



Jonathan T. Hall
Ronin Assets
3425 Turnberry Drive
Lakeland, FL 3380

January 19th, 2024

Subject: Wastewater Treatment Facility Capacity
Project: Cursory Assessment of WTP and WWTF – Grenelefe
Project No.: 482301

Dear Mr. Hall:

We understand Ronin Assets is planning to connect the new Smokey Groves Development to the existing Grenelefe Wastewater Treatment Facility (WWTF). The new Development consists of 423 new ERCs and is estimated to produce 118,440 gpd based on the flow of 280 gpd/ERC provided by Ronin Assets.

In response to your inquiry regarding available capacity, we researched FDEP public records and found the most recent Capacity Analysis Report (CAR), Operation and Maintenance Performance Report (OMPR), and current operating Permit No. FLA013016 (see Exhibit A, B, and C, respectively). Also, we gathered and reviewed additional flow data for 2021, 2022, and 2023. The permitted capacity of the facility is 340,000 gpd, while the current flow is near 150,000 gpd (see Figure 1).

Based on our review of these items, it appears the WWTF has approximately 190,000 gpd of available treatment and effluent disposal capacity to support the new Development.

During our recent visit to the site, it was apparent that one of the blowers was not installed, and the facility does not have a secondary power source (i.e. generator). Also, any new flows should not be discharged into the influent Lift Station No. 1 as this pumping system cannot support additional flows. These items should be corrected as soon as possible.

Please note this letter shall not be construed as a hydraulic, treatment capacity, or condition evaluation of the individual WWTF components as these are discussed in the CAR and OMPR.

Feel free to contact us if you have any comments or if you would like to discuss our observations.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Daniel Magro', is written over a light blue horizontal line.

Daniel Magro, P.E.
Project Manager

Enclosures: Exhibit A – Capacity Analysis Report (2021).
Exhibit B – Operations and Maintenance Performance Report (2021)
Exhibit C – Current FDEP Permit FLA013016.
Figure 1 – Recent Flow Trends

EXHIBIT A

CAPACITY ANALYSIS REPORT

ENGINEERING SERVICES

Prepared for:

GRENELEFE RESORT WWTF

4501 Abbey Court
Haines City, FL 33488-9720
Permit No. FLA013016

Prepared by:



Water and Wastewater Utility Operations, Maintenance, Engineering, Management
4939 Cross Bayou Boulevard
New Port Richey • FL • 34652

June 2021



CERTIFICATIONS (Capacity Analysis Report)

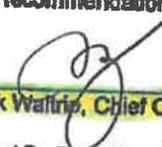
PERMITTEE:

Name: Mr. Mark Waltrip, Chief Operating Officer
Westgate Resorts International, Inc.

Address: 5601 Windhover Drive
Orlando, FL 32819-7814

Facility Name: Gensleife Resort WWTF (Permit No. FLA013016)
Contact Person: Eric Maldonado, National Director of Engineering
Phone Number: (407) 351-3351

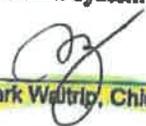
Statement By Permittee Regarding Awareness of the Information in This Report:
The above named permittee is fully aware of the information contained in this report and intends to comply with the recommendations and schedules included in the report.


Mr. Mark Waltrip, Chief Operating Officer

7/12/21
Date

Statement By Permittee Regarding Collection System:

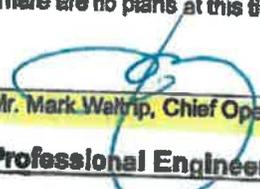
The collection system serving the plant described in this report receives only domestic wastewater.


Mr. Mark Waltrip, Chief Operating Officer

7/12/21
Date

Statement By Permittee Regarding Service Area:

There are no plans at this time to expand the service area.


Mr. Mark Waltrip, Chief Operating Officer

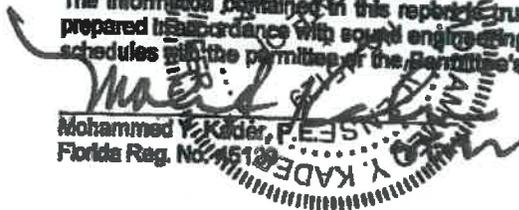
7/12/21
Date

Professional Engineer Preparing this Report:

Name: Mohammed Y. Kader, P.E.
Firm Name: U.S. Water Services Corporation
Address: 4938 Cross Bayou Boulevard
New Port Richey, Florida 34862
Phone Number: (727) 848-8282

Statement By Professional Engineer:

The information contained in this report is true and correct to the best of my knowledge, the report was prepared in accordance with sound engineering principles, and I have discussed the recommendations and schedules with the permittee or the permittee's delegated representative.


Mohammed Y. Kader, P.E.
Florida Reg. No. 1512

July 12, 2021
Date

TABLE OF CONTENTS

	Page No.
INTRODUCTION	1
EXISTING CAPACITY	3
FLOW MESUREMENT	3
TREATMENT PLANT MONTHLY FLOW	3
EFFLUENT DISPOSAL	4
FLOW PROJECTIONS	4
Attachment A Unit Capacity Analysis	
Attachment B Effluent Water Quantity Summary	
Attachment C Flow Meter Calibration	

CAPACITY ANALYSIS REPORT

Greenelefe Resort WWTF

Permit No. FLA013016

INTRODUCTION

The Greenelefe Resort Wastewater Treatment Facility (WWTF) is located at 4501 Abbey Court, Haines City, Florida in Polk County. The wastewater treatment plant and disposal system services the Greenelefe Resort community. A location map and topoquad map are attached at the end of this report. The facility is an existing 0.68 million gallon per day (MGD) three month rolling average daily flow (3MRADF) permitted capacity, Type I extended aeration domestic wastewater treatment facility. The WWTF is limited to 0.34 MGD 3MRADF Type II while the clarifiers in trains one and two are under repair, and as long as R-001 is the only effluent disposal system. The WWTF consists of the following units: a flow splitter box with bar screens, ten aeration basins of 682,187 gallons total volume, four clarifiers of 113,312 total volume and 3,190 square feet of total surface area, seven deep bed automatic backwash filters of 448 square feet designed to handle 472 gallons per minute (gpm), three pre-filter chlorine contact chambers of 21,654 gallons total volume, one post chlorine contact chamber of 19,947 gallons of volume, one effluent pump wetwell of 9,973 volume, and three digesters of 54,442 gallons total volume. The wastewater treatment plant is operated to provide secondary treatment with basic disinfection.

The existing wastewater treatment system consists of the following units:

- Ten (10) 682,187 gallons total volume aeration tanks.
- Four (4) 113,312 gallons total volume and 3,190 square feet total surface area clarifiers.



- Seven (7) Deep filters of 448 square feet total surface area design for 472 gpm.
- Three (3) Pre-filtration chlorination contact tanks of 21,654 gallons total volume.
- One (1) Post-filtration chlorination contact tank of 19,947 gallons total volume.
- One (1) Effluent pump wetwell of 9,573 gallons volume.
- Three (3) Digesters of 54,442 gallons total volume.

The 0.340 MGD AADF (million gallons per day, annual average daily flow) permitted capacity restricted public access rapid-rate infiltration system (Disposal System R-001) Part IV Land Application System with four percolation ponds having a total of 100,188 square feet of bottom surface area.

The effluent limits that must be met as follows:

	Parameter	Units	Annual Avg.	Monthly Avg.	Single Sample	Monitoring Location
R-001	Flow	MGD	0.340			FLW-01
	CBOD ₅	mg/l	20.0	30.0	60.0	EFA - 01
	TSS	mg/l	20.0	30.0	60.0	EFA - 01
	Nitrates (as N)	mg/l			12.0	EFA - 01
	pH	SU			6.0 -- 8.5	EFA - 01
	Fecal Coliforms	#/100ml	200		800	EFA - 01
	TRC	mg/l			0.5	EFA - 01

- FLW-01: Flow meter prior to discharge to R-001.
- EFA-01: Effluent sampling point after treatment and prior to Reuse system R-001.



- **INF-01:** Influent sampling point prior to treatment and ahead of the return activated sludge line.

The current operating permit FLA013016 was issued on January 20, 2017, and expires January 19, 2022.

EXISTING CAPACITY

The existing permitted capacity of the facility is 0.340 mgd (3MRADF). A unit by unit capacity analysis has been performed and the results are shown in the attached table.

FLOW MEASUREMENT

Flows through the treatment plant are determined using flow meter installed on the effluent discharge piping at the effluent sump. The flow meter is calibrated annually. The meter readings are recorded 5 days per week, by the operator into the log book. Historical flow calibrations were located within the facility records during our site inspection on 5/7/2021. The most recent flow calibration was performed on 8/4/2020 by Florida Rural Water Association. A copy of the most recent flow calibration is attached at the end of this report.

TREATMENT PLANT MONTHLY FLOW

Monthly operating reports were reviewed for the past ten years ending in March 2021. The average daily flows recorded on the DMR's are summarized in the attached table. Influent flows to the treatment plant have remained below the permitted capacity through the period under review.

The wastewater flows to the treatment plant are seasonal in nature, as the flows increase through the warmer months of May through August each year. The ratio of three month average daily flow to annual average daily flows have varied from 0.47 to 1.60 during the last ten years (See attached Flow Summary). A trendline of the annual average flows indicate a slight increase in flows over the period under review. During the last ten years, the influent flow has averaged 0.124 mgd or less than 36% of the permitted treatment capacity. The maximum 3MRADF recorded during the period under review was 0.233 mgd or 69% of the permitted capacity December of 2011.

EFFLUENT DISPOSAL

The disposal system is comprised of four rapid infiltration basins (RIBs). Two of the RIBs are adjacent to the treatment plant to the south, within the facility security fencing. One RIB is located on the north side of Abbey Court just north of the treatment plant. The fourth RIB is approximately 1000 feet north of the treatment plant. The locked security fence gate is accessed along West lake Marion Road. The four cell disposal system has a combined bottom area of 100,188 square feet and a 0.340 mgd annual average daily flow (AADF) permitted capacity.

FLOW PROJECTIONS

The wastewater treatment plant serves the Grenelefe Resort Community in Haines City. The property covers approximately 971 acres and the service area includes rental villas, single and multi-family condominiums, single family homes consisting of 1,229 dwellings with a population of 2,712 residents, and employees. The populations, and wastewater flows are expected to increase slightly as housing demands increase. Therefore, the wastewater flows are expected increase slightly, but not expected to reach the permitted capacity within the next permitting cycle.

ATTACHMENT A
UNIT CAPACITY ANALYSIS



**GRENELEFE RESORT WWTF
PERMIT No. FLA013016
UNIT CAPACITY ANALYSIS**

PROCESS UNIT	AREA OR VOLUME	BASIS OF DESIGN		AVAILABLE UNIT CAPACITY (GPD)
		BASIS OF DESIGN	ACTUAL	
Aeration Basins (4) (gallons)	728,447			
Detention Time (hrs.)		6 - 24 hrs	51.42	728,447
Organic Loading* (lbs. BOD5/1,000 cf)		15	5.82	875,773
Clarifier (4) (S. F.)	3,190			
Surface Overflow Rate (gpd/square feet)		1,000 at Maximum Flow	319.75 at Maximum Flow	1,063,333
Solids Loading* Rate (lbs/day/s.f.)		35 lbs/day/sq. ft. at Maximum Flow	10.67 at Maximum Flow	1,115,608
Chlorine Contact Tank (1)				
CCC (gallons)	41,601	15 mins. @ Max Q	58.73	1,331,232
Aerobic Digester (1)				
Total Volume (cubic feet)	7,278.34	3.0 cu. Ft. per capita (at 100 gpcd)	2.14	242,611
(R-001) Ponds				
Total Bottom Area	100,188 sq. ft. 2.30 Acres	9.0 inch/day	5.44 inch/day	339,731

* Based on BOD5 = 200 mg/l, MLSS = 3000 ppm.
Assumed Peaking Flow Factor = 3.0.

ATTACHMENT B

EFFLUENT WATER QUANTITY SUMMARY (GRAPHICAL AND TABULAR FORMAT)

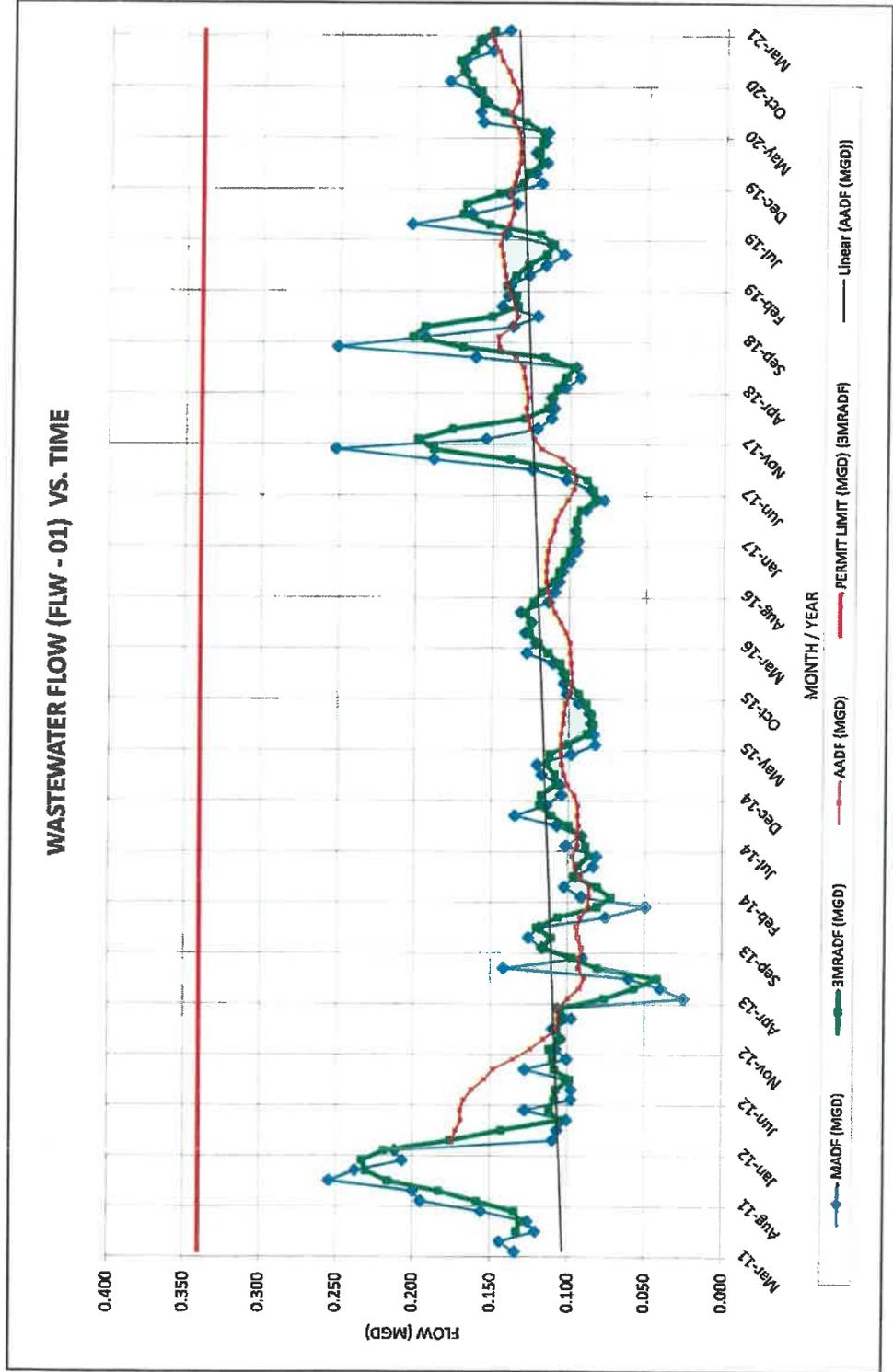
**Greenelefe Resort WWTF
Flow Summary
Permit No. FLA013016**

Permitted Capacity (MGD)	FLW-01			Ratio TMADF/AADF
	MADF (MGD)	limit	AADF (MGD)	
		0.025 3MRADF (MGD)		
Month/Year				
Mar-11	0.134			
Apr-11	0.144			
May-11	0.121	0.133		
Jun-11	0.126	0.130		
Jul-11	0.156	0.134		
Aug-11	0.195	0.159		
Sep-11	0.200	0.184		
Oct-11	0.255	0.217		
Nov-11	0.238	0.231		
Dec-11	0.207	0.233		
Jan-12	0.212	0.219		
Feb-12	0.110	0.176	0.175	1.01
Mar-12	0.107	0.143	0.173	0.83
Apr-12	0.101	0.106	0.169	0.63
May-12	0.128	0.112	0.170	0.66
Jun-12	0.098	0.109	0.167	0.65
Jul-12	0.098	0.108	0.162	0.66
Aug-12	0.101	0.099	0.155	0.64
Sep-12	0.128	0.109	0.149	0.73
Oct-12	0.101	0.110	0.136	0.81
Nov-12	0.108	0.112	0.125	0.90
Dec-12	0.105	0.105	0.116	0.90
Jan-13	0.110	0.108	0.108	1.00
Feb-13	0.098	0.104	0.107	0.98
Mar-13	0.107	0.105	0.107	0.98
Apr-13	0.025	0.077	0.101	0.76
May-13	0.040	0.057	0.093	0.61
Jun-13	0.061	0.042	0.090	0.47
Jul-13	0.142	0.081	0.094	0.86
Aug-13	0.091	0.098	0.093	1.05
Sep-13	0.117	0.117	0.092	1.27
Oct-13	0.126	0.111	0.094	1.18
Nov-13	0.119	0.121	0.095	1.27
Dec-13	0.076	0.107	0.093	1.15
Jan-14	0.050	0.082	0.088	0.93
Feb-14	0.092	0.073	0.087	0.83
Mar-14	0.103	0.082	0.087	0.94
Apr-14	0.096	0.097	0.093	1.05
May-14	0.084	0.094	0.096	0.98
Jun-14	0.082	0.087	0.098	0.89
Jul-14	0.102	0.089	0.095	0.94
Aug-14	0.092	0.092	0.095	0.97
Sep-14	0.108	0.101	0.094	1.07
Oct-14	0.135	0.112	0.095	1.18
Nov-14	0.115	0.119	0.095	1.26
Dec-14	0.105	0.118	0.097	1.22
Jan-15	0.106	0.109	0.102	1.07
Feb-15	0.118	0.110	0.104	1.06
Mar-15	0.121	0.115	0.105	1.09
Apr-15	0.099	0.113	0.106	1.07
May-15	0.083	0.101	0.106	0.96
Jun-15	0.084	0.089	0.106	0.84
Jul-15	0.086	0.084	0.104	0.81
Aug-15	0.087	0.086	0.104	0.82
Sep-15	0.094	0.089	0.103	0.87
Oct-15	0.102	0.094	0.100	0.94
Nov-15	0.104	0.100	0.099	1.01
Dec-15	0.104	0.103	0.099	1.04
Jan-16	0.111	0.106	0.099	1.07
Feb-16	0.128	0.114	0.100	1.14
Mar-16	0.122	0.120	0.100	1.20
Apr-16	0.129	0.126	0.103	1.23
May-16	0.125	0.125	0.106	1.18
Jun-16	0.132	0.129	0.110	1.17
Jul-16	0.114	0.124	0.113	1.10

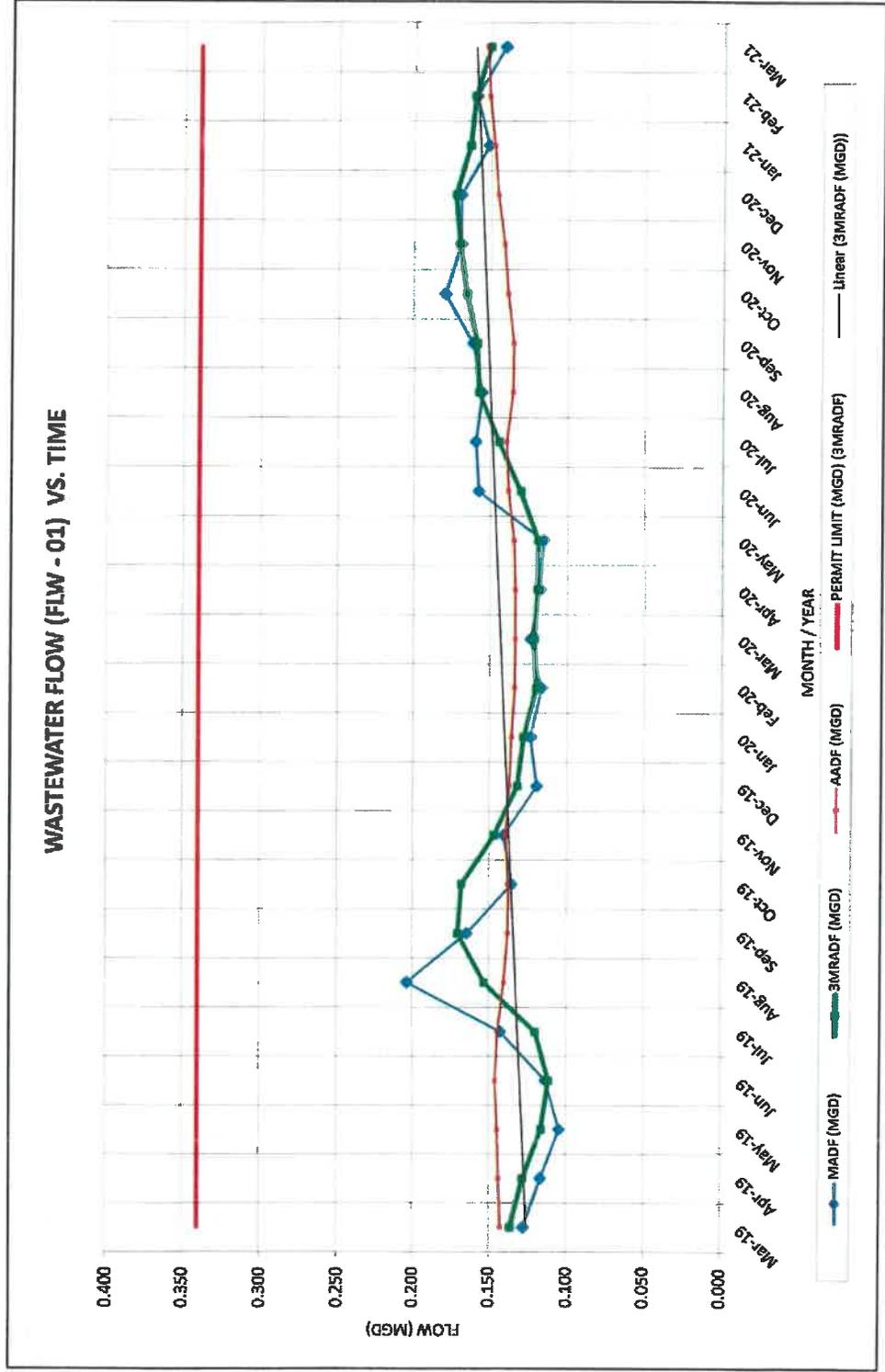
**Greenelefe Resort WWTF
Flow Summary
Permit No. FLA013016**

Permitted Capacity (MGD)	FLW-01			Ratio
		limit		
		0.025		
Month/Year	MADF (MGD)	3MRADF (MGD)	AADF (MGD)	TMADF/AADF
Aug-16	0.110	0.119	0.115	1.04
Sep-16	0.107	0.110	0.116	0.95
Oct-16	0.105	0.107	0.116	0.93
Nov-16	0.100	0.104	0.116	0.90
Dec-16	0.096	0.100	0.115	0.87
Jan-17	0.095	0.097	0.114	0.85
Feb-17	0.097	0.096	0.111	0.86
Mar-17		0.096	0.110	0.87
Apr-17	0.090	0.094	0.106	0.88
May-17	0.078	0.084	0.102	0.82
Jun-17	0.087	0.085	0.098	0.87
Jul-17	0.103	0.089	0.097	0.92
Aug-17	0.125	0.105	0.098	1.07
Sep-17	0.189	0.139	0.106	1.31
Oct-17	0.253	0.189	0.119	1.58
Nov-17	0.155	0.199	0.124	1.60
Dec-17	0.122	0.177	0.127	1.39
Jan-18	0.1190	0.130	0.128	1.01
Feb-18	0.1110	0.115	0.130	0.89
Mar-18	0.1130	0.112	0.128	0.88
Apr-18	0.1040	0.109	0.129	0.84
May-18	0.0940	0.104	0.131	0.79
Jun-18	0.0970	0.098	0.132	0.75
Jul-18	0.1620	0.118	0.137	0.86
Aug-18	0.2520	0.170	0.147	1.16
Sep-18	0.1950	0.203	0.148	1.38
Oct-18	0.1380	0.195	0.138	1.41
Nov-18	0.1220	0.152	0.135	1.12
Dec-18	0.1450	0.135	0.137	0.98
Jan-19	0.141	0.136	0.140	0.97
Feb-19	0.140	0.142	0.142	1.00
Mar-19	0.128	0.136	0.143	0.95
Apr-19	0.117	0.128	0.144	0.89
May-19	0.105	0.117	0.145	0.80
Jun-19	0.114	0.112	0.147	0.76
Jul-19	0.143	0.121	0.145	0.83
Aug-19	0.204	0.154	0.141	1.09
Sep-19	0.165	0.171	0.139	1.23
Oct-19	0.136	0.168	0.138	1.22
Nov-19	0.141	0.147	0.140	1.05
Dec-19	0.120	0.132	0.138	0.96
Jan-20	0.124	0.128	0.136	0.94
Feb-20	0.117	0.120	0.135	0.89
Mar-20	0.124	0.122	0.134	0.91
Apr-20	0.118	0.120	0.134	0.89
May-20	0.116	0.119	0.135	0.88
Jun-20	0.158	0.131	0.139	0.94
Jul-20	0.160	0.145	0.140	1.03
Aug-20	0.156	0.158	0.136	1.16
Sep-20	0.162	0.159	0.136	1.17
Oct-20	0.180	0.165	0.140	1.19
Nov-20	0.170	0.171	0.142	1.20
Dec-20	0.170	0.173	0.146	1.19
Jan-21	0.152	0.164	0.149	1.10
Feb-21	0.160	0.161	0.152	1.06
Mar-21	0.141	0.151	0.154	0.98
Average:	0.124	0.124	0.121	
Maximum:	0.255	0.233	0.175	

**Grenelefe Resort WWTF
Flow Summary
Permit No. FLA013016**



**Grenelefe Resort WWTF
Flow Summary
Permit No. FLA013016**



ATTACHMENT C
FLOW METER CALIBRATION

FLOW METER ACCURACY RECORD

FLORIDA RURAL WATER ASSOCIATION

2970 WELLINGTON CR. W. STE. 101

TALLAHASSEE, FLORIDA 32308

1-800-872-8207

Facility Name & GRENELEFE RESORT LLC - TOTALIZER - FLA015016

Facility Location 3200 SR 516 / HAINES CITY, FL / POLK

INFORM INFORMATION ON METER USED TO CALIBRATE

METER	MODEL	SERIAL #	LAST CALIBRATION DATE
BADGER	DXNP	107521	#####

METER ~~BEING~~ CALIBRATION VERIFIED

TYPE: MAG METER

MAKE/MODEL/SERIAL: SIEMENS DIGITAL MAG METER

DATE OF LAST CALIBRATION: UNKNOWN

EFFLUENT MREADING	READING		READING		READING
BEGINNING RE	3E+08		3E+08	3E+08	3E+08
ENDING READ	3E+08		3E+08	3E+08	3E+08
TOTAL	288	0	285	0	280
BADGER DXNP					
BEGINNING RE	175.2		449.9		721.9
ENDING READ	449.9		721.9		990.9
TOTAL	274.7	0	272	0	269
PERCENT DIFF	4.8476	#DIV/0!	4.7794	#DIV/0!	4.0892

I hereby certify that the above test was performed in accordance with the best available technology.

TECHNICIAN SIGNATURE: David Vice

DATE: 8/4/2020

David Vice 727-218-4602 david.vice@frwa.net

FRWA 1-800-872-8207

COMMENTS: NOTE FLORIDA RURAL WATER DOES NOT CHARGE FOR CALIBRATIONS AS THEY ARE COVERED UNDER YOUR MEMBERSHIP

EXHIBIT B

OPERATION AND MAINTENANCE PERFORMANCE REPORT

ENGINEERING SERVICES

Prepared for:

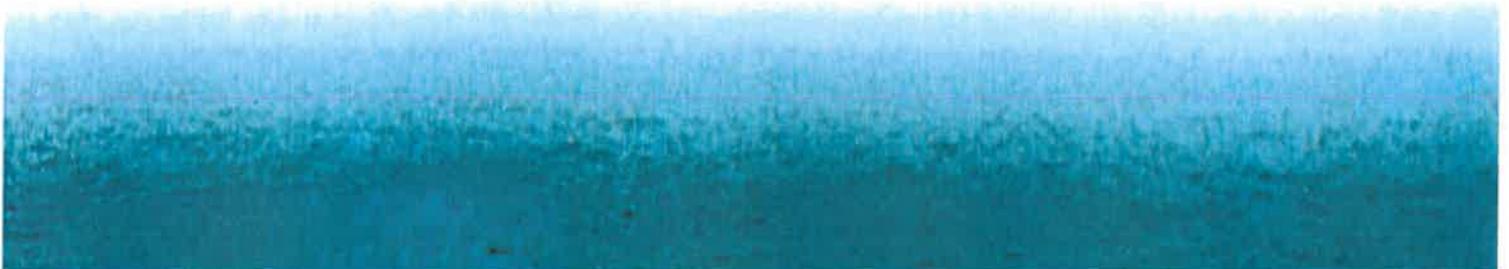
GRENELEFE RESORT WWTF
4501 Abbey Court
Haines City, FL 33844-9720
Permit No. FLA013016
Permit Expiration Date: January 19, 2022
Site Inspection Date: May 7, 2021

Prepared by:



Water and Wastewater Utility Operations, Maintenance, Engineering, Management
4939 Cross Bayou Boulevard
New Port Richey • FL • 34652

June 2021



CERTIFICATIONS (O & M Performance Report)

Permittee:

Name: Mark Waltrip, Chief Operating Officer
Westgate Resorts International, Inc.

Address: 5601 Windhover Drive
Orlando, FL 32819-7914

Facility Name: Grenelefe Resort WWTF (Permit No. FLA013016)
Contact Person: Eric Maldonado, National Director of Engineering
Phone Number: (407) 351-3351

Statement By Permittee Regarding Awareness of the Information in This Report:

The above named permittee is fully aware of the information contained in this report.


Mr. Mark Waltrip, Chief Operating Officer

7/2/21
Date

Facility Operator:

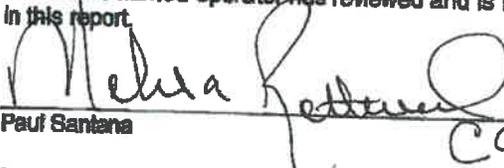
Name: Paul Santana

Address: 4939 Cross Bayou Blvd., New Port Richey, FL 34652

Phone Number: (727) 848-8292

Statement By Operator Regarding Awareness of the Information in This Report:

The above named operator has reviewed and is fully aware of the recommendations and schedules included in this report.

for 
Paul Santana

C95916

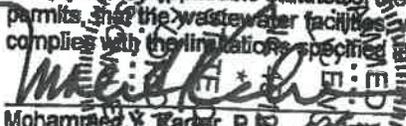
7/12/21
Date

Professional Engineer Preparing this Report:

Name: Mohammed Kader, P.E.
Firm Name: U.S. Water Services Corporation
Address: 4939 Cross Bayou Boulevard
New Port Richey, Florida 34652
Phone Number: (727) 848-8292

Statement By Professional Engineer:

The information contained in this report is true and correct to the best of my knowledge, the report was prepared in accordance with sound engineering principles, and I have discussed the recommendations and schedules with the permittee or the Permittee's delegated representative, and the lead operator and agree that if the recommended schedules for corrective action are met, the facilities, when properly operated and maintained, will comply with all applicable statutes of the State of Florida and rules of the Department, or for temporary operation permits, and the wastewater facilities, when properly operated and maintained, will discharge an effluent that complies with the limitations specified in the permit application.


Mohammed Y. Kader, P.E.
Florida Reg. No. 45129

July 12, 2021
Date

TABLE OF CONTENTS

	Page No.
INTRODUCTION	1
PHYSICAL CONDITIONS	3
TREATMENT CAPACITY AND EFFICIENCY	12
PERFORMANCE TRENDS	13
OPERATION AND MAINTENANCE PROGRAM	14
GENERAL	15
PROBLEMS, DEFICIENCIES, AND CORRECTIVE ACTIONS	16
Attachment A (Site Plan)	
Attachment B (Process Flow Diagram)	
Attachment C (Water Quality and Ground Water Monitoring Summary)	
Attachment D (Biosolids Agreement)	
Attachment E (Site Location Map)	
Attachment F (Field Evaluation Form)	
Attachment G (RPZ Certification)	
Attachment H (Flow Calibration)	
Attachment I (Annual Reuse Report)	

**O & M PERFORMANCE REPORT
Greenelefe Country Club WWTF
Permit No. FLA013016**

INTRODUCTION

The Greenelefe Resort Wastewater Treatment Facility (WWTF) is located at 4501 Abbey Court, Haines City, Florida in Polk County. The wastewater treatment plant and disposal system services the Greenelefe Resort community. A location map and topoquad map are attached at the end of this report. The facility is an existing 0.68 million gallon per day (MGD) three month rolling average daily flow (3MRADF) permitted capacity, Type I extended aeration domestic wastewater treatment facility. The WWTF is limited to 0.34 MGD 3MRADF Type II while the clarifiers in trains one and two are under repair, and as long as R-001 is the only effluent disposal system. The WWTF consists of the following units: a flow splitter box with bar screens, ten aeration basins of 682,187 gallons total volume, four clarifiers of 113,312 total volume and 3,190 square feet of total surface area, seven deep bed automatic backwash filters of 448 square feet designed to handle 472 gallons per minute (gpm), three pre-filter chlorine contact chambers of 21,654 gallons total volume, one post chlorine contact chamber of 19,947 gallons of volume, one effluent pump wetwell of 9,973 volume, and three digesters of 54,442 gallons total volume. The wastewater treatment plant is operated to provide secondary treatment with basic disinfection.

The existing wastewater treatment system consists of the following units:

- Ten (10) 682,187 gallons total volume aeration tanks.
- Four (4) 113,312 gallons total volume and 3,190 square feet total surface area clarifiers.



- Seven (7) Deep filters of 448 square feet total surface area design for 472 gpm.
- Three (3) Pre-filtration chlorination contact tanks of 21,654 gallons total volume.
- One (1) Post-filtration chlorination contact tank of 19,947 gallons total volume.
- One (1) Effluent pump wetwell of 9,573 gallons volume.
- Three (3) Digesters of 54,442 gallons total volume.

The 0.340 MGD AADF (million gallons per day, annual average daily flow) permitted capacity restricted public access rapid-rate infiltration system (Disposal System R-001) Part IV Land Application System with four percolation ponds having a total of 100,188 square feet of bottom surface area.

The effluent limits that must be met as follows:

	Parameter	Units	Annual Avg.	Monthly Avg.	Single Sample	Monitoring Location
R-001	Flow	MGD	0.340			FLW-01
	CBOD ₅	mg/l	20.0	30.0	60.0	EFA - 01
	TSS	mg/l	20.0	30.0	60.0	EFA - 01
	Nitrates (as N)	mg/l			12.0	EFA - 01
	pH	SU			6.0 – 8.5	EFA - 01
	Fecal Coliforms	#/100ml	200		800	EFA - 01
	TRC	mg/l			0.5	EFA - 01

- FLW-01: Flow meter prior to discharge to R-001.
- EFA-01: Effluent sampling point after treatment and prior to Reuse system R-001.



- **INF-01: Influent sampling point prior to treatment and ahead of the return activated sludge line.**

The current operating permit FLA013016 was issued on January 20, 2017, and expires January 19, 2022.

PHYSICAL CONDITION

A summary of the condition of the treatment facility is described in Table 1.0 below.

**Table 1.0
Physical Condition**

	Surge Tank	Treatment Basins	Clarifier	Chlorine Contact Tanks	Blowers	Digester
Evidence of Overloading	N/A	No	No	No	No	No
General Condition	N/A	Good	Good	Good	Good	Good
Compliance with Applicable Rules	N/A	Yes	Yes	Yes	Yes	Yes
Signs of Proper Operation	N/A	Yes	Yes	Yes	Yes	Yes
Expect Proper Operation to Continue	N/A	Yes	Yes	Yes	Yes	Yes
Adequate Safety Features	N/A	Yes	Yes	Yes	Yes	Yes

Collection System and Lift Station

A field inspection was performed on May 7, 2021. During the inspection the wastewater collection, and transmission systems appeared to be in good to fair condition. The Grenelefe wastewater collection system has a total of 5 wastewater lift stations located



throughout the community. A location map is included at the end of this report. The electrical control panels, visual and audible alarms, and structural components at all of the five lift stations were found to be operational and in good condition at the time of our inspection. The wet wells were free of grease accumulation, and/or signs of infiltration of ground water. However, each of the lift stations 1, 4, and 5 were discovered to have one of their two pumps inoperative. Other than the inoperable pumps, all of the lift station equipment was in good condition and would be expected to continue operating without issue through the next permitting cycle.



LIFT STATION #1 AND CONTROL PANEL

Treatment Trains

The Grenelefe Country Club wastewater treatment facility (WWTF) was originally placed into service sometime during the 1970's. The treatment process utilized at the WWTF is an activated sludge utilizing extended aeration. The treatment processes include coarse screening, aeration, secondary treatment by settling, filtration, disinfection and sludge digestion. The treatment facility consists of three treatment trains. Treatment trains 1 and 2 are smaller parallel treatment trains each consisting of: two 59,369 gallon aeration tanks in series utilizing mechanical surface mixers, a 54,462 gallon aeration tank utilizing diffused air, a 28,727 gallon final settling tank, and 11,490 gallon baffled chlorine contact tank. Both

treatment trains 1 and 2 were taken out of service for repairs. Therefore, all influent is directed to treatment train 3 for primary and secondary treatment before filtration and disinfection. Treatment train 3 facilities operate with a reduced permitted capacity of 0.340 mgd until repairs are completed to treatment trains 1 and 2, and as long as the only method of reuse/disposal for the effluent is the four cells of the rapid infiltration basins.

Treatment Plant Tanks and Mechanical Devices

The WWTF construction is precast concrete plant assemble onsite. The precast tank walls have been previously patched to preclude leaking of the contents, and are currently in good condition with no visual signs of leaking, reinforcement spalling or cracking. The influent wastewater is pumped into the treatment facility from the master pump station #5 located across from the entrance gate to the north of the site. Raw wastewater enters the treatment plant grit chamber, and outfalls into the flow splitter/barscreen box. Horizontal aluminum barscreens are used to remove large debris and rags before entering the aeration tanks on either treatment train. The aluminum barscreen was in good condition and expected to continue operating without issue through the next permit cycle.



TANK REPAIRS AND HORIZONTAL BARSCREEN, AT FLOW SPLITTER BOX

Screened influent gravity flows into the three 123,032 gallon aeration tanks for primary treatment. Mechanical mixers are used to provide aeration within the large aeration tanks. Aeration appears to be good close to the mixers or near the center of the rectangular tanks with less mixing or dead spots occurring near the tank walls and corners.



AERATION TANK MECHANICAL MIXER

Aeration Systems

Aeration at the Grenelefe Country Club WWTF is provided by a combination of mechanical aeration and diffused aeration. The mechanical mixers of trains 1 and 2 are currently inoperative. The 10 H.P. mechanical mixers of train 3 appear to be operating as intended. Diffused aeration is provided by a single rotary blower located on the west side of

treatment train 3, and two centrifugal blowers located between the control room and treatment trains 1 and 2. The 10 h.p. Roots 53 URAI positive displacement rotary blower provides aeration to the aeration bubbler trough, and digester of train 3. The two centrifugal blowers provide aeration for the influent grit chamber, aeration tanks, filters, and final settling tank hoppers and skimmers of treatment trains 1 and 2. Additionally, the aeration piping has been interconnected between the treatment trains. The positive displacement blower is kept within a blower room and has a protective belt guard, and steel support stand. At the time of our inspection one of the centrifugal blowers was out of service, Thus, a single 20 H.P. centrifugal blower, and the 10 H.P. Roots 53 URAI provide diffused air for treatment train 3. As such, they would be expected to continue to operate through the next permitting cycle without issue.



CENTRIFUGAL BLOWERS



POSITIVE DISPLACEMENT BLOWER

Clarification

Train 1 and 2 clarifiers are inoperative and need repairs to be placed back into service. Within train 3 the aerated effluent gravity flows westward into the two independent clarifiers located on the west side of the treatment plant. Each of the operating clarifiers have a volume of 31,556 gallons and a surface area of 468 square feet. The clarifiers are rectangular with chain driven flite collectors. All of the safety railings, walkway grates and

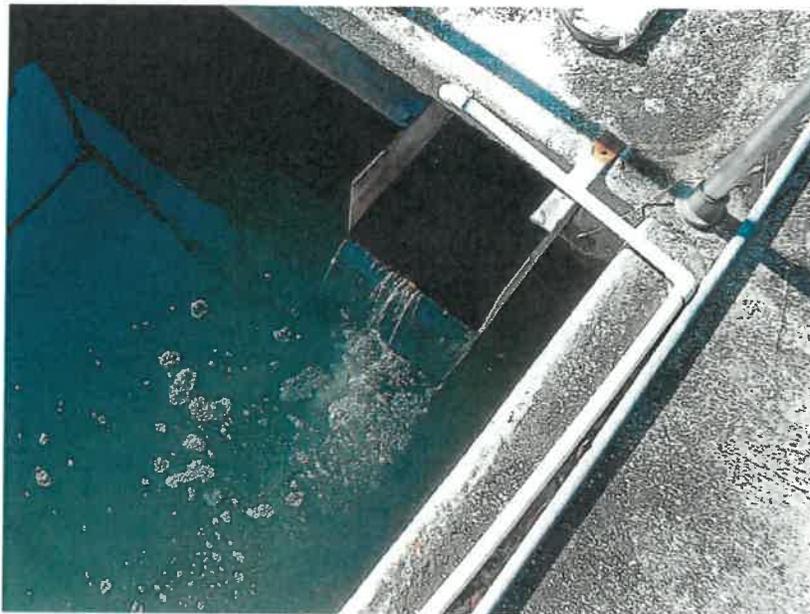
external tank surfaces are in good condition. The return sludge and skimmer returns utilize air lifts to return back to the aeration tank. Some pop-ups were visible on the clarifier surface indicating the skimmers were not operating as designed. Adjustments to the facility skimmers or repairs are included within the corrective actions schedule at the end of this report. The mechanical components of the clarifier require occasional cleaning to remove algae and some floating solids that were observed at the time of our site inspection.



STILLING WELL AND CLARIFIER SURFACE

Chlorine Contact Chambers

Effluent traveling over the clarifier outfall weir passes through the chlorine contact chamber before entering the filters. The 5,800 gallon chlorine contact chambers for trains 1 and 2 are located along the north end of the treatment plant tanks. Treatment trains 1 and 2 are not in service, therefore all of the wastewater passes through the 10,054 gallon chlorine contact tank of train 3 located at the northwest corner of the facility. Disinfection is provided by sodium hypochlorite tablets placed into the clarifier outfall, and 10.5% sodium hypochlorite solution stored in a 250 gallon bulk storage tank, and pumped using a Pulsatron LD54SA-VTC1-U03 chemical feed pump into the outfall of the clarifier.



TRAIN 3 CHLORINE CONTACT TANK

Filtration

The treatment process was originally designed to provide high level disinfection for the public access reuse on the golf course. The current mode of reuse or disposal is by the four rapid infiltration basins (RIBs). Thus, filtration is redundant if the facility can meet the effluent TSS limits without filtration. Chlorinated effluent flows into the distribution header or trough dividing the influent into each of the filters. The seven multimedia sand filters located along the north side of the facility have 64 square feet of surface area, and individual backwash pumps each. A filter bypass line is available for maintenance of the filters. Backwash waste flows into the 28,778 gallon aerated mudwell to be pumped back to the head of the plant. The filter tanks, piping, pumps, and distribution trough are all in good condition and are expected to continue operating without issue through the next permit cycle.



FILTERS AND AERATED MUDWELL

Chlorine Contact Chamber and Effluent dosing

After filtration the treated effluent is directed into the 19,947 gallon chlorine contact tank, and then into the 9,973 gallon effluent dosing tank. Treated effluent is pumped to the four rapid infiltration basins through the magnetic flow meter installed on the discharge piping. A copy of the flow meter calibration report is attached at the end of this report. The concrete tanks, valves, pumps, flow meter, and piping were all in good operating condition, and expected to continue to operate without issue through the next permit cycle.



EFFLUENT DOSING TANK AND FLOW METER

Effluent Disposal/Reuse

Effluent disposal from the Grenelefe Country Club WWTF is by land application system R-001. R-001 is an existing 0.340 MGD AADF permitted capacity rapid infiltration basin (RIB) system consisting of four individual cells with 100,188 square feet of bottom surface area. Prior to our inspection on 5/7/2021, the four percolation pond bottoms were scarified.



R-001 RAPID INFILTRATION BASINS

TREATMENT FACILITY CAPACITY AND EFFICIENCY

The existing permitted capacity of the wastewater treatment facility is 0.340 MGD three month rolling average daily flow (3MRADF). A review of the flow data for the past ten years (as shown in attachment C, graphs and tables) indicates that the annual average flows to the wastewater treatment plant have varied from 0.087 mgd annual average in February and March 2014 to 0.175 mgd annual average in February 2012. The average influent flow during the ten year period under review was 0.0124 mgd or 36.5 % of the permitted capacity. Therefore, the influent flows have been and are expected to remain well below the existing treatment plant permitted capacity of 0.340 mgd (3MRADF), through the next permit cycle.

PERFORMANCE TRENDS

Influent Quality

We have determined that, based on available data, the plant influent quality is within the normal range of typical domestic wastewater.

Effluent Quality

A summary of the flow and influent/effluent water quality data for the past 10-years (2011-2021), is shown in the attached table and graphs under Attachment C. The data is for the wastewater flow (FLW-01), influent quality (INF-01), effluent flows and quality at monitoring location (EFA-01).

During the 10 year period reviewed, the wastewater treatment facility experienced a single exceedance in BOD₅ for the monthly average (132.0 mg/l for March 2019). The Nitrate limit of 12.0 mg/l was exceeded a total of 16 times within the 120 samples or 13% of the samples. The Nitrate exceedances appear to be related to the increased wastewater flows experienced during the winter season and should be corrected by operational and sampling adjustments.

Average Daily Flow

The flow at the WWTP is monitored using the mag-meter/effluent flow meter installed on the effluent dosing discharge piping. The monthly average daily flows from the facility over the past 10-year period are summarized in the attached table and presented in graphical format. The annual average flows during the period under review have remained under the permitted capacity and averaged 0.124 mgd 3MRADF with a maximum three month value of 0.233 mgd 3MRADF reported December 2011, and a maximum annual average of 0.175

mgd reported February 2012. However, the trendline of the annual and three month average is slightly increasing over the ten years under review.

Ground Water Quality

The current operating permit for this facility does require groundwater monitoring. A summary of the ground water reporting is contained within Attachment C at the end of this report.

General

The facility is generally in compliance with the permit conditions with no untreated bypasses, discharges or overflows during the most recent permit period.

Biosolids handling Plan

The facility operator shall make daily observations of the biosolids holding tank. The operator is to immediately request hauling the contents upon the holding tank reaching 80% capacity.

OPERATION AND MAINTENANCE PROGRAM

Record Drawings

Record Drawings are located at the maintenance office.

Operation and Maintenance Manual



An Operation and Maintenance Manual is located at the maintenance office.

Operation and Maintenance Log

The facility maintains up-to-date operation and maintenance logs that are available at the wastewater treatment plant.

GENERAL

Staff Requirements:

The wastewater facility is a Category III, Class C facility. The facility is operated under the supervision of at least one Class C or higher operator for 3 hours per day for 5 visits per week. A certified operator is on call during periods when the facility is unattended.

Maintenance, Sampling and Record keeping Requirements:

The maintenance, sampling and record keeping program for the facility is good.

The facility maintains adequate records including: copy of the contract laboratory certification, backflow certification, operators' licenses, back flow certification, flow calibration, compliance monitoring, the current operating permit, facility operations and maintenance logs are located at the WWTP.

Laboratory Testing:

All analytical testing is performed by laboratories that have been certified by the Department of Health. All on-site tests for pH and chlorine residual are performed by an operator certified by the State of Florida.

Septic Wastewater

No treatment plant problems exist as a result of septic wastewater.

Industrial Contributions

The facility does not receive wastewater from industrial customers.

PROBLEMS, DEFICIENCIES AND CORRECTIVE ACTIONS

Based on our site inspection and file review of records, we have observed that the facility appears to be in good operational conditions. We still recommend the following items be addressed in a timely fashion.

Item No.	Description	Recommended Corrective Action With Schedule
1.	Lift stations 1, 4 and 5 operating with one pump out of service.	Repair or replace second lift station pumps at each station within next 90 days.
2.	Inoperative centrifugal blower.	Repair or replace centrifugal blower within next 180 days.



FLORIDA DEPARTMENT OF Environmental Protection

Southwest District Office
13051 N Telecom Pkwy, Suite 101
Temple Terrace, Florida 33637-926

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Shawn Hamilton
Secretary

STATE OF FLORIDA DOMESTIC WASTEWATER FACILITY PERMIT

PERMITTEE:

NC Real Estate Projects, LLC

RESPONSIBLE OFFICIAL:

Mr. Jason Cox, Managing Member
110 Wades Way, Unit 134
 Mooresville, NC 28117
(704) 996-4543
ndjasoncox@gmail.com

PERMIT NUMBER: FLA013016

FILE NUMBER: FLA013016-009-DW2P/NR

ISSUANCE DATE: November 16, 2022

EFFECTIVE DATE: November 16, 2022

EXPIRATION DATE: November 15, 2027

FACILITY:

Grenelefe Resort WWTF
4501 Abbey Court
Haines City, FL 33844-9720
Polk County
Latitude: 28°3' 45" N Longitude: 81°32' 42" W

EXHIBIT C

This permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and applicable rules of the Florida Administrative Code (F.A.C.). This permit does not constitute authorization to discharge wastewater other than as expressly stated in this permit. This permit is accompanied by an Administrative Order, pursuant to paragraphs 403.088(2)(e) and (f), Florida Statutes. Compliance with Administrative Order, AO-037SWD22, is a specific requirement of this permit. The above-named permittee is hereby authorized to operate the facilities in accordance with the documents attached hereto and specifically described as follows:

WASTEWATER TREATMENT:

An existing 0.680 million gallons per day (MGD) Three-Month Rolling Average Daily Flow (3MRADF), Type I, extended aeration domestic wastewater facility, limited to operate at 0.340 MGD 3MRADF Type II, as long as R-001 is the only effluent disposal system. The treatment plant consisting of: ten aeration basins of 682,187 gallons total volume, four clarifiers of 113,312 gallons total volume and 1,637 square feet of total surface area, seven deep bed automatic backwash filters of 448 square feet designated to handle 472 gallons per minute (GPM), three pre-filter chlorine contact chambers of 21,654 gallons total volume, one post chlorine contact chamber of 19,947 gallons, one effluent pump wetwell of 9,973 gallons, and three digesters of 54,442 gallons total volume. This plant is operated to provide secondary treatment with basic disinfection.

REUSE OR DISPOSAL:

Land Application R-001: An existing 0.340 MGD annual average daily flow (AADF) permitted capacity rapid infiltration basin (RIB) system. R-001 is a reuse system which consists of a four-cell RIB of 100,188 square feet of bottom surface area. R-001 is located approximately at latitude 28°3' 45" N, longitude 81°32' 42" W.

IN ACCORDANCE WITH: The limitations, monitoring requirements, and other conditions set forth in this cover sheet and Part I through Part IX on pages 1 through 18 of this permit.

I. RECLAIMED WATER AND EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Reuse and Land Application Systems

1. During the period beginning on the effective date and lasting through the expiration date of this permit, the permittee is authorized to direct reclaimed water to Reuse System R-001. Such reclaimed water shall be limited and monitored by the permittee as specified below and reported in accordance with Permit Condition I.B.7.:

Parameter	Units	Max. /Min	Reclaimed Water Limitations		Monitoring Requirements			Notes
			Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	
Flow	MGD	Max Max	0.340 Report	Annual Average Monthly Average	5 Days/Week	Flow Meter	FLW-01	See I.A.3
BOD, Carbonaceous 5 day, 20C	mg/L	Max Max Max	20.0 30.0 60.0	Annual Average Monthly Average Single Sample	Every 2 weeks	8-hr FPC	EFA-01	
Solids, Total Suspended	mg/L	Max Max Max	20.0 30.0 60.0	Annual Average Monthly Average Single Sample	Every 2 weeks	8-hr FPC	EFA-01	
Coliform, Fecal	#/100mL	Max Max	200 800	Annual Average Single Sample	Every 2 weeks	Grab	EFA-01	
pH	s.u.	Min Max	6.0 8.5	Single Sample Single Sample	5 Days/Week	Meter	EFA-01	
Chlorine, Total Residual (For Disinfection)	mg/L	Min	0.5	Single Sample	5 Days/Week	Meter	EFA-01	See I.A.4
Nitrogen, Nitrate, Total (as N)	mg/L	Max	12.0	Single Sample	Every 2 weeks	8-hr FPC	EFA-01	
Nitrogen, Total (Interim)	mg/L	Max	Report	Annual Average	Calculated	8-hr FPC	EFA-01	See I.A.6
Nitrogen, Total (Final)	mg/L	Max	10	Annual Average	Monthly	8-hr FPC	EFA-01	See I.A.5 & I.A.6
Phosphorus, Total (as P) (Interim)	mg/L	Max	Report	Single Sample	Monthly	8-hr FPC	EFA-01	See I.A.6
Phosphorus, Total (as P) (Final)	mg/L	Max	6	Single Sample	Monthly	8-hr FPC	EFA-01	See I.A.5 & I.A.6

2. Reclaimed water samples shall be taken at the monitoring site locations listed in Permit Condition I.A.1. and as described below:

Monitoring Site Number	Description of Monitoring Site
FLW-01	Flow meter prior to discharge to R-001.
EFA-01	Effluent sampling point after treatment and prior to Reuse system R-001.

3. A flow meter shall be utilized to measure flow and calibrated at least once every 12 months. [62-600.200(25)]
4. Total residual chlorine must be maintained for a minimum contact time of 15 minutes based on peak hourly flow. [62-610.510][62-600.440(5)(c) and (6)(b)]
5. The Department first adopted the Lake Okeechobee Basin Management Action Plan (BMAP) in December 2014 and the plan became effective in January 2020. In accordance with Table 19 of the BMAP, for this

Figure 1 - Wastewater Treatment Facility Historical Flow

