TOWN OF JUPITER

April 13, 2015

Mr. Ray Eubanks
State Land Planning Agency
Florida Department of Economic Opportunity
Caldwell Building
107 East Madison – MSC 160
Tallahassee, Florida 32399

RE: Adopted Amendment to the Town of Jupiter's Comprehensive Plan - Round 2015-RWSP3

Dear Mr. Eubanks:

Attached please find:

- One (1) paper copy
- Two (2) copies on a CD-ROM in a Portable Document Format (PDF) of one (1) Comprehensive Plan Infrastructure Text (CPTX) amendment

Pursuant to Section 163.3184(3)(a), Florida Statutes, the Town of Jupiter is transmitting copies of the adopted amendment to the Treasure Coast Regional Planning Council (TCRPC), the South Florida Water Management District (SFWMD), the Florida Department of Environmental Protection (FDEP), the Florida Department of Transportation (FDOT) and the Florida Department of State (FDOS). The Town's 2015-RWSP3 round of Comprehensive Plan amendments is subject to the expedited state review process, pursuant to Section 163.3184(3), Florida Statutes.

The Jupiter Town Council held a public hearing on the Comprehensive Plan amendment on April 7, 2015, at which time the proposed 2015-RWSP3 Comprehensive Plan Text amendment was adopted without any changes.

A brief description of the amendment is as follows:

Comprehensive Plan Amendment – Infrastructure Element Text (Ordinance #1-15) – To modify Policy 1.3.13 to adopt by reference the Town's 2012 Water Master Plan Update and 2014 10-year Water Supply Facilities Work Plan.

The local contact person for information on the amendment is as follows:

David M. Kemp, AICP
Principal Planner
Department of Planning and Zoning
Town of Jupiter
210 Military Trail
Jupiter, Florida 33458
(561) 741- 2452 (phone)
(561) 744-3116 (Fax)

davidk@jupiter.fl.us

If you have any further comments or questions, please feel free to contact David Kemp at your earliest convenience.

Sincerely,

John Sickler

John R. Sickler, AICP
Director of Planning and Zoning
Town of Jupiter

Cc: Stephanie A. Thoburn, Assistant Director of Planning and Zoning (via e-mail)
(w/o Attachments)

Attachments:

Transmittal Letter to Michael J. Busha, TCRPC
Transmittal Letter to Gerry O'Reilly, FDOT
Transmittal Letter to Terry Manning, SFWMD
Transmittal Letter to Chris Stahl, FDEP
Transmittal Letter to Deena Woodward, FDOS
2015-RWSP3 Town Comprehensive Plan Amendment

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TOWN OF JUPITER

April 13, 2015

Mr. Michael J. Busha, AICP
Executive Director
Treasure Coast Regional Planning Council
421 S.W. Camden Avenue
Stuart, FL 34994

RE: Adopted Amendment to the Town of Jupiter's Comprehensive Plan - Round 2015-RWSP3

Dear Mr. Busha:

Attached please find:

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Sincerely,

John Sickler

John R. Sickler, AICP
Director of Planning and Zoning
Town of Jupiter

Cc: Stephanie A. Thoburn, Assistant Director of Planning and Zoning (via e-mail)
(w/o Attachments)

Attachments:
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2015-RWSP3 Town Comprehensive Plan Amendment (CD-ROM format)

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TOWN OF JUPITER

April 13, 2015

Mr. Gerry O'Reilly, Director of Production and Planning
Florida Department of Transportation, District Four
3400 West Commercial Boulevard
Fort Lauderdale, Florida 33309

RE: Adopted Amendment to the Town of Jupiter's Comprehensive Plan - Round 2015-RWSP3

Dear Mr. O'Reilly:

Attached please find:

- One (1) copy on a CD-ROM in a Portable Document Format (PDF) of one (1) Comprehensive Plan Infrastructure Text (CPTX) amendment

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Sincerely,

John Sickler

John R. Sickler, AICP
Director of Planning and Zoning
Town of Jupiter

Cc: Stephanie A. Thoburn, Assistant Director of Planning and Zoning (via e-mail)
(w/o Attachments)

Attachments:
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TOWN OF JUPITER

April 13, 2015

Terry Manning, AICP
Senior Planner
Intergovernmental Coordination Section
South Florida Water Management District
3301 Gun Club Road, MSG 2640
West Palm Beach, Florida 33406

RE: Adopted Amendment to the Town of Jupiter's Comprehensive Plan - Round 2015-RWSP3

Dear Ms. Manning:

Attached please find:

- One (1) copy on a CD-ROM in a Portable Document Format (PDF) of one (1) Comprehensive Plan Infrastructure Text (CPTX) amendment

Pursuant to Section 163.3184(3)(a), Florida Statutes, the Town of Jupiter is transmitting copies of the adopted amendment to the Treasure Coast Regional Planning Council (TCRPC), the Florida Department of Transportation (FDOT), the Florida Department of Environmental Protection (FDEP), and the Florida Department of State (FDOS). The Town's 2015-RWSP3 round of Comprehensive Plan amendments is subject to the expedited state review process, pursuant to Section 163.3184(3), Florida Statutes.

The Jupiter Town Council held a public hearing on the Comprehensive Plan amendment on April 7, 2015, at which time the proposed 2015-RWSP3 Comprehensive Plan Text amendment was adopted without any changes.

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davidk@jupiter.fl.us

If you have any further comments or questions, please feel free to contact David Kemp at your earliest convenience.

Sincerely,

John Sickler

John R. Sickler, AICP
Director of Planning and Zoning
Town of Jupiter

Cc: Stephanie A. Thoburn, Assistant Director of Planning and Zoning (via e-mail)
(w/o Attachments)

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TOWN OF JUPITER

April 13, 2015

Florida Department of Environmental Protection
Office of Intergovernmental Programs
Att: Mr. Chris Stahl
3900 Commonwealth Boulevard, Mail Station 47
Tallahassee, Florida 32399-3000

RE: Adopted Amendment to the Town of Jupiter's Comprehensive Plan - Round 2015-RWSP3

Dear Mr. Stahl:

Attached please find:

- One (1) copy on a CD-ROM in a Portable Document Format (PDF) of one (1) Comprehensive Plan Infrastructure Text (CPTX) amendment

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Sincerely,

John Sickler

John R. Sickler, AICP
Director of Planning and Zoning
Town of Jupiter

Cc: Stephanie A. Thoburn, Assistant Director of Planning and Zoning (via e-mail)
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TOWN OF JUPITER

April 13, 2015

Ms. Deena Woodward
Historic Preservation Planner
Bureau of Historic Preservation
Department of State
500 South Bronough Street
Tallahassee, Florida 32399-0250

RE: Adopted Amendment to the Town of Jupiter's Comprehensive Plan - Round 2015-RWSP3

Dear Ms. Woodward:

Attached please find:

- One (1) copy on a CD-ROM in a Portable Document Format (PDF) of one (1) Comprehensive Plan Infrastructure Text (CPTX) amendment

Pursuant to Section 163.3184(3)(a), Florida Statutes, the Town of Jupiter is transmitting copies of the adopted amendment to the Treasure Coast Regional Planning Council (TCRPC), the Florida Department of Transportation (FDOT), and the South Florida Water Management District (SFWMD). The Town's 2015-RWSP3 round of Comprehensive Plan amendments is subject to the expedited state review process, pursuant to Section 163.3184(3), Florida Statutes.

The Jupiter Town Council held a public hearing on the Comprehensive Plan amendment on April 7, 2015, at which time the proposed 2015-RWSP3 Comprehensive Plan Text amendment was adopted without any changes.

A brief description of the amendment is as follows:

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The local contact person for information on the amendment is as follows:

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Principal Planner
Department of Planning and Zoning
Town of Jupiter
210 Military Trail
Jupiter, Florida 33458

(561) 741- 2452 (phone)
(561) 744-3116 (Fax)
davidk@jupiter.fl.us

If you have any further comments or questions, please feel free to contact David Kemp at your earliest convenience.

Sincerely,

John Sickler

John R. Sickler, AICP
Director of Planning and Zoning
Town of Jupiter

Cc: Stephanie A. Thoburn, Assistant Director of Planning and Zoning (via e-mail)
(w/o Attachments)

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ORDINANCE NO. 1-15

AN ORDINANCE OF THE TOWN COUNCIL OF THE TOWN OF JUPITER, FLORIDA, AMENDING ORDINANCE NO. 57-89, THE COMPREHENSIVE PLAN OF THE TOWN OF JUPITER; PROVIDING FOR THE AMENDMENT OF POLICY 1.3.13 OF THE INFRASTRUCTURE ELEMENT OF THE COMPREHENSIVE PLAN BY INCORPORATING BY REFERENCE THE 2012 WATER MASTER PLAN UPDATE AND THE 2014 10-YEAR WATER SUPPLY FACILITIES WORK PLAN; PROVIDING FOR THE REPEAL OF LAWS IN CONFLICT; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Town Council of the Town of Jupiter, Florida (Town), has adopted a Comprehensive Plan pursuant to Chapter 163, Part II, Florida Statutes (the Act); and,

WHEREAS, the Florida Department of Community Affairs, now known as the Department of Economic Opportunity, has previously determined that the Town's Comprehensive Plan was "in compliance" with the Act; and,

WHEREAS, pursuant to the Act, the Jupiter Planning and Zoning Commission, sitting as the Local Planning Agency (the LPA) has conducted a public hearing, as required by Section 163.3174(4)(a), Florida Statutes, and has recommended the amendment of the text of Policy 1.3.13 of the Infrastructure Element of the Comprehensive Plan by incorporating by reference

the Town's 2012 Water Master Plan Update and the 2014 10-year Water Supply Facilities Work Plan (the Amendments) ; and,

WHEREAS, the Council agrees with the LPA's recommendation to amend the text of the Policy 1.3.13 as set forth in Exhibit "A" which is attached hereto and incorporated herein; and,

WHEREAS, The Town Council has determined that the amendment of Policy 1.3.13 would be in compliance with the Act; and,

WHEREAS, pursuant to Section 163.3184(11), Florida. Statutes., the Town Council has conducted a public hearing, and after considering public comments on the Amendments, has voted to transmit the Amendments to the Florida Department of Economic Opportunity, appropriate reviewing agencies, and any other local government or governmental agency that has filed a written request with the Town requesting the Amendments pursuant to Section 163.3184(3)(b)1., Florida Statutes;

WHEREAS, the Florida Department of Economic Opportunity and appropriate reviewing agencies have reviewed the proposed Amendments for consistency with the Act and sent any comments to the Town pursuant to Section 163.3184(3)(b)2. through 4., Florida Statues.

NOW THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL OF THE TOWN OF JUPITER, FLORIDA:

Section 1. The whereas clauses are incorporated herein as the legislative findings of the Town Council.

Section 2. Ordinance No. 57-89 of the Town of Jupiter**,** entitled "Comprehensive Plan of the Town of Jupiter," is hereby amended to amend the text of Policy 1.3.13 of the Infrastructure Element to incorporate by reference the Town's 2012 Master Plan Update and 2014 10-year Water Supply Facilities Work Plan as shown in the attached Exhibit "A", which is incorporated herein.

Section 3. The Town Clerk is hereby directed to transmit the required copies of the proposed Amendments to the Department of Economic Opportunity and all other local governments or governmental agencies pursuant to Section 163.3184(3)(c)2., Florida Statutes.

Section 4. Severability. If any section, paragraph, sentence, clause, phrase or word of this Ordinance is for any reason held by a court to be unconstitutional, inoperative or void, such holding shall not affect the remainder of this Ordinance.

Section 5. Repeal of Laws in Conflict. All ordinances or part of ordinances in conflict herewith are hereby repealed to the extent of such conflict.

Section 6. Effective Date. The provisions of this Ordinance shall become effective pursuant to Section 163.3184(3)(c)4., Florida Statutes

Attachment: Exhibit "A" - Text amendment to the Comprehensive Plan

V:\Staff\WP51\COMPPLAN\Amendments\2015 Water Supply Plan Updates\04-07-15 TC Adoption Meeting\Ordinance 1-15 Final.doc April 8, 2015

EXHIBIT A of Ordinance #1-15

Town of Jupiter Comprehensive Plan

2015-RWSP3 Amendment (Text)

April 7, 2015

Location: Infrastructure Element

Goals, Objectives and Policies

Future Public Facility Needs

Objective 1.3. The provision of sufficient public facilities to meet projected public demand and development impacts, as they are needed and as determined by the adopted level of service standards within this Plan. To implement this objective the following policies are adopted:

Policy 1.3.1 Five year public facility work programs, consistent with the Capital Improvements Element of this Plan, shall be evaluated on an annual basis in order to ensure that necessary projects are prioritized based upon current conditions and future resident demand.

Policy 1.3.2 Expansion of service areas shall be based on ability to serve new customers in a cost effective manner without jeopardizing levels of service for present and future customers within existing service areas.

Policy 1.3.3 The Town shall coordinate with the Loxahatchee River District and have periodic updates on implementation of the recommendations of the Loxahatchee River District's Master Plan.

Policy 1.3.4 New developments requiring sewer service shall not commence until there is adequate wastewater treatment capacity in accordance with the adopted level of service standard.

Policy 1.3.5 The Town shall continue to enforce its ordinance requiring new and existing development to connect to Loxahatchee River District sewer service when such service becomes available.

Policy 1.3.6 Individual package treatment plants and septic tanks are prohibited.

Policy 1.3.7 The Town shall continue to coordinate and cooperate with the Palm Beach County Solid Waste Authority in updating and implementing the county-wide Solid Waste Master Plan. To this end, the Town puts special emphasis on the following:

a) Development of a recycling program to include public education and voluntary separation by residents of recyclables and disposables for curb-side collection by the Town;
b) Development of a hazardous waste management program.

Policy 1.3.8 The Town shall maintain and update the stormwater master plan. This Plan shall meet the requirements of the "National Pollutant Discharge Elimination System" administered by the Environmental Protection Agency, and should include, at a minimum, the following:

An Analysis of:

a) Identification of Drainage Facilities.
b) Identification of Geographic Service Areas.
c) Facility Design Capacity including an analysis of the adequacy of the drainage system based upon historic storm events, including an inventory of areas experiencing flooding problems.
d) Current Demand.
e) Levels of Service.
f) Facility Capacity Analysis including a determination of the condition and regular maintenance needs of the drainage system;
g) General Performance, Adequacy, and Impact on Natural Resources

h) Stormwater impacts to quality of receiving waters;

Planning provisions for:

a) Problems and Opportunities for Expansion including recommendations for design, construction and maintenance to correct deficiencies.
b) A system-wide approach to drainage planning based on the Town's future land use plan.
c) Requirements for drainage basin retrofitting as a stipulation of redevelopment approval. Drainage facility design standards for minimizing impacts of stormwater runoff to receiving waters.

Policy 1.3.9 Wetlands adjacent to Jupiter Creek shall not be reduced in size, in order, to protect developed and developable property in the Choctaw Street area from flooding.

Policy 1.3.10 The Town shall maintain and where necessary, update land development regulations which provide for adequate drainage facilities in conformance with the allowable stormwater discharge criteria consistent with Chapter 62-25, Florida Administrative Code (adopted by reference) Stormwater management systems that are exempt from South Florida Water Management District permitting requirements shall be designed so that post-development runoff volumes do not exceed predevelopment runoff volumes consistent with Chapter 62-25, Florida Administrative Code.

Policy 1.3.11 The Town shall, through the Utilities Department, coordinate all drainage design, construction and maintenance activities that occur within the Town Limits or affect the Town in any way. This will require active and regular communication with and monitoring of Palm Beach County, Village of Tequesta, Loxahatchee River Environmental Control District, North Palm Beach Heights Water Control District, the South Indian River Water Control District, South Florida Water Management District, Florida Department of Transportation, and private developers.

Policy 1.3.12 The Town, through the Utilities Department, shall continue to update, no less than every five years, and implement the recommendations of the Water System Master Plan. The Water System Master Plan shall include a Water Supply Facilities Work Plan for at least a 10-year planning period addressing water supply facilities necessary to serve existing and new development for which the Town's utility is responsible. The Town's Water System Master Plan shall consider and be coordinated with the SFWMD's Lower East Coast Regional Water Supply Plan.

Policy 1.3.13 The Town's ~~2007~~ 2012 Water Master Plan Update and ~~inclusive~~ 2014 10-year Water Supply Facilities Work Plan prepared by the Utilities Department is adopted by reference in the Comprehensive Plan.

Upon First Reading this 3rd day of February, 2015, the foregoing Ordinance was offered by Councilor Todd Wodraska, who moved its adoption. The motion was seconded by Councilor Wendy Harrison, and upon being put to a roll call vote, the vote was as follows:

	AYE	NAY
MAYOR KAREN J. GOLONKA	X	
VICE-MAYOR ILAN KAUFER	X	
COUNCILOR WENDY HARRISON	X	
COUNCILOR JIM KURETSKI	X	
COUNCILOR TODD R. WODRASKA	X	

Upon Second Reading this 7th day of April, 2015, the foregoing Ordinance was offered by Councilor Todd Wodraska, who moved its adoption. The motion was seconded by Councilor Wendy Harrison, and upon being put to a roll call vote, the vote was as follows:

	AYE	NAY
MAYOR KAREN J. GOLONKA	X	
VICE-MAYOR ILAN KAUFER	X	
COUNCILOR WENDY HARRISON	X	
COUNCILOR JIM KURETSKI	X	
COUNCILOR TODD R. WODRASKA	X	

The Mayor thereupon declared Ordinance 1-15 duly passed and adopted this

7th day of April, 2015.

TOWN OF JUPITER, FLORIDA

BY: _____
KAREN J. GOLONKA
MAYOR

ATTEST:

_____
SALLY M. BOYLAN, MMC
TOWN CLERK

(TOWN SEAL)

TOWN OF JUPITER, FLORIDA. PALM BEACH COUNTY
INCORPORATED 1925

_____
THOMAS J. BAIRD, ESQ.
Approved as to form and legal sufficiency

Data and Analysis for Town of Jupiter Comprehensive Plan Amendment (2015-RWSP3) to the Infrastructure Element

Supporting Data and Analysis

A. Supporting Data and Analysis

The South Florida Water Management District ("the District") has provided local governments with a checklist (see staff report Attachment C) that provides a framework for reviewing and upgrading its 10-year Water Supply Facilities Work Plan and Comprehensive Plan, as necessary, to be consistent with the District's 2013 10-year Lower East Coast Water Supply Plan Update. The checklist includes the following six general consistency requirements:

1. Population Projections;
2. Water Suppliers (not applicable to the Town);
3. Water Demand Projections;
4. Water Supply Sources and Treatment Capacities;
5. Water Supply Projects;
6. Comprehensive Plan Goals, Objectives and Policies (see section B below).

The Town's 2014 10-Year Water Supply Facilities Work Plan (see staff report Attachment B) updates the following four applicable statutory consistency requirements with the District's 2013 10-year Lower East Coast Water Supply Plan Update:

1. *Population Projections (see pages 6, 9-10)* – The following population projections through 2035 are based on 2014 Palm Beach County Allocation Model:

Location	2010	2015	2020	2025	2030	2035
Jupiter	55,230	57,978	60,465	61,678	63,316	65,267
Juno Beach	3,176	3,503	3,619	3,710	3,829	3,960
Unincorporated Palm Beach County	12,332	12,767	13,046	13,521	14,186	16,911
Unincorporated Martin County	1,850	2,144	2,224	2,307	2,394	2,484
Total	**72,588**	**76,392**	**79,354**	**81,217**	**83,724**	**88,621**

2. *Water Demand Projections (see pages 9-11)* – The following water demand projections through 2035 are based on respective population forecasts and assume that the Town's average gross per capita water demand from 2010 to 2013 remains stable through 2035:

Year	Population	Raw Water Per Capita (gpcd) [A,B]	Finished Water Per Capita (gpcd) [A,B]	Raw Water Demand AADF (mgd)	AADF Finished Water Demand (mgd)	Max Day Finished Water Demand (mgd)
2010	72,588	236.2	198.1	17.1	14.4	20.16
2011	73,041	251.2	201.0	18.3	14.7	20.58

2012	73,888	248.3	202.0	18.3	14.9	20.86
2013	74,749	245.4	200.8	18.3	15.0	21.00
2015	76,392	245.3	200.5	18.7	15.3	21.42
2020	79,354	245.3	200.5	19.5	15.9	22.26
2025	81,217	245.3	200.5	19.9	16.3	22.82
2030	83,724	245.3	200.5	20.5	16.8	23.52
2035	88,621	245.3	200.5	21.7	17.8	24.92

The Water Demand Projections above illustrates that the annual average day raw water demand does not exceed the annual average day combined raw water allocation of 29.84 MGD through the year 2035. It also illustrates that the Town's design treatment capacity of 30.0 million gallons per day is sufficient through the year 2035 to meet the maximum day demand with all treatment units in service.

3. *Water Supply Sources and Treatment Capacities (see pages 12-17)* - This section briefly describes the water supply, treatment, storage and distribution infrastructure that is owned and operated by the Town of Jupiter. Notable infrastructure includes the Town's reverse osmosis water treatment plant and its 51 surficial aquifer production wells. Additionally, the Loxahatchee River District's (LRD) reuse water program is briefly described in this section as it relates to water supply planning.

4. *Water Supply Projects (see pages 20-22)* – The work plan concludes that, based upon the raw water demand forecast, further development of traditional water supply, alternative water supply, and reuse projects are not required to meet the demand within the Town of Jupiter's water service area over the period from 2015 to 2025. The Town receives no water supply from Lake Okeechobee and the Town anticipates no increase in withdrawals from the Surficial Aquifer beyond what is currently permitted. Hence, the Town plans on the following actions relative to water supply planning over the next 10-Years:
   a. The Town of Jupiter will continue to implement its ongoing conservation programs as outlined in Section 3.7 of the Work Plan.
   b. The Town will work toward completion of its Surface Water Recharge Project, as part of the Loxahatchee River Restoration Plan.

   The Town's residential water use goal is established as 153 gpd. The system is already achieving and exceeding this goal. The 2014 Utility Update Report quantifies residential water use at 118 gpd. Water conservation measures have proven effective and reclaimed water use has been maximized.

   The Town has adequate water treatment capacity at this time to meet all anticipated growth in water demand within its service area. Based upon the raw water demand forecast, further development of traditional water supply, alternative water supply, and reuse projects are not required to meet the demand within the Town of Jupiter's water service area over the period from 2025 to 2035.

The analyses contained in the Town's 2012 Water Master Plan Update (see staff report Attachment A) and 2014 10-year Water Supply Facilities Work Plan concludes these documents are consistent with the District's 2013 10-year Lower Coast Water Supply Plan Update in all six areas of the checklist. Therefore, the proposed text amendment to

Infrastructure Element Policy 1.3.13 will accomplish the consistency requirement with the District's Plan Update, as mandated in Section 163.3177(6)(c)3, F.S.

B. Internal Consistency with the Comprehensive Plan – The proposed modification to Infrastructure Element Policy 1.3.13 is internally consistent and supported by the following policies of the Town's Comprehensive Plan:

Infrastructure Element

Policy 1.3.12 - The Town, through the Utilities Department, shall continue to update, no less than every five years, and implement the recommendations of the Water System Master Plan. The Water System Master Plan shall include a Water Supply Facilities Work Plan for at least a 10-year planning period addressing water supply facilities necessary to serve existing and new development for which the Town's utility is responsible. The Town's Water System Master Plan shall consider and be coordinated with the SFWMD's Lower East Coast Regional Water Supply Plan.

Intergovernmental Coordination Element

Policy 1.1.37 - Within 18 months of the adoption of SFWMD's 10-year Lower East Coast Regional Water Supply Plan update and any future updates to the Plan, the Town shall amend its Infrastructure Element to consider the District's plan updates. These updates will include the following:

a) The Town's 10-year water supply plan;
b) Identification of adequate water supply sources to meet future demand;
c) Identification of alternate water supply projects.

<u>Implementing Infrastructure Element Policy:</u> The Town's Utility Department shall continue to update, no less than every five years, and implement the recommendations of the Water System Master Plan. The Water System Master Plan shall include a Water Supply Facilities Work Plan for at least a 10-year planning period addressing water supply facilities necessary to serve existing and new development for which the Town's utility is responsible. The Town's Water System Master Plan and inclusive 10-year Water Supply Facilities Work Plan shall consider and be coordinated with the SFWMD's Lower East Coast Regional Water Supply Plan.

<u>Staff Comment (for both policies):</u> The proposed text amendment to Policy 1.3.13 adopts by reference the Town's 2012 Water Master Plan Update and 2014 10-year Water Supply Facilities Work Plan. The 2012 Water Master Plan Update and the 2014 10-year Water Supply Facilities Work Plan consider and are consistent with the SFWMD's 2013 10-year Lower East Coast Regional Water Supply Plan Update. The proposed text amendment is consistent with and is supported by Infrastructure Element Policy 1.3.12 and Intergovernmental Coordination Element Policy 1.1.37.

C. Intergovernmental Coordination – Staff has submitted an executive summary of the proposed Infrastructure Element text amendment to the Palm Beach County Interlocal Plan Amendment Review Committee (IPARC). As of the date of this report, staff has not received any comments related to the text amendment.

TOWN OF JUPITER
TOWN MANAGER'S OFFICE

DATE: April 8, 2015

TO: Honorable Mayor and Members of Town Council

THRU: Andrew D. Lukasik, Town Manager

FROM: John Sickler, Planning and Zoning Director

SUBJECT: **INFRASTRUCTURE ELEMENT COMPREHENSIVE PLAN TEXT AMENDMENT** – To modify Policy 1.3.13 to adopt by reference the Town's 2012 Water Master Plan Update and 2014 10-year Water Supply Facilities Work Plan.

Ordinance #1-15	***Meeting dates:***	***PZ***	***01/13/15***
PZ #14-389		***TC***	***01/20/15 – 1st Reading (continued)***
DMK		***TC***	***02/03/15 – 1st Reading***
		TC	***03/17/15 – 2nd Reading***

Applicant: Town-initiated

Request: Amendment to Infrastructure Element Policy 1.3.13 to adopt by reference the Town's 2012 Water Master Plan Update (Attachment A) and 2014 10-year Water Supply Facilities Work Plan (Attachment B) to provide for the coordination of the South Florida Water Management District's 2013 10-year Lower East Coast Regional Water Supply Plan Update.

Town Council Final Action.

At their April 7, 2015 meeting, the Town Council **adopted** (by a 5-0 vote) the Infrastructure Element text as recommended by staff.

Staff Update (03-30-15).

The Town received "No-ORC" letters from the Department of Economic Opportunity (DEO), the Treasure Coast Regional Planning Council (TCRPC) and the Florida Department of Transportation (FDOT) (Attachment D) collectively stating these agencies did not have any objections to the proposed Infrastructure Element text amendments. In addition, the Town received a letter (Attachment E) from the South Florida Water Management District (SFWMD) on March 9, 2015, which included comments the District requested be addressed prior to adopting the text amendment. Utilities Director David Brown has addressed the SFWMD's comments as follows:

1. Include a strategy for the planned reduction of residential per capita rate to meet the stated goal of achieving the established level of service standard of 153 gallons per capita per day (gpd) including water conservation and reclaimed water use implementation.
   Town Response: The Town of Jupiter's residential water use goal is established as 153 gpd. The system is already achieving and exceeding this goal. The 2014 Utility Update

Report which was submitted to the District in November by the Town quantified residential water use at 118 gpd. Water conservation measures have proven effective and reclaimed water use has been maximized.

2. Update Section 2.2 to include the regional issues identified in the Lower East Coast Regional Water Supply Plan (LEC-RWSP). This section is intended to briefly address overarching regional issues impacting water supply planning at the local level. Include a narrative of the effects of identified regional issues on the Town's water supply with a description of the Town's policies addressing regional concerns. The regional issues for the LEC-RWSP to be included are identified as follows:
   a. Increased withdrawals from both the Surficial Aquifer System and surface water from Lake Okeechobee are limited.
   b. Conservation continues to be relied upon to reduce per capita use and a means to potentially delay or perhaps avoid adding capacity.

   Town Response: Section 4.1 (*see page 19*) of the 2014 10-year Water Supply Facilities Work Plan reads: "Based upon the raw water demand forecast, further development of traditional water supply, alternative water supply, and reuse projects are not required to meet the demand within the Town of Jupiter's water service area over the period from 2015 to 2025." The Town receives no water supply from Lake Okeechobee and the Town anticipates no increase in withdrawals from the Surficial Aquifer beyond what is currently permitted. The Town has adequate water treatment capacity at this time to meet all anticipated growth in water demand within its service area.

Town Council Action (02-03-15).

At their January 20, 2015 meeting, the Town Council **approved** (by a 5-0 vote) on first reading the Infrastructure Element text amendment as recommended by staff.

Town Council Action (01-20-15).

At the January 20, 2015 meeting, the Town Council **continued** (by a 4-0 vote) the proposed Infrastructure Element Text amendment to the February 3, 2015 meeting.

Local Planning Agency (LPA) Recommendation.

At their January 13, 2015 meeting, the Planning and Zoning Commission (acting as the Local Planning Agency) recommended approval (by a 7-0 vote) of the proposed Comprehensive Plan text amendment.

Staff Recommendation.

Based upon the facts and findings contained herein, staff recommends that the Planning and Zoning Commission, acting as the Town's Local Planning Agency (LPA), recommend that the Town Council **Adopt** the following (as shown in a ~~strike-through~~ and underline format):

Policy 1.3.13 The Town's ~~2007~~ 2012 Water Master Plan Update and ~~inclusive~~ 2014 10-year Water Supply Facilities Work Plan prepared by the Utilities Department is adopted by reference in the Comprehensive Plan.

Background.

The South Florida Water Management District (the District) Governing Board adopted the Lower East coast Water Supply Plan Update on September 12, 2013. As noted in Section 163.3177(6)(c)3, Florida Statutes (F.S.), the Town is required to update its Water Supply Facilities Work Plan within 18 months of the Governing Board's adoption. The Work Plan adopted by the Town must cover a minimum of 10 years. The Town Council approved the 2012 Update to the Water Utility Master Plan Update (Resolution #31-12) at their May 15, 2012 meeting. The 2014 10-year Water Supply Facilities Work Plan is included with this staff report. This 2014 Town of Jupiter 10-Year Water Supply Facilities Work Plan serves as an interim update while forecasting future water demand based upon the latest population projections plus identifying water supply sources, availability and facilities needed to serve existing and new development within the local government's jurisdiction.

Analysis.

A. Supporting Data and Analysis

The District has provided local governments with a checklist (Attachment C) that provides a framework for reviewing and upgrading its 10-year Water Supply Facilities Work Plan and Comprehensive Plan, as necessary, to be consistent with the District's 2013 10-year Lower East Coast Water Supply Plan Update. The checklist includes the following six general consistency requirements:

1. Population Projections;
2. Water Suppliers (not applicable to the Town);
3. Water Demand Projections;
4. Water Supply Sources and Treatment Capacities;
5. Water Supply Projects;
6. Comprehensive Plan Goals, Objectives and Policies (see section B below).

The Town's 2014 10-Year Water Supply Facilities Work Plan updates the following four applicable statutory consistency requirements with the District's 2013 10-year Lower East Coast Water Supply Plan Update:

1. *Population Projections (see pages 6, 9-10)* – The following population projections through 2035 are based on 2014 Palm Beach County Allocation Model:

Location	2010	2015	2020	2025	2030	2035
Jupiter	55,230	57,978	60,465	61,678	63,316	65,267
Juno Beach	3,176	3,503	3,619	3,710	3,829	3,960
Unincorporated Palm Beach County	12,332	12,767	13,046	13,521	14,186	16,911
Unincorporated Martin County	1,850	2,144	2,224	2,307	2,394	2,484
Total	**72,588**	**76,392**	**79,354**	**81,217**	**83,724**	**88,621**

2. *Water Demand Projections (see pages 9-11)* – The following water demand projections through 2035 are based on respective population forecasts and assume that the Town's average gross per capita water demand from 2010 to 2013 remains stable through 2035:

Year	Population	Raw Water Per Capita (gpcd) [A,B]	Finished Water Per Capita (gpcd) [A,B]	Raw Water Demand AADF (mgd)	AADF Finished Water Demand (mgd)	Max Day Finished Water Demand (mgd)
2010	72,588	236.2	198.1	17.1	14.4	20.16
2011	73,041	251.2	201.0	18.3	14.7	20.58
2012	73,888	248.3	202.0	18.3	14.9	20.86
2013	74,749	245.4	200.8	18.3	15.0	21.00
2015	76,392	245.3	200.5	18.7	15.3	21.42
2020	79,354	245.3	200.5	19.5	15.9	22.26
2025	81,217	245.3	200.5	19.9	16.3	22.82
2030	83,724	245.3	200.5	20.5	16.8	23.52
2035	88,621	245.3	200.5	21.7	17.8	24.92

The Water Demand Projections above illustrates that the annual average day raw water demand does not exceed the annual average day combined raw water allocation of 29.84 MGD through the year 2035. It also illustrates that the Town's design treatment capacity of 30.0 million gallons per day is sufficient through the year 2035 to meet the maximum day demand with all treatment units in service.

3. *Water Supply Sources and Treatment Capacities (see pages 12-17)* - This section briefly describes the water supply, treatment, storage and distribution infrastructure that is owned and operated by the Town of Jupiter. Notable infrastructure includes the Town's reverse osmosis water treatment plant and its 51 surficial aquifer production wells. Additionally, the Loxahatchee River District's (LRD) reuse water program is briefly described in this section as it relates to water supply planning.

4. *Water Supply Projects (see pages 20-22)* – The work plan concludes that, based upon the raw water demand forecast, further development of traditional water supply, alternative water supply, and reuse projects are not required to meet the demand within the Town of Jupiter's water service area over the period from 2015 to 2025. Hence, the Town plans on the following actions relative to water supply planning over the next 10-Years:
   a. The Town of Jupiter will continue to implement its ongoing conservation programs as outlined in Section 3.7 of the Work Plan.
   b. The Town will work toward completion of its Surface Water Recharge Project, as part of the Loxahatchee River Restoration Plan.

   Based upon the raw water demand forecast, further development of traditional water supply, alternative water supply, and reuse projects are not required to meet the demand

within the Town of Jupiter's water service area over the period from 2025 to 2035.

The analyses contained in the Town's 2012 Water Master Plan Update and 2014 10-year Water Supply Facilities Work Plan concludes these documents are consistent with the District's 2013 10-year Lower Coast Water Supply Plan Update in all six areas of the checklist. Therefore, the proposed text amendment to Infrastructure Element Policy 1.3.13 will accomplish the consistency requirement with the District's Plan Update, as mandated in Section 163.3177(6)(c)3, F.S.

B. Internal Consistency with the Comprehensive Plan – The proposed modification to Infrastructure Element Policy 1.3.13 is internally consistent and supported by the following policies of the Town's Comprehensive Plan:

Infrastructure Element

Policy 1.3.12 - The Town, through the Utilities Department, shall continue to update, no less than every five years, and implement the recommendations of the Water System Master Plan. The Water System Master Plan shall include a Water Supply Facilities Work Plan for at least a 10-year planning period addressing water supply facilities necessary to serve existing and new development for which the Town's utility is responsible. The Town's Water System Master Plan shall consider and be coordinated with the SFWMD's Lower East Coast Regional Water Supply Plan.

Intergovernmental Coordination Element

Policy 1.1.37 - Within 18 months of the adoption of SFWMD's 10-year Lower East Coast Regional Water Supply Plan update and any future updates to the Plan, the Town shall amend its Infrastructure Element to consider the District's plan updates. These updates will include the following:
a) The Town's 10-year water supply plan;
b) Identification of adequate water supply sources to meet future demand;
c) Identification of alternate water supply projects.
<u>Implementing Infrastructure Element Policy:</u> The Town's Utility Department shall continue to update, no less than every five years, and implement the recommendations of the Water System Master Plan. The Water System Master Plan shall include a Water Supply Facilities Work Plan for at least a 10-year planning period addressing water supply facilities necessary to serve existing and new development for which the Town's utility is responsible. The Town's Water System Master Plan and inclusive 10-year Water Supply Facilities Work Plan shall consider and be coordinated with the SFWMD's Lower East Coast Regional Water Supply Plan.

<u>Staff Comment (for both policies):</u> The proposed text amendment to Policy 1.3.13 adopts by reference the Town's 2012 Water Master Plan Update and 2014 10-year Water Supply Facilities Work Plan. The 2012 Water Master Plan Update and the 2014 10-year Water Supply Facilities Work Plan consider and are consistent with the SFWMD's 2013 10-year Lower East Coast Regional Water Supply Plan Update. The proposed text amendment is consistent with and is supported by Infrastructure Element Policy 1.3.12 and Intergovernmental Coordination Element Policy 1.1.37.

C. Intergovernmental Coordination – Staff has submitted an executive summary of the proposed Infrastructure Element text amendment to the Palm Beach County Interlocal Plan

Amendment Review Committee (IPARC). As of the date of this report, staff has not received any comments related to the text amendment.

Conclusion.

Staff finds the proposed comprehensive plan text amendment necessary, consistent with the comprehensive plan, and supported by data and analysis; therefore, staff recommends **approval** of the amendment.

Attachments:

Attachment A - The Town's 2012 Water Master Plan Update is available on the Town's website for reference as part of the agenda item at 2012 Water Supply Plan Updates

Attachment B – The Town's 2014 10-year Water Supply Facilities Work Plan

Attachment C – The South Florida Water Management District (SFWMD) Lower East Coast Plan Update Checklist for Local Governments

Attachment D – DEO, TCRPC and FDOT No-comment Letters

Attachment E – SFWMD Comment Letter

V:\Staff\WP51\COMPPLAN\Amendments\2015 Water Supply Plan Updates\04-07-15 TC Adoption Meeting\Staff Report FINAL (PZ 14-389 DMK).doc April 8, 2015

ATTACHMENT A

Town of Jupiter Utilities

WATER MASTER PLAN UPDATE 2012

Town of Jupiter
Water Utility Master Plan
2012 Update

Table of Contents

Acknowledgement

Executive Summary

I. Assessment of Existing Condition of System I.1
- A. Water System History I.1
- B. Service Area, Customer Base and Production Demands I.2
- C. Water Supply I.2
  - 1. Overview I.2
  - 2. Surficial Aquifer Source I.5
  - 3. Floridan Aquifer Source I.10
  - 4. Permitted Withdrawals I.20
    - a. Groundwater from Local Aquifers I.20
    - b. Excess Surface Water for Aquifer Recharge I.21
  - 5. Loxahatchee River Restoration Project I.23
- D. Water Treatment Facilities I.24
- E. Water Storage, Transmission and Distribution Facilities I.27
- F. Level of Service I.34
- G. Capital Cost Recovery System I.36
- H. Current Regulatory Issues I.38
- I. Utility Operations – Business and Information Systems I.39
  - 1. System Supervisory Control and Data Acquisition (SCADA) I.39
  - 2. Customer Information (CIS), Utility Billing & Work Order Systems I.42
  - 3. Geographic Information System (GIS) I.45

II. Future Projections
- A. Service Area, Customer Base and Production Demands II.1
  - 1. Projection of Future Water Demands per SFWMD Consumptive Use Permit II.1
  - 2. Projection of Future Water Demands Utilizing Population Allocation Models II.5
  - 3. Projection of Future Water Demands Utilizing Town's Geographic Information System II.10

Town of Jupiter
Water Utility Master Plan
2012 Update

Table of Contents cont....

B. Water Transmission/Distribution Hydraulic Model Updates II.17
C. Probable Regulatory Changes and Their Importance/Potential Impact II.61
D. Water Utility Capital Needs Assessment II.66
1. Raw Water Supply Sustainability (Water Quality and Quantity) II.66
a. Surficial Aquifer Source II.66
b. Floridan Aquifer Source II.68
c. Surficial Aquifer Withdrawals and Prevention of Wetland Impacts II.70
d. Recharge of Surficial Aquifer II.70
2. Raw Water Collection System Facilities II.71
a. Floridan Aquifer Raw Water Mains II.71
b. Surficial Aquifer Raw Water Mains II.72
3. Treatment Facilities II.72
a. Modify RO Permeate Scrubbers II.72
b. Replace Membrane Vessels and Piping for RO Bank I Trains II.75
c. Demo Lime Sludge Drying Equipment Lime Sludge Pipe Gallery II.76
d. Enclosed Storage Barn II.76
e. Replace Nano Sand Filter Media II.76
f. Replace RO Transfer Pumps II.77
g. Replace Five Nanofiltration Train Membranes II.77
h. Install Supplemental Blend Box at Nano Clearwell and Associated Equipment II.78
i. Replace Circulation Pumps at Concentrate Treatment Facility II.79
j. Replace Reverse Osmosis MCC Cooling System II.79
k. Install Nitrogen Blanket in Sulfuric Acid Storage Tank II.80
l. Implement Free Chlorine Disinfection Process II.80
m. Nanofiltration Permeate Odor Control Modifications II.83
4. Concentrate Disposal II.84
a. FDEP/EPA Permitting II.84

Town of Jupiter
Water Utility Master Plan
2012 Update

Table of Contents cont….

b. C-18 Canal Outfall Corrosion Investigation II.86

5. Water Storage Facilities II.87

a. Enhanced Juno Beach Water Storage Tank Water Circulation II.88

b. Limestone Creek Water Storage Facility II.88

c. Install Re-chlorination Equipment at Riverbend Re-Pump Facility II.88

6. High Service Pumping/Water Transmission Distribution II.89

a. Reconfigure HSP 4, HSP 5, HSP 6, and HSP 7 II.89

b. Central Boulevard Pump Station Upgrades II.90

c. Bluff's Area Low Distribution Pressure Remediation II.92

d. Construct Crossing of I-95/Turnpike at Donald Ross Road II.92

e. Transmission/Distribution System R&R II.94

7. Utility Operations – Business and Information Systems II.98

a. System Supervisory Controls and Data Acquisition (SCADA) II.98

b. Customer Information (CIS), Utility Billing & Work Order Systems II.103

c. Geographic Information System (GIS) II.105

8. 25 Year Community Investment Program Schedule II.109

E. Proposed Strategies for Enhanced Asset Utilization II.111

F. Human Capital – Utility Staffing Needs and Forecast II.112

G. Financial Forecasts and Recommendations II.146

Town of Jupiter
Water Utility Master Plan
2012 Update

List of Tables

Table I.1	Existing Water Demand	I.2
Table I.2	2011 Wellfield Testing	I.8
Table I.3	Floridan Aquifer Well Usage	I.13
Table I.4	Floridan Well Pumpage	I.16
Table I.5	Existing Permitted Water Use (MGD)	I.20
Table I.6	Existing Rated Plant Capacities	I.24
Table I.7	Transmission/Distribution Pipeline Data	1.27
Table I.8	System Water Storage Capacity	I.29
Table I.9	System Capacity Charges	I.38
Table II.1	Projected Water Use Per 2010 SFWMD Consumptive Use Permit	II.2
Table II.2	Calculation of Daily Peak Flow Ratio	II.5
Table II.3	Service Area Estimated Population and Water Demand 2010-2030	II.6
Table II.4	Demand Growth Projection	II.15
Table II.5	Initial Hazen-Williams Friction Coefficients	II.18
Table II.6	Total Potable Water Sales 2010/2011 (Gallons)	II.19
Table II.7	Water Supply and Demand Summary	II.20
Table II.8	Fire Protection Evaluation Criteria	II.23
Table II.9	Fire Demand Simulations	II.23
Table II.10	Distribution System Model Calibration Results	II.28
Table II.11	EPS Pressure Calibration Results (Hydrant 74-49)	II.29

Town of Jupiter
Water Utility Master Plan
2012 Update

List of Tables cont.....

Table II.12	EPS Pressure Calibration Results (Hydrant 80-05)	II.30
Table II.13	EPS Flow Calibration Results	II.31
Table II.14	Distribution System Assessment Criteria	II.32
Table II.15	Fire Flow Analysis Results for Existing Piping Network 2010-2030	II.33
Table II.16	30-40 Year Old Wells to be Replaced	II.67
Table II.17	Other 20-40 Year Old Wells to be Replaced	II.67
Table II.18	Comparison of Processed Hydrogen Sulfide Removed from RO Permeate Preliminary Planning Evaluation of Alternative Technologies	II.75
Table II.19	Water Transmission/Distribution R&R Risk Analysis and Prioritization	II.95
Table II.20	Water Transmission Mains R&R Risk Analysis and Prioritization	II.96
Table II.21	Project Prioritization Listing & Schedule	II.97
Table II.22	Notable New and/or Amended Capital Cost Schedule	II.109/110
Table II.23	Summary of Water Capital Projects fiscal Years 2012 to 2037	II.146
Table II.24	Water System Capital Improvement Plan	II.148-151
Table II.25	Summary of Primary Water System Capital Project	II.152
Table II.26	Summary of Existing Principal Amount of Bonds Outstanding	II.157
Table II.27	Capital Program Funding Plan	II.158
Table II.28	Comparison to Typical Monthly Residential Bills for Water Service	II.171/172

Town of Jupiter
Water Utility Master Plan
2012 Update

List of Figures

Figure I.1	Jupiter's Dual Aquifer Supply Sources	I.3
Figure I.2	Jupiter Water Utilities Service Area Boundaries	I.4
Figure I.3	Surficial Aquifer Well Locations	I.6
Figure I.4	Surficial Aquifer Raw Water Mains	I.7
Figure I.5	Floridan Aquifer Well Locations	I.11
Figure I.6	Floridan Aquifer Raw Water Mains	I.12
Figure I.7	Florida Aquifer 2005 Pumpage by Well	I.14
Figure I.8	Florida Aquifer 2011 Pumpage by Well	I.15
Figure I.9	RO-3 Chloride and Conductivity Data	I.16
Figure I.10	RO-11 Chloride and Conductivity Data	I.17
Figure I.11	Floridan Aquifer Well Chloride Data 1995-2011	I.19
Figure I.12	Town of Jupiter Recharge System	I.22
Figure I.13	How Membrane Technology Works	I.26
Figure I.14	Water Storage and High Service Pumping Facilities	I.30
Figure I.15	Transmission and Distribution Piping Network	I.31
Figure I.16	Jupiter Utilities Water System Process Flow Diagram	I.33
Figure I.17	Current Water Connection Fees	I.37
Figure I.18	GIS/Water Utilities – 2001 to 2011	I.47
Figure I.19	Potable Water Viewer	I.48
Figure I.20	Service Interruption Notification	I.49

Town of Jupiter
Water Utility Master Plan
2012 Update

List of Figures cont.....

Figure II.1	Projected Water Use Per SFWMD CUP	II.1
Figure II.2	Monthly Water Production	II.3
Figure II.3	Single Family Residential Water Usage Metered	II.4
Figure II.4	Traffic Analysis Zones Location Map	II.7
Figure II.5	Areas of New (Future) Water Demand to 2030	II.9
Figure II.6	Projection of Future Water Demands (ERCs)	II.14
Figure II.7	Water Distribution System	II.21
Figure II.8	Potable Water Service Locations (October 2011)	II.24
Figure II.9	Calibration pressure Monitoring Locations	II.26
Figure II.10	Minimum System Pressure 2010-2011 (Peak Hours)	II.34
Figure II.11	Available Fire Flow 2010-2011	II.35
Figure II.12	Minimum System Pressure 2015 (Peak Hour)	II.37
Figure II.13	Minimum System Pressure 2030 (Peak Hour)	II.38
Figure II.14	Available Fire Flow 2015	II.39
Figure II.15	Available Fire Flow 2030	II.40
Figure II.16	Minimum System Pressure Central Blvd 24” Crossing 2015 Peak Hour	II.42
Figure II.17	Minimum System Pressure Central Blvd 24” Crossing 2030 Peak Hour	II.43
Figure II.18	Bluffs Area Inline Booster Pump Station Location	II.45
Figure II.19	Minimum System Pressure Bluffs Area BPS 2015	II.46
Figure II.20	Minimum System Pressure Bluffs Area BPS 2030	II.47
Figure II.21	Jupiter Farms Water Service Extension	II.49

Town of Jupiter
Water Utility Master Plan
2012 Update

List of Figures cont.....

Figure II.22	Current PBCE Valve Arrangement	II.51
Figure II.23	PBCE Water Age with Current Valving and Flushing	II.52
Figure II.24	Proposed PBCE Valve Arrangement	II.53
Figure II.25	PBCE Water Age with Proposed Valving and No Flushing	II.54
Figure II.26	PBCE Water Age with Proposed Valving, FDOT Crossing and No Flushing	II.55
Figure II.27	On-site HSP Station Capacity Evaluation	II.58
Figure II.28	Central Blvd North HSP Station Capacity Evaluation	II.58
Figure II.29	Central Blvd South HSP Station Capacity Evaluation	II.59
Figure II.30	On-site HSP Station Capacity Evaluation w/Proposed Crossing	II.59
Figure II.31	Central Blvd North HSP Station Capacity Evaluation w/Proposed Crossing	II.60
Figure II.32	Central Blvd South HSP Station Capacity Evaluation w/Proposed Crossing	II.60
Figure II.33	Limestone Creek Wellfield Wetland and Well Locations	II.69
Figure II.34	Central Blvd Crossing with 24” DIP	II.91
Figure II.35	Proposed Transmission line Crossing of I-95	II.93
Figure II.36	Cloud-Based Map Services	II.107
Figure II.37	Meter Reading Sequencing	II.108
Figure II.38	Proposed Organization Chart FY 2013	II.114
Figure II.39	Organization Chart FY 2017	II.143
Figure II.40	Projected Operating Expense Detail	II.156
Figure II.41	Capital Funding Requirements by Funding Source	II.160

Town of Jupiter
Water Utility Master Plan
2012 Update

List of Figures cont.....

Figure II.42	All-In Debt Coverage	II.162
Figure II.43	Annual Debt Service Payments	II.163
Figure II.44	Net Revenue Margin	II.164
Figure II.45	Operating Liquidity – Ending Cash Balances	II.166
Figure II.46	Capital Liquidity – Ending Cash Balances	II.167
Figure II.47	Free Cash Flow as % of Depreciation	II.169
Figure II.48	Outstanding Debt as % of Net Plant Investment	II.170
Figure II.49	Revenue Sufficiency	II.173P

Town of Jupiter
Water Utility Master Plan
2012 Update

Appendices

Tab No

3	Appendix A	South Florida Water Management District - Water Use Permit No. Re-Issue 50-00010-W Non - Assignable
4	Appendix B	Town of Jupiter Utilities – Water Agreement Capacity Reservation
5	Appendix C	Financial Forecast
6	Appendix D	Executive Summary Resolution No. 31-12 and Initial Presentation

Acknowledgement

The following master plan update was produced through the collective efforts of Town Staff and its professional utility consultants. Contributing authors included:

Consultants:

James Andersen, P.E., JLA Geosciences, Inc., Jupiter, FL
Steven Duranceau P.E., PhD, University of Central Florida, Orlando, FL
Robert Ori, PRMG, Maitland, FL
Howard C. Osterman, Howard C. Osterman, Inc., Palm Beach Gardens, FL
John E. Potts, P.E., Kimley-Horn and Associates, Inc., West Palm Beach, FL
Robert Taylor, P.E., Hazen and Sawyer, Boca Raton, FL
Ian Watson, P.E., RosTek Associates, Inc., Tampa, FL
Ed Weinberg, EW Consultants, Inc., Stuart, FL

Town Staff:

Amanda Z. Barnes, P.E, Assistant Director of Utilities, Jupiter, FL
David L. Brown, Director of Utilities, Jupiter, FL
Dawn Clark, Utilities Financial Operations Manager, Jupiter, FL
Stephen Glazer, Process Controls Coordinator, Jupiter, FL
Lee Harding, Geographic Information Systems Manager, Jupiter, FL
Paul Jurczak, Utilities Facilities Manager, Jupiter, FL
David Rotar, Utility Service Manager, Jupiter, FL

2012 Water Utility Master Plan Update
Executive Summary

In 1978, The Town of Jupiter purchased its water system from Tri-Southern Utilities. At that time, the system's average daily demand was only 2.5 million gallons per day (MGD) and served a population of approximately 15,000.

Today, the utility is capable of producing 30 million gallons per day of drinking water while its service area encompasses over 58 square miles including Jupiter, Juno Beach and many unincorporated areas of Palm Beach County and Martin Counties.

In pursuit of long-term sustainability of the community, Jupiter Utilities has worked to become an industry leader committed to maintaining high standards of excellence in operations while preserving and protecting the region's precious water resources. The Utility strives to provide a cost effective, reliable water supply to its customers. The Utility employs advanced water treatment technologies to produce a product which exceeds existing regulatory standards. The Town's utility has historically acted to prudently invest in assets which protect public health and the environment while fully understanding the risk associated with not doing so. Jupiter's dual aquifer source treatment facility has consistently served as a model for other communities to follow in South Florida for over two decades.

Looking forward, the Utility is updating its master plan or business forecast to prudently plan all foreseeable opportunities and threats the system may encounter. The system is now entering a maturity phase as multiple decades of rapid growth of its service area are now slowing dramatically. Growth opportunities, although limited, remain in communities west of Florida's Turnpike while some infill and redevelopment is anticipated to the east. Water treatment and water transmission facilities to address expansion areas are nearing completion. Strategies for inducing remaining customer connections have been formulated and now are

recommended to be promoted to maximize efficient asset utilization to support the financial investments made. Therefore, the utility's focus has shifted to enhancing operational efficiencies and asset maintenance to preserve the water system's established high level of reliability and dependability.

Although a continued work in progress, extensive effort has been focused on the utility's asset renewal and replacement (R&R) program through this master plan update. In order to preserve system reliability, future investments were defined to reflect costs of renewing existing worn, inefficient or regulatory deficient assets, to reflect costs to purchase new assets to achieve levels of service or growth requirements and to reflect costs for operations and maintenance needed to obtain the maximum useful life of assets. Assets of higher risk nearing the end of their useful life were given priority. These high risk assets were then further evaluated to define potential rehabilitative efforts and operational changes in an attempt to maximize service life and minimize cost. All R&R activities defined by this plan will continue to be evaluated and scrutinized further as time progresses so that final determinations of investment magnitude can be made with maximum confidence of necessity.

As evident throughout this master plan, the vast majority of future capital needs relate to the renewal and replacement of existing assets. The replacement value of all water utility assets now surpasses $465 million. Asset maintenance is critical to long term system viability. Maintenance programs have been defined to help ensure full service life expectancies while planning for the eventual replacement of assists has been forecasted. In the past, depreciation and the estimation of service life of many assets were "bundled". An example would be a water plant's useful life was established as 35 years. Following the recommendations of our professional utility management consultants, a more detailed condition assessment was performed on major, individual equipment systems and structures to ascertain a more definitive estimate of remaining service life of its major component parts. Furthermore, detailed evaluations have occurred to assess the resulting service life extension brought about by major asset renewal and replacement activities. For instance, if an asset with an initial service life received rehabilitative maintenance, the useful life of this asset may have been extended to reflect the net gain in expected service brought about by the maintenance.

Once anticipated future capital needs were defined, the adequacy of the fees charged new development and funding levels for future renewal and replacement were reviewed given the updated customer growth forecasts and refined asset register. Additionally, strategies are offered to maximize asset utilization and operational economies of scale.

Ultimate future peak day demands on the Town's Water Utility are expected to be approximately 28 MGD. This is 1-2 MGD less than that predicted 5 years ago even though the service area has been expended to now include all of Jupiter Farms. Much of this demand

reduction is attributable to heightened conservation and the expected per capita use reductions associated with the increased use of reclaimed or reuse water for irrigation purposes. With Jupiter's Water Treatment Facility rated at 30 MGD, capacity exists to meet this future demand. However, similar to the demise of the Town's former lime softening plant, regulatory obsolescence may also render the 1.8 MGD Ion Exchange Water Treatment Plant problematic relative to certain water quality standards. If so, capacity can be readily added to the Nanofiltration Plant which was designed to make such accommodations. However, the more prudent planning approach at this time is to wait and see if this capacity is needed as system growth is expected to be slow and regulatory uncertainty remains.

Over the 25 year planning horizon, a total of $249.9 million in capital investment is recommended to ensure continued system safety and reliability. Of which, $24.7 million is forecast to complete system expansion needs to respond to future growth while the overwhelming majority of costs, 90.1%, is needed to maintain, renew or replace the existing assets of the system.

All in all, the utility is seen to be well positioned and its sustainability has been reinforced through its long-term commitment to environmentally-friendly water management practices, reliability and dependability of this essential service, and strategic long range planning. Jupiter's utilization of advanced membrane water treatment technologies has prepared it well for possible future regulatory changes. System capacity most likely exists to relatively carry the utility through build out of its service area. Staffing levels are expected to remain constant. Furthermore, rates for service are currently 23% below the average of that charged by other utilities within Palm Beach, Martin and St. Lucie Counties. Meanwhile, the capital plan set forth in this plan is seen as manageable and excludes the potential for additional debt issuance until 2031 provided that uncontrollable operating cost impacts such as increases in chemical and electrical power are offset by periodic index adjustments to the Town's rates for service. This minimal need for additional debt shall likely contribute to the continued financial strength of this utility.

Chapter I
Assessment of Existing Condition of System

A. Jupiter Water System History

The Jupiter Water System has existed since approximately 1963, and it has expanded from a small investor owned utility to the present municipal utility of today (serving a population of approximately 80,000). The following is a brief chronological summary of the utility's history:

Approximate Date	Jupiter Water System Milestone	System Treatment Capacity (MGD)
1963	Water system founded as investor owned facility	---
1968	Plant facilities relocated to current Central Boulevard location	---
1973	1.0 MGD Lime Softening Treatment System constructed	1.0
1976	4.0 MGD Lime Softening Treatment added	5.0
1978	Town purchases water system	5.0
1982	8.0 MGD Lime Softening Treatment added	13.0
1985	Original 1.0 MGD Lime Softening unit demolished	12.0
1985	Lime Softening Treatment capacity re-rated to 13.5 MGD	13.5
1990	6.0 MGD Reverse Osmosis (R.O.) Treatment facility constructed	19.5
1996	R.O. Treatment facility expanded to 12 MGD	25.5
1999	Ion Exchange (1.8 MGD) facility constructed	27.3
2006	R.O. Treatment facility expanded to 13.7 MGD	29.0
2010	14.5 MGD Nanofiltration Treatment Plant constructed	30.0
2011	13.5 MGD Lime Softening Treatment System demolished	30.0

B. Service Area, Customer Base and Production Demands

Figure I.2 shows the existing Town limits as well as the boundaries of Water Utilities Service Area. The service area covers the entire Town limits as well as areas within Juno Beach, unincorporated Palm Beach and Martin Counties. This service area spans 58 square miles while the utility currently serves a population of approximately 80,000.

As of June 3, 2011 the utility served almost 42,500 equivalent residential connections (ERCs) and there were approximately 5,700 more ERCs reserved through existing water service agreements, but not yet in service.

Table I.1
Existing Water Demand[1]

	Number of ERCs	Water (MGD-ADF)	Capacity Utilized (MGD-PDF)
Existing ERCs	42,477	14.87	20.82
Reserved ERCs	5,659	1.98	2.77
Total	**48,136**	**16.85**	**23.59**

[1]Based on Jupiter Utilities June 2011 Capacity Reservation Report
ADF= Average Daily Flow, PDF- Peak Daily Flow
Assumed 1.40 Peaking Factor

C. Water Supply

1. Overview

The Town utilizes two distinct water supply sources to meet the needs of its water treatment facilities. Raw water from the surficial aquifer (fresh) is used to supply the Nanofiltration and Ion Exchange Treatment plants, while raw water from the Floridan aquifer (brackish) is used to supply the Reverse Osmosis (R.O.) Plant.

Both water sources are permitted by the South Florida Water Management District (a copy of the Water Use Permit is included in Appendix A). While each source has a permitted maximum withdrawal rate (annual and max month), the total allowable withdrawal rate is less than the sum of the two sources. The Town's general approach to operating the utility is to depend more heavily on the brackish water source (and the R.O. Plant) during dry periods. This operating approach aids in reducing the impacts on the surficial aquifer, which is typically strained during dry times. During wet periods, the Town relies more heavily on the surficial aquifer (Nanofiltration) due to its lower operating costs as compared to R.O. The Town's water use

permit was recently renewed and does not expire until September 30, 2030. Resource capacity permitted has capacity and operational flexibility needed by the system to serve all demands through service area build out.

Figure I.1

JUPITER'S DUAL AQUIFER SUPPLY SOURCES

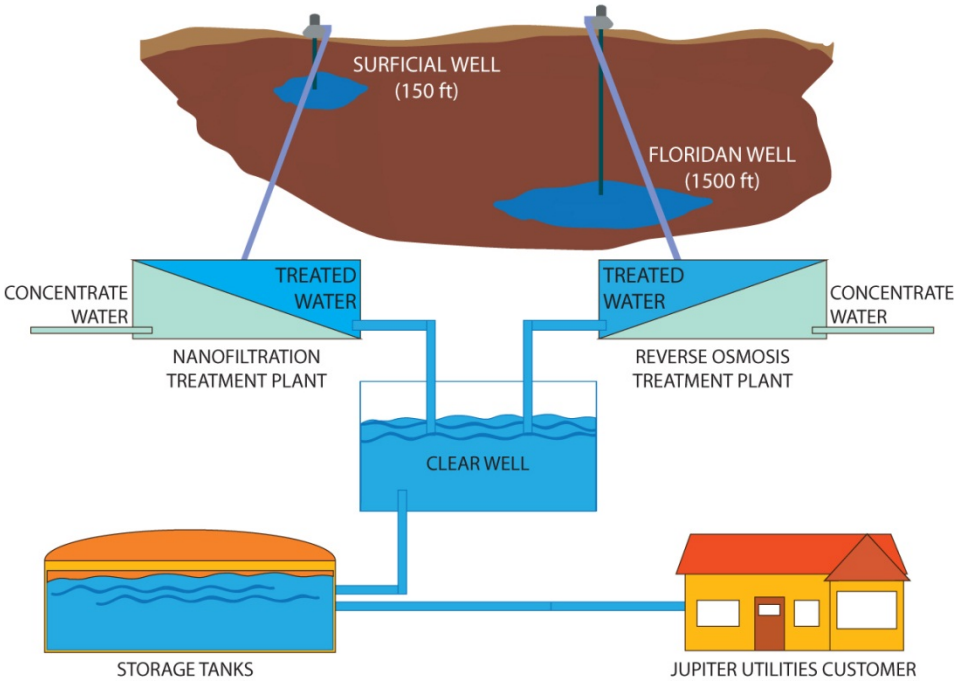
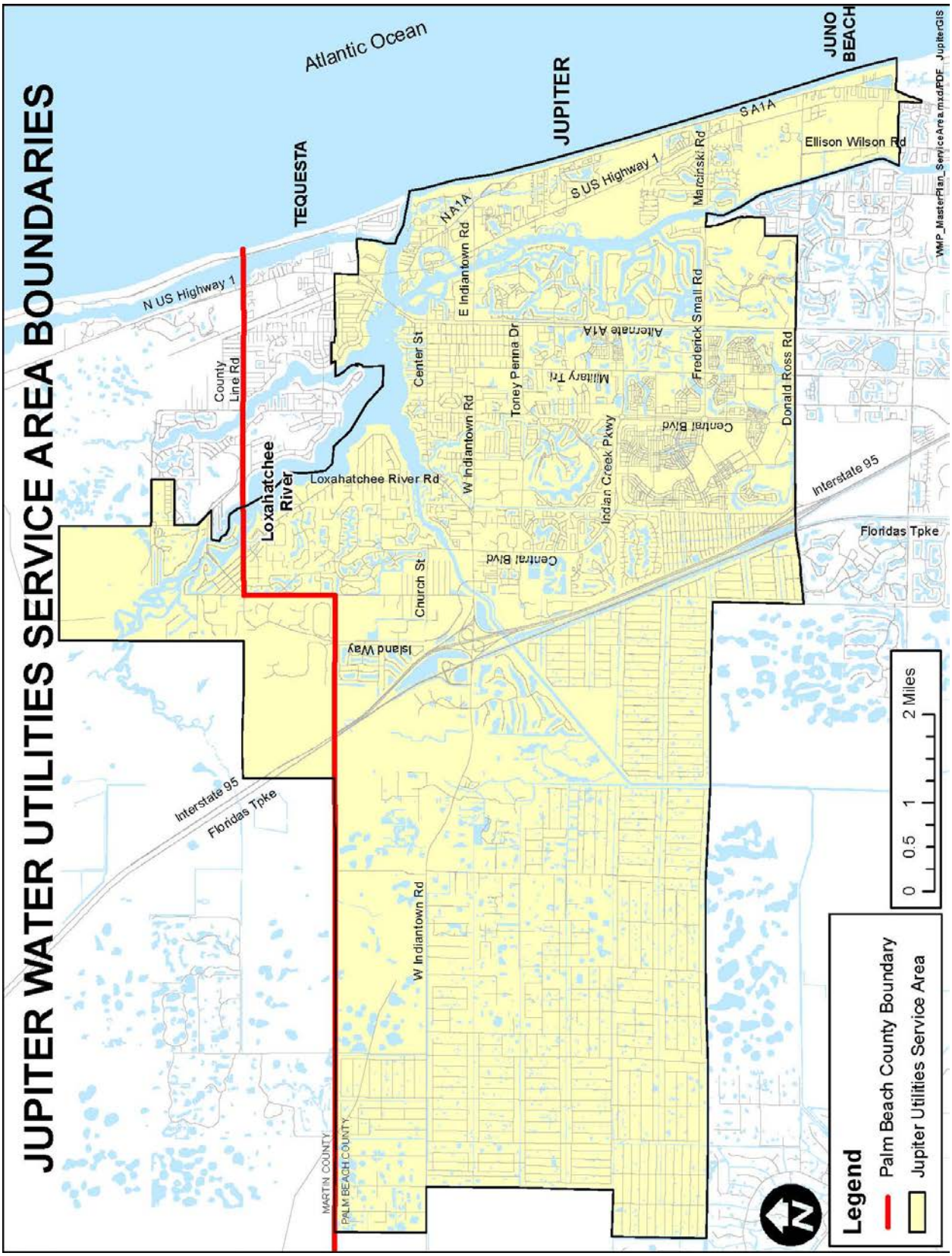


Figure I.2


JUPITER WATER UTILITIES SERVICE AREA BOUNDARIES
Atlantic Ocean
TEQUESTA
JUPITER
JUNO BEACH
N US Highway 1
County Line Rd
Loxahatchee River
Loxahatchee River Rd
N A1A
S US Highway 1
S A1A
Ellison Wilson Rd
Marcinski Rd
Frederick Small Rd
Donald Ross Rd
Center St
E Indiantown Rd
W Indiantown Rd
Toney Penna Dr
Alternate A1A
Military Trl
Indian Creek Pkwy
Central Blvd
Church St
Island Way
Interstate 95
Floridas Tpke
MARTIN COUNTY
PALM BEACH COUNTY
WMP_MasterPlan_ServiceArea.mxd/PDF_JupiterGIS
0 0.5 1 2 Miles
Legend
Palm Beach County Boundary
Jupiter Utilities Service Area

2. Surficial Aquifer Source

Surficial Aquifer Well System Status

The Town of Jupiter's surficial aquifer wellfield currently includes 51 production wells that have a combined raw water producing capacity of approximately 18,000 gallons per minute (gpm) or 26.2 million gallons per day (MGD). The wells are located throughout the largely residential western areas of the Town; located as far north as the water treatment plant on Central Blvd and as far south as the Abacoa Golf Course on Heights Blvd. A map showing locations of all the Town's wells is provided as Figure I.3. Figure 1.4 illustrates the surficial aquifer raw water mains which convey water from these wells to the water treatment plant.

As of 2012, ages of the Town's wells vary from 1 to 38 years. Older wells are found closer to the water treatment plant, the oldest were reportedly installed in 1974, and the newest wells completed as recently as 2007 are found in the Abacoa subdivision in Jupiter. The Town's surficial aquifer production wells typically produce between 200 and 800 gpm (0.3 and 1.2 MGD) with the older wells producing at the lower end of the scale and the newer wells producing more.

Semi Annual Wellfield Evaluation

In addition to basic monthly water quality tests performed by Town water plant operators, each well undergoes comprehensive performance testing twice per year to evaluate production efficiency and produced water quality. The testing is needed to monitor the water supply for the nanofiltration water treatment plant and to identify problem wells that could produce water problematic for plant operation or even potentially harm to the water treatment membranes. Data from semiannual testing are used to evaluate when well rehabilitation is needed and they type of rehabilitation that may be required to restore lost capacity and/or produced water quality.

Figure I.3

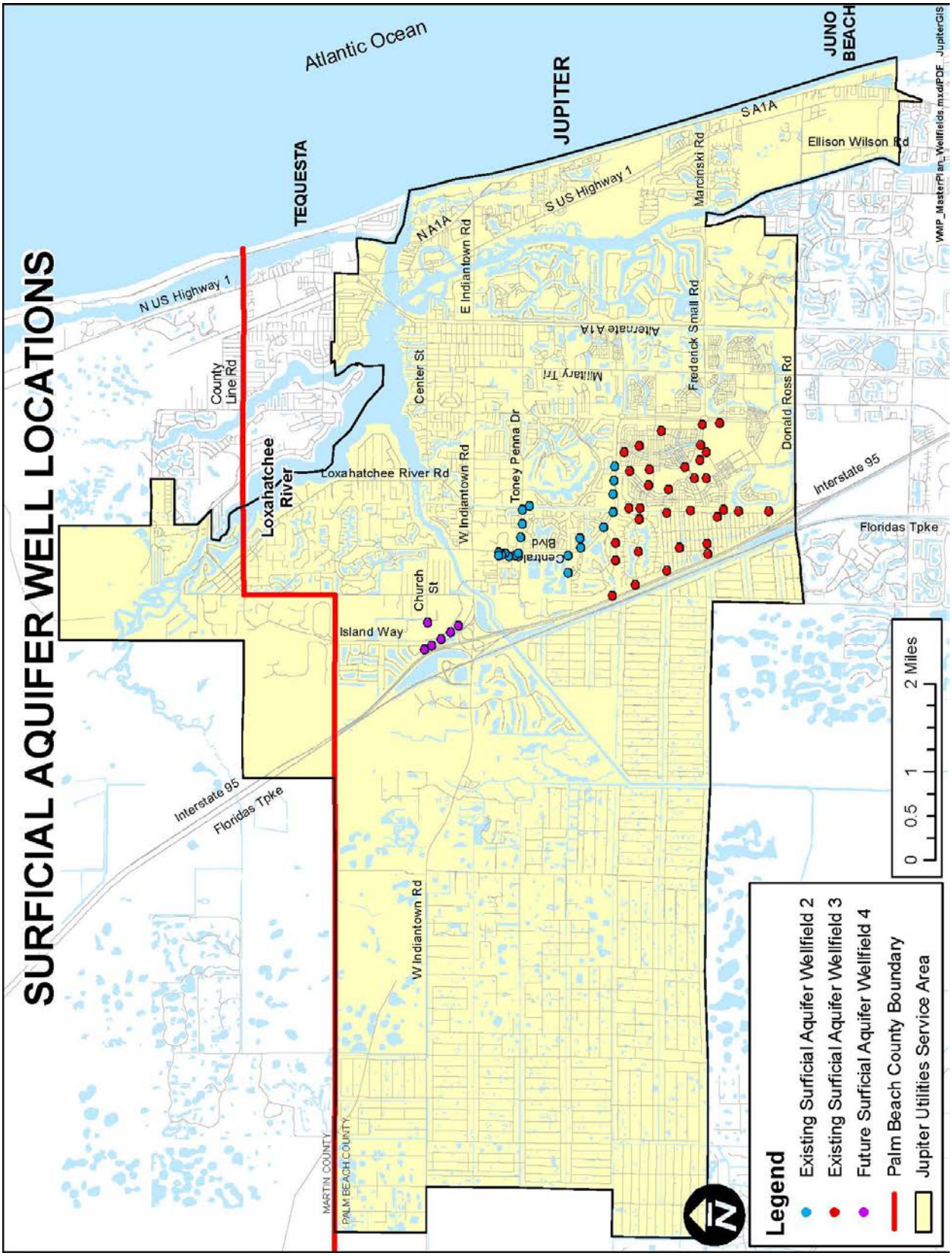

SURFICIAL AQUIFER WELL LOCATIONS
Atlantic Ocean
TEQUESTA
JUPITER
JUNO BEACH
N US Highway 1
County Line Rd
Loxahatchee River
Loxahatchee River Rd
N A1A
E Indiantown Rd
S US Highway 1
S A1A
Marcinski Rd
Ellison Wilson Rd
Center St
Alternate A1A
Military Tri
Frederick Small Rd
Donald Ross Rd
Toney Penna Dr
W Indiantown Rd
Central Blvd
Church St
Island Way
Interstate 95
Floridas Tpke
MARTIN COUNTY
PALM BEACH COUNTY
0 0.5 1 2 Miles
Legend
Existing Surficial Aquifer Wellfield 2
Existing Surficial Aquifer Wellfield 3
Future Surficial Aquifer Wellfield 4
Palm Beach County Boundary
Jupiter Utilities Service Area
WMP_MasterPlan_Wellfields.mxd/PDF JupiterGIS

Figure 1.4

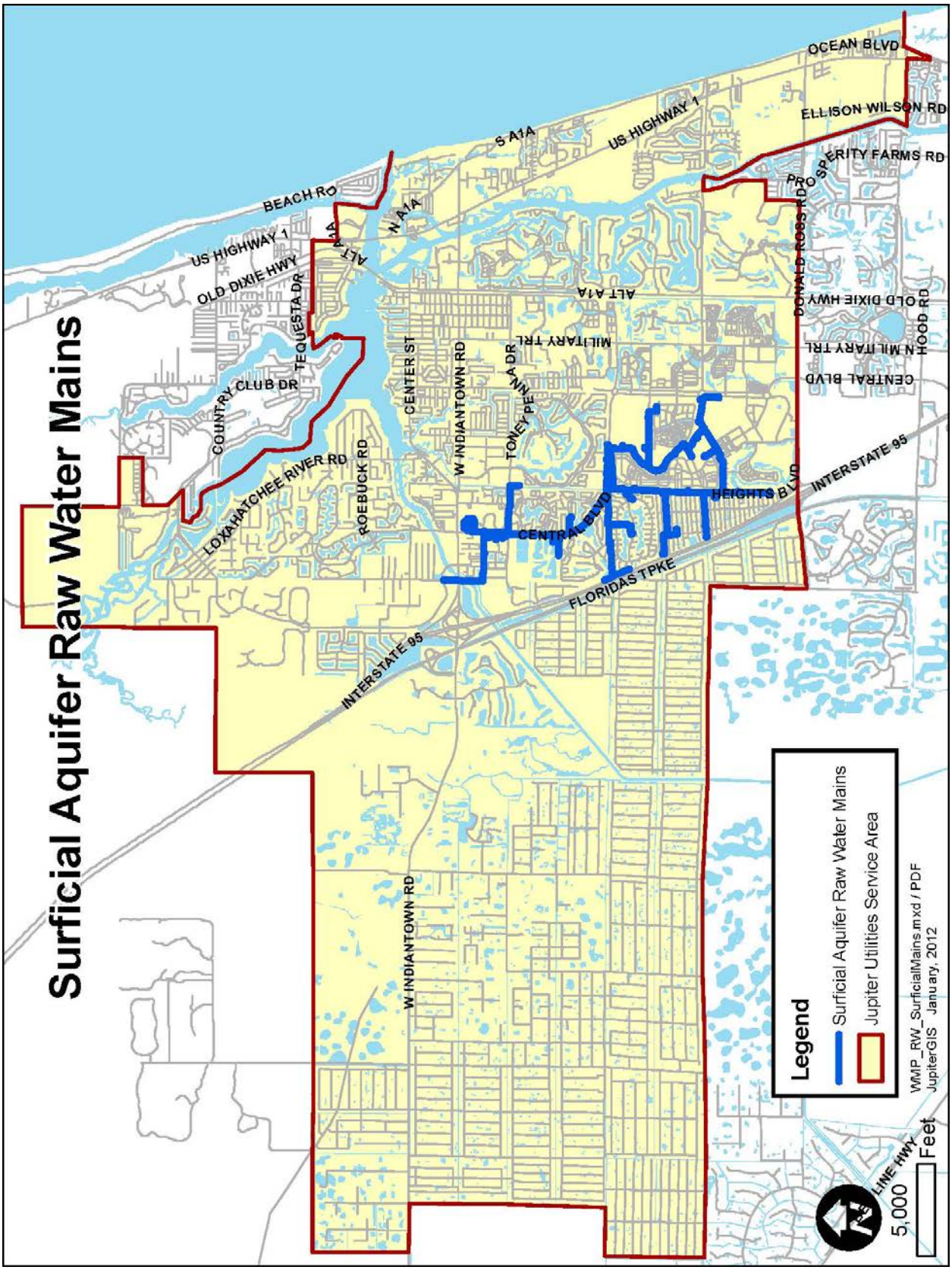

Surficial Aquifer Raw Water Mains
OCEAN BLVD
ELLISON WILSON RD
PROSPERITY FARMS RD
DONALD ROSS RD
OLD DIXIE HWY
HOOD RD
N MILITARY TRL
CENTRAL BLVD
INTERSTATE 95
HEIGHTS BLVD
FLORIDAS TPKE
CENTRAL BLVD
INTERSTATE 95
W INDIANTOWN RD
TONEY PENNA DR
MILITARY TRL
ALT A1A
CENTER ST
W INDIANTOWN RD
ROEBUCK RD
LOXAHATCHEE RIVER RD
COUNTRY CLUB DR
TEQUESTA DR
OLD DIXIE HWY
US HIGHWAY 1
BEACH RD
ALT A1A
N A1A
S A1A
US HIGHWAY 1
Legend
Surficial Aquifer Raw Water Mains
Jupiter Utilities Service Area
WMP_RW_SurficialMains.mxd / PDF
JupiterGIS January, 2012
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Table I.2
2011 Wellfield Testing

Town of Jupiter Well Age	Number of Wells	Percent of Total Wells	Total GPM	Percent of Total WF Capacity	Avg. Individual Well Capacity (gpm)	Avg. In Service Well Capacity (includes O/S wells) (gpm)	Percent of Capacity in Service	Avg. Well Spec. Capacity (gpm/ft)	Avg. Sand Prod. (ppm)	Avg. Silt Density Index (SDI)
0-15 yrs	18	36.0%	8725	48.0%	485	475	98%	45.5	0.4	1.6
15-20 yrs	8	16.0%	2260	12.4%	283	163	58%	26.1	0.3	2.3
20-30 yrs	15	30.0%	4540	25.0%	303	244	81%	23.3	0.2	1.6
30-40 yrs	9	18.0%	2635	14.5%	293	253	87%	18.2	0.5	2.3
Totals	50		18160	gpm						
			26.2	mgd						

Maximum Avg. Sand Production Allowed: 1 ppm
Maximum Avg. SDI Allowed: 3

New Wells (less than 15 years old)

Well 45 Installed in 2001

Of the 50 production wells tested during the semiannual wellfield evaluation, the 18 newest wells (constructed within the last 15 years) represent 36% of the Town's surficial aquifer wells but produce almost half of the total water produced (48%) by all of the Town's surficial aquifer wells. Additionally the newest wells have the highest average pumping capacity (average of 485 gpm per well) and at the time of testing, 98 percent of the well capacity was in service. The newest wells also have roughly twice the specific capacity (gallons per minute / foot of drawdown while pumping) of the wells older than 15 years meaning that the newest wells are approximately twice as efficient as the older wells. Even with the higher pumping rates sand and silt production from the newer wells is relatively low and comparable to the older wells that produce water acceptable for nanofiltration treatment. Wells that have been constructed within the last 15 years have all been constructed of 20-inch diameter PVC casing and open hole completion within the aquifer and have required very little rehabilitative efforts to date. The PVC casing is essentially inert

and unlike steel, does not corrode. Completion intervals are within the competent rock formation of the aquifer and cavities remain open and water production is consistent. Life expectancy of the PVC constructed wells is expected to be 35 years.

Intermediate Age Wells (15-20 years old)

These wells include a group of 8 wells installed in the early 1990s that larger diameter PVC cased wells but were installed with screens as the newer wells. Of the 8 wells, six (6) have been rehabilitated and or reconstructed to the extent they are capable of higher production rates. Two of the 8 are planned for abandonment because of irreparable construction problems and one of the two abandoned wells will be replaced in 2012. The low capacities indicated in the summary table are because only 4 of the 8 wells are in service. As service is restored to the remaining wells, the production rates from these wells are expected to be 350-450 gpm.

Older Wells (20-40 years old)

The Town's older wells are typically lower producing and require more rehabilitation to maintain production rates. The Town's production wells that are older than 20 years are typically 12 inches in diameter, constructed of corrosion prone steel casings. Additionally, a number of the older wells are screened and gravel packed to prevent sand production. Screened wells are typically prone to plugging and require mechanical and chemical rehabilitation to restore lost capacity. The smaller diameter of these wells also limits options for corrective measures. Well failure is typically due to failure of the casing and/or the cement seal causing sand and silt production. Leaking casings may also contribute to undesirable chemical and biological characteristics of the produced water. Steel well casings are dissolved by corrosion over time depending on the corrosiveness of the water and oxygen introduced by the well pumping system. A steel cased well can have a life expectancy of 20-30 years; however, a number of Town's wells 20 to 30 year age range have already been replaced due to casing and or cementing failures.

Well 30 Installed in 1989

Wellheads

The visible part of the well includes the surface casing, wellhead, piping, electrical conduits, control panels, telemetry communications tower, and security fencing. Wellheads that have been constructed for the Town within the last 20 years include durable stainless steel piping,

stainless steel control panel enclosures and modern well pump control equipment. These materials come at a somewhat higher cost but contribute to the greater reliability of the well. These materials are typically specified for wells that feed membrane (nanofiltration) plants. When replaced, the older wellheads are being replaced with equipment consistent with the current Town of Jupiter standard wellhead design.

3. Floridan Aquifer Source

The Town of Jupiter's Upper Floridan Aquifer wellfield includes 11 in service production wells (RO-2, RO-3, RO-5, RO-6, RO-7, RO-8, RO-9, RO-10, RO-11, RO-12 and RO-13) that have a combined raw water producing capacity of approximately 16,300 gallons per minute (gpm) or 23.5 million gallons per day (MGD). Individually these wells produce between 500 and 2,000 gpm. The wells are completed within the Upper Floridan Aquifer at depths between 1,017 feet and 1,825 feet (only one well, RO-6 was drilled this deep, the rest are less than 1,660 feet deep). The wells are located at the Central Blvd Ground Storage Tank and High Service Pumping Facility (RO-2 and RO-3); along the South Indian River Water Control District outfall canal (RO-7 and RO-10), and within the South Florida Water management District (SFWMD) C-18 canal Right of Way (RO-5, RO-6, RO-8, RO-9, RO-11, RO-12 and RO-13). One well, RO-4 located at the water treatment plant site, is not fitted with a pump and is not in service. A map showing locations of all the Town's wells is provided as Figure I.5. Figure 1.6 Illustrates the Floridan Aquifer raw water collection piping network which conveys water from the wells back to the reverse osmosis treatment facility.

As of 2012, ages of the Upper Floridan Aquifer wells are between 8 and 24 years old. The wells are constructed with either fiberglass reinforced polyester (FRP) casing or poly vinyl chloride (PVC) casing. The nature of the brackish water produced by the wells dictates use of this type of casing because the water is corrosive. From a physical/structural stand point, these wells can easily last 50 years or more.

Figure I.5

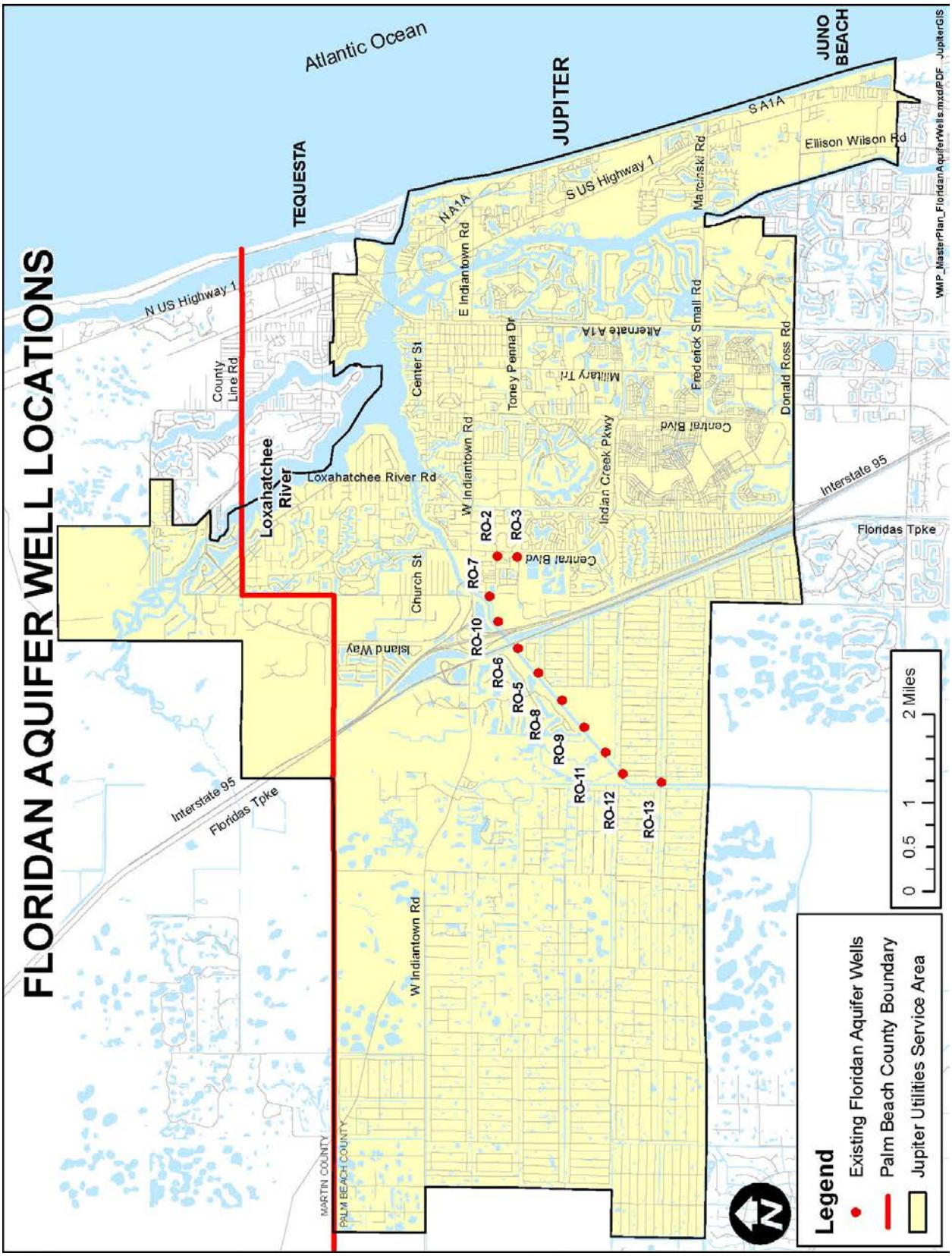
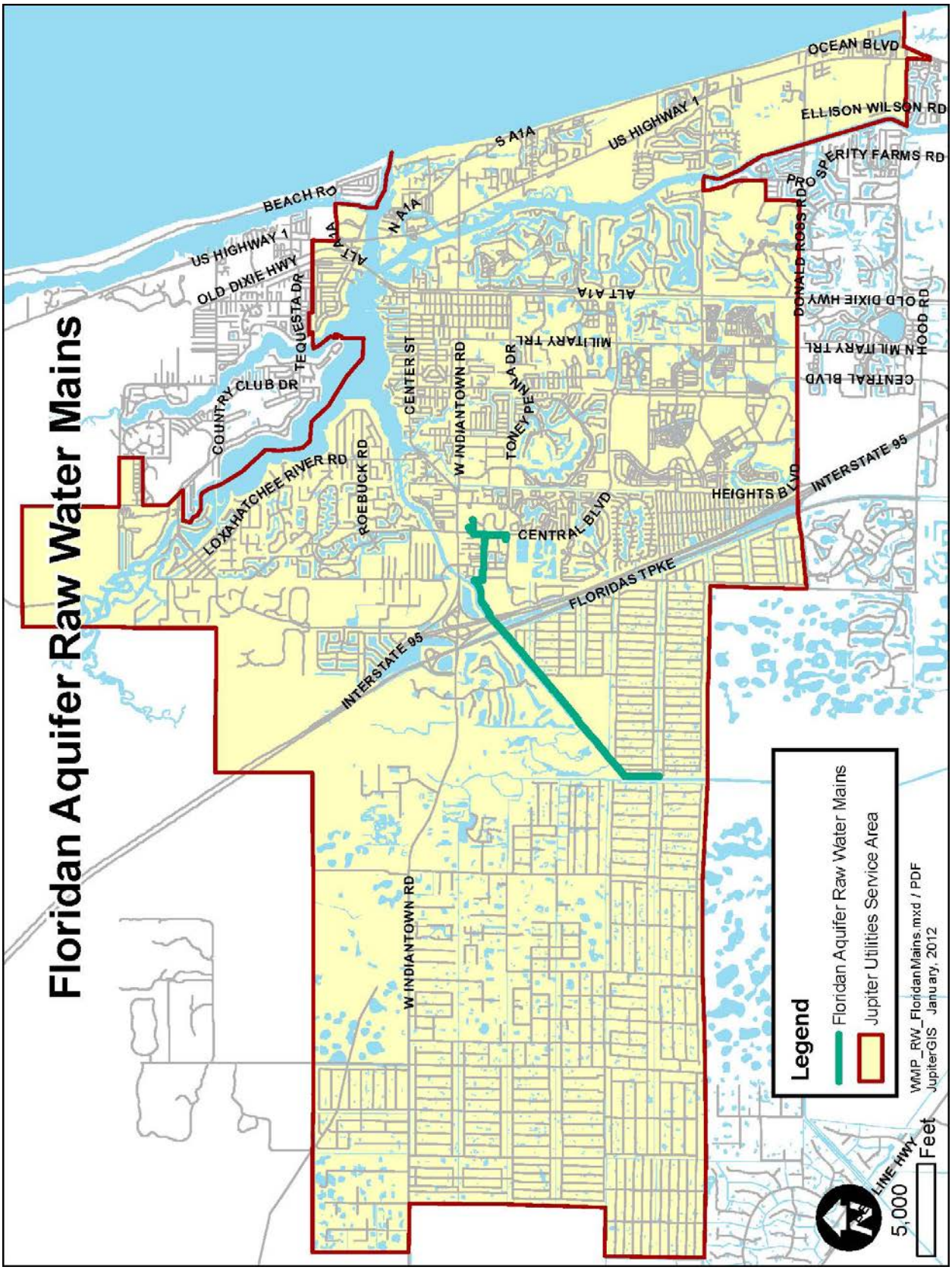

FLORIDAN AQUIFER WELL LOCATIONS
Atlantic Ocean
TEQUESTA
JUPITER
JUNO BEACH
N US Highway 1
County Line Rd
Loxahatchee River
Loxahatchee River Rd
N A1A
S US Highway 1
S A1A
Ellison Wilson Rd
Marcinski Rd
E Indiantown Rd
W Indiantown Rd
Center St
Church St
Toney Penna Dr
Alternate A1A
Military Trl
Frederick Small Rd
Donald Ross Rd
Central Blvd
Indian Creek Pkwy
Island Way
Interstate 95
Floridas Tpke
RO-2
RO-3
RO-5
RO-6
RO-7
RO-8
RO-9
RO-10
RO-11
RO-12
RO-13
MARTIN COUNTY
PALM BEACH COUNTY
0 0.5 1 2 Miles
Legend
Existing Floridan Aquifer Wells
Palm Beach County Boundary
Jupiter Utilities Service Area
WMP_MasterPlan_FloridanAquiferWells.mxd/PDF JupiterGIS

Figure 1.6


Floridan Aquifer Raw Water Mains
OCEAN BLVD
ELLISON WILSON RD
PROSPERITY FARMS RD
US HIGHWAY 1
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N A1A
BEACH RD
ALT A1A
OLD DIXIE HWY
TEQUESTA DR
COUNTRY CLUB DR
LOXAHATCHEE RIVER RD
ROEBUCK RD
CENTER ST
W INDIANTOWN RD
TONEY PENNA DR
MILITARY TRL
DONALD ROSS RD
HOOD RD
CENTRAL BLVD
HEIGHTS BLVD
INTERSTATE 95
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Floridan Aquifer Raw Water Mains
Jupiter Utilities Service Area
WMP_RW_FloridanMains.mxd / PDF
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Evaluation

Anticipated Town of Jupiter Water System peak water usage need at build out is estimated to be 28 to 30 million gallons per day (MGD) on a maximum day; and 20-22 MGD on an average day. To achieve the desired quality of water, a balance of water is produced by nanofiltration (NF) treatment (supplied by surficial aquifer wells) and reverse osmosis treatment (supplied by the Floridan Aquifer wells) that includes an approximate blend ratio of 55% NF product water and 45% RO product water (conservative but simplified for this discussion).

To evaluate the number of wells needed for the Town build out needs, the following evaluation is provided.

Average Condition - Based on an achieve the average day demand of 24 MGD at a 45% blend ratio from RO, 10.8 MGD of RO product water will require approximately 14.4 MGD of raw water considering 75% recovery. At the average day condition, the wellfield will have 9.6 MGD of in service stand-by capacity.

Maximum Condition - The Town has 11 in service wells with an average individual well capacity of just over 2.1 MGD each. At the projected max day demand need of 18 MGD raw (13.5 MGD finish water at 75% recovery), the existing wellfield with all wells in service will still have 5.5 MGD of stand-by capacity.

The Town measures flow and water quality obtained from each Floridan Aquifer well on a monthly basis. These data were reviewed and evaluated for this report. Individual well and total wellfield pumpage data are presented in electronic format MS Excel Workbook attached and summarized in Table I.3 below.

Table I.3
Floridan Aquifer Well Usage

Well Pumpage by Year (in millions of gallons)	RO-2	RO-3	RO-5	RO-6	RO-7	RO-8	RO-9	RO-10	RO-11	RO-12	RO-13	Total	UFA Wellfield Average (MGD)
2011	10.2	18.3	12.0	0.0	164.1	307.3	740.0	464.3	721.3	614.8	354.2	3406.6	9.3
2010	166.1	57.3	85.9	0.0	362.4	282.3	500.3	388.5	509.3	356.1	376.1	3084.3	8.5
2009	12.2	189.0	70.5	0.0	512.8	379.6	232.6	309.4	187.6	230.7	391.2	2515.6	6.9
2008	131.7	12.4	0.0	0.0	312.3	327.5	118.3	363.4	216.3	215.4	426.7	2123.9	5.8
2007	268.7	95.8	0.1	8.7	624.4	288.9	172.9	410.0	400.6	188.5	412.9	2871.7	7.9
2006	468.6	480.3	56.6	30.6	379.1	363.7	521.4	480.0	146.3	0.0	210.6	3137.1	8.6
2005	369.6	269.3	166.7	216.8	411.3	367.8	405.9	405.9	0.0	0.0	0.0	2613.3	7.2
2004	528.3	167.1	123.2	108.2	515.5	566.2	475.1	387.6	0.0	0.0	0.0	2871.2	7.9

The pumpage data summarized in Table I.3 shows how Floridan Aquifer well usage has changed over time as new wells have come on line. Wells RO-11, RO-12 and RO-13 came on line late 2006-2007 and pumpage was shifted to the new wells. This is shown as RED values on Table I.3. The available new wells lower chloride and specific conductance water allowed the RO plant to operate at lower feed pressure. In order that no individual well is over stressed, all wells should be utilized equally. Typically, as an Floridan Aquifer well is pumped, the produced water typically increases very slightly in total dissolved solids (TDS) over time. TDS often increases more drastically when a well is pumped at a high rate for an extended amount of time. Sometimes this cannot be avoided however, the Town has a sufficient number of wells to equitably distribute pumpage and thereby minimize stress to any one well.

Annual wellfield pumpage (shown on the right side of Table I.3 in BLUE) indicate that the wellfield in the last 8 years produced between 5.8 million gallons per day (MGD) and 9.3 MGD.

Considering the Town has 11 serviceable wells this places an individual withdrawal upon each well on the order of 0.53 to 0.85 MGD (individually most of the wells can produce more than 2 MGD each). This indicates that the Town has adequate existing Floridan Aquifer wellfield capacity and must rotate wells pumpage to minimize the stress on any single well. The 2005 and 2011 Pumpage by Well Figures I.7 and I.8 above illustrate the change in wellfield usage between 2005 and 2011. In 2005 (prior to installation of RO-11, RO-12 and RO-13), pumpage was more equitably distributed amongst the wells inservice.

Figure I.7
Florida Aquifer
2005 Pumpage by Well

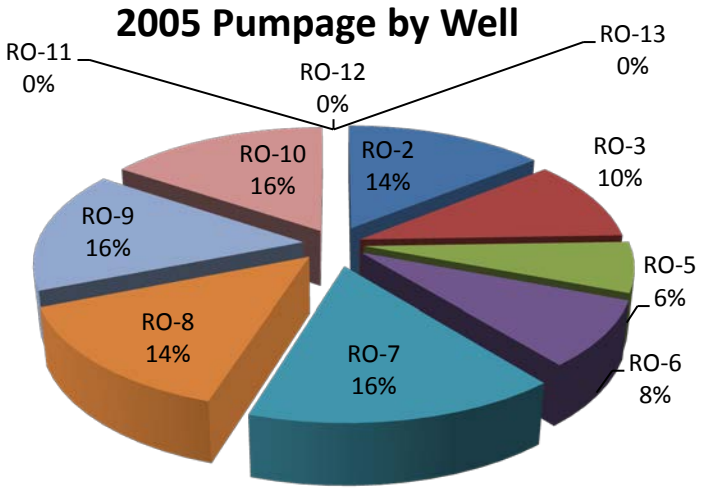
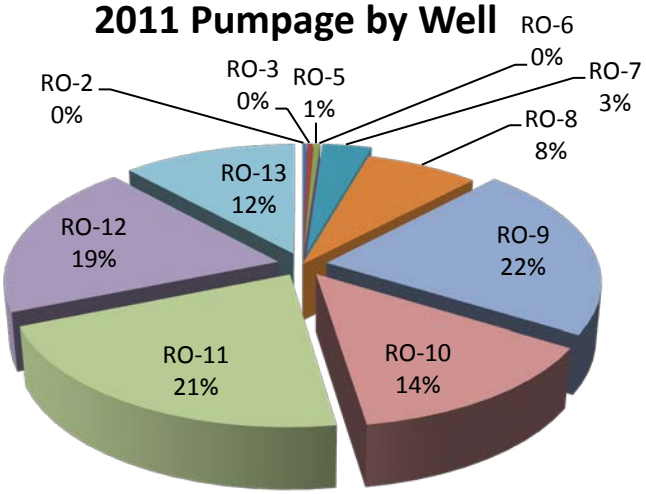


Figure I.8
Floridan Aquifer
2011 Pumpage by Well



In 2004 JLA Geosciences generated a technical memorandum regarding the need for uniform and equitable pumpage of the wells following rapid increases in chloride and specific conductance in water produced from wells RO-2 and RO-3. Figure I.9 illustrates the chloride and conductivity increases in RO-3 over time. At that time as much as 46% of the water supplying the plant was being produced from RO-2 and 58% from RO-2 and RO-3. These two wells were producing water with an average chloride concentration of approximately 3,000 mg/L. With the installation of wells RO-11, RO-12 and RO-13, pumpage from RO-2 and RO-3 has declined sufficiently to level off. The leveling off of chloride from RO-2 is likely the result of reduced stress on the well from the even distribution of well pumpage (see Figure I.7 2005 Pumpage by Well pie chart) and the increased number of wells available for use with the installation of RO-11, RO-12 and RO-13.

Figure I.9
RO-3 Chloride and Conductivity Data

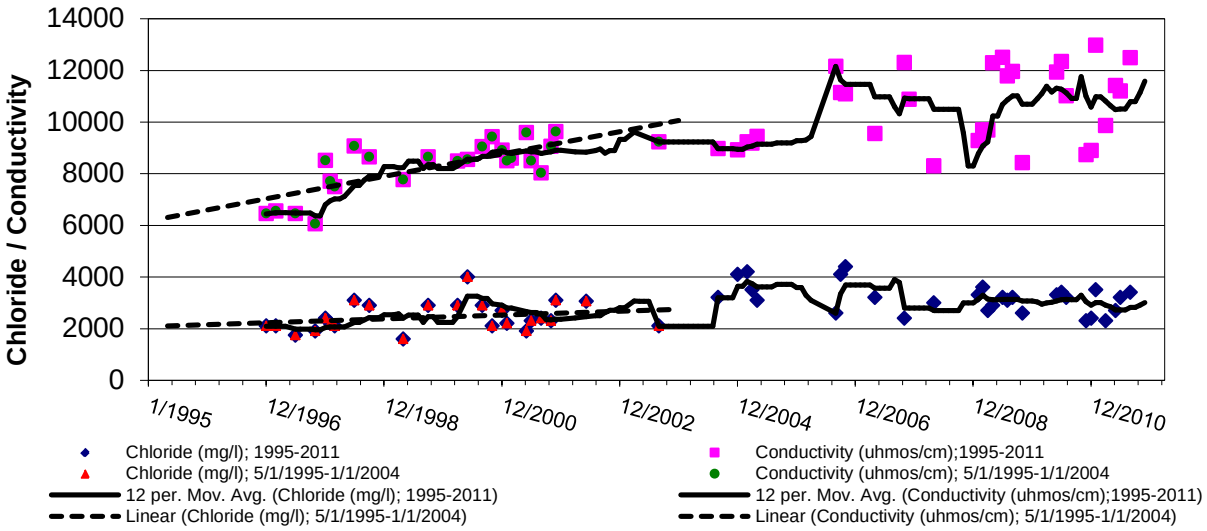


Table I.4 provides a summary of recent well usage for the years 2010 and 2011 as a percentage of well capacity. Chloride and specific conductance values are provided comparing values measured at the time of construction and compared with the minimum and maximum values reported for 2011. In the case of each well, chloride and specific conductance values have increased to the extent that some wells produce water that exceeds the RO plant design criteria.

Table 1.4
Floridan Well Pumpage

FA Well	Well Capacity (gpm)	Well Capacity as Percent of Total WF Capacity	2011 Well Use Percent of Total WF Capacity	2010 Well Use Percent of Total WF Capacity	Original Chloride (mg/L)	Original Spec Cond. (uS/cm)	2011 Chloride min/max (mg/L)		2011 Spec Cond. min/max (uS/cm)	
RO-2	2000	12%	0%	5%	1750	6530	2200	3700	8470	13360
RO-3	2000	12%	0%	2%	1760	6380	2300	3500	8890	12970
RO-5	500	3%	1%	3%	1900	6150	2500	3700	10500	12610
RO-6	1100	9%	0%	0%	2280	7900	2400	4100	12100	14590
RO-7	1700	10%	3%	9%	1350	4930	2000	2100	7030	7670
RO-8	1500	9%	8%	10%	1400	5570	2150	3400	7470	12230
RO-9	1500	9%	22%	18%	2340	6680	2300	2800	9210	9950
RO-10	1500	9%	14%	11%	2020	6730	2400	2900	9030	9960
RO-11	1500	9%	21%	19%	2380	8030	2500	2850	8830	10210
RO-12	1500	9%	19%	12%	1960	6410	2200	2400	8600	9920
RO-13	1500	9%	12%	11%	1840	6110	1600	2200	6370	7100

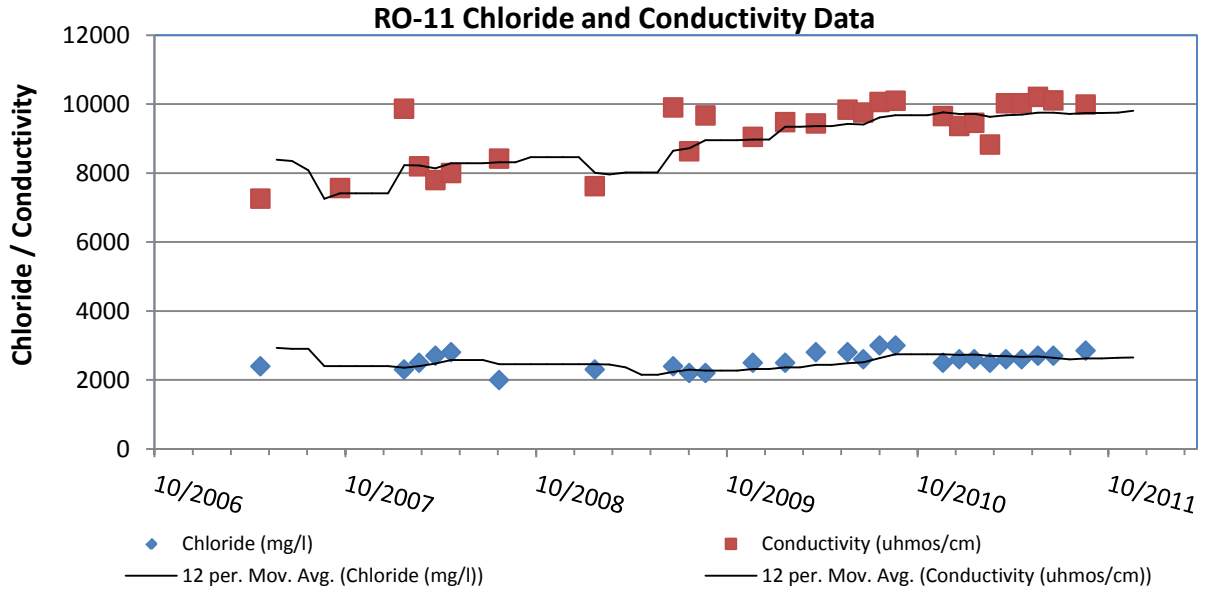
The maximum chloride and conductivity the RO plant can tolerate as currently designed is:

	Chloride	Conductivity
RO Bank 1	5,850	11,700
RO Bank 2	6,600	13,200

The data in Table I.4 indicates almost half the wells (5 of 11) produce water that at times exceeds the design criteria for chloride and conductivity (values shown in **BROWN**) for RO Bank 2 and one out of the 11 (RO-6) produces water at times that exceeds the RO system design criteria. This is the likely reason for the increased emphasis on using wells RO-7, RO-8, RO-9, RO-10, RO-11, RO-12 and RO-13 as shown on Figure I.8.

Unfortunately, the chloride and conductivity increases evident in 2004 in wells RO-2 and RO-3 are now visible in all of the other Floridan Aquifer wells with the exception of RO-13. Figure I.10 below for RO-11 shows the similar trend.

Figure I.10
RO-11 Chloride and Conductivity Data



From the above the following conclusions are provided:

- Chloride and conductivity (dissolved solids) increases in the Floridan Aquifer production wells are inevitable with use. The amount of use may influence the rate of increase of dissolved solids. Higher stress on any one well will increase the rate of dissolved solids produced from that well.

- Wells are not being used equally. In the last two years there has been a greater emphasis on using wells with lower chloride and specific conductance. Currently, most of the raw water for the RO plant is being produced by the newest wells RO-11, RO-12 and RO-13.
- The maximum pressure the feed pumps for the RO plant will produce (shut off pressure) is 300 psi that relates to specific conductance of approximately 13,200 uS/cm in RO Bank 1 and 11,700 uS/cm in RO Bank 2.
- Almost half the wells (5 of 11) produce water that at times exceeds the design criteria for RO Bank 2 and one well (RO-6) out of 11 wells produces water at times that exceeds the RO system design criteria.
- The increases in dissolved solids appear to be leveling off. However, the amount of scatter in water quality analyses results makes this interpretation difficult. This variability in the data should be investigated internally from a quality assurance standpoint to determine if the laboratory analyses methods, procedures and instrument calibration checks are consistent with standard laboratory operating procedures.

Wellfield Evaluation - Future Water Quality

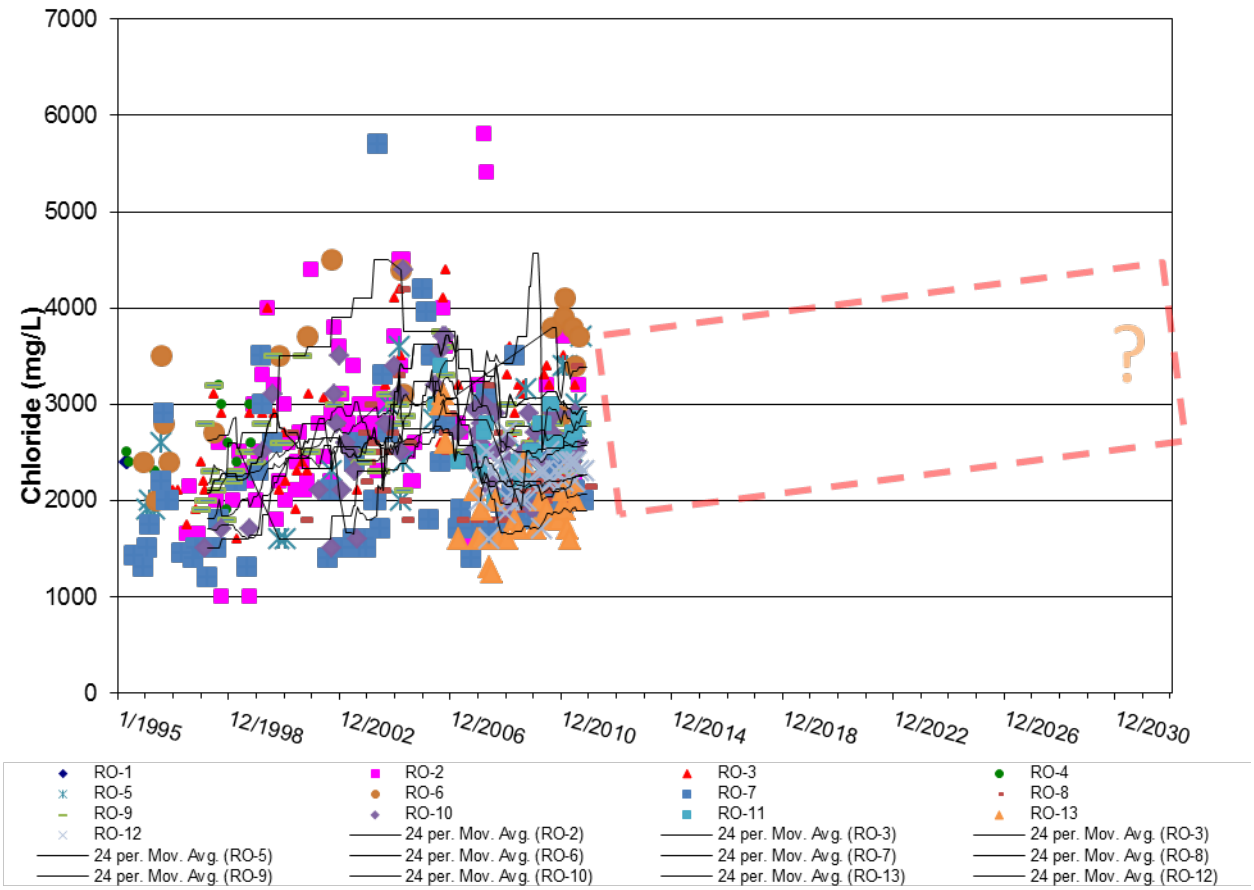
Evaluating future increases in dissolves solids is a complex problem because of the many variables and unknowns. Computer modeling is the appropriate tool to predict future changes and with computing power and advanced software reasonable estimates can be generated particularly given that a long term data set is available for calibration. JLA has performed this type of modeling for other comparable wellfields and JLA strongly recommends that Jupiter perform a similar approach to predict future water quality of the wellfield. Jupiter has a considerable advantage over other utilities utilizing the Floridan Aquifer because there is ample data for model calibration.

That said, given the available individual well chloride data collected and measured by the Town over the past 17 years and expected pumpage of 10 MGD from the wellfield going forward, the chart below provides a potential linear projection for the next 20 years. For the past year 2011, chloride concentrations from water samples collected from each well were reported to be between 1,600 mg/L and 4,100 mg/L. Using a 2.0 multiplier historically used by the Town to calculate total dissolved solids (TDS) from chloride, the TDS range of wells would be 3,200 mg/L to 8,200 mg/L. This is a relatively broad range and water quality of the combined raw water flow from the entire wellfield will be completely dependent on the specific water producing wells that are in service. As a result, the combined water quality may also be significantly lower or higher than the average. For planning purposes, the combined wellfield water quality at the RO plant should consider the high end of the scale should wells with lower dissolved solids be

out of service or experience faster than anticipated degradation of water quality. Based on a linear projection alone, in 20 years time the chloride range of the wellfield will likely increase to between 2,600 mg/L and 4,500 mg/L with a resulting TDS of 5,200 mg/L to 9,000 mg/L using the 2.0 multiplier. The raw water quality of the combined wellfield flow at the RO plant would be within that range. Future modifications to the RO plant to accommodate higher TDS raw water should take into consideration the higher end of this range, if not 9,000 mg/L, certainly 8,500 mg/L TDS given the uncertainty of this prediction.

Figure I.11

Floridan Aquifer Well Chloride Data 1995 - 2011



Further aquifer water quality monitoring and analysis will be conducted. However, given the trending experienced it will be prudent to reconfigure the RO treatment trains to tolerate worsening water quality during future periodic asset renweal efforts including replacement of the treatment membranes. The potential for increasing raw water TDS can be accommodated through the addition of membrane area to the second storage potential restaging of the feedwater pumps and modification to the energy recover devices.

Each wellhead facility is constructed of PVC and stainless steel. The materials are sufficiently durable to last the life of the well with regular maintenance to repair and replace worn or leaking parts. PVC casings should be coated to protect the material from ultraviolet exposure. No other capital expenditures are recommended other than regular replacement and renewal work to keep the facilities operating as designed.

Well RO-4 was removed from service because poor water quality including sand and silt production and the well pump was recently removed in 2011. Deepening of the well and installation of a liner was evaluated and until such time as the Town needs additional Upper Floridan well capacity, we recommend that this well be kept for standby and monitoring purposes including periodic water sampling. Representative water samples should be obtained from the well at least once every 6 months by purging at least 3 well volumes prior to sample collection.

4. Permitted Withdrawals

a. Groundwater from Local Aquifers

The existing permitted withdrawal approved by SFWMD Water Use Permit (WUP) No. 50-00010-W (issued August 23, 2010) is summarized in Table I.5.

Table I.5
Existing Permitted Water Use (MGD)

	Total	Surficial Aquifer	Floridan Aquifer
Through September 23, 2030			
Max month (daily)[1]	30.40	20.30	18.26
Annual avg. (daily)	24.41	18.80	5.61

[1] *Based on 30.4 days/month*

It is important to note that the Utility's withdrawal permit contains a specific provision wherein aquifer source limitations are defined by maximum monthly allocations of 617 MG (surficial aquifer) and 555 MG (Floridan Aquifer). This provision allows for the needed flexibility to alter production from the resources to economize operations yet also protect the environment in times of drought by heightened use of the brackish Floridan Aquifer supply. This permit has a 20 year duration, the maximum time attainable. The Town's current raw water withdrawal facilities' capacities for the surficial aquifer and Floridan Aquifer are approximately 26 mgd and 23 mgd respectively. It is important to note that maximizing redundancy through constructing wellfield capacity beyond permitted allocations is essential to ensure future sustainability of the Utility. To avoid environmental impacts, wellfield withdrawals should be extracted spatially and

rotated to avoid localized wetland or other natural resource impacts. Furthermore, history has shown that many existing well facilities will have a limited life expectancy and will ultimately need to be abandoned leaving little, if any, ability for constructing replacement capacity.

b. Excess Surface Water for Aquifer Recharge

Beginning in 1990, the Town has incrementally constructed a system of control structures, flow-ways and salinity barriers intended to increase surface water storage and surficial aquifer recharge utilizing freshwater that would otherwise be wasted to tide. In general, surplus runoff is captured and channeled into existing surface water storage areas in an effort to maintain these systems at their designed control elevations. The recharge system, when fully developed, is expected to offset some of the effects of urban groundwater withdrawals by replenishing the resource, thereby minimizing the risk of environmental harm, including wetland drawdowns and saltwater intrusion. The long-term sustainability of the region's water resources and fresh water environment will be greatly enhanced through the construction and operation of this system.

Currently, interlocal agreements for the operation of this recharge system are in place amongst all effected agencies which include the Town of Jupiter, Loxahatchee River District, South Indian River Water Control District (SIRWCD), Northern Palm Beach County Improvement District, North Palm Beach Heights Water Control District and numerous homeowners associations.

It should be noted that a consumptive use permit (CUP) for withdrawal from the C-18 Canal to the recharge system has been in place since 1989 for a flow rate of approximately 12 cfs. However, existing permit operational provisions are very stringent and thus prevent divisional flows during dry periods when the local environment needs them the most.

A schematic of the system as it exists and as it is envisioned to expand in the future is provided as Figure I.12.

Figure I.12

TOWN OF JUPITER RECHARGE SYSTEM
LOXAHATCHEE RIVER
Point of Supply from SFWMD Regional System
Future C-18 Recharge Withdrawal Pump Station to Jupiter Future Wellfield No. 4
SIRWCD Control Structure
Existing C-18 Recharge Withdrawal Structure to Jupiter Existing Wellfield No's. 1, 2 & 3
TOJ Salinity Structure
C-18 Canal
Existing Recharge Pipeline
St. Peter's Recharge Pump Station
Egrets Landing Recharge Pump Station
Existing Recharge Pipeline
Future Recharge Connection to Lake
Legend
SURFICIAL WELLS
RECHARGE FLOW LINES
EXISTING RECHARGE PIPELINE
FUTURE RECHARGE CONNECTION
EXISTING BUBBLE UP STRUCTURES
POTENTIAL SALTWATER INTRUSION THREAT
0 0.25 0.5 1 Mile

SFWMD S-46 Control Structure on the C-18 Canal in Jupiter Discharging Surplus Stormwater Runoff to Tidal Reaches of the Loxahatchee River

Currently, the Town is investigating the availability of additional flows into the Recharge system with the SFWMD. Investigations include defining the quantities and frequency of water available in the District's regional system that may be deemed "surplus" for storage in the Town's recharge system. Evaluation of District C-18 Canal stage levels concurrent with data reflecting adequacy of discharges to the Northwest Fork of the Loxahatchee River in meeting required minimum flows (at Lainhart Dam), as well as respective salinity levels, should provide a general forecast of acceptable diversion conditions. This diversion would be conducted as a temporary pilot study, aimed at identifying the potential success of such an operation to meet Town recharge goals. Evaluation of the effectiveness of the effort, over some agreed upon timeframe, would be used to determine the benefits of modifying the Town's current CUP and entering into a Memorandum of Understanding with SFWMD. Meetings have been held with SFWMD representatives in 2011, and the Town is currently awaiting feedback from SFWMD regarding specific "interim" diversion criteria.

5. Loxahatchee River Restoration Project (f.k.a. CERP: North Palm Beach County Regional Water Management Plan)

The SFWMD and USACOE are currently in the early phases of a regional plan to provide water in Northern Palm Beach County to meet environmental and public water supply needs as part of the Central Everglades Restoration Program. Currently, the project is slowly being

implemented. Beyond achieving continual compliance with established minimum flow needs to the Northwest fork of the Loxahatchee River, SFWMD's plan includes a total of approximately 50 cfs of flow from the regional system to Jupiter and Seacoast Utilities for wellfield recharge purposes.

To date, it is reported that the SFWMD has invested over $800 million in the development of the plan. In short, the plan utilizes a 46,000 acre foot reservoir (L-8 Reservoir) in Western Palm Beach County to capture excess surface water that would otherwise be discharged to tide. From the reservoir, water is expected to flow eastward sequentially and then northward to Jupiter through a conveyance system consisting of the M-Canal, West Palm Beach's Water Catchment Area (Grassy Water Preserve) and the Loxahatchee Slough. According to the District, the project is expected to be fully operational in FY 2015. However, much concern exists whether the District will be able to timely conclude operational agreements with the City of West Palm Beach. Pilot tests and operation of the system recently indicate that the City views its urban water supply needs a higher priority than allowing flows to continue northward from its water catchment area. Unless the Water Management District adequately addresses this matter, this huge financial investment may never deliver needed restorative water flows to the Loxahatchee River and Jupiter's wellfields may never receive recharge flow to insure their future sustainability.

D. Water Treatment Facilities

The Town's existing water treatment facilities, located at 17403 Central Boulevard, consists of three separate processes; reverse osmosis, ion exchange and nanofiltration. Each of the processes is permitted by the Florida Department of Environmental Protection (FDEP) and have rated treatment capacities as shown in Table I.6.

Table I.6
Existing Rated Plant Capacities

Facility	FDEP Permitted Treatment Capacity (MGD)
Reverse Osmosis	13.7
Ion Exchange	1.8
Nanofiltration	14.5
Total	**30.0**

The reverse osmosis plant is capable of producing 13.7 MGD of finished water. The Utility has a permitted (by SFWMD) daily withdrawal allocation from the Floridian Aquifer of 18.26 MGD (max month basis), which allows the R.O. plant the ability to produce 13.7 MGD of product water at the 75% recovery rate of the process.

In 1999, a 1.8 MGD ion exchange treatment plant was constructed. The ion exchange plant utilitzes Surficial Aquifer water to produce water of increased alkalinity and low color which when blended with the R.O. permeate waters improves the chemical and aesthetic characterisitics of the total blended finish water.

In 2010, the Town commissioned a 14.5 MGD Nanofiltration (Nano) Water Treatment Facility. The plant utilizes raw water from the surficial aquifer, which is the same source used by the ion exchange plant.

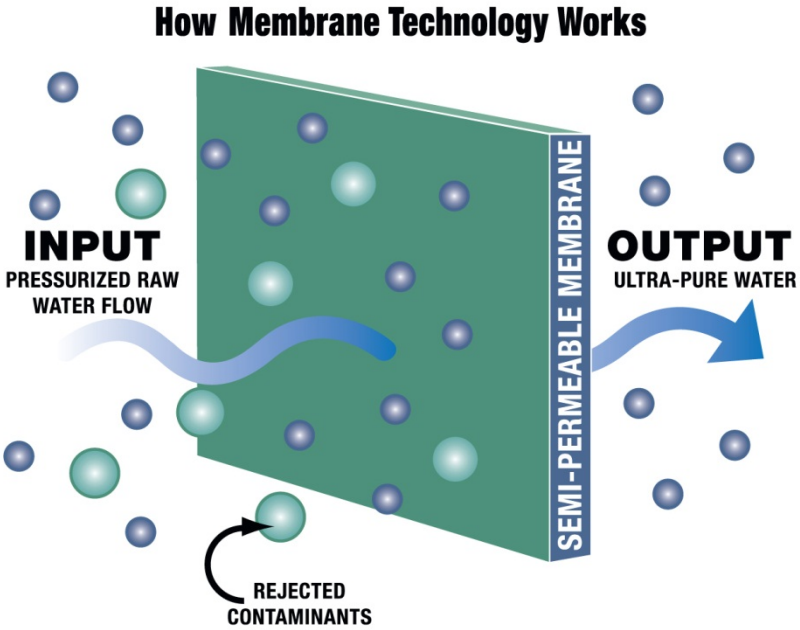
The Utility has a permitted (by SFWMD) daily withdrawal allocation from the surficial aquifer of 20.30 MGD (max month basis), which allows the ion exchange plant to operate in conjunction with the nanofiltration plant. The nanofiltration plant produces 14.5 MGD of product at a 85% process recovery rate.

Jupiter's customers demand high water quality and sensitivity to the environment. As a coastal, south Florida community, Jupiter is in a region with limited fresh water supplies, and often experiences drought conditions during the dry season. Jupiter's nationally designated "wild and scenic" Loxahatchee River, which runs right through the middle of the community, is subject to environmental harm if local freshwater supplies are depleted or damaged. If use of the shallow, fresh water aquifer in the Jupiter area is excessive, it can experience salt water intrusion from the nearby Atlantic Ocean.

To ensure a stable supply of drinking water for the area, Jupiter has become one of the first large communities in the United States to employ state of the art membrane water treatment technologies. Using innovative new processes, Jupiter is able to supply the highest quality drinking water while achieving environmental sustainability of the local water resources.

Jupiter uses two membrane treatment processes to treat its water: brackish water desalination through reverse osmosis and nanofiltration treatment of the fresh water supply. The product of these two treatment processes are combined to create high quality finished water that is distributed to the Jupiter region. These membrane water treatment processes produce drinking water that surpasses all existing and many future quality standards. They also provide a way for Jupiter to produce ultra-pure water from drought-resistant, alternative water supplies in way that is not harmful to the environment.

Figure I.13



Both the reverse osmosis and nanofiltration processes operate by forcing pressurized, raw water through a semi-permeable membrane that separates contaminants from the water. The chemical and physical properties of the membrane, combined with the pressure, remove unwanted substances from the groundwater. Membrane treatment also provides a barrier against viruses, bacteria and many other harmful contaminants found in raw water.

The nanofiltration process treats the fresh water from the shallow Surficial Aquifer, and the reverse osmosis process treats the brackish water from the deep Floridan Aquifer. The Surficial Aquifer rests about 150 feet below the ground's surface, and the Floridan Aquifer is a layer of water some 1,500 feet below the ground. Because it is very deep beneath the ground's surface, the Floridan Aquifer is very drought-resistant, and wells connected to this supply are not at risk of being contaminated by ocean water during severe droughts.

In summary, the water treatment facility currently consist of three (3) separate processes (reverse osmosis, ion exchange, and nanofiltration) that treat raw water from two aquifer sources to meet current production demands. The freshwater treatment system is capable of treating 14.5 MGD through the use of nanofiltration and 1.8 MGD through the ion exchange plant. The brackish water treatment system is capable of producing 13.7 MGD. All facilities are operated from a centralized plant control room and the treated water from each of the three plants is blended before being pumped to storage or distributed to Jupiter's water customers. The Water Treatment Plant is currently capable of producing a total of 30.0 MGD of finished water for distribution.

E. Water Storage, Transmission and Distribution Facilities

Existing System Description

The existing water storage, distribution and transmission system consists of approximately 447 miles of pipelines. Table I.7 identifies the approximate length of pipeline by diameter.

Table I.7
Transmission/Distribution Pipeline Data

Pipe Diameter (Inches)	Length (Feet)	Length (Miles)
2	90,503	17.10
3	7,290	1.40
4	94,921	18.00
6	627,710	118.90
8	974,683	184.60
10	141,092	26.70
12	254,975	48.30
14	1,514	0.30
16	96,967	18.40
18	22,277	4.20
20	2,325	0.40
24	44,741	8.50
30	704	0.10
Total	2,359,702	446.90

Based upon discussions with utility staff, together with the review of available system pressure records and hydraulic modeling performed, the system appears to maintain adequate pressure throughout most of the service area under current conditions. However, areas with the most noted pressure deficiencies relative to the system's established minimum level of service pressure of 45 psi are in the Northern Jupiter Service Area and in the Bluff's Area (south to Juno Beach). Greater detail on these deficiencies and recommended corrective action can be found later in this plan.

Pipelines

The distribution system includes pipe segments made of primarily four types of materials – ductile iron, C-900 PVC, HDPE and asbestos cement. In general, asbestos cement pipe was installed from approximately 1957 to 1970s, C-900 PVC from approximately 1971 to present, ductile iron pipe from approximately 1958 to present, and HDPE, primarily used for service connections, from approximately 1971 to present. Pipe sizes range from 2 to 30 inches in diameter. The distribution system originates at the Town's water treatment plant and extends in all directions.

There are four crossings of the Intracoastal Waterway, as follows:

Location	Pipe Size/Type
• Indiantown Road	10 inch diameter HDPE
• Indiantown Road	16 inch diameter HDPE
• Frederick Small/Marcinski Roads	One – 18 inch diameter ductile iron pipe One – 16 inch diameter ductile iron pipe

There are also five crossings of various branches of the Loxahatchee River and the C-18 Canal, as follows:

Location	Pipe Size/Type
• Alternate A1A (Loxahatchee River)	20 inch diameter ductile iron pipe 20 inch diameter steel pipe
• Island Way (NW Fork Loxahatchee River)	12 inch diameter ductile iron pipe
• Island Way (C-18 Canal)	18 inch diameter ductile iron pipe
• Loxahatchee River Road (SW Fork Loxahatchee River)	12 inch diameter ductile iron pipe
• Central Boulevard (C-18 Canal)	24 inch diameter ductile iron pipe

Water Storage Facilities

The Town's water storage system consists of seven ground storage tanks located at the water treatment plant, Central Boulevard High Service Pump Station, Riverbend Repump Station and Juno Beach Re-pump Station. Water is delivered from the water treatment plant site across Central Boulevard to the ground storage tanks at the Central Boulevard High Service Pump Station via a dedicated 30-inch diameter main. Table I.8 summarizes the finished water storage volume available at each facility.

Table 1.8
System Water Storage Capacity

Water Treatment Plant (2 tanks)	1.5 MG
	3.0 MG
Central Boulevard Repump Station (3 tanks)	5.0 MG
	8.0 MG
	8.0 MG
Riverbend Repump Station	3.0 MG
Juno Beach Repump Station	1.0 MG
Total	**30.5 MG**

High Service/Re-pump Facilities

Finished water is supplied to the transmission and distribution system through high service pump systems located at the water treatment plant and the Central Boulevard High Service Pump Station. In general, pumps are operated automatically, that is, started, stopped and speeds adjusted by the water treatment plant's control system. The water treatment plant has an array of ten high service pumps with drives that include both 150 hp and 200 hp motors. The Central Boulevard Storage/High Service Facility includes two high service pump stations. The north station has four pumps each rated at 200 hp. The south station has four 200 hp pumps. The Riverbend Repump Facility has four high service pumps each rated at 75 hp. The Juno Beach Re-pump Facility has three high-service pumps, each rated at 75 hp. All pumps in the system can be operated manually from the water treatment plant control room, or automatically, relying on automated control logic associated with programmable logic controllers located at each facility. Each pumping facility's control system is set to maintain a service pressure of 75 psi. Figures I.14 and I.15 identify various components of the Town's current storage, transmission and distribution systems.

Figure I.14

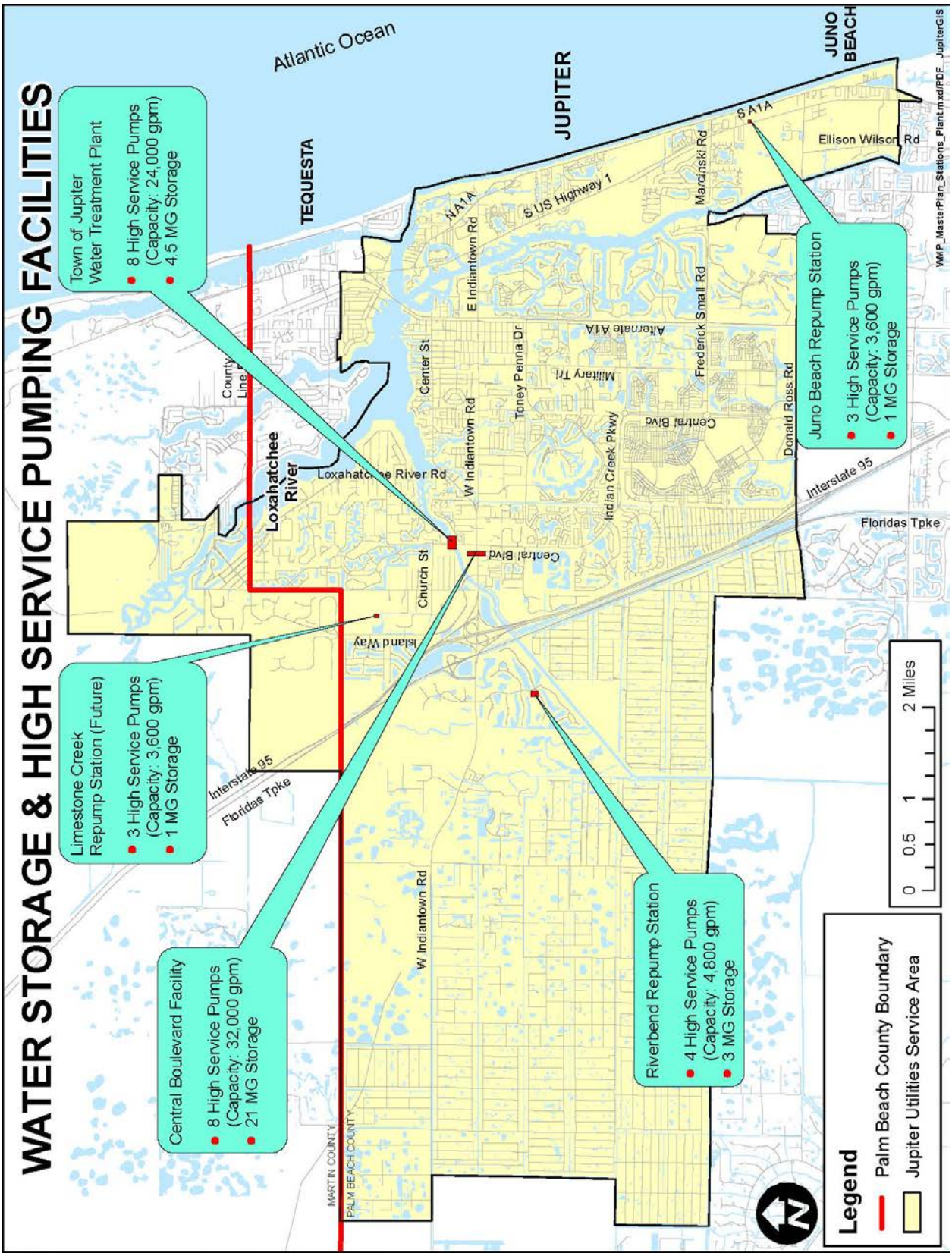
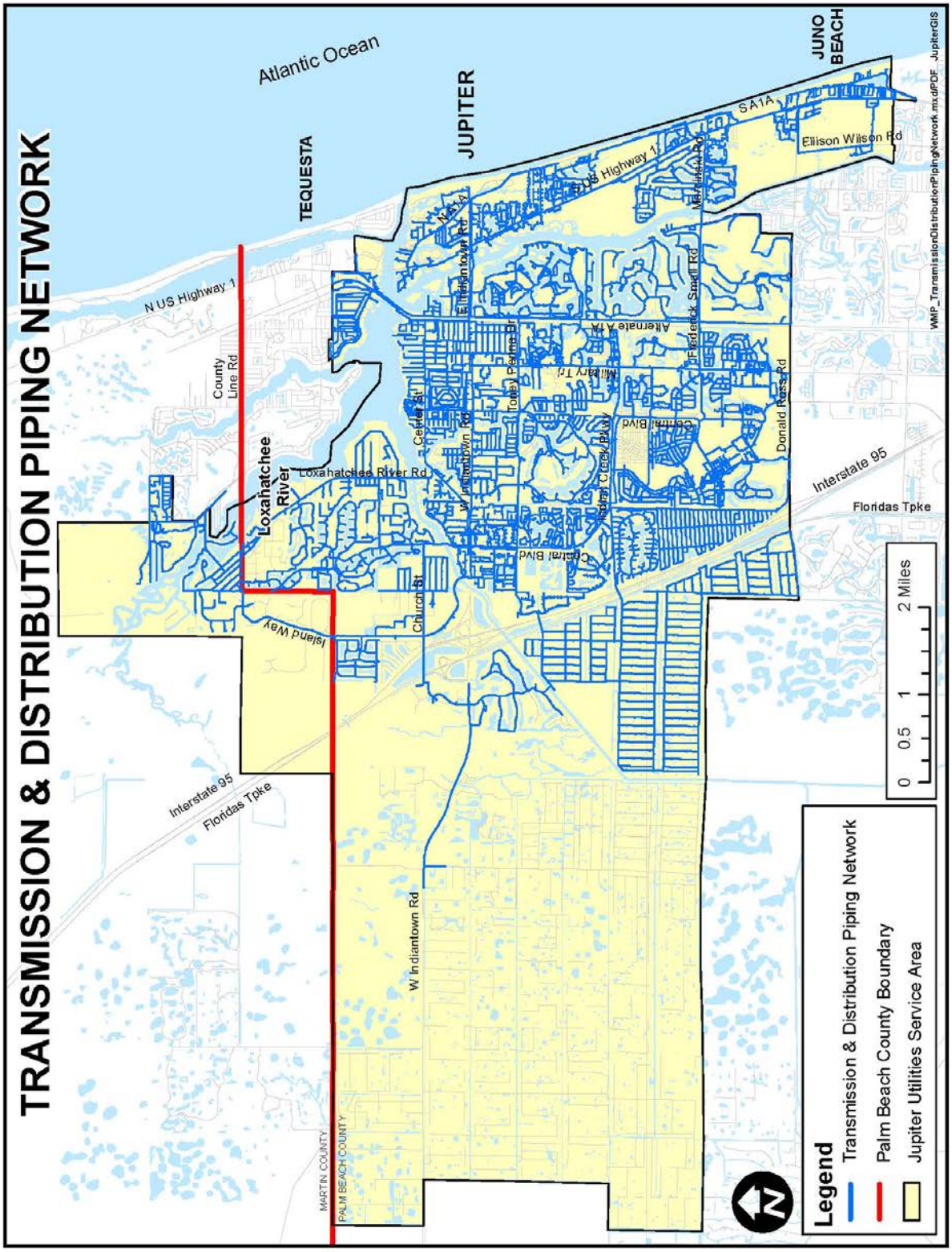

WATER STORAGE & HIGH SERVICE PUMPING FACILITIES
Town of Jupiter Water Treatment Plant
8 High Service Pumps (Capacity: 24,000 gpm)
4.5 MG Storage
Limestone Creek Repump Station (Future)
3 High Service Pumps (Capacity: 3,600 gpm)
1 MG Storage
Central Boulevard Facility
8 High Service Pumps (Capacity: 32,000 gpm)
21 MG Storage
Riverbend Repump Station
4 High Service Pumps (Capacity: 4,800 gpm)
3 MG Storage
Juno Beach Repump Station
3 High Service Pumps (Capacity: 3,600 gpm)
1 MG Storage
Atlantic Ocean
TEQUESTA
JUPITER
JUNO BEACH
Loxahatchee River
Loxahatchee River Rd
County Line
Center St
Church St
Island Way
W Indiantown Rd
E Indiantown Rd
Toney Penna Dr
Military Trl
Alternate A1A
Indian Creek Pkwy
Central Blvd
Frederick Small Rd
Donald Ross Rd
Marcinski Rd
S US Highway 1
N A1A
S A1A
Ellison Wilson Rd
Interstate 95
Floridas Tpke
MARTIN COUNTY
PALM BEACH COUNTY
0 0.5 1 2 Miles
Legend
Palm Beach County Boundary
Jupiter Utilities Service Area
WMP_MasterPlan_Stations_Plant.mxd/PDF JupiterGIS

Figure I.15


TRANSMISSION & DISTRIBUTION PIPING NETWORK
Atlantic Ocean
TEQUESTA
JUPITER
JUNO BEACH
N US Highway 1
County Line Rd
Loxahatchee River
Loxahatchee River Rd
Island Way
Interstate 95
Floridas Tpke
Church St
W Indiantown Rd
Central Blvd
Indian Creek Pkwy
Military Tr
Donald Ross Rd
Frederick Small Rd
Alternate A1A
Ellison Wilson Rd
SA1A
MARTIN COUNTY
PALM BEACH COUNTY
0 0.5 1 2 Miles
Legend
Transmission & Distribution Piping Network
Palm Beach County Boundary
Jupiter Utilities Service Area
WMP_TransmissionDistributionPipingNetwork.mxd/PDF JupiterGIS

The Town's water distribution network has grown steadily over the years to provide service to the Town's growing population and expanding business community. Until 2006, expansion of the Town's distribution system has been accomplished without the benefit of a comprehensive water distribution system hydraulic model. A hydraulic model, when calibrated correctly to reflect the hydraulic performance of the existing piping network, pumping systems and storage facilities, allows the Town to analyze the current system to identify areas of low pressure and poor performance. The hydraulic model developed for the Town's existing potable water transmission and distribution system assists the Town's utilities staff and their consultants with troubleshooting operational deficiencies and planning of future network expansions. The hydraulic model developed by Hazen and Sawyer in 2006 and later updated in 2011 is further discussed in Chapter II.

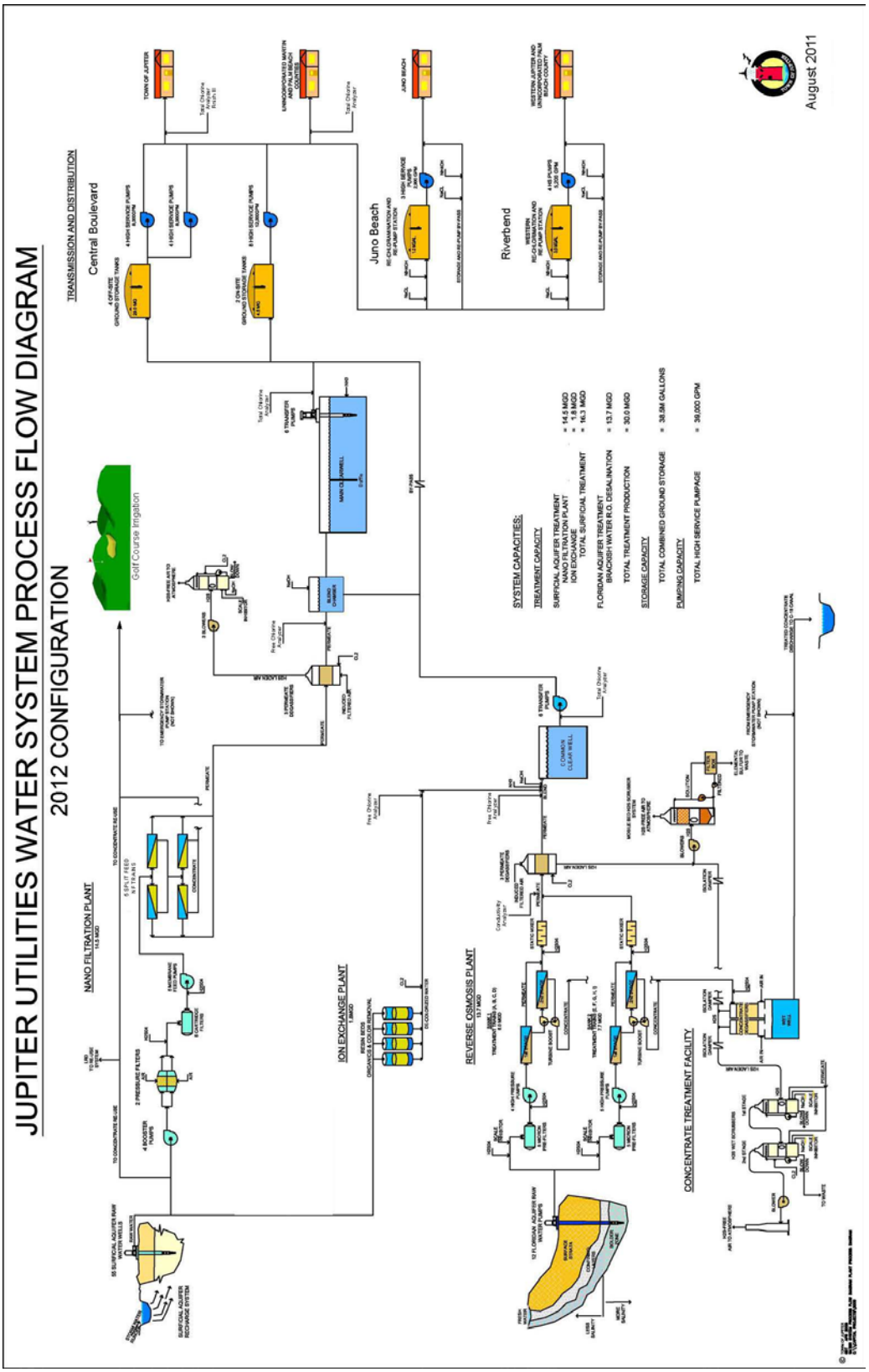
Recent System Additions/Upgrades

Since completion of the FY 2007 Master Plan Update, the following are significant assets which have been added to the Utilities Storage, Transmission and Distribution System:

- Completion of construction of all previously master-planned transmission network piping
- Construction of the Riverbend Re-Pump Station west of the Florida Turnpike
- A second Intracoastal Waterway crossing within the Frederick Small Rd/Marcinski Rd Corridor
- Installation of additional high service pumps (2) at the Central Boulevard Repump Station - South
- Acquisition, planning and site development of a future Repump Station in the Limestone Creek Area
- Construction of a transmission main for service to Jupiter Farms and commercial properties along Indiantown Road west of Florida's Turnpike.

A comprehensive process flow diagram of Jupiter's entire water utility system is show in Figure I.16.

Figure I.16


JUPITER UTILITIES WATER SYSTEM PROCESS FLOW DIAGRAM
2012 CONFIGURATION
TRANSMISSION AND DISTRIBUTION
Central Boulevard
Juno Beach
Riverbend
Golf Course Irrigation
NANO FILTRATION PLANT
ION EXCHANGE PLANT
REVERSE OSMOSIS PLANT
CONCENTRATE TREATMENT FACILITY
SYSTEM CAPACITIES:
TREATMENT CAPACITY
SURFICIAL AQUIFER TREATMENT = 14.5 MGD
NANO FILTRATION PLANT = 1.8 MGD
ION EXCHANGE = 16.3 MGD
TOTAL SURFICIAL TREATMENT
FLORIDAN AQUIFER TREATMENT
BRACKISH WATER R.O. DESALINATION = 13.7 MGD
TOTAL TREATMENT PRODUCTION = 30.0 MGD
STORAGE CAPACITY
TOTAL COMBINED GROUND STORAGE = 38.5M GALLONS
PUMPING CAPACITY
TOTAL HIGH SERVICE PUMPAGE = 39,000 GPM
August 2011

F. Level of Service

The Jupiter Water Utility is subject to federal, state and local regulation. At the federal level, regulatory jurisdiction is vested in the United States Environmental Protection Agency (EPA). The Florida Department of Environmental Protection (FDEP) is the state agency with authority over water treatment, and at the local level, the Palm Beach County Health Department administers the regulations of the FDEP.

1. **Federal:** The Town's utility is regulated by the EPA under the Safe Drinking Water Act (SDWA). Via the SDWA, EPA has promulgated nationwide drinking water regulations which specify the maximum levels of harmful contaminants allowed in drinking water and which govern the construction, operation and maintenance of water supply systems.

2. **State and Local:** Under the terms of the SDWA, states have primary enforcement responsibility for public water systems if the EPA determines that the state's drinking water regulations are at least stringent as the federal drinking water regulations. Florida has adopted all of the regulations promulgated by the EPA pursuant to the SDWA as part of its drinking water program. Thus, regulation of the system is primarily under the jurisdiction of the State of Florida. The State of Florida has delegated the administration of its water program to certain qualifying County Health Departments throughout the state. That delegation has taken place in Palm Beach County.

The quality of water provided by Jupiter's Water System exceeds all state and federal requirements. Jupiter's Water Utility was awarded the EPA's Safe Drinking Water Act Excellence Award in 1999, 2001, 2008 and 2010, signifying it as the best drinking water facility in the Southeastern United States. In total, the Utility has been honored more than 50 times with various awards related to operations, treatment and drinking water quality.

Jupiter Water System History of Award Winning Service

United States Environmental Protection Agency

1999 Safe Drinking Water Act Excellence Award for the Large Ground Water Public Water Supply- Region 4 (Southeastern United States)
2001 Safe Drinking Water Act Excellence Award for the Large Ground Water Public Water Supply- Region 4 (Southeastern United States)
2008 Safe Drinking Water Act Excellence Award for the Large Ground Water public Water Supply- Region 4 (Southeastern United States)

2010 Safe Drinking Water Act Excellence Award for the Large Ground Water Public Water Supply- Region 4 (Southeastern United States)

Florida Department of Environmental Protection

1977 Best Class B Water Plant in the Southeast District
1978 Best Class B Water Plant in the Southeast District
1983 Honorable Mention Best Plant Award in the Southeast District
1984 Honorable Mention Best Plant Award in the Southeast District
1985 Best Public Water Treatment Plant in Southeast District
1996 Excellence Award – Large Community Water Treatment Plant Southeast District
1997 Excellence Award – Large Community Water Treatment Plant Southeast District
2000 Excellence Award – Large Community Water Treatment Plant Southeast District
2001 Excellence Award – Large Community Water Treatment Plant Southeast District
2008 Excellence Award – Large Community Water Treatment Plant Southeast District
2009 Excellence Award – Large Community Water Treatment Plant Southeast District
2010 Excellence Award – Large Community Water Treatment Plant Southeast District

Florida Section American Water Works Association

1991 President's Gold Performance Safety Award
1991 Award of Excellence Safety Award
1993 Award of Excellence Safety Award
1997 Award of Excellence Safety Award
1998 Award of Excellence Safety Award
2000 Most Outstanding Class A Water Treatment Plant Award
2006 Award of Excellence Safety Award
2008 Most Outstanding Class A Water Treatment Plant Award
2009 Most Outstanding Class A Water Treatment Plant Award
2010 Most Outstanding Class A Water Treatment Plant Award
2010 Most Outstanding Water Distribution System Award (Division IV)

Florida Water & Pollution Control Operators Association

1982 Best Operated Water Distribution System Class A
1983 Best Operated Water Distribution System Class A
1983 Best Operated Water Treatment Plant under 15 MGD Class A
1984 Best Maintained Water Distribution System Class A
1984 Best Operated Water Distribution System Class A
1985 Best Operated Water Distribution System Class A
1986 Best Operated Water Distribution System Class A
1988 Best Operated Water Distribution System Class A
1989 Best Operated Water Treatment Plant under 15 MGD Class A
1991 Best Operated Water Distribution System Class A
1992 Best Operated Water Treatment Plant under 15 MGD Class A
1992 Best Operated Water Distribution System Class A
1993 Best Operated Water Distribution System Class A

1994 Best Operated Water Distribution System Class A
1995 Best Operated Water Treatment Plant under 15 MGD Class A
1996 Best Operated Water Treatment Plant under 15 MGD Class A
1997 Best Operated Water Distribution System Class A
2004 Best Operated Reverse Osmosis Plant Award
2007 Safety Excellence Award

American Membrane Technology Association
1996 Engineering Excellence Award
1996 Presidential Distinguished Service Award
1998 Presidential Distinguished Service Award
2001 Distinguished Service Award

Southeast Desalting Association
2003 Membrane Plant of the Year Award
2011 Membrane Plant of the Year Award

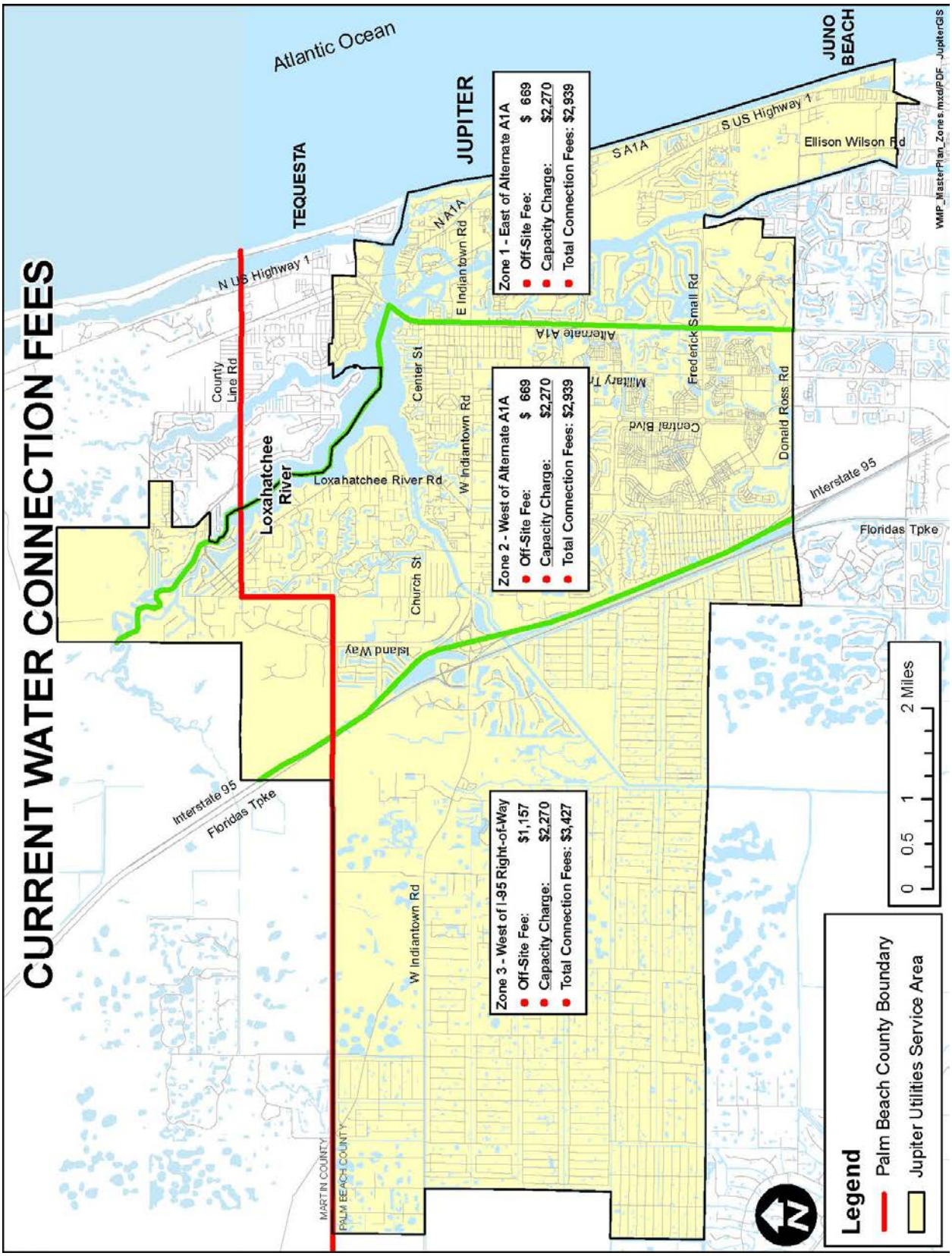
In addition to having been honored for excellence as noted above, Jupiter's Utility has been a leader and innovator in developing/utilizing alternative water supplies and implementing other measures and programs to preserve fresh water for the critical environmental resources of the region.

G. Capital Cost Recovery System

Connection Charges are capital charges levied against new system customers in order to allocate the cost of new plant facilities required by the average demand the new user proposes to exert upon the system. The current connection charge consists of two components which recover from developers their fair share of the cost of water treatment facilities (plant capacity charges) and the water transmission facilities (off-site transmission fees).

Jupiter's water transmission system has three regions or service zones (as shown in Figure I.17). Generally speaking, Zone 1 encompasses all properties east of Alternate A1A, Zone 2 includes properties west of Alternate A1A but east of I-95, and Zone 3 includes all parcels west of I-95. These separate areas are necessary to more appropriately divide the relative costs of water transmission based on location.

Figure I.17


CURRENT WATER CONNECTION FEES
Atlantic Ocean
TEQUESTA
JUPITER
JUNO BEACH
N US Highway 1
County Line Rd
Loxahatchee River
Loxahatchee River Rd
N A1A
E Indiantown Rd
W Indiantown Rd
Center St
Church St
Island Way
Alternate A1A
Military Tr
Central Blvd
Frederick Small Rd
Donald Ross Rd
S A1A
S US Highway 1
Ellison Wilson Rd
Interstate 95
Floridas Tpke
MARTIN COUNTY
PALM BEACH COUNTY
Zone 1 - East of Alternate A1A
Off-Site Fee: $ 669
Capacity Charge: $2,270
Total Connection Fees: $2,939
Zone 2 - West of Alternate A1A
Off-Site Fee: $ 669
Capacity Charge: $2,270
Total Connection Fees: $2,939
Zone 3 - West of I-95 Right-of-Way
Off-Site Fee: $1,157
Capacity Charge: $2,270
Total Connection Fees: $3,427
0 0.5 1 2 Miles
Legend
Palm Beach County Boundary
Jupiter Utilities Service Area
WMP_MasterPlan_Zones.mxd/PDF JupiterGIS

When the Town acquired the System in 1978, connection charges were established and collected at the rate of $750.00 for each new single family unit and $528.00 for each multifamily unit. The level of such charges was based upon the cost of conventional water treatment plant facilities. In subsequent years, the Town increased connection charges due to the increased cost of advanced membrane technology treatment facilities and incremental increases in the cost of water transmission, as well as to account for normal inflationary factors. Town Ordinance No. 42-08 contains provisions for the further adjustment of connection charges to account for future inflation or for necessary improvements in treatment technology to ensure regulatory compliance and system reliability.

Table I.9 shows the current total connection charges for the various service zones.

Table I.9
System Capacity Charges[1]

	Service Zone One	Service Zone Two	Service Zone Three
Capacity Charge	$ 2,270	$ 2,270	$ 2,270
Off-site Transmission Fee	$ 669	$ 669	$ 1,157
Total Capacity Charges	$ 2,939	$ 2,939	$ 3,427

[1] Amounts shown provided by Town and do not include administrative fees or other fees such as meter installation charges. Charges and fees based on 1.0 ERC.
Note: See Figure I.8 for Service Zone locations.

H. Current Regulatory Issues

Concentrate Disposal Operational Permits

The water plant facilities including RO treatment and nanofiltration treatment each include a permit for disposal of concentrate by-product from the treatment processes. The concentrate disposal permit for the RO plant is considerable longer tenured than the permit for the nanofiltration treatment plant, and includes provisions for accommodating the nanofiltration concentrate under limited circumstances. The primary disposal method for the nanofiltration concentrate is by delivery and sale of the concentrate flow to the Loxahatchee River District for blending and distribution as part of their irrigation reuse system.

The RO concentrate is disposed of through surface discharge to the C-18 Canal approximately 2,000 feet north of the water plant site. The outfall was originally permitted in 1989 and has operated continuously as the RO concentrate disposal outfall since 1990. The recent

permitting history for the RO concentrate discharge includes a renewal issued in 2004 which included an increase in the permitted discharge volume from 4.0 MGD to 4.6 MGD to accommodate an expansion of the RO treatment facility. A permit renewal application was filed in 2008 and is currently pending issuance. In 2009, a permit revision was issued by FDEP which allowed for disposal of nanofiltration concentrate through the RO concentrate outfall for up to 30 days per year and established a mixing zone for acute toxicity in accordance with newly adopted FDEP regulations regarding acute toxicity in membrane concentrates that are predominantly due to major seawater ion imbalance.

I. Utility Operations – Business and Information Systems

"Automation is the use of control systems and information technologies to reduce the need for human work in the production of goods and services. In the scope of industrialization, automation is a step beyond mechanization. Whereas mechanization provided human operators with machinery to assist them with the muscular requirements of work, automation greatly decreases the need for human sensory and mental requirements as well…." – Wikipedia

As our utility matures, increased operational efficiencies are constantly being sought out to enhance process costs and reliability. The following section outlines key business and operational systems currently employed by the Utility to achieve this goal.

1. System Supervisory Controls and Data Acquisition (SCADA)

Industrial automation encompasses a wide gamut of technologies designed to control and to monitor a particular process. These technologies networked together cumulatively are referred to as Supervisory Controls and Data Acquisition or SCADA.

Instrumentation Values Returned to a PLC

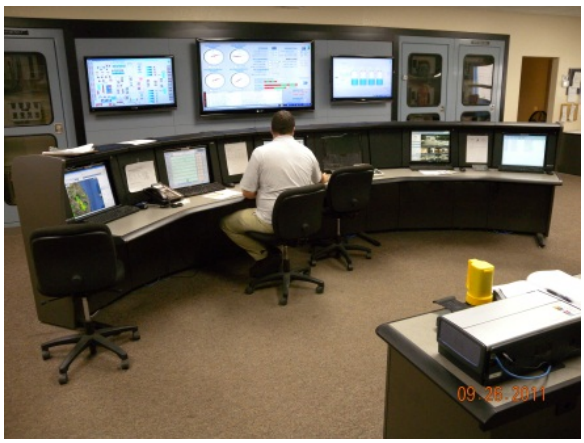
In its basic form, a SCADA network involves the return of instrumentation values to some process decision maker (e.g., a programmable logic controller (PLC)). The decision maker then relays its information to a software-based, human-to-machine interface (HMI) (e.g., a personal computer).

To assist in both the overall support of complex engineered processes and the analysis of the same, modern SCADA networks integrate commonly deployed Information System (IS) technologies. Today, knowledge of networking, programming, operating systems, productivity applications and computer hardware is crucial to the success of any organization's automated process.

Information Technology

With the recent removal of the lime softening treatment plants, the Town of Jupiter Water Treatment Facility witnessed the end of an era. Namely, the days of a fully mechanized facility have gone by the wayside.

The lime plants ran without much computerized intervention. A rudimentary network for monitoring that process included a single computer employing a proprietary networking protocol, the use of a specialized PC adapter card, a homemade soldered cable and outdated software. Needless to say, its lack of uniformity made it very difficult to support.



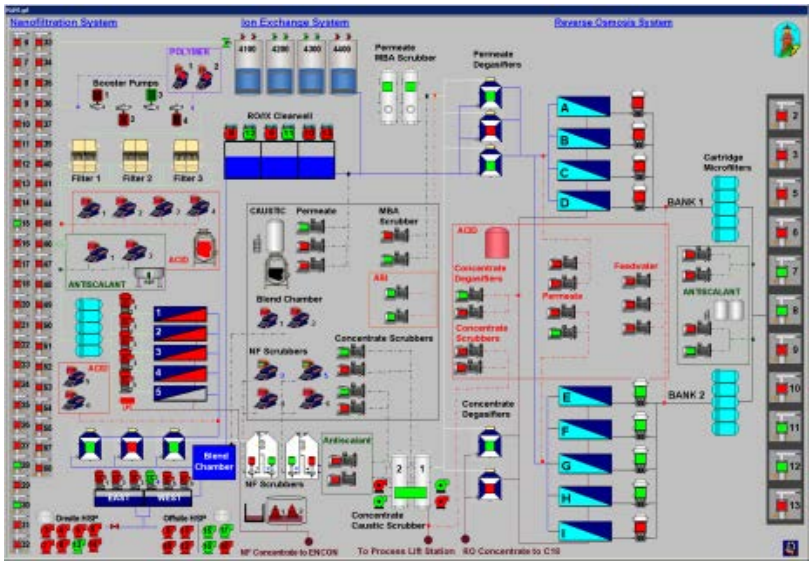
Operator Using Personal Computers as HMIs

Thus, with a growing dependency upon the fully automated Reverse Osmosis (RO) plant and knowledge of the same for the Nanofiltration plant, Jupiter Utilities seven years ago set forth three goals for the future of its SCADA network. These goals were as follows:

1) **Reliability**: To build a reliable network employing modern, recognized technology and maintainable, modular componentry
2) **Redundancy**: To create redundancy in those systems critical to facility operations while providing greater access to plant data where needed
3) **Security**: To ensure the protection of critical systems from both physical and cyber threats

Present SCADA Network

In keeping with the goals set forth, major changes were made to the SCADA network in the manner of both capturing and disseminating plant information.



Upgraded SCADA Software

First, a complete upgrade of the SCADA software was undertaken. HMI interfaces, which had been scripted using an abstract programming language, were converted to a universally, established one. In addition, the new SCADA software allowed for the creation of primary and backup servers with built-in, failover redundancy. Acting in concert with these servers, historical software improved both the trending of instrumentation data and the precision of plant reporting.

Touchscreen HMI at Point of Application

Second, a data highway running over a campus-wide, fiber-optic backbone was established. This upgrade enabled communication between remote PLCs and the SCADA servers using a commonly supported, networking protocol. In addition, HMIs could now be located outside the control room and closer to applications requiring physical assistance from operators and maintenance personnel. Furthermore, by means of a web server, the installation allowed for interconnectivity with the Town's private network and the remote access by administrative staff to real-time information.

Finally, an overhaul of the radio telemetry communication system was commenced. Older PLCs, radios and antennae at many remote sites were replaced or repaired. Similarly, the introduction of spread spectrum technology, offering greater wireless bandwidth, enabled over-the-air, online programming of some long distance locations.

As a result of these changes, the SCADA network at the Town of Jupiter Water Treatment Facility expanded rapidly. It now controls and monitors over 8,000 points of data as well as a wide range of processes which include the following:

- 60+ Surficial and Reverse Osmosis Well Sites
- A Nanofiltration Water Treatment Plant
- A Reverse Osmosis Water Treatment Plant
- An Ion Exchange Water Treatment Plant
- Onsite and Remote Distribution and Repump Stations
- Backup Emergency Electrical Generators
- Stormwater and Recharge Sites
- Security and Building Safety Systems
- Inter-Organizational Data Exchanges

2. Customer Information (CIS), Utility Billing & Work Order Systems

The Town's current CIS, Utility Billing (Billing System) and Work Order Systems were installed in 1998. At the time, they were considered one of the leading technologies available. Advances in technology and changes to applications gave utilities additional tools to help manage and improve the services its customers receive. A strong focus on customer satisfaction and ease of use with customer-friendly access and convenience have become the industry standard. With over 27,600 customer accounts currently served, the Town Utility would like to improve its customer service offerings while simultaneously improving the efficiency of its billing processes.

The following is an account of the CIS, Utility Billing and Work Order Systems currently utilized by Jupiter Utilities.

Meter Reading

Current meter readings systems are 25% manual and 75% radio-frequency reading technologies. The manual reads are captured by the Town's Utility Field Representatives. They physically visit each meter, remove the cover and hand key the reading into the hand held meter reading device. Radio frequency readings are captured by a laptop in the Field Representative's vehicle while driving through the meter reading routes. A receiver on the laptop picks up the meter readings from a transmitter on each of the meters. The meter

readings stored in the hand held devices and laptop are first uploaded to the meter reading program on a personal computer in the office and, from there, are uploaded to the Billing System.

Work Order System

The current systems include a Work Order System. This system allows for the creation and tracking of work orders by customer location. Exception listings and edits are reviewed after the meter readings are uploaded to the Billing System. Work orders are generated for unusual items, i.e., very high readings, no readings, etc. Field Service personnel verify information and investigate any unusual items.

Utility Billing

The Billing System generates billing files that are transferred electronically to a private bill print vendor, CSG Systems, electronically. The vendor prints the billing statements and mails them to customers. The Billing System allows for the collection of a wide array of services and categories: water service, residential garbage pickup, yard waste pickup charges, recycling pickup charges, storm water charges, fire line charges, as well as the collection of utility taxes and surcharges and various service charges for late fees, reconnection fees, application fees, etc.

Utility Cash Receipts

Utility collections are received daily from several sources: walk-in payments, drop-boxes, mail-in, phone-in credit cards, bank drafting (ACH Transactions), E-pay or Bill-pay through third party financial institutions (Online Resources Corporation (ORCC)), Interactive Voice Response (IVR), credit cards, on-line credit cards and on-line ACH.

Paper Check Receipts: The processing of all payment coupons and checks is fully automated using a small scanner and RemitPlus software. The system allows the Utilities staff to image all payment stubs and checks received and electronically transmit deposits to the Town's bank account on a daily basis. The bank sends a confirmation of receipt by email.

Electronic Payment Remittances: Electronic payments or wire transfer remittances are received on-line from third party on-line payment services. These electronic payments are processed in one of three ways.

1. On-line Payments are taken by the Town's billing vendor, CSG Systems, on their website. These payments are processed by PayPal by agreement with CSG Systems and are downloaded, on a daily basis, from their website to the Cash Receipts System.

2. ORCC provides a payment consolidation service to the Town. Other financial institutions transmit utility customer payments to ORCC using Remote Payment and Presentment Service (RPPS). ORCC transmits an electronic payment file to the Town's Billing System and makes a daily ACH deposit to the Town's bank account.
3. On-line payment services that do not have an arrangement with the Town and who are not compatible with ORCC using RPPS, send their company's original checks to the Town by mail for each payment made online by our Utility customers. These paper checks are processed using the RemitPlus software.

Interactive Voice Response (IVR): IVR is an over-the-phone payment option made available to the Town's utility customers through Selectron Technologies, an HTE Solutions Provider. It offers several services to the Town's utility customers including recent amounts billed, balance due, delinquent amount due and due date. IVR also allows the customer to make credit card payments. IVR automatically inputs the payment into a Cash Receipts batch directly in the Cash Receipts System.

Bank Drafts: Customers submit a signed paper application for bank drafts. This information is then manually input by a Customer Service Representative into the Billing System. This information is electronically transmitted to the bank two days before the scheduled bank draft date.

Account Receivable System

The current systems include an Accounts Receivable System (AR System). This system allows for the tracking and periodic billing of fees under Utility Water Service Agreements and other arrangements.

General Ledger System

The Utility Billing and AR Systems produce Utility General Ledger Journal Entry Files. The files are manually updated each morning by Town Finance personnel.

Records Retention

Some processes in the Utility Billing System are formatted to transmit reports required for retention to a file for upload to the Town's Records Retention Systems. Other reports are manually transferred to files for manual entry to the Records Retention Systems.

Current System Limitations

The current Billing System does not offer real time access of information to Utility customers using the on-line system. This information is updated only once a month during the billing process and does not reflect payments, additional fees and charges, account credits and other adjustments occurring between billing dates. In addition, the current Billing and Cash Receipt Systems do not have the ability to accept Debit Card payments.

The Meter Reading System does not allow for billing of meter services based on meter status. As an example, the system will allow an account to bill with a meter that is marked in the system as being stored in inventory.

The current AR System is very labor intensive and requires extensive manual and/or external calculation of fees prior to entry in the AR System. In addition, current system limitations do not allow for the entry and automatic updating and tracking of special assessments.

Many processes in the Utility Billing System require the printing and storage of paper documents for records retentions requirements. Other reports are manually transferred to files for manual entry to Records Retention Systems.

3. Geographic Information System

The Utility's Geographic Information System (GIS) has grown with respect to the number of layers maintained, the number of features stored, the amount of detail in attribution, spatial accuracy, and accessibility, and serves as an irreplaceable tool for the Town's potable water production and distribution systems. Over 3,400 hydrants, 7,000 valves, 27,000 water accounts, and many other features are incorporated with nearly 450 miles of pipe into a networked geographic model of the water distribution system. Figure I.18 illustrates the watermain additions from 2001 to 2011.

Utility staff and others access and utilize the GIS in various ways to support critical functions. A printed, full distribution system atlas is produced every 2 years, along with many other paper maps for a variety of uses. A web-browser based viewer was developed in-house and provides multiple, easy to use searches, one-click access to feature attributes, maintenance, inspection records, water accounts, and other information, along with the ability to instantly view linked as built drawings which is shown in Figure I.19. Another example of an application, shown in Figure I.20, that the Utilities GIS has developed identifies which valves to turn, and which accounts are affected by a line break / service interruption, with a click of the mouse at the break location. Users output the listed pertinent accounts with phone numbers to an automated call system to provide additional boil water notification beyond door cards. The topologically integrated water distribution GIS network also enables hydraulic modeling, fully representing actual usage, pipe size and material, and other requirements.

Water production wells, mains, and other information have been converted from CAD sources, and GIS provides mapping and systems to access related data. Incorporation into GIS of additional water production infrastructure within the walls of the water plant and outlying facilities, applying similar methodology at a more detailed scale, is underway.

As the Utility has grown, so has GIS. Utilities GIS helps plan, manage, and incorporate additions to the water system, and constantly increases the level of detail and accuracy of existing water infrastructure. Continual needs analysis strives to efficiently manage assets, streamline workflows, and provide accountability in order to better serve our growing customer base.

Figure I.18

GIS / WATER UTILITIES - 2001 to 2011

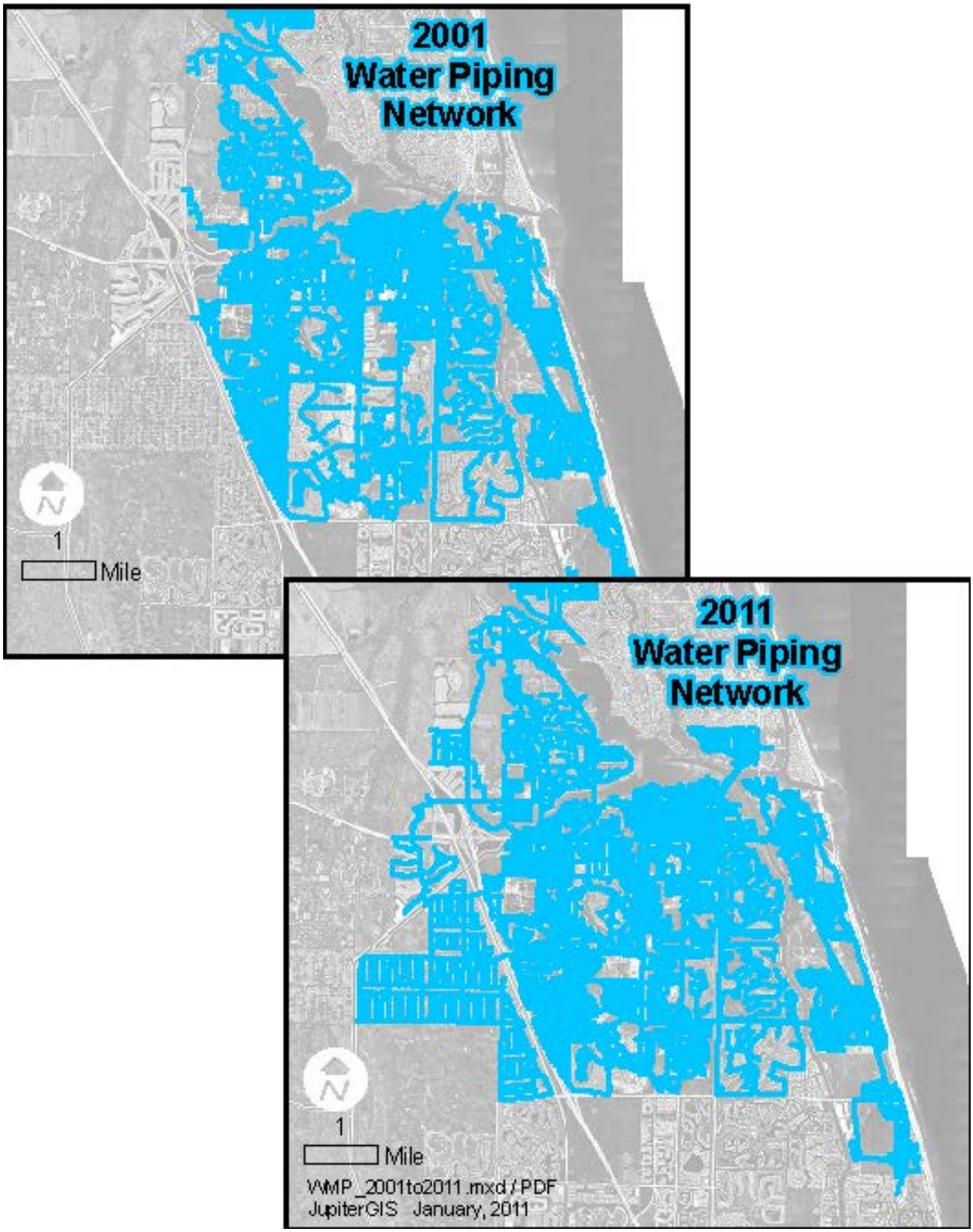


Figure I.19

POTABLE WATER VIEWER

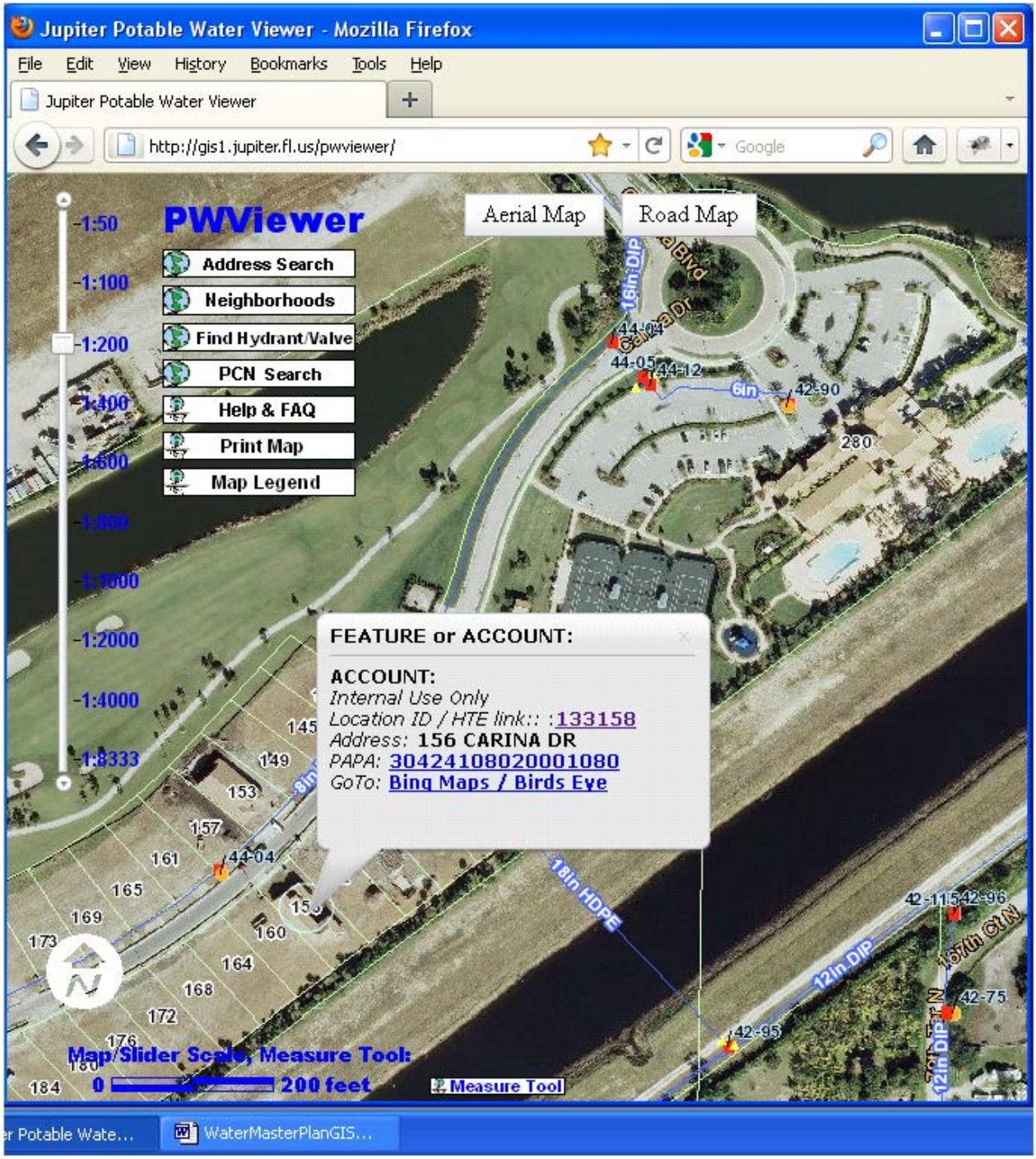
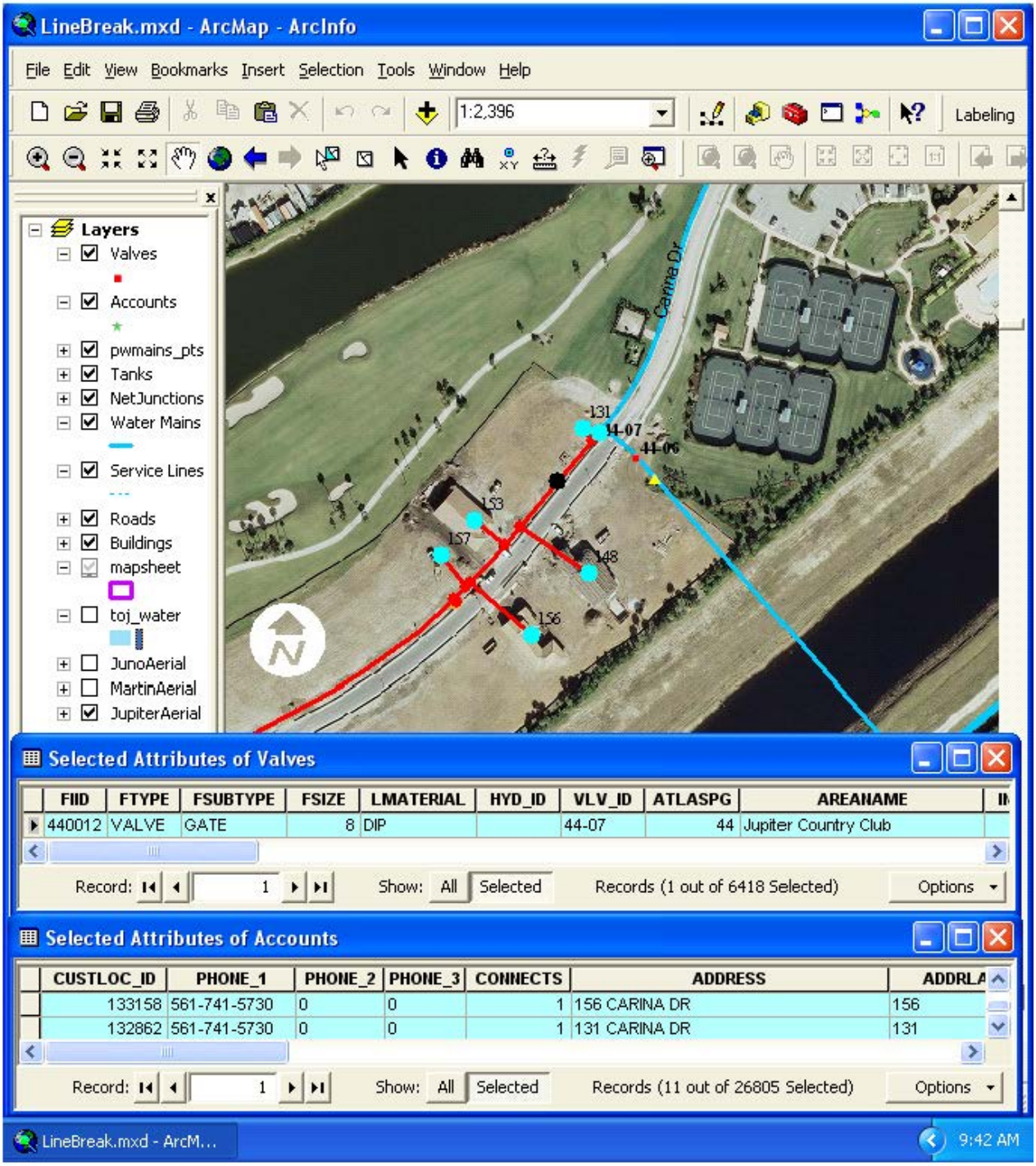


Figure I.20

SERVICE INTERRUPTION NOTIFICATION



Chapter II
Future Projections

A. Service Area, Customer Base and Production Demands

The Town's water utility service area expanded significantly in 2011 to now encompass all of the Jupiter Farms Community. Pockets of redevelopment and increased water demand are anticipated. However, growth in overall customer base is still anticipated to be slow over the next several decades as the utility approaches build-out of its service territory.

1. Projection of Future Water Demands Per SFWMD Consumptive Use Permit

The Town last received an update to its South Florida Water Management District Consumptive Use Permit on August 23, 2010. Within this permit, a population and demand forecast was included which served as a basis for the water allocations provided over the permit's 20 year duration. Figure II.1 below illustrates graphically how the SFWMD water demands were anticipated expected to grow over time.

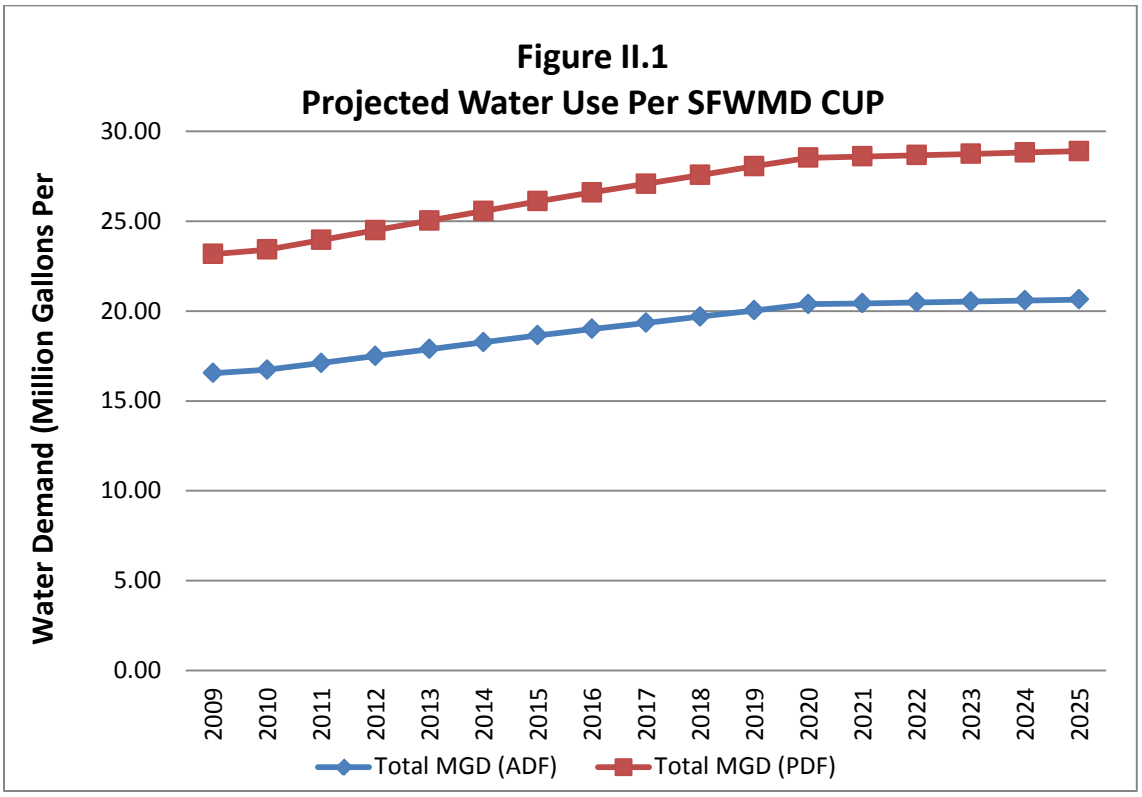


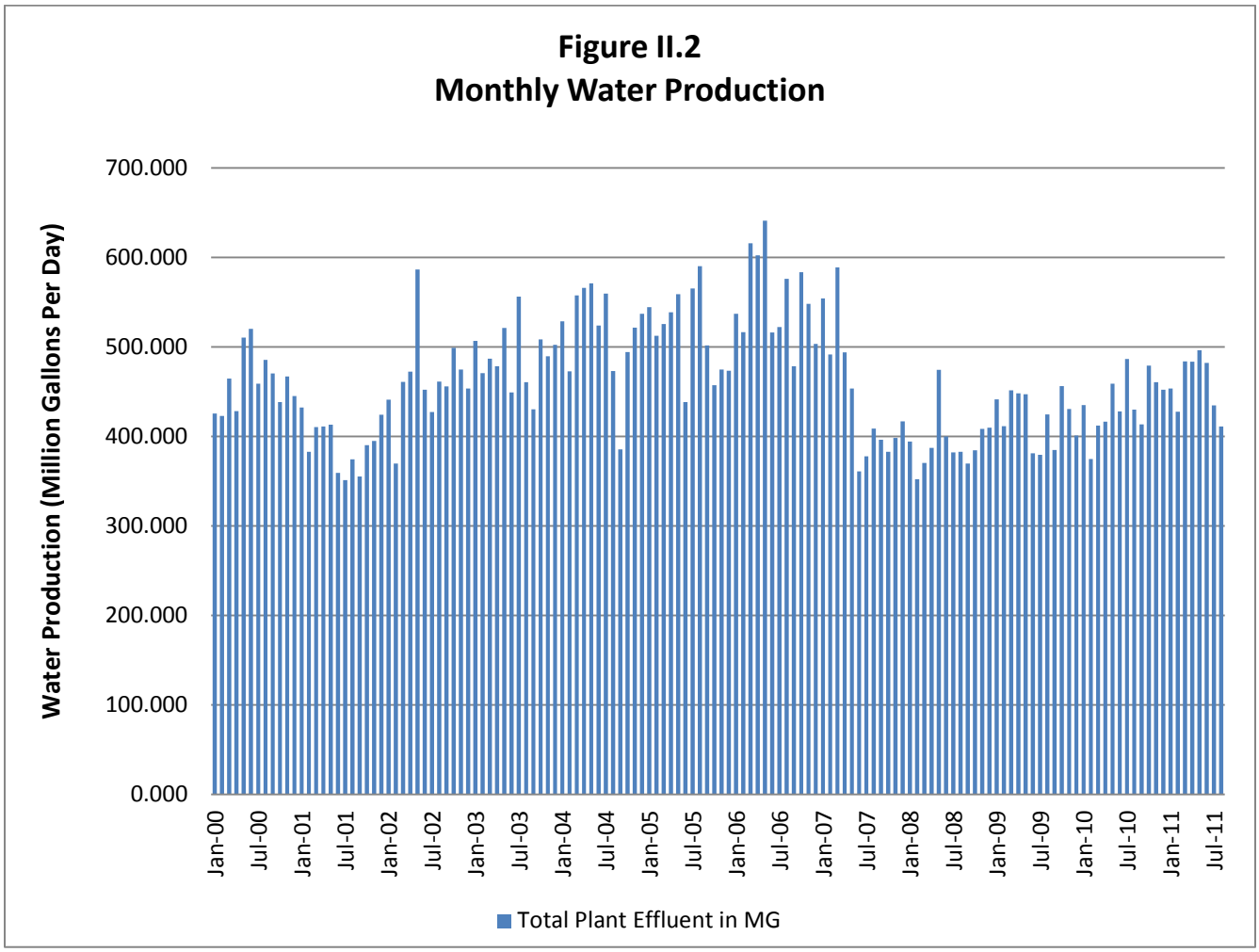
Table II.1 below sets forth demand growth estimates as included within the Town's latest SFWMD Consumptive Use Permit.

Table II.1
Projected Water Use Per 2010 SFWMD Consumptive Use Permit

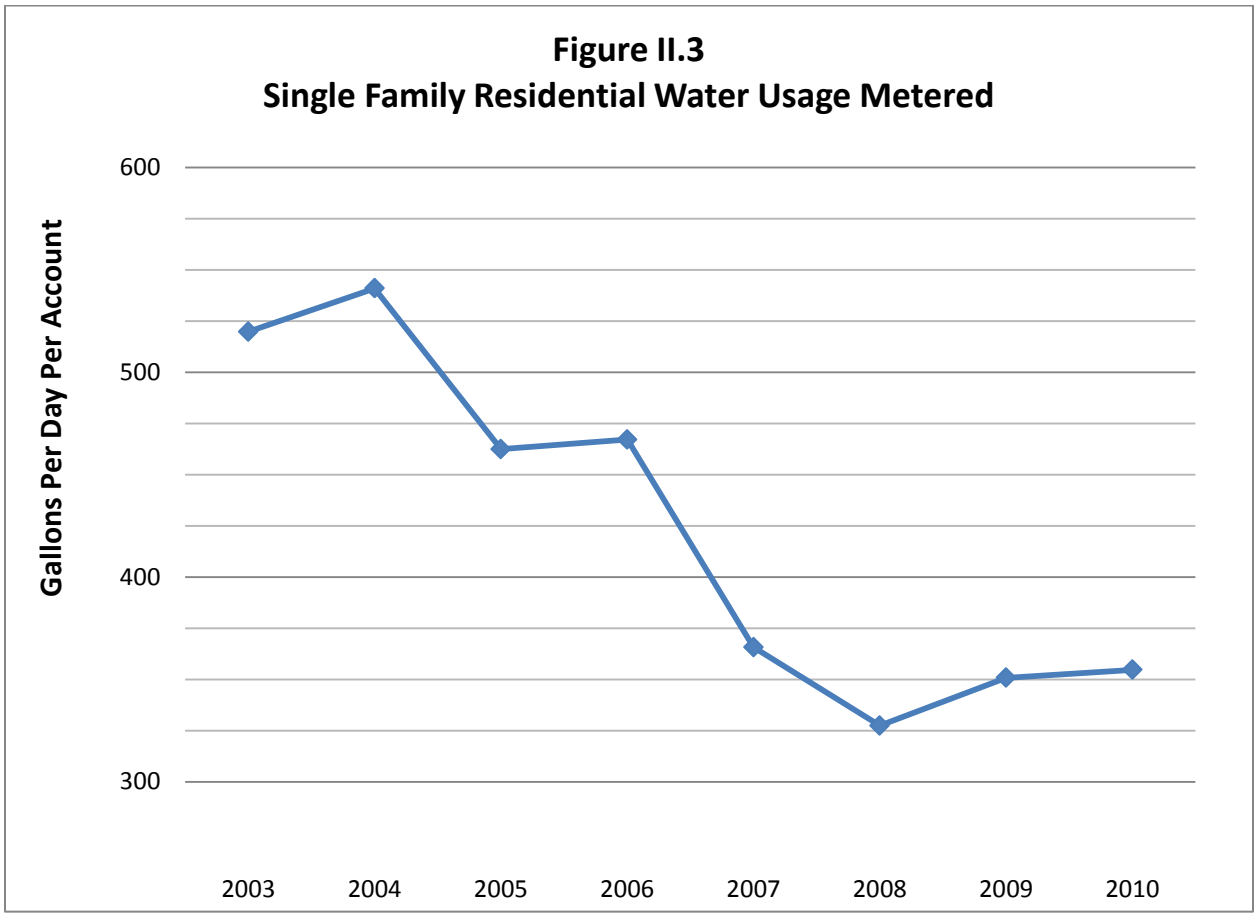
Type of Unit or Water Use Type		Residential	Commercial	Total GPD (ADF)	Total MGD (ADF)	Total MGD (PDF)
Year	(U)	70,900	12,762			
2009	(P)	168	350			
	(U X P)	12,039,888	4,514,958	16,554,846	16.55	23.17
Year	(U)	72,432	13,038			
2010	(P)	168	350			
	(U X P)	12,168,576	4,563,216	16,731,792	16.73	23.42
Year	(U)	74,092	13,335			
2011	(P)	168	350			
	(U X P)	12,447,456	4,667,254	17,114,710	17.11	23.95
Year	(U)	75,751	13,636			
2012	(P)	168	350			
	(U X P)	12,726,168	4,772,606	17,498,774	17.50	24.50
Year	(U)	77,411	13,937			
2013	(P)	168	350			
	(U X P)	13,005,048	4,877,787	17,882,835	17.88	25.03
Year	(U)	79,070	14,230			
2014	(P)	168	350			
	(U X P)	13,283,760	4,980,400	18,264,160	18.26	25.56
Year	(U)	80,730	14,531			
2015	(P)	168	350			
	(U X P)	13,562,640	5,085,990	18,648,630	18.65	26.11
Year	(U)	82,231	14,802			
2016	(P)	168	350			
	(U X P)	13,814,741	5,180,528	18,995,269	19.00	26.60
Year	(U)	83,731	15,072			
2017	(P)	168	350			
	(U X P)	14,066,842	5,275,066	19,341,907	19.34	27.08
Year	(U)	85,232	15,342			
2018	(P)	168	350			
	(U X P)	14,318,942	5,369,603	19,688,546	19.69	27.57
Year	(U)	86,732	15,612			
2019	(P)	168	350			
	(U X P)	14,571,043	5,464,141	20,035,184	20.04	28.06
Year	(U)	88,233	15,882			
2020	(P)	168	350			
	(U X P)	14,823,144	5,558,679	20,381,823	20.38	28.53
Year	(U)	88,454	15,922			
2021	(P)	168	350			
	(U X P)	14,860,238	5,572,589	20,432,828	20.43	28.60
Year	(U)	88,675	15,961			
2022	(P)	168	350			
	(U X P)	14,897,333	5,586,500	20,483,883	20.48	28.67
Year	(U)	88,895	16,001			
2023	(P)	168	350			
	(U X P)	14,934,427	5,600,410	20,534,837	20.53	28.74
Year	(U)	89,116	16,041			
2024	(P)	168	350			
	(U X P)	14,971,522	5,614,321	20,585,842	20.59	28.83
Year	(U)	89,337	16,081			
2025	(P)	168	350			
	(U X P)	15,008,616	5,628,231	20,636,847	20.64	28.90

U = Number of Units, P = Per-unit water demand, U x P = Total water demand

Given recent water usage trends, the rate of growth of demand set forth by the SFWMD Consumptive Use Permit may be further tempered over the long term by the impacts of water use restrictions imposed by the District. Figure II.2 below clearly illustrates the dramatic reduction in water use as a result of the irrigation restrictions enacted in the spring of 2007.



Usage reductions have been as large as 20-25%. Demands since 2007 have been closely monitored to predict the degree of elasticity that may ultimately result. At this point in time, it is apparent that the resulting usage characteristics of Jupiter's customer base will likely reflect lower per capita demand over the long term. Figure II.3 illustrates how residential water usage has trended over the past decade.



The changes in usage characteristics of Jupiter's customer base have many implications to the long-term planning functions updated by this document. Given that state law requires water utilities to have in place service treatment capacity available equal to peak daily demands, an accurate analysis of average day usage to peak day usage is critical to ensure future system reliability and regulatory compliance.

During the last update to the Water Utility Master Plan in 2007, the utility's average daily flow (ADF) to peak daily flow (PDF) ratio was established as 1.43. Based on the analysis of usage data since the imposition of the SFWMD water restrictions, this ratio reduced slightly but remains at 1.40. Please refer to Table II.2 below.

Table II.2
Calculation of Daily Peak Flow Ratio
Quarterly Rolling Annual Peak Finished Water Demand vs Annual Average Finished Water Demand

Month	Year	ADF	PDF	ADF/PDF
Mar	2007	18.11	23.36	1.29
Jun		16.86	21.47	1.27
Sep		16.00	21.47	1.34
Dec		14.60	21.47	1.47
Mar	2008	13.13	19.45	1.48
Jun		13.00	20.73	1.59
Sep		15.30	20.73	1.35
Dec		14.00	20.73	1.48
Mar	2009	14.44	20.73	1.44
Jun		14.60	20.12	1.38
Sep		13.64	20.12	1.48
Dec		13.87	20.12	1.45
Mar	2010	13.64	20.12	1.48
Jun		13.72	19.62	1.43
Sep		14.45	19.91	1.38
Dec		15.13	18.33	1.21
Mar	2011	15.17	22.30	1.47
Jun		16.07	20.28	1.26
Average:		14.76	20.61	1.40
Post Year Round Conservation Rule Avg.:				1.40

ADF = Average Daily Flow from the Water Treatment Plant over the previous 12 month period.

PDF = Peak Daily Flow from the Water Treatment Plant over the previous 12 month period.

* Includes the time period spanning from 10/1/07 to the present.

2. Projection of Future Water Demands Utilizing Population Allocation Models

Current and future Town of Jupiter potable water service area population and water demands were estimated for the years 2010 through 2030 using the best available data. Estimates of

both population and water demand are provided in Table II.3.

Table II.3
Service Area Estimated Population and Water Demand, 2010 – 2030

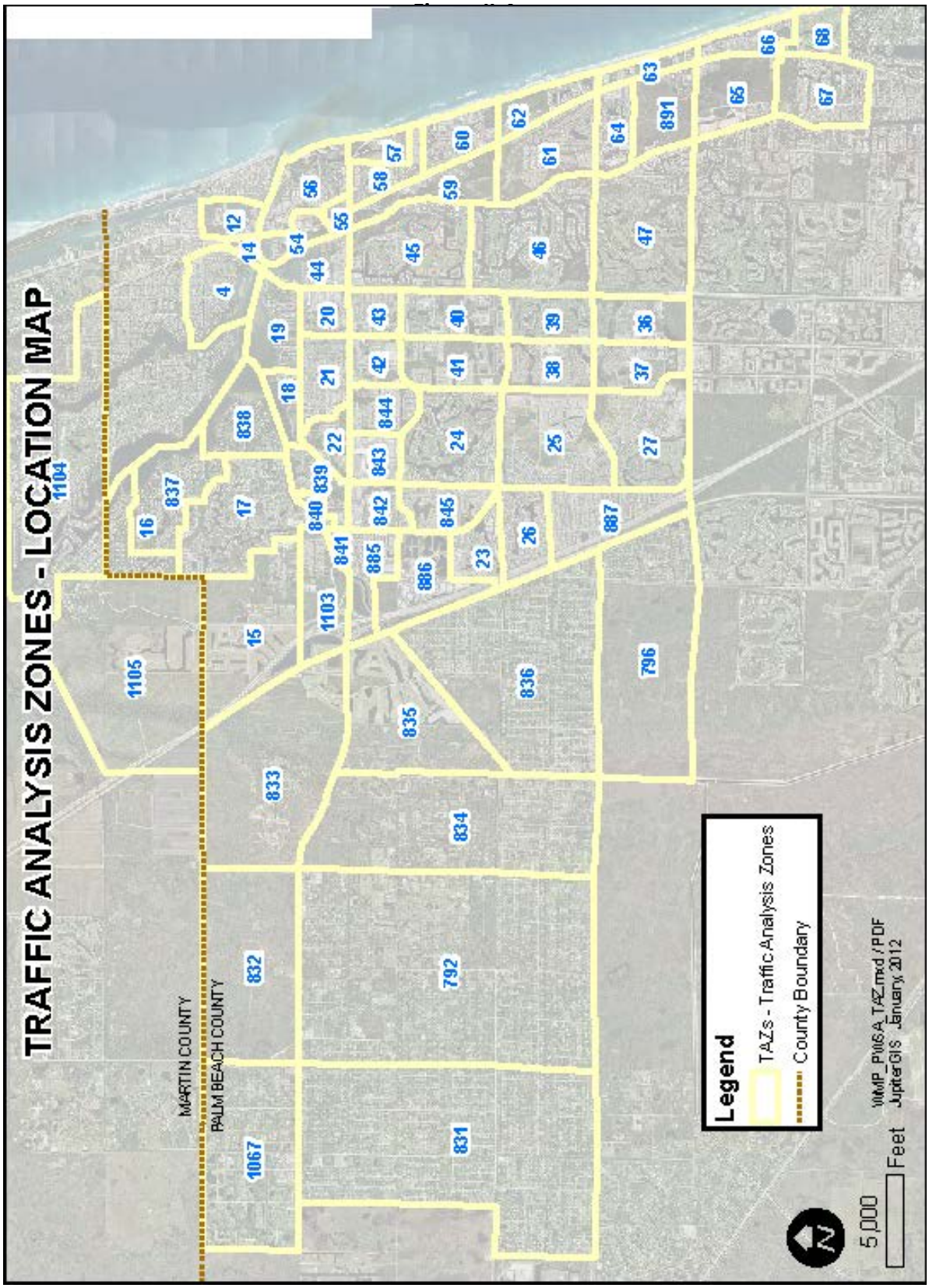
Year	2010	2015	2020	2025	2030	Ultimate
Population[1]	83,626	87,484	90,805	93,395	99,640	99,640
Water Demand (MGD)[2]	14.78	15.37	15.99	16.75	18.13	18.83

[1] *Service area population based on 2008 to 2030 estimates by Traffic Analysis Zone (TAZ) data. Selected boundary TAZ population estimates were adjusted.*

[2] *Future water demands based on Water Treatment Plant (WTP) and unused (currently undeveloped / unconnected) Equivalent Residential Connection (ERC) data. ERC gal/day rate based on historical average water demands in associated TAZ.*

These data provide population estimates for every traffic analysis zone (TAZ) that falls within the Town's current and extended (Jupiter Farms) potable water service area. Reference is made to Figure II.4 which provides a TAZ location map. Note that the Town's service area extends beyond the Town's boundary, into Martin County to the north, into the Town of Juno Beach to the south and into unincorporated Palm Beach County to the west. Population values of selected border TAZs were trimmed proportionally if the service area did not extend fully to the limits of the TAZ.

Estimates of future water demand were developed using Equivalent Residential Connection (ERC) data provided by Town staff. An ERC is typically the average amount of potable water used by a developed single family residential parcel (or its equivalent) in a day. Future demand in the service area was limited to the number of ERCs that Town staff have identified as being unused (currently undeveloped / unconnected), assuming that significant zoning changes and redevelopment (to higher density land uses) do not take place in the future. ERC values, in gallons/day were derived in three ways. For residential parcels located in Abacoa, ERCs were calculated based on historical water use of adjacent properties falling within the same TAZ. The average daily demand for the three affected Abacoa TAZs was applied to associated ERCs. This method provided a means for fine tuning demand to reflect the conditions and land uses that an undeveloped parcel would face when developed. The ERC value for Jupiter Farms was based on the calculated ERC for Palm Beach Country Estates, an area similar in nature both in terms of the type and scale of development, but also in that both areas were developed before water service was provided by the Town. ERC values for parcels in all other areas of the Town's service area were based on the Town's current ERC definition of 350 gallons/day.


TRAFFIC ANALYSIS ZONES - LOCATION MAP
MARTIN COUNTY
PALM BEACH COUNTY
1104
1105
16
837
838
17
15
1103
840
839
841
885
886
845
842
843
844
22
18
19
21
20
42
43
40
41
24
23
26
25
38
39
36
37
27
887
796
836
835
834
833
832
831
792
1067
4
12
14
54
44
55
56
58
57
59
60
45
46
61
62
64
63
891
47
65
66
67
68
Legend
TAZs - Traffic Analysis Zones
County Boundary
5,000
Feet
\\MP_P\06A_TAZ.mxd / PDF
JupiterGIS January 2012

Because it would be erroneous to assume that all ERCs would be developed at a particular time, a method was required to schedule ERC development in the future. ERCs were grouped and summed by the TAZs in which they fell, then scheduled for development in proportion to the TAZ population change projected for each five year time step. Hence, if 10 percent of the projected cumulative population change between 2010 and 2030 for a given TAZ occurred in 2015, then 10 percent of the ERCs lying in that TAZ were developed (and added to system demand) at that time. Areas of future water demand are shown in Figure II.5.

A somewhat different method was applied to ERCs falling in Jupiter Farms because, as the area was developed prior to the introduction of Town potable water, future connections will likely occur regardless of population growth, as homeowners and businesses migrate from their existing onsite well/treatment systems. For Jupiter Farms, it was assumed that the utilization of ERCs would occur in two ways:

1. Through migration from well systems to Town water (resource driven)

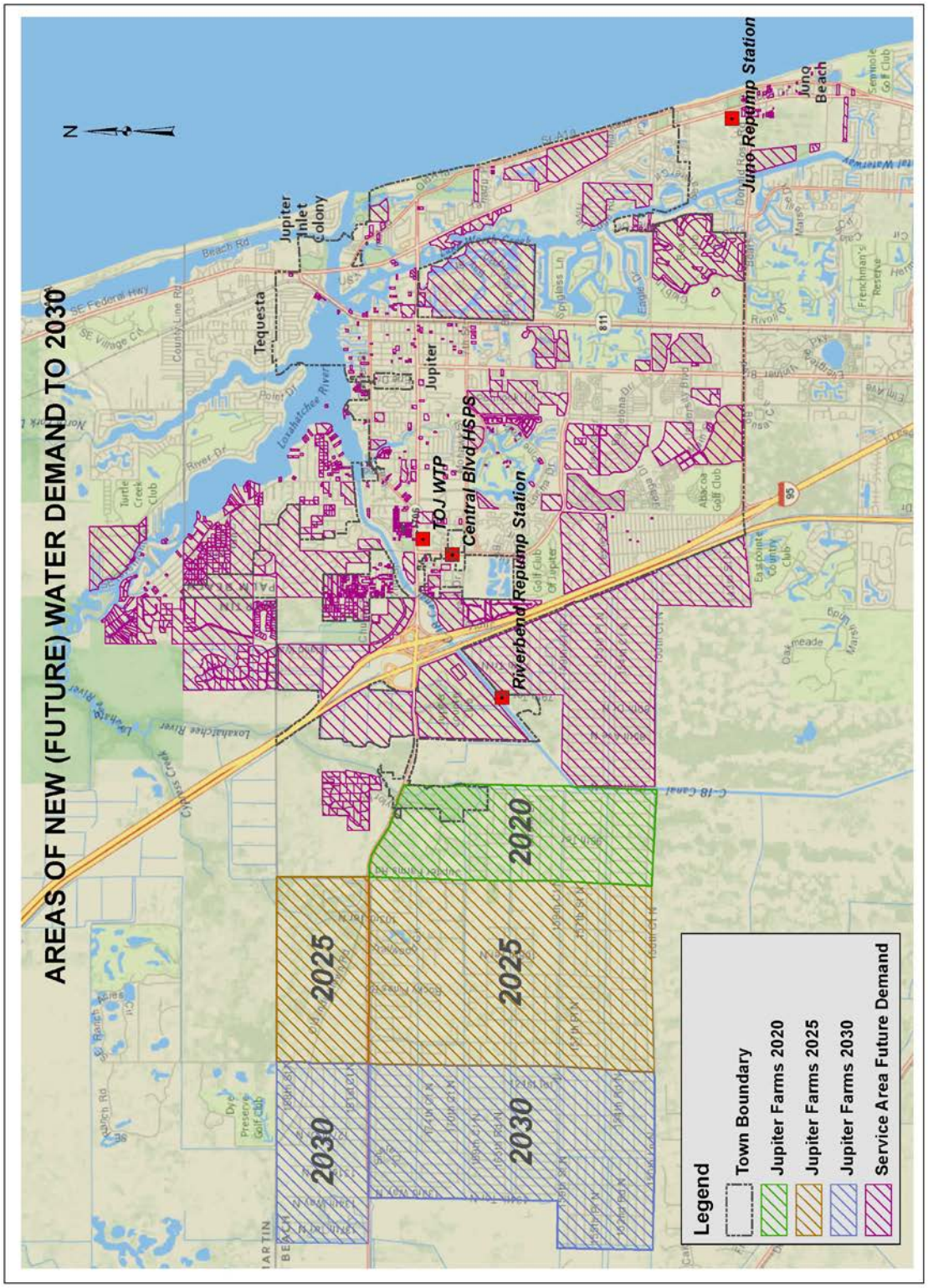
2. Through vacant parcels being developed (population driven)

Development of the water system in Jupiter Farms was assumed to take place in five year incremental steps, with connection in the first phase available by 2020 and connection throughout the entire area available by 2030.

Migration of previously developed parcels were scheduled according to a pattern derived from an analysis of potable water connection history of nearby Palm Beach Country Estates (PBCE). As mentioned before, PBCE is very similar to Jupiter Farms in both the scale and type of development. It was found that potable water connection was asymptotic, with many connections occurring within the first two years after water service was completed, followed by a gradual tapering of new connections as time progressed. Approximately sixty (60) percent of property owners connected to the system in the first five years, after which growth will likely trend to approximately one percent per year. A similar connection pattern (50 percent after five years, in 2020, then one percent per year thereafter) was applied to Jupiter Farms ERCs. Connections associated with newly developed parcels in Jupiter Farms would follow the pattern described for ERCs falling in the rest of the service area.

It was not assumed that all Jupiter Farms residents would connect by 2030, with some preferring to maintain their private water systems. For all other portions of the service area, it was assumed that all remaining ERCs would be developed by 2030.

Figure II.5


AREAS OF NEW (FUTURE) WATER DEMAND TO 2030
Tequesta
Jupiter Inlet Colony
Jupiter
TOJ WTP
Central Blvd HSPS
Riverbend Repump Station
Juno Repump Station
Juno Beach
2020
2025
2030
Legend
Town Boundary
Jupiter Farms 2020
Jupiter Farms 2025
Jupiter Farms 2030
Service Area Future Demand

Ultimate future water demands as generated by this model would equate to an average daily customer demand of 18.83 MGD. When one applies an additional 8.7% of flow historically attributed to system maintenance flushing and system loss, ultimate average daily flow from the water treatment plant will be 20.47 MGD with a peak daily flow of 28.66 MGD.

3. Projection of Future Water Demands Utilizing Town's Geographic Information System

To analyze potential future demand growth utilizing more detailed and localized information, the Town's Geographic Information System (GIS) was utilized. A layer with the Town's GIS was created to project ultimate future water demand growth within the utility service area utilizing ERCs (Equivalent Residential Connections) as a unit of measure. As previously noted, value of 1 ERC represents an estimated 350 gallons per day of future usage. The ERC value within the layer is either a value for remaining and reserved capacity for projects under a utility water service agreement that has not been completely built out, or a calculated estimate based on another methodology detailed below for other areas not currently under a water service agreement with Jupiter Utilities.

Methodology for Projecting Future Water Demands Based on Reserved Capacity for Projects:

A database of reserved capacity for projects currently under a water service agreement with Jupiter Utilities was generated from a spreadsheet of the same that is continually maintained by the Utility; refer to the sample records below:

ACCOUNT NUMBER	*AGREEMENT DATE*	*DEVELOPMENT NAME*	*ERC'S RESERVED*	*ERC'S BUILT*	*ERC'S REMAINING*
6786	*3/3/2006*	*Abacoa - Mallory Creek*	*703.9*	*430.0*	***273.9***
6963	*6/6/2006*	*Jupiter Country Club*	*1,021.0*	*150.2*	***870.8***
	4/20/1977	*Jupiter Village*	*778.2*	*778.2*	***0.0***
6814	*6/21/2005*	*Palm Beach Country Estates*	*1,545.0*	*878.0*	***667.0***

This spreadsheet was simplified into a database by removing records with 0.0 values for ERCs remaining, and then mapped into GIS using a parcel-based layer of neighborhoods and areas maintained by the Town's GIS staff. This database was later merged into the final Future Water Demand GIS layer. The full accounting of future water demand for projects under a water service agreement is attached as Appendix B.

Methodology for Projecting Future Water Demands Based on Site Specific Calculated Estimates:

The parcel base maps maintained by Palm Beach and Martin Counties were compiled into one layer covering the entirety of the Jupiter Utilities Potable Water Service Area. The following procedures were then followed. When completed, this database was later incorporated and merged into the final Future Water Demand GIS layer.

1) Areas with reserved capacity / remaining ERCs under a water service agreement as detailed above were removed by an overlay process. This was to ensure no areas were counted twice.

2) Areas which were built out and are current Jupiter Water Utilities customers or project parcels under a water service agreement without additional reserved capacity, were deleted and removed from further study. This was done with an analysis of the Current Water Utility Accounts GIS layer maintained by the GIS staff.

3) Based on current property land uses, parcels were established as rights of way, preserve or landscape buffers, rivers / lakes, and other property uses that inherently do not have potential for future development or do not require potable water service. These lands were then deleted and removed from further study.

4) Utilizing GIS layers maintained by the Town of Jupiter GIS staff, along with County and SFWMD layers, other preserved land areas were deleted and removed from further study.

5) GIS layers maintained by the Town of Jupiter GIS staff, Palm Beach County and Martin County denoting future land use and zoning were used to classify areas not currently served and without reserved capacity as commercial, multi-family residential or single family residential. Residential allowable units per acre for future demand ERC calculations based on the equations below were derived from the same source.

6) Excluding the Jupiter Farms and other already platted areas designated as single family residential, the following formulas were used to calculate future demand ERC values based on their use classification as either commercial, single family residential, or multi-family.

Formulas:
Single Family Residential: (acreage) x (allowable units/acres) x .75
Multi-Family: (acreage) x (allowable units/acres) x .53
Commercial: (sq. ft of parcel) x (0.0001091)

7) The commercial multiplier noted above was developed by analysis of 52 representative and fully developed commercial projects from the reserved capacity spreadsheet. The resultant was the actual developed ERCs ratio to square footage of the parcel.

8) Similarly, the single family and multi-family multipliers were developed based on historical parcel utilization of parcel land area.

9) The single family residential and multi-family multipliers used calculated future demand ERCs for unplatted vacant single family and multi-family residential areas. In many areas, the surrounding single family community's development pattern was further analyzed to estimate the potential ERCs.

10) Areas approved for or expected to develop homes with 3,500 or more square feet of air conditioned living area, such as the Martin County's Island Way Communities and other riverfront lots, were calculated to have an ERC value of 2.5 based on expected water usage.

11) The DDR / Jupiter Falls Commercial / Industrial / Biotech Parcel's demand was calculated using the commercial multiplier per the square foot of land, with 78.84 ERCs subtracted to less out the 16.59 acres of proposed upland preserve area.

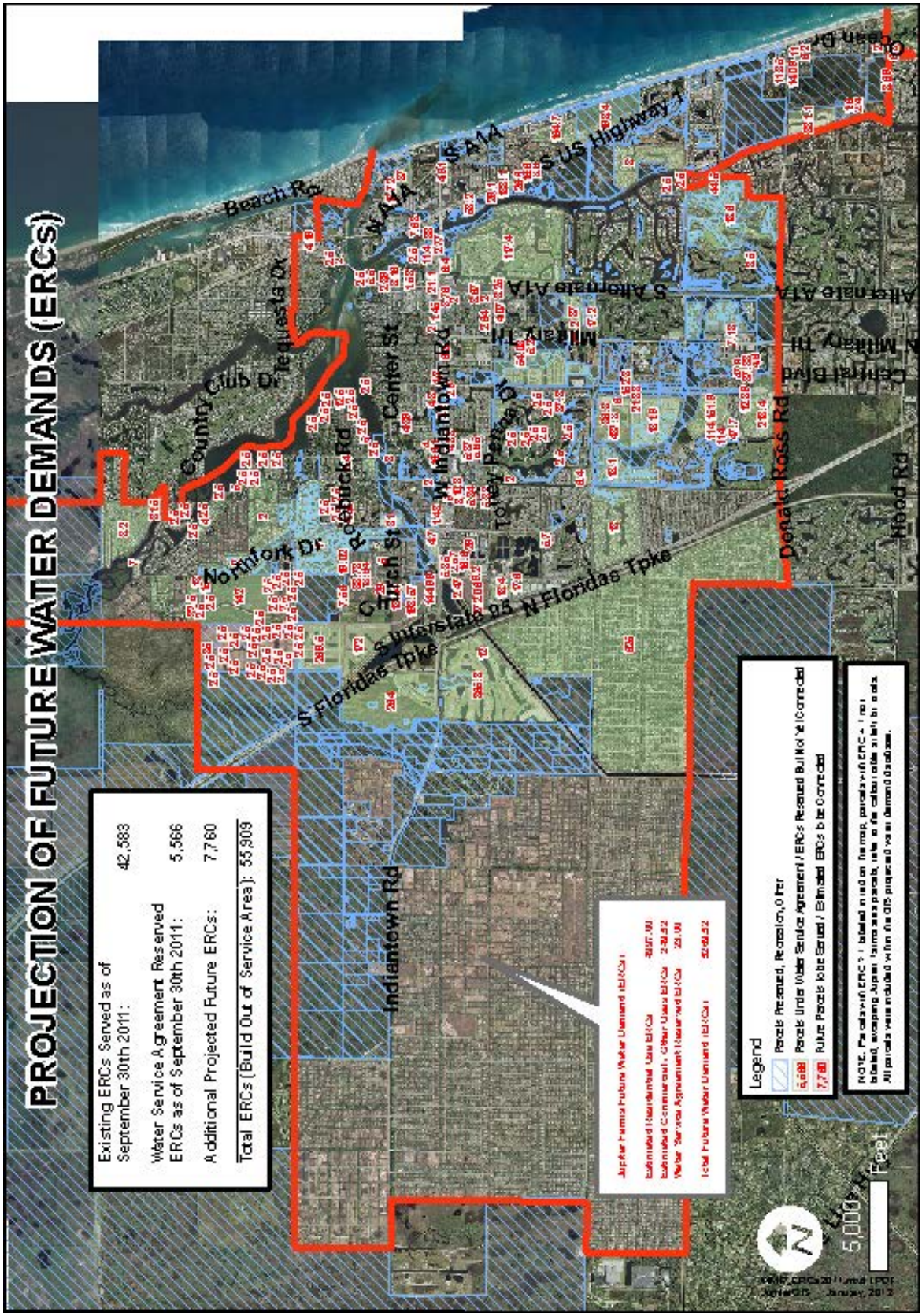
12) Jupiter Farms Area lots were calculated assuming one residence per lot. Sampling of available sources for air conditioned living area square footage yielded little correlation of larger lot sizes to larger home square footage under air in Jupiter Farms. Homes with greater than 3,500 square feet are the exception. Ninety percent (90%) of sampled developed lots of any acreage were less than 3,500 square feet under air. Ninety-five percent (95%) of sampled lots were developed. Approximately ten percent (10%) of the total undeveloped lots appeared to serve as open space, drainage, or storage for the adjacent owner who lived on the developed lot, and owned both lots. Therefore, lacking other definitive data, an assumption of 1 ERC for per single family was made.

13) Jupiter Farms area lots designated as commercial were then calculated using the accepted formulas. ERCs for other uses, such as schools, fire stations were calculated using values for like facilities included within the reserved capacity spreadsheet.

To conclude our projections, reserved future demands and calculated future demands of parcels not under a water service agreement were combined into one master, parcel-based Future Water Demand GIS layer for mapping and analysis. Figure II.6 illustrates this process.

Utilizing the aforementioned future demand projection methodologies, a reasonable forecast can be developed to establish probable future water demands within the Town's expanded service territory with a rate of growth consistent with regional planning estimates. Social planning Agency estimates of population growth rates were utilized in all traffic analysis zones with the exception of those which overlay Jupiter Farms. Given that the Jupiter Farms Community is 95% developed currently, population growth rates would have little bearing on the rate in which existing homes would connect to the regional water utility. Regional economic conditions will likely serve as the best indicator of the rate of connection. For the purposes of this master plan update, incremental connections from east to west throughout the Farms through 2030 were assumed.

Figure II.6


PROJECTION OF FUTURE WATER DEMANDS (ERCs)
Existing ERCs Served as of September 30th 2011: 42,583
Water Service Agreement Reserved ERCs as of September 30th 2011: 5,566
Additional Projected Future ERCs: 7,760
Total ERCs (Build Out of Service Area): 55,909
Legend
Parcels Reserved, Recreation, Other
Parcels Under Water Service Agreement / ERCs Reserved But Not Yet Connected
Future Parcels to be Served / Estimated ERCs to be Connected
Beach Rd
Country Club Dr
Tequesta Dr
Northfork Dr
Center St
Indiantown Rd
W Indiantown Rd
Military Tri
S Alternate A1A
S US Highway 1
Donald Ross Rd
Hood Rd
Central Blvd
N Military Tri
Alternate A1A
Ocean Dr
S Florida Tpke
N Florida Tpke
Interstate 95
Turtle Pass Dr
5,000 Feet

The ultimate future peak daily flow demand estimated by the GIS-based methodology was 29.58 MGD; Table II.4 sets forth these projections.

Table 11.4

	BEBR / County TAZ-based Population Disaggregation				JupiterGIS Demand Growth Projection				
TAZ	Population Growth Rate 2010-2015	Population Growth Rate 2015-2020	Population Growth Rate 2020-2025	Population Growth Rate 2025-2030	Additional ERCS 2010-2015	Additional ERCS 2015-2020	Additional ERCS 2020-2025	Additional ERCS 2025-2030	Total Additional ERCS
4	0.3803	0.1549	0.2113	0.2535	2.6600	1.08	1.48	1.77	7.00
12	0.0000	0.0000	0.5000	0.5000	0.0000	0.00	0.00	0.00	0.00
14	0.0000	0.0000	0.3000	0.7000	0.0000	0.00	1.26	2.93	4.19
15	0.0758	0.0665	0.2943	0.5634	56.8600	49.93	220.88	422.80	750.47
16	0.3043	0.2174	0.3478	0.1304	18.2600	13.04	20.87	7.83	60.00
17	0.1731	0.2060	0.2363	0.3846	13.9200	16.58	19.01	30.94	80.45
18	0.0000	0.2857	0.1429	0.8571	0.0000	1.86	0.93	5.57	6.50
19	0.0000	0.0000	0.3571	0.6429	0.0000	0.00	10.00	18.00	28.00
20	0.3036	0.2857	0.2143	0.1964	5.8500	5.51	4.13	3.79	19.27
21	0.0000	0.0000	0.0000	1.0000	0.0000	0.00	0.00	11.60	11.60
22	0.0000	0.0000	0.5000	0.5000	0.0000	0.00	21.50	21.50	43.00
23	0.0000	0.0227	0.3182	0.6591	0.0000	0.13	1.81	3.76	5.70
24	0.4189	0.4054	0.1216	0.0541	33.8100	32.72	9.81	4.36	80.70
25	0.4200	0.3082	0.1536	0.1182	359.4100	263.79	131.41	101.16	855.76
26	0.1122	0.0612	0.2653	0.5612	1.4600	0.80	3.45	7.30	13.00
27	0.1403	0.4689	0.1337	0.2571	92.3700	308.74	88.03	169.25	658.39
36	0.4020	0.0098	0.1863	0.4020	3.2700	0.08	1.51	3.27	8.13
37	0.9290	0.0164	0.0246	0.0301	83.9100	1.48	2.22	2.71	90.33
38	0.6075	0.0748	0.1402	0.1776	0.0000	0.00	0.00	0.00	0.00
39	0.0000	0.0000	0.3000	0.7000	0.0000	0.00	0.30	0.70	1.00
40	0.3115	0.2731	0.1885	0.2269	43.9900	38.56	26.61	32.04	141.20
41	0.3622	0.3514	0.1676	0.1189	21.8400	21.19	10.11	7.17	60.31
42	0.3333	0.0833	0.2500	0.3333	2.6000	0.65	1.95	2.60	7.80
43	0.3776	0.1735	0.2143	0.2347	7.9500	3.65	4.52	4.94	21.07
44	0.1570	0.7616	0.0349	0.0465	15.0500	73.00	3.34	4.46	95.85
45	0.3571	0.2143	0.1905	0.2381	44.2100	26.53	23.58	29.48	123.80
46	0.1148	0.2295	0.2787	0.3770	1.1500	2.30	2.79	3.77	10.00
47	0.1951	0.3902	0.1951	0.2195	13.7800	27.55	13.78	15.50	70.60
54	0.0000	0.0000	0.3333	0.6667	0.0000	0.00	2.54	5.09	7.63
55	0.2500	0.2500	0.2500	0.2500	0.0000	0.00	0.00	0.00	0.00
56	0.0000	0.0000	0.2857	0.7143	0.0000	0.00	21.03	52.56	73.59
57	0.2500	0.2500	0.2500	0.2500	0.0000	0.00	0.00	0.00	0.00
58	0.0246	0.0164	0.3033	0.6557	0.1500	0.10	1.79	3.88	5.91
59	0.3900	0.4700	0.0600	0.0800	123.7100	149.08	19.03	25.38	317.20
60	0.3788	0.1364	0.2121	0.2727	63.5200	22.87	35.57	45.74	167.70

Table 11.4 Continued

	BEBR / County TAZ-based Population Disaggregation				JupiterGIS Demand Growth Projection				
TAZ	Population Growth Rate 2010-2015	Population Growth Rate 2015-2020	Population Growth Rate 2020-2025	Population Growth Rate 2025-2030	Additional ERCS 2010-2015	Additional ERCS 2015-2020	Additional ERCS 2020-2025	Additional ERCS 2025-2030	Total Additional ERCS
61	0.0000	0.0101	0.3131	0.6768	0.00	0.03	0.94	2.03	3.00
62	0.2500	0.2500	0.2500	0.2500	49.60	49.60	49.60	49.60	198.40
63	0.1667	0.3333	0.2500	0.2500	1.00	2.00	1.50	1.50	6.00
64	0.7661	0.0645	0.0726	0.0968	0.00	0.00	0.00	0.00	0.00
65	0.7238	0.1105	0.0718	0.0939	265.76	40.57	26.37	34.49	367.19
66	0.4245	0.1698	0.1981	0.2075	13.46	5.38	6.28	6.58	31.70
67	0.3862	0.3952	0.0958	0.1228	3.36	3.43	0.83	1.07	8.69
68	0.3947	0.5263	0.1053	0.0000	3.47	4.63	0.93	0.00	8.80
792	0.1933	0.4122	0.2327	0.1617	379.92	810.24	457.46	317.89	1965.52
796	0.3784	0.2838	0.1892	0.1486	0.00	0.00	0.00	0.00	0.00
831	0.4151	0.3365	0.1554	0.0929	886.58	718.85	332.04	198.54	2136.00
832	0.0000	0.0000	1.0000	0.0000	0.00	0.00	1.00	0.00	1.00
833	0.0023	0.0023	0.0055	0.9899	0.69	0.69	1.66	298.95	302.00
834	0.3520	0.3100	0.1935	0.1445	256.59	226.01	141.04	105.36	729.00
835	0.0000	0.0054	0.3721	0.6225	0.00	4.75	326.65	546.40	877.80
836	0.4465	0.3052	0.1503	0.0979	279.04	190.77	93.96	61.22	625.00
837	0.3796	0.2531	0.1918	0.1755	35.87	23.91	18.13	16.59	94.50
838	0.0000	0.0000	0.1667	0.8333	0.00	0.00	15.00	75.00	90.00
839	0.3662	0.3052	0.1784	0.1502	42.29	35.24	20.60	17.35	115.48
840	0.3158	0.1579	0.2632	0.2632	0.00	0.00	0.00	0.00	0.00
841	0.2500	0.2500	0.2500	0.2500	1.18	1.18	1.18	1.18	4.70
842	0.1429	0.2857	0.2857	0.2857	5.46	10.92	10.92	10.92	38.23
843	0.2500	0.2500	0.2500	0.2500	4.25	4.25	4.25	4.25	17.00
844	0.1061	0.2424	0.2121	0.4394	0.97	2.21	1.93	4.00	9.10
845	0.0000	0.0139	0.3056	0.6806	0.00	0.00	0.00	0.00	0.00
885	0.3583	0.2292	0.2125	0.2000	31.36	20.06	18.60	17.50	87.52
886	0.2500	0.2500	0.2500	0.2500	75.77	75.77	75.77	75.77	303.06
887	0.2000	0.1067	0.2400	0.4533	1.20	0.64	1.44	2.72	6.00
891	0.8824	0.0168	0.0420	0.0588	19.50	0.37	0.93	1.30	22.10
1067	0.3278	0.3320	0.1992	0.1411	143.58	145.39	87.24	61.79	438.00
1103	0.2563	0.2563	0.2353	0.2521	107.93	107.93	99.08	106.16	421.10
1104	0.2512	0.2512	0.2512	0.2465	23.41	23.41	23.41	22.97	93.20
1105	0.2399	0.2657	0.2509	0.2435	119.76	132.66	125.29	121.60	499.30
		Totals:			**3,762**	**3,702**	**2,649**	**3,215**	**13,326**
		Water Demand (GPD-ADF):			**1,316,606**	**1,295,739**	**927,245**	**1,125,103**	**4,663,939**
		Estimated Water Growth Demand(MGD-ADF):			**1.32**	**1.30**	**0.93**	**1.13**	**4.66**
		Estimated Water GrowthDemand MGD-PDF):			**1.84**	**1.81**	**1.30**	**1.58**	**6.53**
		Total Estimated Water Demand (MGD-PDF):			**24.54**	**24.51**	**24.00**	**24.28**	**29.23**

ADF = Average Daily Flow, PDF = Peak Daily Flow
Baseline Water Demand (September 2011): 22.70 MGD PDF

Conclusions – Future Water Demand Projections

The two methodologies employed to forecast future water demand growth produce remarkably close estimates for ultimate future demand (Population Allocation models: 28.66 MGD-PDF, GIS Model: 29.23 MGD-PDF). Both methodologies used the county population growth rate. As such, much of the future demand growth in both methodologies came during the 2025-2030 time intervals. These results are further verified by the SFWMD through their March 2012 population and demand projections for the Town. The District has forecasted a

2030 population of 101,596 and a projected peak daily flow of 27.87 MGD. Local economic conditions will obviously affect these outcomes over time. However, the findings indicate that the existing water treatment plant production capacity of 30.0 MGD should be adequate to serve anticipated water demands through build-out of the current service territory.

B. Water Transmission/Distribution Hydraulic Model Update

Network analysis is the process of analyzing a water distribution system through the use of a mathematical computer model. A data base file describing the network, operating parameters and the spatial allocation of water demands used in conjunction with a network solution computer program comprises a model of the system.

The following describes the development of both the steady state and extended period simulation (EPS) hydraulic analysis models of the distribution system, system water demand spatial allocation techniques, and model calibration procedures.

The WaterCAD Version V8i hydraulic modeling application was used to construct and analyze the Town's water distribution system. WaterCAD's computational algorithm permits the simulation of system network pressures, pipe flow rates, hydraulic grades, tank levels and pumping rates using the Hazen-Williams or Darcy Weisbach friction equations. The model permits a steady state analysis predicting the flow in each pipe and the hydraulic grade at each system node. Extended period simulation can also be performed from a variable demand schedule to predict water age, as a proxy for chlorine residual, within various locations within the distribution system. The completed model will be a useful tool for the Utility to evaluate future scenarios under a variety of conditions, including extended period simulations.

The original model layout of the water distribution system was developed from the Town of Jupiter water atlas maps in both paper and electronic formats. All distribution mains with pipe diameters equal to or greater than 6 inches were digitized directly into the computer model using the Town's pipe GIS data layer as a background. Several pipes 4 inches in diameter, considered to be critical to system operation, were also included in the model network. Pipes considered to be critical included those that were necessary to complete network loops. The resulting network consisted of approximately 5,400 pipes and 2,900 junction nodes. This update included the addition of system extensions completed subsequent to the 2005 model. The updated system has approximately 5,900 pipes and 4,900 junction nodes.

The network node locations (pipe intersection points) were determined according to the water atlas. Network nodes are located at the intersections of pipes and other locations where a water demand was assigned to the system. USGS one-foot GIS elevation data were used to

establish grade elevations for each node location. Node elevations of buried pipelines in this analysis were assumed to be 2.5 feet below grade. High service pump station and repump station control pressures were set (in the model) to actual pressure transmitter elevations as provided by the Town.

Initial pipeline friction factors (Hazen-Williams C-factors) were set at levels associated with average new piping, then adjusted as needed during the model calibration step to bring model pressure results in line with pressures measured in the field. For the three primary types of pipe materials used in the distribution network, the initial C-factors are shown in Table II.5.

Table II.5
Initial Hazen-Williams Friction Coefficients
(C-Factors)

Pipe Material	C-Factor
Ductile Iron	130
C-900 PVC	150
Asbestos Cement	140

System Water Demands

The Town of Jupiter currently provides potable water service to over 27,000 retail customers within and near the Town. Water is billed directly to residents and businesses in Jupiter, Juno Beach, and unincorporated Palm Beach and Martin Counties.

Base Flow Demand

Base flow demand defines the water consumption spatial allocation throughout the Town's water distribution system. To accurately assign the base flow demand to the hydraulic model nodes, a GIS method was used that spatialized individual potable water accounts with associated monthly consumption, then linked them to the nearest model pressure node. Individual account locations were provided by Town staff as a GIS point file, with links to the Town's historical water billing database, providing monthly water consumption for each account for the period November 2010 through October 2011. The average consumption for each account was calculated and applied to the model as the preliminary base flow demand. Table II.6 provides a representation of total monthly billed water sales for the Town of Jupiter for the period of record, November 2010 to October 2011.

Table II.6
Total Potable Water Sales 2010/2011(Gallons)

November 2010	466,411,690
December 2010	438,010,320
January 2011	489,232,700
February 2011	402,731,300
March 2011	428,982,300
April 2011	453,231,000
May 2011	469,577,600
June 2011	514,986,400
July 2011	413,282,500
August 2011	497,979,200
September 2011	386,300,400
October 2011	389,645,800

Billed water consumption does not, however, represent all demands supported by the water distribution network. In addition to billed consumption, water expended through the utility's flushing program and water lost from the system through leaks and other unbilled demands must be accounted for. Taken together, these flows make up the mathematical difference, on a monthly basis, between the amount of water produced by the water treatment plant, and the amount reported by the billing system. To maintain hydraulic model accuracy, these unbilled demands must be distributed within the model so that calculated system flows and pressures closely resemble measured values. To this end, average annual model node demands were modified by:

1. Applying flushing demands (both manual and automatic) attributed to specific hydrants to nearby model nodes. These flushing demands are attributed to the Palm Beach Country Estates (PBCE) flushing program and were provided through the automated flushing schedule and through flushing records for the manual flushing program.

2. Applying flushing demands for the Town's general flushing program uniformly based on associated records.

3. Applying a calculated general system water loss associated with leaks and other unmetered consumption by distributing the total associated flow proportionally based on pipe diameter and length for each pipe within the model. Half of this flow for each pipe was added to the model nodes at either end of the pipe.

The total potable water system demand and production are thus equated in the model using the following values:

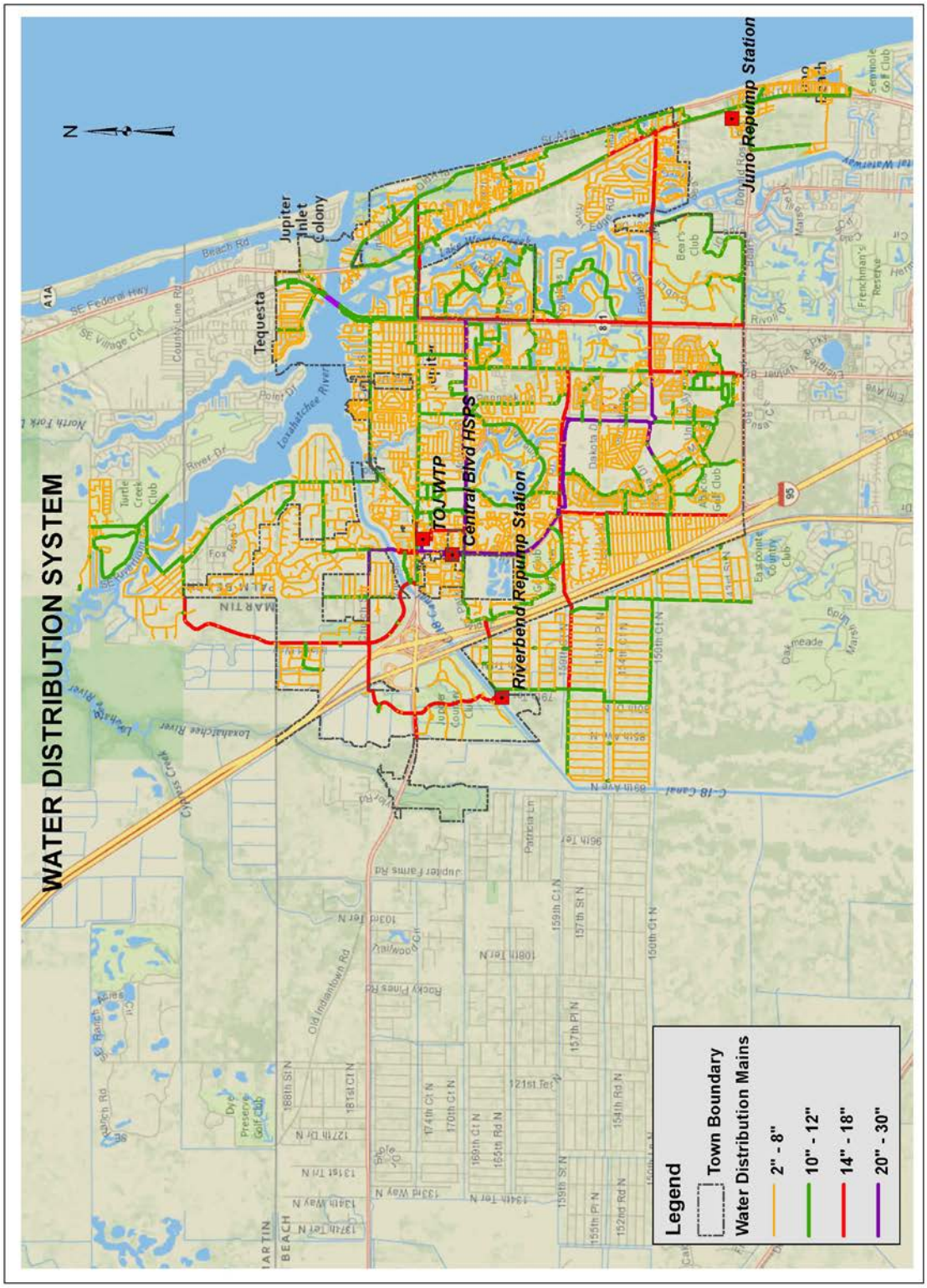
Table II.7
Water Supply and Demand Summary

Average Plant Water Supplied (MGD)	14.78
Average Flushing Demand (MGD)	0.36
Average Plant Water Supplied for Customers (MGD)	14.42
Average Customer Water Demand (MGD)	13.49
Distribution System Loss (MGD)	0.93
Distribution System Loss (%)	6.4%

Figure II.7 provides a representation of spatialized accounts across the Town's service area. Another GIS procedure was used to accumulate individual demands to model nodes. The GIS results were tabulated and then imported into the hydraulic model as the base flow demand, also known as average daily demand. The base flow demand used in the model was 14.8 mgd.

Maximum Day and Peak Hour Flow demands were imposed upon the distribution system to simulate maximum stress conditions. The system-wide average annual demand for the 2010/2011 base year was used to proportionally distribute water demands throughout the service area.

Figure II.7


WATER DISTRIBUTION SYSTEM
N
Jupiter Inlet Colony
Tequesta
TOJ WTP
Central Blvd HSPS
Riverbend Repump Station
Juno Repump Station
Legend
Town Boundary
Water Distribution Mains
2" - 8"
10" - 12"
14" - 18"
20" - 30"

Fire Flow Demand

A water distribution system must provide potable water to meet peak-hour user demands as well as satisfy fire-fighting demands that may occur throughout the system under maximum day conditions. The Insurance Services Office (ISO) establishes standards for required water flow for fire suppression purposes from fire hydrants. ISO is a private corporation that evaluates the public fire defenses of municipalities. The ISO periodically conducts fire flow tests and, based on the results, assigns an insurance classification to the municipality. Fire flow demands depend upon many factors, including building use, type of construction, building height, floor area, and distance to nearby buildings. For example, fire flow requirements in residential structures no higher than two stories may range between 500 and 1,500 gpm depending upon building spacing from adjacent structures.

The adequacy of the distribution system under fire flow demand conditions was approached as a two–step process. The first step was to assess the overall performance of the system to deliver water for purposes of fire fighting at specified minimum pressure conditions at each pipe junction, referred to as "ISO 500 gpm". The available fire flow was determined by the model at each distribution system pipe junction and mapped under current, 2015 and 2030 maximum day demand conditions to provide a general indication of the adequacy of the distribution system.

In the first step, steady-state model runs were used to evaluate the overall capacity of the piping network over the course of the maximum day condition to assess the effects of maximum day demands as well as a mid-day fire on distribution and storage system performance. The maximum day peak factor (ratio of maximum day to average annual daily demand) was determined to be 1.4.

The second step in the modeling process was to evaluate performance of the distribution system at specific locations with potentially high fire flow demands and fire durations in candidate areas. A conservative approach was employed through the use of extended period simulation (EPS) modeling techniques to observe the overall system response to a fire event at a selected site, timed to occur for a four-hour duration during hours of peak water demand during planning year 2010, 2015 and 2030 maximum-day conditions.

Table II.8 summarizes typical fire protection criteria for various user categories.

Table II.8
Fire Protection Evaluation Criteria

Land Use	Fire Flow (gpm)	Duration (hours)
Industrial	Up to 5,000	4
Shopping Centers	3,500 to 5,000	4
Multi-Story Residential/Commercial	3,500 to 5,000	4
Business Districts	2,000 to 3,500	3
Residential	500 to 1,500	2

For purposes of fire flow demand performance of the distribution system, three fire demand scenarios were assessed in conjunction with maximum day demands, as presented in Table II.9.

Table II.9
Fire Demand Simulations

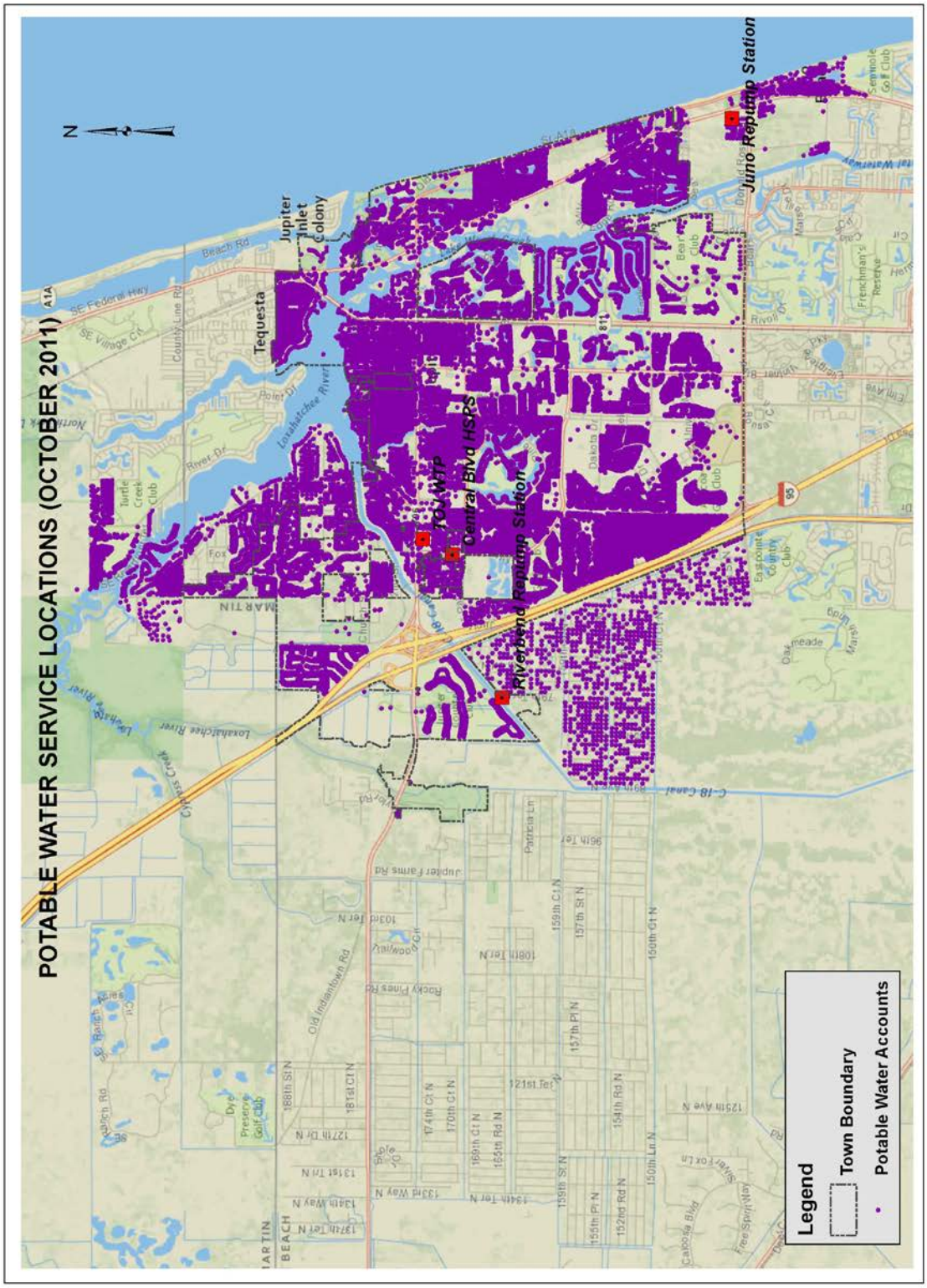
Location	Required Fire Flow
Jupiter Medical Center	5,000 gpm
Haas Building	3,500 gpm
Bluffs Shopping Center	3,500 gpm

Results of the fire flow demand analyses were used to verify local distribution system performance and, where appropriate, evaluate the effectiveness of local system storage and pumps as a supplemental supply.

Years 2015 and 2030 Water Demands

One of the more useful aspects of a distribution system hydraulic model is that it provides the ability for a utility to anticipate system modification requirements that would likely be needed some years into the future. This is typically done by estimating future changes in water demand associated with development and associated changes in population.

Figure II.8


POTABLE WATER SERVICE LOCATIONS (OCTOBER 2011)
N
Tequesta
Jupiter Inlet Colony
TOJ WTP
Central Blvd HSPS
Riverbend Repump Station
Juno Repump Station
Legend
Town Boundary
Potable Water Accounts

Maximum Daily and Peak Hourly Flows

A conservative approach to distribution network analysis requires that the system be subject to demands that are greater than average, as system flow requirements vary greatly on a daily, monthly and annual basis. For that reason, system performance is typically evaluated using both Maximum Daily Flow and Peak Hourly Flow demands. Average demands for each model node are multiplied by both Maximum Daily Flow and Peak Hourly Flow peaking factors to provide the basis for testing the system under conditions of greater stress.

The Maximum Daily Flow peaking factor in this analysis is defined as the greatest daily flow for a calendar year divided by the average daily flow for that year. The Peak Hourly Flow peaking factor is defined as the greatest hourly flow for a calendar year divided by the average hourly flow for the year. The Maximum Daily Flow and Peak Hourly Flow peaking factors for this model were calculated from the 2011 Water Treatment Plant SCADA/HMI historical database and are as follows:

	Peaking Factor	Flow (mgd)
2011 Maximum Daily Flow	1.4	20.69
2011 Peak Hourly Flow	2.4	35.47

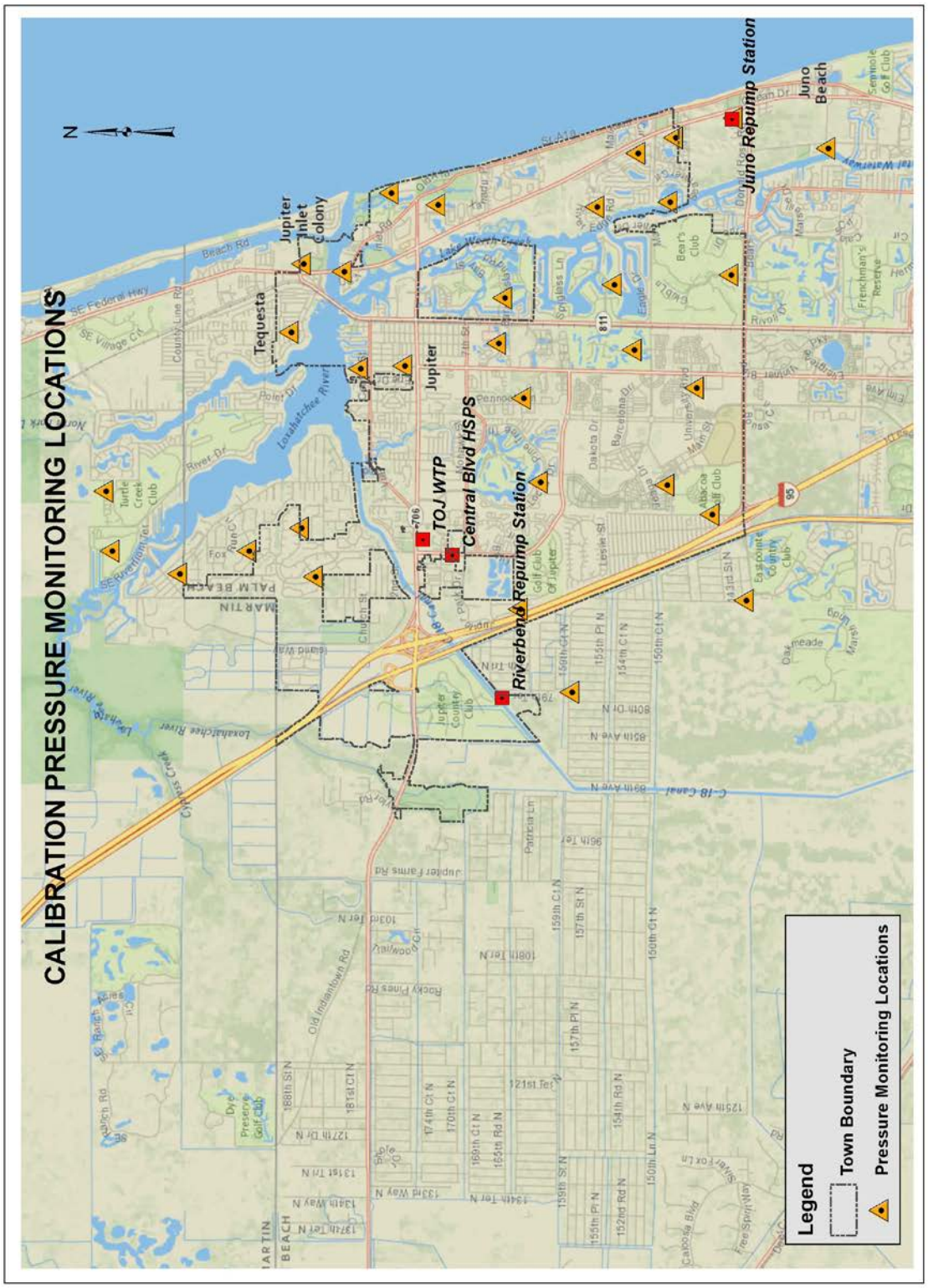
Hydraulic Model Calibration

The hydraulic model is designed to predict the system's present and future operational parameters under specific demand scenarios. Calibration of the model was accomplished using empirical pressure data collected from various locations around the service area and comparing it to model predictions. The accuracy of the model can be measured by how close the model predictions are to observed and measured system conditions. Accuracy is improved by iterative modification of model attributes until conditions match to an acceptable degree.

Jupiter Utilities staff deployed an array of eight pressure recorders over approximately a one-month period to 32 hydrant locations around the utility service area, as shown in Figure II.9. To calibrate the model, recorded system pressures were compared against modeled results. The final calibration results are provided in Table II.10.

Additionally, flows to the PBCE area were isolated and monitored continuously over time for an extended period (10 days) in order to calibrate the dynamic (extended period simulation) portion of the model.

Figure II.9


CALIBRATION PRESSURE MONITORING LOCATIONS
N
Tequesta
Jupiter Inlet Colony
Jupiter
TOJ WTP
Central Blvd HSPS
Riverbend Repump Station
Juno Repump Station
Juno Beach
Legend
Town Boundary
Pressure Monitoring Locations

The American Water Works Association Manual M32, Distribution *Network Analysis for Water Utilities*, states that a model can be considered acceptably calibrated if it predicts performance within ten percent of the observed performance. Calibration results for this model had an average difference of approximately 3.5 percent and are well within the recommended range of accuracy for the analysis of model scenarios.

The Extended Period Simulation (EPS) portion of the model was entirely focused on supporting a water age analysis of the Palm Beach Country Estates (PBCE) portion of the Town's service area. EPS modeling requires that a definition of system behavior, in terms of both pressure and flow, be established over a period of time, typically 24 hours. Hence, calibration of the model required that both PBCE distribution system flows and pressures be measured over time to support the definition of a diurnal curve, or a graph of flows and pressures over a day's time.

To achieve this, a means of accurately measuring distribution flow into PBCE needed to be put in place. While this is typically accomplished through placing temporary flow meters on all water mains supplying the area targeted by the EPS evaluation, for this project it was accomplished by closing two of the three mains supplying PBCE (the 18 inch southern most crossing of the I95/Turnpike corridor and the 18 inch crossing of the C18 Canal from the north) restricting flow (to PBCE) to the single 14 inch main supplying the Riverbend Repump Station. Hence, all flow to the area was forced to pass through the Riverbend Repump Station flow meter. The PBCE flow monitoring valve arrangement was left in place for 10 days in order to provide data to support 24 hour diurnal curve development for all days of the week. System pressures were monitored and recorded during this same period at two hydrants within the PBCE service area.

Table II.10
Distribution System Model Calibration Results

Hydrant ID	Model Node Label	Average Pressure at 7:00 AM (psi)			Variance
		Model	Field	Difference	
18-67	J-13223	76.0	72.1	3.9	5.5%
07-06	J-1059	77.2	79.4	-2.2	-2.8%
17-12	J-13222	76.4	79.4	-3.0	-3.8%
15-32	J-13221	76.5	79.2	-2.8	-3.5%
06-100	J-12716	76.8	79.4	-2.6	-3.3%
24-27	J-2889	62.9	60.4	2.5	4.2%
11-03	J-2930	76.0	78.5	-2.5	-3.2%
20-66	J-13224	76.5	78.3	-1.9	-2.4%
11-68	J-13218	75.2	77.5	-2.2	-2.9%
23-08	J-13216	74.4	76.8	-2.4	-3.1%
26-10	J-2707	76.4	78.6	-2.2	-2.8%
28-08	J-2464	76.1	78.1	-2.0	-2.5%
10-22	J-13219	76.0	78.4	-2.4	-3.1%
39-50	J-1794	73.8	69.7	4.1	5.9%
41-07	J-782	73.5	75.3	-1.8	-2.4%
36-04	J-2691	74.4	77.5	-3.2	-4.1%
42-50	J-11255	74.7	76.1	-1.4	-1.8%
37-72	J-13217	75.4	77.6	-2.2	-2.9%
33-110	J-13215	67.7	72.0	-4.3	-6.0%
47-02	J-13230	76.8	77.7	-0.9	-1.2%
33-63	J-2879	75.1	78.0	-2.9	-3.7%
50-44	J-13228	77.0	72.0	5.0	7.0%
47-35	J-13231	78.6	78.9	-0.2	-0.3%
74-49	J-11792	75.4	76.3	-0.9	-1.2%
83-23	J-13213	73.5	79.7	-6.3	-7.9%
48-17	J-13229	78.3	80.2	-1.9	-2.4%
51-16	J-12799	76.5	77.6	-1.1	-1.4%
80-05	J-13225	74.5	75.6	-1.2	-1.5%
51-42	J-2086	76.9	78.2	-1.3	-1.7%
90-07	J-12813	75.6	70.1	5.5	7.8%
85-25	J-13212	74.3	78.9	-4.6	-5.9%
91-06	J-13220	77.1	79.8	-2.7	-3.4%
Average Difference					**3.5%**

EPS calibration scenarios were executed (with the model) to determine the accuracy with which it could estimate PBCE flows and pressures over a 24 hour period**.** Tables II.11 and II.12 provide the results of the pressure calibration runs at the two monitoring sites in PBCE. The average hourly model error over a 24 hour period was 0.9 percent and 0.7 percent for hydrants 74-49 and 80-05, respectively. These results indicate a very good model fit.

Table II.11
EPS Pressure Calibration Results (Hydrant 74-49)

Hour	Model Pressure (A)	Field Pressure (B)	Difference (A) – (B)	% Difference
0	77.59	76.7	0.94	1.2%
1	77.24	76.3	0.99	1.3%
2	76.51	76.0	0.54	0.7%
3	76.16	75.5	0.70	0.9%
4	75.55	74.3	1.24	1.7%
5	75.25	74.6	0.65	0.9%
6	76.30	75.9	0.37	0.5%
7	76.76	76.3	0.46	0.6%
8	76.57	76.2	0.38	0.5%
9	76.52	76.3	0.26	0.3%
10	76.79	76.2	0.56	0.7%
11	76.94	76.3	0.63	0.8%
12	76.92	76.5	0.41	0.5%
13	76.92	76.7	0.27	0.4%
14	77.20	76.7	0.50	0.7%
15	77.32	76.7	0.61	0.8%
16	77.76	76.7	1.08	1.4%
17	77.96	76.7	1.31	1.7%
18	77.70	76.7	0.98	1.3%
19	77.58	76.8	0.81	1.1%
20	77.65	76.8	0.83	1.1%
21	77.69	76.9	0.84	1.1%
22	77.66	76.9	0.74	1.0%
23	77.65	76.9	0.74	1.0%
Avg	**77.01**	**76.31**	**0.70**	**0.9%**

Table II.12
EPS Pressure Calibration Results (Hydrant 80-05)

Hour	Model Pressure (A)	Field Pressure (B)	Difference (A) – (B)	% Difference
0	76.73	76.0	0.69	0.9%
1	76.37	75.6	0.77	1.0%
2	75.65	75.3	0.34	0.4%
3	75.30	74.8	0.53	0.7%
4	74.68	73.6	1.07	1.5%
5	74.38	73.9	0.49	0.7%
6	75.43	75.2	0.21	0.3%
7	75.88	75.6	0.31	0.4%
8	75.69	75.4	0.25	0.3%
9	75.64	75.5	0.14	0.2%
10	75.91	75.4	0.47	0.6%
11	76.05	75.5	0.56	0.7%
12	76.05	75.7	0.35	0.5%
13	76.04	75.8	0.26	0.3%
14	76.33	75.8	0.48	0.6%
15	76.45	75.9	0.54	0.7%
16	76.88	75.9	0.96	1.3%
17	77.08	75.9	1.14	1.5%
18	76.83	76.1	0.76	1.0%
19	76.71	76.1	0.56	0.7%
20	76.78	76.2	0.59	0.8%
21	76.82	76.2	0.61	0.8%
22	76.79	76.3	0.52	0.7%
23	76.78	76.2	0.55	0.7%
Avg	**76.14**	**75.59**	**0.55**	**0.7%**

EPS flow calibration results also show an exceptionally good fit between the model and empirical flow data. The average hourly error over a 24 hour period (absolute value) is 0.3 percent. Table II.13 indicates the results.

Table II.13
EPS Flow Calibration Results

Hour	Model Pressure (A)	Field Pressure (B)	Difference (A) – (B)	% Difference
0	65.23	65.4	-0.17	0.3%
1	69.23	69.0	0.25	0.4%
2	81.98	82.3	-0.34	0.4%
3	86.45	87.4	-0.93	1.1%
4	92.58	92.8	-0.26	0.3%
5	96.90	97.5	-0.63	0.6%
6	100.75	100.8	-0.10	0.1%
7	153.70	153.2	0.50	0.3%
8	209.13	208.7	0.46	0.2%
9	207.90	206.7	1.21	0.6%
10	213.07	213.1	-0.03	0.0%
11	206.18	205.4	0.78	0.4%
12	174.78	174.6	0.22	0.1%
13	156.48	157.2	-0.74	0.5%
14	151.92	151.9	0.01	0.0%
15	162.58	162.2	0.36	0.2%
16	168.33	168.3	0.02	0.0%
17	176.95	176.6	0.33	0.2%
18	163.25	163.5	-0.27	0.2%
19	148.60	148.4	0.24	0.2%
20	134.42	134.6	-0.19	0.1%
21	122.67	122.9	-0.22	0.2%
22	99.98	100.9	-0.88	0.9%
23	86.53	87.0	-0.42	0.5%
Avg	**138.73**	**138.77**	**-0.03**	**0.3%**

Water Distribution System Evaluation

A series of model runs were made in an effort to identify significant deficiencies in network performance and to support the development of a schedule of intermediate and long-term

capital improvements to the system. The following analysis scenarios were addressed with the calibrated model.

1. Existing System Peak Hourly Flow (see Figure II.10)
2. Existing System Fire Flows (Maximum Daily Flow) (see Figure II.11)
3. 2015 and 2030 Peak Hourly Flow (see Figures II.12 and II.13, respectively)
4. 2015 and 2030 Fire Flows (Maximum Daily Flow) (see Figures II.14 and II.15, respectively)
5. Existing System plus additional Central Boulevard Crossing (Peak Hour Flow) (see Figures II.16 and II.17)
6. Bluffs Area In-line Booster Station (Peak Hour Flow) (see Figures II.19 and II.20)
7. Jupiter Farms System Extension (see Figure II.21)
8. PBCE Valving Modifications and Southern FDOT Crossing at Donald Ross Road (see Figures II.22 through II.26)

The scope of the system analysis was specifically limited to the distribution system piping network which consists of pipes 6 inches in diameter or greater. Distribution system pipelines consisting of pipes less than 6 inches in diameter, including fire and service lines, were typically excluded.

In addition to the delivery of adequate volume, the potable water system must also deliver adequate pressure for consumers as well as for fire protection purposes. Assessment criteria for system pressures are summarized in Table II.14.

Table II.14
Distribution System Assessment Criteria

System Pressure	Assessment Criteria
Normal Pressure at WTP	75-80 psi
Minimum Pressure - Non-Fire	45 psi at service
Minimum Pressure - Fire Flows	20 psi at hydrant

An assessment of existing system performance and proposed improvements based upon the above spectrum of scenarios and assessment criteria is presented in the following Sections.

Existing Distribution Network – 2010 / 2011 Demand

Consistent with the 2005 hydraulic model, the highest system pressure is maintained in the vicinity of the Water Treatment Plant. Under peak demand conditions, areas of low pressure, roughly between 35 psi and 45 psi, occur only in and around the Bluffs development at US 1 and Marcinski Road. Moderately low pressures, between 45 and 55 psi are found along A1A, south of Indiantown Road, and in the Bluffs and Juno Beach areas (see Figure II.10).

The area of low pressure that runs through the Bluffs area is likely due to its relatively high elevation (25 feet to 40 feet), its distance from the Water Treatment Plant, and the limited number of Intracoastal Waterway pipe crossings available to provide water to the service area along the coast.

Table II.15 presents the results of the Fire Flow analysis for the existing piping network under 2011 Maximum Daily Flow conditions.

Table II.15
Fire Flow Analysis Results for Existing Piping Network – 2010 through 2030

Location	Needed Fire Flow (gpm)	Fire Flow Requirement Met	Residual Pressure (psi)			Minimum Pressure Required (psi)
			2010	2015	2030	
Jupiter Medical Center	5000	YES	48	47	45	20
Haas Building	3500	YES	23	22	21	20
Bluffs Shopping Center	3500	YES	36	36	34	20

Under Maximum Daily Flow conditions, the Fire Flow requirements at all three locations, the Jupiter Medical Center, the Bluffs Shopping Center and the Haas Building were met. Residual pressure at the Haas was only 23 psi, just above the minimum allowable pressure.

Figure II.10

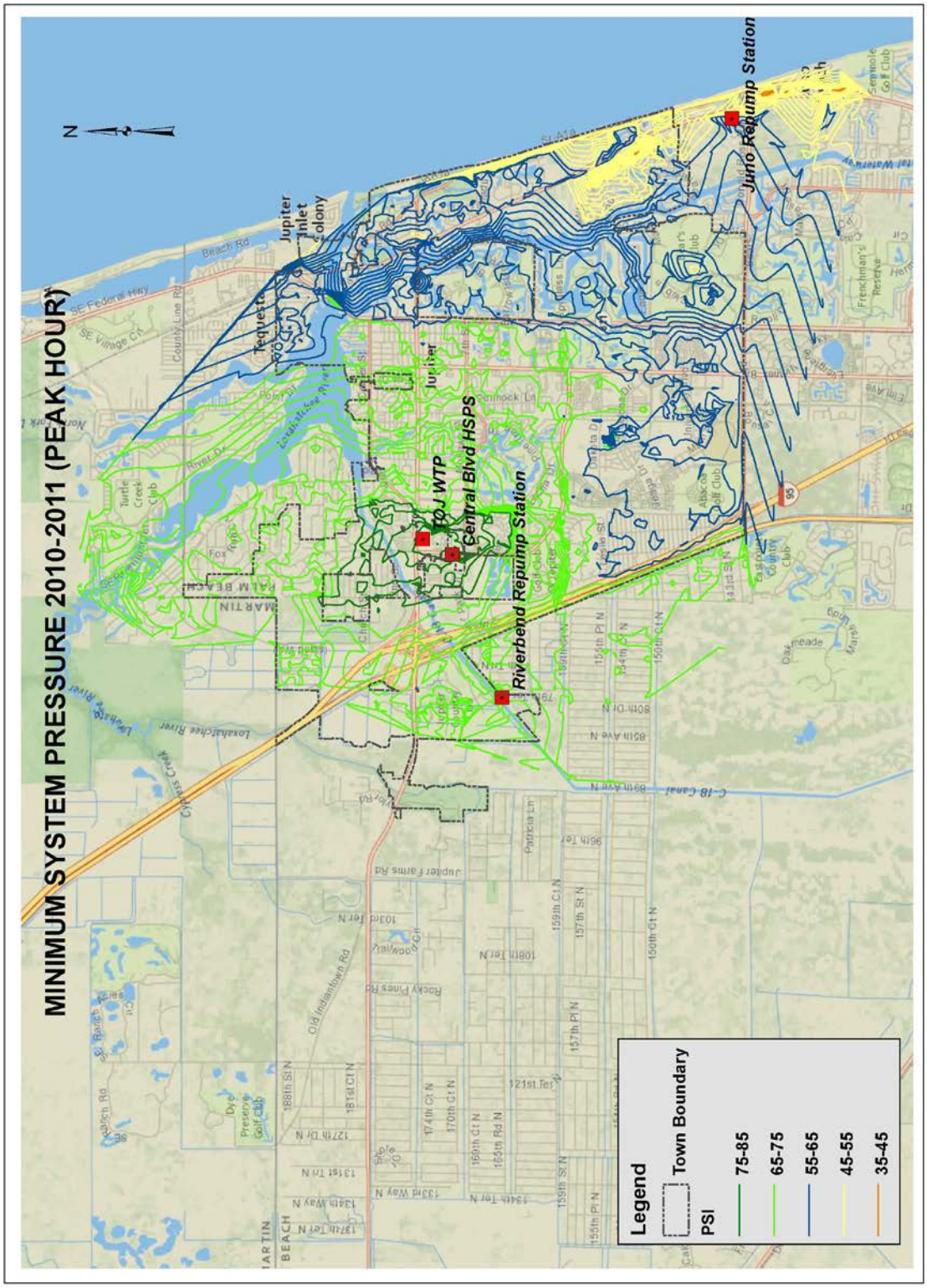
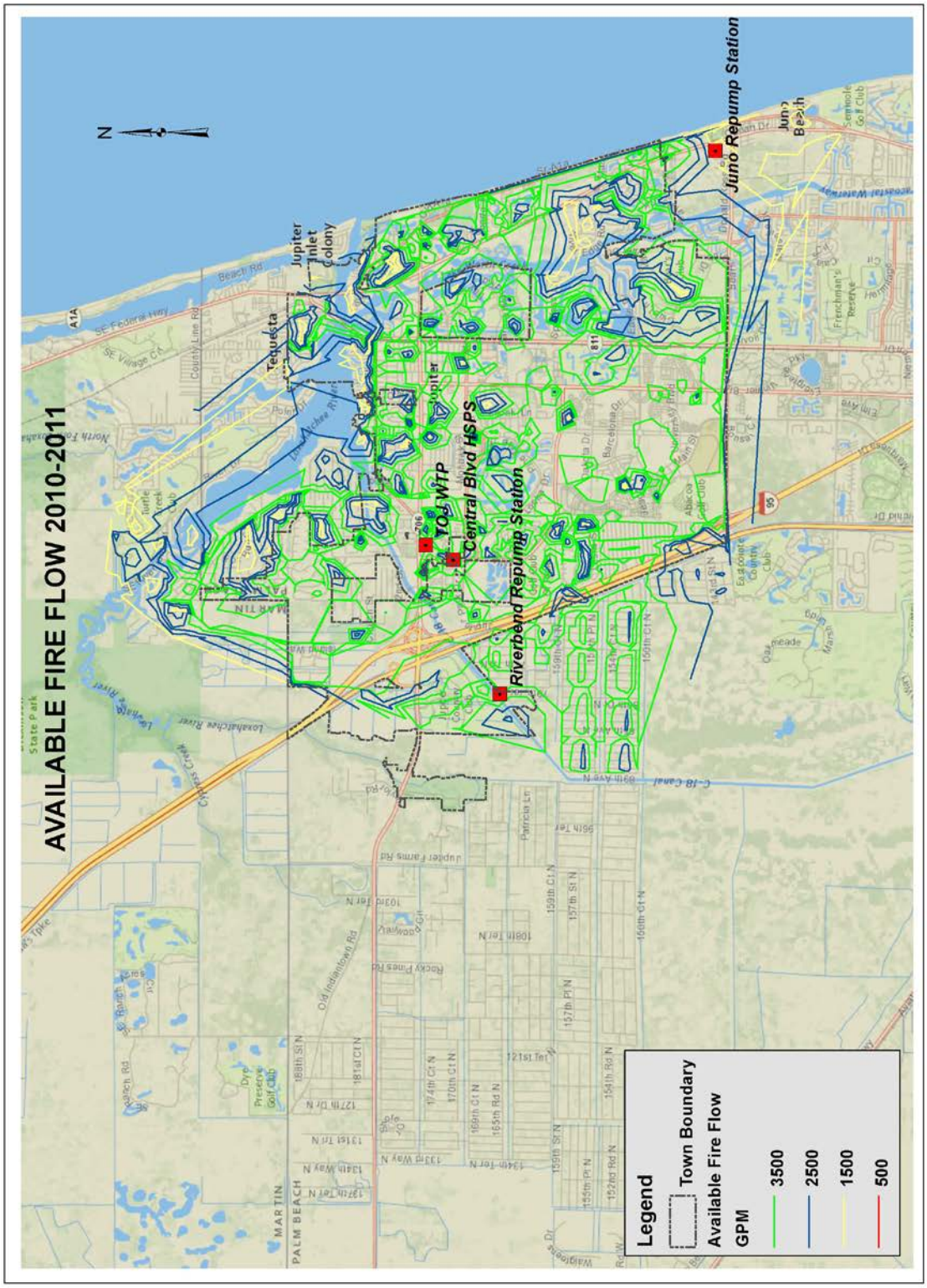

MINIMUM SYSTEM PRESSURE 2010-2011 (PEAK HOUR)
N
Jupiter Inlet Colony
Tequesta
Jupiter
TOJ WTP
Central Blvd HSPS
Riverbend Repump Station
Juno Repump Station
Legend
Town Boundary
PSI
75-85
65-75
55-65
45-55
35-45

Figure II.11


AVAILABLE FIRE FLOW 2010-2011
N
Jupiter Inlet Colony
Tequesta
Jupiter
TOJ WTP
Central Blvd HSPS
Riverbend Repump Station
Juno Repump Station
Juno Beach
Legend
Town Boundary
Available Fire Flow
GPM
3500
2500
1500
500

2015 Distribution Network Demand

In 2015, a net increase of about 0.85 mgd (Average Daily Flow) is expected across the Town's service area, due to expected development in and around the Town's current service area.

The net impact of the relatively small increase in demand through 2015 is a modest increase in the size of the low pressure hotspots in the Bluffs and further along the coastal ridge. Under peak hour conditions in 2015, nearly all areas south of Indiantown Road and east of the Intracoastal Waterway have pressures of less than 55 psi with several areas less than 45 psi. While fire flow requirements of 3,500 gpm at the Bluffs shopping center are able to be met under maximum daily flow conditions, customers residing along the ridge running from coastal Juno Beach to just north of The Bluffs would experience very low pressures at the tap under peak hour flow conditions, typically during early morning hours and on sanctioned irrigation days (Sunday, Wednesday, Thursday, Saturday). Limited portions of the Bluffs area and Juno Beach would experience peak hour pressures less than 35 psi (see Figure II.12). Fire flow requirements continue to be met (see Figure II.14), however, residual pressures at two of the targeted facilities, Jupiter Medical Center and the Haas Building, fall by 1 psi respectively (see Table II.16).

2030 Distribution Network Demand

In 2030, a net increase of about 3.56 mgd (Average Daily Flow) is expected across the Town's service area, due to expected development in and around the Town's current service area and through new connections in the Jupiter Farms area that are assumed to begin between 2015 and 2020.

The impact of this larger increase in demand through 2030 is a significant broadening of the areas in the Bluffs and further along the coastal ridge where the minimum pressure falls below 45 psi (see Figure II.13). Fire flow requirement will continue to be met, (see Figure II.15) however, residual pressures during a fire event at any of the 3 locations targeted in the fire flow analysis will subside slightly (see Table II.16).

Figure II.12

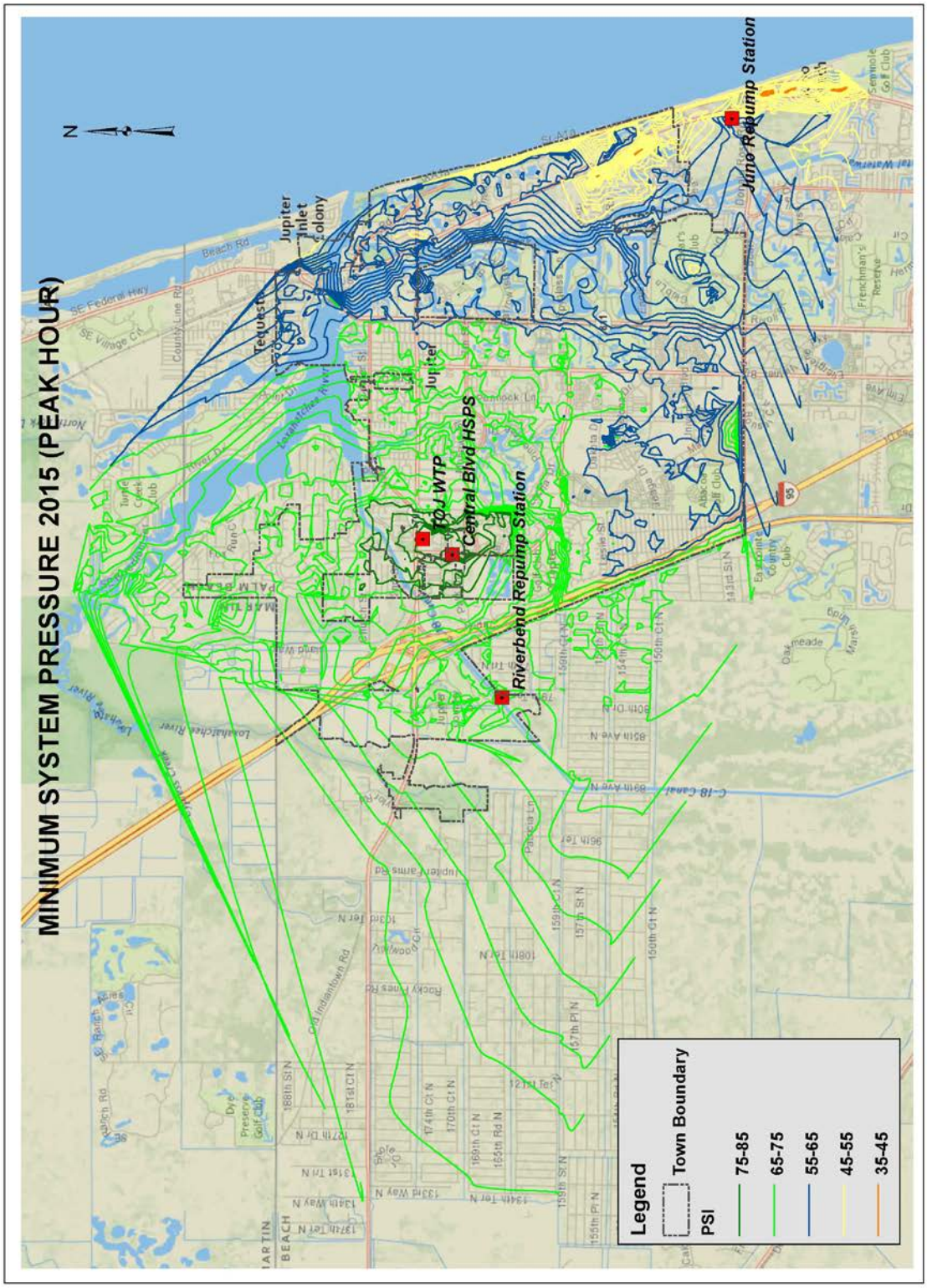

MINIMUM SYSTEM PRESSURE 2015 (PEAK HOUR)
N
Jupiter Inlet Colony
Tequesta
Jupiter
TOJ WTP
Central Blvd HSPS
Riverbend Repump Station
Juno Repump Station
Legend
Town Boundary
PSI
75-85
65-75
55-65
45-55
35-45

Figure II.13

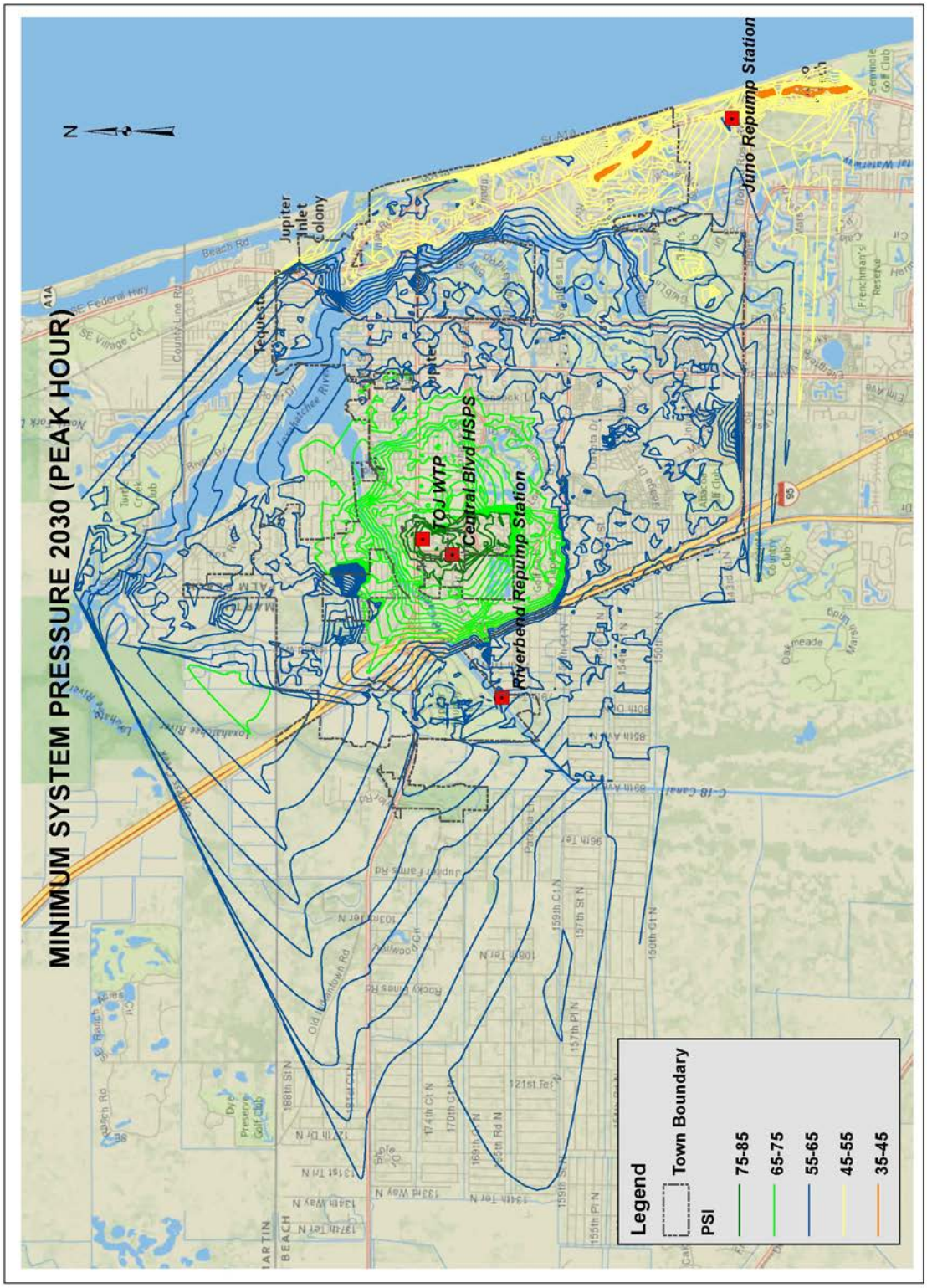

MINIMUM SYSTEM PRESSURE 2030 (PEAK HOUR)
N
Jupiter Inlet Colony
Juno Repump Station
TOJ WTP
Central Blvd HSPS
Riverbend Repump Station
Legend
Town Boundary
PSI
75-85
65-75
55-65
45-55
35-45

Figure II.14

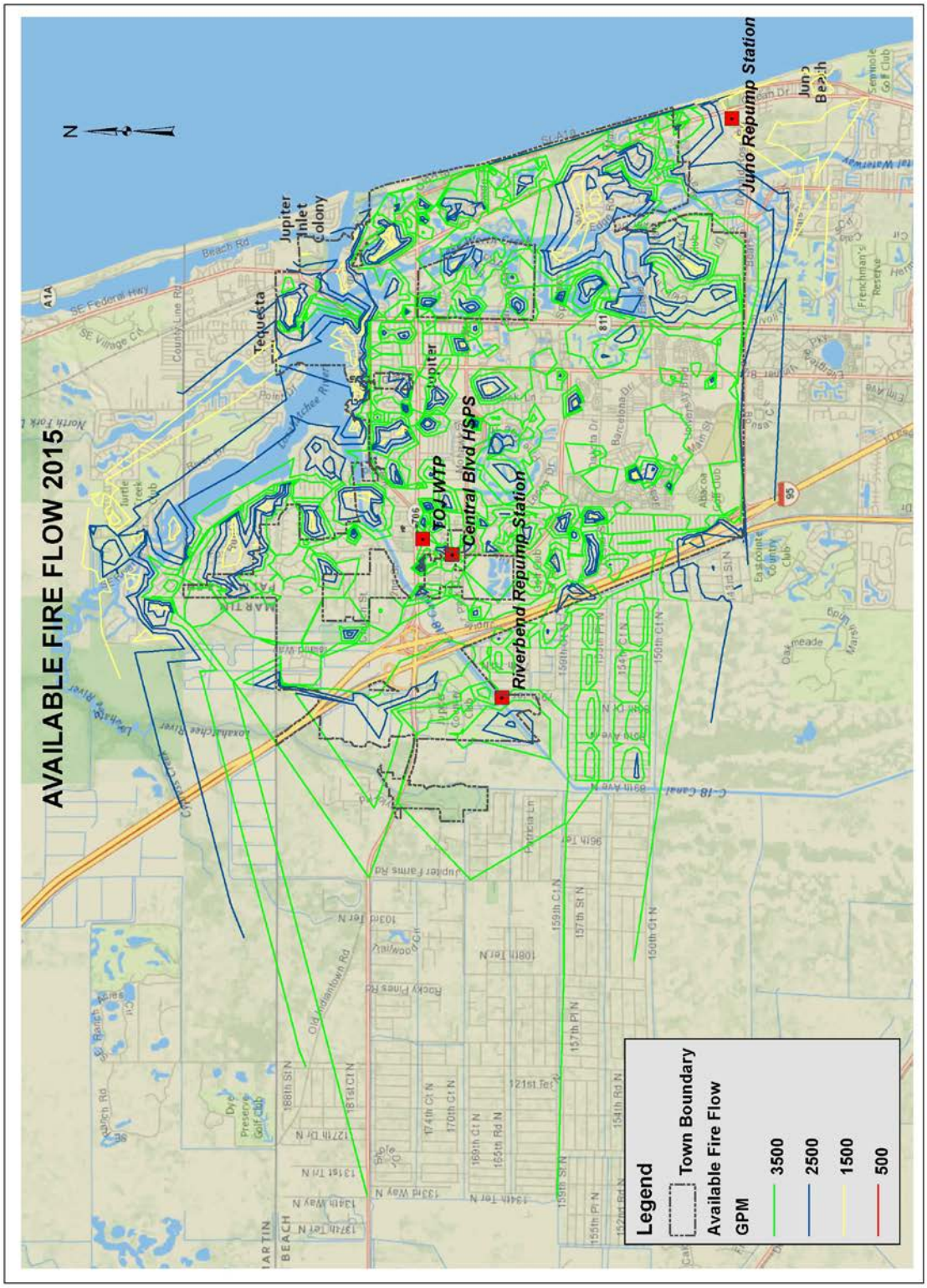
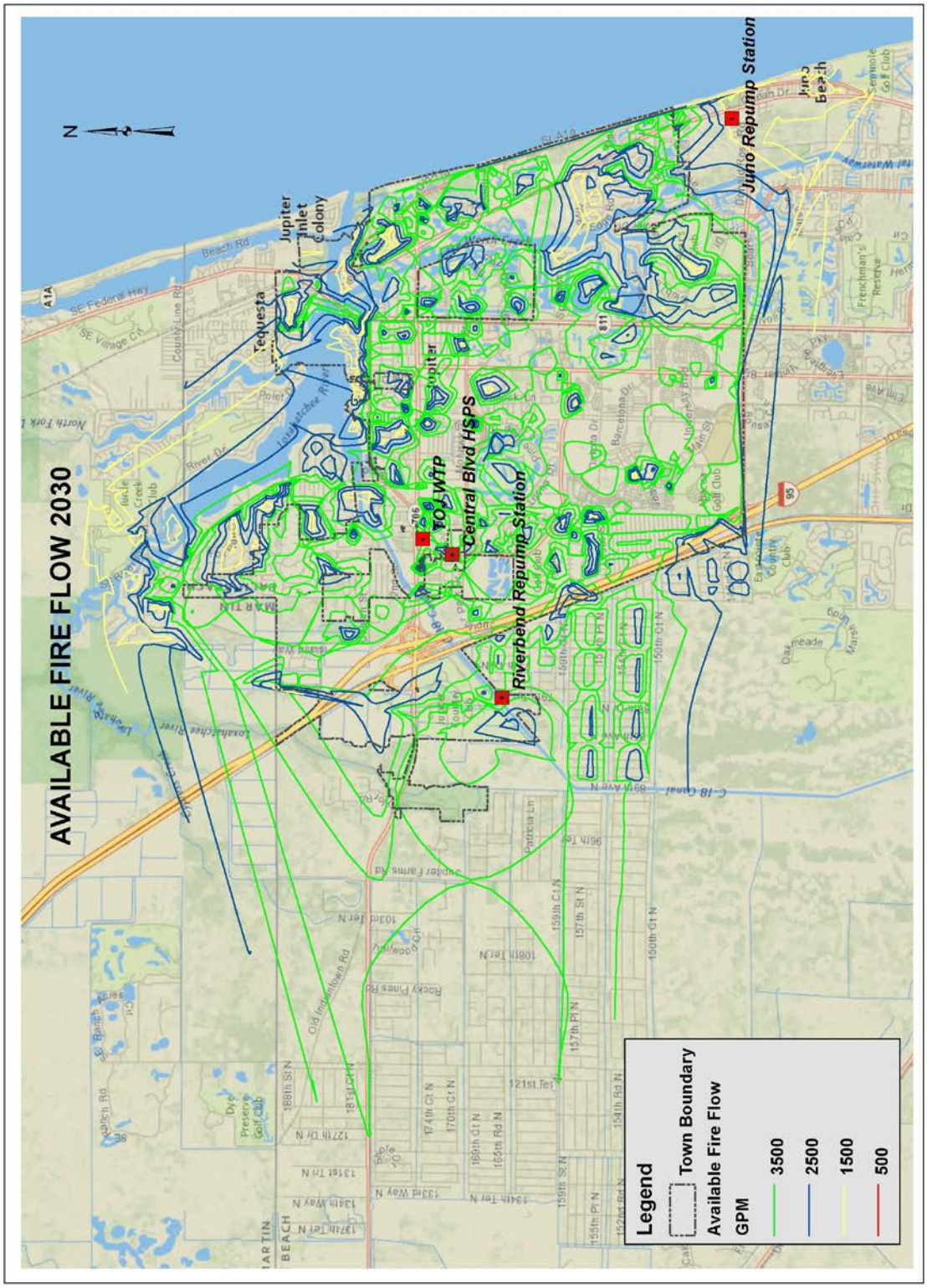

AVAILABLE FIRE FLOW 2015
N
Jupiter Inlet Colony
Tequesta
Juno Repump Station
Juno Beach
TO LWTP
Central Blvd HSPS
Riverbend Repump Station
Legend
Town Boundary
Available Fire Flow
GPM
3500
2500
1500
500

Figure II.15


AVAILABLE FIRE FLOW 2030
N
Jupiter Inlet Colony
Tequesta
Juno Repump Station
Juno Beach
TOJ WTP
Central Blvd HSPS
Riverbend Repump Station
Legend
Town Boundary
Available Fire Flow
GPM
3500
2500
1500
500

Capital Needs Assessment

Beyond being a practical analytical tool for evaluating the impacts of current and future water demands on distribution system performance, a successfully configured and calibrated water distribution system hydraulic model is valuable for quantifying the effectiveness of modifications to the system, both those that are accounted for in the Town's current Capital Program, and those proposed for mitigating problems uncovered in the previously discussed analysis. As part of the hydraulic model update certain specific scenarios have been evaluated based on the Town's interest in particular situations and/or system components. The scenarios evaluated, the findings of the evaluations, and the determinations made from those findings are outlined in the following paragraphs.

Additional Central Boulevard Crossing

One of the scenarios evaluated was the addition of a second crossing along Central Boulevard (midway between the two existing high service pump stations), to resolve a hydraulic constriction of flow emanating from the two high service pump stations on the west side of Central Boulevard. Currently, there is a single 20 inch crossing to convey flow from the 24 inch transmission main on the west side of Central Boulevard to the transmission/distribution system on the east side of Central Boulevard. The additional crossing provides limited hydraulic relief in the chronically low pressure areas in the Bluffs and elsewhere along the coastal ridge (pressure contours with the additional crossing are shown in Figure II.16 and II.17); however, during this analysis and the analysis of the Town's high service pumping capacity, it was determined that the velocity in the existing 20 inch Central Boulevard crossing is very high – 19.13 ft/sec with 2015 peak hour demand. With the proposed 24 inch Central Boulevard crossing in place, the velocity in the existing 20 inch crossing would drop to a manageable 8.72 ft/sec. The velocity in the proposed 24 inch crossing would be 7.23 ft/sec. Excessive velocities are likely to affect the ability to meet peak hour flow requirements in a cost effective manner.

Figure II.16

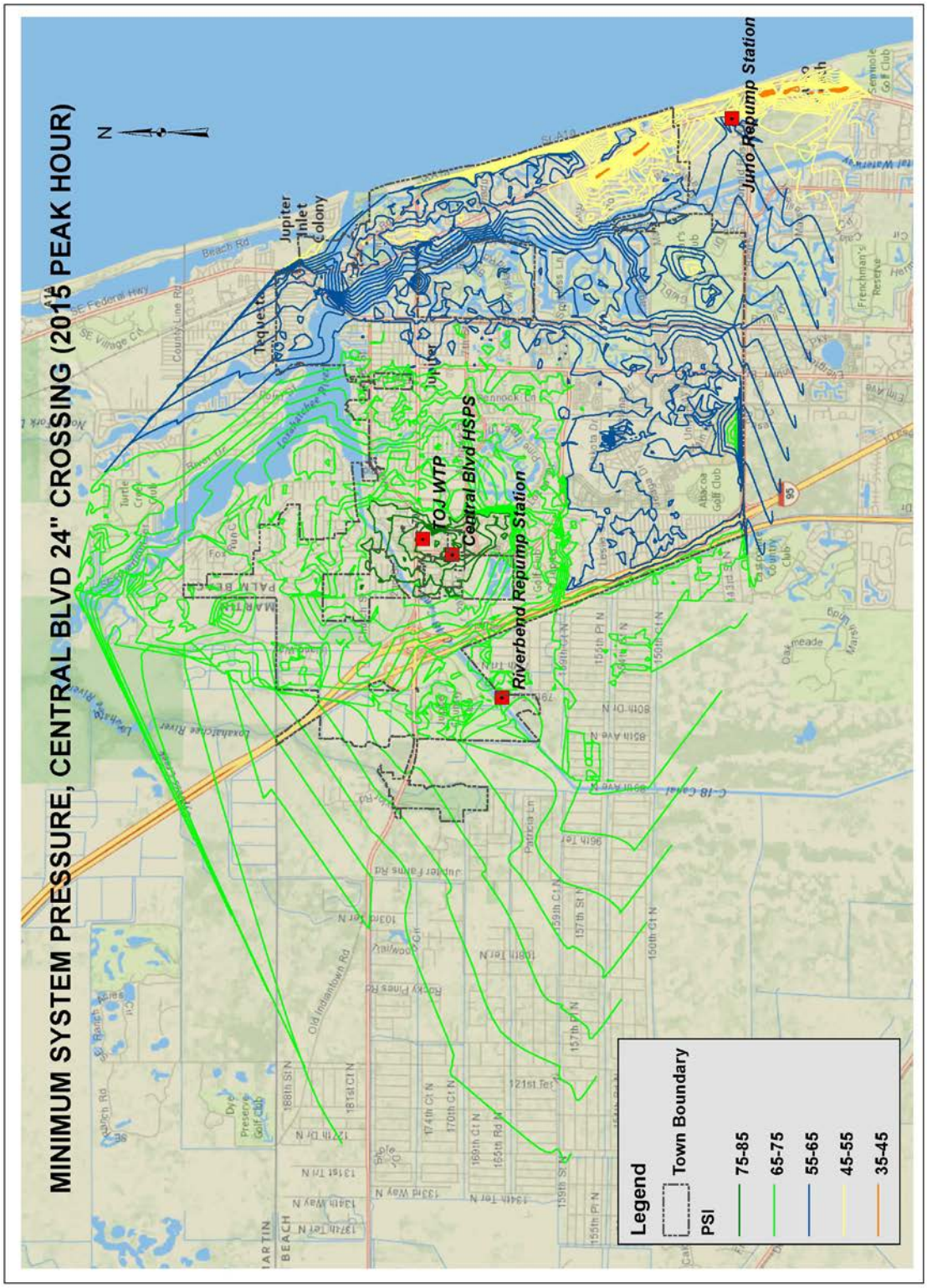
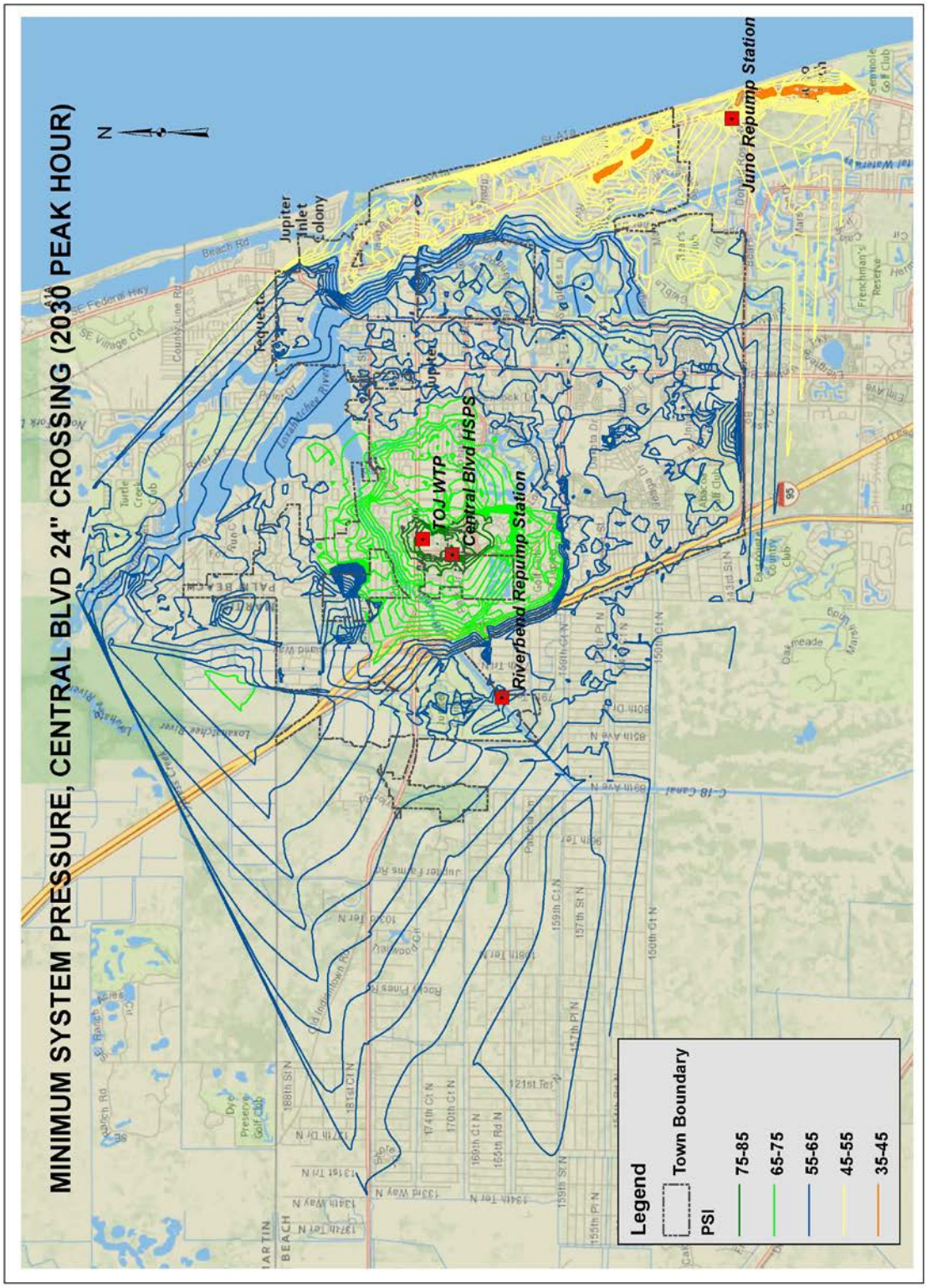

MINIMUM SYSTEM PRESSURE, CENTRAL BLVD 24" CROSSING (2015 PEAK HOUR)
N
Jupiter Inlet Colony
Tequesta
TOJ WTP
Central Blvd HSPS
Riverbend Repump Station
Juno Repump Station
Legend
Town Boundary
PSI
75-85
65-75
55-65
45-55
35-45

Figure II.17


MINIMUM SYSTEM PRESSURE, CENTRAL BLVD 24" CROSSING (2030 PEAK HOUR)
N
Jupiter Inlet Colony
Juno Repump Station
TOJ WTP
Central Blvd HSPS
Riverbend Repump Station
Legend
Town Boundary
PSI
75-85
65-75
55-65
45-55
35-45

Bluffs Area Booster Pump Station

One of the other scenarios evaluated was the need for an in-line booster pump station for the Bluffs area, which historically experiences some of the lowest water pressures in the Town's service area. The Bluffs area is in a fairly remote portion of the service area and includes properties located in a relatively high (elevation) area along the coastal ridge. The potential location of such a facility is shown in Figure II.18. Additionally pressure contours for 2015 and 2030 peak hour flow scenarios with the booster pump station are shown in Figures II.19 and II.20. Comparing these contours to those peak hour scenarios without the pump station indicates the ability to eliminate the limited pockets (north and south of Donald Ross Road) where pressures are projected to fall below 45 psi. It should be noted that provision of this facility would cause a slight drop in pressure to areas immediately upstream of the pump station, but none would drop below Town pressure criteria. As an alternative to, or at least a strategy to delay construction of a booster pump station, the Town could consider dealing with pressure complaints / issues on a case by case basis. Because pressures are not unreasonably low, and since much of the area has dual services, properties with complaints of low pressure problems could have their dual services replaced with single services. While this will not affect the pressure in the main (as shown on the pressure contours figures), it may provide a slight reduction in pressure loss from the main to the point of use.

Figure II.18

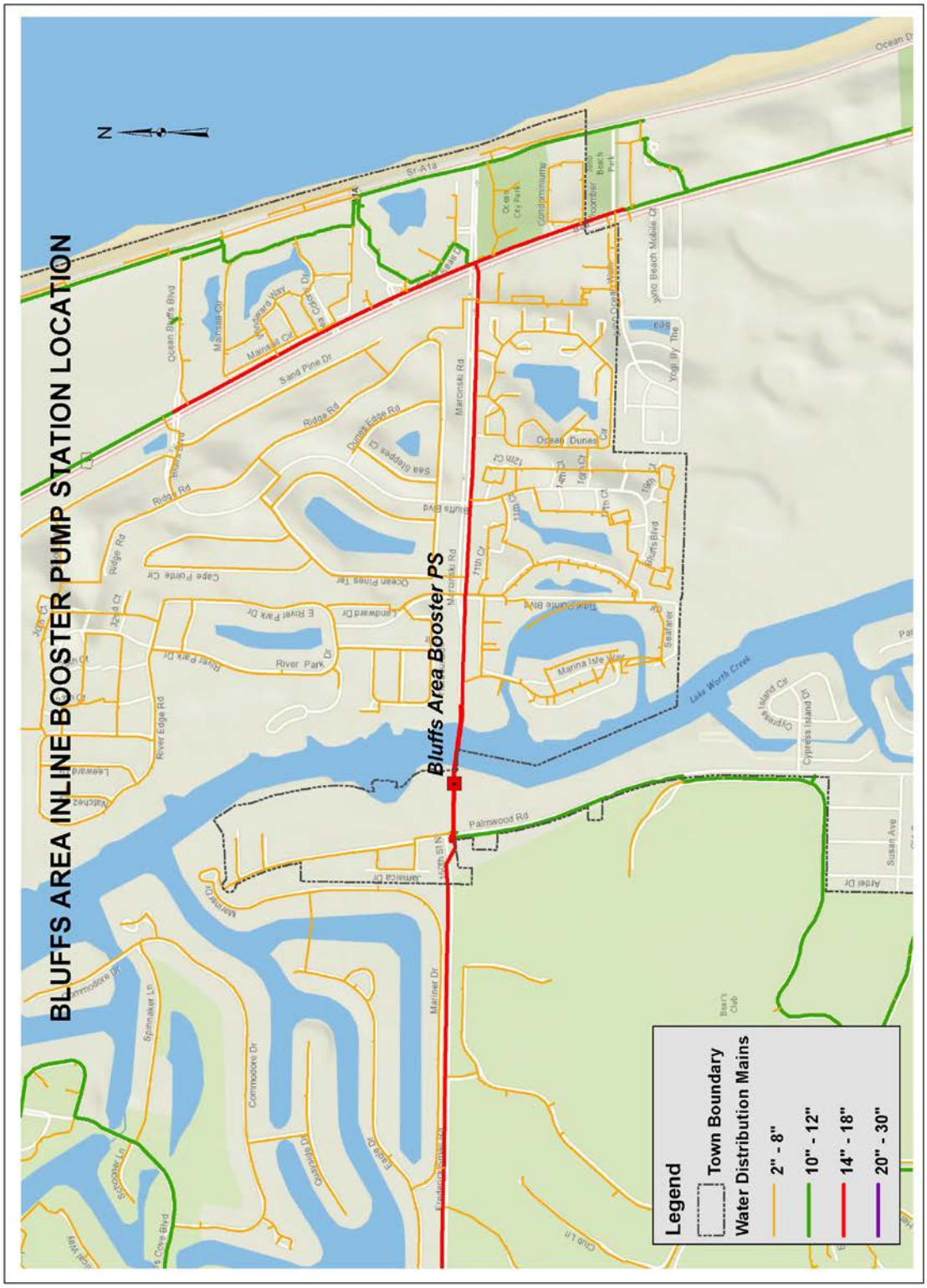

BLUFFS AREA INLINE BOOSTER PUMP STATION LOCATION
Bluffs Area Booster PS
N
Legend
Town Boundary
Water Distribution Mains
2" - 8"
10" - 12"
14" - 18"
20" - 30"

Figure II.19

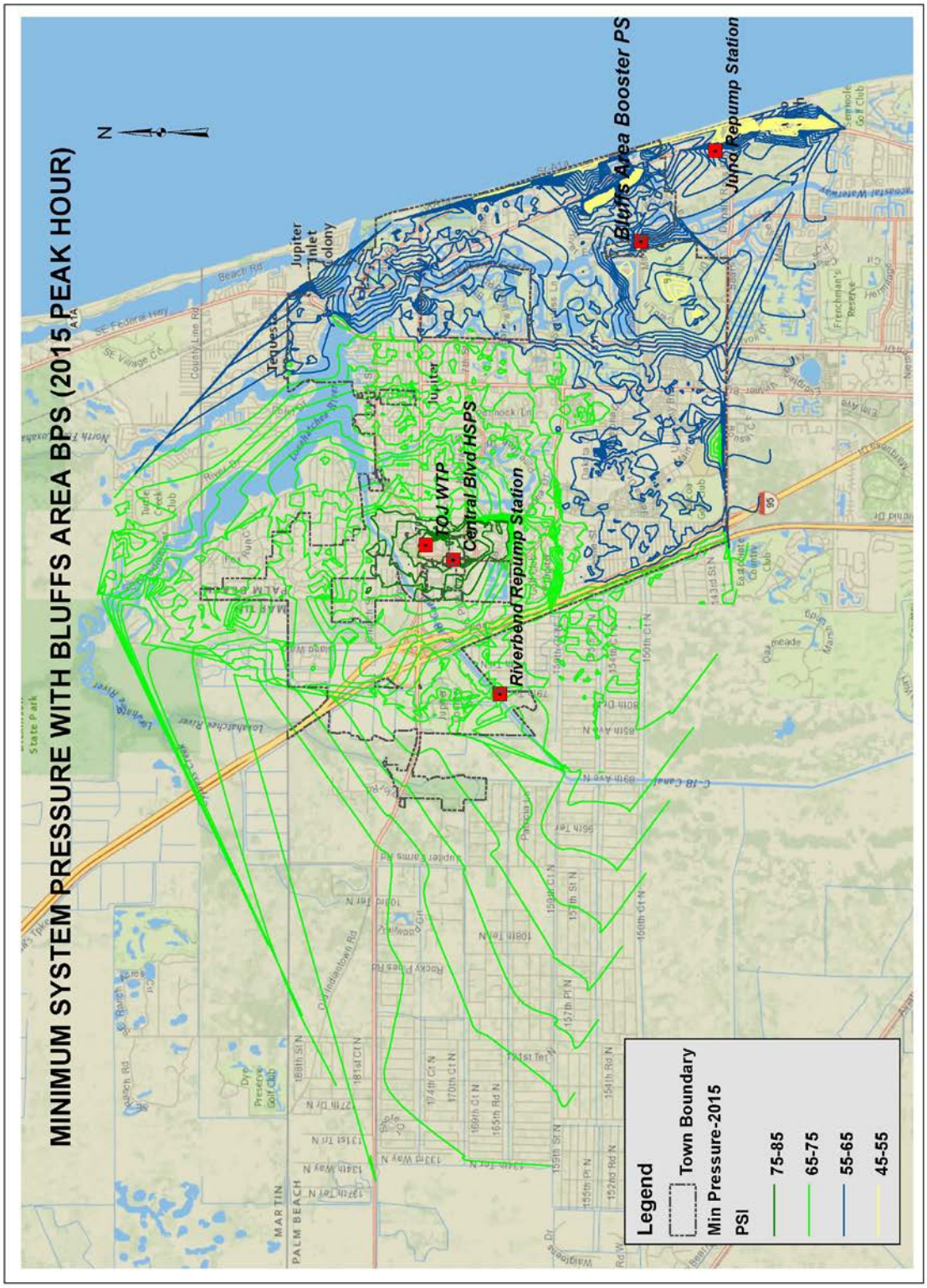
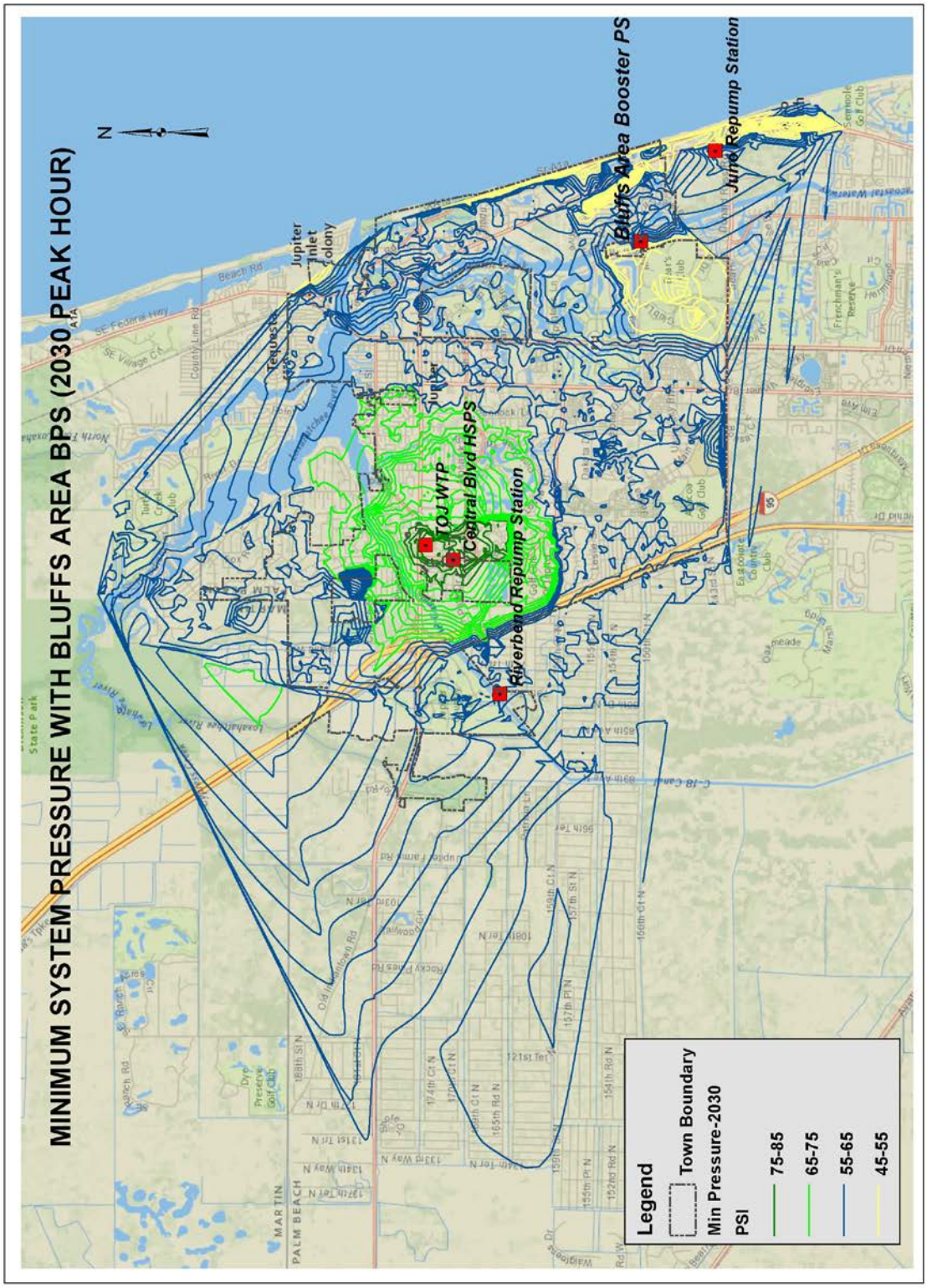

MINIMUM SYSTEM PRESSURE WITH BLUFFS AREA BPS (2015 PEAK HOUR)
N
Jupiter Inlet Colony
Tequesta
Jupiter
FOJ WTP
Central Blvd HSPS
Riverbend Repump Station
Bluffs Area Booster PS
Juno Repump Station
Legend
Town Boundary
Min Pressure-2015
PSI
75-85
65-75
55-65
45-55

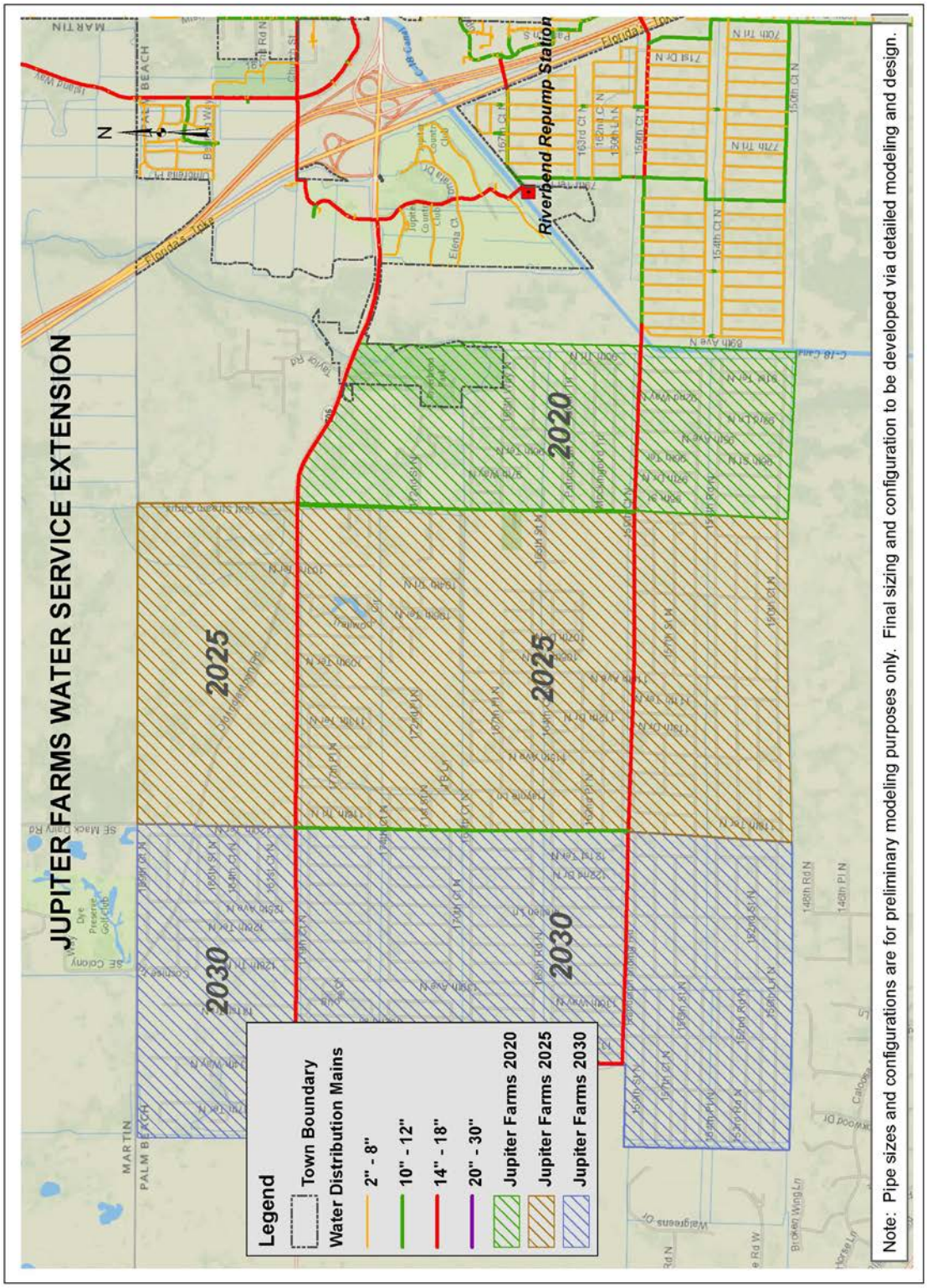
Figure II.20


MINIMUM SYSTEM PRESSURE WITH BLUFFS AREA BPS (2030 PEAK HOUR)
N
Jupiter Inlet Colony
Bluffs Area Booster PS
Juno Repump Station
TOJ WTP
Central Blvd HSPS
Riverbend Repump Station
Legend
Town Boundary
Min Pressure-2030
PSI
75-85
65-75
55-65
45-55

Jupiter Farms System Extension

Also evaluated was the potential for delivery of potable water to the Jupiter Farms area. Water service has already been extended into Palm Beach Country Estates (PBCE), the eastern most portion of the "western communities". The provision of water to the Jupiter Farms area was planned in a three phase process which would begin with service provision in 2020 and conclude with service to the western most section by 2030 (see Figure II.21). A preliminary skeleton system was established for the purpose of spatially distributing flows in the area. Detailed modeling and design will ultimately be necessary for the phased implementation of the system. In addition to meeting maximum day and peak hour flow requirements, a key issue to be evaluated in the detailed planning and design of the Jupiter Farms system will be maintaining adequate chlorine residual for disinfection. Due to its remote location relative to the water treatment plant and the fact that it is at a terminal location with no ability to loop flow, maintaining chlorine residual in this large area will be a challenge.

Figure II.21


JUPITER FARMS WATER SERVICE EXTENSION
Legend
Town Boundary
Water Distribution Mains
2" - 8"
10" - 12"
14" - 18"
20" - 30"
Jupiter Farms 2020
Jupiter Farms 2025
Jupiter Farms 2030
2020
2025
2025
2030
2030
Riverbend Repump Station
N
Note: Pipe sizes and configurations are for preliminary modeling purposes only. Final sizing and configuration to be developed via detailed modeling and design.

Southern FDOT Crossing (Donald Ross)

One of the major issues confronting the Town has been that of maintaining adequate chlorine residual in the distribution system in parts of Palm Beach County Estates (PBCE). Due to its location (somewhat remote and at an non-looped terminus) in the system, as well as reduced use due to partial connections and lack of use for irrigation purposes, water turnover in PBCE is slow. Analyzing the problem and evaluating potential solutions required use of a dynamic (extended period simulation) model, different than the static (steady state) model used for the remainder of the system. This dynamic model required collection of time-based flow data specifically in PBCE in order to calibrate the model for use. This dynamic modeling tracks flow in the system over an extended time period, and computes water age in the system. Water age is used, in this case, as a proxy for water quality, as we know that chlorine residual degrades with time. For the purpose of this evaluation, water age of less than 72 hours is desirable.

Figure II.22 shows the current valving arrangement being used in PBCE. Figure II.23 shows, via color coding, the predicted water age in the system under current conditions. Improvements to water age can potentially be achieved simply by modifying the valving arrangement. Using a model such as this allows a number of scenarios to be evaluated at a desktop level in a fraction of the time that would be required to evaluate them full-scale in the field. A number of scenarios were evaluated, and Figure II.24 shows the valving arrangement of the most productive option. As shown in Figure II.25, incidents of water age in excess of 72 hours are reduced by this operational strategy. The Town could implement this valving arrangement and monitor results to determine whether further improvements (rechlorination, creating a looped system, etc.) are warranted.

Another tool for improving water turnover (and reducing water age) in PBCE is to create a looped system. In order to accomplish this, another crossing at the southern end of PBCE could be constructed. This would require a directionally drilled pipeline under I-95 and the Turnpike in the vicinity of Donald Ross Road. This would allow water from PBCE to be pulled eastward towards North Palm Beach Heights (an area of greater demand). Figure II.26 shows that this improvement would further reduce water age in PBCE.

Figure II.22

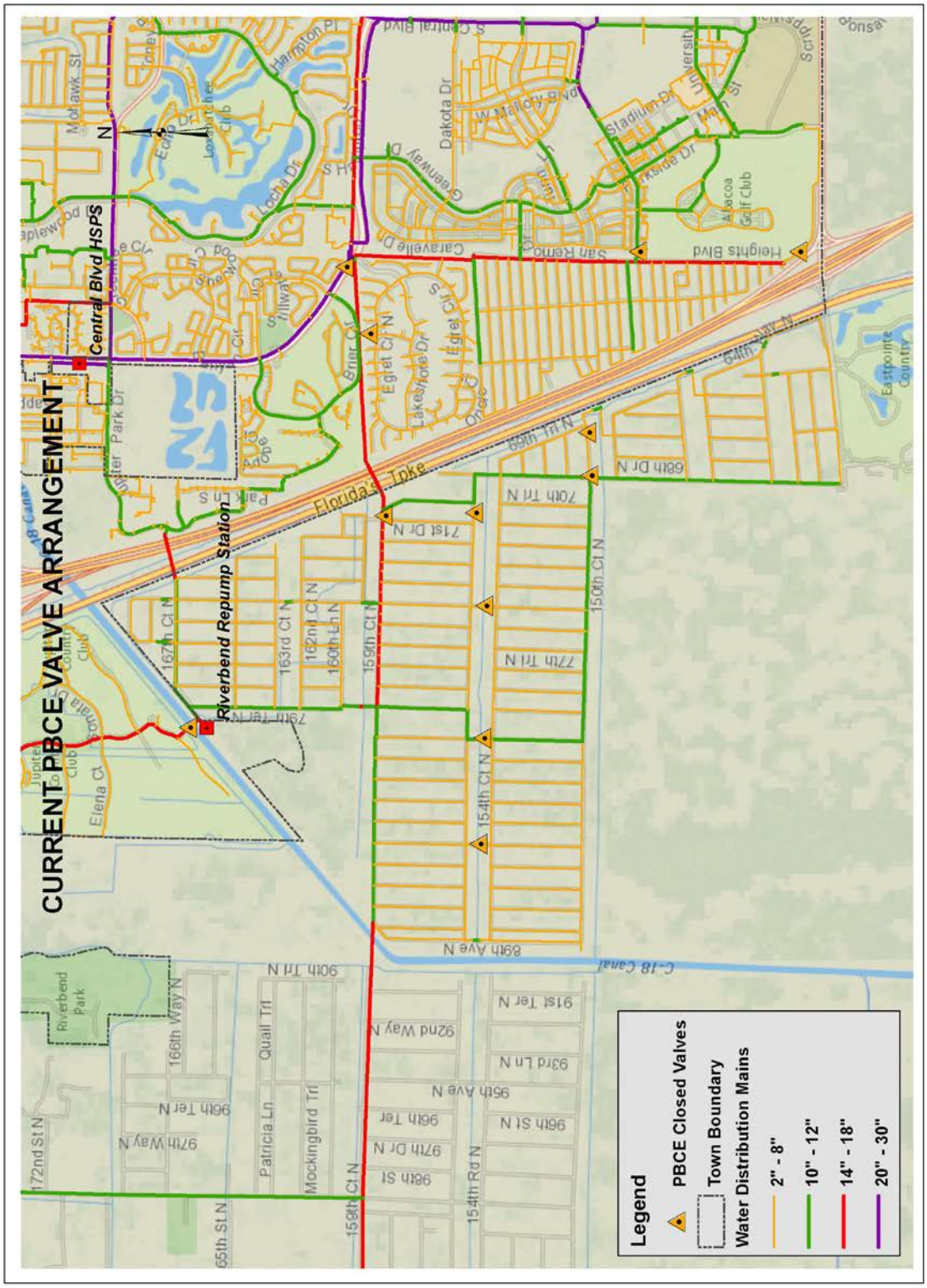

CURRENT PBCE VALVE ARRANGEMENT
Central Blvd HSPS
Riverbend Repump Station
Legend
PBCE Closed Valves
Town Boundary
Water Distribution Mains
2" - 8"
10" - 12"
14" - 18"
20" - 30"

Figure II.23

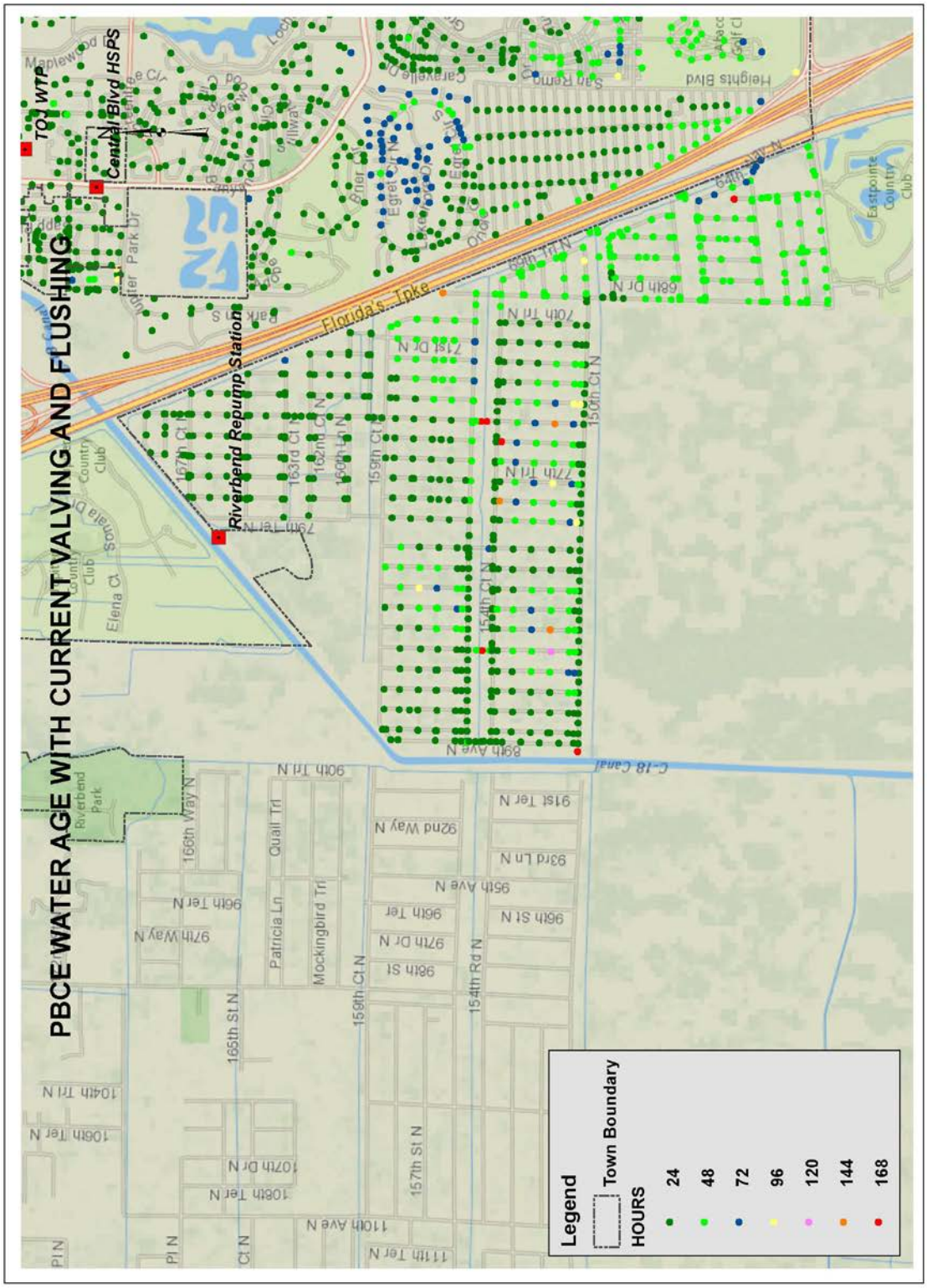

PBCE WATER AGE WITH CURRENT VALVING AND FLUSHING
TO WTP
Central Blvd HSPS
Riverbend Repump Station
Florida's Tpke
Legend
Town Boundary
HOURS
24
48
72
96
120
144
168

Figure II.24

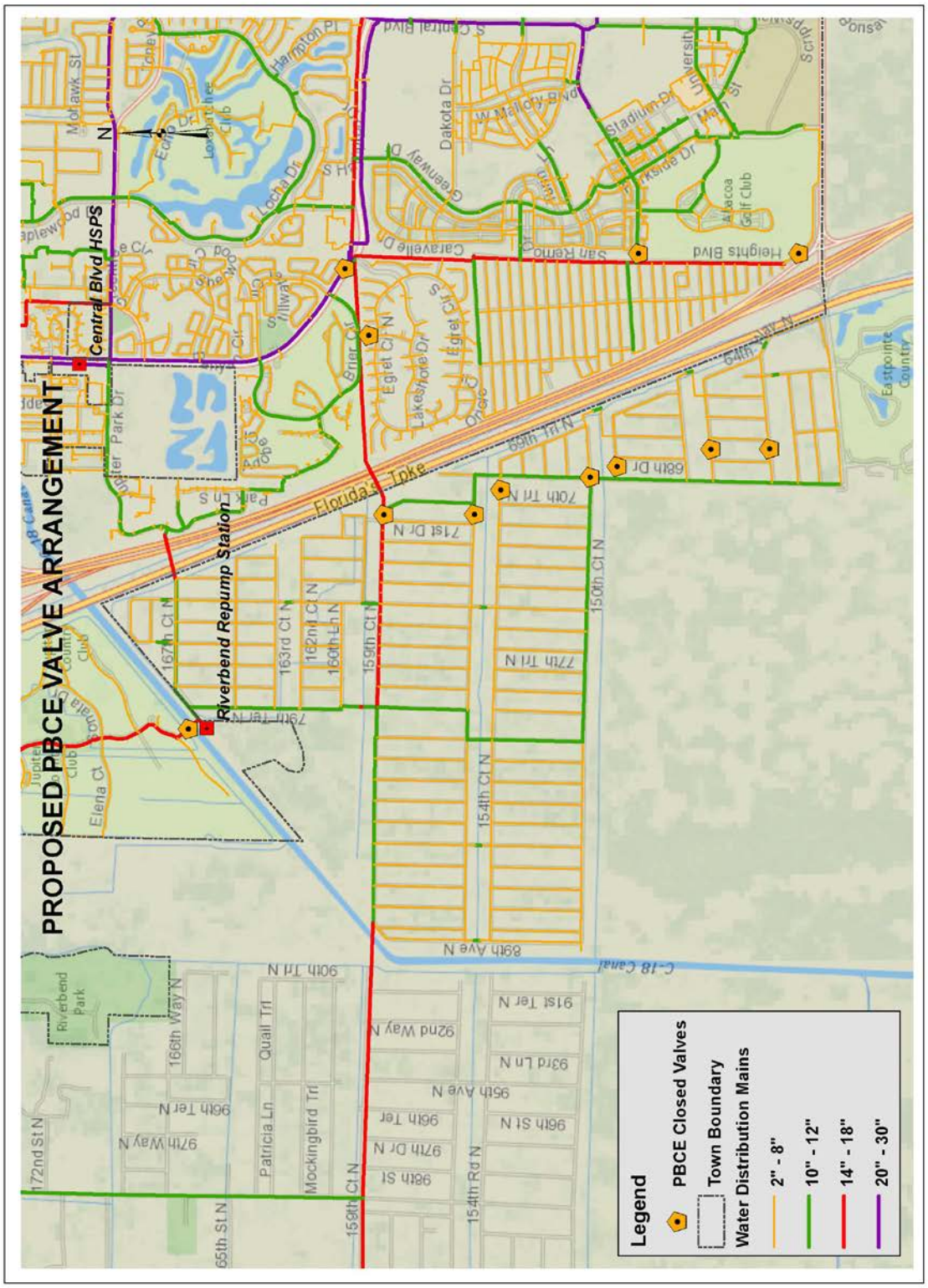

PROPOSED PBCE VALVE ARRANGEMENT
Central Blvd HSPS
Riverbend Repump Station
Legend
PBCE Closed Valves
Town Boundary
Water Distribution Mains
2" - 8"
10" - 12"
14" - 18"
20" - 30"

Figure II.25

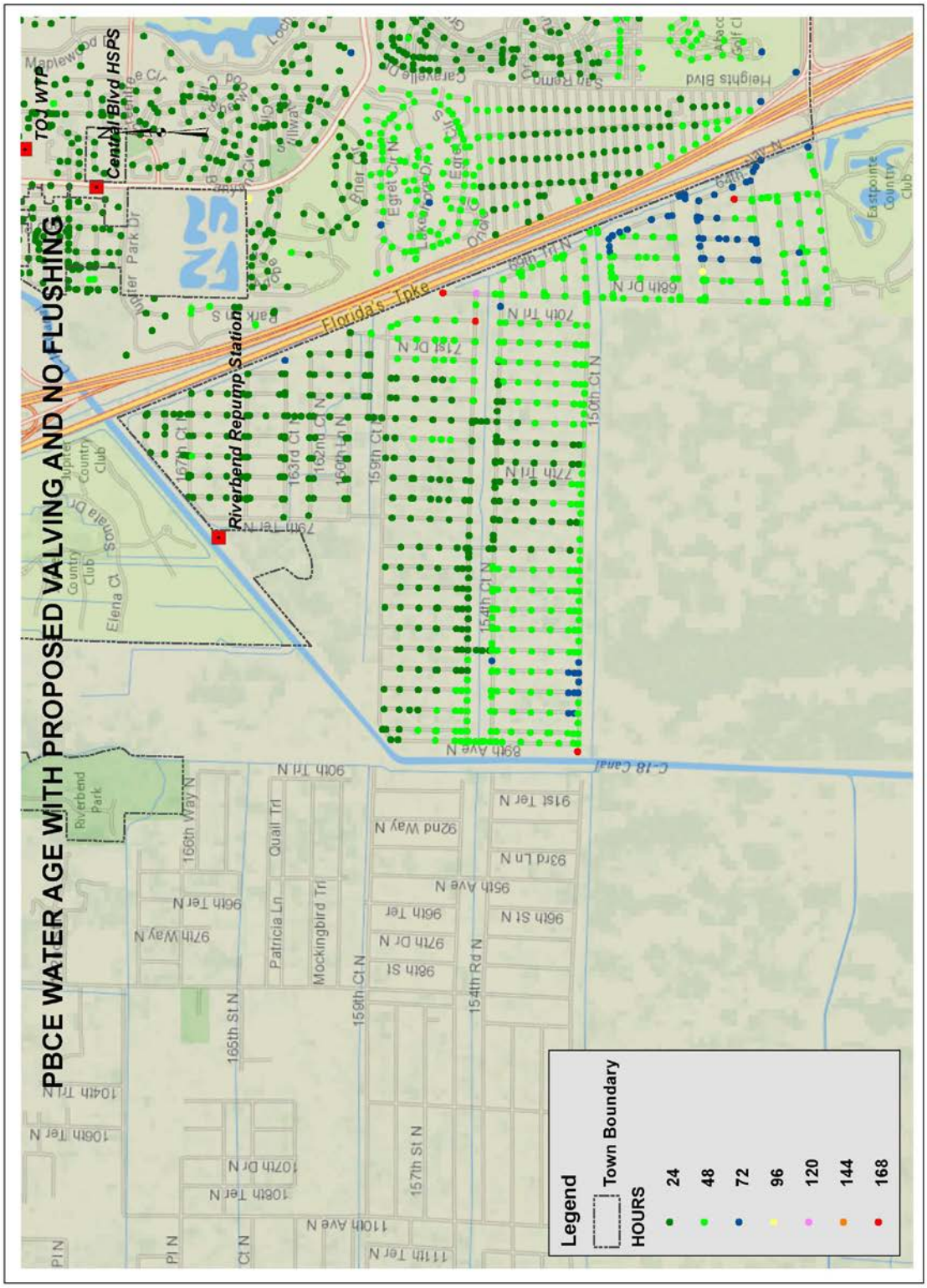
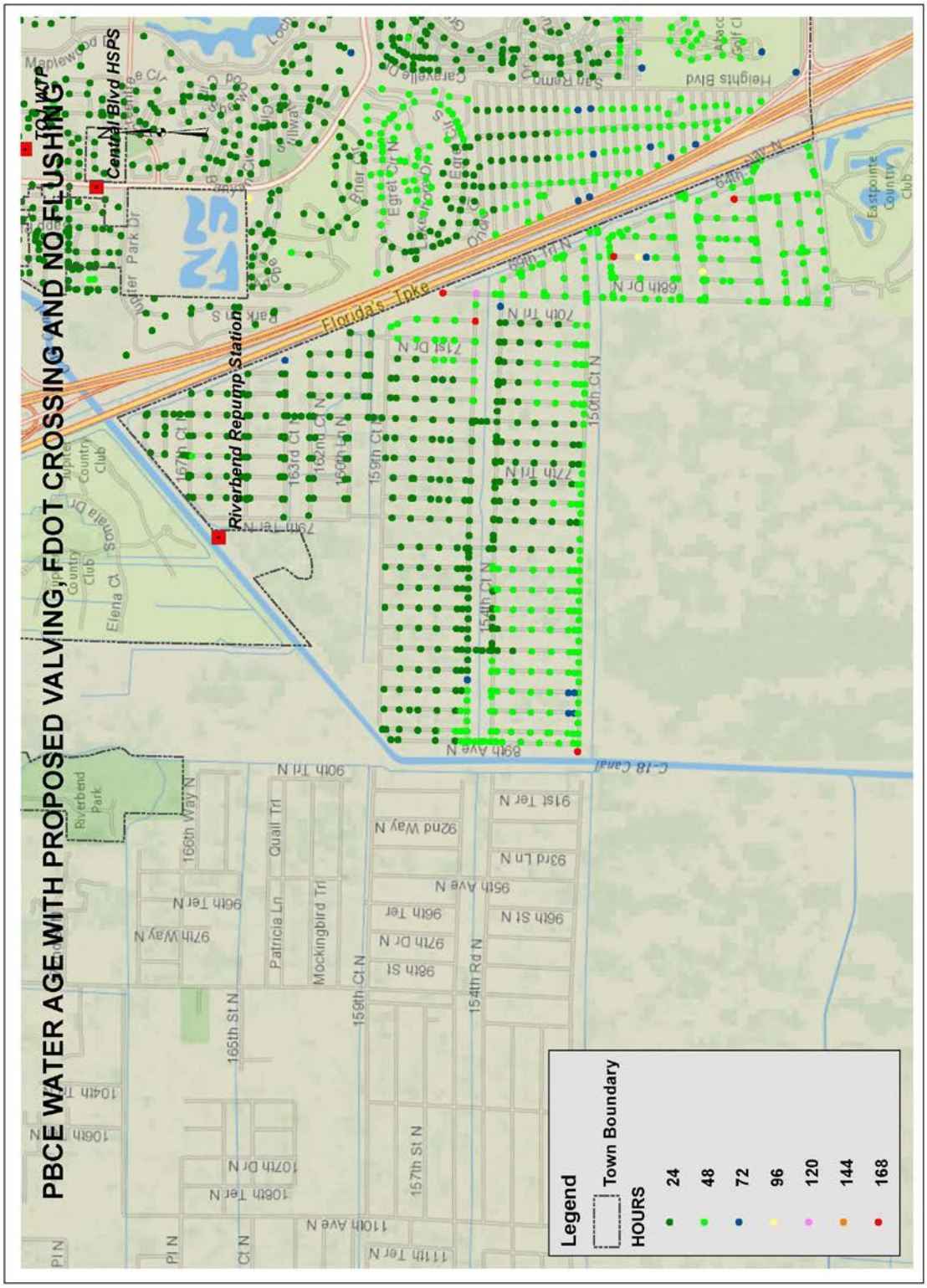

PBCE WATER AGE WITH PROPOSED VALVING AND NO FLUSHING
TO WTP
Central Blvd HSPS
Riverbend Repump Station
Florida's Tpke
Legend
Town Boundary
HOURS
24
48
72
96
120
144
168

Figure II.26


PBCE WATER AGE WITH PROPOSED VALVING, FDOT CROSSING AND NO FLUSHING
Central Blvd HSPS
Riverbend Repump Station
Florida's Tpke
Legend
Town Boundary
HOURS
24
48
72
96
120
144
168

High Service Pumping Capacity Evaluation

The Town's high service pumping capabilities were evaluated by developing pumping envelopes for all pumps in use, and with the largest pump (per station) out of service. These pumping capacities envelops, along with average day, maximum day, and peak hour demands (for 2010, 2015, and 2030) are shown on Figures II.27, II.28, and II.29. In the figures, the pumping envelope representing an operating protocol where all but a standby pump is running is represented by the area within the solid blue line. Alternatively, the dashed brown line indicates an operating protocol where all pumps are allowed to run simultaneously. The multicolored dots in the figures indicate Average Daily Demand for 2010, 2015 and 2030. The multicolored triangles indicate system Peak Hour Demands for those same years. If a dot or triangle falls within a pumping envelope, this indicates that the associated equipment and operating protocol are capable of meeting the associated demands. If a dot or triangle falls outside of a pumping envelope, this indicates that associated demand cannot be met under that same combination of equipment and operating protocol. As shown, the ability to meet peak hour demands in 2015 and 2030 is problematic at both the Central Boulevard North and Central Boulevard South high service pump stations, based on current infrastructure and operating protocols.

Resolving the shortage in pumping capacity can be addressed using a number of possible tools, including provision of additional pumping capacity, manipulating existing high service pumping strategy, improving the transmission system hydraulics to reduce system pressure, and implementing an in-line booster pump station to service the Bluffs area.

Figures II.30, II.31 and II.32 illustrate the impacts on pumping capacity of making the following modifications to the Town's high service pumping infrastructure:

1. Constructing the proposed 24 inch Central Boulevard crossing between the existing 24 inch discharge header at the North and South Central Boulevard high service pump stations.
2. Constructing a parallel discharge header between the North Central Boulevard high service pump station and the proposed 24 inch Central Boulevard crossing.
3. Modifying the current high service pumping operation strategy by reducing flow from the North and South Central Boulevard high service pump stations, which have the least available pumping capacity, and increasing flow from the water treatment plant on-site high service pump station, which has the most. The impact of these changes would be further leveraged by the planned on-site high service pump rehabilitation project.

These figures show that implementing these adjustments improves the ability of the Town's existing high service pumping resources to meet its 45 psi minimum pressure threshold. Both 2010 and 2015 peak hour demands are met at all three pump stations while maintaining a standby pump at each site. However, with 2030 peak hour demands in place, all pumps (including standby pumps) at both the On-site and South Central Boulevard high service pump stations would have to be placed in duty service to maintain the required 45 psi minimum system pressure. One pump can remain as a standby at the North Central Boulevard station. Because all three high service pump stations perform more or less as a single operational unit, the requirement of maintaining backup pumping capacity at all three sites may be unnecessarily conservative. Maintaining a single large capacity standby pump (200 h.p.) at one site may adequately provide the necessary operational safety margin.

Figures II.27, II.28, and II.29 show the expected impacts of adding the Bluffs Area Booster Pump Station to the previously discussed array of modifications. With the Bluffs Area Booster Pump Station in place, all three high service pump stations are able to satisfy 2030 peak hour demands (with the 45 psi minimum system pressure threshold) while maintaining a backup pump at each site. If future conditions indicate that more system-wide pumping improvements may be warranted (as opposed to a localized solution like the Bluffs Area Booster Pump Station) two additional high service pumps, and all appurtenances, can be added at the Central Boulevard site.

This evaluation indicates that existing high service pumping capacity is adequate to support current and projected future demands through 2030 with the limitations in backup pumping capability discussed above. While the provision of additional high service pumping capacity at any of the three sites is not required in the near term, the construction of the proposed Central Boulevard crossing and associated 24 inch parallel discharge header at the North Central Boulevard would need to be constructed. This work should be included together with the Central Boulevard crossing, and a budget of $261,000 should be provided for design, permitting and construction. The evaluation also suggests that planning for the implementation of the Bluffs Area Booster Pump Station can likely be delayed until the 2025 planning horizon. The planning level costs for the Bluffs Area Booster Pump Station and the Central Boulevard Pump Station Piping Upgrade (including design, permitting and construction) should be budgeted at $2.4 million and $2.7 million, respectively. A life cycle cost comparison will be prepared before deciding to proceed with either.

Figure II.27

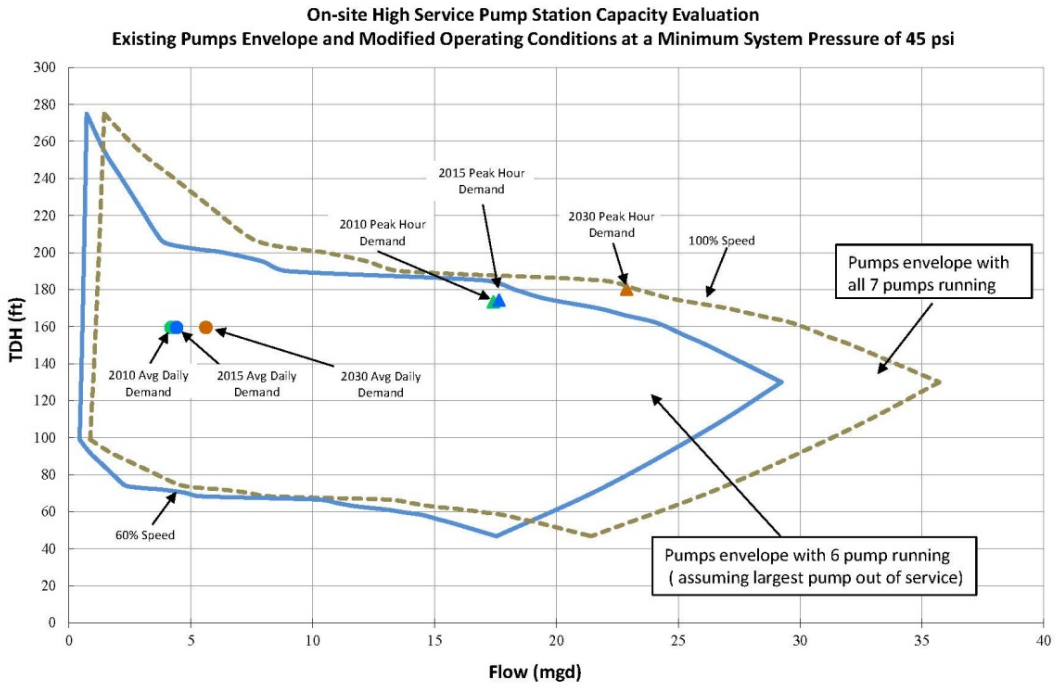


Figure II.28

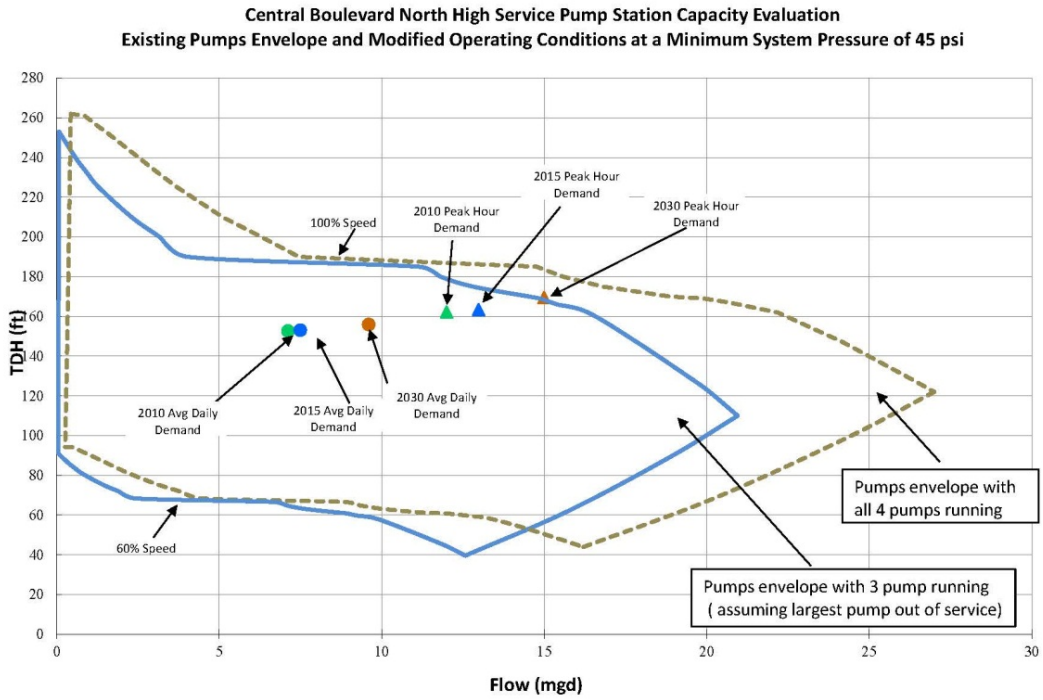


Figure II.29

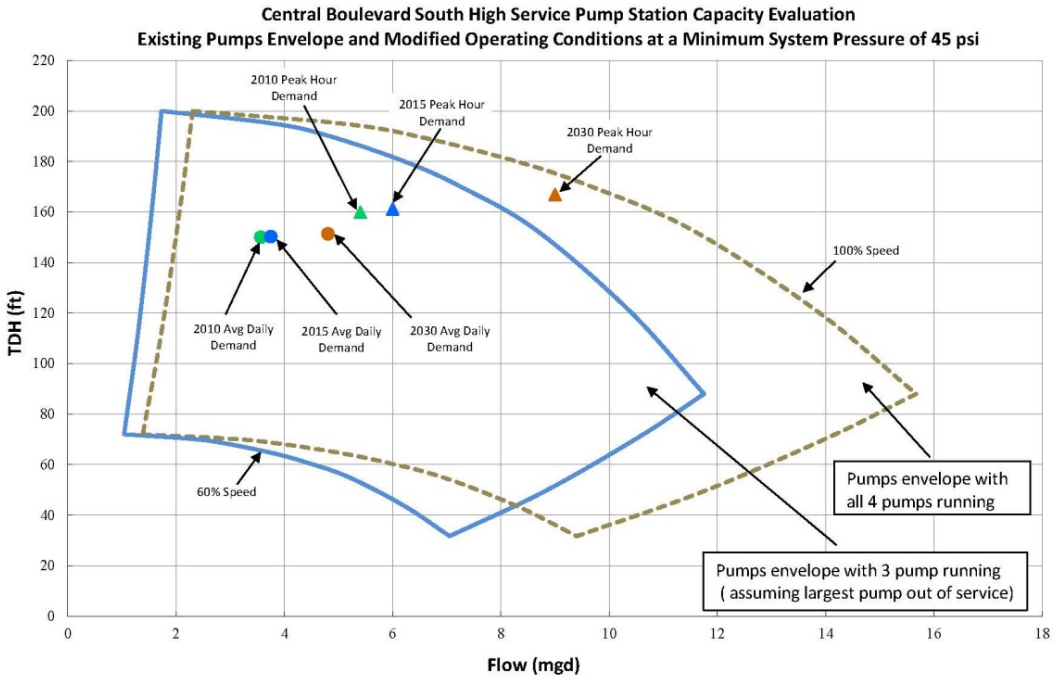


Figure II.30

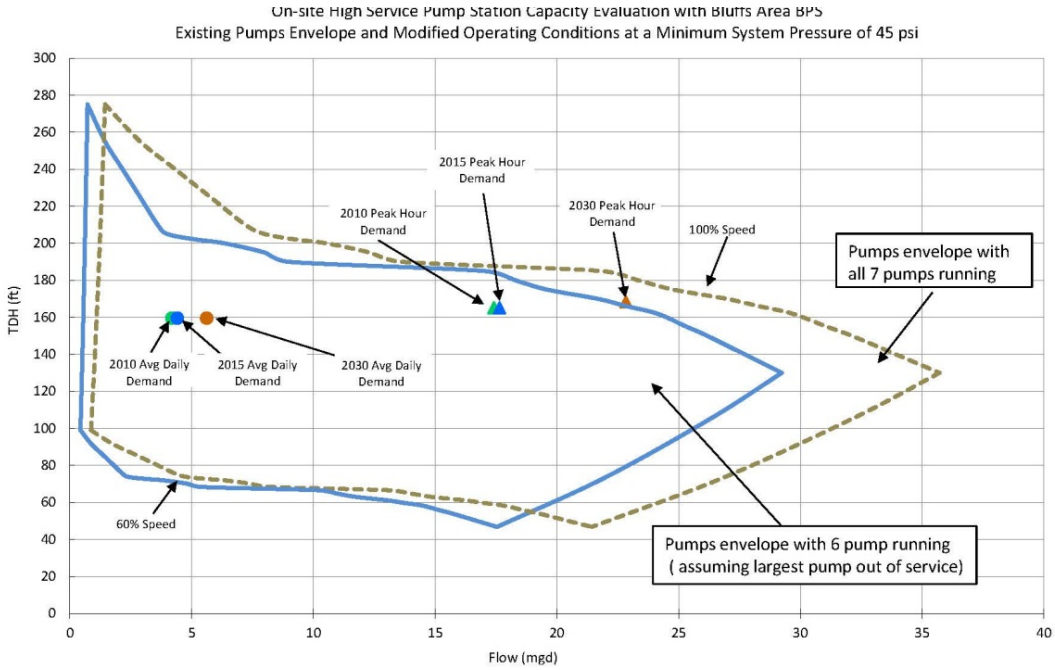


Figure II.31

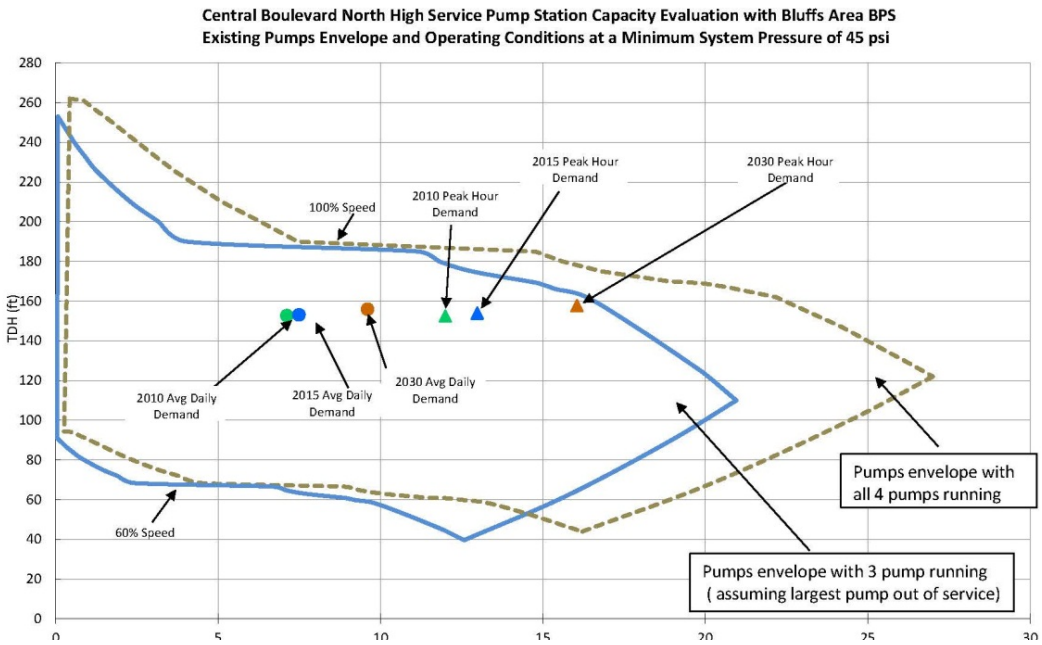
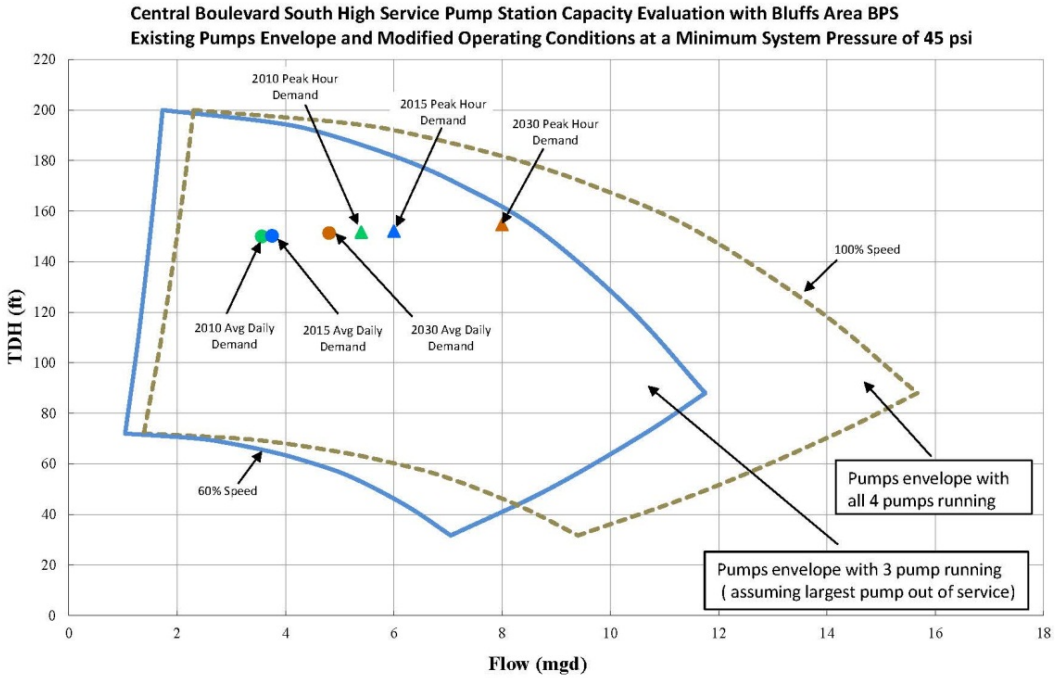


Figure II.32



C. Probable Regulatory Changes and Their Importance/Potential Impact

The Safe Drinking Water Act – An Overview

The Safe Drinking Water Act (SDWA) is the main federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. The SDWA was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and ground water wells. (SDWA does not regulate private wells which serve fewer than 25 individuals.)

Regulations Designed for Controlling Contaminants

Under the Safe Drinking Water Act (SDWA), EPA sets legal limits on the levels of certain contaminants in drinking water. To regulate a contaminant SDWA requires that EPA determine whether:

- The contaminant may have an adverse effect on the health of persons;
- The contaminant is known to occur or there is a substantial likelihood the contaminant will occur in public water systems with a frequency and at levels of public health concern; and
- In the sole judgment of the Administrator, regulation of the contaminant presents a meaningful opportunity for health risk reductions for persons served by public water systems.

The legal limits reflect both the level that protects human health and the level that water systems can achieve using the best available technology. Besides prescribing these legal limits, EPA rules set water-testing schedules and methods that water systems must follow. The rules also list acceptable techniques for treating contaminated water. SDWA gives individual states the opportunity to set and enforce their own drinking water standards if the standards are at least as strong as EPA's national standards. Most states and territories directly oversee the water systems within their borders.

Candidate Contaminant List (CCL)

The drinking water CCL is the primary source of priority contaminants for which EPA conducts research to make decisions about whether regulations are needed. The contaminants on the list are known or anticipated to occur in public water systems. However, they are currently unregulated by existing national primary drinking water regulations. A regulatory determination is a formal decision on whether EPA should issue a national primary drinking water regulation

for a specific contaminant. The law requires EPA to make regulatory determinations for five or more contaminants from the most recent CCL. The Agency published the final regulatory determinations for 9 contaminants on the first CCL in July of 2003. The Agency published the final regulatory determinations for 11 contaminants on the second CCL in July 2008. One of the key outcomes of the CCL process was the decision EPA has decided to regulate perchlorate under the SDWA.

The (current) final CCL 3 includes 104 chemicals or chemical groups and 12 microbiological contaminants. The list includes chemicals used in commerce, pesticides, biological toxins, disinfection byproducts, and waterborne pathogens. The contaminants on the list are not regulated by existing national primary drinking water regulations, are known or anticipated to occur in public water systems, and may require regulation. EPA evaluated approximately 7,500 chemicals and microbes and selected 116 candidates for the Final CCL 3. After the listing process, the CCL 3 contaminants are evaluated further to determine if a contaminant has sufficient data to meet the regulatory determination criteria set forth in the SDWA. The EPA characterizes each contaminant included on the CCL for their data needs in three categories; health effects, occurrence, and analytical methods. The health effects, occurrence, and analytical methods needs are listed in the Federal Register notice for CCL 3. The data and information used to evaluate data needs are provided in the contaminant information sheets, and in the supporting documentation. If the data are sufficient for a particular contaminant, then a regulatory determination may be made.

The Town should continue to follow the findings of the CCL3 as several disinfection by-product parameters related to chlorination practices are included in the data gathering activities. If necessary, a study should be implemented to evaluate the impact of alternative disinfection methods on disinfection by-product formation potential (such as chloramine disinfection by-products that could in the future become regulated).

Consumer Confidence Reports

The Consumer Confidence Rule requires public water suppliers that serve the same people year round (community water systems) to provide consumer confidence reports (CCR) to their customers. These reports are also known as annual water quality reports or drinking water quality reports.

The Town should continue to improve its image within the Consumer Confidence Reports while reinforcing the utility's continued pursuit of water quality enhancement.

Recently Modified Provisions within the SDWA – Fluoride, Groundwater Rule and Security

Fluoride

In January 2011 EPA and the Department of Health and Human Services (HHS) (which includes the Centers for Disease Control) released a joint statement reaffirming the health benefits of water fluoridation, while also taking steps to ensure that no American gets unsafe levels of fluoride. HHS announced that it will take comment on lowering the recommended level for the addition of fluoride from the current range of 0.7-1.2 ppm, to a single value of 0.7 ppm. At the same time, EPA announced that it intends to consider tightening the Maximum Contaminant Level (MCL) for fluoride. It should be noted that utilities wishing to reduce the amount of fluoride they add to water may need to consult with and get approval from their state regulatory agency. EPA regulations (specifically the Lead and Copper Rule) require that the primacy agency review and approve long term treatment changes to ensure they don't interfere with corrosion control. While some experts believe that reducing the fluoride dose will not have a significant effect on corrosion control, review by the state may still be required in many instances.

Although the Town does not add fluoride to its drinking water, the Town should continue to evaluate the amount of fluoride naturally occurring in its raw water supply and to predict what extent the values will occur in its treated water should the EPA continue to further the development of this contaminant, specifically with respect to how the county Health Department intends to implement any newly revised rules, particularly with respect to the Lead and Copper Rule.

Proposed Revisions to the SDWA

Lead and Copper Rule

Lead and copper enters drinking water primarily through plumbing materials. Exposure to lead and copper may cause health problems ranging from stomach distress to brain damage. On June 7, 1991, EPA published a regulation to control lead and copper in drinking water. This regulation is known as the Lead and Copper Rule (also referred to as the LCR). The treatment technique for the rule requires systems to monitor drinking water at customer taps. If lead concentrations exceed an action level of 15 parts per billion (ppb) or copper concentrations exceed an action level of 1.3 parts per million (ppm) in more than 10% of customer taps sampled, the system must undertake a number of additional actions to control corrosion. If the action level for lead is exceeded, the system must also inform the public about steps they should take to protect their health and may have to replace lead service lines under their control.

The EPA is considering long-term revisions to the Lead and Copper Rule. The goal for the LCR Long-Term Revisions is to improve public health protection provided by the LCR by making substantive changes based on topics that were identified in the 2004 National Review, and to streamline the rule requirements. Example categories of potential changes to the rule include:

- Sample site collection criteria and sampling procedures for lead and copper tap monitoring
- Corrosion control treatment and water quality parameter monitoring requirements
- Lead service line replacement requirements
- Schools and day care facilities
- Consecutive system requirements
- Potentially outdated requirements, rule relevancy and simplicity for systems

The Town should maintain its active corrosion control program which includes implementation of corrosion control studies. Corrosion control can be achieved by modification of water quality and through chemical addition of corrosion inhibitors; studies should be performed to evaluate alternative treatment methods and to identify secondary impacts of alternative treatments studied.

Total Coliform Rule

Currently, the EPA is proposing revisions to the 1989 Total Coliform Rule (TCR). The proposed revised TCR offers a meaningful opportunity for greater public health protection beyond the current TCR. The proposed revisions require systems that have an indication of coliform contamination in the distribution system to assess the problem and take corrective action that may reduce cases of illnesses and deaths due to potential fecal contamination and waterborne pathogen exposure. This proposal also updates provisions in other rules that reference analytical methods and other requirements in the current TCR (e.g., Public Notification and Ground Water Rules). As with the current TCR, the proposed revised TCR applies to all public water systems.

EPA proposed revisions to the TCR on July 14, 2010. The proposed revisions to the TCR offer a meaningful opportunity for greater public health protection beyond the current TCR. The proposed revisions require systems that have an indication of coliform contamination in the distribution system to assess the problem and take corrective action that may reduce cases of illnesses and deaths due to potential fecal contamination and waterborne pathogen exposure. This proposal also updates provisions in other rules that reference analytical methods and other requirements in the current TCR (e.g., Public Notification and Ground Water Rules).

EPA expects to publish the final revisions to the TCR in the summer of 2012. The proposed revisions to the TCR will require public water systems that are vulnerable to microbial contamination to identify and fix problems, and establish criteria for systems to qualify for and stay on reduced monitoring, thereby providing incentives for improved water system operation. At this time, the Town of Jupiter should prepare for revisions in the monitoring for Total Coliform, which may have significant impact on sampling cost, distribution system management and updated required analytical methodologies with respect to how the Town monitors for coliform within the Town's drinking water distribution system.

Groundwater Rule

EPA published the Ground Water Rule in the Federal Register on November 08, 2006. The Ground Water Rule (GWR) became effective December 1, 2009, although the state of Florida has yet to promulgate this new Rule. The purpose of the rule is to provide for increased protection against microbial pathogens in public water systems that use ground water sources. EPA is particularly concerned about ground water systems that are susceptible to fecal contamination since disease-causing pathogens may be found in fecal contamination. The GWR applies to public water systems that utilize ground water. The rule also applies to any system that mixes surface and ground water if the ground water is added directly to the distribution system and provided to consumers without treatment.

Action: The Town should be prepared to submit a fully revised virus control plan regarding delineation of critical disinfection segments within the newly modified treatment facilities. As currently submitted, the permit packet "Four-Log Treatment Demonstration Submittal for the Town of Jupiter Water Treatment Plant (PWS No. 450-1491)" has not yet been formally approved by the Palm Beach County Health Department.

Security

Improving the security and resilience of our nation's drinking water and wastewater infrastructures is vital to ensure the provision of clean and safe water to all in the United States. Significant actions are underway to assess and reduce consequences, threats, and vulnerabilities to potential terrorist attacks; to plan for and practice response to natural disasters, emergencies, and incidents; and to develop new security technologies to detect and monitor contaminants and prevent security breaches.

Action: The Town of Jupiter should prepare for future "security-related" requirements of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Bioterrorism Act). This will require continued coordination with existing security and hurricane planning tasks. The Town is recommended to continue in its efforts to enhance security measures at all of its' critical facilities.

Emerging Water Quality Concerns: Endocrine Disruptors and Pharmaceuticals

Research is documenting with increasing frequency that many inorganic, organic and microbial constituents that have not historically been considered as contaminants are present in the environment at low quantities on a global scale. These "*emerging contaminants*" are commonly derived from municipal, agricultural, and industrial wastewater sources and pathways. These newly recognized contaminants represent a shift in traditional thinking as many are produced industrially yet are dispersed to the environment from domestic, commercial and industrial uses. Emerging contaminants will affect current and future treatment technologies utilized by the drinking water community; membrane processes will be carefully examined in order to deal with contaminant removal challenges.

Emerging contaminants (ECs) are those chemicals that recently have been shown to occur widely in water resources and identified as being a potential environmental or public health risk. ECs are used every day in our homes, on our gardens, by agricultural and other businesses, and industry; ECs include detergents, fragrances, prescription and nonprescription drugs, disinfectants and disinfection by-products, pesticides, herbicides and nanomaterials. Emerging chemical contaminants, such as industrial solvent stabilizers (1,4-dioxane), fuel oxygenates (MTBE and TBA), disinfection byproducts (NDMA), pharmaceuticals (antibiotics/drugs), personal care products (polycyclic musks), pesticides and herbicides (1,2,3-trichloropropane), algal toxins, emerging pathogens, and other persistent compounds such as flame retardants (PBDEs) and phthalates, illustrate many technical and institutional challenges.

The Town had foresight with regards to these emerging issues as most of the endocrine contaminants can be removed by reverse osmosis. However, the nanofiltration membranes may not be able to effectively treat for all of the endocrine contaminants that are being evaluated. Consequently, the Town should remain diligent with regards to the presence of endocrine disrupting compounds and possible actions that may be required from the Health Department.

D. Water Utility Capitals Needs Assessment

1. Raw Water Supply Sustainability

a. Surficial Aquifer Source

Well Replacement Plan

Wells that are 30-40 years old (wells 6, 7, 8, 9, 10 and 11) should be properly abandoned and replaced two per year at a budgeted cost of $425,000 per replacement well facility (2012 dollars). Construction of replacement wells should commence in 2017 and be completed by

2019. Based on the expected yield of new replacement wells, it is expected that (4) 400 gpm wells will replace wells 6, 7, 8, 9, 10 and 11 at an approximate of $1,700,000.

Table II.16
30-40 Year Old Wells to be Replaced

Well	Year Built	Age
11	1978	34
8	1977	35
9	1977	35
10	1977	35
6	1974	38
7	1974	38
Number of wells:		6

Remaining wells that are 20-40 years old (17 wells total) should be replaced at the rate of one per year beginning in 2019. Selected wells will be based on age and performance testing. The specific replacement approach will be site specific and may include: over drilling the existing well, replacement at a nearby location, or installation of a non-ferrous liner. The cost of $425,000 per year is recommended for budgeting these replacement wells.

Table II.17
Other 20-40 Year Old Wells to be Replaced

Well	Year Built	Age
29	1989	23
30	1989	23
23	1987	25
24	1987	25
25	1987	25
26	1987	25
27	1987	25
28	1987	25
21	1986	26
22	1986	26
15	1982	30
16	1982	30
17	1982	30
18	1982	30
13	1981	31
14	1981	31
12	1978	34
Number of Wells		17

Well Rehabilitation

The Utility currently budgets $150,000 for existing well rehabilitation that should be increased to $200,000 per year, approximately $4,000/year per well. Historically, the $150,000 budget is depleted prior to the end of the fiscal year leaving wells out of service. This funding will pay for rehabilitative and replacement work on wells that are greater than 20 years old (prior to complete well replacement) and will include maintenance of pumps and motors, replacement mechanical and electrical components , and well construction and development improvements before failure renders the well facility out of service.

Existing Surficial Aquifer Well

New Well Construction

In order to effectively secure surficial aquifer supplies needed to ensure the long-term viability of the Town's water treatment system, the balance of permitted wells located within Wellfield No. 4 (North Limestone Creek wellfield) should be constructed along with needed ancillary facilities. The projected cost of this wellfield is $3,405,472.

b. Floridan Aquifer Source

Florida Aquifer Wellheads

Each wellhead facility is constructed of PVC and stainless steel. The materials are sufficiently durable to last the life of the well with regular maintenance to repair and replace worn or leaking parts. PVC casings should be coated to protect the material from ultraviolet exposure. No other capital expenditures are recommended other than regular replacement and renewal work to keep the facilities operating as designed.

Floridan Aquifer Well Replacement

Well RO-4 was removed from service because of poor water quality including sand and silt production. The well pump was removed from RO-4 in 2011. Deepening of the well and installation of a liner was evaluated and postponed until 2012 and such time as the Town needs additional Floridan Well capacity. It is recommended that this well be kept for standby and monitoring purposes including periodic water sampling.

Figure II.33

LIMESTONE CREEK WELLFIELD (WELLFIELD NO. 4)
WETLAND AND WELL LOCATIONS
JONATHAN DICKINSON STATE PARK
W-1
W-2
W-3
ISLAND WAY
JUPITER COMMUNITY PARK
SA60
SA59
SA58
SA57
SA56
SA62
Interstate 95
Florida's Tpke
INDIANTOWN RD
Legend
Wetlands
Future Surficial Wells
2000
Feet

c. Surficial Aquifer Withdrawals and Prevention of Wetland Impacts

The consumptive use permit (CUP) issued by SFWMD in August 2010 included, among other requirements, implementation of a wetland monitoring program to identify whether consumptive use drawdown in Wellfield 4 results in impacts to wetlands within the modeled drawdown zones for the wellfield. Subsequent to issuance of the permit, a detailed wetland monitoring program design was provided to SFWMD for their consideration and approval. Once the program was approved, implementation occurred and locations to initiate the monitoring were established. The monitoring program includes the following basic elements:

- Daily time step groundwater elevation monitoring in three separate wetland areas
- Collection of daily rainfall data from the SFWMD rain gage at the S-46 structure
- Bi-weekly time step reporting of total pumpage volume once the wellfield is brought on line
- Grade elevation information from monitored wetlands at the edge and deepest points

In addition, site specific vegetative monitoring data is required from several locations in each of the wetlands in order to measure trends or changes in vegetative cover. The pre-pumping "baseline" monitoring report was completed and submitted to SFWMD. Annual reports are required in April of each year beginning in 2012.

The results of the Wetland Monitoring Program are intended to provide reasonable assurance to SFWMD that the permitted withdrawals from Wellfield 4 are not causing negative impacts (referred to as "harm" in the CUP) to wetlands that fall within the modeled drawdown area for the wellfield. In the event that the wetland monitoring results indicate that there is measurable harm to the wetlands that is attributable to the Wellfield 4 withdrawals, operational parameters will have to be developed for the wellfield in order to reduce and eliminate any such impacts. Alternatively, should there be documented impacts which cannot be resolved through modification of wellfield operations; there may be a requirement to provide compensatory wetland mitigation to offset any impacts to wetlands affected by wellfield drawdown.

d. Recharge of Surficial Aquifer

Regional water managers have long recognized the importance of capturing excess surface water runoff and the use of such water for surficial aquifer recharge. In fact, as part of the Northern Palm Beach County Plan component of the Comprehensive Everglades Restoration Plan (CERP), the ultimate delivery of 25 cfs from the regional system was to occur for this

purpose. In fact, in 2006 Town meetings with SFWMD staff and consultants indicated that the infrastructure to deliver this 25 cfs was planned for, and potentially funded, in the CERP. Commitments relative to the infrastructure, and ultimately the allocation from the regional system, have waned over the subsequent years. Given delays in achieving the consistent delivery of minimum flows to the Northwest Fork of the Loxahatchee River, the SFWMD cannot yet responsibly address certification of the availability of flows for aquifer recharge purposes. Although formal certification of water availability continues to delay full operation of the recharge system, SFWMD has recently discussed working with Jupiter (via a pilot study) to explore the diversion of excess surface water runoff from the C-18 Canal when discharges to tide through the S-46 structure are eminent and/or other system factors indicate it is prudent.

Ultimately, it should be the Town's goal to secure the 25 cfs of recharge flows to its surficial aquifer wellfields. Implementation of these recharge flows would aid significantly in reducing natural area impacts due to the Town's groundwater withdrawals while also minimizing recurring impacts simply resulting from periodic drought. The Town has always acknowledged that achieving minimum flows to the northwest fork of the Loxahatchee River should take precedence. However, constant pressure will need to be applied to the SFWMD to ensure that the sustainability of the Town's wellfield is addressed immediately thereafter. Attempts to gain the SFWMD's cooperation and assistance relative to pilot testing should continue and final engineering should be accomplished to complete the recharge system and its connection to the SFWMD's regional system which is estimated to cost $1,400,000.

2. Raw Water Collection System Facilities

a. Floridan Aquifer Raw Water Main

The Floridan Aquifer raw water system includes 11 wells and transmission piping varying in size from 12" to 30". This transmission piping originates at the water plant and proceeds generally west along Jupiter Gardens Drive and continues along the C-18 Canal alignment. The piping system is entirely high density polyethylene (HDPE) with stainless steel valves. The exclusion of any iron materials in this piping system provides a long life expectancy.

There are no known issues with this transmission system that would require capital improvements.

The planned maintenance operations are considered adequate to keep the pipe in operating condition.

b. Surficial Aquifer Raw Water Mains

The surficial aquifer raw water system includes 51 wells and transmission piping varying in size from 6” to 24”. The system was recently analyzed by building a hydraulic model and calibrating that hydraulic model with actual operating data gathered in the field. This calibration process, as well as examining various operating scenarios using the hydraulic model, has demonstrated that the piping system is adequate to meet the future requirements of the water plant.

Piping is in place for a future well field (North Limestone Creek Wellfield/Wellfield 4) that will be located north of Indiantown Rd. This future well field will allow greater dispersion of the groundwater withdrawals serving the Jupiter water treatment facilities.

There are no known issues with this transmission system that would require capital improvements.

The planned maintenance operations are considered adequate to keep the pipe in operating condition.

3. Treatment Facilities

a. Modify RO Permeate Odor Scrubbers

The mobile bed absorbing (MBA) units remove hydrogen sulfide present in the off gas generated by the BWRO permeate degasifiers. These units were installed in 1990 and therefore are approximately 22 years old. This process for removing (scrubbing) hydrogen sulfide from degasifier off gas was selected in 1990 as representing the most easily implemented and lowest-cost method of resolving a serious odor issue present when the BWRO plant was first placed in service in 1990. The units are able to remove large quantities and high concentrations of hydrogen sulfide at a relatively low operating cost. It is also possible for them to operate at a high efficiency of approximately 99% hydrogen sulfide removal.

These units have presented a higher than expected maintenance cost due to the aggressive nature of the fluid in the MBA units and trace amounts of waste product that is emitted from the discharge stacks of these units. Additionally, the process sensing instruments are not accessible and therefore become inoperable making precise operation of the units difficult. The sulfur being removed tends to accumulate inside of the MBA towers and must then be cleaned manually. It is becoming increasingly difficult to find contractors that will undertake this task. The waste product emitted from the discharge stacks is both highly corrosive and stains any painted concrete on which it falls. This adds significantly to maintenance costs at all surrounding facilities. Lastly, the MBA units rely on the use of a chemical that is proprietary.

Hence there is motivation to determine alternative or reasonably secure the insurances that this chemicals can be purchased at a reasonable cost over an extended period of time.

Another viable alternative to the MBA process at this time is a conventional two-stage caustic/chlorine scrubber. If operated properly the caustic/chlorine units may be able to achieve greater than 99% removal of hydrogen sulfide; however, in general their operating cost can be as much as 3 to 4 times higher than the MBA. Redundant units are considered a necessity since operating the BWRO plant without hydrogen sulfide scrubbing will result in very significant odor complaints from the surrounding neighborhoods. In order to provide two-stage scrubbers, a total of four towers will be required. In order to maintain water treatment production, the MBA units must remain in service which means new scrubbers could not be placed at the same location. The most appropriate and available location for 2-two stage scrubbers would be south of the BWRO clear well in the area currently occupied by the lime sludge pens. The lime sludge pens are no longer in service therefore it is possible to construct new scrubbers at that location. Ducting would be connected from the current BWRO degasifier outlets to the new location.

Another known odor control process utilizes bacteria living in a bed of organic matter and the bacteria consume hydrogen sulfide. These units may not be capable of dealing with the very high concentrations and volume of hydrogen sulfide present in the BWRO degasifier off gas. They generate a relatively high volume, approximately 20,000 gpd, of acidic waste product. As a biological process, these biological treatment units can suffer an upset which will lead to no treatment of the hydrogen sulfide while the biological content is being reestablished.

Yet another known process is removing the hydrogen sulfide while it is in the water with ozone. This would eliminate the MBA units and all odors from the RO permeate. However, implementing this process carries a capital cost approximately double the cost of redundant caustic scrubbers. Operating cost is also estimated to be greater than the cost of caustic scrubbers.

Lastly, one additional option may include oxidizing media filters which consist of media having special coatings that oxidize hydrogen sulfide gas to solid sulfur particles which are then filtered. This process would treat the hydrogen sulfide while it is in finished water which may prove costly as significant infrastructure would be required.

Given that a clear low cost, highly reliable alternative is not apparent, it is recommended that the Utility move forward with the rehabilitation of the MBAs presently in use at the RO plant. This rehabilitation is anticipated to restore the units service life for another 35 years. These improvements are intended to improve hydrogen sulfide removal efficiency (reduce odor), reduce mist emission, (reduce area staining), protect blowers and pumps (reduce

maintenance), and improve instrumentation (reduce operating requirements). In the interim, alternative odor treatment technologies can be evaluated and pilot tested. Other emerging technologies may then be discovered which prove to be best suited for the replacement of a reasonable cost. Therefore, the recommended course of action would include the following:

- Install a single stage caustic/chlorine scrubber on the air discharged from the MBA units. These scrubbers are expected to remove 98% of the hydrogen sulfide from the air discharged from the MBA units. The existing 30" MBA stacks are to be replaced with 36" ducting extending vertically downward and discharge into the new second stage scrubber inlet. The scrubber discharge stacks would extend to a height equal to or higher than the exiting stacks to include dispersion as a part of the odor control measures. The new scrubbers are to be installed south of the existing MBA units on top of the proposed building that will house the blowers and pumps. A budget value of $800,000 is recommended for this portion of this element.

- Install a concrete building to house the blowers and recirculation pumps to reduce noise levels and protect these units from the corrosive effect of the MBA waste product. This includes replacement of the blowers and pumps with new units. A budget amount of $350,000 is recommended for this portion of this element. Relocation of these units and construction of the building will eliminate Middle Road as a continuous access across the plant site.

- Modify the sulfur sludge drying pens to better facilitate rapid drying without weather impacts. A budget of $100,000 is recommended for this effort.

- Replace all instruments and control devices at locations and in a fashion that produces reliable instruments and control of the process. A budget amount of $50,000 is recommended for this effort.

- Seek out opportunities for purchasing the long-term rights to the proprietary chemicals used within the MBAs. Options may include the rights to self-produce the chemical. A budget amount of $50,000 is recommended for this task.

- Pilot testing existing and emerging odor treatment technologies to be prepared for the ultimate renewal or replacement of the existing MBA units in 2024. This task would include preliminary design of the selected alternative and definitive projections of capital and operating costs. A budget of $175,000 is recommended for this effort.

Given the significantly reduced capital and operating costs involved, this alternative is the selected recommendation for master planning purposes. A full summary of the current alternative technologies and their cost can be found within Table II.18.

A total budget of $2,196,000 is recommended for this element and would be initiated in 2019.

Table II.18
Comparison of Processed for Hydrogen Sulfide Removed from RO Permeate Preliminary Planning Evaluation of Alternative Technologies

Evaluation Factor	Mobile Bed Absorber	Caustic Chlorine Scrubber	Ozone Oxidation	Oxidizing Media Filter
Service Life	35	35	35	35
Removal Efficiency	99%	99%	99%	99%
Operating and Maintenance Safety Concerns	Average	Average	High	Average
Propietary Chemicals	Yes	No	No	No
Electrical Operating Cost (Per Kgal)	$0.04	$0.02	$0.30	$0.03
Chemical Operating Cost (Per Kgal)	$0.03	$0.10	$0.15	$0.04
Maintenance Cost (Per Kgal)	$0.02	$0.02	$0.03	$0.01
Waste Teatment/Disposal (Per Kgal)	$0.01	$0.03	$0.00	$0.01
Total Estimated Operating Costs (Per Kgal)	$0.10	$0.17	$0.48	$0.09
LRD Connection Fees	$0	$100,000	$0	$10,000
Construction Cost	$1,525,000	$1,700,000	$5,500,000	$2,500,000
Engineering Cost @ 20% Construction	$305,000	$340,000	$1,100,000	$500,000
Contingencies @ 20% Capital	$366,000	$408,000	$1,320,000	$600,000
Total Capital Cost	$2,196,000	$2,548,000	$7,920,000	$3,610,000

b. Replace Membrane Vessel End Caps for RO Trains A, B, C & D

The membrane vessel end caps on all four Bank 1 RO trains are original equipment from 1989. These end caps are constructed of cast aluminum which has been corroding over the years by the high chloride water being treated at this plant. The corrosion is becoming significant and there is no way to repair the damaged end caps. Operating pressures in these treatment train vessels are in excess of 200 psi and end caps in their current condition is concerning relative to worker safety risk. The original manufacturer is no longer in business; however, we hope to

find a source to fabricate replacement of these end caps. In a budget of $500,000 is recommended to accomplish this task. It is hope that this repair will enable the utility to achieve a full 35 year useful life for these treatment trains..

c. Demo Lime Sludge Drying Equipment Lime Sludge Pipe Gallery

The lime sludge drying facilities served the lime softening plants which have now been removed. The basic lime sludge handling facilities are substantial concrete structures and both the vacuum pump building and pipe gallery may be used for future improvements on this site. Accordingly, these structures will remain and the piping, valves, control wiring, motors, pumps, storage vessels and other mechanical components will be removed. These components will deteriorate in time and could create an integrity issue within the structures if allowed to decompose. Furthermore, as this facility becomes more in disrepair, it will prove to be an eyesore to the neighboring Chasewood residential community to the south of the water plant.

A budget of $150,000 is recommended for this element.

d. Enclosed Storage Barn

The covered sludge laydown area served the lime softening plants which have now been removed. This facility is currently being used to store plant equipment and spare parts that are both large and able to tolerate exposure to sun and rain. Currently this facility is composed of a concrete foundation/floor with a roof. Enclosing all, or some, of the facility perimeter will provide a safe location for storage of items that would deteriorate if exposed to sun and rain. Enclosing some or the entire perimeter will allow more effective and productive use of this investment and better secure its contents in a hurricane.

A budget of $300,000 is recommended for this element. This budget is dependent on the building frame being capable of meeting building codes after walls are installed.

e. Replace Nano Sand Filter Media

Pretreatment at the nanofiltration facility consists primarily of filtering the raw water through sand media. These sand filters were placed into service in 2010 and the media has a useful life of 10 years. The media should be replaced in all six filter cells in 2020 and every 10 years thereafter. During media replacement maintenance will be conducted on the nozzles and other filter interior components.

A budget of $250,000 in 2020 and 2030 is recommended for this element.

f. Replace RO Transfer Pumps

The RO clear well contains six pumps which transfer water from the clear well into either the nanofiltration clear well or directly into finished water storage tanks. These pumps were installed in stages between 1989 and 1996. All have been replaced several times on a maintenance basis due to excessive corrosion of the metal parts. These pumps process BWRO permeate which is naturally aggressive, particularly to the cast iron and brass components of the pumps. These pumps will be replaced with units fabricated of Type 316 stainless steel which would significantly prolong the useful life of these pumps.

A budget of $750,000 is recommended for this element.

g. Replace Five Nanofiltration Train Membranes

The nanofiltration facility was placed into service in 2010. The useful life expectancy of the membranes in this facility is 5 years which would call for their replacement in 2015. All five trains were placed into service at the same time which means the membranes in all five trains should be replaced every 5 years. The specific trigger date for membrane replacement will be dictated by decreased membrane treatment performance below acceptable operational parameters.

A budget of $ 1,650,000 in 2015, 2020, 2025, 2030 and 2035 is recommended for this element.

h. Install Supplemental Blend Box at Nano Clearwell and Associated Equipment

Finished water produced at the water treatment facility is currently a blend of waters treated by nanofiltration (Nano), brackish water reverse osmosis (BWRO), and anion ion exchange (IX). The ion exchange treatment process uses shallow aquifer raw water and currently removes only organic carbon leaving in place the hardness and alkalinity naturally present. The process of adding ion exchange treated water to the BWRO permeate was instituted in order to stabilize the BWRO permeate by adding hardness and alkalinity to produce a water with hardness similar to that produced by the lime softening treatment process. The lime softening treatment facility has now been removed. Adding ion exchange treated water to the BWRO permeate is the current method of stabilizing BWRO water to meet customer expectations when only BWRO permeate is being produced and to prevent significant corrosion damage in the RO clearwell. The amount of hardness and alkalinity placed in the BWRO water by the IX water is appropriate to adjust the BWRO water but excessive when this water is blended with Nano water.

The quality of the finished water would be improved and its potential to corrode facilities at the plant by reducing the amount of the hardness/alkalinity being placed into the system by the ion exchange process would be reduced. In order to protect the BWRO clearwell, nanofiltration permeate can be directed from the nanofiltration treatment facility to the RO clearwell trough where it would blend with BWRO water and stabilize that water. This will allow the ion exchange treatment process to be modified to include a resin bed composed of anion and cation resins which would reduce some of the hardness present in the shallow aquifer drinking water while at the same time removing the organic carbon.

Moving nanofiltration permeate from the nanofiltration plant to the BWRO clearwell requires construction of a pump chamber and pumps at the nanofiltration plant and a pipeline connecting the nanofiltration and BWRO plants. Installation of the supplemental pump chamber would allow pumping of only chlorinated Nano permeate to the RO clearwell blend trough. This provides both a method of stabilizing RO permeate without the use of ion exchange treated water and an alternative method to discharge water from the nanofiltration plant to the finished water storage tanks that does not use the existing the blend box. The supplemental pump chamber would include a weir that raises the hydraulic grade line in the nano permeate degasifier collection piping. The intended capacity of this pumping unit is 4,700 GPM (6.8 MGD) which represents 50% of the RO plant capacity. Implementing these facilities requires installation of a new pipe from the supplemental pump chamber to the RO clearwell blend trough entrance. This is approximately 400 feet of pipe and would be 24” HDPE. This

facility will allow blending of Nano permeate with RO permeate and also operation of 2 Nano trains with the existing blend box out of service.

Installation of the supplemental blend box will also remedy several other issues present at the nanofiltration clearwell. Permeate produced by the nanofiltration process contains ammonia, which was present in the raw water, and disinfection of the permeate by chlorination to produce free chlorine residual converts the ammonia to trichloramine. This gas is aggressive and corrosive to aluminum, stainless steel, iron, and copper. It is also an obnoxious gas. Equipment has been installed to collect this gas that accumulates in the blend box and discharge it into the scrubber system for treatment and discharge through the scrubber stacks. Configuration of the Nano degasifiers creates two phase flow in the degasifier piping which increases the volume of air containing trichloramine. The two phase flow will be eliminated by raising the hydraulic gradient in the degasifier piping to an elevation approximately equal to be bottom of the degasifier unit. This will be relieved in the supplemental pump chamber.

Permeate water produced by the nanofiltration facility must pass through the existing blend box in order to reach the clearwell where transfer pumps send it to finished water storage. Any maintenance, repair, or modifications to the blend box will eliminate all nanofiltration water treatment capacity during the duration of the operation. Accordingly, any significant modifications or repairs to the blend box will significantly reduce production capacity and decrease finished water quality. This will be accomplished by the supplemental pump chamber.

A budget of $1,100,000 is recommended for this element.

i. Replace Circulation Pumps at Concentrate Treatment Facility

The hydrogen sulfide scrubbers located at the concentrate treatment facility (CTF) include recirculation pumps that are located inside of the suction tank for each of the scrubber stages. This location does not allow access to the units for routine maintenance and servicing. Replacement of a pump is also significantly impaired by this location. Similar vertical or horizontal pumps will be mounted outside of the suction tank to allow access to the pumps.

A budget of $120,000 is recommended for this element.

j. Replace Reverse Osmosis MCC Cooling System

The air conditioning units serving the reverse osmosis electrical room were installed in 2003. The air handlers/evaporators were replaced in 2008 and the average life expectancy of these units is 7 years which means they will be due for replacement in 2015. The existing units use drinking water as the cooling water source for the condensers and this drinking water cannot be placed back into the drinking water system after it has passed through the heat exchanger

system. Accordingly, these units send to waste a significant amount of drinking water each day. The replacement units will use conventional air cooled condensers located on ground level inside a block wall enclosure for protection against hurricane force winds. These air cool condensers will be located in the vicinity of the above ground transfer pipe.

A budget of $275,000 is recommended for this element.

k. Install Nitrogen Blanket in Sulfuric Acid Storage Tank

The sulfuric acid systems used at both the nanofiltration and reverse osmosis facilities all contain some amount of steel or stainless steel. Sulfuric acid used in these systems is intended to be 93% or higher inpurity which makes it not corrosive to steel or stainless steel. The tanks used to store acid, either bulk storage or day storage, are ventilated to atmosphere which means moist ambient air is allowed into the tank as pressure and level of the stored acid changes. The ambient moisture present in South Florida air will condense and dilute the acid, sometimes to a value below 93% purity. Once below 93% the acid becomes aggressive to stainless steel and steel which can in turn damage those metallic components. Interim work is underway to seal the vents and apply dried air to the storage tanks.

A more positive method of preventing ambient moisture from entering the tanks is to create a blanket of nitrogen in the tank above the liquid line. Nitrogen is heavier than air and will tend to prevent ambient air from entering the tank, provided the nitrogen blanket is replenished as liquid level in the tank declines. Nitrogen generators will be installed at three locations where dry air is currently being inserted into the storage tanks. This will allow replacement of the dry air with nitrogen.

A budget of $65,000 is recommended for this element.

l. Implement Free Chlorine Disinfection Process

Disinfection is the cornerstone of public health, as it is an important step in ensuring that water is safe to drink. Water systems add disinfectants to destroy microorganisms that can cause disease in humans. The EPA's Safe Drinking Water Act (SDWA) mandates public water systems to disinfect water. The two primary methods of disinfection are regulated as either primary or secondary. In primary disinfection specific inactivation requirements exist for groundwater systems, whereas, secondary disinfection is practiced to maintain disinfectant residual throughout the Town's entire water service area. The Town's reliance on chloramines for secondary disinfection was predicated on control of regulated disinfection by-products (DBPs). However, conversion from lime softening to nanofiltration for treatment of the Town's surficial water supply has improved the effectiveness of removing naturally occurring DBP precursor material from the surficial water supply, providing an opportunity for the Town to explore

conversion to free chlorine for both primary and secondary disinfection. Conversion to free chlorine disinfection for both primary and secondary disinfection is recommended for the following reasons:

a. Chlorine disinfection is a stronger disinfectant than chloramine. Actual experience has demonstrated that chloramine residuals decline faster than free chlorine residuals in some parts of the distribution system, requiring additional flushing to maintain adequate residuals.
b. A secondary impact of the use of chloramines as a secondary disinfectant is the occurrence of nitrification within the distribution system. Nitrification is the process by which ammonia is converted to nitrites and then nitrates by non-harmful bacteria that naturally occur in the environment. Nitrification causes the depletion of the chloramine disinfecting residual within the distribution system. Distribution main flushing is used to often address areas of the distribution system experiencing low chlorine residuals, discolored water or other water quality issues that could be improved by flushing. Significant distribution flushing activities are required prior-to, during and following, nitrification episodes in order to maintain or increase chloramine residuals. Flushing of the distribution system requires additional distribution personnel to maintain the water age within the system, increasing operating cost; conversion from chloramines to chlorine will reduce this cost and conserve a treated water resource.
c. Conversion from chloramine to chlorine as a secondary disinfectant will eliminate the ammonia chemical feed system, resulting in a reduction in the operational cost of the facilities.
d. Conversion from chloramines to chlorine for secondary disinfection will result in (1) a decrease in bacteriological activity measured by heterotropic plate counts, or HPCs, (2) a reduction in the amount of water required to flush water lines and storage facilities, and (3) decreased consumer complaints (particularly fish odors).
e. The estimated annual operating cost savings associated with conversion to free chlorine disinfection is at least $60,000.

There are a number of positive benefits associated with eliminating the use of ammonia in the secondary disinfection process and based on these benefits the recommendation is to move ahead toward implementing free chlorine as the secondary disinfection process.

There are several issues that must be examined in greater detail prior to implementing conversion to free chlorine. The Water System will be required to meet requirements of the Stage 2 Disinfectants and Disinfection Byproducts Rule relative to levels of disinfection byproducts in the finished water when using free chlorine as the secondary disinfection

process. The disinfection byproducts are total trihalomethanes as well as halocetic acids and these are formed as a result of the chlorine reacting with certain organic carbon precursors. Stage 2 of this Rule is likely to require that these disinfection byproducts be less than 40 ppb trihalomethanes and 30 ppb halocetic acids.

Water produced at the Jupiter plant undergoes three separate treatment processes-reverse osmosis, nanofiltration, and ion exchange. Each of these processes leaves varying levels of organic carbon remaining after treatment.

- Water produced by the reverse osmosis treatment process individually contains very low levels of precursors and therefore is not expected to have a measurable amount of the disinfection byproducts when subjected to free chlorine.
- Water produced by the nanofiltration process individually allows approximately 2 ppm of organic carbon in the product water which when chlorinated may exceed the allowable concentration.
- Water treated by the ion exchange process individually generally has organic carbon levels in the range of 3 to 5 ppm and when chlorinated will exceed the allowable concentration of disinfection byproducts.

Water sent to the customers is always a blend of these three treatment processes. Typically, with this ratio being consists of 46% nanofiltration, 46% reverse osmosis, and 8% ion exchange. However, there are occasions, such as drought conditions when the reverse osmosis percentage increases or heavy rainfall conditions when the nanofiltration percentage increases, when this ratio is not present. Accordingly, the resulting variations in finished water quality must be considered to ensure compliance with the Stage 2 the disinfection byproduct requirements.

The ion exchange treatment process in general cannot be improved to meet requirements of the Stage 2 DBPR and may eventually have to be decommissioned due to regulatory obsolescence similar to the previous lime softening treatment plant. If ultimate water system demands require its replacement, the 1.8 mgd treatment capacity of the ion exchange system may be replaced by installing the sixth nanofiltration treatment train which was provided for within the design of the Town's nanofiltration plant.

The nanofiltration treatment process can be modified to reduce organic carbon in the product water by replacing a portion of the existing membranes with a tighter membrane that will reject passage of more of the precursor organic carbon compounds. This modification to the membranes can easily occur during their 5-year replacement cycle.

Replacing nanofiltration membranes will require testing membranes using raw water and treatment configurations identical to the existing configurations which will best be accomplished by rebuilding the center feed membrane pilot unit. This pilot unit would be set up in the Nanofiltration Building and used to test a variety of membranes and pretreatment processes. The testing program would include analysis and investigations into the current and potential pretreatment processes. Furthermore, this pilot unit would also serve to facilitate continuous process improvement including the testing of advancements in membrane technology, new chemical additions/reductions and other changes to the treatment scheme. It is generally unsafe to test various changes to treatment processes using the full scale plant as it may negatively affect the finished water product received by our customers and may damage existing equipment. A budget of $400,000 is recommended to perform the necessary testing and construct the pilot unit.

m. Nanofiltration Permeate Odor Control Modifications

Water purveyors across the country often deal with a wide variety of non-regulated inorganic chemicals within their water system, which receive varying degrees of public attention. Hydrogen sulfide (H_2S) is an important inorganic water quality constituent that is regulated per the provisions of Florida Department of Environmental Protection's (FDEP's) Chapter 62-555 that are now in effect for new wells and for modifications to existing treatment systems. Specific H_2S removal requirements are cited in FDEP Chapter 62-555.315(5)(a) that pertain to public water system wells, with respect to various construction operation and maintenance items related to water quality. The new requirements, however, pertain to systems where the total sulfide equals or exceeds 0.3 mg/L, requiring the applicant provide aeration to remove total sulfide. Because the Town of Jupiter's Nanofiltration permeate water has been found to typically not exceed 0.3 mg/L, the current forced-draft aeration process is not yet required. As a result, the Town may be allowed to use the current chlorine chemical feed to reduce total sulfide and meet the intent of FDEP Chapter 62-555 provisions while also preventing any noticeable hydrogen sulfide odor emissions at the plant.

If it is confirmed that the nanofiltration permeate hydrogen sulfide levels are consistently below 0.3 mg/l, the Town could place its existing forced-draft packed tower aeration tower into stand-by and rely on the current chlorination disinfection process to remove the hydrogen sulfide that does

remain in the nanofiltration permeate water after treatment. The existing forced-draft packed tower aeration tower could be transitioned into an induced-draft packed tower operation because some form of aeration must be practiced by the Town in order to remove carbon dioxide from the permeate water for palatability and corrosivity requirements. It is hence recommended that the packed tower be converted from a forced-draft operation to an induced-draft operation.

The Town of Jupiter should benefit from converting to an induced draft packed tower aeration process because the induced-draft operation would not require the use of blowers. The blowers require continual electrical feed when operated; hence, the Town would experience annual operational cost savings of approximately $160,000 by this action, reducing the overall carbon footprint of the facility. However, some capital improvements would be required to transition to the induced draft operation to accommodate an induced flow of air into the existing towers. Approximately $120,000 would represent a probable opinion of the cost required to transition from forced-draft to an induced-draft condition (or $40,000 per packed tower). This cost would include modification of the scrubber air inlets; chlorine feed relocations and required design & permitting efforts.

4. Concentrate Disposal

a. FDEP/EPA Permitting

The RO concentrate discharge/disposal permit renewal application submitted in 2008 has been deemed complete but remains under review by FDEP, and the permit as authorized in the 2004 renewal and subsequent permit revision remains in effect through administrative extension while the pending permit renewal application is in process. At the current time, there are several technical matters related to the permit renewal for which information has been provided to FDEP and no further correspondence from the Department has been received. A discussion of the remaining technical matters as well as potential future permitting concerns is provided below.

In early 2010, FDEP staff contacted Jupiter Utilities staff expressing concern regarding several occurrences of surface water sample analyses of fluoride in the C-18 Canal that exceeded the established limits of the discharge permit. Over the next several months, a statistical analysis was undertaken in an effort to determine the relationship between these observed exceedances of the fluoride limit and external factors in the receiving waters. A series of submittals and coordination with FDEP staff led to the conclusion that the exceedances of the Fluoride limit were directly related to increases in background concentrations of fluoride in the C-18 Canal rather than any changes in the concentrate discharge. The increased background fluoride was found to be a result of the extreme drought conditions that were occurring on a

regional basis, which significantly reduced the normal freshwater base flow to the C-18 system causing increased intrusion of ocean waters in the canal which in turn increased the background fluoride concentration.

Several alternatives were considered in order to address the potential concerns related to fluoride concentrations in the receiving waters. The general approach has been to coordinate with FDEP to prepare a draft notice of intent for the concentrate permit renewal. As part of the renewal, there would be an Administrative Order establishing a schedule for securing the appropriate relief mechanism regarding fluoride in the C-18. This approach is beneficial in that it provides for compliance with water quality criteria under the new permit while allowing the necessary time for completion of the appropriate relief mechanism.

With regard to the relief mechanism for fluoride in the C-18 Canal, there have been several alternatives considered and discussed. Based on input from Department staff and review of the relevant criteria, there are several options for addressing the fluoride exceedances; however, it appears that two relief mechanisms are feasible. They include applying for a variance or applying for site specific alternative criteria (SSAC), in this case a "Type 2 SSAC" for fluoride in the C-18 Canal. These alternatives are discussed below along with a recommendation for a proposed approach.

The first alternative is application for a variance, which is a process by which an administrative request for varied or altered water quality criteria specific to the discharge "end of pipe" characteristics is processed through FDEP. The general approach is a balancing of the social, economic, and environmental impacts of a given proposed change on the receiving waters and affected citizens. The technical requirements generally follow the wastewater permitting and NPDES criteria, thus sufficient technical information and data should be available from the ongoing sampling and analysis program conducted by the Utility. The premise of a variance is that the condition should be temporary in nature with a definable end point after which the variance is not necessary. As an example, the variance that had been previously issued for acute toxicity was a "temporary" measure in anticipation of the rulemaking that allowed for acute toxicity from MSIIT. Once the new rule was in place, the variance was no longer necessary and was not renewed. In the case of fluoride, there is no pending change in criteria or other regulations that is currently expected that would justify a variance. In addition, the variance must be renewed every five years, and the renewal process could be expected to carefully consider whether in fact the variance is simply a request for continuation of conditions that are not expected to change. A variance is issued administratively by the Department after public notice, and if requested, public hearings.

The second alternative is application for site specific alternative criteria (SSAC), which is a process whereby a request is made for a change in water quality criteria (in this case fluoride) in

a specific reach or portion of a surface water body. The major technical areas that must be addressed in a petition for the SSAC include 1) aquatic toxicity, 2) bioassessment and risk assessment, and 3) historical and current water quality and biological data on the water body. There is a significant body of data available for the C-18, and thus the initial petition could be completed primarily by compiling existing data rather than new data collection. The basic approach of the SSAC is that an altered criterion for water quality in a defined location can be demonstrated not to undermine the designated use of the water body. This subjective evaluation is described as a "use attainability analysis" and requires documentation that the uses currently achieved in the designated classification (Class II in the C-18) can continue to be attained with a different water quality criterion for fluoride. The SSAC does not require renewal once it has been established for the waterway. However, implementation of the SSAC requires a second step after the staff review of the petition a development of a recommendation by FDEP staff. The second step is rulemaking that must be completed at the State level. This can have a significant effect on the schedule, as rulemaking is a "legislative" process that can be time consuming and costly.

In evaluating both alternatives, the long history of data collection and analysis that the Town has conducted in regard to the concentrate discharge, the "indefinite" term, and the technical reality of the water quality conditions as they exist with the discharge all favor the SSAC approach. The variance process is more subjective and somewhat less scientific and requires five year renewal cycles for which it may not qualify in the future.

On this basis, it is recommended that the Town proceed with preparing the technical information and documentation for the petition for SSAC for fluoride in the salt water section of the C-18 Canal. The estimated cost for proceeding with this continued permitting strategy should fluoride levels continue to exceed receiving water regulatory constraints is $100,000.

b. C-18 Outfall Corrosion Investigation

The RO concentrate outfall was constructed between 1986 and 1989. The original pipe material was PVC and modifications made in the piping on the plant site were all installed HDPE pipe. Both PVC and HDPE are insensitive to corrosion.

The original construction occurred when HDPE and large diameter PVC fittings were not available; therefore, the fittings included on the concentrate pipeline are ductile iron with epoxy coating on the interior. Although there are not many fittings on this approximately 2,000 foot-long pipeline, there are four located on what is now the north and south edges of Indiantown Road pavement that will be very difficult to repair should they fail due to corrosion. Two of them are approximately 10 feet deep where the pipe crosses Indiantown Road in a steel casing. Based on the type of fittings, potentially corrosive nature of the concentrate, and

critical nature of this pipeline, it should be assigned a life expectancy of no more than 30 years. Should this outfall pipe ever fail, the water treatment plant would immediately lose 46% of its treatment capacity which would impact the service to our customers in a drastic fashion. Replacement of this pipe would be conducted using horizontal directional drilling techniques. Should it have to be replaced in its entirety, a budget value for replacement of this pipe is $1,700,000.

The degree of aggressiveness of the concentrate water on iron fittings is not completely established. The concentrate contains elevated concentrations of chloride as well as dissolved oxygen and both of these elements normally are associated with water being corrosive. However, the LSI value of the water is fairly high which implies that it may tend to scale the pipe interior forming a protective coating against corrosion. In order to determine if replacement of the pipeline should be considered, some level of investigation into the condition of the iron fittings would be in order.

In order to perform a TV inspection of at least portions of the interior of the RO concentrate outfall pipe it is necessary to gain access for the TV camera at a location that will allow the camera to view portions of the original piping. All piping on the water plant site has been replaced within the last 8 years with HDPE piping that is more resistant to corrosion.

The area immediately south and east of the north Water Plant entrance is a location that is relatively clear of other utilities and within 20 feet of the existing outfall pipe extending north along Central Blvd. The proposed concept is to install a 20” x 8” tapping sleeve at this location. This site offers a location for insertion of the camera which allows it to move west and then north toward the fittings and valves approximately 15 feet of ductile iron pipe in Central Boulevard just south of the Indiantown Road. Conditions noted in the original pipe up to the vertical piping on the south side of the Indiantown Road will be used to judge conditions in the balance of the outfall pipe.

The work necessary to conduct a TV inspection will include installation of approximately 35 feet of the sheet piling to protect the wall along the south side of the north entrance and be left in place after this operation is completed to facilitate future excavation in this area. The tapping sleeve will be fabricated from stainless steel and encompassing the entire diameter of the existing HDPE pipe.

A budget value of $125,000 is recommended to conduct a TV inspection of this line.

5. Water Storage Facilities

Presently, constructed water storage facilities achieves all minimum regulatory standards relative to stand-by storage capacity for maximum day water demand as well as fite flow demands. Beyond minimal regulatory requirements, water storage facilities can also assist the Utility by facilitating lower treatment operating costs (production rate shift to hours of lower power costs) and can also serve to minimize the risks of service, interruption in times of emergency. During numerous past hurricanes, sufficient water storage capacity allowed the Utility to not only shut down delicate equipment during the storms to prevent power surge damages but also served to give a greater window of time to bring systems back on line without impacts to service our customers.

Looking forward, the following recommendations for water storage facilities have been generated through this master plan update.

a. Enhance Juno Beach Water Storage Tank Water Circulation

In recent years it has been evident that stored water circulation in the Juno Beach Water Storage Tank has not been optimal leading to decreased water quality. Several baffling/flow directing devices for ground storage tanks are readily available in the industry. Alternatively, the influent pipe riser could be modified to provide increased circulation. To improve tank water flows it is recommended that a budget of $75,000 be established to accomplish this work.

b. Limestone Creek Water Storage Facility

Currently scheduled for construction in 2020, this planned 1.0 million gallon tank can be delayed to 2025 due to the lack of intensive growth in the service area north of the C-18 Canal.

A budget of $2,200,000 has been previously established for this project.

c. Install Re-chlorination Equipment at Riverbend Re-Pump Facility

The Water System recently began serving a limited number of single-family residential customers west of the Florida Turnpike. These current customers represent only a small portion of the potential and therefore future customers in the area west of the Turnpike. Additionally, several large developments that were in progress are not currently active. Piping that was installed for these current customers were sized for the future demands in this area. Demand

by these relatively few current customers does not produce the design velocities within the distribution piping necessary to adequately move water through the system. These low velocities lead to long residence time within the distribution piping which has caused persistent loss of disinfection residual in this area. The area most persistently exhibiting low disinfection residual is the area immediately north of Donald Ross Road and west of the Turnpike. The long-term correction to this problem is waiting for additional customers to come online. In the meantime, it is necessary to add additional disinfection chemicals into the water in the area west of the Turnpike. This will be accomplished by activating the storage tank and re-pumping system recently constructed in the Western service area and adding chlorine and ammonia storage/injection pumps at this facility.

A budget of $275,000 is recommended for this element. It should be noted that $780,000 for this effort was appropriated in 2012, which may now be reduced.

6. High Service Pumping/Water Transmission Distribution

a. Reconfigure HSP-3, HSP-4, HSP-5, and HSP-6

There are currently four high service pumps (3, 4, 5, and 6) located inside of the high service pump building on the water plant site. These are currently the oldest high service pumps in the system, two of which were installed prior to 1984. Several of these pumps are small capacity compared to the current needs of the Jupiter Water System. Piping is present in the building that connects the pump suctions to on-site finished water storage tanks and discharge from the pumps to the finished water transmission system. Electrical service is also available within the building as well as connections to the plant control system. The presence of these core components make it worthwhile to remove the existing smaller units and install two or three pumps that have a capacity and a pumping curve to match the other 12 pumps in the high service pumping system. This will increase pumping efficiency while reducing system operating expense.

A budget of $550,000 is recommended for this element.

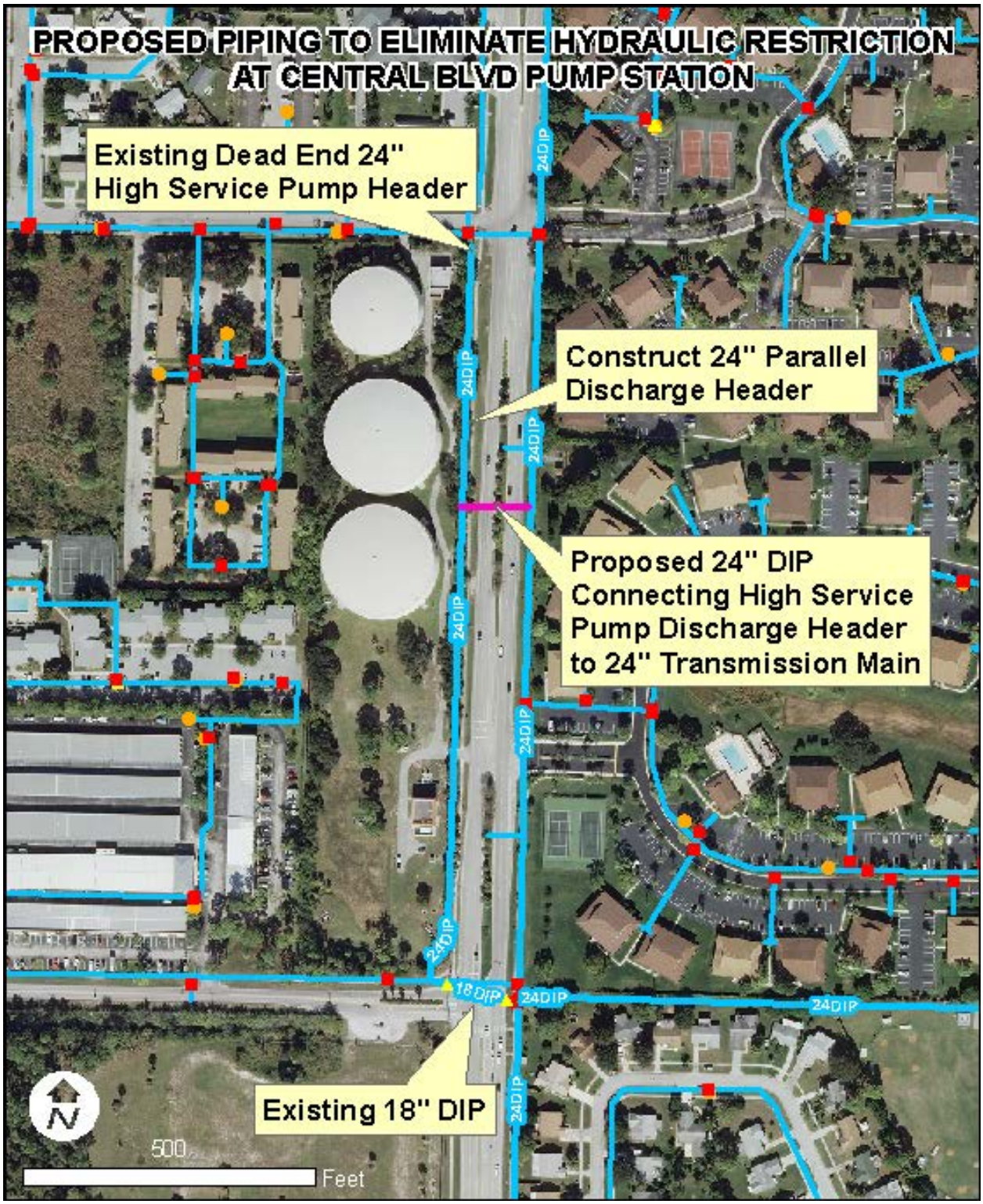
There are 3 elements in the “Summary of Above-ground Assets – Original and Replacement Cost” table in the Pump Rehabilitation component that apply to these high service pumps and stated to be placed in 2017. It is recommended that this element be placed in 2014.

b. Central Boulevard Pump Station Upgrades

As previously noted in the hydraulic modeling outcomes, a hydraulic restriction on the transmission main linking the Central Boulevard High Service Pumping (HSP) Facility to the portion of the system east of Central Boulevard contributes to high pressure conditions that affect both the north and south high service pumping stations. Finished water is pumped from the ground storage tanks into an existing 24” diameter ductile iron header (highlighted in blue on Figure II.34) which reduced down to 22" HDPE (inside diameter of approximately 16") diameter (highlighted in green) where it crosses Central Boulevard before tying into the 24” diameter transmission main on the east side of Central Boulevard.

The recommendation for enhancing the ability for the utility to adequately respond to future peak hour flow means is to construct additional high service pumping facilities, a second crossing of Central Blvd with 24” diameter DIP and construction a 24” parallel discharge header at the North Central Boulevard Pump Station. The recommended budget amount for these Central Boulevard Pump Station Upgrades is $2,700,000.

Figure II.34


PROPOSED PIPING TO ELIMINATE HYDRAULIC RESTRICTION
AT CENTRAL BLVD PUMP STATION
Existing Dead End 24"
High Service Pump Header
Construct 24" Parallel
Discharge Header
Proposed 24" DIP
Connecting High Service
Pump Discharge Header
to 24" Transmission Main
Existing 18" DIP
24DIP
18DIP
N
500
Feet

c. Bluff's Area Low Distribution Pressure Remediation

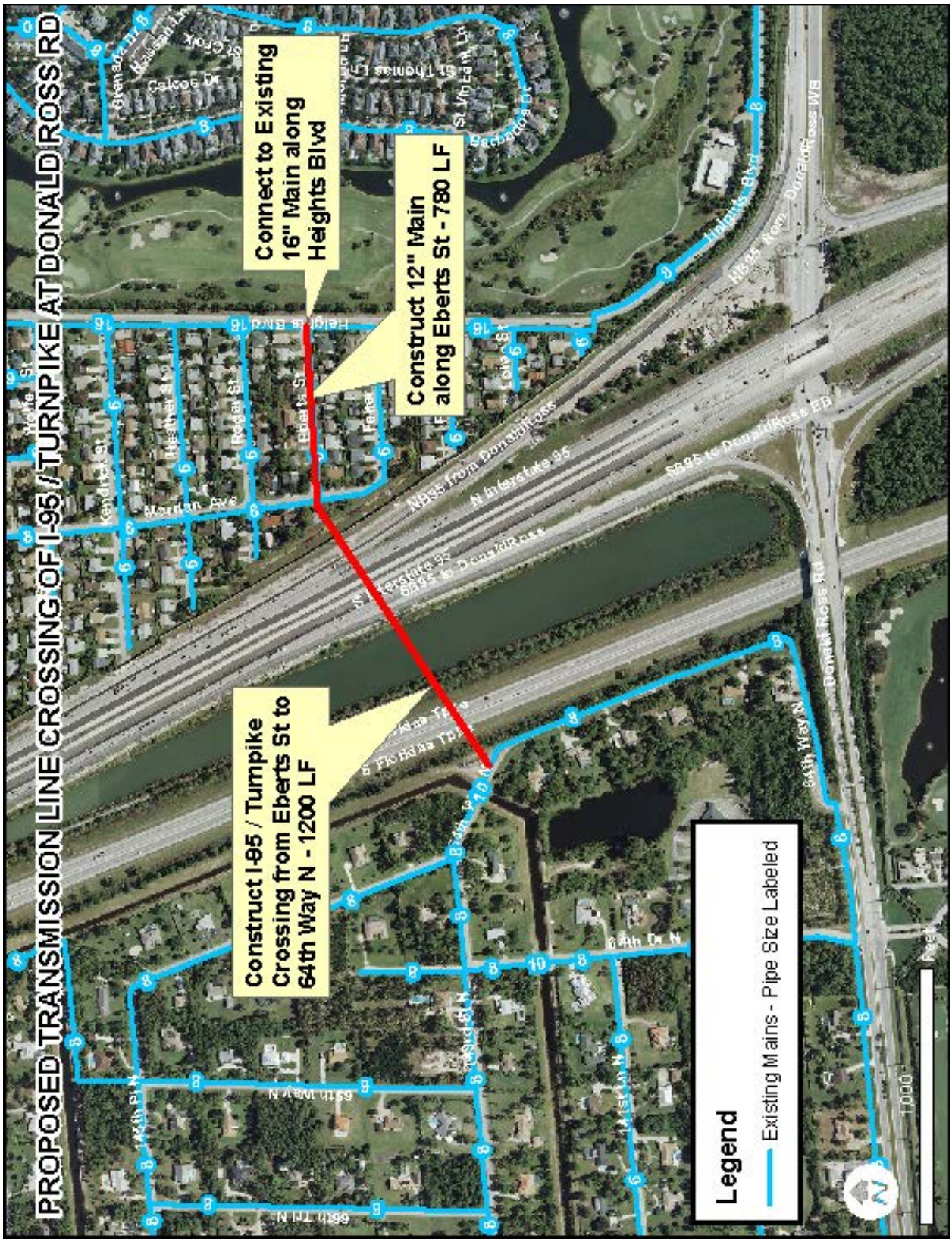
As previously noted in the hydraulic modeling outcomes, it has been recognized that historically the Bluff's Ridge Residential Community experiences some of the lowest residual distribution system pressures during periods of high demand. To further evaluate the negative potential of this issue, remediation steps are currently recommended which would include installation of larger service lines from the water main to each residential meter. In most cases, the Developer installed one 1-inch service line to serve two 5/8 inch residential meters in the zones where pressures are problematic. In these circumstances a minimum of two 1 inch service lines will be provided. The cost to address these service line changes on an interim, as needed basis, is $75,000.

Ultimately, to correct pressure deficiencies eat of the Intracoastal Waterway and to address the system's inability to meet future peak hour water demand pumping requirements, a booster pump station will need to be constructed at the eastern terminus of Frederick Small Road in 2025. The cost of this pump station is estimated to be $2,400,000.

d. Construct Crossing of I95/Turnpike at Donald Ross Road

Also noted in the previously discusses hydraulic modeling, outcomes, should transmission/distribution system valving operational changes not promptly alleviate excessive water age/quality issues within the Palm Beach Country Estates Distribution System, it is recommended that the Utility consider installation of a piped crossing of I95/Turnpike in the vicinity of Donald Ross Road that would span between the southern ends of the Palm Beach Country Estates and Palm Beach Heights Residential communities. The cost of this crossing (envisioned to be 12 inches in diameter) would be $580,000. Please refer to Figure II.35 for additional information.

Figure II.35


PROPOSED TRANSMISSION LINE CROSSING OF I-95 / TURNPIKE AT DONALD ROSS RD
Connect to Existing 16" Main along Heights Blvd
Construct 12" Main along Eberts St - 780 LF
Construct I-95 / Turnpike Crossing from Eberts St to 64th Way N - 1200 LF
Legend
Existing Mains - Pipe Size Labeled
1000'

e. Transmission / Distribution System Renewal and Replacement

Simple reactive management of buried infrastructure facilities can be expensive and result in loss of service as well as customer dissatisfaction. Planning and investment in proactive renewal and replacement of underground piping is critical to avoiding catastrophic failures and the ensuing political and social pressure to prevent their reoccurrence. Historically, the Town's utility has implemented a condition assessment program to cost-effectively reduce the risk of failure and service interruptions while also providing value for both the Utility and the community.

To improve the management of buried infrastructure staff has sought out industry accepted best management practices for implementing condition assessment methodologies for its water transmission and distribution facilities. The Town's repair and replacement program is only as good as the information it is based upon. To be effective, it should be coupled with a structured condition assessment program that includes a risk analysis and prioritization method.

From the inventory of piping facilities housed within the Town's geographic information system, the following parameters were considered in the R&R prioritization process:

- In service date/expected useful life
- Pipe material
- Client/community served and potential impact upon piping failure
- Physical inspection of the pipe, valves and hydrants
- Corrosivity of surrounding soils
- Level of operational service deficiencies (pressure, flow, poor water quality)
- Historical pipe break/leak frequency
- Adequacy of fire protection
- Project coordination with other improvements (road, drainage, sewer, etc.).

This data was then analyzed using a weighted scoring system, shown in Table II.19 and II.20, to refine the risk analysis and develop the water transmission/distribution R&R schedule for those assets nearing the end of their expected service life outlined within Table II.21.

Table II.19
Water Distribution
R&R Risk Analysis and Prioritization

Proposed R & R Project	Remaining Service Life		Customer Impacts Upon Failure		Corrosivity of Surrounding Soil		Operational Deficiencies*		Frequency of Breaks		Adequacy of Fire Protection		Weighted Score**	R &R Project Start Date (Year)	Projected Cost
	Rank	Weighted Rank 10%	Rank	Weighted Rank 15%	Rank	Weighted Rank 5%	Rank	Weighted Rank 20%	Rank	Weighted Rank 20%	Rank	Weighted Rank 30%			
Loxahatchee River Rd. Area Dist.	1	0	4	11.25	1	0	2	5	3	10	1	0	26.3	2017	$566,000
Pine Gardens South & Brentwood	1	0	2	3.75	1	0	2	5	3	10	2	7.5	26.3	2015	$267,000
Juno Beach Distribution Improvements	1	0	1	0	1	0	2	5	3	10	3	15	30.0	2016	$540,000
Penn Park Distribution Improvements	1	0	4	11.25	1	0	2	5	4	15	1	0	31.3	2019	$1,440,000
North Jupiter Distribution System Improvements PH II	1	0	2	3.75	3	2.5	3	10	2	5	3	15	36.3	2014	$1,193,839
Fisherman's Landing Water Main Replacement	1	0	5	15	1	0	2	5	3	10	2	7.5	37.5	2021	$643,393
Yacht Club Drive Area (incl. Clark Lane)	1	0	5	15	1	0	2	5	2	5	3	15	40.0	2023	$465,055
Seabrooke Place	2	2.5	4	11.25	3	2.5	1	0	1	0	5	30	46.3	2025	$480,000
Jupiter Plantation	2	2.5	4	11.25	1	0	2	5	2	5	5	22.5	46.3	2027	$200,000
Villas on the Green	1	0	5	15	1	0	4	15	3	10	2	7.5	47.5	2029	$451,000
Inlet Village Water Main Replacement	1	0	3	7.5	1	0	2	5	4	15	4	22.5	50.0	2012	$508,000
N. Pennock	1	0	3	7.5	1	0	2	5	4	15	4	22.5	50.0	2031	$590,000
Ocean Parks Condos	1	0	3	7.5	3	2.5	3	10	4	15	3	15	50.0	2033	$223,410
Jupiter Dunes	2	0	5	15	3	2.5	2	5	3	10	4	22.5	55.0	2035	$320,000
Bella Vista	1	0	4	11.25	1	0	3	10	4	15	4	22.5	58.8	2035	$320,000
Hampton Place	3	5	3	7.5	1	0	5	20	5	20	5	22.5	75.0	2037	$160,000

* Operational deficiencies include such things as low pressure and water quality concerns brought about by the condition of the distribution system

**Lowest Score = Highest Priority

Table II.20
Water Transmission Mains
R&R Risk Analysis and Prioritization

Proposed R & R Project	Remaining Service Life		Customer Impacts Upon Failure		Corrosivity of Surrounding Soil		Operational Deficiencies*		Weighted Score**	R &R Project Start Date (Year)	Projected Cost
	Rank	Weighted Rank 15%	Rank	Weighted Rank 40%	Rank	Weighted Rank 10%	Rank	Weighted Rank 35%			
Central Boulevard at Jupiter Park Drive Valving Improvements	1	0	2	10	1	0	1	0	10.0	2017	$125,000
S. US Highway 1 (Juno) Valving Improvements	1	0	1	0	3	5	2	8.75	13.8	2018	$50,000
Old Dixie Highway Watermain Replacement	1	0	1	0	1	0	3	17.5	17.5	2027	$956,620
Loxahatchee River Rd Valving Improvements	1	0	3	20	2	2.5	3	17.5	40.0	2030	$168,000
Toney Penna Dr at Jupiter River Estates Transmission Main Improvements	1	0	3	20	1	0	4	26.25	46.3	2031	$549,000
Alt. A1A Bridge Crossing (west side) Watermain Replacement	1	0	5	40	1*	0	4	26.25	66.3	2033	$980,000

* Open to salty air
**Lowest Score = Highest Priority

TABLE II.21
PROJECT PRIORITY LISTING
25 YEAR PLAN

Priority	R&R Project	Breaks & Leaks Total	Major Breaks	Date in Service	System Age	Budget Year	Cost	Noted Significant Deficiencies
1	Loxahatchee River Rd Area	3	0	1977	34	2017	$566,000	Under-sized mains, inadequate fire protection
2	North Jupiter Improvements	35	14	1958	53	2014, 2015	$1,193,839	Rear mains, inoperable valves
3	Pine Gardens South & Brentwood	30	6	1972	39	2015	$267,000	Inoperable valves, troublesome services,inadequate fire protection
4	Fisherman's Landing	4	2	1971	40	2021	$643,393	Under-sized mains, inadequate fire protection
5	Juno Beach Improvements	46	14	1950	61	2015, 2016	$540,000	Inoperable valves, troublesome services
6	Yacht Club Area (incl Clark Ln)	5	0	1972	39	2023	$465,055	Under-sized mains, inadequate fire protection
7	Penn Park Improvements	5	1	1972	39	2019	$1,440,000	Rear mains, inadequate fire protection
8	Inlet Village Water Main Replacement	22	8	1970	41	2012, 2013	$508,000	Under-sized mains, inadequate fire protection
9	Seabrooke Place	56	14	1977	34	2025	$480,000	Large number of breaks
10	Bella Vista	22	6	1980	31	2035	$320,000	Inoperable valves
11	Jupiter Dunes	32	11	1979	32	2035	$320,000	Inoperable valves
12	N. Pennock			1972	39	2031	$590,000	Rear yard mains
13	Hampton Place	3	2	1988	23	2037	$160,000	Loop the water main
14	Jupiter Plantation	53	19	1977	34	2027	$200,000	Replacement of valves and hydrant assemblies needed, new isolation valves need to be added, reduce number of service interruptions
15	Ocean Parks Condos	5	4	1972	39	2033	$223,410	Useful life of pipe,valves, and hydrants are outdated, decrease interruptions of service
16	Villas on the Green	7	3	1975	36	2029	$451,000	Useful life of pipe,valves, and hydrants are outdated, decrease interruptions of service
17	Cypress Drive/N. Jupiter			1964	47		$355,850	Useful life of pipe is outdated, inadequate fire protection,additional hydrants and isolation valves needed
18	Pennock Industrial Park			1972	39		$574,035	Useful life of pipe,valves, and hydrants are outdated, additional hydrants needed
19	Park Plaza			1972	39		$88,550	Useful life of pipe,valves, and hydrants are outdated
20	Ocean Trails Condos			1974	37		$271,150	Useful life of pipe,valves, and hydrants are outdated
21	Holly Cove			1974	37		$16,000	Replacement of valve and hydrant assembly needed, upgrade of services, pipe is C-900 PVC
22	Fernwood Creek			1974	37		$163,350	Useful life of pipe,valves, and hydrants are outdated, upgrade of services needed
23	Center Street Improvements (south)			1974	37		$280,000	Useful life of pipe,valves, and hydrants are outdated, upgrade rear easement mains and services, Penn Park should be done first
24	A1A Beachroad			1974	37		$471,240	Useful life of pipe,valves, and hydrants are outdated
25	400 N A1A (trailer park)			1974	37		$106,000	Replacement of valve and hydrant assembly needed, upgrade of services, pipe is C-900 PVC
26	Jupiter Square			1974	37		$44,000	Replacement of valves and hydrant assemblies needed, additional isolation valves needed
27	Jupiter Ocean & Raquet Club			1975	36		$118,800	Replacement of valves and hydrant assemblies needed, additional isolation valves needed
28	Chevron Cir & Highwood Cir			1975	36		$34,000	Replacement of valves and hydrant assemblies needed
29	Jupiter Oaks			1975	36		$209,000	Replacement of valves and hydrant assemblies needed, improve water quality with "loop" from Toney Penna to Oak & Summer Winds via Radio Road
30	Woods Plaza			1975	36		$47,000	Replacement of valves and hydrant assemblies needed
31	Greenwood Cove			1975	36		$395,373	Useful life of pipe,valves, and hydrants are outdated
32	Pine Gardens North Industrial Area			1977	34		$200,000	Replacement of valves and hydrant assemblies needed
33	Pine Gardens North Residential Area			1977	34		$466,000	Useful life of pipe,valves, and hydrants are outdated, replace 8" AC on Loxahatchee Drive Only
34	Oceanwalk			1977	34		$180,000	Replacement of valves and hydrant assemblies needed
35	Xanadu			1977	34		$104,000	Replacement of valve and hydrant assembly needed, upgrade of services, pipe is C-900 PVC
36	Jupiter Cove Condos/ N. Jupiter			1978	33		$60,000	Replacement of valves and hydrant assemblies needed
37	Olympus			1978	33		$120,000	Replacement of valves and hydrant assemblies needed
38	Jupiter Lakes Area			1978	33		$346,000	Replacement of valves and hydrant assemblies needed
39	Wood Duck Apts			1978	33		$86,000	Replacement of valves and hydrant assemblies needed
40	Jupiter Medical Center			1979	32		$136,000	Replacement of valves and hydrant assemblies needed
41	Eagles Nest			1979	32		$144,000	Replacement of valves and hydrant assemblies needed
42	Jupiter Village			1979	32		$574,000	Replacement of valves and hydrant assemblies needed
43	Set -N- Sun			1979	32		$110,000	Replacement of valves and hydrant assemblies needed
44	Jupiter Woods/S. Pennock Area			1979	32		$182,000	Replacement of valves and hydrant assemblies needed

*Major leaks require more than 2 men to repair and take longer than 3 hours to complete.
*These figures are from Jan '07-Sept '11
*Date in Service taken from As-builts and hydrants
*Pipes are AC - useful life is equal to 40 years

7. Utility Operations – Business and Information Systems

a. System Supervisory Control and Data Acquisition (SCADA)

Despite recent advancements, a number of obsolete, unsupported supervisory control and data acquisition systems still exist within the utility. Improvements to the hardware, software and programming of these matured systems must be completed in the near future to maintain the health and reliability of the plant and the ancillary facilities. Investment in these systems is continual and the following list of major projects reflects what is planned to be initiated in 2012.

- Onsite Distribution System PLC Change & Reprogramming ($23,925)
  Description: The Central Boulevard Repumping Facility North Building currently uses an antiquated, unsupported PLC type. It poses a serious threat to the health of the distribution system and should be replaced as soon as possible. The Town has planned for redundant systems whereby the onsite high service pumping PLC and offsite high service pumping PLCs (Central Blvd. North & South High Service Pumping Stations) work independently of each other. This redundancy requires an ethernet over fiber link between the two offsite PLCs. While the Town has installed the fiber link and the ethernet connectivity now exists between locations, the PLC at the Central Boulevard Repumping Facility North Building site cannot support the ethernet protocol and therefore, must be replaced.
- Offsite Distribution System Programmable Logic Controllers (PLC) Change & Reprogramming ($37,965)
  Description: Isolation of the distribution high service pumping system controls from other processes at the plant is recommended to maintain an uninterrupted, reliable service to customers. As it relates to the onsite portion of the distribution system controls, this project will accomplish this task. The project also coincides with the Town's goals to harden the water plant facility. To this effort, the PLC is scheduled to be relocated, and the operation of each high service pump will need to be rewired, tested and verified.
- Juno Beach Repump Station PLC Change & Reprograming ($17,875)
  Description: The 20 year old Juno Beach Repump Station is also in need of reprogramming. Presently, the Juno PLC contains suspect control over the chemical pumps, storage tank fill valve and high service pumps, and its documentation lacks completion. In addition, the Town has recently established an ethernet radio telemetry communication system to Juno which allows for greater bandwidth and speed. To use this new system, reprogramming at both

Juno and the plant is necessary. Reprogramming will also facilitate in eliminating existing, unsupported technologies such as the Modpac Radio, Basic Communication Module and Peerlink protocol.

- Out of Warranty IT Infrastructure ($67,800)
  Description: Many of the PC workstations and servers at the plant have now exceeded their warranty dates. In addition, improvements to the SCADA software require newer models with streamlined technologies and upgraded operating systems. These replacements will deliver greater stability and better performance, prerequisites for a fully automated facility. The cost of this effort is recurring and dictated by the useful life of the equipment.
- Chlorine Building Communication & Reprogramming ($11,800)
  Description: The PLC in the chlorine building continues to communicate with the SCADA network over an older, unsupported proprietary protocol. While the Town has upgraded the hardware infrastructure, with fiberoptic and ethernet connectivity the reprogramming of that PLC remains outstanding.
- Surficial Well Communication Improvements ($16,200)
  Description: Over the past year, a number of the surficial wellfield antennae and cabling, which had become corroded or damaged from either natural elements or otherwise, were replaced. This effort increased communication efficiencies to those sites. Another twenty (20) surficial well sites remain to be upgraded. The total estimated cost to replace corroded and worn antennae and cabling is $16,200. This project was started in 2012 and will continue to future years until work is complete.
- Replace RO Clearwell PLC Cabinet ($15,000)
  Description: The RO Clearwell cabinet houses a new PLC and its related I/O electrical wiring. It has been physically altered over the years as older technologies went bad or were removed. The wiring panel in this cabinet employs older terminal blocks, and space limitations has wire overflowing. In addition, the level indicators for each of the clearwell cells need to be replaced. The technical drawing is not updated. As such, the cabinet panel should be revised.

The following projects are on the recommended for implementation in five year horizon of 2012-2017.

Realignment of the reverse osmosis plant programming with the parallel membrane treatment process of nanofiltration is needed. Specifically, the RO logic contains numerous programming

and operational inconsistencies in wellfield control, train regulation and alarming. Such irregularities can lead to confusion, and, as such, corrective action has been assigned. The estimated budget for this work is $24,300.

Presently, the PLC in the Central Boulevard Repumping Facility North Building PLC includes programming for four offsite high service pumps and two Floridan Aquifer wells (RO-2 and RO-3). A project to separate that existing logic into two programs employing two separate PLCs is planned with the intent of isolating the distribution system from any potential disruptions caused by RO Wells 2 and 3. In addition, the benefit of using a Siemens S7-200 PLC for RO Wells 2 and 3 is that the program will serve as a programming template for the remainder of the RO Wells. The total proposed cost for this project is estimated to be $16,710.

As remote storm water pump station facility sites were added to the water plant's SCADA system, past designers randomly chose to use different radio frequencies and PLCs. A project to dedicate one frequency pair and one PLC to these sites is recommended. In addition, the removal of unsupported technologies, which include the Basic Communication Module and Modpac Radio, is necessary. The estimated cost for the stormwater communication consolidation is estimated at $36,925.

As wells were added into the RO system, a variety of PLC programs were created. Reprogramming these PLCs will ensure the same program at each well. Additionally, the radios presently used in this system and the existing Basic Communication Module located at the plant are no longer supported; these too will need to be replaced. This RO Well Telemetry Reprogramming is $68,925.

Reprogramming the logic of the RO Wellfield Control system (aka "the Well Matrix") will simplify the parameters associated with RO water demand and create flow based limitations where needed. Estimated costs for reprograming of the RO Wellfield control panel are $21,600.

Past programmers have been apprehensive about removing older SCADA database tags for fear of disrupting existing processes. As such, over the years, the SCADA database has grown quite complex. Some existing tags relate to removed systems. This project will clean the SCADA database of such tags. In addition, the facility's SCADA system presently employs four (4) separate pieces of software (i.e., communication drivers) to read from and to write to the different PLC types around the plant. The Town's recent upgrade of the IGS driver has created an opportunity to reduce the complexities associated with multiple drivers. The total estimated cost for this project is $10,800.

Poor communication to our farthest remote sites is the result of the lack of elevation of our master antennae. At present, the master antennae for all remote sites are situated along the

sides of the RO Process building roof at approximately 40 feet of elevation. In 2010, the Town obtained two new pairs of FCC licensed frequencies that allow up to 100 feet of elevation. Every radio communications consultant who has visited the facilities has attributed poor signal strength due to a lack of elevation of the master antennae; recent surveys support this view. In this regard, FCC licenses have already been obtained, and plans for a communications monopole are underway to ensure reliable communication to those critical remote sites. The total estimated project cost to ensure reliable radio communication between the plant and its remote sites is estimated at $45,000.

The cabinets at RO Wells 5-10, which house variable frequency drives (VFD), PLCs, radios and related I/O electrical wiring, have physically deteriorated over the years. While the condition of these cabinets is suspect, the wiring panels in these cabinets are in need of repair; the technical drawings no longer reflect the I/O in place. Additionally, since VFDs are housed with PLCs and radio equipment, the heat in these cabinets, particularly in the summer months, threatens the longevity of equipment. In some cases, radios have been moved from panel mounts to the cabinet floors near the exhaust fans. This project will separate the equipment, creating both a VFD cabinet and an RTU cabinet, similar to the design at RO Wells 11-13. The total estimated cost of this work is $250,000 , however, the rehabilitation will be performed over multiple fiscal years.

The RO Clearwell cabinet houses a new PLC and its related I/O electrical wiring. It has been physically altered over the years as older technologies went bad or were removed. The wiring panel in this cabinet employs older terminal blocks, and space limitations has wire overflowing. In addition, the level indicators for each of the clearwell cells need to be replaced. The technical drawing is not updated. As such, the cabinet panel should be revised.

A new Siemens 505 Remote Base Controller which communicates over ethernet is presently under development by Control Technology Inc. and is expected for release in 2011. This new communication module will serve to replace the existing RO System's Remote Base Controller module which communicates over a proprietary serial connection called TiWAY. Ethernet is the communication standard used on the Allen-Bradley RIO panels of the Nanofiltration facility. It is a fast, reliable and universally supported communication protocol which should also be deployed to the RO system when it becomes available. The total estimated cost to replace unsupported remote base controllers is $22,040.

Camera surveillance of Nanofiltration Electrical Room

Planning for a wireless expansion of the SCADA network is also being drafted at this time. Through this medium, instrumentation and security cameras, whose locations are either inaccessible to network switches or cost prohibitive to route cable, can be easily integrated into present day operations. Moreover, operators, mobile with wireless tablet PCs, can react quicker to alarms and be able to eliminate the time consuming transcription of clipboard data to computer spreadsheets.

Security of the SCADA network is paramount. In this regard, the Town has recently instituted a card security system that will require all employees to possess a badge to enter authorized areas. This positive step, alongside the recent installation of a plant-wide camera surveillance system, should provide a much needed physical security for critical infrastructure. Action on the placement of cameras at offsite distribution and repump locations will also be forthcoming.

Although web access to the SCADA network is limited to facility sites and through the Town's private network, the threat of cyber-based attacks remains a concern. At present, antivirus software and network protocol analyzers monitor malware activity and network traffic respectively. However, as demands for plant information by outside consultants increase, more preventative measures will need to be investigated.

Reliability, redundancy and security in the SCADA network at the Town of Jupiter Water Treatment Facility are essential elements to sustain the quality of service. Through properly calibrated instrumentation, comprehensive PLC programming and a solid information systems framework, these goals can be achieved.

As seen, most of the tasks outlined above are relatively low in cost (<$50,000). As such, they will be funded through annual appropriations within the utilities. Asset Maintenance Program CIP of $60,000 per year.

These appropriations would be utilized to address the following needs:

- Hardware and Software Improvements
- SCADA Design and Reporting Changes
- Data Network Improvements
- Remote Communication Improvements
- PLC Infrastructure Maintenance
- Control Room Improvements
- Town to SCADA Communications
- Ancillary System and Outside Agency Networks
- Security System Improvements
- New Water Treatment Process Changes

b. Customer Information (CIS), Utility Billing & Work Order Systems

The Utility is focused on improving the Town's ability to service the needs of its utility customers and therefore should expand its customer service offerings, while simultaneously improving the efficiency of its billing processes, by the replacement of current systems with industry standard technology. The key areas of focus in the replacement of the current CIS, Utility Billing, Work Order and Cash Receipting Systems will be a high level of functionality with ease of use, a system that is fully integrated with other departmental cash and billing applications and offers real time web technologies and decision-support software tools as appropriate to streamline business processes and make information widely available. The system will provide further enhancements for protecting and securing critical utility customer information and will offer full interactive capabilities to customers.

Greater customer service and satisfaction will be achieved by offering a self-service portal that allows the customer to have real time access to account information. The portal will be available 24/7 which allows the customer to log on with password protection to make account changes, revise their payment methods, request a final reading on their account and request new service. This will allow for process improvements primarily through the elimination of duplicate efforts, inaccurate data, the elimination of paper-based reports and extensive data reconciliations.

The new system will:

- Allow the customer to make application online with digital signature and Social Security number (SSN). The full SSN would be available for delinquent collections only. During other circumstances, the first 5 digits of the SSN would be redacted. Additionally, the customer application would be attached to the customer account and would be available for viewing within the billing system.

- Allow the customer to make payments via an integrated IVR system fully automated with the latest industry standard technology including: real time account information, current billing and historical billing and payment data, due date, current adjustments, debit card, credit card and checking and savings payment options.
- Allow, directly from the customer account, for the viewing of all location and customer work orders with the details and status of the item: pending completion, cancelled, completed and action taken.
- Allow for field service personnel to access all customer related service orders and other customer account information for daily service via a web based tablet and without the need for paper documents. Information would be available immediately following completion of the service order.
- Allow for other industry standard and optional features not noted above or below.

The new system will incorporate document imaging systems that streamline imaging and fully automate document retention processes. In addition, it will provide easy access to information needed to support decision-making processes for planning, budgeting, forecasting, analysis, and management reporting. Finally, it will provide a suite of fully integrated applications for management analysis and reporting of all Town Utility processes.

This plan supports the Town Sustainability Measures through a High Level of Citizen Satisfaction with Town Services while supporting critical factors contributing to Community Building in Jupiter through Access to Town Information.

Additionally, it supports the Town's mission to Strive for Exceptional Municipal Services that add Value to Residents' Lives and Businesses while assuring a Long Term Sustainable Community through:

> Principle 1 – Exceptional Municipal Services by: Providing services responsive to the needs of the residents, businesses and visitors; Anticipating needs and problems, and providing a proactive response; Leveraging technology to provide enhanced levels of service and service delivery; and, Always striving for a high level of customer satisfaction.
>
> Principle 2 – Values for Residents' Lives and Businesses by: Having services and facilities convenient and worry free.

Summary of Projected Cost & Benefits

Description	Projected Costs	Benefits
Customer Information, Utility Billing, Work Order and Cash Receipting Systems	$774,444 ($400,000 – Water Utility) ($100,000 – Stormwater Utility) ($274,444 General Revenue)	• Improved efficiencies of billing process • Fully integrated with other departmental applications • Real time web technologies • Security enhancements for critical customer information • Greater customer service and satisfaction • Web portal with 24/7 availability • Increased payment methods • Elimination of paper based reporting and service requests • Fully interactive capabilities for customer

c. Geographic Information Systems

The Utility's Geographic Information System (GIS) Division continually analyzes how staff interacts with infrastructure. Distribution system maintenance and inspection records have been incorporated into GIS for many years, historical and current records are stored and accessed through GIS, and a more streamlined methodology for related data input has been implemented. Past and current implementations of GIS for field staff have used PDAs and, on a limited basis, tablets, to provide basic mapping and GPS capability to locate infrastructure. Web-based infrastructure map viewers, PWViewer for distribution, and RWViewer for raw water systems, have been in use for years, and recently the PWViewer has been upgraded to new technology, with simpler interfaces to maps and records. Methodology is being developed to incorporate additional water plant information into the RWViewer / raw water system viewer, when that is also upgraded.

Each year the GIS Division updates the GIS Strategic Plan, which among other functions, provides a road map for further implementation within Water Utilities. GIS expenditures and staff requirements for the GIS Division are projected out 5 years beyond the detailed plan for the coming fiscal year.

Some highlights for the Water Utility include:

- Moving viewer map services to cloud-based servers, saving Town IS staff resources, and eliminating the need to replace the GIS internet server which does not meet

requirements for current specifications (shown in Figure II.35). Fiscal impact for cloud implementation is projected at $5,000 yearly.

- Incorporating more detail into the water production system GIS. No fiscal impact beyond current staff time for implementation.
- Utilizing GIS to assist with meter read sequencing, to increase efficiency. No fiscal impact beyond current staff time for implementation (shown in Figure II.36).
- GPS location of meters, providing this level of detail will minimize future staff time incurred with locating meters. No fiscal impact beyond current staff time for implementation.

Based upon the continual user needs analysis process and as a reaction to new legislative and other mandates, additional requirements may become apparent. As the next GIS Strategic Plan is prepared during the course of the year, these new requirements are incorporated and planned accordingly. Appropriations for funding ($5000/yr) the continual upgrades of the Town's Geographic Information Systems shall be facilitated through the Asset Maintenance CIP of the utility.

Figure II.36

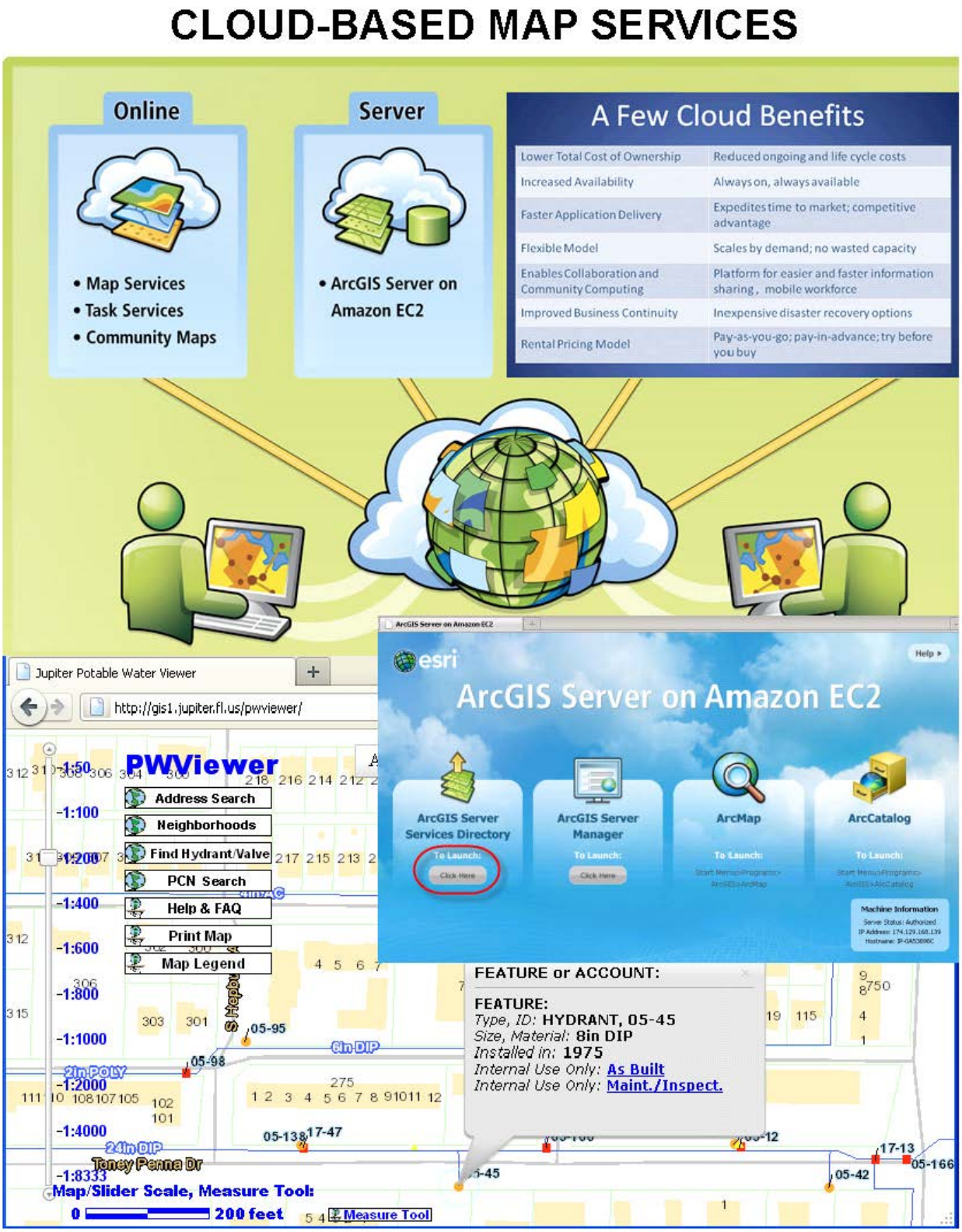
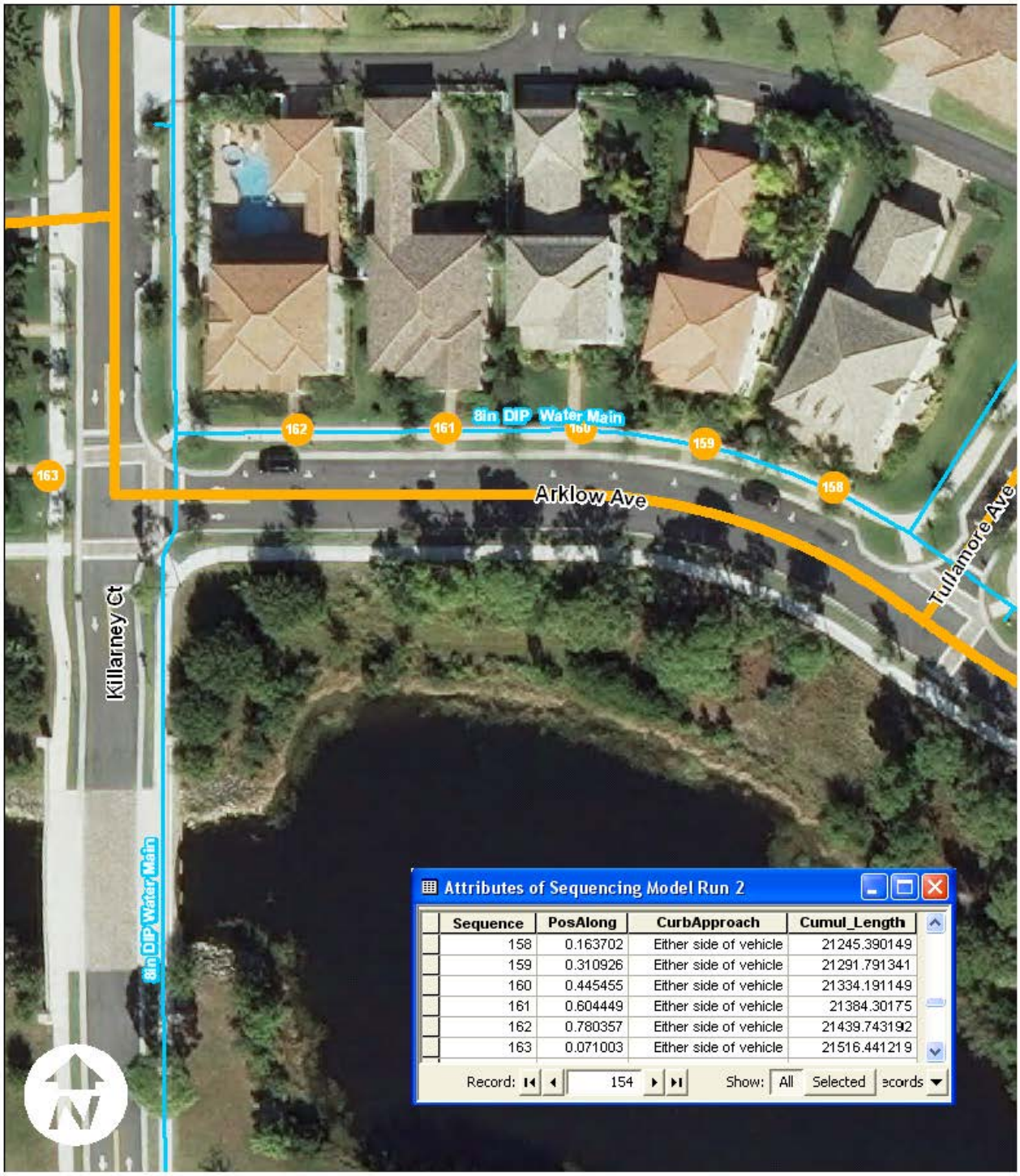

CLOUD-BASED MAP SERVICES
Online
• Map Services
• Task Services
• Community Maps
Server
• ArcGIS Server on Amazon EC2
A Few Cloud Benefits
Lower Total Cost of Ownership
Reduced ongoing and life cycle costs
Increased Availability
Always on, always available
Faster Application Delivery
Expedites time to market; competitive advantage
Flexible Model
Scales by demand; no wasted capacity
Enables Collaboration and Community Computing
Platform for easier and faster information sharing, mobile workforce
Improved Business Continuity
Inexpensive disaster recovery options
Rental Pricing Model
Pay-as-you-go; pay-in-advance; try before you buy
Jupiter Potable Water Viewer
http://gis1.jupiter.fl.us/pwviewer/
PWViewer
Address Search
Neighborhoods
Find Hydrant/Valve
PCN Search
Help & FAQ
Print Map
Map Legend
Map/Slider Scale, Measure Tool:
0
200 feet
Measure Tool
esri
ArcGIS Server on Amazon EC2
ArcGIS Server Services Directory
ArcGIS Server Manager
ArcMap
ArcCatalog
FEATURE or ACCOUNT:
FEATURE:
Type, ID: HYDRANT, 05-45
Size, Material: 8in DIP
Installed in: 1975
Internal Use Only: As Built
Internal Use Only: Maint./Inspect.

Figure II.37

METER READING SEQUENCING



Sequence	PosAlong	CurbApproach	Cumul_Length
158	0.163702	Either side of vehicle	21245.390149
159	0.310926	Either side of vehicle	21291.791341
160	0.445455	Either side of vehicle	21334.191149
161	0.604449	Either side of vehicle	21384.30175
162	0.780357	Either side of vehicle	21439.743192
163	0.071003	Either side of vehicle	21516.441219

All budgetary 2012 estimates should be escalated through the planned replacement period based on the Engineering News Record 20 Cities Construction Price Index.

8. 25 Year Community Investment Program Schedule

a. A complete schedule of all capital cost needs for the 25 year planning period can be found in Table II.24. Notable new or amended projects are as follows:

Table II.22
2012 Water Utility Master Plan Update
Notable New and/or Amended Capital Cost Schedule
2012 - 2037

Item No.	Item Description	Estimated Cost (2012 $)	Funding Source	Start Date of Construction	Additional Comments
	Surficial Aquifer Wells				
1	Replace Wells 6,7,8,9,10 & 11 with 4 new wells	$1,700,000	R&R	2019	Assumed 4 wells at 400 gpm each, useful life extension of 35 years
2	Replace 17 wells that are currently 20-40 years old	$7,225,000	R&R	2021	Assumed $425,000 per well, replace one well per year, (Wells 12-18 and 21-30), useful life extension
3	Construct Wellfield 4 (6 wells, rwm & electrical building)	$3,405,472	Connection Fees	underway	
4	Raw water collection system	$0	R&R		
	Floridan Aquifer Wells				
5	Raw water collection system	$0	R&R		
	Surficial and Florida Aquifer Wells				
6	Continual Well R&R	$200,000	R&R	2013 - Ongoing	
	Surficial Aquifer Recharge				
7	Complete Final Connection to SFWMD Regional System	$1,400,000	Connection Fees	2018	Cost share agreement with SFWMD to be requested.
	Water Treatment Facilities				
8	Replace RO Permeate Odor Scrubbers	$2,196,000	R&R	2019	Useful life extension of 35 years
9	Replace Membrane Vessel End Caps - RO Trains A, B, C & D	$500,000	R&R	2015	Useful life extension of 35 years
10	Demo Lime Sludge Drying Equipment	$150,000	R&R	2019	
11	Enclosed Storage Barn	$300,000	Connection Fees	2024	Useful life extension of 20 years
12	Replace Nano Sand Filter Media	$250,000	R&R	2020	Useful life extension of 10 years
13	Replace Nano Sand Filter Media	$250,000	R&R	2030	Useful life extension of 10 years
14	Replace RO Transfer Pumps	$750,000	R&R	2015	
15	Replace Nanofiltration Train Membranes	$1,650,000	R&R	2015	Useful life extension of 5 years
16	Replace Nanofiltration Train Membranes	$1,650,000	R&R	2020	Useful life extension of 5 years
17	Replace Nanofiltration Train Membranes	$1,650,000	R&R	2025	Useful life extension of 5 years
18	Replace Nanofiltration Train Membranes	$1,650,000	R&R	2030	Useful life extension of 5 years
19	Replace Nanofiltration Train Membranes	$1,650,000	R&R	2035	Useful life extension of 5 years
20	Install Supplemental Blend Box	$1,100,000	Connection Fees	2013	To combat on site corrositivity damage, facilitate conversion to free chlorine
21	Finished Water Stabilization & Other WTP Improvements	$577,500	Connection Fees	2013	
22	Replace CTF Recirculation Pumps	$120,000	R&R	2015	Useful life extension of 35 years
23	Replace RO MCC Cooling System Air Handlers	$275,000	R&R	2015	Hydrogen sulfide impacts leading to early replacement. Useful life extension of 10 years
24	Install Nitrogen Blanket in Sulfuric Acid Storage Tank	$65,000	Connection Fees	2015	
25	Implement Free Chlorine Disinfection Process	$400,000	Connection Fees	2013	Supplemental blend box needs to be in service before free chlorine implementation
	Concentrate Disposal				
26	FDEP/EPA Permitting	$100,000	O&M	2013	Assumes fluoride exceedances continue
27	C-18 Outfall Corrosion Investigation	$125,000	R&R	2015	
	Water Storage Facilities				
28	Modify Juno Tank Influent Riser	$75,000	Off Site Fees	2020	
29	Construct Limestone Creek Water Storage Facility	$2,200,000	Off Site Fees	2025	
30	Riverbend Rechlorination	$335,000	Off Site Fees	2012, 2013	This was a 2012 CIP project, with an approved budget of $780,000. Project cost reduced.

Table II.22 cont..					
2012 Water Utility Master Plan Update					
Notable New and/or Amended Capital Cost Schedule					
2012 - 2037					
Item No.	Item Description	Estimated Cost (2012 $)	Funding Source	Start Date of Construction	Additional Comments
31	**High Service Pumping Facilities**				
32	Reconfigure High Service Pumps 3,4,5 & 6	$550,000	R&R	2014	Beyond anticipated useful life. Replace 4 pumps with 2 or 3 of higher capacity.
33	Central Boulevard Pump Station Upgrades	$2,700,000	R&R	2016, 2025	24 inch crossing of Central Blvd in 2016 ($250,000) to improve operational efficiency of Central HSP Pump Stations. Balance of project scheduled for 2025.
34	Modify Bluffs Ridge Service Lines	$75,000	R&R	2014	
35	Construct Bluffs Booster Pump Station	$2,400,000	Off Site Fees	2025	
36	Construct Crossing of I95/Turnpike at Donald Ross Road	$580,000	O&M	2020	
	Water Transmission/Distribution Piping				
37	Loxahatchee River Rd Area Distribution Improvements	$566,000	R&R	2017	Under-sized mains, inadequate fire protection, useful life extension of 45 yrs
38	Central Boulevard at Jupiter Park Drive Valving Improvements	$125,000	R&R	2017	Inoperable valves, insufficient valves
39	S. US Highmay 1 (Juno) Valving Improvements	$50,000	R&R	2018	Inoperable valves, insufficient valves
40	North Jupiter Distribution Improvements	$1,193,839	R&R	2014, 2015	Rear mains, inoperable valves, useful life extension of 45 yrs
41	Pine Gardens South & Brentwood Distribution Improvements	$267,000	R&R	2015	Inoperable valves, troublesome services, inadequate fire protection, useful life extension of 45 yrs
42	Fisherman's Landing Distribution Improvements	$643,393	R&R	2021	Under-sized mains, inadequate fire protection, useful life extension of 45yrs
43	Juno Beach Distribution Improvements	$540,000	R&R	2015, 2016	Inoperable valves, troublesome services, useful life extension of 15 yrs
44	Yacht Club Area (incl Clark Ln) Distribution Improvements	$465,055	R&R	2023	Under-sized mains, inadequate fire protection, useful life extension of 15 yrs
45	Penn Park Distribution Improvements	$1,440,000	R&R	2019	Rear mains, inadequate fire protection, useful life extension of 15 yrs
46	Inlet Village Water Main Replacement	$508,000	R&R	2012, 2013	Under-sized mains, inadequate fire protection, useful life extension of 15 yrs
47	Seabrook Place Dsitribution Improvements	$480,000	R&R	2025	Large number of breaks, useful life extension of 15 yrs
48	Bella Vista Distribution Improvements	$320,000	R&R	2035	Inoperable valves, useful life extension of 15 yrs
49	Jupiter Dunes Dsitribution Improvements	$320,000	R&R	2035	Inoperable valves, useful life extension of 15 yrs
50	Old Dixie Highway Watermain Replacement	$956,620	R&R	2027	Avoidance of FEC annual ROW fees of $34,000
51	N. Pennock Dsitribution Improvements	$590,000	R&R	2031	Rear yard mains, useful life extension of 15 yrs
52	Loxahatchee River Road Valving Improvements	$168,000	R&R	2030	Inoperable valves, insufficient valves
53	Hampton Place Distribution Improvements	$160,000	O&M	2037	Loop the water main
54	Toney Penna Dr at Jupiter River Estates Trans Main Improvements	$549,000	R&R	2031	Inoperable valves, deteriorated piping, useful life extension of 45 yrs
55	Jupiter Plantation Distribution Improvements	$200,000	R&R	2027	Replacement of valves and hydrant assemblies needed, new isolation valves need to be added, reduce number of service interruptions, useful life extension of 45 yrs
56	Alt A1A Bridge Crossing (West Side) Watermain Replacement	$980,000	R&R	2033	Corroded pipeline open to salty atmosphere, useful life extension of 40 yrs
57	Ocean Parks Condos Distribution Improvements	$223,410	R&R	2033	Useful life of pipe, valves, and hydrants are outdated, decrease interruptions of service, useful life extension of 45 yrs
58	Villas on the Green Distribution Improvements	$451,000	R&R	2029	Useful life of pipe, valves, and hydrants are outdated, decrease interruptions, useful life extension of 45 yrs
	Business and Information Systems				
59	SCADA System Updates	$60,000	R&R	2013-2037	$60,000 per year
60	Replace Customer Information & Billing Syster	$400,000	R&R	2013	
61	Replace Customer Information & Billing Syster	$400,000	R&R	2023	
62	Replace Customer Information & Billing Syster	$400,000	R&R	2033	
63	Geographic Information System Updates	$5,000	R&R	2013-2037	$5,000 per year

E. Proposed Strategies to Enhance Asset Utilization

As discussed previously, the Utility finds itself with what appears to be adequate capacity already in place to serve all forecasted demand to be generated within its service area. The system's customers have invested over $300 million to construct a sustainable water utility that will serve its community in a safe and reliable fashion. At this time, it is now imperative that a game plan be instituted that will ensure these assets are working as efficiently as possible for the Town's customers.

Although the service area has now been expanded to include the Jupiter Farms Area, the irrigation water use regulations imposed by the South Florida Water Management District in 2007 appear to have significantly changed our customer's water usage characteristics. The net effect of the water use restrictions was a reduction in average daily use of approximately 3 million gallons per day (mgd). The expansion of the Town's service area should help ultimately alleviate more than 2 mgd of this stranded capacity. However, to swiftly maximize asset utilization to concurrently maximize efficiency of the utility enterprise, strategies should be offered to expedite connections that would promote further economies of scale and productivity of all the system's resources. It is important to note that the strategies to be recommended will not only provide an incentive for future customers but will also lead to operational economies which in turn will greatly benefit the utility's existing customer base through rate stabilization.

The strategies recommended include the following:

1. **Continued Offerings of New Connection Financing:**

   Expanding on recent similar practices, it is also recommended that the Utility continue to offer low rate, long-term financing to it prospective new customers in all areas of its service area in the form of a voluntary property assessment. Financing offerings would include all costs to be incurred for the design, permitting and construction of water distribution systems as well as the system capacity charges required for connection. To establish consistency in its financing offerings, the utility would promote the availability of 15 year term financing at a simple interest rate established based upon the then current published national average fixed 15 year (Bankrate.com) , zero point mortgage.

The interest rate would then be increased one (1) percent to compensate the Town for its costs of administering the assessment. It is envisioned that such assessment programs would be established subject to the Town Council's consideration of matters such as established financing program funding availability, economic feasibility and prudent growth management. Within unincorporated areas of the Utility's service area it is hoped that such established assessment programs could be formulated through interlocal agreements with the governmental jurisdictions in which the benefiting properties exist.

2. **Expanded Outreach Efforts:**

Greater emphasis on public information offerings is recommended. As always, it remains critical that staff continue to educate those not connected of the numerous benefits that exist which accompanies connection to the regional water system. Much of our target market has now transitioned from property developers to existing residential property owners who are considering the benefits of Jupiter Water on comparison to the continued upkeep of their private well and treatment system. Benefits of our service typically include added property values plus safe and reliable water service at a very competitive cost to privately maintained home treatment systems. This would include more dependable service in times of power outages. Additionally, the capital cost of installing and owning, a private well and treatment system is typically estimated to be $6,100 - $8,850. Meanwhile, the monthly operating cost of a private system normally ranges from $45 – $65. The estimated capital cost of installing distribution lines and connection to Jupiter's Water System within Jupiter Farms is estimated to be $12,000 - $14,000. Monthly rates for service from Jupiter would likely be less than $40 per month even when the 25% unicorporated surcharge is applied. Furthermore, the benefit of fire protection provided is often overlooked. In many of Jupiter's western communities the reduction in home owners insurance premiums should the utility provide fire protection is $800 - $1000 per year. When one simply considers this point, the similar cost to finance installation of community water distribution piping and system connections fees is essentially off set.

F. Human Capital – Utility Staffing Needs and Forecast

Consistent with the long range planning philosophies employed within the Jupiter Utility System, the senior leadership team within the operation has collectively developed and continually updated the following 5-year staffing plan to respond to the changing needs and demands of the organization as it enters its 35th year of operation. Undoubtedly, the Utility

has reached a stage of maturity wherein growth opportunities are decreasing and cost pressures will increase. To respond, our staffing plans need to address the following:

- **Operational Optimization** – ensure ongoing, timely, cost-effective, reliable and sustainable performance improvements in all facets of our operations. Current effects of the ongoing economic recession create a challenge for utility leadership to strike the perfect balance between minimizing the cost of service and maintenance of system reliability.

- **Operational Resiliency** – proactively identify, assess, establish tolerance levels for, and effectively manage a full range of business risk in a way consistent with unfunded regulatory mandates, industry trends, system reliability goals, established levels of service and Town Council/customer expectations. Now more than ever, it is imperative that teamwork be enhanced with all of our stakeholders, including the Town Council, to collectively access threats and opportunities while gaining consensus on levels of service to be provided.

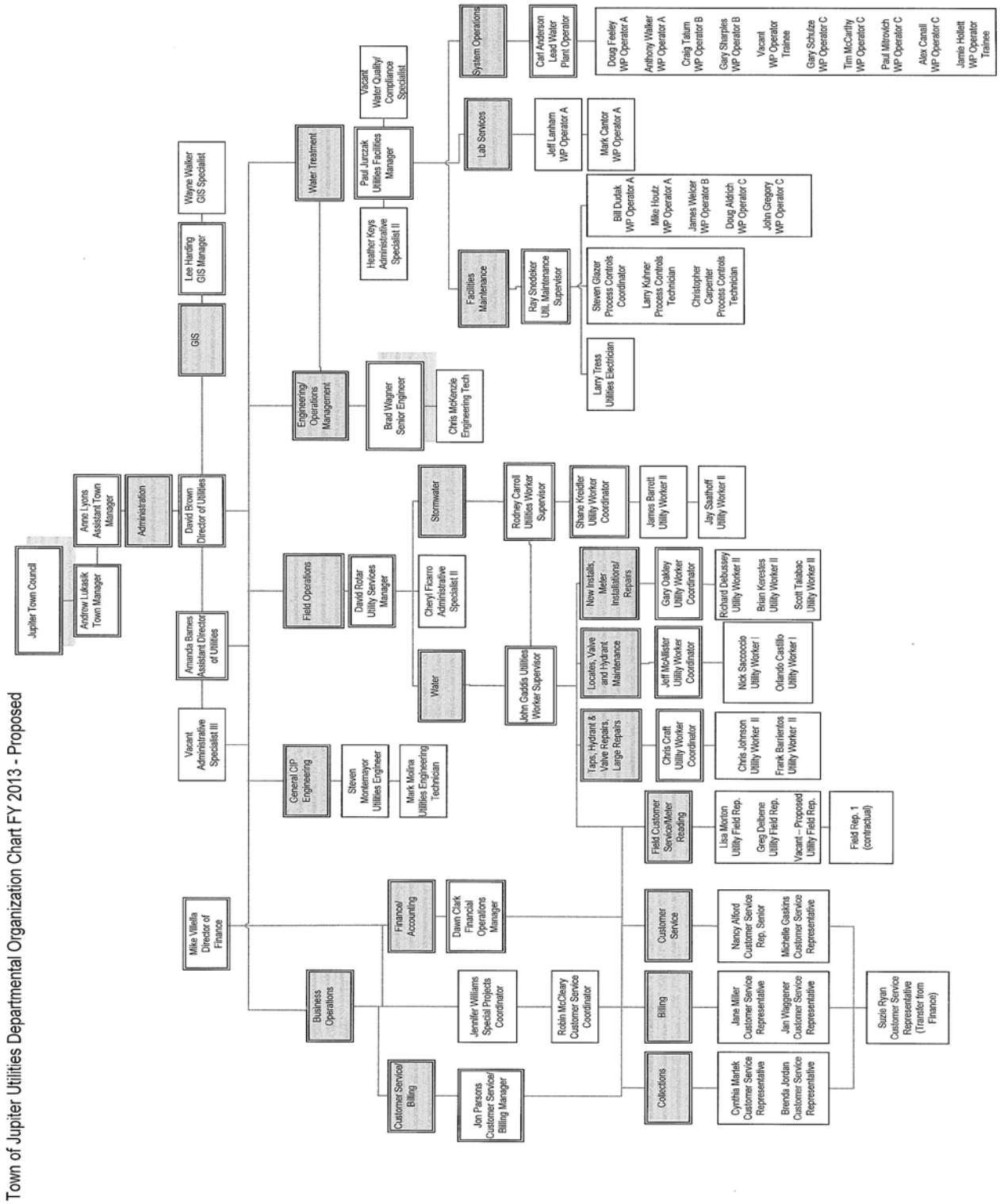
- **Employee and Leadership Development** – recruit and retain a competent, motivated and adaptive workforce. Ensure that institutional knowledge is retained and improved upon over time. Support opportunities for professional development and strive to maintain an integrated and well-coordinated utility leadership team. In a time when water treatment technology is becoming dramatically more complex, our utility is now experiencing its first major wave of retirements, greatly depleting the established core of institutional knowledge created over the last 35 years. Critical processes needed to ensure continued success of our utility, include recruitment of highest quality additions/replacements to our staff, maintenance of a competitive salary and benefit offerings to staff, heightened learning and training, enhanced mentoring programs and documentation of critical information for maximizing knowledge retention.

The Utility is organized under five (5) primary operational divisions which include Administration, Geographic Information Systems (GIS), Business Operations, Water Treatment Operations and Field Operations. Although subject to change, the following staffing plan will serve to help forecast the resource needs of our operation. This information will further serve as an input to our five (5) year budgeting process.

All in all, this planning activity has proven effective in allowing for the reallocation of resources and relatively no increase in staffing over the 5-year forecast. The decline in system growth coupled with various process enhancements will achieve intended personnel cost savings in the Administrative, Business and Field Operations divisions. Meanwhile, heightened plant

maintenance needs, regulatory reporting and growing treatment complexity have necessitated an increase in manpower at the water treatment facility. Furthermore, staffing levels within the Jupiter Utility System have and will remain well below norms reflected in national benchmarking studies.

Figure II.38


Town of Jupiter Utilities Departmental Organization Chart FY 2013 - Proposed
Jupiter Town Council
Andrew Lukasik Town Manager
Anne Lyons Assistant Town Manager
Administration
David Brown Director of Utilities
GIS
Lee Harding GIS Manager
Wayne Walker GIS Specialist
Amanda Barnes Assistant Director of Utilities
Vacant Administrative Specialist III
Mike Villella Director of Finance
Business Operations
Customer Service/ Billing
Jon Parsons Customer Service/ Billing Manager
Finance/ Accounting
Dawn Clark Financial Operations Manager
Jennifer Williams Special Projects Coordinator
Robin McCleary Customer Service Coordinator
Customer Service
Nancy Alford Customer Service Rep. Senior
Michelle Gaskins Customer Service Representative
Billing
Jane Miller Customer Service Representative
Jan Waggener Customer Service Representative
Collections
Cynthia Martek Customer Service Representative
Brenda Jordan Customer Service Representative
Suzie Ryan Customer Service Representative (Transfer from Finance)
General CIP Engineering
Steven Montemayor Utilities Engineer
Mark Molina Utilities Engineering Technician
Field Operations
David Rotar Utility Services Manager
Cheryl Fiorro Administrative Specialist II
Stormwater
Water
Rodney Carroll Utilities Worker Supervisor
Shane Kreidler Utility Worker Coordinator
James Barrott Utility Worker II
Jay Saathoff Utility Worker II
John Gaddis Utilities Worker Supervisor
New Installs, Meter Installations/ Repairs
Gary Oakley Utility Worker Coordinator
Richard Debussey Utility Worker II
Brian Koresles Utility Worker II
Scott Talabac Utility Worker II
Locates, Valve and Hydrant Maintenance
Jeff McAllister Utility Worker Coordinator
Nick Saccoccio Utility Worker I
Orlando Castillo Utility Worker I
Taps, Hydrant & Valve Repairs, Large Repairs
Chris Craft Utility Worker Coordinator
Chris Johnson Utility Worker II
Frank Barrientos Utility Worker II
Field Customer Service/Meter Reading
Lisa Morton Utility Field Rep.
Greg Delbene Utility Field Rep.
Vacant – Proposed Utility Field Rep.
Field Rep. 1 (contractual)
Water Treatment
Engineering/ Operations Management
Brad Wagner Senior Engineer
Chris McKenzie Engineering Tech
Paul Jurczak Utilities Facilities Manager
Vacant Water Quality/ Compliance Specialist
Heather Keys Administrative Specialist II
System Operations
Carl Anderson Lead Water Plant Operator
Doug Feeley WP Operator A
Anthony Walker WP Operator A
Craig Talum WP Operator B
Gary Sharples WP Operator B
Vacant WP Operator Trainee
Gary Schulze WP Operator C
Tim McCarthy WP Operator C
Paul Mitrovich WP Operator C
Alex Canall WP Operator C
Jamie Hollett WP Operator Trainee
Lab Services
Jeff Lanham WP Operator A
Mark Cantor WP Operator A
Facilities Maintenance
Ray Snodeker Util. Maintenance Supervisor
Steven Glazer Process Controls Coordinator
Larry Kuhner Process Controls Technician
Christopher Carpenter Process Controls Technician
Bill Dudak WP Operator A
Mike Houtz WP Operator A
James Welker WP Operator B
Doug Aldrich WP Operator C
John Gregory WP Operator C
Larry Tress Utilities Electrician

FIVE YEAR DIVISIONAL STAFFING PLANS

UTILITIES ADMINISTRATION/ENGINEERING
Five Year Staffing Plan
2013-2017

Overview:

Utilities Administration is responsible for management of the Utility as a whole and all related engineering functions of the operation. This section of our staffing plan focuses on the responsibilities of the Director, Assistant Director, and the engineering and other technical staff who oversee the Utility's long range planning and community investment program (CIP).

Over the past thirty five years, Jupiter's Utility System has experienced tremendous growth. Strategic, long range, forward planning on the part of Utilities Administration has made it possible for the Utility to meet the engineering, technological and financial demands experienced and anticipated while operating an award winning utility with rates 23% below local industry averages. Water system expansions and upgrades, as well as replacement of obsolete infrastructure and facilities, continues to be accomplished through the Utility's Community Investment Program. Increasing regulatory stringency on drinking water and stormwater quality has required the Utility to make improvements to its facilities. The design and construction of these improvements are accomplished through this division.

As the Town reaches build-out, future growth within the Utilities' service area is expected to slow down and much of the work planned for this division will shift from expansion related projects to renewal and replacement projects. Improvements necessary to meet stricter drinking water and stormwater quality regulations are expected to continue. Furthermore, as the South Florida Water Management District (SFWMD) moves towards limiting water use from the surficial aquifer and implements elevated water restrictions, the Utility may be required to expand upon its use of alternative water supplies to an even greater extent. Meanwhile, as a result of heightened water use restrictions, demands will be suppressed reducing operational scale efficiencies and significantly impacting the revenue stream of the water utility. In response, utility staff anticipates a comprehensive plan of action to minimize revenue requirements through efficiency in its operations and its capital improvement program.

The Utilities CIP currently has thirty (30) capital improvement projects projected for the next five years (FY 2013-2017). Some of these projects will be designed and constructed in phases or components to accommodate specific construction types, scheduling with other entity construction projects, and private development within the Town. The total cost of these projects is estimated to be approximately $30 million.

The group of people who manage design and construction of the Utilities CIP projects is often referred to as the CIP team. The CIP team currently consists of the Director of Utilities, Assistant Director of Utilities, Senior Engineer, Utilities Engineer, Special Projects Coordinator, Administrative Specialist III, and two Utilities Engineering Technicians. The function of each of these positions as it relates to implementation of the Utilities Capital Improvement Program is described below. It is important to remember that the Director, Assistant Director, Senior Engineer, Special Projects Coordinator, and Administrative Specialist III each have responsibilities outside of the CIP team responsibilities and do not devote one hundred percent of their time to administering the CIP projects.

General Staff Position Responsibilities:

Director of Utilities:

The Director of Utilities is responsible for planning, managing and directing the overall operations of the Town's Water and Stormwater Utilities. The essential functions of the Director include, but are not limited to, managing/monitoring Utility operations and expansion; supervising Utility Staff; ensuring that the Utility maintains compliance with federal, state, and local rules and regulations; long range and strategic planning for the Utility, consulting with Town Manager/Town Council; planning, coordinating and implementing activities with outside agencies, municipalities, and others as needed; developing, administering, and monitoring the Utility's operating and capital improvement budgets; overseeing new development including plan review; providing leadership to the Utility in public relations and networking efforts; and directing Utility Staff in applying for and securing grant funding for capital improvement projects.

Assistant Director of Utilities:

The Assistant Director of Utilities is responsible for assisting the Director as needed in planning, directing and coordinating activities of the Water and Stormwater Utilities. A major component of the responsibilities of this position includes day to day management of the Utilities' Capital Improvement Program. This consists of assisting the Director in long range and short range planning of capital projects to keep the Utility in compliance with federal, state and local rules and regulations and to meet demands of the Utility's service area; managing/coordinating with consulting engineers; designing/reviewing construction documents; obtaining permits and ensuring construction is performed in accordance with permit conditions; advertising and bidding construction contracts, reviewing, awarding, and administering construction contracts; providing guidance to Special Projects Coordinator in managing grant contracts, providing guidance to the Utilities staff in administering CIP construction contracts and construction

observation and inspection, oversight and management of Utilities CIP and general consulting budgets.

Senior Engineer:

In 2010, the role of the Senior Engineer began transitioning from construction project management of Utilities CIP projects to operations management of the water and stormwater utilities. While the Senior Engineer maintains responsibility for construction project management of CIP projects related to the water plant and its associated facilities, his function in this capacity on distribution and storm water projects has been shifted to the Utilities Engineer.

In his role as construction project manager, the Senior Engineer reviews, processes, distributes shop drawings, contractor's requests for information, contractor's pay applications, construction change orders, and other paperwork associated with the construction contracts; conducts pre-construction and weekly construction progress meetings and prepares meeting minutes; coordinates construction with plant operations staff and design engineers as needed; coordinates with regulatory agencies to ensure permit conditions are adhered to; provides guidance to and interacts with Utilities Engineering Technicians as related to construction observation and inspections; conducts substantial and final inspections; develops punch lists, reviews as-built drawings; coordinates and assists contractors with equipment start ups; coordinates construction and facility start-ups with water plant personnel; and other duties as necessary to ensure that construction is performed in accordance with the contract documents, permits conditions, and other rules and regulations. The Senior Engineer also provides input to the Director and Assistant Director as needed with engineering design and plan review of plant related projects.

In his role as operations management of plant and field staff, the Senior Engineer is responsible to meet with supervisors of the water plant and field (water and stormwater) operations on a weekly basis to discuss, coordinate, and resolve operational issues experienced by the groups and to identify areas/processes where operational efficiencies can be improved and strategize and implement plans for improving those processes and efficiencies. Over the next five years, the Senior Engineer will continue the transition to a heightened role of operations management and become actively involved with the Director and Assistant Director in improving the operational efficiency within the utility and other Town operations.

Utilities Engineer:

The Utilities Engineer is responsible for in house design of select general CIP projects and small distribution and storm water construction projects, permitting as needed of in house design projects, management of Utility computer aided drafting (CADD) library and electronic files, including design documents, bid documents, and record drawings, electronic updating of field changes to construction drawings, preparation of AutoCAD exhibits for permit applications and small construction projects, maintenance of the Utilities CIP construction and electronic drawing files, construction project management of Utilities CIP projects related to water transmission and distribution projects and stormwater projects including reviewing, processing, and distributing shop drawings and contractor's requests for information, contractor's pay applications, construction change orders, and other paperwork associated with the construction contracts; conducts pre-bid, pre-construction and weekly construction progress meetings and prepares meeting minutes; coordinates construction with field staff and design engineers as needed; coordinates with regulatory agencies, provides guidance to and interacts with Utilities Engineering Technician as related to construction observation and inspections; conducts substantial and final inspections; develops punch lists, reviews as-built drawings; coordinates and assists contractors with testing and start-ups; coordinates construction with other utilities/municipalities, home owners associations, and the public; and other duties as necessary to ensure that construction is performed in accordance with the contract documents, permits conditions, and other applicable rules and regulations. The Utilities Engineer also provides input to the Director and Assistant Director as needed with engineering design and plan review of transmission, distribution and stormwater CIP projects and permit applications. As the Senior Engineer continues to shift his attention to improving operational efficiencies of the Utility, the Utilities Engineer will take a greater role in managing a greater number of utility construction contracts.

Administrative Specialist III:

The Utilities Administration Administrative Specialist III is responsible for providing administrative support to the Director, Assistant Director, Special Projects Coordinator, Senior Engineer, Utilities Engineer and the Utilities Engineering Technician. As the Special Projects Coordinator has expanded her role to the Business Operations office, the Administrative Specialist III has assisted with administrative duties related to the CIP projects including preparation and distribution of specifications and contract documents, issuing work orders and purchase orders to consultants, contractors, and vendors, advertising construction projects for bids, scheduling pre-bid meetings, bid openings, pre-work meetings, and weekly construction meetings, preparation of meeting minutes for pre-bid, pre-work and weekly construction progress meetings; maintenance of water administration and CIP project files; processing time

cards; mail sorting and distribution for Utilities Administration; answering and responding to phone calls for the Utilities Administration; and other miscellaneous administrative duties as needed by the Administration Staff.

Utilities Engineering Technician (UET):

There are currently two Utilities Engineering Technicians (UET) that assist with construction observation and inspection of the Utilities' CIP construction projects, one is assigned to Utilities Administration and the other to the Water Plant. It is the responsibility of the UETs to monitor construction activities each day to ensure that the projects are constructed in accordance with the requirements of the contract documents and that all permit conditions and Town standards are achieved. The UETs monitor construction on a daily basis, prepare daily construction field reports, maintain digital photographs of construction progress, and communicate with the Senior Engineer and Utilities Engineer throughout each day. The UETs are instrumental in making sure construction progresses by addressing contractor's field questions, coordinating field activities such as inspections and testing, and addressing the public's concerns as they relate to specific construction projects and issues. The UETs are required to attend the pre-work and weekly construction progress meetings for their respective construction projects, review contractor's pay applications in the field with the contractor, be present for pressure testing, density testing, concrete pours and other major construction activities requiring observation for construction certification, inspect materials upon delivery for conformance with contract specifications and approved shop drawings, coordinate and attend start-up of constructed facilities, attend substantial and final completion walk-thrus with the contractor, develop a punch list of items to be completed before final completion can be issued, review operation and maintenance manuals and record drawings, conduct warranty inspections, and follow-up on warranty items with contractor. The UETs also assist with shop drawing review, plan and specification review, provides input on Sequence of Operation schemes for various facilities throughout the Utility, and coordination with water plant and stormwater personnel as needed during construction and start-up of new facilities.

At any given time, each UET has multiple projects and is responsible for managing from a construction observation perspective. The size of the project and the experience of the Contractor dictates the amount of time the UET can dedicate to the project.

Upon completion of demolition of the lime plants and construction of the water plant warehouse in 2012, the Utility expects to be able to administer the majority of CIP projects with only one UET. To effect this transition, the UET assigned to the Water Plant has been partially reassigned to assist the Senior Engineer in Operations Management functions.

Summary:

Utilities Administration has transitioned the Senior Engineer and one UET position to assist in improving operational efficiencies and address succession of other senior plant staff members. Transition of the Senior Engineer from CIP to operational management is necessary in order to provide the focus needed to identify, strategize and implement operational efficiencies utility-wide. Transfer of certain responsibilities from the Special Projects Coordinator to the Administrative Specialist III has occurred to enable the Special Projects Coordinator to work with the Business Office supervisors in refining operational processes. Projected work load of the Utilities' CIP program for 2013-2017 will keep the Director, Assistant Director, Special Projects Coordinator, Senior Engineer, Utilities Engineer, Administrative Specialist III, and the Utilities Engineering Technicians (UET) utilized. Although, the Senior Engineer and one UET position have been re-assigned to the Operations Management functions, both positions will still be needed to assist with construction of CIP projects given the project workload anticipated over the next several years.

Utility Administration
Staffing

2007-2008	Positions	2008-2009	Positions	2009-2010	Positions
Administration		Administration		Administration	
Director	1	Director	1	Director	1
Assistant Director	1	Assistant Director	1	Assistant Director	1
Sr. Utilities Engineer	1	Sr. Utilities Engineer	1	Senior Engineer	1
Special Projects Coordinator	1	Special Projects Coordinator	1	Special Projects Coordinator	1
Administrative Assistant	1	Administrative Assistant	1	Administrative Specialist III	1
Utilities Engineering Technician	3	Secretary*	1	Admininstrative Specialist II	1
Utility Engineer	1	Utilities Engineering Technician	3	Utilities Engineering Tech ***	1
		Utility Engineer	1	Utility Engineer	1
TOTAL	9	TOTAL	10	TOTAL	8

2010-2011	Positions	2011-2012	Positions	2012-2013	Positions
Administration		Administration		Administration	
Director	1	Director	1	Director	1
Assistant Director	1	Assistant Director	1	Assistant Director	1
Administrative Specialist III	1	Administrative Specialist III	1	Administrative Specialist III	1
Utilities Engineering Technician	1	Utilities Engineering Technician	1	Utilities Engineering Technician	1
Utility Engineer	1	Utility Engineer	1	Utility Engineer	1
Admininstrative Specialist II**	1				
TOTAL	6	TOTAL	5	TOTAL	5

2013-2014	Positions	2014-2015	Positions	2015-2016	Positions
Administration		Administration		Administration	
Director	1	Director	1	Director	1
Assistant Director	1	Assistant Director	1	Assistant Director	1
Administrative Specialist III	1	Administrative Specialist III	1	Administrative Specialist III	1
Utilities Engineering Technician	1	Utilities Engineering Technician	1	Utilities Engineering Technician	1
Utility Engineer	1	Utility Engineer	1	Utility Engineer	1
TOTAL	5	TOTAL	5	TOTAL	5

2016-2017	Positions
Administration	
Director	1
Assistant Director	1
Administrative Specialist III	1
Utilities Engineering Technician	1
Utility Engineer	1
TOTAL	5

*Reassigned from Utility Field Division to assist with Nanofiltration Plant construction clerical burden.
**Reassigned to Utility Business office to address clerical burden.
***One Utility Engineering Technician reassigned to Plant Operations/Maintenance as CIP workload allows.
**** Senior Engineer reassigned to Water Plant for Operations Management.
***** Special Projects Coordinator reassigned to Business Operatoins to assist with complex research and analysis.

UTILITIES GEOGRAPHIC INFORMATION SYSTEMS (GIS)

Five Year Staffing Plan
2013 – 2017

Overview:

The GIS Division within Utilities, staffed by the GIS Manager and GIS Specialist, has the primary function of providing services to enhance access to geographic information for Utilities, staff, and citizens of the Town of Jupiter. While many tasks are performed and products are created specific to the goals of the Utilities Department, the Division also provides leadership, planning and coordination, products (output), and applications related to GIS technology for all departments and entities within the Town. The Utilities Department had both the greatest need and the foresight to enable the initial implementation of GIS at the Town.

During the last decade, about one third or more "geography" was created for the Town and water service area. More hydrants, storm drains, wells, and pipes have been digitized and added to GIS databases. Currently a third of the GIS features have also been created or managed beyond Utilities needs. As the GIS Division created applications and data access for Utilities operations, others also envisioned similar need for GIS layers with geographic reference, shared data access, and managed records for their systems. As the anticipated necessity for both new data creation and the development of new applications wanes, the GIS Division shifts focus towards maintaining systems and streamlining processes related to geography for Utilities and the Town.

General Staff Position Responsibilities:

The GIS Manager plans and implements the GIS function within Utilities and the Town, which requires data creation and maintenance, hardware and software related tasks, coordination within the Town and with other agencies, and application development.

The GIS Specialist creates, verifies, and updates GIS data for Utilities and the Town, and creates hardcopy / output for many standard maps and atlases, and requests for additional custom products and maps.

GIS Five Year Staffing Plan:

GIS staffing is expected to remain static through the five year planning period. This is necessitated by increased GIS integration and maintenance requirements within Utilities and the Town. Staff duties continue to shift from data production, data editing, and application development, toward standard GIS operating procedures, such as data maintenance, application maintenance, regular system upgrades, and support of the increasing number of GIS

users. This has proved a necessity as GIS integration and maintenance requirements have increased and are projected to continue within the Utility and the Town. Simply put, GIS is doing more, and more people are doing GIS.

Summary:

- Continued training for GIS staff to be able to support critical workflows, develop the user interfaces between and within systems, and meet the GIS integration requirements among various current and future systems.
- Work with all Town staff to recognize and plan for current and future data needs, by utilizing other staff or specifying requirements for outside services.
- Develop and publish more web based tools for public consumption.
- Continue to append the GIS Strategic Plan with procedural and documentation information, making it both the blueprint, and the manual, for GIS operations.
- Continue to focus on new technology, access, and workflows for Utilities field staff, sending GIS staff out to assist with transitioning from paper to field devices.
- Make do with current staffing levels throughout five year planning horizon. Should planned delivery timelines for products be found unacceptable, temporary staff may be utilized as in the past.

Utilities Geographic Information Systems (GIS)							
Staffing							
2007-2008			2008-2009			2009-2010	
	Positions			Positions			Positions
GIS Staffing			GIS Staffing			GIS Staffing	
GIS Manager	1		GIS Manager	1		GIS Manager	1
GIS Technician	1		GIS Technician	1		GIS Specialist	1
TOTAL	2		TOTAL	2		TOTAL	2
2010-2011			2011-2012			2012-2013	
	Positions			Positions			Positions
GIS Staffing			GIS Staffing			GIS Staffing	
GIS Manager	1		GIS Manager	1		GIS Manager	1
GIS Specialist	1		GIS Specialist	1		GIS Specialist	1
TOTAL	2		TOTAL	2		TOTAL	2
2013-2014			2014-2015			2015-2016	
	Positions			Positions			Positions
GIS Staffing			GIS Staffing			GIS Staffing	
GIS Manager	1		GIS Manager	1		GIS Manager	1
GIS Specialist	1		GIS Specialist	1		GIS Specialist	1
TOTAL	2		TOTAL	2		TOTAL	2
2016-2017							
	Positions						
GIS Staffing							
GIS Manager	1						
GIS Specialist	1						
TOTAL	2						

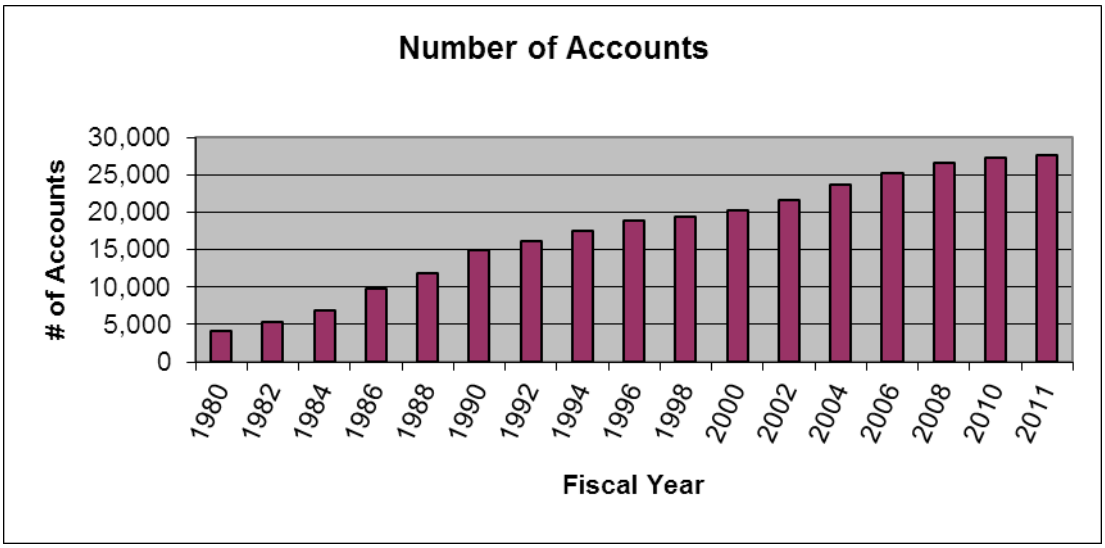
UTILITY BUSINESS OPERATIONS

Five Year Staffing Plan
2013-2017

Overview:

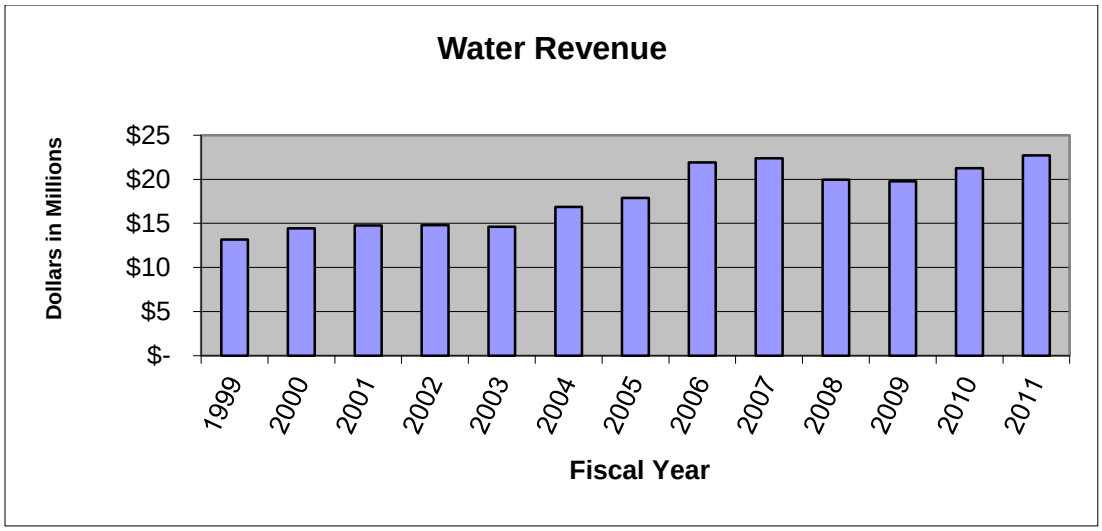
Utility Business Operations consists of administrative and financial functions for the Water and Stormwater Utilities. Utility Billing, Utility Field Service and Utility Collections teams are included within Utility Business Operations. Residential garbage billing and collections is also accomplished by the Utility Business Office. All teams are cross trained in tasks which provide support services to the Utility and the Town as a whole.

Utility Business Operations currently consists of a staff of fifteen, including two contract employees: the Customer Service & Billing Manager, the Financial Operations Manager, the Special Projects Coordinator, the Customer Service Coordinator, six Customer Service Representatives, including the Senior position. It is also recommended that one Customer Service Representative position (currently classified as an Administrative Specialist I and performing cashiering functions) be transferred from Finance to Utilities. This will allow for the direct supervision and cross-training in customer service related functions. No customer service related positions have been added since FY 2002-2003 and the Utility has no intentions of adding new permanent customer service positions in the future. To achieve this goal, the billing, remittance processing, and meter reading functions of the Utility are being streamlined and automated to offset the increased demand for new staff as the number of accounts increase.



Since the beginning of FY 2002-2003, the Utility has added approximately 5,866 new customers. With 27,701 current customers, that is approximately one customer service representative per 4,616 customers, and one Utility Field Representative per 6,925 customers. Over the next five years, the Town is expected to add another 1,250 new customers. At the same time, no additional staff is anticipated to be added to the customer service and billing area. Compared to other utilities in the region, Jupiter Utilities customer service staffing levels remain consistent with benchmarks.

Utility	# of CSR's	# of Customers	# Customers per CSR
City of Boynton Beach	9	65,000	7,222
City of Delray Beach	4	20,000	5,000
City of Stuart	4	8,700	2,175
City of West Palm Beach	7	30,000	4,286
Village of Wellington	3	20,000	6,667
Martin County	7	30,000	4,286
St. Lucie County	5	5,000	1,000
Seacoast Utilities	6	35,000	5,833
Loxahatchee River District	4	28,000	7,000
Tequesta	2	5,000	2,500
Average	5	24,670	4,597
Town of Jupiter	6	27,100	4,517



General Staff Position Responsibilities:

Financial Operations Manager:

Oversight of all business office financial functions of the Utilities are managed by the Financial Operations Manager and supported by the Special Projects Coordinator. The Financial Operations Manager's primary responsibility includes oversight of billing, utility finances and other business office functions. Other responsibilities include preparation of cash flow analyses, monthly financial reports, year-end financial reports, related statistical reports, capital contributions reports as well as monitoring connection fee payments, preparing required refunds to large developers, monitoring of CIP budgets and expenditures, and preparing pre-audit documentation in concert with Town Finance staff.

Customer Service & Billing Manager:

The Customer Service & Billing Manager administrative responsibilities include support for the administrative and operational functions within the customer services teams, budget management, developer agreement management, meter reading and billing services. Other functions also include liaison with Town management, local builders and developers and at times with local, regional, state and federal regulatory agencies. The Financial Operations Manager works with the Customer Service & Billing Manager in the completion of these responsibilities.

Special Projects Coordinator:

The Special Projects Coordinator provides support to both Utilities Administration and Utilities Business Operations. This position is responsible for assisting the Director and Assistant Director in coordinating, scheduling, monitoring and implementing the Utilities' Capital Improvement Program and other complex activities of the Utilities Administration. This position coordinates administrative activities involving capital improvement projects by monitoring budgets and providing biweekly updates. In addition, the Special Projects Coordinator manages administrative activities required for grant funded capital projects by preparing and submitting monthly status reports and reimbursement requests to regulatory agencies while continuing to monitor for additional grant funds that may be available to the Utilities. This position monitors, coordinates and prepares the Utilities' performance measure tracking reports. Furthermore, this position assists with public relations. The Special Projects Coordinator also is assigned duties within the Business Operations Office. In this role, the Coordinator provides support to both the Customer Service & Billing Manager and the Financial Operations Manager by tracking statistical information used in benchmarking, researching and analyzing complex issues and data, preparing reports, and providing assistance with financial functions. Finally, this individual has been trained in billing and customer service activities to enhance staff cross-training and expand effectiveness in responding to the changing needs of the position in our organization.

Customer Service Coordinator:

The primary roll of the Customer Service Coordinator is to supervise and coordinate the customer service activities and the processing of documentation in the customer service, billing and field services areas within the Utility. This position provides a full range of customer service functions in support of the customer service teams, including organizing, prioritizing, assigning work, training and performance evaluations. The Customer Service Coordinator also serves as a backup to the various Utility teams and assists the Financial Operations Manager with a variety of accounting functions.

Utility Field Service Team:

The Utility Field Service Team is primarily responsible for the reading and maintenance of the meter reading systems of the Utility. This Team consists of two Customer Service Representatives, including the Senior position. This Team interrelates heavily with the four Utility Field Representatives operating out of the Field Division. The Senior Customer Service Representative oversees the work of this team and, along with the Customer Service Representative, sets up all new Utility accounts, transfers meter reading data from the electronic devices to and from the utility billing software, reviews and edits all daily meter readings, prepares service orders for re-reads due to high reads or no reads, and edits customer

account and meter setups that must be accurate to properly bill each customer. In addition, this Team answers calls from developers, builders, and customers regarding all aspects of the customer account.

From a Business Office perspective, the Utility Field Representatives handle all field related meter reading and a variety of customer service functions. Field related issues consist of daily service orders, turn-offs for nonpayment, high bill complaints, meter change-outs, monthly meter reading, and routine meter maintenance. The field service team also provides support services to the other Utility teams.

In keeping with the effort to elevate operational efficiencies, a significant investment has already been made to replace conventional water meters with meters that can be read remotely via radio signal. This process enhancement greatly reduces meter reading time and increases the accuracy and quality of information gained through the meter reading process. This process enhancement has enabled the utility to address all meter reading and field service functions with only four staff positions. Two of these positions were converted to contract staff in 2009. However, this change has not lead to any efficiency gains. Therefore, it is proposed that one of these staff positions once again become a permanent full-time Town employee. Meanwhile, one of the field service positions will remain a contractual temporary full-time (2 year contract) position for the 2012-2013 and 2013-2014 fiscal years. In 2014-2015, it is expected that customer growth will necessitate that this position become once again a full time permanent town staff position.

Utility Billing Team:

The Utility Billing team consists of two customer service representatives and is responsible for processing daily and final billings to all customers as well as providing support services to the other Utility teams. The team's primary billing functions include printing and reviewing daily reports which are instrumental in balancing the daily billing to the Town's general ledger, reviewing and editing daily billing reports, transferring billing data files to the outsource printing vendor, processing all final bill and credit balance refunds, handling returned mail, and verifying certificates of occupancy for all locations within the Town's service area. Support functions include opening and sorting mail-in payments, inputting payments made over the phone, processing turn-offs for nonpayment. This team closes all service orders issued to the daily service crew, and files all applications for service, service orders, and reports. The team maintains the exemption files from garbage collection for the Town, and maintains records of accounts that have been turned off for nonpayment and accounts that have promise-to-pay plans. Additional tasks include receiving, filing and maintenance of all foreclosure and bankruptcy documents and communication with customers regarding same.

Utility Collection Services Team:

The Utility Collection Services team is primarily responsible for the collection of payments received at the payment counter and payments received in the mail, and for operation of the automated payment services provided by the Utility. The use of automated payments has increased by 33% over the past two years. Customers may use one of many options for automated payment including online payment, bank draft, transfers of funds through Online Resources and bill pay and E-pay services with the customer's bank.

The processing of payments by check is partially automated for checks and payment stubs received by mail and for checks received over the counter. The process requires the team to open, and sort mail, and then a remittance scanner and software is used to scan checks and payment stubs to make a digital copy. The system creates input batches that the team edits and balances, ensuring accuracy of payment information. The system creates an electronic file of check images and an electronic deposit slip that is sent to the bank electronically, in lieu of a manual deposit, and creates an electronic payment file that is transferred to the Town's cash receipts software so payments are posted directly to the customer accounts.

Summary:

Utilities Business Operations does not anticipate a change in the total number of staff over the next five years even with the increase in Utility customers from new development and growth within the Town's Utility service area. Although automation is beneficial in providing basic account information to the customer, the Town desires to preserve it's "small-town feel" and many customers want to talk directly to a customer service representative about their real life situations, including receipt of payment, high consumption, request for a time-payment plan, request for courtesy credits, or other similar customer concerns. This high level of service expectation is being met; however, the staff resources to respond are being fully utilized at this time.

It is essential to point out that although the Utility is automating certain processes within the customer service and billing area, daily operation and maintenance of that automated process continues to demand staff resources to coordinate the process, open and sort mail, and to edit and balance daily payment transactions. To balance a daily batch from an online payment site, customers frequently enter incorrect account numbers which prevent the data transfer from carrying over the entire batch detail, and the batch must be adjusted manually. As a result, staff is still entering the payment information for a select group of customers that did not come over in the batch and time is spent researching to ensure payment is applied to the proper account. Additionally, the Utility continues to experience increases in customer service demands brought on by growth in the customer base, improvements to delinquent bill collections, maintenance

of customer information on file, as well as the growing number of foreclosures and bankruptcies affecting our customers.

As the Utility further automates the meter reading function over the next five (5) years, fewer meters will be manually read for monthly billing, but all other field service functions will continue to increase as more customers are added to the system. For example, all meter re-reads must be manually located and read, all turn-on and turn-off meter readings must be manually located and read, and a majority of customer complaints require that the customer's meters be manually located, read and ample time is provided in the field to review the situation with the customer to ensure his/her confidence in our operations.

With the investments made in the automation of processes, the teams continue to focus on operational efficiencies to provide better customer relations and accuracy in billing, collection and meter reading systems.

Utility Business Operations
Staffing

2007-2008	Positions	2008-2009	Positions	2009-2010	Positions
Administration		Administration		Administration	
Utility Business Manager	1	Utility Business Manager	1	Customer Service/Billing Mngr	1
Senior Utility Accountant	1	Senior Utility Accountant	1	Financial Operations Manager	1
sub total	2	sub total	2	sub total	2
Customer Service		Customer Service		Customer Service	
Coordinator	1	Coordinator	1	Field Operations Coordinator	1
Customer Service Rep Sr	1	Customer Service Rep Sr	3	Customer Service Rep Sr	1
Customer Service Rep	5	Customer Service Rep	3	Customer Service Rep	3
Field Service Technicians	4	Field Service Technicians*	2	Utility Field Representative	2
sub total	11	sub total	9	sub total	7
Accounting		Accounting		Accounting	
Accounting Technician	1	Accounting Technician	1	Accounting Technician	1
				Customer Service Rep	1
sub total	1	sub total	1	sub total	2
TOTAL	14	TOTAL	12	TOTAL	11

2010-2011	Positions	2011-2012	Positions	2012-2013	Positions
Administration		Administration		Administration	
Customer Service/Billing Mngr	1	Customer Service/Billing Mngr	1	Customer Service/Billing Mngr	1
Financial Operations Manager	1	Financial Operations Manager	1	Financial Operations Manager	1
Special Projects Coordinator	1	Special Projects Coordinator	1	Special Projects Coordinator	1
		Administrative Specialist II***	1		
sub total	3	sub total	4	sub total	3
Customer Service		Customer Service		Customer Service	
Customer Service Coordinator	1	Customer Service Coordinator	1	Customer Service Coordinator	1
Customer Service Rep Sr	1	Customer Service Rep Sr	1	Customer Service Rep Sr	1
Customer Service Rep	5	Customer Service Rep	5	Customer Service Rep ****	6
Utility Field Representative	2	Utility Field Representative	2		
sub total	9	sub total	9	sub total	8
TOTAL	12	TOTAL	13	TOTAL	11

2013-2014	Positions	2014-2015	Positions	2015-2016	Positions
Administration		Administration		Administration	
Customer Service/Billing Mngr	1	Customer Service/Billing Mngr	1	Customer Service/Billing Mngr	1
Financial Operations Manager	1	Financial Operations Manager	1	Financial Operations Manager	1
Special Projects Coordinator	1	Special Projects Coordinator	1	Special Projects Coordinator	1
sub total	3	sub total	3	sub total	3
Customer Service		Customer Service		Customer Service	
Customer Service Coordinator	1	Customer Service Coordinator	1	Customer Service Coordinator	1
Customer Service Rep Sr	1	Customer Service Rep Sr	1	Customer Service Rep Sr	1
Customer Service Rep	6	Customer Service Rep	6	Customer Service Rep	6
sub total	8	sub total	8	sub total	8
TOTAL	11	TOTAL	11	TOTAL	11

2016-2017	Positions
Administration	
Customer Service/Billing Mngr	1
Financial Operations Manager	1
Special Projects Coordinator	1
sub total	3
Customer Service	
Customer Service Coordinator	1
Customer Service Rep Sr	1
Customer Service Rep	6
sub total	8
TOTAL	11

* Two Utility Field Representative (fka, Field Service Technician) staff positions became contract employed 2008-2009 and thereafter.
** One contractual Utility Field Representative position restored as a permanent full-time Town staff position in 2012-2013
& one restored as a temporary full-time Town staff position in 2012-2013 & 2013-2014.
To obtain operation efficiencies, all four Utility Field Representative positions transferred to the Field Division in 2012-2013.
**** Adminstrative Specialist I (Grade 8) position transferred from Finance to Utilities beginning in 2012-2013 and reclassified to Customer Service Representative (Grade 9)

UTILITY WATER PLANT DIVISION

Five Year Staffing Plan
2013 – 2017

Overview:

The Utility Water Plant Division consists of three groups, Water Plant Operations, Water Plant Maintenance and Certified Laboratory Teams. Currently there are 28 total employees in this Division, nineteen of which are certified operators capable of running the treatment plant.

General Staff Position Responsibilities:

Administrative Support:

Administrative support at the water plant is provided by five employees, the Utilities Facilities Manager, Senior Engineer, Utility Engineering Technician, Water Quality/Compliance Specialist and an Administrative Specialist II. The Utilities Facilities Manager is in responsible charge of producing drinking water and the overall operation and maintenance of the water plant and its associated on-site and off-site facilities. The Utilities Facility Manager is also responsible for the overall supervision of all water plant personnel. The Administrative Specialist provides support service to the Facility Manager, Senior Engineer, Maintenance Supervisor and the laboratory staff. In addition, the Administrative Specialist also provides support for financial services at the plant such as purchasing requisitions and invoice processing totaling nearly $6,000,000/year.

In 2010, the role of the Senior Engineer began transitioning from construction project management of Utilities CIP projects to operations management of the Water and Storm Water Utilities. While the Senior Engineer maintains responsibility for construction project management of CIP projects related to the water plant and its associated facilities, his function in this capacity on distribution and storm water projects has been shifted to the Utilities Engineer within Utilities Administration. In his role as construction project manager, the Senior Engineer reviews, processes, distributes shop drawings, contractor's requests for information, contractor's pay applications, construction change orders, and other paperwork associated with the construction contracts; conducts pre-construction and weekly construction progress meetings and prepares meeting minutes; coordinates construction with plant operations staff and design engineers as needed; coordinates with regulatory agencies to ensure permit conditions are adhered to; provides guidance to and interacts with Utilities Engineering Technicians as related to construction observation and inspections; conducts substantial and final inspections; develops punch lists, reviews as-built drawings; coordinates and assists contractors with equipment start ups; coordinates construction and facility start-ups with water plant personnel; and other duties as necessary to ensure that construction is performed in

accordance with the contract documents, permits conditions, and other rules and regulations. The Senior Engineer also provides input to the Director and Assistant Director as needed with engineering design and plan review of plant related projects. In his role as operations management of plant and field staff, the Senior Engineer is responsible to meet with supervisors of the water plant and field (distribution and storm water) groups on a weekly basis to discuss, coordinate, and resolve operational issues experienced by the groups and to identify areas/processes where operational efficiencies can be improved and strategize and implement plans for improving those processes and efficiencies. Over the next five years, the Senior Engineer will continue the transition to operations management and become actively involved with the Director and Assistant Director in improving the operational efficiency within all divisions of the Water and Stormwater Utilities.

Water Plant Operations Staff:

There are currently ten (10) shift water plant operators who work an eight hour rotating shift to provide 24 hour coverage of plant operations. They are responsible for operating a 14.5 mgd nanofiltration (NF) membrane treatment facility, a 13.7 mgd reverse osmosis (RO) membrane treatment facility, concentrate treatment facilities, three odor abatement systems, a 1.8 mgd ion exchange treatment facility, on and off site ground storage and high service pumping, two clearwells, transfer pumps, chemical (sulfuric acid, sodium hydroxide, gaseous chlorine, anti-scalant and corrosion inhibitor) storage and delivery systems, over 50 Surficial Aquifer wells, 12 Floridan Aquifer wells and a surface water recharge system.

The Lead Operator is responsible for providing supervisory level leadership to the operation/lab staff which includes managing and generating operator work schedules, approving vacations, conducting employee reviews, establishing guidelines for plant operation procedures and coordinating operation of the water plant with Plant Maintenance Staff, the Senior Engineer, Water Quality/Compliance Engineer and the Plant Facility Manager to ensure that the plant is producing quality water efficiently.

Water Plant Maintenance Staff:

The water plant maintenance team consists of ten (10) employees, the Utilities Maintenance Supervisor, six water plant maintenance operators/mechanics, one Utility Engineering Technician (also a certified operator), one Process Controls SCADA Coordinator II, one Process Controls SCADA Coordinator I, and a plant electrician.

The function of the maintenance team is to provide preventative, routine, and emergency maintenance service to the water plant facilities and components enabling successful operation of the plant. On average, the maintenance operators/mechanics respond to approximately 338 work orders a month, 213 of which are preventative maintenance tasks, 30 instrument

calibrations and 95 non-scheduled (emergency and no-scheduled maintenance activities). Four of the six water plant operators/mechanics perform general maintenance work as well as provide shift operator relief for approximately 125 vacation days a year and coverage of shift operator sick time. As a result, only a 83 percentage of their time is truly allocated toward facility maintenance. The other two operator/mechanics positions provide more technical services related to instrumentation calibration, maintenance, and replacements and motors and pumps, alignments, vibration analysis, seals and bearings, and line locates for Sunshine State One Call. The Maintenance Supervisor provides guidance and direction to the maintenance staff and is responsible for coordinating maintenance activities with Operations Staff, the Senior Engineer and the Plant Facility Manager. The current Maintenance Supervisor is enrolled in the FRS DROP program and is within a year of retirement. In an attempt to preserve his thirty (30) years of institutional knowledge, job mentoring and documentation of knowledge related to this position is being given appropriate focus by management.

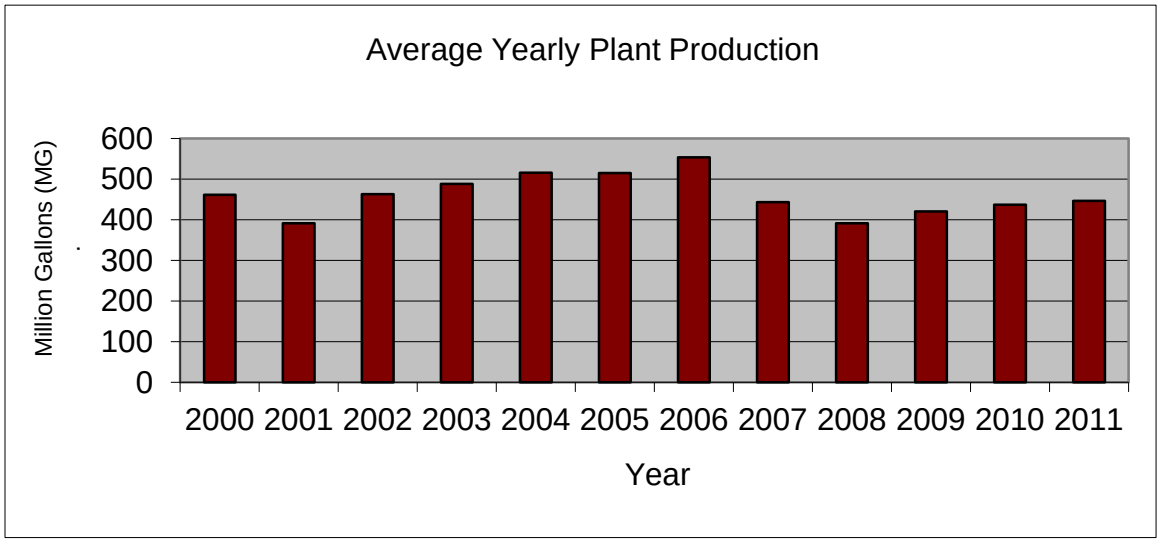
The Utilities Engineering Technician (UET) is responsible for construction observation and inspection (O&I) of water plant related capital investment projects (CIP) as well as coordination of construction activities with water plant operations and maintenance staff. For the past three years, the UET has been responsible for construction O&I for the Town's new nanofiltration plant. For the next several years, the UET will be utilized in construction oversight and inspection of various miscellaneous water plant improvements planned within the Utilities CIP program and necessary to maintain and produce safe drinking water for our customers.

The Process Controls SCADA Coordinator II is responsible to oversee all technical work as it relates to the planning and coordination of the departmental automation efforts. This encompasses both the implementation and the maintenance of all automated solutions within the Utility, performing routine maintenance of equipment; maintains hard-wired SCADA networks, radio telemetry networks, and fiber optic networks. Modifies existing PLC programming, creates new PLC programming and troubleshoots PLC programming. The Process Controls SCADA Coordinator I staff is responsible for performing technical work to install, maintain and calibrate all instrumentation, controls, programmable controllers and communication equipment for the Water Treatment Plant and its facilities.

The Utilities Electrician is responsible to perform technical and skilled work involving the design, installation and maintenance of electrical and mechanical equipment/systems associated with utility plant operations, performs electrical work on utility plant equipment, systems, and related components; install, repairs, replaces, and maintains a variety of mechanical and electrical systems, equipment, fixtures, and related components in compliance with applicable codes.

Certified Laboratory Staff:

The Jupiter Utilities Water System Laboratory is staffed by three employees who are responsible for `all sampling and reporting required by the water plant's operating permit and other associated permits and regulations including: USEPA Safe Drinking Water Act, FDEP, Palm Beach County Public Health Department, SFWMD, PBC DERM, FL DCA, USEPA NPDES Program relative to the RO concentrate discharge, the NF concentrate permit and other special sampling as may be required. These laboratory technicians are responsible for sampling 112 sites within the distribution system for bacteriological quality on a monthly basis. In addition, the lab techs maintain an inventory of all operating supplies and place orders for supplies including chemicals necessary for use in the treatment of water (sulfuric acid, sodium hydroxide, gaseous chlorine, anti-scalant and corrosion inhibitor) routinely and as needed. Customer complaints in reference to water quality are addressed by the laboratory staff and complimentary site visits upon request are made to ensure customer confidence in our product. The laboratory staff is currently supervised by the Lead Operator, Water Quality/Compliance Engineer and Utilities Facilities Manager.



Summary:

The current challenge facing the Utility Water Plant Division is managing and maintaining the increase in complexity of our treatment systems, the ever changing regulatory requirements and maintenance of our exceptional history of providing the highest level of service and reliability. Furthermore, the water plant must also continue preparing for a line of succession due to the "graying" of the Water Plant staff. As such, staffing resources (Senior Engineer and Water Quality/Compliance Engineer) have been added at the plant.

As the testing and reporting requirements for all various governmental agencies and jurisdictions over the Utility increases, the importance of compliance is critical. Presently, we test and report to the Florida Department of Environmental Protection both for the Safe Drinking Water Act and the RO concentrate discharge under the Clean Water Act, the U. S. EPA, Palm Beach County Health Department, the Florida Department of Community Affairs for our Risk Management Program and SERC II Community Right to Know, the South Florida Water Management District for our Consumptive Use Permit and Wellfield Recharge System and the Palm Beach County Department of Environmental Resources Management for wellfield protection. Additional requirements are working their way through the various agencies. The US EPA Ground Water Rule is in place and the Florida Administrative Rule should be promulgated by the Fall of 2011. We must begin compliance with the Stage 2 Disinfection/Disinfectant By-Product Rule by October 1st, 2012. The U. S. EPA's Unregulated Contaminant Monitoring Rule 3 is expected to begin in 2013. Testing and monitoring rules for endocrine disruptors, pharmaceuticals and personal care products are presently being considered by Federal Legislators along with hexavalent chromium and the long awaited Radon Rule. The Water Quality/Compliance Engineer position is critical to our responsiveness to these requirements.

Utility Water Plant Division
Staffing

2007-2008	Positions	2008-2009	Positions	2009-2010	Positions
Utilities Facilities Manager	1	Utilities Facilities Manager	1	Utilities Facilities Manager	1
Chief Water Plant Operator	1	Utilities Maint. Supervisor	1	Utilities Maint. Supervisor	1
Utilities Maint. Supervisor	1	Utilities Systems Technician	1	Utilities Engineering Tech.*	1
Utilities Systems Technician	1	Utilities Maint. Mechanic	2	Process Controls Scada Coord. I	1
Utilities Systems Technician		Utilities Systems Technician		Process Controls Scada Coord. II	1
Apprentice	1	Apprentice	1	Laboratory Manager	1
Utilities Maint. Mechanic	2	Laboratory Technician	1	Utilities Electrician	1
Laboratory Technician	1	Utilities Electrician	1	Water Plant Operator**	17
Utilities Electrician	1	Water Plant Operator	11	Administrative Specialist II	2
Water Plant Operator	14	Laboratory Assistant	1		
Laboratory Assistant	1	Administrative Secretary	2		
Administrative Secretary	2	Lead Shift Operator	3		
TOTAL	26	TOTAL	25	TOTAL	26

2010-2011	Positions	2011-2012	Positions	2012-2013	Positions
Utilities Facilities Manager	1	Utilities Facilities Manager	1	Utilities Facilities Manager	1
Utilities Maint. Supervisor	1	Utilities Maint. Supervisor	1	Utilities Maint. Supervisor	1
Utilities Engineering Tech.	1	Utilities Engineering Tech.	1	Utilities Engineering Tech.	1
Process Controls Coordinator II	1	Process Controls Coordinator II	1	Process Controls Coordinator II	1
Process Controls Coordinator I	1	Process Controls Coordinator I	1	Process Controls Coordinator I	1
Process Controls Technician	1	Process Controls Technician	1	Process Controls Technician	1
Utilities Electrician	1	Utilities Electrician	1	Utilities Electrician	1
Water Plant Operator	17	Water Plant Operator	17	Water Plant Operator	17
Administrative Specialist II	2	Administrative Specialist II	1	Administrative Specialist II	1
Lead Operator	1	Lead Operator	1	Lead Operator	1
Senior Engineer	1	Senior Engineer	1	Senior Engineer	1
		Water Quality/Compliance Specialist	1	Water Quality/Compliance Specialist	1
TOTAL	28	TOTAL	28	TOTAL	28

2013-2014	Positions	2014-2015	Positions	2015-2016	Positions
Utilities Facilities Manager	1	Utilities Facilities Manager	1	Utilities Facilities Manager	1
Utilities Maint. Supervisor	1	Utilities Maint. Supervisor	1	Utilities Maint. Supervisor	1
Utilities Engineering Tech.	1	Utilities Engineering Tech.	1	Utilities Engineering Tech.	1
Process Controls Coordinator II	1	Process Controls Coordinator II	1	Process Controls Coordinator II	1
Process Controls Coordinator I	1	Process Controls Coordinator I	1	Process Controls Coordinator I	1
Process Controls Technician	1	Process Controls Technician	1	Process Controls Technician	1
Utilities Electrician	1	Utilities Electrician	1	Utilities Electrician	1
Water Plant Operator	17	Water Plant Operator	17	Water Plant Operator	17
Administrative Specialist II	1	Administrative Specialist II	1	Administrative Specialist II	1
Lead Operator	1	Lead Operator	1	Lead Operator	1
Senior Engineer	1	Senior Engineer	1	Senior Engineer	1
Water Quality/Compliance Specialist	1	Water Quality/Compliance Specialist	1	Water Quality/Compliance Specialist	1
TOTAL	28	TOTAL	28	TOTAL	28

2016-2017	Positions
Utilities Facilities Manager	1
Utilities Maint. Supervisor	1
Utilities Engineering Tech.	1
Process Controls Coordinator II	1
Process Controls Coordinator I	1
Process Controls Technician	1
Utilities Electrician	1
Water Plant Operator	17
Administrative Specialist II	1
Lead Operator	1
Senior Engineer	1
Water Quality/Compliance Specialist	1
TOTAL	28

UTILITY FIELD DIVISION

Five Year Staffing Plan
2013 - 2017

Overview:

The Utility Field Division consists of two groups, Water Distribution and Stormwater Field Teams. Currently, there are eighteen (18) total employees in this Division. Substantial cross training has occurred amongst the teams and responsibilities are flexed dependent upon the needs of the Utility as a whole. Over the past two years, significant changes have taken place within the Utility Field Division. These changes have required the work load to be redistributed amongst the balance of staff employees.

General Staff Position Responsibilities:

Administrative Support:

Until recently, the Administrative support is provided by three employees, the Utility Services Manager, one Administrative Specialist II, and an Engineering Technician. The Utility Services Manager is responsible for the operations of the Stormwater Utility and the Water Distribution System. The Administrative Specialist provides support for all personnel operating from the Field Operations Center and other Utility Divisions as needed. The Engineering Tech was responsible for all phases of the water main construction and acceptance for new developments. This position is also responsible for the Backflow and Cross-Connection Prevention Program. Presently, approximately 500 backflow certification/testing reminder letters and test results are reviewed and processed monthly. The Engineering Technician retired in 2011. The Administrative Specialist II has since assumed backflow program responsibilities along with the Utility Services Manager. Meanwhile, new construction oversight will also be assumed by the Utility Services Manager coupled with his support staff.

Water Distribution:

The Water Distribution Team is responsible for the operation and maintenance of the distribution system. These responsibilities include meter installation, radio read meter troubleshooting, large meter change outs, radio read meter conversions, piping leaks & breaks, valve maintenance, hydrant maintenance, water main taps & bores, hydrant repairs, valve repairs, flushing, restoration & repairs, customer complaint response, underground piping locations and inspections. They also provide support to the Stormwater Team, and other Town Staff as needed.

Currently, there is a total of 449.9 miles of pipe (a 7.9% increase per employee). This is an 8.8% increase in the size of the distribution system over last year. There is also an increase in the number of valves and hydrants that must be maintained. Eleven employees make up the Water Distribution Team. Even though development continues at a slower pace, additional miles of water main are added annually leading to greater workloads which may ultimately require increased staffing. Build out of the currently established service area of the Water Utility is anticipated to occur within 10 years.

In 2008 – 2009 the workload of two former Utility Field Representatives was previously outsourced to ease in the transition to a smaller work force if warranted. However, this experiment has yielded no cost savings and due to constant turnover of the contracted staff has led to a continual burden on Town staff relative to training. As such, in 2012 - 2013, one contracted position is being requested to be restored to a permanent full-time Town staff position. The other Utility Field Representative position is recommended to become a contracted full-time temporary Town staff position for two years. In 2014 – 2015, service demands are expected to be at a point that will warrant this position to also be restored to a permanent full-time Town staff position. It should be noted that in 2012, all Utility Field Representatives were reassigned as direct reports to the Utilities Water Supervisor in the field Division. Their work remains intertwined with business office functions; however, daily functions are best suited for oversight by Field Operations.

Stormwater:

The Stormwater Field Team consists of four (4) employees including the supervisor who manages and operation of the Town-wide system. Many storm drainage systems in the Town of Jupiter are owned and operated by various entities. These include HOAs, South Indian River Water Control District (SIRWCD), North Palm Beach Heights Water Control District (NPBHWCD), Northern Palm Beach County Improvement District (NPBCID), State of Florida Department of Transportation (FDOT), and Palm Beach County plus various privately owned and operated systems. The primary objectives of the Stormwater Team are to minimize the risk of flooding and enhance the quality of stormwater runoff.

One of the major requirements for the Stormwater Team is to meet the criteria contained in our USEPA NPDES permit. The permit has both maintenance and best management practice (BMP) criteria that must be performed and documented. Also, the Community Rating Service Program (CRS) requires documentation to ensure that the Town maintains or improves upon its present rating. Some of the responsibilities of the SW team include pump station maintenance and inspections, monitoring of street sweeping, inspections of detention ponds and canals, construction site inspections for Pollution Prevention Programs (PPP), swale rehabilitation program, grate cleaning, structure repairs, surveying, customer complaint response, plan

review, new constructions inspections, CIP support and private system inspections. They also help other Town staff as requested.

The SW team has been able to meet the requirements of the current NPDES permit performance measures and maintain the system with frequent job sharing with water field personnel. This has been accomplished by coordinating with the Water Distribution Team to help with the repair of stormwater structures. Repairs often require 3 to 4 men and 3 to 4 days to complete. In the coming year, several issues may cause difficulty in achieving the performance measure goals and meeting the NPDES requirements with the present staffing. First, a new NPDES permit is being negotiated and the recommended frequency of maintenance inspections and the need to inspect exfiltration trenches may become mandatory. Additional staffing may be required to meet these additional mandates.

Lastly, depending on the Town's rate of implementation of community infrastructure equity initiatives, the SW team may be required to maintain more drainage systems thereby stressing the limits of current resources.

Summary:

Staffing levels over the next 5 year planning horizon are expected to remain unchanged. However, system growth and regulatory mandates may ultimately necessitate greater staffing resources.

Utility Field Division
Staffing

2007-2008	Positions
Administration	
Utility Field Manager	1
Administrative Secretary	1
Secretary	1
Utilities Engineering Tech.	1
sub total	4
Water	
Supervisor	1
Coordinator	3
Utility Worker Senior	5
Utility Worker	3
sub total	12
Stormwater	
Supervisor	1
Coordinator	1
Utility Worker Senior	1
Utility Worker	1
sub total	4
TOTAL	20

2008-2009	Positions
Administration	
Utility Field Manager	1
Administrative Secretary	1
Utilities Engineering Tech.	1
sub total	3
Water	
Supervisor	1
Coordinator	3
Utility Worker Senior	4
Utility Worker	4
sub total	12
Stormwater	
Supervisor	1
Coordinator	1
Utility Worker Senior	1
sub total	3
TOTAL	18

2009-2010	Positions
Administration	
Utility Field Manager	1
Administrative Specialist II	1
Utilities Engineering Tech.*	1
sub total	3
Water	
Supervisor	1
Coordinator	3
Utility Worker II	5
Utility Worker I	3
sub total	12
Stormwater	
Supervisor	1
Coordinator	1
Utility Worker I	1
sub total	3
TOTAL	18

2010-2011	Positions
Administration	
Utility Field Manager	1
Administrative Specialist II	1
Utilities Engineering Tech.*	1
sub total	3
Water	
Supervisor	1
Coordinator	3
Utility Worker II	4
Utility Worker I	3
sub total	11
Stormwater	
Supervisor	1
Coordinator	1
Utility Worker II	1
Utility Worker I	1
sub total	4
TOTAL	18

2011-2012	Positions
Administration	
Utility Field Manager	1
Administrative Specialist II	1
sub total	2
Water	
Supervisor	1
Coordinator	3
Utility Worker II	5
Utility Worker I	2
sub total	11
Stormwater	
Supervisor	1
Coordinator	1
Utility Worker II	2
sub total	4
TOTAL	17

2012-2013	Positions
Administration	
Utility Field Manager	1
Administrative Specialist II	1
sub total	2
Water	
Supervisor	1
Coordinator	3
Utility Worker II	6
Utility Worker I	1
Utility Field Representative **	4
sub total	15
Stormwater	
Supervisor	1
Coordinator	1
Utility Worker II	2
sub total	4
TOTAL	21

2013-2014	Positions
Administration	
Utility Field Manager	1
Administrative Specialist II	1
sub total	2
Water	
Supervisor	1
Coordinator	3
Utility Worker II	6
Utility Worker I	1
Utility Field Representative	4
sub total	15
Stormwater	
Supervisor	1
Coordinator	1
Utility Worker II	2
sub total	4
TOTAL	21

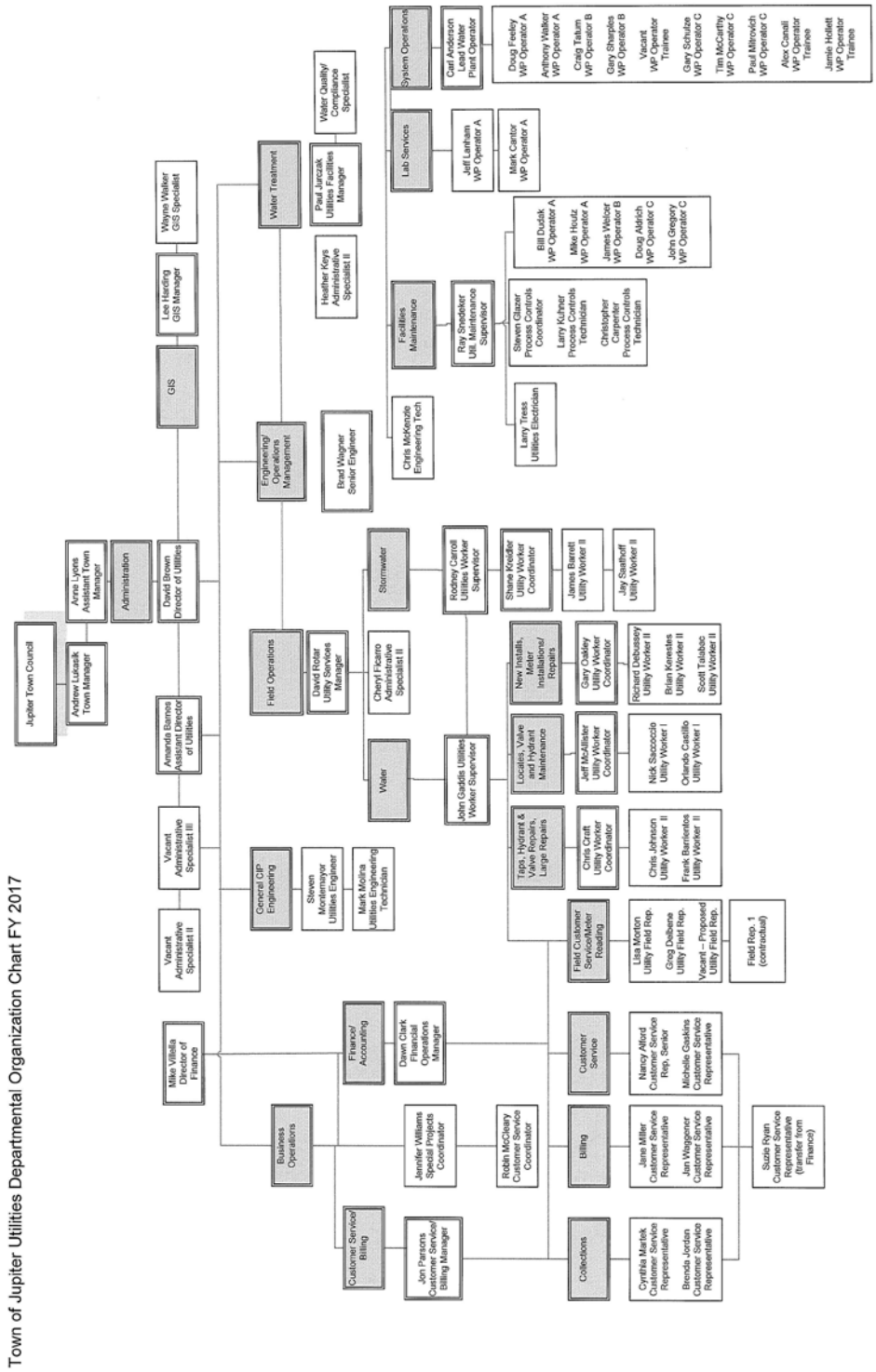
2014-2015	Positions
Administration	
Utility Field Manager	1
Administrative Specialist II	1
sub total	2
Water	
Supervisor	1
Coordinator	3
Utility Worker II	6
Utility Worker I	1
Utility Field Representative ***	4
sub total	15
Stormwater	
Supervisor	1
Coordinator	1
Utility Worker II	2
sub total	4
TOTAL	21

2015-2016	Positions
Administration	
Utility Field Manager	1
Administrative Specialist II	1
sub total	2
Water	
Supervisor	1
Coordinator	3
Utility Worker II	6
Utility Worker I	1
Utility Field Representative	4
sub total	15
Stormwater	
Supervisor	1
Coordinator	1
Utility Worker II	2
sub total	4
TOTAL	21

2016-2017	Positions
Administration	
Utility Field Manager	1
Administrative Specialist II	1
sub total	2
Water	
Supervisor	1
Coordinator	3
Utility Worker II	6
Utility Worker I	1
Utility Field Representative	4
sub total	15
Stormwater	
Supervisor	1
Coordinator	1
Utility Worker II	2
sub total	4
TOTAL	21

*Retired in June 2011.
** One contractual Utility Field Representative position restored as a permanent full-time Town staff position in 2012-2013
& one restored as a temporary full-time Town staff position in 2012-2013 & 2013-2014.
To obtain operation efficiencies, all four Utility Field Representative positions transferred from the Business Operations to the Field Division in 2012-2013.
*** One contractual Utility Field Representative position restored as permanent full-time Town staff position in 2014-2015.

Figure II.39


Town of Jupiter Utilities Departmental Organization Chart FY 2017
Jupiter Town Council
Andrew Lukasik Town Manager
Anne Lyons Assistant Town Manager
Administration
David Brown Director of Utilities
GIS
Lee Harding GIS Manager
Wayne Walker GIS Specialist
Amanda Barnes Assistant Director of Utilities
Vacant Administrative Specialist III
Vacant Administrative Specialist II
Mike Villella Director of Finance
Business Operations
Customer Service/ Billing
Jon Parsons Customer Service/ Billing Manager
Finance/ Accounting
Dawn Clark Financial Operations Manager
Jennifer Williams Special Projects Coordinator
Robin McCleary Customer Service Coordinator
Customer Service
Nancy Alford Customer Service Rep. Senior
Michelle Gaskins Customer Service Representative
Billing
Jane Miller Customer Service Representative
Jan Waggener Customer Service Representative
Suzie Ryan Customer Service Representative (transfer from Finance)
Collections
Cynthia Martek Customer Service Representative
Brenda Jordan Customer Service Representative
General CIP Engineering
Steven Montemayor Utilities Engineer
Mark Molina Utilities Engineering Technician
Field Operations
David Roter Utility Services Manager
Cheryl Fizaine Administrative Specialist II
Stormwater
Rodney Carroll Utilities Worker Supervisor
Shane Kreider Utility Worker Coordinator
James Barrett Utility Worker II
Jay Saathoff Utility Worker II
Water
John Gaddis Utilities Worker Supervisor
New Installs, Meter Installations/ Repairs
Gary Oakley Utility Worker Coordinator
Richard Debussey Utility Worker II
Brian Kenestes Utility Worker II
Scott Talabac Utility Worker II
Locates, Valve and Hydrant Maintenance
Jeff McAllister Utility Worker Coordinator
Nick Saccoccio Utility Worker I
Orlando Castillo Utility Worker I
Taps, Hydrant & Valve Repairs, Large Repairs
Chad Croft Utility Worker Coordinator
Chris Johnson Utility Worker II
Frank Barrientos Utility Worker II
Field Customer Service/Meter Reading
Lisa Morton Utility Field Rep.
Greg Delbene Utility Field Rep.
Vacant – Proposed Utility Field Rep.
Field Rep. 1 (contractual)
Engineering/ Operations Management
Brad Wagner Senior Engineer
Water Treatment
Heather Keys Administrative Specialist II
Paul Jurczak Utilities Facilities Manager
Water Quality/ Compliance Specialist
Chris McKenzie Engineering Tech
Facilities Maintenance
Ray Snedeker Util. Maintenance Supervisor
Steven Glazer Process Controls Coordinator
Larry Kohner Process Controls Technician
Christopher Carpenter Process Controls Technician
Bill Dudak WP Operator A
Mike Houtz WP Operator A
James Welcer WP Operator B
Doug Aldrich WP Operator C
John Gregory WP Operator C
Larry Trees Utilities Electrician
System Operations
Carl Anderson Lead Water Plant Operator
Doug Feeley WP Operator A
Anthony Walker WP Operator A
Craig Tatum WP Operator B
Gary Sharples WP Operator B
Vacant WP Operator Trainee
Gary Schulze WP Operator C
Tim McCarthy WP Operator C
Paul Mitrovich WP Operator C
Alex Canali WP Operator Trainee
Jamie Hollett WP Operator Trainee
Lab Services
Jeff Lanham WP Operator A
Mark Cantor WP Operator A

Summary and Conclusions

The projected final outcome of this analysis and planning activity is summarized below:

Utilities
2013 – 2017 Staffing Plan

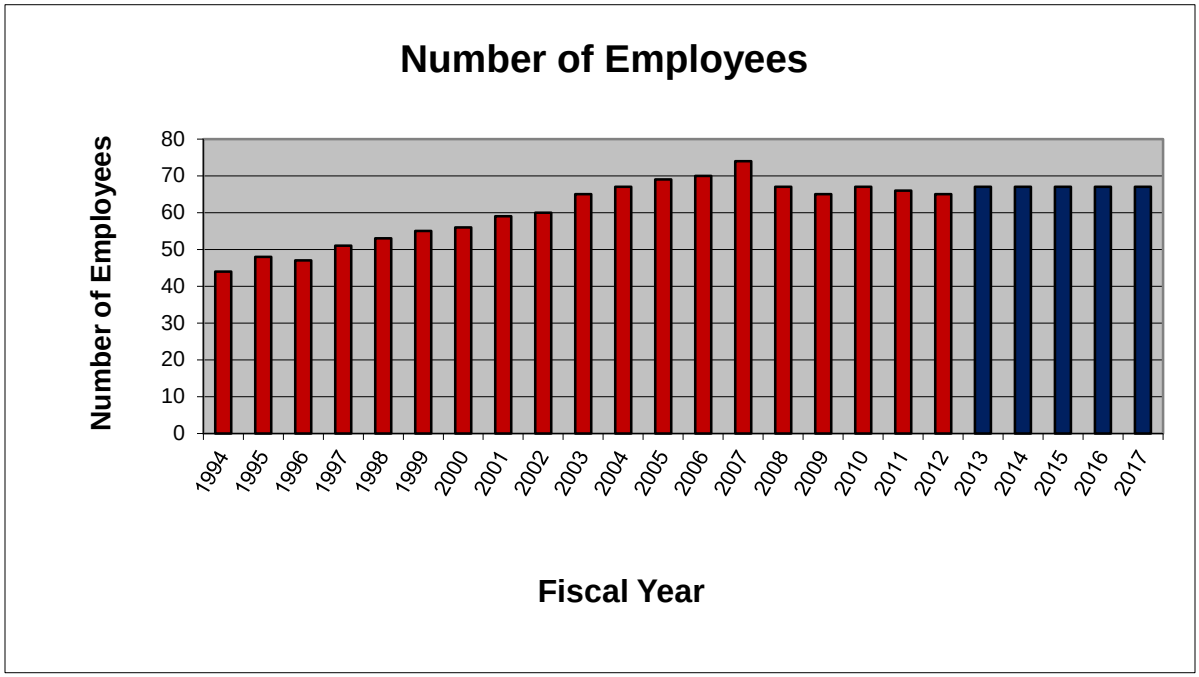
Utilities							
2013 - 2017 Staffing Plan							
2008-2009		2009-2010		2010-2011		2011-2012	
	Positions		Positions		Positions		Positions
Division		Division		Division		Division	
Administrative / Engineering	10	Administrative / Engineering	8	Administrative / Engineering	6	Administrative / Engineering	5
Geographic Information Systems (GIS)	2	Geographic Information Systems (GIS)	2	Geographic Information Systems (GIS)	2	Geographic Information Systems (GIS)	2
Business Operations	12	Business Operations	11	Business Operations	12	Business Operations	13
Water Treatment Operations	25	Water Treatment Operations	26	Water Treatment Operations	28	Water Treatment Operations	28
Field Operations	18	Field Operations	18	Field Operations	18	Field Operations	17
TOTAL	67	TOTAL	65	TOTAL	66	TOTAL	65
2012-2013		2013-2014		2014-2015		2015-2016	
	Positions		Positions		Positions		Positions
Division		Division		Division		Division	
Administrative / Engineering	5	Administrative / Engineering	5	Administrative / Engineering	5	Administrative / Engineering	5
Geographic Information Systems (GIS)	2	Geographic Information Systems (GIS)	2	Geographic Information Systems (GIS)	2	Geographic Information Systems (GIS)	2
Business Operations	11	Business Operations	11	Business Operations	11	Business Operations	11
Water Treatment Operations	28	Water Treatment Operations	28	Water Treatment Operations	28	Water Treatment Operations	28
Field Operations	21	Field Operations	21	Field Operations	21	Field Operations	21
TOTAL	67	TOTAL	67	TOTAL	67	TOTAL	67
2016-2017							
	Positions						
Division							
Administrative / Engineering	5						
Geographic Information Systems (GIS)	2						
Business Operations	11						
Water Treatment Operations	28						
Field Operations	21						
TOTAL	67						

*Please note that many positions allow for promotion upon receipt of higher training and certification. Therefore, the positions per job title may change; however, the total number of positions per Division or the Utility in its entirety will not change.

** Eight (8) positions within the Utility staffing totals above are attributable to the Stormwater utility.

Benchmarking Comparisons

According to the American Water Works Association (AWWA) 2010 Water and Wastewater Rate Survey, of the utilities with water production rates similar to Jupiter (13.0 - 20.0 MGD), average staffing levels equaled 75 compared to the Town's Water System current staffing level of 57. Eight (8) of Jupiter Utilities' 2011 – 2012 staff positions are attributable to the Stormwater Utility.



Conclusions

As can be seen, the evolution of our utility from a growth-oriented, expanding operation to one of maturity and sustainability can likely be achieved through the reallocation of resources across operational divisions. Meanwhile, net savings due to ongoing process improvements are expected to be achieved.

Lastly, it is important to note that this is a planning tool and subject to periodic revision as the environment in which we operate is under perpetual change. New unfunded regulatory mandates and continuing economic recession will pose additional challenges which can not be completed or forecasted at this point in time. Furthermore, the assumed timing of staff retirements may change yielding revisions to the plan. Regardless, in order to achieve the long term efficiencies of this plan, consideration must also be given to utility management to provide adequate training to personnel, allow for succession planning including apprenticeship hires in advance of retirements so that institutional knowledge is not diminished and flexibility

to periodically contracting outside resources when peak staffing demands exceed workforce availability.

All in all, our staff is expected and has been receptive to doing more with fewer resources. System performance and reliability is at all time high levels nevertheless.

G. Financial Forecasts and Recommendations

This section of the Water Master Plan provides a discussion of the financial forecast to i) present the basis for the funding of the capital program as identified in the plan, including the adequacy of the connection fees; ii) evaluate trends in the expenditure requirements to be funded from rates (rate sufficiency and potential changes in rates to fund such expenditures); and iii) estimate the projected financial position of the Water System based on the forecast of assumptions regarding customer growth, inflation, and other factors, and other observations for consideration by the Town. The overall purpose of this analysis is to provide the Town additional information for strategic and business planning purposes as it evaluates the capital funding and water service delivery plans as well as certain risks to the utility which may affect the projections and which need to be monitored by the Town. This forecast is intended to be dynamic and will be adjusted yearly by the Town as part of the annual budget and capital planning process.

1. Capital Expenditure Overview

The capital plan as identified in the Water Master Plan, which also includes projects that have previously been approved by the Town, is shown on Table II.24 on the following page and as summarized on Table II.23 below. The capital plan includes the following expenditures by functional type:

TABLE II.23

Summary of Water Capital Projects – Fiscal Years 2012 to 2037 ($000s) [1]

	2012 to 2016	2017 to 2021	2022 to 2026	2027 to 2031	2032 to 2037	Totals
Summary of Capital Expenditures:						
Expansion-related Projects	$16,112	$ 3,056	$13,139	$1,398	$1,244	$34,949
Renewals, Replacements, and Rehabilitation Projects	21,124	23,232	56,718	61,734	67,350	230,158
General Operating (budgetary) Projects	1,514	752	0	0	360	2,626
Contributions and Grant Projects	215	0	0	0	0	215
Total Capital Expenditures	$38,965	$27,040	$69,857	$63,132	$68,954	$267,948

[1] Amounts derived from Table 11.24 on following page.

As can be seen above, the majority of the identified capital expenditures identified in the Water Master Plan are for renewals, replacements, rehabilitation, improvements, and upgrades ("renewals and replacements") of the Water System (approximately 86% of the identified capital costs). This would be expected since the majority of the Water System service area is approaching a built-out condition from both a service availability and a capacity need standpoint. This is further amplified by the fact that during the next 35 years, most of the installed assets are expected to have reached their average service lives and will need replacement or upgrades in order to continue to provide high quality water service. It should be noted that the capital costs shown on Table II.24 include an allowance for inflation at 3.3% annually beginning in Fiscal Year 2013 to account for the then future cost of the capital needs placed upon the Water System. The 3.3% factor is representative of the average annual increase in construction costs as reported by the Engineering News Record which tracks such changes in cost over the past twenty years. The increased capital needs are allocable to the existing customers and will need to be funded primarily from Water System operations (rates) since the majority of the capital costs are classified as renewals and replacements. This will result in the need for the recognition of annual transfers to the Renewal and Replacement Fund and other capital reserves which will be critical to the ability to fund the improvements while limiting the need to issue additional bonds above amounts considered fiscally prudent for the Water System.

Table 11.24
Town of Jupiter

Water System Capital Improvement Plan

Line No.	Capital Improvement Projects	Funding Source	Project Type	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1	Professional Services	CF	Expansion	$ 45,000	$ 46,485	$ 48,019	$ 49,604	$ 51,241	$ 52,931	$ 54,676	$ 56,483	$ 58,347	$ 60,272	$ 62,261	$ 64,316	$ 66,438	$ 68,630
2	Large Meter Replacement	R&R	Renewal / Upgrade	317,817	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000
3	Meters New	OS	Expansion	110,749	109,767	130,000	162,500	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	227,500
4	Ion Exchange Resin Replacement	RROth	Renewal / Upgrade	-	-	138,641	-	-	-	-	160,725	-	-	-	-	189,054	-
5	Meter Replacement	R&R	Renewal / Upgrade	735,000	768,000	802,089	837,303	873,679	911,255	950,072	990,169	1,031,590	1,074,377	1,118,577	1,164,235	1,211,399	1,260,121
6	Surface Water Recharge Improvements	CF	Expansion	207,821	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Abacoa Surficial Aquifer Wells Ph II	CF	Expansion	1,075,845	-	-	-	-	-	-	-	-	-	-	-	-	-
8	Little Club Area Distribution Improvements	R&R	Renewal / Upgrade	687,617	-	-	-	-	-	-	-	-	-	-	-	-	-
9	North Limestone Creek Wellfield Surficial Aquifer Well Telemetry	CF	Expansion	2,765,810	2,188,100	-	-	-	-	-	-	-	-	-	-	-	-
10	Improvements	CF	Expansion	11,167	-	-	-	-	-	-	-	-	-	-	-	-	-
11	High Speed Service Pumps 13 & 14	OS	Expansion	219,299	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Water Transmission Network East of I-95 - Area 2	OS	Expansion	2,565,000	-	-	-	-	-	-	-	-	-	-	-	-	-
13	N Jupiter Distribution System Improvements - Ph II	R&R	Renewal / Upgrade	-	-	73,363	1,240,188	-	-	-	-	-	-	-	-	-	-
14	Water Transmission Network West of I-95 - Area 3	OS	Expansion	1,528,670	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Jupiter Inlet Village Watermain Replacement	R&R	Renewal / Upgrade	100,000	408,000	-	-	-	-	-	-	-	-	-	-	-	-
16	Juno Beach Distribution System Improvements	R&R	Renewal / Upgrade	-	-	-	11,023	603,500	-	-	-	-	-	-	-	-	-
17	WTP Structure Hadening	EPA	Contribution	90,040	-	-	-	-	-	-	-	-	-	-	-	-	-
18	WTP Structure Hadening	O&M	Operating	351,956	-	-	-	-	-	-	-	-	-	-	-	-	-
19	Mod to Phase II (1997 & 1999) RO Plant (E,F,G,H)	R&R	Renewal / Upgrade	-	-	-	904,264	-	-	-	-	-	-	-	-	-	-
20	WTP Operating System Reprogramming	R&R	Renewal / Upgrade	93,047	-	-	-	-	-	-	-	-	-	-	-	-	-
21	Misc Water System Impr/County Project on Donald Ross	R&R	Renewal / Upgrade	20,000	-	-	-	-	-	-	-	-	-	-	-	-	-
22	Deepen RO Well No. 4	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	881,156	-	-	-	-
23	Construct 14.5 MGD Nanofiltation Plant	R&R	Renewal / Upgrade	775,906	-	-	-	-	-	-	-	-	-	-	-	-	-
24	Construct 14.5 MGD Nanofiltation Plant	CF	Expansion	596,699	-	-	-	-	-	-	-	-	-	-	-	-	-
25	Water Utilities Security Improvements - Ph II	CF	Expansion	26,015	-	-	-	-	-	-	-	-	-	-	-	-	-
26	Town Security System Replacement & Upgrade (IS)	O&M	Operating	144,295	-	-	-	-	-	-	-	-	-	-	-	-	-
27	1.7 MGD Brackish Water RO Treatment Expansion	CF	Expansion	496,714	-	-	-	-	-	-	-	-	-	-	-	-	-
28	Water Treatment Plant Warehouse	R&R	Renewal / Upgrade	1,723,703	-	-	-	-	-	-	-	-	-	-	-	-	-
29	Surficial Aquifer Well Rehabilitation	R&R	Renewal / Upgrade	56,761	-	-	-	-	-	-	-	-	-	-	-	-	-
30	Elec Trans Impr - I/C & EIL	R&R	Renewal / Upgrade	149,794	-	-	-	-	-	-	-	-	-	-	-	-	-
31	Bluffs Booster Pump Station	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	-	2,623,013
32	High Service Pumps 17 & 18	OS	Expansion	167,670	-	-	-	-	-	-	-	-	-	-	-	-	-
33	Lime Softening Plant Demo	O&M	Operating	222,928	-	-	-	-	-	-	-	-	-	-	-	-	-
34	WTP Asphalt Overlay & Drainage Improvements	R&R	Renewal / Upgrade	120,884	-	-	-	-	-	-	-	-	-	-	-	-	-
35	North Limestone Creek Tank Site Improvements	OS	Expansion	273,065	-	-	-	-	-	-	-	-	-	-	-	-	-
36	FDOT US1 South WM Relocation	R&R	Renewal / Upgrade	170,277	-	-	-	-	-	-	-	-	-	-	-	-	-
37	Additional Interconnect with Seacoast Utilities	OS	Expansion	134,114	-	-	-	-	-	-	-	-	-	-	-	-	-
38	Additional Interconnect with Seacoast Utilities	Seacoast	Contribution	125,000	-	-	-	-	-	-	-	-	-	-	-	-	-
39	Asset Maintenance Program - Capitalize	R&R	Renewal / Upgrade	1,005,370	548,219	549,229	396,797	520,462	417,141	476,268	445,129	459,617	662,221	490,666	756,502	767,778	540,662
40	Asset Maintenance Program - Maintenance	R&R	Renewal / Upgrade	61,452	-	-	-	-	-	-	-	-	-	-	-	-	-
41	Asset Maintenance Program - Maintenance	R&R	Renewal / Upgrade	94,250	-	-	-	-	-	-	-	-	-	-	-	-	-
42	Riverbend Repump Station Rechlorination Facility	OS	Expansion	60,000	284,075	-	-	-	-	-	-	-	-	-	-	-	-
43	Limestone Creek 161st St N & 162nd Rd N	Util-Loan	Operating	200,000	-	-	-	-	-	-	-	-	-	-	-	-	-
44	Sierra Square Shopping Ctr	Util-Loan	Operating	209,838	-	-	-	-	-	-	-	-	-	-	-	-	-
45	Jupiter Farms Shopping Ctr	Util-Loan	Operating	282,200	-	-	-	-	-	-	-	-	-	-	-	-	-
46	EOC/Town Field Operations Facility Improvements	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	Construct 8 MG Storage Tank - Central Blvd PS Site	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	5,145,245	-	-
48	Modify Juno Tank Influent Riser	OS	Expansion	-	-	-	-	-	-	-	-	97,244	-	-	-	-	-
49	North Limestone Creek Tank & Repump Station	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	-	3,355,265
50	Finished Water Stabilization & Other WTP Improvements	CF	Expansion	-	577,500	-	-	-	-	-	-	-	-	-	-	-	-
51	Supplemental Blend Box	CF	Expansion	-	1,136,300	-	-	-	-	-	-	-	-	-	-	-	-
52	Free Chlorine Disinfection Pilot Testing	CF	Expansion	-	413,200	-	-	-	-	-	-	-	-	-	-	-	-
53	Nitrogen Blanket in Sulfuric Acid Tank	CF	Expansion	-	-	-	71,650	-	-	-	-	-	-	-	-	-	-

Table 11.24
Town of Jupiter

Water System Capital Improvement Plan

Line No.	Capital Improvement Projects	Funding Source	Project Type	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Total 2012 to 2037
1	Professional Services	CF	Expansion	$ 70,895	$ 73,235	$ 75,652	$ 78,146	$ 80,727	$ 83,391	$ 86,143	$ 88,986	$ 91,922	$ 94,955	$ 98,089	$ 101,326	$ 1,608,174
2	Large Meter Replacement	R&R	Renewal / Upgrade	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	6,942,817
3	Meters New	O S	Expansion	227,500	227,500	195,000	195,000	195,000	195,000	162,500	130,000	97,500	97,500	97,500	97,500	4,413,016
4	Ion Exchange Resin Replacement	RRO/h	Renewal / Upgrade	-	-	-	222,378	-	-	-	-	261,571	-	-	-	970,367
5	Meter Replacement	R&R	Renewal / Upgrade	1,310,450	1,362,439	1,416,145	1,471,623	1,528,931	1,588,131	1,649,284	1,712,456	1,777,712	1,845,121	1,914,755	1,986,687	33,291,600
6	Surface Water Recharge Improvements	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	207,821
7	Abacoa Surficial Aquifer Wells Ph II	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	1,075,845
8	Little Club Area Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	687,617
9	North Limestone Creek Wellfield	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	4,951,910
10	Surficial Aquifer Well Telemetry Improvements	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	11,167
11	High Speed Service Pumps 13 & 14	O S	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	219,299
12	Water Transmission Network East of I-95 - Area 2	O S	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	2,565,000
13	N Jupiter Distribution System Improvements - Ph II	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	1,313,551
14	Water Transmission Network West of I-95 - Area 3	O S	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	1,528,670
15	Jupiter Inlet Village Watermain Replacement	R&R	Renewal / Upgrade	-	-	854,022	-	-	-	-	-	-	-	-	-	1,362,022
16	Juno Beach Distribution System Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	1,000,691	-	-	-	-	-	-	1,615,214
17	WTP Structure Hardening	EPA	Contribution	-	-	-	-	-	-	-	-	-	-	-	-	90,040
18	WTP Structure Hardening	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	-	351,956
19	Mod to Phase II (1997 & 1999) RO Plant (E,F,G,H)	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	904,264
20	WTP Operating System Reprogramming	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	93,047
21	Misc Water System Impr/County Project on Donald Ross	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	20,000
22	Deepen RO Well No. 4	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	661,156
23	Construct 14.5 MGD Nanofiltration Plant	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	775,906
24	Construct 14.5 MGD Nanofiltration Plant	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	596,699
25	Water Utilities Security Improvements - Ph II	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	26,015
26	Town Security System Replacement & Upgrade (05)	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	-	144,295
27	1.7 MGD Brackish Water RO Treatment Expansion	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	496,714
28	Water Treatment Plant Warehouse	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	1,723,703
29	Surficial Aquifer Well Rehabilitation	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	56,761
30	Elec Trans Impr - I/C & B/L	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	149,794
31	Bluffs Booster Pump Station	O S	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	2,823,013
32	High Service Pumps 17 & 18	O S	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	167,670
33	Lime Softening Plant Demo	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	-	222,926
34	WTP Asphalt Overlay & Drainage Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	120,884
35	North Limestone Creek Tank Site Improvements	O S	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	273,065
36	FDOT US1 South WM Relocation	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	170,277
37	Additional Interconnect with Seacoast Utilities	O S	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	134,114
38	Additional Interconnect with Seacoast Utilities	Seacoast	Contribution	-	-	-	-	-	-	-	-	-	-	-	-	125,000
39	Asset Maintenance Program - Capitalize	R&R	Renewal / Upgrade	720,100	585,829	650,013	615,869	645,763	906,346	678,873	1,059,996	1,051,381	748,323	1,007,945	798,527	17,507,448
40	Asset Maintenance Program - Maintenance	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	61,452
41	Asset Maintenance Program - Maintenance	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	94,250
42	Riverbend Repump Station Rechlorination Facility	O S	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	344,075
43	Limestone Creek 181st St N & 182nd Rd N	Util-Loan	Operating	-	-	-	-	-	-	-	-	-	-	-	-	200,000
44	Sims Square Shopping Ctr	Util-Loan	Operating	-	-	-	-	-	-	-	-	-	-	-	-	209,838
45	Jupiter Farms Shopping Ctr	Util-Loan	Operating	-	-	-	-	-	-	-	-	-	-	-	-	282,200
46	EOC/Town Field Operations Facility Improvements	O S	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	-
47	Construct 8 MG Storage Tank - Central Blvd PS Site	O S	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	5,145,245
48	Modify Juno Tank Influent Riser	O S	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	97,244
49	North Limestone Creek Tank & Repump Station	O S	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	3,355,265
50	Finished Water Stabilization & Other WTP Improvements	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	577,500
51	Supplemental Blend Box	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	1,136,300
52	Free Chlorine Disinfection Pilot Testing	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	413,200
53	Nitrogen Blanket in Sulfuric Acid Tank	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	71,650

Table 11.24
Town of Jupiter

Water System Capital Improvement Plan

Line No.	Capital Improvement Projects	Funding Source	Project Type	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
54	Complete Final Connection to SFWMD Regional System	CF	Expansion	-	-	-	-	-	-	1,701,100	-	-	-	-	-	-	-
55	Utilities Remote Facilities Security	CF	Expansion	-	-	-	-	367,000	-	-	-	-	-	-	-	-	-
56	Enclosed Storage Barn	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	442,920	-
57	Concentrate Disposal FDEP/EPA Permitting	O&M	Operating	-	103,300	-	-	-	-	-	-	-	-	-	-	-	-
58	Construct Crossing of I95/Turnpike at Donald Ross Road	O&M	Operating	-	-	-	-	-	-	-	-	752,022	-	-	-	-	-
59	Cinquez Park Roadway, Water & Sewer MSTU	R&R	Renewal / Upgrade	19,700	-	-	-	-	-	-	-	-	-	-	-	-	-
60	Customer Information, Billing, Work Order & Cash Receipting System	R&R	Renewal / Upgrade	-	413,200	-	-	-	-	-	-	-	-	-	571,694	-	-
61	Replace Membrane Vessel End Caps - RO Trains A,B,C,D	R&R	Renewal / Upgrade	-	-	-	551,151	-	-	-	-	-	-	-	-	-	-
62	Replace RO MCC (Motor Control Cooling) System Air Handlers	R&R	Renewal / Upgrade	-	-	-	303,133	-	-	-	-	-	-	-	-	-	-
63	Pine Gardens South & Brentwood Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	294,315	-	-	-	-	-	-	-	-	-	-
64	Demo Lime Sludge Drying Equipment	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	188,275	-	-	-	-	-	-
65	C-18 Outfall Corrosion Investigation	R&R	Renewal / Upgrade	-	-	-	137,788	-	-	-	-	-	-	-	-	-	-
66	Replace CFF Recirculation Pumps	R&R	Renewal / Upgrade	-	-	-	132,276	-	-	-	-	-	-	-	-	-	-
67	Central Blvd Pump Station Piping Upgrade	R&R	Renewal / Upgrade	-	-	-	-	284,670	-	-	-	-	-	-	-	-	3,738,545
68	Central Blvd at Jupiter Park Dr Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	147,032	-	-	-	-	-	-	-	-
69	S US Highway 1 (Juno) Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	60,754	-	-	-	-	-	-	-
70	Loxahatchee River Rd Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71	Old Dixie Highway Watermain Replacement	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72	Toney Penna at JRE Transmission Main Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
73	Alt A1A Bridge Crossing (West Side) Watermain Replacement	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
74	Pump Replacement Program	R&R	Renewal / Upgrade	-	-	586,699	826,727	-	-	-	-	-	-	581,102	-	1,081,023	114,857
75	Storage Reservoir Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
76	Well Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	2,133,788	-	569,235	1,176,040	3,660,379	2,509,879	-
77	Water Treatment Plant Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	2,756,351	324,147	-	-	-	6,781,207	13,562,414
78	Buildings Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
79	Recharge System Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	Generator Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	98,604	-	-	-	-	-	-	-	-
81	Central Blvd HSP North Electrical Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	793,972	-	-	-	-	-	-	-	-
82	Loxahatchee River Road Area Distribution System Impr	R&R	Renewal / Upgrade	-	-	-	-	-	665,761	-	-	-	-	-	-	-	-
83	Modify Bluffs Ridge Service Lines	R&R	Renewal / Upgrade	-	-	80,032	-	-	-	-	-	-	-	-	-	-	-
84	Yacht Club Dr Area Distribution Improvements (Incl Clark Ln)	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	664,673	-	-
85	Fisherman's Landing Watermain Replacement	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	861,746	-	-	-	-
86	Penn Park Distribution System Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	1,607,444	-	-	-	-	-	-
87	Seabrook Place Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	732,058
88	Bella Vista Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
89	Jupiter Dunes Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90	N Pennock Lane Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
91	Hampton Pl & Hampton Cir Distribution Improvements	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-
92	Jupiter Plantation Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
93	Ocean Parks Condos Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
94	Villas on the Green Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
95	RO & Nano Membrane Replacement Program	R/R/Oth	Renewal / Upgrade	-	-	-	1,650,000	-	-	-	-	3,040,082	-	-	-	-	2,516,449
96	Total Projects			$ 18,041,271	$ 7,259,146	$ 2,671,272	$ 7,833,719	$ 3,160,552	$ 3,546,896	$ 3,702,892	$ 8,998,364	$ 6,223,249	$ 4,569,007	$ 3,888,646	$ 12,489,044	$ 13,509,886	$ 29,202,714

Table 11.24
Town of Jupiter

Water System Capital Improvement Plan

Line No.	Capital Improvement Projects	Funding Source	Project Type	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Total 2012 to 2037
54	Complete Final Connection to SFWMD Regional System	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	1,701,100
55	Utilities Remote Facilities Security	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	367,000
56	Enclosed Storage Barn	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	442,920
57	Concentrate Disposal FDEP/EPA Permitting	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	-	103,300
58	Construct Crossing of I95/Turnpike at Donald Ross Road	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	-	752,022
59	Cinquez Park Roadway, Water & Sewer MSTU	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	19,700
60	Customer Information, Billing, Work Order & Cash Receipting Systems	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	790,982	-	-	-	-	1,775,676
61	Replace Membrane Vessel End Caps - RO Trains A,B,C,D	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	551,151
62	Replace RO MCC (Motor Control Cooling) System Air Handlers	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	303,133
63	Pine Gardens South & Brentwood Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	294,315
64	Demo Lime Sludge Drying Equipment	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	168,275
65	C-18 Outfall Corrosion Investigation	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	137,788
66	Replace CTF Recirculation Pumps	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	132,276
67	Central Blvd Pump Station Piping Upgrade	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	4,021,215
68	Central Blvd at Jupiter Park Dr Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	147,032
69	S US Highway 1 (Juno) Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	60,754
70	Loxahatchee River Rd Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	301,360	-	-	-	-	-	-	-	301,360
71	Old Dixie Highway Watermain Replacement	R&R	Renewal / Upgrade	-	1,556,841	-	-	-	-	-	-	-	-	-	-	1,556,841
72	Toney Penna at JRE Transmission Main Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	1,017,369	-	-	-	-	-	-	1,017,369
73	Alt A1A Bridge Crossing (West Side) Watermain Replacement	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	1,937,907	-	-	-	-	1,937,907
74	Pump Replacement Program	R&R	Renewal / Upgrade	1,171,341	-	747,192	2,846,138	4,725,936	229,714	-	-	1,123,491	3,369,027	-	-	17,403,447
75	Storage Reservoir Replacement Program	R&R	Renewal / Upgrade	-	-	870,954	-	1,490,932	-	-	-	-	-	-	-	2,361,886
76	Well Replacement Program	R&R	Renewal / Upgrade	-	-	4,266,919	8,696,494	-	6,237,617	4,922,596	-	1,736,305	-	3,880,765	-	40,010,017
77	Water Treatment Plant Replacement Program	R&R	Renewal / Upgrade	6,761,207	-	-	-	448,483	7,004,905	14,009,811	7,004,905	-	778,845	-	-	59,452,274
78	Buildings Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-
79	Recharge System Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-
80	Generator Replacement Program	R&R	Renewal / Upgrade	220,563	-	117,680	-	703,220	-	-	-	-	-	167,841	-	1,308,108
81	Central Blvd HSP North Electrical Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	793,972
82	Loxahatchee River Road Area Distribution System Impr	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	665,761
83	Modify Bluffs Ridge Service Lines	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	80,032
84	Yacht Club Dr Area Distribution Improvements (incl Clark Ln)	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	664,673
85	Fisherman's Landing Watermain Replacement	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	881,746
86	Penn Park Distribution System Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	2,941,505	-	-	-	4,748,949
87	Seabeck Place Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	732,058
88	Bella Vista Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	675,239	-	-	675,239
89	Jupiter Dunes Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	675,239	-	-	675,239
90	N Pennock Lane Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	1,093,347	-	-	-	-	-	-	1,093,347
91	Hampton Pl & Hampton Cir Distribution Improvements	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	360,270	360,270
92	Jupiter Plantation Distribution Improvements	R&R	Renewal / Upgrade	-	325,468	-	-	-	-	-	-	-	-	-	-	325,468
93	Ocean Parks Condos Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	441,783	-	-	-	-	441,783
94	Villas on the Green Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	783,217	-	-	-	-	-	-	-	-	783,217
95	RO & Nano Membrane Replacement Program	R/R/Oth	Renewal / Upgrade	-	916,936	-	-	2,959,987	-	1,329,606	-	-	3,461,700	-	-	15,694,960
96	Total Projects			$ 10,767,056	$ 5,313,268	$ 9,478,577	$ 15,373,865	$ 13,345,359	$ 19,621,511	$ 23,104,013	$ 13,432,015	$ 9,346,387	$ 12,030,949	$ 7,431,895	$ 3,609,310	267,950,674

The capital improvement program forecast recognizes that the level of the expenditure needs will increase over time as assets reach their useful service life (many of the primary Water System assets are relatively new, being in service less than twenty (20) years. The primary projects recognized during the financial forecast include the following:

TABLE II.25

Summary of Primary Water System Capital Projects [1]

Project Description	Amount (Rounded)	Fiscal Year of Expenditure
Well Replacement Program – Phase 1	$7,915	2021 - 2025
Well Replacement Program – Phase 2	13,183	2028 - 2029
Well Replacement Program – Phase 3	11,160	2031 - 2032
RO Water Plant Treatment Train Replace / Upgrade – Phase 1	27,125	2024 - 2026
RO Water Plant Treatment Train Replace / Upgrade – Phase 2	28,468	2030 - 2033
RO and Nanofiltration Water Plant Membrane Replacement	15,895	Recurring – 5 Years

[1] Amounts derived from Table 11.24.

2. Long–Term Cash Flow Projections and Financial Position

In order to evaluate the funding of the capital program and the financial position of the Water System, a detailed financial forecast was prepared. Included in Appendix C at the end of this section are financial projections for the System. The analysis was for a twenty-five (25) year period (the "Forecast Period") beginning in 2013 and includes annual projections of Gross Revenues, Operating Expenses, payment of the Debt Service Requirement, and other required deposits to the various funds and accounts established by the Bond Resolution, including the Renewal and Replacement Fund, and balances available for capital outlay and other System purposes. Projected revenue includes those from sales (rate revenue), other operating revenues of the System, interest income on the available unrestricted funds as defined in the Bond Resolution, and other miscellaneous revenues derived from System operations. Additionally, projections of Connection Fees were also recognized since this represents a financial resource to the Water System and are used generally to fund expansion-related debt service payments.

The development of the financial forecast required certain assumptions with respect to conditions which may occur in the future. While we believe the assumptions are reasonable for the preparation of the financial forecast, they are dependent upon future events and actual conditions may differ from those assumed. The following is a summary of the primary assumptions recognized in the development of the financial forecast.

a. Projected sales revenue for the Water System were based on growth projections in customers and corresponding water sales (usage) which recognizes the estimated remaining equivalent residential connections that are considered available for connection as identified in the master plan. The customer and sales forecasts were based on historical growth and usage trends and recognize that over time, average water use per customer will marginally decline (0.15% per year).

   Additionally, the financial forecast includes the following rate adjustments:

   i. A customer (ERC) growth rate of approximately 0.5% compounded annually during the Forecast Period with a higher growth rate occurring during the beginning of the period and a lower growth at the end of the period as the service area approaches a built-out condition.

   ii. An annual 2.1% rate index applied each October 1st beginning in Fiscal Year 2015 with such index being generally consistent with Town Council action over the past several years.

   iii. In order to meet future expenditure needs and recognizing reductions in cash flow due to projected declining margins, additional annual rate increases of 2.1% for the Fiscal Years 2028 through 2031 were assumed in order to meet cash flow needs and operating margins.

b. Interest income has been estimated on balances in certain funds created by the Bond Resolution, including balances in the Revenue Fund (operating reserves); Sinking Fund; and the Renewal and Replacement Fund. An assumed average interest earnings rate of approximately 0.34% in Fiscal Year 2012 which was assumed to increase to 3.00% by Fiscal Year 2018 was recognized and applied to the average account balances projected during the Forecast Period.

c. Guaranteed Revenue and Accrued Guaranteed Revenues were based on i) the current rates in effect for such charges with no change in such rates during the Forecast Period; ii) projections of the remaining ERCs available to connect as identified on Table II.4; iii) the current amount of ERCs that have reserved capacity; and iv) the projected growth in accounts during the Forecast Period that would be subject to the payment of such fees. The amount of revenue from these fees is significant and averages $912,000 annually during the Forecast Period with the higher level of fees being collected early in the Forecast Period with essentially no fees being collected by the Fiscal Year 2035; the elimination of this fee would result in an immediate 7% increase in water rates to maintain revenue neutrality.

d. Connection fees (which include off-site transmission fees) were based on the projected growth in accounts and the current rates for service; such fees were not indexed during the Forecast Period since the primary infrastructure is currently in service (note that the capital plan does recognize approximately $34.9 Million in expansion-related expenditures during the Forecast Period). The amount of revenue from these fees is significant and averages $1,320,000 annually during the Forecast Period with the higher level of charges being collected early in the Forecast Period with essentially no fees being collected by the Fiscal Year 2037. Funds received from the application of Connection Fees from the System have been assumed, not to be a revenue of the Water System for debt coverage purposes but a financial resource which was applied based on the following priority i) funding of expansion-related debt service payments and ii) if remaining funds were available, payment of expansion-related capital expenditures.

During the initial portion of the Forecast Period, there are not enough Connection Fees to fund all of the expansion-related debt service and the expansion-related capital expenditures based on the timing of when such expenditures need to be funded; accordingly funds from available operating reserves were used to fund such expenditures (referred to as "timing differences"). It was assumed that the use of the operating reserves would be considered as an interest-free loan to the Connection Fee Fund and in the latter part of the Forecast Period such amounts were repaid from available Connection Fees in the latter part of the Forecast Period.

e. It must be emphasized that the forecast of customer growth recognizes providing water service to all of the identified development within the service area (approximately 13,000 ERCs). This growth assumption includes the Jupiter Farms area west of I-95 which represents approximately 5,300 ERCs or 41% of the projected customer growth during the Forecast Period. This places an element of risk on the financial forecast since i) it is not known if and when development will occur in this area; ii) the extensions of service may not necessarily lead to connections without heightened marketing and financial incentive offerings consistent with our policies employed in Palm Beach County Estates project; and iii) that until some experience in the area is achieved, water sales per connected ERC may be less than the current system average since it is expected that irrigation needs will be met by on-site wells. Assuming no connections in the Jupiter Farms service area, end of period annual rate revenues could be affected by as much as 5% to 10% which would have a material impact on the cash flow projections of the Water System.

   Based on the financial forecast, the financial resources from growth-related fees is significant and the need to bring the utility to a "revenue from existing customer" basis will become more important as the Water System service area matures. The need to maintain adequate net revenue margins and capital funding deposits will become critical over time since additional margins / funds produced by growth, through the utilization of constructed capacity, will begin to diminish.

f. Projected Operating Expenses are based on various factors such as projected expense increases due to inflation and projected changes in expenses associated with anticipated changes in operations. The escalation was based on historical trends, projections of inflation prepared by the Congressional Budget Office, and other factors. The escalation rates ranged from 1.5% (general inflation) to 7% for electric expenses. During the Forecast Period, the change in Operating Expenses is projected to average approximately 3.6% annually. It should be noted that the cost of labor, utilities and chemicals / operating supplies accounts for approximately 75% percent of the total operating expenses and these costs are required (e.g., set by regulation, uncontrollable as to cost, etc.) for ongoing utility operations and service. This can be seen on the following chart for the Forecast Period:

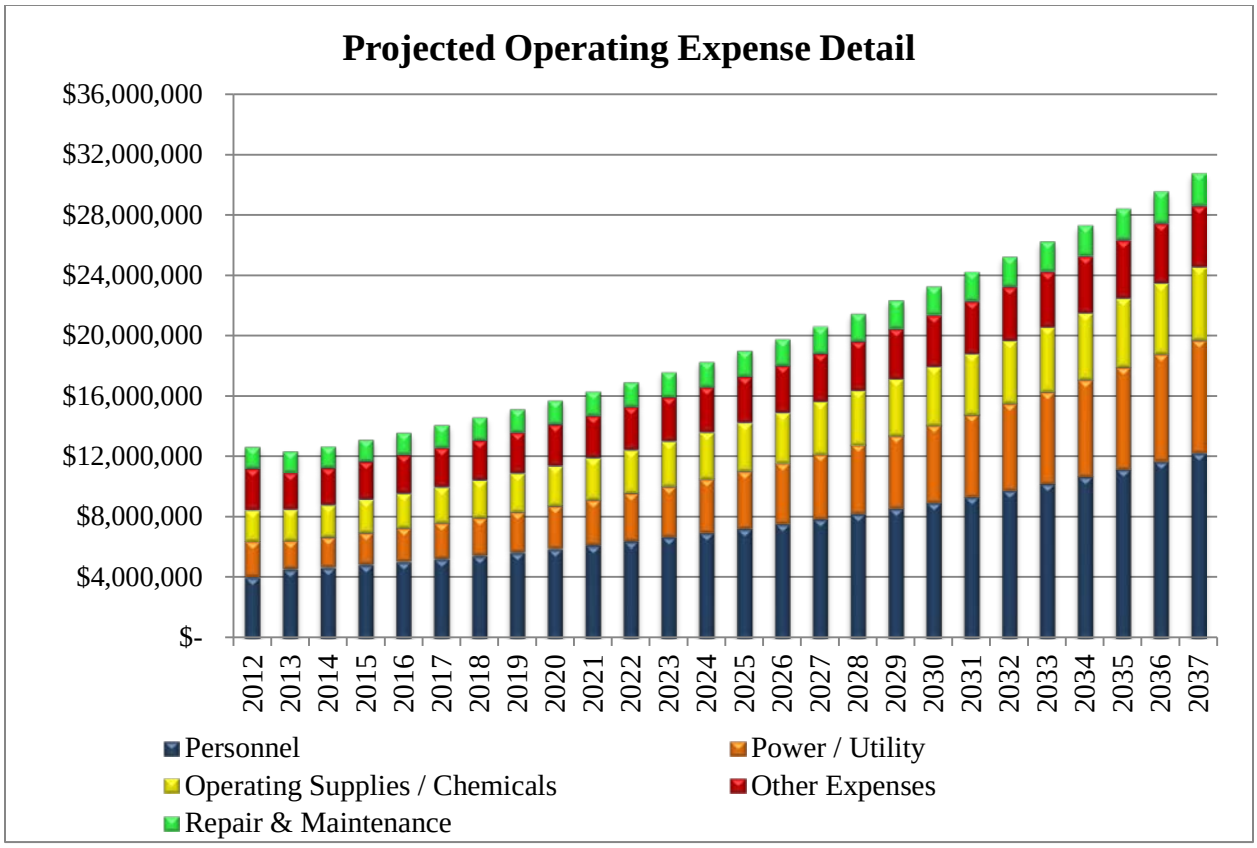


Figure II.40

f. The forecast of operating expenses includes the payment the General Fund cost allocation to account for expenses accounted for in the General Fund that are allocable to the Water System. The budgeted payment for the Fiscal Year 2012 is $738,825; this payment was assumed to remain constant during the Forecast Period. Any increase in the payment without a corresponding revenue increase would serve to reduce operating margins and the ability to annually make transfers for renewal and replacement-related capital expenditures.

Although considered a System operating expense for financial reporting purposes, depreciation and amortization expenses have not been recognized as an Operating Expense pursuant to the Bond Resolution since such amounts represent non-cash expenses. In lieu of depreciation and amortization expenses, the financial forecast recognizes the annual funding of the Renewal and Replacement Fund and the payment of principal on bonds issued to fund capital expenditures of the Water System.

g. The Town originally issued utility system revenue bonds pursuant to the provisions of the Bond Resolution (the "Outstanding Bonds") to finance capital improvements for the Water System. As of October 1, 2011, a total principal

amount of $38,750,000 of utility revenue bonds is estimated to be outstanding (the "Outstanding Bonds" and assumes that the October 1st payment is made since funds were deposited in twelve equal installments during the Fiscal Year 2011 to fund such principal payment). The Debt Service Requirements included in this Report for the Outstanding Bonds were based on the actual debt service schedules for each issue and are presented on a "gross" basis (i.e., not net of interest earnings on any debt service related funds or accounts). Furthermore, the amounts shown are based on the monthly funding requirements of the various sinking funds as required by the Bond Resolution which authorized the bonds (essentially an accrual basis) as opposed to when the debt service requirements are actually paid. The following is a summary of the Outstanding Bonds:

TABLE II.26

Summary of Existing Principal Amount of Bonds Outstanding

Issue	Principal Outstanding [*]
Utilities System Revenue Bonds, Series 2002 (the "Series 2002 Bonds")	$7,030,000
Utilities System Revenue Bonds, Series 2003 (the "Series 2003 Bonds")	22,555,000
TD Bank Bonds, Series 2010 (the "Series 2010 Bonds")	9,165,000
Total Principal Outstanding	$38,750,000

[*] Estimated amount outstanding as of October 1, 2011.

The capital program as identified on Table II.24 was funded based on i) the nature of the project (e.g., expansion-related); ii) the availability of funds to the Town for project funding; iii) the use of additional bonds to the extent that funds were not readily available; and iv) the policy to maintain an adequate cash balance in the operating reserves and the Renewal and Replacement Fund accounts. With respect to the operating reserves (working capital) and in order to maintain an AA credit, a minimum liquidity equal to 180 days of Operating Expenses was recognized. This target level is suggested i) to limit the operating risk to the utility as the system continues to approach a mature (built-out) condition; ii) to maintain a "AAA" credit rating; and iii) to provide an emergency hedge for major storm events that may strike the service area that could result

in an immediate i) reduction in revenues and cash flow and ii) increase in operating and maintenance expenditures. For the Renewal and Replacement Fund, the maintenance of an ending balance of approximately $11,300,000 which is equal to approximately the annual depreciation expense at the end of the Forecast Period was targeted.

The following table summarizes the capital program funding plan recognized in the financial forecast by five-year forecast period increments:

TABLE II.27

Capital Program – Funding Plan (000s)

		Recognized Funding Plan			
Forecast Period – Capital Expenditures	Total Capital Projects [1]	R & R Fund	Connection Fee Fund [2]	Operating Fund and Contributions	Additional Parity Bonds
FY 2012 – FY 2016	$38,965	$21,124	$6,459	$11,382	$0
FY 2017 – FY 2021	27,040	23,232	498	3,310	0
FY 2022 – FY 2026	69,857	56,718	1,384	11,755	0
FY 2027 – FY 2031	63,132	39,733	1,252	147	22,000
FY 2032 – FY 2037	68,954	67,350	776	828	0
Total Forecast Period	$267,948	208,157	10,369	27,422	22,000
Percent of Total CIP	100.0%	77.7%	3.9%	10.2%	8.2%

[1] Amounts shown based on information presented on Table II.24.
[2] Amounts shown do not include payment of expansion-related debt service expenditures or the repayment of funds to operating reserves (repayment of expansion-related capital financing) of $1.941 Million during latter portion of Forecast Period.

As can be seen above, approximately $208 Million or 77.7% of the assumed capital expenditure program will be funded from the Renewal and Replacement Fund (derived from deposits from annual operations). Although there is identified over $30 Million of expansion-related projects, due to the timing differences in the collection of Connection Fees relative to when project expenditures are required, such fees essentially do not fund any of the projects (after exhausting the current balance in the fund for projects) since the first priority assumed for fund drawdown is to fund the expansion-related debt service for the benefit of the existing customer. This will result in the need to use operating reserves as a “bridge” in the financing of the expansion-projects in the near term portion of the Forecast Period. However, as the expansion-related bonds mature, the Connection Fees can then be used to reimburse the operating reserves such that a strong liquidity position is maintained over the long-term.

Based on the projection of expansion-related debt service and capital projects, the existing Connection Fees and the Guaranteed Revenues should be generally sufficient to fund all the expenditures over time, but timing differences will exist. Should the Town lower the Connection Fees or Guaranteed Revenues, this may cause an immediate strain on the rates of the Water System and the need to issue additional debt or increase water rates above what is assumed in the financial forecast.

h. A significant component associated with the funding of the capital program is the continued deposits to the Renewal and Replacement Fund ("R&R Fund"), the annual funding which is critical to the financial health of the System. The forecast recognizes the fund deposits at current levels of $5.2 Million through Fiscal Year 2012 and then increased thereafter for construction cost increase allowances. It is appropriate to fund the R&R Fund annually from operations since this matches the use of the system by the existing customer base and the need to replace the assets at the end of the useful service life of such assets (a depreciation expense equivalent). It should be noted that the annual funding of the R&R Fund in relationship to annual depreciation expense has become a key indicator with the credit rating agencies since the more "equity-based" capital funding a utility has, the less risk on the utility in terms of funding capital improvements coupled with the need to issue additional bonds. It is recommended that this level of R&R Funding be recognized in the future which is prudent and promotes the long-term stability of rates to the Town's customers. It should also be noted that the deposit to the Renewal and Replacement Fund based on the approximate depreciation of system assets which ensures adequate debt service coverage and efficient renewal of system assets was identified by Fitch Ratings as being prudent and assisted in the affirmation of the AAA rating by Fitch in February 2011. This capital funding level is further discussed below regarding the review of certain key financial ratios associated with the evaluation of the projected financial position of the Water System.

Based on the primary assumptions discussed above, the following figure illustrates the capital appropriation forecast and corresponding funding sources for the Water System for the Forecast Period:

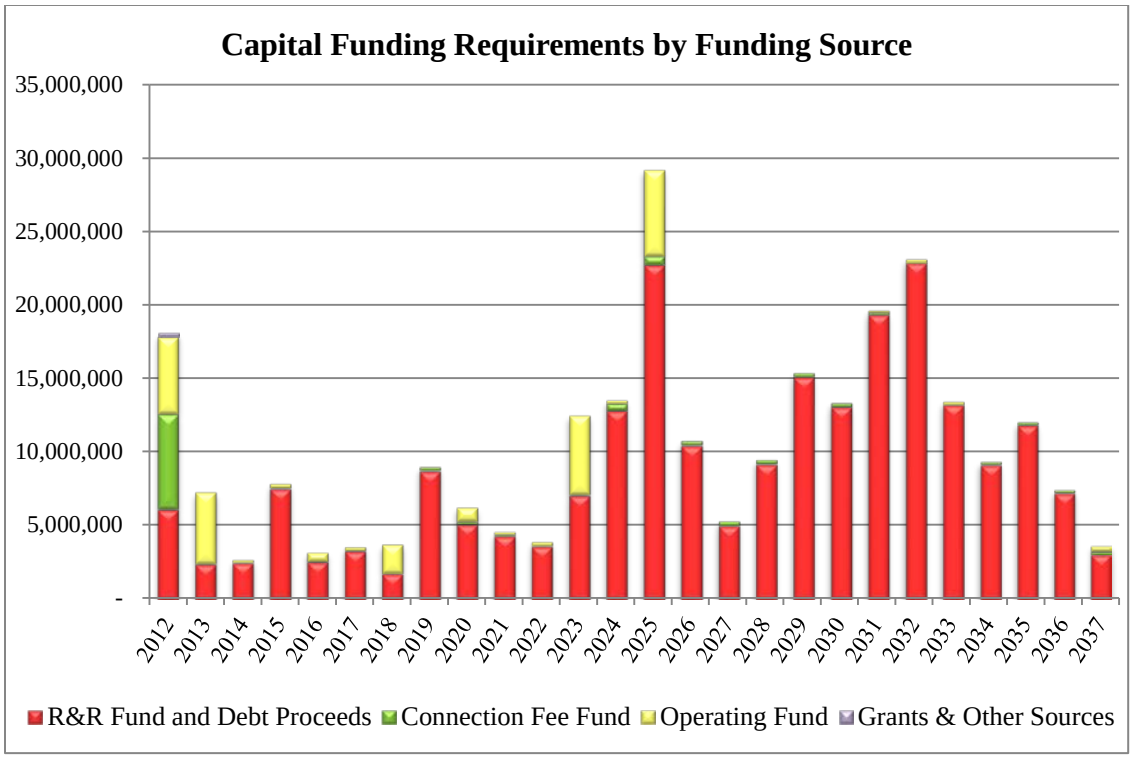


Figure II.41

As can be seen above, the capital program varies from year to year primarily due to when assets reach their useful service life and must be replaced. It must be realized in that until Fiscal Year 2025, operating reserves are used to bridge the expansion capital projects but are partially reimbursed during the latter part of the Forecast Period.

In the development of the financial forecast, a projection of certain other financial ratios was developed to evaluate the projected financial position of the Water System. The analysis includes a series of charts and figures prepared to provide the Town with a visual representation of the financial and statistical trends in the selected financial ratios or benchmarks anticipated for the Water System over the Forecast Period. The performance ratios discussed below considered the credit rating rationale or findings identified by Fitch Ratings with respect to the February 2011 financial review which recognized the following:

- Robust Liquidity Position;
- Manageable capital plan that excludes additional debt issuance;
- Rates are low relative to regional utilities; and
- Strong Financial management policies and stewardship.

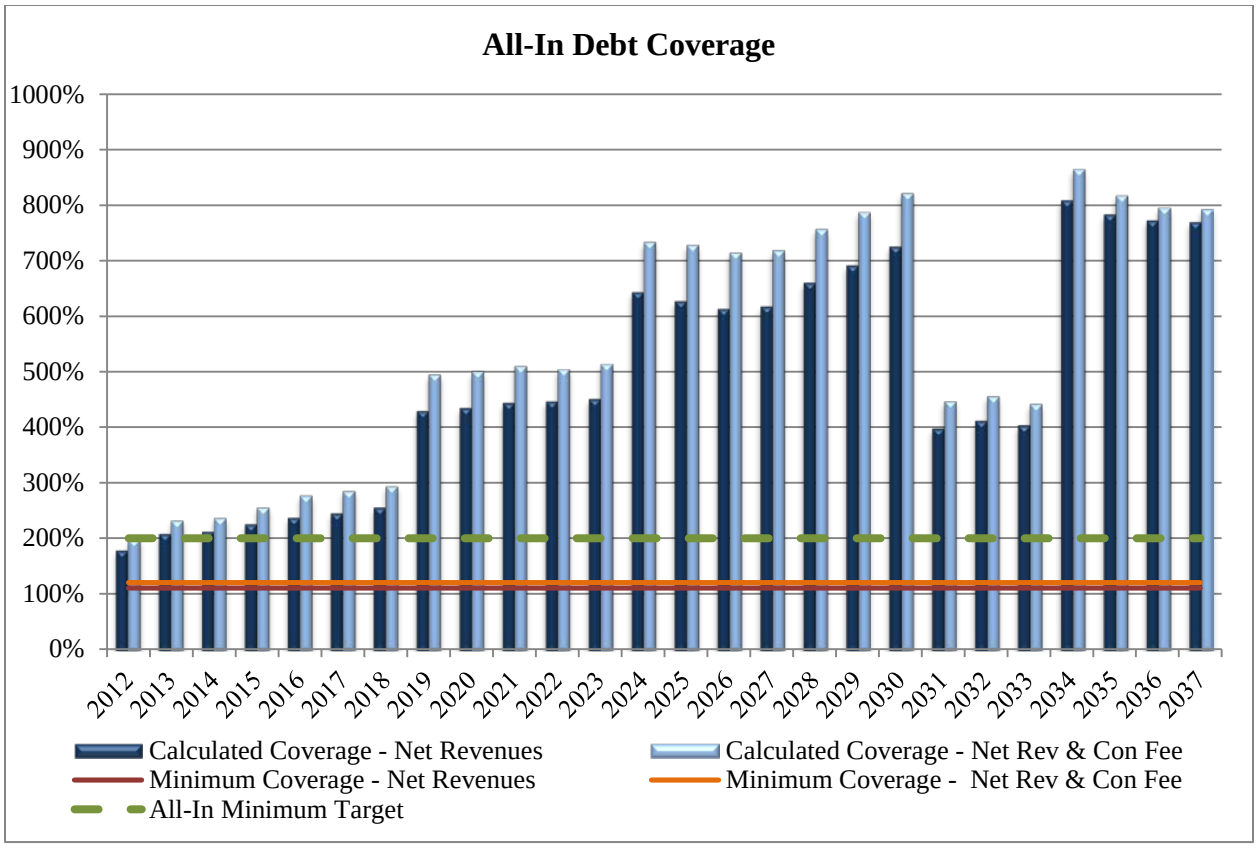
The key rating driver identified by Fitch Ratings in their report was "sustained financial performance at current high levels" and is the key business principal relative to the financial evaluation included herein. The following is a brief description of other financial ratios and financial results evaluated for the Town's consideration based on the primary assumptions mentioned above.

Debt Service Coverage Ratio

An important component in the development of the financial forecast is the determination of whether the rate covenants as outlined in the Bond Resolution authorizing the issuance of Water System Outstanding Bonds will be met. Generally, these covenants are in the form of certain debt service coverage ratios, which are applicable to the level of rates both currently and projected to be in place. The Town's Bond Resolution contains a rate covenant which provides that the Town will at all times fix, charge and collect reasonable rates and charges so that Net Revenues (total revenue less operating expenses) are adequate at all times to pay at least one hundred and ten percent (110%) and with the inclusion of Connection Fees one hundred and twenty percent (120%) of the annual debt service payment. This is viewed as a minimum requirement not to be in default of the Bond Resolution; an AAA-rated utility generally would see a coverage ratio in the 175% to 250% range (assumed a target of 200% to recognize this credit rating).

As shown below and summarized, the Town's anticipated Net Revenue, assuming that the Town continues to index the water rates annually (assumed at 2% per year) as assumed in this report for the Forecast Period, should be adequate for the Forecast Period to meet the rate covenant requirements defined in the Bond Resolution and continue to promote a AAA-credit rating. The debt coverage ratio is calculated by dividing the annual Net Revenue with/without Connection Fees by the annual debt service payment each year and illustrates the financial margin (ability) of Water System revenues to meet current total debt service payments (higher the percent, the stronger the ratio) and is considered as a key ratio by the credit rating agencies:

Figure II.42



As can be seen above, the debt service coverage ratio (for Outstanding and anticipated bonds) increases significantly during the Forecast Period. This is due to the Outstanding Bonds maturing during the Forecast Period with a limited increase in the issuance of additional bonds which results in a decline in the overall debt service payments. This decline in debt service payments i) reduces the fixed cost risk of the utility since the annual debt burden is projected to reduce by approximately $2.5 Million annually and ii) provides for additional future debt leveraging capability in case there are increased regulations imposed on the Water System that would materially affect the capital program identified on Table 11.24. The projected annual debt service payments during the Forecast Period are summarized below. As one can see, when the additional bonds are recognized in the debt service coverage calculation (forecast assumes a $22.9 Million debt issue in Fiscal Year 2031), the projected coverage ratio declines but remains well within the AAA-credit range:

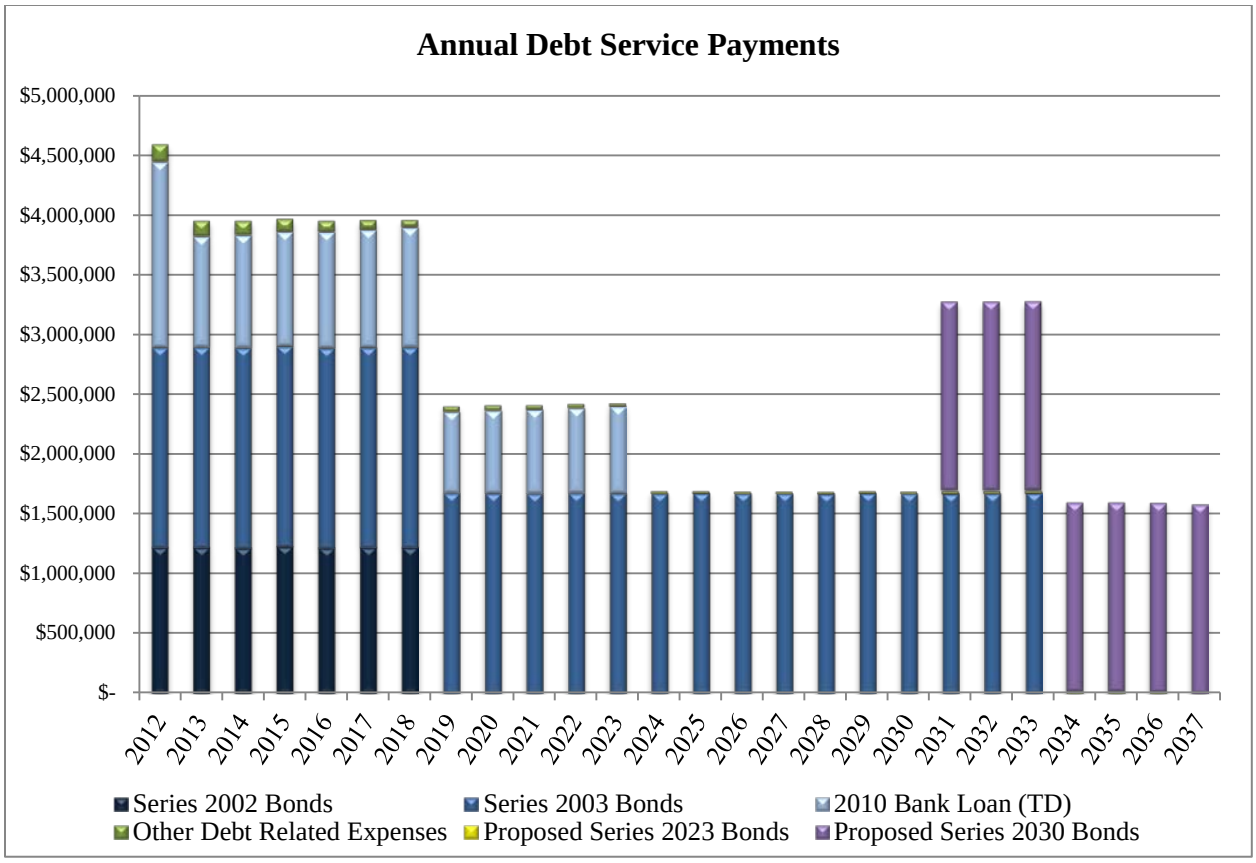


Figure II.43

Projected Net Revenue Margin

The Net Revenue Margin Ratio is a measure of a utility system's ability to meet its operating expenses and indicates the net contribution margin estimated to be earned by the Water System. The contribution margin represents the amount of Net Revenues from operations that are available to meet the other System expenditure requirements after the payment of the operating expenses (e.g., debt service, deposits to the Renewal and Replacement Fund, etc.). Since Connection Fees are restricted as to use for expansion-related expenditure and are a one-time revenue (not recurring like water sales revenue), Connection Fees are not included in the evaluation of the Net Revenue Margin. A relatively low Net Revenue Margin Ratio (for example, 25 percent) indicates that a large portion of operating revenue is used to pay operating expenses. A high Net Revenue Margin Ratio (for example, 45 percent) indicates a significant portion of operating revenues is available for Water System expenditures other than the payment of operating expenses. A minimum target of 35 percent was assumed and relates to the Moody's Investor Service median for water utilities for this ratio. As can be seen below and assuming the

implementation of the recommended rate adjustments, the Net Revenue Margin Ratio is projected to decrease during the Forecast Period.

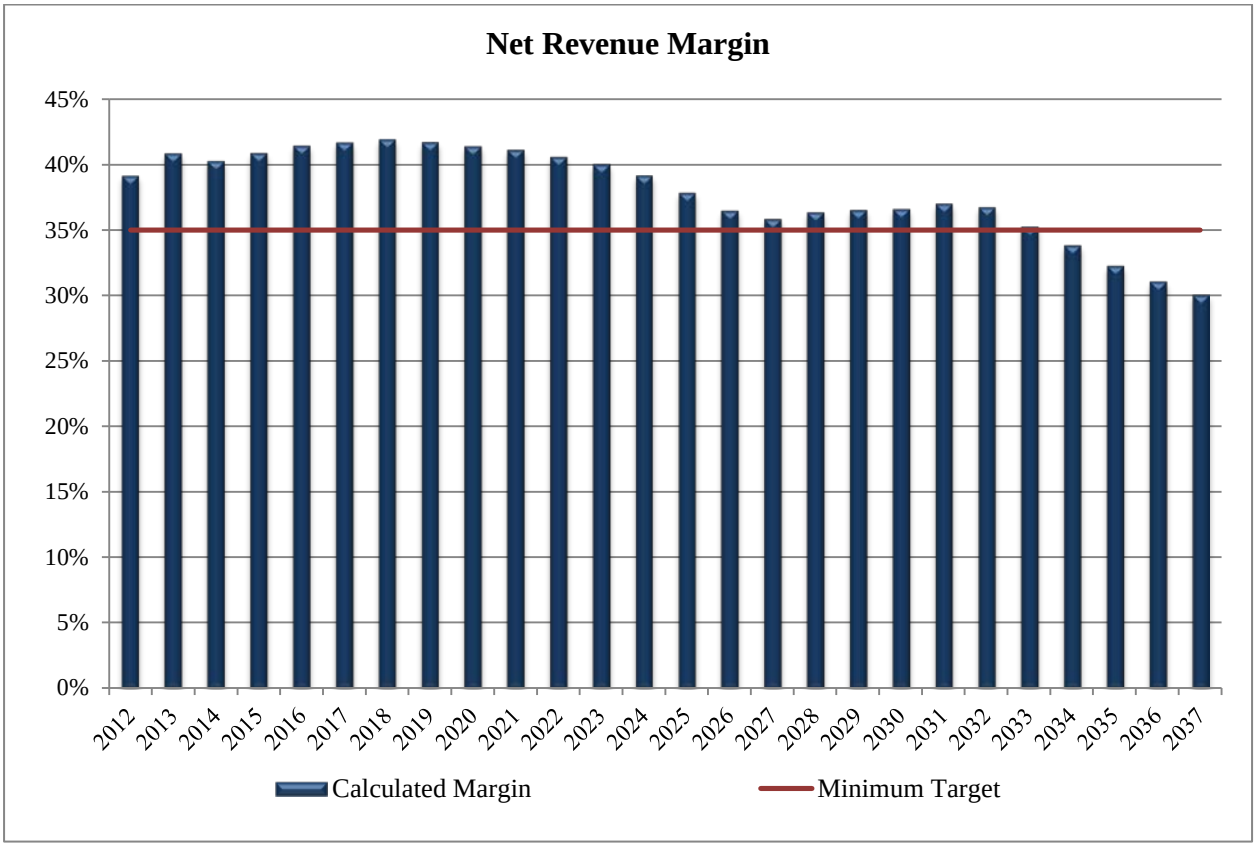


Figure II.44

The reason for the decrease is due to the price index factor used to increase water service rates (primary source of System revenue) coupled with a decline in Guaranteed Revenues due to the build-out of the service area (overall percentage change in revenues) is less than the average increase in the cost of operations and maintenance assumed during the Forecast Period. Although a higher Net Revenue Margin Ratio is recommended for the latter part of the Forecast Period, one must recognize that the amount of debt service payments (a driver for a higher Net Revenue Ratio) is projected to significantly decline in the later part of the Forecast Period and therefore there is less pressure to have a higher ratio. However, it must be recognized that rate increases may be required in the future as the Net Revenue Margins continue to decline and the need to continue to fund ongoing capital from Water System operations continues. As previously mentioned, the ratio does not include Connection Fees since they represent non-recurring revenues. If the Connection Fees were recognized, the ratio would be more favorable in the near term but

would not affect the latter part of the Forecast Period due to declining growth and the receipt of such fees.

Liquidity (Cash) Position

A major credit component deals with the amount of liquidity a utility maintains relative to working capital (operating) and capital reserves. With respect to working capital reserves, a minimum target of 180 days of operating expenses was recognized which was considered appropriate for a mature water system (limited customer growth). The maintenance of a strong liquidity position was a key indicator in the Fitch Ratings credit report. Further, it would be considered prudent for the working capital reserves to be higher if a low Net Revenue Margin is being experienced in order to provide a rate stabilization hedge on operations. The following figure summarizes the projected working capital reserves for the Forecast Period based on the assumptions delineated earlier in this section of the Water Master Plan.

As can be seen below, in the early portion of the Forecast Period, the available working capital reserves approximating the target working capital reserve. As the Connection Fee funds begin to reimburse the Water System reserves during the latter part of the Forecast Period, the operating reserve liquidity increases which promotes the AAA-rating for the utility.

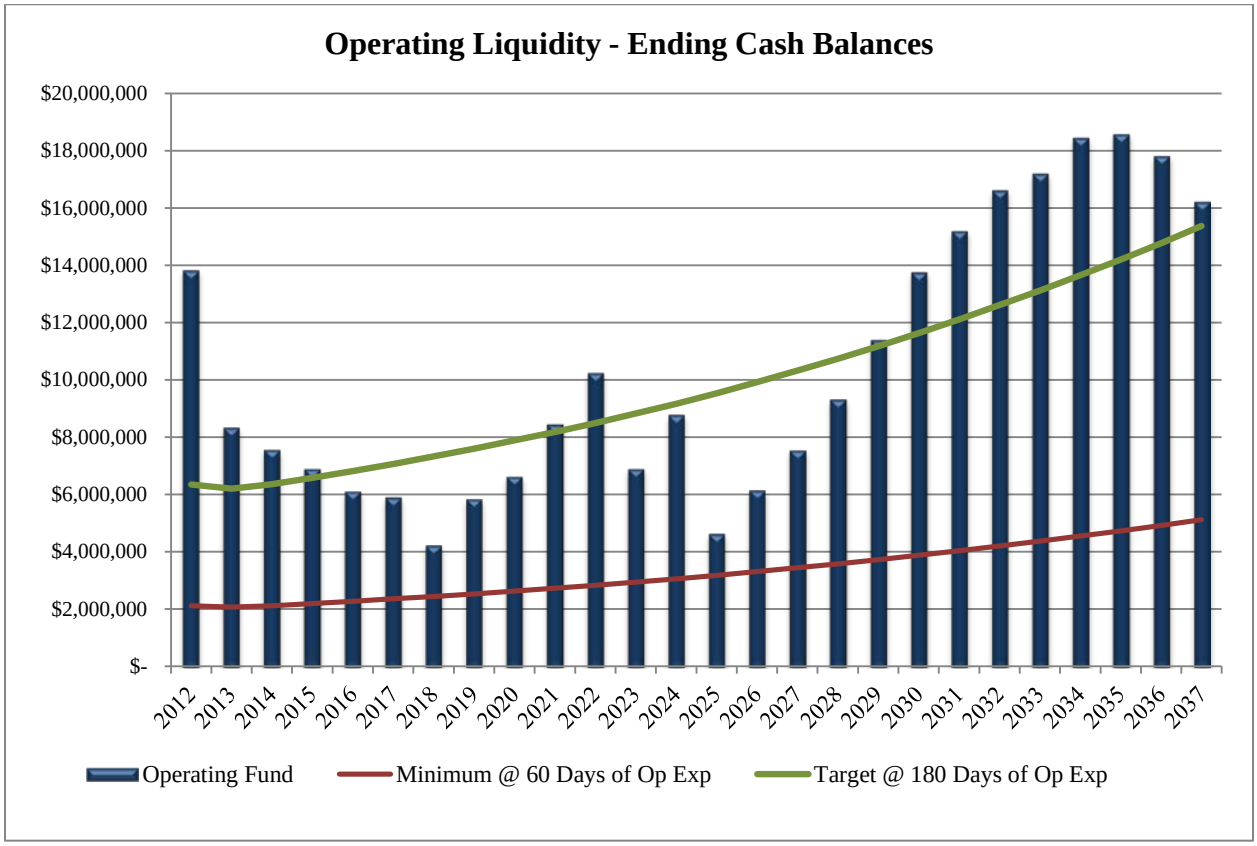


Figure II.45

In addition to working capital reserves which are for ongoing operations and the payment of debt financing, the Water System should also maintain a capital reserve to accrue funds for ongoing renewals and replacements but to also have funds for extraordinary or unplanned capital expenditures that occur from time to time. Further, the capital reserve would allow for the continuity of funding the capital program since funds would be available in advance of appropriation such that the Utility Department can more effectively plan for capital expenditures (e.g., bundling of projects to achieve a better price bid). The following figure summarizes the projected capital reserves for the Forecast

Period based on the assumptions delineated earlier in this section of the Water Master Plan:

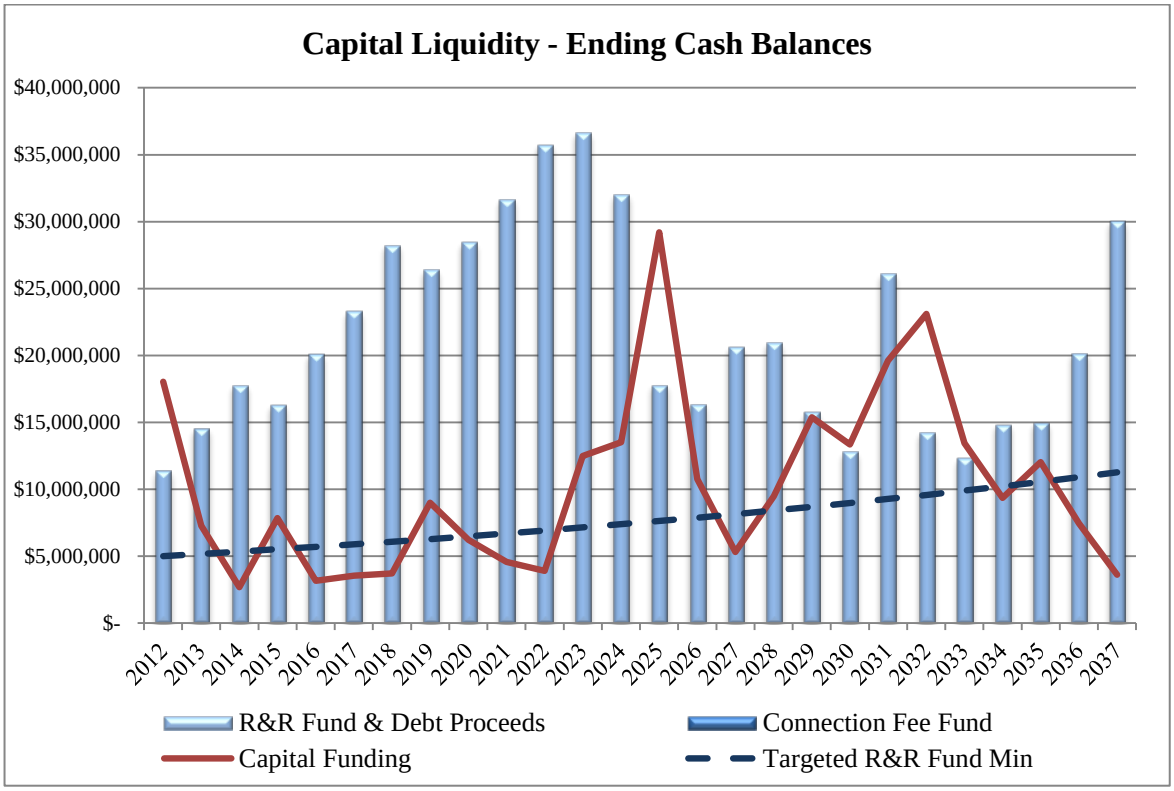


Figure II.46

As can be seen on the figure above, the capital reserves increase during the initial part of the Forecast Period when the annual renewal and replacement expenditures are generally level. However, as the Water System assets begin to reach their useful service lives and require replacement in the latter part of the Forecast Period, the available capital reserves are utilized and approach the R&R Fund target. The R&R Fund capital reserve target was estimated to equate to one year of annual depreciation expense, which is expected to increase over time as additional utility plant or assets are added to the Water System (added at a higher cost when compared to the historic embedded cost for the assets being replaced). The funding of the R&R Fund and maintenance of a capital reserve equal at least to the annual depreciation expense was considered as a prudent financial objective of the Town by Fitch Ratings. Additionally this reserve allows for the continuation of capital projects for the subsequent year since the funds are considered available which promotes the continuity of the program.

Free Cash as a Percent of Depreciation

A key ratio recently identified by the credit rating agencies is the "free cash as a percent of depreciation" which measures the amount of Net Revenues available after the payment of debt service and other required transfers (absent the R&R Fund). The ratio indicates the annual financial capacity to maintain facilities at current levels of service from existing cash flows. The issue being addressed by the rating agencies is whether there are the proper resources generated annually to maintain capital such that there is less risk in the need to issue additional bonds or due to increased expenditures funded from Net Revenues due to the need for emergency capital / repairs and maintenance expenditures. As can be seen below, the ratio after Fiscal Year 2016 is projected to be favorable and indicates that annual re-investment in the System is adequately being accomplished. It should be noted that the reason for the decline in the ratio in Fiscal Year 2031 is due to the assumed issuance of the additional revenue bonds in such year to fund capital needs.

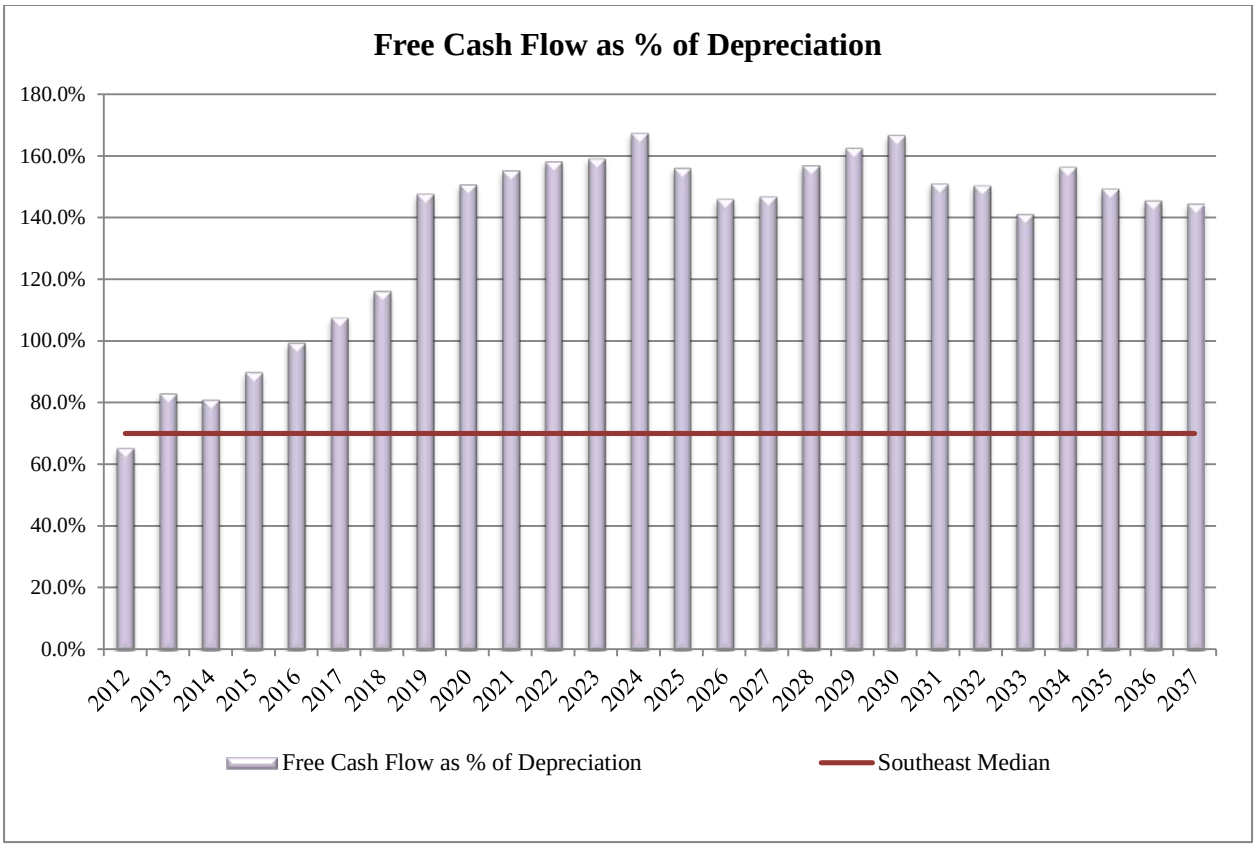


Figure 11.47

Debt to Net Plant Investment

As mentioned above, the forecast assumes the issuance of bonds in Fiscal Year 2031 to fund $22 Million of renewal and replacement projects which we consider as being extremely manageable from a rate perspective. As can be seen below, even with the issuance of additional bonds, it is projected that the Water System will be well below the maximum debt to net plant ratio identified for the financial forecast as shown below and that future leveraging of the Net Revenues (e.g., for increased regulatory issues) will not adversely affect the amount of debt allocable to the System from a credit perspective:

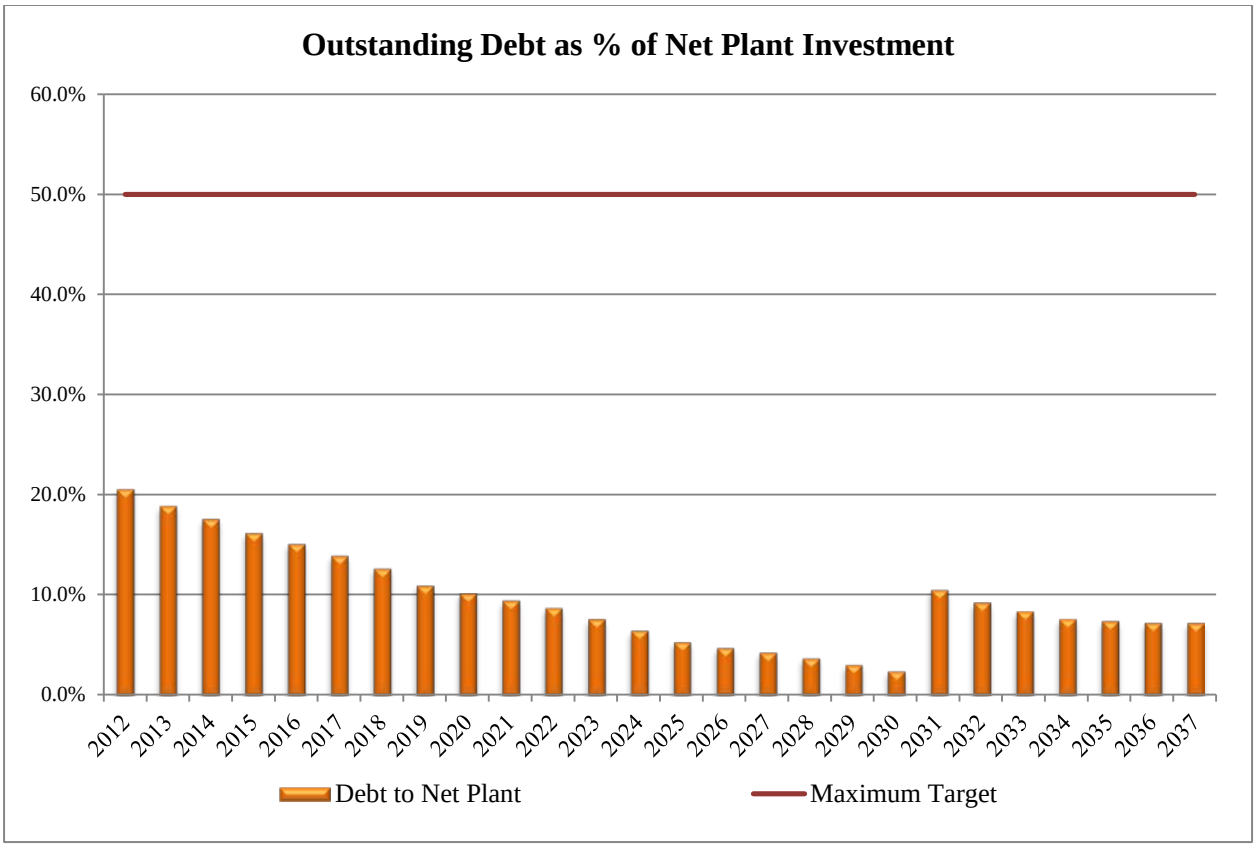


Figure II.48

3. Rate Comparison

A primary indicator used by credit rating agencies, neighboring utilities, and the Town's peers is the comparability of the rates for monthly service. Generally a utility that has a strong financial and rate implementation policy has competitive rates. Table 11.25 on the following page provides a comparison of the monthly cost of providing water service for a 5/8-inch by 3/4-inch water meter at various usage levels calculated under the existing rates of the Town. Also included on the comparison are bills calculated under the rates of other neighboring Florida utilities as of the billing month of February 2012. The 5/8 by 3/4 inch meter comparison was prepared since this represents the majority of the System's water residential customers and the majority of the customers for the other utilities reflected in the comparison. As can be seen in the comparison, the Water System rates produce bills for the Town that is competitive when compared to the other neighboring utilities. It should be noted that the Town's rates do reflect the high degree of treatment being used by the Water System to provide service (e.g., reverse osmosis water treatment) and the

status of the Town's capital program and corresponding asset age (new facilities being built to meet needs with no grant funds received to assist in construction which many utilities historically received).

TABLE II.28

Comparison of Typical Monthly Residential Bills for Water Service [1]

	Residential Service for a 5/8" or 3/4" Meter							
	0	2,000	4,000	6,000	8,000	10,000	15,000	20,000
Description	Gallons	Gallons	Gallons	Gallons	Gallons	Gallons	Gallons	Gallons
Town of Jupiter								
Existing Rates	$18.28	$20.56	$22.84	$25.12	$28.22	$31.32	$40.26	$53.96
Other Florida Utilities:								
City of Boynton Beach [2]	$10.98	$13.92	$16.86	$19.80	$22.74	$26.84	$39.99	$53.14
Brevard County – North Brevard [2][3]	12.32	12.32	16.18	23.90	31.62	42.82	70.82	108.86
City of Deerfield Beach	15.00	20.30	25.60	30.90	38.24	45.58	65.01	85.16
Fort Pierce Utilities Authority [2]	20.94	20.94	23.97	30.03	36.09	42.15	61.10	83.85
Indian River County	9.05	13.45	18.07	22.91	29.18	36.88	63.83	102.33
City of Lake Worth [2]	17.25	22.81	28.37	36.93	45.49	57.09	99.11	149.81
Martin County [2]	15.73	19.79	23.85	27.91	31.97	36.03	50.28	68.58
City of Melbourne [2]	6.89	15.37	23.85	32.33	40.81	49.29	70.49	91.69
Okeechobee Utility Authority [2]	19.44	27.64	37.90	50.22	62.54	74.86	105.66	136.46
Palm Beach County [2]	11.42	13.70	15.98	21.08	26.18	31.28	63.33	95.38
City of Port St. Lucie [2]	8.99	16.13	23.27	31.49	40.79	50.09	76.55	105.15
St. Lucie County	21.89	28.63	35.37	44.80	56.92	69.04	109.44	156.59
St. Lucie West Services District [2]	15.42	22.36	29.30	36.24	43.18	50.12	67.47	84.82
Seacoast Utility Authority	17.94	19.76	21.58	23.40	30.56	37.72	55.62	73.52
South Martin Regional Utilities [2]	19.20	21.18	24.49	29.13	33.77	38.41	55.76	73.11
City of Stuart [2]	11.71	16.21	20.71	25.43	30.15	38.25	60.54	84.19
Village of Tequesta	13.77	18.15	22.53	26.91	31.29	35.67	51.06	69.41

City of Vero Beach	13.60	15.26	16.92	20.53	26.09	31.65	45.55	73.35
Village of Wellington [2]	17.69	21.69	25.69	29.69	35.65	41.61	56.51	76.51
City of West Palm Beach [2]	19.43	25.45	31.46	37.49	45.03	52.57	73.41	95.53
Other Florida Utilities' Average	$14.93	$19.25	$24.10	$30.06	$36.91	$44.40	$67.08	$93.37

_____

[1] Unless otherwise noted, amounts shown reflect residential rates in effect February 2012 and are exclusive of taxes or franchise fees, if any, and reflect rates charged for inside the city service. All rates are as reported by the respective utility. This comparison is intended to show comparable charges for similar service for comparison purposes only and is not intended to be a complete listing of all rates and charges offered by each listed utility.

[2] Utility is currently involved in a rate study, is planning a rate study, or plans to implement a rate revision or price index / pass-through adjustment within the next twelve months.

[3] Amounts shown reflect charges by Brevard County for the North Brevard service area, thus representing charges to the majority of the County's service area. The County charges separate rates for the Barefoot Bay District.

In the development of the financial forecast, a primary rate assumption included the annual implementation of the price index rate adjustment. The application of the index i) allows the utility a vehicle to maintain utility revenue margins and promote overall financial performance; ii) is considered as a prudent financial and management policy by the rating agencies; iii) limits the need for large rate adjustments in the future since rates are marginally increased annually for the customer's benefit; iv) allows the utility to achieve the highest credit rating which reduces the overall cost of borrowing for the long-term benefit of the customers and the Town; v) is acceptable to the customers since there is no significant change in rates and no material impact on the affordability of water service to such customers; and vi) generally results in the lowest rates over the long-term. The Town implemented the price index for these reasons and such application has assisted the Town in securing the highest financial credit rating. By not implementing the price index, the utility loses the "time value of money" relative to the financial impact to the System and places the utility in a fiscally greater financial risk position (e.g., results in the inability to fund capital or need to issue more debt beyond what is prudent for the system). For example, if a 2% index was reflected in the fiscal year 2013, this would generate an additional $19 million in funds over the Forecast Period (due to the compounding effect over the 25 year period). The application of the index promotes the sustainability of the system for the long-term in terms of revenue generation and funds availability and use.

As a result of the Town electing to postpone the rate index over the past three years as well assumed through Fiscal Year 2014, the rates are sufficient to meet the expenditure requirements of the Water System. The result is a use of operating reserves to fund the annual expenditure requirements. Although the Water System has a strong liquidity position, this current rate policy is not sustainable and if maintained will adversely affect the utility over the long-term. Furthermore, the rating agencies look at the lack of the ability to adjust rates negatively. The following is a summary of revenue sufficiency of the rates for the first six years of the Forecast Period and, as can be seen, the expenditures and fund transfers are greater than the available revenues (reference the figure regarding operating liquidity presented earlier in this section which illustrates a decline in fund balance).

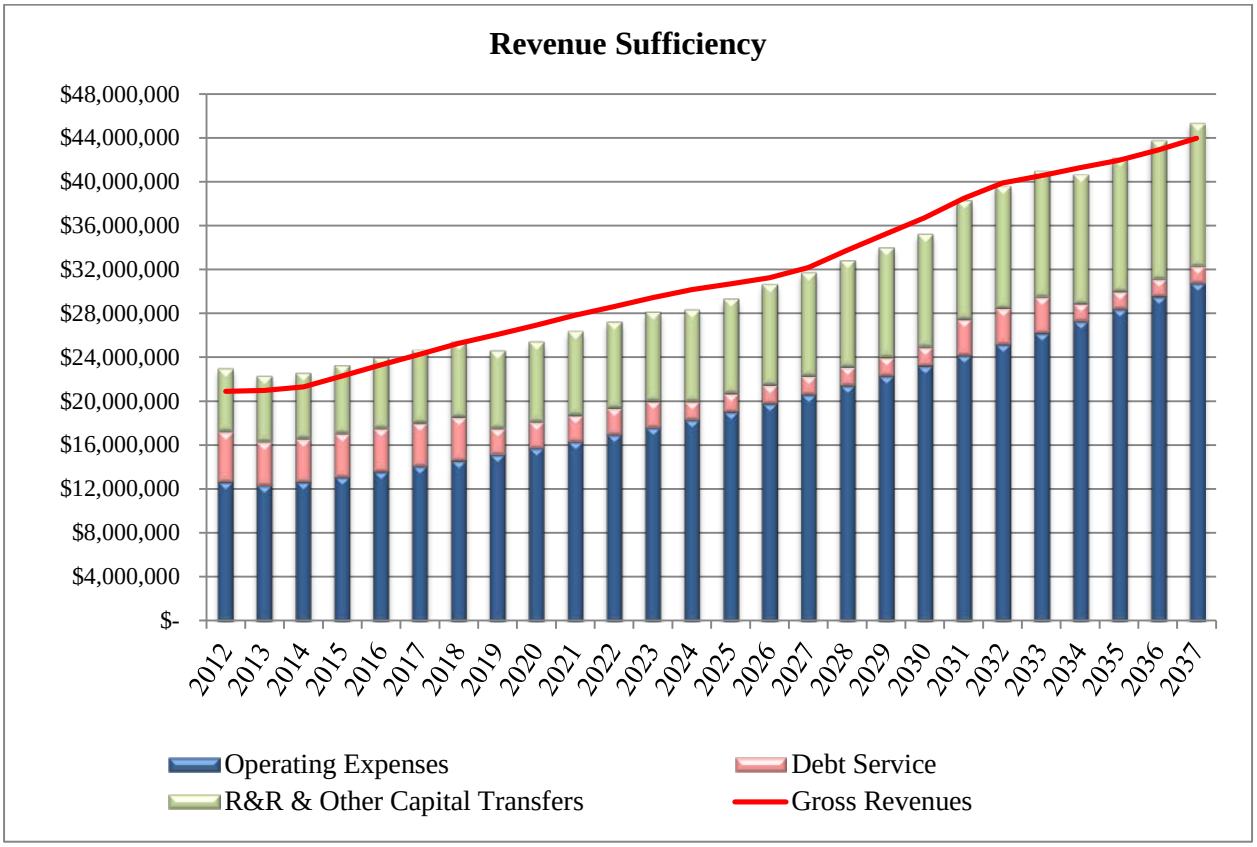


Figure II.49

The Town will need to monitor this trend closely and should re-instate the application of the price index to maintain the overall financial position of the utility consistent with the favorable position as disclosed in the February 2011 Fitch Ratings credit report.

4. Observations and Recommendations

Based on the financial evaluation as presented herein in support of the funding of the anticipated capital needs of the Water System, we offer the observations and recommendations:

a. The Water System should continue to set policy which will promote the maintenance of the "AAA" rating with the credit agencies. This should i) promote stability in long-term rate competitiveness; ii) limit the risk to the utility due to market changes such as increased regulations; iii) allow for future debt borrowing at lowest interest costs; and iv) provide benefit to the overall credit rating of the Town.

b. The Water Master Plan identifies the need to fund approximately $267.9 Million in capital expenditures for the Fiscal Year 2012 to 2037 time frame. The majority of the capital expenditures is for renewals and replacements (approximately 77.7% of the total identified needs) and is attributable to utility plant reaching its useful service lives during the Forecast Period. This is typical for a mature system which the Water System is now transitioning in (from a growth-related system) and for the water utilities in the south Florida area.

c. Renewal and replacement-related capital expenditures generally benefit existing customers since the assets are in service to serve such customers. Prudent utility business practices suggest that the funding of such expenditures should be from an annual deposit to a capital fund (i.e., Renewal and Replacement Fund) in order to match asset use to asset replacement. This is generally considered as a "depreciation equivalent." It is recommended that the Town annually fund a deposit to the R&R Fund at the amounts identified in the financial forecast as follows:

i. Maintain annual $5.2 Million deposit through Fiscal Year 2012; and

ii. Increase the deposit by the construction cost index as published annually in the Engineering News Record to account for changes in construction costs.

d. The Town should annually index the water rates to maintain Net Revenue Margins and provide funds for renewals and replacement capital projects. The indexing of rates is critical to the financial forecast and strong financial position of the Water System. The financial forecast assumes an annual 2.1% price index adjustment effective each October 1st beginning in Fiscal Year 2015. By way of example, it the Fiscal Year 2013 price index is not implemented and recognizing that this affects cash flow for the remainder of the Forecast Period (due to the time value of money), the ending working capital reserves assuming no other changes would reduce by approximately $19 Million by Fiscal Year 2037. Delays in adjusting rates will cause greater rate increases in the future, absent any significant change in the financial forecast objectives and assumptions and will place the utility in a financial negative (unsustainable) position.

e. The Connection Fees were based primarily on the cost of the Nanofiltration Plant as the last increment of capacity and are considered as being reasonable. Furthermore, the Connection Fees are necessary to recover the cost of capacity from new users to the Water System. Any reduction in the Connection Fees will put additional rate pressure on the monthly rates for service since the Connection Fees are a financial resource to the System. Although provided in the Connection Fee ordinances, the assumed fees for the financial presentation did not assume any indexing in the fees since the majority of the capital costs to provide service have been constructed.

f. The Town should update the financial forecast every 1 to 3 years to monitor trends and changes in Water System operations and capital needs to evaluate business and rate strategies in order to maintain the financial position of the Water System and the overall sufficiency of rates to meet the financial commitments of the utility.

Table 11.24
Town of Jupiter

Water System Capital Improvement Plan

Line No.	Capital Improvement Projects	Funding Source	Project Type	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1	Professional Services	CF	Expansion	$ 45,000	$ 46,485	$ 48,019	$ 49,604	$ 51,241	$ 52,931	$ 54,678	$ 56,483	$ 58,347	$ 60,272	$ 62,261	$ 64,316	$ 66,438	$ 68,630
2	Large Meter Replacement	R&R	Renewal / Upgrade	317,817	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000
3	Meters New	OS	Expansion	110,749	109,767	130,000	162,500	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	227,500
4	Ion Exchange Resin Replacement	RROth	Renewal / Upgrade	-	-	136,641	-	-	-	-	160,725	-	-	-	-	189,054	-
5	Meter Replacement	R&R	Renewal / Upgrade	735,000	768,000	802,089	837,303	873,679	911,255	950,072	990,169	1,031,590	1,074,377	1,118,577	1,164,235	1,211,399	1,260,121
6	Surface Water Recharge Improvements	CF	Expansion	207,821	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Abacoa Surficial Aquifer Wells Ph II	CF	Expansion	1,075,645	-	-	-	-	-	-	-	-	-	-	-	-	-
8	Little Club Area Distribution Improvements	R&R	Renewal / Upgrade	687,617	-	-	-	-	-	-	-	-	-	-	-	-	-
9	North Limestone Creek Wellfield	CF	Expansion	2,765,810	2,186,100	-	-	-	-	-	-	-	-	-	-	-	-
10	Surficial Aquifer Well Telemetry Improvements	CF	Expansion	11,167	-	-	-	-	-	-	-	-	-	-	-	-	-
11	High Speed Service Pumps 13 & 14	OS	Expansion	219,299	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Water Transmission Network East of I-95 - Area 2	OS	Expansion	2,565,000	-	-	-	-	-	-	-	-	-	-	-	-	-
13	N Jupiter Distribution System Improvements - Ph II	R&R	Renewal / Upgrade	-	-	73,363	1,240,188	-	-	-	-	-	-	-	-	-	-
14	Water Transmission Network West of I-95 - Area 3	OS	Expansion	1,528,670	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Jupiter Inlet Village Watermain Replacement	R&R	Renewal / Upgrade	100,000	408,000	-	-	-	-	-	-	-	-	-	-	-	-
16	Juno Beach Distribution System Improvements	R&R	Renewal / Upgrade	-	-	-	11,023	603,500	-	-	-	-	-	-	-	-	-
17	WTP Structure Hardening	EPA	Contribution	90,040	-	-	-	-	-	-	-	-	-	-	-	-	-
18	WTP Structure Hardening	O&M	Operating	351,956	-	-	-	-	-	-	-	-	-	-	-	-	-
19	Mod to Phase II (1997 & 1999) RO Plant (E,F,G,H)	R&R	Renewal / Upgrade	-	-	-	904,264	-	-	-	-	-	-	-	-	-	-
20	WTP Operating System Reprogramming	R&R	Renewal / Upgrade	93,047	-	-	-	-	-	-	-	-	-	-	-	-	-
21	Misc Water System Impr/County Project on Donald Ross	R&R	Renewal / Upgrade	20,000	-	-	-	-	-	-	-	-	-	-	-	-	-
22	Deepen RO Well No. 4	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	881,156	-	-	-	-
23	Construct 14.5 MGD Nanofiltration Plant	R&R	Renewal / Upgrade	775,906	-	-	-	-	-	-	-	-	-	-	-	-	-
24	Construct 14.5 MGD Nanofiltration Plant	CF	Expansion	596,699	-	-	-	-	-	-	-	-	-	-	-	-	-
25	Water Utilities Security Improvements - Ph II	CF	Expansion	26,015	-	-	-	-	-	-	-	-	-	-	-	-	-
26	Town Security System Replacement & Upgrade (IS)	O&M	Operating	144,295	-	-	-	-	-	-	-	-	-	-	-	-	-
27	1.7 MGD Brackish Water RO Treatment Expansion	CF	Expansion	496,714	-	-	-	-	-	-	-	-	-	-	-	-	-
28	Water Treatment Plant Warehouse	R&R	Renewal / Upgrade	1,723,703	-	-	-	-	-	-	-	-	-	-	-	-	-
29	Surficial Aquifer Well Rehabilitation	R&R	Renewal / Upgrade	56,761	-	-	-	-	-	-	-	-	-	-	-	-	-
30	Elec Trans Impr - I/C & E/L	R&R	Renewal / Upgrade	149,794	-	-	-	-	-	-	-	-	-	-	-	-	-
31	Bluffs Booster Pump Station	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	-	2,823,013
32	High Service Pumps 17 & 18	OS	Expansion	167,670	-	-	-	-	-	-	-	-	-	-	-	-	-
33	Lime Softening Plant Demo	O&M	Operating	222,926	-	-	-	-	-	-	-	-	-	-	-	-	-
34	WTP Asphalt Overlay & Drainage Improvements	R&R	Renewal / Upgrade	120,884	-	-	-	-	-	-	-	-	-	-	-	-	-
35	North Limestone Creek Tank Site Improvements	OS	Expansion	273,065	-	-	-	-	-	-	-	-	-	-	-	-	-
36	FDOT US1 South WM Relocation	R&R	Renewal / Upgrade	170,277	-	-	-	-	-	-	-	-	-	-	-	-	-
37	Additional Interconnect with Seacoast Utilities	OS	Expansion	134,114	-	-	-	-	-	-	-	-	-	-	-	-	-
38	Additional Interconnect with Seacoast Utilities	Seacoast	Contribution	125,000	-	-	-	-	-	-	-	-	-	-	-	-	-
39	Asset Maintenance Program - Capitalize	R&R	Renewal / Upgrade	1,005,370	548,219	549,229	396,797	520,462	417,141	476,288	445,129	459,817	662,221	490,666	758,502	767,778	540,862
40	Asset Maintenance Program - Maintenance	R&R	Renewal / Upgrade	61,452	-	-	-	-	-	-	-	-	-	-	-	-	-
41	Asset Maintenance Program - Maintenance	R&R	Renewal / Upgrade	94,250	-	-	-	-	-	-	-	-	-	-	-	-	-
42	Riverbend Repump Station Rechlorination Facility	OS	Expansion	60,000	284,075	-	-	-	-	-	-	-	-	-	-	-	-
43	Limestone Creek 181st St N & 182nd Rd N	Util-Loan	Operating	200,000	-	-	-	-	-	-	-	-	-	-	-	-	-
44	Sierra Square Shopping Ctr	Util-Loan	Operating	209,838	-	-	-	-	-	-	-	-	-	-	-	-	-
45	Jupiter Farms Shopping Ctr	Util-Loan	Operating	282,200	-	-	-	-	-	-	-	-	-	-	-	-	-
46	EOC/Town Field Operations Facility Improvements	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	Construct 8 MG Storage Tank - Central Blvd PS Site	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	5,145,245	-	-
48	Modify Juno Tank Influent Riser	OS	Expansion	-	-	-	-	-	-	-	-	97,244	-	-	-	-	-
49	North Limestone Creek Tank & Repump Station	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	-	3,355,265
50	Finished Water Stabilization & Other WTP Improvements	CF	Expansion	-	577,500	-	-	-	-	-	-	-	-	-	-	-	-
51	Supplemental Blend Box	CF	Expansion	-	1,136,300	-	-	-	-	-	-	-	-	-	-	-	-
52	Free Chlorine Disinfection Pilot Testing	CF	Expansion	-	413,200	-	-	-	-	-	-	-	-	-	-	-	-
53	Nitrogen Blanket in Sulfuric Acid Tank	CF	Expansion	-	-	-	71,650	-	-	-	-	-	-	-	-	-	-

Table 11.24
Town of Jupiter

Water System Capital Improvement Plan

Line No.	Capital Improvement Projects	Funding Source	Project Type	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
54	Complete Final Connection to SFWMD Regional System	CF	Expansion	-	-	-	-	-	-	1,701,100	-	-	-	-	-	-	-
55	Utilities Remote Facilities Security	CF	Expansion	-	-	-	-	367,000	-	-	-	-	-	-	-	-	-
56	Enclosed Storage Barn	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	442,920	-
57	Concentrate Disposal FDEP/EPA Permitting	O&M	Operating	-	103,300	-	-	-	-	-	-	-	-	-	-	-	-
58	Construct Crossing of I95/Turnpike at Donald Ross Road	O&M	Operating	-	-	-	-	-	-	-	-	752,022	-	-	-	-	-
59	Cinquez Park Roadway, Water & Sewer MSTU	R&R	Renewal / Upgrade	19,700	-	-	-	-	-	-	-	-	-	-	-	-	-
60	Customer Information, Billing, Work Order & Cash Receipting Systems	R&R	Renewal / Upgrade	-	413,200	-	-	-	-	-	-	-	-	-	571,694	-	-
61	Replace Membrane Vessel End Caps - RO Trains A,B,C,D	R&R	Renewal / Upgrade	-	-	-	551,151	-	-	-	-	-	-	-	-	-	-
62	Replace RO MCC (Motor Control Cooling) System Air Handlers	R&R	Renewal / Upgrade	-	-	-	303,133	-	-	-	-	-	-	-	-	-	-
63	Pine Gardens South & Brentwood Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	294,315	-	-	-	-	-	-	-	-	-	-
64	Demo Lime Sludge Drying Equipment	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	188,275	-	-	-	-	-	-
65	C-18 Outfall Corrosion Investigation	R&R	Renewal / Upgrade	-	-	-	137,788	-	-	-	-	-	-	-	-	-	-
66	Replace CTF Recirculation Pumps	R&R	Renewal / Upgrade	-	-	-	132,276	-	-	-	-	-	-	-	-	-	-
67	Central Blvd Pump Station Piping Upgrade	R&R	Renewal / Upgrade	-	-	-	-	284,670	-	-	-	-	-	-	-	-	3,736,545
68	Central Blvd at Jupiter Park Dr Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	147,032	-	-	-	-	-	-	-	-
69	S US Highway 1 (Juno) Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	60,754	-	-	-	-	-	-	-
70	Loxahatchee River Rd Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71	Old Dixie Highway Watermain Replacement	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72	Toney Penna at JRE Transmission Main Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
73	Alt AIA Bridge Crossing (West Side) Watermain Replacement	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
74	Pump Replacement Program	R&R	Renewal / Upgrade	-	-	586,899	826,727	-	-	-	-	-	-	581,102	-	1,081,023	114,857
75	Storage Reservoir Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
76	Well Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	2,133,788	-	569,235	1,176,040	3,660,379	2,509,879	-
77	Water Treatment Plant Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	2,756,351	324,147	-	-	-	6,781,207	13,562,414
78	Buildings Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
79	Recharge System Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	Generator Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	98,804	-	-	-	-	-	-	-	-
81	Central Blvd HSP North Electrical Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	793,972	-	-	-	-	-	-	-	-
82	Loxahatchee River Road Area Distribution System Impr	R&R	Renewal / Upgrade	-	-	-	-	-	665,761	-	-	-	-	-	-	-	-
83	Modify Bluffs Ridge Service Lines	R&R	Renewal / Upgrade	-	-	80,032	-	-	-	-	-	-	-	-	-	-	-
84	Yacht Club Dr Area Distribution Improvements (incl Clark Ln)	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	664,673	-	-
85	Fisherman's Landing Watermain Replacement	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-		861,746	-	-	-	-
86	Penn Park Distribution System Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	1,807,444	-	-	-	-	-	-
87	Seabrook Place Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	732,058
88	Bella Vista Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
89	Jupiter Dunes Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90	N Pennock Lane Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
91	Hampton Pl & Hampton Cir Distribution Improvements	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-
92	Jupiter Plantation Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
93	Ocean Parks Condos Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
94	Villas on the Green Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-
95	RO & Nano Membrane Replacement Program	RROth	Renewal / Upgrade	-	-	-	1,650,000	-	-	-	-	3,040,082	-	-	-	-	2,516,449
96	Total Projects			$ 18,041,271	$ 7,259,146	$ 2,671,272	$ 7,833,719	$ 3,160,552	$ 3,546,896	$ 3,702,892	$ 8,998,364	$ 6,223,249	$ 4,569,007	$ 3,888,646	$ 12,489,044	$ 13,509,698	$ 29,202,714

Table 11.24
Town of Jupiter

Water System Capital Improvement Plan

Line No.	Capital Improvement Projects	Funding Source	Project Type	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Total 2012 to 2037
1	Professional Services	CF	Expansion	$ 70,895	$ 73,235	$ 75,652	$ 78,148	$ 80,727	$ 83,391	$ 86,143	$ 88,986	$ 91,922	$ 94,955	$ 98,089	$ 101,326	$ 1,808,174
2	Large Meter Replacement	R&R	Renewal / Upgrade	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	6,942,817
3	Meters New	OS	Expansion	227,500	227,500	195,000	195,000	195,000	195,000	162,500	130,000	97,500	97,500	97,500	97,500	4,413,016
4	Ion Exchange Resin Replacement	RROth	Renewal / Upgrade	-	-	-	222,376	-	-	-	-	261,571	-	-	-	970,367
5	Meter Replacement	R&R	Renewal / Upgrade	1,310,450	1,362,439	1,416,145	1,471,623	1,528,931	1,588,131	1,649,284	1,712,456	1,777,712	1,845,121	1,914,755	1,986,687	33,291,600
6	Surface Water Recharge Improvements	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	207,821
7	Abacoa Surficial Aquifer Wells Ph II	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	1,075,645
8	Little Club Area Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	687,617
9	North Limestone Creek Wellfield	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	4,951,910
10	Surficial Aquifer Well Telemetry Improvements	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	11,167
11	High Speed Service Pumps 13 & 14	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	219,299
12	Water Transmission Network East of I-95 - Area 2	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	2,565,000
13	N Jupiter Distribution System Improvements - Ph II	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	1,313,551
14	Water Transmission Network West of I-95 - Area 3	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	1,528,670
15	Jupiter Inlet Village Watermain Replacement	R&R	Renewal / Upgrade	-	-	854,022	-	-	-	-	-	-	-	-	-	1,362,022
16	Juno Beach Distribution System Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	1,000,691	-	-	-	-	-	-	1,615,214
17	WTP Structure Hardening	EPA	Contribution	-	-	-	-	-	-	-	-	-	-	-	-	90,040
18	WTP Structure Hardening	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	-	351,956
19	Mod to Phase II (1997 & 1999) RO Plant (E,F,G,H)	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	904,264
20	WTP Operating System Reprogramming	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	93,047
21	Misc Water System Impr/County Project on Donald Ross	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	20,000
22	Deepen RO Well No. 4	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	881,156
23	Construct 14.5 MGD Nanofiltration Plant	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	775,906
24	Construct 14.5 MGD Nanofiltration Plant	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	596,699
25	Water Utilities Security Improvements - Ph II	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	26,015
26	Town Security System Replacement & Upgrade (IS)	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	-	144,295
27	1.7 MGD Brackish Water RO Treatment Expansion	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	496,714
28	Water Treatment Plant Warehouse	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	1,723,703
29	Surficial Aquifer Well Rehabilitation	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	56,761
30	Elec Trans Impr - I/C & E/L	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	149,794
31	Bluffs Booster Pump Station	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	2,823,013
32	High Service Pumps 17 & 18	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	167,670
33	Lime Softening Plant Demo	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	-	222,926
34	WTP Asphalt Overlay & Drainage Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	120,884
35	North Limestone Creek Tank Site Improvements	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	273,065
36	FDOT US1 South WM Relocation	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	170,277
37	Additional Interconnect with Seacoast Utilities	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	134,114
38	Additional Interconnect with Seacoast Utilities	Seacoast	Contribution	-	-	-	-	-	-	-	-	-	-	-	-	125,000
39	Asset Maintenance Program - Capitalize	R&R	Renewal / Upgrade	720,100	585,829	650,013	615,869	645,763	906,346	678,873	1,059,996	1,051,381	748,323	1,007,945	798,527	17,507,446
40	Asset Maintenance Program - Maintenance	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	61,452
41	Asset Maintenance Program - Maintenance	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	94,250
42	Riverbend Repump Station Rechlorination Facility	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	344,075
43	Limestone Creek 181st St N & 182nd Rd N	Util-Loan	Operating	-	-	-	-	-	-	-	-	-	-	-	-	200,000
44	Sierra Square Shopping Ctr	Util-Loan	Operating	-	-	-	-	-	-	-	-	-	-	-	-	209,838
45	Jupiter Farms Shopping Ctr	Util-Loan	Operating	-	-	-	-	-	-	-	-	-	-	-	-	282,200
46	EOC/Town Field Operations Facility Improvements	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	-
47	Construct 8 MG Storage Tank - Central Blvd PS Site	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	5,145,245
48	Modify Juno Tank Influent Riser	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	97,244
49	North Limestone Creek Tank & Repump Station	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	3,355,265
50	Finished Water Stabilization & Other WTP Improvements	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	577,500
51	Supplemental Blend Box	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	1,136,300
52	Free Chlorine Disinfection Pilot Testing	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	413,200
53	Nitrogen Blanket in Sulfuric Acid Tank	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	71,650

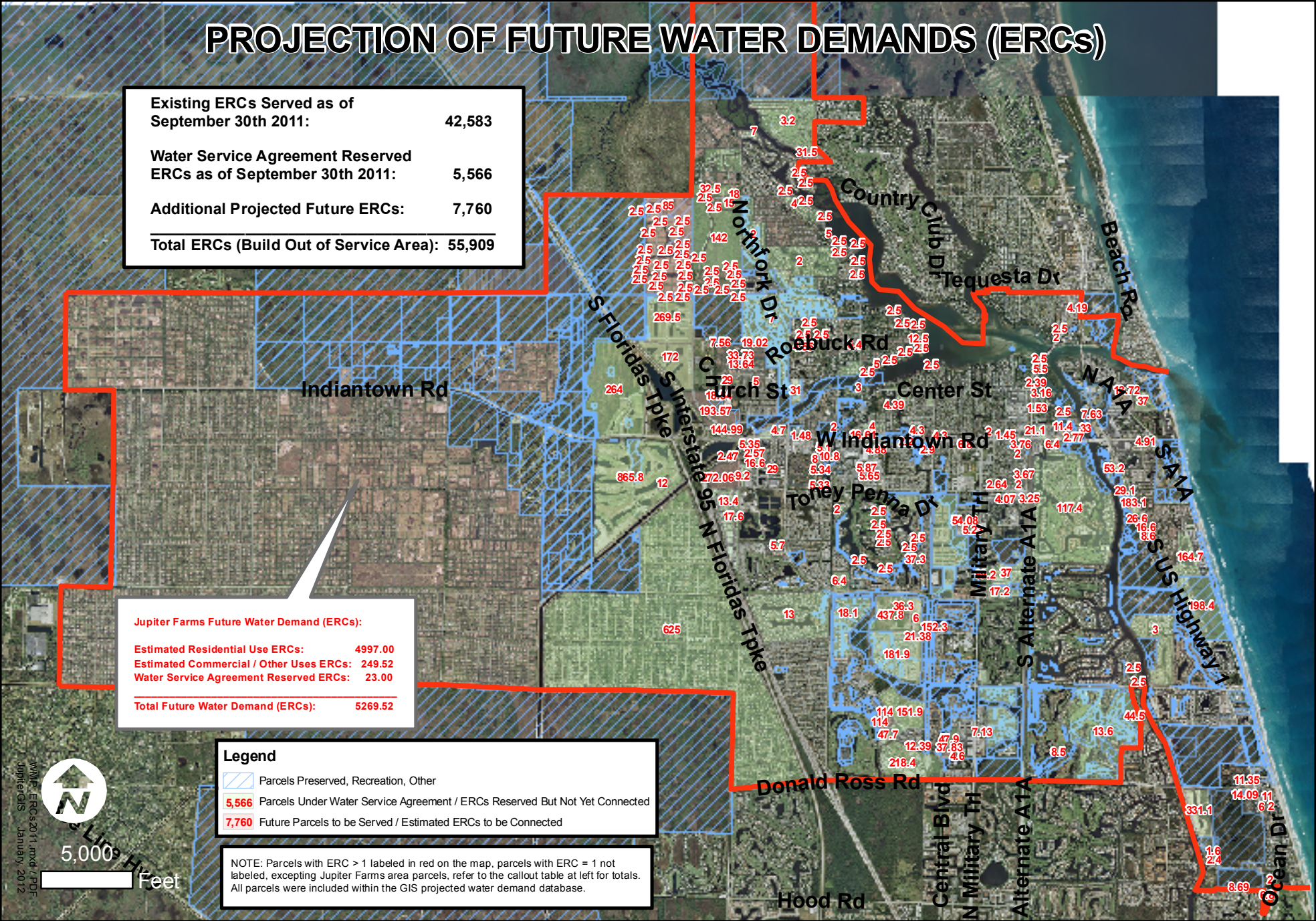
Table 11.24
Town of Jupiter

Water System Capital Improvement Plan

Line No.	Capital Improvement Projects	Funding Source	Project Type	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Total 2012 to 2037
54	Complete Final Connection to SFWMD Regional System	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	1,701,100
55	Utilities Remote Facilities Security	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	367,000
56	Enclosed Storage Barn	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	442,920
57	Concentrate Disposal FDEP/EPA Permitting	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	-	103,300
58	Construct Crossing of I95/Turnpike at Donald Ross Road	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	-	752,022
59	Cinquez Park Roadway, Water & Sewer MSTU	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	19,700
60	Customer Information, Billing, Work Order & Cash Receipting Systems	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	790,982	-	-	-	-	1,775,876
61	Replace Membrane Vessel End Caps - RO Trains A,B,C,D	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	551,151
62	Replace RO MCC (Motor Control Cooling) System Air Handlers	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	303,133
63	Pine Gardens South & Brentwood Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	294,315
64	Demo Lime Sludge Drying Equipment	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	188,275
65	C-18 Outfall Corrosion Investigation	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	137,788
66	Replace CTF Recirculation Pumps	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	132,276
67	Central Blvd Pump Station Piping Upgrade	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	4,021,215
68	Central Blvd at Jupiter Park Dr Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	147,032
69	S US Highway 1 (Juno) Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	60,754
70	Loxahatchee River Rd Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	301,380	-	-	-	-	-	-	-	301,380
71	Old Dixie Highway Watermain Replacement	R&R	Renewal / Upgrade	-	1,556,841	-	-	-	-	-	-	-	-	-	-	1,556,841
72	Toney Penna at JRE Transmission Main Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	1,017,369	-	-	-	-	-	-	1,017,369
73	Alt AIA Bridge Crossing (West Side) Watermain Replacement	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	1,937,907	-	-	-	-	1,937,907
74	Pump Replacement Program	R&R	Renewal / Upgrade	1,171,341	-	747,192	2,846,138	4,725,936	229,714	-	-	1,123,491	3,369,027	-	-	17,403,447
75	Storage Reservoir Replacement Program	R&R	Renewal / Upgrade	-	-	870,954	-	1,490,932	-	-	-	-	-	-	-	2,361,886
76	Well Replacement Program	R&R	Renewal / Upgrade	-	-	4,286,919	8,896,494	-	6,237,617	4,922,596	-	1,736,305	-	3,880,765	-	40,010,017
77	Water Treatment Plant Replacement Program	R&R	Renewal / Upgrade	6,781,207	-	-	-	448,483	7,004,905	14,009,811	7,004,905	-	778,845	-	-	59,452,274
78	Buildings Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-
79	Recharge System Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-
80	Generator Replacement Program	R&R	Renewal / Upgrade	220,563	-	117,680	-	703,220	-	-	-	-	-	167,841	-	1,308,108
81	Central Blvd HSP North Electrical Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	793,972
82	Loxahatchee River Road Area Distribution System Impr	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	665,761
83	Modify Bluffs Ridge Service Lines	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	80,032
84	Yacht Club Dr Area Distribution Improvements (incl Clark Ln)	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	664,673
85	Fisherman's Landing Watermain Replacement	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	861,746
86	Penn Park Distribution System Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	2,941,505	-	-	-	4,748,949
87	Seabrook Place Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	732,058
88	Bella Vista Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	675,239	-	-	675,239
89	Jupiter Dunes Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	675,239	-	-	675,239
90	N Pennock Lane Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	1,093,347	-	-	-	-	-	-	1,093,347
91	Hampton Pl & Hampton Cir Distribution Improvements	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	360,270	360,270
92	Jupiter Plantation Distribution Improvements	R&R	Renewal / Upgrade	-	325,488	-	-	-	-	-	-	-	-	-	-	325,488
93	Ocean Parks Condos Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	441,783	-	-	-	-	441,783
94	Villas on the Green Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	783,217	-	-	-	-	-	-	-	-	783,217
95	RO & Nano Membrane Replacement Program	RROth	Renewal / Upgrade	-	916,936	-	-	2,959,987	-	1,329,806	-	-	3,481,700	-	-	15,894,960
96	Total Projects			$ 10,767,056	$ 5,313,268	$ 9,478,577	$ 15,373,865	$ 13,345,359	$ 19,621,511	$ 23,104,013	$ 13,432,015	$ 9,346,387	$ 12,030,949	$ 7,431,895	$ 3,609,310	267,950,674

PROJECTION OF FUTURE WATER DEMANDS (ERCs)

Existing ERCs Served as of September 30th 2011:	42,583
Water Service Agreement Reserved ERCs as of September 30th 2011:	5,566
Additional Projected Future ERCs:	7,760
Total ERCs (Build Out of Service Area):	55,909



Jupiter Farms Future Water Demand (ERCs):

Estimated Residential Use ERCs:	4997.00
Estimated Commercial / Other Uses ERCs:	249.52
Water Service Agreement Reserved ERCs:	23.00
Total Future Water Demand (ERCs):	5269.52

Legend

- Parcels Preserved, Recreation, Other
- 5,566 Parcels Under Water Service Agreement / ERCs Reserved But Not Yet Connected
- 7,760 Future Parcels to be Served / Estimated ERCs to be Connected

NOTE: Parcels with ERC > 1 labeled in red on the map, parcels with ERC = 1 not labeled, excepting Jupiter Farms area parcels, refer to the callout table at left for totals. All parcels were included within the GIS projected water demand database.

WMP_ERCs2011.mxd / PDF
JupiterGIS January, 2012

Appendix A

copies to: Paul Jurczak
Jim Anderson
Ed Weinberg
Sent 8/26/10 MRD

RECEIVED
DISTRICT CLERK'S OFFICE
AUG 24 2010 9:02 AM
SOUTH FLORIDA
WATER MANAGEMENT DISTRICT

FORM 80229
Rev. 07/09

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
WATER USE PERMIT NO. RE-ISSUE 50-00010-W
NON-ASSIGNABLE

Date Issued: August 23, 2010 **Expiration Date:** September 30, 2030

Authorizing: THE USE OF GROUND WATER FROM THE FLORIDAN AQUIFER SYSTEM AND SURFICIAL AQUIFER SYSTEM FOR PUBLIC WATER SUPPLY USE WITH AN ANNUAL ALLOCATION OF 8909 MILLION GALLONS.

Located In: Palm Beach County, S35,36/T40S/R41E, S31/T/40S/R43E, S1-6,8-17,20-24/T41S/R42E S21,22,27,31-36/T40S/R42E, S5-8,17-21,28,29/T41S/R42E

Issued To: TOWN OF JUPITER WATER UTILITIES
(TOWN OF JUPITER)
210 MILITARY TRAIL
JUPITER, FL 33458

This is to notify you of the District's agency action concerning Permit Application No. 080627-9, dated June 27, 2008. This action is taken pursuant to the provisions of Chapter 373, Part II, Florida Statutes (F.S.), Rule 40E-1.603 and Chapter 40E-2, Florida Administrative Code (F.A.C.). Based on the information provided, District rules have been adhered to and a Water Use Permit is in effect for this project subject to:

1. Not receiving a filed request for an administrative hearing pursuant to Section 120.5 and Section 120.569, or request a judicial review pursuant Section 120.68, Florida Statutes.
2. The attached 35 Limiting Conditions.
3. The attached 18 exhibits.

Permittee agrees to hold and save the South Florida Water Management District and its successors harmless from any and all damages, claims or liabilities which may arise by reason of the construction, maintenance or use of activities authorized by this permit. Said application, including all plan and specifications attached thereto, is by reference made a part hereof.Upon written notice to permittee, this permit may be temporarily modified, or restricted under a Declaration of Water Shortage or a Declaration of Emergency due to Water Shortage in accordance with provisions of Chapter 373, Fla. Statutes, and applicable rules and regulations of the South Florida Water Management District. This Permit may be permanently or temporarily revoked, in whole or in part, for the violation of the conditions of the permit or for the violation of any provision of the Water Resources Act and regulations thereunder. This Permit does not convey to the permittee any property rights nor any privileges other than those specified herein, nor relieve the permittee from complying with any law, regulation, or requirement affecting the rights of other bodies or agencies.

Should you object to these conditions, please refer to the attached "Notice of Rights" which addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. Should you wish to object to the proposed agency action or file a petition or request, please provide written objections, petitions, requests and/or waivers to:

Elizabeth Veguilla, Deputy Clerk, MSC2440
South Florida Water Management District
Post Office Box 24680
West Palm Beach, FL 33416-4680

Please contact this office if you have any questions concerning this matter. If we do not hear from you in accordance with the "Notice of Rights", we will assume that you concur with the District's action.

CERTIFICATION OF SERVICE

I HEREBY CERTIFY that the Staff Report, Conditions and Notice of Rights have been mailed to the Permittee (and the persons listed on the attached staff report distribution list) no later than 5:00 p.m. on this 24th day of August, 2010, in accordance with Section 120.60(3), Florida Statutes, and a copy has been filed and acknowledged with the Deputy District Clerk.

By _____
DEPUTY CLERK
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

GOVERNING BOARD OF SOUTH FLORIDA WATER MANAGEMENT DISTRICT
STATE OF FLORIDA
SEAL
Established 1949

Attachments
CERTIFIED MAIL# 70050390000598197032

LIMITING CONDITIONS

1. This permit shall expire on September 30, 2030.

2. Application for a permit modification may be made at any time.

3. Water use classification:

   Public water supply

4. Source classification is:

   Ground Water from:
   Floridan Aquifer System
   Surficial Aquifer System

5. Annual allocation shall not exceed 8909 MG.

   Maximum monthly allocation shall not exceed 925 MG.

   The following limitations to annual withdrawals from specific sources are stipulated:
   Floridan Aquifer System-: 2,047 MG.
   Surficial Aquifer System-: 6,862 MG.

   The following limitations to maximum monthly withdrawals from specific sources are stipulated:
   Floridan Aquifer System-: 555.00 MG.
   Surficial Aquifer System-: 617.00 MG.

   Permittee shall implement the following wellfield operating plan:
   The total withdrawals from the Floridan and surficial aquifers shall further be subject to the the allocations listed above in this condition and specific wellfield withdrawals shall further be limited as follows:

   Wellfield 2: 319.3 MGM
   Wellfield 3 512.12 MGM
   Wellfield 4 98.27 MGM
   Pursuant to Section 2.2.4 of the BOR, the Town's operational plan includes multiple configurations such that withdrawals from the SAS and FAS shall be defined by the maximum monthly specific source limitations of 617 MG and 555 MG, respectively. The total withdrawals of each configuration shall not exceed the authorized maximum monthly allocation of 925 MG. These withdrawal configurations represent a normal operation protocol of the Town's use. Pursuant to Section 3.7 of the BOR, subsequent permit applicants shall not be allowed to interfere with the Town's approved operational plans and must provide reasonable assurance that withdrawals will not interfere with the Town's existing legal use of water, pursuant to Section 373.223(1)(b), F.S.

6. Pursuant to Rule 40E-1.6105, F.A.C., Notification of Transfer of Interest in Real Property, within 30 days of any transfer of interest or control of the real property at which any permitted facility, system, consumptive use, or activity is located, the permittee must notify the District, in writing, of the transfer giving the name and address of the new owner or person in control and providing a copy of the instrument effectuating the transfer, as set forth in Rule 40E-1.6107, F.A.C.

   Pursuant to Rule 40E-1.6107 (4), until transfer is approved by the District, the permittee shall be liable for compliance with the permit. The permittee transferring the permit shall remain liable for all actions that are required as well as all violations of the permit which occurred prior to the transfer of the permit.

   Failure to comply with this or any other condition of this permit constitutes a violation and pursuant to Rule 40E-1.609,

Suspension, Revocation and Modification of Permits, the District may suspend or revoke the permit.

This Permit is issued to:

Town of Jupiter Water Utilities
210 Military Trail
Jupiter, Florida 33458

7. Withdrawal Facilities:

Ground Water - Existing:

1 - 10" X 140' X 250 GPM Well Cased To 117 Feet
1 - 12" X 148' X 500 GPM Well Cased To 142 Feet
1 - 16" X 1615' X 2000 GPM Well Cased To 1017 Feet
1 - 8" X 180' X 300 GPM Well Cased To 124 Feet
1 - 8" X 134' X 400 GPM Well Cased To 106 Feet
1 - 8" X 180' X 300 GPM Well Cased To 138 Feet
1 - 8" X 142' X 300 GPM Well Cased To 110 Feet
1 - 12" X 165' X 370 GPM Well Cased To 130 Feet
1 - 12" X 175' X 315 GPM Well Cased To 130 Feet
1 - 12" X 148' X 520 GPM Well Cased To 142 Feet
1 - 8" X 122' X 750 GPM Well Cased To 105 Feet
1 - 8" X 138' X 1000 GPM Well Cased To 116 Feet
1 - 8" X 143' X 300 GPM Well Cased To 112 Feet
1 - 16" X 148' X 220 GPM Well Cased To 104 Feet
1 - 8" X 131' X 700 GPM Well Cased To 117 Feet
1 - 8" X 118' X 400 GPM Well Cased To 113 Feet
1 - 10" X 205' X 300 GPM Well Cased To 105 Feet
1 - 16" X 1662' X 2000 GPM Well Cased To 1330 Feet
1 - 10" X 207' X 300 GPM Well Cased To 105 Feet
1 - 12" X 185' X 325 GPM Well Cased To 110 Feet
1 - 12" X 175' X 255 GPM Well Cased To 130 Feet
1 - 10" X 160' X 300 GPM Well Cased To 105 Feet
1 - 8" X 140' X 1200 GPM Well Cased To 118 Feet
1 - 12" X 165' X 550 GPM Well Cased To 132 Feet
1 - 16" X 153' X 450 GPM Well Cased To 137 Feet
1 - 8" X 141' X 400 GPM Well Cased To 124 Feet
3 - 16" X 1500' X 1000 GPM Wells Cased To 1050 Feet
1 - 8" X 116' X 750 GPM Well Cased To 112 Feet
1 - 16" X 1540' X 1500 GPM Well Cased To 1295 Feet
1 - 12" X 200' X 430 GPM Well Cased To 136 Feet
1 - 12" X 158' X 170 GPM Well Cased To 125 Feet
1 - 10" X 200' X 300 GPM Well Cased To 120 Feet
1 - 12" X 140' X 480 GPM Well Cased To 135 Feet
1 - 16" X 1617' X 1500 GPM Well Cased To 1224 Feet
1 - 12" X 177' X 285 GPM Well Cased To 120 Feet
1 - 12" X 201' X 270 GPM Well Cased To 117 Feet
1 - 8" X 122' X 230 GPM Well Cased To 118 Feet
1 - 8" X 113' X 330 GPM Well With Unknown Cased Depth
1 - 10" X 202' X 360 GPM Well Cased To 103 Feet
1 - 16" X 1520' X 1500 GPM Well Cased To 1235 Feet
1 - 12" X 201' X 635 GPM Well Cased To 130 Feet
1 - 10" X 220' X 260 GPM Well Cased To 120 Feet

1 - 16" X 1660' X 1300 GPM Well Cased To 1465 Feet
1 - 10" X 205' X 300 GPM Well Cased To 120 Feet
1 - 16" X 1665' X 1100 GPM Well Cased To 1451 Feet
1 - 16" X 161' X 190 GPM Well Cased To 144 Feet
1 - 8" X 138' X 840 GPM Well Cased To 116 Feet
1 - 8" X 132' X 500 GPM Well Cased To 126 Feet
1 - 8" X 131' X 400 GPM Well Cased To 109 Feet
1 - 16" X 1673' X 2000 GPM Well Cased To 1032 Feet
1 - 10" X 140' X 330 GPM Well Cased To 121 Feet
1 - 16" X 153' X 385 GPM Well Cased To 138 Feet
1 - 12" X 140' X 440 GPM Well Cased To 138 Feet
1 - 10" X 194' X 300 GPM Well Cased To 105 Feet
1 - 8" X 150' X 300 GPM Well Cased To 110 Feet
1 - 12" X 145' X 280 GPM Well Cased To 140 Feet
1 - 8" X 136' X 1000 GPM Well Cased To 116 Feet
1 - 8" X 125' X 300 GPM Well Cased To 118 Feet
1 - 8" X 152' X 300 GPM Well Cased To 114 Feet
1 - 8" X 142' X 300 GPM Well Cased To 118 Feet
1 - 10" X 155' X 350 GPM Well Cased To 120 Feet
1 - 16" X 1373' X 2040 GPM Well Cased To 1065 Feet

Ground Water - Proposed:

6 - 20" X 150' X 367 GPM Wells Cased To 110 Feet

8. Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.

   Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1 in 10 year drought event that results in the:

   (1) Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or

   (2) Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.

9. Permittee shall mitigate harm to existing off-site land uses caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm caused by withdrawals, as determined through reference to the conditions for permit issuance, includes:

   (1) Significant reduction in water levels on the property to the extent that the designed function of the water body and related surface water management improvements are damaged, not including aesthetic values. The designed function of a water body is identified in the original permit or other governmental authorization issued for the construction of the water body. In cases where a permit was not required, the designed function shall be determined based on the purpose for the original construction of the water body (e.g. fill for construction, mining, drainage canal, etc.)

   (2) Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or

   (3) Land collapse or subsidence caused by reduction in water levels associated with consumptive use.

10. Permittee shall mitigate harm to the natural resources caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

    (1) Reduction in ground or surface water levels that results in harmful lateral movement of the fresh water/salt water interface,

    (2) Reduction in water levels that harm the hydroperiod of wetlands,

    (3) Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,

    (4) Harmful movement of contaminants in violation of state water quality standards, or

    (5) Harm to the natural system including damage to habitat for rare or endangered species.

11. If any condition of the permit is violated, the permit shall be subject to review and possible modification, enforcement action, or revocation.

12. Authorized representatives of the District shall be permitted to enter, inspect, and observe the permitted system to determine compliance with special conditions.

13. The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.

14. The permit does not convey any property right to the Permittee, nor any rights and privileges other than those specified in the Permit and Chapter 40E-2, Florida Administrative Code.

15. Permittee shall submit all data as required by the implementation schedule for each of the limiting conditions to: SFWMD, Environmental Resource Compliance, P.O. Box 24680, West Palm Beach, FL 33416-4680.

16. In the event of a declared water shortage, water withdrawal reductions will be ordered by the District in accordance with the Water Shortage Plan, Chapter 40E-21, F.A.C. The Permittee is advised that during a water shortage, pumpage reports shall be submitted as required by Chapter 40E-21, F.A.C.

17. Prior to the use of any proposed water withdrawal facility authorized under this permit, unless otherwise specified, the Permittee shall equip each facility with a District-approved operating water use accounting system and submit a report of calibration to the District, pursuant to Section 4.1, Basis of Review for Water Use Permit Applications.

    In addition, the Permittee shall submit a report of recalibration for the water use accounting system for each water withdrawal facility (existing and proposed) authorized under this permit every five years from each previous calibration, continuing at five-year increments.

18. Monthly withdrawals for each withdrawal facility shall be submitted to the District quarterly. The water accounting method and means of calibration shall be stated on each report.

    The permittee shall maintain records of daily withdrawals from each well. Monthly withdrawals for each well and maximum monthly withdrawals for each wellfield and for the entire system for each month shall be submitted to the District quarterly.

19. Permittee shall implement the wellfield operating plan described in District staff report prepared in support of recommendation for permit issuance.

20. The Permittee shall notify the District within 30 days of any change in service area boundary. If the Permittee will not serve a new demand within the service area for which the annual allocation was calculated, the annual allocation may then be subject to modification and reduction.

21. Permittee shall determine unaccounted-for distribution system losses. Losses shall be determined for the entire distribution system on a monthly basis. Permittee shall define the manner in which unaccounted-for losses are calculated. Data collection shall begin within six months of Permit issuance. Loss reporting shall be submitted to the District on a yearly basis from the date of Permit issuance.

22. Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.

23. The Water Conservation Plan required by Section 2.6.1 of the Basis of Review for Water Use Permit Applications within the South Florida Water Management District, must be implemented in accordance with the approved implementation schedule.

24. If at any time there is an indication that the well casing, valves, or controls leak or have become inoperative, repairs or replacement shall be made to restore the system to an operating condition. Failure to make such repairs shall be cause for filling and abandoning the well, in accordance with procedures outlined in Chapters 40E-3 and 40E-30, Florida Administrative Code.

25. If a proposed well location is different from a location specified in the application, the Permittee shall submit to the District an evaluation of the impact of pumpage from the proposed well location on adjacent existing legal uses, pollution sources, environmental features, the saline water interface, and water bodies one month prior to all new well construction. The Permittee is advised that the proposal must be in compliance with all permitting criteria and performance standards in effect at the time of submittal, and that a formal modification of the permit shall be required if the withdrawals from the well location will result in an environmental or resource impact significantly greater than that anticipated in the permit review process.

26. The Permittee shall submit to the District an updated Well Description Table (Table A) within one month of completion of the proposed wells identifying the actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters.

27. Permittee shall secure a well construction permit prior to construction, repair, or abandonment of all wells, as described in Chapters 40E-3 and 40E-30, Florida Administrative Code.

28. The Permittee shall continue to submit monitoring data in accordance with the approved saline water intrusion monitoring program for this project.

    The permittee shall continue to monitor and submit the data from the saltwater intrusion monitoring program to the District on a monthly basis. These data shall include water levels, referenced to NGVD, and chloride concentrations in mg/l for the following wells: B, Q, S, T, U, V, W, X and Y. Should any of these wells become damaged or unserviceable during the term of this permit, they shall be repaired or replaced with a well of similar construction within one month.

    The permittee shall continue to monitor and submit the water level data from the MUD-PHOMP program on a quarterly basis. These data shall include water levels, referenced to feet NGVD, from the following wells: C, L1, L2, L3, K1, K2, K3, N, R, Z, 711, 925, 926(FF), 927(GG) and 928.

    The permittee shall make monthly measurements of the chloride concentrations in each production well and shall submit this data to the District in the month following data collection.

29. The Permittee shall notify the District within 30 days of entry into an inter-local agreement, contract, or other similar instrument to deliver or receive water outside of its service area or to serve a demand not identified to determine the allocation described in this permit. A copy of such agreement shall be provided to the District. The monthly volume of water delivered and/or received via each inter-local agreement, contract, or other similar instrument shall be submitted to the District on a quarterly basis.

30. Every ten years from the date of permit issuance, the permittee shall submit a water use compliance report for review and approval by District Staff, which addresses the following:

1. The results of a water conservation audit that documents the efficiency of water use on the project site using data produced from an onsite evaluation conducted. In the event that the audit indicates additional water conservation is appropriate or the per capita use rate authorized in the permit is exceeded, the permittee shall propose and implement specific actions to reduce the water use to acceptable levels within timeframes proposed by the permittee and approved by the District.

2. A comparison of the permitted allocation and the allocation that would apply to the project based on current District allocation rules and updated population and per capita use rates. In the event the permit allocation is greater than the allocation provided for under District rule, the permittee shall apply for a letter modification to reduce the allocation consistent with District rules and the updated population and per capita use rates to the extent they are considered by the District to be indicative of long term trends in the population and per capita use rates over the permit duration. In the event that the permit allocation is less than allowable under District rule, the permittee shall apply for a modification of the permit to increase the allocation if the permittee intends to utilize an additional allocation, or modify its operation to comply with the existing conditions of the permit.

31. Upon issuance of the permit, the permittee shall implement the wetland monitoring plan in accordance with Exhibit 17 of the staff report. A minimum of 3 wetland sites shall be monitored in perpetuity or until such time that harm has not occurred for a period of 5 years after the wellfield has pumped the maximum permitted allocation.

32. The permittee shall implement the wetland monitoring plan in accordance with the work schedule provided in Exhibit 17 of the Staff Report. The permittee shall conduct hydrological and vegetative monitoring within the agreed upon wetland monitoring sites shown on the referenced exhibit. A permanent photo station and vegetative data collection plots must be established at each of the monitoring sites. The monitoring plan shall also include hydrographs that summarize data taken from the wetland monitoring wells, withdrawal facilities, rain gage data from S-46 and staff gauges:

a) Daily time step groundwater elevation from the monitoring well established within the wetland;
b) Daily rainfall data from the S-46 rain gage;
c) Pumpage data (total volume) reported in bi-weekly time step, and;
e) Perimeter grade (edge elevations) and deepest elevations within the wetland.

Monitoring data shall be submitted electronically (CD) as Excel spreadsheets or in an SFWMD-approved computer accessible format. This data shall also be submitted as a legible paper copy (two copies).

Each monitoring report shall provide results of vegetative monitoring data and an evaluation comparing results to previous monitoring reports. Data should be presented such that a trend analysis over time can be conducted. Percent coverage of dominant species in each sampling station should be presented; hydrographs and data for previous monitoring events and calendar years shall also be displayed consecutively for ease of comparison.

33. The permittee must submit reports (two copies to the Water Use Compliance Section Leader at 3301 Gun Club Road, West Palm Beach, FL 33406) summarizing the monitoring efforts and data through the previous calendar years. The annual report must include the permit number, application number, hydrologic data, hydrographs, results of vegetative monitoring and panoramic photographs. The report shall also include a narrative that includes any cause and effect relationships, possible solutions and corrective actions for any negative trends identified.

34. The permittee shall provide baseline monitoring data in accordance with Exhibit 17. The permittee will notify SFWMD at least 30 days prior to bringing Wellfield 4 into operation.

35.

In the event that the Permittee is unable to obtain or maintain legal access to any of the proposed monitoring sites under its control, or in the event that the Permittee wishes to propose an alternative site with better access or information, the Permittee shall notify SFWMD in writing within 30 days of concluding that a change in the monitoring site is necessary. In either event, the Permittee shall identify alternative sites where legal access can be obtained and submit corrective action plan in writing within 30 days to modify the monitoring network. This plan shall also include a schedule for the well construction and equipment placement where necessary. Such a corrective action plan is subject to District approval.

NOTICE OF RIGHTS

As required by Sections 120.569(1), and 120.60(3), Fla. Stat., following is notice of the opportunities which may be available for administrative hearing or judicial review when the substantial interests of a party are determined by an agency. Please note that this Notice of Rights is not intended to provide legal advice. Not all the legal proceedings detailed below may be an applicable or appropriate remedy. You may wish to consult an attorney regarding your legal rights.

RIGHT TO REQUEST ADMINISTRATIVE HEARING

A person whose substantial interests are or may be affected by the South Florida Water Management District's (SFWMD or District) action has the right to request an administrative hearing on that action pursuant to Sections 120.569 and 120.57, Fla. Stat. Persons seeking a hearing on a District decision which does or may determine their substantial interests shall file a petition for hearing with the District Clerk within 21 days of receipt of written notice of the decision, unless one of the following shorter time periods apply: 1) within 14 days of the notice of consolidated intent to grant or deny concurrently reviewed applications for environmental resource permits and use of sovereign submerged lands pursuant to Section 373.427, Fla. Stat.; or 2) within 14 days of service of an Administrative Order pursuant to Subsection 373.119(1), Fla. Stat. "Receipt of written notice of agency decision" means receipt of either written notice through mail, or electronic mail, or posting that the District has or intends to take final agency action, or publication of notice that the District has or intends to take final agency action. Any person who receives written notice of a SFWMD decision and fails to file a written request for hearing within the timeframe described above waives the right to request a hearing on that decision.

Filing Instructions

The Petition must be filed with the Office of the District Clerk of the SFWMD. Filings with the District Clerk may be made by mail, hand-delivery or facsimile. **Filings by e-mail will not be accepted.** Any person wishing to receive a clerked copy with the date and time stamped must provide an additional copy. A petition for administrative hearing is deemed filed upon receipt during normal business hours by the District Clerk at SFWMD headquarters in West Palm Beach, Florida. Any document received by the office of the SFWMD Clerk after 5:00 p.m. shall be filed as of 8:00 a.m. on the next regular business day. Additional filing instructions are as follows:

- Filings by mail must be addressed to the Office of the SFWMD Clerk, P.O. Box 24680, West Palm Beach, Florida 33416.
- Filings by hand-delivery must be delivered to the Office of the SFWMD Clerk. **Delivery of a petition to the SFWMD's security desk does <u>not</u> constitute filing. To ensure proper filing, it will be necessary to request the SFWMD's security officer to contact the Clerk's office.** An employee of the SFWMD's Clerk's office will receive and file the petition.
- Filings by facsimile must be transmitted to the SFWMD Clerk's Office at (561) 682-6010. Pursuant to Subsections 28-106.104(7), (8) and (9), Fla. Admin. Code, a party who files a document by facsimile represents that the original physically signed document will be retained by that party for the duration of that proceeding and of any subsequent appeal or subsequent proceeding in that cause. Any party who elects to file any document by facsimile shall be responsible for any delay, disruption, or interruption of the electronic signals and accepts the full risk that the document may not be properly filed with the clerk as a result. The filing date for a document filed by facsimile shall be the date the SFWMD Clerk receives the complete document.

Initiation of an Administrative Hearing

Pursuant to Rules 28-106.201 and 28-106.301, Fla. Admin. Code, initiation of an administrative hearing shall be made by written petition to the SFWMD in legible form and on 8 and 1/2 by 11 inch white paper. All petitions shall contain:

1. Identification of the action being contested, including the permit number, application number, District file number or any other SFWMD identification number, if known.
2. The name, address and telephone number of the petitioner and petitioner's representative, if any.
3. An explanation of how the petitioner's substantial interests will be affected by the agency determination.
4. A statement of when and how the petitioner received notice of the SFWMD's decision.
5. A statement of all disputed issues of material fact. If there are none, the petition must so indicate.
6. A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the SFWMD's proposed action.
7. A statement of the specific rules or statutes the petitioner contends require reversal or modification of the SFWMD's proposed action.
8. If disputed issues of material fact exist, the statement must also include an explanation of how the alleged facts relate to the specific rules or statutes.
9. A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the SFWMD to take with respect to the SFWMD's proposed action.

A person may file a request for an extension of time for filing a petition. The SFWMD may, for good cause, grant the request. Requests for extension of time must be filed with the SFWMD prior to the deadline for filing a petition for hearing. Such requests for extension shall contain a certificate that the moving party has consulted with all other parties concerning the extension and that the SFWMD and any other parties agree to or oppose the extension. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

If the District takes action with substantially different impacts on water resources from the notice of intended agency decision, the persons who may be substantially affected shall have an additional point of entry pursuant to Rule 28-106.111, Fla. Admin. Code, unless otherwise provided by law.

Mediation

The procedures for pursuing mediation are set forth in Section 120.573, Fla. Stat., and Rules 28-106.111 and 28-106.401-.405, Fla. Admin. Code. The SFWMD is not proposing mediation for this agency action under Section 120.573, Fla. Stat., at this time.

RIGHT TO SEEK JUDICIAL REVIEW

Pursuant to Sections 120.60(3) and 120.68, Fla. Stat., a party who is adversely affected by final SFWMD action may seek judicial review of the SFWMD's final decision by filing a notice of appeal pursuant to Florida Rule of Appellate Procedure 9.110 in the Fourth District Court of Appeal or in the appellate district where a party resides and filing a second copy of the notice with the SFWMD Clerk within 30 days of rendering of the final SFWMD action.

Last Date for Agency Action:
September 30, 2010

Water Use Staff Review Summary

Application Number: 080627-9

Permit Number: 50-00010-W

Project Name: TOWN OF JUPITER

FINAL APPROVED BY THE EXECUTIVE DIRECTOR AUGUST 23, 2010

Water Use Permit Status: MODIFICATION/RENEWAL

Environmental Resource Permit Status: NOT APPLICABLE.

Right Of Way Permit Status: NOT APPLICABLE

Location: PALM BEACH COUNTY,
S35,36/T40S/R41E
S21,22,27,31-36/T40S/R42E
S31/T40S/R43E
S1-6,8-17,20-24/T41S/R42E
S5-8,17-21,28,29/T41S/R42E

Applicant's Name and Address: TOWN OF JUPITER WATER UTILITIES
210 MILITARY TRAIL
JUPITER, FL 33458

Purpose:
The purpose of this application is to modify and renew the water use permit for the Town of Jupiter Public Water Supply. The modification consists of the following elements: 1) changes to the annual and maximum monthly allocations to meet demands through 2030 from multiple aquifer sources; 2) changes to the proposed construction timeline for Wellfield 4; and 3) optimization and use of the new nanofiltration system.

Withdrawals are from the surficial aquifer system via 52 existing withdrawal facilities and six proposed withdrawal facilities and from the Floridan aquifer system via 12 existing withdrawal facilities. Prior to drilling the proposed wells, it may be necessary to obtain well construction permits from the Palm Beach County Health Department.

Project Summary

Expiration Date: September 30, 2030

Water Use Classification: Public Water Supply

Sources: **Ground Water from:** Floridan Aquifer System
Surficial Aquifer System

Authorized Allocation:

Annual Allocation:	8,909	Million Gallons (MG)
Maximum Monthly Allocation:	925	Million Gallons (MG)

Specific Source Limitations:	**Annual**(MG)	**Monthly**(MG)
Surficial Aquifer System	6862	617
Floridan Aquifer System	2047	555

Existing Withdrawal Facilities - Ground Water

Source: Floridan Aquifer System
1 - 16" X 1373' X 2040 GPM Well Cased to 1065 Feet
1 - 16" X 1665' X 1100 GPM Well Cased to 1451 Feet
1 - 16" X 1673' X 2000 GPM Well Cased to 1032 Feet
1 - 16" X 1660' X 1300 GPM Well Cased to 1465 Feet
1 - 16" X 1540' X 1500 GPM Well Cased to 1295 Feet
1 - 16" X 1520' X 1500 GPM Well Cased to 1235 Feet
3 - 16" X 1500' X 1000 GPM Wells Cased to 1050 Feet
1 - 16" X 1615' X 2000 GPM Well Cased to 1017 Feet
1 - 16" X 1617' X 1500 GPM Well Cased to 1224 Feet
1 - 16" X 1662' X 2000 GPM Well Cased to 1330 Feet

Source: Surficial Aquifer System
1 - 12" X 165' X 370 GPM Well Cased to 130 Feet
1 - 8" X 180' X 300 GPM Well Cased to 124 Feet
1 - 8" X 118' X 400 GPM Well Cased to 113 Feet
1 - 8" X 131' X 400 GPM Well Cased to 109 Feet
1 - 10" X 205' X 300 GPM Well Cased to 105 Feet
1 - 8" X 152' X 300 GPM Well Cased to 114 Feet
1 - 12" X 175' X 315 GPM Well Cased to 130 Feet
1 - 10" X 202' X 360 GPM Well Cased to 103 Feet
1 - 8" X 143' X 300 GPM Well Cased to 112 Feet
1 - 8" X 122' X 230 GPM Well Cased to 118 Feet
1 - 10" X 160' X 300 GPM Well Cased to 105 Feet
1 - 10" X 205' X 300 GPM Well Cased to 120 Feet
1 - 12" X 175' X 255 GPM Well Cased to 130 Feet
1 - 8" X 116' X 750 GPM Well Cased to 112 Feet
1 - 10" X 207' X 300 GPM Well Cased to 105 Feet
1 - 10" X 155' X 350 GPM Well Cased to 120 Feet
1 - 12" X 148' X 520 GPM Well Cased to 142 Feet
1 - 12" X 201' X 635 GPM Well Cased to 130 Feet
1 - 8" X 134' X 400 GPM Well Cased to 106 Feet
1 - 16" X 148' X 220 GPM Well Cased to 104 Feet
1 - 8" X 140' X 1200 GPM Well Cased to 118 Feet

Source: Surficial Aquifer System
1 - 10" X 194' X 300 GPM Well Cased to 105 Feet
1 - 8" X 136' X 1000 GPM Well Cased to 116 Feet
1 - 10" X 220' X 260 GPM Well Cased to 120 Feet
1 - 8" X 150' X 300 GPM Well Cased to 110 Feet
1 - 8" X 138' X 1000 GPM Well Cased to 116 Feet
1 - 12" X 145' X 280 GPM Well Cased to 140 Feet
1 - 8" X 142' X 300 GPM Well Cased to 118 Feet
1 - 8" X 122' X 750 GPM Well Cased to 105 Feet
1 - 8" X 125' X 300 GPM Well Cased to 118 Feet
1 - 12" X 158' X 170 GPM Well Cased to 125 Feet
1 - 10" X 140' X 250 GPM Well Cased to 117 Feet
1 - 12" X 140' X 440 GPM Well Cased to 138 Feet
1 - 8" X 138' X 840 GPM Well Cased to 116 Feet
1 - 8" X 180' X 300 GPM Well Cased to 138 Feet
1 - 12" X 200' X 430 GPM Well Cased to 136 Feet
1 - 16" X 153' X 385 GPM Well Cased to 138 Feet
1 - 8" X 131' X 700 GPM Well Cased to 117 Feet
1 - 8" X 141' X 400 GPM Well Cased to 124 Feet
1 - 10" X 200' X 300 GPM Well Cased to 120 Feet
1 - 12" X 140' X 480 GPM Well Cased to 135 Feet
1 - 12" X 177' X 285 GPM Well Cased to 120 Feet
1 - 10" X 140' X 330 GPM Well Cased to 121 Feet
1 - 12" X 201' X 270 GPM Well Cased to 117 Feet
1 - 8" X 113' X 330 GPM Well With Unknown Cased Depth
1 - 16" X 153' X 450 GPM Well Cased to 137 Feet
1 - 12" X 148' X 500 GPM Well Cased to 142 Feet
1 - 8" X 142' X 300 GPM Well Cased to 110 Feet
1 - 12" X 185' X 325 GPM Well Cased to 110 Feet
1 - 16" X 161' X 190 GPM Well Cased to 144 Feet
1 - 12" X 165' X 550 GPM Well Cased to 132 Feet
1 - 8" X 132' X 500 GPM Well Cased to 126 Feet

Proposed Withdrawal Facilities - Ground Water

Source: Surficial Aquifer System
6 - 20" X 150' X 367 GPM Wells Cased to 110 Feet

Rated Capacity

Source	Status Code	GPM	MGM	MGY
Floridan Aquifer System	E	17,940	785.3	9,429
Surficial Aquifer System	E	21,720	950.8	11,416
Surficial Aquifer System	P	2,202	96.4	1,157
Totals:		**41,862**	**1,832.5**	**22,002**

Project Description

The Town of Jupiter (Town) Water Utility is located in northern Palm Beach County (Exhibit 1) and provides potable water supply to a service area that includes the Town of Jupiter, the Town of Juno Beach, and portions of unincorporated Martin County and Palm Beach County including the Palm Beach Country Estates and Jupiter Farms areas. The service area is approximately 23,704 acres and is depicted on Exhibit 2. The Town's raw water source is groundwater from both the surficial aquifer system (SAS) and the Floridan aquifer system (FAS). Wellfield 1 (Exhibit 3), formerly comprised of standby facilities 1 through 5, has been abandoned since the last issuance of the permit and is included here for informational purposes only. Current and future withdrawals are from the SAS via 52 existing withdrawal facilities in two wellfields (Exhibits 4 and 5), from the SAS via six proposed withdrawal facilities in Wellfield 4 (Exhibit 6) and from the Floridan aquifer system via 12 existing withdrawal facilities (Exhibit 7). Withdrawal facility details are provided in Exhibit 8.

A combination of reverse osmosis (RO) for the FAS wellfield and lime softening and ion exchange treatment systems for the SAS wellfields are currently in use. The Town has constructed a nanofiltration treatment plant that is in the final stages of preparation to replace the lime softening system for the SAS wellfields. The efficiency of the new treatment system has been considered in the recommended allocation for the SAS wellfields.

PERMIT HISTORY

The Town was initially issued Water Use Permit 50-00010-W on September 10, 1974. The permit was modified and reissued in October 1988 to include expansion of the withdrawal system to include the FAS and the addition of an RO plant to the treatment facilities. The permit was later modified on March 11, 1993 to add 14 SAS wells and 9 FAS wells and to increase the withdrawal allocation from the FAS.

On January 29, 1997, the South Florida Water Management District (District) issued a permit modification to: add 23 SAS wells (including 11 wells in proposed Wellfield 4 to be located north of the C-18 Canal and east of I-95); increase the maximum daily allocation from the SAS; increase the maximum daily allocation from the FAS; and to increase the overall allocation to reflect the projected demands through the year 2007. This proposed agency action was challenged by the Village of Tequesta via a Petition for an Administrative Hearing under Sections 120.569 and 120.57(1), Florida Statutes (F.S.). The District forwarded the Village of Tequesta's Petition to the Division of Administrative Hearings for assignment of an administrative law judge and case number (Case No. 97-0845). On August 25, 1997 the parties filed a "Joint Motion for Continuance and Stipulation of the Parties" (Joint Stipulation) and on September 3, 1997, the case was put into abeyance for several months. In the Joint Stipulation, the parties agreed to abate the hearing to allow the Town to modify its permit application. The permit was modified and reissued on February 11, 1999.

The most recent modification to this permit was issued on November 10, 2004 to meet the Town's projected water demands through the year 2024. The modification included an increase in allocation from the SAS, a Source of Limited Availability, to meet demands through 2009 pursuant to Section 1.7.2.2.D of the Basis of Review for Water Use Permit Applications (BOR). The Town is now requesting to: 1) extend the allocation from the SAS for a 20-year duration based on projected demands; 2) change the proposed construction timeline for Wellfield 4; and 3) optimize use of the new nanofiltration system.

Additionally, the Town also obtained a separate Water Use Permit (50-01584-W) to operate a SAS Recharge System utilizing surface water from the District's C-18 Canal to maintain the water table in the vicinity of the SAS wellfields. This recharge permit was initially issued on June 11, 1987, subsequently modified/renewed on February 9, 1995 and is currently under review for renewal (application 090903-6).

Projected Water Use Demands

The Town previously provided finished water to the Village of Tequesta via a bulk sales agreement. In 2007, Tequesta terminated its agreement with the Town and currently meets its water demands through withdrawals authorized under Water Use Permit 50-00046-W. These historic delivery volumes were excluded from calculating the Town's finished water demand as shown in Exhibit 9A. Based on a finished water per capita use rate (pcur) of 208 gallons per capita per day (gpcd), the Town has a finished water projected average annual demand through the year 2030 of 7,368 million gallons (MG) (20.2 MG per day) based on a residential population of 97,053. Per capita daily water use greater than 200 gpcd must be supported with additional information explaining the rate of use. The permittee submitted a Table H, Projected Water Use, which separates that portion of the demand represented by commercial users from the residential demand. The commercial users account for almost 27 percent of the overall demand. Considering the commercial users, the resulting finished water residential pcur is 168 gpcd (Exhibit 10).

The Town has historically used a conventional lime softening treatment method for SAS withdrawals and is in the final stages of upgrading to a nanofiltration treatment plant to replace the existing treatment method. The withdrawals from the FAS are treated using a reverse osmosis facility. The treatment efficiency losses for each of these facilities (nanofiltration - 15 percent and reverse osmosis - 25 percent) have been considered in the recommended allocation.

The Town requested a specified volume from the SAS to maximize use of the nanofiltration plant. Based on these volumes, treatment efficiencies, and the finished water demands described above, the raw water withdrawal of 617 MG maximum per month and 6,862 MG annually from the SAS is recommended. Total raw withdrawals from all sources shall not exceed 925 MG per month or 8,909 MG per year. Calculations in support of the allocation are presented as Exhibit 9B. Pursuant to Section 2.2 of the BOR, the FAS is a secondary source and will be used based upon the need for alternative sources during high stress periods or in the event of the interruption of service from the primary source, the SAS, not to exceed 555 MG per month.

Pursuant to Section 2.2.4 of the BOR and Limiting Condition 5 of this permit, the Town's operational plan includes multiple configurations such that withdrawals from the SAS and FAS shall be defined by the maximum monthly specific source limitations of 617 MG and 555 MG, respectively. The total withdrawals of each configuration shall not exceed the authorized maximum monthly allocation of 925 MG. These withdrawal configurations represent a normal operation protocol of the Town's use. Pursuant to Section 3.7 of the BOR, subsequent permit applicants shall not be allowed to interfere with the Town's approved operational plans and must provide reasonable assurance that withdrawals will not interfere with the Town's existing legal use of water, pursuant to Section 373.223(1)(b), F.S.

Hydrologic Modeling

Winflow

The SAS Winflow evaluation was configured as a one layer model utilizing a single value for aquifer transmissivity and storage and evaluated with a withdrawal rate of 617 MG per month (19.9 MG per day) for a period of 90 days with no recharge pursuant to Section 1.7.5.2 of the BOR. The Town proposed multiple drawdown scenarios detailed in Exhibit 11. The influence of the Town's Surface Water Recharge System (50-01584-W) was not considered in the model simulations and therefore the simulated drawdowns are considered conservative estimates of the actual impacts of the wellfields. Aquifer characteristics were based on aquifer performance testing at the Town's wellsites. Model results are presented in Exhibit 12. The specific wellfield withdrawal limitations contained in Limiting Condition 5 are based on the wellfield operating scenarios modeled by the applicant.

Evaluation of withdrawals from the FAS utilizing MODFLOW was performed for the previous issuance of this permit. The maximum wellfield drawdown was approximately 13 feet after the withdrawal of 629.3 MG per month (20.3 MG per day) for a period of 90 days with no recharge, pursuant to Section 1.7.5.2 of the BOR.

Impact Assessments

Water Resource Availability

Surficial Aquifer System

The base of the SAS in the vicinity of the project is estimated to be at -195 feet National Geodetic Vertical Datum (NGVD). The Town has maintained an extensive SAS water level monitoring network since the 1980's (Exhibit 13). Monitor wells in the vicinity of the Towns wellfields show increases in SAS water levels throughout the vertical extent of the aquifer since 1990 as shown in Exhibit 14.

SAS simulations predicted a maximum wellfield drawdown of approximately 30 feet at wells 46, 47 and 54 in Wellfield 3 after withdrawal of the recommended maximum monthly allocation of 617 MG (19.9 MGD) for a period of 90 days with no recharge.

Based on the results of the SAS model and historic monitor data, the water resource availability of the SAS is not expected to be exceeded as a result of the withdrawal of the recommended allocation.

Floridan Aquifer System

The top of the FAS is estimated to be at -900 feet NGVD in the vicinity of the project (District Technical Publication 92-03). The dry season potentiometric surface elevation of the FAS in the vicinity, inclusive of historic project withdrawals, is approximately +48 feet NGVD (United States Geological Survey Scientific Investigations Map 3070). Therefore, the total available drawdown is approximately 948 feet. Based on the results of the model described above, the water resource availability of the FAS is not expected to be exceeded as a result of the withdrawal of the recommended allocation.

Existing Legal Users

Surficial Aquifer System

There are numerous existing legal users of the SAS within the cone of influence of the Town's wellfield including two public water suppliers, Seacoast Utility Authority (50-00365-W) and the Village of Tequesta (50-00046-W). As described above, water levels in the SAS in the vicinity of the Town's wellfields have increased since 1990.

In all modeling results submitted in support of this application, the potential for harm to existing legal users of the SAS is consistent with District permitting criteria. However, localized impacts in the immediate vicinity of the wellfield may be sufficient to render centrifugal pumps inoperable. Limiting Condition 34 of the November 11, 2004 issuance of the permit required the Town to identify all centrifugal pumps for uses which were specifically exempted by Chapter 40E-2, F.A.C., and that were existing at the time of permit issuance in areas where the Town's permitted drawdown was expected to result in groundwater levels of 20 feet below land surface or greater. The Town completed the required inventory and provided a report (July 2005) documenting the location of centrifugal pumps and evidence of irrigation wells. Pursuant to Limiting Condition 8 of this Permit, should the Town's pumpage cause interference with existing legal users, mitigation shall be required.

Based upon the Town's ongoing commitment to identify and protect existing legal users, and as stipulated by the limiting conditions of this Permit, the Town will address any interference with any existing legal use of water as a result of the withdrawal of the recommended allocation.

Floridan Aquifer System

The nearest existing legal user of the FAS is the Village of Tequesta's Public Water Supply (50-00046-W), located approximately 18,000 feet to the northeast of the Town's FAS wellfield. There are no proposed increases to the Town's FAS withdrawals allocation and no harm has been previously reported. Therefore, the potential for interference to existing legal users as a result of the withdrawal of the recommended allocation is considered minimal.

Saline Water Intrusion

Surficial Aquifer System

Wellfields 2 and 3 are bounded by the Loxahatchee River to the north and the Intracoastal Waterway to the east. Wellfield 4, located just north of the C-18 canal, is bounded by the Loxahatchee River to the north and west. The Town is permitted to operate a surface water recharge system (50-01584-W) to divert water from the C-18 Canal into the South Indian River Water Control District, the North Palm Beach Heights Water Control District and various surface water management lake systems. This system, when operated, helps to reduce the potential for saltwater intrusion by recharging the aquifer in the vicinity of the wellfields.

The Town actively monitors nine wells for chloride concentrations. Selected graphs of chloride concentrations over time are presented in Exhibit 15 and are further described below.

Monitoring Well JPB is located approximately 1/4 mile to the north of the water treatment plant along the saline portion of the C-18 Canal, downstream of structure S-46. Chloride concentrations measured in this well remained between 30 and 45 milligrams per liter (mg/L) from 1986 through 1990 with a slight upward trend in concentrations to approximately 75 mg/L through 1991 and 1992. The concentration returned to the 30 to 45 mg/L range during 1993. A high value of 142 mg/L was observed in April 1994. This high reading coincided with the temporary operation of Wellfield 1(now abandoned) which withdrew 19 MG during the month of April 1994. The chloride concentration in well JPB has ranged between 20 to 80 mg/L since 1994.

Chloride concentrations in Monitoring Well JPU, located along the C-18 canal, have decreased since 1984 and were stable at approximately 100 mg/L from 1988 through 1992. Chloride concentrations have continued to decline and now range between 50 and 70 mg/L.

Monitoring Well JPQ is located in the vicinity of the water treatment plant. Water quality data for this well has been recorded since 1981 and shows chloride concentrations ranging between 200 and 400 mg/L through the 1990's. Chloride values in this well have displayed a downward trend since and are currently less than 100 mg/L. The applicant has previously identified an analytical error in the data for this well for the latter portion of 1991 which would account for the higher readings during that time period.

Based on historic chloride data and continuation of the monitoring program (Limiting Condition 28), the potential for saline water intrusion as a result of the withdrawal of the recommended allocation is considered minimal.

Floridan Aquifer System

The Town has monitored chloride concentrations within its FAS wellfield since 1999. Data shows that volumes of water withdrawn from the FAS have steadily increased with no corresponding increase in chloride concentrations. As the Town is not requesting an increase in withdrawals from the FAS, the potential for saline water intrusion or upconing to occur as a result of the withdrawal of the recommended allocation is considered minimal.

Wetlands

Surficial Aquifer System

Construction and operation of Wellfield 4 was authorized in the previous water use permit, but the wells were never constructed. The raw water main from this wellfield to the water treatment plant has been constructed in the Island Way right of way, and well site No. 60 has been acquired. This wellfield is being re-authorized with this permit. During review of the permit renewal/modification request, staff identified wetland areas that may potentially be harmed due to groundwater withdrawals from the

Surficial Aquifer System. To provide reasonable assurance that harm will not occur, the applicant has committed to implement a wetland monitoring plan and operational modifications as necessary to prevent harm to wetlands in the area of the wellfield.

The wetland monitoring program will be implemented in accordance with Exhibit 17. The monitoring program will provide quantitative data on wetland hydrology and vegetative composition prior to wellfield construction and operation. A total of 3 different wetland monitoring sites will be established adjacent to Wellfield 4. Baseline information will be used to establish the existing vegetative and hydrologic functions within the wetlands. Continuation of monitoring events will be conducted after the wellfield is put into operation to provide data necessary to analyze any negative effects from wellfield pumpage on wetland functions (hydrology and vegetation).

Upon construction and operation of wellfield 4, the permitted allocation and withdrawal rates will be the default operational plan. Wetland monitoring data will be analyzed in conjunction with withdrawal data to develop necessary operational parameters to prevent harm to the protected wetland habitats.

In the event that the District determines from the monitoring program data that harm attributable to Wellfield 4 withdrawals has occurred to wetlands, the permittee shall provide design or wellfield operational modifications to eliminate or reduce wetland harm. In addition, the permittee may be required to provide mitigation for any wetland harm attributable to the wellfield withdrawals.

Floridan Aquifer System

The FAS is hydrologically separated from the SAS by approximately 700 feet of confinement (District Technical Publication 92-03). Therefore, the potential for harm to occur to wetlands as a result of the withdrawal of the recommended allocation is considered minimal.

Source Of Pollution

Surficial Aquifer System

The applicant previously provided the locations of sites which have been identified by the Florida Department of Environmental Protection (FDEP) as potential sources of contamination. Based on modeling described above, withdrawal scenarios are not anticipated to cause significant degradation of surface or groundwater quality through the induced movement of pollutants into a water resource that is not polluted pursuant to Section 3.5 of the BOR. Therefore, the potential for movement of contaminants, if present, from known pollution sources as a result of the withdrawal of the recommended allocation is considered minimal.

Floridan Aquifer System

There are no known sources of pollution in the Floridan aquifer in the vicinity of the project and the FAS is hydrologically separated from the SAS by approximately 700 feet of confinement (District Technical Publication 92-03). Therefore, the potential for movement of contaminants, if present, from known pollution sources as a result of the withdrawal of the recommended allocation is considered minimal.

Other Impacts

Surficial Aquifer System

EXISTING OFFSITE LAND USES

Pursuant to Section 3.6.2 of the BOR, the use is not expected to result in significant reductions in water levels on the property of an existing off-site land use to the extent that the designed function of a water body and related surface water management improvements are damaged (not including aesthetic values), damage to agriculture, including damage resulting from reduction in soil moisture resulting from

consumptive use; or land collapse or subsidence caused by reduction in water levels associated with consumptive use.

Additional Information

WITHDRAWAL FACILITIES

The existing SAS withdrawal facilities consist of 52 wells within two wellfields (Exhibits 3 through 5). Wellfield 1 has been abandoned since the November 11, 2004 issuance of the Permit. Wellfield 4 includes 6 proposed wells (Exhibit 6). The Town has provided a modified proposal for the construction and operation of Wellfield 4.
Wellfield 1 - Wells 1 through 5 (Abandoned)
Wellfield 2 - Wells 6 through 22, well 31 and wells 35 through 38
Wellfield 3 - Wells 23 through 30, wells 32 through 34, wells 39 through 55 and wells 67 and 68
Wellfield 4 - Wells 56 through 60 and 62

The FAS wellfield consists of one wellfield containing 12 existing wells as shown in Exhibit 7.

WATER CONSERVATION

The Town has previously submitted a water conservation plan which provides that all eight mandatory water conservation elements listed in Section 2.6.1 of the BOR are in effect. As an additional conservation measure, all of the by-product concentrate from the nanofiltration treatment facility will be provided to the Loxahatchee River Environmental Control District to be blended with the irrigation quality reuse water supply.

WATER USE ACCOUNTING

Pursuant to Limiting Condition 17, the Town has installed flowmeters on all existing wells and will install flowmeters on the wells listed on Table A as proposed (Exhibit 8) as they are constructed. In addition, a report of recalibration shall be submitted every five years from each previous calibration, continuing at five-year intervals.

Pursuant to Limiting Condition 18, monthly withdrawals for each withdrawal facility shall be submitted to the District quarterly. The water accounting method and means of calibration shall be stated on each report.

COMPLIANCE REPORTING

Pursuant to Limiting Condition 21, the Permittee shall determine unaccounted-for distribution system losses for the entire distribution system on a monthly basis. Loss reporting shall be submitted to the District on a yearly basis from the date of Permit issuance.

Pursuant to Limiting Condition 26, the Permittee shall submit to the District an updated Well Description Table (Table A) within one month of completion of the proposed wells.

Pursuant to Limiting Condition 28, the Permittee shall continue to monitor and submit the data from the saltwater intrusion monitoring program to the District on a monthly basis.

Pursuant to Limiting Condition 30, every ten years from the date of permit issuance, the Permittee shall

Additional Information

submit a water use compliance report for review and approval by District Staff.

MINIMUM FLOWS AND LEVELS (MFL)

NORTHWEST FORK, LOXAHATCHEE RIVER - The Northwest Fork of the Loxahatchee River is an MFL waterbody covered under a recovery strategy set forth in Chapter 40E-8, F.A.C. Consumptive use permit criteria for MFLs are located in Section 3.9 of the BOR. The applicant has demonstrated that less than 0.1 feet of drawdown would extend to the Northwest Fork of the Loxahatchee River as a result of the withdrawal of the requested SAS maximum monthly allocation of 617 MG from existing Wellfields 2 and 3 and, therefore, is not a direct withdrawal from an MFL water body under recovery.

The Town operates a wellfield recharge system for Wellfields 2 and 3 under Water Use Permit 50-01584-W which uses surface water from the C-18 canal. Therefore, the withdrawals for this Permit are considered an indirect withdrawal from a MFL water body under recovery. Pursuant to Section 3.9.1.A of the BOR, impacts from the approved allocation that indirectly withdraw water from a MFL water body may not result in a level of impact that is greater under the requested renewal. The Town has requested no changes to the previously approved allocation. As demonstrated by the reasonable assurance provided for the 2004 permit issuance, the allocation is consistent with the recovery strategy.

The Town has also demonstrated that less than 0.1 feet of drawdown will extend to the Northwest Fork of the Loxahatchee River as a result of the operation of proposed Wellfield 4 as described below.

REGIONAL WATER AVAILABILITY

Parcel 19.01 (50-00547-W) was an agricultural operation with an allocation to irrigate 213 acres of row crops located between Wellfield 4 and the Loxahatchee River Watershed Waterbodies. Parcel 19.01's base condition water use was terminated when the renewal application (070629-59) was withdrawn as contemplated by Limiting Condition 38 of the Town's 2004 permit. Pursuant to Section 3.2.1.E(5)(d) of the BOR, the Town identified this terminated base condition water use and demonstrated its availability. Subsequent modeling was performed to demonstrate that, pursuant to Section 3.2.1.E(3) of the BOR, the requested allocation requested allocation will not cause a net increase in the volume or cause a change in timing on a monthly basis of surface and groundwater withdrawn from the North Palm Beach County/Loxahatchee River Watershed Waterbodies over that resulting from the base condition water use.

PERMIT DURATION

Pursuant to Section 1.7.2 of the BOR, Staff recommends a 20-year permit duration.

Recommendations

Project Name: TOWN OF JUPITER

Application Number: 080627-9

Permit Number: 50-00010-W

Recommendations to Executive Director:

Staff recommends the modification and renewal of a Water Use Permit for public water supply for the Town of Jupiter Service Area serving 97,053 persons in the year 2030 with an average finished water per capita use rate of 208 gallons per day and a maximum monthly to average monthly pumping ratio of 1.23:1. Withdrawals are from the surficial aquifer system via 52 existing withdrawal facilities and six proposed withdrawal facilities and from the Floridan aquifer system via 12 existing withdrawal facilities. The use is reasonable-beneficial, will not interfere with any presently existing legal use of water and is consistent with the public interest. The use is further subject to 35 limiting conditions.

Application Reviewer: Stephen E. Bell **Date:** 8-23-10
Stephen E. Bell

Supervisor: **Date:** 8/23/10
Steven J. Memberg, P.G.

Water Use Division: **Date:** 8-23-10
James Harmon, P.G.

Limiting Conditions

1. This permit shall expire on September 30, 2030.
2. Application for a permit modification may be made at any time.
3. Water use classification:

   Public water supply

4. Source classification is:

   Ground Water from:
   Floridan Aquifer System
   Surficial Aquifer System

5. Annual allocation shall not exceed 8909 MG.

   Maximum monthly allocation shall not exceed 925 MG.

   The following limitations to annual withdrawals from specific sources are stipulated:
   Floridan Aquifer System-: 2,047 MG.
   Surficial Aquifer System-: 6,862 MG.

   The following limitations to maximum monthly withdrawals from specific sources are stipulated:
   Floridan Aquifer System-: 555.00 MG.
   Surficial Aquifer System-: 617.00 MG.

   Permittee shall implement the following wellfield operating plan:
   The total withdrawals from the Floridan and surficial aquifers shall further be subject to the the allocations listed above in this condition and specific wellfield withdrawals shall further be limited as follows:

   Wellfield 2: 319.3 MGM
   Wellfield 3 512.12 MGM
   Wellfield 4 98.27 MGM
   Pursuant to Section 2.2.4 of the BOR, the Town's operational plan includes multiple configurations such that withdrawals from the SAS and FAS shall be defined by the maximum monthly specific source limitations of 617 MG and 555 MG, respectively. The total withdrawals of each configuration shall not exceed the authorized maximum monthly allocation of 925 MG. These withdrawal configurations represent a normal operation protocol of the Town's use. Pursuant to Section 3.7 of the BOR, subsequent permit applicants shall not be allowed to interfere with the Town's approved operational plans and must provide reasonable assurance that withdrawals will not interfere with the Town's existing legal use of water, pursuant to Section 373.223(1)(b), F.S.

6. Pursuant to Rule 40E-1.6105, F.A.C., Notification of Transfer of Interest in Real Property, within 30 days of any transfer of interest or control of the real property at which any permitted facility, system, consumptive use, or activity is located, the permittee must notify the District, in writing, of the transfer giving the name and address of the new owner or person in control and providing a copy of the instrument effectuating the transfer, as set forth in Rule 40E-1.6107, F.A.C.

   Pursuant to Rule 40E-1.6107 (4), until transfer is approved by the District, the permittee shall be liable for compliance with the permit. The permittee transferring the permit shall remain liable for all actions that are required as well as all violations of the permit which occurred prior to the transfer of the permit.

Limiting Conditions

Failure to comply with this or any other condition of this permit constitutes a violation and pursuant to Rule 40E-1.609, Suspension, Revocation and Modification of Permits, the District may suspend or revoke the permit.

This Permit is issued to:

Town of Jupiter Water Utilities
210 Military Trail
Jupiter, Florida 33458

7. Withdrawal Facilities:

Ground Water - Existing:

1 - 10" X 140' X 250 GPM Well Cased To 117 Feet
1 - 12" X 148' X 500 GPM Well Cased To 142 Feet
1 - 16" X 1615' X 2000 GPM Well Cased To 1017 Feet
1 - 8" X 180' X 300 GPM Well Cased To 124 Feet
1 - 8" X 134' X 400 GPM Well Cased To 106 Feet
1 - 8" X 180' X 300 GPM Well Cased To 138 Feet
1 - 8" X 142' X 300 GPM Well Cased To 110 Feet
1 - 12" X 165' X 370 GPM Well Cased To 130 Feet
1 - 12" X 175' X 315 GPM Well Cased To 130 Feet
1 - 12" X 148' X 520 GPM Well Cased To 142 Feet
1 - 8" X 122' X 750 GPM Well Cased To 105 Feet
1 - 8" X 138' X 1000 GPM Well Cased To 116 Feet
1 - 8" X 143' X 300 GPM Well Cased To 112 Feet
1 - 16" X 148' X 220 GPM Well Cased To 104 Feet
1 - 8" X 131' X 700 GPM Well Cased To 117 Feet
1 - 8" X 118' X 400 GPM Well Cased To 113 Feet
1 - 10" X 205' X 300 GPM Well Cased To 105 Feet
1 - 16" X 1662' X 2000 GPM Well Cased To 1330 Feet
1 - 10" X 207' X 300 GPM Well Cased To 105 Feet
1 - 12" X 185' X 325 GPM Well Cased To 110 Feet
1 - 12" X 175' X 255 GPM Well Cased To 130 Feet
1 - 10" X 160' X 300 GPM Well Cased To 105 Feet
1 - 8" X 140' X 1200 GPM Well Cased To 118 Feet
1 - 12" X 165' X 550 GPM Well Cased To 132 Feet
1 - 16" X 153' X 450 GPM Well Cased To 137 Feet
1 - 8" X 141' X 400 GPM Well Cased To 124 Feet
3 - 16" X 1500' X 1000 GPM Wells Cased To 1050 Feet
1 - 8" X 116' X 750 GPM Well Cased To 112 Feet
1 - 16" X 1540' X 1500 GPM Well Cased To 1295 Feet
1 - 12" X 200' X 430 GPM Well Cased To 136 Feet
1 - 12" X 158' X 170 GPM Well Cased To 125 Feet
1 - 10" X 200' X 300 GPM Well Cased To 120 Feet
1 - 12" X 140' X 480 GPM Well Cased To 135 Feet
1 - 16" X 1617' X 1500 GPM Well Cased To 1224 Feet
1 - 12" X 177' X 285 GPM Well Cased To 120 Feet
1 - 12" X 201' X 270 GPM Well Cased To 117 Feet
1 - 8" X 122' X 230 GPM Well Cased To 118 Feet
1 - 8" X 113' X 330 GPM Well With Unknown Cased Depth
1 - 10" X 202' X 360 GPM Well Cased To 103 Feet

1 - 16" X 1520' X 1500 GPM Well Cased To 1235 Feet
1 - 12" X 201' X 635 GPM Well Cased To 130 Feet
1 - 10" X 220' X 260 GPM Well Cased To 120 Feet
1 - 16" X 1660' X 1300 GPM Well Cased To 1465 Feet
1 - 10" X 205' X 300 GPM Well Cased To 120 Feet
1 - 16" X 1665' X 1100 GPM Well Cased To 1451 Feet
1 - 16" X 161' X 190 GPM Well Cased To 144 Feet
1 - 8" X 138' X 840 GPM Well Cased To 116 Feet
1 - 8" X 132' X 500 GPM Well Cased To 126 Feet
1 - 8" X 131' X 400 GPM Well Cased To 109 Feet
1 - 16" X 1673' X 2000 GPM Well Cased To 1032 Feet
1 - 10" X 140' X 330 GPM Well Cased To 121 Feet
1 - 16" X 153' X 385 GPM Well Cased To 138 Feet
1 - 12" X 140' X 440 GPM Well Cased To 138 Feet
1 - 10" X 194' X 300 GPM Well Cased To 105 Feet
1 - 8" X 150' X 300 GPM Well Cased To 110 Feet
1 - 12" X 145' X 280 GPM Well Cased To 140 Feet
1 - 8" X 136' X 1000 GPM Well Cased To 116 Feet
1 - 8" X 125' X 300 GPM Well Cased To 118 Feet
1 - 8" X 152' X 300 GPM Well Cased To 114 Feet
1 - 8" X 142' X 300 GPM Well Cased To 118 Feet
1 - 10" X 155' X 350 GPM Well Cased To 120 Feet
1 - 16" X 1373' X 2040 GPM Well Cased To 1065 Feet

Ground Water - Proposed:

6 - 20" X 150' X 367 GPM Wells Cased To 110 Feet

8. Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.

   Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1 in 10 year drought event that results in the:

   (1) Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or

   (2) Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.

9. Permittee shall mitigate harm to existing off-site land uses caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm caused by withdrawals, as determined through reference to the conditions for permit issuance, includes:

   (1) Significant reduction in water levels on the property to the extent that the designed function of the water body and related surface water management improvements are damaged, not including aesthetic values. The designed function of a water body is identified in the original permit or other governmental authorization issued for the construction of the water body. In cases where a permit

was not required, the designed function shall be determined based on the purpose for the original construction of the water body (e.g. fill for construction, mining, drainage canal, etc.)

(2) Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or

(3) Land collapse or subsidence caused by reduction in water levels associated with consumptive use.

10. Permittee shall mitigate harm to the natural resources caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

    (1) Reduction in ground or surface water levels that results in harmful lateral movement of the fresh water/salt water interface,

    (2) Reduction in water levels that harm the hydroperiod of wetlands,

    (3) Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,

    (4) Harmful movement of contaminants in violation of state water quality standards, or

    (5) Harm to the natural system including damage to habitat for rare or endangered species.

11. If any condition of the permit is violated, the permit shall be subject to review and possible modification, enforcement action, or revocation.
12. Authorized representatives of the District shall be permitted to enter, inspect, and observe the permitted system to determine compliance with special conditions.
13. The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.
14. The permit does not convey any property right to the Permittee, nor any rights and privileges other than those specified in the Permit and Chapter 40E-2, Florida Administrative Code.
15. Permittee shall submit all data as required by the implementation schedule for each of the limiting conditions to: SFWMD, Environmental Resource Compliance, P.O. Box 24680, West Palm Beach, FL 33416-4680.
16. In the event of a declared water shortage, water withdrawal reductions will be ordered by the District in accordance with the Water Shortage Plan, Chapter 40E-21, F.A.C. The Permittee is advised that during a water shortage, pumpage reports shall be submitted as required by Chapter 40E-21, F.A.C.
17. Prior to the use of any proposed water withdrawal facility authorized under this permit, unless otherwise specified, the Permittee shall equip each facility with a District-approved operating water use accounting system and submit a report of calibration to the District, pursuant to Section 4.1, Basis of Review for Water Use Permit Applications.

    In addition, the Permittee shall submit a report of recalibration for the water use accounting system for each water withdrawal facility (existing and proposed) authorized under this permit every five years from each previous calibration, continuing at five-year increments.

18. Monthly withdrawals for each withdrawal facility shall be submitted to the District quarterly. The water

accounting method and means of calibration shall be stated on each report.

The permittee shall maintain records of daily withdrawals from each well. Monthly withdrawals for each well and maximum monthly withdrawals for each wellfield and for the entire system for each month shall be submitted to the District quarterly.

19. Permittee shall implement the wellfield operating plan described in District staff report prepared in support of recommendation for permit issuance.
20. The Permittee shall notify the District within 30 days of any change in service area boundary. If the Permittee will not serve a new demand within the service area for which the annual allocation was calculated, the annual allocation may then be subject to modification and reduction.
21. Permittee shall determine unaccounted-for distribution system losses. Losses shall be determined for the entire distribution system on a monthly basis. Permittee shall define the manner in which unaccounted-for losses are calculated. Data collection shall begin within six months of Permit issuance. Loss reporting shall be submitted to the District on a yearly basis from the date of Permit issuance.
22. Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.
23. The Water Conservation Plan required by Section 2.6.1 of the Basis of Review for Water Use Permit Applications within the South Florida Water Management District, must be implemented in accordance with the approved implementation schedule.
24. If at any time there is an indication that the well casing, valves, or controls leak or have become inoperative, repairs or replacement shall be made to restore the system to an operating condition. Failure to make such repairs shall be cause for filling and abandoning the well, in accordance with procedures outlined in Chapters 40E-3 and 40E-30, Florida Administrative Code.
25. If a proposed well location is different from a location specified in the application, the Permittee shall submit to the District an evaluation of the impact of pumpage from the proposed well location on adjacent existing legal uses, pollution sources, environmental features, the saline water interface, and water bodies one month prior to all new well construction. The Permittee is advised that the proposal must be in compliance with all permitting criteria and performance standards in effect at the time of submittal, and that a formal modification of the permit shall be required if the withdrawals from the well location will result in an environmental or resource impact significantly greater than that anticipated in the permit review process.
26. The Permittee shall submit to the District an updated Well Description Table (Table A) within one month of completion of the proposed wells identifying the actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters.
27. Permittee shall secure a well construction permit prior to construction, repair, or abandonment of all wells, as described in Chapters 40E-3 and 40E-30, Florida Administrative Code.
28. The Permittee shall continue to submit monitoring data in accordance with the approved saline water intrusion monitoring program for this project.

    The permittee shall continue to monitor and submit the data from the saltwater intrusion monitoring program to the District on a monthly basis. These data shall include water levels, referenced to NGVD, and chloride concentrations in mg/l for the following wells: B, Q, S, T, U, V, W, X and Y. Should any of these wells become damaged or unserviceable during the term of this permit, they shall be repaired or replaced with a well of similar construction within one month.

    The permittee shall continue to monitor and submit the water level data from the MUD-PHOMP program on a quarterly basis. These data shall include water levels, referenced to feet NGVD, from

the following wells: C, L1, L2, L3, K1, K2, K3, N, R, Z, 711, 925, 926(FF), 927(GG) and 928.

The permittee shall make monthly measurements of the chloride concentrations in each production well and shall submit this data to the District in the month following data collection.

29. The Permittee shall notify the District within 30 days of entry into an inter-local agreement, contract, or other similar instrument to deliver or receive water outside of its service area or to serve a demand not identified to determine the allocation described in this permit. A copy of such agreement shall be provided to the District. The monthly volume of water delivered and/or received via each inter-local agreement, contract, or other similar instrument shall be submitted to the District on a quarterly basis.

30. Every ten years from the date of permit issuance, the permittee shall submit a water use compliance report for review and approval by District Staff, which addresses the following:

1. The results of a water conservation audit that documents the efficiency of water use on the project site using data produced from an onsite evaluation conducted. In the event that the audit indicates additional water conservation is appropriate or the per capita use rate authorized in the permit is exceeded, the permittee shall propose and implement specific actions to reduce the water use to acceptable levels within timeframes proposed by the permittee and approved by the District.

2. A comparison of the permitted allocation and the allocation that would apply to the project based on current District allocation rules and updated population and per capita use rates. In the event the permit allocation is greater than the allocation provided for under District rule, the permittee shall apply for a letter modification to reduce the allocation consistent with District rules and the updated population and per capita use rates to the extent they are considered by the District to be indicative of long term trends in the population and per capita use rates over the permit duration. In the event that the permit allocation is less than allowable under District rule, the permittee shall apply for a modification of the permit to increase the allocation if the permittee intends to utilize an additional allocation, or modify its operation to comply with the existing conditions of the permit.

31. Upon issuance of the permit, the permittee shall implement the wetland monitoring plan in accordance with Exhibit 17 of the staff report. A minimum of 3 wetland sites shall be monitored in perpetuity or until such time that harm has not occurred for a period of 5 years after the wellfield has pumped the maximum permitted allocation.

32. The permittee shall implement the wetland monitoring plan in accordance with the work schedule provided in Exhibit 17 of the Staff Report. The permittee shall conduct hydrological and vegetative monitoring within the agreed upon wetland monitoring sites shown on the referenced exhibit. A permanent photo station and vegetative data collection plots must be established at each of the monitoring sites. The monitoring plan shall also include hydrographs that summarize data taken from the wetland monitoring wells, withdrawal facilities, rain gage data from S-46 and staff gauges:

a) Daily time step groundwater elevation from the monitoring well established within the wetland;
b) Daily rainfall data from the S-46 rain gage;
c) Pumpage data (total volume) reported in bi-weekly time step, and;
e) Perimeter grade (edge elevations) and deepest elevations within the wetland.

Monitoring data shall be submitted electronically (CD) as Excel spreadsheets or in an SFWMD-approved computer accessible format. This data shall also be submitted as a legible paper copy (two copies).

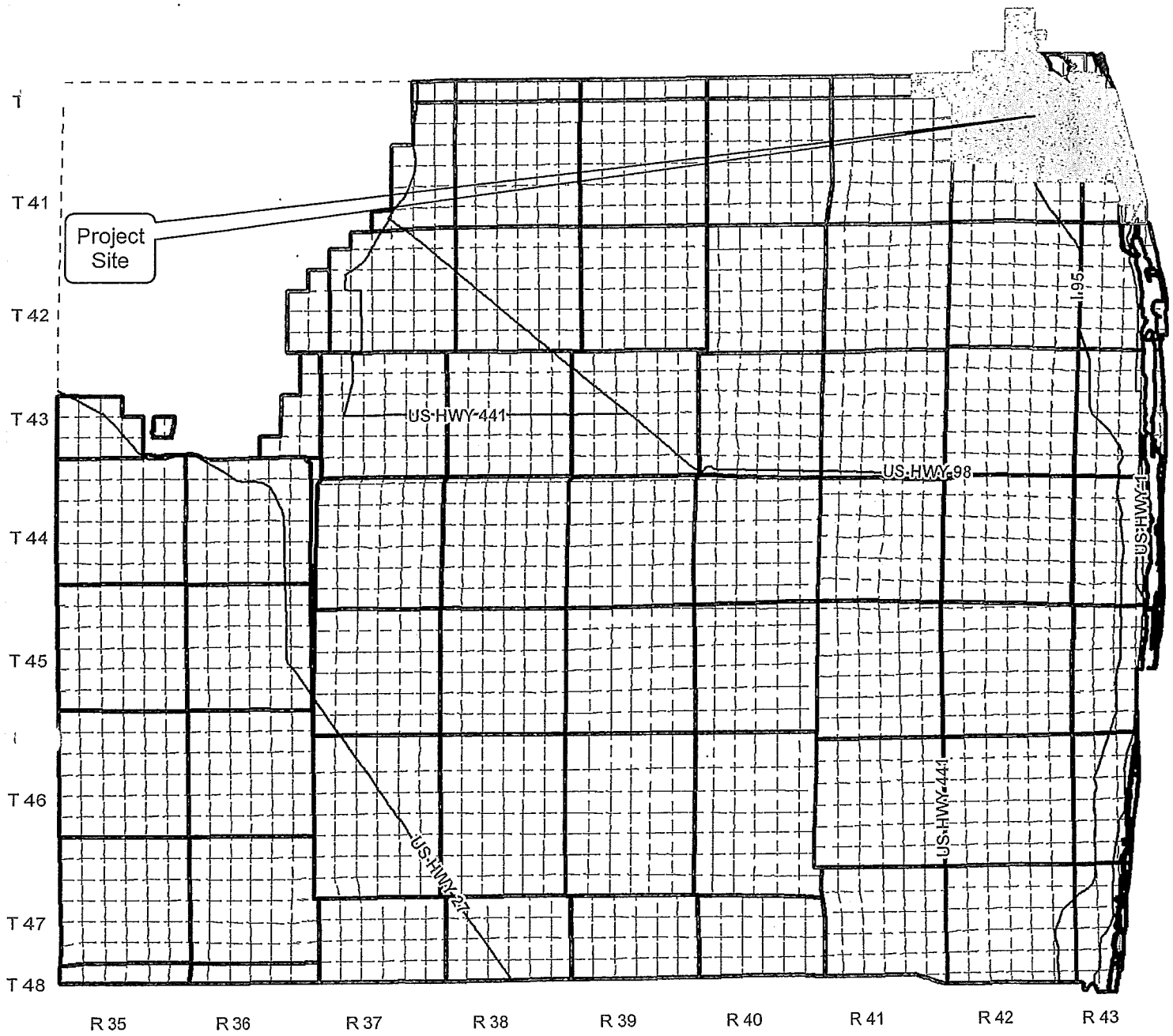
Each monitoring report shall provide results of vegetative monitoring data and an evaluation

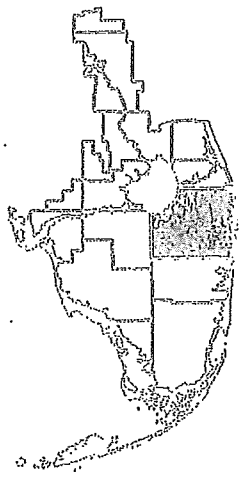
comparing results to previous monitoring reports. Data should be presented such that a trend analysis over time can be conducted. Percent coverage of dominant species in each sampling station should be presented; hydrographs and data for previous monitoring events and calendar years shall also be displayed consecutively for ease of comparison.

33. The permittee must submit reports (two copies to the Water Use Compliance Section Leader at 3301 Gun Club Road, West Palm Beach, FL 33406) summarizing the monitoring efforts and data through the previous calendar years. The annual report must include the permit number, application number, hydrologic data, hydrographs, results of vegetative monitoring and panoramic photographs. The report shall also include a narrative that includes any cause and effect relationships, possible solutions and corrective actions for any negative trends identified.

34. The permittee shall provide baseline monitoring data in accordance with Exhibit 17. The permittee will notify SFWMD at least 30 days prior to bringing Wellfield 4 into operation.

35. In the event that the Permittee is unable to obtain or maintain legal access to any of the proposed monitoring sites under its control, or in the event that the Permittee wishes to propose an alternative site with better access or information, the Permittee shall notify SFWMD in writing within 30 days of concluding that a change in the monitoring site is necessary. In either event, the Permittee shall identify alternative sites where legal access can be obtained and submit corrective action plan in writing within 30 days to modify the monitoring network. This plan shall also include a schedule for the well construction and equipment placement where necessary. Such a corrective action plan is subject to District approval.





PALM BEACH COUNTY, FLORIDA

Legend

Application

Application Sections

Map Date: 8/19/2010

Application Number: 080627-9

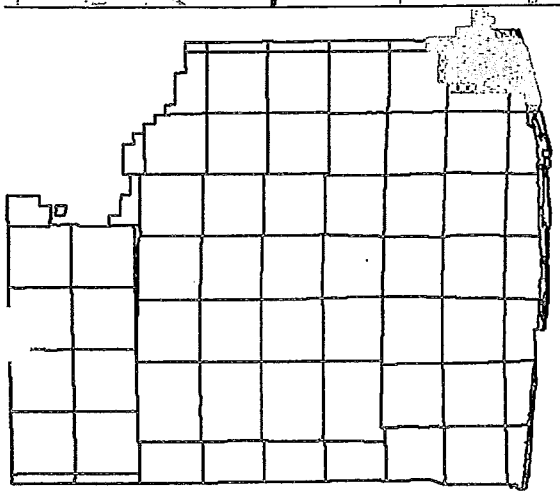
Permit Number: 50-00010-W

Project Name: TOWN OF JUPITER

N

0 5 10 Miles

Exhibit : 1



PALM BEACH COUNTY, FLORIDA

N

Legend

Application

Map Date: 8/19/2010

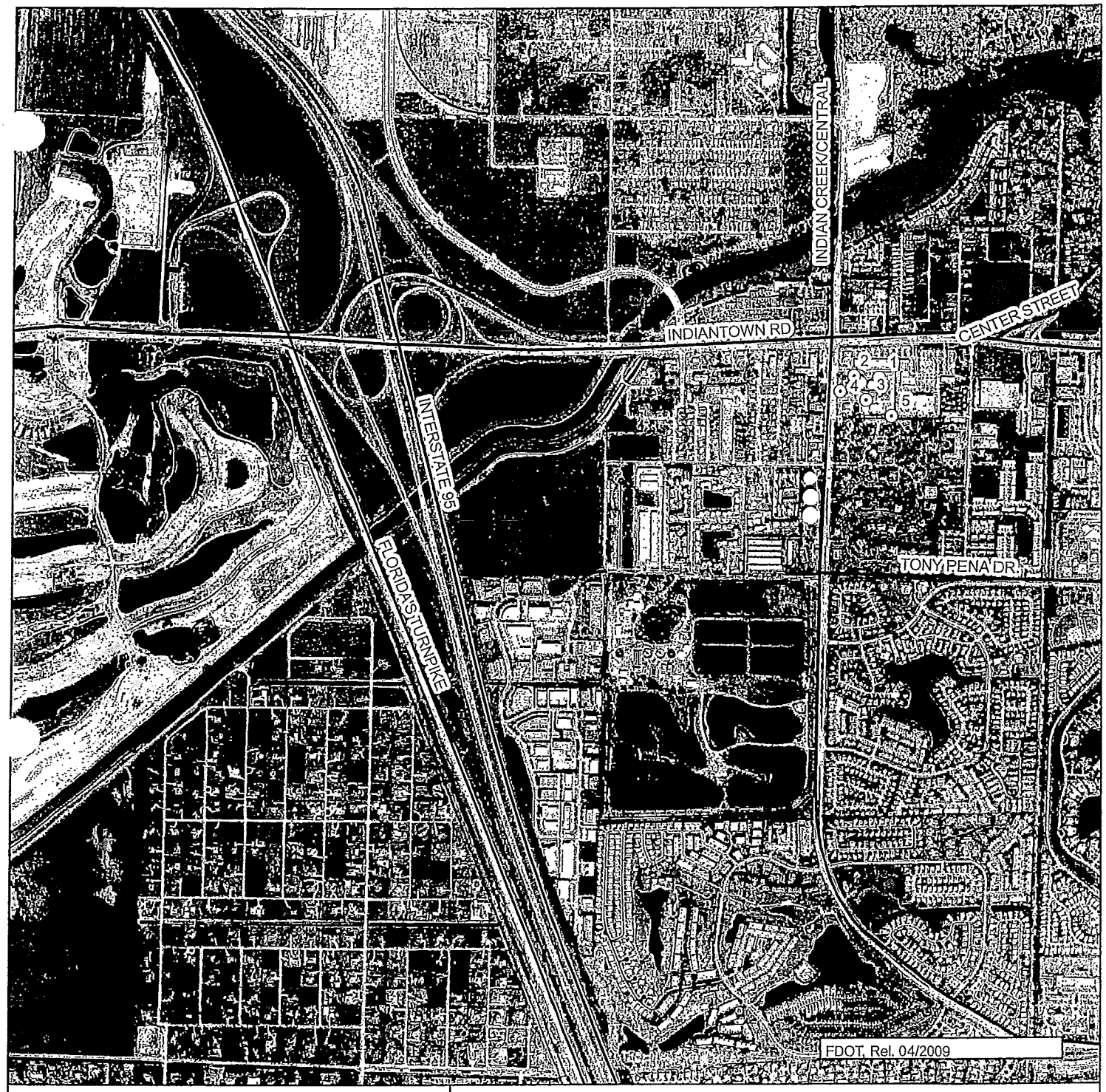
Application Number: 080627-9

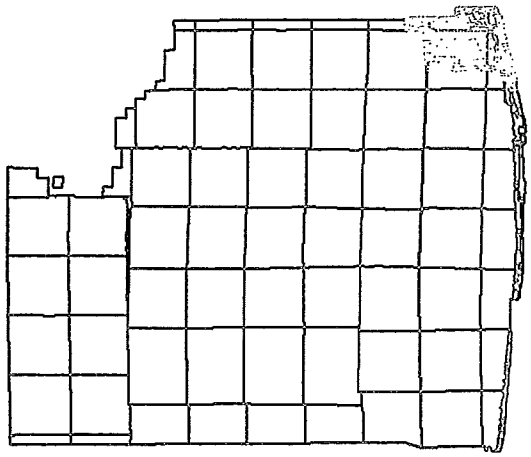
Permit Number: 50-00010-W

Project Name: TOWN OF JUPITER

0 2 4
Miles

Exhibit : 2





SURFICAL AQUIFER SYSTEM
WELLFIELD 1

N

Legend

Application Number: 080627-9

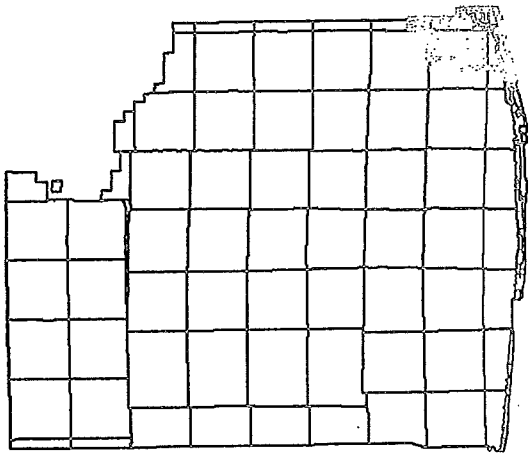
Permit Number: 50-00010-W

Project Name: TOWN OF JUPITER

⊙ WELL

0 0.35 0.7
Miles

Exhibit : 3



SURFICAL AQUIFER SYSTEM
WELLFIELD 2

N

Legend

Application Number: 080627-9

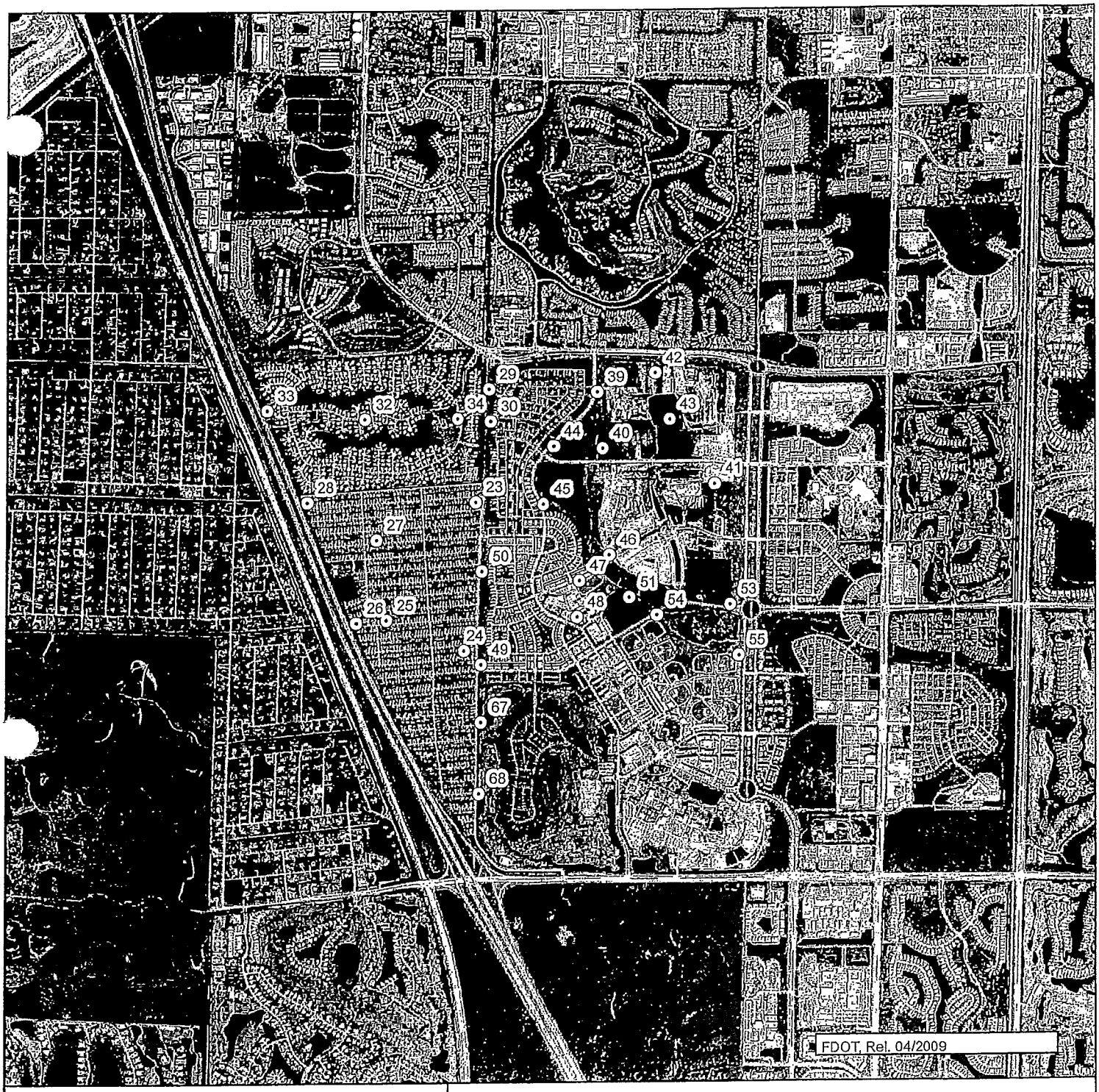
Permit Number: 50-00010-W

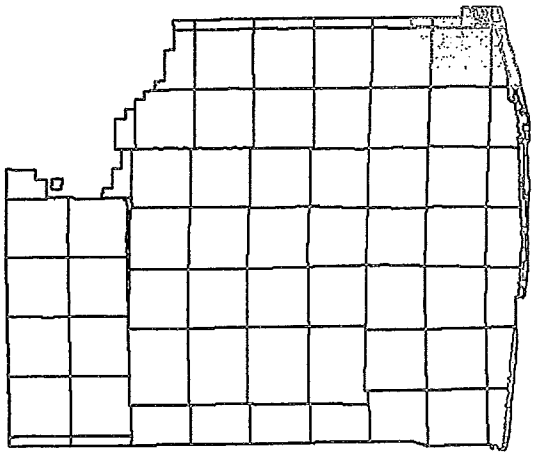
Project Name: TOWN OF JUPITER

⊙ WELL

0 0.35 0.7
Miles

Exhibit : 4





SURFICAL AQUIFER SYSTEM
WELLFIELD 3

N

Legend

Application Number: 080627-9

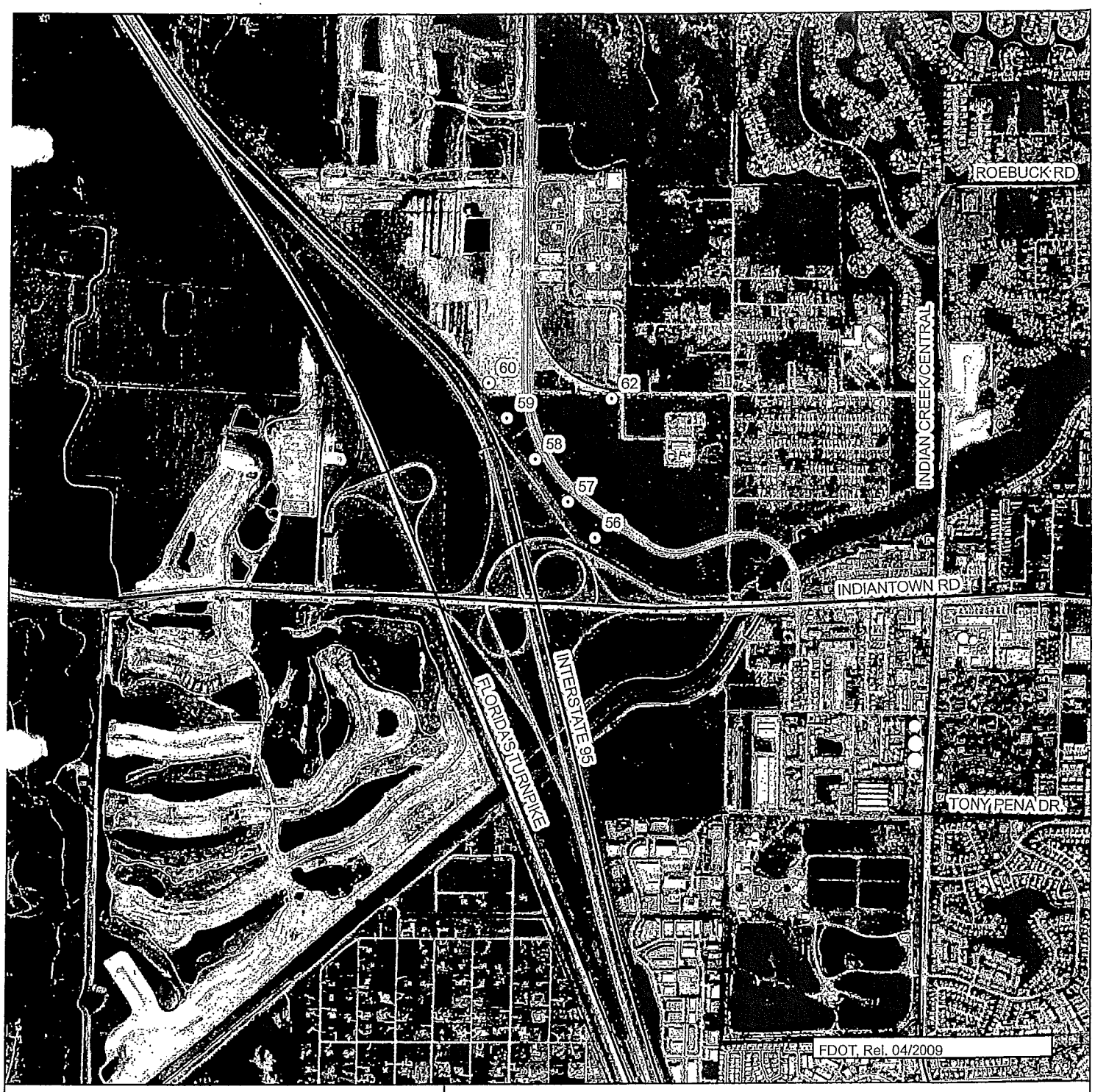
Permit Number: 50-00010-W

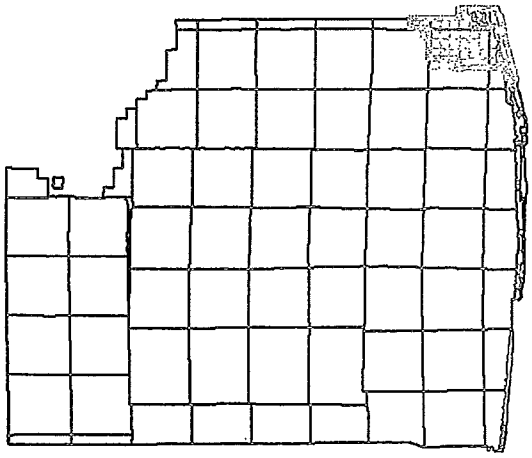
Project Name: TOWN OF JUPITER

⊙ WELL

0 0.5 1
Miles

Exhibit : 5





SURFICIAL AQUIFER SYSTEM
WELLFIELD 4

N

Legend

Application Number: 080627-9

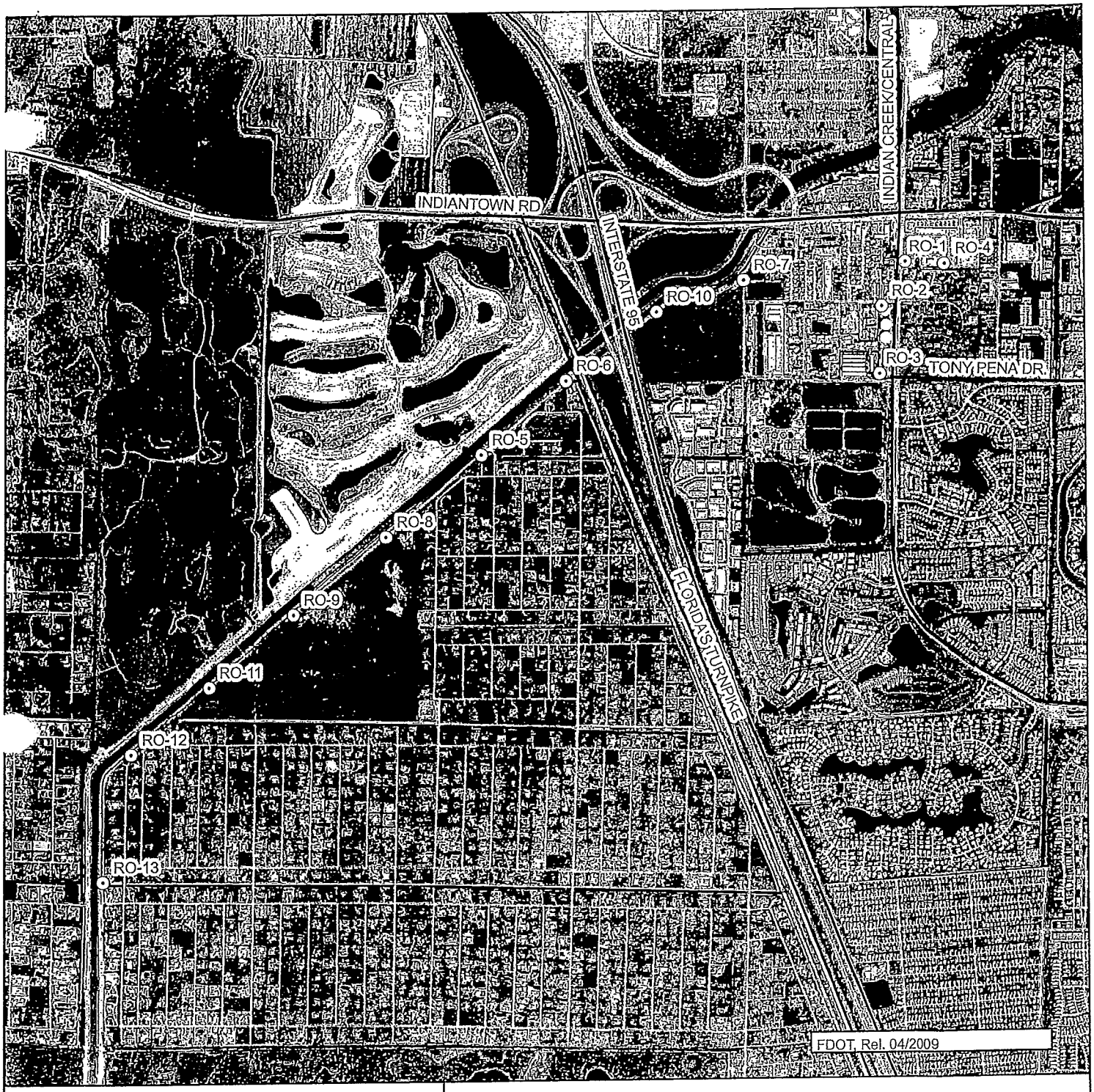
Permit Number: 50-00010-W

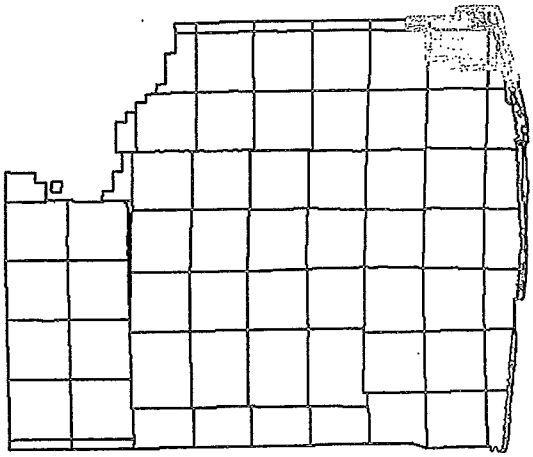
Project Name: TOWN OF JUPITER

⊙ WELL

0 0.35 0.7
Miles

Exhibit : 6





FLORIDA AQUIFER SYSTEM WELLFIELD

N

Legend

Application Number: 080627-9

Permit Number: 50-00010-W

Project Name: TOWN OF JUPITER

⊙ WELL

0 0.45 0.9
Miles

Exhibit : 7

Description Of Wells.

Application Number: 080627-9

Well ID	23531	23572	23532	23533	23534	23535
Name	1	2	3	4	5	6
Map Designator	1	2	3	4	5	6
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	8	8	8	8	10	8
Total Depth(feet)	160	147	156	165	156	122
Cased Depth(feet)	110	120	110	110	127	118
Facility Elev. (ft. NGVD)						
Screened Interval						
From	110	120	110	110	127	118
To	160	147	156	165	156	122
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	turbine	turbine	turbine	turbine	turbine	turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	0
Pump Capacity(GPM)	0	0	0	0	0	230
Year Drilled	1970	1970	1971	1973	1977	1974
Planar Location						
Source	Migrate	Migrate	Migrate	Migrate	Migrate	Migrate
Feet East	938805	938510	938655	938343	938953	938060
Feet North	945900	945920	945643	945745	945454	943670
Accounting Method	flow meter	flow meter	flow meter	flow meter	flow meter	flow meter
Use Status	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

1 _E - A

Description Of Wells.

Application Number: 080627-9

Well ID	23536	23537	23538	23539	23540	23541
Name	7	8	9	10	11	12
Map Designator	7	8	9	10	11	12
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	8	10	10	10	8	12
Total Depth(feet)	125	140	140	155	113	201
Cased Depth(feet)	118	117	121	120		130
Facility Elev. (ft. NGVD)						
Screened Interval						
From	118	117	121	120	0	130
To	125	140	140	155	0	200
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	turbine	turbine	turbine	turbine	turbine	turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	0
Pump Capacity(GPM)	300	250	330	350	330	635
Year Drilled	1974	1977	1977	1977	1978	1978
Planar Location						
Source	Migrate	Migrate	Migrate	Migrate	Migrate	Migrate
Feet East	937925	938090	937965	938110	937885	938973
Feet North	943735	944430	944635	944815	944235	943518
Accounting Method	flow meter	flow meter	flow meter	flow meter	flow meter	flow meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Water Shortage Monitoring Facility Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

Description Of Wells.

Application Number: 080627-9

Well ID	23542	23543	23544	23545	23546	13563
Name	13	14	15	16	17	18
Map Designator	13	14	15	16	17	18
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	12	12	12	12	12	12
Total Depth(feet)	200	201	185	165	165	177
Cased Depth(feet)	136	117	110	130	132	120
Facility Elev. (ft. NGVD)						
Screened Interval						
From	136	117	110	130	132	120
To	200	200	185	165	165	177
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	turbine	turbine	submersible	submersible	submersible	submersible
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	0
Pump Capacity(GPM)	430	270	325	370	550	285
Year Drilled	1981	1981	1982	1982	1982	1982
Planar Location						
Source	Migrate	Migrate	Migrate	Migrate	Migrate	Migrate
Feet East	939775	940585	940470	941470	942260	943080
Feet North	943440	943420	938202	938190	938165	938135
Accounting Method	flow meter	flow meter	flow meter	flow meter	flow meter	flow meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

1 _E - A
Description Of Wells.

Application Number: 080627-9

Well ID	23547	23548	23549	23550	23551	23552
Name	19	20	21	22	23	24
Map Designator	19	20	21	22	23	24
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16	16	16	16	12	12
Total Depth(feet)	153	148	161	153	148	148
Cased Depth(feet)	138	104	144	137	142	142
Facility Elev. (ft. NGVD)						
Screened Interval						
From	138	104	144	137	142	142
To	153	148	161	153	148	148
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	submersible	submersible	submersible	submersible	submersible	submersible
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	114	92	108	108	104	104
Pump Capacity(GPM)	385	220	190	450	520	500
Year Drilled	1986	1986	1986	1986	1987	1987
Planar Location						
Source	Migrate	Migrate	Migrate	Migrate	Migrate	Migrate
Feet East	940802	938395	938681	937674	940395	940165
Feet North	942955	940082	938080	938042	935085	932165
Accounting Method	flow meter	flow meter	flow meter	flow meter	flow meter	flow meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

LE - A

Description Of Wells.

Application Number: 080627-9

Well ID	23554	23553	23555	23556	23557	23558
Name	25	26	27	28	29	30
Map Designator	25	26	27	28	29	30
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	12	12	12	12	12	12
Total Depth(feet)	140	145	140	158	175	175
Cased Depth(feet)	138	140	135	125	130	130
Facility Elev. (ft. NGVD)						
Screened Interval						
From	138	140	135	125	130	130
To	140	145	140	158	175	175
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	submersible	submersible	submersible	submersible	submersible	submersible
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	104	104	104	104	-39	-28
Pump Capacity(GPM)	440	280	480	170	255	315
Year Drilled	1987	1987	1987	1987	1989	1989
Planar Location						
Source	Migrate	Migrate	Migrate	Migrate	Migrate	Migrate
Feet East	938605	938010	938405	937050	940660	940690
Feet North	932775	932720	934355	935095	937310	936670
Accounting Method	flow meter	flow meter	flow meter	flow meter	flow meter	flow meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

,LE - A
Description Of Wells.

Application Number: 080627-9

Well ID	27767	27768	27769	27770	27771	27772
Name	31	32	33	34	35	36
Map Designator	31	32	33	34	35	36
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	10	10	10	10	10	10
Total Depth(feet)	202	160	207	220	205	200
Cased Depth(feet)	103	105	105	120	120	120
Facility Elev. (ft. NGVD)						
Screened Interval From	103	105	105	120	120	120
To	202	160	207	220	205	200
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	submersible	submersible	submersible	submersible	submersible	submersible
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	0
Pump Capacity(GPM)	360	300	300	260	300	300
Year Drilled	1993	1993	1993	1993	1993	1993
Planar Location Source	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED
Feet East	935637	938180	936253	940030	937945	936920
Feet North	938261	936730	936911	936730	940785	940815
Accounting Method	flow meter	flow meter	flow meter	flow meter	flow meter	flow meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

Description Of Wells.

Application Number: 080627-9

Well ID	27773	27774	23559	23561	23560	23562
Name	37	38	39	41	40	42
Map Designator	37	38	39	41	40	42
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	10	10	8	8	8	8
Total Depth(feet)	205	194	116	138	131	138
Cased Depth(feet)	105	105	112	116	117	116
Facility Elev. (ft. NGVD)						
Screened Interval						
From	105	105	110	110	110	110
To	205	194	150	150	150	150
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	submersible	submersible	submersible	submersible	submersible	submersible
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0	80	80	80	80
Pump Capacity(GPM)	300	300	750	840	700	1000
Year Drilled	1993	1993	2001	2007	2007	2007
Planar Location						
Source	DIGITIZED	DIGITIZED	Migrate	Migrate	Migrate	Migrate
Feet East	939033	939600	942800	945105	942904	943934
Feet North	940096	938750	937245	935417	936129	937615
Accounting Method	flow meter	flow meter	flow meter	flow meter	flow meter	flow meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

3LE - A
Description Of Wells.

Application Number: 080627-9

Well ID	23563	23564	24661	23633	23634	27787
Name	43	44	45	46	47	48
Map Designator	43	44	45	46	47	48
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	8	8	8	8	8	8
Total Depth(feet)	140	118	141	122	132	180
Cased Depth(feet)	118	113	124	105	126	124
Facility Elev. (ft. NGVD)						
Screened Interval						
From	110	110	110	110	110	124
To	150	150	150	150	150	180
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	submersible	submersible	submersible	submersible	submersible	submersible
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	80	80	80	80	80	0
Pump Capacity(GPM)	1200	400	400	750	500	300
Year Drilled	2007	2001	2001	2001	2001	1997
Planar Location						
Source	Migrate	Migrate	Migrate	Migrate	Migrate	DIGITIZED
Feet East	944214	941940	941737	943035	942445	942400
Feet North	936695	936175	935040	934035	933531	932815
Accounting Method	flow meter	flow meter	flow meter	flow meter	flow meter	flow meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

Description Of Wells.

Application Number: 080627-9

Well ID	27788	23635	27789	27790	27791	27792
Name	49	50	51	52	53	54
Map Designator	49	50	51	52	53	54
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	8	8	8	8	8	8
Total Depth(feet)	180	131	152	142	150	142
Cased Depth(feet)	138	109	114	110	110	118
Facility Elev. (ft. NGVD)						
Screened Interval						
From	138	110	114	110	110	118
To	180	150	152	142	150	142
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	submersible	submersible	submersible	submersible	submersible	submersible
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	80	0	0	0	0
Pump Capacity(GPM)	300	400	300	300	300	300
Year Drilled	1997	2001	1997	1997	1997	1997
Planar Location						
Source	DIGITIZED	Migrate	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED
Feet East	940500	940517	943425	944305	945405	943965
Feet North	931890	933730	933200	933132	933045	932850
Accounting Method	flow meter	flow meter	flow meter	flow meter	flow meter	flow meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

;LE - A
Description Of Wells.

Application Number: 080627-9

Well ID	27793	23636	23637	23638	23639	23640
Name	55	56	57	58	59	60
Map Designator	55	56	57	58	59	60
FLUWID Number						
Well Field						
Existing/Proposed	E	P	P	P	P	P
Well Diameter(Inches)	8	20	20	20	20	20
Total Depth(feet)	143	150	150	150	150	150
Cased Depth(feet)	112	110	110	110	110	110
Facility Elev. (ft. NGVD)						
Screened Interval						
From	112	110	110	110	110	110
To	143	150	150	150	150	150
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	submersible	submersible	submersible	submersible	submersible	submersible
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	0
Pump Capacity(GPM)	300	367	367	367	367	367
Year Drilled	1997					
Planar Location						
Source	DIGITIZED	Migrate	Migrate	Migrate	Migrate	Migrate
Feet East	945578	933872	933523	933108	932750	932523
Feet North	932045	947142	947603	948145	948670	949117
Accounting Method	flow meter	flow meter	flow meter	flow meter	flow meter	unspecified
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

Description Of Wells.

Application Number: 080627-9

Well ID	23642	27581	27582	23565	23566	23567
Name	62	67	68	RO-1	RO-2	RO-3
Map Designator	62	67	68	RO-1	RO-2	RO-3
FLUWID Number						
Well Field						
Existing/Proposed	P	E	E	E	E	E
Well Diameter(Inches)	20	8	8	14	16	16
Total Depth(feet)	150	134	136	1500	1673	1615
Cased Depth(feet)	110	106	116	1073	1032	1017
Facility Elev. (ft. NGVD)						
Screened Interval						
From	110	110	110	0	0	0
To	150	150	150	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	submersible	submersible	submersible	none	centrifugal	centrifugal
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0	0	-84	0	0
Pump Capacity(GPM)	367	400	1000	0	2000	2000
Year Drilled		2001	2001	1987	1988	1988
Planar Location						
Source	Migrate	Migrate	Migrate	Migrate	Migrate	Migrate
Feet East	934080	940495	940455	938328	937921	937879
Feet North	948913	930750	929350	945567	944831	943694
Accounting Method	flow meter	unspecified	flow meter	none	flow meter	flow meter
Use Status	Primary	Primary	Primary	Abandoned	Secondary	Secondary
Water Use Type	Public Water Supply	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply	Public Water Supply Monitor	Public Water Supply Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System

Exhibit No: 8

LE - A

Description Of Wells.

Application Number: 080627-9

Well ID	23568	27794	27795	27796	27797	27798
Name	RO-4	RO-5	RO-6	RO-7	RO-8	RO-9
Map Designator	RO-4	RO-5	RO-6	RO-7	RO-8	RO-9
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16	16	16	16	16	16
Total Depth(feet)	1373	1665	1660	1662	1540	1520
Cased Depth(feet)	1065	1451	1465	1330	1295	1235
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	submersible	centrifugal	centrifugal	centrifugal	centrifugal	centrifugal
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	-104	0	0	0	0	0
Pump Capacity(GPM)	2040	1100	1300	2000	1500	1500
Year Drilled	1989	1994	1994	1994	1996	1996
Planar Location						
Source	Migrate	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED	DIGITIZED
Feet East	938951	931190	932609	935590	929599	928061
Feet North	945529	942432	943641	945291	941090	939806
Accounting Method	flow meter	flow meter	flow meter	flow meter	flow meter	flow meter
Use Status	Secondary	Secondary	Secondary	Secondary	Secondary	Secondary
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor
Aquifer	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System

Exhibit No: 8

Description Of Wells.

Application Number: 080627-9

Well ID	27799	23569	23570	23571	135865	135908
Name	RO-10	RO-11	RO-12	RO-13	JP-C	JPL-1
Map Designator	RO-10	RO-11	RO-12	RO-13	C	L-1
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16	16	16	16		
Total Depth(feet)	1617	1500	1500	1500	23	145
Cased Depth(feet)	1224	1050	1050	1050	20	
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0		
To	0	0	0	0		
Pumped Or Flowing	P	P	P	P		
Pump Type	centrifugal	submersible	submersible	submersible	none	none
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0	0	0		
Pump Capacity(GPM)	1500	1000	1000	1000	0	0
Year Drilled	1996					
Planar Location						
Source	DIGITIZED	Migrate	Migrate	Migrate		
Feet East	934137	926631	925331	924872	938863	939745
Feet North	944779	938613	937513	935407	947850	943909
Accounting Method	flow meter	flow meter	flow meter	flow meter	none	none
Use Status	Secondary	Secondary	Secondary	Secondary	Monitor	Monitor
Water Use Type	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Public Water Supply Monitor	Monitor	Monitor
Aquifer	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

T .E - A

Description Of Wells.

Application Number: 080627-9

Well ID	135938	135940	135941	135944	135945	135946
Name	JP711(PB711)	JPB	JPK1	JPK2	JPK3	JPL2
Map Designator	JP711	B	K1	K2	K3	L2
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)						
Total Depth(feet)	97	132	160	63	23	63
Cased Depth(feet)				60	20	60
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing						
Pump Type	none	none	none	none	none	none
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source						
Feet East	935585	938795	938806	938817	938875	939883
Feet North	940994	947769	944024	943783	943668	943875
Accounting Method	none	none	none	none	none	none
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

LE - A

Description Of Wells.

Application Number: 080627-9

Well ID	135947	135948	135949	136087	150513	150514
Name	JPL3	JPQ	JPR	JPN	JPJVL (Jupiter Village L	JPC18U(Jupiter Canal C
Map Designator	L3	Q	R	N		
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)				2		
Total Depth(feet)	23	198	23	145		
Cased Depth(feet)	20	185	20			
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing						
Pump Type	none	none	none	none	none	none
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source						
Feet East	939963	938726	938760	940536		
Feet North	943829	945146	945215	943439		
Accounting Method	none	none	none	none	none	none
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

TABLE - A
Description Of Wells.

Application Number: 080627-9

Well ID	150515	150516	150517	150518	150519	150520
Name	JPC18D(Jupiter Canal	CJPY	JPX	JPW	JPV	JPU
Map Designator						
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)		2	2	2	2	2
Total Depth(feet)		210	23	252	23	189
Cased Depth(feet)		189	20	231	20	168
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing						
Pump Type	none	none	none	none	none	none
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location Source						
Feet East		938875	944410	943639	938817	938806
Feet North		947873	952314	952185	947895	947781
Accounting Method	none	none	none	none	none	none
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

.BLE - A

Description Of Wells.

Application Number: 080627-9

Well ID	150521	150522	150523	150524	150526	150527
Name	JPT	JPS	PB928	PB925	JPZ	PB927(GG)
Map Designator						
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	2	2	2	2	2	2
Total Depth(feet)	23	282	26	15	160	13
Cased Depth(feet)	20	273				
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing						
Pump Type	none	none	none	none	none	none
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source						
Feet East	940799	940708	939784	942868	942504	939913
Feet North	946103	946108	935737	943447	938832	942291
Accounting Method	none	none	none	none	none	none
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

.BLE - A
Description Of Wells.

Application Number: 080627-9

Well ID	150528	177538	224579	224608
Name	PB926(FF)	JPS	CA-S	CA-N
Map Designator				
FLUWID Number				
Well Field				
Existing/Proposed	E	E	E	E
Well Diameter(Inches)	2	2	2	2
Total Depth(feet)	115	282		
Cased Depth(feet)		273		
Facility Elev. (ft. NGVD)				
Screened Interval				
From				
To				
Pumped Or Flowing				
Pump Type	none	none	none	none
Pump Int. Elev.				
Feet (NGVD)				
Feet (BLS)				
Pump Capacity(GPM)	0	0	0	0
Year Drilled				
Planar Location				
Source				
Feet East	941069			
Feet North	941006			
Accounting Method	none	none	none	none
Use Status	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor
Aquifer	Surficial Aquifer System	Water Shortage Monitoring Facility Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 8

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report

Quarterly Report of Withdrawals From Wells and Surface Water Pumps

This Report must be completed and submitted to the District at the address shown as required by your Permit

Permit Number 50-00010-W
Project Name TOWN OF JUPITER
Issued to Town of Jupiter Utilities
Address 210 Military Trail
City, State, Zip Jupiter FL 33458
Phone / Fax No 561-741-2602
E-mail paulj@jupiter.fl.us

Return To:
South Florida Water Management District
Attn: Water Use Regulation Division (4320)
PO Box 24680
West Palm Beach, FL - 33416 - 4680

Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: ____ Year: _____	Month: ____ Year: _____	Month: ____ Year: _____	Accounting Method	Date Last Calibrated
Monthly (S) RO plant output	2					
Surficial Aquifer System Monthly (S) withdrawal	7					
permit (SIMPLE) monthly pumpage	50-00010-W					
wellfield 3 Monthly (SIMPLE) withdrawal	100374					
wellfield 4(SIMPLE) monthly withdrawal	100375					
wellfield 2(SIMPLE) monthly withdrawal	100373					

Name of Person Completing Form

Signature:_____ Date:_____

Form 0188-QMON (08/03)

Printed: 08/23/2010

TOWN OF JUPITER
FINISHED WATER DEMANDS

Past Water Use

Year	Jupiter Finished Water (MGY)	Finished Water to Tequesta (MGY)	Jupiter w/o Tequesta (MGY)	Jupiter Population	Per Capita (w/o Tequesta delivery)	Maximum Month Use (MG)	Maximum Month Peaking Factor
2004	6,190.98	490.96	5,700.02	66,771	234	571	1.20
2005	6,180.98	490.42	5,690.56	68,602	227	590	1.24
2006	6,640.99	528.41	6,112.58	69,368	241	541	1.06
2007	5,324.00	269.42	5,054.58	70,134	197	589	1.40
2008	4,732.96	0	4,732.96	70,900	183	477	1.21
2009	5,054.16	0	5,054.16	72,432	191	457	1.09

Projected Water Use

Year	Total Jupiter Finished Water (MGY)	Jupiter Population	Per Capita	Maximum Month Demand (MG)	Maximum Month Peaking Factor
2030	7,368	97,053	208^	755	1.23*

^ Projected Per Capita Use Rate is the average of years 2005 - 2009 per Section 2.6.3 of the Basis of Review
* Projected Maximum Month Peaking Factor is the average of years 2007 - 2009 per Section 2.6.4 of the Basis of Review

EXHIBIT 9A

Calculation of Allocation - 2030

85 percent – Efficiency of nanofiltration plant, surficial aquifer system (SAS)

75 percent – Efficiency of reverse osmosis plant, Floridan aquifer (FAS)

6,862 MG – Requested SAS Average Annual Allocation (Raw Water)

617 MGM – Requested SAS Maximum Month Allocation (Raw Water)

Annual Allocation

7,368 MG: 2030 Total Average Annual Demand (Finished Water)

6,862 MG x .85 = 5,832.7 MG (SAS Average Annual Finished Water Demand)

7,368 MG - 5,832.7 MG = 1,535.3 MG (FAS Annual Finished Water Demand)

1,535.3 MG / .75 = 2,047 FAS Average Annual Allocation (Raw)

6,862 MG + 2,047 MG = 8,909 MG Total Annual Average Allocation (Raw)

Maximum Month Allocation

7,368 MG / 12 x 1.23 (Exhibit 9A) = 755 MGM Total Max Month Demand (Finished)

617 MGM x .85 = 524 MGM (SAS Max Month Finished Water Demand)

755 MGM - 524MGM = 231 MGM (FAS Max Month Finished Water Demand)

231 MGM / .75 = 308 MGM FAS Max Raw Water Demand

617 MGM + 308 MGM = 925 MGM Total Max Month Allocation (Raw)

EXHIBIT 9B

TABLE H
Projected Water Use

Service Area (Table F & G) Town of Jupiter **Treatment Plant (Table I)** SAS/FAS

Type of Unit or Water Use Type		Residential	Commercial	Total GPD	Total MGD	Total MGY
Year	(U)	70,900	12,762			
2009	(P)	168	350			
	(U X P)	12,039,888	4,514,958	16,554,846	16.55	6,043
Year	(U)	72,432	13,038			
2010	(P)	168	350			
	(U X P)	12,168,576	4,563,216	16,731,792	16.73	6,107
Year	(U)	74,092	13,335			
2011	(P)	168	350			
	(U X P)	12,447,456	4,667,254	17,114,710	17.11	6,247
Year	(U)	75,751	13,636			
2012	(P)	168	350			
	(U X P)	12,726,168	4,772,606	17,498,774	17.50	6,387
Year	(U)	77,411	13,937			
2013	(P)	168	350			
	(U X P)	13,005,048	4,877,787	17,882,835	17.88	6,527
Year	(U)	79,070	14,230			
2014	(P)	168	350			
	(U X P)	13,283,760	4,980,400	18,264,160	18.26	6,666
Year	(U)	80,730	14,531			
2015	(P)	168	350			
	(U X P)	13,562,640	5,085,990	18,648,630	18.65	6,807
Year	(U)	82,231	14,802			
2016	(P)	168	350			
	(U X P)	13,814,741	5,180,528	18,995,269	19.00	6,933
Year	(U)	83,731	15,072			
2017	(P)	168	350			
	(U X P)	14,066,842	5,275,066	19,341,907	19.34	7,060
Year	(U)	85,232	15,342			
2018	(P)	168	350			
	(U X P)	14,318,942	5,369,603	19,688,546	19.69	7,186
Year	(U)	86,732	15,612			
2019	(P)	168	350			
	(U X P)	14,571,043	5,464,141	20,035,184	20.04	7,313
Year	(U)	88,233	15,882			
2020	(P)	168	350			
	(U X P)	14,823,144	5,558,679	20,381,823	20.38	7,439
Year	(U)	88,454	15,922			
2021	(P)	168	350			
	(U X P)	14,860,238	5,572,589	20,432,828	20.43	7,458

Exhibit 10

TABLE H
Projected Water Use

Service Area (Table F & G) Town of Jupiter **Treatment Plant (Table I)** SAS/FAS

Type of Unit or Water Use Type		Residential	Commercial	Total GPD	Total MGD	Total MGY
Year	(U)	88,675	15,961			
2022	(P)	168	350			
	(U X P)	14,897,333	5,586,500	20,483,833	20.48	7,477
Year	(U)	88,895	16,001			
2023	(P)	168	350			
	(U X P)	14,934,427	5,600,410	20,534,837	20.53	7,495
Year	(U)	89,116	16,041			
2024	(P)	168	350			
	(U X P)	14,971,522	5,614,321	20,585,842	20.59	7,514
Year	(U)	89,337	16,081			
2025	(P)	168	350			
	(U X P)	15,008,616	5,628,231	20,636,847	20.64	7,532

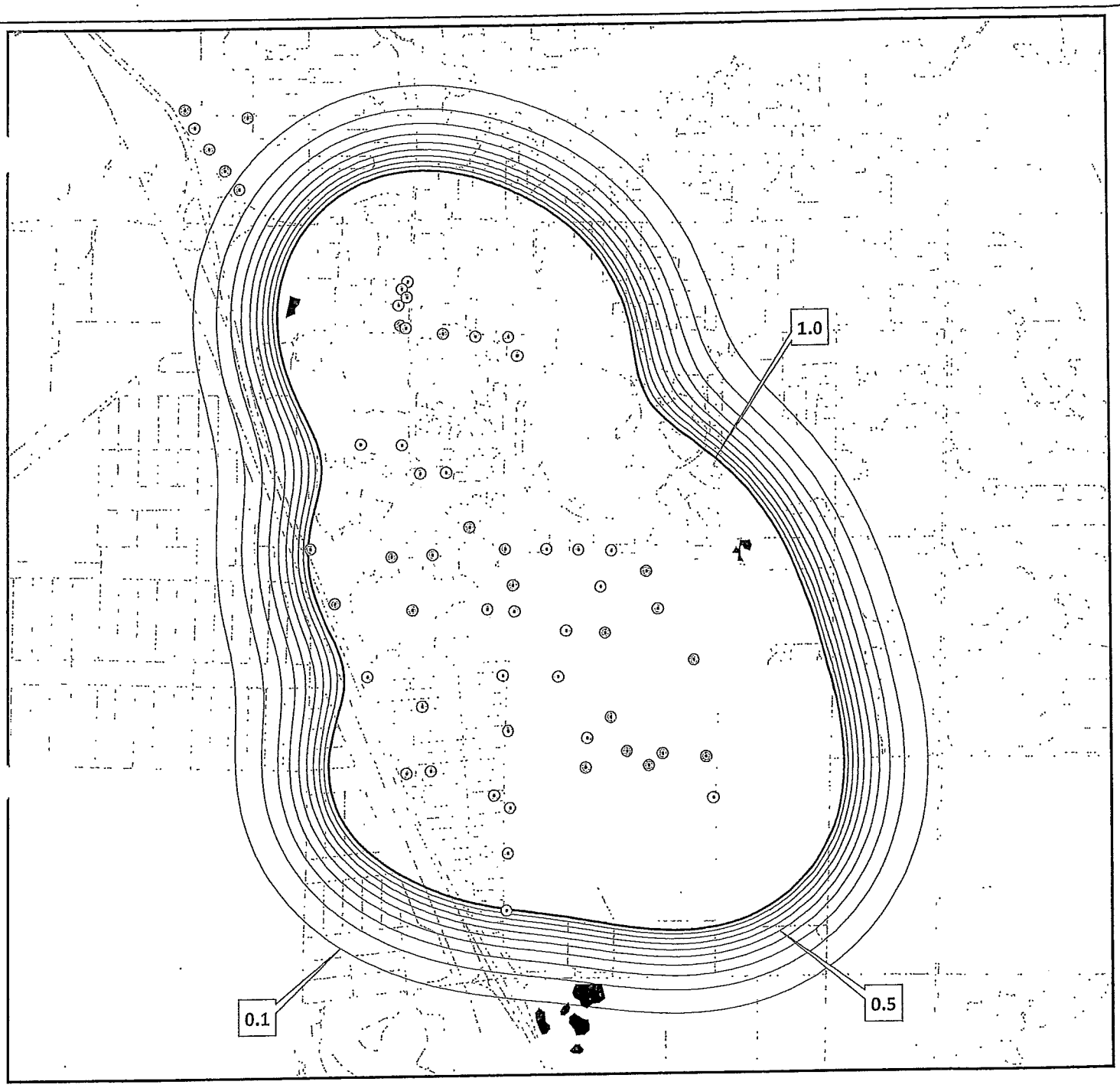
U = Number of Units
P = Per-unit water demand
U x P = Total water demand

Exhibit 10

Table 1
Town of Jupiter
Wellfield Operating Scenarios

Wellfield	Well	Status	Capacity gpm	A2a Pumping Rate gpm	A2c Pumping Rate gpm	A2d Pumping Rate gpm	B Pumping Rate gpm	C Pumping Rate gpm
2	6	Operational	300	300	300		286	163
2	7	Operational	300	300	300	300	286	163
2	8	Operational	300	300	300		286	163
2	9	Operational	300	300	300		286	163
2	10	Out of Service	300			300	286	163
2	11	Out of Service	300				286	163
2	12	Operational	700	700	700	700	667	381
2	13	Operational	350	350	350	350	333	190
2	14	Operational	350	350	350		333	190
2	15	Operational	350	350	350		333	190
2	16	Operational	430	430	430		410	234
2	17	Operational	420	420			400	229
2	18	Operational	300				286	163
2	19	Operational	400	400	400		381	218
2	20	Operational	300		300		286	163
2	21	Operational	350	350	350	350	333	190
2	22	Operational	350	350	350	350	333	190
2	31	Out of Service	300				286	163
2	35	Operational	260		260		248	141
2	36	Operational	250		250		238	136
2	37	Operational	300		300		286	163
2	38	Operational	300		300		286	163
3	23	Out of Service	300				145	163
3	24	Operational	500	500	500	500	241	272
3	25	Operational	280		280	280	135	152
3	26	Operational	360	360	360	360	173	196
3	27	Out of Service	300			300	145	163
3	28	Operational	300		300	300	145	163
3	29	Operational	260		260	260	125	141
3	30	Operational	300		300	300	145	163
3	32	Operational	300		300	300	145	163
3	33	Operational	300		300	300	145	163
3	34	Out of Service	300			300	145	163
3	39	No Pump	750	750	750	750	361	408
3	40	No Pump	700	400	200	300	325	300
3	41	No Pump	840	400	200	325	350	350
3	42	No Pump	1000	500	250	400	450	550
3	43	No Pump	1200	600	300	500	550	650
3	44	No Pump	400	400		400	193	218
3	45	No Pump	400	400		400	193	218
3	46	No Pump	750	750	750	750	361	408
3	47	No Pump	500	500		500	241	272
3	48	Out of Service	300			300	145	163
3	49	Operational	300		300	300	145	163
3	50	Operational	400	400	400	400	193	218
3	51	Operational	600	600	600	600	289	327
3	52	Operational	700	700	700	700	337	381
3	53	Operational	500	500	500	500	241	272
3	54	Operational	400	400	400	400	193	218
3	55	Operational	900	750		750	434	490
3	67	Operational	500					
3	68	Operational	900					
4	56	Proposed	367					367
4	57	Proposed	367					367
4	58	Proposed	367					367
4	59	Proposed	367					367
4	60	Proposed	367					367
4	62	Proposed	367					367
Wellfield 2		gpm	7510	4900	5890	2350	7153	4087
		mgd	10.81	7.06	8.48	3.38	10.30	5.89
Wellfield 3		gpm	15540	8910	7950	11475	6684	7510
		mgd	22.38	12.83	11.45	16.52	9.63	10.81
Wellfield 4		gpm	2202	0	0	0	0	2202
		mgd	3.17	0.00	0.00	0.00	0.00	3.17
Total		gpm	23050	13810	13841	13825	13837	11597
		mgd	36.36	19.9	19.9	19.9	19.9	19.9

Exhibit 11



Mitigated Wetlands

TOJ Productin Well

1-ft Drawdown Contour

0.1-ft Drawdown Contour

0 2,000 4,000 6,000 8,000 Feet

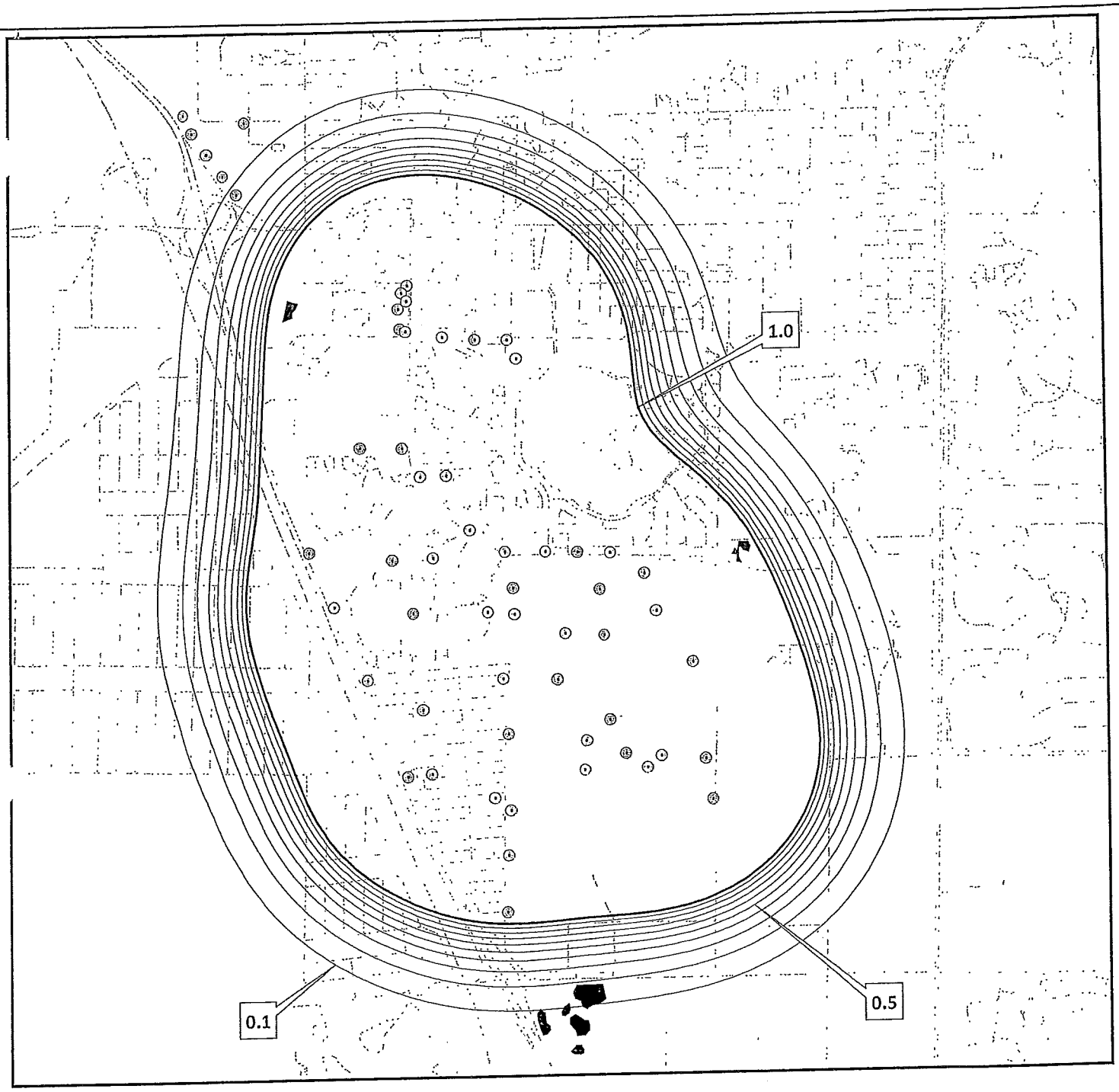
N W E S

Town of Jupiter
Operating Scenario A2a Drawdown

Exhibit 12

JLA Geosciences

Figure A



Mitigated Wetlands

TOJ Productin Well

1-ft Drawdown Contour

0.1-ft Drawdown Contour

0 2,000 4,000 6,000 8,000 Feet

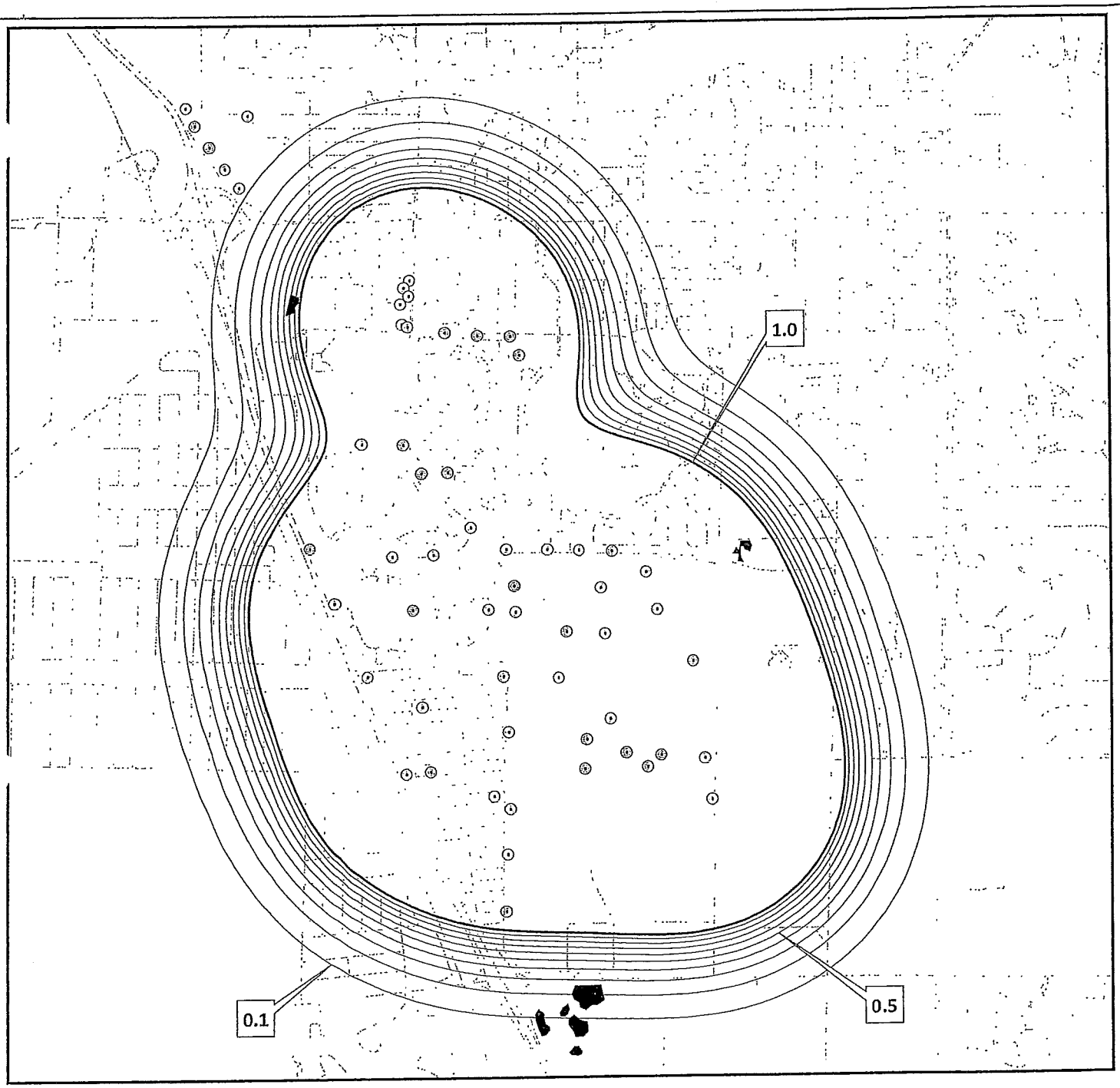
N W E S

Town of Jupiter
Operating Scenario A2c Drawdown

Exhibit 12

JLA Geosciences

Figure B



Mitigated Wetlands

TOJ Productin Well

1-ft Drawdown Contour

0.1-ft Drawdown Contour

0 2,000 4,000 6,000 8,000 Feet

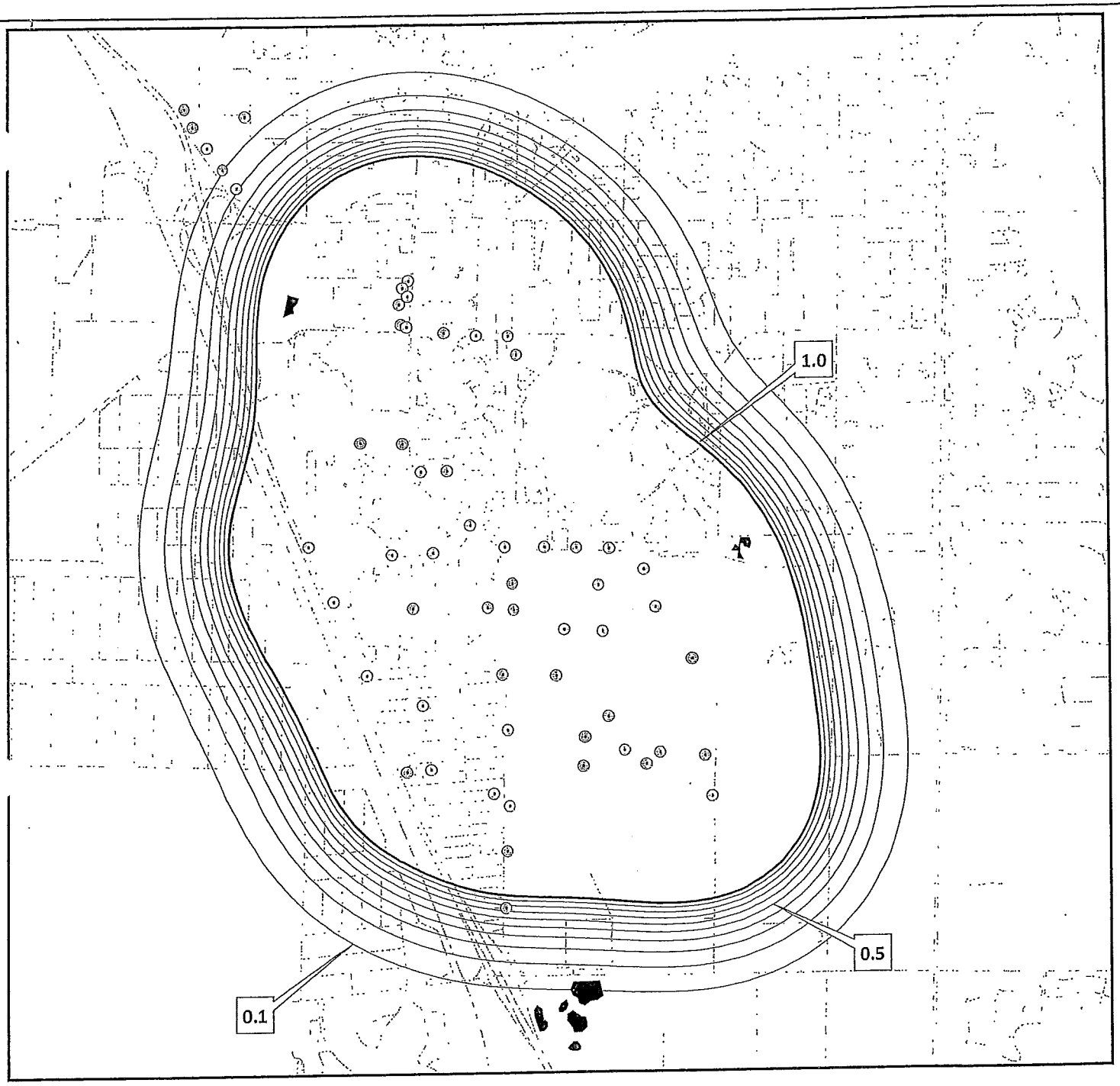
N W E S

Town of Jupiter
Operating Scenario A2d Drawdown

Exhibit 12

JLA Geosciences

Figure C



Mitigated Wetlands

TOJ Productin Well

1-ft Drawdown Contour

0.1-ft Drawdown Contour

0 2,000 4,000 6,000 8,000 Feet

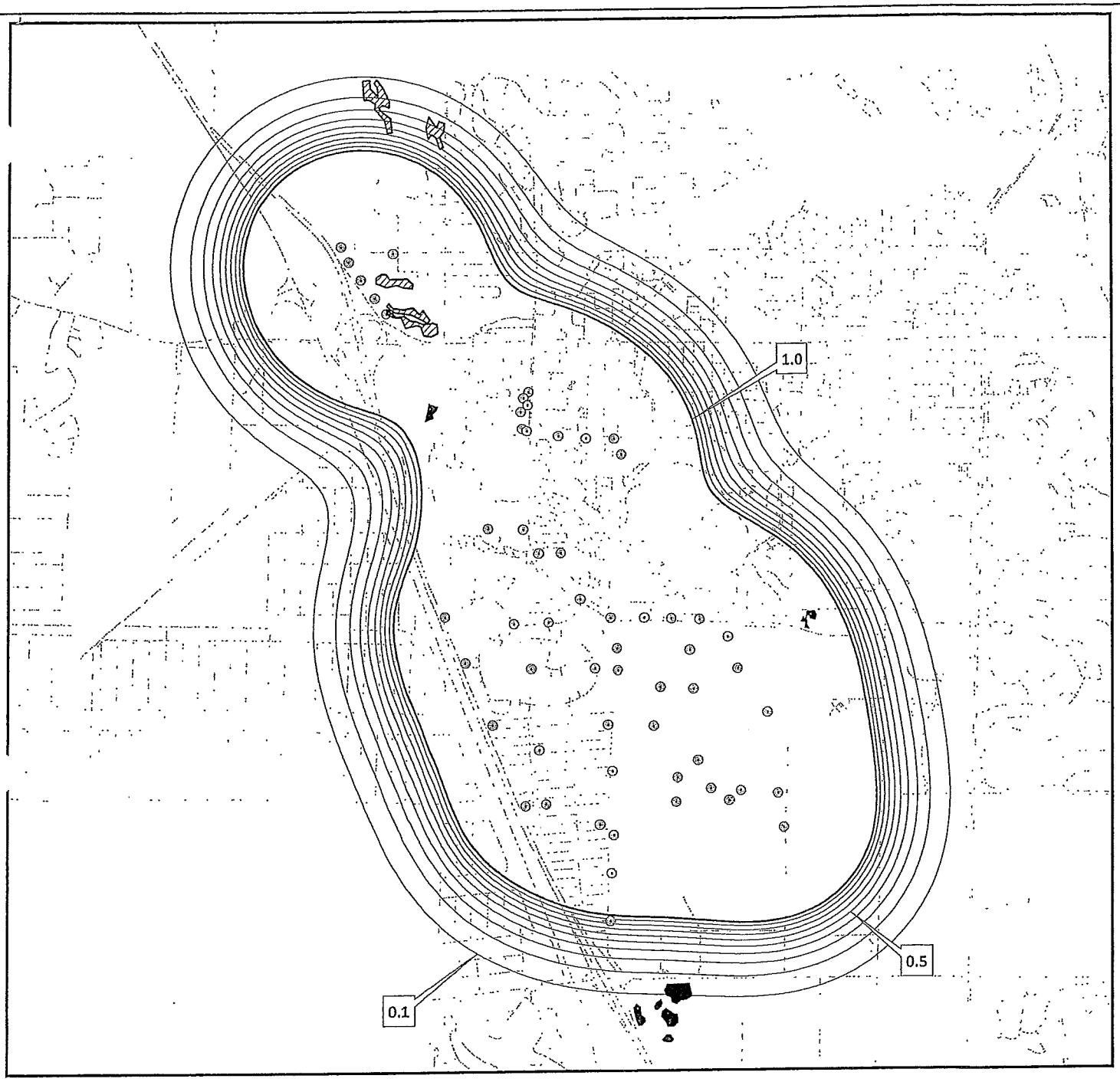
N W E S

Town of Jupiter
Operating Scenario B Drawdown

Exhibit 12

JLA Geosciences

Figure D



Mitigated Wetlands

Future Mitigation

TOJ Productin Well

1-ft Drawdown Contour

0.1-ft Drawdown Contour

0 4,000 8,000 Feet

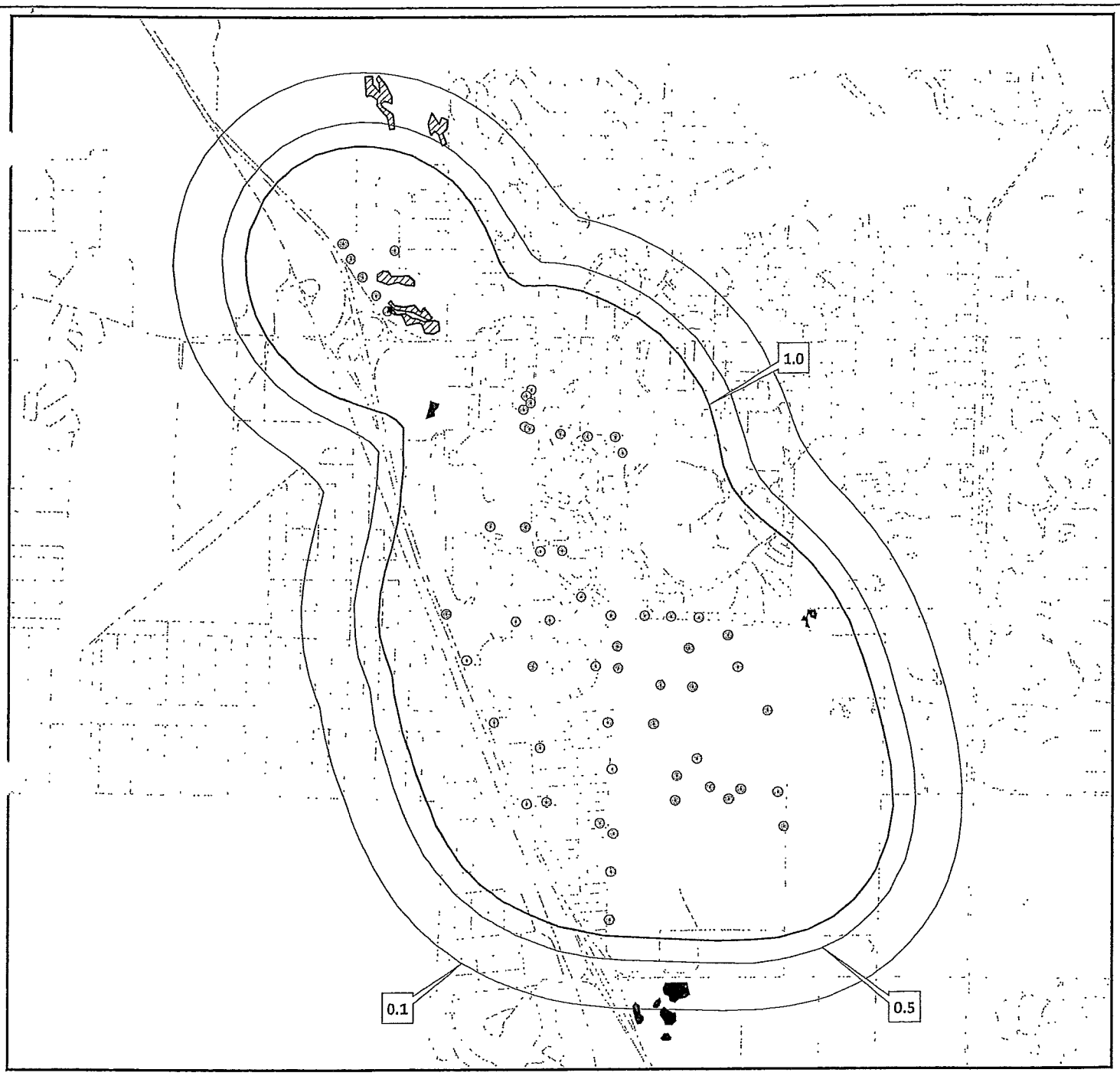
N W E S

Town of Jupiter
Operating Scenario C Drawdown

Exhibit 12

JLA Geosciences

Figure E



Mitigated Wetlands

Future Mitigation

TOJ Productin Well

1-ft Drawdown Contour

0.5-ft Drawdown Contour

0.1-ft Drawdown Contour

0 4,000 8,000 Feet

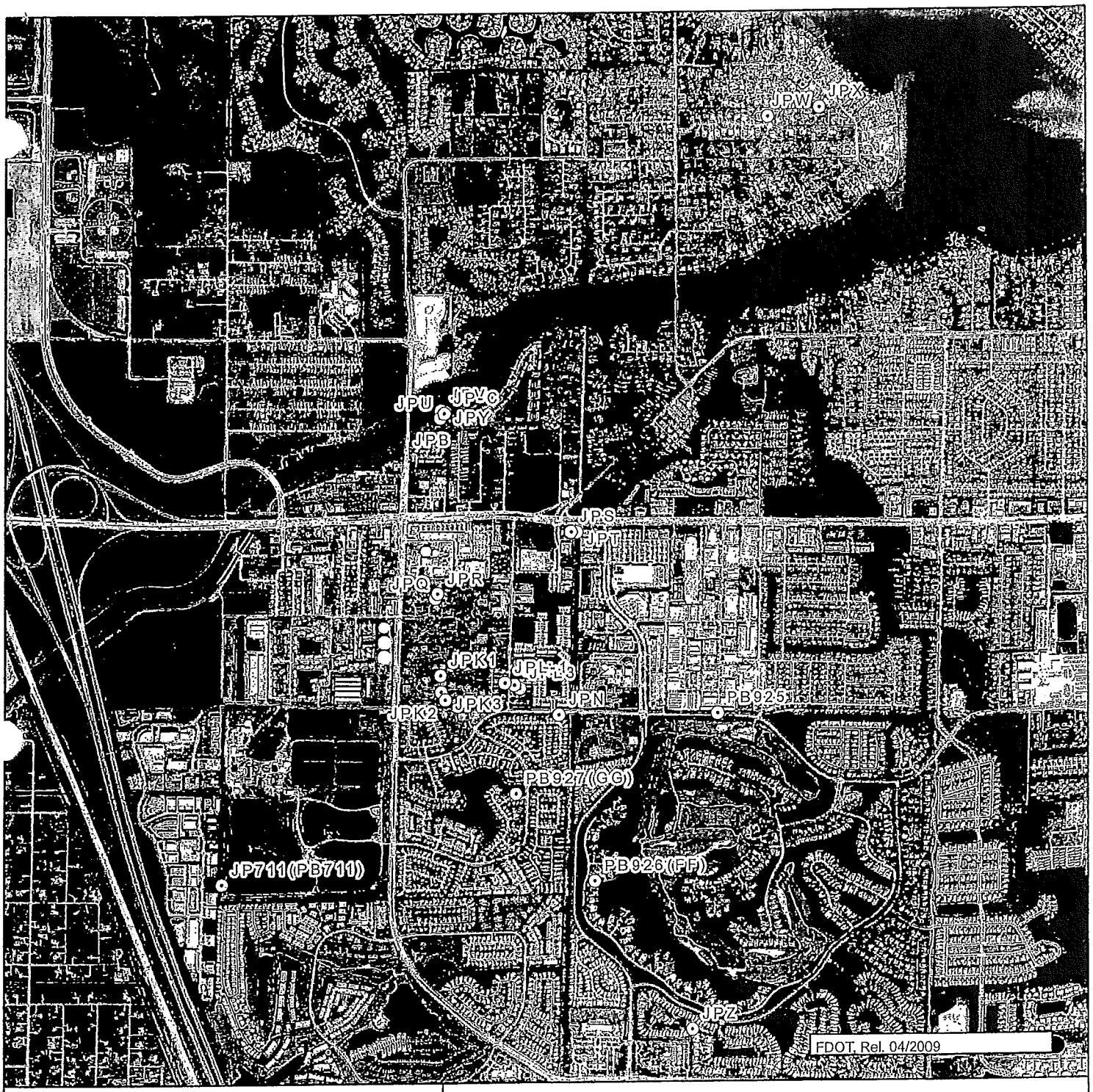
N W E S

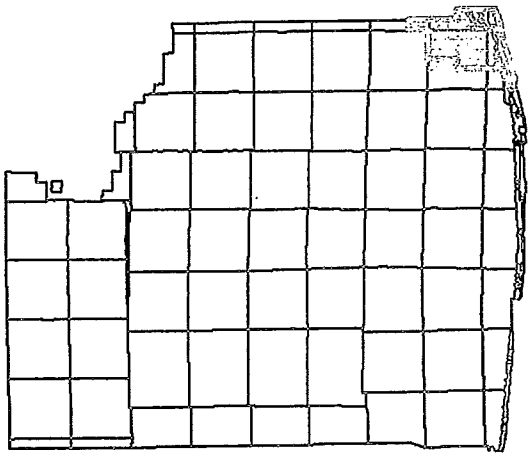
Town of Jupiter
All Operating Scenarios Drawdown

Exhibit 12

JLA Geosciences

Figure F





MONITOR WELLS

N

Legend

Application Number: 080627-9

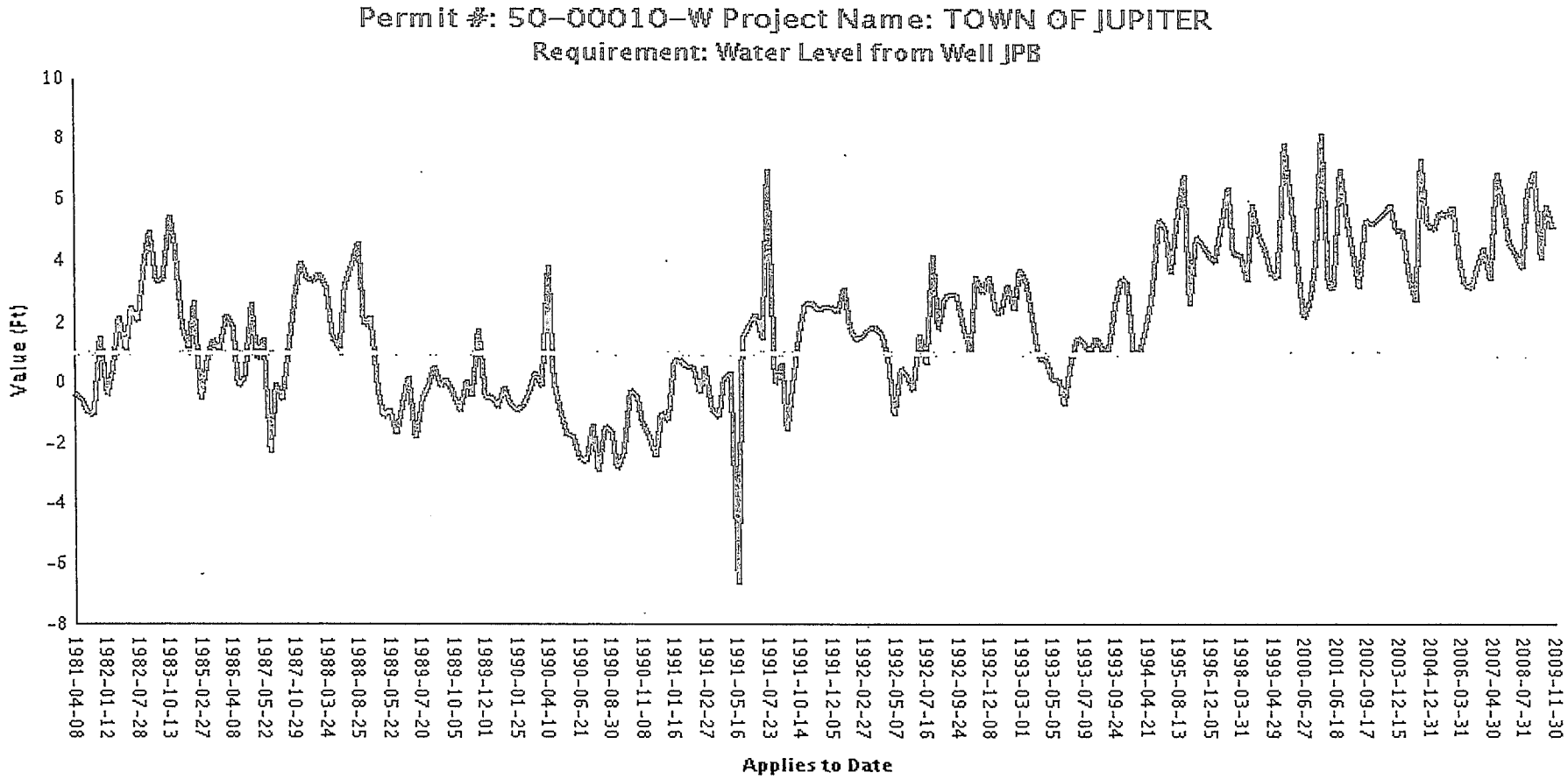
Permit Number: 50-00010-W

Project Name: TOWN OF JUPITER

⊙ WELL

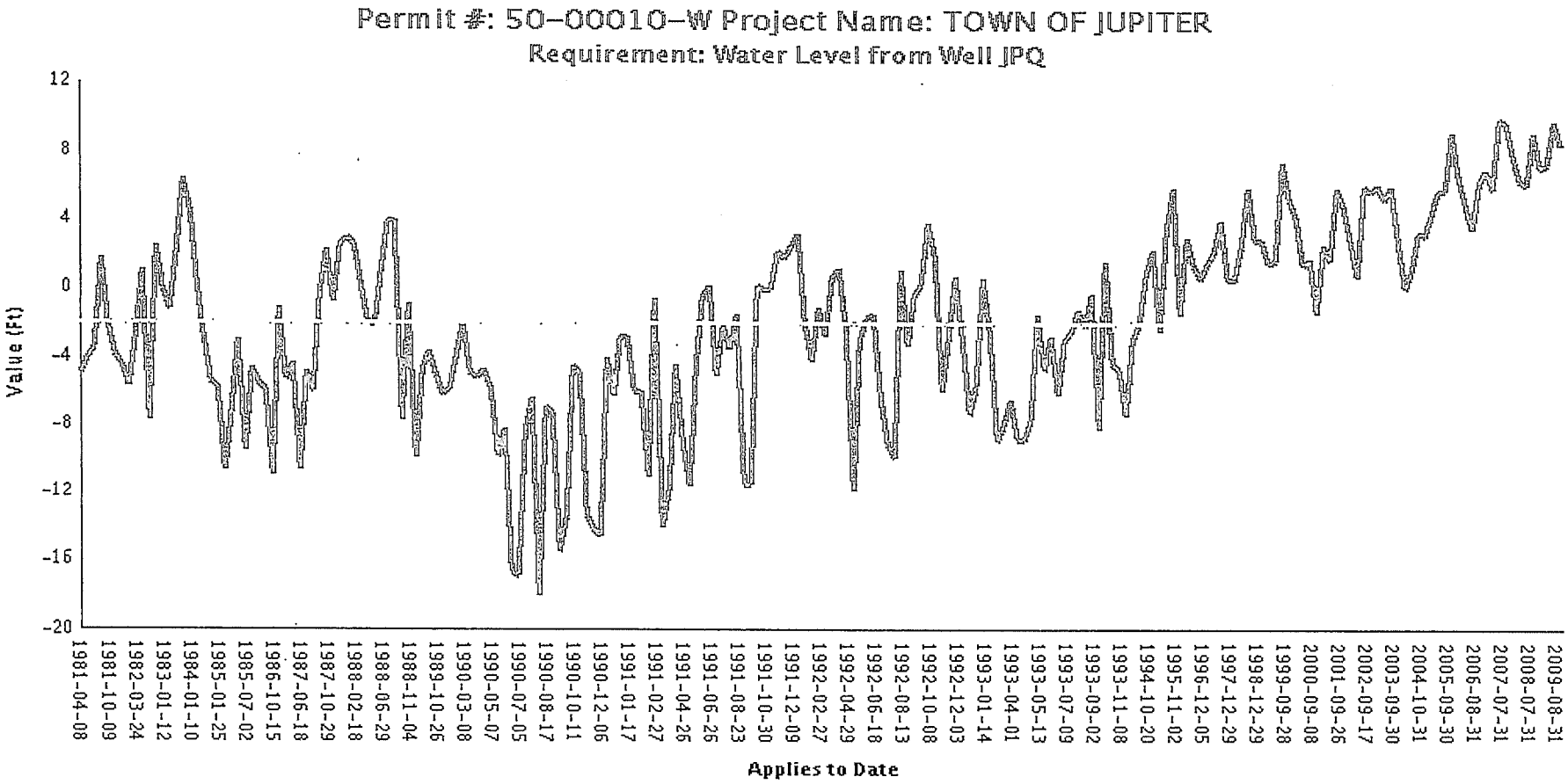
0 0.35 0.7
Miles

Exhibit : 13



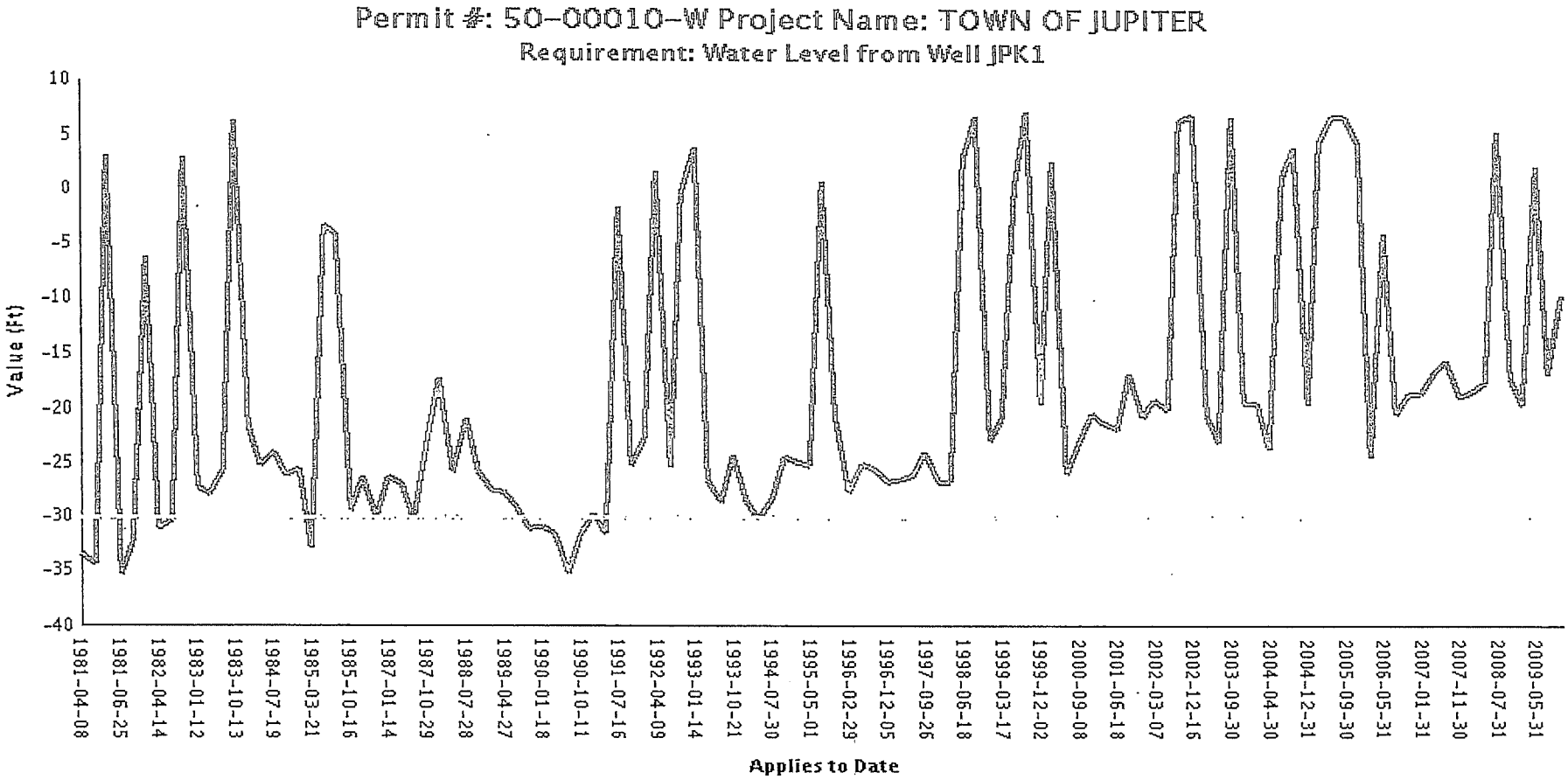
Spec 1: High Value 1 Ft

Exhibit 14



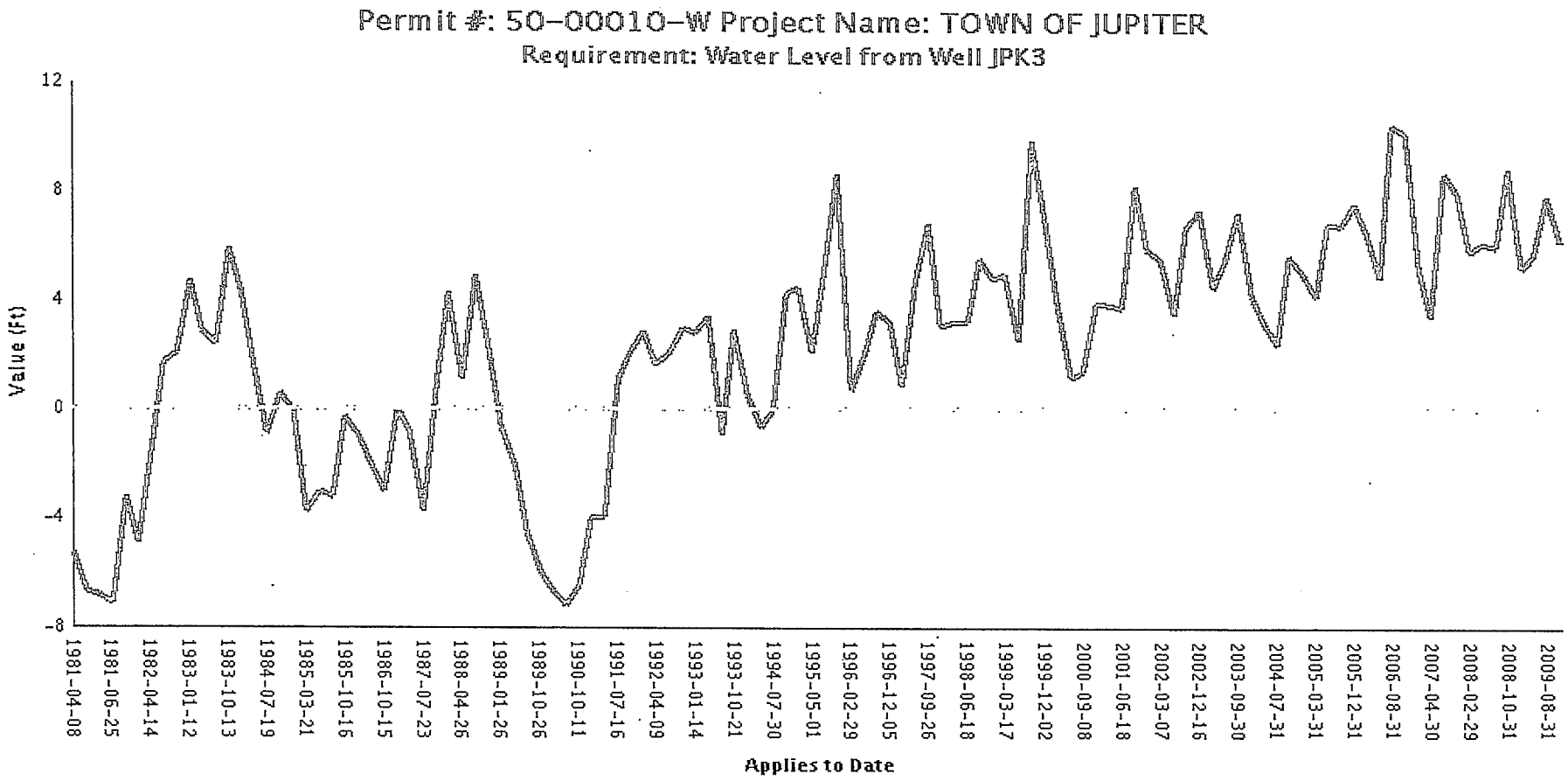
Spec 1: High Value -2 Ft

Exhibit 14



Spec 1: High Value -30 Ft

Exhibit 14



Spec 1: High Value 0 Ft

Exhibit 14

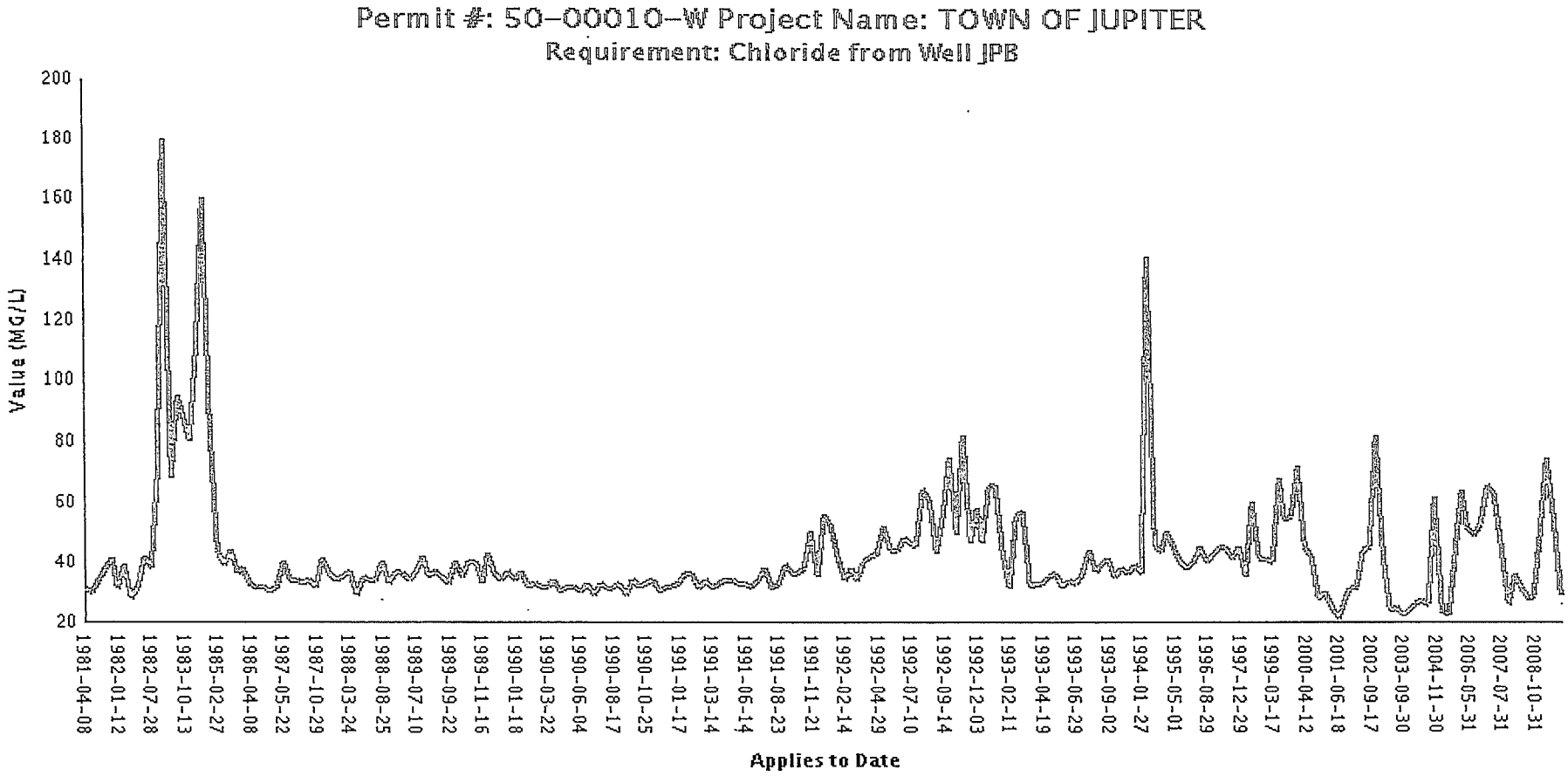

Permit #: 50-00010-W Project Name: TOWN OF JUPITER
Requirement: Chloride from Well JPB
Value (MG/L)
200
180
160
140
120
100
80
60
40
20
1981-04-08
1982-01-12
1982-07-28
1983-10-13
1985-02-27
1986-04-08
1987-05-22
1987-10-29
1988-03-24
1988-08-25
1989-07-10
1989-09-22
1989-11-16
1990-01-18
1990-03-22
1990-06-04
1990-08-17
1990-10-25
1991-01-17
1991-03-14
1991-06-14
1991-08-23
1991-11-21
1992-02-14
1992-04-29
1992-07-10
1992-09-14
1992-12-03
1993-02-11
1993-04-19
1993-06-29
1993-09-02
1994-01-27
1995-05-01
1996-08-29
1997-12-29
1999-03-17
2000-04-12
2001-06-18
2002-09-17
2003-09-30
2004-11-30
2006-05-31
2007-07-31
2008-10-31
Applies to Date

Exhibit 15

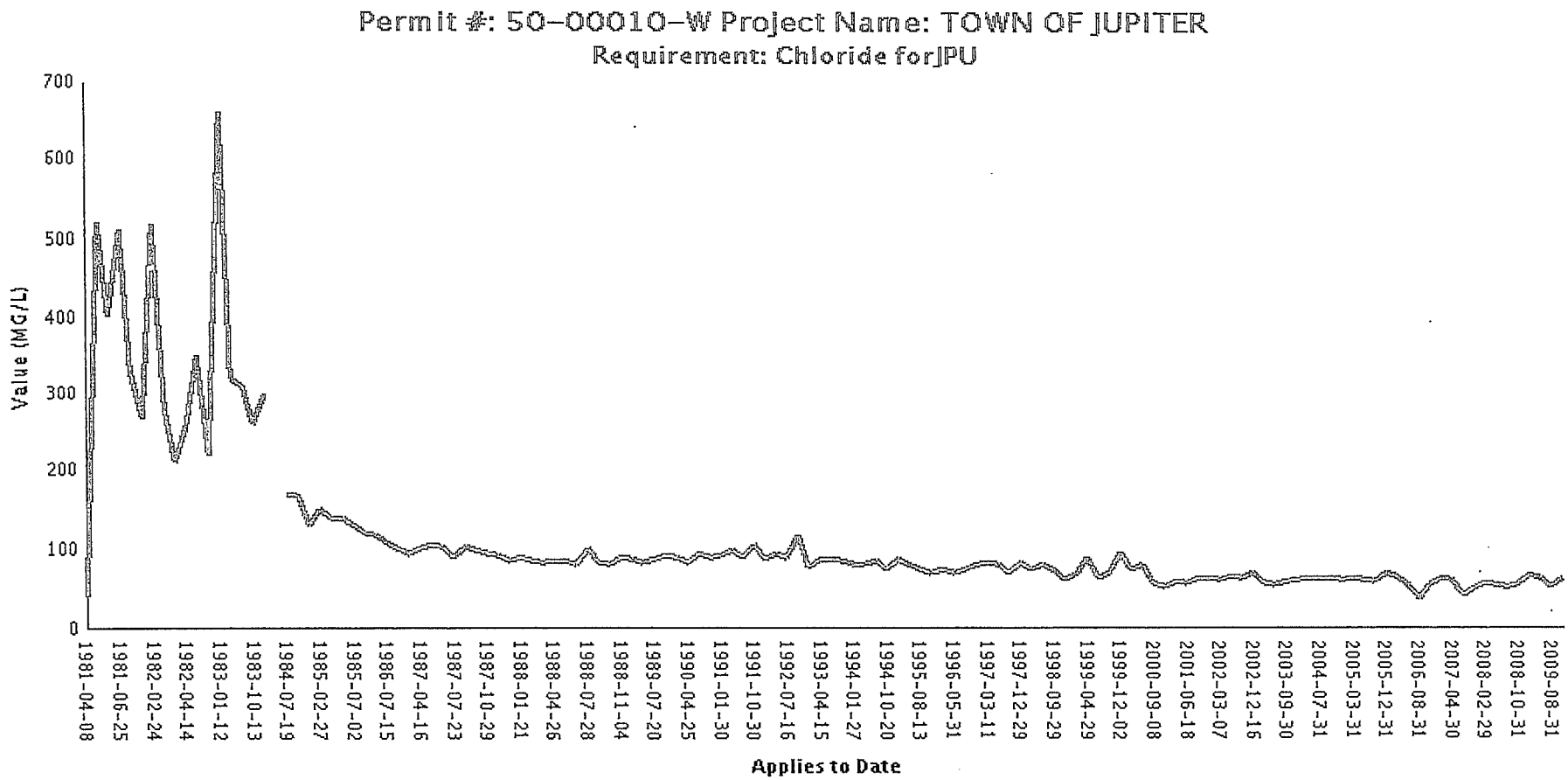

Permit #: 50-00010-W Project Name: TOWN OF JUPITER
Requirement: Chloride forJPU
Value (MG/L)
700
600
500
400
300
200
100
0
1981-04-08
1981-06-25
1982-02-24
1982-04-14
1983-01-12
1983-10-13
1984-07-19
1985-02-27
1985-07-02
1986-07-15
1987-04-16
1987-07-23
1987-10-29
1988-01-21
1988-04-26
1988-07-28
1988-11-04
1989-07-20
1990-04-25
1991-01-30
1991-10-30
1992-07-16
1993-04-15
1994-01-27
1994-10-20
1995-08-13
1996-05-31
1997-03-11
1997-12-29
1998-09-29
1999-04-29
1999-12-02
2000-09-08
2001-06-18
2002-03-07
2002-12-16
2003-09-30
2004-07-31
2005-03-31
2005-12-31
2006-08-31
2007-04-30
2008-02-29
2008-10-31
2009-08-31
Applies to Date

Exhibit 15

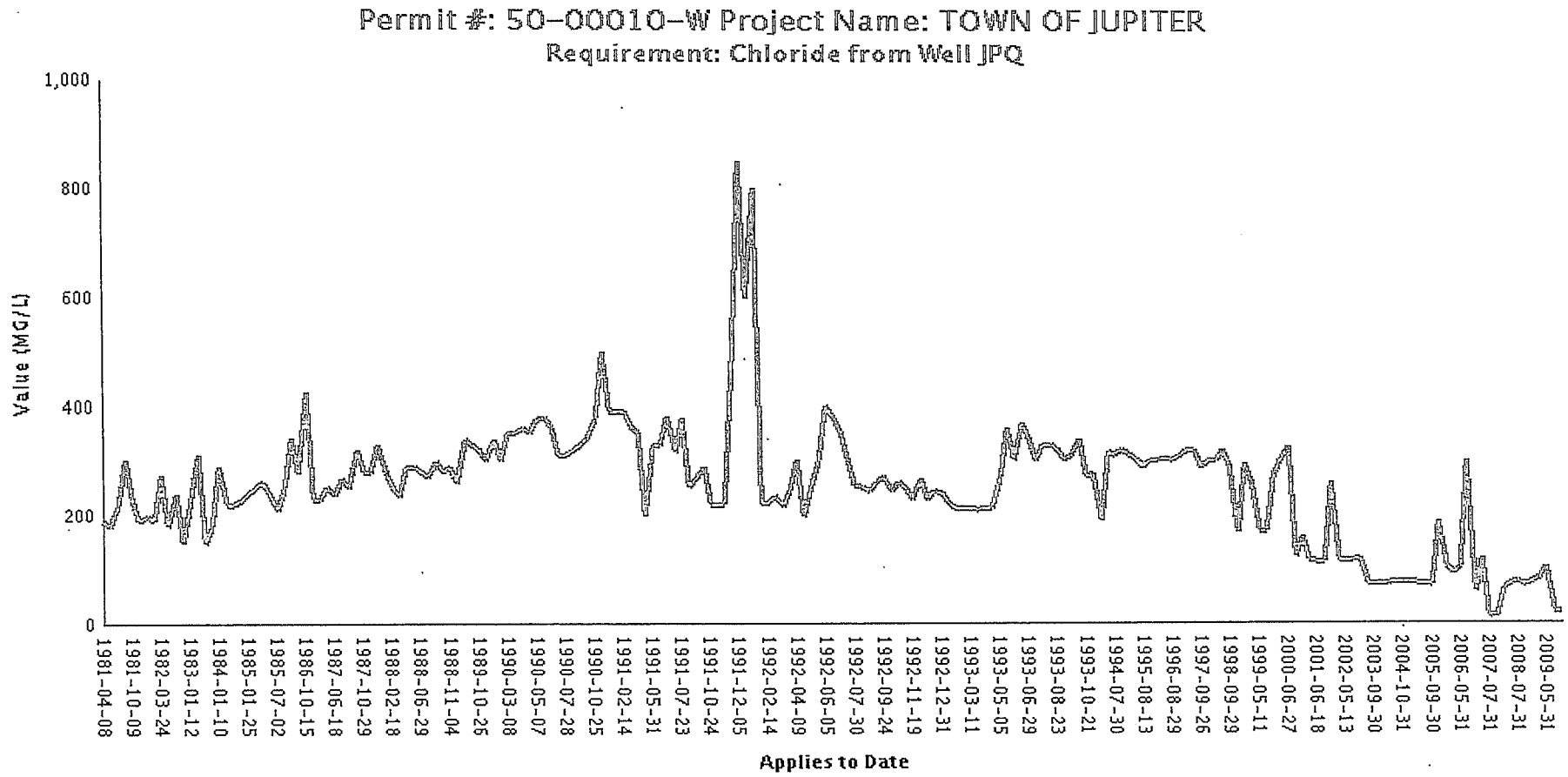

Permit #: 50-00010-W Project Name: TOWN OF JUPITER
Requirement: Chloride from Well JPQ
Value (MG/L)
1,000
800
600
400
200
0
1981-04-08
1981-10-09
1982-03-24
1983-01-12
1984-01-10
1985-01-25
1985-07-02
1986-10-15
1987-06-18
1987-10-29
1988-02-18
1988-06-29
1988-11-04
1989-10-26
1990-03-08
1990-05-07
1990-07-28
1990-10-25
1991-02-14
1991-05-31
1991-07-23
1991-10-24
1991-12-05
1992-02-14
1992-04-09
1992-06-05
1992-07-30
1992-09-24
1992-11-19
1992-12-31
1993-03-11
1993-05-05
1993-06-29
1993-08-23
1993-10-21
1994-07-30
1995-08-13
1996-08-29
1997-09-26
1998-09-29
1999-05-11
2000-06-27
2001-06-18
2002-05-13
2003-09-30
2004-10-31
2005-09-30
2006-05-31
2007-07-31
2008-07-31
2009-05-31
Applies to Date

Exhibit 15

Requirement by Limiting Condition Report

App No: 080627-9
Permit No: 50-00010-W
Project Name: TOWN OF JUPITER

Expiration Date: 30-SEP-30
Issued Date:

Limiting Condition No: 17 **Limiting Condition Code:** WUSTD021-8

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - 18	Calibration report for WELL 18	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 6	Calibration report for WELL 6	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 7	Calibration report for WELL 7	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 8	Calibration report for WELL 8	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 9	Calibration report for WELL 9	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 10	Calibration report for WELL 10	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 11	Calibration report for WELL 11	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 12	Calibration report for WELL 12	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 13	Calibration report for WELL 13	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 14	Calibration report for WELL 14	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 15	Calibration report for WELL 15	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 16	Calibration report for WELL 16	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 17	Calibration report for WELL 17	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 19	Calibration report for WELL 19	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 20	Calibration report for WELL 20	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 21	Calibration report for WELL 21	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 22	Calibration report for WELL 22	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 23	Calibration report for WELL 23	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 24	Calibration report for WELL 24	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 26	Calibration report for WELL 26	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 25	Calibration report for WELL 25	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 27	Calibration report for WELL 27	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 28	Calibration report for WELL 28	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 29	Calibration report for WELL 29	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 30	Calibration report for WELL 30	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 39	Calibration report for WELL 39	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 40	Calibration report for WELL 40	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years

Exhibit No: 16

Requirement by Limiting Condition Report

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - 41	Calibration report for WELL 41	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 42	Calibration report for WELL 42	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 43	Calibration report for WELL 43	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 44	Calibration report for WELL 44	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 46	Calibration report for WELL 46	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 47	Calibration report for WELL 47	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 50	Calibration report for WELL 50	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 56	Calibration report for WELL 56	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 57	Calibration report for WELL 57	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 58	Calibration report for WELL 58	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 59	Calibration report for WELL 59	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 60	Calibration report for WELL 60	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 62	Calibration report for WELL 62	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 45	Calibration report for WELL 45	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 67	Calibration report for WELL 67	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 68	Calibration report for WELL 68	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 31	Calibration report for WELL 31	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 32	Calibration report for WELL 32	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 33	Calibration report for WELL 33	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 34	Calibration report for WELL 34	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 35	Calibration report for WELL 35	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 36	Calibration report for WELL 36	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 37	Calibration report for WELL 37	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 38	Calibration report for WELL 38	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 48	Calibration report for WELL 48	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 49	Calibration report for WELL 49	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 51	Calibration report for WELL 51	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 52	Calibration report for WELL 52	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 53	Calibration report for WELL 53	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 54	Calibration report for WELL 54	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - 55	Calibration report for WELL 55	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - RO-2	Calibration Report for Well RO-2	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years

Exhibit No: 16

Requirement by Limiting Condition Report

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - RO-3	Calibration Report for Well RO-3	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - RO-4	Calibration Report for Well RO-4	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - RO-5	Calibration Report for Well RO-5	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - RO-6	Calibration Report for Well RO-6	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - RO-7	Calibration Report for Well RO-7	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - RO-8	Calibration Report for Well RO-8	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - RO-9	Calibration Report for Well RO-9	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - RO-10	Calibration Report for Well RO-10	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - RO-11	Calibration Report for Well RO-11	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - RO-12	Calibration Report for Well RO-12	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years
WELL - RO-13	Calibration Report for Well RO-13	30-SEP-15	01-OCT-10	30-SEP-30	Every Five Years	Every Five Years

Limiting Condition No: 18 **Limiting Condition Code:** WUSTD022-1

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - 18	Monthly withdrawal for WELL 18	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 6	Monthly withdrawal for WELL 6	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 7	Monthly withdrawal for WELL 7	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 8	Monthly withdrawal for WELL 8	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 9	Monthly withdrawal for WELL 9	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 10	Monthly withdrawal for WELL 10	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 11	Monthly withdrawal for WELL 11	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 12	Monthly withdrawal for WELL 12	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 13	Monthly withdrawal for WELL 13	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 14	Monthly withdrawal for WELL 14	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 15	Monthly withdrawal for WELL 15	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 16	Monthly withdrawal for WELL 16	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 17	Monthly withdrawal for WELL 17	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 19	Monthly withdrawal for WELL 19	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 20	Monthly withdrawal for WELL 20	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 21	Monthly withdrawal for WELL 21	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 22	Monthly withdrawal for WELL 22	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 23	Monthly withdrawal for WELL 23	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly

Exhibit No: 16

Requirement by Limiting Condition Report

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - 24	Monthly withdrawal for WELL 24	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 26	Monthly withdrawal for WELL 26	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 25	Monthly withdrawal for WELL 25	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 27	Monthly withdrawal for WELL 27	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 28	Monthly withdrawal for WELL 28	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 29	Monthly withdrawal for WELL 29	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 30	Monthly withdrawal for WELL 30	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 39	Monthly withdrawal for WELL 39	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 40	Monthly withdrawal for WELL 40	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 41	Monthly withdrawal for WELL 41	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 42	Monthly withdrawal for WELL 42	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 43	Monthly withdrawal for WELL 43	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 44	Monthly withdrawal for WELL 44	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 46	Monthly withdrawal for WELL 46	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 47	Monthly withdrawal for WELL 47	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 50	Monthly withdrawal for WELL 50	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 56	Monthly withdrawal for WELL 56	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 57	Monthly withdrawal for WELL 57	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 58	Monthly withdrawal for WELL 58	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 59	Monthly withdrawal for WELL 59	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 60	Monthly withdrawal for WELL 60	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 62	Monthly withdrawal for WELL 62	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 45	Monthly withdrawal for WELL 45	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 67	Monthly withdrawal for WELL 67	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 68	Monthly withdrawal for WELL 68	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 31	Monthly withdrawal for WELL 31	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 32	Monthly withdrawal for WELL 32	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 33	Monthly withdrawal for WELL 33	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 34	Monthly withdrawal for WELL 34	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 35	Monthly withdrawal for WELL 35	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 36	Monthly withdrawal for WELL 36	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 37	Monthly withdrawal for WELL 37	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly

Exhibit No: 16

Requirement by Limiting Condition Report

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - 38	Monthly withdrawal for WELL 38	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 48	Monthly withdrawal for WELL 48	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 49	Monthly withdrawal for WELL 49	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 51	Monthly withdrawal for WELL 51	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 52	Monthly withdrawal for WELL 52	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 53	Monthly withdrawal for WELL 53	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 54	Monthly withdrawal for WELL 54	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 55	Monthly withdrawal for WELL 55	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-2	Monthly Withdrawal for Well RO-2	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-3	Monthly Withdrawal for Well RO-3	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-4	Monthly Withdrawal for Well RO-4	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-5	Monthly Withdrawal for Well RO-5	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-6	Monthly Withdrawal for Well RO-6	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-7	Monthly Withdrawal for Well RO-7	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-8	Monthly Withdrawal for Well RO-8	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-9	Monthly Withdrawal for Well RO-9	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-10	Monthly Withdrawal for Well RO-10	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-11	Monthly Withdrawal for Well RO-11	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-12	Monthly Withdrawal for Well RO-12	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-13	Monthly Withdrawal for Well RO-13	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
Wellfield 3	Average day (S) from Wellfield 3	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
Wellfield 2	Average day from Wellfield 2	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
Floridan Aquifer System	Monthly (S) RO plant output	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
Wellfield 4	wellfield 4(SIMPLE) monthly withdrawal	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
PERMIT	permit (SIMPLE) monthly pumpage	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
Wellfield 4	Average day from Wellfield 4	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
Floridan	Monthly (S) sum of FAS wells on sheet submitted	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
Surficial Aquifer System	Surficial Aquifer System Monthly (S) withdrawal	30-JUN-11	01-OCT-10	30-SEP-30	Monthly	Quarterly
Wellfield 3	wellfield 3 Monthly (SIMPLE)	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly

Exhibit No: 16

Requirement by Limiting Condition Report

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
Wellfield 2	withdrawal wellfield 2(SIMPLE) monthly withdrawal	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly

Limiting Condition No: 21 **Limiting Condition Code:** WUPWS003-1

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
PERMIT	Unaccounted for Distribution Losses for PERMIT	30-SEP-12	01-OCT-10	30-SEP-30	Yearly	Yearly

Limiting Condition No: 26 **Limiting Condition Code:** WUWC004-1

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - 56	Updated Table A for WELL 56	01-APR-11	01-OCT-10	30-SEP-30	One time Only	One time Only
WELL - 57	Updated Table A for WELL 57	01-APR-11	01-OCT-10	30-SEP-30	One time Only	One time Only
WELL - 58	Updated Table A for WELL 58	01-APR-11	01-OCT-10	30-SEP-30	One time Only	One time Only
WELL - 59	Updated Table A for WELL 59	01-APR-11	01-OCT-10	30-SEP-30	One time Only	One time Only
WELL - 60	Updated Table A for WELL 60	01-APR-11	01-OCT-10	30-SEP-30	One time Only	One time Only
WELL - 62	Updated Table A for WELL 62	01-APR-11	01-OCT-10	30-SEP-30	One time Only	One time Only

Limiting Condition No: 28 **Limiting Condition Code:** WUSAT001-4

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - 18	Chloride for WELL 18	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 6	Chloride for WELL 6	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 7	Chloride for WELL 7	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 8	Chloride for WELL 8	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 9	Chloride for WELL 9	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 10	Chloride for WELL 10	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 11	Chloride for WELL 11	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 12	Chloride for WELL 12	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 13	Chloride for WELL 13	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 14	Chloride for WELL 14	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 15	Chloride for WELL 15	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 16	Chloride for WELL 16	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 17	Chloride for WELL 17	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 19	Chloride for WELL 19	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly

Exhibit No: 16

Requirement by Limiting Condition Report

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - 20	Chloride for WELL 20	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 21	Chloride for WELL 21	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 22	Chloride for WELL 22	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 23	Chloride for WELL 23	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 24	Chloride for WELL 24	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 26	Chloride for WELL 26	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 25	Chloride for WELL 25	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 27	Chloride for WELL 27	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 28	Chloride for WELL 28	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 29	Chloride for WELL 29	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 30	Chloride for WELL 30	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-2	Chloride for WELL RO-2	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-3	Chloride for WELL RO-3	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-4	Chloride for WELL RO-4	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-11	Chloride for WELL RO-11	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-12	Chloride for WELL RO-12	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-13	Chloride for WELL RO-13	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 50	Chloride for WELL 50	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 67	Chloride for WELL 67	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 68	Chloride for WELL 68	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 31	Chloride for WELL 31	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 32	Chloride for WELL 32	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 33	Chloride for WELL 33	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 34	Chloride for WELL 34	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 35	Chloride for WELL 35	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 36	Chloride for WELL 36	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 37	Chloride for WELL 37	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 38	Chloride for WELL 38	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 48	Chloride for WELL 48	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 49	Chloride for WELL 49	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 51	Chloride for WELL 51	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 52	Chloride for WELL 52	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly

Exhibit No: 16

Requirement by Limiting Condition Report

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - 53	Chloride for WELL 53	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 54	Chloride for WELL 54	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - 55	Chloride for WELL 55	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-5	Chloride for WELL RO-5	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-6	Chloride for WELL RO-6	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-7	Chloride for WELL RO-7	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-8	Chloride for WELL RO-8	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-9	Chloride for WELL RO-9	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - RO-10	Chloride for WELL RO-10	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JP-C	Chloride for WELL JP-C	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPL-1	Chloride for WELL JPL-1	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JP711(PB711)	Chloride for WELL JP711	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPB	Chloride for WELL JPB	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPK1	Chloride for WELL JPK1	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPK2	Chloride for WELL JPK2	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPK3	Chloride for WELL JPK3	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPL2	Chloride for WELL JPL2	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPL3	Chloride for WELL JPL3	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPQ	Chloride for WELL JPQ	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPR	Chloride for WELL JPR	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - CA-S	Chloride for WELL CA-S	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - CA-N	Chloride for WELL CA-N	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPN	Chloride for WELL JPN	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPJVL (Jupiter Village Lake)	Chloride for WELL JPJVL (Jupiter Village Lake)	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPC18U(Jupiter Canal C-18U)	Chloride for WELL JPC18U(Jupiter Canal C-18U)	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPC18D(Jupiter Canal C-18D)	Chloride for WELL JPC18D(Jupiter Canal C-18D)	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPY	Chloride for WELL JPY	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPX	Chloride for WELL JPX	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPW	Chloride for WELL JPW	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPV	Chloride for WELL JPV	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly

Exhibit No: 16

Requirement by Limiting Condition Report

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - JPU	Chloride for WELL JPU	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPT	Chloride for WELL JPT	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPS	Chloride for WELL JPS	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly
WELL - JPZ	Chloride for WELL JPZ	31-DEC-10	01-OCT-10	30-SEP-30	Monthly	Quarterly

Limiting Condition No: 30 **Limiting Condition Code:** WUPWS008-2

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
PERMIT	Ten-Year Water Use Compliance Report for TOWN OF JUPITER	30-SEP-30	01-OCT-10	30-SEP-30	Every Ten Years	Every Ten Years

Limiting Condition No: 32 **Limiting Condition Code:** WUZZUD001-2

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
PERMIT	Wetland Monitoring Report for TOWN OF JUPITER	31-JAN-11	01-OCT-10	30-SEP-30	Yearly	Yearly

Limiting Condition No: 34 **Limiting Condition Code:** WUZZUD001-4

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
PERMIT	Baseline Wetland Monitoring Report for TOWN OF JUPITER	01-FEB-11	01-OCT-10	30-SEP-30	One time Only	One time Only

Exhibit No: 16

EW Consultants, Inc.
Natural Resource Management, Wetland, and Environmental Permitting Services

Jupiter Utility Wellfield 4 Monitoring Program

Introduction –

In June 2008, the Town of Jupiter applied for the five year renewal of its 20 year consumptive use permit (50-00010-W) originally issued in 2004. Among the issues addressed in the 2004 permit and identified in the permit review process was the construction and operation of Surficial Aquifer Wellfield 4 as part of the Town's water system. The application for renewal included a modification request to maintain this wellfield although wells had yet to be constructed and operated. The 2004 permit included a condition requiring provision of wetland mitigation in the event that Wellfield 4 operations caused impacts to wetlands in the area of the wellfield. In the process of the permit renewal review, SFWMD staff has asserted that there are more wetlands present in the vicinity of Wellfield 4 than had been identified and agreed to during the review and issuance of the permit in 2004.

The permit request to keep Wellfield 4 in the Town's water system has resulted in the need to address potential impacts to wetlands upon construction and operation of the wells. Prospective provision of mitigation is problematic because of the significant costs to the utility system without any demonstration of actual impacts or benefit to the water system as a whole. In place of prospective mitigation of as yet indeterminable impacts, the Town has committed to implement operational modifications as necessary to prevent negative impacts to wetlands in the vicinity of the wellfield. Thus it is necessary to develop a means of measuring how wellfield operations could in fact impact wetlands in the vicinity and applying that measurement to develop operational criteria that prevent any such impacts from occurring.

The circumstances of Wellfield 4 provide an opportunity to determine the wetland conditions and water level influences prior to initiation of wellfield operation because the wells have yet to be constructed. The utility has installed the raw water main that would carry water from the wellfield to the water treatment plant as well as completing the purchase of well site No. 60. By implementing a monitoring program upon issuance of the permit renewal and modification, baseline conditions can be established which can be used to evaluate the future operations and establish conditions that prevent impacts to wetlands from wellfield drawdown.

2081 SE Ocean Blvd, Suite 2B • Stuart, FL 34996 772-287-8771 • Fax 772-287-2988
www.ewconsultants.com

EXHIBIT 17

The following monitoring program has been developed in order to assemble the necessary site specific information regarding water levels and wetland conditions in relation to Wellfield 4. The monitoring program will provide quantitative information on water levels and wetland conditions prior to construction and operation of wells, establishing a baseline that properly accounts for surrounding drainage and other external affects as well as seasonal and climatic (rainfall) conditions. Upon construction and operation of Wellfield 4, the monitoring program will allow for continued collection of data and direct measurement of any potential affects of drawdown from the wellfield on water levels and wetland conditions, in the context of external factors and seasonal/climatic conditions.

Technical Approach –

In order to implement a successful and statistically robust monitoring program, it is important to distinguish the technical from the regulatory components of the approach. The regulatory criteria provided for in the permit are based on modeled drawdown under hypothetical conditions established conservatively so that permitted activity "errs on the side of the resource". The quantifiable parameters that reflect the response of wetland systems to the permitted activity are actual drawdown of water levels in wetlands and the associated ecological affects in the wetlands.

These quantifiable parameters occur on significantly different temporal scales, with actual drawdown in response to wellfield operation measurable on a time scale of days while observable ecological affects in wetlands are measured on a time scale of years. Out of necessity, permit criteria apply an instantaneous threshold occurrence (i.e. once drawdown has reached a certain elevation) as the measure of compliance, with the expectation that the affects can be measured using a long term indicator such as ecological change. Once affects are observed (even with all other factors accounted for) there is considerable time needed to reverse the affects if that is possible at all.

In the case of Wellfield 4, gathering pre-operation baseline data at both temporal scales will allow for direct measurement of wellfield operation affects on the same time scales at such time as the wellfield is constructed. In order to gather this information, the following monitoring approach is proposed.

1) Implement water level monitoring in accordance with the permit work schedule (provided later in this monitoring plan) in order to establish pre-wellfield baseline conditions, which would account for all external factors such as drainage, climatic variation, etc.

2) Conduct detailed quantitative baseline vegetation conditions assessment in a select set of wetlands beginning immediately after permit issuance and continuing on a semi-annual basis. This quantitative approach will account for all current conditions and also enable tracking of future external changes such as development, habitat management activities, climatic variation, and the like.

3) Upon development and operation of the wellfield, water level (short term) and vegetative condition (long term) data would be used in their respective time scales to develop operational criteria for the wellfield.

EXHIBIT 17

Using this approach, operational criteria for the wellfield can be managed at the proper temporal scale. For instance, if water levels measured in wetlands fall to a certain point then wellfield operation is reduced until recovery to a set level above that point. If ecological indicators show reduced wetland function over a longer time scale, the water elevation set point can be modified to eliminate the impact or the impact can be quantified and mitigated.

Water Level Monitoring –

The proposed water level monitoring will entail placement of three water level monitoring devices in wetlands that fall within the modeled drawdown contours. Specific locations of the water level monitoring installations are shown on the attached Figure 1 (Monitoring Station Map). These monitoring stations have been selected in order to provide data that is representative of the group of potentially affected wetlands in locations that are practically possible with regard to the logistics of access, installation, and regular monitoring. Preliminary wetland inventory information indicates that there are potential locations on publicly owned property (within Jonathan Dickinson State Park and the Palm Beach County Jupiter Flatwoods property) that present opportunities to monitor wetland types that may be affected by the wellfield operations. For each wetland where a monitoring station is established, the perimeter elevation of the wetland (average ground elevation at wetland line) as well as the ground elevation at the deepest point in the wetland will be surveyed.

The purpose of the water level monitoring is to measure actual affects (drawdown) within the water table strata that directly influence the hydroperiod in the wetlands. As such, monitoring wells would be installed to a depth of no more than 15 feet below the ground surface (subject to modification based on hydrogeologic and geotechnical information) and provide measurements to approximately three feet above the ground surface (based on site specific conditions). Each monitoring well will be tied in by survey for horizontal location as well as fixed elevation measurement to the nearest 0.10 foot. Monitoring wells will be equipped with pressure sensor water level monitoring equipment calibrated to the surveyed elevation providing measurements to 0.01 foot accuracy. Pressure sensors will be equipped with data loggers that will collect and store water level data on a 12 hour time step. The water level monitoring stations will be visited, downloaded, and maintained on a schedule sufficient to ensure continuous data collection.

Rainfall data collection will be provided from the SFWMD rainfall monitoring network. There is an active SFWMD rainfall monitoring site at the S-46 structure approximately one mile south of the proposed wetland monitoring area.

Wetland Ecological Monitoring –

As discussed earlier, there is some uncertainty as to the areal extent of wetlands that occur within the modeled drawdown contours, and thus would be subject to evaluation in accordance with the BOR for Water Use Permits. As such, the first step in the wetland ecological monitoring will be establishment of a mutually agreed wetland map in areas without current SFWMD approved wetland delineations. In addition to quantifying the areal extent of the wetlands, their current ecological conditions and hydroperiod classification (i.e.

EXHIBIT 17

shallow wet prairie, deep marsh, hydric flatwoods, etc.) will be documented in order to reflect the potential sensitivity to drawdown affects in accordance with the BOR.

Once the areal extent of wetlands has been determined, there will be three vegetation quantification stations established in each of the three wetlands (total of nine vegetation stations) that have water level monitoring equipment installed. The purpose of these vegetation monitoring stations will be to provide specific determinations of quantitative changes in vegetative composition (plot scale) rather than the "qualitative" evaluations (landscape scale) typically provided in wetland monitoring reports. The plot selection, data collection, and statistical analysis will be designed in accordance with BLM Technical Reference 1730-1 "Measuring and Monitoring Plant Populations"[1]. Sampling design will be coordinated through SFWMD to develop a mutually agreeable sampling and analysis approach. Once selected, each plot location will be marked in the field with PVC pipe and coordinates documented with hand held GPS. Site photos will be collected at all stations.

The purpose of the quantitative vegetation monitoring will be to first, establish baseline conditions in the absence of withdrawal from Wellfield 4. Statistical analysis of the relative proportions of wetland indicator plant species (obligate, facultative wetland, and facultative) will be conducted in order to develop baseline trends on a seasonal (semi-annual) and annual (year to year) basis. These statistical analyses of quantitative vegetative data will be coupled with the water level data in order to determine whether and to what degree there is a causal link between observed water level data and vegetative cover. Conducting this data collection and analysis prior to construction and operation of the wellfield will provide a baseline control that accounts for all existing conditions with regard to surrounding drainage impacts and other external factors that could otherwise confound analysis of affects that are specific to wellfield drawdown.

The quantitative vegetation monitoring will continue once the wellfield is put into operation. Data collection and analysis will be compared directly to the conditions established during the baseline analysis prior to initiating wellfield operation. Statistical tools will be applied in accordance with Elzinga, et. al.[1] in order to determine whether there are measurable vegetation affects that can be attributed to the measured drawdown documented through water level monitoring. A default drawdown threshold in accordance with the BOR will be used initially to set the parameters for observed affects in wetland water levels. Subsequent analysis of observed drawdown and vegetative affects will be used to modify this threshold as necessary to prevent deleterious affects on wetland vegetation while providing for appropriate yield from the wellfield.

Wellfield Operation Plan –

The default operation plan for Wellfield 4 upon construction and operation is the allowed allocation and withdrawal rates from the wellfield. Actual withdrawal data will be used in concert with the water level and quantitative vegetation analyses discussed above to develop the necessary operational parameters to prevent measurable impacts to the wetlands.

EXHIBIT 17

Once the wells are operational, total pumpage (total volume withdrawn) will be measured and recorded for each well. Data collection of total volume pumped will be in accordance with the requirements for existing wells within the consumptive use permit.

Data Collection and Reporting –

Water level and pumpage data will be provided in the form of a comparative hydrograph and submitted in electronic format (MS Excel or another format acceptable to SFWMD). The hydrograph for each monitoring station will show the wetland perimeter elevation and elevation at the deepest point in the wetland on the graph. The water level recorder data, rainfall data, and well pumpage volume (in bi-weekly time steps) will be graphed on the vertical axis with the horizontal axis depicting time through the monitoring period.

Vegetation monitoring data will include quantitative plant cover data in each of the plot locations (three per monitoring station) for each semi-annual data collection event. In addition to reporting genus and species percent coverage, wetland indicator status, and native/non-native species designation will be recorded. Vegetation data for each year will be submitted in a table format (providing the percent coverage of each species) so any changes can be easily identified. Statistical analysis of trends within years as well as over the multiple years of data collection will be provided along with anecdotal notations of external factors such as disturbance or habitat management activities that may skew observations.

Work Schedule –

The following work schedule milestones are proposed in order to implement the monitoring program elements and initiate baseline data collection. This schedule assumes issuance of the water use permit on or before August 31, 2010.

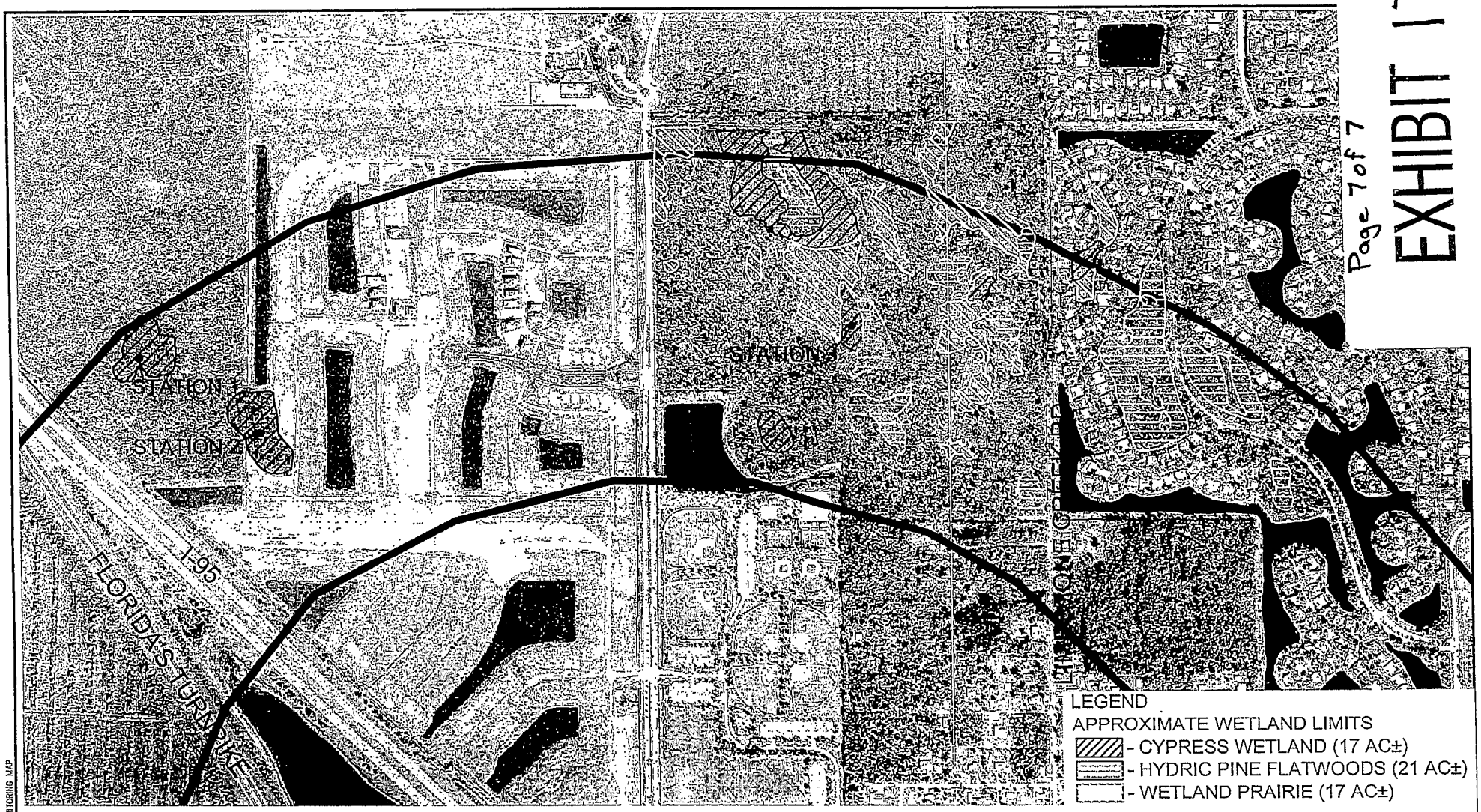
Activity	Completion Date
Conduct field evaluation, mapping of wetlands, and site specific monitoring locations	September 30, 2010
Permitting/authorization for well installation	October 31, 2010
Establish vegetation monitoring plots	October 31, 2010
Install water level recording device wells	December 15, 2010
Survey well elevations and wetland ground elevations	December 15, 2010
Install, calibrate and test water level recording devices	December 31, 2010
Initiate baseline water level data collection	January 1, 2011
Conduct baseline vegetation monitoring	January 1, 2011
Conduct semi-annual vegetation monitoring	July 31, 2011
Conduct second semi-annual vegetation monitoring	December 31, 2011
Prepare and submit first annual monitoring report	January 31, 2012
Conduct two semi-annual vegetation monitoring events	Each year
Prepare and submit annual monitoring report	January 31 annually

EXHIBIT 17

References

[1] Elzinga, Caryl L., Daniel W. Salzer, and John W. Willoughby. 1998. ***Measuring and monitoring plant populations.*** BLM Technical Reference 1730-1. U.S. Department of the Interior Bureau of Land Management National Applied Resource Sciences Center. Denver, CO.

EXHIBIT 17



Page 7 of 7

EXHIBIT 17

EW CONSULTANTS, INC.
2081 SE OCEAN BOULEVARD, SUITE 2B
STUART, FLORIDA 34996
772-287-8771 FAX 772-287-2988
WWW.EWCONSULTANTS.COM

JUPITER UTILITY
WELLFIELD 4 MONITORING STATION MAP

0 600
SCALE IN FEET

FIGURE 1

JUPITER CUP.dwg MONITORING MAP

STAFF REPORT DISTRIBUTION LIST

TOWN OF JUPITER

Application No: 080627-9

Permit No: 50-00010-W

INTERNAL DISTRIBUTION

X Stephen E. Bell
X Anita Bain
X Barb Conmy
X ERC - 4230
X Permit File
X WU Compliance - B. Rasperger - 4234

EXTERNAL DISTRIBUTION

X Permittee - Town Of Jupiter Water Utilities
X Agent - J L A Geosciences Inc

GOVERNMENT AGENCIES

X Dept of Environmental Protection - West Palm Beach
X Div of Recreation and Park - District 7
X Engineer, City of Jupiter
X Palm Beach County - Environmental Res Mgmt
X Palm Beach County - Health Dept Environmental Health & Engineering
X Palm Beach County - School Board Growth Mgt
X Palm Beach County - Zoning Division
X Patrick Martin, Director of Engineering Lake Worth Drainage District
X Town of Jupiter Utilities David Brown

OTHER INTERESTED PARTIES

X Alexandria Larson
X B.F. Sewell
X Mr. Ed Dailey, Chairman Water Catchment Area Advisory Committee
X Rosa Durando
X SEACOAST UTILITY AUTHORITY
X Solid Waste Authority - Thomas A. Sirna, P.G.
X TEQUESTA VILLAGE OF

Exhibit No:18

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report

Quarterly Report of Withdrawals From Wells and Surface Water Pumps

This Report must be completed and submitted to the District at the address shown as required by your Permit

Permit Number 50-00010-W
Project Name TOWN OF JUPITER
Issued to Town of Jupiter Utilities
Address 210 Military Trail
City, State, Zip Jupiter FL 33458
Phone / Fax No 561-741-2602
E-mail paulj@jupiter.fl.us

Return To:
South Florida Water Management District
Attn: Water Use Regulation Division (4320)
PO Box 24680
West Palm Beach, FL - 33416 - 4680

Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____ Year: _____	Month: _____ Year: _____	Month: _____ Year: _____	Accounting Method	Date Last Calibrated
Monthly withdrawal for WELL 18	13563					
Monthly withdrawal for WELL 6	23535					
Monthly withdrawal for WELL 7	23536					
Monthly withdrawal for WELL 8	23537					
Monthly withdrawal for WELL 9	23538					
Monthly withdrawal for WELL 10	23539					
Monthly withdrawal for WELL 11	23540					
Monthly withdrawal for WELL 12	23541					
Monthly withdrawal for WELL 13	23542					
Monthly withdrawal for WELL 14	23543					

Name of Person Completing Form

Signature:_____ Date:_____

Form 0188-QMON (08/03)

Printed: 08/23/2010

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report

Quarterly Report of Withdrawals From Wells and Surface Water Pumps

This Report must be completed and submitted to the District at the address shown as required by your Permit

Permit Number 50-00010-W
Project Name TOWN OF JUPITER
Issued to Town of Jupiter Utilities
Address 210 Military Trail
City, State, Zip Jupiter FL 33458
Phone / Fax No 561-741-2602
E-mail paulj@jupiter.fl.us

Return To:
South Florida Water Management District
Attn: Water Use Regulation Division (4320)
PO Box 24680
West Palm Beach, FL - 33416 - 4680

Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____ Year: _____	Month: _____ Year: _____	Month: _____ Year: _____	Accounting Method	Date Last Calibrated
Monthly withdrawal for WELL 15	23544					
Monthly withdrawal for WELL 16	23545					
Monthly withdrawal for WELL 17	23546					
Monthly withdrawal for WELL 19	23547					
Monthly withdrawal for WELL 20	23548					
Monthly withdrawal for WELL 21	23549					
Monthly withdrawal for WELL 22	23550					
Monthly withdrawal for WELL 23	23551					
Monthly withdrawal for WELL 24	23552					
Monthly withdrawal for WELL 26	23553					

Name of Person Completing Form

Signature:_____ Date:_____

Form 0188-QMON (08/03)

Printed: 08/23/2010

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report

Quarterly Report of Withdrawals From Wells and Surface Water Pumps

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Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____ Year: _____	Month: _____ Year: _____	Month: _____ Year: _____	Accounting Method	Date Last Calibrated
Monthly withdrawal for WELL 25	23554					
Monthly withdrawal for WELL 27	23555					
Monthly withdrawal for WELL 28	23556					
Monthly withdrawal for WELL 29	23557					
Monthly withdrawal for WELL 30	23558					
Monthly withdrawal for WELL 39	23559					
Monthly withdrawal for WELL 40	23560					
Monthly withdrawal for WELL 41	23561					
Monthly withdrawal for WELL 42	23562					
Monthly withdrawal for WELL 43	23563					

Name of Person Completing Form

Signature:_____ Date:_____

Form 0188-QMON (08/03)

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Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____ Year: _____	Month: _____ Year: _____	Month: _____ Year: _____	Accounting Method	Date Last Calibrated
Monthly withdrawal for WELL 44	23564					
Monthly Withdrawal for Well RO-2	23566					
Monthly Withdrawal for Well RO-3	23567					
Monthly Withdrawal for Well RO-4	23568					
Monthly Withdrawal for Well RO-11	23569					
Monthly Withdrawal for Well RO-12	23570					
Monthly Withdrawal for Well RO-13	23571					
Monthly withdrawal for WELL 46	23633					
Monthly withdrawal for WELL 47	23634					
Monthly withdrawal for WELL 50	23635					

Name of Person Completing Form

Signature:_____ Date:_____

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Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____ Year: _____	Month: _____ Year: _____	Month: _____ Year: _____	Accounting Method	Date Last Calibrated
Monthly withdrawal for WELL 56	23636					
Monthly withdrawal for WELL 57	23637					
Monthly withdrawal for WELL 58	23638					
Monthly withdrawal for WELL 59	23639					
Monthly withdrawal for WELL 60	23640					
Monthly withdrawal for WELL 62	23642					
Monthly withdrawal for WELL 45	24661					
Monthly withdrawal for WELL 67	27581					
Monthly withdrawal for WELL 68	27582					
Monthly withdrawal for WELL 31	27767					

Name of Person Completing Form

Signature:_____ Date:_____

Form 0188-QMON (08/03)

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

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West Palm Beach, FL - 33416 - 4680

Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____ Year: _____	Month: _____ Year: _____	Month: _____ Year: _____	Accounting Method	Date Last Calibrated
Monthly withdrawal for WELL 32	27768					
Monthly withdrawal for WELL 33	27769					
Monthly withdrawal for WELL 34	27770					
Monthly withdrawal for WELL 35	27771					
Monthly withdrawal for WELL 36	27772					
Monthly withdrawal for WELL 37	27773					
Monthly withdrawal for WELL 38	27774					
Monthly withdrawal for WELL 48	27787					
Monthly withdrawal for WELL 49	27788					
Monthly withdrawal for WELL 51	27789					

Name of Person Completing Form

Signature:_____ Date:_____

Form 0188-QMON (08/03)

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

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Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____ Year: _____	Month: _____ Year: _____	Month: _____ Year: _____	Accounting Method	Date Last Calibrated
Monthly withdrawal for WELL 52	27790					
Monthly withdrawal for WELL 53	27791					
Monthly withdrawal for WELL 54	27792					
Monthly withdrawal for WELL 55	27793					
Monthly Withdrawal for Well RO-5	27794					
Monthly Withdrawal for Well RO-6	27795					
Monthly Withdrawal for Well RO-7	27796					
Monthly Withdrawal for Well RO-8	27797					
Monthly Withdrawal for Well RO-9	27798					
Monthly Withdrawal for Well RO-10	27799					

Name of Person Completing Form

Signature:_____ Date:_____

Form 0188-QMON (08/03)

Printed: 08/23/2010

Appendix B

Town of Jupiter Utilities
Capacity Reservation Report
September 30, 2011

Flow Projections based on Capacity Reservations:

	ERC	MGD ADF
* Capacity served as of 09/30/2011	42,582.8	14.90
Bulk Service Commitment (Tequesta)	0.0	0.00
SubTotal: Capacity Presently Served	42,582.8	14.90
Additional Capacity Reserved (but not in service as of this date)	5,565.8	1.95
Total	48,148.6	16.85

Actual Flows:

Permitted Plant Capacity as of this date	30.00
Average Daily Flow (ADF) from Treatment Plant Over the Previous 12 months:	14.96
Peak Daily Flow (PDF) from Treatment Plant Over the Previous 12 months	22.70
% Ratio of PDF to Permitted Plant Capacity	75.7%

* Capacity served total based on number of Equivalent Residential Connections (ERC) served multiplied by 350 GPD/ERC

Notes:

Jupiter Medical Center -Phase II Expansion	Agreement	2.5 ERC
Green Turtle Plaza (Amendment # 1)	Agreement	1.5 ERC
Abacoa at Dakota Gas Station	Expired	1.0 ERC

c: Howard Osterman
David Brown
Dawn Clark
Paul Jurczak
Amanda Barnes

Appendix B

TOWN OF JUPITER UTILITIES

WATER AGREEMENT CAPACITY RESERVATION

ACCOUNT NUMBER	AGREEMENT DATE	DEVELOPMENT NAME	ERC'S RESERVED	ERC'S BUILT *	ERC'S REMAINING
5084/8948		Abacoa	151.9	0.0	**151.9**
8948	11/23/2009	Abacoa - Allegro	36.3	0.0	**36.3**
4665	3/5/2002	Abacoa - Alta Commons	193.6	193.6	**0.0**
5161	10/31/2002	Abacoa - Antigua	289.5	298.7	**0.0**
7158	6/12/2006	Abacoa - Bermudiana	38.8	38.8	**0.0**
4244	4/18/2000	Abacoa - Cambridge	213.0	213.0	**0.0**
6407	9/14/2004	Abacoa - Canterbury Place	322.2	338.2	**0.0**
	9/1/1998	Abacoa - Charleston Court	110.3	110.3	**0.0**
	12/7/1999	Abacoa - Charleston Court West	80.0	80.0	**0.0**
6202		Abacoa - Commons, The	25.7	25.7	**0.0**
6917		Abacoa - Commons - Phase 2, The	17.2	17.2	**0.0**
5668		Abacoa - Corporate Commerce Ctr WK3D	9.9	17.4	**0.0**
6871	6/29/2005	Abacoa - Dakota	152.3	0.0	**152.3**
		Abacoa - Eckerds	3.1	3.1	**0.0**
4102		Abacoa - Elementary School	41.6	41.6	**0.0**
5297		Abacoa - Executive Center - St Farm	2.3	2.3	**0.0**
4500		Abacoa - FAU	543.1	324.7	**218.4**
4539		Abacoa - Fire Rescue	1.6	1.6	**0.0**
6182		Abacoa - Greenway Condo	25.7	25.7	**0.0**
5938		Abacoa - Greenwich	228.5	161.7	**0.0**
4501		Abacoa - Intelligent Life	13.8	13.8	**0.0**
	7/7/1998	Abacoa - The Island	178.1	178.1	**0.0**
8251	8/18/2008	Abacoa - Lifesong Community Church	7.0	1.0	**6.0**
	12/1/1998	Abacoa - The Links	28.7	28.7	**0.0**
6786		Abacoa - Mallory Creek	703.9	533.5	**181.9**
5900	11/26/2003	Abacoa - Martinique	459.2	441.1	**18.1**
4925		Abacoa - Middle School	66.4	66.4	**0.0**
		Abacoa - Miscellaneous	31.0	31.0	**0.0**
4506	5/6/1997	Abacoa - New Haven	512.6	511.6	**1.0**
4502	10/30/2000	Abacoa - Osceloa Woods	148.1	150.1	**0.0**
4523	7/7/1998	Abacoa - Plaza	72.5	72.5	**0.0**
6021		Abacoa - Regions Bank	12.6	13.0	**0.0**
4503	9/7/2000	Abacoa - Retreat, The	290.6	290.6	**0.0**
4812	3/5/2002	Abacoa - San Palermo	34.0	34.0	**0.0**
	2/4/1997	Abacoa - Sports Complex	45.6	48.1	**0.0**
5098	5/10/1999	Abacoa - Town Center Phase I	428.7	439.6	**0.0**
6515	8/3/1999	Abacoa - Town Center Phase II	108.7	61.0	**47.7**
4492	3/5/2002	Abacoa - Tuscany	450.3	455.3	**0.0**
4567		Abacoa - United StorAll	1.0	1.0	**0.0**
5696		Abacoa - University Commons	30.7	30.7	**0.0**
4292	2/6/2001	Abacoa - Valencia Phase I	140.3	141.3	**0.0**
6785	10/29/2009	Abacoa - Windsor Park	437.8	0.0	**437.8**
4525	5/15/2001	Abacoa - Workplace Ph 1	11.8	11.8	**0.0**
5409		Abacoa - Workplace Ph 2	7.4	7.4	**0.0**
4730		Abyssina Park	227.4	232.4	**0.0**
6836	5/19/2005	Admirals Corporate Center	9.7	9.7	**0.0**
5138	8/19/1986	Admiral's Cove	1,201.0	1,744.2	**0.0**
4531	1/6/1998	Admiral's Crossing	26.3	33.7	**1.0**
		Allen E. Hursey - 134 Jupiter St	1.0	1.0	**0.0**
5336	4/3/2003	Alexandria Apartments - 7 MF ERC's	9.5	9.5	**0.0**
		Kenneth Andrus, Inc. **	0.0	0.0	**0.0**
	1/29/1985	Andrew E. Armour	3.0	3.0	**0.0**
		April Lane - Rebate	5.0	6.0	**0.0**
	5/5/1998	April Lane Extension	1.0	1.0	**0.0**
		Aulton Parcels	4.0	4.0	**0.0**
	8/11/1998	Auto Zone/Jupiter Commons	4.0	4.0	**0.0**
4966	12/15/2003	Barcelona Center	5.1	5.1	**0.0**
4923	7/9/2004	Beachwalk	9.1	10.1	**0.0**
4296	1/21/1999	The Bear's Club - Golf	46.6	33.0	**13.6**

TOWN OF JUPITER UTILITIES
WATER AGREEMENT CAPACITY RESERVATION

ACCOUNT NUMBER	AGREEMENT DATE	DEVELOPMENT NAME	ERC'S RESERVED	ERC'S BUILT *	ERC'S REMAINING
4297	1/21/1999	The Bear's Club - Residential	175.0	205.5	**44.5**
	7/7/1998	Bell Subdivision - Center St	2.0	2.0	**0.0**
	10/21/1980	Bella Vista	183.1	186.5	**0.0**
	6/3/1997	Bert Winters Park - PBC	7.5	7.5	**0.0**
	4/3/1984	Bluff's, The	2,494.0	2,494.0	**0.0**
		Bluff's Pre-School	6.6	6.6	**0.0**
	2/4/1986	Bluff's Shopping Center I & II	65.0	65.0	**0.0**
4490	11/5/2001	Bonded Lightning Protection	2.2	2.2	**0.0**
4713		Botanica MF & SF	234.3	197.3	**37.0**
		Brentwood North	50.0	50.0	**0.0**
4569	4/6/1977	Brentwood South	20.0	20.0	**0.0**
5485	1/29/2003	Broedell Plumbing	1.0	1.0	**0.0**
	4/3/1984	Calle Vieja	46.5	25.4	**21.1**
	10/4/1994	Carlin Park/Dubois Park/Jup Inlet Park	142.9	142.9	**0.0**
		Carlin Park Amphitheatre	10.7	12.3	**0.0**
6677		Carradori - Lox River Road	4.0	15.0	**0.0**
7044	9/21/2005	Carter's Cay Villas	29.0	0.0	**29.0**
5603	1/9/2004	Castaways	6.1	6.1	**0.0**
8818	5/1/2009	Castle Road Extension	2.5	7.5	**0.0**
6577		Caulkins Woll PUD 07/02/06 Jup Gdns Blvd	2.0	2.0	**0.0**
	5/20/1986	Center Park	26.8	31.5	**0.0**
4535	9/21/1993	Central Baptist Church of Jupiter	8.0	1.6	**6.4**
		Chasewood N & S	365.7	365.7	**0.0**
	11/10/1982	Chasewood Plaza I & II	78.6	111.9	**0.0**
		Cheshire, Arthur **	0.0	0.0	**0.0**
		Cheyenne St Extension	4.0	4.0	**0.0**
7159	5/7/2007	Chivers Office Building	6.2	6.2	**0.0**
		Church of Jesus Christ of LDS	2.4	2.4	**0.0**
6498	12/24/2010	Cinquez Park - Lot 23 -Office Building	1.0	1.0	**0.0**
5438	4/7/2003	Cinquez Park Road West - Perry	15.0	15.0	**0.0**
		Citgo Gas Station	2.0	2.0	**0.0**
4494		Clocktower Hammock	40.0	40.0	**0.0**
4499		Comfort Inn	30.3	30.3	**0.0**
7234	9/30/2008	Commerce Bank	1.2	6.2	**0.0**
	7/1/1993	Commodore's Pocket	5.0	5.0	**0.0**
5101	6/2/2000	Community Christain Assembly	2.9	0.0	**2.9**
4523		Community Savings Bank - Maplewood	1.2	1.2	**0.0**
		Community Savings Bank-Military	1.3	1.3	**0.0**
5167		Concourse Plaza	107.1	109.1	**0.0**
5096		Coral Cay - Old Jupiter Beach Rd	8.0	8.0	**0.0**
		Creekside Trail	3.0	3.0	**0.0**
4570		Crosswinds Jupiter East	13.0	13.9	**0.0**
		Crosswinds S - Beachcomber	42.1	42.1	**0.0**
	7/12/1986	Crown Quay Lane	8.0	8.0	**0.0**
6105		Cypress Cove	79.0	79.0	**0.0**
		Dawson Williams Office Bldg	1.0	1.0	**0.0**
5310		Diamondhead Radnor Park	200.0	1.6	**198.4**
4571		Dias, R.A. & Sarah - Lox River Rd	2.0	2.0	**0.0**
		Discount Auto Parts	3.2	3.2	**0.0**
5298		Dockside at Jupiter Harbour	17.0	17.0	**0.0**
		Don Anderson Building	1.3	1.3	**0.0**
		Don Carter Lanes	19.0	19.0	**0.0**
		Duplessis Building	1.7	1.7	**0.0**
		Eagles Nest I	45.0	45.0	**0.0**
		Eagles Nest II	53.0	53.0	**0.0**
		Eastview Manor/Penn Park	433.0	433.0	**0.0**
		Eckerd Drug - Indiantown/Military	3.2	3.2	**0.0**
4572		Egret Landing - Section 15	666.0	653.0	**13.0**
		Erickson Building - Orange Ave	1.7	1.7	**0.0**
6435		Estuary, The **(This is part of Harbourside)**	37.0	0.0	**37.0**
4538		Executive Park	45.0	15.9	**29.1**

TOWN OF JUPITER UTILITIES
WATER AGREEMENT CAPACITY RESERVATION

ACCOUNT NUMBER	AGREEMENT DATE	DEVELOPMENT NAME	ERC'S RESERVED	ERC'S BUILT *	ERC'S REMAINING
		Executive Park Parcel D	6.9	6.9	**0.0**
		Fellowship with Christ Church - Rebate	1.0	0.0	**1.0**
4574	7/12/1977	Fernwood Creek	21.0	20.0	**1.0**
5464	11/13/2003	First National Bank & Trust	1.0	1.0	**0.0**
		Fisherman's Landing	200.0	200.0	**0.0**
	8/2/1988	Fisherman's Wharf	33.0	213.5	**0.0**
6514	8/2/1988	Fisherman's Wharf WFR Parcel	33.0	0.0	**33.0**
6513		Fisherman's Wharf Lot 11	11.4	0.0	**11.4**
		Fran's Follie	11.0	11.0	**0.0**
4493		Gables of Jupiter - Paseos MF	226.6	226.6	**0.0**
		Gamot - Thelma Rd Property	1.0	1.0	**0.0**
		Gateway Center - Taco Bell/PepBoys	10.1	10.1	**0.0**
5932		Gateway Center - Lot 4	3.4	3.4	**0.0**
		George, Roy **	0.0	0.0	**0.0**
		Georgian Park	107.0	107.0	**0.0**
4544		Goodwill Retail Center	4.9	4.9	**0.0**
6784	11/21/2000	Good Year Tire Center	1.0	1.0	**0.0**
5099	7/29/1993	Grace Immanual Church	10.1	3.7	**6.4**
4497	2/19/1988	Green Turtle Plaza (inclds amendment #1)	9.1	9.1	**0.0**
		Greenwood Cove	58.5	58.5	**0.0**
6298	5/15/2008	Guanabanas	15.5	15.5	**0.0**
		Habitat for Humanity - Center St	8.0	8.0	**0.0**
7517		Hammock Trace	51.0	51.0	**0.0**
4545		Hampton Inn	50.7	50.7	**0.0**
		Harbour View	5.5	0.0	**5.5**
		Harmony Animal Hospital	2.4	2.4	**0.0**
		Harpoon Louie's	44.3	44.3	**0.0**
		Hawksbill Corporation **	0.0	0.0	**0.0**
		Hook & Ladder Restaruant	17.6	17.6	**0.0**
	12/1/1976	Highwood	30.0	30.0	**0.0**
	8/27/1975	Holly Cove	9.0	9.0	**0.0**
6065		Holy Spirit Lutheran Church	6.0	4.4	**1.6**
		Hamptons, The (Hidden Oaks)	395.0	395.0	**0.0**
4765		Hudson Property - River Edge St	4.0	1.0	**3.0**
6351		Illustrated Properties 300 W Indiantown	3.6	3.6	**0.0**
		Indian Creek	1,140.3	1,140.3	**0.0**
	2/17/1981	Indian Creek - Commercial	38.0	38.0	**0.0**
		Indian Creek - Greenbriar	138.0	138.0	**0.0**
5606		125 W Indiantown Rd	5.7	5.7	**0.0**
4565		250 W Indiantown Rd	16.8	16.8	**0.0**
5728		820 W Indiantown Rd Building	4.9	7.4	**0.0**
5462		Integrity Bank	9.9	7.2	**2.7**
4575		Island Country Estates	31.0	30.2	**0.8**
4576		Island Cove	3.0	2.0	**1.0**
7630		Islandway Estates	13.0	15.0	**0.0**
		Johnson & Johnson Chiropractic	2.6	2.6	**0.0**
4496		Johnston Groves	1.0	1.0	**0.0**
4959	1/30/1976	Jonathan's Landing	2,285.7	2,168.3	**117.4**
9033	7/11/2011	JP Morgan Chase	2.5	2.5	**0.0**
		Juno Beach	1,584.5	1,709.3	**0.0**
		Juno Beach - Beachfront at	42.9	42.9	**0.0**
		Juno Beach - Eckerd Center - Retail	2.9	2.9	**0.0**
		Juno Beach - Eckerd Center - Restaur.	16.1	16.1	**0.0**
4964		Juno Beach - Juno Dunes	49.0	49.0	**0.0**
		Juno Beach - Juno Prof. Building	4.6	4.6	**0.0**
		Juno Beach - Juno Village Shoppes	8.8	8.8	**0.0**
7820	4/6/2007	Juno Beach - Mercury Rising	5.7	5.7	**0.0**
5348		Juno Beach - New Palm Beach Hghts	14.0	14.0	**0.0**
		Juno Beach - Ocean Key 40.4 MF	28.9	28.9	**0.0**
5439		Juno Beach - Ocean Ridge	21.0	22.5	**0.0**
		Juno Beach - Oceanfront at	18.1	18.1	**0.0**

TOWN OF JUPITER UTILITIES
WATER AGREEMENT CAPACITY RESERVATION

ACCOUNT NUMBER	AGREEMENT DATE	DEVELOPMENT NAME	ERC'S RESERVED	ERC'S BUILT *	ERC'S REMAINING
5901	11/18/2004	Juno Beach - Oceanside (lot 2 defaulted)	4.0	1.0	**3.0**
6918	12/12/2004	Juno Beach - Ocean Winds	11.0	0.0	**11.0**
6783	10/29/2007	Juno Beach - Old Juno Court	2.5	2.5	**0.0**
4620	12/6/1999	Juno Beach - Old Towne at	8.0	12.0	**2.0**
		Juno Beach - Plaza La Mer	84.1	84.1	**0.0**
		Juno Beach - Seaside at	17.0	17.0	**0.0**
		Juno Beach - Seaview Estates	25.2	25.2	**0.0**
		Juno Beach - Seminole Plaza	51.5	51.5	**0.0**
4627		Juno Beach - Surfside Hills	10.0	11.0	**2.0**
		Juno Beach - Ter Marsh	7.0	7.0	**0.0**
		Juno Beach - Waterfront at (60 MF)	42.9	42.9	**0.0**
		231 Juno Street	1.0	1.0	**0.0**
		237 Juno Street	1.0	1.0	**0.0**
		Jupiter I	92.9	102.7	**0.0**
5607		Jupiter 95 Associates	10.7	12.7	**0.0**
		Jupiter Bay	299.1	312.3	**0.0**
		Jupiter Care Center	34.3	34.3	**0.0**
6578	7/13/2005	Jupiter Christian School + Expansion	42.6	42.6	**0.0**
6837	4/27/2005	Jupiter Commerce Center	20.0	10.8	**9.2**
6963	6/6/2006	Jupiter Country Club	1,021.0	155.2	**865.8**
		Jupiter Cove (Sound)	133.6	133.6	**0.0**
		Jupiter Creek Estates	10.0	10.0	**0.0**
4551		Jupiter Creek Plaza	66.9	64.7	**2.2**
		Jupiter Dodge	8.8	8.8	**0.0**
		Jupiter Dunes	214.3	305.6	**0.0**
7156	12/15/2005	Jupiter Equestrian Estates	40.0	7.5	**32.5**
4630		Jupiter Estates - Baker Sub - PBC	60.0	43.4	**16.6**
5502		JupiterFIRST Church	2.9	2.9	**0.0**
		Jupiter Gardens	54.0	54.0	**0.0**
4643		Jupiter Gardens Office Building	12.6	12.6	**0.0**
		Jupiter Gardens West	38.0	38.0	**0.0**
6311	3/6/1980	Jupiter Harbour fka Rive Harbour	262.4	305.7	**0.0**
8480	7/30/2008	Jupiter Inlet Car Wash	13.5	13.5	**0.0**
		Jupiter Lakes Homes	65.7	65.7	**0.0**
		Jupiter Lakes Homes	50.7	50.7	**0.0**
		Jupiter Lakes Med Park	24.0	24.0	**0.0**
		Jupiter Lakes Med Park	41.0	41.0	**0.0**
		Jupiter Lakes Villas	97.1	97.1	**0.0**
		Jupiter Landings	162.0	162.0	**0.0**
5310		Jupiter Library	11.9	11.9	**0.0**
	12/4/1979	Jupiter Mall	119.0	119.0	**0.0**
6499		Jupiter Medical Center	366.6	366.6	**0.0**
6499	2/29/2012	Jupiter Medical Center - Phase II Expansion	2.5	2.5	**0.0**
		Jupiter Medical Park	41.0	41.0	**0.0**
		Jupiter Medical Park - Lot 3	8.6	8.6	**0.0**
		Jupiter Montessori School	9.9	9.9	**0.0**
	2/17/1977	Jupiter Oaks	32.0	32.0	**0.0**
		Jupiter Ocean & Racquet Club 700 MF	500.0	547.8	**0.0**
4552	1/15/1985	Jupiter Park of Commerce	84.0	105.1	**0.0**
4555		Jupiter Park of Commerce Phase IIA	29.0	15.6	**13.4**
4557	1/2/1995	Jupiter Park of Commerce Phase IIB	78.0	60.4	**17.6**
8982		Jupiter Plantation	217.0	218.0	**0.0**
6374		Jupiter Plumbing 16 Yacht Club Dr	1.0	1.0	**0.0**
		Jupiter Pointe-Villas of Ocean Dunes	303.0	303.0	**0.0**
		Jupiter Professional Center	9.1	9.1	**0.0**
		Jupiter Professional Plaza - Dasco	7.5	7.5	**0.0**
		Jupiter Reef	38.2	38.2	**0.0**
	8/18/2008	Jupiter Reserve - Woods Plaza	34.3	37.6	**0.0**
4577		Jupiter River Estates - Ryan	42.0	41.0	**1.0**
		Jupiter River Estates - Urban Land	217.0	217.0	**0.0**
4731		Jupiter River Estates - Martin Cty/Island of Jupiter	258.0	261.0	**0.0**

TOWN OF JUPITER UTILITIES
WATER AGREEMENT CAPACITY RESERVATION

ACCOUNT NUMBER	AGREEMENT DATE	DEVELOPMENT NAME	ERC'S RESERVED	ERC'S BUILT *	ERC'S REMAINING
		Jupiter River Estates - Cagni Rebate	14.0	13.0	**1.0**
		Jupiter Southern Self Storage	1.5	1.5	**0.0**
4558	2/14/1984	Jupiter Square	76.1	154.8	**0.0**
5698		Jupiter Trade Center	15.3	15.3	**0.0**
		Jupiter Theatre - Maltz	21.9	21.9	**0.0**
		Jupiter Towne Center	9.7	9.7	**0.0**
5087		Jupiter Urgent Care	2.4	1.1	**1.3**
	4/20/1977	Jupiter Village	778.2	778.2	**0.0**
4499	8/18/1987	Jupiter West Condo	87.1	93.6	**0.0**
6183	5/25/1988	Jupiter West Plaza	56.6	161.9	**0.0**
		Jupiter Woods	9.0	9.0	**0.0**
4560	3/30/1998	Jupiter Yacht Club	228.3	289.5	**53.2**
5500		Dr. K's Animal Hospital	2.0	1.4	**0.6**
		Keating Industries (Center & Indiantown)	3.0	3.0	**0.0**
5826		Kempe Office Plaza	3.6	1.5	**2.1**
5437		Kennedy Estates - West Jupiter HCD	26.0	26.0	**0.0**
		Kiddie Haven	4.8	4.8	**0.0**
4696		123 Killane Dr - Roughgarden	2.5	2.5	**0.0**
4601		Land's End	8.0	8.5	**0.0**
		Laurel Oaks	50.0	64.7	**0.0**
6499		Lender Center - Jupiter Medical Center	83.9	14.7	**69.2**
7147	3/27/2007	Limestone Cay	29.0	0.0	**29.0**
4730/4925		Limestone Creek - Mustapick	22.0	19.0	**3.0**
		Linens N Things	3.5	3.5	**0.0**
6128		Little Club - FM Water	396.9	396.9	**0.0**
		Little Oaks	38.0	38.0	**0.0**
		Loxahatchee Business Park	8.0	8.0	**0.0**
		Loxahatchee Business Park North	10.7	10.7	**0.0**
5086		Loxahatchee Estates	6.0	5.0	**1.0**
6914		Loxahatchee Landings	30.0	30.0	**0.0**
		Loxahatchee Pines	14.0	14.0	**0.0**
4603		Loxahatchee Pointe	42.0	38.0	**4.0**
		Loxahatchee Storage	1.1	1.1	**0.0**
		Lubrication Station	1.0	1.0	**0.0**
		MBK Development, Inc.	14.0	14.0	**0.0**
		Mallards Cove	256.4	256.4	**0.0**
4602		Mangrove Bay	219.5	36.4	**183.1**
4562		Manor Care - Maplewood Center	14.4	14.4	**0.0**
5824		Maplecrest	119.0	120.0	**0.0**
		Maple Island	107.0	106.0	**1.0**
	5/21/1996	Maplewood Center - Car Wash	4.5	4.5	**0.0**
		Maplewood Center Parcel C-1	23.7	26.2	**0.0**
	5/13/1996	Maplewood Center - The Home Depot	12.9	12.9	**0.0**
5100		Maplewood Center - Pollo Tropical	12.6	12.6	**0.0**
		Maplewood Center - Walgreens	7.6	7.6	**0.0**
5692		Maplewood Phase I	261.0	223.7	**37.3**
5164		Maplewood Phase II	263.3	316.7	**0.0**
		Maplewood - Egret Cove	57.1	55.1	**2.0**
4617		Marlin Ridge	12.0	12.0	**0.0**
		Marquette Electronics	55.5	55.5	**0.0**
6961	8/5/2005	Marsh Fasteners	1.0	1.0	**0.0**
		Mepco Centralab	37.1	37.1	**0.0**
		Merrimac Fund **	0.0	0.0	**0.0**
		Merritt Way	29.0	22.0	**7.0**
		Muscle Express	1.0	1.0	**0.0**
4618		Mystic Cove	28.0	28.0	**0.0**
4635		Mystic Cove - Ph 2 Sheltz Property	10.0	10.0	**0.0**
4697		Neandross Building - Townhall Ave	1.0	1.0	**0.0**
		North County Pool	26.7	26.7	**0.0**
4619		North Palm Beach Heights	1,509.0	1,511.2	**0.0**
		North Passage	258.0	254.8	**3.2**

TOWN OF JUPITER UTILITIES
WATER AGREEMENT CAPACITY RESERVATION

ACCOUNT NUMBER	AGREEMENT DATE	DEVELOPMENT NAME	ERC'S RESERVED	ERC'S BUILT *	ERC'S REMAINING
		Northfork	133.0	131.0	**2.0**
4564		Ocean Cay Park - PBC	9.7	16.0	**0.0**
	6/1/1982	Ocean Cove	44.0	53.0	**0.0**
	10/16/1979	Ocean Parks	228.6	236.3	**0.0**
		Ocean Royale	88.7	88.7	**0.0**
	12/4/1979	Ocean Trails (2)	356.4	432.5	**0.0**
		Ocean Walk	187.5	188.5	**0.0**
		Oceanside Professional Park	9.5	9.5	**0.0**
		Oceanside Terrace (2)	89.5	89.5	**0.0**
6129	11/16/2005	Old Cypress PUD - Martin County	20.5	2.5	**18.0**
4565		150 S Old Dixie Hwy	1.7	1.7	**0.0**
4347		Olympia Center	4.3	0.0	**4.3**
4857		Olympus	773.6	608.9	**164.7**
5429		Omega Builders	3.6	3.6	**0.0**
5491		Owl Pointe	12.0	12.0	**0.0**
		PCI Industries	40.0	40.0	**0.0**
		Palm Beach Chicken	5.1	5.1	**0.0**
6814	6/21/2005	Palm Beach Country Estates	1,545.0	920.0	**625.0**
		Palm Beach Fire Rescue #12	5.1	5.1	**0.0**
4539		Palm Beach Fire Rescue #18	1.8	7.6	**0.0**
		Palm Cove	27.0	28.0	**0.0**
7008	8/31/2007	Papa Chiropractic	1.0	1.0	**0.0**
4678		Paseos	328.5	327.5	**1.0**
4621	3/8/2002	Park Place	13.0	14.0	**0.0**
5865		Park Plaza	7.2	7.2	**0.0**
4717	3/8/2002	Estates of Pennock Point	26.8	14.3	**12.5**
5379		Pennock Business Center	3.4	3.4	**0.0**
		Pennock Landing	47.0	46.0	**1.0**
		Pennock Point Estates - Lox Landing	26.0	25.0	**1.0**
6792		Pennock Point Road N - Rebate	14.0	13.5	**0.5**
4962		Pennock Point - Burg Rebate	34.5	34.0	**0.5**
7202		Pennock Point - Getz Rebate	20.5	18.0	**2.5**
6676		Pennock Point - Meng Rebate	7.0	6.0	**1.0**
		Pennock Point - Rogers Rebate	15.0	10.0	**5.0**
8939	10/6/2009	Pennock Preserve (Martin County)	142.0	0.0	**142.0**
		Pointe Lane - Oldham Rebate	4.0	4.0	**0.0**
		Peoples Church	2.9	2.9	**0.0**
7201	11/29/1977	Perigon Pointe Addition	5.0	5.0	**0.0**
		Pignato, Charlie	1.0	1.0	**0.0**
5939	8/11/2004	Pioneer Realty 231 W Indiantown	2.8	0.0	**2.8**
		Pixie Private School	10.9	10.9	**0.0**
8137	11/7/2007	Prado, The	15.0	0.0	**15.0**
		Privateer Pointe	10.0	10.0	**0.0**
		Professional Learning Center	41.4	41.4	**0.0**
		Republic Security Bank	2.5	2.5	**0.0**
		Reynolds Plaza	30.7	30.7	**0.0**
4922	12/2/2003	Rialto North - Jupiter Isles	504.0	234.5	**269.5**
5691		Rialto South - Loxahtachee Reserve	172.0	0.0	**172.0**
7160		Ridge at Jupiter Riverwalk	16.6	0.0	**16.6**
4232	8/28/2001	Ritz Carlton Golf Club & Spa (including 2 add'l)	371.7	365.2	**8.5**
6203		River Hammock	2.0	0.0	**2.0**
	1/29/1988	River Isle - Anstrom Corp	13.0	14.0	**0.0**
		River Oaks	36.0	36.0	**0.0**
4967		River Place	8.6	8.6	**0.0**
6314		River Place Phase 2	4.3	0.0	**4.3**
		River Trails	342.1	344.1	**0.0**
		Riverview Office Complex	24.0	24.0	**0.0**
8781	3/2/2009	Rocking Horse Irrevocable Trust	5.0	6.5	**0.0**
		Rosebush Apartments	12.0	12.0	**0.0**
		Rudy's European Motorwerks	1.5	1.5	**0.0**
		Rustics, The	14.0	14.0	**0.0**

TOWN OF JUPITER UTILITIES
WATER AGREEMENT CAPACITY RESERVATION

ACCOUNT NUMBER	AGREEMENT DATE	DEVELOPMENT NAME	ERC'S RESERVED	ERC'S BUILT *	ERC'S REMAINING
6270		St Ann's ALF - Bush Rd aka St. Joseph's	38.7	38.7	**0.0**
5110/4566		St Peter Catholic Church	62.2	55.8	**6.4**
4622		Sanctuary Bay	5.5	6.0	**0.0**
		Sandy Oaks	5.0	5.0	**0.0**
9022		Saturn Ln. Extension - Rebate WSA	1.0	1.0	**0.0**
5499		Sawfish Office Building	5.1	5.1	**0.0**
4623		Sawfish Bay Colony	7.0	9.0	**0.0**
		School A & B, PBC	87.9	87.9	**0.0**
4925		School, Jerry Thomas (Jup West Elem)	30.9	30.9	**0.0**
		School, Middle	42.9	42.9	**0.0**
	9/16/1977	Sea Brook	125.7	125.7	**0.0**
	4/8/1982	Sea Colony	203.4	211.2	**0.0**
		Sea Palms	48.0	50.5	**0.0**
5694		Sea Plum - 267.8 MF Units	191.3	174.1	**17.2**
6605	8/26/2003	Sea Plum Center	20.9	21.8	**0.0**
	7/19/1983	Seagrape Square	22.0	65.2	**0.0**
4491		Sehayik Medical Office Building	10.8	10.8	**0.0**
		Sen-Del Corp	2.0	2.0	**0.0**
		Set-N-Sun	31.0	31.0	**0.0**
		Seventh Street Housing Corp (32 MF)	22.9	22.9	**0.0**
		Shaw Warehouse - JPC	1.7	1.7	**0.0**
4624		Shores, The	599.0	592.0	**7.0**
4625		Shorewood	63.0	62.0	**1.0**
4792		Shores Pointe	31.0	0.0	**31.0**
9014		Sierra Square	23.0	0.0	**23.0**
4626		Sims Cay	9.0	10.0	**0.0**
		Sims Creek Phase I	74.0	74.0	**0.0**
		Sims Creek Phase II	123.0	119.0	**4.0**
		Sims Creek Plaza	29.9	49.9	**0.0**
4504		Sims Creek - Estates	7.0	5.0	**2.0**
6708		Somerset Court	1.0	0.0	**1.0**
		State Farm - Susan Wiley Insurance Center	1.4	1.4	**0.0**
		Stonebriar	98.0	98.1	**0.0**
		Straith, William	8.5	8.5	**0.0**
		Summerwinds	54.0	54.0	**0.0**
	11/23/1988	Summerwood	18.0	19.6	**0.0**
		Suni Sands MHP (111 MF)	79.3	79.3	**0.0**
6628	7/30/2007	Surowitz Family Practice	2.7	2.7	**0.0**
		SWA of PBC	25.7	25.7	**0.0**
	5/16/1995	Taylor Modeen Realty Corp.	1.7	1.7	**0.0**
4714		Temple Beth AM	9.5	9.5	**0.0**
7419		Three Palms Center	26.2	64.6	**0.0**
7160		Tierra Del Sol	26.9	18.3	**8.6**
4628	6/16/1998	Timberwalk - Gateway PUD	221.0	221.0	**0.0**
		Tire Kingdom - Bush Rd	2.9	2.9	**0.0**
		Toney Penna Apartments	32.0	32.0	**0.0**
		430 Toney Penna - Pebworth	2.4	2.4	**0.0**
		Toomey, Albert **	0.0	0.0	**0.0**
4858	7/2/2002	Tuscany Square	2.4	2.5	**0.0**
8009	7/15/2008	Turtle River Montessori	3.8	3.8	**0.0**
		Tutor Time Day Care	12.6	12.6	**0.0**
		Vecchione-Sentimental Journey	6.0	14.0	**0.0**
		125 Venus Street	1.1	1.1	**0.0**
7464		231 Venus Street	1.0	1.0	**0.0**
5689		Village Veternary	1.6	1.6	**0.0**
		Villas on the Green	94.3	97.1	**0.0**
		Walgreens - Perry Ave	5.5	5.5	**0.0**
4568		Wal-Mart - DEFAULTED	41.7	36.6	**5.1**
5492	8/25/2005	WIC Parcel 19	264.0	0.0	**264.0**
5645	6/20/2006	WCI Parcel 32 - Juno Beach	331.1	0.0	**331.1**
		Weiler Office Building	1.2	1.2	**0.0**

TOWN OF JUPITER UTILITIES
WATER AGREEMENT CAPACITY RESERVATION

ACCOUNT NUMBER	AGREEMENT DATE	DEVELOPMENT NAME	ERC'S RESERVED	ERC'S BUILT *	ERC'S REMAINING
		West Jupiter Community Center - Add	6.6	6.6	**0.0**
		West Jupiter Community Center - Orig	8.0	8.0	**0.0**
		West Jupiter Tutorial Center	1.4	1.4	**0.0**
4631		Whispering Trails - Rebate	183.0	181.0	**2.0**
6833		White Wing	12.0	4.0	**8.0**
		Windsong on Loxahatchee	7.0	7.0	**0.0**
		Wood Duck (2)	54.3	54.3	**0.0**
	9/3/1984	Woodland Estates	88.0	98.3	**0.0**
		Woodside Trail - Rebate	3.0	3.0	**0.0**
4736		Xanadu	62.5	61.5	**1.0**
		Yogi Bear by the Sea	69.7	69.7	**0.0**
		115 1st St - Novie Property - Boxing Gym	2.3	2.3	**0.0**
		Subtotal Agreement Reservations	**41,712.5**	**38,173.7**	**5,427.5**

TOWN OF JUPITER UTILITIES
WATER AGREEMENT CAPACITY RESERVATION

ACCOUNT NUMBER	AGREEMENT DATE	DEVELOPMENT NAME	ERC'S RESERVED	ERC'S BUILT *	ERC'S REMAINING
	EXPIRATION	GUARANTEED RESERVATIONS			
	DATE	Project Name/Exp Date			
8998	9/23/2012	Donald Carver- 18080 Woodside Trail	1.0	0.0	**1.0**
8997	9/23/2012	James Moody-18140 Woodside Trail & Center St.	1.0	0.0	**1.0**
7723	8/11/2012	Thelma Ave Office Bldg	2.0	0.0	**2.0**
4988	8/6/2012	Courtyard Gardens Expansion (20 beds)	5.7	0.0	**5.7**
6980	8/1/2012	Warrior Plaza	6.8	0.0	**6.8**
6313	7/21/2012	Beechler Subdiv. Palmwood Rd	1.0	0.0	**1.0**
8446	6/30/2012	Juno Beach - Shoppes of Juno Beach	6.0	0.0	**6.0**
8447	6/30/2012	F. Martin Perry - 18990 Lox River Rd	1.0	0.0	**1.0**
6963	5/10/2012	Jupiter Country Club - Parcel E OS/WSA	12.0	0.0	**12.0**
7820	4/5/2012	Mercury Rising	0.7	0.0	**0.7**
8948	3/27/2012	Allegro @ Abacoa (4 additional beds)	0.9	0.0	**0.9**
4568	2/28/2012	Walmart Expansion	10.8	0.0	**10.8**
6340	2/2/2012	Water Pointe/Emerald Cay	26.6	0.0	**26.6**
8953	1/20/2012	Institute of Healthy Living - Abacoa	47.9	0.0	**47.9**
8860	1/18/2012	Seaside Solutions - 800 W. Indiantown	1.0	0.0	**1.0**
6183	11/9/2011	Jupiter West Plaza Expansion	4.7	0.0	**4.7**
7504	9/4/2011	Juno Beach - Toscana	6.8	0.0	**6.8**
6065	9/1/2011	Holy Spirit Lutheran Church OS/WSA	2.4	0.0	**2.4**
		Subtotal Guaranteed Reservations	**138.3**	**0.0**	**138.3**
		TOTAL PAID RESERVATIONS	**41,850.8**	**38,173.7**	**5,565.8**
		EXPIRED RESERVATIONS			
6811	6/18/2011	Abacoa at Dakota Gas Station	1.0	0.0	**1.0**
4730	10/15/2010	Abyssinia Park 8 SF Lots	8.0	0.0	**8.0**
6435	9/20/2010	Water Front Quarter/Harbourside Orig 129.7	290.6	0.0	**290.6**
6677	8/13/2010	Carradori - Lox. River Road Lot 2	1.0	0.0	**1.0**
7284	9/6/2008	Juno Beach - Seminole Ridge	31.0	0.0	**31.0**
7483	2/28/2008	Old Jupiter Beach Rd Townhomes HB1752 Status	21.0	0.0	**21.0**
		TOTAL EXPIRED RESERVATIONS	**352.6**	**0.0**	**352.6**

ALL ERC'S ARE REPRESENTED WITH 350 GPD/ERC
Ken Andrus, Inc. - Agreement terms known
Arthur Cheshire - Agreement terms unknown
Roy George - Agreement terms unknown
Hawksbill Corporation - Agreement terms unknown
Hyollaine WL - Agreement terms unknown
Merrimac Fund - Agreement terms unknown
Albert Toomey - Agreement terms unknown
* Totals equal ERC's built and paid; figures represent ERC's in service as of: 9/30/2011

TOWN OF JUPITER UTILITIES
SUMMARY OF ERC'S IN SERVICE **

Cycle Number	RESIDENTIAL Number of LOCATIONS	RESIDENTIAL Number of ERC'S	MULTI-FAMILY Number of LOCATIONS	MULTI-FAMILY Number of UNITS	MULTI-FAMILY Number of ERC	COMMERCIAL Number of LOCATIONS	COMMERCIAL Number of ERC'S	SUMMARY Total Number of LOCATIONS	SUMMARY Total Number of ERC'S
2	1,039	1,095.0	24	321.0	231.0	13	41.2	1,076	1,365.5
3	1,154	1,180.5	0	0.0	0.0	6	11.9	1,160	1,192.4
4	529	529.0	61	553.0	391.3	116	566.2	706	1,490.2
5	907	907.0	0	0.0	0.0	78	295.0	985	1,202.0
6	1,389	1,389.0	170	1,509.0	1,078.4	66	182.8	1,625	2,649.7
7	1,820	1,897.0	2	137.0	97.9	104	547.1	1,926	2,542.0
8	876	876.0	4	8.0	5.6	105	302.2	985	1,183.9
9	833	854.0	8	100.0	71.5	133	372.2	974	1,297.6
10	700	700.0	37	100.0	70.4	77	340.1	814	1,111.5
11	621	622.5	48	116.0	85.9	154	251.0	823	956.4
12	607	608.6	23	72.0	51.4	81	167.7	711	827.7
13	1,122	1,911.0	0	0.0	0.0	127	624.7	1,249	2,535.7
14	974	1,060.5	19	252.0	179.9	128	886.1	1,121	2,126.6
15	731	740.0	68	1,903.0	1,362.3	129	952.1	928	3,051.4
16	884	896.0	20	748.0	560.9	53	200.6	957	1,630.9
17	2,184	2,187.0	68	1,216.0	872.2	90	375.9	2,342	3,431.5
18	431	602.7	75	1,457.0	1,060.1	84	625.7	590	2,269.1
19	883	916.0	0	0.0	0.0	4	7.0	887	923.0
20	5,910	6,205.6	104	1,810.0	1,129.7	299	1,808.9	6,313	9,307.4
21	524	525.5	5	236.0	168.2	61	97.4	590	791.5
22	209	350.1	0	0.0	0.0	20	54.0	229	404.1
23	289	289.0	2	4.0	2.8	1	1.0	292	292.9
TOTALS	24,616.0	26,342.0	738.0	10,542.0	7,419.5	1,929.0	8,710.8	27,283.0	42,582.8

Appendix C

Jupiter Water System

Cash Flow Analysis

	A	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO
1		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
2	**SOURCE OF REVENUE**																									
28	Growth of Retail Sales Over Prior Yr	100.6%	100.8%	103.1%	103.3%	103.3%	103.3%	103.3%	103.2%	103.2%	103.2%	103.2%	103.2%	103.4%	103.3%	103.3%	105.1%	105.1%	105.1%	105.1%	104.9%	102.7%	102.5%	102.5%	102.3%	102.3%
30	**Adjusted Operating Fund Balance**	$ 13,843,735	$ 8,386,804	$ 7,610,916	$ 6,942,624	$ 6,155,361	$ 5,944,929	$ 4,267,318	$ 5,890,829	$ 6,677,157	$ 8,496,998	$ 10,267,275	$ 6,943,441	$ 8,827,691	$ 4,677,243	$ 6,195,358	$ 7,589,923	$ 9,344,304	$ 11,419,421	$ 13,773,804	$ 15,222,149	$ 16,631,372	$ 17,212,370	$ 18,471,760	$ 18,593,894	$ 17,836,307
31	Add: Operating Income Excluding GF Xfers & FCA	7,813,531	7,644,443	7,792,465	7,972,997	8,149,587	8,321,623	8,487,936	8,647,240	8,800,556	8,943,923	9,079,529	9,204,732	9,357,785	9,499,298	9,628,542	10,282,686	10,967,299	11,682,526	12,432,247	13,168,359	13,145,021	13,043,233	12,911,057	12,697,138	12,447,971
32	Less: General Fund Full Cost Allocation	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)	(738,825)
33	Add: Guaranteed Revenues & AGRF	1,242,803	1,220,187	1,360,396	1,474,486	1,450,411	1,425,593	1,400,034	1,373,734	1,346,693	1,185,100	1,129,814	1,065,980	1,002,146	916,376	830,607	816,129	766,554	716,978	667,403	410,203	410,203	263,232	-	-	-
34	Add: Capital Surcharge/Loan Program Interest Pymt	56,671	91,324	106,874	131,785	154,684	175,503	194,171	210,615	217,145	215,798	212,883	208,346	202,130	187,416	171,348	156,786	141,679	126,802	102,316	79,748	63,485	47,942	36,333	26,382	18,481
35	Add: Capital Surcharge/Loan Program Principal Pymt	60,650	90,954	139,078	216,831	276,850	338,886	403,009	469,288	506,743	537,834	584,072	631,886	681,330	701,773	741,243	754,387	769,147	760,401	702,145	614,427	483,644	398,398	326,726	275,100	239,435
36	Add: GF Loans Principal Repayment	153,950	130,458	55,522	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	Add: Transfers from Connection Fee Fund	-	-	-	-	-	-	-	-	-	-	-	-	-	256,802	199,462	90,614	23,118	-	-	-	-	701,593	345,887	163,305	160,068
41	Less: Transfers to R&R Fund	(5,371,600)	(5,548,863)	(5,731,975)	(5,921,130)	(6,116,528)	(6,318,373)	(6,526,879)	(6,742,267)	(6,964,761)	(7,194,598)	(7,432,020)	(7,677,277)	(7,930,627)	(8,192,338)	(8,462,685)	(8,741,953)	(9,030,438)	(9,328,442)	(9,636,281)	(9,954,278)	(10,282,769)	(10,622,101)	(10,972,630)	(11,334,727)	(11,708,773)
42	Less: Capital Surcharge Program Loans	(419,072)	(419,072)	(628,608)	(990,936)	(990,936)	(990,936)	(990,936)	(990,936)	(729,119)	(522,733)	(522,733)	(522,733)	(522,733)	(287,129)	(287,129)	(347,528)	(347,528)	(347,528)	-	-	-	-	-	-	-
43	Less: Deposit to Membrane & Ion Reserves	(184,472)	(184,472)	(325,043)	(399,949)	(399,949)	(399,949)	(399,949)	(411,867)	(541,101)	(541,101)	(541,101)	(541,101)	(547,765)	(819,860)	(819,860)	(819,860)	(819,860)	(827,699)	(1,014,615)	(1,014,615)	(1,014,615)	(1,014,615)	(1,023,836)	(1,151,361)	(1,151,361)
44	Less: Annual Debt Service Payments	(1,925,221)	(1,854,917)	(1,785,722)	(1,698,128)	(1,611,963)	(1,517,843)	(1,012,635)	(956,875)	(897,759)	(835,945)	(771,213)	(629,163)	(576,663)	(524,175)	(469,313)	(411,838)	(351,750)	(288,575)	(1,804,570)	(1,735,457)	(1,663,020)	(1,582,020)	(1,582,020)	(1,582,020)	(1,582,020)
45	Less: Transfers to Gen Fund/CIP	(26,705)	(21,750)	(15,750)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	Less: Capital Project Expenditures	(103,300)	-	-	-	-	-	-	(752,022)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(360,270)
48	Less: Capital Equipment Expenditures	(423,044)	(200,000)	(125,000)	(126,888)	(128,804)	(130,748)	(132,723)	(134,727)	(136,761)	(138,826)	(140,923)	(143,051)	(145,211)	(147,403)	(149,629)	(151,888)	(154,182)	(156,510)	(158,873)	(161,272)	(163,708)	(166,180)	(168,689)	(171,236)	(173,822)
49	Less: Working Capital @ 16.67% of Expenses (2mos)	(3,311,371)	(3,336,581)	(3,382,578)	(3,443,142)	(3,502,040)	(3,564,213)	(3,638,329)	(3,733,100)	(3,824,424)	(3,916,252)	(4,024,942)	(4,153,587)	(4,320,144)	(4,487,947)	(4,622,676)	(4,758,830)	(4,917,352)	(5,088,702)	(5,486,621)	(5,687,815)	(5,883,046)	(6,059,487)	(6,255,260)	(6,452,772)	(6,644,781)
51	Less: Transfers to Connection Fee Fund	(5,683,945)	(1,174,685)	(1,134,012)	(1,197,559)	(940,009)	(2,755,616)	(18,461)	(184,569)	(156,250)	(414,514)	(5,508,311)	(223,608)	(5,869,211)	-	-	-	-	(39,461)	(107,125)	(326,824)	(551,615)	-	-	-	-
54	Oper. Funds Avail. for Future CIP before Int. Income	4,983,784	4,085,005	3,197,737	2,222,166	1,757,839	(209,970)	1,293,730	1,946,520	3,559,296	5,076,860	1,593,506	3,425,042	(580,095)	1,041,232	2,216,444	3,719,802	5,652,165	7,890,387	8,731,005	9,875,799	10,436,126	11,483,541	11,350,504	10,324,879	8,342,411
55																										
56	Add: Interest Income	91,648	189,331	362,309	490,054	685,050	913,075	958,770	997,538	1,113,278	1,274,164	1,324,992	1,249,062	937,194	666,179	750,803	865,673	849,904	794,715	1,004,523	1,067,758	893,198	928,732	988,130	1,058,657	1,246,331
57	Total Operating Fund Balance with Working Capital	8,386,804	7,610,916	6,942,624	6,155,361	5,944,929	4,267,318	5,890,829	6,677,157	8,496,998	10,267,275	6,943,441	8,827,691	4,677,243	6,195,358	7,589,923	9,344,304	11,419,421	13,773,804	15,222,149	16,631,372	17,212,370	18,471,760	18,593,894	17,836,307	16,233,523
58																										
59	**Renewal & Replacement Fund Balance**	11,411,057	14,564,710	17,804,792	16,311,846	20,085,614	23,303,126	28,269,335	26,449,283	28,482,780	31,674,907	35,779,221	36,667,859	32,080,896	17,830,983	16,374,520	20,644,531	20,998,419	15,748,000	12,834,509	26,142,285	14,255,809	12,340,165	14,819,916	14,977,888	20,227,670
60	Add: Interest Earned Prior Periods on R&R Fund Bal.																									
61	Add: Annual Contributions to R&R Fund	5,371,600	5,548,863	5,731,975	5,921,130	6,116,528	6,318,373	6,526,879	6,742,267	6,964,761	7,194,598	7,432,020	7,677,277	7,930,627	8,192,338	8,462,685	8,741,953	9,030,438	9,328,442	9,636,281	9,954,278	10,282,769	10,622,101	10,972,630	11,334,727	11,708,773
62	Add: Annual Deposit to Membrane, Ion Resin Reserve	184,472	184,472	325,043	399,949	399,949	399,949	399,949	411,867	541,101	541,101	541,101	541,101	547,765	819,860	819,860	819,860	819,860	827,699	1,014,615	1,014,615	1,014,615	1,014,615	1,023,836	1,151,361	1,151,361
63	Add: Debt/Bond Proceeds for R&R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22,000,000	-	-	-	-	-	-
66	Less: Capital Project Expenditures	(2,402,419)	(2,356,612)	(5,899,965)	(2,547,311)	(3,298,965)	(1,752,114)	(8,586,156)	(2,080,554)	(4,313,735)	(3,631,385)	(7,084,483)	(12,616,286)	(20,211,857)	(10,468,661)	(4,095,597)	(9,207,925)	(14,878,341)	(10,109,645)	(19,343,120)	(21,525,564)	(13,213,029)	(8,895,394)	(8,356,794)	(7,236,306)	(3,050,214)
68	Less: Capital Proj. Exp. - Membrane, Ion Resin, Storm	-	(136,641)	(1,650,000)	-	-	-	(160,725)	(3,040,082)	-	-	-	(189,054)	(2,516,449)	-	(916,936)	-	(222,376)	(2,959,987)	-	(1,329,806)	-	(261,571)	(3,481,700)	-	-
69	Less: Annual Debt Service Payments																									
70	Less: Transfers To Operating Fund	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71	Less: Membrane, Ion Resin, & Storm Fund Reserve	(4,204,296)	(4,252,127)	(2,927,170)	(3,327,119)	(3,727,069)	(4,127,018)	(4,366,242)	(1,738,027)	(2,279,128)	(2,820,228)	(3,361,329)	(3,713,375)	(1,744,691)	(2,564,551)	(2,467,475)	(3,287,335)	(3,884,819)	(1,752,530)	(2,767,146)	(2,451,955)	(3,466,571)	(4,219,615)	(1,761,751)	(2,913,112)	(4,064,473)
72	Less: Minimum Deposit per Bond Resolution	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)	(500,000)
75	R&R Funds Avail. for Future CIP before Int. Income	9,860,415	13,052,665	12,884,676	16,258,495	19,076,058	23,642,317	21,583,040	26,244,753	28,895,779	32,458,993	32,806,530	27,867,521	15,586,291	13,309,968	17,677,056	17,211,085	11,363,182	10,581,979	22,875,140	11,303,854	8,373,594	10,100,301	12,716,137	16,814,558	25,473,117
76																										
77	Add: Interest Income	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
79	Total R&R Fund Bal. with Minimum Deposit Req & Rsrv	14,564,710	17,804,792	16,311,846	20,085,614	23,303,126	28,269,335	26,449,283	28,482,780	31,674,907	35,779,221	36,667,859	32,080,896	17,830,983	16,374,520	20,644,531	20,998,419	15,748,000	12,834,509	26,142,285	14,255,809	12,340,165	14,819,916	14,977,888	20,227,670	30,037,590
80																										
81	**Connection Fees Fund Balance**	14,003	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
83	Add: Annual Contributions to Connect Fee Fund	955,339	984,027	1,229,742	1,580,022	1,580,022	1,580,022	1,580,022	1,580,022	1,580,022	1,400,747	1,530,750	1,530,750	1,710,197	1,710,197	1,710,197	1,626,266	1,626,266	1,626,266	1,626,266	1,446,819	1,267,371	891,015	538,342	358,894	358,894
85	Add: Transfers from Operating Fund	5,683,945	1,174,685	1,134,012	1,197,559	940,009	2,755,616	18,461	184,569	156,250	414,514	5,508,311	223,608	5,869,211	-	-	-	-	39,461	107,125	326,824	551,615	-	-	-	-
86	Less: Annual Debt Service Payments	(1,899,860)	(1,980,720)	(2,080,000)	(2,164,340)	(2,272,100)	(2,384,860)	(1,347,000)	(1,414,000)	(1,481,000)	(1,558,000)	(1,634,500)	(1,050,000)	(1,105,000)	(1,155,000)	(1,210,000)	(1,265,000)	(1,330,000)	(1,390,000)	(1,455,000)	(1,525,000)	(1,600,000)	-	-	-	-
87	Less: Capital Project Expenditures	(4,753,427)	(178,019)	(283,754)	(613,241)	(247,931)	(1,950,778)	(251,483)	(350,591)	(255,272)	(257,261)	(5,404,561)	(704,358)	(6,474,408)	(298,395)	(300,735)	(270,652)	(273,148)	(275,727)	(278,391)	(248,643)	(218,986)	(189,422)	(192,455)	(195,589)	(198,826)
89	Less: Transfers to Operating Fund	-	-	-	-	-	-	-	-	-	-	-	-	-	(256,802)	(199,462)	(90,614)	(23,118)	-	-	-	-	(701,593)	(345,887)	(163,305)	(160,068)
92	Conn. Fees Avail. for Future CIP before Int. Income	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
93																										
94	Add: Interest Income	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
95	Connection Fee Fund Balance	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
96																										
105	Total Funds Available At Year End	$ 22,951,541	$ 25,415,709	$ 23,254,470	$ 26,240,976	$ 29,248,055	$ 32,536,653	$ 32,340,112	$ 35,159,937	$ 40,171,905	$ 46,046,496	$ 43,611,299	$ 40,908,588	$ 22,508,226	$ 22,569,877	$ 28,234,454	$ 30,342,724	$ 27,167,421	$ 26,608,313	$ 41,364,434	$ 30,887,181	$ 29,552,535	$ 33,291,676	$ 33,571,782	$ 38,063,977	$ 46,271,113
106																										

107 Notes:

108 Per bond covenants, minimum R&R balance is $500k.

109 Per Resolution 48-10, annual R&R reserve funding deposit goal is $5.2m and minimum R&R fund balance goals is $5.0m.

110 Minimum fund balance goal is $10m.

Jupiter Water System

Capital Improvement Plan

	A	F	G	H	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	CH
5	**Budget Acct No.**	**Capital Improvement Projects**	**Funding Source**	**Project Type**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**Total 2013 to 2037**
70	044-3093-533.31-00	Professional Services	CF	Expansion	$ 46,485	$ 48,019	$ 49,604	$ 51,241	$ 52,931	$ 54,678	$ 56,483	$ 58,347	$ 60,272	$ 62,261	$ 64,316	$ 66,438	$ 68,630	$ 70,895	$ 73,235	$ 75,652	$ 78,148	$ 80,727	$ 83,391	$ 86,143	$ 88,986	$ 91,922	$ 94,955	$ 98,089	$ 101,326	$ 1,763,174
71	043-3090-533.63-01	Large Meter Replacement	R&R	Renewal / Upgrade	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	265,000	6,625,000
72	044-3094-533.64-01	Meters New	OS	Expansion	109,767	130,000	162,500	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	227,500	227,500	227,500	195,000	195,000	195,000	195,000	162,500	130,000	97,500	97,500	97,500	97,500	4,302,267
73	043-3090-533.63-02	Ion Exchange Resin Replacement	RROth	Renewal / Upgrade	-	136,641	-	-	-	-	160,725	-	189,054	-	-	-	-	-	-	-	222,376	-	-	-	-	261,571	-	-	-	970,367
74	043-3090-533.63-05	Meter Replacement	R&R	Renewal / Upgrade	768,000	802,089	837,303	873,679	911,255	950,072	990,169	1,031,590	1,074,377	1,118,577	1,164,235	1,211,399	1,260,121	1,310,450	1,362,439	1,416,145	1,471,623	1,528,931	1,588,131	1,649,284	1,712,456	1,777,712	1,845,121	1,914,755	1,986,687	32,556,600
78	044-3093-533.63-26	North Limestone Creek Wellfield	CF	Expansion	2,186,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,186,100
82	043-3090-533.63-38	N Jupiter Distribution System Improvements - Ph II	R&R	Renewal / Upgrade	-	73,363	1,240,188	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,313,551
84	043-3090-533.63-46	Jupiter Inlet Village Watermain Replacement	R&R	Renewal / Upgrade	408,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	854,022	-	-	-	-	-	-	-	-	-	1,262,022
85	043-3090-533.63-48	Juno Beach Distribution System Improvements	R&R	Renewal / Upgrade	-	-	11,023	603,500	-	-	-	-	881,156	-	-	-	-	-	-	-	-	-	1,000,691	-	-	-	-	-	-	1,615,214
88	043-3090-533.63-52	Mod to Phase II (1997 & 1999) RO Plant (E,F,G,H)	R&R	Renewal / Upgrade	-	-	904,264	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	904,264
91	043-3090-533.63-63	Deepen RO Well No. 4	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	881,156
100	044-3092-533.63-80	Bluffs Booster Pump Station	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	2,823,013	-	-	-	-	-	-	-	-	-	-	-	-	2,823,013
108	043-3090-533.63-90	Asset Maintenance Program - Capitalize	R&R	Renewal / Upgrade	548,219	549,229	396,797	520,462	417,141	476,288	445,129	459,817	662,221	490,666	758,502	767,778	540,862	720,100	585,829	650,013	615,869	645,763	906,346	678,873	1,059,996	1,051,381	748,323	1,007,945	798,527	16,502,076
111	044-3093-533.63-91	Riverbend Repump Station Rechlorination Facility	OS	Expansion	284,075	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	284,075
116	044-3092-533.63-xx	Construct 8 MG Storage Tank - Central Blvd PS Site	OS	Expansion	-	-	-	-	-	-	-	-	-	-	5,145,245	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,145,245
117	044-3092-533.63-xx	Modify Juno Tank Influent Riser	OS	Expansion	-	-	-	-	-	-	-	97,244	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	97,244
118	044-3092-533.63-xx	North Limestone Creek Tank & Repump Station	OS	Expansion	-	-	-	-	-	-	-	-	-	-	-	-	3,355,265	-	-	-	-	-	-	-	-	-	-	-	-	3,355,265
119	044-3093-533.63-xx	Finished Water Stabilization & Other WTP Improvements	CF	Expansion	577,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	577,500
120	044-3093-533.63-xx	Supplemental Blend Box	CF	Expansion	1,136,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,136,300
121	044-3093-533.63-xx	Free Chlorine Disinfection Pilot Testing	CF	Expansion	413,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	413,200
122	044-3093-533.63-xx	Nitrogen Blanket in Sulfuric Acid Tank	CF	Expansion	-	-	71,650	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71,650
123	044-3093-533.63-xx	Complete Final Connection to SFWMD Regional System	CF	Expansion	-	-	-	-	-	1,701,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,701,100
124	044-3093-533.63-xx	Utilities Remote Facilities Security	CF	Expansion	-	-	-	367,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	367,000
125	044-3093-533.63-xx	Enclosed Storage Barn	CF	Expansion	-	-	-	-	-	-	-	-	-	-	-	442,920	-	-	-	-	-	-	-	-	-	-	-	-	-	442,920
126	040-3098-533.63-xx	Concentrate Disposal FDEP/EPA Permitting	O&M	Operating	103,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	103,300
127	040-3098-533.63-xx	Construct Crossing of I95/Turnpike at Donald Ross Road	O&M	Operating	-	-	-	-	-	-	-	752,022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	752,022
129	043-3090-533.63-xx	Customer Information, Billing, Work Order & Cash Receipting Systems	R&R	Renewal / Upgrade	413,200	-	-	-	-	-	-	-	-	-	571,694	-	-	-	-	-	-	-	-	-	790,982	-	-	-	-	1,775,876
130	043-3090-533.63-xx	Replace Membrane Vessel End Caps - RO Trains A,B,C,D	R&R	Renewal / Upgrade	-	-	551,151	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	551,151
131	043-3090-533.63-xx	Replace RO MCC (Motor Control Cooling) System Air Handlers	R&R	Renewal / Upgrade	-	-	303,133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	303,133
132	043-3090-533.63-xx	Pine Gardens South & Brentwood Distribution Improvements	R&R	Renewal / Upgrade	-	-	294,315	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	294,315
133	043-3090-533.63-xx	Demo Lime Sludge Drying Equipment	R&R	Renewal / Upgrade	-	-	-	-	-	-	188,275	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	188,275
134	043-3090-533.63-xx	C-18 Outfall Corrosion Investigation	R&R	Renewal / Upgrade	-	-	137,788	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	137,788
135	043-3090-533.63-xx	Replace CTF Recirculation Pumps	R&R	Renewal / Upgrade	-	-	132,276	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	132,276
136	043-3090-533.63-xx	Central Blvd Pump Station Piping Upgrade	R&R	Renewal / Upgrade	-	-	-	284,670	-	-	-	-	-	-	-	-	3,736,545	-	-	-	-	-	-	-	-	-	-	-	-	4,021,215
137	043-3090-533.63-xx	Central Blvd at Jupiter Park Dr Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	147,032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	147,032
138	043-3090-533.63-xx	S US Highway 1 (Juno) Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	60,754	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60,754
139	043-3090-533.63-xx	Loxahatchee River Rd Valving Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	301,380	-	-	-	-	-	-	-	301,380
140	043-3090-533.63-xx	Old Dixie Highway Watermain Replacement	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,556,841	-	-	-	-	-	-	-	-	-	-	1,556,841
141	043-3090-533.63-xx	Toney Penna at JRE Transmission Main Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,017,369	-	-	-	-	-	-	1,017,369
142	043-3090-533.63-xx	Alt AIA Bridge Crossing (West Side) Watermain Replacement	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,937,907	-	-	-	-	1,937,907
143	043-3090-533.63-xx	Pump Replacement Program	R&R	Renewal / Upgrade	-	586,899	826,727	-	-	-	-	-	-	581,102	-	1,081,023	114,857	1,171,341	-	747,192	2,846,138	4,725,936	229,714	-	-	1,123,491	3,369,027	-	-	17,403,447
144	043-3090-533.63-xx	Storage Reservoir Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	870,954	-	1,490,932	-	-	-	-	-	-	-	2,361,886
145	043-3090-533.63-xx	Well Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	2,133,788	-	569,235	1,176,040	3,660,379	2,509,879	-	-	-	4,286,919	8,896,494	-	6,237,617	4,922,596	-	1,736,305	-	3,880,765	-	40,010,017
146	043-3090-533.63-xx	Water Treatment Plant Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	-	-	2,756,351	324,147	-	-	-	6,781,207	13,562,414	6,781,207	-	-	-	448,483	7,004,905	14,009,811	7,004,905	-	778,845	-	-	59,452,274
149	043-3090-533.63-xx	Generator Replacement Program	R&R	Renewal / Upgrade	-	-	-	-	98,804	-	-	-	-	-	-	-	-	220,563	-	117,680	-	703,220	-	-	-	-	-	167,841	-	1,308,108
150	043-3090-533.63-xx	Central Blvd HSP North Electrical Improvements	R&R	Renewal / Upgrade	-	-	-	-	793,972	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	793,972
151	043-3090-533.63-xx	Loxahatchee River Road Area Distribution System Impr	R&R	Renewal / Upgrade	-	-	-	-	665,761	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	665,761
152	043-3090-533.63-xx	Modify Bluffs Ridge Service Lines	R&R	Renewal / Upgrade	-	80,032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80,032
153	043-3090-533.63-xx	Yacht Club Dr Area Distribution Improvements (incl Clark Ln)	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	664,673	-	-	-	-	-	-	-	-	-	-	-	-	-	-	664,673
154	043-3090-533.63-xx	Fisherman's Landing Watermain Replacement	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	861,746	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	861,746
155	043-3090-533.63-xx	Penn Park Distribution System Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	1,807,444	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,941,505	-	-	-	4,748,949
156	043-3090-533.63-xx	Seabrook Place Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	732,058	-	-	-	-	-	-	-	-	-	-	-	-	732,058
157	043-3090-533.63-xx	Bella Vista Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	675,239	-	-	675,239
158	043-3090-533.63-xx	Jupiter Dunes Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	675,239	-	-	675,239
159	043-3090-533.63-xx	N Pennock Lane Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,093,347	-	-	-	-	-	-	1,093,347
160	043-3090-533.63-xx	Hampton Pl & Hampton Cir Distribution Improvements	O&M	Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	360,270	360,270
161	043-3090-533.63-xx	Jupiter Plantation Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-	325,488	-	-	-	-	-	-	-	-	-	-	325,488
162	043-3090-533.63-xx	Ocean Parks Condos Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	441,783	-	-	-	-	441,783
163	043-3090-533.63-xx	Villas on the Green Distribution Improvements	R&R	Renewal / Upgrade	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	783,217	-	-	-	-	-	-	-	-	783,217
164	043-3090-533.63-xx	RO & Nano Membrane Replacement Program	RROth	Renewal / Upgrade	-	-	1,650,000	-	-	-	-	3,040,082	-	-	-	-	2,516,449	-	916,936	-	-	2,959,987	-	1,329,806	-	-	3,481,700	-	-	15,894,960
166		Total Projects			$ 7,259,146	$ 2,671,272	$ 7,833,719	$ 3,160,552	$ 3,546,896	$ 3,702,892	$ 8,998,364	$ 6,223,249	$ 4,569,007	$ 3,888,646	$ 12,489,044	$ 13,509,698	$ 29,202,714	$ 10,767,056	$ 5,313,268	$ 9,478,577	$ 15,373,865	$ 13,345,359	$ 19,621,511	$ 23,104,013	$ 13,432,015	$ 9,346,387	$ 12,030,949	$ 7,431,895	$ 3,609,310	249,909,403
167																														
168		Funding by Source of Funds																												
169		Water O&M Reserve Funds	O&M		$ 103,300	$ -	$ -	$ -	$ -	$ -	$ -	$ 752,022	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 360,270	$ 1,215,592
170		Water O&M Reserve Funds - Loans	Util-Loan		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
171		Water Off-site Transmission Fees	OS		393,842	130,000	162,500	195,000	195,000	195,000	195,000	292,244	195,000	195,000	5,340,245	195,000	6,405,778	227,500	227,500	195,000	195,000	195,000	195,000	162,500	130,000	97,500	97,500	97,500	97,500	16,007,109
172		Water Plant Capacity Charges	CF		4,359,585	48,019	121,254	418,241	52,931	1,755,778	56,483	58,347	60,272	62,261	64,316	509,358	68,630	70,895	73,235	75,652	78,148	80,727	83,391	86,143	88,986	91,922	94,955	98,089	101,326	8,658,944
173		Water Renewal & Replacement Funds	R&R		2,402,419	2,356,612	5,899,965	2,547,311	3,298,965	1,752,114	8,586,156	2,080,554	4,313,735	3,631,385	7,084,483	12,616,286	20,211,857	10,468,661	4,095,597	9,207,925	14,878,341	10,109,645	19,343,120	21,525,564	13,213,029	8,895,394	8,356,794	7,236,306	3,050,214	207,162,431
174		Water R&R Subfund - Membrane, Ion, Storm	RROth		-	136,641	1,650,000	-	-	-	160,725	3,040,082	-	-	-	189,054	2,516,449	-	916,936	-	222,376	2,959,987	-	1,329,806	-	-	261,571	3,481,700	-	-	16,865,327
178		Intergov - Grant Funds - FEMA - WTR	EPA		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
179		Shared Costs With Others	Seacoast		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
182		Total Projects			$ 7,259,146	$ 2,671,272	$ 7,833,719	$ 3,160,552	$ 3,546,896	$ 3,702,892	$ 8,998,364	$ 6,223,249	$ 4,569,007	$ 3,888,646	$ 12,489,044	$ 13,509,698	$ 29,202,714	$ 10,767,056	$ 5,313,268	$ 9,478,577	$ 15,373,865	$ 13,345,359	$ 19,621,511	$ 23,104,013	$ 13,432,015	$ 9,346,387	$ 12,030,949	$ 7,431,895	$ 3,609,310	$ 249,909,403

Jupiter Water System

Summary of Maintenance Programs

	A	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO
1		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
3	**Asset Maintenance R&R Program**																									
4	Recharge System																									
5	Maintenance Dredging of Canals (every 5 yrs)				60,754					71,462					84,057					98,873					116,300	
6	Total Recharge System	-	-	-	60,754	-	-	-	-	71,462	-	-	-	-	84,057	-	-	-	-	98,873	-	-	-	-	116,300	-
7																										
8	Wells																									
9	Continual Well R&R	206,600	213,418	220,461	227,736	235,251	243,014	251,034	259,318	267,875	276,715	285,847	295,280	305,024	315,090	325,488	336,229	347,325	358,786	370,626	382,857	395,491	408,542	422,024	435,951	450,337
10	Clean and Paint Wellhead piping			5,881			6,483			7,146			7,877			8,683			9,571			10,551			11,630	
11	Total Wells	206,600	213,418	226,342	227,736	235,251	249,497	251,034	259,318	275,021	276,715	285,847	303,157	305,024	315,090	334,171	336,229	347,325	368,357	370,626	382,857	406,042	408,542	422,024	447,581	450,337
12																										
13	Ground Storage Tanks																									
14	On-Site clean/paint every 5 yrs due to MBAs																									
15	Two Tanks On-Site (3 MG, 1.5 MG)				55,893					65,745					77,333					90,963					106,996	
16	Off-Site clean/paint every 10 years																									
17	Central Blvd Tanks (2-5MG, 1-8MG)		170,802										236,317										326,963			
18	Juno Tank (3 MG)									42,877										59,324						
19	Riverbend Tank (3 MG) last painted in 2008						38,898										53,818									
20	Total Ground Storage Tanks	-	170,802	-	55,893	-	38,898	-	-	108,622	-	-	236,317	-	77,333	-	53,818	-	-	150,287	-	-	326,963	-	106,996	-
21																										
22	Buildings Clean and Paint every 10 years																									
23	On-Site Bldgs (Interior & Exterior)	48,501	50,102	51,755	53,463	55,227	57,050	58,933	60,877	62,886	64,962	67,105	69,320	71,607	73,970	76,411	78,933	81,538	84,229	87,008	89,879	92,845	95,909	99,074	102,344	105,721
24	WTP Administration/Lab/Maintenance Bldg																									
25	RO Plant Process/Control Rm/Clearwell/pumps																									
26	RO Chemical Bldg																									
27	Nanofiltration Process Bldg																									
28	Nanofiltration Pretreatment Bldg																									
29	Chlorine Bldg																									
30	Concentrate Treatment Facility																									
31	MBA Chemical Bldg																									
32	On-Site Generator Bldg																									
33	On-Site High Service Pump Bldg (& pumps)																									
34	WTP Warehouse Bldg (Future)																									
35	Sludge Vacuum Bldg																									
36	WTP Pole Barn																									
37	Off-Site Bldgs (Interior & Exterior)	22,046	22,774	23,525	24,301	25,103	25,932	26,788	27,672	28,585	29,528	30,502	31,509	32,549	33,623	34,732	35,879	37,063	38,286	39,549	40,854	42,202	43,595	45,034	46,520	48,055
38	Central Blvd HSP Bldgs & Pumps (2)																									
39	Indian Creek Generator Bldg																									
40	Toney Pena Well House																									
41	Abacoa Generator Bldg																									
42	Riverbend Repump Generator/Electrical Bldg																									
43	Juno Tank Site Electrical Bldg																									
44	Emergency Operations Center (EOC)																									
45	EOC Pole Barn																									
46	Total Buildings	70,547	72,876	75,280	77,764	80,330	82,982	85,721	88,549	91,471	94,490	97,607	100,829	104,156	107,593	111,143	114,812	118,601	122,515	126,557	130,733	135,047	139,504	144,108	148,864	153,776
47																										
48	Other Plant Facilities Clean & Paint																									
49	IX Facility (incld. Brine tank, salt contain & piping)	16,535	17,080	17,644	18,226	18,828	19,449	20,091	20,754	21,439	22,146	22,877	23,632	24,412	25,217	26,049	26,909	27,797	28,714	29,662	30,641	31,652	32,696	33,775	34,890	36,041
50	Hydropneumatic Tank																									
51	MBA Scrubbers & Duct Work																									
52	CTF Scrubbers & Duct Work																									
53	Nano Degas/Scrubbers/Ductwork																									
54	RO Generator Muffler (high temp coating)																									
55	Above Ground Finished Water Transfer Line																									
56	Bollards on Plant Site																									
57	Backflow Preventors (incld. NF Conc. Piping)																									
58	Bulk Fuel & Chemical Containment Areas																									
59	Nano Bulk Chemical Tanks																									
60	Misc. Exterior PVC																									
61	Plant III Filter																									
62	Total Other Plant Facilities	16,535	17,080	17,644	18,226	18,828	19,449	20,091	20,754	21,439	22,146	22,877	23,632	24,412	25,217	26,049	26,909	27,797	28,714	29,662	30,641	31,652	32,696	33,775	34,890	36,041
63																										
64	Distribution System																									
65	Aerial Bridge Crossings Clean & Paint every 7 yrs	5,512	5,693	5,881	6,075	6,276	6,483	6,697	6,918	7,146	7,382	7,626	7,877	8,137	8,406	8,683	8,970	9,266	9,571	9,887	10,214	10,551	10,899	11,258	11,630	12,014
66	Bridgegate Drive (Jonathan's Landing-8",130')																									
67	Carlin Park (12", 40')																									
68	Lox. River Road Culvert (12", 40')																									
69	Jupiter Beach Resort (8", 45')																									
70	Toney Penna/Mohican (Jones Creek-Culvert)																									
71	Bluff's Marina																									
72	Indiantown Road (Jones Creek)																									
73	Commodore Dr. (Admirals Cove)																									
74	Island Way (South, East, West)																									
75	Center St. (East, West)																									
76	Reach Island																									
77	Toney Penna (Canal Crossing)																									
78	Loxahatchee River Rd																									
79	Alt A1A (East, West)																									
80	Caseekey Island (Jonathan's Landing)																									
81	Barrow Island (Jonathan's Landing)																									
82	Total Distribution System	5,512	5,693	5,881	6,075	6,276	6,483	6,697	6,918	7,146	7,382	7,626	7,877	8,137	8,406	8,683	8,970	9,266	9,571	9,887	10,214	10,551	10,899	11,258	11,630	12,014
83																										
84	Hydrant Maintenance Painting																									
85	3300 Hydrants (every 10 yrs)	181,880										251,645										348,170				
86	Total Hydrant Maintenance	181,880	-	-	-	-	-	-	-	-	-	251,645	-	-	-	-	-	-	-	-	-	348,170	-	-	-	-
87																										
88	Information Systems																									
89	GIS Upgrades	5,165	5,335	5,512	5,693	5,881	6,075	6,276	6,483	6,697	6,918	7,146	7,382	7,626	7,877	8,137	8,406	8,683	8,970	9,266	9,571	9,887	10,214	10,551	10,899	11,258
90	SCADA Upgrades	61,980	64,025	66,138	68,321	70,575	72,904	75,310	77,795	80,363	83,015	85,754	88,584	91,507	94,527	97,646	100,869	104,197	107,636	111,188	114,857	118,647	122,563	126,607	130,785	135,101
91	Total Hydrant Maintenance	67,145	69,360	71,650	74,014	76,456	78,979	81,586	84,278	87,060	89,933	92,900	95,966	99,133	102,404	105,783	109,275	112,880	116,606	120,454	124,428	128,534	132,777	137,158	141,684	146,359
92																										
93																										
94	Total Asset Maintenance R&R Program	548,219	549,229	396,797	520,462	417,141	476,288	445,129	459,817	662,221	490,666	758,502	767,778	540,862	720,100	585,829	650,013	615,869	645,763	906,346	678,873	1,059,996	1,051,381	748,323	1,007,945	798,527

Jupiter Water System

Summary of Maintenance Programs

	A	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO
1		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
96	Membrane Replacements																									
97	RO Bank I (Trains A-D, every 12 yrs)								697,323												1,029,527					
98	RO Bank II (Trains E-F, every 12 yrs)															458,468										
99	RO Bank II (Trains G-H, every 12 yrs)															458,468										
100	RO Bank II (Train I, every 12 yrs)								203,386												300,279					
101	Nano (Trains 1-5, every 5 yrs)			1,650,000					2,139,373					2,516,449					2,959,987					3,481,700		
102	Total Membrane Replacements	-	-	1,650,000	-	-	-	-	3,040,082	-	-	-	-	2,516,449	-	916,936	-	-	2,959,987	-	1,329,806	-	-	3,481,700	-	-
103																										
104	Ion Exchange Resin Replacement																									
105	Ion Exchange Resin Replacement (every 5 yrs)		136,641					160,725					189,054					222,376					261,571			
106	Total Ion Exchange Resin Replacement	-	136,641	-	-	-	-	160,725	-	-	-	-	189,054	-	-	-	-	222,376	-	-	-	-	261,571	-	-	-
107																										

Jupiter Water System

Assumptions by Year for Projections

	A	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
1	**Assumptions**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**
2																										
3	Expenses																									
4	Salaries	110.18%	102.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%
5	OT - Plant	100.00%	102.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%
6	OT - Field	166.67%	102.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%
7	FICA	109.68%	102.00%	103.01%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%
8	FRS	125.98%	102.00%	103.20%	103.00%	103.00%	103.00%	103.00%	103.43%	103.00%	103.00%	103.00%	103.00%	103.38%	103.00%	103.00%	103.00%	103.00%	103.33%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%
9	Health/Life Insurance	128.31%	103.84%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%	107.50%
10	Workers Comp	91.27%	103.83%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%	103.50%
11	OPEB	31.52%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%	101.04%
12	Consumer Price Index - Gen Inflation	102.90%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%	102.50%
13	Repairs and Maintenance	98.98%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%
14	Other 1	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
15	Customer Growth plus Inflation	103.65%	103.43%	103.65%	103.86%	103.84%	103.83%	103.81%	103.79%	103.77%	103.76%	103.74%	103.73%	103.91%	103.90%	103.88%	103.66%	103.65%	103.64%	103.62%	103.43%	103.23%	103.05%	103.04%	102.86%	102.86%
16	Marginal Increase	93.36%	100.09%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%	101.51%
17	Chemical Costs	99.78%	103.97%	104.00%	104.21%	104.19%	104.17%	104.16%	104.14%	104.12%	104.11%	104.09%	104.08%	104.26%	104.24%	104.22%	104.01%	104.00%	103.99%	103.97%	103.77%	103.58%	103.40%	103.39%	103.21%	103.21%
18	Utility Costs	79.52%	105.78%	106.00%	106.21%	106.19%	106.17%	106.16%	106.14%	106.12%	106.11%	106.09%	106.08%	106.26%	106.24%	106.22%	106.01%	106.00%	105.99%	105.97%	105.77%	105.58%	105.40%	105.39%	105.21%	105.21%
19	Insurance Costs	80.97%	104.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%	105.00%
20	Constant	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
21	Depreciation as a % of Total Assets	101.88%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%	101.90%
22																										
23	Other																									
24	Working Capital-% of Oper/Non-Oper Expenses	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%
25																										
26	Revenues																									
27	Fuel Reimbursement	101.96%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%	103.00%
30	Interest Rate on Investments	0.37%	0.79%	1.50%	2.00%	2.50%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
31	R&R Contributions	5,371,600	5,548,863	5,731,975	5,921,130	6,116,528	6,318,373	6,526,879	6,742,267	6,964,761	7,194,598	7,432,020	7,677,277	7,930,627	8,192,338	8,462,685	8,741,953	9,030,438	9,328,442	9,636,281	9,954,278	10,282,769	10,622,101	10,972,630	11,334,727	11,708,773
32	Growth in Retail Sales	100.60%	100.78%	103.10%	103.31%	103.29%	103.28%	103.26%	103.24%	103.22%	103.21%	103.19%	103.18%	103.36%	103.35%	103.33%	105.11%	105.10%	105.09%	105.07%	104.88%	102.68%	102.50%	102.49%	102.31%	102.31%
33	User Charge Index (20yr avg 4.7% - USDOL Water & Sewer Maintenance Cost Index to Water Rates)	0.00%	0.00%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%
34	Rate Increase	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.00%	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%
35	Water Use Adjustment	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%	-0.15%
36	Customer Growth	100.75%	100.93%	101.15%	101.36%	101.34%	101.33%	101.31%	101.29%	101.27%	101.26%	101.24%	101.23%	101.41%	101.40%	101.38%	101.16%	101.15%	101.14%	101.12%	100.93%	100.73%	100.55%	100.54%	100.36%	100.36%
37	ERCs Connected	43,174	43,574	44,074	44,674	45,274	45,874	46,474	47,074	47,674	48,274	48,874	49,474	50,174	50,874	51,574	52,174	52,774	53,374	53,974	54,474	54,874	55,174	55,474	55,674	55,874
38	Increase in ERCs	320	400	500	600	600	600	600	600	600	600	600	600	700	700	700	600	600	600	600	500	400	300	300	200	200

Town of Jupiter

Summary of Above-ground Assets - Original and Replacement Cost [1]

Line No.	Asset Description	Original Cost	Service Life (Years)	Installation Date (Year)	Useful Life Expiration	Useful Life Expiration Replace Cost
	Pump					
1	High Service Pump 11 (Central Blvd North Station)	487,500	20	1995	2035	1,786,436
2	High Service Pump 12 (Central Blvd North Station)	487,500	20	1999	2026	1,171,341
3	High Service Pump 13, 14 (Outside HSP Bldg On-Site)	789,689	20	2002	2029	1,897,426
4	High Service Pump 15 (Central Blvd South Station)	394,844	20	2002	2029	948,712
5	High Service Pump 16 (Central Blvd South Station)	60,000	20	2005	2025	114,857
6	High Service Pump 17, 18	120,000	20	2011	2031	229,714
7	High Service Pump 3 (In HSP Bldg On-Site)	495,000	20	2000	2014	586,899
8	High Service Pump 4 (In HSP Bldg On-Site)	60,000	20	1979	2014	-
9	High Service Pump 5 (In HSP Bldg On-Site)	60,000	20	1985	2014	-
10	High Service Pump 6 (In HSP Bldg On-Site)	295,000	20	1979	2034	1,123,491
11	High Service Pump 7 (Outside HSP Bldg On-Site)	295,000	20	1984	2024	1,081,023
12	High Service Pump 8 (Outside HSP Bldg On-Site)	203,901	20	1988	2028	747,192
13	High Service Pump 9, 10 (Central Blvd North Station)	548,823	20	1990	2030	2,011,153
14	Nano Pretreatment Booster (4) Pump	233,685	20	2010	2030	447,340
15	Nano Transfer (6), Feed (5) Pump	1,184,486	20	2010	2030	2,267,443
16	RO Transfer Pump 11	270,000	20	1994	2015	826,727
17	RO Transfer Pump 12, 13	270,000	20	1996	2015	
18	RO Transfer Pump 8, 9, 10	270,000	20	1990	2035	1,582,591
19	Juno Repump Station	-	20	1992	2022	581,102
20	Total Pumps	6,525,428				17,403,447
	Storage Reservoirs					
21	Hydropneumatic Tank	250,000	55	1975	2030	1,490,932
22	8 MG Ground Storage Tank ST5	1,277,557	55	1993	2048	7,619,000
23	5 MG Ground Storage Tank ST4	808,326	55	1989	2044	4,820,635
24	3 MG Ground Storage Tank ST3	484,120	55	1984	2039	2,887,159
25	1.5 MG Ground Storage Tank ST2	146,042	55	1973	2028	870,954
26	1 MG Juno Beach Water Storage and Repump Facility	262,001	55	1992	2047	1,562,502
27	3 MG Riverbend Water Storage Repump Facility	3,700,165	55	2008	2063	22,066,770
28	8 MG Ground Storage Tank ST6	3,771,229	55	2002	2057	22,490,577
29	Total Storage Reservoirs	10,699,440				63,808,529
	Wells					
30	Surficial Well 6, 7	370,000	35	1974	2019	2,133,788
31	Surficial Well 8, 9, 10, 11	341,744	35	1977	2019	
32	Surficial Well 12	94,963	35	1978	2021	569,235
33	Surficial Well 13,14	241,855	35	1981	2022	1,176,040
34	Surficial Well 15, 16, 17, 18	491,676	35	1982	2024	2,509,879
35	Surficial Well 23, 24, 25, 26, 27, 28	881,555	35	1986	2028	4,286,919
36	Surficial Well 29, 30	315,745	35	1989	2034	1,736,305
37	Surficial Well 21, 22	315,745	35	1989	2036	1,852,792
38	Surficial Well 31, 32, 33, 34, 35, 36, 38	1,287,661	35	1994	2029	4,011,554
39	Surficial Well 19 Relocation	124,425	35	2012	2047	387,631
40	Surficial Well 20	185,000	35	1997	2032	576,346
41	Surficial Well 37	183,952	35	2012	2047	573,079
42	Surficial Well 39	265,151	35	2006	2041	826,047
43	Surficial Well 47	265,151	35	2006	2041	826,047
44	Surficial Well 48, 49, 51, 52, 53, 54, 55	1,395,094	35	1997	2032	4,346,250
45	Surficial Well 50, 67, 68	650,955	35	2001	2036	2,027,973
46	Floridan Well 11, 12, 13	2,002,200	35	2004	2039	6,237,617
47	Floridan Well 11, 12, 13 - RWM Extension To	604,180	70	2004	2074	5,863,931
48	Floridan Well 2, 3	1,174,938	35	1988	2023	3,660,379
49	Floridan Well 4	587,469	35	2021	2056	5,343,264
50	Floridan Well 5, 6, 7	1,568,007	35	1994	2029	4,884,940
51	Floridan Well 5, 6, 7 - Raw Water Collection Piping	733,793	70	1994	2064	7,121,903
52	Floridan Well 8, 9, 10	2,002,200	35	1996	2031	6,237,617
53	Floridan Well 8, 9, 10 - Raw Water Collection Piping	375,000	70	1996	2066	3,639,601
54	Abacoa Wellfield and Emer Generator Bldg (Gen 10)	7,836,074	35	2006	2041	24,412,361
55	Total Wells	24,294,531				95,241,498

Town of Jupiter

Summary of Above-ground Assets - Original and Replacement Cost [1]

Line No.	Asset Description		Original Cost	Service Life (Years)	Installation Date (Year)	Useful Life Expiration	Useful Life Expiration Replace Cost
	Water Treatment Plant						
56	Chlorine Storage Facility Building		766,183	50	2000	2050	3,884,620
57	Chlorine Storage Facility Scrubbers (Single Stage/Single Unit)		250,000	35	2000	2035	778,845
58	Concentrate Treatment		214,243	35	1996	2031	667,449
59	Concentrate Treatement Facility Recirculation Pumps		71,380	35	2015	2050	412,091
60	Dry Sludge Covered Storage		197,013	50	2000	2050	998,875
61	Ion Exchange Treatment Plant		1,400,000	35	1999	Abandon ~ 2013	
62	Nanofiltration Treatment Facility		42,531,220	35	2010	2045	132,500,981
63	Nano Sand Filter Media		250,000	10	2010	2020	324,147
64	Nano Sand Filter Media Replacement		-	10	2020	2030	448,483
65	Reverse Osmosis Treatment Plant, Trains E, F, G, H, Process Equip		8,779,718	35	1996	2031	27,352,172
66	Reverse Osmosis Treatment Plant, Train I, Process Equip		6,176,528	35	2004	2039	19,242,242
67	Reverse Osmosis Treatment Plant, Trains A, B, C, D, Process Equip		8,706,743	35	1989	2024	27,124,827
68	Reverse Osmosis Treatment Plant, Building		5,471,821	50	1989	2039	27,742,651
69	Reverse Osmosis Permeate Scrubbers (MBAs)		1,200,000	20	1989	2019	2,756,351
70	Total Water Treatment Plant		76,014,849				244,233,734
	Buildings						
71	Administration Laboratory Building		1,557,475	50	2003	2053	7,896,546
72	EOC Field Maintenance Facility		2,779,041	50	2002	2052	14,090,001
73	Warehouse - Original		295,000	50	2012	2062	1,495,678
74	High Service Pump Building		1,011,232	50	2012	2062	5,127,042
75	Total Buildings		5,642,748				28,609,267
	Recharge Systems						
76	C-18 Siphon		53,888	70	1989	2059	523,016
77	Jupiter Village Outfall Structure To Heights Canal		13,472	70	1989	2059	130,754
78	Indian Creek Outfall Structure To Heights Canal		13,472	70	1989	2059	130,754
79	Indian Creek Surface Weir		5,389	70	1989	2059	52,303
80	Maplewood Outfall Structure To Heights Canal		13,472	70	1989	2059	130,754
81	Salinity Structure		269,442	70	1989	2059	2,615,097
82	Recharge Pump Stations (2)		2,066,628	30	2008	2038	5,473,586
83	Central Blvd Recharge Pipeline		355,000	70	2009	2079	3,445,489
84	Total Recharge Systems		2,790,763				12,501,753
	Generators	**Gen #**					
85	17403 Central Blvd Water Plant	I	271,768	35	2003	2038	846,661
86	1451 Tony Penna Well House 12	II	10,741	35	1970	2040	104,248
87	2351 S Central Blvd (CWF #4 WH #15)	III	31,715	35	1982	2017	98,804
88	2534 Jupiter Gardens Blvd H.S.B. North	IV	70,798	35	1991	2026	220,563
89	14255 US Highway 1 Juno Repump	V	37,774	35	1993	2028	117,680
90	17403 Central Blvd R,O.	VI	225,725	35	1995	2030	703,220
91	620 S Central Blvd H.S.B. South	VII	305,332	35	2006	2041	951,226
92	17403 Central Blvd R.O.	VIII	312,309	35	2005	2040	972,962
93	16491 79th Terr N (Western Repump)	IX	302,332	35	2004	2039	941,880
94	3190 Carlstrom Ally Abacoa Gen	X	101,605	35	2009	2044	316,538
95	17403 Central Blvd #Nano 1	XI	341,115	35	2010	2045	1,062,703
96	17403 Central Blvd #Nano 2	XII	341,115	35	2010	2045	1,062,703
97	3133 Washington St	EOC	53,875	35	2001	2036	167,841
98	Total Generators		2,406,204				7,567,029
99	Totals		128,373,963				469,365,257

[1] Amounts shown based on utility plant analysis as prepared by Hazen and Sawyer dated June 20, 2010 and Director and Assistant Director, Utilities.

(2) Replacement Cost based on an average construction index of =====> 3.30%

TOWN OF JUPITER

Approved by Town Council 5/15/12 4-1

DATE: May 2, 2012

TO: Honorable Mayor and Members of Town Council

THRU: Andrew D. Lukasik, Town Manager

FROM: David L. Brown, Director of Utilities

SUBJECT: Resolution No. 31–12, Accepting the 2012 Update to the Water Utility Master Plan

EXECUTIVE SUMMARY:

Acceptance of a 5 year update to the Water Utility's business plan.

During its history, the Town has prudently planned for the future of its utility operations through the creation and subsequent updates of a master plan which serves to guide business decisions. In 2012, the latest update to this plan was drafted and reviewed with the Town Council at a workshop held on April 24, 2012. All direction and revisions offered at this workshop have been incorporated within the document. As such, the 2012 Water Utility Master Plan may now be considered for formal acceptance by the Town Council through the adoption of attached Resolution No. 31-12.

RECOMMENDATION:

Staff recommends adoption of Resolution No. 31-12, accepting the 2012 Update to the Water Utility Master Plan.

Strategic Priority: Responsive Town Government

Attachments:

1. April 24, 2012 Town Council Workshop Follow Up Information	3. Resolution No. 31-12
2. Staff Initiated Master Plan Changes Since the April 24, 2012 Town Council Workshop	4. 2012 Update to the Water Utility Master Plan

Funding Source:

☐ Approved in Budget	$ NA	Sources:	
☐ Additional Funding Required	$	Sources:	

RESOLUTION NO. 31-12

A RESOLUTION OF THE TOWN COUNCIL OF THE TOWN OF JUPITER, FLORIDA, ACCEPTING THE 2012 UPDATE TO THE WATER UTILITY MASTER PLAN.

WHEREAS, In 1978 the Town of Jupiter purchased a Water Utility which has grown to serve over 80,000 residents in Northern Palm Beach and Southern Martin Counties; and

WHEREAS, the Town of Jupiter's administrative staff and its consultants has studied and made an analysis of the Town's Water Utility in regard to the service capabilities of said system to serve its existing and future customers within its ultimate service area; and

WHEREAS, since its inception, the Jupiter Water Utility has prudently planned for its capital and financial needs through the adoption and periodic updates of master plans; and

WHEREAS, this study and analysis is routinely refined and the Town's latest findings are contained in a document entitled the 2012 Update to the Water Master Plan; and

WHEREAS, the Jupiter Town Council deems it necessary and desirable to adopt this Water Master Plan Update for the Town of Jupiter Water Utility to guide the future development of the Town's Water Utility and ensure that such future development is consistent with the Jupiter comprehensive plan in furtherance of the public health, safety and welfare; and

WHEREAS, the Jupiter Town Council's acceptance of the 2012 Update to the Water Utility Master Plan will provide adequate, reliable, economical and efficient services to its present and future customers.

NOW THEREFORE be it resolved by the Town Council of the Town of Jupiter, Florida:

Section 1. The Town Council of the Town of Jupiter hereby adopts the 2012 Update to the Water Master Plan for the Water Utility System, a copy of which is attached hereto, marked Exhibit "A", and made a part hereof by reference.

Section 2. The aforesaid 2012 Update to the Water Master Plan is intended to be a guide to the maintenance and operation, future development and expansion of the Town of Jupiter's Water Utility System consistent with the Town's Comprehensive Plan. The plan may be further amended from time to time so as to remain consistent with the actual development of the land areas involved and shall be subject to further review and determination by the Town Council of the Town of Jupiter to ensure consistency with its comprehensive plan, or as otherwise may be required.

Section 3. The Town of Jupiter shall adopt this 2012 Update to the Water Master Plan as support documents to the Town's Comprehensive Plan and in furtherance of the implementation of the Town's Infrastructure Element. The Town shall take such actions at the next available comprehensive plan amendment cycle.

Section 4. The Town Clerk shall maintain a copy of the Town's 2012 Update to the Water Utility Master Plan in the official records of the Town which shall be available for the inspection and information of the general public and all interested parties.

Section 5. This Resolution shall take effect immediately upon adoption.

Master Plan Workshop Meeting Follow Up

Date: 4/24/12

Water Plan

Councilor Wendy Harrison

- Comment: Something to consider in the future is that the Town's higher usage tier rates are lower than other cities.

Councilor Jim Kuretski

- Power cost 6% assumption?
  - Comment: Unfounded in history
  - Comment: No reasonable forecast to predict 6%

Please find below recent historical power cost trends for the water utility:

Town of Jupiter										
Water System Historical Power Cost Increases	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Power Cost Increase	13.09%	8.26%	20.68%	4.09%	39.57%	-4.04%	-14.59%	9.29%	1.36%	15.73%
Increase in Finished Water Produced	10.24%	8.46%	6.04%	3.09%	2.43%	-11.12%	-18.23%	5.58%	3.38%	6.01%
Increase Due to Increased Power Costs	2.85%	-0.20%	14.64%	1.00%	37.14%	7.08%	3.64%	3.71%	-2.02%	9.72%
Annual Compound Growth Rate From 2001	2.85%	2.87%	20.96%	23.09%	80.78%	87.00%	78.64%	89.55%	88.69%	112.97%

- Commented on the comparison of residential bill amounts of other Florida Communities. He felt that at a usage rate of 6,000 (in lieu of 10,000) gallons per month per residence the Town's bill would be higher that the City of Port ST. Lucie.

  Reference is made to Water Master Plan Table II.28. At 6,000 gallons per month: Town of Jupiter = $25.12; Port St. Lucie = $31.49.

- Connection Fees:
  - Explore option to waive plant impact fees if 75% of NF plant was paid for from R&R reserves, not connection fees.
  - Additional detail requested on status of connection fee fund. How much in connection fees remains to be paid, debt remaining, etc. - business decisions to offer connections at reduced rate if in big picture, financial benefit to Town exists- economic developmental tool? Business option/residential option?

The Master Plan Update recognizes approximately 13,000 ERCs of new customer growth for the FY 2013 – 2037 forecast period which produces $33.6m of revenue to the water system from the collection of connection fees. However, it should be noted that approximately 40% of this growth is anticipated from connections within Jupiter Farms which may be much slower to occur than projected. Of the total $36.0m of bonds outstanding, the expansion portion of the debt remaining is $33.3m and is shown in the following table.

Town of Jupiter			
Water System			
Projected Debt Summary EOY FY2012			
Debt Issue	%Exp		Total
Projected Principal Balances EOY FY2012			
Series 2002	69.6%	$	6,155,000
Series 2003	100.0%		21,930,000
TD Bank 2010	90.0%		7,875,000
Total		$	35,960,000
Expansion Related Amounts			
Series 2002		$	4,283,880
Series 2003			21,930,000
TD Bank 2010			7,087,500
Total		$	33,301,380

This essentially equates to the amount of funds to be generated from the Connection Fees. Until such time adequate growth related connection fees are realized, system operating revenues will continue to be burdened with the payment of the expansion related annual debt service.

With the probable net reduction in ultimate system demand, it is anticipated that the remaining and unused treatment / transmission capacity may result in a potential shortfall of the capital cost recovery derived from connection fees during the projected forecast period. As a result, most future expansion related projects are being approached on an "if critically necessary" basis.

Town of Jupiter	
Water System	
Connection Fund - Projection 2013 - 2037	
Connection Fees Collected	$ 33,608,479
Debt Service Paid [1]	(33,301,380)
Expansion Projects Planned	(24,666,053)
Potential Connection Fund Shortfall	$ (24,358,954)

(1) *Amounts shown reflect expansion related principle payments remaining associated with the currently outstanding indebtedness. It should be noted that the connection fees applied to the debt service from prior periods may not be recognized in this calculation and will be further reviewed by staff in the coming months which may reduce the potential shortfall.*

In addition, the capital projects identified during the financial forecast that are classified as expansion projects total $24.1m and are shown in the table above and in more detail in the following table.

Town of Jupiter						
Water System						
Capital Improvement Plan - Expansion Projects						
No. Capital Improvement Projects	2013 to 2017	2018 to 2022	2023 to 2027	2028 to 2032	2033 to 2037	Total
1 Professional Services	$ 248,280	$ 292,041	$ 343,514	$ 404,061	$ 475,278	$ 1,763,174
2 North Limestone Creek Wellfield	2,186,100	-	-	-	-	2,186,100
3 Finished Water Stabilization & Other WTP Improvements	577,500	-	-	-	-	577,500
4 Supplemental Blend Box	1,136,300	-	-	-	-	1,136,300
5 Free Chlorine Disinfection Pilot Testing	413,200	-	-	-	-	413,200
6 Nitrogen Blanket in Sulfuric Acid Tank	71,650	-	-	-	-	71,650
7 Complete Final Connection to SFWMD Regional System	-	1,701,100	-	-	-	1,701,100
8 Utilities Remote Facilities Security	367,000	-	-	-	-	367,000
9 Enclosed Storage Barn	-	-	442,920	-	-	442,920
10 Meters New	792,267	975,000	1,072,500	942,500	520,000	4,302,267
11 Bluffs Booster Pump Station	-	-	2,823,013	-	-	2,823,013
12 Riverbend Repump Station Rechlorination Facility	284,075	-	-	-	-	284,075
13 Construct 8 MG Storage Tank - Central Blvd PS Site	-	-	5,145,245	-	-	5,145,245
14 Modify Juno Tank Influent Riser	-	97,244	-	-	-	97,244
15 North Limestone Creek Tank & Repump Station	-	-	3,355,265	-	-	3,355,265
Total Projects	$ 6,076,372	$ 3,065,385	$ 13,182,457	$ 1,346,561	$ 995,278	$ 24,666,053

One option that has been suggested is to waive the application of connection fees as an economic development tool, if there is a financial benefit to the Town. The receipt of the connections fees were recognized as a financial resource to the water system and were relied

upon i) in the determination of the rates to be charged; ii) the evaluation of the projected financial position of the system; and iii) in the evaluation of the need for additional debt financing to fund the capital program over the 25 year forecast period. There is concern over the potential for a legal challenge if a class of customers is discriminated against by waiving fees for a select group.

The rate covenants as delineated in the Bond Resolution which authorized the issuance of the outstanding utility revenue bonds require that net revenues equal at least 1.1 times the maximum annual debt service requirement for all outstanding bonds (which totals $4.0m for Fiscal Year 2013). The covenants further require that net revenues and connection charges shall equal at least 1.2 times the maximum debt service requirement for all outstanding bonds. The elimination of the availability of the connection fees will result in a negative impact on the ability to meet the annual rate covenants. In addition, to the extent that the connection fees are waived, the Town will need to replace this financial resource through the issuance of additional debt in order to fund the capital improvement program. Moreover, the credit rating agencies have recognized that the Town will continue to collect the connection fees which are a pledged revenue for the payment of the debt; any major change in policy, with limited financial benefit, may jeopardize the current AAA rating of the Utility by rating agencies.

Finally, the waiving of capacity fees may not be considered as being fair and reasonable to the existing rate payer, absent a significant financial benefit. To the extent new customer growth does not fund the allocated cost of providing the capacity to serve such growth, the cost for this capital recovery will unfortunately be allocated to the existing customers which would not be considered as fair and reasonable. This issue is further amplified by the fact that the current customers have paid their fair share of the cost of the allocable capacity and to exempt new customers from the payment of their allocable cost would be considered as unfair and may be challenged.

Based on the above, we do not recommend waiving the connection fees. However, if these fees were funded from other sources, such that the system would remain whole, this would not be considered an issue to the system or in the development of the future rates for service. For instance, the repayment of connection fees may be funded through the generation of taxes derived from the new development and paid to the Town's General Fund. Meanwhile, it is also plausible that the Utility may provide low cost financing for the new development's connection fees. However, it is recommended that the ultimate repayment of connection fees and financing cost come from sources outside the Utility to ensure fairness and equity amongst all customers.

- Questioned the historical trend of US Bureau of Labor Index vs. 2% index proposed.

  Please see below for the historical trend of the index over the past decade.

US Bureau of Labor Statistics
Consumer Price Index - All Urban Consumers
12-Month Percent Change

Series Id:	*CUUR0000SEHG01*
Not Seasonally Adjusted	
Area:	*U.S. city average*
Item:	*Water and sewerage maintenance index*
Base Period:	*1982-84=100*
Years:	*2002 to 2011*

Year	***Annual***
2002	*3.4%*
2003	*3.8%*
2004	*6.5%*
2005	*5.7%*
2006	*4.9%*
2007	*5.2%*
2008	*6.0%*
2009	*7.0%*
2010	*7.4%*
2011	*5.8%*
Average:	***5.6%***

Vice Mayor Todd Wodraska

- Comment: Requested further discussion on indexing policy with all 5 councilors present so that direction may be given. (Mayor Golonka and Councilor Friedman were unable to attend this workshop)

  All the additional capacity of the water treatment facility

TOWN OF JUPITER

May 8, 2012

2012 Water Utility Master Plan Update

Staff Initiated Master Plan Changes Made Since the April 24, 2012 Town Council Workshop

- Ion Exchange Resin Replacement within the Asset Maintenance Program moved from 2013 to 2014 and every 5 years thereafter; reserve funding also adjusted based on this move
- Finished Water Stabilization project added in 2013 for $577,500
- Riverbend Repump project moved from 2014 to 2013
- Generator 1 removed from 2019 with replacement now in 2038; this generator is being repaired in 2012; this project was also duplicated in the Generator Replacement Program
- MBA Replacement removed from 2020 as it was duplicated in Water Treatment Plant Replacement Program in 2019
- High Service Pump Replacement Project in 2014 renamed to change to pumps nubers to be replaced to pumps 3, 4, 5 & 6; originally listed as 4, 5, 6 & 7; removed pump 3 replacement from 2020 and grouped with 2014 replacement; added pump 7 replacement to 2024 and removed from 2014 grouping
- Meter revenue removed hardcoding in 2014 to allow it to calculate based on assumptions
- Floridan Well 4 Replacement extended 35 years from 2021 Deepening RO 4 project; replacement now programed in 2056
- Water Plant Replacement Program in 2031 was spread over a three year period 2031 to 2033
- Operating budget numbers updated to current proposed budget for 2013, primary changes:
    - An increase in chemical costs of $176.7k
    - A reduction to the General Fund Cost Allocation of $59k and an offsetting increase to Water Administration Operating Budget salaries and benefits for the Cashier moving from Finance to Utilities
- Miscellaneous adjustments to assumptions in 2014 which were hardcoded prior
- Adjusted interest to calculate based on assumptions in 2014; interests was hardcoded prior
- Increased recommended indexing, beginning in 2015, from 2.0% to 2.1% due to increases in the short term affecting other expenditures long term and to maintain minimal operating liquidity.

210 Military Trail • Jupiter, Florida 33458 • www.jupiter.fl.us
Phone (561) 741-2272 • Fax (561) 741-2539

Welcome

2012 Town of Jupiter

Water and Stormwater Utility Master Plan Updates

Final Drafts

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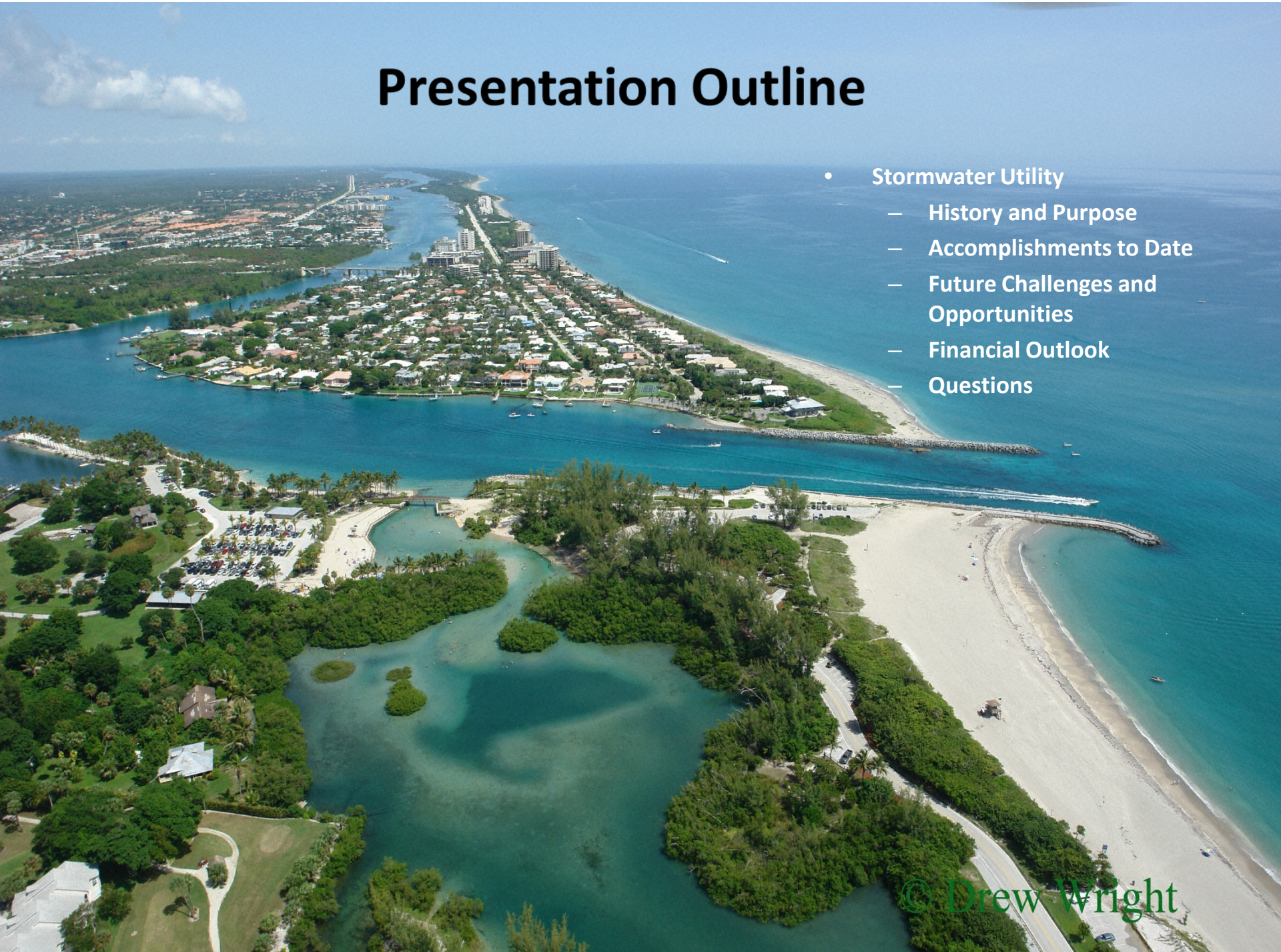
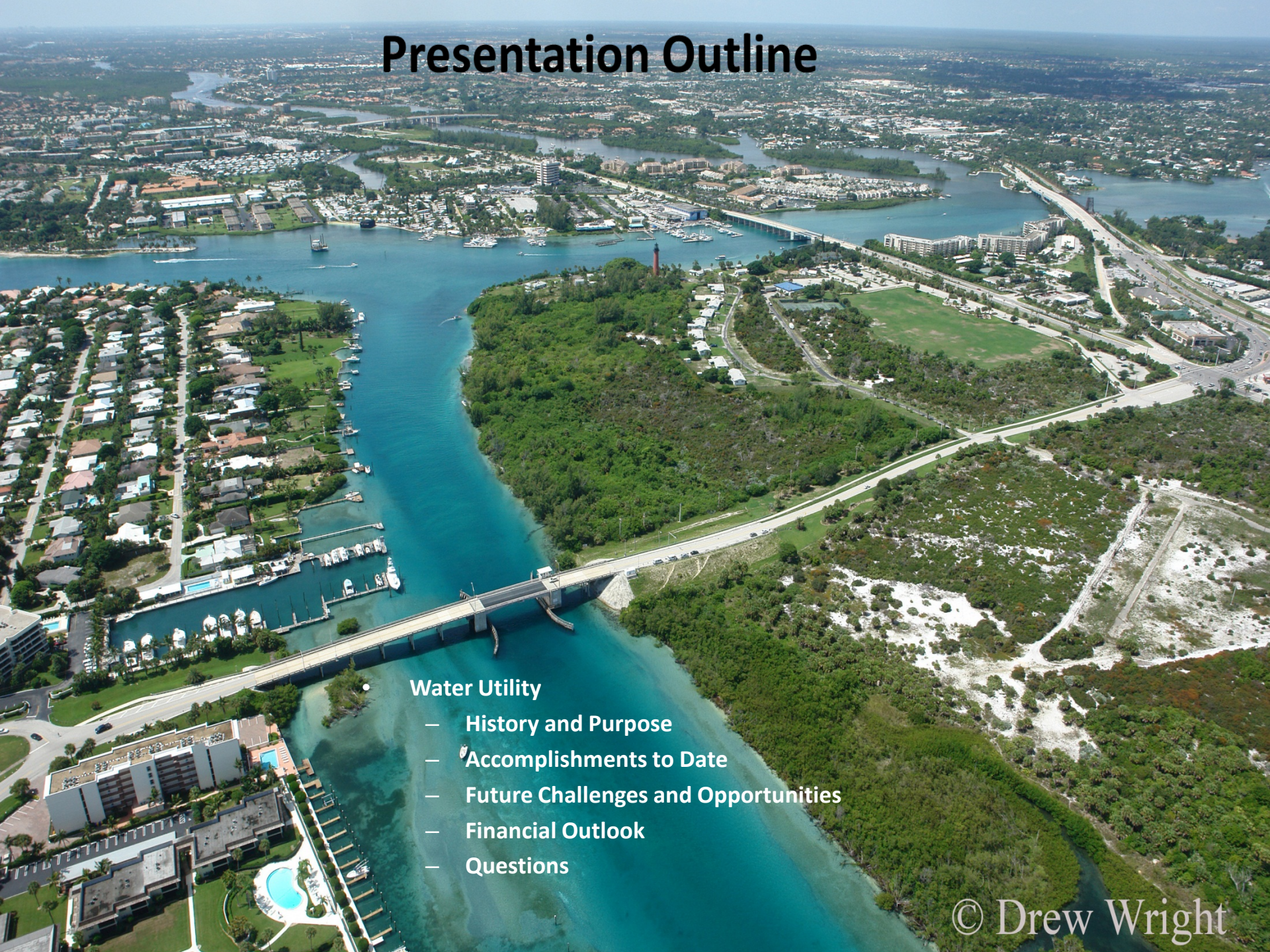
Presentation Outline

- Stormwater Utility
  - History and Purpose
  - Accomplishments to Date
  - Future Challenges and Opportunities
  - Financial Outlook
  - Questions



Presentation Outline



- Water Utility
  - History and Purpose
  - Accomplishments to Date
  - Future Challenges and Opportunities
  - Financial Outlook
  - Questions

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Town of Jupiter Utilities

STORMWATER UTILITY MASTER PLAN UPDATE 2012

History & Purpose of Utility

- Town Council acted over 15 years ago to address stormwater management issues proactively through the establishment of the utility
- Primary purposes include:
  - Enhance the quality of stormwater runoff
  - Minimize the risk of flooding

Accomplishments to Date

- Operationally, the system is far more reliable than ever before. Regional water quality gains are being achieved.

The mission of the 1996 and 2002 planning efforts is largely complete

Capital Improvements to Reduce Flooding

Capital Improvements to Enhance Water Quality

Capital Improvements for Environmental Restoration

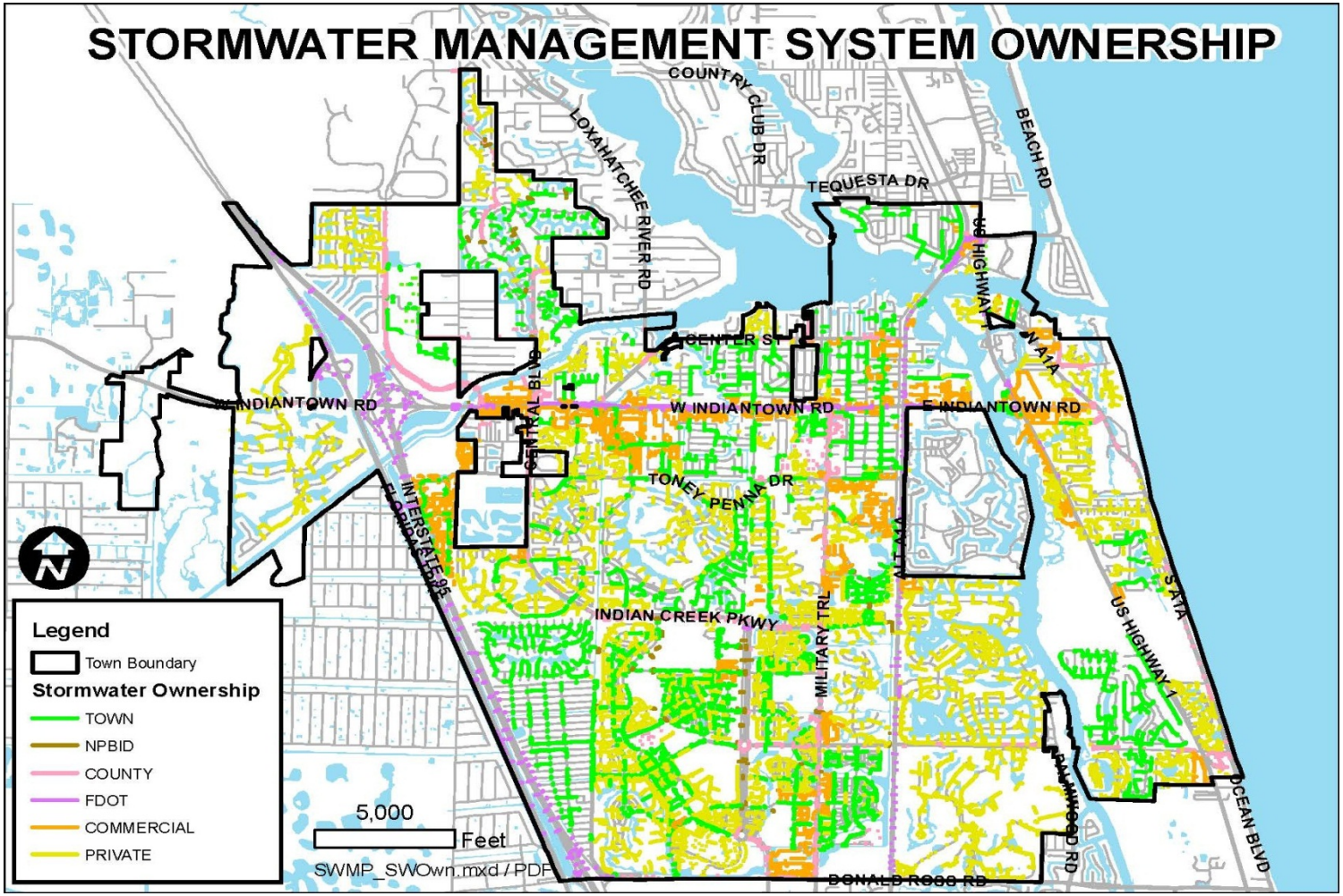
Accomplishments to Date

- Basin-wide, comprehensive approach to stormwater management has been created through the establishment of the LRPI and working relationships with other entities.
- Available grant funding was capitalized upon while maintaining our cost of service as one of the lowest in the region.

Future Challenges and Opportunities

- Growth potential is limited.
- Grant Funding has become very scarce
- Neighborhood Infrastructure Equity Program is increasing operational costs and R&R liability.

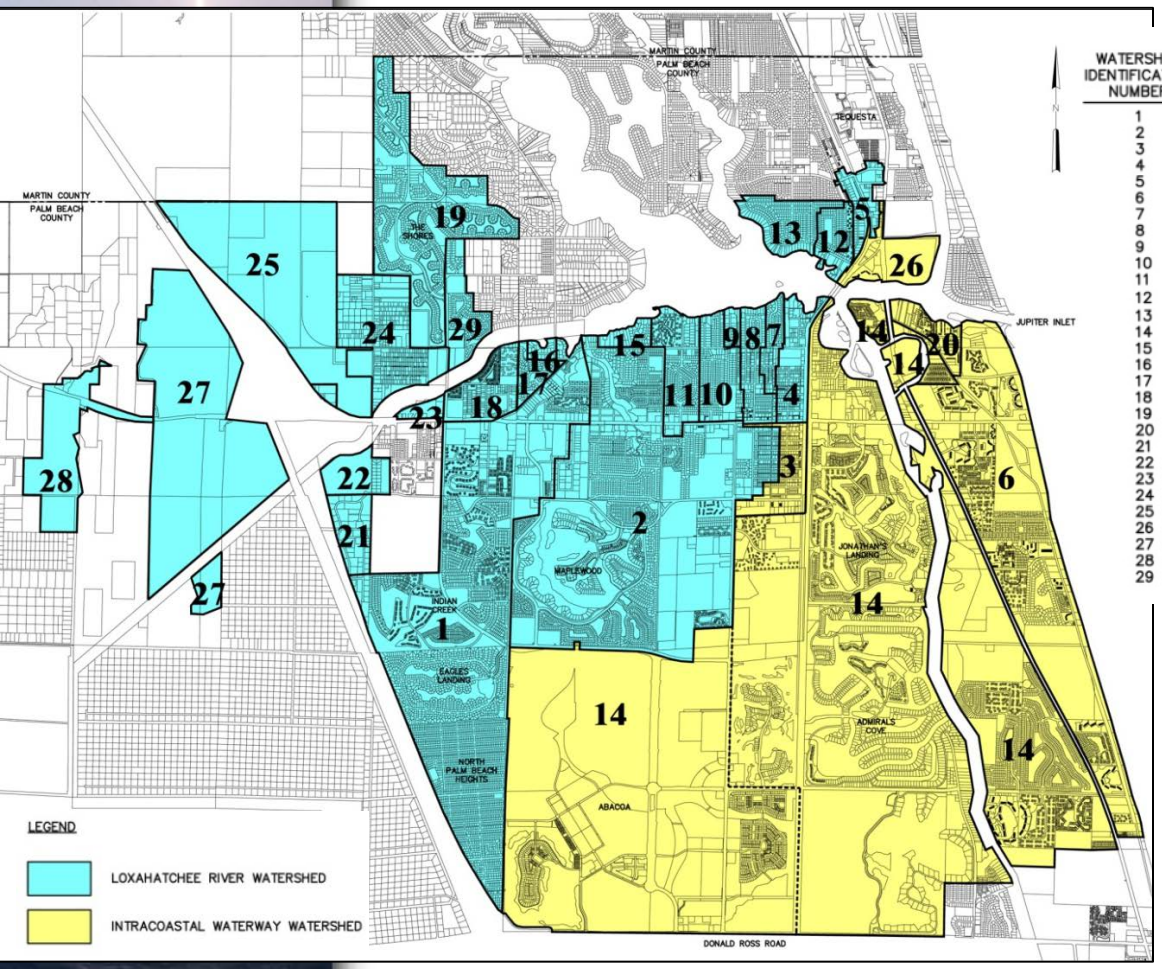
Future Challenges and Opportunities



TOWN OF JUPITER UTILITIES

STORMWATER UTILITY MASTER PLAN UPDATE 2012

Over $15M in improvements completed thus far



WATERSHED IDENTIFICATION NUMBER	WATERSHED NAME
1	SIMS CREEK WATERSHED
2	JONES CREEK WATERSHED
3	SEVENTH STREET PUMP STATION
4	SEMINOLE AVENUE PUMP STATION
5	CYPRESS DRIVE WATERSHED
6	DUBOIS PARK WATERSHED
7	RIO VISTA CANAL WATERSHED
8	LOXAHATCHEE CANAL WATERSHED
9	TURNER QUAY ROAD CANAL WATERSHED
10	PENN WATERWAY WATERSHED
11	EASTVIEW MANOR CANAL WATERSHED
12	RIVERSIDE DRIVE WATERSHED (BASIN 1)
13	RIVERSIDE DRIVE WATERSHED (BASIN 2)
14	INTRACOASTAL WATERWAY WATERSHED
15	PALM POINT WATERSHED
16	TIDEWATER DRIVE WATERSHED
17	WOODLAND ESTATES WATERSHED
18	RIVERWALK LANE WATERSHED
19	THE SHORES WATERSHED
20	SUNI–SANDS WATERSHED
21	JUPITER PARK OF COMMERCE WATERSHED
22	C–18 CANAL WATERSHED
23	JUPITER WEST WATERSHED
24	LIMESTONE CREEK WATERSHED
25	ISLAND WAY CORRIDOR
26	LIGHTHOUSE WATERSHED
27	WCI PARCEL 19
28	RIVERBEND PARK BASIN
29	JUPITER LANDINGS

Capital Invested ($)
$ 974,117 (1)
$ 2,880,690 (2)
$ 1,001,933 (3)
$ 753,586 (4)
$ 880,000 (5)
$ 70,000 (10)
$ 521,332 (13)
$ 226,648 (14)
$ 888,775 (19)
$ 320,000 (25)
$ 6,789,865 (Townwide System)

(#) = Watershed ID

Now there is a shift in priorities (highlighted in 2007/2012 Updates)

Renewal and Replacement (R&R)

- Aging infrastructure
- Impact on flood control, water quality and other infrastructure

Regulatory Mandates

- NPDES
- TMDLs
- NNC

R&R program is progressing

- Assets identified and mapped
- Type and age identified / estimated
- Depreciation schedule developed
  ➔ R&R Funding
- Numerous projects completed / underway
  - Lake outfall repairs
  - Culvert and / or headwall replacements
  - Storm sewer rehab

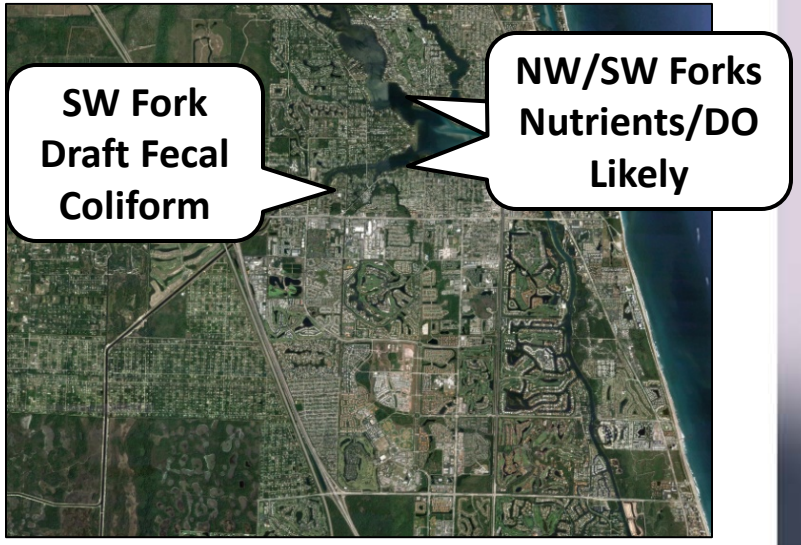
Timely R&R saves money in the long run

Regulatory drivers may also have a significant cost impact

NPDES

- Mechanism for restoring "impaired" waters
- Results in BMAP for implementation
- Cost/requirements shared by water-shed stakeholders
- Currently limited impact on Jupiter

- Town involved for 20 years
- Co-permittee with PBC entities
- Five year renewal cycle
- Expected mechanism to enforce other regulatory measures



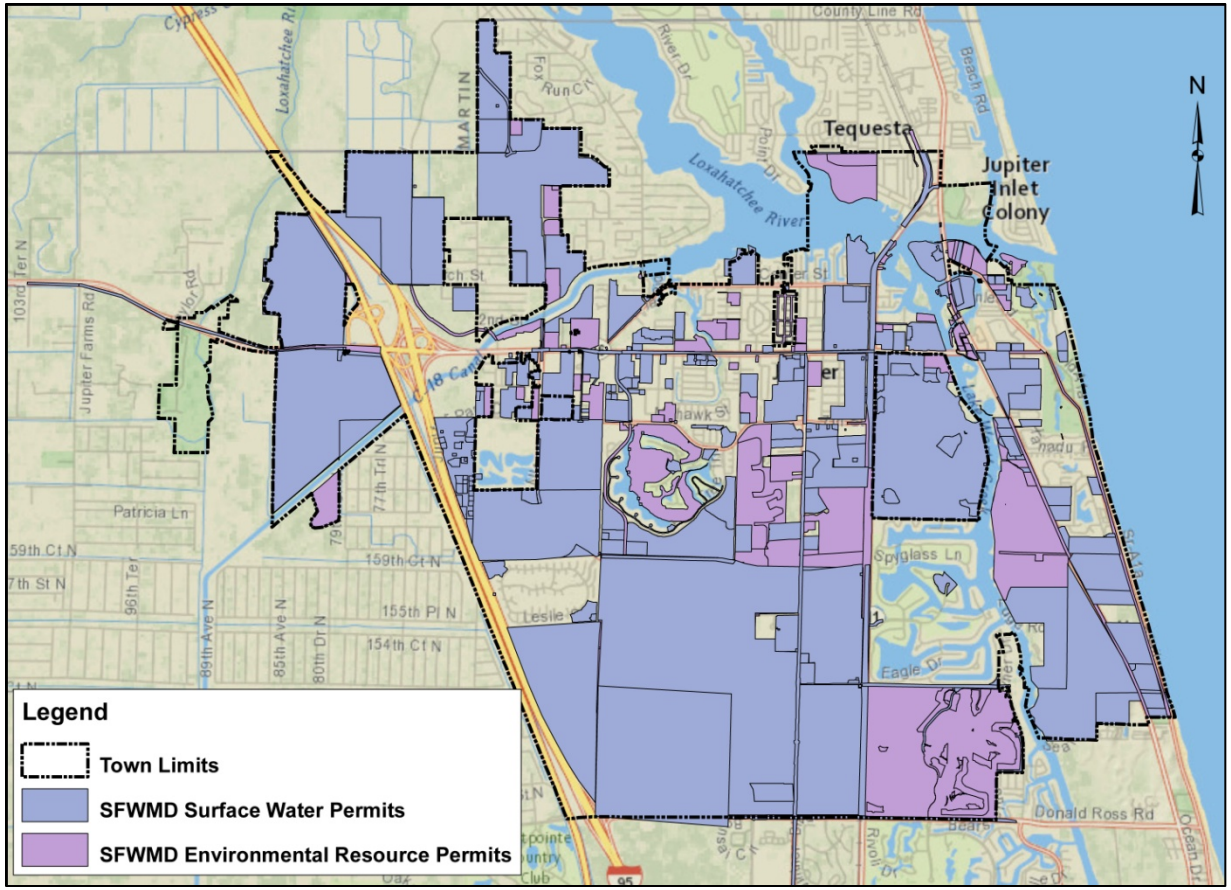
TMDLs

Numeric Nutrient Criteria – the big unknown

- FDEP and EPA simultaneously working on programs
- Legal / Judicial actions ➔ multiple delays
- Wide disparity on statewide implementation costs
  - FDEP: $50.5M to $149.8M[1]
  - Private Study: $1.71B to $4.82B[2]
- Currently no numeric criteria for South Florida (narrative only)

(1) Center for Economic Forecasting and Analysis, January 2012
(2) Cardno-Entrix (for Florida Water Quality Coalition)

Town should begin preparing itself



…but relatively speaking, proactive approach should serve Town well in future

Future Challenges and Opportunities

- Incentive Grant & Loan Programs to Improve Private SW Systems (Residential and Commercial)
- Rates can not support take over of all private systems – programs are best means of addressing new regulatory mandates and R&R needs of these systems.

Future Projects Highlights

- Asset Maintenance R&R Program

Annual maintenance to enable facilities to achieve their projected useful life

- Mechanical/Electrical Maintenance
  - Pumps/Piping/Valves
  - Generators/Instrumentation & Controls
- Painting Maintenance
  - Clean, crack repair, paint
  - EOC/Storm Water Pumps Stations/Fuel Containment Areas
  - Generators/Piping
  - Salinity Barrier
- Control Structures/Outfalls/Detention & Retention Ponds
  - Debris Removal/Cleaning
  - Minor repairs/Grouting
  - Maintenance Dredging
- Information Systems
  - Storm Water Pump Station Control/SCADA System Upgrades
  - Storm Water System GIS Upgrades

Future Projects Highlights

- On-going Projects
  - Private Storm Water Improvement Grants
  - Storm Water Redevelopment Grants
- A1A Drainage Improvements
  - Jupiter Beach Road to US1
  - CRA/Engineering Project(2014)
- N. Jupiter Infrastructure Failure Investigation (2015)
  - Repairs to failing drainage pipe joints
  - Repairs to failing pipe joints at structures
  - Replacement of pipe damaged by tree root intrusion

Future Projects Highlights

- TMDL/NNC Regulatory Response Modeling (2014 -)
  - Regulatory Rules have been in draft stage of development for some time; Total Maximum Daily Load (Fecal Coliform) & Numeric Nutrient Criteria (primarily Nitrogen & Phosphorus)
  - Anticipate that Regulatory Rules will be established within the next 5 years that will impact all watersheds in the Town as contributing to water bodies affected by TMDLs and NNC
  - Recommendation that Town continue to work with the PBC NPDES Consortium and possible others to address issues on a regional/watershed basis
  - Town's involvement may require modeling and development of other tools to minimize the impacts these Rules could impose on the Town's contributing watersheds

Future Projects

- The Heights Headwall Replacements (2015)
  - Replacement of deteriorated rip-rap headwalls and corrugated metal culverts
  - Failures are resulting in damage to existing sidewalks and canal banks

Financial Analysis & Rates

- Purpose and Scope
- Principle Assumptions & Observations
- Financial Performance
- Rate Comparison
- Recommendations

Purpose and Scope

- Prepare Financial Forecast to Evaluate:
  - Long-Term Financial Position for Master Plan CIP Funding (25 Year Outlook / FY13 – FY37)
  - Near-Term Financial Position for Revenue Sufficiency / Rate Recommendations (5 Year Outlook / FY13 – FY17)
- Determine Risks Effecting Forecast Outcome
- Identify Strategies to Maintain a Credit Rating Consistent with Water – "AAA" (Performance Measurement)

Principle Assumptions & Observations

Summary of Major Assumptions – Revenues & Growth:

- Rate Revenue Assumptions
  - Approaching a Mature System
  - Build Out of Service Area = 5,170 ERUs (400 per Year through FY2025)
  - Growth in Early Portion of Forecast Period
  - Each 400 Units Under Current Rates = $21,000 Rate Revenue
- Operating Expenses Account for 75% of Expenditures
- Operating Expense Escalation Factors
  - Based on review of Historical Trends & Inflation Forecasts
    - Power 6%
    - Insurance 5%
    - Wages 3% / Health Insurance 7.5%
    - Repair & Maintenance 2.5%
    - General Inflation 1.5%

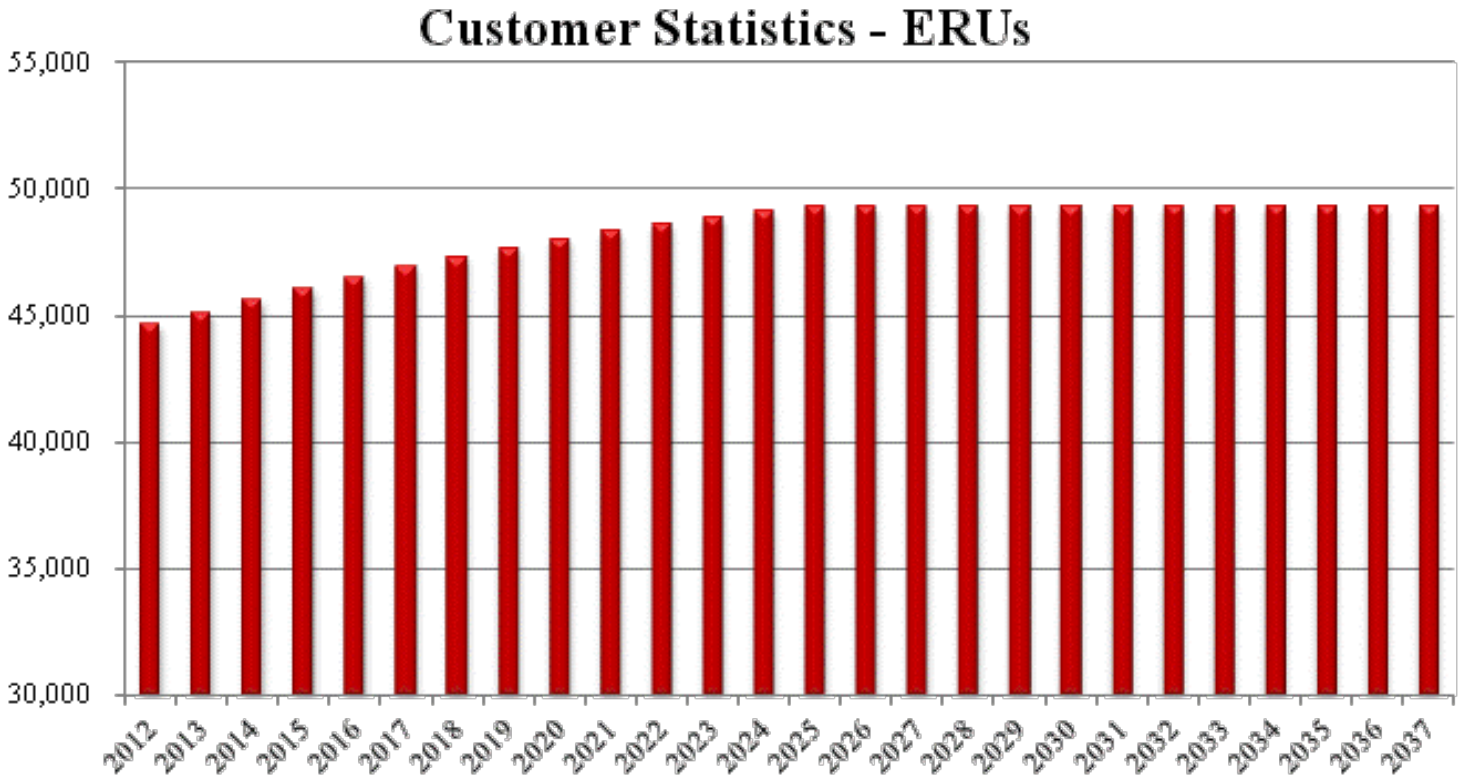
Principle Assumptions & Observations

Summary of Major Assumptions – Revenues & Growth (Continued):

- R&R Fund Transfers
  - Made Annually from Rate Revenues
  - Initial Deposit at $500,000 Adj. for Inflation
- Risks
  - Lower Growth
  - Higher Inflation of Uncontrolled Costs / Most Costs are Fixed
  - Unforeseen Regulations Affecting Capital Investment
  - Reduced R&R Funding Transfers May Increase Debt Requirements

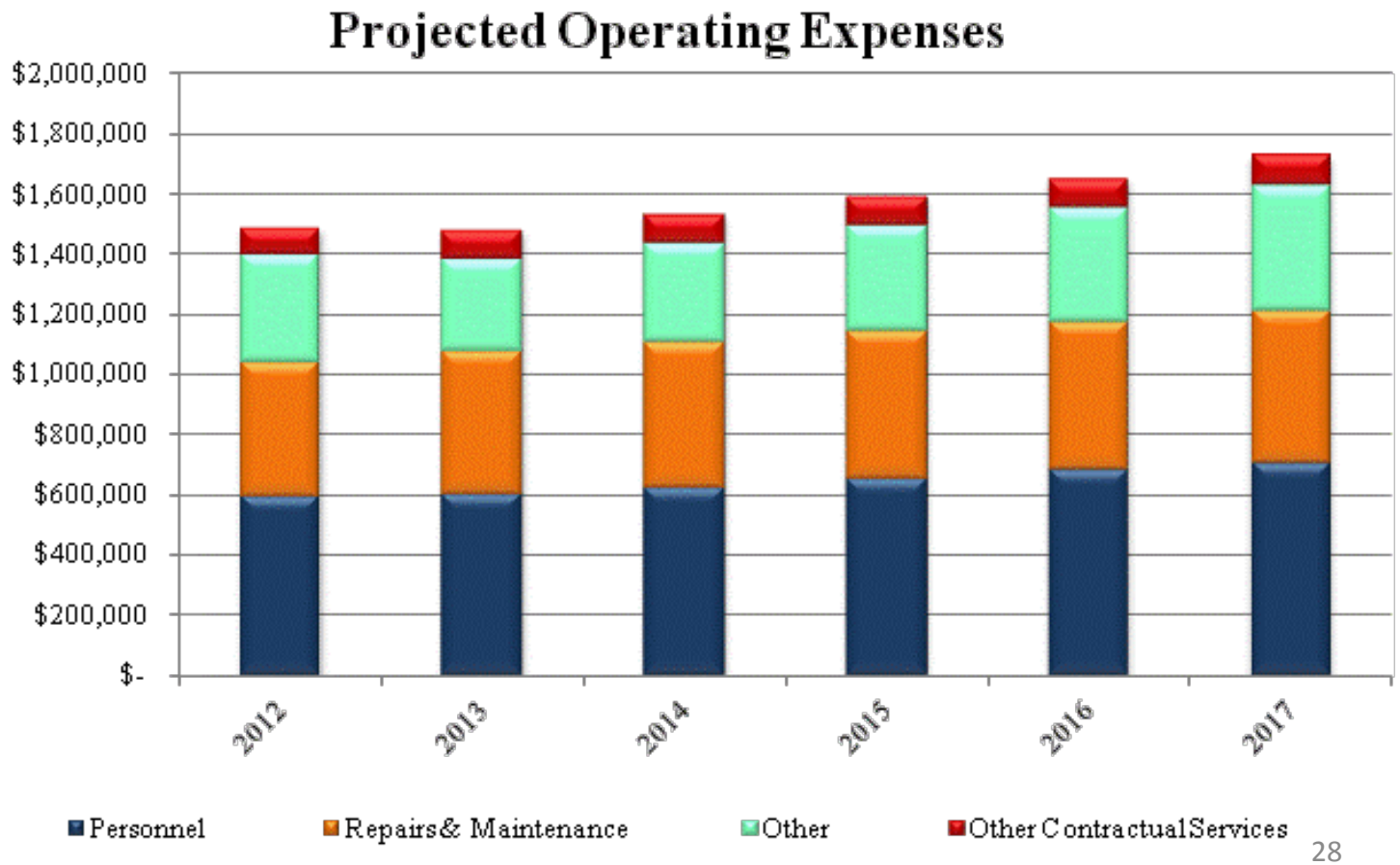
Principle Assumptions & Observations

- Customer Statistics
  - Annual Growth ERUs = 0.44%
  - Total Growth = 5,170 ERUs
  - System at Build-Out by FY 2025



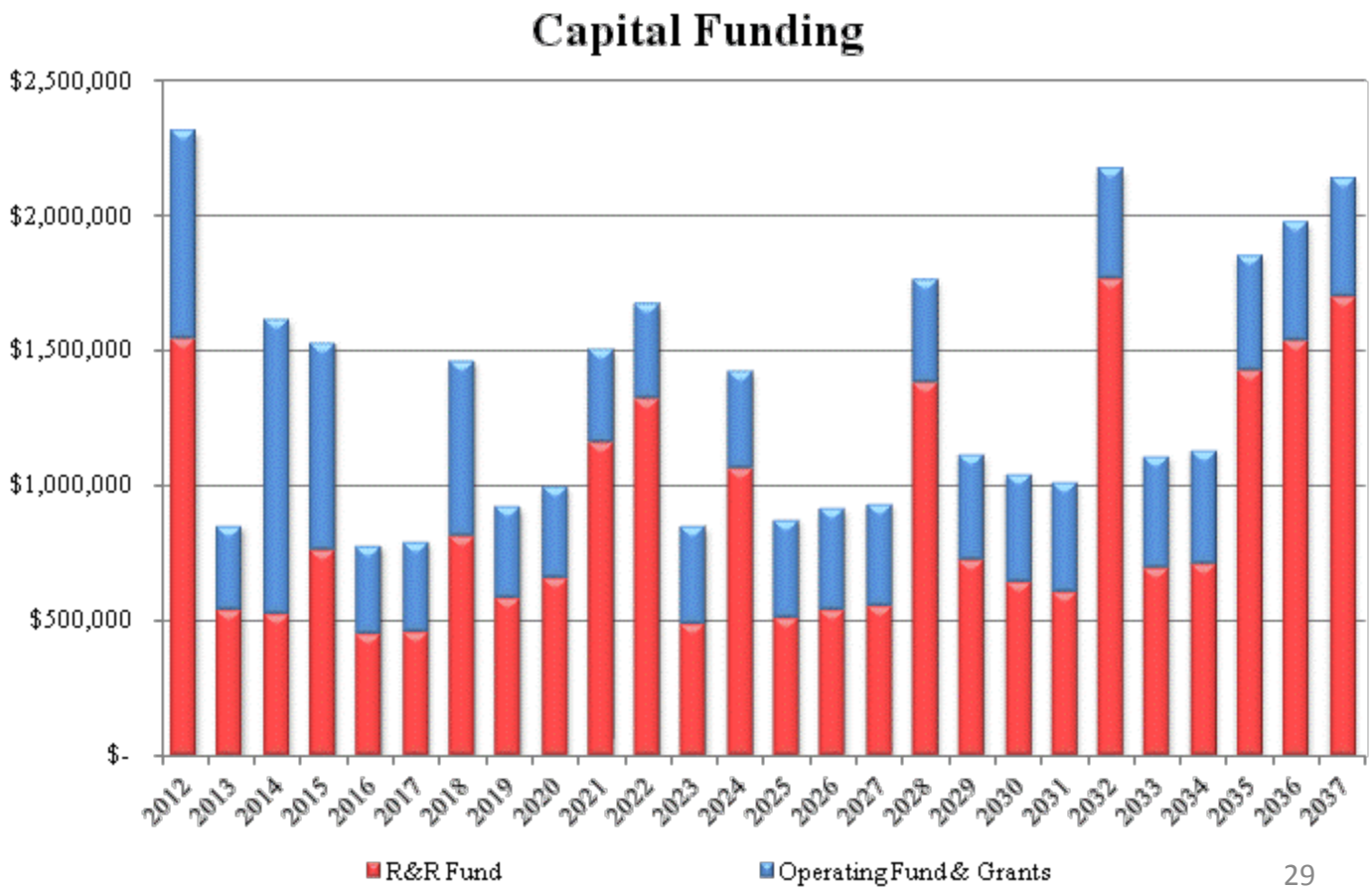
Principle Assumptions & Observations

- Operating Expenses Annual Growth = 3.1%
- Personnel, Repairs & Maintenance Account for 73%



Principle Assumptions & Observations

- Capital Finance Plan Strategy
  - Pay-Go Funding Plan [FY 12 – FY 37 Capital Funding = $34.7 Million]
  - Attributable to Renewals, Repairs & Replacements



Principle Assumptions & Observations

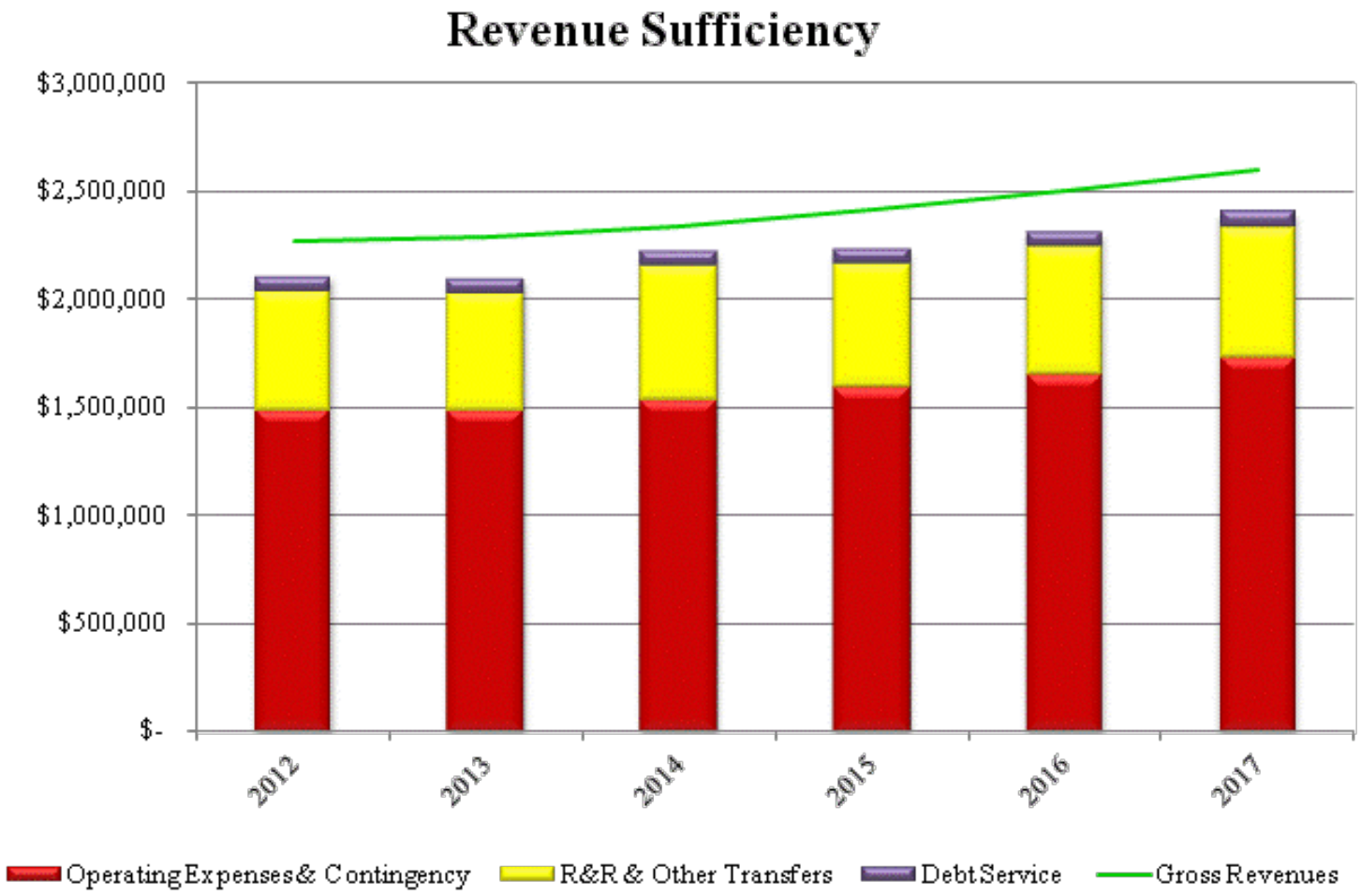
- Annual Renewal & Replacement Fund Transfers from Rates
  - $500,000 Annually Escalated 3% for Inflation ($1.1 Million in FY 37)
  - Links to Replacement Cost Analysis Prepared in FY 2010
  - Risk of Reduced Transfers = Deferred Capital or New Debt
- Inlet Village CRA Contributions Restricted

Principle Assumptions & Observations

- Revenue Sufficiency
  - Existing Rates Sufficient to Fund Annual Requirements – Short Term Only
  - Assumed Annual 2% Rate Indexing (CPI) Beginning FY 2015 – Consistent with Water System
  - Current Revenue Requirement Characteristics
    - 73% - Operating Expenses
    - 26% - Transfers for Capital Needs & Reserves
    - 1% - Debt Service (Matures EOY 2017)

Principle Assumptions & Observations

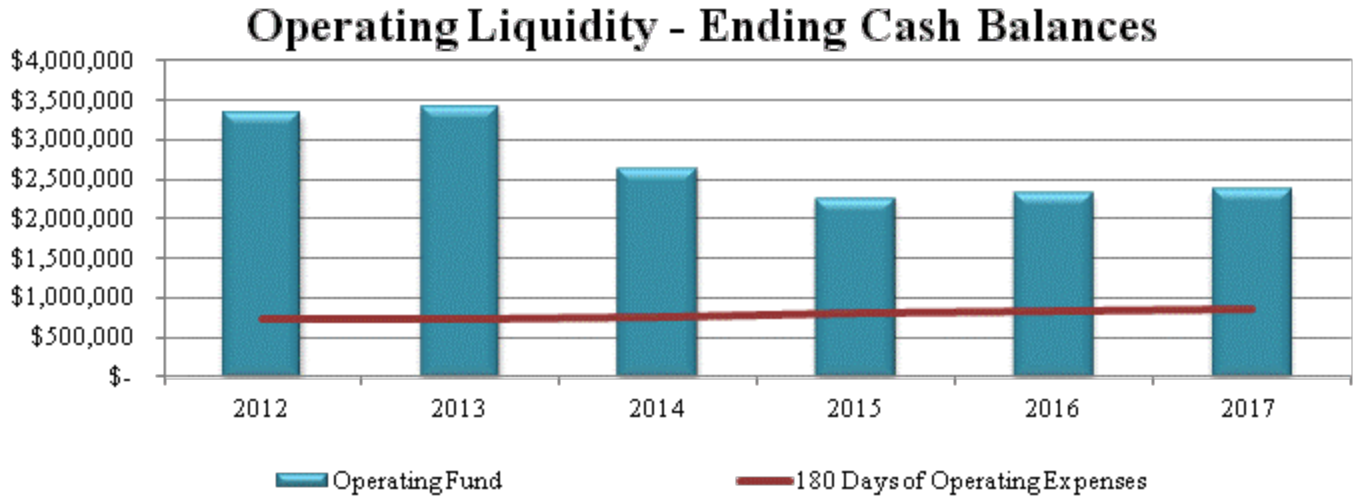
- Additional Revenues Used to Fund Capital Expenditures

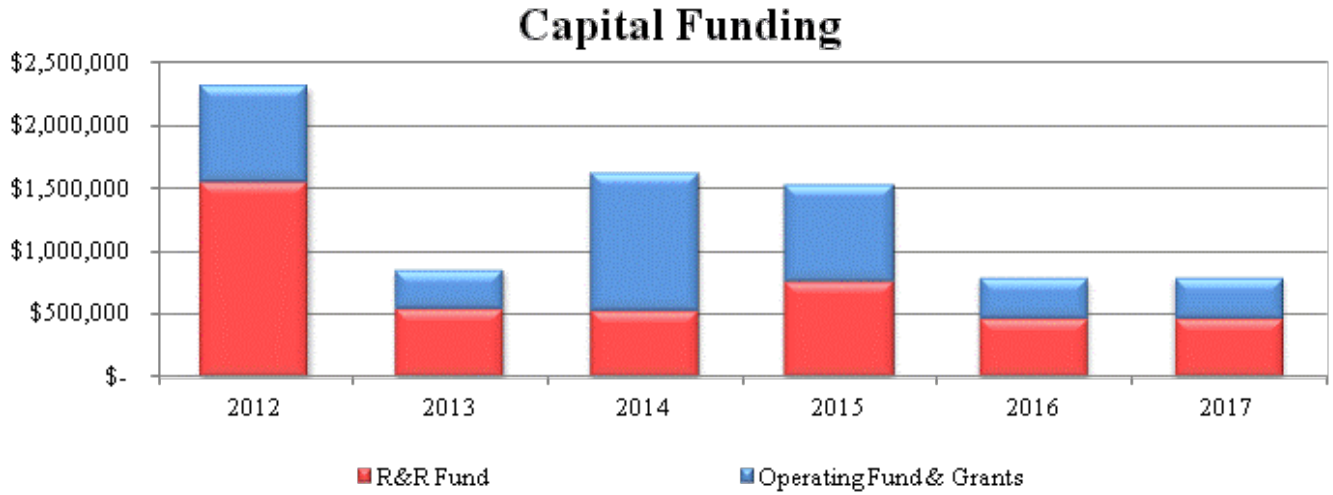


- Financial Performance Metrics:
  - Liquidity / Cash Reserves
  - Net Revenue Margin (Contribution) = Net Revenue / Gross Revenue

Financial Performance:

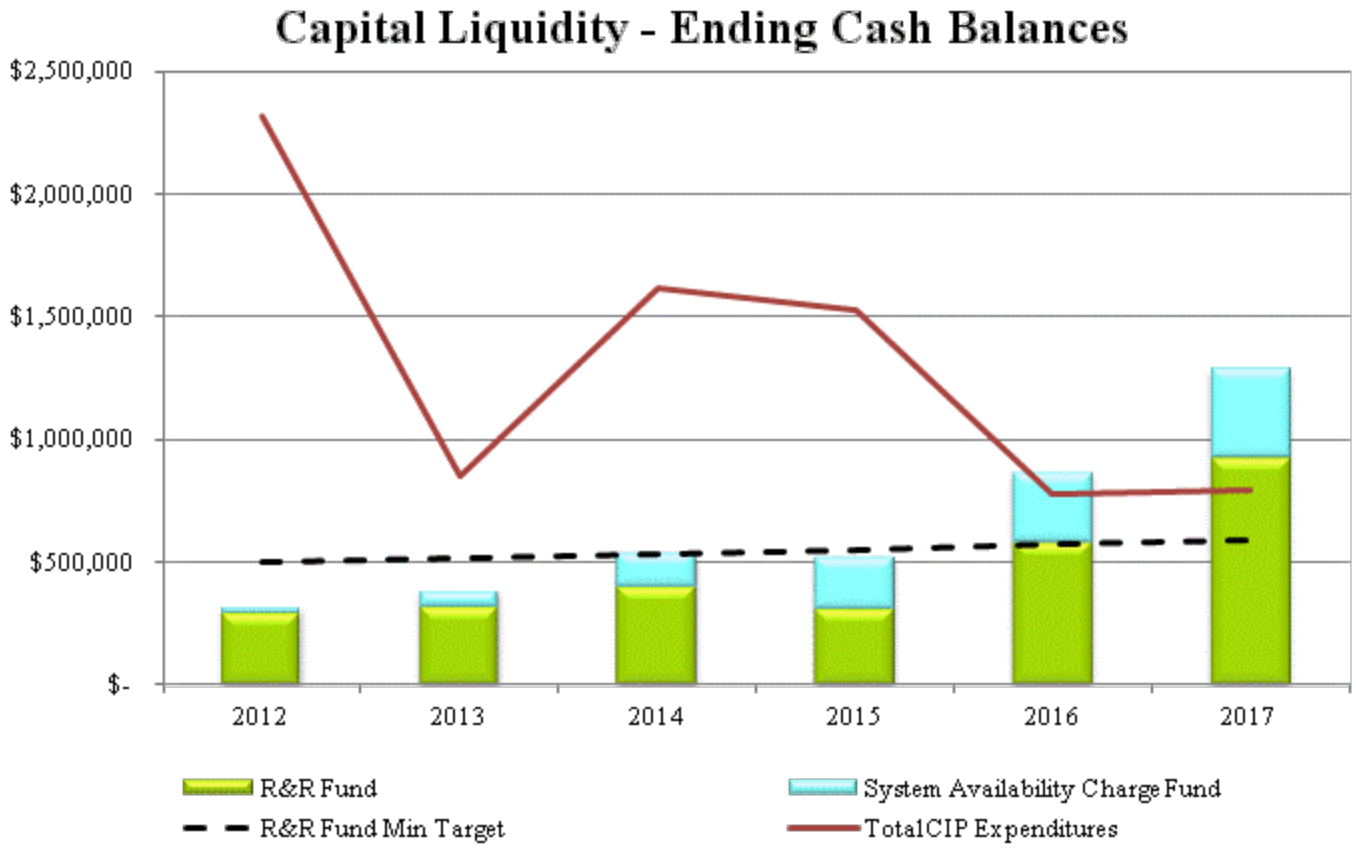
- Near Term Liquidity Reduction Due to Capital Expenditures





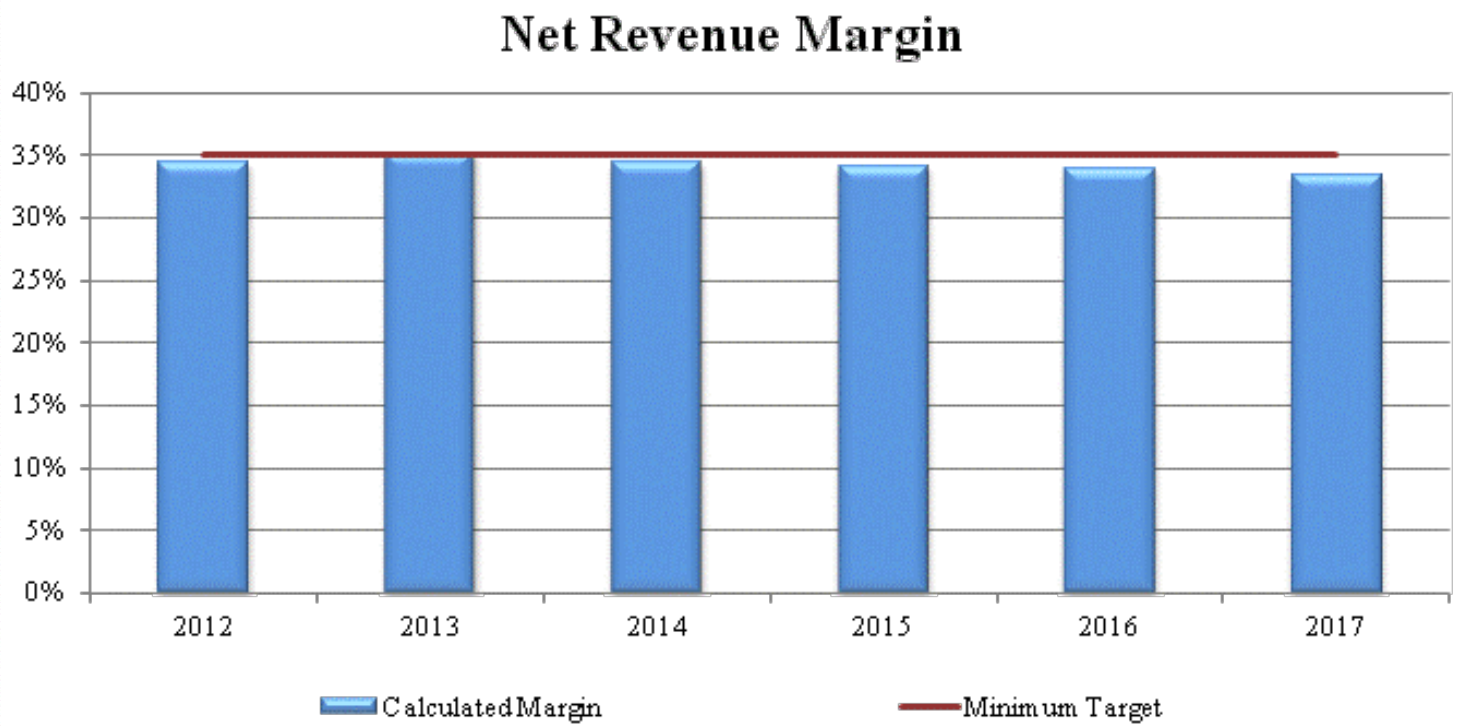
Financial Performance:

- Near Term Liquidity Reduction Due to Capital Expenditures



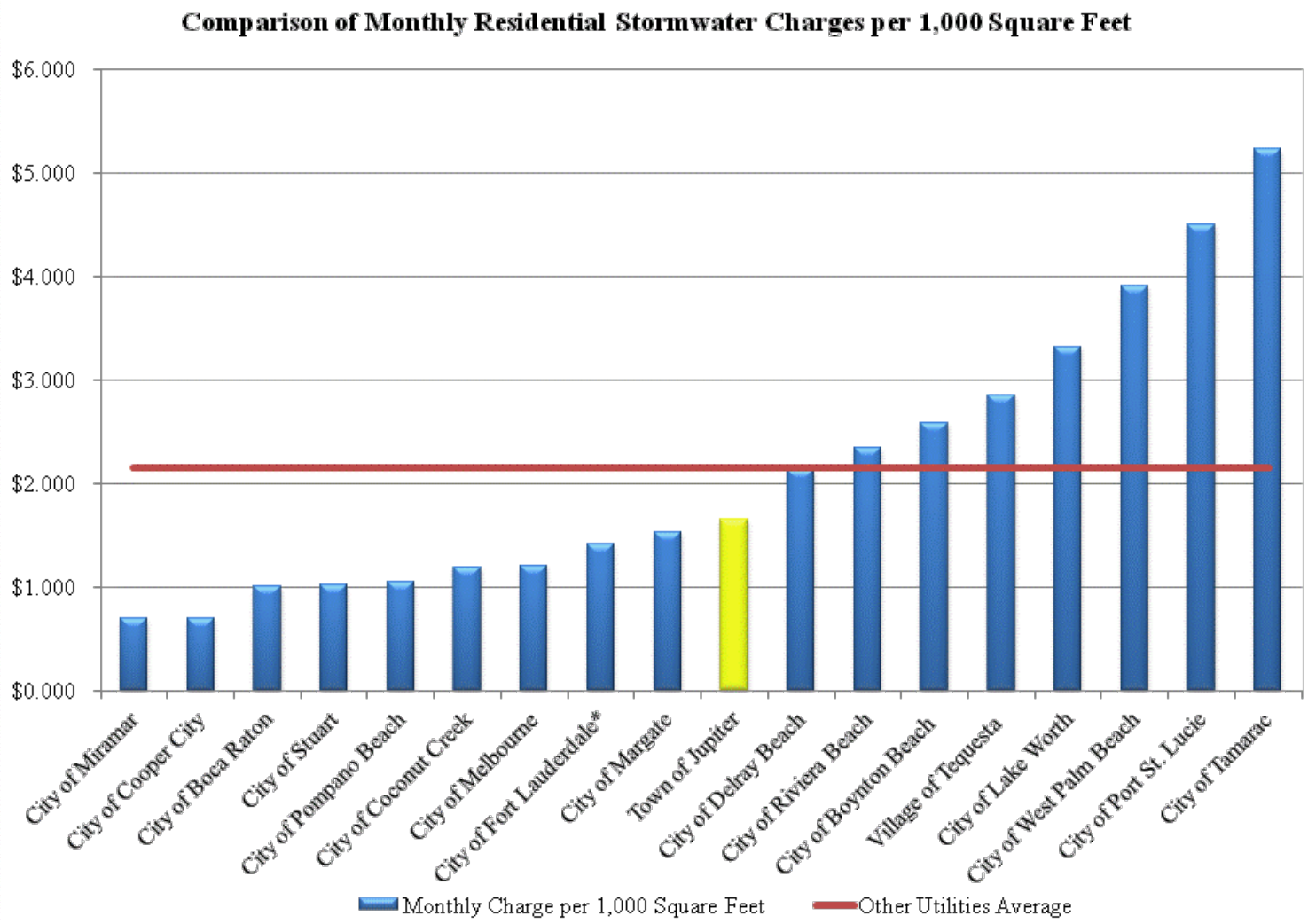
Financial Performance

- Decline in Revenue Margin
  - Change in Expenditures > Change in Revenues
  - Indexing Not Sufficient in Latter Years
  - Supports Near-Term Indexing / Minimizes Rate Impacts to Customers



Town of Jupiter Utilities

STORMWATER UTILITY MASTER PLAN UPDATE 2012



*City of Fort Lauderdale charges a flat fee regardless of square footage. For purposes of this comparison, the incremental rate per 1,000 square feet was calculated assuming an average level of service of 2,500 square feet.

Recommendations / Observations

- Rate Indexing
  - Required to Maintain Financial Position
  - No Later than FY 2015
- Annual Transfer to R&R Fund
  - $500,000 Annually Adjusted for Inflation (ENR Construction Cost Index)
- Continue To Monitor Financial Position Through Annual Review
  - Smaller System Relative to Water – Implies Greater Risk Relative to Changes in Revenue Requirements
  - Reduced Growth
  - Effects of Higher Inflation (O&M Dependent System)
  - Regulations Causing Additional Capital Investment

Questions?

Town of Jupiter Utilities

WATER UTILITY MASTER PLAN UPDATE 2012

History & Purpose of Utility

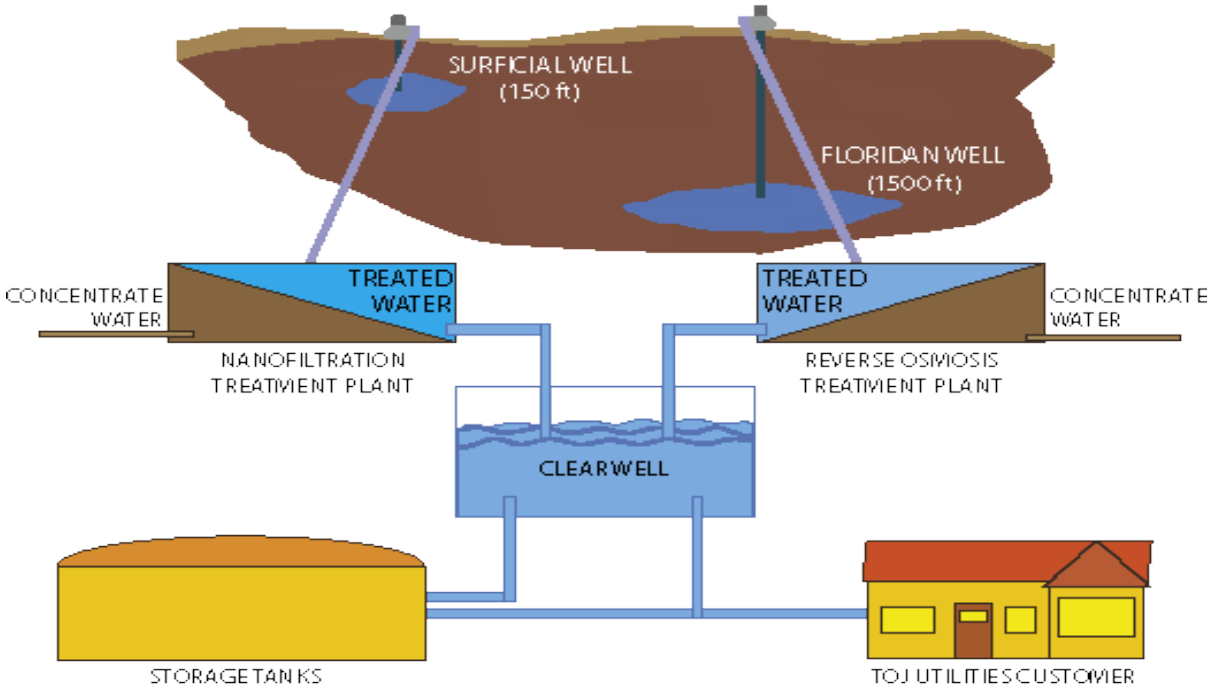
- Created in 1963 as an investor owned utility
- Operated as an enterprise fund under the Town of Jupiter since 1978
- Now serves over 80,000 persons in the Town of Jupiter, Town of Juno Beach and many unincorporated areas of Palm Beach and Martin Counties.

History & Purpose of Utility

- Purpose has been a constant: safety and reliability.
- Mission: Maintaining our established role in the industry as a standard of excellence with a commitment to a sustainable community in concert with our unique environment.

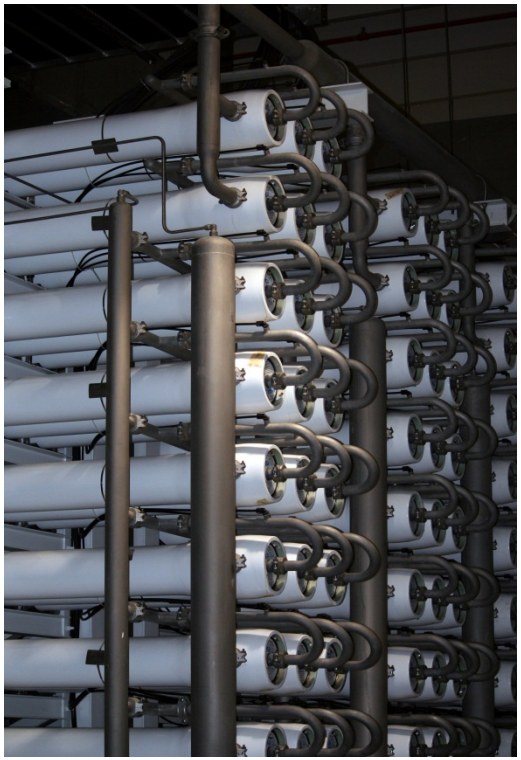
Accomplishments to Date

- Primary Strength: Reliability
- Environmentally prudent dual aquifer supply system



Accomplishments to Date

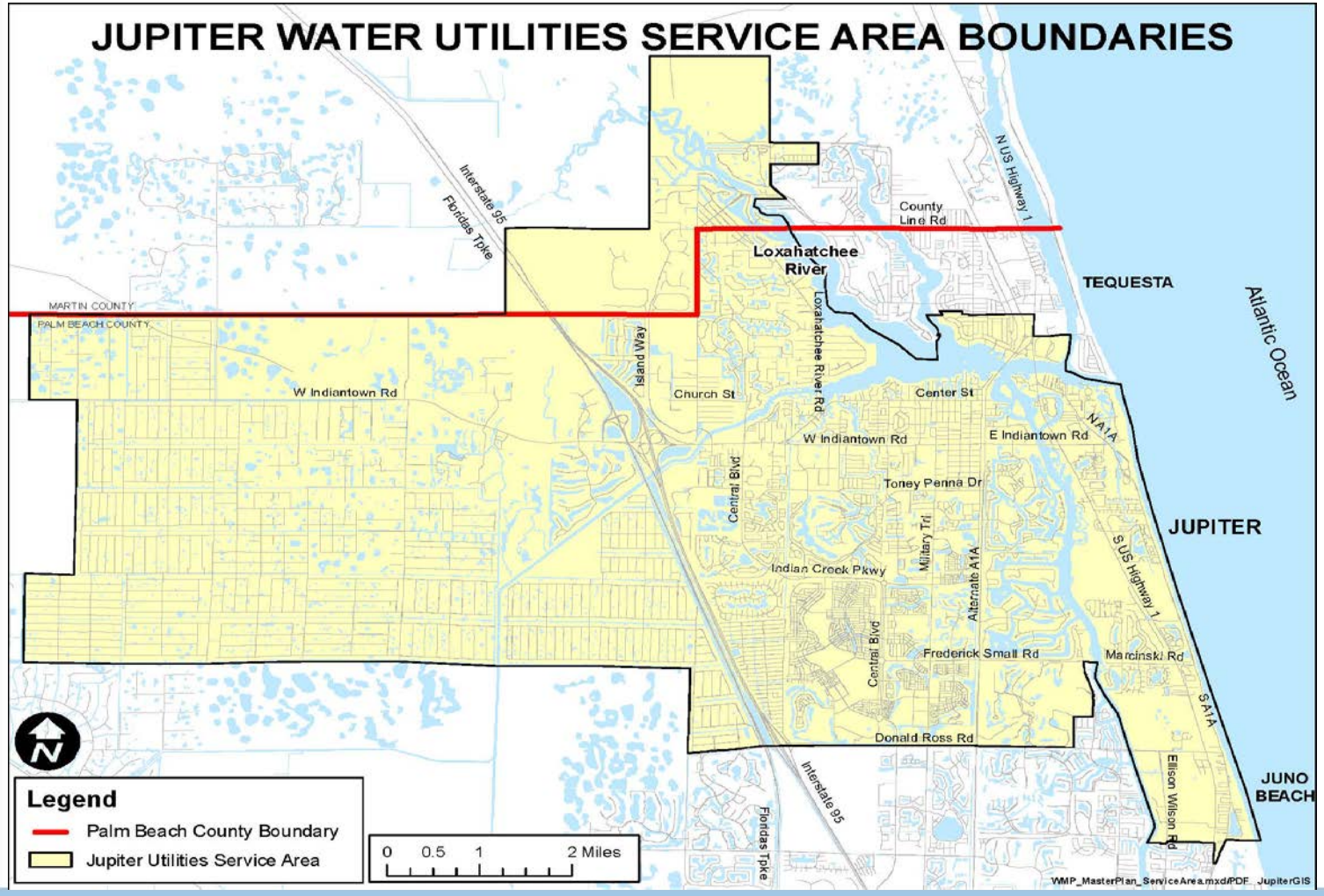
- Technology leader relative to the use of advanced membrane water treatment technologies to develop sustainable quantity and quality water supply.
- Award winning – recognized 50+ times



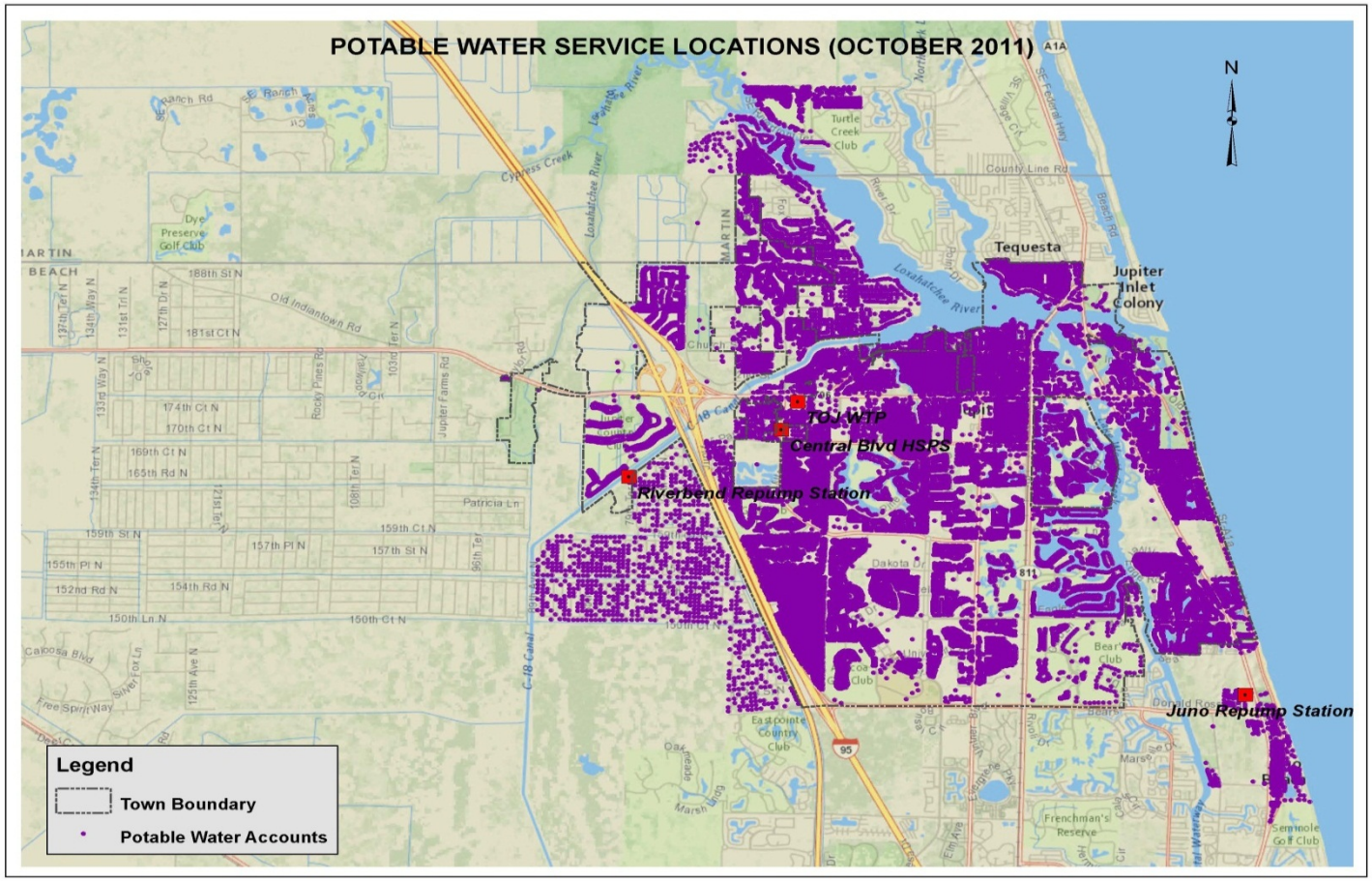
Future Challenges & Opportunities

- Growth Potential is limited. Ultimate population to be served: 100,000 +/-.
- Current Plant Capacity is 30 MGD while ultimate demand predicted to be 28-29 MGD.
- Significant portion of growth target market has now changed.

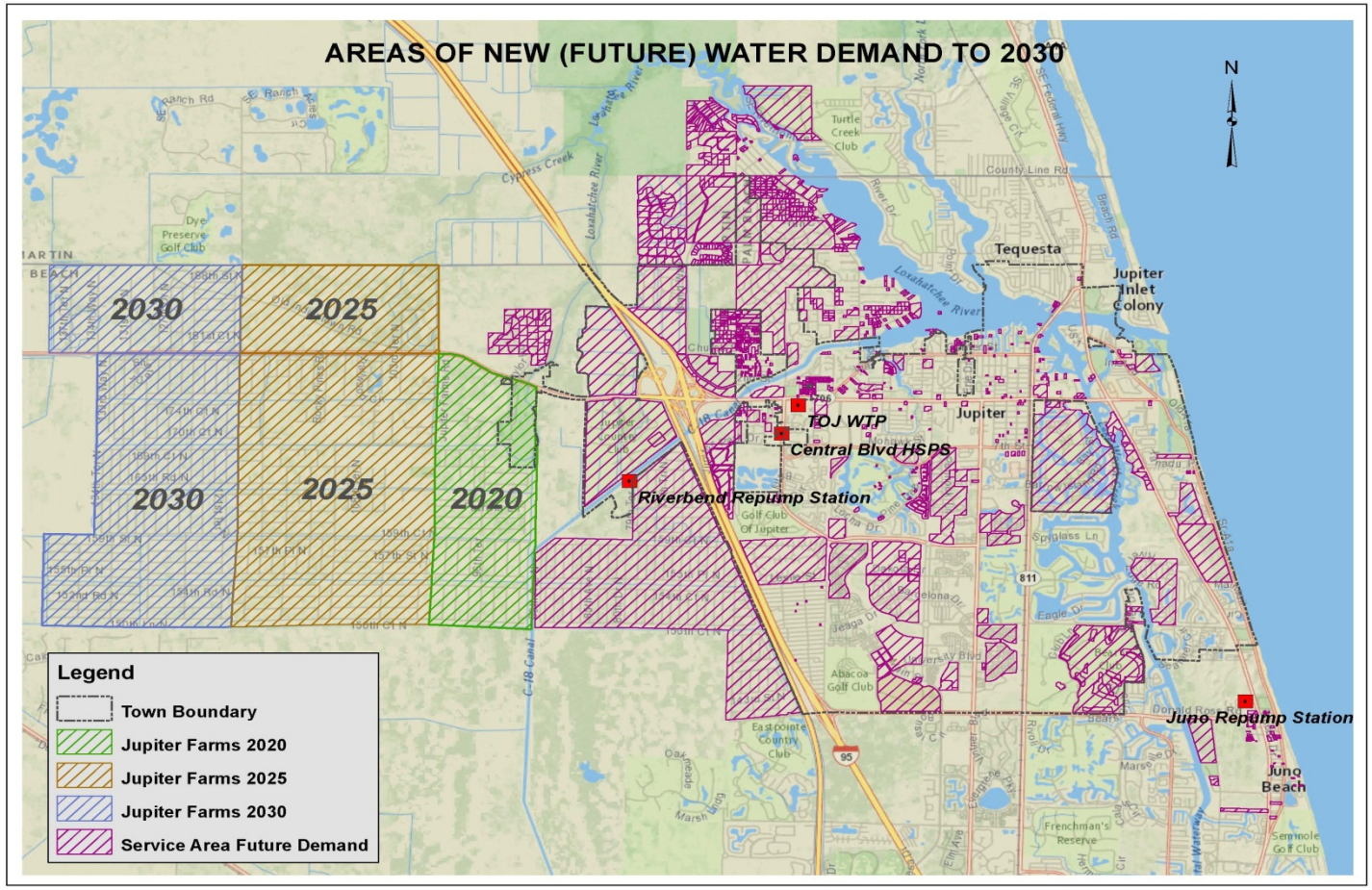
Future Challenges & Opportunities



Future Challenges & Opportunities



Future Challenges & Opportunities



Future Challenges & Opportunities

- To maximize system utilization:
  - Continue to work with typical development/redevelopment community.
  - However, now must set up marketing of service to established existing residential communities (Jupiter Farms, PBCE, Loxahatchee River Road Area)

Future Challenges & Opportunities

- Proposed strategies to maximize system utilization:
  - Continuation of loan offerings for distribution system expansion and connection costs.
  - Heightened outreach relative to promoting the benefits of service by Jupiter Utilities.

Future Challenges & Opportunities

- New Connection Financing:
  - 15 year financing at 1% above published fixed 15 year mortgage rate.
  - Work closely with other entities such as PBC and SIRWCD to enable low cost assessment programs in unincorporated areas **which request service**.

Future Challenges & Opportunities

- Promoting the benefits of service:
  - Safety and reliability
  - Increased home resale value
  - Life cycle cost comparison between private well/treatment system and connection to Jupiter Utilities
  - Reduction in home insurance premiums with fire protection

Future Projects Highlights

- Asset Maintenance R&R Program

Annual maintenance to enable facilities to achieve their projected useful life

- Wells
  - Maintenance Development/Well Disinfection to improve water quality and well capacities
  - Pump/Motor/Mechanical/Electrical Components
  - Well construction improvements (open hole/screen)
  - Painting maintenance of above ground piping & valves
- Painting Maintenance
  - Clean, crack repair, paint
  - Plant Facility Buildings/Tanks/Containment Areas
  - Distribution System Bridge Crossings/Hydrants
- Information Systems
  - Plant Control/SCADA System Upgrades
  - Raw Water and Distribution System GIS Upgrades

Future Projects Highlights

- Water Supply & Recharge
  - N. Limestone Creek Wellfield (2013->)
    - 6 new wells , raw water mains, electrical bldg/ emergency power
  - Recharge System (2018)
    - Pilot testing
    - Final connection to SFWMD Regional System
  - R & R Well Replacement Program (2019->)
    - > 35 years old and not responding to rehabilitation

Future Projects Highlights

- Treatment Facilities
  - Supplemental Blend Box (2013)
    - Water quality characteristics of nanofiltration permeate are different than lime softening
    - Provides a means of diverting a stream of nanofiltration permeate to the RO clearwell for RO permeate stabilization
    - Reduces our dependence on IX flows for RO permeate stabilization
    - Improved finished water quality (lower hardness and alkalinity)
    - Provides needed infrastructure for free chlorine disinfection
    - Enables the existing blend box to be taken out of service for maintenance without significantly reducing production capacity of the plant

Future Projects Highlights

- Treatment Facilities
  - Supplemental Blend Box

Future Projects Highlights

- Treatment Plant Facilities
  - Free Chlorine Disinfection Pilot Testing (2013)
    - Chloramine disinfection (chlorine followed by ammonia)
    - Nanofiltration has dramatically improved the effectiveness of removing DBPs during the treatment process
    - Opportunity now exists for the Town to explore free chlorine disinfection (chlorine only)
    - Free chlorine is a stronger disinfectant than chloramine
    - Eliminate ammonia chemical feed systems reducing operating costs (estimated $60,000 savings annually)

Future Projects Highlights

- Treatment Plant Facilities
  - Free Chlorine Disinfection Pilot Testing (2013)
    - Pilot testing is necessary to:
      - Ensure compliance with the Stage 2 Disinfectant and Disinfection By-Products Rule
      - RO treatment is not expected to be an issue due its low carbon content
      - Determine if changes are needed to reduce organic content in NF permeate
      - Determine if reduction of organic content of IX product water can be achieved by exploring alternative resin types
      - Determine blend requirements during drought and non-drought conditions to comply with Stage 2 DBP Rule

Future Projects Highlights

- Treatment Plant Facilities
  - Replace RO Membrane Vessel End Caps, Trains A-D (2015)
    - Original aluminum end caps (clam shells) have experienced significant deterioration from the high chloride and hydrogen sulfide environment in the reverse osmosis plant
    - Operating pressure in excess of 200 psi and the deteriorating condition of the end caps are a concern for worker safety risk
    - Original vessel manufacturer no longer exists and therefore replacement clam shells are not available nor is the casting die for the clam shell
    - Newer vessel designs do not have clam shell end caps
    - Replacement requires fabricating new 316 SS clam shells (est. $550 K) or replacing the membrane vessels in their entirety (est. $7.6 M)

Future Projects Highlights

- Treatment Plant Facilities
  - Replace RO Membrane Vessel End Caps, Trains A-D (2015)

Future Projects Highlights

- Treatment Plant Facilities
  - RO Permeate Scrubbers (MBAs) Replacement (2019)
    - Alternatives for H2S Removal/Odor Control
      - Conventional two-stage caustic/chlorine scrubbers
        - High operating costs
        - > 99% H2S removal efficiency
        - Redundant units required to achieve high removal efficiencies
        - High capital cost
      - Biological Removal System
        - Removal efficiency dependent upon bacterial survival
        - Disposal of high volume of waste product
        - Upset in biological content will result in no treatment
      - Ozone Oxidation
        - Very high capital cost
        - High operating costs
      - Oxidizing Media Filters
        - Very high capital cost
        - Significant infrastructure required
        - Would remove H2S directly from the permeate
      - Rehabilitation of Existing MBAs
        - Reliance on a proprietary solution for treatment

Future Projects Highlights

- Treatment Plant Facilities
  - RO Permeate Scrubbers (MBAs) Replacement (2019)
    - Recommended Option: Lowest Capital & Operating Cost
      - Rehabilitation of Existing MBAs
        - Increase H2S removal efficiency by installing a single stage caustic/chlorine scrubber on the air discharged from the MBAs
        - Construct a concrete building to house new MBA blowers and recirculation pumps; provide protection to critical equipment from MBA waste product
        - Modify sulfur drying beds to facilitate rapid drying and eliminate impacts from weather
        - Replace MBA instruments and control devices to allow for more accessibility and reliability
        - Explore opportunities to obtain long-term rights to the proprietary chemical
        - Extend useful life of MBAs by 35 years
        - Conduct pilot testing of emerging technologies to be prepared for ultimate R&R of MBAs in 2024

Future Projects Highlights

- Storage & Distribution Systems
  - N. Jupiter Distribution Improvements, Phase 2 (2014-2015)
  - Riverbend Repump Station Rechlorination Facility (2014)
  - Juno Beach Distribution Improvements (2015-2016)
  - Penn Park Distribution Improvements (2019)

Regulatory Issues

- The Safe Drinking Water Act (SDWA) originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply.
- SDWA was further amended in 1986 and 1996 in an effort to protect the sources of drinking water.

Regulatory Issues…

- Under the SDWA, the EPA sets legal limits on the level of certain contaminants in drinking water.
  - The contaminant may have an adverse on the health of persons.
  - The contaminant is known to occur or be likely to occur in public drinking water and a levels of health concerns.
  - In the sole judgment of the Administrator, regulation of the contaminant presents an opportunity for health risk reductions.

Regulatory Issues…

- Pending Regulatory Actions
  - Hexavalent chromium (Cr-6). In January 2011, EPA released enhanced Cr-6 monitoring guidance. The completion date for the revised Cr-6 risk assesment is scheduled for late 2014.
  - Third Unregulated Contaminant Monitoring Rule (UCMR3). In March 2011, EPA proposed UCMR3 to require monitoring for 30 contaminants from the Third Contaminant Candidate List (CCL3). UCMR3 monitoring will be conducted in 2013-2015 throughout the nation. Hexavalent chromium 6 should be included in the final rule.
  - Nitrosamines. A regulatory determination is expected in mid-2012 with a proposed rule to follow in mid-2014 timeframe. This group of contaminants may be considered a new class of disinfection by-product.

Regulatory Issues…

- Pending Regulatory Actions
  - Long-Term Revisions to the Lead and Copper Rule (LT-LCR). Changes to sample site selection criteria, sampling for schools and day care centers and public education on copper.
  - Fluoride. In January 2011 EPA reduced the recommended level for the addition of fluoride from the current range of 0.7-1.2 ppm to a maximum of 0.7 ppm. The Utility will continue to evaluate the level of naturally occurring fluoride in the source water as it relates to future EPA rule making.
  - Consumer Confidence Reports (CCR). This rule requires public water suppliers to provide these reports annually to their customers to inform them of the quality of their drinking water. The EPA is considering the electronic delivery of CCRs in lieu of US Postal Service mailing requirements.

Regulatory Issues…

- Pending Regulatory Actions
  - Total Coliform Rule (TCR). EPA is currently proposing revisions to the 1989 TCR. The proposed revisions require systems that have an indication of coliform contamination in the distribution system to assess the problem and take corrective action that reduces the risk to the public.
  - Ground Water Rule (GWR). The Federal GWR became effective December 1, 2009. The State of Florida has yet to promulgate this new Rule in Florida Administrative Code. The GWR requires the demonstration of four-log virus removal during treatment. EPA is particularly concerned about ground water systems that are susceptible to fecal contamination.
  - Security. The Town should prepare for future security related requirements of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002.

Regulatory Issues…

- Emerging Water Quality Concerns
  - Endocrine Disruptors, Pharmaceuticals and Personal Care Products. Trace amounts of these compounds (part per trillion) have been detected around the U. S. These emerging contaminants include detergents, fragrances, prescription and non-prescription drugs, pesticides, herbicides and nanomaterials. The Town will remain diligent with regards to the presence of these compounds and possible actions that may be required in the future.

Financial Analysis & Rates

- Purpose and Scope
- Principle Assumptions & Observations
- Credit Rating Criteria
- Financial Performance
- Rate Comparison
- Recommendations

Purpose and Scope

- Prepare Financial Forecast to Evaluate:
  - Long-Term Financial Position for Master Plan CIP Funding (25 Year Outlook / FY13 – FY37)
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- Determine Risks Effecting Forecast Outcome
- Identify Strategies to Maintain AAA Credit Rating (Performance Measurement)

Principle Assumptions & Observations

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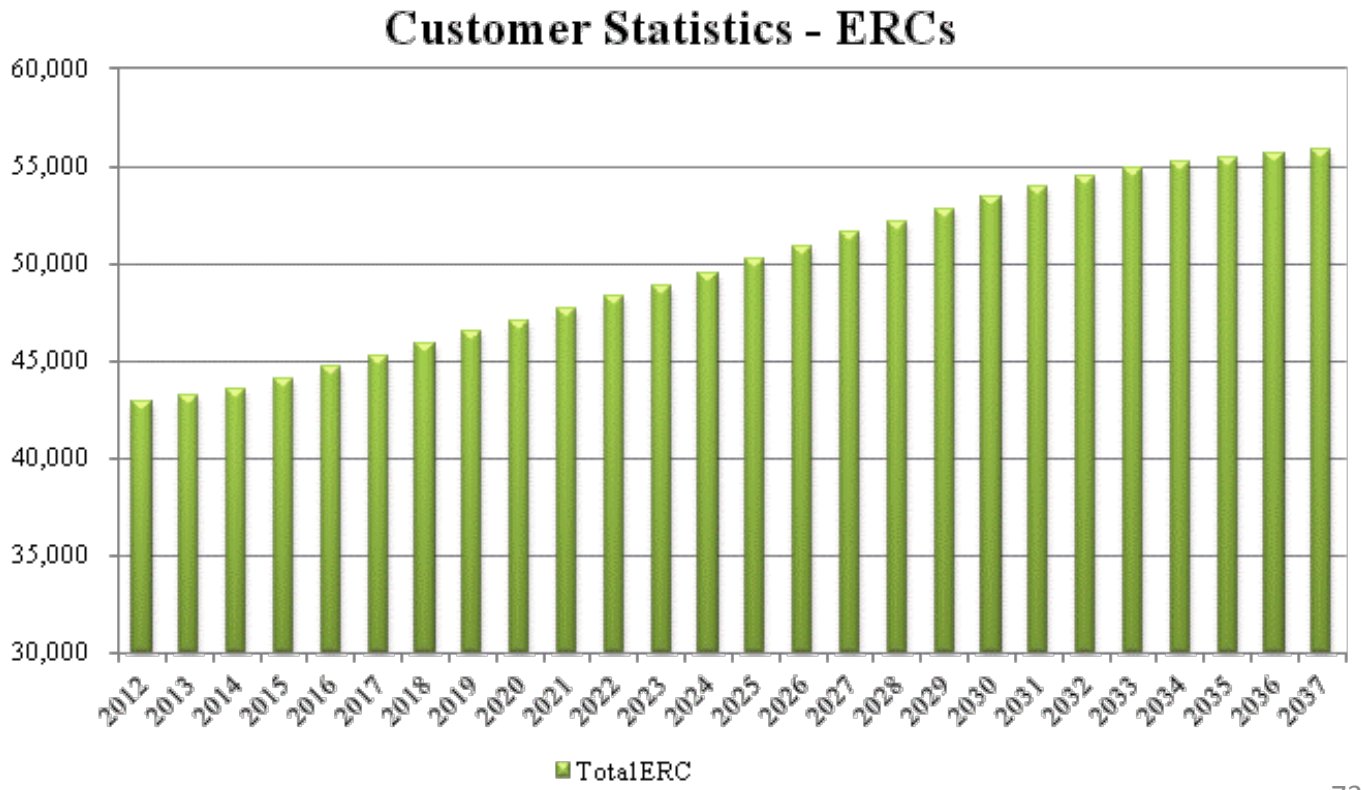
- Rate Revenue Assumptions
  - Approaching a Mature System
  - Build Out of Service Area = 13,020 Units (500 per Year or 1%)
  - Higher Growth in Early Portion of Forecast Period
  - Each 500 Units Under Current Rates = $220,000 Rate Revenue
  - Declining Water Sales – Assumed 0.15% Annual Reduction in Usage Revenues
- Growth Related Revenues
  - Connection Fees / AGRF / Guaranteed Revenues
  - Averages Over $2 Million Annually ($50.4 Million)
  - Connection Fees Used to Pay Expansion-Debt Service
  - Lack of Growth May Require Additional Rate Adjustments
- Revenues Tied to Growth
  - Risks = Slower Growth / Higher Reduction in Water Use per ERC

Principle Assumptions & Observations

- Customer Statistics
  - Annual Growth ERCs = 1.07%
  - System Maturing
  - Reduced Water Sales
  - 13,000 ERCs / 5,300 = Jupiter Farms
  - Growth Rate w/o Jupiter Farms = 0.66%
  - Increased Conservation = 0.15% Annually



Principle Assumptions & Observations

<u>Summary of Major Assumptions – Operating Expenses:</u>

- Operating Expenses Account for 56% of Expenditures
- Operating Expense Escalation Factors
  - Based on review of Historical Trends & Inflation Forecasts
    - Chemicals 4%
    - Power 6%
    - Insurance 5%
    - Wages 3% / Health Insurance 7.5%
    - Repair & Maintenance 5.0%
    - General Inflation 2.5%
- Risk = Higher Inflation of Uncontrolled Costs / Most Costs are Fixed

Recent Operational Efficiency Gains

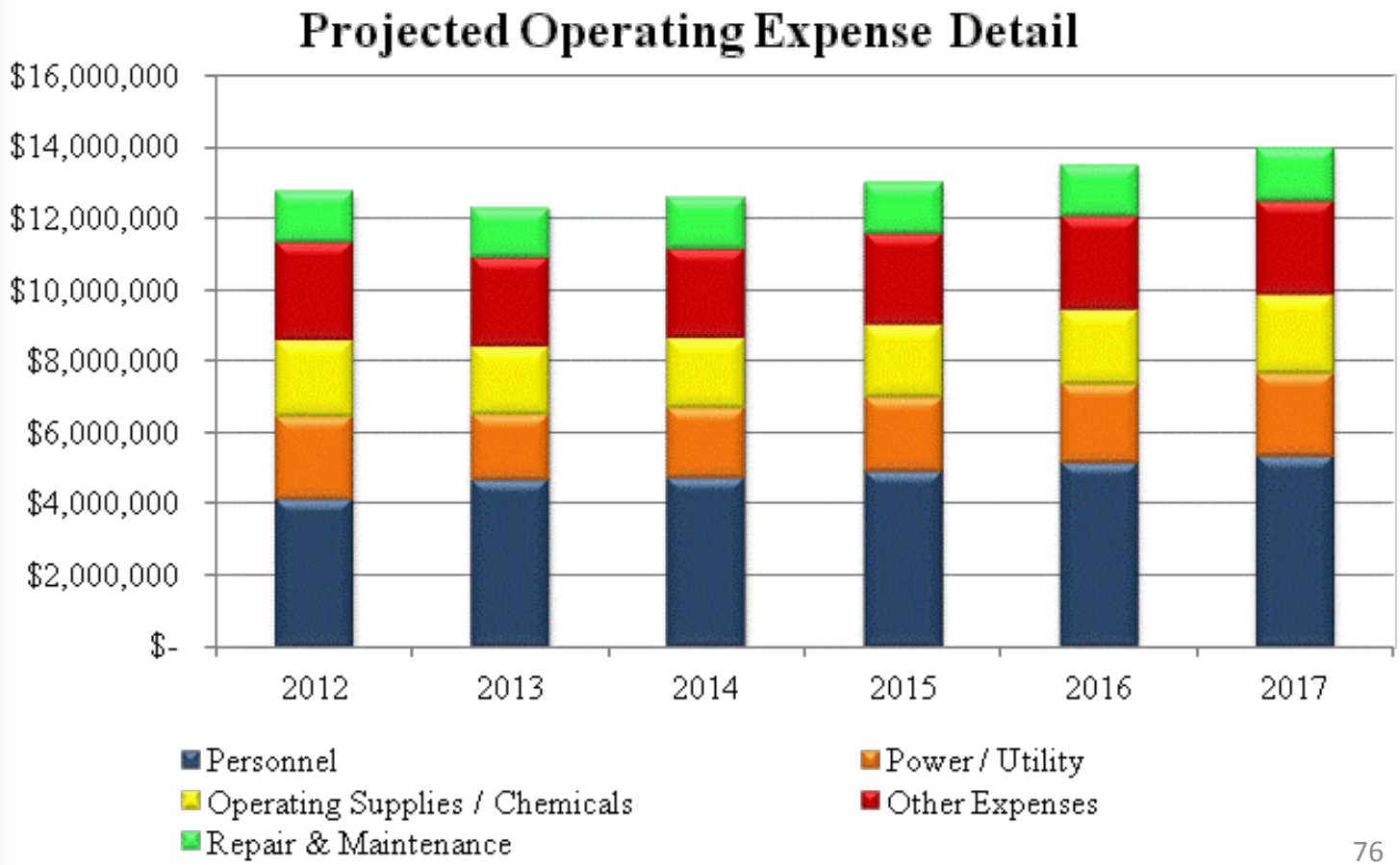
Regardless of Uncontrollable Cost Impacts:

- Labor
- Electrical Power
- Chemicals
- Regulatory Mandates
- Advanced Treatment

Fiscal Year	Production (MGD)	Operating Expense Per MGD
2009	13.63	$ 824,950
2010	14.09	$ 810,111
2011	14.95	$ 775,559
2012 (to date)	14.64	$ 725,340

Principle Assumptions & Observations

- Operating Expenses Annual Growth = 3.5%
- Personnel, Power, Chemicals & Supplies Account for 75%



Principle Assumptions & Observations

Summary of Major Assumptions – Other Expenditures:

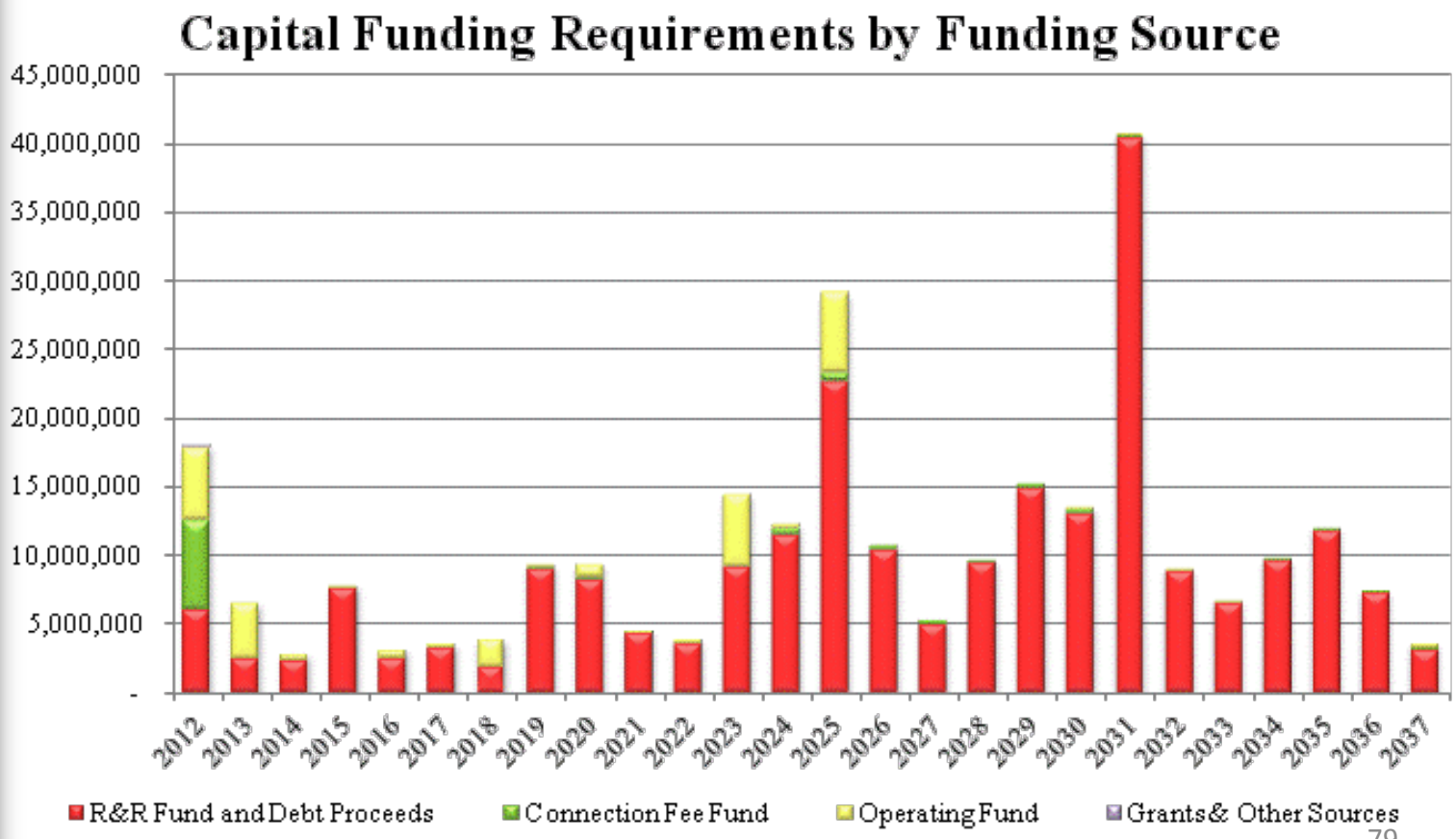
- R&R Fund Transfers
  - Made Annually from Rate Revenues
  - Initial Deposit at $5.2 Million Adj. for Inflation (3.3% - ENR Index)
  - Priority was PAYGO Capital
- Additional Bonds Assumed FY 2031 - $22M
- Risk = Unforeseen Regulations Affecting Capital Investment
- Risk = Reduced R&R Funding Transfers Will Increase Debt Requirements

Principle Assumptions & Observations

- Capital Finance Plan Strategy
  - Maximize Use of Internal Funding Sources
  - Lower Debt = Increased Long-Term Financial Flexibility
    - Better Future Leveraging Capacity
    - Lower Costs from Lower Annual Debt Service
    - Lowest Rates over the Long Term

Principle Assumptions & Observations

- FY 12 – FY 37 Capital Funding = $272 Million
- 88% Attributable to Renewals, Repairs & Replacements
- $22 Million Bond Issue Assumed FY31



Principle Assumptions & Observations

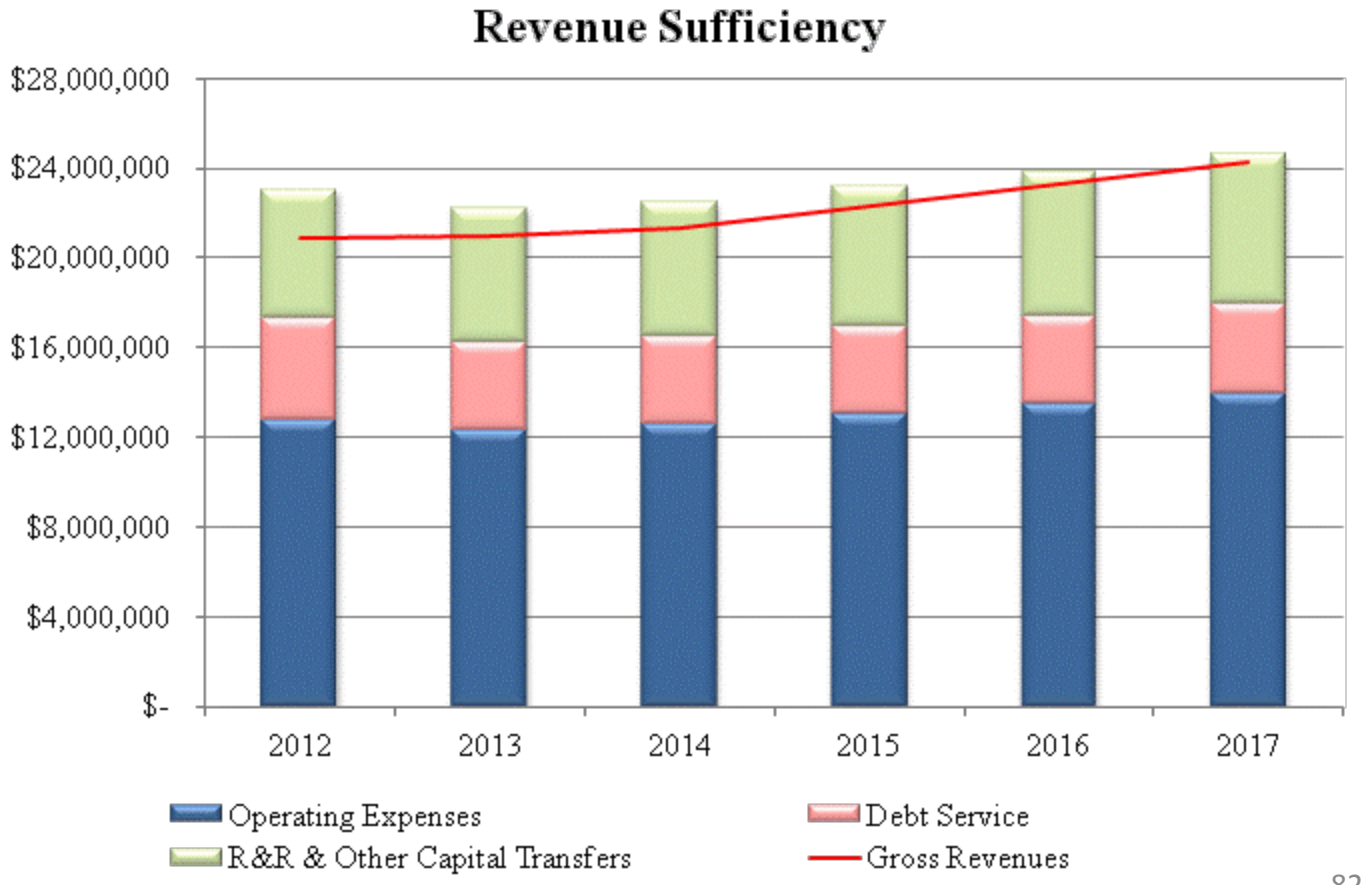
- Annual Renewal & Replacement Fund Transfers from Rates
  - $5.2 Million Annually Escalated 3% for Inflation ($11.7 Million in FY 37)
  - Links to Replacement Cost Analysis Prepared in FY 2010
  - Risk of Reduced Transfers = Increased Debt

Principle Assumptions & Observations

- Revenue Sufficiency
  - Existing Rates Not Sufficient to Fund Annual Requirements (Near Term)
  - Identified Annual 2% Rate Indexing (CPI) Beginning FY 2015
  - Current Revenue Requirement Characteristics
    - 56% - Operating Expenses
    - 17% - Debt Service
    - 26% - Transfers for Capital Needs & Reserves

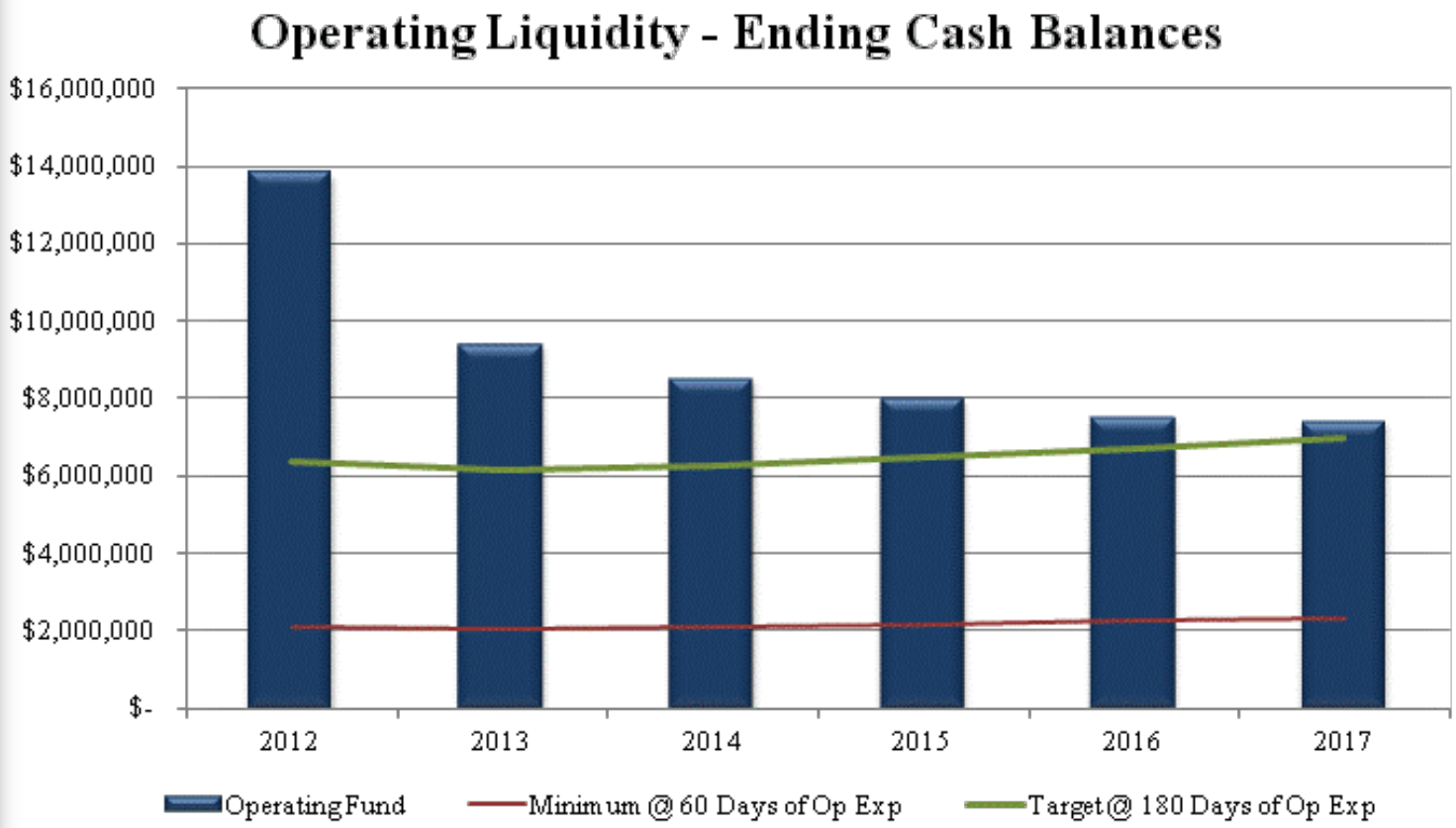
Principle Assumptions & Observations

- Principle Drivers for Rate Increases
  - 80% Operating Expenses Increases
  - 20% Capital Funding Increases



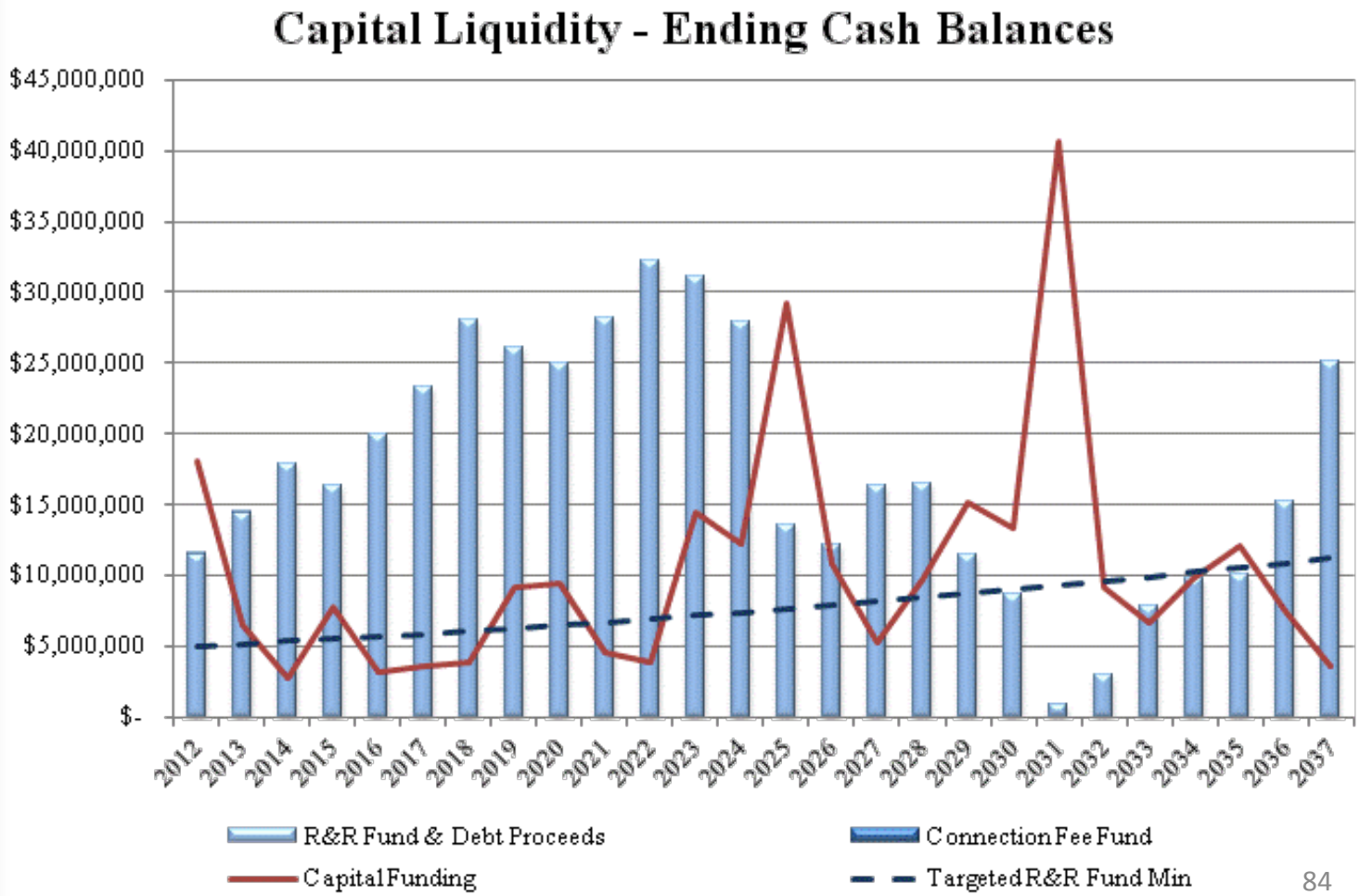
Principle Assumptions & Observations

- Revenue Deficiency Reduces Liquidity



Principle Assumptions & Observations

- Long-Term Capital Liquidity



Credit Rating Criteria

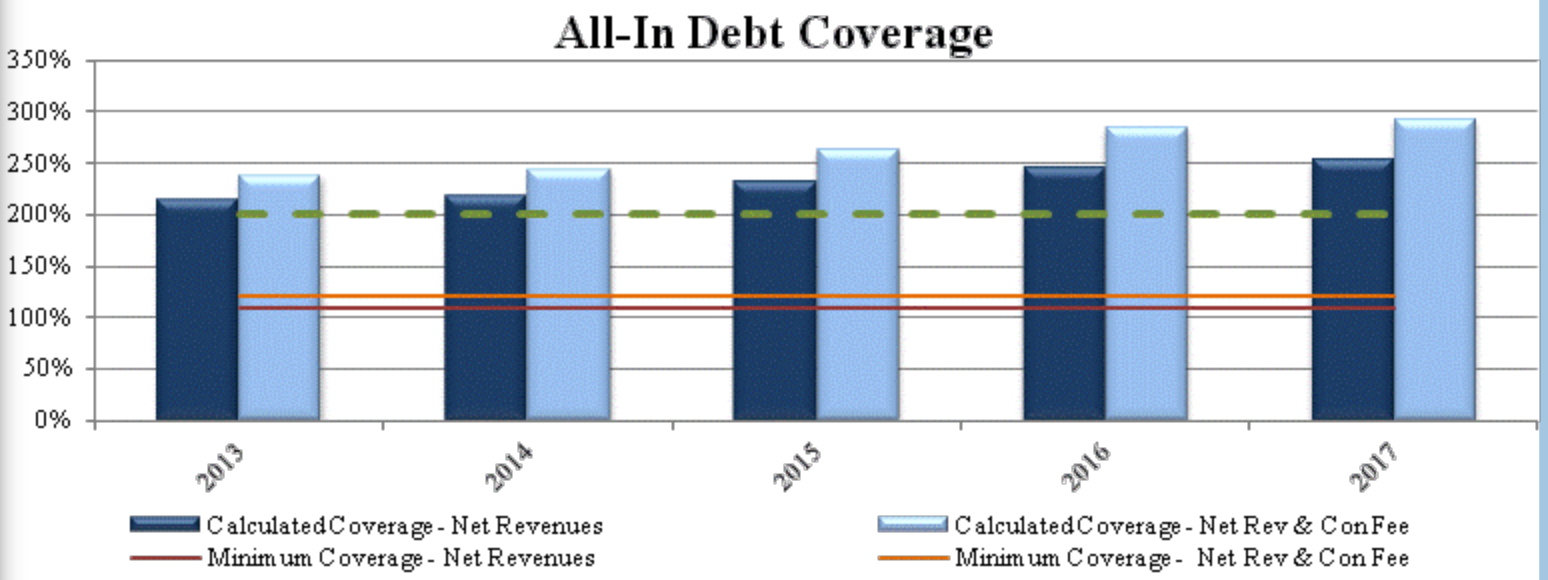
- Evaluation Based on a Variety of Factors:
  - Demographic / Economic
  - Management / Organization
  - Reporting / Planning
  - **Financial Metrics**
  - Other Factors
    - Rating Agencies Monitoring Political Willingness to Implement Rate Increases
- Town Rating = AAA
  - Assumed Restoration of Rate Indexing
  - Last Increase November 2009
  - May Affect Long-Term Outlook

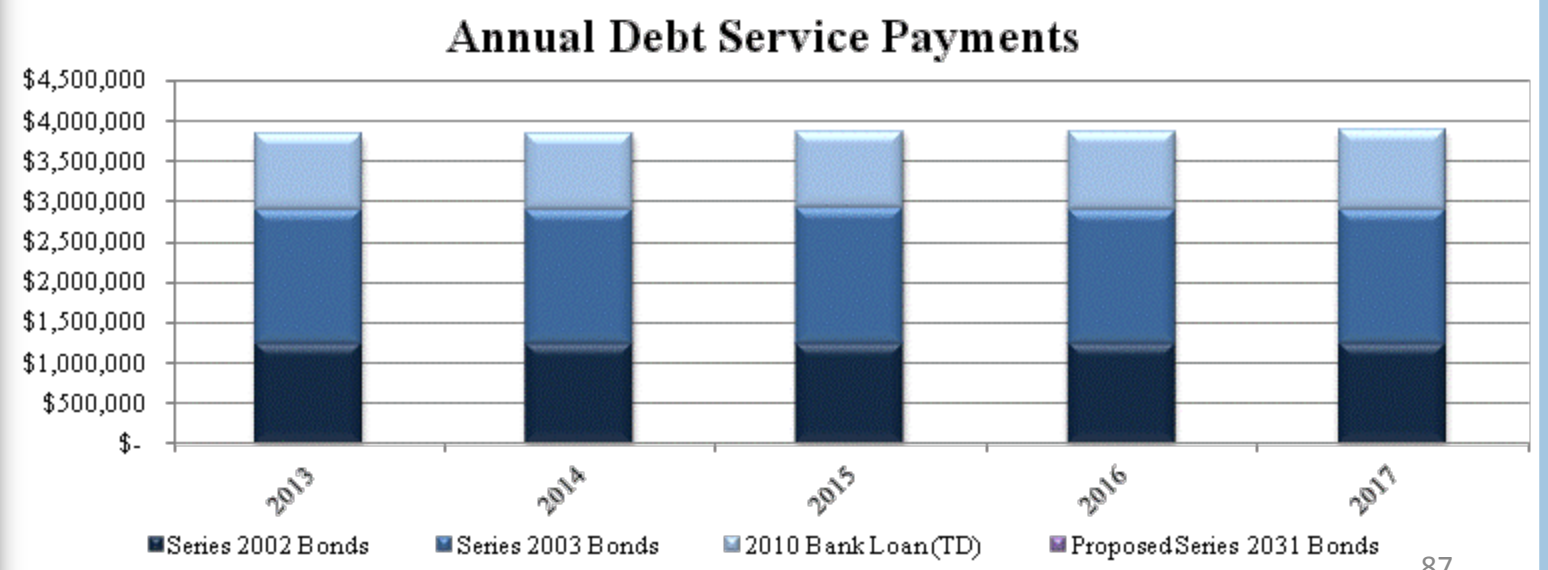
Credit Rating Criteria

- Financial Performance Metrics:
  - Debt Coverage = Net Revenues / Debt
  - Liquidity / Cash Reserves
  - Net Revenue Margin (Contribution) = Net Revenue / Gross Revenue
  - Debt to Net Plant Investment
  - Free Cash Flow to Depreciation

Town of Jupiter Utilities

Water Utility Master Plan Update 2012





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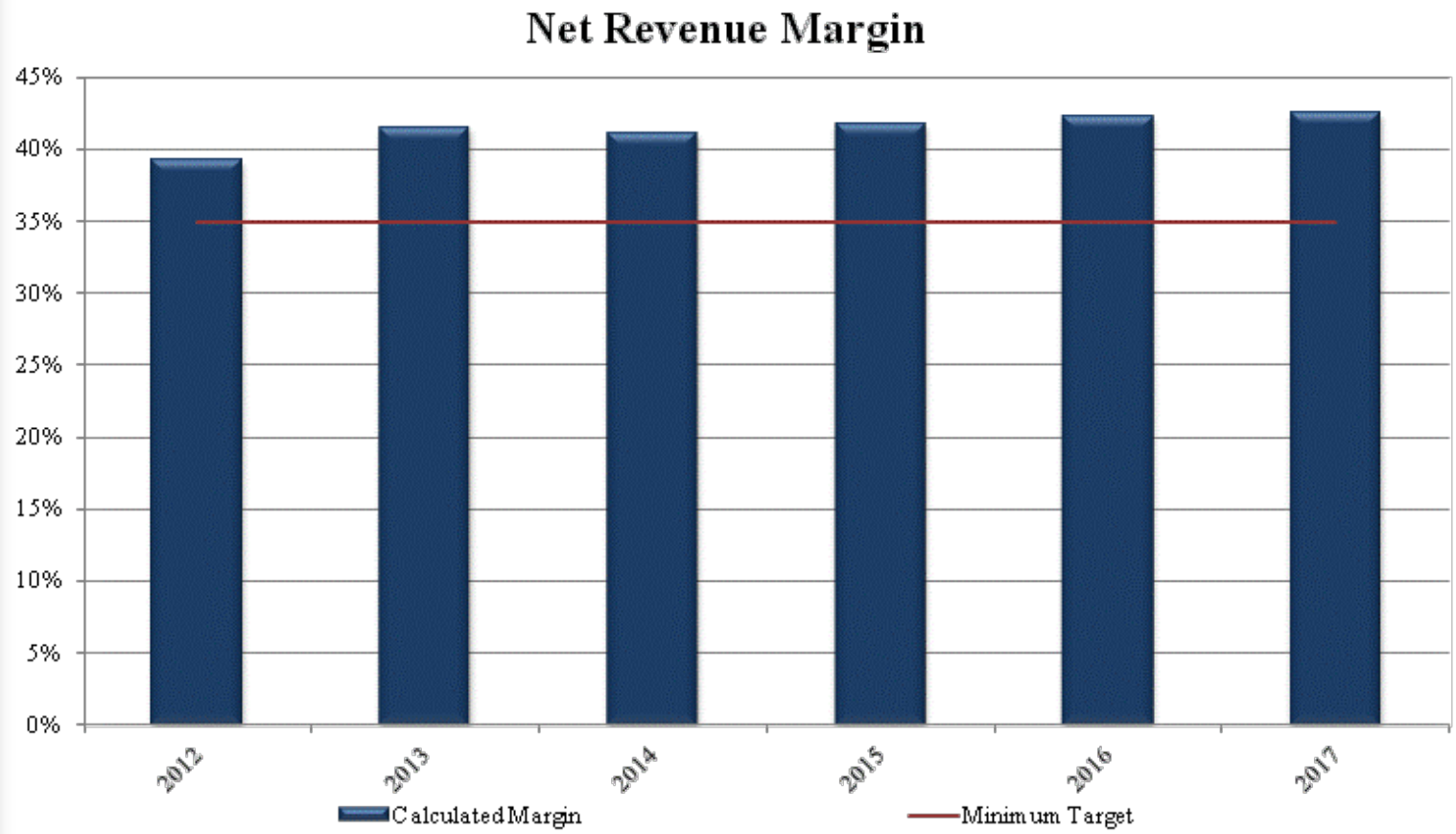
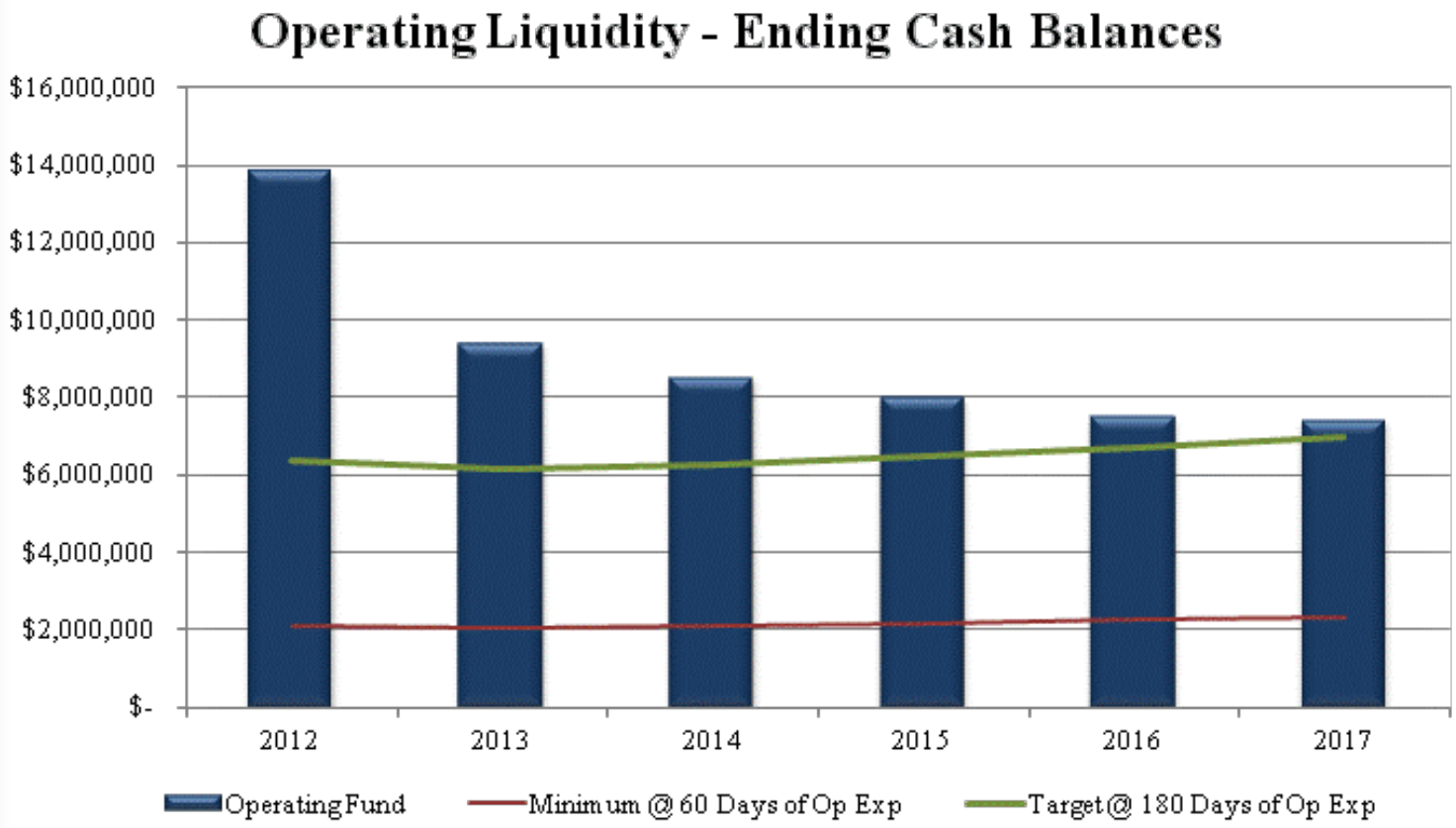
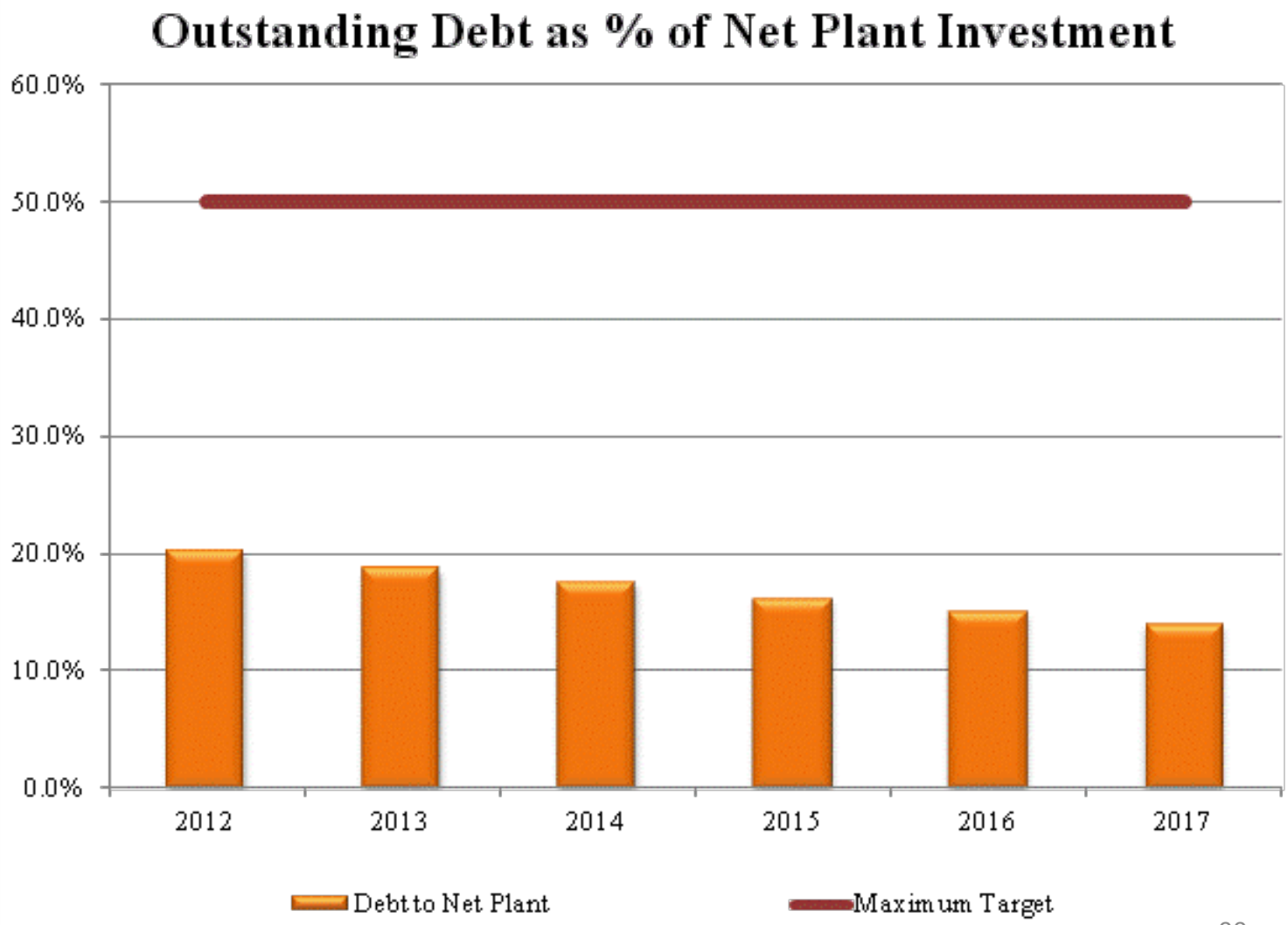


Financial Performance

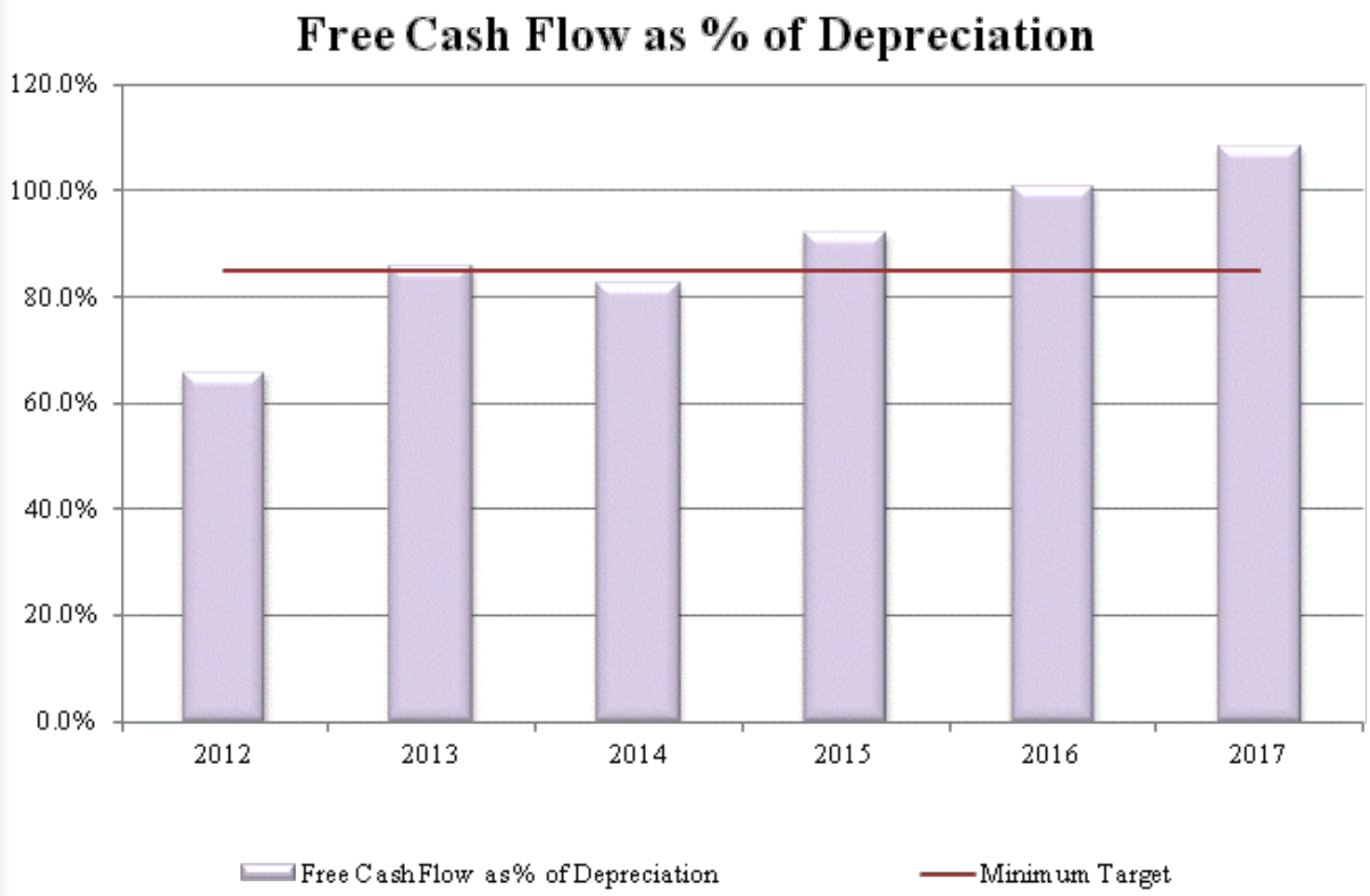
- Increase in Outer Years from Connection Fee Reimbursement



Financial Performance

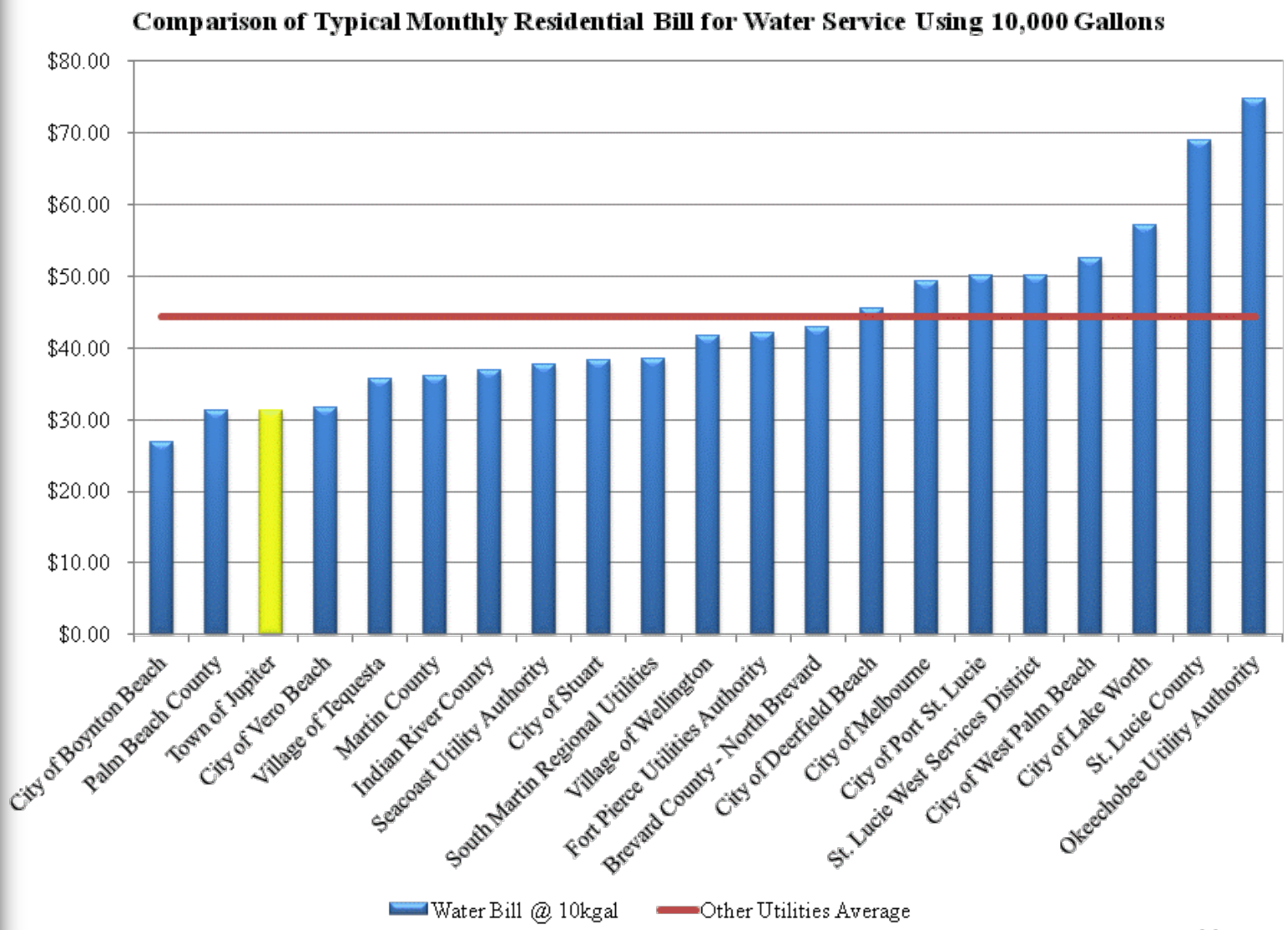


Financial Performance



Town of Jupiter Utilities

WATER UTILITY MASTER PLAN UPDATE 2012



Recommendations / Observations

- Rate Indexing
  - Required to Maintain Financial Position
  - No Later than FY 2015
  - 2% Index in FY13 = $19 M over 25 yrs
- Annual Transfer to R&R Fund
  - $5.2 M Annually Adjusted for Inflation (ENR Construction Cost Index)
- Continue To Monitor Financial Position Through Annual Review
  - If Growth Does Not Materialize Additional or Advancement of Rate Increases May be Required
  - Effects of Higher Inflation (O&M Dependent System)
  - Regulations Causing Additional Capital Investment

Questions?

ATTACHMENT B

Town of Jupiter
10-Year Water Supply Facilities Work Plan

Prepared by:

Town of Jupiter Utilities Department

in association with

HAZEN AND SAWYER
Environmental Engineers & Scientists

Table of Contents

1.0 INTRODUCTION 1

1.1 Statutory History 1

1.2 Statutory Requirements 2

2.0 BACKGROUND INFORMATION 3

2.1 Service Area 3

2.2 Regional Water Supply Issues 4

2.2.1 Loxahatchee River Watershed Restoration Project 5

2.2.2 Extreme Weather Events 5

3.0 DATA AND ANALYSIS 5

3.1 Population Information 6

3.2 Service Area 6

3.3 Potable Water Level of Service Standards 7

3.4 Population and Potable Water Demand Projections 9

3.5 Water Supply from Local Governments 11

3.5.1 Water Use Permit 12

3.5.2 Raw Water Allocation 12

3.5.3 Town of Jupiter Water Treatment Plant 12

3.5.4 Town of Jupiter Wellfields 13

3.5.5 Saltwater Intrusion Monitoring Program 14

3.5.6 Distribution System Water Storage Facilities 14

3.5.7 Surficial Aquifer Recharge Project 15

3.5.8 Finished Water Distribution System 15

3.5.9 Interlocal Agreements and Bulk Sales 15

3.5.10 Distribution System Interconnects 15

3.5.11 Treatment Losses 15

3.5.12 Distribution System Losses 16

3.5.13 Outstanding Compliance Issues 16

3.5.14 Required Upgrades or Expansions 17

3.5.15 Deep Well Injection Wells and Reuse 17

3.6 Water Supply Provided by Others 17
3.7 Conservation 17
3.7.1 Conservation Rate Structure 17
3.7.2 Water Shortage Restrictions 18
3.7.3 Landscape Irrigation Restrictions 18
3.7.4 Meter Replacement Program 18
3.7.5 Plumbing Code 18
3.8 Reuse 18
3.8.1 Local Government Specific Actions, Programs, Regulations, or Opportunities 18
3.8.2 Local Financial Responsibilities 19
3.9 Sector Plans 19
4.0 CAPITAL IMPROVEMENTS 19
4.1 Work Plan Projects 19
4.1.1 Water Supply / Treatment Projects Needed from 2015 to 2025 19
4.1.2 Water Supply / Treatment Projects Needed from 2025 to 2035 20
4.1.3 Transmission System Projects Needed from 2015 to 2025 20
4.1.4 Projects Needed to Supply Water Outside of the Town's Water Service Area 20
4.2 Capital Improvements Element/Schedule 20
5.0 GOALS, OBJECTIVES AND POLICIES 21

1.0 INTRODUCTION

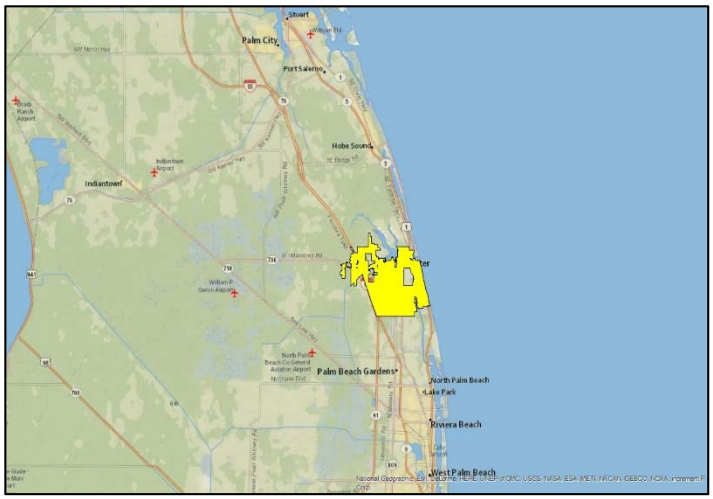


Figure 1 – Location Map

The Town of Jupiter is located on the southeastern coast of Florida within Palm Beach County. **Figure 1** illustrates a location map of the Town. This 2014 Town of Jupiter 10-Year Water Supply Facilities Work Plan identifies water supply sources, availability and facilities needed to serve existing and new development within the local government's jurisdiction. Chapter 163, Part II, (F.S.), requires local governments to prepare and adopt 10-Year Water Supply Facilities Work Plans into their comprehensive plans within 18 months after the South Florida Water Management District (SFWMD) approves a regional water supply plan or its update. The 2013 Lower East Coast Water Supply Plan Update (2013 LECWSP Update) was adopted by the SFWMD Governing Board on September 12, 2013. Therefore, local governments within the Lower East Coast Region are required to amend their comprehensive plans and include an updated 10-Year Water Supply Facilities Work Plan and related planning elements by March 12, 2015.

The State of Florida requires that the 10-Year Water Supply Facilities Work Plan - 2014 Update address the development of traditional and alternative water supplies and management strategies, including conservation and reuse. The data and analyses, including population projections, water demands and service areas must cover at least a 10-Year planning period and be consistent to the LECWSP and the updated comprehensive plan amendment.

The Town of Jupiter's 10-Year Water Supply Facilities Work Plan - 2014 Update is divided into five sections:

1.0 – Introduction

2.0 – Background Information

3.0 – Data and Analysis

4.0 – Capital Improvements

5.0 – Goals, Objectives, and Policies

1.1 Statutory History

The Florida Legislature enacted bills in the 2002, 2004, 2005, and 2011 sessions to address the state's water supply needs. These bills, in particular Senate Bills 360 and 444 (2005 legislative session), significantly changed Chapters 163 and 373, F.S., by strengthening the statutory links

between the regional water supply plans prepared by the water management districts and the comprehensive plans prepared by local governments. In addition, these bills established the basis for improving coordination between local land use and water supply planning.

1.2 Statutory Requirements

The Town of Jupiter has considered the following in updates to this 10-Year Water Supply Facilities Work Plan.

1. Coordinate appropriate aspects of its comprehensive plan with the 2013 LECWSP [163.3177(4) (a), F.S.].

2. Ensure the future land use plan is based upon availability of adequate water supplies and public facilities and services [s.163.3177 (6) (a), F.S.].

3. Ensure that adequate water supplies and potable water facilities are available to serve new development no later than the issuance by the local government of a certificate of occupancy or its functional equivalent and consult with the applicable water supplier to determine whether adequate water supplies will be available to serve the development by the anticipated issuance date of the certificate of occupancy [s.163.3180 (2), F.S.].

4. Revision of the related comprehensive planning elements within 18 months after the water management district approves an updated regional water supply plan, to:

    a. Identify and incorporate the alternative water supply project(s) selected by the local government from projects identified in the 2013 LECWSP, or alternative project(s) proposed by the local government under s. 373.709(8)(b), F.S. [s. 163.3177(6)(c), F.S.];

    b. Identify the traditional and alternative water supply projects and the conservation and reuse programs necessary to meet water needs identified in the 2013 LECWSP [s. 163.3177(6)(c)3, F.S.]; and

    c. Update the 10-Year Water Supply Facilities Work Plan for at least a 10-Year planning period for constructing the public, private, and regional water supply facilities identified in the element as necessary to serve existing and new development [s. 163.3177(6)(c)3, F.S.].

5. Revise the Five-Year Schedule of Capital Improvements to include water supply, reuse, and conservation projects and programs to be implemented during the five-year period [s. 163.3177(3)(a)4, F.S.].

6. To the extent necessary to maintain internal consistency after making changes described in Paragraph 1 through 5 above, revise the Conservation Element to assess projected water needs and sources for at least a 10-Year planning period, considering the 2013 LECWSP, as well as applicable consumptive use permit(s) [s.163.3177 (6) (d), F.S.]. The plan must address the water supply sources necessary to meet and achieve

the existing and projected water use demand for the established planning period, considering the applicable regional water supply plan [s.163.3167(9), F.S.].

7. To the extent necessary to maintain internal consistency after making changes described in Paragraphs 1 through 5 above, revise the Intergovernmental Coordination Element to ensure coordination of the comprehensive plan with the 2013 LECWSP [s.163.3177 (6) (h) 1., F.S.].

While an Evaluation and Appraisal Report is not required, local governments are encouraged to comprehensively evaluate, and as necessary, update comprehensive plans to reflect changes in local conditions. The evaluation could address the extent to which the local government has implemented the need to update its 10-Year Water Supply Facilities Work Plan, including the development of alternative water supplies, and determine whether the identified alternative water supply projects, traditional water supply projects, and conservation and reuse programs are meeting local water use demands [s.163.3191 (3), F.S.].

2.0 BACKGROUND INFORMATION

This section includes the following:

- An overview of the Town of Jupiter's water service area; and
- A description of regional water supply planning issues that impact the Town of Jupiter, including the following:
  - Loxahatchee River Watershed Restoration Project
  - Extreme Weather Events

2.1 Service Area

The Town of Jupiter service area encompasses a total area of 58 square miles, approximately one-tenth the total area of urban Palm Beach County. Retail customers include residential, commercial, and industrial properties within the Town of Jupiter, The Town of Juno Beach, and unincorporated areas of Palm Beach and Martin Counties. The utility has no wholesale customers. **Figure 2** depicts the water service area. The water service area includes the Jupiter Farms area, west of the Town limits. It should be noted that the Town is not actively pursuing extension of water service to the Jupiter Farms area at the current time.

Figure 2 also depicts the location of key Town assets including the following: 1) Water Treatment Plant; 2) Central Boulevard High Service Pump Station; 3) Juno Repump Station; 4) Riverbend Repump Station.

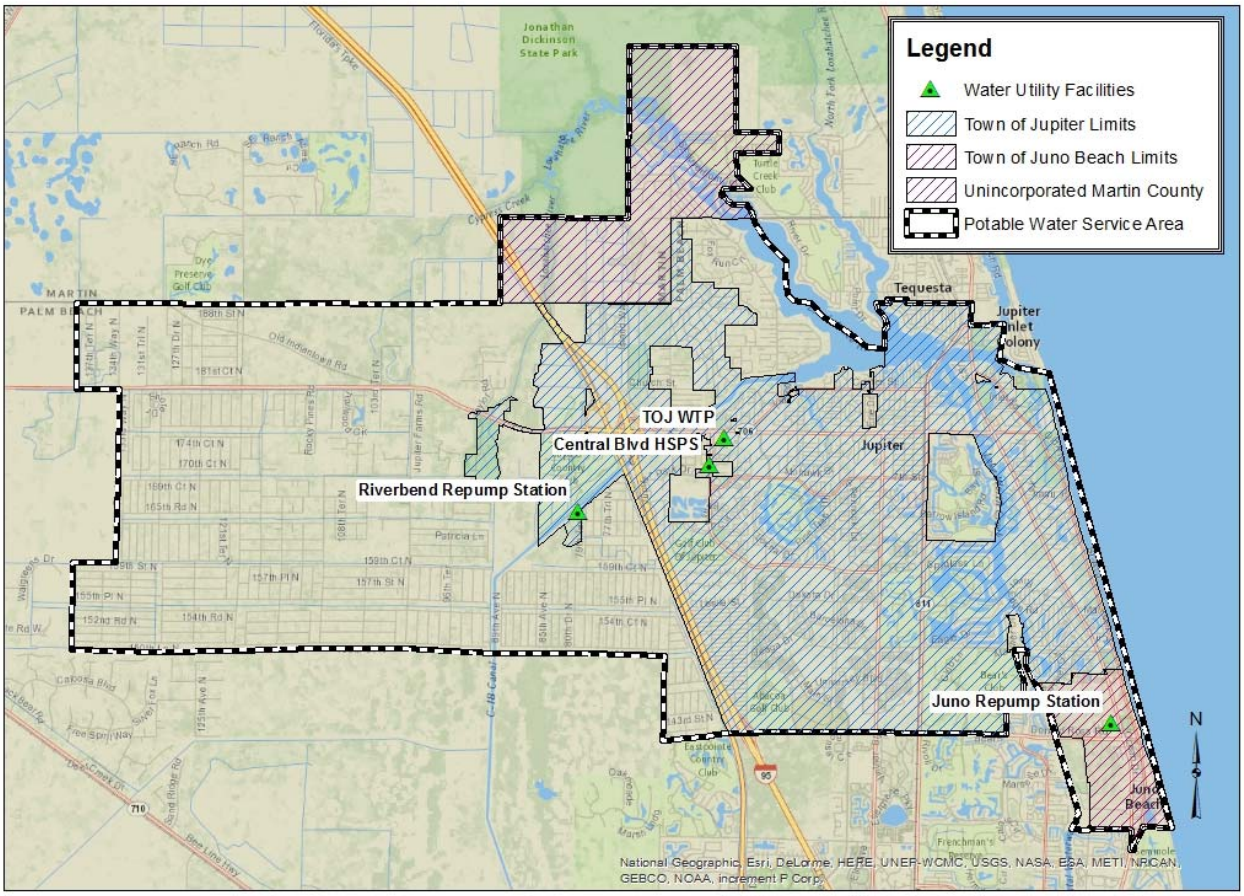


Figure 2 – Town of Jupiter Water Service Area

2.2 Regional Water Supply Issues

Investigations and evaluations conducted at the national, regional, and local levels have reinforced the need to plan for the predicted impacts of more frequent and severe drought, increases in tidal and storm-related flooding, and ensuring that future planning efforts are flexible to adapt to changes to ensure a sustainable water supply infrastructure.

The Town of Jupiter, together with its municipal and regional partners, understands that it is imperative that local governments and water utilities begin to formalize the integration of water supply and climate change considerations as part of coordinated planning efforts and work to provide relevant updates to the 10-Year Water Supply Facilities Work Plan and enhance Goals, Objectives and Policies (GOPs) of its comprehensive plan.

The Town is a leader in developing planning tools and identifying achievable and cost effective goals that meet the needs of its community.

2.2.1 Loxahatchee River Watershed Restoration Project

Regional water managers have long recognized the importance of capturing excess surface water runoff and the use of such water for surficial aquifer recharge, for protecting natural systems, maintaining public water supplies and providing a barrier to salt water intrusion to the surficial aquifer. In fact, as part of the Loxahatchee River Watershed Restoration Project, (Northern Palm Beach County Plan) component of the Comprehensive Everglades Restoration Plan (CERP), the ultimate delivery of 25 cfs from the regional system was to occur for this purpose. SFWMD has recently discussed working with Jupiter (via a pilot study) to explore the diversion of excess surface water runoff from the C-18 Canal when discharges to tide through the S-46 structure are eminent and/or other system factors indicate it is prudent.

It is the Town's goal to secure the 25 cfs of recharge flows to its surficial aquifer wellfields. Implementation of these recharge flows would aid significantly in reducing natural area impacts due to the Town's groundwater withdrawals while also minimizing recurring impacts simply resulting from periodic drought.

The primary benefit of the project would provide for sustainability of Jupiter's surficial aquifer resources which currently provide over 26 MGD of withdrawals for public utility use and over 2 MGD for privately permitted withdrawals within the Town's service area. Additional benefits include protection of other natural systems and wetlands, and stormwater runoff water quality improvement. Lack of recharge to surface waters will impact wetlands; and depressed surface water levels will jeopardize the sustainability of the local surficial aquifer and potentially cause saltwater intrusion from the nearby Atlantic Ocean and Loxahatchee River.

2.2.2 Extreme Weather Events

An increase in frequency and severity of extreme weather events may be an impact of climate change. Comprehensive planning should consider impacts and risks associated with drought, water shortages and reduced groundwater tables, all of which can hasten saltwater intrusion and exacerbate water supply deficits. Conversely, more intense rainfall will cause flooding, increased runoff, impacts to the natural systems and provide more recharge potential for wellfields. Integrated water resource management strategies will help to mitigate for these impacts, particularly those projects that can serve to provide additional long-term storage of stormwater runoff and redistribution of excess rainfall during dry periods and drought.

3.0 DATA AND ANALYSIS

This section provides information related to the population forecast and water demand forecast within the Town of Jupiter's water service area.

The planning horizon for the Water Supply Facilities Work Plan - 2014 Update spans 20 years, covering 2015 to 2035.

3.1 Population Information

This 10-Year Water Supply Facilities Work Plan - 2014 Update estimates the future water supply needs for the Town of Jupiter's water service area.

The water demand forecast was developed based on current utility operations and the existing customer base, compared to population projections through 2035. The population modeling was performed by Palm Beach County Planning and Zoning Department (PBCPZD) using the *Countywide Population Projections Through 2035 by TAZ (2014)*, to develop the projected populations based on the Office of Economic and Demographic Research (OEDR) and University of Florida's Bureau of Economic and Business Research (BEBR). Palm Beach County utilizes the OEDR/BEBR medium range projections for the County's Population Allocation Model. The population forecast was disaggregated into Palm Beach County's 2010 Traffic Analysis Zones (TAZ).

These OEDR/BEBR forecasts were assigned by the PBCPZD to 1,033 TAZs within 38 municipalities and unincorporated Palm Beach County. Annually BEBR issues population projections in five-year increments for every Florida County. Palm Beach County's 2014 Population Allocation Model incorporates:

- The 2010 Census populations and related information (Summary File 1, released in August 2011), such as persons per household, group quartered population, vacancy and seasonal rates by TAZs. Henceforth, the baseline for future population models will be 2010.
- The latest OEDR projections, released in March 2013. These projections are based on the 2010 Census released in late March 2011, and the 2012 OEDR population estimates released in the Fall of 2012.
- All land use densities changes, approved or expired residential projects, annexations, and 2012 Municipal population estimates, adopted up to April 2013.

3.2 Service Area

The Town of Jupiter provides water to customers within the Town as well as the following jurisdictions:

- Town of Juno Beach
- Unincorporated Palm Beach County
- Unincorporated Martin County

The Town does not provide bulk water sales to jurisdictions via master meters.

Figure 3 depicts the water service area (inclusive of all retail customers). The Town of Jupiter's water service area encompasses a total area of 58 square miles, approximately one-tenth the total area of urban Palm Beach County. The Town's land use is composed of residential, commercial, and industrial uses.

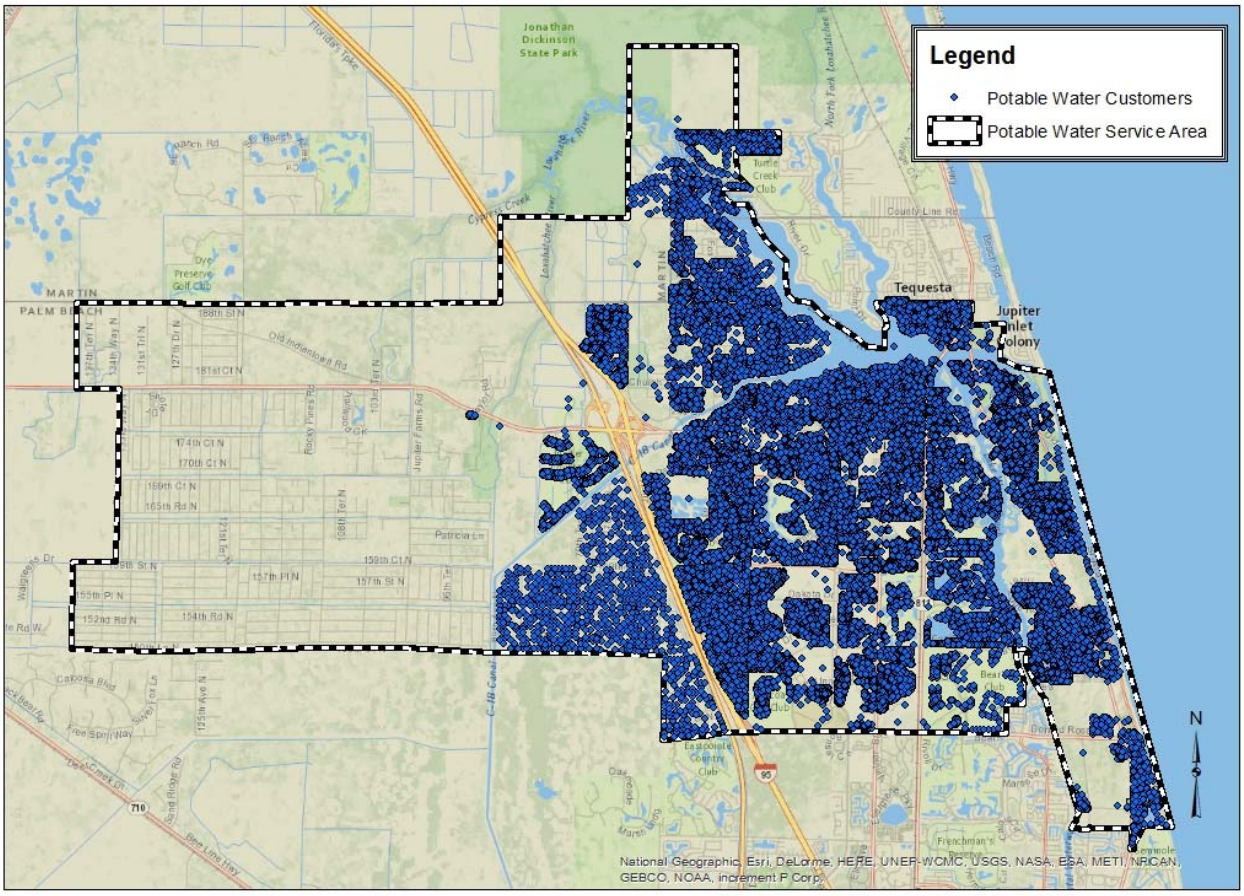


Figure 3 – Town of Jupiter Water Customers (as of November 2014, the Town's Water Utility served 28,955 accounts)

3.3 Potable Water Level of Service Standards

The Town of Jupiter has set level of service standards for its water system as summarized in **Table 2**.

Table 2
Town of Jupiter
Water System Level of Service Standards

Component	Level Of Service Standard / Goal
Raw Water Supply	26.2 MGD – surficial aquifer 23.5 MGD – Floridan Aquifer 49.7 MGD - Total
Treatment Capacity	30 Million Gallons per Day
Minimum system pressure during peak hour demand with largest pump out of service during non-fire flow conditions	Maintain a minimum of 45 psi in the distribution system
Minimum system pressure during peak hour demand with largest pump out of service during fire flow conditions	Maintain a minimum of 20 psi in the distribution system
Finished Water Pumped Per Capita – 2008 Comprehensive Plan Volume 1, Infrastructure Element	Policy 1.4.4 of the Comprehensive Plan Volume 1, Infrastructure Element indicates that the level of service for finished water pumped shall be 153 gallons per capita per day for residential customers and 100 gallons per 1,000 square feet for non-residential customers
Finished Water Storage	A minimum of 5.8 MG based on water demand in the past 12 months (FAC 62-555.320). Current storage capacity: 30.5 MG.
Maximum Distribution System Water Loss	10 Percent of Finished Water Pumped

Table 3 presents historical Annual Average Daily Flow (AADF) pumping data from the Town's WTPs and wellfields along with the estimated populations from 2010 to 2013. The historical per capita water demand during this time frame is also presented.

Table 3
Town of Jupiter Water Service Area
Historical AADF Finished and Raw Water Pumping Data

Year	Water Service Area Population [A]	AADF Finished Water Pumped		AADF Raw Water Pumped	
		Pumping Rate (mgd) [B]	Per Capita (Gallons per person per day)	Pumping Rate (mgd)[B]	Per Capita (Gallons per person per day)
2010	72,588	14.4	198.1	17.1	236.2
2011	73,041	14.7	201.0	18.3	251.2
2012	73,888	14.9	202.0	19.1	258.9
2013	74,749	15.0	200.8	18.8	251.2
2010 to 2013 Average:		**14.7**	**200.5**	**18.4**	**249.4**

Notes:

Note A: Water service area population forecast Palm Beach County Planning and Zoning Dept.

Note B: Data provided by Town of Jupiter Utilities Department

The above data represent the overall water consumption rate within the Town's water service area including: 1) residential; 2) commercial; 3) industrial. These data indicate the following:

- 2010 to 2013 average raw water per capita demand: 216 gallons per person per day
- 2010 to 2013 average finished water per capita demand: 174 gallons per person per day

The above 4-year per capita averages for raw water and finished water demand are used to assess future forecasts based upon the water service area population forecast.

The Town has established a finished water residential per capita standard of 153 gallons per person per day within its Comprehensive Plan.

3.4 Population and Potable Water Demand Projections

Table 4 presents the population forecast for the Town of Jupiter's water service area from 2015 through the year 2035. The population forecast for 2010 is also included.

Table 4
Town of Jupiter Water Service Area
Population Projections

Location	2010	2015	2020	2025	2030	2035
Jupiter	55,230	57,978	60,465	61,678	63,316	65,267
Juno Beach	3,176	3,503	3,619	3,710	3,829	3,960
Unincorporated Palm Beach County	12,332	12,767	13,046	13,521	14,186	16,911
Unincorporated Martin County	1,850	2,144	2,224	2,307	2,394	2,484
Total	**72,588**	**76,392**	**79,354**	**81,217**	**83,724**	**88,621**

Table 5 presents the water demand forecast for the Town of Jupiter's water service area from 2015 through the year 2035. Water demand estimates for 2010-2013 are also included (based upon respective population forecasts for those years). Forecasts are presented for the raw water and finished water demands on an AADF basis. Additionally, the maximum day water demand is provided based upon the historical maximum day to annual average day ratio of 1.4 (based upon water pumping data from 2009 to 2014). The data in the table below assumes that the Town's average gross per capita water demand from 2010 to 2013 remains stable through 2035.

Table 5
Town of Jupiter Water Service Area
Water Demand Forecast

Year	Population	Raw Water Per Capita (gpcd) [A,B]	Finished Water Per Capita (gpcd) [A,B]	Raw Water Demand AADF (mgd)	AADF Finished Water Demand (mgd)	Max Day Finished Water Demand (mgd)
2010	72,588	236.2	198.1	17.1	14.4	20.16
2011	73,041	251.2	201.0	18.3	14.7	20.58
2012	73,888	248.3	202.0	18.3	14.9	20.86
2013	74,749	245.4	200.8	18.3	15.0	21.00
2015	76,392	245.3	200.5	18.7	15.3	21.42
2020	79,354	245.3	200.5	19.5	15.9	22.26
2025	81,217	245.3	200.5	19.9	16.3	22.82
2030	83,724	245.3	200.5	20.5	16.8	23.52
2035	88,621	245.3	200.5	21.7	17.8	24.92

Notes:

Note A: Year 2015 raw and finished water per capita demands are based on an average of the per capita from the years 2010 through 2013.

Note B: The raw and finished water demands in the year 2020-2035 are assumed to remain equal to the 2015 values.

The maximum day finished water demand is presented in the above table since it is critical to assess the timing for expanding treatment capacity to meet future demand.

Table 5 illustrates that the annual average day raw water demand does not exceed the annual average day combined raw water allocation of 29.84 MGD through the year 2035. It also illustrates that the Town's design treatment capacity of 30.0 million gallons per day is sufficient through the year 2035 to meet the maximum day demand with all treatment units in service.

Jupiter Farms is the area west of the Florida's Turnpike/Interstate 95 corridor and represents by far the largest portion of the Town of Jupiter service area to which potable water service has yet to be extended. As referenced in *Countywide Population Projections Through 2035 by TAZ (2014),* the currently unserved area within Jupiter Farms had a population of approximately 11,190 persons in 2010, or about 13% of the entire Service Area. However, it should be noted that the Town is not actively pursuing extension of water service to the Jupiter Farms area at the current time. If potable water service were to be extended to this area, it is expected that demand for water would not likely include an irrigation component, as households have existing private water systems. Hence, per capita water demand would likely be reduce by approximately 25%. If the entire Jupiter Farms area were to connect to the Town's water distribution network by 2025, raw water demand would be expected to increase to 24.3 MGD, finished water to 19.9 MGD, and Max Day Finished water demand to 24.0 MGD. As is the case without having extended service to Jupiter Farms, both raw water and Max Day demands remain below both water treatment rated capacity and Water Use Permit thresholds.

3.5 Water Supply from Local Governments

This section briefly describes the water supply, treatment, storage and distribution infrastructure that is owned and operated by the Town of Jupiter. Additionally, the Loxahatchee River District's (LRD) reuse water program is briefly described as it relates to water supply planning.

- Water Use Permit (WUP) Information and Number
- Raw Water Allocation Information
- Existing Water Facilities
  - Water Treatment Plant (WTP);
  - Surficial Wellfield;
  - Floridan Wellfield;
  - Saltwater Intrusion Monitoring Program;
  - Distribution System Water Storage Facilities;
  - Surficial Aquifer Recharge Project; and
  - Finished Water Distribution System.

- Interlocal Agreements and Bulk Sales
- Distribution System Interconnects
- Treatment Losses
- Distribution System Losses
- Outstanding Compliance Issues
- Required Upgrades or Expansion
- Deep Injection Wells and Reuse

3.5.1 Water Use Permit

Both surficial and Floridan Aquifer water sources are permitted by the South Florida Water Management under Consumptive Use Permit No. 50-00010-W. The permit was issued November 11, 2004 with an expiration date of November 11, 2024. The WUP was modified on August 7, 2012 and has a new expiration date of September 17, 2030.

3.5.2 Raw Water Allocation

The permit allows withdrawal from the surficial and Floridan Aquifers within the limitations presented in **Table 6**.

Table 6
Current Aquifer Withdrawal Limits (million gallons)

Category	Floridan Aquifer (million gallons)	Surficial Aquifer (million gallons)
Annual Allocation	4,275	6,862
Maximum Month Allocation	555	617

The total annual allocation from both sources combined cannot exceed 8,909 MG.

3.5.3 Town of Jupiter Water Treatment Plant

The Town's existing water treatment facility consists of three separate processes; reverse osmosis, ion exchange and nanofiltration. Each of the processes is permitted by the Florida Department of Environmental Protection (FDEP) and have rated treatment capacities as shown in **Table 7.**

Table 7
Existing Rated Plant Capacities

Facility	FDEP Permitted Treatment Capacity (MGD)
Reverse Osmosis	13.7
Ion Exchange	1.8
Nanofiltration	14.5
Total	**30.0**

The reverse osmosis plant is capable of producing 13.7 MGD of finished water. The Utility has a permitted (by SFWMD) daily withdrawal allocation from the Floridian Aquifer of 18.26 MGD (max month basis), which allows the R.O. plant the ability to produce 13.7 MGD of finished water at the 75% recovery rate of the process.

In 1999, a 1.8 MGD ion exchange treatment plant was constructed. The ion exchange plant utilizes surficial aquifer water to produce water of increased alkalinity and low color which when blended with the R.O. permeate waters improves the chemical and aesthetic characteristics of the total blended finish water.

In 2010, the Town commissioned a 14.5 MGD Nanofiltration Water Treatment Facility. The plant utilizes raw water from the surficial aquifer, which is the same source used by the ion exchange plant.

The Utility has a permitted (by SFWMD) daily withdrawal allocation from the surficial aquifer of 20.30 MGD (max month basis), which allows the ion exchange plant to operate in conjunction with the nanofiltration plant. The nanofiltration plant produces 14.5 MGD of product at an 85% process recovery rate.

3.5.4 Town of Jupiter Wellfields

The Town utilizes two distinct water supply sources to meet the needs of its water treatment facilities. Raw water from the surficial aquifer (fresh) is used to supply the Nanofiltration and Ion Exchange Treatment plants, while raw water from the Floridan aquifer (brackish) is used to supply the Reverse Osmosis (R.O.) Plant.

While each source has a permitted maximum withdrawal rate (annual and max month), the total allowable withdrawal rate is less than the sum of the two sources. The Town's general approach to operating the utility is to depend more heavily on the brackish water source (and the R.O. Plant) during dry periods. This operating approach aids in reducing the impacts on the surficial aquifer, which is typically strained during dry times. During wet periods, the Town relies more heavily on the surficial aquifer (Nanofiltration) due to its lower operating costs as compared to R.O. The Town's water use permit was recently renewed and does not expire until September 30, 2030.

Permitted resources and facilities provide the capacity and operational flexibility needed by the system to serve all demands through service area build out.

The Town of Jupiter's surficial aquifer wellfield currently includes 51 production wells that have a combined raw water producing capacity of approximately 18,000 gallons per minute (gpm) or 26.2 million gallons per day (MGD). The wells are located throughout the largely residential western areas of the Town; located as far north as the water treatment plant on Central Blvd. and as far south as the Abacoa Golf Course on Heights Blvd.

As of 2012, ages of the Town's wells vary from 1 to 38 years. Older wells are found closer to the water treatment plant, the oldest were reportedly installed in 1974, and the newest wells completed as recently as 2007 are found in the Abacoa subdivision in Jupiter. The Town's surficial aquifer production wells typically produce between 200 and 800 gpm (0.3 and 1.2 MGD) with the older wells producing at the lower end of the scale and the newer wells producing more.

The Town of Jupiter's Upper Floridan Aquifer wellfield includes 11 in service production wells that have a combined raw water producing capacity of approximately 16,300 gallons per minute (gpm) or 23.5 million gallons per day (MGD). Individually these wells produce between 500 and 2,000 gpm. The wells are completed within the Upper Floridan Aquifer at depths between 1,017 feet and 1,825 feet (only one well, RO-6 was drilled this deep, the rest are less than 1,660 feet deep). The wells are located at the Central Blvd Ground Storage Tank and High Service Pumping Facility (RO-2 and RO-3); along the South Indian River Water Control District outfall canal (RO-7 and RO-10), and within the South Florida Water management District (SFWMD) C-18 canal Right of Way (RO-5, RO-6, RO-8, RO-9, RO-11, RO-12 and RO-13). One well, RO-4 located at the water treatment plant site, is not fitted with a pump and is not in service.

As of 2012, ages of the Upper Floridan Aquifer wells are between 8 and 24 years old. The wells are constructed with either fiberglass reinforced polyester (FRP) casing or polyvinyl chloride (PVC) casing. The nature of the brackish water produced by the wells dictates use of this type of casing because the water is corrosive.

3.5.5 Saltwater Intrusion Monitoring Program

The Town of Jupiter operates a saltwater intrusion monitoring program in accordance with the limiting conditions of its SFWMD Water Use Permit. Its goal is to locate and monitor the saltwater interface in and around the Town's wellfields. The purpose of the program is to provide an early warning monitoring system to assist wellfield managers in tracking the location and to manage withdrawals to limit the inland movement of the salt front. The Town currently has 10 saltwater monitor wells.

3.5.6 Distribution System Water Storage Facilities

The Town water storage facilities are located on-site at its water treatment plant, at the high service pumping facility adjacent to the water treatment plant, and at two distribution system storage sites.

The water treatment plant has two ground storage tanks with a combined capacity of 4.5 million gallons on-site. The Central Boulevard High Service Pump Station has three ground storage tanks with a combined capacity of 21.0 million gallons.

The two remote storage and repump facilities sites are the Juno Beach Repump Station and the Riverbend Repump Station. The Juno Beach Repump Station has a ground storage tank with a capacity of 1.0 million gallons. The Riverbend Repump Station has a ground storage tank with a capacity of 3.0 million gallons.

3.5.7 Surficial Aquifer Recharge Project

It is the Town's goal to secure 25 cfs of recharge flows to its surficial aquifer wellfields with diversions from the C-18 Canal during periods when surface water runoff is being discharged to tide. Implementation of these recharge flows would aid significantly in reducing natural area impacts due to the Town's groundwater withdrawals while providing protection to natural systems and wetlands.

3.5.8 Finished Water Distribution System

The Town of Jupiter's water distribution system consists of over 446 miles of 2 to 30-inch diameter water mains that convey the finished water from the treatment facilities to the individual customers. In general, the larger diameter transmission mains radiate from the water treatment facility and decrease in size as they extend throughout the service area. The majority of the Town's customers are to the east, north and south of the WTP.

3.5.9 Interlocal Agreements and Bulk Sales

The Town of Jupiter has no bulk water customers.

3.5.10 Distribution System Interconnects

The Town of Jupiter maintains distribution system interconnects with two other utilities, Seacoast Utilities, adjacent to the south service area boundary, and the Village of Tequesta, adjacent to the north boundary.

3.5.11 Treatment Losses

Treatment losses, for the purpose of this report, is defined as the difference between raw water pumped and finished water pumped. The terminology "treatment loss" may be misleading since a portion of the water is not actually "lost". Rather the "lost" water is repurposed for reuse water blending or other beneficial use. Hence, "treatment efficiency" may be a more accurate term. However, since the 10-Year water supply plan template issued by the SFWMD used the terminology "treatment loss", this report uses the same terminology as the SFWMD template.

Treatment losses vary with the efficiency of the treatment technology utilized. The treatment loss for the Town's WTP, which uses a combination of nanofiltration and reverse osmosis

technologies, is roughly 10 to 22 percent of the raw water pumped. The historical overall treatment loss in the system is summarized in **Table 8**.

Table 8
Historical Overall Treatment Loss

Water Use Category	Annual Average Day Flow (mgd)				
	2009	2010	2011	2012	2013
Raw Water	15.55	17.15	18.35	19.13	18.78
Finished Water Pumped from WTP	13.86	14.38	14.68	14.92	15.01
Treatment Loss	1.69	2.77	3.66	4.21	3.77
Loss as % of Raw Water Pumped[1]	10.9%	16.2%	20.0%	22.0%	20.1%

[1] Loss as a percentage of raw water pumped does not account for reuse of 1.5 MGD of Nanofiltration Concentrate, which is typically not considered a water loss.

3.5.12 Distribution System Losses

Distribution system losses are presented in **Table 9**. The percent distribution system loss refers to the percent of finished water pumped. The distribution system losses have averaged 11.3 percent over the timeframe from 2009 through 2013.

Table 9
Historical Distribution System Losses

Water Use Category	Annual Average Day Flow (mgd)				
	2009	2010	2011	2012	2013
Raw Water	15.5	17.1	18.3	19.1	18.8
Finished Water Pumped from WTPs	13.9	14.4	14.7	14.9	15.0
Billed Authorized Consumption	12.1	12.6	12.8	12.7	12.9
Unmetered Authorized Consumption	0.1	0.1	0.4	0.4	0.5
Total Authorized Consumption	12.2	12.7	13.2	13.1	13.4
Distribution System Loss	1.7	1.7	1.5	1.8	1.6
% Distribution System Loss	12.1%	11.8%	9.9%	12.3%	10.7%

3.5.13 Outstanding Compliance Issues

There are no outstanding compliance issues related to the Town of Jupiter's water facilities.

3.5.14 Required Upgrades or Expansions

The Town of Jupiter has no planned upgrade or expansion projects at its WTP.

No expansion of the Town of Jupiter's water system is planned at this time.

3.5.15 Deep Well Injection Wells and Reuse

Town of Jupiter WTP nanofiltration concentrate disposal is accomplished in conjunction with LRD. LRD is a regional wastewater treatment facility that lies less than one half mile from the Jupiter WTP. Nanofiltration concentrate disposal is accomplished via either of two methods. Primarily, nanofiltration concentrate is mixed with disinfected reclaimed water within storage ponds on the LRD WWTP site, then pumped to LRD customers via a reclaimed water distribution network. During periods of low irrigation demand, combined WWTP reclaimed water and WTP concentrate is pumped down LRD's deep injection well.

3.6 Water Supply Provided by Others

This Town of Jupiter does not currently receive water supplied by others. This section is not applicable to the Town of Jupiter.

3.7 Conservation

The Town of Jupiter has been promoting water conservation for more than 25 years. Conservation is a proven strategy for delaying implementation of expensive alternative water supply technologies. The Town has established a goal of reducing residential finished water demand to 153 gallons per person per day by the year 2020. Current data supplied by the utility indicate compliance. The following subsections summarize the Town of Jupiter's ongoing conservation initiatives.

Water conservation has been addressed through a series of ordinances within the Town's municipal code and Comprehensive Plan.

3.7.1 Conservation Rate Structure

The Town has implemented a progressive conservation rate structure that provides for step-wise increases in rates as water usage increases. For example, water rates for residential customers increases from $1.14 per thousand gallons per month for consumption under 6,000 gallons, to $3.62 per thousand gallons per month when consumption increases to over 30,000 gallons per month.

Further, the Town provides for additional curbs on water use during periods of water shortage through Section 20-111 of the Town Code. It provides for the imposition of a surcharge of up to 100 percent on customer accounts whose water use exceeds the average of the preceding four months by an amount fixed by Council resolution.

3.7.2 Water Shortage Restrictions

Section 20-107 through 20-116 of the Municipal Code provides for the imposition of water restrictions under an array of circumstances, including drought, requests by the South Florida Water Management District, deterioration of aquifer salt water intrusion and water availability. Restricted water uses are established and provisions for enforcement are addressed.

3.7.3 Landscape Irrigation Restrictions

The Town of Jupiter has implemented progressive landscape irrigation restrictions under Section 20-101 of the Town Code that meet the requirements of the SFWMD. These restrictions apply to all individuals who use Town of Jupiter water, as well as water from private wells, lakes, canals, or other sources. Violators are subject to fines and imprisonment.

3.7.4 Meter Replacement Program

The Town has implemented an ongoing meter replacement program that is funded annually through 2037 through its renewal and replacement budget.

3.7.5 Plumbing Code

An essential part of the Town of Jupiter's conservation program is the implementation of high efficiency plumbing requirements. Section 20-110 establishes the requirements for water saving devices such that flows are limited to 3.0 GPM for fixtures generally and 3.5 GPM for toilets.

3.8 Reuse

Florida law supports reuse efforts. Florida's utilities, local governments, and water management districts have led the nation in the quantity of reclaimed water reused and public acceptance of reuse programs. Section 373.250(1) F.S. provides "the encouragement and promotion of water conservation and reuse of reclaimed water, as defined by the department, are state objectives and considered to be in the public interest." In addition, Section 403.064(1), F.S., states "reuse is a critical component of meeting the state's existing and future water supply needs while sustaining natural systems."

3.8.1 Local Government Specific Actions, Programs, Regulations, or Opportunities

This section describes the Town of Jupiter's ongoing participation in the reuse program operated by LRD within the Town's service area.

LRD, founded in 1971, began its reuse program, also known as IQ Water, in 1983. Today, this respected wastewater recycling program serves residential communities, golf courses, public parks and recreational facilities such as Roger Dean Stadium, with nearly 7.0 mgd of reuse water. On a typical day, LRD blends approximately 1.5 mgd of nanofiltration concentrate from the Town's Water Treatment Plant with treated and disinfected wastewater from its own facility. LRD operates an extensive network of reuse lines throughout the Jupiter and Tequesta communities

with more than 165,000 feet or 30 miles of 4 inch to 24 inch force mains. Because IQ Water must meet strict health standards, using it to water lawns and landscaping provides for a safe, economical and environmentally beneficial use of this resource.

Thoroughly treated and disinfected according to exacting regulations, IQ Water must meet the requirements of the Department of Environmental Protection and the Public Health Department. LRD's IQ Water system is monitored 24 hours a day by trained operators and tested at an on-site, state-certified laboratory, as well as other independent research laboratories. The LRD IQ Water program has garnered numerous awards from state and national environmental managers for its safety and innovation.

3.8.2 Local Financial Responsibilities

The Town of Jupiter does not have any financial responsibilities relative to reuse. Hence, this section is not applicable to the Town of Jupiter.

3.9 Sector Plans

This section is not applicable to the Town of Jupiter.

4.0 CAPITAL IMPROVEMENTS

This section provides a brief description of the Town of Jupiter Capital Improvements Program (it is noted that the terminology “Community Investment Plan” is utilized by the Town of Jupiter) for Water Supply.

4.1 Work Plan Projects

This section identifies projects required to augment and/or diversify water supply to meet demand in the Town of Jupiter’s water service area.

4.1.1 Water Supply / Treatment Projects Needed from 2015 to 2025

Based upon the raw water demand forecast, further development of traditional water supply, alternative water supply, and reuse projects are not required to meet the demand within the Town of Jupiter’s water service area over the period from 2015 to 2025. Hence, the Town plans on the following actions relative to water supply planning over the next 10-Years:

1. The Town of Jupiter will continue to implement its ongoing conservation programs as outlined in Section 3.7 of the 10-Year Water Supply Facilities Work Plan – 2014 Update.

2. The Town of Jupiter will work toward completion of its Surface Water Recharge Project, as part of the Loxahatchee River Restoration Plan.

4.1.2 Water Supply / Treatment Projects Needed from 2025 to 2035

Based upon the raw water demand forecast, further development of traditional water supply, alternative water supply, and reuse projects are not required to meet the demand within the Town of Jupiter's water service area over the period from 2025 to 2035.

4.1.3 Transmission System Projects Needed from 2015 to 2025

No additional potable water transmission network project are planned through 2025.

4.1.4 Projects Needed to Supply Water Outside of the Town's Water Service Area

The Town of Jupiter has no plans to supply water outside of its existing water service area over the next 10 years. Hence, this section is not applicable to the Town of Jupiter.

4.2 Capital Improvements Element/Schedule

Table 10, below, presents the Five-Year (Fiscal Year 2014 – 2018) Schedule of Capital Improvements for traditional water supply, treatment, storage, and distribution system infrastructure. Additionally, alternative water supply projects (if any) that have been identified to start within the next five years are included.

Costs include engineering services along with construction costs. Additionally, the Five-Year Schedule of Capital Improvements includes costs for development of engineering studies where appropriate.

The projects presented herein are based upon the Town of Jupiter's Long-Term Capital Improvement Plan for Fiscal Year 2014 – 2018. Associated capital projects include two that will complete the proposed connection with the SFWMD water delivery system for use in its surface water recharge program.

Table 10
Town of Jupiter Water System
Five-Year (FY 2014-2018) Community Investment Plan

Project Number and Title	Funding Source	FY 2014-2018 CIP Total	Unfunded Needs
W0002 Meters New	OS[1]	$816,912	-
W0113 Abacoa Surficial Aquifer Wells Ph II[5]	CF[2]	$903,769	-
W0128 North Limestone Creek Wellfield	CF[2]	$4,755,619	-
W0806 North Limestone Creek Tank Site Improvements	OS[1]	$419,923	-
W0812 Water Utilities Security Improvements - Ph II	CF[2]	$13,271	-
W1120 Finished Water Stabilization & Other WTP Improvements[5]	CF[2]	$112,372	-
W1205 Riverbend Repump Station Rechlorination Facility[5]	OS[1]	$285,142	-
W1301 Supplemental Blend Box[5]	CF[2]	$297,268	-
Wxxx Construction of Floridan Aquifer Well RO-14	CF[2]	$3,032,628[3]	-
Wxxx Complete Final Connection to SFWMD Regional System	CF[2]	$1,757,236[4]	-
Total		**$12,394,140**	-

[1] Water Off-site Transmission Fees
[2] Water Plant Capacity Charges
[3] Project Funded in 2019
[4] Project Funded in 2021
[5] Under Construction

5.0 GOALS, OBJECTIVES AND POLICIES

The Town of Jupiter Comprehensive Plan addresses the needs and aspirations of the community. This has tremendous implications regarding the importance of community input in the development and implementation of the Comprehensive Plan.

The Comprehensive Plan also plays a significant role within Florida's growth management system. The Comprehensive Plan is required to be consistent with the State Comprehensive Plan (Chapter 187, Florida Statutes), and to be consistent with the Regional and County Comprehensive Plans. In short, the Comprehensive Plan provides a critical link between the Town of Jupiter, State of Florida, Regional, and Palm Beach County plans. The Comprehensive Plan focuses on those issues facing the Town of Jupiter over a twenty-year time horizon. The Comprehensive Plan establishes long-term direction of goals as well as short-term objectives and policies to guide implementation efforts.

The following Goals, Objectives and Policies have been adopted in the original Water Supply Facilities Work Plan and have been reviewed to see if updates or revisions are needed:

Coordination of land uses and future land use changes with the availability of water supplies and water supply facilities;

1. Revision of potable water level of service standards for residential and non-residential users to include a standard for Gross Per Capita Consumption;

2. Amendments related to climate change, to meet the requirements of Section 163.3177(6), Florida Statutes.

Provisions to update the Town's Water System Master Plan to include the 10-Year Water Supply Work Plan, and to consider and coordinate with the SFWMD Lower East Coast Water Supply Plan. These updates will include the following:

- The Town's 10-year water supply plan;
- Identification of adequate water supply sources to meet future demand; and
- Identification of alternate water supply projects

South Florida Water Management District
Lower East Coast
Water Supply Facilities Work Plan Update Checklist

The South Florida Water Management District (District) Governing Board adopted the Lower East Coast Water Supply Plan Update on September 12, 2013. As noted in 163.3177(6)(c)3, F.S., local governments are required to update their Water Supply Facilities Work Plan (Work Plan) within 18 months of the Governing Board's adoption (March 2015). The Work Plan must cover a minimum of 10 years.

To assist local governments, the following checklist provides a framework for reviewing and updating both the Work Plan and Comprehensive Plan to be consistent with the 2013 Lower East Coast (LEC) Water Supply Plan Update. Other changes may need to be included to address water supply within your jurisdiction.

Work Plan Updates

Population Projections

__ Update the planning period of the Work Plan to the current year including: a minimum 10-year period consistent with the LEC Water Supply Plan and your Comprehensive Plan (e.g. a 2008 - 2018 planning period may be updated to 2013 – 2023; 2013 – 2033, etc.).

__ Revise population projections with consideration given to the most current data found in the applicable published by the Office of Economic and Demographic Research, or other approved method [See Florida Statutes, Chapter 163.3177(1)(f)3]. The Comprehensive Plan, Work Plan, and applicable Regional Water Supply Plan should be based upon coordinated and consistent population projections and methodologies.

Water Suppliers

__ Update current information concerning water suppliers within your local jurisdiction limits. (e.g. include any existing and new water suppliers for your local jurisdictional limits). Show the water supplier for each portion of the jurisdiction and list the population covered by each water supplier.

__ Provide updated consumptive use permit information for each water supplier.

__ Show or describe the water supplier's service area(s) for the jurisdiction (map or narrative). The service area(s) should be consistent across the Work Plan, LEC Water Supply Plan, and the Water Use Permits.

__ Update existing and projected level of service standards/per capita use rates for each service area and/or water supplier.

__ Update the current and future population, demands, sources, and infrastructure needs of each water supplier.

__ Revise the status of capital improvements for each water supplier to be consistent with the revised planning period.

__ If there are contracts for bulk purchases or sales or water, attach the contract(s) or describe the details of the contract(s) in the Work Plan.

Water Demand Projections

__ Using the populations, planning period, and level of service/per capita use rate developed above, revise existing water demand projections. The results should be consistent with the LEC Water Supply Plan. The projections should address current and projected needs and sources based on the demands for industrial, agricultural, and potable water use.

__ Update the Work Plan's water demands for self-served areas (e.g. private wells) and non-potable water (e.g. agriculture, industrial, irrigation).

Water Supply Sources and Treatment Capacities

__ Describe existing and future water sources for each water supplier to meet the demand over the planning period. Note: In areas having limited fresh water availability, alternative sources may be necessary.

__ Describe existing and future water treatment facilities and capacities to meet the demand over the planning period.

__ Describe new commitments for water conservation and reclaimed water programs, if applicable.

__ Identify geographical areas and projected withdrawal amounts for existing and future domestic self-supply systems. Provide details of future plans to provide regional water service to these areas in the planning period, if any.

__ Identify potential impacts to existing Minimum Flow and Levels (MFLs), water reservations, and/or restricted allocation areas in the updated planning period, if applicable.

__ Provide updated water service area descriptions.

Water Supply Projects

__ Update water supply projects (alternative and traditional) to be consistent with the Work Plan's planning period (e.g. delete completed projects and add projects planned for the updated planning period).

__ Revise the 5-Year Schedule of Capital Improvements to include the water supply projects deemed necessary within the five-year planning period. For example, if you are planning to construct a new Floridan well in year two of the planning period, the financial plans for the well would be included the 5-Year Schedule of Capital Improvements.

Comprehensive Plan Goals, Objectives and Policies

__ Include revisions to the Goals, Objectives and Policies with any new or updated information or policies for water supply including but not limited to the following:

- Implementation of the Work Plan
- Concurrency for water supply availability
- Water conservation programs
- Alternative water supply projects
- Reclaimed water programs
- Level of service standards
- Population projections
- Water supply/source needs and demands
- Intergovernmental coordination with the District, water suppliers, and other local governments. Identify any joint planning areas and joint infrastructure service areas related to water supply

__ Update the data and analysis for availability of water supply sources, facilities, and services for the revised planning periods

Once updates are made to the Water Supply Facilities Workplan, please send an updated copy to the District. District staff is available to provide technical assistance as needed. Please contact the staff listed below to arrange a meeting or request additional information.

Contact Information

Terry Manning
Policy and Planning Analyst
tmanning@sfwmd.gov.
(561) 682-6779

Natalie Schneider
Supervising Planner
nschneid@sfwmd.gov
(561) 682-2545

Deborah Oblaczynski
Policy and Planning Analyst
doblaczy@sfwmd.gov.
(561) 682-2544

Kristopher Esterson
LEC Utility Specialist
kesterso@sfwmd.gov
(561) 682-2888

ATTACHMENT D

Rick Scott
GOVERNOR

Jesse Panuccio
EXECUTIVE DIRECTOR

March 11, 2015

The Honorable Karen Golonka, Mayor
The Town of Jupiter
210 Military Trail
Jupiter, Florida 33458

Dear Mayor Golonka:

The Department of Economic Opportunity has completed its review of the proposed comprehensive plan amendment for the Town of Jupiter (Amendment 15-3ESR), which we received on February 10, 2015. We reviewed the proposed amendment pursuant to Sections 163.3184(2) and (3), Florida Statutes (F.S.), and identified no comments related to important state resources and facilities within the Department of Economic Opportunity's authorized scope of review that will be adversely impacted by the amendment if adopted.

Pursuant to Section 163.3184(3)(b), F.S., other reviewing agencies have the authority to provide comments directly to the Town. If other reviewing agencies provide comments, we recommend the Town consider appropriate changes to the amendment(s) based on those comments. If unresolved, such reviewing agency comments could form the basis for a challenge to the amendment(s) after adoption. The Town should act by choosing to adopt, adopt with changes, or not adopt the proposed amendment.

Also, please note that Section 163.3184(3)(c)1, F.S., provides that if the second public hearing is not held within 180 days of your receipt of agency comments, the amendment shall be deemed withdrawn unless extended by agreement with notice to the Department of Economic Opportunity and any affected party that provided comment on the amendment. For your assistance, we have enclosed the procedures for adoption and transmittal of the comprehensive plan amendment.

If you have any questions concerning this review, please contact Erin Schaefer, at (850) 717-8498 or by email at Erin.Schaefer@deo.myflorida.com.

Sincerely,

Ana Richmond, Chief
Bureau of Community Planning

AR/es

Enclosure(s): Procedures for Adoption

cc: John Sickler, Director, Planning and Zoning Department, Town of Jupiter
Michael J. Busha, Executive Director, Treasure Coast Regional Planning Council

SUBMITTAL OF ADOPTED COMPREHENSIVE PLAN AMENDMENTS

FOR EXPEDITED STATE REVIEW

Section 163.3184(3), Florida Statutes

NUMBER OF COPIES TO BE SUBMITTED: Please submit three complete copies of all comprehensive plan materials, of which one complete paper copy and two complete electronic copies on CD ROM in Portable Document Format (PDF) to the Department of Economic Opportunity and one copy to each entity below that provided timely comments to the local government: the appropriate Regional Planning Council; Water Management District; Department of Transportation; Department of Environmental Protection; Department of State; the appropriate county (municipal amendments only); the Florida Fish and Wildlife Conservation Commission and the Department of Agriculture and Consumer Services (county plan amendments only); and the Department of Education (amendments relating to public schools); and for certain local governments, the appropriate military installation and any other local government or governmental agency that has filed a written request.

SUBMITTAL LETTER: Please include the following information in the cover letter transmitting the adopted amendment:

_____ Department of Economic Opportunity identification number for adopted amendment package;

_____ Summary description of the adoption package, including any amendments proposed but not adopted;

_____ Identify if concurrency has been rescinded and indicate for which public facilities. (Transportation, schools, recreation and open space).

_____ Ordinance number and adoption date;

_____ Certification that the adopted amendment(s) has been submitted to all parties that provided timely comments to the local government;

_____ Name, title, address, telephone, FAX number and e-mail address of local government contact;

_____ Letter signed by the chief elected official or the person designated by the local government.

ADOPTION AMENDMENT PACKAGE: Please include the following information in the amendment package:

_____ In the case of text amendments, changes should be shown in strike-through/underline format.

_____ In the case of future land use map amendments, an adopted future land use map, **in color format,** clearly depicting the parcel, its future land use designation, and its adopted designation.

_____ A copy of any data and analyses the local government deems appropriate.

Note: If the local government is relying on previously submitted data and analysis, no additional data and analysis is required;

_____ Copy of the executed ordinance adopting the comprehensive plan amendment(s);

Suggested effective date language for the adoption ordinance for expedited review:

> The effective date of this plan amendment, if the amendment is not timely challenged, shall be 31 days after the Department of Economic Opportunity notifies the local government that the plan amendment package is complete. If timely challenged, this amendment shall become effective on the date the Department of Economic Opportunity or the Administration Commission enters a final order determining this adopted amendment to be in compliance. No development orders, development permits, or land uses dependent on this amendment may be issued or commence before it has become effective. If a final order of noncompliance is issued by the Administration Commission, this amendment may nevertheless be made effective by adoption of a resolution affirming its effective status, a copy of which resolution shall be sent to the Department of Economic Opportunity.

_____ List of additional changes made in the adopted amendment that the Department of Economic Opportunity did not previously review;

_____ List of findings of the local governing body, if any, that were not included in the ordinance and which provided the basis of the adoption or determination not to adopt the proposed amendment;

_____ Statement indicating the relationship of the additional changes not previously reviewed by the Department of Economic Opportunity in response to the comment letter from the Department of Economic Opportunity.

TREASURE COAST REGIONAL PLANNING COUNCIL

M E M O R A N D U M

To: Council Members AGENDA ITEM 8I

From: Staff

Date: March 20, 2015 Council Meeting

Subject: Local Government Comprehensive Plan Review
Draft Amendment to the Town of Jupiter Comprehensive Plan
Amendment No. 15-3ESR

Introduction

The Community Planning Act, Chapter 163, *Florida Statutes*, requires that the regional planning council review local government comprehensive plan amendments prior to their adoption. The regional planning council review and comments are limited to adverse effects on regional resources or facilities identified in the strategic regional policy plan (SRPP) and extrajurisdictional impacts that would be inconsistent with the comprehensive plan of any affected local government within the region. Council 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 Town of Jupiter includes text changes to the Infrastructure Element of the comprehensive plan related to the town's 2012 Water Master Plan Update and 2014 10-tear Water Supply Facilities Work Plan. This report includes a summary of the proposed amendment and Council comments.

Summary of Proposed Amendment

The proposed amendment is to revise Policy 1.3.13 in the Infrastructure Element of the comprehensive plan to refer to the 2012 Water Master Plan Update and 2014 10-year Water Supply Facilities Work Plan (WSFWP). These plans are adopted by reference in this policy. The Water Master Plan contains a comprehensive analysis of the water systems managed by the Town of Jupiter Utilities. The WSFWP plan forecasts future water demand based upon the latest population projections plus identifies water supply sources, availability and facilities needed to serve existing and new development within the local government's jurisdiction. The water supply work plan was updated to be consistent with the Lower East Coast Regional Water Supply Plan, which was updated by the South Florida Water Management District (SFWMD) on September 12, 2013.

The WSFWP indicates the town is currently permitted by the SFWMD to withdraw a combined total annual allocation of 8,909 million gallons from the surficial and Floridan aquifers. The town has 51 production wells in the surficial aquifer and 11 in service production wells in the Floridan aquifer. Water from the surficial aquifer is used to supply nanofiltration and ion exchange treatment plants, and water from the Floridan aquifer is used to supply a reverse osmosis plant. The town supplies water to a total area of 58 square miles, which includes customers in the Town of Jupiter, Town of Juno Beach, and unincorporated areas of Palm Beach and Martin counties. The WSFWP indicates the annual water demand does not exceed the annual water allocation through the year 2035, and the town's design treatment capacity is sufficient to meet demand through the year 2035.

Regional Impacts

No adverse effects on regional resources or facilities have been identified.

Extrajurisdictional Impacts

The proposed amendment was circulated by the Palm Beach County Intergovernmental Plan Amendment Review Committee Clearinghouse Coordinator on December 17, 2014. No extrajurisdictional impacts have been identified.

Conclusion

No adverse effects on regional resources or facilities and no extrajurisdictional impacts have been identified.

Recommendation

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

Attachments

List of Exhibits

Exhibit

1 General Location Map
2 Proposed Text Change in Underline and Strikethrough Format

Exhibit 1
General Location Map

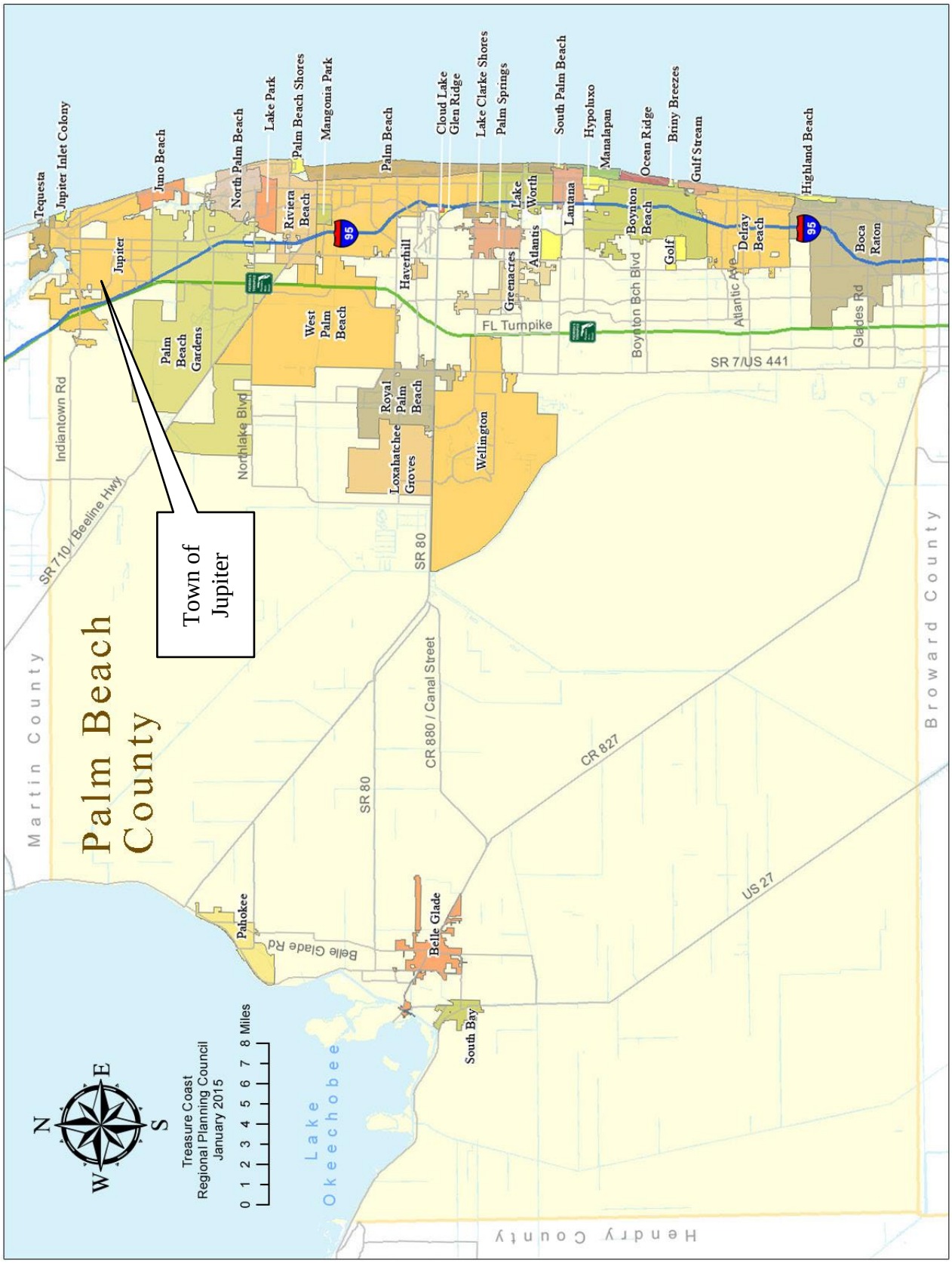


Exhibit 2
Proposed Text Change in Underline and Strikethrough Format

Location: Infrastructure Element

Goals, Objectives and Policies

Future Public Facility Needs

Objective 1.3. The provision of sufficient public facilities to meet projected public demand and development impacts, as they are needed and as determined by the adopted level of service standards within this Plan. To implement this objective the following policies are adopted:

Policy 1.3.1 Five year public facility work programs, consistent with the Capital Improvements Element of this Plan, shall be evaluated on an annual basis in order to ensure that necessary projects are prioritized based upon current conditions and future resident demand.

Policy 1.3.2 Expansion of service areas shall be based on ability to serve new customers in a cost effective manner without jeopardizing levels of service for present and future customers within existing service areas.

Policy 1.3.3 The Town shall coordinate with the Loxahatchee River District and have periodic updates on implementation of the recommendations of the Loxahatchee River District's Master Plan.

Policy 1.3.4 New developments requiring sewer service shall not commence until there is adequate wastewater treatment capacity in accordance with the adopted level of service standard.

Policy 1.3.5 The Town shall continue to enforce its ordinance requiring new and existing development to connect to Loxahatchee River District sewer service when such service becomes available.

Policy 1.3.6 Individual package treatment plants and septic tanks are prohibited.

Policy 1.3.7 The Town shall continue to coordinate and cooperate with the Palm Beach County Solid Waste Authority in updating and implementing the county-wide Solid Waste Master Plan. To this end, the Town puts special emphasis on the following:

a) Development of a recycling program to include public education and voluntary separation by residents of recyclables and disposables for curb-side collection by the Town;
b) Development of a hazardous waste management program.

Policy 1.3.8 The Town shall maintain and update the stormwater master plan. This Plan shall meet the requirements of the "National Pollutant Discharge Elimination System" administered by the Environmental Protection Agency, and should include, at a minimum, the following:

An Analysis of:

a) Identification of Drainage Facilities.
b) Identification of Geographic Service Areas.
c) Facility Design Capacity including an analysis of the adequacy of the drainage system based upon historic storm events, including an inventory of areas experiencing flooding problems.
d) Current Demand.
e) Levels of Service.
f) Facility Capacity Analysis including a determination of the condition and regular maintenance needs of the drainage system;
g) General Performance, Adequacy, and Impact on Natural Resources

h) Stormwater impacts to quality of receiving waters;

Planning provisions for:

a) Problems and Opportunities for Expansion including recommendations for design, construction and maintenance to correct deficiencies.
b) A system-wide approach to drainage planning based on the Town's future land use plan.
c) Requirements for drainage basin retrofitting as a stipulation of redevelopment approval. Drainage facility design standards for minimizing impacts of stormwater runoff to receiving waters.

Policy 1.3.9 Wetlands adjacent to Jupiter Creek shall not be reduced in size, in order, to protect developed and developable property in the Choctaw Street area from flooding.

Policy 1.3.10 The Town shall maintain and where necessary, update land development regulations which provide for adequate drainage facilities in conformance with the allowable stormwater discharge criteria consistent with Chapter 62-25, Florida Administrative Code (adopted by reference) Stormwater management systems that are exempt from South Florida Water Management District permitting requirements shall be designed so that post-development runoff volumes do not exceed predevelopment runoff volumes consistent with Chapter 62-25, Florida Administrative Code.

Policy 1.3.11 The Town shall, through the Utilities Department, coordinate all drainage design, construction and maintenance activities that occur within the Town Limits or affect the Town in any way. This will require active and regular communication with and monitoring of Palm Beach County, Village of Tequesta, Loxahatchee River Environmental Control District, North Palm Beach Heights Water Control District, the South Indian River Water Control District, South Florida Water Management District, Florida Department of Transportation, and private developers.

Policy 1.3.12 The Town, through the Utilities Department, shall continue to update, no less than every five years, and implement the recommendations of the Water System Master Plan. The Water System Master Plan shall include a Water Supply Facilities Work Plan for at least a 10-year planning period addressing water supply facilities necessary to serve existing and new development for which the Town's utility is responsible. The Town's Water System Master Plan shall consider and be coordinated with the SFWMD's Lower East Coast Regional Water Supply Plan.

Policy 1.3.13 The Town's ~~2007~~ 2012 Water Master Plan Update and ~~inclusive~~ 2014 10-year Water Supply Facilities Work Plan prepared by the Utilities Department is adopted by reference in the Comprehensive Plan.

David Kemp

From: Hymowitz, Larry <Larry.Hymowitz@dot.state.fl.us>
Sent: Thursday, March 05, 2015 9:01 AM
To: DCPexternalagencycomments; David Kemp
Cc: Schaefer, Erin; Bush, Lois; John Sickler
Subject: FW: Town of Jupiter 15-3ESR - FDOT District Four Review

I am writing to advise you that the Department will not be issuing formal comments for the proposed Jupiter comprehensive plan amendment with DEO reference number 15-3ESR.

The Department requests one copy, which may be on CD ROM in Portable Document Format (PDF), of all adopted comprehensive plan amendment materials, including graphic and textual materials and support documents.

Thank you.

Larry Hymowitz
Mobility Coordinator
Modal Development Office - FDOT District Four
3400 West Commercial Boulevard
Fort Lauderdale, Florida 33309-3421
Phone: (954) 777-4663; Fax: (954) 677-7892
larry.hymowitz@dot.state.fl.us

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

March 9, 2015

John Sickler, Director
Town of Jupiter Dept. of Planning and Zoning
210 Military Trail
Jupiter, FL 33458

Subject: Town of Jupiter, DEO #15-3ESR
Comments on Proposed Comprehensive Plan Amendment Package

Dear Mr. Sickler:

The South Florida Water Management District (District) has completed its review of the proposed amendment package from Town of Jupiter (Town). The proposed amendment updates the Town's Water Supply Facilities Work Plan (Work Plan). The District offers the following comments that we request the Town address prior to adopting the amendment:

- Include a strategy for the planned reduction of residential per capita rate to meet the stated goal of achieving the established level of service standard of 153 gallons per capita per day including water conservation and reclaimed water use implementation.

- Update Section 2.2 to include the regional issues identified in the Lower East Coast Regional Water Supply Plan. This section is intended to briefly address overarching regional issues impacting water supply planning at the local level. Include a narrative of the effects of identified regional issues on the Town's water supply with a description of the Town's policies addressing regional concerns. The regional issues for the Lower East Coast Water Supply Plan to be included are identified as follows:

    - Increased withdrawals from both the Surficial Aquifer System and surface water from Lake Okeechobee are limited

    - Conservation continues to be relied upon to reduce per capita use and a means to potentially delay or perhaps avoid adding capacity

The District offers its technical assistance to the Town and the Department of Economic Opportunity in developing sound, sustainable solutions to meet the Town's future water supply needs and to protect the region's water resources. Please forward a copy of adopted amendments to the District.

For assistance or additional information, please contact Deborah Oblaczynski, Policy and Planning Analyst, at (561) 682-2544 or doblaczy@sfwmd.gov.

Sincerely,

Dean Powell
Water Supply Bureau Chief

DP/do

c: Michael J. Busha, TCRPC
Ray Eubanks, DEO
David M. Kemp AICP, Town of Jupiter
Deborah Oblaczynski, SFWMD
Chris Stahl, DEP
James Stansbury, DEO