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North Ranch Sector Plan

Long-Term Master Plan

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ABBREVIATIONS & ACRONYMS

AAF	All Aboard Florida
ASR	Aquifer Storage and Recovery
BEBR	University of Florida Bureau of Business and Economic Research
BRT	Bus Rapid Transit
CFRPM	Central Florida Regional Planning Model
CMP	Conceptual Master Plan
DEO	Department of Economic Opportunity
DRI	Development of Regional Impact
DSAP	Detailed Specific Area Plan
ECFS	East Central Florida Services
Econ	Econlockhatchee Swamp
EDA	U.S. Department of Commerce Economic Development Administration
EPA	Environmental Protection Agency
FDOT	Florida Department of Transportation
FEC	Florida East Coast
FEMA	Federal Emergency Management Agency
FLUCFCS	Florida Land Use, Cover and Forms Classification System
GDP	Gross Domestic Product
ICP	International Corporate Park
LOS	Level of Service
LFA	Lower Floridan Aquifer
LRT	Light Rail Transit
LTMP	Long-Term Master Plan
MPO	Metropolitan Planning Organizations
MSA	Orlando Metropolitan Statistical Area
MUD	Mixed Use District
NED	Northeast District
NEPA	National Environmental Policy Act of 1969
OCX	Osceola Expressway Authority
OIA	Orlando International Airport
OOCEA	Orlando-Orange County Expressway Authority
OUC	Orlando Utilities Commission
PD&E	Project Development and Environment
SIS	Strategic Intermodal System
SJRWMD	St. Johns River Water Management District
TOD	Transit Oriented Development
Toho	Lake Tohopekaliga
TWA	Toho Water Authority
UCF	University of Central Florida
UFA	Upper Floridan Aquifer
UGB	Urban Growth Boundary
ULI	Urban Land Institute
VMT	Vehicle Miles Traveled

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EXECUTIVE SUMMARY

INTRODUCTION

Osceola County is preparing a Long-Term Master Plan, the first of two components of a Sector Plan, pursuant to Section 163.3245, F.S., for roughly 130,000 acres of the Deseret Ranch within Osceola County known as the North Ranch Planning Area. Deseret Ranches of Florida has been an important part of Osceola County and Central Florida for more than 60 years. As growth unfolds in coming decades, a balanced master plan for Deseret's North Ranch will ensure a sustainable future while continuing a legacy of agricultural and natural resource conservation. This proposed long-term master plan is intended to proactively plan for and preserve regionally significant *economic opportunities*, *natural resources*, and *transportation corridors* at a landscape scale.

The Long-Term Master Plan is in response to the growing needs of Osceola County and the region to plan for an economically sustainable future predicated on thoughtful and strategic regional initiatives. The plan tiers off of the Comprehensive Plan and identifies goals, policies, frameworks, and opportunities within the North Ranch Planning Area, taking into consideration environmental factors, market conditions, surrounding land uses, transportation and available infrastructure.

Development on the North Ranch will be phased at 2060 and 2080 to facilitate redevelopment and buildout of other areas that are already approved or planned for development inside Osceola County's Urban Growth Boundary. Upon adoption, this plan will modify the County's Urban Growth Boundary with development occurring only upon approval of a series of statutorily required Detailed Specific Area Plans (DSAPs), which will also meet the requirements for the County's Conceptual Master Plans (CMPs).

Preparation of the Long-Term Master Plan is being closely coordinated with existing and proposed planning initiatives such as the Governor's East Central Florida Corridor Task Force, the Northeast District Conceptual Master Plan, the Osceola County Expressway Authority Master Plan, the Osceola Parkway Extension PD&E Study, OOCEA Master Plan Update, and the Space Coast Long Range Transportation Plan.

The Long-Term Master Plan guiding principles are as follows:

- Proactively maximize job growth and reinforce the long-term economic sustainability of the County and the larger region while minimizing County infrastructure investment.
- Plan for future mixed-use communities that embody the highest quality growth practices to accommodate the County's future needs.
- Connect regions and economic centers through a multi-modal transportation system.
- Preserve, enhance, and restore the County's large-scale natural systems.

PROACTIVELY MAXIMIZE JOB GROWTH AND REINFORCE THE REGION'S LONG-TERM ECONOMIC SUSTAINABILITY

Growth is shifting to eastern Osceola County. The County is positioned as a major economic hub for the southeastern part of the region. Over the next 50 years, the 7-county Central Florida region is anticipated to add more than 1 million jobs and more than 4 million people, with over 350,000 people anticipated to reside within the North Ranch. Current and projected demographic trends show growth shifting from the I-4 Corridor northeast of Downtown Orlando to southeast Orlando and the emerging job core anchored by Medical City. Osceola County is poised to increase its relative share of the region's population and jobs. By 2060, the population of Osceola County could triple from its current 280,000 residents.

Figure ES-1 shows vacant developable land, after deducting already-developed lands, wetlands and other environmental lands recommended for protection by *myregion.org*. The greatest amount of vacant, developable land in the region and Osceola County – the darkest shades of grey – is on the North Ranch.

More than 80 percent of the vacant developable land in the very area where demographic and economic forces are propelling an increasing share of the region's population and job growth – is located on Deseret's North Ranch.

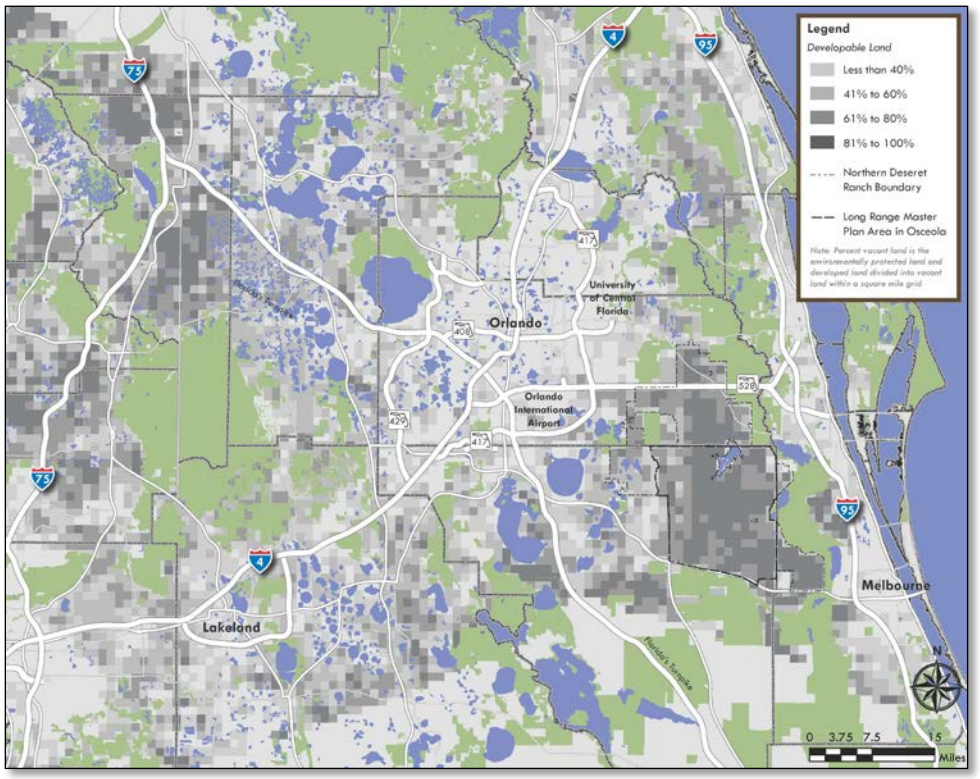


Figure ES-1. Vacant, Developable land in East Central Florida.

(Source: Renaissance Planning Group)

The plan addresses the "regional connectivity gap" between the emerging and planned job cores in southeastern Orlando and Osceola County's planned Northeast District and the existing job core in Melbourne and southern Brevard County (Figure ES-2). To stimulate a diverse and dynamic range of economic development and primary employment opportunities, development within the North Ranch Planning Area will target specific industry clusters and connect emerging and expanding job clusters between Central Florida and the Space Coast. Target industry clusters will include:

- Life sciences and allied health services
- Information technology
- Tourism, entertainment, and recreation
- Chemical and plastics manufacturing
- Food production
- Defense and security
- Higher education

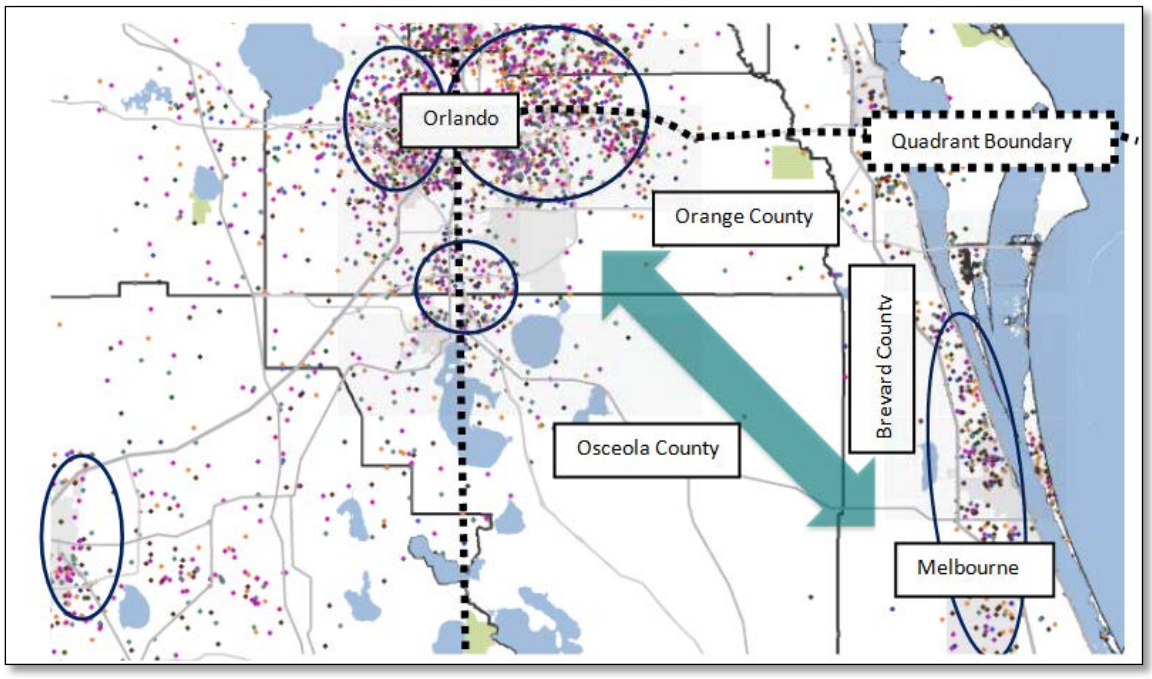


Figure ES-2. Concentrations of High-Value Jobs in Osceola, Orange, and Brevard Counties

(Source: ESRI Business Analyst)

Each dot represents 100 jobs. High-value jobs include computer/math, life/social science, and architecture/engineering occupations and professional/technical service, information, manufacturing, finance/insurance, transportation, and wholesale trade industry jobs

PRESERVING, ENHANCING, AND RESTORING THE COUNTY'S LARGE-SCALE NATURAL SYSTEMS

Environmental stewardship is a strong ethic of Deseret Ranches and Osceola County. The Plan proposes landscape-scale conservation of the natural resources Central Floridians treasure by using the science-based planning principles of the "How Shall We Grow?" regional vision and Osceola County's Conservation Element. This Plan preserves 48,300 acres of wetlands, habitat, agriculture, and other environmentally sensitive lands with conservation easements and other measures to protect the long-

term viability of key ecosystems, sustain resident wildlife populations, and mitigate pressures of future growth and development (Figure ES-3). Among other things, the Environmental Plan will:

1. **Buffer the Econlockhatchee Swamp Preserve** along the North Ranch border to continue Deseret Ranch's conservation commitments already enacted throughout the Northeast District. The Econ Swamp's buffer will ensure long-term protection of important habitat for indigenous wildlife, as well as provide a system of natural areas for the use and enjoyment of local residents.
2. **Create a 14,000 acre Central Wetland/Upland Mosaic** that includes an important mix of upland and wetland habitat types.
3. **Expand Taylor Creek Reservoir and create a new Pennywash/Wolf Creek Reservoir** and their associated freshwater marshes, emergent aquatic vegetation, and wetlands to provide important water storage for the region and valuable habitat for wading birds, water fowl, and other wildlife.
4. **Buffer the St. Johns River and ensure the 60-year legacy of ranching and farming will continue** on the North Ranch. A 11,600-acre agricultural area in Osceola County will remain in ranching and farming, coupled with 14,000 acres in Brevard that Deseret plans to continue ranching. When coupled with 9,200 acres of Additional Wildlife Areas along the St. Johns' large forested strands, interconnected wetlands, floodplains, tributaries and uplands, some 20,800 acres of land bordering the St. Johns in Osceola County will remain free from urban development in perpetuity.
5. **Create an urban parks and open space system and conserve wildlife linkages to contribute to maintenance of wildlife populations and their viability.** The North Ranch will offer nearly 3,000 acres of Regional Parks, 2,000 acres of Community Parks and 330 miles of Recreational Trails at 2080. Conserved east-west corridors will connect the Central Wetland/Upland Mosaic to Taylor Creek Reservoir and to the St. Johns River serving as conduits for dispersal and gene flow among wildlife populations.

In total, **the Plan will protect more than 48,300 acres of regionally significant lands in perpetuity**, including lands adjacent to those identified by *myregion.org* as the most important for future generations. **Another 20,000 acres are included in greenways** designed to help bound and define each of the communities designated in the Master Plan. The greenways include trails, parks and open spaces and regional stormwater systems.

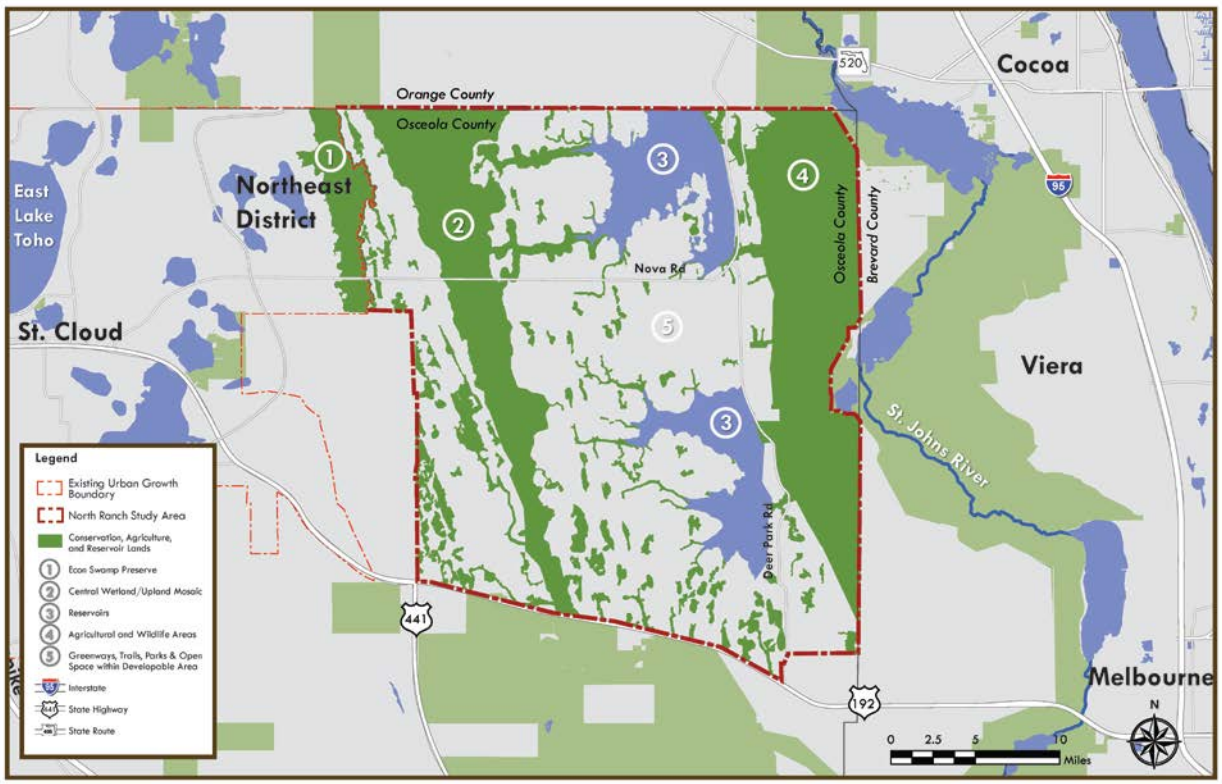


Figure ES-3. Environmental Plan showing Proposed Conservation, Agricultural, and Reservoir Lands

(Source: Logan Simpson Design Inc.)

CONNECTING REGIONS THROUGH A MULTI-MODAL TRANSPORTATION SYSTEM

This plan provides residents with choices for all modes of travel – cars, buses, trains, bicycles, and walking. A multimodal approach ensures connectivity between pedestrian, bike, transit, and road facilities, which will include commuter rail and Bus Rapid Transit. Key elements of the transportation system include:

- Two passenger rail corridors with a primary connection to the airport, the Northeast District employment center and the Melbourne region.
- A fine-grained street network with complete streets encourages walkability by making streets, retail and public spaces pedestrian-oriented places.
- Two new regional expressways that connect the airport, the Northeast District, and Melbourne.
- A regional trail system – including connections to the Florida National Scenic Trail – connecting centers to neighborhoods and to the surrounding recreation and conservation areas.

One of these, the Pineda Extension is strategically important because it provides a direct high-speed connection between job clusters in and around Melbourne with the emerging job clusters surrounding Orlando International Airport (OIA) including the urban center planned in the Northeast District. This new corridor noticeably reduces travel times between Melbourne and the OIA and Medical City, putting the Northeast District within a reasonable commute time for potential high tech employees living in the Melbourne area.

This multimodal transportation system will foster sustainable economic development by completing the regional roadway grid and developing premium transit facilities. Strategically aligning new expressways and dedicated transit corridors will not only close regional connectivity gaps, it will also help minimize disruption to the urban fabric and important environmental corridors.

OTHER PUBLIC FACILITIES

Most public services will require new infrastructure or expansion of existing infrastructure within or in close proximity to the North Ranch to serve the projected population and will be more fully evaluated at the time of CMP s / DSAPs and specific site engineering and facilities design.

Water conservation measures such as those outlined in the *Conserve Florida Clearinghouse EZ Guide* (http://www.conservefloridawater.org/) would be applied consistent with the Comprehensive Plan. Residential and non-residential construction is proposed to be certified to meet Florida Water Star™ standards.

The water supplier and the wastewater service provider must each demonstrate that it has adequately permitted water source(s) and capacity at all necessary facilities to provide service to the development in order for the County to approve a CMP / DSAP. By 2060, water would be provided from a combination of sources to meet the anticipated demand. Supplies could include expanding Taylor Creek Reservoir and creating a new 5,500-acre Pennywash / Wolf Creek Reservoir, with approval by local, state, and federal regulators. This will help development on the North Ranch to be water self-sufficient.

FUTURE MIXED-USE COMMUNITIES EMBODYING THE HIGHEST QUALITY GROWTH PRACTICES

The size of the North Ranch Planning Area presents unique planning and phasing challenges. It covers 133,000 acres. Because of its size, the planning area is not expected to build-out until 2080 or later. As a result, the Long-Term Master Plan relies heavily on a development framework and a place-based organizational structure defined for UGB expansion areas, specifically Mixed-Use Districts, in the Osceola County Comprehensive Plan (Figure ES-4).

In order for future expansions to occur, the area must be carefully phased and meet the requirements of a Mixed-Use District and the CMP process. Upon adoption, the entire planning area would be designated as a Mixed Use District. The new Mixed-use District will be divided into 8 to 16 CMP / DSAPs focusing on an urban center and its complimentary community centers and neighborhoods. Each CMP / DSAP must demonstrate the qualities of a Mixed Use District including a balanced land use program, walkability, fine-grained network of interconnected streets, multi-modal transit, small blocks and regional connectivity. Each CMP will then be reviewed through submittal of a series of smaller site plans. The goal of the process is to accomplish the County's smart growth principles and Comprehensive Plan so that the area develops in an economically sustainable manner.

A balance of jobs and housing that includes densities ranging from 5 to over 25 dwelling units per acre in centers, with greater intensities occurring in centers. The area includes the complete range of place types ensuring a balanced mix of land uses with adequate land to achieve a target jobs-to-housing ratio of 1.4:1 within the planning area.

The Long-Term Master Plan's framework, presented in Figure ES-4, forms the skeleton on which the centers and neighborhoods are placed. Centers, neighborhoods, and special district development types

are the three urban-form organizing elements for the Long-Term Master Plan and are consistent with those defined in the Osceola County Comprehensive Plan for Mixed-Use Districts.

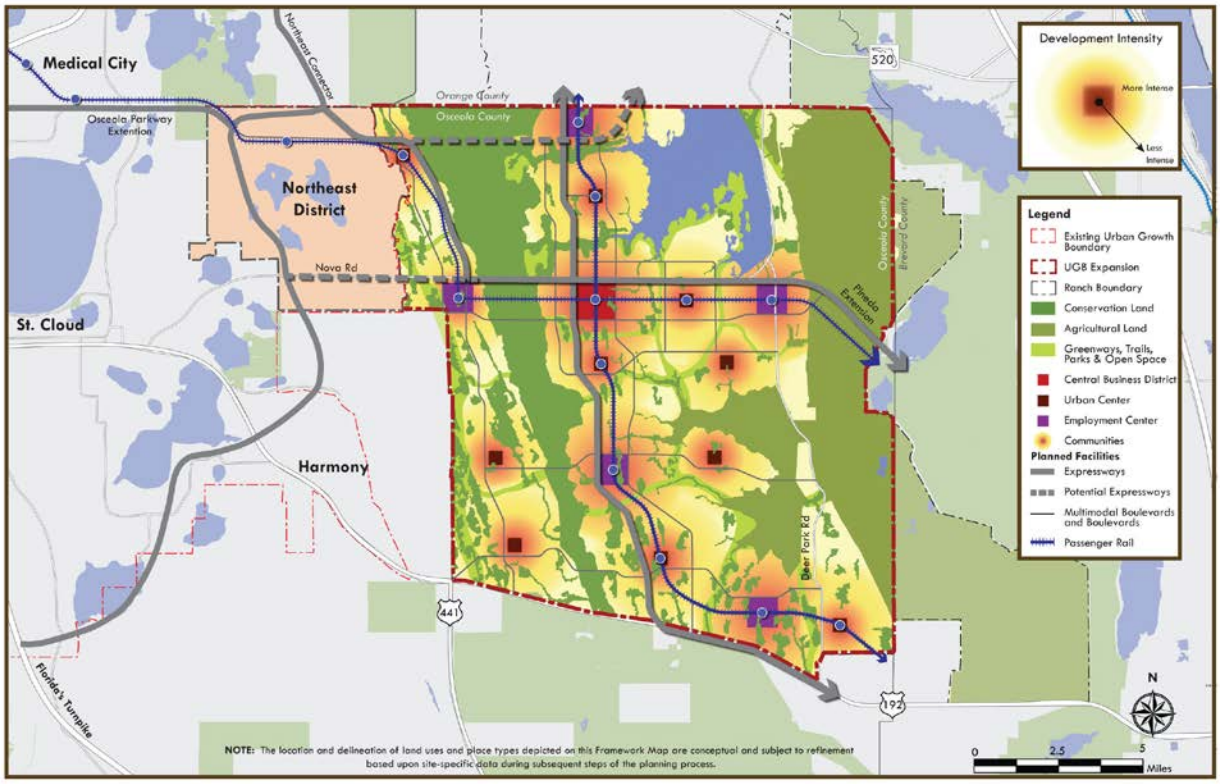


Figure ES-4. Long-Term Master Plan for North Ranch in Osceola County
(Source: Renaissance Planning Group)

MAJOR CENTERS

Major centers are urban-oriented employment, business and commercial areas that foster and focus regionally significant economic development opportunities. Sixteen urban/employment centers are planned, complemented by over 30 community centers and 100 new neighborhood centers. Each major center place type has a unique economic development objective and mix of uses that affect its intensity, footprint, and location within the Long-Term Master Plan area that will be defined further during the CMP process.

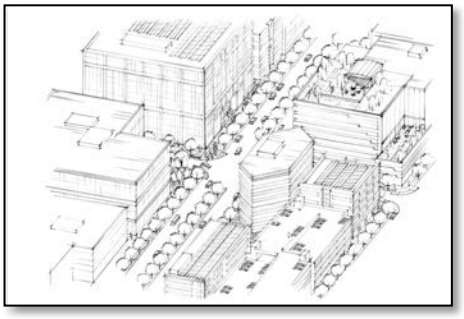
URBAN CENTERS

Regional-scale commercial uses having a trade area extending outside the North Ranch are urban centers. They will contain a diverse mix of commercial, office, business, residential, and public, park and civic uses. Built on a well-structured street grid, an urban center will have a structure and character resembling traditional downtowns with buildings uniformly close to streets to create a sense of enclosure.

The primary urban center will serve as the regional hub for the North Ranch Planning Area at the intersection of two rail lines and midway between the emerging Northeast District Urban Center and the

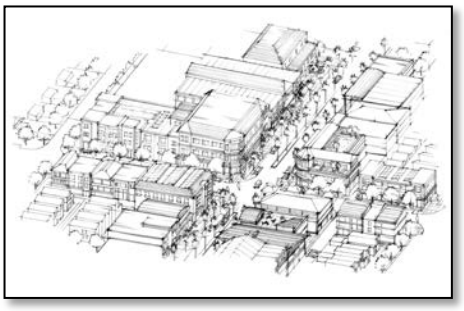
job cores around the City of Melbourne. This large-scale downtown will be designed for a rich mix of uses, including high-intensity office buildings, high-tech industries, regional civic uses, medium- to high-rise hotels and residential condominium and apartment buildings. Two major expressways will intersect on its northwest corner to define its northern and western edges, while the regional multimodal boulevards paralleling the expressways will create the southern and eastern edges. Development intensities would be highest around the passenger rail station where two rail lines intersect. The central urban center is anticipated to not only include high-tech industries but also a regional university and research campus.

Employment Centers



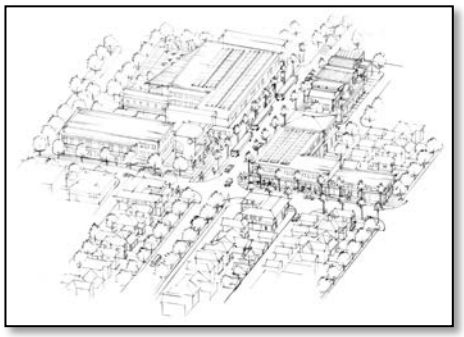
As a compliment to urban centers, employment centers are job cores designed for around 30,000 employees each. They will have higher-intensity office and commercial buildings and hotels with a limited amount of higher-intensity civic and residential uses. Because of their need for high-speed and high-capacity access, they are located on the plan's multimodal corridors, and designed to optimize density and pedestrian access to one or more centrally located passenger rail transit stations.

Community Centers



Community centers are designed to serve approximately four neighborhood pedestrian walksheds and provide locally-oriented places to shop, eat, and recreate. Their size can range from a single medium-sized store (such as a grocery) with an adjacent park to a development cluster that includes a high school, grocery and drug stores, several churches and a medium-sized park. Community centers tend to support up to four neighborhoods and are located central to these pedestrian-oriented neighborhoods to provide close and convenient access.

Neighborhood Centers

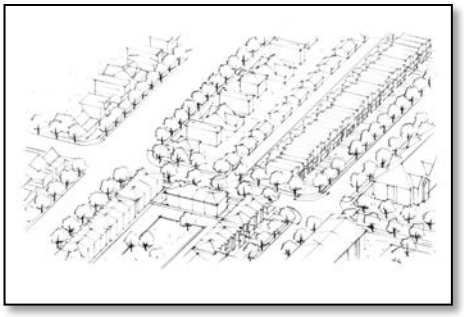


Each neighborhood will have a neighborhood center, a place intended to be the heart of the community where residents and visitors are encouraged to congregate. Neighborhood centers will have at least one outdoor public space for this purpose, designed with pedestrians in mind. Neighborhood centers will be within a 5-minute walking distance of many residents, although they need not be in the geographical center of the neighborhood. Centers will vary in size, use, and intensity depending on the size and density of the surrounding residential uses. In an urban neighborhood, where the number of houses within walking distance is high, there may be local shops and small offices in addition to civic uses.

Neighborhoods

While centers and special districts are vibrant and active places intended as focal points for commerce and exchange, residential neighborhoods create a different context, one that fosters stability, safety, and sense of community. They are organized by half-mile-radius pedestrian walksheds, with neighborhood centers providing a local place to gather. Higher-density, Type 2 neighborhoods with a

minimum of 8 dwelling units per acre are located closer to centers or major transit lines. Type 1 neighborhoods, with a density of 5 dwelling units per acre form the remainder of most neighborhoods. Neighborhoods occur within a fine grain network of streets. A mixture of Neighborhood Type 1 and Type 2 allows for a variety of home types, from large single family homes to townhomes.



SPECIAL DISTRICTS

Special Districts are intended to serve two purposes. First, Special Districts provide a place within the planning area for land uses that provide an essential function but are incompatible with the surrounding urban form, either through their operations or space needs. These are typically of a use which cannot fit into, or should not be mixed with other types of development in an urban setting, such as industrial operations, distribution centers, research parks, production facilities, or large-scale campuses. Secondly, Special Districts accommodate economic catalysts with design standards adapted to their individual form.

The policies that support the County's smart growth principles and mixed-use district standards will help create a predictable development framework for the North Ranch Planning Area. The seven Mixed-Use Place Types will direct levels for residential densities, job creation, and land use mixes, by focusing on the creation of new job centers in employment corridors and protecting environmental and agricultural resources.

A SMART GROWTH DEVELOPMENT PROGRAM

Tables ES-1 and ES-2 present the intensity of the development types within the net developable land, and the projected population and employment. To facilitate development in currently designated Mixed Use Districts, urban development within the North Ranch would not be authorized by the Board of County Commissioners until specific criteria are met. Given the size and long planning horizon for this master plan, these acreages are approximate and subject to refinement based upon site-specific data during the preparation, review and adoption of CMPs / DSAPs. However, they reflect a reasonable distribution of development types based on the best available data at this stage of the planning process.

Table ES-1. Distribution of Development Types

	Non-Residential		Residential	
Place Types	**Minimum Density (FAR)**	**Maximum Density (FAR)**	**Minimum Density**	**Maximum Density**
Urban and Employment Centers	0.35	2.5	5/acre	100/acre
Special District	N/A	N/A	N/A	N/A
Neighborhoods	0	1.0	5/acre	25/acre
Community and Neighborhood Centers	0	2.0	5/acre	25/acre

Table ES-2. Population and Employment by 2060, 2080

Planning Period	Population	Jobs	Residential Units
By 2060	355,000	184,000	131,700
By 2080	493,000	256,000	182,600

WHY MAKE THESE DECISIONS NOW?

Because we cannot afford more unplanned sprawl. By making long-term plans now, Osceola County can avoid the mistakes that were made when Central Florida began to boom 50 years ago. In the decades that followed, Central Florida experienced piecemeal development that failed to protect important natural resources, made us overly dependent on the automobile and did not create as many great places as we all wanted. The region was always behind the growth curve. The results can be seen today all around.

Because we cannot afford to miss out on creating high value jobs. The policies put forth in this plan will preposition the County for long-term economic development, by stimulating high-value job growth in mixed-use districts that exemplify the County's smart growth principles – providing a sustainable balance of jobs and housing, multi-modal transportation options, and compact and pedestrian-oriented neighborhoods and centers.

Because we cannot afford to lose natural resources, agriculture, and water supplies of statewide importance. With significant natural resources protected and the most productive lands set aside for long-term ranching and farming, the North Ranch's improved pasturelands will be a suitable location for "smart growth".

Because tomorrow will be too late. Current and projected demographic trends show growth shifting from the I-4 Corridor northeast of Downtown Orlando to southeast Orlando and the emerging job core anchored by Medical City. By 2060, Osceola County could have 865,000 residents or more compared to 280,000 today. With better transportation connectivity, Osceola County is poised to capitalize on the region's growth.

For practical reasons, any future growth strategy for Osceola County must include the North Ranch. While other vacant lands will absorb much of the expected growth, and redevelopment will absorb more, a substantial amount of the region's new homes and businesses will locate on the North Ranch. Accordingly, this master plan is based on two reasonable but conservative population projections: 355,000 residents by 2060, and 493,000 residents by 2080.

The North Ranch Long-Term Master Plan's framework will accommodate that growth, capture its potential economic benefits and avoid making the mistakes of the past – all while protecting important natural systems, promoting alternative ways to travel and creating great new places to grow our economy.

CHAPTER 1. PLANNING PROCESS

THE NORTH RANCH TODAY

Deseret Ranches of Florida has been an important part of Central Florida for more than 60 years, and it can play an even greater role as the region continues to grow in decades to come. This joint master plan for Deseret's extensive range and farmland serves multiple purposes: First, it identifies Osceola County's long-term outcomes that are consistent with the landowner's stewardship ethic and that would implement its internal visioning in recent years. Second, it would help to prevent piecemeal planning of these strategic lands. It addresses 133,000 acres, equivalent to two cities the size of Orlando (Figure 1-2).

Location: From Highway 192 north to County boundary, and from Highway 441 east to County boundary.

Current Uses: Cattle ranching, hunting, citrus production, silviculture, and wildlife conservation

Neighbors: Agricultural and conservation lands in Brevard and Orange Counties, new planned development in the Northeast District and Harmony, and residential subdivisions to the south.

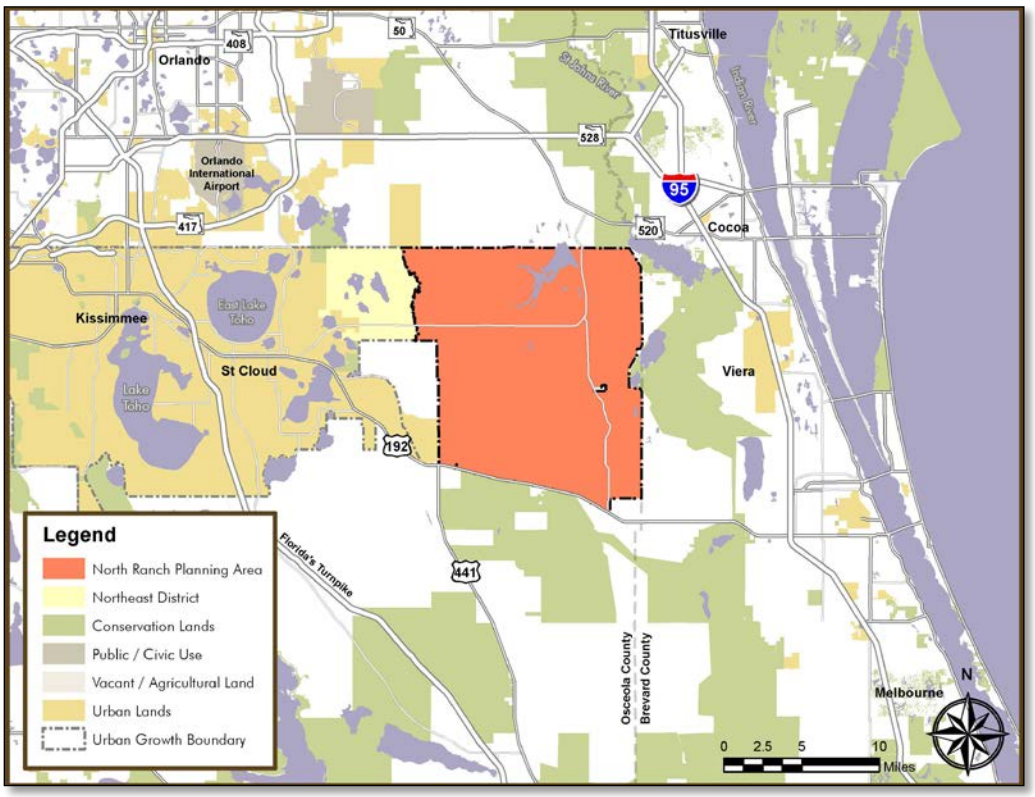


Figure 1-1. North Ranch Planning Area
(Source: Logan Simpson Design Inc. 2013)

SECTOR PLANNING

The overall Sector Plan process is illustrated in Figure 1-2 and consists of a Long-Term Master Plan, the phase in which the North Ranch Planning Area is currently engaged, followed by more Detailed Specific

Area Plans (DSAP) and Conceptual Master Plans (CMP). Each DSAP must consist of an area of at least 1,000 acres and must identify the distribution, extent, and location of future uses and public facilities. The final step is submittal of site development plans, which must be consistent with the previous larger-scale plans and meet applicable County policies and standards.

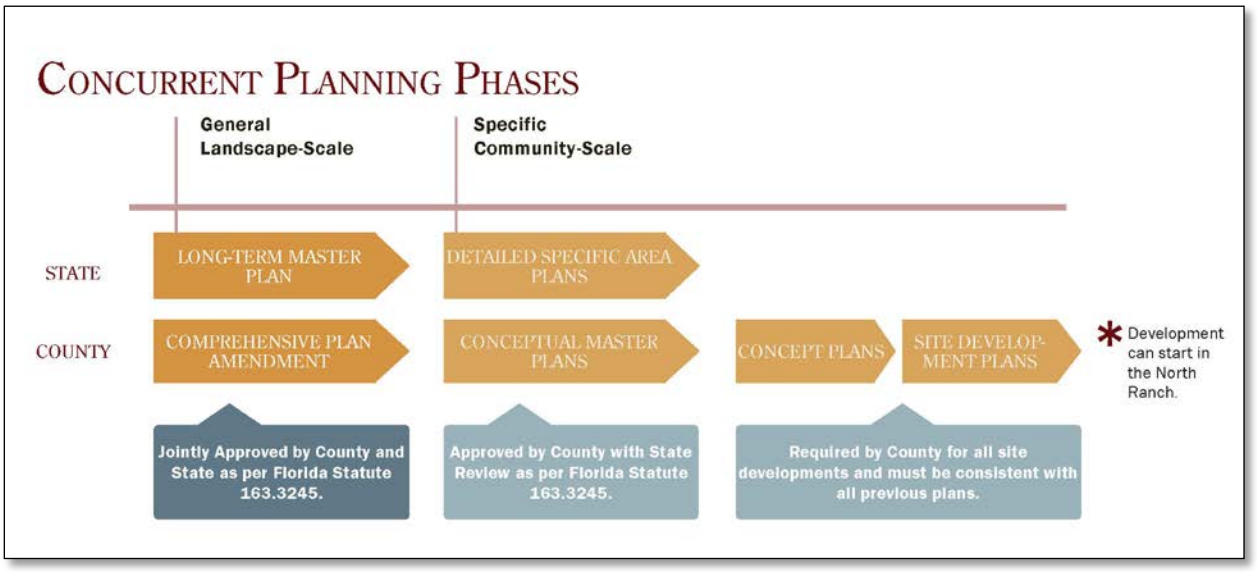


Figure 1-2. Planning Process
(Source: Logan Simpson Design Inc.)

The plan has been created in response to the growing needs of Osceola County and the region to develop thoughtful and strategic initiatives that anticipate and prepare for an economically sustainable future. It is the result of collaboration between Osceola County and Deseret Ranches that is intended to build on the success of their earlier and continuing coordination in Osceola County's Northeast District, on lands that are part of Deseret Ranches' holdings but not addressed by this application. The plan will be consistent with the Comprehensive Plan in identifying policies, frameworks, and opportunities within the North Ranch Planning Area, taking into consideration environmental factors, market conditions, surrounding land uses, and available infrastructure.

REGIONAL EFFORTS

In addition to the guidance and direction provided by the Osceola County Comprehensive Plan, planning for the North Ranch Planning Area is being closely coordinated with existing and proposed planning initiatives such as the Governor's East Central Florida Corridor Task Force and other regional efforts like "How Shall We Grow?" The "How Shall We Grow?" initiative was a collaborative effort involving multiple jurisdictions designed to create a Shared Growth Vision for Central Florida, a region where the population is expected to double from 3.5 million to 7.2 million people by 2050. Four key goals emerged from this effort:

1. Conservation – Establish a "Green Areas" conservation footprint
2. Countryside – Preserve countryside outside of centers

3. Centers – Promote growth in current city, town or village centers and encourage the development of additional population centers to counter the current pattern of sprawling development
4. Corridors – Connect centers with a balance of roads, light rail, streetcars and buses planned by county transportation planners cooperating regionally

In 2013, Governor Rick Scott signed Executive Order 13-319 creating the *East Central Florida Corridor Task Force*. The purpose of the Task Force is to evaluate and develop consensus recommendations on future transportation corridors serving established and emerging economic activity centers in portions of Brevard, Orange, and Osceola counties. These recommended corridors are likely to include one that will close the "regional connectivity gap" between the emerging and planned job cores in southeastern Orlando and Osceola County's planned Northeast District and the existing job core in Melbourne and southern Brevard County. Several options are being evaluated, including the Pineda Extension, which would extend through the heart of the North Ranch Planning Area. Other options include improvements to existing corridors such as US 192 or State Road 528 ("Beachline Expressway").

Other important existing and proposed planning initiatives that relate to the North Ranch include the Northeast District Conceptual Master Plan, the Osceola County Expressway Authority Master Plan, the Osceola Parkway Extension PD&E Study, Orlando-Orange County Expressway Authority Master Plan Update, and Space Coast Long Range Transportation Plan.

PLANNING PROCESS

The Long-Term Master Plan for the North Ranch Planning Area was developed through a Comprehensive Plan Amendment effort that is illustrated in Figure 1-3. The effort was initiated in November 2013 and initially focused on a scoping process to identify issues and opportunities. This was followed by developing initial concepts and an overall framework for the planning area, including key plan elements such as environmental conservation, transportation and economics. These steps led to development of a draft plan in the spring of 2014, which will be followed by review and approval by Osceola County and the State of Florida following the State Coordinated Review process. Throughout the process, public and stakeholder outreach was a major focus.

The Sector Plan goals include the following:

- Proactively maximize high-value job growth and reinforce the long-term economic sustainability of the County and the larger region while minimizing County infrastructure investment.
- Plan for future mixed-use communities that embody the highest quality growth practices to accommodate the County's future needs.
- Connect regions and economic centers through a multimodal transportation system in coordination with long-term land use decisions, environmental protection, and agricultural preservation.
- Preserve, enhance, and restore the County's large-scale natural systems.

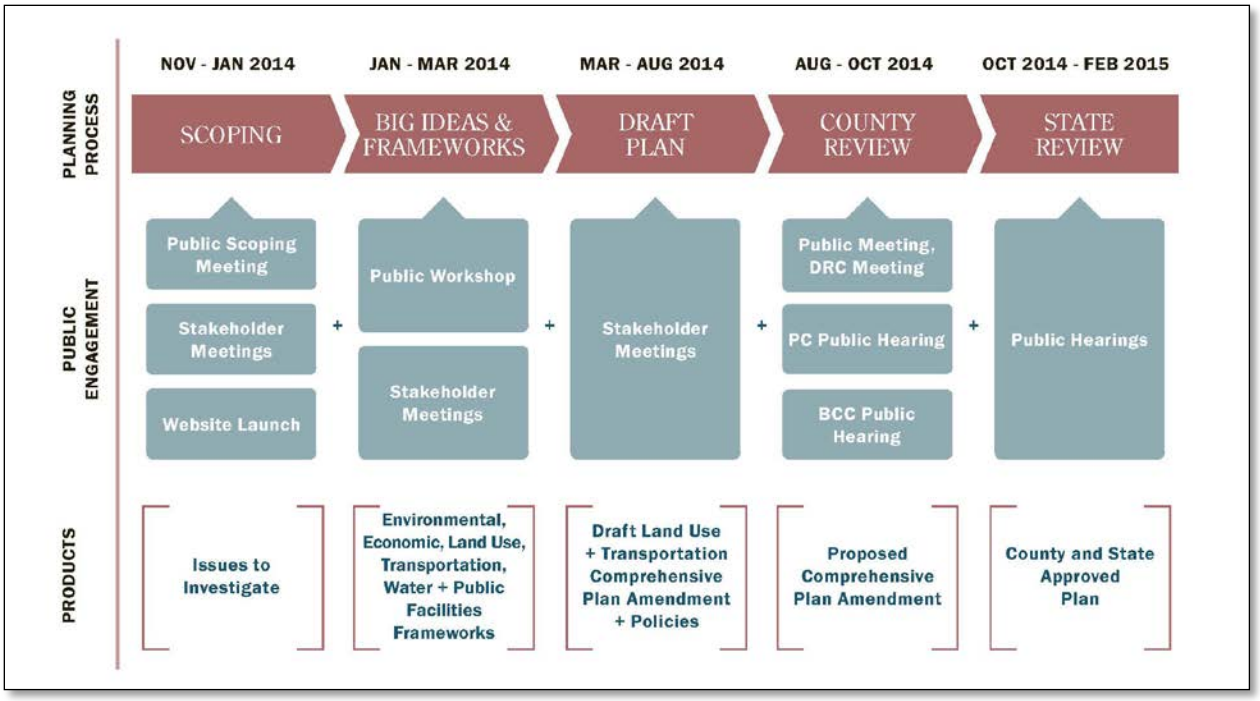
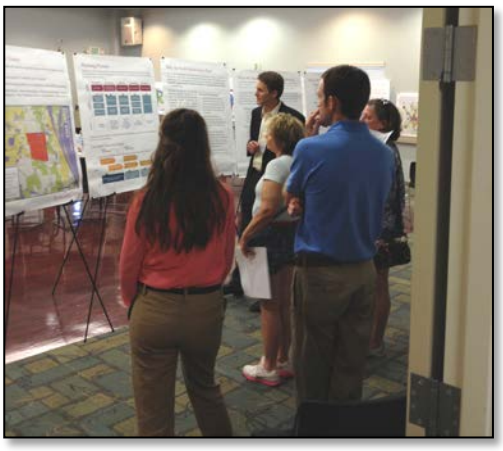


Figure 1-3. Comprehensive Planning Process
(Source: Logan Simpson Design Inc. 2013)

Two public meetings were held to provide information on the planning effort and to obtain public comment on plan concepts, issues, and concerns. The first meeting was held on January 7, 2014, and was attended by over 60 people. The second public meeting for the North Ranch Sector Plan process was held on March 4, 2014, and was attended by over 30 people. Both meetings were structured in an open house workshop format and were attended by a wide range of stakeholders. A third public meeting is anticipated in September 2014 to present the Proposed Plan.

The County employed a four-pronged approach to notify stakeholders and residents of the public meetings: direct e-mails were sent out to specified agencies with interest in the North Ranch; two newspaper advertisements were published in the Osceola Gazette; 620 postcards were mailed to residents within 300 feet of the property; and the North Ranch Sector Plan page on the Osceola County website was updated with materials and meeting information.



Comments were organized into four primary themes and are summarized below. Any attempt to summarize the number of comments received risks being selective or arbitrary, but the summary below is intended to be balanced. A complete summary of comments received is in Appendix B.

ECONOMIC FRAMEWORK

- The North Ranch offers a lot of potential for creating a high-tech corridor. Attracting the right investors and specialized educational facilities is crucial. Business incentives should be provided.
- The economic framework appears short-sighted and an unnecessary justification to encourage more housing development in an environmentally unique area that could otherwise benefit the region if more properly planned and preserved.
- Implementation and phasing can be tied to build out of the Northeast District.
- Make the opportunity stand apart from similar, competing sites.

TRANSPORTATION FRAMEWORK

- There is support for the mixed-use transit oriented approach for the North Ranch, though the transportation system and footprint of the developed areas could be reduced.
- There were concerns that the transportation network would fragment the natural environment, destroy native plants and habitats, create barriers to wildlife movement through the area, and result in noise that will affect the animals.
- There was support for the rail systems and the concentration of growth along the transit corridors.
- Consider enhancing existing roads such as US 192 and 520 rather than connecting to the east coast.

ENVIRONMENTAL FRAMEWORK

- The North Ranch (as a whole and especially in certain areas) serves as a crucial wildlife corridor, particularly to migratory birds. Even with the cited intended "conservation areas," development proposed for this fragile mosaic region fragments the disparate "conservation areas" so as to reduce their long-term value to wildlife.
- East to West significant wildlife corridors to connect the Econ and St. Johns river systems.
- Consider impacts on habitats for special status and T&E species.

- Consider an approach to water conservation utilized by initiatives in the Northern Everglades/Upper Kissimmee water shed – dispersed storage in natural wetlands, including large-scale wetland restoration.
- Provide conservation areas, especially around wetlands and remaining forested areas.

URBAN FORM FRAMEWORK

- Ensure a way to demonstrate long term job creation, otherwise there will only be housing and a highway.
- Job to housing ratio should be higher than 1:1.
- Recommend redevelopment within the UGB as a higher priority than greenfield development.
- The plan appears to replicate the same development pattern that the County has been trying to avoid. Further concentrate development nodes along primary corridors, surrounded by more open space. By all means incorporate mixed-use development and multimodal, transit-oriented approaches; but the Urban Framework is entirely inadequate from a land consumption and natural resource protection perspective.

CHAPTER 2. REGIONAL ECONOMIC GROWTH AND POPULATION PROJECTIONS

CONNECTING FOR ECONOMIC DEVELOPMENT

The Long-Term Master Plan for the North Ranch Planning Area, along with transportation investments across the southeast quadrant of Central Florida,[1] provides an opportunity to connect science and technology jobs in Osceola and Orange counties with those in Brevard County, as part of an overall economic development strategy to grow jobs in Osceola and the region (Figure 2-1). This opportunity is the heart of the North Ranch Long-Term Master Plan.

Economists acknowledge the importance of geographical economics to government-led economic development efforts.[2] Industry clusters increase an area's ability to compete for jobs by enhancing the productivity of the companies in each cluster.[3] The increase in productivity results from there being a sufficient critical mass of companies and jobs in an area such that various resources, exchanges between those companies, and a shared labor pool with the appropriate education, knowledge and skills, are more plentiful in that location. There are large numbers of computer/math, life/social science, architecture/engineering occupations, professional/technical services, information, and science oriented manufacturing jobs in counties to the north and east of Osceola County, currently separated by the North Ranch. Connecting these centers could facilitate further growth of the region's science and technology job clusters and bring new jobs to Osceola County.

Over the next 50 years, the seven-county Central Florida region[4] is anticipated to add more than 1 million jobs and more than 4 million people.[5] This chapter describes the economic forces that influence the amount and direction of job and population growth in the region, and how those forces are likely to result in economic development opportunities and growth on the North Ranch. The two largest concentrations of life sciences, information technology and communication, defense and security jobs in the region are in Orange County, with 42 percent, and Brevard County, with 20 percent, respectively. Although starting from a smaller base of these jobs, Osceola County is gaining "market share" in these types of jobs. This is a further indication of its potential as a "bridge" between these concentrations of science and technology jobs, and a likely location for future job concentrations. Accessibility to major transportation facilities is highly correlated with the distribution of economic activity throughout the

[1] The southeast quadrant is bounded by State Road 50 to the North, the coast to the east, Osceola and Brevard County boundaries to the south, and Orange Blossom Trail to west. The dividing lines for the region's four quadrants are State Road 50 as the north-south dividing line and Orange Blossom Trail as the east-west dividing line, while the exterior boundaries are reflective of the county boundaries. See Figure 2-1.

[2] Porter, Michael. *Location, Competition, and Economic Development: Local Clusters in a Global Economy*; Economic Development Quarterly, vol 14, no. 1, pp 15-34, 2000.

[3] An industry cluster is a concentration of interconnected businesses, suppliers, and associated institutions in a particular field of economic endeavor, that have located in a particular metropolitan area. This should not be confused with a job center, or Metro Core, which is a physical place. *Clusters and the New Economics of Competition*, Michael Porter, Harvard Business Review, 1998.

[4] The seven-county region includes the East Central Florida Regional Planning Area with Brevard, Lake, Orange, Osceola, Seminole, and Volusia Counties plus Polk County, which is located in the Central Florida Regional Planning Area. These seven counties together comprised the area addressed by the "How Shall We Grow?" regional vision created in 2007 by myregion.org, which has become an important direction-setting plan for Central Florida.

[5] "How Shall We Grow," Central Florida Regional Growth Vision, 2007

region. Transportation and infrastructure investments promote communication and commerce between employment centers. Assuming land use considerations and transportation investments are made, the North Ranch is among the most likely locations for new job concentrations due to its strategic location.

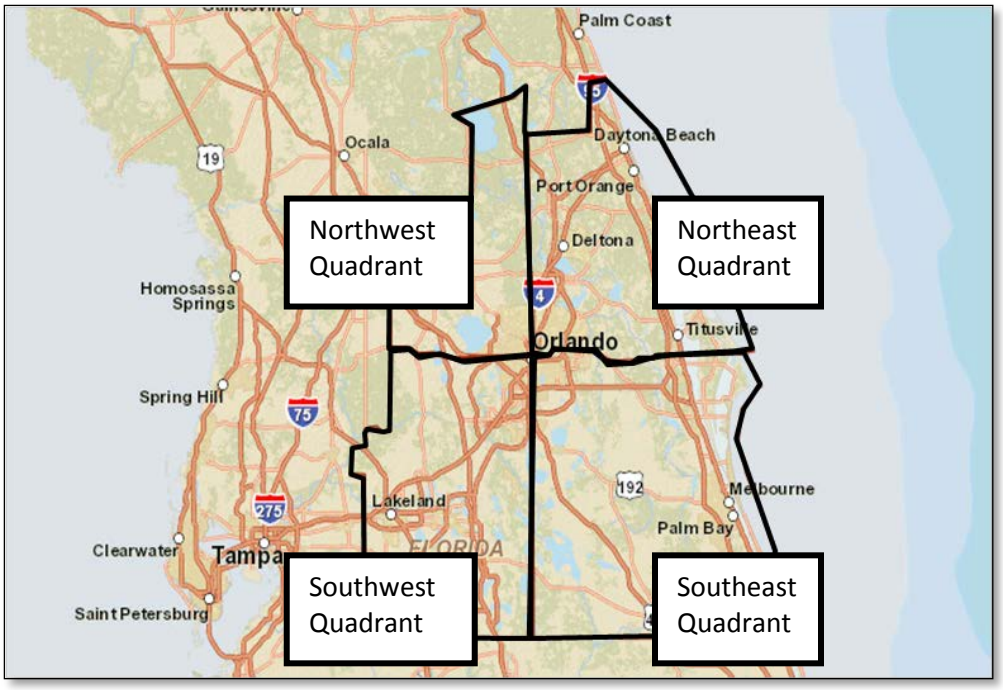


Figure 2-1. Quadrants of Central Florida Region

The Central Florida region is composed of multiple job centers, which some experts refer to as Metro Cores. Examples of Metro Cores in this region include Downtown Orlando, the Disney resorts area and the education, research and technology-oriented employment centers on the University of Central Florida and the Central Florida Research Park. These Metro Cores are places where employment, education, civic and recreation uses concentrate to serve the region's population and economic activity. Metro Cores are not simply the largest job centers; they are the places that bring new revenue into the region due to the types of jobs that locate there. They are the places where the highest-paying jobs locate–the jobs that "export" services or goods outside the region and have the greatest impact on the regional economy.

As regions grow and existing centers meet certain size thresholds, new centers are needed to facilitate employment growth. Osceola County already has a goal in the Comprehensive Plan of redeveloping and revitalizing its existing economic centers and that will remain an important aspect of its economic development strategy. In addition, the southeast quadrant of the region, including the North Ranch, is a likely location for new regional job centers (Metro Cores) in the future, which will be needed to accommodate the anticipated job growth. That outcome can be enhanced by identifying substantial acreage for a future college or university campus on the North Ranch, to provide additional higher education facilities in the area. The Central Florida Research Park is a good example of how the linkages between higher education and support for technology clusters in the area can lead to important job growth.

By analyzing long-term trends, many observations can be derived. For instance, high-value office-oriented jobs originally concentrated in Downtown Orlando and along I-4, but over the past 20+ years

the locations of new office-oriented jobs moved steadily to the east and to the southeast. In that same time period the Palm Bay-Melbourne-Titusville area has grown to have a higher proportion of high-tech industries (as measured by share of GDP) than any other metropolitan area in the state. Additionally, the southeast quadrant of the region is demonstrating its potential to grow life sciences and high-tech employment in places like Lake Nona's Medical City and the expansion of the University of Central Florida-affiliated University Research Park at International Corporate Park (ICP).

Linking these areas near Orlando to technology-oriented employment in the Palm Bay-Melbourne-Titusville area with new transportation facilities has the potential to facilitate the growth of an even larger and more marketable economic cluster around the life sciences (biomedical/biotechnical), information technology and communication industries. A geographic analysis of the locations of these high-value jobs demonstrates that there are missing connections between existing and emerging Metro Cores, as depicted in Figure 2-2. Enhancing those connections would likely help drive economic development and cultivate the growth of new employment cores.

The Melbourne-Palm Bay Metropolitan Statistical Area already has one of the highest shares of high-tech industry gross domestic product (GDP) as percent of total compared to the state's share of high-tech GDP.[6] The Orlando region also has a larger share and is experiencing growth in these types of jobs in the southeast quadrant. Better connections between these two areas will likely promote the growth of a larger economic cluster, enhancing the broader region's economic competitiveness relative to other regions in the United States. This strategy was embraced in the 2012 Comprehensive Economic Development Strategy for the region prepared by the East Central Florida Regional Planning Council.[7]

Orange County to the north of the North Ranch has about 42 percent of the region's life sciences, information technology and communication, defense and security jobs, while Brevard to the east has about 20 percent of those jobs. In contrast Osceola County, although situated between these two areas, only has about 3 percent of the region's jobs in those high value industries. With the Pineda Extension, the North Ranch could be the bridge that links 62 percent of the region's life sciences, information technology and communication, defense and security jobs.

The life sciences, information technology and communications, and defense and security industries represent about 280,000 jobs in the seven-county Central Florida region. While Osceola County only has a 3 percent share of those jobs, it represented 9 percent of the growth from 2001 to 2011 indicating that the County has the potential to become a critical location for these types of jobs[8]. Given the significant concentration of those jobs in Orange and Brevard Counties, Osceola County can be an intermediary connecting those jobs clustered in southern Brevard and southeastern Orange via new transportation facilities, and by creating great places in between those two job centers in the Northeast District and later on the North Ranch. Initially those connections are likely to benefit the Northeast District, and longer-term, new employment centers on the North Ranch.

[6] Milken Institute, 2010 Best Performing Cities Index, Space Coast EDC

[7] "Improve connectivity of all transportation systems to integrate economic development, talent, infrastructure, partnerships, and other resources across East Central Florida." East Central Florida Regional Planning Council, *East Central Florida Economic Development Strategy*, "Vital Projects" (2012), at 49.

[8] RCLCO using Purdue Center for Regional Development, the Indiana Business Research Center at Indiana University's Kelley School of Business and US Commerce Department's Economic Development Administration data.

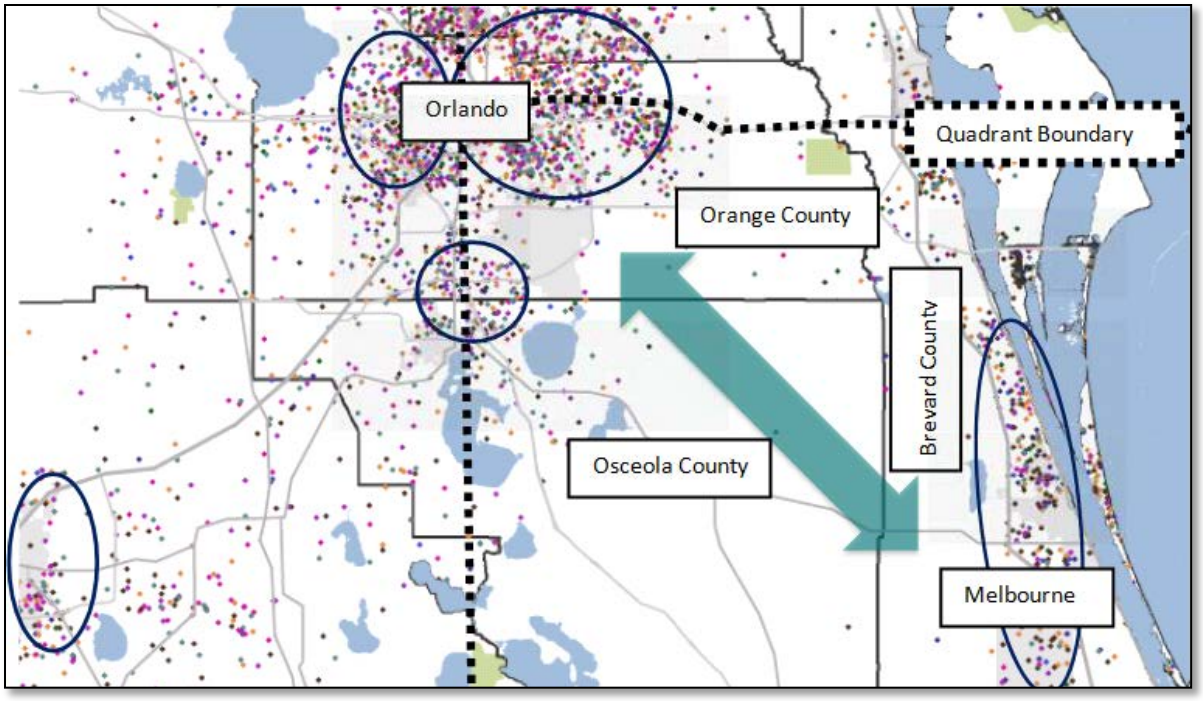


Figure 2-2. Concentrations of High-Value Jobs in Osceola, Orange and Brevard Counties[9]

(Source: ESRI Business Analyst)

It is a confluence of factors that will promote job growth in the Northeast District initially and then in the North Ranch: putting development in the right locations relative to existing job centers such as Medical City and the Orlando International Airport, having the right infrastructure to connect to existing and growing job centers, facilitating the linkages across clusters and creating the great places that attract the entrepreneurs whose firms bring or create the jobs. Firms typically weigh factors like access to transportation and customers, land and wage costs and the skill level of the labor pool, but having the essential quality of life factors provided by a great community development is essential.

The targeted industry clusters are seeking great communities where workers want to live. They value communities that provide choices, which means offering variety in housing, shopping, recreation and employment, in places that support their lifestyle at different stages of their lives. With that in mind, the master plan for the North Ranch includes a well-balanced mix of residential and commercial locations; orientations and environments, offering a broad range of housing products to best meet the needs of a diverse population. It features well-located planned commercial and employment centers to best connect to other key economic places in the region as well as provide access to shopping and services. The plan envisions safe communities that integrate different land uses, feature vibrant urban centers, provide for transportation options, and protect environmental resources. The plan for the North Ranch meets the needs and preferences of the anticipated current and future market audiences.

Without the connection, Osceola County's opportunities may be more limited relative to economic development in these clusters, and it may participate less in the region's economic development strategy for those types of jobs. Those industry clusters currently achieve average annual wages of

[9] High-Value Jobs include computer/math, life/social science, and architecture/engineering occupations and professional/technical service, information, manufacturing, finance/insurance, transportation, and wholesale trade industry jobs.

$64,000 in Brevard County and $57,000 in Orange County compared to $44,000 in Osceola County, which suggests the capturing of the appropriate employer and employee talent pool could have a positive impact on wages in technology related industries in Osceola County.[10]

CLUSTERS ENHANCE ECONOMIC DEVELOPMENT

Job clusters are "geographic concentrations of interconnected companies and institutions in a particular field." [11] Employment clusters are groups of interrelated businesses and their presence and concentration help to drive wealth creation in a region. Understanding the current and potential future clusters within a region helps decision-makers more effectively plan their economic development efforts, guide work force development programs, retain their high value-added jobs, and understand the future infrastructure needs that can support the growth of these economic clusters. Clusters work because they facilitate communication among companies, specialized suppliers, service providers, and associated institutions in a particular field in a particular region. Supporting their creation and growth is an important agenda for governments, companies, and other institutions engaged in setting economic policy.

Economist Michael Porter has noted that regions register higher economic performance when they have strong clusters in related fields. His research indicates that growth is likely to occur in related fields, more so than in completely new fields without any relation to existing activities. Growth is most likely to occur through strengthening positions within existing clusters and through diversification into related clusters. Figure 2-3 depicts the relationships between clusters, where clusters with overlapping borders or identical shading have at least 20% overlap in both directions (by number of industries).

Porter's research has indicated that firms within clusters and in related clusters share resources such as access to the highly educated people they employ, suppliers, customers, etc., and that sharing creates a better environment for job growth. The 'blue circles' on Porter's illustration below are related businesses. Related businesses in some of the clusters described above can be found on both sides of the North Ranch. On the Orange County side of the divide, the Central Florida Research Park is one of the largest in the nation, and is a hub of the military's simulation and training programs. Lockheed Martin in Orlando designs, develops and builds advanced combat systems, and is a leader in technologies related to electro-optics, millimeter wave radar, image and signal processing. Harris Corporation in Brevard County is an international telecommunications equipment company that produces wireless equipment for government, defense and commercial sectors. Harris Communication's equipment is widely used in aerospace. Lockheed falls into the Aerospace Vehicles & Defense Cluster while Harris falls into the Communications Equipment Cluster, but Porter's diagram shows they are related (as indicated by the blue shading); both rely on government contracts, serve the defense industry, are engaged in aerospace, and hire a lot of engineers. They seek employees from the same talent pool.

[10] RCLCO using Purdue Center for Regional Development, the Indiana Business Research Center at Indiana University's Kelley School of Business and US Commerce Department's Economic Development Administration data..

[11] *Clusters and the New Economics of Competition*, Michael Porter, Harvard Business Review, 1998.

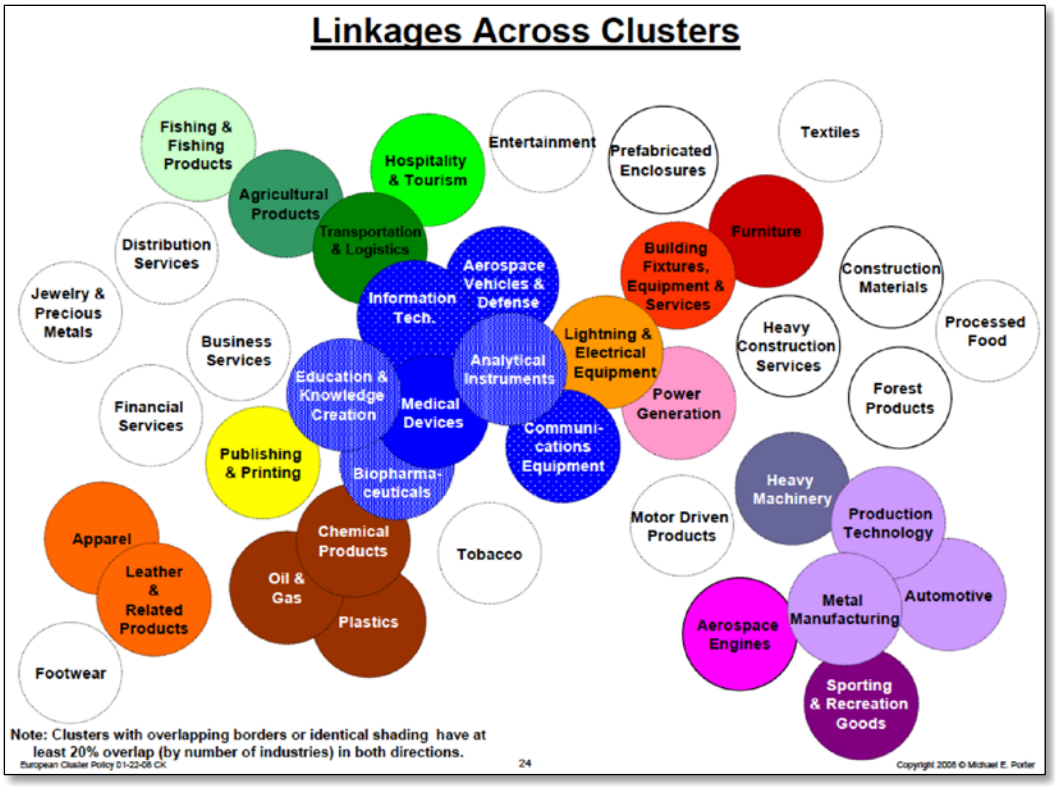


Figure 2-3. Relationships between Job Clusters

Today Lockheed would be considered part of the Orlando metro area while Harris is part of the Space Coast. With better transportation linkages the region can come to be viewed – and can compete – as one larger market. These two firms are simply being used for illustrative purposes; there are about 800 high technology firms in Brevard County and about 2,600 such firms in the Orlando metro area. Top sectors include simulation and training; optics and photonics; aviation/aerospace; information technology, the life science and biotechnology industries. Manufacturing is another important cluster where firms can benefit from better linkages. Technology manufacturing firms, such as Mitsubishi Power Systems and Siemens are in Orange County, Boeing Defense and Embraer in Brevard, and Northrop Grumman is already located in both.

The North Ranch represents a strong opportunity to support the region's economic development goals, by becoming a great place in Osceola County where centers of commerce can be established, a place for connection among various industries in related clusters consistent with the regional strategic plan. With 42 percent of the region's life sciences, information technology and communication, defense and security jobs on the west side of the North Ranch in Orange County and another 20 percent to the east in Brevard County, being the connection provides Osceola County the opportunity to increase from its mere 3 percent of those jobs. The Northeast District, and longer term the North Ranch, can become great places that draw on the high value employment base in the areas on either side as well as grow new centers of commerce of its own by capitalizing on those connections in the course of creating great places. In addition, assuming that a great place (or multiple great places) is created there, it can be the place where new jobs result from the overlap of related industry clusters via the creativity of entrepreneurs, as described by Porter.

Achieving this outcome will require government and institutional support. Creating great places, connected by great transportation infrastructure, with support from local and regional economic development agencies, will facilitate it, but it may take more than that. For example, in successful regions of the country regional programs have been established to assist in the formation and development of innovative technology and life sciences companies, by linking entrepreneurs with the resources they need for success. CONNECT in San Diego County is an example of such a regional program, which facilitates collaboration between industry, capital sources, professional service providers and research organizations. CONNECT was originally founded as a part of the University of California in the mid-1980s when the traditional industries in the region were in decline. This highlights the need for another key ingredient in the North Ranch plan: higher education. Better transportation linkages can help the North Ranch connect to institutions of higher learning in the region, and part of the plan for the North Ranch includes up to 320 acres of land reserved for a new higher-education campus that would be adjacent to a research park.

Central Florida has a substantial tourism cluster centered on the Disney and Universal theme parks. Less visible but also important is the region's major modeling and simulation cluster with over 100 companies employing over 10,000 workers. That cluster has evolved to include aviation and aerospace, education, entertainment, medical, and photonics.

In terms of the future outlook for the region's job clusters, the growth of employment in the life sciences (biomedical/biotechnical) information technology and communications sectors could play a significant role. The region has over 182,000 of these jobs, with over half of them in Orange County. There are about 17,000 of these jobs in Brevard County, and creating better linkages regionally for employers could facilitate the expansion of these jobs.

In order to accommodate the enhanced connectivity between major job cores in the region, the need for new transportation linkages between Orlando and the Melbourne area becomes more obvious. Such transportation infrastructure would connect the existing, emerging and future job centers, as well as facilitate the growth of industry clusters by helping combine separate smaller areas to create larger and more competitive areas. Not only can this help close the regional transportation connectivity gap between the Orlando and Melbourne areas, additional transportation infrastructure can also facilitate the creation of new employment cores in the southeast quadrant, which will accommodate continuing growth of both jobs and the population associated with those jobs.

While another core may emerge in the southwest quadrant, it is more than likely that major new employment cores will develop in the southeast. These cores will attract population that supports those cores and desires to live within a reasonable commute distance of where the jobs are. The reasoning is as follows:

The locations of the region's largest Metro Cores started with the region's original downtown areas, in Orlando and Melbourne, with development following I-4 north. For over 20 years, the majority of new office and research park space has located farther to the east and southeast of Downtown Orlando. This shift has been facilitated by major investments in transportation infrastructure, such as the SR 417 expressway, and by the location of the University of Central Florida. The most recent Metro Core to emerge is at Medical City, following the trend for high value employment growth to the southeast portion of the region. The next most likely Metro Cores are similarly in the southeast quadrant, building off of the current and future growth of Medical City. These are the Northeast District, planned by Osceola County, and Innovation Way that has been planned by Orange County.

New Metro Cores emerge in relation to existing Metro Cores. For example, the Maitland Center Core and Lake Mary Core followed I-4 north from Downtown Orlando. Therefore, it is likely that Metro Core growth to the southeast will follow a similar pattern, with the emergence of Medical City, to be followed by the Northeast District and Innovation Way, setting the example. Similarly, the University of Central Florida-affiliated research park is seeking to expand on Innovation Way, at ICP, in the southeast quadrant.

Since Metro Cores follow major transportation investments, the opportunity to capitalize on geographical economics can facilitate growth of a larger cluster. Linking the science and technology concentrations in Central Florida's southeast quadrant to similar concentrations in the greater Melbourne-Palm Bay has the potential to create a sufficient critical mass of companies and jobs in that sector.

Given all of the above, and the potential for new major transportation investments between Orlando and Melbourne, it's likely that new Metro Cores will emerge in the North Ranch Planning Area in Osceola between Orlando and Melbourne in a pattern similar to that shown in Figure 2-4, if the right transportation investments are made.

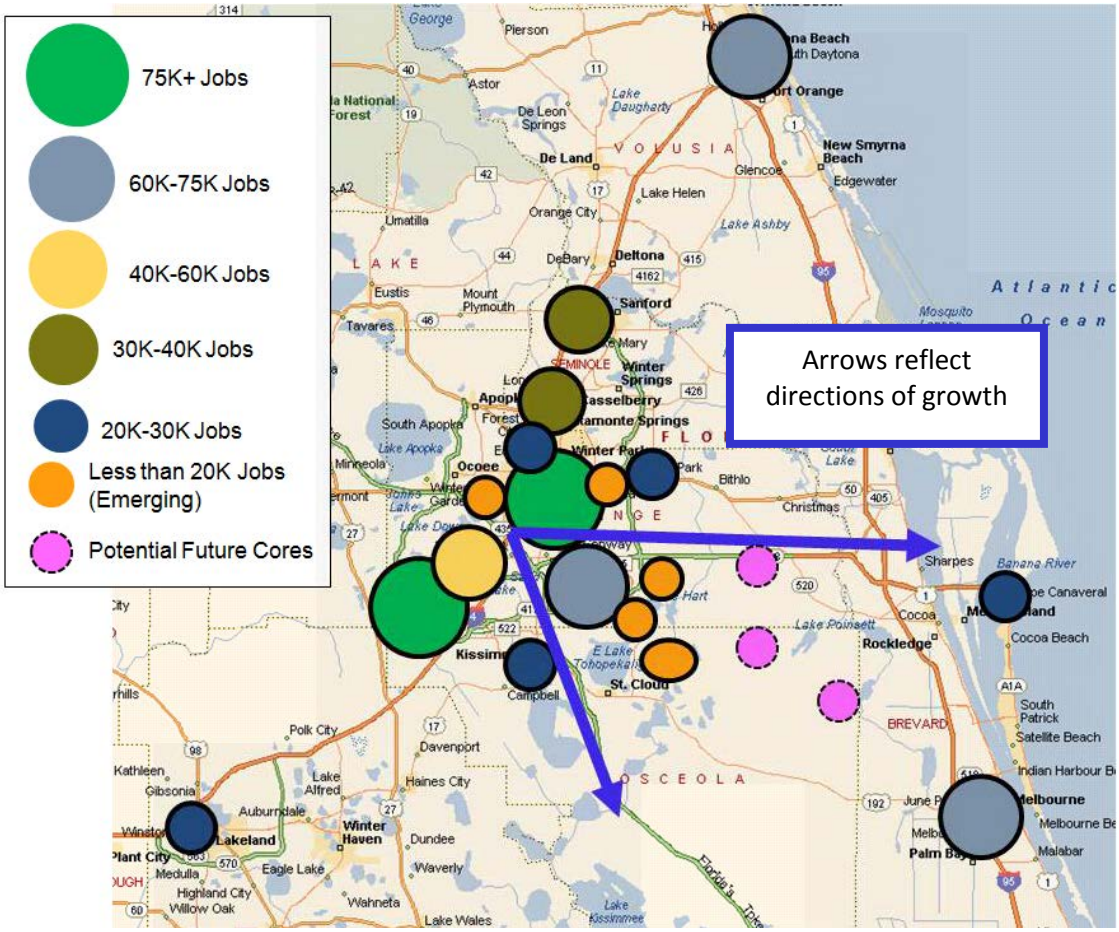


Figure 2-4. Existing and Emerging Jobs Cores, by Size of Core and Potential Future Core Locations

(Source: RCLCO)

In the short term, major transportation connectivity through the North Ranch forms the essential nexus between workers, employers, producers, distributors and markets in Orange County, the Northeast

District, and southern Brevard County. Longer term the Pineda Extension will be the crucial facility for access to businesses, workers, materials, services, goods, markets and customers in new job centers expected to emerge on the North Ranch itself. Orange County to the west of the North Ranch has about 42 percent of the region's life sciences, information technology and communication, defense and security jobs, while Brevard to the east has about 20 percent of those jobs. In contrast Osceola County, although situated between these two areas, only has about 3 percent of the region's jobs in those high value industries. Today there is a connectivity gap, as identified in the FDOT *Tampa Bay to Central Florida Study Area Concept Report*. The Pineda Extension has the potential to close the regional transportation connectivity gap, creating a high-speed connection between the high value job clusters located in the eastern portion of the Orlando metro area and those in Brevard County. The current connection in the quadrant, US 192, has a speed and capacity bottleneck that begins west of Narcoossee Road, which has hampered connectivity between these areas. Closing this connectivity gap to facilitate further growth of the region's high value job clusters and bring new jobs to Osceola fits into the county's and the region's economic development strategies.

The major catalysts of future growth to Northeast portion of Osceola County include:

- Existing employment cores in Eastern Orlando – These include the University of Central Florida (UCF), the Central Florida Research Park, Orlando International Airport, and the developing core at Lake Nona.
- Lake Nona – The development of an emerging "Medical City" at Lake Nona will have a significant impact on future growth in southeastern Orange and northeastern Osceola counties, with some estimates indicating as much as 30,000 new jobs, based on similar experiences elsewhere.
- Conceptual Master Plan in the Northeast District – with the correct linkages to existing employment cores, the Northeast District is in the unique position of potentially becoming one of the next major employment cores in the region, with that opportunity being greatly enhanced by transportation connections to southern Brevard County.
- The aforementioned potential for linking science and technology employment between Orlando and Melbourne.

Appropriately designed transportation projects can promote economic development by providing access to basic economic activities, and by supporting the great places being created via real estate development, which can also be a catalyst for economic development, as the places where basic employment locates.[12] While many economic development efforts focus on cutting taxes, creating business-friendly policies, attracting venture capital and building business incubators, research shows that what best facilitates high-value entrepreneurial job creation is access to talented workers and providing places that offer a high quality of life.[13]

CENTERS FACILITATE ECONOMIC DEVELOPMENT AND JOB GROWTH

Regions are comprised of a hierarchy of centers, that is, central places that vary in size, role, and regional influence, as depicted in Figure 2-5. At one end of the spectrum these centers have very little regional influence, while at the other end they actually drive the economic growth of the region. Due to

[12]Adams, John S. and VanDrasek, Barbara J., Transportation as Catalyst for Community Economic Development; Report #2 in the Series: Moving Communities Forward, 2007

[13] Florida, Richard; What do the Best Entrepreneurs Want: Lessons from the Founders of America's Fastest-Growing Companies, Atlantic Monthly, February, 2014

their size and influence, Metro Cores are the places that, if connected, will enhance regional competitiveness, because they are the region's most important economic and employment centers.

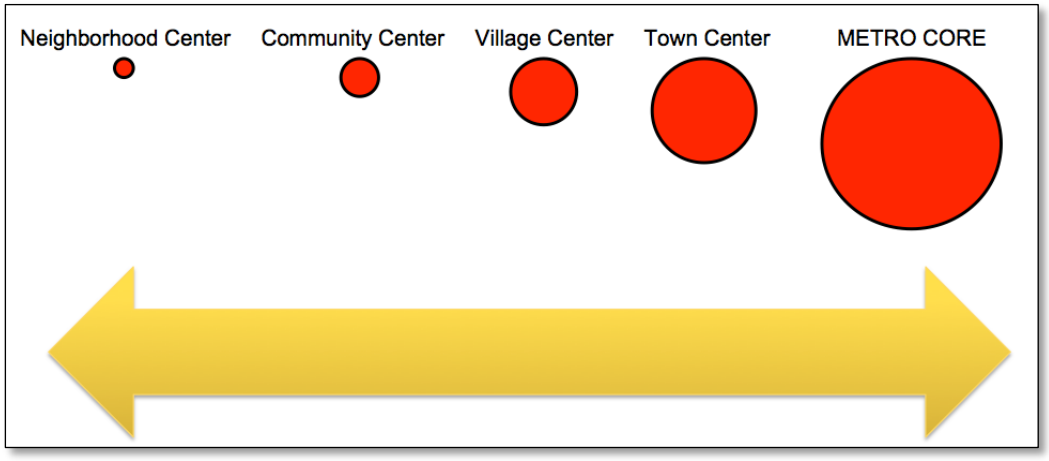


Figure 2-5. Regional Hierarchy of Centers

(Source: RCLCO)

According to studies by RCLCO, a national real estate advisory firm, at least 35% to 40% of regional employment locates in these Metro Core employment centers. So in effect Metro Core employment centers are the backbone of the region's job infrastructure. They are the places that gain the greatest benefit from transportation connectivity, because employee access, access to markets, suppliers, and networks enhance the competitiveness of these locations. It is no surprise then that these most important centers typically emerge at key points of the regional transportation network. Therefore, planning for transportation connectivity in conjunction with future land use can often promote job growth.

Regions comprised of well-connected Metro Core employment centers are better able to compete for economic development jobs relative to regions with weaker transportation connectivity. This is because a well-connected region allows for greater employee mobility and better access to markets, which are attractive features for employers considering expansion in or relocation to a region. Thus, transportation infrastructure should be a major consideration for economic development.

Research also shows that there is a strong correlation between the total number of jobs in a region and the number of Metro Core employment centers. As depicted in Figure 2-6, Central Florida currently has 13 of these Metro Core job centers, but will need up to 16 such centers by the year 2040 to support the anticipated job and population growth projected in this region.

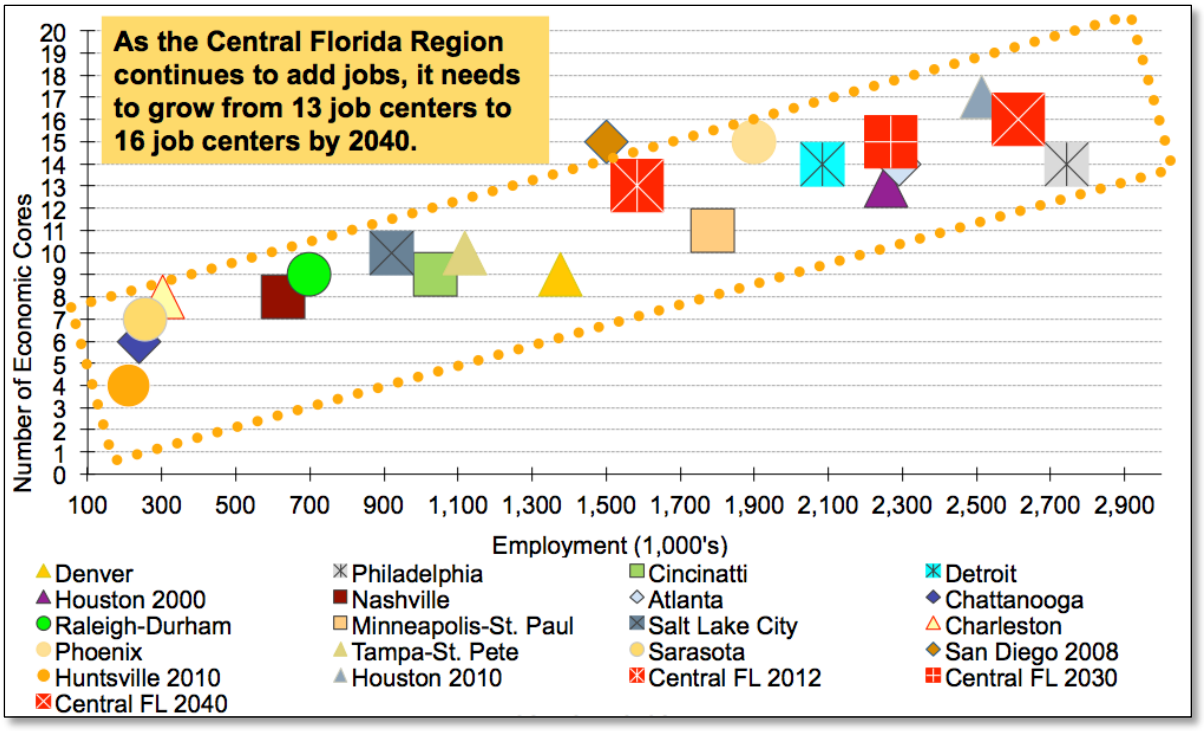


Figure 2-6. Demonstrated Correlation of Total Employment to Number of Employment Cores in a Region

(Source: RCLCO)

Although every region has its own unique character, the characteristics of Metro Cores are similar across regions. They tend to be similar in size and have a similar range of center types, ranging from the traditional downtown to more catalytic job centers such as those oriented to universities and research parks. In Central Florida there are major Metro Core employment centers oriented around tourism, like Disney, and newly emerging Metro Cores around medical and life sciences, like Medical City. Regions need these types of centers to accommodate jobs, and also need new centers to accommodate job growth once old centers hit capacity.

Metro Cores concentrate along major highways, occurring at interchanges. Job locations grow fastest when highway access is available. A Metro Core located at a system-to-system highway interchange can have double the number of jobs of the typical Metro Core employment center, due to its superior regional connectivity and access to markets and employees.

Research shows that a major job center's capacity and appeal can be increased by making the core more mixed use and putting more housing close to the jobs, as well as by introducing other forms of transportation to move more people in and out each day. Therefore, the land use planning decisions for existing and emerging job centers are important.

It is a confluence of factors that will promote job growth in the Northeast District initially and then in the North Ranch: putting development in the right locations relative to existing job centers such as Medical City and the Orlando International Airport, having the right infrastructure to connect to existing and growing job centers, facilitating the linkages across clusters and creating the great places that attract the entrepreneurs whose firms bring or create the jobs. Firms typically weigh factors like access to transportation and customers, land and wage costs and the skill level of the labor pool, but having the essential quality of life factors provided by a great community development is essential.

The targeted industry clusters are seeking great communities where workers want to live. They value communities that provide choices, which means offering variety in housing, shopping, recreation and employment, in places that support their lifestyle at different stages of their lives. With that in mind, the master plan for the North Ranch includes a well-balanced mix of residential and commercial locations; orientations and environments, offering a broad range of housing products to best meet the needs of a diverse population. It features well-located planned commercial and employment centers to best connect to other key economic places in the region as well as provide access to shopping and services. The plan envisions safe communities that integrate different land uses, feature vibrant urban centers, provide for transportation options, and protect environmental resources. The plan for the North Ranch meets the needs and preferences of the anticipated current and future market audiences.

However, as a major job center grows beyond 35,000 to 50,000 jobs, depending on housing density and transportation facilities, it begins to reach its maximum effectiveness as a location for employers. There are some areas that grow larger, to 80,000 jobs or more, but there are typically no more than two or three such Metro Cores in any particular region. This usually includes the original downtown with the greatest highway access, densest street network and widest range of transportation options. So, while existing cores may grow denser over time, they cannot accommodate all the job growth that a region needs. Accommodating more growth in those cores becomes increasingly expensive, from both a real estate and an infrastructure perspective.

In planning for growth in Central Florida, it is tempting to want to capitalize on existing infrastructure and focus all growth in existing places. But, while existing places may continue to grow in absolute terms, it's not possible for those places to accommodate the scale of growth that is forecast for Central Florida. So to prepare for job growth, new job centers should be planned at the optimal locations for new economic activity.

BEST OPPORTUNITIES FOR NEW MAJOR JOB CENTERS IN CENTRAL FLORIDA

Identifying the best opportunities for new Metro Core employment centers to emerge relies on analyses of three stages in the life of these major job centers:

1. Existing Core: Large employment cores already shaping regional growth patterns and tending to have more than 25,000 jobs.
2. Emerging Core: Locations with enough job growth over the next 10 to 20 years to shape regional growth and development patterns and that will have approximately 25,000 or more jobs by 2030.
3. Likely New Core: Areas of a region likely to attract significant employment growth in the next 20 years, but that will have less than 25,000 jobs in 2030.

Another important factor in anticipating where future Metro Core employment centers will go is understanding the growth patterns and the underlying economic drivers by regional quadrant. Each of a region's four quadrants has been driven at different points in time by just a few major economic sectors, so understanding the current and future drivers helps anticipate where future growth is likely to occur. In this context and at this particular point in time it is similarly important to focus on the current and future locations of science and technology jobs, the "sunrise industries" that have the potential to play an even bigger role in the regional economy, given their potential to become a larger regional employment cluster.

There is already an anticipated shift in population growth to the southwest and southeast quadrants of the region. From 1990 to 2010 the greatest increase in population distribution by quadrant was to the southwest, due to growth in the large tourism cluster and an abundance of available land for new development in places like Horizon West. A similar analysis shows the shift of growth to the southeast during that time period, and the data indicates that shift is accelerating.

When population forecasts from the University of Florida's Bureau of Economic and Business Research (BEBR) are applied to U.S. Census Bureau trend data, the Central Florida region's southeast quadrant has demonstrated a steadily increasing capture of population growth over the last 20 years, as depicted in Figure 2-7. In the 2000–2010 period, there was significant activity in the southwest quadrant, but as areas like Horizon West build out the southwest quadrant's share of the region's growth is anticipated to slow. The southeast quadrant has the greatest land availability in proximity to existing and potential job centers, and is the area with the strongest current and forecasted job growth, particularly in sunrise industries like biotechnology. For these reasons, the southeast quadrant is likely to capture an even a greater share of regional growth in the future, with appropriate land planning and transportation investments.

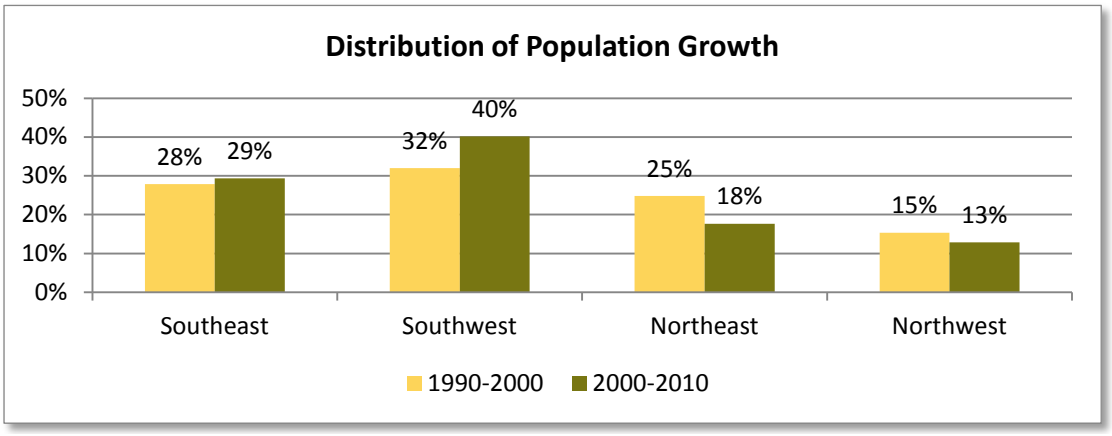


Figure 2-7. Demonstrated Distribution of Population Growth by Quadrant, 1990–2010

(Source: ESRI)

CENTRAL FLORIDA'S GROWTH DRIVERS

Historically the region's major economic drivers have pushed growth in multiple directions – first tourism in the southwest quadrant, and retirees to the northwest; later, business and professional services to the northeast quadrant, largely east of I-4, and science and technology to the southeast. With the emerging signs of strong growth in science and technology-oriented employment in the southeast quadrant, it is likely that the region's job and population growth will continue to shift significantly to the southeast.

The most significant population growth in Florida will be along the corridor from East Central Florida to the Treasure Coast and South Florida, as depicted in Figure 2-8, which is based on regional planning districts established by State law. This area is projected to grow by 4.388 million people between 2012 and 2040,[14] which will help fuel the most robust job growth in the state of almost 2 million jobs,[15] as

[14] *Source*: BEBR average of medium and high population forecasts
[15] *Source*: Moody's Economy.com job growth forecasts

shown in Figure 2-9. The second-fastest growth corridor will be between East Central Florida and Tampa Bay. Thus, Central Florida sits at the intersection of the two fastest-growing regions in one of the nation's fastest growing states.

In order to reap the maximum economic benefit from the growth that is anticipated in the seven-county Central Florida region over the coming decades, decision-makers should plan the locations that can best accommodate new employment centers and urban settlements, as well as make the necessary transportation investments to serve them. Thus, it is important to note that the current regional growth pattern shows growth shifting from the I-4 Corridor northeast of Downtown Orlando to southeast of Downtown Orlando. The Momentum Index in Figure 2-10 measures the relative proportion of growth that, based on population forecasts by BEBR, is projected to go to one county relative to the others in the seven-county Central Florida region from 2012 to 2040. Counties with a score equal to one (1.00) are considered to be at equilibrium, neither gaining nor losing momentum, while a score greater than one indicates that a county will get a relatively greater proportion of the region's population growth than it presently has. A score of less than one indicates that, while a county may still be growing in absolute terms, it is projected by BEBR to receive a smaller proportion of the region's population growth than it presently has.

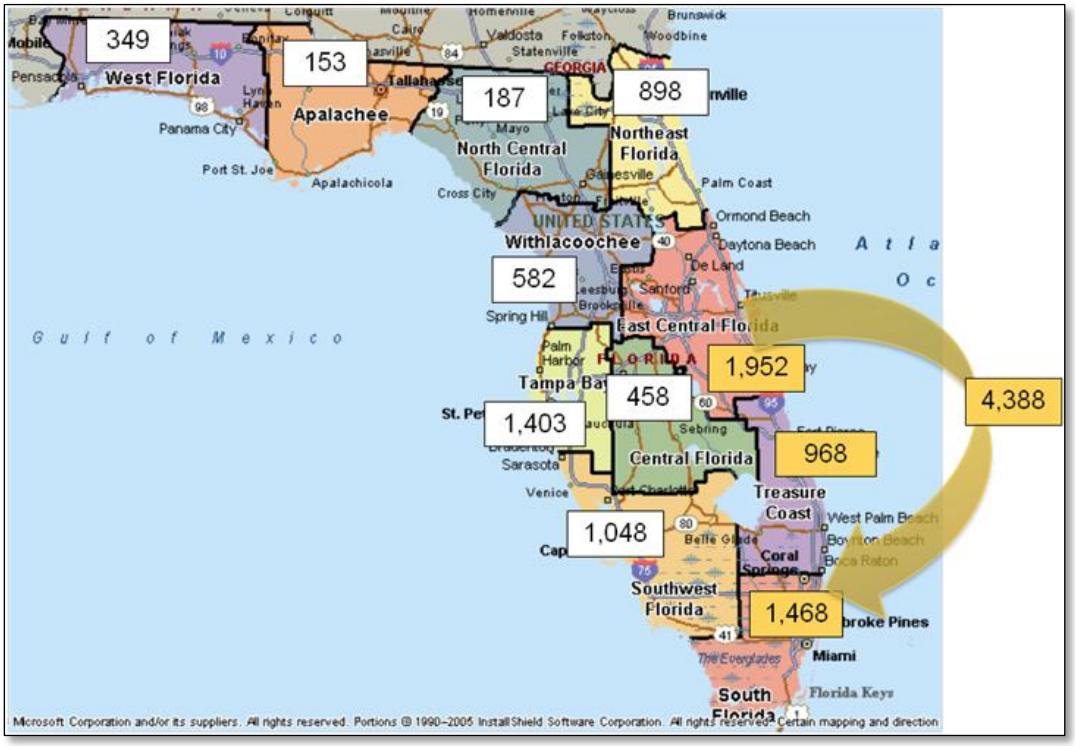


Figure 2-8. Projected Population Growth (Thousands) by Florida Planning Region, 2012 to 2040

(Source: BEBR Medium-High Population Projections 2012 to 2040)

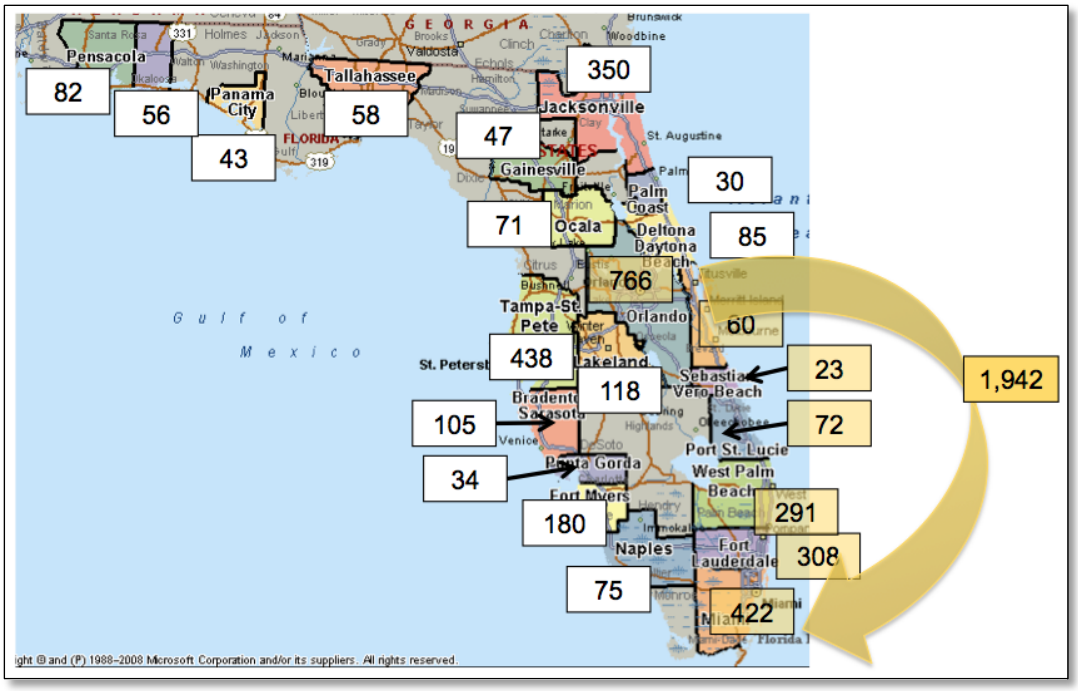


Figure 2-9. Projected Job Growth (Thousands) by Metropolitan Area, 2012 to 2040

(Source: Moody's Economy.com)

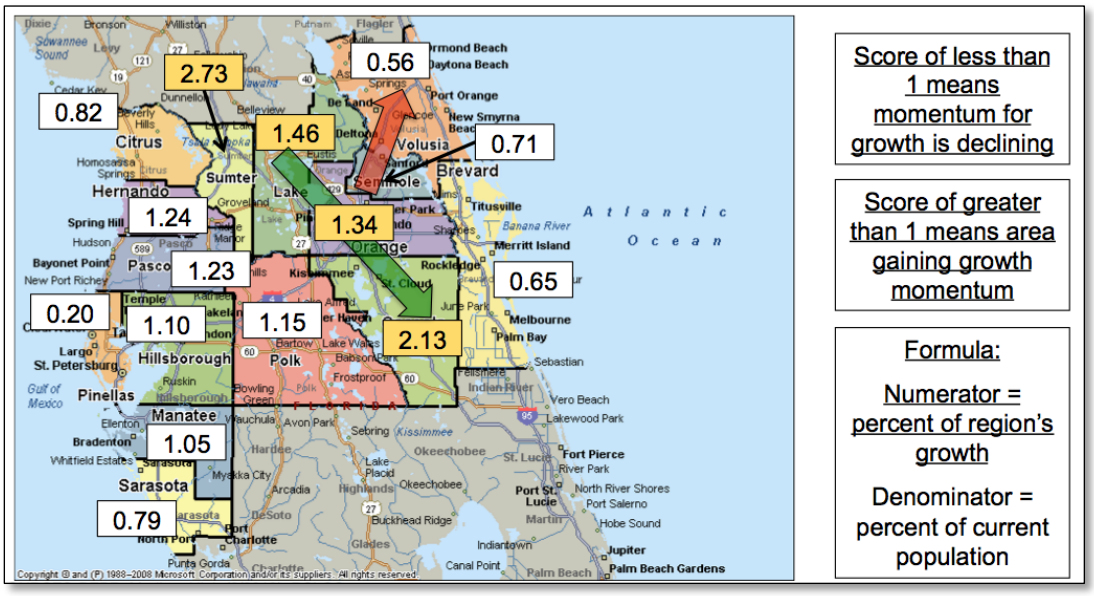


Figure 2-10. Projected Population Growth Momentum Index, 2012 to 2040

(Source: BEBR Medium-High [3/2013], RCLCO)

In the Central Florida region, the counties to the north along the I-4 Corridor outside Orange County are experiencing a slowing of their population growth momentum and are expected to receive a relatively smaller proportion of the region's population growth in coming decades. The smaller proportion of the

region's population growth as forecast by BEBR is partly due to the exhausted transportation capacity of I-4 and the challenging commute for those who must travel that route daily to and from their workplaces. Although areas along that I-4 Corridor, such as Seminole County, have become home to a cluster of high-tech and financial sector businesses, the area is considered by economic development experts to be close to build-out, as cited on myregion.org's web page profile of Seminole County[16].

A land capacity analysis of the Central Florida region shows that approximately 36 percent of the region's vacant developable land is located in the southeast quadrant, as depicted in Figure 2-12. In Figure 2-12, the population numbers on the y-axis indicate how much population could theoretically be accommodated in each quadrant at current densities, as indicated by the yellow bars, while the green line indicates the percent of the region's land capacity in each quadrant. As shown on the chart, there is slightly more vacant land capacity in the southwest quadrant; however, the primary economic drivers

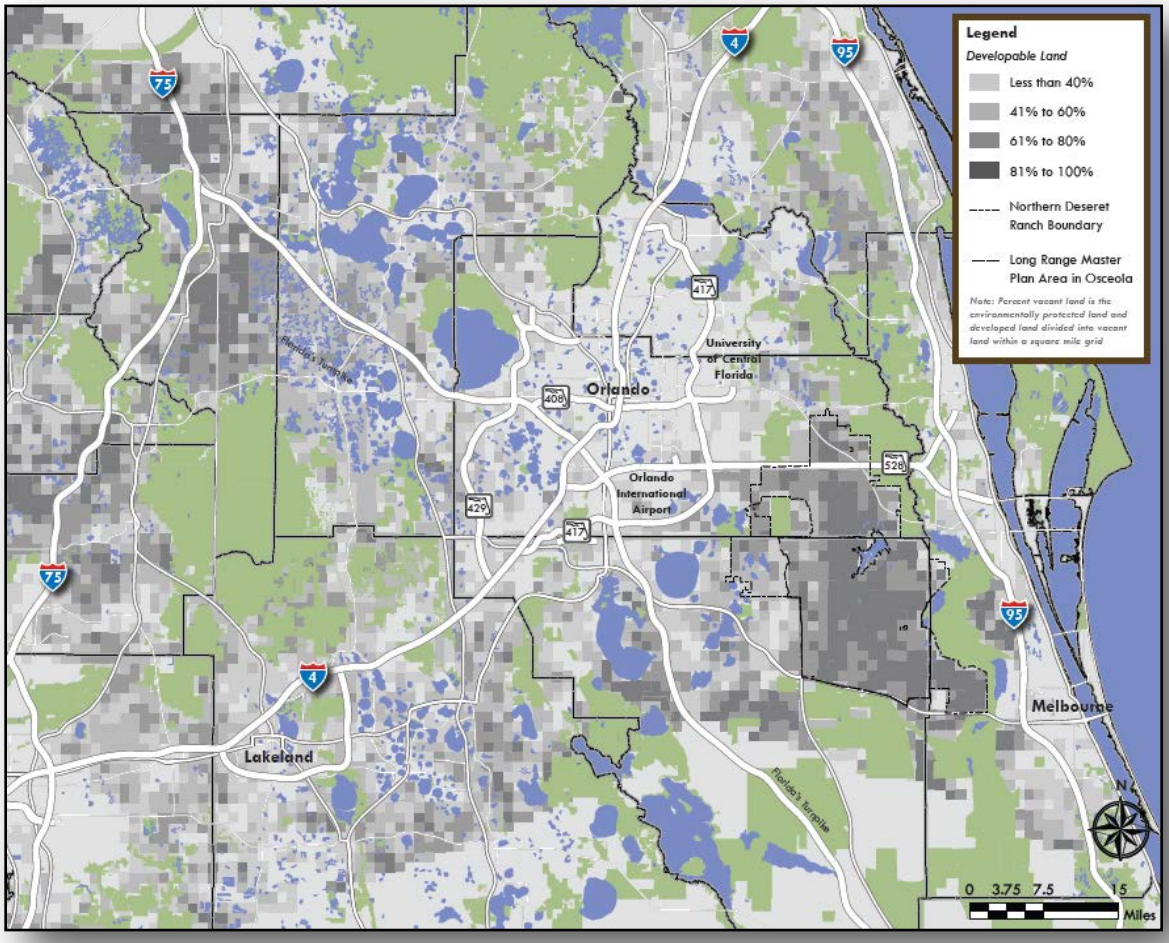


Figure 2-11. Vacant and Developable Land in East Central Florida
(Source: RPG, Logan Simpson Design)

[16]http://www.myregion.org/index.php?submenu=SeminoleCounty&src=gendocs&ref=SeminoleCounty&category=Collaboration

there are more mature so development in that quadrant is not likely to be as strong as in the southeast quadrant. Land availability alone is not sufficient; unlike mature job sectors, emerging job sectors require both land availability and strong job growth.

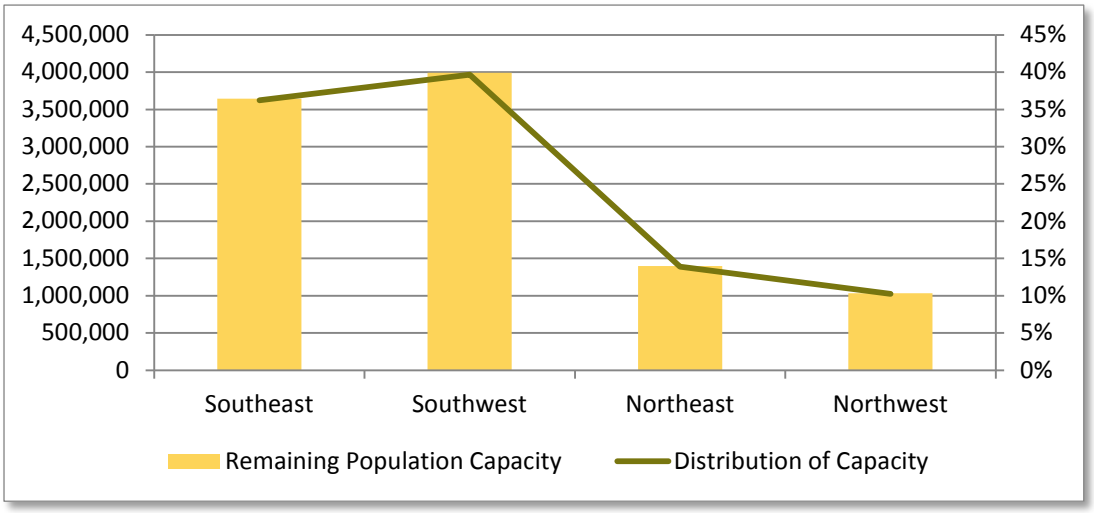


Figure 2-12. Anticipated Remaining Land Capacity Population by Quadrant

(Source: RPG)

The economic drivers of each quadrant also demonstrate a continued shift of population and households as well as job growth to the southeast. One way to analyze this long-term trend is by plotting all of the high-value office-oriented jobs from the 1980s to 2012. That analysis shows that jobs initially concentrated in Downtown Orlando and along I-4 but have been moving steadily to the east and to the southeast for more than 20 years. In that same timeframe significant job centers have grown up on the Space Coast and in the Melbourne area. See Figure 2-13. These science and technology-oriented jobs have the potential to become even more regionally significant employment centers if they are connected through new or improved transportation facilities. With such improved connectivity, these centers can function together and compete as a single large economic cluster.

The other quadrants of the region are continuing to grow in absolute terms though their growth is influenced by the fact that they are either much closer to build-out, or because their growth is occurring in more mature economic sectors, like tourism. The northwest quadrant is driven by the relocation of retiree households from the Midwest and Northeast to Central Florida. For the greater region, this is positive because these retirees bring their savings and entitlement income with them. However, it does not attract the same kinds of job growth that attracts research facilities. Likewise, the southwest quadrant is largely oriented toward theme parks, attractions and tourism services. These are important to the established economy but have little effect on the sunrise industries emerging in the southeast quadrant.

Much of the region's business and professional services employment is located in the northeast quadrant, currently the region's "favored quarter." The favored quarter is that part of the region where the best housing, schools, and high paying jobs historically located. Because this area is largely built out and its transportation networks are highly congested, elements of the "new economy," which includes the sunrise industries, are already choosing to locate in the southeast quadrant where there is much greater land development capacity. It is clear that the region's favored quarter is shifting to the southeast.

In the southeast quadrant, substantial job growth is oriented to emerging job clusters with potential for much greater growth. For example, there is continued job growth in the life sciences and high-tech industries, which is part of the larger professional services and technology jobs category. This job growth is further enhanced by public and private investments in existing and new higher education facilities in the quadrant. The growth in professional services and technology employment is demonstrated by the increasing share of office space development over the last 20 years, as shown in Figure 2-13. Office development has the strongest increasing activity in the southeast quadrant, while other areas have received a smaller share of new office development.

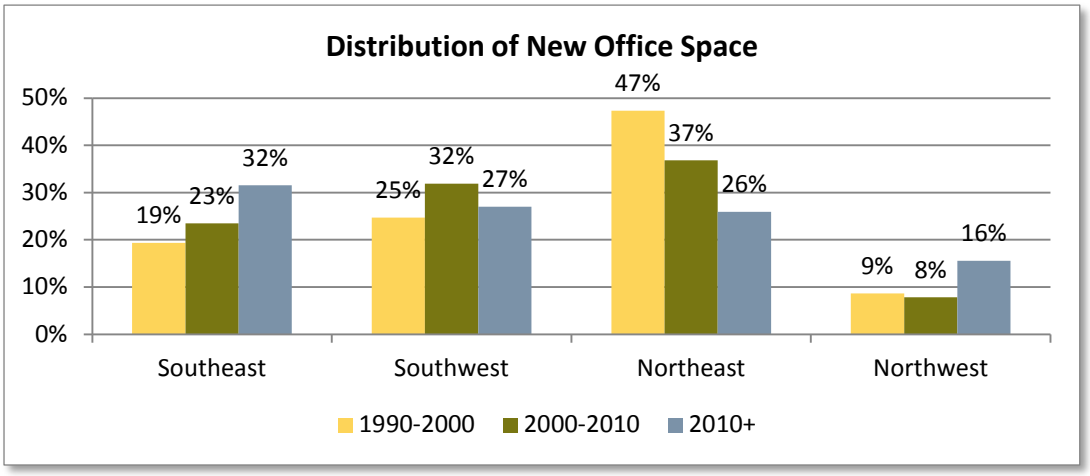
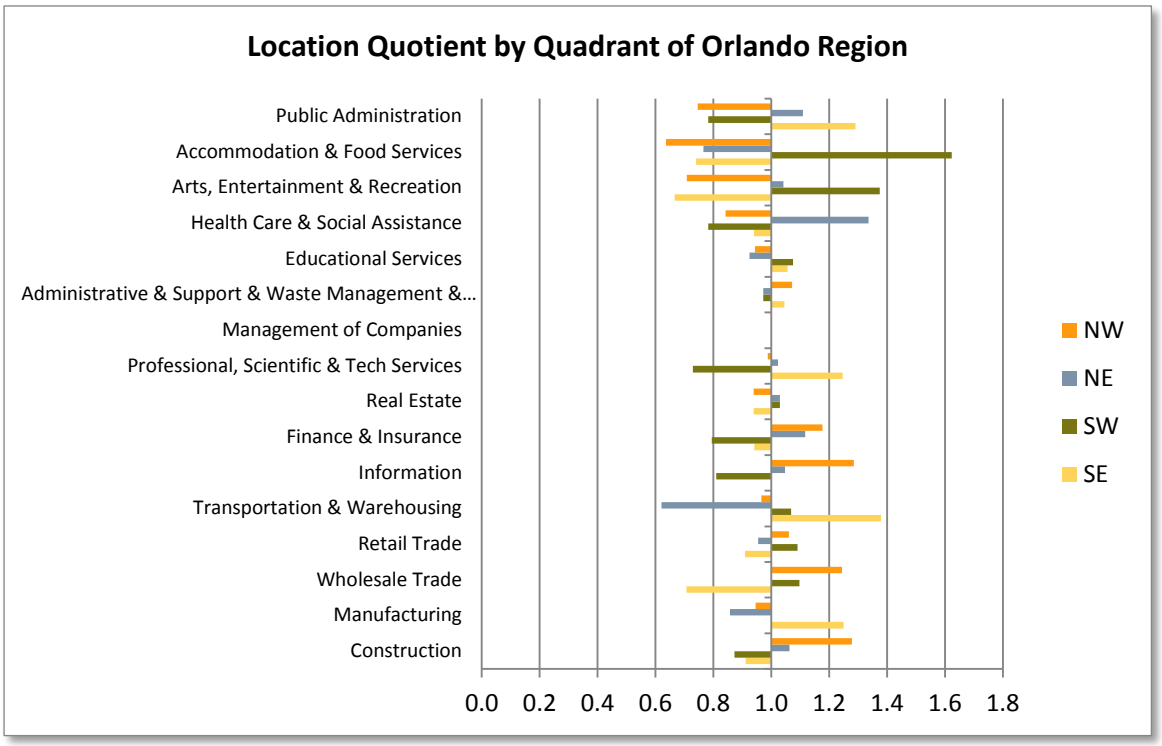


Figure 2-13. Distribution of New Office Space Deliveries, 1990–2013

(Source: CoStar)

An examination of the types of jobs in each quadrant as it relates to a "location quotient"[17] shows patterns in the types of jobs in which each quadrant specializes and the sectors in which they have a greater share compared to the rest of the region. See Figure 2-14. This analysis showing which types of jobs have the greatest potential for future growth can be used to better predict where job growth will locate spatially within the region. As previously noted, the southeast quadrant has a greater share of professional and technical services jobs, which include sunrise industries such as life sciences and many high-tech industries. Additional transportation connectivity would likely help to continue to attract companies to this growing cluster location in the southeast quadrant.

[17] Location quotient means that if an industry has a score greater than one, there is a greater share of that industry in the quadrant compared to its share in the Orlando region.



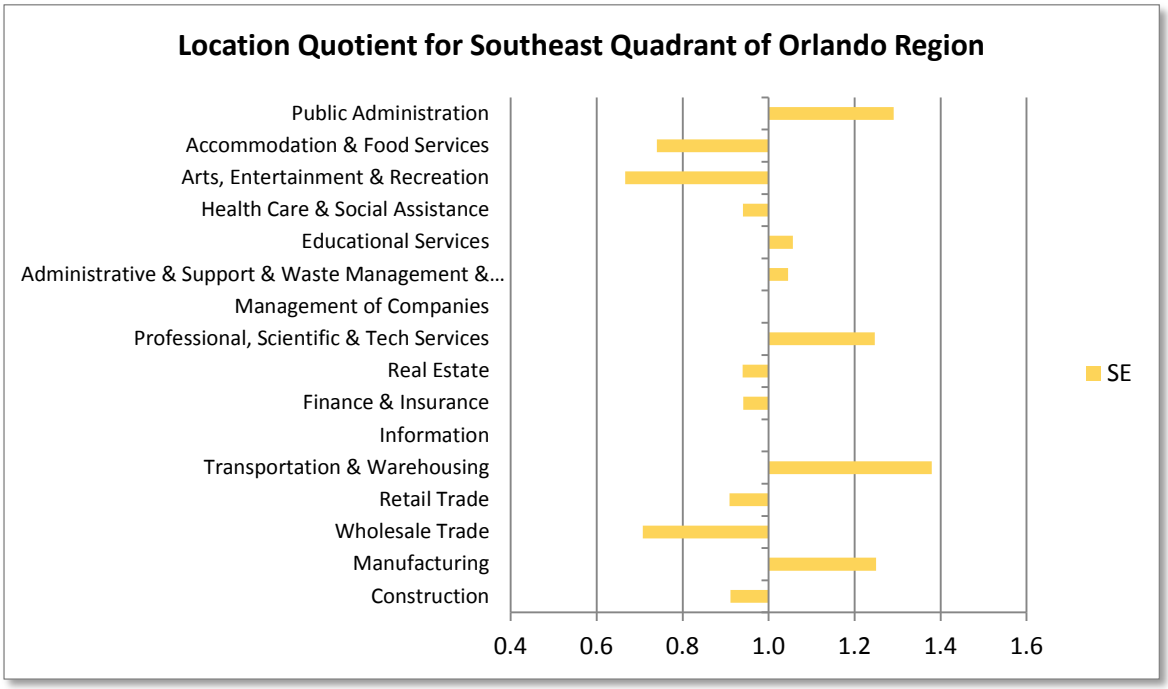


Figure 2-14. Industry Location Quotients by Quadrant, 2012

(Source: ESRI)

SOUTHEAST QUADRANT'S GROWTH POTENTIAL

Given the momentum of growth to the southeast, economic development potential and resulting new Metro Cores, it is highly likely that the southeast quadrant can capture a relatively larger portion of the region's growth, with appropriate land planning and transportation investments. In order to determine the growth potential, several different growth scenarios were considered.

BEBR prepares low, medium and high forecasts of future population projections at the county level. An average of BEBR's medium and high forecasts comes closest to reflecting the region's growth experience; BEBR's medium forecast, though widely used by government agencies, has historically underestimated the actual growth experienced in the Central Florida region. In RCLCO's analysis, in order to more closely project the likely future growth, the medium-high forecasts were utilized. BEBR's forecasts for the seven-county region go through 2040. The 2035–2040 growth rate was applied to the 2040 population to calculate the 2080 population and determine that the total growth projection from 2010 to 2080 will include more than 6.4 million new residents in the region.

Utilizing this analysis, two trend scenarios emerged. The first scenario (Scenario 1 in Figure 2-15) is based on BEBR forecasts to 2040, and then assumes the share of growth received by the quadrants is similar to the share captured from 1990 to 2010. This suggests that the southeast quadrant could add nearly 1.9 million people by 2080.[18]

However, as shown previously on the Momentum Index, it's likely that the relative share of the region's population growth will continue to increase in the southeast and southwest quadrants while the relative share of population growth captured by the northeast and northwest quadrants will continue to decline. This geographic change in the momentum of growth suggests that a modification to assumptions about the historic distribution of growth among quadrants is in order, to reflect that demonstrated shift. With that in mind, RCLCO took that continuing trend into consideration and prepared another scenario (Scenario 2), which indicates that the southeast quadrant could add approximately 2.2 million people by 2080.[19]

In addition to the trend forecasts, RCLCO has also considered scenarios based on the Central Florida Regional Planning Model (CFRPM) utilized by the Florida Department of Transportation. The CFRPM 2035 Forecast is based on the region's estimates and plans, and it also provides TAZ-level[20] population and employment estimates for traffic modeling purposes. It is important to note that the local counties are in the process of updating these projections to 2040 to be more reflective of current conditions.

[18] This scenario assumes that each quadrant of the region maintains its demonstrated capture of growth from 1990 to 2010 according to the U.S. Census Bureau going forward based on BEBR medium-high growth projections out to 2080 for the seven-county region.

[19] This scenario assumes that the southeast quadrant's capture increases similar to what was demonstrated between 1990-2000 and 2000-2010 according to the U.S. Census Bureau. In terms of forecast methodology, that demonstrated trend has been applied to the 2010-2040 BEBR medium-high forecasts for the seven-county region up to the point at which the distribution of growth is the same as the share of population that could be accommodated in each of the four quadrants based on remaining land capacity. Each quadrants share of future growth from that point forward in the forecast is held constant with its capacity for future population growth (percent share of land capacity multiplied by anticipated population per acre).

[20] TAZ (traffic analysis zone) level data are detailed, small area forecasts that are utilized for traffic analysis purposes by the transportation planning organizations. These forecasts are largely based on planned projects in the regulatory process.

From the CFRPM, there are three primary scenarios that were considered:

1. Utilizing the CFRPM 2035 population estimates and distribution between quadrants, we can assume that the region grows at the 2035 to 2040 rate anticipated by BEBR medium-high. The distribution of growth between quadrants after 2035 was assumed to be consistent with the shift in growth from 1990 to 2010, constrained by land capacity. Also, the CFRPM numbers do not include all of Polk County, so projections for the southwest quadrant were adjusted upwards to accommodate likely growth in the portion of Polk County not covered in this model. Southwest quadrant projections were increased 33% to reflect additional households. This scenario (Scenario 3) is probably the most aggressive for the southeast quadrant.
2. Given that projections are likely to decrease with the pending CFRPM update to 2040, the 2035 projections are within 5% of the BEBR 2040 estimates. As an alternative scenario (Scenario 4), it has been assumed that the 2035 control totals occur closer to 2040 and the control total for the region's growth from the BEBR regional medium-high growth projections was applied. The distribution of growth is reflective of the CFRPM through 2040, and then is consistent with the shift of growth from 1990 to 2010 constrained by land capacity (similar to the trend scenario above).
3. Lastly, a scenario (Scenario 5) was prepared to take into consideration updates to growth forecasts for counties served by MetroPlan Orlando (Lake, Orange, Osceola, and Seminole) through 2040. To distribute growth among quadrants, RCLCO assumed that the distribution is reflective of what was projected in the original CFRPM assumptions to 2040, and therefore consistent with the demonstrated shift of growth (as shown by the U.S. Census Bureau data from1990 to 2010) constrained by land capacity. This ensures that population growth is not over-allocated to any quadrant beyond vacant land available to accommodate growth.

The result of these various scenarios is a range of population projections for the southeast quadrant that are all within a reasonable range. See Figure 2-15 and Table 2-1. The historical and trend scenarios are among the more conservative scenarios because they do not take existing conditions into consideration – for example, they are based only on percentage growth trends, whereas other forecasts take into consideration where new developments are being planned. Furthermore, they are conservative because they do not fully account for the likely shift from the northern quadrants to the southern quadrants.

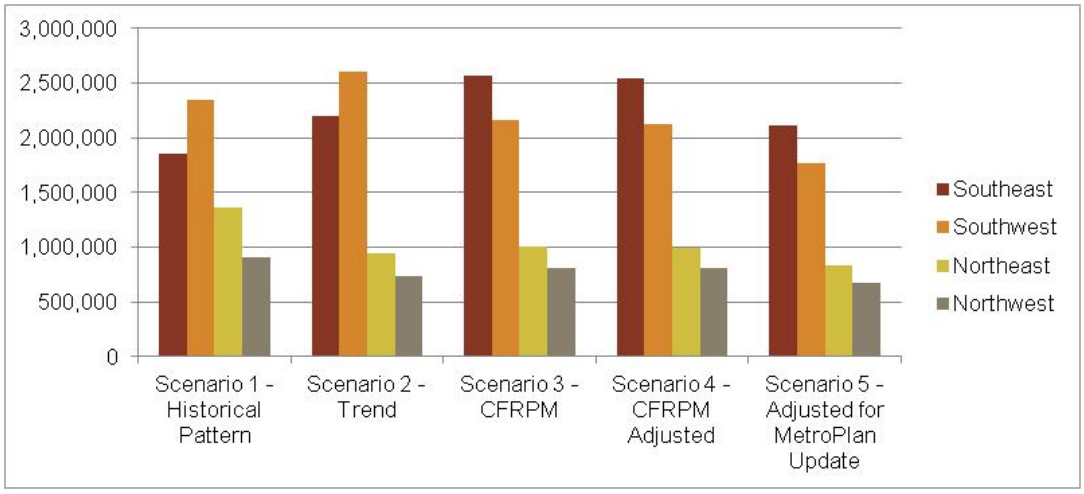


Figure 2-15. Population Growth by Quadrants

(Source: BEBR; ESRI; CFRPM; RCLCO)

Table 2-1. Population Growth by Quadrants

	Scenario 1 Historical Pattern	Scenario 2 Trend	Scenario 3 CFRPM	Scenario 4 CFRPM Adjusted	Scenario 5 Adjusted for MetroPlan Update
Southeast	1,854,000	2,193,000	2,565,000	2,539,000	2,118,000
Southwest	2,351,000	2,600,000	2,158,000	2,128,000	1,774,000
Northeast	1,361,000	943,000	1,009,000	998,000	832,000
Northwest	908,000	737,000	812,000	808,000	674,000

Source: BEBR; ESRI; CFRPM; RCLCO.

Under all of these growth scenarios, it is assumed that growth and development in the southeast quadrant will include the build-out of currently entitled and planned land developments in the quadrant, which are listed in Table 2-2. The build-out of these projects will leave a significant portion of the quadrant's projected population growth to be accommodated in developments that will be in addition to the currently entitled and planned projects. As depicted in Table 2-3, a portion of this unmet need is likely to be met by new development in the North Ranch Planning Area, as it has much of the region's remaining vacant developable land that does not currently have entitled or planned projects.

Table 2-2. Potential Capacity in Major Southeast Quadrant Entitled and Planned Developments

	Housing Units Remaining	Population[1]
Orange County		
Lake Nona	6,746	17,159
Randall Park	2,200	5,596
Moss Park	1,000	2,544
Poitras	4,800	12,209
Eagle Creek	2,014	5,123
Innovation Place	5,500	13,990
Starwood	9,000	22,892
ICP	3,440	8,750
IWE	6,343	16,134
Camino Reale	4,000	10,174
Osceola County		
Northeast District	29,320	74,578
Center Lake DRI	3,373	8,579
Harmony	4,824	12,270
East of Lake Toho	30,380	77,274
South of Lake Toho	40,202	102,257

	Housing Units Remaining	Population[1]
Brevard County		
Viera	28,000	71,220
Total in Major Developments	**181,142**	**460,748**
+5% Additional Development in Smaller Projects in Orange[2]	*2,252*	*5,729*
+25% Additional Development in Smaller Projects in Osceola[3]	*27,025*	*68,740*
+85% Additional Development in Smaller Projects in Brevard[4]	*23,800*	*60,537*
Total Potential Remaining Capacity in SE Quadrant	**234,219**	**595,754**

Source: RCLCO; County Planning Departments.

[1] Based on the 2010 persons per household by quadrant: SE: 2.54.

[2] Based on planned projects in the Orange County portion of the southeast quadrant, it is unlikely that there will be many additional projects planned beyond the large projects, so it is assumed that only a small percentage of additional units will be added.

[3] In Osceola County going forward, it is likely that a smaller percentage of developments will be located outside of major projects compared to Osceola County's history, so it is assumed that there will be an additional 25% of units in smaller developments.

[4] Based on the limited number of planned major projects in the Brevard County portion of the southeast quadrant, it is likely that a large portion of the development will occur outside of Viera. From 1990-2012, more than 12% of the Brevard County portion of the southeast quadrant's growth came from Viera. It is assumed that development in smaller projects in Brevard County will represent an additional 23,800 units beyond the 28,000 anticipated in Viera.

Table 2-3. Estimated Potential Growth for Additional Projects SE Quadrant to 2080

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
2010-2080 Growth Anticipated in Southeast Quadrant	1,854,000	2,193,000	2,565,000	2,539,000	2,118,000
Total Potential Remaining Capacity in SE Quadrant (from Figure 2-15 and Table 2-1)	596,000	596,000	596,000	596,000	596,000
Growth Increment Remaining for Other New Projects	1,258,000	1,597,000	1,969,000	1,943,000	1,522,000

Source: RCLCO.

POPULATION PROJECTION FOR NORTH RANCH PLANNING AREA

In order to determine the additional development that could be located on the North Ranch to accommodate future growth, an analysis of vacant developable land and regional accessibility was performed for the southeast quadrant. The locations considered included major destinations 20–30 minutes away, such as the downtowns of Orlando, Melbourne, Cocoa and Titusville, as well as the quadrant's major educational and research facilities, including the University of Central Florida and Medical City, and intermodal hubs, including the Orlando and Melbourne International Airports and Port Canaveral. The vacant parcels within the North Ranch represented more than 80 percent of those vacant developable parcel grids that were proximate to three or more locations.

With the appropriate land planning and transportation investments, Osceola County has a significant opportunity to capitalize on the momentum anticipated in the southeast quadrant. The North Ranch Planning Area can capture a significant portion of the region's long-term economic development between existing and potential job centers in Orlando and Melbourne, especially since there is sufficient land availability for the residential and nonresidential uses that the job centers require.

Assuming that (1) already entitled and planned areas in Orange and Osceola build-out as expected, (2) appropriate transportation and economic development investments are made, and (3) the entire North Ranch Planning Area captures approximately 60 percent of the remaining population growth increment expected in the southeast quadrant, the range of population in the Osceola County portion of the North Ranch could be from about 380,000 (with a 50% capture in Scenario 1) to just over 700,000 (with a 60% capture in Scenario 3, as shown in Table 2-4.) Scenario 2 represents an important adjustment to BEBR's forecast to account for the population shift to the southern quadrants, and Scenario 5 adjusts the CFRPM based forecast to the latest Metro Plan Orlando estimates. These two scenarios therefore are considered best. They result in a projected population range of about 460,000 to 530,000 by 2080 (assuming a 50% to 55% capture), or on average approximately 490,000. Given the range of possible growth scenarios and potential for higher captures of Osceola growth, 490,000 represents a reasonable but conservative forecast of population for the Osceola portion of the North Ranch Planning Area by 2080.

Table 2-4. Estimated Potential Growth on the Osceola County Portion of the North Ranch to 2080

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Ranch Potential Population (60% Potential)	754,800	958,200	1,181,400	1,165,800	913,200
50% Capture of Ranch Growth in Osceola	377,400	479,100	590,700	582,900	456,600
55% Capture of Ranch Growth in Osceola	415,140	527,010	649,770	641,190	502,260
60% Capture of Ranch Growth in Osceola	452,880	574,920	708,840	699,480	547,920
Source: RCLCO.					

The 490,000 estimate of year 2080 population on the Osceola portion of the North Ranch Planning Area, while reasonable, may under-represent the potential growth. This depends on how quickly the region grows, investments in major infrastructure, land availability, planning decisions by other local governments as well as other factors. Overall, Osceola County is well-positioned to capture the growth anticipated in the region's southeast quadrant. Planning for robust but reasonable population growth to be accommodated in the North Ranch Planning Area will allow Osceola County to create and better accommodate future economic development opportunities.

CHAPTER 3. ENVIRONMENTAL FRAMEWORK

GENERAL IDENTIFICATION OF ENVIRONMENTAL RESOURCES

ECOLOGICAL SETTING

The North Ranch Planning Area in Osceola County (Property) consists of approximately 133,043 acres located within the St. Johns River and Kissimmee River watersheds, within the Eastern Florida Flatwoods ecological region of the Southern Coastal Plain (Figure 3-1 and Figure 3-2). This ecoregion is a warm, heterogeneous area of low relief and wet soils consisting of flat plains, coastal lagoons, marshes, and swampy lowlands along the Gulf and Atlantic coasts. Historically this region was covered by a variety of forest communities that included trees of longleaf pine (*Pinus palustris*), slash pine (*Pinus elliottii*), pond pine (*Pinus serotina*), sweetgum (*Liquidambar styraciflua*), southern magnolia (*Magnolia grandiflora*), and laurel oak (*Quercus laurifolia*). Current land cover in this region is primarily slash and loblolly pine (*Pinus taeda*) with oak-gum-cypress forest in low lying areas, citrus groves, pasture land for beef cattle, and urban.

TOPOGRAPHY

Topography within the Property was determined from a statewide digital elevation model (DEM) constructed from a mosaic of four Laser Interferometry Detection and Ranging- and contour-based DEM models and published by the GeoPlan Center, University of Florida (Figure 3-3). The statewide DEM has contour intervals of 1 foot and a resolution of 5 meter grid cells. Elevations within the Property range from 10 to 78 feet above mean sea level (MSL). The lowest elevations are within the St. Johns River floodplain along the east border of the Property. The highest elevations are to the north and south of County Road (CR) 532 near the Property's west boundary.

PHYSIOGRAPHY

Puri and Vernon (1964) mapped the western 90 percent of the Property as falling within the Osceola Plain physiographic province, and the eastern 10 percent of the Property is in the Eastern Valley physiographic province. Brooks (1981) indicates the entire Property is in the Eastern Flatwoods physiographic district, which has elevations that are generally less than 90 feet above MSL and originated as a sequence of barrier islands and lagoons during Plio-Pleistocene and Recent Time. The Property occurs within three subdivisions, or provinces, of the Eastern Flatwoods District. The western 70 percent of the Property is in the Holopaw-Indian Town Ridges and Swales province, which consists of gentle slopes covered by flatwoods with cypress (*Taxodium* spp.) strands in the swales, and with sand pine (*Pinus clausa*) scrub occurring discontinuously along the eastern margin. The northeastern 15% is in the St. Johns Wet Prairie province, which is an area of marshes and grass prairies with clumps of cabbage palms (*Sabal palmetto*) and willow (*Salix* spp.) that are seasonally flooded at elevations between 6-12 feet above MSL. The southeastern 15 percent is in the St. Johns Marsh province, which is similar to the St. Johns Wet Prairie province but with elevations mostly above 18 feet MSL in an area where organic soils are more common (Brooks 1981).

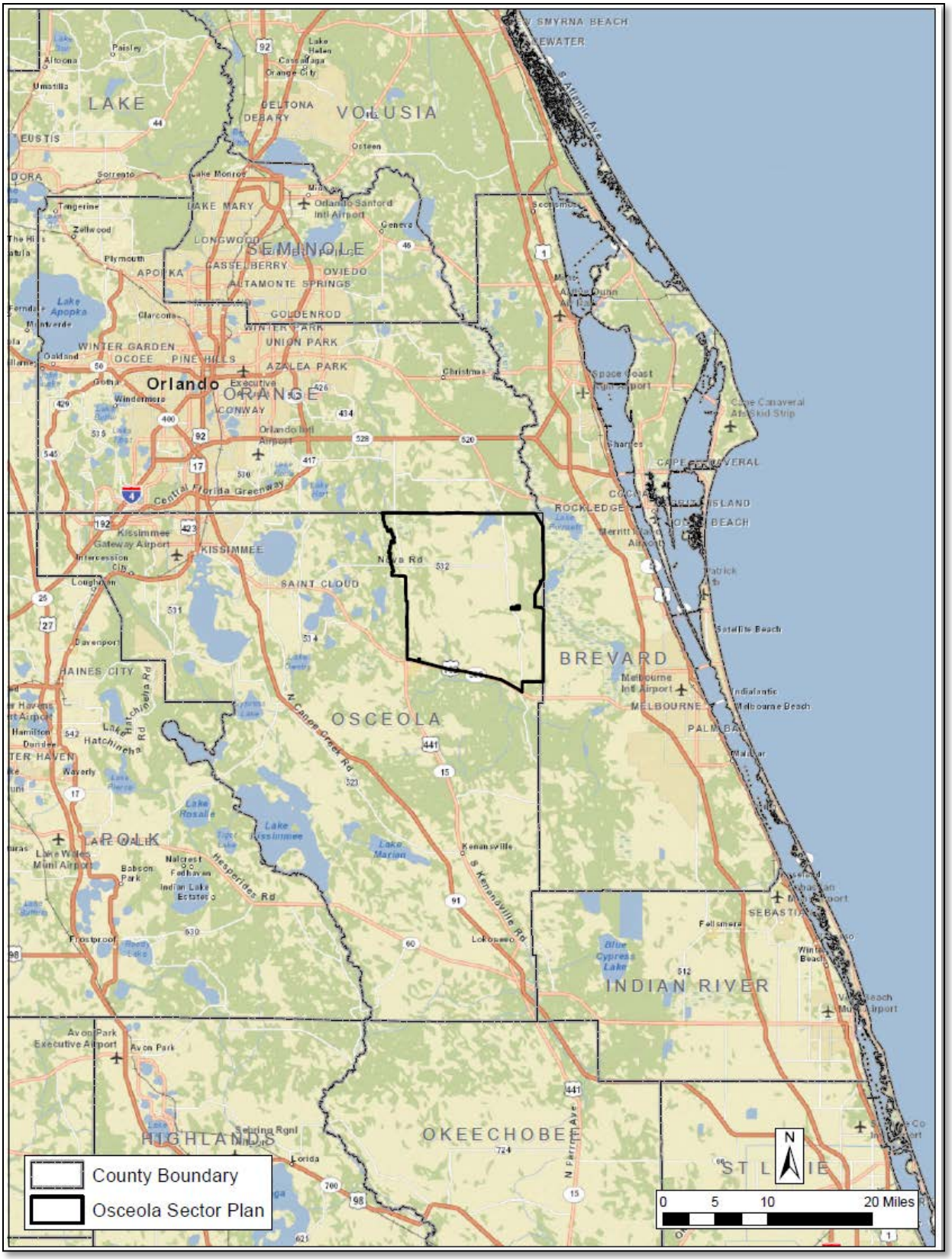


Figure 3-1. Location of North Ranch Planning Area in Osceola County

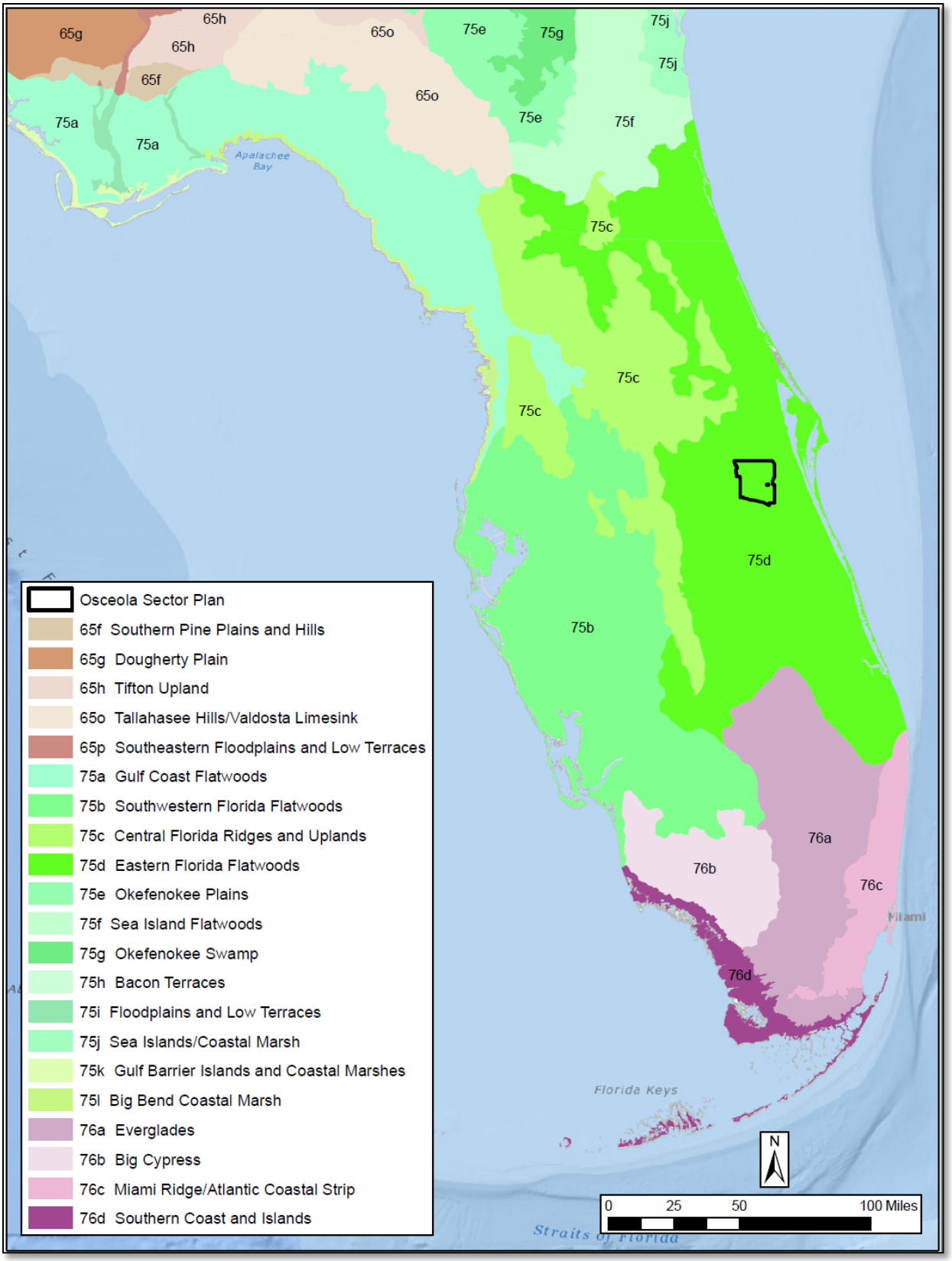


Figure 3-2. Level IV Ecoregions of Peninsular Florida

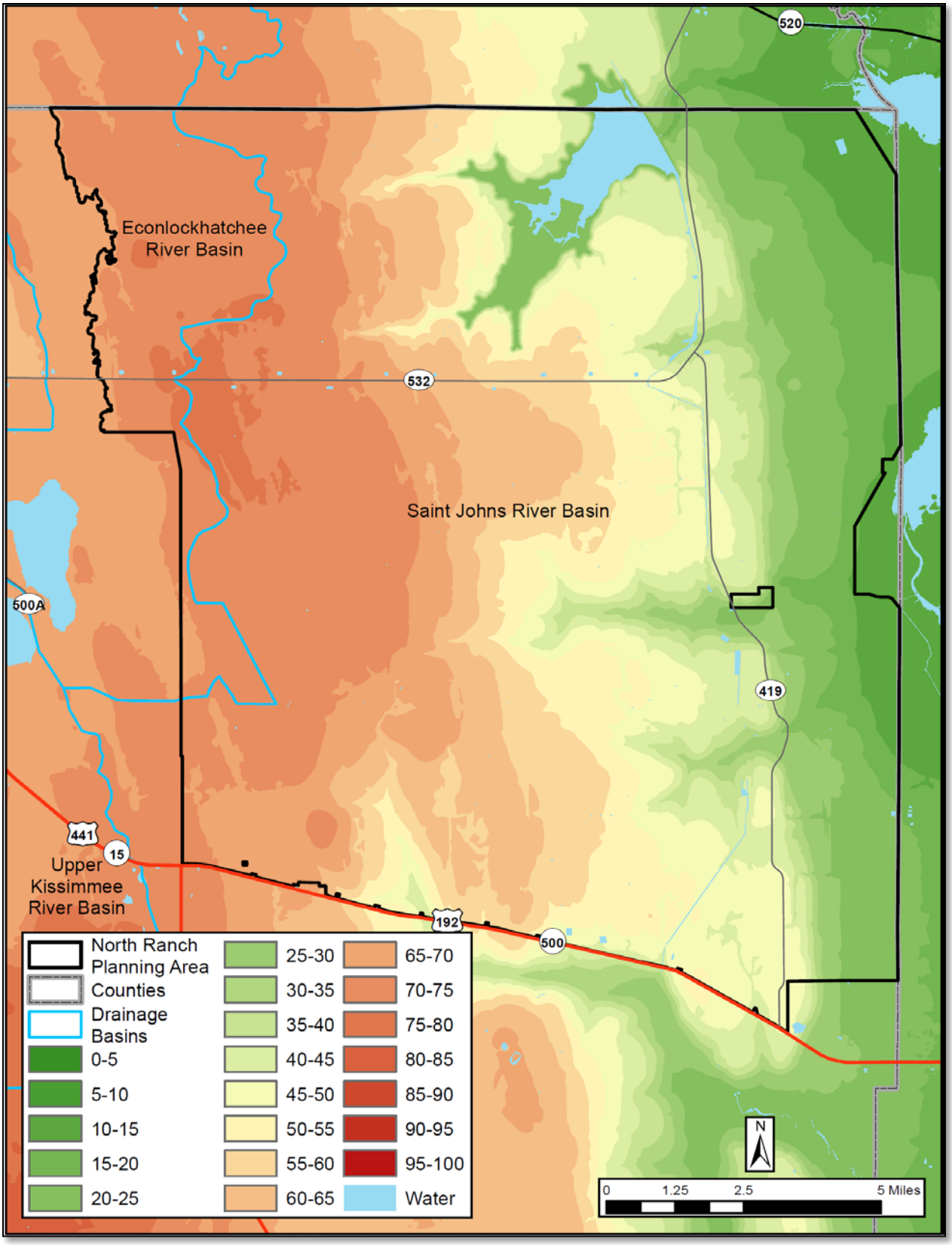


Figure 3-3. Topography within the North Ranch Planning Area in Osceola County

VEGETATIVE COMMUNITIES

Existing land use and vegetative associations identified throughout the Property were classified using the Florida Land Use, Cover and Forms Classification System (FLUCFCS; Florida Department of Transportation [FDOT], January 1999) data included in the 2009 St. Johns River Water Management District's (SJRWMD's) Geographic Information System (GIS) database and the 2008 South Florida Water Management District database, site-specific information, and photointerpretation (Figure 3-4 and Table 3-1).

FLUCFCS data indicates the Property is comprised of a diverse mixture of upland and wetland community types, including agricultural lands, rangeland, upland forest, wetlands, surface waters, and various types of human infrastructure. While the dominant land use on the Property is improved pasture for raising cattle (~54.5 percent), there are also many other vegetative communities which combine to create a diverse and abundant mosaic of uplands, wetlands, and water. The majority of the Property is characterized as uplands (~75 percent), with the remaining consisting of wetland (~23.5 percent) and surface water (~1.5 percent) cover types. The property is primarily used for cattle ranching, hunting leases, and, to a lesser extent, citrus production. Improved pastures comprise ~54.5 percent of the Property, with citrus and other agricultural operations making up another ~6 percent of the Property. Upland forested communities cover ~4 percent of the Property and consist of pine flatwoods, upland hardwood forests, upland mixed coniferous, and hardwood forest and pine plantation. An additional 0.5 percent of the Property consists of barren land, urban, and infrastructure cover types.

Forested freshwater wetlands cover ~14.5 percent of the Property and are characterized by areas of bay swamp, cypress swamp, mixed wetland hardwoods, cabbage palm hammock, cabbage palm savannah, hydric pine flatwoods, and mixed forested wetlands. In addition to forested wetlands, approximately 5.2 percent of the Property is characterized as mixed scrub-shrub wetland, ~1.2 percent of the Property consists of freshwater marsh, ~2.6 percent consists of wet prairies, and ~0.2 percent consists of emergent aquatic vegetation. Surface waters on the Property consist of streams and other waterways (~0.12 percent) and a reservoir (~1.35 percent).

The Taylor Creek Reservoir is currently operated by the SJRWMD at a regulation schedule which fluctuates between 41 and 43 feet National Geodetic Vertical Datum (NGVD29). At its current maximum operating elevation, the reservoir includes approximately 4,303 acres within Osceola County based on 2010 SJRWMD LiDAR generated one-foot contour lines. If the operating schedule is increased to its designed maximum operating level of 46 feet NGVD29, the footprint of the reservoir is anticipated to increase in size to approximately 7,104 acres in Osceola County. This area is currently comprised of approximately 3,019 acres of upland, primarily rangeland and improved pastures with some upland forest; 2,402 acres of wetland, primarily mixed scrub-shrub wetland and freshwater marsh with emergent aquatic vegetation, mixed wetland hardwoods, wet prairie, wetland forested mixed, cypress, cabbage palm savannah, and hydric pine flatwoods; and 1,683 acres of surface water.

The area comprising the potential Pennywash/Wolf Creek Reservoir (discussed later in this Chapter) is currently comprised of 3,838 acres of upland cover types, primarily improved pasture with some rangeland and upland forest; 1,632 acres of wetland cover types dominated by mixed wetland hardwoods with some mixed scrub-shrub wetland, wetland forested mixed, wet prairie, hydric pine flatwoods, freshwater marsh, cypress, and bay swamp; and 78 acres of surface water. (For additional information concerning Pennywash/Wolf Creek Reservoir, see Chapter 6, Water Demand and Supply.)

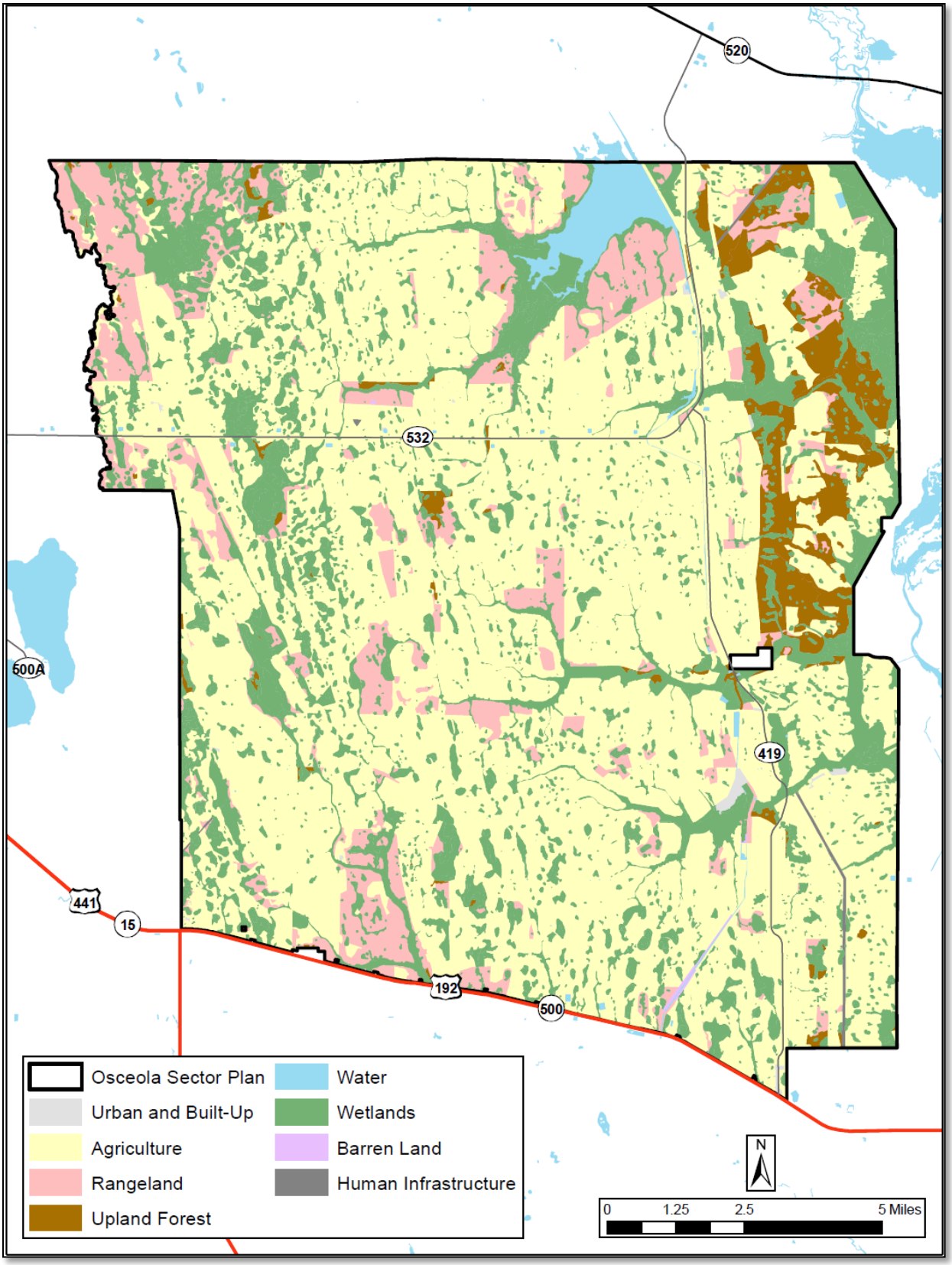


Figure 3-4. Existing Land Use within the North Ranch Planning Area in Osceola County

Table 3-1. Vegetative Communities for the North Ranch Planning Area in Osceola County, based on the Florida Land Use Cover & Forms Classification System

FLUCFCS Code	Vegetative Community	Percent Coverage (%)
2110	Improved pastures	54.49
2120	Unimproved pastures	0.01
2130	Woodland pastures	0.82
2150	Field crops	4.42
2210	Citrus groves	0.19
2310	Cattle feeding operations	0.02
2420	Sod farms	0.49
2510	Horse farms	0.01
3000	Rangeland	9.82
4110	Pine flatwoods	3.02
4200	Upland hardwood forests	0.02
4340	Upland mixed coniferous/hardwood	1.17
4410	Pine plantation	0.01
5100	Streams and waterways	0.12
5300	Reservoirs - pits, retention ponds, dams	1.35
6110	Bay swamp	0.32
6170	Mixed wetland hardwoods	5.77
6181	Cabbage palm hammock	0.46
6182	Cabbage palm savannah	0.01
6210	Cypress	4.84
6250	Hydric pine flatwoods	0.17
6300	Wetland forested mixed	2.94
6410	Freshwater marshes	1.17
6430	Wet prairies	2.59
6440	Emergent aquatic vegetation	0.16
6460	Mixed scrub-shrub wetland	5.18
7000	Barren Land	0.05
1000	Urban and Built-Up	0.18
8140	Infrastructure	0.20
	Grand Total	**100.00**

Significant Wetlands and Surface Waters

Several of the most ecologically significant ecosystems in Central Florida are partly within or border the Property. These include two large ecosystems that combine to make one of Naturally Central Florida's (NCF) seven "jewels," the St. Johns River – Econlockhatchee (Econ) River Mosaic. The eastern boundary of the Property borders the St. Johns River and floodplain ecosystem for approximately 12 miles. Much of this floodplain is already under permanent protection; in fact, Deseret transferred 1,330 acres of land in Osceola County to the SJRWMD for preservation in the 1970s. Bordering the northwestern side of the Property are the headwaters of the Econ, which have been designated for permanent preservation in the Northeast District Conceptual Master Plan. The Econ has been designated as an Outstanding Florida Water and is a regionally significant refuge for many species of plants and wildlife.

Many large, interconnected wetland strands and seven large tributaries originate on the Property and flow to both the St. Johns River and Econ River ecosystems. Wetlands and waters on the southwestern side of the Property also flow south to the Kissimmee Prairie on their way to the Everglades. Protection of these ecosystems and their functionality is a key component of the Long-Term Master Plan.

Listed Species Potential Occurrence

State and federal databases were reviewed to determine the likelihood of occurrence for protected and wildlife and plant species that occur or are likely to occur within the Property. Statewide GIS databases of known locations and potential habitat models for rare and imperiled species were researched. Species of wildlife and plants listed for protection under provisions of the Endangered Species Act (ESA) of 1973, 16 United States Code 1531-1544, December 28, 1973, as amended 1976 – 1982, 1984, and 1988 (ESA) and Florida rule (68A-27.0001- 27.007, Florida Administrative Code [F.A.C.]) known to occur within Osceola County, Florida, are represented in Table 3-2. The likelihood of occurrence, listed within this table, is based on a comparison of known general habitat requirements by these species with the habitats found on or near the Property, the quantity, quality, and adjacency of these habitats, as well as any observations of these species during field investigations. The likelihood for occurrence for listed species was rated as high, moderate, low, unlikely, or not applicable based on knowledge of a species' habitat preference and site conditions. A likelihood of occurrence given as "unlikely" indicates that no, or very limited, suitable habitat for this species exists on the Property, but the Property is within the documented range of the species; "not applicable" indicates that the habitat for this species does not exist on or adjacent to the Property and/or the Property is not within the documented range of the species. Additional information on protected species is provided in Appendix C.

Table 3-2. Protected Plants and Animals with Potential for Occurrence on the North Ranch Planning Area in Osceola County

Species	Habitat	Likelihood of Occurrence	Designated Status[1]	
			USFWS[2]	FWC[3, 4]
Plants				
Bonamia grandiflora Florida bonamia	Scrub, dry pinelands.	Low	T	—
Chionanthus pygmaeus pygmy fringe-tree	Scrub, sandhill, xeric hammock.	Unlikely	E	—
Eriogonum longifolium var. *gnaphalifolium* scrub buckwheat	Sandhill, scrub.	Low	T	—
Lupinus aridorum scrub lupine	Sand pine scrub.	Not Applicable	E	—
Nolina brittoniana Britton's beargrass	Scrub, sandhill, scrubby flatwoods, xeric hammock.	Low	E	—
Paronychia chartacea papery whitlow-wort	Scrub, sandhill.	Unlikely	T	—
Polygala lewtonii Lewton's polygala	Xeric oak scrub, sandhill.	Low	E	—
Polygonella myriophylla sandlace	Scrub.	Low	E	—
Prunus geniculata scrub plum	Sandhill, xeric oak scrub.	Low	E	—
Warea amplexifolia wide-leaf warea	Sandhill.	Unlikely	E	—
Amphibians				
Lithobates capito gopher frog	Xeric oak scrub, sand pine scrub, sandhill, upland hardwoods, pine flatwoods, freshwater marsh.	High	—	SSC

Species	Habitat	Likelihood of Occurrence	Designated Status[1]	
			USFWS[2]	FWC[3, 4]
Reptiles				
Alligator mississippiensis American alligator	Freshwater marsh, cypress swamp, mixed hardwood swamp, shrub swamp, bottomland hardwoods, lakes, ponds, rivers, streams.	High	FT (S/A)	—
Drymarchon corais couperi eastern indigo snake	Xeric oak scrub, sand pine scrub, sandhill, pine flatwoods, pine rocklands, tropical hardwood hammock, hydric hammock, wet prairie, mangrove swamp.	Moderate to High	FT	—
Eumeces [=Plestiodon] egregious lividus bluetail mole skink	Xeric oak scrub, sand pine scrub, sandhill, xeric hammock.	Not Applicable	FT	—
Gopherus polyphemus gopher tortoise	Sandhill, sand pine scrub, xeric oak scrub, coastal strand, xeric hammock, dry prairie, pine flatwoods, mixed hardwood-pine forests, ruderal.	High	—	ST
Neoseps [=Plestiodon] reynoldsi sand skink	Rosemary scrub, sand pine scrub, xeric oak scrub, scrubby flatwoods, xeric hammock.	Not Applicable	FT	—
Pituophis melanoleucus mugitus Florida pine snake	Xeric oak scrub, sand pine scrub, sandhill, scrubby pine flatwoods, old fields on former sandhill and scrub sites.	Low to Moderate	—	SSC
Stilosoma extenuatum short-tailed snake	Sandhill, xeric hammock, sand pine scurb, xeric oak scrub.	Not Applicable	—	T
Ammodramus savannarum floridanus Florida grasshopper sparrow	Dry prairie.	Unlikely	FE	—
Birds				
Aphelocoma coerulescens Florida scrub-jay	Xeric oak scrub.	Unlikely	FT	—
Aramus guarauna limpkin	Freshwater marsh, mixed hardwood swamp, rivers, streams, spring runs, lake margins, ruderal.	High	—	SSC

Species	Habitat	Likelihood of Occurrence	Designated Status[1]	
			USFWS[2]	FWC[3, 4]
Athene cunicularia burrowing owl	Sandhill, dry prairie, pastures, ruderal.	High	—	SSC
Caracara cheriway crested caracara	Dry prairie, cabbage palm–live oak hammock, freshwater marsh, pasture.	High	FT	—
Egretta caerulea little blue heron	Freshwater marsh, various types of forested wetlands, lakes, streams, salt mash, mangrove swamp, tidal mud flats.	High	—	SSC
Egretta thula snowy egret	Freshwater marsh, various types of forested wetlands, streams, lakes, salt marsh, mangrove swamp, tidal mud flats, impoundments, ditches.	High	—	SSC
Egretta tricolor tricolored heron	Salt marsh, mangrove swamp, tidal mud flats, tidal creeks, tidal ditches, freshwater marsh, various types of forested wetlands, lakes and ponds.	High	—	SSC
Eudocimus albus white ibis	Freshwater marsh, various types of forested wetlands, salt marsh, mangrove swamp, tidal mud flats, ruderal.	High	—	SSC
Falco sparverius paulus southeastern American kestrel	Sandhill, pine flatwoods, dry prairie, pasture, old field.	Unlikely	—	ST
Grus americana whooping crane	Dry prairie, freshwater marsh, pasture.	Moderate	FXN	—
Grus canadensis pratensis Florida sandhill crane	Dry prairie, freshwater marsh, pasture.	High	—	ST
Mycteria Americana wood stork	Freshwater marsh, various types of forested wetlands, ponds, salt marsh, mangrove swamp, tidal mud flats, lagoons, flooded pastures.	High	FT	—
Picoides borealis red-cockaded woodpecker	Sandhill, pine flatwoods.	Moderate to High	FE	—
Rostrhamus sociabilis plumbeus Everglade snail kite	Freshwater marsh, lakes.	Unlikely	FE	—

Species	Habitat	Likelihood of Occurrence	Designated Status[1]	
			USFWS[2]	FWC[3, 4]
Mammals				
Podomys floridanus Florida mouse	Xeric oak scrub, sand pine scrub, sandhill.	Not Applicable	—	SSC
Puma concolor coryi Florida panther	Cypress swamp, pine flatwoods, upland hardwood hammock, cabbage palm-live oak hammock, mixed hardwood swamp, freshwater marsh.	Unlikely	FE	—
Sciurus niger shermani Sherman's fox squirrel	Sandhill, pine flatwoods, pastures.	High	—	SSC

[1] FE = Federally-designated Endangered; FT = Federally-designated Threatened; FT(S/A) = Federally-designated Threatened Due to Similarity of Appearance; FXN = Federally-designated Experimental Non-essential; ST = State-designated Threatened; SSC = State Species of Special Concern.

[2] U.S. Fish and Wildlife Service.

[3] Florida Fish and Wildlife Conservation Commission.

[4] These state classifications are pending reclassification in accordance with revisions to Rules 68A-27.003, 68A-27.005, 68A-27.0012 and 68A-27.0021, Florida Administrative Code, for managing imperiled species as adopted by the Florida Fish and Wildlife Conservation Commission on September 1, 2010, effective November 15, 2010.

Plant and Animal Databases

FWC Wildlife Observation (WILDOBS) Database (2006)

The FWC WILDOBS database contains no records of rare and imperiled species of wildlife on the Property that are not listed in Appendix C.

FNAI Element Occurrences

The FNAI natural heritage database contains the following additional records of rare or imperiled plants, animals, and natural communities on the Property:

- Wet prairie – a quality example of wet prairie natural community type
- Florida beargrass (*Nolina atopocarpa*) – listed by the FDACS as threatened; not listed by USFWS
- Giant orchid (*Pteroglossaspis ecristata*) – FDACS threatened; not listed by USFWS

Wildlife Habitat and Biodiversity Models

FNAI Potential Habitats (October 2001, May 2007)

The FNAI database of habitats potentially used by rare and imperiled species of plants and animals shows that various areas of the Property were mapped as potentially suitable habitat for bald eagle, crested caracara, red-cockaded woodpecker, and Florida sandhill crane.

Strategic Habitat Conservation Areas (SHCA) (1994, 2009)

The FWC Closing the Gaps database (Cox et al. 1994) indicates that various areas of the Property were mapped as an SHCA for the conservation of wading birds, mottled ducks (*Anas fulvigula*), and limpkins. Information updated by Endries et al. (2009) indicates that various areas of the Property were mapped as an SHCA for American swallow-tailed kite (*Elanoides forficatus*), short-tailed hawk (*Buteo brachyurus*), and Cooper's hawk (*Accipiter cooperii*).

Integrated Wildlife Habitat Ranking System (2003, 2009)

The Integrated Wildlife Habitat Ranking System database was created by the FWC in 2003 to score the Florida landscape on a scale of 1-10 for wildlife and biodiversity, with 10 being areas of highest value, and the most recent update to the database was completed in 2009 (Endries et al. 2003, Endries et al. 2009). The database was created at the request of the FDOT as a means of rapidly determining whether or not planned road projects were likely to have adverse impacts on listed species of wildlife. The ranking was based on 10 variables that are indicators of importance to wildlife and biodiversity. Generally speaking, scores higher than 6 indicate that further review for impacts to wildlife may be warranted. Scores on most areas of the Property that are in pastureland ranged 1-4, indicating a relatively low ranking in terms of importance to wildlife conservation on a statewide scale. However, small areas in the northwest and northeast corners had scores of 8-10, indicating areas of high importance to wildlife conservation.

Environmental Plan for the North Ranch Planning Area

Environmental Plan for "Green Infrastructure"

The Environmental Plan for the North Ranch Planning Area in Osceola is presented in Figure 3-5. This Environmental Plan depicts the lands for which Deseret Ranches has proposed protection through the

Long-Term Master Plan and subsequent plan implementation measures. This plan includes a total 60,889 acres of environmental and agricultural lands, or 46% of the 133,043-acre North Ranch Planning Area in Osceola. These natural resources, water resources, and agricultural lands will comprise the "green infrastructure" within the Property. This Environmental Plan also shows how protected lands within the County connect to other significant environmental areas of the North Ranch Planning Area in Orange and Brevard counties and the larger regional landscape.

BUILDING THE ENVIRONMENTAL PLAN

The Environmental Plan is based on the results of community-based regional visioning initiatives such as the NCF process conducted by *myregion.org* and the University of Central Florida's Metropolitan Center for Regional Studies. The Environmental Plan was also informed by m*yregion.org'*s "How Shall We Grow?" regional visioning project to create a shared blueprint for regional growth patterns through 2050.

The following well established principles and data resources were used to design the conservation plan for *myregion.org* (Scott et al. 1993, Noss and Cooperrider 1994, Groves 2003), which became the foundation for the North Ranch Planning Area Environmental Plan:

- *Objective Setting:* Define targets for conservation planning
- *Existing Protected Lands*: Design around existing public lands, when present, because their natural areas are generally protected for the long term, and they provide the framework around which effective conservation plans are built
- *Large Core Habitats:* Protect and restore (if needed) core habitat areas of sufficient size to support many species of plants and animals
- *Landscape Linkages/Wildlife Corridors*: Ensure that natural linkages among large habitat patches are maintained in the landscape to provide for species movements on and off the Property
- *Focal Species:* Identify a suite of focal species (e.g., listed species, habitat indicators, area sensitive species) and plan for their continued presence on the Property, if possible
- *Representation of all Natural Communities:* Ensure that examples of all natural community types expected to occur on a site under natural conditions are protected or restored
- *Redundancy*: Ensure that multiple examples of each community type are protected or restored, if possible, to provide for the long-term persistence of all species and natural communities
- *Buffer Zones:* Provide low-intensity land use buffers around protected areas to ameliorate indirect effects of intensive human development
- *Population Viability:* Ensure that the landscape identified for preservation is large enough to support viable populations of featured indigenous species

Building on the planning principles described above, the following data sources and information were used to create the conservation plan for *myregion.org*:

Florida Fish and Wildlife Conservation Commission

- 2003 and 1986 land cover (Kautz et al. 1993, Kautz et al. 2007)
- Potential habitat models for rare and imperiled species of wildlife (Cox et al. 1994, Cox and Kautz 2000)

- Wildlife Observations (WildObs) (2003) database of wildlife occurrences
- Bald eagle nests
- Red-cockaded woodpecker colony and cavity tree locations
- Florida black bear nuisance, roadkill, and telemetry records
- Florida scrub-jay territory records and dispersal buffers (Fitzpatrick et al. 1994, Stith et al. 1996, Stith 1999)
- Models of species richness for rare and imperiled wildlife
- Integrated Wildlife Habitat Ranking System (Endries et al. 2003)
- Closing the Gaps Strategic Habitat Conservation Areas (Cox et al. 1994)
- Biodiversity Hot Spots (Cox et al. 1994)
- Priority wetlands for listed species of wetland-dependent wildlife (Kautz et al. 1994)
- Breeding Bird Atlas

Florida Natural Areas Inventory

- Element occurrence records
- Potential habitat polygons (2001)
- Florida Managed Areas (FLMA) – public and private lands managed for conservation
- Florida Forever projects – private lands proposed for acquisition by the State

Other Data Layers and Sources

- 1999-2000 land use/land cover – Water Management Districts
- 2004 Digital Ortho Quarter Quadrangles (aerial photography) – LABINS
- 2003 Landat satellite imagery – USGS EROS Data Center
- Potential Natural Vegetation (Davis 1967) – Florida Geographic Data Library
- SSURGO detailed soils – Florida Geographic Data Library
- Physiography (Brooks 1981) – Florida Geographic Data Library
- Scrub polygons (Fitzpatrick et al. 1994) – Archbold Biological Station/US Fish and Wildlife Service
- Florida Ecological Greenways Network – University of Florida GeoPlan Center
- Base map layers – Florida Geographic Data Library

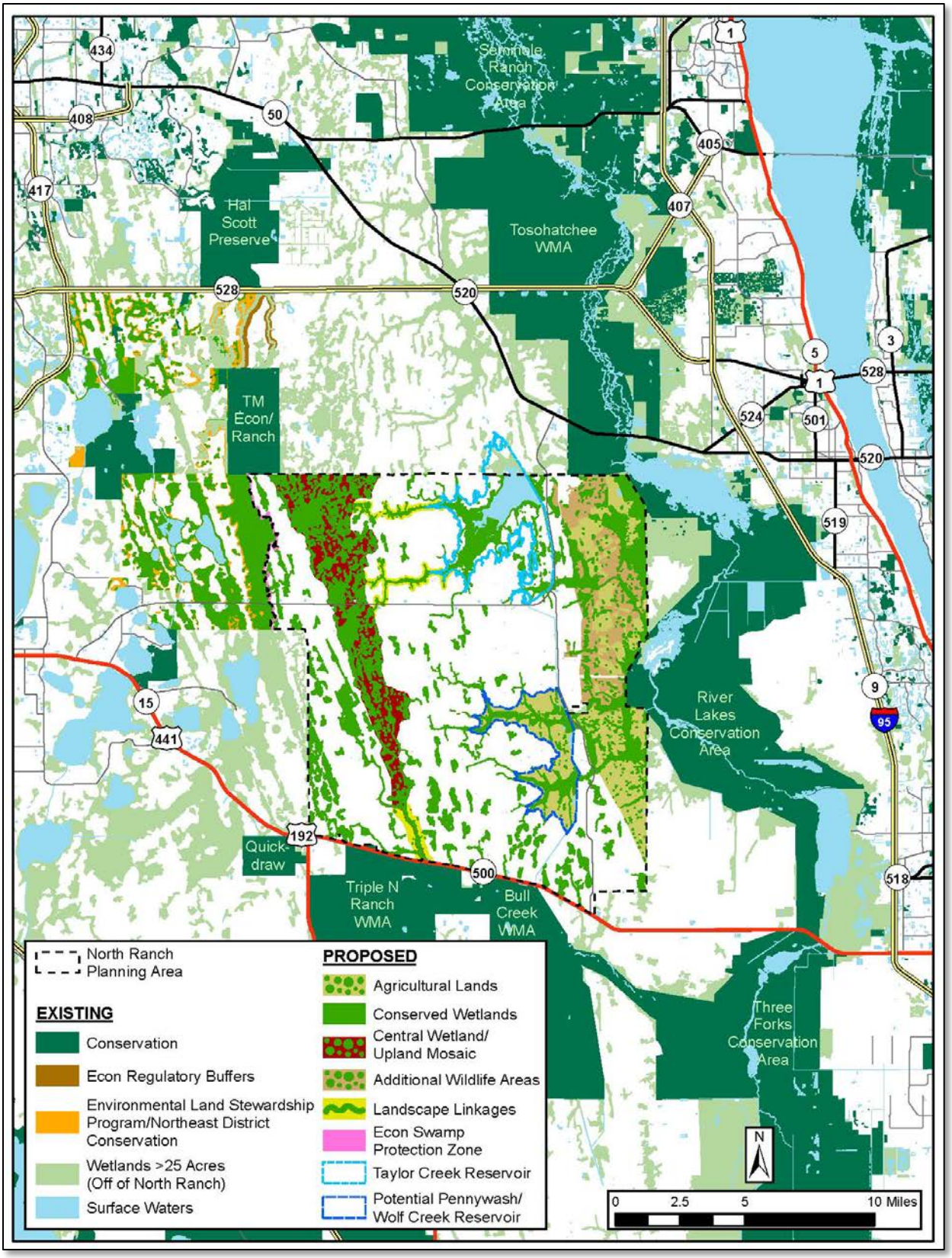


Figure 3-5. Environmental Plan for the North Ranch Planning Area in Osceola County

Key to attaining the vision for the Environmental Plan is ensuring that species currently present persist as land use changes occur over time. This begins with the identification of focal species and communities that reflect the overall needs of the natural environment.

Focal Species of Uplands

- Gopher tortoise (Gopherus polyphemus)
- Sand skink (Neoseps reynoldsi)
- Florida scrub-jay (Aphelocoma coerulescens)
- Crested caracara (*Caracara cheriway*)
- Bald eagle (Haliaeetus leucocephalus)
- American swallow-tailed kite (*Elanoides forficatus*)
- Florida sandhill crane (*Grus Canadensis pratensis*)
- Burrowing owl (Athene cunicularia)
- Red-cockaded woodpecker (*Picoides borealis*)
- Florida black bear (Ursus americanus floridanus)

Focal Species of Wetlands

- Little blue heron (*Egretta caerulea*)
- Tricolored heron (*Egretta tricolor*)
- Snowy egret (*Egretta thula*)
- Reddish egret (Egretta rufescens)
- White ibis (Eudocimus albus)
- Roseate spoonbill (*Platalea ajaja*)
- Wood stork (Mycteria americana)
- Limpkin (Aramus guarauna)
- Everglade snail kite (Rostrhamus sociabilis plumbeus)
- Mottled duck (*Anas fulvigula*)

Focal Natural Communities

- Scrub (xeric oak, sand pine, rosemary)
- Sandhill (longleaf pine-xeric oak)
- Pine flatwoods
- Dry and wet prairies and prairie hammock
- Forested freshwater wetlands
- Herbaceous freshwater wetlands

Various methods were used to develop a spatially explicit database of the most important conservation lands within each of the seven jewels of *myregion.org*, depending on size or scale of the area, resolution and accuracy of data, and availability of existing land use and biodiversity data layers. One of these jewels is located within Osceola County partially on the North Ranch Planning Area, the St. Johns River –

Econ Mosaic. The primary goal for this area was to preserve water quality and quantity, and protect fish and wildlife habitats of these two river systems. Key environmental features targeted for protection were aquatic ecosystems of rivers and streams, freshwater marshes, forested wetlands, pine flatwoods, and pastures. Focal species targeted for this critical area were wading birds, bald eagles, red-cockaded woodpeckers, Florida sandhill cranes, and American swallow-tailed kites. In addition to targeting these communities and species, an effort was made to utilize existing public lands as the foundation around which to identify additional complementary conservation lands.

To create a conservation plan for the St. Johns River – Econ Mosaic, wetland ecosystems associated with tributaries to the St. Johns and Econ rivers were selected from land cover databases. Wildlife and biodiversity databases were reviewed to ensure the wetlands and uplands along tributaries to the St. Johns and Econ rivers included hot spots that had been identified by previous landscape-scale conservation planning efforts, such as the FWC Closing the Gaps Project (Cox et al. 1994). An effort was also made to delineate selected stream segments to ensure long-term landscape connectivity among parcels of land proposed for conservation.

In addition to the identification of specific lands important for the conservation of each of the seven jewels, the *myregion.org* green infrastructure also included large wetland strands and isolated wetlands greater than 25 acres in size. These wetlands ecosystems help to ensure long-term regional water quality, water supply, flood protection, and conservation of biodiversity, including rare, imperiled, and common species of plants and animals. The *myregion.org* database of wetlands greater than 25 acres in size that occur within the North Ranch Planning Area in Osceola include cypress and cypress-gum swamps, bay swamps, mixed hardwood swamps, hydric hammocks, freshwater marshes, and wet prairies.

Realizing the Vision of the Environmental Plan

Key to realizing *myregion.org*'s vision for Central Florida is careful planning and development, recognizing that human-use areas will be embedded within the natural environment, the conservation of which is crucial to the character and quality of life of the region. The Environmental Plan for the North Ranch Planning Area was designed using the same science-based environmental planning principles of *myregion.org* to create a green infrastructure within which transportation corridors and other human uses can be placed. Deseret has helped build upon the *myregion.org* concepts and expanded conservation areas throughout the Property to ultimately create an Environmental Plan that protects the long-term viability of key ecosystems, sustains resident wildlife populations, and protects water supplies for the future. The Environmental Plan is based on the foundations of sustainability, conservation, wise and efficient planning of human uses, and recognition of the integral role that agriculture plays in the economy and cultural heritage of the region. The following is a description of the key environmental attributes of the North Ranch Planning Area in Osceola that will be protected by the Long-Term Master Plan (Table 3-3).

Table 3-3. Approximate Acreage Allocations for Environmental Plan

Type of Land	Uplands	Wetlands	Surface Water	Total
Conservation Lands				
Central Wetland/Upland Mosaic*	7,380	6,649	11	14,040
Landscape Linkages*	2,004	522	7	2,533
Additional Wildlife Areas*	5,839	3,298	3	9,140
Conserved Wetlands*	1,953	8,693	2	10,648
Econlockhatchee Swamp Protection Zone*	277	20	0	297
Agricultural Lands				
Agricultural Lands*	8,625	2,920	34	11,579
Pennywash/Wolf Creek Reservoir‡	0	2,841	2,707	5,548
Reservoirs				
Taylor Creek Reservoir†	0	3,191	3,913	7,104
Total	26,078	28,134	6,677	60,889

*Upland, wetland, and surface water acreages based on 2009 FLUCFCS data from SJRWMD.

†Acreage based on maximum operating level of 46.0 feet NGVD29. Wetland and surface water acreages based on previous analyses of anticipated vegetative community change by CH2M/PB Joint Venture (2009) and BDA.

‡Will remain in agriculture unless reservoir is permitted by state and federal agencies. Wetland and surface water acreages based on previous BDA analysis of anticipated post-reservoir vegetative community change.

ST. JOHNS RIVER

The St. Johns River is the longest and one of the most diverse rivers in the state. The headwaters of the St. Johns River harbor hundreds of species of wading birds, waterfowl, alligators, and other aquatic and wetland-dependent life. The upper St. Johns River is recognized as one of the most spectacular and important natural resources in Central Florida as demonstrated by its inclusion on the NCF list of "must save" natural jewels. Long extolled by naturalists, this unique and extraordinary ecosystem is known for its scenic beauty, wide variety of plant communities, and the abundance and diversity of wildlife.

The Environmental Plan will protect large interconnected wetlands, floodplain, major tributaries, and upland areas on the western border of the St. Johns River (Figure 3-5). Consistent with the recommendations of the NCF conservation plan for the St. Johns River natural jewel, the Environmental Plan includes 50 feet upland buffers surrounding the St. Johns River tributary wetlands within the North Ranch Planning Area. The headwaters and floodplain of the upper St. Johns River are currently protected by a patchwork of public lands, including the River Lakes Conservation Area, Tosohatchee State Reserve, and Canaveral Marshes Conservation Area. Approximately 20,700 acres of land bordering protected floodplain wetlands on the Property will remain in agriculture indefinitely.

These lands will provide an additional element that augments the current St. Johns River regulatory protections. By protecting vital portions of the St. Johns River floodplain and key uplands and wetlands that border this important resource, the Environmental Plan connects to and significantly augments existing public lands and helps to protect the long-term health and integrity of this great river.

Econlockhatchee River and Swamp

The Econ River and Swamp ecosystem is a diverse landscape of aquatic and wetland habitats. Home to a diversity of wildlife, and the second largest tributary of the St. Johns River, the Econ is a regionally significant natural resource. Because of its importance to the St. Johns River and the region, the Econ and certain tributaries were designated by the State of Florida as Outstanding Florida Waters. Special state and local regulatory provisions also protect the Econ, including the SJRWMD Econ Rule. The Environmental Plan includes a 250-foot buffer adjacent to the eastern extent of the 3,000-acre Econlockhatchee Swamp Preservation Area identified in the Northeast District Conceptual Master Plan adopted as part of the Osceola County Comprehensive Plan. This additional 297 acres will protect vital habitat and accommodate the movement of wildlife between regionally significant core habitat areas.

Conserved Wetlands

In addition to protecting areas adjacent to major ecosystems such as the Econ River and St. Johns River, the Environmental Plan will also protect large wetland strands, isolated wetlands greater than 25 acres in size, and major tributary systems. Protecting large, forested wetland strands provides core habitat that supports numerous native game and non-game species. These large systems have fewer "edge effects" from adjacent development and provide greater resilience due to their size. Large wetland systems buffer streams on the Property and provide vital connections to off-site priority ecological areas such as the St. Johns River, Econ River, and numerous public conservation lands. The Environmental Plan includes 50 feet upland buffers surrounding these large wetlands.

Central Wetland/Upland Mosaic

The Central Wetland/Upland Mosaic is an enormous north-south oriented area on the western side of the Property that is proposed for conservation under the Environmental Plan (Figure 3-5). The best way to comprehend the true scale of this area is through comparison to some of the state's treasured nature preserves. At over 14,000 acres, the Central Wetland/Upland Mosaic is larger than the Rock Springs Run State Reserve and larger than the Disney Wilderness Preserve. If overlaid on greater Orlando, this ~15-mile-long area would stretch from Longwood to the Orlando International Airport. The Central Wetland/Upland Mosaic comprises a dynamic landscape providing an important mix of habitat types for numerous species of plants and animals. This large north-south mosaic of uplands and wetlands also provides for critical landscape linkages. The Central Wetland/Upland Mosaic will provide a vital connection between TM-Econ Mitigation Bank and Triple N Ranch Wildlife Management Area and other state-owned lands to the south. This large protected corridor also provides the opportunity for key linkages for wildlife movement. By allowing for east-west landscape linkages, preservation of the Central Wetland/Upland Mosaic makes possible the movement of wildlife between the Econ River system to the west and the St. Johns River system to the east.

Landscape Linkages

The Environmental Plan recognizes the importance of planning for regional-scale spatial and temporal patterns when preserving local natural resources.

The Property is contiguous with the following parcels of publicly-owned land and mitigation banks:

- Tosohatchee Wildlife Management Area – northeast corner
- River Lakes Conservation Area – northeast corner and central segment of east boundary
- Hurky Huffman/Bull Creek Wildlife Management Area – south of US 192
- Triple N Ranch Wildlife Management Area – south of US 192

- TM Ranch and TM-Econ Mitigation Banks – northwest corner

For a distance of 2.8 miles immediately north of US 192 in the southwest corner of the Property, the Property is contiguous with the Big Bend Swamp/Holopaw Ranch Florida Forever project, which is proposed for acquisition by the State of Florida.

Landscape linkages contribute to the maintenance of wildlife populations and their viability by providing habitat and serving as conduits for dispersal and gene flow among populations, thus ensuring the long-term persistence of resident species. The Environmental Plan will protect vital landscape linkages within the Property and connections to regionally significant ecological areas within Osceola County. The Environmental Plan will also protect large areas bordering the St. Johns River and its associated floodplain, and the large, buffered wetlands and tributaries that connect to other priority areas offsite (Figure 3-6). The Environmental Plan will protect these large, interconnected wetland and stream systems to accommodate the movement of wildlife populations and help to ensure the long-term persistence of resident wildlife within the region.

Additional Wildlife Areas

The Environmental Plan will protect a large mosaic of uplands and wetlands bordering the St. Johns River west of Lake Winder and Lake Poinsett. Approximately 9,140 acres of this mosaic are within Osceola County. In addition to approximately 3,300 acres of wetlands and surface waters, there are approximately 5,840 acres of forested uplands, rangeland, and agricultural lands proposed for long-term protection. Almost 4,630 acres of these protected uplands are forested. This mixture of pine flatwoods and hardwood forests is rare within Osceola County, and will provide important habitat for a variety of forest-dependent species. Collectively, this landscape serves as an additional large, diverse area of habitat that will provide an additional buffer for the St. Johns River and floodplain ecosystem. The Environmental Plan will also protect areas of forest within or adjacent to pastures to create diverse and structurally complex cover and edge habitat, thus benefiting numerous species of wildlife. Deseret will utilize heterogeneous, edge-enhanced landscapes, to create a diverse environmental and agricultural mosaic.

Taylor Creek Reservoir

The TCR was approved by Congress in 1948 for flood control and subsequently built by the ACOE as part of the Central and Southern Florida Project. Made possible by Deseret's donation of thousands of acres of land as a flood easement, the TCR serves as a surface water alternative to valuable groundwater, primarily located within Osceola County. Approximately 45% of the area surrounding the existing reservoir consists of a diverse mix of forested wetlands (cypress swamp, hydric pine flatwoods, mixed hardwood and coniferous forest, and mixed hardwoods) as well as extensive freshwater marsh, wet prairies, and emergent aquatic vegetation. As part of the Environmental Plan, these wetlands and surface waters will continue to provide important water storage for the region and valuable habitat for wading birds, water fowl, and other resident wildlife.

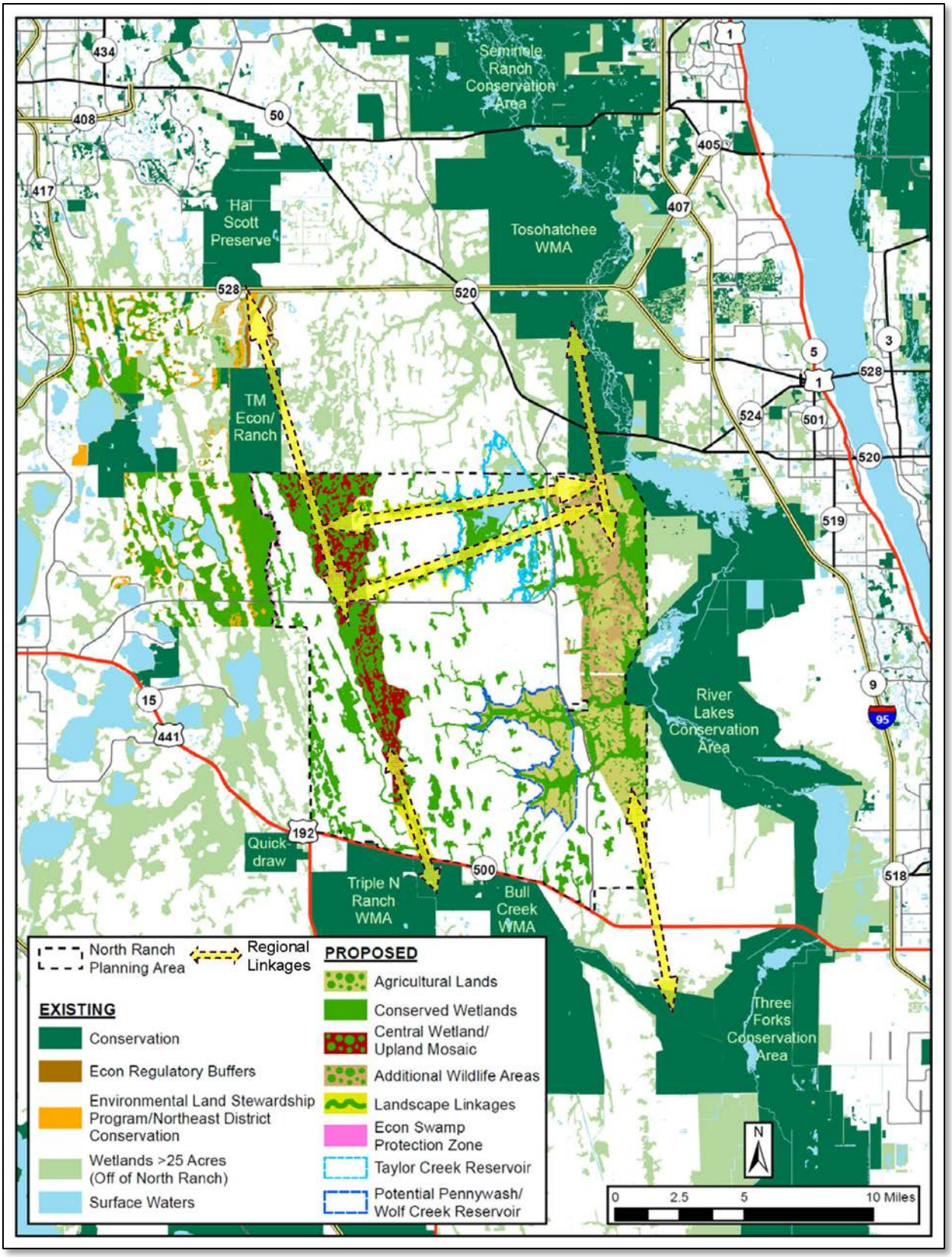


Figure 3-6. Regional Linkages in the Environmental Plan

AGRICULTURAL LANDS

Deseret plans to continue cattle ranching and other agricultural operations for future generations and has identified approximately 17,000 acres for continued agricultural production until the planned Pennywash/Wolf Creek Reservoir is constructed and approximately 11,500 acres afterward. (For additional information concerning the Pennywash/Wolf Creek Reservoir, see Chapter 6, Water Demand and Supply.) Agricultural lands are a valuable component of the Environmental Plan, because they provide additional areas of open space within the large mosaic of protected uplands and wetlands. A large area bordering the St. Johns River will remain in agriculture indefinitely, contributing open space and wildlife habitat, and buffering this important resource from areas planned for development. Deseret will continue to maintain pastures and other agricultural lands with an environmental ethic, focusing on management practices that provide for productive cattle operations and wildlife populations. As part of the Environmental Plan, lands identified for continued agriculture will also enhance aesthetic values as undeveloped parts of the landscape provide green, low density spaces between urban centers. The Environmental Plan reflects Deseret's commitment to remaining a viable agricultural operation.

CONTINUING A TRADITION OF ENVIRONMENTAL STEWARDSHIP

The Environmental Plan for the North Ranch Planning Area in Osceola represents an opportunity to conserve a large part of the region's "green infrastructure" while responsibly planning for impending regional growth. The Environmental Plan proposes to protect important natural resources on the Property consistent with environmental protection plans prepared through regional public processes, including the NCF process and the "How Shall We Grow?" process conducted by *myregion.org*. The "green infrastructure" proposed for protection is composed of some of the region's most spectacular natural resources and will establish the framework within which to plan future human uses. This environmental framework will guide smart planning and development, ensuring the achievement of long-term conservation and sustainability goals.

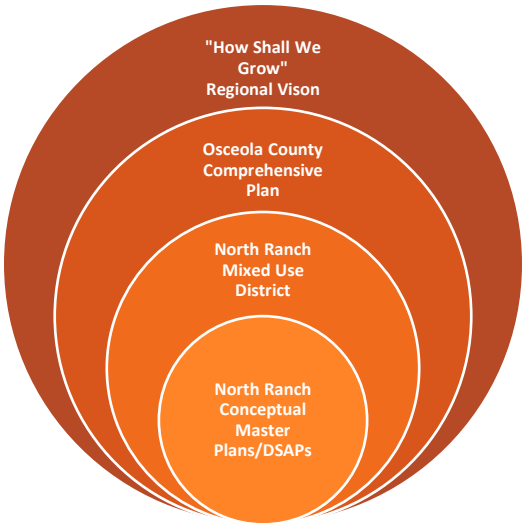
REFERENCES

For references cited in this chapter, see References in Appendix C: Protected Wildlife Species.

CHAPTER 4. URBAN FORM

RELATIONSHIP TO THE REGIONAL VISION AND THE COMPREHENSIVE PLAN

The Deseret Ranch is Central Florida's largest undeveloped property. Strategically located between the Orlando metro area and the cities stretching north and south in Brevard County, the Ranch offers a unique opportunity to proactively plan a large portion of the region in a manner that strikes the balance of fostering the region's economic development opportunities while protecting its environmental resources.



"HOW SHALL WE GROW" REGIONAL VISION

In 2004, *myregion.org*, an organization made up of business and civic leaders crafted a vision for regional growth based on sound technical analysis and extensive outreach with the citizens of the seven-county Central Florida region. The regional vision articulated in the 2007 final report, "How Shall We Grow?" reflects the balance Central Floridians seek in fostering economic development while protecting the region's major environmental and agricultural lands.

Achieving this kind of vision requires the long-range planning reflected in this Long-Term Master Plan. The inception of this plan was inspired by the themes found in that regional effort:

Conservation - *By protecting the movement of water and wildlife along and between the naturally occurring north-south strands stretching across the property.*

Countryside – *By ensuring significant agricultural production over the long term and augmenting natural movements of wildlife along the St. Johns River.*

Centers – *By enhancing economic development with new high intensity, mixed use development centers surrounded by high quality, safe and walkable neighborhoods.*

Corridors – *By promoting regional connectivity through new multimodal corridors linking Brevard County with southeastern Orlando.*

OSCEOLA COUNTY COMPREHENSIVE PLAN

These regional themes were reflected locally by Osceola County through their 2007 adoption of the Comprehensive Plan.

URBAN GROWTH BOUNDARY

A key feature of the Comprehensive Plan is the Urban Growth Boundary (UGB) that creates a clear distinction between urban and rural land and limiting urban services to only urban lands. Because of its size, the planning area is not expected to build-out until the year 2080 or later. As a result, the Long-Term Master Plan relies on a development framework defined for UGB expansion areas, specifically Mixed Use Districts. Policy 1.1.6 of Osceola County's Comprehensive Plan allows for the expansion of the

UGB under two conditions: 1) the need for additional land to meet 20-year development demand consistent with the county's financial ability to provide necessary services, and 2) through the Conceptual Master Plan (CMP) process associated with Mixed Use Districts[1]. As this policy predates section 163.3245, F.S, which enables local governments to prepare sector plans, it will be amended by the Board of County Commissioners to also grant the County the ability to expand the UGB through the sector planning process.

For this Long-Term Master Plan to be implemented, the UGB must be expanded. Figure 4-1 illustrates the adopted 2025 Urban Growth Boundary and Future Land Use and Figure 4-2 illustrates the 2080 Urban Growth Boundary and Future Land Use.

MIXED USE DISTRICTS

Land within the UGB is broadly classified as urban infill or urban expansion, with the latter defined by Mixed Use Districts organized around urban place types that ensure compact and walkable centers and neighborhoods focused on economic development. The North Ranch Planning Area within the expanded UGB would be designated as a Mixed Use District and subject to the CMP process.

Two policies within the Comprehensive Plan 2025 define the primary planning principles guiding development of Mixed Use Districts:

Policy 1.3.11: Mixed Use FLUM designation defined Mixed Use. *This future land use category is the only urban land use allowed within the Urban Expansion Area of the UGB. It is intended to promote a balanced mix of activities, residences, shops, schools, workplaces, parks, etc. It allows residential uses with densities ranging from 5 dwelling units per acre up to 25 dwelling units per acre. It also allows for non-residential uses with intensities ranging from .35 FAR to 2.5 FAR. The development opportunities afforded by the mixed use category's wide range of densities and intensities are a part of an integrated development strategy and cannot be severed from the category's design and diversity policies.*

Policy 1.3.12: Mixed Use design characteristics. *To provide an orderly framework for public and private development decisions, development activity within Mixed Use category shall support and further the design characteristics outlined below: Neighborhoods form the basic building block for development, characterized by a mix of residential housing types distributed on a well-connected street system where the majority of housing is within a reasonable walking distance (defined as approximately ½ mile) of a neighborhood center.*

- *Neighborhood and other centers provide a public/civic focal point to neighborhoods through a combination of appropriately scaled retail/office uses and schools, parks, and community centers to include places of worship.*
- *Within neighborhoods a range of housing types are accommodated supporting a broad range of family sizes and incomes.*
- *The street pattern is a network of interconnected streets that supports the needs of all users, including pedestrians, bicyclists, and motor vehicles, offers multiple routes to a destination, and reduces reliance on arterial roadways. The primary priority is creation of a safe, comfortable,*

[1] Osceola Comprehensive Plan, Future Land Use Goals and Objectives, page 2

and attractive pedestrian environment that emphasizes accessibility; vehicle mobility is secondary.

- *A pedestrian environment is formed through provision of sidewalks, street trees and on-street parking capable of providing a distinct separation between pedestrians and traffic; an inviting public space is created by streets, sidewalks and buildings, which are arranged in such a way that they are unbroken by surface parking lots; a safe and attractive setting is created with adequate lighting and signage which has a pedestrian orientation.*
- *Neighborhoods and other centers are designed with pedestrian scale blocks having standard dimensions capable of accommodating different types of uses and enable over time the site to evolve to other uses.*

This chapter further defines the five elements of Osceola County's new Mixed Use District place types, development program, building communities, the supporting transportation and key community amenities.

Mixed Use District Conceptual Master Plans will guide development through the principles of smart growth. The North Ranch provides the opportunity for Osceola County to grow in an economically sustainable manner. Osceola County's principles of Smart Growth include:

- Create a range of housing opportunities and choices
- Create walkable neighborhoods
- Encourage community and stakeholder collaboration
- Foster distinctive, attractive communities with a strong sense of place
- Make development decisions predictable, fair and cost effective
- Ensure a mix of land uses
- Preserve open space, farmland, natural beauty and critical environmental areas
- Provide a variety of transportation choices
- Take advantage of compact building design
- Provide a sustainable balance of jobs and housing

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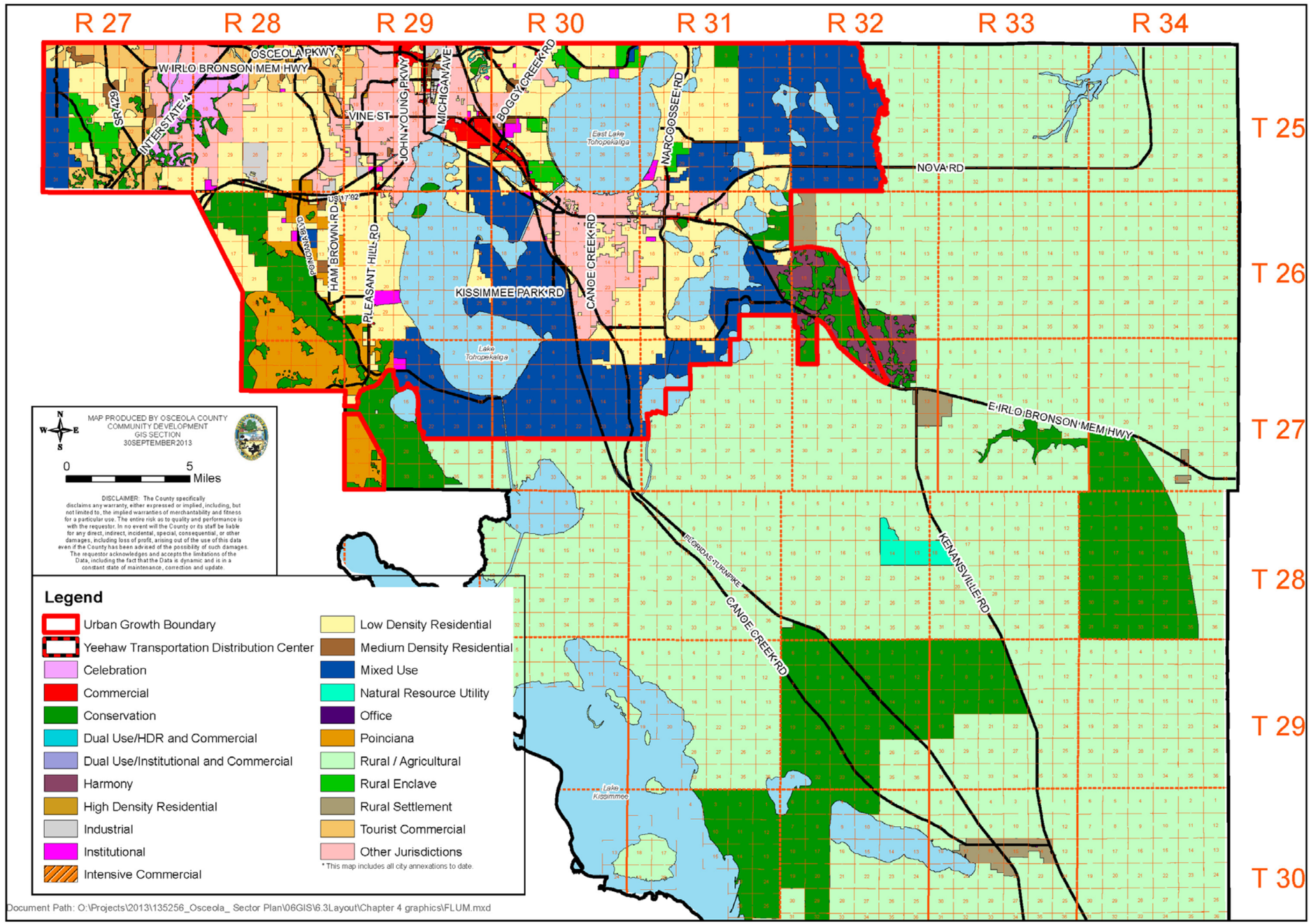

Figure 4-1. 2025 Urban Growth Boundary and Future Land Use

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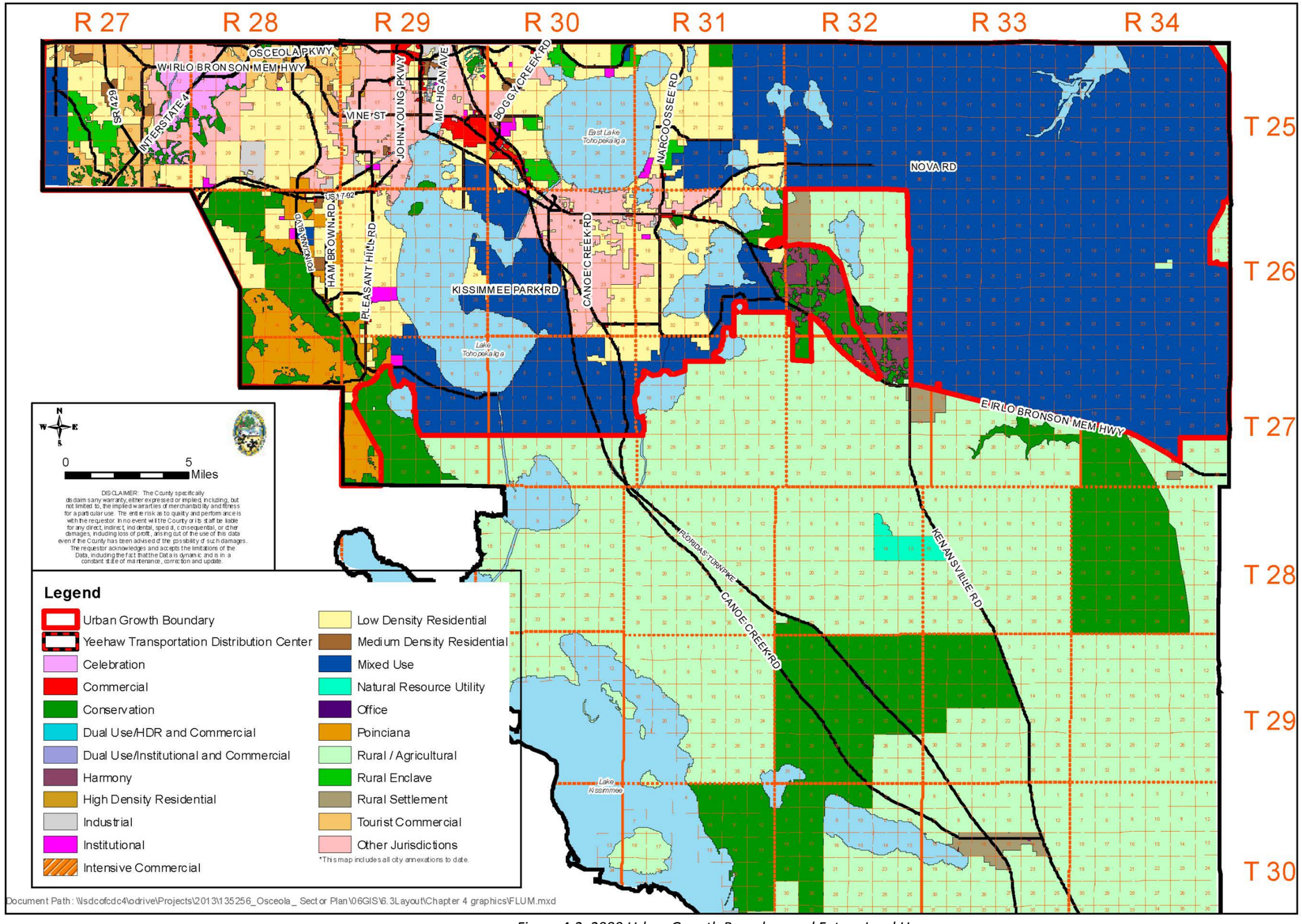

Figure 4-2. 2080 Urban Growth Boundary and Future Land Use

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ELEMENT 1: PLACE TYPES

The Long-Term Master Plan's Framework Map, presented in Figure 4-3, illustrates the overall structure of the new Mixed Use District. One of the key organizing elements of the urban form for the Long-Term Master Plan is the place type. There are five place types in the plan, including urban centers, employment centers, community centers, neighborhoods and special districts. The place types are consistent with those defined for Mixed Use Districts in the Osceola Comprehensive Plan. Table 4-1 summarizes the characteristics of the place types, with more detailed descriptions provided later in this section.

These place types are organized into 16 distinguishable communities, another organizing element described in more detail later in the Chapter. Each community is anchored by a single urban or employment center centrally located among neighborhoods, community and neighborhood centers and special districts. Figure 4-3 shows the locations of the 16 communities. The urban/employment centers are located at intervals along the two regional expressways crossing the planning area and will be served by a dedicated transit system including passenger and light rail.

The primary regional urban center, envisioned to become the Central Business District (CBD) for the planning area, is conceptually illustrated in Figures 4-4 and 4-5. It is expected to have a footprint of around one square mile (equal to the footprint of Downtown Orlando). The CBD is oriented around a transit station where the plan's two regional passenger rail lines intersect. The east-west and north-south expressways are located approximately one mile north and west of the passenger rail hub within the CBD, and the east-west and north-south multimodal boulevards are approximately one mile to the south and east. These heavily traveled and wide expressways and boulevards form the boundary for the CBD.

Because of its central location in the North Ranch Planning Area and access provided by two passenger rail lines and expressways, the CBD will target diverse and dynamic industry clusters and become one of the largest primary job centers of the region, expected to have over 30,000 employees by buildout.

A new college campus would be located near one of the transit stations in the CBD. This campus will be comparable to the size of Vanderbilt University in Nashville, Tennessee, the main campus of the University of Texas at Austin, and the Coral Gables campus of the University of Miami. The campus can be designed to accommodate the specific needs of the higher-education institution that ultimately locates there. Other locations or satellite campuses are also possible. Regionally oriented office buildings and civic facilities, such as a regionally oriented performing arts center, will also locate in the CBD. Retail uses supporting office and civic uses, interspersed with multi-family buildings, will round out the development mix.

Special districts are located within the larger CBD community to provide additional opportunities for research parks seeking proximity to the targeted industries and the college in the CBD itself. These special districts are located at expressway interchanges and at multimodal boulevard intersections. The CBD community also includes Type 2 and Type 1 neighborhoods, including lower intensity neighborhoods adjacent to the Taylor Creek Reservoir and protected conservation lands.

Fifteen additional regional urban and employment centers are planned, each with complementing community and neighborhood centers. The typical organization of place types within these communities is shown in Figure 4-6.

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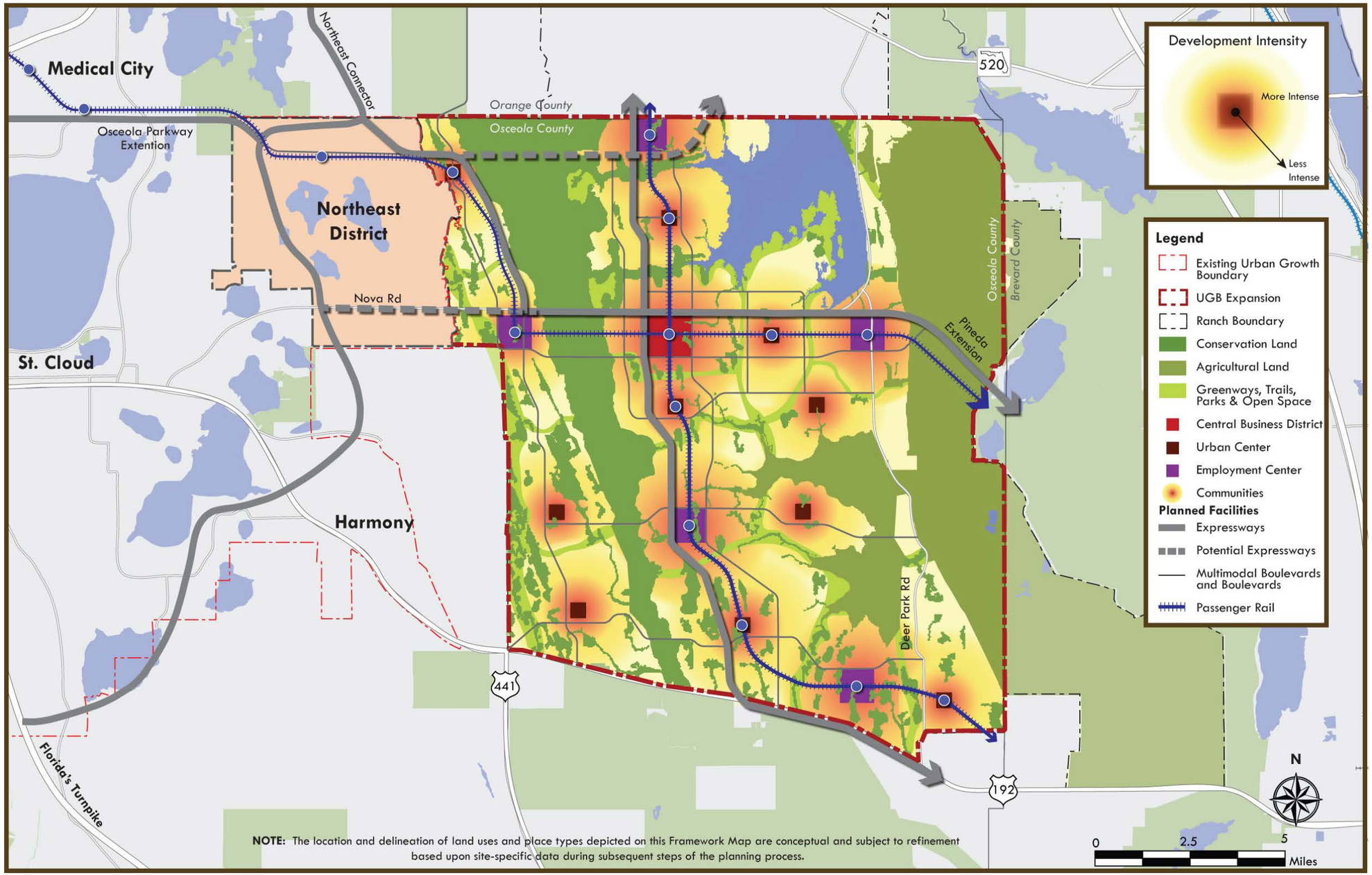

Figure 4-3. Framework Map for Long-Term Master Plan

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Table 4-1. Place Type Characteristics

Place Type	Characteristics
Urban center	"Downtown" area for each community, with high-intensity, mixed use development, including regionally oriented office, retail and civic use and high intensity residential development
Employment center	Regional job core with high-intensity office and supporting retail uses and a limited amount of higher-intensity residential development
Community center	Moderate-intensity, neighborhood-oriented retail, office, and civic uses serving approximately four neighborhoods
Neighborhood center	Low-intensity retail, office, and civic uses located at or near the center of a neighborhood
Type 2 neighborhood	Higher-intensity residential development surrounding major centers and special districts. Each is organized by half-mile radius pedestrian walksheds that surround a neighborhood center
Type 1 neighborhood	Lower-intensity residential development organized by half-mile radius pedestrian walksheds oriented around a neighborhood center
Special districts	Regionally oriented uses such as industrial operations, distribution centers, research parks, production facilities, or large-scale campuses that require standards adapted to their individual form

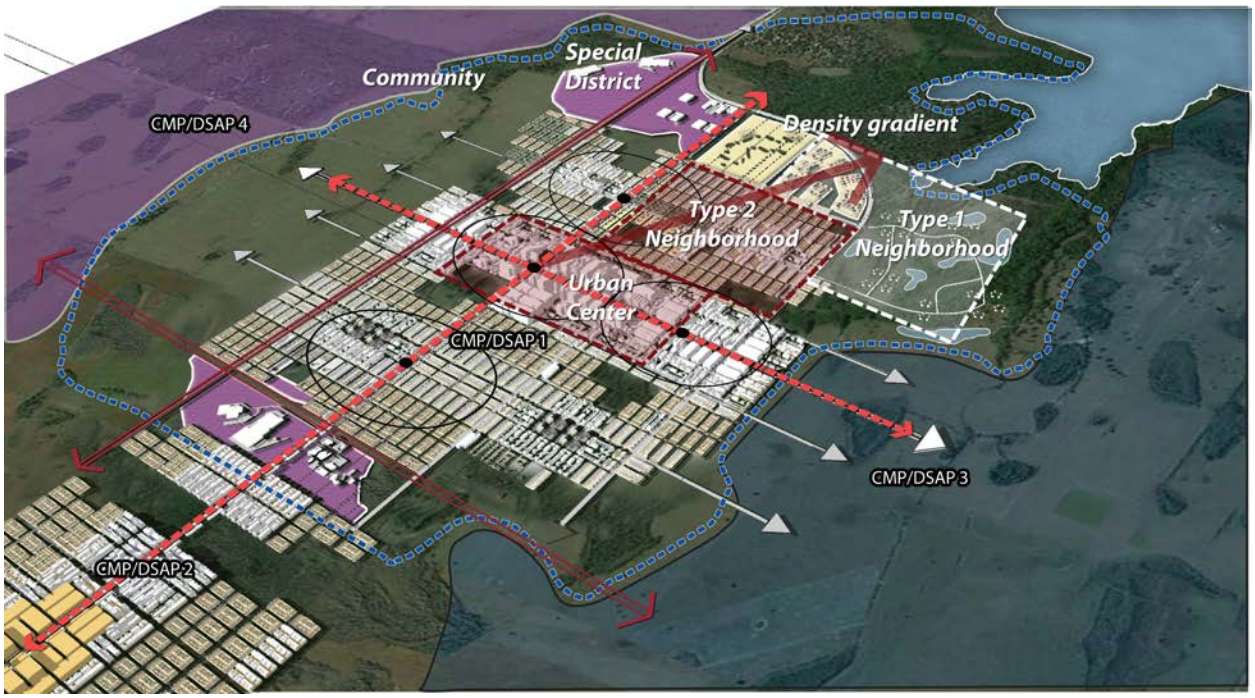


Figure 4-4. Organization of Place Types in and around the Primary Urban Center

Figure 4-5. Illustrative Depiction of the Primary Urban Center

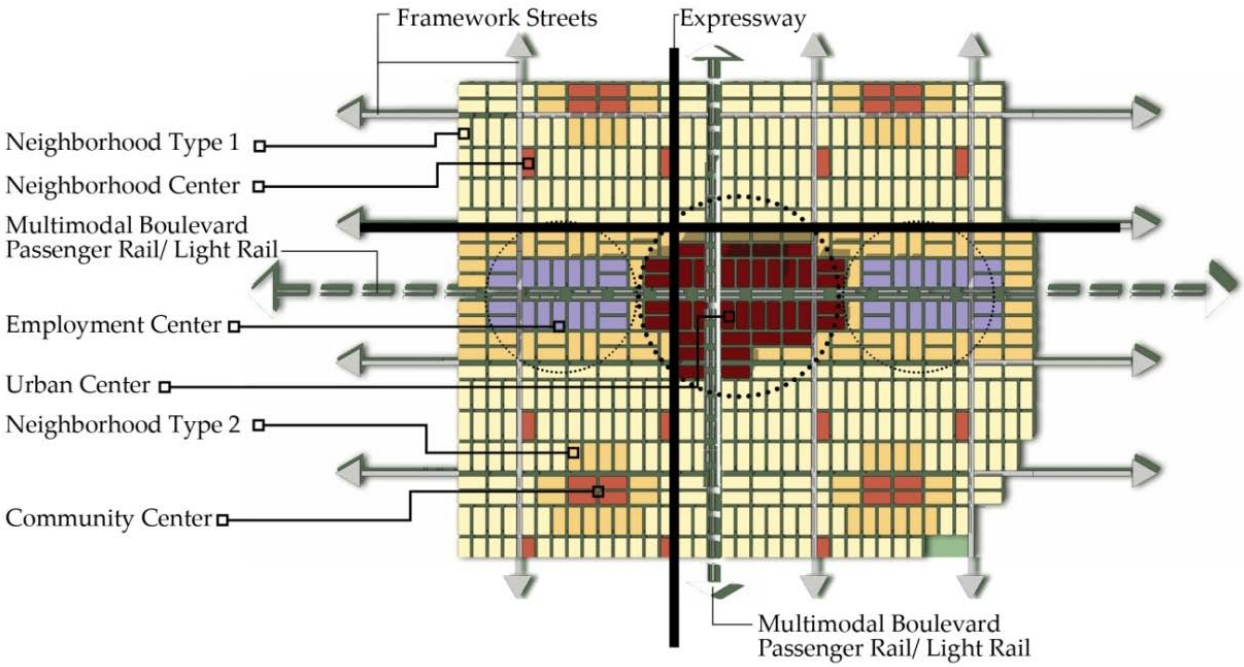


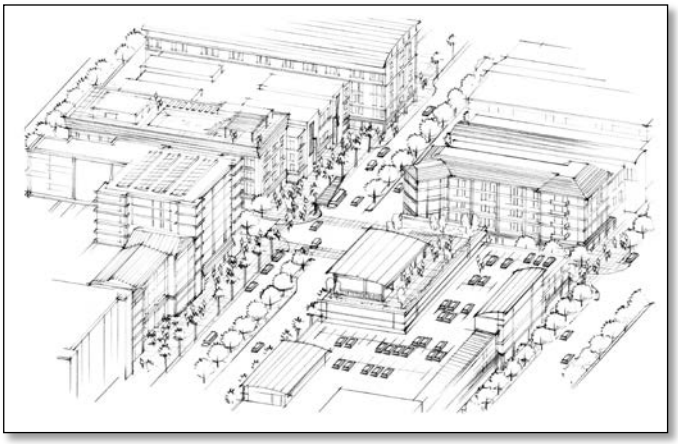
Figure 4-6. Typical Organization of Place Types in Communities

Key organizing principles for communities include:

- The regional urban or employment center at the heart of the community is typically surrounded by four community centers. Community centers are located among four neighborhoods and designed for small to medium-sized retail uses such a grocery store, civic uses such as a recreational center, medium sized parks and possibly a middle or high school.
- The community center is ringed by medium to high-density Type 2 neighborhoods, each organized into half-mile radius pedestrian walksheds surrounding a neighborhood center. Type 2 neighborhoods are bordered by multimodal boulevards and, where possible, transit stations are located in the community centers serving those Type 2 neighborhoods.
- Lower intensity Type 1 neighborhoods surround the ring of Type 2 neighborhoods, with each organized by a pedestrian walkshed around a neighborhood center. Bike and pedestrian paths connect Type 1 neighborhoods to adjacent community centers. To the extent feasible, feeder bus service provides transit connections from these neighborhoods to passenger rail stations.
- Neighborhood centers are designed for small scale retail and civic uses, small parks and possibly an elementary school and/or a limited amount of retail.

Each of these place types are described further below.

Regionally Oriented Centers



As described above, regional urban and employment centers, including the CBD, are urban-oriented business and commercial areas that foster and focus regionally significant economic development opportunities. They draw employees and customers from the North Ranch Planning Area and beyond and as a result, are located along expressways, multimodal boulevards and passenger transit lines that provide convenient access and allow for development intensities commensurate with high transportation capacities. Each of the 16 regional centers will have a different orientation and mix of uses that affect its intensity and footprint.

Urban Centers

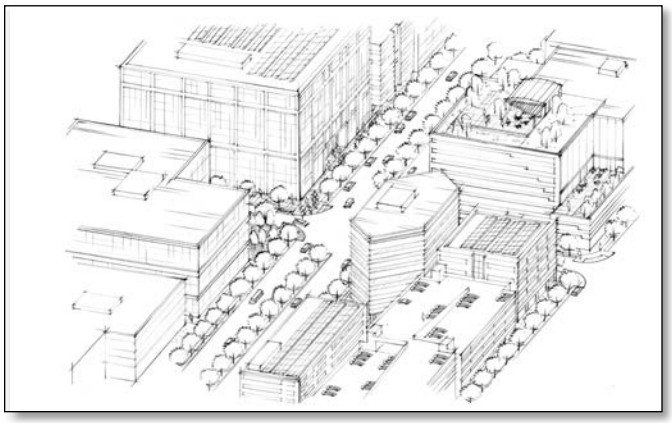
The footprints and intensities of urban centers, including the CBD, will vary relative to the size of their surrounding communities. The CBD is the largest of the urban centers, intended to not only serve its surrounding community but the North Ranch Planning Area and southeast quadrant. Details for the CBD are provided in the previous section. Regardless of their footprints, all of the urban centers are designed for a rich mix of uses, including medium to high-intensity office buildings, high-tech industries, civic uses, medium- to high-rise hotels and residential condominium and apartment buildings. Surface and/or structured parking will be located in the fringe areas to intercept expressway and multimodal boulevard traffic before it flows into each center.

Each urban center will have a well-structured street grid. Buildings will be uniformly close to streets to create a sense of enclosure. Where practical, retail and service uses will be located on the first floor of taller buildings to enhance the walking experience. Urban parks will be located throughout, with more

numerous, smaller parks located in the fringe areas and larger parks located in the higher intensity areas. Stormwater will be conveyed to ponds designed into parks or other open space amenities on the edges of the center.

Employment Centers

Employment centers are located along the two multimodal corridors about 5 to 7 miles from the CBD and each other to the north, east, and south. These centers are job cores designed for around 30,000 employees each. They will have higher-intensity office and commercial buildings and hotels with a limited amount of higher-intensity civic and residential uses. Because of their need for high-speed and high-capacity access, they are located on the multimodal corridors, and designed to optimize density and pedestrian access to one or more centrally located passenger rail transit stations.



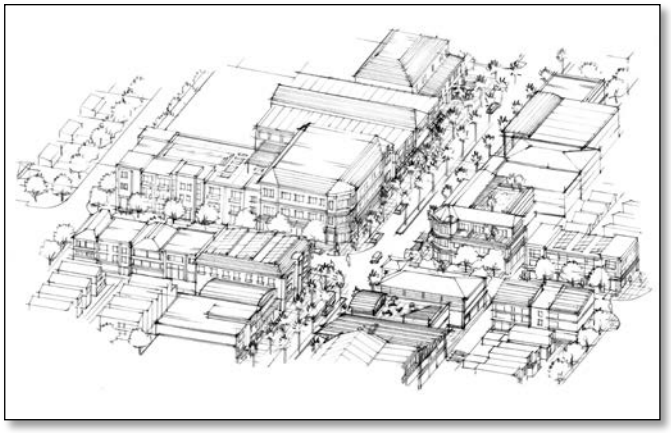
Expressways and multimodal boulevards will define the edges of these centers, and much of the surface and structured parking will be located around the ramps and intersections of these facilities to intercept traffic destined for buildings and uses within the center.

The employment centers will have a fine-grained local street network and buildings located adjacent to streets to create a sense of enclosure. To the extent practical, retail and service uses will be located on the first floor of taller buildings. Urban parks will be provided throughout and intended primarily for nearby employees and residents. As in the urban center, stormwater will be conveyed to the edges with opportunities to intercept and treat water closer to the source, to the extent practicable.

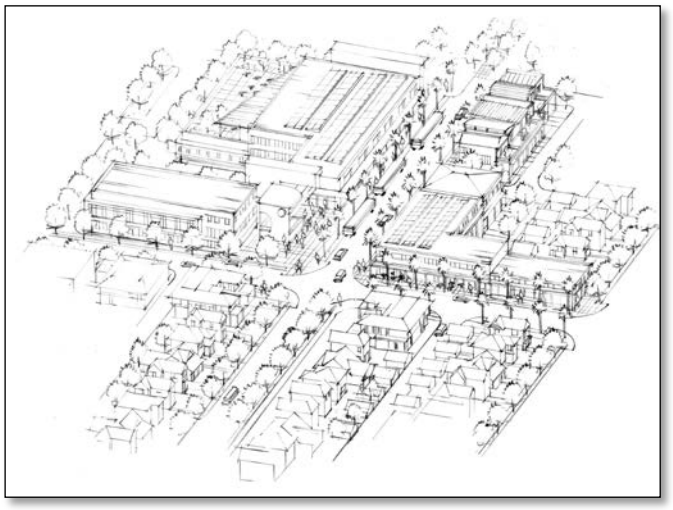
Community- and Neighborhood-Oriented Centers

Community Centers

Community centers are designed to serve approximately four neighborhood pedestrian walksheds and provide locally-oriented close and convenient access to places to shop, eat, and recreate. Their size can range from a single medium-sized store (such as a grocery) with an adjacent park to a development cluster that includes a high school, grocery and drug stores, several churches and a medium-sized park.



Neighborhood Centers



Each neighborhood will have a neighborhood center, a place intended to be the heart of the community where residents and visitors are encouraged to congregate. Neighborhood centers will have at least one outdoor public space for this purpose, designed with pedestrians in mind. Centers will be within a 5- to 10-minute walking distance of many residents, although they need not be in the geographical center of the neighborhood. Centers will vary in size, use, and intensity depending on the size and density of the surrounding residential uses. In an urban neighborhood, where the number of houses within walking distance is high, there may be some local shops and small offices in addition to civic uses.

Neighborhoods

While centers and special districts are vibrant and active places intended as focal points for commerce and exchange, neighborhoods create a different context, one that fosters stability, safety, and sense of community. They are typically organized by half-mile-radius pedestrian walksheds, with neighborhood centers providing a local place to gather. All neighborhoods are anticipated to be within a range of 800–1,200 units apiece. Higher-density, Type 2 neighborhoods with a minimum of 8 dwelling units per acre are located closer to regional and community centers or major transit lines. Type 1 neighborhoods, with a density of 5 dwelling units per acre form the remainder of most neighborhoods. Neighborhoods typically occur within a fine-grained network of streets.

Neighborhoods allow for a variety of home types, from single-family on large lots to townhomes and apartments. The Mixed Use District standards encourage that a block framework be maintained in order to allow for neighborhood transitions to higher densities over time. The block network can be created through streets, dedicated rights-of-way, trails and other mechanisms that give the appearance of large areas but still have the flexibility to transition to an urban framework. Within this block framework, houses can vary from single-family uses across multiple blocks, to blocks consisting of 60 units.

Figure 4-7 illustrates how neighborhoods can be created to allow for a variety of home types while accommodating transition over time.

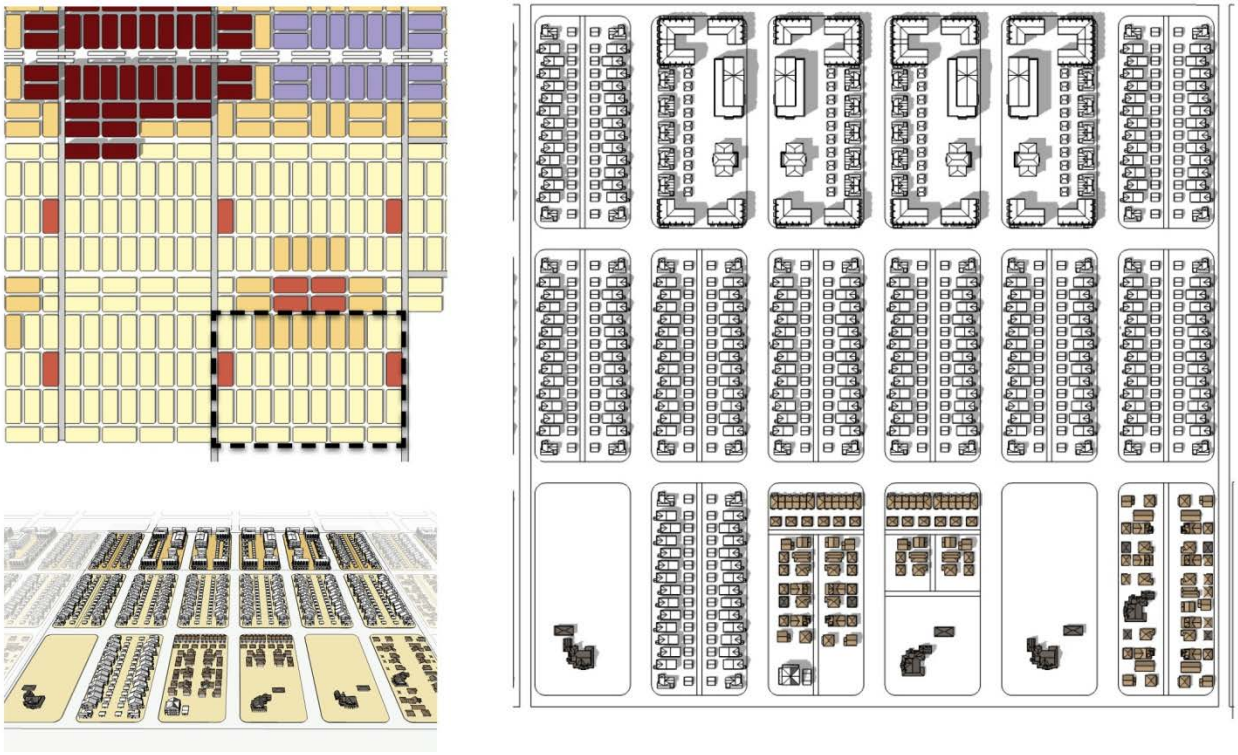
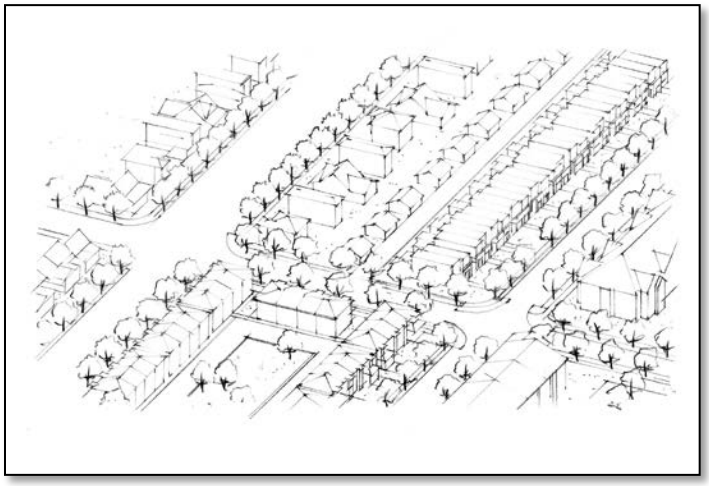


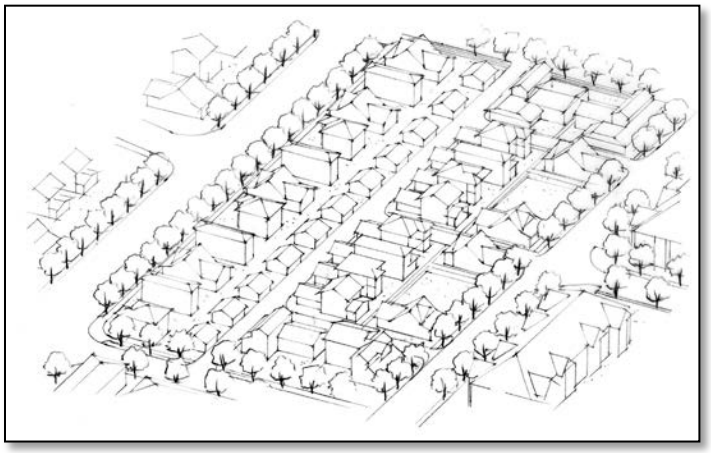
Figure 4-7. Example Illustration of a 1,156-Unit Neighborhood with Diversity in Housing Types

TYPE 2 NEIGHBORHOODS



Neighborhood Type 2 is focused on providing a transition between urban, employment and community centers and Type 1 Neighborhoods. They feature a carefully integrated mixture of traditional neighborhoods with attached and detached units, mixed use developments, schools, parks, recreation centers, and small scale commercial, located within a 5- to 10-minute walk of urban, employment and community centers. The mix of housing types is oriented more towards attached units than detached units. Limited corner commercial and service uses are permitted. They also feature highly-connected street systems with transit facilities, bike lanes, bike routes and pedestrian-friendly sidewalks that contribute to the multimodal character.

TYPE 1 NEIGHBORHOODS



Neighborhood Type 1 represents the most predominant place type within the planning area. They feature a carefully integrated mixture of 800 to 1,200 housing units located within a 5- to 10-minute walk of a neighborhood center that can include neighborhood-scaled commercial, civic or open space uses. The mix of housing types is oriented more to detached than attached units, and some limited corner commercial and service uses would be permitted. Higher housing densities would be located near neighborhood centers, and transition to lower densities at the edges of each neighborhood. Neighborhood Type 1 also features highly-connected street systems with alleys, sidewalks, bikeways, and transit facilities that contribute to the multimodal character.

SPECIAL DISTRICTS

Special districts are intended to provide a variety of development contexts for economic development uses that do not meet the standards found in mixed use districts, including access to transit, walkability, and other uses. Uses could include distribution centers, research parks, large-scale campuses, and other similar uses.

ELEMENT 2: DEVELOPMENT PROGRAM

As illustrated in Figure 4-3, the Long-Term Master Plan's designated conservation lands cover 36,700 acres, agricultural lands cover another 17,100 acres and the expanded Taylor Creek Reservoir spans 7,100 acres. In total, approximately 60,900 acres, close to half of the gross acres in the North Ranch Planning Area in Osceola, will be protected by conservation easements, covenants or other restrictions. See Table 4-2. These protected areas include large swaths of land along the St. Johns and Econlockhatchee River basins, two of seven environmental jewels identified by Naturally Central Florida. They further create a regionally significant environmental and open space framework that preserves wildlife movement and migration while allowing limited, low-impact human access to natural spaces, where appropriate.

Approximately 72,100 acres, or 54 percent of the North Ranch Planning Area in Osceola, is available for urban development, including supporting land uses such as greenways and trails, parks and open space. Of those developable acres, around 20,000 acres are expected to be used for greenways, trails, parks and open space plus major stormwater management systems, which is significantly more than required to meet the County's adopted level-of-service standard for recreation and open space. See Table 4-2. In combination with the framework of protected environmental and agricultural lands noted above, around 61 percent of the North Ranch Planning Area will remain in some form of open space. The locations of these greenways are generally depicted on Figure 4-3. Details for these unique areas will be developed in subsequent CMPs and Detailed Specific Area Plans (DSAPs). The remaining 52,100 acres, or 39 percent, will be used for urban development and transportation rights of way.

Table 4-2. Estimated Long-Term Open Space and Developable Land

Conservation vs Developable Area	Acres	Percent
Conservation	36,700	28
Agriculture*	17,100	13
Reservoirs	7,100	5
Environmental Plan Subtotal	**60,900**	**46%**
Greenways and trails, parks and open space	20,000	15
Transportation rights-of-way for major roads and transit	5,000	4
Net urban developable**	47,100	35
Developable Area Subtotal	**72,100**	**54%**
Total	**133,000**	**100%**

* Includes lands for proposed Pennywash/Wolf Creek Reservoir

** Net of total urban developable acres minus acres required for greenways and trails, parks and open space, stormwater and transportation

Table 4-3 presents the allocation of the place type acreages within the net developable land area. Given the size and long planning horizon for this master plan, these acreages are approximate and subject to refinement based upon site-specific data during the preparation, review, and adoption of CMP/DSAPs. However, they reflect a reasonable distribution of development types based on the best available data at this stage of the planning process.

Table 4-3. Overall Development Program

Place Type	Urban Developable Acres	Percent of Total
Urban centers	3,500	5
Employment centers	2,600	4
Community centers	2,700	4
Neighborhood centers	4,100	6
Neighborhoods	51,600	71
Special districts	7,600	10
Total	**72,100**	**100%**

ELEMENT 3: BUILDING COMMUNITIES

The North Ranch Planning Area is organized into a series of 16 communities ranging in size from 5,000 to 20,000 acres. Each community is designed with a density gradient: the highest densities are located in the urban or employment center, with higher intensity Type 2 Neighborhoods adjacent to centers, and lower intensity Type 1 Neighborhoods extending from the Type 2 Neighborhoods to the edges of the community. Community and neighborhood centers are regularly spaced throughout the neighborhoods. Opportunities for special districts are also provided throughout each community, with most located near major transportation facilities to maximize access. As noted above, urban and employment centers are

located along a passenger rail or bus rapid transit line to optimize multimodal access and connectivity. Street blocks are regularly sized and shaped in and around centers and become less rigid towards community edges. Conservation and agricultural lands along with greenways will form the boundaries for each community. The greenways will connect larger wetlands along community edges and will include major stormwater systems, regional and community parks, and recreational trails.

These complete communities will generally define the location for CMP/DSAPs. The 16 communities shown in the Framework Plan are intended to generally define the study areas for such plans. As illustrated in Figure 4-8, the maximum size of each CMP/DSAP will be two employment and/or urban centers and their supporting residential uses.

A key component of the timing of the development of communities depends on regional access. As such, the programmed extension of an expressway and/or a multimodal boulevard to a major center will influence the phasing of CMP/DSAPs. The staging of non-transportation infrastructure, such as central water and wastewater facilities, will be coordinated with the phasing of the CMP/DSAPs.

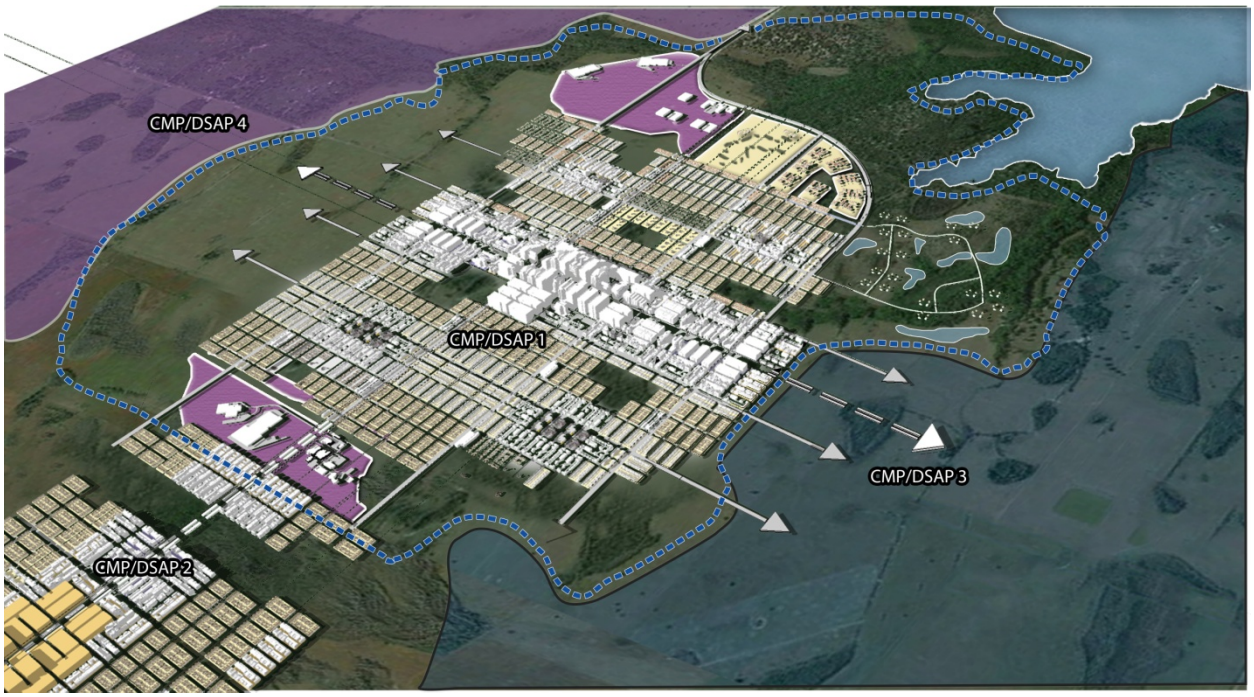


Figure 4-8. Inset of the Mixed Use District Illustration of CMP/DSAP Phasing

ELEMENT 4: MULTIMODAL CONNECTIVITY

Since the advent of the automobile, transportation networks have reflected the speed and flexibility of cars. There have been efforts in recent years to create multimodal transportation networks that promote walking, biking, and transit to support more compact development patterns and to reduce vehicular miles traveled (VMT). Reducing VMT brings a number of benefits, ranging from reduced air emissions, reduced energy consumption, reduced urban footprints, and healthier lifestyles. The master plan reduces VMT through the walkshed orientation of neighborhoods and centers, augmented by convenient and safe transit and bicycle networks. Further, a hierarchy of centers, organized around travel sheds, makes all trips, including auto trips, shorter.

The multimodal transportation network and supporting development patterns in the North Ranch Planning Area are designed to optimize connectivity among the non-auto travel modes. Figure 4-9 illustrates the network and urban design in the CBD community where the two passenger rail lines cross. The passenger rail alignments in the corridors are located in their own rights of way and stations are spaced to optimize their travel speeds. The most intense development within the CBD community occurs within a quarter mile of proposed transit stations. Community and neighborhood centers outside the station areas are located to provide walkable destinations for those living in neighborhoods. Regional walking and biking trails are located along the periphery of the community and connect to other communities throughout the North Ranch Planning Area. These trails also connect to the bicycle and walking networks crisscrossing neighborhoods and centers within the CBD community.

Bicycle and Pedestrian Networks

The ability to conveniently walk to destinations and transit is the key design objective of the multimodal network. Throughout the planning area, destinations typically will be within a half mile or less of homes to make walking a viable travel option for most trips. Biking and transit networks will reinforce walking by providing convenient and safe access to destinations beyond the half-mile walkshed.

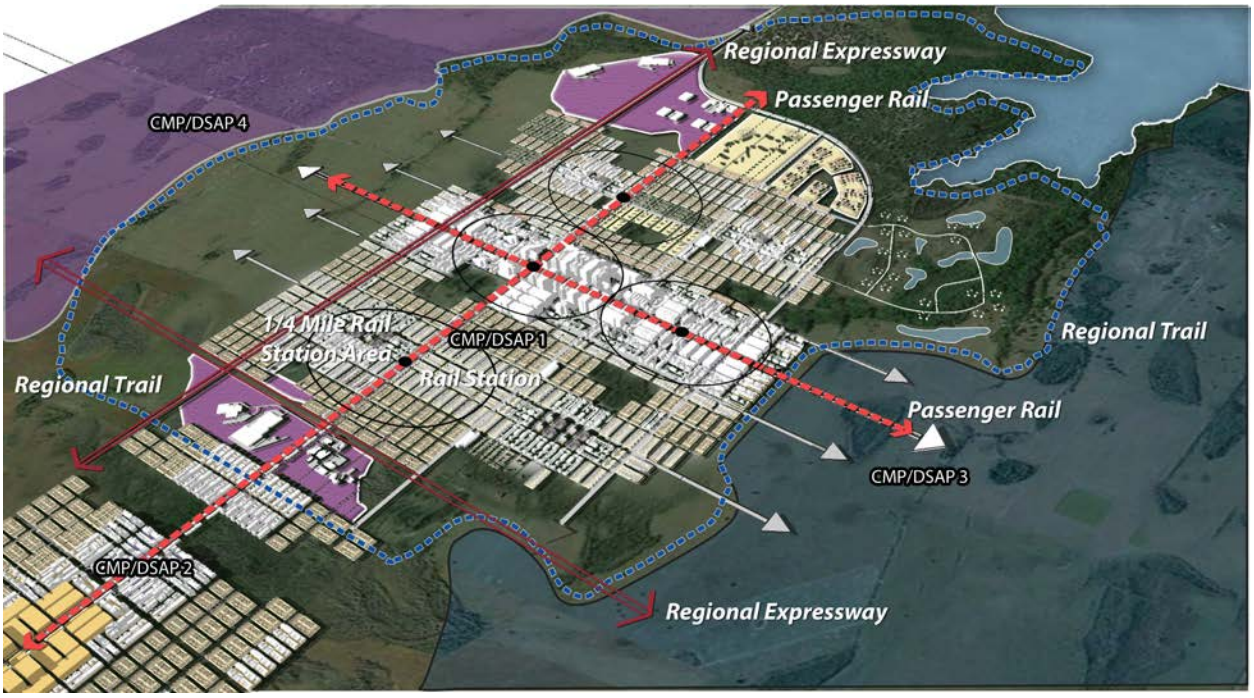


Figure 4-9. Multimodal Network Design

Both Type 1 and Type 2 neighborhoods are oriented around small-scale centers with uses such as elementary schools, neighborhood parks, small-scale retail and civic uses. All major centers are designed with higher intensities, mixed uses, gridded street networks, and street amenities that promote and enhance walking. They are connected with each other in ways that support the design and operations of premium transit service, such as passenger rail and bus rapid transit.

Bicycle networks, where cyclists either have dedicated bike lanes on a framework street or separated bike paths, will connect neighborhoods with each other and with major centers and special districts. These networks are intended to make bicycling a functional travel mode for work and shopping. Bike

trails located along the edges of conservation areas and connecting neighborhoods with regional parks will promote recreational biking.

Passenger Rail and Transit

As noted above, two regional passenger rail lines are planned along the plan's two major multimodal corridors, where the planning area's highest intensity development is located, to optimize multimodal travel. See Figure 4-10. Both rail lines are designed to be part of larger regional transit systems, such as the Orlando to Melbourne rail line presented in Chapter 5, but can operate without those connections. Both corridors could ultimately include multiple types of rail transit, including longer distance commuter rail service with less frequent stops (around 3 to 5 miles spacing on average) and shorter distance light rail type service with more frequent stops (around a 1-mile spacing on average). Sub-regional transit will likely be bus-rapid transit (BRT) with buses running in separated rights of way or given priority treatment on multimodal boulevards. All major centers in the planning area will be served by either rail or BRT and all will have transit supportive intensities within transit station areas.

Rail, and to the extent practical, BRT, may operate within their own rights of way to simplify rail, transit and traffic operations and to make pedestrian access to stations safer and more convenient. Larger centers and communities, such as the CBD community, will likely have multiple stations, each with high-intensity development within a half-mile walkshed. Expressways and multimodal boulevards will be located approximately one mile from the stations to minimize potentially difficult and dangerous pedestrian crossings within the station areas and to avoid dividing the urban fabric.

As noted above, the CBD is located where these two major corridors cross. This location increases its attractiveness to a variety of uses, ranging from large-scale employers looking to attract employees from across the southeastern quadrant, to major civic uses, such as a performing arts center that draws patrons from across the southeast quadrant, to unique, large-scale uses, such as a major university that would find the multimodal access and proximity of high-intensity housing a selling point for prospective faculty and students.

Employment centers are spaced around five to seven miles from the CBD and each other along both corridors. This spacing is typical of job cores, such as the spacing of Maitland Center and the Heathrow Center along I-4 north of Orlando. Smaller urban centers are interspersed between the CBD and employment centers. The primary difference between these new centers versus those on the I-4 corridor is their multimodal orientation and design, with development patterns geared towards walking and transit rather than the automobile.

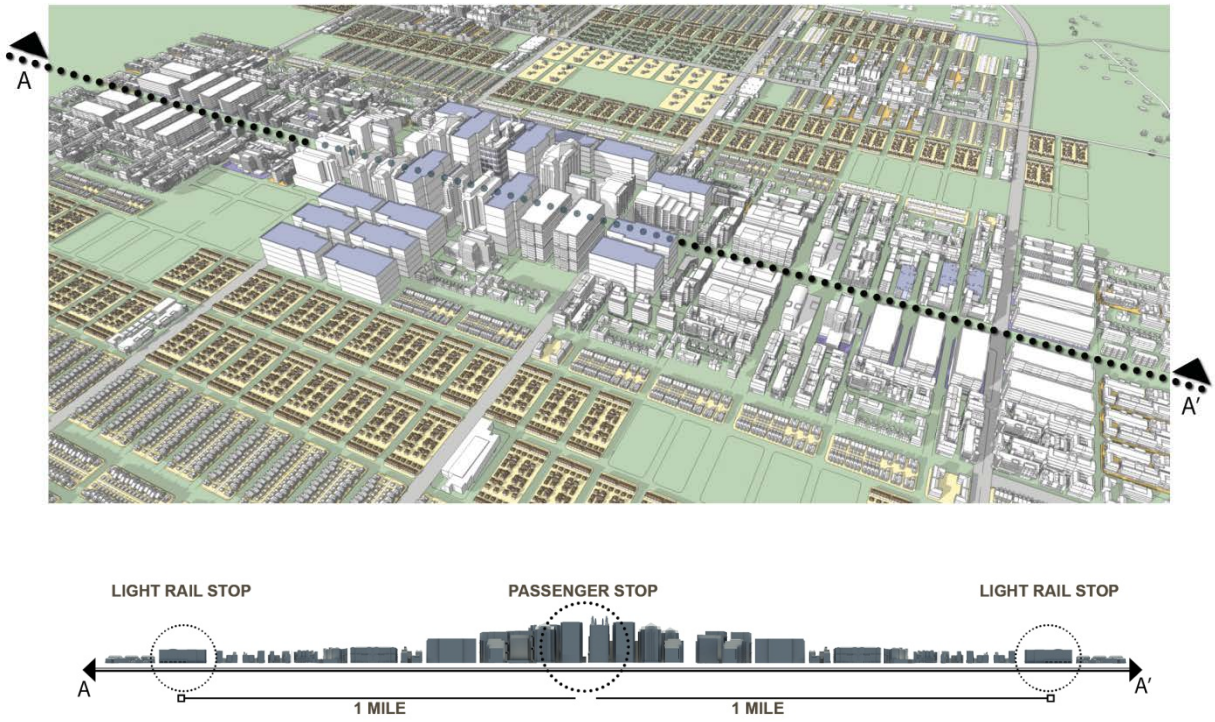


Figure 4-10. Primary Urban Center Densities along Passenger Rail

ELEMENT 5: COMMUNITY AMENITIES

OPEN SPACE AND NATURAL RESOURCES

The conservation areas of the Long-Term Master Plan's framework protect the north-south rivers and wetland strands located adjacent to and in the planning area. The design and magnitude of these areas will preserve the quality and functionality of the natural systems over the long term. The urban form proposed for the remaining developable lands increases development densities, creates a rich mix of land uses, and provides multimodal connectivity through an integrated street network, pedestrian orientation, and transit accessibility to reduce environmental impacts compared to conventional suburban development. In addition to the form characteristics, future development in the North Ranch Planning Area in Osceola will use a number of techniques, described in the following sections, to help preserve the integrity of natural and urban open space systems in the planning area to increase sustainability and promote a clean and healthy environment.

DEVELOP OPEN SPACE SYSTEMS

The Environmental Plan detailed in Chapter 3 forms a regionally significant and connected system that protects natural flows of water and wildlife. As illustrated in Figure 4-12, the designated conservation and agricultural lands cover 53,800 acres, or 41 percent of the planning area. This natural system will extend into the plan's neighborhoods and centers via an interconnected system of greenways and trails, parks and open space that covers an estimated 20,000 acres. Combined with 7,100 acres of an enlarged Taylor Creek Reservoir, these open space systems will extend over the majority of the planning area.

The plan's greenways include regional and community parks, major stormwater retention systems, and walking and bike trails. They will have more organic and natural features along urban edges and become more formal towards higher intensity neighborhoods and centers. The system will define neighborhood pedestrian walksheds and centers. Stormwater systems will be designed so that, consistent with state standards, stormwater is cleansed through a series of ponds and outfalls before discharge into major wetlands and tributaries. Appropriately sited trails and parks will parallel these natural systems to provide recreational opportunities and connections.

CMP/DSAPs will more precisely define the boundaries of the conservation and agricultural lands presented on the Framework Map. Both plans will also define the greenways and trails, parks and open space for each detailed specific area with the intent of creating an interconnected and functional system. The CMP/DSAP will identify the locations of regional and community parks, major recreational trails, and major stormwater systems.

Greenways and Trails System

The Greenways and Trails System shows conceptual alignments throughout the North Ranch Planning Area, including connections off-site with the planned Florida National Scenic Trail. One suggested location of the Florida National Scenic Trail connection begins at US 192 and extends north along the agricultural lands that flank the eastern portion of the planning area. See Figure 4-11. Both the "Mosaic Trail" and the "Western Deseret Tail" extend north from a potential western spur of the Florida National Scenic Trail that parallels US 192 to the south. The Mosaic Trail would be located within the Central Wetlands/Uplands Mosaic conservation lands, and the Western Deseret Trail would run along the western boundary of the planning area and the eastern buffer area of the Econ Swamp north of Nova Road. Both trails would reconnect in the TM Ranch mitigation bank to potentially connect with the Florida National Scenic Trail further north. The "Eastern Deseret Trail" would run along the eastern edges of the communities that stretch north and south through the planning area.

A series of east-west trails would connect the four north-south trails. They will be designed to follow the greenways illustrated in the Framework Map. As noted above, regional parks would locate along these trails. Urban recreational trails and paths will be designed to connect centers to the Greenways and Trails System.

Specific locations for these planned trails will be determined through CMP/DSAPs. The locations will be designed to ensure connectivity of the system throughout the planning area and minimize impacts to conservation areas, wetlands, and agricultural operations.

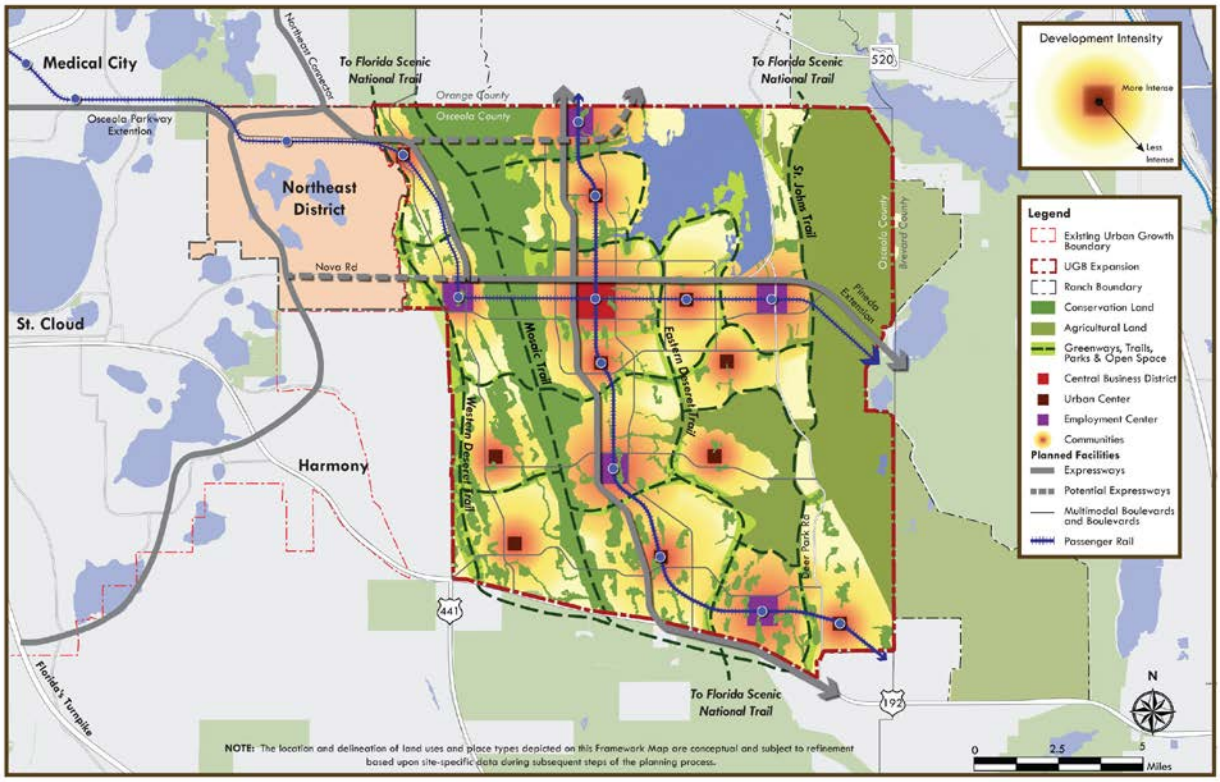


Figure 4-11. Greenways and Trails System

PROTECT AND CONSERVE WATER

Central Florida has long depended on water from the Floridian Aquifer. Chapter 6 addresses the future demand for water, both potable and non-potable, in the North Ranch Planning Area along with the likely sources.

To ensure this balance of water, development in the North Ranch Planning Area will employ water conservation techniques such as:

- Low-flow plumbing in all new residential and non-residential buildings
- Use of drought-tolerant plants and/or native plants for landscaping consistent with the requirements of the Land Development Code
- Use of lowest-quality water suitable for its intended use, such as rainwater harvesting
- Reclaimed water-metering at the point of service
- Minimize the amount of impervious surface area for development, where practicable
- Timed irrigation and/or drip irrigation to minimize losses from evapotranspiration
- Installation of rain-sensor devices or automatic switches to override landscape irrigation when adequate rainfall has occurred

COMMUNITY CHARACTER

People choose to live in quality communities so they can have a better quality of life. The character of a place, including its streets, homes, workplaces, shops and public spaces, significantly affects human well-being. Quality communities respect resources, preserve open spaces, provide multimodal access, and provide a variety of choices and activities. Neighborhoods in the North Ranch Planning Area in Osceola will strive to provide the following features:

- Design legibility – street layouts and urban design features will provide easily recognized cues to foster a strong sense of place. Those cues include defined neighborhood and center boundaries, development intensities that decrease in measure away from centers, and blocks that become larger and less formal as densities decrease.
- Quality public spaces – streets, parks and recreational trails that are well-landscaped will promote a sense of nature and community. Streets will feature sidewalks, street furniture, on-street parking and create a sense of enclosure or safety.
- Pedestrian scale – neighborhoods will be designed around pedestrian walksheds, with safe and convenient pedestrian networks that promote walking to centers and recreational walking trails that interconnect throughout communities. Design streets that provide an appropriate sense of scale and enclosure.
- Security – well-defined neighborhoods, with neighborhood and community centers will encourage residents to gather and build a sense of community; orient home living areas, outdoor balconies and porches towards streets to increase surveillance; limit residential frontages on major streets where traffic prohibits street activity.
- Variety – a variety of housing types and architectural styles will be provided within pedestrian walksheds and within blocks, while maintaining a consistent building scale at both levels.

EDUCATION, HEALTH CARE, AND CULTURAL AMENITIES

The Long-Term Master Plan anticipates a fully functioning city in the planning area, complete with a high-intensity, mixed use urban center and a variety of centers and neighborhood types. Educational, health care, and cultural amenities of all scales are expected. As noted above, the largest, regionally oriented civic uses, such as museums, a performing arts theater and civic center are expected to locate in the urban center. Smaller scale entertainment venues, such as movie theaters, are expected in retail/town centers. Likewise, a regional hospital would locate near the urban center, with smaller scale wellness centers located closer to residents in community centers. Educational venues for all levels are expected to locate throughout the planning area, including universities and community colleges, vocational schools, high schools, middle schools and elementary schools.

SUMMARY

It is clear from the Osceola County Comprehensive Plan that the County is seeking a new way for the County to grow and prosper. Many residents in Central Florida are looking for compact, walkable, and safe communities that provide multimodal access to jobs and other amenities for which the region is known. The North Ranch Planning Area in Osceola presents a unique opportunity to accommodate many of those who will move to the Central Florida region in the types of communities envisioned by “How Shall We Grow” and Osceola County's Mixed Use Districts.

CHAPTER 5. TRANSPORTATION

INTRODUCTION

Much of Florida's economic output occurs within the Florida megaregion as depicted in Figure 5-1, and that output depends on connectivity to and within the megaregion. This relationship was recognized by the Florida Department of Transportation (FDOT) when it shifted its planning and funding focus to the Strategic Intermodal System (SIS).The State of Florida is continuing its economic development focus with a 50-year assessment of the need for new or enhanced transportation corridors within the state. To further that purpose, Governor Scott created the East Central Florida Corridor Task Force to address the region's need for new or enhanced transportation corridors and evaluate and develop consensus recommendations on future transportation corridors serving established and emerging economic activity centers in portions of Brevard, Orange, and Osceola Counties. The Task Force is charged with presenting its findings and recommendations to the Governor by December 1, 2014.

The North Ranch Planning Area in Orange, Osceola and Brevard counties is located in the Florida megaregion and anchors the eastern end of FDOT's Tampa Bay-Central Florida Study Area. It presents an opportunity to address the regional connectivity gap between Orlando and Melbourne in the context of an overall long-term land plan that speaks to urban growth, environmental protection, regional transportation and sustainable agriculture. As noted in Chapter 2, the North Ranch Planning Area is located in the fast-growing, high-tech-oriented southeast quadrant of Central Florida.

This chapter begins by setting the regional transportation context, with a focus on the connection between transportation and economic development, which is grounded in the analysis set forth in Chapter 2. It then presents existing and planned roadway and transit networks through and around the North Ranch Planning Area in Osceola. It also presents major roadway and transit improvements needed to improve connectivity in the southeast quadrant, including closing the regional connectivity gap and accommodating travel demand from the urban development outlined in this Long-Term Master Plan, based on long-range travel demand forecasts for both roads and transit and preliminary recommendations made in a series of studies that preceded the creation of the East Central Florida Corridor Task Force. This Long-Term Master Plan's recommendations will be updated to reflect the Task Force's findings during the coordinated state agency review process in late 2014. The chapter also includes proposed multimodal planning and design guidelines based on best practices by various transportation agencies and planners.

REGIONAL CONTEXT

Increasingly, income-importing businesses, such as the Burnham Institute, are moving to Central Florida for a number of reasons, including gaining a competitive edge in attracting talented employees looking for a climate amenable to year-round outdoor activities. High-tech industries are increasingly moving to the southeast quadrant of the Orlando metro area.

FLORIDA'S MEGAREGION

The overwhelming majority of Florida's economic output occurs within the Florida megaregion, 1 of 11 megaregions defined by the Regional Plan Association in its report, *America 2050*, and depicted in Figure 5-1. The 2010 population of the Florida megaregion ranks fifth among the 11 U.S. megaregions and its gross domestic product (GDP) ranks sixth, rivaling that of Australia. Over the next 40 years, the

population of the Florida megaregion is expected to add 14 million new residents, an increase of 80 percent, which is fifth among the 11 megaregions.

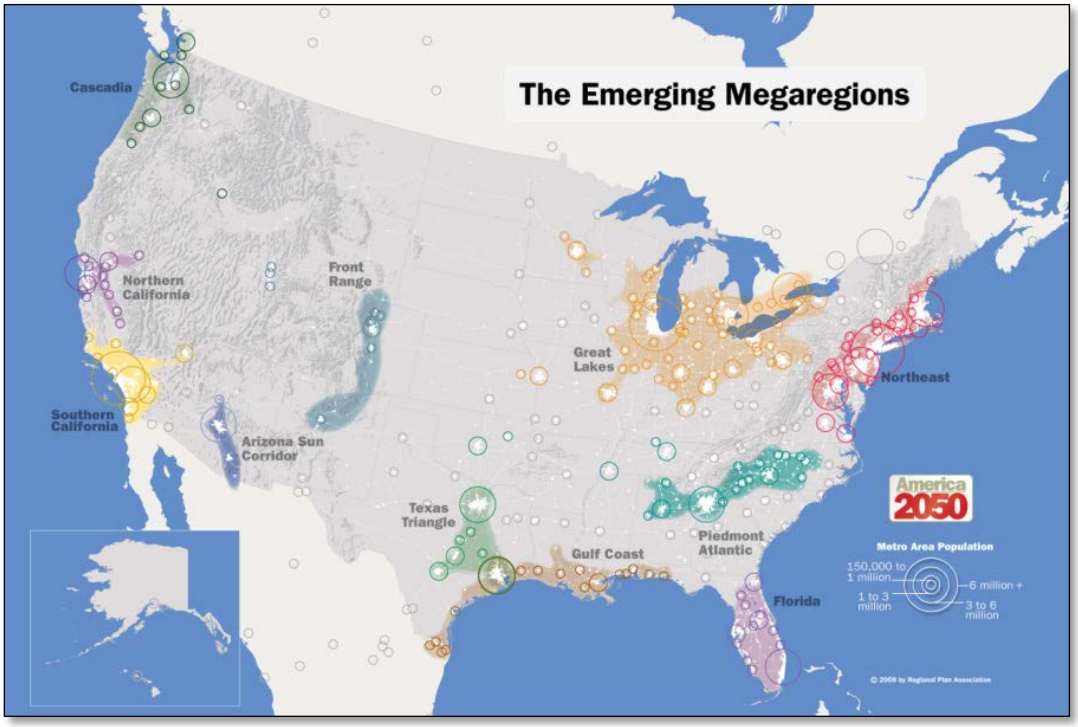


Figure 5-1. America's Megaregions

(Source: America 2050, a project of the Regional Plan Association)

The visitor- and retiree-based economy of the Florida megaregion is evident in the comparison of its GDP per capita among the other 11 megaregions. Only the Arizona and Piedmont Atlantic megaregions rank lower than Florida. This low ranking underscores the need for Florida to diversify its economy away from the service sector and attract major new income-importing employers and corporate headquarters to create a more balanced economy.

The continued productivity and efficiency of the megaregion depends heavily on maintaining its national and inter-regional access via the major ports, intermodal centers and corridors that form its transportation backbone. It also depends on "infilling" economic development in places with ready access to that backbone so they can more effectively take advantage of Florida's current economic development connections and transportation investments.

Corridors and Centers

Development in the Florida megaregion has a recognizable pattern, with just fewer than 80 percent of developed land located within 10 miles of its regional transportation corridors (I-75 along the Gulf coast, I-95 along the Atlantic coast and I-4 connecting the two, and Florida's Turnpike).City centers are spaced around 50 miles from each other along those corridors, as shown in Figure 5-2.

Orlando is the hub in the Central Florida portion of the megaregion and is surrounded by regional centers in Ocala, Daytona Beach, Lakeland, and Melbourne, as shown in Figure 5-3. Smaller subregional centers are located halfway between Orlando and the regional hubs with the exception of the southeast

quadrant. Much of the reason for this gap is the Deseret Ranch, the region's largest property under long-term single ownership, which continues to be used for raising cattle and growing citrus, potatoes and other crops.

The East Central Florida Corridor Task Force, in recognition of the influence of accessibility on economic development within and beyond the Florida megaregion, is studying the need for new or enhanced major transportation corridors in the region. FDOT recently completed a Concept Report regarding new or enhanced transportation corridors for the Tampa Bay – Central Florida Study Area on either side of I-4. The Concept Report defined urban centers and intermodal hubs of differing sizes and types and assessed the current and future ability to both connect and intensify those economic centers given the capacity of the existing inter-regional network.

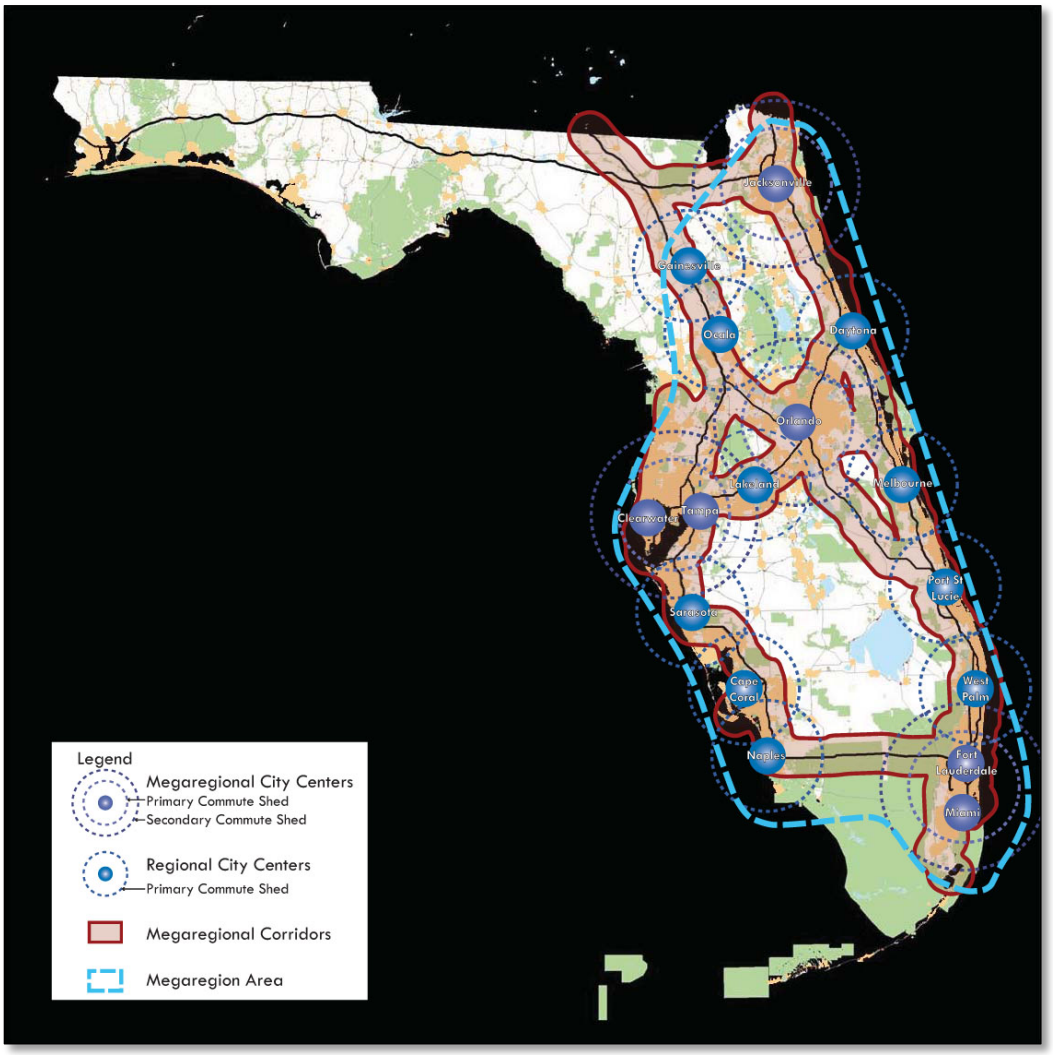


Figure 5-2. Centers and Corridors in the Florida Megaregion

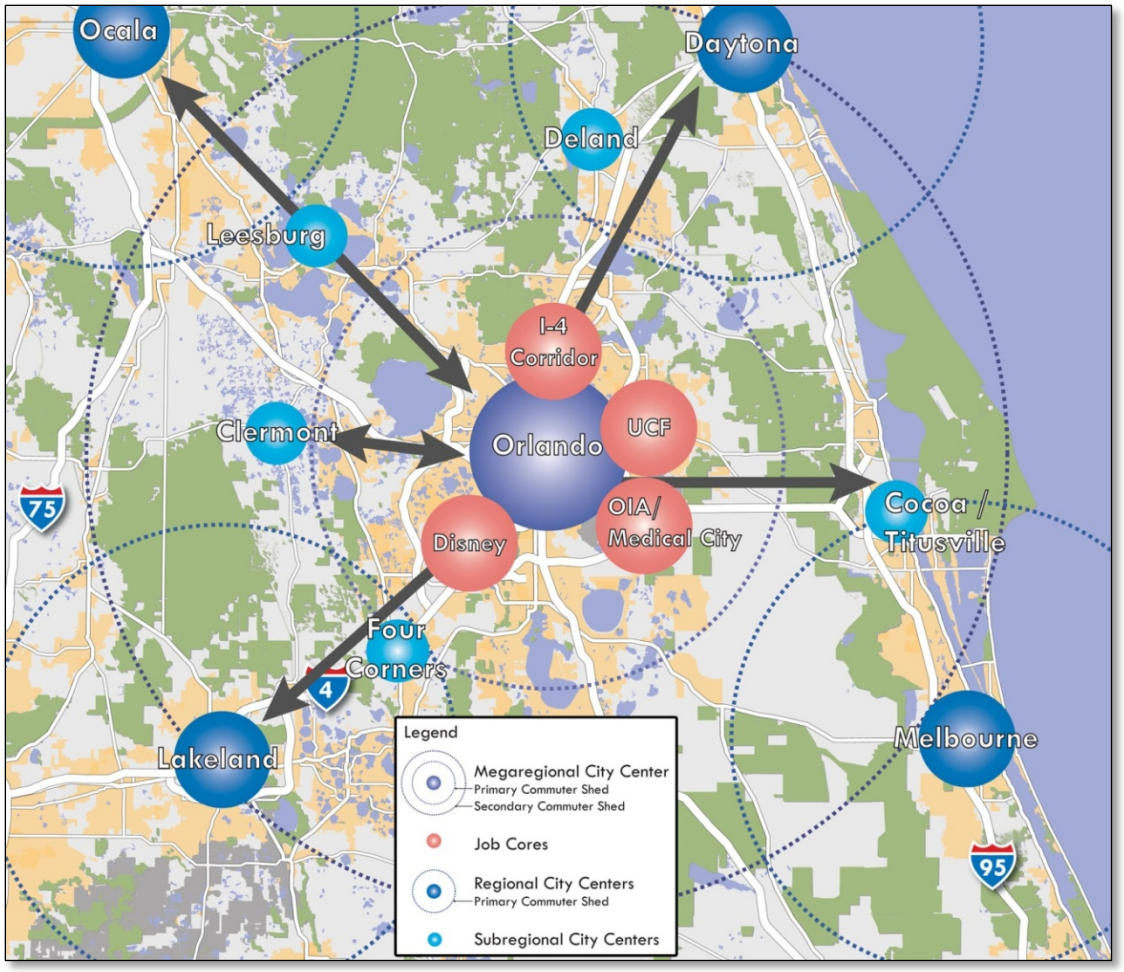


Figure 5-3. Central Florida Centers and Corridors

The list below and Figure 5-4 highlight some of the transportation concepts identified in the Concept Report:

- Major limited-access facilities may not have the capacity to accommodate anticipated future growth. Potential solutions include:
  - maximizing efficiency of the existing facilities through management and operational strategies such as managed lanes;
  - promoting transit alternatives for commuting and long distance trips;
  - encouraging greater use of telecommuting and other travel demand strategies; and
  - identifying strategic investments for new highway capacity that support regional visions.
- Passenger rail and public transit are not well connected in the region. Potential solutions include coordinating transit investments with urban development decisions, with an emphasis on more compact centers connected by multimodal corridors;
- The region's major truck routes, freight rail system, seaports and air cargo facilities do not have the capacity to meet future demand. Recommended solutions include making strategic investments in these facilities to improve capacity and connectivity; and

- Economic development requires regional accessibility, yet many of the region's existing and emerging employment centers are not well connected to interregional roadways. Potential solutions include improving connectivity to existing and emerging employment centers.

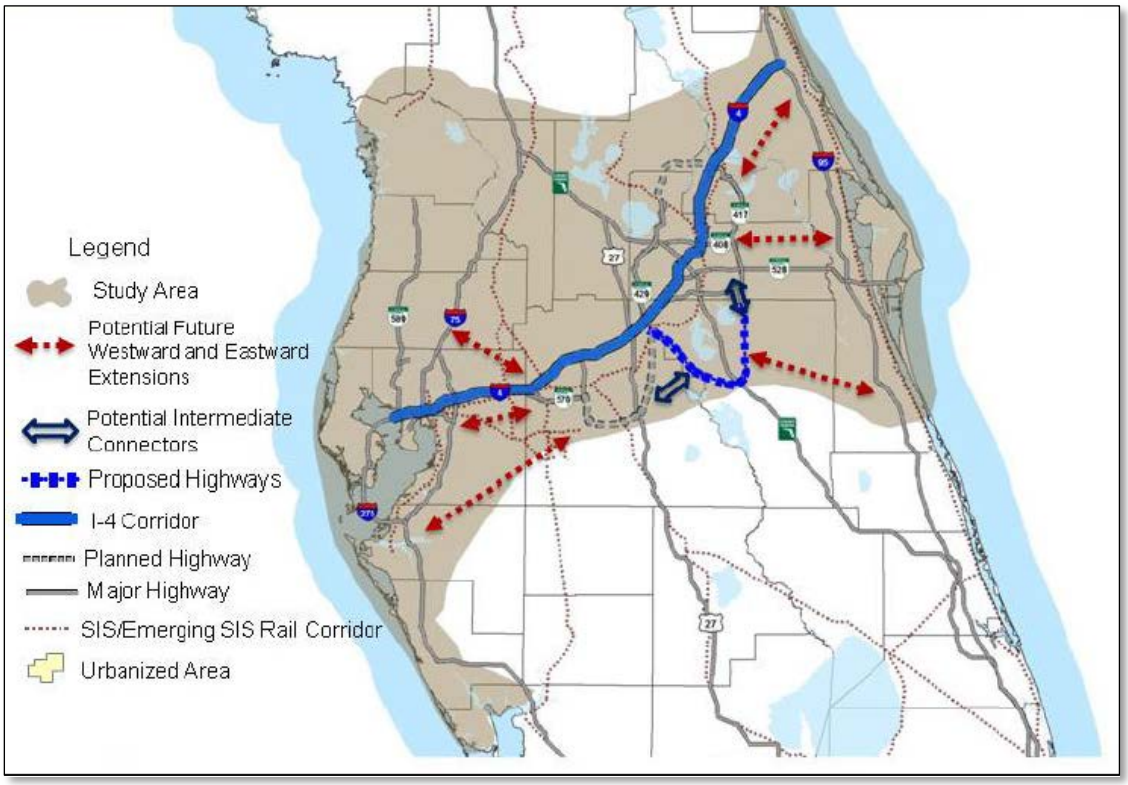


Figure 5-4- Potential I-4 Relievers

(Source: FDOT, Tampa Bay – Central Florida Study Area Concept Report, October 2013)

The Long-Term Master Plan for the North Ranch Planning Area in Osceola is located within the Tampa Bay – Central Florida Study Area. One of the recommendations from the report, which prompted the creation of the East Central Florida Corridor Task Force, was the development of a Corridor Plan for the eastern end of the corridor. As noted in the Concept Report:

> *This effort would be timely because of the ongoing development of the Medical City at Lake Nona; the need to transition the Space Coast economy with the end of the Space Shuttle program; major planned developments in the Northeast District of Osceola County and the Viera Ranch in Brevard County, as well as potential development of additional portions of the Deseret Ranch; and the All Aboard Florida proposal for a passenger rail connection between the Space Coast and Orlando.*[1]

One of the potential future roadway extensions identified in the Concept Report, the Pineda Extension, would pass through the North Ranch Planning Area in Osceola. Other potential options identified in the Concept Report include upgrades to existing facilities such as SR 192 and extending SR 408 from Orange County to I-95. The Concept Report also states that additional analysis is needed to assess alternative

[1] *FDOT, Tampa Bay – Central Florida Study Area Concept Report, October 2013.*

solutions including improvements to existing highway and rail facilities and development of new facilities to close the gaps. It is anticipated that whatever solutions are determined appropriate, more detailed studies will be required, such as Project Development and Environment (PD&E) studies, Traffic and Revenue studies for the toll roads, ridership studies for transit facilities, followed by design, right-of-way acquisition and finally construction.

As described in Chapter 2, the North Ranch Planning Area is strategically located in the southeast quadrant of Central Florida. It is currently crossed by SR 528, SR 520, Nova Road, and US 192. Traffic on each of these roads has increased notably over the past 20 years, reflecting the increased exchange between Brevard County and the Orlando metro area. The southeast quadrant's ability to foster continued economic development depends greatly on these existing and additional transportation corridors.

An overlay of a seven mile regional roadway spacing grid on the southeast quadrant identifies gaps in the major roadway network. See Figure 5-5. The potential location of employment centers occurs at each intersection on the grid. The grid suggests the quadrant needs at least three new east-west facilities and one new north-south facility assuming the construction of the Northeast Connector and significant upgrades of Nova and Deer Park Roads.

The Pineda Extension, which splits the distance between SR 528 and US 192, is one of the three east-west corridors needed. The Pineda is strategically important for the quadrant for several reasons. First, to avoid multiple crossings of the St. Johns River, the Pineda will have to accommodate traffic levels for two of the three east-west corridors. Second, the Pineda provides a direct high speed connection between job clusters in and around Melbourne with those surrounding OIA. This connection would noticeably reduce travel times between Melbourne and OIA and between Medical City and the Northeast District (NED) to synergize high tech oriented economic development. Travel times from Melbourne to the Northeast District Urban Center drop from nearly an hour to just under 40 minutes, thereby putting the employment center in the Northeast District within a reasonable commute time for potential high-tech employees living in the Melbourne area. In the longer term, as the employment center in the Northeast District matures, the proposed urban and employment centers located on the Pineda corridor in the North Ranch Planning Area become attractive to high tech firms because they are within a 20- to 30-minute commute for employees living in either the Orlando metro or Melbourne areas.

The Pineda Extension corridor also provides an opportunity for a regional passenger rail connection between Orlando and Melbourne. The SunRail commuter rail service, which started in May 2014, will likely be extended to a proposed multimodal terminal located at OIA to connect with inter-city passenger rail service under development by All Aboard Florida. Right of way for a rail extension from the OIA multimodal terminal will be preserved in the Osceola Parkway Extension to the NED. From there, the rail corridor would extend southeast along the Pineda corridor and ultimately to the Viera community, with several realistic alignment possibilities to I-95 in Brevard County and then to Melbourne International Airport. This commuter/passenger rail alignment has the potential to connect all of the major intermodal and job centers between downtown Orlando and Melbourne. See Figure 5-5.

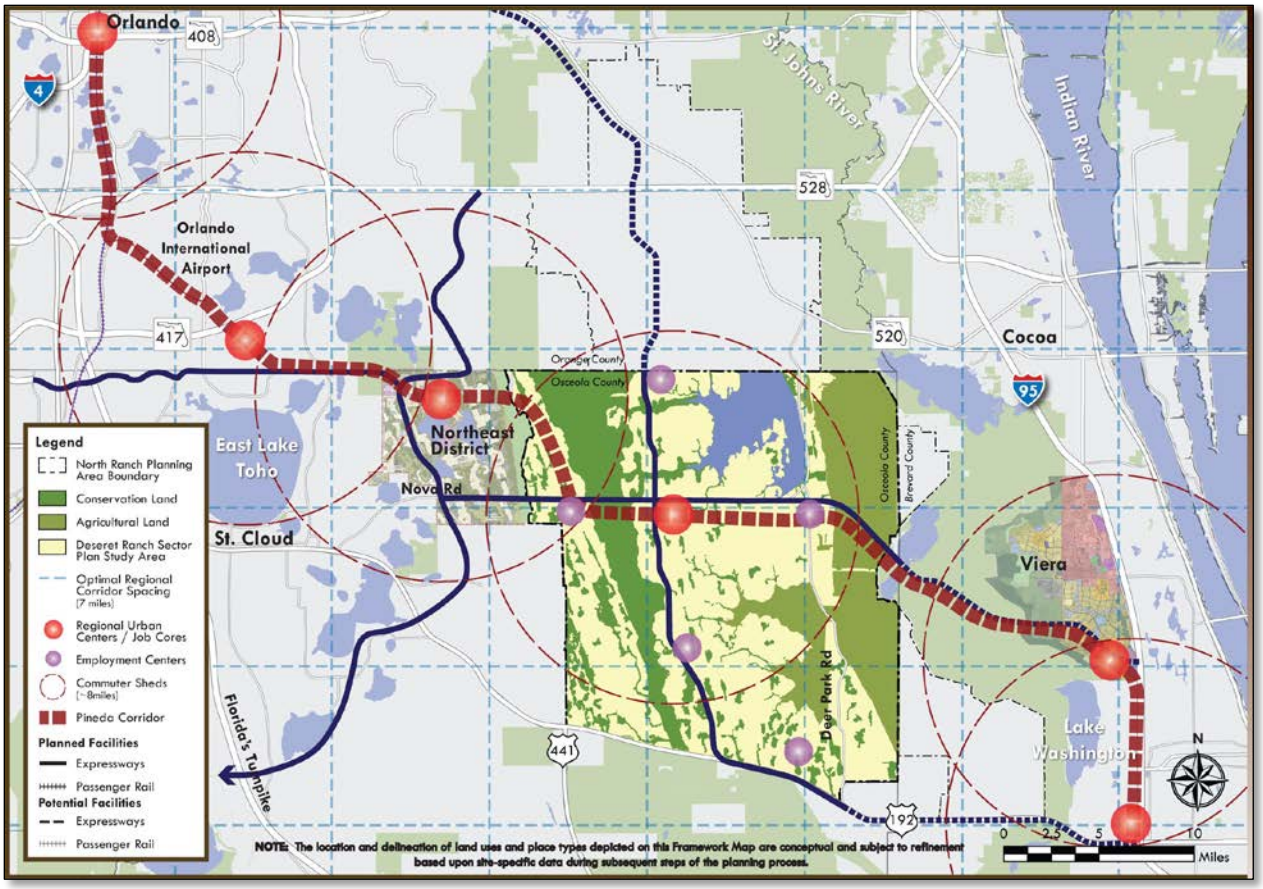


Figure 5-5. Corridor Grid in the Southeast Quadrant

EXISTING AND PLANNED TRANSPORTATION FACILITIES

EXISTING ROADS

The North Ranch Planning Area in Osceola is surrounded and crossed by a number of existing and planned roads as depicted in Figure 5-6. Existing roads include Nova Road, Deer Park Road and US 192. According to data from Osceola County Public Works, traffic volumes on Nova and Deer Park are low (less than 2,000 vehicles per day) and volumes on US 192 are just over 20,000 vehicles per day. All three roads currently operate at level of service (LOS) of "C" or better.

The Beachline Expressway (SR 528) and SR 520 cross the North Ranch Planning Area in Orange County. Data from the FDOT indicate that 2012 traffic volumes on SR 528 are around 38,000 vehicles per day west of SR 520 and 33,000 east of SR 520. Volumes on SR 520 north of SR 528 are 15,500 per day and 14,000 south of SR 528. Both roads operate at LOS "C" or better.

PLANNED ROADS

The Osceola Expressway Authority (OCX) and the Orlando-Orange County Expressway Authority (OOCEA) have included in their master plans several major expressway extensions to the west and north of the North Ranch Planning Area in Osceola. These planned expressway extensions are based on recommendations from feasibility studies completed by OOCEA in 2008, including the SR 417 Extension Study on which OCX relied heavily during the development of its OCX 2040 Master Plan as depicted in Figure 5-7.

The OCX 2040 Master Plan also includes the Osceola Parkway Extension based on recommendations of a feasibility study completed by Osceola County in 2011. See Figure 5-7. Project Development and Environmental (PD&E) Studies are currently being conducted by FDOT and Florida's Turnpike Enterprise for the Poinciana Parkway, Southport Connector and Osceola Parkway Extension segments in the OCX 2040 Master Plan. A PD&E is expected to be started for the last major thoroughfare in the OCX 2040 Master Plan, the Northeast Connector, in the near future.

The SR 417 Extension Feasibility Study (by OOCEA) recommended a connection from the Northeast Connector to SR 528 in Orange County. See Figure 5-6. That segment is expected to be added to the OOCEA Master Plan and a PD&E study should begin shortly thereafter. The East Central Florida Corridor Task Force created by Governor Scott and described in the last section is expected to focus in part on connections between these new expressways in Osceola and Orange counties and I-95 in Brevard County.

The SR 408 Extension Feasibility Study completed by OOCEA in 2008 recommended the extension of SR 408 from its current eastern terminus just south of the University of Central Florida (UCF) to the junction of SR 50 and SR 520. See Figure 5-6. The recommended alignment would closely follow SR 50. That effort initially looked at an extension to I-95 in Brevard County, but that connection was not deemed financially feasible. An extension to SR 528 was also explored to create an expressway level connection, but that proposal was not recommended at that time.

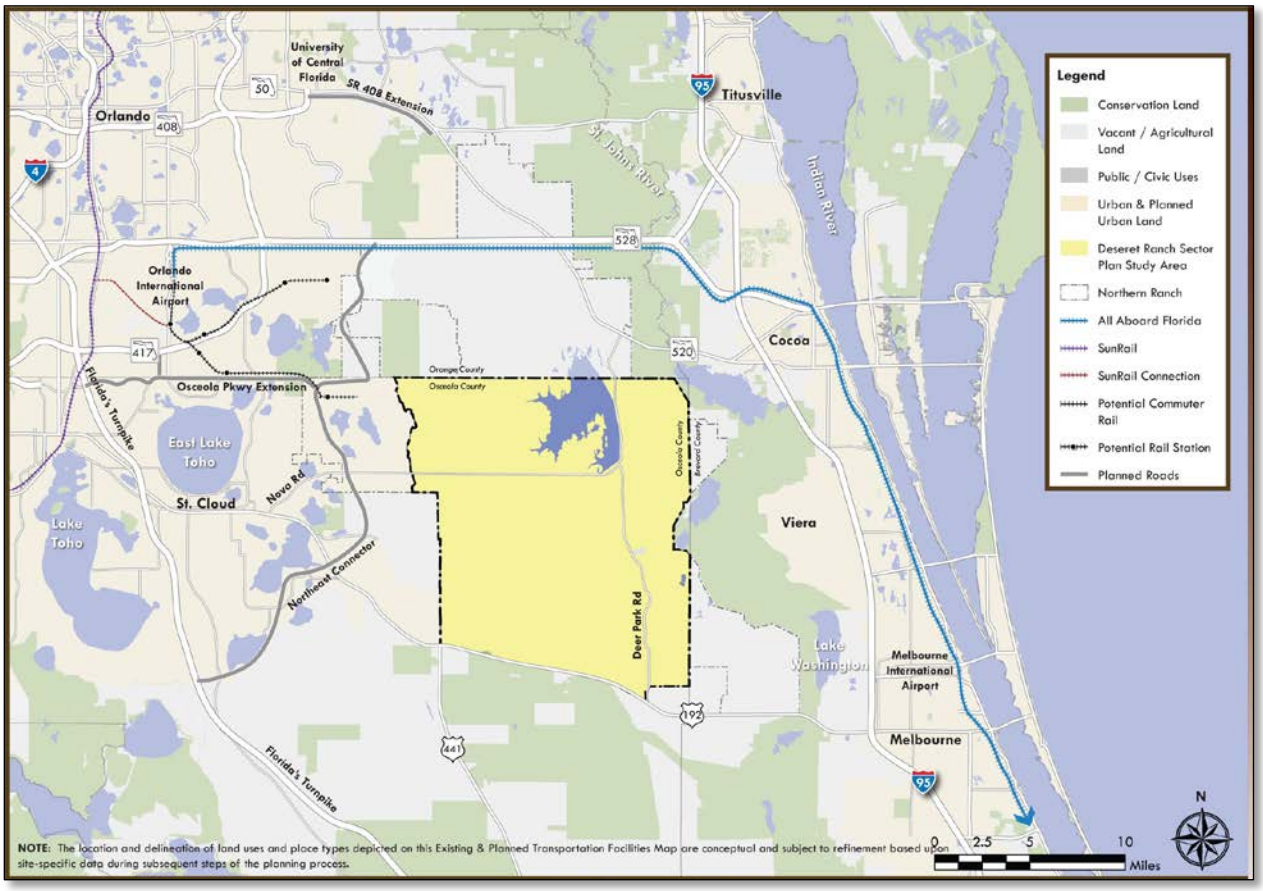


Figure 5-6. Existing and Planned Transportation Facilities

PLANNED TRANSIT IMPROVEMENTS

All Aboard Florida (AAF) is a planned intercity passenger rail service that will connect Miami at its southern terminus to the Orlando International Airport (OIA) at its northern end. The alignment will use existing Florida East Coast (FEC) railroad tracks from Miami to Cocoa, and then follow SR 528 west to OIA (Figure 5-6). In anticipation of this connection, FDOT is studying a transit extension from the Sun Rail system, currently under construction, to OIA.As part of its Innovation Way planning effort, Orange County studied transit connections from OIA to Innovation Way and north to the University of Central Florida (UCF).The multimodal transportation district created for the Northeast District in Osceola County anticipates a premium transit connection extending from OIA through Medical City and the Poitras property to the District.

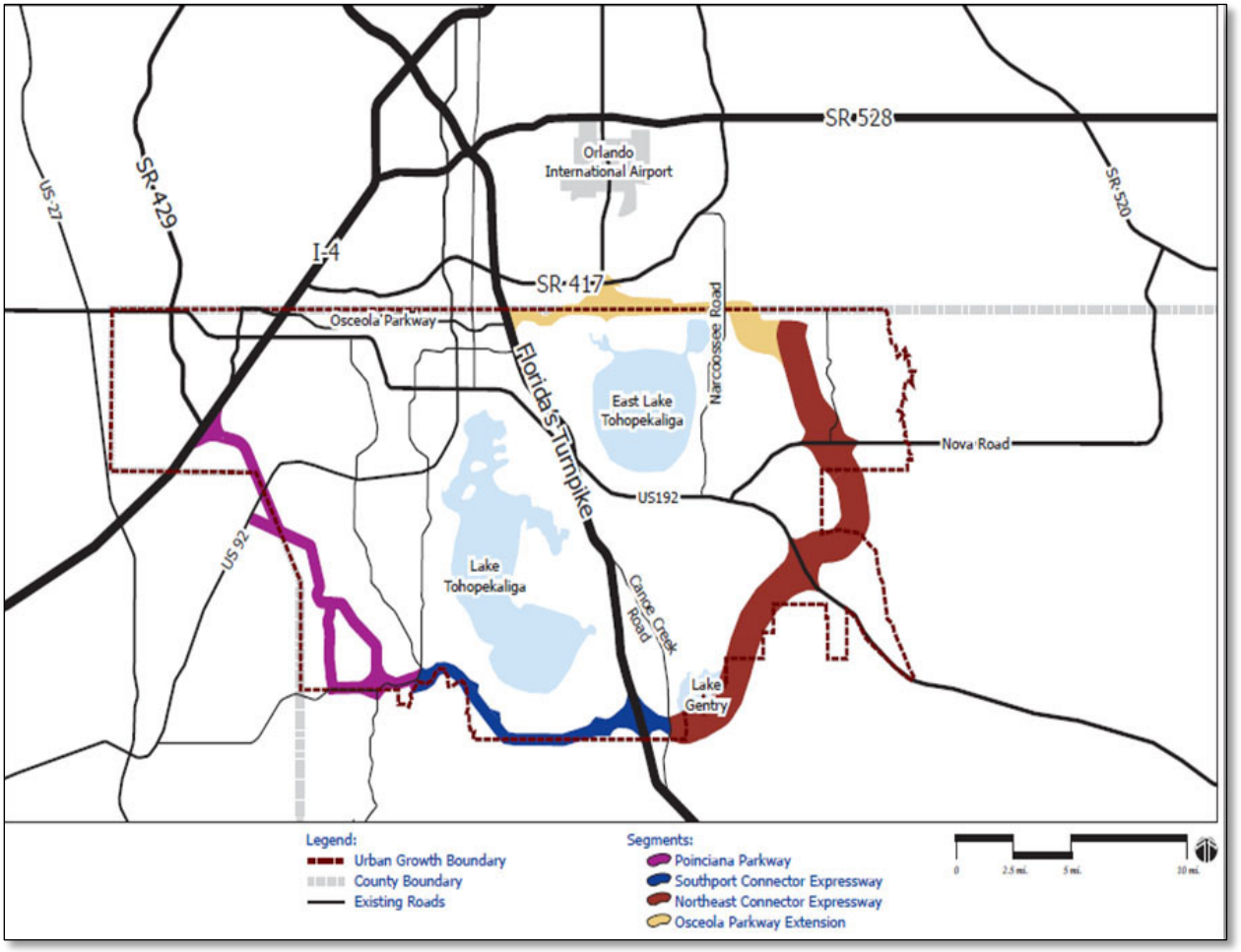


Figure 5-7. OCX 2040 Master Plan

PROPOSED REGIONAL TRANSPORTATION SYSTEM

One of the urban form elements described in Chapter 4 is multimodal connectivity. The proposed multimodal network begins with neighborhoods and centers oriented around half-mile radius pedestrian walksheds to promote walking to nearby destinations. Extensive bike and transit networks are provided for safe and convenient travel destinations beyond walksheds.

Multimodal transportation systems and supportive development patterns provide a number of benefits, including:

- Reducing vehicle miles traveled (VMT) per person – this reduces energy consumption and household energy costs, and vehicle emissions to improve air quality and mitigate climate change. The plan reduces VMT not only by shifting more trips into non-auto modes, but by providing a hierarchy of centers that reduce trip lengths for all trip purposes and travel modes.
- Increasing travel choices – survey responses from across the country have shown a consistent preference for travel choices, particularly the ability to walk to nearby destinations. Fluctuating energy prices have encouraged more to use transit as a travel option, and even more would likely make the shift if transit options are safe and convenient. As evidenced by the proliferation of bike sharing across the country, there is an increasing interest in bicycling, not only for recreation, but for travel to work, shopping and other destinations.
- Improving health – research has demonstrated the health benefits of living in walkable places. Improved health has the added benefit of reducing health care costs.
- Creating a stronger sense of place – walkable places foster a sense of community because they encourage people to get out of their homes and cars and into public spaces, including streets. This sense of community creates defensible places, which has proved to improve safety and security. It helps to fulfill a basic human need for community.

The following sections highlight the major transportation facilities identified for the North Ranch Master Plan Area, including expressways, regional arterials and regional passenger rail. Details for subregional and neighborhood roadway, pedestrian and bike and transit networks will be provided in subsequent Detailed Specific Area Plans (DSAPs). Those more detailed network plans will support the multimodal urban form element described in Chapter 4 and the regional transportation networks described below.

Regional Facility Design Guidelines

Table 5-1 presents the spacing and speed guidelines used to develop the multimodal transportation network for the North Ranch Planning Area in Osceola, based on transportation planning and engineering practice. Roadway and transit facility types are defined for each travel market, ranging from the megaregion to community. Average travel speeds vary by the typical travel distances of each travel market, with speeds higher for travel over longer distances, and follow typical speeds found on corresponding facility types. Road and station spacing standards are set according to those target speeds and follow typical transportation planning and engineering practice for each road and facility type.

Table 5-1. Facility Spacing and Speed Guidelines

Travel Market	Road Type	Road spacing (miles)	Average Travel Speed (mph)	Transit Type	Station Spacing (miles)	Average Travel Speed (mph)
Mega-regional travel	Interstate expressway	NA	60 to 70	High speed rail, intercity rail, Amtrak	20 plus	50 plus
Regional commute, retail, service	Expressway	5 to 10	50 to 70	Commuter rail, express bus	3 to 10	30 to 80

Travel Market	Road Type	Road spacing (miles)	Average Travel Speed (mph)	Transit Type	Station Spacing (miles)	Average Travel Speed (mph)
Subregional commute, retail, service	Multimodal Boulevard	2 to 4	30 to 50	Commuter rail, light rail, bus rapid transit	1 to 4	20 to 40
Community retail, service	Boulevard	1 to 2	20 to 40	Bus rapid transit, fixed route bus	0.5 to 2	10 to 20

Source: Renaissance Planning Group.

REGIONAL EXPRESSWAYS AND TRANSIT FACILITIES

The spacing guidelines in Table 5-1 were used in combination with the existing and planned roadway network presented in Figure 5-6 to develop the multimodal network for the Long-Term Master Plan. The transportation plan is presented in Figure 5-8. The major facilities in the network are as follows:

- *Pineda Extension (Orlando-Space Coast Expressway)*–As stated previously, The East Central Florida Corridor Task Force is evaluating options for closing a connectivity gap between southeastern Orlando and southern Brevard County. One of the options under evaluation is an extension of the Pineda Causeway (the Pineda Extension) in Brevard County west of I-95 and then into Orlando. A project to provide connectivity between these points has been contemplated since the causeway was built in 1972. Although the Task Force recommendation will not be available until December 2014, the Pineda Extension is shown in Figure 5-8 and is integrated in the development concepts presented in Chapter 4. Several considerations support this assumption: Right-of-way was acquired in Osceola County just to the west of the St. Johns River and considerations for the right-of-way were incorporated into the St. Johns Water Management District land purchase agreement with the Viera Company; and the fact that a crossing of the St. Johns River in this vicinity would occur at a location where the river and its adjacent wetlands are narrow, thereby minimizing environmental impacts as well as construction costs of a river crossing. The bridge across the river would span 1,000 feet to both cross the nearly 300-foot river channel and accommodate wildlife movements through the surrounding floodplain underneath the roadway. This alignment is subject to change and can be adjusted once further investigations have been completed and the Task Force's findings and recommendations have been made to the Governor. West of Deer Park Road, the Pineda Extension would either run south of Nova Road or would replace Nova Road, with a new Nova built to the south to provide access to adjacent properties. To optimize access, the southern alignment of Nova Road is the preferred option. The exact alignment of these two roads would be determined through subsequent planning and engineering studies. The western end of the Pineda Extension would connect with the Northeast Connector in Osceola County's Northeast District.
- *Osceola Parkway Extension from the Northeast District to SR 408 Extension*– This expressway would connect the eastern end of the planned Osceola Parkway Extension in the Northeast District to a north / south arterial west of Taylor Creek Reservoir. Its crossing of the Econlockhatchee (Econ) Swamp was anticipated in the state and county's approval for the Northeast District, with the exact crossing to be identified at a later date during more detailed planning and engineering studies. The crossing will include bridging a portion of the Econ Swamp to mitigate wetland impacts and provide for wildlife movement. Details of the roadway's

alignment, bridging and mitigation strategies will be developed during the design of the roadway.

- *SR 408 Extension to US 192*– As noted above, OOCEA plans to extend SR 408 to the SR 50 / SR 520 interchange. Extending it further to SR 528 would provide system-level connectivity. Extending it south of the SR 528 creates the north / south transportation spine for the North Ranch Planning Area, eventually connecting to US 192. Upgrading US 192 to an expressway from that point to I-95 would create an expressway system-level connection from Downtown Orlando and UCF to Melbourne. Traffic forecasts indicate the need to make the connection from the Orange – Osceola County line to the SR 528 to balance north – south traffic flows between the Northeast Connector to the west and I-95 to the east.
- *Upgrade of US 192 to I-95*–As noted in the preceding paragraph, extending SR 408 from SR 50 and SR 528 to US 192 would create a direct, system-level connection from Orlando to Melbourne. Much of US 192 between the SR 408 extension and I-95 is a four-lane access controlled facility. This upgrade will require modifying the existing I-95 interchange and the proposed St. Johns Heritage Parkway interchange. It will also require providing local access to adjacent properties.US 192 west of the US 441 will be difficult to convert to an expressway-level facility because of the Harmony development and lakes to the west of Harmony that limit the width of right-of-way, hence the need for providing the SR 408 and Pineda extensions.
- *Extension of OIA to Northeast District transit*–As noted above, the Northeast District multimodal transportation plan envisions a transit connection from OIA through Medical City and the Poitras property to the urban center in the Northeast District. The alignment would follow Medical City Boulevard, then the Osceola Parkway Extension, with stations at the OIA intermodal hub (connecting passengers to either the AAF or Sun Rail systems), Medical City, Poitras and the Northeast District. This alignment would extend to the east through the North Ranch Planning Area in Osceola to connect with a proposed north/south transit line located in the planned urban center. The alignment would continue to the east along the Pineda Extension corridor, then turn south on the west side of I-95 to connect with a transit alignment running east and west along the US 192 corridor. This alignment could follow either US 192 or Ellis Road into Melbourne. Given the length of this alignment (40 miles from OIA to Melbourne) and its station spacing (averaging five miles) this alignment should be planned as an intra-regional commuter rail line.
- *North / south transit* – In the event that long-term urban development is approved on the North Ranch Planning Area in Orange County, this transit line would extend from just north of SR 528 to US 192. Otherwise, the northern terminus of this transit line should be near the planned Osceola Parkway Extension in Osceola. This transit line should be planned to be a subregional system, with more frequent transit stops at transit oriented development (TOD) centers along the alignment. It should connect with the OIA to Melbourne commuter rail in the proposed urban center.

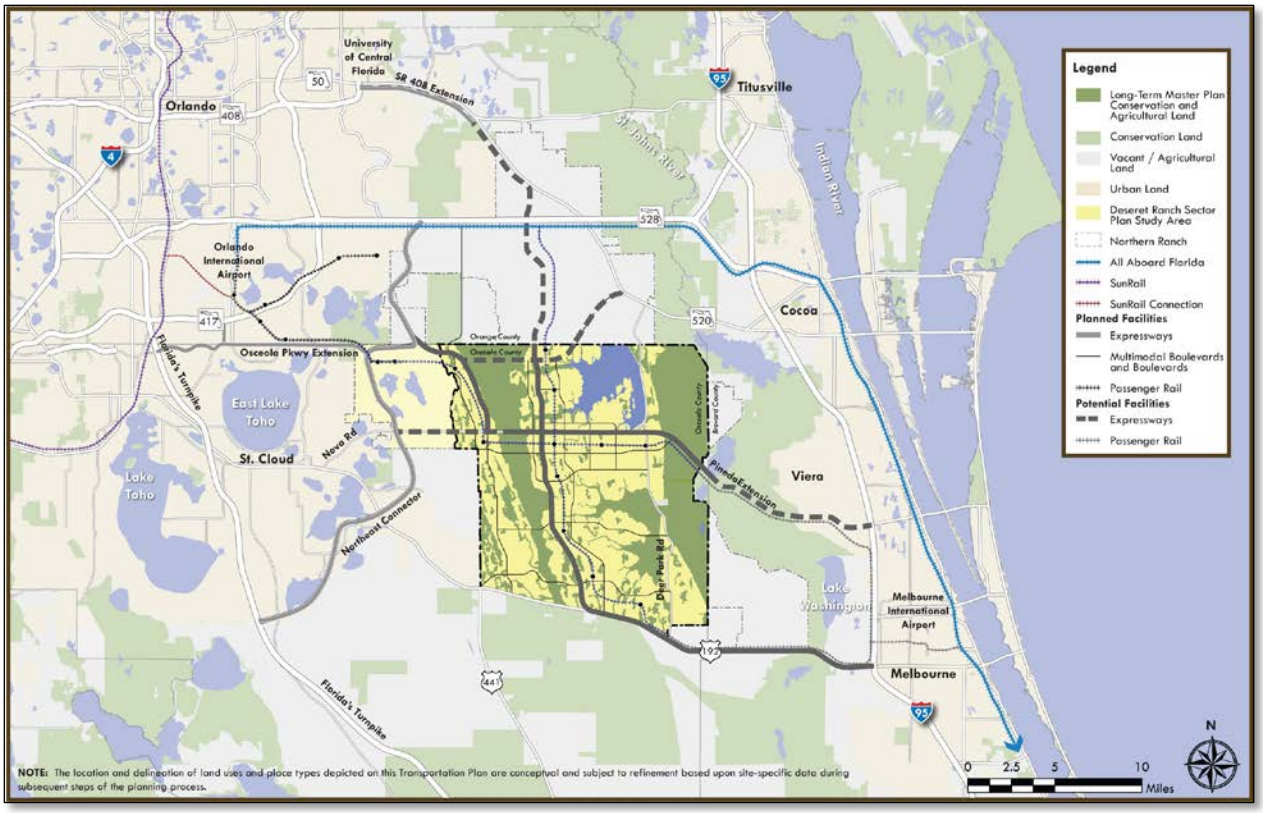


Figure 5-8. Long-Term Master Plan Transportation Plan

NETWORK ASSESSMENT

EXPRESSWAYS

The roadway assessment focuses on existing and planned expressways in and around the North Ranch Planning Area. Figure 5-9 presents year 2060 volumes and levels of service, while Figure 5-10 presents the same information for 2080. Neither the 2060 or 2080 traffic forecasts are adjusted due to the shift of auto trips to transit, therefore reflecting the upper ends of the volume forecast ranges. Details of the expressway analysis are provided in Appendix 5A.

Traffic forecasts indicate the need for additional lanes beyond what exists or is planned for in current long range transportation plans (LRTPs) on several expressway segments outside the North Ranch Planning Area. Widening the following segments to 8 lanes are included in the analysis to accommodate traffic forecasts beyond the 2040 LRTP planning horizon:

- I-95 from SR 50 to Palm Bay Boulevard,
- SR 417 from the Florida Turnpike to SR 528, and
- SR 528 from the Northeast Connector to SR 417 and west of the Orlando International Airport.

With the improvements noted above, only SR 417 between Innovation Way and Curry Ford Road and SR 528 between Innovation Way and SR 417 and east of OIA operate below level of service E by 2060. By 2080, the following segments drop below the LOS E threshold:

- I-95 between SR 528 and Viera Boulevard, and between Wickham Road and US 192,

- SR 528 between the Northeast Connector and SR 417 and west of OIA, and
- SR 417 between Innovation Way and Curry Ford Road.

Results confirm the need to close the network gaps identified by the corridor spacing assessment and the importance of the Pineda Extension to accommodate the traffic of two east west facilities. The 2060 traffic volume on the proposed expressway paralleling US 192 at the St. Johns River crossing is 71,000, while the volume on US 192 is 67,000. These combined volumes require 10 lanes at the crossing. The 2060 volume on the Pineda Extension at the St. Johns River is 61,000. Without the Pineda, nearly all of that traffic will shift to the US 192 corridor, requiring up to 14 lanes at the US 192 crossing. Thus, the Pineda plays a critical role in dispersing east-west traffic through the North Ranch Planning Area. Results also clearly indicate the value of the north-south expressway in the North Ranch Planning Area, including a connection through Orange County to SR 528 and ultimately to the SR 408. Traffic volumes on this expressway are around 90,000 vehicles per day near the urban center and over 70,000 on the extension to SR 528.

Regional Transit

Transit ridership for the proposed commuter rail alignments was developed by assuming a portion of trips along adjacent roadways will shift to the parallel regional transit lines. Results indicate potential ridership and confirm the financial feasibility of the proposed alignments.

Average daily ridership estimates for 2060 are around 25,000 on the north-south passenger rail line and 22,000 on the east-west passenger line. These levels exceed ridership levels for similar systems that have been funded elsewhere in the country, suggesting the financial feasibility of the alignments. By 2080, daily ridership is expected to average 32,000 on the north-south line and 27,000 on the east-west line. These ridership estimate are high in comparison with expectations for the SunRail system, but they are reasonable given the transit oriented development supporting the two proposed rail corridors versus the existing auto oriented nature of the SunRail corridor. Details of how the transit ridership estimates were developed are provided in Appendix 5A.

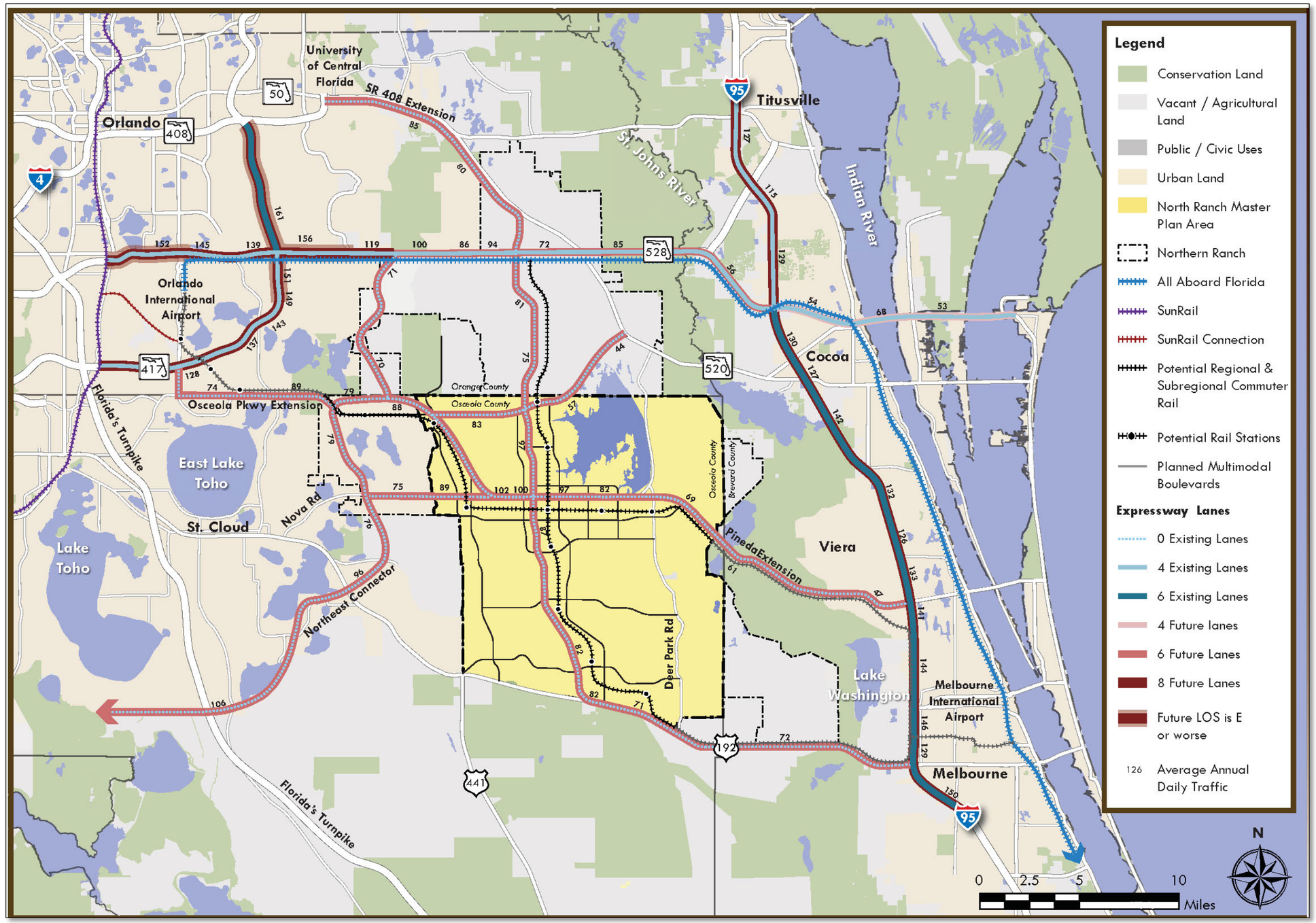


Figure 5-9. Year 2060 Traffic Forecasts and Levels of Service

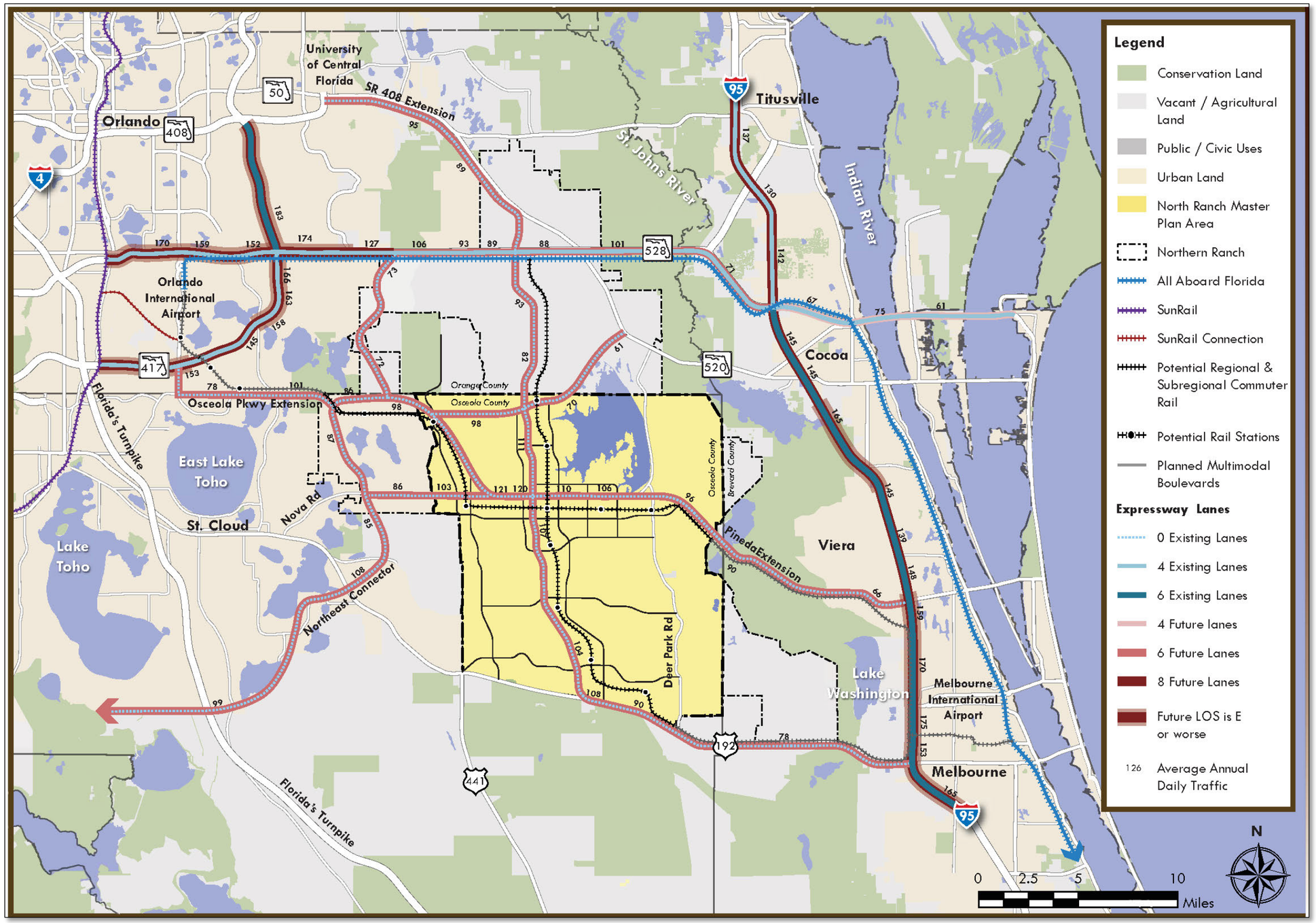


Figure 5-10. Year 2080 Traffic Forecasts and Levels of Service

NETWORK PHASING

REGIONAL ROADWAYS

The phasing of regional expressways and arterials will depend on the development of DSAPs and the outcome of future regional transportation planning efforts. The regional expressways in the plan are likely to be funded through tolls and, as a result, designed and built by the Osceola Expressway Authority (OCX) or its successor. Financial feasibility is the key trigger for the timing of construction, thus OCX will determine the phasing of these improvements more definitively through updates to their Master Plan. The timing of these improvements may supersede the development of, or recommendations made in, DSAPs.

REGIONAL TRANSIT

It is anticipated that the two passenger rail alignments will occur later in the planning period when enough development has taken place to generate the ridership needed to justify federal and state funding. Like nearly all premium transit facilities built in the U.S., those proposed for the North Ranch Planning Area, including bus rapid transit, will likely need federal, state and local funding support; meaning these improvements will be planned and constructed using public processes. In their current form, those processes pay a significant amount of attention to ridership levels before making funding commitments. Premium transit ridership is driven primarily by transit-oriented development surrounding station areas and a supportive feeder bus system. Both will likely occur later in the planning period.

COMMUNITY TRANSPORTATION

This Long-Term Master Plan provides a framework for development. It is supported by more detailed planning steps, including the development of DSAPs. Details for transportation networks, including community and locally oriented streets, bicycle and pedestrian networks and design accommodations, and local transit service will be provided with increasing levels of specificity in DSAPs and subsequent planning efforts.

MULTIMODAL GUIDELINES

REGIONAL EXPRESSWAYS AND FRAMEWORK STREETS

The proposed spacing and speed guidelines for road and transit facilities are presented in Table 5-1. Table 5-2 presents design guidelines for the major streets, including the number of lanes, rights of way and multimodal treatments. These requirements follow transportation planning and engineering practice. Cross-sections and more detailed design standards for these regional facilities as wells as more locally oriented roads will be developed in subsequent steps of the planning and regulatory process. These cross-sections will reflect planning and urban design considerations in the Detailed Specific Area Plans and provide more detailed information about the character of major streets.

REGIONAL TRANSIT

Table 5-3 presents design guidelines for premium transit, including alignment options, right-of-way widths, allowance of freight rail and station types. The guidelines align with transit planning and engineering practice with one exception; because the North Ranch Planning Area is largely a blank canvas, there is a rare opportunity to plan for and eventually develop separate rights of way for premium transit. As with SunRail in Orange County, separate rights of way for premium transit would create important advantages, including:

- The ability to design pedestrian access and development around transit stations without creating safety issues for pedestrians and roadway operations challenges;
- The ability to optimize both transit and roadway operations; and
- The ability to create non-auto multimodal travel corridors, where wide bicycle and pedestrian paths are located on either or both sides of the transit right-of-way with excellent opportunities for linear parks.

Table 5-2. Roadway Design Guidelines

Road Type	Minimum/ Maximum Lanes	Typical Right-of-Way (feet)	Transit Envelope	Bicycle Treatment	Pedestrian Treatment
Expressway	4 to 8	300 to 500	50 to 100 foot envelope (as needed)	Not allowed in right-of-way, parallel trail as needed	Not allowed in right-of-way, parallel trail as needed
Multimodal Boulevard	4 to 6	120 to 180	30 to 50 foot envelope (as needed)	Bike lanes or adjacent bike paths	Sidewalks on both sides.Intersection crosswalks
Boulevard	2 to 6	100 to 120	30 to 50 foot envelope (as needed)	Bike lanes or adjacent bike paths	Sidewalks on both sides, intersection crosswalks

Source: RPG.

Chapter 4 presents more detail regarding the relationship between differing types of transit and place types. These relationships are based on FDOT TOD Guidelines, which recommend differing land use mixes and intensities needed to generate ridership and fare revenues that offset operational costs. More detailed guidelines for regional and community transit facilities and bike and pedestrian facilities should be provided in subsequent steps of the planning and regulatory process.

Table 5-3. Transit Design Guidelines

Transit Type	Alignment	Typical Right-of-Way (feet)	Freight Rail	Station Type
Intra-regional commuter rail	Separate right-of-way (ROW) or adjacent to expressway ROW	50 to 100	Allowed	Raised platform
Subregional rail	Separate ROW or within framework street ROW	30 to 50	NA	Raised platform
Community streetcar/ bus rapid transit	Separate ROW or within framework street ROW	30 to 50	NA	Raised platform, street level

Source: RPG.

NON-REGIONAL COMMUNITY STREETS

The local or fine-grained street networks will provide access to properties, organize development, and channel vehicle and pedestrian travel. These networks differ by place type, as described in Chapter 4.

FINANCING TRANSPORTATION FACILITIES

As with other Public Facilities addressed by the Long-Term Master Plan in Chapter 8, transportation facilities within the North Ranch Planning Area may be designed, constructed, operated and/or maintained with a variety of legal entities and financing methods. These issues are more appropriately addressed through subsequent planning steps, such as individual Detailed Specific Area Plans. For transportation facilities, such legal entities and financing methods include but are not limited to:

- Federal, state or county transportation departments;
- Florida Turnpike Enterprise, regional transportation authority or local expressway authorities;
- Regional or local transit authorities;
- Stewardship district established by special act of the Legislature;
- Community development districts;
- Special improvement districts;
- Impact fees;
- Special assessments
- Municipal service taxing unit / municipal service benefit unit;
- Tax-increment financing;
- Property owner associations;
- Homeowner associations; and
- Any other legal entity or financing method authorized by Florida law.

SUMMARY

As noted in the Introduction, the North Ranch Planning Area in Osceola is located in the eastern portion of the Tampa Bay – Central Florida Study Area, which is located within the larger Florida megaregion. FDOT's Concept Report for this study area identified a number of potential transportation strategies to help connect Tampa Bay and Central Florida into a globally competitive Super Region. Some of these strategies include transportation connections through the North Ranch Planning Area in Osceola County. This regional need and other issues will be studied by the East Central Florida Corridor Task Force established by the Governor of Florida.

The transportation plan detailed in this chapter presents a list of multimodal improvements that both improve the region's connectivity and serve the jobs and housing proposed for the Long-Term Master Plan.

CHAPTER 6. WATER DEMAND AND SUPPLY

WATER SUPPLY DEMANDS

AGRICULTURE

Prior to urban development of the North Ranch Planning Area, existing agriculture would continue and new agriculture would expand within the area encompassed by the Long-Term Master Plan. The existing agricultural uses and their associated water supply, as permitted under existing consumptive use permits, are shown in Table 6-1.

Table 6-1. Existing Consumptive Use Permits for Agricultural Uses

ID No.	Name	Permittee	Quantity (MGD AADF)	Source	Use
3426	North Tract*	ECFS	8.52	Groundwater	Pasture & livestock
			0.33	Surface Water	Citrus
			0.04	Groundwater	Household
70964	Reliant Water	ECFS	0.17	Groundwater	Power generation
109142	SMR Farms	ECFS	1.52	Groundwater	Sod
		Total:	**10.58**		

NOTES: 1. MGD = Million Gallons per Day
2. AADF = Annual Average Daily Flow
3. ECFS = East Central Florida Services

* This CUP extends beyond the North Ranch in Osceola. Quantities shown are estimated allocations for uses within the long term master plan.

Pending agricultural consumptive use permits for areas already in production, or planned for future production, and their associated water demands are shown in Table 6-2.

Table 6-2. Consumptive Use Permit Applications for Agricultural Uses Under Review By SJRWMD

ID No.	Name	Permittee	Quantity (MGD AADF)	Source	Use
115794	Deseret Agronomic Crops	ECFS	3.45	Groundwater	Pasture & livestock
			0.38	Surface Water	Citrus
			6.99	Surface Water	Row Crops
118375	Deseret Field Crops	ECFS	2.88	Surface Water	Row Crops
		Total:	**13.70**		

NOTES: 1. MGD = Million Gallons per Day
2. AADF = Annual Average Daily Flow
3. ECFS = East Central Florida Services
4. SJRWMD = St. Johns River Water Management District

Agricultural water use would increase over the planning horizon, ultimately reaching the quantities set forth in Table 6-3. As non-agricultural development is implemented, agricultural water demands will increase for a period, spatially shifting as development occurs, thereafter decreasing between the years 2060 to 2080 as shown in Table 6-3. The estimated acres in irrigated agriculture under the above scenarios are set forth in Table 6-4. Agricultural water demands have been estimated using the 1-in-10 year drought scenario, which is the planning level standard of section 373.709, F.S.

Table 6-3. Projected Agricultural Demands (MGD AADF)

Crop	2014 Permitted	2015	2020	2040	2060	2080
Pasture & livestock	8.5	12.0	12.0	14.0	16.0	6.5
Citrus	0.3	1.0	1.0	1.0	1.0	1.0
Sod	1.5	3.0	6.5	6.5	4.0	1.5
Row Crops	0	10.0	10.0	10.0	0.0	0
Nursery	0	0	1.0	1.0	1.0	1.0
Total	**10.3**	**26.0**	**30.5**	**32.5**	**22.0**	**10.0**

Table 6-4. Projected Agricultural Acres Irrigated

Crop	2014 Permitted	2015	2020	2040	2060	2080
Pasture & livestock	2,597	3,666	3,666	4,477	5,116	1,920
Citrus	220	620	620	620	620	620
Sod	600	1,200	2,600	2,600	1,600	600
Row Crops	0	2,800	2,800	2,800	0	0
Nursery	0	0	400	400	400	400
Total	**3,417**	**8,286**	**10,086**	**10,897**	**7,736**	**3,540**

URBAN DEVELOPMENT

For urban development within the North Ranch Planning Area, water demands have been determined by looking at the adopted Osceola County Level of Service (LOS) standards and confirmed by extrapolating from the Central Florida Water Initiative (CFWI) draft regional water supply plan projections. According to Policy 1.2.1 of Osceola County's Potable Water Element and Policy 1.1.1 of the Sanitary Sewer Element, the LOS standards shown in

Table 6-6 apply to this area:

Table 6-5. Osceola County Level of Service Standards

Supply/Capacity Standards	Potable Water	Wastewater	Reclaimed Water
Residential			
TWA	96 gpd per capita	96 gpd per capita	N/A
St. Cloud	96 gpd per capita	84 gpd per capita	N/A
Hotel/Motel			
TWA	120 gpd per room	120 gpd per room	N/A
St. Cloud	120 gpd per room	120 gpd per room	N/A
Commercial			
TWA	0.1 gpd per gross sq. ft. of floor area	0.1 gpd per gross sq. ft. of floor area	N/A
St. Cloud	0.1 gpd per gross sq. ft. of floor area	0.1 gpd per gross sq. ft. of floor area	N/A
Public or Private Schools			
TWA	10 gpd per student	10 gpd per student	N/A
St. Cloud	10 gpd per student	10 gpd per student	N/A
Operational Standard for All Land Use Types			
TWA	98% of the maximum permitted capacity and minimum 20 PSI pressure will be maintained during fire flow conditions	98% of permitted average daily flow capacity per day per capita	N/A
St. Cloud	N/A	N/A	N/A

NOTES:

1. gpd = Gallons Per Day
2. PSI = Pounds per Square Inch
3. TWA = Toho Water Authority

Sources:

Osceola County Comprehensive Plan 2025

Based upon these LOS standards and the projected 2080 population for the North Ranch Planning Area in Osceola, the projected potable water demands for development within the Long-Term Master Plan are shown in

Table 6-6. 2080 Projected Potable Water Demand Based Upon Osceola County Level Of Service.

Table 6-6. 2080 Projected Potable Water Demand Based Upon Osceola County Level Of Service Standards

USE	QUANTITY	UNIT	LOS STANDARD (GPD / UNIT)	TOTAL (MGD)
Industrial	23,969,010	G.S.F.	0.1	2.397
Institutional	15,573,000	G.S.F.	0.1	1.557
Office	13,482,000	G.S.F.	0.1	1.348
Retail / Service	30,335,000	G.S.F.	0.1	3.034
Hotel	20,390	Room	120	2.447
Residential	493,000	Persons	96	47.328
School - Elementary	45,000	Students	10	0.450
School – Middle	22,100	Students	10	0.221
School – High	20,400	Students	10	0.204
			TOTAL:	**58.986**

NOTES:
1. G.S.F. = Gross Square Feet
2. GPD = Gallons Per Day
3. MGD = Million Gallons Per Day

Source:
Osceola County Comprehensive Plan 2025

Typical projected non-potable water demands for development in the North Ranch Planning Area in Osceola are set forth in Figure 6-7. A projected 41.957 MGD of non-potable water would be needed to serve development in the year 2080. It is anticipated that these projected non-potable water demands associated with development can be supplied primarily from reclaimed water supplemented by stormwater harvesting.

Table 6-7. – 2080 Projected Non-Potable Water Demands Summary

USE	DEVELOPMENT AREA (ACRES)	IRRIGATION (IN/WK)	% IRRIGATED AREA	TOTAL (MGD)
Industrial	1,598	0.385	20%	0.477
Industrial Other (0.1 gpd per sq. ft.)				2.397
Institutional	1,038	0.385	20%	0.310
Office	1,124	0.385	20%	0.336
Retail/Service	3,034	0.385	20%	0.906
Hotel	408	0.385	30%	0.183
Multi-Family Residential	2,107	0.385	30%	0.944
Townhome Residential	2,458	0.654	30%	1.871
Single-Family Residential	34,516	0.654	30%	26.272
School – Elementary	900	0.385	30%	0.403
School – Middle	425	0.385	30%	0.190
School – High	600	0.385	50%	0.448
Higher Education Campus	320	0.385	30%	0.143
Golf Course	2,600	1.000	80%	8.069
Open Space	5,533	0.654	10%	1.404
	48,208		**TOTAL:**	**41.957**

NOTES:
1. G.S.F. = Gross Square Feet
2. GPD = Gallons Per Day
3. MGD = Million Gallons Per Day

The amounts shown in

Table 6-6 and Table 6-7, equal a year 2080 water demand within the North Ranch Planning Area of 100.943 MGD, not including agriculture.

The North Ranch Planning Area is located within the boundaries of the St. Johns River Water Management District (SJRWMD) and the South Florida Water Management District (SFWMD). The SJRWMD and SFWMD, along with the Toho Water Authority (TWA) and others, are participating in the Central Florida Water Initiative (CFWI) to examine the water needs and resources of Osceola County and the Central Florida area. The CFWI has prepared a draft 2014 Water Supply Plan which sets out projected population growth for the Central Florida Region through the CFWI planning period (2010-2035).

This draft Plan breaks growth down into 5-year increments by county. In addition, the draft CFWI Water Supply Plan shows the projected public supply demand for the CFWI planning period. The public supply use was derived in the draft plan by multiplying the 2006 to 2010 average unadjusted gross per capita rate by the projected population for each five-year increment of growth. The CFWI draft plan water use projections for Osceola County through the year 2035 show a gross rate of total water usage from public supplies (potable and non-potable / unadjusted for additional conservation) of 81.83 MGD for a

population of 453,751. This equals 180.3 gallons gross per capita per day of public supply water use. Applying that gross per capita per day usage to the 2080 projected population in the North Ranch Planning Area, the projected water needed from public supplies for the North Ranch Planning Area would be 88.888 MGD.

In addition to public supplies, the CFWI draft 2014 regional water supply plan projects additional uses of water through self-supply, including:

- Domestic Self-Supply and Small Utility
- Agriculture
- Commercial/Industrial/Institutional and Mining/Dewatering
- Power Generation
- Landscape/Recreational/Aesthetic

Given the nature of proposed land uses within the North Ranch Planning Area, the only self-supply demands that are anticipated to be applicable to the Long Term Master Plan are Agriculture and Landscape/Recreation/Aesthetic. Water demands associated with Agriculture are shown in Table 6-3. Water demands associated with Landscape/Recreation/Aesthetic within the North Ranch Planning Area will largely be from golf courses, parks and other open spaces. Based on the CFWI draft plan, which shows a 2035 regional demand of 72.18 MGD across 16,005 acres of land, an estimated 4,500 gpd/acre is assumed to be required across the irrigated portions of the golf courses, parks and other open spaces within the North Ranch Planning Area, for a total of 11.850 MGD of additional demand projected to occur through Landscape/Recreation/Aesthetic self-supply.

Using the CFWI draft plan projections extrapolated to the year 2080, it is estimated that the year 2080 water demand within the North Ranch Planning Area will be 100.738 MGD, not including agriculture. This quantity is generally consistent with the total demands listed in

Table 6-6 and Table 6-7.

An aspirational goal of the Long-Term Master Plan is to be water-sustainable by employing significant conservation and developing sufficient water supply sources within the North Ranch Planning Area to meet the needs of the North Ranch Planning Area.

WATER CONSERVATION AND USE OF RECLAIMED WATER

A significant portion of the Osceola County potable LOS standard is projected to be met through water conservation. The draft CFWI Plan predicts and encourages further reductions from the projected gross per capita rates through conservation. Appropriate and feasible water conservation measures will be employed in the development of the North Ranch Planning Area to reduce water use. These measures include:

- Low-volume plumbing fixtures in all new residential and non-residential buildings;
- Use of drought-tolerant plants and/or native plants for landscaping;
- Use of lowest-quality water suitable for its intended use, such as rainwater harvesting;
- Reclaimed water metering at point of service;
- Timed irrigation and/or drip irrigation to minimize losses from evapotranspiration; and

- Installation of rain-sensor devices or automatic switches to override landscape irrigation when adequate rainfall has occurred.

In addition, the Conserve Florida Clearinghouse (www.conservefloridawater.org) EZ Guide will be utilized to determine if other water-saving measures are appropriate and feasible. Residential and non-residential construction will be certified as meeting Florida Water Star™ standards (not including agricultural practices).

All construction in the North Ranch Planning Area will be new and will incorporate many water saving devices and strategies. Development will strive to achieve a lower demand for water than is presently estimated in the CFWI 2014 Draft Water Supply Plan for Osceola County and a lower demand than is set out in Osceola County's Potable Water Element LOS standard. Assuming that reclaimed water or stormwater can be used for most non-potable needs, the amount of fresh potable water needed will be reduced. As an aspirational goal, it is assumed that the North Ranch Planning Area can achieve a residential potable water use per capita of 60 gallons per day, which is generally consistent with recent Orlando Utilities Commission reports for new construction utilizing reclaimed water for irrigation and with studies performed by the American Water Works Association.

It is anticipated that, through implementation of water conservation best practices, a reduction of 15 - 20 MGD in potable water demands from public supplies may be experienced within the North Ranch Planning Area.

The use of reclaimed water will also reduce the amount of total new water needed. All reclaimed water generated within the North Ranch Planning Area in Osceola would be used for non-potable purposes such as irrigation of developed areas, industrial process water, etc. The total quantity of wastewater projected to be generated is 50.14 MGD. This is 85 percent of the 58.986 MGD potable water used. Due to seasonality, storage, and process losses only 90 percent of this supply is projected to be usable (50.14 MGD x 0.9 = 45.12 MGD). With conservation of potable public water, it is anticipated that the availability of reclaimed water will be reduced in proportion to the reduction in potable water demand (15 - 20 MGD X 0.85 X 0.90 = 11.48 - 15.30 MGD reduction), resulting in 29.82 - 33.64 MGD of reclaimed water being available for non-potable purposes.

Total projected water needed during the planning period after applying conservation and after utilization of reclaimed water are set out in Table 6-8.

Table 6-8. Projected Total Water Demands (MGD AADF)

Need	2080 Demand
Agriculture from Table 6-3	10.00
Development Potable from Table 6-7	58.99
Development Non-Potable from Table 6-8	41.96
Total	**110.95**
Less Savings from Conservation	(15.00-20.00)
Less Needs Met from Reclaimed Water	(29.82-33.64)
Total Projected Water Needed from Supply Sources	**57.31-66.13 MGD**

WATER SUPPLY SOURCES

To meet the foregoing water demands, one or more of the following traditional and alternative water supply sources will be employed. The timing and implementation of these sources will depend upon the actual timing, location and nature of approved development. Subject to regulatory review, water used on an interim basis for agriculture on lands planned for development will be transitioned to serve these urbanized areas as they displace interim agricultural uses. Anticipated water supply sources, along with their estimated yields expressed in million gallons per day (MGD), are set forth below:

1. **13.7 MGD – Continuation or Conversion of Existing Groundwater Withdrawals in Table 6-1 and Table 6-2 –** Existing consumptive use permits within the North Ranch Planning Area in Osceola already account for 10.25 MGD of water supply to support the Long-Term Master Plan, while permits currently pending account for an additional 3.45 MGD of water supply. These permits will continue to provide water supply to the planning area throughout the planning period, and continue to provide water for irrigation of agricultural uses or may be converted to provide potable or non-potable water to developed areas.
2. **15.6 MGD - Taylor Creek Reservoir/St. Johns River Water Supply Project –** East Central Florida Services (ECFS), along with Toho Water Authority (TWA), is participating in the development of the Taylor Creek Reservoir/St. Johns River Water Supply Project. This project involves the development of the Taylor Creek Reservoir as a potable water supply source. The reservoir is proposed to be augmented with water from the St Johns River. According to recent modeling performed by the SJRWMD, the estimated yield of the project is 50.5 MGD. Assuming negotiations over the development of this water supply project are successful, ECFS would project receiving 5 MGD to support new potable demands in the North Ranch in Osceola. ECFS would also project receiving 10.58 MGD to use for agricultural water supply in the near term as shown in Table 6-1 and Table 6-2. Through the planning period, some of this 10.58 MGD of agricultural water could be transitioned to potable water use, subject to regulatory review. The Taylor Creek Reservoir/St. Johns River Water Supply Project is listed in the regional water supply plan of the St. Johns River Water Management District. This supply source also uses some augmentation from the northern section of the L-73 canal.
3. **10 MGD – Lower Floridan Aquifer (LFA) –** Later in the planning period as demands require, ECFS would develop new groundwater wells withdrawing water from the LFA. The LFA in this area is considered an alternative water source under Section 373.019(1), F.S., because it involves the use of brackish groundwater and is identified as a nontraditional water supply source in the draft CFWI Regional Water Supply Plan.

   Modeling analysis indicates that approximately 10 MGD of additional withdrawals are possible from the LFA in this area without causing unacceptable environmental impacts. This modeling was performed using the draft East Central Florida Steady-state groundwater flows model and considered prior existing legal users in the vicinity (e.g. Cypress Lake Wellfield – SFWMD Permit No. 090224-20).
4. **25 MGD - Upper Floridan Aquifer (UFA) –** Modeling analysis performed using the draft East Central Florida Steady-state groundwater flow model indicates approximately 25 MGD of additional localized groundwater withdrawals from the UFA can be undertaken in eastern portions of Osceola County without causing unacceptable environmental impacts due to the

confined nature of the aquifer in this area. This analysis is consistent with groundwater modeling analysis of the area performed as part of the CFWI draft Regional Water Supply Plan development. ECFS would develop 25 MGD of additional new groundwater withdrawals from the Upper Floridan Aquifer.

5. **20 MGD - Pennywash/Wolf Creek Reservoir (PWR) –** ECFS would construct a new surface water reservoir near the junction of Pennywash and Wolf Creeks at the site of a decommissioned levee and impoundment structure the U.S. Army Corps of Engineers originally constructed in the late 1960's as part of the Upper St. Johns River Basin Flood Control Project. Subject to permitting and other regulatory requirements, ECFS would rebuild and update the levee structure and reservoir to modern standards. The PWR drainage basin is located within the North Ranch Planning Area in Osceola. The location of the PWR within ECFS' service area is shown on the attached Figure 1. The yield from the PWR was established by ECFS using surface water modeling similar to that used by the SJRWMD to estimate the yield of the Taylor Creek Reservoir/St. Johns River Water Supply Project. This surface water modeling did not assume that the PWR would be augmented with water drawn from the St. Johns River. This modeling did determine that minimum flows and levels adopted by rule would be met.

6. **10 MGD - Aquifer Storage and Recovery (ASR) –** ASR involves the injection and storage of potable water into underground aquifer formations during periods of above average rainfall. During drier periods with heavier water use demands, the stored water is recovered by withdrawal through the injection well and used to meet the increased demands. ASR is a cost-effective means of providing water storage because it uses subterranean storage capabilities and eliminates the need to acquire significant land tracts and construct impoundments required for above ground storage while at the same time eliminating water loss due to evapotranspiration. ASR has been successfully employed by the City of Cocoa to increase the yield of water withdrawals from the Taylor Creek Reservoir and increase the reliability of the reservoir. ASR has also been employed by the Peace River – Manasota River Regional Water Supply Authority in conjunction with a reservoir supplied by the Peace River. Subject to permitting, ECFS would employ ASR in conjunction with the PWR to increase the yield and reliability of PWR.

   The use of ASR in this area in conjunction with a surface water reservoir was investigated as part of the Environmental Information Document and Preliminary Design Report for the Taylor Creek Reservoir/St. Johns River Water Supply Project (CH2MHill 2009) (hereinafter "PDR"). The PDR concluded that ASR was a feasible water storage option in this area given the hydrogeology and land uses in this area. Based upon the ASR analysis contained in the PDR, for the North Ranch Planning Area in Osceola, ECFS would construct a 25-well ASR facility in the vicinity of the proposed PWR which ASR facility would require approximately 440 acres of land to accommodate appropriate well spacing (assuming 1,000 ft. radius around each well) and produce a yield of 10-20 MGD.

7. **10 MGD - Intermediate Confining Unit/Intermediate Aquifer System –** Additional water can be obtained from the Intermediate Aquifer between the Surficial and the Upper Floridan. Groundwater modeling analysis performed using the draft East Central Florida Steady-state model indicates approximately 10 MGD can be withdrawn from the Intermediate Confining Unit/Intermediate Aquifer System without causing unacceptable environmental impacts. These modeling results are consistent with the prior experience of the City of Cocoa which has several wells in the water lens of the Intermediate Aquifer from which they are able to extract potable water, at locations just to the north of the North Ranch Planning Area.

8. **Surficial Aquifer –** The use of the surficial aquifer would be investigated. The surficial aquifer has been used to a limited extent by some coastal municipalities in Brevard and Indian River Counties. This investigation would consider the differences in soil conditions, geography, and hydrology of the sector plan area and would account for the need to protect against impacts to wetlands and other surface waters.
9. **Additional Water Supply Sources –** Additional water can be obtained from TWA. This supply would allow for the phasing of other sources and flexibility in water supply development. The amount obtained would be commensurate with the need. Obtaining water from TWA may also allow for "wheeling" and "swapping" and "offsetting" depending upon the facilities configuration as the assets are developed. Additional non-potable water supply may also be obtained through the use of harvested stormwater, which can be used to supplement reclaimed water supplies in meeting non-potable water demands. The amount of water obtained through stormwater harvesting would be determined based on need and reliability.
10. **104.3 MGD - POTENTIAL WATER SUPPLIES (not including the Surficial Aquifer, TWA or Stormwater Harvesting)**

CHAPTER 7. PUBLIC FACILITIES

GENERAL

The North Ranch Planning Area in Osceola is located in an area that is ideally positioned to accommodate regional infill between the Orlando MSA and the Palm Bay-Melbourne-Titusville MSA. Currently, the North Ranch Planning Area is largely agricultural in nature, with limited areas of residential and office development ancillary to ranching and farming. The North Ranch Planning Area is located within the service areas of two potable water companies and one public wastewater company; however, the bulk of the property is located outside of the geographic areas currently serviced by the facilities of these companies. The same holds true to varying extents for other public services and facilities, including but not limited to stormwater management, solid waste collection and disposal, parks and recreational facilities, educational facilities and emergency services. Therefore, it is expected that most public services will require new infrastructure or expansion of existing infrastructure within or in close proximity to the North Ranch Planning Area to serve the projected population of 493,000 by 2080. The master planning considerations associated with new public facilities and services will be more fully evaluated at the time of DSAPs / CMPs and specific site engineering and facilities design.

POTABLE WATER

The North Ranch Planning Area in Osceola lies within the certificated service area of East Central Florida Services (ECFS), a private utility regulated by the Public Service Commission. The North Ranch Planning Area also lies within the service area for Toho Water Authority (TWA), a public utility established under Florida law (Figure 7-1).

The area encompassed by the North Ranch Planning Area could potentially receive its potable water service from either ECFS or TWA, or through some combination of the two providers. Neither ECFS nor TWA currently has potable water supply or treatment facilities within or proximate to the North Ranch Planning Area in Osceola of sufficient capacity to provide adequate levels of service through the 2080 planning horizon (Figure 7-2).As a result, new supply and treatment facilities will likely be required to serve the North Ranch Planning Area, although it is possible that early stages of development might be served by extensions from existing TWA facilities or future facilities within the Northeast District. It is also possible that ECFS or TWA could enter into one or more bulk service agreements with the City of St. Cloud, the City of Cocoa, Orlando Utilities Commission (OUC), another potable water supplier and/or one another in order to provide potable water to the North Ranch Planning Area as a short-term or a long-term potable water supply solution.

Based on the projected population of 493,000 persons at 2080 and the land use program, potable water demand for the Long-Term Master Plan is a projected 58.99 mgd for the planning period based on Osceola County's Level of Service standard (see Chapter 6), although reductions in demand are possible through the implementation of conservation practices. Considering the expanse of the North Ranch Planning Area, an overall system comprised of at least four potable water treatment plants located strategically throughout the property may be anticipated. The locations for potable water treatment plants should be determined in conjunction with review and approval of DSAPs based on their intended service area and capacity, sequence in relation to other potable water facilities and the utility provider ultimately chosen to provide such service.

WASTEWATER

The North Ranch Planning Area in Osceola lies within the TWA's wastewater service area (Figure 7-3). As ECFS does not currently hold a wastewater certificate, wastewater service is anticipated to be provided by TWA. While TWA currently has a number of wastewater collection and treatment facilities in Osceola County (Figure 7-4), it is anticipated that the capacity of these existing facilities is likely to be consumed by planned development within Osceola County's current Urban Growth Boundary. As a result, it is anticipated that TWA will construct new wastewater collection and treatment facilities within or in close proximity to the North Ranch Planning Area, although it is possible that early stages of development might be served by extensions from existing facilities or future facilities within the Northeast District. Alternatively, ECFS could modify their existing certificate to allow them to provide wastewater and reclaimed irrigation water service, and serve as the sole potable water, wastewater and reclaimed water provider within the North Ranch Planning Area. This scenario would require the same infrastructure investments as anticipated if TWA would be the wastewater and reclaimed water service provider.

As Osceola County's Level of Service Standard for wastewater is identical to the Level of Service Standard for potable water, wastewater treatment demand for the Long-Term Master Plan is projected to be 58.99 mgd for the 2080 planning period; however, outdoor uses of potable water and the implementation of water conservation practices have the potential to significantly reduce the ultimate amount of wastewater to be treated. Considering the expanse of the North Ranch Planning Area, an overall system comprised of at least two wastewater treatment plants located strategically within the property may be anticipated. The locations for wastewater treatment plants should be determined in conjunction with review and approval of DSAPs / CMPs based on their intended service area and capacity, sequence in relation to other wastewater facilities and the utility provider ultimately chosen to provide such service.

It is expected there will be a reclaimed water distribution component associated with any wastewater treatment facility that will produce and deliver irrigation water that has been treated to public access standards, thereby serving as an AWS and a wastewater effluent disposal system.

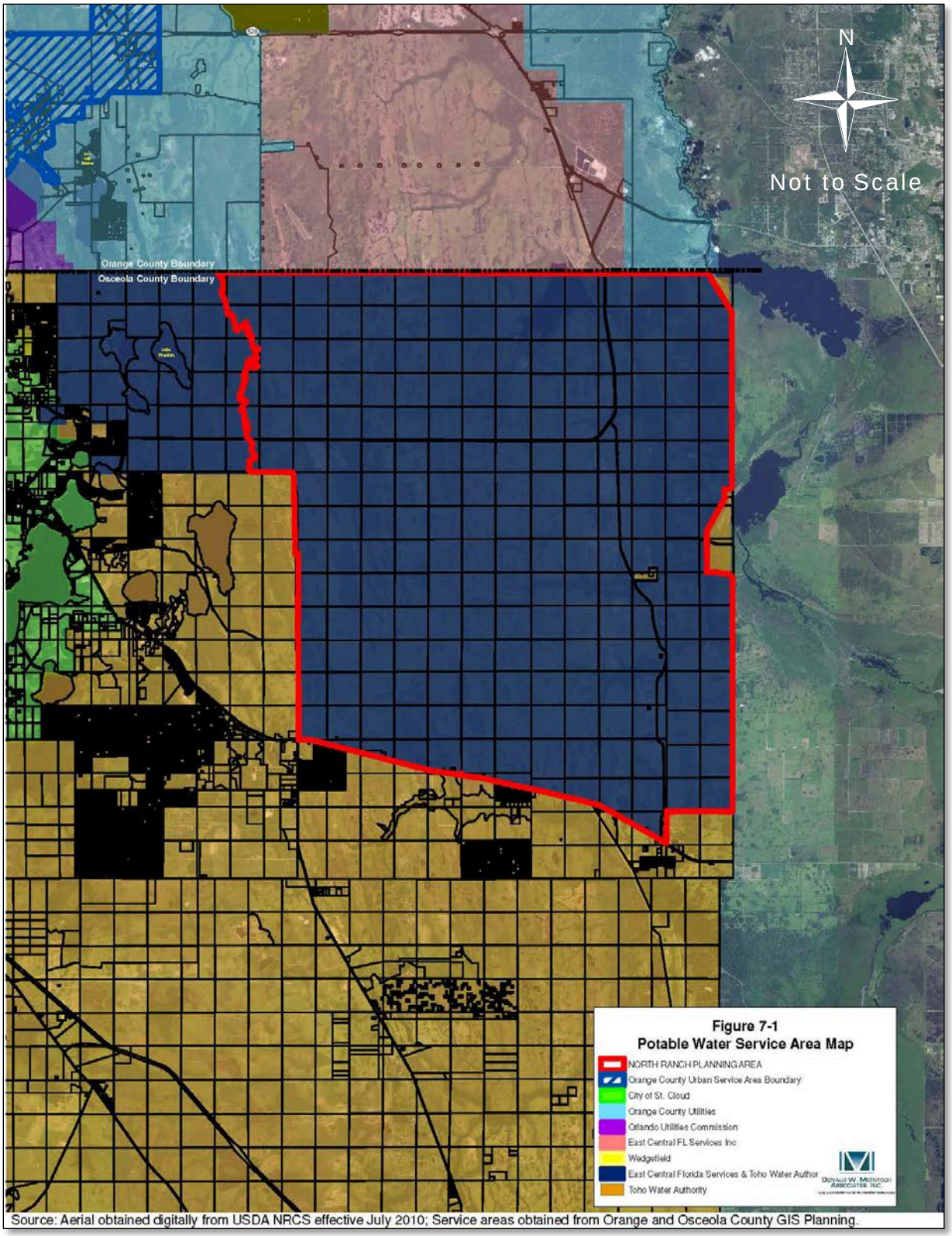


Figure 7-1. Potable Water Service Area Map

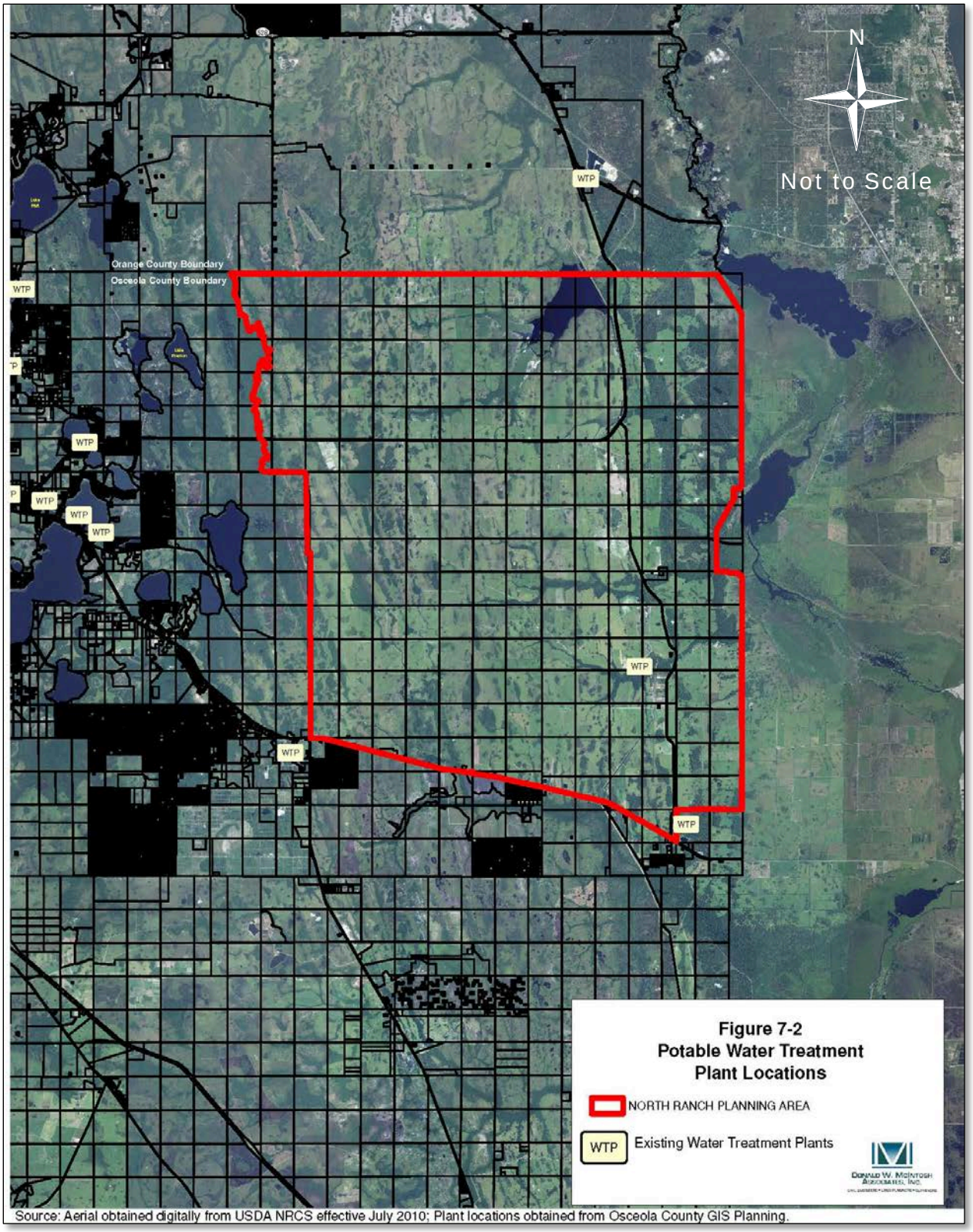


Figure 7-2. Potable Water Treatment Plant Locations

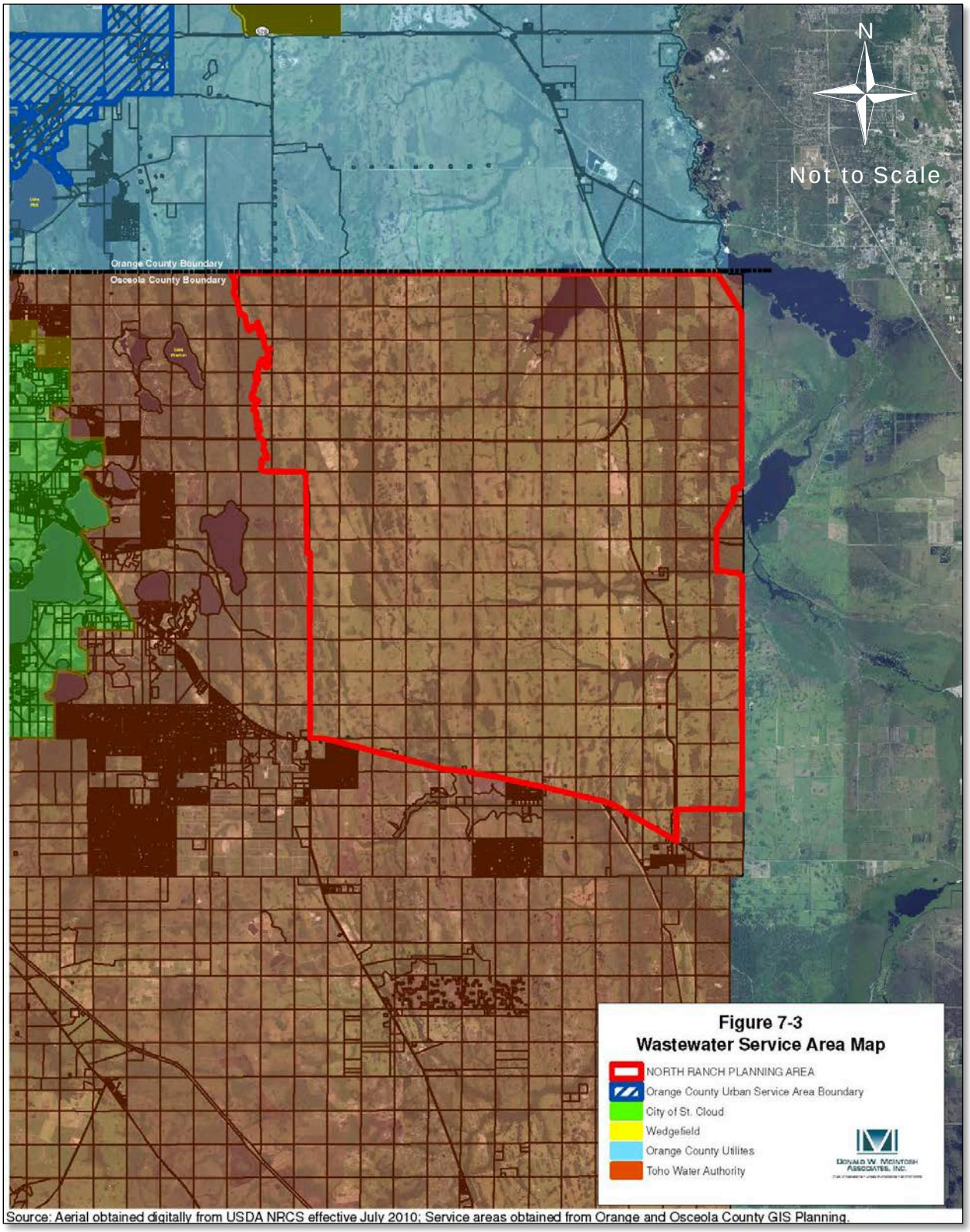


Figure 7-3. Wastewater Service Area Map

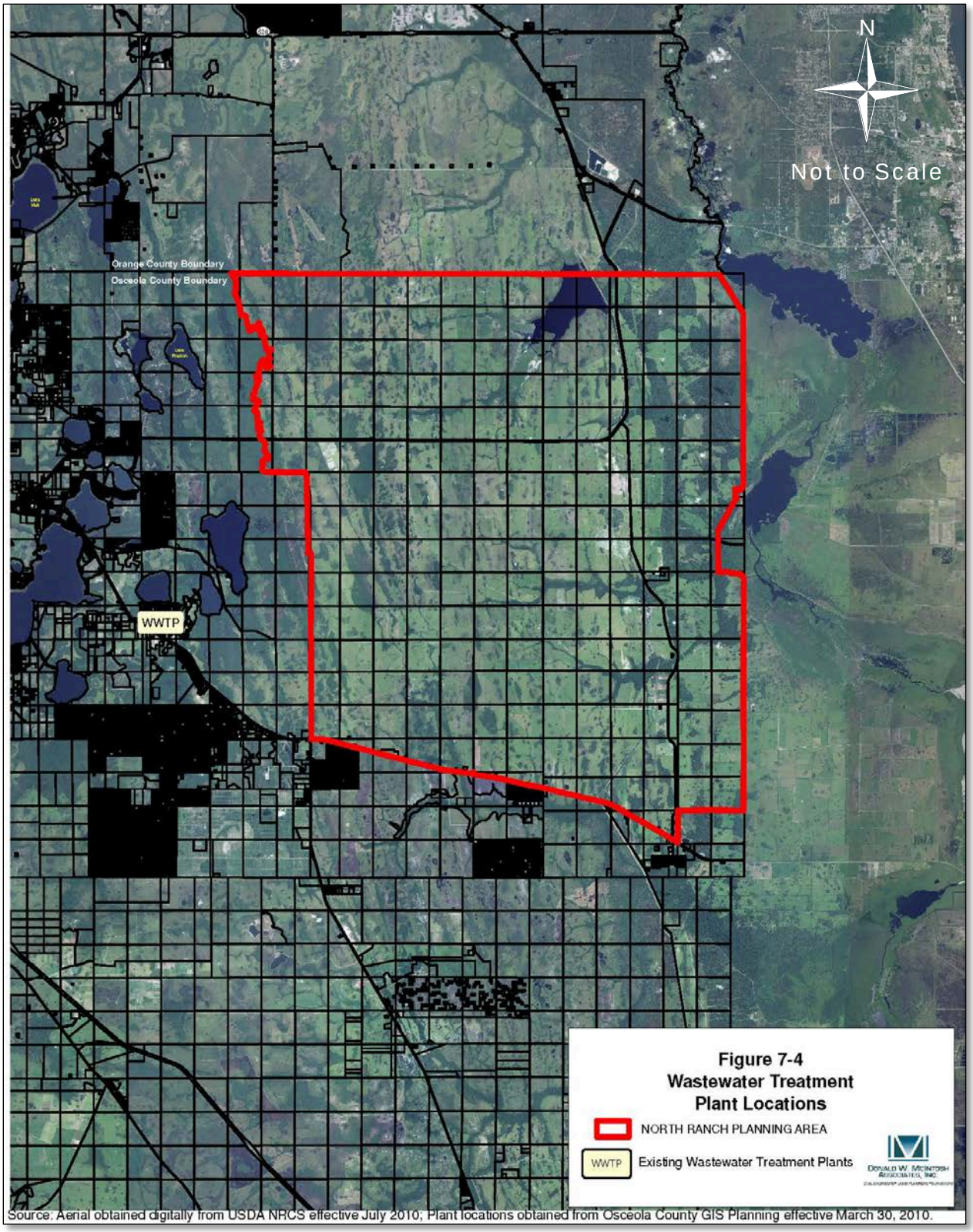


Figure 7-4. Wastewater Treatment Plant Locations

DRAINAGE

The majority of the area encompassed by the North Ranch Planning Area is located within two major SJRWMD drainage basins: the Econlockhatchee River basin and the St. Johns River basin (Figure 7-5).A relatively small portion of the North Ranch Planning Area in Osceola lies within the South Florida Water Management District's (SFWMD's) Upper Kissimmee basin. To a large extent, an interconnected system of wet detention ponds will likely be utilized to provide water quality treatment, peak discharge rate attenuation, and floodplain compensating storage. These ponds, while providing management of stormwater and protection against flooding, may also be used as community features, incorporated aesthetically into parks and community open spaces. There is also potential that areas of preserved wetlands may be utilized for some level of stormwater attenuation, which could also aid in hydrating the wetlands and surrounding vegetation. Based on site conditions, design configurations and applicable rules and ordinances at the time of final engineering, additional Best Management Practices (BMP's) including but not limited to dry retention treatment areas, exfiltration trenches, grassed waterways and swales, and various Low Impact Development (LID) principles will be evaluated as a supplement to the overall master stormwater management system.

Current Flood Insurance Rate Maps (FIRM) published by the Federal Emergency Management Administration (FEMA) show portions of the North Ranch Planning Area in Osceola lie within areas mapped as Special Flood Hazard Areas subject to inundation by the 1% annual chance flood, which is commonly known as the "100-year floodplain" (Figure7-6).Areas shown on the map as "Zone A" are those areas that are subject to flooding by the 1% annual chance flood but with no base flood elevations having been determined. The 100-year flood elevations associated with these areas, as well as more accurate delineations of the limits of Special Flood Hazard Areas, will be determined through detailed flood studies prepared in conjunction with future development permitting. Areas shown on the map as "Zone AE," namely those associated with the main channel of the St. Johns River, are subject to flooding by the 1% annual chance flood and have had their base flood elevations determined through detailed study. The portions of the property lying outside of Zone A and Zone AE lie within "Zone X," which is the designation for areas that lie outside of the 0.2% annual chance floodplain, or outside of what is commonly known as the "500-year floodplain."

The Environmental Plan includes nearly 40,000 acres of land mapped within the 100-year floodplain, or approximately 65% of the mapped floodplains within the North Ranch Planning Area (see Chapter 3).These floodplains generally surround the limits of wetlands and surface waters and are therefore often associated with environmental features, but are not themselves considered to be intrinsically environmental features. Generally, any vertical development located within the 100-year floodplain must be constructed to an elevation above the 100-year Base Flood Elevation. Fill impacts to the 100-year floodplain resulting from development will be compensated for in accordance with FEMA, SJRWMD, SFWMD and Osceola County requirements. Stormwater management ponds, preserved/created wetlands, flood storage ponds and other stormwater facilities may be utilized to provide compensating storage if required to mitigate such fill impacts.

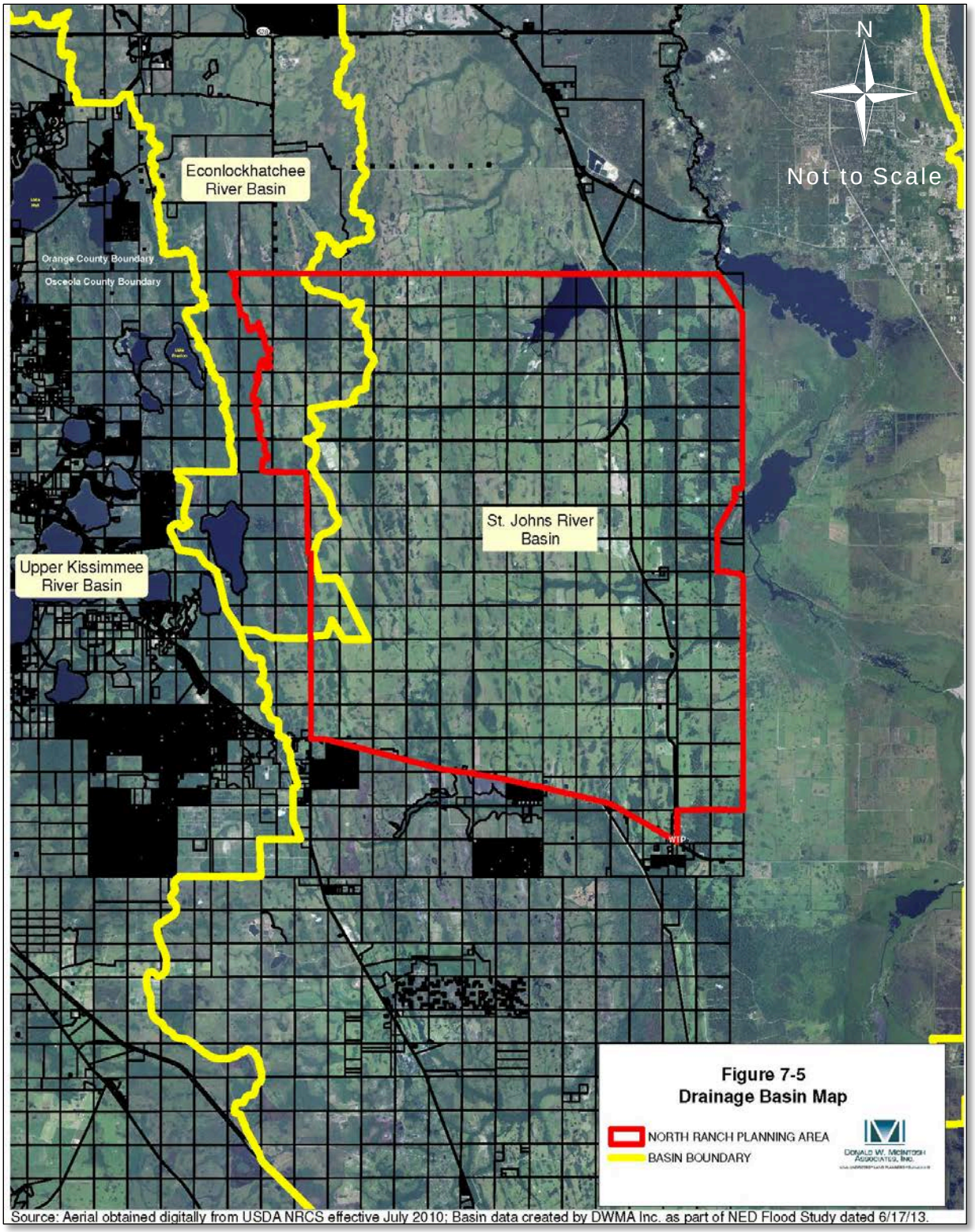


Figure 7-5. Drainage Basin Map

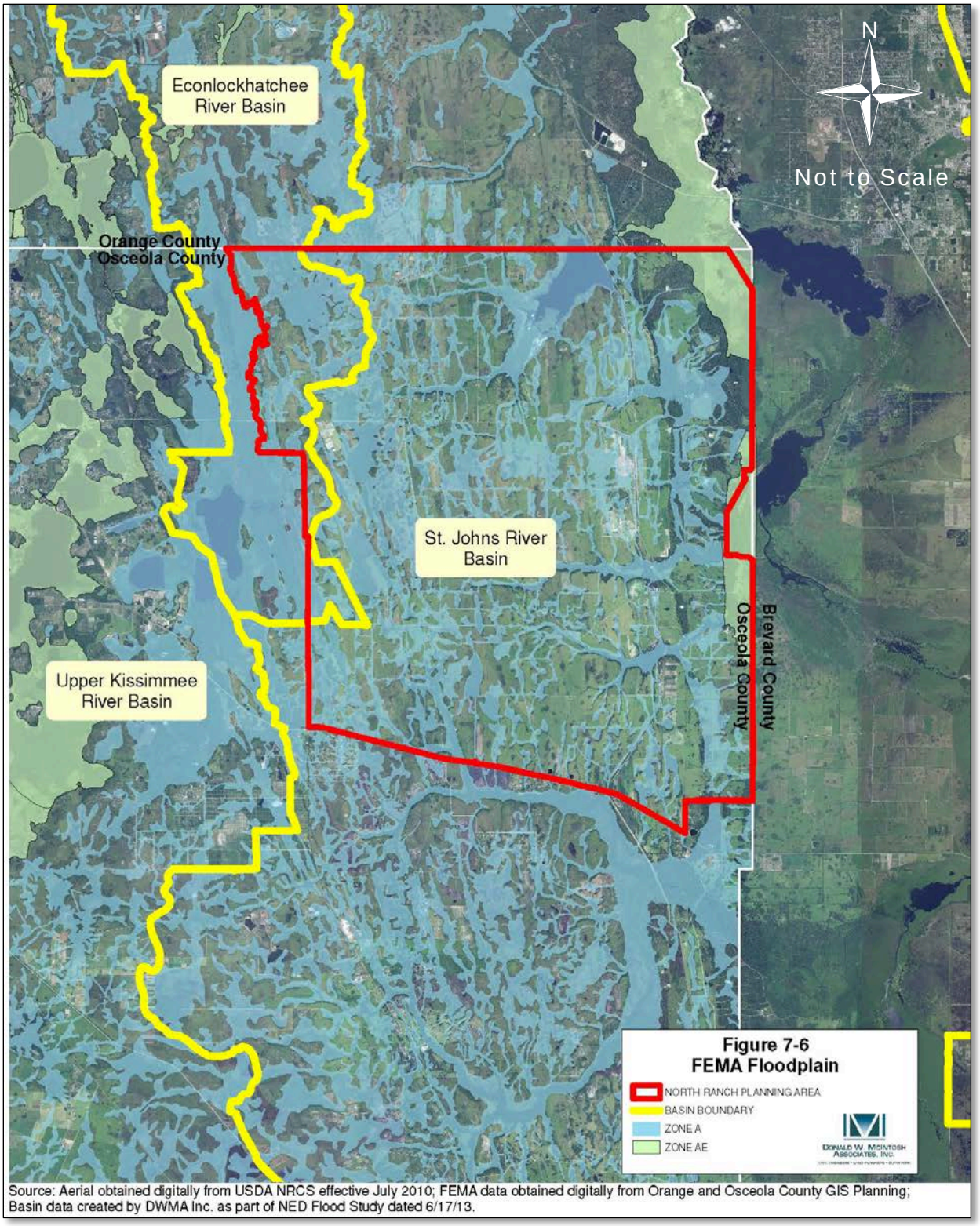


Figure 7-6. FEMA Floodplain

It is expected that stormwater management will commonly (although not necessarily) be provided through a regional/master system with individual property owners typically participating in their operation and management through owner associations, community development districts, County taxing districts, stormwater utilities or some other mechanism suitable to such a purpose. This will allow for greater land planning and land use flexibility, including regional planning of pond/lake locations and their use for irrigation water supply, stormwater harvesting, groundwater recharge, flood management, visual amenity and recreational purposes.

SOLID WASTE

Osceola County currently provides residential collection services within the northern unincorporated portions of the County, including the North Ranch Planning Area, through private contractors. The County also provides recycling services to the public through a private vendor using both curbside pickup and public and private drop-off sites where residents may drop-off various Class I recyclables. Similarly, the County currently contracts for disposal of residential and non-residential solid waste through a private contractor, with the County's role being limited to coordination with this private company by providing population projections and other relevant data to ensure adequate future capacity in its landfill. All Municipal Solid Waste (MSW) is currently disposed of at the J.E.D. Solid Waste Facility, a MSW Class I Solid Waste Disposal Landfill. The facility is located in eastern Osceola County on US 441, approximately two-miles north of Yeehaw Junction and five-miles south of Holopawand was designed and constructed with capacity to service Osceola County through the year 2034 (Figure 7-7).In addition, the Bass Road Recovery Site in Kissimmee accepts yard debris, tires, major appliances, recyclables and household chemicals.

Based on the 2080 population projections for Osceola County and the significant countywide residential and non-residential development anticipated during the planning period, additional landfill capacity will be required in order to accommodate Osceola County's solid waste disposal needs, including over 1,900 tons of solid waste generated per day in the North Ranch Planning Area in Osceola at 2080 (Table 7-1).To put the amount of solid waste generated by the North Ranch Planning Area into perspective, approximately 4 acres of landfill capacity would be consumed annually by the 2080 development program. If this rate of consumption is averaged over the planning horizon, approximately 135 acres of landfill capacity will be required to accommodate development in the planning area through 2080, which is equivalent to approximately 6% of the gross area of the J.E.D. Solid Waste Facility (2,172 acres), approximately 4.5% of the gross area of the Brevard County landfill site on US 192 (2,980 acres), or approximately 2% of the gross area of the Orange County Landfill (6,268 acres).Because construction of a Class I landfill with sufficient capacity to serve only the North Ranch Planning Area through the planning period is not feasible from a regulatory or operational standpoint under current or foreseeable standards, accommodation of solid waste from the North Ranch Planning Area will be accomplished in conjunction with accommodation of countywide needs in a regional facility – needs which the County must accommodate no matter where its expected population increase is located. Options for such a facility may include construction of a new landfill within the County, expansion of the J.E.D. Solid Waste Facility, or an interlocal agreement with an adjacent county or municipality. Within the planning horizon, it is also possible that the County may consider increasing its recycling efforts in order to reduce the amount of solid waste being directed into landfills, thereby extending the functional life of the J.E.D. Solid Waste Facility.

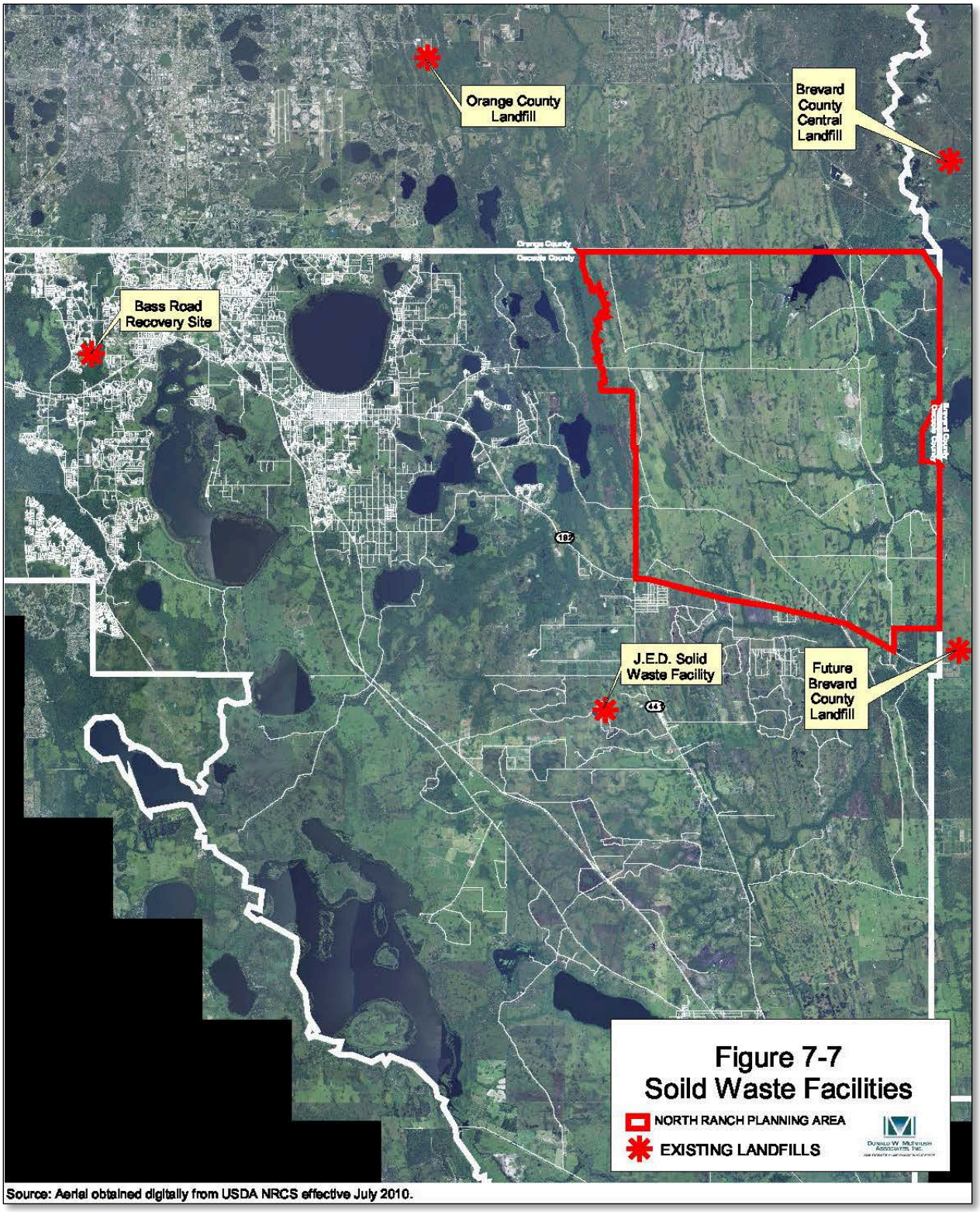


Figure 7-7. Solid Waste Facilities

Table 7-1. Solid Waste Summary

Component	Quantity	Unit	LOSStandard (lbs/day/unit)	2060 Total		2080 Total	
				Cu. Yds.	Tons	Cu. Yds.	Tons
Industrial	15,170	1,000 G.S.F.	10	101	75.9	160	119.8
Institutional	8,497	1,000 G.S.F.	10	57	42.5	104	77.9
Office	8,533	1,000 G.S.F.	10	57	42.7	90	67.4
Retail/service	20,024	1,000 G.S.F.	10	133	100.1	202	151.7
Hotel	12,700	Room	3	25	19.1	41	30.6
Multi-family residential	88,750	Persons	6	355	266.3	493	369.8
Townhome residential	35,500	Persons	6	142	106.5	197	147.9
Single family residential	230,750	Persons	6	923	692.3	1,282	961.4
School – elementary	32,250	Students	0.25	5	4.0	8	5.6
School – middle	15,600	Students	0.25	3	2.0	4	2.8
School – high	15,300	Students	0.25	3	1.9	3	2.6
			Total	1,804	1,353.1	2,583	1,937.3

Sources: Solid Waste Element Data & Analysis – Osceola County Comprehensive Plan. Orange County Solid Waste System Evaluation – Final Report (January 2013).

Notes: G.S.F. = gross square feet; D.U. = dwelling unit; 1 cubic yard = 1,500 pounds (estimated).

This solid waste summary is based on a development program described in Table 9-3.

NATURAL GROUNDWATER AQUIFER RECHARGE

The North Ranch Planning Area does not contain any prime recharge areas (8”-12” per year) as defined in the Osceola County Comprehensive Plan; however, an area of high recharge (4”-8” per year) is located generally along the Central Wetland/Upland Mosaic (Figure 7-8).Mapping by SJRWMD and SFWMD shows that the remaining lands within the North Ranch Planning Area are either classified as discharge areas or as areas that contribute less than 4” per year to the recharge of the aquifer (Figure 7-9). Despite the low recharge rates associated with the soils found on much of the North Ranch Planning Area, the proper collection, management and use of stormwater runoff will help take the greatest advantage of the limited recharge potential. Those areas within the North Ranch Planning Area that are designated as high recharge will either be incorporated as part of the Central Wetland/Upland Mosaic or will be developed consistent with the requirements of the Comprehensive Plan, which require at a minimum that:

- Natural grades and topography be maintained unless alteration is needed to meet health and safety standards.
- Borrow Pits be prohibited.
- Landscaping be predominately comprised of native vegetation.

- Best Management Practices be required to minimize the effects of herbicide and pesticide application for all non-residential and multi-family residential landscaped areas, including golf courses.
- Documentation be provided from each new project demonstrating the measures that will be taken to ensure the projects will not negatively impact the quantity and quality of the recharge to the aquifer.
- Best management practices be used for closed drainage basins and stormwater pond maintenance to ensure that the quality and quantity of recharge is maintained.
- Stormwater pond maintenance procedures be put into effect.
- No net loss of recharge occurs on a development site.

RECREATIONAL FACILITIES

The North Ranch Planning Area in Osceola will be served by a hierarchy of recreational facilities, including neighborhood, community and regional parks. Neighborhood parks can range from active playgrounds, pools and clubhouses to passive plazas and squares. Community parks accommodate larger scale active and passive recreational uses and are located in order to provide diverse recreational experiences to residents in the North Ranch Planning Area. Regional parks are generally resource based parks that provide benefit to the region, in this case including Osceola, Orange and Brevard counties. Regional parks tend to be more passive in nature than the neighborhood or community parks, with upland trails used for hiking, cycling and horseback riding that meander through the preserved upland and wetland habitats. Neighborhood and community park locations and details will be more fully defined with DSAPs / CMPs and specific site engineering design. Regional parks can be envisioned within the environmental framework of the North Ranch Planning Area, with the most outstanding example being the Central Wetland/Upland Mosaic. Where appropriate and as identified in an approved Land and Habitat Management Plan, the Central Wetland/Upland Mosaic will provide recreational opportunities for County residents within a natural environment as described in Chapter 3.

Based on Osceola County's Level of Service Standards for Regional Parks (6 acres per 1,000 persons), Community Parks (4 acres per 1,000 persons) and Recreational Trails (1 mile per 1,500 persons), the North Ranch Planning Area will generate a need for 2,958 acres of Regional Park land, 1,972 acres of Community Park land and 329 miles of Recreational Trails at 2080. These park lands and trails are all components of an open space network that encompasses thousands of acres of land within the North Ranch Planning Area, providing abundant and diverse recreational opportunities to its future residents.

EDUCATION

Due to the historically rural/agricultural nature of the North Ranch Planning Area, existing and planned public schools are not located proximate to planned development areas in the North Ranch Planning Area. The nearest schools are located in and around the City of St. Cloud (Figure 7-10). As a result, new schools will be needed during development of the North Ranch Planning Area. Based on the projected 2080 population of 493,000 in the North Ranch Planning Area in Osceola, nearly 90 public elementary, middle and high schools will be needed to serve over 85,000 students (Table 7-2). During the initial stages of future development, it is likely that existing and/or future schools within the Northeast District, Harmony and the surrounding area will provide capacity until such time that school facilities are constructed within the North Ranch Planning Area.

Because the development framework for the North Ranch Planning Area is planned to be more urban in nature than much of unincorporated Osceola County, it is important that new school facilities are designed consistent with this urban character. As a result, new schools should be integrated as walkable and bikeable destinations into the fabric of the neighborhood or center in which they are located. Where practical, schools should be designed to serve multiple purposes by also incorporating or collocating with parks, playgrounds, libraries, sports facilities, health clinics, etc. Osceola County's historical use of a variety of methods to provide for the education of its youth is expected to allow for a broad range of educational facilities in order to meet the anticipated demand, including public schools, private schools, charter schools and vocational schools.

Campuses of the University of Central Florida, University of Florida and Valencia Community College currently lie within 10–20 miles of the North Ranch Planning Area. It is also likely that, based on the ultimate population within the North Ranch Planning Area, institutions of higher learning will desire to locate within or near the planning area, potentially including community colleges, vocational schools and university campuses.

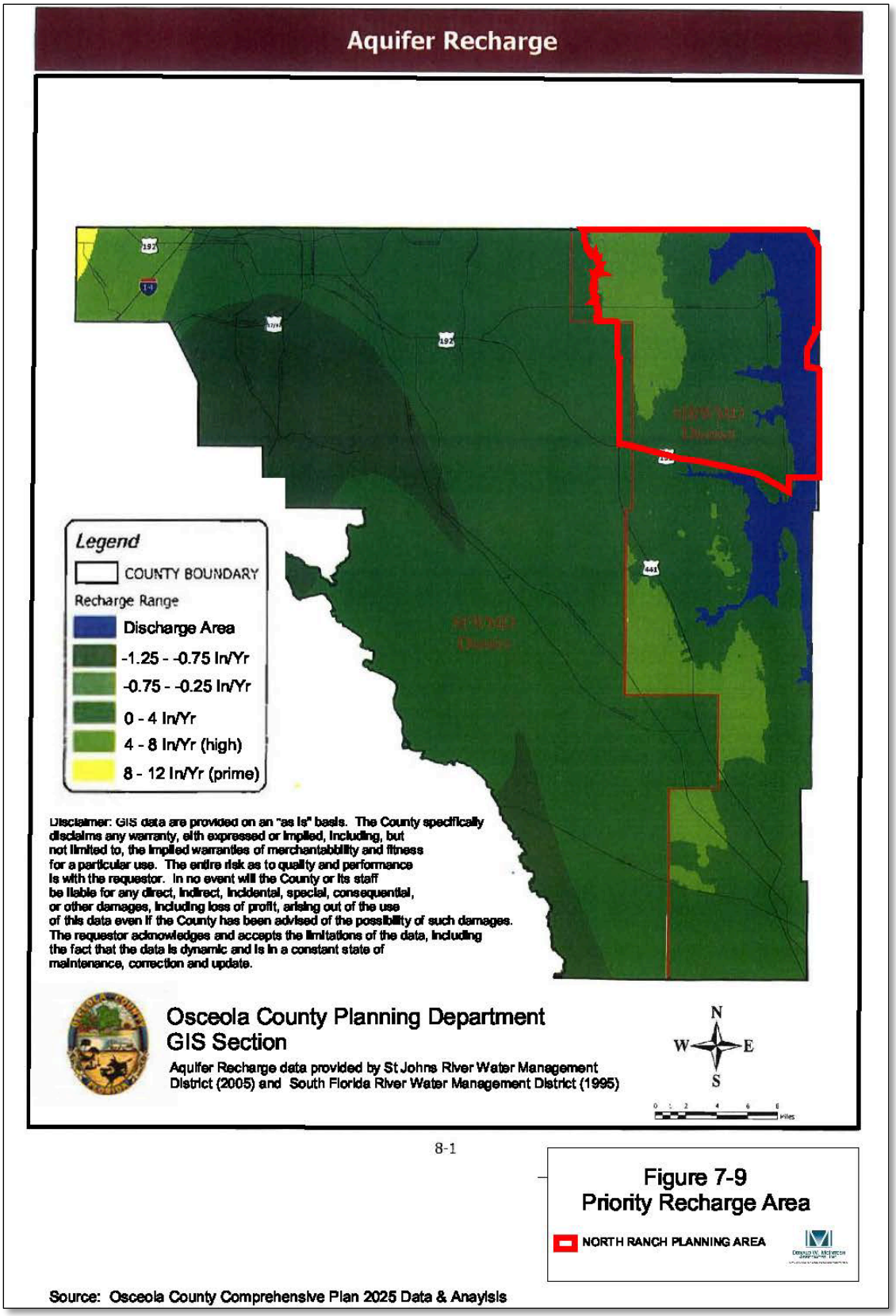


Figure 7-8. Priority Recharge Area

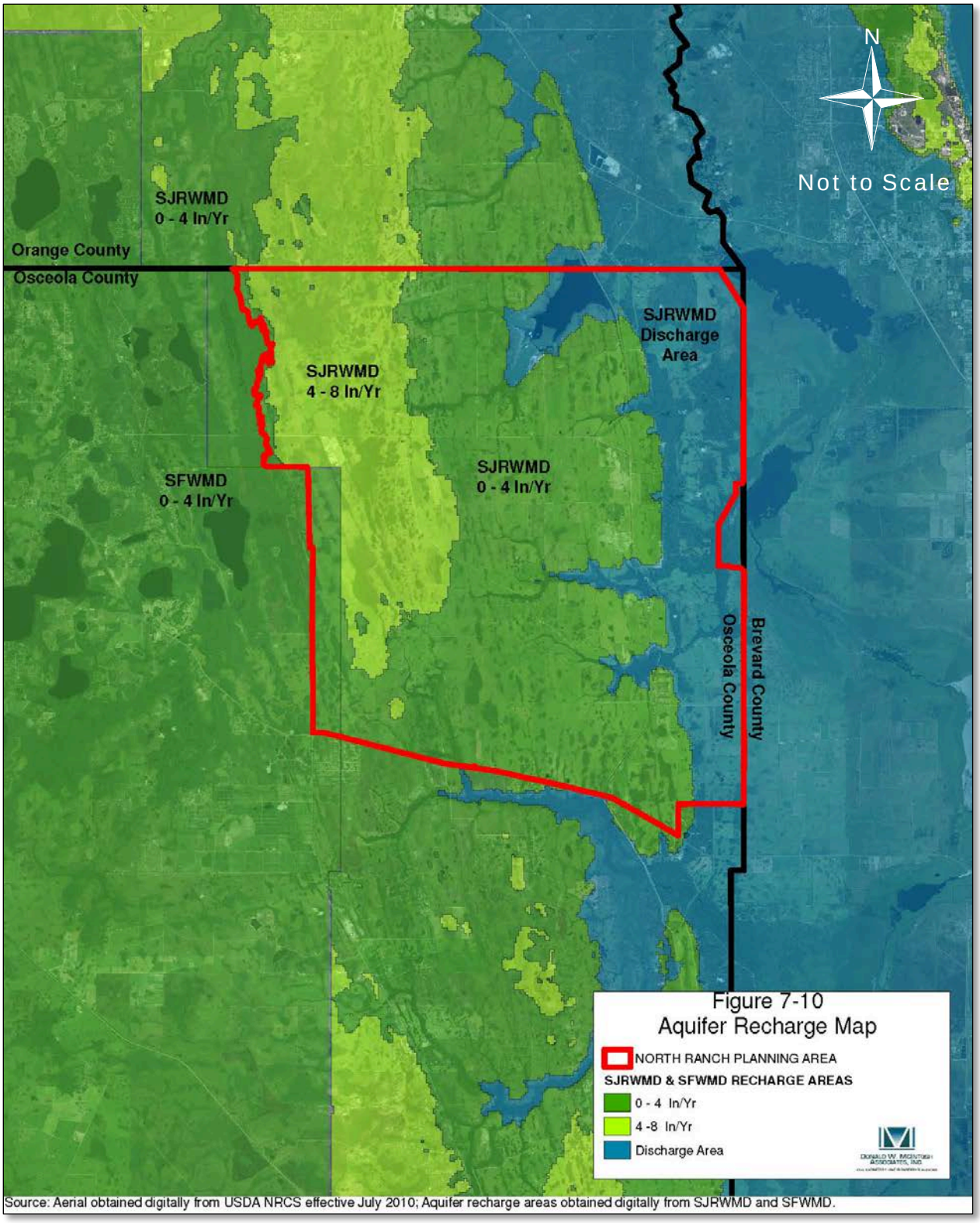


Figure 7-9. Aquifer Recharge Map

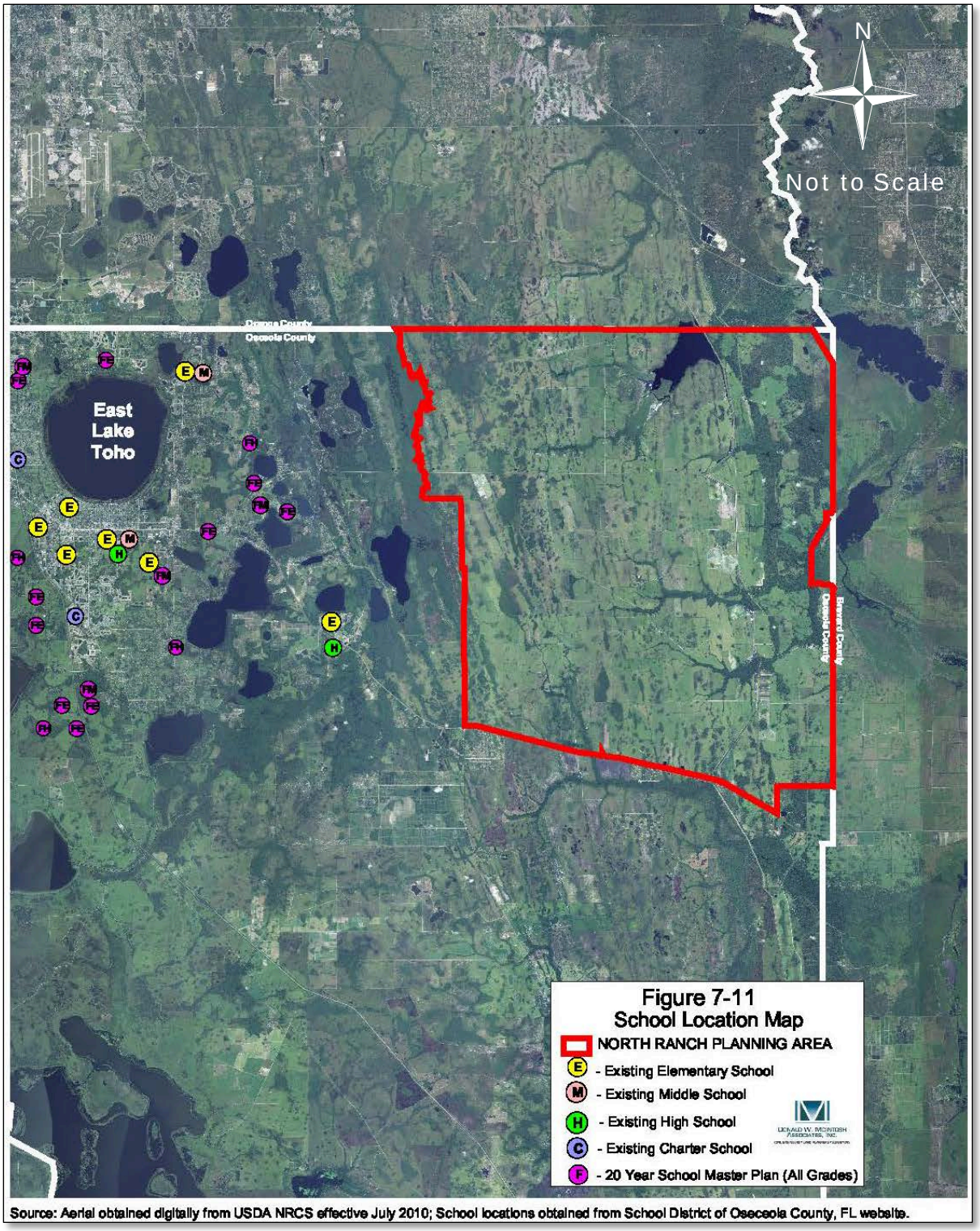


Figure 7-10. School Location Map

Table 7-2. Public Education Summary

2060 Student Population							
Component	**Quantity**	**Unit**	**Students per Unit**	**Elementary School**	**Middle School**	**High School**	**Total Students**
Multifamily residential	32,870	D.U.	0.36	6,153	2,958	2,722	11,833
Townhome residential	13,148	D.U.	0.502	3,432	1,650	1,518	6,600
Single-family residential	85,463	D.U.	0.502	22,309	10,726	9,868	42,903
			Total	**31,894**	**15,334**	**14,108**	**61,336**

2080 Student Population							
Component	**Quantity**	**Unit**	**Students per Unit**	**Elementary School**	**Middle School**	**High School**	**Total Students**
Multifamily residential	42,131	D.U.	0.36	7,887	3,792	3,488	15,167
Townhome residential	19,662	D.U.	0.502	5,133	2,468	2,270	9,871
Single-family residential	120,807	D.U.	0.502	31,535	15,161	13,948	60,644
			Total	**44,555**	**21,421**	**19,706**	**85,682**

Assumptions:

Generation Rates	**Total**	**Elementary School**	**Middle School**	**High School**
Multifamily residential	0.360	0.187	0.090	0.083
Townhome residential	0.502	0.261	0.126	0.115
Single-family residential	0.502	0.261	0.126	0.115
Maximum Students per Facility		750	1300	1700
2080 School Sites		60	17	12
School Site Acreage		15	25	50

Source: Osceola County Land Development Code.

Note: D.U. = Dwelling Unit

EMERGENCY SERVICES

Existing emergency services are remote to the North Ranch Planning Area (Figure 7-11),and provide levels of service consistent with rural/agricultural uses. New facilities will be needed in order to provide levels of service appropriate to the more urban nature of the North Ranch Planning Area. Early stages of development may be able to be served by a combination of existing Osceola County facilities and future facilities within the Northeast District; however, the development of new fire stations within the North Ranch Planning Area will ultimately be guided by the Florida Department of Health, Bureau of Emergency Medical Services biennial comprehensive state plan for basic and advanced life support services.Based on a general and high-level analysis, it can be anticipated that the 133,000 acres within the North Ranch Planning Area will ultimately be served by 20-25 new fire stations.

The Osceola County Sheriff's Office will require significant increases over time in personnel and equipment associated with additional deputies, supervisors, administrative staff, patrol cars and other equipment. Based on the ultimate population envisioned within the North Ranch Planning Area, it is likely that at 1-2 Sheriff's substations may be warranted.

FINANCING PUBLIC FACILITIES

As with the transportation facilities addressed by the Long-Term Master Plan in Chapter V, other public facilities within the North Ranch Planning Area may be designed, constructed, operated and/or maintained with a variety of legal entities and financing methods. These issues are more appropriately addressed through subsequent planning steps, such as the DSAPs / CMPs. Such legal entities and financing methods include but are not limited to:

- Stewardship district established by special act of the Legislature;
- Community development districts;
- Special improvement districts;
- Impact fees;
- Special assessments
- Municipal service taxing unit / municipal service benefit unit;
- Tax-increment financing;
- Property owner associations;
- Homeowner associations;
- Osceola County;
- Osceola County School Board; and
- Any other legal entity or financing method authorized by Florida law.

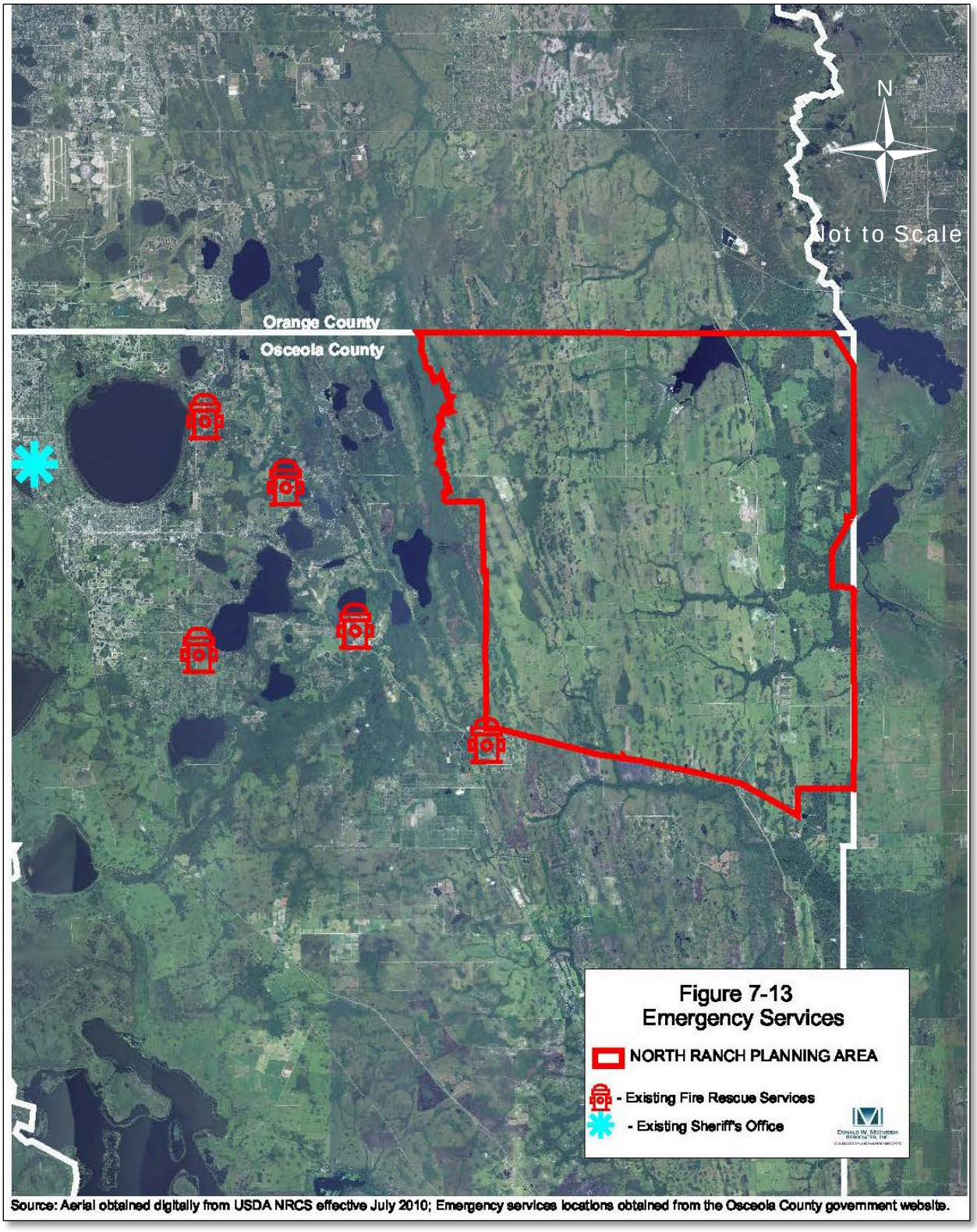


Figure 7-11. Emergency Services

CHAPTER 8. INTERGOVERNMENTAL COORDINATION

Osceola County has a robust Intergovernmental Coordination Element (ICE) within the current 2025 Comprehensive Plan. Therein, the County sets forth goals, objectives and policies requiring coordination with adjacent governmental jurisdictions on planned and future development. This element also includes a coordination component with the Osceola County School Board on educational facilities; a coordination requirement on public facilities, including water supply, wastewater treatment, and transportation; and a coordination requirement relating to protection of natural resources. In the future, as Detailed Specific Area Plans are reviewed by Osceola County for portions of the North Ranch, those applications will be reviewed by the County in a manner consistent with the ICE as supplemented by other coordination requirements in the goals, objectives and policies of the Long-Term Master Plan.

In addition to adherence to the ICE, Osceola County will engage in an extensive public involvement and hearing process relating to the Long-Term Master Plan for the North Ranch. This process will include publicly noticed workshops and open houses to discuss and construct the major components of the Long-Term Master Plan, a transmittal hearing before the Board of County Commissioners and ultimately an adoption hearing before the Board of County Commissioners.

Concurrently, a multidisciplinary East Central Florida Corridor Task Force, appointed by Governor Scott and led by the Florida Department of Economic Opportunity, is conducting a study of existing and future transportation corridors in East Central Florida with a study area that includes the North Ranch. The purpose of the Task Force is to evaluate and develop consensus recommendations on future transportation corridors serving established and emerging economic activity centers in portions of Brevard, Orange, and Osceola counties. These recommended corridors are likely to include one to close the "regional connectivity gap" between the emerging and planned job cores in southeastern Orlando and Osceola County's planned Northeast District and the existing job core in Melbourne and southern Brevard County. Several options are being evaluated, including the Pineda Extension that would extend through the heart of the North Ranch Planning Area. Other options include improvements to existing corridors such as US 192 or State Road 528. That process will engage stakeholders throughout the region, including representatives from the Florida Department of Transportation, Orange County, Brevard County, and Osceola County. While officially separate, the task force will facilitate intergovernmental coordination relating to the Long-Term Master Plan for the North Ranch.

Other important existing and proposed planning initiatives that relate to the North Ranch include the Northeast District Conceptual Master Plan, the Osceola County Expressway Authority Master Plan, the Osceola Parkway Extension PD&E Study, OOCEA Master Plan Update, and Space Coast Long Range Transportation Plan.

As proposed, the Long-Term Master Plan reflects the significant regional visioning and planning efforts which have occurred and are ongoing in Osceola County and Central Florida. Those activities include, among others, the long-range transportation plan of MetroPlan Orlando (serving as the metropolitan planning organization for Orange, Osceola and Seminole counties); the master plans for the Orlando-Orange County Expressway Authority and Osceola County Expressway Authority; and the "How Shall We Grow?" regional vision report prepared in 2006-2007 by *myregion.org* for Brevard, Lake, Orange, Osceola, Polk, Seminole and Volusia counties as well as many municipal participants throughout the region. Additional coordination requirements regarding long-range transportation plans and regional water supply plans are set forth in Section 163.3245, F.S..

As reflected in Figure 8-1, the North Ranch is a vast landscape that can connect key economic centers within the region and accommodate a substantial portion of the population growth expected in East Central Florida in coming decades, in a manner consistent with the regional visions.

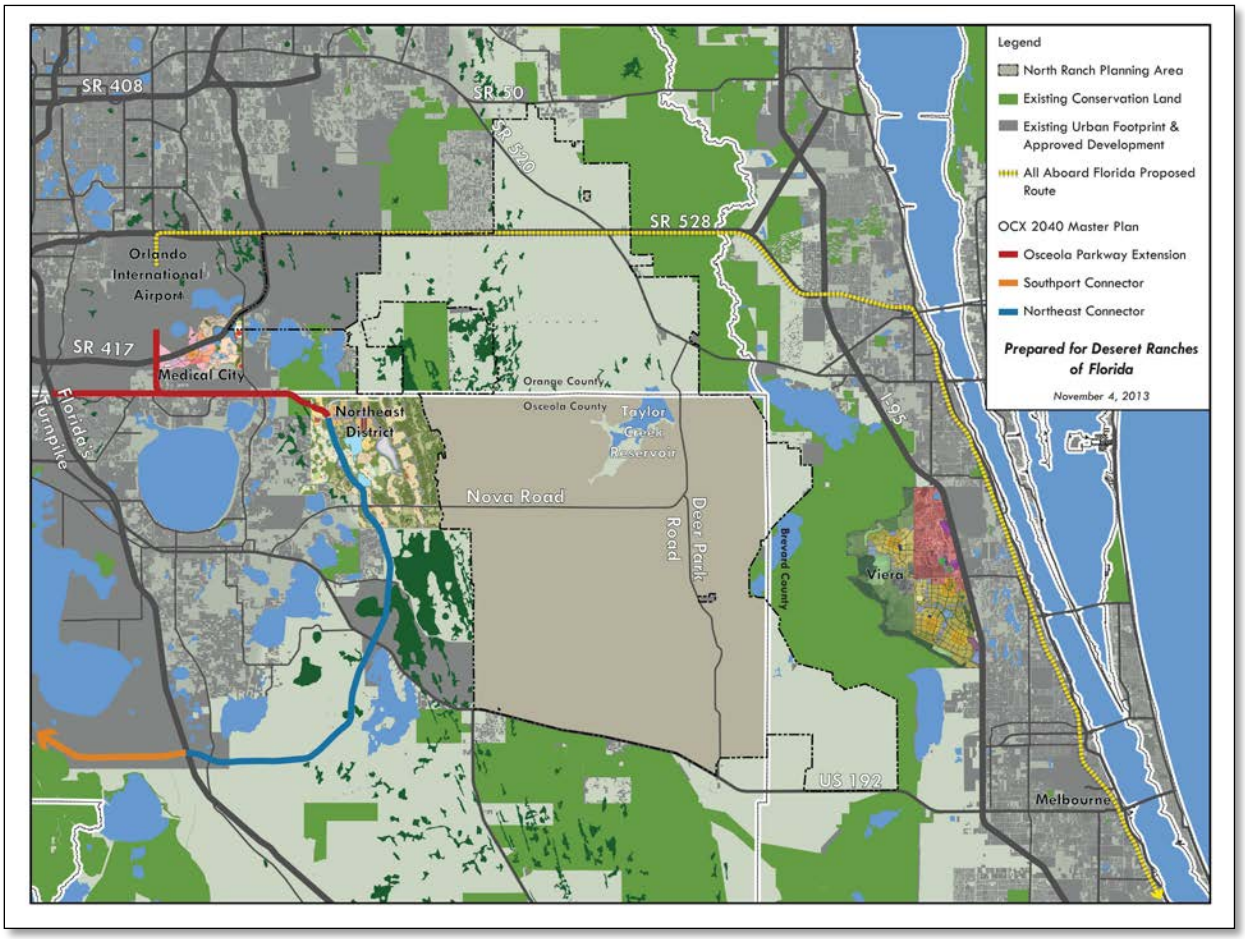


Figure 8-1. North Ranch and Adjacent Jurisdictions

(Source: Renaissance Planning Group)

APPENDIX A. TRAVEL DEMAND FORECASTS

INTRODUCTION

This technical appendix to Chapter 5 details the methods used to estimate travel demand and resulting levels of service for the Osceola portion of the Long-Term Master Plan area and surrounding traffic shed. By 2060, over 350,000 people are expected to live in the Osceola portion of the Long-Term Master Plan and by build-out, expected to be around 2080, nearly 500,000 will live in the Long-Term Master plan area. As presented in Chapters 4 and 5, the Long-Term Master Plan is organized around two transit oriented multimodal corridors, with each corridor including a regional expressway and arterial as well as a passenger rail line. This appendix begins by detailing the methods used to estimate 2060 and 2080 travel demand. It then presents resulting expressway volumes and transit ridership estimates as well as expressway levels of service for both time periods.

METHODOLOGY

The Central Florida Regional Planning Model, version 5.0 (CFRPM) was used to estimate travel demand for the Osceola portion of the Long-Term Master Plan. The CFRPM was selected over the MetroPlan Orlando travel demand model because the network includes the entire travel impact area of the Long-Term Master Plan, including Orange, Osceola and Brevard Counties. The MetroPlan Orlando model does not extend into Brevard County. The disadvantage of using the CFRPM is its age. The model was developed in 2008 with a forecast horizon of 2035. The impact of the Great Recession on growth in Central Florida was not understood at that time and the resulting socioeconomic forecasts are high in comparison to recent forecasts prepared by the University of Florida's Bureau of Economic and Business Research (BEBR).

A two-step process was used to develop a set of 2060 forecasts for the CFRPM. The first was an update of the 2035 forecasts given changes that occurred since those forecasts were developed. The second was extrapolating the updated 2035 forecasts to 2060, the forecast horizon for the Long-Term Master Plan. The 2060 forecasts were extrapolated once again to 2080 for the build-out analysis.

The 2035 network in the CFRPM includes the adopted cost feasible network improvements anticipated by FDOT and MPOs in District 5 over the planning horizon. That network was augmented for this analysis with expressway improvements listed in the Osceola County Expressway Authority Master Plan completed after the 2035 CFRPM network was developed and with roadway improvements identified in the Long-Term Master Plan. The same network was used for both the 2060 and 2080 forecasts.

Transit ridership was estimated using a spreadsheet model. The spreadsheet calculated ridership from the total travel demand along the major multimodal corridors where passenger rail is proposed. Demand was determined from traffic forecasts from the updated 2060 and 2080 CFRPM model runs along roadways parallel to the passenger rail alignments. The portion of total demand shifting from roads to rail was determined using information from similar multimodal corridors elsewhere in the country. Details of the methodology are presented below.

SOCIOECONOMIC FORECASTS

2035 MODIFICATIONS

The 2035 CFRPM socioeconomic (ZDATA) forecasts were developed in 2008 by each of the MPOs in District 5 for their respective planning areas. The MPOs agreed to use a hybrid of the county-based medium and high forecasts prepared by BEBR in 2008 as county control totals, and then allocated growth among the traffic analysis zones (TAZs) in their planning areas based on locally adopted future land use plans.

Since 2008, BEBR has adjusted its forecasts down to reflect the impact of the Great Recession on growth in Florida. MetroPlan Orlando, which is updating its LRTP ahead of the other four MPOs in the District, has already prepared a 2040 ZDATA forecasts based on the latest medium forecasts from BEBR. The remaining MPOs are scheduled to prepare their 2040 forecasts by early 2014 using either the medium or medium high BEBR forecasts.

The comparison of the latest BEBR forecasts with the 2035 CFRPM forecasts, presented in Chapter 2, indicates that the 2035 CFRPM forecasts are now comparable with the latest 2040 BEBR forecasts. As a result, the 2035 CFRPM forecasts were assumed to reflect a forecast year of 2040 for areas outside the MetroPlan Orlando modeling area. The recently developed 2040 ZDATA from MetroPlan replaced the 2035 CFRPM forecasts for traffic zones within the MetroPlan modeling area. This required aggregating or modifying a number of 2035 CFRPM zones.

2060 AND 2080 EXTRAPOLATIONS

The modified 2040 ZDATA forecasts were extrapolated to 2060 to match the forecast horizon for FDOT's State Transportation Plan. County based population and employment growth rates were developed using the base year 2005 CFRPM ZDATA and the modified 2040 ZDATA. The county based rates were then applied equally across all zones in each respective county. While the actual growth rate within any given zone in a county will likely differ from other zones, this approach provided technical simplicity without compromising accuracy for the Long-Term Master Plan. The 2040 forecasts for traffic analysis zones within Osceola County's Urban Growth Boundary (UGB) were not extrapolated to reflect the anticipated build-out of the UGB by 2040. The projected 2060 program for the Osceola portion of the Long-Term Master Plan was translated to ZDATA and added to the forecasts. The build-out program was used to estimate the 2080 forecasts for the Long-Term Master Plan area. Outside the Master Plan area, ZDATA were extrapolated using the same methods and rates used for the 2060 forecast. Figure 5A-1 summarizes the 2040, 2060 and 2080 forecasts for population and employment by county.

NETWORK UPDATES

The CFRPM 2035 Cost Feasible Plan was the base network used for the analysis. The network reflects the currently adopted LRTPs from the MPOs in the District. Since the last round of MPO LRTPs, the Orlando, Orange County Expressway Authority (OOCEA) completed feasibility studies for major corridors identified in its Master Plan, including the extension of SR 408 to the east, the extension of SR 417 to the south and east and the SR 528 corridor. The studies found that the extension of SR 408 is feasible from its current eastern terminus to the intersection of SR 50 and SR 520 and the extension of SR 417 is feasible from I-4 southwest of Disney to SR 528 east of SR 417.

The Osceola County Expressway Authority (OCX) was formed after the OOCEA feasibility studies were completed. The OCX Master Plan prepared shortly after the Authority was created relied heavily on the analysis and findings of the SR 417 Feasibility Study prepared by OOCEA. The SR 417 Extension corridor

is divided into segments for the OCX Master Plan, with the western segment referred to as the Poinciana Expressway, the middle segment called the Southport Connector and the eastern segment called the Northeastern Connector. The OCX Master Plan also includes the Osceola Parkway Extension, following the recommendations from a feasibility study conducted by Osceola County.

Figure 5A-1 – 2060 and 2080 Population and Employment forecasts

	Population						
County	2005	2040	2005 to 2040 Increase	2060	2040 to 2060 Increase	2080	2040 to 2080 Increase
Seminole	422,630	498,115	18%	541,248	9%	584,382	16%
Orange	1,052,479	1,886,505	79%	2,334,424	24%	2,811,004	40%
Osceola	243,501	609,025	150%	817,921	34%	1,002,636	48%
Brevard	526,920	771,991	47%	912,030	18%	1,167,155	43%
Sub-Total	*2,245,530*	*3,765,636*	*68%*	*4,605,623*	*22%*	*5,565,177*	39%
Other Counties	1,335,874	2,412,479	81%	3,027,685	26%	3,642,888	41%
CFRPM Total	***3,581,404***	***6,178,114***	***73%***	***7,633,308***	***24%***	***9,208,065***	***21%***

	Employment						
County	2005	2040	2005 to 2040 Increase	2060	2040 to 2060 Increase	2080	2040 to 2080 Increase
Seminole	214,488	378,598	77%	472,377	25%	566,155	20%
Orange	807,357	1,506,794	87%	1,906,477	27%	2,306,157	21%
Osceola	77,419	269,824	249%	379,771	41%	417,194	10%
Brevard	277,596	385,905	39%	447,793	16%	603,496	35%
Sub-Total	*1,376,860*	*2,541,121*	*85%*	*3,206,418*	*26%*	*3,893,002*	*21%*
Other Counties	487,663	899,497	84%	1,134,828	26%	1,370,161	21%
CFRPM Total	***1,864,523***	***3,440,618***	***85%***	***4,341,246***	***26%***	***5,263,163***	***21%***

Each of these improvements, deemed financially feasible by OOCEA and OCX, was added to the 2035 CFRPM Cost Feasible Network. In addition, the proposed network for the Osceola portion of the Long-Term Master Plan, as shown and described in Chapter 5, was added to the CFRPM network. This network was used for both the 2060 and 2080 forecasts.

TRANSIT RIDERSHIP FORECASTS

It was determined based on tests of the CFRPM 5.0 model that ridership estimates for the proposed passenger rail corridors in the Long-Term Master Plan area would be low given the magnitude and design of transit supportive development proposed for those corridors. These results are likely caused by the fact that the transit modules in CFRPM were calibrated using existing transit ridership levels in the region, which are low because of the lack of transit supportive development in the region. The proposed multimodal corridors in the Long-Term Master Plan are specifically designed to maximize transit ridership, yet the CFRPM transit modules were not calibrated in a way that can accurately estimate ridership of such corridors.

A spreadsheet tool was developed to generate more reasonable estimates of ridership in the multimodal corridors. Each corridor was divided into segments and traffic volumes from the major

roadways within each segment were summed to determine total travel demand for the corridor. The traffic demand was determined by netting out truck trips (assumed to be 5 percent of the volume) and converting the remaining auto vehicle trips into person trips using an average auto occupancy factor of 1.40. A 7 percent transit mode share split was applied to the person trip demand to estimate transit ridership for each segment for both 2060 and 2080. The percentage is based on actual results from commuter rail corridors with transit oriented development patterns, including the MARC commuter rail line between Baltimore and Washington (around 15% mode share during peak periods[1]) and the Caltrain commuter rail line between San Jose and San Francisco (10% mode share[2]).

TRAVEL DEMAND RESULTS

ROADWAYS

Figures 5A-2 and 5A-3 present 2060 daily traffic volumes, number of existing and future lanes and level of service results for the expressways in the Long-Term Master Plan area and surrounding travel shed. Level of service results are based on level of service "D" thresholds for urbanized freeways shown in the 2012 Florida Department of Transportation Generalized Level of Service tables. The volumes have not been adjusted to account for anticipated shifts from autos to transit, so they reflect an upper range estimate.

Figures 5A-4 and 5A-5 present the 2080 daily traffic volumes, existing and future lanes and levels of service for expressways in the Long-Term Master Plan area and surrounding travel shed. Again, level of service results are based on a "D" threshold for urbanized freeways as listed in FDOT's Generalized Level of Service tables.

TRANSIT

Figures 5A-6 and 5A-7 present the 2060 and 2080 ridership results for the two passenger rail lines. The 2060 average daily ridership across all sections of the north-south line is just over 25,000, while the average daily ridership for the east-west line is just under 22,000 trips. The 2080 average daily ridership for the north-south line is over 32,000 and the ridership for the east-west line is over 27,000. By comparison, the SunRail line is expected to average 4,300 trip per day soon after opening, although those ridership numbers will increase as transit oriented development fills in around the SunRail stations. The anticipated ridership levels for these two lines are expected to be sufficient for federal capital funding through the Federal Transit Administration's New Starts program.

[1] Field, Christopher, Ph.D., A Comparison of the Number of Travelers Riding MARC and Driving I-95, MD-295, and I-270, December 2007

[2] Based on Caltrain daily ridership and CalTran daily traffic volumes on US 101, and I-280 in 2012.

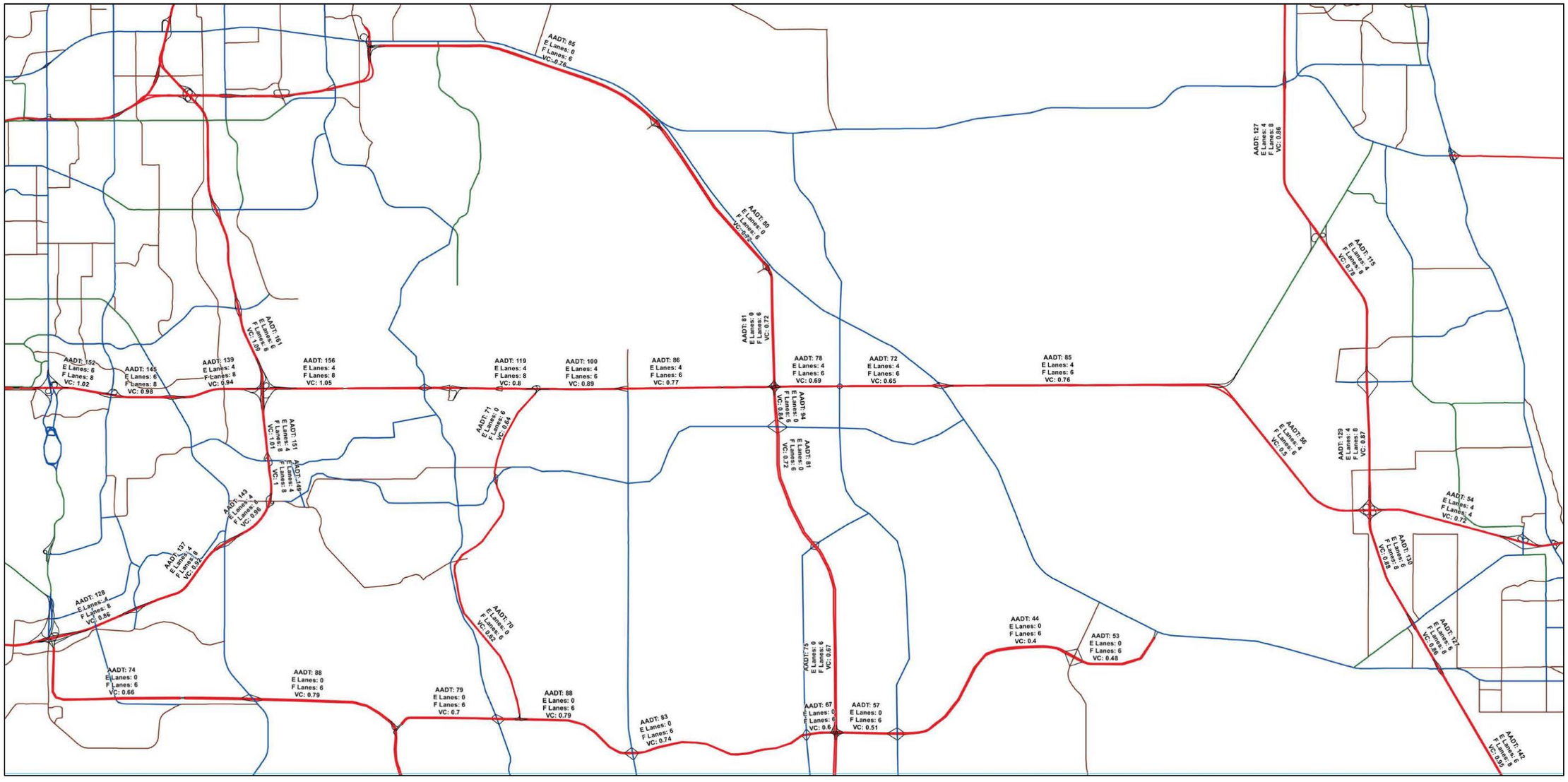


Figure 5A-2 - 2060 Expressway Volumes and Levels of Service (North)

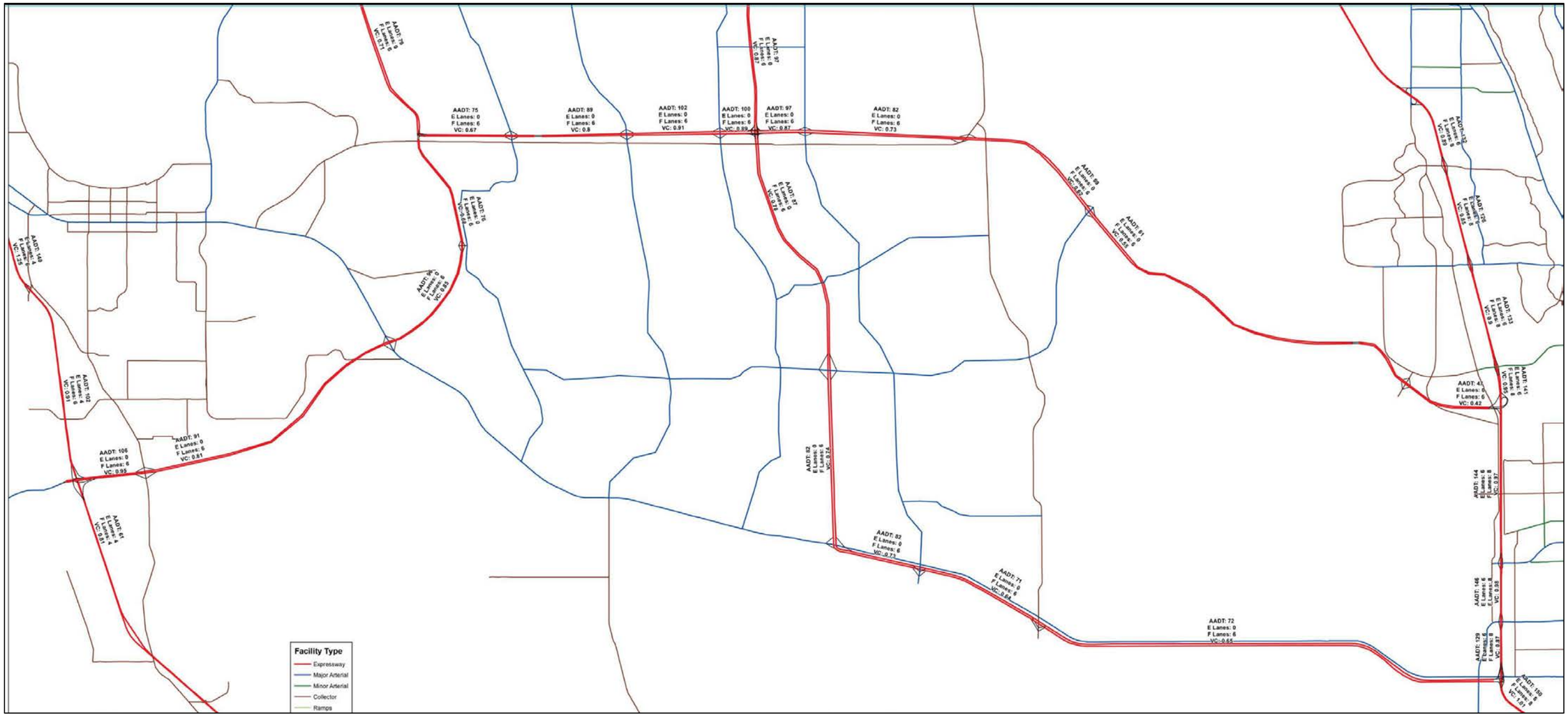


Figure 5A-3 - 2060 Expressway Volumes and Levels of Service (South)

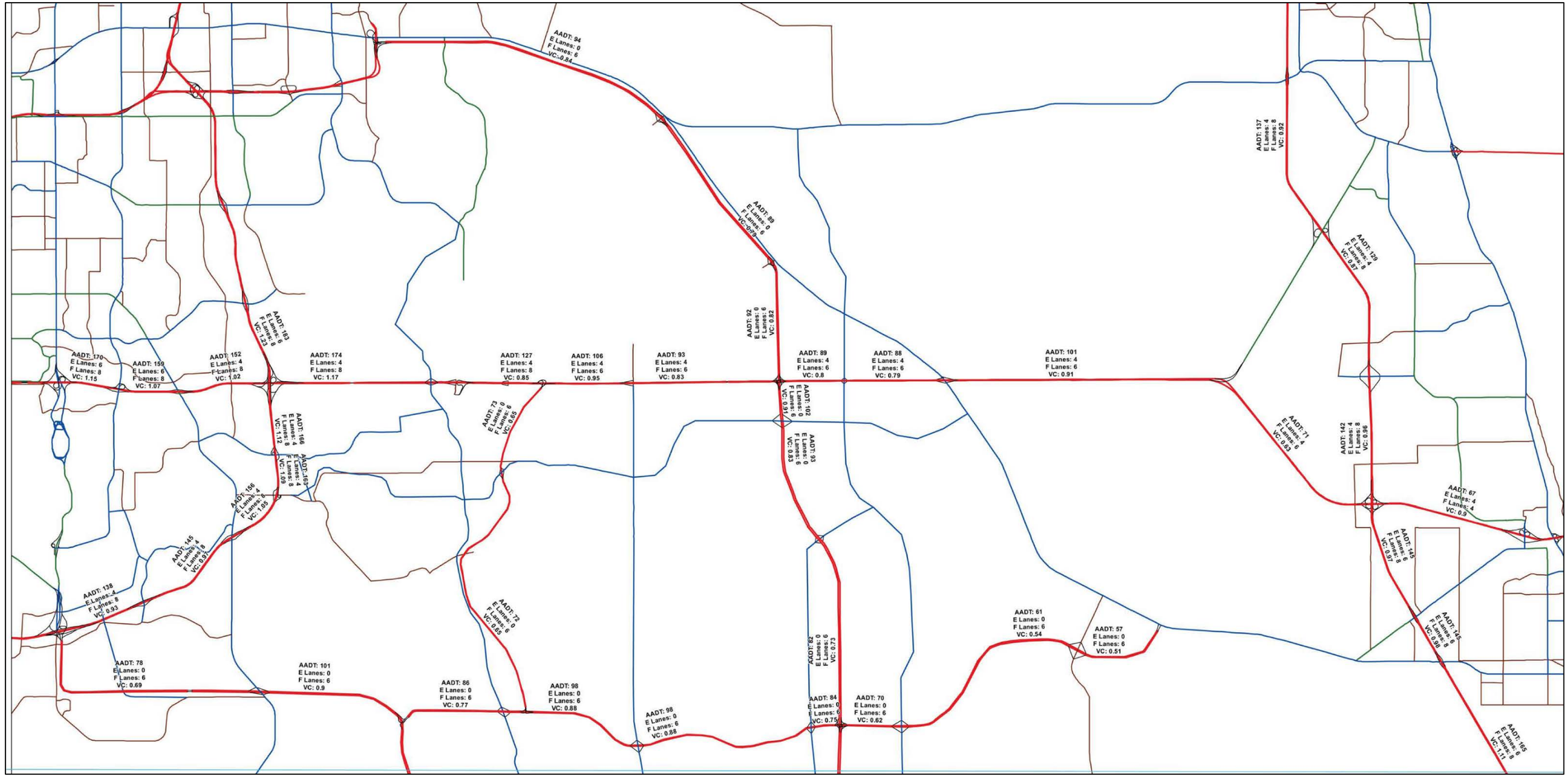


Figure 5A-4 - 2080 Expressway Volumes and Levels of Service (North)

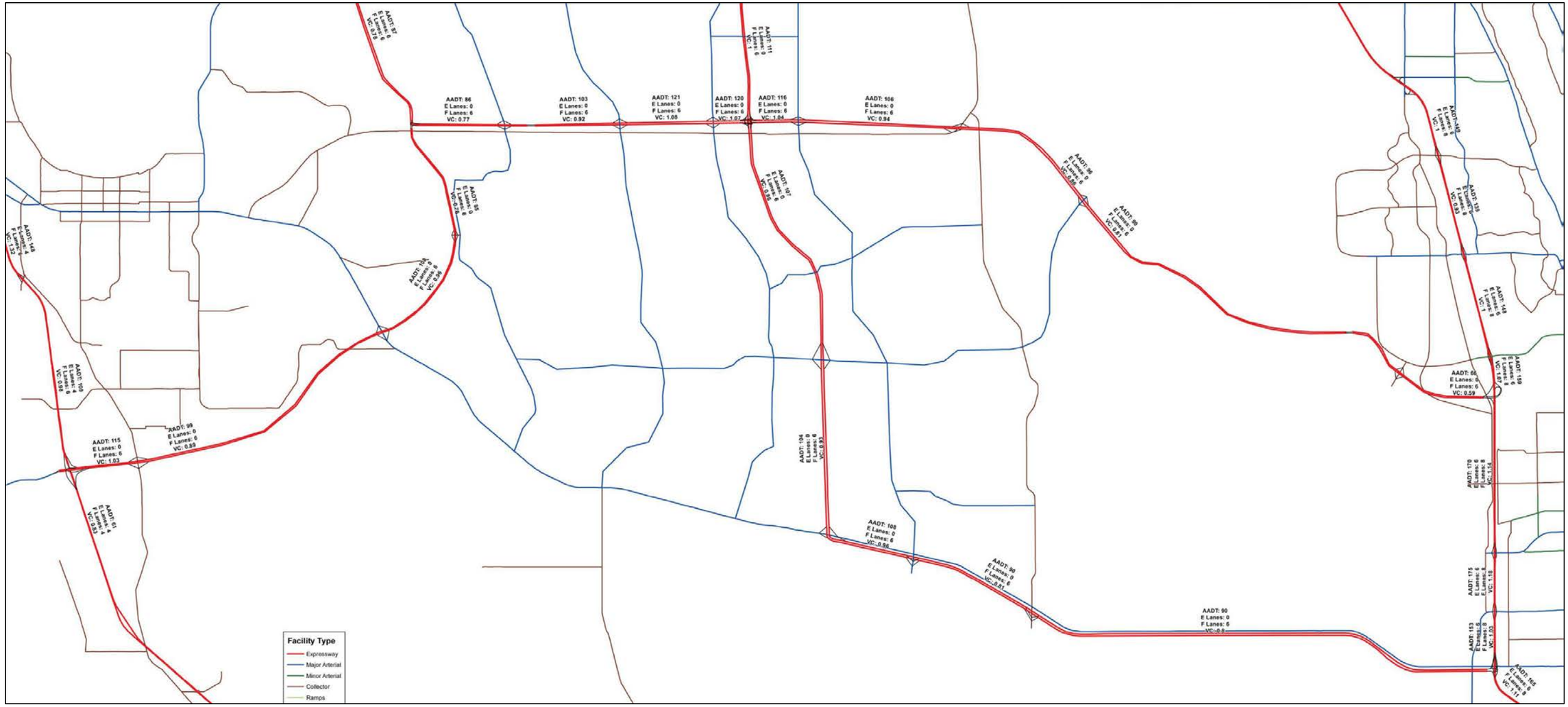


Figure 5A-5 - 2080 Expressway Volumes and Levels of Service (South)

Table 5A-1 - 2060 Daily Passenger Rail Ridership

North / South Rail

From	To	Sections	2080 Traffic Volume	Pct. Trucks	Auto Occupancy	Auto Person Trips	Mode Split	Rail Ridership
Osceola County Line	Pineda Extension	1	281,300	5%	1.40	374,129	7%	26,189
		2	317,200	5%	1.40	421,876	7%	29,531
Pineda Ext	US 192	1	273,800	5%	1.40	364,154	7%	25,491
		2	273,700	5%	1.40	364,021	7%	25,481
		3	230,500	5%	1.40	306,565	7%	21,460
							Average	25,630

East / West Rail

From	To	Sections	2080 Traffic Volume	Pct. Trucks	Auto Occupancy	Auto Person Trips	Mode Split	Rail Ridership
West Ranch Boundary	SR 408 Ext	1	231,300	5%	1.40	307,629	7%	21,534
		2	235,800	5%	1.40	313,614	7%	21,953
		3	342,300	5%	1.40	455,259	7%	31,868
SR 408 Ext	East Ranch Boundary	1	277,000	5%	1.40	368,410	7%	25,789
		2	91,800	5%	1.40	122,094	7%	8,547
East Ranch Boundary	I-95	1	251,900	5%	1.40	335,027	7%	23,452
		2	200,000	5%	1.40	266,000	7%	18,620
							Average	21,680

Table 5A-2 - 2080 Daily Passenger Rail Ridership

North/South Rail

From	To	Sections	2080 Traffic Volume	Pct. Trucks	Auto Occupancy	Auto Person Trips	Mode Split	Rail Ridership
Osceola County Line	Pineda Extension	1	299,700	5%	1.40	398,601	7%	27,902
		2	363,800	5%	1.40	483,854	7%	33,870
Pineda Ext	US 192	1	330,400	5%	1.40	439,432	7%	30,760
		2	386,900	5%	1.40	514,577	7%	36,020
		3	360,000	5%	1.40	478,800	7%	33,516
							Average	32,414

East/West Rail

From	To	Sections	2080 Traffic Volume	Pct. Trucks	Auto Occupancy	Auto Person Trips	Mode Split	Rail Ridership
West Ranch Boundary	SR 408 Ext	1	306,900	5%	1.40	408,177	7%	28,572
		2	312,200	5%	1.40	415,226	7%	29,066
		3	404,200	5%	1.40	537,586	7%	37,631
SR 408 Ext	East Ranch Boundary	1	382,700	5%	1.40	508,991	7%	35,629
		2	127,900	5%	1.40	170,107	7%	11,907
East Ranch Boundary	I-95	1	282,600	5%	1.40	375,858	7%	26,310
		2	250,800	5%	1.40	333,564	7%	23,349
							Average	27,495

APPENDIX B. PUBLIC PARTICIPATION SUMMARY

INTRODUCTION

The long-term master plan for North Ranch was developed through a comprehensive planning effort that is illustrated in Figure B-1. The effort was initiated in November 2013 and initially focused on a scoping process to identify issues and opportunities. This was followed by a developing initial concepts and an overall framework for the planning area, including key plan elements such as environmental conservation, transportation and economics. Throughout the process, public and stakeholder outreach was a major focus.

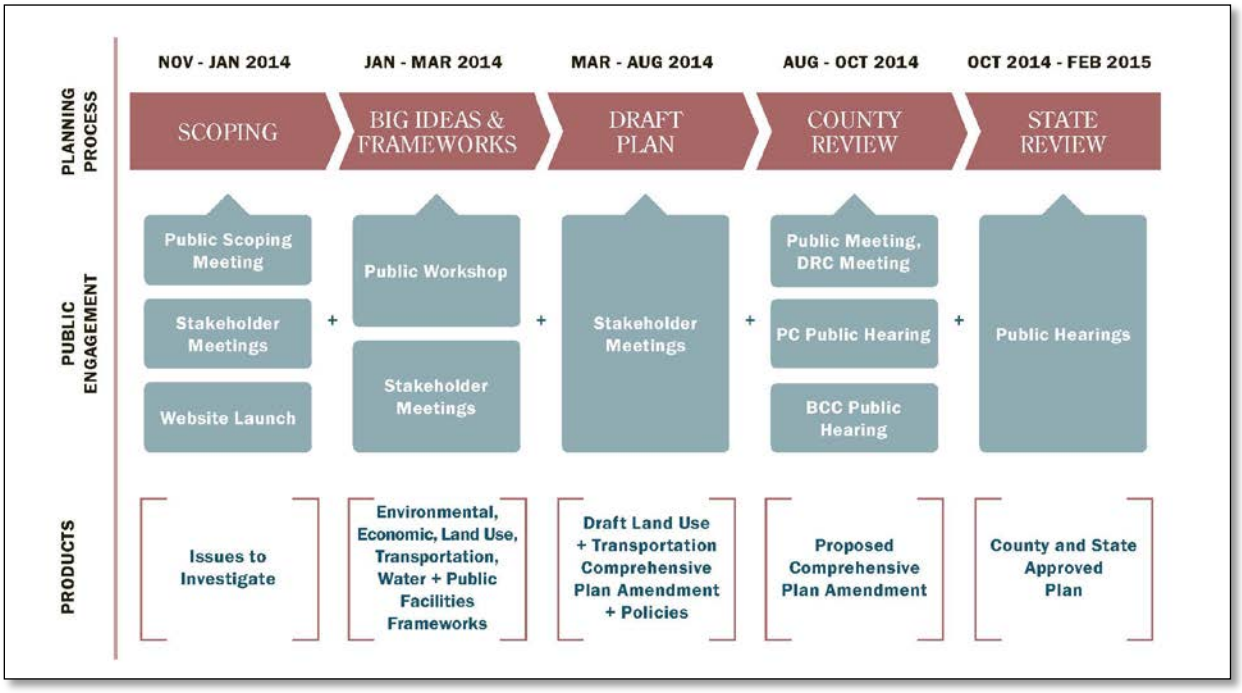


Figure B-1. Comprehensive Planning Process

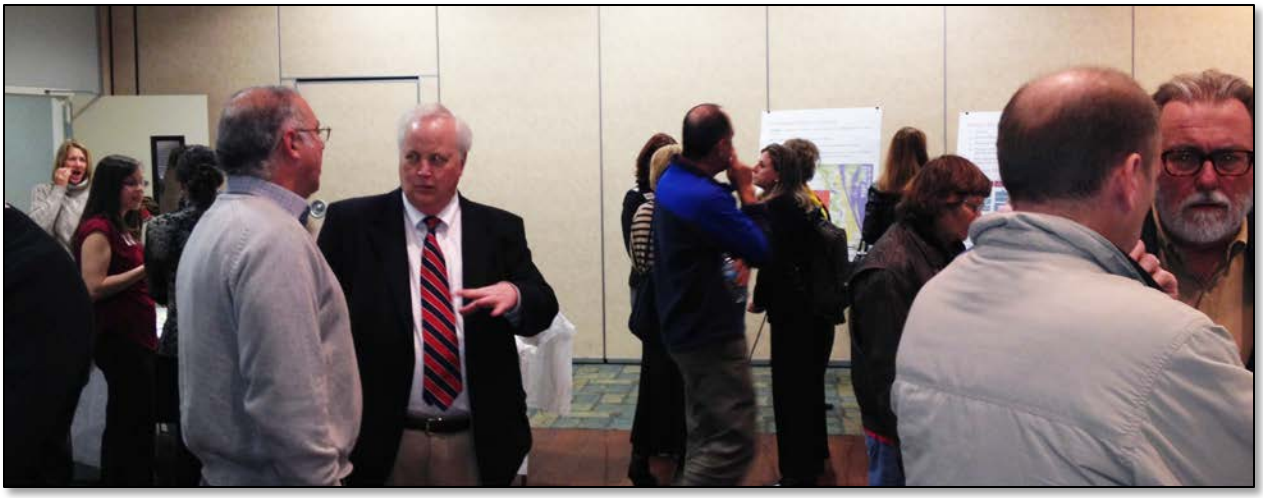
Two public meetings were held to provide information on the planning effort and to obtain public comment on plan concepts, issues, and concerns. The first meeting was held on January 7, 2014, and was attended by over 60 people. The second public meeting for the North Ranch Sector Plan process was held on March 4, 2014, and was attended by over 30 people. Both meetings were structured in an open house workshop format and were attended by a wide range of stakeholders.

In order to notify stakeholders and residents of the meeting, the County employed a 4-pronged approach: direct e-mails were sent out to specified agencies with interest in the North Ranch; two newspaper advertisements were published in the Osceola Gazette; 620 postcards were mailed to residents within 300 feet of the property; and the North Ranch Sector Plan page on the Osceola County website was updated with materials and meeting information. Comments were organized into four primary themes and are summarized below. Any attempt to summarize the number of comments received risks being selective or arbitrary, but the summary below is intended to be balanced.

SCOPING MEETING SUMMARY

The first public meeting to kick off the North Ranch Sector Plan process was held on January 7, 2014 between 3:30-6:00 pm at the Osceola County Council on Aging. The purpose of the Scoping Meeting was to present a wide set of information on existing conditions for the area within the North Ranch, and get feedback on additional issues to address. In order to notify stakeholders and residents of the meeting, the county employed a 4-prong, multi-media notification approach: direct e-mails were sent out to specified agencies with interest in the North Ranch; two newspaper advertisements were published in the Osceola Gazette; 620 postcards were mailed to residents within 300 feet of the property; and the North Ranch Sector Plan page on the Osceola County website was updated with materials and meeting information.

Over 60 people attended, representing a wide range of stakeholders. A short presentation and welcome at 4:30 pm from Jeff Jones (Osceola County) and Bruce Meighen (Logan Simpson) was the only pause in the steady flow and mingling of participants. The meeting was an open house format, with informational boards for participants to review and give feedback. The themes addressed Economic Development, Environmental Resources, Transportation Systems, and Infrastructure & Water. The comments and feedback from participants helped identify additional issues that the Sector Plan should address during the Long-Term Master Plan process. The primary themes are summarized below, with a full list at the end of the document:



Economic Development

- Importance of agribusiness to the local and regional economy.
- Connect to technology, aerospace, manufacturing centers in Melbourne to UCF, Orlando Int'l Airport.
- Make the opportunity stand apart from similar, competing sites.

Environmental Resources

- Environmental impacts: habitats for special status and T&E species, etc.
- Water impacts: water quality protection, groundwater, wetlands, St. Johns River and tributaries and watersheds.
- Need for regional greenway and wildlife corridor connections.
- Need for new reservoirs and water supply.

Transportation Systems

- Multiple corridor alternatives were identified.
- Avoid impacts to St. Johns River, Econ, watersheds, wetlands, and wildlife habitat.
- Avoid impacts to established neighborhoods, esp. along Nova Road and Lake Ajay.
- Optimize the route of the Florida National Scenic Trail.

Online Questionnaire Summary

To extend the reach of the Scoping Meeting to those unable to attend, the meeting information was also posted on the Osceola County website and through an online questionnaire. The survey included the same information and asked for the same kinds of feedback as the Scoping Meeting. Summarized comments from five respondents (received as of February 3, 2014) are below, with the full list of responses at the end of this document. The survey will be available online until the subsequent public meeting in March 2014.

Economic Development

- There should be flexibility in the types of uses by planning for adaptable buildings and mixed use areas.
- Is there enough projected growth to sustain a community of this scale, or should growth be focused on redeveloping existing communities?
- Implementation and phasing can be tied to build out of Northeast District development or construction of future roads.

Environmental Resources

- East to west significant wildlife corridors to connect the Econ River and St. Johns River systems.
- Impact on endangered species, water quality, forested areas, wetlands, the Floridian Aquifer, the St. Johns River and the Econlockhatchee River.
- Conservation areas, especially around wetlands and remaining forested areas.

Transportation Systems

- Consider enhancing existing roads such as US 192 and 520 rather than connecting to the east coast.

- Analyze multimodal and mass transportation opportunities, and avoid environmental impacts.
- Address regional connections, such as a new bridge over the St. John's River, as well as a local grid network for internal growth within the North Ranch.

INFRASTRUCTURE AND WATER

- Investigate partnerships with surrounding counties.
- Need to identify alternative water supplies and water conservation practices.
- Balance growth with available resources to minimize unsustainable development.

ADDENDUM: WRITTEN PUBLIC SCOPING MEETING AND ONLINE QUESTIONNAIRE COMMENTS

ECONOMIC DEVELOPMENT

- Partner with Duke Energy and their ED team to market the site and close suitable projects
- What is the projected population growth in Central Florida vs. the amount projected for this area? What types of residents / businesses can this area attract?
- Don't forget importance of local agriculture in the region's economy
- Connecting to the tech centers in Melbourne is more relevant than purely tourism destinations
- How will we make this site stand apart from similar sites or others competing for the same industries?
- Impact of residential development on public school system (i.e. sites, facilities, transportation, maintenance, funding etc.
- Connect aerospace, space and mfg. in Brevard to UCF and other research areas
- Agribusiness commonalities
- Environmental impacts should outweigh purely short term financial gain
- How will we make this site stand apart from similar sites or others competing for the same industries?
- Consider impact on Lake Ajay long-time residential neighborhood
- Space
- Plan for flexibility in the type of use by designing buildings that can have multiple uses
- There should be restrictions on when the development can begin. It could be tied to available developable acreage within the current Urban Growth Boundary, the build out of the Northeast District development or the construction of the future road.
- Is there enough projected growth to sustain a community much larger than the rural center, Harmony? St. Cloud and Kissimmee seemed better poised for growth than an entirely new community of such a large size.
- Has there been any communication with the TND – Harmony? What about rural uses adjacent? How are compatibility issues going to be addressed?
- Simulation sector

ENVIRONMENTAL RESOURCES

- Protect Wood Stork nesting colony
- Will the Wood Stork rookery be disrupted/destroyed?
- Protect Florida Grasshopper Sparrow habitat and Eagle trees and habitat
- Save environmentally sensitive areas upland/wetland for parks/private but not building
- The project site may contain habitat for threatened species including: Audubon's Crested Caracara and Florida Grasshopper Sparrow
- Eastern Indigo Snake
- How can large tract remain protect in perpetuity?
- Tributaries to St. Johns River need protection. All this area is a major wildlife corridor

- Protect Indian River and mosquito lagoons!
- Where will the conservation areas be and who decides this?
- Protect the SJRWMD watershed
- Protect runoff to Indian River Lagoon feeders
- Save the Florida Grasshopper Sparrow as well as other species – habitat
- Regional greenway connection between Econ and Kissimmee River begins on western edge
- Preserve wildlife crossing areas that mimic natural movements as well as preserve aquifer recharge areas.
- Consider development supported agriculture: http://www.npr.org/blogs/thesalt/2013/12/17/251713829/forget-golf-courses-subdivisions-draw-residents-with-farms
- Please make sure there is a significant undisturbed environmental wildlife corridor of some size running east to west that will connect the Econ River System to the St. Johns River System.
- There needs to be a bridge across SJR.
- Impact of the area on Threatened and Endangered species such as but not limited to Sandhill Crane, Wood Stork, Gopher Tortoise, Black Bear, Florida Panther, Crested Carcara. Impact of the development on the water quality of the region. Impact of development on Climate Change specifically loss of the remaining forested areas that currently are acting as carbon sinks. Impact of development on the recharge of the Floridian Aquifer. Impacts to wetland resources associated with the St. Johns River and the Econlockhatchee River.

TRANSPORTATION SYSTEMS

- Improve driving time on 192 to Kissimmee and north past Deseret to Lake Nona to airport. Can Nova Road handle it
- Impact to residents on Nova Rd?
- Protect the watersheds and water supply, SJWMD, Econ and the reservoir!
- Protect native plants especially rare and endangered plants.
- Don't lose the Florida Grasshopper Sparrow the way we did the Dusky Seaside Sparrow (built the Beeline and DDI)
- The Florida National Scenic Trail Corridor currently is designed to go through (N-5) along Deer Park Rd. Needs to be addressed as is or with an alternative
- Will the Poinciana Parkway connect with the North Ranch Sector?
- Look at transportation issues holistically. Local and regional
- Where will new road be located – north of Lake Ajay
- ECF Task Force needs to have all this info for planning – will be a key factor in vital connectivity needs
- Light Rail
- Keep designated Florida National Scenic Trail off of major road corridors. Provide alternative to current Deer Park Rd.
- All roads need to have wildlife crossings and/or be wildlife adapted.

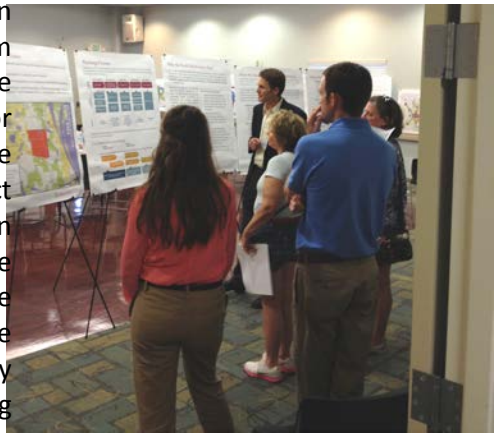
- How will it affect bear and panther corridors?
- Connecting Viera growth area to Jobs in Medical City not using 528
- Involve FNPS to rescue Native Plants
- Compact high density should be the only allowed development pattern
- Grid street system
- Eastward extension of Nova Rd. would impact SJRWMD watershed
- Light Rail
- Create a grid network internal to the North Ranch Sector Plan, with roadways between 2 and 3 lanes. This will give the future residents options since the new road(s) developed for the Future Corridors study will be for longer/regional trips
- Use wildlife underpasses at the base of all highway bridges
- The main reason for this sector plan is in response to the Governor's request to connect to the east coast, but there seems to be very little interaction with coastal communities. Some consideration of funding to assist other major roads like US 192 and 520 need to be addressed.
- Need to analyze multimodal transportation opportunities including but not limited to, bicycle trails, walkable communities and mass transit.

INFRASTRUCTURE AND WATER

- Can the aquifer handle the drain on potable water from projected population and use?
- Is there a plan for an additional landfill since the existing landfill only has 20+ years left for capacity?
- Stop fertilizer adopt and enforce strong fertilizer law to protect our water.
- Drainage to SJWD has effects on Indian River Lagoon – should be factored in
- Consider a reservoir to partner with Brevard Water Authority
    - Agree!
    - Yes!
- Where will the electric utilities be located?
    - On roofs!
- State of the art reuse for water is necessary . . . even sewage should be treated to potable water standards.
    - No fertilizer
- How can this area be developed in a manner that is infrastructure efficient?
- How much electric capacity is available today? How much will be needed for the industries in Osceola will target? Time frame?
    - Solar
- Only native plants and groundcover should be planted that require no irrigation
- Stop the sterile retention ponds. Plant with native plants to filter water

- Potable – ground water to surface water – existing supply not sufficient. Development agent should require DSM measures to minimize consumption (e.g., low use appliances)
- Wastewater – development should include requirements before new wastewater facilities as well as waste to energy in all new facilities
- Drainage – Wet retention alone will not be sufficient. County should require low impact design and development to emphasize, zero stormwater buildings (green lots, green walls, etc) and recharge-friendly road surfacing
- Septic tanks should be prohibited
- Why not partner with providers in Brevard County?
- Need to identify alternative water supply areas, identify and enhance water conservation practices. Utilize Low Impact Development principles.

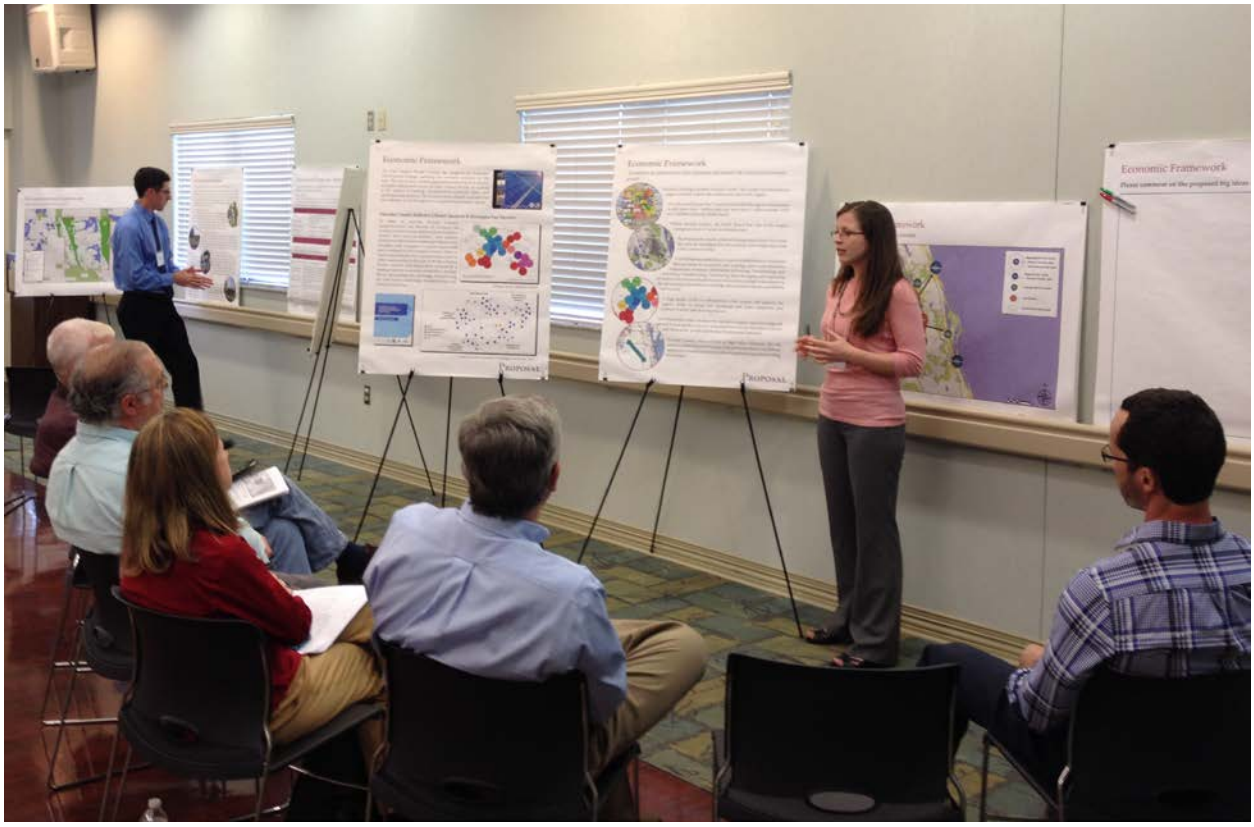
SECOND PUBLIC WORKSHOP SUMMARY: FRAMEWORKS AND BIG IDEAS



The second public meeting for the North Ranch Sector Plan process was held on March 4, 2014 between 4:00-6:00 pm at the Osceola County Council on Aging. The purpose of the Public Workshop was to present proposed frameworks for the plan. In order to notify stakeholders and residents of the meeting, the county employed a 4-pronged approach: direct e-mails were sent out to specified agencies with interest in the North Ranch; two newspaper advertisements were published in the Osceola Gazette; 620 postcards were mailed to residents within 300 feet of the property; and the North Ranch Sector Plan page on the Osceola County website was updated with materials and meeting information.

Over 30 people attended, representing a wide range of stakeholders. The meeting was open house workshop format, with informational boards for participants to review and give feedback. Four frameworks were presented to participants: Economic, Environmental, Transportation, and Urban Form Frameworks. By rotating small groups of participants through four stations, the County briefly presented the proposed frameworks and opened it up to small group discussion.

To extend the reach of the second Public Meeting to those unable to attend, the meeting information was also posted on the Osceola County North Ranch Master Plan webpage and through an online questionnaire. The survey included the same material presented at the public meeting and solicited open ended comments. The full list of comments from 15 respondents (as of March 28, 2014) can be



found at the end of this document. The survey will be available online until the next public meeting in late spring/early summer 2014.

The verbal, written, and online comments and feedback from participants will help update the frameworks, which form the core of the plan. The primary themes are summarized below, with a full list at the end of the document:

Economic Framework

- The North Ranch offers a lot of potential for creating a high-tech corridor. Attracting the right investors and specialized educational facilities is crucial. Business incentives should be provided.
- Should the development be directed to Orlando and Orange County, such as the UCF/Cocoa triangle, instead of rural portions of Osceola County?
- Eco-tourism is an important economic sector in Osceola County and not clearly represented in this framework. Making the North Ranch a worldwide destination for eco-tourism, great parks, etc. would be an important step in preserving what is unique about Florida.
- Osceola County already has difficulty attracting high paying companies. How can this new area ensure that the right kind of jobs are created?
- The economic framework, as presented, lacks details regarding how to attract industry and create a fiscally sustainable future.
- The economic framework appears short-sighted and an unnecessary justification to encourage more housing development in an environmentally unique area that could otherwise benefit the region if more properly planned and preserved. The sprawling development pattern fragments natural systems will not ultimately attract or benefit residents or businesses alike. Centers should be further consolidated.

Transportation Framework

- There is support for the mixed-use transit oriented approach for the North Ranch, though the transportation system and footprint of the developed areas could be reduced. The transportation system could be consolidated to accommodate more conservation and agriculture areas.
- There were concerns that the transportation network would fragment the natural environment, destroy native plants and habitats, create barriers to wildlife movement through the area, and result in noise that will affect the animals. There were concerns that the barriers to wildlife movement would result in animals being hit by vehicles and trains. It was noted that the plan should clarify the steps taken to facilitate the movement of wildlife and to avoid fragmentation.
- Some people believe that the area should be preserved intact and its habitat areas enhanced; and that there would be no need for new toll roads or rail systems if the area stays a ranch.
- While some comments recommended that the roads should be gridded to concentrate growth and hinder sprawl, others felt the criss-crossing of roads did not support conservation efforts due to the resulting fragmentation and barriers to wildlife movement.
- There was support for the rail systems and the concentration of growth along the transit corridors.

- It was suggested that the extension of Osceola Parkway should connect to Brevard County in the vicinity of US 192 instead of at Viera.
- There was a question of how the Florida National Scenic Trail gap (north-south) within the North Ranch would be filled, preferably without requiring any or many major roadway crossings.

ENVIRONMENTAL FRAMEWORK

- The North Ranch (as a whole and especially in certain areas) serves as a crucial wildlife corridor, particularly to migratory birds. Even with the cited intended "conservation areas," development proposed for this fragile mosaic region fragments the disparate "conservation areas" so as to be of no long-term value to wildlife---especially in such close proximity to dense urban uses and transportation grids. The extensive network of passenger rail, expressway, and street corridors are detrimental to animal and plant habitat, and will lead to wildlife mortality thereby undoing the viability of conservation areas as a long-term use to wildlife. The conservation areas should be wider and more connected. As one of the most important north/south wildlife corridors in the state, the north/south connections need to be better preserved.
- The Environmental Framework proposes 43,000 acres as "conservation areas," which equates to less than one-third of the land area. Further, the way it's broken up does not convey an understanding of conservation planning. It is also disconcerting to see that the 43,000 acres that are deemed "conservation areas" include both expansive reservoirs and agricultural lands. What natural systems will be displaced to accommodate new and expanded reservoirs? "Agricultural lands," however sustainably they are farmed or ranched, should not be grouped with "conservation areas." Conservation planning is not simply reserving the slivers of uplands that would be impractical to develop because they are so enmeshed in wetlands, nor is it building reservoirs designed to help accommodate future water needs.
- The Environmental Framework isolates wetlands and natural resource areas. Wetland value comes from their connected functions, which appears to be lost to fragmentation. Further, wetlands cannot function correctly without healthy uplands which appear to house most of the developable areas.
- Wetlands are protected through Federal and state regulations. It is misleading to show the largest wetlands and call it an Environmental Framework, as they are already protected. What proportion of the 43,000 acres is true conservation once the wetlands, agriculture, reservoirs, and otherwise undevelopable areas are subtracted? Not enough land is preserved and it is not preserved in the right way.
- Consider an approach to water conservation utilized by initiatives in the Northern Everglades/Upper Kissimmee water shed - dispersed storage in natural wetlands, including large-scale wetland restoration.
- Consider the ramifications of sea level rise.
- Concern with groundwater withdrawal, especially drawing down the Floridian Aquifer. Golf course irrigation, as proposed, is a large consumer of water. Are golf courses necessary? If so, can they be created to use less water?
- Stormwater should not drain directly into the Econ and St. Johns. Require natural retention ponds filtered by native plants.
- Concerns with the size and location of the Penny Wash Wolf Creek and Taylor Creek Reservoirs.
- Avoid and monitor invasive plants. Require drought tolerant Florida native plants.

- The Master Plan's regulations should address the above, especially plant diversity, water quality and natural ecosystems.
- With the anticipated growth of the area in the coming years, what source(s) will people get their water from? From drawing down the Florida Aquifer? From expansion of existing or proposed reservoirs? Ensure that there is adequate capacity within the aquifer to handle the complete build-out as anticipated. There is an ever-growing concern about continuous drawdown of the Florida Aquifer and keeping our natural resources protected. Why aren't other water sources being considered such as ocean water desalination or other sources that would not have as great an impact on Florida's natural resources?
- Further explain aquifer/groundwater recharge. Is it safe and proven to use this method? Many have never heard of this and are somewhat unease with the idea.
- Consider mandating that all irrigation be supplied by non-potable water. Using only reuse water would help with water conservation. There should be laws & statues mandating allowable irrigation times/days. Many wonder why golf courses are such a major contributor of water use.
- Water conservation needs to have a larger role in the Sector Plan. Measures must be taken to ensure that water conservation is at the forefront of importance when considering the development of the Ranch.

URBAN FORM FRAMEWORK

- Ensure a way to demonstrate long term job creation, otherwise there will only be housing and a highway.
- Job to housing ratio should be higher than 1:1.
- Recommend redevelopment within the UGB as a higher priority than greenfield development.
- Incorporate urban parks and natural areas within developments. As proposed, the pattern is too intense and austere.
- The number of employment and urban centers seems unrealistic in the planning horizon.
- The Master Plan should protect water quality, habitat quality, native plants, minimize lawn turf, encourage plant diversity, and wildlife especially bird species.
- Concern over the significant environmental impacts that would be created through such large-scale transformation. Some commenters preferred using the land for natural conservations and eco-tourism because of the significant impact on environment from development.
- For the full range of habitat communities to function, there must be a considerable transition between conservation areas and urban areas. The reasonable transition, shape, size and character of conservation areas and connectivity of the mosaic's systems need to be better represented.
- The plan appears to replicate the same development pattern that the County has been trying to avoid. Further concentrate development nodes along primary corridors, surrounded by more open space. By all means incorporate mixed use development and multi-modal, transit oriented approaches; but the Urban Framework is entirely inadequate from a land consumption and natural resource protection perspective.

ADDENDUM: WRITTEN PUBLIC MEETING AND ONLINE QUESTIONNAIRE COMMENTS

ECONOMIC FRAMEWORK

- Why don't we just say "no" [to future development]?
    - But then where does the growth go?
- Connections seem necessary, but we should avoid sprawl.
- Clustered centers sound good. No sprawl!
- If the land is available and property owners want/are willing to sell, let them!
- Growth is inevitable
- May be good place for big renewable energy facility
- If nothing happens for 50 years, why should we care?
- Why can't we focus growth north in Orange County? Makes more sense to connect UCF/Cocoa triangle instead
- Provide business incentives to attract industry
- There is a lot of potential for a high-tech corridor here –just make sure to do it right (education and investors that are innovative)
- A specialized tech school could be a big draw for the businesses you want. Has to have something special/unique, like attracting Space X's CEO, Elon Musk.
- How were the job centers determined? Just the proximity to Orlando? Seems strange that there are so many job centers near Orlando when there are other business clusters that have numerous companies with over 500 employees.
- It will not work in my life time. A waste of tax dollars.
- Where are the jobs going to be INSIDE Osceola County? This whole design still relies of people working OUTSIDE Osceola County. When will Osceola County obtain their OWN economic framework and STOP relying on other counties? You miss one of the largest and most important assets Osceola County has going for it and that is eco-tourism in the form of birdwatching and wildlife viewing. You count fishing but not the larger portion of eco-tourism birdwatching and wildlife viewing.
- First of all, I'm not convinced that we need ALL this new building in Osceola County. Second, I'm not convinced that "if we build it, they will come." Third, planning for it doesn't mean it should happen at the North Ranch. I understand connectivity, correct positioning and all the other buzz words, but this is urban sprawl at its worst. Economically, what you all want to do is to create new cities and all the trappings. We cannot attract enough high paying companies to Osceola now, with tax breaks, subsidizing, paying, (bribing) them to come, just like every other state, Creating this big a complex will add very little to our taxing foundation - with only people paying taxes, not companies. Economically, if we put all these minds to work for the current county needs, we would be better off.
- Rather than trying to provide an urban link I believe you should look at conserving the unique natural characteristics and building on that as an amenity to be enjoyed by those in the dense urban areas, Europeans and other visitors. This economic framework appears very short-sighted, unnecessary, and an excuse to encourage more housing development in a unique area that could be a boon to Osceola worldwide if properly planned, enhanced and preserved.

- I feel that development in the form of this massive, sprawling plan would have the opposite effect from that intended: once the beautiful, vital Econlockhatchee Mosaic is fragmented beyond repair, there will be no attractant to ANYONE, and the proposed plan area will be nothing but a grey concrete beehive of frenetic SHORT-TERM human activity with no coherent sense of place or proper quality-of-life to keep residents there for the long haul. The area would have lost all allure it ever had. Florida in general is teetering on the edge of killing the goose that laid the golden egg, and Osceola County will be at the forefront of this death knell if it pursues this sort of broad-swath urban development in the sensitive, priceless and irreplaceable Econ Mosaic. I OPPOSE DEVELOPMENT IN THE FORM OF THIS PROPOSED PLAN. The area should be purchased by the State for conservation, as was its original intention, to complete the wildlife corridor/greenway.
- It's not possible to comment on an economic framework that is so lacking in detail. Economic jargon and planner speak do not qualify as an economic framework.

TRANSPORTATION FRAMEWORK

- Need to concentrate growth
- Too much sprawl
- Roads are not gridded
- Concentrate on corridor
- Roads to the north and south?
- Question the 1:1 job/housing
- People want to get to Lake Nona and Melbourne –or is this the place for Air or OIA? Two airports
- Same driving time from center to OIA or Melbourne
- Too many roads crossing too many wetlands!
- One of the most damaging aspects of transportation systems is the fragmentation of ecosystems that inhibit the movement of birds and animals. What special steps are being taken to facilitate the easy movement of wildlife to prevent fragmentation?
- Where is the Federal Florida National Scenic Trail Proposed Trail proposed to traverse through this transportation framework without requiring any or many expensive major road crossings?
- I heard that the continuation of the proposed roads would flank the SJ River. Why would natural resources be allowed to be impacted by roads and rails?
- I'm loving the train system.
- Do not need new toll roads or rail to a ranch.
- Again, a train straight through a conservation area is a BAD idea. Animals will be run over constantly. Noise will affect the animals. Native plants and habitat will be destroyed during the construction. A train through a conservation area negates the area as conservation. How are you going to keep animals safe on these mega highways?
- Roads, rails, hubs, trails criss-crossing everything negates any "conservation" efforts. The fragility of this land will be undone with this proposal. It is chopped into too many pieces, thus will have too many bridges, too many fences, and too many other blockages for wildlife to negotiate.

- No transportation system should be disrupting the natural areas. It does not work. This area should be preserved intact and its habitat areas enhanced not degraded.
- Ugh. Criss-crosses the entire footprint, again neutralizing any positive intended conservation effect. There will BE no wildlife habitat left if these transportation corridors and systems, along with the urban-intense building, are put into place as proposed. I OPPOSE STRONGLY this idea for the Transportation Framework.
- I'm fully in support of adopting a mixed use, transit oriented approach to development of these lands; however, I believe this vision does not capitalize fully on the road network that already exists beyond the borders of the Ranch to minimize the need for all these new roads. The bottom line is that the footprint of the developed areas must be consolidated and densified to accommodate more conservation - which can only be accomplished by reducing the footprint of the transportation network.

ENVIRONMENTAL FRAMEWORK

- Road is perpendicular/bisects wetlands
- Conservation of water needs to be a greater factor
- Concern with drawing down the Floridian Aquifer
- Scrub areas are some of the most endangered animal and plant life in Florida
- Why so much water for irrigating golf courses?
- Why isn't the SJ River listed with a number like the Econ Swamp?
- Gold course irrigation is a big consumer. What were the assumptions leading up to continue the assumption that golf communities will continue and expand?
- Good. Go for it.
- A waste of tax dollars!
- A waste of water for St. Johns.
- There is not enough land being preserved in this proposal. Saving ranch land is NOT the same thing as saving preservation/conservation land. Saying you are saving conservation land and then running a train and trail straight through the middle of the same conservation area is NOT making it conservation. How many animals will be run over by the train? How many plants and habitat will be destroyed by the building of the train and trail? The conservation areas going East/West that are 1/2-1 mile wide between communities is too narrow to be considered wildlife corridors. You are not saving enough uplands to keep the wetlands viable. Wetlands cannot function correctly without healthy uplands.
- At the first meeting there were numerous references to the large woodstork rookery and saving it. At the second meeting no one admitted to there being a large woodstork rookery . . . ominous beginnings for this project for a large woodstork rookery to have already disappeared.
- As communities are built and native plants and their ecosystems and communities are destroyed put them back by replanting the same native plants that were destroyed and *not* replacing them with non-native exotics or worse invasive plants. Make landscape ordinances that require 75%–90% native plants and little to no lawn turf in order to replace lost native habitats and reduce water needs. Design innovative golf courses that use less of our precious water by using only native plants and using the most drought tolerant and pest resistant lawn

turf available. Or better yet, reduce the number of golf courses and increase the amount of conservation lands. Landscape ordinance requires that every pond have native plants around the littoral zone to filter nutrients from the water and provide wildlife habitat that was removed for buildings.

- Streetscaping-Plant a diversity of native trees, shrubs, and flowers and give them enough room and soil to grow. Avoid invasive species. Avoid lawn turn as much as possible.
- Will stormwater drain directly into the Econ and St John's? If so, Why? Be innovative. Have stormwater drain into retention ponds before draining directly into the Econ and St. John's and have these retention ponds aquascaped with Florida native plants to filter out the excess nutrients and provide habitat for wildlife that was lost during development. Then the stormwater can drain into the Econ and St Johns as cleaner water. What is meant by "emergent aquatic vegetation"?
- How large will Penny Wash Wolf Creek Reservoir be? Does this have anything to do with the disappearance of the woodstork rookery? How large is Taylor Creek Reservoir today? How large will it become exactly? Where exactly are they located? Stop using so much water for irrigation of lawns! Use more drought tolerant Florida native plants NOT Florida friendly NOT invasive plants. Put our Florida native plants back after you build!
- This land is THE north/south wildlife corridor through the state. Yes, it has some fences already, but nothing like the barriers it will have.
- The whole idea for having an urban growth boundary is to keep growth within certain guide lines, and this wipes that idea out. You are actively planning to destroy some of the most fragile lands in Osceola County. The "environmental framework" you describe will be undone by all the roads, rails, and "urban centers." None of this would leave any place for wildlife or a real corridor. Wildlife, roads and people do not go together. The mosaic will be destroyed (according to your proposed urban framework). Changing the drainage ALWAYS changes what can and will live there. Wildlife will totally be crowded out. Nothing can negotiate the maze of roads, rails and urban areas.
- Creating such an intense maze of urban areas creates MORE need for water! Any way you look at it, planning for 350,000 more people, (if that is really the number) will take LOTS more water. Conserving is always a great idea - but people are people. We don't all conserve.
- The map shows urban areas, but not the agricultural areas. Where are they? Why so much water for agriculture and golf courses?
- As designed the environmental framework will likely [not] do anything to preserve wildlife areas and wildlife migration. Too small an area. Please rely on true natural sciences rather than what just looks like an effort.
- Do not know enough about protection of potable water to comment.
- The mosaic character of the sensitive Econlockhatchee River region makes it utterly inappropriate for development; Dense urban uses in this area is doubly undesirable to residents and citizens of the entire state because this proposed area sits smack in the middle of the greenway migration corridor, south to north, for important imperiled native species like Florida panther and Florida black bear. This corridor is also crucial to migratory birds. Developed, even with the cited intended "conservation areas," this fragile mosaic region would be then too fragmented for any of the disparate "conservation areas" to be of long-term use to wildlife---especially in such close proximity to dense urban uses and transportation grids. *I oppose*

strongly this plan as proposed, as ecologically so insignificant as to lead to unviability of the functioning mosaic systems and biota currently present there

- 43,000 acres is less than 1/3 of the land area, and the way it's broken up does not convey an understanding of conservation planning. It is also disconcerted to see that the 43,000 acres that are deemed "conservation areas" include both expansive reservoirs and agricultural lands is frightening. What natural systems will be displaced to accommodate those reservoirs? Some large wetland systems would apparently be included. It is an extreme misrepresentation to suggest that agricultural lands, however sustainably they are farmed or ranched, are conservation areas. There is much work to be done before this vision of natural resource protection is acceptable. Think about incorporating the same kind of approach to water conservation that is embraced by the ongoing initiatives in the Northern Everglades/Upper Kissimmee water shed - dispersed storage in natural wetlands, including large-scale wetland restoration. That is the only way to store water and honestly claim it as conservation. It is also a stretch to draw maps that show wetlands being preserved and treat it as conservation. Wetlands are rightly protected through regulation. What proportion of the 43,000 acres is wetland? What proportion is interstitial uplands closely associated with those wetlands that are not feasible to develop?
- Consider the ramifications of sea level rise on the St. Johns River system. Before the end of this century, much of the watershed will be a brackish lagoon. The only way to achieve any substantial development in this area is to use the freshwater in the ground, and on the surface, as a hydraulic barrier to salt water intrusion. These big ideas imagine there is still water to be withdrawn for human use by ignoring reality. We need to REDUCE water withdrawals – both groundwater and surface water – from where they currently are. This framework is based on shortsighted fantasy.

URBAN FORM FRAMEWORK

- Concentrate nodes on corridor with green space separating it
- Continuous development along corridor could create same traditional patter
- Safeguards to ensure jobs and correct development polluting; Ranch land needs to be true conservation
- Will do housing but who will ensure the jobs?
- Need long term planning to get jobs
- No jobs, just a big highway/passthrough
- How do you catalyze the urban center?
- Need to be higher than 1:1 job balance
- Urban parks and natural areas/parks
- Protect lake water quality through standards and keep natural
- Wildlife movement corridors under roads and rail
- East west corridors from lake should be wider
- Focus and address redevelopment with the UGB as well
- Will just get housing. Demonstrate job creation
- More open space and concentration

- Use the connection from Osceola Parkway to 192, not Viera
- Existing crossings.
- There seem to be quite a few employment centers, which seem unrealistic in the planning time horizon. Most employment centers are still near the megaregional or regional hubs.
- I'm very impressed.
- Will not work.
- There are not enough Florida native trees, shrubs, flowers in this design. There is too much lawn turf. What lawn turf there is should be drought tolerant, pest resistant and not need additional irrigation. I would like to see a wide diversity of native trees, shrubs, and flowers. I would like to see a LOT of native long leaf pine trees planted for the future of our bald eagles. Fewer buildings with reflective glass that confuse and injure birds. Less hardscape. More green areas but without lawn turf. Less use of palms, especially non-native palms and especially when landscapers do not know how to maintain them. Shade trees, long leaf pine trees. Wildlife proof garbage cans!
- "Greenway and trails system throughout...some of Central Florida's most important environmental lands....?" That about says it all! That is what NOT to do from a wildlife point of view. That leaves NO PLACE for wildlife! Wildlife really doesn't include people unless we can be unintrusive about it, and a trail system through it doesn't cut it at all.
- Environmental impact would be significant. Once again rather than building urban centers Osceola should plan for the use and enhancement of the natural land amenities. Make it a worldwide destination for eco-tourism, parkland, etc. Would be an important step in the preservation of what is unique about Florida.
- The proposed idea for the Urban Framework is to put entirely too dense a human use and population and too intense activity to be compatible with the nearby wildlife habitat areas the Environmental Framework claims to want to salvage under this proposal. Such diametrically antithetical uses---wildlife survival, foraging, nesting, migration etc immediately adjacent the above-pictured gigantic urban hub of mixed use and transportation grids – WILL NOT WORK. And Planners surely can see this. For true wilderness habitat of all community types to function, there must be a considerable transition between that wilderness belt and the human urban presence. That reasonable transition and the proper shape, size and character of "preserve" areas, and CONNECTIVITY of the mosaic's systems are utterly absent here. I OPPOSE STRONGLY this proposed idea for the "urban framework."
- This certainly appears to complete the picture. To elaborate a bit more on my previous comments, the protection of wetlands, and reserving for conservation the slivers and slices of interstitial uplands that would be impractical to develop because they are so enmeshed in wetlands, and reservoirs designed to help accommodate the future water needs of the new populations, appears to account for the core of the "conserved" areas. THAT IS NOT CONSERVATION PLANNING! It is the same way development has been accommodated throughout Florida's history. By all means incorporate mixed use development and multi-modal, transit oriented approaches; but this is entirely inadequate from a natural resource protection perspective.

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APPENDIX C. PROTECTED WILDLIFE SPECIES

AMPHIBIANS AND REPTILES

GOPHER TORTOISE (*GOPHERUS POLYPHEMUS*)

The gopher tortoise is listed as "Threatened" by the FWC but is not listed as a threatened or endangered species by the USFWS. However, the USFWS determined in a 12-month finding published on July 27, 2011, that listing of the gopher tortoise as a threatened species in the eastern portion of its range is warranted under the ESA. Gopher tortoises were added to the candidate species list with the publication of the 12-month finding, but the USFWS has taken no further action. Gopher tortoises occur in a variety of natural and disturbed habitats characterized by well-drained loose soils in which to burrow, low-growing herbaceous vegetation used for food, and open sunlit areas for nesting (Diemer 1992, Mushinsky et al. 2006). Gopher tortoises typically inhabit sites with soils that support sandhill, scrub, and pine flatwoods habitats (Enge et al. 2006), and sandhill and mesic flatwoods soils cover approximately 89,450 acres (67 percent) of the Property. Reported annual average home range sizes vary from 1.2 to 4.7 acres for males and from 0.2 to 1.6 acres for females (Enge et al. 2006). Cox et al. (1987) indicate that patches of habitat must be at least 25–50 acres in size to support a minimally viable population of gopher tortoises, but Eubanks et al. (2002) found that 47-101 acres were needed to support populations of this size. Mushinsky et al. (2006) considered 250 acres to be the minimum area necessary to maintain a population of tortoises, and a buffer zone surrounding the 250-acre parcel would provide additional security. FWC habitat models (Cox et al. 1994, McCoy et al. 2002, Endries et al. 2009) indicate the Property contains scattered patches of potentially suitable gopher tortoise habitat covering approximately 10 percent of the Property. FWC Gopher Tortoise Permitting Guidelines provide that sites that are *Acceptable* as recipient sites for the long-term relocation of gopher tortoises should be >40 acres in size and have a minimum annual depth to water table of >18 inches. The Property contains approximately 901 acres of soil types, primarily scrubby flatwoods soils, which meet the criterion for *Acceptable* relocation sites. This information indicates that gopher tortoises have a high likelihood of occurring on the Property.

EASTERN INDIGO SNAKE (*DYRMARCHON COUPERI*)

The eastern indigo snake is listed as "threatened" by USFWS. The primary reasons for this listing status are over-collection and habitat loss (Moler 1992). Eastern indigo snakes are found in a variety of habitats throughout Florida, including pine (*Pinus* spp.) flatwoods, scrubby flatwoods, sandhill, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, and human-altered habitats (USFWS 2008). Eastern indigo snakes often winter in the burrows of gopher tortoises in northern portions of the range, but they also may take shelter in hollowed root channels, hollow logs, stump holes, trash piles, or the burrows of rodents, armadillos (*Dasypus novemcinctus*), or land crabs (*Cardisoma guanhumi*) in wetter habitats (USFWS 2008, USFWS 2011). Eastern indigo snakes are capable of moving considerable distances in a short period of time as demonstrated by records of movements of 2.2 miles in 42 days and 2.4 miles in 176 days (USFWS 2008). One individual was observed to have moved 13.8 miles over a two-year period in a mark-recapture study in southeastern Georgia (Stevenson and Hyslop 2010). Reported home range sizes of eastern indigo snakes in peninsular Florida range from 4 to 818 acres (USFWS 2011), and mean home range size reported from one Florida study was 292 acres (Dodd and Barichivich 2007). Radio-telemetry studies of eastern indigo snakes in Georgia have revealed home ranges sizes of 87.5 to 8,885 acres for females and 350 to 3,825 acres for

males (Hyslop 2007). Eastern indigo snakes apparently need a mosaic of habitats to complete their life cycle, often feeding along wetland edges (Moler 1992). Population viability modeling suggests that eastern indigo snake populations are susceptible to habitat fragmentation resulting from construction of roads and intensive human developments in occupied habitats, and that large areas protected from roads and human developments are needed to maintain viable snake populations (Breininger et al. 2004). USFWS (2011) requires surveys to determine the presence of eastern indigo snakes on sites in north and central Florida when impacts are projected for more than 25 acres of xeric habitat or for more than 25 active and inactive gopher tortoise burrows. Occurrence databases available from the FWC and Florida Natural Areas Inventory (FNAI) contain no records of eastern indigo snakes on the Property, but there is a 2008 record of eastern indigo snakes on Tosohatchee Wildlife Management Area, approximately 0.65 mile north of the Property. FWC habitat models (Cox et al. 1994, Endries et al. 2008; Endries and Enge, unpublished data) indicate that approximately 33% of the Property, primarily in the northern half, was mapped as potentially suitable habitat for eastern indigo snakes. Eastern indigo snakes have a moderate to high likelihood of occurring on the Property based on the FWC habitat models and the documented occurrence of eastern indigo snakes immediately north of the Property.

FLORIDA PINE SNAKE (*PITUOPHIS MELANOLEUCUS MUGITUS*)

The Florida pine snake is listed as Species of Special Concern (SSC) by the FWC but is not listed as a threatened or endangered species by the USFWS. The Property is within the range of the Florida pine snake as mapped by Franz (1992). Florida pine snakes occur in open xeric habitats, including longleaf pine – turkey oak sandhills, sand pine scrub, scrubby pine flatwoods, and old fields on former sandhill sites (Franz 1992). Florida pine snakes are extremely fossorial, seeking out the tunnel systems of pocket gophers (*Geomys pinetis*), and, to a lesser extent, gopher tortoise burrows. Two radio-tracked females exhibited home ranges of 27.5 and 30 acres, and 3 males used areas 2-8 times larger in size (Franz 1992). Available occurrence databases contain no records of Florida pine snakes on or near the Property. FWC habitat models (Cox et al. 1994, Endries et al. 2008) indicate the Property was not mapped as potentially suitable habitat for Florida pine snakes, and few areas of the surrounding landscape were mapped as potentially suitable habitat. However, the Property does contain approximately 886 acres of xeric soils that would be expected to support scrubby flatwoods vegetation types under natural conditions. These patches of xeric soils are small and scattered throughout the Property. There is a low to moderate likelihood that Florida pine snakes occur on the Property due to the presence of xeric soil types preferred by this species.

AMERICAN ALLIGATOR (*ALLIGATOR MISSISSIPPIENSIS*)

The American alligator is listed as ”Threatened” due to similarity of appearance (to other crocodilians) by the USFWS. American alligators are found throughout Florida in permanent water bodies of freshwater including marshes, swamps, lakes, reservoirs, and rivers. There is a high likelihood of occurrence of alligators on the Property.

GOPHER FROG (*LITHOBATES CAPITO*)

The gopher frog is listed as SSC by the FWC but is not listed as a threatened or endangered species by the USFWS. The Property is within the range of the gopher frog as mapped by Godley (1992). The distribution of gopher frogs seems to be restricted to that of gopher tortoises (Godley 1992). Gopher frogs typically occur in native, xeric, upland habitats, particularly longleaf pine – turkey oak sandhills which often support the densest populations of gopher tortoises. However, gopher frogs are also known to occur in pine flatwoods, sand pine scrub, xeric hammocks, and the early successional stages of these

communities. Preferred breeding habitats include seasonally flooded, grassy ponds and cypress heads that lack fish populations (Godley 1992). Gopher frogs will disperse up to 1.0 mile from breeding ponds to occupy gopher tortoise burrows, but they may also occupy a variety of other retreats including the burrows of rodents and crayfish, stump holes, and other crevices (Godley 1992). There are no occurrence database records of gopher frogs on the Property. However, FWC habitat models (Endries et al. 2008) indicate that approximately 5 percent of the northwest quadrant of the Property was mapped as scattered patches of potentially suitable habitat. This information indicates there is a high likelihood that gopher frogs may occur on the Property based on the presence of xeric habitats and high likelihood of occurrence of gopher tortoises.

BIRDS

FLORIDA SCRUB-JAY (*APHELOCOMA COERULESCENS*)

The Florida scrub-jay is listed as "Threatened" by the USFWS. The Property is within the USFWS consultation area for Florida scrub-jays. Available databases contain no records of Florida scrub-jay territories on or near the Property. The nearest location of a recorded Florida scrub-jay territory is approximately 4.3 miles west of the Property. Approximately 85% of documented Florida scrub-jay dispersal events have occurred within 2 miles of natal territories, but scrub-jays may occasionally disperse up to 5 miles to establish territories of their own (Fitzpatrick et al. 1991, Stith 1999). Re-colonization of vacant patches of habitat rarely occurs beyond about 7.4 miles (Stith et al. 1996). Florida scrub-jay territories that are within 7.4 miles of one another are considered to be members of the same metapopulation (Stith et al. 1996, Stith 1999). This information suggests the Property is not within normal dispersal distances of recorded Florida scrub-jay territories, but western portions of the Property are within distances dispersing Florida scrub-jays are known to travel.

Available land cover databases indicate that low-growing xeric oak (*Quercus* spp.) scrub vegetation, the required habitat of Florida scrub-jays, does not occur on the Property. However, historical land cover databases indicate that small patches of scrub habitats have occurred in the northwest corner of the Property. The Property also includes approximately 886 acres of scattered patches of soils that typically support scrubby flatwoods vegetation under natural conditions, and scrubby flatwoods habitats are known to support Florida scrub-jays in some locations. It is unlikely that Florida scrub-jays occur on the Property based on the apparent lack of suitable habitat conditions, the absence of occurrence records, and the location of the Property beyond normal dispersal distances from the nearest documented records of Florida scrub-jays.

BALD EAGLE (*HALIAEETUS LEUCOCEPHALUS*)

The bald eagle is protected by the USFWS under provisions of the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act. Recovery goals have been achieved for this species; therefore, the bald eagle is no longer listed or protected as a "Threatened" species under the ESA. The USFWS has implemented National Bald Eagle Management Guidelines (National Guidelines) to assist private landowners and others plan land-use activities in proximity to active bald eagle nests. The National Guidelines include measures intended to minimize the likelihood of a "disturbance" to nesting bald eagles, as defined under the BGEPA. The FWC also removed the bald eagle from classification and protection as a "Threatened" species under Florida Rule and implemented a Florida Bald Eagle Management Plan (Florida Plan). The Florida Plan includes Florida Bald Eagle Management Guidelines (Florida Guidelines) and permit provisions. We recommend taking the National Guidelines and Florida Guidelines into account during preparation of the LTMP and coordinating with both the USFWS and FWC

for guidance prior to actual development that may result in a “disturbance” of nesting bald eagles. The FWC Bald Eagle Nest Database was reviewed to determine the locations of all nests that occur on or in close proximity to the Property. The FWC database contains records of seven bald eagle nests on the Property. The status of these nests through the 2012 nesting season is as follows:

- OS032 – Last known active 2012, last surveyed 2012
- OS042 – Last known active 2012, last surveyed 2012
- OS123 – Last known active 2012, last surveyed 2012
- OS147 – Last known active 2012, last surveyed 2012
- OS157 – Last known active 2005, last surveyed 2012
- OS171 – Last known active 2012, last surveyed 2012
- OS201 – Last known active 2012, last surveyed 2012

WOOD STORK (*MYCTERIA AMERICANA*)

The wood stork has been reclassified from “Endangered” to "Threatened" by the USFWS, effective July 30, 2014. There are no records of a wood stork rookery on the Property based on data available from the USFWS for the 2001–2012 nesting seasons. However, all areas of the Property are within the Core Foraging Areas of four wood stork rookeries that have been active in one or more of the last 10 years (Table C-1).

Table C-1. Number of Nests in Each Colony over the Last 10 Years

	Number of Nests/Year*									
Name	**2012**	**2011**	**2010**	**2009**	**2008**	**2007**	**2006**	**2005**	**2004**	**2003**
Brevard County Maintenance Shop (Brevard County)				36	Active	Active				
Deseret Ranch (Brevard County)	399	270	100	319	230	51	249	176	300	400
Kempfer Ranch (Brevard County)	16	3	0	142	120	20	125	60	74	45
Lake Mary Jane (Orange County)	95	125	100	159	Not Active		103	250	160	120

*Blank = colony not checked that year.

Wood storks typically return to the same rookery sites each year to nest (Ogden 1996). Wood storks will travel up to 18.6 miles from south Florida rookeries to forage in wetlands and return food to incubating adults and nestlings during the nesting season (Cox et al. 1994). Wetlands within 15 miles of known rookeries are considered by the USFWS to comprise Core Foraging Areas for nesting wood storks in this area of central Florida. There is high likelihood that wood storks forage in wetlands on the Property during the breeding season, and, if future development activities were to affect on-site wetlands, the USFWS effects determination key for wood storks may be used to implement appropriate wetland mitigation to minimize impacts to wood stork foraging habitat.

WADING BIRD ROOKERIES (1999)

The FWC wading bird rookery database from the 1999 statewide survey contains records of three rookeries used by other protected species of wading birds on the Property. However, only one colony was active during the 1999 survey, and the only wading bird nesting in that colony was the cattle egret (*Bubulcus ibis*), a non-native wading bird not listed as a protected species by either the USFWS or FWC. Two of these colonies were active in the 1989 statewide survey, at which time nests of little blue heron (*Egretta caerulea*) were observed. The little blue heron is listed as SSC by the FWC. The FWC database also contains records of 17 wading bird rookeries within 9.3 miles, the maximum distance most listed species of wading birds will fly to forage in wetlands and return food to incubating adults and nestlings (Cox et al. 1994). Wetlands within 9.3 miles of the rookeries of listed species of wading birds are considered important to wading bird nesting success. These off-site rookeries contained nests of snowy egrets (*Egretta thula*), tricolored heron (*Egretta tricolor*), and white ibis (*Eudocimus albus*), all of which are listed as SSC by the FWC. There is high likelihood the wetlands on the Property are utilized by several listed species of wading birds based on the presence of documented rookeries within normal foraging distances of the Property. Wading birds have a tendency to establish new undocumented nesting sites in response to changing hydrologic conditions, and the wetlands on the Property have the potential to be within the range of new undocumented wading bird rookeries. In addition, listed species of wading birds may be expected to forage in on-site wetlands during other times of the year if hydrologic conditions are suitable.

LIMPKIN (*ARAMUS GUARAUNA*)

The limpkin is listed as SSC by the FWC but is not listed as a threatened or endangered species by the USFWS. The Property is within the range of limpkins as mapped by Bryan (1996). Limpkins are found along the wide and well-vegetated shallows of rivers and streams statewide; around lakes in peninsular Florida; and in marshes, broad swales, strand swamps, sloughs, and impoundments in south Florida. The range of the limpkin is almost identical with that of the Florida apple snail (*Pomacea paludosa*), the primary food item in the diet of limpkins (Bryan 1996). Nests are constructed in a wide variety of situations, including slowly-sinking aquatic vegetation, among tall marsh grasses, between the knees of bald-cypress (*Taxodium distichum*), in vine-covered shrubs, in the tops of cabbage palms, and on high cypress branches. During nesting season, riparian habitats are divided into abutting exclusive territories arranged linearly along rivers and lake edges (Bryan 1996). Territories average 1.93 acres in size during high population years and 9.39 acres in more normal years (Bryan 1996). There are no occurrence records of limpkins on or near the Property. However, the wetlands in the northeast corner, along the east-central boundary, and in the southeast corner of the Property are within Breeding Bird Atlas blocks (Kale et al. 1992) in which nesting limpkins have been observed. FWC habitat models mapped the wetlands along the eastern project boundary, along the tributaries of Taylor Creek Reservoir (TCR), and in the large wetlands systems in the western 20% of the Property as habitat potentially suitable for limpkins (Endries et al. 2009). There is a high likelihood that limpkins occur on the Property based on the Breeding Bird Atlas records and models that indicate the presence of potentially suitable wetland habitats.

RED-COCKADED WOODPECKER (*PICOIDES BOREALIS*)

The red-cockaded woodpecker is listed as “Endangered” by the USFWS. Although the entire Property is within the range of the species as mapped by Wood (2001), only the western 90 percent of the Property is within the USFWS consultation area for red-cockaded woodpeckers. Nesting habitat for this species consists of open old-growth pine forests >60–80 years old (USFWS 2003). Stands of pines >50 years of

age comprise preferred foraging habitat, and red-cockaded woodpeckers usually forage within 0.5 mile of cavity trees (USFWS 2003). Average home range size of red-cockaded woodpeckers in central Florida has been reported as 319 acres (DeLotelle et al. 1995). Female red-cockaded woodpeckers usually disperse no further than 2 miles to establish territories of their own in areas where populations are dense, but in areas where populations are sparsely distributed, females may disperse up to 15 miles (USFWS 2003). FWC databases contain one record of a red-cockaded woodpecker group on the Property in an area of rough pasture on the south side of TCR, but the current status of this record is unknown. Active red-cockaded woodpecker cavity trees are known to be present on the TM Ranch and TM-Econ Mitigation Banks contiguous with the northwest corner of the Property, and two-mile dispersal buffers around these colony trees overlaps an area of approximately 2,000 acres of the Property. Aerial photography appears to indicate the presence of old-growth pines potentially suitable as foraging habitat or cavity trees in this area of the Property. FWC habitat models depict scattered patches of potentially suitable habitat for this species in the northern third of the Property and in the southern 10 percent of the Property (Endries et al. 2009). There is a moderate to high likelihood that red-cockaded woodpeckers utilize the Property based on the presence of active red-cockaded woodpecker cavity trees in close proximity to the northwest corner of the Property and based on the apparent presence of old-growth pines in that area.

CRESTED CARACARA (*CARACARA CHERIWAY*)

The crested caracara is listed as "Threatened" by the USFWS. The Property is within the breeding range of the crested caracara as mapped by Layne (1996), and is within the USFWS consultation area for crested caracaras. The crested caracara is a bird of open xeric to mesic habitat, primarily native prairie habitats and associated wetlands, cabbage palms, and cabbage palm-live oak (*Quercus virginiana*) hammocks. The bulk of the population is found in south central Florida on large cattle ranches with improved pasture. Mean home range size of crested caracaras (n=25) has been estimated at 3,094 acres (1,362–6,863 acres) (Humphrey and Morrison 2000). There is one caracara telemetry record in the southeast corner of the Property, and all or portions of 11 Breeding Bird Atlas blocks (Kale et al. 1992) with confirmed nesting records of caracaras overlap the Property. Most of the Breeding Bird Atlas blocks onsite are in the northeastern quadrant, along the east boundary, and in the southeast corner of the Property. FWC habitat models indicate that virtually all of the pasturelands on the Property comprise potentially suitable habitat for crested caracaras. There is a high likelihood that crested caracaras occur on the Property based on records that have confirmed the presence of this species in the past.

EVERGLADE SNAIL KITE (*ROSTRHAMUS SOCIABILIS PLUMBEUS*)

The Everglade snail kite is listed as "Endangered" by the USFWS. The Property is within the USFWS consultation area for the Everglade snail kite, but only the eastern 10 percent of the Property is within the historic breeding range of the Everglade snail kite as mapped by Rodgers (1996). Everglade snail kites nest in shrub-dominated wetlands associated with lakes, rivers, and extensive wetlands systems in central and south Florida (Rodgers 1996). Everglade snail kites will occasionally nest in herbaceous wetlands when wetland shrubs are lacking as long as hydrologic conditions are suitable. Everglade snail kites feed almost exclusively on Florida apple snails by aerially hunting and capturing snails found on emergent vegetation in relatively shallow open water systems. There are no records of Everglade snail kite occurrences on the Property, and no areas of the Property are within a Breeding Bird Atlas block (Kale et al. 1992) with records of confirmed nesting. The nearest nest records are from Lake Tohopekaliga, approximately 15 miles west of the Property. The Everglade snail kite is a nomadic disperser, and the possibility exists that Everglade snail kites could occasionally wander onto the Property and utilize the open waters of TCR, but there are no records of Everglade snail kite use of this

water body. There is a low likelihood that Everglade snail kites occur on the Property based on the absence of occurrence records on the Property despite the potentially suitable habitat conditions associated with TCR.

BURROWING OWL (*ATHENE CUNICULARIA*)

The burrowing owl is listed as SCC by the FWC but is not listed as a threatened or endangered species by the USFWS. The Property is within the range of the burrowing owl as depicted by Millsap (1996). Burrowing owls typically occur in open, well-drained treeless areas where herbaceous groundcover is low and sparse. Historically, burrowing owls occurred primarily in the dry prairies of central Florida, but land clearing and wetlands drainage have greatly expanded the range and habitats used by burrowing owls (Millsap 1996). Currently, burrowing owls are found in a variety of open well-drained habitats including improved pastures, golf courses, school campuses, athletic fields, airports, cemeteries, and industrial/residential complexes (Wood 2001). Burrowing owls construct burrows in well-drained soils, but will also adopt abandoned gopher tortoise burrows or will nest in polyvinyl chloride pipes, culverts, and under the eaves of buildings (Wood 2001). Occurrence databases contain no records of burrowing owls on the Property. However, three Florida Breeding Bird Atlas (Kale et al. 1992) blocks with confirmed records of nesting burrowing owls are located on the Property. FWC habitat models indicate that scattered small patches of potentially suitable habitat cover about 5% of the Property. There is a high likelihood that burrowing owls occur on the Property based on the presence of open herbaceous vegetation and records of confirmed nesting from the Breeding Bird Atlas project.

SOUTHEASTERN AMERICAN KESTREL (*FALCO SPARVERIUS PAULUS*)

The southeastern American kestrel is listed as "Threatened" by the FWC but is not listed as a threatened or endangered species by the USFWS. Although the range of the southeastern kestrel includes the western two-thirds of Osceola County, the Property itself is not within the range of the southeastern American kestrel as mapped by Collopy (1996). Two subspecies of American kestrels occur in Florida, the eastern American kestrel (*Falco sparverius sparverius*) and the southeastern American kestrel. The eastern kestrel winters in Florida, arriving in September and leaving in the early spring months of March-April (Stys 1993). Southeastern and eastern kestrels co-occur in Florida during the winter, during which time they are virtually indistinguishable in the field. Surveys intended to determine the presence of resident kestrels should be conducted between April and August, and surveys for nesting kestrels ideally would be conducted in April or May (Stys 1993, Wood 2001). Southeastern kestrels are secondary cavity nesters, typically using cavities excavated by other species in trees or snags. Occasionally southeastern kestrels will nest in human structures such as utility poles (Wood 2001). Kestrels feed in open areas, such as croplands, pasture, and open pine woods that are adjacent to nest sites. Home ranges around nest sites range 125–800 acres (Stys 1993, Wood 2001). Available occurrence databases contain no records of southeastern kestrels on or near the Property, and FWC habitat models (Endries et al. 2009) indicate that no potentially suitable kestrel habitat occurs on the Property. It is unlikely that southeastern American kestrels occur on the Property based on the lack of occurrence records and the location of the Property outside of the known range for this subspecies.

FLORIDA SANDHILL CRANE (*GRUS CANADENSIS PRATENSIS*)

The Florida sandhill crane is a resident, breeding, non-migratory subspecies of sandhill cranes that is listed as "Threatened" by the FWC but is not listed as a threatened or endangered species by the USFWS. The greater sandhill crane (*Grus canadensis tabida*) also occurs in Florida as a wintering migrant, arriving in Florida during October and November and beginning spring migration to northern breeding

grounds in late February (Stys 1997). Florida sandhill cranes nest in shallow, emergent palustrine wetlands, particularly those dominated by pickerelweed (*Pontederia cordata*) and maidencane (*Panicum hemitomon*). They feed in a variety of open, upland habitats, mostly prairies but also human-manipulated habitats such as sod farms, ranchlands, pastures, golf courses, airports, and suburban subdivisions (Nesbitt 1996, Wood 2001). Home ranges of individual pairs overlap with those of adjacent pairs and average approximately 1,100 acres. Core nesting territories within home ranges vary from approximately 300 acres to 625 acres and are aggressively defended from other cranes (Wood 2001). Occurrence databases contain one record of Florida sandhill cranes on the Property, and approximately 75 percent of the Property is within Breeding Bird Atlas (Kale et al. 1992) blocks in which Florida sandhill cranes have been observed nesting. FWC habitat models (Cox et al. 1994, Endries et al. 2009) map most areas of pastureland and herbaceous wetlands on the Property as potentially suitable foraging or nesting habitat, respectively, for Florida sandhill cranes. There is a high likelihood that Florida sandhill cranes nest and forage on the Property due to the presence of herbaceous wetlands and large areas of open pasturelands.

FLORIDA GRASSHOPPER SPARROW (*AMMODRAMUS SAVANNARUM FLORIDANUS*)

The Florida grasshopper sparrow is listed as "Endangered" by the USFWS. The Property is not in the range of the Florida grasshopper sparrow as mapped by (Delany 1996), nor is the Property within the original extent of natural dry prairie, the primary habitat of this species, as mapped by Orzell and Bridges (2006). However, the Property is within the USFWS consultation area for the Florida grasshopper sparrow. The Florida grasshopper sparrow requires large expanses of open, treeless, frequently burned prairie grasslands interspersed with shrubs and palmettos (*Serenoa repens*) (Delany et al. 1985, Delany and Linda 1994, Delany 1996). Delany et al. (1995) suggested that 50 breeding pairs of sparrows would need 814–1,348 ha (2,011–3,300 acres) of dry prairie habitat to survive. However, Perkins et al. (2003, 2008) suggested that patches of dry prairie of >4,000 ha (10,000 acres) were needed to sustain viable populations of Florida grasshopper sparrows. Conversion of prairie habitats to improved pastures has resulted in the extirpation of Florida grasshopper sparrows from occupied prairie habitats (Delany and Linda 1994, Pranty and Tucker 2006), and cattle grazing appears to have contributed to population declines in occupied habitats at Avon Park Air Force Range (Pranty and Tucker 2006). Although Florida grasshopper sparrows have occurred in the short term in pastures near or adjacent to occupied dry prairie habitat, it appears that such altered habitats cannot sustain sparrows in the long term (Pranty and Tucker 2006). Occurrence databases contain no current or historic records of Florida grasshopper sparrows on the Property, and there are no Breeding Bird Atlas (Kale et al. 1992) blocks with confirmed nest records of this species on the Property. FWC habitat models did not map any area of the Property as potentially suitable habitat for Florida grasshopper sparrows (Cox et al. 1994, Endries et al. 2009). In a rangewide survey of Florida grasshopper sparrows, Delany et al. (2007) identified six patches of potentially suitable sparrow habitat on the Property using remote sensing techniques, but concluded that none of the patches were suitable for this species based on an aerial survey of the Property. Knight et al. (2010) inventoried remaining examples of natural dry prairie habitat in Florida, but found no examples of this habitat type on the Property. It is unlikely that Florida grasshopper sparrows occur on the Property.

MAMMALS

FLORIDA BLACK BEAR (*URSUS AMERICANUS FLORIDANUS*)

The Florida black bear is a wide-ranging omnivore that is not listed as a threatened or endangered species by the FWC or USFWS. However, the black bear is protected under the Florida Black Bear

Conservation Rule (68A-4.009, F.A.C.). This rule provides that it is unlawful to injure or kill bears, and it states the FWC will work with landowners and regulatory agencies to guide future land use to be in line with FWC's Florida Black Bear Management Plan. Florida black bears are dependent on forest vegetation, but are not limited to specific forest types (Eason 2003). Forested wetlands provide optimal habitat, but any forested areas of large size with diverse food and dispersed cover can support bears. Home range sizes vary but average approximately 9,200 acres for females and 39,700 acres for males (Eason 2003). Male Florida black bears have been reported moving distances of 13.67–87.0 miles and females have been reported moving 8.7–47.9 miles (Maehr et al. 1988, Wooding and Hardiskey 1988, Wooding et al. 1992, Maehr 1997). Individuals tend to be solitary, except for females with young and groups at abundant food sites, but Florida black bears tolerate considerable range overlap (Eason 2003). Reserves ranging in size from 494,200 to 998,400 acres have been recommended as necessary to support viable populations of black bears (Cox et al. 1994, Kautz and Cox 2001). Although black bears historically ranged throughout Florida, the current range generally consists of the natural and semi-natural landscapes surrounding large parcels of public land throughout the state. Black bear habitat has been mapped as Primary Range and Secondary Range (Simek et al. 2005). Primary Range was defined as areas with evidence of females and reproduction, and factors such as habitat, general bear use, and roadkill records were used to refine range boundaries. Secondary Range was defined as areas outside of Primary Range where general bear use has been documented by nuisance calls, sightings, and roadkill records, but evidence of females or reproduction has not been confirmed.

FWC databases show there are no Florida black bear telemetry, roadkill, or nuisance records on the Property, and there are very few records of black bears in the landscape surrounding the Property. The Property is approximately 23 miles south of the Secondary Range of the St. Johns black bear population and is approximately 24 miles northeast of the Secondary Range of the Glades/Highlands population as mapped by FWC (Simek et al. 2005). However, FWC habitat models indicate the forested wetlands on the Property were mapped as potentially suitable habitat for black bears (Endries et al. 2009), and FWC models indicate the Property is connected to the St. Johns and Glades/Highlands populations by potentially suitable bear habitats. It is unlikely the Property contributes to the sustainability of black bear populations in Florida except the Property could occasionally be used as a dispersal corridor by bears moving between areas of the state with occupied habitat.

FLORIDA PANTHER (*PUMA CONCOLOR CORYI*)

The Florida panther is a wide-ranging predator that is listed as "Endangered" by the USFWS. Although dispersing sub-adult and adult males occasionally are sighted in central Florida, the known reproducing population of Florida panthers occurs in south Florida south of the Caloosahatchee River and Lake Okeechobee. The Property is not within the USFWS Florida Panther Focus Area (USFWS 2007) used by the USFWS to determine when consultation is required regarding potential impacts to panther habitats. The USFWS (2007) provides that "a project is considered to potentially have an effect on panthers if there has been documented physical evidence of panther occurrence within a two-mile radius of a project within the last two years." This finding applies to areas both north and south of the Caloosahatchee River (i.e., between Charlotte Harbor and Lake Okeechobee). In 2013, a Florida panther died in a collision with a motor vehicle on US 192 along the border shared with Triple N Ranch Wildlife Management Area, and another panther died in a collision with a motor vehicle on SR 528 approximately 7.3 miles north of the Property in 2012. There is also a record of a radio-collared panther on the Property from 2000. This record was for FP62, a sub-adult male that dispersed out of south Florida, spent about 1.5 years in the vicinity of Disney Wilderness Preserve in western Osceola County before moving east into Brevard County near the St. Johns River, and then southwest to Charlotte County where his collar eventually failed. His fate is unknown. Although it is unlikely that Florida

panthers occur on the Property, the possibility exists that consultation with the USFWS may be necessary for potential effects of a development project on panthers due to the documented occurrence of a panther within 2.0 miles of the Property within the last two years.

SHERMAN'S FOX SQUIRREL (*SCIURUS NIGER SHERMANII*)

Sherman's fox squirrel is listed as SSC by the FWC but is not listed as a threatened or endangered species by the USFWS. The Property is within the range of Sherman's fox squirrels as mapped by Kantola (1992) and Wood (2001). Optimal fox squirrel habitat has been characterized as mature, fire-maintained longleaf pine – turkey oak sandhills and flatwoods by Kantola (1992). Preferred habitat has also been described as mature and open pine and pine-hardwood associations by Edwards and Guynn (2003). Sherman's fox squirrels are diurnal, solitary animals whose home ranges may overlap, but separate core home range areas are maintained (Kantola 1992). Male and female home ranges average 196 acres and 82 acres, respectively (Wooding 1997). Due to relatively low population densities and large home range sizes, preserves of at least 5,000–10,000 acres have been recommended as necessary to support viable populations (Kantola 1986, Cox et al. 1994). Available databases contain no occurrence records for the Property. However, the FNAI element occurrence database contains records of Sherman's fox squirrels 3.5 miles west of the northern boundary of the Property and on Lake Lizzie Conservation Area approximately 5.2 miles west of the Property. FWC habitat models (Endries et al. 2009) mapped several large patches of potentially suitable habitat for Sherman's fox squirrels, most of which are in the northern half of the Property. There is a high likelihood that Sherman's fox squirrels occur on the Property based on the proximity of documented occurrences and the presence of potentially suitable habitats.

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