SPECIAL TOWN COMMISSION MEETING - WATER, SEWER, AND REUSE MASTER PLANS AGENDA
TOWN OF LADY LAKE, FLORIDA
MARCH 4, 2026

Commission Chambers
409 Fennell Blvd., Lady Lake, FL 32159
2:00 PM

PROCEDURE

If you wish to address the Town Commission on any item on the agenda or comment on something not on the agenda you must fill out a Speaker Card and turn it in to the Town Clerk before the agenda item. Speakers will be limited to three minutes. Persons interested in speaking on an item not on the agenda may be heard under "PUBLIC COMMENTS." Citizen groups are asked to name a spokesperson. Upon being recognized, please approach the dais, state your name and address, and speak clearly into the microphone. The order of agenda items may be changed if deemed appropriate by the Town Commission. Please be respectful of others and silence your electronic devices.

1. **CALL TO ORDER**
2. **ROLL CALL**
3. **PLEDGE OF ALLEGIANCE**
4. **PRESENTATIONS**
   - **a.** Water, Wastewater, and Reclaimed Water Planning Update and Recommendations
5. **NEW BUSINESS – (PUBLIC COMMENT TAKEN)**
   - **a.** Consideration of approval of Water, Sewer, and Reuse Master Plans and Clean Water Facilities Plan as presented by CPH.
6. **ADJOURN**

NOTICES: Pursuant to Section 286.0105, Florida Statutes, If a person decides to appeal a decision made with respect to any matter considered at the above meeting or hearing, he/she may need a verbatim record of the proceedings including the testimony and evidence, a

record of which is not provided by the Town of Lady Lake. (F.S. 286-0105) One or more members of any other Town Board or Committee may be in attendance at this meeting but will not be conducting business.

In accordance with the Americans with Disabilities Act (ADA), persons with a disability needing special accommodation to participate in the Town Commission meeting should contact the Town Clerk's Office, 409 Fennell Boulevard, Lady Lake, FL 32159, Telephone: (352)751-1501, Email: krosado@ladylake.org not later than 48 hours prior to the proceedings. If you are hearing or voice impaired, contact the relay operator at 7-1-1 or for a telecommunications device contact (352) 751-1565.

Please contact the Town Clerk’s Office with any questions at 352-751-1501. This meeting is being conducted in a handicapped accessible location. Any handicapped person requiring special accommodation or an interpreter for the hearing or visually impaired should contact the Clerk's Office at least two days prior to the meeting. To access a Telecommunication Device for Deaf Persons (TDD), please call 352-751- 1565.

TOWN COMMISSION MEETING AGENDA ITEM
TOWN OF LADY LAKE, FLORIDA

AGENDA ITEM TITLE

Water, Wastewater, and Reclaimed Water Planning Update and Recommendations - Presented by Jason Shepler, CPH Engineer

AGENDA ITEM ID

2026-55

DEPARTMENT

Public Works

SUMMARY

The Town's Engineer, Jason Shepler with CPH, is presenting recommendations for future utility's infrastructure improvement projects. The recommendations are based on the recently completed Water, Wastewater, and Reuse Master Plans and the Clean Water Facilities Plan that CPH was contracted to perform by the Town.

STAFF RECOMMENDATION

None for this item

FISCAL IMPACT

NA

FUNDING SOURCE

NA

TOWN COMMISSION MEETING AGENDA ITEM
TOWN OF LADY LAKE, FLORIDA

AGENDA ITEM TITLE

Public Works Department - Consideration of approval of Water, Sewer, and Reuse Master Plans and Clean Water Facilities Plan as presented by CPH. (CT Eagle)

AGENDA ITEM ID

2026-56

DEPARTMENT

Public Works

SUMMARY

The Town previously contracted the Town Engineer, CPH, to perform Water, Sewer, and Reuse Master Plans to stay ahead of the population growth that the Town and the region is experiencing. CPH also created a Clean Water Facilities plan that is required to secure SRF (State Revolving Fund) funding for the projects. This meeting's prior agenda item included a presentation of the reports' results. Staff is seeking approval of the master plans and facilities plan to keep moving forward with these much-needed projects.

STAFF RECOMMENDATION

Approve the Water, Wastewater, and Reuse Master Plans and Clean Water Facilities Plan as presented.

FISCAL IMPACT

NA

FUNDING SOURCE

NA

FACILITIES PLAN

WASTEWATER SYSTEM CAPITAL IMPROVEMENTS PROGRAM (WRF EXPANSION, PHASE 3 PLANNING PHASE)

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Prepared For:

Town of
LADY LAKE
FLORIDA
Est. 1925

February 2026

Jason R. Shepler, P.E.
PE No. # 58760
CPH Project # 2501109
Client No. 9514-43-1



Documents included herein which have been prepared by professionals other than CPH, are contained in the Appendix and are not covered under the above Registered Engineer's signature.

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1.0 SUMMARY OF FINDINGS AND RECOMMENDATIONS

The Town of Lady Lake (Town) completed a comprehensive Wastewater Master Plan to evaluate existing system conditions, regulatory requirements, and future wastewater demands through the year 2040. The planning effort was undertaken in response to projected growth, infrastructure capacity limitations, and increasingly stringent regulatory requirements, including Basin Management Action Plan (BMAP) nutrient reduction obligations.

The Town's existing Water Reclamation Facility (WRF) has a permitted capacity of 1.20 million gallons per day (MGD) (AADF) and provides biological nutrient removal; however, it was not designed to meet advanced wastewater treatment (AWT) effluent limits of 3 mg/L total nitrogen (TN) and 1 mg/L total phosphorus (TP). As flows increase, several treatment and support processes will become limiting, including influent screening capacity, biological treatment capacity, biosolids dewatering capacity, reclaimed water storage, and wet-weather disposal capacity.

The wastewater collection and transmission system also exhibits constraints that will require future improvements, including lift station capacity limitations, inflow and infiltration concerns at Lift Station Nos. 3 and 7 during storm events, and elevated force main transmission system operating pressures due to flow increases and WRF operating elevation. Septic tank phase out requirements along with continued growth will necessitate targeted collection system improvements, transmission system expansion, and lift station upgrades.

Future wastewater flow projections were developed based on population growth within the Town limits, conversion of existing septic systems, service to select package wastewater treatment facilities, and continuation of bulk service to the Town of Fruitland Park through 2030. Based on these projections and regulatory considerations, a planning target of 3.0 MGD (AADF) with AWT capabilities is recommended for the WRF treatment capacity through the 2040 planning horizon.

To address projected wastewater flows and regulatory requirements, multiple wastewater infrastructure expansion alternatives were evaluated, including treatment process upgrades, collection system improvements, transmission system expansion, and septic tank phase-out (STPO) projects. Three WRF expansion alternatives capable of expanding treatment capacity to 3.0 MGD (AADF) with AWT capabilities were analyzed using present-worth cost evaluations. Based on this analysis, expansion of the existing facility utilizing the membrane bioreactor (MBR) treatment technology was identified as the preferred alternative

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due to its cost effectiveness, ability to utilize existing infrastructure, and capability to reliably meet AWT effluent limits.

Implementation of the recommended improvements will allow the Town to:

- Meet current and future wastewater treatment capacity needs.
- Achieve required BMAP nutrient load reductions.
- Support septic tank phase-out efforts.
- Improve system reliability, redundancy, and resiliency.
- Maintain long-term regulatory compliance.

Based on the findings of this Facilities Plan, implementation of the recommended wastewater infrastructure improvements is necessary and technically feasible. The Capital Financing Plan considers rate increases that will be required to fund the improvements and ensure financial feasibility. The FDEP Clean Water State Revolving Fund (CWSRF) financing is recommended as a funding partner, but additional financing may be required.

The Town's Wastewater Capital Improvement Program is anticipated to include the items summarized in Table 1-1.

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TABLE 1-1
WASTEWATER CAPITAL IMPROVEMENT PROGRAM

Year	CIP Item	Budget[D]
2026	1. Collection System Action Plan (CSAP) Annual Review[A] 2. WRF Expansion, Phase 3 | Design/Permitting 3. Interim Sludge Dewatering/Disposal[B] 4. Offsite RIB Property Search/Acquistion[C]	1. $ 50,000[A] 2. $ 3,500,000 3. TBD 4. $ 5,000,000
2027	1. CSAP Annual Review[A] 2. WRF Expansion, Phase 3 | Design/Permitting & Construction 3. STPO Project 2 & 3 | Design/Permitting	1. $ 50,000[A] 2. $ 30,000,000 3. $ 3,853,000
2028	1. CSAP Annual Review[A] 2. WRF Expansion, Phase 3 | Construction 3. LS 1 Expansion Design/Permitting [*pending growth*] 4. STPO Project 2 & 3 | Construction 5. Offsite RIB Expansion | Construction[E]	1. $ 50,000[A] 2. $ 30,000,000 3. $ 970,000 4. $ 12,843,500 5. TBD
2029	1. CSAP Annual Review[A] 2. WRF Expansion, Phase 3 | Construction 3. LS 1 Construction [*pending growth*] 4. STPO Project 2 & 3 | Construction	1. $ 50,000[A] 2. $ 26,915,000 3. $ 6,450,000 4. $ 12,843,500

TABLE 1-1 WASTEWATER CAPITAL IMPROVEMENT PROGRAM		
Year	**CIP Item**	**Budget[D]**
2030	1. CSAP Annual Review[A]	1. $ 50,000[A]
2030-2035	1. CSAP Annual Review[A] 2. STPO Project 1 & 4 | Design/Permitting/Construction	1. $ 250,000[A] 2. $ 19,846,000
2035 - 2040	1. CSAP Annual Review[A] 2. STPO Project 5 & 6 | Design/Permitting/Construction	1. $ 250,000[A] 2. $ 11,991,000

A: Annual system review per FDEP requirements. May be completed by Town personnel or contracted entities. $50,000 per year is planning budget to be refined by Town.

B: Item listed as a capital improvement, but will need to become part of an operating expense in FY 27 to address existing biosolids dewatering limitations.

C: 40 Acre estimate at $125,000/AC

D: Conceptual budgets utilize Year 2026 dollars. Budgets will require adjustment based on inflationary adjustments for work that occurs after 2026.

E: RIB Expansion costs to be defined once property acquired and preliminary design services completed.

The Town's first priority is the design, permitting, and construction of the WRF Expansion, Phase 3 project.

The enclosed Capital Financing Plan considers funding the FDEP Table 1-1 improvements through a program such as the SRF. The Town will likely find the SRF program can fund portions of the Town's capital needs, but not the entire list of projects. Pending actual growth patterns, sewer use, and reclaimed water use, as well as final construction amounts and financing terms, the Town will be required to raise sewer and reuse rates by a factor of 2.15 to 2.80 from current rate levels.

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2.0 INTRODUCTION

2.1 BACKGROUND

The Town is located in northwest Lake County, approximately fifty miles north of Orlando along the U.S. Highway 27/441 corridor, just north of the City of Fruitland Park and south of the Marion County line. The Town was incorporated in 1925 and has operated under a Town Commission–Town Manager form of government since 1987. The Town includes a significant commercial corridor along U.S. Highway 27/441 and County Road (CR) 466 that supports regional commerce associated with The Villages. Extending from these corridors are multifamily developments that have occurred over the past decade, along with additional large-scale planned residential developments within the southwest and northeast portions of the Town's municipal limits. These development patterns will continue to affect population growth and wastewater flows that will require careful consideration of the Town's infrastructure capacity and regulatory compliance obligations. The Town's general location is shown in **Figure 2-1,** and Town limits shown in **Figure 2-2**.

In addition to recent growth, the Town retains areas that were developed prior to construction of the centralized wastewater collection system. These areas are served either by onsite sewage treatment and disposal systems (OSTDS) or by package wastewater treatment plants constructed to serve higher-density developments. As growth continues and regulatory requirements evolve, the extension of central sewer service to these areas will be a requirement of the Town's long-term wastewater planning strategy.

The Town owns and operates a wastewater collection, transmission, treatment, and reuse system that serves residential, commercial, and institutional customers within the Town limits. The wastewater system includes gravity sewers, force mains, lift stations, a centralized WRF, reclaimed water distribution facilities, and rapid infiltration basins (RIBs) for effluent disposal. In addition to service within the Town, the wastewater system currently provides bulk wastewater treatment service to the Town of Fruitland Park under an existing interlocal agreement, with those flows anticipated to continue through approximately 2030.

Due to continued growth and increasing regulatory pressures, the Town undertook a comprehensive Wastewater Master Plan to review alternatives and establish a plan to effectively and efficiently serve utility customers through the year 2040. The Master Plan evaluated existing wastewater treatment, collection, transmission, reclaimed water, and biosolids facilities; developed wastewater flow and loading projections based on anticipated growth and service area changes; and reviewed current and pending regulatory requirements that will influence the design, permitting, construction, operation, and maintenance of future wastewater infrastructure improvements.

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The Master Plan analysis identified several existing and projected system constraints that will affect the Town's ability to reliably serve future wastewater demands. The existing WRF has a permitted capacity of 1.20 MGD (AADF) and provides biological nutrient removal; however, the facility was not originally designed to meet AWT effluent limits of 3 milligrams per liter (mg/L) TN and 1 mg/L TP. As wastewater flows increase, additional limitations related to influent screening capacity, biological treatment capacity, biosolids dewatering capacity, reclaimed water storage, and wet-weather effluent management are expected to become increasingly critical.

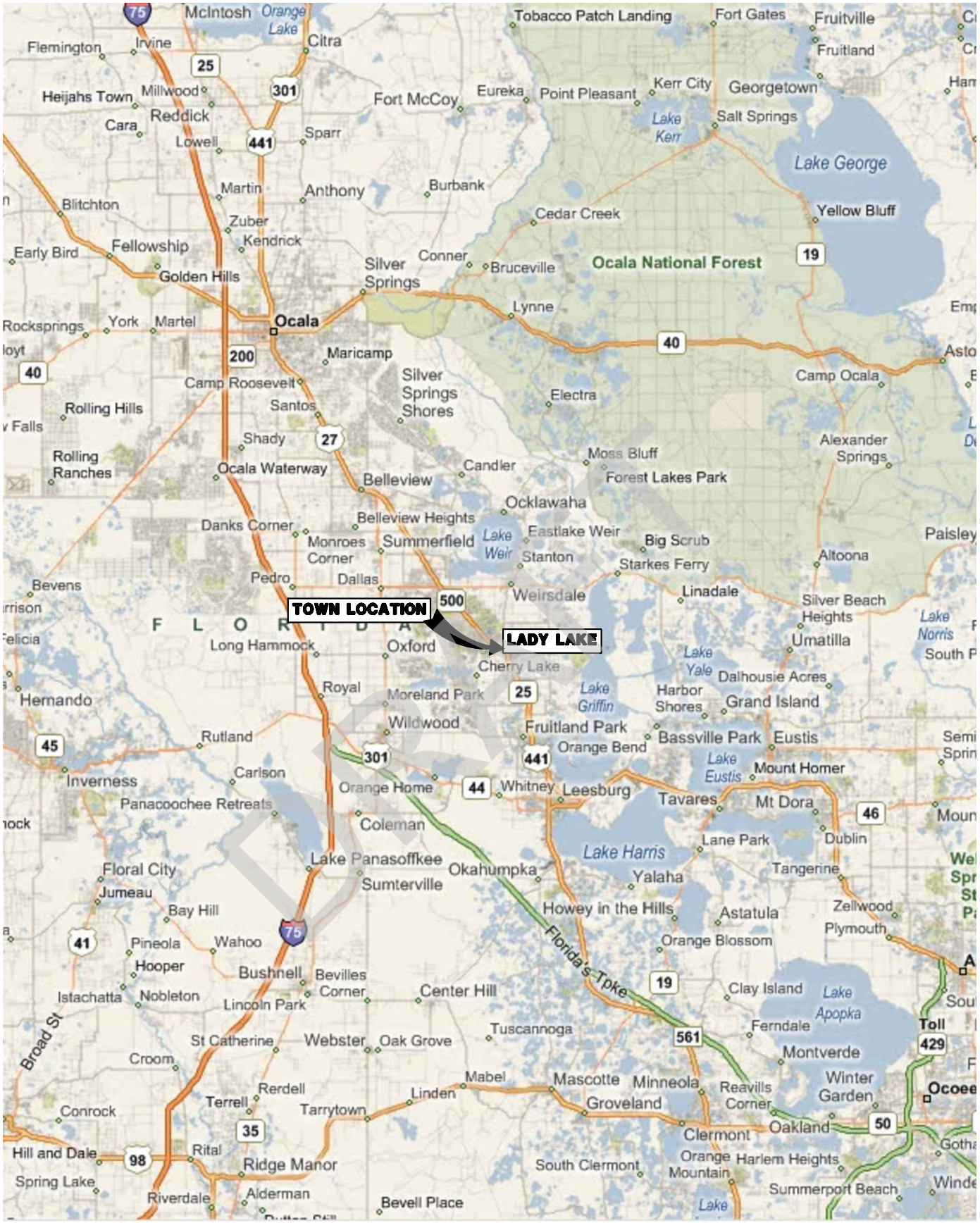
In parallel with treatment facility considerations, the Master Plan evaluated the Town's wastewater collection and transmission system and identified capacity constraints and operational challenges that will require future improvements. These include lift station capacity limitations, areas near Lift Station Nos. 3 and 7 that are susceptible to inflow and infiltration during large storm events, elevated system operating pressures associated with the Town's topography and system configuration, and force main capacity limitations during periods of concurrent pumping. While these collection and transmission system improvements are necessary to support long-term growth and system reliability, they were evaluated as part of a broader, phased capital improvement strategy.

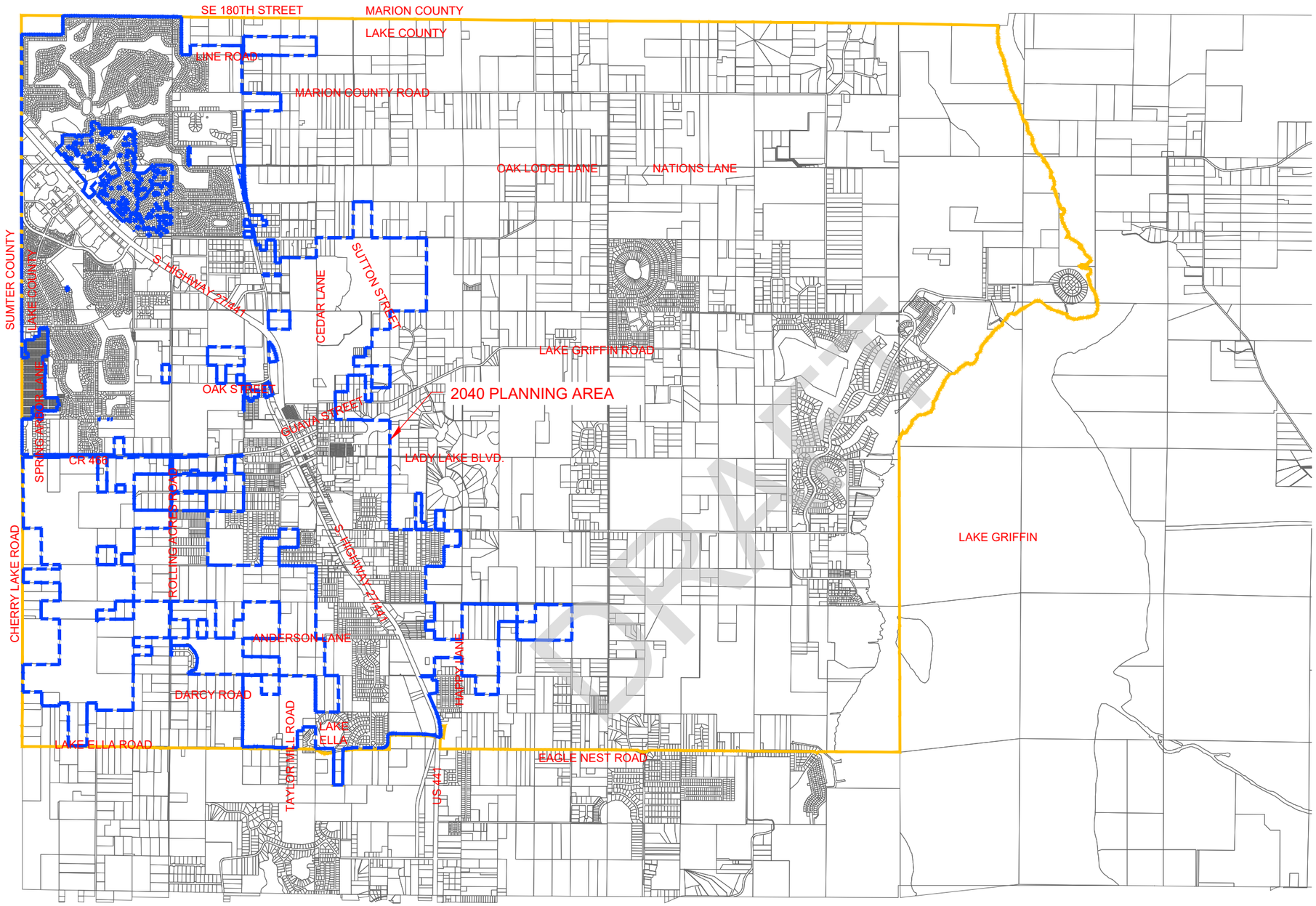
The Master Plan also addressed regulatory drivers that will influence future wastewater infrastructure planning, including BMAP nutrient reduction requirements applicable to the Town. Compliance with these requirements will necessitate reductions in nitrogen loading through a combination of advanced wastewater treatment upgrades and conversion of existing septic systems to central sewer service. As a result, septic tank phase-out initiatives and associated collection system expansions were identified as important enabling components of the Town's overall wastewater improvement program.

Based on projected growth and associated wastewater flows, planned septic system conversions, service to select package wastewater treatment facilities, and continuation of bulk service to Fruitland Park through 2030, the Master Plan recommended a planning target of 3.0 MGD (AADF) WRF treatment capacity through the 2040 planning horizon. Multiple wastewater treatment expansion alternatives capable of achieving this capacity with AWT effluent limits were evaluated, and expansion utilizing a MBR–based treatment process was identified as the preferred alternative based on present-worth cost analysis, ability to utilize existing infrastructure, and long-term operational considerations.

This Facilities Plan builds upon the technical analyses and recommendations presented in the Wastewater Master Plan and advances the recommended WRF expansion as part of a phased implementable Capital Improvement Program utilizing Clean Water State Revolving Fund financing.

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TOWN LOCATION
LADY LAKE
FLORIDA
Ocala
Ocala National Forest
Lake George
Silver Springs
Belleview
Summerfield
Lady Lake
Leesburg
Tavares
Eustis
Mount Dora
Fruitland Park
Howey in the Hills
Clermont
Groveland
Mascotte
Minneola
Lake Harris
Lake Griffin
Lake Yale
Lake Eustis
Florida's Tpke
Broad St
Ridge Manor
Center Hill
Webster
Wildwood
Oxford
Coleman
Sumterville
Lake Panasoffkee
Okahumpka
Bushnell
Inverness
Hernando
Dunnellon
Citrus Springs
Belleview Heights
Ocklawaha
Silver Springs Shores
Orange Bend
Orange Home
Whitney
Mount Homer
Grand Island
Dalhousie Acres
Umatilla
Altoona
Paisley
Lake Norris
Alexander Springs
Camp Ocala
Yellow Bluff
Georgetown
Fruitville
Tobacco Patch Landing
Fort Gates
Fort McCoy
Eureka
Point Pleasant
Kerr City
Salt Springs
Lake Kerr
Cedar Creek
Bruceville
Lynne
Electra
Moss Bluff
Forest Lakes Park
Eastlake Weir
Lake Weir
Big Scrub
Starkes Ferry
Stanton
Weirsdale
Linadale
Silver Beach Heights
Harbor Shores
Lane Park
Dublin
Tangerine
Yalaha
Astatula
Orange Blossom
Zellwood
Plymouth
Clay Island
Lake Apopka
Ferndale
Montverde
Winter Garden
Ocoee
Oakland
Reavills Corner
Tuscannoga
Mabel
Linden
Tarrytown
Conrock
Terrell
Rerdell
Croom
St Catherine
Oak Grove
Lincoln Park
Istachatta
Nobleton
Hooper
Pineola
Wahoo
Bay Hill
Jumeau
Floral City
Panacoochee Retreats
Carlson
Rutland
Royal
Moreland Park
Cherry Lake
Long Hammock
Danks Corner
Monroes Corner
Pedro
Dallas
Bevens
Rolling Ranches
Ocala Waterway
Shady
Santos
Camp Roosevelt
Maricamp
Rolling Hills
Golden Hills
Fellowship
Early Bird
Blitchton
Martin
Zuber
Kendrick
Anthony
Burbank
Sparr
Lowell
Reddick
Millwood
Heijahs Town
Cara
Irvine
Flemington
Citra
McIntosh
Orange Lake
Rocksprings
York
Martel
Loyt
Falls
Hill and Dale
Spring Lake
Rital
Riverdale
Alderman
Bevell Place
South Clermont
Orange Mountain
Harlem Heights
Summerport Beach
Toll 429
Bevilles Corner
Reddick
Lake Kerr
Lake Apopka
Lake Eustis
Lake Griffin
Lake Yale
Lake Harris
Lake Weir
Lake Norris
Florida's Tpke
Broad St
Toll 429
Ocala National Forest
Lake George



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PLANNING LIMITS

TOWN OF LADY LAKE
Wastewater Facilities Plan
Lake County, Florida

Figure
2-2

J:\OrangePark\CAD Files\Lady Lake\9514431 SRF WRF Expansion, Ph 3\Figures\Wastewater\Fig. 2-2 Planning Limits.dwg, 1/27/2026 11:55:37 AM, Mike.Lisena

3.0 EXISTING WASTEWATER SYSTEM

The Town owns and operates a centralized wastewater system that serve residential, commercial, and institutional customers within the Town limits. The system has been developed over several decades and reflects a combination of infrastructure constructed to serve early development patterns as well as more recent improvements intended to accommodate growth and evolving regulatory requirements.

The existing wastewater system includes gravity collection systems, force mains, lift stations, a centralized WRF, reclaimed water distribution facilities, and RIBs for effluent disposal. Portions of the Town remain served by OSTDS or package wastewater treatment plants that were constructed prior to extension of the centralized sewer system. In addition, the Town provides bulk wastewater treatment service to the Town of Fruitland Park under an interlocal agreement.

This section summarizes the existing wastewater system components and current operating conditions that form the basis for evaluating future system needs and identifying required improvements.

3.1 SERVICE AREA DESCRIPTION

The Town's wastewater service area is limited to the Town's municipal boundaries and includes a mix of commercial, multifamily, and single-family residential land uses. Development within the Town was historically concentrated along the U.S. Highway 27/441 and County Road (CR) 466 corridors, which support significant commercial activity and higher-density development associated with regional growth patterns. Extending outward from this core are growing single-family residential neighborhoods that include larger planned developments.

Areas developed prior to construction of the centralized system remain served by OSTDS or by package wastewater treatment plants serving individual developments. As growth continues and regulatory requirements evolve, these areas represent potential candidates for future sewer system expansion and septic tank phase-out initiatives.

In addition to service within the Town, the wastewater system provides bulk wastewater treatment service to the Town of Fruitland Park under an existing interlocal agreement. Wastewater generated within Fruitland Park is conveyed to the Lady Lake WRF for treatment, with these flows anticipated to continue through approximately 2030 based on current planning assumptions. The inclusion of Fruitland Park flows has been considered in evaluating existing system performance and future treatment capacity needs.

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The wastewater service area, major infrastructure components, and general system layout are shown on the figures included in this Facilities Plan.

3.2 WASTEWATER TREATMENT FACILITIES

The Town owns and operates one permitted WRF consisting of two biological treatment trains, identified as Biological Treatment Unit (BTU) No. 1 and BTU No. 2. The Town's Florida Department of Environmental Protection (FDEP) Operating Permit Number for the facility is FLA399761. A copy of the current operating permit is included as Appendix B, and Record Drawings for the facility are included as Appendix C. The general location of the WRF is illustrated in **Figure 3-1**, and the WRF site plan is shown in **Figure 3-2**. A process flow schematic for the facility is provided as **Figure 3-3**.

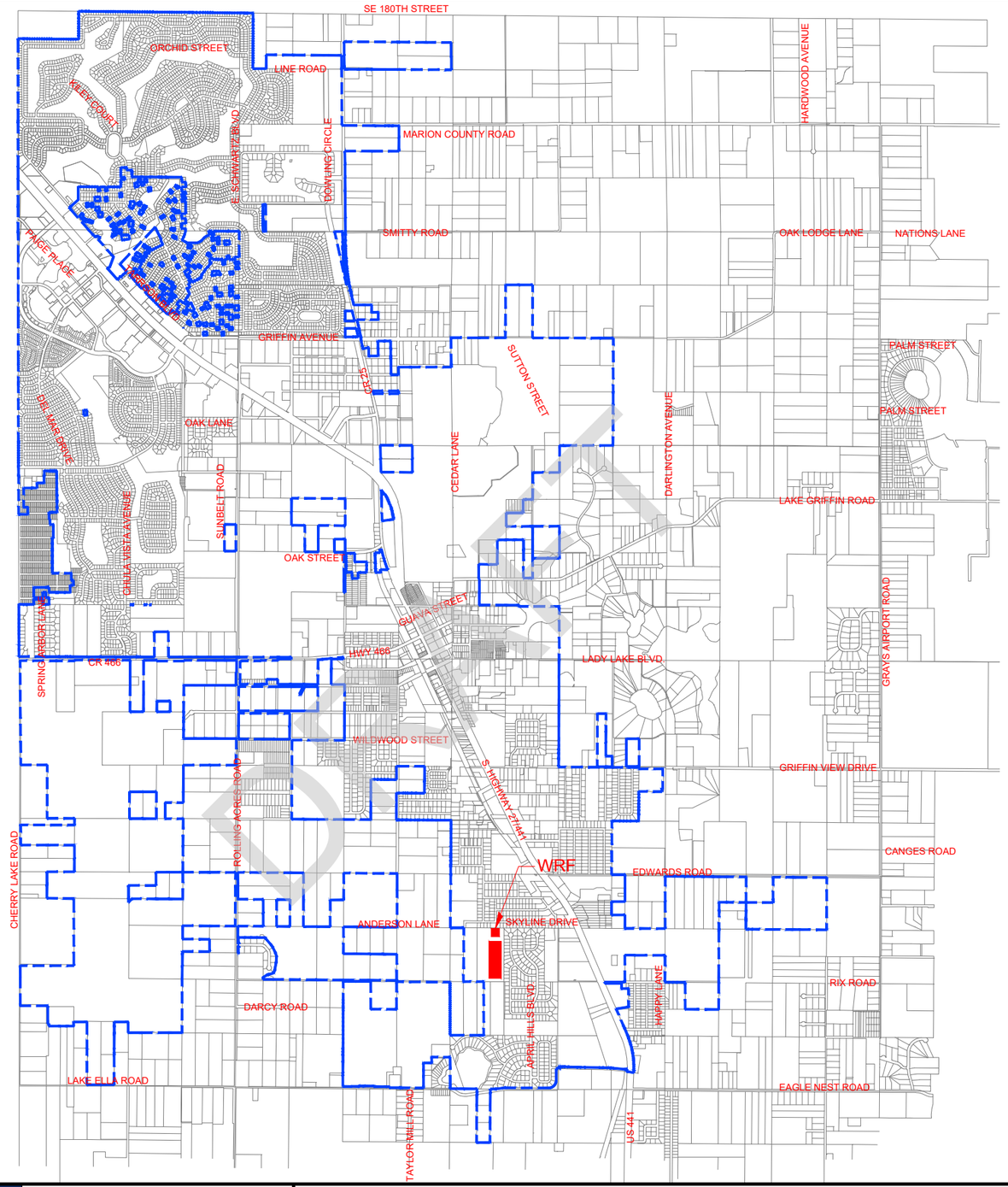
The WRF is currently permitted for a treatment capacity of 1.20 MGD on an AADF basis. Treated effluent is managed through a combination of public-access reclaimed water reuse and onsite effluent disposal via the Town's RIBs. The public-access reuse system is permitted for 2.26 MGD (AADF), while the RIBs are permitted for a total loading capacity of 0.25 MGD (AADF) or 91.25 million gallons of loading per year.

3.2.1 FACILITY DEVELOPMENT AND TREATMENT CONFIGURATION

The original BTU No. 1 was constructed between 2005 and 2006 and was subsequently converted to a flow equalization basin in 2022. Construction of a second BTU (BTU No. 2) was completed between 2007 and 2008. In 2022 following the flow EQ conversion, the Town permitted and constructed an expansion project that included a 0.60 MGD package treatment facility, which now functions as BTU No. 1, along with associated facility components. Completion of this project increased the WRF's total permitted treatment capacity to 1.20 MGD (AADF).

Both BTU No. 1 and BTU No. 2 operate using a modified Ludzack–Ettinger (MLE) biological treatment process configuration. This process provides biological nutrient removal (BNR) designed to reduce total nitrogen concentrations to below 10 mg/L.

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TOWN LIMITS

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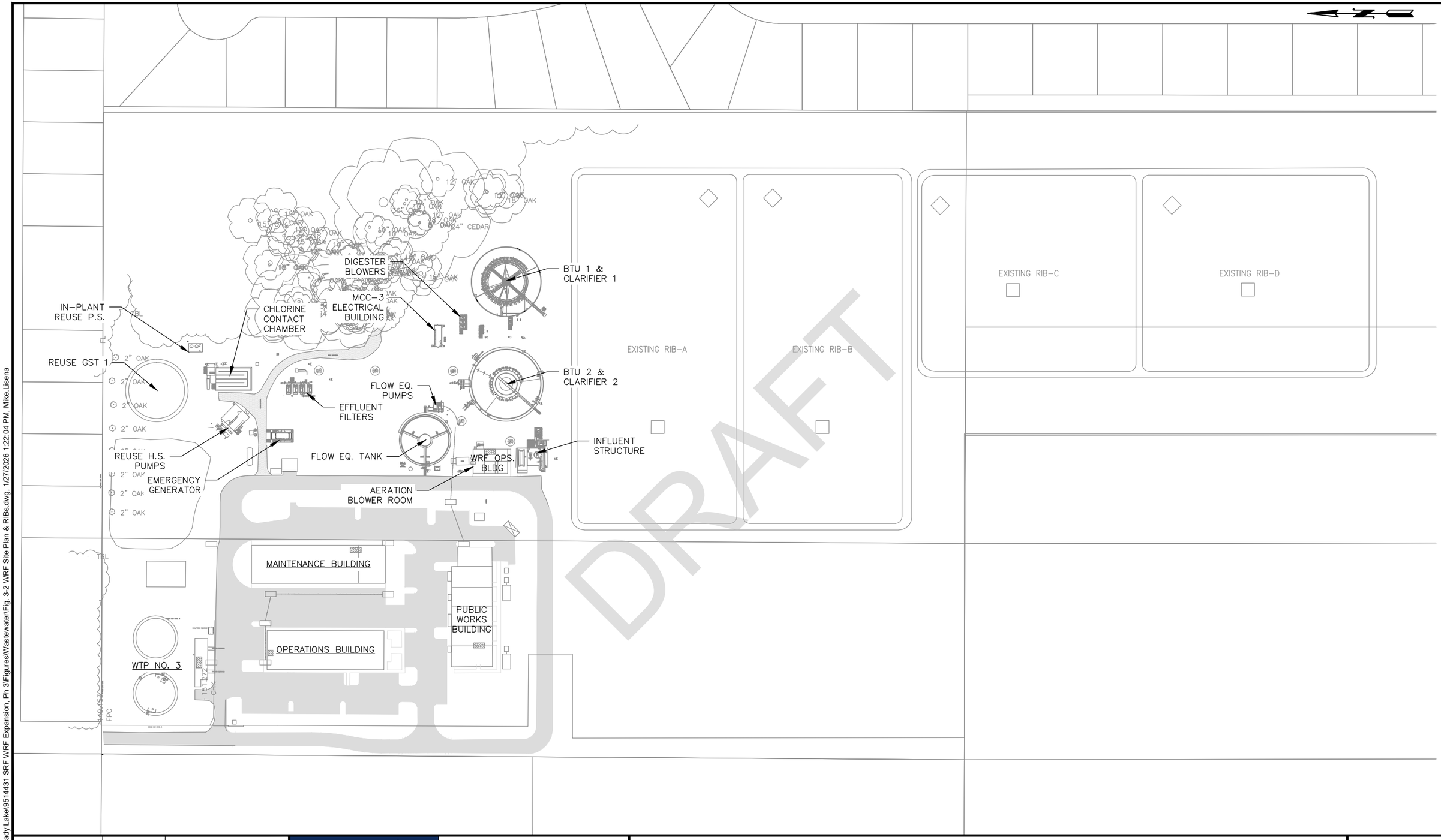
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WRF LOCATION MAP

TOWN OF LADY LAKE
Wastewater Facilities Plan
Lake County, Florida

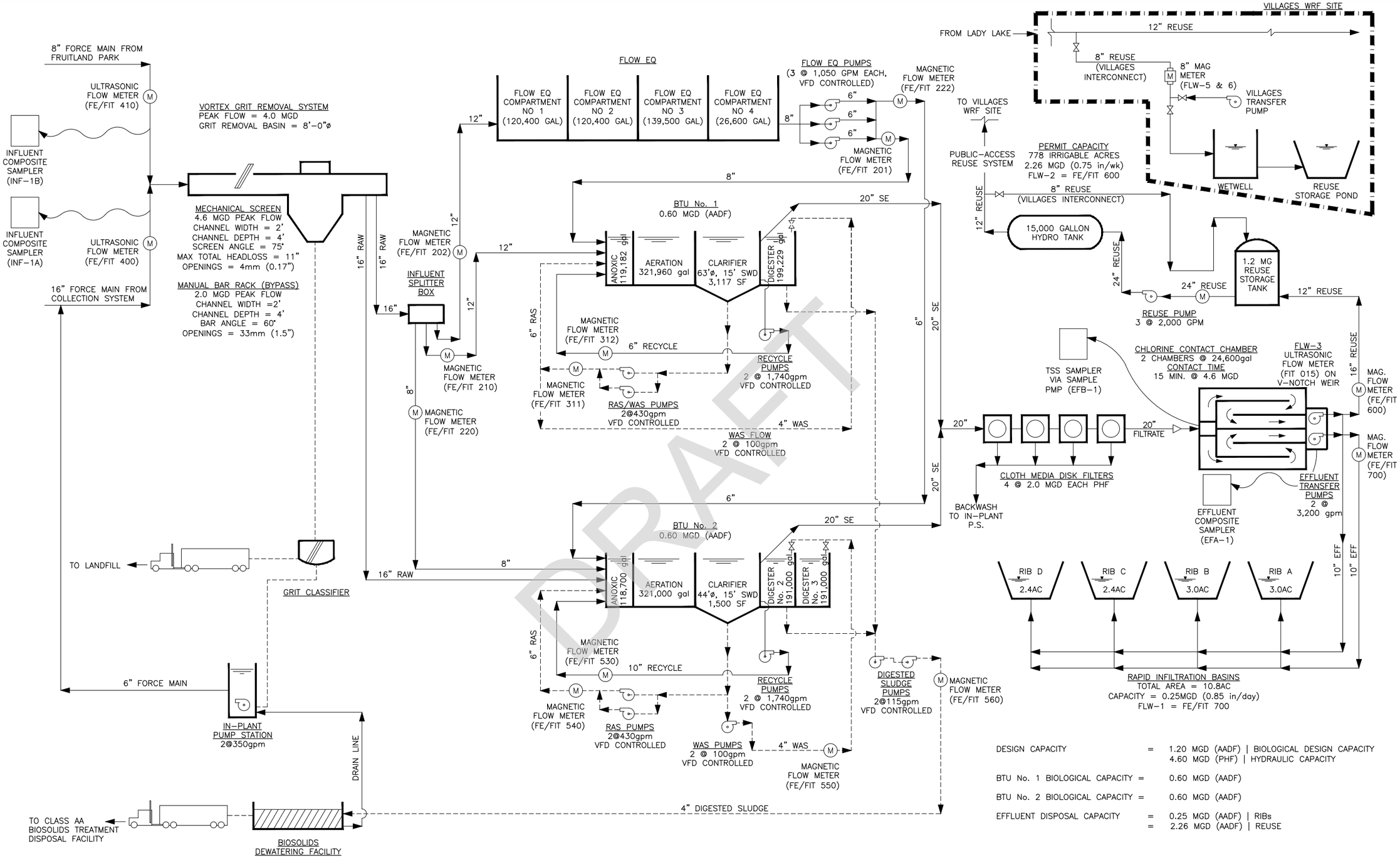
Figure
3-1

J:\OrangePark\CAD Files\Lady Lake\9514431 SRF WRF Expansion, Ph 3\Figures\Wastewater\Fig. 3-1 WRF Location Map.dwg, 1/27/2026 11:58:59 AM, Mike.Lisena



Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	***Building Stronger Communities Together***	WRF SITE PLAN & RIBS
Drawn by:	MAL	Job No. 9514-43-1		**580-1 Wells Road**	TOWN OF LADY LAKE
Checked by:	JRS			**Orange Park, FL 32073**	Wastewater Facilities Plan
Approved by:	JRS	© 2026		**Ph: 904.278.0030**	Lake County, Florida
Scale:	1" = 140'				Figure **3-2**

J:\OrangePark\CAD Files\Lady Lake\9514431 SRF WRF Expansion, Ph 3\Figures\Wastewater\Fig. 3-2 WRF Site Plan & RIBs.dwg, 1/27/2026 1:22:04 PM, Mike.Lisena



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Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	**Building Stronger Communities Together**	WRF PROCESS FLOW DIAGRAM
Drawn by:	MAL	Job No. 9514-43-1		580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030	TOWN OF LADY LAKE Wastewater Facilities Plan Lake County, Florida
Checked by:	JRS				Figure 3-3
Approved by:	JRS	© 2026			
Scale:	1" = 3,200'				

J:\OrangePark\CAD Files\Lady Lake\9514431 SRF WRF Expansion, Ph 3\Figures\Wastewater\Fig. 3-3 WRF Process Flow Diagram.dwg, 1/27/2026 1:35:42 PM, Mike.Lisena

3.2.2 MAJOR TREATMENT AND SUPPORT COMPONENTS

The WRF consists of the following major treatment and support components:

- **Influent Structure**, including a 4.6 MGD (peak hour flow [PHF]) mechanical bar screen, a 2.0 MGD (PHF) manual bypass bar rack, and a 4.0 MGD (PHF) vortex grit removal system.

- **Influent Splitter Box** equipped with magnetic flow meters dedicated to the following discharge points:

    - BTU No. 1 (2024 | 0.60 MGD package plant)

    - BTU No. 2 (2008 | 0.60 MGD package plant)

    - Flow Equalization / Surge Basin

- **BTU No. 1** consists of a 0.60 MGD (AADF) package biological treatment unit utilizing an MLE activated sludge process, a 63-foot diameter central clarifier with a surface area of approximately 3,120 square feet, nitrified mixed liquor recycle (NRCY) pumps, return activated sludge (RAS) pumps, waste activated sludge (WAS) pumps, and aerobic digestion compartments providing approximately 199,200 gallons of total aerobic digester volume.

- **BTU No. 2** consists of a 0.60 MGD (AADF) package biological treatment unit utilizing an MLE activated sludge process, a 44-foot diameter central clarifier with a surface area of approximately 1,520 square feet, NRCY pumps, RAS pumps, WAS pumps, digested sludge pumps, and aerobic digestion compartments providing approximately 382,000 gallons of total aerobic digester volume.

Additional major facility components include an in-plant pump station, multiple centrifugal blowers providing process air for biological treatment, effluent disc filters, chlorine contact chambers, vertical turbine effluent transfer pumps, a 1.2-million-gallon ground storage tank (GST), reuse pumps, biosolids gravity dewatering boxes with polymer injection, hypochlorite feed systems, and associated electrical and instrumentation systems.

3.2.3 EFFLUENT DISPOSAL AND REUSE

The WRF has two effluent disposal points. The primary effluent disposal method is the Town's public-access reclaimed water reuse system. The secondary effluent disposal method

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consists of four onsite RIBs with a combined wetted area of 10.8 acres. RIBs A and B each provide approximately 3.0 acres of wetted area, while RIBs C and D each provide approximately 2.4 acres. In addition to effluent disposal, the RIBs provide reject storage capacity.

Under normal operating conditions, all treated wastewater is treated to public-access reclaimed water standards and conveyed to the GST for storage and pumped distribution through the reuse system when reuse demand exists and storage capacity is available. When reuse demand is low, the GST is at capacity, or treated effluent does not meet reuse quality standards, treated effluent is diverted to the RIBs for disposal.

The Town's Reclaimed Water Service Area (RWSA) with existing customer locations is provided in **Figure 3-4**.

3.2.4 PROCESS OVERVIEW

Raw wastewater delivered from the Town's pump stations is screened through a mechanical fine screen, treated for grit removal, and conveyed to the biological treatment units for oxidation and nitrification/denitrification. Following biological treatment, wastewater is conveyed to clarifiers where solids are separated from the treated effluent. A majority of the settled solids are returned to the biological process as RAS, while a portion is wasted to aerobic digesters as WAS for further stabilization.

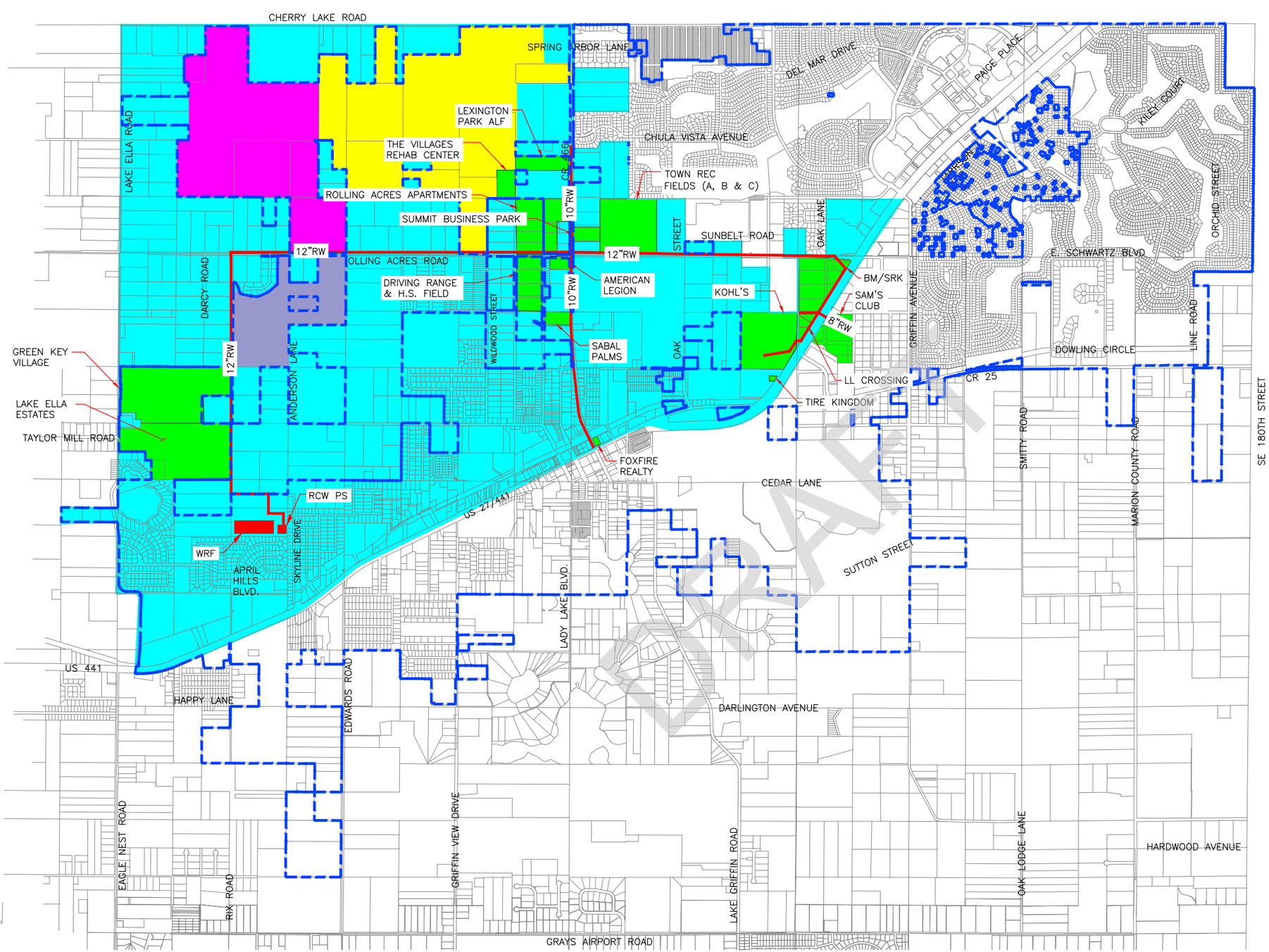
Clarified effluent is routed to disc filters for additional removal of suspended solids, bacteria, and viruses prior to disinfection. Disinfection is achieved through injection of hypochlorite within the baffled chlorine contact chambers, which provide the required contact time and mixing to meet FDEP high-level disinfection requirements for public-access reclaimed water.

3.2.5 OPERATIONAL EVALUATION CONSIDERATIONS

WRF effluent limitations are defined in the Town's current FDEP operating permit. Existing facility operations and performance are evaluated in the Master Plan with respect to the following considerations:

- Near-term flow trends
- Biological treatment capacity
- Biological treatment and effluent disposal

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LEGEND

- TOWN LIMITS
- XX"RW — REUSE MAIN
- EXISTING REUSE CUSTOMER
- RECLAIMED WATER SERVICE AREA
- HAMMOCK OAKS DEVELOPMENT AREA
- HAMMOCK RESERVE DEVELOPMENT AREA
- HAMMOCK HIGHLANDS DEVELOPMENT AREA

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EXISTING REUSE MAIN ROUTING & REUSE CUSTOMERS

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Figure **3-4**

J:\OrangePark\CAD Files\Lady Lake\9514431 SRF WRF Expansion, Ph 3\Figures\Wastewater\Fig. 3-4 Existing Reuse Main Routing & Reuse Customers.dwg, 1/27/2026 1:37:12 PM, Mike.Lisena

- Hydraulic capacity
- Mechanical reliability
- Overall facility needs

These considerations form the basis for evaluation of future treatment capacity requirements and identification of recommended improvements.

3.3 COLLECTION AND TRANSMISSION SYSTEM

The Town owns and operates a wastewater collection and transmission system consisting of gravity sewer mains, force mains, and lift stations that convey wastewater from service areas within the Town to the WRF. The collection system has been developed incrementally over time. As a result, the system reflects a combination of infrastructure installed under varying design standards and operating conditions.

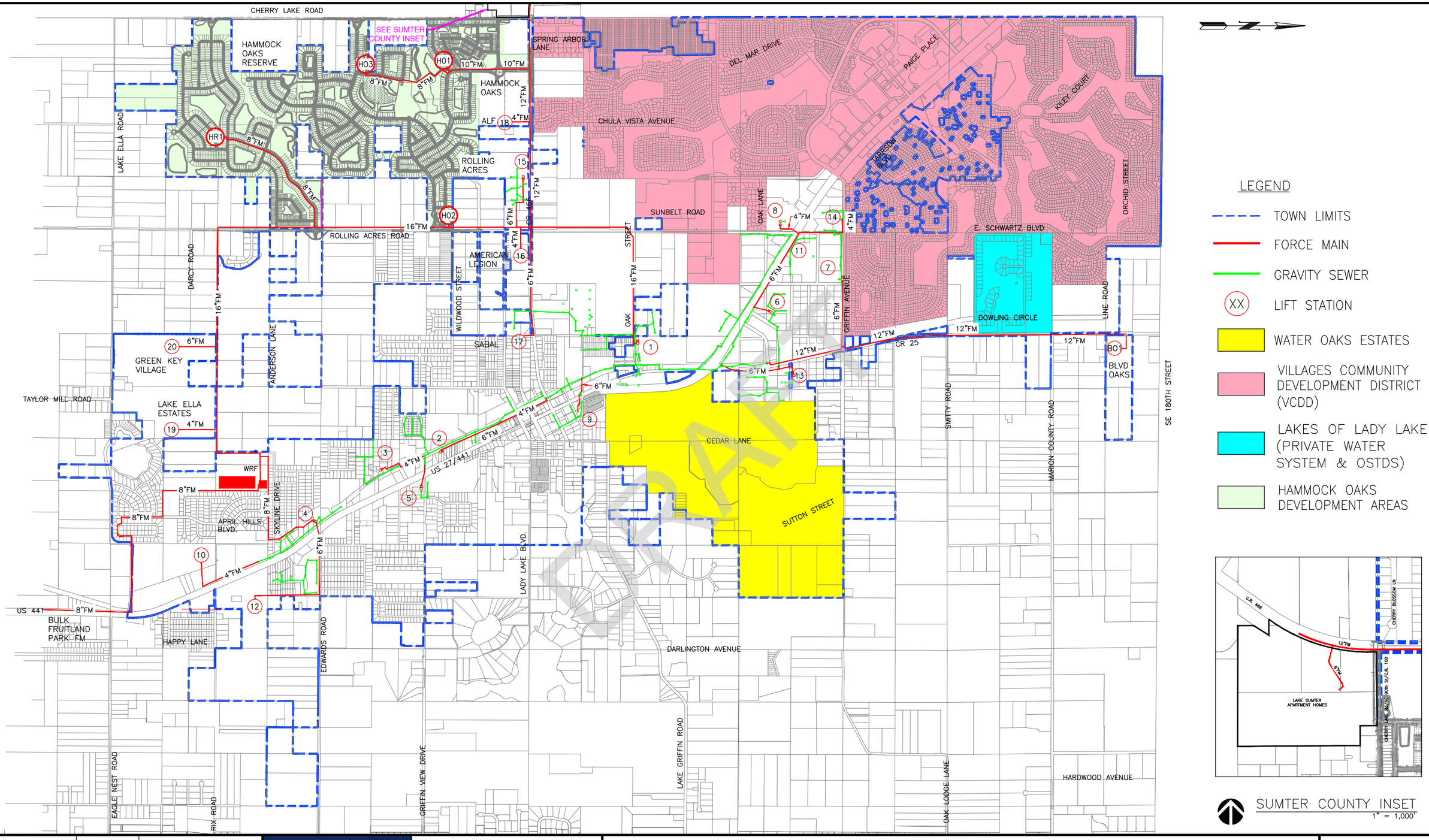
The Town's existing collection and transmission system is illustrated in **Figures 3-5 and 3-6**, with the transmission system schematic illustrated in **Figure 3-7**.

Wastewater generated within the Town is collected through a network of gravity sewer mains that discharge to lift stations, which in turn convey flows through force mains to downstream lift stations or directly to the WRF. The system includes multiple lift stations of varying size and capacity that are strategically located to accommodate the Town's topography and development patterns. Several lift stations pump into separate gravity collection systems that are repumped to the WRF.

Portions of the collection system serve areas developed prior to construction of the centralized sewer system and are subject to inflow and infiltration (I/I), particularly during large rainfall events. These areas are limited to Lift Station Nos. 3 and 7. During significant rainfall events, elevated wet-weather flows can increase pumping durations, reduce available hydraulic capacity within force mains, and place additional operational stress on downstream lift stations and treatment facilities.

The Town's wastewater transmission system also experiences elevated operating pressures for those stations connected to the existing 16-inch force main due to the relative elevation between the WRF and various lift stations. Concurrent pumping from multiple lift stations can further exacerbate these conditions and limit available system capacity during peak flow periods.

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J:\OrangePark\CAD Files\Lady Lake\9514431 SRF WRF Expansion, Ph 3\Figures\Wastewater\Fig. 3-5 Existing Collection and Tansmission System.dwg, 1/27/2026 1:43:23 PM, Mike.Lisena

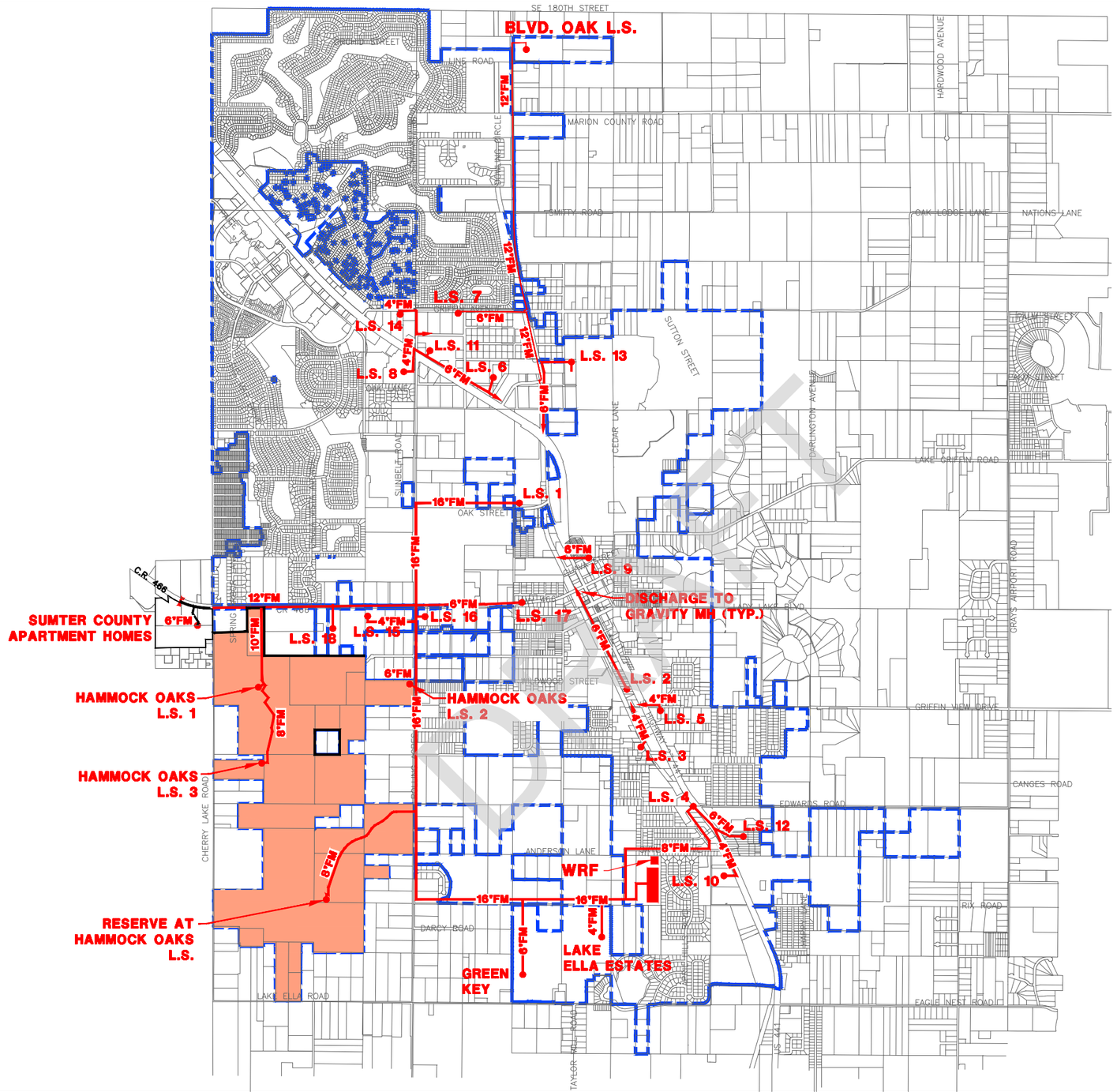
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EXISTING COLLECTION & TRANSMISSION SYSTEM

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Figure **3-5**



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TOWN LIMITS AREA

HAMMOCK OAKS DEVELOPMENT AREA

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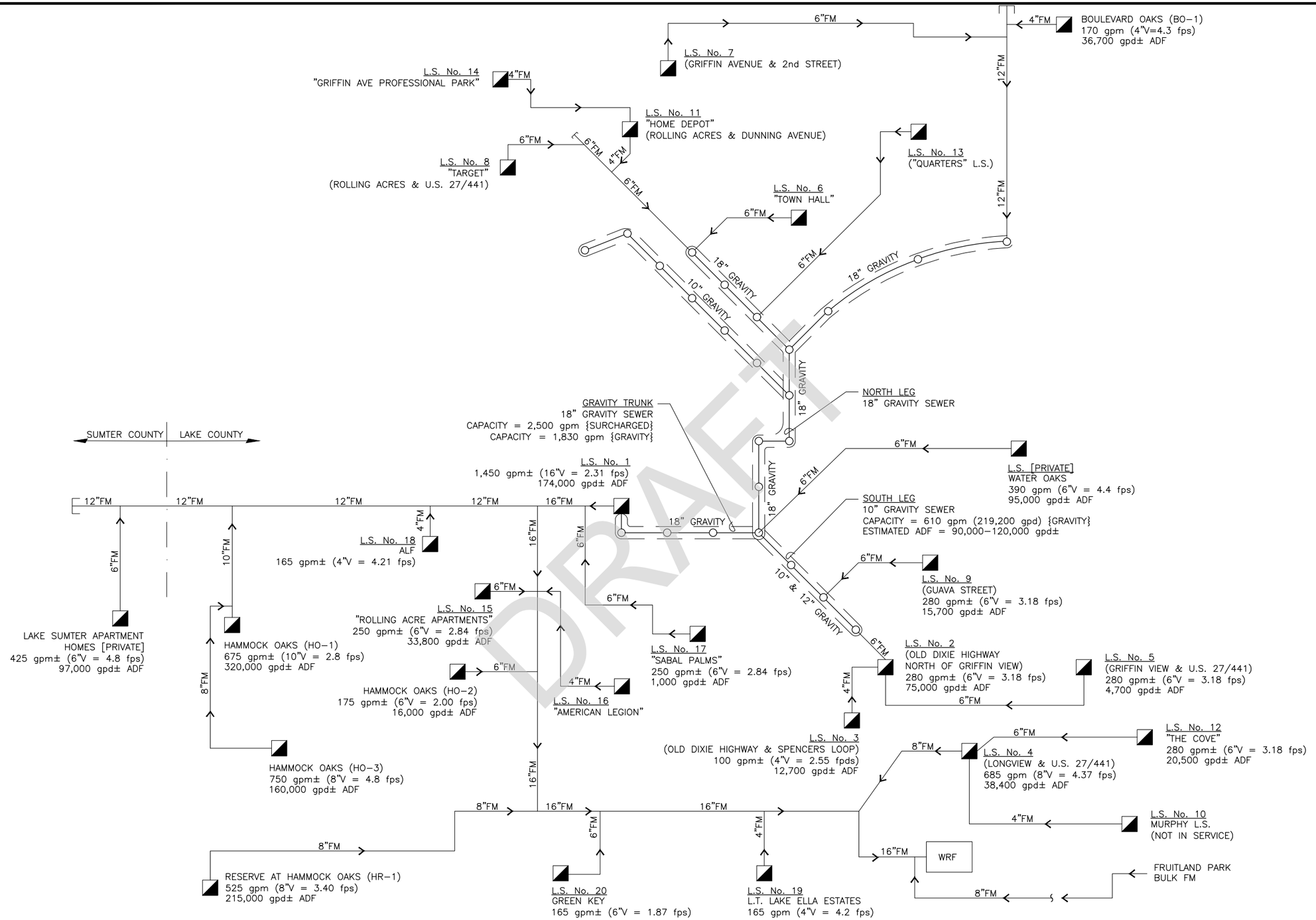
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EXISTING TRANSMISSION SYSTEM MAP

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Figure
3-6

J:\OrangePark\CAD Files\Lady Lake\9514431 SRF WRF Expansion, Ph 3\Figures\Wastewater\Fig. 3-6 Existing Transmission System Map.dwg, 1/27/2026 1:49:22 PM, Mike.Lisena



Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	***Building Stronger Communities Together***	EXISTING COLLECTION & TRANSMISSION SYSTEM SCHEMATIC
Drawn by:	MAL	Job No. 9514-43-1		**580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030**	TOWN OF LADY LAKE Wastewater Facilities Plan Lake County, Florida
Checked by:	JRS				Figure **3-7**
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J:\OrangePark\CAD Files\Lady Lake\9514431 SRF WRF Expansion, Ph 3\Figures\Wastewater\Fig. 3-7 Collection and Transmission System Schematic.dwg, 1/27/2026 1:51:05 PM, Mike.Lisena

In addition to wet-weather influences, continued residential and commercial growth within the Town is projected to increase average and peak wastewater flows within portions of the collection and transmission system. Capacity constraints at select lift stations and within certain force mains will require future expansion to address capacity limitations. While the system continues to function within its intended operating envelope, these constraints have been identified as areas requiring future evaluation and improvement as part of the Town's long-term wastewater capital improvement strategy.

The Wastewater Master Plan evaluated the existing collection and transmission system to identify areas of hydraulic, mechanical, and operational concern and to assess the system's ability to convey projected wastewater flows. Collection system improvements, lift station upgrades, force main improvements, and targeted I/I reduction measures were identified as important capital improvement elements necessary to maintain reliable system performance and to complement future wastewater treatment facility expansion efforts.

In summary, the collection and transmission system findings were as follows:

A. Lift Station 1 collection and pumping system have the following considerations to be monitored:

    1. The 18" trunk leg has a limiting capacity of 1,860 gpm (PHF), 878,400 gpd (ADF) based on a 3.0 peak factor, or 4,000 ERUs. If surcharged conditions are allowed, then the limiting capacity increases to 2,650 gpm (PHF), 1,272,000 gpd (ADF), or 5,780 ERUs. Based on the contributing LS flows, the current ADF through the Gravity Trunk is approximately 45% of the system's gravity capacity and 31% of the surcharged capacity. However, the combined LS capacity connected to the Gravity Trunk is approximately 2,760 gpm, which will need to be monitored.

    2. At 1,450 gpm of pumping capacity, the station is limited to an estimated average daily flow of 522,000 gpd (ADF) or 2,375 ERUs using standard peaking factors. The current ADF is estimated at 396,000 gpd, or 76% of the current pumping capacity.

    3. Flow monitoring at the station should continue while expansion plans are completed and implemented in the future to support further growth in the Town's northeast quadrant.

B. The Town's original design of the wastewater system resulted in the wastewater treatment facility being constructed at a relatively high elevation in the Town, which results in a static back pressure condition on all connecting pump stations that are located at lower elevations. The Town's existing influent structure hydraulic water elevation is approximately 177 feet (NAVD) while Lift Station 1's operating level is 52

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feet (NAVD) and the Hammock Oak lift stations operating elevations vary between 39 feet to 69 feet (NAVD). The elevation difference results in static pressures ranging from 108 ft (47 psig) to 138 ft (60 psig). As a result, the system's operating pressure can range from 80 to 100 psig pending location and operating flows.

C. The Town's existing 16" trunk force main was reviewed when all stations are pumping concurrently which indicated the force main becomes limiting when force main flows exceed 4 fps (2,500 gpm). The Town will need to monitor pump station run times, which will give an indication when concurrent pumping is occurring more regularly.

D. Expansion to the transmission system capacity will be needed as further growth occurs. Alternatively, an inline booster pump station could be reviewed as a future alternative to decrease force main operating pressures.

3.4 RECLAIMED WATER AND EFFLUENT DISPOSAL

The Town operates a public-access reclaimed water system that serves as the WRF's primary effluent disposal method. Treated effluent meeting reclaimed water quality standards is conveyed from the WRF to a 1.2 MG GST for storage and subsequent distribution to the Town's reclaimed water customers. The reclaimed water system provides irrigation water for residential, commercial, and institutional users and plays a key role in reducing groundwater withdrawals and maximizing beneficial reuse of treated wastewater.

The reclaimed water system is permitted for a total capacity of 2.26 MGD (AADF). Under normal operating conditions, treated effluent is preferentially directed to the reclaimed water system when sufficient storage capacity is available in the GST. Reclaimed water distribution is managed to balance seasonal irrigation demand, storage availability, and treatment facility operating conditions.

In addition to reclaimed water reuse, the Town operates four onsite RIBs that provide secondary effluent disposal and reject storage capacity. The RIBs are permitted for a total loading capacity of 0.25 MGD (AADF), or 91.25 MG per year, and have a combined wetted area of approximately 10.8 acres. The RIBs are located within the WRF site and are used when reclaimed water demand is insufficient, the GST is at capacity, or treated effluent does not meet reclaimed water quality standards. Under these circumstances, treated effluent is diverted from the reclaimed water system to the RIBs to maintain continuous operation of the WRF and to ensure compliance with permit requirements.

Effluent management at the WRF is coordinated to optimize reclaimed water utilization while maintaining flexibility to accommodate fluctuations in demand and operational conditions. The combination of reclaimed water reuse and RIB disposal provides the Town with a

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diversified effluent management strategy that supports water resource conservation, regulatory compliance, and reliable system operation.

The existing reclaimed water and effluent disposal facilities were evaluated in the Wastewater Master Plan to assess their ability to support projected future wastewater flows and expanded treatment capacity. These evaluations considered reclaimed water demand variability, storage capacity, wet-weather operating conditions, and the role of the RIBs in supporting long-term system reliability. Recommended capital improvements included:

- Reclaimed water GST operational storage capacity to 5.0 MG target via incremental expansion.
- 36 acres offsite RIB expansion.

3.5 BIOSOLIDS MANAGEMENT

The Town manages WRF biosolids through onsite stabilization and dewatering processes prior to offsite disposal. Biosolids handling and management are integral components of overall wastewater treatment operations and are closely linked to treatment capacity, process configuration, and long-term system reliability.

WAS generated from the biological treatment units is conveyed to onsite aerobic digesters for stabilization. The WRF includes multiple aerobic digestion compartments associated with BTU No. 1 and BTU No. 2, providing storage and stabilization capacity for biosolids generated under current operating conditions. Aerobic digestion reduces the volatile content of the sludge and prepares the material for subsequent dewatering and disposal.

Following stabilization, biosolids are dewatered using gravity dewatering boxes equipped with polymer injection systems. The Town operates two 30-yard gravity dewatering boxes capable of producing dewatered biosolids with approximately 10 percent solids content. Dewatered biosolids are periodically removed from the site and transported for offsite disposal in accordance with applicable regulatory requirements and disposal facility acceptance criteria.

The Wastewater Master Plan evaluated existing biosolids handling, stabilization, and dewatering facilities to assess their ability to accommodate projected increases in wastewater flows and associated solids production. As treatment flows increase, biosolids production is expected to increase proportionally, placing additional demand on existing digestion and dewatering capacity. Biosolids management was therefore identified as an important operational consideration in evaluating future wastewater treatment facility expansion alternatives.

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Existing biosolids facilities and operations provide adequate treatment capacity under current conditions; however, current dewatering systems are reaching their capacity. Future wastewater treatment expansion will require increases to the digestion and dewatering capacities, and review of disposal practices to ensure reliable, compliant, and cost-effective biosolids management.

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4.0 REGULATORY REQUIREMENTS

The Town's wastewater system is subject to a range of federal, state, and local regulatory requirements that govern wastewater treatment, effluent disposal, reclaimed water use, biosolids management, and system operation. These regulatory requirements establish the framework within which existing facilities operate and directly influence the planning, design, permitting, construction, operation, and maintenance of future wastewater infrastructure improvements.

The Town's WRF operates under an FDEP wastewater operating permit that defines permitted treatment capacity, effluent limitations, monitoring requirements, and operational conditions. Ongoing compliance with permit conditions is maintained through operational controls, routine monitoring, and reporting in accordance with FDEP requirements.

In addition to facility-specific permitting requirements, the Town is subject to statewide and basin-specific regulatory programs intended to protect water quality and reduce nutrient loading to impaired surface waters and springs. The Town is located within watersheds subject to BMAP requirements, which establish total maximum daily load (TMDL) reduction goals for nutrients, including total nitrogen. These regulatory programs are intended to restore and protect downstream waterbodies and springs and have direct implications for wastewater treatment performance standards, effluent disposal practices, and long-term wastewater system planning.

Compliance with BMAP nutrient reduction goals necessitates measurable reductions in nitrogen loading from centralized wastewater treatment facilities as well as from onsite sewage treatment and disposal systems. As a result, wastewater treatment facility upgrades capable of achieving AWT effluent limits and conversion of existing septic systems to centralized sewer service are key components of the Town's regulatory compliance strategy. Regulatory milestones and implementation schedules established under the BMAP program influence the timing, sequencing, and prioritization of wastewater infrastructure improvements evaluated in this Facilities Plan.

The Town's reclaimed water system is regulated under FDEP reclaimed water criteria applicable to public-access reuse systems. These criteria establish effluent quality requirements, disinfection standards, operational controls, and monitoring requirements intended to protect public health and environmental resources. Compliance with reclaimed water regulations is dependent upon consistent treatment performance, adequate storage and conveyance capacity, and effective management of treated effluent during periods of variable reuse demand and wet-weather operating conditions. Reclaimed water reuse also plays an important role in reducing nutrient loading to surface waters and minimizing groundwater withdrawals, further supporting regulatory compliance objectives.

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Biosolids generated at the WRF are regulated under applicable state and federal requirements governing stabilization, handling, transport, and disposal. These regulations establish standards for pathogen reduction, vector attraction reduction, and approved disposal practices to ensure protection of public health and the environment. As wastewater treatment flows increase, biosolids production will increase proportionally, and continued compliance with biosolids regulations will influence future treatment process selection, facility configuration, and operational planning.

Collectively, these regulatory requirements establish the technical, operational, and environmental performance standards that the Town's wastewater system must meet. The regulatory framework described in this section serves as a primary driver for evaluating existing system performance, identifying capacity limitations, and assessing future wastewater treatment facility expansion alternatives. These regulatory considerations form the basis for the evaluation of projected wastewater demands and the development of recommended improvements presented in subsequent sections of this Facilities Plan.

In summary, the regulatory items affecting the Town's future planning include the following:

A. The Town is located within the Upper Ocklawaha and Silver Springs and Upper Silver River and Rainbow Spring Group and Rainbow River BMAP. The Town's TN loading reduction requirement is 18,279 pounds per year (lb-TN/yr) with the following breakdown:

    1. 11,313 lb-TN/yr | 1,302 septic tank abandonments.

    2. 2,053 lb-TN/yr at WRF through advanced wastewater treatment improvements to achieve 3 mg/L (TN).

    3. 4,914 lb-TN/yr through stormwater system improvements.

B. Through 2025, the Town has achieved 372 lb-TN/yr (7% of the 2028 goal).

C. Nutrient loading reduction schedule is: 30% at 5,485 lb-TN/yr (2028), 80% at 14,625 lb-TN/yr (2033), and 100% at 18,279 lb-TN/yr (2038).

D. Septic tank phase out projects will be critical to meeting the nutrient reduction goals.

E. Development growth will be increasing reclaimed water demands beginning in 2025. Managing reclaimed water storage capacities for drought and wet-weather conditions will be a capital planning focus to manage the reclaimed water utility.

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F. Town developed a Collection System Action Plan (CSAP) as part of the most recent WRF Operating Permit renewal. FDEP rules require that collection system flows be routinely (i.e., annually) reviewed as part of a pipe assessment, repair, and replacement plan. The entire system review is required during the 5-year operating permit window.

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5.0 PROJECTED WASTEWATER DEMANDS

Projected wastewater demands were developed as part of the Wastewater Master Plan to evaluate future treatment capacity needs and to support long-term wastewater infrastructure planning through the year 2040. Projections were prepared to reflect anticipated growth within the Town limits, conversion of existing OSTDS to centralized sewer service, service to select package wastewater treatment facilities, and continuation of near term bulk wastewater treatment service to the Town of Fruitland Park through 2030. These projected demands provide the basis for evaluating existing system capacity and determining the appropriate scale of future wastewater treatment facility improvements.

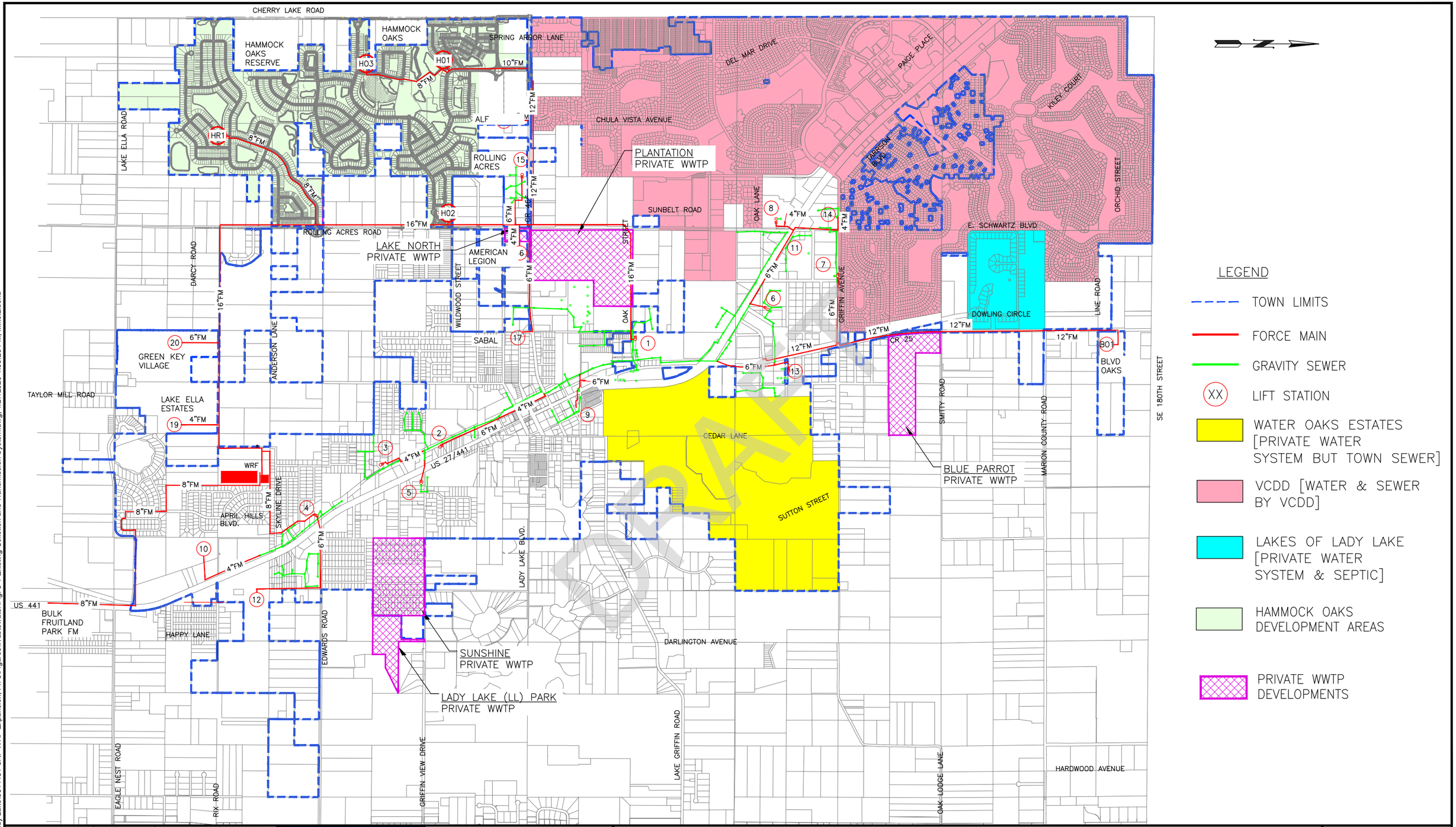
Wastewater flow projections were developed using a combination of population projections, land use considerations, and unit flow factors consistent with industry standards and the Town's historical operating data. Unit flow assumptions were applied to projected residential, commercial, and institutional development to estimate average daily and peak wastewater flows. For planning purposes, an average wastewater generation rate of 220 gallons per day per equivalent residential unit (gpd/ERU) was utilized, consistent with the assumptions used in the Wastewater Master Plan.

The Town may be required to connect existing package WWTPs to the Town's centralized system over the planning horizon. Connection of these facilities is expected to consolidate treatment at the Town's WRF and reduce reliance on smaller, decentralized treatment systems. It would also ensure wastewater generated from these locations would be treated to AWT standards. Location of these facilities are illustrated in **Figure 5-1**.

In addition to growth-related flows, projected wastewater demands account for conversion of existing septic systems to centralized sewer service within the Town. Areas currently served by OSTDS were evaluated to estimate potential future wastewater contributions associated with septic tank phase-out initiatives driven by regulatory requirements and system expansion planning. These conversions represent an important component of future wastewater demand and were included in the overall flow projections. The targeted connection locations ("Sectors") are illustrated in **Figure 5-2**.

The Town currently provides bulk wastewater treatment service to the Town of Fruitland Park under an interlocal agreement. For planning purposes, wastewater flows associated with Fruitland Park were included in projected demands through approximately 2030, after which these flows are projected to cease.

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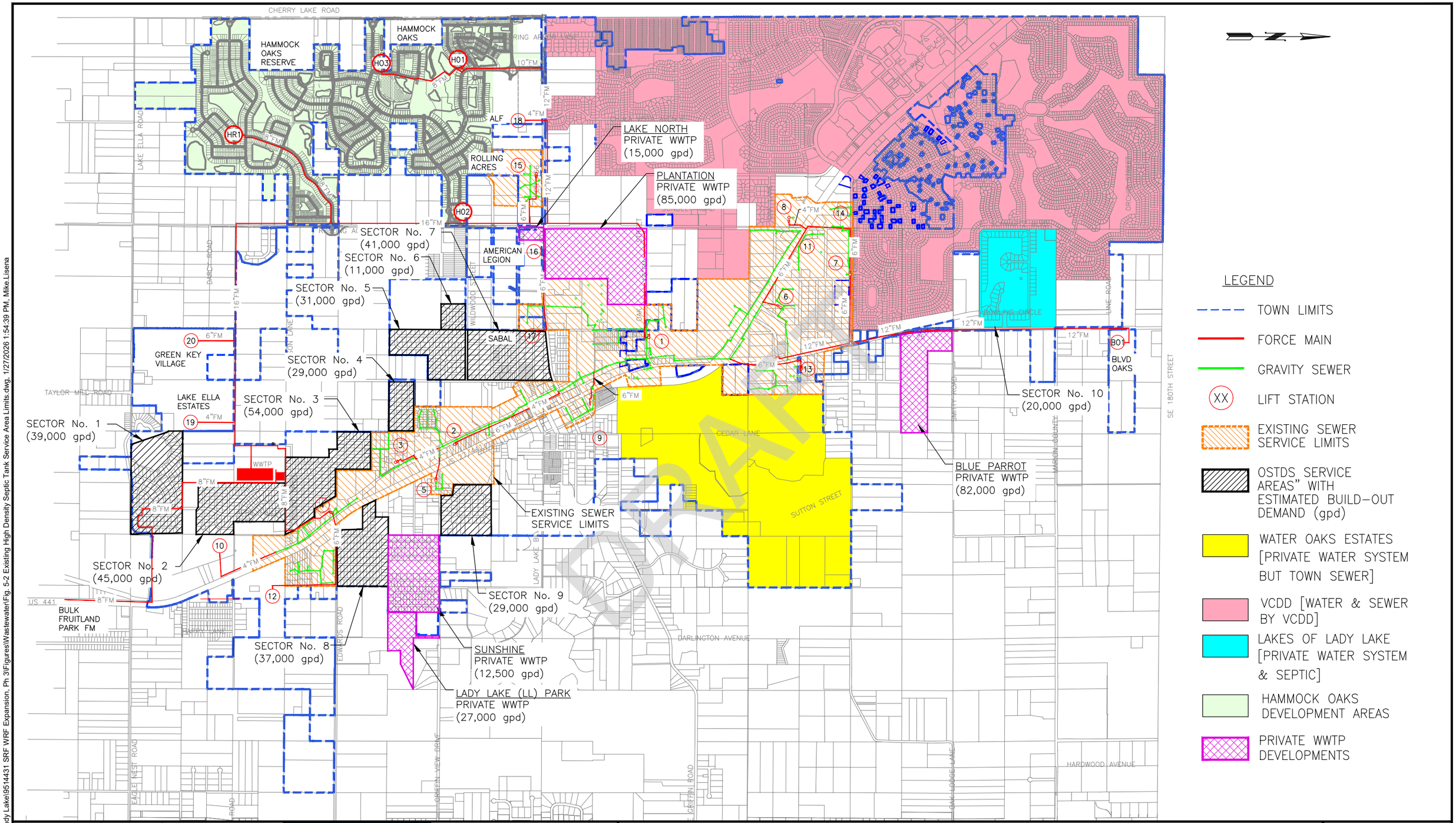
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EXISTING COLLECTION & TRANSMISSION SYSTEM

TOWN OF LADY LAKE
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Lake County, Florida

Figure
5-1



J:\OrangePark\CAD Files\Lady Lake\9514431 SRF WRF Expansion, Ph 3\Figures\Wastewater\Fig. 5-2 Existing High Density Septic Tank Service Area Limits.dwg, 1/27/2026 1:54:39 PM, Mike.Lisena

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EXISTING HIGH DENSITY SEPTIC TANK SERVICE AREA LIMITS

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Wastewater Facilities Plan
Lake County, Florida

Figure **5-2**

Figure 5-3 illustrates near-term project locations that the Town is actively monitoring with numerous developments in construction. **Figure 5-4** highlights remaining blocks of large undeveloped land within the Town limits that are anticipated to develop.

Based on the combined effects of projected growth within the Town, septic system conversions, potential package plant connections, and continuation of Fruitland Park flows through 2030, the Wastewater Master Plan identified a recommended planning target of 3.0 MGD (AADF) for the Water Reclamation Facility through the 2040 planning horizon. This planning target provides sufficient capacity to accommodate projected demands while allowing operational flexibility and compliance with applicable regulatory requirements. It also provides reasonable excess capacity should growth and wastewater flows exceed the planning projections.

Projected wastewater demands were evaluated in conjunction with regulatory requirements discussed in Section 4.0 to assess the adequacy of existing treatment capacity and to inform evaluation of wastewater treatment facility expansion alternatives. These projections form the basis for the alternatives analysis and identification of the recommended wastewater treatment facility improvements presented in subsequent sections of this Facilities Plan.

A summary of the wastewater flow projection considerations are provided as follows:

A. The Town is currently serving the Town of Fruitland Park through a bulk wastewater service agreement. Flows through this bulk connection are considered through 2030 when it is anticipated those flows will be rerouted to a WRF, owned and operated by Fruitland Park.

B. The Town's existing residential water customers include many areas that are served by onsite sewage treatment and disposal systems or septic tanks as well as more recent developments that include water and sewer use.

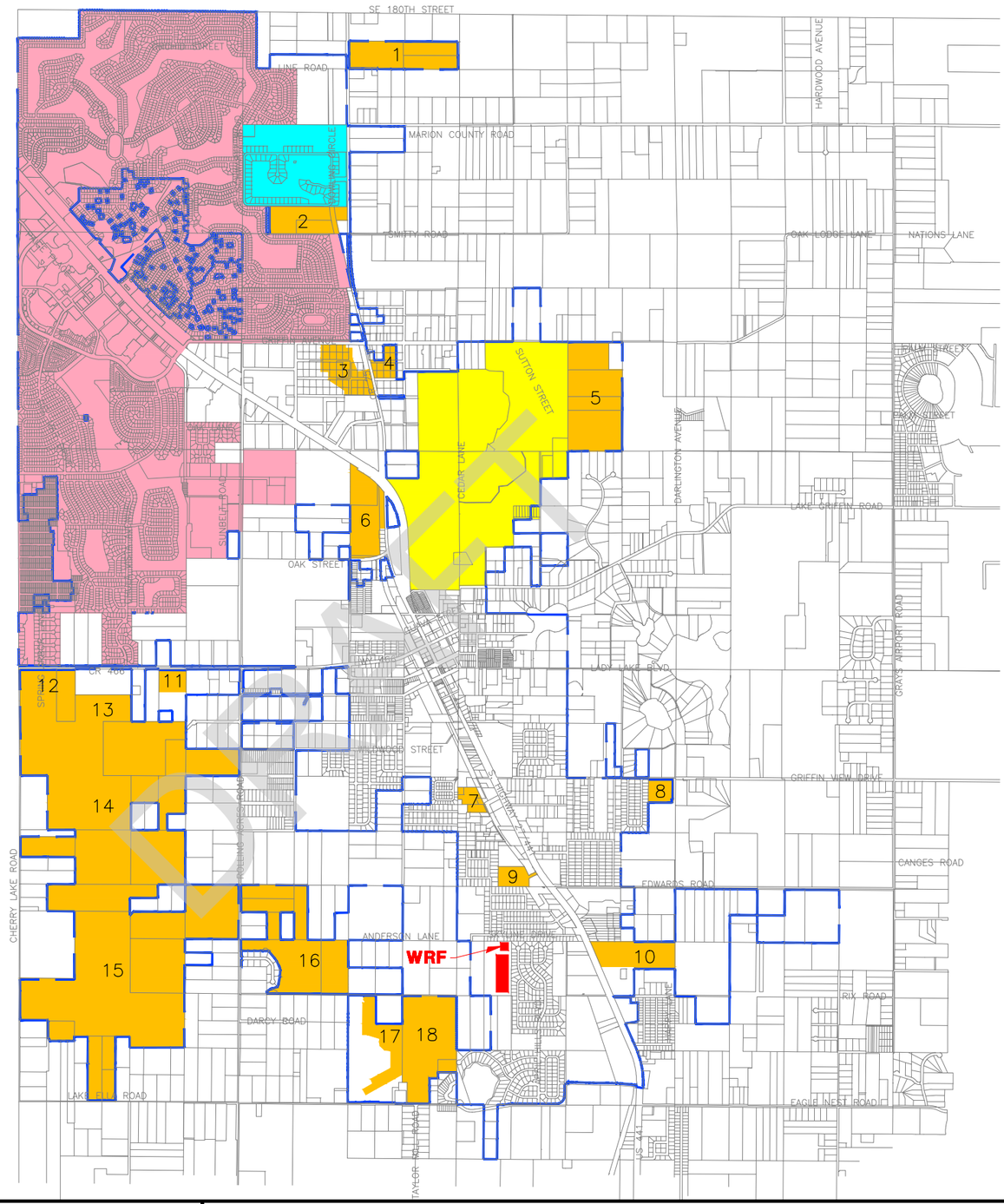
C. The Town's aggregate average potable water use indicates an average use of approximately 127 gallons per day per ERU (3,800 gal/mo/30 days) or 53 gallons per capita day (gpcd). However, those customers that are served by central sewer indicate an aggregated average use of 200 gpd/ERU. For planning purposes a value of 220 gpd/ERU was utilized.

D. In order to meet the BMAP requirements, the extension of central sewer to existing septic areas will result in the following estimated WRF flow increases.

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DEVELOPMENT (ESTIMATED CAPACITY, IF KNOWN)

1 Boulevard Oaks (35,200 gpd–ADF)
2 Lighthouse Storage
3 Lady Lake Square Apartments (63,360 gpd–ADF)
4 Elite RV & Storage
5 Water Oak Hilltop Addition (65,120 gpd–ADF)
6 Portillos & Proposed Apartments
7 Gettings Storage
8 Pinebrook MHP
9 Discount Storage 27–441
10 Lady Lake Luxury Apartments (72,600 gpd–ADF)
11 Rolling Acres Reserve (20,240 gpd–ADF)
12 Hammock Oaks Commercial
13 Hammock Oaks Multi–Family (68,640 gpd–ADF)
14 Hammock Oaks (251,240 gpd–ADF)
15 Reserve @ Hammock Oaks (227,040 gpd–ADF)
16 Highlands @ Hammock Oaks (99,000 gpd–ADF)
17 Green Key Village Ph 5&6 (21,560 gpd–ADF)
18 Lake Ella Estates Ph 1 thru 3 (51,040 gpd–ADF)



LEGEND

- TOWN LIMITS
- WATER OAK ESTATES
- VCDD
- LAKES OF LADY LAKES (PRIVATE WATER & OSTDS)
- NEAR TERM PROJECTS

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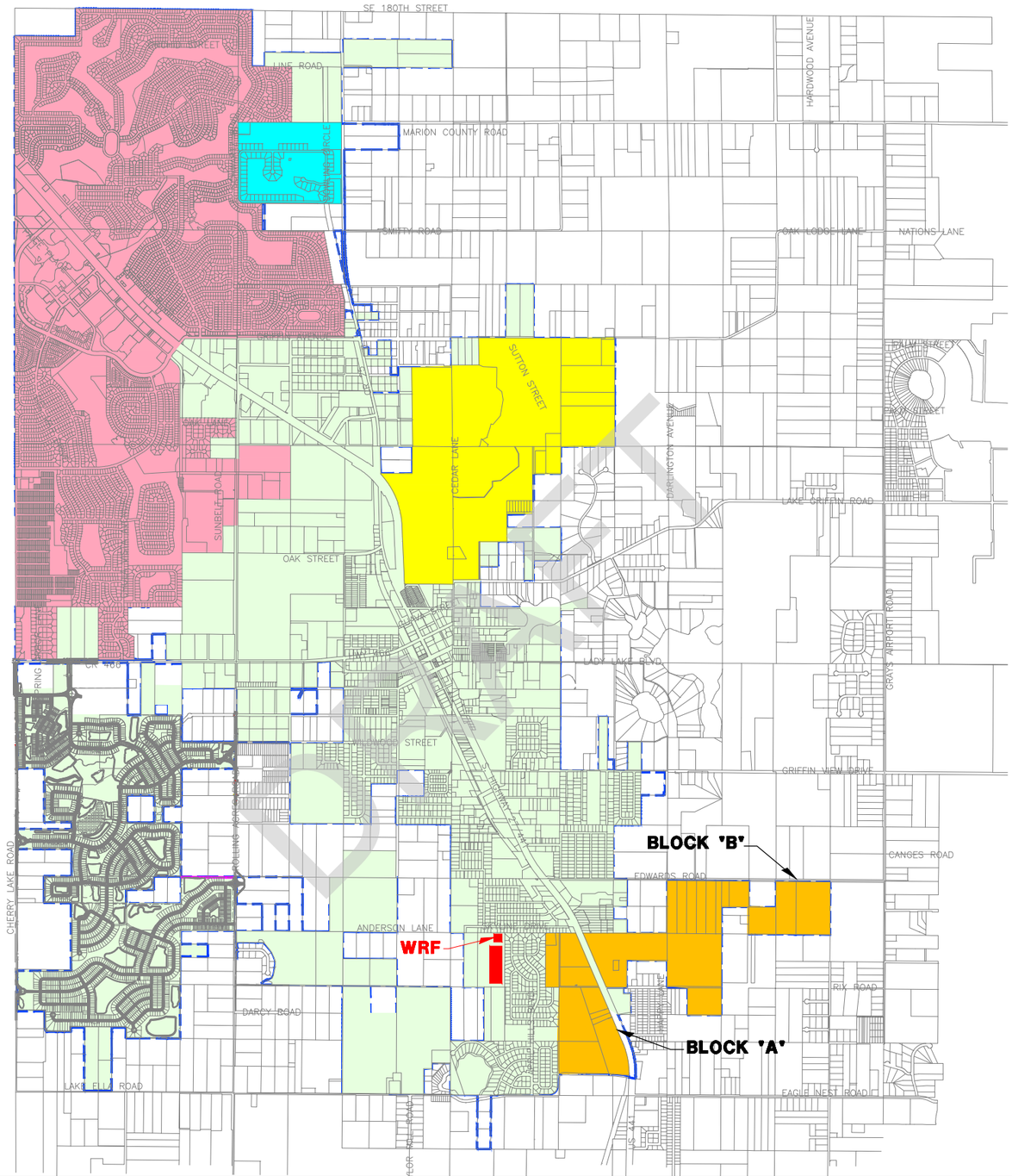
DEVELOPMENT PROJECTS

TOWN OF LADY LAKE
Wastewater Facilities Plan
Lake County, Florida

Figure
5-3

J:\OrangePark\CAD Files\Lady Lake\9514431 SRF WRF Expansion, Ph 3\Figures\Wastewater\Fig. 5-3 Development Projects.dwg, 1/27/2026 1:56:59 PM, Mike Lisena

PARCEL "BLOCKS"	AC
BLOCK A	100
BLOCK B	190



N

LEGEND

- TOWN LIMITS
- WATER OAK ESTATES
- VCDD
- LAKES OF LADY LAKES (PRIVATE WATER SYSTEM & OSTDS)
- SERVICE AREA
- "LARGE" UNDEVELOPED PARCELS W/O IDENTIFIED PROJECTS

Designed by:	JRS	Date: JAN. 2026
Drawn by:	MAL	Job No. 9514-43-1
Checked by:	JRS	
Approved by:	JRS	© 2026
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EXISTING "LARGE" UNDEVELOPED

TOWN OF LADY LAKE
Wastewater Facilities Plan
Lake County, Florida

Figure
5-4

J:\OrangePark\CAD Files\Lady Lake\9514431 SRF WRF Expansion, Ph 3\Figures\Wastewater\Fig. 5-4 Existing Large Undeveloped.dwg, 1/27/2026 1:59:26 PM, Mike.Lisena

TABLE 5-1 ESTIMATED PARCEL AND WASTEWATER DEMAND SUMMARY SERVICED BY OSTDS		
OSTDS Sector	**Build-out Parcel Count**	**Estimated Demand (gpd)**
1	176	39,000
2	206	45,000
3	246	54,000
4	131	29,000
5	141	31,000
6	51	11,000
7	186	41,000
8	167	37,000
9	92	20,000
10 (Lakes of Lady Lake)	92	20,000
SUM	**1,488**	**327,000**

E. Should the Town be required to serve those locations within or adjacent to the Town limits that are currently served by private wastewater treatment systems, the additional flows to the WRF are estimated as follows:

TABLE 5-2 PACKAGE WASTEWATER SYSTEM SUMMARY		
Development	**WWTP Permit Capacity (gpd)**	**'Current' Average Flows[A] (gpd)**
Plantation	85,000	30,000
Lake North	15,000	9,000
Sunshine	12,500	4,000
Blue Parrot	82,000	17,000
LL Park	27,000	14,000
Harbor Hills	40,000	11,000
SUM	**261,500**	**85,000**

A: Listed flows are either annual average, quarterly average, and three-month average flows as presented on the most up to date discharge monitoring report (DMR) submitted to FDEP. The DMRs for each respective WWTP varied between late 2023 to as recent as March 2025.

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F. Limiting growth to the current Town limits, **Table ES-3** summarizes the estimated build-out flow. Future developments will likely have less than 100% of their build-out potential realized, so build-out demands may be less than anticipated. Based on unknowns related to potential service to areas beyond the current Town limits, a wastewater flow of 3.0 MGD (AADF) is recommended through 2040.

TABLE 5-3
ESTIMATED WASTEWATER BUILD OUT FLOWS

Service Areas	Flow (MGD)
Existing Residential	0.364
Existing Commercial	0.160
Existing Fruitland Park	0.080
SUBTOTAL	**0.604**
Future Residential (Town limits)	1.041
Future OSTDS Sectors	0.327
Future Package WWTP	0.177
Future Large Undeveloped Tracts	0.259
SUBTOTAL	**1.804**
TOTAL	**2.408**
Future Fruitland Park[A] [thru 2030]	0.368
2030 TOTAL WITH FRUITLAND	**2.776**

A 0.448 MGD (2030 ADF) future service reservation less current flows of 0.08 MGD.

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G. **Table 5-3** was created to summarize the flow projection for the Town's master planning use. It is intended as an aggressive guide and should be revisited on a 6-month interval until the WRF expansion is completed.

H. Pending economic conditions, we recommend the Town prepare for growth based on the 10-year build-out projection for the current large-scale residential developments with associated monitoring of building permit starts to trace actual growth patterns. This growth schedule results in WRF expansion requirements by 2029. At a minimum, the Town should begin design and permitting of expansion requirements. Construction activities should commence based on building permit activities. A 2-year construction period is estimated to complete the expansion.

I. Based on currently known development projects with anticipated septic tank phase out project timing, **Table 5-4** is provided to summarize the planning-level.

TABLE 5-4 - Population Growth Projections - Development Review

																	ERU =	220 gpd	
Item	**Development**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2045**	**TOTAL**
1	Hammock Oaks (HO) - Single Family	92	109	109	109	109	109	109	109	109	109	67							1,140
2	HO - Apartments			312															312
3	HO- Reserve	42	103	103	103	103	103	103	103	103	103	61							1,030
4	HO - Highlands			44	44	44	44	44	44	44	44	44	44						439
5	Hilltop Expansion (Water Oak)	30	30	30	30	30	30	30	30	30	12								282
6	Lady Lake Luxury Apartments																		0
7	Lake Sumter Apartments	84																	84
8	Lumen Park ALF																		0
9	Teague Plaza	16																	16
10	Boulevard Oaks		32	32	32	32	32												160
11	Rolling Acres Reserve Apartments			92															92
12	Lake Ella Estates, Ph 2 and 3	34	15	15	15	15	15	15	15	13									152
13	Self Storage at Lady Lake																		0
14	Lady Lake Square Apartments																		0
15	Green Key Phase 5 and 6	21	10	10	10	10	10	10	7										88
16	Neighborhood Market		8																8
17	Residential Growth - Future Development Tracts					100	100	100	100	100	100	100	100	100	100	100	100	500	1,000
18	Commercial Growth	25	25	25	25	25	18	18	18	18	18	18	18	18	18				283
19	Septic Tank Phase Out Connections					450				740					580				1,770
	Lady Lake ERU Subtotal	*344*	*332*	*772*	*368*	*918*	*460*	*428*	*425*	*1,156*	*385*	*289*	*161*	*118*	*698*	*100*	*100*	*500*	*6,856*
20	Fruitland Park - Residential Connections	200	325	500	100	100	100	100	100	100	100	100	100	100	100				2,125
21	Fruitland Park - Commercial Connections	22	36	55	11	11	11	11	11	11	11	11	11	11	11				234
	Fruitland Park ERU Subtotal	*222*	*361*	*555*	*111*	*111*	*111*	*111*	*111*	*111*	*111*	*111*	*111*	*111*	*111*				2,359
	TOTAL (ERU)	**566**	**693**	**1,327**	**479**	**1,029**	**571**	**539**	**536**	**1,267**	**496**	**400**	**272**	**229**	**809**	**100**	**100**	**500**	**9,215**
	TOTAL Lady Lake WW Flows (gpd-ADF)	**694,558**	**847,057**	**1,139,013**	**1,244,410**	**1,470,806**	**1,596,517**	**1,367,148**	**1,485,158**	**1,763,989**	**1,873,200**	**1,961,291**	**2,021,222**	**2,071,494**	**2,249,367**	**2,271,367**	**2,293,367**	**2,403,367**	
	Lady Lake Population	**7,928**	**8,559**	**10,026**	**10,725**	**12,470**	**13,344**	**14,158**	**14,967**	**17,164**	**17,896**	**18,446**	**18,753**	**18,976**	**20,301**	**20,491**	**20,681**	**21,631**	

In 2030, the Town of Fruitland Park's wastewater flows will be diverted from Lady Lake's WRF to a Fruitland Park WRF.

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6.0 WASTEWATER INFRASTRUCTURE EXPANSION ANALYSIS

The Wastewater Master Plan evaluated wastewater infrastructure expansion alternatives to address projected wastewater demands, regulatory requirements, and existing system constraints. The analysis focused on identifying improvements necessary to expand treatment capacity, achieve compliance with AWT requirements, and provide long-term operational reliability through the 2040 planning horizon.

The expansion analysis considered improvements to the WRF as the primary means of accommodating projected wastewater demands. The Master Plan also evaluated collection system improvements, transmission system upgrades, and septic tank phase-out initiatives as part of a comprehensive wastewater improvement program. The Town anticipates utilizing the Clean Water State Revolving Fund financing to complete the Capital Improvement Program. However, additional funding partners may be required. Collection system improvements and septic system conversions are referenced as supporting and enabling elements of the overall program and will likely occur following the WRF improvements.

6.1 PLANNING CRITERIA AND EXPANSION OBJECTIVES

WRF expansion alternatives were evaluated based on the ability to provide a total treatment capacity of 3.0 MGD (AADF), consistent with projected wastewater demands through 2040. Alternatives were also evaluated based on their ability to reliably meet AWT effluent limits, support reclaimed water reuse, integrate with existing facilities, and maintain operational flexibility.

Additional evaluation criteria included:

- Compatibility with existing treatment processes and site constraints
- Reliability and redundancy
- Operational complexity and staffing requirements
- Capital and lifecycle costs
- Constructability and ability to phase improvements
- Flexibility to accommodate future regulatory changes

6.2 NO-ACTION ALTERNATIVE

The No-Action Alternative assumes continued operation of the existing WRF at its current permitted capacity of 1.20 MGD (AADF) without expansion. Under this alternative, projected wastewater demands associated with growth, septic system conversions, and near-term continuation of Fruitland Park flows would exceed available treatment capacity. In addition, the existing facility configuration was not designed to meet AWT effluent limits of 3 mg/L total

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nitrogen (TN), limiting the Town's ability to comply with BMAP nutrient reduction requirements.

Based on these considerations, the No-Action Alternative was determined to be infeasible and was not carried forward for further consideration.

6.3 WRF EXPANSION ALTERNATIVES

The Master Plan evaluated multiple WRF expansion alternatives capable of increasing treatment capacity to 3.0 MGD (AADF) while achieving AWT effluent limits. Each alternative was evaluated at a planning level to assess technical feasibility, operational considerations, and estimated costs.

Alternative 1 – Conventional Biological Treatment Expansion

This alternative considered expansion of the existing biological treatment processes using conventional activated sludge configurations with additional basins and support facilities. While this approach could increase treatment capacity, it would require significant expansion of treatment footprint and additional process units to achieve AWT effluent limits. Operational complexity and site constraints limited the feasibility of this alternative. The conceptual site plan for this alternative is illustrated in **Figure 6-1**.

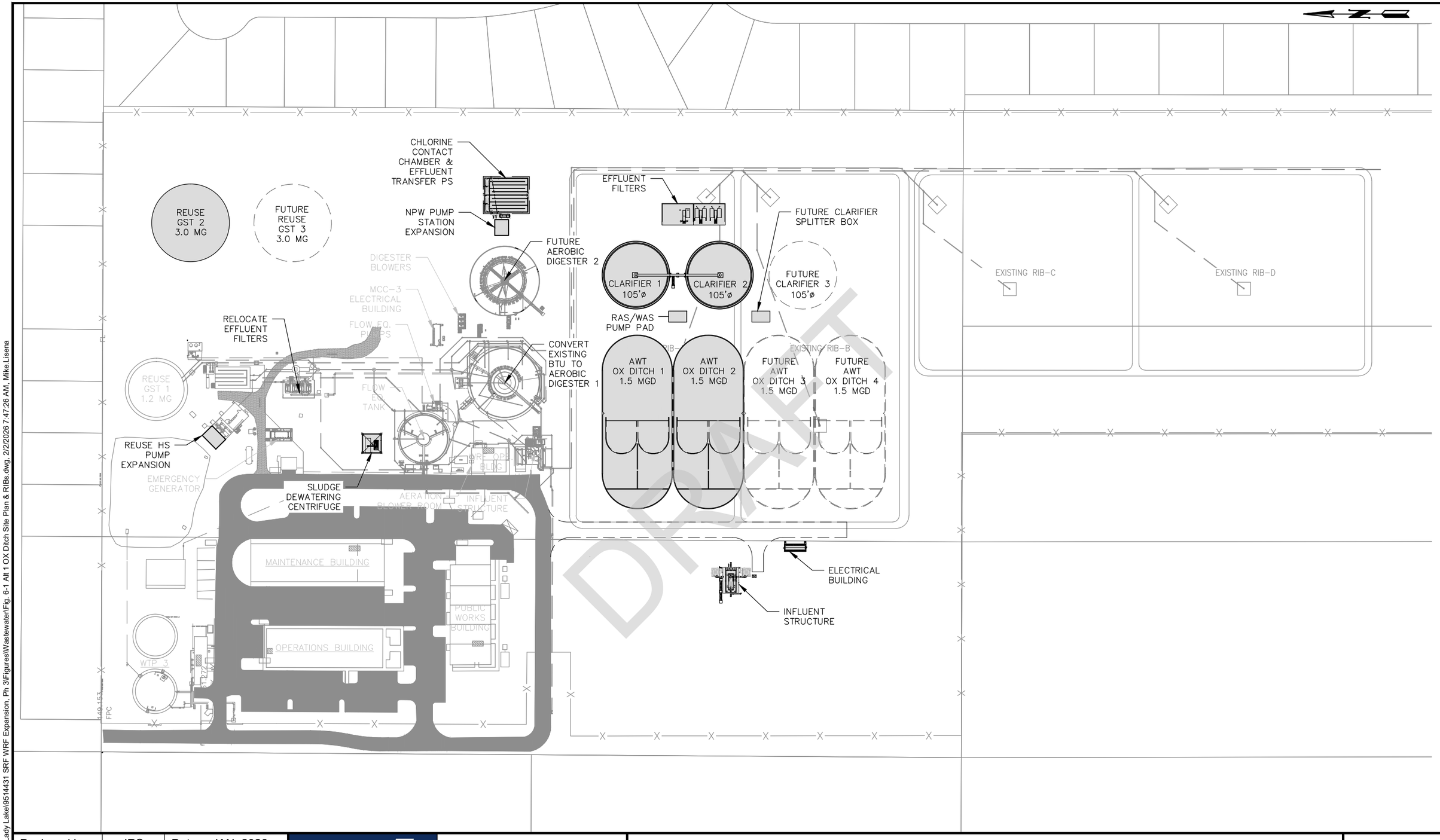
Alternative 2 – Activated Granular Sludge (AGS)

This alternative evaluated a hybrid approach incorporating upgrades to existing biological treatment processes combined with additional tertiary treatment to achieve AWT effluent limits. While this alternative reduced footprint requirements compared to conventional expansion, it introduced additional operational complexity and did not fully optimize integration with existing infrastructure. The conceptual site plan for this alternative is illustrated in **Figure 6-2**.

Alternative 3 – Membrane Bioreactor (MBR) Expansion

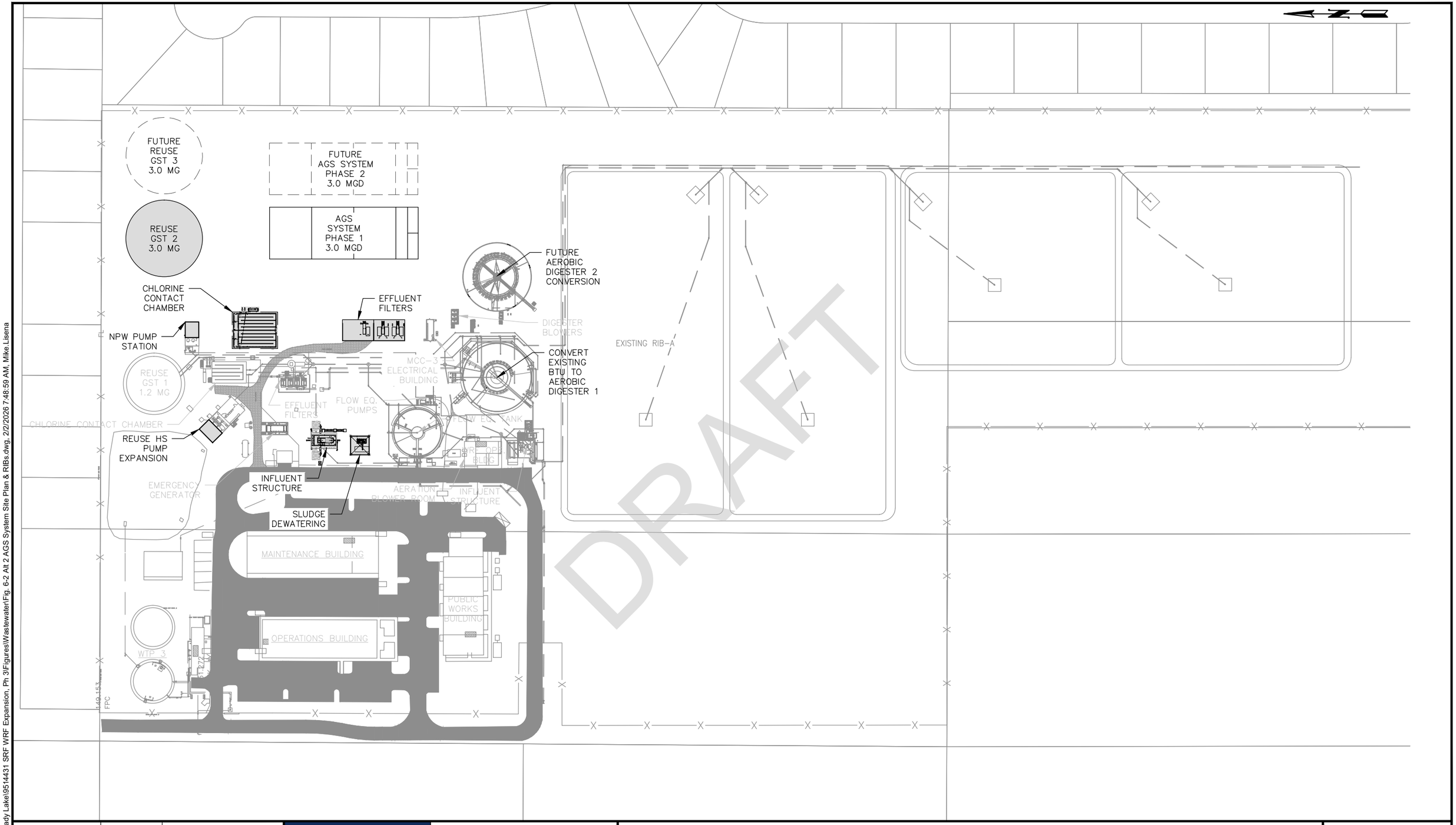
This alternative evaluated expansion of the WRF using a membrane bioreactor (MBR) based treatment process while achieving AWT effluent limits. The MBR approach provides enhanced solids separation, improved effluent quality, and a compact footprint that allows efficient use of available site space. The MBR alternative also provides operational flexibility and is well-suited to support reclaimed water reuse. The conceptual site plan for this alternative is illustrated in **Figure 6-3**.

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Drawn by:	MAL	Job No. 9514-43-1		**580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030**	TOWN OF LADY LAKE Wastewater Facilities Plan Lake County, Florida
Checked by:	JRS				Figure **6-1**
Approved by:	JRS	© 2026			
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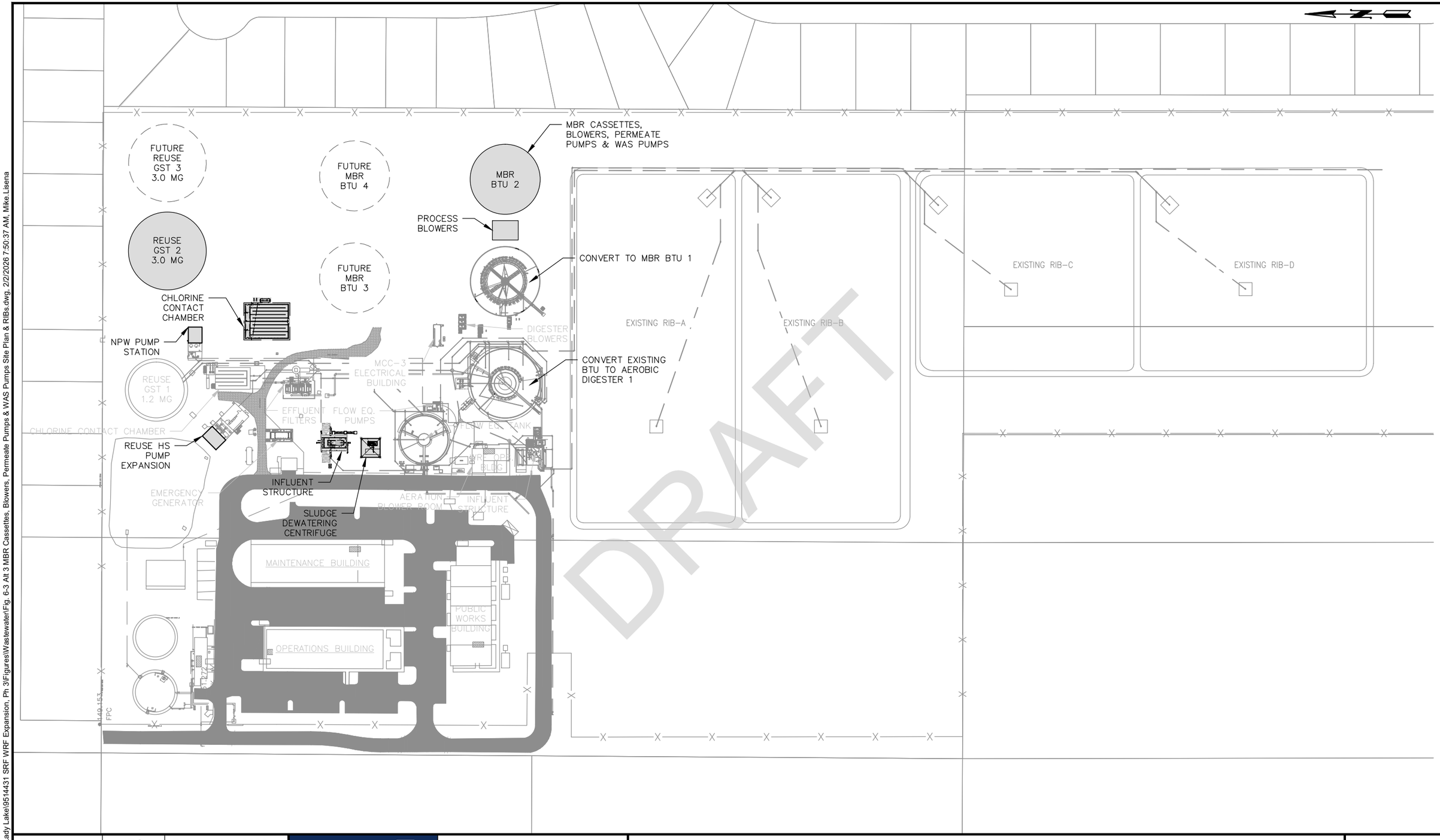
J:\OrangePark\CAD Files\Lady Lake\9514431 SRF WRF Expansion, Ph 3\Figures\Wastewater\Fig. 6-1 Alt 1 OX Ditch Site Plan & RIBs.dwg, 2/2/2026 7:47:26 AM, Mike.Lisena



Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	***Building Stronger Communities Together***	ALTERNATE 2 AGS SYSTEM SITE PLAN
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Checked by:	JRS			**Orange Park, FL 32073**	Wastewater Facilities Plan
Approved by:	JRS	© 2026		**Ph: 904.278.0030**	Lake County, Florida
Scale:	1" = 140'				Figure **6-2**

J:\OrangePark\CAD Files\Lady Lake\95144431 SRF WRF Expansion, Ph 3\Figures\Wastewater\Fig. 6-2 Alt 2 AGS System Site Plan & RIBs.dwg, 2/2/2026 7:48:59 AM, Mike.Lisena

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Checked by:	JRS				Figure **6-3**
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6.4 COMPARATIVE EVALUATION

The WRF expansion alternatives were compared based on their ability to meet planning objectives and evaluation criteria. Capital costs were evaluated using planning-level cost estimates and present-worth analysis to account for both initial construction costs and long-term operational considerations. Non-cost factors, including reliability, regulatory compliance, and compatibility with existing facilities, were also considered.

Based on this evaluation, the MBR-based expansion alternative demonstrated advantages in terms of footprint efficiency, effluent quality, operational reliability, and lifecycle cost effectiveness when compared to the other alternatives evaluated.

The present-worth analysis is summarized below. Alternative 3 was the most cost effective. Given the planning level of analysis, Alternatives 2 and 3 are comparable. Alternative 3's advantage is use of existing tankage and removal of additional treatment components (i.e., clarifiers and filtration).

TABLE 6-1
SUMMARY OF ALTERNATIVE COSTS

Description	Alternative 1 Oxidation Ditch	Alternative 2 AGS	Alternative 3 MBR
Total Construction Cost	$129,000,000	$87,750,000	$78,625,000
Total Non-Construction Cost	$19,350,000	$13,160,000	$11,790,000
Total Capital Cost	**$148,350,000**	**$100,910,000**	**$90,415,000**
Annualized Capital Cost	**$8,580,600/yr**	**$5,836,600/yr**	**$5,229,600/yr**
Annual Power Cost	$658,000/yr	$488,000/yr	$752,800/yr
Annual Equipment O&M Cost	$597,750/yr	$708,000/yr	$467,800/yr
Annual Membrane Replacement Cost	$0/yr	$0/yr	$300,000/yr
Annual Chemical Cost	$140,000/yr	$140,000/yr	$140,000/yr
Total Annual O&M Cost	**$1,395,750/yr**	**$1,336,000/yr**	**$1,660,300/yr**
Total Annual Cost	**$9,979,500/yr**	**$7,172,600/yr**	**$6,889,900/yr**
Present Worth	**$172,540,000**	**$124,009,400**	**$119,121,600**

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Additional wet-weather/alternate effluent disposal capacity was reviewed in the Town's Reclaimed Water Master Plan, which recommended the following:

- Expansion of operational storage to a total capacity of 5.0 MG based on a projected reclaimed water maximum day demand of 6.6 MGD (MDF) 4,600 gpm.

- 26 acre offsite RIB expansion to bring the total RIB capacity to 36 acres or 0.83 MGD (AADF) using the current permitted application rate of 0.85 inches per day.

Additional operational storage expansion is included in the WRF Expansion project. Costs associated with the RIB expansion are not included since a site has not been selected. A general target area was provided in the Reclaimed Water Master Plan, and the Town should begin efforts to secure the property and expand these capabilities.

6.5 SELECTED ALTERNATIVE

Based on the results of the planning-level evaluation, expansion of the Water Reclamation Facility to 3.0 MGD (AADF) using an MBR based treatment process was identified as the preferred alternative. The selected alternative provides the ability to reliably meet AWT effluent limits, support reclaimed water reuse, and accommodate projected wastewater demands through the 2040 planning horizon while maintaining operational flexibility and regulatory compliance.

This Facilities Plan advances the selected WRF expansion alternative as the proposed project for Clean Water State Revolving Fund financing. Supporting collection system improvements and septic tank phase-out initiatives remain important elements of the Town's overall wastewater improvement program but are not included in the initial SRF-funded project scope.

6.6 COLLECTION SYSTEM ALTERNATIVE ANALYSIS

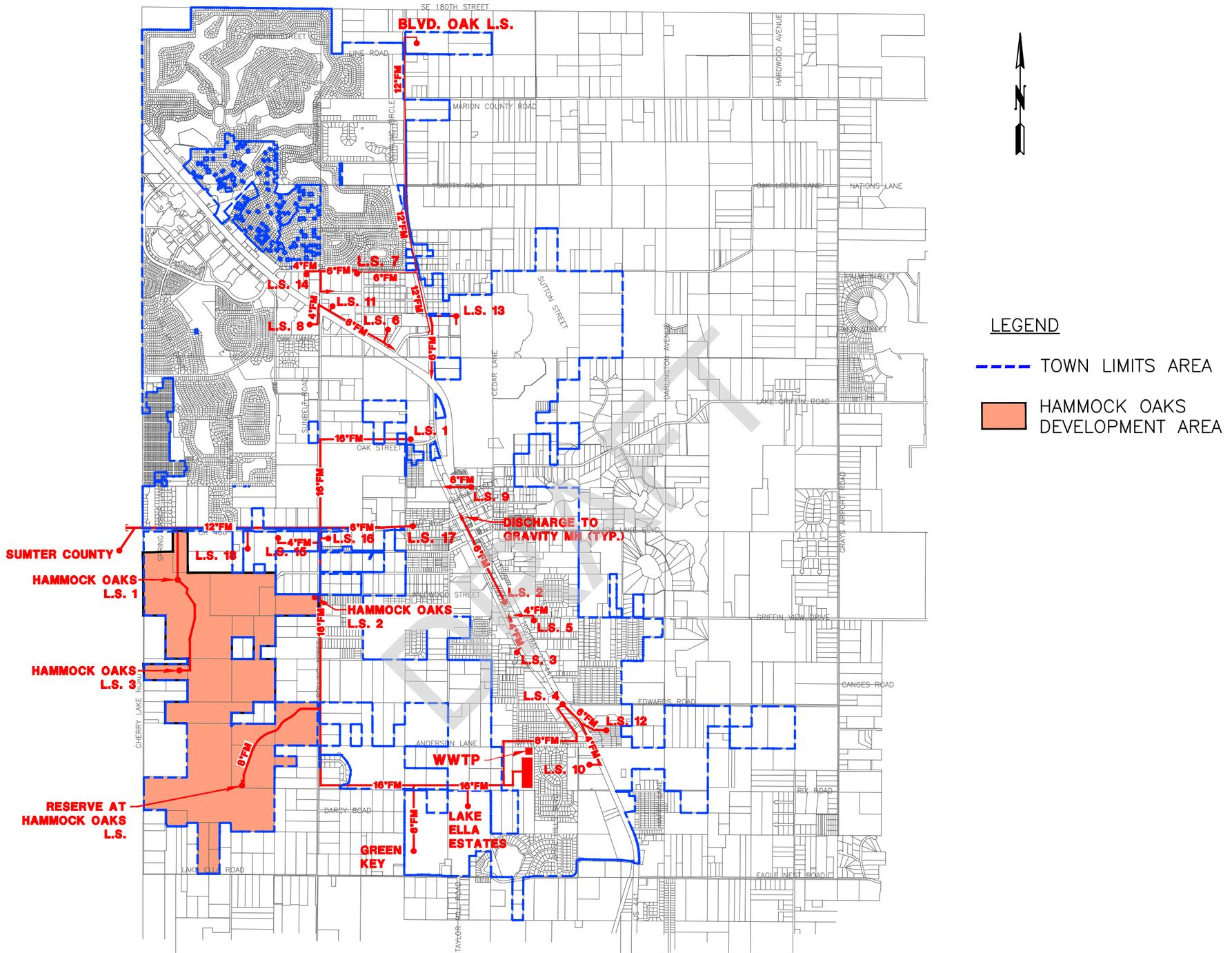
The Town's existing collection system configuration is illustrated in **Figure 6-4** and schematically in **Figure 6-5**. As outlined in Section 3.3, the existing collection system has the following areas of capital improvement needs:

- Lift Station 3 and 7 modifications to address infiltration and inflow issues during heavy rain events. Capital costs for these improvements are conceptually estimated at $500,000.

- Lift Station 1 improvements to increase pumping capacity and resiliency to serve the Town's northeast corridor. The capital needs for this project were estimated at $7,420,000.

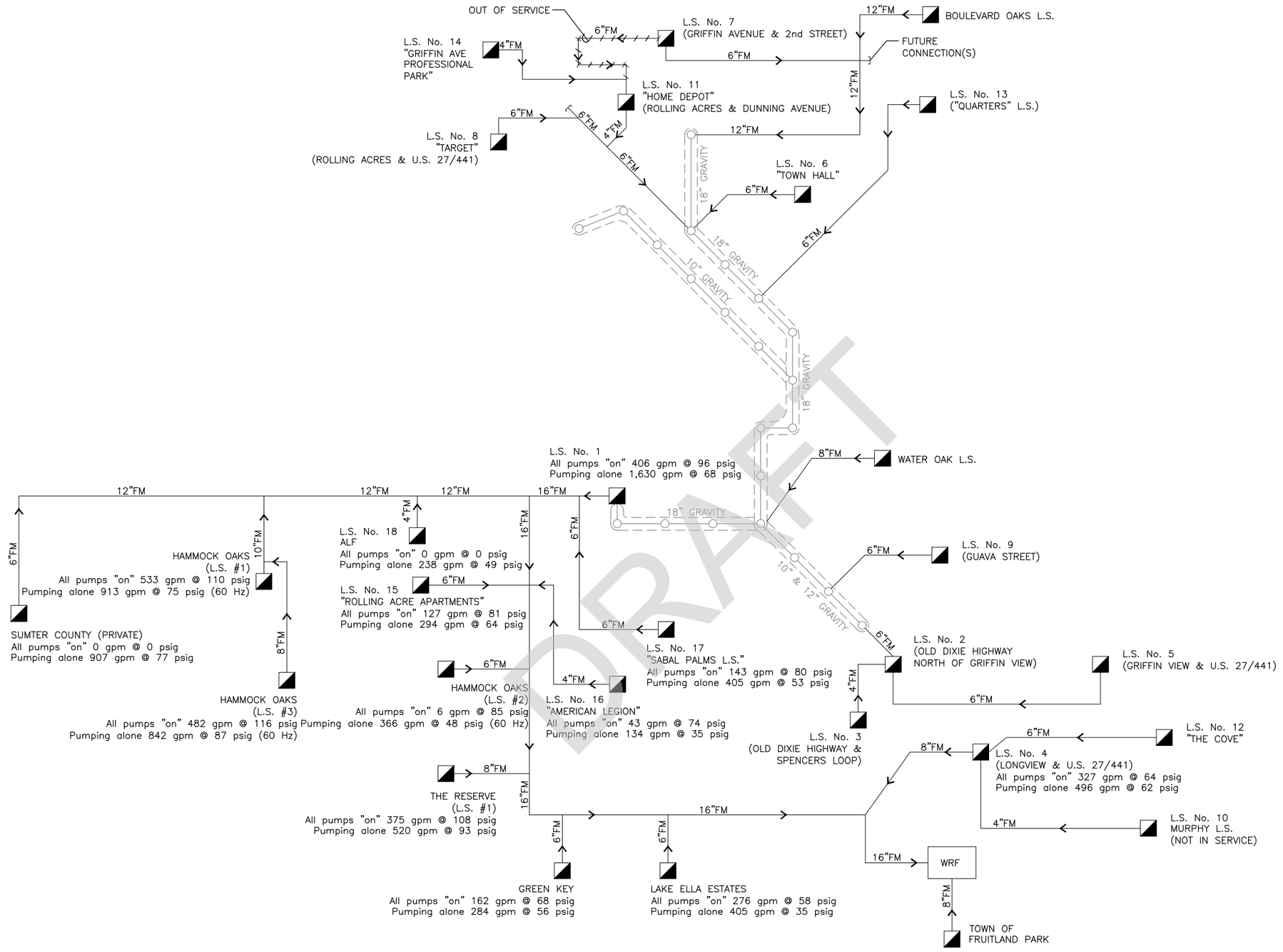
- Expansion of the existing transmission system to increase service capacity and/or alleviate pressure bottlenecks as growth occurs and the existing 16" force main is further utilized. Improvements associated with this capital needs are part of the septic tank phase out work that is summarized herein. The force main work could be completed as a separate stand-alone project. The capital need for that work is estimated at a no-action

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J:\orangepark\cad files\lady lake\9514431 srf wrf expansion, ph 3\Figures\wastewater\Fig. 6-5 Existing Wastewater Transmission Modeling & Review.dwg, 2/17/2026 8:25:03 AM, Mike.Lisena

alternative and is not feasible, so the Town will be addressing these items as either separate capital improvement projects or improvements completed in concert with private development that impact the Town's infrastructure. The Town's Wastewater Master Plan included review and requirements to expand the Town's wastewater collection system to serve those areas currently served by OSTDS. The service extension to those areas would include new gravity sewer systems with pump stations to convey the wastewater to the Town's WRF. It would also include extension of a separate mainline force main that would connect to the existing 16" force main to provide another parallel main to increase the transmission system capacity as well as control force main operating pressures. The transmission system improvements were included in the Wastewater Master Planning as part of the septic tank phase out work. In total, six septic tank phase out projects were contemplated, and the improvement scope of work is summarized as follows:

- **STPO Project 1 (OSTDS Sectors 1 & 2):** 250 connections including pump station and force main improvements. Estimated capital cost of $13,100,000. **Figure 6-6** illustrates the conceptual design layout.

- **STPO Project 2 (OSTDS Sectors 3 & 4):** 340 connections including pump station and force main improvements to establish secondary trunkline force main from existing 16" force main. Estimated capital cost of $15,600,000. **Figure 6-7** illustrates the conceptual design layout.

- **STPO Project 3 (OSTDS Sectors 5 - 7):** 330 connections including pump station and completion of the force main improvements to establish secondary trunkline force main from existing 16" force main. Estimated capital cost of $14,000,000. **Figure 6-8** illustrates the conceptual design layout.

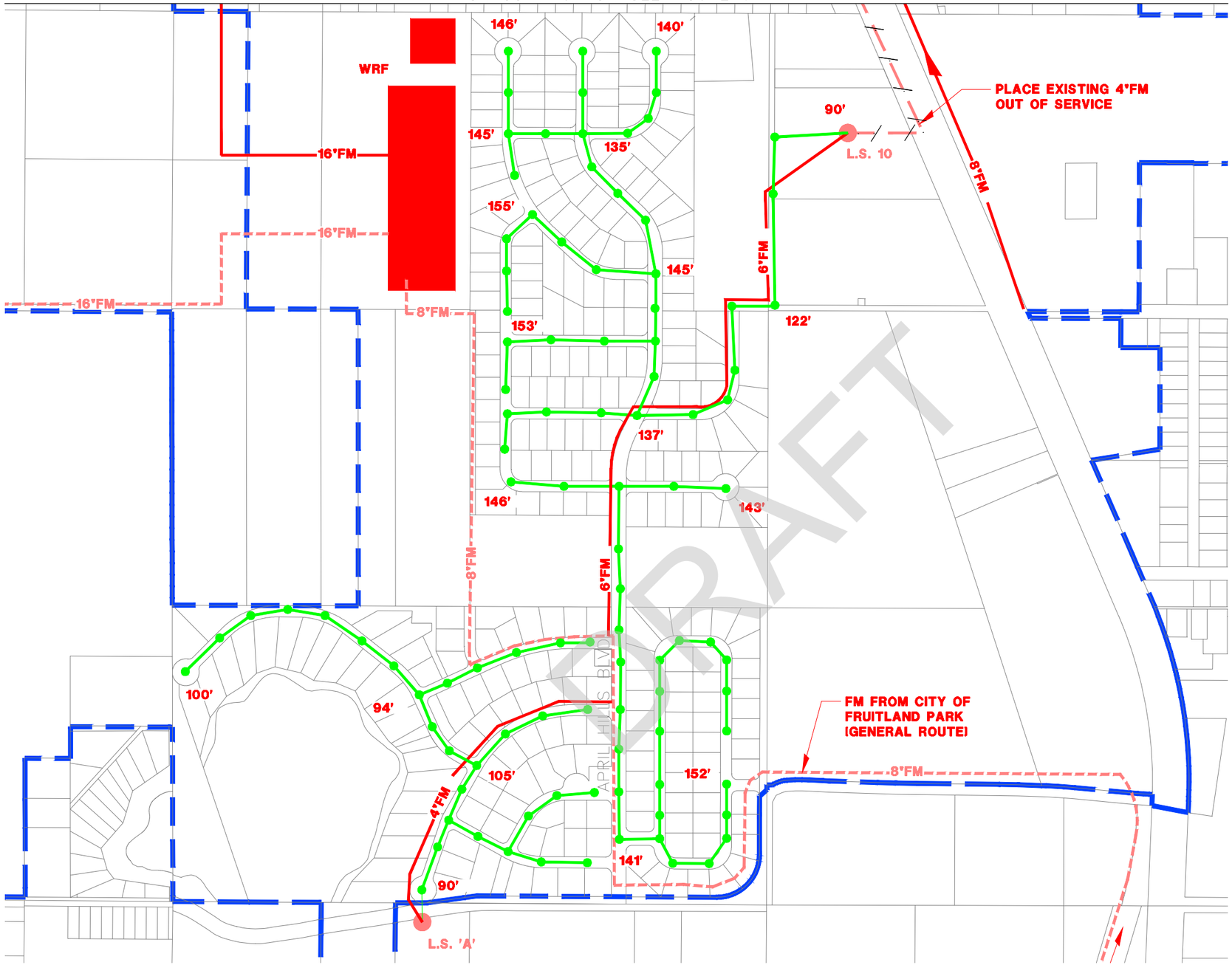
- **STPO Project 4 (OSTDS Sector 8):** 150 connections including pump station and force main extensions. Estimated capital cost of $6,800,000. **Figure 6-7** illustrates the conceptual design layout.

- **STPO Project 5 (OSTDS Sector 9):** 75 connections including pump station and force main extensions. Estimated capital cost of $4,600,000. **Figure 6-9** illustrates the conceptual design layout.

- **STPO Project 6 (OSTDS Sector 10):** 75 connections including pump station and force main extensions. Estimated capital cost of $7,400,000. **Figure 6-10** illustrates the conceptual design layout.

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FOR CONTINUATION SEE FIGURE 6-7



LEGEND

- TOWN LIMITS
- EXISTING FM
- FM - CONCEPTUAL FM PIPING
- CONCEPTUAL GRAVITY SEWER PIPING
- XX' TOPOGRAPHIC ELEVATION

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OSTDS SERVICE SECTOR NO. 1 & 2 CONCEPTUAL CENTRAL SEWER LAYOUT

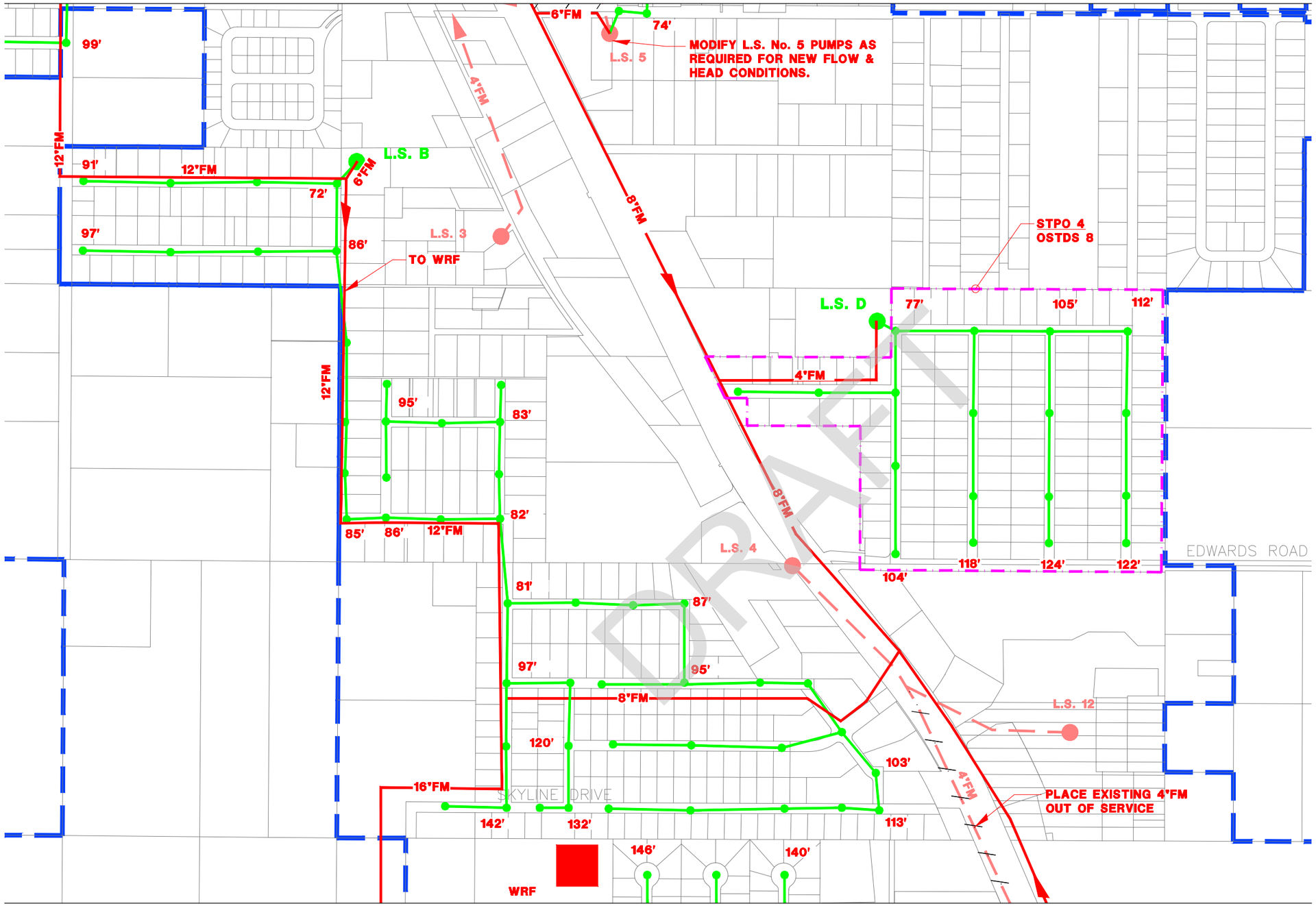
TOWN OF LADY LAKE
Wastewater Facilities Plan
Lake County, Florida

Figure
6-6

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FOR CONTINUATION SEE FIGURE 6-8

FOR CONTINUATION SEE FIGURE 6-9



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FOR CONTINUATION SEE FIGURE 6-6

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OSTDS SERVICE SECTOR NO. 3,4,8 CONCEPTUAL CENTRAL SEWER LAYOUT

TOWN OF LADY LAKE
Wastewater Facilities Plan
Lake County, Florida

Figure **6-7**

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FOR CONTINUATION SEE FIGURE 6-10

L.S. 17

HWY 466

6"FM

64'

72'

75'

84'

8"FM

L.S. C

EXTENSION TO EXISTING 16"FM

12"FM

68'

72'

12"FM

80'

83'

83'

WILDWOOD STREET

87'

79'

80'

105'

99'

12"FM

91'

12"FM

72'

6"FM

L.S. B

97'

86'

L.S. 3

TO WRF

6"FM

S. HIGHWAY 27/441

L.S. 2

4"FM

FOR CONTINUATION SEE FIGURE 6-9

FOR CONTINUATION SEE FIGURE 6-7

N

LEGEND

- TOWN LIMITS
- EXISTING FM
- FM - CONCEPTUAL FM PIPING
- CONCEPTUAL GRAVITY SEWER PIPING
- XX' TOPOGRAPHIC ELEVATION

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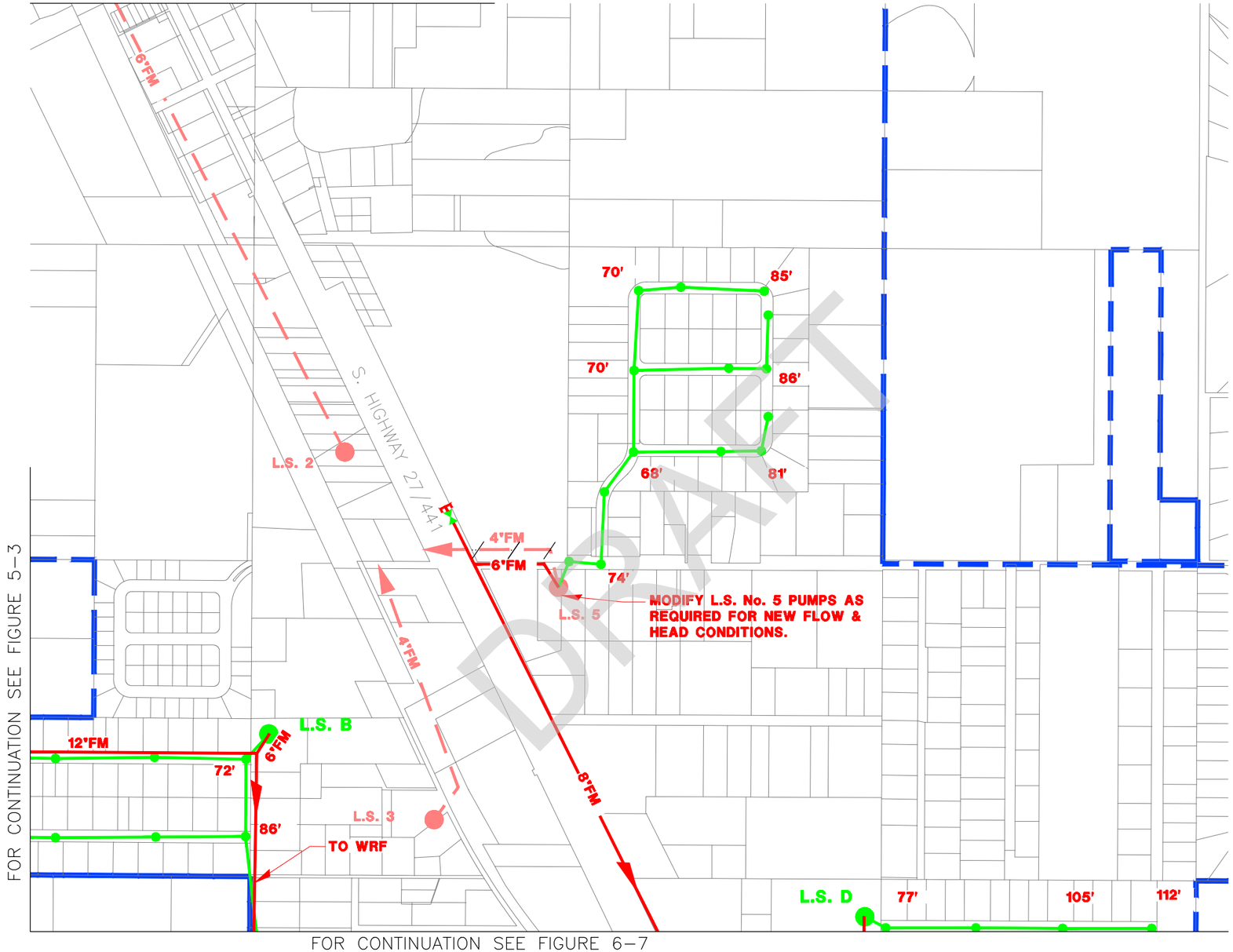
OSTDS SERVICE SECTOR NO. 5,6,7 CONCEPTUAL CENTRAL SEWER LAYOUT

TOWN OF LADY LAKE
Wastewater Facilities Plan
Lake County, Florida

Figure
6-8

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FOR CONTINUATION SEE FIGURE 6-10



FOR CONTINUATION SEE FIGURE 5-3

FOR CONTINUATION SEE FIGURE 6-7

LEGEND

- TOWN LIMITS
- EXISTING FM
- FM - CONCEPTUAL FM PIPING
- CONCEPTUAL GRAVITY SEWER PIPING
- XX' TOPOGRAPHIC ELEVATION

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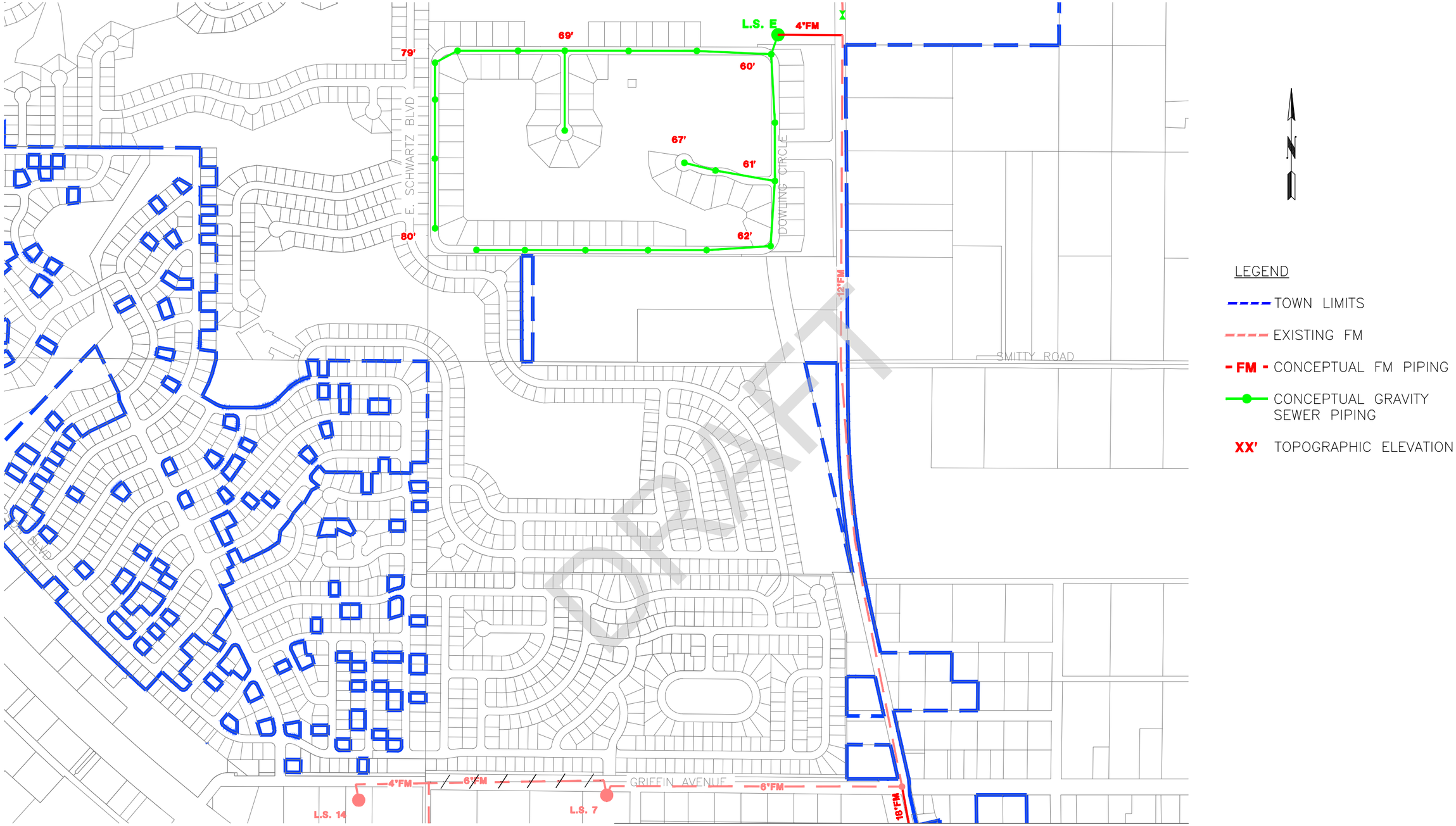
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OSTDS SERVICE SECTOR NO. 9 CONCEPTUAL CENTRAL SEWER LAYOUT

TOWN OF LADY LAKE
Wastewater Facilities Plan
Lake County, Florida

Figure 6-9

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OSTDS SERVICE SECTOR NO. 10 CONCEPTUAL CENTRAL SEWER LAYOUT

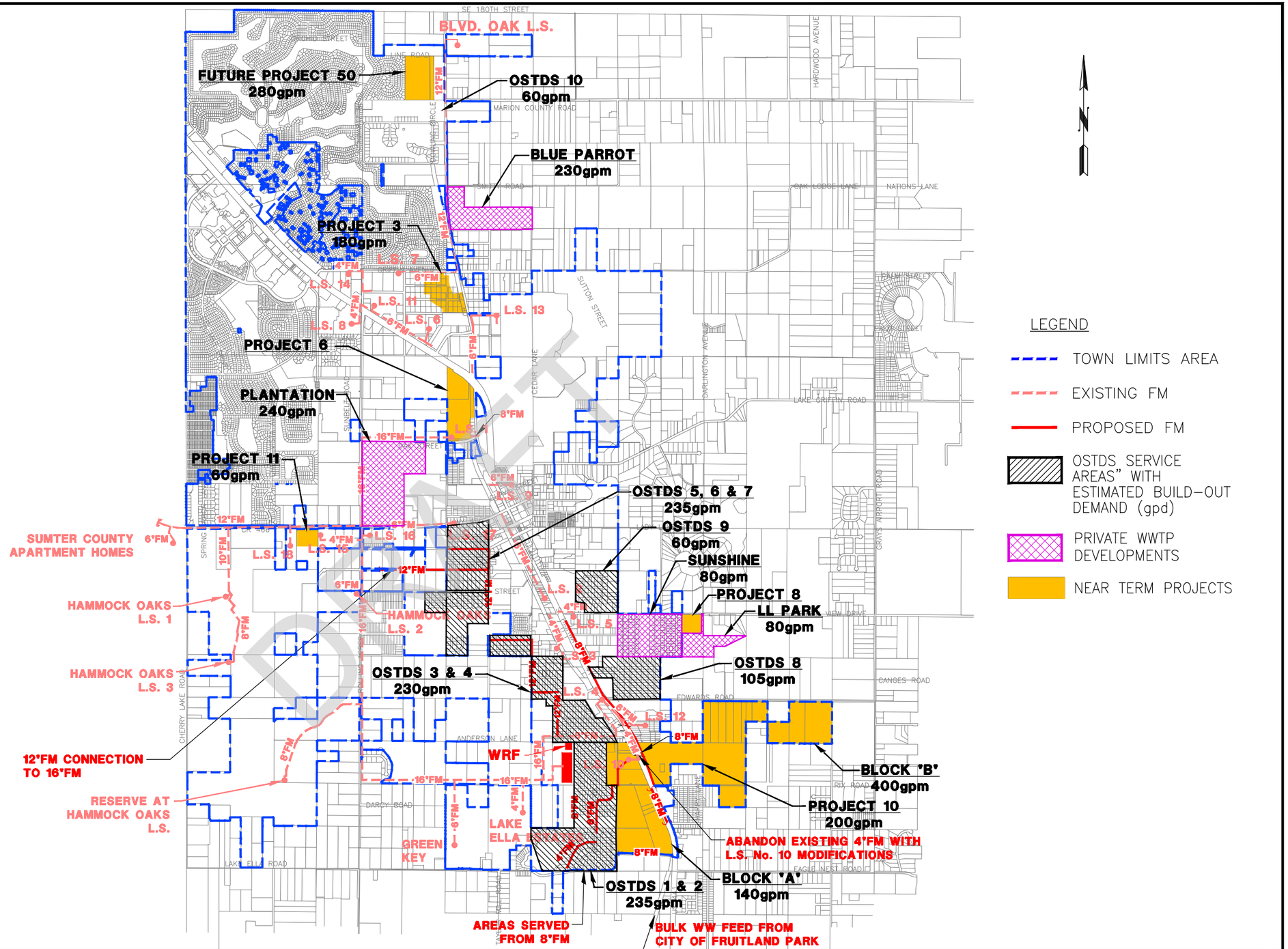
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Lake County, Florida

Figure
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The existing system improvements (LS 3, LS 7, and LS 1) with the above collection system expansion projects are the Town's targeted capital improvement needs. **Figure 6-11** illustrates the conceptual collection system improvements while **Figure 6-12** updates the transmission system schematic.

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LEGEND

- TOWN LIMITS AREA
- EXISTING FM
- PROPOSED FM
- OSTDS SERVICE AREAS" WITH ESTIMATED BUILD-OUT DEMAND (gpd)
- PRIVATE WWTP DEVELOPMENTS
- NEAR TERM PROJECTS

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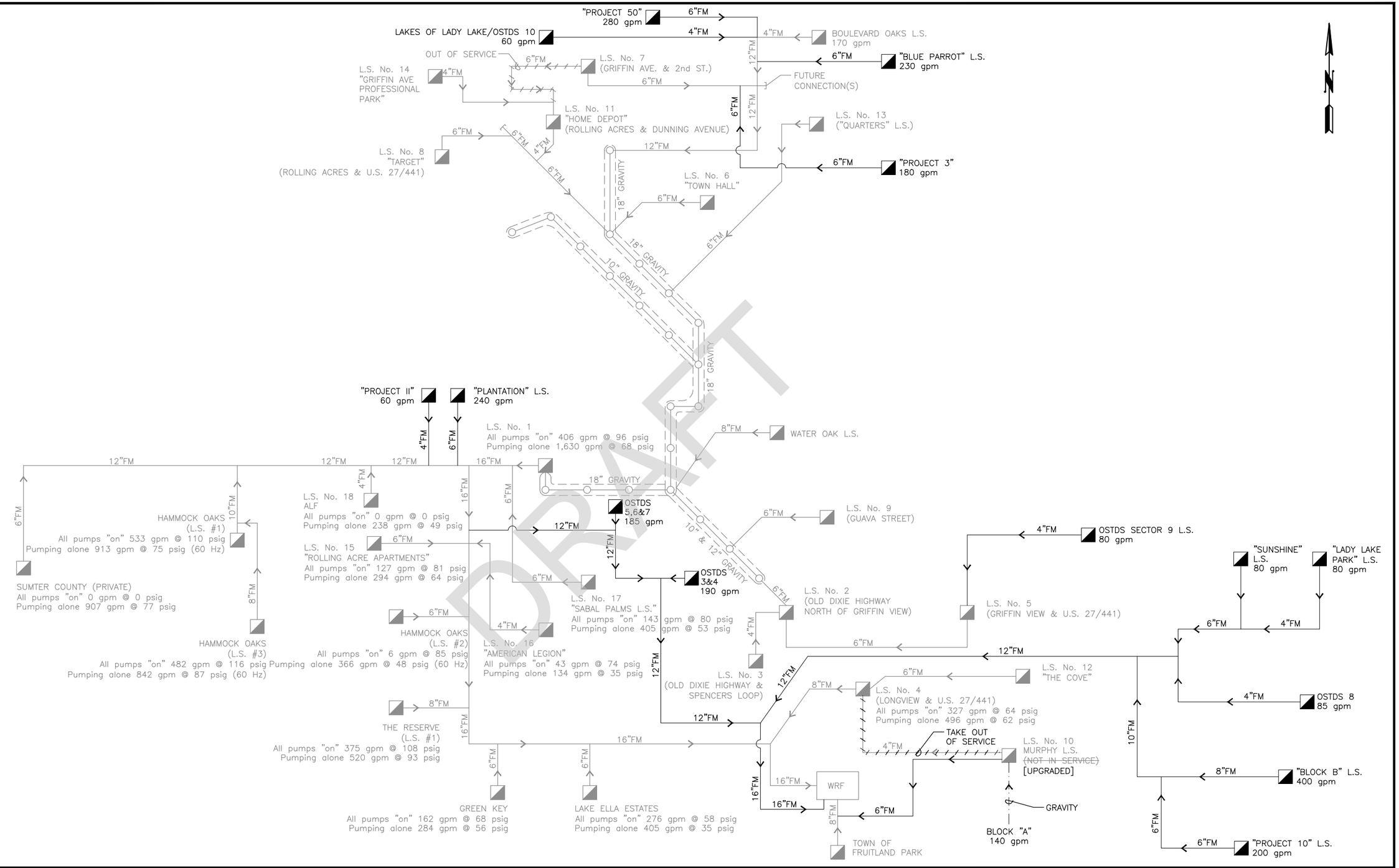
CONCEPTUAL TRUNK FORCE MAIN BUILD-OUT NETWORK

TOWN OF LADY LAKE
Wastewater Facilities Plan
Lake County, Florida

Figure
6-11

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J:\orangepark\cad files\lady lake\9514431 srf wrf expansion, ph 3\Figures\wastewater\Fig. 6-12 Wastewater Transmission Build-Out Modeling & Review.dwg, 2/16/2026 2:16:59 PM, Mike.Lisena



Designed by:	JRS	Date: FEB. 2026	cph www.cphcorp.com	***Building Stronger Communities Together***	WASTEWATER TRANSMISSION BUILD-OUT MODELING & REVIEW
Drawn by:	MAL	Job No. 9514-43-1		580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030	TOWN OF LADY LAKE Wastewater Facilities Plan Lake County, Florida
Checked by:	JRS				Figure **6-12**
Approved by:	JRS	© 2026			
Scale:	N.T.S.				

7.0 ENVIRONMENTAL IMPACTS

The Town's proposed WRF expansion has been evaluated at a planning level to identify potential environmental impacts associated with construction and operation of the recommended improvements. The purpose of this evaluation is to assess whether the proposed project will result in adverse environmental effects and to identify considerations relevant to future permitting and implementation.

7.1 SURFACE WATER AND GROUNDWATER RESOURCES

The proposed WRF expansion is intended to improve wastewater treatment performance and reduce nutrient loading to surface waters and groundwater. Expansion of treatment capacity using AWT processes will support compliance with BMAP nutrient reduction requirements and is expected to result in a net environmental benefit through improved effluent quality.

Treated effluent will continue to be managed through a combination of public-access reclaimed water reuse and RIBs, consistent with existing operations. Reclaimed water reuse reduces reliance on groundwater withdrawals for irrigation and provides a beneficial reuse of treated wastewater. Continued use of the RIBs for secondary effluent disposal and reject storage will be subject to applicable permitting requirements to ensure protection of groundwater quality.

7.2 WETLANDS AND FLOODPLAINS

The proposed WRF expansion is anticipated to be constructed within the boundaries of the existing WRF site. Based on the planning-level evaluation, no jurisdictional wetland or floodplain impacts are anticipated.

7.3 AIR QUALITY AND NOISE

Construction-related activities associated with the proposed WRF expansion may result in temporary increases in noise, dust, and emissions from construction equipment. These impacts are expected to be short-term in nature and typical of construction projects of similar scope. Long-term operational impacts to air quality and noise levels are not anticipated to change significantly from existing conditions, as wastewater treatment activities will continue to occur at the existing site.

7.4 PUBLIC HEALTH AND SAFETY

The proposed WRF expansion is expected to enhance protection of public health by improving wastewater treatment reliability and effluent quality. Achieving AWT effluent limits will reduce the potential for nutrient-related impacts to receiving waters and support safe operation of the public-access reclaimed water system. Construction activities will be conducted in accordance with applicable safety regulations to minimize risks to workers and the public.

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7.5 ENVIRONMENTAL PERMITTING CONSIDERATIONS

Implementation of the proposed WRF expansion will require review and approval by the Florida Department of Environmental Protection and will require modification of the existing wastewater operating permit. Environmental permitting requirements will be addressed during subsequent project phases, including detailed design and permitting, to ensure compliance with all applicable federal, state, and local regulations.

7.6 SUMMARY OF ENVIRONMENTAL IMPACTS

Based on the planning-level evaluation, the proposed WRF expansion is not anticipated to result in significant adverse environmental impacts. The project is expected to provide overall environmental benefits through improved wastewater treatment performance, reduced nutrient loading, and increased reclaimed water reuse. Environmental impacts identified at this stage are anticipated to be temporary or manageable through standard design, permitting, and construction practices.

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8.0 PUBLIC PARTICIPATION PROCESS

Public participation is an important component of wastewater facilities planning and implementation. The Town has engaged the public throughout the development of its wastewater planning efforts to ensure transparency, provide opportunities for input, and support informed decision-making by elected officials and stakeholders.

Development of the Wastewater Master Plan, which forms the basis for this Facilities Plan, included public discussion and review through regularly scheduled Town Commission and Workshop meetings. These meetings provided opportunities for presentation of planning objectives, discussion of system needs and regulatory drivers, and consideration of recommended wastewater infrastructure improvements. Town Commission meetings were conducted in accordance with applicable public notice and Sunshine Law requirements.

The recommended WRF expansion was presented and discussed in public meetings as part of the Master Plan development and adoption process. Public input received during these meetings was considered in evaluating alternatives and identifying the preferred wastewater treatment expansion strategy. Adoption of the Wastewater Master Plan by the Town Commission established formal public acknowledgement of the planning assumptions, projected demands, and recommended improvements carried forward into this Facilities Plan.

Additional public participation opportunities will occur as the proposed WRF expansion advances through subsequent phases, including design, permitting, and financing. These may include public meetings, agenda items at Town Commission meetings, and required public notices associated with environmental permitting and Clean Water State Revolving Fund financing.

The Town will continue to provide information to the public regarding project progress and implementation through established communication channels and public meeting processes. Public participation efforts will be conducted in accordance with applicable local, state, and federal requirements to ensure continued transparency and stakeholder engagement.

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9.0 IMPLEMENTATION SCHEDULE

Implementation of the Town WRF Expansion project will occur in a phased manner to support orderly planning, permitting, financing, and construction of the proposed improvements. The implementation schedule is intended to provide a logical framework for advancing the project while maintaining flexibility to accommodate funding availability, regulatory review timelines, and coordination with related wastewater system improvements.

The initial phase of implementation includes completion of the Facilities Plan, coordination with FDEP through a design-phase request inclusion (RFI), and submittal of the Clean Water State Revolving Fund (CWSRF) loan application. Approval of the Facilities Plan and execution of the CWSRF loan agreement will establish the financial framework necessary to advance the project into design and permitting.

Following funding approval, the project will advance into detailed engineering design and environmental permitting. This phase will include preparation of construction plans and specifications, modification of existing wastewater and reclaimed water permits as required, and coordination with applicable regulatory agencies. Design and permitting activities will be conducted in accordance with FDEP requirements and applicable local, state, and federal regulations.

Construction of the WRF expansion will be initiated following completion of design, receipt of required permits, and procurement of construction services. Construction activities will be phased as appropriate to maintain continuous operation of the existing WRF and to minimize impacts to ongoing wastewater treatment and reclaimed water reuse operations. Startup, testing, and commissioning of new facilities will be conducted to verify performance and compliance with permit requirements prior to full integration into routine operations.

Implementation of supporting collection system improvements and septic tank phase-out initiatives identified in the Wastewater Master Plan will occur independently of, but in coordination with, the WRF expansion. These supporting projects may be implemented in phases and funded through separate funding mechanisms and schedules, consistent with the Town's long-term wastewater capital improvement strategy.

The implementation schedule will be refined as the project advances through subsequent phases and as funding, permitting, and construction timelines are finalized. The Town will continue to coordinate with FDEP and other stakeholders to ensure timely and compliant implementation of the recommended wastewater treatment facility improvements.

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10.0 FINANCIAL FEASIBILITY

The financial feasibility of the proposed expansion of the Town of Lady Lake's Water Reclamation Facility (WRF) has been evaluated to determine the Town's ability to fund, operate, and maintain the recommended improvements over the planning horizon. This evaluation considers estimated capital costs, anticipated operation and maintenance expenses, existing and projected wastewater revenues, and available financing mechanisms.

The Wastewater Master Plan developed planning-level cost estimates for the recommended WRF expansion to increase treatment capacity to 3.0 MGD (AADF) using a MBR–based treatment process. These cost estimates were prepared for planning purposes and will be refined during subsequent phases of design and permitting. Capital costs associated with the WRF expansion are anticipated to be financed, in part, through the CWSRF loan program.

The Town operates its wastewater utility as part of the sewer utility enterprise fund and has established user rates and charges intended to recover the costs associated with wastewater treatment, effluent disposal, reclaimed water operations, and system maintenance. Existing wastewater revenues are generated from customer service charges, bulk wastewater service, and reclaimed water reuse and are used to support ongoing operation and maintenance of the wastewater system as well as repayment of existing debt obligations.

A Capital Financing Plan has been prepared in conjunction with this Facilities Plan to evaluate the Town's ability to support additional debt associated with the proposed WRF expansion. The Capital Financing Plan evaluates projected revenues, operating expenses, debt service coverage, and affordability considerations over a multi-year period. This analysis demonstrates that the Town has the financial capacity to support the proposed CWSRF financing while maintaining compliance with applicable coverage requirements and ensuring continued operation of the wastewater system.

Operation and maintenance costs associated with the expanded WRF are expected to increase as treatment capacity and process complexity increase. These costs include staffing, energy, chemicals, routine maintenance, and biosolids management. The financial evaluation considers these anticipated increases and confirms that projected wastewater revenues are sufficient to support both ongoing system operations and repayment of debt associated with the proposed improvements.

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Based on the results of the financial analysis and the Capital Financing Plan, the proposed WRF expansion will require rate increases to fund the improvements. The Town has demonstrated the ability to fund capital improvements and operate and maintain the expanded facilities debt. Detailed financial information supporting this determination is provided in the Capital Financing Plan and associated appendices included with this Facilities Plan.

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Appendix A – Capital Financing Plan

Facilities Plan for the Wastewater System Capital Improvements Program
WRF Expansion, Phase 3 – Planning Phase
Town of Lady Lake, FL
CPH Project No. 2501109 / Client No. 9514-43-1

CAPITAL FINANCING PLAN

Town of Lady Lake, Florida
(Project Sponsor)
William Lawrence, Town Manager
(Authorized Representative and Title)
Lady Lake, Florida 32159
(City, State, and Zip Code)

Jason R. Shepler, P.E., VP - North FL Infrastructure, 904-278-0030
(Capital Financing Plan Contact, Title and Telephone Number)

580-1 Wells Road
(Mailing Address)

Orange Park, FL 32073
(City, State, and Zip Code)

The Department needs to know about the financial capabilities of potential State Revolving Fund (SRF) loan applicants. Therefore, a financial capability demonstration (and certification) is required well before the evaluation of the actual loan application.

The sources of revenues being dedicated to repayment of the SRF loan are Wastewater
(Note: Projects pledging utility operating revenues should attach a copy of the existing/proposed rate ordinance)

Estimate of Proposed SRF Loan Debt Service

Capital Cost*	**90,415,000**
Loan Service Fee (2% of capital cost)	**1,808,000**
Subtotal	**92,223,000**
Capitalized Interest**	**1,125,000**
Total Cost to be Amortized	**93,348,000**
Interest Rate***	**1.22**
Annual Debt Service	**5,215,000**
Annual Debt Service Including Coverage Factor****	**5,998,000**

* Capital Cost = Allowance + Construction Cost (including a 10% contingency) + Technical Services after Bid Opening.
** Estimated Capitalized Interest = Subtotal times Interest Rate times construction time in years divided by two.
***20 GO Bond Rate times Affordability Index divided by 200.
**** Coverage Factor is generally 15%. However, it may be higher if other than utility operating revenues are pledged.

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SCHEDULE OF PRIOR AND PARITY LIENS

List annual debt service beginning two years before the anticipated loan agreement date and continuing at least fifteen fiscal years. Use additional pages as necessary.

IDENTIFY EACH OBLIGATION

#1 **Coverage %** **Insured (Yes/No)**	**#2** **Coverage %** **Insured (Yes/No)**	**#3** **Coverage %** **Insured (Yes/No)**
#4 **Coverage %** **Insured (Yes/No)**	**#5** **Coverage %** **Insured (Yes/No)**	**#6** **Coverage %** **Insured (Yes/No)**

Fiscal Year	Annual Debt Service (Principal + Interest)						Total Non-SRF Debt Service w/coverage	Total SRF Debt Service w/coverage
	#1	**#2**	**#3**	**#4**	**#5**	**#6**		

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SCHEDULE OF ACTUAL REVENUES AND DEBT COVERAGE FOR PLEDGED REVENUE

(Provide information for the two fiscal years preceding the anticipated date of the SRF loan agreement)

		FY25	FY26
(a)	Operating Revenues (Identify)		
	Sewer	1,827,000	1,991,400
	Reuse	223,100	243,180
(b)	Interest Income	127,700	139,200
(c)	Other Incomes or Revenues (Identify)		
	Miscellaneous	3,300	3,500
	Impact Fee Transfer	100,000	
(d)	Total Revenues	**2,281,100**	**2,377,280**
(e)	Operating Expenses (excluding interest on debt, depreciation, and other non-cash items)	2,551,200	2,332,000
(f)	**Net Revenues (f = d – e)**	**(270,100)**	**45,280**
(g)	Debt Service (including coverage) Excluding SRF Loans	0	0
(h)	Debt Service (including coverage) for Outstanding SRF Loans	0	0
(i)	**Net Revenues After Debt Service (i = f – g – h)**	**(270,100)**	**45,280**

Source: Town of Lady Lake Budget Sheets

Notes:

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SCHEDULE OF PROJECTED REVENUES AND DEBT COVERAGE
FOR PLEDGED REVENUE
(Begin with the fiscal year preceding first anticipated semiannual loan payment)

		FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
(a)	Operating Revenues (Identify)					
	Sewer	2,273,200	2,498,200	2,915,200	7,801,200	8,148,200
	Reuse	551,250	651,250	760,250	2,131,250	2,326,250
(b)	Interest Income	81,500	81,500	81,500	81,500	81,500
(c)	Other Incomes or Revenues (Identify)					
	Miscellaneous	3,500	3,500	3,500	3,500	3,500
		$0	$0	$0	$0	$0
(d)	Total Revenues	**2,909,450**	**3,234,450**	**3,760,450**	**10,017,450**	**10,559,450**
(e)	Operating Expenses[1]	2,458,502	2,523,959	2,591,381	2,660,825	2,732,353
(f)	**Net Revenues (f = d - e)**	**450,948**	**710,491**	**1,169,069**	**7,356,625**	**7,827,097**
(g)	Existing Debt Service on Non-SRF Projects (including coverage)	0	0	0	0	0
(h)	Existing SRF Loan Debt Service (including coverage)	0	0	0	0	0
(i)	**Total Existing Debt Service (i = g + h)**	**0**	**0**	**0**	**0**	**0**
(j)	Projected Debt Service on Non-SRF Future Projects (including coverage)	0	0	0	0	0
(k)	Projected SRF Loan Debt Service (including coverage)	0	274,000	274,000	5,215,000	5,215,000
(l)	**Total Debt Service (Existing and Projected) (l = i + j + k)**	**0**	**274,000**	**274,000**	**5,215,000**	**5,215,000**
(m)	**Net Revenues After Debt Service (m = f – l)**	**450,948**	**436,491**	**895,069**	**2,141,625**	**2,612,097**

Source: Town of Lady Lake Budget Sheets

Notes: (i.e. rate increases, explanations, etc.)
1. For existing and proposed facilities, excluding interest on debt, depreciation, and other non-cash items.

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CERTIFICATION

I, Joella LeDonne, Finance Director , certify that I have reviewed the information
Chief Financial Officer (please print)

included in the preceding capital financing plan worksheets, and to the best of my knowledge, this information accurately reflects the financial capability of Town of Lady Lake, Florida
Project Sponsor

I further certify that Town of Lady Lake, Florida has the financial capability to ensure
Project Sponsor

adequate construction, operation, and maintenance of the system, including this SRF project.

	February 24, 2026
Signature	Date

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RECLAIMED WATER MASTER PLAN

FOR THE

TOWN OF LADY LAKE, FLORIDA

DRAFT

Prepared by:

Orange Park, Florida
Project No. M951441.000
Client No. 9514-41-1
January 2026

01/15/26

RECLAIMED WATER MASTER PLAN

FOR THE

TOWN OF LADY LAKE, FLORIDA

DRAFT

Prepared by:

CPH CONSULTING, LLC
Orange Park, Florida
Project No. M951441.000
Client No. 9514-41-1
January 2026

EXECUTIVE SUMMARY

Due to growth and regulatory pressures, the Town is updating their previous master planning efforts to review alternatives and establish a plan to effectively and efficiently serve their citizens and utility customers through 2040. This also includes consideration of current and pending regulatory restrictions that will shape service requirements. The Plan considered the following:

1. Service Areas.
2. The "Planning Period" which will be through the Year 2040.
3. Wastewater flow and loading projections vs. reclaimed water demand projections.
4. Reclaimed distribution system capacity and expansion requirements.
5. Wet-weather storage and/or disposal capacities and expansion requirements.
6. Expansion alternatives.

The Plan's objective was to develop a capital improvement plan (CIP) that will accommodate the above elements. The planning-level CIP is outlined as follows:

Year	CIP Item	Budget[D]
2026-2030	1. Offsite RIB Property Search/Acquistion[A] 2. Offsite RIB Expansion | Construction[B] 3. Reclaimed Water Distribution Pipeline Extension 4. WRF Expansion - Reclaimed Water Operational Storage Expansion[C]	1. $ 5,000,000 2. TBD 3. $ 1,500,000 4. See Note C
2030- 2035	Monitor System/Reclaimed Water Operational Storage Expansion	TBD
2035 - 2040	Monitor System/Reclaimed Water Operational Storage Expansion	TBD

A: 40 Acre estimate at $125,000/AC.

B: RIB Expansion costs to be defined once property acquired and preliminary design services completed.

C: See Wastewater Master Plan (2026) for WRF Expansion requirements and associated planning-level budgeting. The WRF Expansion includes increasing the reclaimed water operational storage.

D: Conceptual budgets utilize Year 2026 dollars. Budgets will require adjustment based on inflationary adjustments for work that occurs after 2026.

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The Plan findings are summarized as follows:

1. **Treatment and Reuse Facilities**

   A. The WRF's current permitted capacity is 1.20 MGD (AADF) but was not designed to meet advanced wastewater treatment requirements. The facility can provide biological nutrient removal capabilities but is not designed to provide an effluent with Total Nitrogen (TN) less than 3 mg/L or Total Phosphorus (TP) less than 1 mg/L. Biological nutrient removal can be achieved at TN levels below 6.0 mg/l, but TP removal is not part of the current treatment system.

   B. The permitted capacity for the existing RIBs is 0.25 MGD (AADF), and the permitted public-access reclaimed water system capacity is 2.26 MGD (AADF). The Town is already experiencing growth within the reclaimed water service area, which is resulting in less use of the RIBs. However, wet-weather storage needs will need to be monitored and managed. The RIBs also provide the necessary reject water disposal capacity needs.

2. **Existing Reclaimed Water System**

   A. The Town's Reclaimed Water Treatment System's firm capacity is limited by the chlorine contact chamber and transfer pump capacity of 4.6 MGD-PHF. The operational storage provides a buffer to the reclaimed water pump station. The pump station's firm capacity is 5.76 MGD (4,000 gpm) with a total pumping capacity of 8.6 MGD (6,000 gpm). For reclaimed water customers, the limiting component is the Town's ability to produce reclaimed water on a day-to-day basis based on incoming wastewater flows.

   B. The Town's RWSA is currently growing with new customers coming online, so use characteristics are being monitored. In 2024, the Town had approximately 160 residential reuse customers. The average use for this service pool was 625 gpd (18,750 gallons per month) per connection. In 2025, the connection total grew to 327 residential connections

   C. Reclaimed water use increased 18% (0.365 MGD/0.308 MGD) between 2024 and 2023 and 66% (0.607 MGD/0.365 MGD) between 2025 and 2024. Wastewater flows over the same period of time increased 15% (0.572

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MGD/0.497 MGD) and 16% (0.664 MGD/0.572 MGD). The 2025 reuse demand increase is largely attributed to the construction of the Hammock Oaks development.

D. The Town's existing 12" reclaimed water main becomes limiting as peak reclaimed water demands approach 2,850 gpm resulting in a nominal pipeline velocity of 8 feet per second (fps) with pressure losses of 1 psig per 175 lineal feet. A parallel or looped reclaimed water main is required to decrease pressure loss in the distribution system prior to reaching these service demands.

E. The Town retains RIBs as a back-up disposal method and can transfer reclaimed water to the Village Community Development District (VCDD) if reclaimed water storage is available in their system. Transfers to or from the VCDD have been limited.

3. Regulatory Items

A. The regulatory environment is a dynamic variable, and a subject that is often difficult to predict. On balance, regulations tend to become more restrictive, so the Town should prepare appropriately. Within the forthcoming planning period, the following items will be most critical to the Town's reclaimed water system management and operations:

- Enhancement of reclaimed water quality to meet advanced wastewater treatment (AWT) criteria (TN 3 mg/L and TP 1 mg/L).
- Maximizing reclaimed water use within the Town's RWSA.
- Reviewing opportunities to extend reclaimed water service outside of the RWSA.

4. Reclaimed Water Flow Projections & Expansion

A. Increase reclaimed water operational storage and high-service pump capacity located at the WRF. Both of these items are budgeted within the WRF Expansion project outlined in the Town's Wastewater Master Plan.

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B. Increase RIB capacity to a total of 36 acres (26 acre addition). A location for this improvement is not currently known, but a general target area was outlined herein. The Town should begin to acquire property and begin the capacity expansion for this facility component.

C. Monitor system performance and expand reclaimed water distribution capacity through piping modifications and extensions as demands reach estimated capacity outlined in **Section III**.

D. 2025 reclaimed water demands have exceeded original estimates. The Town will need to monitor the actual level of service through 2026 as the RWSA continues to grow and mature. A 325 gallon per day per connection estimate was utilized through coordination with the developer of large portions within the RWSA. Using this planning value, the currently known developments are anticipated to need 985,700 gpd (AADF) of reclaimed water supply with estimated maximum day demands of 3.9 MGD (MDF). Actual demands could exceed these values based on current system use trends.

E. The Town's RWSA capacity is permitted at 2.26 MGD (AADF) based on a conservative application rate of 0.75 inches per week. As historic trends within the RWSA are known, modifying the permitted capacity may be necessary.

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ATTACHMENTS

A WRF Operating Permit
B WRF “Record” Drawings
C Reuse Operating Protocol
D Hammock Developments Reclaimed Water System Modeling (October 2024)

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E VCDD and Lady Lake Bulk Reuse Interconnect Drawings
F Upper Ocklawana BMAP Order, BMAP Link & BMAP Remediation Plan

ACRONYMS / DEFINED TERMS

AADF	Annual Average Daily Flow
ADF	Average Daily Flow
BEBR	Bureau of Economic Business Research
BOD_5	Biochemical Oxygen Demand-5 Day
BNR	Biological Nutrient Removal
BTU	Biological Treatment Unit
CCC	Chlorine Contact Chamber
CWA	Clean Water Act
cfm	Cubic Feet Per Minute
DO	Dissolved Oxygen
Engineer	CPH Consulting, LLC
EPA	Environmental Protection Agency
ERU	Equivalent Residential Unit
FDEP	Florida Department of Environmental Protection
gpd	Gallons Per Day
gpm	Gallons Per Minute
GST	Ground Storage Tank
HP	Horsepower
ISBA	Interlocal Service Boundary Area
I/I	Infiltration & Inflow
JPA	Joint Planning Area
LS	Lift Station
MG	Million Gallons
MGD	Million Gallons Per Day
MLE	Modified Ludzack Ettinger
NNC	Numeric Nutrient Criteria
ORP	Oxidation-Reduction Potential
OSTDS	Onsite Sewage Treatment & Disposal System
PHF	Peak Hour Flow
Plan	Wastewater & Reuse Master Plan
PVC	Polyvinyl Chloride
RAS	Return Activated Sludge
RIB	Rapid Infiltration Basins
RWSA	Reclaimed Water Service Area
SOUR	Specific Oxygen Uptake Rate
SRT	Solids Residence Time
SSO	Sanitary Sewer Overflows

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SJRWMD	St. Johns River Water Management District
TKN	Total Kjedahl Nitrogen
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
Town	Town of Lady Lake
TP	Total Phosphorus
TSS	Total Suspended Solids
WAS	Waste Activated Sludge
WWTP	Wastewater Treatment Plant

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I. INTRODUCTION

A. BACKGROUND

The Town of Lady Lake (Town) is located in northwest Lake County, approximately fifty miles north of Orlando on U.S. Highway 27/441, just north of the City of Fruitland Park and just south of the southerly Marion County line. The Town was incorporated in 1925 and has operated under a Town Commission-Town Manager form of government since 1987.

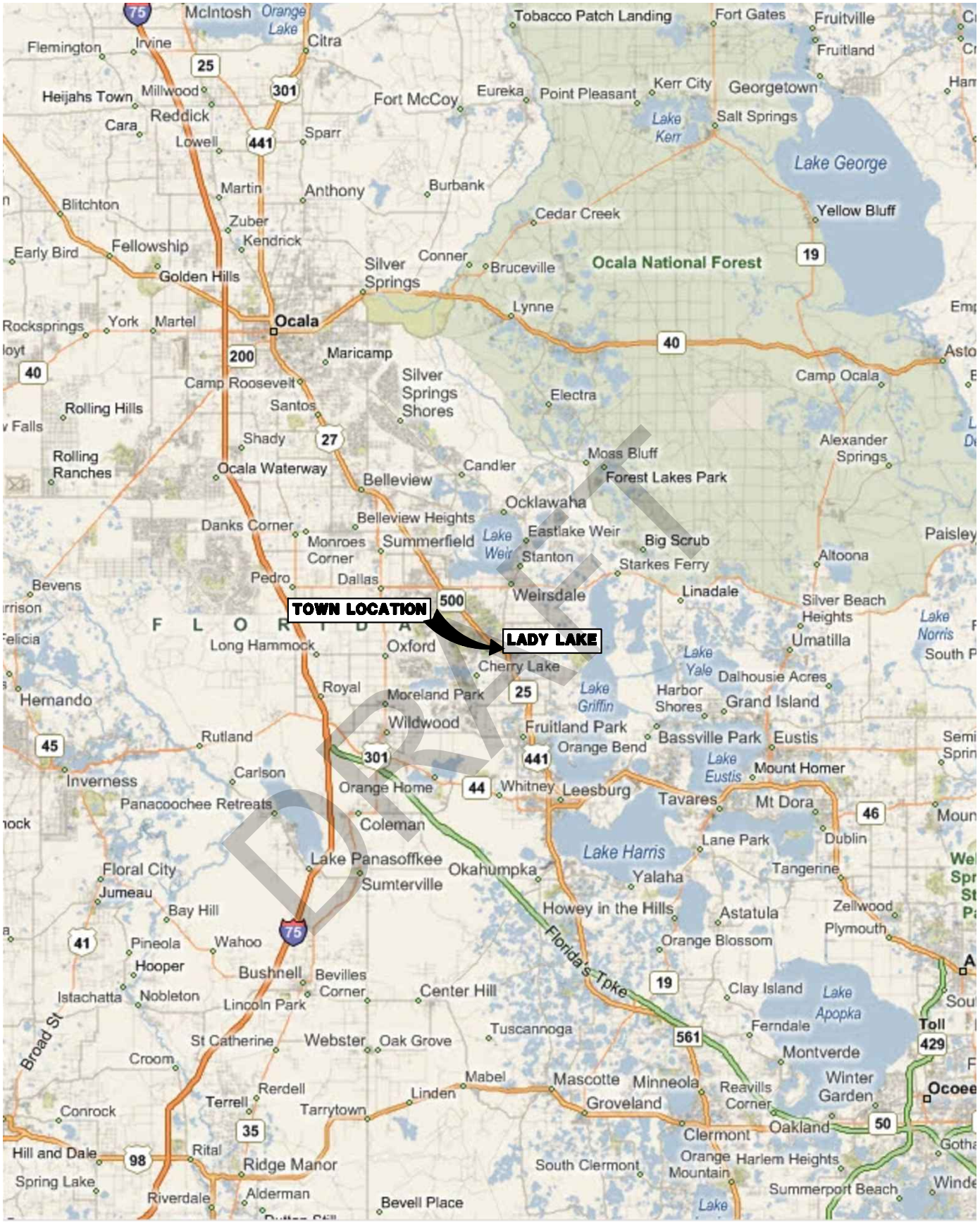
The Town has a significant commercial corridor along Highway 27/441 and County Road (CR) 466 that supports regional commerce with The Villages. Extending from these areas are multifamily and single family developments that are continuing to be developed within the Town's service area. As a result of the commercial and dense population centers, the Town is now experiencing further residential growth through large-scale planned developments within the southwest and northeast portions of the Town's municipal limits. These developments are anticipated to bring large relative growth that will require consideration of the Town's infrastructure capacities and regulatory compliance requirements.

The Town has retained a limited Reclaimed Water Service Area (RWSA) that is experiencing significant growth, with anticipated build out in the next 10 to 20 years.

Due to growth and regulatory pressures, the Town is updating their previous master planning efforts to review alternatives and establish a plan to effectively and efficiently serve their citizens and utility customers through 2040. This also includes consideration of current and pending regulatory restrictions that will shape service requirements.

The Town's general location is shown in **Figure I-1**.

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cph	Designed by:	JRS	VICINITY MAP
	Drawn by:	MAL	TOWN OF LADY LAKE Reclaimed Water Master Plan Lake County, Florida
	Date:	JAN. 2026	FIGURE I-1
	Job No.	9514-41-1	
www.cphcorp.com	Scale:	1" = 9± MILES	© 2026

J:\orangepark\cad files\lady lake\9514411 2025 water, wastewater, reclaimed water master plan updates\Figures\reclaimed water\Fig. I-1 Vicinity Map.dwg, 1/13/2026 8:45:45 AM, Mike.Lisena

B. OBJECTIVE

The Town authorized the preparation of this report to establish a plan to effectively manage the Town's current and future reclaimed water system through 2040. Planning for this infrastructure is necessary to identify the most logical and practical means of accommodating the growth and demands placed on this system. This translates into developing an implementable capital improvement plan that considers the following:

1. Service Areas.
2. The "Planning Period" which will be through the Year 2040.
3. Wastewater flow and loading projections vs. reclaimed water demand projections.
4. Reclaimed distribution system capacity and expansion requirements.
5. Wet-weather storage and/or disposal capacities and expansion requirements.
6. Expansion alternatives.

The objective of this study is to develop a capital improvement plan that will accommodate the above elements. The plan will identify proposed projects, an implementation schedule, and review necessary capital needs to implement the proposed alternatives.

The reclaimed water system is directly connected to the Town's wastewater system. A separate master plan is provided for that system. Portions of the wastewater system master plan review and analyze effluent disposal needs that include the reuse system as well as onsite storage, onsite disposal systems, and future expansion to these systems.

C. GENERAL APPROACH

This report will utilize work previously completed by the Town, the Town's previous planning efforts, and work completed by Mittauer & Associates, Inc. or CPH Consulting, LLC ("Engineer"). In addition to these documents, information from University of Florida Bureau of Economic Business Research ("BEBR"), Florida Department of Environmental Protection ("FDEP"), and the St. Johns River Water Management District ("SJRWMD") was also utilized to collaborate, coordinate, and analyze the Town's needs.

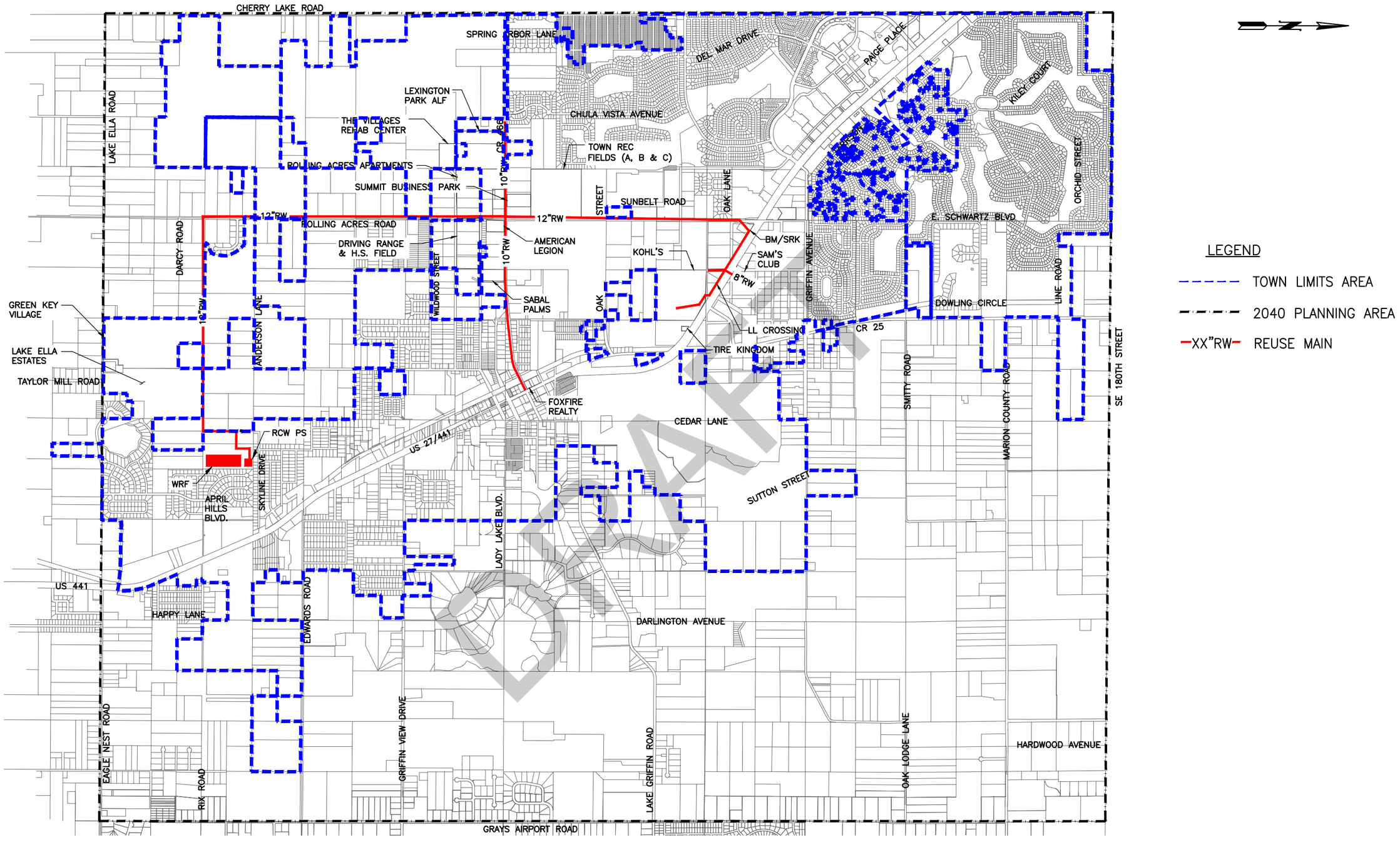
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In general, the report focuses on the wastewater and reuse systems' capacities related to: system components such as pumps, piping, treatment systems, etc.; and applicable regulatory aspects of each to meet the Town's demands into the planning horizon. The Environmental Protection Agency ("EPA") defines system capacity as "*...the ability to plan for, achieve, and maintain compliance with applicable...standards. Capacity has three components: technical, managerial, and financial. Adequate capability in all three areas is necessary for a system to have 'capacity'. Technical capacity includes, but is not limited to, condition of the infrastructure. Managerial capacity includes, but is not limited to, staffing, organization, and having the appropriate planning documents. Financial capacity includes, but is not limited to, credit worthiness, revenue sufficiency, and usage of proper accounting methods*."[1] This Reclaimed Water Master Plan ("Plan") is limited to the "technical" aspects of capacity as listed above, and broadly provides a component of the planning documents for the "managerial" component. "Financial" aspects of the systems are typically reviewed through rate studies, audits, etc.

Within the Plan, various service areas are reviewed. The Town's limits, the Town's Service Area, and the Town's RWSA. The Town also has a Joint Planning Area ("JPA") or Interlocal Service Boundary Area ("ISBA") with Lake County, but these limits are not included within the analysis. The planning area is identified as the 'RWSA' and any expansion needs specifically identified within the Plan. Each of the aforementioned boundaries are shown in **Figure I-2**.

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[1] New Water System Quality Development Planning Manual, FDEP April 2003.



LEGEND

- TOWN LIMITS AREA
- 2040 PLANNING AREA
- XX"RW REUSE MAIN

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Scale:	1" = 2,500'		

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BOUNDARY MAP

TOWN OF LADY LAKE
Reclaimed Water Master Plan
Lake County, Florida

Figure **I-2**

J:\orangepark\cad files\lady lake\9514411 2025 water, wastewater, reclaimed water master plan updates\Figures\reclaimed water\Fig. I-2 Boundary Map.dwg, 1/13/2026 9:02:03 AM, Mike.Lisena

II. EXISTING WASTEWATER SYSTEM

A. OVERVIEW

The Town owns and operates one permitted water reclamation facility ("WRF") with two treatment trains, Biological Treatment Unit ("BTU") No. 1 and BTU No. 2. The Town's Florida Department of Environmental Protection ("FDEP") Operating Permit Number is FLA399761. The current operating permit is included as **Attachment A**. Record Drawings are included as **Attachment B**. The WRF location is illustrated in **Figure II-1** and WRF site plan is shown within **Figure II-2**. The WRF Site Plan with the RIB locations are shown in **Figure II-3**. Further discussion on each treatment train is provided herein. The Town's current WRF Permit Capacity is defined as 1.20 million gallons per day ("MGD") on an annual average daily flow ("AADF") basis by FDEP. The effluent disposal options include the Town's Rapid Infiltration Basins ("RIBs") that are rated at 0.25 MGD (AADF) and the public-access-reuse system that is rated at 2.26 MGD (AADF).

The original BTU No. 1 was constructed between 2005 and 2006, and was converted to a flow equalization basin in 2022. BTU No. 2 expansion was completed between 2007 and 2008. In 2022, the Town permitted the current expansion project that constructed a 0.60 MGD package facility (current BTU No. 1), with other facility components, to bring the system's treatment capacity to 1.2 MGD.

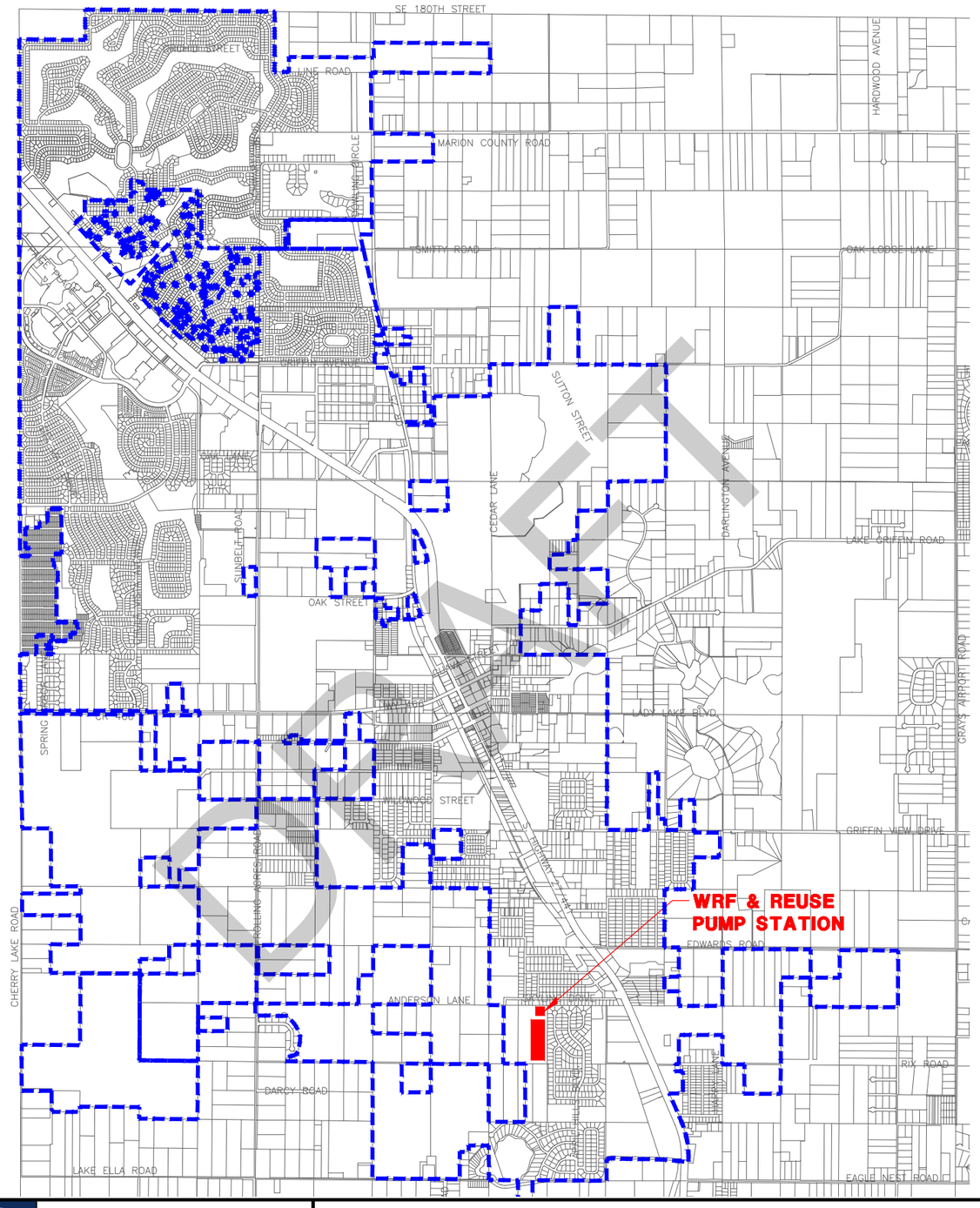
The BTUs operate in the modified ludzack ettinger (MLE) process configuration, which is a biological nutrient removal (BNR) configuration to reduce total nitrogen (TN) below 10 mg/L.

The entire WRF is comprised of the following components:

1. Influent Structure with 4.6 MGD (Peak Hour Flow-PHF) mechanical bar screen, 2.0 MGD (PHF) manual bypass bar rack, and 4.0 MGD (PHF) vortex grit removal system.

2. Influent splitter box with magnetic flow meters located in the three discharge pipes from the structure. A magnetic meter is dedicated for each of the following discharge points:
   - BTU No. 1 (2024 | 0.60 MGD package plant)
   - BTU No. 2 (2008 | 0.60 MGD package plant)
   - Flow Equalization or Surge Basin

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LEGEND

- - - - TOWN LIMITS AREA

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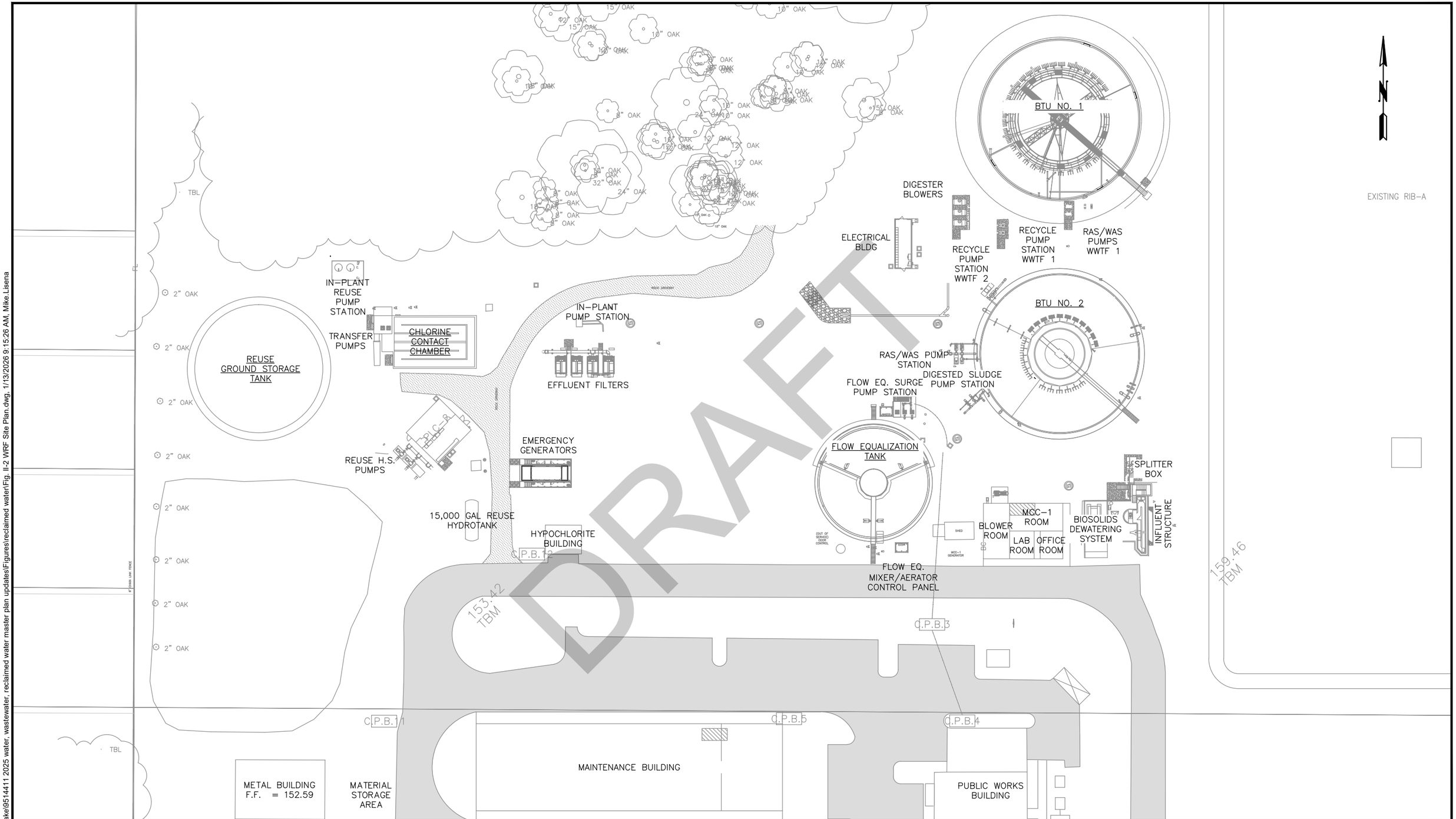
WRF LOCATION MAP

TOWN OF LADY LAKE
Reclaimed Water Master Plan
Lake County, Florida

Figure
II-1

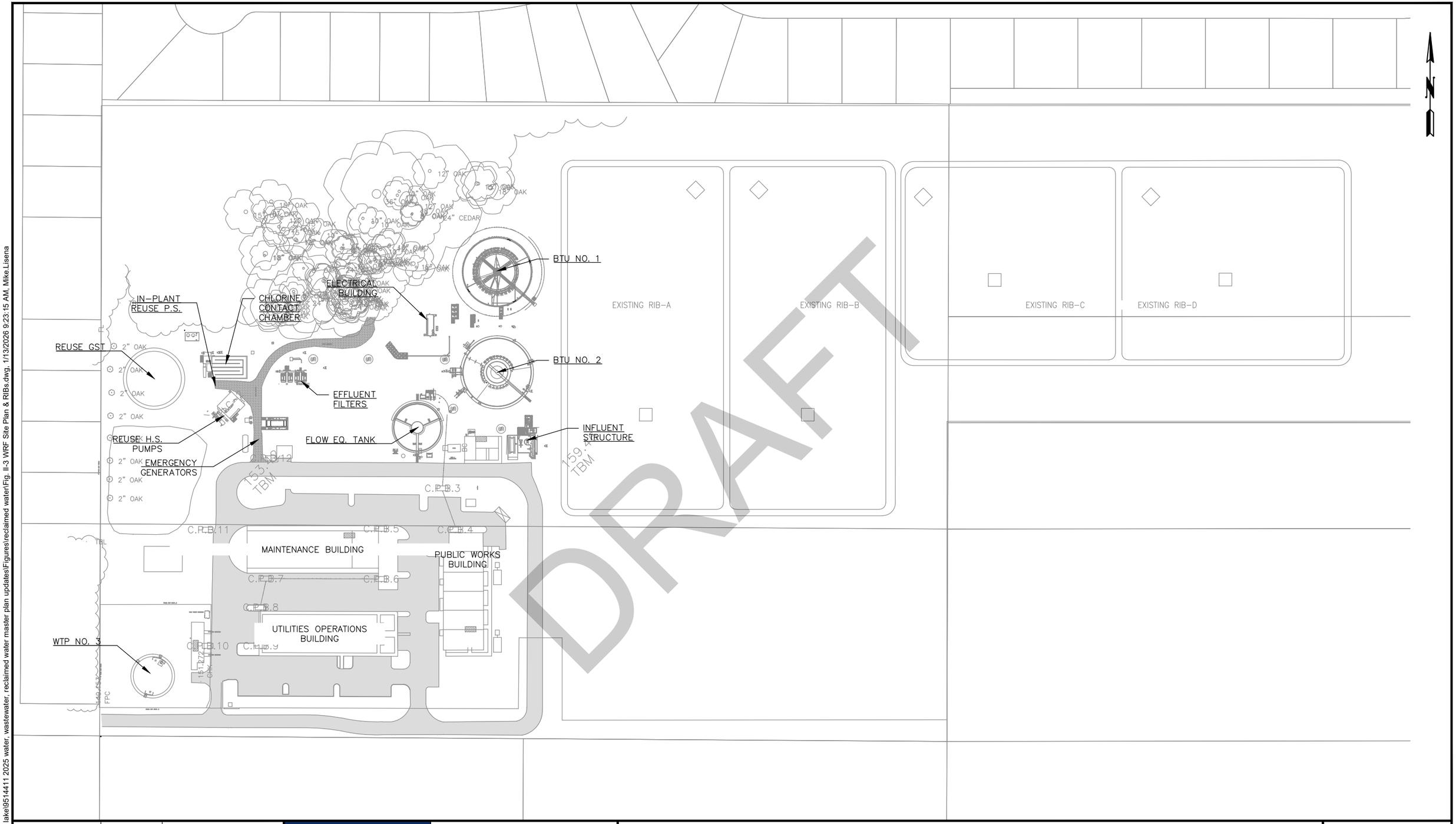
J:\orangepark\cad files\lady lake\9514411 2025 water, wastewater, reclaimed water master plan updates\Figures\reclaimed water\Fig. II-1 WRF Location Map.dwg, 1/13/2026 9:05:30 AM, Mike.Lisena

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Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	***Building Stronger Communities Together***	WRF SITE PLAN
Drawn by:	MAL	Job No. 9514-41-1		**580-1 Wells Road**	TOWN OF LADY LAKE
Checked by:	JRS			**Orange Park, FL 32073**	Reclaimed Water Master Plan
Approved by:	JRS	© 2026		**Ph: 904.278.0030**	Lake County, Florida
Scale:	1" = 60'				Figure II-2

J:\orangepark\cad files\lady lake\95144111 2025 water, wastewater, reclaimed water master plan updates\Figures\reclaimed water\Fig. II-3 WRF Site Plan & RIBs.dwg, 1/13/2026 9:23:15 AM, Mike.Lisena



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Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	***Building Stronger Communities Together***	WRF SITE PLAN & RIBS	Figure
Drawn by:	MAL	Job No. 9514-41-1		**580-1 Wells Road**	TOWN OF LADY LAKE	**II-3**
Checked by:	JRS			**Orange Park, FL 32073**	Reclaimed Water Master Plan	
Approved by:	JRS	© 2026		**Ph: 904.278.0030**	Lake County, Florida	
Scale:	1" = 140'					

3. BTU No.1 is comprised of the following items:
   - 0.60 MGD (AADF) package BTU with MLE activated sludge system.
   - 63-foot diameter central clarifier having a surface area of 3,120 square feet.
   - Two 1,740 gpm (2.51 MGD) Gorman-Rupp non-clog Nitrified Mixed Liquor Recycle (NRCY) pumps.
   - Two 430 gpm (0.62 MGD) Gorman-Rupp non-clog return activated sludge ("RAS") pumps.
   - One 100 gpm (0.14 MGD) Gorman-Rupp non-clog waste activated sludge ("WAS") pump;
   - Two 99,600 gallon aerobic digester compartments providing a total of 199,200 gallons.

4. BTU No. 2 is comprised of the following items:
   - 0.60 MGD (AADF) package BTU with MLE activated sludge system.
   - 44-foot diameter central clarifier having a surface area of 1,520 square feet.
   - Two 1,740 gpm (2.51 MGD) Gorman-Rupp non-clog recycle pump.
   - Two 430 gpm (0.62 MGD) Gorman-Rupp non-clog return activated sludge ("RAS") pumps.
   - Two 100 gpm (0.14 MGD) Gorman-Rupp non-clog waste activated sludge ("WAS") pump.
   - Two 115 gpm (0.17 MGD) Gorman-Rupp non-clog digested sludge pumps.
   - Two 191,000 gallon aerobic digester compartments providing a total of 382,000 gallons.

5. One in-plant pump station with two 350 gpm (0.50 MGD) submersible pumps.

6. Four centrifugal blowers including: Two 100 HP units at 1,350 cfm/each and Two 150 HP units at 2,100 cfm/each.

7. Four 2.0 MGD (PHF) effluent disc filters.

8. Two 24,600 gallon chlorine contact chambers.

9. Two 3,200 gpm (4.6 MGD-PHF) vertical turbine effluent transfer pumps.

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10. 1.2 Million Gallon ("MG") ground storage tank (“GST”).

11. Three 2,000 gpm (2.88 MGD) horizontal split-case reuse pumps.

12. Two 30-yard biosolids gravity dewatering box as manufactured by FloTrends with polymer injection system capable of producing 10% solids.

13. Four RIBs having a total wetted area of 10.8 acres and a permitted loading capacity of 0.25 MGD (AADF).

14. Hypochlorite feed system.

15. Associated electrical and instrumentation systems

The process flow schematic for the Town’s WRF is provided as **Figure II-4.**

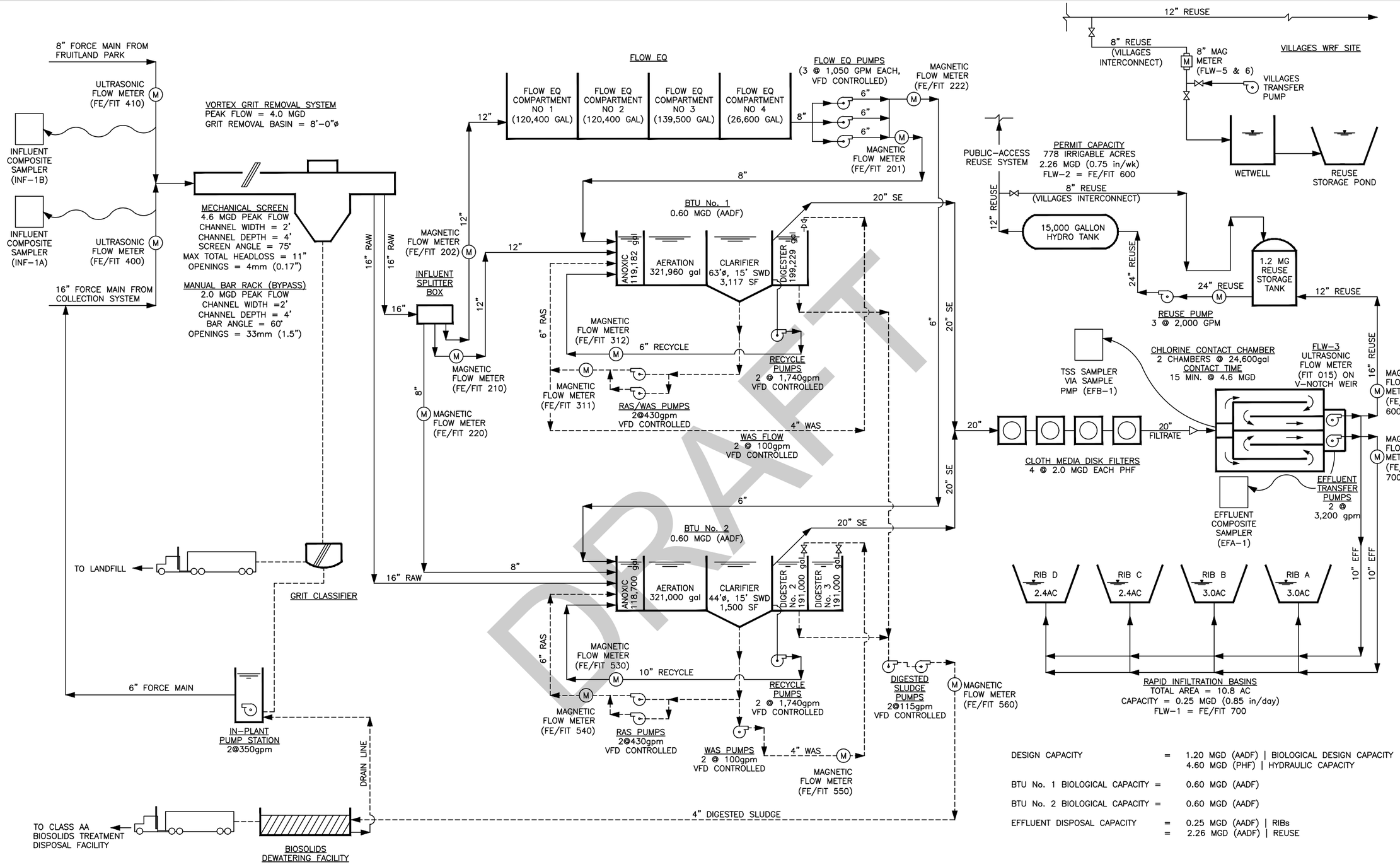
The WRF has two effluent disposal points. The primary effluent disposal location is the Town’s public-access-reuse system. The secondary location is located onsite and contains four separate RIBs having a total wetted area of 10.8 acres. RIB A and B have 3.0 acres of available wetted area, respectively, while RIB C and D have 2.4 acres, respectively. The RIBs also provide “reject” storage capacity. At this time, the Town treats all wastewater to public-access-reuse quality and only loads the RIBs if reuse demand is low and the GST is full, or the treated effluent does not meet reuse standards (i.e., reject water).

If the treated wastewater meets public-access-reuse requirements and the GST has storage capacity, the treated effluent is pumped to the GST for storage and repumping to the Town’s public-access-reuse system. If the effluent does not meet reuse requirements or the GST is at capacity, the wastewater is pumped to the RIBs.

Effluent limitations for the plant are summarized in Town’s operating permit.

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DESIGN CAPACITY = 1.20 MGD (AADF) | BIOLOGICAL DESIGN CAPACITY
4.60 MGD (PHF) | HYDRAULIC CAPACITY

BTU No. 1 BIOLOGICAL CAPACITY = 0.60 MGD (AADF)

BTU No. 2 BIOLOGICAL CAPACITY = 0.60 MGD (AADF)

EFFLUENT DISPOSAL CAPACITY = 0.25 MGD (AADF) | RIBs
= 2.26 MGD (AADF) | REUSE

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Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	**Building Stronger Communities Together**	WRF PROCESS FLOW DIAGRAM
Drawn by:	MAL	Job No. 9514-41-1		580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030	TOWN OF LADY LAKE Reclaimed Water Master Plan Lake County, Florida
Checked by:	JRS				Figure II-4
Approved by:	JRS	© 2026			
Scale:	1" = 140'				

1. **Near-Term Flow Trends:** A review of the average daily flows (ADF) between 2021 and 2025 is summarized in **Table II-1**.

TABLE II-1

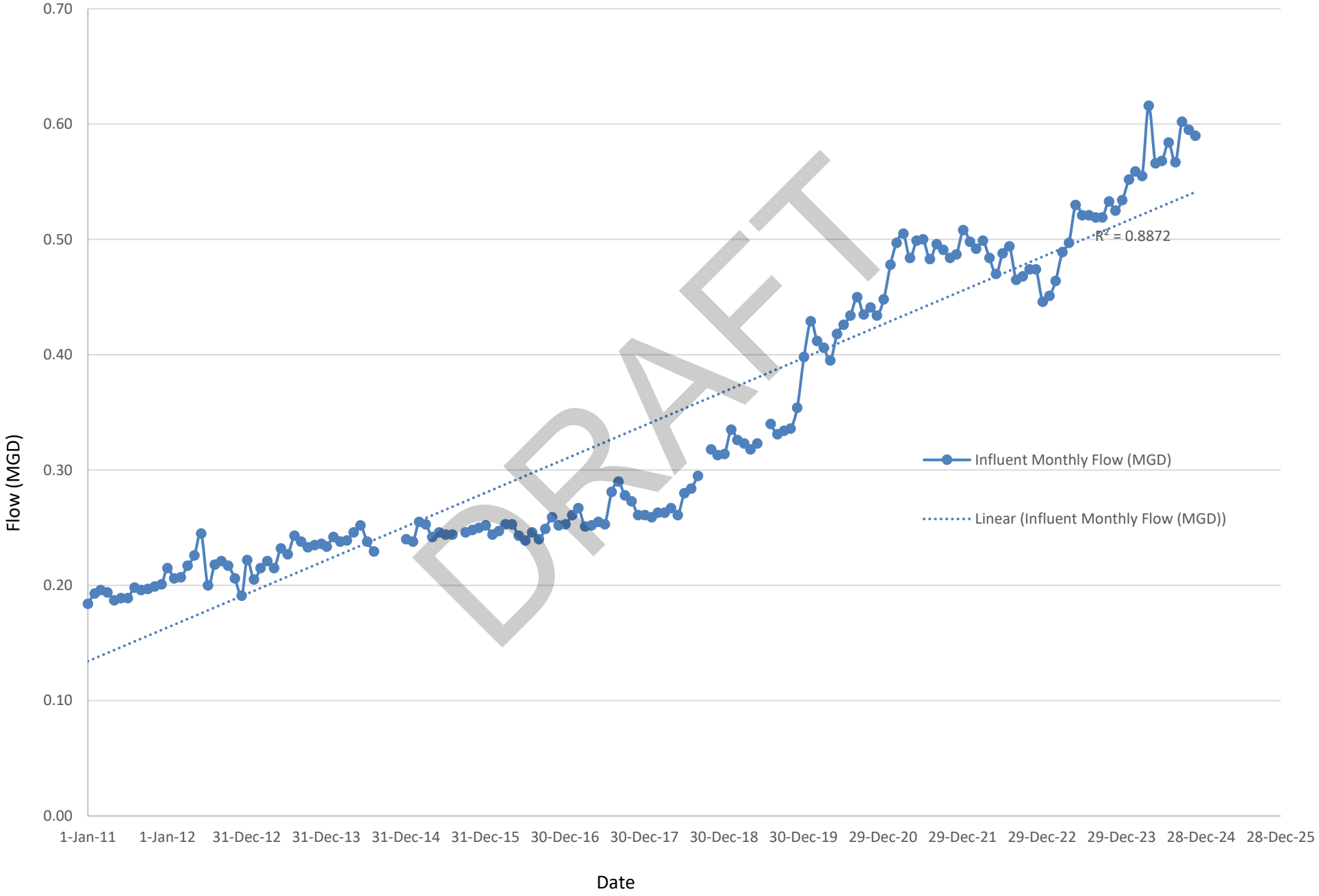
2021 THROUGH 2025 WRF ADF SUMMARY

Month	2021 Average Daily Flows (MGD)	2022 Average Daily Flows (MGD)	2023 Average Daily Flows (MGD)	2024 Average Daily Flows (MGD)	2025 Average Daily Flows (MGD)
January	0.448	0.508	0.446	0.534	0.636
February	0.478	0.498	0.451	0.552	0.682
March	0.497	0.492	0.464	0.559	0.682
April	0.505	0.499	0.489	0.555	0.734
May	0.484	0.484	0.497	0.616	0.658
June	0.499	0.470	0.530	0.566	0.705
July	0.500	0.488	0.521	0.568	0.643
August	0.483	0.494	0.521	0.584	0.684
September	0.496	0.465	0.520	0.567	0.659
October	0.491	0.468	0.468	0.602	0.567
November	0.484	0.474	0.533	0.595	0.572
December	0.487	0.474	0.525	0.590	0.550
Average	**0.488**	**0.485**	**0.497**	**0.574**	**0.648**
Max	**0.505**	**0.508**	**0.533**	**0.616**	**0.734**
Min	**0.448**	**0.465**	**0.446**	**0.534**	**0.550**

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Monthly flow trends since January 2011 are illustrated in **Figure II-5**. As illustrated by the chart, the Town's influent flows were relatively flat until 2018 and 2019. During this time period, the Town completed bulk connections to the Town of Fruitland Park and Water Oaks. During this same time period and continuing into 2024/2025, the Town's growth began to increase in scale and intensity through multiple multi-family projects, additional commercial growth, and large-scale residential developments such as Lake Ella Estates, Green Key Village, and the Hammock Oaks.

Town of Lady Lake
Reclaimed Water Master Plan
Client No. 9514-41-1
Figure II-5: January 2011 through December 2025 Average Monthly Influent WRF Flow



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From 2011 through 2017, average influent flow increased from approximately 0.20 MGD (AADF) to 0.26 MGD (AADF). This results in a 30% increase or 5% annual increase. In contrast, flows between 2017 and 2024 increased from 0.26 MGD (AADF) to 0.57 MGD (AADF) resulting in a 119% increase or 17% annual increase. Much of this growth is a result of bulk connections from Water Oaks and Fruitland Park which account for approximately 0.17 MGD of the increase.

B. EFFLUENT DISPOSAL CAPACITY

The Town's effluent disposal capacity will be dictated by public-access-reuse. **Section III, IV,** and **VII** provide additional details and analysis of the Town's reuse system. In the near-term, the Town's capacity is a combination of the reuse system and the onsite RIBs. We anticipate the RIBs will continue to function as a back-up disposal means for 'reject' water and/or wet-weather conditions into the future. The Town's existing/current disposal capacity will be reviewed as follows:

- Current FDEP Permit Limitations;
- Existing RIBs;
- Existing Public-Access-Reuse Capacity; and
- Existing Reject and Wet-Weather Storage Capacity.

1. **Current FDEP Permit Limitations:** The current FDEP permitted effluent limitations for the WRF are listed in **Table II-2**.

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TABLE II-2
WRF EFFLUENT LIMITATIONS

Parameter/Units	Effluent Limits	Effluent Limit Basis[a]
Maximum $CBOD_5$ (mg/L)	(RIB) 20/30/60 (Reuse) 20/30/45/60	Ann/Mon/Single Ann/Mon/Wk/Single
Maximum TSS (mg/L)	(RIB) 20/30/60 (Reuse) 5	Ann/Mon/Single Single/Continuous
pH (Std. Units)	(RIB) 6.0 to 8.5 (Reuse) 6.0 to 8.5	Continuous Continuous
Total Nitrogen, Nitrate (mg/L)	(RIB) 12 (Reuse) N/A	Weekly (Maximum) N/A

TABLE II-2 WRF EFFLUENT LIMITATIONS		
Parameter/Units	**Effluent Limits**	**Effluent Limit Basis[a]**
Total Nitrogen (mg/L)	(RIB) 6/Report (Reuse) 10/Report	Ann/Mon Ann/Mon
Maximum Total Phosphorus (mg/L)	(RIB) N/A (Reuse) Report	N/A Ann/Mon
Minimum Cl_2 Residual for Disinfection (mg/L)	(RIB) 0.50 (Reuse) 1.00	Single/Continuous Single/Continuous
Turbidity (NTU)	(RIB) N/A (Reuse) Reuse Op. Protocol	N/A Continuous
Maximum Fecal Coliform (#/100 ml)	(RIB) 200/200/800 (Reuse) 25	Ann/Mon/Single Daily

a: Ann = Annual Average/Mon = Monthly Geometric Mean/Single Sample Can Not Exceed Limit

Based on the recent WRF effluent sampling records, the facility is currently in compliance with permit requirements.

2. **Existing RIBs:** As defined within Rule 62-610.500, FAC, "Rapid infiltration basins involve reuse of reclaimed water by spreading in a system of basins, RIBs, or percolation ponds (cells) which may be underlain with subsurface drains. The percolation area shall be divided into two or more basins, RIBs, or cells (each of which need not have identical size and shape) to allow for alternate loading and resting." The Town has a total of four (4) basins that meet the rule requirement. Capacity of the RIBs are defined based on geological investigations and modeling of the soils based on seasonal high groundwater levels. Per rule, the initial hydraulic capacity of RIB systems shall be limited to 3 inches per day (1.9 GPD/ft^2), and additional capacity can be requested with required supporting documentation. In general, the maximum capacity allowed for a RIB is 9 inches per day (5.6 gpd/ft^2). The Town's existing RIBs are currently rated for a total capacity of 0.25 MGD resulting in the following individual capacities per RIB cell:

   - RIB A (3.0 Acres) = 0.069 MGD (0.85 inches/day or 0.53 gpd/ft^2)
   - RIB B (3.0 Acres) = 0.069 MGD (0.85 inches/day or 0.53 gpd/ft^2)
   - RIB C (2.4 Acres) = 0.056 MGD (0.85 inches/day or 0.53 gpd/ft^2)
   - RIB D (2.4 Acres) = 0.056 MGD (0.85 inches/day or 0.53 gpd/ft^2)

   Sum (10.8 Acres) = 0.25 MGD (0.85 inches/day or 0.53 gpd/ft^2)

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The RIB locations were illustrated in **Figure II-3**.

Given the soil characteristics within areas of the Town and anticipated differential between the groundwater table at the Public Works complex, the Town may have opportunities to re-rate the existing RIBs and potentially open space on the Town's WWTP for other facilities, or re-rate the facilities to provide reclaimed water reject storage capacity. A site-specific hydraulic analysis would be required to make any loading recommendations with consideration of geologic conditions and groundwater mounding analysis.

3. **Existing Public-Access-Reuse Capacity:** As defined within Rule 62-610.423, FAC, capacities associated with public-access-reuse facilities include the following considerations:

   "(1) Hydraulic loading rates shall be established after considering the ability of the soil-plant system to remove pollutants from the reclaimed water.

   (2) Loading of nitrogen shall promote use by vegetation and nitrification-denitrification reactions in the soil. If supplemental fertilizers are used, the effect of such fertilizer use on nitrate concentrations in the ground water shall be assessed in the engineering report.

   (3) Other factors which shall be considered in establishing loading rates are the infiltration capacity and hydraulic conductivity of the geologic materials underlying the site; the resulting pollutant load shall be within the assimilative capacity of the soil-plant system. The hydraulic loading rate shall not produce surface runoff or ponding of the applied reclaimed water. Additionally, the quality and use of underlying ground water may dictate the loading rates to be used.

   (4) Since soil-plant relationships are complex, the initial design loading rate shall be conservative; a maximum annual average of two inches per week is recommended. The Department will consider a rate higher than the two inches per week average provided the rate is justified in the engineering report on the basis of the renovating and hydraulic capacity of the soil-plant system, the existing quality and use of surface or ground water in the area, and other hydrogeologic conditions."

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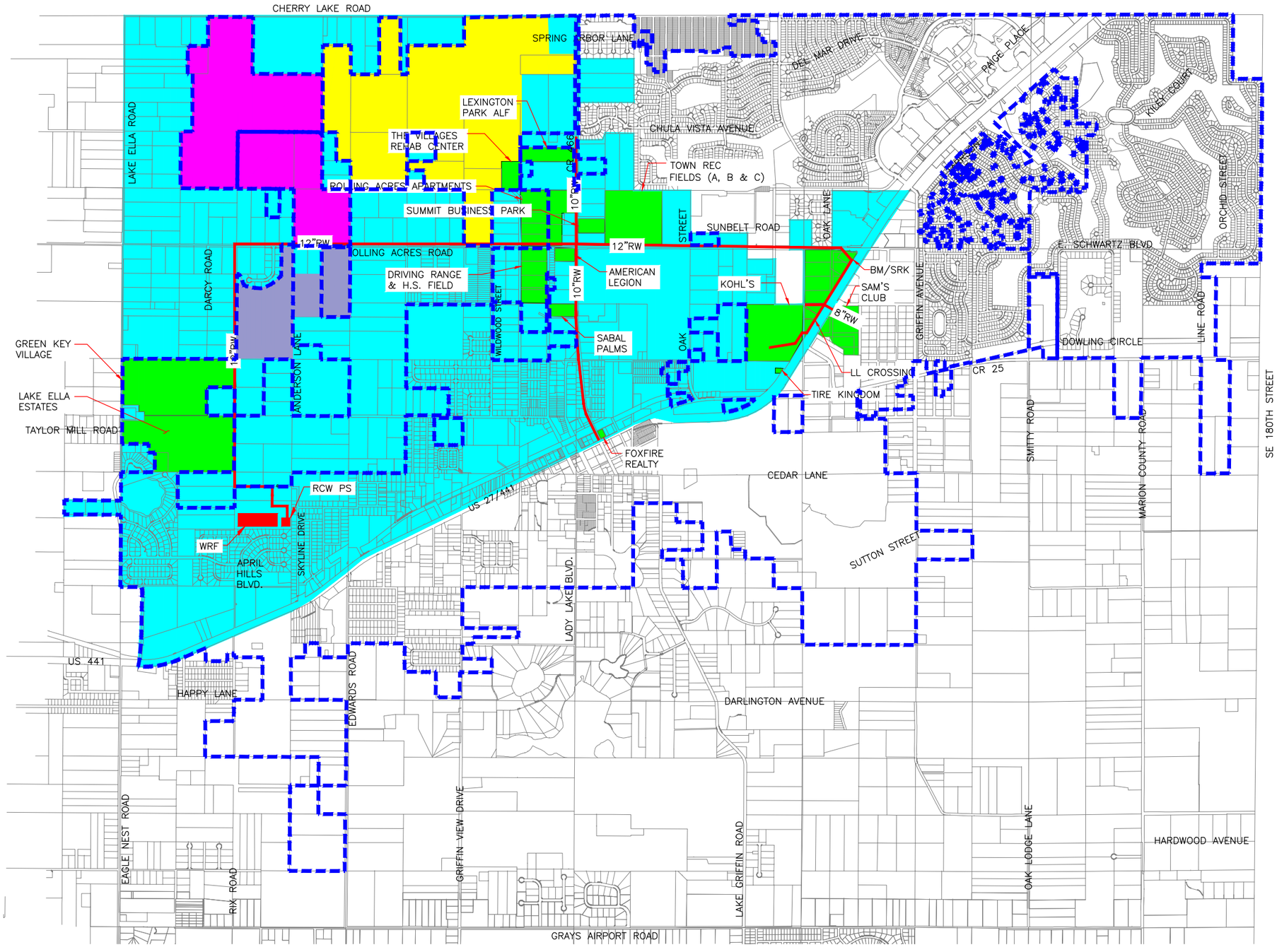
The current WRF operating permit lists 778 acres as 'irrigable' area within the Town's Reclaimed Water Service Area ("RWSA"). The characteristics and variables associated with the RWSA are discussed in **Section III**. The permitted capacity of the system is 2.26 MGD (AADF), which results in a permitted application rate of 0.75 inches per week. The Town's current reuse customer locations are depicted in **Figure II-6**. The St. Johns River Water Management District (SJRWMD) currently allows/recommends an irrigation rate of approximately 0.75 inches per week, and many reuse system customers utilize much more than this amount.

Generally, an application rate of 32 to 36 inches per year (0.62 to 0.69 inches per week) is used for supplemental irrigation needs (irrigation water needed beyond that received by rainfall) pending the type of turf which is being grown, groundwater levels, slope of land, regional rainfall amounts, soil characteristics, etc.

4. **Reject and Wet-Weather Storage:** Reuse demands will fluctuate widely based on weather conditions and customer irrigation practices. The Town's current available effluent disposal capacity via the RWSA exceeds influent (or treatment) capacity, and wet-weather, or reject, conditions are currently addressed via the RIBs but require 'management' to ensure the annual average remains at or below 0.25 MGD (AADF). The Town's current 1.25 MG GST 1 provides operational storage that helps limit wet-weather discharges to the RIBs but is functionally an 'operational buffer' to allow equalization between water being processed through the treatment system and the associated hour-to-hour reuse system demands. A water balance is done to 'estimate' wet-weather disposal needs based on a 1-in-10 yr annual rain event (a general wet year).

   Since the Town's has existing RIBs, they provide an alternative disposal method. As it relates to storage requirements when a RIB system is available, FDEP Rule 62-610.514(1), FAC states "System storage is not required for rapid-rate land application systems. However, it shall be demonstrated in the engineering report that percolation ponds (cells), rapid infiltration basins, or absorption fields will function adequately under high ground water conditions and that reclaimed water storage or other discharge provisions are not required." Further, storage requirements for slow-rate-

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LEGEND

- TOWN LIMITS AREA
- XX"RW REUSE MAIN
- EXISTING REUSE CUSTOMER
- RECLAIMED WATER SERVICE AREA
- HAMMOCK OAKS DEVELOPMENT AREA
- HAMMOCK RESERVE DEVELOPMENT AREA
- HAMMOCK HIGHLANDS DEVELOPMENT AREA

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Checked by:	JRS	
Approved by:	JRS	© 2026
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EXISTING REUSE MAIN ROUTING & REUSE CUSTOMERS

TOWN OF LADY LAKE
Reclaimed Water Master Plan
Lake County, Florida

Figure
II-6

J:\OrangePark\CAD Files\Lady Lake\9514411 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Reclaimed Water\Fig. II-6 Existing Reuse Main Routing & Reuse Customers.dwg, 2/23/2026 1:14:31 PM, Mike.Lisena

public-access-reclaimed water systems are defined in FDEP Rule 62-610.414, FAC, which states:

"(1) System storage ponds as described herein shall not be required where it is documented in the engineering report that an alternative system (e.g., permitted surface water discharge, deep wells) is incorporated into the system design to ensure continuous facility operation in accordance with the requirements of Chapter 62-600, F.A.C. If system storage is not required, provision of flow equalization or storage shall be evaluated in the engineering report to ensure that reclaimed water flows will match the demand pattern during a diurnal cycle.

(2) Unless exempted by subsection 62-610.414(1), F.A.C., system storage ponds shall have capacities determined as follows.

a. System storage ponds shall have sufficient storage capacity to assure the retention of the reclaimed water under adverse weather conditions, harvesting conditions, maintenance of irrigation equipment, or other conditions which preclude land application.

b. Storage capacity or a limited wet weather discharge system shall be provided for wet weather conditions which preclude land application and shall be described in the engineering report and subject to Department approval. The system storage period shall be established by determining the volume of storage that would be required for a ten-year recurrence interval, using weather data that is available from, or is representative of, the area involved.

c. At a minimum, system storage capacity shall be the volume equal to three times that portion of the average daily flow of the reuse capacity for which no alternative reuse or disposal system is permitted.

d. Analytical means (water balance calculations or computer hydrological programs such as the Department's LANDAP program) of determining system storage requirements shall be used and shall account for all water inputs into the system. Analysis shall be based on site specific data.

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e. The methods and assumptions used for determining the system storage requirements shall be described and justified in the engineering report.

f. A minimum of 20 years of climatic data shall be used in storage volume determinations.

g. Irrigation efficiencies or rainfall efficiencies shall not be used in storage volume determinations."

Further conversation related to the RWSA, effluent disposal and storage requirements is provided in **Section III**.

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III. EXISTING REUSE SYSTEM

In 2005, the Town passed “The Town of Lady Lake Reclaimed Water Ordinance” which was subsequently codified in Article VII of the Town’s Code of Ordinances. Within the ordinance, the Town stated, “The Town Commission has determined that the use of reclaimed water is necessary and in the best interests of the citizens of the Town of Lady Lake. This article will accomplish the objectives of providing the safe and beneficial use of reclaimed water to protect the environment and conserve Florida’s limited potable water supplies.”

The limits of the Reclaimed Water Service Area (RWSA) were defined as “property situated west of U.S. Highway 27/441, north of Lake Ella Road, east of Cherry Lake Road/Sumter County Line, and south of Griffin Road which is the reclaimed water district. From time to time, the director and the town manager shall designate certain additional geographical areas within the town as reclaimed water usage areas. The requirements of this article shall only apply to the specific geographical areas thus designated as reclaimed water usage areas” and are depicted in **Figure III-1**.

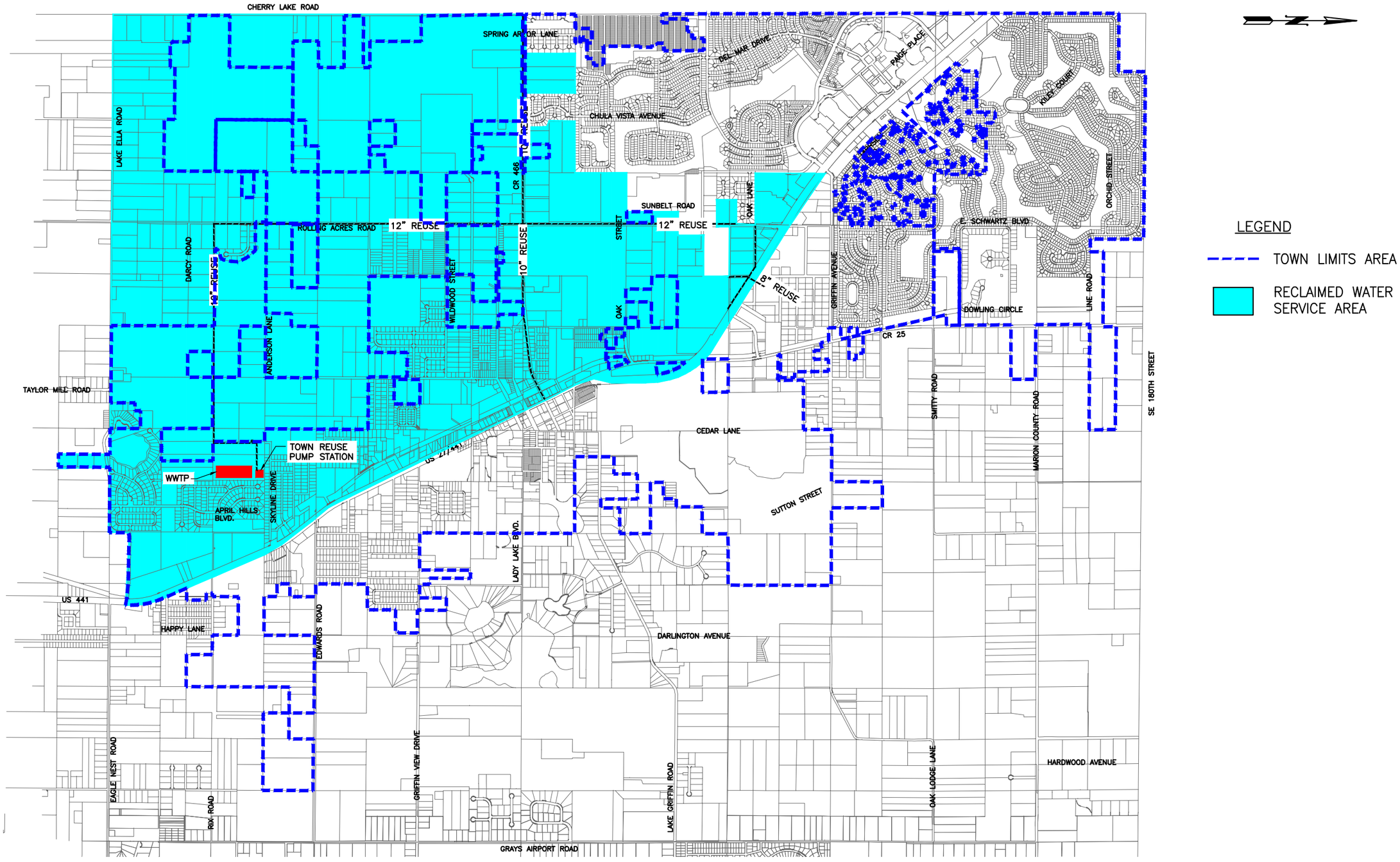
Some highlights from the ordinance include the following:

- Reclaimed water use shall be a condition of all development approvals granted as of the effective date of this article, provided that service is available as set forth in this section.

- Reclaimed water demand for a development shall be calculated based on a minimum irrigation of one (1) inch per week for the irrigable area of the property. This irrigation rate equals three thousand nine hundred (3,900) gallons per day per acre of irrigable area. *[As noted in Section II, FDEP has approved a 0.75" per week application rate for the Town’s WRF Permit. Actual use may exceed this value.]*

- For all other proposed development projects, reclaimed water service shall be considered available if the reclaimed water facilities are located at a distance as specified in Table 1 below within one (1) year after the board approval of the preliminary subdivision plan, and if adequate capacity exists in the reclaimed water facilities to service the applicant’s property, as determined by the director.

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LEGEND

TOWN LIMITS AREA

RECLAIMED WATER SERVICE AREA

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Drawn by:	MAL	Job No. 9514-41-1	
Checked by:	JRS		
Approved by:	JRS	© 2026	
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RECLAIMED WATER SERVICE AREA (RWSA)

TOWN OF LADY LAKE
Reclaimed Water Master Plan
Lake County, Florida

Figure
III-1

J:\OrangePark\CAD Files\Lady Lake\9514411 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Reclaimed WaterFig. III-1 Reclaimed Water Service Area (RWSA).dwg, 2/23/2026 1:15:37 PM, Mike.Lisena

TABLE 1	
Irrigation Demand, for the Development (gallons per day)	**Maximum Distance from the Development Property Line to the Town's Reclaimed Water Facilities**
< 25,000	150
25,000 - 50,000	300
50,001 - 100,000	600
> 100,000	1,350

- In new developments where reclaimed water is available, the use of potable water for irrigation shall be prohibited.

- The Town will monitor reclaimed water connections so as not to exceed the capacity of the system. It is the intent of the town to maximize the use of reclaimed water. However, at times it may be necessary to limit a customer's use of reclaimed water. Notwithstanding any provision of this article to the contrary, the town makes no representation as to the continuing availability or implementation of reclaimed water service within the town. Furthermore, nothing in this article shall be construed to create a debt or general obligation of the town or a pledge of the full faith and credit or taxing power of the town.

- Existing developments desiring reclaimed water shall be responsible for designing, permitting, and constructing the required reclaimed water facilities at their expense. Reclaimed water service to such developments shall be subject to the existence of adequate capacity in the town's reclaimed water facilities, as determined by the director.

A review of the reclaimed water delivery system will be completed as follows:

1) Reclaimed Water Treatment Facilities
    a) Existing connection characteristics
    b) Existing reuse supply vs. demand
    c) Existing hydraulic review
    d) VCDD reuse interconnect

2) Public-access Reclaimed Water Delivery System

DRAFT

Based on the establishment of the RWSA, the Town concurrently constructed reclaimed water treatment facilities and a public-access-reuse delivery system. Both components are an integral/required part of providing reclaimed water service, and each are reviewed further herein.

A. RECLAIMED WATER TREATMENT FACILITIES

The Town's existing reclaimed water treatment system is permitted for a capacity of 1.20 MGD-AADF. The system is currently comprised of the following components:

- Four Disc Filters (2.0 MGD capacity per filter) providing a total capacity of 8.0 MGD on a peak hourly flow (PHF) basis and 6.0 MGD-PHF firm capacity.

- Chlorine Contact Chamber with high-level disinfection capabilities containing two chambers with 24,600 gallons per chamber (49,200 gallons) providing 4.6 MGD-PHF of treatment capacity with a 15 minute contact time.

- Two 3,200 gpm (4.6 MGD-PHF) Effluent Transfer Pumps.

- One 1.2 Million Gallon (MG) ground storage tank (GST).

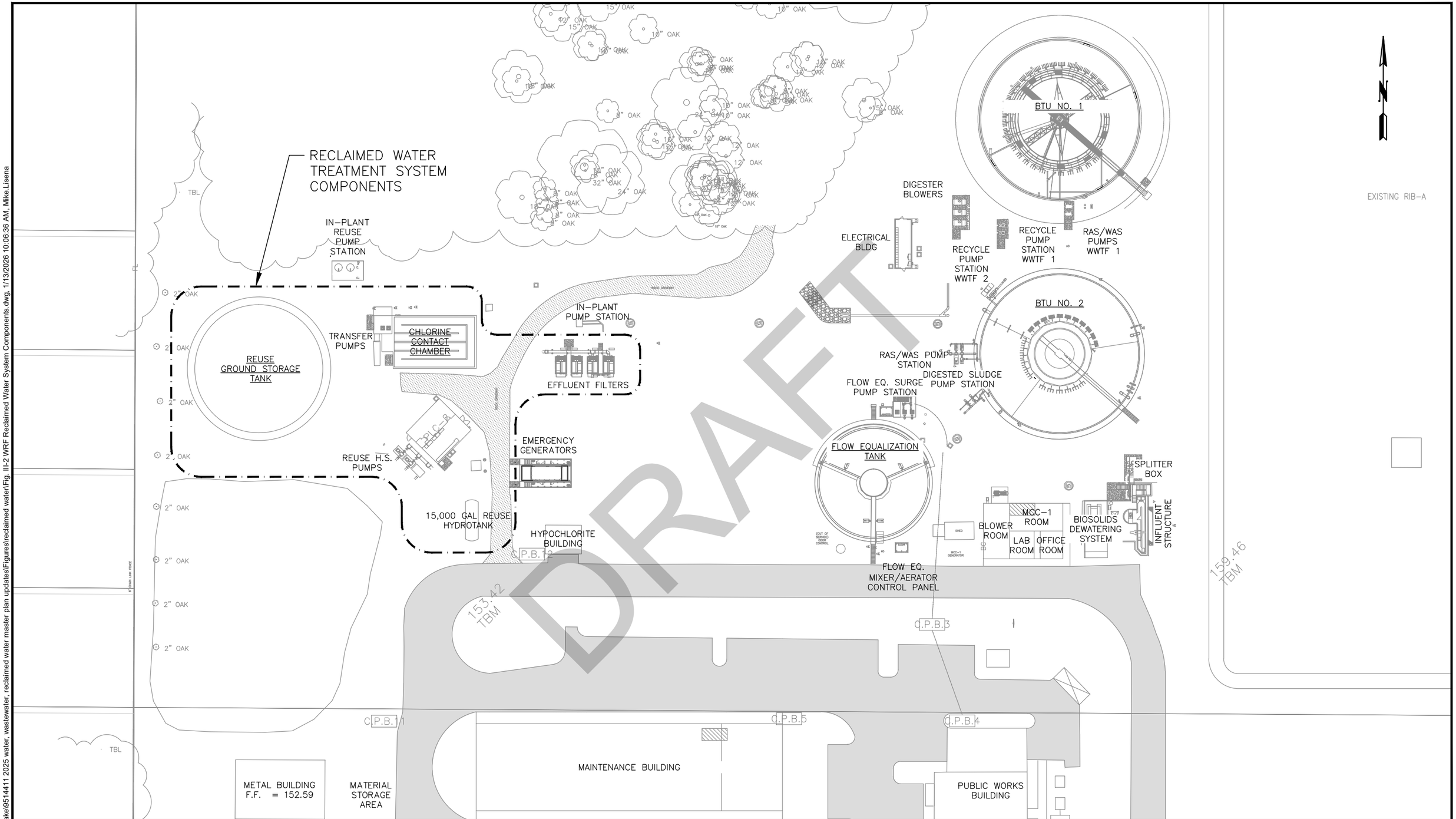
- Three centrifugal reuse pumps (2,000 gpm per pump at 116 feet (50.2 psi) total dynamic head (TDH)) providing 6,000 gpm (8.6 MGD) total pumping capacity with 4,000 gpm (5.76 MGD) firm capacity with a 15,000 gallon hydropneumatic tank for low-flow system equalization.

The chlorine contact chamber and effluent transfer pumping capabilities are the current limiting components. The 4.6 MGD-PHF basis is equivalent to approximately 1.5 MGD-AADF of treatment capacity using a 3.0 peaking factor. These components are highlighted within **Figure III-2**.

The Town's reuse pumps are located at an estimated elevation of 145 feet, which is higher than many areas in Town, providing a hydraulic advantage to the reuse pumping system. As reviewed further herein, the limiting hydraulic component in the Town's existing reclaimed water distribution system is the 12" backbone transmission main.

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J:\orangepark\cad files\lady lake\9514411 2025 water, wastewater, reclaimed water master plan updates\Figures\reclaimed water\Fig. III-2 WRF Reclaimed Water System Components.dwg, 1/13/2026 10:06:36 AM, Mike.Lisena



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WRF RECLAIMED WATER SYSTEM COMPONENTS

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Reclaimed Water Master Plan
Lake County, Florida

Figure
III-2

Section II reviewed the overall WRF mechanical reliability. As noted therein, reclaimed water facilities must meet Class I reliability requirements. Class I reliability is the most stringent of the classifications, and generally requires a back-up provision for each facility component. In effect, the Class I designation intends to ensure mechanical reliability. For example, if a single pump or basin or piece of equipment is required to meet demand/treatment requirements, then Class I reliability will require a redundant or 'back-up' component to provide equivalent capacity or partial service. For the Town's Reuse System, **Table III-1** summarizes the Class I review.

TABLE III-1

REUSE SYSTEM CLASS I RELIABILITY REVIEW

Process Unit	Class I Requirement	WWTP Provisions
Pumping Reuse Pumps Transfer Pumps	Back-up pump(s) (With one (1) pump out of service, remaining pump(s) shall meet peak flow requirements.)	Two (2) pumps provided for all systems. Limiting component is transfer pumps with 4.6 MGD firm capacity. (Class I Reliability Met.)
Filtration	Multiple Basins (with one (1) unit out of service remaining basin(s) must have 75% design capacity).	Filter Capacity = 8.0 MGD with four filters. Firm capacity = 6.0 MGD
Disinfectant Basin (CCC)	Multiple Basins (with one (1) unit out of service remaining basin(s) must have 75% design capacity).	CCC No.1 Capacity = 24,600 gallons | 2.4 MGD @ 15 min CCC No. 2 Capacity = 24,600 gallons | 2.4 MGD @ 15 min

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As noted herein, the Town's Reuse System's firm capacity is limited by the chlorine contact chamber and transfer pump capacity of 4.6 MGD-PHF.

B. PUBLIC-ACCESS RECLAIMED WATER DELIVERY SYSTEM

The Town's current reclaimed water delivery system has one 12-inch 'reuse main' that extends from the WRF west along Abeble Road to Rolling Acres Road where it turns north and continues to its most northern reaches near the intersection of Rolling Acres Road and US 27/441.

1. **Existing Connection Characteristics:** The Town's current reclaimed water customers are illustrated in **Figure III-3** and are generally summarized as follows:

   - Residential: Lake Ella Estates, Green Key Village, Hammock Oaks, and Lake Sumter.

   - Commercial: Benchmark, Village Rehab, Sam's Club, Lexington Park ALF, Insight Credit Union, American Legion, Foxfire Realty, Kohl's, Tire Kingdom, Howell Dental, Sabal Palms, Summitt, and Spruce Creek.

   - Institutional: Town Recreational Fields A, B, C; Driving Range; H.S. Field; 466 Median 1, 2, 3, 4, and 5; and US 27 West, Mid, and East Medians.

   The Town's RWSA is currently growing with new customers coming online, so use characteristics are being monitored. In 2024, the Town had approximately 160 residential reuse customers. The average use for this service pool was 625 gpd (18,750 gallons per month) per connection. In 2025, the connection total grew to 327 residential connections. Utilities throughout Florida develop different 'levels of service' for single-family-detached customers, which can approach these values. Actual use is largely dependent on lot size, irrigable area, customer education, and rates. The Town's Land Development Code (Section 14-10) currently designates a reuse equivalent residential unit (ERU) as 274 gpd or 8,200 gallons per month.

2. **Existing Reuse Supply vs. Demand:** In aggregate, the Town's reuse flows (i.e., demand) in comparison to "available" influent flows (i.e., supply) are summarized in **Table III-2**. As highlighted in the table, on annual average basis reclaimed water use increased 18% (0.365 MGD/0.308 MGD) between 2024 and 2023 and 66% (0.607 MGD/0.365 MGD) between 2025 and 2024. Wastewater flows over the same period of time increased 15% (0.572 MGD/0.497 MGD) and 16% (0.664 MGD/0.572 MGD). The 2025 reuse demand increase is largely attributed to the construction of the Hammock Oaks development.

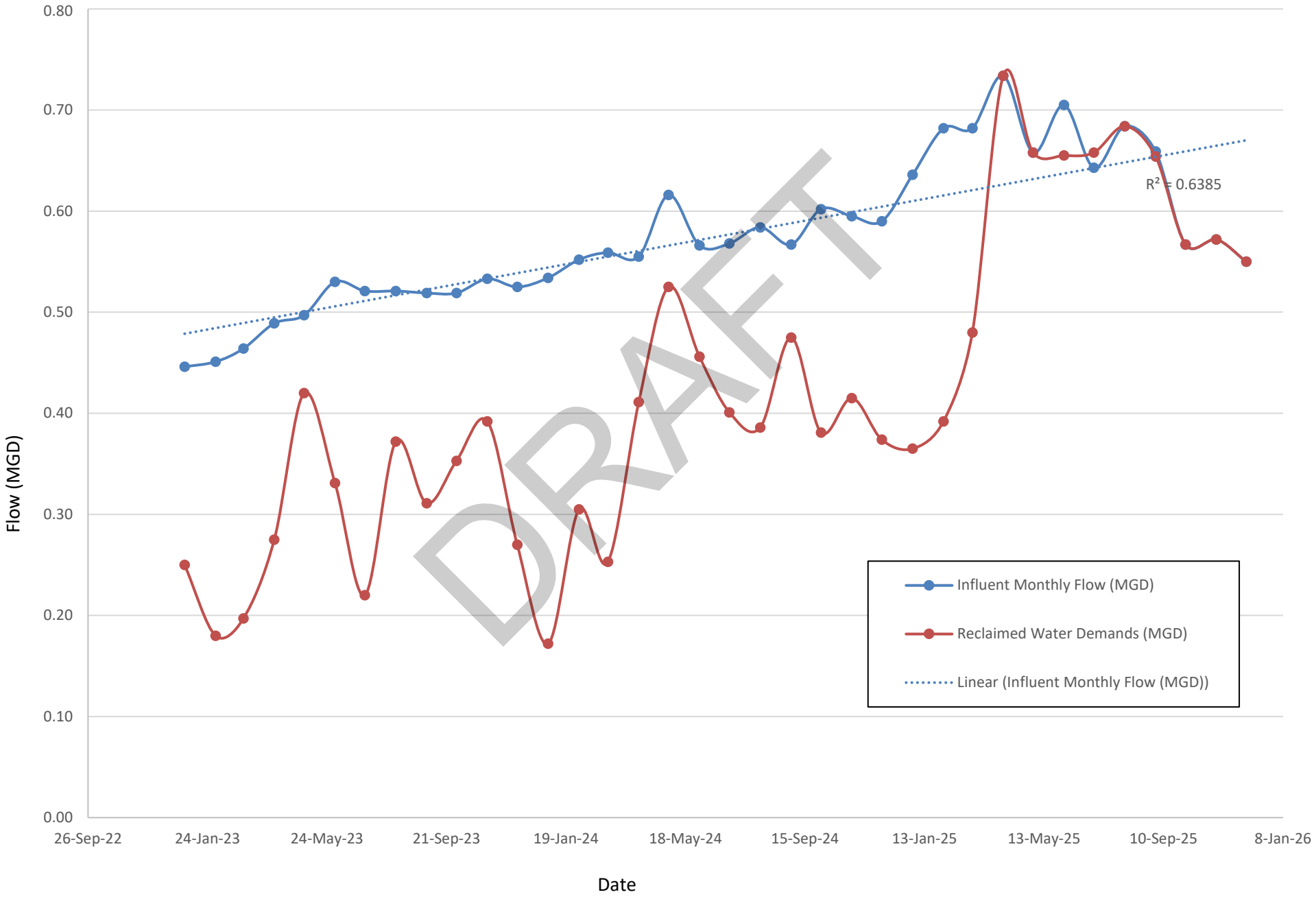
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TABLE III-2 2023 THROUGH 2025 WRF AND REUSE ADF SUMMARY						
Month	**2023 WRF Flows (MGD)**	**2023 Reuse Flows (MGD)**	**2024 WRF Flows (MGD)**	**2024 Reuse Flows (MGD)**	**2025 WRF Flows (MGD)**	**2025 Reuse Flows (MGD)**
January	0.446	0.250	0.534	0.172	0.636	0.365
February	0.451	0.306	0.552	0.305	0.682	0.392
March	0.464	0.197	0.559	0.253	0.682	0.480
April	0.489	0.275	0.555	0.411	0.734	0.734
May	0.497	0.420	0.616	0.525	0.658	0.658
June	0.530	0.331	0.566	0.337	0.705	0.655
July	0.521	0.220	0.568	0.401	0.643	0.658
August	0.521	0.372	0.584	0.386	0.684	0.684
September	0.520	0.311	0.567	0.475	0.659	0.654
October	0.468	0.353	0.602	0.381	0.567	0.567
November	0.533	0.392	0.595	0.415	0.572	0.572
December	0.525	0.270	0.590	0.374	0.550	0.550
AVERAGE (AADF)	**0.497**	**0.308**	**0.574**	**0.370**	**0.648**	**0.581**

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The flow trends are illustrated in **Figure III-3**. As shown within the figure, the public-access reclaimed water demands have met or exceeded available supply beginning in April 2025. The Town is coordinating with the Hammock Oaks development to further review the consumption dynamics, but the 2025 reclaimed water use has exceeded the anticipated demand. **Attachment D** provides the *Hammock Developments Reclaimed Water System Modeling* (October 2024) summary that included a review of the planned developments within the Town's RWSA. The developer's engineer had utilized a planning value of 325 gpd/ERU that indicated an estimated reclaimed water use of 100,000 to 200,000 gpd pending what areas are online within the Hammock Oaks development.

Town of Lady Lake
Reclaimed Water Master Plan
Client No. 9514-41-1
Figure III-3: January 2023 through December 2025 Average Monthly Influent WRF Flow and Reclaimed Water Demands



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3. **Existing Hydraulic Review:** The Town's current reclaimed water delivery system has one 12-inch reclaimed water (‘reuse') main that extends from the WRF's reclaimed water pump station (RCW PS) west along Abeble Road to Rolling Acres Road where it turns north and continues to its most northern reaches near the intersection of Rolling Acres Road and US 27/441 and one (1) 10-inch ‘reuse main' running east west along US 466. **Attachment D** summarizes the 2024 review of the Town’s reclaimed water hydraulic review.

   As a result of these modeling efforts, it was determined that:

   - The existing 12" water main becomes limiting as peak reclaimed water demands approach 2,850 gpm resulting in a nominal pipeline velocity of 8 feet per second (fps) with pressure losses of 1 psig per 175 lineal feet. A parallel or looped reclaimed water main is required to decrease pressure loss in the distribution system prior to reaching these service demands.

4. **VCDD Reuse Interconnect:** In 2012/2013, the Town and The Villages Community Development District (VCDD) entered into an interlocal agreement to provide a “regional” reuse interconnection such that reclaimed water supplies could be maximized between the two (2) entities. The project generally involved the construction of a bi-directional reclaimed water transfer system between the VCDD reclaimed water system and the Lady Lake reclaimed water system. At the VCDD site, the project constructed a pump station to deliver reclaimed water to the Lady Lake GST and a bypass discharge line to allow reclaimed water to be discharged from the Lady Lake system into the VCDD reclaimed water storage basins. At the Lady Lake site, the project included a fill line to the existing GST.

   More specifically, the scope included the following:

   - 600 gpm package pump station at the VCDD site;
   - bi-directional flowmeter, interconnect piping, and valves at the VCDD site;
   - interconnect piping, valves, and a storage tank penetration at the Lady Lake WWTP; and

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- Updated Effluent Operating Protocols for the VCDD and Lady Lake systems.

Attachment E depicts the improvements. The VCDD estimated 150,000 gallons per day of reclaimed water could be available from the VCDD WWTP. This is an annual average number, but quantities would not be available during all periods of the year. During some months, there would be no available reuse and, during other months, there could be more available for delivery. Under all conditions, delivery of reclaimed water will be coordinated between VCDD and the Town of Lady Lake. Reclaimed water will generally be delivered when the supplying party has available excess and the receiving party has available storage accompanied with an anticipated demand from its customers. Transfers to date have been in limited windows.

5. **Reject Storage:** Currently, the Town is meeting the one (1) day reject storage capacity via the onsite RIBs that have a capacity of approximately 13 million gallons, assuming no losses to percolation, and a permitted disposal capacity of 0.25 MGD (AADF).

C. SUMMARY OF FINDINGS

A general summary of findings is provided as follows:

- As noted herein, the Town's Reuse System's firm capacity is limited by the chlorine contact chamber and transfer pump capacity of 4.6 MGD-PHF.

- The Town's RWSA is currently growing with new customers coming online, so use characteristics are being monitored. In 2024, the Town had approximately 160 residential reuse customers. The average use for this service pool was 625 gpd (18,750 gallons per month) per connection. In 2025, the connection total grew to 327 residential connections

- Reclaimed water use increased 18% (0.365 MGD/0.308 MGD) between 2024 and 2023 and 66% (0.607 MGD/0.365 MGD) between 2025 and 2024. Wastewater flows over the same period of time increased 15% (0.572 MGD/0.497 MGD) and 16% (0.664 MGD/0.572 MGD). The 2025 reuse

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demand increase is largely attributed to the construction of the Hammock Oaks development.

- The existing 12" water main becomes limiting as peak reclaimed water demands approach 2,850 gpm resulting in a nominal pipeline velocity of 8 feet per second (fps) with pressure losses of 1 psig per 175 lineal feet. A parallel or looped reclaimed water main is required to decrease pressure loss in the distribution system prior to reaching these service demands.

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IV. REGULATORY REQUIREMENTS

A. OVERVIEW

The most dynamic regulatory areas which could impact the Town's reclaimed water infrastructure planning are related to nutrient loading, alternative water supply needs/demands (non-potable irrigation), and public-access-reuse water quality requirements. Each of these topics are discussed in further detail in relation to the following areas:

- Basin Management Action Plan (BMAP);
- Consumptive Use Permit (CUP);
- Water Conservation; and
- Reclaimed Water Use.

B. BASIN MANAGEMENT ACTION PLAN

The Town is located within the Upper Ocklawaha and Silver Springs and Upper Silver River and Rainbow Spring Group and Rainbow River basin management action plans (BMAP). The Florida legislature enacted legislation (Subparagraph 403.067(7)(a)9 of the Florida Statutes) requiring local governments (counties and municipalities) to develop a wastewater treatment plan and/or an onsite sewage treatment and disposal system (OSTDS) remediation plan for those identified entities within a BMAP. The FDEP identified communities where the domestic wastewater treatment facilities and/or OSTDS were contributors of at least 20 percent of point source or non-point source nutrient pollution or where it was determined that remediation is necessary to achieve an identified total maximum daily load (TMDL). A final order was issued on June 27, 2025 and a copy if provided as **Attachment F**.

The Town provided a *BMAP Remediation Plan* (July 2024) outlining the Town's planned activities related to meeting the BMAP requirements. As it relates to the Town's reclaimed water system, the BMAP requires the following:

- Reclaimed water quality is required to meet 3 mg/L (Total Nitrogen) and 1 mg/L (Total Phosphorus).

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C. CONSUMPTIVE USE PERMIT

The Town is renewing their CUP which expires in July 2026. The Town's current CUP lists the following conditions as it applies to reclaimed water use:

- Condition 11: Landscape irrigation is prohibited between the hours of 10:00 a.m. and 4:00 p.m., except as follows:

  (b) The use of reclaimed water for irrigation is allowed anytime, provided appropriate signs are placed on the property to inform the general public and District enforcement personnel of such use. Such signs must be in accordance with local restrictions.

- Condition 13: Treated effluent must be used as irrigation water when it becomes available, economically feasible, and permissible under applicable state and federal statutes or regulations promulgated thereunder.

- Condition 29: The lowest quality water source, such as reclaimed water and surface/storm water, must be used to supply water use needs within the service area whenever it is deemed feasible pursuant to District rules and applicable state law.

As reviewed throughout this Plan, the Town is maximizing reclaimed water use within the RWSA. The Town will be coordinating with the developers and educating the customers to maximize the resource. The Town will consider further extension of reclaimed water service outside of the current RWSA on a case-by-case basis.

D. WATER CONSERVATION

Changing consumer behavior is difficult, but can occur through appropriate outreach and associated economic measures provided through rate structures that encourage reasonable water use. The SJRWMD is increasing their review and scrutiny of measures to increase water conservation. Condition 26 of the Town's CUP states, "The permittee shall implement all features of the Water Conservation Plan that was submitted with its application on September 30, 2005 and amendments to the plan, including landscaping, water conservation, and reclaimed water ordinances, provided to the District on March 17, 2006."

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The Town continues to be proactive and perform increasing water conservation within the Town. The Town reviews potable water use for all metered accounts. If an account is trending above average consumption or displays a “large” use, then those accounts are notified via letter from Public Works. The letter states that their water use appears greater than required which may have resulted from over-irrigation. They are asked to review their irrigation practices and reduce water consumption to recommended levels. Letters continue to these accounts until use is in line with recommended or average values. Use of this program has been effective in reducing water consumption within “high-use” accounts.

Increasing water conservation should remain a goal of the Town. Continued focus should be made on budgeting and allotting Town resources to maximize the cost-benefit of conservation measures. On an on-going basis, the effectiveness of utilized measures should be reviewed and the most-effective programs or approaches should be continued. However, the efficacy of any water conservation tool is often times limited since end user behavior is difficult to change, especially over a short time period.

E. SUMMARY

The regulatory environment is a dynamic variable, and a subject that is often difficult to predict. On balance, regulations tend to become more restrictive, so the Town should prepare appropriately. Within the forthcoming planning period, the following items will be most critical to the Town’s reclaimed water system management and operations:

- Enhancement of reclaimed water quality to meet advanced wastewater treatment (AWT) criteria (TN $\leq$ 3 mg/L and TP $\leq$ 1 mg/L).

- Maximizing reclaimed water use within the Town’s RWSA.

- Reviewing opportunities to extend reclaimed water service outside of the RWSA.

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V. PROJECTED REUSE DEMANDS

A. OVERVIEW

Based on the projected wastewater demands within the Service Area and the anticipated time horizon of when those demands may impact the system, a review of the Town's reuse system needs is required to determine existing facility limitations, service area characteristics, and implications for future CUP allocations. The reuse system analysis will include a review of the following items:

1. Reclaimed Water Service Area Characteristics.
2. Reclaimed Water Supply and Demand.
3. Wet-weather Storage Requirements.

B. EXISTING RECLAIMED WATER SERVICE AREA CHARACTERISTICS

Attachment D, as referenced in **Section III**, reviewed the currently known developments within the Town's RWSA. A summary of the developments and estimated demands are provided in **Table V-1**.

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TABLE V-1
LADY LAKE RECLAIMED WATER SYSTEM DEMAND SUMMARY

Development	RW-ERU	RW Demand[1] (gpd-AADF)	RW Demand[2] (gpm)
Lake Ella Estates	232	75,400	320
Green Key Village	230	75,000	310
Hammock Highlands	323	105,000	440
Hammock Reserve	954	310,000	1,300
Hammock Oaks[3]	989	345,300	1,450
Sumter Co. Apartments[4]	n/a	40,000	100
Lady Lake Recreational[4]	n/a	10,000	20
US 27 Commercial[4]	n/a	25,000	50
TOTAL	**2,728**	**985,700**	**3,990**

Notes: 1 - 325 gallons per day (gpd) per ERU | Sumter Co. Apartments estimated based on developer submittal | Lady Lake Recreational estimated | US 27 Commercial estimated
2 - Peaking factor of 6.0 used. 4 hour cycle time.
3 - Includes 23,900 gpd-ADF for commercial and multi-family users.
4 - Existing common space landscaping. Peaking factor reduced to anticipated irrigation zone demands.

The development locations are illustrated in **Figure V-1**. As noted in **Section II**, the ERU basis provided in **Table V-1** is 325 gpd/ERU which is greater than the Town's traditional land development code basis of 274 gpd/ERU but less than the 2025 trends that indicate an ERU basis greater than 600 gpd/ERU. As construction within the new developments are completed and irrigation use matures, the ERU basis will be monitored.

C. PROJECTED RECLAIMED WATER SUPPLY AND DEMANDS

The 2026 Wastewater Master Plan provided wastewater projections that include interim flows from the Town of Fruitland Park that is estimated to come offline by 2030. Using the 2025 Reuse AADF use, which may be inflated due to interim development demands, the estimated influent wastewater flows and associated reclaimed water demands are summarized in **Table V-2**.

TABLE V-2

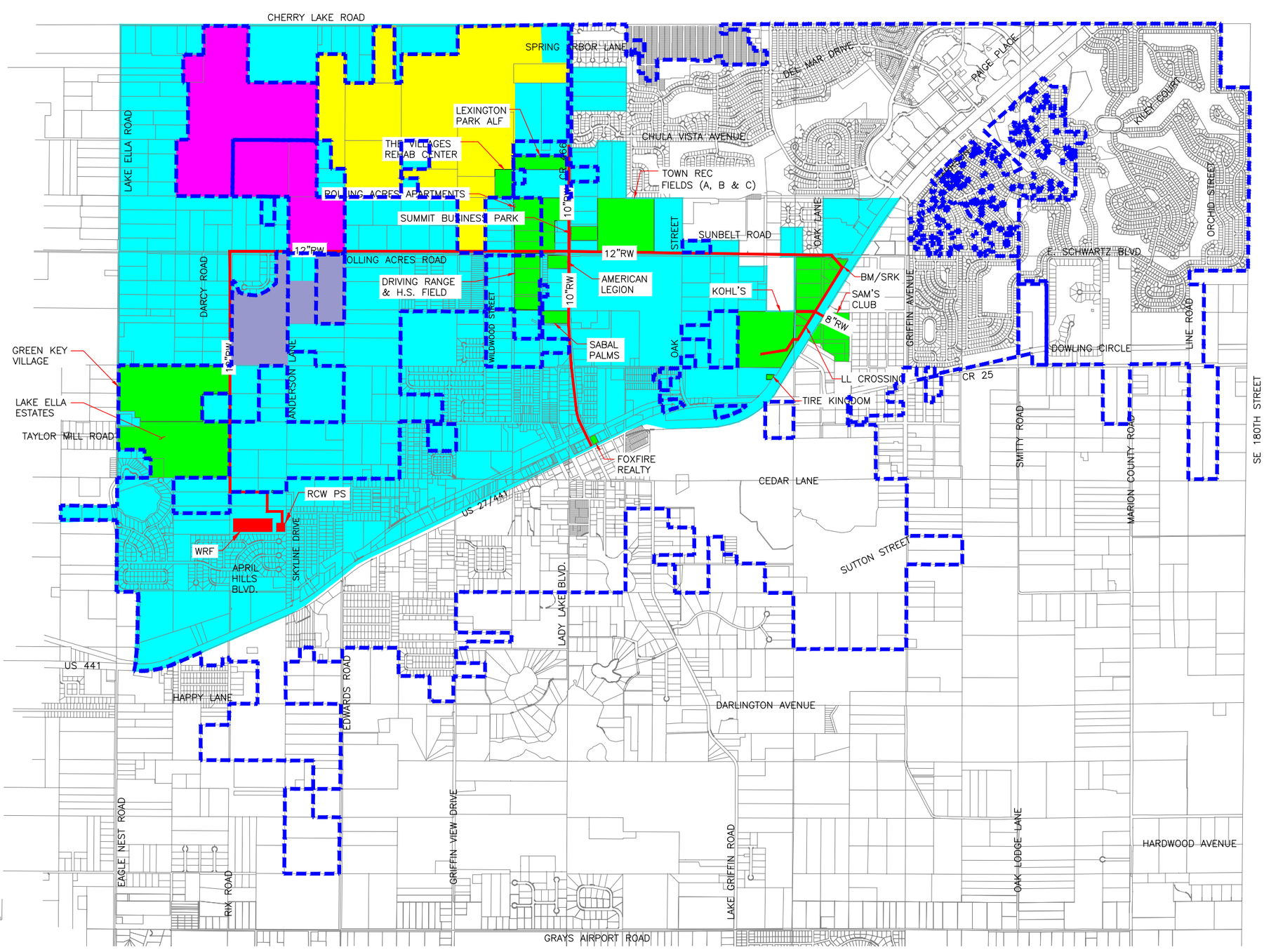
RECLAIMED WATER SUPPLY AND DEMAND PROJECTIONS

Year	Wastewater Flows (Reuse Supply) (MGD-AADF)	Reclaimed Water Demands (MGD-AADF)	Reclaimed Water Demands (MGD-MDF)[B]	Operational Storage Estimate (MGD-AADF)
2025[C]	0.664	0.664	2.656	1.992
2026[C]	0.717	0.694	2.776	2.059
2027	1.121	0.889	3.556	2.435
2028	1.395	0.983	3.932	2.537
2029	1.575	1.077	4.308	2.733
2030[A]	1.775	1.171	4.684	2.909
2035[A]	1.687	1.631	6.524	4.837
2040	1.986	1.645	6.580	4.594
2045	2.658	1.645	6.580	3.922

a: Town of Fruitland Park bulk wastewater flows to end by 12/31/30.
b: Maximum day demands estimated using a 4.0 peaking factor.
c: 2025 Reclaimed Water Demands may be inflated due to initial development activities (grow-in, construction issues, flushing, non-metered flows, etc.).

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J:\OrangePark\CAD Files\Lady Lake\9514411 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Reclaimed WaterFig. V-1 Existing Reuse Main Routing & Reuse Customers.dwg, 2/23/2026 1:17:00 PM, Mike.Lisena



LEGEND

- TOWN LIMITS AREA
- XX"RW REUSE MAIN
- EXISTING REUSE CUSTOMER
- RECLAIMED WATER SERVICE AREA
- HAMMOCK OAKS DEVELOPMENT AREA
- HAMMOCK RESERVE DEVELOPMENT AREA
- HAMMOCK HIGHLANDS DEVELOPMENT AREA

Designed by:	JRS	Date: JAN. 2026
Drawn by:	MAL	Job No. 9514-41-1
Checked by:	JRS	
Approved by:	JRS	
Scale:	1" = 2,500'	

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EXISTING REUSE MAIN ROUTING & REUSE CUSTOMERS

TOWN OF LADY LAKE
Reclaimed Water Master Plan
Lake County, Florida

Figure
V-1

As noted in the table, the reclaimed water operational storage is estimated based on the estimated maximum day reclaimed water demands versus estimated average influent wastewater flows through the WRF. The reclaimed water use projections are limited to those located in the RWSA, and known to have a development plan. Additional growth is anticipated to occur but the timing is unknown. The Town's RWSA is currently permitted at 2.26 MGD (AADF) estimated using 778 acres of irrgable area at an average application rate of 0.75" per week.

The recommended target for operational storage is 5.0 MG. The Town currently has 1.2 MG, leaving a deficit of 3.8 MG.

D. WET-WEATHER STORAGE/DISPOSAL REQUIREMENTS

The Town's primary means of effluent disposal is the public-access reuse system. Rapid infiltration basins (RIBs) were constructed with the initial wastewater treatment improvements, and were the only effluent disposal method until the Town implemented a public-access reclaimed water delivery system. The RIBs are permitted for a 0.25 MGD (AADF) capacity and remain as the Town's wet-weather and/or reject disposal alternative. Beginning in 2025, developments within the RWSA began to come online and utilize reclaimed water for irrigation. This has led to limited RIB loading, which is anticipated as the RWSA develops.

As the RWSA continues to develop, the RIB loading will become more infrequent and generally utilized during reject conditions, which will be limited, and those wet periods of the year. The existing RIBs consist of four cells totaling approximately 10.8 acres and provide roughly 12.3 MG of effluent storage when filled to 3.5 ft depth. The 12.3 MG of wet weather effluent storage provided in the RIBs is equivalent to 10 days of storage at the design flow of 1.2 MGD. FDEP approved a RIB percolation rate of 0.85 inches per day, which is maintained for conceptual RIB expansion basis.

A water balance model was developed utilizing requirements outlined in FDEP's LandAp Model. The water balance included the following critical inputs:

- WRF Influent Flow = 3.0 MGD (AADF) [Expansion Planning Basis]
- RWSA Irrigable Area = 778 acres

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- RWSA Irrigation Rate = 0.75/1.00/1.25 in/week reviewed
- RWSA Reuse Demand = 2.26/3.02/3.77 MGD (AADF)
- RIB Percolation Rate = 0.85 in/day
- Rainfall = 52 in/year [Monthly distribution per NOAA]
- Evapotranspiration [ET] = 40 in/year [Monthly distribution per NOAA]

Based on the above inputs, the Town's alternative disposal needs fluctuate based on the actual RWSA irrigation application rate. Irrigation use through the end of 2025 has exceeded estimates, but needs to be monitored. Using the planning values, the water balance findings are summarized as follows:

- 0.75"/week Application Rate | 2.26 MGD (AADF) Reuse Demand
  70 Acres of RIB area needed (10.3 Acres Existing)
  Permitted RIB Capacity Required = 1.43 MGD (AADF)
  Results are summarized in **Table V-3**.

- 1.00"/week Application Rate | 3.02 MGD (AADF) Reuse Demand
  36 Acres of RIB area needed (10.3 Acres Existing)
  Permitted RIB Capacity Required = 0.68 MGD (AADF)
  Results are summarized in **Table V-4**.

- 1.25"/week Application Rate | 3.77 MGD (AADF) Reuse Demand
  10.3 Acres | Existing RIB Capacity Sufficient
  Results are summarized in **Table V-5**.

Expansion of the Town's RIB capacity to a total of 36 acres is recommended. Using the current permitted loading criteria of 0.85"/day, the expanded capacity would be 0.83 MGD (AADF).

E. REJECT STORAGE REQUIREMENTS

Operation of the Town's WRF includes a Reuse Operating Protocol, which is provided as **Attachment C**. Should effluent quality not meet the requirements outlined in the protocol then it can not be pumped into the Town's Reuse GST and is diverted to the onsite RIBs. The RIBs have sufficient volume to provide one day of storage at a permitted capacity of 3.0 MGD. Assuming no percolation, the existing RIBs have a capacity of approximately 12.3 million gallons.

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TABLE V-3: EFFLUENT DISPOSAL WATER BALANCE (WITH ET) - 0.75"/WEEK APPLICATION RATE
2025 RECLAIMED WATER MASTER PLAN
TOWN OF LADY LAKE, FL
Client No. 9514-41-1
January 2026

WW INFLUENT (MGD-AADF) =		3.00	RIB Permit Capacity (MGD-AADF) =	1.62	
IRRIGABLE PAR AREA (ac) =	778.00	RCW STORAGE (MG) =		6.7	RIB AREA (ac) =	70.0
MAXIMUM PAR APPLICATION RATE (in/wk) =	0.75	REUSE DEMAND (MGD-AADF) =		2.26	RIB LOADING RATE (in/day) =	0.85

MONTH	DAYS PER MONTH	WEEKS PER MONTH	DAILY EFFLUENT FLOW (GPD)	MONTHLY INCOMING VOLUME (GAL)	IRRIGATION RATE (in/wk)	IRRIGATION RATE (in/mon)	ET Total = AVERAGE RAINFALL (in/mon)	40 AVERAGE ET (in/mon)	AVAILABLE IRRIGATION RATE (in/mon)	MONTHLY PAR DEMAND (GAL)	IRRIGATION DEFICIT/SURPLUS (GAL)	TOTAL VOLUME (GAL) IN RIBS AT MONTHS START	MONTHLY VOLUME APPLIED TO RIBS (GAL)	POTENTIAL PERCOLATION FROM RIBS (GAL)	TOTAL VOLUME IN RIBS AT MONTHS END (MG)
Jan	31	4.4	3,000,000	93,000,000	0.75	3.3	2.5	1.9	2.7	57,976,491	35,023,509	0	35,023,509	50,082,602	0
Feb	28	4.0	3,000,000	84,000,000	0.75	3.0	2.7	2.1	2.4	50,211,471	33,788,529	0	33,788,529	45,235,898	0
Mar	31	4.4	3,000,000	93,000,000	0.75	3.3	3.5	2.7	2.5	53,101,591	39,898,409	0	39,898,409	50,082,602	0
Apr	30	4.3	3,000,000	90,000,000	0.75	3.2	2.8	2.2	2.6	54,250,674	35,749,326	0	35,749,326	48,467,034	0
May	31	4.4	3,000,000	93,000,000	0.75	3.3	3.8	2.9	2.4	51,639,121	41,360,879	0	41,360,879	50,082,602	0
Jun	30	4.3	3,000,000	90,000,000	0.75	3.2	7.7	5.9	1.4	30,363,664	59,636,336	0	59,636,336	48,467,034	11,169,302
Jul	31	4.4	3,000,000	93,000,000	0.75	3.3	7.9	6.1	1.5	31,652,030	61,347,970	11,169,302	61,347,970	50,082,602	22,434,670
Aug	31	4.4	3,000,000	93,000,000	0.75	3.3	7.4	5.7	1.6	34,089,480	58,910,520	22,434,670	58,910,520	50,082,602	31,262,589
Sep	30	4.3	3,000,000	90,000,000	0.75	3.2	6.4	4.9	1.7	36,701,034	53,298,966	31,262,589	53,298,966	48,467,034	36,094,521
Oct	31	4.4	3,000,000	93,000,000	0.75	3.3	3.0	2.3	2.6	55,539,041	37,460,959	36,094,521	37,460,959	50,082,602	23,472,878
Nov	30	4.3	3,000,000	90,000,000	0.75	3.2	1.9	1.5	2.8	58,638,084	31,361,916	23,472,878	31,361,916	48,467,034	6,367,760
Dec	31	4.4	3,000,000	93,000,000	0.75	3.3	2.4	1.8	2.8	58,463,981	34,536,019	6,367,760	34,536,019	50,082,602	0
Jan	31	4.4	3,000,000	93,000,000	0.75	3.3	2.5	1.9	2.7	57,976,491	35,023,509	0	35,023,509	50,082,602	0
Feb	28	4.0	3,000,000	84,000,000	0.75	3.0	2.7	2.1	2.4	50,211,471	33,788,529	0	33,788,529	45,235,898	0
Mar	31	4.4	3,000,000	93,000,000	0.75	3.3	3.5	2.7	2.5	53,101,591	39,898,409	0	39,898,409	50,082,602	0
Apr	30	4.3	3,000,000	90,000,000	0.75	3.2	2.8	2.2	2.6	54,250,674	35,749,326	0	35,749,326	48,467,034	0
May	31	4.4	3,000,000	93,000,000	0.75	3.3	3.8	2.9	2.4	51,639,121	41,360,879	0	41,360,879	50,082,602	0
Jun	30	4.3	3,000,000	90,000,000	0.75	3.2	7.7	5.9	1.4	30,363,664	59,636,336	0	59,636,336	48,467,034	11,169,302
Jul	31	4.4	3,000,000	93,000,000	0.75	3.3	7.9	6.1	1.5	31,652,030	61,347,970	11,169,302	61,347,970	50,082,602	22,434,670
Aug	31	4.4	3,000,000	93,000,000	0.75	3.3	7.4	5.7	1.6	34,089,480	58,910,520	22,434,670	58,910,520	50,082,602	31,262,589
Sep	30	4.3	3,000,000	90,000,000	0.75	3.2	6.4	4.9	1.7	36,701,034	53,298,966	31,262,589	53,298,966	48,467,034	36,094,521
Oct	31	4.4	3,000,000	93,000,000	0.75	3.3	3.0	2.3	2.6	55,539,041	37,460,959	36,094,521	37,460,959	50,082,602	23,472,878
Nov	30	4.3	3,000,000	90,000,000	0.75	3.2	1.9	1.5	2.8	58,638,084	31,361,916	23,472,878	31,361,916	48,467,034	6,367,760
Dec	31	4.4	3,000,000	93,000,000	0.75	3.3	2.4	1.8	2.8	58,463,981	34,536,019	6,367,760	34,536,019	50,082,602	0
AVERAGE	**30**		**3,000,000**	**91,250,000**			**4.33**		**2.26**	**47,718,888**	**43,531,112**	**10,900,143**	**43,531,112**	**49,140,187**	**10,900,143**

Max = **36,094,521**
Days = **12.0**

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TABLE V-4: EFFLUENT DISPOSAL WATER BALANCE (WITH ET) - 1.00"/WEEK APPLICATION RATE
2025 RECLAIMED WATER MASTER PLAN
TOWN OF LADY LAKE, FL
Client No. 9514-41-1
January 2026

2,924,680 gal
78200 SF

		WW INFLUENT (MGD-AADF) =		**3.00**	**RIB Permit Capacity (MGD-AADF) =**	**0.83**	
IRRIGABLE PAR AREA (ac) =	**778.00**	**RCW STORAGE (MG) =**		**6.7**	**RIB AREA (ac) =**	**36.0**	
MAXIMUM PAR APPLICATION RATE (in/wk) =	**1.00**	**REUSE DEMAND (MGD-AADF) =**		**3.02**	**RIB LOADING RATE (in/day) =**	**0.85**	

MONTH	DAYS PER MONTH	WEEKS PER MONTH	DAILY EFFLUENT FLOW (GPD)	MONTHLY INCOMING VOLUME (GAL)	IRRIGATION RATE (in/wk)	IRRIGATION RATE (in/mon)	ET Total = AVERAGE RAINFALL (in/mon)	40 AVERAGE ET (in/mon)	AVAILABLE IRRIGATION RATE (in/mon)	MONTHLY PAR DEMAND (GAL)	IRRIGATION DEFICIT/SURPLUS (GAL)	TOTAL VOLUME (GAL) IN RIBS AT MONTHS START	MONTHLY VOLUME APPLIED TO RIBS (GAL)	POTENTIAL PERCOLATION FROM RIBS (GAL)	TOTAL VOLUME IN RIBS AT MONTHS END (MG)
Jan	31	4.4	3,000,000	93,000,000	1.00	4.4	2.5	1.9	3.9	81,364,404	11,635,596	0	11,635,596	25,756,767	0
Feb	28	4.0	3,000,000	84,000,000	1.00	4.0	2.7	2.1	3.4	71,336,038	12,663,962	0	12,663,962	23,264,176	0
Mar	31	4.4	3,000,000	93,000,000	1.00	4.4	3.5	2.7	3.6	76,489,504	16,510,496	0	16,510,496	25,756,767	0
Apr	30	4.3	3,000,000	90,000,000	1.00	4.3	2.8	2.2	3.6	76,884,139	13,115,861	0	13,115,861	24,925,903	0
May	31	4.4	3,000,000	93,000,000	1.00	4.4	3.8	2.9	3.6	75,027,034	17,972,966	0	17,972,966	25,756,767	0
Jun	30	4.3	3,000,000	90,000,000	1.00	4.3	7.7	5.9	2.5	52,997,128	37,002,872	0	37,002,872	24,925,903	12,076,968
Jul	31	4.4	3,000,000	93,000,000	1.00	4.4	7.9	6.1	2.6	55,039,944	37,960,056	12,076,968	37,960,056	25,756,767	24,280,258
Aug	31	4.4	3,000,000	93,000,000	1.00	4.4	7.4	5.7	2.7	57,477,394	35,522,606	24,280,258	35,522,606	25,756,767	34,046,097
Sep	30	4.3	3,000,000	90,000,000	1.00	4.3	6.4	4.9	2.8	59,334,499	30,665,501	34,046,097	30,665,501	24,925,903	39,785,696
Oct	31	4.4	3,000,000	93,000,000	1.00	4.4	3.0	2.3	3.7	78,926,954	14,073,046	39,785,696	14,073,046	25,756,767	28,101,975
Nov	30	4.3	3,000,000	90,000,000	1.00	4.3	1.9	1.5	3.8	81,271,549	8,728,451	28,101,975	8,728,451	24,925,903	11,904,522
Dec	31	4.4	3,000,000	93,000,000	1.00	4.4	2.4	1.8	3.9	81,851,894	11,148,106	11,904,522	11,148,106	25,756,767	0
Jan	31	4.4	3,000,000	93,000,000	1.00	4.4	2.5	1.9	3.9	81,364,404	11,635,596	0	11,635,596	25,756,767	0
Feb	28	4.0	3,000,000	84,000,000	1.00	4.0	2.7	2.1	3.4	71,336,038	12,663,962	0	12,663,962	23,264,176	0
Mar	31	4.4	3,000,000	93,000,000	1.00	4.4	3.5	2.7	3.6	76,489,504	16,510,496	0	16,510,496	25,756,767	0
Apr	30	4.3	3,000,000	90,000,000	1.00	4.3	2.8	2.2	3.6	76,884,139	13,115,861	0	13,115,861	24,925,903	0
May	31	4.4	3,000,000	93,000,000	1.00	4.4	3.8	2.9	3.6	75,027,034	17,972,966	0	17,972,966	25,756,767	0
Jun	30	4.3	3,000,000	90,000,000	1.00	4.3	7.7	5.9	2.5	52,997,128	37,002,872	0	37,002,872	24,925,903	12,076,968
Jul	31	4.4	3,000,000	93,000,000	1.00	4.4	7.9	6.1	2.6	55,039,944	37,960,056	12,076,968	37,960,056	25,756,767	24,280,258
Aug	31	4.4	3,000,000	93,000,000	1.00	4.4	7.4	5.7	2.7	57,477,394	35,522,606	24,280,258	35,522,606	25,756,767	34,046,097
Sep	30	4.3	3,000,000	90,000,000	1.00	4.3	6.4	4.9	2.8	59,334,499	30,665,501	34,046,097	30,665,501	24,925,903	39,785,696
Oct	31	4.4	3,000,000	93,000,000	1.00	4.4	3.0	2.3	3.7	78,926,954	14,073,046	39,785,696	14,073,046	25,756,767	28,101,975
Nov	30	4.3	3,000,000	90,000,000	1.00	4.3	1.9	1.5	3.8	81,271,549	8,728,451	28,101,975	8,728,451	24,925,903	11,904,522
Dec	31	4.4	3,000,000	93,000,000	1.00	4.4	2.4	1.8	3.9	81,851,894	11,148,106	11,904,522	11,148,106	25,756,767	0
Jan	31	4.4	3,000,000	93,000,000	1.00	4.4	2.5	1.9	3.9	81,364,404	11,635,596	0	11,635,596	25,756,767	0
Feb	28	4.0	3,000,000	84,000,000	1.00	4.0	2.7	2.1	3.4	71,336,038	12,663,962	0	12,663,962	23,264,176	0
Mar	31	4.4	3,000,000	93,000,000	1.00	4.4	3.5	2.7	3.6	76,489,504	16,510,496	0	16,510,496	25,756,767	0
Apr	30	4.3	3,000,000	90,000,000	1.00	4.3	2.8	2.2	3.6	76,884,139	13,115,861	0	13,115,861	24,925,903	0
May	31	4.4	3,000,000	93,000,000	1.00	4.4	3.8	2.9	3.6	75,027,034	17,972,966	0	17,972,966	25,756,767	0
Jun	30	4.3	3,000,000	90,000,000	1.00	4.3	7.7	5.9	2.5	52,997,128	37,002,872	0	37,002,872	24,925,903	12,076,968
Jul	31	4.4	3,000,000	93,000,000	1.00	4.4	7.9	6.1	2.6	55,039,944	37,960,056	12,076,968	37,960,056	25,756,767	24,280,258
Aug	31	4.4	3,000,000	93,000,000	1.00	4.4	7.4	5.7	2.7	57,477,394	35,522,606	24,280,258	35,522,606	25,756,767	34,046,097
Sep	30	4.3	3,000,000	90,000,000	1.00	4.3	6.4	4.9	2.8	59,334,499	30,665,501	34,046,097	30,665,501	24,925,903	39,785,696
Oct	31	4.4	3,000,000	93,000,000	1.00	4.4	3.0	2.3	3.7	78,926,954	14,073,046	39,785,696	14,073,046	25,756,767	28,101,975
Nov	30	4.3	3,000,000	90,000,000	1.00	4.3	1.9	1.5	3.8	81,271,549	8,728,451	28,101,975	8,728,451	24,925,903	11,904,522
Dec	31	4.4	3,000,000	93,000,000	1.00	4.4	2.4	1.8	3.9	81,851,894	11,148,106	11,904,522	11,148,106	25,756,767	0
AVERAGE	**30**		**3,000,000**	**91,250,000**			**4.33**		**3.35**	**70,666,707**	**20,583,293**	**12,516,293**	**20,583,293**	**25,272,096**	**12,516,293**

Max = **39,785,696**
Days = **13.3**

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TABLE V-5: EFFLUENT DISPOSAL WATER BALANCE (WITH ET) - 1.25"/WEEK APPLICATION RATE
2025 RECLAIMED WATER MASTER PLAN
TOWN OF LADY LAKE, FL
Client No. 9514-41-1
January 2026

2,924,680 gal
78200 SF

WW INFLUENT (MGD-AADF) =		3.00	RIB Permit Capacity (MGD-AADF) =	0.24	
IRRIGABLE PAR AREA (ac) =	778.00	RCW STORAGE (MG) =		6.7	RIB AREA (ac) =	10.3
MAXIMUM PAR APPLICATION RATE (in/wk) =	1.25	REUSE DEMAND (MGD-AADF) =		3.77	RIB LOADING RATE (in/day) =	0.85

MONTH	DAYS PER MONTH	WEEKS PER MONTH	DAILY EFFLUENT FLOW (GPD)	MONTHLY INCOMING VOLUME (GAL)	IRRIGATION RATE (in/wk)	IRRIGATION RATE (in/mon)	ET Total = 40 AVERAGE RAINFALL (in/mon)	AVERAGE ET (in/mon)	AVAILABLE IRRIGATION RATE (in/mon)	MONTHLY PAR DEMAND (GAL)	IRRIGATION DEFICIT/SURPLUS (GAL)	TOTAL VOLUME (GAL) IN RIBS AT MONTHS START	MONTHLY VOLUME APPLIED TO RIBS (GAL)	POTENTIAL PERCOLATION FROM RIBS (GAL)	TOTAL VOLUME IN RIBS AT MONTHS END (MG)
Jan	31	4.4	3,000,000	93,000,000	1.25	5.5	2.5	1.9	5.0	104,752,318	-11,752,318	0	0	7,369,297	0
Feb	28	4.0	3,000,000	84,000,000	1.25	5.0	2.7	2.1	4.4	92,460,606	-8,460,606	0	0	6,656,139	0
Mar	31	4.4	3,000,000	93,000,000	1.25	5.5	3.5	2.7	4.7	99,877,418	-6,877,418	0	0	7,369,297	0
Apr	30	4.3	3,000,000	90,000,000	1.25	5.4	2.8	2.2	4.7	99,517,604	-9,517,604	0	0	7,131,578	0
May	31	4.4	3,000,000	93,000,000	1.25	5.5	3.8	2.9	4.7	98,414,948	-5,414,948	0	0	7,369,297	0
Jun	30	4.3	3,000,000	90,000,000	1.25	5.4	7.7	5.9	3.6	75,630,593	14,369,407	0	14,369,407	7,131,578	7,237,829
Jul	31	4.4	3,000,000	93,000,000	1.25	5.5	7.9	6.1	3.7	78,427,857	14,572,143	7,237,829	14,572,143	7,369,297	14,440,674
Aug	31	4.4	3,000,000	93,000,000	1.25	5.5	7.4	5.7	3.8	80,865,308	12,134,692	14,440,674	12,134,692	7,369,297	19,206,070
Sep	30	4.3	3,000,000	90,000,000	1.25	5.4	6.4	4.9	3.9	81,967,963	8,032,037	19,206,070	8,032,037	7,131,578	20,106,528
Oct	31	4.4	3,000,000	93,000,000	1.25	5.5	3.0	2.3	4.8	102,314,868	-9,314,868	20,106,528	0	7,369,297	12,737,231
Nov	30	4.3	3,000,000	90,000,000	1.25	5.4	1.9	1.5	4.9	103,905,014	-13,905,014	12,737,231	0	7,131,578	5,605,653
Dec	31	4.4	3,000,000	93,000,000	1.25	5.5	2.4	1.8	5.0	105,239,808	-12,239,808	5,605,653	0	7,369,297	0
Jan	31	4.4	3,000,000	93,000,000	1.25	5.5	2.5	1.9	5.0	104,752,318	-11,752,318	0	0	7,369,297	0
Feb	28	4.0	3,000,000	84,000,000	1.25	5.0	2.7	2.1	4.4	92,460,606	-8,460,606	0	0	6,656,139	0
Mar	31	4.4	3,000,000	93,000,000	1.25	5.5	3.5	2.7	4.7	99,877,418	-6,877,418	0	0	7,369,297	0
Apr	30	4.3	3,000,000	90,000,000	1.25	5.4	2.8	2.2	4.7	99,517,604	-9,517,604	0	0	7,131,578	0
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Jun	30	4.3	3,000,000	90,000,000	1.25	5.4	7.7	5.9	3.6	75,630,593	14,369,407	0	14,369,407	7,131,578	7,237,829
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Aug	31	4.4	3,000,000	93,000,000	1.25	5.5	7.4	5.7	3.8	80,865,308	12,134,692	14,440,674	12,134,692	7,369,297	19,206,070
Sep	30	4.3	3,000,000	90,000,000	1.25	5.4	6.4	4.9	3.9	81,967,963	8,032,037	19,206,070	8,032,037	7,131,578	20,106,528
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Dec	31	4.4	3,000,000	93,000,000	1.25	5.5	2.4	1.8	5.0	105,239,808	-12,239,808	5,605,653	0	7,369,297	0
Jan	31	4.4	3,000,000	93,000,000	1.25	5.5	2.5	1.9	5.0	104,752,318	-11,752,318	0	0	7,369,297	0
Feb	28	4.0	3,000,000	84,000,000	1.25	5.0	2.7	2.1	4.4	92,460,606	-8,460,606	0	0	6,656,139	0
Mar	31	4.4	3,000,000	93,000,000	1.25	5.5	3.5	2.7	4.7	99,877,418	-6,877,418	0	0	7,369,297	0
Apr	30	4.3	3,000,000	90,000,000	1.25	5.4	2.8	2.2	4.7	99,517,604	-9,517,604	0	0	7,131,578	0
May	31	4.4	3,000,000	93,000,000	1.25	5.5	3.8	2.9	4.7	98,414,948	-5,414,948	0	0	7,369,297	0
Jun	30	4.3	3,000,000	90,000,000	1.25	5.4	7.7	5.9	3.6	75,630,593	14,369,407	0	14,369,407	7,131,578	7,237,829
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Sep	30	4.3	3,000,000	90,000,000	1.25	5.4	6.4	4.9	3.9	81,967,963	8,032,037	19,206,070	8,032,037	7,131,578	20,106,528
Oct	31	4.4	3,000,000	93,000,000	1.25	5.5	3.0	2.3	4.8	102,314,868	-9,314,868	20,106,528	0	7,369,297	12,737,231
Nov	30	4.3	3,000,000	90,000,000	1.25	5.4	1.9	1.5	4.9	103,905,014	-13,905,014	12,737,231	0	7,131,578	5,605,653
Dec	31	4.4	3,000,000	93,000,000	1.25	5.5	2.4	1.8	5.0	105,239,808	-12,239,808	5,605,653	0	7,369,297	0
AVERAGE	**30**		**3,000,000**	**91,250,000**			**4.33**		**4.43**	**93,614,525**	**-2,364,525**	**6,611,165**	**4,092,357**	**7,230,628**	**6,611,165**

Max = **20,106,528**
Days = **6.7**

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F. SUMMARY

A general summary of findings is provided as follows:

- Reclaimed water use projections utilized a 325 gpd/ERU value which is greater than the Town's traditional land development code basis of 274 gpd/ERU but less than the 2025 trends that indicate an ERU basis greater than 600 gpd/ERU. As construction within the new developments is completed and irrigation use matures, the ERU basis will be monitored.

- The recommended target for operational storage is 5.0 MG. The Town currently has 1.2 MG, leaving a deficit of 3.8 MG.

- Expansion of the Town's RIB capacity to a total of 36 acres is recommended. Using the current permitted loading criteria of 0.85"/day, the expanded capacity would be 0.83 MGD (AADF). Actual reclaimed water service area use is anticipated to fluctuate between 0.75" to 1.5" per week.

- The Town's existing RIBs have sufficient volume to provide one day of storage at a permitted capacity of 3.0 MGD.

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VI. REUSE INFRASTRUCTURE EXPANSION

A. OVERVIEW

The following review will build upon the work completed in **Sections II** through **V** and provide recommendations related to the following infrastructure components:

1. Reclaimed Water Treatment System.
2. Reclaimed Water Delivery System.

Each section will review existing system deficiencies (if any) and then review expansion alternatives for each component. The Executive Summary provides the estimated costs that are summarized in a capital improvement plan.

B. RECLAIMED WATER TREATMENT SYSTEM

The Town's Wastewater Master Plan (2026) outlines the WRF improvements to meet the planning basis flows of 3.0 MGD (AADF). This includes expansion to the high-level disinfection facilities, transfer pumping facilities, operational storage capacity, and reclaimed water high-service pumping facilities.

C. RECLAIMED WATER DISTRIBUTION SYSTEM

The *Hammock Developments Reclaimed Water System Modeling* (October 2024) reviewed the Town's reclaimed water distribution system based on the developments anticipated to be completed within the planning period that are located in the RWSA. The findings from the analysis included the following:

- The existing 12" reclaimed water main becomes limiting as peak reclaimed water demands approach 2,850 gpm (4.1 MGD) resulting in a nominal pipeline velocity of 8 feet per second (fps) with pressure losses of 1 psig per 175 lineal feet. A parallel or looped reclaimed water main is required to decrease pressure loss in the distribution system prior to reaching these service demands.

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- An additional 12" reclaimed water main extension from the Town's existing reclaimed water distribution system to the Highlands development along Anderson Lane was recommended. The approximate pipeline length is 4,000 lineal feet. A separate alternative is to parallel a reclaimed water main along Abeble Road, but the total length for the improvement is approximately 8,400 lineal feet.

It is unclear if the 12" reclaimed water main extension work will be completed by the Town or developer. A $1.25 to 1.50 million dollar capital expense may be required pending the final construction corridor and associated construction costs.

The Town may have new developments that desire reclaimed water located outside of the RWSA. These locations should be reviewed on a case-by-case basis pending actual reclaimed water use within the RWSA. As noted herein, current use of the resource is greater than estimated, which will impact future supply capabilities for developments that are in the planning or construction phases.

D. REUSE SYSTEM RECOMMENDATIONS

As discussed in **Sections III** and **VI**, the Town's most dynamic variable facing the utility is related to residential developments coming online and changing supply and demand dynamics. The main expansion requirements are summarized as follows:

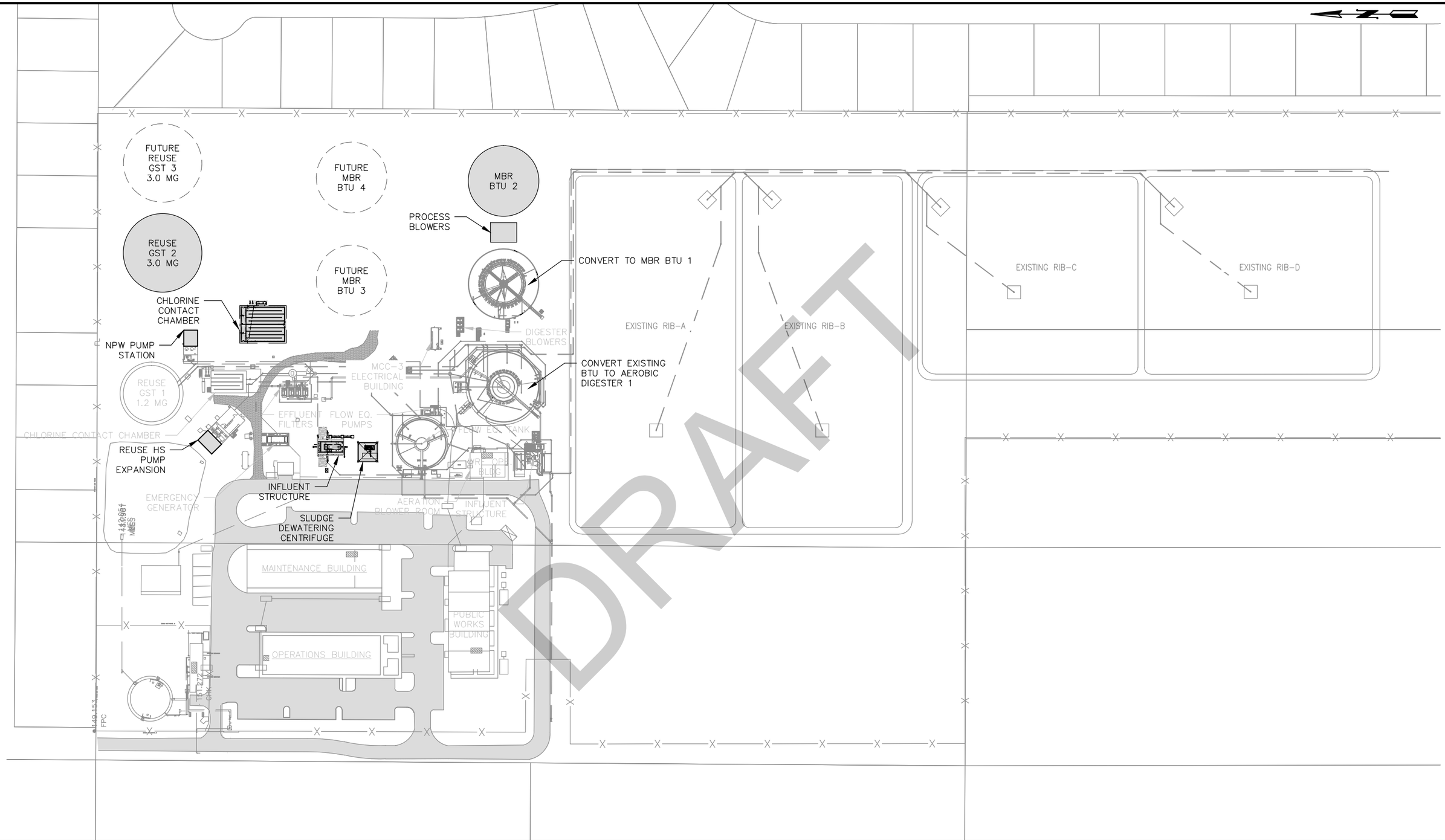
- Increase reclaimed water operational storage and high-service pump capacity located at the WRF. Both of these items are budgeted within the WRF Expansion project outlined in the Town's Wastewater Master Plan. **Figure VI-1** illustrates the selected alternatives site plan.

- Increase RIB capacity to a total of 36 acres (26 acre addition). A location for this improvement is not currently known, but general target aread are outlined in **Figures VI-2**, **VI-3**, and **VI-4**. The Town should begin to acquire property and begin the capacity expansion for this facility component.

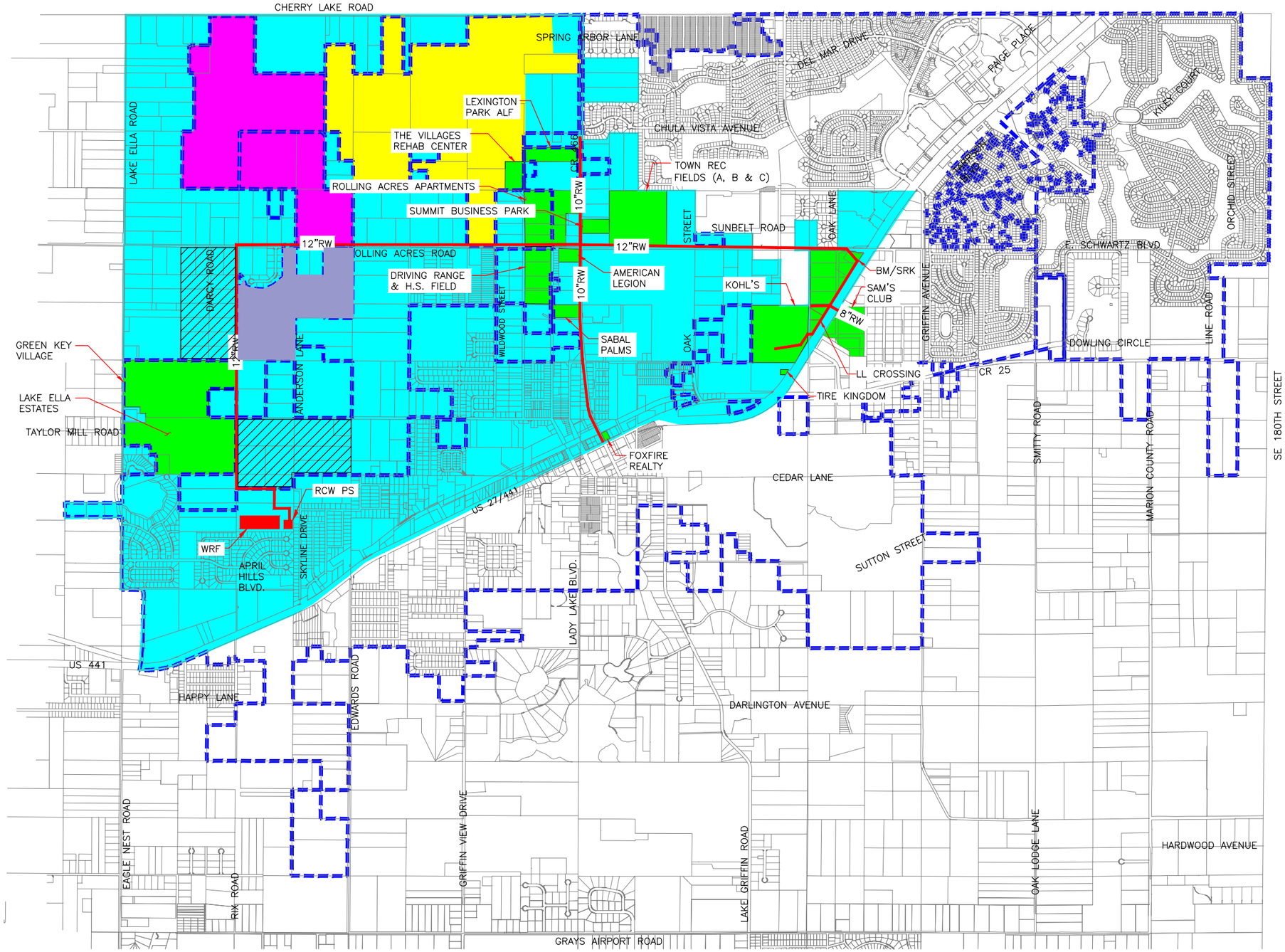
- Monitor system performance and expand reclaimed water distribution capacity through piping modifications and extensions as demands reach estimated capacity outlined in **Section III**.

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J:\orangepark\cad files\lady lake\9514411 2025 water, wastewater, reclaimed water master plan updates\Figures\reclaimed water\Fig. VI-1 Operational Storage Expansion Site Plan.dwg, 1/15/2026 1:31:08 PM, Mike.Lisena



Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	***Building Stronger Communities Together***	OPERATIONAL STORAGE EXPANSION SITE PLAN
Drawn by:	MAL	Job No. 9514-41-1			TOWN OF LADY LAKE Reclaimed Water Master Plan Lake County, Florida
Checked by:	JRS				
Approved by:	JRS	© 2026		580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030	Figure **VI-1**
Scale:	1" = 140'				



LEGEND

- TOWN LIMITS AREA
- XX"RW REUSE MAIN
- EXISTING REUSE CUSTOMER
- RECLAIMED WATER SERVICE AREA
- HAMMOCK OAKS DEVELOPMENT AREA
- HAMMOCK RESERVE DEVELOPMENT AREA
- HAMMOCK HIGHLANDS DEVELOPMENT AREA
- RIB EXPANSION AREA

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Designed by:	JRS	Date: JAN. 2026	
Drawn by:	MAL	Job No. 9514-41-1	
Checked by:	JRS		
Approved by:	JRS	© 2026	
Scale:	1" = 2,500'		

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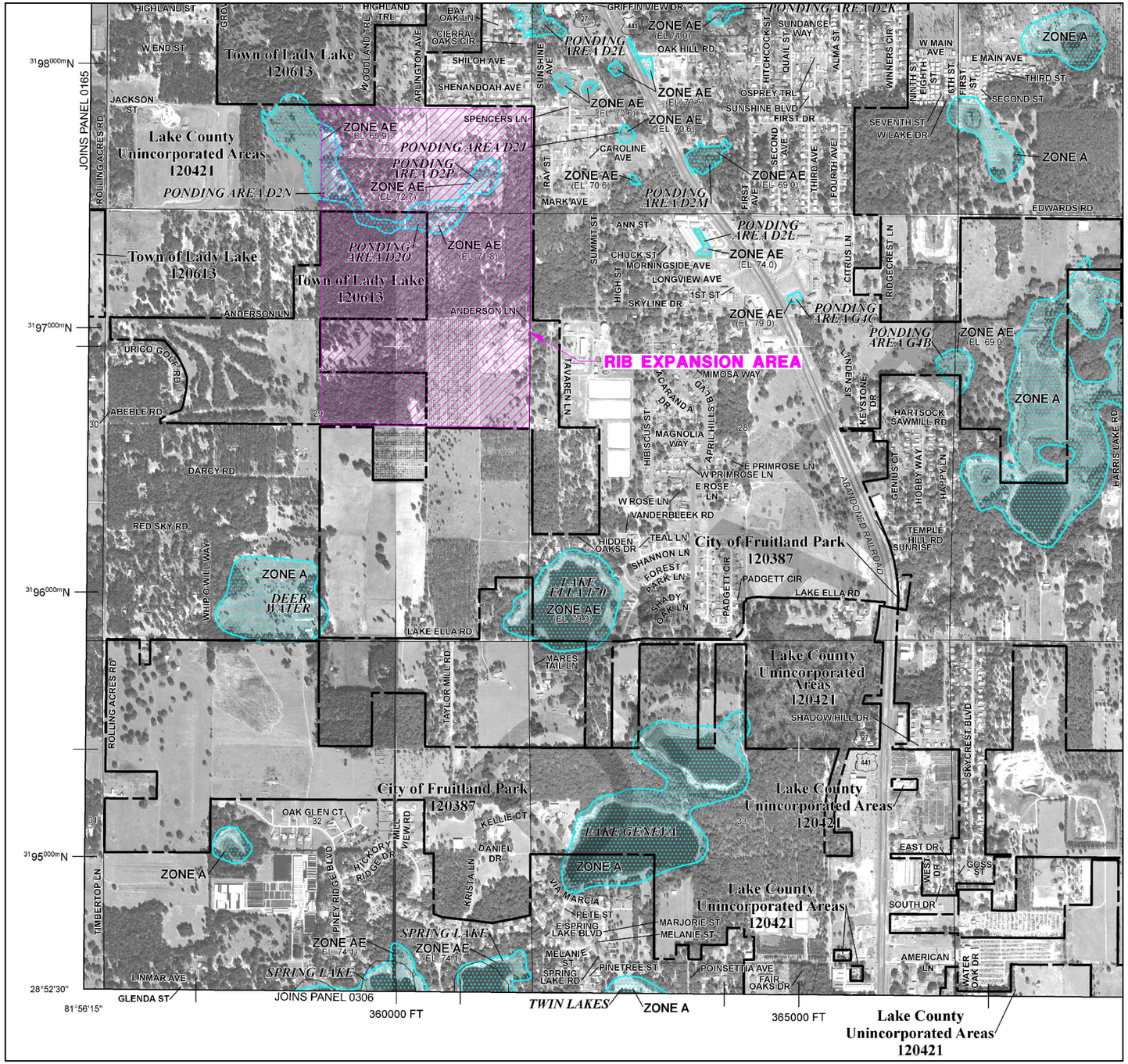
Building Stronger Communities Together

580-1 Wells Road
Orange Park, FL 32073
Ph: 904.278.0030

CONCEPTUAL RIB EXPANSION LOCATIONS

TOWN OF LADY LAKE
Reclaimed Water Master Plan
Lake County, Florida

Figure
VI-2



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

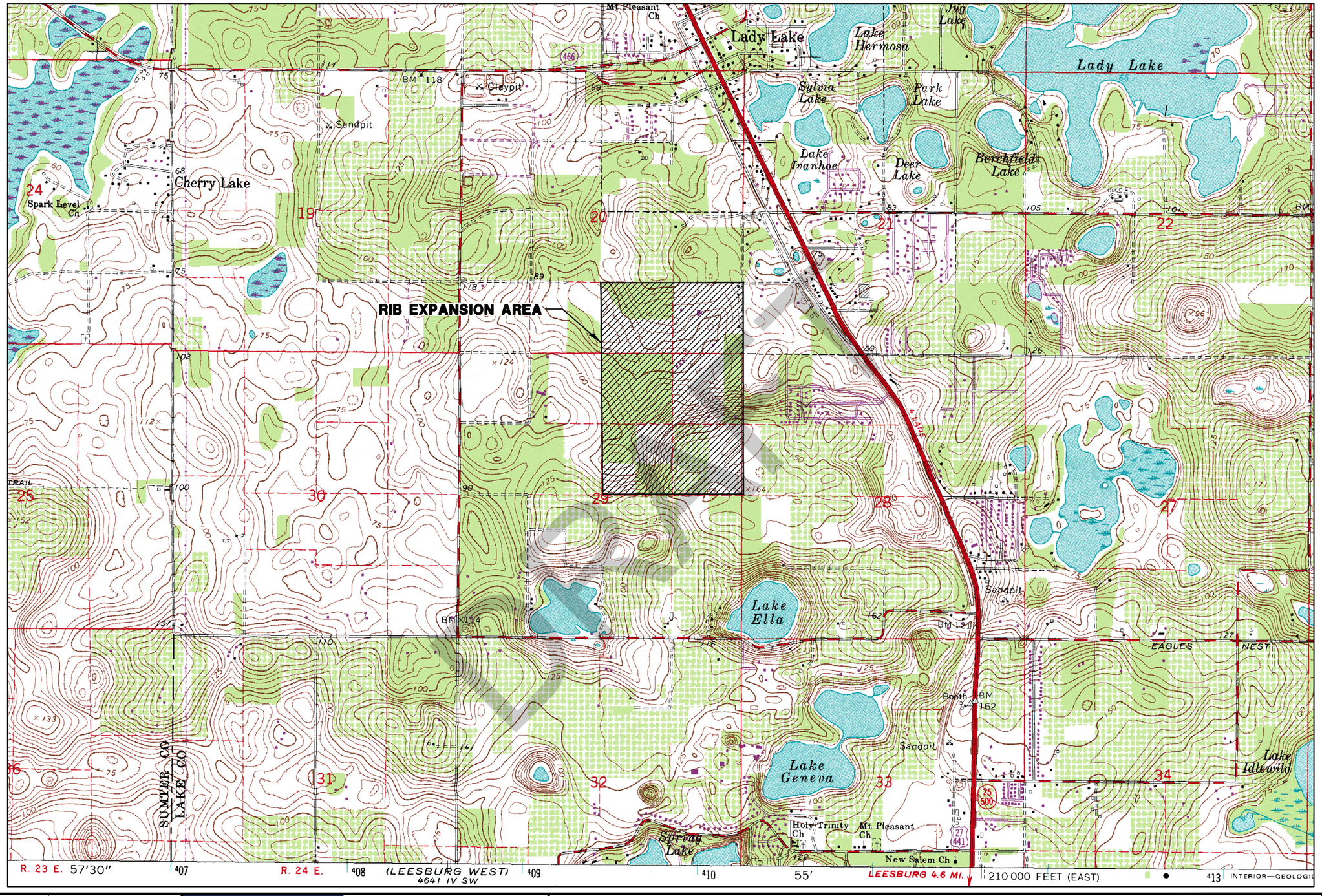
OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

N

Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	**Building Stronger Communities Together**	FLOOD INSURANCE RATE MAP
Drawn by:	MAL	Job No. 9514-41-1		580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030	TOWN OF LADY LAKE Reclaimed Water Master Plan Lake County, Florida
Checked by:	JRS				Figure VI-3
Approved by:	JRS	© 2026			
Scale:	N.T.S.				

J:\orangepark\cad files\lady lake\95144\11 2025 water, wastewater, reclaimed water master plan updates\Figures\reclaimed water\Fig. VI-3 Flood Insurance Rate Map.dwg, 1/15/2026 2:03:40 PM, Mike Lisena



Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	***Building Stronger Communities Together***	LADY LAKE QUADRANGLE MAP
Drawn by:	MAL	Job No. 9514-41-1		580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030	TOWN OF LADY LAKE Reclaimed Water Master Plan Lake County, Florida
Checked by:	JRS				Figure VI-4
Approved by:	JRS	© 2026			
Scale:	N.T.S.				

J:\orangepark\cad files\lady lake\9514411 2025 water, wastewater, reclaimed water master plan updates\Figures\reclaimed water\Fig. VI-3 Flood Insurance Rate Map.dwg, 1/15/2026 1:41:47 PM, Mike.Lisena

WASTEWATER MASTER PLAN

FOR THE

TOWN OF LADY LAKE, FLORIDA

DRAFT

Prepared by:

Orange Park, Florida
Project No. M951441.000
Client No. 9514-41-1
January 2026

WASTEWATER MASTER PLAN

FOR THE

TOWN OF LADY LAKE, FLORIDA

DRAFT

Prepared by:

CPH Consulting, LLC
Orange Park, Florida
Project No. M951441.000
Client No. 9514-41-1
January 2026

EXECUTIVE SUMMARY

Due to growth and regulatory pressures, the Town is updating their previous master planning efforts to review alternatives and establish a plan to effectively and efficiently serve their citizens and utility customers through 2040. This also includes consideration of current and pending regulatory restrictions that will shape service requirements. The Plan considered the following:

1. Service Areas.
2. The "Planning Period" which will be through the Year 2040.
3. The '2040 Planning Area' is limited to the Town limits.
4. Wastewater flow and loading projections.
5. Wastewater collection system capacity and expansion requirements.
6. Wastewater treatment system capacity and expansion requirements.
7. Expansion alternatives.
8. Influence of current and pending regulatory requirements for the design, permitting, construction, operation and maintenance of infrastructure improvements.

The Plan's objective was to develop a capital improvement plan (CIP) that will accommodate the above elements. The planning-level CIP is outlined as follows:

Year	CIP Item	Budget[D]
2026	1. Collection System Action Plan (CSAP) Annual Review[A] 2. WRF Expansion, Phase 3 | Design/Permitting 3. Interim Sludge Dewatering/Disposal[B] 4. Offsite RIB Property Search/Acquistion[C]	1. $ 50,000[A] 2. $ 3,500,000 3. TBD 4. $ 5,000,000
2027	1. CSAP Annual Review[A] 2. WRF Expansion, Phase 3 | Design/Permitting & Construction 3. STPO Project 2 & 3 | Design/Permitting	1. $ 50,000[A] 2. $ 30,000,000 3. $ 3,853,000
2028	1. CSAP Annual Review[A] 2. WRF Expansion, Phase 3 | Construction 3. LS 1 Expansion Design/Permitting [*pending growth*] 4. STPO Project 2 & 3 | Construction 5. Offsite RIB Expansion | Construction[E]	1. $ 50,000[A] 2. $ 30,000,000 3. $ 970,000 4. $ 12,843,500 5. TBD

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Year	CIP Item	Budget[D]
2029	1. CSAP Annual Review[A] 2. WRF Expansion, Phase 3 | Construction 3. LS 1 Construction [*pending growth*] 4. STPO Project 2 & 3 | Construction	1. $ 50,000[A] 2. $ 26,915,000 3. $ 6,450,000 4. $ 12,843,500
2030	1. CSAP Annual Review[A]	1. $ 50,000[A]
2030-2035	1. CSAP Annual Review[A] 2. STPO Project 1 & 4 | Design/Permitting/Construction	1. $ 250,000[A] 2. $ 19,846,000
2035 - 2040	1. CSAP Annual Review[A] 2. STPO Project 5 & 6 | Design/Permitting/Construction	1. $ 250,000[A] 2. $ 11,991,000

A: Annual system review per FDEP requirements. May be completed by Town personnel or contracted entities. $50,000 per year is planning budget to be refined by Town.

B: Item listed as a capital improvement, but will need to become part of an operating expense in FY 27 to address existing biosolids dewatering limitations.

C: 40 Acre estimate at $125,000/AC

D: Conceptual budgets utilize Year 2026 dollars. Budgets will require adjustment based on inflationary adjustments for work that occurs after 2026.

E: RIB Expansion costs to be defined once property acquired and preliminary design services completed.

The Plan findings are summarized as follows:

1. Treatment and Reuse Facilities

A. The WRF's current permitted capacity is 1.20 MGD (AADF) but was not designed to meet advanced wastewater treatment requirements. The facility can provide biological nutrient removal capabilities but is not designed to provide an effluent with Total Nitrogen (TN) less than 3 mg/L or Total Phosphorus (TP) less than 1 mg/L. Biological nutrient removal can be achieved at TN levels below 6.0 mg/l, but TP removal is not part of the current treatment system.

B. As additional growth occurs, pumped flows to the WRF will increase in peak capacity that may exceed the current influent screening capacity of 4.6 MGD (3,200 gpm). The existing flow equalization system downstream of the influent screening system buffers the remaining treatment system.

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C. The permitted capacity for the existing RIBs is 0.25 MGD (AADF), and the permitted public-access reclaimed water system capacity is 2.26 MGD (AADF). The Town is already experiencing growth within the reclaimed water service area, which is resulting in less use of the RIBs. However, wet-weather storage needs will need to be monitored and managed. The RIBs also provide the necessary reject water disposal capacity needs.

D. Current biosolids dewatering capacity will become limiting as flows approach 0.60 to 0.70 MGD (AADF). Recommend the Town review operational contract for mobile dewatering system until permanent dewatering system is developed as part of the WRF Expansion.

2. Collection and Transmission Facilities

A. The Town has the following I/I areas they monitor during large storm events: Lift Station 3 at 448 south Old Dixie; and Lift Station 7 at 632 Griffin Ave.

B. Lift Station 1 collection and pumping system have the following considerations to be monitored:

1. The 18" trunk leg has a limiting capacity of 1,860 gpm (PHF), 878,400 gpd (ADF) based on a 3.0 peak factor, or 4,000 ERUs. If surcharged conditions are allowed, then the limiting capacity increases to 2,650 gpm (PHF), 1,272,000 gpd (ADF), or 5,780 ERUs. Based on the contributing LS flows, the current ADF through the Gravity Trunk is approximately 45% of the system's gravity capacity and 31% of the surcharged capacity. However, the combined LS capacity connected to the Gravity Trunk is approximately 2,760 gpm, which will need to be monitored by the Town.

2. At 1,450 gpm of pumping capacity, the station is limited to an estimated average daily flow of 522,000 gpd (ADF) or 2,375 ERUs using standard peaking factors. The current ADF is estimated at 396,000 gpd, or 76% of the current pumping capacity.

3. Flow monitoring at the station should continue while expansion plans are completed and implemented in the future to support further growth in the Town's northeast quadrant.

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C. The Town's original design of the wastewater system resulted in the wastewater treatment facility being constructed at a relatively high elevation in the Town, which results in a static back pressure condition on all connecting pump stations that are located at lower elevations. The Town's existing influent structure hydraulic water elevation is approximately 177 feet (NAVD) while Lift Station 1's operating level is 52 feet (NAVD) and the Hammock Oak lift stations operating elevations vary between 39 feet to 69 feet (NAVD). The elevation difference results in static pressures ranging from 108 ft (47 psig) to 138 ft (60 psig). As a result, the system's operating pressure can range from 80 to 100 psig pending location and operating flows.

D. The Town's existing 16" trunk force main was reviewed when all stations are pumping concurrently which indicated the force main becomes limiting when force main flows exceed 4 fps (2,500 gpm). The Town will need to monitor pump station run times, which will give an indication when concurrent pumping is occurring more regularly.

E. Expansion to the transmission system capacity will be needed as further growth occurs. Alternatively, an inline booster pump station could be reviewed as a future alternative to decrease force main operating pressures.

3. <u>Regulatory Items</u>

A. The Town is located within the Upper Ocklawaha and Silver Springs and Upper Silver River and Rainbow Spring Group and Rainbow River basin management action plans (BMAP). The Town's Total Nitrogen (TN) loading reduction requirement is 18,279 pounds per year (lb-TN/yr) with the following breakdown:

1. 11,313 lb-TN/yr | 1,302 septic tank abandonments.

2. 2,053 lb-TN/yr at WRF through advanced wastewater treatment improvements to achieve 3 mg/L (TN).

3. 4,914 lb-TN/yr through stormwater system improvements.

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B. The Town has achieved 372 lb-TN/yr (7% of the 2028 goal).

C. Nutrient loading reduction schedule is: 30% (2028), 80% (2033), and 100% (2038).

D. Septic tank phase out projects will be critical to meeting the nutrient reduction goals.

E. Development growth will be increasing reclaimed water demands beginning in 2025. Managing reclaimed water storage capacities for drought and wet-weather conditions will be a capital planning focus to manage the reclaimed water utility.

F. Town developed a Collection System Action Plan (CSAP) as part of the most recent WRF Operating Permit renewal. FDEP rules require that collection system flows be routinely (i.e., annually) reviewed as part of a pipe assessment, repair, and replacement plan. The entire system review is required during the 5-year operating permit window.

4. Wastewater Flow Projections

A. The Town is currently serving the Town of Fruitland Park through a bulk wastewater service agreement. Flows through this bulk connection are considered through 2030 when it is anticipated those flows will be rerouted to a Town owned and operated WRF.

B. The Town's existing residential water customers include many areas that are served by onsite sewage treatment and disposal systems or septic tanks as well as more recent developments that include water and sewer use.

C. The Town's aggregate average potable water use indicates an average use of approximately 127 gallons per day per ERU (3,800 gal/mo/30 days) or 53 gallons per capita day (gpcd). However, those customers that are served by central sewer indicate an aggregated average use of 200 gpd/ERU. For planning purposes a value of 220 gpd/ERU was utilized.

D. In order to meet the BMAP requirements, the extension of central sewer to existing septic areas will result in the following estimated WRF flow increases.

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TABLE ES-1 ESTIMATED PARCEL AND WASTEWATER DEMAND SUMMARY SERVICED BY OSTDS		
OSTDS Sector	**Build-out Parcel Count**	**Estimated Demand (gpd)**
1	176	39,000
2	206	45,000
3	246	54,000
4	131	29,000
5	141	31,000
6	51	11,000
7	186	41,000
8	167	37,000
9	92	20,000
10 (Lakes of Lady Lake)	92	20,000
SUM	**1,488**	**327,000**

E. Should the Town be required to serve those locations within or adjacent to the Town limits that are currently served by private wastewater treatment systems, the additional flows to the WRF are estimated as follows:

TABLE ES-2 PACKAGE WASTEWATER SYSTEM SUMMARY		
Development	**WWTP Permit Capacity (gpd)**	**'Current' Average Flows[A] (gpd)**
Plantation	85,000	30,000
Lake North	15,000	9,000
Sunshine	12,500	4,000
Blue Parrot	82,000	17,000
LL Park	27,000	14,000
Harbor Hills	40,000	11,000
SUM	**261,500**	**85,000**

A: Listed flows are either annual average, quarterly average, and three-month average flows as presented on the most up to date discharge monitoring report (DMR) submitted to FDEP. The DMRs for each respective WWTP varied between late 2023 to as recent as March 2025.

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F. Limiting growth to the current Town limits, **Table ES-3** summarizes the estimated build-out flow. Future developments will likely have less than 100% of their build-out potential realized, so build-out demands may be less than anticipated. Based on unknowns related to potential service to areas beyond the current Town limits, a wastewater flow of 3.0 MGD (AADF) is recommended through 2040.

TABLE ES-3
ESTIMATED WASTEWATER BUILD OUT FLOWS

Service Areas	Flow (MGD)
Existing Residential	0.364
Existing Commercial	0.160
Existing Fruitland Park	0.080
SUBTOTAL	**0.604**
Future Residential (Town limits)	1.041
Future OSTDS Sectors	0.327
Future Package WWTP	0.177
Future Large Undeveloped Tracts	0.259
SUBTOTAL	**1.804**
TOTAL	**2.408**
Future Fruitland Park[A] [thru 2030]	0.368

A 0.448 MGD (2030 ADF) future service reservation less current flows of 0.08 MGD.

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G. **Table IV-13** was created to summarize the flow projection for the Town's master planning use. It is intended as an aggressive guide and should be revisited on a 6-month interval until the WRF expansion is completed.

H. Pending economic conditions, we recommend the Town prepare for growth based on the 10-year projection with associated monitoring of building permit starts. This would result in WRF expansion requirements by 2029. At a minimum, the Town should begin design and permitting of expansion requirements. Construction activities should commence based on building permit activities. A 2-year construction period is estimated to complete the expansion.

5. Wastewater System Expansion

A. To address the BMAP requirements, central sewer extensions to serve existing septic systems results in the following capital needs per service area:

1. $13,100,000 Septic Tank Phase Out (STPO) Project 1: Onsite Sewage Treatment and Disposal System (OSTDS) Service Sectors 1 and 2.

2. $15,600,000 STPO Project 2: OSTDS Service Sectors 3 - 4.

3. $14,000,000 STPO Project 3: OSTDS Service Sectors 5 - 7.

4. $ 6,800,000 STPO Project 4: OSTDS Service Sector 8.

5. $ 4,600,000 STPO Project 5: OSTDS Service Sector 9.

6. $ 7,400,000 STPO Project 6: OSTDS Service Sector 10.

B. The STPO project scope of work includes an extension to the Town's existing 16" force main to expand transmission capacity. This could be completed as a stand alone project as well and leave connection points for the future STPO work.

C. Service to existing package WWTP locations is assumed to be funded by the developer and is not included within the Plan.

D. Lift Station 1 expansion and improvements are estimated at $7,400,000.

E. Three WRF Expansion Alternatives were reviewed and included:

- Alternative 1: 5-stage Bardenpho oxidation ditch process.
- Alternative 2: Aerobic granular sludge (AGS) treatment system.
- Alternative 3: 5-stage Bardenpho membrane bioreactors (MBR).

Each alternative was reviewed to expand the existing 1.2 MGD (AADF)

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facility to a 3.0 MGD (AADF) with advanced wastewater treatment (AWT) capabilities. The present-worth analysis is summarized below. Alternative 3 was the most cost effective. Given the planning level of analysis, Alternatives 2 and 3 are comparable. Alternative 3's advantage is use of existing tankage and removal of additional treatment components (i.e., clarifiers and filtration).

TABLE ES-4
SUMMARY OF ALTERNATIVE COSTS

Description	Alternative 1 Oxidation Ditch	Alternative 2 AGS	Alternative 3 MBR
Total Construction Cost	$129,000,000	$87,750,000	$78,625,000
Total Non-Construction Cost	$19,350,000	$13,160,000	$11,790,000
Total Capital Cost	**$148,350,000**	**$100,910,000**	**$90,415,000**
Annualized Capital Cost	**$8,580,600/yr**	**$5,836,600/yr**	**$5,229,600/yr**
Annual Power Cost	$658,000/yr	$488,000/yr	$752,800/yr
Annual Equipment O&M Cost	$597,750/yr	$708,000/yr	$467,800/yr
Annual Membrane Replacement Cost	$0/yr	$0/yr	$300,000/yr
Annual Chemical Cost	$140,000/yr	$140,000/yr	$140,000/yr
Total Annual O&M Cost	**$1,395,750/yr**	**$1,336,000/yr**	**$1,660,300/yr**
Total Annual Cost	**$9,979,500/yr**	**$7,172,600/yr**	**$6,889,900/yr**
Present Worth	**$172,540,000**	**$124,009,400**	**$119,121,600**

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F. Additional wet-weather/alternate effluent disposal capacity was reviewed in the Town's Reclaimed Water Master Plan, which recommended the following:

- Expansion of operational storage to a total capacity of 5.0 MG based on a projected reclaimed water maximum day demand of 6.6 MGD (MDF) 4,600 gpm.

- 26 acre offsite RIB expansion to bring the total RIB capacity to 36 acres or 0.83 MGD (AADF) using the current permitted application rate of 0.85 inches per day.

Additional operational storage expansion is included in the WRF Expansion project. Costs associated with the RIB expansion are not included since a site has not been selected. A general target area was provided in the Reclaimed Water Master Plan, and the Town should begin efforts to secure the property and expand these capabilities.

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B WRF Operating Permit
C WRF “Record” Drawings
D Reuse Operating Protocol
E 2024 Collection System Action Plan (CSAP)
F Hammock Oaks WaterCAD Modeling Results (July 2023)
G BMAP Remediation Plan
H Private WWTP Operating Permits
I Fruitland Park Bulk Wastewater Service Agreement
J WRF Expansion Alternative Analysis
K WRF Expansion Present-Worth Analysis
L Collection System Action Plan

ACRONYMS / DEFINED TERMS

AADF	Annual Average Daily Flow
ADF	Average Daily Flow
BEBR	Bureau of Economic Business Research
BOD_5	Biochemical Oxygen Demand-5 Day
BNR	Biological Nutrient Removal
BTU	Biological Treatment Unit
CCC	Chlorine Contact Chamber
CWA	Clean Water Act
cfm	Cubic Feet Per Minute
DO	Dissolved Oxygen
Engineer	CPH Consulting, LLC
EPA	Environmental Protection Agency
ERU	Equivalent Residential Unit
FDEP	Florida Department of Environmental Protection
gpd	Gallons Per Day
gpm	Gallons Per Minute
GST	Ground Storage Tank
HP	Horsepower
ISBA	Interlocal Service Boundary Area
I/I	Infiltration & Inflow
JPA	Joint Planning Area
LS	Lift Station

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MG	Million Gallons
MGD	Million Gallons Per Day
MLE	Modified Ludzack Ettinger
NNC	Numeric Nutrient Criteria
ORP	Oxidation-Reduction Potential
OSTDS	Onsite Sewage Treatment & Disposal System
PHF	Peak Hour Flow
Plan	Wastewater & Reuse Master Plan
PVC	Polyvinyl Chloride
RAS	Return Activated Sludge
RIB	Rapid Infiltration Basins
RWSA	Reclaimed Water Service Area
SOUR	Specific Oxygen Uptake Rate
SRT	Solids Residence Time
SSO	Sanitary Sewer Overflows
SJRWMD	St. Johns River Water Management District
TKN	Total Kjedahl Nitrogen
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
Town	Town of Lady Lake
TP	Total Phosphorus
TSS	Total Suspended Solids
WAS	Waste Activated Sludge
WWTP	Wastewater Treatment Plant

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I. INTRODUCTION

A. BACKGROUND

The Town of Lady Lake (Town) is located in northwest Lake County, approximately fifty miles north of Orlando on U.S. Highway 27/441, just north of the City of Fruitland Park and just south of the southerly Marion County line. The Town was incorporated in 1925 and has operated under a Town Commission-Town Manager form of government since 1987.

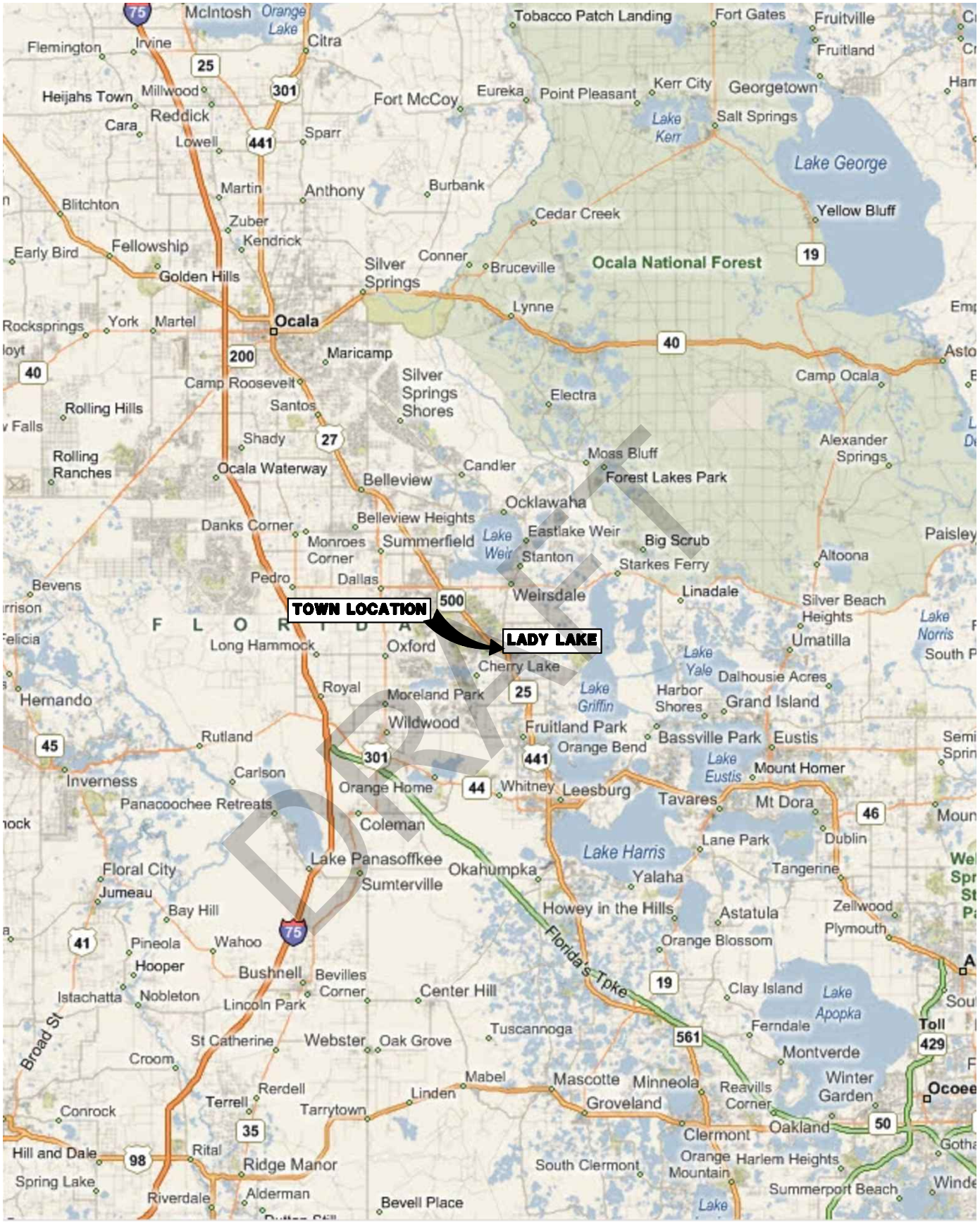
The Town has a significant commercial corridor along Highway 27/441 and County Road (CR) 466 that supports regional commerce with The Villages. Extending from these areas are multifamily developments that have developed over the past ten years. As a result of these commercial and dense population centers, the Town is now experiencing further residential growth through large-scale planned developments within the southwest and northeast portions of the Town's municipal limits. These developments are anticipated to bring large growth relative to the Town's existing service population that will require consideration of the Town's infrastructure capacities and regulatory compliance requirements.

In addition to the recent growth, the Town retains areas that were developed before the Town's central sewer system was constructed. Those areas are either served by onsite sewage treatment and disposal systems ("septic systems") or packaged wastewater treatment plants where higher density developments were constructed.

Due to growth and regulatory pressures, the Town is updating their previous master planning efforts to review alternatives and establish a plan to effectively and efficiently serve their citizens and utility customers through 2040. This also includes consideration of current and pending regulatory restrictions that will shape service requirements.

The Town's general location is shown in **Figure I-1**.

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cph	Designed by:	JRS	VICINITY MAP
	Drawn by:	MAL	TOWN OF LADY LAKE Wastewater Master Plan Lake County, Florida
	Date:	JAN. 2026	FIGURE I-1
	Job No.	9514-41-1	
www.cphcorp.com	Scale:	1" = 9± MILES	© 2026

J:\orangepark\cad files\lady lake\9514411 2025 water, wastewater, reclaimed water master plan updates\Figures\wastewater\Fig. I-1 Vicinity Map.dwg, 1/13/2026 10:24:09 AM, Mike.Lisena

B. OBJECTIVE

The Town authorized preparation of this report to establish a plan to effectively manage the Town's current and future wastewater system through 2040. Planning for this infrastructure is necessary to identify the most logical and practical means of accommodating the growth and demands placed on this system. This translates into developing an implementable capital improvement plan that considers the following:

1. Service Areas.
2. The "Planning Period" which will be through the Year 2040.
3. Wastewater flow and loading projections.
4. Wastewater collection system capacity and expansion requirements.
5. Wastewater treatment system capacity and expansion requirements.
6. Expansion alternatives.
7. Influence of current and pending regulatory requirements for the design, permitting, construction, operation and maintenance of infrastructure improvements.

The objective of this study is to develop a capital improvement plan that will accommodate the above elements. The plan will identify proposed projects, an implementation schedule, and review necessary capital needs to implement the proposed alternatives.

The wastewater system is directly connected to the Town's reclaimed water or reuse system. A separate master plan is provided for that system, since it will mature and become a separate critical utility to serve the Town's growth. Portions of the wastewater system master plan review and analyze effluent disposal needs that include the reuse system as well as onsite storage, onsite disposal systems, and future expansion to these systems.

C. GENERAL APPROACH

This report will utilize work previously completed by the Town, the Town's previous planning efforts, and work recently completed by CPH Consulting, LLC, formerly Mittauer & Associates, Inc. ("Engineer"). In addition to these documents, information from University of Florida Bureau of Economic Business Research

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("BEBR"), Florida Department of Environmental Protection ("FDEP"), and the St. Johns River Water Management District ("SJRWMD") was also utilized to collaborate, coordinate, and analyze the Town's needs..

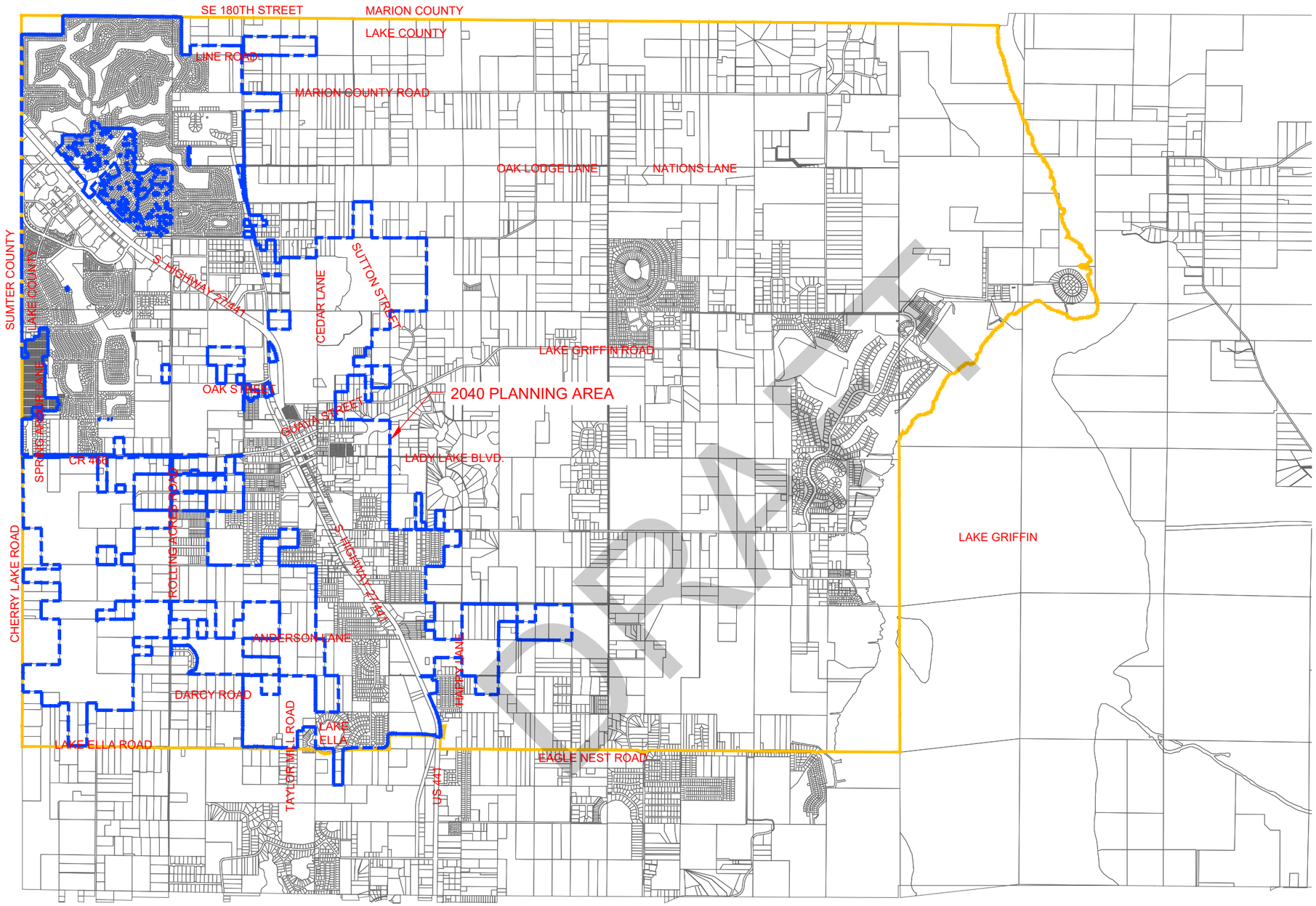
In general, the report focuses on the wastewater and reuse systems' capacities related to: system components such as pumps, piping, treatment systems, etc.; and applicable regulatory aspects of each to meet the Town's demands into the planning horizon. The Environmental Protection Agency ("EPA") defines system capacity as "*...the ability to plan for, achieve, and maintain compliance with applicable...standards. Capacity has three components: technical, managerial, and financial. Adequate capability in all three areas is necessary for a system to have 'capacity'. Technical capacity includes, but is not limited to, condition of the infrastructure. Managerial capacity includes, but is not limited to, staffing, organization, and having the appropriate planning documents. Financial capacity includes, but is not limited to, credit worthiness, revenue sufficiency, and usage of proper accounting methods*."[1] The Wastewater Master Plan ("Plan") is limited to the "technical" aspects of capacity as listed above, and provides information and analysis to assist the "managerial" component. "Financial" aspects of the systems are typically reviewed through rate studies, audits, etc., which are not part of this study.

Within the Plan, various service areas are illustrated. The Town's limits, the Town's Service Area, and the Town's Joint Planning Area ("JPA") or Interlocal Service Boundary Area ("ISBA") with Lake County (see **Attachment A**), and various private utility boundaries were all considered during completion of the evaluation. The '2040 Planning Area' is limited to the Town limits.

Each of the aforementioned boundaries are shown in **Figure I-2**. The limits of the private utilities and other service providers are defined in **Section II**.

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[1] New Water System Quality Development Planning Manual, FDEP April 2003.



LEGEND

TOWN LIMITS

ISBA

Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	***Building Stronger Communities Together***	PLANNING LIMITS
Drawn by:	MAL	Job No. 9514-41-1		580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030	TOWN OF LADY LAKE Wastewater Master Plan Lake County, Florida
Checked by:	JRS				
Approved by:	JRS	© 2026			Figure **I-2**
Scale:	1" = 4,000'				

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II. EXISTING WASTEWATER SYSTEM

A. OVERVIEW

The Town owns and operates one permitted water reclamation facility ("WRF") with two treatment trains, Biological Treatment Unit ("BTU") No. 1 and BTU No. 2. The Town's Florida Department of Environmental Protection ("FDEP") Operating Permit Number is FLA399761. The current operating permit is included as **Attachment B**. Record Drawings are included as **Attachment C**. The WRF location is illustrated in **Figure II-1** and WRF site plan is shown within **Figure II-2**. Further discussion on each treatment train is provided herein. The Town's current WRF Permit Capacity is defined as 1.20 million gallons per day ("MGD") on an annual average daily flow ("AADF") basis by FDEP. The effluent disposal options include the Town's Rapid Infiltration Basins ("RIBs") that are rated at 0.25 MGD (AADF) and the public-access-reuse system that is rated at 2.26 MGD (AADF).

The original BTU No. 1 was constructed between 2005 and 2006, and was converted to a flow equalization basin in 2022. BTU No. 2 expansion was completed between 2007 and 2008. In 2022, the Town permitted the current expansion project that constructed a 0.60 MGD package facility (current BTU No. 1), with other facility components, to bring the system's treatment capacity to 1.2 MGD.

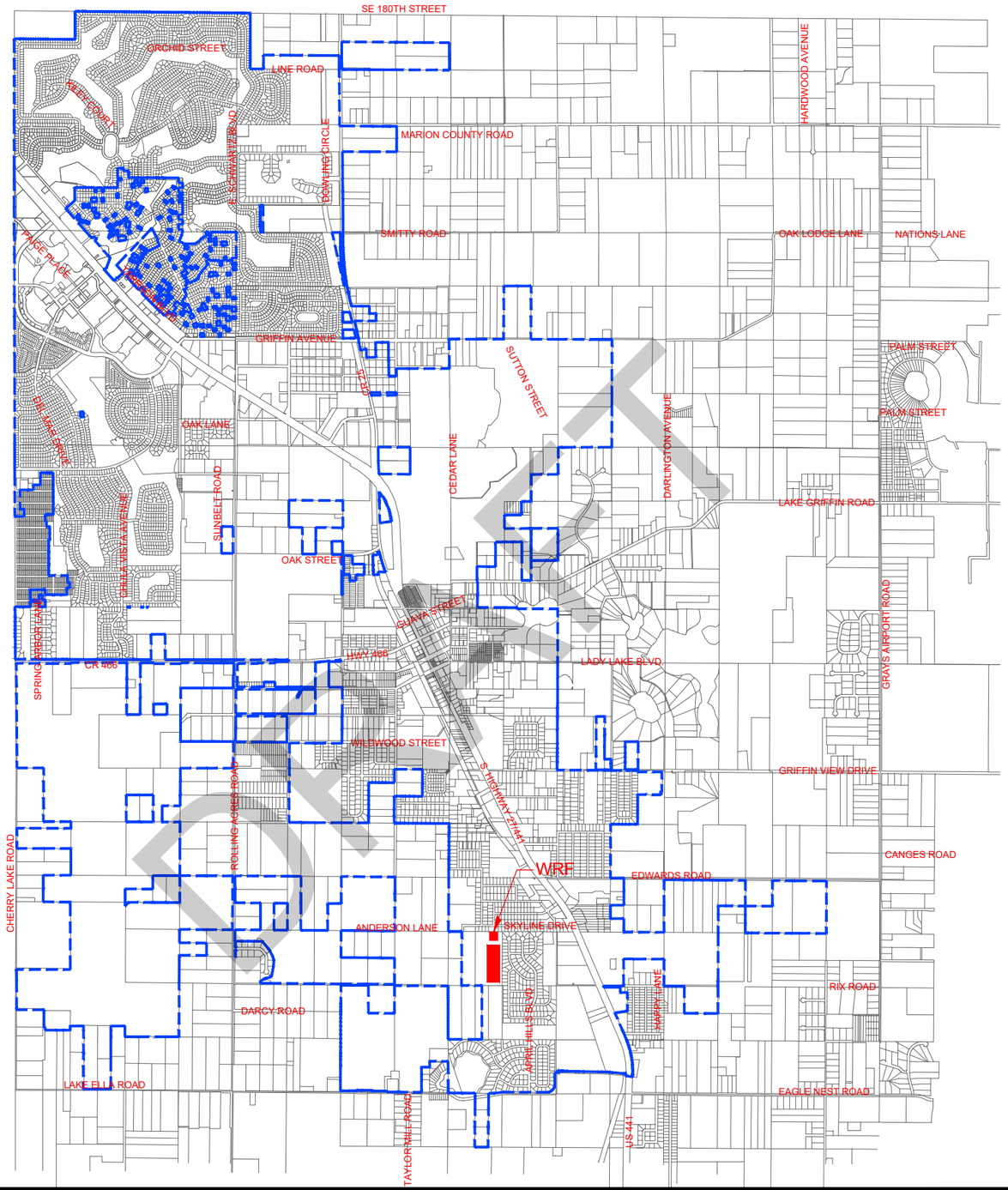
The BTUs operate in the modified ludzack ettinger (MLE) process configuration, which is a biological nutrient removal (BNR) configuration to reduce total nitrogen (TN) below 10 mg/L.

The entire WRF is comprised of the following components:

1. Influent Structure with 4.6 MGD (Peak Hour Flow-PHF) mechanical bar screen, 2.0 MGD (PHF) manual bypass bar rack, and 4.0 MGD (PHF) vortex grit removal system.

2. Influent splitter box with magnetic flow meters located in the three discharge pipes from the structure. A magnetic meter is dedicated for each of the following discharge points:
   - BTU No. 1 (2024 | 0.60 MGD package plant)
   - BTU No. 2 (2008 | 0.60 MGD package plant)
   - Flow Equalization or Surge Basin

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TOWN LIMITS

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Building Stronger Communities Together

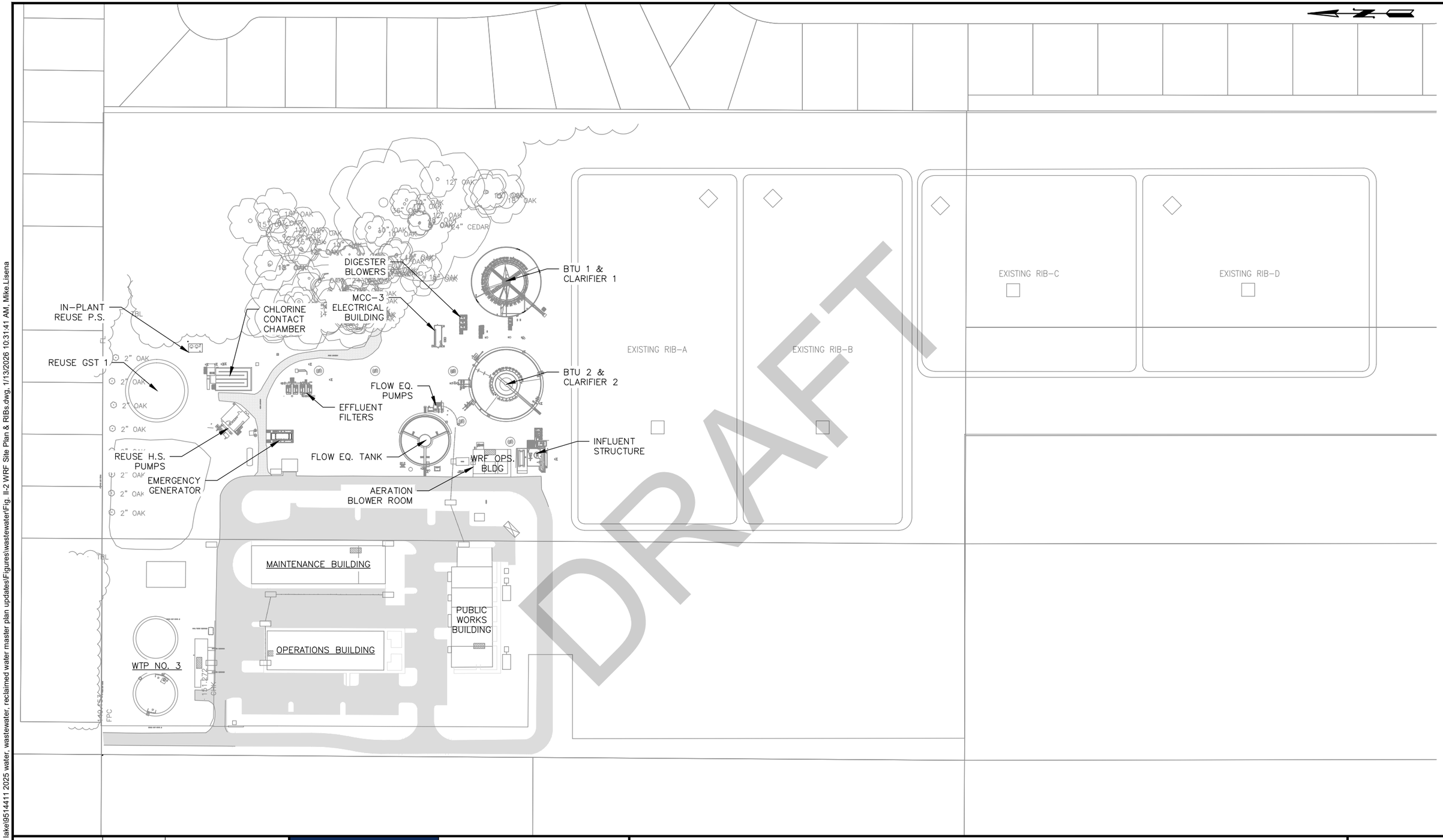
580-1 Wells Road
Orange Park, FL 32073
Ph: 904.278.0030

WRF LOCATION MAP

TOWN OF LADY LAKE
Wastewater Master Plan
Lake County, Florida

Figure
II-1

J:\orangepark\cad files\lady lake\95144411 2025 water, wastewater, reclaimed water master plan updates\Figures\wastewaterFig. II-1 WRF Location Map.dwg, 1/13/2026 10:29:16 AM, Mike.Lisena



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Drawn by:	MAL	Job No. 9514-41-1		**580-1 Wells Road**	TOWN OF LADY LAKE
Checked by:	JRS			**Orange Park, FL 32073**	Wastewater Master Plan
Approved by:	JRS	© 2026		**Ph: 904.278.0030**	Lake County, Florida
Scale:	1" = 140'				Figure **II-2**

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3. BTU No.1 is comprised of the following items:
   - 0.60 MGD (AADF) package BTU with MLE activated sludge system.
   - 63-foot diameter central clarifier having a surface area of 3,120 square feet.
   - Two 1,740 gpm (2.51 MGD) Gorman-Rupp non-clog Nitrified Mixed Liquor Recycle (NRCY) pumps.
   - Two 430 gpm (0.62 MGD) Gorman-Rupp non-clog return activated sludge ("RAS") pumps.
   - One 100 gpm (0.14 MGD) Gorman-Rupp non-clog waste activated sludge ("WAS") pump;
   - Two 99,600 gallon aerobic digester compartments providing a total of 199,200 gallons.

4. BTU No. 2 is comprised of the following items:
   - 0.60 MGD (AADF) package BTU with MLE activated sludge system.
   - 44-foot diameter central clarifier having a surface area of 1,520 square feet.
   - Two 1,740 gpm (2.51 MGD) Gorman-Rupp non-clog recycle pump.
   - Two 430 gpm (0.62 MGD) Gorman-Rupp non-clog return activated sludge ("RAS") pumps.
   - Two 100 gpm (0.14 MGD) Gorman-Rupp non-clog waste activated sludge ("WAS") pump.
   - Two 115 gpm (0.17 MGD) Gorman-Rupp non-clog digested sludge pumps.
   - Two 191,000 gallon aerobic digester compartments providing a total of 382,000 gallons.

5. One in-plant pump station with two 350 gpm (0.50 MGD) submersible pumps.

6. Four centrifugal blowers including: Two 100 HP units at 1,350 cfm/each and Two 150 HP units at 2,100 cfm/each.

7. Four 2.0 MGD (PHF) effluent disc filters.

8. Two 24,600 gallon chlorine contact chambers.

9. Two 3,200 gpm (4.6 MGD-PHF) vertical turbine effluent transfer pumps.

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10. 1.2 Million Gallon ("MG") reclaimed water ground storage tank (“GST”).

11. Three 2,000 gpm (2.88 MGD) horizontal split-case reuse pumps.

12. Two 30-yard biosolids gravity dewatering box as manufactured by FloTrends with polymer injection system capable of producing 10% solids.

13. Four RIBs having a total wetted area of 10.8 acres and a permitted loading capacity of 0.25 MGD (AADF).

14. Hypochlorite feed system.

15. Associated electrical and instrumentation systems

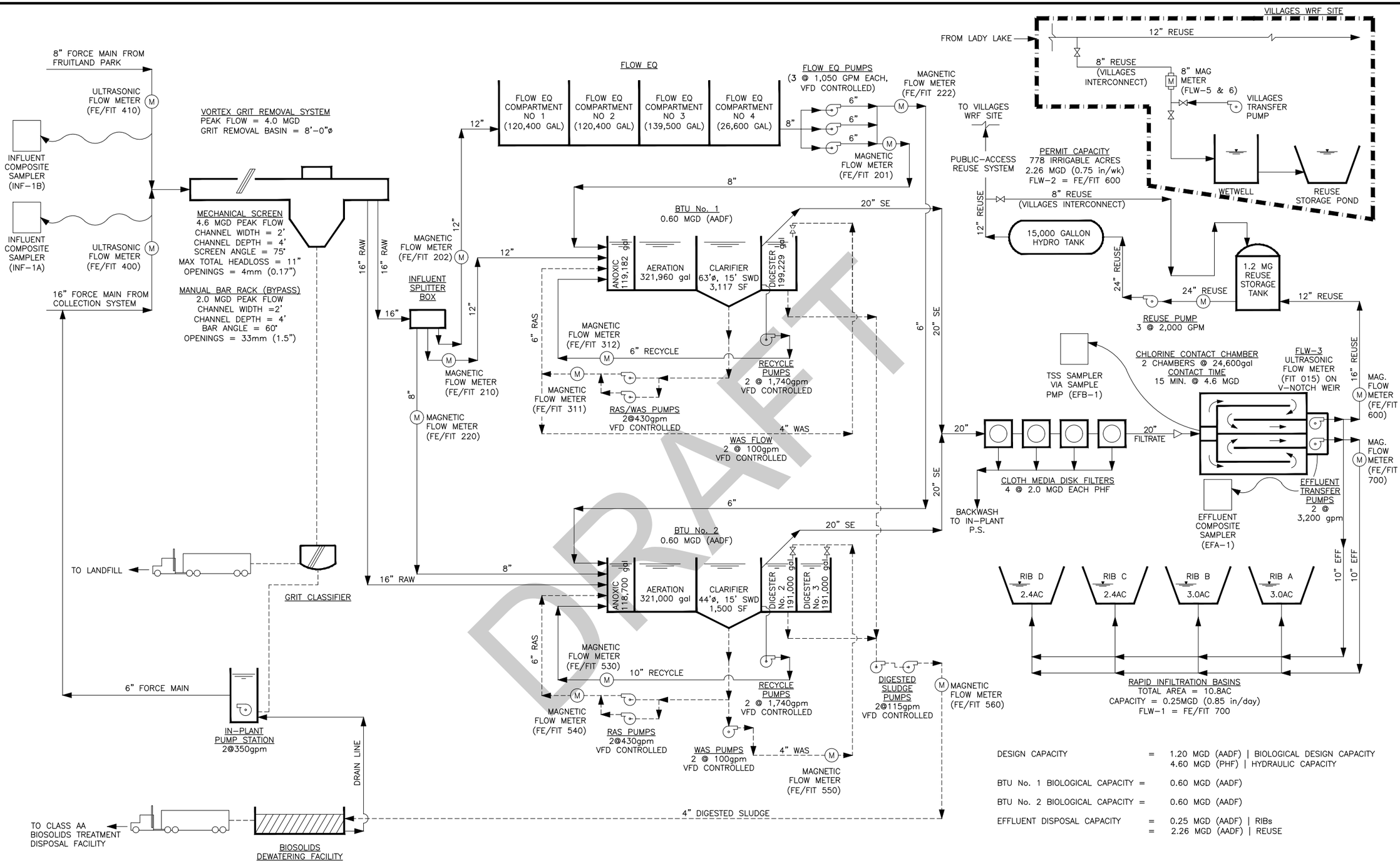
The process flow schematic for the Town’s WRF is provided as **Figure II-3.**

The WRF has two effluent disposal points. The primary effluent disposal location is the Town’s public-access-reuse system. The secondary location is located onsite and contains four separate RIBs having a total wetted area of 10.8 acres. RIB A and B have 3.0 acres of available wetted area, respectively, while RIB C and D have 2.4 acres, respectively. The RIBs also provide “reject” storage capacity. At this time, the Town treats all wastewater to public-access-reuse quality and only loads the RIBs if reuse demand is low and the GST is full, or the treated effluent does not meet reuse standards (i.e., reject water).

The raw wastewater delivered from the Town’s pump stations is first screened via a mechanical fine screen, treated for grit removal, and then flows to the flow equalization system and then pumped at a constant rate to the biological treatment unit(s) for oxidation and nitrification/denitrification. Following the biological treatment, the wastewater is conveyed to clarifier(s) which separates the solids (or sludge) from the clear liquid (or effluent). Most of the settled sludge is recirculated into the oxidation/nitrification process as Return Activated Sludge (“RAS”). A portion of the settled sludge is wasted to the digesters for further stabilization as Waste Activated Sludge (“WAS”). The clarified effluent is then routed to the filter basins for further removal of suspended solids, bacteria, and viruses prior to disinfection in order to meet the FDEP requirements for public-access-reuse water. The water discharged from the filter is called filtrate which then travels to the chlorine contact chamber where a disinfectant (hypochlorite)

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J:\orangepark\cad files\lady lake\9514411 2025 water, wastewater, reclaimed water master plan updates\Figures\wastewater\Fig. II-3 WRF Process Flow Diagram.dwg, 1/13/2026 10:32:44 AM, Mike.Lisena



DESIGN CAPACITY = 1.20 MGD (AADF) | BIOLOGICAL DESIGN CAPACITY
4.60 MGD (PHF) | HYDRAULIC CAPACITY

BTU No. 1 BIOLOGICAL CAPACITY = 0.60 MGD (AADF)

BTU No. 2 BIOLOGICAL CAPACITY = 0.60 MGD (AADF)

EFFLUENT DISPOSAL CAPACITY = 0.25 MGD (AADF) | RIBs
= 2.26 MGD (AADF) | REUSE

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Designed by:	JRS	Date: JAN. 2026	
Drawn by:	MAL	Job No. 9514-41-1	
Checked by:	JRS		
Approved by:	JRS	© 2026	
Scale:	1" = 3,200'		

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WRF PROCESS FLOW DIAGRAM

TOWN OF LADY LAKE
Wastewater Master Plan
Lake County, Florida

Figure
II-3

is injected into the process stream. The baffled chlorine contact chamber ("CCC") provides the necessary contact time and mixing in accordance with FDEP requirements for high-level disinfection.

If the treated wastewater meets public-access-reuse requirements and the GST has storage capacity, the treated effluent is pumped to the GST for storage and repumping to the Town's public-access-reuse system. If the effluent does not meet reuse requirements or the GST is at capacity, the wastewater is pumped to the RIBs.

Effluent limitations for the plant are summarized in Town's operating permit.

The current WWTP component operations will be reviewed as follows:

- Near-Term Flow Trends;
- Biological Treatment Capacity;
- Biological Treatment and Disposal;
- Hydraulic Capacity;
- Mechanical Reliability; and
- Facility Needs.

1. **Near-Term Flow Trends:** A review of the average daily flows (ADF) between 2021 and 2025 is summarized in **Table II-1**.

TABLE II-1
2021 THROUGH 2025 WRF ADF SUMMARY

Month	2021 Average Daily Flows (MGD)	2022 Average Daily Flows (MGD)	2023 Average Daily Flows (MGD)	2024 Average Daily Flows (MGD)	2025 Average Daily Flows (MGD)
January	0.448	0.508	0.446	0.534	0.636
February	0.478	0.498	0.451	0.552	0.682
March	0.497	0.492	0.464	0.559	0.682
April	0.505	0.499	0.489	0.555	0.734
May	0.484	0.484	0.497	0.616	0.658
June	0.499	0.470	0.530	0.566	0.705

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TABLE II-1 2021 THROUGH 2025 WRF ADF SUMMARY					
Month	**2021 Average Daily Flows (MGD)**	**2022 Average Daily Flows (MGD)**	**2023 Average Daily Flows (MGD)**	**2024 Average Daily Flows (MGD)**	**2025 Average Daily Flows (MGD)**
July	0.500	0.488	0.521	0.568	0.643
August	0.483	0.494	0.521	0.584	0.684
September	0.496	0.465	0.520	0.567	0.659
October	0.491	0.468	0.468	0.602	0.567
November	0.484	0.474	0.533	0.595	0.572
December	0.487	0.474	0.525	0.590	0.550
Average	**0.488**	**0.485**	**0.497**	**0.574**	**0.648**
Max	**0.505**	**0.508**	**0.533**	**0.616**	**0.734**
Min	**0.448**	**0.465**	**0.446**	**0.534**	**0.550**

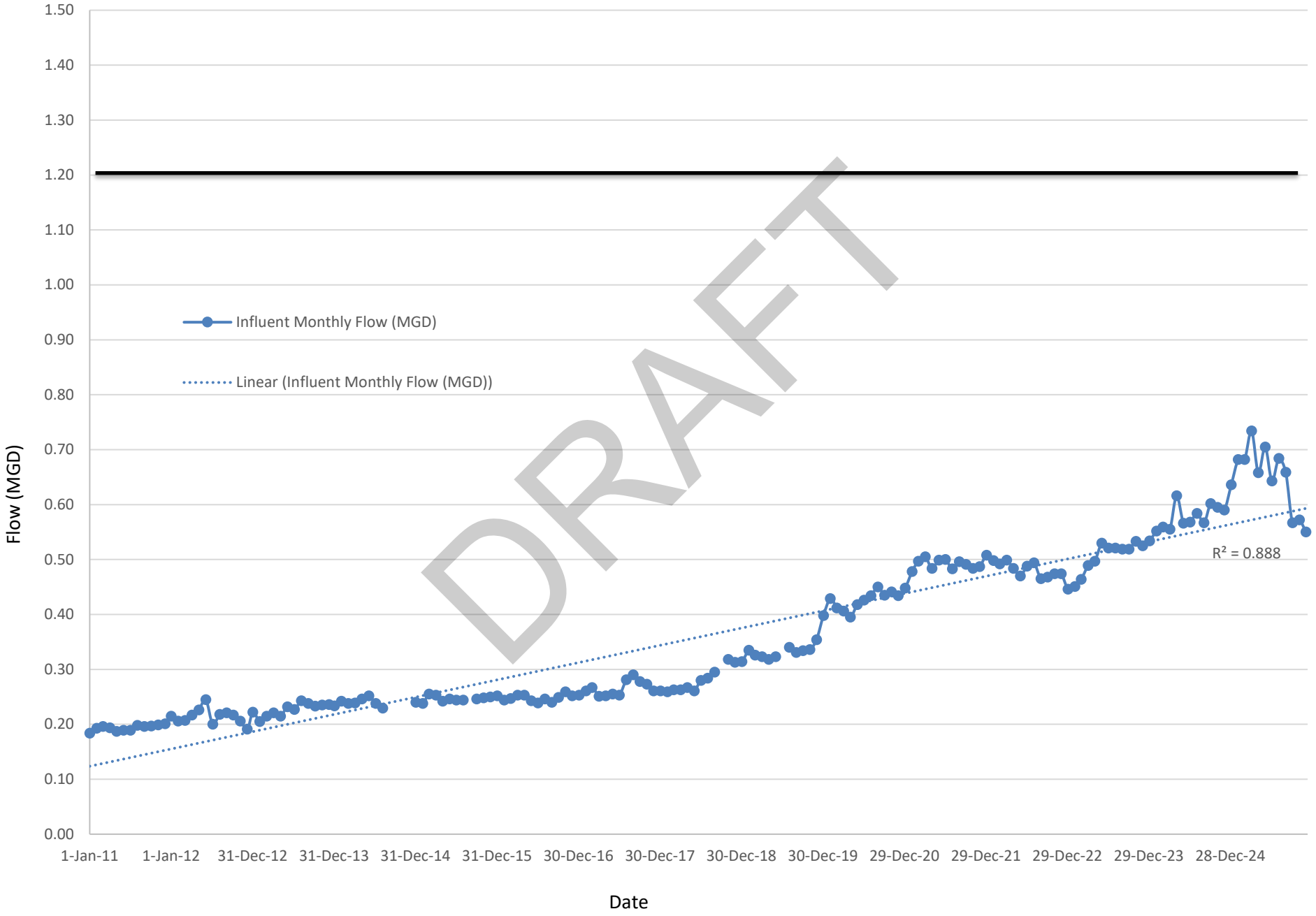
Monthly flow trends since January 2011 are illustrated in **Figure II-4**. As illustrated by the chart, the Town's influent flows were relatively flat until 2018 and 2019. During this time period, the Town completed bulk connections to the Town of Fruitland Park and Water Oaks. During this same time period and continuing into 2024/2025, the Town's growth began to increase in scale and intensity through multiple multi-family projects, additional commercial growth, and large-scale residential developments such as Lake Ella Estates, Green Key Village, and the Hammock Oaks.

From 2011 through 2017, average influent flow increased from approximately 0.20 MGD (AADF) to 0.26 MGD (AADF). This results in a 30% increase or 5% annual increase. In contrast, flows between 2017 and 2024 increased from 0.26 MGD (AADF) to 0.57 MGD (AADF) resulting in a 119% increase or 17% annual increase. Much of this growth is a result of bulk connections from Water Oaks and Fruitland Park which account for approximately 0.17 MGD of the increase.

Additional discussion related to flow trends and associated projections are provided in **Section IV**.

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Town of Lady Lake
2025 Wastewater Master Plan Update
M&A Project 9514-41-1
Figure II-4: January 2011 through December 2025 Average Monthly Influent WRF Flow



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2. **<u>Biological Treatment Capacity</u>:** The WRF's current permitted capacity is 1.20 MGD (AADF) but was not designed to meet advanced wastewater treatment requirements. The facility can provide biological nutrient removal capabilities but is not designed to provide an effluent with Total Nitrogen (TN) less than 3 mg/L or Total Phosphorus (TP) less than 1 mg/L. Biological nutrient removal can be achieved at TN levels below 6.0 mg/l, but TP removal is not part of the current treatment system.

The design basis of a WRF is a critical component of any activated sludge process review. **Table II-2** provides a summary of the anticipated BTU No. 1 and BTU No. 2 biological removal design basis based on review of operation and maintenance data, compliance reports, and communications with manufacturers involved in the BTU No. 2 construction.

TABLE II-2

SUMMARY OF ACTIVATED SLUDGE DESIGN PARAMETERS

BTU No. 1	BTU No. 2
Flow[A,B] = 0.60 MGD (Max, AADF)	Flow[A,B] = 0.60 MGD (Max, AADF)
<u>Influent Characteristics</u>[A,B] BOD_5 = 310 mg/l TSS = 300 mg/l TKN = 40 mg/l	<u>Influent Characteristics</u>[A,B] BOD_5 = 310 mg/l TSS = 300 mg/l TKN = 40 mg/l
<u>Effluent Characteristics</u>: BOD_5 = 20 mg/l TSS = 20 mg/l (*5 mg/l after filtration*) TN = 6 mg/l	<u>Effluent Characteristics</u>: BOD_5 = 20 mg/l TSS = 20 mg/l (*5 mg/l after filtration*) TN = 6 mg/l

A: Reference documents indicated various ranges for these parameters. Separate calculations were completed to defined the expected capacity as listed in Footnote B.

B: Activated sludge calculations indicated BTU No. 1 and BTU No. 2 are capable of treating up to 0.60 MGD, respectively, with average wastewater treatment temperatures of 20°C and influent $CBOD_5$ at 310 ppm or below and influent TKN at 40 ppm or below. Effluent parameters are as specified.

BOD_5 = Biochemical Oxygen Demand-5 day | TSS = Total Suspended Solids | TKN = Total Kjeldahl Nitrogen (Organic Nitrogen + Ammonia) | TN = Total Nitrogen (Nitrate + Nitrite + Organic Nitrogen + Ammonia)

The design basis for the treatment trains reflects an anticipated wastewater strength (i.e., influent characteristics) that would be categorized as 'strong' or 'high-strength' wastewater. While influent total kjeldahl nitrogen (TKN) levels were not available for review, the Town's 2024 influent BOD_5 has varied between monthly averages of 170 to 304 mg/l averaging 227 mg/l, while TSS varied between 168 and 360 mg/l averaging 301 mg/l. At these

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influent levels, we would anticipate TKN levels to be between 30 to 60 mg/l. Therefore, the design influent loadings appear to be appropriate levels that the WRF would need to effectively process and meet permit limits.

3. **Biosolids Treatment and Disposal:** The Town currently treats their biosolids to Class B standards, dewaters the digested material to 8 to 10% solids via a gravity-filtration box, and disposes of the material via a third party.

   As it relates to creation of Class B materials, the Town meets the sludge stabilization requirements of CFR 503 by having > 40 day solids residence time (SRT) for pathogen reduction and by having a specific oxygen uptake rate (SOUR) of ≤ 1.5 mg/l per hour per gram for vector attraction reduction. Based on current influent flow and loading with anticipated wasting schedule for an MLSS of 3,000 ppm, the current SRT is calculated as follows:

$$SRT = \frac{(581{,}000\ gal)(8.34\ lb\ gal^{-1})(2.0\%\ solids)}{755 ppd} = 128\ days$$

   The total digester capacity is 581,000 gallons. At a design flow rate of 1.2 MGD and design influent loading and wasting schedule, the SRT is estimated as follows:

$$SRT = \frac{(581{,}000\ gal)(8.34\ lb\ gal^{-1})(2.0\%\ solids)}{1{,}615 ppd} = 60\ days$$

   As loading increases, the Town will likely require additional sludge dewatering capacity. The current dewatering boxes can treat 30,000 gallons per treatment cycle, which is typically 3 days. This treatment cycle results in a capacity limitation of 10,000 gpd. With the boxes, that results in 20,000 gpd, or an estimated influent flow of 0.6 to 0.7 MGD (ADF).

4. **Hydraulic Capacity:** Typically, a WRF is designed with components capable of accepting a hydraulic flow between 2.0 to 4.0 times the average day design capacity. This is referred to as the “peaking factor” and is commonly used to review the capacity to treat and/or accommodate

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wastewater at peak times during the day. Wastewater systems are typically characterized as having a “diurnal” flow which means that there are two times during the day in which flow is greater than the average for the day. These times typically coincide with morning (5 a.m. to 10 a.m.) and afternoon (4 p.m. to 9 p.m.) hours when large blocks of residents are cooking, showering, etc. Another factor which will impact peak flows into a WRF is infiltration and inflow or “I/I”. I/I is created by stormwater or elevated groundwater levels which flow into the gravity wastewater collection system via cracks, holes, crushed pipes, failed gaskets, etc. Typically, older cities with dated infrastructure, such as vitrified clay pipe (“VCP”) and brick manholes, have issues with I/I. During rain events, the WRF can experience large peaks as a result of elevated groundwater levels and stormwater runoff entering the collection system. Due to the Town’s relatively ‘young’ sewer system, relatively low groundwater level, and the use of modern construction materials, I/I is not a significant issue for the Town. However, the Town has the following I/I areas they monitor during large storm events:

- Lift Station 3 at 448 south Old Dixie; and
- Lift Station 7 at 632 Griffin Ave.

Section II.D. reviews the Town’s force main transmission system. The majority of the Town’s flow is pumped to the WRF via a 16" force main. A separate 8" force main serves areas east of the WRF and another 8" force main delivers flow from Fruitland Park. These three pipelines directly impact WRF peak flows. A flow-equalization system was developed at the WRF to mitigate the issue, which will be further explored in **Section V**.

The major components within the WRF treatment process train are listed within **Table II-3** and include the design capacity (either hydraulic or biological) of each unit. The peak capacity is either based on manufacturer information or hydraulic process review.

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TABLE II-3 WRF PROCESS TRAIN HYDRAULIC CAPACITY OVERVIEW[A]		
Process Unit	**Current Hydraulic Capacity, MGD[B]**	**Comments**
Mechanical Fine Screen	4.6 MGD (PF = 3.8)	1 mechanical fine screen (4.0 mm) on-line and 1 manual bar rack in bypass channel
Grit Removal System	4.0 MGD (PF = 3.3)	
BTU 1 Clarifier 63' Diameter	2.5 MGD @ 800 gpd/SF 2.5 MGD @ 34 ppd (PF = 2.1)	Desired Range: 800 - 1,000 gpd/SF [PHF] 34 ppd/SF [PHF] @ 3,000 ppm MLSS & Qr @ 70%
BTU 2 Clarifier 40' Diameter	1.0 MGD @ 800 gpd/SF 1.0 MGD @ 34 ppd (PF =0.8)	Desired Range: 800 - 1,000 gpd/SF [PHF] 34 ppd/SF [PHF] @ 3,000 ppm MLSS & Qr @ 70%
Both Clarifiers in Service[C]	3.5 MGD @ 800 gpd/SF 3.5 MGD @ 34 ppd (PF = 2.9)	Flow Splitter Box and Flow Equalization required to control flow rates to BTUs
Disc Filter	8.0 MGD (PF = 6.7)	4 Filters available for service.
Chlorine Contact Chamber	4.7 MGD (PF = 3.9)	
Transfer Pumps	9.2 MGD (PF = 7.7)	2 pumps available for service.
Reuse Pumps	8.6 MGD (PF = 7.2)	3 pumps available for service.

A: Summary assumes all mechanical units are in operation. Next Section will review firm capacity aspects of system.

B: Peaking Factor calculated herein based on an assumed AADF capacity of 1.0 MGD (AADF)

C. Flow equalization system controls peak flows to each clarifier.

Based on an analysis of the facility infrastructure it was determined that the WRF components are limited to a peak hour flow of approximately 3.5 MGD or 2.9 times the current capacity (3.5 MGD/1.20 MGD) based on the clarifier capacity.

As shown within the Table, the hydraulic capacity is currently limited by the secondary clarifiers.

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5. **Mechanical Reliability:** Lastly, a review of the WRF's mechanical reliability will be completed to determine future expansion requirements. Rule 62-610.462(1), FAC requires reclaimed water facilities to meet Class I reliability requirements. Class I reliability is the most stringent of the classifications, and generally requires a back-up provision for each facility component. In effect, the Class I designation intends to ensure mechanical reliability. For example, if a single pump or basin or piece of equipment is required to meet demand/treatment requirements, then Class I reliability will require a redundant or 'back-up' component to provide equivalent capacity or partial service. **Table II-4** summarizes the Class I review requirements.

TABLE II-4
CLASS I RELIABILITY REVIEW

Process Unit	Class I Requirement	Current WRF Provisions
Screening	Manual Back-up Bar Screen Required	Mechanical Fine Screen and manual back-up. Class I Reliability Met.
Grit Removal	Not Applicable	One unit provided with bypass capabilities
Pumping RAS Pumps In-Plant Pump Station Reuse Pumps Transfer Pumps Metering Pumps	Back-up pump(s) (With one (1) pump out of service, remaining pump(s) shall meet peak flow requirements.)	Minimum of two pumps provided for all systems. Class I Reliability Met.
Aeration Blowers	With largest unit out of service remaining unit(s) shall be able to meet design oxygen transfer (back-up unit may be uninstalled.)	Current configuration meets Class I requirements. Each BTU has two blowers. A total of four blowers are available.
Clarification	Multiple Basins (with one (1) unit out of service remaining basin(s) must have 75% design capacity).	BTU 2's clarifier has a capacity of 1.0 MGD or 83% of the ADF design capacity. Peak flows require control via the flow equalization basin.
Aeration	Minimum of two of equal volume. However, FDEP allows for single basins with redundant aeration delivery capabilities.	BTU No. 1 Vol = 322,000 gal. BTU No. 2 Vol = 321,000 gal. Class I Reliability Met.

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TABLE II-4 CLASS I RELIABILITY REVIEW		
Process Unit	**Class I Requirement**	**Current WRF Provisions**
Air Diffusers	Multiple diffuser leads/sections (must have 75% design capacity with largest section out of service).	Coarse-bubble diffuser systems meet requirement. Class I Reliability Met.
Filtration	Multiple Basins (with one (1) unit out of service remaining basin(s) must have 75% design capacity).	6.0 MGD filtration capacity with one unit out of service. Class I Reliability Met.
Aerobic Digestion	Back-up basin not required. Two (2) or more blowers required. Multiple diffuser leads/sections so one (1) can be isolated without impairing oxygen transfer.	Four digester compartments provided. Three dedicated PD blowers on-line. Multiple diffuser leads/sections provided. Class I Reliability Met.
Disinfectant Basin (CCC)	Multiple Basins (with one (1) unit out of service remaining basin(s) must have 75% design capacity).	CCC No.1 Capacity = 24,600 gallons. CCC No. 2 Capacity = 24,600 gallons.
Emergency Generator	Capacity to Operate: Screening, Main Wastewater Pumps, Clarifier, Blowers, Disinfectant Facilities, and Critical Operation Bldg Needs.	Provided. Class I Reliability Met.

Table II-3 provided a total hydraulic capacity review, the Class I requirements must be utilized to determine the WRF's 'firm capacity' and associated limiting components. **Table II-5** summarizes the firm capacity limitations.

TABLE II-5 WRF PROCESS TRAIN FIRM CAPACITY OVERVIEW [A]		
Process Unit	**Firm Capacity, MGD**	**Comments**
Mechanical Fine Screen	4.6 MGD (PF = 3.8)	1 mechanical fine screen (4.0 mm) on-line and 1 manual bar rack in bypass channel
Grit Removal System	4.0 MGD (PF = 3.3)	One unit available. System can be bypassed without permit violation.

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TABLE II-5 WRF PROCESS TRAIN FIRM CAPACITY OVERVIEW [A]		
Process Unit	**Firm Capacity, MGD**	**Comments**
Limiting Clarifier BTU 2 Clarifier 40' Diameter	1.0 MGD @ 800 gpd/SF 1.0 MGD @ 34 ppd (PF =0.8)	83% of ADF capacity. Flow management required via the flow equalization basin.
Disc Filter	6.0 MGD (PF = 5.0)	Firm capacity with 3 filters online. 4 filters available.
Chlorine Contact Chamber	4.7 MGD (PF = 3.9)	
Transfer Pumps	4.7 MGD (PF = 7.7)	Firm capacity with 1 pump online. 2 pumps available for service.
Reuse Pumps	5.8 MGD (PF = 4.8)	Firm capacity with 2 pumps online. 3 pumps available for service.

A: Peaking Factor based on permitted capacity of 1.2 MGD (AADF).

Secondary clarification is the WRF's limiting treatment component. Should a clarifier require maintenance, the Town's operations would require peak flow management via the flow equalization basin.

In addition to these components, the Town's reject storage capacity should remain a consideration. One day of the permitted capacity's storage is required. The Town's current RIBs have the following storage capacity at a depth of 3.5 feet, excluding consideration of percolation rates due to their unlined configuration:

- RIB A Storage Capacity = 3.39 million gallons
- RIB B Storage Capacity = 3.39 million gallons
- RIB C Storage Capacity = 2.77 million gallons
- RIB D Storage Capacity = 2.77 million gallons

Total = 12.32 million gallons

At 1.2 MGD permitted capacity, the current RIB capacity provides 10 days of reject storage, without consideration of percolation losses.

6. **Logistical Monitoring and Optimization: Section II.D.** reviews the collection system configuration and associated pumping capacities. The Town's WRF includes flow equalization that allows diversion of peak influent

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flows to basin for flow buffering into the biological treatment units. This process component significantly assists management of the secondary clarifiers and biological treatment process. The Town will need to continue monitoring of peak flow levels and durations, and optimize use of the influent flow splitter box with flow equalization basin as flows increase. The design intent was to allow 'controlled' influent flow to enter the BTU's from the influent splitter box with diversion of excess flow to the flow equalization basin for treatment during low-flow and low-loading periods of the day.

7. **Facility Needs:** Effluent management will be required as influent flows increase. The expanded demand within the reclaimed water service area will address these flows on an average daily flow basis, but the Town may require supplemental sources during prolonged dry periods. In addition, offsite effluent disposal and/or storage options will be required to address prolonged wet-weather conditions. The 12.3 million gallons of onsite storage is useful, but limited based on the permitted 0.25 MGD (AADF) disposal capacity.

   Further discussion on effluent disposal needs is provided below and in **Section V**.

B. EFFLUENT DISPOSAL CAPACITY

The Town's effluent disposal capacity will be primarily impacted by future public-access-reuse capacity. **Section V** summarizes the Town's reuse system and the Reuse Master Plan outlines existing and future needs. In the near-term, the Town's capacity is a combination of the reuse system and the onsite RIBs. We anticipate the RIBs will continue to function as a back-up disposal means into the future. The Town's existing/current disposal capacity will be reviewed as follows:

- Existing RIBs; and
- Existing Public-Access-Reuse Capacity.

1. **Existing RIBs:** As defined within Rule 62-610.500, FAC, "Rapid infiltration basins involve reuse of reclaimed water by spreading in a system of basins, RIBs, or percolation ponds (cells) which may be underlain with subsurface drains. The percolation area shall be divided into two or more basins, RIBs, or cells (each of which need not have identical size and shape) to allow for alternate loading and resting." The Town has a total of four basins that meet

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the rule requirement. Capacity of the RIBs are defined based on geological investigations and modeling of the soils based on seasonal high groundwater levels. Per rule, the initial hydraulic capacity of RIB systems shall be limited to 3 inches per day (1.9 GPD/ft^2), and additional capacity can be requested with required supporting documentation. In general, the maximum capacity allowed for a RIB is 9 inches per day (5.6 gpd/ft^2). The Town's existing RIBs are currently rated for a total capacity of 0.25 MGD resulting in the following individual capacities per RIB cell:

- RIB A (3.0 Acres) = 0.069 MGD (0.85 inches/day or 0.53 gpd/ft^2)
- RIB B (3.0 Acres) = 0.069 MGD (0.85 inches/day or 0.53 gpd/ft^2)
- RIB C (2.4 Acres) = 0.056 MGD (0.85 inches/day or 0.53 gpd/ft^2)
- RIB D (2.4 Acres) = 0.056 MGD (0.85 inches/day or 0.53 gpd/ft^2)

Sum (10.8 Acres) = 0.25 MGD (0.85 inches/day or 0.53 gpd/ft^2)

The RIB locations were illustrated in **Figure II-2**.

Further discussion on effluent disposal needs is provided in **Section V** and the Reuse Master Plan.

2. **Existing Public-Access-Reuse Capacity:** As defined within Rule 62-610.423, FAC, capacities associated with public-access-reuse facilities include the following considerations:

> "(1) Hydraulic loading rates shall be established after considering the ability of the soil-plant system to remove pollutants from the reclaimed water.
>
> (2) Loading of nitrogen shall promote use by vegetation and nitrification-denitrification reactions in the soil. If supplemental fertilizers are used, the effect of such fertilizer use on nitrate concentrations in the ground water shall be assessed in the engineering report.
>
> (3) Other factors which shall be considered in establishing loading rates are the infiltration capacity and hydraulic conductivity of the geologic materials underlying the site; the resulting pollutant load shall be within the assimilative capacity of the soil-plant system. The hydraulic loading rate shall not produce surface runoff or ponding of the applied reclaimed water. Additionally, the quality and use of underlying ground water may dictate the loading rates to be used.

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(4) Since soil-plant relationships are complex, the initial design loading rate shall be conservative; a maximum annual average of two inches per week is recommended. The Department will consider a rate higher than the two inches per week average provided the rate is justified in the engineering report on the basis of the renovating and hydraulic capacity of the soil-plant system, the existing quality and use of surface or ground water in the area, and other hydrogeologic conditions."

The current WRF operating permit lists 778.28 acres as 'irrigable' area within the Town's Reclaimed Water Service Area ("RWSA"). The characteristics and variables associated with the RWSA are discussed in the Reuse Master Plan. The permitted capacity of the system is 2.26 MGD, which results in a permitted application rate of 0.75 inches per week when applied over the 778 acres of land. The Town's current reuse customer locations are depicted in **Figure II-5**. The St. Johns River Water Management District (SJRWMD) currently allows/recommends an irrigation rate of approximately 0.75 inches per week, and many reuse system customers utilize much more than this amount.

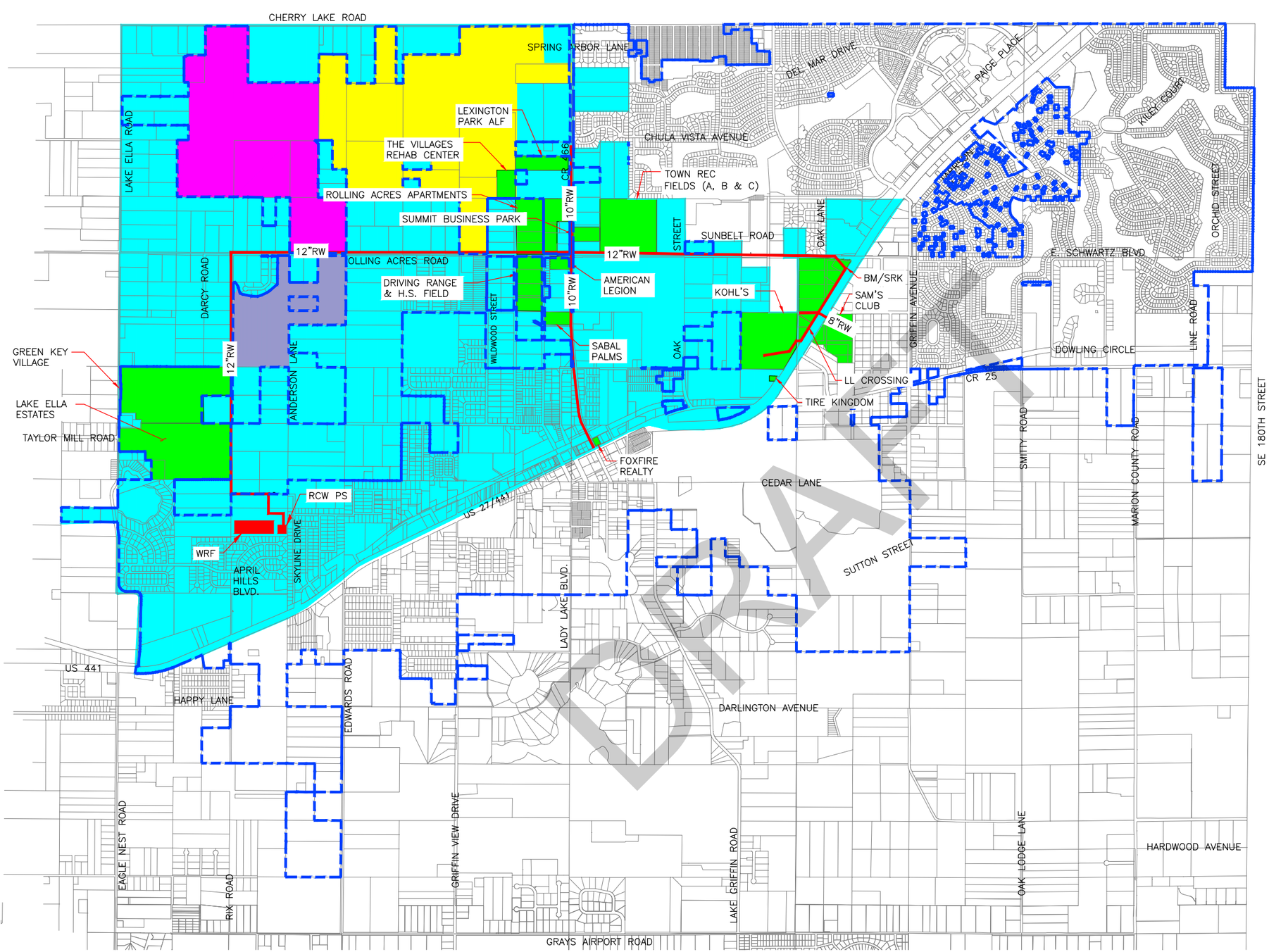
Generally, an application rate of 32 to 36 inches per year (0.62 to 0.69 inches per week) is used for supplemental irrigation needs (irrigation water needed beyond that received by rainfall) pending the type of turf which is being grown, groundwater levels, slope of land, regional rainfall amounts, soil characteristics, etc.

FDEP requires a minimum wet-weather storage volume of three days for wet-weather events if an alternative means of effluent disposal is not available. The onsite RIBs mitigate this requirement and provide the reject water disposal location. Further discussion on effluent disposal needs is provided in **Section V**, which includes an estimated water balance for planning-level wet-weather events. The Town's current reuse operating protocol is provided as **Attachment D**.

C. COLLECTION AND TRANSMISSION SYSTEMS

For purposes of this Plan, the Town's wastewater collection and transmission system will be reviewed within various collection system areas as defined further herein. Each collection system is served by a pump station. **Figure II-6** depicts the Town's entire collection and transmission system, **Figure II-7** illustrates the transmission system in a schematic form, and **Figure II-8** isolates the transmission system.

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LEGEND

- TOWN LIMITS
- XX"RW REUSE MAIN
- EXISTING REUSE CUSTOMER
- RECLAIMED WATER SERVICE AREA
- HAMMOCK OAKS DEVELOPMENT AREA
- HAMMOCK RESERVE DEVELOPMENT AREA
- HAMMOCK HIGHLANDS DEVELOPMENT AREA

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Designed by:	JRS	Date: JAN. 2026	
Drawn by:	MAL	Job No. 9514-41-1	
Checked by:	JRS		
Approved by:	JRS	© 2026	
Scale:	1" = 2,500'		

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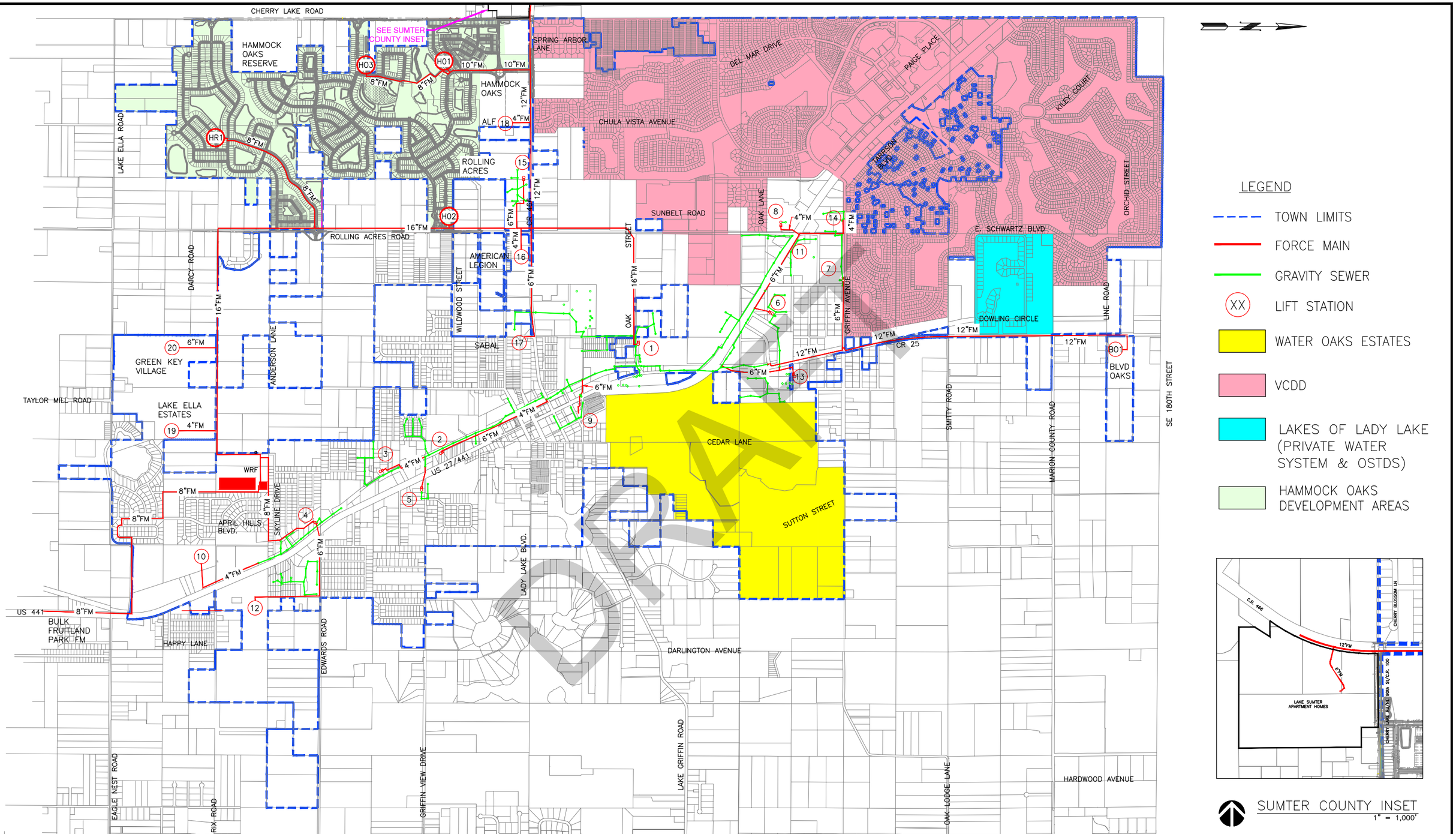
EXISTING REUSE MAIN ROUTING & REUSE CUSTOMERS

TOWN OF LADY LAKE
Wastewater Master Plan
Lake County, Florida

Figure II-5

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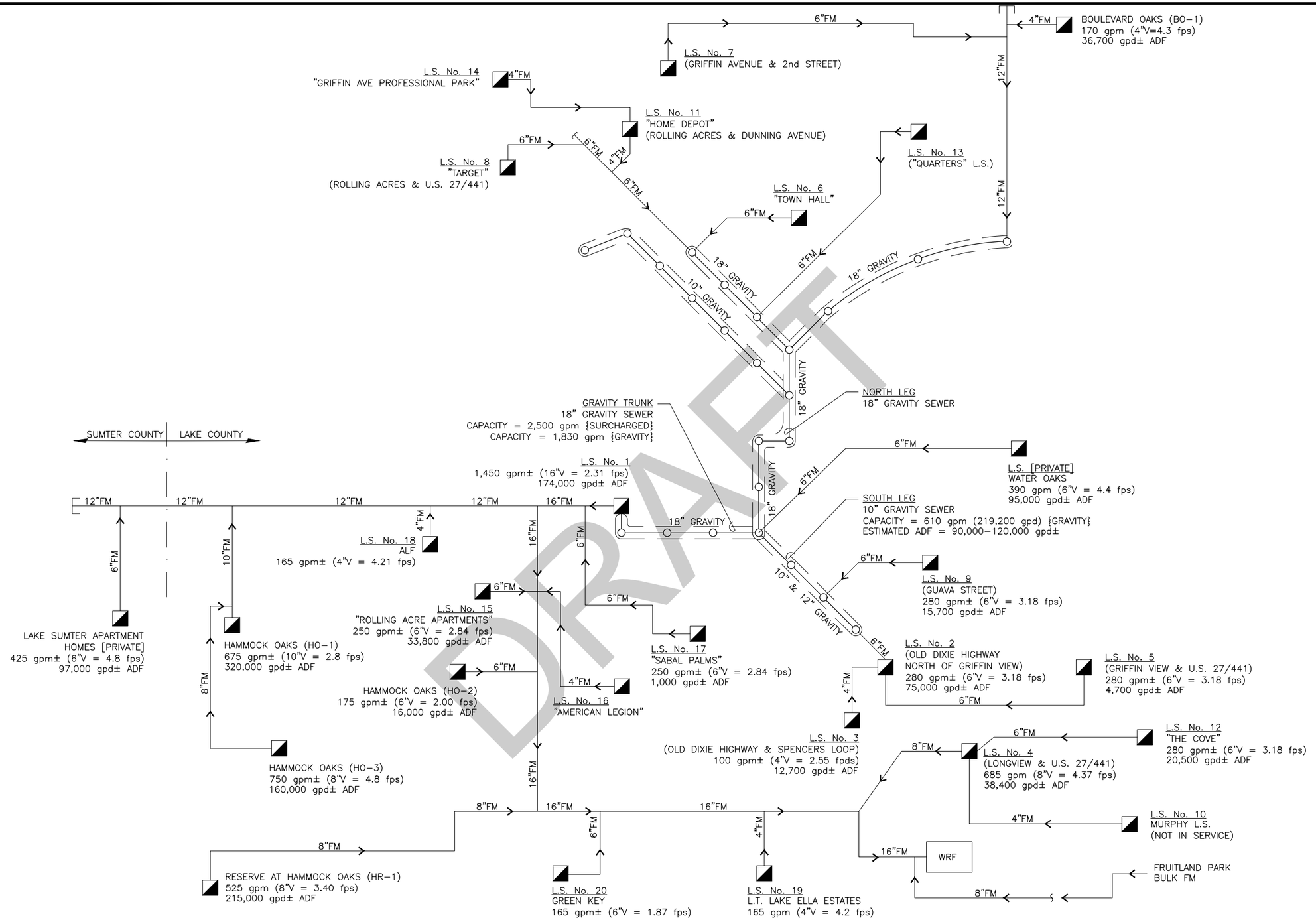
580-1 Wells Road
Orange Park, FL 32073
Ph: 904.278.0030

EXISTING COLLECTION & TRANSMISSION SYSTEM

TOWN OF LADY LAKE
Wastewater Master Plan
Lake County, Florida

Figure
II-6

J:\orangepark\cad files\lady lake\9514411 2025 water, wastewater, reclaimed water master plan updates\Figures\wastewater\Fig. II-7 Collection and Transmission System Schematic.dwg, 1/13/2026 10:49:42 AM, Mike.Lisena



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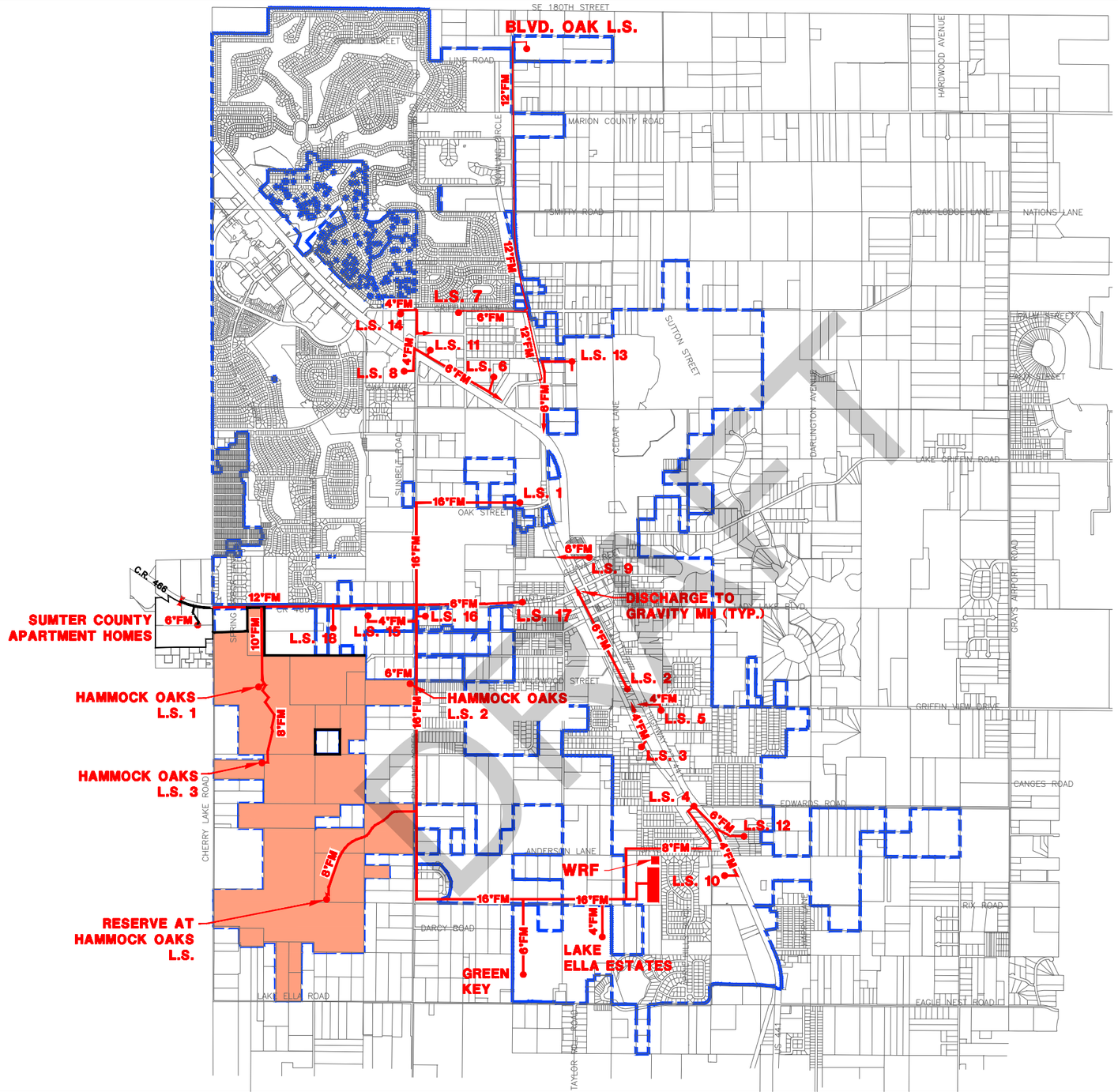
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EXISTING COLLECTION & TRANSMISSION SYSTEM SCHEMATIC

TOWN OF LADY LAKE
Wastewater Master Plan
Lake County, Florida

Figure
II-7



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EXISTING TRANSMISSION SYSTEM MAP

TOWN OF LADY LAKE
Wastewater Master Plan
Lake County, Florida

Figure
II-8

J:\orangepark\cad files\lady lake\95144111 2025 water, wastewater, reclaimed water master plan updates\Figures\wastewater\Fig. II-8 Existing Transmission System Map.dwg, 1/13/2026 10:52:52 AM, Mike.Lisena

A list of the current pump stations, capacities, and their respective collection areas are summarized in **Table II-6,** which will be referenced throughout the following subsections of this Plan.

TABLE II-6

WASTEWATER COLLECTION & TRANSMISSION BASIN SUMMARY

Basin/ L.S. I.D.	L.S. Location	L.S. Capacity (gpm)	L.S. Discharge Location
1	Oak Street & Clay Avenue	1,450 gpm	WRF
2	Old Dixie, North of Griffin View	280 gpm	LS 1 Collection System
3	Old Dixie & Spencers Loop	100 gpm	LS 2
4	Longview & US 27/441	685 gpm	WRF
5	Griffin View & US 27/441	280 gpm	LS 2
6	Sam's Club on US27/441	250 gpm	LS 1 Collection System
7	Griffin Avenue & 2nd Street	350 gpm	LS 11
8	Rolling Acres & US 27/441	280 gpm	LS 1 Collection System
9	Guava Street	280 gpm	LS 1 Collection System
10	Parcel on U.S. 27/441 (Murphy L.S.)	n/a	LS 4 Collection System
11	Rolling Acres & Dunning Avenue	320 gpm	LS 1 Collection System
12	The Cove Apartment Complex	280 gpm	LS 4
13	Quarters Apartment Complex	440 gpm	LS 1 Collection System
14	Griffin Avenue Professional Park	Unknown	LS 1 Collection System
15	Village Rehab | Rolling Acres Apartments	250 gpm	WRF
16	American Legion	Unknown	WRF
17	Sabal Palms	250 gpm	WRF
18	ALF	165 gpm	WRF
19	Lake Ella	165 gpm	WRF
20	Green Key Village	165 gpm	WRF
21	Hammock Oaks 1 (HO-1)[A]	670 gpm	WRF
22	Hammock Oaks 2 (HO-2)[A]	175 gpm	WRF
23	Hammock Oaks 3 (HO-3)[A]	500 gpm	WRF
24	Reserve at Hammock Oaks (HR-1)[A]	525 gpm	WRF
25	Boulevard Oaks (BO-1)[A]	170 gpm	LS 1 Collection System
	Private Stations		
	Water Oaks	390 gpm	LS 1 Collection System
	Sumter Lake Apartments	450 gpm	WRF

A Stations were designed with VFDs to reduce flows while development builds out.

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Portions of the components listed in **Table II-6** are further discussed and reviewed in context of each service area within the following subsections of the report.

1. **Gravity Sewer:** This subsection will review the following characteristics of the Town's existing Gravity System:

    - Existing Collection System Characterization.
    - Existing Trunk Sewer Capacity Review.

    a. **Existing Collection System Characterization:** The Town's original collection system and all current and future projects are constructed using polyvinyl chloride ("PVC") piping which is the current industry standard, and is more likely to withstand the wastewater environment over long service durations. As long as the materials were installed properly, the likelihood of leaks is also limited when compared to older vitrified clay pipes.

    In Florida, relatively deep portions of the gravity collection systems (typically 10 to 25 feet below grade) can become submerged due to groundwater conditions. If joints are loose, gaskets improperly installed, poor manhole connections, and/or poor lateral connections are made, these conditions can lead to 'infiltration' of groundwater and sand particles ("grit") into the collection system. In more extreme cases, the faulty piping and/or poor connections to manholes can create potential roadway failures due to the materials beneath the roadway "eroding" away due to the influence of the piping being "open" to the surrounding conditions.

    In 2013, the Town completed a system-wide sanitary sewer evaluation survey (SSES) that included cleaning and subsequent video inspection. Findings from that SSES were addressed by the Town. On June 28, 2023, FDEP implemented a rule that requires all domestic wastewater facility permittees to develop a pipe assessment, repair, and replacement action plan for the facility's collection system, i.e., a collection system action plan. The Town has completed the initial version of the Collection System Action Plan (CSAP) that is provided as **Attachment E**. An annual update to the report is required by June 30.

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The goal of the CSAP is to prevent sanitary sewer overflows (SSO) and leakages that may endanger public health and the environment. The plan is a proactive approach to assess the condition of the collection system to identify needed maintenance, repairs, and rehabilitation of the system.

FDEP's intent is to evaluate 25 percent, minimum, of the collection system annually so the entire system is completed in a five-year planning horizon. Facilities with a permitted capacity over 1 million gallons per day are required to complete a computerized GIS map and electronic inventory. Inventory items include:

- Detailed information on each section of pipe, manholes, and pump stations including inspection and maintenance information.
- Climatic, geologic, topographic, and hydrological information including seasonal high water table information and rainfall data.
- Information on system flows, SSOs, bypasses, odor complaints, corrosion data, and past I&I analyses, as well as population and industries served.

Satellite collection systems, such as Fruitland Park, will also require coordination and maintenance activities.

b. Existing Trunk Sewer Capacity Review: The Town's previous master plan identified a limiting component within the collection system associated with the trunk sewer running along CR 25 and Oak Street that originally served the Town's commercial core area and flowed to Lift Station No. 1. The original piping size was 10" diameter and was a capacity concern relative to serving future development. In 2018/2019, the majority of the 10" piping was replaced with 18" piping. The 18" gravity sewer was also extended north along CR 25 to Fennell Boulevard, which is the northerly terminal point. A 12" force main was extended from this terminal manhole north to serve the Boulevard Oaks development as well as future needs. LS 7 was also diverted to the 12" FM.

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The 18" gravity capacity is estimated at 1,830 gpm. The capacity may increase to approximately 2,650 gpm if the system is allowed to surcharge. Surcharging is not recommended for normal operations since it could lead to an SSO condition.

The 18" gravity system is broken into 3 main components: North Leg, South Leg, and Trunk Leg. See **Figure II-7** for the system schematic.

North Leg - Lift Station (L.S.) Connections

- Lift stations affecting the gravity collection system include:
  - L.S. No. 6: 250 gpm capacity (6" FM)
  - L.S. No. 7: 350 gpm capacity (6" FM)
  - L.S. No. 8: 280 gpm capacity (4" FM)
  - L.S. No. 11: 320 gpm capacity (6" FM)
  - L.S. No. 13: 440 gpm capacity (6" FM)
  - L.S. No. 14: 100 gpm capacity (4" FM)
  - Boulevard Oaks L.S.: 170 gpm capacity (4" FM)

  Total: 1,910 gpm

- The total capacity available to pump into the gravity sewer piping based on the force main connections is approximately 1,810 gpm (L.S. No. 6 + L.S. No. 7+ L.S. No. 8 + L.S. No. 11 + L.S. No. 13 + Boulevard Oaks) if all pumps were running concurrently. L.S. No. 14 flow is re-pumped through L.S. No. 11.

- Based on the run-time meter readings, the anticipated average daily flow that was calculated for the larger lift stations is summarized as follows:
  - L.S. No. 6 delivers approximately: 40,000 gpd-ADF
  - L.S. No. 7 delivers approximately: 47,000 gpd-ADF
  - L.S. No. 8 delivers approximately: 2,000 gpd-ADF
  - L.S. No. 11 delivers approximately: 28,000 gpd-ADF
  - L.S. No. 13 delivers approximately: 34,000 gpd-ADF

  Total: 151,000 gpd-ADF

- Planning basis flows from Boulevard Oaks are summarized as follows:
  - Boulevard Oaks: 36,700 gpd-ADF

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- The total average daily flow from the existing pump stations is approximately 130,000 to 150,000 gpd-ADF. Adding Boulevard Oaks results in a total flow of 187,700 gpd-ADF. Using standard peaking factor basis, the peak flow anticipated from the service area is approximately 3.6 resulting an anticipated peak flow of 470 gpm. This is 25% (470 gpm/1,910 gpm) of the current pumping capacity. Therefore, the existing collection system pumps will likely run short durations limiting any combined pumping durations.

- The existing 12" FM extending from Boulevard Oaks has a general capacity of 705 gpm at 2 fps to 1,760 gpm at 5 fps. Using a peak factor of 3.6, the remaining ADF capacity is a maximum of 650,000 gpd. The gravity collection system is the limiting component.

South Leg - Lift Station (L.S.) Connections

- Lift stations that affect the gravity collection system include:
  - L.S. No. 2: 280 gpm capacity (6" FM)
  - L.S. No. 3: 100 gpm capacity (4" FM)
  - L.S. No. 5: 280 gpm capacity (6" FM)
  - L.S. No. 9: 280 gpm capacity (6" FM)
  - Water Oak: 390 gpm capacity (6" FM)

  Total: 1,330 gpm

- Only Water Oaks, L.S. No. 2 and L.S. No. 9 pump into the collection system, the combined capacity of those stations is approximately 950 gpm if stations were running concurrently.

- Based on the run-time meter or flow meter readings, the average daily flow per station is summarized as follows:
  - L.S. No. 2 delivers approximately 75,200 gpd-ADF
  - L.S. No. 3 delivers approximately 12,700 gpd-ADF
  - L.S. No. 5 delivers approximately 4,700 gpd-ADF
  - L.S. No. 9 delivers approximately 15,700 gpd-ADF
  - Water Oak delivers approximately 100,000 gpd-ADF

  Total: 208,300 gpd-ADF

- Using standard peaking factor basis, the peak flow anticipated from the service area is approximately 3.6, resulting an anticipated peak

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flow of 517 gpm. This is 39% (517 gpm/1,330 gpm) of the current pumping capacity. Therefore, the existing collection system pumps will likely run short durations limiting any combined pumping durations.

Trunk Leg - L.S. 1 Summary

- The North Leg and South Leg combine west of the Oak Street and US 441 intersection. At this location, the Water Oak L.S. force main discharges into the 18" gravity system resulting in the following flows when combine with the gravity legs:
  - North Leg - Combined Pump Flow: 1,810 gpm
  - South Leg - Combined Pump Flow: 1,330 gpm

    Total: 3,140 gpm

- The total average daily flow from the existing pump stations is approximately 396,000 gpd-ADF [151,000 gpd (North Leg) + 36,700 gpd (B.O.) + 208,300 gpd (South Leg)].

- The 18" trunk leg has a limiting capacity of 1,860 gpm (PHF), 878,400 gpd (ADF) based on a 3.0 peak factor, or 4,000 ERUs. If surcharged conditions are allowed, then the limiting capacity increases to 2,650 gpm (PHF), 1,272,000 gpd (ADF), or 5,780 ERUs. Based on the contributing LS flows, the current ADF through the Gravity Trunk is approximately 45% of the system's gravity capacity and 31% of the surcharged capacity. However, the combined LS capacity connected to the Gravity Trunk is approximately 2,760 gpm, which will need to be monitored by the Town.

Lift Station No. 1 Considerations

A review of L.S. No. 1's hydraulics and run-time meters resulted in the following:

- L.S. No. 1 pump-down test indicated a pumping capacity of 1,600 gpm (16" FM V = 2.55 fps), while the design point was 1,450 gpm (16" FM V = 2.31 fps).

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- At 1,450 gpm, the L.S. No. 1 capacity would indicate a collection system delivery capacity would be limited to 522,000 gpd (ADF) or 2,375 ERUs. The current ADF is estimated at 396,000 gpd, or 76% of the current pumping capacity.

2. **Transmission System:** As part of the Hammock Oaks development review, a hydraulic review of the Town's main transmission corridor was completed to determine capacities and capabilities of the Town's existing 16" force main to serve known developments. **Attachment F** includes a copy of those results that were documented in the *Hammock Oaks WaterCad Modeling Results* (July 2023). The findings are summarized as follows:

   - The Town's original design of the wastewater system resulted in the wastewater treatment facility being constructed at a relatively high elevation in the Town, which results in a static back pressure condition on all connecting pump stations that are located at lower elevations. The Town's existing influent structure hydraulic water elevation is approximately 177 feet (NAVD) while Lift Station 1's operating level is 52 feet (NAVD) and the Hammock Oak lift stations operating elevations vary between 39 feet to 69 feet (NAVD). The elevation difference results in static pressures ranging from 108 ft (47 psig) to 138 ft (60 psig). As a result, the system's operating pressure can range from 80 to 100 psig pending location and operating flows.

   - Field testing of LS 1, LS 4, and LS 15 were completed to determine current operating conditions. LS 1 modeling versus field testing indicated a relatively low C-factor for the 16" piping.

   - All stations were able to deliver near their anticipated design flows when pumping individually.

   - A scenario was reviewed when all stations are pumping concurrently which indicated the force main becomes limiting when force main flows exceed 4 fps (2,500 gpm). The Town will need to monitor pump station run times, which will give an indication when concurrent pumping is occurring more regularly.

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- Expansion to the transmission system capacity will be needed as further growth occurs. Alternatively, an inline booster pump station could be reviewed as a future alternative to decrease force main operating pressures.

D. SUMMARY

The following areas of the existing system will require Town monitoring to track capacity limitations and determine expansion and/or modification requirements as discussed in **Section V**:

- Treatment and Reuse Facilities:
  - The WRF's current permitted capacity is 1.20 MGD (AADF) but was not designed to meet advanced wastewater treatment requirements. The facility can provide biological nutrient removal capabilities but is not designed to provide an effluent with Total Nitrogen (TN) less than 3 mg/L or Total Phosphorus (TP) less than 1 mg/L. Biological nutrient removal can be achieved at TN levels below 6.0 mg/l, but TP removal is not part of the current treatment system.

  - As additional growth occurs, pumped flows to the WRF will increase in peak capacity that may exceed the current influent screening capacity of 4.6 MGD (3,200 gpm). The existing flow equalization system downstream of the influent screening system buffers the remaining treatment system.

  - The permitted capacity for the existing RIBs is 0.25 MGD (AADF), and the permitted public-access reclaimed water system capacity is 2.26 MGD (AADF). The Town is already experiencing growth within the reclaimed water service area, which is resulting in less use of the RIBs. However, wet-weather storage needs will need to be monitored and managed. The RIBs also provide the necessary reject water disposal capacity needs.

  - Current biosolids dewatering capacity will become limiting as flows approach 0.60 to 0.70 MGD (AADF).

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- Collection and Transmission Facilities:
  - The Town has the following I/I areas they monitor during large storm events: Lift Station 3 at 448 south Old Dixie; and Lift Station 7 at 632 Griffin Ave.

  - Lift Station 1 collection and pumping system have the following considerations to be monitored:

    - The 18" trunk leg has a limiting capacity of 1,860 gpm (PHF), 878,400 gpd (ADF) based on a 3.0 peak factor, or 4,000 ERUs. If surcharged conditions are allowed, then the limiting capacity increases to 2,650 gpm (PHF), 1,272,000 gpd (ADF), or 5,780 ERUs. Based on the contributing LS flows, the current ADF through the Gravity Trunk is approximately 45% of the system's gravity capacity and 31% of the surcharged capacity. However, the combined LS capacity connected to the Gravity Trunk is approximately 2,760 gpm, which will need to be monitored by the Town.

    - At 1,450 gpm of pumping capacity, the station is limited to an estimated average daily flow of 522,000 gpd (ADF) or 2,375 ERUs using standard peaking factors. The current ADF is estimated at 396,000 gpd, or 76% of the current pumping capacity.

    - Flow monitoring at the station should continue while expansion plans are completed and implemented in the future to support further growth in the Town’s northeast quadrant.

  - The Town's original design of the wastewater system resulted in the wastewater treatment facility being constructed at a relatively high elevation in the Town, which results in a static back pressure condition on all connecting pump stations that are located at lower elevations. The Town's existing influent structure hydraulic water elevation is approximately 177 feet (NAVD) while Lift Station 1's operating level is 52 feet (NAVD) and the Hammock Oak lift stations operating elevations vary between 39 feet to 69 feet (NAVD). The elevation difference results in static pressures ranging from 108 ft (47 psig) to 138 ft (60 psig). As a result, the system's operating pressure can range from 80 to 100 psig pending location and operating flows.

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- The Town's existing 16" trunk force main was reviewed when all stations are pumping concurrently which indicated the force main becomes limiting when force main flows exceed 4 fps (2,500 gpm). The Town will need to monitor pump station run times, which will give an indication when concurrent pumping is occurring more regularly.

- Expansion to the transmission system capacity will be needed as further growth occurs. Alternatively, an inline booster pump station could be reviewed as a future alternative to decrease force main operating pressures.

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III. REGULATORY REQUIREMENTS

A. OVERVIEW

The most dynamic regulatory areas which will impact the Town's wastewater infrastructure planning are related to septic tank abatement requirements, advanced wastewater treatment requirements, and the availability of traditional water supplies/growing need of alternative water supplies (i.e., limited groundwater supply). Each of these topics are discussed in further detail in relation to the following areas:

- Basin Management Action Plan (BMAP);
- Reclaimed Water Use; and
- Collection System Action Plan.

B. BASIN MANAGEMENT ACTION PLAN (BMAP)

The Town is located within the Upper Ocklawaha and Silver Springs and Upper Silver River and Rainbow Spring Group and Rainbow River basin management action plans (BMAP). The Florida legislature enacted legislation (Subparagraph 403.067(7)(a)9 of the Florida Statutes) requiring local governments (counties and municipalities) to develop a wastewater treatment plan and/or an onsite sewage treatment and disposal system (OSTDS) remediation plan for those identified entities within a BMAP. The Florida Department of Environmental Protection (FDEP) identified communities where the domestic wastewater treatment facilities and/or OSTDS were contributors of at least 20 percent of point source or non-point source nutrient pollution or where it was determined that remediation is necessary to achieve an identified total maximum daily load (TMDL). A final order was issued on June 12, 2023 and reissued on June 27, 2025, identifying BMAP's where these requirements are applicable.

The Town's BMAP Remediation Plan was developed in response to the above criteria. A copy is provided as **Attachment G**. Implications to the Town's planning are summarized in **Section V** and are associated with the septic tank phase out plans and future AWT improvements. Included in **Attachment G** is the FDEP October 6, 2025 Town of Lady Lake BMAP Update. The key items to note from the update are summarized as follows:

- Nutrient loading reduction schedule is: 30% (2028), 80% (2033), and 100% (2038).

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- Town of Lady Lake Total Nitrogen (TN) loading reduction requirement total is 18,279 pounds per year (lb-TN/yr) with the following breakdown:

  - 11,313 lb-TN/yr | 1,302 septic tank abandonments.

  - 2,053 lb-TN/yr at WRF through advanced wastewater treatment improvements to achieve 3 mg/L (TN).

  - 4,914 lb-TN/yr through stormwater system improvements.

- The Town has achieved 372 lb-TN/yr (7% of the 2028 goal).

- Total phosphorus requirements will be achieved through collective stormwater treatment rule modifications that will enhance nutrient removal requirements for development and redevelopment projects.

Section V reviews capital improvement needs to meet the BMAP criteria.

C. RECLAIMED WATER USE

Associated with the Town's St. Johns River Water Management District (SJRWMD) Consumptive Use Permit (CUP) requirements, reduction of potable water use for irrigation purposes is necessary. While reclaimed water use is critical, it is not the panacea to overall water demand reduction. In addition, reclaimed water use is often hampered through:

- Reclaimed water availability. Available supplies of reclaimed water can be hampered by the following items:

  1) For instance, the majority of the Town is serviced by individual on-site sewage disposal systems or septic tanks with drainfields. Therefore, areas of Town that receive potable water service may not contribute wastewater to the Town which is required to produce reclaimed water;

  2) If reclaimed water rates are not defined properly, then overuse can occur "wasting" the commodity; and

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3) Even with proper reclaimed water rates the overall reclaimed water demand within a given area typically exceeds the amount of wastewater supplied to the WRF for reclaimed water production. For example, a 0.25 acre lot with an 1,800 square foot residence with driveway would have an average irrigation demand of approximately 575 gpd based on an irrigation rate of 0.75 inches per week. The same residence would likely only supply approximately 200 to 300 gpd of wastewater to the system. Thus, the reclaimed water demand for this single unit would exceed the supply it produced by a factor of two (2) to three (3) or worst-case ratio of three (3) to one (1); and/or

- Capital investment costs are often prohibitive to construct new reclaimed water service infrastructure to existing neighborhoods along with proper cross-connection control.

The Town's Reuse Master Plan reviews these dynamics further. Development growth will be increasing reclaimed water demands beginning in 2025. Managing reclaimed water storage capacities for drought and wet-weather conditions will be a capital planning focus to manage the reclaimed water utility.

D. COLLECTION SYSTEM ACTION PLAN

Pursuant to Rule 62-600.710, F.A.C., the Town developed a Collection System Action Plan (CSAP) as part of the most recent WRF Operating Permit renewal. FDEP rules require that collection system be routinely reviewed (i.e., annually) as part of a pipe assessment, repair, and replacement plan. The utility is required to have at least a 5-year planning horizon to prevent sanitary sewer overflows and underground pipe leaks for all collection/transmission systems under its control to the extent technically and economically feasible. The entire system review is required during the 5-year operating permit window. A copy of the CSAP is provided as **Attachment L**, and it provides a template for recording the annual system review.

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IV. PROJECTED WASTEWATER FLOWS

A. OVERVIEW

The Town's existing wastewater collection and transmission system is currently expanding to serve residential and commercial growth. The Town also has existing residential areas that meet their needs through onsite sewage treatment and disposal systems or via small wastewater treatment package plants. The Town's limits include a portion of the Village Center Community Development District (VCDD), but future sewer service to The Villages customers/residents through the Town is not anticipated. The remaining privately-held utility systems are small systems and limited in scope but remain service points that require consideration by the Town to comply with the BMAP requirements.

The current private wastewater service providers that may require service from the Town are summarized as follows:

- Recreation Plantation mobile home park ("Plantation");
- Blue Parrot mobile home park ("Blue Parrot");
- Lady Lake mobile home park ("LL Park");
- Lake North apartments ("Lake North"); and
- Sunshine mobile home park ("Sunshine").

In addition to the above, the "Lakes of Lady Lake" is a private community within the Town limits that has their own potable water system and each home is served by an OSTDS.

The community of "Harbor Hills" also operates and maintains a small wastewater system that is beyond the Town limits. Harbor Hills has previously approached the Town for service, but the Town does not currently have infrastructure near this development that would make it economically feasible. Thus, the Town is unable to extend service at this time.

The Town's existing customer base is comprised primarily of residential and commercial connections. For purposes of projecting wastewater flows, the enclosed summary reviewed historical usage in concert with planning values prescribed in the Town's land development code and/or Comprehensive Plan.

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Upon review of these values, flow projections were analyzed based on a comparison of: historic growth, planned growth based on regional studies, and demand calculations based on historic and planned values. Lastly, a review was completed to determine the potential "Build-Out" wastewater demands within the Town's existing Service Area based on existing land use designations and planning values. A component of these projections, as discussed herein, would involve septic-tank phase out projects to bring existing residential areas online.

For purposes of this Plan, the Town's 2040 planning limits include the current municipal limits. The Town has annexed and grown over the past 10 years and intends to review service responsibilities within these limits before considering further expansion.

Increased demands on the Town's wastewater infrastructure will be dependent on population growth that will fuel both residential and commercial development. However, another significant component will involve how the Town addresses existing residential areas that are currently served by OSTDS and/or small package systems.

The Town's 2030 Comprehensive Plan highlights the following criteria as it relates to wastewater service within the Public Facilities Element:

- Goal PUB 1-1: The Town will assure the provision of sanitary sewer...and efficiently maximize capacity of the facilities, promote managed growth, protect public health and safety, and maintain environmental quality, with consideration to limited financial resources.

- Policy PUB1-1.2: Capital Improvement Projects shall be evaluated and ranked according to the following priority level guidelines:...protect public health, safety, and environmentally sensitive natural resources...preserve or maximize the use of existing facilities...improve efficiency of existing facilities....extend facilities and expand capacities in a manner consistent with the Future Land Use Element goals, objectives, and policies and the Future Land Use Map.

- Policy PUB 1-2.1: Sanitary Sewer level of service is defined as 100 gallons per day per resident or gallons per capita day (gpcd).

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- Policy PUB 1-3.1: The Town shall coordinate with the Lake County Health Department (LCDOH) and Florida Department of Health (FDOH) related to failing septic tanks and determine if connection to a central system is required. Area of past failures are continually monitored including package treatment plants.

- Policy PUB 1-4.3 & 1-4.5: The Town shall analyze the feasibility of developing a central sanitary sewer system which serves all land uses currently receiving service from onsite septic tanks and package treatment plants by 2030.

- Policy PUB 4-2.5: The Town shall develop and enact into the Future Land Use Element and Land Development Regulations an overlay classification which sets specific design criteria and standards to protect the function of the high aquifer recharge areas and protect areas most vulnerable to contamination....create land develop regulations associated with...requirements regarding the use and maintenance of onsite sewage treatment and disposal systems (OSTDS).

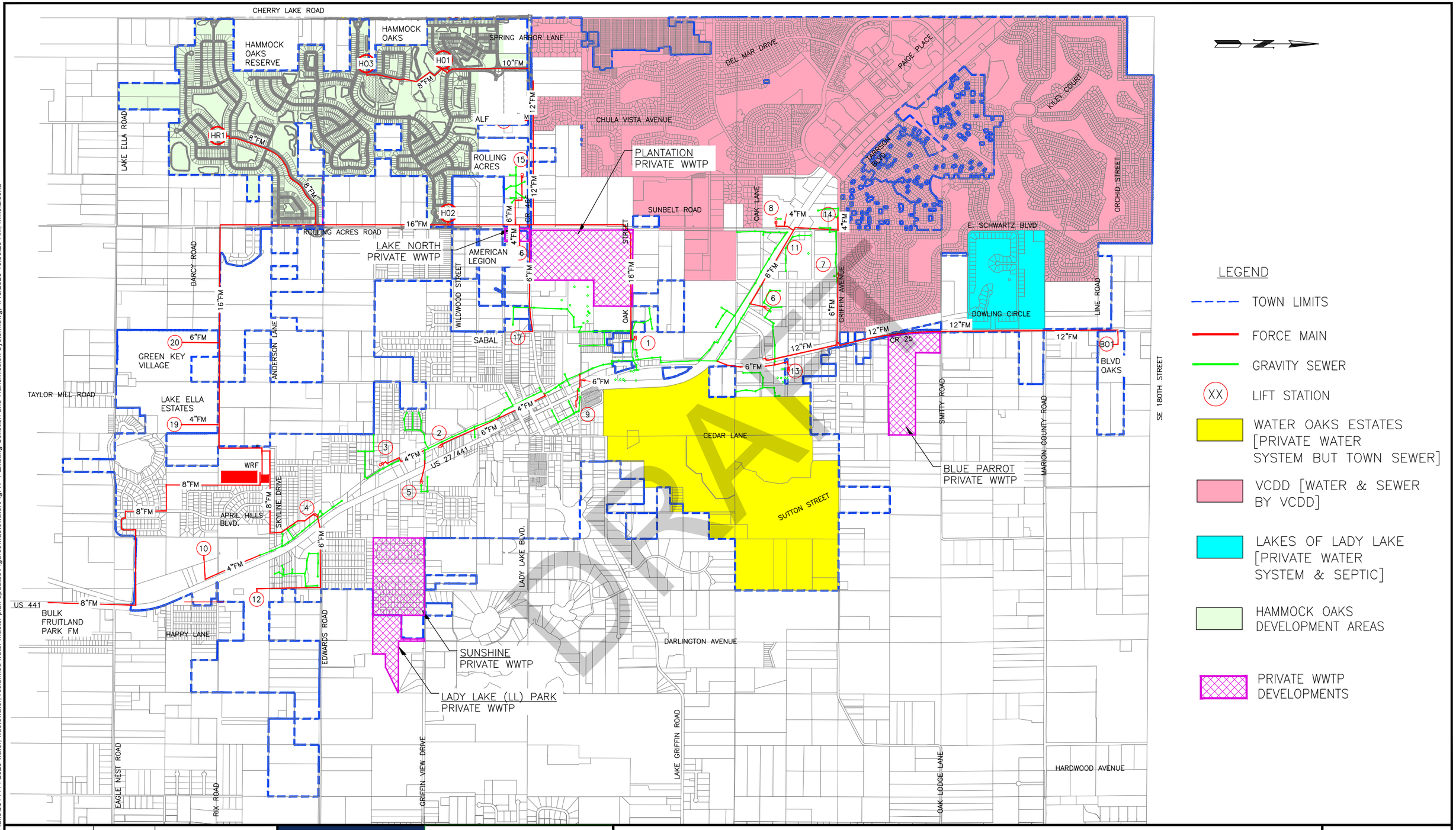
- Policy PUB 4-2.7: The Town in partnership with Lake County shall coordinate with FDOH to establish and implement a dedicated septic tank maintenance program in Areas Most Vulnerable to Contamination.

Figure IV-1 illustrates the general limits of the Town's existing wastewater collection and transmission system with existing package WWTP service areas. Discussion related to expanding the system is provided in **Section V** but first requires a review of existing wastewater demands that are serviced through onsite systems, as well as potential growth corridors that may require further central sewer service.

Wastewater demands will be reviewed based on the aforementioned considerations within the following areas:

- Existing wastewater system level of service;
- Existing residential demands served by onsite systems
- Existing development demands served by onsite package treatment systems;
- Projected developments to be served by central sewer;
- Project Build-out demands; and
- Population growth projections.

DRAFT



J:\orangepark\cad files\lady lake\9514411 2025 water, wastewater, reclaimed water master plan updates\Figures\wastewater\Fig. IV-1 Existing Colleton and Transmission System.dwg, 1/13/2026 10:56:23 AM, Mike.Lisena

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EXISTING COLLECTION & TRANSMISSION SYSTEM

TOWN OF LADY LAKE
Wastewater Master Plan
Lake County, Florida

Figure
IV-1

B. EXISTING WASTEWATER SYSTEM LEVEL OF SERVICE

The Town's current service population, including bulk service to Fruitland Park, is estimated based on the number of connections to the Town's WRF. Based on the Town's 2025 billing records, the sewer system's estimated service population was:

- Total Sewer Connections = 2,894 Equivalent Residential Units (ERUs)

BEBR estimates the Town's household density at 1.9 persons per household or ERU. Therefore, the estimated service population is 5,498 persons [(2,984 ERUs) * 1.9 persons/ERU]. This number includes estimates from the Town of Fruitland Park as well as other bulk connections from private developments, adult living facilities, and apartment complexes.

The Town's 2025 average daily wastewater flows were comprised of the following estimated contributions:

1)	Residential Connections	=	274,000 gpd-ADF ±
2)	Commercial Connections	=	160,000 gpd-ADF ±
3)	Water Oak Bulk Connection	=	90,000 gpd-ADF ±
4)	Fruitland Park Bulk Connection	=	80,000 gpd-ADF ±
	Total:	**=**	**604,000 gpd-ADF ±**

Separately, the Town's 2024 potable water use characteristics indicated the following:

- Residential water use averaged 3,800 gallons per month for 2,945 metered customers.

- This average use represents approximately 127 gallons per day per ERU (3,800 gal/mo/30 days) or 53 gallons per capita day (gpcd).

It is anticipated that the average residential water consumption summarized above also reflects the single-family residential sewer use. However, for planning purposes a value of 220 gpd/ERU is being utilized for future capacity needs that generally reflects the Town's 2025 average flow of approximately 0.576 MGD-ADF with ERU connections (576,000 gpd/2,894 ERU = 199 gpd/ERU).

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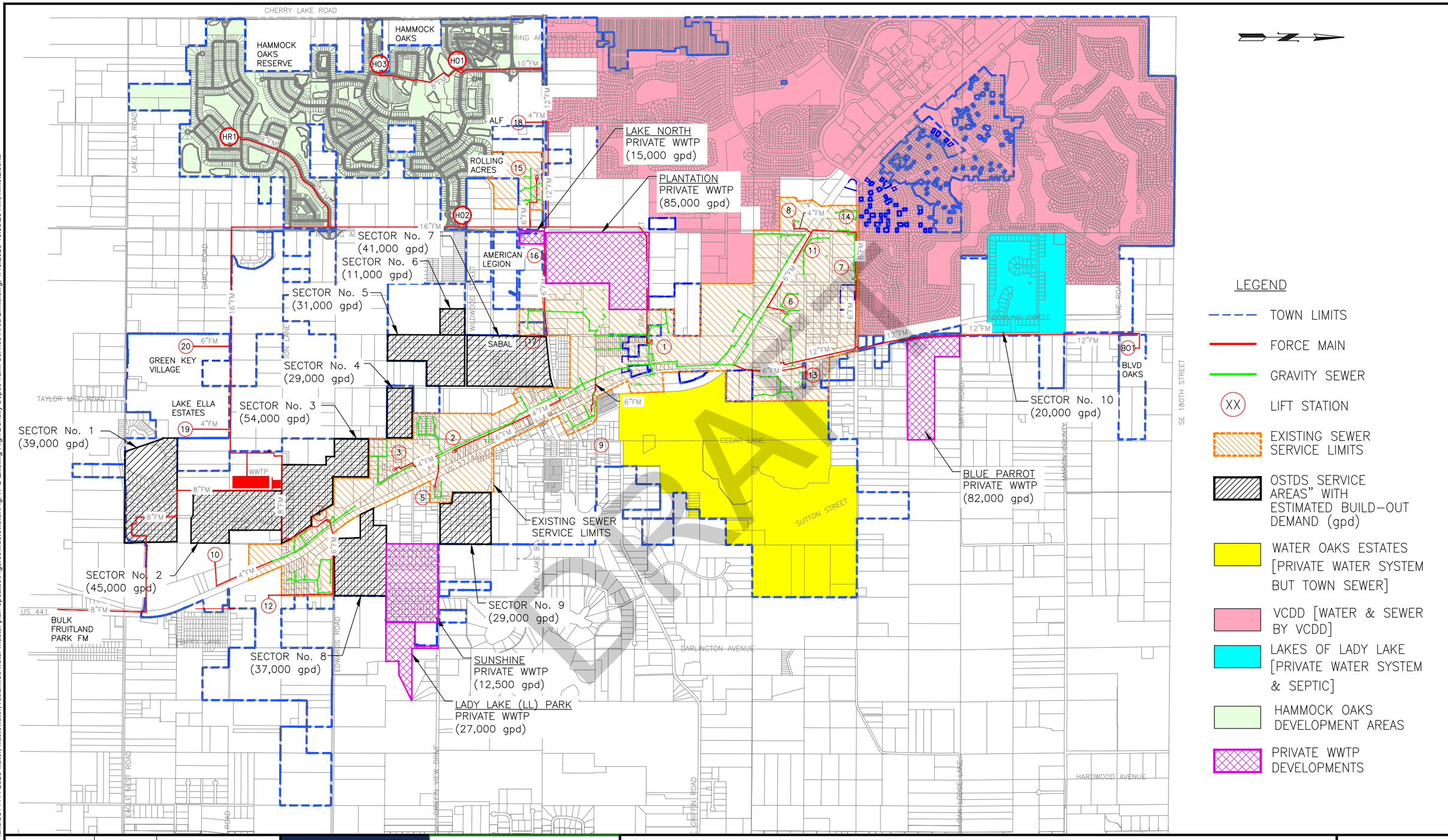
C. EXISTING RESIDENTIAL WASTEWATER DEMANDS SERVED BY OSTDS

Figure IV-2 depicts the approximate limits of areas served by OSTDS that have a density greater than two dwellings units per acre. In total, ten 'OSTDS Sectors' were identified. These areas were outside of the Town's sanitary sewer collection system limits, meaning their wastewater needs are currently served by OSTDS (i.e., septic tanks and drainfields). Logistics, costs, and other considerations associated with serving these areas are discussed in **Section V**. This discussion is focused on estimating wastewater demands from these specific areas. **Table IV-1** summarizes the results based on 220 gpd/ERU flow projection.

TABLE IV-1
ESTIMATED PARCEL AND WASTEWATER DEMAND SUMMARY SERVICED BY OSTDS

OSTDS Sector	Build-out Parcel Count	Estimated Demand (gpd)
1	176	39,000
2	206	45,000
3	246	54,000
4	131	29,000
5	141	31,000
6	51	11,000
7	186	41,000
8	167	37,000
9	92	20,000
10 (Lakes of Lady Lake)	92	20,000
SUM	**1,488**	**327,000**

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J:\orangepark\cad files\lady lake\9514411 2025 water, wastewater, reclaimed water master plan updates\Figures\wastewaterFig. IV-2 Existing High Density Septic Tank Service Area Limits.dwg, 1/13/2026 10:58:20 AM, Mike.Lisena

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EXISTING HIGH DENSITY SEPTIC TANK SERVICE AREA LIMITS

TOWN OF LADY LAKE
Wastewater Master Plan
Lake County, Florida

Figure
IV-2

The current occupied parcel density in these OSTDS Sectors is anticipated to be between 50 to 60% of the build-out potential. In the near-term, the connections result in an estimated flow increase of approximately 164,000 gpd (327,000 gpd * 0.50).

D. EXISTING WASTEWATER DEMANDS SERVED BY PRIVATE PACKAGE WWTPs

Figure IV-2 also depicts the approximate areas served by private package WWTPs. Excluding the VCDD service area, three developments are located within the Town's Service Area, two were located adjacent to, but outside of the Town's Service Area, and one is located beyond the Town's limits. The developments are summarized as follows:

Developments within Town's Limits

- Plantation (FDEP Permit FLA010593)
- Lake North (FDEP Permit FLA010549)
- Sunshine (FDEP Permit FLA 010611)

Developments outside of Town's Limits

- Blue Parrot (FDEP Permit FLA 010623)
- LL Park (FDEP Permit 010575)
- Harbor Hills (FDEP Permit 010608)

Water Oaks was previously served by an on-site WWTP but was connected to the Town's system in 2019/2020.

A copy of each of the aforementioned FDEP permits is provided within **Attachment H**. **Table IV-2** summarizes the permitted capacity for each development and current flows based on monitoring data submitted to FDEP as part of the system's on-going compliance requirements.

DRAFT

TABLE IV-2 PACKAGE WASTEWATER SYSTEM SUMMARY		
Development	**WWTP Permit Capacity (gpd)**	**'Current' Average Flows[A] (gpd)**
Plantation	85,000	30,000
Lake North	15,000	9,000
Sunshine	12,500	4,000
Blue Parrot	82,000	17,000
LL Park	27,000	14,000
Harbor Hills	40,000	11,000
SUM	**261,500**	**85,000**

A: Listed flows are either annual average, quarterly average, and three-month average flows as presented on the most up to date discharge monitoring report (DMR) submitted to FDEP. The DMRs for each respective WWTP varied between late 2023 to as recent as March 2025.

Aggregating the various WWTPs per their proximity to the Town's limits results in the demand summary provided in **Table IV-3**.

TABLE IV-3 PACKAGE WASTEWATER SYSTEM PER SERVICE AREA LOCATION		
Developments	**WWTP Permit Capacity (gpd)**	**'Current' Average Flows (gpd)**
Developments within Town Limits (Plantation, Lake North, and Sunshine)	112,500	37,300
Developments outside of Town Limits (Blue Parrot, LL Park, and Harbor Hills)	109,000	21,000

Similar to the discussion related to the areas of Town currently served by OSTDS, the potential wastewater flows from the areas served by package WWTPs could approach 261,500 gpd pending actual build-out dynamics for each development, and near-term connection flow is estimated at 60,000 gpd.

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E. DEVELOPMENT PROJECTS

The Town continues to track various projects that are moving through the development process. **Figure IV-3** displays the location of proposed projects that may develop or are actively in the development process. The Town of Fruitland Park Master Plan summary of growth projections are noted accordingly. **Table IV-4** summarizes the anticipated demands for the larger development projects.

TABLE IV-4
2024 FUTURE DEVELOPMENT SUMMARY

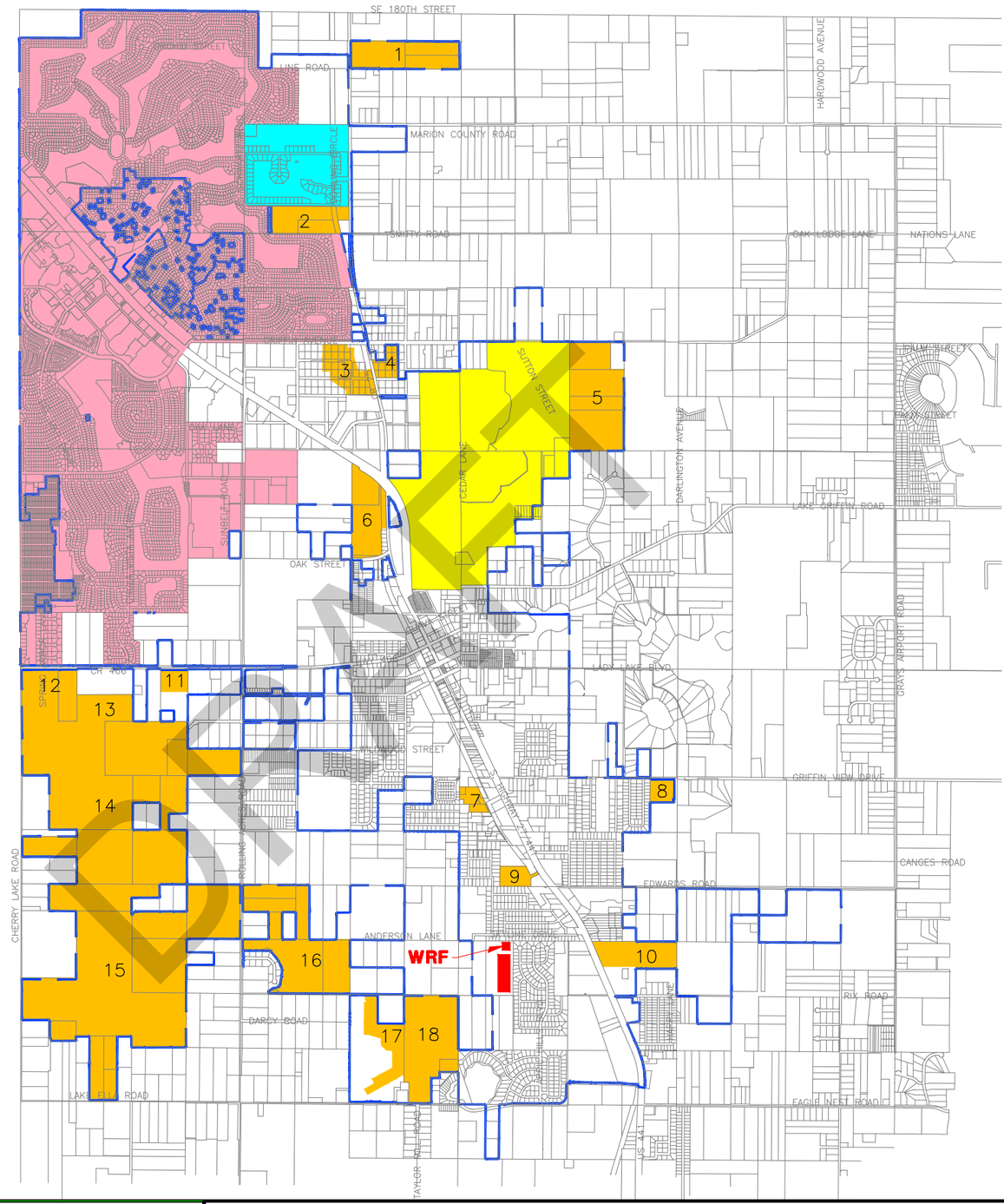
Development	Density (ERUs)	Capacity (gpd-ADF)[A]
Boulevard Oaks	160	35,200
Green Key Village Phase 5/6	98	21,560
Hammock Oaks	1,142	251,240
Hammock Oaks (Apartments)	312	68,640
Hammock Oaks (Highlands)	450	99,000
Hammock Oaks (Reserve)	1,032	227,040
Hilltop Expansion (Water Oak)	296	65,120
Lady Lake Luxury Apts.	330	72,600
Lady Lake Square Apartments	288	63,360
Lake Ella Estates Phases 1-3	232	51,040
Lake Sumter Apartments	84	18,480
Lumen Park ALF	135	29,700
Rolling Acres Reserve Apts.	92	20,240
Teague Plaza (Apartments)	6	1,320
SUBTOTAL	**4,657**	**1,024,540**
RESIDENTIAL TOWN OF FRUITLAND PARK PROJECTS [Master Plan Summary][B]		
Single Family	4,002	1,000,500
Multi-Family Residential	1,603	300,600
RV Park	786	65,200
Adult Living Facility (ALF)	200	20,800
Commercial		152,600
SUBTOTAL	**6,591**	**1,539,700**
TOTAL	**11,248**	**2,564,240**

A: Capacity needs based on 220 gpd/ERU
B: Densities and capacities provided by HALFF, dated May 2025..

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DEVELOPMENT (ESTIMATED CAPACITY, IF KNOWN)

1 Boulevard Oaks (35,200 gpd–ADF)
2 Lighthouse Storage
3 Lady Lake Square Apartments (63,360 gpd–ADF)
4 Elite RV & Storage
5 Water Oak Hilltop Addition (65,120 gpd–ADF)
6 Portillos & Proposed Apartments
7 Gettings Storage
8 Pinebrook MHP
9 Discount Storage 27–441
10 Lady Lake Luxury Apartments (72,600 gpd–ADF)
11 Rolling Acres Reserve (20,240 gpd–ADF)
12 Hammock Oaks Commercial
13 Hammock Oaks Multi–Family (68,640 gpd–ADF)
14 Hammock Oaks (251,240 gpd–ADF)
15 Reserve @ Hammock Oaks (227,040 gpd–ADF)
16 Highlands @ Hammock Oaks (99,000 gpd–ADF)
17 Green Key Village Ph 5&6 (21,560 gpd–ADF)
18 Lake Ella Estates Ph 1 thru 3 (51,040 gpd–ADF)



LEGEND

- TOWN LIMITS
- WATER OAK ESTATES
- VCDD
- LAKES OF LADY LAKES (PRIVATE WATER & OSTDS)
- NEAR TERM PROJECTS

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DEVELOPMENT PROJECTS

TOWN OF LADY LAKE
Wastewater Master Plan
Lake County, Florida

Figure
IV-3

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This represents a potential flows based on developer interactions with the Town, but does not provide a time basis of when these flows and loading would need to be served. Those considerations are reviewed in the following subsection.

In addition to these aforementioned parcels, the Town has a few remaining undeveloped large tracts of land located within the Town and the 2040 Planning Area as shown in **Figure IV-4**. The development potential based on future land use map designations is summarized in **Table IV-5**.

TABLE IV-5

ESTIMATED WASTEWATER DEMANDS FOR LARGE UNDEVELOPED PARCEL

Area	Gross Area (Ac)	Development Densities[A]	Density	WW Demand (gpd)[B]
Block A	100	0.50 FAR	n/a	50,000 (*estimated)*
Block B	190	5 DU/Ac	950 units	209,000
			SUM	**259,000**

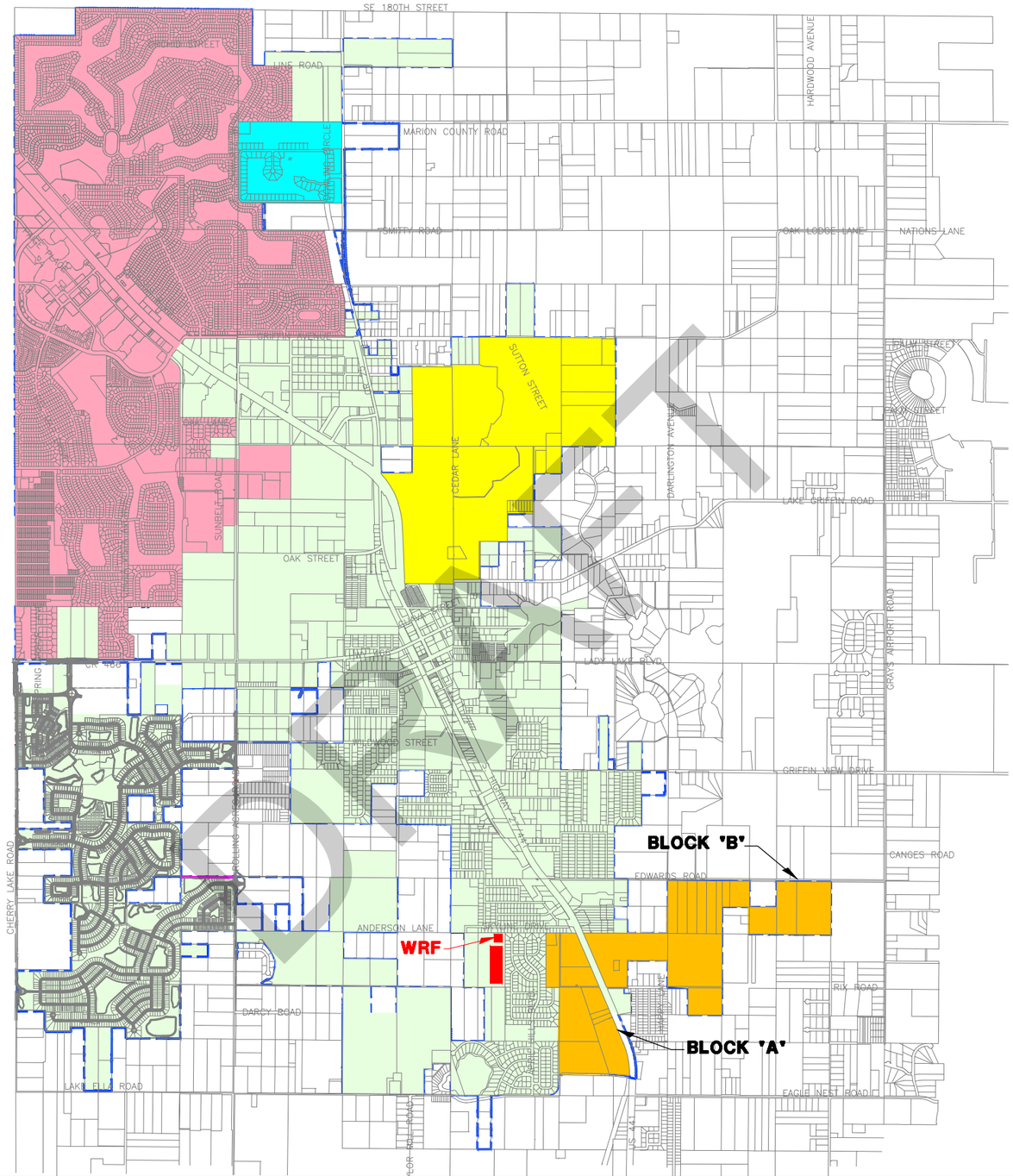
A: FLUM Designation for Block A is MR-LD (Mixed Residential Low Density up to 5 DU/Ac) and Block B is RET (Commercial General with 0.50 FAR)
B: AADF based on 220 gpd/ERU.

F. FRUITLAND PARK BULK WASTEWATER SERVICE

The Town of Fruitland Park's bulk force main connection delivered approximately 80,000 to 90,000 gpd of raw sewage to the Town's WRF in 2025. The current bulk service agreement is provided in **Attachment I**. Based on discussions in 2025, the Town of Fruitland Park is developing a separate wastewater treatment facility to serve their needs. This plan anticipates offloading their flows from Lady Lake in 2030.

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PARCEL "BLOCKS"	AC
BLOCK A	100
BLOCK B	190



N

LEGEND

- TOWN LIMITS
- WATER OAK ESTATES
- VCDD
- LAKES OF LADY LAKES (PRIVATE WATER SYSTEM & OSTDS)
- SERVICE AREA
- "LARGE" UNDEVELOPED PARCELS W/O IDENTIFIED PROJECTS

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EXISTING "LARGE" UNDEVELOPED

TOWN OF LADY LAKE
Wastewater Master Plan
Lake County, Florida

Figure
IV-4

J:\orangepark\cad files\lady lake\9514411 2025 water, wastewater, reclaimed water master plan updates\Figures\wastewater\Fig. IV-4 Existing Large Undeveloped.dwg, 1/13/2026 11:03:15 AM, Mike.Lisena

G. TOWN LIMITS BUILD-OUT FLOW ESTIMATE

In order to develop a 'build-out demand' calculation, the existing residential and commercial sewer demands that are served by the central sewer system must be separated. Based on a review of the Town's existing water records in comparison to aggregated central sewer flows, the current sewer demands were calculated and are summarized in **Table IV-6**.

TABLE IV-6
EXISTING WASTEWATER FLOW BASIS SUMMARY

Service Areas	Existing Wastewater Flow Records (MGD)
Residential (including Water Oak)	0.364
Commercial	0.160
In-town OSTDS Sectors (estimated)	0.164
In-town Package WWTPs	0.085
SUBTOTAL	**0.773**
Fruitland Park	0.080
TOTAL	**0.853**

The Town's Build-out wastewater demand estimate will be calculated in **Table IV-7**:

TABLE IV-7
ESTIMATED WASTEWATER BUILD OUT FLOWS

Service Areas	Flow (MGD)
Existing Residential	0.364
Existing Commercial	0.160
Existing Fruitland Park	0.080
SUBTOTAL	**0.604**
Future Residential (Town limits)	1.041
Future OSTDS Sectors	0.327
Future Package WWTP	0.177
Future Large Undeveloped Tracts	0.259
SUBTOTAL	**1.804**
TOTAL	**2.408**
Future Fruitland Park[A] [thru 2030]	0.368

A 0.448 MGD (2030 ADF) future service reservation less current flows of 0.08 MGD.

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Future developments will likely have less than 100% of their build-out potential realized, so build-out demands may be less than anticipated. Based on unknowns related to potential service to areas beyond the current Town limits, a wastewater flow of 3.0 MGD (AADF) is recommended through 2040.

H. GROWTH PROJECTIONS UTILIZING HISTORIC POPULATION AND WATER USE GROWTH DATA

The Build-Out Calculations and the aforementioned analysis allows the Town to estimate build-out service requirements within the Town limits; however, it does not place a timeline on the anticipated flows per year. In order to review the potential pace of development within the Town and associated needs for infrastructure construction, growth projections will be reviewed to determine potential flows through the year 2040. The ultimate wastewater flow will be a direct function of the development rate (which is a function of the prevailing market for commercial, office, and residential developments) along with in-town growth with potential migration of persons to the Town from other areas. Therefore, the actual demand timelines could vary drastically due to fluctuation within any one of those categories. The pace of local growth can change significantly in comparison to regional growth rate projections.

Projections are based on the BEBR and census data, as well as input from local developers.

Flow trends will also be influenced by timing related to extending central sewer into existing areas served by OSTDS and/or package WWTPs. The enclosed population projections will give an indication of development growth potential, but flows from these areas will be a function of the Town's decision to extend central sewer or regulatory requirements. The following analysis takes the above discussion into further consideration and applies these concepts to the Town.

1. **Lake County Growth Projections (BEBR and US Census):** The Bureau of Economic and Business Research (BEBR) of the University of Florida does not have population projections for the Town of Lady Lake; however, the 2024 BEBR Florida Statistical Abstract has published projections for Lake County as shown in **Table IV-8**.

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TABLE IV-8 LAKE COUNTY POPULATION PROJECTIONS 2025 THROUGH 2050			
Year	Population (in Thousands) with Percent Change (%)		
	Low Growth	Medium Growth	High Growth
2024	433.3	433.3	433.3
2025[A]	429.6	445.0	460.6
2030	456.6 (+6.3%)	495.8 (+11.4%)	534.9 (+16.1%)
2035	470.0 (+2.9%)	536.2 (+8.1%)	602.4 (+12.6%)
2040	474.2 (+0.9%)	568.2 (+6.0%)	662.3 (+9.9%)
2045	472.7 (-0.3%)	594.6 (+4.6%)	716.5 (+8.2%)
2050	468.6 (-0.9%)	618.2 (+4.0%)	767.8 (+7.2)

A: Percent Difference is calculated between each 5-year increment and is not an annualized value.
B: 2024 BEBR estimated value for Lake County (Bulletin 295).

Applying the BEBR medium-growth criteria, **Table IV-9** estimates the Town's wastewater flows based on current service population.

TABLE IV-9 2025 THROUGH 2050 PROJECTED 'SEWER' POPULATION & FLOW		
Year	Population[B]	Est. Flow[C] (gpd-ADF)
2025[A]	5,500	605,000
2030	6,127	673,970
2035	6,623	728,530
2040	7,020	772,200
2045	7,344	807,840
2050	7,637	840,070

A: Base population based on Town's estimated ERU connection capacity of 2,894 ERUs @ 1.9 person/ERU.
*B: Population growth based on **Table IV-8**.*
C: Wastewater production estimated at 110 gpd/person.

The Town's influent flows since 2019 have been influenced by growth as well as two bulk service connections that included Water Oak and the Town of Fruitland Park. Each bulk connection resulted in a respective instantaneous flow increase of approximately 90,000 and 75,000 gpd. On a percentage basis, this increased the Town's influent flows from approximately 0.31 MGD (ADF) to 0.48 MGD (ADF), or 53% on an ADF basis. The trendline incorporates these connections into the growth projection.

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Figure IV-5 projected the Monthly ADF Trendline into the future using the current growth slope since 2011. As shown within the figure, if this growth rate continued, the WRF would reach its current permitted capacity around 2045, which is 19 years from now. The trendline flow projection is summarized against the population-based projection in **Table IV-10**.

TABLE IV-10

2025 THROUGH 2050 POPULATION VS. TRENDLINE FLOW PROJECTIONS

Year	Population Projection (MGD-ADF)[A]	Trendline Projection (MGD-ADF)
2025	0.61	0.61
2030	0.67	0.79
2035	0.73	0.98
2040	0.77	1.16
2045	0.81	1.34
2050	0.84	1.52

*A: See **Table IV-9**.*

Table IV-11 provides a comparison of the annual percentage growth increases when comparing the medium-growth and high-growth BEBR rates against the trendline projections.

TABLE IV-11

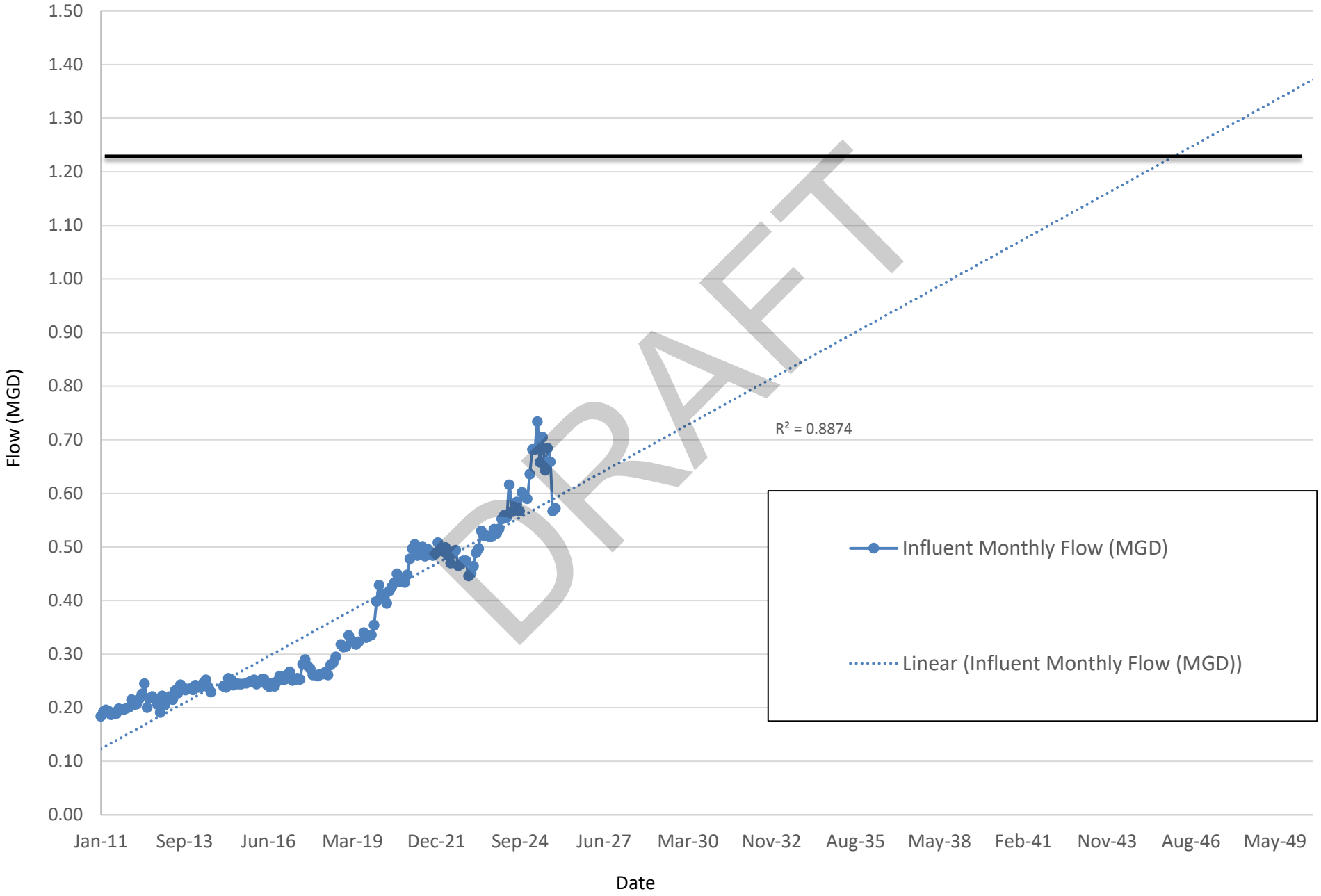
2025 THROUGH 2050 POPULATION VS. TRENDLINE FLOW GROWTH PROJECTIONS

Time Period	Medium-Growth Population Projection (Annual % increase)[A]	High-Growth Population Projection (Annual % increase)[A]	Trendline Projection (Annual %increase)[A]
2025 - 2030	2.3%	3.2%	5.9%
2030 - 2035	1.6%	2.5%	4.8%
2035 - 2040	1.2%	2.0%	3.7%
2040 - 2045	0.9%	1.6%	3.1%
2045 - 2050	0.8%	1.4%	2.7%

A: % increase is the annual increase for each 5-year time period.

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Town of Lady Lake
2025 Wastewater Master Plan Update
M&A Project 9514-41-1
Figure IV-5: Monthly Influent Average WRF Flow Projections



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As illustrated in the table, the trendline projections, as influenced by recent bulk connections and growth, indicate a growth pattern that is generally three times greater than the BEBR Medium-Growth projection, and two times greater than the BEBR High-Growth projection.

As summarized in **Table IV-4**, the Town has approximately 1.04 MGD (AADF) of development flow that will likely require service within the 2040 planning window. The developer's anticipated build out window is aggressive and will be dependent on economic conditions, as well as logistical limitations on the number of simultaneous housing structures that can be concurrently constructed. **Table IV-12** reviews the Trendline Projection flow rate with an ERU basis in comparison to a 5-yr, 10-yr, and 15-yr build out rate.

TABLE IV-12

FLOW TRENDLINE VS DEVELOPMENT BUILD-OUT FLOW PROJECTIONS

Year	Trendline Flow Projection (MGD)	Trendline ERU Growth/yr	5-Yr Build Flow (MGD)	ERU Growth/yr	10-yr Build Flow (MGD)	ERU Growth/yr	15-yr Build Flow (MGD)	ERU Growth/yr
2025	0.61		0.61	1,200	0.61	590	0.61	410
2026	0.65	164	0.87	1,200	0.74	590	0.70	410
2027	0.69	164	1.13	1,200	0.87	590	0.79	410
2028	0.71	164	1.39	1,200	1.00	590	0.88	410
2029	0.75	164	1.65	1,200	1.13	590	0.97	410
2030	0.79	164	1.93	1,200	1.26	590	1.06	410
2031	0.83	164			1.39	590	1.15	410
2032	0.87	164			1.52	590	1.24	410
2033	0.91	164			1.65	590	1.33	410
2034	0.95	164			1.78	590	1.42	410
2035	0.98	164			1.93	590	1.51	410
2036	1.02	164					1.60	410
2037	1.06	164					1.69	410
2038	1.10	164					1.78	410
2039	1.14	164					1.87	410
2040	1.16	164					1.93	410

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Growth will continue beyond the 5-year and 10-year build out periods. This table was provided to review reasonable near-term projections. Pending economic conditions, we recommend the Town prepare for growth based on the 10-year projection with associated monitoring of building permit starts. This would result in WRF expansion requirements by 2029. At a minimum, the Town should begin design and permitting of expansion requirements. Construction activities should commence based on building permit activities. A 2-year construction period is estimated to complete the expansion.

The Town's BMAP Plan requires central sewer extensions into the existing OSTDS and/or package WWTP locations, which will further increase flows beyond the development estimates.

Table IV-13 was created to summarize the flow projection for the Town's master planning use. It is intended as an aggressive guide and should be revisited on a 6-month interval until the WRF expansion is completed.

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V. WASTEWATER INFRASTRUCTURE EXPANSION ANALYSIS

A. OVERVIEW

Based on the projected wastewater flows within the Service Area and the anticipated time horizon of when those demands may influence the system, a review of the Town's future expansion needs is required comparing the proposed flows with the existing infrastructure capabilities. The results of this analysis will be incorporated into a capital improvement budget for the Town's consideration to address the wastewater system needs to serve the public through 2040. The analysis will include a review of the following items:

1. Wastewater Collection and Transmission System
2. Wastewater Treatment System.

B. WASTEWATER COLLECTION AND TRANSMISSION SYSTEM

1. <u>Build-Out Force Main Network Considerations</u>: Section IV developed wastewater demands in the following sequence:

- Existing central collection system demands;
- Existing OSTDS service area demands;
- Existing Package WWTP service area demands;
- Potential Development demands; and
- Growth Sector demands.

Table V-1 summarizes annual average and peak flow demands utilizing a 4.0 peak factor for each area. Each demand point's location is also illustrated on **Figure V-1**. Typically pump stations are designed to accommodate 'build-out' flow from the associated collection system limits with a peaking factor between 2.0 to 4.0 based on the population served. Since each individual collection system is relatively small, the larger peaking factor of 4.0 is utilized.

Many of the OSTDS Sectors are planned to be served by one pump station, thus aggregating their flows into one pumping system. These areas are denoted within the table.

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TABLE V-1 FUTURE BUILD-OUT DEMAND SUMMARY ESTIMATES				
Item	Service Area Description[A]	Estimated Units	Estimated Build-Out Demand (gpd-AADF)	Estimated Peak Flow[B] (gpm)
1	OSTDS Sector 1[C]	176	39,000	110
2	OSTDS Sector 2[C]	206	45,000	125
3	OSTDS Sector 3[D]	246	54,000	150
4	OSTDS Sector 4[D]	131	29,000	80
5	OSTDS Sector 5[E]	141	31,000	90
6	OSTDS Sector 6[E]	51	11,000	30
7	OSTDS Sector 7[E]	186	41,000	115
8	OSTDS Sector 8	167	37,000	105
9	OSTDS Sector 9	92	20,000	60
10	OSTDS Sector 10 (Lakes of Lady Lake)	92	20,000	60
11	Plantation (Private WWTP)	N/A	85,000	240
12	Lake North (Private WWTP)	N/A	15,000	40 | 80[F]
13	Sunshine (Private WWTP)	N/A	12,500	35 | 80[F]
14	Blue Parrot (Private WWTP)	N/A	82,000	230
15	LL Park (Private WWTP)	N/A	27,000	75 | 80[F]
16	Lady Lake Apartments ('Development 39')	336	67,200	190
17	Stonewood Valley ('Development 46')	92	18,400	50 | 80[F]
18	Richardson ('Development 47')	239	47,800	130
19	Allen Cobb ('Development 49')	255	51,000	140
20	Adult Living Facility ('Development 50')	900 beds	103,500	280

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TABLE V-1 FUTURE BUILD-OUT DEMAND SUMMARY ESTIMATES				
Item	**Service Area Description[A]**	**Estimated Units**	**Estimated Build-Out Demand (gpd-AADF)**	**Estimated Peak Flow[B] (gpm)**
21	Block A (Large Undeveloped Parcel)	N/A	50,000	140
22	Block B (Large Undeveloped Parcel)	950	190,000	530
		SUM	**1,076,400**	**3,125**

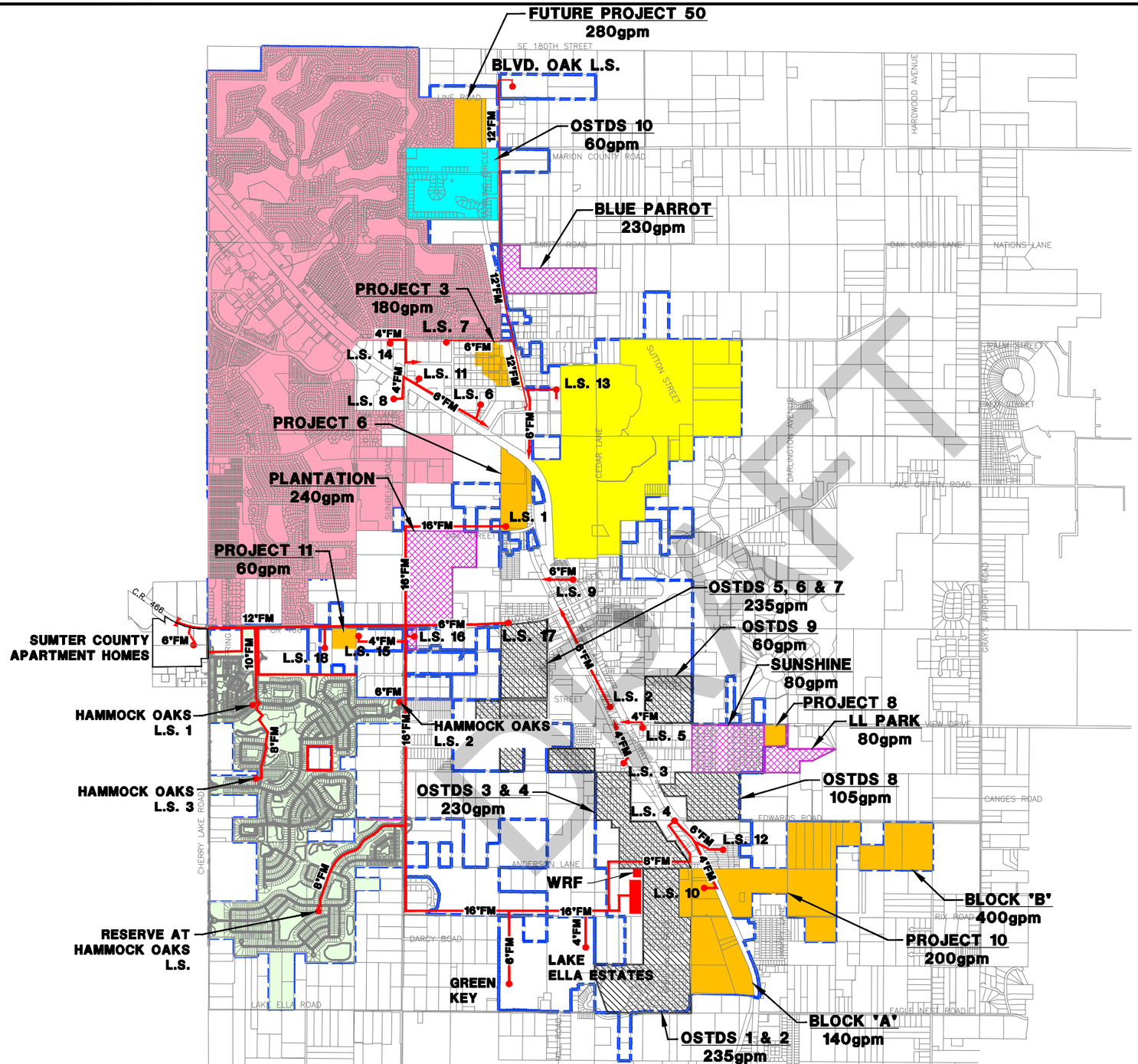
*A: See **Figure V-1** for locations.*
*B: Peak Flow calculated based on Build-out Demand (gpd)/60/24 * 4.0 (peaking factor)*
C: OSTDS Sector No. 1 and No. 2 are planned to be served by existing L.S. No. 10.
D: OSTDS Sector No. 3 and No. 4 are planned to be served by one (1) new lift station.
E: OSTDS Sector No. 5, No. 6, and No. 7 are planned to be served by one (1) new lift station.
F: At these locations the minimum pump size will be 80 gpm to provide 2 fps in a 4-inch force main.
G: Combined flow is based on the 80 gpm minimum at noted stations.

As shown within the table, the summary demand is approximately 2.3 MGD (AADF) or 1,600 gpm-AADF with a combined peak flow of 6,600 gpm-PHF. This results in a peaking factor of 4 (6,600 gpm/1,600 gpm). A more realistic peaking factor for an aggregate flow of 2.3 MGD-AADF is between 2.5 and 3.0 or 4,000 gpm to 4,800 gpm. All of these demands and flows are anticipated to be outside of the Planning Period, but are reviewed as it relates to prudent planning for future force main design. The 2.5 to 3.0 peaking factor is also an indication of anticipated manifold lift station operations. Designing a larger force main system for 'all' pump stations 'on' is not practical, and a more likely scenario is having 60 to 75% of stations 'on' at any given time.

The Town currently accepts bulk wastewater pumped from the City of Fruitland Park. The current connection is estimated to come offline by 2030.

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J:\orangepark\cad files\lady lake\9514411 2025 water, wastewater, reclaimed water master plan updates\Figures\wastewater\Fig. V-1 Build-Out Peak Flow Demands.dwg, 1/13/2026 11:05:01 AM, Mike.Lisena



LEGEND

- TOWN LIMITS AREA
- OSTDS SERVICE AREAS" WITH ESTIMATED BUILD-OUT DEMAND (gpd)
- WATER OAKS ESTATES [PRIVATE WATER SYSTEM BUT TOWN SEWER]
- VCDD [WATER & SEWER BY VCDD]
- LAKES OF LADY LAKE [PRIVATE WATER SYSTEM & SEPTIC]
- HAMMOCK OAKS DEVELOPMENT AREAS
- PRIVATE WWTP DEVELOPMENTS
- NEAR TERM PROJECTS

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BUILD-OUT PEAK FLOW DEMAND

TOWN OF LADY LAKE
Wastewater Master Plan
Lake County, Florida

Figure
V-1

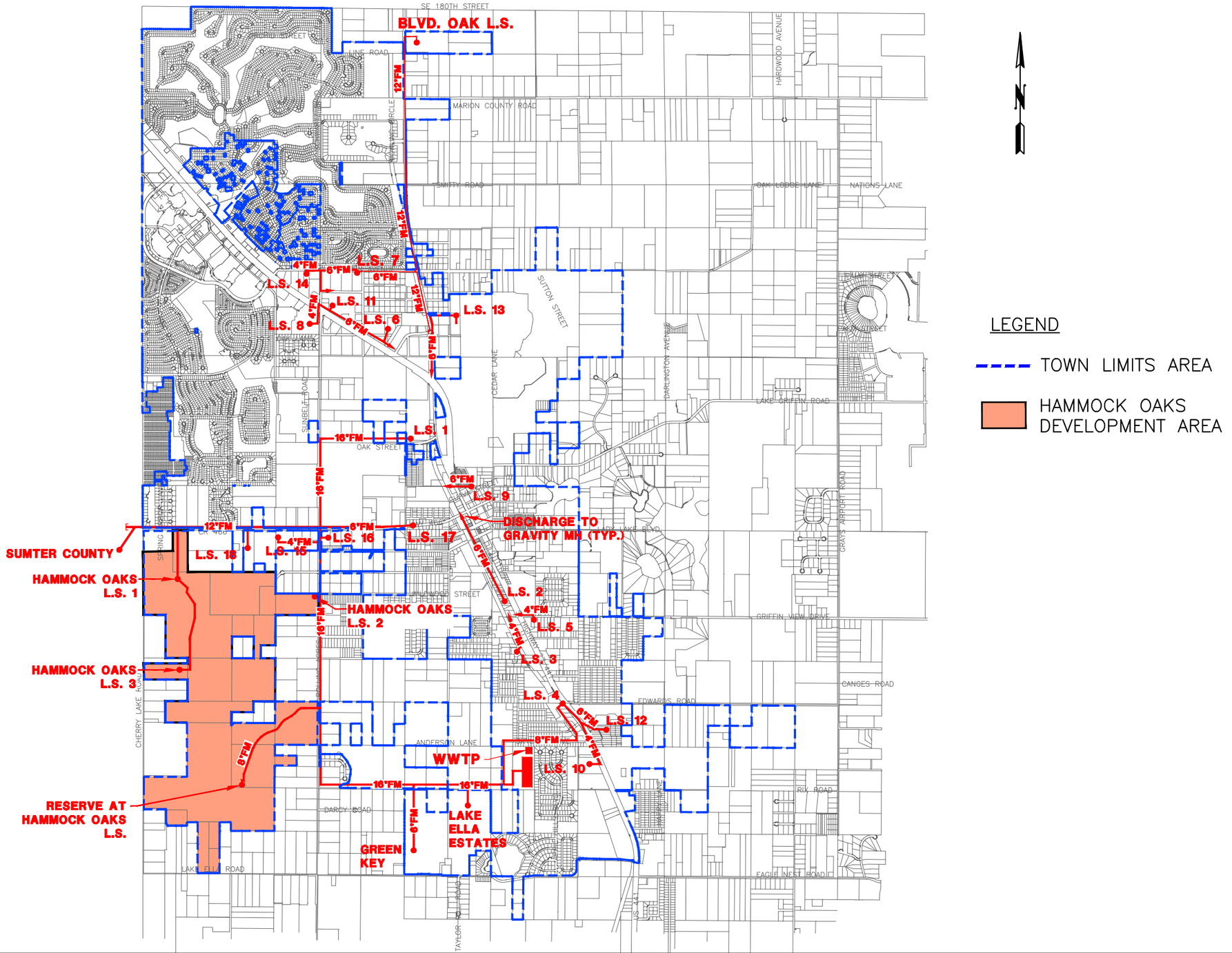
The Town's existing lift station locations and associated force main routings are illustrated in **Figure V-2**. As shown within the figure, the Town has two primary force mains into the WRF, a 16-inch main that serves the majority of the Town's service area and an 8-inch main that serves a small portion of the Town's southeasterly service area quadrant. The 12-inch force main along CR 466 serves existing and future developments. However, the 12-inch pipeline also connects to the existing 16-inch main.

2. **Central Sewer Expansion/Extension Projects:** For purposes of projecting potential capital improvement and/or expansion projects for the Town, conceptual estimates are provided herein to: a) extend central sewer to OSTDS service sectors; b) force main connections to private WWTP locations; and c) extend trunk force main extensions that will facilitate future growth. It is anticipated that new developments and connections would be designed, permitted, and constructed by entities separate from the Town. It is also assumed those projects would construct improvements to address the long-term needs identified within this Plan, which may result in infrastructure costs that exceed their near-term needs. Developer Agreements and/or Interlocal Agreements will be needed to address this 'pioneer' provision where/when infrastructure is built larger than required for near-term demands. Mechanisms should be provided for these entities to recoup costs within some reasonable time period for the portion that is 'upsized' for future growth. In addition, for some trunk portions, the Town may consider constructing those force main segments since they would facilitate future growth by lowering offsite development costs that could be problematic for a 'smaller development' that is the 'first' project in the corridor and would not be able to carry the larger upfront infrastructure costs for those off-site improvements.

   Capital projects have been developed to extend central sewer related to the following areas:

   - OSTDS Service Sectors;
   - Private WWTP communities; and
   - Trunk force main 'legs' to serve Service Area Quadrants.

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Drawn by:	MAL	Job No. 9514-41-1		580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030	TOWN OF LADY LAKE Wastewater Master Plan Lake County, Florida
Checked by:	JRS				Figure **V-2**
Approved by:	JRS	© 2026			
Scale:	1" = 3,200'				

J:\OrangePark\CAD Files\Lady Lake\95144111 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Wastewater\Fig. V-2 Town Existing Transmission System.dwg, 2/17/2026 9:13:57 AM, Mike.Lisena

a. OSTDS Service Sectors: **Figure V-1** identified the various OSTDS Service Sectors, and the Town's current force main transmission system that will be expanded to serve these areas. It is anticipated components of the force main network will be built in various stages and individual extensions by the Town may be dependent on mutually exclusive projects completed by other parties.

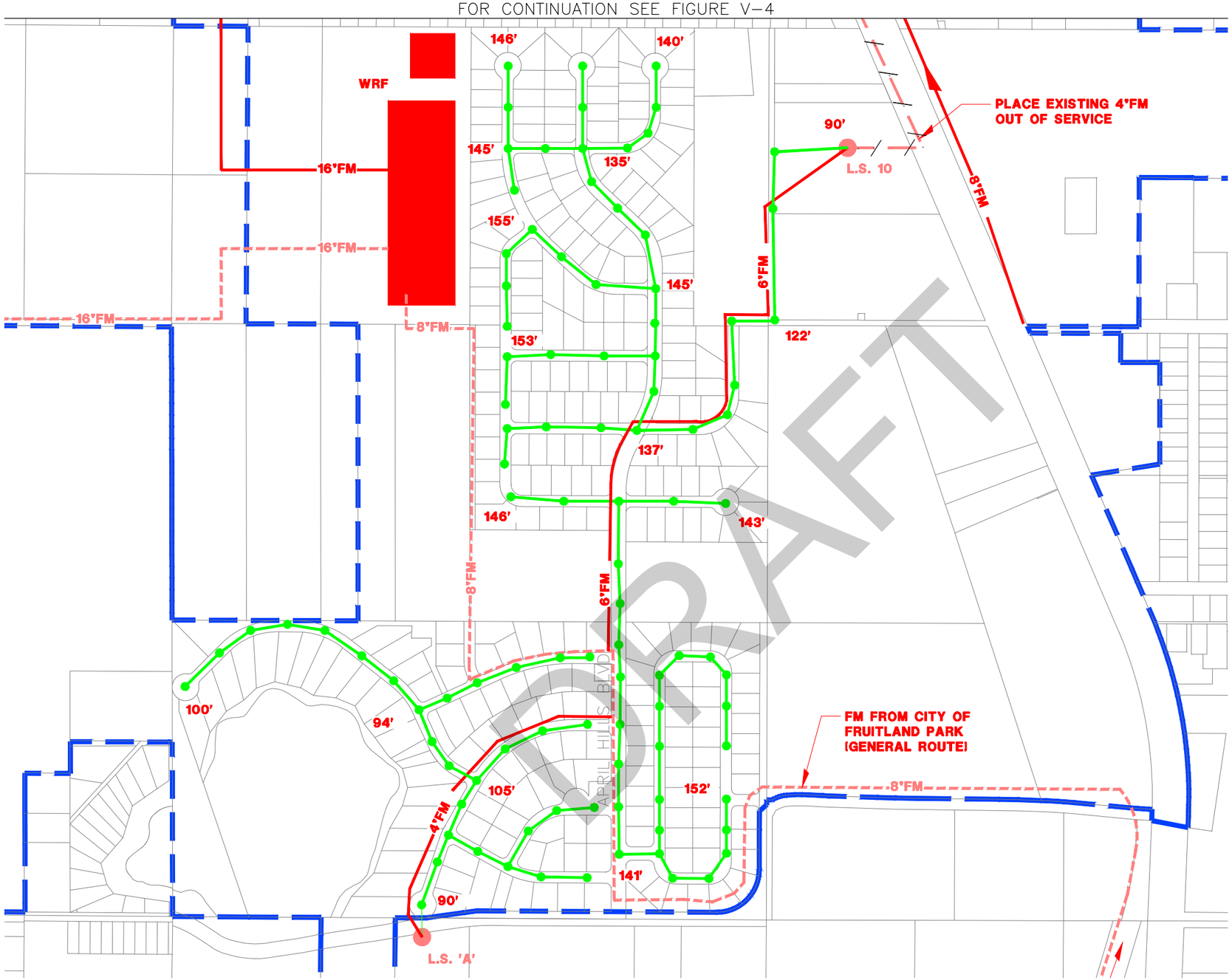
For purposes of the Plan, STPO projects are conceptually developed herein as 'stand-alone' projects. Therefore, conceptual cost estimates may be larger than needed if infrastructure components are developed and constructed by other parties. The following summaries outline STPO projects for each of the previously identified OSTDS Service Sectors defined in **Section IV**.

STPO Project No. 1 - OSTDS Service Sector No. 1 and 2

Figure V-3 depicts the proposed improvements. For purposes of this Plan, the approach includes constructing gravity sewer improvements throughout the residential areas and performing the necessary septic tank abandonments and hook-ups. For this project, the concept includes utilizing existing Lift Station No. 10 and constructing a 'new' lift station near Lake Ella due to the large elevation drop near the lake that can not be economically served from the larger gravity sewer system. It is anticipated the lift station could be constructed within available right of way, or a utility easement could be procured. At this time, land acquisition costs are not included. In total, the project would serve approximately 250 parcels, and at build-out would direct 50,000 gpd (AADF) of wastewater to the Town's WRF. All force main routings are based on the 'build-out' concept and would construct a new 8-inch force main that would serve these areas. The conceptual opinion of construction costs is summarized in **Table V-2** and includes construction of one new lift station and modification to existing L.S. No. 10, with new 4-inch, 6-inch, and 8-inch manifold force mains to the WRF. The existing 8-inch run currently serving Fruitland Park will accommodate future flows from 'Block A' development areas identified in **Figure V-1.**

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FOR CONTINUATION SEE FIGURE V–4



LEGEND

- TOWN LIMITS
- EXISTING FM
- FM - CONCEPTUAL FM PIPING
- CONCEPTUAL GRAVITY SEWER PIPING
- XX' TOPOGRAPHIC ELEVATION

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J:\orangepark\cad files\lady lake\9514411 2025 water, wastewater, reclaimed water master plan updates\Figures\wastewater\Fig. V-3 thru V-7 OSTDS Service Sectors.dwg, 1/13/2026 11:11:47 AM, Mike.Lisena

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OSTDS SERVICE SECTOR NO. 1 & 2 CONCEPTUAL CENTRAL SEWER LAYOUT

TOWN OF LADY LAKE
Wastewater Master Plan
Lake County, Florida

Figure
V-3

TABLE V-2 STPO PROJECT NO. 1: OSTDS SERVICE SECTORS 1 & 2 CONVENTIONAL GRAVITY SYSTEM	
Item (Units and Unit Cost)	**Estimated Cost**
1. Mobilization & General Conditions (5% of Subtotal)	$450,000
2. 4-inch Force Main (1,500 LF @ $60/LF)	$90,000
3. 6-inch Force Main (2,300 LF @ $80/LF)	$184,000
4. Lift Stations (1 @ $300,000)[A]	$300,000
5. 8-inch Gravity Sewer (14,000 LF @ $250/LF)	$3,500,000
6. Sanitary Manholes (45 @ $4,000, 4 @ $7,000)	$208,000
7. Ductile Iron Fittings (5,000 lbs @ $10/lb)	$50,000
8. Force Main Valves (10 @ $5,000/EA)	$50,000
9. Air Release (4 @ $10,000)	$40,000
10. Sewer Services (200 @ $2,000, 50 @ $3,000)	$550,000
11. Pavement Removal & Replac. (12,800 LF @ $200/LF)	$2,560,000
12. Lift Station No. 10 Pump Replacement & Modifications (duplex)	$100,000
13. Removal of Unsuitable Soils	$50,000
14. Miscellaneous (restorations, seed & mulch, etc.)	$100,000
15. Existing Septic Tank, Drainfield Decommissioning, and Sewer Hook-up (250 @ $5,000/Ea)	$1,250,500
SUBTOTAL: CONSTRUCTION COSTS	**$9,483,000**
CONSTRUCTION CONTINGENCY (20%)	**$1,900,000**
NON-CONSTRUCTION COSTS (15%)	**$1,707,000**
TOTAL ESTIMATED CONSTRUCTION COST	**$13,090,000**

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With contingency and non-construction costs, STPO Project No. 1 is anticipated to cost $13,100,000. Based on service to 250 parcels, the total project results in a per connection cost of approximately $52,400 ($13,100,000/250 parcels).

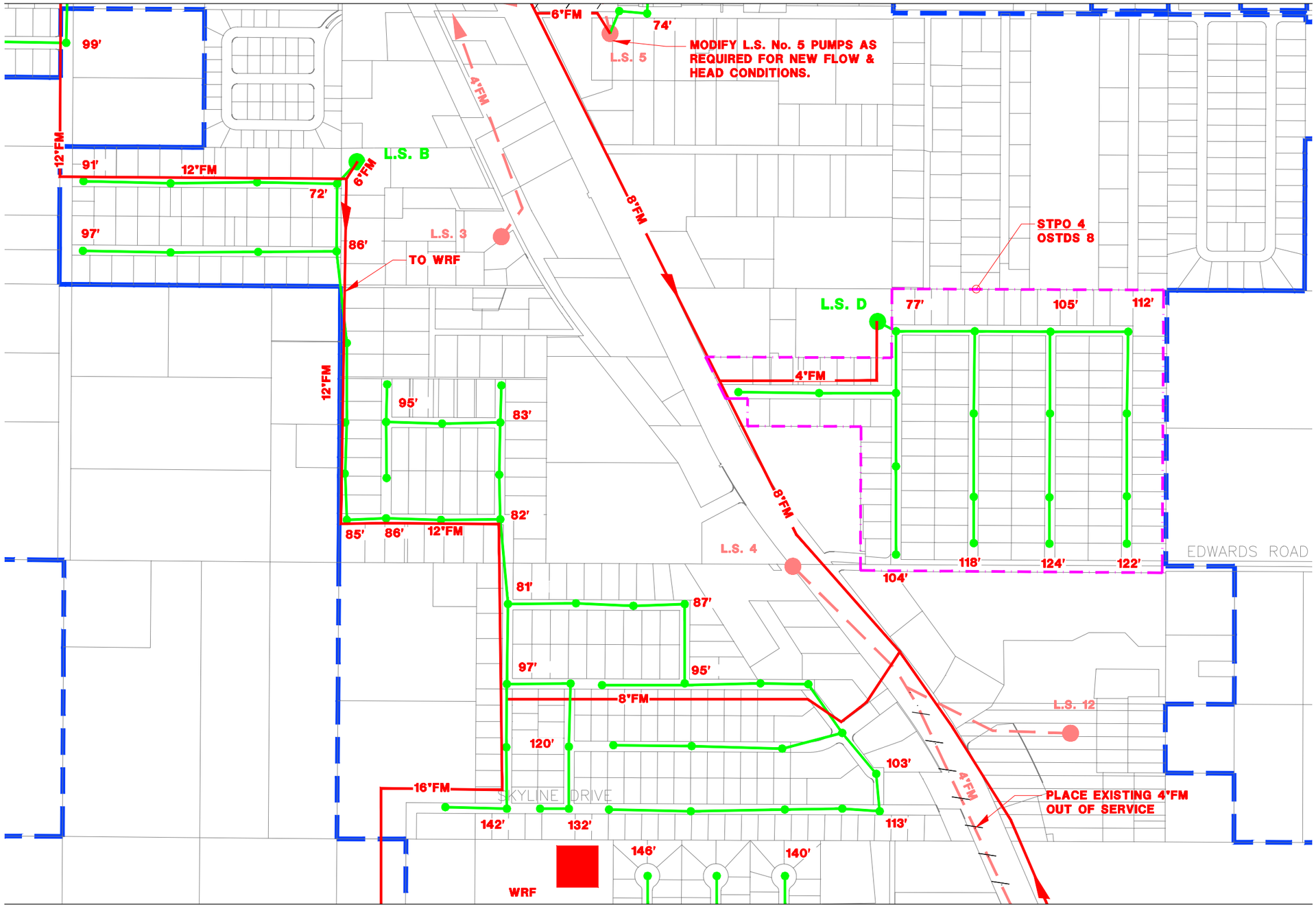
STPO Project No. 2 - OSTDS Service Sector No. 3 and 4

Figure V-4 depicts the proposed improvements. For purposes of this Plan, the approach includes constructing gravity sewer improvements throughout the residential areas and performing the necessary septic tank abandonments and hook-ups. The concept includes constructing one new lift station to serve OSTDS Service Sectors No. 3 and 4. Generally, ground elevations increase by 30 to 40 feet from the proposed lift station site to the southern extents of the proposed service area, which allows gravity service to extend over large areas. However, the roadway does have some relatively flat runs along this portion, so some portions of the gravity sewer system would become relatively deep. It is anticipated the lift station could be constructed within available right of way, or a utility easement could be procured. Land acquisition costs are not included within these conceptual estimates. In total, the project would serve approximately 340 parcels, and at build-out would direct 81,600 gpd (AADF) of wastewater to the Town's WRF. All force main routings are based on the 'build-out' concept that includes constructing a new 8-inch force main that would serve these areas and the STPO Project No. 3 limits. This 8-inch force main would also provide a future pressure relief for the 16-inch force main as the westerly and northerly limits of the Town's Service Area are built out. At some future date, the 8-inch main would be extended north and west to provide a 'hydraulic loop' for the force main network reducing the overall head conditions in the system. The conceptual opinion of construction costs are summarized in **Table V-3**.

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FOR CONTINUATION SEE FIGURE V–5

FOR CONTINUATION SEE FIGURE V–6



LEGEND

- TOWN LIMITS
- EXISTING FM
- **FM** - CONCEPTUAL FM PIPING
- CONCEPTUAL GRAVITY SEWER PIPING
- **XX'** TOPOGRAPHIC ELEVATION

FOR CONTINUATION SEE FIGURE V–3

Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	***Building Stronger Communities Together*** 580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030	OSTDS SERVICE SECTOR NO. 3,4,8 CONCEPTUAL CENTRAL SEWER LAYOUT TOWN OF LADY LAKE Wastewater Master Plan Lake County, Florida
Drawn by:	MAL	Job No. 9514-41-1			Figure **V-4**
Checked by:	JRS				
Approved by:	JRS	© 2026			
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TABLE V-3 STPO PROJECT NO. 2: OSTDS SERVICE SECTORS 3 & 4 CONVENTIONAL GRAVITY SYSTEM	
Item (Units and Unit Cost)	**Estimated Cost**
1. Mobilization & General Conditions (5% of Subtotal)	$550,000
2. 12-inch Force Main (3,800 LF @ $150/LF)[A]	$570,000
3. 16-inch Force Main (1,700 LF @ $200/LF)[A]	$340,000
4. Lift Stations (1 @ $300,000)[A]	$300,000
5. 8-inch Gravity Sewer (14,800 LF @ $250/LF)	$3,700,000
6. Sanitary Manholes (50 @ $4,000, 5 @ $7,000)	$235,000
7. Ductile Iron Fittings (5,000 lbs @ $10/lb)	$50,000
8. Air Release (4 @ $10,000)	$40,000
9. Force Main Valves (6 @ $5,000/EA)	$30,000
10. Sewer Services (300 @ $2,000, 40 @ $3,000)	$720,000
11. Pavement Removal & Replac. (14,800 LF @ $200/LF)	$2,960,000
12. Removal of Unsuitable Soils	$50,000
13. Miscellaneous (restorations, seed & mulch, etc.)	$50,000
14. Existing Septic Tank, Drainfield Decommissioning, and Sewer Hook-up (340 @ $5,000/Ea)	$1,700,000
SUBTOTAL: CONSTRUCTION COSTS	**$11,295,000**
CONSTRUCTION CONTINGENCY (20%)	**$2,260,000**
NON-CONSTRUCTION COSTS (15%)	**$2,033,000**
TOTAL ESTIMATED CONSTRUCTION COST	**$15,588,000**

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With contingency and non-construction costs, STPO Project No. 2 is anticipated to cost $15,600,000. Based on service to 340 parcels, the total project results in a per connection cost of approximately $46,000 ($15,600,000/340 parcels).

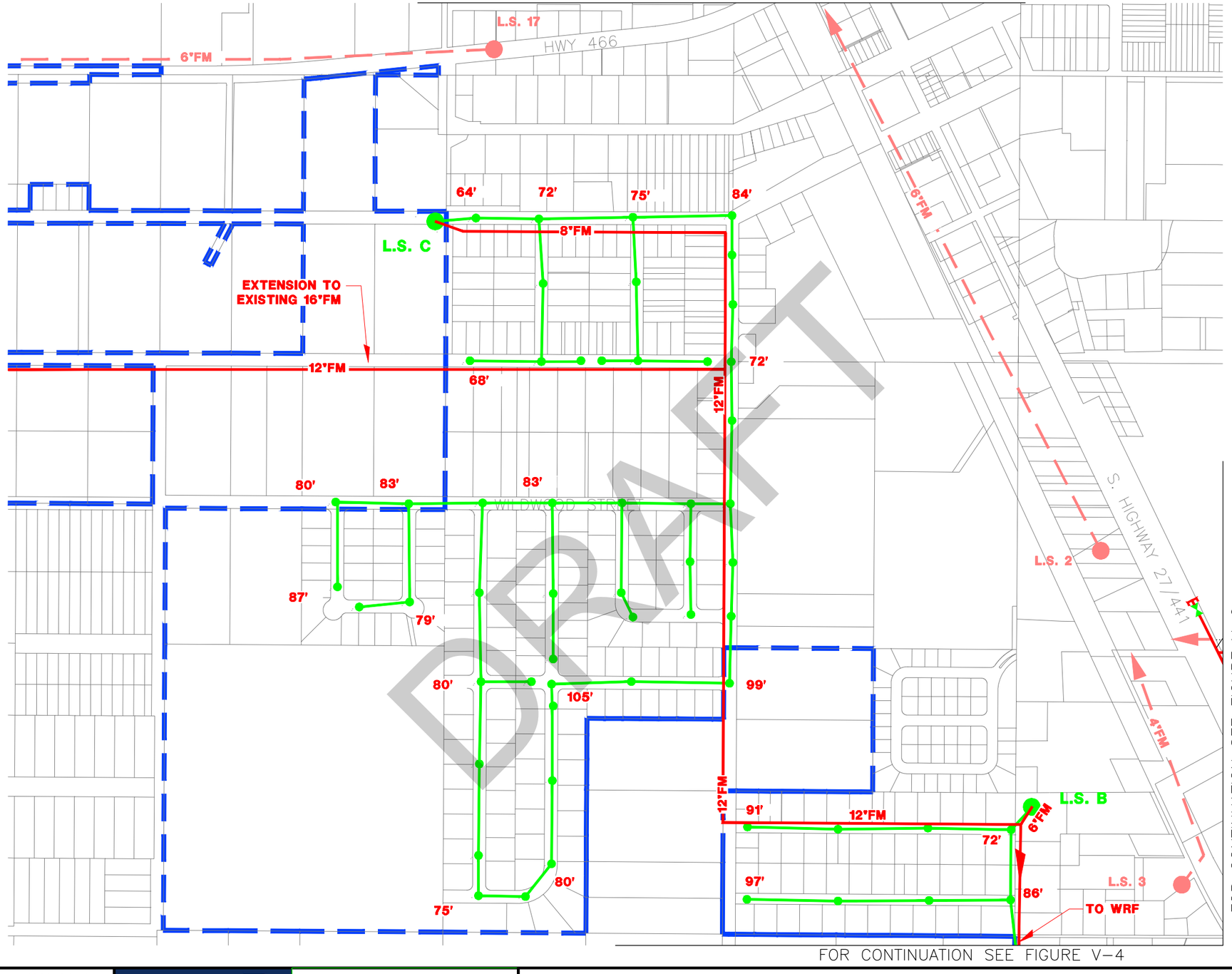
STPO Project No. 3 - OSTDS Service Sector No. 5, 6 and 7

Due to current 'occupied' densities within the OSTDS Service Sectors No. 5, 6, and 7, it is anticipated this project would occur after STPO Project No. 2 is constructed. Therefore, the estimated opinion of costs assume the 12-inch force main from the STPO Project No. 2 is constructed and on-line.

Figure V-5 depicts the proposed improvements. The approach includes constructing gravity sewer improvements throughout the residential areas and performing the necessary septic tank abandonments and hook-ups. For this project, the concept includes constructing one new lift station to serve OSTDS Service Sectors No. 5, 6 and 7. Generally, ground elevations increase by 10 to 20 feet from the proposed lift station site to the southern extents of the proposed service area. It is anticipated the lift station could be constructed within available right of way, or a utility easement could be procured. In total, the project would serve approximately 330 parcels, and at build-out would direct 79,200 gpd (AADF) of wastewater to the Town's WRF. All force main routings are based on the 'build-out' concept, which includes a 12-inch force main extension from the existing 16-inch force main along Rolling Acres. The conceptual opinion of construction costs are summarized in **Table V-4**.

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FOR CONTINUATION SEE FIGURE V-7



N

LEGEND

- TOWN LIMITS
- EXISTING FM
- FM - CONCEPTUAL FM PIPING
- CONCEPTUAL GRAVITY SEWER PIPING
- XX' TOPOGRAPHIC ELEVATION

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OSTDS SERVICE SECTOR NO. 5,6,7 CONCEPTUAL CENTRAL SEWER LAYOUT

TOWN OF LADY LAKE
Wastewater Master Plan
Lake County, Florida

Figure
V-5

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TABLE V-4 STPO PROJECT NO. 3: OSTDS SERVICE SECTORS 5, 6 & 7 CONVENTIONAL GRAVITY SYSTEM	
Item (Units and Unit Cost)	**Estimated Cost**
1. Mobilization & General Conditions (5% of Subtotal)	$480,000
2. 8-inch Force Main (2,000 LF @ $100/LF)	$200,000
3. 12-inch Force Main (7,300 LF @ $150/LF)	$1,095,000
4. Lift Stations (1 @ $300,000)	$300,000
5. 8-inch Gravity Sewer (11,900 LF @ $250/LF)	$2,975,000
6. Sanitary Manholes (35 @ $4,000, 5 @ $7,000)	$175,000
7. Ductile Iron Fittings (2,000 lbs @ $10/lb)	$20,000
8. Force Main Valves (5 @ $5,000/EA)	$25,000
9. Air Release (2 @ $10,000)	$20,000
10. Sewer Services (300 @ $2,000, 30 @ $3,000)	$690,000
11. Pavement Removal & Replac. (11,900 LF @ $200/LF)	$2,380,000
12. Removal of Unsuitable Soils	$50,000
13. Miscellaneous (restorations, seed & mulch, etc.)	$50,000
14. Existing Septic Tank, Drainfield Decommissioning, and Sewer Hook-up (330 @ $5,000/Ea)	$1,650,000
SUBTOTAL: CONSTRUCTION COSTS	**$10,110,000**
CONSTRUCTION CONTINGENCY (20%)	**$2,022,000**
NON-CONSTRUCTION COSTS (15%)	**$1,820,000**
TOTAL ESTIMATED CONSTRUCTION COST	**$13,952,000**

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With contingency and non-construction costs, STPO Project No. 3 is anticipated to cost $14,000,000. Based on service to 330 parcels, the total project results in a per connection cost of approximately $42,500 ($14,000,000/330 parcels).

STPO Project No. 4 - OSTDS Service Sector No. 8

Figure V-4 depicts the proposed improvements. The approach includes constructing gravity sewer improvements throughout the residential areas and performing the necessary septic tank abandonments and hook-ups. For this project, the concept includes constructing one new lift station to serve OSTDS Service Sector No. 8, and would include a new 8-inch force main within the US 27 corridor to the Longview Avenue intersection to provide capacity for future growth west of US 27 within the Town's southeasterly corridor as well as potential hook-ups to the private WWTPs located in this vicinity. The 8-inch force main construction includes directionally drilling under US 27. It is anticipated the lift station could be constructed within available right of way, or a utility easement could be procured. In total, the project would serve approximately 150 parcels, and at build-out would direct 36,000 gpd (AADF) of wastewater to the Town's WRF. The conceptual opinion of construction costs is summarized in **Table V-5**.

Further discussion and analysis related to the 'build-out' force main network is provided in **Section V.B.2.c.**

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TABLE V-5 STPO PROJECT NO. 4: OSTDS SERVICE SECTOR 8 SEPTIC TANK CONVENTIONAL GRAVITY SYSTEM	
Item (Units and Unit Cost)	**Estimated Cost**
1. Mobilization & General Conditions (5% of Subtotal)	$250,000
2. 4-inch Force Main (1,200 LF @ $60/LF)	$72,000
3. 8-inch Force Main (3,000 LF @ $100/LF)	$300,000
4. 8-inch Force Main Directional Drill (1,000 LF @ $150/LF)	$150,000
5. Lift Stations (1 @ $300,000)	$300,000
6. 8-inch Gravity Sewer (5,500 LF @ $250/LF)	$1,375,000
7. Sanitary Manholes (15 @ $4,000, 2 @ $7,000)	$74,000
8 Ductile Iron Fittings (5,000 lbs @ $10/lb)	$50,000
9. Force Main Valves (5 @ $5,000/EA)	$25,000
10. Air Release (2 @ $10,000)	$20,000
11. Sewer Services (120 @ $2,000, 30 @ $3,000)	$330,000
12. Pavement Removal & Replacement (5,500 LF @ $200/LF)	$1,100,000
13. Removal of Unsuitable Soils	$50,000
14. Miscellaneous (restorations, seed & mulch, etc.)	$50,000
15. Existing Septic Tank, Drainfield Decommissioning, and Sewer Hook-up (150 @ $5,000/Ea)	$750,000
SUBTOTAL: CONSTRUCTION COSTS	**$4,896,000**
CONSTRUCTION CONTINGENCY (20%)	**$979,000**
NON-CONSTRUCTION COSTS (15%)	**$881,000**
TOTAL ESTIMATED CONSTRUCTION COST	**$6,756,000**

DRAFT

With contingency and non-construction costs, STPO Project No. 4 is anticipated to cost $6,800,000. Based on service to 150 parcels, the total project results in a per connection cost of approximately $45,300 ($6,800,000/150 parcels).

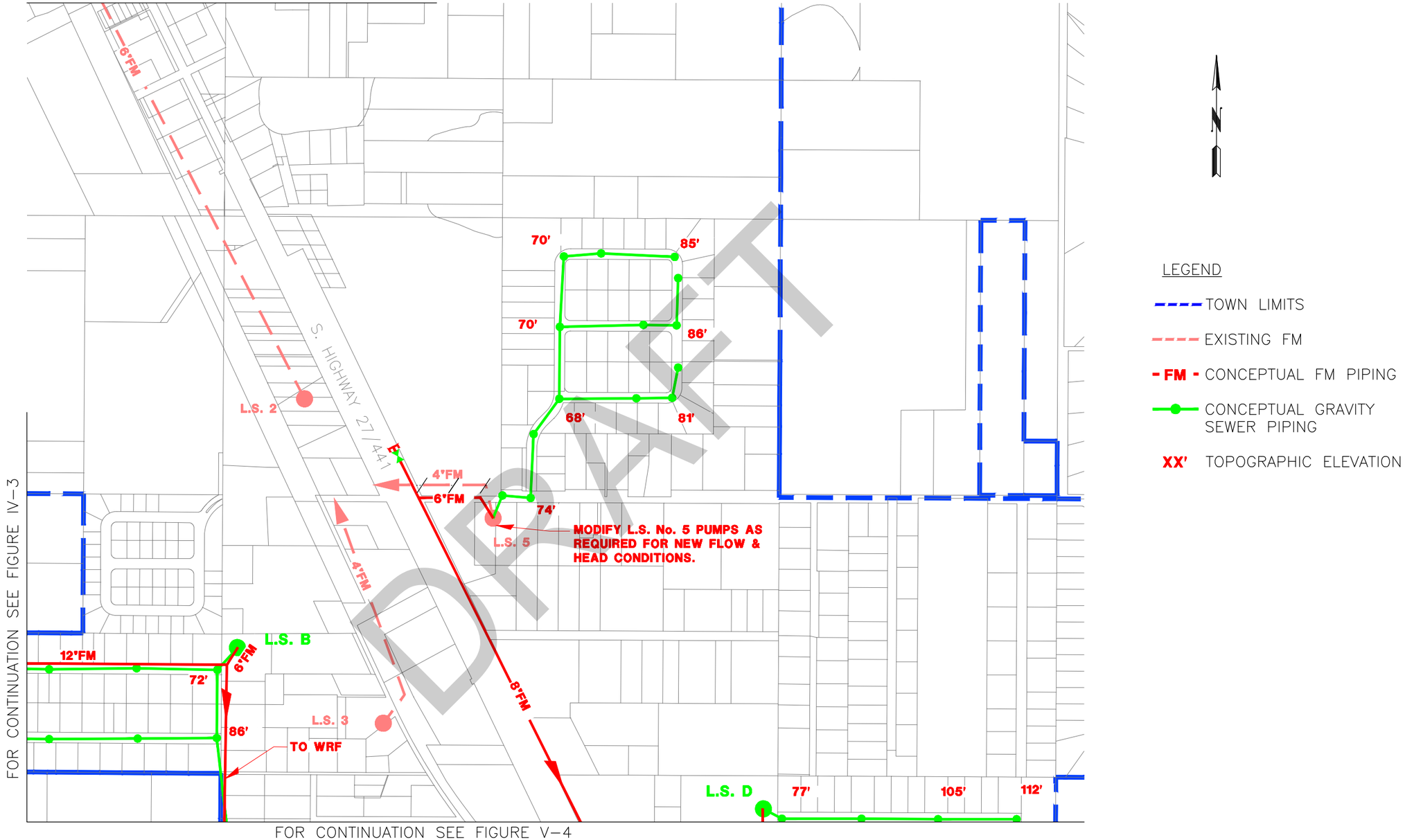
STPO Project No. 5 - OSTDS Service Sector No. 9

Figure V-6 depicts the proposed improvements. For purposes of this Plan, the approach includes constructing gravity sewer improvements throughout the residential areas and performing the necessary septic tank abandonments and hook-ups. For this project, the concept includes connecting the new collection system to the existing Lift Station No. 5, replacing the existing pumps with new units, and constructing a new 8-inch force main along US 27 that would connect to the STPO Project No. 4 force main improvements. This project is conceptually estimated as a stand alone project in case L.S. No. 5 flows required diversion ahead of any STPO work. Therefore, cost overlap does exist between STPO Project No. 4 and No. 5.

In total, the project would serve approximately 75 parcels, and at build-out would direct 18,000 gpd (AADF) of wastewater to the Town's WRF. All force main routings are based on the 'build-out' concept that is discussed within **Section V.B.5.c.** The conceptual costs are outlined in **Table V-6**.

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FOR CONTINUATION SEE FIGURE V–7



FOR CONTINUATION SEE FIGURE IV–3

FOR CONTINUATION SEE FIGURE V–4

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Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	Building Stronger Communities Together 580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030	OSTDS SERVICE SECTOR NO. 9 CONCEPTUAL CENTRAL SEWER LAYOUT TOWN OF LADY LAKE Wastewater Master Plan Lake County, Florida
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Checked by:	JRS				
Approved by:	JRS	© 2026			
Scale:	1" = 500'				

Figure
V-6

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TABLE V-6 STPO PROJECT NO. 5: OSTDS SERVICE SECTOR 9 CONVENTIONAL GRAVITY SYSTEM	
Item (Units and Unit Cost)	**Estimated Cost**
1. Mobilization & General Conditions (5% of Subtotal)	$175,000
2. 8-inch Force Main (5,500 LF @ $100/LF)[A]	$550,000
3. 8-inch Force Main Directional Drill (1,000 LF @ $150/LF)[A]	$150,000
4. Lift Station No. 5 Pump Replacement (duplex, 2 total)	$75,000
5. 8-inch Gravity Sewer (3,500 LF @ $250/LF)	$875,000
6. Sanitary Manholes (10 @ $4,000, 2 @ $7,000)	$54,000
7. Ductile Iron Fittings (7,000 lbs @ $10/lb)	$70,000
8. Air Release (4 @ $10,000)	$40,000
9. Force Main Valves (8 @ $5,000/EA)	$40,000
10. Sewer Services (70 @ $2,000, 5 @ $3,000)	$155,000
11. Pavement Removal & Replacement (3,500 LF @ $200/LF)	$700,000
12. Removal of Unsuitable Soils	$50,000
13. Miscellaneous (restorations, seed & mulch, etc.)	$50,000
14. Existing Septic Tank, Drainfield Decommissioning, and Sewer Hook-up (75 @ $5,000/Ea)	$375,000
SUBTOTAL: CONSTRUCTION COSTS	**$3,359,000**
CONSTRUCTION CONTINGENCY (20%)	**$672,000**
NON-CONSTRUCTION COSTS (15%)	**$605,000**
TOTAL ESTIMATED CONSTRUCTION COST	**$4,636,000**

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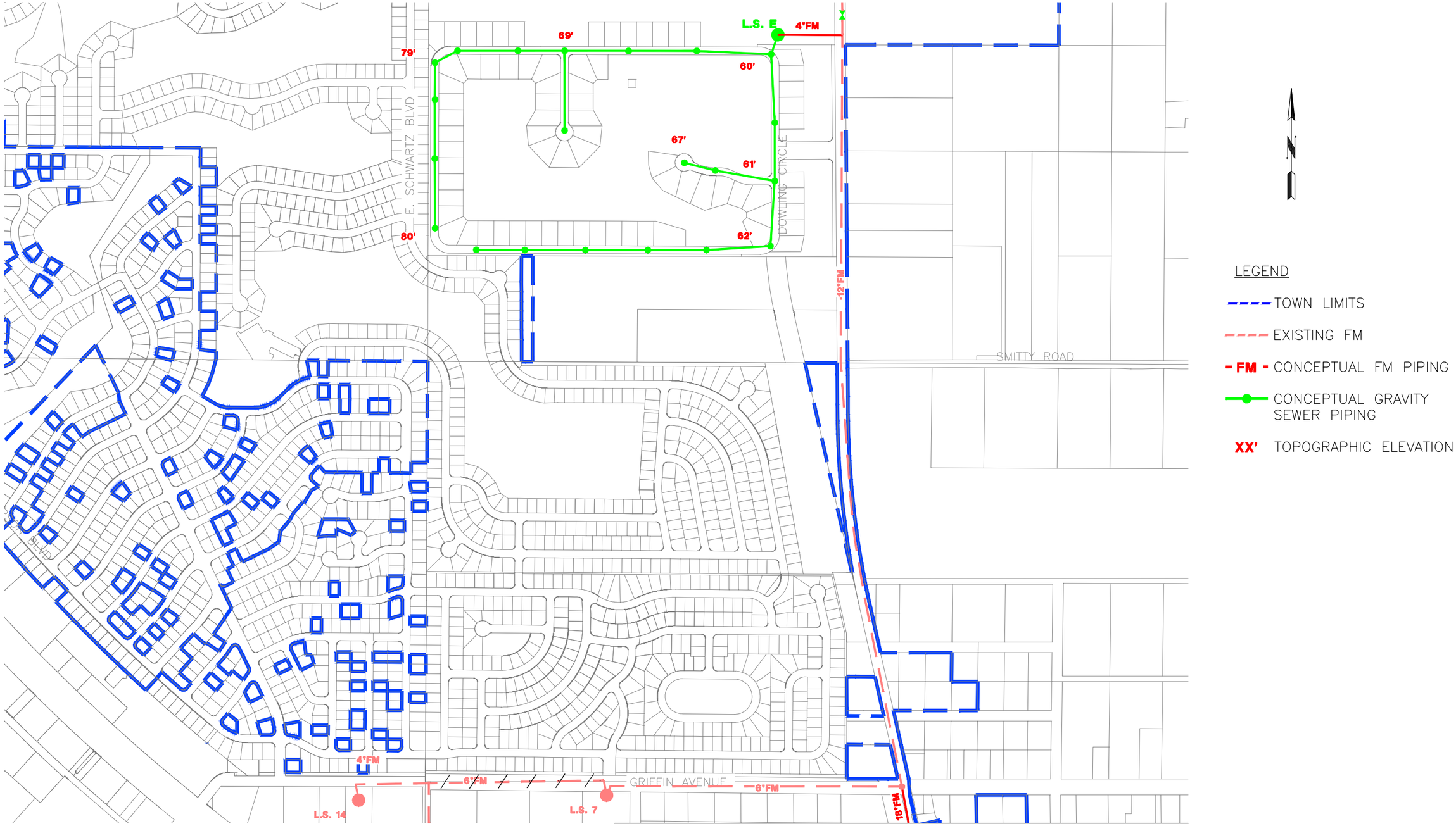
With contingency and non-construction costs, STPO Project No. 5 is anticipated to cost $4,640,000. Based on service to 75 parcels, the total project results in a per connection cost of approximately $61,900 ($4,640,000/75 parcels). The higher per parcel costs are related to the force main extensions that will also benefit other projects/sewer extensions which would utilize the 8-inch force main along US 27.

STPO Project No. 6 - OSTDS Service Sector No. 10

Figure V-7 depicts the proposed improvements. For purposes of this Plan, the approach includes constructing gravity sewer improvements throughout the residential areas and performing the necessary septic tank abandonments and hook-ups. This location is the Lakes of Lady Lakes private community that currently has a private water system, but homes are provided sewer service via OSTDS. The development is on the northern edge of the Town's Service Area that is currently problematic due to the limited transmission systems available for connection and the capacity considerations with the Gravity Trunk Sewer that were explored within **Section II.C.b.** Due to the limited build-out density and currently small development density within the development, the timeline associated with constructing this project is likely the most remote. Initial force main construction will also require a 10-inch main through portions of CR 25. For this project, the approach includes construction of an 8-inch force main from the development to the intersection of CR 25 and Griffin Avenue. At this location it is anticipated the 10-inch trunk main construction to the existing 16-inch force main would be completed by others. These components are discussed in more detail within **Section V.B.2.c.**

In total, the project would serve approximately 75 parcels, and at build-out would direct 18,000 gpd (AADF) of wastewater to the Town's WWTP. All force main routings are based on the 'build-out' concept that is discussed within **Section V.B.2.c.** The conceptual costs are outlined in **Table V-7**.

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OSTDS SERVICE SECTOR NO. 10 CONCEPTUAL CENTRAL SEWER LAYOUT

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Lake County, Florida

Figure
V-7

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TABLE V-7 STPO PROJECT NO. 6: OSTDS SERVICE SECTOR 10 CONVENTIONAL GRAVITY SYSTEM	
Item (Units and Unit Cost)	**Estimated Cost**
1. Mobilization & General Conditions (5% of Subtotal)	$275,000
2. 4-inch Force Main (500 LF @ $60/LF)	$30,000
3. 8-inch Force Main (4,800 LF @ $100/LF)	$480,000
4. Lift Stations (1 @ $300,000)	$300,000
5. 8-inch Gravity Sewer (7,500 LF @ $250/LF)	$1,875,000
6. Sanitary Manholes (19 @ $4,000, 2 @ $7,000)	$90,000
7. Ductile Iron Fittings (7,000 lbs @ $10/lb)	$70,000
8. Force Main Valves (5 @ $5,000/EA)	$50,000
9. Air Release (3 @ $10,000)	$30,000
10. Sewer Services (70 @ $2,000, 5 @ $3,000)	$155,000
11. Pavement Removal & Replacement (7,500 LF @ $200/LF)	$1,500,000
12. Removal of Unsuitable Soils	$50,000
13. Miscellaneous (restorations, seed & mulch, etc.)	$50,000
14. Existing Septic Tank, Drainfield Decommissioning, and Sewer Hook-up (75 @ $5,000/Ea)	$375,000
SUBTOTAL: CONSTRUCTION COSTS	**$5,330,000**
CONSTRUCTION CONTINGENCY (20%)	**$1,066,000**
NON-CONSTRUCTION COSTS (15%)	**$959,000**
TOTAL ESTIMATED CONSTRUCTION COST	**$7,355,000**

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With contingency and non-construction costs, STPO Project No. 6 is anticipated to cost $7,400,000. Based on service to 75 parcels, the total project results in a per connection cost of approximately $99,000 ($7,400,000/75 parcels). The higher per parcel costs are related to the force main extensions that will also benefit other projects/sewer extensions who would utilize the 8-inch force main along CR 25.

b. Private WWTP Service Sectors: Within this Plan, private WWTPs have been reviewed as potential projects that could connect to the Town's central sewer system. The approach for each community, is to connect them to the Town's system via a new or rehabilitated lift station. At each location, the existing WWTP would be decommissioned and flows would be pumped into the Town's transmission system.

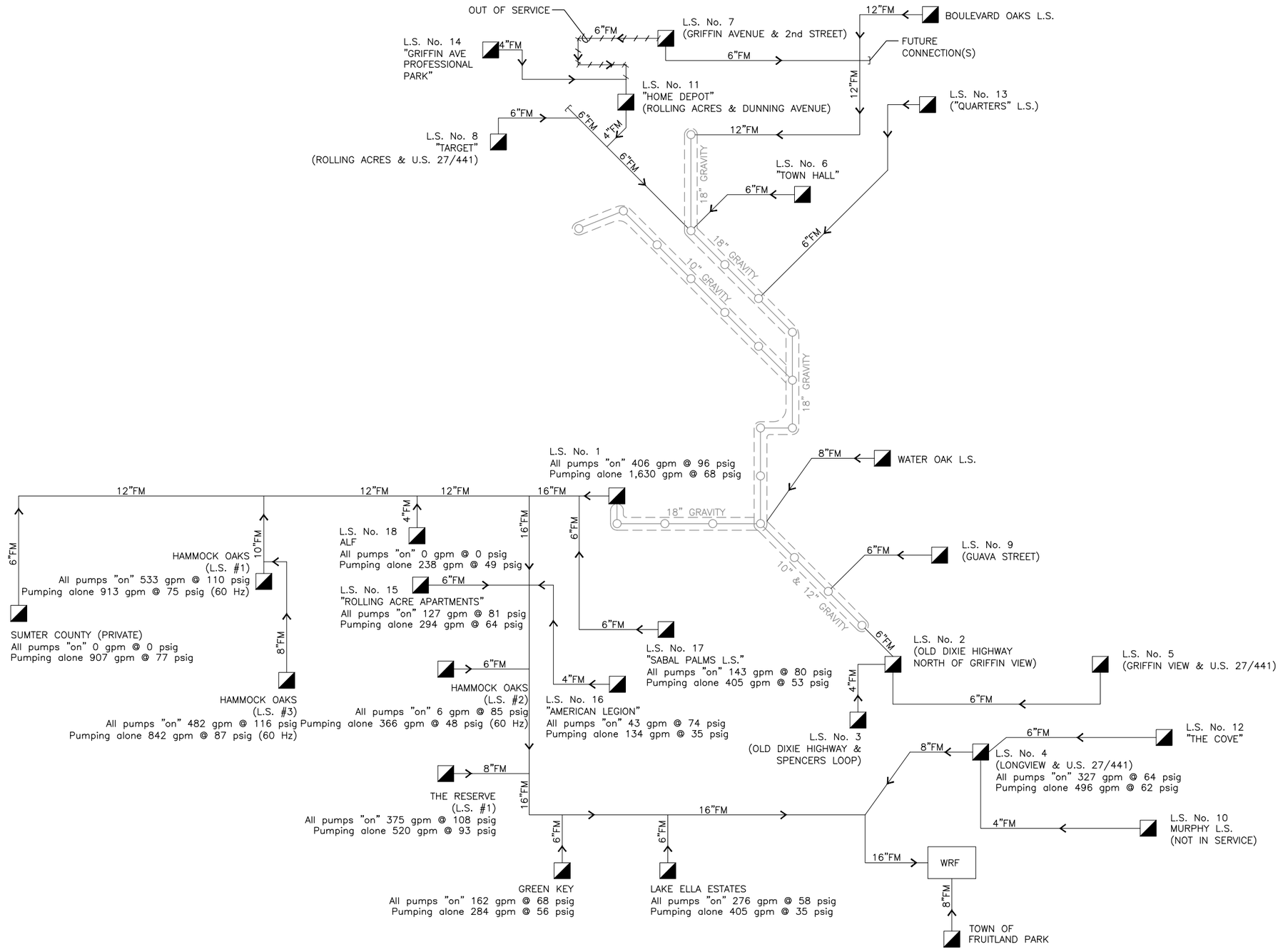
For each private community that wanted to decommission their WWTP, the entity would be required to modify their system with a new pump station and/or modifications to existing pump station(s) that would pump to the Town's sewer system. The costs associated with the modifications and/or expansion would be paid by the private community. If the community desired the Town to own and maintain the system (i.e., collection and transmission) after necessary modifications were completed, then those details would be reviewed on a case-by-case basis. If the WWTP were just decommissioned, the private community would pay the necessary impact fees prior to hook-up and then become a bulk customer paying the Town monthly sewer fees based on the prevailing rates.

Table V-2 summarized anticipated pump flows from various proposed developments, septic-tank phase out areas, and existing private communities served by package WWTPs.

Costs associated with connecting any of the private WWTPs are not included since they would be paid by each community. However, the 'build-out' flows from each are utilized to develop the Build-out Force Main Network defined further herein.

c. Build-Out Force Main Network Analysis: Utilizing the 'build-out' wastewater demand information summarized in **Table V-2**, the flows were spatially located within the Town's Service Area and the 2040 Planning Area. The result was illustrated in **Figure V-1**, and the existing force main system presented in schematic form in **Figure V-8**.

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The Town will need to consider development (i.e., construction) of various 'trunk' legs to facilitate future growth and septic tank phase out work. For purposes of this Plan, the overall 'build-out' force main network is broken into the following quadrants:

- North and Northeasterly Quadrant
- West and Southwesterly Quadrant | CR 466 and Rolling Acres Corridors
- Central Quadrant | STPO Projects No. 1, 2, and 3
- Southeasterly Quadrant | STPO Projects No. 4 and 5

For each of these options, the trunk force main system could be developed by the Town and/or developers through Development Agreements. Given the Town's current impact fee basis, trunk mains are included within the fee calculation. The fees would need to be updated for these new costs, which would allow subsequent impact fee revenue to be utilized in construction of this infrastructure. Conceptual construction and non-construction costs are developed herein for the Town's consideration and future review.

North and Northeasterly Quadrant

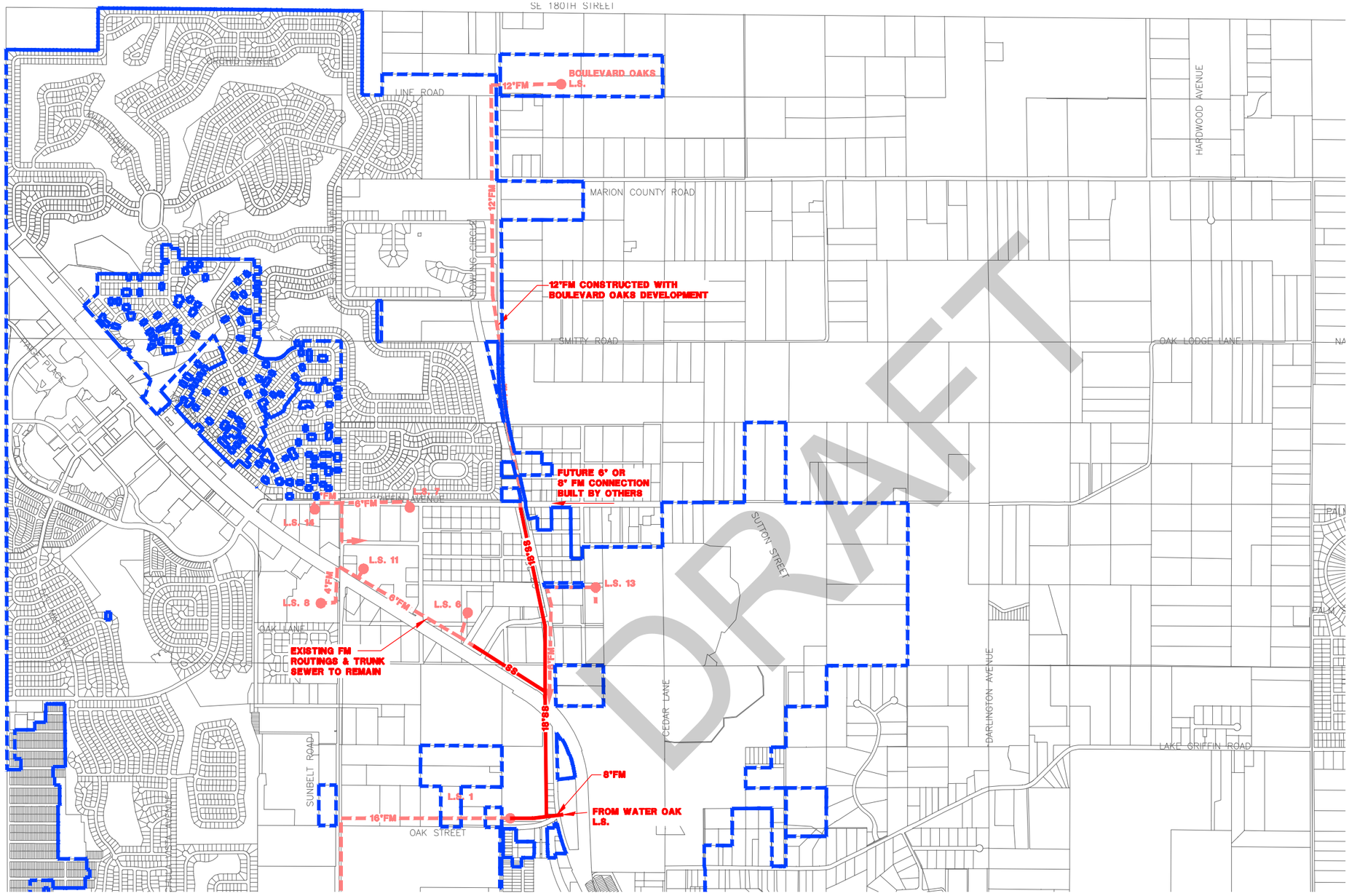
As part of the Boulevard Oaks Development and improvements along Griffin Avenue, a 12-inch force main was constructed along CR 25 from Griffin to Boulevard Oaks and 18-inch gravity sewer expansion occurred along CR 25 to L.S. 1. These improvements were reviewed in **Section II** and provide an estimated capacity of 650,000 gpd (ADF) but is limited by the existing collection system capacity. **Figure V-9** illustrates the improvements.

West and Southwesterly Quadrant | CR 466 and Rolling Acres Corridors

This quadrant has significantly developed and is maximizing the Town's existing force main infrastructure. The focus for this area involves monitoring the capacity of the existing 12-inch force main along CR 466 and the trunk 16-inch force main to the WRF. All 'new' force main extensions would be developed and constructed by the individual developments along and/or adjacent to CR 466, Rolling Acres Road, and Anderson Lane. **Figure V-10** depicts the force main extension requirements.

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N

LEGEND

- TOWN LIMITS AREA
- 12"FM — EXISTING FM
- 18"SS — EXISTING GRAVITY SEWER

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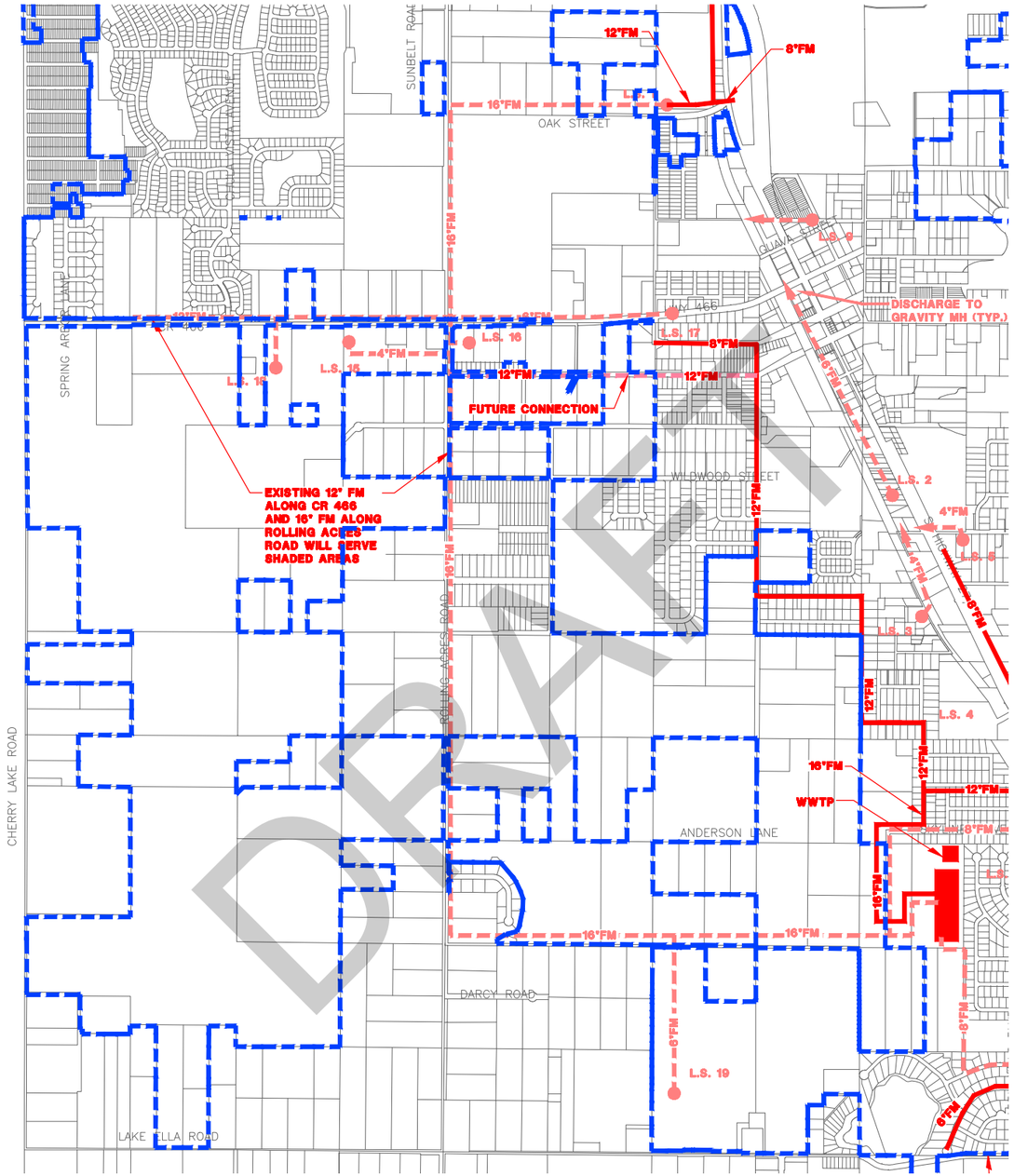
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NORTH & NORTHEASTERLY CONCEPTUAL TRUNK FORCE MAIN INFRASTRUCTURE

TOWN OF LADY LAKE
Wastewater Master Plan
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Figure
V-9



LEGEND

- TOWN LIMITS AREA
- EXISTING FM
- PROPOSED FM RUNS CONSTRUCTED DURING STPO PROJECTS

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WEST & SOUTHWESTERLY CONCEPTUAL TRUNK FORCE MAIN INFRASTRUCTURE

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Figure
V-10

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Within **Figure V-9**, a potential 'new' force main connection from the 16-inch force main to a 'proposed' 12-inch force main along Lakeview Street is depicted. The connection would provide for hydraulic looping to the WRF and drop pressure in the 16-inch force main.

Central Quadrant | STPO Projects No. 1, 2, and 3

For each STPO project, the necessary gravity sewer system was conceptually designed and the associated force main was estimated to meet current and future needs. The bulk feed from Fruitland Park is estimated to discontinue service by 2030. **Figure V-11** is provided to illustrate the build-out components to serve this area.

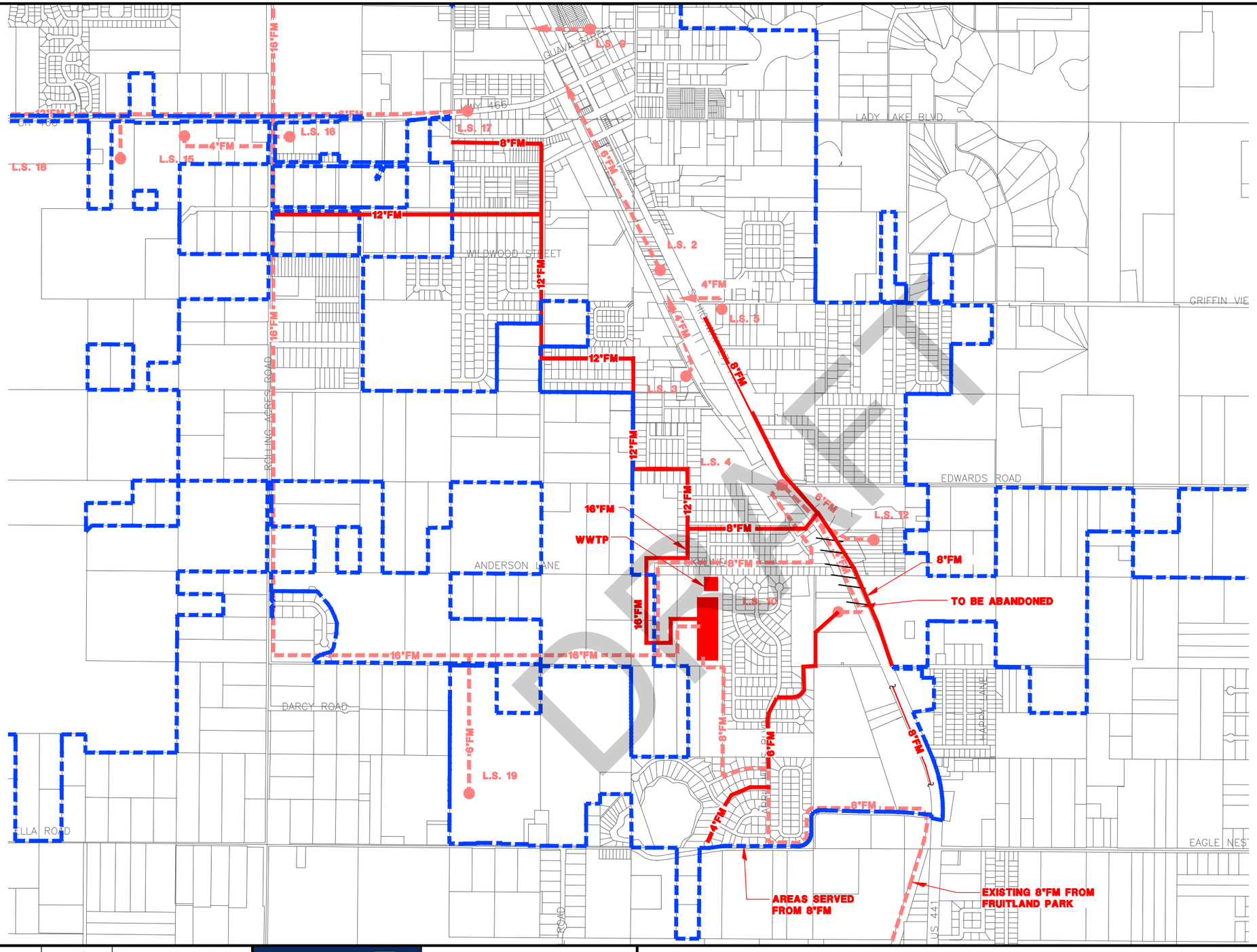
Southeasterly Quadrant | STPO Projects No. 4 and 5

Similar to the Central Quadrant discussion and summary, the force main components associated with this improvement were developed with the STPO projects. If the private WWTPs are decommissioned and replaced with pump stations, then those communities would need to develop their individual force main extensions to connect to the trunk force main components developed as part of the STPO project review. The same would be true of new developments that are constructed within this quadrant. **Figure V-12** is provided to illustrate the build-out components to serve this area.

The build-out force main network is illustrated in a schematic form in **Figure V-13** and plan view in **Figure V-14**. The existing Town lift stations that will remain 'as is' are depicted in a grayscale while the new components are shown in a bold line style.

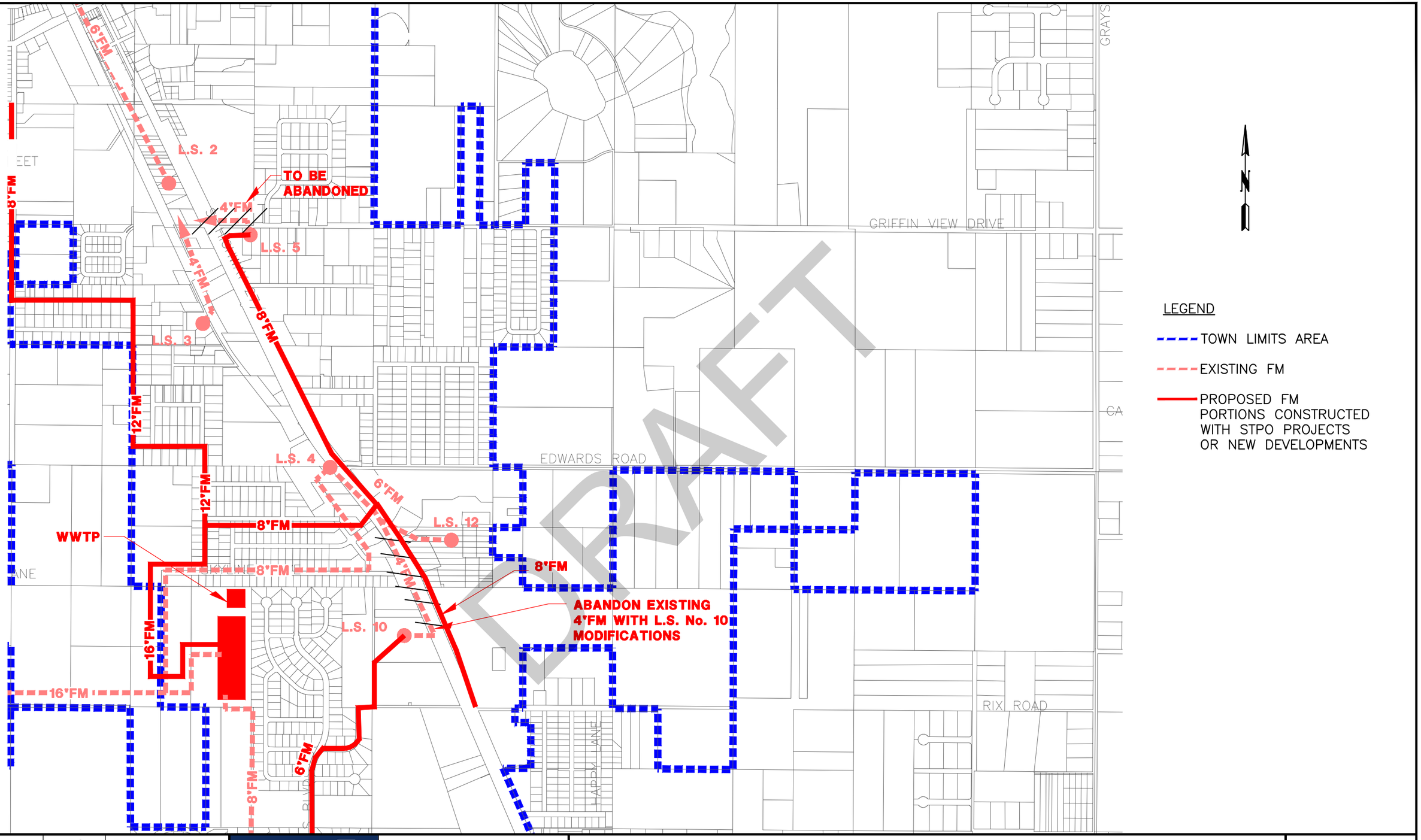
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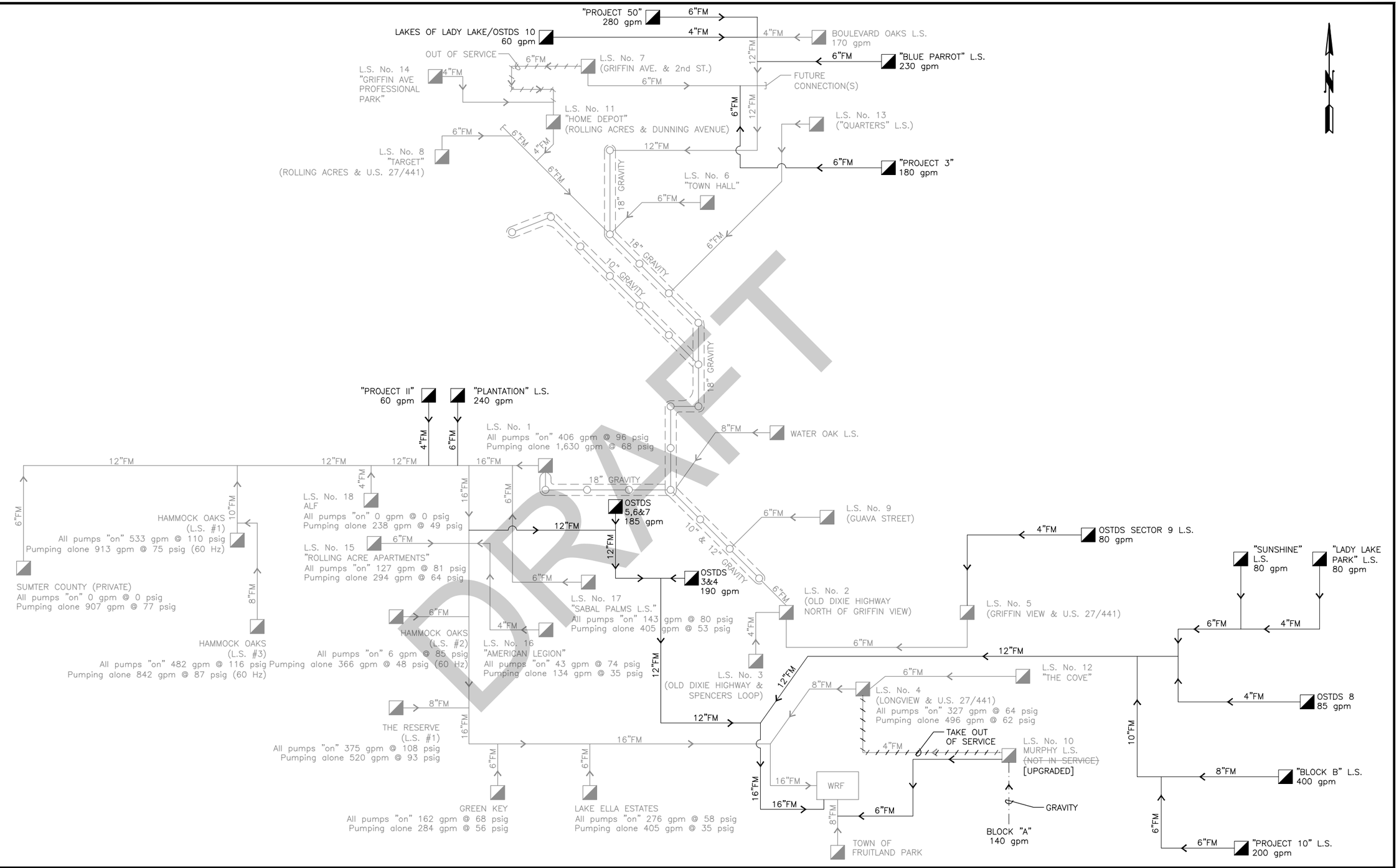
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SOUTH & SOUTHEASTERLY CONCEPTUAL TRUNK FORCE MAIN INFRASTRUCTURE

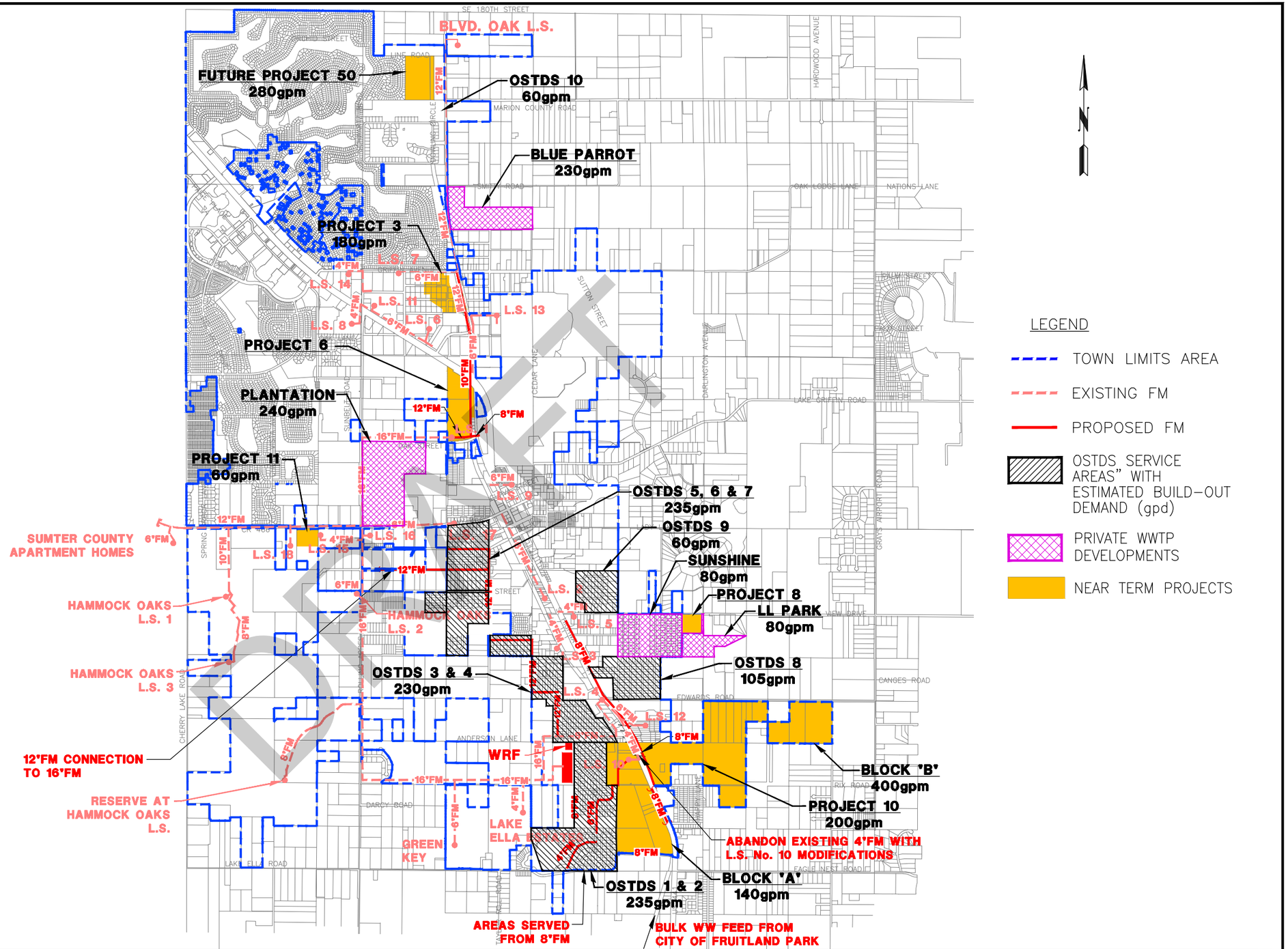
TOWN OF LADY LAKE
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Figure
V-12

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CONCEPTUAL TRUNK FORCE MAIN BUILD-OUT NETWORK

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Figure
V-14

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3. **Lift Station No. 1 Expansion:** As summarized in **Section II**, L.S. No. 1's design pumping capacity was 1,450 gpm (2.08 MGD-peak flow). Based on the collection system improvements, the gravity piping system can convey 1,830 gpm (2.6 MGD-peak flow), with potential to approach 2,500 gpm (3,600 MGD-peak flow) in a surcharged condition. The pump station's capacity should be increased to 3,000 gpm (4.3 MGD-peak flow) to exceed the current collection system capacity and provide future capacity should additional growth occur.

   The station would operate using variable frequency drives to maintain wet well level so the station would deliver the amount of flow entering the wet well and also cycle on and off at lower flow conditions. The increased capacity would also maximize the 16" force main capacity since 3,000 gpm generally equates the maximum force main velocity of 5 feet per second. The anticipated improvements would include:

   - 12' diameter precast polymer wet well with three submersible pumps at 1,600 gpm per each capacity.
   - Electrical building with motor control cabinet and telemetry system.
   - Dedicated back-up diesel pumping system.
   - Provisions to include a back-up diesel generator.

   The conceptual opinion of project costs is summarized in **Table V-8**.

TABLE V-8
LIFT STATION NO. 1 EXPANSION

Item	Description	Estimated Cost
1	Mobilization & General Conditions	$700,000
2	System Connections to Existing Wet Wells	$150,000
3	12' Diameter Wet Well (polymer)	$500,000
4	Triplex Pumping System	$1,250,000
5	Site Improvements	$300,000
6	Connections to Existing Manhole	$350,000
7	Electrical Building	$400,000
8	Electrical	$1,000,000
9	Instrumentation	$500,000
	SUBTOTAL	**$5,150,000**
	25% CONTINGENCY	**$1,300,000**
	15% NON-CONSTRUCTION COSTS	**$970,000**
	TOTAL	**$7,420,000**

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Should pumping capacity into the 18" gravity sewer system begin to approach available capacity, then force main extensions from the 12" force main at Fennell and the 6" force main from Water Oak will be required to the L.S. No. 1 head-up manhole where larger gravity sewer piping will be constructed.

C. WATER RECLAMATION FACILITY EXPANSION REQUIREMENTS

Three alternatives for expanding the WRF from 1.2 MGD to 3.0 MGD were evaluated. The alternatives were defined as follows:

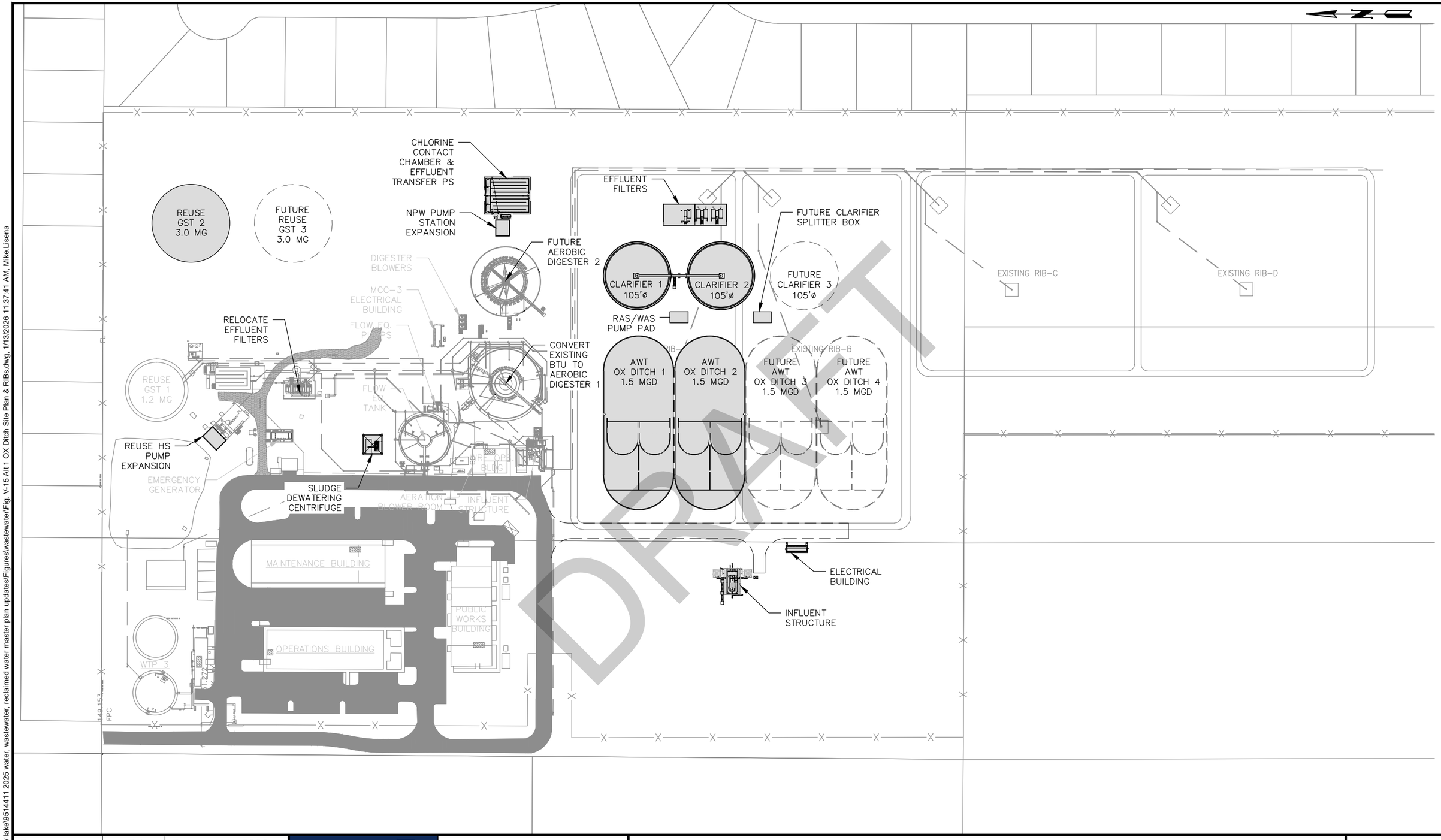
- Alternative 1: 5-stage Bardenpho oxidation ditch process.
- Alternative 2: Aerobic granular sludge (AGS) treatment system.
- Alternative 3: 5-stage Bardenpho membrane bioreactors (MBR).

All alternatives will achieve 5:5:3:1 BOD5:TSS:TN:TP effluent quality with an influent loading of 3.0 MGD (ADF) having a influent concentration of 275:275:60:10 BOD5:TSS:TKN:TP. Expansion of effluent disposal capacities is considered separately and common to all alternatives.

Conceptual site plans for each of the alternatives are depicted respectively in **Figures V-15**, **V-16**, and **V-17**.

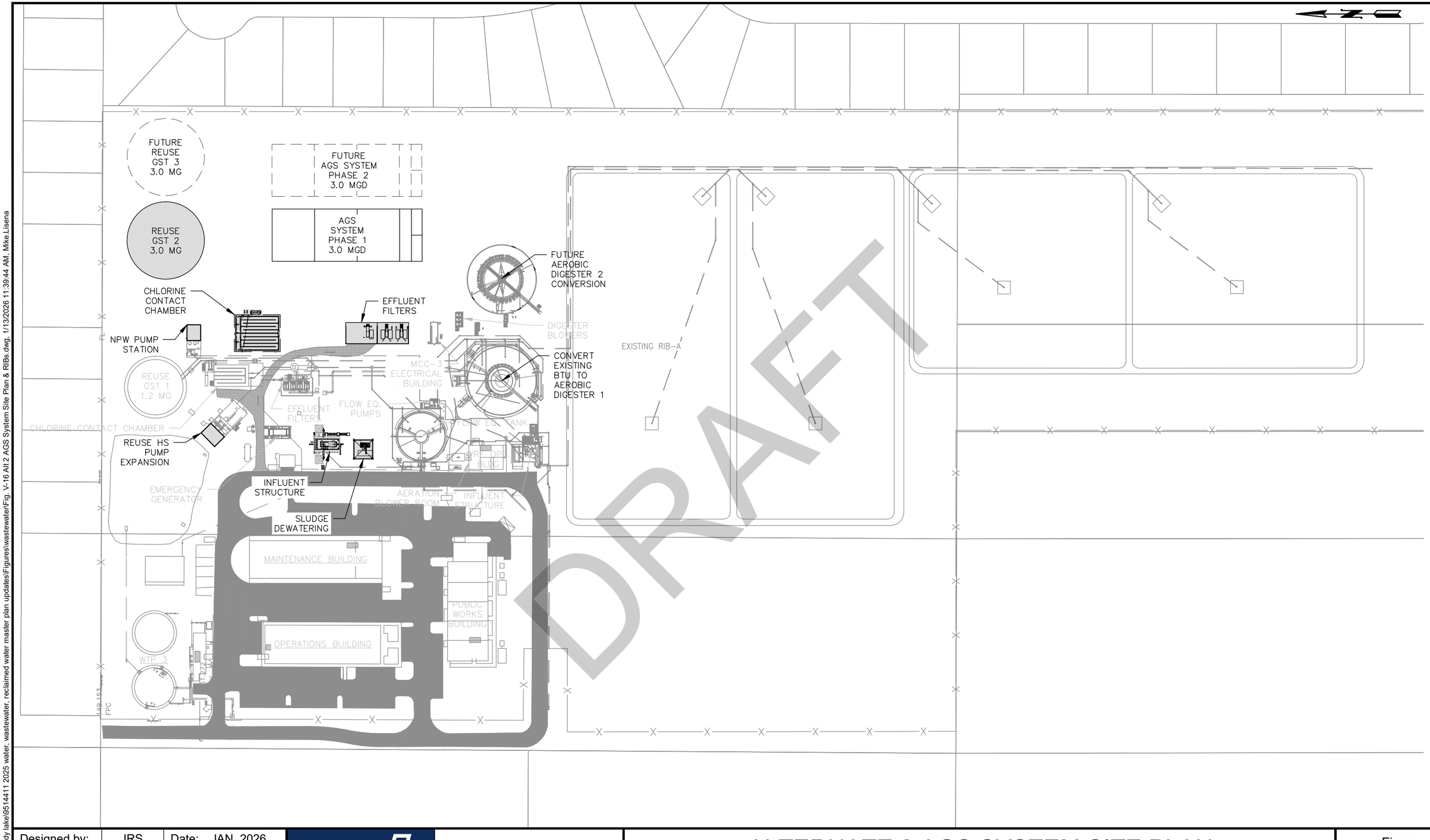
Attachment J summarizes each alternative's approach and associated capital needs while **Attachment K** summarizes each alternative's present-worth analysis. **Table V-9** summarizes the economic findings. Alternative 3 was the most cost effective and is the recommended alternative for the AWT expansion. Alternative 2 is the next-best alternative of those evaluated. Town personnel have completed site visits at facilities with similar operating infrastructure. Alternative 3 mimics current operations, but allows removal of the secondary clarifiers and tertiary filters. It will require more operational energy due to the various recycle flows and membrane aeration needs. In addition, it will require a 'sinking fund' to replace the membranes on a planned 10-year interval.

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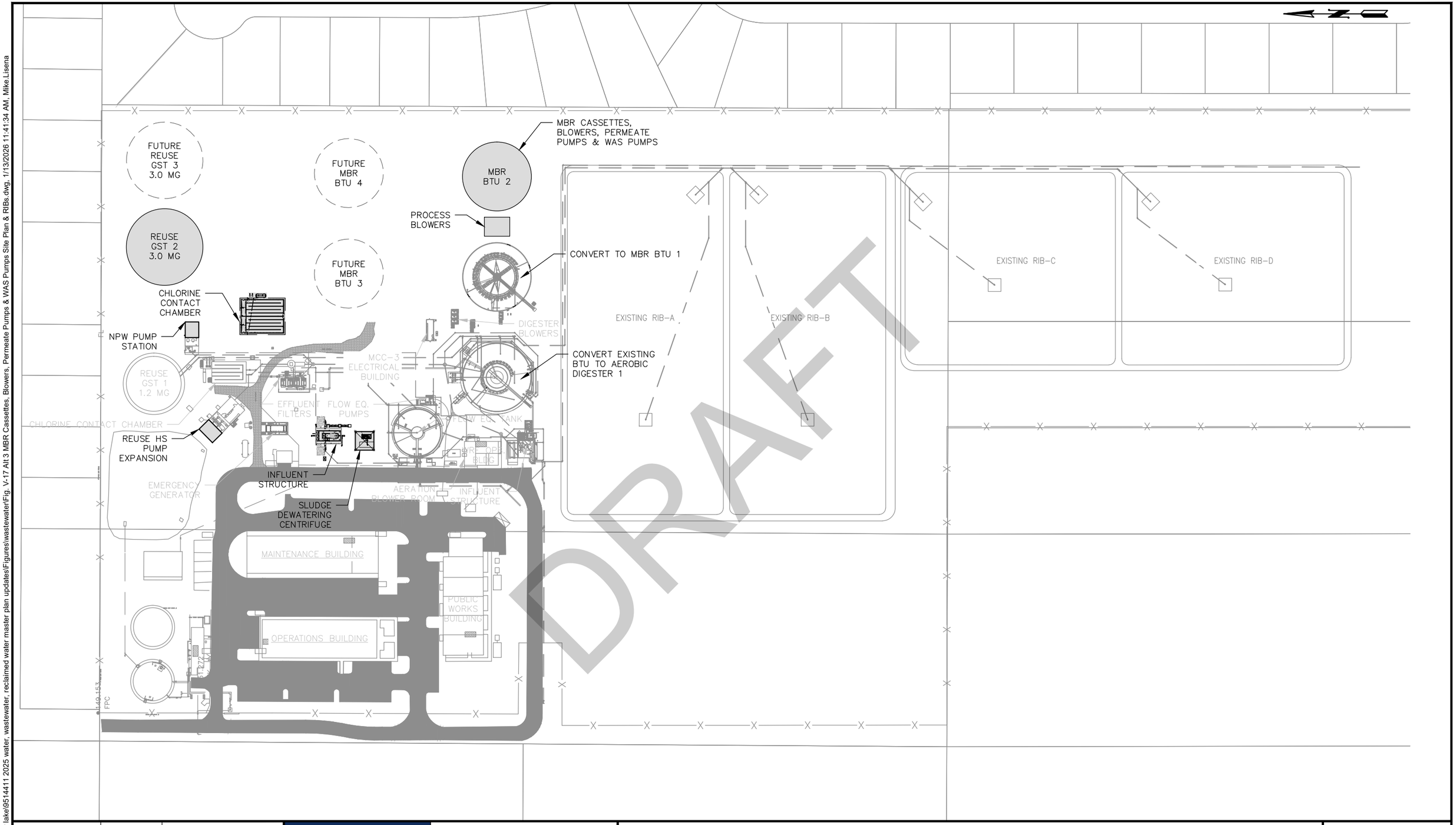
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Approved by:	JRS	© 2026		580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030	Figure **V-17**
Scale:	1" = 140'				

TABLE V-9 SUMMARY OF ALTERNATIVE COSTS			
Description	**Alternative 1 Oxidation Ditch**	**Alternative 2 AGS**	**Alternative 3 MBR**
Total Construction Cost	$129,000,000	$87,750,000	$78,625,000
Total Non-Construction Cost	$19,350,000	$13,160,000	$11,790,000
Total Capital Cost	**$148,350,000**	**$100,910,000**	**$90,415,000**
Annualized Capital Cost	**$8,580,600/yr**	**$5,836,600/yr**	**$5,229,600/yr**
Annual Power Cost	$658,000/yr	$488,000/yr	$752,800/yr
Annual Equipment O&M Cost	$597,750/yr	$708,000/yr	$467,800/yr
Annual Membrane Replacement Cost	$0/yr	$0/yr	$300,000/yr
Annual Chemical Cost	$140,000/yr	$140,000/yr	$140,000/yr
Total Annual O&M Cost	**$1,395,750/yr**	**$1,336,000/yr**	**$1,660,300/yr**
Total Annual Cost	**$9,979,500/yr**	**$7,172,600/yr**	**$6,889,900/yr**
Present Worth	**$172,540,000**	**$124,009,400**	**$119,121,600**

D. EFFLUENT DISPOSAL EXPANSION

The Reclaimed Water Master Plan reviewed the Town's effluent disposal options. Public-access reclaimed water will be the primary mode of effluent disposal, which provides the benefit of reducing potable water withdrawals from the Floridan Aquifer. To assist with projected maximum day reclaimed water demands expansion to the Town's ground storage tank capacity is also recommended. The reclaimed water demand projections are utilizing information from consultants supporting development activities, and the Town may find actual reclaimed water demands exceed these values which will require further evaluation as historical trends are developed. Portions of the Hammock Oaks development went into service in May 2025 and further development is anticipated through the coming 5 to 10 years. The Town will need to revisit operational requirements on a regular basis, and accelerate further operational storage expansion as deemed necessary to support the system's growth.

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The Town's onsite RIBs will continue to function as the reject disposal location during those times when the system does not meet public-access reclaimed water quality criteria and/or a mechanical issue is present.

Wet-weather storage was also reviewed. Based on historic 1-in-10-year Lake County annual rainfall amounts, the estimated total irrigable acreage within the Town's RWSA, estimated irrigation application rates, and an influent capacity of 3.0 MGD (AADF), a water balance was completed to estimate required wet-weather storage and/or effluent disposal requirements. Expansion to the City's RIB capacity at offsite locations is recommended to support effluent disposal restrictions that may be present during rainfall events that exceed normal conditions.

Based on the foregoing, the Reclaimed Water Master Plan recommended the following:

- Expansion of operational storage to a total capacity of 5.0 MG based on a projected reclaimed water maximum day demand of 6.6 MGD (MDF) 4,600 gpm.

- 26 acre offsite RIB expansion to bring the total RIB capacity to 36 acres or 0.83 MGD (AADF) using the current permitted application rate of 0.85 inches per day.

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WATER SYSTEM MASTER PLAN

FOR THE

TOWN OF LADY LAKE, FLORIDA

DRAFT

Prepared by:

Orange Park, Florida
Project No. M9514441.000
Client No. 9514-41-1
January 2026

WATER SYSTEM MASTER PLAN

FOR THE

TOWN OF LADY LAKE, FLORIDA

DRAFT

Prepared by:

CPH CONSULTING, LLC
Orange Park, Florida
Project No. M9514441.000
Client No. 9514-41-1
January 2026

EXECUTIVE SUMMARY

Due to growth and regulatory pressures, the Town is updating their previous master planning efforts to review alternatives and establish a plan to effectively and efficiently serve their citizens and utility customers through 2040. This also includes consideration of current and pending regulatory restrictions that will shape service requirements. The Plan considered the following:

1. Service Area, which was limited to the 2025 Town limits.
2. The "Planning Period" which will be through the Year 2040.
3. Water Projections for the Service Area.
4. Existing Firm Capacity of Water System.
5. Existing Water Distribution System's Hydraulic Capacity.
6. Expansion Alternatives and/or Improvements to Address Future System Capacity Requirements.
7. The influence of current and pending regulatory requirements for the design, permitting, construction, operation and maintenance of infrastructure improvements.

The Plan's objective was to develop a capital improvement plan (CIP) that will accommodate the above elements. The planning-level CIP is outlined as follows:

Year	CIP Item	Budget[A]
2026-2030	Design, Permit, and Construct WTP 4	$ 15,300,000
2030-2035	Pending development activities and system operations, increase pumping capacity at WTP 3	TBD
2035 - 2040	Monitor System and modify plans should service territory modifications occur	TBD

A: Conceptual budgets utilize Year 2026 dollars. Budgets will require adjustment based on inflationary adjustments for work that occurs after 2026.

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The Plan findings are summarized as follows:

1. **Existing Water System**

   A. With all the WTPs operating properly, the Town's existing water distribution system infrastructure is capable of providing proper water service to the Town during residential and commercial fire flow demands on both average and maximum days as well as peak hourly demands, except for the hydraulic deficient areas reviewed herein.

   B. Existing storage capacity is the current limiting system component. An additional elevated storage capacity would provide additional redundancy as well as system capacity. Alternatively, ground storage tanks could be added to the system but would require additional wells and high service pumps. See further system expansion recommendations related to a proposed WTP 4.

   C. Extend larger diameter piping in areas that can not support fire flow conditions.

   D. Review operational modifications to ensure pressure in higher elevation areas can be maintained below minimum system requirements during high system demands.

2. **Regulatory Considerations**

   A. Concurrent with the master plan work, the Town is beginning the SJRWMD CUP Permit renewal process. The projections contained within the master plan are being presented to the SJRWMD for review and comment. The Town's current development needs will exceed current CUP allocations and those projected by the SJRWMD. The CUP renewal process will result in a permitted allocation with other conditions the Town will need to incorporate into management of the water system and associated service capabilities.

   B. The Town has completed a Reclaimed Water Master Plan (2026) concurrent with the Water System Master Plan (2026) that outlines the Town's objectives to manage and maximize their reclaimed water supply capabilities. A Reclaimed Water Service Area (RWSA) was developed by the Town, and the near-term focus is maximizing reclaimed water use within this geographic area based on available water supplies.

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C. Per- and Polyfluoroalkyl (PFAS) are a large class of chemicals found in a wide range of consumer and industrial products. PFAS are stable chemicals that do not naturally degrade and when released into the environment can contaminate soil, groundwater, surface water, and pose risks to human health and the environment. Per Environmental Protection Agency (EPA) regulations, the Town is required to complete initial monitoring (by 2027), followed by ongoing compliance monitoring. Water systems must also provide the public with information on the levels of these PFAS in their drinking water beginning in 2027. Public water systems have five years (by 2029) to implement solutions that reduce these PFAS if monitoring shows that drinking water levels exceed these MCLs. Beginning in five years (2029), public water systems that have PFAS in drinking water which violates one or more of these MCLs must take action to reduce levels of these PFAS in their drinking water and must provide notification to the public of the violation.

   The Town is currently reviewing the regulatory requirements and will be coordinating field activities with the local FDEP officials.

3. <u>Expansion Considerations</u>

As a result of that review and the firm capacity needs, a fourth WTP is recommended to:

1. Expand storage capacity;
2. Provide additional raw water and finished water pumping redundancy and capacity; and
3. Provide another pressure sustaining input into the system to enhance distribution system hydraulics and support potential growth in the northeast portions of the Town's service area.

WTP 4 would have the following conceptual components:

4. Two 1,000 gpm well pumps in 16" diameter production wells (Well 4-1 & 4-2)
5. Two 400,000 gallon ground storage tanks (GST 4-1 and 4-2).
6. Three 750 gpm high service pumps (HSP 4-1, 4-2, and 4-3).
7. Electrical building with diesel generator and chemical feed facilities.

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C WaterCad Simulations
D 2013 Water System Pressure Evaluation
E 2026 Water Use Basis of Estimates
F CT Study
G Hammock Oaks WaterCAD Modeling Results (July 2023)

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I. INTRODUCTION

A. BACKGROUND

The Town of Lady Lake (Town) is located in northwest Lake County, approximately fifty miles north of Orlando on U.S. Highway 27/441. The City of Fruitland Park is located just south of the Town and the northerly municipal limits approach the southerly Marion County line. The Town was incorporated in 1925 and operated under the Town Commission/Town Manager form of government since 1987.

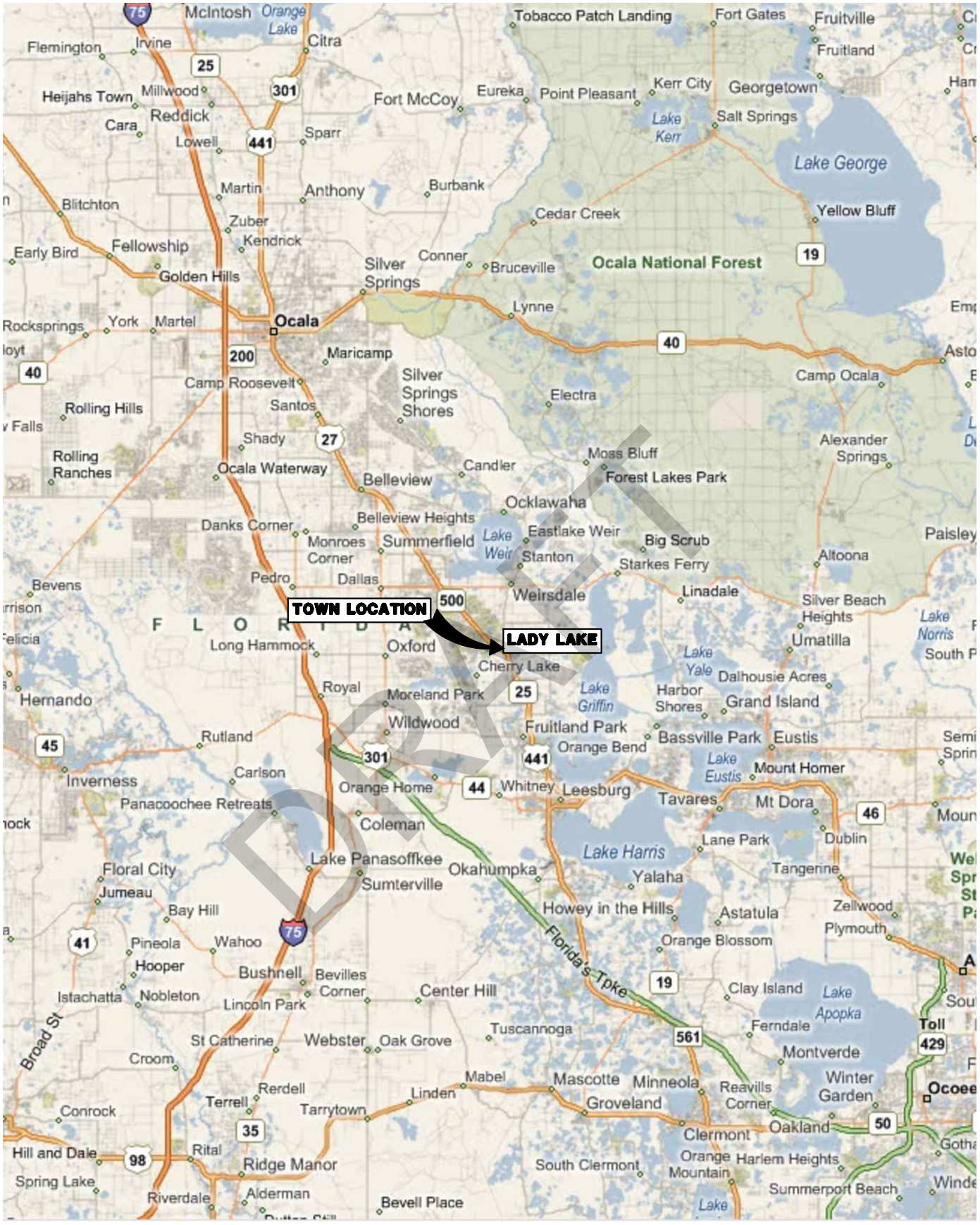
The Town has a significant commercial corridor along Highway 27/441 and County Road (CR) 466 that supports regional commerce with The Villages. Extending from these areas are multifamily developments that have developed over the past twenty years. As a result of these commercial and dense population centers, the Town is now experiencing further residential growth through large-scale planned developments within the southwest and northeast portions of the Town's municipal limits. These developments are anticipated to bring large growth relative to the Town's existing service population that will require consideration of the Town's infrastructure capacities and regulatory compliance requirements.

The Town's general location is shown in **Figure I-1**.

Within the Town's municipal limits, several private utilities operate systems that serve the Town's residents. The Villages of Lake-Sumter are served by the Villages Center Community Development District (VCCDD), while Water Oak Estates Mobile Home Park and the Lake of Lady Lakes provide its residents with potable water through respective private utility systems. Service to these areas is anticipated to remain through 2040. The location of each private utility's service area and the Town's municipal limits are shown in **Figure I-2**.

The Town currently owns and operates a water supply and distribution system that consists of distribution piping, three water treatment plants (WTPs), five public water supply wells, an elevated storage tank (EST), and two ground storage tanks (GST). These system components provide potable water and fire protection capabilities to the Town's developed areas.

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VICINITY MAP

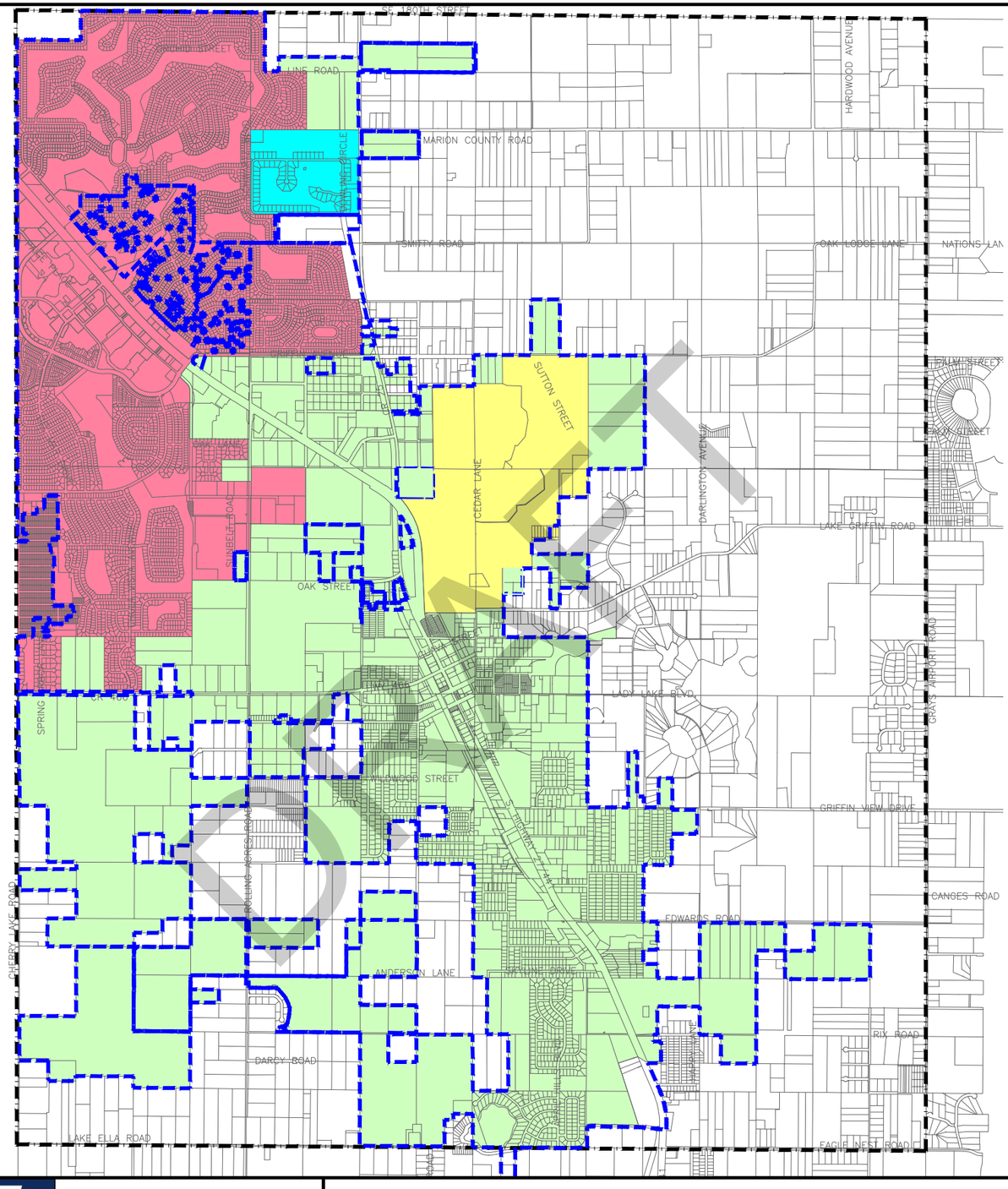
TOWN OF LADY LAKE
Water System Master Plan
Lake County, Florida

FIGURE
I-1

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J:\OrangePark\CAD Files\Lady Lake\9514411 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Water System\Figure I-1 Vicinity Map.dwg, 1/5/2026 8:32:25 AM, Mike.Lisena



LEGEND

- TOWN LIMITS AREA
- UTILITY PLANNING AREA
- WATER OAK ESTATES
- VCCDD
- LAKES OF LADY LAKE
- SERVICE AREA

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UTILITY SERVICE AREAS

TOWN OF LADY LAKE
Water System Master Plan
Lake County, Florida

Figure
I-2

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B. OBJECTIVE

The Town authorized the preparation of this report to establish a plan to effectively manage the Town's current and future water system through 2045. Planning for this infrastructure is necessary to identify the most logical and practical means of accommodating the growth and demands placed on this system. This translates into developing an implementable capital improvement plan that considers the following:

1. Water Service Areas.
2. The "Planning Period" which will be through the Year 2040.
3. Water Projections for the Service Area.
4. Existing Firm Capacity of Water System.
5. Existing Water Distribution System's Hydraulic Capacity.
6. Expansion Alternatives and/or Improvements to Address Future System Capacity Requirements.
7. The influence of current and pending regulatory requirements for the design, permitting, construction, operation and maintenance of infrastructure improvements.

The objective of this study is to develop a capital improvement plan that will accommodate the above elements. The plan will identify proposed projects, an implementation schedule, and review necessary capital needs to implement the proposed alternatives.

For purposes of the 2025 update, growth and associated water system expansion is strictly limited to the Town's limits.

C. GENERAL APPROACH

This report utilizes work completed by the Town's Growth Management Office related to their Comprehensive Planning. Previous analyses associated with population projections, level of service requirements, and other pertinent information related to the study, planning, and management of the Town's water system are reviewed and incorporated into the system analysis. In addition, information from the University of Florida Bureau of Economic Business Research (BEBR), Florida Department of Environmental Protection (FDEP), and

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the St. Johns River Water Management District (SJRWMD) was also utilized to collaborate, coordinate, and analyze the Town's water system interests.

In general, the report focuses on water system capacity related to:

- Available raw water sources;
- System components, such as pumps, piping, treatment systems, etc.; and
- Applicable regulatory aspects of each to meet the Town's demands into the planning horizon.

The Environmental Protection Agency (EPA) defines water system capacity as "...the ability to plan for, achieve, and maintain compliance with applicable drinking water standards. Capacity has three components: technical, managerial, and financial. Adequate capability in all three areas is necessary for a system to have 'capacity'. Capacity refers to the capability of a system to remain viable over time. It is the ability to deliver water meeting applicable standards consistently over time, not just intermittently. Elements of capacity can be classified as technical, managerial, and financial. Technical capacity includes, but is not limited to: source water adequacy and condition of the infrastructure. Managerial capacity includes, but is not limited to: staffing, organization, and having the appropriate planning documents. Financial capacity includes, but is not limited to: credit worthiness, revenue sufficiency, and usage of proper accounting methods."[1] This Water System Master Plan (Plan) is limited to the "technical" aspects of capacity as listed above, and broadly provides a component of the "planning documents" for the "managerial" component. "Financial" aspects of the Water System are typically reviewed through rate studies, audits, etc.

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[1] New Water System Quality Development Planning Manual, FDEP April 2003

II. EXISTING WATER SYSTEM

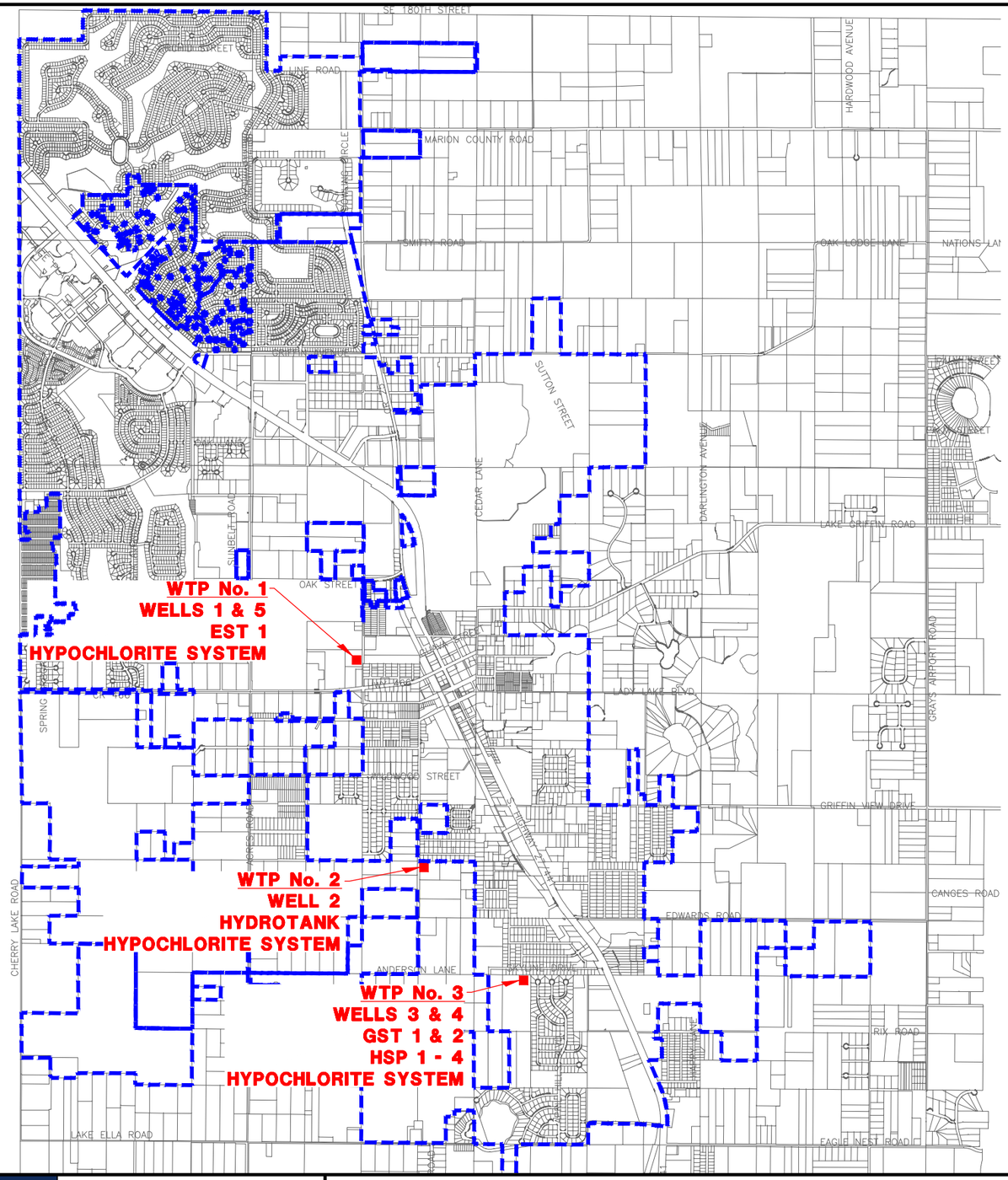
A. OVERVIEW

The Town owns and operates three (3) permitted water treatment facilities or plants ("WTPs") within their service area. The Town's "Service Area" is defined and discussed further in **Section IV**. Each of the three (3) WTPs utilize water from the Floridan Aquifer for "raw" water which is further treated to meet FDEP public water supply requirements. Each WTP has a numerical designation of WTP 1, WTP 2, and WTP 3. The locations of each WTP are shown within **Figure II-1** and further discussion on each WTP is provided herein.

Many of the water treatment facility aspects and associated design, planning, and permitting are based on maximum daily demands or flow ("MDF") in lieu of annual average daily flow ("AADF"). FDEP, pursuant to their Rule 62-655, Florida Administrative Code (F.A.C.), broadly states that water systems shall be capable of meeting maximum day demands with fire flow. In contrast, the SJRWMD permits, reviews, and regulates annual allocations of water use. In essence, FDEP is concerned with water quality and also infrastructure capabilities to meet worst-case demands while the SJRWMD is concerned with overall use and consumption of the resource.

For design purposes and throughout the Plan analysis, the coincident MDF and fire flow demands are considered the worst-case values to ensure potable water can be delivered to all parts of the distribution system while maintaining a 20 pounds per square inch (psi) residual pressure. Specific demand values related to the Town and projections thereof will be discussed further in the Plan, but existing facility information is provided further herein and references permitted capacities based on MDF values. A more specific review of the methodology utilized to review existing and future facility capabilities is provided in **Section II.B.,** and the Town's existing infrastructure is then analyzed in **Sections II.C.** and **II.D.**

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TOWN LIMITS AREA

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WTP LOCATION MAP

TOWN OF LADY LAKE
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Figure
II-1

J:\OrangePark\CAD Files\Lady Lake\9514411 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Water System\Fig. II-1 WTP Location Map.dwg, 2/23/2026 3:09:49 PM, Mike Lisena

B. WATER SYSTEM CAPACITY REVIEW METHODOLOGY

For purposes of the **Section II.C.** evaluation, the Town's WTP components were reviewed based on their capacity to deliver water to the distribution system or provide finished water storage in accordance with FDEP requirements. Generally, the review consists of any components that are part of the raw water ("groundwater") withdrawal/delivery system, treatment system, storage facilities, and finished water delivery system. For the Town's system each component is defined as follows:

- Groundwater Withdrawal/ Delivery System: Wells, pumps and motors.
- Treatment System: Not applicable since Town's treatment system is limited to chemical feed systems or traditional aerators at WTP3 GSTs.
- Storage Facilities: Elevated storage tank(s), ground storage tank(s), and hydro-pneumatic tank(s)
- Finished Water Delivery System: Pumps and motors

Each of these areas will be further defined in **Section II.C.** The Town's raw water delivery system is also its finished water delivery system at WTP 1 and WTP 2. This is not uncommon for older Florida communities due to the high quality raw water. As a result, the Town is only required to add chlorine to provide a disinfectant residual in the distribution system. Accordingly, an "elaborate" treatment system, such as treatment tanks, mixers, etc., is not required for the Town and is not a limiting component for water service.

The Town's chemical feed/injection systems are not linked to a system's firm capacity since they are comprised of relatively small systems such as metering pumps and chemical storage tanks. In addition, the size of the chemical feed systems are required to match the larger facility components such as wells and finished water pumps. While the chemical feed systems are a critical component

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of the water treatment process, they are typically designed and rated to meet/match the overall WTP firm capacity rating. Therefore, they are not a specific component limiting design capacity.

"Firm Capacity" will be defined in more detail for the Town's infrastructure. However, a working definition is the capability of a water system to meet the maximum day demand with coincident fire flow with the largest mechanical "unit" out of service. For example, the firm capacity of the raw water or finished water delivery systems will be defined as the capacity of the system to deliver water with the largest well and/or pump out of service. Storage is reviewed based on available volume. Generally, the FDEP rated capacity of a system should define the water system's firm capacity.

Water system review includes a number of references, but two of the most critical items associated with Firm Capacity include: (a) the Recommended Standards for Water Works, 2022 Edition ("10 State Standards"), referenced as part of FDEP Rule 62-555.330, F.A.C., and (b) FDEP Rule 62-555, F.A.C.

The 10 State Standards firm capacity requirements for the Town's water system components is summarized as follows:

- Ground water pumping sources (10 State Standards Section 3.2.1.1): The total developed groundwater source capacity, unless otherwise specified by the reviewing authority, shall equal or exceed the design maximum day demand with the largest producing well out of service.

- Finished water pumping sources (10 State Standards Section 6.3): At least two pumping units shall be provided. With any pump out of service, the remaining pump or pumps shall be capable of providing the maximum pumping demand of the system.

- Finished Water Storage (10 State Standards Section 7.0.1): Storage facilities should have sufficient capacity, as determined from engineering studies, to meet domestic demands, and where fire protection is provided, fire flow demands. In addition:

    - Fire flow requirements established by the appropriate state Insurance Services Office should be satisfied where fire protection is provided;

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- The minimum storage capacity (or equivalent capacity) for systems not providing fire protection shall be equal to the average daily consumption. This requirement may be reduced when the source and treatment facilities have sufficient capacity with standby power to supplement peak demands of the system; and

- Excessive storage capacity should be avoided to prevent potential water quality deterioration problems.

Additional requirements for each of the aforementioned components are further defined within Rule 62-555.320, F.A.C. The applicable requirements for each component is listed as follows:

- Ground water pumping sources (FDEP Rule 62-555.320(7)): At each raw surface water pumping station that is constructed or altered under a construction permit for which the Department receives a complete application on or after August 28, 2003, and that is connected to a community water system (CWS) serving, or designed to serve, 350 or more persons or 150 or more service connections, the supplier of water shall provide an installed or uninstalled standby pump of sufficient capacity to replace the largest pump. However, for CWSs that have multiple pumping stations subject to this requirement, the supplier of water may provide one uninstalled standby pump for each size of raw surface water pump installed in the water system instead of providing a standby pump on site at each raw surface water pumping station; and for CWSs that have only one pumping station subject to this requirement and that are designed to serve 10,000 or fewer persons, as many as three water systems located in the same county, or within 50 miles of one another, may enter into a mutual aid agreement to share one appropriately sized, uninstalled standby pump instead of providing a standby pump on site at each water system's raw surface water pumping station.

- Finished water pumping sources with elevated storage (FDEP Rule 62-555.320(7)(b)): **The total capacity of all high-service pumping stations connected to a water system shall be sufficient to at least meet the water system's maximum-day water demand (including design fire-flow demand if fire protection is being provided) and to maintain distribution system pressure**. In addition, the total capacity of the high-service pumping

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stations combined with the useful elevated finished-water storage capacity shall be sufficient to meet the water system's peak-hour water demand for at least four consecutive hours (and if fire protection is being provided, shall be sufficient to meet the water system's design fire-flow rate plus a background water demand equivalent to the maximum-day demand other than fire-flow demand for the design fire-flow duration). At each high-service or booster pumping station that is constructed or altered under a construction permit for which the Department receives a complete application on or after August 28, 2003, the supplier of water shall provide an installed or uninstalled standby pump of sufficient capacity to replace the largest pump. However, for CWSs that have multiple interconnected pumping stations subject to this requirement, the supplier of water may provide one uninstalled standby pump for each size of high-service or booster pump installed in the water system instead of providing a standby pump on site at each high-service or booster pumping station; and for water systems that have only one pumping station subject to this requirement and that are designed to serve 10,000 or fewer persons, as many as three water systems located in the same county, or within 50 miles of one another, may enter into a mutual aid agreement to share one appropriately sized, uninstalled standby pump instead of providing a standby pump on site at each water system's high-service or booster pumping station.

- Finished Water Storage (FDEP Rule 62-555.320(19)):

  (a) Except as noted in paragraph (b) below, the **total useful finished-water storage capacity (excluding any storage capacity for fire protection) connected to a water system shall at least equal 25 percent of the system's maximum-day water demand**, excluding any design fire-flow demand.

  (b) A total useful finished-water storage capacity less than that specified in paragraph (a) above is acceptable if the supplier of water or construction permit applicant makes one of the following demonstrations:

  - A demonstration consistent with Section 10.6.3 in *Water Distribution Systems Handbook* as incorporated into Rule 62-555.330, F.A.C., showing that the water system's total useful finished-water storage

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capacity (excluding any storage capacity for fire protection) is sufficient for operational equalization.

- A demonstration showing that, in conjunction with the capacity of the water system's source, treatment, and finished-water pumping facilities, the water system's total useful finished-water storage capacity (excluding any storage capacity for fire protection) is sufficient to meet the water system's peak-hour water demand for at least four consecutive hours.

For purposes of the Plan, the Town's Firm Capacity review is based on the following criteria:

- Groundwater Delivery Systems must have sufficient installed units to meet maximum day demand with the largest unit out of service;

- Finished Water Delivery Systems must have sufficient installed units to meet maximum day demand with coincident fire flow and the largest unit out of service; and

- Finished water storage shall be provided for a minimum of 25% of the maximum day demand plus 180,000 gallons to provide two (2) hours of residential fire flow protection at 1,500 gpm.

These criteria will be utilized throughout the Plan to analyze existing and future water system capabilities.

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C. EXISTING WATER TREATMENT SYSTEM REVIEW

Utilizing the criteria developed in **Section II.B.**, each of the Town's water treatment plants will be reviewed in specific detail to determine Firm Capacity of the Water System as well as define existing system characteristics.

1. **WTP 1:** WTP 1 is located on Clay Avenue just west of the existing Town Recreation Facilities. WTP consists of two wells, chlorination system, auxiliary power generator and a 150,000 gallon elevated steel water storage tank. WTP 1 has a Florida Department of Environmental Protection (FDEP) permitted design capacity of 1.163 MGD-MDF.

   WTP 1 includes Well 1 (1-1) and Well 5 (1-2). Well 1 (1-1) was originally constructed with the water plant, while Well 5 (1-2) was completed in 2024. Both wells are located at WTP 1 but are not designed to operate concurrently. Both wells are designed to provide 1,000 gpm of pumping capacity. The well drawdown at 1,000 gpm is approximately 13 feet. Due to the Floridan Aquifer's water quality, the Town is not required to aerate or provide any additional treatment beyond chlorination. Thus, Well 1 (1-1) and Well 5 (1-2) are raw water wells that also function as high service pumps to deliver water directly into the distribution system. Pressure transmitters and switches monitor the water level in the elevated tank and control the operation of the well based on operator adjustable operating levels.

   The chlorination equipment consists of a 165 gallon double walled sodium hypochlorite tank, which stores the disinfectant, and chemical metering pumps. Finished water is metered at each well head and those meters require calibration and certification every three (3) years in accordance with the Town's SJRWMD Permit Condition 15/21.

   The 150,000 gallon elevated water storage tank (EST 1) is located within 50 feet of Well 1 (1-1) and is one of the mechanisms that sustains pressure on the Town's distribution system. The tank is approximately 133 feet high and has a high and low water level approximately three (3) below the top of the tank and six (6) feet above the bottom of the tank, respectively. The tank and its supports are made of steel with protective coating. The elevated tank "floats on the system" because it is connected to the system with a "tee" connection and water can bypass the tank if system demands are high.

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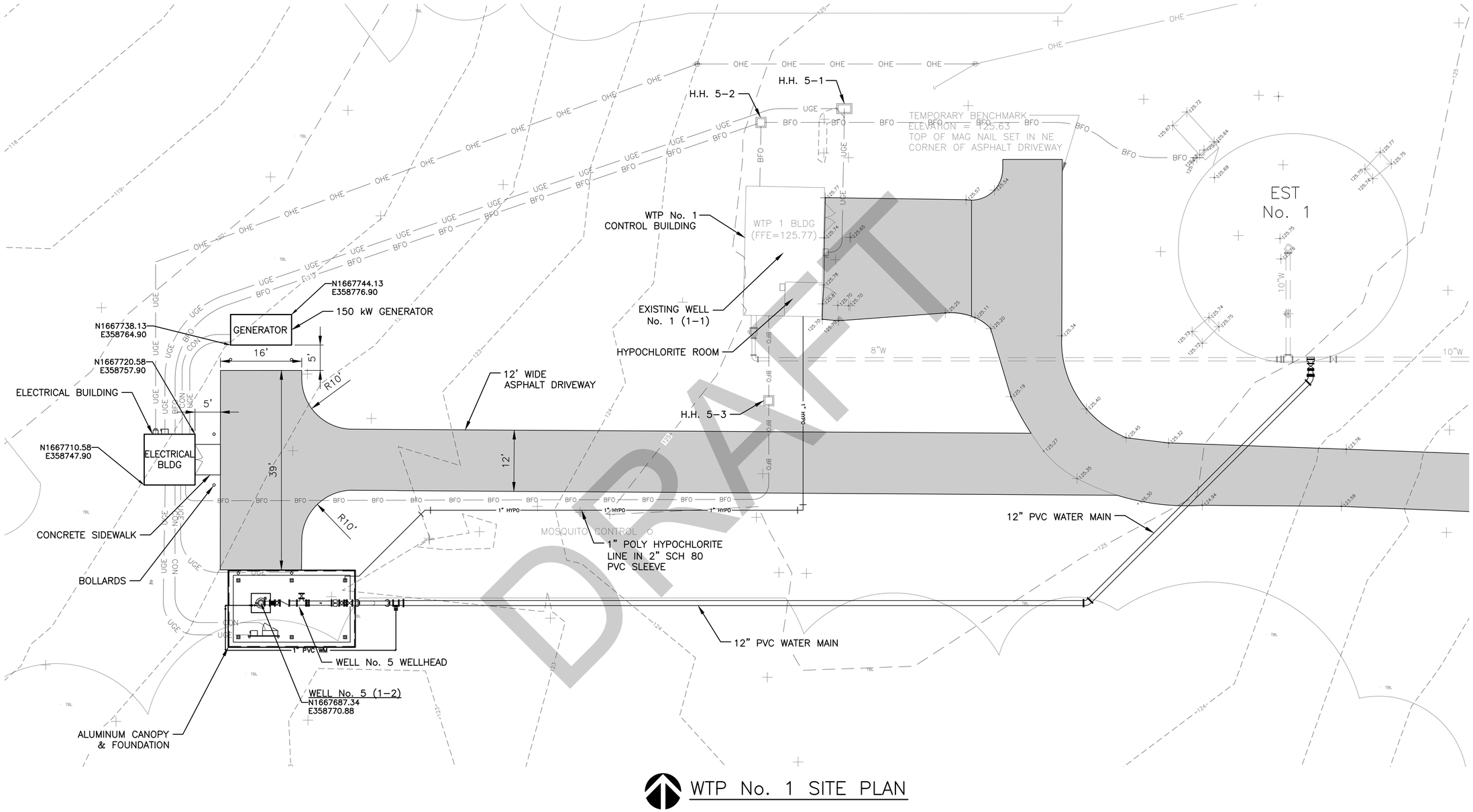
A summary of the WTP 1 facility components is provided as **Table II-1**.

TABLE II-1
WTP 1 FACILITY COMPONENT SUMMARY

Unit	Description
Well No. 1 (1-1) (Raw/Finished Water Pump)	Well Components include: • Well Total Depth: 312' (bls) • Well Casing Diameter: 12" • Well Surface Casing Depth: 189' (bls) • Well Capacity: 1,000 gpm (1.44 MGD) @ 250' TDH
Well No. 5 (1-2) (Raw/Finished Water Pump)	Well Components include: • Well Total Depth: 400' (bls) • Well Casing Diameter: 16" • Well Surface Casing Depth: 190' (bls) • Well Capacity: 1,000 gpm (1.44 MGD) @ 252' TDH
Chlorination System	Chlorination System includes: • One (1) 165-gallon Hypochlorite Storage Tanks • Two (2) 17 gpd Chemical Metering Pumps [Well 1] • Two (2) 17 gpd Chemical Metering Pumps [Well 5]
Instrumentation & Control System	Instrumentation & Control System includes: • One (1) 8-inch Turbine Meter [Well 1] • One (1) 10-inch Mag Meter [Well 5] • One (1) Chlorine Residual Analyzer • One (1) True line Chart Recorder • Telemetry/Control System
Auxiliary Power System	150 kW Diesel Generator with 1,050 gallon Double-Walled Diesel Fuel Tank
EST No. 1 (Finished Water Storage)	150,000 gallon Steel Elevated Storage Tank
WTP No. 1 (FDEP Permitted Capacity)	1.163 MGD (MDF)
WTP No. 1 (Operating Category & Class)	5C (see category and class rating requirements in Rule 62-699.310(4)(e), F.A.C.)

The WTP 1 site plan is provided as **Figure II-2,** while the process flow schematic is provided as **Figure II-3**.

DRAFT

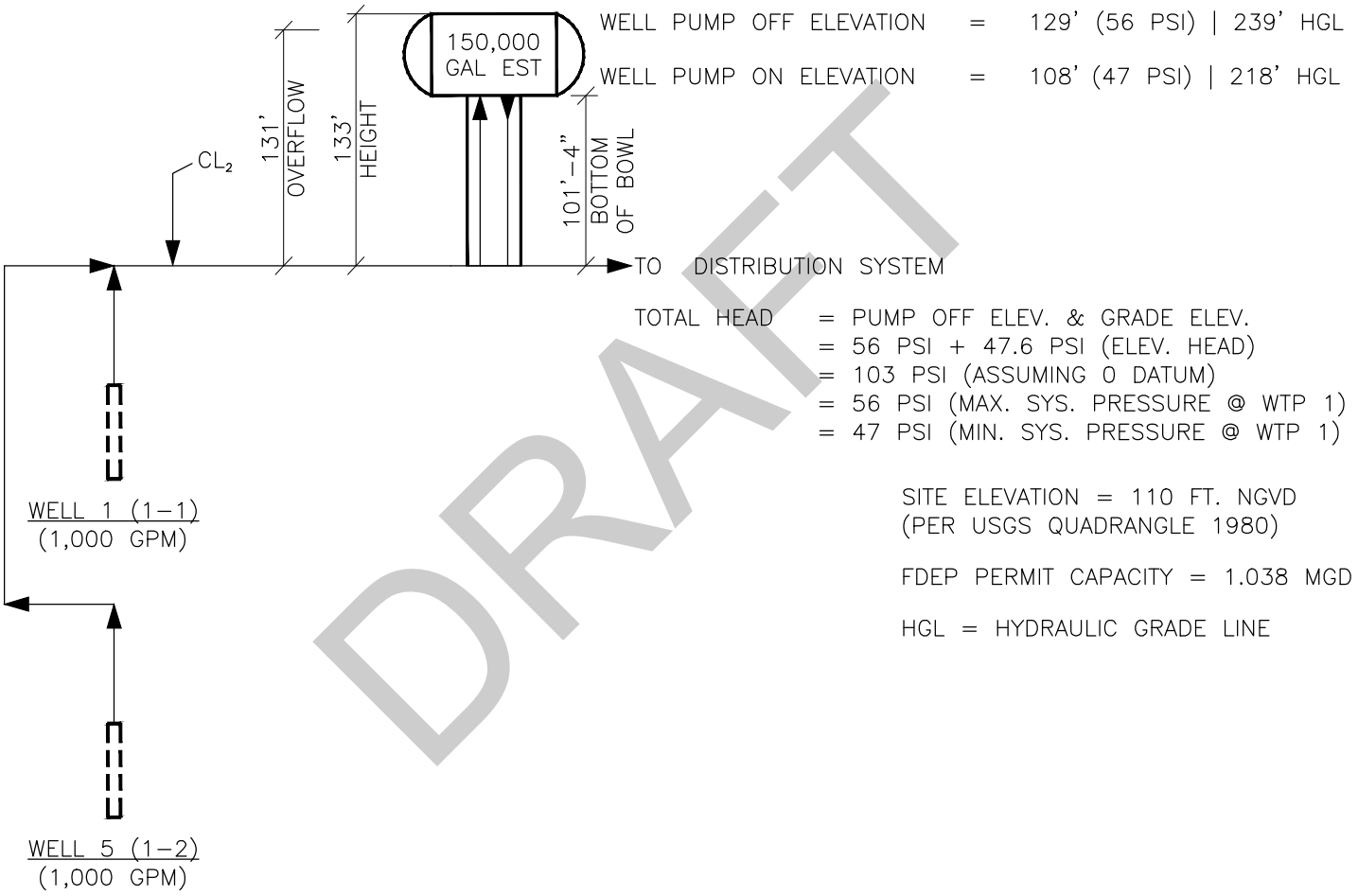


WTP No. 1 SITE PLAN

DRAFT

Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	***Building Stronger Communities Together***	WTP NO. 1 SITE PLAN
Drawn by:	MAL	Job No. 9514-41-1		**580-1 Wells Road**	TOWN OF LADY LAKE
Checked by:	JRS			**Orange Park, FL 32073**	Water System Master Plan
Approved by:	JRS	© 2026		**Ph: 904.278.0030**	Lake County, Florida
Scale:	1" = 10'				Figure **II-2**

J:\OrangePark\CAD Files\Lady Lake\9514411 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Water System\Fig. II-2 WTP 1 Site Plan.dwg, 1/15/2026 3:13:53 PM



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cph www.cphcorp.com	Designed by:	JRS	WTP NO. 1 PROCESS FLOW SCHEMATIC
	Drawn by:	MAL	
	Date:	JAN. 2026	TOWN OF LADY LAKE Water System Master Plan Lake County, Florida
	Job No.	9514-41-1	
	Scale:	N.T.S.	

FIGURE II-3

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J:\OrangePark\CAD Files\Lady Lake\9514411 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Water System\Fig. II-3 WTP 1 Process Flow Schematic.dwg, 1/12/2026 2:37:03 PM, Mike.Lisena

a. Historical Flow Review: As discussed previously, WTP 1 is currently designed and permitted to treat a total flow of 1.163 MGD (MDF). Currently, the maximum daily flow recorded at WTP 1 for 2022, 2023, 2024, and 2025 was: 0.730 MGD, 0.600 MGD, 0.594 MGD, and 0.737 MGD, respectively. Based on these historic flows the average maximum daily flow from WTP 1 has been 0.665 MGD which is 57% of the permitted capacity, while the 2025 MDF demand was 63% of the permitted capacity.

For purposes of this study, each WTP is reviewed individually and the total water treatment capacity, including the combined capacity of WTP 1, 2, and 3, is reviewed in **Section II.C.4.** The following subsections will review the treatment process for WTP 1.

A summary of recent average day flows from WTP 1 is provided in **Table II-2.**

TABLE II-2
2022 THRU 2025 WTP 1 ADF SUMMARY

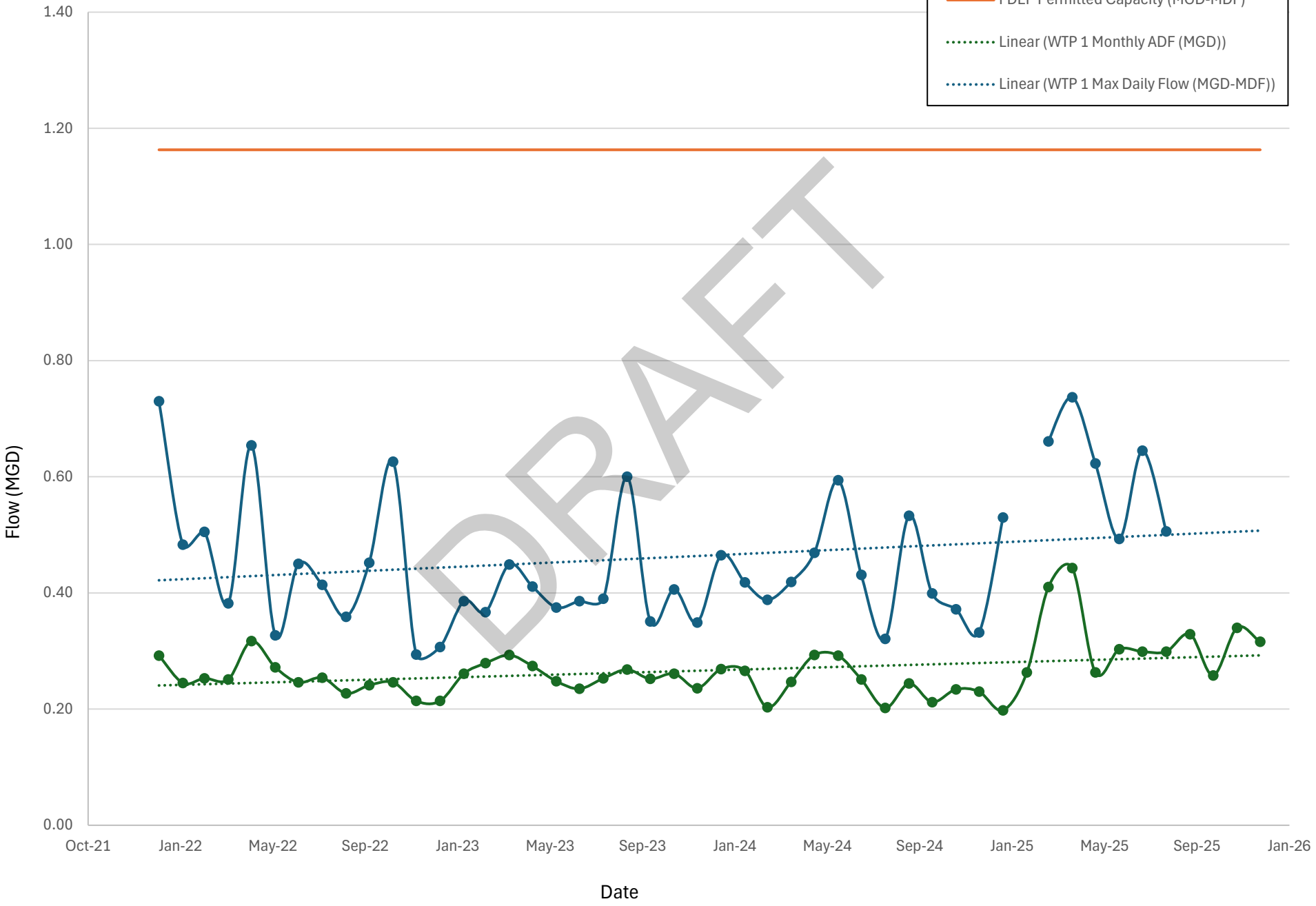
Month	2022 Average Daily Flows (MGD)	2023 Average Daily Flows (MGD)	2024 Average Daily Flows (MGD)	2025 Average Daily Flows (MGD)
January	0.292	0.214	0.269	0.198
February	0.245	0.261	0.266	0.263
March	0.253	0.279	0.203	0.410
April	0.251	0.293	0.247	0.443
May	0.317	0.274	0.293	0.263
June	0.272	0.248	0.292	0.303
July	0.246	0.235	0.251	0.299
August	0.254	0.253	0.202	0.299
September	0.227	0.268	0.244	0.329
October	0.241	0.252	0.212	0.258
November	0.246	0.261	0.234	0.340
December	0.214	0.236	0.230	0.316
AADF	**0.255**	**0.256**	**0.245**	**0.31**
MDF[a]	**0.730**	**0.600**	**0.594**	**0.737**
MDF/AADF[a]	**2.86**	**2.34**	**2.42**	**2.38**

a: Maximum daily flow is the largest daily demand during the noted year.

These historic flows are illustrated in **Figure II-4.**

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Town of Lady Lake
Water Master Plan
Client No. 9514-41-1
Figure II-4: WTP 1 January 2022 through December 2025 ADF, MDF, and FDEP Permitted Capacity



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b. Firm Capacity Overview: WTP 1 is comprised of the following major treatment components:

- Well pump and motor [Well 1 (1-1) and 5 (1-2)];
- Chlorination System; and an
- Elevated Storage Tank (EST 1).

A Firm Capacity review of the following WTP 1 components will be completed:

- Well 1 (1-1) and Well 5 (1-2)
- EST 1.

The system capacities are summarized as follows:

- Well 1 (1-1) Capacity = 1,000 gpm (1.44 MGD)
- Well 5 (1-2) Capacity = 1,000 gpm (1.44 MGD)
- EST 1 Capacity = 150,000 Gallons (Nominal)

The well pumping/HS pumping system capacity is derived based on the largest pump being out of service, which is calculated as follows:

Well/HS Pumping Firm Capacity =
Well Pump 1 (1-1) + Well Pump 5 (1-2)
= 1,000 gpm ~~+ 1,000 gpm~~
= 1,000 gpm (1.44 MGD)

In order to calculate firm capacity of the elevated storage tank, the criteria listed in **Section II.B.** will be reviewed. For this item, the FDEP criteria provided in Rule 62-555 is more restrictive than that provided in 10 State Standards. At a minimum, the rule requires for the water system to have 25% finished water storage of the system's maximum day demand excluding fire flow demands. However, fire flow review is not reviewed at each individual WTP, since all three WTPs are interconnected. Fire flow requirements will be reviewed based on the

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interconnected storage capacities. Therefore, the EST 1 capacity is calculated as follows:

Minimum Finished Water Storage Capacity (MG)	=	[0.25 * Max. Day Demand (MGD) * 1 Day]
Max. Day Demand (MGD)	=	(0.150 Million Gallons/(0.25*Day)
	=	0.6 MGD (MDF) [Nominal]

In summary, the WTP 1 firm capacity is 1.44 MGD (MDF), while the FDEP Permitted capacity is 1.163 MGD (MDF). The FDEP firm capacity basis is provided in **Attachment A**.

c. **Facility Needs:** Existing facilities, with use of laboratory areas at WTP 3, are adequate. The 2024 expansion project provided a redundant well [Well 5 (1-2)], separate electrical building, and replaced the aging diesel generator.

2. **WTP 2:** WTP 2 is located at the southeast corner of the Arlington Avenue and Shenandoah Avenue intersection, and has an FDEP permitted design capacity of 0.240 MGD (MDF). WTP 2 consists of: an 8-inch diameter well/high-service pump (Well 2), chlorination system, auxiliary generator, and a 10,000 gallon steel cylindrical tank (Hydro Tank 1). The components are housed in a concrete block building. Well 2 has a total depth of 419 feet (bls) and is cased with an 8-inch casing to a depth of 214 feet (bls). The Well 2 pumping capacity is 325 gpm (0.468 MGD) at a TDH of 240 feet (104 psi) utilizing a 40 horsepower vertical turbine pump and motor system. Due to the Floridan Aquifer's water quality, additional treatment is not required beyond chlorination. Thus, Well 2 is a raw water well and high service pump since it delivers water directly into the distribution system. Pressure switches monitor the water level in EST 1 and control the operation of Well 2 through the telemetry system. If needed, Hydro Tank 1 can be isolated or the compressor can be turned off and the finished water from Well 2 can be pumped directly into the distribution system. The finished water is metered by a turbine flow meter prior to discharge. The turbine flow meter is calibrated and certified every three

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years. The chlorination equipment consists of a 55 gallon sodium hypochlorite tank with chemical metering pumps. The auxiliary power is derived from a 50 KW Diesel Generator with a 275 gallon fuel storage tank.

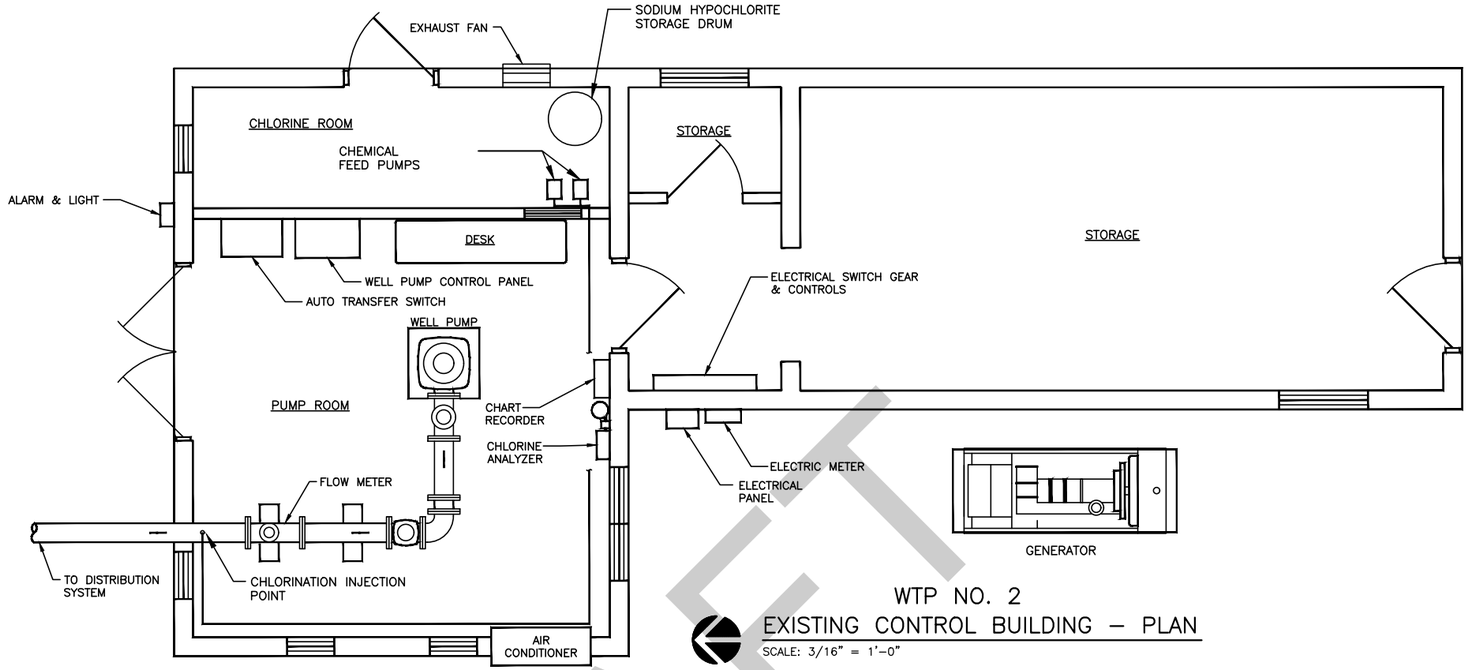
A summary of the WTP 2 facility components is provided as **Table II-3**.

TABLE II-3
WTP 2 FACILITY COMPONENT SUMMARY

Unit	Description
Well 2 (Raw/Finished Water Pump)	Well Components include: • Well Total Depth: 419' (bls) • Well Casing Diameter: 8" • Well Surface Casing Depth: 214' (bls) • Well Capacity: 325 gpm (0.468 MGD) @ 240' TDH
Chlorination System	Chlorination System includes: • Two (2) 55-gallon Hypochlorite Storage Tanks • Two (2) 17 gpd Chemical Metering Pumps
Instrumentation & Control System	Instrumentation & Control System includes: • One (1) 8-inch Turbine Finished Water Meter • One (1) Chlorine Residual Analyzer • One (1) True line Chart Recorder • Radio Telemetry Control from WTP No. 1
Auxiliary Power System	50 kW Auxiliary Generator with 250-gallon Steel Diesel Fuel Tank for Generator
Hydro Tank 1 (Finished Water Storage)	10,000 gallon
WTP 2 (FDEP Permitted Capacity)	0.240 MGD (MDF) or 167 gpm (MDF)
WTP 2 (Operating Class & Category)	5C (see category and class rating requirements in Rule 62-699.310(4)(e), F.A.C.)

The facility plan for WTP 2 is provided as **Figure II-5**, while the process flow schematic is provided as **Figure II-6**.

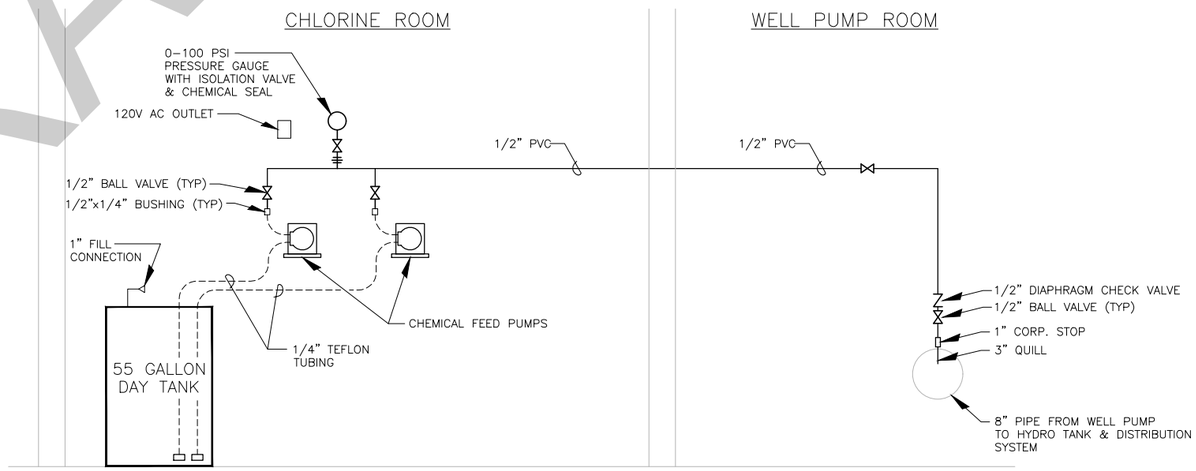
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WTP NO. 2
EXISTING CONTROL BUILDING – PLAN
SCALE: 3/16" = 1'-0"



LOCATION MAP
SCALE: 1" = 1000'

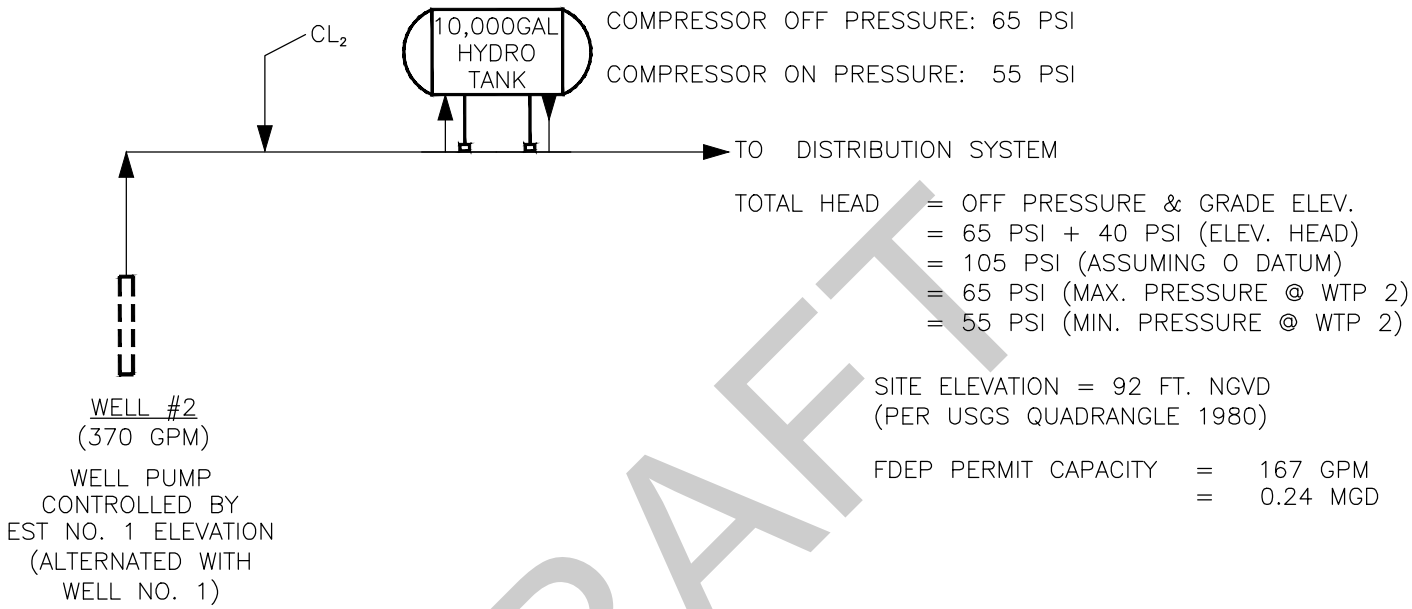


SODIUM HYPOCHLORITE (NaOCl) FEED SYSTEM – ELEVATION
N.T.S.

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Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	***Building Stronger Communities Together***	WTP NO. 2 FACILITY PLAN
Drawn by:	MAL	Job No. 9514-41-1		580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030	TOWN OF LADY LAKE Water System Master Plan Lake County, Florida
Checked by:	JRS				Figure II-5
Approved by:	JRS	© 2026			
Scale:	AS SHOWN				

J:\OrangePark\CAD Files\Lady Lake\95144411 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Water System\Fig. II-5 WTP 2 Facility Plan.dwg, 1/12/2026 2:38:29 PM, Mike.Lisena



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cph www.cphcorp.com	Designed by:	JRS	WTP NO. 2 PROCESS FLOW SCHEMATIC
	Drawn by:	MAL	
	Date:	JAN. 2026	TOWN OF LADY LAKE Water System Master Plan Lake County, Florida
	Job No.	9514-41-1	
	Scale:	N.T.S.	

FIGURE
II-6

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J:\OrangePark\CAD Files\Lady Lake\9514411 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Water System\Fig. II-6 WTP 2 Process Flow Schematic.dwg, 1/12/2026 2:40:06 PM, Mike.Lisena

a. Historical Flow Review: As discussed previously, WTP 2 is currently designed and permitted to treat a total flow of 0.240 MGD (MDF). Currently, the maximum daily flow recorded at WTP 2 for 2022, 2023, 2024, and 2025 was: 0.217 MGD, 0.209 MGD, 0.237 MGD, and 0.231 MGD, respectively. Based on these historic flows the average maximum daily flow from WTP 2 has been 0.224 MGD which is 93% of the permitted firm capacity. A summary of the average daily flows from WTP 2 are provided in **Table II-4**.

TABLE II-4

2022 THRU 2025 WTP 2 ADF SUMMARY

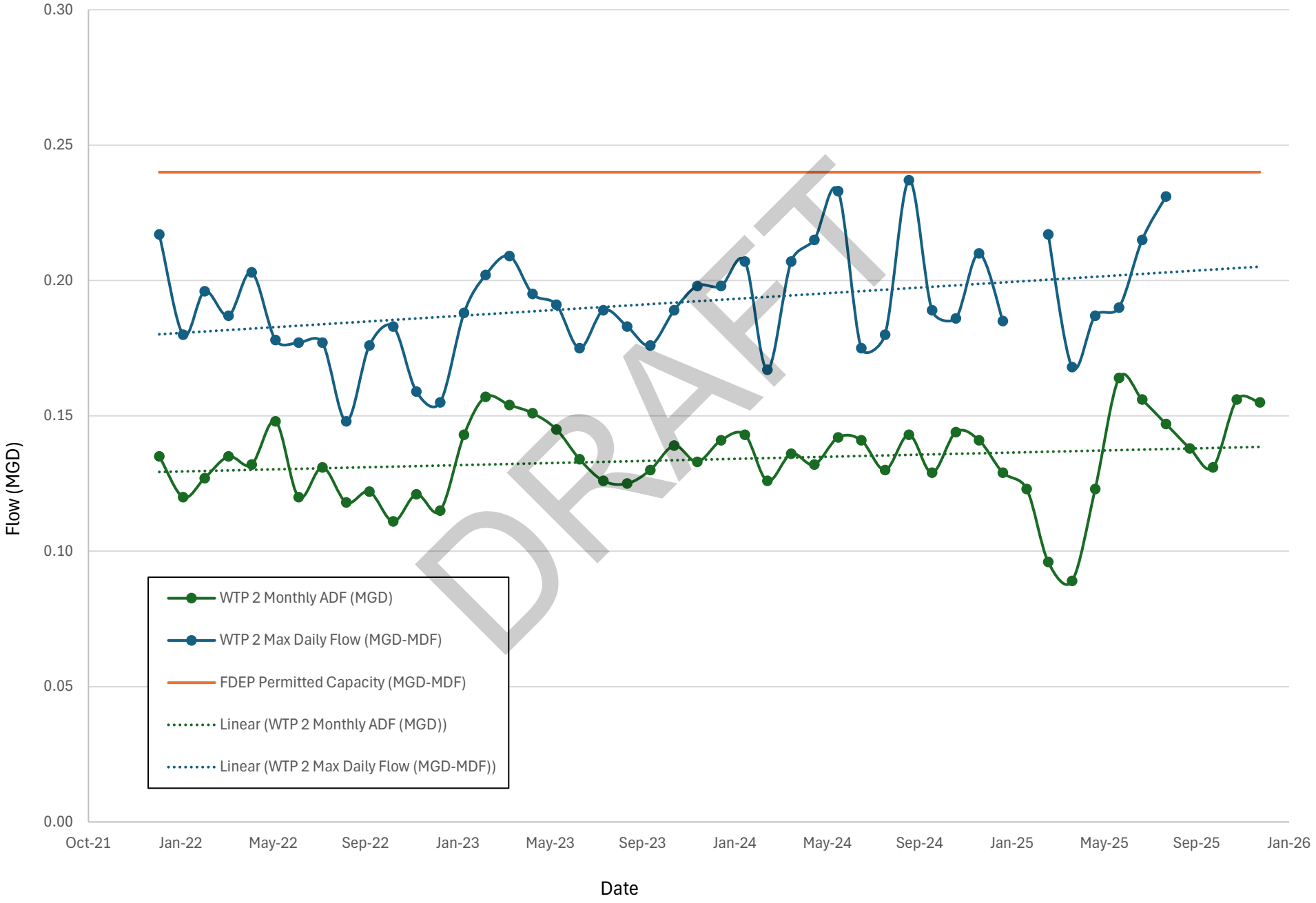
Month	2022 Average Daily Flows (MGD)	2023 Average Daily Flows (MGD)	2024 Average Daily Flows (MGD)	2025 Average Daily Flows (MGD)
January	0.135	0.115	0.141	0.129
February	0.120	0.143	0.143	0.123
March	0.127	0.157	0.126	0.096
April	0.135	0.154	0.136	0.089
May	0.132	0.151	0.132	0.123
June	0.148	0.145	0.142	0.164
July	0.120	0.134	0.141	0.156
August	0.131	0.126	0.130	0.147
September	0.118	0.125	0.143	0.138
October	0.122	0.130	0.129	0.131
November	0.111	0.139	0.144	0.156
December	0.121	0.133	0.141	0.155
Average	**0.127**	**0.138**	**0.137**	**0.134**
MDF[a]	**0.217**	**0.209**	**0.237**	**0.231**
MDF/AADF[a]	**1.71**	**1.51**	**1.73**	**1.72**

a: Maximum daily flow is the largest daily demand during the noted year.

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These historic flows are illustrated in **Figure II-7.**

Figure II-7: WTP 2 January 2022 through December 2025 ADF, MDF, and FDEP Permitted Capacity



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b. Firm Capacity Overview: WTP 2 is comprised of the following major treatment components:

- Well pump and motor (Well 2);
- Chlorination System; and
- Hydropneumatic Tank (Hydro Tank 1).

As summarized within **Section II.B.**, a firm capacity review of Well 2 and Hydro Tank 1 will be completed.

WTP 2 does not meet the redundancy requirements for pumping systems individually, but collectively WTP 2 with the other systems meet the requirement. A review of the connected systems will be discussed further in **Section II.C.4.** However, for this review, the capacity for each component of WTP 2 is defined as follows:

- Well 2 Capacity = 325 gpm (0.468 MGD)
- Hydro Tank 1 Capacity = 10,000 Gallons

In order to calculate firm capacity of Hydro Tank 1, the criteria listed in **Section II.B.** will be reviewed similar to that completed for EST 1. Therefore, the capacity is calculated as follows:

Minimum Finished Water Storage Capacity (MG) = 0.25 * Max. Day Demand (MGD) * 1 Day

Max. Day Demand (MGD) = 0.010 Million Gallons/0.25 Day
= 0.04 MGD (MDF)

Based on this analysis and notwithstanding the single well pumping system, the WTP 2 firm capacity would be limited to 0.04 MGD (MDF) limited by the finished water storage capacity. This limited rating applies to a system defined within limits of Well 2 with Hydro Tank No. 1. If WTP 2 only included a review of the well/high service pumping capacity, then the firm capacity would be zero since there is not a redundant well. However, the capacity of the well/high-service capacity is approximately

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325 gpm (0.468 MGD) which should be considered within future system ratings. A more defining discussion related to all the connected water treatment plants is provided in **Section II.C.4.**

In summary, the WTP 2 firm capacity is 325 gpm (0.468 MGD) with an FDEP permitted capacity of 0.240 MGD. FDEP's basis of review is provided in **Attachment B**.

c. Facility Needs: Existing facilities, with use of laboratory areas at WTP 3, are adequate.

Due to the limited capacity of this WTP, the Town does not have capital improvement plans beyond maintaining the existing system. As other system improvements occur, the Town may eliminate use of this well.

3. <u>WTP 3</u>: Water Treatment Plant 3 (WTP 3) is located at 150 Skyline Drive, and has an FDEP permitted capacity of 1.44 MGD (MDF). WTP 3 consists of: one 14-inch diameter well [Well 3 (3-1)], one 16-inch diameter well [Well 4 (3-2)], four high-service pumps, one chlorination system, two auxiliary generators, and two 400,000 gallon ground storage tanks with aerators.

The high-service pumps, chlorination system, and generator are housed in a concrete block building (WTP 3 Bldg), located adjacent to Well 3 (3-1).

Well 4 (3-2) was constructed in 2024 and cleared for service to provide additional capacity and redundancy. Well 4 (3-2) is approximately 1,000 feet south of Well 3 (3-1) and includes a slab on grade with protective canopy. A pre-cast concrete electrical building is located adjacent to Well 4 (3-2) and houses the electrical gear. A separate diesel generator provides back-up power for Well 4 (3-2) operations.

Well 3 (3-1) total depth of 419 feet (bls) and is cased with a 14-inch diameter casing to a depth of 214 feet (bls). The Well 3 (3-1) capacity is 1,000 gpm (1.44 MGD) at a TDH of 156 feet (68 psi). Well 4 (3-2) has total depth of 400 feet (bls) an has a 16-inch diameter casing to a depth of 200 feet (bls). Well 4 (3-2) capacity is 1,200 gpm (1.73 MGD) at a TDH of 170 feet (74 psi).

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Under normal operation, water is pumped from the wells to the aerators located above the ground storage tanks prior to being pumped into the distribution system by the high-service pumps. Each high-service pump is rated at 500 gpm (0.720 MGD). Operation of the pumps is based on the level of EST 1, or local pressure transmitters, and controlled through the telemetry system. Each well is metered and calibrated/certified every three years.

The chlorination equipment consists of two (2) 250 gallon hypochlorite storage tanks with chemical metering pumps dedicated to each production well.

A summary of the WTP 3 facility components are provided as **Table II-5**.

TABLE II-5

WTP 3 FACILITY COMPONENT SUMMARY

Unit	Description
Well 3 (Raw/Finished Water Pump)	Well Components include: • Well Total Depth: 419’ (bls) • Well Casing Diameter: 14” • Well Surface Casing Depth: 214’ (bls) • Well Capacity: 1,000 gpm (1.44 MGD) @ 156' TDH
Well 4 (Raw/Finished Water Pump)	Well Components include: • Well Total Depth: 400’ (bls) • Well Casing Diameter: 16” • Well Surface Casing Depth: 200’ (bls) • Well Capacity: 1,200 gpm (1.73 MGD) @ 170' TDH
Chlorination System	Chlorination System includes: • Two (2) 250-gallon Hypochlorite Storage Tanks • Three (3) 3.8 gph Chemical Metering Pumps to Well 3 or HS Pump Suction piping • Two (2) 3.8 gph Chemical Metering Pumps to Well 4
Instrumentation & Control System	Instrumentation & Control System includes: • One (1) 8-inch Turbine Meter [Well 3] • One (1) 10-inch Mag Meter [Well 4] • One (1) Chlorine Residual Analyzer • One (1) True line Chart Recorder • Telemetry System • Pressure Transmitter with Mercoid Switches as Telemetry Back-up System

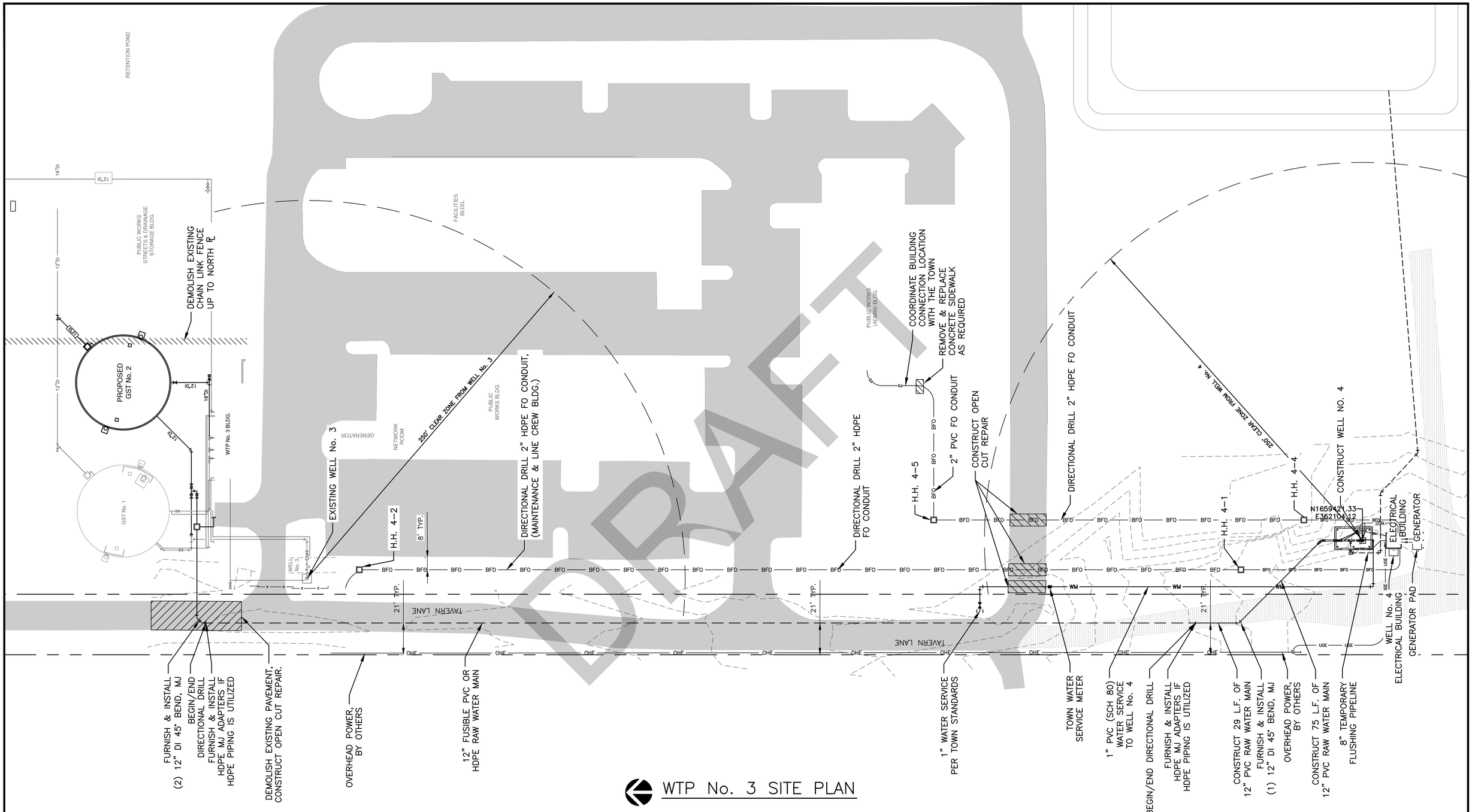
DRAFT

TABLE II-5 WTP 3 FACILITY COMPONENT SUMMARY	
Unit	**Description**
WTP Bldg 3 Auxiliary Power System	250 kW Auxiliary Generator with 2,000-gallon Steel Diesel Fuel Tank for Generator
Well No. 4 Auxiliary Power System	150 kW Auxiliary Generator with 1,050-gallon Steel Diesel Fuel Tank for Generator
GST Tank No. 1 (Finished Water Storage)	400,000 gallon
GST Tank No. 2 (Finished Water Storage)	400,000 gallon
WTP No. 3 (FDEP Permitted Capacity)	1.44 MGD (MDF) or 1,000 gpm (MDF)
WTP No. 3 (Operating Class & Category)	5C (see category and class rating requirements in Rule 62-699.310(4)(e), F.A.C.)

The current site plan for WTP 3 is provided as **Figures II-8** and **II-9** while the process flow schematic is provided as **Figure II-10**.

a. Historical Flow Review: As discussed previously, WTP 3 is currently designed and permitted to treat a total flow of 1.440 MGD (MDF). Currently, the maximum daily flow recorded at WTP 3 for 2022, 2023, 2024, and 2025 was: 0.749 MGD, 0.781 MGD, 0.937 MGD, and 0.847 MGD, respectively. Based on these historic flows, the average maximum daily flow from WTP 3 has been 0.829 MGD, which is 58% of the permitted firm capacity.

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WTP No. 3 SITE PLAN

Designed by:	JRS	Date: JAN. 2026
Drawn by:	MAL	Job No. 9514-41-1
Checked by:	JRS	
Approved by:	JRS	© 2026
Scale:	1" = 30'	

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Orange Park, FL 32073
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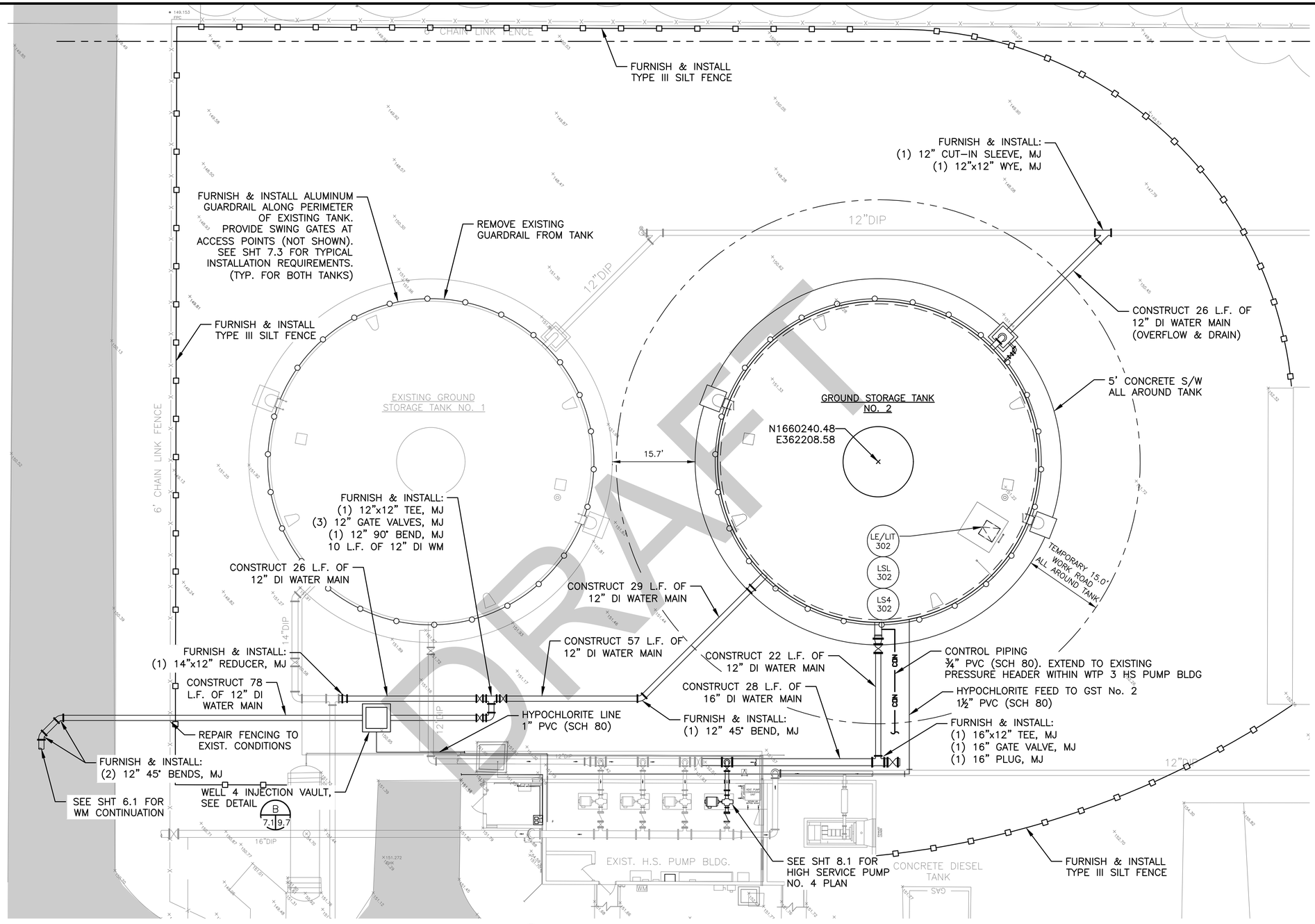
WTP NO. 3 SITE PLAN

TOWN OF LADY LAKE
Water System Master Plan
Lake County, Florida

Figure
II-8

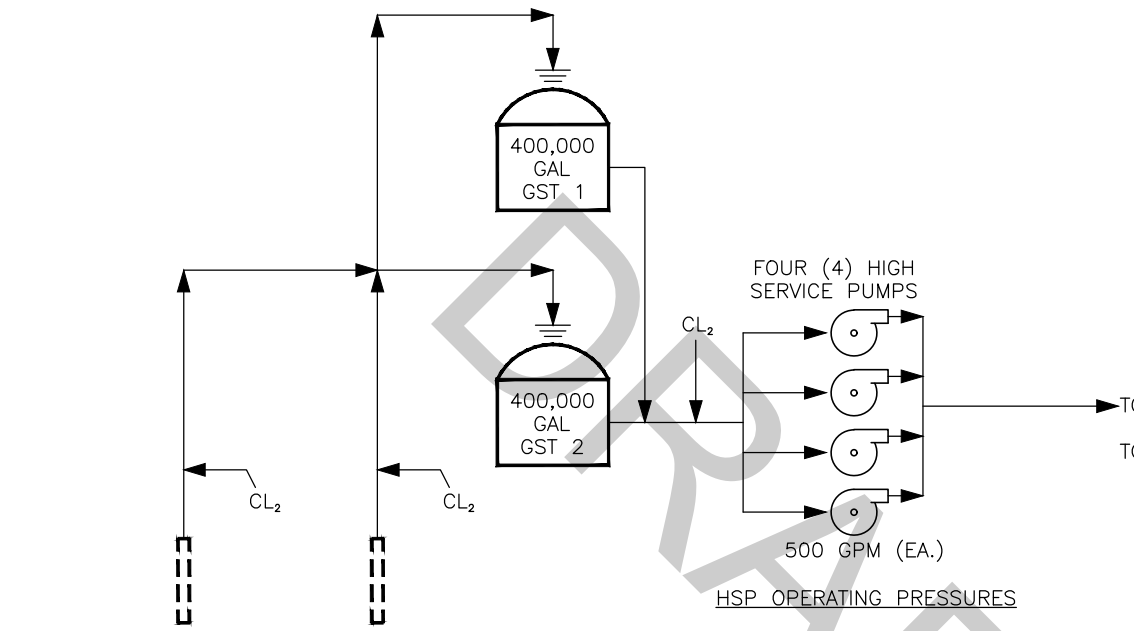
J:\OrangePark\CAD Files\Lady Lake\9514411 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Water System\Fig. II-8 WTP 3 Site Plan.dwg, 1/12/2026 2:43:09 PM

J:\OrangePark\CAD Files\Lady Lake\9514411 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Water System\Fig. II-9 WTP 3 Facility Plan.dwg, 1/12/2026 3:14:18 PM



WELL 4 SITE PLAN

Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	*Building Stronger Communities Together*	WELL 4 SITE PLAN
Drawn by:	MAL	Job No. 9514-41-1		580-1 Wells Road Orange Park, FL 32073 Ph: 904.278.0030	TOWN OF LADY LAKE Water System Master Plan Lake County, Florida
Checked by:	JRS				Figure II-9
Approved by:	JRS	© 2026			
Scale:	1" = 30'				



TOTAL HEAD = LEAD OFF & SITE ELEV.
= 49.5 PSI + 66 PSI
= 115 PSI (ASSUMING 0 DATUM)
= 49.5 PSI (MAX. PRESSURE @ WTP NO. 3)
= 26.0 PSI (MIN. PRESSURE @ WTP NO. 3)

SITE ELEVATION = 152.50 FT. NGVD

FDEP PERMIT CAPACITY = 1.44 MGD

HSP OPERATING PRESSURES

LEAD ON: 37.5 PSI
LEAD OFF: 49.5 PSI

LAG#1 ON: 32 PSI
LAG#1 OFF: 36 PSI

LAG#2 ON: 26 PSI
LAG#2 OFF: 32 PSI

LAG#3 ON: 24 PSI
LAG#3 OFF: 32 PSI

HSP OPERATING PRESSURES
RELAYED FROM WTP NO. 1
TELEMETRY SYSTEM

WELL OPERATING PARAMETERS

WELL PUMPS CONTROLLED BY LEVELS IN GST

WELL PUMP ON: 9'-0" ELEVATION IN GST
WELL PUMP OFF: 18'-9" ELEVATION IN GST
(AS REQUIRED BY "CT STUDY" FOR CONTACT TIME
TO DISABLE POTENTIAL VIRUS & GIARDIA PER
RULE 62-655, F.A.C.)
PUMPS ALTERNATE SERVICE

DRAFT

WTP NO. 3 PROCESS FLOW SCHEMATIC

TOWN OF LADY LAKE
Water System Master Plan
Lake County, Florida

Designed by:	JRS
Drawn by:	MAL
Date:	JAN. 2026
Job No.	9514-41-1
Scale:	N.T.S.

FIGURE II-10

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The average daily flows for WTP 3 are summarized in **Table II-6**.

TABLE II-6
2022 THRU 2025 WTP 3 ADF SUMMARY

Month	2022 Average Daily Flows (MGD)	2023 Average Daily Flows (MGD)	2024 Average Daily Flows (MGD)	2025 Average Daily Flows (MGD)
January	0.432	0.496	0.454	0.588
February	0.510	0.466	0.488	0.547
March	0.451	0.479	0.589	0.430
April	0.506	0.479	0.583	0.509
May	0.468	0.432	0.566	0.547
June	0.453	0.442	0.506	0.496
July	0.436	0.419	0.426	0.451
August	0.449	0.468	0.480	0.495
September	0.417	0.465	0.423	0.518
October	0.479	0.466	0.506	0.547
November	0.466	0.463	0.508	0.466
December	0.505	0.456	0.518	0.449
Average	**0.464**	**0.461**	**0.504**	**0.504**
MDF[a]	**0.749**	**0.781**	**0.937**	**0.847**
MDF/AADF[a]	**1.61**	**1.69**	**1.86**	**1.68**

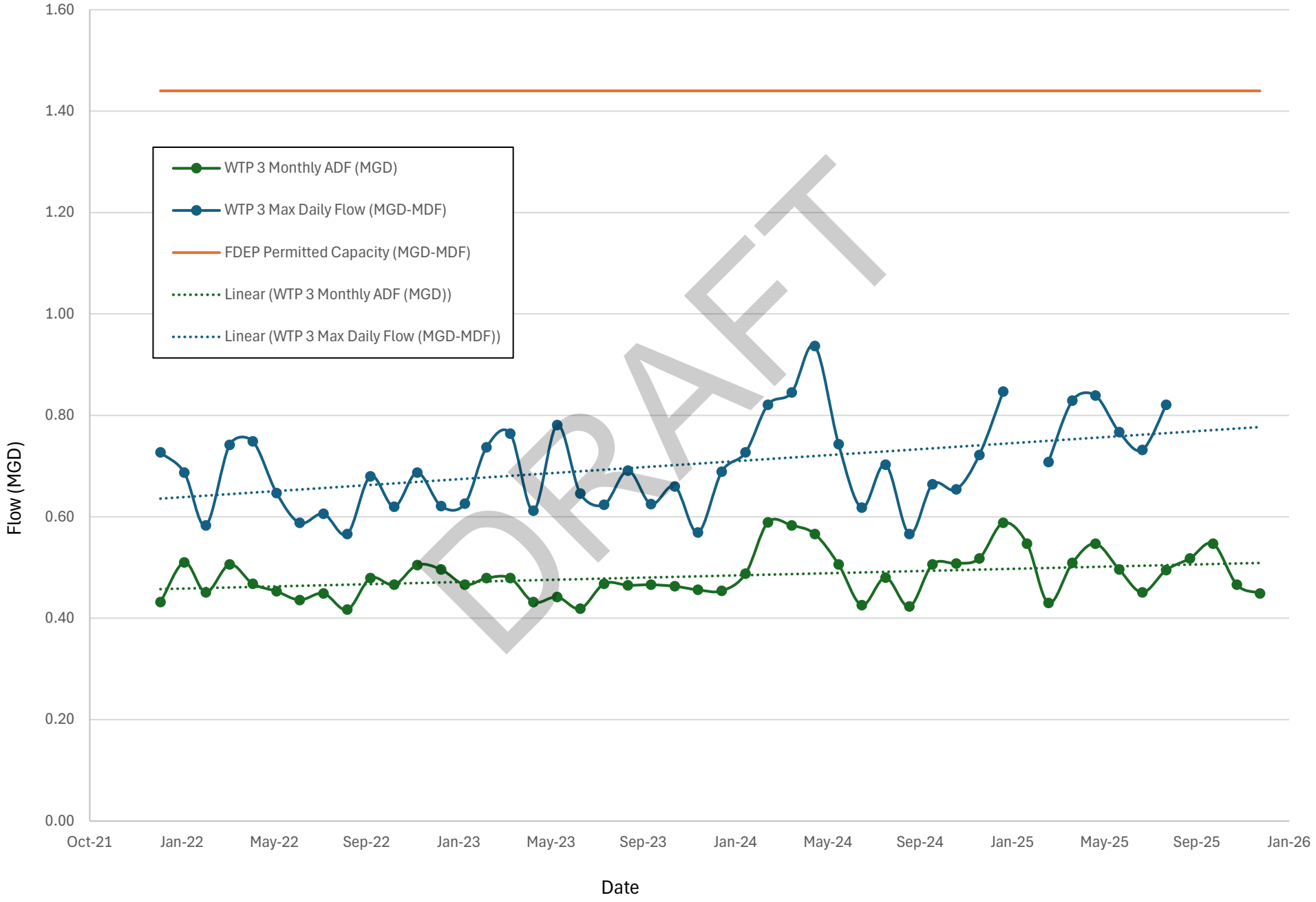
a: Maximum daily flow is the largest daily demand during the noted year.

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These historic flows are illustrated in **Figure II-11.**

b. Firm Capacity Overview: The WTP 3 treatment train includes a ground storage tank between the well and high service pumps, which differs from the Town's other two WTPs. This allows for additional redundancy by more easily allowing expansion of groundwater and finished-water delivery systems. In addition, more efficient pumping systems can be selected since the well system is limited to ground

Figure II-11: WTP 3 January 2022 through December 2025 ADF, MDF, and FDEP Permitted Capacity



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storage pumping and does not have to maintain the distribution system pressure, thus high service pumps can be selected to maintain varying system pressures.

WTP 3 is comprised of the following major treatment components:

- Two (2) Well pumps and motors [Well 3 (3-1) and No. 4 (3-2)];
- Two (2) 400,000 Gallon Ground Storage Tanks [GST 1 (3-1) and 2 (3-2.];
- Four (4) high-service pumps and motors [HS Pump 1 - 4];
- One (1) Chlorination System.

As summarized within **Section II.B.**, a firm capacity review of: Well 3 (3-1), Well 4 (3-2), GST 1 (3-1), GST 2 (3-2), HS Pump 1 (3-1), HS Pump 2 (3-2), HS Pump 3 (3-3), HS Pump 4 (3-4) will be completed. The capacity for each WTP 3 component is defined as follows:

- Well 3 (3-1) Capacity = 1,000 gpm (1.44 MGD)
- Well 4 (3-2) Capacity = 1,200 gpm (1.73 MGD)
- HS Pump 1 - 4 Capacity = 500 gpm/each (0.72 MGD/each)
- GST 1 (3-1) and 2 (3-2) Capacity = 400,000 Gallons/each [Nominal]
  = 415,000 Gallons/each [Operational]

In order to calculate firm capacity of the well and high service pumping systems, the capacity is derived based on the largest pump being out of service. The following calculations summarize the firm capacity basis:

Well Pumping Firm Capacity = Well 3 (3-1) + Well 4 (3-2) (Offline)
= 1,000 gpm + ~~1,200 gpm~~
= 1,000 gpm (1.44 MGD)

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HS Pumping Firm Capacity = HS Pump 1 (3-1) + HS Pump 2 (3-2) + HS Pump 3 (3-3) + HS Pump 4 (3-4) (Offline)
= 500 gpm + 500 gpm + 500 gpm + ~~500 gpm~~
= 1,500 gpm (2.16 MGD)

Similar to WTP 1 and 2, the finished water storage capacity will be calculated based on GST 1 plus GST 2. Utilizing the criteria listed in **Section II.B.**, the capacity of the storage facilities, with fire flow storage, is calculated as follows:

Minimum Finished Water Storage Capacity (MG) = [0.25 * Max. Day Demand (MGD) * 1 Day] + 180,000 gallons (Fire Flow Storage)

Max. Day Demand (MGD) = (GST 1 + GST 2 - 180,000 gallons)/(0.25*Day)

= (0.400 MG + 0.400 MG - 0.180 MG)/0.25*Day

= 2.48 MGD (MDF) [Nominal]

Based on this analysis, the WTP 3 firm capacity would be limited to 1.44 MGD (MDF) limited by the raw water pumping capacity, but can be mitigated by providing an emergency connection from the Town's distribution system to the WTP 3 ground storage tanks. A more defining discussion related to all the connected water treatment plants is provided in **Section II.C.4.** In summary, the WTP 3 component capacity is listed as follows:

- Well Firm Capacity = 1,000 gpm (1.44 MGD)
- High Service Capacity = 1,500 gpm (2.16 MGD)
- Storage Capacity = 800,000 Gallons (2.48 MGD)

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c. Facility Needs: Another GST could be added in the future to improve storage capacity, and an emergency interconnect from the distribution system to the ground storage tanks would be beneficial to provide further redundancy to Well 3 and Well 4 operations. Further, the existing high service pumps could be replaced with 750 gpm units to further increase the system's capacity.

4. <u>Collective Water Treatment System Firm Capacity</u>: The previous sections have reviewed the individual water treatment components and their individual "firm" capacities. The following analysis will review the total firm capacity of the connected system and compare those results against that of the sum of the individual components. To summarize the previous analysis, **Table II-7** illustrates the current FDEP rated capacity for each W, along with the individual "firm capacity" review completed in the preceding sections.

TABLE II-7
FDEP WTP PERMIT CAPACITY VS. INDIVIDUAL FIRM CAPACITY[a]

WTP	FDEP Rated Capacity (MDF)	Firm Capacity Review[a] (MDF)
WTP No. 1	1.163 MGD	1.44 MGD[b]
WTP No. 2	0.240 MGD	0.468 MGD
WTP No. 3	1.440 MGD	1.44 MGD
Sum:	**2.843 MGD**	**3.348 MGD**

a: WTP 2 firm capacity is the rated well capacity without mechanical redundancy.
b: EST Capacity not included.

Utilizing the criteria summarized in **Section II.B.** and applying those criteria to the entire water treatment system, the collective water treatment plant infrastructure will be reviewed to determine a total firm capacity of the system. First, the groundwater firm capacity will be reviewed followed by the finished-water pumping capacity and finalized with the finished-water storage capacity as it relates to meeting the maximum day demands with fire flow per rule. The groundwater delivery systems are reviewed as follows:

Well Firm Capacity = $\sum$ of Well Pumping Capacity with largest out of service
= $\sum$ Well 1 (1-1) + Well 2 + Well 3 (3-1) + ~~Well 4 (3-2)~~ + Well 5 (1-2) (can't run concurrently with Well 1)

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= ∑ 1,000 gpm (Well 1-1) + 325 gpm (Well 2) + 1,000 gpm (Well 3-1) + ~~1,200 gpm (Well 3-2)~~ + ~~1,000 gpm (Well 1-2)~~

= 2,325 gpm (3.35 MGD)

The high-service firm capacity is reviewed in a similar method and is detailed as follows:

High-Service Firm Capacity = ∑ of High-Service Pumping Capacity with largest out of service

= ∑ Well 1 + Well 2 + ~~Well 5~~ + HS Pump 1 + HS Pump 2 + HS Pump 3 + HS Pump 4

= ∑ 1,000 gpm (Well 1) + 325 gpm (Well 2) + ~~1,000 gpm (Well 5)~~ + 500 gpm (HS Pump 1) + 500 gpm (HS Pump 2) + 500 gpm (HS Pump 3) + ~~500 gpm (HS Pump 4)~~

= 2,825 gpm (4.07 MGD)

Utilizing the criteria listed in **Section II.B.** and the aforementioned <u>nominal</u> storage capacities, the applicable firm capacity of the storage facilities is calculated as follows:

Minimum Finished Water Storage Capacity (MG) = [0.25 * Max. Day Demand (MGD) * 1 Day] + 180,000 Gallons

Max. Day Demand (MGD) = [(EST 1 + GST 1 (3-1) + GST 2 (3-2)) - 180,000 Gallons] /0.25 Day

= [(0.150 MG + 0.400 MG + 0.400 MG) - 0.180 MG]/0.25 Day

= 3.08 MGD (MDF)

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Based on this analysis, the individual component firm capacity is summarized as follows:

- Raw Water Firm Capacity = 2,325 gpm (3.35 MGD)
- High Service Firm Capacity = 2,825 gpm (4.07 MGD)
- Storage Capacity = 950,000 Gallons (3.08 MGD)

Pursuant to this analysis, the limiting component is the Town's storage capacity limiting the system capacity to 3.08 MGD (MDF). The summary of the information provided in **Table II-7** will now be updated to include the system-wide analysis. **Table II-8** summarizes the various capacity analyses.

TABLE II-8

FDEP WTP PERMIT CAPACITY, INDIVIDUAL FIRM CAPACITY[a] & SYSTEM-WIDE FIRM CAPACITY

WTP	FDEP Rated Capacity (MDF)	Individual WTP Firm Capacity Review[a] (MDF)	System-wide Firm Capacity Review[e] (MDF)
WTP 1	1.163 MGD	1.440 MGD[b]	n/a[b]
WTP 2	0.240 MGD	0.468 MGD	n/a
WTP 3	1.44 MGD	1.440 MGD	n/a
Sum:	**2.843 MGD**	**3.348 MGD**	**3.08 MGD**

a: Storage capacity not included.

From a practical perspective, we believe the System-wide Firm Capacity analyzed and calculated herein is more accurate regarding actual, on-line facility capabilities. The values per system component will be utilized going forward as planning for the Town's infrastructure improvements. In sum, the Town is limited first by their storage capacity then by raw water pumping capacity then high-service pumping capacities. The FDEP within Rule 62-555.320(6), FAC states that the "...total capacity of all water source and treatment facilities connected to a water system shall at least equal the water system's design maximum-day water demand (including design fire-flow demand if fire protection is being provided)." For purposes of this Study, the Town's existing system capacity will be defined as 3.08 MGD limited by the Town's finished water storage capacity.

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Utilizing this information along with the historical flow data, **Table II-9** presents a summary of annual average daily flows for each WTP along with the maximum daily flow for each year per WTP. In addition, a column is provided denoting the System-wide Firm Capacity.

TABLE II-9

HISTORIC WATER SYSTEM DEMANDS WITH FIRM CAPACITY

Year	WTP 1		WTP 2		WTP 3		AADF Sum (MGD)	Firm Capacity (MGD-MDF)
	AADF (MGD)	MDF (MGD)	AADF (MGD)	MDF (MGD)	AADF (MGD)	MDF (MGD)		
2022	0.255	0.730	0.127	0.217	0.464	0.749	0.846	3.08
2023	0.256	0.600	0.138	0.209	0.461	0.781	0.855	3.08
2024	0.245	0.594	0.137	0.237	0.504	0.937	0.886	3.08
2025	0.316	0.737	0.129	0.231	0.502	0.847	0.947	3.08
Avg	**0.268**	**0.665**	**0.133**	**0.224**	**0.483**	**0.829**	**0.884**	**3.08**

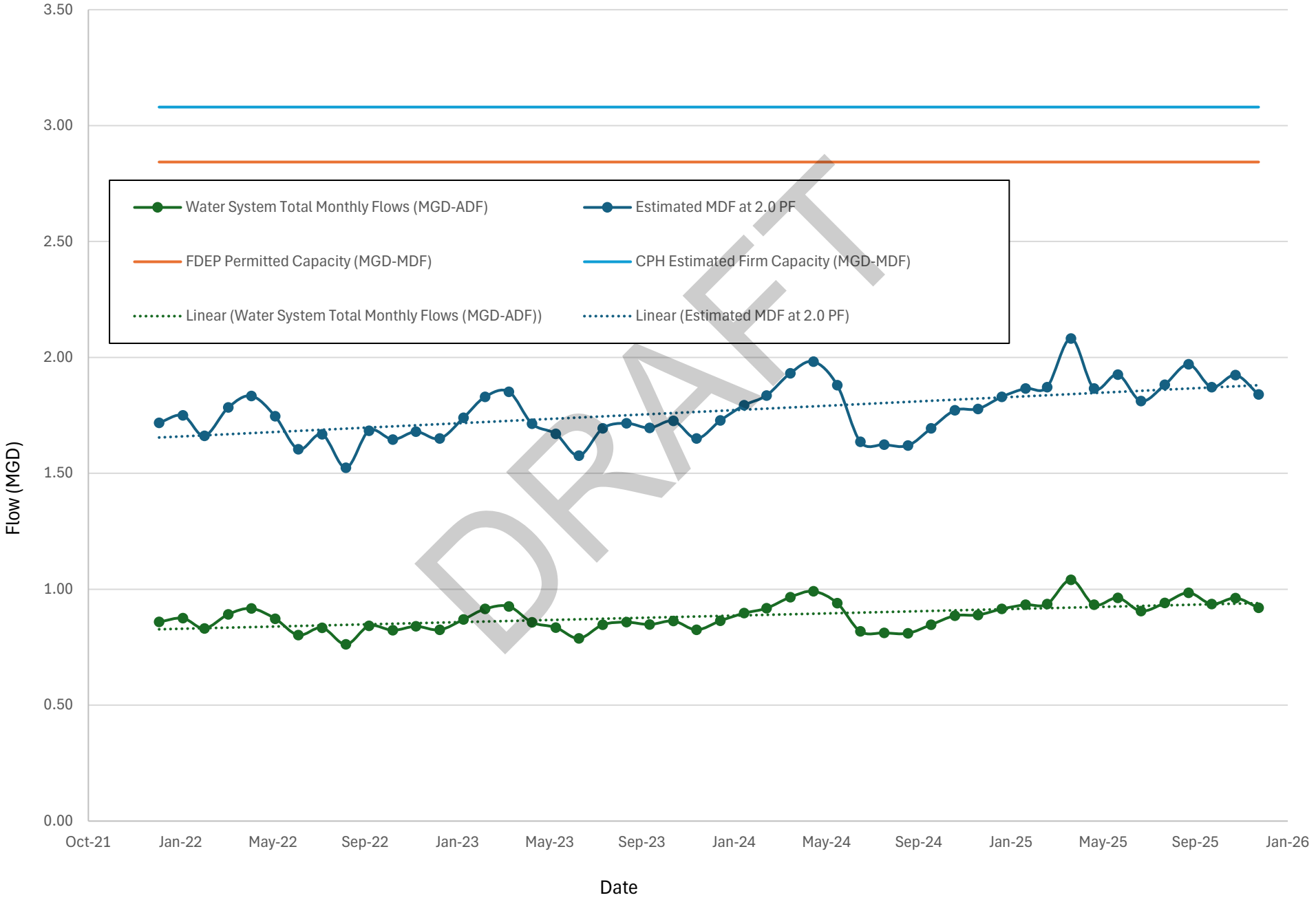
The data for each WTP is tracked separately, so the maximum day demands do not necessarily correlate to the system-wide maximum day demand. In order to approximate the system's MDF, the largest MDF value from one of the WTPs will be utilized in combination with the average flow from the remaining WTPs. Thus, the MDF for the system is considered 0.937 MGD (WTP 3 maximum MDF) plus 0.133 MGD (WTP 2 AADF), and 0.268 MGD (WTP 1 AADF), resulting in a system-wide MDF of 1.34 MGD. Converting this into a peaking factor, the maximum day demand would be 1.5 (1.34 MGD/0.884 MGD), which is less than the individual peaking factors reviewed with each WTP and typical planning values. For future planning purposes and the individual MDF factors reviewed for each respective WTP, a peaking factor of 2.0 will be utilized, which is an industry standard.

The values shown in **Table II-9** do not include fire flow demand, which will be required since the Town's system provides fire flow protection. Since the Town has an elevated storage tank, the two-hour fire suppression volume is 'stored' and considered in the overall firm capacity calculation.

The historic flows along with the various firm capacities per water treatment component are shown in **Figure II-12**.

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Figure II-12: Water System January 2022 through December 2025 ADF, MDF, and FDEP Permitted Capacity



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D. DISTRIBUTION SYSTEM

Once the various water treatment plants were reviewed and analyzed, the Town's distribution system was then analyzed as part of the overall Water System. Generally defined, the distribution system is the remaining infrastructure which delivers potable water at pressure to each customer and provides fire protection service within the Town's Service Area. Typically, the fire protection design of the system dictates the size of the water mains to ensure minimum fire flows (1,500 gpm or greater) can be provided to various areas of the system while maintaining a residual pressure of 20 psi. Each of the three WTPs are directly connected to the distribution system and supply finished water (i.e., flow) while sustaining minimum pressure requirements. In order to analyze the Town's existing distribution system capabilities and provide a foundation to analyze future infrastructure expansion, a WaterCAD computer model of the Town's existing distribution system was constructed. The WaterCAD model ("Model") allows the user to provide a hydraulic simulation that spatially analyzes a distribution system based on a number of variables including but not limited to: elevations, pipe diameter, valves, fittings, wells, elevated storage tanks, high-service pumps, control valves, fire hydrants, etc. The Model allows the user to analyze the infrastructure based on various demands such as: average daily flow, maximum daily flow, peak hourly flow, and various fire flow demands. The following discussion will review the Existing Distribution System Analysis. The model creation and calibration basis is summarized in **Attachment B**.

The existing distribution system is illustrated in **Figure II-13**, and the resulting nodal diagram is illustrated in **Figure II-14**.

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SCALE: 1" = 2,300'

CHERRY LAKE ROAD
SUMTER CO.
SPRING ARBOR LANE
DEL MAR DRIVE
PAIGE PLACE
KILEY COURT
CHULA VISTA AVENUE
LAKE ELLA ROAD
CR 466
STREET
SUNBELT ROAD
OAK LANE
ORCHID STREET
E. SCHWARTZ BLVD
ROLLING ACRES ROAD
DARCY ROAD
WILDWOOD STREET
WTP No. 1
GRIFFIN AVENUE
DOWLING CIRCLE
LINE ROAD
OAK
ANDERSON LANE
WTP No. 2
CR 25
TAYLOR MILL ROAD
WTP No. 3
SMITTY ROAD
MARION COUNTY ROAD
SE 180TH STREET
CEDAR LANE
US 27/441
SKYLINE DRIVE
APRIL HILLS BLVD.
SUTTON STREET
LADY LAKE BLVD.
US 441
HAPPY LANE
EDWARDS ROAD
DARLINGTON AVENUE
EAGLE NEST ROAD
RIX ROAD
GRIFFIN VIEW DRIVE
LAKE GRIFFIN ROAD
OAK LODGE LANE
HARDWOOD AVENUE
GRAYS AIRPORT ROAD

LEGEND

----- TOWN LIMITS AREA

WTP Water Treatment Plant

Designed by:	JRS	Date: JAN. 2026	
Drawn by:	MAL	Job No. 9514-41-1	
Checked by:	JRS		
Approved by:	JRS	© 2026	
Scale:	1" = 2,500'		

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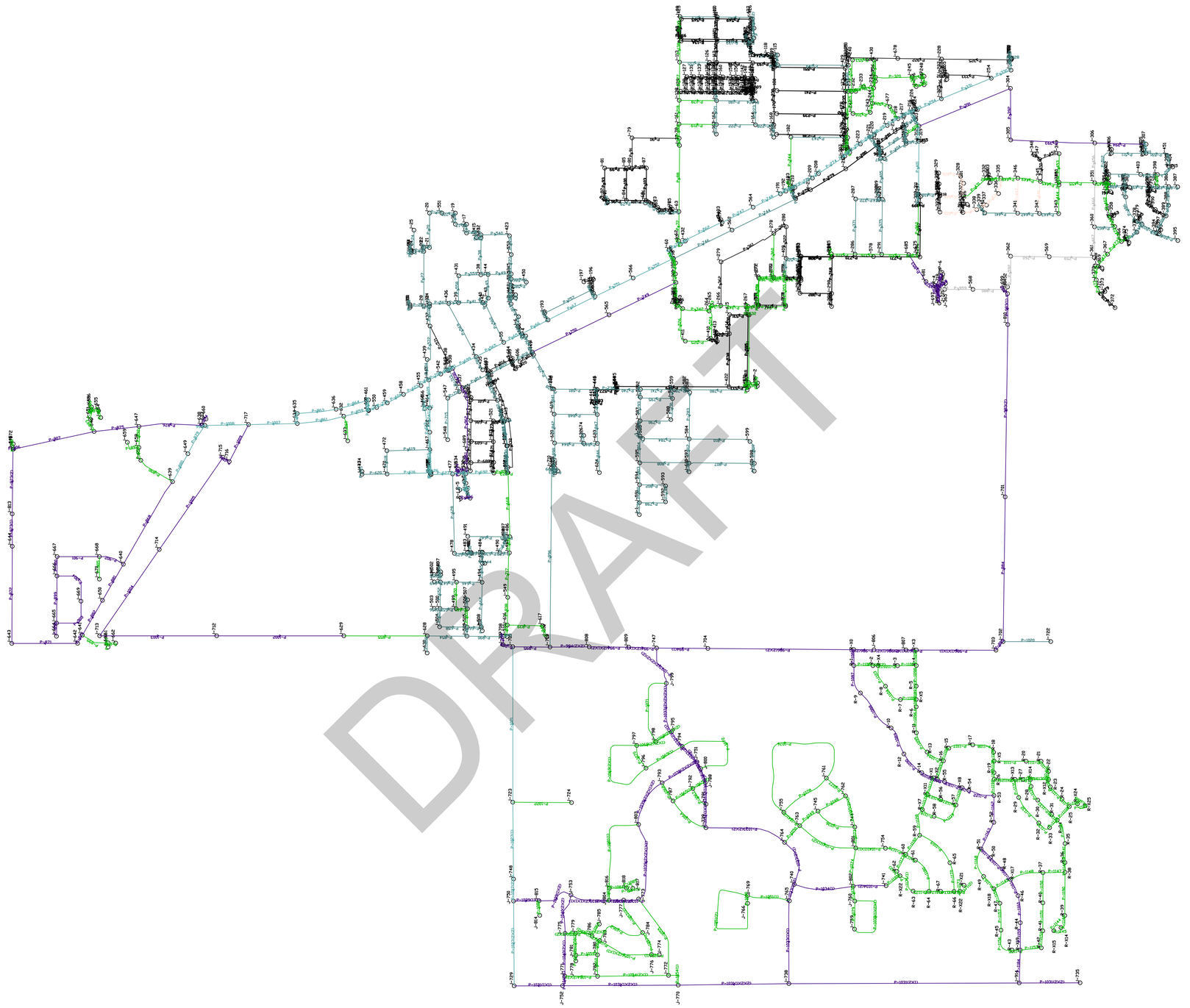
580-1 Wells Road
Orange Park, FL 32073
Ph: 904.278.0030

EXISTING POTABLE WATER DISTRIBUTION SYSTEM

TOWN OF LADY LAKE
Water System Master Plan
Lake County, Florida

Figure
II-13

J:\OrangePark\CAD Files\Lady Lake\95144111 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Water System\Fig. II-13 Existing Potable Water Distribution System.dwg, 2/23/2026 3:00:05 PM, Mike Lisena



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Designed by:	JRS	Date: JAN. 2026	cph www.cphcorp.com	***Building Stronger Communities Together***	WATERCAD NODE DIAGRAM
Drawn by:	MAL	Job No. 9514-41-1		**580-1 Wells Road**	TOWN OF LADY LAKE
Checked by:	JRS			**Orange Park, FL 32073**	Water System Master Plan
Approved by:	JRS	© 2026		**Ph: 904.278.0030**	Lake County, Florida
Scale:	N.T.S.				Figure II-14

J:\OrangePark\CAD Files\Lady Lake\9514411 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Water System\Fig. II-14 WaterCAD Node Diagram.dwg, 1/15/2026 3:24:51 PM

1. **<u>Existing Distribution System Analysis</u>:** Once the Model was established and calibrated, several simulations were performed at various areas of the Town to "stress" the system and determine any potential areas where capital improvements would be required to meet minimum fire protection requirements. In other words, a system-sensitivity analysis was completed on the existing infrastructure to determine any deficiencies, so appropriate projects and/or operational changes could be developed to address those issues. In order to simulate some "worst-case" scenarios, the following simulations were completed:

   - Residential fire demands (1,500 gpm) were developed at the highest elevations within system coincident with maximum day demand to determine if sufficient flow and pressure (1,500 gpm @ 20 psi) are available for the high elevation areas in Town;

   - Commercial fire demands (1,500 gpm) were developed within the system coincident with maximum day demand to determine if sufficient flow and pressure (1,500 gpm @ 20 psi) are available within the system;

   - Commercial and/or residential fire demands in areas where the distribution system did not appear to have sufficient hydraulic loops and/or relatively long runs of "small" diameter piping were completed; and

   - Peak hourly demand in areas where the distribution system did not appear to have sufficient hydraulic loops and/or relatively long runs of "small" diameter piping were completed.

   A summary of each of these analyses is provided in the following subsections.

   a. **Residential Fire Demand Simulation at High Elevations:** The highest elevation within the Town's Service Area occurs in the neighborhoods located off of April Hills Boulevard in the southern portion of Town. In evaluating Residential Fire Demand scenarios within the Model, a maximum day demand was calculated for the entire system by multiplying the existing average day demands assigned to the various nodes throughout the system by a peaking factor of 2.0. A fire flow

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demand of 1,500 gpm was then assigned to the highest node elevation within the system of 169-feet NGVD, which is located within Padgett Circle in the April Hills Boulevard area.

The Model results for the Residential Fire Demand Simulation indicate that the Town's water distribution system infrastructure would not be capable of providing proper flow and maintaining minimum residual pressure with the approximated maximum day demand within the highest elevation areas in Town. Within the Model, the low-pressure node during this simulation also corresponded with the highest elevation node located in the Padgett Circle neighborhood off of April Hills Boulevard. The Model designation for this node is J-400 and has an approximate grade elevation 169 feet NGVD, The pressure at J-400 during the Residential Fire Demand Simulation drops to 15 psi which is below the 20 psi minimum residual pressure required in the system.

Results from this scenario are provided in **Attachment C**. A separate analysis for this area was completed in 2013 and is provided in **Attachment D**. Since completion of the 2024 WTP 3 Expansion project, the Town has additional pumping capacity and control capabilities. The Alternative 4 control enhancements should be implemented and field tested.

b. Commercial Fire Demand Simulation at High Elevations: For the Commercial Fire Demand Simulation, a fire flow demand of 1,500 gpm was assigned to the highest commercial node elevation. The highest known commercial development area is located along US Hwy 441 across from Town Hall at an approximate elevation of 100 feet NGVD.

The simulation for the Commercial Fire Demand indicated that the Town's water distribution system infrastructure would be able to provide the proper flow and pressure during periods of maximum day demand. However, the residual pressure within the Padgett Circle neighborhood off of April Hills Boulevard drops to 24 psi which exceeds the minimum 20 psi pressure requirement.

Results from this scenario are provided in **Attachment C**.

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c. Residential and/or Commercial Fire Demand Simulations in Small-Diameter Areas: For this Simulation, nodes within the Town's water distribution system in which smaller diameter piping is installed (4-inch diameter or less) were reviewed. Current rules require all water distribution systems that provide fire protection to service fire hydrants from 6-inch diameter water mains, so the Town should plan on expanding service to this area.

Four main areas of small-diameter infrastructure were reviewed and the results are summarized as follows:

1) Griffin View Drive Area (between Sunshine Blvd. & Sundance Way): The neighborhoods in this area are supplied by smaller diameter 1-inch and 2-inch water mains which are unable to provide sufficient fire flow. The closest hydrant available to service the Sunshine Boulevard neighborhood is located approximately 300 linear feet (LF) from the Sunshine Blvd./Griffin View Drive intersection at Quail Street. If a fire were to occur within the Sunshine Boulevard neighborhood, the majority of the residences in this neighborhood would be farther than 500 LF from the closest hydrant, which exceeds the maximum recommended separation distance for a residential unit from a hydrant. In order for the Sunshine Blvd. neighborhood to be properly serviced during fire flow events, approximately 1,000 LF of 6" PVC water main and two (2) fire hydrants would need to be constructed along Sunshine Blvd. and connected to the Town's existing distribution system at the Sunshine Blvd./Griffin View Drive intersection. **Figure II-15** provides the general location of this area.

2) Linden Street: The neighborhood in this area is supplied by 2-inch water mains which are unable to provide sufficient residential fire flow. The closest available hydrant is located along Hartsock Sawmill Road approximately 200 LF east from the Hartsock Sawmill Road/Linden Street intersection. The majority of the homes along Linden Street exceed the recommended 500 LF distance from this hydrant. In order for

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this neighborhood to be properly serviced during fire flow events, two (2) fire hydrants would need to be installed, one at the northern intersection of Linden Street with U.S. 441 and one at the southern intersection of Linden Street and U.S. 441. **Figure II-15** generally locates this area.

3) WTP 1 Area (between 1st Street & 4th Street): Two-inch water mains service this area which have the same flow and pressure issues. In order to be serviced during fire flow events, hydrants along County Road 466 or Clay Avenue would need to be utilized. The majority of the residences between 1st Street and 4th Street are further than 500 LF from the existing hydrants along County Road 466 and Clay Avenue. In order to be properly serviced during fire flow events, approximately 1,600 LF of 6-inch water main and three (3) fire hydrants would need to be constructed north along 1st Street from the 1st Street/County Road 466 intersection to West Guava Street and from the West Guava Street/1st Street intersection west to Clay Avenue. **Figure II-15** locates this area within the Town.

4) South Old Dixie Highway (east of WTP 2): Two-inch water mains service this area as well. None of the residences along South Old Dixie Highway are within 500 LF of an existing hydrant. In order to be properly serviced during a fire flow event, approximately 2,000 LF of 6-inch water main and four (4) fire hydrants would need to be constructed along South Old Dixie Highway. **Figure II-15** also locates these areas within the Town.

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SCALE: 1" = 2,300'

CHERRY LAKE ROAD
SUMTER CO.
SPRING ARBOR LANE
DEL MAR DRIVE
PAIGE PLACE
KILEY COURT
CHULA VISTA AVENUE
LAKE ELLA ROAD
CR 466
STREET
SUNBELT ROAD
OAK LANE
ORCHID STREET
E. SCHWARTZ BLVD
ROLLING ACRES ROAD
DARCY ROAD
WILDWOOD STREET
WTP#1 AREA
(B/W 1ST ST. & 4TH ST.
WTP No. 1
OAK
GRIFFIN AVENUE
DOWLING CIRCLE
LINE ROAD
ANDERSON LANE
WTP No. 2
CR 25
TAYLOR MILL ROAD
WTP No. 3
S. OLD DIXIE HIGHWAY
(E. OF WTP #2)
SMITTY ROAD
MARION COUNTY ROAD
SE 180TH STREET
CEDAR LANE
US 27/441
SKYLINE DRIVE
APRIL HILLS BLVD.
SUTTON STREET
LADY LAKE BLVD.
US 441
LINDEN ST.
HAPPY LANE
EDWARDS ROAD
GRIFFIN VIEW DRIVE AREA
(B/W SUNSHINE BLVD. & SUNDANCE WAY
DARLINGTON AVENUE
EAGLE NEST ROAD
RIX ROAD
GRIFFIN VIEW DRIVE
LAKE GRIFFIN ROAD
OAK LODGE LANE
HARDWOOD AVENUE
GRAYS AIRPORT ROAD

LEGEND

----- TOWN LIMITS AREA

WTP Water Treatment Plant

Designed by:	JRS	Date: JAN. 2026	
Drawn by:	MAL	Job No. 9514-41-1	
Checked by:	JRS		
Approved by:	JRS	© 2026	
Scale:	1" = 2,500'		

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EXISTING POTABLE WATER DISTRIBUTION SYSTEM

TOWN OF LADY LAKE
Water System Master Plan
Lake County, Florida

Figure
II-15

J:\OrangePark\CAD Files\Lady Lake\95144111 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Water System\Fig. II-15 Existing Potable Water Distribution System.dwg, 2/23/2026 2:57:10 PM, Mike Lisena

The estimated costs to address these areas is provided as **Table II-10**.

TABLE II-10

CONCEPTUAL CONSTRUCTION ESTIMATE
FIRE PROTECTION EXPANSION

Item	Description	Estimated Cost
1	Mobilization & General Conditions	$150,000
2	Finished Water Piping (6" Dia. Piping - 4,600 LF)[a]	$920,000
3	Fire Hydrant Assemblies (11 Total)	$60,000
	SUBTOTAL	**$1,130,000**
	30% Contingency	$339,000
	25% Non-Construction Costs	$285,000
	TOTAL	**$1,754,000**

a: LF cost inclusive of fittings, valves, restoration, etc.

d. Peak Hourly Demand Simulations in Small-Diameter Areas: This simulation was run to determine residual pressures during the peak hourly demand of the system, which was determined by multiplying the average day demands within the system by a peaking factor of 4.0. This scenario was utilized to determine whether sufficient flow and pressure are available within the hydraulic deficient areas discussed in the simulation "c" above. Generally, this scenario depicts times when the system's demand is large due to consumption, but does not include fire flow.

After running the Peak Hourly Demand Simulation, it was determined that higher elevation areas can see residual pressures drop below 20 psi with modeled values of approximately 18 psi. The previously noted "Alternative 4" control improvements from the 2013 analysis should be implemented and tested.

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E. SUMMARY OF FINDINGS

With all the WTPs operating properly, the Town's existing water distribution system infrastructure is capable of providing proper water service to the Town during residential and commercial fire flow demands on both average and maximum days as well as peak hourly demands, except for the hydraulic deficient areas reviewed herein.

Further recommendations are summarized as follows:

- Increase system storage capacity. It is the current limiting system component. An additional elevated storage capacity would provide additional redundancy as well as system capacity. Alternatively, ground storage tanks could be added to the system but would require additional wells and high service pumps.

- Extend larger diameter piping in areas that can not support fire flow conditions.

- Review operational modifications to ensure pressure in higher elevation areas can be maintained below minimum system requirements during high system demands. See **Attachment D**.

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III. REGULATORY REQUIREMENTS

A. OVERVIEW

The most dynamic regulatory areas which could impact the Town's infrastructure planning are related to the availability of traditional water supplies/growing need of alternative water supplies (i.e., limited groundwater supply) and pending regulations related to treatment requirements for Per- and polyfluoroalkyl substances (PFAS) or forever chemicals. We believe the most significant issue for the Town to address is related to water supply planning, but discussion on PFAS is also provided based on current regulatory changes. The Town does not currently have a specific issue related to disinfection by-products, but this area should continue to be monitored given the karst geology and the Town's location within the unconfined Floridan Aquifer. Each of these topics are discussed in further detail in relation to the following areas:

- SJRWMD Regional Review and Town's CUP;
- Water Conservation;
- Reclaimed Water Use; and
- Per- and polyfluoroalkyl substances (PFAS).

B. SJRWMD REGIONAL REVIEW AND TOWN'S CUP

The SJRWMD produced the Central Springs/East Coast Regional Water Supply Plan (RWSP) in 2022 and is working toward an updated draft in 2027. The work is critical to understanding the regional water supply aspects which will affect the Central Florida Region, Lake County ("County"), and the Town of Lady Lake. The CSEC RWSP includes a number of review items, but some of the more applicable items are highlighted as follows:

(1) Based on the results of the CSEC water resource assessment, SJRWMD determined that water supply planning pursuant to section 373.709, Florida Statutes, was necessary since traditional water sources alone cannot supply the projected 75 mgd increase in water demand while at the same time sustaining water resources and related natural systems during the 20-year planning horizon.

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(2) The water resource assessment projected that adopted minimum flows and levels would not be achieved and predicted an increased potential for degradation of water quality resulting from saltwater intrusion.

(3) The CSEC RWSP identifies projects and measures that, when implemented, will meet the current and future water use needs of the region, while avoiding harm to water resources.

(4) One of the major components of the CSEC RWSP is a focus on water conservation.

Concurrent with the master plan work, the Town is beginning the SJRWMD CUP Permit renewal process. The projections contained within the master plan are being presented to the SJRWMD for review and comment. The Town's current development needs will exceed current CUP allocations and those projected by the SJRWMD. The CUP renewal process will result in a permitted allocation with other conditions the Town will need to incorporate into management of the water system and associated service capabilities.

C. WATER CONSERVATION

The Town continues to be proactive and perform increasing water conservation within the Town. The Town reviews potable water use for all metered accounts. If an account is trending above average consumption or displays a "large" use, then those accounts are notified via letter from Public Works. The letter states that their water use appears greater than required which may have resulted from over-irrigation. They are asked to review their irrigation practices and reduce water consumption to recommended levels. Letters continue to these accounts until use is in line with recommended or average values. Use of this program has been effective in reducing water consumption within "high-use" accounts.

Increasing water conservation should remain a goal of the Town. Continued focus on budgeting and allotting Town resources to maximize the cost-benefit of conservation measures. On an on-going basis, the effectiveness of utilized measures should be reviewed and the most-effective programs or approaches should be continued. However, the efficacy of any water conservation tool is often times limited since end user behavior is difficult to change, especially over a short time period.

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D. RECLAIMED WATER USE

The Town has completed a Reclaimed Water Master Plan (2026) concurrent with the Water System Master Plan (2026) that outlines the Town's objectives to manage and maximize their reclaimed water supply capabilities. A Reclaimed Water Service Area (RWSA) was developed by the Town, and the near-term focus is maximizing reclaimed water use within this geographic area based on available water supplies.

E. PFAS

Per- and Polyfluoroalkyl (PFAS) are a large class of chemicals found in a wide range of consumer and industrial products. PFAS are stable chemicals that do not naturally degrade and when released into the environment can contaminate soil, groundwater, surface water, and pose risks to human health and the environment.

The Environmental Protection Agency (EPA) lists the following relative to the Final PFAS National Primary Drinking Water Regulation:

- Public water systems must monitor for these PFAS and have three years to complete initial monitoring (by 2027), followed by ongoing compliance monitoring. Water systems must also provide the public with information on the levels of these PFAS in their drinking water beginning in 2027.

- Public water systems have five years (by 2029) to implement solutions that reduce these PFAS if monitoring shows that drinking water levels exceed these MCLs.

- Beginning in five years (2029), public water systems that have PFAS in drinking water which violates one or more of these MCLs must take action to reduce levels of these PFAS in their drinking water and must provide notification to the public of the violation.

The Town is currently reviewing the regulatory requirements and will be coordinating field activities with the local FDEP officials.

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IV. PROJECTED WATER DEMANDS

The Town has completed a Water Use Basis of Estimates (2026) report that is part of the Town's 2026 consumptive use permitting (CUP) renewal. A copy of the report is provided as **Attachment E**, and it summarizes the various growth projections that were utilized to determine the recommended water supply requirements through 2045. Population projections were reviewed, discussed, and analyzed based on the following:

1. University of Florida Bureau of Economic and Business Research (BEBR) Population Projections.
2. Town's Planning Department - Development Project Review.
3. SJRWMD Utility Projections.

Based upon current development activities, the recommended water supply needs are summarized in **Table IV-1**.

TABLE IV-1
SUMMARY OF POTABLE WATER USE PROJECTIONS

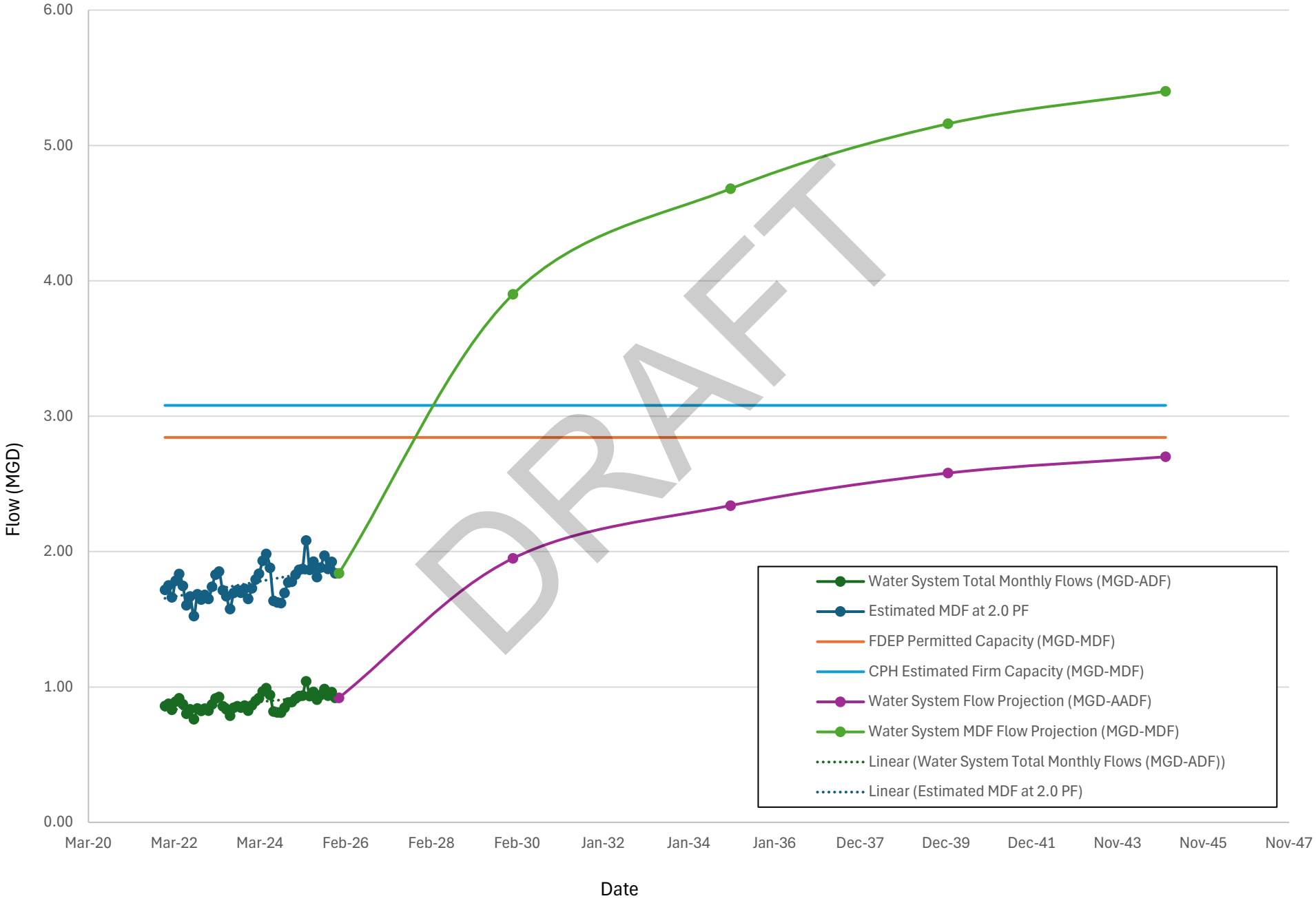
	Service Area Population (Persons)	Water Use Projection (mgd-AADF)	Max Day Demand Estimate[a] (mgd-MDF)
2025	7,690	1.23	2.46
2030	13,840	1.95	3.90
2035	17,170	2.34	4.68
2040	19,100	2.58	5.16
2045	19,980	2.70	5.40

a 2.0 MDF peaking factor utilized.

The proposed flow projections are illustrated in **Figure IV-1**.

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Town of Lady Lake
Water Master Plan
Client No. 9514-41-1
Figure IV-1: Water System Flow Projections



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V. WATER INFRASTRUCTURE EXPANSION ANALYSIS

A. OVERVIEW

Based on the projected water demands within the Service Area and the anticipated time horizon of when those demands may influence the system, a review of the Town's future expansion needs is required comparing the proposed demands with the existing infrastructure capabilities. The results of this analysis will be incorporated into a capital improvement budget for the Town's consideration to address the water system needs to serve the public through 2040. The analysis will include a review of the following items:

1. Water Treatment Objectives;
2. Water Treatment Technology;
3. Future Infrastructure Expansion Scenarios & Estimated Costs; and
4. Reclaimed Water Service.

B. WATER TREATMENT OBJECTIVES

As noted in **Section III**, long-range available water supply sources within the State, the central-florida region, and within the Town are currently unknown. Many alternatives are currently being reviewed since the SJRWMD has determined that groundwater from the Floridan Aquifer is limited and other water sources must be utilized to meet future water supply needs. At this time alternative water sources are not known. It is anticipated that the Town would continue to operate their existing system utilizing groundwater sources and would supplement that system from a "Regional Supplier". Regardless of raw water sources utilized, the Water System will have to meet the requirements of FDEP Rule 62-4, 62-550, 62-551, 62-655, 62-560, and 62-699, F.A.C.

Presently, the Town's raw water quality requires little to no treatment beyond disinfection. However, Well No. 3 has experienced bacteriological occurrences that could impact the required treatment levels at WTP 3. In light of these past occurrences, the Town maintains a 4-log (i.e. 99.99% removal) viral and 3-log (i.e. 99.9%) giardia removal system to allow for appropriate treatment if future bacteriological occurrences were found in Well 3 (3-1) or Well 4 (3-2). The improvements, include baffle walls within GST 1 (3-1) and 2 (3-2) and operational

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water levels that provide required detention time for longer disinfectant contact time. With the improvements online, the Town will be able to continue operation even if future bacteriological occurrences are found within the raw water well.

A copy of the CT Study and the specifics related to operation of WTP 3 is provided as **Attachment F**.

If the Town were required at some future date to consider alternative water supply sources, then a separate analysis would be required to address those issues based on the specific water source, its water quality, cost-effectiveness, etc.

C. WATER TREATMENT PLANT EXPANSION REQUIREMENTS

As summarized in **II.C.4.**, the Town's existing treatment facilities were reviewed in a piece-wise fashion to determine potential limiting components. The summary of findings found that the following components had firm capacities as follows:

- Raw Water Firm Capacity = 2,325 gpm (3.35 MGD-MDF)
- High Service Firm Capacity = 2,825 gpm (4.07 MGD-MDF)
- Storage Capacity = 950,000 Gallons (3.08 MGD-MDF)

Therefore, the most limiting component is the storage capacity, followed by raw water delivery, then high service delivery capacities.

The Storage Capacity review includes consideration of meeting the 1,500 gpm fire flow condition for a two-hour duration. The Town's available storage capacity is reduced by a volume of 180,000 gallons (2 hr * 1,500 gpm * 60 min/hr), and the remaining capacity is reviewed based on providing capacity for 25% of the system's MDF. Thus, the limiting capacity is defined as follows:

$$\text{Storage MDF Capacity} = \frac{\text{950,000 Gallons (avail) - 180,000 Gallons (fire)}}{\text{25\% MDF}}$$

$$= 3.08 \text{ MGD-MDF}$$

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Table V-1 summarizes the anticipated annual average potable water demands with Maximum Daily Flow projections with noted system expansion requirements. Fire flows are met via the available system storage capacity.

TABLE V-1
2040 SERVICE AREA FLOW PROJECTIONS

Year	AADF Projection (MGD)	MDF Projection (MGD)[a]	System Expansion Requirements
2025	1.23	2.46	
2030	1.95	3.90	Storage & Well Field Expansion by 2029. High Service Pump Expansion by 2032.
2035	2.34	4.68	
2040	2.58	5.16	
2045	2.70	5.40	

*a: MDF = AADF * 2.0 (Maximum-day peaking factor)*

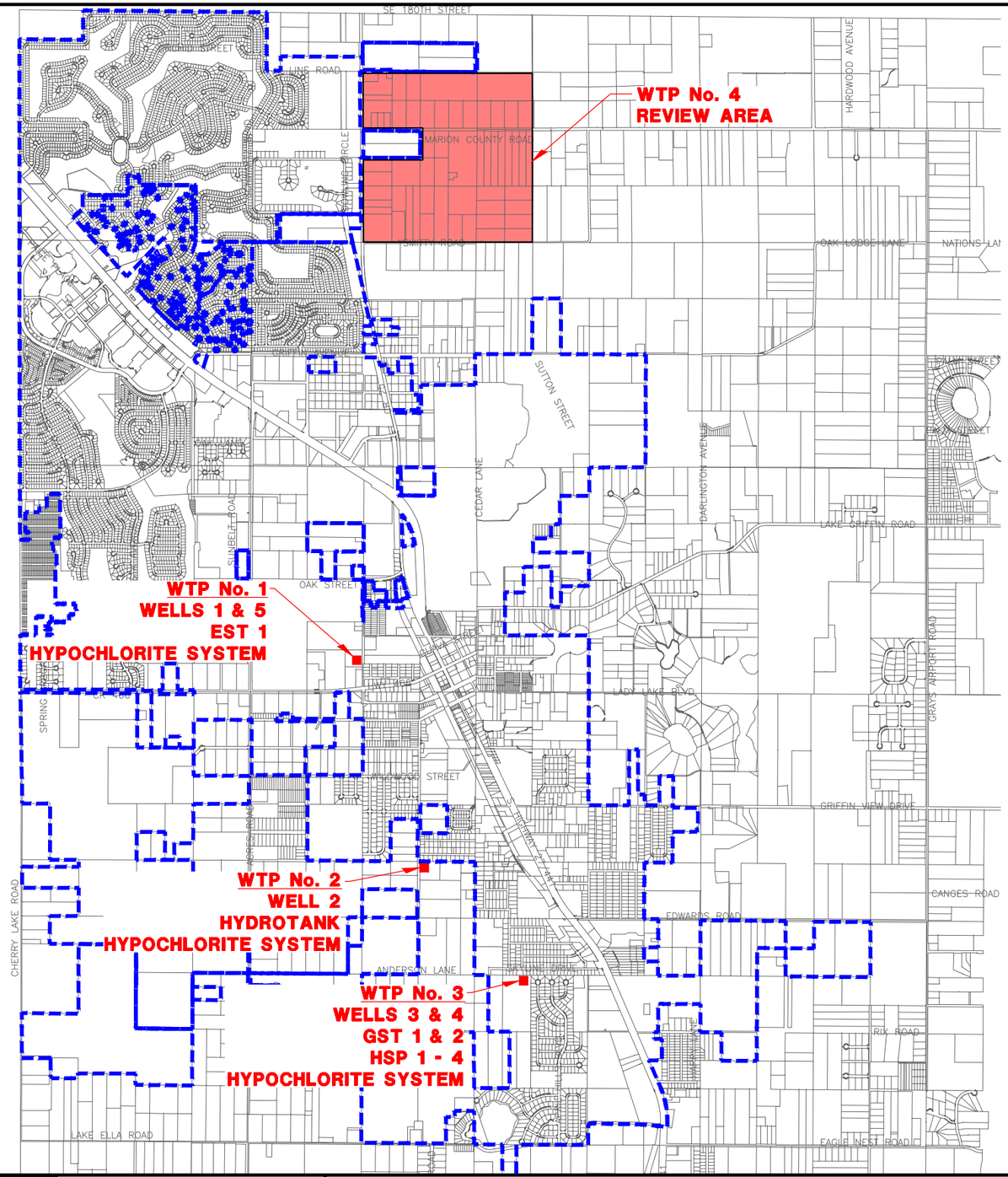
As a result of that review and the firm capacity needs outlined in **Table V-1**, a fourth WTP is recommended to:

- Expand storage capacity;
- Provide additional raw water and finished water pumping redundancy and capacity; and
- Provide another pressure sustaining input into the system to enhance distribution system hydraulics and support potential growth in the northeast portions of the Town's service area.

The targeted location for WTP 4 is illustrated in **Figure V-1**. WTP 4 would have the following conceptual components:

- Two 1,000 gpm well pumps in 16" diameter production wells (Well 4-1 & 4-2)
- Two 400,000 gallon ground storage tanks (GST 4-1 and 4-2).
- Three 750 gpm high service pumps (HSP 4-1, 4-2, and 4-3).
- Electrical building with diesel generator and chemical feed facilities.

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LEGEND

TOWN LIMITS AREA

Designed by:	JRS	Date: JAN. 2026	
Drawn by:	MAL	Job No. 9514-41-1	
Checked by:	JRS		
Approved by:	JRS	© 2026	
Scale:	1" = 3,000'		

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www.cphcorp.com

Building Stronger Communities Together

580-1 Wells Road
Orange Park, FL 32073
Ph: 904.278.0030

PRELIMINARY WTP NO. 4 LOCATION MAP

TOWN OF LADY LAKE
Water System Master Plan
Lake County, Florida

Figure
V-1

J:\OrangePark\CAD Files\Lady Lake\95144111 2025 Water, Wastewater, Reclaimed Water Master Plan Updates\Figures\Water System\Fig. V-1 Preliminary WTP 4 Location Map.dwg, 2/23/2026 2:55:01 PM, Mike.Lisena

For identification purposes, the WTP 4 identifier will be 4-X for the proposed system components. Similar process components at WTP 3 will be identified as 3-X.

The additional WTP would increase the Town's firm capacity as follows:

Well Firm Capacity = ∑ of Well Pumping Capacity with largest out of service
= ∑ Well 1 (1-1) + Well 2 (2-1) + Well 3 (3-1) + Well 4 (3-2) + ~~Well 5 (1-2) (can't run concurrent with Well 1) +~~ Well 4-1 (out of service) + Well 4-2
= ∑ 1,000 gpm (Well 1-1) + 325 gpm (Well 2-1) + 1,000 gpm (Well 3-1) + 1,200 gpm (Well 3-2) + ~~1,000 gpm (Well 1-2)~~ + ~~1,000 gpm (Well 4-1)~~ + 1,000 gpm (Well 4-2)
= 4,525 gpm (6.52 MGD)

The high-service firm capacity is reviewed in a similar method and is detailed as follows:

High-Service Firm Capacity = ∑ of High-Service Pumping Capacity with largest out of service
= ∑ Well 1-1 + Well 2-1 + Well 1-2 + HS Pump 3-1 + HS Pump 3-2 + HS Pump 3-3 + HS Pump 3-4 + HS Pump 4-1 + HS Pump 4-2 + HS Pump 4-3
= ∑ 1,000 gpm (Well 1-1) + 325 gpm (Well 2-1) + ~~1,000 gpm (Well 1-2) +~~ 500 gpm (HS Pump 3-1) + 500 gpm (HS Pump 3-2) + 500 gpm (HS Pump 3-3) + 500 gpm (HS Pump 3-4) + 750 gpm (HS Pump 4-1) + 750 gpm (HS Pump 4-2) + ~~750 gpm (HS Pump 4-3)~~
= 4,325 gpm (6.23 MGD)

WTP 3 high service pumps can also be upgraded to larger units with associated electrical modifications. The target capacity increase would be 750 gpm per pumping unit.

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Utilizing the criteria listed in **Section II.B.** and the aforementioned nominal storage capacities, the applicable firm capacity of the storage facilities is calculated as follows:

Minimum Finished Water Storage Capacity (MG) = [0.25 * Max. Day Demand (MGD) * 1 Day] + 180,000 Gallons

Max. Day Demand (MGD) = [(EST 1 + GST 3-1 + GST 3-2 + GST 4-1 + GST 4-2) - 180,000 Gallons] /0.25 Day

= [(0.150 MG + 0.400 MG + 0.400 MG + 0.400 MG + 0.400 MG) - 0.180 MG]/0.25 Day

= 6.28 MGD (MDF)

The estimated costs for this project are provided in **Table V-2**.

TABLE V-2
CONCEPTUAL CONSTRUCTION ESTIMATE
WTP 4 EXPANSION

Item	Description	Estimated Cost
1	Mobilization & General Conditions	$125,000
2	Yard Piping and Site Work	$500,000
3	Production Wells 4-1 and 4-2	$2,750,000
4	Two (2) 400,000 Concrete GST with aerator	$3,000,000
5	High Service Pump & Operations Bldg.	$1,500,000
6	High Service Pumping Systems	$500,000
7	Chemical Feed System	$60,000
8	Electrical & Instrumentation	$2,100,000
	SUBTOTAL	**$10,535,000**
	25% Contingency	$2,650,000
	20% Non-Construction Costs	$2,100,000
	TOTAL	**$15,285,000**

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Figure V-1 is provided to illustrate these facility expansion requirements and the relationship to the projected water demands. As noted within the various subsections, long-term expansion of water treatment facilities will be dependent on regional water supply alternatives that are not currently known.

D. WATER DISTRIBUTION EXPANSION REQUIREMENTS

Section II.D. reviewed the Town's existing distribution system and outlined recommended improvements to address areas with small diameter piping and other elevated areas of Town where system pressures are lower. It is anticipated future growth will include separate, project-specific hydraulic reviews to determine facility expansion needs. Improvements to meet development demands will be paid by the developer. **Attachment G** outlines the review that was completed for the Hammock Oaks Development (June 2023). Similar development reviews will be required as development needs are known.

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