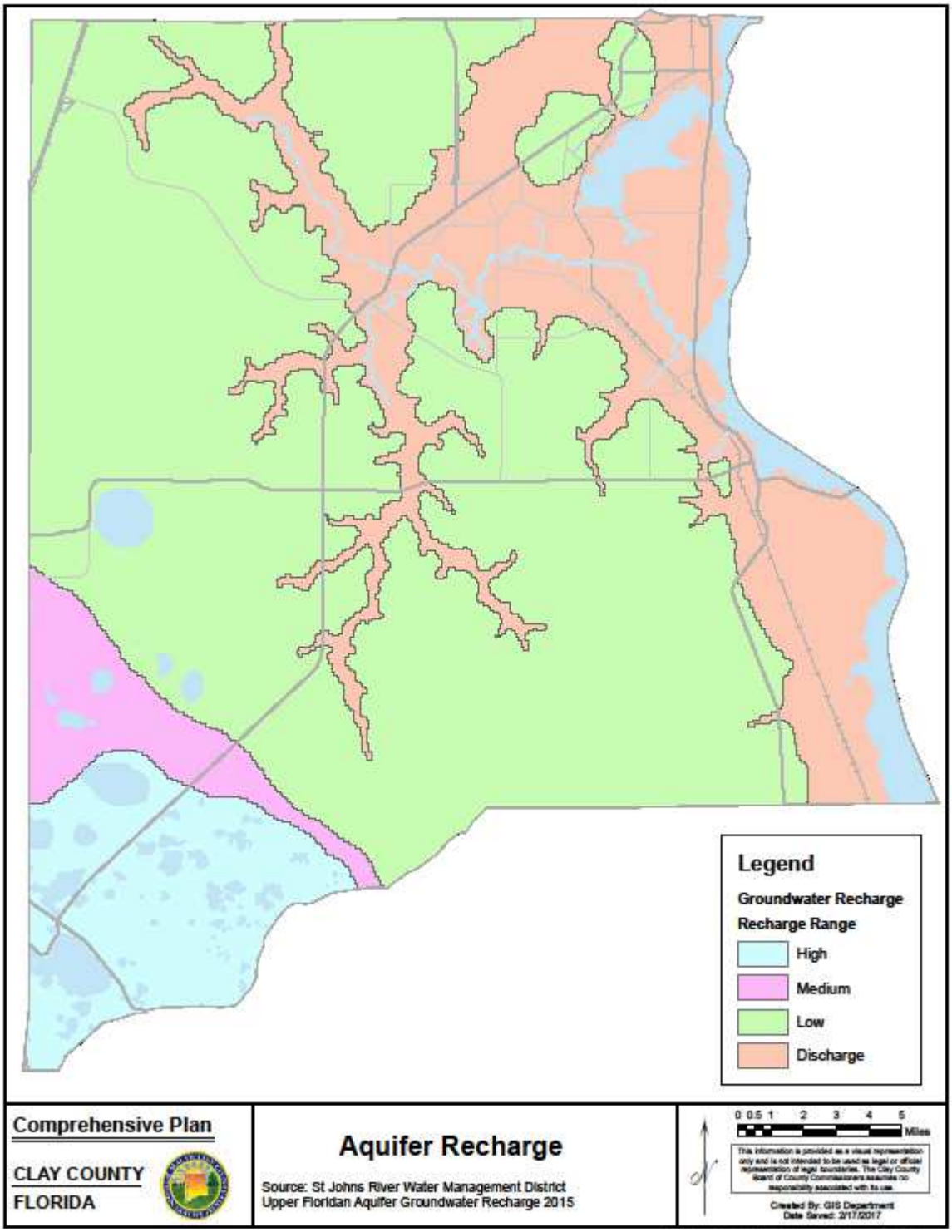
A variety of techniques can be used to transfer the development rights for a particular area (e.g. recharge areas) to another location. The receiving area may then be developed at a higher density than normally allowed, while the donating area is preserved.

Artificial Recharge as Mitigation

Under this option, development is permitted only if lost natural recharge capacity is compensated. Various methods exist to artificially recharge an aquifer. These include injection wells, drainage wells, seepage basins, etc. Water quality safeguards must be incorporated into mitigation requirements to prevent aquifer contamination.

Perhaps the best opportunity for recharge area protection involves the authority of the County to regulate land development. Through various regulatory techniques, development impacts on the recharge function can be eliminated, minimized, or mitigated. Acquisition and preservation of recharge areas by State, regional, local, or private agencies could become an important recharge protection mechanism, but high costs limit the extensive use of this alternative. The water management districts and State agencies can regulate the use of water resources, provide technical assistance to local governments, and support recharge efforts through other water management programs.

Figure 3 – Aquifer Recharge Area Map



Essential Services

Clay County will continue in its role of overall responsibility for coordinating the provision of public utilities adequate to meet the needs of the residents of the unincorporated portions of the County. The County presently provides solid waste disposal facilities for all County residents and has review responsibilities for drainage facilities. The County does not provide sanitary sewer or potable water distribution services; they are provided by the Clay County Utility Authority, an independent board.

Rapid population growth will place increasing strain on existing facilities, and future growth will only increase demands upon facilities. Due to the number of diverse entities involved in the County's growth and development, and the mixed role between the public and private sector in the provision of facilities, the County should assume a strong role of facilities coordinator.

When considering the financial feasibility of public facility projects, the County encourages the partnership between the public and private sectors. In cases where the County does not provide public facilities, private enterprise must provide these services for existing and new residents to maintain the adopted levels of service.

Capacity of Services and Facilities

Availability of Sanitary Sewer and Potable Water Services

The Centralized Service Areas Map (**Figure 11**) shows areas of service for sanitary sewer and potable water services within Clay County. These areas include franchised service areas and planned expansion areas for the Clay County Utility Authority (CCUA), Jacksonville Electric Authority (JEA; Electric, Water, and Sewer), Melrose Water Association, and the three municipally controlled utilities including Orange Park, Green Cove Springs, and Penney Farms.

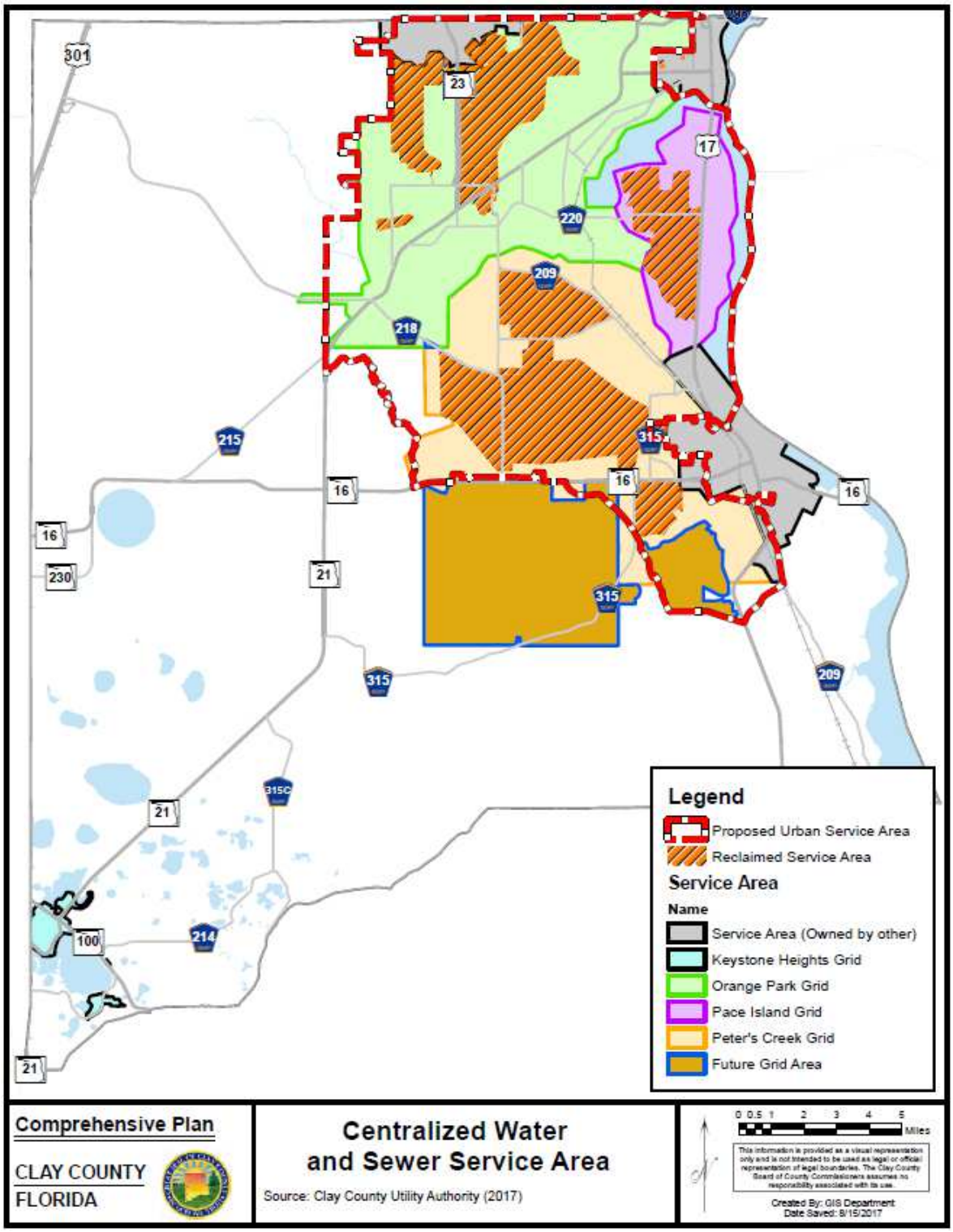
The CCUA owns and currently operates seven regional wastewater treatment plants with a combined design capacity of approximately 15.684 million gallons per day (MGD). These plants provide service to more than 101,520 people. The CCUA serves central Clay County, north of Penney Farms, as well as the areas surrounding the Town of Orange Park, Doctors Lake, Lake Asbury and Fleming Island. It also serves interspersed locations near Doctors Inlet, southwest of Doctors Lake. All regional wastewater treatment plants currently have available capacities to serve additional units. Further analysis is provided in the Community Facilities Element.

Sanitary sewer service is provided in the existing service areas shown on the Centralized Service Areas Map. Potable water facilities are projected to be available within the planning period in all service areas depicted on the map. The CCUA currently owns and operates twenty three water treatment plants with a combined design capacity of 71.581 MGD serving approximately 48,105 units (as of September 30, 2015).

Capacity is available in the regional water and wastewater treatment facilities to serve the existing land uses, all vested developments (land for which development orders have been issued and development with vested status identified in the Future Land Use policies that address vested rights), and enough capacity, based on projections, for future needs through the first five years of the planning period. Four additional wastewater treatment plants are anticipated by 2040 to serve the Mid-Clay area, Governor's Park, DarDam Point and Northwest Clay bringing the combined design capacity to 10.912 MGD. Eight additional water treatment plants are anticipated by 2040 bringing the total capacity to 75.331 MGD (see Community Facilities Element). Expansion by private providers will be coordinated by the County through a Development Agreement and a

modification of the Centralized Water and Sewer Service Areas Map.

Figure 4 – Centralized Service Area Map



Availability of Solid Waste Capacity

Waste Management, Inc. of Florida has been responsible for managing Clay County Class 1 Waste, and has been transferring it to the Chesser Island Road Landfill Area since June 20th, 2006. The site life is currently estimated to be 58 years.

Policy 1.5 of the Community Facilities Element requires that the County maintain a minimum of three years' solid waste disposal capacity (1) through formal agreement or contract with a solid waste disposal provider, or (2) by providing a solid waste disposal facility within the County's boundaries. If the latter alternative is chosen, the County must start evaluating alternative sites at least three years before expiration of the contract with the service provider. It must purchase land for such a facility at least two years prior to contract expiration and commence construction at least one year prior to contract expiration. The policy requires planning for the provision of solid waste capacity well in advance of the use of all the existing capacity.

Availability of Roadway Capacity

The roadway capacity required to serve existing land uses at the adopted level of service is available throughout the county. The following facilities currently show deficiency: SR 21 from Long Bay Road to CR 218 is deficient at 100% Volume Capacity Ratio, CR 209 from CR 739B to CR 315B is under 108% Volume Capacity Ratio, and CR 739-B (Sandridge Road) from CR 209 to CR 739 is at 170% Volume Capacity Ratio.

Three roadway segments are at Critical Status: SR 16 from Green Cove Springs to Penny Farms has a 95% Volume Capacity Ratio;;; SR 21 from Kingsley Avenue to Suzanne Avenue has a Volume Capacity Ratio of 92% and CR 220 from Knight Boxx Road to CR 209 is currently under critical status at 98% Volume Capacity Ratio. Recent improvements to the SR 21 segment from Wells Road to the county line improved the movement of traffic however, it still has a Critical Status with a Volume Capacity Ratio of 113%. Future deficiencies on County Roads will be addressed by the Clay County 5-year Capital Improvements Program.

In 2006, a study to determine the need for additional transportation capacity across the St. Johns River, between Clay and St. Johns County was completed. The study results prompted the plans for a 46.5 mile facility that will extend from I-10 in Duval County, through Clay County using the SR 23 (Branan Field Road alignment) southward and then crossing the St. Johns River into St. Johns County where it will continue to I-95.The segment of SR 23 from SR 21 to the Duval county line is expected to be completed in 2017. Tolls will be collected on this segment once completed which will speed up the overall construction. The next segment, extending from SR 21 to US 17 (SR 15), will begin the right of way acquisition phase in 2017 which is anticipated to continue through 2020. The bridge and St. Johns County portion of the expressway are expected to be completed by 2040. The expressway is expected to share loads on State Road 16, SR 21 and 17.

Man-Made Constraints

This category includes areas within the County that have unique limitations affecting their use. Some have been excluded from any further consideration concerning development, while others have been considered but will have to meet prescribed criteria. Camp Blanding is a 72,000-acre State military reservation located in the extreme western portion of the County which has been classified as use-limited. The Florida National Guard utilizes Camp Blanding for training purposes, and also leases out areas for mining and timber production. The National Guard's use of this property precludes any development of the land for anything other than training facilities.

Historic Resources

An inventory of existing surveys was utilized to determine the historic resources of the County. The Bureau of Historic Preservation within the Division of Historical Resources, Florida Department of State, maintains the Florida Master Site File which is a statewide compilation of historically and archaeologically identified sites. One thousand one (1,001) sites have been identified in the County by the State at this time. An inventory of these sites is maintained in the Planning Department and updated as the Florida Division of Historical Resources revises the Master Site File. Twenty-three individual buildings are listed on the National Register of Historic Places (see **Figure 12**. Historic Resources Map and **Table 3**). **Table 4** contains twelve sites that have been evaluated and found eligible for listing on the National Register of Historic Places.

Table 2 – NRHP Registered Individual Buildings and Districts

	NRHP Registered Individual Buildings	Planning District / Municipality
1	Clark-Chalker House	Middleburg / Clay Hill
2	St. Margaret's Episcopal Church and Cemetery	Fleming Island
3	Memorial Home Community Historic District	Town of Penney Farms
4	St. Mary's Church	City of Green Cove Springs
5	Clay County Courthouse	City of Green Cove Springs
6	Bubba Midden (8CL84)	Fleming Island
7	Princess Mound (8CL85)	City of Green Cove Springs
8	Haskell-Long House	Middleburg / Clay Hill
9	Budington, Frosard W., House	Middleburg / Clay Hill
10	Methodist Episcopal Church at Black Creek	Middleburg / Clay Hill
11	Frisbee, George Randolph, Jr., House	Middleburg / Clay Hill
12	Chalker, George A., House	Middleburg / Clay Hill
13	Middleburg Historic District	Middleburg / Clay Hill
14	Green Cove Springs Historic District	City of Green Cove Springs
15	Winterbourne	Town of Orange Park
16	Orange Park Negro Elementary School	Town of Orange Park
17	Green, Joseph, House	Town of Orange Park
18	Helffrich, William, House	Town of Orange Park
19	Orange Park Elementary School	Town of Orange Park
20	Westcott, William, House	Town of Orange Park
21	Clarke, William, Estate	Town of Orange Park
22	River Road Historic District	Town of Orange Park
23	Holly Cottage	City of Green Cove Springs

Source: The Florida Master Site File

Table 3 – Sites Eligible for NRHP (Nat'l Register of Historic Places)

Site Name	Type
St. Margaret's Episcopal Church	Historical District
Memorial Home Community Historic District	FMSF Building Complex
Middleburg Historic District	Historical District
Green Cove Springs Historic District	Historical District
POW District	Historical District
River Road Historic District	Historical District
Camp Blanding North Cantonment District	Historical District
Camp Blanding Ammunition Storage Historic District	Historical District
Florida Railroad Corridor	Linear Resource
Jacksonville, Tampa, and Key West RR	Linear Resource
Lee Field Runway South	Designed Historic Landscape
Florida Railroad Corridor R.G.	Linear Resource

Source: The Florida Master Site File

Of the 1,001 sites identified in this study, 439 sites were deemed as archaeological sites. Sites listed in the Florida Master Site File are granted no protection because of their status, but every reasonable effort should be made to protect and preserve any significant sites.

The National Register of Historic Places is the official list of those sites, buildings, structures, and objects which have been identified and documented as significant cultural resources reflecting the historical development of our nation. The following is the criteria utilized by the National Park Service in determining a site's eligibility for inclusion to the National Register:

Criteria for Evaluation:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

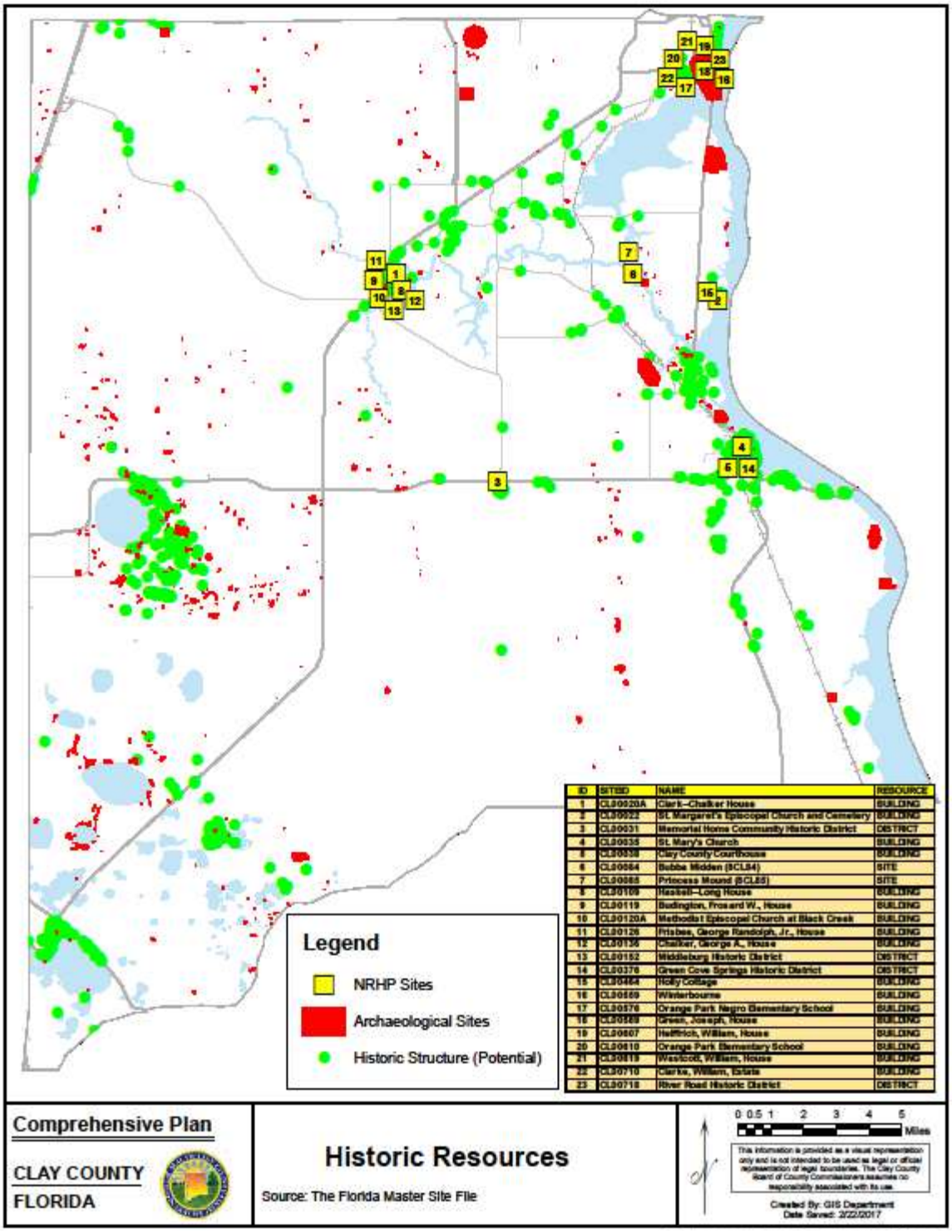
That are associated with events that have made a significant contribution to the broad patterns of our history; or

That are associated with the lives of persons significant in our past; or

That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

That have yielded, or may be likely to yield, information important in prehistory or history.

Figure 5 – Historic Resources Map



ID	SITEID	NAME	RESOURCE
1	CL00020A	Clark–Chalker House	BUILDING
2	CL00022	St Margaret's Episcopal Church and Cemetery	BUILDING
3	CL00031	Memorial Home Community Historic District	DISTRICT
4	CL00035	St Mary's Church	BUILDING
5	CL00038	Clay County Courthouse	BUILDING
6	CL00084	Bubba Midden (8CL84)	SITE
7	CL00085	Princess Mound (8CL85)	SITE
8	CL00109	Haskell–Long House	BUILDING
9	CL00119	Budington, Frosard W., House	BUILDING
10	CL00120A	Methodist Episcopal Church at Black Creek	BUILDING
11	CL00126	Frisbee, George Randolph, Jr., House	BUILDING
12	CL00136	Chalker, George A., House	BUILDING
13	CL00152	Middleburg Historic District	DISTRICT
14	CL00370	Green Cove Springs Historic District	DISTRICT
15	CL00464	Holly Cottage	BUILDING
16	CL00569	Winterbourne	BUILDING
17	CL00570	Orange Park Negro Elementary School	BUILDING
18	CL00589	Green, Joseph, House	BUILDING
19	CL00607	Helfrich, William, House	BUILDING
20	CL00610	Orange Park Elementary School	BUILDING
21	CL00619	Westcott, William, House	BUILDING
22	CL00710	Clarke, William, Estate	BUILDING
23	CL00718	River Road Historic District	DISTRICT

Criteria Considerations (Exceptions):

Ordinarily cemeteries, birthplace, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

A religious property deriving primary significance from architectural or artistic distinction of historical importance; or

A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or

A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or

A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and no other building or structure with the same association has survived; or

A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or

A property achieving significance within the past 50 years if it is of exceptional importance.

Redevelopment Analysis

Blighted Areas

Clay County currently has no areas designated as blighted. However, certain programs contained in the Housing Element will be geared towards rehabilitation of individual structures.

Elimination or Reduction of Inconsistent Uses

Florida Statute 163.3177(6)(a) requires an analysis of the elimination or reduction of uses inconsistent with Clay County's character and proposed future land uses. There are two areas in particular which merit future elimination or reduction. The first is the reduction of the negative impacts of the existing strip commercial development along SR21 and US17. The commercial uses are not inconsistent per se, but many have developed in a manner that is inconsistent with good planning practices. In the past, insufficient attention has been given to minimizing the traffic impacts on the adjacent roadways, e.g., requiring service roads, interconnecting driveways, etc. In addition, non-automobile modes of transportation have been ignored. In both of these cases, more recent standards as well as standards that will be developed in Clay County's updated land development code, will be applied to parcels as they redevelop or expand. In either case, any increased transportation impact should be regulated by limiting and combining driveways, thereby minimizing points of conflict.

The second issue meriting further study concerns areas of inconsistent zoning. Some of these may be eligible for vesting. This is most relevant where residential plats have been at least partially developed and individual ownership of lots makes other uses impractical. In those cases where vesting has not been realized, the County has acted to rezone those properties to uses which comply with the Plan.

D. Land Use Demand Analysis

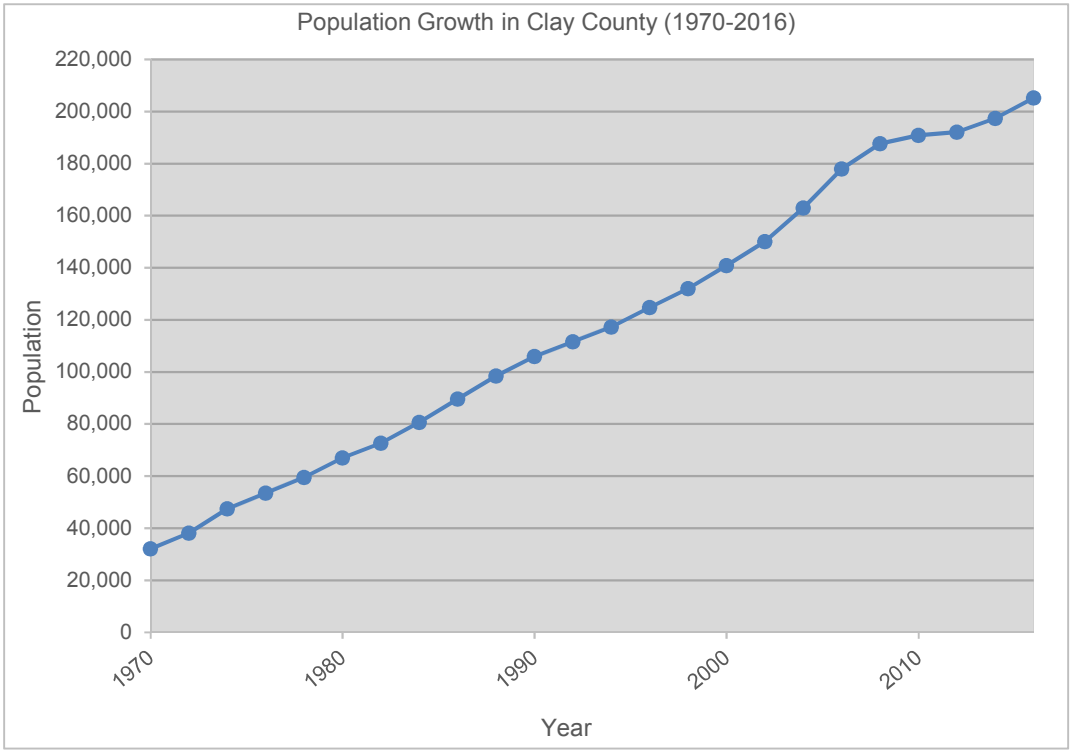
In the preceding sections the supply of land for development purposes was evaluated. In this and subsequent sections, the demand for the available land will be assessed. This assessment will be based upon an analysis of past and projected growth trends in the County. The end result will be a set of projected requirements for land use in various categories to the year 2040.

Demographic Projections

Population

The first step in analyzing land use demand in Clay County is to assess population growth. The residential population of the County underlies the demand for developed space. The demand for developed space, in turn, results in the use of the available supply of land.

Figure 6 – Population Growth



Source: Demographic Estimating Conference, Dec. 2015 and UF, BEBR, Florida Population Studies, Volume 49, Bulletin 174, Jan. 2016 medium county projections.

Historic Population Growth

Clay County has experienced large population increases in the past. (See **Figure 13**) In 1950 the population of Clay County was only 14,000. It was a rural area with a few small towns. Though the percent of growth from 1950 to 1960 was large, by 1960 the population was still less than 20,000. The decade's absolute growth was less than 6,000 persons. Growth increased in the 1960s, ending the decade with population of 32,000. The absolute growth was over 12,000, a 64 percent increase over the ten year period. While this growth must have seemed rapid to long-time residents, it was modest compared to the growth of the 1970s when the population more than doubled, ending the decade at 67,000, for a ten-year growth of 35,000 residents. The population exceeded 100,000 by 1990 and the County saw additional 34,828 population by 2000. In 2010, the Office of Economic and Demographic Research (EDR) reported the County's population at 190,865. By 2016, the estimated population exceeded the 200,000 mark by an additional 5,000 residents according to EDR. This historic period of growth saw Clay County change from a rural area with small towns to a county of three characters: an urban portion in the northeastern quadrant extending south from Orange Park and Blanding Boulevard; a suburban or urbanizing portion, south of CR 220 and north of SR 16, posing a intermediate character; and the remaining portion, south of SR 16, maintaining a rural character. The urbanized portion, which is most convenient to employment opportunities in neighboring Duval County, is characterized by workplaces and bedroom communities for the growing Jacksonville Metropolitan Area. It is the economic expansion of the metropolitan area since the 1960's that created housing demand in rural Clay County which transformed the character of the County.

Recent Population Growth

While the historic growth patterns of the County are important to an understanding of its current situation. In the 1980 - 1990 period, Clay County's population grew almost 38,934 persons, an average of nearly 3,900 persons per year. This ten-year population increase was greater than the entire population of the County in 1970. During the 1990 – 2000 period, Clay County saw growth in population of 34,828. The population trend during the 1980 – 2000 period was constant showing average 58.06% of yearly growth during 1980-1990 period and average 32.86% of yearly growth during 1990-2000 period. The 2000-2010 period saw a slight increase in growth over the previous decade with an average 35.54% of yearly growth. It is a good indication of cubic growth in population.

Changing Growth Forces

The purpose of population projections is to use known information as indicators of future change. Projection methodologies rely heavily on consistently available and quantifiable information.
Clay County's residential growth since 1970 had reflected the growing Jacksonville metropolitan area economy. Residential developments, modest in nature and overwhelmingly single family, had resulted. But more recently, new large scale land developments, permitted as Developments of Regional Impact (DRI's), with integrated plans for residential, commercial, industrial, and recreational uses, have been initiated in the County. The DRIs and other individual developments generally coincide with major road intersections that become urban nuclei and create radial development patterns.

Population Projection and Distribution Methodology

Clay County has a broad spectrum of land uses, ranging from built-out urban to pristine forests and wetlands, and the County's land use profile is changing rapidly. The County consists of three

distinct areas: the urban area, urbanizing area, and rural area. (See **Figure 14**)
The *urban area* (much of which was developed at suburban densities), consists of the incorporated Town of Orange Park, and the Orange Park and Fleming Island Planning Districts. This area is at or near the buildout point. Within this area, future development will consist of scattered infill projects and redevelopment projects.

The *urbanizing area* consists of the Doctors Inlet/Ridgewood and the northern sections of the Penney Farms/Lake Asbury and Green Cove Springs Planning Districts. This is the portion of Clay County in which government, private utility, and other service and infrastructure providers have concentrated their planning efforts. Future growth areas include lands under the Branan Field Master Plan and the Lake Asbury Master Plan. The north and west Green Cove Springs area is outside of the master plan areas, but is likely to undergo rapid growth based on recent concurrency, rezoning, and Future Land Use Map amendment activity.

The *rural area* consists of the Keystone Heights and Middleburg/Clay Hill Planning Districts, as well as the southern sections of the Penney Farms/Lake Asbury and Green Cove Springs Planning Districts. Prior to the current Comprehensive Plan, much of unincorporated Middleburg and the greater Keystone Heights/Lake Geneva area was zoned for one-acre lots. These areas are largely without central water and sewer services, and in many cases are accessed by unpaved roads. Approximately 80,300 acres is within agricultural land use and zoning categories, and around 4,664 acres is in the Mining land use category, with both comprising almost 22% of the County's land area. The predominant agricultural use is silviculture. County land use policies impose annual development caps to restrict the total number of new dwelling units in areas within the Agriculture and Agricultural Residential land use categories. In addition to these areas mentioned above, around 15% of the County is maintained in conservation lands with no growth potential, including Camp Blanding, Jennings State Forest, Bayard Conservation Area, Black Creek Ravines Conservation Area, and Gold Head State Park.

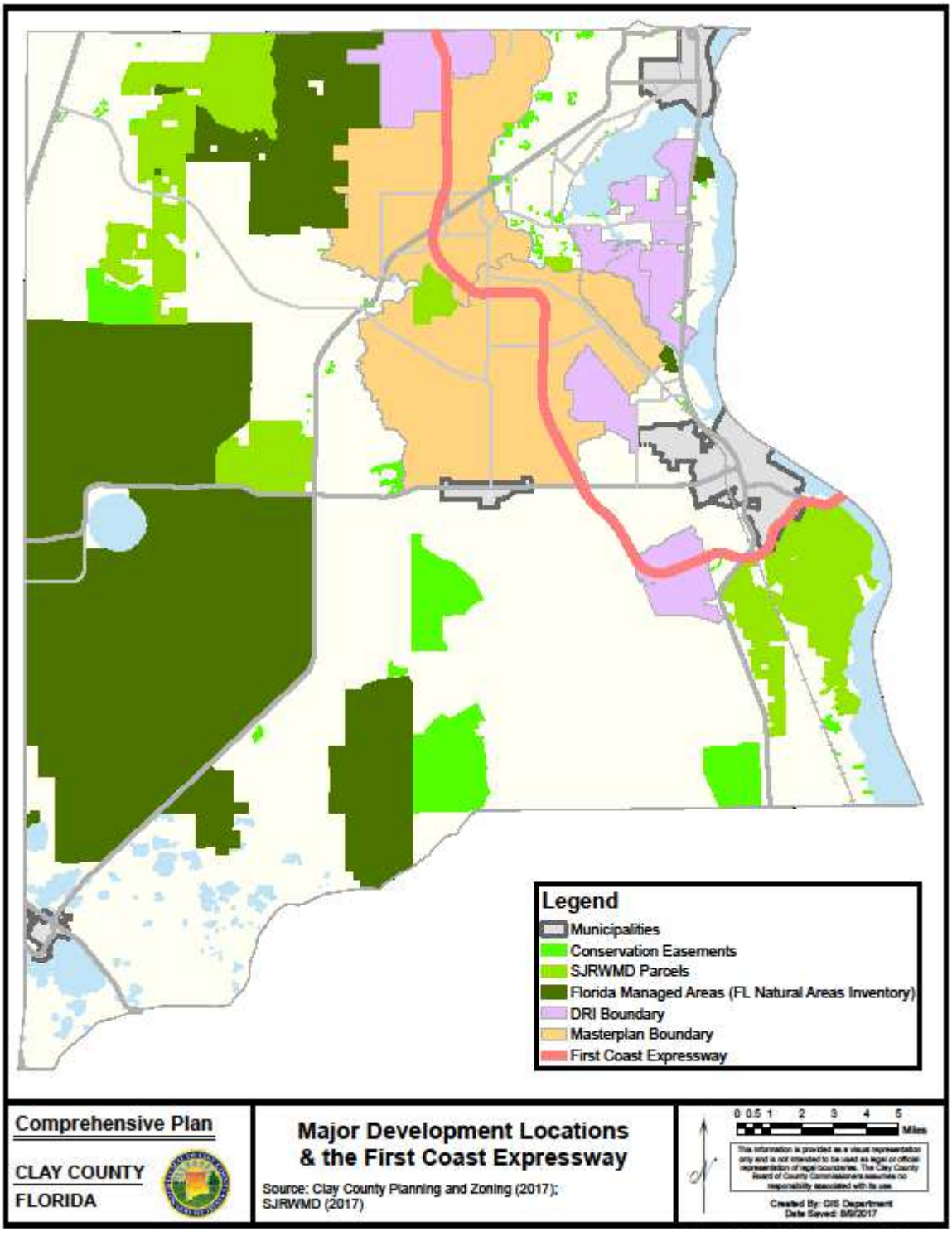
Shifting growth patterns. With the economic downturn, Clay County's growth slowed from an average 3% to just over 1% between 2010 and 2015. Faced with the scarcity of lands within the urbanized areas, recent development has shifted to the urbanizing areas. The Argyle Forest DRI (Oakleaf) continues to grow in the north central portion of the county. Additional growth within both the Branan Field and Lake Asbury Master Plan areas as well as northern Green Cove Springs is largely in response to the First Coast Expressway construction. This trend is expected to continue through the completion of the Expressway and the replacement of the Shands Bridge. Anticipated development in the Saratoga Springs and Governor's Park DRIs has yet to begin.

Given these circumstances, Clay County Planning staff has developed population projections using the following methodology:

Residential

Countywide population data was collected from the Office of Economic and Demographic Research (EDR). Municipality population data was calculated based on the municipality's proportion of the total population in 2016. Planning District population figures were developed using the Census data from 2010, EDR's projections for years 2020, 2025, 2030, 2035 and 2040, traffic analysis zone (TAZ) data from the TPO's North Florida Regional Planning Model and County building permit data. Developments that were reviewed by the Development Review Committee in 2015 and 2016 was also factored in. In the absence of TAZ data for 2020, a median value was developed using the 2015 and 2025 projections.

Figure 7 - Major Development Location Map



Planning District Characteristics and Expectations

The **Doctors Inlet-Ridgewood Planning District** is one of the highest growth districts within the County. The development pattern was primarily comprised of platted subdivisions with paved roads and 1/2 acre lots. Growth is occurring in the vicinity of Blanding Boulevard and continues south along Blanding toward Middleburg.

Existing development in the Doctors Inlet-Ridgewood Planning District is located adjacent to Blanding Boulevard, and is limited toward the northwest by the wetland system associated with Black Creek and on the southeast by Doctors Lake. The First Coast Expressway (formerly Branan Field Road) provides access to the center of the Planning District (those lands lying between the wetland system associated with Black Creek and the Jennings State Forest). The Expressway corridor runs through both the Argyle Forest DRI and the Branan Field Master Plan area. The focus of the master plan is an economic development program, creating an employment center to begin reversing the workforce out-migration to adjacent counties.

The construction of the First Coast Expressway is expected to boost existing development trends and increase both residential and non-residential demands in the Doctors Inlet-Ridgewood, the Penny Farms/Lake Asbury and the Green Cove Springs Planning Districts by providing these areas of the County with increased accessibility to neighboring jurisdictions.

The **Middleburg-Clay Hill Planning District** is characterized by low density, high vacancy, rural development primarily accessed by dirt roads. Most of the existing development pattern was created prior to revision of the 1985 subdivision ordinance prohibiting dirt road subdivisions. The adoption of this ordinance requiring the paving of all new subdivisions has resulted in very little new development since 1990. Most of this District's growth has occurred as infill within the existing platted areas (lots of record) or in vested unrecorded subdivisions and is expected to continue as such. Rural development may increase along County Road 217 in the western portion of the District. The First Coast Expressway will cross Blanding Boulevard approximately 5 miles northeast from the C.R. 218/Blanding Boulevard intersection (unincorporated Middleburg) and will provide an alternative to Blanding Boulevard as a route to employment centers from the eastern portion of the Planning District.

The **Orange Park Planning District** is the most urbanized part of Clay County. The eastern portions of the District are largely developed. The western portions have available land (approx. 137 acres) planned for future residential development. Growth throughout the period is expected to be minimal, consisting of infill, development within existing vested properties and multi-family development along Wells Road. It is estimated that the existing vacant lands will be occupied by the year 2025.

The **Fleming Island Planning District** includes two approved Developments of Regional Impact (DRI) and one Florida Quality Development (FQD) which together cover approximately two thirds of the land area. U.S. Highway 17 provides direct access to the Jacksonville area and most of the developments in this District have occurred within the three Planned Communities. There are vacant lands available within this district: 56 acres in Planned Community and 172 acres in Rural Fringe and it is estimated that the existing vacant lands will be consumed by the year 2025. Some infill is expected to occur within the existing developed areas outside these communities.

The **Green Cove Springs Planning District** has been growing relatively slowly in comparison to the rest of the County. Development has been concentrated in and around the City of Green Cove Springs with scattered development north of the City and along the river's edge. One

Development of Regional Impact (DRI) is located in this district but has yet to begin construction. There is ample land for future development and significant growth pressures are now anticipated in the District in the planning period due to the planned construction of the Expressway.

The **Penney Farms-Lake Asbury Planning District** can be subdivided into Penny Farms and Lake Asbury Master Plan areas. One Development of Regional Impact (DRI) has been approved within the Lake Asbury Master Plan Area but has yet to begin construction. There are large tracts of land available for future development within the Lake Asbury Master Plan Area which will likely develop once the First Coast Expressway is completed.

Outside of the Keystone Heights City Limits, the **Keystone Heights Planning District** is characterized by low density, high vacancy, rural development primarily accessed by dirt roads. Most of the land surrounding the many lakes in the region is developed. This District has slow but steady population growth with ample land available for future residential development within the planning period. There are several vested subdivisions, and in subdivisions which are not vested small lots can be combined to create conforming lots. Most of the undeveloped area beyond the immediate vicinity of the City of Keystone Heights is restricted to densities of one dwelling per ten or twenty acres. In recent years, over 11,000 acres have changed from agriculture land use (1 dwelling per twenty acres) to Agriculture/Residential to allow for development up to one dwelling per five acres with points and clustering. Current policy places annual limits on development within these more rural lands.

Seasonal Population

An estimate and projection of "seasonal" population is also required by 163.3177 F.S. "Seasonal" population refers to "tourist, migrant farmworkers, and other short-term and long-term visitors," who may be expected to utilize public facilities or services but are not full-time residents as defined by the Census. While many Florida counties will be severely affected by high seasonal population, this is a minor factor in unincorporated Clay County.

The Clay County projection was prepared on the basis of historical building permit data in each Traffic Analysis Zone. Reasonably, the building permit numbers are a combination of occupancy, vacancy, and others without certificate of occupancy information.

Table 4 – Clay County Total Population 2010-2040

Year	Middleburg/ Clay Hill	Doctors Inlet/ Ridgewood	Orange Park	Fleming Island	Green Cove Springs	Penney Farms/ Lake Asbury	Keystone Heights	Total
2010	18,888	73,900	25,069	27,126	14,318	14,183	17,381	190,865
2015	19,277	81,231	25,173	27,866	14,682	15,325	17,724	201,277
2020	19,216	87,894	26,154	28,644	18,419	24,899	18,174	223,400
2025	19,054	94,105	27,067	29,275	21,775	34,365	18,558	244,200
2030	18,793	94,095	27,608	28,831	32,105	42,032	18,635	262,100
2035	18,611	98,807	28,106	28,535	38,881	46,981	18,780	278,700
2040	18,502	104,016	28,659	28,424	44,950	50,584	18,963	294,100

Source: BEBR, Florida Population Studies, Vol. 50, Bulletin 177, April 2017, Clay County Planning and Building Divisions, 2017. Municipality projections are based on proportion of Total County Population in 2016, according to the Office of Economic and Demographic Research, Oct. 17, 2016.

Population Summary

The unincorporated area of the County has been divided into seven Planning Districts (PD), as shown on the Planning Districts Map. Traffic Analysis Zone (TAZ) data from the TPO's Northeast Regional Planning Model was utilized to distribute the County's total projected population~~,~~ into these sub-areas. The results of this distribution of the County's population are shown in **Tables 5 and 6**. Within the unincorporated area, the distribution shows that the rate of growth continues to be increased in the Doctors Inlet-Ridgewood, Penny Farms-Lake Asbury, Keystone Heights and Green Cove Springs Planning Districts. The Fleming Island, Orange Park and Middleburg/Clay Hill Planning Districts are predicted to decrease in population as fewer parcels are available.

Table 5 – Clay County Total Population (Unincorporated) 2010-2040

Year	Middleburg/ Clay Hill	Doctors Inlet/ Ridgewood	Orange Park	Fleming Island	Green Cove Springs	Penney Farms/ Lake Asbury	Keystone Heights	Total
2010	18,888	73,900	16,657	27,126	7,410	13,434	16,031	173,446
2015	19,277	81,231	16,663	27,866	7,639	14,579	16,357	183,611
2020	19,216	87,894	16,790	28,644	10,292	24,094	16,690	203,620
2025	19,054	94,105	16,831	29,275	12,892	33,485	16,936	222,579
2030	18,793	94,095	16,622	28,831	22,571	41,087	16,894	238,894
2035	18,611	98,807	16,424	28,535	28,743	45,976	16,929	254,024
2040	18,502	104,016	16,332	28,424	34,251	49,525	17,009	268,061

Source: BEBR, Florida Population Studies, Vol. 50, Bulletin 177, April 2017, Clay County Planning and Building Divisions, 2017. Municipality projections are based on proportion of Total County Population in 2016, according to the Office of Economic and Demographic Research, Oct. 17, 2016.

Average Household Size and Vacancy Rates

Based on the 2010 Census, the Office of Economic and Demographic Research reports the average household size in Clay County is 2.76. To derive household projections, vacancy rates per planning district generally need to be applied to population projections. Average vacancy rates for planning districts are summarized in **Table 7** for reference.

Table 6 – Average Vacancy Rates for Planning Districts

Middleburg/ Clay Hill	Doctors Inlet/ Ridgewood	Orange Park	Fleming Island	Green Cove Springs	Penney Farms/ Lake Asbury	Keystone Heights
8.27%	7.77%	8.41%	5.93%	9.42%	7.70%	16.17%

Source: Clay County Planning and Zoning Division, 2017, Northeast Florida Regional Transportation Model 2017

Households

The household estimates and projections are calculated based on the population figures in **Table 5**, the average household size and the average vacancy rates shown in **Table 7**. The unincorporated area of Clay County, as shown in **Table 8**, is projected to have approximately 106,072 households by the year 2040, or an additional 33,375 households between 2015 and 2040.

Table 7 – Clay County Unincorporated Area Household Estimates and Projections

Year	Middleburg/ Clay Hill	Doctors Inlet/ Ridgewood	Orange Park	Fleming Island	Green Cove Springs	Penney Farms/ Lake Asbury	Keystone Heights	Total
2010	7,460	29,031	6,589	10,448	2,964	5,273	6,929	68,695
2015	7,614	31,911	6,591	10,733	3,056	5,723	7,069	72,697
2020	7,590	34,529	6,642	11,033	4,117	9,458	7,213	80,581
2025	7,526	36,969	6,658	11,276	5,157	13,145	7,320	88,050
2030	7,423	36,964	6,576	11,105	9,028	16,128	7,302	94,526
2035	7,351	38,815	6,497	10,990	11,497	18,048	7,317	100,516
2040	7,308	40,862	6,461	10,948	13,700	19,441	7,352	106,072

Source: BEBR, Florida Population Studies, Vol. 50, Bulletin 177, April 2017, Clay County Planning and Building Divisions, 2017 , U.S. Census, 2010.

Existing Land Use

This section contains an analysis of existing land use and past development trends in Clay County. The analysis for existing land use (**Figure 15**) and its series (**Figure 16**) Adjacent Land Use; (**Figure 17**) Vacant Land Analysis Map; (**Figure 12**) Historic Resources; (**Figure 9**) Potable Waterwells; (**Figure 7**) Rivers, Bays, Lakes, Floodplains, and Harbors; (**Figure 3**) Wetlands; (**Figures 5 and 6**) Soils; and (**Figure 24**) Minerals is based on Clay County Property Appraisers Office Data (2017), supplemented by information on 2009 Natural color and color infrared aerial photography (2009 SJRWMD Land Use and Land Cover). The Existing Land Use Map depicts the existing pattern of land uses that affect future land use decisions in Clay County as of 2017 and the Adjacent Land Use Map (2009 SJRWMD Land Use and Land Cover Map) reveals the existing land uses adjacent to the County's boundary line as required by 163.3177(6)(a) F.S.

Past development trends are addressed in the second part of this section. Such trends were identified from a study of historical patterns of growth based on approved subdivisions, rezoning requests, and applications for building permits.

Figure 8 – Existing Land Use Map