



CITY COMMISSION - CITY OF WILDWOOD

Mayor/Commissioner – Ed Wolf – Seat 1

Mayor Pro Tem/Commissioner – Pamala Harrison-Bivins – Seat 2

Joe Elliott – Seat 3

Marcos Flores – Seat 4

Julian Green – Seat 5

Jason McHugh – City Manager

Agenda

Special Meeting

September 19, 2022 9:00 AM

City Hall Commission Chamber

100 N Main Street

Persons with disabilities needing assistance to participate in any of these proceedings should contact the City Clerk's Department, ADA Coordinator, at 352-330-1330, Ext. 102, forty-eight (48) hours in advance of the meeting.

F.S.S. 286.0105A - If a person decides to appeal any decision made by the Commission with respect to any matter considered at this meeting, they will need a record of the proceedings, and that for such purpose they 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. The City of Wildwood DOES NOT provide this verbatim record.

1. Call to Order

2. Consent Agenda/Informational Items

(A consent agenda may be presented by the Mayor at the beginning of a meeting. Items may be removed from the consent agenda on the request of any one Commissioner. Items not removed may be adopted by general consent without debate. Removed items may be either taken up immediately after the consent agenda or placed later on the agenda at the discretion of the Commission.)

3. Presentations and/or Proclamations

A. *PROCLAIM SEPTEMBER 17-23, 2022 AS CONSTITUTION WEEK*

B. *WASTEWATER TREATMENT PLANT EXPANSION PRESENTATION*

4. **Public Hearings - Timed**
5. **Public Forum - 4 minute time limit**
6. **Ordinances First Reading Only (No Vote)**
7. **Resolutions for Approval**
8. **Financial & Contracts & Agreements**
9. **General Items for Consideration/Discussion and Other Business**
 - A. *DISCUSSION ON WATER QUALITY ISSUES AFFECTING DOWNTOWN CUSTOMERS*
10. **Appointments**
11. **City Manager Reports**
12. **Other Department Reports**
13. **Commission Members Reports**
14. **City Attorney Reports**
15. **Adjournment**

Upcoming Events

September 26, 2022 - City Commission Meeting at 7pm

October 8, 2022 - Christmas with a Cop Golf Tournament at the Tierra Del Sol Golf & Country Club at 10:30am

October 10, 2022 - City Commission Meeting at 9am

October 15, 2022 - Homecoming at the Baker House Event at 10am

September 19, 2022 9:00 AM

CITY COMMISSION OF THE CITY OF WILDWOOD
EXECUTIVE SUMMARY

SUBJECT: Proclaim September 17-23, 2022 as Constitution Week

REQUESTED ACTION: Staff recommends approval.

CONTRACT: Vendor/Entity:
Effective Date: Termination Date:
Managing Division/Department:

BUDGET IMPACT:

HISTORY/FACTS/ISSUES:

Please see the attached proclamation requested by the Daughters of the American Revolution (DAR) proclaiming September 17th through the 23rd as Constitution Week.



Proclamation

WHEREAS, it is the privilege and duty of the American people to commemorate the 235th anniversary of the signing of the Constitution of the United States of America with appropriate ceremonies and activities; and,

WHEREAS, Public Law 915 guarantees the issuing of a proclamation each year by the President of the United States of America designating September 17th through the 23rd as Constitution Week.

NOW, THEREFORE, BE IT RESOLVED, by the City Commission of the City of Wildwood, Florida, that September 17th through the 23rd of 2022, be, and is hereby proclaimed as

CONSTITUTION WEEK

and urge all citizens to study the Constitution and reflect on the privilege of being an American with all the rights and responsibilities which that privilege involves.

IN WITNESS WHEREOF, we have PASSED and DULY ADOPTED this 19th day of September 2022.

CITY COMMISSION
CITY OF WILDWOOD, FLORIDA

Ed Wolf, Mayor

ATTEST: _____
Susan Patterson, City Clerk

CITY COMMISSION OF THE CITY OF WILDWOOD
EXECUTIVE SUMMARY

SUBJECT: Wastewater Treatment Plant Expansion Presentation

REQUESTED ACTION: For Information Only

CONTRACT:

Vendor/Entity:

Effective Date:

Termination Date:

Managing Division/Department:

BUDGET IMPACT:

HISTORY/FACTS/ISSUES:

On March 14, 2022, the City authorized CPH, LLC to complete a Conceptual Design Report associated with the expansion of the City's wastewater treatment facility located at 1290 Industrial Drive. Ben Fries, Vice President of CPH, will present the findings of the Conceptual Design Report and provide recommendations on the next steps in the expansion process.

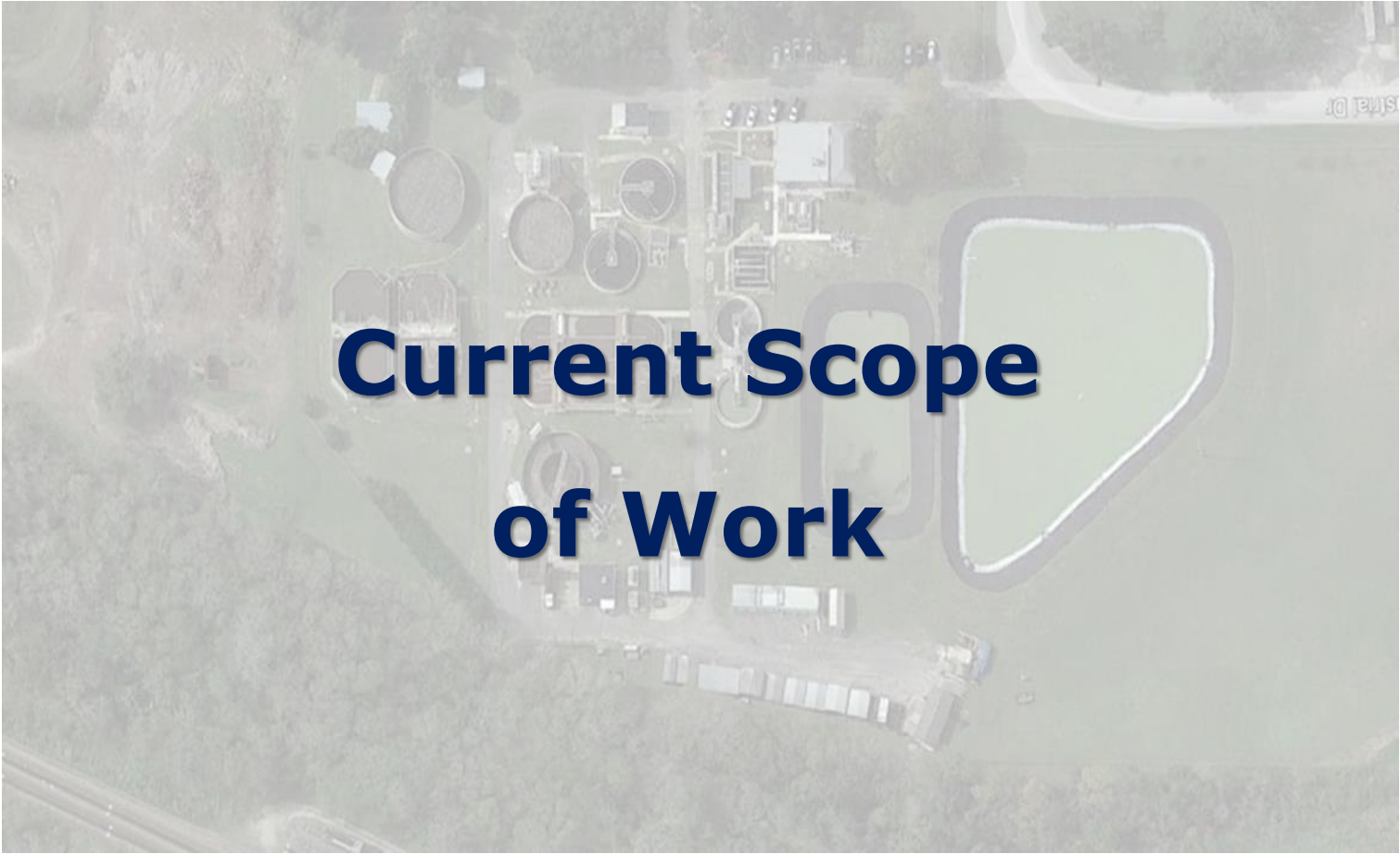
Wildwood WRF

Existing WRF Improvements and New 6.0 MGD BNR AWT WRF

September 19, 2022







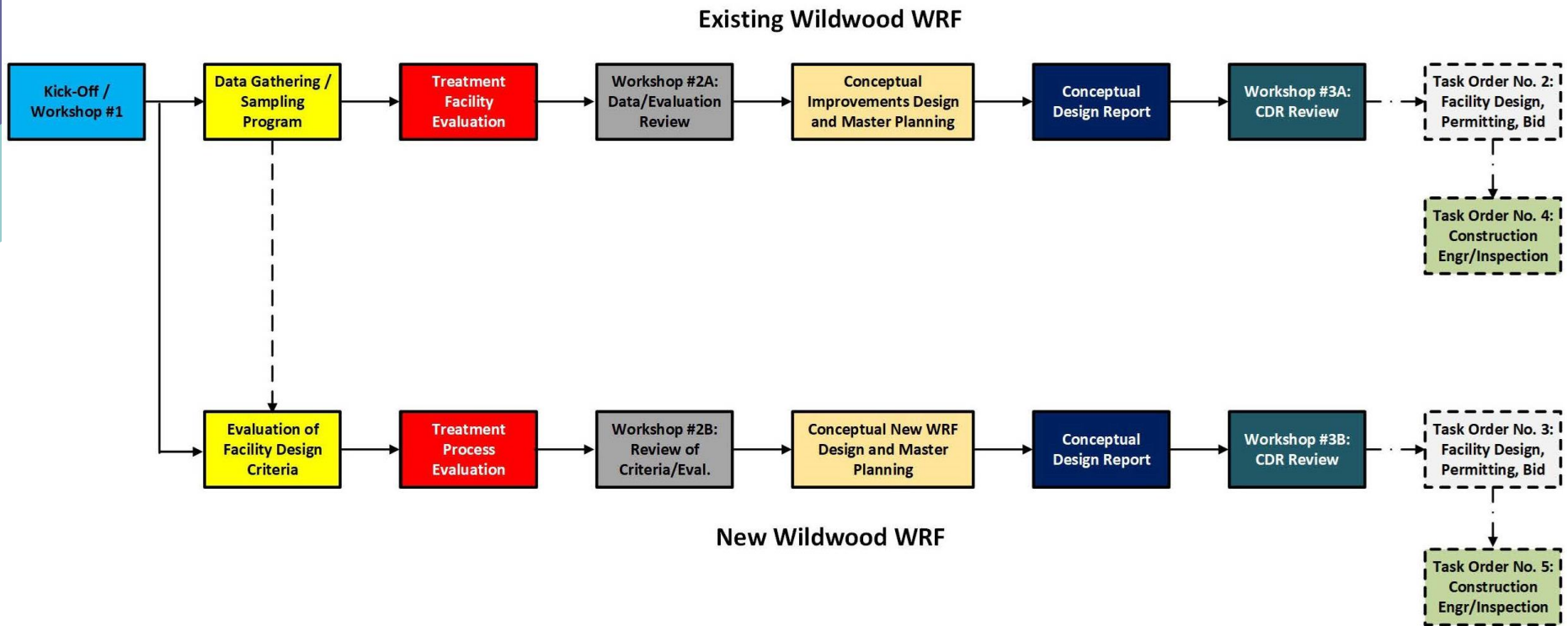
Current Scope of Work

Work Completed to Date

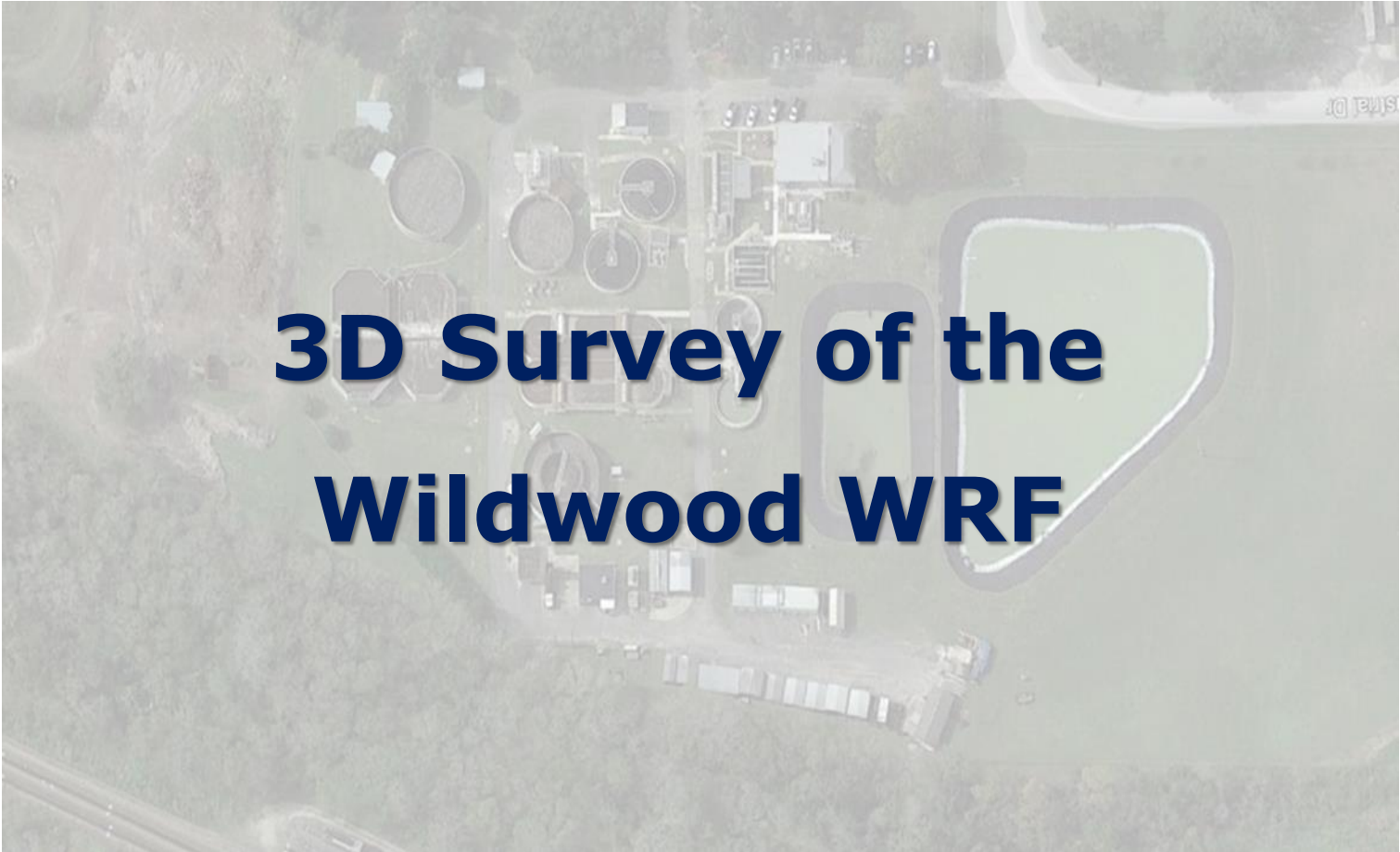
- CPH was selected by the City for Professional Engineering Service for the Wastewater Treatment Facility Expansion
- Work completed to date

Work Element	Status
3D Survey of the Treatment Facility	✓
Wastewater Data Collection and Analysis	✓
Wastewater Sampling Program and Data Analysis for WRF BOD	✓
Evaluation of Existing WRF Unit Operations and Processes	✓
Resolution of Existing Hydraulic Issues at the WRF	✓
BIOWIN Modeling of Existing WRF and Capacity Determination	✓
Conceptual Layout of Existing WRF Improvements	✓
Conceptual Evaluation/Modeling of Proposed new WRF Processes and BOD	✓
Conceptual Layout/Master Planning of New 6.0 MGD AWT Facility	✓
Conceptual Design Report (CDR)	75% Complete

Dual Track Evaluation/Design

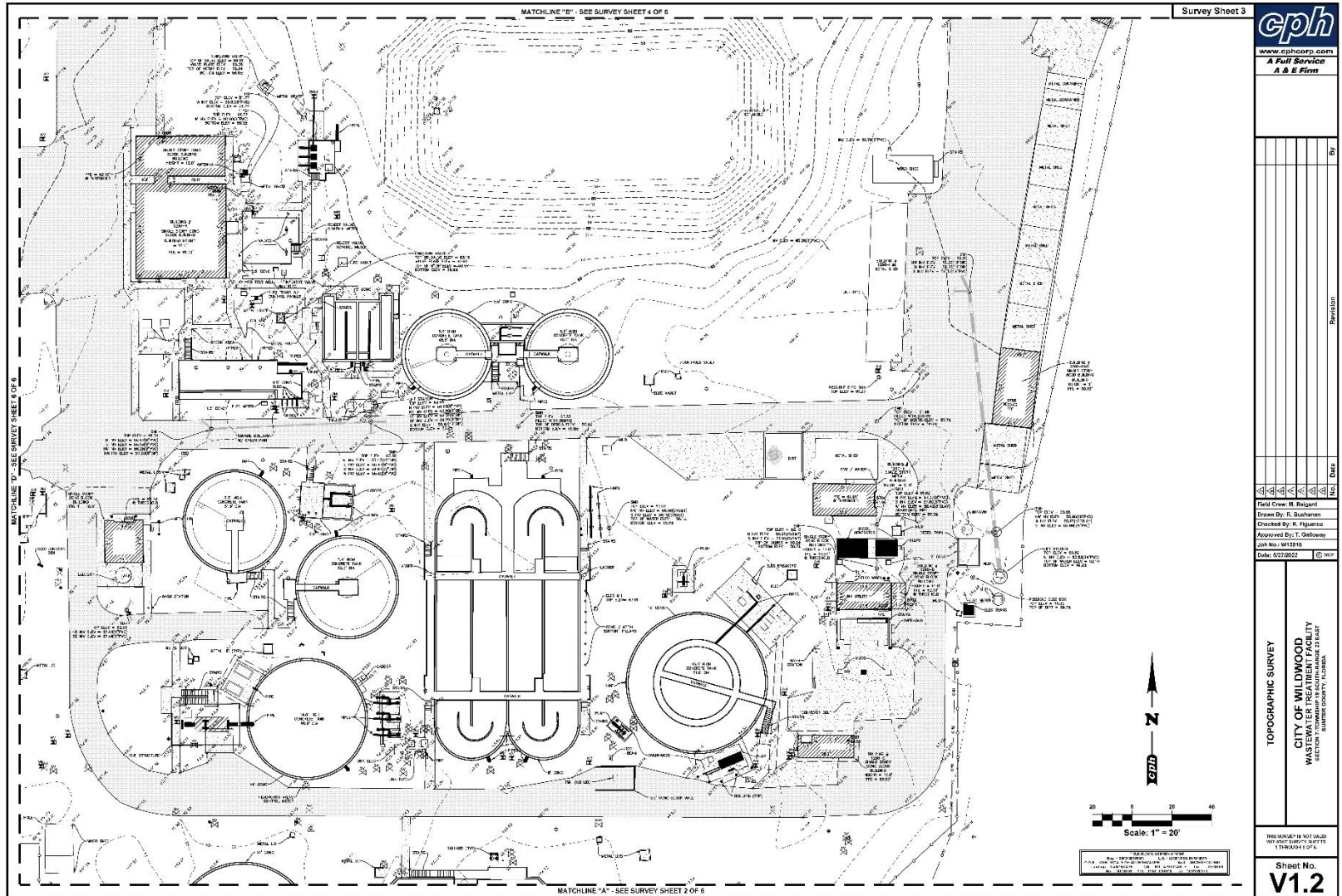






3D Survey of the Wildwood WRF

3D Topographic Survey







Data Collection And Evaluation

Data Collection

- Wastewater Sampling Program

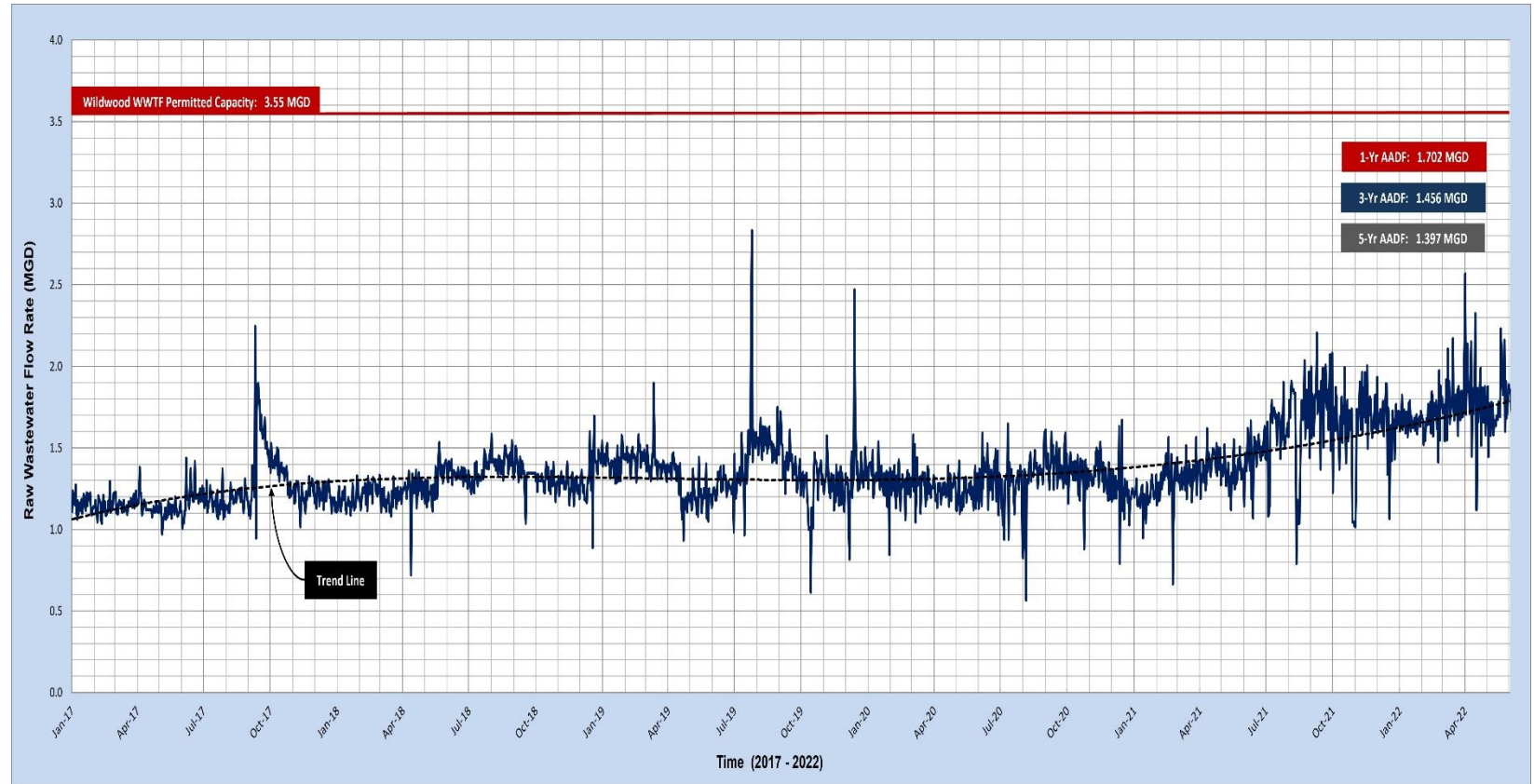
Parameter	WW Sampling Program	FDEP Compliance Monitoring	2021 Average Influent	5-Year Average (2017 – 2021)	WWTF Design Conc's
BOD ₅	135	142	160	218	250
TSS	157	171	203	330	250
TKN	44.1	---	---	---	40
TN	44.6	---	---	---	
TP	6.5	---	---	---	6
BOD ₅ /TKN Ratio	3.05	---	---	---	6.25

- BOD₅ and TSS concentrations are low and have been decreasing over the last 18 months (potential I/I issues)
- Basis of Design for the WRF improvements has been finalized based on the data collection/evaluation results

An aerial photograph of the Wildwood Wastewater Treatment Facility (WWTF). The image shows several large circular clarifiers, rectangular aeration tanks, and various industrial buildings. A road with several vehicles is visible in the lower right. The text "Wildwood WWTF: Raw Wastewater Flows" is overlaid in a large, bold, dark blue font. A large, faint, stylized number "12" is also visible in the background.

Wildwood WWTF: Raw Wastewater Flows

Historical WW Flows: AADF



Wastewater Flows

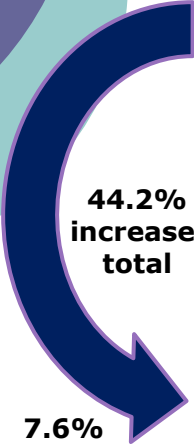
- Comparison in Flow 2021 vs 2022

Month	2021 Flow (MGD)	2022 Flow (MGD)
January	1.204	1.667
February	1.284	1.693
March	1.334	1.787
April	1.394	1.796
May	1.352	1.772
June	1.454	1.763
Average:	1.337	1.747
Annual Percent Increase in Flow:		30.7%

Wastewater Flows

- Annual Flow Comparison

Year	Annual Flow (MGD)	Annual Percent Change
2017	1.211	---
2018	1.293	+ 6.8%
2019	1.357	+ 5.0%
2020	1.295	- 4.6%
2021	1.497	+ 15.6%
2022	1.746*	+16.7%
Percent Increase in Flow (5-Year Avg.):		7.59%



44.2%
increase, total

7.6%
annual
increase



10.3%
increase

- Flows have been increasing on an annual basis since 2017 but have significantly accelerated in the last 20 months
- The decrease in flow in 2020: COVID-19 Pandemic, economy, retail/commercial establishments shutdown

Flow Distribution

- Annual Distribution of Flows

Flow Range (MGD)	2017	2018	2019	2020	2021	2022
0.0 – 0.9	0.0%	0.5%	0.5%	1.6%	0.5%	0.0%
0.9 - 1.3	85.2%	50.7%	33.7%	47.3%	23.0%	1.3%
1.3 – 1.7	12.9%	48.8%	63.8%	51.1%	52.3%	42.4%
1.7 – 2.2	1.6%	0.0%	1.6%	0.0%	23.8%	54.3%
2.2 – 3.0	0.3%	0.0%	0.3%	0.0%	0.3%	2.0%

- Flows have shifted significantly over the last 20 months to the higher flow ranges shown in the table
- Flows in the 1.7 – 3.0 MGD range were 1.9% of all flows in 2017; in 2022, 56.3% of all flows are in this range

Utility Master Plan Flow Projections

- Raw Wastewater Flow Projections

Design Year	Projected Flow (MGD)
2022	1.595
2024	1.892
2026	2.244
2028	2.660
2030	3.154
2032	3.740
2034	4.434
2036	5.258

1.800 MGD (est.)

**At this rate,
capacity will be
exceeded in
3.2 – 3.4 years**

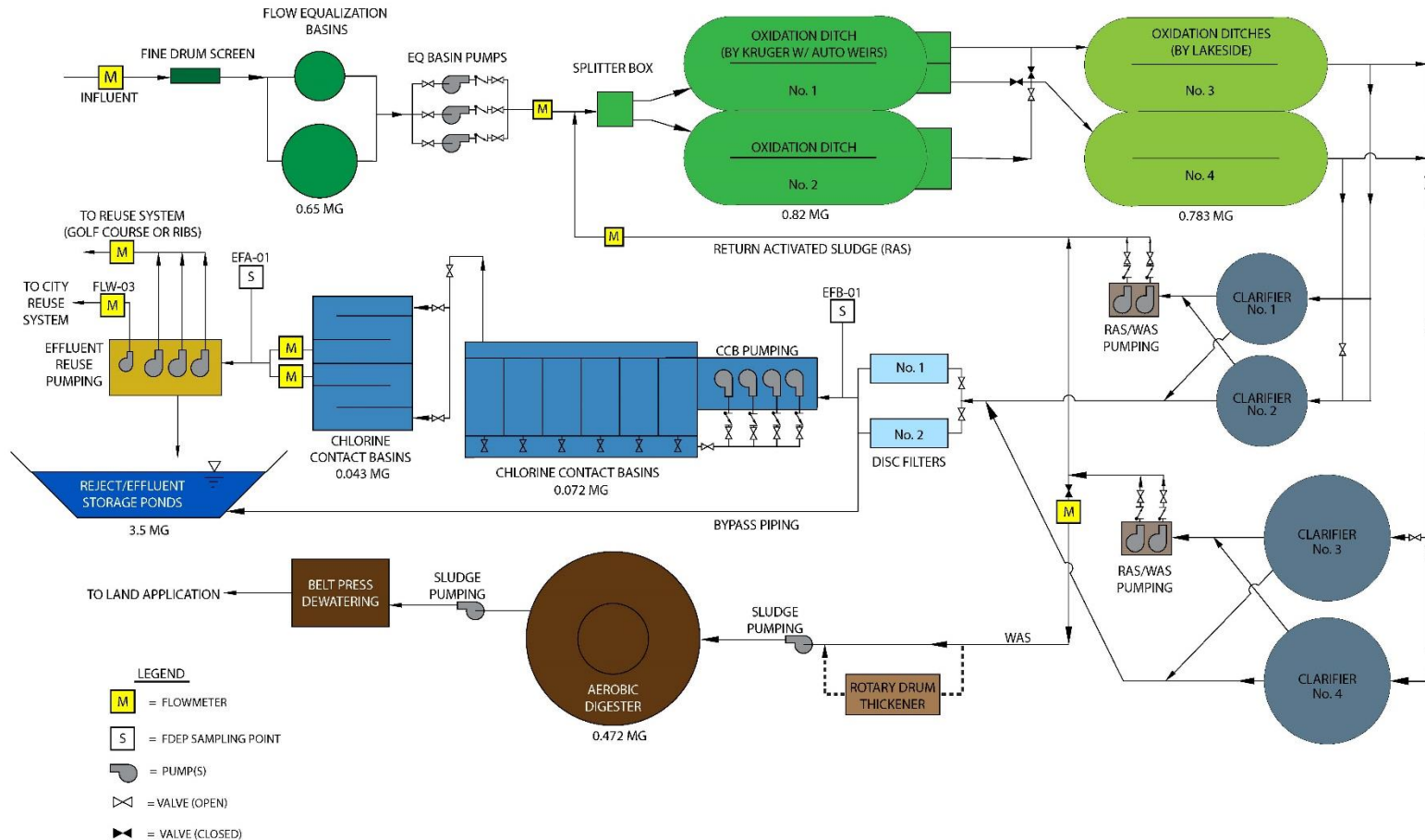
**Design, permitting,
and construction of
the new WRF
facilities will take
approximately
2.7 - 3 years**

- At the current rate of increase in the rate of flow received at the WRF, construction of the new facility, or a portion thereof, will be required sooner than originally anticipated



Oxidation Ditches - Treatment Evaluation

Current Process Flow Diagram



Oxidation Ditches

- Two Kruger Oxidation Ditches
0.82 MG volume
- Two Lakeside Oxidation Ditches,
0.783 MG volume
- Ditches are currently operated in
a “series” configuration
- Kruger Ditches – can’t get
enough oxygen into system
(high organic loadings)
- Hydraulic issues between
oxidation ditches and between
ditches and secondary clarifiers
- Operational issues when flows
exceed 2.3 MGD



BIOWIN Modeling Assumptions

- Modifications of the piping systems to allow operation of the oxidation ditches in “parallel”; thus four (4) independent treatment trains
- Evaluated two (2) scenarios, current influent concentrations entering the oxidation ditches:
 - Scenario 1:

BOD ₅ :	160 mg/L
TSS:	203 mg/L
TKN:	44 mg/L
TP:	6 mg/L
COD/BOD:	1.7 – 2.3
 - Scenario 2:

BOD ₅ :	250 mg/L
TSS:	250 mg/L
TKN:	50 mg/L
TP:	8 mg/L
COD/BOD:	1.7 – 2.3



BIOWIN Modeling: Design Results

○ Scenario 1

• AOR BOD Basis (lb O ₂ /lb BOD):	1.2
• AOR TKN Basis (lb O ₂ /lb TKN):	4.6
• Denite Basis (lb O ₂ /lb NO ₃):	-2.86
• Total System AOR (lb O ₂ /day):	8,460
• O ₂ saturation (mg/L):	7.8
• Design Residual DO – Aerobic:	1.6
• Total System SOR (lb O ₂ /d):	16,075
• Total System SOR (lb O ₂ /hr):	670
• SOTR Capability (lb O ₂ /hr):	880
• Diurnal Safety Factor:	1.3
• No. of Rotors Operating/Ditch:	2
• Rotor Horsepower (HP):	40
• Effluent NO₃-N Conc. (mg/L):	< 6
• Effluent NH₃-N Conc. (mg/L):	< 1 - 2

○ Scenario 2

• AOR BOD Basis (lb O ₂ /lb BOD):	1.2
• AOR TKN Basis (lb O ₂ /lb TKN):	4.6
• Denite Basis (lb O ₂ /lb NO ₃):	-2.86
• Total System AOR (lb O ₂ /day):	11,786
• O ₂ saturation (mg/L):	7.8
• Design Residual DO – Aerobic:	1.3
• Total System SOR (lb O ₂ /d):	21,270
• Total System SOR (lb O ₂ /hr):	886
• SOTR Capability (lb O ₂ /hr):	880
• Diurnal Safety Factor:	0.99
• No. of Rotors Operating/Ditch:	2
• Rotor Horsepower (HP):	40
• Effluent NO₃-N Conc. (mg/L):	< 7.5
• Effluent NH₃-N Conc. (mg/L):	< 2

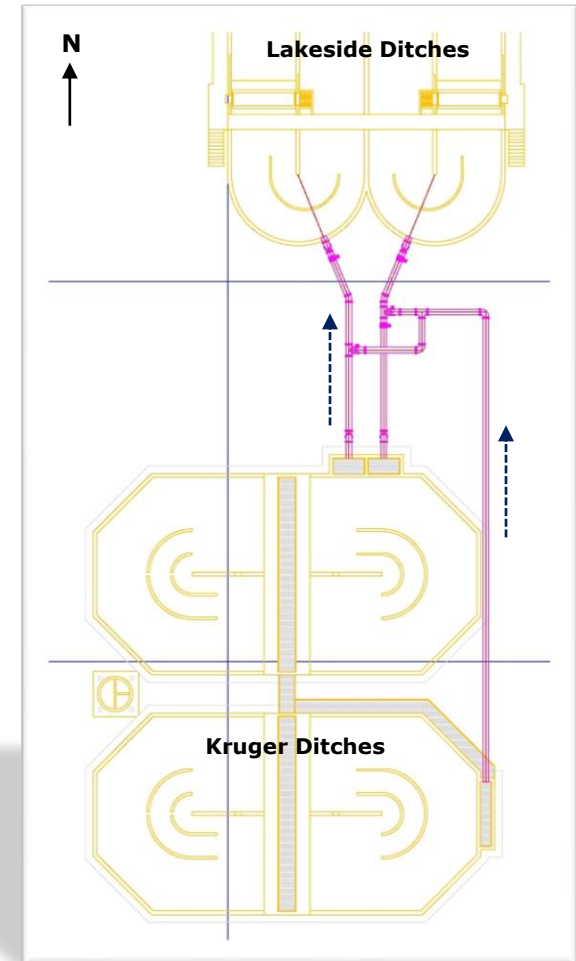
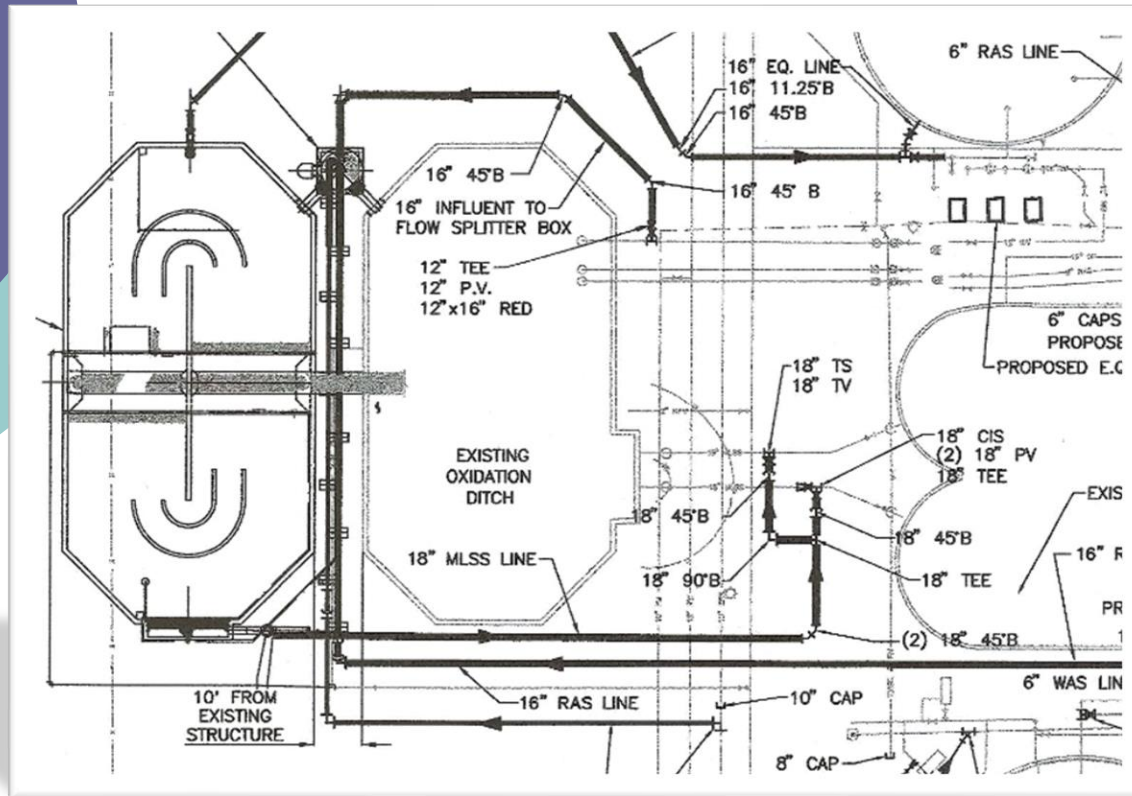
Treatment Capacity: 2.8 – 3.0 MGD AADF



Existing WRF

Hydraulic Evaluation

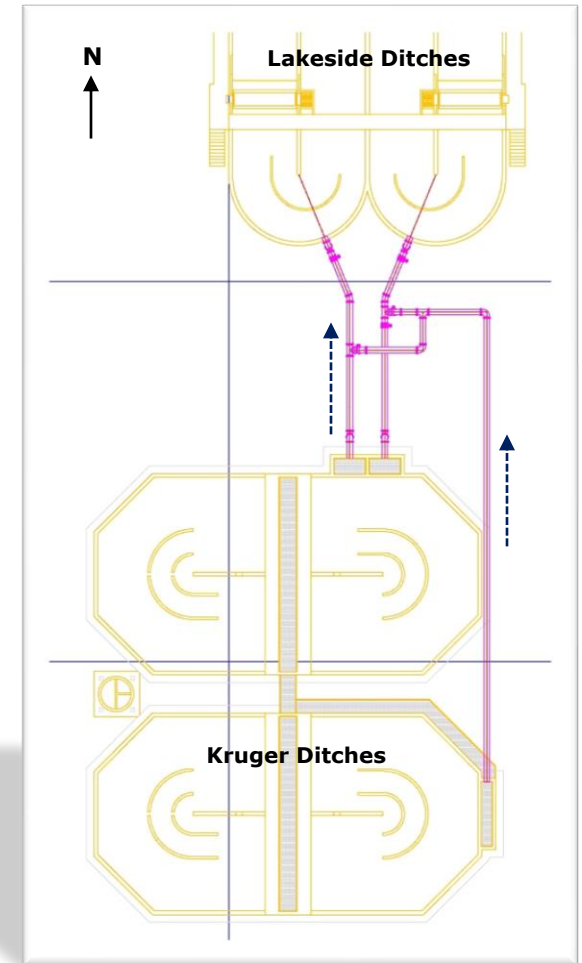
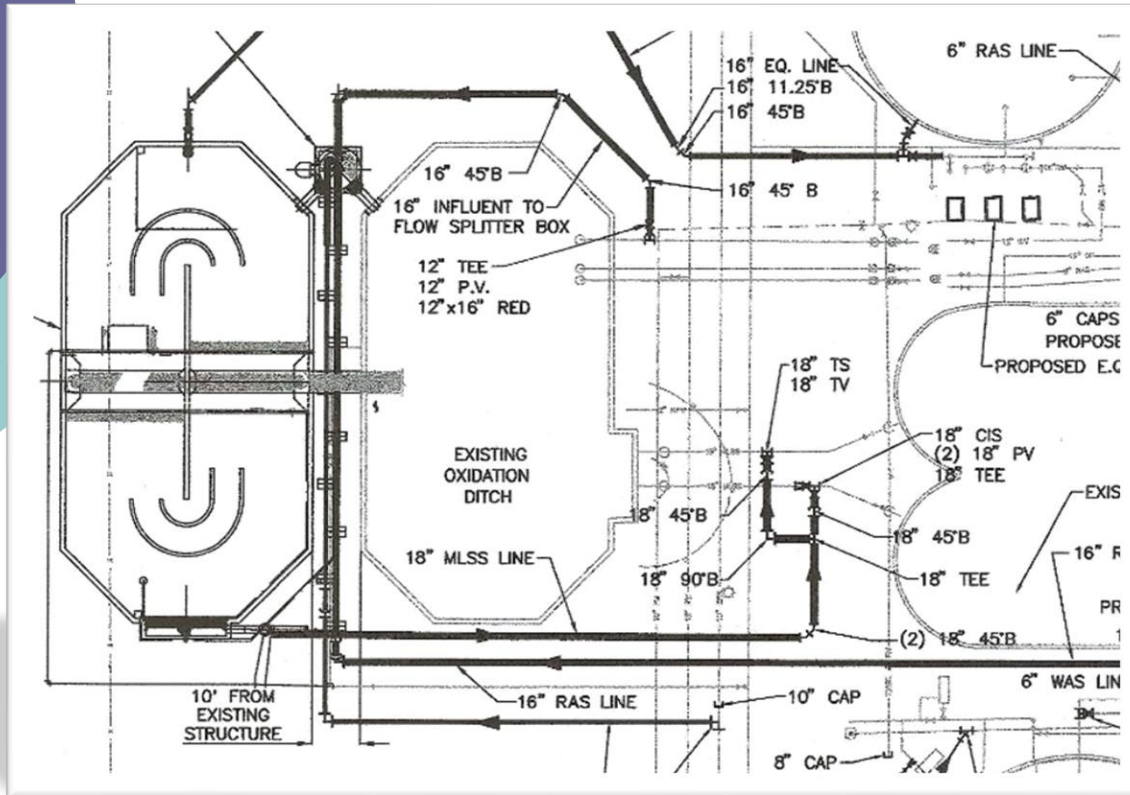
Oxidation Ditch – Piping Plan



Kruger Ditches receive the initial, higher organic load

Kruger Ditches have a current issue with not being able to provide enough oxygen for proper treatment due to the current "series" design and operation of the facility

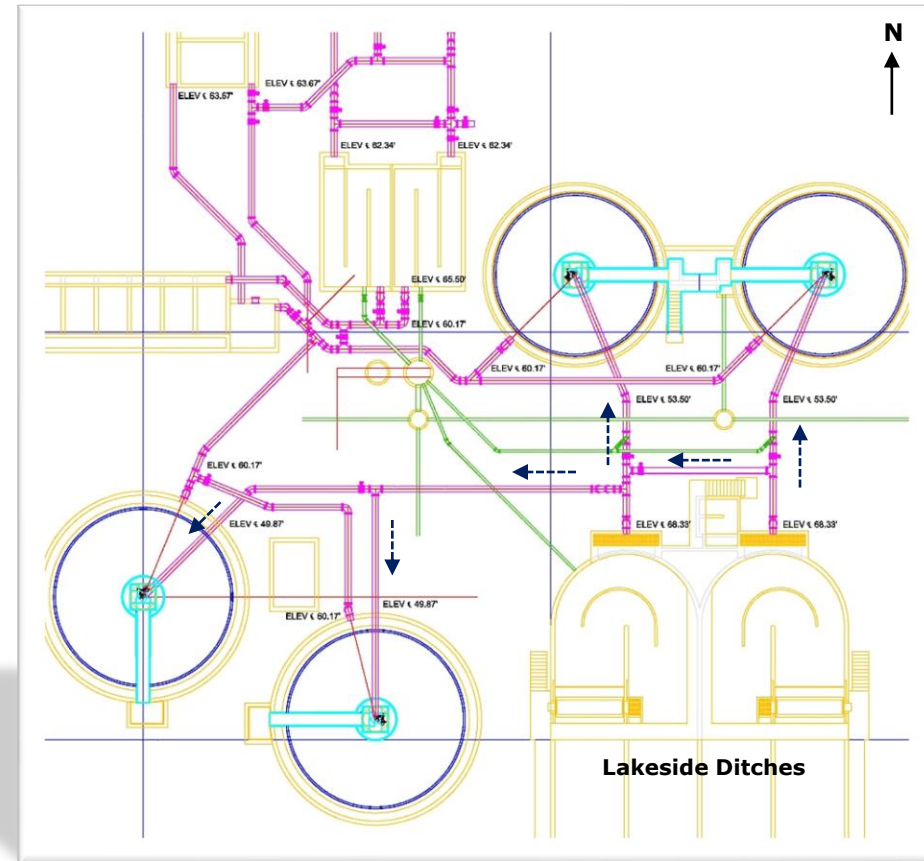
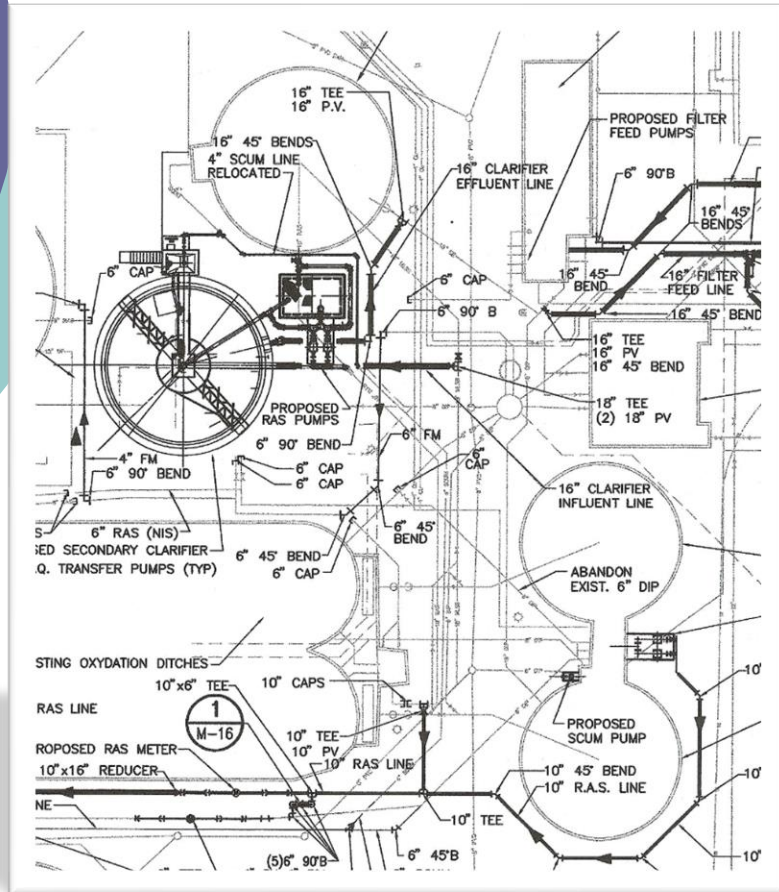
Oxidation Ditch – Piping Plan



Poor hydraulic distribution of flow from the Kruger Ditches to the Lakeside Ditches due to piping system

Majority of flow from South Kruger Oxidation Ditch flows to the east Lakeside Ditch – least amount of headloss

Secondary Clarifier – Piping Plan



There is a poor hydraulic distribution of flow from the Lakeside Ditches to the two sets of secondary clarifiers causing exceedances with flows above 2.3 MGD

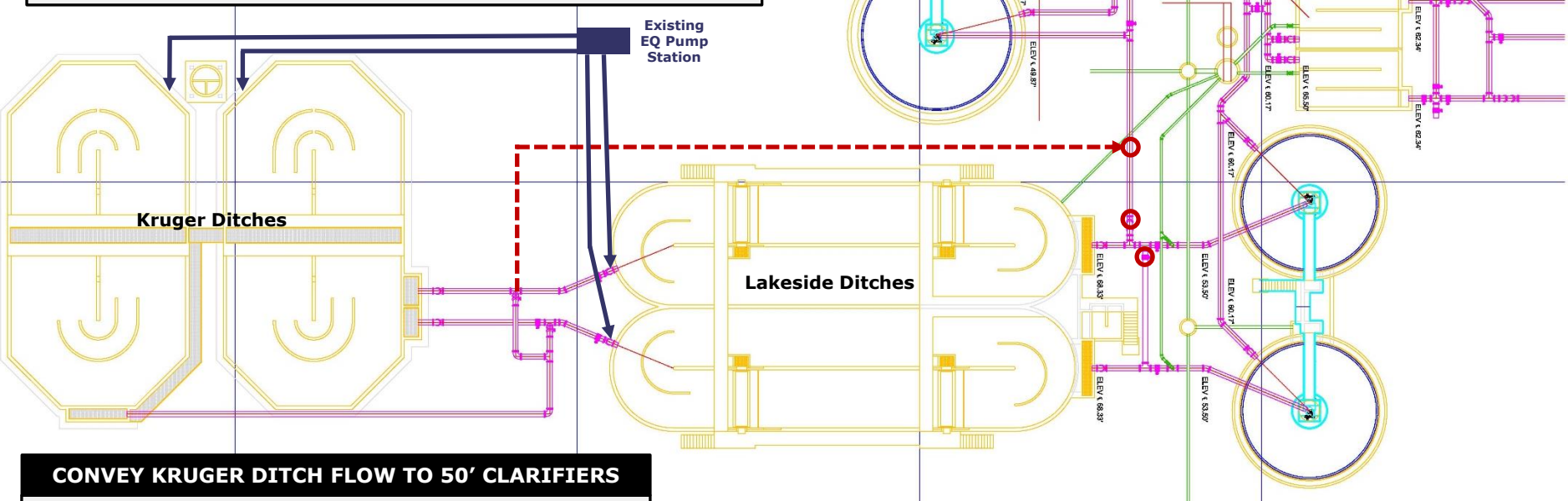
Significant hydraulic piping modifications and clarifier rehab are required

Hydraulic Modifications Required

DISTRIBUTION OF FLOW TO OXIDATION DITCHES

Solution. Convert Oxidation Ditches to a “**parallel**” operation

Method. Addition of new EQ pumps with VFD's (one pump dedicated to each of the four oxidation ditches); piping to each oxidation ditch; modulating valves and flow meters; and install instrumentation systems to optimize flow distribution and the treatment of the wastewater



CONVEY KRUGER DITCH FLOW TO 50' CLARIFIERS

Solution. Dedicate the Kruger Ditch effluent flow to the two 50-foot diameter clarifiers

Method. Install new piping to collect the effluent from the Kruger Ditches and convey it, by gravity, to the existing influent piping

CONVEY LAKESIDE DITCH FLOW TO 40' CLARIFIERS

Solution. Dedicate the Lakeside Ditch effluent flow to the two 40-foot diameter clarifiers

Method. Close existing valve

**New 6.0 MGD
BNR AWT WRF
(Phased Expansion)**

Project Objectives

- Modifications to the existing WRF to keep it operating, treating as much wastewater as possible, and meet all effluent limitations (FDEP Operations Permit)
- Design and Master Plan a new 6.0 MGD BNR AWT treatment facility to be constructed in a phased-approach
 - Meet the timing issues required for the design, permitting and construction of treatment facilities to not impact growth within the City of Wildwood and the wastewater/reclaimed water service area
 - Evaluate all potential unit operations and processes to meet current and known future limitations
 - Develop a set of evaluation criteria for the BNR system
- Minimization of MOPO (majority of the new infrastructure improvements proposed will be built off-line while the existing WRF continues to operate)



Relevant Evaluation Criteria

- Area requirements
- Technology reliability
- Technical maturity and history of successful operation
- O&M Complexity and Requirements
- Level of Staffing Required for Operations and Maintenance
- Flexibility of Design
- Efficient Operation during Periods of Wet Weather
- Minimization of the amount of sludge generated
- Nutrient Loading Rates



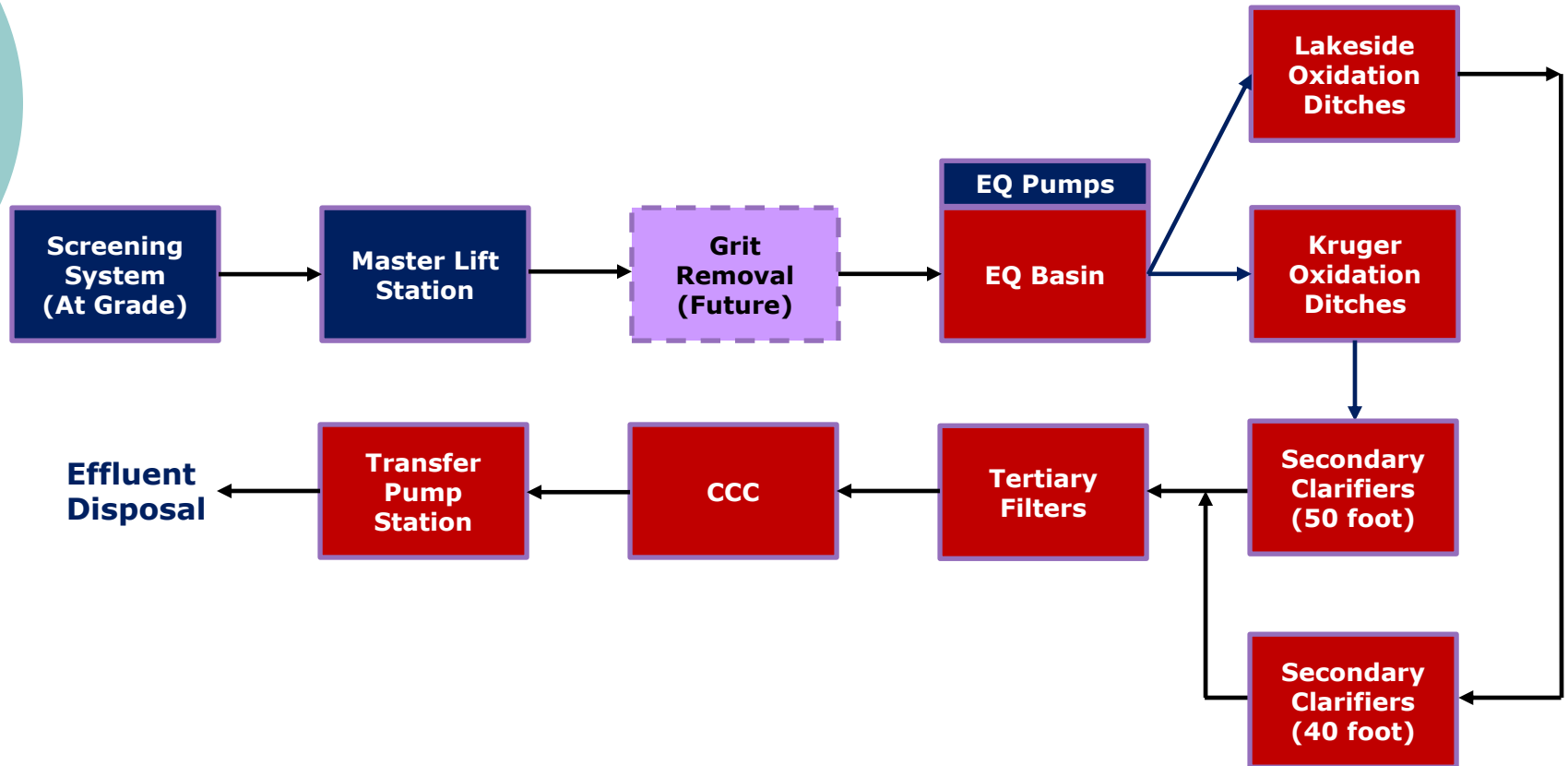
Relevant Evaluation Criteria

- Oxygen Transfer Efficiency
- Systems compatibility
- Energy Efficiency
- Effluent Quality (TN and TP)
- Minimization of chemical application
- Internal recycle loop and pumping required
- External carbon source required
- RAS nitrate issues

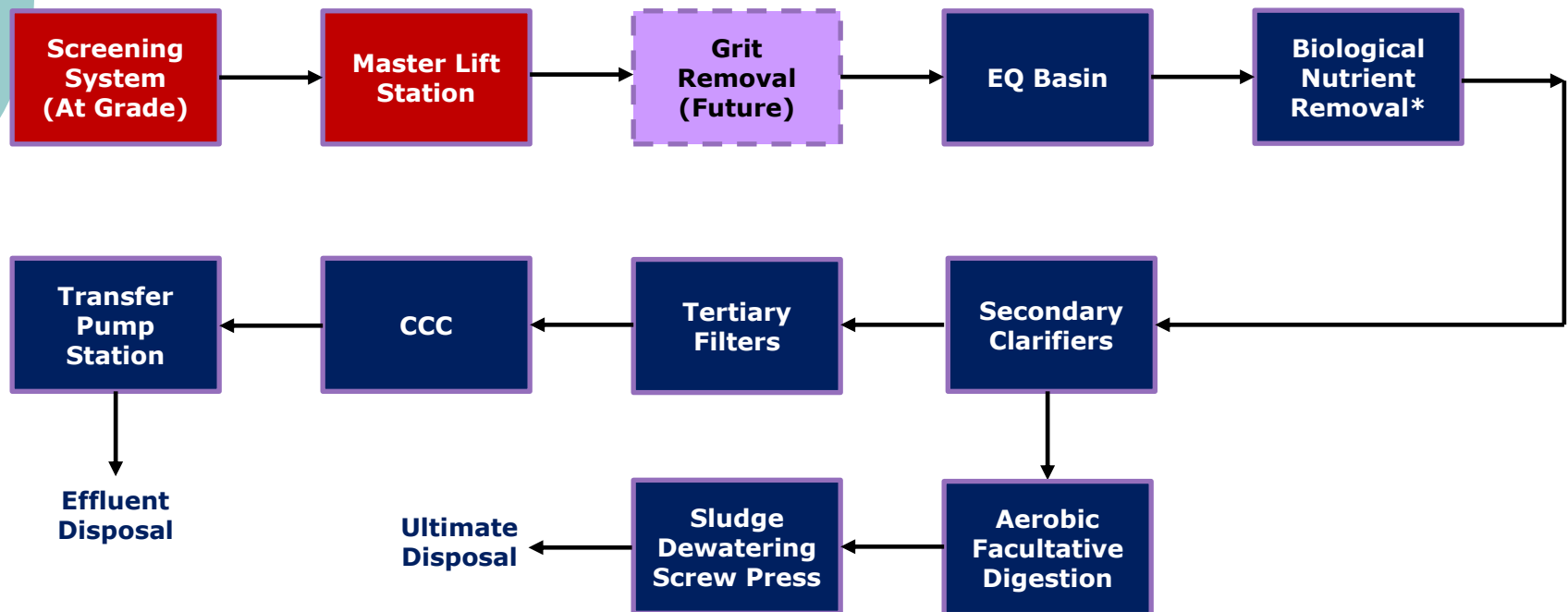
Screening (Evaluation) Process

- A preliminary screening process (first-level), one criteria weighting (pair-wise) analysis and a final screening process (second-level) were implemented, with respect to nutrient removal technologies, in the evaluation process and are identified as follows:
 - First-Level Screening: “Fatal Flaw” Analysis and “short-listing” of nutrient removal technologies
 - Pair-Wise Analysis: “Criteria-Weighting”, i.e., establishing the relative importance of the selection/evaluation criteria for the Second-Level Screening
 - Second-Level Screening: “Ranking” of “short-listed” nutrient removal technologies, based on individual selection criteria, that meet the goals and objectives of the City and the AWT effluent limitations required for this BNR project

Existing WRF – General Improvements



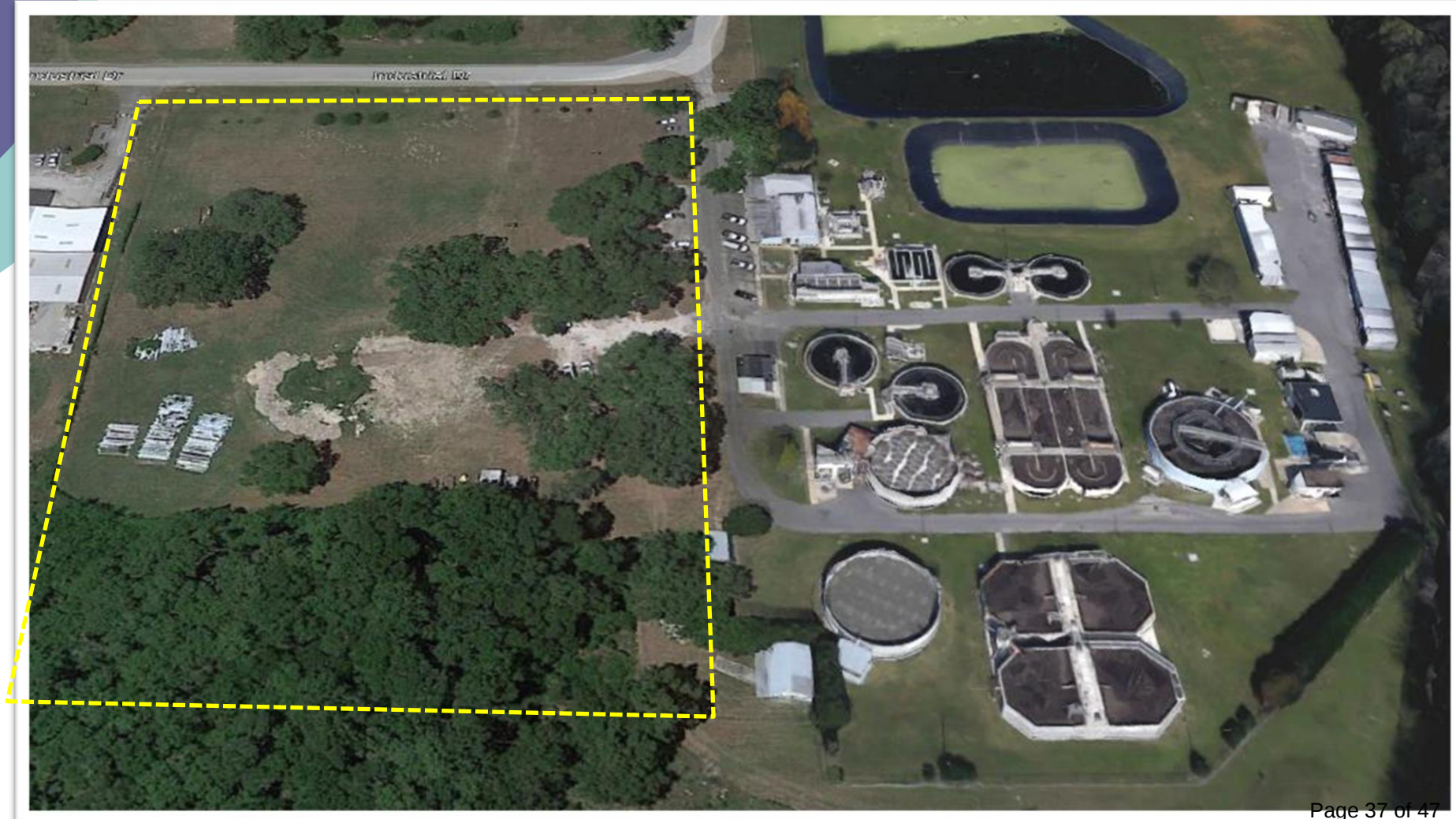
Conceptual Diagram – New AWT WRF



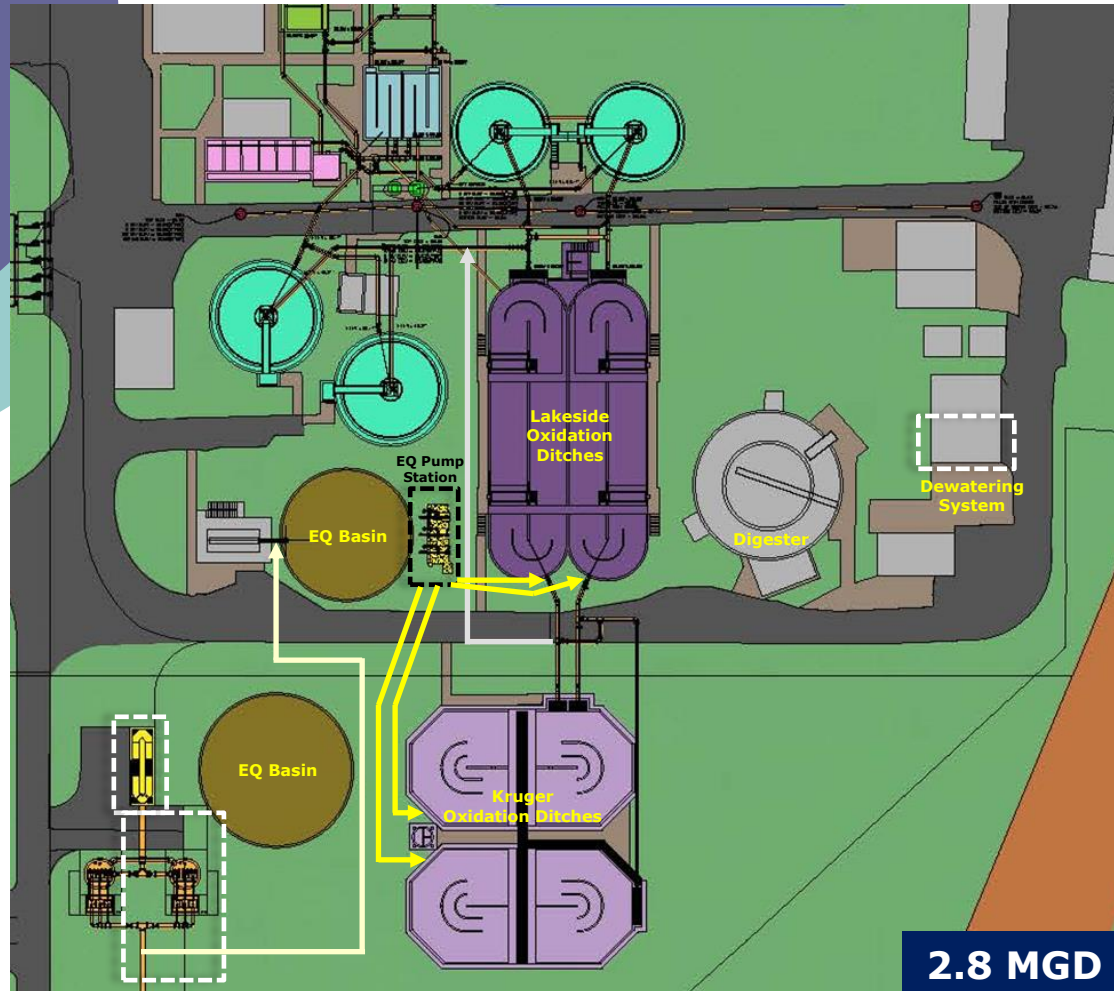
- BIODENIPHO (Oxidation Ditches)
- Conventional 5-Stage BNR (PF System – Fine Bubble with Mixers)
- Conventional 5-Stage BNR (Oxidation Ditches)

Open Space Availability

- Open space available for expansion of facility

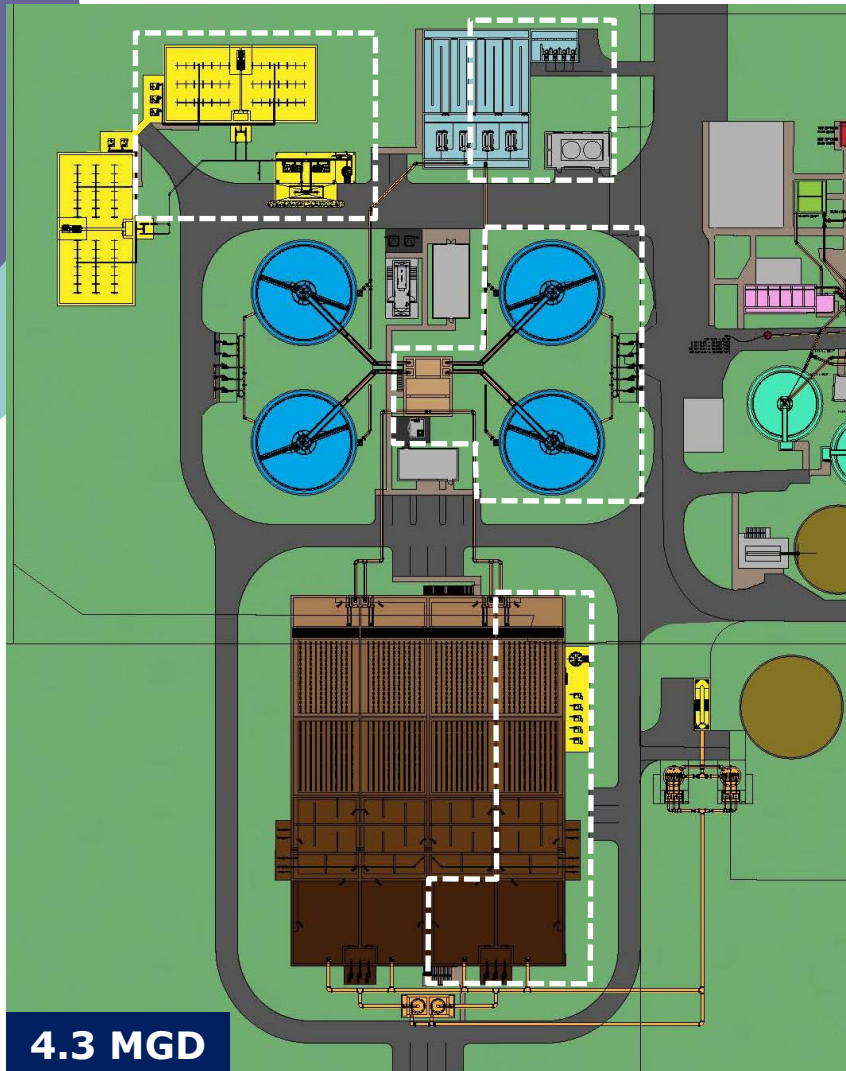


Phase I Improvements – Existing WRF



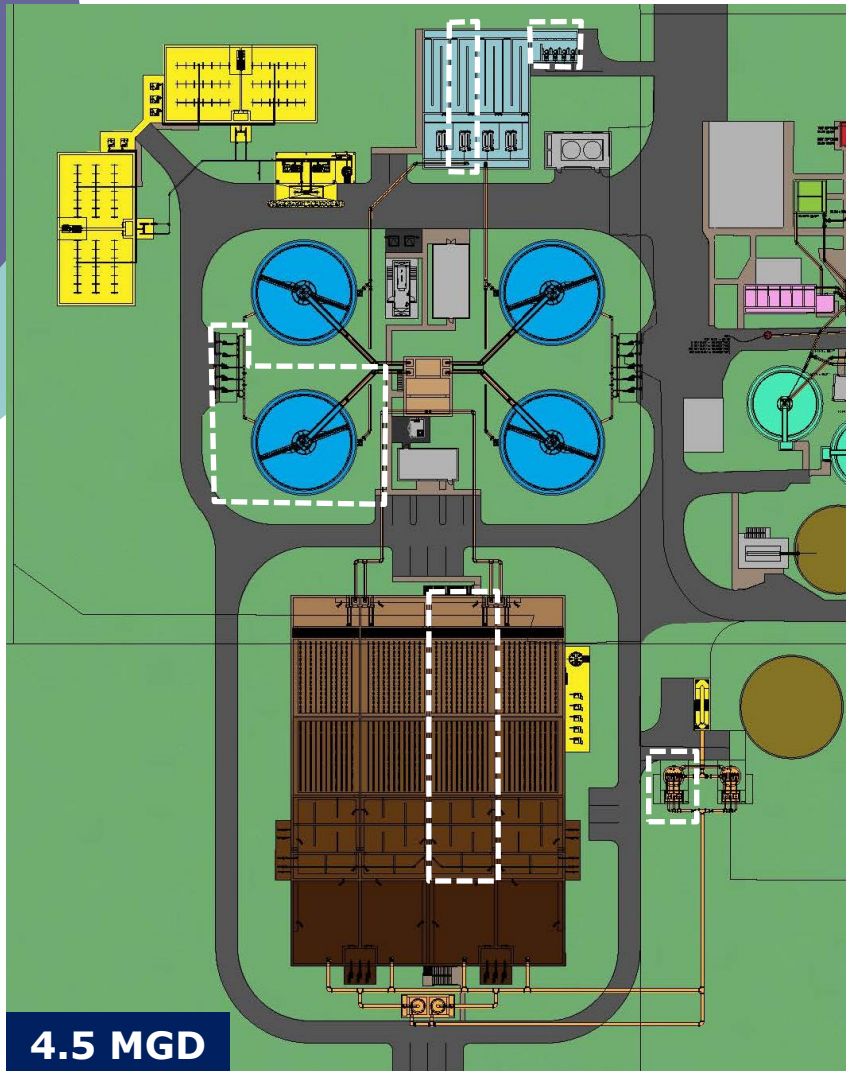
- New EQ Pumps, Piping, Modulating Valves and Flow Meters
- Instrumentation Improvements to the Oxidation Ditches
- Install new piping to collect the effluent from the Kruger Ditches and convey it to the existing influent pipe to the two 50-foot diameter clarifiers
- Close an existing valve to convey the Lakeside Ditches effluent to the two existing 40-foot diameter clarifiers
- New Screening System
- New Master Lift Station and Piping
- New dewatering screw press
- Electrical, Controls, Instrumentation and SCADA improvements

Phase II Improvements – New WRF



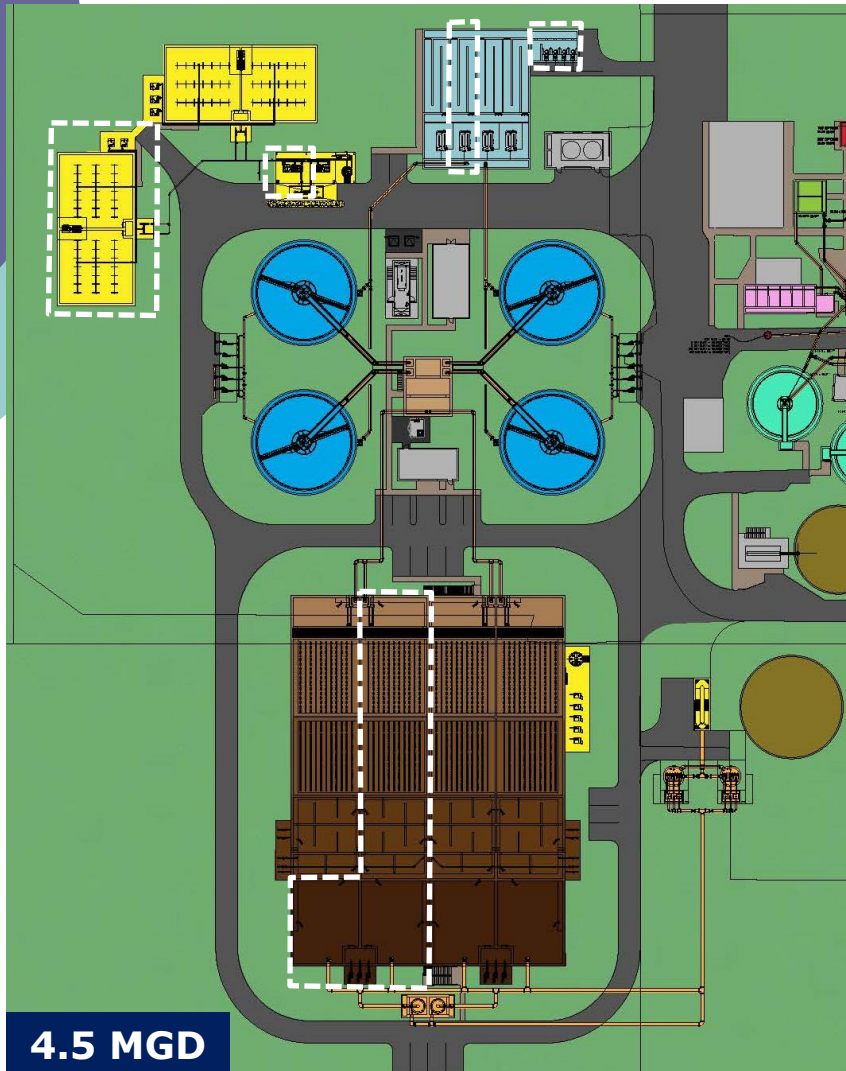
- EQ Basin and Pumping System
- 5-Stage BNR AWT System (1 Treatment Train with a capacity of 1.5 MGD)
- 2 Secondary Clarifiers, RAS/WAS Pumping System and a Reaeration Basin/Clarifier Splitter Box
- Two Tertiary Disc Filters and Filter Influent Channel
- Two Chlorine Contact Chambers, Influent and Effluent Channels and Chemical Storage/Feed
- Transfer Pump Station with 2 Submersible Pumps
- Aerobic-Facultative Digestion System (2) and move the Screw Press over from the existing WRF
- Electrical, Controls, Instrumentation, and SCADA System improvements

Phase III Improvements – New WRF



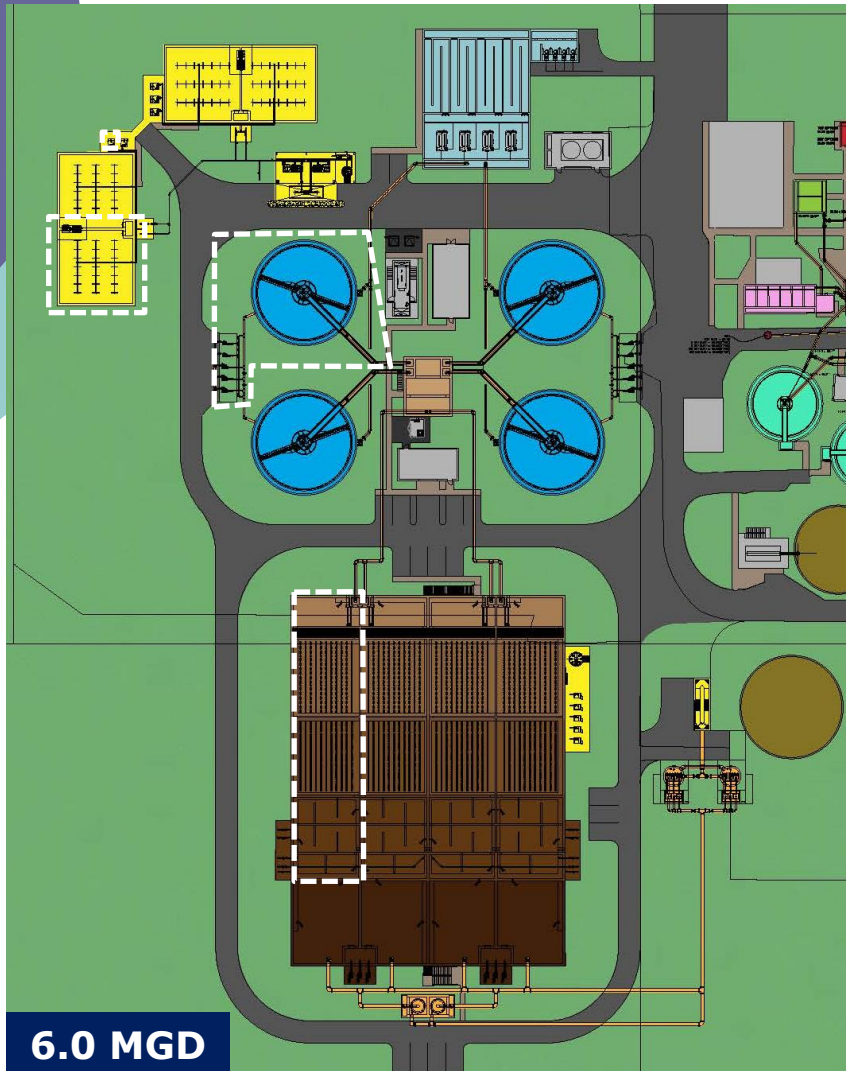
- Addition of the second Master Lift Station Wetwell and Submersible Pumps
- Addition of the second 5-Stage BNR AWT Treatment Train (overall BNR capacity of 3 MGD)
- Addition of 3rd Secondary Clarifier and second RAS/WAS Pumping System
- Addition of 3rd Disc Filter and Filter Influent Channel Expansion
- Addition of 3rd Chlorine Contact Chamber and Influent/Effluent Channel Expansion
- Addition of 3rd Pump to the Transfer Pump Station
- Electrical, Controls, Instrumentation, and SCADA System Improvements
- Lakeside Oxidation Ditch System is no longer used for treatment

Phase IV Improvements – New WRF



- Addition of third 5-Stage BNR AWT Treatment Train (overall BNR capacity of 4.5 MGD)
- Addition of 4th Disc Filter and Filter Influent Channel Expansion
- Addition of 4th Chlorine Contact Chamber and Influent/Effluent Channel Expansion
- Addition of 4th Transfer Pump
- Addition of second Aerobic-Facultative Digestion System (2 tanks) – install equipment in one tank
- Addition of second dewatering screw press
- Electrical, Controls, Instrumentation, and SCADA System Improvements
- Old WRF no longer operational; demolition of portions of the old WRF

Phase V Improvements – New WRF



- Addition of fourth 5-Stage BNR AWT Treatment Train (overall BNR capacity of 6.0 MGD)
- Addition of 4th Secondary Clarifier and additional RAS/WAS Pumps
- Installation of equipment in the fourth Aerobic-Facultative Digestion System reactor and 5th PD blower
- Electrical, Controls, Instrumentation, and SCADA System Improvements
- Demolition of remaining portions of old WRF

Next Steps

- Commission Meeting - September 26, 2022
 - Commission Approval of the Conceptual Design Report (CDR)
 - Commission Approval of CPH Design Contract for WRF Improvements
- Design of Proposed Improvements (Beginning Oct. 2022)
 - Preliminary Engineering Design of Proposed Improvements
 - Advertise for CM/CMAR Contractor (Alternative Delivery Method), Selection Process, Commission Approval, and Contractor “on-board”
 - Generation of a Preliminary Design Report (PDR) and FDEP Permitting
 - Final Engineering Design of the Proposed Improvements
 - Generation of a Wastewater Facilities Plan and Facility Safety Manual
 - Wildwood WRF Operations Permit Renewal (FDEP)
- Construction of Proposed Improvements (Phased)



QUESTIONS ?

CITY COMMISSION OF THE CITY OF WILDWOOD

EXECUTIVE SUMMARY

SUBJECT: Discussion on Water Quality Issues Affecting Downtown Customers

REQUESTED ACTION:

CONTRACT:

Vendor/Entity:

Effective Date:

Termination Date:

Managing Division/Department: Utility Department

BUDGET IMPACT:

HISTORY/FACTS/ISSUES:

City utility customers located within the downtown area have been experiencing discolored water intermittently over the last month or so. In spite of the City's recent efforts, many water quality issues remain within the affected area. The City's Utility Director and engineering consulting firm, Kimley-Horn and Associates, will provide updated information on the problem, recommended action items intended to pinpoint the cause of the issue, and improvement projects that should be implemented to rectify the issue.



September 16, 2022

Mr. Jason McHugh, City Manager
City of Wildwood
100 N. Main Street
Wildwood, FL 34785

RE: *Short Term Improvements for Potable Water System*

Dear Mr. McHugh:

On September 12, 2022, the City of Wildwood (the City) made Kimley Horn aware of customer complaints of discolored water attributable to the presence of iron in the City's potable water system. The City has identified long term solutions to reduce the iron content in the distribution system through the implementation of new treatment processes and the replacement of aging infrastructure. Prior to these improvements being completed, the City has requested that Kimley Horn develop a short-term plan to address the iron in the City's water system.

The recommended components of the short-term plan include:

- A. The City will perform water quality sampling at the points of entry (POE) in the distribution system and at select locations in the distribution system for the following constituents:

1) Constituents:

- | | |
|---------------------------------|----------------------|
| a. pH (field) | j. Total Hardness |
| b. Temp (field) | k. Alkalinity |
| c. Turbidity (field) | l. LSI |
| d. Ortho phosphate | m. Chloride |
| e. Poly phosphate | n. Total Iron |
| f. Chlorine residual (field) | o. Dissolved Iron |
| g. TDS | p. Zinc |
| h. Calcium | q. Sodium |
| i. Magnesium | r. Sulfate |

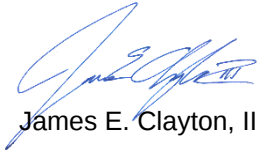
The water quality sampling will be utilized to determine the next corrective action items which could include, but are not limited to, adjusting the current dosage of corrosion inhibition at the existing treatment facilities with corrosion control, introducing a different corrosion inhibitor better suited for the existing water source, and/or installing corrosion control treatment components at facilities currently not utilizing corrosion control.

- B. The City will develop a unidirectional flushing plan utilizing the City's existing hydraulic model to reduce iron levels and water age in the problematic sections of the City's water system. The flushing plan should also evaluate the operating parameters at the each of the treatment facilities to better balance the hydraulics of the City's water system. Once the flushing is complete the City will install automated flushing devices in accordance with the unidirectional flushing plan.

Please contact me if you have any questions.

Sincerely,

KIMLEY HORN



James E. Clayton, III, P.E.

JEC/sab

Cc: Mark Odell
File

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