To: Council Members
From: Staff
Date: February 21, 2014 Council Meeting
Subject: Local Government Comprehensive Plan Review
Draft Amendment to the City of Stuart Comprehensive Plan
Amendment No. 14-1ESR

Introduction

The Community Planning Act, Chapter 163, Florida Statutes, requires that the Treasure Coast
Regional Planning Council (TCRPC) review local government comprehensive plan amendments
prior to their adoption. TCRPC comments are limited to adverse effects on regional resources
and facilities identified in the Strategic Regional Policy Plan (SRPP) and extrajurisdictional
impacts that would be inconsistent with the comprehensive plan of any local government within
the Region. TCRPC must provide any comments to the local government within 30 days of the
receipt of the proposed amendments and must also send a copy of any comments to the State
Land Planning Agency.

The amendment package from the City of Stuart includes a text amendment to update the City’s
Ten-Year Water Supply Facilities Work Plan and make related changes to the Infrastructure and
Conservation elements of the comprehensive plan. This report includes a summary of the
proposed amendment and TCRPC comments.

Summary of Proposed Amendment

The City of Stuart has submitted an updated Ten-Year Water Supply Facilities Work Plan in
order to be consistent with the Upper East Coast Water Supply Plan, which was updated by the
South Florida Water Management District in 2011. Pursuant to Section 163.3177 (6)(c)(3),
Florida Statutes, the City is required to update its water supply facilities work plan and
comprehensive plan within eighteen months of the update to the regional water supply plan. The
water supply facilities work plan is intended to ensure that adequate water supplies are available
to serve current and future residents in the water service area. The revised water supply plan
includes updated data and analysis related to the raw water source and consumptive use permit;
population projections; public water supply water projections; conservation practices;
availability of water supply; and water supply project identification and selection. The plan
indicates that the Interlocal Agreement between the City and Martin County confirms that
sufficient water supply from an alternative source is available to meet projected demands through 2028.

The proposed amendment also contains revisions to the Infrastructure Element, which includes a revision to Policy A1.1 indicating that priority shall be given to improvements to new raw water wells, the water distribution system, and drainage system; and a revision to Policy A8.1 limiting landscape irrigation to two days per week. In addition, the proposed amendment contains revisions to the Conservation Element, which includes a revision to Policy A3.3 to add 2-day per week year-round landscape irrigation restrictions as a conservation program; and deletion of Policy A3.5, which supports implementation of the proposed district-wide year round landscape irrigation rule by the South Florida Water Management District. This policy is no longer necessary because the City has adopted 2-day per week year-round landscape irrigation restrictions.

Extrajurisdictional Impacts

TCRPC requested comments from local governments and organizations expressing an interest in reviewing the proposed amendment on January 27, 2014. No extrajurisdictional impacts have been identified.

Regional Impacts

No adverse effects on significant regional resources and facilities have been identified.

Conclusion

The proposed amendment is consistent with the SRPP.

Recommendation

Council should approve this report and authorize its transmittal to the City of Stuart and the Florida Department of Economic Opportunity.

Attachments
List of Exhibits

Exhibit

1  General Location Map
2  Ordinance Number 2274-2014 Showing Strikethrough and Underline
BEFORE THE CITY COMMISSION
CITY OF STUART, FLORIDA

ORDINANCE NUMBER 2274-2014

AN ORDINANCE OF THE CITY COMMISSION OF THE CITY OF STUART, FLORIDA ADOPTING AND AMENDING THE CITY’S TEN YEAR WATER SUPPLY FACILITIES WORK PLAN, AND AMENDING CHAPTER 4 (INFRASTRUCTURE) AND CHAPTER 5 (CONSERVATION) OF THE CITY’S COMPREHENSIVE PLAN, THEREBY ENSURING CONSISTENCY WITH THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT’S EAST COAST WATER SUPPLY PLAN; REPEALING ALL ORDINANCES IN CONFLICT HEREWITH; PROVIDING A SEVERABILITY CLAUSE; PROVIDING FOR CONFLICTING PROVISIONS; PROVIDING FOR CODIFICATION AND AN EFFECTIVE DATE.

* * * * *

WHEREAS, the City of Stuart, Florida has adopted a Comprehensive Plan known as the City of Stuart Comprehensive Plan adopted by Ordinance No. 911, as subsequently amended; and

WHEREAS, Section 163.3177(6)(c)(3), Florida Statutes, requires a local government subject to a Regional Water Supply Plan to prepare a Water Supply Facilities Work Plan covering at least a 10-year planning period and to update the Water Supply Facilities Work Plan within 18 months after the governing board of the water management district approves an updated regional water supply plan; and
WHEREAS, the Water Supply Facilities Work Plan is intended to ensure that adequate water supplies are available to serve current and future residents of the City of Stuart and the water service area; and

WHEREAS, this amendment complies with the South Florida Water Management District Upper East Coast Water Supply Plan; and

WHEREAS, the City of Stuart Planning Advisory Board, acting as the Local Planning Agency, pursuant to Section 163.3174 et seq., Florida Statutes, and having held a properly noticed public hearing on December 11, 2013, has considered the proposed amendments to the Stuart Ten Year Water Supply Facilities Work Plan and Stuart Comprehensive Plan, and submitted its recommendation to the City Commission;

WHEREAS, having considered the recommendations of the Planning Board, the City of Stuart City Commission has prepared this amendment to the City’s Ten Year Water Supply Facilities Work Plan and Comprehensive Plan and transmitted it to the Department of Economic Opportunity and other agencies as required by Section 163.3184, Florida Statutes, and the proposed amendment has been reviewed by the Department of Economic Opportunity; and

WHEREAS, two (2) public hearings with due notice have been held by the City Commission to inform the public and receive comments; and

WHEREAS, the City of Stuart desires to hereby formally adopt these amendments to the City’s Ten Year Water Supply Facilities Work Plan and Comprehensive Plan.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE

CITY OF STUART, FLORIDA that:

SECTION 1: The City Comprehensive Plan, as amended, is hereby further amended as follows:
Element IV
INFRASTRUCTURE ELEMENT
Goals, Objectives, and Policies
GOAL STATEMENT A

The provision of needed public facilities in a timely manner which protects investments in existing facilities, maximizes the use of existing facilities, and promotes compact urban development.

Objective A1. Facility deficiencies.

Continuation of an active program that provides for the correction of existing public facility deficiencies within established facility service areas of the Capital Improvement Element.

Policy A1.1. Priority shall be given to work programs for correction of the deficiencies in and necessary improvements to the following facilities:

a. Contaminated wells, New raw water wells S-1 and S-2
b. Wastewater treatment plant, Water distribution system;
c. Water treatment plant;
d. Drainage system.

Policy A1.2. Work programs and capital facility improvements to correct existing facility deficiencies shall be coordinated with and supportive of each other.

Objective A8. Conservation of potable water resources.

The City shall maximize the use of existing facilities and discourage urban sprawl. The City shall maintain or reduce per capita use of potable water.

Policy A8.1. The City shall continue to implement its water conservation program by:

a. Enforce existing landscaping provisions which require the preservation and/or use of desirable species of native and drought-tolerant vegetation as a portion of all new development landscape plans;
b. Using treated wastewater on public and private lands, where feasible, and the use of potable water for irrigation purposes;
c. Sponsoring ongoing education programs to inform the public of various water conservation techniques and devices;
d. Employing its existing leak detection and meter testing and repair program to minimize losses of water in the distribution system;
e. Limit landscape irrigation to two-days per week.
f. Implementing South Florida Water Management District’s (SFWMWD) emergency water shortage rules during a declared drought or water emergency;
g. Requiring that development must connect to central potable water facilities as it
becomes available; and

2b. Enforcing its Land Development and Florida Building Code standards requiring low volume plumbing fixtures for new construction

Element V
CONSERVATION ELEMENT®
Goals, Objectives, and Policies
GOAL STATEMENT A


By implementing the City’s Twenty-Year Water Conservation Initiative, adopted on January 14, 2008, conserve water resources by reducing raw water average daily per capita consumption from the current rate of 2041 GPCD to 1941 GPCD by 2045-50, a 4.1% percent decrease in the overall per capita daily consumption rate.

The following policies support this objective:

Policy A3.1. The City shall continue to implement its existing water conservation programs, which include the following components:

1. Minimum water quality standards for non-potable use.
2. Use of wastewater effluent for irrigation purposes wherever economically feasible.
3. Use of water-saving devices, irrigation systems, and plumbing fixtures, such as toilet tank dams, adjustable shower heads and drip irrigation, shall be required for all new construction. Retrofitting of existing systems shall be encouraged.
4. Application of existing leak detection and maintenance program for the City water system.

Policy A3.2. During drought emergencies, implementation of South Florida Water Management District water shortage plans shall be enforced.

Policy A3.3. The City shall continue to cooperate with the South Florida Water Management District and Martin County in the development and implementation of water conservation programs established as part of its Ten-Year Water Supply Facilities Work Plan and Consumptive Use Permit. The following specific actions, regulations, and programs shall be implemented by the City:

- Interlocal Agreement For The Sale and Purchase Of Supplemental Water and Wastewater Capacity With Martin County;
- 2-day per week year-round landscape irrigation restrictions;
- Additional limitations on landscape irrigation during a water shortage emergency;
- Requirements for the use of xeriscape landscaping and “rain switches” on irrigation systems;
Ordinance 2274-2014
Comprehensive Plan Amendments
Water Supply Facilities Work Plan

- Continued use of the Standard Plumbing Code, including implementation of all plumbing fixture requirements;
- A tiered water use rate structure, including periodic rate studies;
- Retrofit rebate programs for residential toilets, residential indoor plumbing exchanges, and landscape irrigation efficiency;
- Customer education on the subject of water conservation via the monthly utility bill;
- Additional public education efforts, including open houses at the water plant and tours of the water plant for school and seniors groups throughout the year.

Policy A3.4. The City shall continue to develop and implement the water reuse program for large users as a means to reduce the City’s traditional water source per capita consumption rate.

Policy A3.5. The City supports implementation of the proposed district-wide year-round landscape irrigation rule proposed by the South Florida Water Management District.

Policy A3.6. The City shall monitor progress toward achieving the 204830 raw water consumption rate target on an annual basis. If progress is not consistent with interim targets projected in Table 4A of the Ten-Year Water Supply Facilities Work Plan, the City shall consider the need for implementing additional conservation measures.

SECTION 2: The City of Stuart Water Supply Facilities Work Plan, attached hereto as Exhibit "A" is hereby adopted in compliance with Section 163.3177, Florida Statutes.

SECTION 3: All ordinances or parts of ordinances herewith are hereby repealed to the extent of such conflict.

SECTION 4: If any word, clause, sentence, paragraph, section or part thereof contained in this Ordinance is declared to be unconstitutional, unenforceable, void or inoperative by a court of competent jurisdiction, such declaration shall not affect the validity of the remainder of this Ordinance.

SECTION 5: The provisions of this Ordinance shall be codified.

SECTION 6: This Ordinance shall take effect upon adoption.
Ordinance 2274-2014
Comprehensive Plan Amendments
Water Supply Facilities Work Plan

Commissioner ____________ offered the foregoing resolution and moved its adoption. The
motion was seconded by Commissioner ____________, and upon being put to a roll call vote, the
vote was as follows:

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<th></th>
<th>YES</th>
<th>NO</th>
<th>ABSENT</th>
</tr>
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<tr>
<td>TROY A. McDONALD, MAYOR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KELI GLASS LEIGHTON, VICE MAYOR</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>JAMES A. CHRISTIE, Jr., COMMISSIONER</td>
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<tr>
<td>EULA R. CLARK, COMMISSIONER</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>JEFFREY A. KRAUSKOPF, COMMISSIONER</td>
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</table>

ADOPTED this ___ day of ____________, 2014.

ATTEST:

CHERYL WHITE
CITY CLERK

TROY A. McDONALD
MAYOR

APPROVED AS TO FORM
AND CORRECTNESS:

MICHAEL J. MORTHELL
CITY ATTORNEY
City of Stuart
Ten-Year Water Supply Facilities Work Plan
200813 - 204823

July 2008; Revised December 2009 December 2013

Items underlined are additions and items struck through are deletions to the July December 2008 version of the Ten-Year Water Supply Facilities Work Plan.

Revisions highlighted in yellow are in response to the Objections Recommendations and Comments (ORC) Report issued by the Florida Department of Community Affairs (FDCA) on October 31, 2008
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City of Stuart Ten-Year Water Supply Facilities Work Plan

A. Introduction

The South Florida Water Management District (SFWMD) adopted the Upper East Coast Water Supply Plan 20062011 Amendment on July 12, 2006March 10, 2011. Per Section 163.3177(c), Florida Statutes, municipalities and water suppliers must adopt a related Water Supply Facilities Work Plan (WSFWP) and supportive amendments to their comprehensive plans by FebruarySeptember 160, 200813.

Municipalities and local suppliers are required to coordinate with SFWMD in the preparation of their WSFWP in order to identify needed facilities for at least a 10-year planning period, confirming that: (1) adequate water supply is available, considering the regional water supply plan; and (2) infrastructure plans necessary to serve projected need have been prepared.

Specifically, WSFWP comprehensive plan amendments must:

- Demonstrate that the local government has coordinated with the appropriate water management district’s regional water supply plan.
- Ensure that the local government’s future land use plan is based upon the availability of adequate water supplies and public facilities and services.
- Ensure that adequate water supplies and facilities are available to serve new development no later than the date on which the local government issues a certificate of occupancy and consult with the applicable water supplier prior to approving a building permit to determine whether adequate water supplies will be available to serve new development by the anticipated issuance date of the certificate of occupancy.
- Revise the five-year schedule of capital improvements to include any water supply, reuse and conservation projects and programs to be implemented during the five-year period.
- Revise the Conservation Element to assess projected water needs and sources for at least a ten-year planning period, considering the appropriate regional water supply plan.
- To maintain internal consistency, revise the intergovernmental Coordination Element to ensure coordination of the comprehensive plan with the regional water supply plan and regional water supply authorities.
- Clearly define responsibilities for planning, financing, construction and/or operation of the water supply facilities by all entities providing service within its jurisdiction, regardless of ownership responsibility for the individual facilities, including: (1) water supply source, service areas, existing demands and future projects; (2) treatment types and losses; (3) distribution facilities; and (4) bulk sales agreements.

The City has coordinated with Martin County and the South Florida Water Management District by reviewing the Martin County Water Supply Plan and the
SFWMD’s Upper East Coast Water Supply Plan and incorporating appropriate data from each of these documents herein, thus assuring a coordinated regional planning effort as well as the use of the best available data in preparing the City’s SWFMP.

B. Data and Analysis

The City of Stuart owns and operates its own potable water supply system. All responsibilities for the treatment and distribution of public water supply to the residents and businesses within its service area, which includes a small portion of unincorporated Martin County, are assumed by the City. In addition, there are areas of the City which receive potable water service from the Martin County Consolidated Water System. The City’s potable water service area is illustrated on Map 1, which illustrates the following potable water service areas:

- Areas within the City limits served by Stuart.
- Areas within the unincorporated area served by Stuart.
- Areas within the City limits served by Martin County Consolidated Water System.

Raw water for the Stuart water system is provided by 24 production wells drawing from the Surficial Aquifer System (SAS). In addition, Stuart receives an average of 800,000,000 gallons per day from the Vought Inc.-Northrop Grumman Systems Corporation Remediation system. Vought Inc.-Northrop Grumman’s system consists of 6 recovery wells treated by on-site stripping towers to remove volatile organic compounds. Once the water has been effectively treated at the Vought site, it is pumped to the Stuart water treatment plant.

Stuart currently operates a single water treatment facility, which consists of three 2-MGD treatment units, with a finished water treatment peak-day capacity of 6.0 MGD. The current treatment facility has the capacity to provide finished water supply through the year 2025. The treatment process consists of air-stripping to remove volatile organic compounds, lime softening, sand filtration and chloramination. The current (2013) average daily output of finished water is approximately 3.52 MGD.

In association with the approval of development orders, Stuart requires developers to upgrade the capacity of existing, and/or build new distribution systems to meet their needs. Upon completion, the City assumes ownership, operation and maintenance responsibilities for these facilities.
1. Raw Water Source and Consumptive Use Permit (CUP)

According to the Upper East Coast Water Supply Plan 200611 Update, Stuart currently (2005143) withdraws an average of approximately 403.3 MGD of raw water from the Surficial Aquifer System (SAS). Implementation of current Upper East Coast Water Supply Plan projects will result in the use of both the SAS and alternative supply sources in the future. Per the 200611 Update, brackish and reclaimed water are future potential alternative potable water sources.

Projections of raw water supply and finished water demand for the Stuart service area from the 200611 Update are presented in Table 1.

Projections of finished water demand for the Stuart service area, by expected supply component are presented in Table 2. Currently, the Stuart service area potable water supply consists entirely of traditional groundwater from the SAS. Projections from the 200611 Update show that future water supplies will come from both the SAS (74.6%) and alternative (25.4%) sources. Based upon the projections in Table 2, future withdrawals from the SAS will not exceed current levels.

<table>
<thead>
<tr>
<th>Year</th>
<th>Raw Water Withdrawal (MGD)**</th>
<th>Finished Water Demand (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>200610</td>
<td>403.37</td>
<td>403.49</td>
</tr>
<tr>
<td>2010</td>
<td>4.4</td>
<td>4.4</td>
</tr>
<tr>
<td>201520</td>
<td>644.58</td>
<td>644.13</td>
</tr>
<tr>
<td>2020</td>
<td>6.5</td>
<td>6.7</td>
</tr>
<tr>
<td>202520</td>
<td>606.25</td>
<td>6.64.73</td>
</tr>
</tbody>
</table>

* - Demand under average conditions.
** - Withdrawal includes 800,000,000 gpd from the Vought Northrop Grumman remediation.

Source: Table A-3: Upper East Coast Water Supply Plan Appendices, 200611 Update

The current Stuart Public Water Supply consumptive use permit (CUP 43-00053-W) was renewed by the South Florida Water Management District (SFWMD) in May/November 2004 for a 20-year period at an annual SAS allocation of 1,416,341 million gallons. The pending permit renewal seeks an annual SAS allocation of 1,340 million gallons. It is anticipated that the permit will be renewed during 2008 by SFWMD at its February 2009 meeting, with twenty-year duration to 2028-2029.
TABLE 2
Stuart Service Area Current and Projected Water Supply by Source

<table>
<thead>
<tr>
<th>Year</th>
<th>Traditional Sources (MGD)*</th>
<th>Alternative Sources (MGD)**</th>
<th>Total (MGD)</th>
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<tr>
<td>200610</td>
<td>3.867</td>
<td><strong>0</strong></td>
<td>4.836</td>
</tr>
<tr>
<td>201520</td>
<td>3.84.13</td>
<td><strong>0.90.48</strong></td>
<td>4.862</td>
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<tr>
<td>202530</td>
<td>3.84.73</td>
<td><strong>0.40.84</strong></td>
<td>5.657</td>
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</table>

* - Surficial Aquifer System (SAS) and Vought Northrup Grumman remediation.
** - Brackish water and reclaimed water Purchased from Martin County

Source: City of Stuart Utility Summary Table, Upper East Coast Water Supply Plan, 200611 Update

The SFWMND staff report related to the current CUP establishes the projected 200613 population of the service area at 22,550 18,338 residents. Projections beyond 2006 are not included in the background data for the current CUP.

More recent estimates of current population, however, are substantially lower. The Stuart Utility Department estimates the 200813 City service area population at 16,947 residents and the Community Development Department has estimated the 2008 City population at 17,952 residents.

Raw water is presently drawn from 30 Surficial Aquifer wells (City of Stuart – 24 wells and Vought Northrop Grumman Remediation – 6 wells), pursuant to the current CUP. Each of the wells has permitted average and maximum daily withdrawal rates established by CUP conditions of approval.

The City of Stuart wellfield is located in an area of concern for saline water intrusion. To address this issue, the City has an ongoing saline water monitoring program. As determined in the CUP, the potential for saline water intrusion or “upcoming” to occur as a result of the withdrawal of the current allocation is considered to be minimal.

In addition to saline water intrusion, the City has addressed the following aquifer pollution issues.

- The former Turbocombuster Technology (TCT) site is located approximately 0.75 miles southwest of the main City wellfield. There is a known plume of VOC contaminants that has migrated from the former TCT site towards the wellfield. The Florida Department of Environmental Protection (FDEP) has approved a Remedial Action Plan (RAP) for the TCT site that includes the operation of the main City wellfield. Wellfield operations facilitate the remediation process.
- The former Northrop Grumman Facility (n.k.a Vought), located at Witham Field airport and adjacent to 6 City wells, is currently under remediation for VOC contamination under CUP 43-00675-W.
- The City of Stuart Landfill, located along Monterey Road, is currently implementing a remediation program under CUP 43-00952-W consisting of a series of recovery wells situated around the perimeter of the landfill.

The CUP states that, based upon the monitoring results from the permitted remediation systems and the drawdown evaluation submitted by the City, the
potential for movement of contaminants from known pollution sources, other than the former TCT site, as a result of the withdrawal of the permitted allocation is considered to be minimal.

2. Population Projections
Population projections for Stuart and the City water service area were supplied by the Departments of Community Development and Public Utilities Works and the Upper East Coast Water Supply Plan, 2011 Update, respectively. Countywide projections were prepared by the Martin County Growth Management Department during the preparation of the Martin Water Supply Plan. Projections for the City and the Stuart water service area are presented in Tables 3A – 3C. Table 3A contains projections for both the Stuart water service area and the portion of the City served by the Martin County Consolidated System, including City and Stuart service area totals. Table 3B contains projections for the Stuart service area, including incorporated and unincorporated area components. Table 3C contains projections for the Martin County Consolidated System service area, including Stuart and "service area balance" components.

### TABLE 3A
Population Projections (Resident Population)
City of Stuart and Stuart Water Service Area

<table>
<thead>
<tr>
<th>Year</th>
<th>Stuart Service Area</th>
<th>City</th>
<th>Unincorporated</th>
<th>City Served By Martin County</th>
<th>City Total</th>
<th>Stuart Service Area Total</th>
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</thead>
<tbody>
<tr>
<td>2008-13</td>
<td>15,980,041</td>
<td>8881,006</td>
<td>6781,020</td>
<td>16,981,026</td>
<td>16,847</td>
<td></td>
</tr>
<tr>
<td>2010-20</td>
<td>17,070,046</td>
<td>1,002,025</td>
<td>1,041,150</td>
<td>19,071</td>
<td>18,970</td>
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<td>2015-30</td>
<td>18,800,253</td>
<td>1,052</td>
<td>1,158,120</td>
<td>20,067</td>
<td>19,960</td>
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</tbody>
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Sources:
*City of Stuart Community Development and Public Utilities Departments, 2008-13
*Population data are from the SFWMD's 2011 Upper East Coast Water Supply Plan Update

### TABLE 3B
Population Projections (Resident Population)
Stuart Water Service Area

<table>
<thead>
<tr>
<th>Year</th>
<th>Service Area Component</th>
<th>Stuart</th>
<th>Unincorporated Area</th>
<th>Service Area total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-13</td>
<td>15,980,041</td>
<td>8881,006</td>
<td>16,847</td>
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<tr>
<td>2010-20</td>
<td>17,070,046</td>
<td>1,002,025</td>
<td>1,041,150</td>
<td>19,071</td>
</tr>
<tr>
<td>2015-30</td>
<td>18,800,253</td>
<td>1,052</td>
<td>1,158,120</td>
<td>20,067</td>
</tr>
</tbody>
</table>

Sources:
*City of Stuart Community Development and Public Utilities Departments, 2008-13
*Population data are from the SFWMD's 2011 Upper East Coast Water Supply Plan Update
### TABLE 3C
Population Projections (Resident Population)
Martin County Consolidated System Water Service Area

<table>
<thead>
<tr>
<th>Year</th>
<th>City of Stuart</th>
<th>Service Area Balance</th>
<th>Total Service Area</th>
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</thead>
<tbody>
<tr>
<td>200612</td>
<td>9481,020</td>
<td>84,664,738.279</td>
<td>82,923,997.969</td>
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<td>201520</td>
<td>1,194,500</td>
<td>943,664,738</td>
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<tr>
<td>201530</td>
<td>1,192,200</td>
<td>943,501,112.095</td>
<td>92,560,113.295</td>
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</table>

Source: Table 3-A and Martin County 10-Year Water Supply Plan, 4/08/07/12

Projections for the Stuart service area, per Table 3B, are comparable to those presented in Appendix A, Table A-1 of the 200611 Update.

### 3. Public Water Supply Demand Projections

Demand for potable water can be calculated by either of the following means; raw water or finished water. Raw water demand is the amount that is withdrawn from the source to meet a particular demand. Finished water is the amount consumed by the end user, accounting for production losses and inefficiencies. Raw water demand, or withdrawal, is normally higher than finished water demand due to inherent treatment and process losses, and inefficiencies associated with delivering water from the source to the end user.

Projections of raw water and finished water demand for the Stuart service area, assuming the implementation of progressive water conservation measures, are presented in Tables 4A and 4B. A discussion of the City’s conservation measures is presented in Section 5.

### TABLE 4A
Stuart Service Area Projected Total Raw Water Demand

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Use Rate (gpcd)</th>
<th>Total Use (million gallons/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>200613</td>
<td>*16,847</td>
<td>2381,193</td>
<td>1,340,51,186.7</td>
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<tr>
<td>201520</td>
<td>**18,970,20,648</td>
<td>2904,191</td>
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<td>201530</td>
<td>**19,965,23,648</td>
<td>2904,191</td>
<td>1,464,463.3</td>
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Source: *City of Stuart Utilities Department

**Population data are from the SFWMD’s 2011 Upper East Coast Water Supply Plan Update

### TABLE 4B
Stuart Service Area Projected Finished Water Demand

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Use Rate (gpcd)</th>
<th>Total Use (million gallons/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>200613</td>
<td>*16,847</td>
<td>1996,669</td>
<td>1,306,5033.0</td>
</tr>
<tr>
<td>201520</td>
<td>**18,970,20,648</td>
<td>1,484,172</td>
<td>1,274,328.3</td>
</tr>
<tr>
<td>201530</td>
<td>**19,965,23,648</td>
<td>1,484,172</td>
<td>1,318,6484.6</td>
</tr>
</tbody>
</table>

Source: *City of Stuart Utilities Department

**Population data are from the SFWMD’s 2011 Upper East Coast Water Supply Plan Update
Current (2008) raw water demand within the City’s service area is estimated at 3,672.5 MGD (i.e., population of 16,847 residents x 248,193 gallons per capita per day).

It is projected that the raw water demand for Stuart’s water service area, using population projections per Table 4A, will attain a level of 4,043.84 MGD by 2020 (i.e., population of 19,969,20,648 residents x 204,191 gallons per capita per day).

The City’s existing CUP (43-00053-W) permits a raw water withdrawal of up to 1,446,341 million gallons per year (1,988,195 million gallons per year from the Surficial Aquifer System and 2,281,463 million gallons per year from the Vought/Northrop Grumman-Remediation System). To accommodate projected needs, the City executed a Twenty-Year Interlocal Agreement with Martin County for the Sale and Purchase of Supplemental Water and Wastewater Capacity on October 28, 2008. Raw water demand above the 1,341 million gallons will be requesting a raw water allocation from the Surficial Aquifer System of 1,340.5 million gallons per year, with the balance obtained from an alternative water supply via water distribution interconnections with Martin County. The projected impacts of the alternative water source upon total raw water demand are shown in Table 5.

It is projected that the Stuart service area finished water demand, using population projections per Table 4B, will attain a level of 3,641.07 MGD by 2020 (i.e., population of 19,969,20,648 residents x 484,172 gallons per capita per day). Based upon this projection, the City’s 6 MGD water treatment plant has the capacity to provide for the finished water needs of the Stuart service area beyond the 2020 projection period.

<table>
<thead>
<tr>
<th>Year</th>
<th>Surficial Aquifer (MGY)</th>
<th>Alternative Supply (MGY)</th>
<th>Total Use (MGY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-13</td>
<td>1,340.51</td>
<td>0</td>
<td>1,340.51</td>
</tr>
<tr>
<td>2048-20</td>
<td>1,340.51</td>
<td>72.60</td>
<td>1,413.10</td>
</tr>
<tr>
<td>2048-20</td>
<td>1,340.51</td>
<td>423.9143.6</td>
<td>1,764.14</td>
</tr>
</tbody>
</table>

Source: City of Stuart Utilities Department

The City’s adopted finished potable water level-of-service (LOS) standards are as follows:
- Residential: 100 gallons per capita per day
- Non-Residential: 1,100 gallons/acre/day
- Total Generation: 150 gallons per capita per day for all land uses.

Current consumption data provided by the City’s Utility Department, however, indicates that a more appropriate figure is 1,600 gallons per capita per day (i.e., 90% of raw water demand) for total generation for all land uses. Using this updated rate, the City’s current raw water-to-finished water ratio is 1.144 (248,195 gpd/196,688 gpd).
4. Non-Public Water Supply

The Upper East Coast Water Supply Plan 2011 Update identifies several classifications of water supply, including: Public Water Supply; Domestic Self-Supply; Agricultural; Commercial and Industrial; Thermoelectric Power Generation; and Recreational.

All customers within the Stuart service area, which includes a majority of the land uses in the City, are included in the Public Water Supply category.

5. Conservation Practices

The City's submitted a water conservation program includes as part of its current CUP, consisting of the following components:

- City of Stuart Code, Chapter 42, Division 4, Section 42-126 limits landscape irrigation to two days per week.
- City of Stuart Code, Chapter 842, Division 4, Section 842-86127 limits landscape irrigation during a water shortage emergency. The code also has a provision for a leak detection program.
- City of Stuart Landscape Code (Stuart Land Development Code, Section 6.06) requires the use of xeriscape landscape methods and the installation of a "rain switch" on irrigation systems.
- The City uses the Standard Plumbing Code for all plumbing fixture requirements.
- The City uses a five-tiered water use rate structure and is undertaking a rate study.
- The City implemented a public education program including notes about water conservation to its customers via the monthly utility bill. The City also has an open house at the water plant for tours and hosts tours for school groups and seniors groups throughout the year. Conservation materials are distributed during the tours.
- The City's Twenty-Year Water Conservation Initiative includes long-term goals to protect the limited water supply by implementing progressive water conservation measures to offset future water demands. The Initiative is based on the Conserve Florida Guide.

As part of the current CUP application, the City adopted and submitted a twenty-year initiative called the City of Stuart Twenty-Year Water Conservation Initiative (Initiative), with long-term goals to protect the water supply by implementing progressive conservation measures to maximize the limited water supply by implementing progressive water conservation measures to offset future demands. The Initiative is divided into two phases (2003-2012 and 2013-2027), the first of which includes conservation measures based upon the Conserve Florida Guide.

The City is also preparing to implement toilet retrofit, indoor plumbing retrofit and outdoor rain- and soil moisture sensor rebate programs. These programs are
consistent with recommendations made in the Upper East Coast Water Supply Plan Amendment.

Beyond the demand management practices contained in the water conservation initiative, the City executed a Twenty-Year Interlocal Agreement with Martin County for the Sale and Purchase of Supplemental Water and Wastewater Capacity on October 28, 2008 plans to meet additional demands by purchasing water from Martin County’s alternative water supply source. The overall objective of the City’s water conservation program is to reduce the gallons per capita per day from 218 gpcd in 2008 to 191 gpcd in 2030 and implement demand management programs. Demand management practices are projected to reduce the historical use rate of 218 gpcd in 2008 to 190 gpcd in 2028.

6. Availability of Water Supply

The City of Stuart water service area is delineated on Map 1. As the County’s service area encompasses all of the City not currently served by the City’s system, there will be no future expansion of the Stuart water service area. Delineation of the service area boundary minimizes the potential for duplication of facilities and provides for the orderly growth, expansion and extension of respective water utility systems.

The City’s pending Stuart CUP permit renewal, expected to be approved by the South Florida Water Management District later this year, will insure adequate water supply through 2028, provided there are no unforeseen impacts upon existing and planned sources. Further, by implementing the improvements identified in the Upper East Coast Water Supply Plan, 2008 Update (Ref. Table 6), Stuart will insure adequate water supply for its service area through 2025, without increasing current withdrawals from the SAS.

In accordance with the Twenty-Year Interlocal Agreement with Martin County for the Sale and Purchase of Supplemental Water and Wastewater Capacity on October 28, 2008. Under the terms and conditions of the Interlocal Agreement, as part of the CUP negotiations, the City has a memorandum of understanding (MOU) with Martin County regarding the provision of bulk water and wastewater services for a twenty-year period. It is the intention of both parties to execute an Interlocal Agreement by September 20, 2008 to formalize the terms of the MOU. Under the MOU, Martin County will supply Stuart with up to 50,000 gallons per day of bulk potable water from an alternative source during the term of the Agreement. To a maximum second year of the agreement, with increases of 50,000 gallons per day each successive year, up to a maximum of 40.84 G MGD. Projected water use under the MOU is displayed in Table 5 (i.e., Alternative Supply).

Stuart utilizes reclaimed water as its primary means of effluent disposal and deep well injection as a back-up for the disposal of municipal wastewater. At present, the City does not have the capability to utilize this source to provide irrigation-quality water. Phase I of the on-site improvements at the wastewater treatment facility have been completed, however. The remaining on-site improvements are
scheduled to be completed in FY 2009 and the final phase, including the reuse transmission line, is scheduled for completion in 2013. When completed, the reclaimed water system will provide 2.733 MGD of reclaimed water. Although a majority of the reclaimed wastewater will offset potable water from the traditional source, Stuart service area water demand projections (Ref. Table 4) do not currently include such credits to reduce per capita water demands. Should the ultimate user of reclaimed water discontinue use of a traditional water source, however, the reclaimed offset will be applied to future overall per capita usage for the service area.

The Stuart water system has three interconnections with Martin County in the event of an emergency shortage. Interconnections are detailed in Table 6.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Size (inches)</th>
<th>Capacity (gpm)</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin County</td>
<td>8</td>
<td>3,500</td>
<td>Federal Hwy. &amp; North River Shores Drive</td>
</tr>
<tr>
<td>Martin County</td>
<td>8</td>
<td>3,500</td>
<td>Indian Street &amp; Carnivale Street</td>
</tr>
<tr>
<td>Martin County</td>
<td>8</td>
<td>3,500</td>
<td>St. Lucie Blvd. &amp; the Airport Ditch</td>
</tr>
</tbody>
</table>

Source: CUP 43-00053-W

Based on the data and analysis presented in Sections 1-6, it is concluded that the City’s future land use mix is feasible, from the perspective of projected raw water supply needs during the ensuing five and ten-year periods. Further, the City’s 6 MGD water treatment plant has the capacity to provide for the finished water needs of the Stuart service area as well.

7. Water Supply Project Identification and Selection

The Update recommends the following two major capital improvements projects for the Stuart water supply system:

- Construction of a 1.6 MGD Aquifer Storage and Recovery (ASR) facility or blending well Memorandum of Understanding with Martin County Utilities to purchase Floridan Water from 0.15 MGD to 0.84 MGD.
- Construction of Phases II and III of the City’s reclaimed water project.

Recommended projects for consideration by Stuart are summarized in Table 7A. Since these projects were originally submitted to the South Florida Water Management District during the Update planning process, several opportunities have allowed the City to address more cost-effective alternatives to achieve the same end.
### TABLE 7A – Stuart Alternative Water Supply Projects Summary

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Alternative Source</th>
<th>Capital Costs ($ million)</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memorandum of Understanding with Martin County to Purchase Floridan Water</td>
<td>Brackish</td>
<td>0.05</td>
<td>0.15</td>
<td>0.49</td>
<td>0.84</td>
</tr>
<tr>
<td>from 0.15 MGD to 0.84 MGD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stuart WWTF Expansion Final Phase and Reclaimed Water Transmission Main to</td>
<td>Reclaimed</td>
<td>2.65</td>
<td>2.33</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Interconnect with Martin County.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: [Upper East Coast Water Supply Plan, 2006 Update](#).

Stuart has executed a Twenty-Year Interlocal Agreement with Martin County for the Sale and Purchase of Supplemental Water and Wastewater Capacity on October 28, 2008, recently engaged in discussions with Martin County regarding regional solutions to a sustainable water supply. The Interlocal Agreement confirms that sufficient water supply from an alternative source is available to meet projected demands through 2028.

Both the Stuart City Commission and Martin County Board of County Commissioners have authorized the execution of a Memorandum of Understanding (MOU) to jointly develop a formal Interlocal Agreement to provide Stuart with future water supply from an alternative source and Martin County with future wastewater treatment and disposal services. With the Interlocal Agreement in place, and the guarantee of a future alternate water supply source, the City has determined that the ASR blending well, per Table 7A, is no longer a viable option. Among various MOU conditions, each party is responsible for the costs of necessary improvements to their respective systems up to the point of connection to the other party. Further, the billing structure will be based upon actual consumption of water or wastewater services by the other party.

Phase I of the reclaimed water system improvements has been completed and the remaining related on site improvements are scheduled for completion in FY 2020. A revised schedule for completing the reclaimed water system, including the related transmission system, will be prepared when the results of the current Needs Assessment Report is finished.

When completed, the reclaimed water system will offer future potential for obtaining credits against the renewed CUP allocation. The impact of the reclaimed water source upon projected water demand in the Stuart service area cannot be determined at this time, however.
Based upon the above discussion, the City is proposing a revised list of recommended projects for the Stuart service area, presented in Table 7B.

**TABLE 7B – Revised Stuart Alternative Water Supply Projects Summary**

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Alternative Source</th>
<th>Capital Costs ($ million)</th>
<th>Total Design Capacity* (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2010</td>
</tr>
<tr>
<td>MOU with Martin County/Intergovernmental Agreement with Martin County</td>
<td>Brackish</td>
<td>To be determined</td>
<td>0.20</td>
</tr>
<tr>
<td>Stuart WWTF Expansion Final Phase</td>
<td>Reclaimed</td>
<td>2.65</td>
<td>2.33</td>
</tr>
</tbody>
</table>