Welcome!

2021 UEC Stakeholder Kickoff Meeting

April 30, 2021

Questions and public comment will occur after each presentation.
Agenda

- Welcome and Progress Since 2016 – Mark Elsner, SFWMD
- 2021 Plan Update Process and Overview – Nancy Demonstranti, SFWMD
- Status of the Citrus Industry – Lorenzo Rossi, University of Florida IFAS
- Demand Estimates and Projections – Nathan Kennedy, NES Consulting

10-minute Break

- Comprehensive Everglades Restoration Plan Projects – Leslye Waugh, SFWMD
- Next Steps – Nancy Demonstranti, SFWMD
- Adjourn

Questions and public comment will occur after each presentation.
Welcome

Mark Elsner, P.E.
Bureau Chief, Water Supply

2021 UEC Stakeholder Kickoff Meeting
April 30, 2021
SFWMD Water Supply Planning Areas
Regional Water Supply Plan

What it Does

- Provides a road map to meet future water needs while protecting water resources and natural systems
- Conducts a planning-level approach
- Projects future water demands
- Identifies and evaluates water source options

What it Does NOT Do

- Does not authorize consumptive use permits
- Does not establish MFLs
- Does not adopt rules
- Does not require water users to implement specific projects
- Does not address surface water quality issues (e.g., algal blooms)
Progress Since 2016

Mark Elsner, P.E.
Bureau Chief, Water Supply

2021 UEC Stakeholder Kickoff Meeting
April 30, 2021
In many areas, especially coastal areas, large increases in withdrawals from the surficial aquifer system are limited due to low aquifer productivity.

Regulatory limitations on surface water availability:
- C-23, C-24, C-25, and C-44 canals and the Lake Okeechobee Service Area Restricted Allocation Area rules
- Lake Okeechobee Service Area (LORS 2008)

Freshwater discharges affecting coastal resources:
- Timing and volume

Long-term availability of the Floridan aquifer system.
Future 2040 projected water needs of the region can be met with appropriate management, conservation, and implementation of projects.

CERP implementation and other projects will be necessary to meet future water needs.

Construction of one potable water supply development project.
2016 Future Direction

- Continue SAS and FAS aquifer monitoring programs
- Construct CERP and related projects
- Promote local storage projects
- Promote water reuse and conservation measures
- Coordinate with other agencies, local governments, and utilities on water supply elements
- Identify the potential impact of sea level rise on utilities and other users

Presenter: Mark Elsner
Progress Since the 2016 UEC Plan Update

➢ Restoration & construction projects
  • C-44 reservoir and STA construction
  • C-23/C-24 STA design completion
  • Lakeside Ranch STA Phases 1 and 2 completion
  • Herbert Hoover Dike rehabilitation

➢ Regulatory protection efforts
  • Lake Okeechobee System Operating Manual (LOSOM)

➢ Hydrologic studies & modeling
  • East Coast Floridan Model update
  • CERP aquifer storage and recovery
  • Continued surficial and Floridan aquifer system groundwater monitoring
Water Supply and Conservation Project Support

- **Alternative Water Supply Funding**
  - Port St. Lucie Tradition and Western Grove Communities Reclaimed Water Main Extension
  - Stuart FAS Production Well #1
  - Martin County Tropical Farms FAS Wells 6 and 7
  - Port St. Lucie McCarty Ranch Reservoir Areas 3, 4 and 6

- **Conservation Funding**
  - Bernard Egan & Company River Basket Citrus Grove Ag Irrigation Retrofit (225 acres)
  - Bernard A Egan Groves, Inc. Cow Creek Citrus Grove Ag Irrigation Retrofit (1,200 acres)
  - Graves Brothers Company Ashland Citrus Grove Ag Irrigation Retrofit - Site 10, 11, 12 (203.5 acres)
  - Scott Groves, Inc. Scott Grove #2 Citrus Ag Irrigation Retrofit (511 acres)
  - Scott Groves, Inc. Scott Groves #3 Citrus Ag Irrigation Retrofit (196 acres)
  - Wescott Groves, LLC Wescott Grove 1 Citrus Ag Irrigation Retrofit (986 acres)
  - Nettles Island, Inc. A Condominium Irrigation Water Conservation Retrofit
  - Field Operations Division Martin County Engineering Irrigation H2O Conservation Retrofit Project
Surficial aquifer system saltwater interface
- 250 mg/L isochlor lines

Update and comparison to 2009 and 2014 mapping effort

No major changes, but interface is dynamic

Maps published on SFWMD website
Questions and Public Comment

- If you are participating via Zoom:
  - Use the Raise Hand feature

- If you are participating via phone:
  - *9 raises hand
  - *6 mutes/unmutes your line

- When you are called on, please state your full name and affiliation prior to providing comments and/or questions
2021 Upper East Coast Water Supply Plan Update

Nancy Demonstranti, P.G.
Upper East Coast Plan Manager

2021 UEC Stakeholder Kickoff Meeting
April 30, 2021
Statutory Goal of Water Supply Plans (Section 373.709, F.S.)

To identify sufficient water supply sources and future projects to meet existing and future reasonable-beneficial uses during 1-in-10 year drought conditions through 2045 while sustaining water resources and related natural systems.
Water Supply Plan Requirements

- 20-year planning period
- Demand estimates and projections
- Evaluation of water source options
- Resource analyses
- Issue identification
- Water resource development
  - Responsibility of water management district
- Water supply development
  - Responsibility of water users
- Minimum Flows and Minimum Water Levels (MFLs)
  - Recovery and prevention strategies
Active participation to ensure plan reflects the needs of the planning area
  - Agricultural interests
  - Public water suppliers
  - Environmental community
  - County commissions/city councils
  - County/city planning staff
  - Regional planning council
  - Local Governing Board member involvement
  - Water management districts

Opportunities for public participation
  - Stakeholder meetings
  - Governing Board meetings
  - One-on-one meetings
  - Draft document review and comment
**UEC Water Supply Plan Update Process**

**Meetings with Local Governments**

**Meetings with Other Stakeholders**

**Draft Plan to Governing Board**

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**Upper East Coast Water Supply Plan**

**Kickoff**
April 2021

**Stakeholder Workshops**

- **Urban and Agricultural Demand Projections**
- **Environmental Needs**
- **Water Resource Analysis**
- **Water Source Options and Conservation**
- **Water Resource and Water Supply Projects**

**Board Approval**
November 2021

**Presenter:** Nancy Demonstranti
UEC Planning Area

- All of Martin and St. Lucie counties and the northeastern portion of Okeechobee County
- 1,230 square miles
- 17 public supply utilities
- Major agricultural industry
- Important natural and water resources
  - C-23, C-24, and C-25 canals
  - St. Lucie River and Estuary
  - Indian River Lagoon
  - North Fork of the Loxahatchee River

Presenter: Nancy Demonstranti
Objectives of 2021 UEC Plan Update

1. Water supply during 1-in-10 year drought conditions through 2045
2. Protect and enhance natural systems
3. Encourage water conservation measures
4. Promote compatibility with local government planning
5. Coordinate and integrate with other water resource initiatives
2021 UEC Water Supply Plan Organization

- Executive Summary
- Chapter 1: Introduction
- Chapter 2: Demand Estimates & Projections
- Chapter 3: Water Conservation
- Chapter 4: Resource Protection
- Chapter 5: Water Source Options
- Chapter 6: Water Resource Issues & Analyses
- Chapter 7: Water Resource Development Projects
- Chapter 8: Water Supply Development Projects
- Chapter 9: Future Direction
Water Source Options & Alternatives

- Surface Water
- Reservoirs*
- Fresh Groundwater
- Aquifer Storage & Recovery*
- Reclaimed Water*
- Saline Groundwater*
- Conservation*
- Seawater*

* Alternative water source

Presenter: Nancy Demonstranti
Water Resource Protection

- **Minimum Flows and Minimum Water Levels**
  - St. Lucie Estuary
  - North Fork of Loxahatchee River
  - Lake Okeechobee

- **Water Reservations**
  - North Fork of the St. Lucie River

- **Restricted Allocation Areas**
  - C-23, C-24 and C-25 canals
  - Lake Okeechobee Service Area
  - North Palm Beach County and Loxahatchee River Watershed waterbodies
  - Floridan wells in Martin and St. Lucie counties

Presenter: Nancy Demonstranti
Groundwater Sources

Surficial Aquifer System

Floridan Aquifer System
Aquifer Recharge Areas

- **Surficial aquifer system**
  - Recharged primarily by local rainfall
  - Low transmissivity & productivity
  - Some local recharge by C-44 and regional canals

- **Floridan aquifer system**
  - Extensive recharge area
  - Primarily in Central Florida
  - Higher transmissivity
Groundwater Resource Evaluation

- Minimal projected demand for new surficial aquifer system use through 2045
- Updated East Coast Floridan Model to evaluate:
  - 2019 current demands (78.4 mgd)
  - 2045 projected demands (98.9 mgd)
- Numerous data sources used for 2021 water resource evaluation efforts
Permitted Surficial Aquifer System Wells in the UEC Planning Area
Permitted Floridan Aquifer System Wells in the UEC Planning Area
PUBLIC SUPPLY

Groundwater Demands

Public Supply Utilities Water Sources
(Finished Water)

Volume (mgd)


Floridan Aquifer System
Surficial Aquifer System

Water Treatment Plants (≥0.1 mgd)
from the Floridan Aquifer System

Treatment Type
- Reverse Osmosis
- Nanofiltration

Presenter: Nancy Demonstranti
Upper East Coast Reuse History (1994-2019)
Water Conservation

- All water sources should be used efficiently by all users
- Agriculture
  - Conversion to microirrigation
  - FDACS best management practices
- Public supply per capita use rate (gallons per capita per day)

<table>
<thead>
<tr>
<th>Year</th>
<th>Use Rate</th>
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<tbody>
<tr>
<td>2000</td>
<td>167</td>
</tr>
<tr>
<td>2014-19</td>
<td>130</td>
</tr>
</tbody>
</table>

22% decrease

*The cheapest gallon of water is the gallon we don’t use*
Questions and Public Comment

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  - *6 mutes/unmutes your line

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Status of the citrus industry in the Indian River district

Lorenzo Rossi, Ph.D.
Howdy!

Lorenzo Rossi
Assistant Professor of Plant Root Biology

Horticultural Sciences Department
UF/IFAS Indian River REC

Fort Pierce, FL
772-577-7341
l.rossi@ufl.edu
Welcome to the Indian River district!

https://indianriverselect.com/

https://www.orchidislandjuice.com/
HLB-affected grapefruit grove in Ft. Pierce
HLB-affected citrus leaves
HLB-affected grapefruit tree

HLB-affected grapefruit fruit
Florida citrus production

1,000 boxes

- Oranges
- Grapefruits
- Specialty
- Total

Year Range
- 1920-1921
- 1923-1924
- 1926-1927
- 1929-1930
- 1932-1933
- 1935-1936
- 1938-1939
- 1941-1942
- 1944-1945
- 1947-1948
- 1950-1951
- 1953-1954
- 1956-1957
- 1959-1960
- 1962-1963
- 1965-1966
- 1968-1969
- 1971-1972
- 1974-1975
- 1977-1978
- 1980-1981
- 1983-1984
- 1986-1987
- 1989-1990
- 1992-1993
- 1995-1996
- 1998-1999
- 2001-2002
- 2004-2005
- 2007-2008
- 2010-2011
- 2013-2014
- 2016-2017
- 2019-2020
Citrus production by US states

Note: F = forecast. Citrus production includes production of grapefruit, oranges, and lemons; excludes production of tangerines, mandarins, and tangelos due to lack of data.
Loss-adjusted fresh citrus availability in the US 1970-2018

Note: The Economic Research Service’s loss-adjusted food availability data are designed to approximate consumption by accounting for some of the spoilage, plate waste, and other losses in food stores, restaurants, and households.

US orange juice sales – four weeks average 2015-2020

Notes: The reports are issued every four weeks during the marketing year. The dates in the chart are from marketing year 2020, when orange juice sales reporting began on September 29, 2019, with the first report being issued on October 26, 2019.

Source: USDA, Economic Research Service using Florida Department of Citrus Nielsen Sales Data.
Figure 4. Number of citrus operations in Florida.
Number of juice processing facilities and packinghouses in Florida

Figure 5. Number of juice processing facilities and packinghouses in Florida
Source: Florida Department of Agriculture and Consumer Services
Commercial citrus acreage - Indian River district
### 10-year comparison (2010 vs 2020)

Indian River district acreages of:
- Specialty +100%
- Grapefruit -57%
- Oranges -71%

-60% in citrus acreages

<table>
<thead>
<tr>
<th></th>
<th>Dec. 2010</th>
<th>Dec. 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oranges</td>
<td>41,952</td>
<td>15,870</td>
</tr>
<tr>
<td>Grapefruit</td>
<td>37,000</td>
<td>5,590</td>
</tr>
<tr>
<td>Specialty</td>
<td>2,721</td>
<td>1,1851</td>
</tr>
</tbody>
</table>

**Total Acreages**
- Dec. 2010: 81,673 acres
- Dec. 2020: 33,311 acres
Grapefruit production – Indian River district

Hurricanes
Francis and Jeanne

-85%

1,000 Boxes

2000-2001
2001-2002
2002-2003
2003-2004
2004-2005
2005-2006
2006-2007
2007-2008
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020

Red
White
Both
Specialty crops in the Indian River district

With the loss of citrus acreage, growers are switching to:

• Peaches
• Pongamia
• Lemon trees
As of December 2020

Indian River district has:

• 15870 acres of grapefruits
• 11851 acres of oranges
• 5590 acres of specialty citrus (i.e., lemons, tangerines, etc.)

• One of the largest citrus processing plants (Tropicana)
• One of the best small juice plants known globally as Natalie’s Juice Company
• The world’s largest USDA Citrus Research lab
• UF/IFAS Indian River Research and Education Center
• 7 packing houses
How to control HLB?

• Control of the Psyllid (ACP)
  • Pesticides
  • Citrus under protective screens (CUPS and mini-CUPS)
  • Reflective mulch
  • Cover crops
  • Use of colored clays
  • ...

• Control of the bacterium (CLas)
  • Traditional breeding (new varieties)
  • Micronutrients (Boron, Zinc, Manganese...)
  • Antibiotics
  • GMO
  • Natural compounds with antibacterial properties (i.e., oak extracts)
  • ...

• By enhancing the overall “soil health”
  • Compost
  • Cover crops
  • Ground covers
  • Mulching
  • ...

Direct ways

Indirect ways
Control of the psyllid

1. Pesticides
Control of the psyllid

2. CUPS and mini-CUPS
Control of the psyllid
3. Reflective mulch
Control of the psyllid

4. Cover crops
Control of the psyllid

4. Use of Kaolin clays
Control of the CLas
1. Micronutrient overdoses
Control of the CLas

2. Use of natural compounds
Enhancing “soil health”
1. Use of oak mulch and compost
Enhancing “soil health”
2. Use of ground covers
Conclusions

• No cure for HLB.
• Growers must rely on management strategies to prolong the producing life of affected trees.
• A combination of strategies may be the most effective.
  • cover crops and mulching
  • enhanced nutritional programs
  • mini CUPS to reduce inoculation on young trees
Acknowledgements

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Dr. Elezier Louzada (Texas A&M-Kingsville)
Dr. Cate Simpson (Texas Tech)
Mr. Lukas Hallman (UF/IFAS)
Mr. John Santiago (UF/IFAS)
Mr. John-Paul Fox (UF/IFAS)
Mr. Robert Adair (FL Research Center)
Mr. Daniel Scott (Scott Citrus Groves)
Mr. Doug Bournique (Indian River Citrus League)
Mr. Robert Croft (Croft Farm)
Mr. Travis Murphy (Murphy Citrus Groves)
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Upper East Coast Demand Estimates & Projections

Nathan Kennedy, Ph.D.
NES Consulting

2021 UEC Stakeholder Kickoff Meeting
April 30, 2021
Water Use Categories

1. Public Supply
2. Domestic Self-Supply
3. Agriculture
4. Commercial/Industrial/Institutional
5. Landscape/Recreational
6. Power Generation
Population Projections

Define Current and 2045 Service Area Boundaries
• Coordination with utilities

• U.S. Census and BEBR* annual reports

Calculate 2020 – 2045 Projected Utility Service Area Populations
• Projections based on county growth rates published by BEBR

Review Population Projections with Stakeholders
• Adjustments with local input considered

* The University of Florida’s Bureau of Economic and Business Research (BEBR) produces Florida’s official state and local population estimates and projections.

Presenter: Nathan Kennedy
## Population Projections in Martin County

<table>
<thead>
<tr>
<th>Public Supply Utility</th>
<th>2019</th>
<th>2045</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indiantown, Village of</td>
<td>6,367</td>
<td>8,455</td>
</tr>
<tr>
<td>Martin County Utilities</td>
<td>94,163</td>
<td>117,215</td>
</tr>
<tr>
<td>Sailfish Point</td>
<td>1,054</td>
<td>1,122</td>
</tr>
<tr>
<td>South Martin Regional Utility</td>
<td>21,126</td>
<td>24,228</td>
</tr>
<tr>
<td>St. Lucie Mobile Home Village</td>
<td>801</td>
<td>913</td>
</tr>
<tr>
<td>Stuart, City of</td>
<td>20,596</td>
<td>23,518</td>
</tr>
<tr>
<td>Jupiter, Town of*</td>
<td>2,257</td>
<td>2,770</td>
</tr>
<tr>
<td>Tequesta, Village of*</td>
<td>3,533</td>
<td>3,804</td>
</tr>
<tr>
<td>Port St. Lucie Utility Systems Department*</td>
<td>1,609</td>
<td>1,705</td>
</tr>
<tr>
<td><strong>Public Supply Total</strong></td>
<td><strong>151,506</strong></td>
<td><strong>183,729</strong></td>
</tr>
<tr>
<td><strong>Domestic Self-Supply Total</strong></td>
<td><strong>7,092</strong></td>
<td><strong>9,271</strong></td>
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<tr>
<td><strong>Martin County Total</strong></td>
<td><strong>158,598</strong></td>
<td><strong>193,000</strong></td>
</tr>
</tbody>
</table>

* Portion within Martin County

Presenter: Nathan Kennedy
Service Areas in St. Lucie County

2019

2045

Presenter: Nathan Kennedy
## Population Projections in St. Lucie County

<table>
<thead>
<tr>
<th>Public Supply Utility</th>
<th>2019</th>
<th>2045</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fort Pierce Utilities Authority</td>
<td>46,615</td>
<td>54,635</td>
</tr>
<tr>
<td>Harbour Ridge</td>
<td>1,042</td>
<td>1,397</td>
</tr>
<tr>
<td>Martin County Utilities*</td>
<td>1,934</td>
<td>2,192</td>
</tr>
<tr>
<td>Meadowood Community Association</td>
<td>589</td>
<td>654</td>
</tr>
<tr>
<td>Port St. Lucie Utility Systems Department</td>
<td>186,206</td>
<td>322,742</td>
</tr>
<tr>
<td>Reserve Community Development District</td>
<td>3,353</td>
<td>3,735</td>
</tr>
<tr>
<td>Spanish Lakes Country Club</td>
<td>1,649</td>
<td>1,781</td>
</tr>
<tr>
<td>Spanish Lakes Fairways</td>
<td>2,241</td>
<td>2,251</td>
</tr>
<tr>
<td>St. Lucie County Utilities Department</td>
<td>14,883</td>
<td>56,544</td>
</tr>
<tr>
<td>St. Lucie West Services District</td>
<td>13,785</td>
<td>13,785</td>
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<tr>
<td><strong>Public Supply Total</strong></td>
<td><strong>272,296</strong></td>
<td><strong>459,715</strong></td>
</tr>
<tr>
<td><strong>Domestic Self-Supply Total</strong></td>
<td><strong>37,060</strong></td>
<td><strong>33,085</strong></td>
</tr>
<tr>
<td><strong>St. Lucie County Total</strong></td>
<td><strong>309,356</strong></td>
<td><strong>492,800</strong></td>
</tr>
</tbody>
</table>

* Portion within St. Lucie County

Presenter: Nathan Kennedy
Public Supply and Domestic Self-Supply Demands

Demands (mgd)

- NE Okeechobee DSS
- St. Lucie DSS
- St. Lucie PS
- Martin DSS
- Martin PS

2019

2045

Presenter: Nathan Kennedy
Water Use Categories

1. Public Supply
2. Domestic Self-Supply
3. Agriculture
4. Commercial/Industrial/Institutional
5. Landscape/Recreational
6. Power Generation
Crop Categories

- Citrus
- Field Crops
- Fruits (Non-Citrus)
- Greenhouse or Nursery
- Hay
- Potatoes
- Sod
- Sugarcane
- Vegetables (Fresh Market)

Total Irrigated Acreage in UEC

Presenter: Nathan Kennedy
Data Sources for Agricultural Projections

- Census of Agriculture
- Florida Citrus
- World Bank
- Economic Research Service
- United States Department of Agriculture
- Bureau of Labor Statistics
- University of Florida
- IFAS
- United States Department of Agriculture
- Florida Department of Agriculture and Consumer Services
- NASS
- South Florida Water Management District

Presenter: Nathan Kennedy
Statutory Basis for Projections

- **2013 legislation (Section 570.93, Florida Statutes) requires FDACS to develop statewide agricultural demand projections**
  - Acreage – historical, current, and 20-year projection, by crop
  - Demands for average rainfall and 1-in-10 year drought, by crop
  - Metered data factored into estimates of historical and current demands
  - Consult with stakeholders

- **FDACS publishes the annual FSAID report**
Statutory Basis for Projections

- Section 373.709, Florida Statutes: Agricultural demand projections in water management districts’ regional water supply plans should be based on best available data
  - Must consider data of future demands provided by FDACS
  - Any deviation from data must be described
  - FDACS data are presented with adjusted data
Basic Components of Agricultural Demand Projections

Irrigated Acreages
- FSAID Irrigated Lands Geodatabase
- SFWMD land use map and acreage projections

Water Demand Models
- FSAID water use model
- Agricultural Field-Scale Irrigation Requirements Simulation (AFSIRS) model
FSAID/FDACS
Upper East Coast
Irrigated Agricultural Areas
### AFSIRS and FSAID Water Demand Model Comparison

<table>
<thead>
<tr>
<th>AFSIRS</th>
<th>FSAID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Built with data from University of Florida field experiments</td>
<td>Built with available reported water use from all water management districts</td>
</tr>
<tr>
<td>Uses a wide range of location-specific environmental variables</td>
<td>A limited set of environmental variables are used directly in the model</td>
</tr>
<tr>
<td>Does not consider changing irrigation intensities in response to crop profitability</td>
<td>Irrigation intensities vary in response to crop profitability</td>
</tr>
</tbody>
</table>

Presenter: Nathan Kennedy
Use of AFSIRS in 2021 UEC Plan Update

- AFSIRS model is similar to the model used to establish water use permit allocations in the region
- AFSIRS estimates are consistent with previous planning efforts for the UEC and other planning areas
- Unique aspects of agricultural production in the UEC may be under-represented with statewide FSAID model
Upper East Coast Agricultural Demands

Comparison of UEC Demand Projections

- Field Crops
- Fruit (Non-citrus)
- Potatoes
- Sod
- Greenhouse/Nursery
- Hay or Irrigated Pasture
- Vegetables (Fresh Market)
- Sugarcane
- Citrus

2016 Plan Update - 2020
FSAID VII - 2019
AFSIRS - 2019

Presenter: Nathan Kennedy
Livestock Water Demands

- 92,200 head of cattle (6% of state herd)
- FDACS estimates water demands at 1.90 mgd
- No change projected in livestock population or water demand
Upper East Coast Agriculture Demands Summary

<table>
<thead>
<tr>
<th>Agriculture Subcategory</th>
<th>2019</th>
<th>2045</th>
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</thead>
<tbody>
<tr>
<td>Crops</td>
<td>172.75</td>
<td>129.01</td>
</tr>
<tr>
<td>Livestock</td>
<td>1.91</td>
<td>1.91</td>
</tr>
<tr>
<td>Aquaculture</td>
<td>0.07</td>
<td>0.07</td>
</tr>
<tr>
<td><strong>UEC Planning Area Total</strong></td>
<td><strong>174.73</strong></td>
<td><strong>130.99</strong></td>
</tr>
</tbody>
</table>

Demands in million gallons per day.
Water Use Categories

1. Public Supply
2. Domestic Self-Supply
3. Agriculture
4. Commercial/Industrial/Institutional
5. Landscape/Recreational
6. Power Generation
Commercial/Industrial/Institutional

<table>
<thead>
<tr>
<th>County</th>
<th>2019</th>
<th>2045</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin</td>
<td>3.46</td>
<td>4.21</td>
</tr>
<tr>
<td>St. Lucie</td>
<td>0.92</td>
<td>1.47</td>
</tr>
<tr>
<td>Okeechobee</td>
<td>0.05</td>
<td>0.06</td>
</tr>
<tr>
<td><strong>UEC Planning Area Total</strong></td>
<td><strong>4.43</strong></td>
<td><strong>5.73</strong></td>
</tr>
</tbody>
</table>

Demands in million gallons per day.
Water Use Categories

1. Public Supply
2. Domestic Self-Supply
3. Agriculture
4. Commercial/Industrial/Institutional
5. Landscape/Recreational
6. Power Generation
Landscape/Recreational includes irrigation of golf courses and other landscaped areas such as parks, sports fields, and common areas of residential developments.

<table>
<thead>
<tr>
<th>County</th>
<th>2019</th>
<th>2045</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin</td>
<td>15.54</td>
<td>17.36</td>
</tr>
<tr>
<td>St. Lucie</td>
<td>16.43</td>
<td>23.21</td>
</tr>
<tr>
<td>Okeechobee</td>
<td>0.06</td>
<td>0.07</td>
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<tr>
<td><strong>UEC Planning Area Total</strong></td>
<td><strong>32.03</strong></td>
<td><strong>40.63</strong></td>
</tr>
</tbody>
</table>

Demands in million gallons per day.
Water Use Categories

1. Public Supply
2. Domestic Self-Supply
3. Agriculture
4. Commercial/Industrial/Institutional
5. Landscape/Recreational
6. Power Generation
## Power Generation

<table>
<thead>
<tr>
<th>County</th>
<th>2019</th>
<th>2045</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin</td>
<td>16.46</td>
<td>14.13</td>
</tr>
<tr>
<td>St. Lucie</td>
<td>1.45</td>
<td>3.34</td>
</tr>
<tr>
<td>Okeechobee</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>UEC Planning Area Total</strong></td>
<td><strong>17.91</strong></td>
<td><strong>17.47</strong></td>
</tr>
</tbody>
</table>

Demands in million gallons per day.
## Upper East Coast Draft Water Demands Summary

<table>
<thead>
<tr>
<th>Water Use Category</th>
<th>2019</th>
<th>2045</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Supply</td>
<td>56.25</td>
<td>84.27</td>
</tr>
<tr>
<td>Domestic Self-Supply</td>
<td>5.76</td>
<td>5.61</td>
</tr>
<tr>
<td>Agriculture</td>
<td>174.73</td>
<td>130.10</td>
</tr>
<tr>
<td>Commercial/Industrial/Institutional</td>
<td>4.43</td>
<td>5.73</td>
</tr>
<tr>
<td>Landscape/Recreational</td>
<td>32.03</td>
<td>40.63</td>
</tr>
<tr>
<td>Power Generation</td>
<td>17.89</td>
<td>17.47</td>
</tr>
<tr>
<td><strong>UEC Planning Area Total</strong></td>
<td><strong>291.09</strong></td>
<td><strong>283.81</strong></td>
</tr>
</tbody>
</table>

Demands in million gallons per day.

Presenter: Nathan Kennedy
2016 UEC Plan Update (2040) versus 2021 UEC Plan Update (2045) Demand Comparison

**2040 Total Projected Demand**
- 355 mgd

**2045 Total Projected Demand**
- 284 mgd

**Demand (mgd)**

- Agriculture
- Public Supply
- Landscape/Recreational
- Commercial/Industrial/Institutional
- Domestic Self-Supply
- Power Generation
Questions and Public Comment

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- When you are called on, please state your full name and affiliation prior to providing comments and/or questions
10-minute Break
Water Resource Protection Tools

Toni Edwards
Senior Scientist

2021 UEC Stakeholder Kickoff Meeting
April 30, 2021
Minimum Flows and Minimum Water Levels (MFL)

Water Reservations

Restricted Allocation Areas (RAAs)

- Adopted by rule in the Florida Administrative Code (F.A.C.)
- Considered in Consumptive Use Permitting (CUP) process
Minimum Flows and Minimum Water Levels (MFLs)

**Statutory Authority:** Chapter 373, Florida Statutes (F.S.)

Defined in Rule 40E-8.021, F.A.C.

**MFL**
- Point at which further withdrawals will cause "significant harm" to the water resources or ecology of an area

**Significant Harm**
- Temporary loss of water resource functions that takes more than two years to recover, but is less severe than serious harm

*May be adopted for both surface waters and groundwaters*
MFL Recovery and Prevention Strategies

Section 373.0421(2), F.S.

Recovery Strategy

- For waterbodies not meeting the MFL at the time of adoption
- Achieve recovery to the established MFL as soon as “practicable”

Prevention Strategy

- For waterbodies that are meeting the MFL but are not expected to meet it in 20 years
- Prevent the existing flow or level from falling below the adopted MFL

Great Egret (Ardea alba) and American Alligator (Alligator mississippiensis)
Source: https://naturetime.wordpress.com

Presenter: Toni Edwards
MFLs Adopted to Date in SFWMD

With **Prevention Strategies**
- Biscayne Aquifer
- Lower West Coast Aquifers
- St. Lucie Estuary
- Florida Bay
- Lake Istokpoga

With **Recovery Strategies**
- Caloosahatchee River
- Everglades
- Lake Okeechobee
- Northwest Fork of Loxahatchee River

*Cover > 6.6 million acres Districtwide*

Presenter: Toni Edwards
MFLs Adopted in the UEC

St. Lucie Estuary
Lake Okeechobee
NW Fork of Loxahatchee River

Presenter: Toni Edwards
### MFLs Covered in Other Water Supply Plans

<table>
<thead>
<tr>
<th>MFL Waterbody</th>
<th>Water Supply Plan</th>
<th>MFL Criteria</th>
<th>Recovery or Prevention Strategy</th>
</tr>
</thead>
</table>

Defined in Subsection 40E-8.021(29), F.A.C, as... “the surface water body south of the confluence of the St. Lucie River North Fork and the C-24 Canal; north of the confluence of the St. Lucie River South Fork and the C-44 Canal; and west of the western boundary of the Intracoastal Waterway, exclusive of canals”

- Minimum mean monthly flow of 28 cubic feet per second (cfs) at the Gordy Road Structure
- An MFL violation occurs when:
  - Mean monthly flow at the Gordy Road Structure declines below 28 cfs, for two consecutive months, during a 365-day period, for two consecutive years
St. Lucie Estuary Prevention Strategy

Subsection 40E-8.421(5), F.A.C., and Upper East Coast Water Supply Plan

Discharges from the North Fork are managed within the operational protocols of the Ten Mile Creek Project.

From: https://www.saj.usace.army.mil/Media/Fact-Sheets/Article/479985/ten-mile-creek-water-preserve-area/

Presenter: Toni Edwards
St. Lucie Estuary Prevention Strategy

Subsection 40E-8.421(5), F.A.C., and Upper East Coast Water Supply Plan

Flow targets are consistent with the Comprehensive Everglades Restoration Plan (CERP) performance requirements for Indian River Lagoon as part of the CERP Indian River Lagoon – South (IRL-S) Project.
St. Lucie Estuary Prevention Strategy

Subsection 40E-8.421(5), F.A.C., and Upper East Coast Water Supply Plan

Ongoing research and monitoring are conducted in the North and South Forks of the St. Lucie River.
Water Reservations

**Statutory Authority:** Chapter 373, F.S.

**Functions and Considerations**

- Reserve water for the protection of fish and wildlife or public health and safety
- Prevent use of reserved water for consumptive uses
- Required for CERP projects per federal Water Resources Development Act of 2000 (WRDA 2000)
- May be used as MFL recovery or prevention strategies

*Adopted for both surface waters and groundwaters*

---

Osprey (*Pandion haliaetus*) with bass (*Micropterus* sp.) on Merritt’s Mill Pond

Source: [http://nykography.weebly.com](http://nykography.weebly.com)

Presenter: Toni Edwards
Water Reservations Do Not...

- Prevent use of unreserved water or water allocated under CUPs
- Establish an operating regime
- Drought-proof the natural system
- Ensure wildlife proliferation

Lake Okeechobee under drought conditions
Source: SFWMD

American Alligator (Alligator mississippiensis)
Source: http://www.photodrom.com

5-67 water control structure (replaced G-85 structure)
Source: SFWMD
Water Reservations Adopted to Date in SFWMD

- Fakahatchee Estuary
- Picayune Strand
- North Fork of the St. Lucie River
- Nearshore Central Biscayne Bay
- Caloosahatchee River C-43 West Basin Storage Reservoir
- Everglades Agricultural Area (EAA) Reservoir
- Kissimmee River and Chain of Lakes

Cover 356,281 acres Districtwide
Water Reservations Adopted in the UEC

North Fork of the St. Lucie River, Subsection 40E-10.051, F.A.C.

For the protection of fish and wildlife

Common snook (Centropomus undecimalus)
Source: https://www.treasurecoast.com/

West Indian manatee (Trichechus manatus latirostris)
Source: James R. D. Scott
https://www.gettyimages.com
Section 40E-10.051, F.A.C.

- Prospective reservation - water available to fish and wildlife when the CERP C-23/C-24 North and South Reservoirs and STA Project components are operational

- Mean monthly flow of 130 cfs over Gordy Road Structure from November 1 through May 31
Restricted Allocation Areas (RAAs)

Listed in Section 3.2.1 of the SFWMD Applicant’s Handbook\(^1\), incorporated by reference in Rule 40E-2.091, F.A.C.

**Definition and Uses**

- Areas from which new or increased water allocations are restricted
- Regional in scope, for specific sources or areas of the SFWMD
- Implemented where water for projected needs is insufficient
- Protect water for natural systems and future restoration projects (CERP)
- May be designated as part of MFL recovery or prevention strategies

Restricted Allocation Areas in the SFWMD

- C-23, C-24, & C-25 Canal System
- L-1, L-2, & L-3 Canal System
- Lake Istokpoga/Indian Prairie Canal System
- Lower East Coast Everglades Waterbodies
- North Palm Beach County/Loxahatchee River Watershed Waterbodies
- Pumps on Floridan Wells in Martin and St. Lucie Counties
- Lake Okeechobee & Lake Okeechobee Service Area

Cover > 4.3 million acres Districtwide
Restricted Allocation Areas Adopted in the UEC

Osprey (Pandion haliaetus) nest just off the C-23 Canal. Source: https://www.SFWMD.gov

Restricted Allocation Area Criteria

C-23, C-24, and C-25 Canal System
- No additional surface water allocations from these canals, or directly connected canals, above existing allocations
- No increase in surface water pump capacity

Northern Palm Beach County/Loxahatchee River Watershed Waterbodies
- Water allocations are limited to base condition uses described in Applicant’s Handbook

Floridan Wells in Martin and St. Lucie Counties
- No pumps on flowing Floridan aquifer wells in Martin and St. Lucie counties, except under Applicant’s Handbook guidelines

Lake Okeechobee and Lake Okeechobee Service Area
- Water allocations are limited to historical condition water uses that occurred from April 1, 2001 to January 1, 2008
Questions and Public Comment

For more information contact:

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at tedwards@sfwmd.gov
or (561)682-6387

Don Medellin
at dmedelli@sfwmd.gov
or (561)682-6340

https://www.sfwmd.gov/our-work

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Presentation Outline

- Restoration Projects
- CERP Project Updates
  - Central Everglades Planning Project
  - Caloosahatchee River (C-43) West Basin Storage Reservoir
  - Lake Okeechobee Watershed Restoration Project: Aquifer Storage and Recovery Wells
  - Indian River Lagoon - South
- CERP Planning Projects
- Integrated Delivery Schedule (IDS)
Restoration Projects

- State Projects
  - Restoration Strategies Program
  - Everglades Construction Project
    - Stormwater Treatment Areas (STA)
  - Northern Everglades and Estuaries Program
    - Dispersed Water Management

- Federal Projects
  - South Florida Ecosystem Restoration Program
    - Comprehensive Everglades Restoration Plan (CERP)
    - Non-CERP

https://sfwmd.maps.arcgis.com/apps/MinimalGallery/index.html?appid=1facf32f199240b49a326432258c102f
Central Everglades Planning Project

- **CEPP EAA Phase**
  - SFWMD Signed Project Partnership Agreement (PPA)
  - STA under construction by SFWMD
  - Reservoir in design by USACE

- **CEPP North Phase**
  - SFWMD lead on design and construction

- **CEPP South Phase**
  - S-333N spillway completed by SFWMD
  - Old Tamiami Trail Removal under construction by SFWMD
  - L-67A Culverts and L-67C Levee Gaps under construction by USACE
  - USACE lead on design and construction of remaining features

- **CEPP New Water Phase**
  - Seepage Barrier, L-31N Levee
Caloosahatchee River (C-43) West Basin Storage Reservoir

- SFWMD began construction in 2015
  - Purpose is to improve salinity balance in the Caloosahatchee Estuary by capturing and storing basin runoff and Lake Okeechobee regulatory releases during the wet season and providing essential flows during the dry season.
  - 10,700-acre area with 170,000-acre-feet storage capacity
  - Construction completion expected in 2024
Lake Okeechobee Watershed Restoration Project
Aquifer Storage and Recovery Wells

- Project Implementation Report pending Final Chief’s Report and Congressional Authorization
- SFWMD initiating work on Aquifer Storage and Recovery (ASR) well clusters
  - siting evaluation and site selection activities
  - conducting continuous cores as part of exploratory well program
  - initiating exploratory testing and well drilling
- Developing Science Plan for ASR implementation to address uncertainties
Indian River Lagoon - South

- **Purpose**
  - To capture, store, and treat local basin runoff to restore the delicate balance of freshwater and salt water in the St. Lucie Estuary and the southern portion of the Indian River Lagoon, and revitalize degraded habitat within the watershed.

- **Structural Component**
  - C-44 Reservoir & STA
  - Southern Diversion – C23/C24 Interconnect Canal
  - C23/C24 South and North Reservoir & STA
  - Northern Diversion – discharge from the STA to the North Fork of the St. Lucie Estuary
  - C25 Reservoir & STA

- **Natural Lands Component**
  - Cypress Creek
  - Allapattah Complex
  - Palmar Complex
Purpose is to capture, store, and treat local C-44 basin runoff

SFWMD Projects:
- Pump Station 1,100 cfs – complete
- STA 6,300 acres – complete

USACE Project:
- Reservoir 3,400-acre area
- 50,600-acre-feet storage capacity
- Construction completion in 2021
- Filling to start in Fall 2021
IRL-S: C-44 Reservoir

Reservoir

Pump Station

STA Hydration Station

S-404 Spillway

Presenter: Leslye Waugh
IRL-S: C44 STA

Cell 1
Cell 2
Cell 3
Cell 4
Bar-B Ranch
IRL-S: C-23/C-24 Reservoir & STA

- **Stormwater Treatment Area (STA)**
  - 1,970-acre treatment area
  - Design completion in May 2021
  - Contract award scheduled for late 2021 and construction completion expected 2025

- **North Reservoir**
  - Approximately 2,000 acres
  - 30,000 acre-feet storage capacity
  - Final design expected in March 2022
  - Construction scheduled for 2022 to 2028

- **South Reservoir**
  - Approximately 3,500 acres
  - 60,000 acre-feet storage capacity
  - Final design expected in 2024
  - Construction scheduled for 2024 to 2030
Lakeside Ranch STA

- Constructed by the SFWMD under the **Northern Everglades & Estuaries Program**
- Purpose is to reduce phosphorus loads to Lake Okeechobee
- Located in Martin County
- 2,700-acre parcel
  - Phase I (North STA)
  - Phase II (South STA & S-191A Pump Station)
- Construction completion in 2021
Loxahatchee River Watershed Restoration Project

- Authorized in WRDA 2020
- Purpose is to restore and sustain the overall quantity, quality, timing, and distribution of fresh waters to the federally designated “National Wild and Scenic” Northwest Fork of the Loxahatchee River for current and future generations.
- This project also seeks to restore, sustain, and reconnect the area’s wetlands and watersheds that form the historic headwaters for the river.
- Few project features located in Martin County but majority are in Palm Beach County
- Project is fully described in Lower East Coast Plan
- Lake Okeechobee Watershed Restoration Project (LOWRP) (includes ASR Wells)
- Western Everglades Restoration Project (WERP)
- Biscayne Bay Southeastern Everglades Ecosystem Restoration Project (BBSEER)
Integrated Delivery Schedule

- Proven to be a steady, reliable “road map” that guides projects and maximizes the benefits of all Comprehensive Everglades Restoration Plan (CERP) efforts

- Schedule is reviewed each year and has yielded significant Everglade's restoration progress

- Developed through an extensive public process with participation of the South Florida Ecosystem Restoration Task Force and its Working Group

https://www.saj.usace.army.mil/Missions/Environmental/Ecosystem-Restoration/Integrated-Delivery-Schedule/
If you are participating via Zoom:
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Next Steps

Nancy Demonstranti, P.G.
Upper East Coast Plan Manager

2021 UEC Stakeholder Kickoff Meeting
April 30, 2021
Next Steps

- Continue coordination with utilities, agricultural operations, state agencies, and other stakeholders
- Groundwater model simulations
- Stay up to date with progress of regional projects
- Next stakeholder meeting: Late summer/Early Fall of 2021
Need Water Supply Plan Information?

- Plan information can be found at [www.sfwmd.gov/uecplan](http://www.sfwmd.gov/uecplan)
- Workshop announcements sent via email
Questions and Public Comment

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cbrcka@sfwmd.gov
(561) 682-2816

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