



# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

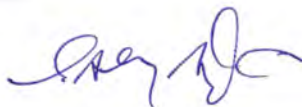
D. Albrey Arrington, Ph.D. EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

**AGENDA**  
**REGULAR MEETING #09-2023**  
**JUNE 15, 2023 – 7:00 PM AT DISTRICT OFFICES**  
ALSO, THE MEETING WILL BE AVAILABLE TO THE PUBLIC ONLINE AT:  
[LOXAHATCHEERIVER.ORG/PUBLICMEETING](http://LOXAHATCHEERIVER.ORG/PUBLICMEETING)

1. Call to Order & Pledge of Allegiance
2. Administrative Matters
  - A. Roll Call
  - B. Previous Meeting Minutes Page 3
  - C. Additions and Deletions to the Agenda
3. Comments from the Public
4. Status Updates
  - A. Loxahatchee River Watershed Page 9
  - B. Loxahatchee River District Dashboard Page 10
5. Consent Agenda (see next page) Page 11
6. Regular Agenda
  - A. Consent Agenda Items Pulled for Discussion
  - B. Auditor Selection Page 137
7. Reports (see next page) Pulled for Discussion
8. Future Business Page 198
9. Board Comments
10. Adjournment

“...if a person decides to appeal any decision made by the Board, with respect to any matter considered at such meeting or hearing, he/she will need a record of the proceedings, and that, for such purpose, he/she may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based.”

Submitted by:   
Date: June 6, 2023

**Dr. Matt H. Rostock**  
CHAIRMAN

**Kevin L. Baker**  
BOARD MEMBER

**Gordon M. Boggie**  
BOARD MEMBER

**Stephen B. Rockoff**  
BOARD MEMBER

**Clinton R. Yerkes**  
BOARD MEMBER

## 5. CONSENT AGENDA

All items listed in this portion of the agenda are considered routine and will be enacted by one motion. There will be no separate discussion of these items unless requested by a Board member or citizen; in which event, the item will be removed and considered under the regular agenda.

- A. Billing Printing & Mailing Services – to approve extension [Page 12](#)
- B. Billing Payment Processing Services – to approve extension [Page 13](#)
- C. Pump Purchase – to approve purchase [Page 14](#)
- D. Partial Abandonment of Easement - 430 University Boulevard, Jupiter - to approve easement [Page 18](#)
- E. Manual of Minimum Construction Standards and Technical Specifications – to approve revisions [Page 23](#)
- F. Fixed Asset Disposal – to approve disposal [Page 133](#)
- G. Change Order to Current Contract - 18-005-LSGENCONSTR – Removal of Grass Paver Driveway Section – to approve additional services [Page 134](#)

## 7. REPORTS

- A. Neighborhood Sewering [Page 138](#)
- B. Legal Counsel's Report [Page 140](#)
- C. Engineer's Report [Page 142](#)
- D. Busch Wildlife Sanctuary [Page 148](#)
- E. Director's Report [Page 149](#)



# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

D. Albrey Arrington, Ph.D. EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

## MEMORANDUM

TO: Governing Board  
FROM: D. Albrey Arrington, Ph.D., Executive Director  
DATE: June 09, 2023  
SUBJECT: Approval of Meeting Minutes

Attached herewith are the minutes of the Regular Meeting of May 18, 2023. As such, the following motion is presented for your consideration:

**“THAT THE GOVERNING BOARD** approve the minutes of the Regular Meeting of May 18, 2023 as submitted.”

Dr. Matt H. Rostock  
CHAIRMAN

Kevin L. Baker  
BOARD MEMBER

Gordon M. Boggie  
BOARD MEMBER

Stephen B. Rockoff  
BOARD MEMBER

Clinton R. Yerkes  
BOARD MEMBER

Ref: #08-2023

LOXAHATCHEE RIVER ENVIRONMENTAL CONTROL DISTRICT  
REGULAR MEETING - MINUTES  
MAY 18, 2023

1. CALL TO ORDER

Chairman Rostock called the Regular Meeting of May 18, 2023 to order at 7:00 PM.

2. ADMINISTRATIVE MATTERS

A. ROLL CALL

The following Board Members were in attendance:

Dr. Rostock  
Mr. Baker  
Mr. Rockoff  
Mr. Yerkes  
Mr. Boggie

Staff Members in attendance were, Mr. Dean, Mr. Howard, Ms. Fraraccio, Mr. Pugsley, Ms. Jones, and Mr. Jarvis.

Consultants in attendance were Mr. Curtis Shenkman and Mr. Hunter Shenkman, and Mr. Spencer Schroder, Mock, Roos & Associates.

- Moment of silence for Anthony Nicoletto

B. PREVIOUS MEETING MINUTES

The minutes of the Regular Meeting of April 20, 2023 were presented for approval and the following motion was made:

“THAT THE GOVERNING BOARD approve the minutes of the Regular Meeting of April 20, 2023 as submitted.”

MOTION: Made by Mr. Boggie, Seconded by Mr. Yerkes  
Passed Unanimously.

C. ADDITIONS & DELETIONS TO THE AGENDA

Pull 5B for discussion



### 3. COMMENTS FROM THE PUBLIC

No comments from the public were received.

### 4. STATUS UPDATES

#### A. LOXAHATCHEE WATERSHED STATUS

Mr. Jarvis presented on the findings from LRD's most recent Capacity Analysis Report.

#### B. LOXAHATCHEE RIVER DISTRICT DASHBOARD

Mr. Dean reviewed the District Dashboard.

### 5. CONSENT AGENDA

"THAT THE GOVERNING BOARD approve the Consent Agenda of May 18, 2023 as amended by removal of item 5B for discussion."

MOTION: Made by Mr. Rockoff, Seconded by Mr. Baker  
Passed unanimously.

The following motions were approved as a result of the Board's adoption of the Consent Agenda:

#### A. Jupiter Inlet Lighthouse Outstanding Natural Area Septic to Sewer – to approve electrical revisions

" THAT THE DISTRICT GOVERNING BOARD authorize the Executive Director to issue a purchase order to Hinterland Group, Inc. for electrical work at the JILONA in the amount of \$256,910.63 and a contingency of \$25,691.00."

#### B. 20 Acres – Site Remediation – to approve professional engineering services

"THAT THE DISTRICT GOVERNING BOARD authorize the Executive Director to execute KCI Technologies, Inc. work authorization dated May 3, 2023 in the amount of \$83,120.00 and a contingency of \$8,000.00 under their continuing contract for professional engineering services 20-001-PROFSERVICES."

#### C. Staff Award Policy – to approve revisions

"THAT THE GOVERNING BOARD approve the updated Staff Award Policy and authorize the Executive Director to implement the policy with an effective date of May 19, 2023."

D. Non-Residential Billing by Water Use Policy – to approve update

“THAT THE DISTRICT GOVERNING BOARD approves the attached, revised Non-Residential Billing By Water Use Policy with an effective date of July 1, 2023.

E. Multi-meter Non-Residential Billing Policy – to approve update

“THAT THE DISTRICT GOVERNING BOARD approves the attached Multi-Meter Non-Residential Billing Policy with an effective date of May 18, 2023.”

F. End Sewer Service Charges Policy – to approve update

“THAT THE DISTRICT GOVERNING BOARD approves the attached End Sewer Service”.

G. Charges Policy with an effective date of May 18, 2023.

“THAT THE DISTRICT GOVERNING BOARD approves the attached End Sewer Service Charges Policy with an effective date of May 18, 2023.”

H. Fixed Asset Disposal – to approve disposal

“THAT THE GOVERNING BOARD authorize the Executive Director to dispose of tangible personal property with asset tag numbers 2728, 2558, 2603, 2604, 2899, 2900, and 2780 in accordance with the District’s Disposal of Surplus Tangible Personal Property Policy.”

I. Change Order to Current Contract – Loxahatchee River Subaqueous Force Main Replacement – Professional Engineering Services Agreement – to approve additional permitting services 22-005-00115 General Services - Electrician Services - to approve contract extension

“THAT THE DISTRICT GOVERNING BOARD authorize the Executive Director to reauthorize the contract to Mock, Roos and Associates for Professional Engineering Services for the Loxahatchee River Subaqueous Force Main Replacement to include additional permitting services in the amount of \$18,850.00 in accordance with their proposal dated May 9, 2023.”

6. REGULAR AGENDA

A. CONSENT AGENDA ITEMS PULLED FOR DISCUSSION

5B. 20 Acres – Site Remediation – to approve professional engineering services

“THAT THE DISTRICT GOVERNING BOARD authorize the Executive Director to execute KCI Technologies, Inc. work authorization dated May 3, 2023 in the amount of \$83,120.00 and a contingency of \$8,000.00 under their continuing contract for professional engineering services 20-001-PROFSERVICES.”

MOTION: Made by Mr. Baker, Seconded by Mr. Rockoff  
Passed unanimously.

Mr. Boggie wanted to make it clear that this is remediation of the 20 acres and not a Master Plan.

B. Headworks Odor Control System Replacement (Evoqua)

“THAT THE DISTRICT GOVERNING BOARD authorize the Executive Director to execute the agreement submitted by Evoqua Water Technologies, Inc. for the supply and installation of a replacement headworks biotrickling filter odor control system, in accordance with a “piggy-back” of the Lee County contract.”

MOTION: Made by Mr. Boggie, Seconded by Mr. Rockoff,  
Passed unanimously.

7. REPORTS

The following reports stood as written.

A. NEIGHBORHOOD SEWERING

B. LEGAL COUNSEL’S REPORT

C. ENGINEER’S REPORTS

D. BUSCH WILDLIFE SANCTUARY

E. DIRECTOR’S REPORT

8. FUTURE BUSINESS

Mr. Dean reviewed Future Business.

9. COMMENTS FROM THE BOARD

Mr. Boggie commented on the work on reporting near misses.

Mr. Rockoff would like the District to consider recognizing Anthony Nicoletto in some form.

## 10. ADJOURNMENT

MOTION: Made by Mr. Rockoff, Seconded by Mr. Yerkes  
Passed Unanimously.

“That the regular meeting of May 18, 2023 adjourns at 7:45 PM.”

---

BOARD CHAIRMAN

---

BOARD SECRETARY

---

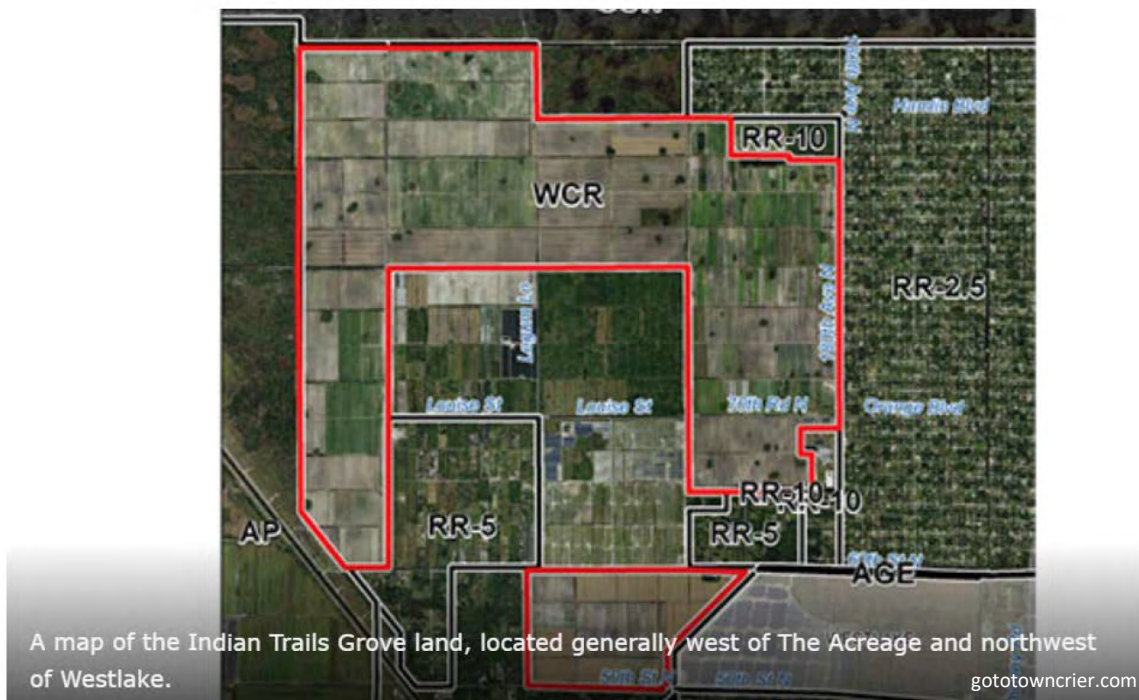
RECORDING SECRETARY



## Loxahatchee River Watershed Status GL Homes Development Plan Approval by Palm Beach County Board of County Commissioners

On May 3<sup>rd</sup>, the Palm Beach County Commission approved a complex development plan with GL Homes. Included in that plan are lands dedicated for water storage and pump stations that could benefit the Loxahatchee River by helping to provide additional water to the river during the dry season.

At our meeting we will present some of the details of this project and how it may benefit the Loxahatchee River.



A map of the Indian Trails Grove land, located generally west of The Acreage and northwest of Westlake.

# LOXAHATCHEE RIVER DISTRICT'S EXECUTIVE DASHBOARD



		Stewardship	Pre-Treatment	Collection & Transmission		Wastewater Treatment			Reclaimed Water	EHS	General Business					River Health		
		# People educated at RC	Grease Interceptor Inspections	Customer Service	Unauthorized Discharge of Sewage	Mean Daily Incoming Flow	Permit exceedance	NANO Blend to Reuse (@ 511)	Delivery of Reclaimed Water	Employee Safety	Cash Available	Revenue (excluding assessment & capital contrib.)	Operating Expenses	Capital Projects		Minimum Flow Compliance	Salinity @ NB seagrass beds	River Water Quality
Units		% of Target	% requiring pump out	# blockages with damage in home	Gallons; # impacting surface waters	million gallons/day	# occurrences	Max Specific Conductance (umhos/cm)	# days demand not met	# of OSHA recordable injuries	\$	% of Budget	% of Budget	% within budget	average # days ahead (behind) schedule	# Days MFL Violation	‰	Fecal Coliform Bacteria (cfu/100ml)
Green Level		≥ 90%	≤ 15	Zero	<704; 0	< 7.7	Zero	<1542	<2	Zero	≥ \$9,894,657	≥ 95%	≥ 85% but ≤ 105%	≥ 80%	≥ (30)	0	min ≥ 20 ‰	≤ 1 site > 200
Yellow		< 90%	≤ 25	1	≤1,500; 0	< 8.8	1	≤1875	≥ 2	-	< \$9,894,657	≥ 90%	≥ 80%	≥ 60%	< (30)	1	min ≥ 10 ‰	≤ 3 sites > 200
Red		<75%	> 25	≥ 2	>1,500; ≥1	≥ 8.8	≥ 2	>1875	≥ 9	≥ 1	< \$5,557,057	< 90%	< 80% or > 105%	< 60%	< (60)	≥ 2	min < 10 ‰	≥ 4 sites > 200
2020 Baseline		34%	8	0.1	3,292	7.2	0	1,183	1	0.3	\$ 35,350,661	100%	90%	91%	-15	7	14.6	2
2021 Baseline		113%	16	0.3	1,130	7.1	0	1,294	2	0.2	\$ 40,651,532	97%	89%	79%	-34	0	24.3	3
2022 Baseline		81%	12	0.1	395	6.8	0	1,268	3	0.0	\$ 44,372,235	101%	91%	83%	-51	1	22.6	3
2022	May	55%	13	0	13; 0	6.5	0	1,312	1	0	\$ 46,067,857	102%	92%	81%	(39)	16	31.8	2
	June	86%	14	0	17; 0	6.6	0	1,249	1	0	\$ 44,902,557	101%	91%	81%	(36)	0	20.6	4
	July	95%	8	0	310; 0	6.2	0	1,245	7	0	\$ 44,247,503	102%	93%	81%	(52)	0	26.9	4
	Aug	88%	10	0	45; 0	6.3	0	1,275	4	0	\$ 45,392,935	101%	92%	84%	(69)	0	32.2	3
	Sept	77%	10	0	11; 0	6.4	0	1,207	13	0	\$ 43,373,290	92%	92%	84%	(87)	0	5.0	4
	Oct	79%	13	0	120; 0	6.9	0	1,101	5	0	\$ 43,464,126	97%	84%	86%	(34)	0	13.8	3
	Nov	53%	9	0	31; 0	7.2	0	1,269	3	0	\$ 45,258,800	103%	83%	87%	(36)	0	17.3	0
	Dec	94%	14	0	3,482; 0	7.1	0	1,342	0	0	\$ 44,024,404	107%	92%	89%	(36)	0	11.8	1
2023	Jan	69%	11	0	51; 0	7.1	0	1,447	9	0	\$ 44,602,531	106%	91%	90%	(23)	0	26.5	1
	Feb	79%	14	0	8; 0	7.2	0	1,334	5	0	\$ 45,825,795	105%	89%	92%	(22)	0	28.9	0
	Mar	94%	13	0	2949; 0	7.1	0	1,324	24	0	\$ 45,242,896	105%	90%	92%	(30)	1	32.7	2
	Apr	116%	9	0	0; 0	7.1	0	1,317	17	0	\$ 44,973,518	106%	93%	92%	(26)	26	27.8	5
	May	84%	13	0	92; 0	6.7	0	1,365	2	0	\$ 46,555,442	107%	92%	97%	(30)	0	27.7	1
Consecutive Months at Green		0	13	13	2	168	23	153	0	18	164	19	6	16	5	1	5	1
Metric Owner		O'Neill	Pugsley	Dean	Dean	Pugsley	Pugsley	Pugsley	Dean	Horchar	Fraraccio	Fraraccio	Fraraccio	Dean	Dean	Howard	Howard	Howard

## Metric

Environmental Education  
IQ Water Delivery

## Explanation

In May our program visitor numbers were down because we had four school groups cancel due to lack of bussing (transportation), which reduced our engagement by 150 people.  
Tequesta Country Club did not receive their full allocation (short 95k gallons) on one day due to a power issue and Jupiter Hills did not receive their full allocation (short 500k gallons) on one day due to an issue with a variable frequency drive that controls IQ Water pumps.





# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

**D. Albrey Arrington, Ph.D.** EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

## MEMORANDUM

TO: Governing Board  
FROM: Administration Staff  
DATE: June 08, 2023  
SUBJECT: Consent Agenda

All items listed below are considered routine and will be enacted by one motion. There will be no separate discussion of these items unless requested by a Board Member or citizen, in which event, the item will be removed and considered under the regular agenda.

This month's consent agenda consists of the following items:

- A. Billing Printing & Mailing Services – to approve extension
- B. Billing Payment Processing Services – to approve extension
- C. Pump Purchase – to approve purchase
- D. Partial Abandonment of Easement - 430 University Boulevard, Jupiter  
- to approve easement
- E. Manual of Minimum Construction Standards and Technical Specifications  
- to approve revisions
- F. Fixed Asset Disposal – to approve disposal
- G. Change Order to Current Contract - 18-005-LSGENCONSTR – Removal  
of Grass Paver Driveway Section – to approve additional services

Should you have any questions regarding these items, I would be pleased to discuss them further with you.

The following Motion is provided for Board consideration:

**“THAT THE GOVERNING BOARD approve the Consent Agenda of June 15, 2023 as presented.”**

Signed

D. Albrey Arrington, Ph.D.  
Executive Director

**Dr. Matt H. Rostock**  
CHAIRMAN

**Kevin L. Baker**  
BOARD MEMBER

**Gordon M. Boggie**  
BOARD MEMBER

**Stephen B. Rockoff**  
BOARD MEMBER

**Clinton R. Yerkes**  
BOARD MEMBER



# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

D. Albrey Arrington, Ph.D. EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

## MEMORANDUM

DATE: June 8, 2023

DEPARTMENT: Customer Service - Bud Howard, Director of Information Services

BUDGET: Printing and Mailing services budgeted item for FY2023  
Postage: \$65,000 from 40-42-5420  
Printing: \$20,000 from 40-42-5340

### DESCRIPTION:

This request is to authorize a second not to exceed extension of \$20,000 to purchase order 23-0223 to Arista Information Systems for printing and mailing services because of delays with the transition to our new Customer Information system.

At the September 2022 Governing Board meeting, the Board approved a purchase order for not to exceed \$40,000 for printing and mailing services from October 1, 2022, through the anticipated transition date to our new provider in March 2023. At the March 2023 Governing Board meeting, the Board approved a \$25,000 extension to the purchase order to fund the anticipated services through the revised transition date prior to May 2023.

Because of continued delays with the implementation of our new customer information system, and the functional timing of implementation with our quarterly billing cycle, we request authorization to extend the printing and mailing services with Arista by \$20,000 for the remainder of the fiscal year (through September 30) and the original budgeted amount of \$85,000. This extension is contractually allowed under the Board approved agreement dated December 22, 2015. We will continue to push to go live as soon as practical and we will only be billed for services provided under this purchase order.

Therefore, we offer the following suggested motion:

**“THE DISTRICT GOVERNING BOARD authorizes the Executive Director to approve a \$20,000 extension to Purchase Order 23-0223 to Arista Information Systems, for a revised not to exceed amount of \$85,000 for FY2023.”**

Dr. Matt H. Rostock

CHAIRMAN

Kevin L. Baker

BOARD MEMBER

Gordon M. Boggie

BOARD MEMBER

Stephen B. Rockoff

BOARD MEMBER

Clinton R. Yerkes

BOARD MEMBER





# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

D. Albrey Arrington, Ph.D. EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

## MEMORANDUM

DATE: June 8, 2023

DEPARTMENT: Customer Service - Bud Howard, Director of Information Services

BUDGET: Payment processing services budgeted item of \$110,000 for FY2023;  
Account #: 40-42-5340

DESCRIPTION:

This request is to authorize a \$35,000 not to exceed extension to purchase order 23-0117 to First Billing Services, LLC., for credit/debit card and echeck payment processing services because of delays with the transition to our new payment services provider.

At the September 2022 Governing Board meeting, the Board approved a contract extension and purchase order for not to exceed \$50,000 for credit card and echeck payment processing services from October 1, 2022 through the anticipated transition date to our new provider in March 2023. At the March 2023 Governing Board meeting, the Board approved a \$25,000 extension to the purchase order to fund the anticipated services through the revised transition date prior to May 2023.

Because of delays with the implementation of our new payment services provider and customer information system, and the functional timing of implementation with our quarterly billing cycle, we request authorization to extend the payment services with First Billing by \$25,000 for the remainder of the fiscal year (through September 30) and the original budgeted amount of \$110,000. This extension is contractually allowed under the Second Amendment to the Master Services Agreement that the Board approved in September 2022. We will continue to push to go live as soon as practical and we will only be billed for services provided under this purchase order.

Therefore, we offer the following suggested motion:

**“THE DISTRICT GOVERNING BOARD authorizes the Executive Director to approve a \$35,000 extension to Purchase Order 23-0117 to First Billing Services, for a revised not to exceed amount of \$110,000 for FY2023.”**

Dr. Matt H. Rostock

CHAIRMAN

Kevin L. Baker

BOARD MEMBER

Gordon M. Boggie

BOARD MEMBER

Stephen B. Rockoff

BOARD MEMBER

Clinton R. Yerkes

BOARD MEMBER



# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

D. Albrey Arrington, Ph.D. EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

## MEMORANDUM

TO: D. Albrey Arrington, Ph.D., Executive Director

FROM: Kris Dean, P.E., Deputy Executive Director

DATE: June 9, 2023

SUBJECT: Pump Purchase – To Approve Purchase

Staff are continuously working to improve documentation of existing pumping equipment and evaluate pump performance against capacity needs throughout our system.

Staff has determined inventory levels for NP3127 10HP pumps are short. Current stock levels are at 2 compared with an industry standard (10%). The 10 HP pumps are available and in use in various impeller sizes with various performance requirements. To date, using improved system documentation and review of system and pump performance staff has identified greater than 50 NP3127 installations with similar capacity and pressure requirements. To ensure available spares in these installations staff are proposing purchase of five 10 HP NP3127 pumps with 488 impellers. The proposed purchase detailed in the attached quote is through an Orange County piggyback contract with Xylem Water Solutions, Inc. on file with purchasing.

As more installations are evaluated staff will continue to determine appropriate pump selections and adjust stocking inventories.

Staff recommend the following motion:

**“THAT THE DISTRICT GOVERNING BOARD authorize the Executive Director to purchase five NP3127 10 HP pumps as detailed in Xylem Water Solutions Inc. quote dated May 8, 2023 in the amount of \$73,804.50”**

Dr. Matt H. Rostock  
CHAIRMAN

Kevin L. Baker  
BOARD MEMBER

Gordon M. Boggie  
BOARD MEMBER

Stephen B. Rockoff  
BOARD MEMBER

Clinton R. Yerkes  
BOARD MEMBER



**Xylem Water Solutions USA, Inc.  
Flygt Products**

May 8, 2023

LOXAHATCHEE RIVER DISTRICT  
2500 JUPITER PARK DR  
JUPITER FL 33458-8962

15132 Park Of Commerce Blvd.  
Suite 102  
Jupiter, FL 33478  
Tel (561) 848-1200  
Fax (561) 848-1299

Quote # 2023-WEP-0395  
Project Name: PUMP - 2023  
Job Name: WO-00185256

Xylem Water Solutions USA, Inc. is pleased to provide a quote for the following Flygt equipment.

3127.070

Qty	Part Number	Description	Unit Price	Extended Price
5	3127.070-0023	Flygt Model NP-3127.070 4" volute Submersible pump equipped with a 230 Volt / 3 phase / 60 Hz 10 HP 1750 RPM motor, 488 impeller, 1 x 50 Ft. length of SUBCAB 4G6+2x1,5 submersible cable, FLS leakage detector, volute is prepared for Flush Valve	\$ 14,760.90	\$ 73,804.50

\*\*Orange County Contract pricing\*\*

**Total Price**

**\$ 73,804.50**

**Terms & Conditions**

This order is subject to the Standard Terms and Conditions of Sale – Xylem Americas effective on the date the order is accepted which terms are available at <http://www.xyleminc.com/en-us/Pages/terms-conditions-of-sale.aspx> and incorporated herein by reference and made a part of the agreement between the parties.

**Purchase Orders:** Please make purchase orders out to: Xylem Water Solutions USA, Inc.

**Freight Terms:** 3 DAP - Delivered At Place 08 - Jobsite (per Incoterms 2020)

See Freight Payment (Delivery Terms) below.

**Taxes:** State, local and other applicable taxes are not included in this quotation.

**Back Charges:** Buyer shall not make purchases nor shall Buyer incur any labor that would result in a back charge to Seller without prior written consent of an authorized employee of Seller.

**Shortages:** Xylem will not be responsible for apparent shipment shortages or damages incurred in shipment that are not reported within two weeks from delivery to the jobsite. Damages should be noted on the receiving slip and the truck driver advised of the damages. Please contact our office as soon as possible to report



damages or shortages so that replacement items can be shipped and the appropriate claims made.

**Terms of Delivery:** PP/Add Order Position

**Terms of Payment:** 100% N45 after invoice date.

Xylem's payment shall not be dependent upon Purchaser being paid by any third party unless Owner denies payment due to reasons solely attributable to items related to the equipment being provided by FLYGT.

**Time of Delivery:** Approx. 10-12 working weeks after receipt of order.

**Validity:** This Quote is valid for ninety (90) days.

**Schedule:** Please consult your local Flygt Branch Office to get fabrication and delivery lead times.

**COVID 19:** Our current delivery lead-times are forecasted estimates only due to the outbreak of the COVID-19 virus pandemic and its global effects on commerce, supply chain, and logistics. Xylem will, however, use all commercially reasonable efforts to minimize any delivery delay impacts.

Thank you for the opportunity to provide this quotation. Please contact us if there are any questions.

Sincerely,



Eric Johnson  
Sales Representative  
Phone: 5615158710  
Cell: 5612483712  
eric.johnson@xylem.com



Lesa Bondesen  
Customer Support Specialist  
Phone: 704-227-5019  
lesa.bondesen@xylem.com



**Customer Acceptance**

This order is subject to the Standard Terms and Conditions of Sale – Xylem Americas effective on the date the order is accepted which terms are available at <http://www.xyleminc.com/en-us/Pages/terms-conditions-of-sale.aspx> and incorporated herein by reference and made a part of the agreement between the parties.

A signed copy of this Quote is acceptable as a binding contract.

**Purchase Orders:** Please make purchase orders out to: Xylem Water Solutions USA, Inc.

Quote #: 2023-WEP-0395  
Customer Name: LOXAHATCHEE RIVER DISTRICT  
Job Name: WO-00185256  
Total Amount: \$ 73,804.50  
(excluding freight)

Signature: _____	Name: _____ (PLEASE PRINT)
Company/Utility: _____	PO: _____
Address: _____	Date: _____
_____	Phone: _____
_____	Email: _____
_____	Fax: _____



# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

D. Albrey Arrington, Ph.D. EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

## MEMORANDUM

**TO:** D. Albrey Arrington, Ph.D., Executive Director

**FROM:** Kris Dean, P.E., Deputy Executive Director  
Courtney Jones, P.E., Director of Engineering

**DATE:** June 15, 2023

**SUBJECT:** Partial Abandonment of Easement – 430 University Boulevard

The District maintains a 40-foot by 40-foot easement at 430 University Boulevard, Jupiter, FL 33458 for operation and maintenance of Lift Station No. 254. The Chabad Jewish Center has purchased this property and built a new facility on this site. The Chabad Jewish Center reached out to the District requesting to relocate the Chabad Jewish Center's mechanical equipment from the east side of the building to a location within the District's lift station easement. Allowing the Chabad Jewish Center to relocate the building's mechanical equipment to within the District's easement renders that portion of the easement dedicated to the mechanical equipment no longer available for District operation and maintenance of the station and would therefore be proposed to be abandoned.

The District Standards require a 40-foot by 40-foot easement at lift station sites. At Lift Station No. 254, there is an existing 10-foot utility easement on the east-side of the District's 40-foot by 40-foot easement, effectively providing a 40-foot by 50-foot easement. Based on the existing site configuration and proposed location for the Chabad Jewish Center's building mechanical equipment on the western side of the easement, the District would still maintain a 40-foot by 30-foot lift station site and have access to the additional 10-foot easement on the east-side.

Allowing the Chabad Jewish Center to relocate the building mechanical equipment to the western 10-feet of the lift station easement will not hinder operation / maintenance of the lift station and will not conflict with future standby emergency power and/or radio telemetry. As such, District staff see no issue with abandonment of the western 10-feet of the District's existing easement.

Staff recommend the following motion:

**“THAT THE DISTRICT GOVERNING BOARD approve partial abandonment of easement at 430 University Boulevard as described in the attached legal sketch and description.”**

Dr. Matt H. Rostock  
CHAIRMAN

Kevin L. Baker  
BOARD MEMBER

Gordon M. Boggie  
BOARD MEMBER

Stephen B. Rockoff  
BOARD MEMBER

Clinton R. Yerkes  
BOARD MEMBER



**DESCRIPTION & SKETCH  
PREPARED FOR:  
CHABAD JEWISH CENTER OF JUPITER, INC.**

**PARTIAL RELEASE OF EASEMENT  
430 UNIVERSITY BLVD.  
JUPITER, FL. 33458**

LEGAL DESCRIPTION

A PARTIAL RELEASE OF EASEMENT LYING OVER AND ACROSS A PORTION OF TRACT WK5-C OF ABACOA-REPLAT OF TRACT WK5 AS RECORDED IN PLAT BOOK 85, PAGES 7 AND 8, OF THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SAID TRACT WK5-C; THENCE SOUTH 01°24'26" WEST ALONG THE EAST LINE OF SAID TRACT WK5-C A DISTANCE OF 183.75 FEET; THENCE NORTH 88°35'34" WEST, A DISTANCE OF 10.00 FEET TO THE NORTHEAST CORNER OF A SEWER EASEMENT RECORDED IN OFFICIAL RECORDS BOOK 10217, PAGE 9 OF THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA; THENCE ALONG THE NORTH LINE OF SAID SEWER EASEMENT, NORTH 88°35'34" WEST, A DISTANCE OF 30.00 FEET TO THE POINT OF BEGINNING; THENCE SOUTH 01°24'26" WEST, A DISTANCE OF 40.00 FEET TO POINT ON THE SOUTH LINE OF SAID SEWER EASEMENT; THENCE NORTH 88°35'34" WEST, ALONG THE SOUTH LINE OF SAID EASEMENT, A DISTANCE OF 10.00 FEET TO THE SOUTHWEST CORNER OF SAID EASEMENT; THENCE NORTH 01°24'26" EAST, A DISTANCE OF 40.00 FEET TO THE NORTHWEST CORNER OF SAID EASEMENT; THENCE SOUTH 88°35'34" EAST, ALONG THE NORTH LINE OF SAID EASEMENT, A DISTANCE OF 10.00 FEET TO POINT OF BEGINNING.

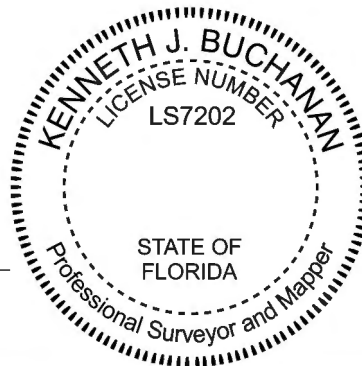
CONTAINING A TOTAL OF 400 SQUARE FEET OF LAND, MORE OR LESS.

SURVEYOR'S NOTES:

1. THIS DRAWING IS NOT A SURVEY.
2. NO SEARCH OF THE PUBLIC RECORDS HAS BEEN MADE BY THIS OFFICE.
3. THE DESCRIPTION SKETCH AND THE DESCRIPTION TEXT COMPRISE THE COMPLETE LEGAL DESCRIPTION. THE LEGAL DESCRIPTION IS NOT VALID UNLESS BOTH ACCOMPANY EACH OTHER.
4. THIS LEGAL DESCRIPTION IS NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OR DIGITAL SIGNATURE OF A FLORIDA LICENSED SURVEYOR AND MAPPER EMPLOYED BY LIDBERG LAND SURVEYING, INC.
5. DATE OF LEGAL DESCRIPTION: MAY 19, 2023

LIDBERG LAND SURVEYING, INC.

BY: KENNETH J. BUCHANAN  
PROFESSIONAL SURVEYOR AND MAPPER  
FLORIDA CERTIFICATE NO. 7202



ABBREVIATIONS:

PCN = PARCEL CONTROL NUMBER  
O.R.B. = OFFICIAL RECORD BOOK  
P.B. = PLAT BOOK  
P.O.B. = POINT OF BEGINNING  
P.O.C. = POINT OF COMMENCEMENT  
PG. = PAGE  
R/W = RIGHT OF WAY  
R = RANGE  
T = TOWNSHIP



CAD. K:\AUTOCAD2000\244442\85-7\23-058\DWG\23-058-303.DWG			
REF.			
FLD.	—	FB.	PG.
OFF.	M.B.S.		
CKD.	R.J.W.	SHEET 1 OF 2	DWG. A23-058
			JOB 23-058-303
			DATE 5-18-2023

**PARTIAL RELEASE OF EASEMENT  
430 UNIVERSITY BLVD.  
JUPITER, FL. 33458**



675 West Indiantown Road, Suite 200,  
Jupiter, Florida 33458 TEL. 561-746-8454

DWG. A23-058



Prepared By and Return To:  
Kris Dean, P.E. Deputy Executive Director  
Loxahatchee River Environmental Control District  
2500 Jupiter Park Drive  
Jupiter, Florida 33458-8964

## TERMINATION OF EASEMENT

THIS PARTIAL TERMINATION OF EASEMENT (“AGREEMENT”) is given this \_\_\_\_ day of \_\_\_\_\_, 2023 by the LOXAHATCHEE RIVER ENVIRONMENTAL CONTROL DISTRICT (“DISTRICT”), whose address is 2500 Jupiter Park Drive, Jupiter, Florida 33458 to CHABAD JEWISH CENTER OF JUPITER, INC (“DEVELOPER”),

### WITNESSETH:

1. Pursuant to a request from the DEVELOPER, the DISTRICT received a request to release a portion of an easement dedicated to the DEVELOPER within the western 10-feet of the existing easement on the property located at 430 University Blvd., Jupiter, FL.
2. The Specific Easement area to be terminated and abandoned is more particularly described in the attached Exhibit “A”.

NOW, THEREFORE, in consideration of the promises, stipulations, agreements and covenants made by Grantee contained herein, the receipt and adequacy of which is hereby acknowledged, DISTRICT does by this instrument terminate, abandon and release to DEVELOPER, their successors and assigns, that portion of the easement described in Exhibit A attached hereto and made a part hereof.

IN WITNESS WHEREOF, DISTRICT has signed and sealed these presents the day and year first above written.

Signed, sealed, and delivered  
in the presence of:

LOXAHATCHEE RIVER  
ENVIRONMENTAL  
CONTROL DISTRICT

\_\_\_\_\_  
Witness  
Print Name:

\_\_\_\_\_  
By: D. Albrey Arrington, Ph.D.  
Executive Director

\_\_\_\_\_  
Witness  
Print Name:

STATE OF FLORIDA  
COUNTY OF PALM BEACH

The foregoing instrument was acknowledged before me this \_\_\_\_ day of \_\_\_\_\_, 2023, by D. Albrey Arrington, Executive Director of the Loxahatchee River Environmental Control District, on behalf of the District, who is personally known to me or who has produced \_\_\_\_\_ as identification.

[SEAL]

\_\_\_\_\_  
Notary Public  
Print Name: \_\_\_\_\_

Commission Number: \_\_\_\_\_

My Commission Expires: \_\_\_\_\_



# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

**D. Albrey Arrington, Ph.D.** EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

## MEMORANDUM

TO: D. Albrey Arrington, Ph.D., Executive Director

FROM: Kris Dean, P.E., Deputy Executive Director  
Courtney Jones, P.E., Director of Engineering

DATE: June 15, 2023

SUBJECT: Manual of Minimum Construction Standards and Technical Specifications – June 2023 Update

In April of 1983 the Governing Board approved the District's first "Manual of Minimum Construction Standards and Technical Specifications". Since the initial adoption, this document has been updated from time to time as codes, rules, materials, and methods have changed and improved over time.

Staff have implemented a Standards Review Committee to manage change control of the construction standards and technical specifications. This Committee meets quarterly and follows strict procedures governing change requests, investigation, recommendation/authorization and implementation of changes to the construction standards and technical specifications.

This June, Engineering Services is updating the Manual of Minimum Construction Standards and Technical Specifications. Detailed updates can be reviewed in the Manual of Minimum Construction Standards and Technical Specifications, as summarized below and attached:

1. Throughout document – Typographical and numbering errors
2. TC-1 – Updated to include new Standard Details SD-35 through SD-39
3. Section 10.02.2 – Added reference to District's website and correct reference to District Rule Chapter 31-10.
4. Section 10.02.4 – Added language to clarify final submittal required documents to be consistent with current workflow process.
5. Section 110.013 – Added language to clarify pressure rating requirements for mechanical joint vs. flanged fittings.
6. Section 122.01.1 & 122.01.2– Updated language to be consistent with current F.A.C. and 2020 Building Code.
7. Section 122.03
  - a. Added language to align with updated Rule Chapter 31-13 approved by the Board in March 2023.
  - b. Added language to clarify structural inspection procedures.
8. Section 122.04
  - a. Added language to further clarify grease interceptor exemption requirements

**Dr. Matt H. Rostock**  
CHAIRMAN

**Kevin L. Baker**  
BOARD MEMBER

**Gordon M. Boggie**  
BOARD MEMBER

**Stephen B. Rockoff**  
BOARD MEMBER

**Clinton R. Yerkes**  
BOARD MEMBER

9. Section 150.07 – Updated to reflect the addition of the cellular telemetry standards.
10. Section 181.07 – Updated to reflect the addition of the cellular telemetry standards.
11. Section 200 – Revised current officers.
12. Standard Detail Index (SD)
  - a. Updated to reflect addition of new Standard Details SD-35 through SD-39
  - b. Updated to reflect name change of SD-26 for clarification purposes
13. Standard Detail SD-5
  - a. Updated call-outs for clarification purposes
  - b. Updated Note 3 to be consistent with current F.A.C. and 2020 Building Code
  - c. Updated name of SD-5 for clarification that detail applies to all interceptors (grease or oil/sand).
14. Standard Detail SD-26 – Updated name of Standard Detail for clarification purposes
15. Standard Detail SD-32 – Addition of heading over radio telemetry system I/O.
16. Standard Detail SD-33
  - a. Relocated junction to left-hand side of front elevation of control panel to allow for alignment with intrinsically safe barrier inside control panel.
  - b. Conduits between control panel and junction box updated with note to specify aluminium conduits with aluminium seals.
  - c. Note for junction box updated to provide further specifications / requirements to address frequently asked questions during construction.
  - d. Rear elevation updated to show updated dimensions based on new cellular RTU and added dimension of panel rack width to limit rack footprint to the extent possible.
17. Standard Detail SD-34
  - a. Updated phase monitor on bill of materials to standardize on ProSense PMRU-1C-480A-TL. This phase monitor has a higher input voltage range, includes adjustable indicator for undervoltage trip delay, and is less costly than the current standard phase monitor.
18. Standard Details SD-35 through SD-39
  - a. New Standard Details to adopt the cellular remote telemetry unit (RTU) that will be installed at 149 lift stations as part of two (2) capital projects (#N21003 and #R22012) as part of the District Standards.

Staff recommend the following motion:

**“THAT THE DISTRICT GOVERNING BOARD ratify and approve the Loxahatchee River Environmental Control District’s “Manual of Minimum Construction Standards and Technical Specifications”, as of June 15, 2023, and authorize the Director of Engineering and Executive Director to update the Construction Standards and Technical Specifications from time to time, and periodically present it to the Governing Board for ratification and approval.”**

**LOXAHATCHEE RIVER  
ENVIRONMENTAL CONTROL DISTRICT**



**MANUAL OF MINIMUM CONSTRUCTION  
STANDARDS AND TECHNICAL SPECIFICATIONS  
FOR  
LOXAHATCHEE RIVER DISTRICT**

D. Albrey Arrington, Ph.D.  
Executive Director

Kris Dean, P.E.  
Deputy Executive Director/~~Director of Engineering~~

Courtney ~~Marshall~~Jones, P.E.  
~~District Engineer~~Director of Engineering

Revision: ~~September 2022~~June 2023

## TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
10	Administrative and General	10-1 to 10-8
20	Design Criteria	20-1 to 20-7
30	Miscellaneous Requirements	30-1 to 30-4
100	Excavation, Pipe Embedment, Fill and Grading	100-1 to 100-5
107	Horizontal Directional Drill	107-1 to 107-2
110	Pipe, Fittings and Accessories	110-1 to 110-6
120	Cast in Place Concrete	120-1 to 120-5
121	Precast Manholes and Structures	121-1 to 121-4
122	Grease Interceptors and Traps	122-1 to 122-4
130	Valves and Appurtenances	130-1 to 130-4
140	Pipeline Integrity Tests	140-1 to 140-4
150	Submersible Lift Stations	150-1 to 150-9
151	Low Pressure Sewer Systems	151-1 to 151-7
160	Variable Speed/PLC Control Panels	160-1 to 160-8
170	Emergency Standby Diesel Generator Set	170-1 to 170-5
180	Instrumentation	180-1 to 180-2
181	Programmable Logic Controllers	181-1 to 181-5
190	Remote Terminal Unit (RTU) – Lift Station	190-1 to 190-4
200	Adoption of Standards	200-1
	Low Pressure Force Main Details	LP-1 to LP-35
	Standard Details	SD-1 to SD-30
	Lift Station Details	SD-31 to SD- <del>34</del> 39

## SECTION 10

### ADMINISTRATIVE AND GENERAL

#### 10.01 General

The purpose of this manual is to provide the minimum construction standards for design and construction work associated with wastewater systems within the District and is intended to supplement the requirements of other regulatory agencies. The design engineer is to use good engineering judgment in the design of wastewater systems. The design engineer and the contractor are responsible for providing sound, workable, and long lasting systems.

The intent of this section is to provide members of the development community with a brief introduction to the Loxahatchee River Environmental Control District, also referred to as “District”, its function, and procedures.

The Loxahatchee River Environmental Control District is an agency of government which was created in 1971 for the purpose of providing utility and other environmental services within the 72 square mile basin of the Loxahatchee River. Currently, the District owns, operates, and regulates the regional wastewater system serving Tequesta, Jupiter, Juno Beach, Juno, and the unincorporated areas of northern Palm Beach and southern Martin Counties.

The District offices are located at 2500 Jupiter Park Drive, Jupiter, Florida. The offices are open between 8:00 A.M. and 5:00 P.M. weekdays. The telephone number during working hours is (561) 747-5700. For emergency situations outside of normal office hours, the telephone number is (561) 747-5708. The District website can be found at <http://www.loxahatcheeriver.org>.

With specific regard to new development, the District’s legislated policy is to provide the required utility services to the area now and as it continues to grow. It is, therefore, the agency’s intent to work closely with new development to assure that the utility services can be provided in a manner which is both timely and consistent with the standards and specifications set forth in this manual.

Please note that the District’s “Manual of Minimum Construction Standards and Technical Specifications” may change from time to time. All projects will be subject to the current District, local, state and federal rules and regulations at the time of submittal of final engineering drawings for approval.

#### 10.02 Procedures Prior to Construction

##### 10.02.1 Introductory Meeting

It is highly recommended that the project representative (s) (owner, engineers) meet with the District’s Deputy Executive Director early in the planning stages of the development. At such time a determination of sewer and reuse water availability will be made, and financial impacts will be reviewed.



#### 10.02.2 Developer Agreement

The submittal of a properly executed agreement, along with payment for certain charges, is required before the District will review the engineering plans. Copies of the District's Standard Developer Agreement and District Rule Chapter 31-10-~~F.A.C.~~, which addresses the charges, are available online at the District's website: <https://loxahatcheeriver.org/> or at the District offices.

#### 10.02.3 District Installed Facilities

During the introductory meeting the developer may wish to discuss the availability of District installed regional and sub regional facilities to serve the proposed project, although, this program is limited to larger developments.

The District currently maintains a program where sub regional lift stations may be constructed by and paid for by the District. A sub regional facility must be designated and approved by the District Governing Board. Staff will take no action for recommending designation of a facility for installation until a developer agreement is executed and all fees are paid.

Staff reviews and assesses the project based upon economic feasibility, consistency with the District Master Plan and its current and future demand. To promote stable and effective communication between the District and the Developer, we will require the Developer to coordinate all communication through the Engineer of Record.

In designating a sub-regional facility, the following items are the responsibility of the owner/developer:

Provide the District with any project information necessary for the design of lift station(s) and force mains(s).

Provide, at developer's expense, all necessary electrical service to the lift station site in conjunction with construction activities.

Provide suitable access to lift station and force main sites for District and contractor's vehicles and equipment. Paved asphaltic concrete or reinforced concrete access drives will be provided (Min.16' wide) prior to acceptance.

Provide appropriately sized sanitary sewer gravity lines that are necessary to serve adjoining properties in conjunction with lift station construction. Sewer lines to adjoining properties must be activated concurrent with lift station, or upon demand from the District.

The last collection manhole, just upstream of the lift station, should be placed in a manner to minimize road, lane or sidewalk closures should by-pass operations be needed at the lift station. The District may require this last collection manhole to be placed inside the lift station easement.

Provide all clearing, grubbing and rough grading of the lift station and force main sites prior to construction.

Provide survey requirements and staking of the lift station and force main upon request from the District. Staking shall include provision of one stake at center of the proposed wet well, with 50' offsets and bench mark. Force main shall be staked at center line with 10' offsets every 100 feet, with a set bench mark. All survey work shall be performed by a professional surveyor licensed in the State of Florida.

Developer shall convey a deed to the lift station property prior to construction, and all required easements as follows:

Permanent Easements:

- a. Lift Station - 40' x 40'
- b. Force Mains - 10' wide minimum
- c. Gravity Mains - 15' wide minimum for sewers

Temporary Construction Easements:

- a. Lift Station - 100' x 100'
- b. Force Mains - 30' wide minimum
- c. Gravity Mains - 50' wide minimum

Developer's contractor will be responsible to make gravity line connections from the system collection manhole to the lift station after the construction of the wet well has been completed.

District staff will work in conjunction with the developer's project engineer to plan for the service area. Station design will be performed by the District. Construction will be contracted for by the District and inspected by District personnel.

#### 10.02.4 Developer Installed Facilities - Plan Review and Approval

An initial electronic plan submittal (PDF) is recommended. Submittal should contain; one (1) complete set of plans including sewer, reuse, water and drainage systems, and paving and grading details. Upon review, the design engineer will be notified of acceptance or comments which need to be addressed. District staff will work with the Developer's Engineer of Record to address the final design of Developer installed facilities.

Final submittal for approval will require additional plan sets, to include one (1) electronic (PDF), [electronic AutoCAD plan files](#), two (2) ~~hardcopies~~ full-size (24x36) sets for District files, two (2) ~~sets for hard~~ [copies of executed Florida](#) Department of Environmental Protection and/or Palm Beach County Health Department [permit applications](#) for District files, plus any additional sets required by the engineer or owner.

District approval of utility plans and specifications, as well as sign off on the Florida Department of Environmental Protection/Health Department application, is required.

Plan review will be for technical sufficiency of design for incorporation into the District's system. This review, as well as plan approval by the District, does not relieve the design engineer of his liabilities or responsibility for a properly detailed design. District Engineering staff will be available to work with the design engineer to assure the plans meet the requirements set forth in this manual.

All plan submittals must be signed and sealed by a Professional Engineer, registered in the State of Florida. Plans which are marked "Preliminary" or "Draft" will not be approved.

Supplemental data to be furnished with the final plans submitted for approval includes the following:

1. Project Summary
  - a. Number of residential units being served or non-residential uses.
  - b. Number of Manholes
  - c. L.F. of Gravity Main (for each pipe size)
  - d. L.F. of Force Main (for each pipe size)
  - e. Number of Lift Stations and depth of each
2. Basis of determination of design capacity and design flow.
3. Calculations and plot of system head curves.
4. Calculations of pump cycle times.
5. Wet well floatation calculations.
6. Landscaping plan that includes the proposed sewer facilities on the plan to determine if the necessary setbacks are provided.
7. Preliminary phasing plan (for entirety of project) that includes a table indicating number and type of lots (i.e., multifamily, single family, etc.) and the year those lots require DOH certifications.

#### 10.03 Developer Installed Facilities - Procedures During Construction

##### 10.03.1 Periodic Inspection

Throughout construction, the developer will look to his consulting engineering firm for progress by periodic inspections. District Engineering staff will periodically check the site during construction for progress. If problems are encountered during construction, it will be the

developer's responsibility through his engineers, to resolve them to the District's satisfaction. Any revision of substance to the approved plans shall be submitted to the District for approval prior to incorporation into the work.

#### 10.03.2 Pre-Final Inspection Submittals

1. Approximately 60 days prior to construction completion, the Developer's Engineer of Record shall provide the Deputy Executive Director the following for review and approval:
  - a. A signed and sealed cost of construction of the sewer improvements. This information will be used to establish the value of the maintenance bond.
  - b. A final Phasing Plan. The Phasing Plan should encompass the project in its entirety and is solely at the discretion of the District as to timing and extent of phases.
2. Upon receipt of the above information the Deputy Executive Director will prepare a letter to the Owner, with copy to the engineer, with the Bill of Sale and easement forms prepared for execution, along with a listing of administrative items to be provided prior to District inspection of facilities for acceptance.

#### 10.04 Developer Installed Facilities - Procedures Following Construction

##### 10.04.1 Project Completion

A project is not considered complete and prepared for District final inspection until such time as:

1. All sewer system construction is completed in accordance with plans and specifications and inspected and certified by the engineer.
2. Where sewers are constructed in paved areas, at least the 1<sup>st</sup> lift of asphalt has been provided.
3. Areas over lines and laterals, which are not proposed to be paved, shall be brought to finish compacted grade.

##### 10.04.2 Project Completion Submittals

Upon Completion of Construction, but before District final inspection, submit the following items in forms acceptable to the District:

1. Bill of Sale
2. Grant of Easement

3. Maintenance Bond: From a surety company and executed by an attorney-in-fact for the surety company with a certified copy of his Power-Of Attorney attached to the Bond; or a
4. Letter of Credit: From a financial institution and in a form acceptable to the District.
5. Record Drawings: Submit one (1) blackline copy of the record drawings, signed and sealed by a Florida licensed Professional Surveyor & Mapper. Record drawings must comply with LRD's District Standard Detail SD-29 "Record Drawing Submittal Guide".
6. Department of Environmental Protection Certificate of Completion Executed by Owner and Certifying Engineer.
7. Letter of Certification from the Engineer of Record
8. Performance Test Results: infiltration/exfiltration, pressure, leakage and pump start-up test records. All documents must be signed and sealed by the Engineer of Record.
9. Copy of Site Plan and Recorded Plat indicating all building numbers and street names.
10. Payment for all buildings connected to the system.

#### 10.04.3 Final Inspection

After the Owner and Project Engineer have provided the documents as outlined in Section 10.04.2, and all punch list items have been remedied, the District engineering staff will conduct a final inspection and recommend acceptance or denial. If acceptance is denied, a letter will be sent to the project Engineer advising of the denial and reasons for such. Subsequently, the project engineer should address the comments and request scheduling a final reinspection. It should be noted that after the final inspection, any comments to the initial Record Drawing submittal shall be provided to the Engineer of Record for any remedies.

#### 10.04.4 Final Record Drawings

After District Engineering staff has completed the final inspection and all work is to the satisfaction of the District Engineer, the final Record Drawings shall be submitted to the District, as follows:

1. Two (2) final black line record drawings, signed and sealed by a Florida licensed Professional Surveyor & Mapper. This record drawing shall meet the technical standards for "Record Survey" set forth by the Florida Board of Professional surveyors and mappers, pursuant to Chapter 472 of the Florida Statutes and Chapter 61G17-6, Florida Administrative Code.
2. One electronic submittal with the record drawing in AutoCAD 2020 or later format and PDF format. Only one (1) AutoCAD file shall be accepted containing the entire record drawing (additional files used for x-referencing are acceptable) and one Adobe Acrobat file with the entire record drawing as seen on the paper copy. The District will no longer

accept separate AutoCAD and/or Adobe Acrobat files for separate record drawing pages.  
The AutoCAD files must be established in state plane coordinate system, NAD 83, Florida East Zone. The vertical datum referenced shall be NGVD 29.

#### 10.04.5 One Year Maintenance Bond and Inspection

Prior to acceptance by the District, a maintenance bond, which will remain in effect for one year from the date of District acceptance of the system, must be provided to the District. Shortly before the expiration of the one-year maintenance bond, the District will reinspect the system in a manner similar to the final inspection (i.e., broken pipes, deflection, infiltration, etc.) The District will advise the developer of any defects found, unless of an emergency nature, during this inspection and will require correction to be made prior to expiration of the maintenance bond.

Should adequate progress, in the opinion of the District, not be made in correcting the deficiencies, the District will look to the bonding company to pay for corrective action taken by the District.

A Letter of Credit drawn upon a financial institution licensed in the State of Florida, and in a form acceptable to the District may be provided in lieu of a maintenance bond.

#### 10.04.6 District Acceptance

Upon satisfactory finding of the final inspection, the Department of Environmental Protection/Health Department Certification of Completion will be executed by the Executive Director, thereby, accepting the system for operation and maintenance.

#### 10.04.7 Operation and Maintenance

With the exception of service laterals which lie beyond right-of-way or easement lines, or in common areas of ownership, the wastewater system serving the development will be operated and maintained by the District's personnel, who are well trained and responsive to the needs of the community.

#### 10.04.8 Utility Billing

The District's accounting department will continue to work with the Developer in the collection of connection charges as new buildings are tied into the system, and in the billing of quarterly service charges.

#### 10.05 Definitions and Abbreviations

The term "Owner" or "District" shall mean the Loxahatchee River Environmental Control District.

The term "Director" shall mean the Executive Director of the Loxahatchee River Environmental Control District.

The term “Engineer” or “Design Engineer” shall be the engineer registered in the State of Florida that signs and seals the plans of a developer or other person or entity.

The term “District Engineer” shall be the engineer designated by the District, whether acting directly or as an authorized agent of the District, acting within the scope of duties entrusted to them.

The abbreviation listed below shall have the meaning set forth opposite each:

AASHTO	American Association of State Highway Transportation Officials
ACI	American Concrete Institute
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Material
AWWA	American Water Works Association
NEC	National Electric Code
NEMA	National Electric Manufacturers Association
AWG	American or Brown and Sharpe Wire Gage
NPT	National Pipe Thread
WOG	Water, Oil, Gas

**END OF SECTION 10**

## SECTION 20

### DESIGN CRITERIA

#### 20.01      General

The requirements of this section are a minimum and nothing herein shall be construed to eliminate consideration of a design based on a rational procedure not covered by such requirements. Standards or minimum requirements set forth in this Manual are not intended to relieve the Developer, Contractor, or Design Engineer from complying with good engineering and construction practices under specific conditions which require a higher degree of procedure, standards, or requirements. Where the Developer, Contractor, or Design Engineer is not capable of following the requirements of the Manual due to certain site conditions, any deviation from the requirements set forth in the Manual shall first be approved by the District. It is intended that the requirements of this section shall be applicable in all cases where the facilities being constructed or to be constructed shall be owned and/or operated and maintained by the District.

#### 20.02      Design Capacity

Gravity sewer systems should be designed for the estimated ultimate tributary population. Parts of the system that can be readily increased in capacity such as lift stations may be submitted for approval based on phased implementation. The basis of design for all projects shall accompany the plan documents.

#### 20.03      Design Flow

Sewer system Average Daily Flow (ADF) designs shall be based on the design flows as listed in Chapter 64E-6 of the Florida Administrative Code.

##### 20.03.1      Peak Hourly Flow

Peak Hourly Flow (PHF) shall be utilized for the sizing of all gravity sewers, force mains and lift station pump sizing. Peak hourly flow peaking factor (PF) shall follow Figure 1 - Ratio of Peak Hourly Flow to Design Average Flow, of the “Recommended Standards for Wastewater Facilities”, by the Waste Water Committee of the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, latest edition.

For low pressure sewer systems, all low pressure mains and LRD's the District's approved grinder pump systems (centrifugal) shall be sized based upon the estimated peak design flow. The estimated peak design shall follow either Part 4 – Design Flows, of the “Design and Specification Guidelines for Low Pressure Sewer Systems”, by the FDEP, latest edition or Chapter 2, “Manual – Alternative Wastewater Collection Systems”, by the EPA, latest edition.



## 20.04 Gravity Sewers

### 20.04.1 New Construction

The basic design criteria for gravity sewers shall be as follows:

Pipe material – all new gravity sewer shall be of PVC construction. Use of epoxy coated D.I.P. will only be allowed with prior approval from the District Engineer.

The minimum gravity sewer pipe line diameter – All new gravity sewer mains (manhole to manhole) shall be a minimum of 8-inches in diameter.

The minimum depth of cover shall be as follows: 3'-6" for DIP or PVC C-900 and 4'-0" for PVC SDR-26. Any cover that is proposed to be less than 4'-0" must be given prior approval by the Director of Engineering.

Straight alignment and constant slope between manholes.

All manholes shall be precast concrete with monolithic bases and concentric conical cone sections.

Manholes are required at the end of each line; at all changes in grade, size or alignment. Stubs eight (8) inches or larger will require a manhole at the terminus point.

Manholes shall be spaced not greater than 400 feet for sewers fifteen (15) inches in diameter or less, 450 feet for sewers eighteen (18) inches in diameter or greater.

Five-foot drop manholes (internal type) are to be provided for a sewer entering a manhole at an elevation twenty-four 24 inches or more above the lowest manhole channel invert. (See Standard Details)

A positive 0.1-foot grade differential shall be provided between the upstream and downstream invert on all manholes.

All sewers shall be designed and constructed to give mean velocities, when flowing full, of not less than 2.0 feet per second, based on Kutter's formula using an "n" value of 0.013. The following are minimum slopes allowed:

<u>Sewer Size</u>	<u>Slope in Ft/100 Ft</u>
8-inch	0.40
10-inch	0.28
12-inch	0.22
15-inch	0.15
18-inch	0.12
21-inch	0.10

24-inch	0.08
27-inch	0.067
30-inch	0.058
36-inch	0.046

When possible, slopes at least 10% above the minimums shown are preferred. However, in no case will slopes be designed which would provide a mean velocity less than 2.0 feet per second when flowing full, based on an “n” value of 0.013.

When a smaller sewer joins a larger one, the invert of the larger sewer should be lowered sufficiently to maintain the same energy gradient. An approximate method for securing these results is to place the 0.8 depth point of both sewers at the same elevation.

Intersecting sewers shall not meet at an alignment angle of less than 90 degrees to downstream flow.

Manholes deeper than 14 feet from the lowest invert to the manhole rim, manholes with a force main discharge, manholes with inside drops and the last collection manhole just upstream of a lift station, shall be given a minimum 0.5-inch coat of Sewper Coat, Strong Seal, Refratta HAC 100 or other approved calcium aluminate corrosion barrier.

The last collection manhole, just upstream of the lift station, should be placed in a manner to minimize road, lane or sidewalk closures should by-pass operations be needed at the lift station. The District may require this last collection manhole to be placed inside the lift station easement.

All gravity sewers shall be placed in the center of any roadway and within any easements. The minimum gravity sewer easement is 15' wide.

No landscaping or surface features (i.e., walls, fences, fountains, etc.) shall be placed in a manner that would adversely affect access to utility easements or District infrastructure. Trees shall be a minimum of 10' away from any gravity sewer main or service line/lateral. This may be reduced to 7' with the use of an approved root barrier system.

All gravity sewer mains shall be a minimum of 10' horizontally from any structures. This setback shall be measured from the outside edge of the pipe to the nearest part of the structure, including underground (i.e., footers) or above ground (i.e., roof overhangs) features.

In addition to the above requirements, gravity sewer design shall follow Recommended Standards for Wastewater Facilities, at a minimum.

#### 20.04.2 Adjustments to Existing Sewer Infrastructure

There may be instances where an area is being redeveloped or when a new developer takes ownership of a project from a previous developer and wishes to make modifications to already constructed, but not yet activated sewer facilities. The following criteria shall apply:

It is advised that developers of redesigned projects meet with the District Engineer to conduct a pre-application meeting and/or conduct due diligence prior to submitting final engineering plans to discuss the proper procedure for obtaining approval for any modifications.

This manual is updated from time to time, thus any comments provided at a pre-application/due diligence meeting should be considered conceptual in nature and may no longer be applicable by the time final engineering drawings are submitted to the District for approval (See Section 10.01).

Services may be abandoned on a gravity run (manhole to manhole) and the service must be entirely removed, including the mainline wye fitting. The repair(s) must be completed using two sleeves and one spool piece per abandoned service.

Lift stations and all related appurtenances must be brought up to current ~~LRD~~ [District](#) standards if they haven't been installed.

~~LRD~~ [The District](#) will accept all gravity and force mains as constructed and re-inspect them based upon the ~~LRD~~ [District](#) standards at the time the project was approved. However, additional appurtenances may be required to be installed, such as air release/vacuum valves or inline valves should the District Engineer require them. Additionally, all setbacks shall be based upon the current ~~LRD~~ [District](#) standards.

~~LRD~~ [The District](#) will accept all previously agreed to sewer easement widths, though the extent of the easements may require modifications should any infrastructure be removed or added.

Any new infrastructure proposed by the new developer shall meet all current ~~LRD~~ [District](#) standards.

#### 20.05 Submersible Pumping Stations

The basic design criteria for pump stations are as follows:

Sized to handle the peak hourly flows from the tributary areas with the largest pumping unit out of service (firm capacity).

Total dynamic head based on static head, lift station friction losses and pipeline friction factor (C) of 120. Pumping units shall be capable of operating based on a C=100 and not “running out” based on a C=140.

Pumping units capable of passing spheres of at least three (3) inches in diameter.

Under normal conditions, pumps operate under a positive suction head.

Controls included to automatically alternate the pumps in use.

Maximum pump speed of submersible pumps shall not be greater than 1800 rpm unless specifically allowed otherwise by the District Engineer.

All electrical and mechanical equipment shall be installed 1 foot minimum above the Base Flood Elevation.

Lift stations shall be provided with remote telemetry (Data Flow Systems radio telemetry or cellular telemetry) and wetwell level instrumentation.

Detailed specifications and drawings for submersible pump stations and appurtenances are included elsewhere in this manual. Site specific designs and requirements not covered under this manual will be reviewed on a case by case basis. Additional design criteria for these stations are contained in the “Recommended Standards for Wastewater Facilities”, by the Water Supply Committee of the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, latest edition as referenced by the Florida Department of Environmental Protection.

All wet wells shall be designed to resist flotation based on a base flood event plus 1 foot at the site, without consideration of the weight of the pumps, with a safety factor of at least 1.0. Flotation calculations based on a unit weight of concrete of 130 pounds per cubic foot shall be submitted to the District for review with all pump station plans

Wet well cycle times shall be 10 minutes minimum 30 minutes maximum; based on the formula:

$$T = \frac{V}{Q-S} + \frac{V}{S}$$

Where:

T = Cycle time (minutes)

V = Effective volume of wet well (gallons)

Q = Pumping rate (gpm)

S = Average daily flow (gpm)

All lift stations shall be given a 1.0-inch coat of Sewper Coat, Strong Seal, Refratta HAC 100 or other approved calcium aluminate corrosion barrier.

#### 20.06 Force Main

The basic design criteria for force mains are as follows:

Pipe material – C-900 PVC, epoxy lined ductile iron pipe or HDPE (DR-11 min).

Minimum size - 4-inch diameter.

Minimum velocity - 2 feet per second.

Maximum velocity - 8 feet per second.

Minimum depth of cover - 3 feet.

Branches of intersecting force mains shall be provided with appropriate valves such that one branch may be shut down for maintenance and repair without interrupting the flow of other branches. Stubouts on a force main, placed in anticipation of future connections, shall be equipped with a valve to allow such connections without interruption of service.

At all times, the force main shall be laid per the design elevations approved by the District. An automatic air release valve shall be placed at all high points of all force mains with a diameter of (4) inches or larger, as indicated on the construction plans and approved by the District.

All automatic air release/air vacuum valves shall be placed in a manhole as provided in the District's standard details.

Force main design drawings are to indicate elevations at all high points and all low points with constant slopes in between such points. Low point drains shall be placed at all low points in the force main profile.

Approved restrained joints shall be provided at all force main bends.

Terminal ends of force main (permanent or temporary) shall be as shown on the [District Standard Details](#).

#### 20.07 Separation Requirements

Sanitary sewers crossing under water mains shall be laid to provide a minimum vertical separation of twelve (12) inches between the invert of the upper pipe and the crown of the lower pipe. Where this minimum separation cannot be maintained, the crossing shall be arranged so that the joints are equidistant from the point of crossing with no less than ten (10) feet between any two joints and

both pipes shall be D.I.P. Where there is no alternative to sewer pipes crossing over a water main, the criteria for the minimum separation between lines and joints in the above, shall be required and both pipes shall be D.I.P. irrespective of separation.

Where storm sewers cross above or below sanitary sewer mains, the minimum vertical separation between the outside of the storm sewer main and the outside of the sanitary sewer main is twelve (12) inches. Where the minimum separation cannot be maintained, the sewer main shall be constructed of DIP at the conflict with one full joint (min. 20 feet) centered on the conflict for pressure mains and C-900, DR18 inside DI or steel sleeve for gravity mains.

The minimum vertical separation between sanitary sewer mains and any other utility other than those listed above is twelve (12) inches. Vertical separations of less than six (6) inches, will not be accepted.

Maintain ten (10) feet horizontal distance between water mains, storm pipes and sanitary sewer mains unless reduced separation is allowed by the FDEP, Palm Beach County Health Department and the District Engineer. Separations greater than ten feet may be required for drainage pipes larger than 48-inches in diameter.

#### 20.08 Sewer Use Regulations

The Loxahatchee River Environmental Control District has adopted certain rules and regulations regarding the acceptability and pretreatment requirements for certain types of wastewaters. These rules and regulations are published in Chapter 31-13 of the District Rules and may be amended from time to time. Prospective users of the system should contact the District Deputy Executive Director for information regarding the above referenced rules and the Director of Operations for compatibility of the anticipated wastewater with the District's facilities.

### **END OF SECTION 20**

## SECTION 30

### MISCELLANEOUS REQUIREMENTS

#### 30.01 Lines, Grades and Measurements

Alignment and grade of all pipe, tunnels and borings shall be continuously controlled by use of lasers or other acceptable method. Laser alignment and grade through the pipeline is the preferred method. The District Engineer shall be permitted at any time to check the lines, elevations, reference marks, laser, etc., set by the Contractor or the Design Engineer.

#### 30.02 Work to Conform

The maximum allowed vertical deviation of any single gravity pipe, tunnel or boring from plan grade shall be three percent (3%) of inside diameter. No single gravity pipe shall vary in horizontal alignment right or left, from the pipe centerline by more than five percent (5%) of inside diameter. Force main joint deflections shall be limited by AWWA Standards and manufacturer's recommendation.

#### 30.03 Pipeline location

Pipelines shall not be located closer to an existing or proposed structure than the horizontal distance obtained when drawing a 45-degree angle from the proposed invert of the pipeline to bottom outside face of the footing. In no case shall this distance be less than ten (10) feet. Pipelines shall be located as indicated on the drawings, but the Design Engineer is responsible to make such modifications in location as may be found desirable to avoid interference with existing structures or for other reasons, which are not material to the interest of the District and which do not otherwise conflict with any other statement or criteria set forth in this manual. The District should be notified of such changes in a timely fashion and such changes shall be recorded on Record Drawings.

#### 30.04 Pipe Adapters

When joining pipes of different types, District approved transition sleeves, adapters, and couplings shall be used.

#### 30.05 Fittings and Stoppers

Branches, stub-outs and fittings shall be laid as indicated in the Standard Details and shown on the approved drawings. Open ends of pipe and branches shall be closed with nonmetallic "wing nut" expansion stoppers secured in place in an acceptable manner. Stoppers shall be designed to remain in place and watertight during infiltration tests.

## 30.06 Service Lines

### a. General

Service lines shall be as shown on the Standard Details. Service lines for a single lot shall be a minimum of 4 inches in diameter; for two lots, a minimum of 6-inches in diameter. Where three or more lots are connected to a single service line, the service line shall be considered a gravity sewer, shall be a minimum of 8-inches in diameter, and shall be in accordance with the criteria covering District maintained gravity sewers. Exceptions to these requirements may be made in specific instances where constructability, environmental impacts or excessive costs require an alternate to these criteria. These exceptions shall be considered non-conforming connections and subject to correction to District Standards if and when criteria used in determining constructability, environmental impacts or excessive costs are no longer valid.

### b. Easements, Implied Grant of Way of Necessity and Statutory Way of Necessity

If a residential property requires an easement across another residential property to gain access to District sewers the easement shall be conveyed to the District using the District's Standard Easement Agreement. Easements shall only be allowed when no District maintained sanitary sewer is available for connection in public right of way or existing easements adjacent to the property **and** constructability, environmental impacts or excessive costs render construction of new sewer facilities in public right of way or existing easements adjacent to the property non-viable.

The District recognizes Florida Statutes 704.01, (1) Implied grant of way of necessity, and (2) Statutory way of necessity, may be applicable in providing sanitary sewer service to a property.

In the case of Implied Grant of Way of Necessity there may be instances where a sanitary sewer service existed to a property and that property was then divided into multiple properties each using the existing sanitary sewer service. In these instances the District recognizes the Implied Grant of Way of Necessity for each property's use of the sanitary sewer service under a "grandfather" clause but considers the connection/s non-conforming in that properties may be served by facilities not owned and maintained by the District and/or properties may be served by facilities that may be inadequately sized and/or one property may be served by facilities that cross another property and are not in a District Standard Easement. In these instances, the District shall require the sanitary sewer connections using an Implied Grant of Way of Necessity for sewer service be corrected to current District Standards when renovation or redevelopment of any of the affected properties occurs.



In the case of Statutory Way of Necessity there may be instances where a property is shut off or hemmed in from access to sanitary sewer service by lands, fencing or other improvements. In these instances the District, with agreement from the shut off or hemmed in property, may act on behalf of the shut off or hemmed in property and use and maintain an easement over, under, through and upon the lands which lie between the said shut-off or hemmed-in lands and public right of way or existing easements to supply sanitary sewer service to the shut-off or hemmed-in land granted the shut-off or hemmed-in land is using the lands that lie between for personal ingress and egress. The District considers sanitary sewer connections using Statutory Way of Necessity to be non-conforming in that properties are served by facilities that cross another property and are not in a District Standard Easement. In these instances the District shall require the sanitary sewer connections using a Statutory Way of Necessity for sewer service be corrected to current District Standards when renovation or redevelopment of the property over which a Statutory Way of Necessity is used occurs, or when a public right of way or utility easement becomes accessible to the shut-off or hemmed in property.

c. Maintenance Responsibility

The service line (lateral) cleanout will usually delineate the point of responsibility between the District and the property owner; however, the following variations do exist:

1. Multi-family Units - Public right-of-way - Owner's responsibility to the right-of-way line.
2. Multi-family Units - Non-Public right-of-way - Owner's responsibility to the main line connection.
3. Commercial Buildings - Owner's responsibility to the main line.
4. Condominium with Common Areas - Non-Public right-of-way Owner's responsibility to the main line connection.
5. Condominium with Common Areas Adjacent to Public right-of-way - District assumes responsibility within the public right-of-way.

30.07 Service Line Markers

A service line marker shall be installed 12-inches {minimum} above the service wye adjacent to the cleanout of each service line. The service line markers shall be Electronic System, Sanitary Marker 1258, as manufactured by 3M.

### 30.08 Bolts, Anchor Bolts, and Nuts

Anchor bolts shall have suitable washers and, where so required, their nuts shall be hexagonal. All anchor bolts, nuts, washers, plates, and bolt sleeves shall be galvanized unless otherwise indicated or specified.

Expansion bolts shall have malleable iron and lead composition elements or the required number of units and sizes.

Bolts, anchor bolts, nuts and washers specified to be stainless steel shall be type 316 stainless steel.

Anchor bolts and expansion bolts shall be set accurately. If anchor bolts are set before the concrete has been placed, they shall be carefully held in suitable templates of approved design. If anchor or expansion bolts are set after the concrete has been placed, all necessary drilling and grouting or caulking shall be done, and care shall be taken not to damage the structure or finish by cracking, chipping, spalling, or otherwise during the drilling and caulking.

### 30.09 Concrete Inserts

Concrete inserts shall be designed to safely support the maximum load that can be imposed by the bolts used in the inserts. Inserts shall be of a type which will permit locking of the bolt head or nut. All inserts shall be galvanized.

### 30.10 Protection against Electrolysis

#### 3.10 Protection against Electrolysis

Where dissimilar metals are used in conjunction with each other, suitable insulation shall be provided between adjoining surfaces so as to eliminate direct contact with any resultant electrolysis. The insulation shall be bituminous impregnated felt, heavy bituminous coatings, nonmetallic separators or washers, or other approved materials.

**END OF SECTION 30**

## **SECTION 100**

### **EXCAVATION, PIPE EMBEDMENT, FILL AND GRADING**

#### **100.01      Description**

All excavations shall be made in such manner and to such widths as will provide suitable room for building the structures or laying and jointing the piping. All sheeting, bracing, supports, coffer dams, pumping and draining shall be performed to render the bottom of the excavations firm, dry and acceptable in all respects.

#### **100.02      Sheeting and Bracing**

Sheeting and bracing shall be furnished as may be necessary to support the sides of the excavation and to prevent any movement of earth which could in any way diminish the width of the excavation to less than that necessary for proper construction, or could otherwise injure or delay the work, or endanger adjacent structures.

All timber sheeting and bracing shall be left in place unless otherwise directed by the Design Engineer to remove same or cut off at a specified elevation.

All sheeting and bracing, including trench boxes not to be left in place, shall be carefully removed in such manner as not to endanger the construction or other structures. All voids left or caused by the withdrawal of sheeting shall be backfilled immediately with approved material and compacted by ramming with tools especially adapted to that purpose, by watering, or by other means as may be directed by the Design Engineer.

#### **100.03      Drainage**

##### **100.03.01      General**

To ensure proper conditions at all times during construction, all means shall be used to intercept and/or remove promptly and dispose properly of all water entering trenches and other excavations. Such excavations shall be kept dry until the structures, pipes and appurtenances to be built therein have been completed to such extent that they will not be floated or otherwise damaged.

All water pumped or drained from the work shall be disposed of in a suitable manner without undue interference with other work, damage to pavements, other surfaces, or property. Suitable temporary pipes, flumes, or channels shall be provided for water that may flow along or across the site of the work. All requirements of all regulatory agencies regarding dewatering and the discharge of water from the project shall be complied with.

All labor, materials, tools, and equipment shall be provided, as necessary, to properly control the quality of the discharge from the dewatering operations as described herein. All applicable laws, rules and regulations governing the discharge of water from dewatering operations shall be

complied with. All dewatering shall be accomplished by the use of sanded well points and other techniques deemed necessary by the Contractor to properly dewater the trench excavations.

The water discharged from the Contractor's dewatering operation shall not exceed the turbidity limits promulgated by the State of Florida Department of Environmental Protection discharge standards for the Loxahatchee River or its tributaries.

Unless otherwise directed by the Design Engineer, an approved siltation tank shall be installed ahead of dewatering discharge points. In addition, silt screens and other devices and techniques may be required to maintain the discharge quality at turbidity levels below the required limits.

Any and all methods approved by the Design Engineer to control the bacteriological quality of well point discharge into existing drainage ditches and/or canals shall be utilized. Levels for fecal coliform in a discharge which ultimately leads to the Loxahatchee River, shall not exceed those promulgated by the State of Florida Department of Environmental Protection discharge standards.

#### 100.03.02     Drainage Well-point System

If it is necessary to drain the soil and prevent saturated soil from flowing into the excavation, an efficient drain well-point system will be utilized. The well points shall be designed especially for this service. The pumping unit shall be designed for use with the well-points and shall be capable of maintaining a high vacuum and of handling large volumes of air and water at the same time.

#### 100.04         Trench Excavation

Where pipe is to be laid in rock bedding or concrete cradle, the trench may be excavated by machinery to, or to just below, the designated subgrade, provided that the material remaining at the bottom of the trench is not disturbed.

If the trench is excavated below the designated subgrade, the undercut shall be backfilled with compacted bedding rock, uniformly graded from 1/4-inch size.

#### 100.05         Depth of Trench

Trenches shall be excavated to such points as will permit the pipe to be laid at the elevations, slopes, or depths of cover indicated and at uniform slopes between indicated elevations.

#### 100.06         Width of Trench

Pipe trenches shall be made as narrow as practicable and shall not be widened by scraping or loosening materials from the sides. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.

Trenches shall be excavated with approximately vertical sides between the elevation of the center of the pipe and an elevation one (1) foot above the top of the pipe.

#### 100.07 Trench Excavation in Fill

If pipe is to be laid in embankments or other recently filled material, the material shall first be placed to the top of the fill or to go to a height of at least three (3) feet above the top of the pipe, whichever is the lesser. Particular care shall be taken to ensure maximum consolidation of material under the pipe location. The pipe trench shall be excavated as though in undisturbed material.

#### 100.08 Unauthorized Excavation

If bottom of any excavation is taken out or disturbed beyond the limits indicated or prescribed, the resulting void shall be backfilled with embedment material compacted to a minimum of 90% of AASHTO T-180 or to the standards of the applicable agency having jurisdiction.

#### 100.09 Elimination of Unsuitable Material

Pipe bedding shall extend a minimum of 4 inches below the pipe. The pipe shall be supported on suitable material ascertained by the Design Engineer following good engineering practices.

#### 100.10 Backfilling

As soon as practicable after the pipes have been laid, or the structures have been built and are structurally adequate to support the loads, including construction loads to which they will be subjected, the backfilling shall be started and thereafter it shall proceed until its completion.

##### 100.10.1 Backfill Materials

The nature of the materials will govern both their acceptability for backfill and the methods best suited for their placement and compaction in the backfill. The materials and the methods shall both be subject to the approval and direction of the Design Engineer. No stone or rock fragment larger than 3 inches in greatest dimension shall be placed in the backfill nor shall large masses of backfill material be dropped into the trench in such a manner as to endanger the pipeline. If necessary, a timber grillage shall be used to break the fall of material dropped from a height of more than 5 feet. Pieces of bituminous pavement shall be excluded from the backfill unless their use is expressly permitted, in which case they shall be broken up as directed.

##### 100.10.2 Embedment Materials

Three broad classes of material shall be used for bedding, haunching, and pipe side support.

CLASS 1 - Angular, 1/4-inch to 3/4-inch graded stone, of which 100% passes a 1-inch sieve such as coral, slag, cinders, crushed stone, crushed shells, or bedding rock.

CLASS 2 - Coarse sands and gravels with maximum particle size 3/4 inch including variously graded sands and gravels containing small percentages of fines, generally granular and non-cohesive, either wet or dry. Soil Types GW, GP, SW, and SP are included in this class.

CLASS 3 - Fine sand and clayey gravels, including fine sands, sand-clay mixtures, and gravel-clay mixtures. Soil Types GM, GC, SM, and SC are included in this class. Included in Class 3 are existing soil types classified as select backfill.

Class 1, Class 2, or Class 3 material shall be used for bedding material to the top of the pipe. Special care must be taken to ~~insure~~ensure Class 1, 2, or 3 material is worked under the pipe haunch. Class 2 or 3 material shall be compacted to a minimum of 98% density per AASHTO T - 180. The District has the option, at any time, to take density tests to confirm the 98% compaction. Precautions shall be taken to prevent movement of the pipe when placing and compacting material under the pipe haunches.

If Class 2 or 3 material is used for bedding and haunching, a dry trench shall be maintained.

Under certain conditions, the Engineer may be faced with an unusual amount of water running in the trench which he may find necessary to remove in order to properly install and compact the embedment material. The Engineer may elect to remove the water with trench side pumps through the use of Class 1 material for bedding. The depth of Class 1 material will depend upon the amount of water but take care to ensure that the trench wall soil material is such that it will not be removed from the area adjacent to the bedding as a result of the running water. The Engineer may also elect to utilize well points or under drain to control excessive ground water. If Class 1 material is used as bedding and under drain, it must be utilized at least up to the top of the pipe.

#### 100.10.3 Zone Around Pipe

The zone around the pipe shall be backfilled with the materials and to the densities and limits indicated on the details.

#### 100.10.4 Compaction

Compaction shall be accomplished by tamping, or under appropriate construction techniques to achieve the required densities.

#### 100.10.5 Maximum Density

Unless specified otherwise, the percent of maximum density referred to in these specifications refers to the maximum density obtained when the material is laboratory tested in accordance with the procedures outlined in Designation AASHTO T-180, Latest Revision or as otherwise required by the governmental agency having jurisdiction over the finished roadway. Field densities shall be determined by a testing laboratory using accepted methods.

#### 100.10.6 Miscellaneous Requirements

Whatever method of compacting backfill is used, care shall be taken that stones and lumps shall not become nested and that all voids between stones shall be completely filled with fine materials. Only approved quantities of stones and rock fragments shall be used in the backfill.

All voids left by the removal of sheeting shall be completely backfilled with suitable material, thoroughly compacted.

**END OF SECTION 100**

## **SECTION 107**

### **HORIZONTAL DIRECTIONAL DRILL**

#### **107.01      General**

This specification covers installation of 4" and larger diameter HDPE pipe using horizontal directional drill methods. Installations shall comply with FDOT Standard Specification (Latest Edition) Section 555, ASTM F1962 and this specification.

#### **107.02      Material and Equipment**

The drilling fluid shall be a bentonite drilling fluid with or without polymer additives. All materials shall be NSF/ANSI 60 certified.

Pipe and fittings shall comply with Section 110.

Tracking/Steering equipment shall require a walk-over tracking system. The tracking/steering equipment shall place the pilot bore with a maximum horizontal tolerance of +/- 5% of directional bore pipe depth below grade.

After placement the contractor shall utilize a magnetic locating system utilizing a DC or AC current and a surveyed surface loop coil to as-built the final directional bore installation location in place. The surface loop shall be surveyed in by a Florida Licensed Professional Land Surveyor and georeferenced to State Plane Coordinates in NAD83, Florida East Zone and vertical datum NGVD29.

All directional drills shall be installed with a minimum 2" HDPE conduit and two minimum 10 gauge tracer wires installed for the full length of the bore. The conduit shall be terminated in a CDR box installed at each end of the bore. The 10-gauge tracer wires shall be terminated in the valve box for the isolation valves on each end. The conduit diameter and wall thickness shall be sized to withstand anticipated pull back forces of the installation. Tracer wire shall be high strength copper clad steel, Copperhead Soloshot EHS or approved equal.

#### **107.03      Submittals**

Submit technical data, cut sheets and shop drawings for equipment and materials including but not limited to drilling fluid (including MSDS Sheet), additives, pipe, fittings, adapters, pipe stiffeners, bore plan, locating and tracking equipment, locating tracking equipment calibration, locating and tracking equipment certification, heat fusion technician certification and proposed sequence of construction for approval by the Engineer.

Horizontal and vertical alignment of the pilot bore based on location information from the locating/tracking/steering equipment outlined in paragraph 107.02 and surveyed points on the DC surface looped coil. The horizontal and vertical alignment shall be referenced to horizontal and vertical datum requirements as specified in the Record Drawing Submittal Guide, Standard Detail



SD-29. The horizontal and vertical alignment shall be as-built and certified by the steering contractor as complying with the locating/tracking/steering equipment manufacturer's recommended procedures.

A log of directional drilling machine pressures during pulling operations converted to tensile stress seen in the pipe. Hydraulic pressure produced by the machine alone is not acceptable.

Experience and project resumes.

#### 107.04 Experience

The directional drill contractor and locating/tracking/steering/contractor shall demonstrate experience in similar horizontal directional drills. Experience shall be a minimum of 5 successful installations of same or larger diameter of same or longer length in the previous 5 years. The directional drill contractor shall submit a list of references.

#### 107.05 Placement and Testing

Perform all locates and pothole all potential conflicts prior to submitting the bore plan. The bore plan shall not be approved until all known conflicts have been resolved.

HDPE pipe shall be handled with care to include only the use of nylon slings for lifting and the use of appropriate sized pipeline rollers for supporting and maneuvering the pipe during fusion and pull back operations.

All HDPE pipe shall be pressure tested per Section 140.

All pipe installed below the water table shall be flooded with water prior to pulling operations.

Installations shall not exceed the pipe manufacturer's recommended radius of curvature.

The reamed hole shall not exceed 1.5 times the nominal diameter of the installed pipe.

All directional bores shall include one isolation valve on each end.

Upon completion bore pits shall be cleaned of excess drilling fluid and backfilled with clean fill.

**END OF SECTION 107**

## **SECTION 110**

### **PIPE, FITTINGS AND ACCESSORIES**

#### **110.01      General**

This section provides standards for all pipe and fittings used in the construction of District wastewater facilities. Approved piping systems include SCH40 and SCH 80 PVC, High Density Polyethylene (HDPE), SDR26 PVC, C900 PVC, C905 PVC and Ductile Iron.

#### **110.02      Schedule 40 and 80 PVC Pipe (1/2" – 3")**

Small diameter PVC (3" diameter or less) pipe and fittings shall be pressure rated ASTM D1784/D1785 schedule 40 for buried applications and schedule 80 for non-buried applications. Small diameter PVC pipe shall be marked with schedule, diameter, pressure rating at 140 F and applicable ASTM standards for dimensions and materials and be white or gray in color.

Small diameter PVC joints shall be solvent weld socket type.

#### **110.03      AWWA C901 High Density Polyethylene (1/2" – 3")**

Small diameter HDPE (3" diameter or less) pipe shall manufactured from PE4710 resin and comply with AWWA C901 and ASTM D3035. Small diameter HDPE pipe shall be iron pipe size (IPS) with a standard dimension ratio (SDR) 11. Small diameter HDPE pipe shall be marked with diameter, SDR, AWWA C901, ASTM D3035 and PE4710 and shall be black in color with extruded stripes in applicable color; sewer = green, IQ = purple.

Small diameter HDPE pipe shall come in reels sufficient for continuous lay lengths from service latera to service lateral.

Small diameter HDPE pipe shall use brass pack joint style couplings and stainless steel pipe stiffeners.

#### **110.04      AWWA C906 High Density Polyethylene (4" – 63")**

Large diameter HDPE (4" – 63") pipe shall manufactured from PE4710 resin and comply with AWWA C906, ASTM F714 and be listed with the Plastic Pipe Institute's (PPI) TR4. Large diameter pipe shall be ductile iron pipe size (DIPS) with a standard dimension ratio (SDR) 11. Large diameter HDPE pipe shall be marked with diameter, SDR, AWWA C906, ASTM F714 and PE4710 and be black in color with extruded stripes in applicable color; sewer = green, IQ = purple, potable = blue.

Single joints of pipe shall be a minimum of 40 feet in length. Damaged pipe may have the damaged area cut out and the remaining portion reused as long as the remaining portion is a minimum of 20 feet in length.

Large diameter HDPE pipe shall utilize HDPE butt fused fittings of the same SDR.

110.05      SDR 26 PVC Gravity Mains

Gravity main installations whose invert is greater than 4'-0" and less than 14'-0" shall be integral bell and spigot gasketed pipe and comply with ASTM D3034 for SDR 26 up to 15" in diameter. SDR 26 gravity main pipe shall meet the following ASTM Standards: D3212 (Joint), F477 (Gasket), D1784 (PVC Compound), D2412 (Stiffness) and D2321 (installation). SDR 26 gravity main pipe shall be green in color and marked with diameter, SDR and applicable ASTM standards.

Joints of SDR 26 gravity main pipe shall be either 14'-0" or 20'-0" in length

110.06      AWWA C900 Force Mains

Force main installations 4" – 48" shall be integral bell and spigot gasketed pipe and comply with AWWA C900 DR18, Pressure Class 235. C900 Force main pipe shall comply with ASTM Standards D1784 (PVC Compound), D3139 (Joint), and F477 (Gasket). C900 force main pipe shall be marked with diameter, DR and AWWA C900. C900 force main pipe shall be green for sewer and purple for IQ.

Joints of C900 force main pipe shall be either 14'-0" or 20'-0" in length.

C900 force main pipe shall use ductile iron fittings with restrained mechanical joints

110.07      Ductile Iron Pipe

All ductile iron pipe shall be manufactured in accordance with ANSI/AWWA C151/A21.51. Ductile iron pipe shall be pressure class 350 up to 20" and pressure class 250 for larger diameters. Ductile iron pipe shall be epoxy coated on the interior with Protecto 401, Permite 9043 Type II or Linerguard. Coatings shall conform to ANSI/AWWA C104/A21.4

Joints shall be conform to ANSI/AWWA C111/A21.11. Restrained push on joints shall use Field Lok 350 Gaskets by US Pipe and Foundry Co., or approved equal.

Ductile Iron Pipe shall be minimum Pressure Class 350 up to 20-inches in diameter and Pressure Class 250 for larger diameters.

Where ductile iron pipe is used, fittings shall be ductile iron and conform to the requirements of ANSI/AWWA C153/A21.53 and shall be of a pressure classification at least equal to that of the pipe with which they are used. Fittings may be flanged or mechanical as applicable.

#### 110.08      SDR 26 PVC Fittings

PVC Gravity main fittings shall conform to the requirements of ASTM D2241 SDR26. Gaskets shall conform to ASTM F477. Fittings in sizes not available in injection molded form shall be fabricated from SDR26 pipe in accordance with ASTM D2241.

#### 110.09      Schedule 40 and 80 PVC Fittings

Fittings used in small diameter PVC piping systems shall match the schedule of the piping system, either Schedule 40 or 80. Fittings shall be socket weld and conform to ASTM D1785 for physical dimensions and ASTM D1784 for materials.

#### 110.010      HDPE Butt Fused Fittings

Molded butt fusion fittings and adapters shall conform to ASTM D 3261, utilize HDPE conforming to the pipe to which it will be fused and have the same dimension ratio as the pipe to which it will be fused. All fittings shall be pressure rated to provide a working pressure rating no less than that of the pipe.

#### 110.011      Large Diameter HDPE to PVC/DI Adapters

Transition from HDPE to other piping systems shall require MJ or flanged HDPE adapters. Instances where these adapters are not practical will require pipe stiffeners in conjunction with ductile iron fittings. The pipe stiffeners shall be stainless steel as manufactured by JCM Industries or pre-approved equal. Pipe stiffeners in conjunction with ductile iron fittings shall only be used with the written approval of the District Engineer for HDPE pipe 12" diameter and smaller. When approved, MEGALUG Series 2000PV mechanical joint restraints or approved equal shall be used.

#### 110.012      Small Diameter HDPE Fittings and Adapters

Small diameter HDPE pipe (1/2" – 3") HDPE to HDPE and HDPE to PVC connections shall use pack joint style fittings as manufactured by Ford Meter Box Co. Stainless steel pipe stiffeners shall also be required.

#### 110.013      Ductile Iron Fittings

Ductile iron fittings shall conform to ANSI/AWWA C153/A21.53 (compact fittings) with a minimum pressure rating of 350 psi for mechanical joint fittings and 250 psi for flanged fittings. Fittings shall be mechanical joint or flanged as required.

Flanged fittings shall comply with ANSI B16.5, Class 150.

All mechanical joints shall be restrained. Restrained mechanical joints shall use 1100 Series Megalug by EBAA Iron Sales, Inc. or approved equal.

Ductile iron fittings shall be epoxy coated on the interior with Protecto 401, Permite 9043 Type II or Linerguard. Coatings shall conform to ANSI/AWWA C104/A21.4

110.014      Ductile Iron Pipe and Fittings Linings and Coatings

Ductile iron pipe fittings shall be epoxy coated on the interior with Protecto 401, Permite 9043 Type II or Linerguard. Coatings shall conform to ANSI/AWWA C104/A21.4

Buried ductile iron pipe and fittings shall receive an external bituminous coating in accordance with ANSI 21.10. and be striped with green for sewer and purple for IQ water.

Above grade ductile iron pipe and fittings shall receive a three coat system; Prime Coat: TNE MEC-Aluminum Mastic #135 (3 to 5 mils DFT), Intermediate Coat Series 66 Epoxoline Hi-Build Epoxy (4 to 6 mils DFT) and Finish Coat Series 73 Endura-Shield III Urethane (2 to 3 mils DFT). Coatings shall be green for sewer and purple for reclaimed water.

110.015      Marking Tape

All buried piping shall include marking tape. Marking tape shall be minimum 2” wide, magnetic and detectable. Marking tape shall be green and marked “SEWER”.

110.016      Buried Markers

Buried markers shall be installed at all fittings, valves, service connections, change of direction and every 300’ of pipe lay length. Buried markers are not required on gravity main piping but are required on service lateral piping and cleanouts. Buried markers shall be EMS Mini-Markers for Wastewater Model 1258 as by 3M.

110.017      Tracer Wire

When specifically required pressure rated piping shall be installed with tracer wire. Tracer wire shall be attached to the pipe using a half-hitch every 10’ for direct bury applications and shall be pulled with the pipe (without attaching) in directional drill installations. Tracer wire in directional drill applications shall be minimum 10 gauge, Copperhead Soloshot EHS or approved equal. Tracer wire in direct bury applications shall be minimum 14 gauge, PVC coated, solid copper wire.

110.018      Handling and Cutting Pipe

The pipe manufacturer's recommendation for handling, storing, unloading and cutting pipe shall be followed. Individual pipes shall not be allowed to drop from the truck when unloading. Pipe units shall not be handled with chains or single cables. Pipe shall not be stored more than two units high. Every care shall be taken in handling and laying pipe and fittings to avoid damaging the pipe or scratching or marring machined or finished surfaces.

Any fitting showing a crack shall be marked as rejected and removed at once from the work.

In any pipe showing a distinct crack and in which it is believed there is not incipient fracture beyond the limits of the visible crack, the cracked portions, if so approved by the Design Engineer, may be cut off before the pipe is laid so that the pipe used is perfectly sound. The cut shall be made in the sound barrel at a point at least 12-inches from the visible limits of the crack.

Except as otherwise approved, all cutting shall be done with knives or saws adapted to the purpose. All cut ends shall be examined for possible cracks caused by cutting.

Cut ends to be used with push on joints shall be carefully chamfered and the reference mark located in accordance with the manufacturer's recommendation to prevent cutting the gasket when the pipe is laid or installed.

#### 110.019      Installing Pipe and Fittings

No defective pipe or fittings shall be laid or placed in the piping, and any piece discovered to be defective after having been laid or placed shall be removed and replaced by a sound and satisfactory piece.

Each pipe and fitting shall be cleared of all debris, dirt, etc., before being laid and shall be kept clean until accepted in the complete work. Pipe and fittings shall be laid accurately to the lines and grades indicated on the drawings or required. Care shall be taken to ensure a good alignment both horizontally and vertically.

Each length of pipe shall have a firm bearing along its entire length. Embedment requirements are shown on the Standard Details and in this specification.

The bell of the pipe shall be cleaned of dirt or other obstruction and wiped out before the cleaned and prepared spigot of the next pipe is inserted into it. Only lubricants made by the pipe manufacturer may be used on the spigot. The new pipe shall be shoved firmly into place until properly seated and held securely until the joint has been completed.

#### 110.020      Temporary Plugs

At all times when pipe laying is not actually in progress, the open ends of pipe shall be closed by temporary watertight plugs. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe has passed.

#### 110.021      Preparation of Trench Bottom

The trench bottom shall be constructed to provide a firm, stable and uniform support for the full length of the pipe. Unsuitable foundation material shall be removed as required by the Engineer and refilled with Class 1, 2, or 3 material. Class 2 or 3 material shall be compacted to a minimum of 90% standard proctor density.

110.022      Manhole Connections

Where PVC gravity or force main pipe enters the manhole, approved sealing adapters as manufactured by Harco, Fernco or equal, shall be used. Any coupling used shall be coated with an epoxy coated sand finish approved by the District.

110.023      Bell Holes for Elastomeric Seal Joints

When the pipe being installed is provided with elastomeric seal joints, bell holes shall be excavated in the bedding material to allow for unobstructed assembly of the joint. Care should be taken that the bell hole is not larger than necessary to accomplish proper joint assembly. When the joint has been made, the bell hole should be carefully filled with bedding or haunching material to provide for adequate support of the pipe throughout the entire length.

**END OF SECTION 110**

## SECTION 120

### CAST IN PLACE CONCRETE

#### 120.01      Materials

##### 120.01.1      Concrete

Ready-mixed concrete shall be used. It shall comply with the Standard Specifications for Ready-Mixed Concrete, ASTM Designation C94 for the strengths specified herein. Alternate No.2, under Paragraph 4 - Quality of Concrete ASTM C94 shall govern for the design of the concrete mixture.

##### 120.01.2      Cement

Type I cement shall be used in concrete for general purposes. Type II cement shall be used for sewer manholes, wet wells, and all other applications where the concrete may be exposed to a wastewater atmosphere.

#### 120.02      Concrete

##### 120.02.1      Mix

Concrete shall be composed of Portland cement, coarse aggregate, fine aggregate and water. The concrete mix shall be designed to produce the quality specified, proportioned and mixed in accordance with the requirements set forth herein and shall in all cases meet the following requirements:

<u>Class</u>	<u>Location</u>	28 Day Compressive <u>Strength</u>
A.	Specifically Required on Plans	4,000 psi
B.	General Structural Concrete	3,000 psi
C.	Non-structural Applications	2,500 psi

##### 120.02.2      Slump

The concrete, when placed, shall show slumps within the following limits when tested in accordance with the Method of Test for Slump of Portland Cement Concrete, ASTM Standard Specification C-143.



<u>Type of Concrete</u>	<u>Min. Slump</u>	<u>Max. Slump</u>
Mass Concrete	1 Inch	3 Inches
Reinforced Concrete:		
Thin vertical sections and thin columns, 7 inches or less in thickness	3 Inches	6 Inches
Heavy vertical sections more than 7 inches in thickness	3 Inches	5 Inches
Structural Slabs	1 Inch	4 Inches

#### 120.02.3 Air Entraining

Air entrained concrete shall conform with the following requirements:

	<u>Maximum Aggregate Size(Inches):</u>				
	<u>3/8:</u>	<u>1-2:</u>	<u>3/4:</u>	<u>1:</u>	<u>1-1/2:</u>
Average total air content, percent (Plus or minus 1%):	5	5	4	4	3

#### 120.03 Placing Concrete

Concrete shall be placed within 1 hour of the load ticket time stamp and before the initial set has occurred.

The concrete shall be compacted and worked in an approved manner into all corners and angles of the forms and around reinforcement and embedded fixtures in such a manner to prevent segregation of the coarse aggregate.

All concrete shall be placed with an aid of mechanical vibrating equipment supplemented by hand forking or spading. Vibration shall be transmitted directly to the concrete and not through the forms. The duration of vibration at any location in the forms shall be held to a minimum necessary to produce thorough compaction. The concrete shall be placed by suitable equipment as nearly as possible to its final location and without any segregation of the aggregate. Any free vertical drop shall not exceed 4-1/2 feet.

Expansion joints shall be placed as indicated on the plans. Joint material shall be installed as indicated and as approved by the Design Engineer. Construction joints shall be made only at locations indicated on the plans or approved by the Design Engineer, and in such manner as not to impair the strength, water-tightness or appearance of the structure.

#### 120.04 Finishing

All top surfaces which are not covered by forms and which are not to be covered by additional concrete or backfill, shall be carried slightly above grade and struck off by board finish. All edges shall be provided with a 3/4 inch chamfer. All exposed surfaces which show board marks, joint marks or other irregularities after the forms are removed shall, at the discretion of the Design Engineer, be rubbed with carborundum brick, filled or otherwise dressed to produce a smooth true surface.

No special concrete or cement mortar topping course shall be used for slab finish unless shown on the drawings. The slab shall be brought to a true and even finish by power or hand floating. Unless otherwise specified, the surface shall be steel troweled to a smooth finish. Troweling shall be the minimum to obtain a smooth, dense surface and shall not be done until the mortar has hardened sufficiently to prevent excess fine material from being worked to the surface.

#### 120.05 Curing

All concrete shall be kept wet by covering with water and approved water saturated covering, or other approved method which will keep all surfaces continuously wet for a period of seven (7) days, unless otherwise specified by the Design Engineer. All concrete shall be adequately protected from injurious action by the sun. Fresh concrete shall be protected from heavy rains, flowing water and mechanical injury. All concrete shall be kept damp for at least seven (7) days by covering with an approved saturated covering, by a system of perforated pipes or mechanical sprinklers, or by any other approved method which will keep all surfaces continuously damp.

Where wood forms are left in place during curing, they shall be kept wet at all times to prevent opening at the joints and drying out of the concrete. Water for curing shall be clean and entirely free from any elements which might cause staining or discoloration of the concrete.

#### 120.06 Forms

Forms shall be of wood, metal, or other approved material shall be built true to line and grade, mortar tight, adequately braced and supported, and sufficiently rigid to prevent displacement or sagging.

Forms, except those lined with absorptive form lining, shall be coated with a non-staining mineral oil applied shortly before placing the concrete. In lieu of oiling, forms for unexposed surfaces may be thoroughly wetted immediately before placing the concrete.

Forms ties shall be of a design such that when forms are removed no metal shall be within 1 inch of the finished surface. Holes remaining from withdrawn tie rods or bolts shall be filled solid with cement mortar.

Under normal conditions, the minimum waiting period after placing concrete for stripping forms shall be as follows:

<u>Where Used</u>	<u>Time</u>
1. Bottom forms of girders and beams, floor slabs, and other concrete.	5 Days
2. Walls, piers, columns, sides of beams, and other vertical surfaces.	24-48 hours

The use of this schedule shall not operate to relieve the Contractor or the Design Engineer of responsibility for the safety of the structure.

#### 120.07 Embedded Items

In addition to steel reinforcement, pipes, and other metal objects, as shown on the plans or ordered to be built into, or set in, or attached to the concrete, all necessary precautions shall be taken to prevent these objects being displaced, broken, or deformed. Before concrete is placed, care shall be taken to determine that any embedded or wood parts are firmly and securely fastened in place as indicated. They shall be thoroughly cleaned and free of paint or other coating, rust, scale, oil, or any foreign matter. The concrete shall be packed tightly around the pipes and other metal work to prevent leakage and to secure perfect adhesion. Drains shall be adequately protected from intrusion of concrete.

Concrete placing operations shall not begin until the reinforcing steel, utilities, anchor bolts, etc., to be embedded in concrete have been inspected and approved by the Design Engineer.

#### 120.08 Reinforcing Steel

Reinforcing bars and mesh shall be sizes and shapes as indicated on the drawings. Bars shall be deformed bars of intermediate grade, new billet steel conforming with ASTM Designation A-615, Grade 60. Wire mesh shall conform with ASTM Designation A-I85.

#### 120.09 Water Stops

Water stops shall be molded PVC, hollow center bulb, multiple ribbed as manufactured by W.R. Meadows, Inc., Electrovert, Inc. or Serviced Products Corporation, or approved equal.

#### 120.10 Testing Services

Testing shall be performed by an independent commercial testing laboratory approved by the District. The Design Engineer shall furnish the District with copies of compression and slump test reports for every thirty (30) cubic yards or portion thereof of concrete placed. It shall be the responsibility of the Design Engineer to produce concrete of the strength, durability, workability and finish specified, furnish representative material for specimens in quantities required by the

testing laboratory, and cooperate and assist in taking samples of materials for testing. The District reserves the right to take and test additional concrete samples.

**END OF SECTION 120**

## SECTION 121

### PRECAST MANHOLES AND STRUCTURES

#### 121.01      General

Manholes and structures shall conform in shape, size, dimensions, materials and other respects to the Standard Details or as directed by the District's Engineer.

All manholes and structures shall be precast concrete with monolithic base sections. Invert channels may be formed in the concrete of the base or may be formed of brick and mortar upon the base.

All manholes which will receive direct force main discharges, or are at least 14-feet deep (rim to lowest invert) and the last collection manhole just upstream of any lift station shall receive a minimum 0.5-inch thick calcium aluminate corrosion barrier such as Sewper Coat, Strong Seal, Refratta HAC 100 or approved equal, and installed per the manufacturers recommendations.

The inverts shall conform accurately to the size of the adjoining pipes. Sides inverts shall be curved and main inverts (where direction changes) shall be laid out in smooth curves of the longest possible radius which is tangent to the centerlines of adjoining sewers.

Connections to existing structures shall be made only by mechanically coring a hole through the structure. Jackhammer and other methods of cutting a hole through an existing structure are not acceptable.

Rubber "boots" subject to District approval, will be allowed for making pipe connections to structures provided that a layer of non-shrink grout be applied to seal the annular space on the inside of the manhole for the full wall thickness. The boots shall be cast in the precast structure and shall utilize stainless steel bands and screws.

#### 121.02      Precast Concrete Sections

Precast concrete sections shall conform to the ASTM Specifications for Precast Reinforced Concrete Manhole Risers and Tops, Designation C-478 or ASTM C858 Standard Specification for Underground Precast Concrete Utility Structures with the following exceptions and additional requirements:

Type II cement shall be used in structures directly exposed to wastewater (i.e. manholes and wetwells.

Sections shall be steam cured and shall not be shipped until at least five (5) days after having been cast.

Acceptance of the sections will be on the basis of material tests, finished quality, and inspection of the completed product.

Cones shall be 30" - concentric type

Joint material in riser sections shall be of the bitumastic type as manufactured by RAM-NEK or equal.

No more than two (2) lift holes may be cast or drilled in each section.

#### 121.03      Shallow Manhole

When the depth from the deepest invert to the top of the cone section is 4'-0" or less, an approved shallow cone section with a 30" opening shall be used. In no case shall a flat slab top section be used.

#### 121.04      Setting Precast Sections

Precast reinforced concrete sections shall be set so as to be vertical with sections in true alignment.

All holes in sections, used for their handling, shall be thoroughly plugged with mortar. The mortar shall be one part cement and 1-1/2 parts sand; mixed slightly damp to the touch (just short of "balling"); hammered into the holes until it is dense and an excess of paste appears on the surface; and then finished smooth and flush with the adjoining surfaces.

Anti-hydro grout shall be used to fill all voids around sanitary sewer pipe and manhole sections.

#### 121.05      Mortar for Brick and Concrete Block Work

The mortar shall be composed of Portland cement, hydrated lime, and sand, in which the volume of sand shall not exceed three (3) times the sum of the volumes of cement and lime. The proportions of cement and lime shall be as directed and may vary from 1:1/4 for dense, hard burned brick to 1:3/4 for softer brick. In general, mortar for Grade SA brick shall be mixed in the proportions of 1:1/2:4-1/2.

Cement shall be Type II Portland cement as specified for under Concrete Masonry.

Hydrated lime shall be Type "S" conforming to the ASTM Standard Specification for Hydrated Lime for Masonry Purposes, Designation C207 - Latest Revision.

The sand shall be well graded clean, durable particles all of which shall pass a No. 8 sieve.

#### 121.06      Laying Brick

Only clean, red, fire cured brick shall be used. The brick or block shall be moistened by suitable means, as directed, until they are neither so dry as to absorb water from the mortar, nor so wet as to be slippery when laid.

Each brick or block shall be laid in a full bed and joint of mortar without repairing subsequent grouting, flushing, or filling, and shall be thoroughly bonded as directed.

Brick shall only be used in chimney construction for final adjustment of frame and covers to required grade. Brick chimneys shall not exceed 18 inches in height for manholes 4-6 feet deep and 24 inches for manholes greater than 6 feet deep.

#### 121.07      Plastering and Curing Brick

Outside faces of brick shall be plastered with mortar from 1/4 inch to 3/8 inch thick. If required, the brick shall be properly moistened prior to application of the mortar. The plaster shall be carefully spread and troweled so that all cracks are thoroughly worked out. After hardening, the plaster shall be carefully checked by being tapped for bond and soundness. Unbonded or unsound plaster shall be removed and replaced.

Brick and plaster shall be protected from too rapid drying by the use of burlaps kept moist, or by other approved means and shall be protected from the weather, all as required.

#### 121.08      Frames and Covers

The castings for the frames and covers shall be of good quality, strong, tough, even grained cast iron, smooth, free from scale, lumps, blisters, sandholes and defects of every nature which render them unfit for the service for which they are intended.

All castings shall be thoroughly cleaned and subject to a careful hammer inspection.

Casting shall be at least Class 30 conforming to the ASTM Standard Specification for Gray Iron Castings, Designation A48- Latest Revision, and conform to the standard details.

The contact surface of the frame and cover seat shall be a machine fit and the cover surface shall be "knobbed".

Frame and covers shall be US Foundry Model 230 AB-M

#### 121.09      Setting Frames and Covers

Frames shall be set with the tops conforming accurately to the grade of the pavement or finished roadway surface, in unsurfaced areas the frames and covers shall be set 3 inches higher than the surrounding ground. Frames shall be set concentric with the top of the masonry and in a full bed of mortar so that the space between the top of the manhole masonry and the bottom flange of the



frame shall be completely filled and made watertight. A thick ring of mortar extending to the outer edge of the masonry shall be placed around the bottom flange. The mortar shall be smoothly finished to be flush with the top of the flange and have a slight slope to shed water away from the frame.

Cover shall be left in place in the frames on completion of other work at the manholes.

#### 121.10        Adjustment of Existing Manhole Frames

When it is necessary to raise existing manhole frames due to repaving of roads or other reasons, the frames shall be shimmed with masonry, brick and Type II cement mortar to the new finished grade, or in the case of sodded areas, 2" above finished grade. In cases where raising the existing frame and cover result in chimneys greater than 12" in height the District may require the conical section be raised installation of additional barrel section below the conical section.

When new paving operations cause the manhole frame to be adjusted upwards, manholes will be raised using conventional shimming methods under the frame. The use of adapter rings in the existing frame will not be permitted unless specifically authorized by the District.

### **END OF SECTION 121**

## SECTION 122

### GREASE INTERCEPTORS AND TRAPS

#### 122.01 Grease, Oil and Sand Interceptors

##### 122.01.1 Grease Interceptors

Grease, oil and sand can be a serious problem for any sewer system if not taken care of properly and adequately. When grease is discharged into a gravity collection system, it can cause operation and maintenance problems not only inside those gravity lines, but also with the downstream lift stations and force mains. Additionally, grease inhibits the biological processes at the wastewater treatment plant.

Frequent and adequate cleaning of interceptors is important and often over looked. Interceptors shall be provided when the resultant discharge from a business contains excessive amounts of grease, oil, lint, sand or other solids and substances that are harmful or hazardous when discharged into wastewater, or in the opinion of the District Engineer the resultant discharge from such occupancy will be detrimental to the District facilities.

Grease interceptors will be required on all food service establishments where any kind of food is prepared on site, or in the opinion of the District Engineer the resultant discharge from such occupancy will be detrimental to the District facilities. Examples of businesses that will be required to have a grease interceptor are restaurants, delis, bakeries, sandwich shops, schools, hospitals, assisted and independent living facilities, etc.

Grease interceptors will be sized according to one of the two (2) formulas listed in [Section 64E-6.013\(7\)\(d\) – of Rule 64E-6, Florida Administrative Code](#)~~the 2010 Florida Building Code – Plumbing, Chapter 10 – Traps, Interceptors and Separators, Table 1003.5.1~~, whichever best applies for the proposed establishment. [As per compliance with the 2020 Florida Building Code – Plumbing, Chapter 10 Traps, Interceptors and Separators, Section 1003.3.5, “Grease interceptors that are sized, constructed and approved in accordance with Rule 64E-6, Florida Administrative Code and that are located outside the building shall not be required to meet the requirements of this section.”](#)– The minimum sized grease interceptor shall be 750 gallons, which will also apply to businesses where the above formulas might not directly apply.

When multiple tanks are required, they must be installed in series. This also applies to pre-existing restaurants (or other facilities) that require additional capacity to augment their existing interceptors.

Interceptors shall not be shared. Each business location is required to have its own interceptor(s) and its own separate plumbing to the interceptor(s). When the same establishment has multiple discharge points that require installation of interceptors at different locations, such as an institutional facility with a kitchen and a laundry, each use shall be provided with separate plumbing and the required interceptor(s).

All equipment and plumbing fixtures in a food service facility that may introduce fats, oil or grease into the [LRD-District](#) wastewater facilities must be connected through the grease interceptor, including but not limited to:

- a. Scullery sinks (two or three compartment)
- b. Pots and pan sinks
- c. Floor drains in kitchen, walk-in coolers and washing areas (not including public restrooms)
- d. Pre-wash sinks
- e. Dishwashers and other washing machines
- f. Automatic hood wash units
- g. Indoor garbage can washes

Under the counter (flow-based) grease traps are not allowed.

#### 122.01.2 Oil/Sand Interceptors

Oil/Sand interceptors are required for all car washes and establishments with facilities for servicing vehicles/mechanical equipment. All plumbing (other than the restroom) from the area where repairs and maintenance is being performed shall connect to an oil/sand interceptor; this includes but is not limited to floor drains and hand wash sinks. Engine oil, transmission oil, coolant, solvents, additives, brake fluid or any other fluid collected in the process of servicing vehicles/mechanical equipment shall not be discharged into the interceptor or other plumbing; the handling and disposal of these fluids shall be in compliance with the DEP and [LRD-District](#) rules and regulations.

Oil/Sand interceptors are also required for hydraulic and all outdoor elevators, such as in parking garages, where sump pumps and/or drains are proposed to discharge to [LRD's-District's](#) sewer system. Oil/sand interceptors are not required for indoor elevators with an approved alarm system that meets the [2010-2020](#) Florida Building Code.

Oil/Sand separators shall be sized based upon the [2010-2020](#) Florida Building Code — Plumbing, Chapter 10 – Traps, Interceptors and Separators, Section 1003.4.2.2. The minimum sized oil/sand separator shall be 750 gallons.

#### 122.02 Lint Interceptors

Lint interceptors are required for all laundromats and all establishments with a central laundry room with at least 5 washing machines or more. Interceptors shall be equipped with a wire basket

or similar device that's removable for cleaning and prevents passage of solids ½" or larger in size, strings, rags, buttons or other materials detrimental to the wastewater facilities. Lint interceptors shall be sized based on the following formula: Number of washers X 2 cycles per hour X 20 gallons per cycle flow rate X 2.0 hours retention time X 1.5 storage factor. The minimum sized lint interceptor shall be 750 gallons.

#### 122.03 General Requirements

All interceptor construction shall be concrete and shall meet all applicable standards in Chapter 64E-6, Florida Administrative Code.

All interceptors shall be provided with two (2) access manholes: one (1) over the inlet and one (1) over the outlet. LRD approved, traffic rated lids shall be installed with manhole covers to finished grade. Manhole frame & covers and inside openings in the top slab, for tanks sized 1,250 gallons or less, shall be manufactured by US foundry with a 24-inch minimum clear opening. Manhole frame & covers and inside openings in the top slab, for tanks larger than 1250 gallons, shall be US foundry, model 230-AB-M, double ring & cover, with a 30-inch minimum clear opening.

All manhole covers shall be marked with the lettering: "GREASE", "OIL" or "LINT", as applicable.

Wastewater from toilets, urinals, showers, and other similar plumbing fixtures for human waste shall not discharge into an interceptor.

In accordance with the District's Rule Chapter 31-13 and Industrial Pretreatment Program, all interceptors shall be inspected at a minimum on a semi-annual basis. Additionally, all interceptors will have a structural inspection performed by District staff on a 5-year basis pending no change in ownership or operation. The structural inspection will require the interceptor to be pumped out, pressure washed and cleaned of all contents at the Owner's expense, in advance of the scheduled inspection date.

If a restaurant submits for change of ownership or operation, then a structural inspection will be required (if not already completed within the past 6 months) as part of the District's review and approval process. The structural inspection will require the interceptor to be pumped out, pressure washed and cleaned of all contents at the Owner's expense, in advance of the scheduled inspection date.

#### 122.04 Grease Interceptor Exemptions

There are instances where a food service establishment may not require a grease interceptor. In these instances an exemption from a grease interceptor may be allowed. In order to qualify for an exemption, the following minimum criteria must be met.

- No food preparation on-site.
- The following equipment is prohibited from being on-site: oven, dishwasher, stove top cooking surfaces/griddle, fryers, ranges, or any equipment used to cook food, including

pre-cooked frozen food.

- Only pre-made food may be allowed to be heated on-site using the following equipment: toasters, microwaves or sandwich presses.
- Traditional and/or convection ovens which have a microwave feature or which utilize microwaves to accelerate preparation times are not permitted.
- No reusable buffet serving basins used on-site.
- If serving food on-site, all food is served on paper/plastic plates using disposable utensils or in the pre-packaging it was brought on-site in.
- All condiments are pre-packaged in individual servings.

If the above criteria cannot be initially met or if it is found that after an exemption is given the above criteria are no longer being met, then a District-approved grease interceptor must be installed. Failure to do so will result in a violation of the District's Sewer Use Rule outlined in Chapter 31-13, Florida Administrative Code, which may result in fines against the property.

Any exemptions provided are permanent, so long as these requirements are met.

**END OF SECTION 122**

## SECTION 130

### VALVES AND APPURTENANCES

#### 130.01 General

All buried valves and appurtenances including exposed nuts, bolts, and retainer glands shall be given an exterior approved bitumastic or epoxy coating. All valves shall open counterclockwise. All valves shall have extension stems pinned to the operating nut with a stainless steel pin extension. Stems will not be required where the valve operation nut is less than 30" from finished grade.

Contractors must supply LRD with shop drawings clearly indicating that the criterion for each type of valve or appurtenance listed in this section is satisfied.

#### 130.02 Plug Valves

All mechanical joint and flanged plug valves shall be of the nonlubricated eccentric type. Valves shall be rated for not less than 125 psi pressure differential acting in either direction (bi-directional). At this differential, the valve shall provide drip tight shutoff. All components shall be of corrosion resistant construction. Valve flanges shall be ANSI B16.1, class 125 pound with a full round or other acceptable type port to assure minimum turbulence and minimum pressure drop. Valve bodies shall be of ductile iron and seats shall be of nickel-alloy. Valves are to have a balance plug, coated with a resilient material solidly bonded to a cast iron or semi-steel core, as required, to assure low torque and bubble-tight shutoff. The valve plug shall touch on the seat when in the closed position.

Plug valve port areas shall be at least 100% through 24 inches in diameter. For plug valves 30" and larger, a port area of at least 75% is required.

Buried plug valves shall be installed vertically with non-rising stems and shall open by turning a two inch square operating nut counterclockwise. An arrow shall be cast into the nut skirt to indicate the open direction.

Plug valves shall be as manufactured by DeZurik Corporation, Milliken, Keystone Valve Manufacturing Company (Ballcentric Type), or approved equal.

#### 130.03 Resilient Seat Gate Valves

Gate valves shall be resilient seated, manufactured to meet or exceed the requirements of AWWA C509 or C515, Latest Revision, and in accordance with the following specifications. Valves shall have an unobstructed waterway canal equal to or greater than the full nominal diameter of the valve.

The valves are to be non-rising stem with the stem made of cast, forged, or rolled bronze as shown in AWWA C509. Two stem seals shall be provided and shall be of the O-ring type, one above and

one below the thrust collar. A 2-inch square operating nut shall be provided for operating the valve. The stem nut, also made of bronze, may be independent of the gate or cast integrally with the gate. If the stem nut is cast integrally, the threads shall be straight and true with the axis of the stem to avoid binding during the opening or closing cycle.

The valve body, bonnet, and bonnet cover shall be ductile iron. All ferrous surfaces inside the valve body shall have a fusion bonded epoxy coating applied at the valve manufacturer's facilities. The coating shall meet or exceed all requirements of AWWA C550. All bolts, nuts and washers shall be stainless steel to limit exterior corrosion and maintain fastener strength.

The sealing mechanism shall consist of a cast iron or ductile iron gate having a vulcanized Buna-N or SBR synthetic rubber coating or a Buna-N rubber seat mechanically retained on the gate. The resilient sealing mechanism shall provide zero leakage at 250-psi working pressure. All valves shall have pressure tests performed to the requirements of AWWA C509 or C515 specifications, as applicable, prior to shipment from the manufacturer. Valve shall seat and be drip-tight at the working pressure when installed with the line flow in either direction.

All valves are to be tested in strict accordance with AWWA C509. Resilient seat gate valves shall be as manufactured by Mueller, Metro-Series, American Darling or approved equal.

Valves shall be covered by a Manufacturer's 10 year limited warranty from date of purchase by end user and delivered within 30 days from receipt of purchase order. The supplier will also provide laminated maintenance manuals.

#### 130.04      Swing Check Valves

Swing check valves for sewage, sludge, and general service shall be in accordance with AWWA C 508, unless otherwise specified below, full-opening; designed for a working pressure of 150 psi unless otherwise shown, and shall have a flanged cover piece to provide access to the disc. Corrosive ferrous surface of valves, 4-inch and larger, which will be in contact with water, shall receive a fusion-bonded epoxy coating conforming to AWWA C550. The valve body and cover shall be of cast iron to ASTM A126, with flanged ends to ANSI B16.1, or mechanical joint ends, as shown.

The valve disc shall be of cast iron, ductile iron, or bronze to ASTM B 62. The valve seat and rings shall be of bronze to ASTM B 92 or B 148, or stainless steel. The hinge pin shall be of bronze or stainless steel.

Suppliers or Equal:

American-Darling Valve Co.

APCO (Valve and Primer Corp.)

Crane Company

Mueller Co.

The valves shall have a lever and counterweight and shall be suitable for horizontal or vertical mounting.

130.05      Air Release, Air Vacuum Valves, and Combination Type Valves

The air release and air vacuum valves shall be of the type especially designed for forced sewer systems. The valve shall be of the short body type and capable of releasing air, gas, or vapor under pressure during system operation or allow air to enter the system when the system is draining, as applicable. The valve shall be as shown on the Standard Details with a two inch inlet. The venting orifice shall be sized by the Design Engineer based on a working pressure of 75 psi.

It shall be the responsibility of the design engineer to determine which valve is necessary for the pipeline conditions encountered.

Air release and air vacuum valves shall be ARI D-025 (See Standard Details).

130.06      Ball Valves

Ball valves shall be limited to ¾” through 2-1/2” in size and shall have cast brass, bronze or stainless steel body, bronze tee head, stem with check, full round way opening and provision for locking in a closed position.

Ball valves can be used for force main and low pressure sewer applications up to 2-1/2” in diameter. The primary use in force main applications is for ARV isolation valve use (See Standard Details).

Valves shall be designed to be fully opened with a 90-degree turn of the operating handle and shall be full port design with bi-directional sealing rated for a minimum 150 psi working pressure.

Brass ball valves in the low pressure system shall be as manufactured by Ford, with NPT or pack joint ends as needed.

Where these valves are direct buried, a 2” square gate valve operating nut shall be included with a valve box.

130.07      Brass Check Valves

Brass check valves shall be Proflo PFX31 size 1-1/2” to 2”.

130.08      Valve Boxes and Vaults



All buried valves shall be equipped with a valve box. Valve boxes shall be heavy duty construction for traffic loading type, cast iron, three piece, slide type, or screw type with drop covers. The valve boxes shall be adjustable to six inches up or down from the nominal required cover of the pipe.

A number six base section shall be provided. Minimum shaft diameter shall be 5-1/4 inches and minimum metal thickness shall be 3/16 inch. Boxes shall be coated with an approved bitumastic or epoxy coating. Valve box covers shall have the word "SEWER" or "REUSE" cast thereon depending on the application. Swing check valves shall be installed in an approved suitable vault for easy access by the District maintenance staff.

Valve boxes shall be installed on firmly compacted material at a level approximately equal to the elevation of the valve packing plate. No contact between the valve and the box shall be permitted. On plug valves, the positioner on the operating mechanism shall be kept free of rocks, debris, etc.

Where valves are installed with over six feet of cover, or where the ground water table is within three feet of the ground level, an extension stem shall be provided to bring an operating nut within two feet of the finished grade. This extension, stem shall be satisfactorily pinned to the valve operation nut to prevent dislodging during operation of the valve.

**END OF SECTION 130**

## **SECTION 140**

### **PIPELINE INTEGRITY TESTS**

#### **140.01      General**

The District shall inspect all sewer facilities prior to acceptance and again just prior to the expiration of the 1-year guarantee.

When a section of pipe of a length deemed adequate by the Design Engineer is ready for testing, the pipe shall be flushed and then tested in accordance with the applicable testing method as described herein. Suitable temporary testing plugs or caps shall be installed. All necessary pressure pumps, pipe connections, meters, gauges, water, weirs, bulkheads, and other necessary equipment and all labor required for carrying out these tests shall be furnished. The Design Engineer shall notify the District at least 48 hours prior to any testing so that it may, at its option, have a representative present during the testing.

Gravity sewers shall be tested in accordance with the Hydraulic Infiltration/Exfiltration Test as described herein. Additionally, PVC Gravity sewers shall be tested for deflection as described herein. Force mains shall be tested in accordance with the Pressure and Leakage Test for Force Mains as described herein.

If the District Engineer so desires, the first section of any line between two manholes shall be tested as soon as possible after backfilling has been completed. If such tests appear to be satisfactory and acceptable, progressive testing of completed sections of the lines may be deferred at the option of the District's Engineer, and at the request of the Contractor, until all pipe has been laid and before final acceptance. However, if permitted, this will not constitute a waiver of any of the tests or the leakage requirements.

Sections of pipe tested for infiltration and exfiltration prior to completion of the project shall be subject to a final inspection at completion of the project, and also subject to additional leakage tests, if warranted in the opinion of the District Engineer.

If the section fails to pass the applicable tests, the Contractor shall locate, uncover and repair or replace the defective pipe, fitting or joint, at his own expense. Additional testing will be required after the deficiency is corrected.

#### **140.02      Hydraulic Infiltration/Exfiltration Tests**

Upon completion of a section of the sewer, the pipe shall be dewatered and tested to measure the infiltration for at least three (3) consecutive days. Test section shall be from manhole to manhole. Longer test sections may be used with the approval of the District Engineer.

For making the infiltration tests, underdrains, if used, shall be plugged, well points and other groundwater drainage shall be stopped to permit the groundwater to return to its normal level.

Infiltration shall be measured by the use of weirs designed specifically for this purpose or other acceptable means approved by the District Engineer.

As required, suitable bulkheads shall be installed to permit the test of the sewer.

Where the crown of the pipe is below the natural groundwater table at the time and place of testing, the pipe shall be tested for infiltration. Suitable watertight plugs shall be installed and section of pipe to be tested shall be pumped dry before start of test. Where the crown of the pipe is above the natural water table, the pipe shall be tested for exfiltration by installing necessary plugs and filling pipes and manholes with water and maintaining a static head of water of a minimum of two feet above the crown of the pipe during the test. Exfiltration tests shall be conducted on main lines and lateral lines, unless waived by the District Engineer. The water level of internal pressure to be used for exfiltration test shall be determined by the Design Engineer.

The sewers shall pass the applicable test before any connections are made to buildings or to active sewers.

The maximum allowed infiltration/exfiltration shall not exceed 25 gallons per inch of diameter per mile per 24 hours for pipe lines and 4 gallons per 24 hours for manholes. Once systems are stabilized a 2 hour test shall be performed and the appropriate fraction of maximum allowed infiltration/exfiltration applied.

#### 140.03      Pressure and Leakage Test for Force Mains (HDPE)

After fusing, prior to placement, the HDPE piping shall be filled with potable water and pressure tested at 100 psi or 1.5 times design operating pressure for 2 hours, whichever is greater. Each joint shall be visibly inspected for leakage at the end of 2 hours. Any sections showing visible leakage shall be cut out and the remaining pipe fused together and retested. After placement the HDPE pipe shall be pressurized to a minimum 1.65 times pipeline design pressure for 4 hours, with make up water added as necessary to maintain 1.65 times pipeline design pressure. At the end of 4 hours, pressure is reduced to 1.5 times design pressure and pressure monitored for 1 hour. Deviation in pressure > 5% during the 1 hour test indicate a failed test. All testing shall be in compliance with ASTM F2164.

#### 140.04      Pressure and Leakage Test for Force Mains (PVC and DI)

Except as otherwise directed by the District, all pipelines shall be given combined pressure and leakage tests in sections of length approved by the District's Engineer. The Contractor shall furnish and install suitable temporary plugs or caps; all necessary pressure pumps, pipe connections, meters, gauges, and other necessary equipment; and all labor required. The Design Engineer shall witness all tests.

Subject to approval of the Design Engineer and provided that the tests are made within a reasonable time considering the progress of the project as a whole, and the need to put the section into service, the Contractor may make the tests when he desires.

The section of pipe to be tested shall be filled with water of approved quality and all air shall be expelled from the pipe.

The section under test shall be maintained full of water for a period of 24 hours prior to the combined pressure and leakage test being applied.

Two pressure and leakage tests shall be conducted for each pipeline segment. The first test shall be conducted at the average working pressure of the pipeline segment. The second test shall be conducted at a test pressure of 100 pounds per square inch or 1.5 times the pipeline design operating pressure, whichever is greater.

The pressure and leakage test shall consist of first raising the water pressure (based on the elevation of the lowest point of the section under test and corrected to the gauge location) to the specified pressure. If the Contractor cannot achieve the specified pressure and maintain it for a period of one hour with no loss of pressure and no additional pumping, the section shall be considered as having failed to pass the pressure test. The District may require that the pressure and leakage test be run in accordance with AWWA C-600 Standards, latest revision (Four Hour Test).

Allowable leakage shall not exceed the following where L = allowable leakage (gallons), N = number of joints, D = nominal diameter of pipe (inches), P = average test pressure (psi).

$$L = \frac{ND\sqrt{P}}{7400}$$

#### 140.05      Pressure and Leakage Test for Low Pressure Force Mains

Low pressure force mains shall be filled with potable water, bled of air and pressurized to 70 psi. Pressure shall be maintained constant for 1 hour without adding water. Any loss of pressure indicates a failed test.

#### 140.06      Deflection Testing

Pipe deflection shall not exceed 5% measured by a go/no-go gauge or mandrel. The District may confirm the pipe deflection at the end of the job prior to acceptance. Additionally, the District may confirm the pipe deflection just prior to end of the one year guarantee period. Pipe sections exceeding 5% long term deflection will be relaid by the Contractor or the Developer at his own cost and expense and retested until the District's go/no-go gauge passes through the pipe section.

The District's mandrel will be considered the "official" gauge used for deflection testing. The standard District gauge is manufactured by "HURCO" Technologies, Inc., Harrisburg, S.D. The outside diameter of the District's mandrel is as follows:

Pipe Diameter (Inches)	Mandrel Diameter (Inches)
8	7.28
10	9.08
12	10.79

**END OF SECTION 140**

## SECTION 150

### SUBMERSIBLE LIFT STATIONS

#### 150.01 Scope

It is the intent of this standard is to provide component requirements and general design guidelines for submersible wastewater lift stations. This standard shall be used in conjunction with Standard Details SD-31 through 35 and referenced standards for complete submersible wastewater lift station requirements.

This specification typically defines requirements for 20HP and smaller lift stations. Lift stations greater than 20 HP, serving critical infrastructure or performing as a repump station may require alternate design criteria including variable speed, tri-plex configuration, permanent standby emergency power and PLC control. These additional design criteria will be defined by Engineering Services during the design.

#### 150.02 Site

Lift station sites shall be provided with a minimum 40' x 40 lift station easement. Variations on the easement shall be considered on a case by case basis where access, maintenance and bypass operations can be accommodated with alternate configurations acceptable to the District and approved by Engineering Services.

The lift station site and access shall be set at proper elevations and configurations such that access and maintenance to the station will not be impaired by flooding, excessive road grades, swales, walls or landscaping. A lift station site plan indicating all topographical features, rights-of-way, easements and adjoining contiguous areas shall be submitted to the District for approval.

All above or at grade facilities shall be above the 1% Annual Chance Flood (100-year flood) zone, as shown on Flood Insurance Rate Maps (FIRMs). Site and lift station plans shall include the 100-year flood elevation.

#### 150.03 Power

The Contractor shall coordinate with and pay all fees, deposits, and service costs to Florida Power and Light Corp. to provide a three phase, 480V or 240V underground power service to the new lift station site. The transformer for the station shall be located not further than 25 feet from the nearest station easement line.

The power meter for the lift station shall be located on the lift station site, installed on the District's standard control panel rack.

#### 150.04 Lift Station Standard Equipment

A list of standard lift station equipment is given below. This list is not all inclusive and the Contractor shall supply all other equipment necessary for complete working installations. The lift station shall include:

Two (2) explosion proof submersible type sewage pumps with 316 stainless steel guide rails, base plates and all accessories.

Two (2) discharge lines with swing check valves and plug valves and emergency tap connection

Instrumentation/control system, (requirements vary on station size)..

One (1) electrical control panel, NEMA 4X, to house electrical equipment, pump controls, alarms and protection.

One (1) wet well.

One (1) valve vault.

Concrete covers with aluminum access hatches and safety grates

Influent drop assemblies

Permanent standby generator and ATS, (requirements vary on station size).

Radio or Cellular Telemetry System

Coatings

Concrete pads

Landscaping/site screening

The wet well structure shall receive a minimum 1.0-inch thick calcium aluminate corrosion barrier such as Sewper Coat, Strong Seal, Refratta HAC 100 or approved equal, and installed per the manufacturers recommendations.

One (1) influent (collection) manhole structure with piping connecting to the wet well structure. The distance between the collection manhole and the wet well shall be no more than 50 feet.

#### 150.05      Pumps and Motors

The pumps shall be capable of handling grit and raw unscreened sewage. The design shall be such that the pump unit will be automatically and firmly connected to the discharge piping when

lowered into place on its mating discharge connection, permanently installed in the wet well. The pump shall be easily removable for inspection or service requiring no bolts, nuts, or other fastenings to be disconnected.

All major parts, such as the stator casing, oil casing, sliding bracket, volute, and impeller shall be of gray iron. All surfaces coming into contact with sewage shall be protected by a coating resistant to sewage. All exposed bolts and nuts shall be of stainless steel.

Pump faces shall be machined to accept a sacrificial plate between the pump face and seat. The sacrificial plate shall be manufactured from 1/4" brass plate, bolted to the pump face and removable/replaceable.

A wear ring system shall be installed to provide efficient sealing between the volute and impeller.

The impeller shall be hard alloy gray cast iron of non-clogging design capable of handling solids, fibrous material, heavy sludge, and other matter found in normal sewage applications. The impeller shall be constructed with a long throughout without acute turns. The impeller shall be dynamically balanced. The impeller shall be a slip fit to the shaft and key driven. Non-corroding fasteners shall be used.

Each pump shall be provided with a mechanical rotating shaft seal system running in an oil reservoir having separate, constantly hydro-dynamically lubricated and lapped seal faces.

The lower seal unit between the pump and oil chamber shall contain one stationary and one positively driven rotating tungsten-carbide ring.

The upper seal unit between the oil pump and motor housing shall contain one stationary tungsten-carbide ring and one positively driven rotating carbon ring. Each interface shall be held in contact by its own spring system supplemented by external liquid pressures. The seals shall be easily inspected and replaceable.

The shaft sealing system shall be capable of operating submerged to depths of, or pressure equivalent to, 65 feet. No seal damage shall result from operating the pumping unit out of its liquid environment. The seal system shall not rely upon the pumped media for lubrication.

A sliding guide bracket shall be an integral part of the pump unit. The volute casing shall have a machined discharge flange to automatically and firmly connect with the cast iron discharge connection, which when bolted to the floor of the sump and discharge line, will receive the pump discharge connection flange without the need of adjustment, fasteners, clamps or similar devices.

Installation of the pump unit to the discharge connection shall be the result of a simple linear downward motion of the pump unit guided by no less than two guide bars. No other motion of the pump unit, such as tilting or rotating, shall be acceptable. Sealing of the discharge interface by means of a diaphragm, O-ring, or other device will not be considered acceptable or equal to a metal to metal contact of the pump discharge flange and mating discharge connection specified and



required. No portion of the pump unit shall bear directly on the floor of the wet well. There shall be no more than a 90-degree bend allowed between the volute discharge flanges and station piping.

The pump motor shall be housed in an air or oil filled watertight casing and shall have moisture resistant Class "F" 155-degree C insulation. Oil filled casing shall be filled with transformer oil, quality BP Energol JSO, or Shell Diala D or DX. The motor shall be a minimum of 5 BHP, rated for operation at 1700 or 1750 rpm, on a 230V, 3-phase, 60 hertz power supply. The cable entry water seal design shall be such that precludes specific torque requirements to insure a watertight and submersible seal. Epoxies, silicones or other secondary sealing systems shall not be required or used. The cable entry junction box and motor shall be separated by a stator lead sealing gland or terminal board which shall isolate the motor interior from foreign materials gaining access through the pump top.

Pump motor cable installed shall be suitable for submersible pump applications and this shall be indicated by a code or legend permanently marked on the cable. Cable sizing shall conform to NEC specifications for pump motors and shall be of adequate size for the motor rating. Pump motor cable shall be ample length to reach the rack mounted panel. Cable length to be determined by the site plans.

The pump cable shall have 90 degree C rated insulated material based on 40 degree ambient and shall have anti-roping and anti-wicking design. All mating surfaces of major parts shall be machined and fitted with nitrile O-rings where watertight sealing is required. Machining and fittings shall be such that sealing is accomplished by automatic compression in two planes and O-ring contact made on four surfaces, without the requirement of specific torque to affect this. Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered adequate.

Tolerances of all parts shall be such that allows replacement of any parts without additional machining required to insure sealing as described above. No secondary sealing compounds, greases, or other devices shall be used.

Each unit shall be provided with an adequately designed cooling system. Thermal radiators integral to the stator housing, cast in on unit, are acceptable. Where water jackets along or in conjunction with radiators are used, separate circulation shall be provided. Cooling media channels and ports shall be no-clogging by virtue of their dimensions. Provisions for external cooling and flushing shall be provided.

Pump and motor assemblies shall meet NEC and NFPA requirements for explosion proof installations in Class 1, Division 1, Group D environments.

The pumps and motors shall be manufactured by FLYGT Corporation.

#### 150.06      Control Panel

This section is specific to single speed, duplex lift stations with float control, for variable speed, PLC controlled stations see Section 161.

The Contractor shall furnish and install a heavy duty type District Standard control panel as shown on the plans and specified here, as manufactured by Sta-Con Incorporated, QCI, or approved equal, and in accordance with the detail sheets SD-31 through 354.

The control panel shall contain all the remote electrical equipment necessary to provide for the operation of the pumps. The panel shall start and stop the pumps in the wet well.

The control panel shall start the “lead” pump when the liquid level rises to a preselected elevation “D”. If the influent rate exceeds the capacity of the “lead” pump, the lag pump shall be started when the liquid level rises to a preselected elevation “C” (higher than “D”). If the liquid level rises to a preselected elevation “B” (higher than “C”), the high level alarm shall be activated. When the liquid level falls to a preselected elevation “E” (lower than “D”), both pumps shall be stopped.

The control panel shall be contained in a single enclosure, fabricated of not less than 14-gauge 316 stainless steel, NEMA 4X construction. The door shall be formed with minimum lip of 3/4” and full height hinged. Closure mechanisms shall be No. 3 S.S. fasteners with No. 3 keepers as manufactured by Simmons Fasteners, or approved equal.

The interior door shall be constructed of .080-inch thick 6061-T6 aluminum. The interior and exterior doors shall be provided with a stop mechanism to hold the doors open which working in the panel. A rain shield shall be provided.

The control panel shall include the following items plus any other items shown on the plans or required for a complete, operational installation.

Circuit breakers with combination full voltage motor Starters for each pump.

“Hand-Off-Auto” selector switch for each pump, heavy duty oil tight type (toggle switches will not be acceptable).

Automatic pump alternator with test switch.

Duplex receptacle with 15-amp circuit breaker 115V GFI.

Control power circuit breaker.

Main circuit breaker.

Emergency power minimum 100-amp circuit breaker and 100-amp, 4 wire, 3 pole, reverse service generator receptacle. Emergency power to match main breaker size.

Lightning arrestor, 3-phase.

Surge capacitor.

Phase monitor, to prevent energization of pump motors in the event of phase failure or reversal or low voltage.

Indicating light for each level regulator (float switch).

“Running” indicating light for each pump.

Elapsed time meter for each pump, 2-1/2”, 6-digit non-reset.

Emergency/High level alarm light and horn, 12 VDC with battery back-up.

The panel shall include back-up circuitry to permit one pump to operate with a normal drawdown in the event of failure (open circuit) of the “stop” level regulator.

Spare parts to be furnished with the panel include:

- 2 - 120V Relays
- 1 - Alternator
- 1 - Phase Monitor
- 12 - Lamps
- 12 - Fuse Links
- 1 – Intrinsically Safe Barrier
- 1 – Alarm Controller

A copy of the panel wiring diagram shall be attached to the inside of the outer panel door. An extra copy shall be given to the District.

The basic components and layout of the control panel are shown on Standard Details 31, 32, 33 and 34.

Substitutions of these components will be permitted for approved equal, interchangeable products upon obtaining specific written approval from the District.

#### 150.07 Telemetry

Lift stations shall be provided with a District standard cellular telemetry system or radio telemetry system by Data Flow Systems. Radio Telemetry systems by Data Flow Systems shall provide monitoring and control for the following signals; (see Standard Detail SD-32):

1. Digital
  - a. Power Fail
  - b. High Level
  - c. Pump # 1 Fail
  - d. Pump # 2 Fail

- e. Pump Run # 1
  - f. Pump Run # 2
  - g. Spare
  - h. Spare
  - i. Generator General Alarm (Permanent Standby Generator Stations Only)
  - j. Generator Low Coolant (Permanent Standby Generator Stations Only)
  - k. Generator Low Fuel (Permanent Standby Generator Stations Only)
  - l. Generator Fail to Start (Permanent Standby Generator Stations Only)
2. Analog
- a. Wet Well Level
  - b. Spare
  - c. Spare

See Standard Details SD-34 through SD-39 for cellular telemetry system requirements.

~~An alternative cellular telemetry system may be available. Coordinate with the District's Director of Engineering Services for specifics.~~

#### 150.08 Access Hatches & Fall Through Safety Prevention Systems

The wetwell and valve vault access hatch shall be single leaf design with a minimum clear opening at 36" x 48", but must also meet the minimum clear opening as required by the pump manufacturer. The frame shall be a minimum: 3" x 3" x 1/4" aluminum angles and the cover shall be 1/4" aluminum angles and the cover shall be 1/4" aluminum diamond pattern. The hatch shall be completed with anchor straps, automatic hold open arm and cover release, forged brass or stainless steel hinges with stainless steel pins, hasp and staple lock, flush type handles, upper guide holders and sensor cable holder. The cover shall be reinforced to withstand a live load of 300 lbs./sq. ft. unless in areas that may experience traffic. Hatches in traffic areas shall meet H-20 design loading criteria, at a minimum. Hinges shall be of the interior type.

All stations 6' in diameter or larger, shall be provided with fall through safety prevention systems. All systems will be of the grate type as manufactured by U.S.F. Fabrication, Inc., or approved equal able to withstand a pedestrian load of 300 lbs/sq. ft.. The safety grate shall be constructed of aluminum. All hardware must be of 316 stainless steel.

The configuration of the hatch and safety grate shall be such that opposing sides of the wetwell opening are protected when the safety grate is in the upright position. Safety chains shall be provided from the safety grate to the hatch to protect adjacent sides.

10' diameter and larger wetwells and tri-plex stations will require custom hatch and safety grate designs to be determined in coordination with the District's Engineering Services.

#### 150.09 Floats

Float switches with internal single pole mercury switch shall be installed in the wet well to control the operation of the pumps with variations of liquid level in the wet well. The float switches shall be sealed in a polypropylene casing with a firmly bonded electrical cable protruding. Floats shall be Roto-Float type S as manufactured by Anchor Scientific Inc..

150.10        Wetwell Level Transducer / Transmitter

See Section 180

150.11        Valves

See Section 130

150.12        Pipe and Fittings

See Section 110 for pipe and fittings.

150.13        Wetwell and Valve Vault

See Section 121 and standard details SD-31

150.14        Wet Well via Caisson Construction

Wet wells installed via the caisson method are allowed only with prior approval by the Loxahatchee River District. Final acceptance of the wet well by caisson method will only occur when it is determined that:

- Wet well has no structural damage, deep gouges and and/or cracks.
- Wet well has been installed at the design depths indicated.
- Wet well is plumb. The maximum deviation shall be 1/8" per foot of each precast section.
- Wet well tremie seal is leak free and there are no continually damp areas prior to the installation of the secondary pour.
- Wet well sections show no evidence of separation and that the structure has not settled.
- Wet well walls, specifically at the joints, are flush and without overhang.
- Wet well was installed in proper sequence.

If any of the above items are not met to the satisfaction of the District, the wet well will be rejected and it will be the contractor's responsibility to remedy the problem at his own expense. The contractor shall also provide a warrantee that the wet well will meet the above requirements for a 1-year period from the date of District acceptance.

150.15        Submittals

The following submittals are required for approval prior to construction of the project.

1. Lift Station Calculations to include
  - a. Average Daily Flow
  - b. Peak Hour Flow
  - c. System Head Curves
  - d. Wetwell Cycle Time
  - e. Anti-Flotation
2. Lift Station Site Plan
3. Pump and Motor
4. Pipe and Fittings
5. Valves
6. Concrete Structures
7. Control Panel – complete detailed design including electrical schematic, panel layout, bill of materials
8. Panel Rack
9. Base Plates
10. Rails, Brackets and Adapters
11. Conduit and Cable
12. Aluminum Hatches and Safety Grates

Detailed wiring diagrams of the entire installation including main power supply, pump motors, control circuits, alarm circuits, and metering circuits shall be submitted. The diagrams shall include schematic and connection wiring diagrams.

Four (4) copies of detailed installation drawings including wiring diagrams, pump curves and maintenance and operating manuals shall be submitted to the District at the time of initial start-up.

#### 150.16 Services to be Furnished by Manufacturer of Equipment

The services of a factory-trained representative shall be furnished for the lift station start-up. The representative shall check all electrical components, wiring, and pump operations.

#### 150.17 Operation and Maintenance

Upon completion and successful startup of the lift station the District will be provided with two copies of the lift station operation and maintenance manual. The manual shall include operation and maintenance detail including service intervals for all equipment provided with the lift station. Operation and maintenance manuals shall also include AS-BUILT drawings for the lift station, control panel, wiring schematics and appurtenances.

#### 150.18 Warranty

The pump manufacturer shall warrant the pumps for a period of five (5) years from the date of pump manufacturer's start-up. The warranty shall include a minimum 100% coverage of the manufacturer's shop labor and parts for the first eighteen months, then 50% coverage through the third year, and then 25% coverage through the fifth year.

**END OF SECTION 150**

## **SECTION 151**

### **LOW PRESSURE SEWER SYSTEMS**

#### **151.01      General Intent**

It is the intent of the District to provide sanitary sewer service to the citizens, businesses, and industry of the area in a manner which maximizes use of existing facilities, minimizes environmental damage, and provides solutions to existing problems.

Gravity collection systems with central lift stations are the preferred methods of collecting and transporting sewage to the regional facilities. All property owners should anticipate connection via these conventional facilities unless otherwise directed by the District.

The District recognizes that the construction of gravity sanitary sewer lines is not conducive to all areas, and that utilization of an alternative system may be necessary to provide access to regional facilities.

The District may at its sole discretion allow or direct the utilization of LPSS where it is determined to be in the best interest of the District. The District may direct the use of LPSS to minimize the impacts of gravity sewer construction upon existing neighborhoods or upon environmentally sensitive areas.

The use and implementation of LPSS shall be at the sole discretion of the District and no installation shall be considered as a precedent for justifying the acceptance of LPSS in a similar or like situation.

#### **151.02      Administration**

The administrative procedures for construction are set forth in the latest revision of the District Construction Standards and Technical Specifications and shall be adhered to unless specifically modified in writing by the District.

#### **151.03      Utilization**

##### **151.03.1      LPSS for Existing Developments**

For the purpose of this section, the term "existing developments" shall be considered as those areas which have previously developed on septic tanks to the extent that a substantial portion of the subdivision is now built out; or, under less prevalent circumstances, an area which has received site plan approval and is plated/subdivided based upon use of septic tanks.

The criteria for the District's determination of whether the use of LPSS is warranted includes, but is not limited to: existing developments of less than 40 homes, or in areas of high water tables, or in areas where work space for construction activities is unreasonably restricted or in areas where available gravity collection lines have not been provided by prior construction.



Existing gravity sewer systems will be utilized to the maximum extent possible; however, LPSS may be considered in existing neighborhoods where gravity construction would be unreasonably restricted in the opinion of the District Engineer.

#### 151.03.2 Community Grinder Systems

The use of a community grinder system is a merge of a LPSS system and a traditional gravity collection system, in that there are instances where the District would allow “grinder systems” in conjunction with small gravity system to serve a community. In accordance with Section 151.01 above, the utilization of smaller “grinder systems” with limited gravity collection systems will be encouraged in new developments where environmental concerns would be adversely impacted by the construction of a traditional non-clog lift station and/or deep gravity lines, at the sole determination of the District.

Grinder systems could be considered for:

- New Development – areas of less than 15 homes, with a suitable site for a grinder station.
- Existing Development – areas of less than 20 homes, both sides of street participating, and cost is not greater than 200% of LPSS, unless specifically requested by property owners.

#### 151.04 Responsibility

##### 151.04.1 District

A low pressure sewer system may consist of one or more pump stations. A pump station shall be considered as the individual pumping unit which serves a single residence, or a commercial or industrial customer. In the latter cases, the unit may contain two pumps (duplex).

All plans for the construction of any portion of an LPSS shall be submitted to the District Engineer for review and approval.

All LPSS facilities which are located within public rights-of-way shall be conveyed to the District for operation and maintenance.

Any facility, associated with an LPSS, which is located outside of the private property being served, must be within a dedicated easement or right of way. The easement shall be conveyed to the District.

The District shall be responsible for the operation and maintenance of all facilities (force mains, valves, etc.) within rights-of-way, or dedicated platted utility easements which serve more than one unit.

Property owners must execute a License Agreement for District maintenance of residential and low flow nonresidential pump stations.

##### 151.04.2 Residential or Non-residential User Responsibilities

Each individual residential or low flow non-residential user of the LPSS system shall provide his own pump station, electrical service, force main and connection to the District owned collection/transmission lines. The District shall be responsible for the operation and maintenance of all residential and 3-phase non-residential low flow equipment serving his individual property, whether located on his property or in easements off of his property. The residential or nonresidential user shall be responsible for the installation of the pump station, control panel, force main valves, and all appurtenances which are a part of the system solely serving the individual user. Maintenance will be provided in accordance with the License Agreement provisions.

Low Pressure Systems for commercial and single phase low flow non-residential use shall: 1) require a duplex grinder pump system, and 2) be operated and maintained by the property owner in accordance with P.B.C. Health Dept./Florida DEP requirements

The user shall provide electrical power from his meter to the control panel, and all operating costs shall be users responsibility.

#### 151.05      Submissions and Approvals

All installations of individual units shall be reviewed and approved by the District Engineer prior to construction. The District Engineering Department shall be notified at time of installation of the pumping unit and prior to connection to the District line. Connection excavations shall remain open and protected until such time as an inspection has been performed and a satisfactory connection is made.

All installations shall be made in accordance with District Technical Specifications, and local plumbing and electrical codes, and the regulations of the Florida Department of Environmental Protections.

Submittals for area lines which will be taken over by the District for operation and maintenance shall be made by a Professional Engineer, registered in the State of Florida. The District may require a hydraulic analysis from the Professional Engineer to determine if the existing District infrastructure has the capacity to accept new connections. Once hydraulic capacity has been determined available, six (6) sets of signed and sealed construction plans shall be submitted for approval. The construction shall also be inspected and certified by a Florida registered professional engineer upon completion.

Submittals for individual installations shall include a shop drawing of the pump station and control panel, and an as-built drawing showing tie-in dimensions of the force main, valves, and any electrical conduits.

The use of pumping units is restricted to specific makes and models for which the District will maintain a limited spare parts inventory for emergency situations only.

#### 151.06      Definition

A low pressure sewer system is defined as a means of conveying sewage by individual pumping units through a small pressurized force main to a discharge point which can be part of an existing force main or gravity system.

#### 151.07      General System Design Considerations

The following particulars should be considered in the design of any proposed low pressure system:

1. Geographical location.
2. Type of development - number of residences.
3. Topography of service area (where applicable).
4. Layout of existing or proposed service area.
5. Projected sewage flows.
6. Location of nearest existing sewer facility.
7. Soil and water table information.
8. Availability of electric power.

##### 151.07.1      System Layout and Alignment

The pressure sewer system should be designed so that all contributory lines are branched into a main collector. "Looping" and "dead-endings" of macerated sewage in remote areas of the system shall be avoided.

Pressure lines should be laid out to provide runs as short as possible with a minimum of major change in direction.

In order to facilitate maintenance and repair, force mains should be laid outside the limits of pavement or heavy traffic areas.

All system lines shall be kept full, under a positive pressure head at all times. This can be maintained by locating the system terminus at the highest elevation, or by employment of a positive pressure control device at the terminus.

To minimize the number of potential air pockets, pressure lines should be installed on a continuously rising grade as much as possible to predetermined points where air release devices and cleanout ports can be installed in accordance with the Standard Details.

##### 151.07.2      Design Flow

As in any collection system, a pressure sewer system must be designed to effectively handle all sewage flow generated in the service area especially during times of peak flows.

Peak flow shall be determined by accepted sanitary sewer engineering principals and standards established by regulatory agencies. Proper design should assure that each contributing pump unit in the service area, no matter what its location or what other units are operating at the same time, will be able to deliver into the system during these peak flow system conditions at a rate sufficient

to insure that there will be no sewage removal problem at any individual building or unit. A pumping rate in the range of 8-10 gal./min. is normally considered sufficient.

#### 151.07.3 Line Sizing and Velocities

Line sizing must be designed to insure that scouring velocities will occur in the system pressure lines at some regular interval. At the same time they must avoid excessive system pressures which can jeopardize the delivery capacity of any unit on the system.

To insure that scouring will occur during design flows, it is recommended that the velocities in the pressure lines be maintained in the 2-5 ft./sec. range at regular intervals.

Minimum service line and tap diameters for commercial connections shall be 2-inches. In the case of tying into an existing 2 or 2.5-inch main, a tee with a 2-inch outlet shall be cut in.

#### 151.07.4 Operation of Contributing Pumping Units

A most important design consideration is that the proper operation of any and each pumping unit on the system be assured during any flow conditions which could exist. This includes the most demanding maximum peak design flow which may be seldom, if ever, encountered (such as immediately following an extended power outage).

#### 151.07.5 System Flushing

Design shall provide for the ability to mechanically purge sewage from the system at regular intervals. Flushing connections to the force main system are shown in the Standard Details.

#### 151.07.6 Air Release

Design shall provide for relief of air at high points along the system. Valves and piping configuration is shown in the Standard Details.

#### 151.08 Pumping Units

The pumping units shall combine a centrifugal submersible pumping unit(s) with a patented grinding assembly which is capable of reducing sewage and its normal constituents (together with sticks, rubber, bones, rags, plastics, etc.) to a particulate slurry which can easily be transported through small diameter pipes.

The units shall be furnished complete with unit tank, electrical control panel, level controls, alarms, check and ball valves, and other necessary appurtenances as shown on the Standard Details.

Pumps shall be manufactured by Barnes and have a 1-1/4" vertical discharge outlet. Reference the District's low pressure sewer standard details (LP details) for information regarding pump models and configurations.

## 151.09        Piping and Appurtenances

### 151.09.1      Pipe

Schedule 40 PVC: Pipe shall be Type I, PVC 1120 with a hydrostatic design stress of 2000 psi for liquid at 73.4 F. Pipe shall conform to ASTM D 1785, ASTM F 480 and ASSTM D 2665.

HDPE: Pipe shall be PE 4710 with a minimum hydrostatic design stress of 800 psi for liquid at 73.4 F utilizing a 0.5 design factor. Pipe shall conform to ASTM 3035 and ANSI/AWWA C901.

### 151.09.2      Valves and Cleanouts

Isolation valves shall be strategically placed along the pressure main at services, junction points, changes of direction, and recommended intervals along extensive straight runs (see LP Details). Isolation valves shall be ball type made of brass and be capable of operation with a 2" operating nut and be placed within a District approved valve box. Refer to the District's LP details for specifics on which isolation valves are not required to have a valve box.

Each pumping unit shall be isolated from the low pressure force main system by a PVC ball valve (service valve) and check valve, positioned at the street right-of-way line, inside of a service box (see LP details).

This service line will typically be 1.5 inches in diameter, set in a District approved meter box, at no more than 18" depths at the right of way line (see LP Details).

### 151.09.3      System Wiring and Control

Each individual contributing pumping unit shall be connected by underground conduit to the individual home electrical power supply. This conduit may be laid in the same trench as the gravity service pipe to the unit tank. Wiring and conduits shall be installed in accordance with all applicable local codes and regulations.

Liquid level controls shall be a sealed mercury switch in an approved float ball. The switch shall be sealed for life with a heavy neoprene jacketed control cord permanently attached.

A high water activated alarm shall be supplied. An alarm light shall be mounted on the building or control panel in such a manner so that it will be visible to building occupants and from the contiguous street areas.

The electrical control panel shall consist of the following:

- Corrosion Proof Enclosure
- NEMA 3R rating
- Hinged Access Panel
- Lockable Latch
- 120V AC Control Voltage - single phase
- GFI Receptacle on dead front

Audible Alarm

Rated Disconnect Switch

The electrical control panel enclosure and its components shall be UL listed.

Typical wiring diagram is shown on the District's LP Details.

#### 151.09.4      Tanks and Covers

Tanks shall be constructed of polymer or reinforced fiberglass polyester resin and the minimum size shall be 30" x 60" for a simplex configuration. Interior surface to be 10-20 mil. thick gel coated to provide a smooth sealed surface. Lockable gasketed water tight covers shall be flat aluminum and capable of supporting a 300 lb. wheel load. The fiberglass tank shall have an integral anti-flotation flange which will anchor into a concrete collar designed to counteract uplift forces.

The wall thickness of the fiberglass tank shall be sufficient to withstand a water saturated sand load of 120 pcf with a safety factor of two (2) for all depths.

Inlet hubs shall be as shown on the District's LP details. All hardware shall be stainless steel and be leak proof sealed.

The cover (lid) shall be 2/3<sup>rd</sup>s hinged single leaf, rated at 300 lbs/sq. ft and be lockable. The lid shall be set at a minimum, six (6") inches above final grade.

Conduit opening shall be sealed with an approved duct seal.

Float and wire hanger bracket shall be stainless steel (Type 304).

All interior piping shall be Schedule 80 PVC. A PVC union on the horizontal discharge pipe shall allow for the quick removal of the grinder pump assembly. The discharge line inside the tank shall also have a 1.25 inch PVC ball type check valve located inside the tank.

**END OF SECTION 151**

## SECTION 160

### VARIABLE SPEED/PLC CONTROL PANELS

#### 160.01 General

This section provides for design, construction, installation and start-up of a custom power and control panel by a qualified panel manufacturer. The panel and components shall comply with the requirements of this specification and other sections and standard details of the District's Manual of Minimum Construction Standards and Technical Specifications.

This section is generally used for variable speed submersible wastewater lift stations greater than 20HP

#### 160.02 Submittals

Submittals for the power and control panel shall include but not be limited to the following:

1. Panel materials of construction, layout and dimensions.
2. Anchoring details to concrete slab
3. Wind load calculations (if required by permitting authority)
4. Scaled dead front layout
5. Scaled back plan layout
6. Scaled component layout
7. Power, Instrumentation, Radio Telemetry and Control wiring schematics

#### 160.03 Panel

The control panel shall be NEMA 4X ground mount enclosure with double doors and leg kit for floor standing. The panel shall be minimum thickness 12-gauge 316 stainless steel, enclosure and doors. The doors shall be formed with minimum lip of 3/4", full height concealed hinges, stainless steel door clamps on non-hinged sides and pad-lock hasps. The center post shall be removable for full access to the panel interior. A rain/drip ledge shall be provided over the doors. Sun shields shall be provided on top, east, west and south facing sides.

The interior doors/dead fronts shall be construction of minimum 0.080 inch 6061-T6 aluminum.

Both exterior and interior doors shall have a mechanism to hold the doors open.

The panel shall be manufactured by Hoffman or approved equal.

The control panel shall be designed and tested in conformance with UL 508.

#### 160.04 Operating Protocol

The power and control panel shall provide for manual and automatic operation of the lift station pumps utilizing a level transducer / transmitter, programmable logic controller and variable speed drives. The station operating protocol shall be as follows.

1. Operating Protocol 1: Level Control

- a. ELEV A all pumps off
- b. ELEV  $\geq$  B lead pump on. speed adjust to maintain level
- c. ELEV  $\geq$  C lag 1 pump on. lead and lag 1 match speed and adjust to maintain level
- d. ELEV  $\geq$  D lag 2 pump on. lead, lag 1 and lag 2 match speed and adjust to maintain level
- e. ELEV E all pumps on 100% speed
- f. LEVEL DECREASING/MATCHED PUMP SPEED BELOW 50% for X seconds lag 2 off. Lead and lag 1 match speed adjust to maintain ELEV C.
- g. LEVEL DECREASING/MATCHED PUMP SPEED BELOW 50% for Y seconds lag 1 off. Lead adjusts speed to maintain ELEV D.

2. Operating protocol 2: Constant Speed

- a. ELEV INCREASING
  - i. ELEV  $\geq$  B lead pump on. N% speed.
  - ii. ELEV  $\geq$  C for X seconds. Lag 1 on. N% speed.
  - iii. ELEV  $\geq$  D for X seconds. Lag 2 on. N% speed.
- b. ELEV DECREASING
  - i. ELEV  $\leq$  C for X seconds. Lag 2 off.
  - ii. ELEV  $\leq$  B for X seconds. Lag 1 off.
  - iii. ELEV  $\leq$  A for X seconds. All pumps off.

3. Operating protocol 3: Manual/Hand

- a. With the HOA selector switch in Hand the selected pump shall turn on and speed be manually adjusted through the AFD. In Hand, all alarms shall function, but pump operation will not be prevented except for specific pump manufacturer alarms in place to prevent harm to the pump and/or motor.

4. Alarm Functions

- a. With the station in Hand, Off or Auto the alarm functions shall be fully operable.
- b. Alarms shall be available for the following
  - i. Pump Out of Service, each pump.
  - ii. Pump Fail to Run, each pump
  - iii. AFD Fault, each drive.
  - iv. ATS Fault
  - v. Generator Fault
  - vi. UPS Fault



- vii. Communication Fault
- viii. Wetwell High Level
- c. The station shall have two high level alarm systems.
  - i. Alarm 1: PLC based alarm system using a preset high level as read from the pressure transmitter. This alarm will activate onsite and offsite audible and visual alarms including the following.
    - 1. Audible Alarm Horn
    - 2. Visual Alarm Light
    - 3. High Level indicator located on the dead front inside the panel.
    - 4. Alarm indication on the Panel PC
    - 5. Alarm indication in the PLC
    - 6. Alarm indication to the DFS Radio Telemetry System
    - 7. Alarm indication in the Plant VT SCADA system.
  - ii. Alarm 2: Back up to Alarm 1 using a high level float switch inside the wetwell. This alarm will activate onsite and offsite audible and visual alarms including the following.
    - 1. Audible Alarm Horn
    - 2. Visual Alarm Light
    - 3. High Level indicator located on the dead front inside the panel.
    - 4. Alarm indication on the Panel PC
    - 5. Alarm indication in the PLC
    - 6. Alarm indication to the DFS Radio Telemetry System
    - 7. Alarm indication in the Plant VT SCADA system.
- 5. Emergency Standby Generator Limited Operation – On emergency standby generator power station operation shall be limited to 2 pumps.
- 6. Pump Off – Back Up Float System
  - a. With the station in Auto a low level float in the wetwell will automatically shut off all pump operation until the high level float switch is activated.

Programming shall allow for operators to change all variables noted above through a simple interface via a laptop computer or the HMI.

#### 160.05 Adjustable Frequency Drive:

Adjustable frequency drives shall be Eaton PowerXL DG1 Series. Drives shall be rated for 480V, 3 PH, 60 HZ. Drives shall be variable torque, pulse width modulated. Drive horsepower rating shall equal or exceed maximum pump motor horsepower requirements at any point on the pump curve.

The drive shall include a keypad interface that provides the following functions and displays at a minimum; Output frequency, frequency reference, motor speed, motor current, motor torque, motor power and motor voltage.

The drive shall include the following protective features, at a minimum; over current, over voltage, inverter fault, under voltage, input phase loss, output phase loss and under/over temperature.

The drive shall include the following field programmable I/O, at a minimum; DIGITAL: eight 24VDC digital inputs and eight 24VDC digital outputs including local/remote, drive ready, fault, running, overload, set speed, current. ANALOG: two 4-20 mA analog outputs, two 4-20 mA analog inputs.

The drive manufacturer shall provide services of a field service technician to assist in installation, setup and training.

Drives shall come with a minimum 12 month warranty.

160.06        Programmable Logic Controller: See Section 169

160.07        Uninterruptible Power Source (UPS)

Power and control panels shall be provided with an UPS for the control and telemetry system. The UPS shall be Eaton 5P Tower UPS with an Eaton Network Card-MS. The UPS shall be sized by the Contractor based on control and radio telemetry loads and to provide a minimum 10 minutes of backup power to these systems in the event of power failure.

The UPS shall provide power through an APC 120V 10 outlet rack mounted automatic transfer switch model number AP7750A. In the event of UPS failure the ATS shall switch to commercial power, if available.

160.08        Operator Interface/Panel PC

Power and control panels shall be provided with an operator interface/panel PC. The panel PC shall be Phoenix Contact USA Panel PC – VL2 PPC 2000 – 2400334:

Order Key **2400334/D29/A20/I32/R26/M52/M00/OS64/T00/S00/EF00/PS01**

The panel PC shall come with the following specific options:

1. Passive cooling system and fanless design for industrial applications
2. Panel PC (PPC): IP65 rating in front panel and IP20 rating in back. The control panel design shall ensure only IP65 areas are exposed when the dead front is closed.
3. Display shall be 47.0 cm / 18.5" TFT (Thin Film Transistor)
4. Screen resolution 1366 x 768 Pixel(s) (WXGA)
5. LED Backlighting
6. Intel® Celeron® N2930 1.83 GHz/2.16 GHz processor
7. Operating system shall be Windows® 10 IoT Enterprise LTSC 2015 (32-bit), Multi-language
8. RAM 4 GB DDR3 SODIMM
9. Mass storage - 2,5" SSD (MLC), 160 GB

10. Network 2x Ethernet (10/100/1000 Mbps), RJ45
11. Interfaces 1x COM (RS-232/422/485)
12. 4x USB 2.0
13. Monitor output 1x DisplayPort
14. Service life of battery 5 years
15. Environmental Conditions
  - a. Degree of protection IP65 (front), IP30 (back)
  - b. Ambient temperature (operation) 0 °C ... 45 °C (with HDD)
  - c. Ambient temperature (storage/transport) -40 °C ... 70 °C
  - d. Permissible humidity (operation) 5 % ... 95 % (non-condensing)
  - e. Permissible humidity (storage/transport) 5 % ... 95 % (non-condensing)
  - f. Power supply unit 24 V DC  $\pm$ 20 %

#### 160.09 Ethernet Switch

Power and control panels shall be provided with an Ethernet switch to connect all networked devices including but not limited to the Panel PC, Uninterruptible Power Source and PLC. Ethernet switches shall be Allen Bradley Stratix 5700.

#### 160.10 Ventilation

The panel shall include forced ventilation sufficient to maintain panel interior temperatures and conditions within the ranges set by the manufacturers of equipment located within the panel. Ventilation shall include filtration to prevent the entrance of dust, debris and water from entering the panel.

#### 160.11 Level Transducer/Transmitter:

See Section 180

#### 160.12 Circuit Breakers:

Circuit breakers shall be Square D H-Frame sized per panel and pump power requirements.

#### 160.13 Miscellaneous Materials and Requirements:

1. In general, except as specified otherwise in this section or the drawings, panel components shall comply with the Bill of Materials, on Sheet SD-34 of the District's Manual of Minimum Construction Standard and Technical Specifications.
2. One Duplex 15 amp 120 V GFCI receptacle with dedicated circuit breaker.
3. Two overhead fluorescent or LED lights with integral on/off switch mounted inside the panel behind each door in front of the dead front. The lights shall be 120V.
4. One "Hand-Off-Auto" selector switch for each pump, heavy duty oil tight type (toggle switches will not be acceptable).

5. One control power circuit breaker.
6. One main circuit breaker.
7. Secondary Backup Generator circuit breaker with Main Breaker Lockout.
8. Secondary Backup Generator receptacle.
9. Lightning arrestor, surge protector and phase monitor. The phase monitor shall lock out pump operation in the event of phase loss, reversal or low voltage.
10. One "RUN" indicator light for each pump.
11. One "FAIL" indicator light for each pump.
12. One Elapsed time meter for each pump, 2-1/2", 6 digit non-resettable.
13. Independent 12VDC High Level Alarm System -
  - a. Alarm light, 12 VDC, with Flasher, outdoor type mounted on top of the control panel.
  - b. Alarm Horn, 12 VDC, outdoor type mounted on side of control panel.
  - c. High Level Alarm Circuitry to include high level float in the wetwell. Alarm circuit to match the District Standard, including the intrinsic safe circuit in the wetwell.
  - d. This alarm shall act independently from the PLC
14. A copy of the panel wiring diagram asbuilts and bill of materials shall be attached to the inside of the outer panel door. An extra copy shall be given to the District.

Spare parts to be furnished with the panel include:

- 2 - 120V Relays
- 1 - Alternator
- 1 - Phase Monitor
- 12 - Lamps
- 12 - Fuse Links
- 1 – Intrinsically Safe Barrier
- 1 – Alarm Controller

#### 160.14 System Integration

System integration shall include integration of the adjustable frequency drives, level transmitter, level transducer, programmable logic controller, uninterruptable power source, generator controller, panel PC, automatic transfer switch, Data Flow Systems RTU and the District's VT Scada System for a fully functional system capable of implementing the required operating protocol and monitor/control functions as detailed in the specifications and the System Block Diagram.

System integration shall include screen development. At a minimum the following screens shall be provided at the Panel PC.

1. Overview – shows diagrammatic representation of the lift station pumps, drives, wetwell, generator and ATS and include equipment status and alarm and HOA functions. This screen shall also display, at a minimum, pump speed, pump hours, wetwell level, power source, voltage and current.

2. Setup Screen – allows setup of station parameters to include lead, lag, standby selection, time delays, tandem pump operation criteria, pump speed limits, operating levels and alarm levels,
3. Alarm/Fault Screen – displays a complete list of programmed alarms, indicates current/active alarm, allows alarm acknowledgment, allows setup of alarm parameters.
4. Trend Screen – Provide trending for lift station parameters including pump speed, wetwell level, estimated flow (based on correlation between pump speed, pump head and pump curve).

The following minimum screens shall be provided in the Plant VT SCADA system. Screens shall conform in style and function to the District's existing VT SCADA screens.

1. Station Status
2. Historical Trending

#### 160.15      Radio Telemetry

The power and control panel shall include dry contacts for the radio telemetry unit. Dry contacts shall be provided for all I/O listed below.

1. Pump Status
2. Pump Fail
3. Pump Call to Run/Off
4. Commercial Power
5. Auxiliary Power
6. High Alarm – back up float
7. Generator General Alarm
8. Generator Low Coolant
9. Generator Fuel Alarm
10. Generator Fail
11. Pump Speed
12. Pump Disable
13. Wetwell Level
14. 2 Spare Digital
15. 2 Spare Analog

**END OF SECTION 160**

## SECTION 170

### EMERGENCY STANDBY DIESEL GENERATOR SET

#### 161.01 General

The generator shall provide emergency power to the lift station adequate to operate the station and all appurtenances. A detailed sizing report shall be submitted for approval. The generator set shall be 130 C (266 F) temperature rise at 0.8 PF, 480/277V, 3 phase, four wire at 500' above sea level and ambient temperature 25C (77 F). The generator set shall be EPA certified for this specific application (permanent standby emergency power) but not have less than an EPA Tier III emission certification.

The generator set shall include an automatic transfer switch, battery charger, batteries, sound attenuating/hurricane rated/weather resistant enclosure and exhaust silencer and come as a complete package from the manufacturer.

Work shall also include a generator sizing report based on design loads detailed in the contract including pumps, controls, instrumentation, lightening and miscellaneous loads verifying manufacturers concurrence with the above sizing.

#### 161.02 Applicable Codes, Standards and Specifications

The installation shall comply with all applicable rules, regulations, and ordinances of the following:

- National Electric Code (NEC)
- Occupational and Safety Health Standards (OSHA)
- Florida Building Code (FBC)
- National Fire Prevention Association (NFPA)
- Underwriters Laboratory (UL)
- International Standardization Organization (ISO)
- National Electrical Manufacturers Association (NEMA)
- American National Standards Institute (ANSI)
- Institute of Electrical and Electronics Engineers (IEEE)
- Environmental Protection Agency (EPA)
- Town of Jupiter
- Palm Beach County

#### 161.03 Submittals

The generator set submittal shall include drawings and schematics that fully depict the product being provided. Submittals shall include the following:

- A. Generator sizing report
- B. Generator set plans and elevations.
- C. Enclosure including plans and elevations.
- D. Fuel tank including plans and elevations.
- E. Engine, combustion air, exhaust, fuel, lubrication and cooling performance specifications.

- F. Alternator specifications.
- G. Fuel consumption rates.
- H. Generator set rating (Prime at 105 C temperature rise)
- I. Exhaust silencer.
- J. Generator breaker
- K. Battery charger.
- L. Controller.
- M. Enclosure including sound attenuation, wind rating and weather rating (wind driven rain proof).
- N. Tier Rating.
- O. Start-up report
- P. Factory production testing.

#### 161.04 Acceptable Manufacturers

The generator set, fuel tank and enclosure shall be supplied by a single manufacturer. The generator set shall be manufactured by Caterpillar, Kohler, Cummins/Onan, Detroit Diesel or Generac.

#### 161.05 Warranty

The generator set and ATS shall have a 1-year warranty from the date of acceptance by the District.

#### 161.06 Diesel Engine Generator Set

The engine shall be water-cooled four-stroke compression ignition diesel and rated to drive the generator set after derating for elevation (altitude) and temperature.

Voltage regulation shall be within 5% of rated voltage at constant load. Frequency regulation shall be within 3%. Total harmonic distortion shall not exceed 5%.

When loaded voltage dip shall not exceed 20% and frequency dip shall not exceed 10%. Recovery time shall not exceed 3 seconds.

The generator shall be synchronous, four pole, revolving field, permanent magnet, drip proof, air cooled and direct connected to the engine. Insulation shall be Class H and suitable for use in wind driven rain and salt spray environments. Temperature rise shall not exceed 130 C at standby rating and 105 C at prime rating.

- A. Governor: The generator set shall be equipped with an electronic governor that maintains frequency regulation within 3%.
- B. Fuel System: The fuel system shall be equipped with a 5-micron fuel filter/water separator. The filter shall be sized to handle 125% of the fuel flow at full load. The fuel pump shall be engine driven, positive displacement and mechanical.

The fuel tank shall be sized for min. 72 hour run time at full load based on published fuel consumption rates provided by the generator set manufacturer. The fuel tank shall be belly style installed beneath the enclosure but not form a structural member of the enclosure. Fuel fill shall be readily accessible without opening the enclosure. The tank shall be fitted with a local, mechanical fuel gauge. The tank shall be double walled with inspection port for the interstitial space.

- C. Space Heater: The generator shall have a 120V space heater sized to maintain the generator windings above temperatures typical in the installation location.
- D. Jacket Water Heater: The generator shall have a 120V jacket water heater sized to maintain the engine block at 90 F.
- E. Battery Charger: The generator shall have a 120V powered 12V or 24V battery charger with trickle charge/maintain function and standard charging capability. The battery charger shall be sized based on charging requirements and sizes of batteries provided as part of the standard generator set.
- F. Batteries: Batteries (12V or 24 V) based on the charging and starting systems shall be provided. Batteries shall be easily accessible for maintenance and replacement and be installed in a corrosion resistant (fiberglass or plastic) battery tray.
- G. Cooling System: The cooling system shall incorporate an engine driven fan, enclosure mounted radiator and ethylene glycol based coolant. Access to the radiator cap shall allow for filling of coolant without the need for additional funnels, piping, etc.
- H. Enclosure: The enclosure shall be sound attenuating (78 dB(A) at 7 meters), weather proof, aluminum and wind rated for min. 165 MPH (or current PBC requirement). The enclosure shall be coated with manufacturers standard coating system and color.

Sound attenuating material shall be moisture and weather resistant, securely fastened to the enclosure interior and protected from damage during routine maintenance and operation.

The enclosure shall house the generator muffler and all generator appurtenances (controller, radiator, breaker, etc.) except the fuel tank.

All hinges, latches and locks shall be corrosion resistant stainless steel.

- I. Controller: The generator controller shall provide/display the following functions.
  - a. Programmable generator exercise schedule.
  - b. Cool down period prior to shutoff.
  - c. All phase AC voltage
  - d. Current output
  - e. Each phase AC voltage
  - f. Utility status
  - g. KW power output
  - h. Power factor
  - i. Total runtime
  - j. Last runtime
  - k. Engine Speed
  - l. Overcrank
  - m. Oil Pressure
  - n. Fuel Pressure
  - o. Water Temperature
  - p. Coolant Level
  - q. Battery Voltage
  - r. Frequency
  - s. Off/On/Auto(Remote)
  - t. Alarms



- i. Oil Pressure
- ii. Coolant Temperature
- iii. Coolant Level
- iv. Low Fuel Pressure
- v. Engine Speed
- vi. Overcrank
- vii. Battery Voltage

- J. Generator Main Circuit Breaker: The generator set shall be provided with a generator main breaker mounted and wired on the generator set. The main breaker shall be UL listed, 480/277 VAC, 200 ampere and configured such that load side cables enter through the bottom of the enclosure.
- K. Air Filter: The generator set shall be provided with a dry type replaceable air filter.
- L. Mounts: Mounts for the generator set to the frame shall be spring type vibration isolation mounts.
- M. Exhaust Silencer: The exhaust silencer shall limit exhaust noise to 78 dB(A) at 7 meters. All enclosure interior exhaust piping shall be insulated to maintain a surface temperature not to exceed 150 degrees F. The insulation shall be installed so that it does not interfere with other components. The insulation shall not be asbestos base.

#### 161.07 Automatic Transfer Switch

The automatic transfer switch shall be UL listed, electrically operated, 480/277 VAC, 3 phase, 60 Hz, 200 ampere and incorporate a mechanical lockout for only normal or emergency power. The use of molded case circuit breakers, contactors or components that are not intended for continuous duty, repetitive switching and transfer service will not be allowed.

The switch shall be mounted in a NEMA-4XSS enclosure.

The switch shall provide the following functions:

- A. Phase voltage sensing and transfer of power based on voltage of primary or emergency source. Transfer limits shall be adjustable for pick-up (85%-100% of nominal voltage) or drop-out (75%- 98% of pickup).
- B. Three phase voltage sensing and transfer of power based on voltage of primary or emergency source. Transfer limits shall be adjustable for pick-up (85%-100% of nominal voltage) or drop-out (fixed at 84%086% of pickup).
- C. Three phase frequency sensing and transfer of power based on frequency of primary or emergency source. Transfer limits shall be adjustable for pick-up (90%-100%) and drop out (fixed at 87%-89% of pickup).
- D. Time delay start in accordance with NFPA 110, Level 1, Type 10 (10 seconds).
- E. Time delay transfer to emergency power after start. Transfer time shall be adjustable from 0-120 seconds.
- F. Time delay transfer to primary power. Transfer time shall be adjustable from 0-30 minutes.

G. Time delay shutdown of emergency generator after transfer to primary power. Transfer time shall be adjustable from 0-15 minutes.

H. Status display:

- a. Primary Power Status
- b. Emergency Power Status
- c. Current Power Source
- d. Time to transfer (in consideration of time delays) to/from emergency
- e. Transfer complete to/from emergency
- f. Time to emergency generator stop

#### 161.08      Testing

The generator set shall have factory production testing completed at the rated load. The production testing shall incorporate all parameters and limits identified in this specification. A factory certified record of testing shall be provided in the submittal.

After installation the manufacturer shall provide start up and testing services. Services shall conform to NFPA 110 and include start and shut down cycles, automatic start and load bank test at full load for 2 hours, power transfer and operation of the station on emergency power for not less than 2 additional hours.

#### 161.09      Start-up and Instructions

On completion of the installation, start-up shall be performed by the generator set service representative. Operating and maintenance instruction manuals shall be supplied and operator training provided to operating personnel (minimum 2 hours training). Upon completion a start-up report shall be provided.

**END OF SECTION 170**

## **SECTION 180**

### **INSTRUMENTATION**

#### **180.01      General**

Instrumentation as described in this specification and shown in the drawings shall be provided.

Instrumentation shall be incorporated into the design requirements of the Contractor utilizing the equipment and materials included in this specification.

All electrical components of the system shall operate on 120 volt, single-phase, 60 hertz or 24 VDC power, except as otherwise noted in the specifications.

All electrical components located within the wetwell and the wetwell side of any sealed conduit fitting shall be Intrinsically Safe.

All necessary fuses or switches required by the instrumentation manufacturer for his equipment shall be provided with the equipment.

#### **180.02      Submittals**

Detailed design drawings including product specification sheets, mounting hardware, location, conduit, cable and tag numbers shall be provided.

#### **180.03      Cable**

All electronic (4-20MADC) signal wire shall be two conductors, copper, twisted pair with tape foil shield and drain wire. The shield is to be grounded at the PLC I/O panel only for single point grounding, in accordance with manufacturer's instructions. Single triad shielded cables for potentiometer signal cables shall be three conductors, copper, twisted triad with tape foil shield and drain wire. The cables must be UL listed for wet locations as defined by the NEC.

#### **180.04      Instrument Mounts**

All instruments shall be mounted in readily accessible positions that do not require entry into the wetwell for removal or maintenance. Brackets shall be fabricated to hold instruments. All brackets shall be 304 or 316 stainless steel. All mounting hardware, screws, machine bolts with washers and nuts shall be 316 stainless steel.

#### **180.05      Conduits**

All low voltage signals shall be isolated from high level control or power signals in separate conduits. All instrumentation signal conduits below grade shall be SCH80 PVC or 304 stainless steel. All underground conduits shall have grounding bushings and a No. 8 AWG copper minimum cable run to a ground lug at the termination points.

#### **180.06      Lightning/Surge Protection**

All transmitters with 4-20 MADC outputs shall have a transmitter mounted surge protection unit. The surge protection unit shall be a EDCO SS65 or approved equal.

#### 180.07      Intrinsically Safe Pressure Transducer/Wetwell Level Sensor

Pressure transducers/wetwell level sensors shall be intrinsically safe and encased in a 316 stainless steel housing.

1.      Range: 0 – 15 PSI
2.      Cable: Minimum 50'
3.      Output: 4 – 20 mA
4.      Accuracy: +/-5%

Probes shall be Wika Instruments, LP Model LS10 with LevelGuard Anti-clog attachment or equal.

Level sensing submersible probes shall be installed in a stilling well. The stilling well shall be minimum 6" SCH 40 PVC secured to the wetwell every 7 feet with stainless steel brackets and hardware. The stilling well and probe shall be accessible from the wetwell hatch, not requiring an entry into the wetwell for maintenance or replacement of the probe.

#### 180.08      Intrinsically Safe Pressure Transmitter

Pressure transmitters shall be intrinsically safe, backlit and mounted in the power and control panel dead-front.

1.      Display: 5 Digit
2.      Input: 24 VDC
3.      Output: 4 – 20 mA
4.      Accuracy: +/- 0.03%

Pressure transmitters shall be Precision Digital model 688 or approved equal.

#### 180.09      Power Supplies

All instruments shall be looped powered with an appropriately rated power supply. Each instrument shall have a dedicated power supply.

#### 180.10      Field Calibration and Testing

All instruments shall be set up, calibrated and tested in the field. The Contractor shall provide calibration sheets and testing equipment for each instrument. When installation is complete all components shall be tested to confirm operation and compliance with the contract.

#### 180.11      Installation

All equipment shall be installed per the manufacturers requirements.

**END OF SECTION 180**

## SECTION 181

### PROGRAMMABLE LOGIC CONTROLLERS

#### 181.01 General

This section describes the hardware and software requirements for a new Programmable Logic Controller (PLC) for a duplex or tri-plex lift submersible wastewater lift station with adjustable frequency drives, level control, emergency standby power, DFS radio telemetry unit (or) Cellular telemetry unit and appurtenances.

This section provides all labor and material required for the PLC system including the panels, equipment, software, screen development, programming, conduit, cable, tie-ins, checkout and start-up of the complete integrated system. This section shall be used in conjunction with the approved drawings and Section 161, Variable Speed/PLC Control Panels.

The latest version available at the time of installation of all PLC development software and communication driver software shall be provided.

All software and programming shall be required to perform the following functions in addition to the interlocking, monitoring and control functions indicated on the loop diagram drawings and developed in the PLC logic and OWS screen development meetings.

All enclosures shall be UL listed and NEMA rated to house the PLC, remote I/O, power supplies, and terminal blocks as shown in the drawings.

All panels shall be UL listed and labeled as a completed assembly. The panel fabricator shall furnish and install all items not specifically detailed in the drawings required to have the panels UL listed and labeled. All inspections, approvals and modifications required to have the completed panel labeled and listed by UL shall be furnished by, and the responsibility of the panel fabricator.

#### 181.02 Applicable Standards

NEC  
NEMA  
UL  
IEC

Temperature	IEC60068:
Relative Humidity	IEC60068:
Vibration	IEC 60068
Shock	IEC 60068
Emissions	IEC61000
ESD Immunity	IEC 61000
Radiated RF Immunity	IEC61000

EFT/B Immunity	IEC61000
Surge Immunity	IEC61000
Conducted RF Immunity	IEC61000

#### 181.03      Operation and Maintenance Manuals

All products shall be provided with operation and maintenance manuals complete with installation, troubleshooting and technical information on the equipment provided under this contract. Manuals shall be published by the equipment manufacturer.

#### 181.04      Training

Training and instruction shall be given by the manufacturer or representative. Training shall be 4-hours for personnel selected by the Owner in the operation and general maintenance of the PLC. This training is independent of operator training for lift station observation and operation associated with automated controls.

#### 181.05      Submittals

Submittals shall include installation drawings and manufacturer cutsheets clearly defining the products to be provided, their accessories/options and interconnectivity with all systems. Drawings shall also include single line system diagrams and detailed line diagrams for power, input/output and tag numbers.

#### 181.06      Spare Parts

- A. One CPU
- B. One of each Network Module
- C. One of each type of input/output and data link module
- D. One of each type of power supply

#### 181.07      Programmable Logic Controller

##### 1.      Approved Manufacturer

The PLC system shall be a Rockwell Automation 1756 ControlLogix L7\*\*\* .

##### 2.      General

The PLC system (memory, communications, input/output modules, processor, power supplies, software) shall be a modular chassis mounted system and come complete from one manufacturer to provide a complete functioning control system as depicted in the Control Block Diagram and described in the operating protocol and of sufficient capacity for future expansion as allowed for in this specification.

Products shall be provided with conformal coatings, factory applied, to extend product life in harsh, corrosive environments.

The PLC shall be programmable and configurable from a Windows 7 and Windows 10

3. Communication

The PLC system shall be Ethernet compatible or have an Ethernet module accessible by a laptop computer. Programming functions associated with the PLC system shall be accessible through the Ethernet connection.

The PLC shall have a compatible communication modules or ports for communicating with the emergency standby generator controller exclusive of input/output modules and dry contacts. This communication port shall allow for sharing of all monitoring and alarm data associated with the emergency generator controller.

4. Input/Output Modules

The PLC shall have analog and discrete input/output modules sufficient for all proposed and future nodes identified in the control block diagram associated with the DFS Radio Telemetry System or Cellular Telemetry System.

The PLC shall have analog an discrete input/output modules sufficient for all proposed generator status and generator fail signals.

The PLC shall have analog and discrete input/output modules sufficient for all proposed ATS, commercial, generator power signals.

The PLC shall have analog and discrete input/output modules sufficient for variable speed pump control based on level. PLC control and monitoring of variable speed drives shall be through analog and discrete input/output modules. The use of proprietary communication protocols for variable speed drive control shall be allowed.

The PLC shall have the ability to accommodate 50% additional I/O modules.

5. Central Processing Unit

The PLC configuration shall be maintained through a power loss. The PLC shall continue with operations when power is reinstated without additional programming, uploads or resets.

The PLC system shall utilize a Secure Digital (SD) card for non-volatile memory to store a user program and tag data on the PLC. The PLC system shall be

configurable to trigger the controller to save to or load from the SD card and to load to the controller from the SD card on power up.

The minimum size CPU shall be an A-B Rockwell Automation ControlLogix Series 1756-L71 with 128 MBs of optional nonvolatile memory storage.

6. Power Supplies

Power supplies shall be surge and transient protected, and shall accept input voltages of 90 to 130 VAC. The power supplies shall be fused.

All PLC systems power supplies shall be modular, allowing the power supply to be removed for replacement without affecting input/output modules or wiring.

The PLC systems shall come with redundant power supply.

7. Wire and Cabling

All PLC specific cables shall be furnished by the PLC system manufacturer and be designed for the intended use.

All other wire shall be stranded copper type TFF or MTW, 18 GA for I/O and minimum 14 GA for power.

8. Programming

The CPU shall be capable of being programmed by an external IBM compatible host device via either a serial communication port or Ethernet port on the CPU, or a parallel communication port on an input/output chassis. Serial programming shall be possible without the use of a workstation interface board.

Software shall be Rockwell Automation RSLogix 5000 Professional Edition.

All software shall be registered to the Owner.

9. Terminal Blocks

Input/output modules shall utilize removable terminal blocks to connect all field side wiring.

10. Signal Isolators, Converters and Conditioners

Instrument signals shall be 4 – 20 mA DC. Signal isolators and converters shall be provided as necessary to comply with this requirement. The devices shall be mounted in the panel and such that field wiring may be changed/maintained without affecting the devices.



All communication circuitry shall include protection against lightning, spikes and other transient surges.

11.     Grounding

The grounding system of the PLC system shall be tied into the main ground system. The tie-in shall be made from the panel frames to the main ground system.

181.08         Execution

Start-up and testing services for the PLC system shall be provided. The PLC system shall be fully tested against the requirements outlined in this section and Section 161 and the operating protocol and equipment manufacturer requirements. Test procedures and checklists for approval shall be submitted prior to testing. Completed test checklists shall be submitted as part of the project record documentation.

**END OF SECTION 181**

## **SECTION 190**

### **REMOTE TERMINAL UNIT (RTU) – LIFT STATION DATA FLOW SYSTEMS**

#### **190.01      General**

The District has an existing Radio Telemetry System as manufactured by Data Flow Systems, Melbourne, Florida (321) 259-5009. For compatibility purposes, new remote terminal units will be required as specified herein from Data Flow Systems (DFS) 321-259-5009. The remote terminal unit shall include all materials, labor, tools, equipment, and appurtenances necessary for the proper completion of the work. The work covered by these specifications consists of providing all design, labor, tools, materials, and testing necessary for the supply of the RTU as described herein.

Physical location information shall be provided to DFS for radio communication study purposes. Information shall be provided in the form of GPS readings or street map with actual site location(s) clearly marked.

The RTU shall be housed in its own enclosure. The RTU enclosure shall be mounted on the antenna tower. The RTU shall be powered by 120 VAC commercial power, monitor local statuses and transmit those statuses to the existing central site when polled by the master radio. An Uninterruptible Power Source (UPS) shall be included with the RTU.

#### **190.02      Equipment Specification**

##### **190.02.1      Remote Terminal Unit (RTU204)**

The remote terminal unit shall be DFS Model RTU204. The RTU shall communicate with the central site via a two-way radio link and designed to accommodate the required plug-in function modules. Function module card connectors shall be gold-over-nickel plated to inhibit corrosion. The RTU shall be housed in a white color NEMA 4X 316 SS enclosure. All mounting hardware utilized shall be stainless steel. The enclosure shall be capable of being locked. The latches utilized to secure the door of each enclosure shall not require the use of a screwdriver to open or close.

##### **190.02.2      Power Supply Module (PSM003)**

The RTU shall include a Power Supply Module (PSM003). All function modules in the RTU shall run off DC voltage from +7.5 volts to +13 volts. The PSM shall supply +12 volts. A battery backup shall be provided in event of power failure. The power supply shall be surge protected. The power supply shall be short circuit protected by current limiting. Normal operation shall automatically resume when the short circuit overload is removed. The power supply shall be sized to operate the system with the battery removed. The power supply module shall provide a battery backed, isolated bias voltage source. The circuit breaker for the power supply module shall be part of the power supply module. Neither the use of tools nor the disconnection of any wires shall be required to replace the power supply module.

### 190.02.3 Backup Battery/Uninterruptable Power Supply (UPS)

The RTU shall have the uninterruptible power supply (UPS) function built in. The RTU's internal Power Supply Module shall keep the battery at a float charge. The battery shall not be damaged by deep discharges.

### 190.02.4 Telemetry Interface Module (TIM007)

- a) The Telemetry Interface Module (TIM) shall incorporate a synthesized programmable radio.
- b) A data buffer on the TIM shall enable it to query and store the I/O function module(s) status between radio polling loops until data is requested by the central site.
- c) The TIM shall feature a wake up/report/sleep mode to aid in battery conservation for solar-powered applications.
- d) The TIM shall support four levels of digipeating (store and forward), enabling radio messages from a different RTU to be routed to the central site.
- e) The TIM shall monitor AC power on the Power Supply Module and DC Bias to the RTU I/O function modules.
- f) The TIM shall incorporate a 2x8 character LCD display and 3-button user interface for field diagnostics and support data without the use of a portable computer.
- g) The TIM shall incorporate a test mode switch that places the radio into a service mode.
- h) The TIM shall incorporate LEDs for TX, RX, Power, CPU Fault.

### 190.02.5 Digital Monitor Module (DMM002)

The RTU shall include a Digital Monitor Module (DMM002). The DMM002 shall accept 12 on/off inputs of 12 to 30 volts AC or DC. Voltages from 100 to 300 volts AC or DC shall be accommodated with the use of an inline voltage converter device. Status reporting of these inputs shall have an accuracy of  $\pm 2$  seconds, the accuracy being defined as time of an occurrence to actual time recorded by the central site computer. The DMM002 shall not require interfacing relays to monitor 24 VDC, 115 VAC, 220 VAC or 480 VAC. The DMM002 shall have LEDs to indicate: the status of each input point; receive communications; transmit communications; CPU fault; and power status. The configuration of the monitor points as alarm points or monitor points (pump run time monitors) shall be operator changeable. The configuration shall not require any software or firmware changes in the system.

### 190.02.6 Antenna Subsystem

DFS shall determine the antenna type and height required for reliable communications. A high gain directional or omni antenna shall be used to transmit and receive data. The antenna mast/pole shall be hot dipped galvanized for corrosion protection. All mounting hardware shall be made of stainless steel. The coax cable shall be the type that utilizes an inert semi-liquid compound to flood the copper braid. The coax cable shall be of the RG-8 construction type and have the RF-loss characteristic of foam flex. The coax cable shall be RTC 400 as supplied by DFS. Type N

connectors shall be utilized at both ends of the coax and sealed with 3-inch sections of Alpha FIT321-1-0 sealant shrink tubing. The coax cable shall be secured to the mast/pole with AE112 Bandit coated 316 stainless steel cable ties. The RTU shall be protected from electrical surge or transients entering through the coaxial cable by use of a IS-B50LN-C2 Polyphaser coaxial cable surge protector.

#### 190.03 RTU Monitor Points

The RTU shall accommodate the following I/O points.

##### **RTU HARDWIRED I/O LIST:**

DIGITAL INPUT (DI)	DIGITAL OUTPUT (DO)	ANALOG INPUT (AI)	ANALOG OUTPUT (AO)
COMMERCIAL POWER	PUMP 1 OVERRIDE	WET WELL LEVEL	NONE
AUXILIARY POWER	PUMP 2 OVERRIDE	(3) AI SPARE	
HIGH WET WELL LEVEL	*PUMP 3 OVERRIDE		
PUMP 1 RUN STATUS	PUMP 1 DISABLE		
PUMP 2 RUN STATUS	PUMP 2 DISABLE		
*PUMP 3 RUN STATUS	*PUMP 3 DISABLE		
PUMP 1 FAULT	(2) DO SPARE		
PUMP 2 FAULT			
* PUMP 3 FAULT			
GENERATOR GENERAL ALARM			
GENERATOR LOW COLLANT			
GENERATOR LOW FUEL			
GENERATOR FAIL TO START			
(7) DI SPARE			
* If applicable			

#### 190.04 Installation

In order to insure total system integration with the existing system, secure and provide the services of Data Flow Systems, Inc. for RTU hardware.

#### 190.05 Programming

Antenna alignment fine-tuning procedure, configuration of RTU into the system, RTU point-by-point verification at the central computer, and RTU screen generation services shall be covered by the District.

#### 190.06 Warranty

DFS shall warrant all hardware provided under this contract against all defects in material and workmanship for a period of one year. The RTU plug-in modules shall carry an additional 2-year return-to-manufacturer warranty and shall be covered against damage due to lightning and surge the entire 3-year period.

#### 190.07 Spare Parts

Provide the following spare parts with the RTU:

- a. (1) Telemetry Interface Module (TIM007)
- b. (1) Power Supply Module (PSM003)
- c. (1) Digital Control Module (DCM003)
- d. (1) Digital Control Module (DCM004)
- e. (1) Analog Monitor Module (AMM ---)
- f. (1) Backup Battery
- g. (1) RTU Antenna

**END OF SECTION 190**

## SECTION 200

### ADOPTION OF STANDARDS

The Loxahatchee River Environmental Control District Manual of Minimum Construction Standards and Technical Specifications were initially adopted and promulgated by the Governing Board in April, 1983.

The current edition was ratified by the Loxahatchee River Environmental Control District's Governing Board, on ~~September~~ June 15, 20232, with a vote as follows:

“THAT THE DISTRICT GOVERNING BOARD ratify the Loxahatchee River Environmental Control District's “Manual of Minimum Construction Standards and Technical Specifications”, as of June ~~September~~ 15, 20232, and authorize the ~~District Engineer~~ Director of Engineering and Executive Director to update the Construction Standards and Technical Specifications from time to time, and periodically present it to the Governing Board for ratification.”

#### Board Member

Dr. Rostock, ~~Vice~~ Chairman

Mr. Rockoff, ~~Treasurer~~ Vice-Chairman

Mr. Boggie, ~~Secretary~~ Treasurer

Mr. Yerkes, Secretary

Mr. Baker, Assistant Secretary / Treasurer

#### Vote

~~“Aye”~~ \_\_\_\_\_

\_\_\_\_\_ ~~“Aye”~~ \_\_\_\_\_

\_\_\_\_\_ ~~“Aye”~~ \_\_\_\_\_

D. Albrey Arrington, Ph.D.

Executive Director

Loxahatchee River Environmental Control District

**END OF SECTION 200**

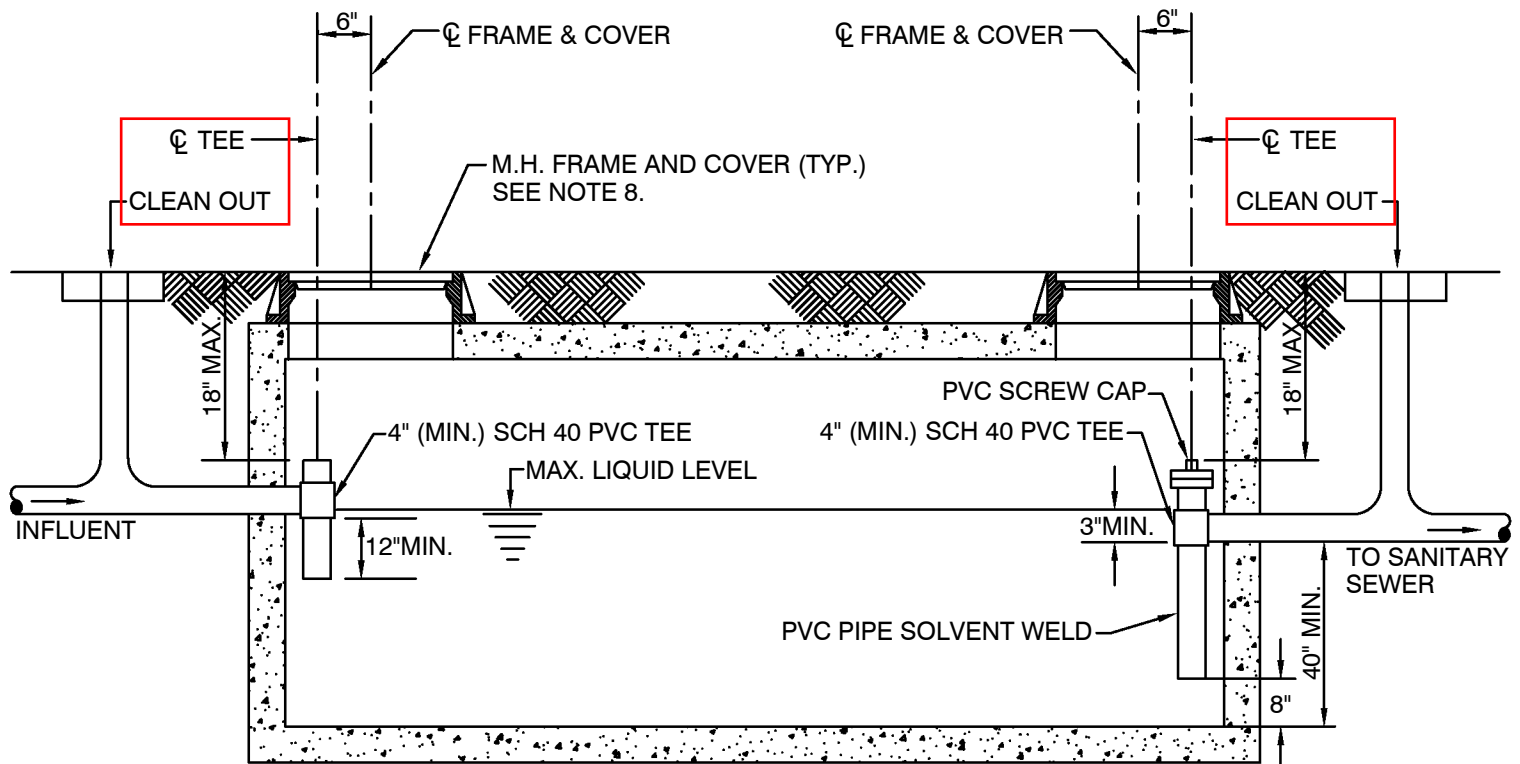
SD	STANDARD DETAILS INDEX
SD-1	TYPICAL TRENCH DETAIL FOR NON - PAVED AREAS
SD-2	TYPICAL TRENCH & PAVEMENT RESTORATION DETAIL
SD-3	TYPICAL TRENCH & PAVEMENT RESTORATION W/ FLOWABLE FILL DETAIL
SD-4	TYPICAL GRAVITY SEWER EMBEDMENT DETAIL
SD-5	INTERCEPTOR DETAIL
SD-6	4" OR 6" SINGLE SERVICE CONNECTION DETAIL
SD-7	4" OR 6" SINGLE SERVICE CONNECTION ALTERNATE CONFIGURATION DETAIL
SD-8	6" DOUBLE SERVICE CONNECTION DETAIL
SD-9	6" DOUBLE SERVICE CONNECTION ALTERNATE CONFIGURATION DETAIL
SD-10	SANITARY SEWER LATERAL CLEAN OUT PROTECTIVE BOX (PAVED AREAS ONLY) DETAIL
SD-11	PRECAST MANHOLE DETAIL
SD-12	GRAVITY SEWER INSIDE DROP MANHOLE DETAIL
SD-13	MANHOLE FRAME AND COVER DETAIL
SD-14	MANHOLE EXTENSION RING DETAIL
SD-15	DOGHOUSE MANHOLE INSTALLATION INTO AN EXISTING GRAVITY SEWER LINE DETAIL
SD-16	SEWER MANHOLE INSTALLATION INTO AN EXISTING GRAVITY SEWER LINE DETAIL
SD-17	SEWER MAIN / STORM DRAIN CONFLICT STRUCTURE DETAIL
SD-18	FORCE MAIN THRUST RESTRAINT CHART
SD-19	FORCE MAIN THRUST RESTRAINT DETAIL
SD-20	FORCE MAIN TERMINAL END DETAIL
SD-21	FORCE MAIN INTO SHALLOW MANHOLE DETAIL
SD-22	FORCE MAIN INTO DEEP MANHOLE DETAIL
SD-23	AUTOMATIC AIR RELEASE VALVE OFFSET FORCE MAIN CONDITION DETAIL
SD-24	AUTOMATIC AIR RELEASE VALVE DETAIL
SD-25	TYPICAL FORCE MAIN AIR RELEASE VALVE DETAIL ALTERNATE OFFSET CONFIGURATION
SD-26	LOW POINT FORCE MAIN DRAIN DETAIL
SD-27	BURIED VALVE DETAIL
SD-28	TAPPING FORCE MAIN DETAIL
SD-29	RECORD DRAWING SUBMITTAL GUIDE
SD-30	STANDARD WATER AND SEWER SEPARATION STATEMENT
SD-31	LIFT STATION STRUCTURAL & MECHANICAL STANDARD DETAILS
SD-32	LIFT STATION ELECTRICAL CONTROL PANEL STANDARD DETAILS
SD-33	LIFT STATION ELECTRICAL CONTROL PANEL STANDARD DETAILS
SD-34	LIFT STATION ELECTRICAL CONTROL PANEL STANDARD DETAILS
SD-35	CELLULAR REMOTE TELEMETRY UNIT (RTU) - BILL OF MATERIALS STANDARD DETAILS
SD-36	CELLULAR REMOTE TELEMETRY UNIT (RTU) - COMMUNICATION DIAGRAM STANDARD DETAILS
SD-37	CELLULAR REMOTE TELEMETRY UNIT (RTU) - ELECTRICAL WIRING DIAGRAM STANDARD DETAILS
SD-38	CELLULAR REMOTE TELEMETRY UNIT (RTU) - ELECTRICAL WIRING DIAGRAM STANDARD DETAILS
SD-39	CELLULAR REMOTE TELEMETRY UNIT (RTU) - ELECTRICAL WIRING DIAGRAM STANDARD DETAILS

LOXAHATCHEE RIVER DISTRICT

STANDARD DETAILS INDEX

SD

N.T.S.  
REVISION:  
JUNE, 2023



**NOTES:**

1. EFFECTIVE SIZE OF INTERCEPTOR 750 GALS MIN. AND SHALL BE MADE OF CONCRETE.
2. TANK TO BE DESIGNED TO RESIST FLOTATION WHEN EMPTY.
3. TWO-WAY CLEAN OUTS WILL BE INSTALLED IMMEDIATELY UPSTREAM AND DOWNSTREAM OF ALL GREASE INTERCEPTORS. IF INSTALLED IN PAVED AREAS, A PROTECTIVE STANDARD CLEAN OUT COVER WILL BE INSTALLED PER SD-10.
4. TANK(S) SIZING SHALL FOLLOW SECTION 64E-6.013 (7) (D) OF CHAPTER 64E-6 OF THE FLORIDA ADMINISTRATIVE CODE, WHICH IS IN COMPLIANCE WITH THE 2020 FLORIDA BUILDING CODE. TANK CONSTRUCTION SHALL BE IN ACCORDANCE WITH CHAPTER 64E-6 OF THE FLORIDA ADMINISTRATIVE CODE.
5. ALL MATERIALS SHALL BE NEW AND CODE APPROVED.
6. ALL MANHOLE COVERS USED SHALL BE MARKED WITH: "GREASE TRAP" LETTERING.
7. TANKS TO BE IN SERIES WHERE MULTIPLE UNITS ARE REQUIRED.
8. FOR TANKS UP TO 1,250 GALLONS, USE 24" STANDARD M.H. FRAME AND COVER, U.S. FOUNDRY. FOR LARGER TANKS, USE DOUBLE RING AND COVER TYPE, #230-AB-M, U.S. FOUNDRY.

**LOXAHATCHEE RIVER DISTRICT**

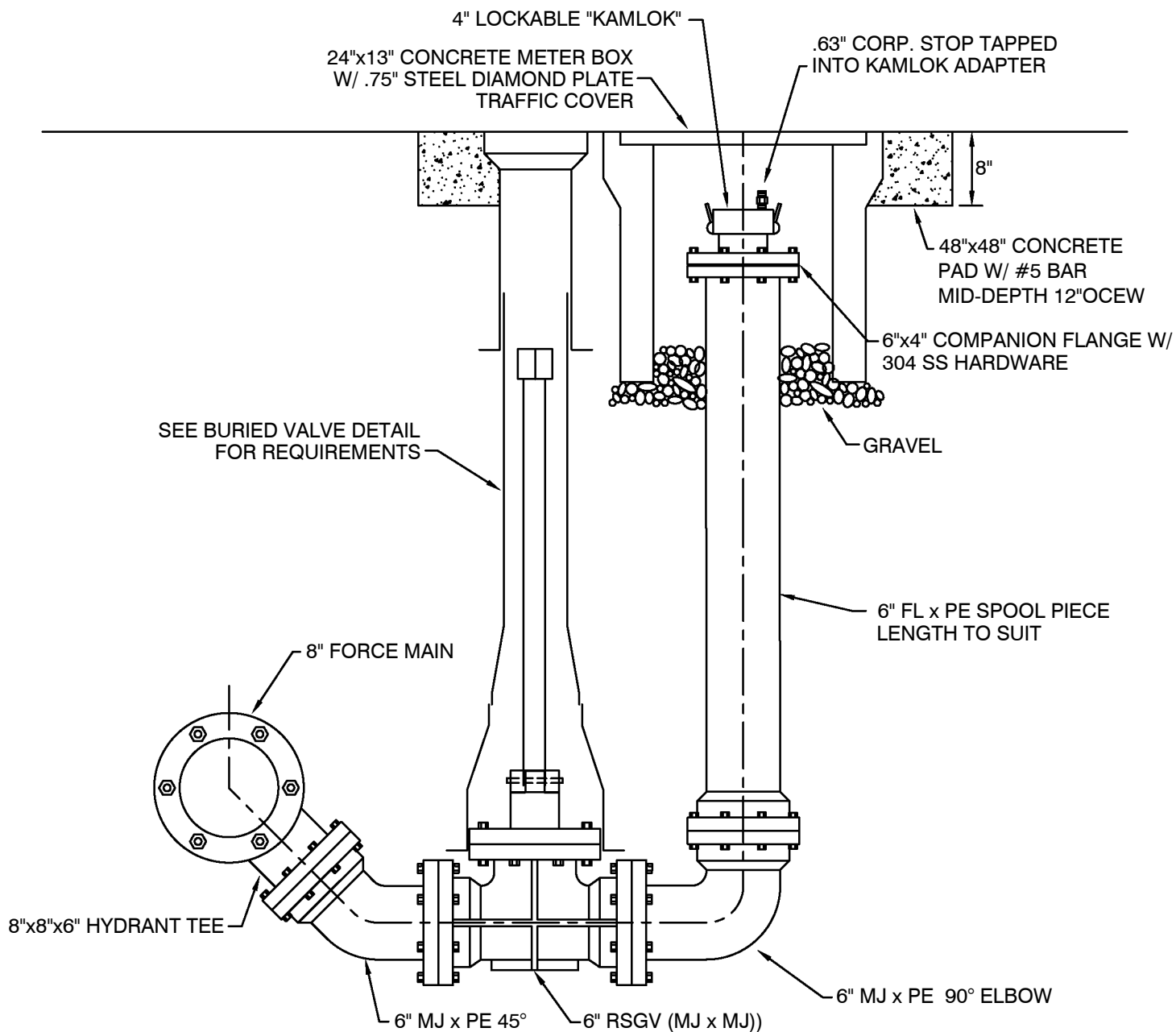
N.T.S.

REVISION:  
JUNE, 2023

**INTERCEPTOR DETAIL**

**SD-5**





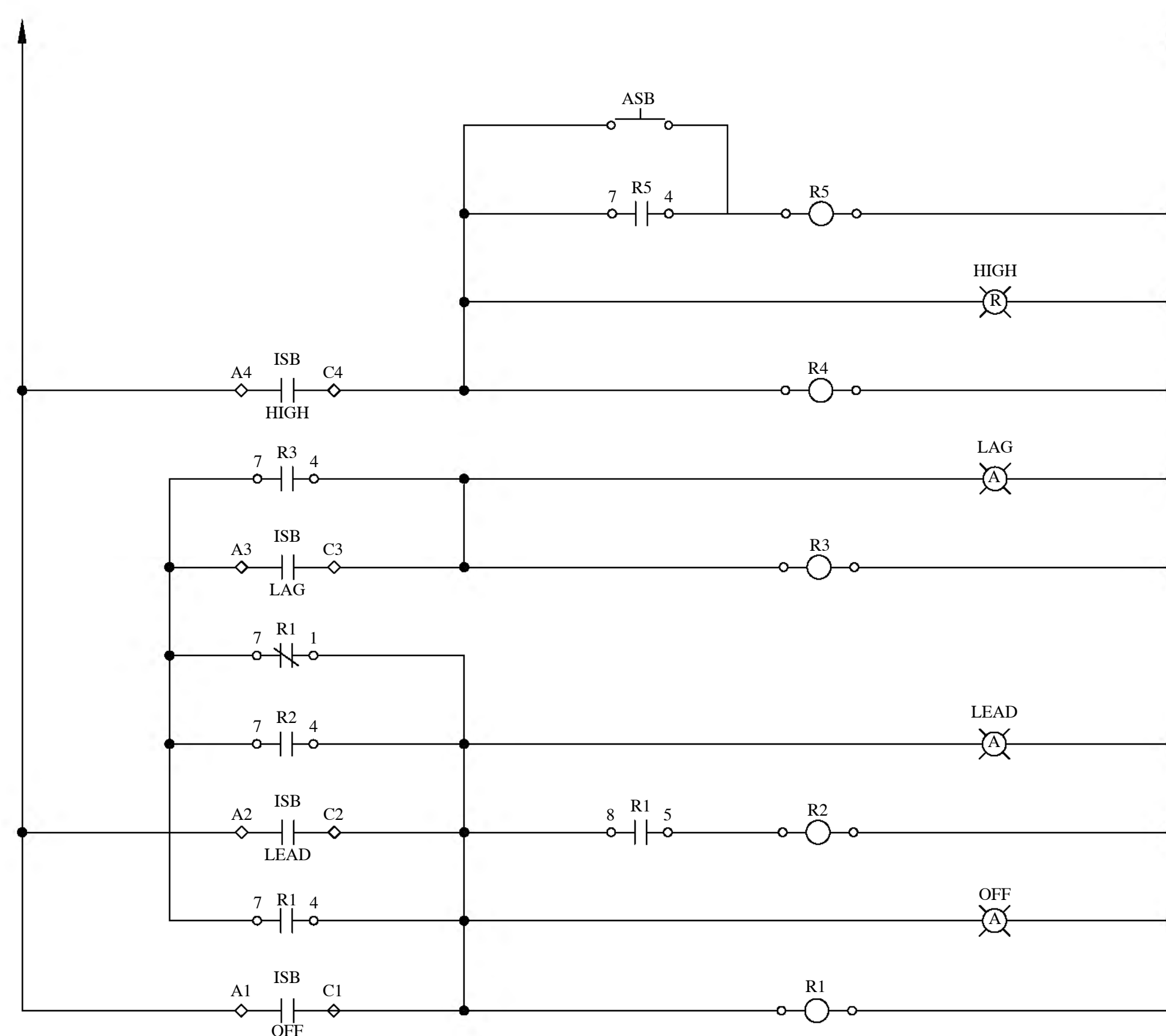
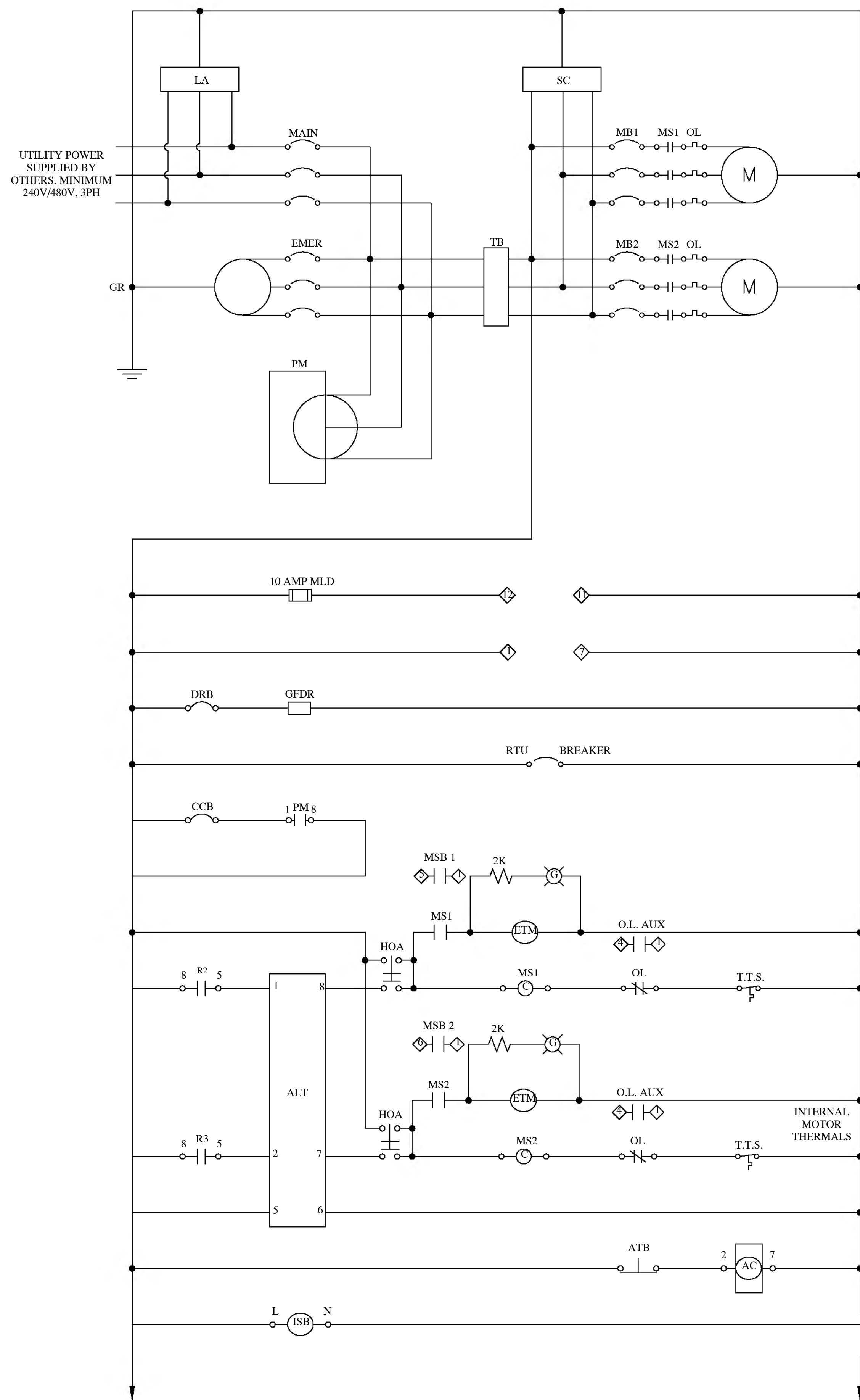
# LOXAHATCHEE RIVER DISTRICT

N.T.S.

REVISION:  
JUNE, 2023

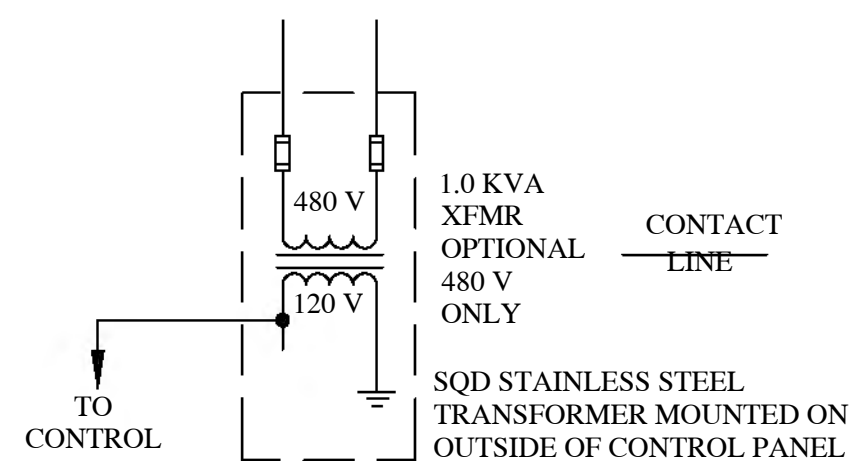
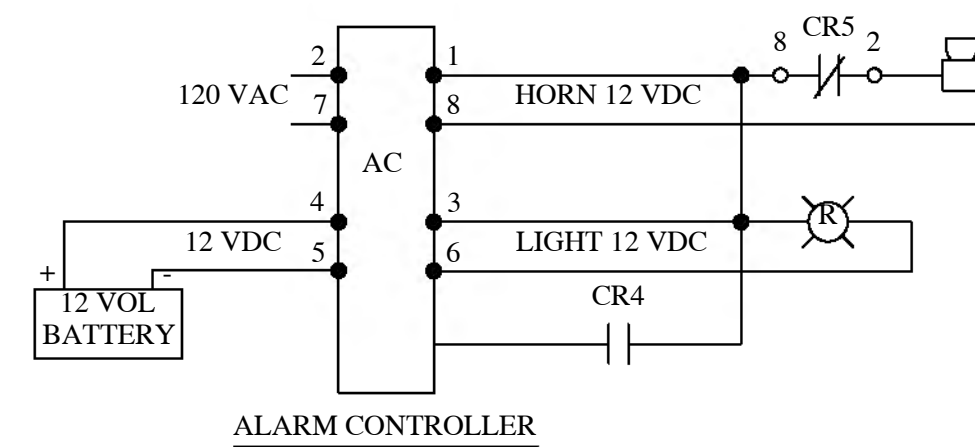
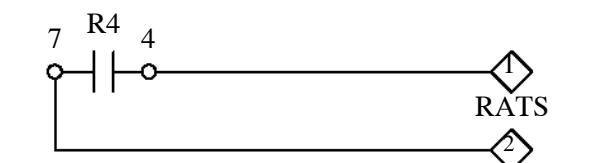
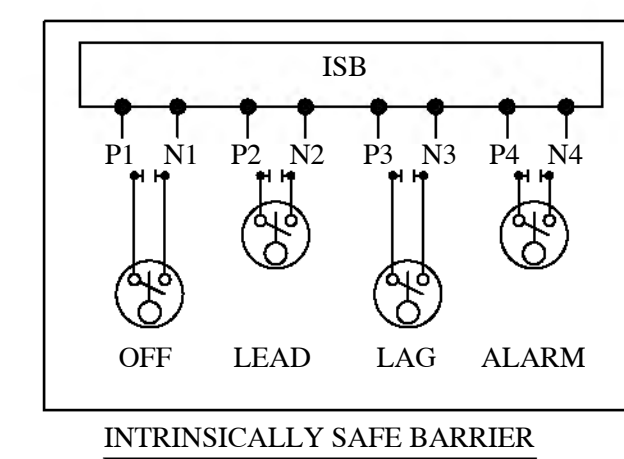
## LOW POINT FORCE MAIN DRAIN DETAIL

SD-26



## RADIO TELEMETRY SYSTEM BY DATA FLOW SYSTEM

<u>PANEL</u>	<u>RATS</u>	<u>RTU</u>
120 VAC _____	1	_____ PWR FAIL
R4-1 _____	2	_____ HIGH LEVEL
#1 O.L. AUX _____	3	_____ PUMP #1 FAIL
#2 O.L. AUX _____	4	_____ PUMP #2 FAIL
#1 MSB AUX _____	5	_____ PUMP RUN #1
#2 MSB AUX _____	6	_____ PUMP RUN #2
120V NEUTRAL _____	7	_____ 120V NEUTRAL
SPARE _____	8	_____ SPARE
SPARE _____	9	_____ SPARE
GRD _____	10	_____ RTU GRD
120V NEUT _____	11	_____ RTU NEUT
120V RTU SUPPLY _____	12	_____ RTU SUPPLY PWR
	13	_____ AUXILIARY POWER
	14	GENERATOR GENERAL ALARM
	15	___ GENERATOR LOW COOLANT
	16	___ GENERATOR LOW FUEL
	17	___ GENERATOR FAIL TO START
	18	_____ WET WELL LEVEL
	19	_____ PUMP #1 OVER RIDE
	20	_____ PUMP #2 OVER RIDE
	21	_____ PUMP #1 DISABLE
	22	_____ PUMP #2 DISABLE

[illegible]

LOXAHATCHEE RIVER  
ENVIRONMENTAL CONTROL DISTRICT

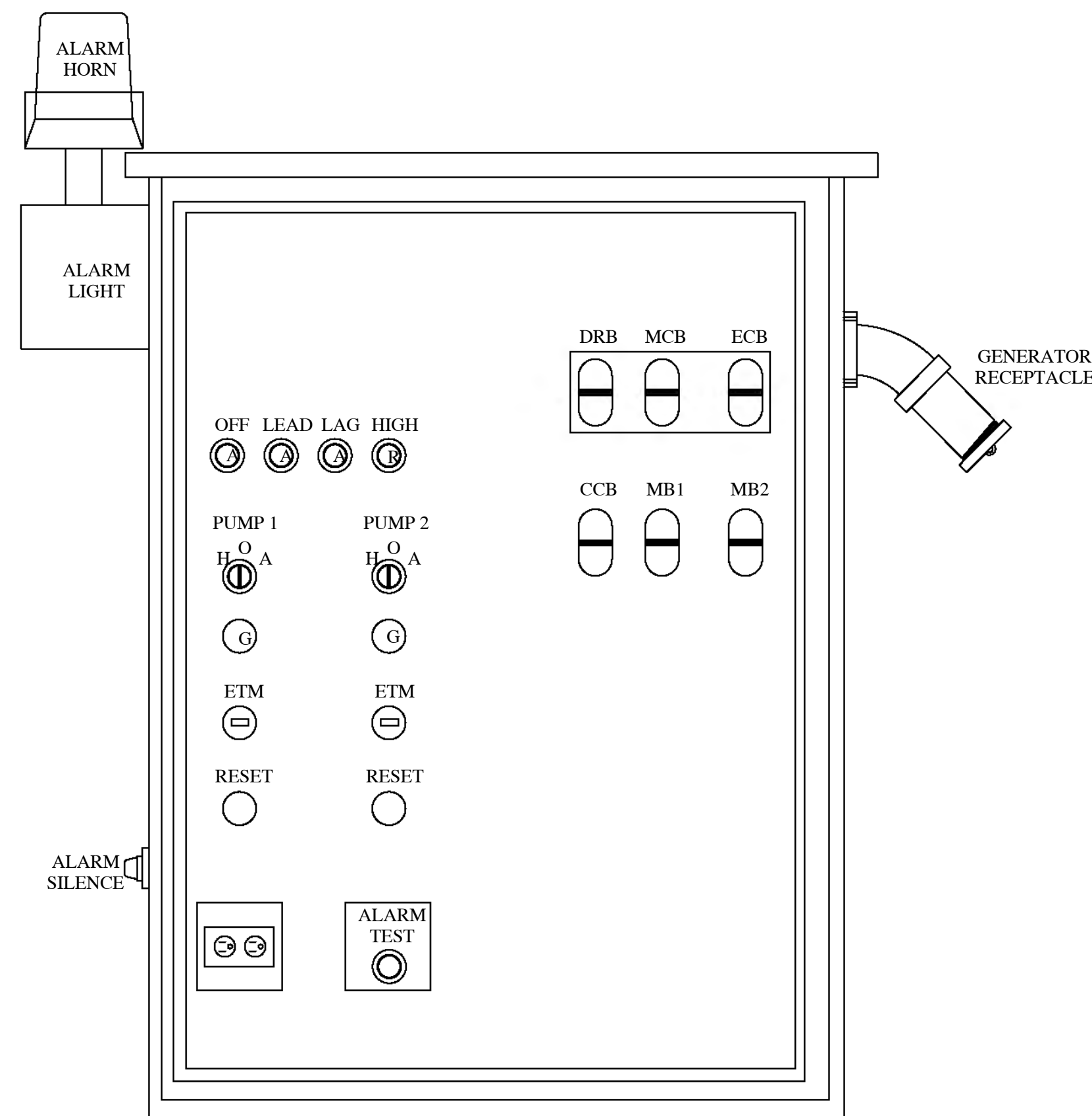
2500 JUPITER PARK DRIVE  
JUPITER, FL 33458-8964  
(561) 747-5700 MAIN  
(561) 747-5929 FAX  
[www.loxahatcheeriver.org](http://www.loxahatcheeriver.org)



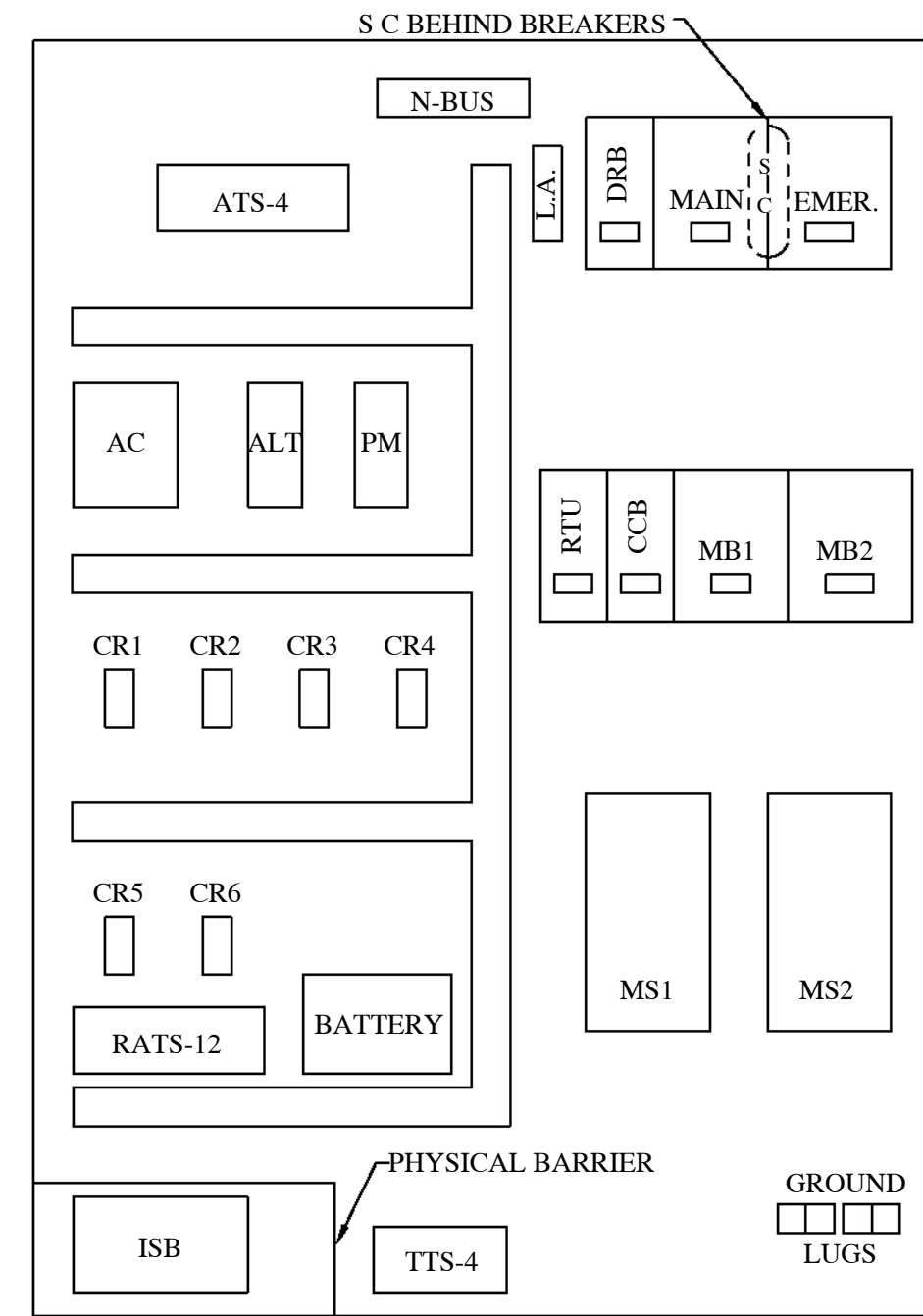
# LIFT STATION ELECTRICAL CONTROL PANEL STANDARD DETAILS

Scale:	NTS
Date:	JUNE 2023

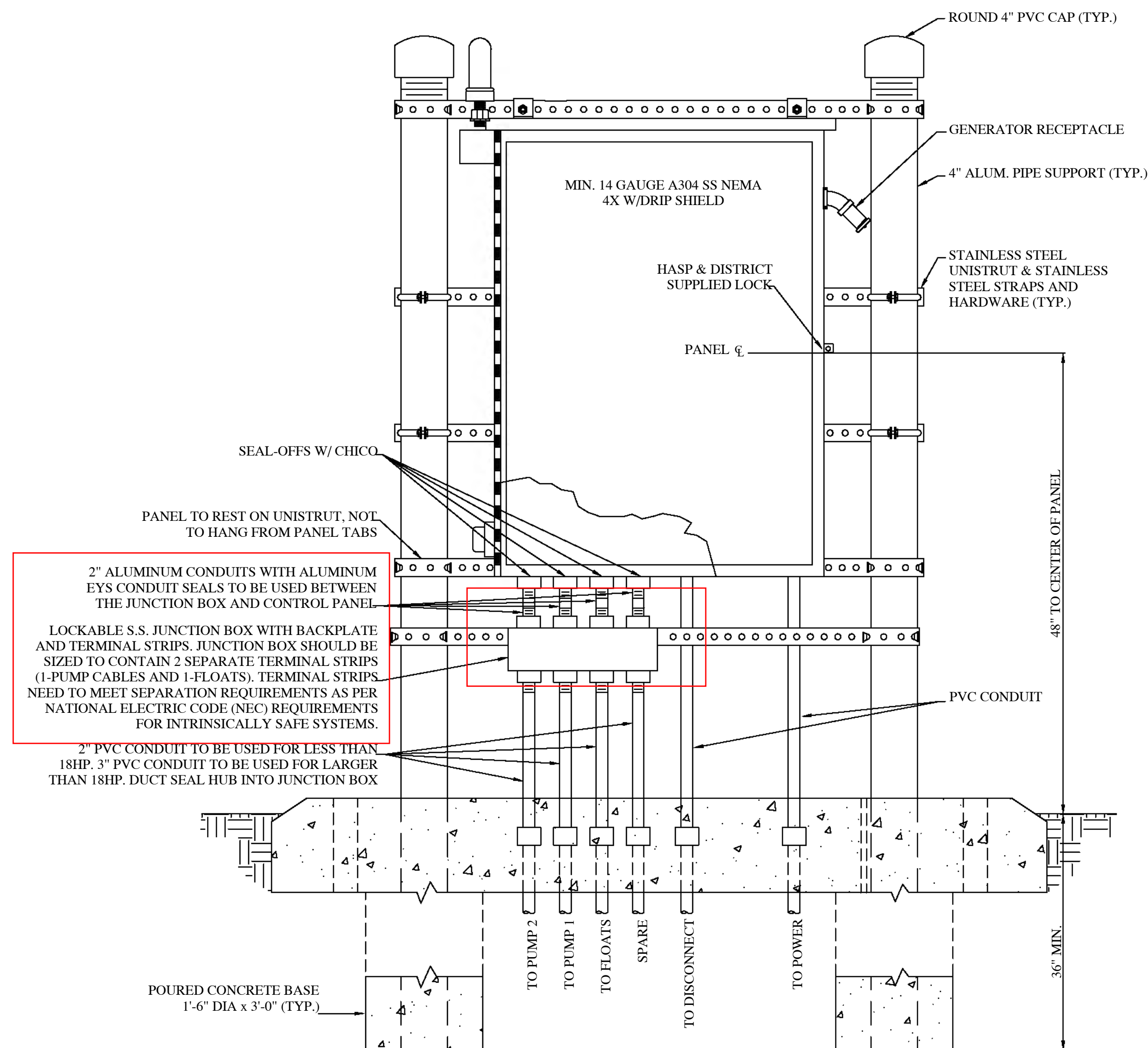
SD-32



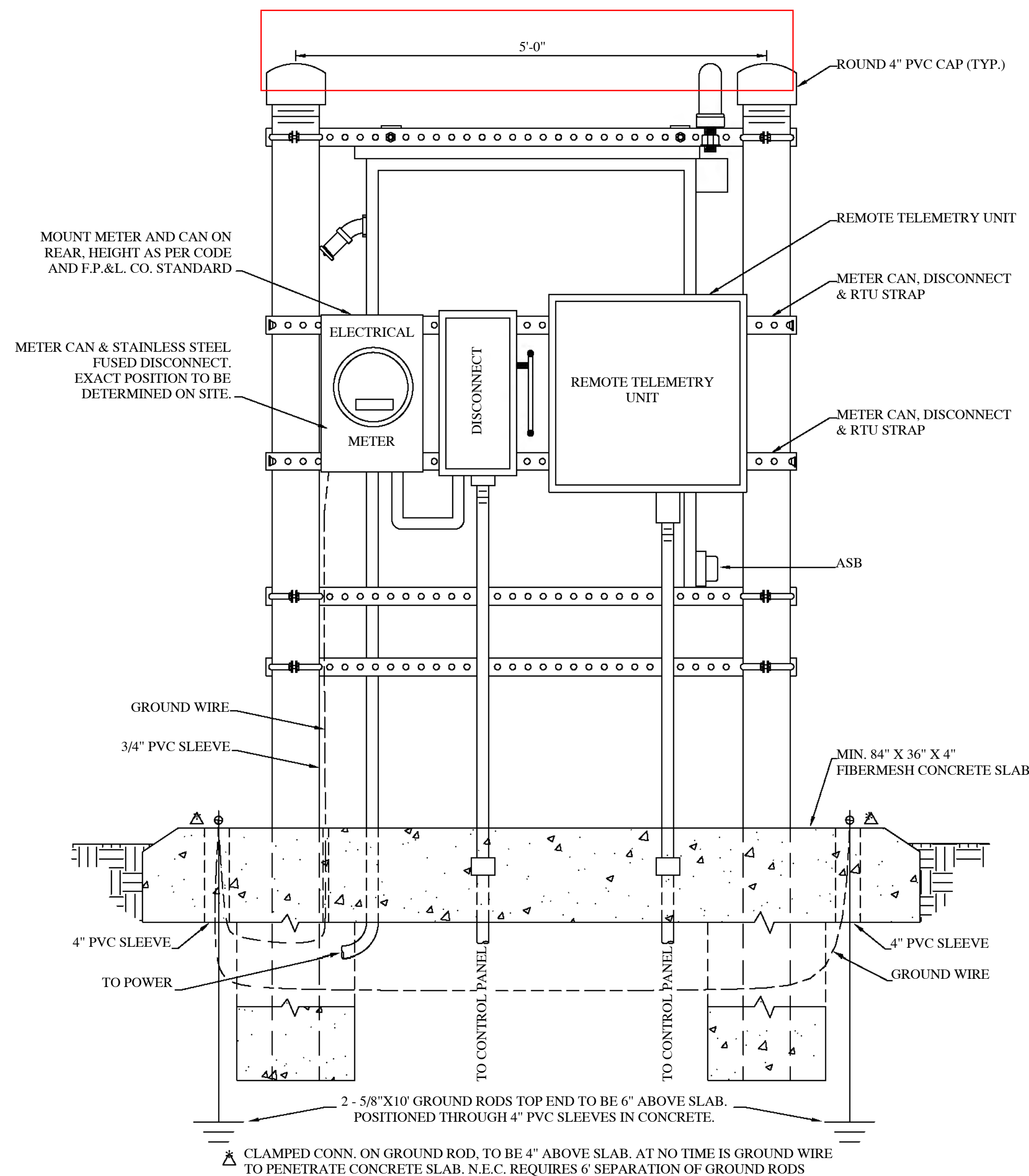
DEAD FRONT LAYOUT



BACKPLATE LAYOUT



FRONT ELEVATION



REAR ELEVATION

Rev.	Description
Δ	4/22/2001 - Added RTU

LOXAHATCHEE RIVER  
ENVIRONMENTAL CONTROL DISTRICT  
2500 JUPITER PARK DRIVE  
JUPITER, FL 33458-8964  
(561) 747-5700 MAIN  
(561) 747-9929 FAX  
www.loxahatcheeriver.org



## LIFT STATION ELECTRICAL CONTROL PANEL STANDARD DETAILS

Scale: NTS  
Date: JUNE 2023

SD-33







Rev.	Description
------	-------------

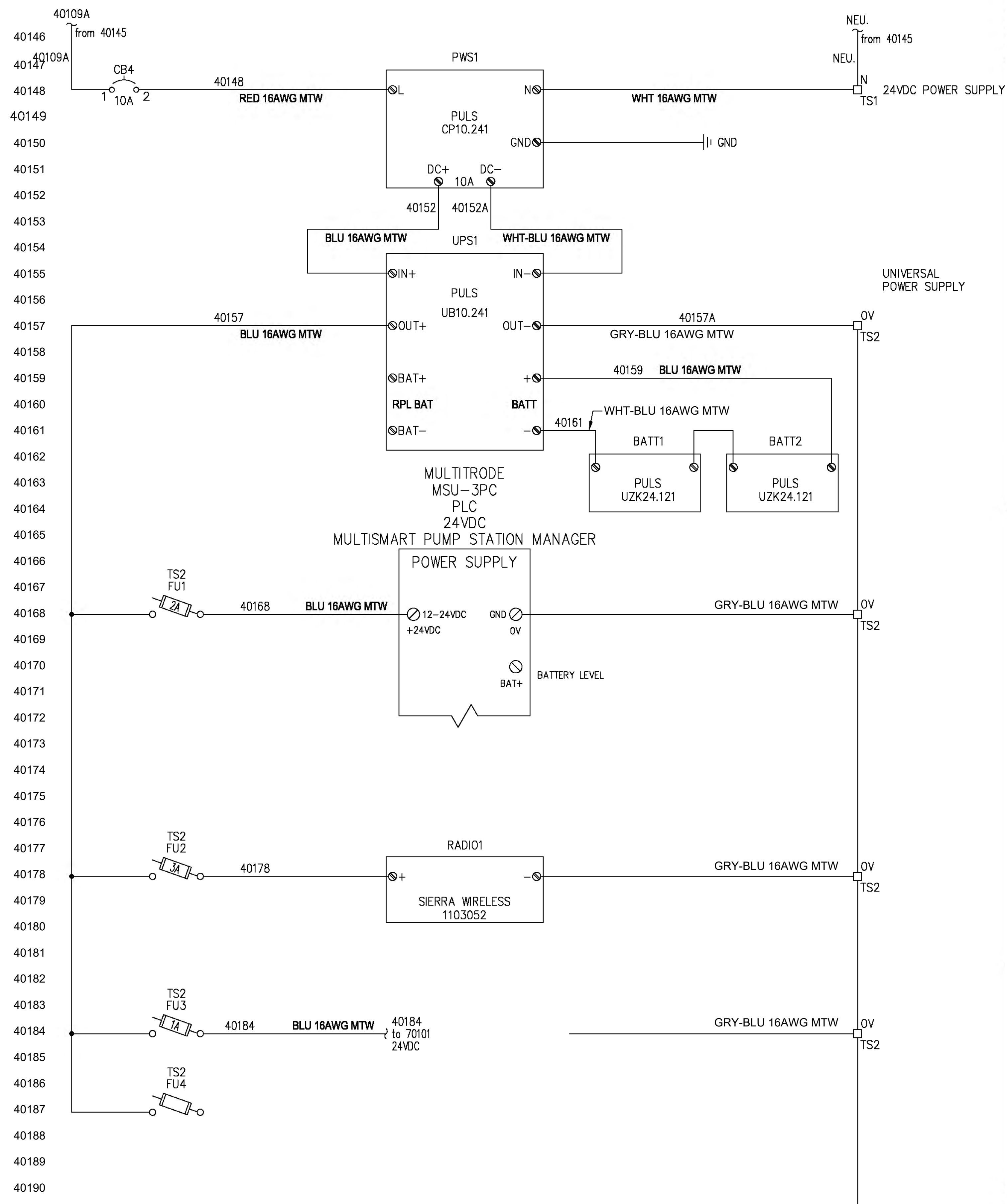
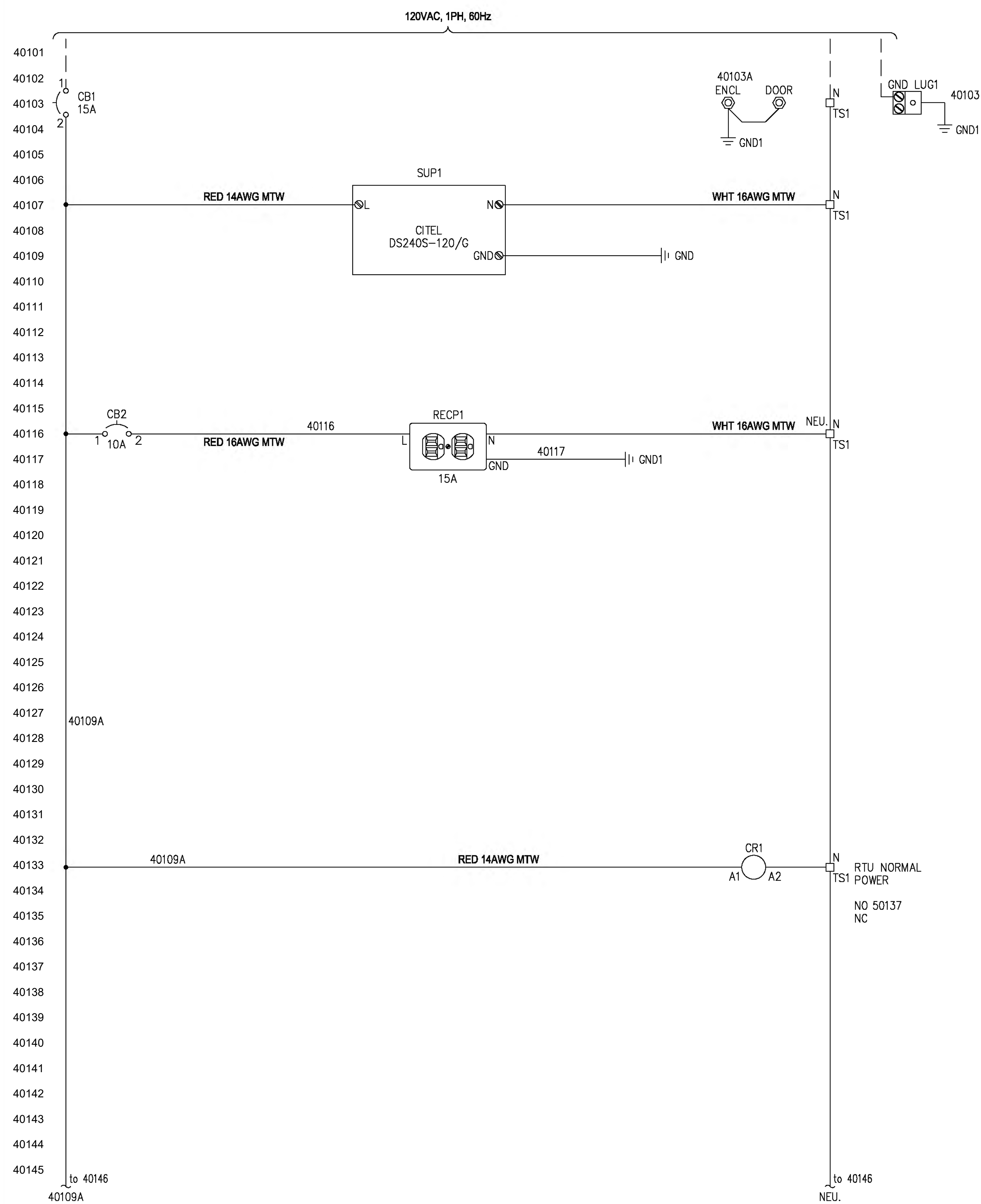
Scale: NTS

Date: JUNE 2023

SD-35

















# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

**D. Albrey Arrington, Ph.D.** EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

To: Governing Board  
From: Kara Fraraccio, Director of Finance and Administration  
Date: June 9, 2023  
Subject: Disposal of Surplus Property

Whenever the District disposes of tangible personal property of a non-consumable nature, Florida Statutes and our Disposal of Surplus Tangible Personal Property Policy require Governing Board approval before any Surplus Tangible Personal Property can be disposed of. Consistent with state statute and our policies and procedures, I request your authorization to dispose of the items listed below:

Tag #	F/A #	Description	Condition	Date Recorded	Acquired Value	Book Value	Estimated Value
N/A	TDE0241-1	EQ Odor Control System	Operational	09/30/09	\$ 552,851	\$ -	\$ -
N/A	TDE0241-2	EQ Odor Control System	Operational	09/30/09	15,198	-	-
2796	OE0301-1	Color Copier/Scanner	Operational	09/30/14	6,499	-	100
N/A	CTLS0371-1	10 HP Flygt Pump	Beyond Repair	09/30/19	5,029	2,012	-
<b>Total Assets to be Disposed</b>					<b>\$ 579,577</b>	<b>\$ 2,012</b>	<b>\$ 100</b>

In addition, the following assets were aggregated with other assets or grouped as part of a project when purchased and we therefore do not have individualized asset information on each item. A description of the asset to be disposed is provided below:

<u>Description</u>	<u>Serial Number</u>	<u>Condition</u>	<u>Estimated Value</u>
2 HP Barnes Pump	C1532048-0711	Beyond Repair	\$0
2 HP Barnes Pump	C1789199-0716	Beyond Repair	\$0
2 HP Barnes Pump	SGVF2022L	Beyond Repair	\$0
5 HP Flygt Pump	FLY-0830301	Beyond Repair	\$0
9.4 HP Flygt Pump	FLY-0120105	Beyond Repair	\$0
20 HP Flygt Pump	FLY-0650270	Beyond Repair	\$0

The items listed in the schedules above are no longer of use to the District and are considered Surplus. The assets will be disposed of in accordance with the District's Disposal of Surplus Tangible Personal Property Policy.

If you have any questions, please feel free to contact me.

I offer the following motion for your approval:

**"THAT THE GOVERNING BOARD authorize the Executive Director to dispose of tangible personal property asset numbers TDE0241-1, TDE0241-2, OE0301-1, and CTLS0371-1, and the items from aggregated assets listed in the schedule above in accordance with the District's Disposal of Surplus Tangible Personal Property Policy."**

**Dr. Matt H. Rostock**  
CHAIRMAN

**Kevin L. Baker**  
BOARD MEMBER

**Gordon M. Boggie**  
BOARD MEMBER

**Stephen B. Rockoff**  
BOARD MEMBER

**Clinton R. Yerkes**  
BOARD MEMBER



# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

**D. Albrey Arrington, Ph.D.** EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

## MEMORANDUM

TO: D. Albrey Arrington, Ph.D., Executive Director

FROM: Kris Dean, P.E., Deputy Executive Director  
Courtney Jones, P.E., Director of Engineering

DATE: June 15, 2023

SUBJECT: Change Order to Current Contract – 18-005-LSGENCONSTR

The District maintains a general lift station rehabilitation services contract that has an option to reauthorize / renew on an annual basis for a 5-year period. The current contract (18-005-LSGENCONSTR) is currently on its last year of the renewal period, and the District will advertise for competitive bid for a new contract in the next year.

The current contract pricing under 18-005-LSGENCONSTR for specifically Bid Item #26 – Grass Paver Driveway Section is currently not able to be held by the Contractor due to current inflation / market conditions. Staff are requesting consideration for removal of this line item from the contract in order to utilize other procurement methods to have this type of work completed.

Staff recommend the following motion:

**“THAT THE DISTRICT GOVERNING BOARD approve removal of Bid Item #26 – Grass Paver Driveway Section ( >20 SY / site) from general services contract 18-005-LS-GENCONSTR.”**

**Dr. Matt H. Rostock**  
CHAIRMAN

**Kevin L. Baker**  
BOARD MEMBER

**Gordon M. Boggie**  
BOARD MEMBER

**Stephen B. Rockoff**  
BOARD MEMBER

**Clinton R. Yerkles**  
BOARD MEMBER

**BID RESPONSE – ADDENDUM 1**  
**ITB # 18-005-LSGENCONSTR**

**LOXAHATCHEE RIVER ENVIRONMENTAL CONTROL DISTRICT LIFT STATION REHABILITATION GENERAL CONSTRUCTION SERVICES**

The contractor agrees to execute an Agreement in strict accordance with the Contract Documents and to provide services at the Unit Prices as included in the following Lift Station Rehabilitation General Construction Services Unit Price Bid Sheet as follows:

NO.	ITEM	QUANTITY	UNIT	Original Contract Unit Price	2021 Escalated Unit Price (1.2% Increase)	2022 Escalated Unit Price (6.8% Increase)	2022 Escalated Unit Price (7.1% Increase)
1	Mobilization/Demobilization	10	LS	\$ 500.00	\$ 506.00	\$ 540.41	\$578.78
2	Isolation Valve	4"	EA	\$ 1,800.00	\$ 1,821.60	\$ 1,945.47	\$2,083.60
		6"	EA	\$ 2,100.00	\$ 2,125.20	\$ 2,269.71	\$2,430.86
3	Temporary Bypass Connection Assembly	4"	EA	\$ 1,000.00	\$ 1,012.00	\$ 1,080.82	\$1,157.56
		6"	EA	\$ 1,200.00	\$ 1,214.40	\$ 1,296.98	\$1,389.07
4	Wetwell Concrete Lid and Hatch (hatch dimensions vary, not to exceed						
	6" Diameter Wetwell	1	EA	\$ 6,500.00	\$ 6,578.00	\$ 7,025.30	\$7,524.10
	8" Diameter Wetwell	1	EA	\$ 7,500.00	\$ 7,590.00	\$ 8,106.12	\$8,681.65
	10" Diameter Wetwell	1	EA	\$ 9,000.00	\$ 9,108.00	\$ 9,727.34	\$10,417.98
5	Demolition of Wetwell Rectangular Chimney and Replacement with Cylindrical Wetwell Section (3' x up to 5' hatch with chimney not to exceed 6' in depth)						
	6" Diameter Wetwell	1	EA	\$ 12,800.00	\$ 12,953.60	\$ 13,834.44	\$14,816.69
	8" Diameter Wetwell	1	EA	\$ 13,500.00	\$ 13,662.00	\$ 14,591.02	\$15,626.98
	10" Diameter Wetwell	1	EA	\$ 15,000.00	\$ 15,180.00	\$ 16,212.24	\$17,363.31
6	Valve Vault						
	5' x 5', not to exceed 5' depth	3	EA	\$ 8,500.00	\$ 8,602.00	\$ 9,186.94	\$9,839.21
	5' x 7', not to exceed 5' depth	2	EA	\$ 10,000.00	\$ 10,120.00	\$ 10,808.16	\$11,575.54
7	Valve Vault Piping Assembly						
	4" Diameter Piping	3	EA	\$ 12,000.00	\$ 12,144.00	\$ 12,969.79	\$13,890.65
	6" Diameter Piping	2	EA	\$ 13,000.00	\$ 13,156.00	\$ 14,050.61	\$15,048.20
8	Above Grade Piping Assembly						
	4" Diameter Piping	3	EA	\$ 13,000.00	\$ 13,156.00	\$ 14,050.61	\$15,048.20
	6" Diameter Piping	2	EA	\$ 14,000.00	\$ 14,168.00	\$ 15,131.42	\$16,205.75
9	Discharge Piping Assembly						
	Up to 10' x 4" Diameter Piping	4	EA	\$ 3,200.00	\$ 3,238.40	\$ 3,458.61	\$3,704.17
	Up to 10' x 6" Diameter Piping	1	EA	\$ 3,600.00	\$ 3,643.20	\$ 3,890.94	\$4,167.20
	Up to 15' x 4" Diameter Piping	4	EA	\$ 3,800.00	\$ 3,845.60	\$ 4,107.10	\$4,398.70
	Up to 15' x 6" Diameter Piping	1	EA	\$ 4,200.00	\$ 4,250.40	\$ 4,539.43	\$4,861.73
	Up to 20' x 4" Diameter Piping	1	EA	\$ 4,200.00	\$ 4,250.40	\$ 4,539.43	\$4,861.73
	Up to 20' x 6" Diameter Piping	1	EA	\$ 4,800.00	\$ 4,857.60	\$ 5,187.92	\$5,556.26
10	Angle Pipe Support						
	6" Diameter Wetwell	12	EA	\$ 800.00	\$ 809.60	\$ 864.65	\$926.04
	8" Diameter Wetwell	4	EA	\$ 1,200.00	\$ 1,214.40	\$ 1,296.98	\$1,389.07
	10" Diameter Wetwell	2	EA	\$ 1,800.00	\$ 1,821.60	\$ 1,945.47	\$2,083.60
11	Alternate Angle Pipe Support						
	4" Diameter Wetwell	4	EA	\$ 600.00	\$ 607.20	\$ 648.49	\$694.53
12	Leveling Floor						
	6" Diameter Wetwell	1	EA	\$ 2,280.00	\$ 2,307.36	\$ 2,464.26	\$2,639.22
	8" Diameter Wetwell	1	EA	\$ 2,380.00	\$ 2,408.56	\$ 2,572.34	\$2,754.98
	10" Diameter Wetwell	1	EA	\$ 2,480.00	\$ 2,509.76	\$ 2,680.42	\$2,870.73
13	Base Plates						
	4" Bases	8	EA	\$ 600.00	\$ 607.20	\$ 648.49	\$694.53
	6"-8" Bases	2	EA	\$ 750.00	\$ 759.00	\$ 810.61	\$868.16
14	Pump Bases						
	4"x4"	8	EA	\$ 1,600.00	\$ 1,619.20	\$ 1,729.31	\$1,852.09
	6"x6"	2	EA	\$ 2,000.00	\$ 2,024.00	\$ 2,161.63	\$2,315.11
15	Drop Bowl Assembly (less than 10' drop)						
	8"	5	EA	\$ 400.00	\$ 404.80	\$ 432.33	\$463.03
	10"	3	EA	\$ 600.00	\$ 607.20	\$ 648.49	\$694.53
16	Abandon Outside Drop (less than 10' drop)						
	8"	4	EA	\$ 650.00	\$ 657.80	\$ 702.53	\$752.41
	10"	4	EA	\$ 850.00	\$ 860.20	\$ 918.69	\$983.92
	12"	2	EA	\$ 900.00	\$ 910.80	\$ 972.73	\$1,041.79
17	Guidesails Removal and Installation (per pump)						
	2" up to 10'	2	EA	\$ 300.00	\$ 303.60	\$ 324.24	\$347.26
	2" up to 15'	6	EA	\$ 350.00	\$ 354.20	\$ 378.29	\$405.15
	2" up to 20'	2	EA	\$ 400.00	\$ 404.80	\$ 432.33	\$463.03
18	Guidesails						
	2" up to 10'	2	EA	\$ 1,500.00	\$ 1,518.00	\$ 1,621.22	\$1,736.33
	2" up to 15'	6	EA	\$ 2,000.00	\$ 2,024.00	\$ 2,161.63	\$2,315.11
	2" up to 20'	2	EA	\$ 3,000.00	\$ 3,036.00	\$ 3,242.45	\$3,472.66
19	Panel Rack	2	EA	\$ 8,500.00	\$ 8,602.00	\$ 9,186.94	\$9,839.21
20	Panel Installation	2	EA	\$ 3,500.00	\$ 3,542.00	\$ 3,782.86	\$4,051.44
21	Concrete Demolition (>0.5 CY/Site)						
	Slabs up to 8" thick	8	EA	\$ 250.00	\$ 253.00	\$ 270.20	\$289.38
	Structures up to 12" thick	2	EA	\$ 500.00	\$ 506.00	\$ 540.41	\$578.78
22	Concrete No Reinforcing (>0.5 CY/Site)	10	CY	\$ 300.00	\$ 303.60	\$ 324.24	\$347.26
23	Concrete (6 x 6 - W1.4 x W1.4 Reinforcing) (>0.5CY/Site)	10	CY	\$ 320.00	\$ 323.84	\$ 345.86	\$370.42
24	Concrete (6' @ 12" O.C.E.W., Top and Bottom) (>0.5 CY/Site)	10	CY	\$ 350.00	\$ 354.20	\$ 378.29	\$405.15
25	Stabilized Grass Driveway Section (>20 SY/Site)	100	SY	\$ 35.00	\$ 35.42	\$ 37.83	\$40.52
<del>26</del>	<del>Grass Driveway Extension (&gt;30 CY/Grass)</del>	<del>100</del>	<del>EA</del>	<del>\$ 55.00</del>	<del>\$ 55.66</del>	<del>\$ 59.44</del>	<del>\$63.66</del>
24	Adjust or Replace Manhole Frame and Cover	5	EA	\$ 900.00	\$ 910.80	\$ 972.73	\$1,041.79
27	Ductile Iron Fittings	1,000	LBS	\$ 5.00	\$ 5.06	\$ 5.40	\$5.78
28	Relocation of Radio Telemetry Unit	2	EA	\$ 3,500.00	\$ 3,542.00	\$ 3,782.86	\$4,051.44
26	Sod						
	Bahia	100	SY	\$ 5.00	\$ 5.06	\$ 5.40	\$5.78
	Floratan	100	SY	\$ 8.00	\$ 8.10	\$ 8.65	\$9.26
28	Dewatering w/Wellpoints						
	First Day	1	EA	\$ 1,000.00	\$ 1,012.00	\$ 1,080.82	\$1,157.56
	Each Additional Day	1	EA	\$ 800.00	\$ 809.60	\$ 864.65	\$926.04
29	Maintenance of Traffic Thoroughfare Roads						
	First Day	1	EA	\$ 400.00	\$ 404.80	\$ 432.33	\$463.03
	Each Additional Day	1	EA	\$ 300.00	\$ 303.60	\$ 324.24	\$347.26
29	Maintenance of Traffic NON-Thoroughfare Roads						
	First Day	1	EA	\$ 300.00	\$ 303.60	\$ 324.24	\$347.26
	Each Additional Day	1	EA	\$ 200.00	\$ 202.40	\$ 216.16	\$231.51
30	Maintenance of Traffic - Flagger	1	EA	\$ 800.00	\$ 809.60	\$ 864.65	\$926.04
31	Maintenance of Traffic - Sign Board	1	EA	\$ 150.00	\$ 151.80	\$ 162.12	\$173.63
32	Line Stops						
	4"	1	EA	\$ 4,600.00	\$ 4,655.20	\$ 4,971.75	\$5,324.74
	6"	1	EA	\$ 5,500.00	\$ 5,566.00	\$ 5,944.49	\$6,366.55
	8"	1	EA	\$ 5,700.00	\$ 5,768.40	\$ 6,160.65	\$6,598.06
	10"	1	EA	\$ 6,500.00	\$ 6,578.00	\$ 7,025.30	\$7,524.10
33	Trench Safety Act	4	EA	\$ 100.00	\$ 101.20	\$ 108.08	\$113.75
34	J-Box Under Panel	1	EA		\$ 5,875.00	\$ 6,274.50	\$6,719.99

**THIS  
PAGE  
INTENTIONALLY  
LEFT  
BLANK**





# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

D. Albrey Arrington, Ph.D. EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

## MEMORANDUM

**To:** Governing Board  
**From:** Kara Fraraccio, Director of Finance and Administration  
**Date:** June 9, 2023  
**Subject:** Auditor Selection

As an Independent Special District of the State of Florida, the Loxahatchee River Environmental Control District is required to have an annual financial audit of our accounts and records (Florida Statutes 218.391). In selecting auditors, we are required to implement auditor selection procedures according to Florida Statutes 218.391.

Per the audit selection procedures, on March 16, 2023, the LRD Governing Board established an audit committee whose members include Gordon Boggie (Committee Chair), Steve Rockoff, Daniela Russell (Chief Financial Officer, Seacoast Utility Authority), and Matthew Pazanski (Finance Director of the Town of Juno Beach). The Audit Committee established factors to use for the evaluation of audit services, publicly announced the request for proposals for audit services, provided request for proposals to interested audit firms, evaluated proposals submitted by qualified firms, and ranked in the order of preference no fewer than three firms deemed to be the most highly qualified to perform the required services based on the factors provided in the request for proposals.

A total of five (5) firms submitted Financial Audit Services proposals. The Audit Committee reviewed the proposals and contacted references. Based on a careful and thoughtful review of the proposals, the Audit Committee offers the three (3) firms ranked as the most highly qualified to perform the required services:

1. Marcum Accountants & Advisors
2. Moore, Stephens, Lovelace, P.A.
3. Mauldin & Jenkins, LLC

Now that the Audit Committee has completed ranking the audit firms, the next step is for the LRD Governing Board, or your designee, to begin negotiations with the highest ranked firm by selecting the highest-ranked qualified firm. If the highest-ranked qualified firm is not selected, the Governing Board must document in its public records the reason for not selecting the highest-ranked qualified firm. This negotiation will ultimately result in execution of a written contract for audit services.

At this time, the Audit Committee recommends the LRD Governing Board select the highest-ranked qualified firm. Therefore, the following motion is offered for your consideration:

**“THAT THE GOVERNING BOARD authorize the Executive Director to negotiate and execute an Audit Services Agreement with the top ranked firm, Marcum Accountants & Advisors.”**

Dr. Matt H. Rostock  
CHAIRMAN

Kevin L. Baker  
BOARD MEMBER

Gordon M. Boggie  
BOARD MEMBER

Stephen B. Rockoff  
BOARD MEMBER

Clinton R. Yerkes  
BOARD MEMBER



## Neighborhood Sewering Schedule-Revised February 2020

Rank *	Area Description	# Lots	Activity	Original Target Date	Revised Target Start Date
11	Jupiter Farms (East)	708		TBD	TBD
11	PB Country Estates	1547		TBD	TBD

\* Rank based upon "2010 Septic System Inventory & Assessment"  
TBD = To be determined

### Remnant Areas

Rank*	Area Description	Lots	Activity	Original Target Date	Revised Target Start Date
	605+607 Military Trl (LP)	2	Notified Owners – June 2020 Notice of Intent – Jan 2021	2022	
	18041 69 <sup>th</sup> Terrace	1	LRD procedures shared for connection to sewer services Statutory Way Provision – Jan 2022 Notice of Intent - April 2023 Under Construction	N/A	2022
	5331 Center Street	1	LRD procedures shared for connection to sewer services Notice of Intent – March 2022 In Permitting	N/A	2022
	Island Way Property	1	Notice of Intent – August 2022 Project in Design	N/A	2022

Rank *	Area Description	# Lots	Activity	Original Target Date	Revised Target Start Date
AA	Peninsular Road	4	Private Road Notice of Intent – February 2010 Partial construction complete - June 2013 Soliciting easements for remainder of project	2010	AEO
BB	Rivers Edge Road (Martin Co.)	35	Notified Owners – August 2010 Private Road-Easements Solicited –May 2014 Notice of Intent – February 2014 Project Delayed	2013	AEO
CC	171 <sup>st</sup> Street (Martin Co.)	7	Private Road - In House Design Owners notified October 2012 Easement rec'd from Church – April 2017 Grant received	2014	AEO
CC	Jamaica Dr	11	Private Road Owners notified Oct 2012 Statutory Way Provision (2) – June 2021 In Construction	2014	AEO
D	Loggerhead Park <i>(institutional)</i>	6 ECs	Need Easements from County-No database	2014	AEO
DD	Taylor Road	38	Notified Owners – September 2011 Private Roads	2015	AEO
FF	Rolling Hills	50	Notified Owners – Jan. 2013 - Private HOA Notice of Intent to Assess – October 2019 Award of Contract – December 2021 Notice To Connect – March 2023	2017	2021
FF	North A1A	3	Postponed-Town activities in area No database	2012	AEO
GG	815 S US 1 (Yum Yum Tree)	9 ecs	Notified Owner – November 2014	2016	AEO
GG	Rockinghorse <i>(north of Roebuck Road)</i>	11	Notified Owners – January 2013	2018	AEO
GG	Castle Rd SE	5	Notified Owners – Jan 2013-private road	2018	AEO
GG	Jupiter Rd SE	4	Notified Owners – Jan 2013-private road	2018	AEO
HH	Harbor Rd. S. LPSS	6	Notified Owners – January 2014-private road Statutory Way Provision – May 2023 (1 lot)	2017	AEO
HH	Indian Hills SE	12	Notified Owners – January 2016 Easement for Road & Utilities, No Dedication	2019	AEO
16	Limestone Creek Road West	49	Notified Owners – January 2013-private road	2018	TBD
19	US Coast Guard Station Offices <i>(institutional)</i> PX Commercial <i>(commercial)</i>	2 ECs 2 ECs	US Government - private roads-No database Contract for installation of sanitary sewers – September 2020 Project Under Construction	2019	2021
	109+111 Old Jupiter Beach Road	2	Notified Owners – September 2021 Follow Up Reminder – July 2022 Constr. Plans Complete – Pending Owners		
	182 <sup>nd</sup> Road North	12	Sewering Pricing Request by 50% of Owners Design/Cost Est. In Progress		



CURTIS L. SHENKMAN  
*Board Certified*  
*Real Estate Attorney*  
HUNTER SHENKMAN  
*Attorney*

**CURTIS SHENKMAN, P.A.**  
4400 PGA BLVD, SUITE 300  
PALM BEACH GARDENS, FLORIDA 33410  
TELEPHONE (561) 822-3939  
**Curtis@PalmBeachLawyer.Law**

**LEGAL ASSISTANTS**  
**REAL ESTATE**  
JUDY D. MONTEIRO  
DENISE B. PAOLUCCI  
CAROLINA INMAN

June 5, 2023

Loxahatchee River Environmental Control District  
D. Albrey Arrington, Exec. Dir. and Board Members (sent by email to S. Patel)  
2500 Jupiter Park Drive  
Jupiter, FL 33458

**RE: PENDING LITIGATION STATUS REPORT**

Dear Dr. Arrington and Board Members:

We are enclosing herewith a brief status report relating to the litigation in which the Loxahatchee River Environmental Control District is involved with our law firm as the attorney of record, and/or monitoring the attorney of record. This status report updates the last monthly status report previously submitted and consists of a summary of the record proceedings which have occurred in each of the pending cases since last month.

**The Beman CASE has a CHANGE IN STATUS SINCE LAST REPORT.**

There are no analyses of the pending cases included, as the inclusion of such items might constitute a waiver of any attorney/client privilege that exists between our firm and the District. Therefore, if you would like to discuss the particulars of any specific case in more detail or would like to obtain more information concerning the strategy, status, or settlement posture of any of the individual cases, please feel free to contact me.

As always, we are available at any time to discuss any of these lawsuits with each individual Board Member by telephone or by conference, if there are any questions.

Respectfully submitted,

***CURTIS L. SHENKMAN***

CURTIS L. SHENKMAN

Attachments

## **OTHER LITIGATION**

---

IN THE CIRCUIT COURT OF THE FIFTEENTH JUDICIAL CIRCUIT, IN AND  
FOR PALM BEACH COUNTY, FLORIDA  
CASE NO. 50-2019 CA 014447 XXXX MB AB

**FRED BEMAN**, Plaintiff, vs.  
LOXAHATCHEE RIVER DISTRICT,  
Defendant.

December 6, 2017. Auto Accident involving District vehicle and vehicle driven by Fred Beman.

April 15, 2020. Summons & Complaint served upon the District.

April 20, 2020. Attorney Lyman Reynolds, appointed be District's Insurance Carrier to Defend the  
District under the District's Insurance Policy.

May 4, 2020. District's Motion to Dismiss filed.

July 8, 2020. District's attorney reports Motion to Dismiss not yet set for a hearing.

August 19, 2020. Agreed Order permitting transfer of the case to Martin County

Sept 16, 2020. Amended Complaint filed in Martin County

November 16, 2021, Notice of Lack of Prosecution filed in Palm Beach County.

Dec 2, 2021, Summons served on the District; Attorney Reynolds responded with Motion to Dismiss on  
December 17, 2021.

January 14, 2022. District's Responses to Plaintiff's Request for Production and Interrogatories was filed.

January 31, 2022. District's Motion to Dismiss denied. District's Answer due by February 20, 2022, being  
prepared by Attorney Reynolds.

February 20, 2022, District's Answer Filed.

April 22, 2022, Deposition of Plaintiff

June 21, 2022, Attorney Reynolds indicated projected trial date is December 18, 2023, and provided  
confidential information to claims adjuster.

November 1, 2022 Attorney Reynolds office setting Pre Trial MEDIATION in January 2023.

January 13, 2023 Dr. Michael Zeide performs CME on Plaintiff

May 23, 2023 Mediation conducted and settlement pending

---

## **LIEN FORECLOSURES**

---

**NONE**

---

## **MORTGAGE OR LIEN FORECLOSURES / LRD COUNTERCLAIMS/CROSSCLAIMS**

**NONE**



***Loxahatchee River Environmental Control District***  
***Monthly Status Report***  
***May 31, 2023***

***Submitted To: Kris Dean, P.E., Deputy Executive Director***

---

The following is a summary of work performed by Baxter and Woodman, Inc. (B&W), on District projects for the monthly period ending May 31, 2023.

**Lift Station Control Panels & RTU Upgrades**

The following items were ongoing or completed during the last monthly period:

- Preliminary Design Report and site plans submitted to LRECD April 20, 2023.
- Review meeting held May 4, 2023. Site plans provided to District. PDR and site plans discussed.
- Comments received from District 6/2/23.

**Irrigation Quality 511 (IQ-511) Pump Station Piping Improvements**

The following items were ongoing or completed during the last monthly period:

- Final Walk Through was performed on February 7, 2023.
- Final pay application received from Contractor on May 18<sup>th</sup>, 2023 along with final as-built submittal.
  - Comments on final as-builts were provided to Contractor on May 19<sup>th</sup>, 2023.
- Email provided to Contractor on May 19<sup>th</sup>, 2023 with proposed solution to end the fiber line dispute.
  - On May 30<sup>th</sup>, 2024 the Contractor confirmed receipt of proposed solution and is discussing internally.
  - Contractor states that no clear evidence has been provided that the Contractor caused the damage.
  - B&W to follow up with Contractor in the coming week.

Respectfully Submitted by:

**BAXTER & WOODMAN, INC.**

Rebecca Travis, P.E.  
Executive Vice President / Florida Division Manager

**Loxahatchee River Environmental Control District  
CMA Project Status Update  
June 5, 2023**

1. Science Center at Jupiter Inlet Lighthouse Outstanding Natural Area (CMA Project # 494.001)  
*Activities Performed:*
  - Conceptual Design Memorandum and building layout options were approved by the Board on 10/21/21.
  - A coordination meeting was held 11/12/21.
  - 90% design, specifications and cost estimate were submitted.
  - LRD plan comments were addressed.
  - Proposed roof alternative design was submitted to LRD for review (to address comments from SHPO).
  - Bid documents were submitted to LRD.
  - Comments were received from LRD and meetings/calls conducted to review.
  - Final bid documents were submitted to LRD.
  - Project advertised for bid (bids due January 10, 2023, anticipated award at January Board meeting).
  - Recommendation of bid rejection was presented to the Board on January 19, 2023. Board voted to reject all bids.
  - Conducted discussions with LRD staff on possible project adjustments to save costs.
  - Project on hold.
2. 2500 Jupiter Park Drive Conceptual Site Planning  
*Activities Performed:*
  - Conducted kickoff meeting.
  - Environmental field work was performed, report submitted, comments received from LRD, revised report submitted.
  - Staff and Board survey were performed.
  - Existing site base plan was prepared.
  - A review of adjacent stormwater permits was performed.
  - Site concept plans were prepared.
  - Site visits and meeting with LRD were conducted to review survey results and concept plans.
  - Presented survey results and concept plans to the Board.
  - Submitted data request to LRD for massing study and received results. Provided LRD with initial space calculations.
  - Reviewed WWTF capacity expansion goals with LRD. Submitted memorandum on the WWTF future space to LRD.
  - Submitted draft Site Security memorandum, received comments from LRD, and submitted final memorandum.
  - Draft massing concepts were presented to LRD at the meeting.
  - LRD comments were incorporated, and a revised massing study was submitted.
  - LRD provided comments on the revised massing study.
  - Revised massing study submitted.
  - Draft site plans submitted and comment received. Comment responses issued.

**500 S. Australian Ave., Suite 850**  
**West Palm Beach, FL 33401**  
Office: +1 (561) 746-6900



- Site planning memorandum drafted. Holding document submittal for confirmation on some of the key site plan concepts.
- Met with LRD staff to discuss comments and confirm concepts. CMA submitted additional information to follow up discussion at this meeting. Site plans, massing study and report revisions are underway.



**HOLTZ CONSULTING ENGINEERS, INC.**  
270 South Central Boulevard, Suite 207, Jupiter, FL 33458 (561) 575 2005

**MEMORANDUM**

**To:** Kris Dean, PE, Deputy Director/Director of Engineering, Loxahatchee River Environmental Control District  
**From:** Christine Miranda, PE, Holtz Consulting Engineers, Inc.  
**Date:** June 8, 2023  
**Subject:** **Loxahatchee River Environmental Control District Monthly Status Report**

The following is a summary of work performed by Holtz Consulting Engineers, Inc. (HCE) on Loxahatchee River District projects through June 8, 2023. **Note: Any information that is historical or repeated from previous months are shown in italics. Otherwise, all information as shown below is newly reported information.**

**Electrical System Condition Assessment, Short Circuit, Device Coordination and Arc Flash Study**

- The draft condition assessment analysis study was submitted to the District on May 17, 2023. HCE's subconsultant, Hillers Electrical Engineering, is currently working on the short circuit, device coordination, and arc flash study. A draft will be submitted to the District for review during the week of July 10, 2023.

**Schedule Update:**

The final technical memorandum for the condition assessment analysis will be submitted to the District 20 days after receiving comments from the District and having a review meeting.

**Greenhouse Gas Strategies Evaluation**

- A review meeting to discuss the comments on the draft technical memorandum for the chemical feed analysis and flow equalization testing was held on May 25, 2023. The HCE team is currently working on addressing the comments and finalizing the technical memorandum. The draft solar assessment technical memorandum was transmitted to the District on June 1, 2023.

**Schedule Update:** The final chemical feed analysis and flow equalization technical memorandums will be submitted to the District during the week of June 12, 2023. The final solar assessment technical memorandum will be submitted to the District two weeks after receipt of comments from the District.



### **Lift Station No. 082 Improvements**

- The easement agreement was approved by the property owner, signed, and received by HCE. The agreement was returned to the Town of Jupiter along with responses to the initial Town of Jupiter Request for Information (RFI). HCE is awaiting approval on the Town of Jupiter permit to move forward with change order for additional work and project mobilization. The precast concrete structures were delivered to the project site and enclosed in temporary fencing with approval from the property owner and property manager. Payment Request No. 2 for stored materials was approved and processed.

#### **Schedule Update:**

The Contractor has prepared the change order request for the water main relocation, new tie-in location for the force main, and revisions to the generator drawings that include a retaining wall, concrete footer, and aluminum guardrail on the west and north side of the pad. HCE is currently reviewing. This change order will also include the time extension required to complete this work and will be determined once the Town of Jupiter permit has been issued. The current contractual final completion date was April 13, 2023. This will be extended with the change order.

### **Country Club Drive Force Main Transmission System Preliminary Evaluation**

- *The District is currently reviewing the different methodologies that can be utilized for flow projections and will be providing feedback to HCE for finalization of the technical memorandum.*

**Schedule Update:** *Per the work authorization agreement, upon receipt of final information from the District on the draft memorandum, the final memorandum will be prepared and submitted within two weeks.*

### **Lift Station Telemetry Improvements**

- The Contractor is still completing the existing panel modifications for the remaining lift stations. A CONEX for storage of materials has been delivered to the District's wastewater treatment plant. Delivery of the first 20 RTU panels is expected to be this week. The Contractor is modifying the HMI SCADA template to be re-submitted for approval. It will be uploaded to District SCADA upon approval, and then tested on both the AT&T and Verizon networks. HCE is in the process of responding to a Palm Beach County Engineering RFI for a right-of-way permit application. Payment Request No. 2 was approved and processed.

**Schedule Update:** Construction is proceeding as scheduled. The project remains on schedule to meet substantial and final completion deadlines. The contract completion date is July 12, 2024.

### **Rolling Hills Gravity Sewer System, Lift Station, & Force Main**

- HCE has processed all final documents. This project is now complete.



### **Jupiter Inlet Lighthouse Septic to Sewer Conversion**

- Change Order #5 for the project was processed for the project extending the Contract completion date to June 28, 2023. The Contractor is currently on site working towards completing all remaining punch list items. HCE is providing daily site visits and reports to the District to provide status updates for each of the remaining punch list items on the project. Once all punch list items are completed all final paperwork and payment requests will be processed.

**Schedule Update:** Change Order #5 extended the Contract completion date to June 28, 2023. All punch list and remaining work for the project should be completed by this date.

### **Deep Injection Well Replacement Cost Study**

- *HCE is currently working on completing the analysis of the additional alternative and completing the technical memorandum.*

**Schedule Update:** The final technical memorandum is anticipated to be submitted to the District by the end of June to the District.

### **Injection Well Pump Manual Transfer Switch Addition**

- The Contractor is currently on site. The Contractor submitted a revised schedule in support of a change order request for a time extension due to material delays and the time needed for the multiple shutdowns and wire testing required for each station.

**Schedule Update:** The current final completion date was April 30, 2023. The revised schedule submitted by the Contractor reflects a substantial completion date of July 7, 2023 and final completion date of July 30, 2023. A time extension change order request will be prepared and submitted to the District for review and approval.

### **Lift Station No. 050 Emergency Generator**

- The sketch and legal for the proposed easement was provided to the District on May 31, 2023. The 90% plans and specifications were submitted to the District on June 5, 2023.

**Schedule Update:** The 100% plans and specifications will be submitted to the District four weeks after receipt of comments.

### **Bulk Sodium Hypochlorite Conversion Study**

- The draft technical memorandum will be submitted to the District by June 29, 2023.

### **Emergency Response ESRI Collection Tool & Synovia Vehicle Tracking Assistance**

- *No new activities have occurred for this work.*





# Busch Wildlife Sanctuary

The 2nd Quarter Report will be presented  
at the July 2023 Board Meeting.

J:\Board\Notebook\BWS No Update





# Director's Report

- |                               |            |
|-------------------------------|------------|
| ➤ Admin. & Fiscal Report      | attach. #1 |
| ➤ Engineering Report          | attach. #2 |
| ➤ Operations Report           | attach. #3 |
| ➤ Information Services Report | attach. #4 |
| ➤ Environmental Education     | attach. #5 |
| ➤ Safety Report               | attach. #6 |
| ➤ Other Matters (as needed)   | attach. #7 |



J:\Board\Notebook\Directors Report



# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

D. Albrey Arrington, Ph.D. EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

To: Governing Board  
From: Kara Fraraccio, Director of Finance and Administration  
Date: June 9, 2023  
Subject: Monthly Financial Report

## Cash and Investments

Balance as of May 31, 2023  
Certificates of Deposit:

Institution	Original Term	Maturity	Rate	Book Value	Monthly Change in Investment	Market Value
TD Bank	9 Months	05/05/23	3.22%	\$ 2,500,000	\$ 1,129	\$ -
TD Bank	9 Months	05/08/23	3.35%	1,274,425	958	-
Bank United	9 Months	05/16/23	2.13%	1,003,248	950	-
TD Bank	12 Months	08/10/23	3.36%	2,000,000	5,848	2,054,980
Bank United	12 Months	08/16/23	2.42%	1,004,118	2,099	1,023,456
Bank United	12 Months	08/16/23	2.42%	1,004,118	2,099	1,023,456
US Century Bank	13 Months	09/22/23	2.71%	2,500,000	5,869	2,552,896
Bank United	12 Months	11/18/23	4.55%	1,060,577	4,178	1,086,461
Bank United	12 Months	11/22/23	4.59%	1,582,357	6,297	1,620,573
TD Bank	10 Months	12/01/23	5.00%	2,538,250	10,905	2,578,824
<b>Subtotal</b>				<b>\$ 16,467,093</b>	<b>\$ 40,332</b>	<b>\$ 11,940,646</b>
<b>Investment Accounts:</b>						
Synovus - Public Demand			2.75%		\$ 11,649	\$ 4,993,653
Bank United - Public Funds Reserve			4.41%		7,947	2,053,024
Florida Prime - SBA			5.23%		27,120	8,877,815
<b>Subtotal</b>					<b>\$ 46,716</b>	<b>\$ 15,924,492</b>
<b>Checking Account:</b>						
SunTrust-Hybrid Business Account			1.95%		\$ 20,759	\$ 11,172,246
<b>Subtotal</b>					<b>\$ 20,759</b>	<b>\$ 11,172,246</b>
<b>Brokerage Accounts:</b>						
Vanguard GNMA ADM			0.63%	\$ 328,429	\$ 2,023	\$ 318,918
Vanguard Short-Term Treasury			-0.20%	2,892,282	(5,691)	2,830,140
U.S. Treasuries - Due 05/25/23			4.69%	1,231,427	3,675	-
U.S. Treasuries - Due 06/22/23			4.61%	146,718	609	149,549
U.S. Treasuries - Due 06/27/23			4.73%	498,410	2,056	503,134
U.S. Treasuries - Due 07/05/23			4.71%	3,011,802	12,975	3,037,890
U.S. Treasuries - Due 07/06/23			4.77%	670,155	2,931	676,754
Charles Schwab Bank Sweep						1,673
<b>Subtotal</b>				<b>\$ 8,779,223</b>	<b>\$ 18,578</b>	<b>\$ 7,518,058</b>
<b>Total</b>					<b>\$ 126,385</b>	<b>\$ 46,555,442</b>

Average weighted rate of return on investments is: 3.34%

As of 5/31/23:

3 month Short Term Bond: 5.26%

1 month Federal Fund Rate: 5.08%

Dr. Matt H. Rostock  
CHAIRMAN

Kevin L. Baker  
BOARD MEMBER

Gordon M. Boggie  
BOARD MEMBER

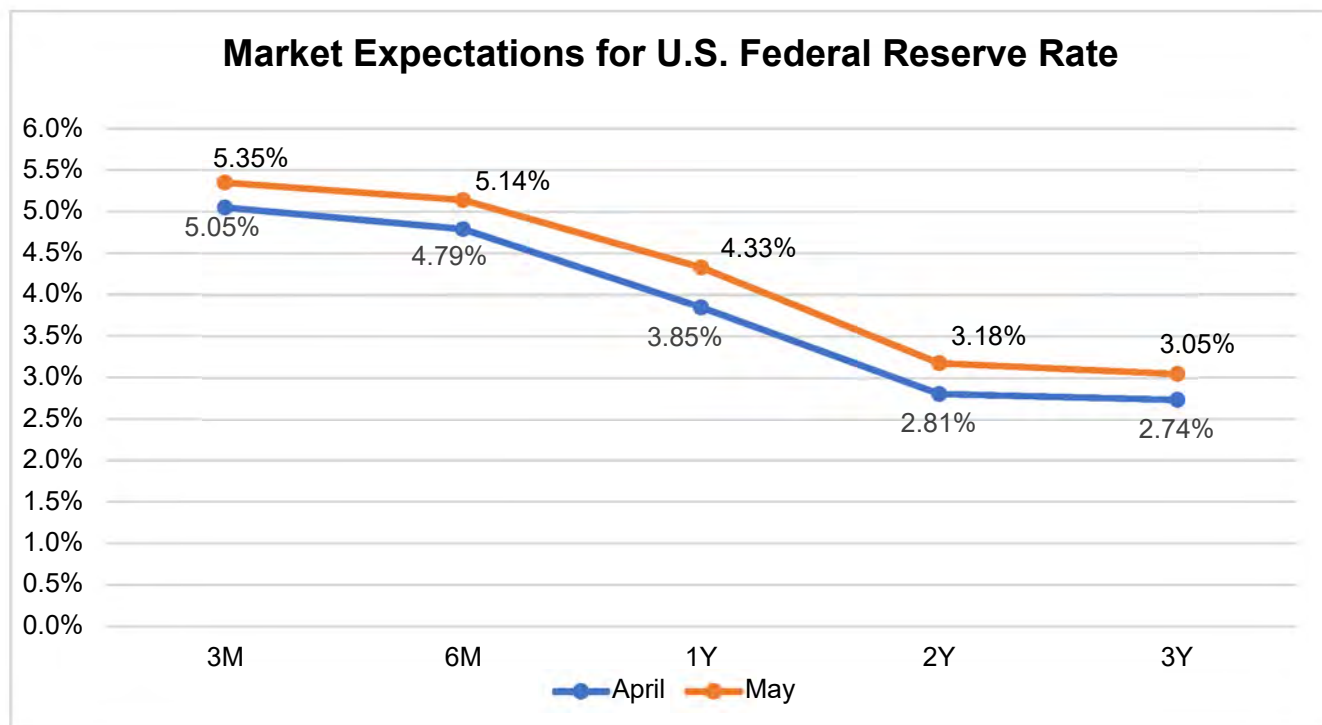
Stephen B. Rockoff  
BOARD MEMBER

Clinton R. Yerkes  
BOARD MEMBER

The District's average weighted rate of return on investment of 3.34% is lower than our benchmark because interest rates are increasing so rapidly. So far in 2023, the Fed has raised rates 0.25 percentage points three times, meaning interest rates have increased by 0.75% in 2023. Interest rates are currently over 5%. With interest rates rising, investing in moderate and long-term CDs produces lower returns than investing in short-term assets. Therefore, District staff are intentionally evaluating and revising our investments. The Board can rest assured that all existing and any future investments will fully comply with our Investment Policy.

At the end of May, staff opened a Preferred Deposit Pool account with Florida Fixed Income Trust (FL-FIT) another Local Government Investment Pool (LPIG). The fund is currently offering a 7-day yield of 5%. As noted in the schedule above, three CDs matured during the month of May; the matured balance was transferred into either the District's Florida PRIME (SBA fund) or the Preferred Deposit Pool account with FL-FIT. Additionally, staff is in the process of closing our public demand account with Synovus and will transfer the balance to the Preferred Deposit Pool account with FL-FIT.

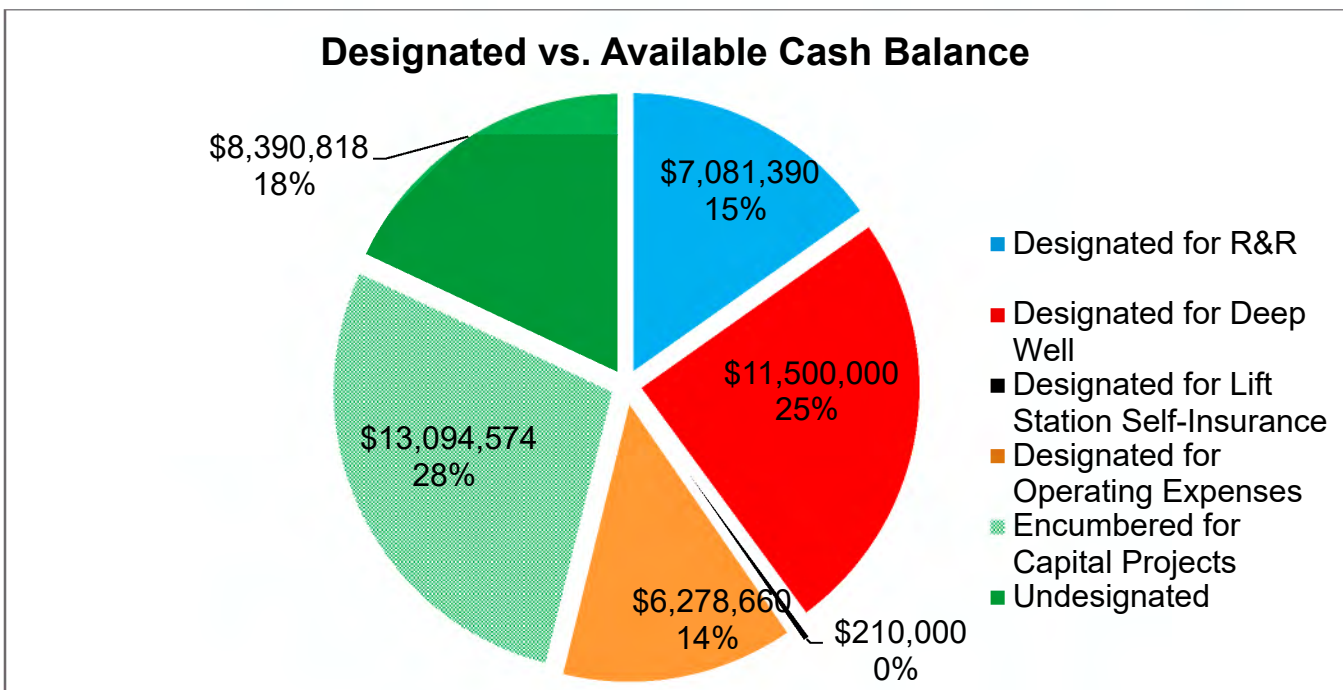
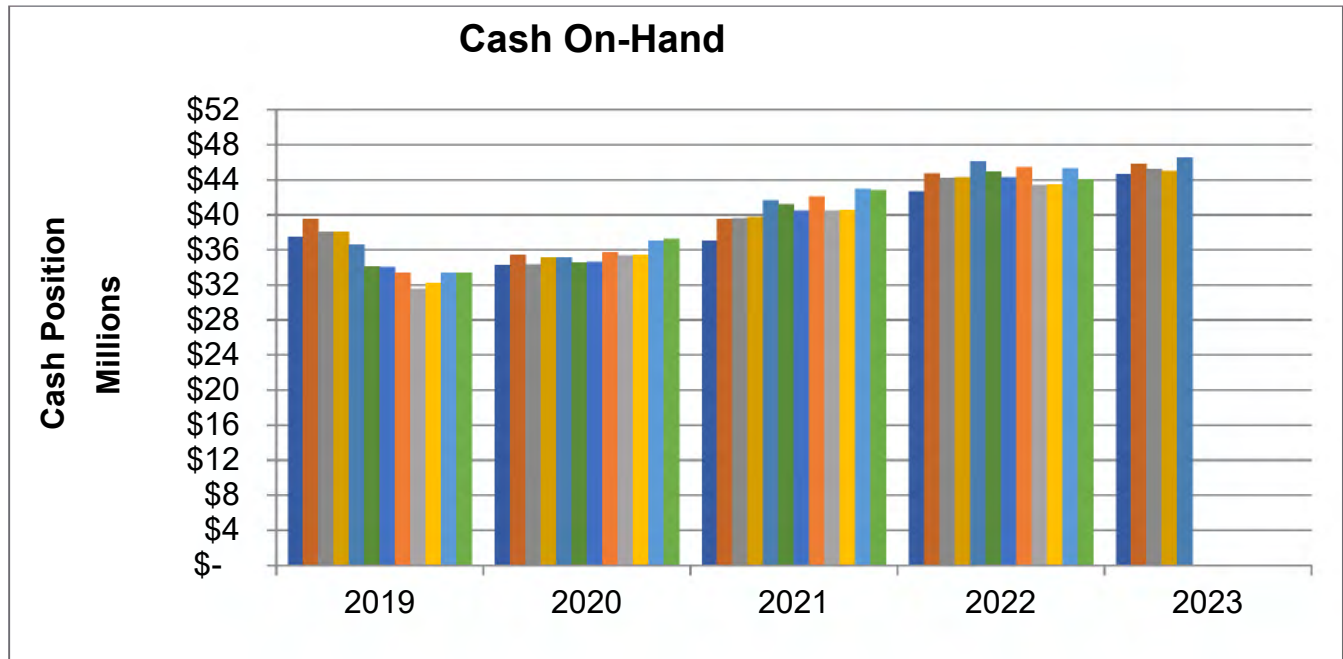
At this time staff believes it is best to invest in short term maturities as short-term rates are substantially higher than long term rates (e.g. the June 6<sup>th</sup>, 3-Month treasury rate of 5.18% vs. the 2-Year rate of 4.51%). This inverted yield curve is shown in the chart below. We will continue to monitor the yield curve and evaluate our options during this abnormal market.



\*Data as of May 31, 2023.



Cash position for May 2022 was \$46,069,668. Current Cash position is up by \$485,774.



#### Financial Information

- Legal Fees billed in May were \$5,000. The fiscal year-to-date total is \$53,215.
- Estoppel fees collected in May totaled \$8,010. The fiscal year-to-date total is \$49,770.
- There was no Septage billing for the month of May.
- Developer's Agreement – There were no new Developer Agreements.
- I.Q. Water Agreements – Abacoa Plaza is past due for March, April, and May.

## Summary of Budget vs. Actual

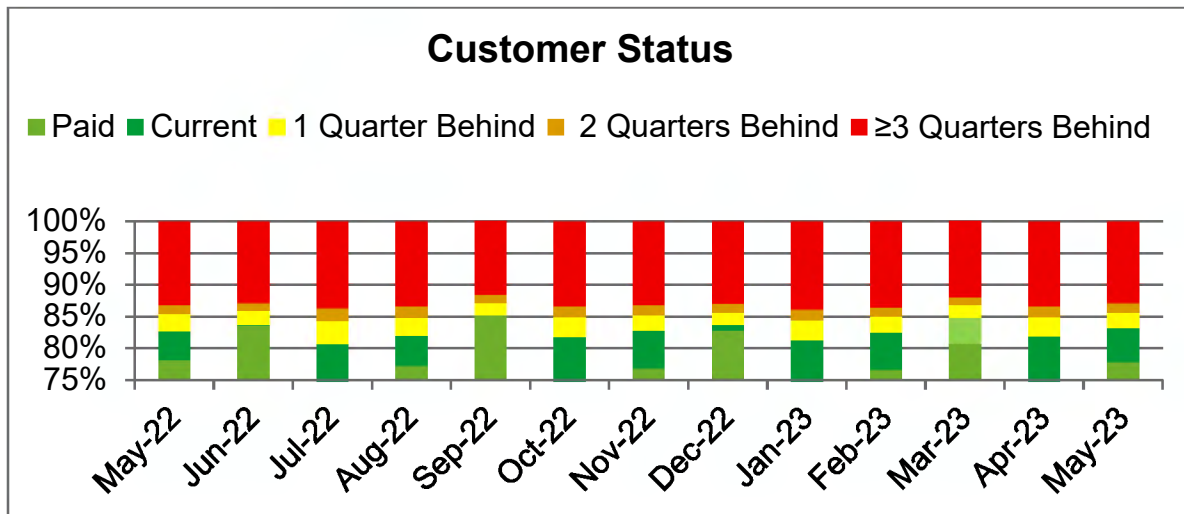
Budget Benchmark  
66.67%

	May-23 Actual	YTD Actual	FY 23 Budget	Favorable (Unfavorable)	Budget Expended	May-22 YTD
<b>Revenues</b>						
<b>Operating Revenues</b>						
Regional Sewer Service	\$ 1,538,003	\$ 11,866,552	\$17,501,000	\$ (5,634,448)	67.80%	\$11,383,379
Standby Sewer Service	8,341	71,073	108,000	(36,927)	65.81%	77,334
IQ Water Charges	200,896	1,568,523	2,352,000	(783,477)	66.69%	1,532,646
Admin. and Engineering Fees	3,142	23,227	63,000	(39,773)	36.87%	25,204
Other Revenue	64,812	344,239	516,265	(172,026)	66.68%	335,346
<b>Subtotal Operating Revenues</b>	<b>1,815,194</b>	<b>13,873,614</b>	<b>20,540,265</b>	<b>(6,666,651)</b>	<b>67.54%</b>	<b>13,353,909</b>
<b>Capital Revenues</b>						
Assessments	\$ 43,688	\$ 1,187,537	1,411,000	(223,463)	84.16%	1,244,429
Line Charges	18,623	143,975	465,000	(321,025)	30.96%	124,271
Plant Charges	143,973	426,357	686,000	(259,643)	62.15%	423,715
Capital Contributions		959,625	140,000	819,625	685.45%	637
<b>Subtotal Capital Revenues</b>	<b>206,284</b>	<b>2,717,494</b>	<b>2,702,000</b>	<b>15,494</b>	<b>100.57%</b>	<b>1,793,052</b>
<b>Other Revenues</b>						
Grants		5,126		5,126		351,500
Interest Income	135,803	1,468,278	560,700	907,578	261.87%	554,943
<b>Subtotal Other Revenues</b>	<b>135,803</b>	<b>1,473,404</b>	<b>560,700</b>	<b>912,704</b>	<b>262.78%</b>	<b>906,443</b>
<b>Total Revenues</b>	<b>\$ 2,157,281</b>	<b>\$ 18,064,512</b>	<b>\$ 23,802,965</b>	<b>\$ (5,738,453)</b>	<b>75.89%</b>	<b>\$ 16,053,404</b>
<b>Expenses</b>						
Salaries and Wages	\$ 530,488	\$ 4,316,078	\$7,381,800	\$ 3,065,722	58.47%	\$3,815,381
Payroll Taxes	38,742	309,651	530,500	220,849	58.37%	274,353
Retirement Contributions	80,219	618,357	1,107,000	488,643	55.86%	535,414
Employee Health Insurance	140,949	1,073,546	1,542,500	468,954	69.60%	941,454
Workers Compensation Insurance		54,492	77,800	23,308	70.04%	49,856
General Insurance		442,808	423,520	(19,288)	104.55%	384,163
Supplies and Expenses	79,519	756,609	1,105,382	348,773	68.45%	699,691
Utilities	139,686	1,095,749	1,555,116	459,367	70.46%	1,003,276
Chemicals	54,972	383,746	634,000	250,254	60.53%	247,155
Repairs and Maintenance	153,761	1,170,295	1,940,780	770,485	60.30%	1,219,185
Outside Services	147,323	1,363,572	2,312,578	949,006	58.96%	1,225,973
Contingency		225,000	225,000	225,000	0.00%	
<b>Subtotal Operating Expenses</b>	<b>1,365,659</b>	<b>11,584,903</b>	<b>18,835,976</b>	<b>7,251,073</b>	<b>61.50%</b>	<b>10,395,901</b>
<b>Capital</b>						
Capital Improvements	\$ 902,515	\$ 4,417,121	12,741,414	8,324,293	34.67%	1,876,475
<b>Subtotal Capital</b>	<b>902,515</b>	<b>4,417,121</b>	<b>12,741,414</b>	<b>8,324,293</b>	<b>34.67%</b>	<b>1,876,475</b>
<b>Total Expenses</b>	<b>\$ 2,268,174</b>	<b>\$ 16,002,024</b>	<b>\$ 31,577,390</b>	<b>\$ 15,575,366</b>	<b>50.68%</b>	<b>\$ 12,272,376</b>
<b>Excess Revenues</b>						
<b>Over (Under) Expenses</b>	<b>\$ (110,893)</b>	<b>\$ 2,062,488</b>	<b>\$ (7,774,425)</b>	<b>\$ 9,836,913</b>		<b>\$ 3,781,028</b>

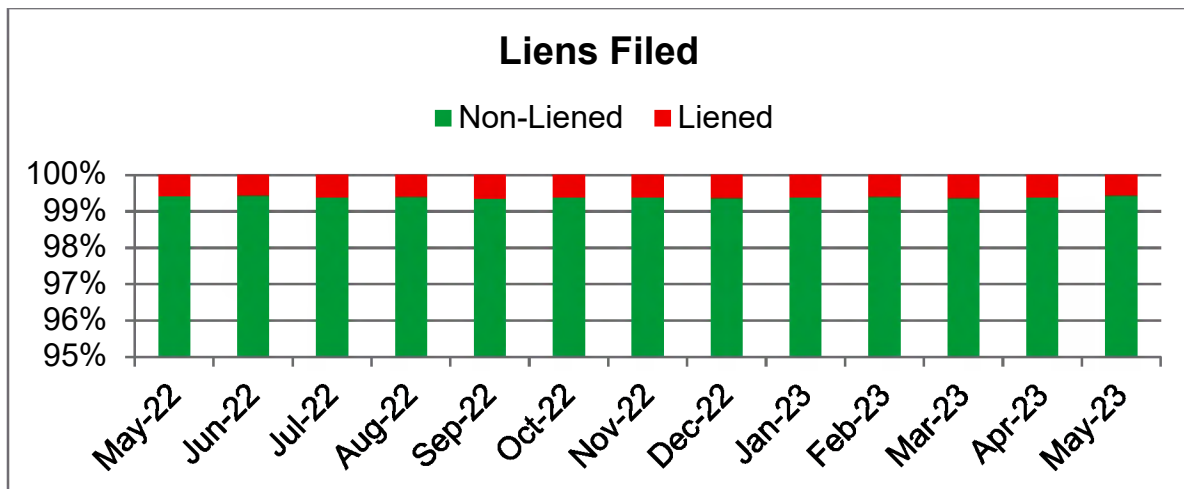
Total Capital expenses incurred and encumbered totalled \$17,511,695 or 137% of the capital budget. This includes funds encumbered in a prior fiscal year for projects that stretch across multiple fiscal years.

## Accounts Receivable

The District's second quarter billing was \$4,613,964, of this amount \$3,836,572 represents customer balances that are either paid or current. The chart below illustrates customers' receivable status as a percentage of quarterly sewer billing. Paid or current balances represent approximately 83.0% billing.



The District serves approximately 33,284 customers. Currently, the District has 187 liens filed which represent approximately 1.0% of our customers.



## Pending/Threatened Litigation

- Vehicle Accident – The District received a legal summons related to a vehicle accident involving a District vehicle. This claim is currently being handled through the District's General Liability Insurance provider, PRIA. PRIA has assigned the firm of Roberts, Reynolds, Bedard & Tuzzio, PLLC to represent the District. A settlement offer has been made on behalf of the District, this offer is available through June 12<sup>th</sup>.

## Retirement Plan Administrative Committee Update

On June 6, 2023, the Retirement Plan Administrative Committee met in the Governing Board room to discuss the First Quarter Retirement Plan results. As of March 31, 2023, the Plan had 87 participants with participant assets totalling \$11,567,255. The majority of the Plan's balance continues to be in the Self-directed Brokerage accounts (60.5%); however, that percentage continues to decline with new

contributions coming in and going to the funds in the Core Line-up. Three funds are on the watch list due to long-term performance being below the index and median of the peer group for the 3 and 5-year periods. The most notable of these are T. Rowe Price Growth Stock, which has been on the list since the fourth quarter of 2021. The other two funds, FMI Large Cap has been on the watch list since the second quarter of 2022 and Fidelity Emerging Markets Index was added to the watch list in the first quarter of 2023. The Administrative Committee discussed the performance of these funds and recognized that while these funds are flagged for review, we have deemed the funds to still meet the fundamental credentials of the investment line up.

The Administrative Committee was informed that Empower has rejected our request to add the VMRXX money market fund to the investment menu due to “competing” restrictions. Empower also confirmed the Vanguard money market fund cannot replace the current Dreyfus money market fund as the sweep investment within the self-directed brokerage (SDB) platform.

The Administrative Committee also discussed the newly issued House Bill 3, targeting what is known as “ESG.” This bill mandates all investment decisions to be made based on pecuniary factors. Furthermore, a new Florida Statute 112.662 will take effect, requiring the plan administrator, named fiduciary, board, or board of trustees to prudently determine risk or returns of an investment based on appropriate investment horizons consistent with the investment objectives and funding policy of the retirement system or plan, and **not** to include any consideration of social, political, or ideological interests. Additionally, the law adds a biennial reporting requirement for all governmental pension plans regarding the policies concerning decision-making and adherence to fiduciary standards. According to the Plan’s legal counsel, this law does not apply to the LRD Plan as provided for by the newly created Florida Statute, 112.662(5).





# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

D. Albrey Arrington, Ph.D. EXECUTIVE DIRECTOR

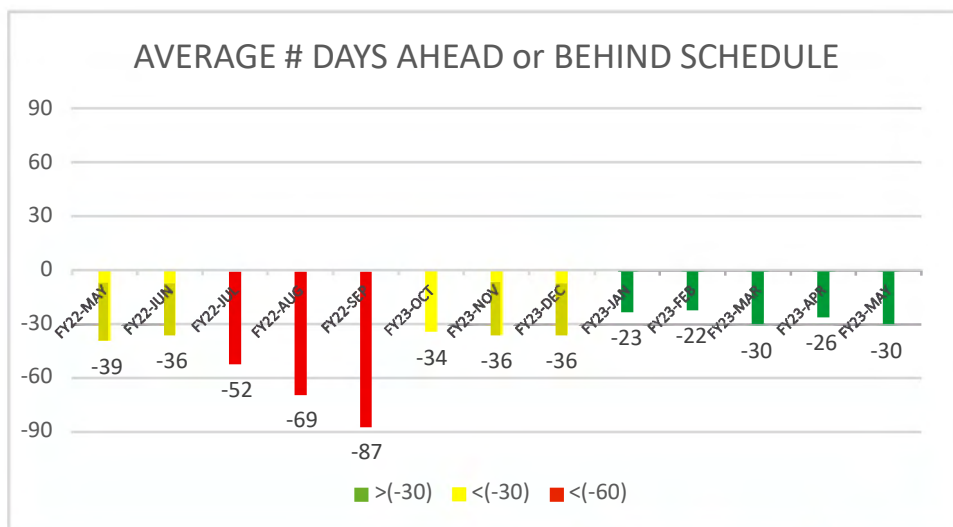
[loxahatcheeriver.org](http://loxahatcheeriver.org)

## MEMORANDUM

TO: D. Albrey Arrington, Ph.D., Executive Director  
FROM: Kris Dean, P.E., Deputy Executive Director  
Courtney Jones, P.E., Director of Engineering  
DATE: June 09, 2023  
SUBJECT: Capital Program and Engineering Services Report

### Capital Projects

#### *Capital Schedule (FLOAT = -30 Days)*



Notable delays to the Capital Program are listed below.

**N21008 – Jupiter Park Drive Site Planning** – Staff are working through site plan coordination with the consultant for current and future facilities.

**R19011 – Lift Station 082 Conversion** – Staff are working with the consultant and contractor to understand current project schedule with resolution of easement and utility conflicts.

Dr. Matt H. Rostock  
CHAIRMAN

Kevin L. Baker  
BOARD MEMBER

Gordon M. Boggie  
BOARD MEMBER

Stephen B. Rockoff  
BOARD MEMBER

Clinton R. Yerkes  
BOARD MEMBER

**R20023 – Rolling Hills Gravity Sewer System** – Final close out documents have been submitted and are under review. Staff anticipate closing the construction and engineering contracts and providing a preliminary assessment in June 2023.

**R21002 – Lift Station 018 Main Lining** – The contractor is working through the punchlist. The contractor provided a revised schedule showing punchlist completion in June 2023.

**R20047 – Lift Station 041 Main Lining** – The contractor is working through the punchlist. The contractor provided a revised schedule showing punchlist completion in June 2023.

**N23004 – Lift Station 050 Emergency Generator** – Staff are coordinating with the consultant to resolve a schedule discrepancy.

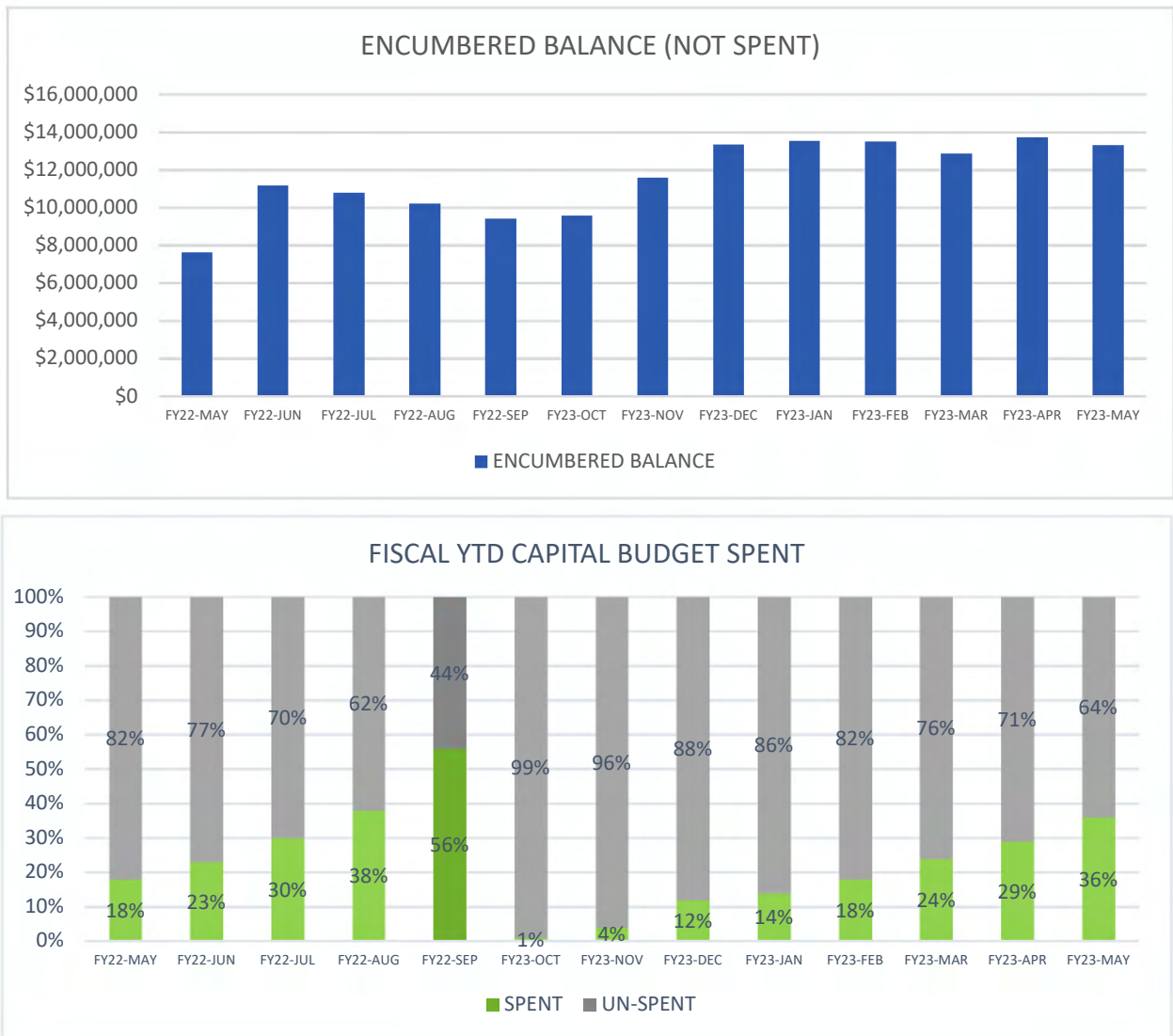
**N20019 – Permanent Generator at Headworks** – The installation is complete. Staff and the contractor are coordinating start-up.

The overall negative (-) float is attributed to the following causes:

Construction Delays:	72%
Supply Chain Issues:	9%
Design/Permit/Bid:	6%
Late Start:	0%
Planning Contracts:	11%

Construction delays have the largest impact to the negative float (72% from 9 projects total). Staff are working with consultants and contractors to implement recovery schedules and understand impacts to the FY24 budget for uncompleted work.

## Capital Budget



## Project Updates

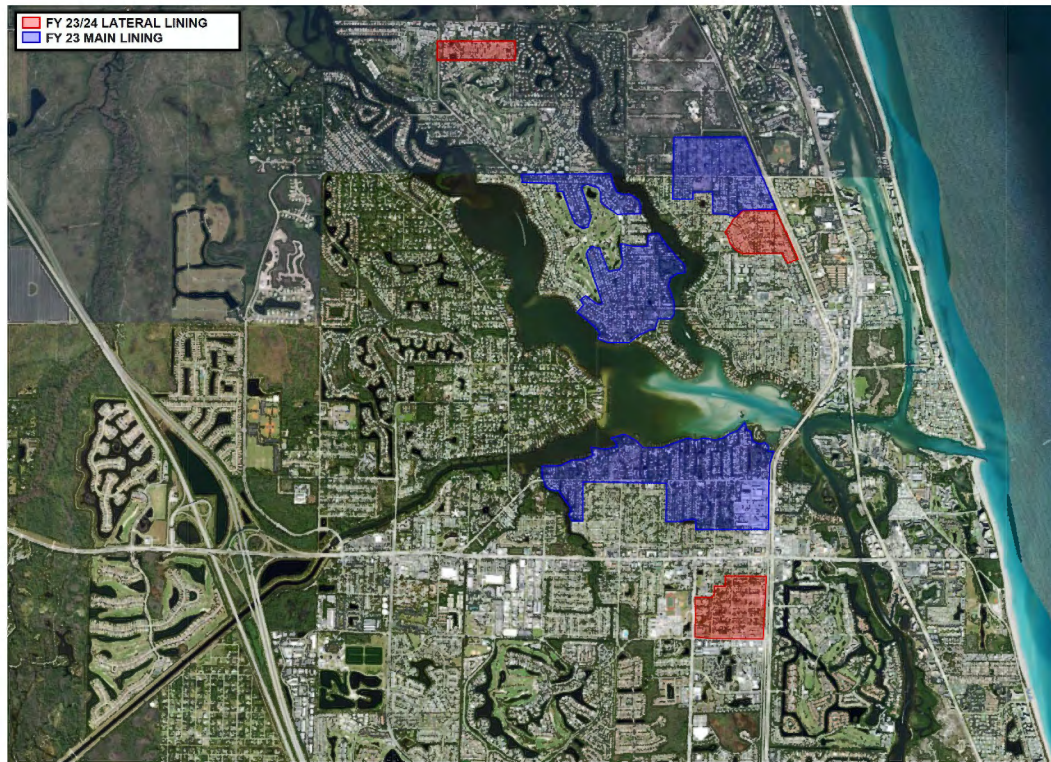
**Science Center and Jupiter Inlet Lighthouse Outstanding Natural Area (aka: BLM House Renovations):** Staff are evaluating alternate renovation approaches.

**2500 Jupiter Park Drive Site Planning:** Since the presentation to the Board in May 2022, staff and the consultant have continued to make progress on the massing study, architectural programming, potential treatment facility footprint and security review. Once these components are complete staff will provide revised site plans for Board discussion and consideration. See Chen-Moore's engineering report for more details.

**20 Acres/9278 Indiantown Road:** Last month the Board approved the engineering contract for design of lake remediation and staff and the consultant attended the project kick-off meeting. Design bid is scheduled to complete with award in late 2024.

### In-house Projects

#### *Gravity System Rehabilitation – Cleaning, TV Inspection and Lining:*



Main lining work is complete in LS018, LS041, and LS054 systems. Work is substantially complete with punchlist items remaining to reach final completion, now anticipated in June 2023.

The Board awarded lateral lining contracts for LS018, LS041 and LS054 in November 2022. A preconstruction meeting was held on January 11, 2023. The Contractor has completed cleaning and CCTV work in LS041 and LS054 systems. The Contractor will start the lateral lining in LS041 system in June 2023.

The Board also awarded main lining contracts for LS050 in November 2022 and LS070 and LS071 in December 2022. Work commenced in January 2023. Main lining work in LS050 is completed, and the Contractor is currently working on punchlist / closeout items with anticipated final completion in July 2023. Cleaning and CCTV work ahead of the main lining work in LS070 and LS071 began in May 2023. The Village of Tequesta's Council approved extended working hours as requested by the Contractor for the LS070 and LS071 project due to the longer curing timeframe, equipment and MOT set-up required for the larger diameter mains included in this project. Main lining in LS070 and LS071 to begin in June 2023.

In April 2023, the Board awarded a main lining contract for LS011, LS012, LS014, LS027 and LS190 collection systems. Main lining work included in this project anticipated to begin following completion of the LS070 and LS071 main lining work.

***Lift Station Rehabilitations General Construction Services:***

Lift Station	Inspection	Design	Procurement	Construction
064	COMPLETE	COMPLETE	COMPLETE	IN-PROCESS
095	COMPLETE	IN-PROCESS	-----	-----
131	COMPLETE	COMPLETE	COMPLETE	IN-PROCESS
174	COMPLETE	COMPLETE	COMPLETE	IN-PROCESS
210	COMPLETE	COMPLETE	COMPLETE	IN-PROCESS
211	COMPLETE	COMPLETE	COMPLETE	IN-PROCESS
233	COMPLETE	COMPLETE	COMPLETE	IN-PROCESS
242	COMPLETE	COMPLETE	IN-PROCESS	-----

Pre-construction meeting was held on March 15, 2023 for LS064, LS131, LS210, LS211, and LS233 Rehabilitations. Material submittals and permitting is complete. Contractor was issued NTP for May 15, 2023 and started work on LS064. Anticipated substantial completion date of August 25, 2023.

LS174 rehabilitation is anticipated to be completed separately by in-house construction staff. Permitting for this project is currently in-progress.

***Manhole Rehabilitation:***

Staff utilized a piggyback contract mechanism to contract for select manhole rehabilitation work that has been identified per field inspections.

Pre-construction meeting was held on March 15, 2023 for five (5) manhole rehabilitations (LS087-MH20, LS087-MH21, LS065-MH50, LS062-MH45, LS154-MH01). Material submittals, permitting, and manhole rehabilitation is complete. Project is in punchlist / closeout stage.

Pre-construction meeting for two (2) manhole rehabilitations (LS043-MH15 and LS090-MH05) to be held on June 14, 2023.



### ***Collections System Rehabilitation:***

Staff utilized general services contracts (18-005-LSGENCONSTR, 20-007-WWRECGENCONSTR, 22-005-00115 GENERAL SERVICES – ELECTRICIAN SERVICES) to contract for the following collection system rehabilitation projects:

- Abacoa Town Center Phase 2 – Maxicom Site 21 (ABS21) – replace breaker panel
- Abacoa POA – Maxicom Site 6G (ABS06) – replace breaker panel
- Abacoa Vintage – Maxicom Site 27 (ABS27) – replace breaker panel
- Lift Station 069 – replace meter can
- Lift Station 091 – replace meter can
- LS108 – install concrete slab and conduit from valve vault to RTU panel for permanent pressure recorder
- 5th Street and S Orange Point Repair
- Town Hall Point Repair

Pre-construction meeting for this work to be held on June 14, 2023.

### ***Neighborhood Sewering/Remnant Properties:***

*5331 Center St.:* Design and permitting are complete for 5331 Center Street. Pricing and material submittals have been coordinated with the Contractor and approved. Construction is currently in-progress. This project includes a single service to be installed in easements coordinated by the property owner.

*18041 69<sup>th</sup> Terrace:* The property owner at 18041 69<sup>th</sup> Terrace provided easements and requested staff install sewers to a proposed two-unit residential project. Design and permitting are complete. Staff are coordinating with contractor for scheduling. This project includes a single service to be installed in easements.

*109-111 Old Jupiter Beach Road:* Design is complete for 109-111 Old Jupiter Beach Road. The project includes two services and low-pressure force main to be installed in existing roadway ingress/egress easement. Homeowners were provided information on 9/22/21 and 7/13/22. Homeowner at 109 Old Jupiter Beach Road has entered into an agreement and paid connection charges. Project is moving forward into permitting.

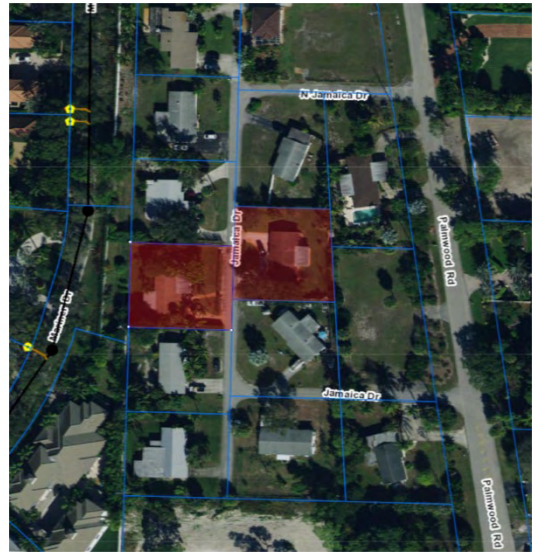
*Island Way LPSS:* Design is complete and project is in permitting. The project includes two services and low-pressure force main to be installed in the right of way.

*Other:* Staff are working with IT and customer service to confirm remnant sewerage and update priority listing based on property access rights.

### ***Statutory Way of Necessity:***

*Jamaica Drive Low Pressure Sewer:* Over the last two years staff have been coordinating with two property owners for utility easements to install sewers to their properties on Jamaica Drive without success. At this time both property owners have determined Statutory Way of Necessity is the preferred option and entered into letter agreements for staff to proceed on their behalf.

Agreements are in place. Pricing and material submittals have been coordinated with the Contractor and approved. Construction is currently in-progress.



### **COLLECTIONS AND REUSE**

During May 2023, generator and field training for emergency response was completed. The training was a huge success with very positive feedback from trainees.

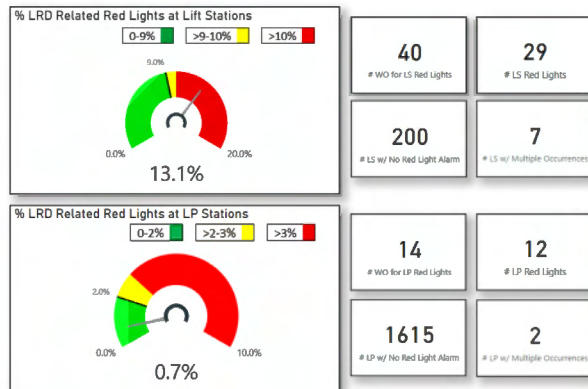
This year's training resulted in 16 persons that can lead the lift station response within a zone (total of 13 zones) with 20 trained assistants and 6 additional quality helpers in the conventional collection system, and 47 personnel trained to assist with the low-pressure system response.

This is the largest number of trained personnel in these key areas from previous years and a direct result of collaborative efforts by Collections, Reuse, Engineering, Operations, and Information Services.

## Lift Station Red Lights:

This month the system experienced 34 total red lights. 16 lift station red lights (with 3 stations experiencing multiple red light events) and 18 low pressure red lights (with 2 stations experiencing multiple red light events).

Red Light Emergency Call Work Orders Dashboard  
May 2023



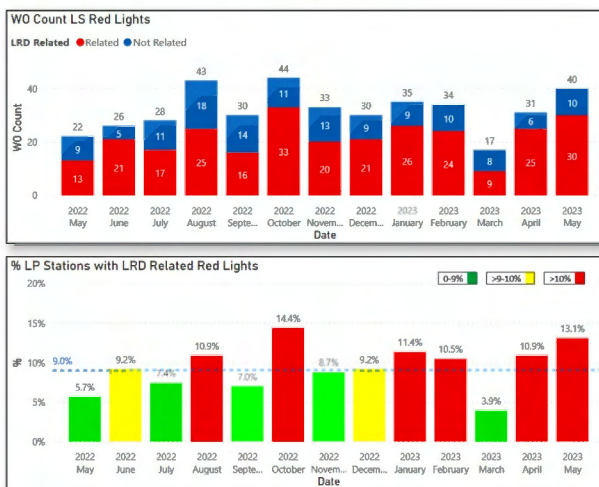
Red Light Emergency Call Work Orders Dashboard  
March 2023 through May 2023



Work Order counts due to red lights exclude red lights due to FP&L power failure since staff have no mechanism to impact FP&L performance during inclement weather or other power outages. Staff continue to include FP&L power outages in the 3-month rolling average for repeat stations and work order counts to facilitate FPL coordination on problem areas and potential use of portable standby power to ensure continuity of service.

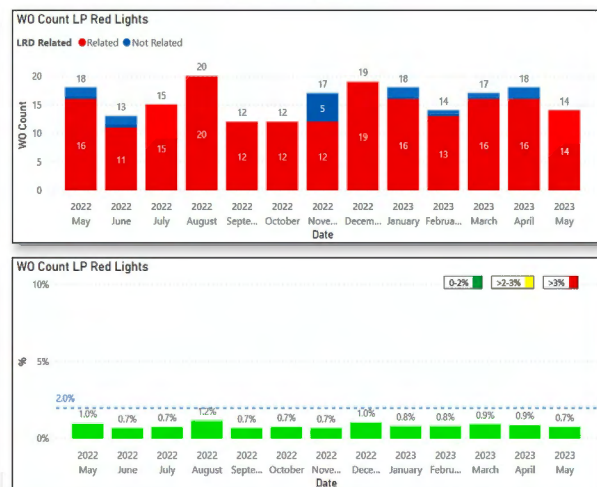
Emergency Call Work Order Lift Station Trend

5/1/2022 through 5/31/2023



Emergency Call Work Order Low Pressure Trend

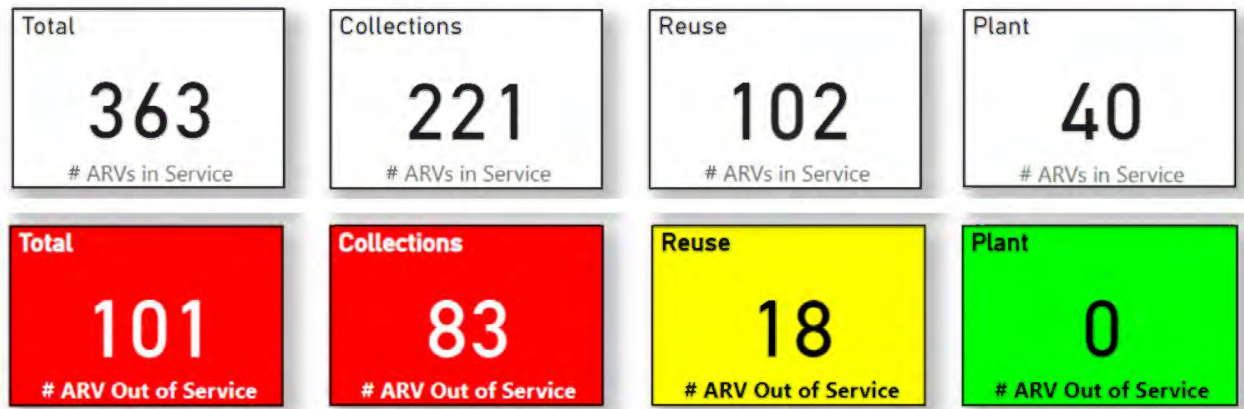
5/1/2022 through 5/31/2023





## Air Release Valves (ARV):

### ARV Status Dashboard



## Wet Well Cleaning:

### KPI - Wet Well Cleaning Schedule

May 2023

6 # LS WW PM Monthly	0 # Wells	2 # Wells	4 # Wells
6 # PMs Completed			
6 # LS WW PM Bi-Monthly	0 # Wells	2 # Wells	4 # Wells
6 # PMs Completed			
11 # LS WW PM Quarterly	0 # Wells	3 # Wells	8 # Wells
11 # PMs Completed			
4 # LS WW PM Semi-Annually	0 # Wells	2 # Wells	0 # Wells
2 # PMs Completed			
0 # LS WW PM Annually	0 # Wells	0 # Wells	0 # Wells
0 # PMs Completed			
25 # PMs Completed	0 # Wells	9 # Wells	16 # Wells

#### Score Calculation

Grease, Sand/Grit, and Rags scoring aggregate where  
 Light = 1, Medium = 3,  
 Heavy = 5

Green: 7-11

Red > 11

Yellow < 7

#### Wet Well Cleaning Schedule Legend

	Cleaning Not Often Enough
	Cleaning Ideal Schedule
	Cleaning Too Often

### UNAUTHORIZED DISCHARGES (fka SANITARY SEWER OVERFLOWS)

There were 3 unauthorized discharges in the collection-transmission-distribution system this month.

On May 1, 2023, the District had an unauthorized discharge of 80 gallons of sewage at two manholes (LS058-MH007 & LS058-MH009) located on Franklin Road, Tequesta, FL. The unauthorized discharge was caused by failed level elements due to damage by pests. The unauthorized discharge was stopped by District personnel operating the lift station (LS058) in manual operation until repairs could be made. Of the unauthorized discharge, 50 gallons from LS058-MH007 traveled westwardly 21 feet and was contained in the center of Franklin Road and 30 gallons from LS058-MH009 traveled north 8 feet and was contained to the north edge of the roadway. Some of the unauthorized discharge was absorbed into the soil in the immediate area north of LS058MH-009. The affected areas were disinfected with lime and cleaned with approximately 200 gallons of potable water of which 200 gallons was recovered with a vacuum truck. No known storm drains or bodies of water were affected.

On May 11, 2023, the District had an unauthorized discharge of 10 gallons of sewage at a private residence low pressure system (LP0943-WW) located on Pennock Point Road, Jupiter, FL. The unauthorized discharge was caused by a failed PVC fitting. The unauthorized discharge was stopped by disabling and isolating the station until repairs could be made. The unauthorized discharge was absorbed into the soil. The affected area was cleaned with potable water and disinfected with lime. No known storm drains or bodies of water were affected.

On May 14, 2023, the District had an unauthorized discharge of 2 gallons of sewage from a private residence low-pressure system (LP0421-WW) located on Loxahatchee River Road, Jupiter, FL. The unauthorized discharge was caused by a wet well overflow due to power loss. The unauthorized discharge was stopped by discontinuing use of water until power was restored. The unauthorized discharge was absorbed into the soil in the immediate area around the low-pressure system wet well. The affected area was disinfected with lime. No known storm drains or bodies of water were affected.



# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

D. Albrey Arrington, Ph.D. EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

## MEMORANDUM

TO: Albrey Arrington, Ph.D., Executive Director

FROM: Jason A. Pugsley, P.E., Operations – Plant Manager

DATE: June 9, 2023

SUBJECT: May 2023 Operations Department Monthly Report

### Treatment Plant Division / Maintenance Department

Overall, the month of May was productive with all monthly reports prepared and submitted on time. There were no permit exceedances this month. The treatment plant generally operated efficiently and met all treatment objectives. During the month, influent flows to the plant were slightly less than the flows during the previous month. The decreasing trend in influent flows to the plant are consistent with historical values when transitioning from spring to summer months and is generally attributable to the departure of seasonal residents within our service area. The plant did not experience any unauthorized discharges during the month of May.



Dr. Matt H. Rostock  
CHAIRMAN

Kevin L. Baker  
BOARD MEMBER

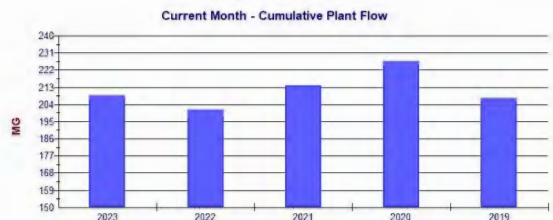
Gordon M. Boggie  
BOARD MEMBER

Stephen B. Rockoff  
BOARD MEMBER

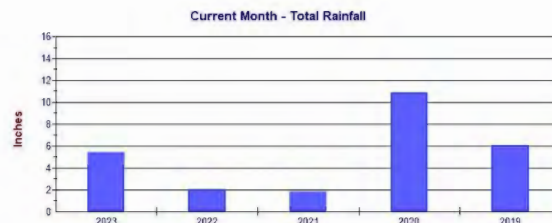
Clinton R. Yerkes  
BOARD MEMBER

Water Reclamation – Environmental Education – River Restoration

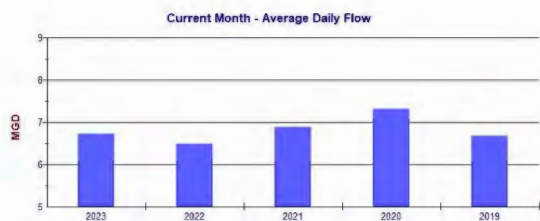
Graphical summaries of the plant flows and rainfall during the month of May, including comparisons with plant flows during the previous month (i.e., April 2023), are presented below.



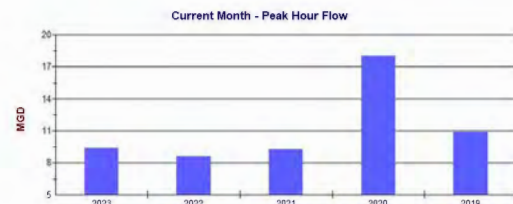
The Cumulative Influent Flow to the plant for the month of May was 208.98 million gallons. This is less than the April flow of 214.01 million gallons.



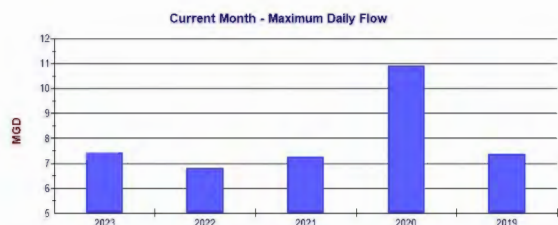
5.45 inches of total rainfall was recorded at the plant site during the month of May. This is slightly less than the April rainfall recorded 7.25 inches.



The Average Daily Flow (ADF) for the month of May was recorded at 6.74 MGD compared to 7.13 MGD during the month of April and 6.50 MGD during May 2022.



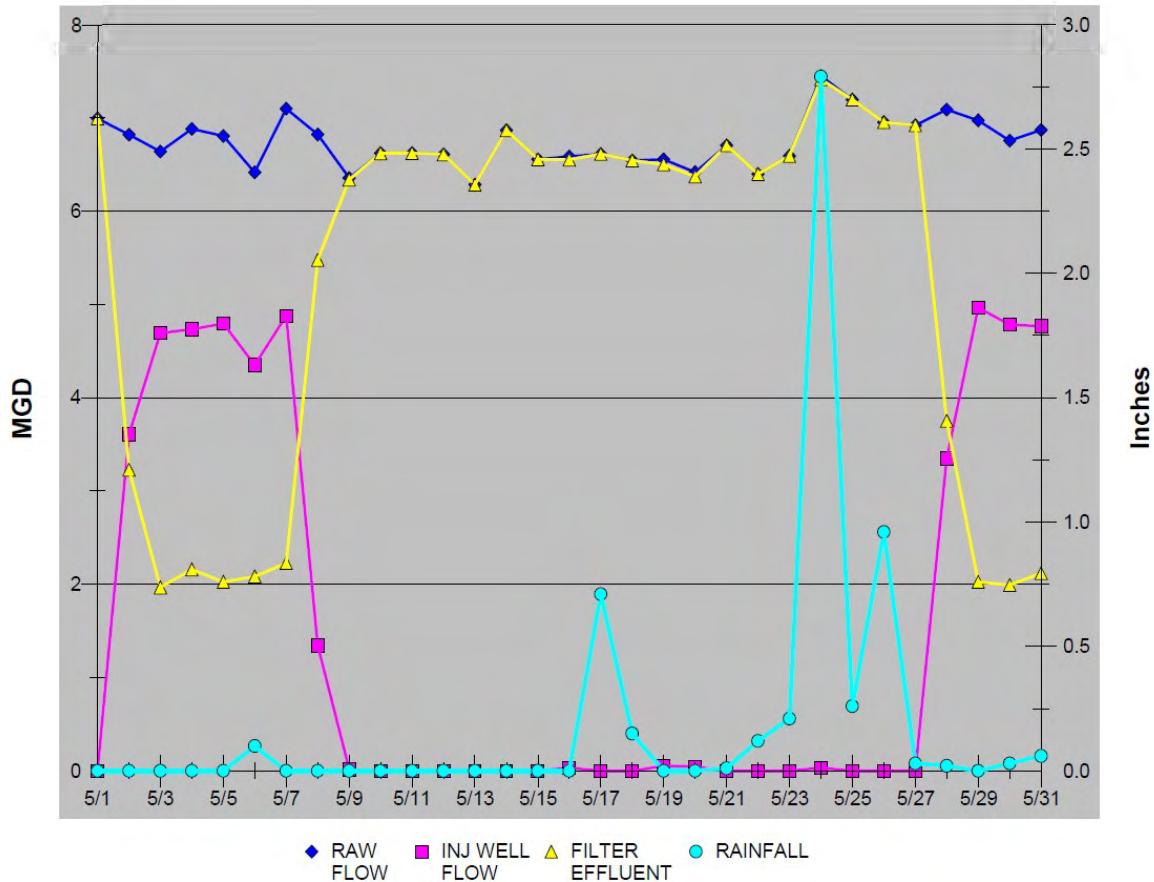
The Peak Hour Flow (PHF) for May was 6,514 GPM which equates to an equivalent daily rate of 9.38 MGD. This is slightly less than the PHF for April of 6,958 GPM (10.02 MGD).



The Maximum Daily Flow (MDF) in May was 7.45 MGD. This is slightly less than the MDF for April of 7.58 MGD.



For the month of May, 77.85% or 162.70 MG of the cumulative influent flow to the plant was sent to the IQ storage system where it was distributed, as needed, to the various golf courses and the Abacoa development sites. A total of 46.44 MG of blended effluent was diverted to the Deep Injection Well. The plant delivered a total of approximately 204.94 million gallons of IQ water to the reuse customers during the month of May.



DR-Plant Flows and Rain Fall

Year to date (i.e., Calendar Year 2023), approximately 88.01% of all influent flow to the plant was treated and available for reuse as IQ water. The total volume of IQ water distributed to reuse customers for the year stands at 1,092.31 million gallons.

**All monthly reporting was submitted on time.**

## **Treatment Plant:**

Operations Staff continued to perform routine monitoring, sampling and general maintenance of equipment and structures. Staff also worked and/or provided operational assistance during the execution of various special and/or capital improvement projects. A few of the projects are discussed below.

Operations Staff worked closely with the Maintenance Team to install new aeration systems at Plant Lift Station No's. 1, 2, 3 and 4 as well as the vacuum truck dump pit lift station. Staff previously worked with the manufacturer's representative to trial the "Wet Well Wizard" aeration systems at Plant Lift Station No. 3 (PLS-3) at headworks and the vacuum truck dump pit lift station. These lift stations have historically experienced high levels of grease accumulation as well as elevated concentrations of hydrogen sulfide ( $H_2S$ ) vapors. The presence of high concentrations of  $H_2S$  vapors is problematic because the sulfide gas is biochemically oxidized in the presence of moisture to form sulfuric acid which is extremely corrosive and causes premature failure of system components. Additionally, humans have a low odor detection threshold for  $H_2S$  gas.  $H_2S$  has a "rotten egg smell" and is responsible for most odor complaints at wastewater treatment facilities. During the trial, the data indicated that the Wet Well Wizard was effective at reducing the average  $H_2S$  concentrations at PLS-3 by approximately 30%. After reviewing the trial data, Staff recommended the permanent installation of the aeration systems at all plant lift stations and the vacuum truck dump pad lift station as part of a capital improvement project in Fiscal Year 2023.

Since installing the aerations systems, there has been a noticeable reduction in odors from each of the lift stations and the frequency of wet well cleanings at PLS-3 to remove the floating layer of fats, oils and grease (FOG) has been reduced from weekly to the standard monthly preventative maintenance events.



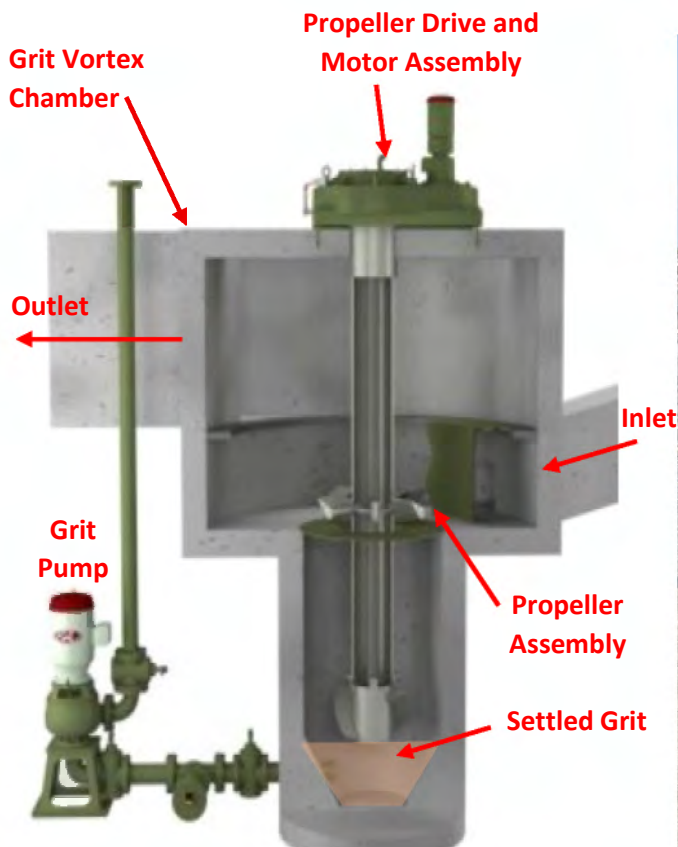
**Wet Well Wizard Blower Enclosure**



**Wet Well Wizard In Action  
(15-Minutes After Install)**



During the month, Operations Staff worked with the Maintenance Team and the manufacturer's representative of the vortex grit removal unit at the headworks structure to replace the propeller drive gearbox and motor assembly. The removal of grit and sand from the plant influent is essential to the preservation and longevity of downstream pumps and equipment. The accumulation of grit and sand in downstream tankage can also result in the loss of treatment capacity within plant process tankage. Further, accumulation of grit and sand in unit treatment processes which utilize diffused aeration systems can cause clogging/plugging of diffusers resulting in increased maintenance and repairs as well as significant detrimental impacts to the effluent treatment quality. The vortex grit removal unit is designed to induce a constant hydraulic velocity gradient across the unit to promote the settlement of grit to the base of the unit where it is removed via dedicated grit pumps and conveyed to the grit classifier unit for dewatering. To further enhance and maintain a constant velocity across the unit, the unit is equipped with a propeller which is shaft driven via a gear box and motor assembly mounted to the top of the headworks structure. Replacement of the existing drive and motor assembly required the grit removal unit to be bypassed, emptied, and cleaned as well as the complete removal of the propeller assembly to facilitate proper coupling alignment with the new drive and motor assembly.



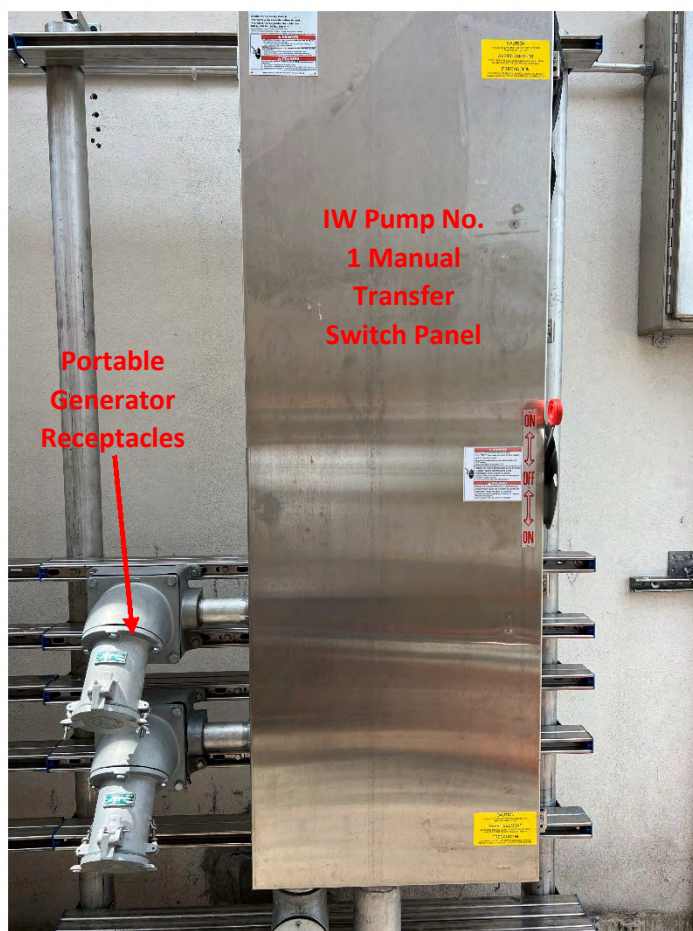
**Vortex Grit Removal Unit Cross Section**



**New Propeller Drive and Motor**



Lastly, the Operations Team worked with the Contractor installing critical improvements to the injection well pump station electrical distribution systems. The project entails the installation of dedicated manual transfer switch (MTS) units for the four (4) injection well pumping units. The installation of dedicated MTS units will provide a means to energize and run each of the pumps independently using portable generator units in the event of the complete loss of primary (i.e., FPL) power and the main generators at the plant. During the month, Staff coordinated with the Contractor to perform a series of electrical shutdowns at Electrical Room No. 3 (ER-3). The shutdowns were required to facilitate installation of specific electrical upgrades at a zero-energy state. As part of the shutdowns, a temporary generator was utilized by Staff to power critical control systems which can remain energized without impacting the ability to completely deenergize the areas where work needed to be performed. Upon deenergizing the main distribution panel in ER-3, the Contractor and District Staff performed lock out/tag out (LO/TO) of the affected electrical systems for the duration of the work. The electrical work performed this month culminated with the completion of the improvements associated with Injection Well Pump No. 1 (IW Pump No. 1). IW Pump No. 1 was placed into service and tested in the presence of District Staff and the project design electrical engineer. Upon completion of the testing, IW Pump No. 1 was placed back into the service rotation and IW Pump No. 2 was deenergized and LO/TO of the associated electrical systems performed. The Contractor is currently in the process of completing the work associated with IW Pump No. 2. Staff is pleased to see this project nearing the end, especially in light of the impending storm season.



**IW Pump No. 1 – Manual Transfer Switch Panel**

### **Maintenance Department:**

The Maintenance Department continued to efficiently perform planned maintenance (PM) tasks over the last monthly period. In addition to the completion of standard PM tasks, the Maintenance Department addressed non-routine maintenance items as well as “special projects.” A few examples of these types of projects are presented below.

Maintenance Team members completed the replacement of a significant section of the above grade diesel fuel, supply and return, piping between Main Generator No. 1 and its 6,000-gallon diesel fuel bulk storage tank. The existing piping was original to the facility and began to have specific areas with moderate to advanced corrosion. To complete the repairs, the Maintenance Team coordinated with plant Operators to isolate Main Fuel Tank No. 1 and the associated piping from Main Generator No. 1. Staff developed a plan which would allow the use of the generator in the event of a primary power loss to the plant. The plan included periodic refuelling of the generator day tank in the event that the use of the generator was required.



**Main Fuel Tank No. 1 – Fuel Piping Replacement**



During the month of April, Maintenance Team members also completed the final task associated with the rehabilitation of Secondary Clarifier No. 3. The remaining task, which was delayed due to issues with sourcing the neoprene material and the associated lead times, included the replacement of the flexible wiper blades on the two (2) scum skimmer arms. The skimmer arms revolve along with the clarifier drive mechanism and divert floating scum and FOG from the top of the liquid in the clarifier unit to the plant drain system where it is diverted back to the plant headworks and ultimately back through the plant treatment process.

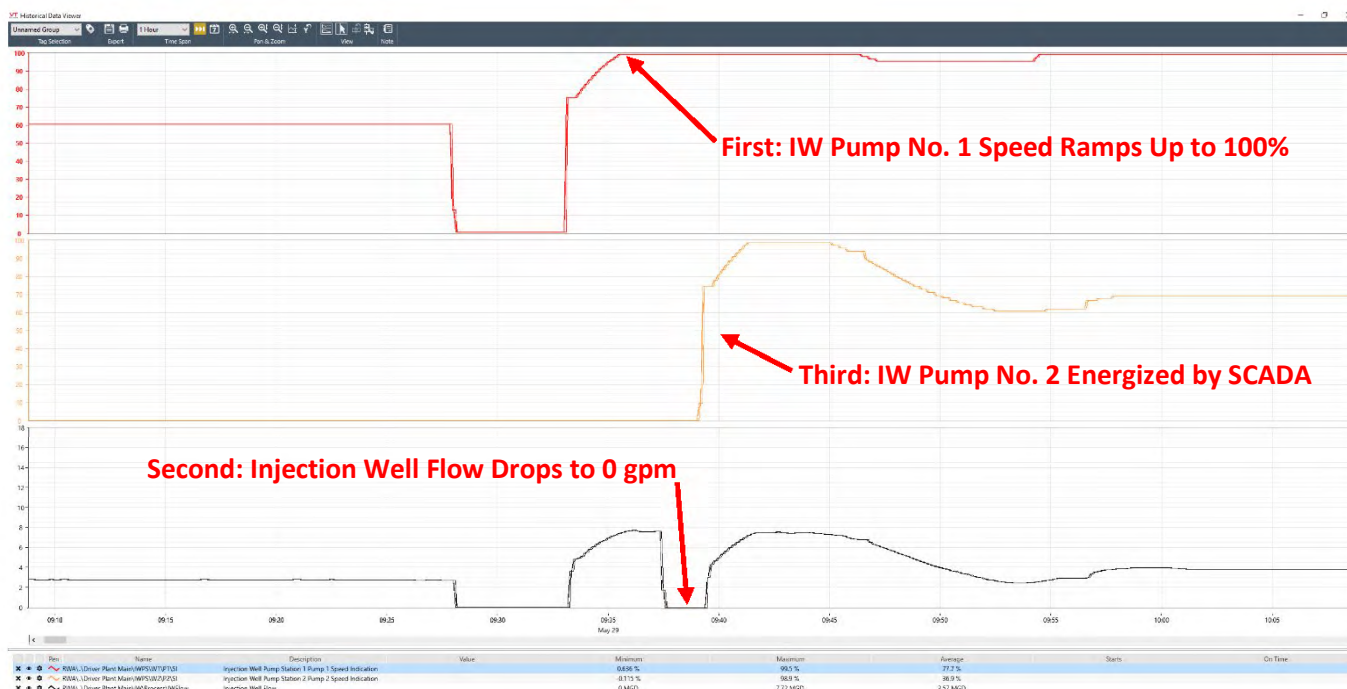


Clarifier No. 3 – Out of Service



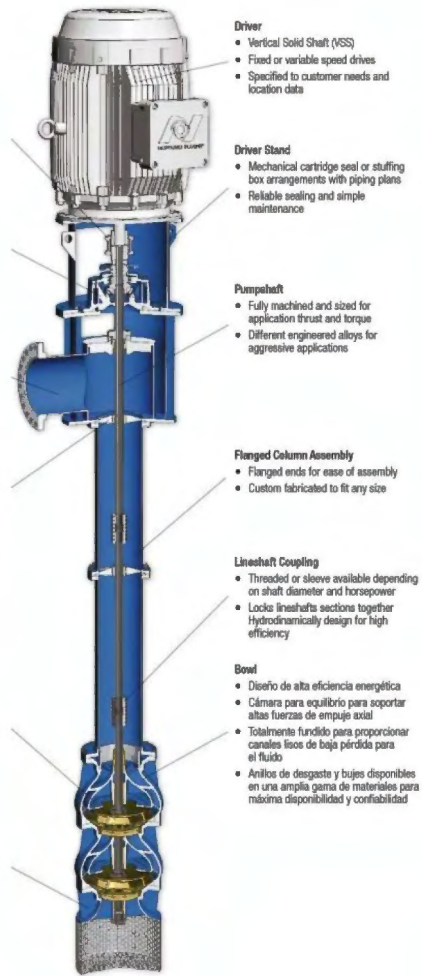
In Service Clarifier Unit

Lastly, Maintenance Team members replaced Injection Well Pump No. 1 with the spare injection well pump maintained onsite due to the failure of the pumping unit. The failure was discovered by plant Operators when the speed of the pump increased to 100% and the injection well flow meter temporarily indicated that there was no flow being diverted to the injection well. Under this scenario, the SCADA system automatically called for a second injection well pump to start to ensure that flow to the injection well resumed, preventing any negative upstream effects on the plant process which could include a structure overflow resulting in an unauthorized discharge.



### Injection Well Pump – SCADA Trending

The injection well pumps are vertical turbine type pumps which consist of a series of pump bowls which are rotated via a vertical lineshaft which extends from the pump bowls to a driver stand (typically termed “discharge head”) where it is ultimately coupled to a vertically oriented electric motor. Prior to replacing IW Pump No. 1, Maintenance Team members assessed the pump and motor to identify the source of the issue. Based on this assessment, it was determined that the issue was due to a mechanical failure of the pump shaft and/or coupling and not with the electric motor and/or quality of power being delivered to the motor. As a result, it was determined that the entire pumping unit (i.e., not just the motor) required replacement. The Maintenance Team worked quickly and efficiently to replace the failed pump and overcame a few challenges along the way. In the end, the failure was discovered, and the pump replaced within a 24-hour period. The failed pump has been sent to an authorized service center for further evaluation and root cause failure analysis.



**Vertical Turbine Pump Cutaway**



**Maintenance Team Replacing IW Pump No. 1**





# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

D. Albrey Arrington, Ph.D. EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

## MEMORANDUM

TO: Albrey Arrington, Ph.D., Executive Director  
FROM: Bud Howard, Director of Information Services  
DATE: June 8, 2023  
SUBJECT: Information Services Monthly Governing Board Update for May 2023

### WildPine Ecological Laboratory

#### Riverkeeper Project

In May, the lab staff and our partners collected 163 water quality samples from 30 monitoring stations throughout the watershed. A total of 73 fecal indicator bacteria samples were analysed in support of additional testing for the weekly bacteria monitoring program and the additional monthly testing in Jones and Sims Creeks.

The overall water quality score for May 2023 was “Fair” with 79% of all samples meeting the EPA/DEP water quality criteria. This was a slight increase from last month’s score of 76% but not as good as last year’s score of 84% for May (see score card below). The score this month was driven by lower chlorophyll scores than last year, and corresponded with historically average rainfall.

For the core parameters, *Total Nitrogen* scored “Good” during May with 87% of sites meeting the water quality criteria. This was down from last month’s score of 100% and last year’s score of 95%. *Total Phosphorus* squeaked in at “Good” with 80% of sites meeting the criteria. This was identical to last month’s score and slightly lower than last year’s May score of 85%. *Chlorophyll* scores went from “Poor” to “Fair”, with 60% of sites meeting the water quality criteria, better than last month’s 43%, but worse than last year’s score of 80%. For the combined *Fecal Indicator Bacteria* (fecal coliforms in all waters, enterococci in marine and brackish waters and *E. coli* in fresh waters), May scored “Good” at 84%, up from last month’s score of 79%, and similar to last year’s score of 81%.

Dr. Matt H. Rostock  
CHAIRMAN

Kevin L. Baker  
BOARD MEMBER

Gordon M. Boggie  
BOARD MEMBER

Stephen B. Rockoff  
BOARD MEMBER

Clinton R. Yerkes  
BOARD MEMBER

5/1/2022

5/24/2023

# Loxahatchee River District Water Quality Scorecard

Results scored to FDEP/EPA Water Quality Criteria

Green - Good: 80% - 100%  
Yellow - Fair: 60% - 79.9%  
Red - Poor: < 60%

## Monthly Water Quality Score

May  
2023

79%  
Overall

163  
Total Samples

TN: Total Nitrogen, TP: Total Phosphorus, CLA: Chlorophyll a, BAC: Enterococci and E. coli bacteria

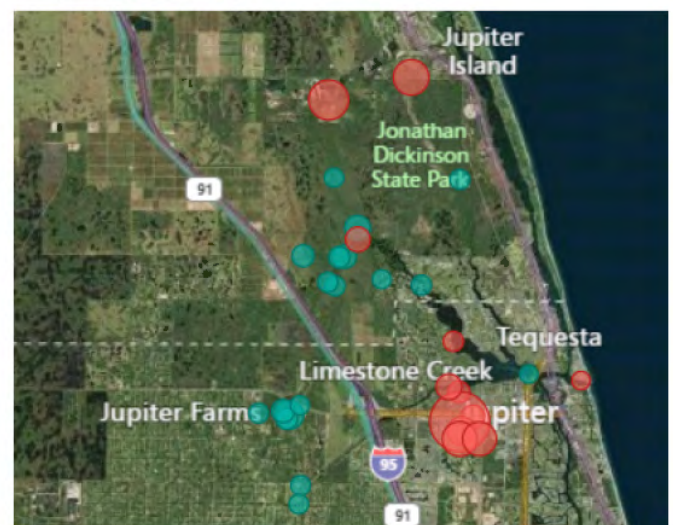
Year	Month	# Samples	Overall Score	# TN Samples	Total Nitrogen Percent Good	# TP Samples	Total Phosphorus Percent Good	# CLA Samples	Chlorophyll Percent Good	# BAC Samples	Bacteria Percent Good
2023	May	163	79%	30	87%	30	80%	30	60%	73	84%
2023	April	157	76%	30	100%	30	80%	30	43%	67	79%
2023	March	125	89%	19	100%	19	100%	19	74%	68	87%
2023	February	159	88%	28	93%	28	96%	28	75%	75	88%
2023	January	160	85%	30	100%	30	90%	30	53%	70	90%
2022	December	164	75%	29	93%	29	86%	29	76%	77	64%
2022	November	120	77%	18	100%	18	83%	18	56%	66	74%
2022	October	160	71%	30	100%	30	73%	30	40%	70	71%
2022	September	104	81%	19	100%	19	95%	19	79%	47	68%
2022	August	162	80%	26	88%	26	88%	26	77%	84	76%
2022	July	159	72%	30	93%	30	70%	30	47%	69	75%
2022	June	123	76%	16	88%	16	75%	16	69%	75	75%
2022	May	119	84%	21	95%	20	85%	20	80%	58	81%
Total		1875	79%	326	95%	325	84%	325	62%	899	78%

## Spatial Distribution of Water Quality Results

In May, *Chlorophyll* results met the water quality criteria at 18 of 30 sites. The poorest stations were in Jones Creek and Jonathan Dickinson State Park (JDSP) this month. All six Jones Creek stations scored poor with Delaware (DEL) having the highest concentration of all sites tested this month with 70 µg/L, nearly 13 times higher than the stringent FDEP water quality criteria of 5.5 µg/L. That is not a great surprise because this sample is located at a dead end canal where water can lay stagnant during times of low flow. The next two highest stations were in JDSP, which has a freshwater criteria of 20 µg/L. Station 111, which drains into JDSP through the Kitching Creek Road canal had a result of 37 µg/L. Station 56, which drains into JDSP at the Hobe Hills outfall, had a result of 30 µg/L. This follows recent improvements to drainage structures in the Hobe Hills community and there has been a marked improvement this month as the previous sample collected in February had 80 µg/L chlorophyll.

Chlorophyll a (µg/L)

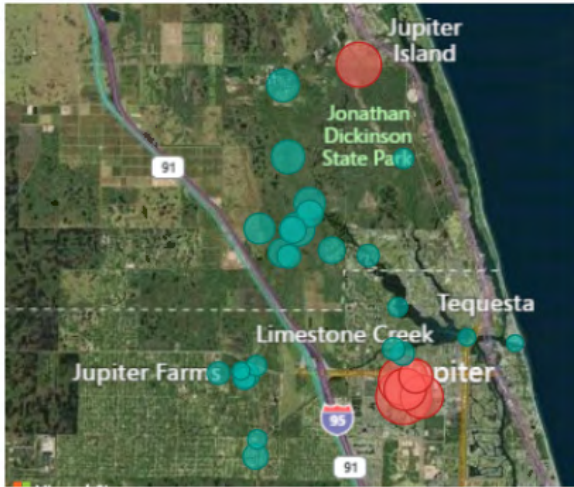
CHL\_Score ● GOOD ● POOR





#### Total Phosphorus (mg/L)

TP\_Score ● GOOD ● POOR



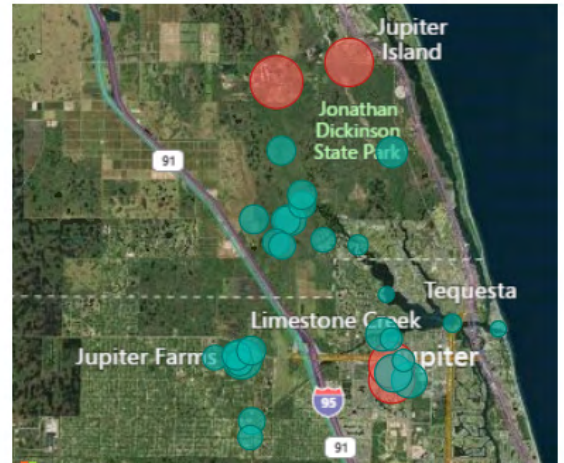
*Total Phosphorus* results scored “Good” at 24 out of 30 sites in May. Five out of six Jones Creek stations scored “Poor”. Jones Creek Upper (JCU) had the highest result at 0.20 mg/L, almost 3 times higher than the Numeric Nutrient Criteria (NNC) water quality standard of 0.075 mg/L for brackish water stations. The Delaware (DEL) site was next highest at 0.17 mg/L. These sites are at dead end canals where flushing can be poor. As you can see on the map at left, all the “Poor” stations except for Hobe Hills Outfall (Station 56 = 0.15 mg/L) were in Jones Creek. We are hopeful to see long term improvements in phosphorus levels at the Hobe Hills following the stormwater improvement project.

*Total Nitrogen* scored “Good” at 26 out of 30 sites in May. Two sites in JDSP and two sites in Jones Creek scored “Poor” this month. Station 111 (Kitching Creek Road canal) had the highest concentration at 1.9 mg/L and Station 56 (Hobe Hills Outfall) was next at 1.7, both over the NNC of 1.54 mg/L for freshwater stations. In Jones Creek, JCU and DEL were both 1.6 mg/L, which is over the NNC of 1.3 mg/L for brackish waters.

We will be tracking these 2 dead end canal stations in Jones Creek every month for at least the next 18 months as part of increased monitoring frequency in support of the forthcoming vegetation trimming and exotic removal project by the Town of Jupiter (more information below).

#### Total Nitrogen (mg/L)

TN\_Score ● GOOD ● POOR



The overall *fecal indicator bacteria* results scored “Good” in May. For Enterococci (see map below left), the preferred indicator bacteria for salt and brackish waters, ten stations were “Poor” when compared to the water quality standard of 130 MPN/100 mL. Nine out of ten stations were sampled in Jones and Sims Creeks, with the highest concentrations of 4,611 MPN/100 mL at 3 Jones Creek stations: Delaware (DEL), Caloosahatchee Culvert (CALC), and Jones Creek Upper (JCU).

# Enterococci Bacteria - Criteria: 130 MPN/100mL

ENT\_Score ● GOOD ● POOR

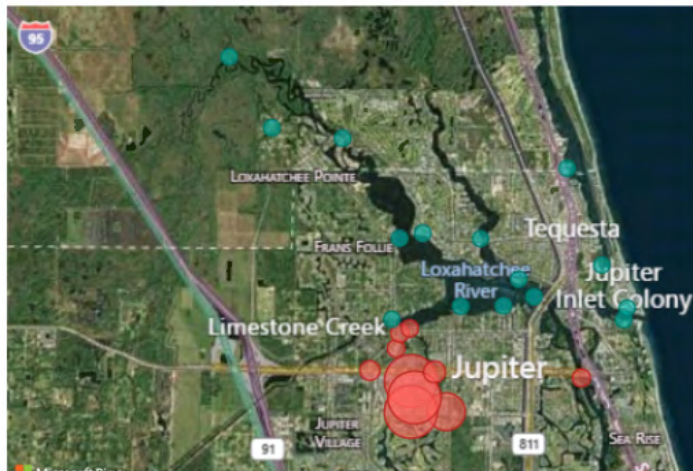


Map of the poor Enterococci Bacteria Stations in the Southwest Fork.

For E. coli (map below right), the preferred indicator bacteria for freshwater, 2 stations scored "Poor" in May. Once again, Cypress Creek (Station 100) had the highest concentration at 598 MPN/100 mL, although it was lower than last month at 1,989 MPN/100 mL. The turbidity result was 6 ntu both months, which is the higher than it has been in the past year. Unlike last month, the nearby monitoring sites did not show high bacteria concentrations at the time of sampling. Sims Canal (Station 74) had the next highest E.coli at 504 MPN/100 mL.

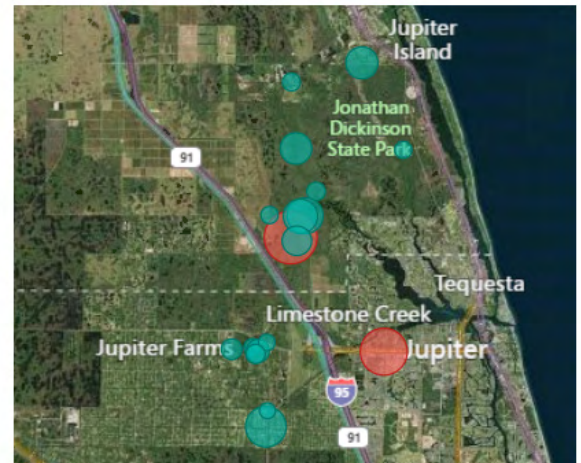
## Enterococci Bacteria - Criteria: 130 MPN/100mL

ENT\_Score ● GOOD ● POOR



## E. coli Bacteria - Criteria: 410 MPN/100mL

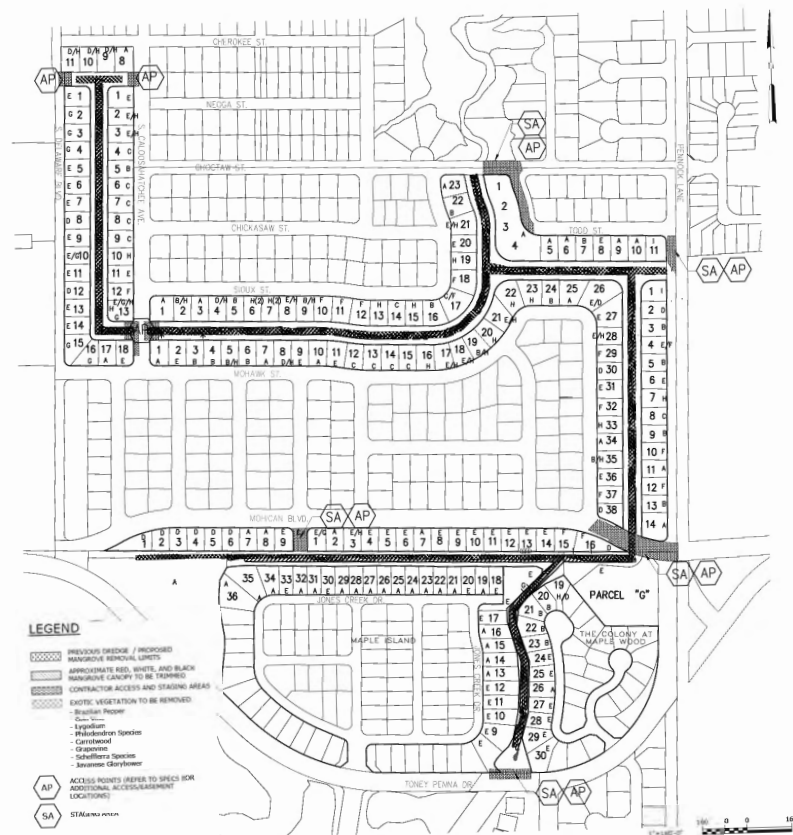
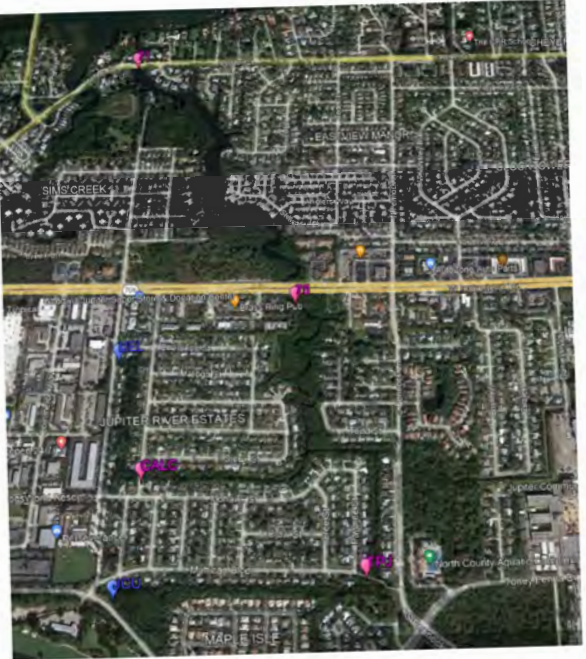
ECOL\_Score ● GOOD ● POOR





## Expanded Monitoring in Jones Creek

The Loxahatchee River District and the Town of Jupiter are ramping up monitoring efforts again in support of the monitoring for the upcoming Canal Vegetative Trimming and exotic plant removal project to increase sunlight exposure for UV treatment and increase flow. The Jupiter Town Council recently approved the Town's funding the initial vegetation trimming and exotic removal, with the biennial trimming for the next 10 years funded by the Jupiter River Estates residents through non-ad valorem tax assessment. The WildPine Lab and Town staff have agreed to monitor two additional water quality sites (DEL and JCU shown in blue at map right) in Jones Creek monthly. The two added sites are at the uppermost reaches of the canals and are surrounded by mangroves. For the four sites currently being monitored for nutrients quarterly (CALC, TPJ, 75, 71 shown in pink at map right), staff have agreed to increase the monitoring frequency from bi-monthly or quarterly to monthly. This additional monitoring is scheduled to provide six months of data prior to trimming, during the 6-month period of active trimming, and continue for six months after trimming is complete. Trimming is tentatively set to start in September 2023.

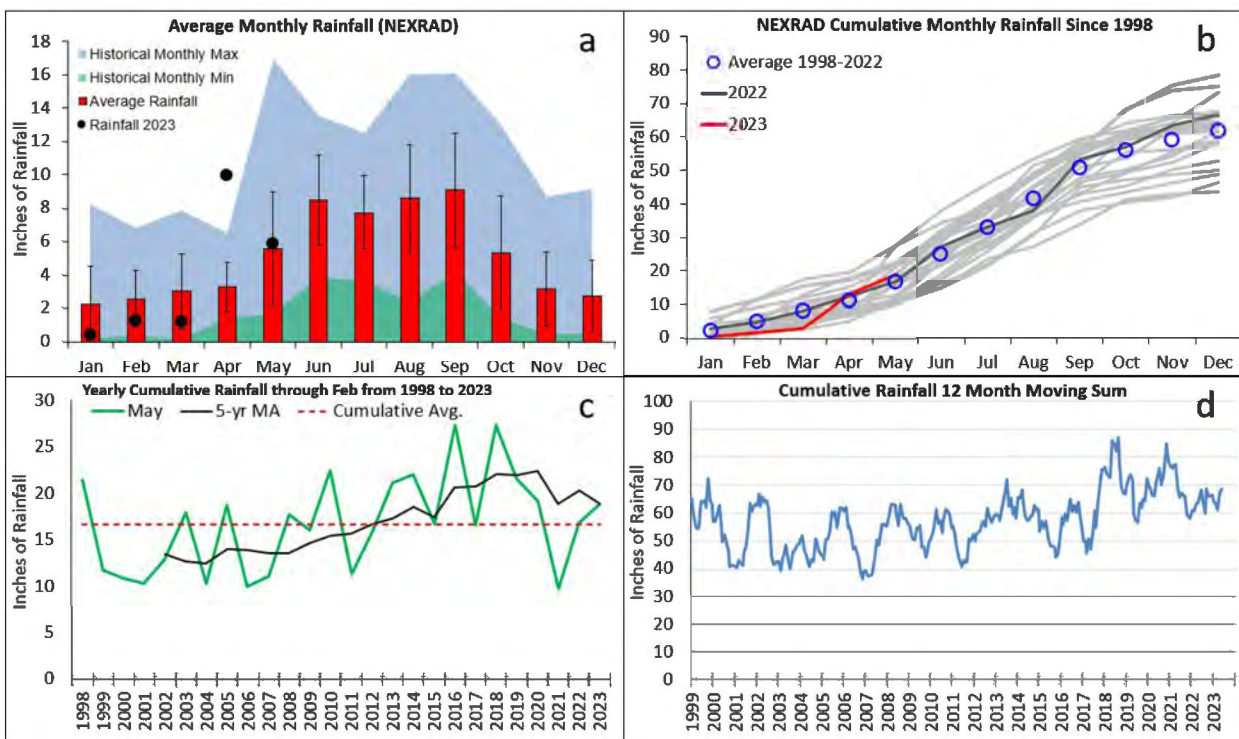


Extents of vegetation trimming and exotic plant removal by the Town of Jupiter's contractor

## Hydrologic Monitoring

### Rainfall

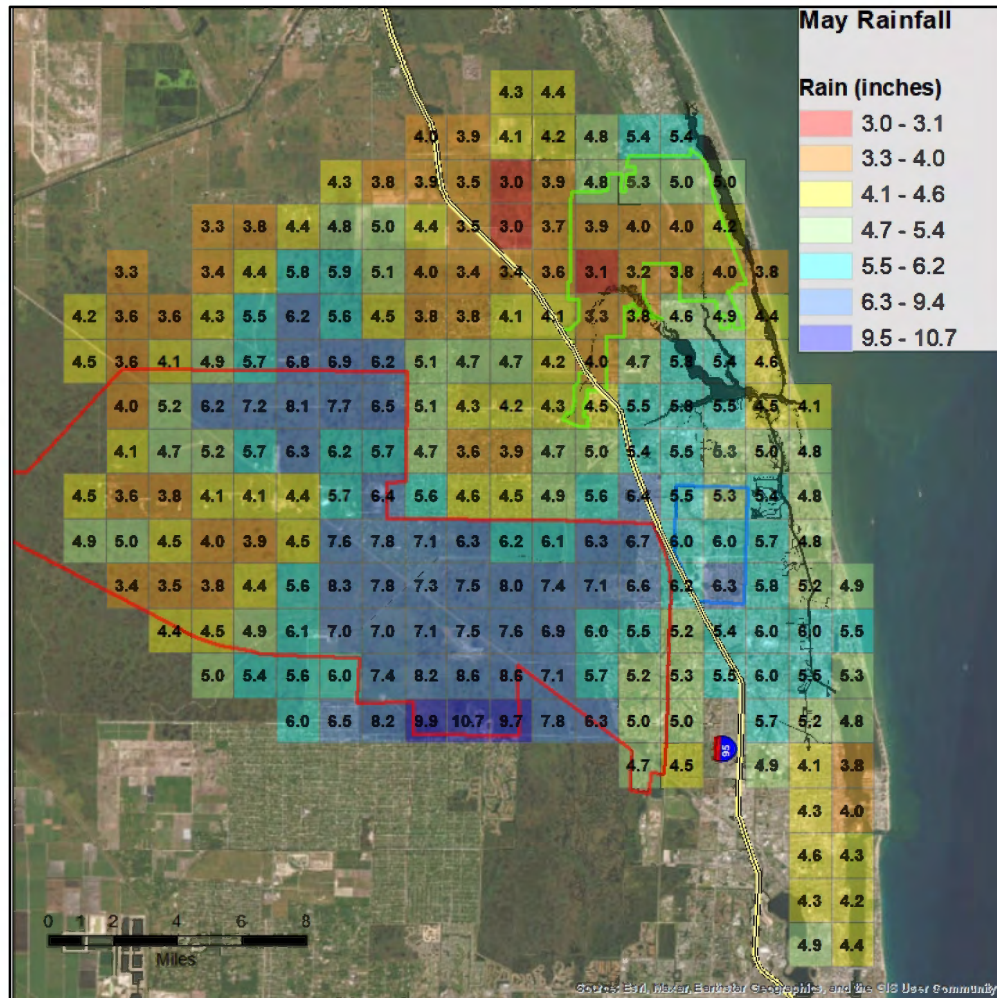
Rainfall across the watershed during May totalled 5.9", very near the historical monthly average for May of 5.6" (panel 'a' in figure below). Year to date cumulative rainfall through May was about 13% above the 16.7" average at 18.8" (panel 'a' in figure below), driven by the significant rain in April. Prior to April, cumulative rainfall had been near record low. However, recent cumulative trends appear to indicate that yearly cumulative rainfall through May over the past couple years has settled near the long-term average (panel "c" below). Rain was detected within the watershed during 20 days in May, with the highest single day total of 1.3" occurring on May 24. The 12-month moving rainfall sum through May was 68.5", about 5% above the 65.4" moving sum from one year ago (panel "d" below). This long-term trend indicator shows that current rainfall is slightly below recent rainfall totals since 2018, but remain well above the historical rainfall totals.



Figures above display various measures of rainfall. Panel (a) shows average monthly rainfall from 1998 to 2022 (red bars; error bars indicate  $\pm 1$  sd). Black dots indicate monthly rainfall for the current year. The blue and green shaded areas show the maximum and minimum rainfall ever recorded for each month. Panel (b) shows monthly cumulative rainfall for each year since 1998. Red line indicates cumulative rainfall during 2023; dark grey line indicates rainfall during 2022. Blue circles are monthly cumulative average rainfall measured between 1998-2022. Panel (c) shows cumulative annual rainfall using NEXRAD radar-based data. Green line indicates cumulative rainfall through indicated month for each year since 1998, when the radar-based rainfall measurements began. Black line is the 5-year moving average across all years and red dashed line shows cumulative average through indicated month. Panel (d) shows cumulative 12-month moving sum of monthly rainfall.



The spatial distribution of rainfall across the watershed during May ranged from about 3" in the driest regions to about 10.7" in the wettest regions (figure below). In general, the driest regions occurred in the northern portions of the watershed including areas of Jonathan Dickinson State Park while the "wettest" regions were within the C-18 basin and include Loxahatchee Slough and Pine Glades Natural Area as well as portions of J.W. Corbett Wildlife Conservation Area.



*Rainfall distribution across the watershed using NEXRAD data. Each pixel represents an area of 2 km x 2 km. Blue colored pixels show highest rainfall and red pixels show lowest rainfall. For reference, the red line is the C-18 basin which includes portions of J.W. Corbett WMA, Loxahatchee Slough, and Pine Glades Natural Area; green line shows Jonathan Dickinson State Park boundary, light blue line shows the Abacoa development.*

## River Flows

Recent rainfall has been sufficient to maintain river flows above the Minimum Flow and Level (MFL) target throughout the month of May. Flow measured at the Lainhart Dam ranged between 35 to 146 cfs with a daily average of 55 cfs. Throughout May, there were no days of flow below the MFL of 35 cfs. As a result of sufficient flow into the Northwest Fork, salinity at River Mile 9.1 averaged 0.4 ppt during May with the maximum average daily salinity of 0.7 ppt, well below the 2 ppt salinity threshold for this portion of the river.



Loxahatchee River District  
WildPine Laboratory  
www.loxahatcheeriver.org

Loxahatchee River Flow at Lainhart Dam and Salinity at River Mile 9.1 Relative to the Minimum Flow & Level (MFL)  
Data from USGS. MFL Exceedance when Flow is less than 35 cfs for 20 consecutive days or Salinity 20d rolling average is greater than 2 ppt.

Date Selector - Slide ends of bar to change dates or enter dates in boxes

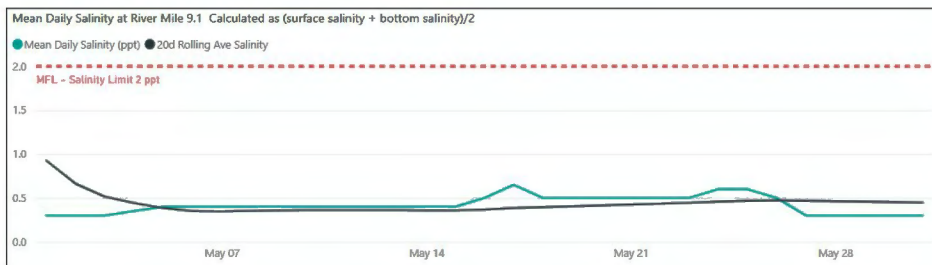
5/1/2023 5/31/2023

South Florida Water  
Management District's  
Real-time Flow Data for  
Lainhart Dam Available [HERE](#)



Days of Flow Less Than MFL  
for Selected Dates  
**0**

Average flow (cfs) for  
Selected Dates  
**55.1**



Days of Salinity MFL  
Exceedance  
**0**

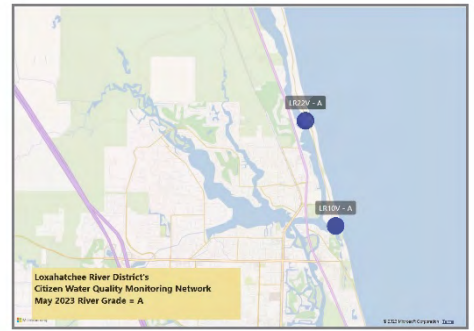
Average Salinity (ppt) for  
Selected Dates  
**0.42**

*May 2023 River Flow and Salinity. Top graph shows mean daily flow measured at Lainhart Dam (blue line) and the Minimum Flow & Level (red dashed line). Boxes at right is shown the number of days during the indicated date range that average daily flow was below the 35 cfs MFL flow target (yellow box) and the mean daily flow during the selected timeframe. Bottom graph shows mean daily salinity at the USGS River Mile 9.1 structure with the 2 ppt threshold line indicated (red dashed line). Boxes at right show the number of days of salinity exceedance (red box) and average salinity during the indicated period (grey box).*



## Volunteer Water Quality

The weekly Volunteer Water Quality monitoring had another month of high scores for May, resulting in an overall “A” grade. Most of the parameters scored in the “Good” range for both sites. However, the water clarity degraded slightly toward the end of the month at the Jupiter Inlet site following some increased wave activity on the beach. This weekly turbidity data from our volunteers has helped us document the higher than usual turbidity following wave activity reworking the nourished beach and engineered beach profile in Jupiter and Juno beaches. Both sites also experienced higher than normal salinity concentrations during the beginning of the month. These results seemed to have returned to normal levels as rainfall increased.



Site	Temp (F)	Secchi	Salinity	pH	DO	DO%	Color	Vis	Salt	pH	DO	DO%	Color	Score	Grade
LR10V	27.0	3.20	35.3	8.2	6.5	98.6	1.0	B	C	A	A	A	A	93.8	A
LR22V	23.5	1.20	37.5	8.3	5.7	83.2	1.0	A	C	A	A	A	A	95.8	A
Average	25.2													94.4	A

VAB (Visible at Bottom)  
DO (Dissolved Oxygen)  
ND (No Data)

## Wastewater Surveillance of COVID-19

In May, the wastewater surveillance monitoring for the Biobot/CDC and WastewaterSCAN programs show that the concentrations of SARS-CoV-2/COVID, Respiratory viruses RSV and hMPV, and Norovirus have all declined, following the winter “flu” and other illness season.

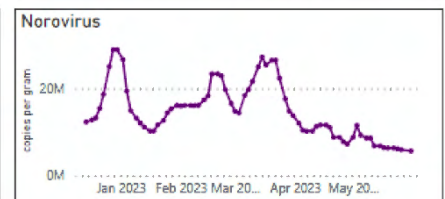
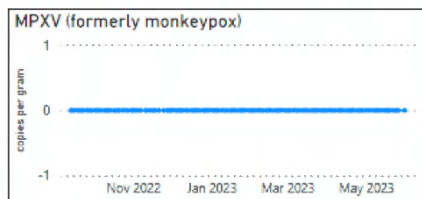
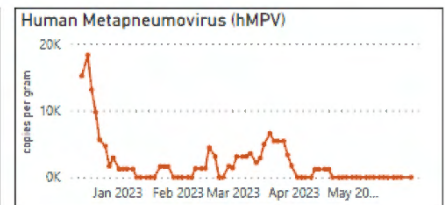
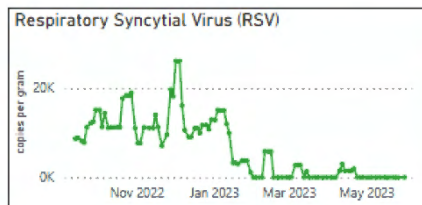
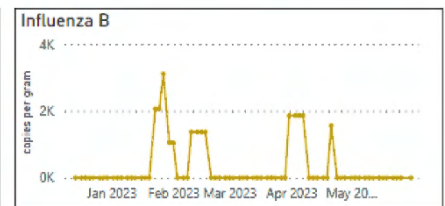
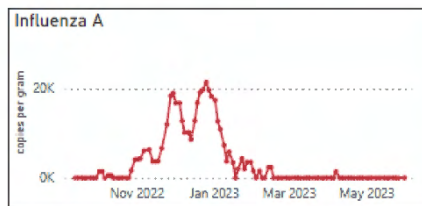
### Loxahatchee River District's Wastewater Surveillance Program, Jupiter, Florida

Conducted in partnership with WastewaterSCAN -

a program of Stanford University, Emory University and Verily, the life sciences subsidiary of Alphabet, Inc. (formerly Google)  
Sewer Service Area largely overlaps with zip codes 33458, 33477, 33469



Date Selector - Select Dates or Move Slider  
To Adjust Date Range



The data in these charts have been smoothed, where measurements from nearby dates have been combined to reduce day-to-day variability and increase accuracy. Specifically, Verily takes the 5 samples centered around a date and report the average after excluding the highest and lowest values. This processing minimizes the influence of outlier measurements and makes it easier to visualize trends in the data. For more information and visualizations, please visit the [WastewaterSCAN data page](#).

## Customer Service

### **Payment Processing**

With the 2<sup>nd</sup> Quarter Bills due on May 17, staff were busy processing over 20,000 payments totalling nearly \$2.9M. Over 9,300 of these payments were made through automatic payments. No significant changes in the methods of payment are readily apparent, but we will fully explore the payment data following the close of the billing quarter on June 30 and provide a summary in next month's Board report.

### **Customer Information & Billing System**

We continue to make significant progress on the implementation of our new Customer Information and Billing System. In May we completed a series of trainings. Since the training our staff have been busy testing and refining the various procedures, identifying and resolving issues with the software provider, and trying to gain proficiency in the new system.

Unfortunately, the process has been much slower than anticipated, and the implementation continues to fall behind schedule. Our most recent projected go live date was targeted for early June, but too many significant issues remain. We continue to set target go live dates and work through the issues with the objective of going live as soon as practical given the constraints of scheduling that will mesh with our quarterly billing cycle and significant payment loads.

## Information Technology (IT)

### **Process Improvement – Warehouse Inventory Reporting**

The Finance department asked the IT team to create a workflow that would provide a monthly summary of stock movement in the warehouse. Their intention was to streamline the previous manual process of entering transactions into the general ledger.

In the past, the Finance department would summarize, by hand, the detail report generated by the inventory system that is part of our asset management software EAM. Then, after it was summarized, the individual transactions would be entered into the general ledger for each department and account number.

We created a new data tool that summarized the transaction data by month, which is what the Finance staff needs to complete their general ledger entries. The big improvement with the new process is the monthly data can be exported from the report and loaded directly into the account system using an import sheet thereby eliminating the manual entries needed for each account.

To Export Data:  
 1. Filter for Year/ Month using slicer  
 2. Select main table  
 3. At top right of table, select ellipses  
 4. Choose 'Export data' option  
 5. Navigate in window to a save location and select 'Save'

## Stock Issue by Department / Cost Code

^ 2023

☐ January

☐ February

☐ March

☐ April

☒ May

Posting Date	Account No.	Description	Shortcut Dimension 1 Code	Shortcut Dimension 2 Code	Debit Amount	Credit Amount	Document No.	Journal Template Name	Journal Batch Name	Line No.
5/31/2023	552000	Stock Movement	40-30		5.78			General	Inventory	
5/31/2023	552000	Stock Movement	40-41		220.17			General	Inventory	
5/31/2023	552000	Stock Movement	40-50		986.29			General	Inventory	
5/31/2023	552200	Stock Movement	40-50		130.47			General	Inventory	
5/31/2023	546100	Stock Movement	40-51		66.64			General	Inventory	
5/31/2023	552000	Stock Movement	40-51		551.00			General	Inventory	
5/31/2023	552200	Stock Movement	40-51		1,357.26			General	Inventory	
5/31/2023	546000	Stock Movement	50-40		1,910.14			General	Inventory	
5/31/2023	546100	Stock Movement	50-40		88.64			General	Inventory	
5/31/2023	546200	Stock Movement	50-40		29,983.10			General	Inventory	
5/31/2023	546300	Stock Movement	50-40		5,871.18			General	Inventory	
5/31/2023	552000	Stock Movement	50-40		4,804.12			General	Inventory	
5/31/2023	552200	Stock Movement	50-40		1,819.65			General	Inventory	
5/31/2023	600000	Stock Movement	50-40		5,088.00			General	Inventory	
5/31/2023	652000	Stock Movement	50-40	R22018	102.48			General	Inventory	
5/31/2023	653000	Stock Movement	50-40	R21002	654.50			General	Inventory	
5/31/2023	546000	Stock Movement	50-50		276.48			General	Inventory	

Screenshot of the Power BI report to export stock movement for general ledger entries

# Loxahatchee River Environmental Center

June 2023

## River Center Summary Statistics



## LRD'S ENVIRONMENTAL STEWARDSHIP DASHBOARD



		Total Visitors <small>(Incl. Visitors, Field Trips, Onsite Programs)</small>	Average Program Participation <small>[Actual participants/Capacity of Program]</small>	Volunteer Engagement	1st Time Visitors	Visitor Satisfaction	Staff Overall Program Assessment	Expenses	Program Revenue
Benchmark / Customer Expectation		% of Target	% of Capacity	% of Target	% of Target	Rating Average <small>[Max Rating is 5]</small>	Rating Average <small>[Max Rating is 9]</small>	% within budget	% of Target
Green Level		≥ 90%	≥ 85%	≥ 90%	≥ 90%	≥ 4	≥ 7	≥ 85% but ≤ 105%	≥ 90%
Yellow		≥ 75%	≥ 70%	≥ 75%	≥ 75%	≥ 3	≥ 5	≥ 80%	≥ 75%
Red		<75%	<70%	<75%	<75%	<3	<5	< 80% or > 105%	<75%
2020 Baseline		35%	50%	70%	65%	4.6	7.8	81%	103%
2021 Baseline		113%	83%	102%	275%	4.7	7.8	92%	85%
2022 Baseline		81%	120%	75%	163%	4.6	7.9	91%	94%
2022	May	55%	86%	55%	147%	5.0	7.9	100%	153%
	June	86%	92%	105%	107%	4.8	8.0	100%	122%
	July	95%	84%	134%	164%	4.5	7.9	101%	123%
	Aug	88%	100%	147%	184%	3.8	8.0	91%	129%
	Sept	77%	86%	76%	178%	4.6	7.8	89%	120%
	Oct	79%	100%	118%	100%	4.9	7.4	55%	82%
	Nov	53%	104%	82%	111%	4.4	8.0	63%	88%
	Dec	94%	124%	50%	286%	4.6	7.9	96%	85%
	2023 Jan	69%	76%	63%	338%	4.6	7.9	85%	92%
	Feb	79%	88%	82%	102%	4.7	7.8	85%	104%
	Mar	94%	91%	98%	304%	4.4	8.1	73%	87%
	Apr	116%	105%	91%	220%	4.7	7.5	79%	78%
	May	84%	83%	129%	170%	4.6	7.8	88%	104%
Consecutive Months at Green		0	0	3	13	9	13	1	1
Metric Owner		O'Neill	Duggan/Warwick	Patterson	O'Neill	O'Neill	O'Neill	O'Neill	O'Neill

Metric	Explanation
Total Visitors	Our program visitor numbers were down because we had four school groups cancel in May. This is equivalent to a reduction of 150 people. All schools cancelled due to lack of busses.
Program Participation	The Boating Safely Class (US Coast Guard Aux.) underperformed (64%) because they ran out of materials, and we had to limit the number of students in the class. Our kayak programs were only 76% due to cancellations. The lectures were only at 56%. This number is oddly low. We usually run over 80% participation for the lectures. We do not have a clear indication why the numbers are down this month.



## River Center General

### Summer Staff Certifications

All program staff received their lifeguard, first-aid, CPR (with AED), and Kayak Level 2 certifications during training in May. It was a busy three weeks, but we are ready to go for summer!



Pictured from left to right: Sara Duggan, Kiera Fielding, Jess Redman, Noah June, Jake Meuse and Samantha Warwick

## Special Programs

### Wild & Scenic Kayak Tour [Wednesday, May 17<sup>th</sup>]

The River Center once again partnered with the South Florida Water Management District to host a kayak tour launching from Lainhart Dam. This paddle was to celebrate the anniversary of the Wild & Scenic designation of the Loxahatchee River (May 17th). Winding through the freshwater swamp, guests were immersed in the beautiful and scenic parts of the Loxahatchee. We heard tons of birds, saw an abundance of turtles, and glided along with giant swallowtail butterflies. It was a magical opportunity to explore, experience, and connect with nature.



### Lecture Series [Friday, May 5th]



Our May speaker was Teri Jabour, President of the North American Butterfly Association (NABA)-Atala Chapter. Teri Jabour has been involved in the community for many years as an advocate and educator about sustainability issues and natural resource protection. Her interests include ecology and the relationship of birds and butterflies with their natural habitats. This presentation discussed bird migration between North America and tropical regions and the birds you might see, from plovers and terns on the shore to songbirds (warblers and hummingbirds) in your back yard and raptors in the sky. Teri explained that the

whys and hows of bird migration are still not fully understood but seeing birds migrating from far-away places (and near) in the fall and spring is one of the rewards of living in South Florida.

### **Blooming in the Garden [Saturday, May 13th]**

The Blooming in the Garden program is designed for children ages 3-6. The theme for this month was May Flowers. We started by reading a story about a curious gardener who brightened his town. We talked about our favorite flowers and how our communities are blooming right now. Children were given “Flower Finder” sheets and spent some time in the garden exploring and identifying different flowers, as well as Atala caterpillars and all sorts of other insects. Back in the Chickee Hut, we read a short story about how flowers grow and then made our own flower craft, labeling the parts. Then each child planted seeds in their own take-home pot – they were very excited to be able to identify the flowers on their seed packets! They also received a flower drying kit as something fun to do with a special grown-up for Mother’s Day.

### **Science with Sam [Saturday, May 6th]**

This month's Science with Sam class was estuary exploration. Students were taught how to use seine and dip nets to collect critters around Burt Reynolds Park. Students learned why scientists use these nets and the purpose of collecting organisms for biodiversity surveys of a habitat. Students also used looking glasses in the water to see fish and other creatures swimming below the water's surface. By the end of class, we had caught comb jellies, blue crabs, pipe fish, and sea hares.



### **Volunteer of the Month**

Dawn Scherb is our May 2023 Volunteer of the Month! Dawn is new to our team but immediately jumped right in to help in any way possible. She goes above and beyond to greet guests and help with any activity to ensure the Center is running smoothly. She is always so happy to help in any way that she can and will take the initiative to complete any project that is given to her. She always makes sure that our guests have a wonderful experience. In her free time, Dawn loves horseback riding, art and sewing, she loves nature and animals. Dawn loves to help and is such a wonderful addition to our volunteer team. We love having her volunteer and are grateful for her consistent support every week!

## **UPCOMING EVENTS**

RSVP at [www.lrdrivercenter.org/events-calendar](http://www.lrdrivercenter.org/events-calendar)  
[rivercenter@lrcd.org](mailto:rivercenter@lrcd.org) or 561-743-7123

**Every Thursday, 9:30 a.m. – 10 a.m. – Story time:** Join the River Center for Story Time. Families are welcome as we read stories and have an animal encounter.

**June 17, 7 am – 3 pm: AustinBlu Land & Sea Fishing Tournament:** Join the River Center and the AustinBlu Foundation for the annual AustinBlu Fishing tournament on Saturday, June 17th. This family-friendly tournament aims to support the education and outreach efforts of the foundation, which is dedicated to teaching people about the importance of safety on the water. This unique tournament will showcase not just one competition, but two! Anglers will have the option to compete in our Release Competition and/or the Harvest Competition. In the Release Competition, anglers will receive points for the number/species of fish caught, photographed, and released. Fishing will commence at 7:00 am and with lines out of the water at 3:00 p.m. Anglers will have until 4:00 pm to submit and weigh



their catches. The tournament celebration will begin at 5:00 pm. Participants can enjoy food and beverages from local eateries as well as partake in our various family-friendly activities during the event. Winners will be announced at 7:00 p.m.

**June 20, 9 a.m. – 10:30 a.m.: Swamp Tromp [Cypress Creek Natural Area North]:** Come explore with us! Tie up your hiking boots and join the River Center for the first Swamp Tromp through Cypress Creek North Natural Area. Prepare to get wet as you travel through the swamp and immerse yourself in this local natural area. This is an intermediate to advanced hike. Participants can expect water up to their knees and traveling through mud. Interested participants should wear closed toed shoes that will get wet, long pants, a walking stick, comfortable clothing and bring plenty of water. Make sure to RSVP to this event! Space is limited.

**June 21, 10 am – 12 pm: Lagoon Exploration:** Join the River Center in a day of estuary exploration at our Family Seine and Dip Netting Experience at Blowing Rocks Preserve! Activities will include exploring our local waterways through dip netting and seining. Guests are welcome to bring their own buckets and dip nets. Please make sure to bring sunscreen, water shoes, and plenty of water!

**June 22, 9:30 a.m. – 11 a.m.: Fishing Adventure [Jupiter Inlet Lighthouse Outstanding Natural Area]:** Join the River Center on a fishing adventure to the Jupiter Inlet Lighthouse ONA. Bring your own pole or let us provide one for you. We will fish at the new pier on the Loxahatchee River and see what is biting that day!

**June 23, 5 p.m. – 7 p.m.: Sunset Kayak Tour [Pine Glades Natural Area]:** Join the River Center for our Public Kayak Tour to Pine Glades Natural Area. Paddle along through the freshwater marsh on our naturalist led tour for great views of local wildlife. All equipment will be provided but interested participants should bring water shoes, sunscreen, and plenty of water! The cost for this program is \$20 per person. Make sure to reserve your spot today! Space is limited!

**June 24, 1:00 p.m. – 2:30 p.m.: Introduction to Volunteering:** Do you have a passion for the environment? Do you enjoy interacting and educating the public? The River Center is looking for enthusiastic and personable volunteers to join our River Center team! Individuals 14+ are invited to attend the next Intro to Volunteering workshop from 1:00 PM – 2:30 PM. For questions or application information please contact our Volunteer Coordinator Emmy Weeks at 561-339-3107 or [Volunteer@lrecd.org](mailto:Volunteer@lrecd.org)

**June 27, 7 p.m. – 8 p.m.: Sunset Hike [Pine Glades Natural Area]:** Come explore with us! Tie up your hiking boots and join the River Center for our sunset nature walk through Pine Glades Natural Area. Walk along the guided paths and immerse yourself in this local natural area. We will explore a path inside this natural area with uneven terrain. Interested participants should wear closed toed shoes, long pants(recommended), a walking stick, comfortable clothing and bring plenty of water. Bug spray and a flashlight are highly recommended. Please RSVP to attend. Space is limited.

**June 28, 9 am – 12 pm: Family Fishing Clinic:** Don't miss out on this exciting fishing opportunity with the River Center. Fishing clinics are a great way for kids to learn the basics of fishing methods and tactics! Make sure to join us for an engaging overview that includes knot tying, fish identification, and of course fishing! Parents are encouraged to accompany their kids and participate in the clinic. The cost is \$10 per child. Interested participants should bring water, sunscreen, a hat, and sunglasses.

**July 1 -30: Jr. Angler Fishing Tournament:** The Loxahatchee River District's River Center, in partnership with Fishing Headquarters, is delighted to announce the 6th Annual Jr. Angler Fishing Tournament. Due to its high popularity last year with over 50 anglers, participation for this year's tournament is expected to grow. Interested anglers should mark their calendars and set their reels for Sunday, June 30th when the contest officially opens. Registration is now open! Anglers will have until August 3rd, 2019 to accumulate points in this unique catch-and-release tournament. By having the anglers photographed with the fish they catch and then submitted online. The contest is run over the course of several weeks instead of just a single day of competition. In addition, the contest awards points not only for the number of fish caught, but also for the number of different species represented in the submissions. The more fish you catch and the more species you catch, the better your chances are to

win! These innovative guidelines encourage contestants to spend time throughout the summer exploring the diversity of habitats and fish species in our Palm Beach and Martin Counties.

**July 5, 9 a.m. – 10:30 a.m.: Swamp Tromp [Pine Glades Natural Area]:** Come explore with us! Tie up your hiking boots and join the River Center for a Swamp Tromp through Pine Glades Natural Area. Prepare to get wet as you travel through the swamp and immerse yourself in this local natural area. This is an intermediate to advanced hike. Participants can expect water up to their knees and traveling through mud. Interested participants should wear closed-toed shoes that will get wet, long pants, a walking stick, comfortable clothing and bring plenty of water. Make sure to RSVP to this event! Space is limited.

**July 5, 10 a.m. – 1 p.m.: Old School Science Day:** Join the River Center for a day of exciting science fun! Participants will test out different experiments, partake in crafts and enjoy some great demonstrations and educational fun! This program is free, and no RSVP is required to attend.

**July 7, 9:30 – 11:30 a.m.: Exploring Archery:** Join the River Center for our introductory archery workshop! Learn about the complex history of archery, uses, safety and basic skills. All equipment will be provided but interested participants should bring comfortable clothing, closed-toe shoes, water and sunscreen.

**July 8: 3 p.m. – 4 p.m.: Science with Sam Family Fun [Fantastic Fungi]:** On select Saturdays from 3:00 pm – 4:00 pm, join our Scientist Sam for different science activities for children 6-12. Activities will include garden exploration and hands-on opportunities with wildlife. Each month has a different theme! Participants will participate in a scavenger on the trails at the Jupiter Inlet Lighthouse Outstanding Natural Area.

**July 8: 8:00 a.m. – 4:00 p.m.: Boating America Class:** The River Center continues to collaborate with the US Coast Guard Auxiliary “Flotilla 52” to provide a series of Boating Safely Classes targeted specifically to young boaters in our community. These classes are provided through a generous sponsorship by the AustinBlu Foundation, a not-for-profit dedicated to raising awareness and promoting educational programs to improve boater safety. There is no cost for this class, however there is a deposit required to reserve a seat. The deposit of \$10 will be refunded in full to all students who complete the class. Recommended for children 12 years and up, but all ages are welcome.

**July 11, 9 am – 11 am: Kayaking 101:** Join the River Center for our Intro to Kayaking: Kayak 101 workshops! Participants in these workshops will learn basic kayak strokes, safety tips and how to be a proficient paddler on the water. This course will be conducted by a Level 2 Kayak instructor and all equipment will be provided. Registered participants need to bring water, water shoes, and comfortable clothing that can get wet. Registration is required to attend. Space is limited.

**July 12, 10 a.m. – 11:30 a.m.: Wilderness Skills [How to Make a Shelter]:** Join River Center staff at our 20-acre property for this series to educate participants on various wilderness skills to encourage outdoor recreation. Both classes will focus on different skills. Take both classes for the full experience.

**July 13, 12 p.m. – 2 p.m.: Sandbar & Seashells Boat Tour:** Join the River Center for an exciting family-friendly boat tour! Hop on-board the Osprey for a trip up the Central embayment of the Loxahatchee River. Hunt for shells and creatures at the sandbar and soak up some sunshine! Make sure to bring water, snacks, water shoes, and snorkel gear! The boat will launch from Burt Reynold's Park. Registration is required to attend. Space is Limited!

**July 15, 10 – 11:30 a.m.: Blooming in the Garden [Snakes Alive]:** Join the River Center for our Blooming in the Garden program, designed for children ages 3-6. The program will start at 10:00am at the River Center Chiki Hut with a story time and a garden themed craft. We will then move to our garden for a garden themed hands-on activity. When it is time to go home, children will receive seeds to take home to start their own garden! This is an exciting opportunity for little ones and their families to enjoy nature together!

**July 15, 9:30 a.m. – 11 a.m.: Latino Conservation Week Fishing Adventure [Jupiter Inlet Lighthouse Outstanding Natural Area]:** Join the River Center on a fishing adventure to the Jupiter Inlet Lighthouse ONA. Bring your own pole or let us provide one for you. We will fish at the new pier on the Loxahatchee River and see what is biting that day!

**July 19, 10 a.m. – 11 a.m.: Tots on Trails [Jupiter Inlet Lighthouse Outstanding Natural Area]:** Let's get outside! Join the River Center for our Tots on Trails program, designed for children ages 2-6! Each month, we'll explore a new natural area in the Jupiter/Tequesta area. This month, we'll be at the Jupiter Inlet Lighthouse Outstanding Natural Area. Together, we'll walk the trail, observe plants and animals with our magnifying glasses & binoculars, and learn about the nature surrounding us. Additional activities may include scavenger hunts, trail games, and nature art. Adults and children should come prepared to be outside for an hour. This includes comfortable clothing, closed toe shoes, hats, sunscreen, bug spray, and water bottles. Limited to 20 children (+ their accompanying adults). All equipment is provided, and this program is free of charge. Donations are always welcome.

**June 14, 10 a.m. – 11 a.m.: Latino Conservation Week Hike [Delaware Scrub]:** Let's get outside! Join the River Center for a hike through Delaware Scrub Natural Area. Together, we'll walk the trail, observe plants and animals, and learn about the nature surrounding us. Additional activities may include scavenger hunts, trail games, and nature art. Adults and children should come prepared to be outside for an hour. This includes comfortable clothing, closed toe shoes, hats, sunscreen, bug spray, and water bottles. Limited to 20 children (+ their accompanying adults). All equipment is provided, and this program is free of charge. Donations are always welcome.

**July 20, 9:00 a.m. – 10:30 a.m.: Fishing Adventure [Cypress Creek South Natural Area]:** Join the River Center on a fishing adventure to the Cypress Creek Natural Area. Bring your own pole or let us provide one for you. We will fish at the new pier on the Loxahatchee River and see what is biting that day!

**July 21, 10 am – 12 pm: Lagoon Exploration:** Join the River Center in a day of estuary exploration at our Family Seine and Dip Netting Experience at Blowing Rocks Preserve! Activities will include exploring our local waterways through dip netting and seining. Guests are welcome to bring their own buckets and dip nets. Please make sure to bring sunscreen, water shoes, and plenty of water!

**July 22, 1:00 p.m. – 2:30 p.m.: Introduction to Volunteering:** Do you have a passion for the environment? Do you enjoy interacting and educating the public? The River Center is looking for enthusiastic and personable volunteers to join our River Center team! Individuals 14+ are invited to attend the next Intro to Volunteering workshop from 1:00 PM – 2:30 PM. For questions or application information please contact our Volunteer Coordinator Rebecca Patterson at 561-339-3107 or [Volunteer@Lrecd.org](mailto:Volunteer@Lrecd.org)

**July 27, 9 a.m. – 10:30 a.m.: Swamp Tromp [Cypress Creek Natural Area North]:** Come explore with us! Tie up your hiking boots and join the River Center for another Swamp Tromp through Cypress Creek North Natural Area at a different location. Prepare to get wet as you travel through the swamp and immerse yourself in this local natural area. This is an intermediate to advanced hike. Participants can expect water up to their knees and traveling through mud. Interested participants should wear closed-toe shoes that will get wet, long pants, a walking stick, comfortable clothing and bring plenty of water. Make sure to RSVP to this event! Space is limited.

**July 29, 9 am – 12 pm: Family Fishing Clinic:** Don't miss out on this exciting fishing opportunity with the River Center. Fishing clinics are a great way for kids to learn the basics of fishing methods and tactics! Make sure to join us for an engaging overview that includes knot tying, fish identification, and of course fishing! Parents are encouraged to accompany their kids and participate in the clinic. The cost is \$10 per child. Interested participants should bring water, sunscreen, a hat, and sunglasses.

**July 25, 5 p.m. – 7 p.m.: Sunset Kayak Tour [Jupiter Inlet Lighthouse Outstanding Natural Area]:** Join the River Center for our Public Kayak Tour to Jupiter Inlet Lighthouse Outstanding Natural Area. Paddle along through the lagoon on our naturalist led tour for great views of local wildlife. All equipment will

be provided but interested participants should bring water shoes, sunscreen, and plenty of water! The cost for this program is \$20 per person. Make sure to reserve your spot today! Space is limited!

**August 4, 6 p.m. – 8 p.m.: Jr. Angler Fish Fry:** After a month of fishing, anglers can celebrate their accomplishments, enjoy eating fried fish from Fishing Headquarters and find out who pulled in the most catches this summer. Everyone must RSVP to attend.

**August 5, 10 am – 12 pm: Lagoon Exploration:** Join the River Center in a day of estuary exploration at our Family Seine and Dip Netting Experience at Blowing Rocks Preserve! Activities will include exploring our local waterways through dip netting and seining. Guests are welcome to bring their own buckets and dip nets. Please make sure to bring sunscreen, water shoes, and plenty of water!

**August 11, 9 a.m. – 3 p.m.: Adult Summer Camp:** For adults that wish they could do all the fun things that the kids get to do during our summer camp! This is a high adventure, intensive day of fun in the sun. Participants will be able to kayak, snorkel, hike, fish and more. Space is limited. Call to RSVP.

**August 12: 8:00 a.m. – 4:00 p.m.: Boating America Class:** The River Center continues to collaborate with the US Coast Guard Auxiliary “Flotilla 52” to provide a series of Boating Safely Classes targeted specifically to young boaters in our community. These classes are provided through a generous sponsorship by the AustinBlu Foundation, a not-for-profit dedicated to raising awareness and promoting educational programs to improve boater safety. There is no cost for this class, however there is a deposit required to reserve a seat. The deposit of \$10 will be refunded in full to all students who complete the class. Recommended for children 12 years and up, but all ages are welcome.

**August 19: 10 – 11:30 a.m.: Blooming in the Garden [Flutter by, Butterflies!]:** Join the River Center for our Blooming in the Garden program, designed for children ages 3-6. The program will start at 10:00am at the River Center Chiki Hut with a story time and a garden themed craft. We will then move to our garden for a garden themed hands-on activity. When it is time to go home, children will receive seeds to take home to start their own garden! This is an exciting opportunity for little ones and their families to enjoy nature together!

**August 26, 1:00 p.m. – 2:30 p.m.: Introduction to Volunteering:** Do you have a passion for the environment? Do you enjoy interacting and educating the public? The River Center is looking for enthusiastic and personable volunteers to join our River Center team! Individuals 14+ are invited to attend the next Intro to Volunteering workshop from 1:00 PM – 2:30 PM. For questions or application information please contact our Volunteer Coordinator Rebecca Patterson at 561-339-3107 or [Volunteer@Lrecd.org](mailto:Volunteer@Lrecd.org)



# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

D. Albrey Arrington, Ph.D. EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

## MEMORANDUM

**To:** D. Albrey Arrington, Ph.D., Executive Director  
**From:** Ed Horchar Safety Officer  
**Date:** June 7, 2023  
**Subject:** District Safety Report for May 2023

### Safety Metrics: May 2023

OSHA recordable injuries: Zero

Lost time injuries: Zero

**Actual TRIR: 0.0** [Goal < 1.5]

TRIR = Total Recordable Incident Rate

**Safety is a Core Value at LRD** – *Our conduct is shaped by a personal commitment to protect the health and safety of ourselves and our colleagues. Safety is driven through education, training, planning, protective equipment, and individual accountability.*

### **OSHA Recordable Incidents/MVA's:**

The LRD has now experienced zero OSHA Recordable Injuries for **eighteen** consecutive months. The District has sustained a Total Recordable Incident Rate (TRIR) of **0.0**, below our new adjusted goal of 1.5. The District continues to experience a performance best period (recent history) for consecutive months with no recordable injuries.

The District experienced zero Motor Vehicle Accident's (MVA) in May. With a total of two MVAs in the last 12-month period, the MVA incident rate is at 2.2. Right on the LRD MVA goal of 2.2.

### **Sustainment:**

Job Hazard Assessment (JHA) activity levels in May bumped up to a total of 1267. The following is a comparison of April JHA's performed per employee in each participating department:

Reuse:	24 JHA / employee	Construction:	8 JHA / employee
Operations:	38 JHA / employee	Inspection:	19 JHA / employee
Collections:	39 JHA / employee	Wild Pine Lab	2 JHA / employee
Maintenance:	31 JHA / employee		

Dr. Matt H. Rostock  
CHAIRMAN

Kevin L. Baker  
BOARD MEMBER

Gordon M. Boggie  
BOARD MEMBER

Stephen B. Rockoff  
BOARD MEMBER

Clinton R. Yerkes  
BOARD MEMBER



### **JHA and EAM:**

The District has steadily increased JHA's created per work order for the past six months to the point where nearly every single JHA is incorporated into EAM. This may indicate the creation of a JHA as an EAM checklist form or a download of a paper JHA into the EAM work order. In May **99%** (1256) of the total JHA's were completed via an EAM Work Order. This phase of the transition from only a paper JHA to incorporating into the EAM work order has been completed. Congratulations for a tremendous accomplishment. The next phase is to incorporate JHA checklists into the work orders, making the process totally automated. Additionally, approximately 96% of all EAM Work Orders included a completed JHA, exceeding the District expectation of 95%. The following is a District comparison for the percentage of May EAM Work Orders created for which an electronic JHA was completed:

Reuse:	100%	Construction:	97 %
Operations:	94 %	Inspection:	95 %
Collections:	99 %	Wild Pine Lab	0 Electronic JHA's
Maintenance:	94 %		

### **Near Miss Reporting:**

There were 7 Near Miss reports initiated in May. Employees from Collections, Plant Operations, and Inspection all participated in this program in May. Collection employees accounted for 71% of the participation. The hazards include trips, slips, and falls safety; bee stings, broken concrete tripping hazard, door swing hazards, and equipment failure. The Near Miss's are input into the Work Order system if corrective action is warranted. Next month a focus on the status of near misses will be addressed. A detail of the volume of near misses receiving work orders and the percentage of those being closed will be reported. As a reminder, reporting safety issues in the Near Miss Reporting system includes Unsafe or Unhealthy Conditions, Environmental Pollution Potential, and Suggestions for Safety Process Improvement. This continuous improvement process will enhance the District's overall safety performance and help continue to keep District employees injury free. Your input is important, and each employee is encouraged to participate in this program.

### **Training:**

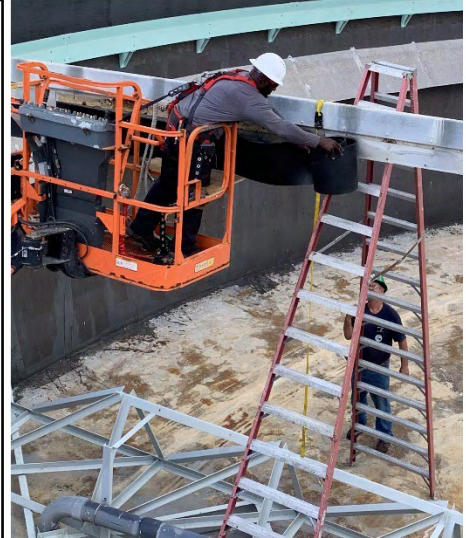
Computer Based Training for the District was put on hold in May. The safety training platform (Target Solutions) which has been used in the past is no longer available. The District will now use "OpenSesame" as our preferred training platform for Safety, and choice Human Resource and IT training. OpenSesame has over 19,000 training modules which goes beyond Safety, HR and IT. We look forward to implementing the new training platform as OpenSesame will be deployed to District employees in June. District employees should look forward to emails concerning this topic. Lock-out Tag-out Authorized classroom training was conducted by the



Safety Officer for 15 District employees. Electrical Safety Awareness and ARC Flash Awareness training was conducted for 24 District employees. This awareness training is in preparation for the utilization of ARC Flash PPE. The ARC Flash kits for the 24 employees is scheduled to arrive in early June. Subsequent ARC Flash PPE “Use and Maintenance” training will follow in June. A second and final CPR/AED class for 2023 was conducted for District employees on June 7<sup>th</sup>. 75% of all District employees are CPR Certified. The District will provide CPR refresher training next year to keep up with the certifications as they expire after two years. The River Center completed CPR/AED, Lifeguarding, and Kayak training for seven full and part time River Center employees. A District Construction employee has begun taking steps toward his CDL Class B license. The employee is schedule to take his CDL test in July 2023.



At left: Maintenance employee Brian Davis utilizes the Articulating Boom with fall protection harness to replace clarifier 3 rubber pad to the rake arm. At Right: Ross Cowell supports Brian during this task. Ross was directing the mobile crane operator (not pictured) moving the load as one of his duties.



A total of 12 Workplace inspections occurred in May. District jobs that were observed included Plant Inspection with EGIS Insurance, injection well manual transfer switch improvement oversight, Raz Pit influent valve replacement assessment, Clarifier 3 rake arm maintenance, energizing “A” structure generator, field hurricane generator training, chlorine building cylinder replacement, and various near miss report evaluations including facility tripping hazards.

The 2023 Hurricane Plan was finalized in May and is published on the LRD Intranet page (see Hurricane Plan). District employees have worked **eighteen** consecutive months of injury-free work. Congratulation to all District employees! Injury free work demonstrates dedication to work smart and safely. Let’s stay safe at home and at work. This includes preparing for the 2023 Hurricane season. Ensure your family has everything needed to ride out a storm. Feel free to visit with any questions or ideas you may have. And do not forget to utilize the near miss reporting system. Let’s help each other stay safe and reach beyond our goals.



# LOXAHATCHEE RIVER DISTRICT

2500 JUPITER PARK DRIVE, JUPITER, FLORIDA 33458

TEL: (561) 747-5700

FAX: (561) 747-9929

**D. Albrey Arrington, Ph.D.** EXECUTIVE DIRECTOR

[loxahatcheeriver.org](http://loxahatcheeriver.org)

## MEMORANDUM

**TO:** Governing Board  
**FROM:** Administration Staff  
**DATE:** June 08, 2023  
**SUBJECT:** Consultant Payments

The following amounts have been reviewed and approved for payment to our consultants for work performed during the prior month.

Consultant	Prior Month	Fiscal YTD
Attorneys	\$ 22,482.50	\$ 97,850.55
Baxter & Woodman	\$ 2,808.27	\$ 220,983.93
Chen Moore	\$ 4,251.74	\$ 62,427.80
Holtz	\$ 53,606.92	\$ 340,948.11
Mock, Roos & Associates	\$ 8,177.75	\$ 96,471.75
Kimley-Horn & Associates, Inc.	\$ 5,689.00	\$ 46,877.00

Should you have any questions regarding these items, please contact Kara Fraraccio concerning the attorney invoices, and Kris Dean concerning the engineer invoices.

**Dr. Matt H. Rostock**  
CHAIRMAN

**Kevin L. Baker**  
BOARD MEMBER

**Gordon M. Boggie**  
BOARD MEMBER

**Stephen B. Rockoff**  
BOARD MEMBER

**Clinton R. Yerkes**  
BOARD MEMBER



# Future Business

## General:

- Fiscal Year – 2024 Budget
- Board Presentation of select Six Sigma green belt projects

## Future Contracts:

- Lift Station 050 Emergency Generator and Automatic Transfer Switch – Award Construction Contract
- County Line Road Bridge IQ Main Relocation - Award Construction Contract
- Loxahatchee River Subaqueous Force Main Replacement – Award Construction Contract
- Rolling Hills Gravity Sewer System – Preliminary Assessment
- Lift Station Control Panel and RTU Upgrades – Award Construction Contract
- 5331 Center Street – Preliminary Assessment
- 2500 Jupiter Park Drive Site planning Presentation

