



# DISTRICT ENGINEER ANNUAL REPORT

**FISCAL YEAR**  
**OCTOBER 2018 THROUGH SEPTEMBER 2019**  
September 11, 2019



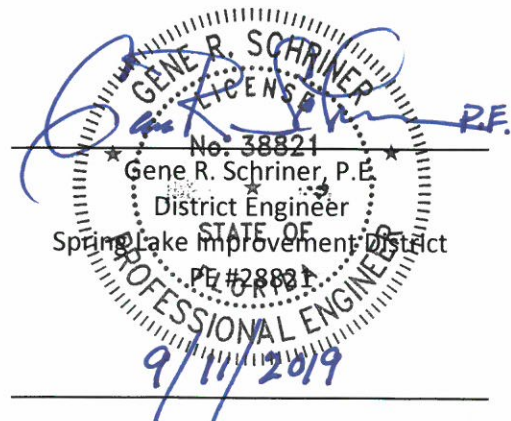
Gary Behrendt – Chairman  
Tim McKenna – Vice Chairman  
Kay Gorham – Secretary  
Bill Lawens – Supervisor  
Brian Acker – Supervisor

Joe DeCerbo – District Manager  
Clay Shrum – Director of Operations  
Diane Angell – Administrator

**District Engineer:**



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**Spring Lake Improvement District  
Annual District Engineer Report  
FY October 2018 – September 2019  
September 11, 2019**



As District Engineer, I am pleased to provide the SLID Board of Supervisors (BOS) with the Annual Report for the 2018-2019 FY regarding the status of the “Works of the District”. This report is intended to update the Board regarding the major projects and activities affecting the District, and not intended for updating the everyday activities of the District. The Report is intended to inform the BOS of potential identified deficiencies requiring action, along with status updates of ongoing projects.

The 2018-2019 FY has been, and continues to be, a productive year with respect to District infrastructure improvements, proactive planning, grant submittals and overall progress. The District continues to improve and expand the infrastructure. Permits are in compliance and no major deficiencies have been identified. A brief listing of complete and on-going projects are as follows:

**Current and Future Projects:**

- 2019 Utility Improvement Plan Program; Approved 8/14/19 by SRF
  - WTP #1                      - Pinedale Estates
  - WTP #2                      - US98 Watermain Loop

- New 80,000 gpd tertiary activated sludge WWTP expandable to 120,000 gpd; SRF funded
- 2019 State Appropriation – US98 Sewer Service
  - Extension of Forcemain along US98 Corridor from Floral Drive to Arbuckle Creek
- Signature H Golf Course purchase and planned improvements to include planned Town Center
- Bark Park (dog park)
- Continued upgrades to STA Eco Park and Final QAPP
- Met with SFWMD on STA QAPP and final compliance of plantings
- FM Extension from Golf Course Club House along C-9 to US98 and to WWTP
- New Master L.S.
- Completion of stormwater pump station improvements and upgrades
- Renewal of District's Consumptive Use Permit (CUP) for water withdrawals
- Continued home building

The District has completed numerous projects and are in the process of beginning new projects of greater substantial impact to the "Works of the District", adding assets and positive impacts to the community. These projects, for the most part, are being accomplished through grant funding, legislative appropriations, low interest long term loans and private investments. The BOS, District Staff and team of professionals continually work diligently to make progress on current and future planned projects to position the District for future growth, added reliability to the infrastructure and potential for future commercial growth and increased property values. The new ownership of the golf course continues to plan for course upgrades, clubhouse improvements and community improvements. The District is in the process of upgrading and expanding sewer capacity and service to the existing system including service to the US 98 commercial corridor with added new reliable and efficient treatment capacity. The District added additional water treatment, storage and high service pumping capacity through the acquisition of the second water treatment plant site at the west end of the community which provides an additional 2.0± MGD of capacity. This item will be further elaborated in this report. Water service has expanded to the south side of US 98 at the west end of the District at the intersection of US 98 and Madrid Drive. The new STA (Stormwater Treatment Area) adds additional stormwater quality treatment and added flood protection as exhibited during Hurricane Irma. The District (located on the north shores of

Lake Istokpoga) is poised to become an attractive destination for development in Highlands County. The STA brings the District into compliance with the surface water permit.

As part of the duties, the District Engineer attended District staff meetings, BOS meetings, site project meetings and regulatory agency meetings as requested by the District. We continue to solicit numerous agencies for grant opportunities for infrastructure. We are in communication with the District Manager, Director of Operations, administrative staff and BOS regularly as needed and we are always readily available. We have addressed permitting issues, drainage improvements, answered agency requests, made site visits to correct field issues, assisted District field operations and responded to BOS requests in a timely manner. Major priority and emphasis this past year was on the sewer system, WWTP expansion, water improvements, stormwater pump station upgrades including emergency power back-up and finalizing the STA project. We assisted the District in renewing the Consumptive Use Permit (CUP) for drinking water withdrawals from the groundwater aquifer. We also assisted the District as needed during storm events.



#### **A SUMMARY OF THE PROJECTS AND ACTIVITIES ARE AS FOLLOWS:**

- **Stormwater Treatment Area Project (STA)**

SLID was originally permitted with a proposed wet detention system of which only 85% was constructed upon transfer to SLID by WCI. In addition to the remaining system to be constructed, SLID has acquired additional unimproved lands for stormwater purposes to complete the system. This acquired area was previously zoned for large lot (estate) subdivisions. Over 70 acres of these lands are contiguous and a lake-wetland marsh system was constructed and in operation. The stormwater system is a stormwater

treatment area or STA. In addition to adding additional stormwater quality treatment and flood protection, the District created a passive Eco park open for public recreational use. The park includes a walking trail, pavilions, restrooms, grills, park benches and parking. The facility attracts wildlife and a variety of plant life. The Eco park is a great amenity for the residents for exercise, fishing, family gatherings, observing wildlife, bird watching, and just to enjoy the beauty of south Florida at SLID. The system can be expanded in the future with the remaining parcels purchased if grant funding is provided or through partnering entities. As mentioned, the addition of the STA provides additional water quality treatment benefits prior to discharging into Arbuckle Creek in terms of TSS, TN, TP reduction and also provides additional storage during rain events reducing flooding. SLID has no additional water quality or flood protection needs at this time and shall only proceed if funded through a third party with BOS approval. The system was funded through EPA/FDEP 319 grants and state appropriations. Preliminary engineering for a future Phase IV is complete.

The current STA system is designed to function as follows:

Storm runoff from SLID will be conveyed through the existing canal, lake system, and STA prior to reaching the pump station. With the addition of the STA, the pump schedule may be modified so as to allow runoff to discharge into the proposed STA. This system allows the District flexibility in managing canal levels. The intent is to discharge the runoff into the lake portion of the STA and continue to let it travel through the marsh portion for treatment. A control structure is installed at the southeasterly perimeter to optimize treatment. The control structure will allow for 0.5 ft. of retention plus 2 ft. of detention for a total gross volume of 150 ac-ft. The addition of this STA will create storage to reduce the operation period of the pumps as well, saving operational expenditures. The constructed STA shows a 21.26 acre wet detention pond with a 21.76 acre wetland marsh (northeast) and 23.46 acre wetland marsh (southwest). This STA also provides added flood protection by creating surface water storage on land that was previously zoned and planned for development.

The STA construction of Phases I–III are complete. The total grants (State Appropriation \$416,000 and two 319 FDEP Grants of \$1,250,000) amount to \$1,666,000. The final construction cost of the project was \$3,304,579.22. A portion of the STA levee was damaged during Hurricane Irma. The District worked with FEMA to repair the bank erosion incurred during the hurricane. District staff diligently provided all necessary information, filed a claim with FEMA for the repairs, and successfully received reimbursement.



- **Section 319 Grant**

SLID was granted \$1,250,000 by the FDEP 319 Grant Program for construction of the 70± acre Phases I – III wetland Stormwater Treatment Area (STA) which is constructed. The grant consisted of two (2) \$625,000 portions for multiple years. Substantial completion for Phases I – III is complete and in operation. The District is working with FDEP on the Quality Assurance Project Plan (QAPP) portion or water quality testing as required in the

grant. Due to the costs, the FDEP agreed to modify the reporting requirements under the QAPP from continuous monitoring to targeted storm monitoring with specific stormwater event analysis. The District completed the first QAPP report for the first storm on September 7, 2017. However, additional storm event monitoring was needed to complete the report and these events were recorded in the summer of 2018 through late September of 2018. The Final Report for the QAPP was completed on February 14, 2019. The following table provides a summary of the anticipated treatment efficiencies when SLID is built-out:

Table 1

Constituent	Rain Event no. 1	Rain Event no. 2	Rain Event no. 3	Rain Event no. 4	Rain Event no. 5	Rain Event no. 6	Min	Max	Average
Total Nitrogen (as N)	100%	7.0%	22.9%	15.0%	10.4%	18.2%	7.0%	100.0%	29%
TSS (mg/L)	100%	7.0%	80.0%	70.2%	79.4%	59.3%	7.0%	100.0%	66%
TKN(as N) (mg/L)	100%	7.0%	23.7%	15.0%	10.4%	2.3%	2.3%	100.0%	26%
Total Phosphorus (as P) (mg/L)	<i>These parameters were tested but not detected.</i>								
BOD 5day (mg/L)									
NO3+NO2(as N) (mg/L)									

### STA Discussion & Conclusion

- The STA allowed SLID to pump less due to the increase in storage provided by the STA. This provides some benefits to pump operating costs during a storm.
- The STA and modeled results provide a glimpse of the potential water quality treatment benefits. It is anticipated that additional volume can be diverted to the STA once pump operating schedule is addressed.
- Event No. 1 had the greatest amount of rainfall and due to the drought conditions prior to the storm, no outflow from the control structure was observed.
- For all events monitored, levels of Phosphorus, BOD5day, & NO3+NO2 went undetected. The existing stormwater management system may be the reason for these undetected constituents since the STA is technically downstream of these systems such that a significant amount treatment occurs upstream prior to entering the STA.
- The use of grab sampling is time specific and may not be completely representative of the entire event and therefore influence the results. If the sample is taken at the beginning of an event, it is likely that inflow concentrations will be high due to the "first flush" of pollutants, particularly when it hasn't rained in some time as occurs during the

winter dry season. Conversely, if the first flush is missed, inflow concentrations will be lower.

- Looking at available historical rainfall data from the same SFWMD Rain Station used to model the storm events, 96%<sup>1</sup> of the storms produced 1 inch or less of rainfall. Therefore the existing system coupled with the STA is adequately geared to treat the majority of the storm events.
- Lastly, the regulatory 1" treatment volume for SLID (2,296 acres) is calculated to be 191.37 ac-ft or 62.35 million gallons of storm runoff and is presumed to be treated within the existing canal and lake system of SLID. There was a time when the SFWMD would not recognize treatment in the existing canal system due to latter day dimensional criteria for wet detention systems (see Table below). That would have required SLID to modify its control structures to provide an additional storage volume of 32.45 ac-ft or 10.57 million gallons. CAS convinced the SFWMD that SLID was grandfathered in with its current system and that widening existing canals would not be feasible. However with the addition of the STA an additional treatment volume of 259.76 ac-ft has been created (84.64 million gallons). This provides an additional 1.36" of treatment for SLID for a total of 2.36" of treatment. This additional treatment volume (259.76 ac-ft or 84.64 MG) can be used to credit third party users with water quality treatment.

Table 2

				1" Treatment Volume			
SLID Drainage Area:	2,296.41	Acres	=	191.37	ac-ft	or	62,353,042.88 gals
<u>Analysis Method:</u>							
Canal areas were removed from treatment credit in Basins where only wet canals existed. Dry canals remained as no dimensional criteria exist for dry detention areas.							
If no credit was allowed in canal system, you need to provide an additional volume in areas that met dimensional criteria by modifying existing control structures.							
Every Basin with a control structure would need to be evaluated to ensure this treatment volume is being detained.							
This additional volume is estimated to be at:				32.45	ac-ft	or	10,573,274.89 gals
Note this volume is a conservative estimate and will depend on control structure overflow elevation relative to its respective control elevation.							
The addition of the STA provides a volume of				259.76	ac-ft	or	84,637,289.09 gals
	191.37	+	259.76	=	451.13	ac-ft	or 146,990,331.97 gals
So, if we're just looking at SLID, then equivalent treatment volume would be:				<u>451.13</u>	<u>ac-ft</u>	=	0.196 ft or 2.36 inches
				2,296.41	Acres		
Therefore SLID is providing an additional :				1.36	inches of treatment	over the 1" Regulatory Volume	

<sup>1</sup> 2004 to present day





- **Wastewater Treatment Plant**

SLID purchased an existing wastewater treatment plant including the collection system from the existing Spring Lake golf course within the SLID boundaries. The system was acquired by SLID to benefit the customers of the system and to insure reliable service and environmental safety with respect to district surface waters. The existing wastewater treatment plant had a capacity of 104,000 gpd with average daily flows reaching 35,000 gpd during peak months. The existing plant was in disrepair, oversized to allow for spray irrigation and operating under an FDEP Administrative Order #A0-070-SD. It currently serves 314 units consisting of the existing golf course villas within SLID.

It was in the best interest of both SLID and the existing customers for SLID to own the wastewater treatment plant and sewer system for financial, environmental and health reasons. This also allows for SLID to control their future destiny. Due to the existing wastewater treatment plant's close proximity to SLID's storm water canal system and potential intermingling of wastewater effluent with SLID's surface waters as a result of spray irrigation practices by the previous utility owner, SLID realizes through ownership of the system it has greater control of environmental and surface water quality within the District including control of charges to the customers of the system. This helps to minimize excessive discharges from private "for profit" owners. SLID now has the ability to provide both water and sewer service which will help to enhance commercial growth along the US 98 corridor and other higher density parcels. Through ownership of the wastewater treatment plant, SLID is in control of the District's growth.

The District has applied for and received an SRF loan to construct a new 80,000 GPD tertiary activated sludge wastewater treatment plant located on US 98 near the east end of the District. The new plant consists of two (2) 40,000 GPD treatment trains allowing for a more efficient operation of the wastewater treatment plant due to the wide fluctuation of flows to the plant throughout the year. The project also included a new lift station and over 9,500 linear feet of new force main.

Bids were received on May 16, 2018. The low bid for all wastewater improvements was \$3,156,199.00 by Excavation Point, Inc. a local Sebring contractor. The award was issued on May 24, 2018 with a deduct of \$133,789.00 for a total revised lowered award of \$3,022,410.00.

The entire project includes the following:

- 5,612 LF of 10" force main along US 98
- 3,893 LF of 8" force main
- 5 each directional bores (10" & 8")
- Construction of duplex submersible lift station
- Demolition of existing lift station

- 10" gravity sewer to the club house
- Modification of existing WWTP by-pass piping to new plant
- Clearing and grubbing of WWTP site
- 80,000 GPD (two 40,000 GPD) tertiary WWTP expandable to 120,000 gpd
- Dual absorption bed effluent disposal systems up to 120,000 gpd
- Chemical building and feed system
- Water service to WWTP
- US 98 entrance road
- WWTP road work and parking lot
- WWTP electrical components and controls
- Back-up generator

The improvements include re-routing of all sewage from the existing plant to the new wastewater treatment plant. The existing wastewater treatment plant site's future use is to be determined. The force mains will extend from the existing golf course clubhouse along the C-9 Canal to US 98 and then along US 98 to the wastewater treatment plant.

SLID has acquired this new property in close proximity to the existing wastewater treatment plant for the construction of the new proposed plant. The existing plant will be decommissioned in the near future. The new WWTP is complete and going through the certification process with FDEP. Once certified, it will be put into service.

The District acquired the new 7.58 acre site which is more centralized to the District, along the US 98 corridor and the soil conditions and site are highly suited for this use.

The proposed treatment plant will be located between Duane Palmer Boulevard and US 98. A proposed 8-inch force main will be constructed from a new proposed lift station at Clubhouse Lane and Duane Palmer Boulevard along the C-9 canal to US98 and tie into a 10 inch force main to the proposed wastewater treatment plant site. The 10" force main will be constructed along US 98 to accommodate future capacity. The new concrete wastewater treatment plant is to be constructed in two phases. Phase One consists of two (2) 40,000 gpd treatment trains for an initial design capacity of 80,000 gpd. A third 40,000 gpd train will be added adjacent to the first phase tankage for a build out capacity of 120,000 gpd as demand dictates. The tertiary activated sludge treatment plant will treat the District's wastewater to tertiary treatment levels with onsite effluent disposal of the treated wastewater into an absorption mound disposal system. The effluent is spray irrigation quality. The plant's stabilized sludge will be hauled from the site by a licensed sludge hauler for final disposal.

The projected construction cost of the proposed new wastewater facilities as of 8/20/19 is 3,022,410.00 by Excavation Point, Inc. which is \$92,270.00 lower than the actual bid price of \$3,156,199.00.

The District operates a utility fund, and pledged revenues for operations and debt payments are from these monthly charges. The SRF loan will be repaid in 60 semi-annual installments, and as new customers are connected to the system, rates could be readjusted.

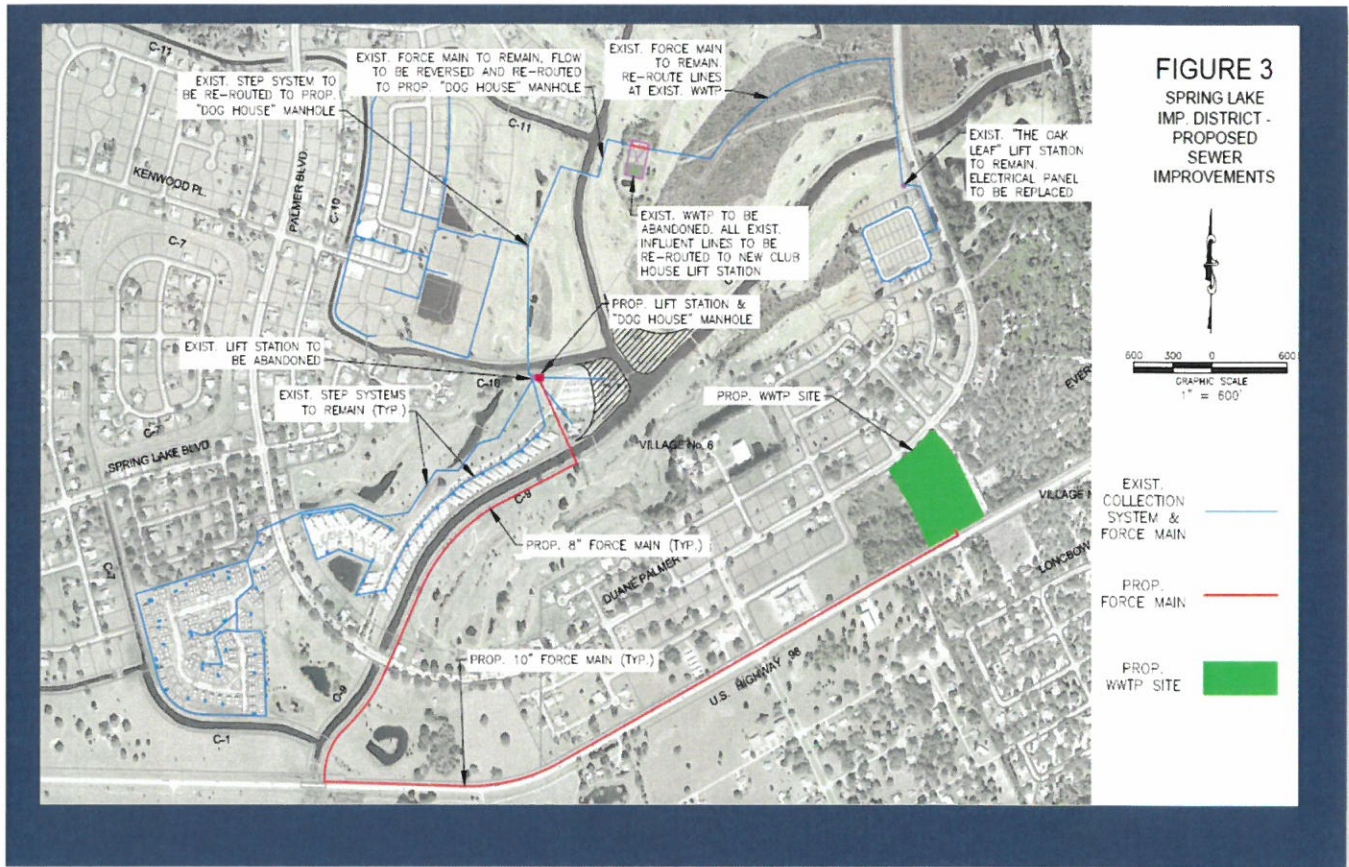
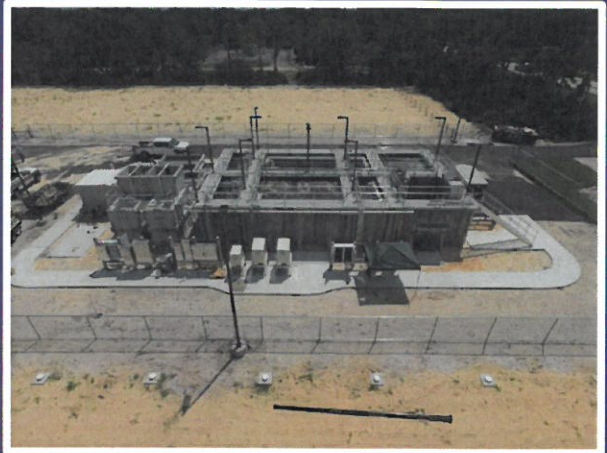
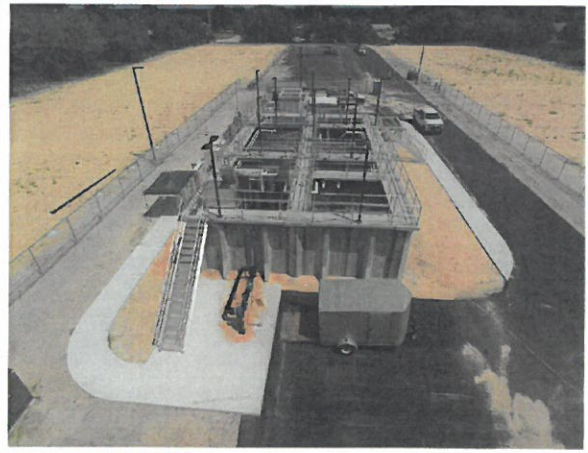
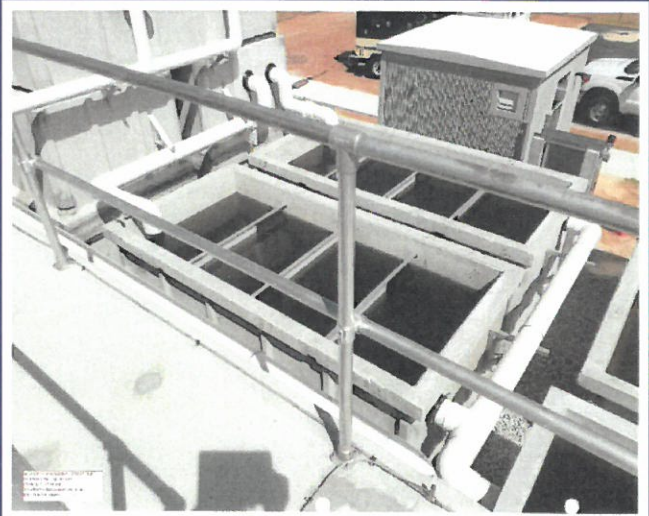
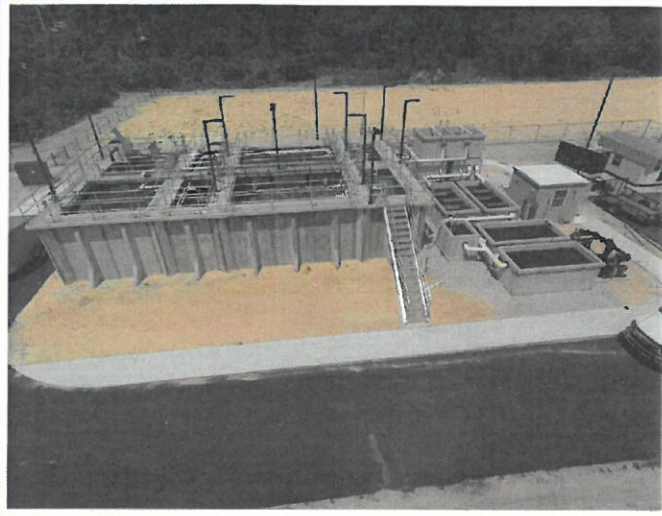


EXHIBIT OF CONSTRUCTED IMPROVEMENTS







- **Stormwater Pump Station State Appropriation**



The District was granted a state appropriation in the amount of \$500,000 for the refurbishment of the stormwater pump station.

The District stormwater pump station was installed in the 1970's at the time of the District's initial development. The District is comprised of 3,333 acres including 36 miles of roadway, 16 miles of canals, 3 miles of levees and a stormwater pump station (which discharges to the Arbuckle Creek and Lake Istokpoga). Since adjacent lands are incorporated into SLID's stormwater management system (Sebring Airport and State Road 98) the stormwater pump station's performance is vital not only to the District but to the entire area.

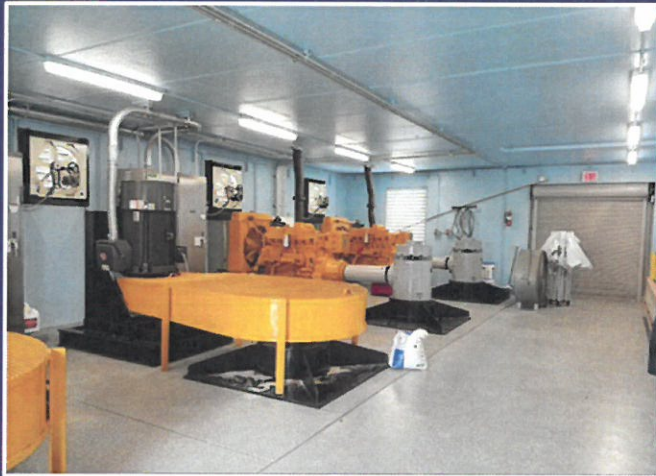
In 2008 emergency repairs were performed at the pump station facility. The proposed rehabilitation improvements for the forty-year old stormwater pump station were listed in the District's Water Control Plan as the second highest priority and have been completed.

A summary of the repairs included pump repairs, motor replacement, control system replacement, installation of ATS, bar rack repairs, exhaust fans, discharge piping repairs by internal sleeving, site improvements and the installation of a back-up generator.

Stormwater pumps #2, #3 and #4 have been damaged and repaired under insurance claims. Pump #1 was replaced with the appropriation along with two new energy efficient electric motors, mounts and complete new pump electrical controls. The project is complete and closed out.



The District installed a 600 KW back-up emergency generator as a part of the stormwater pump station rehabilitation. During Hurricane Irma the District lost power and was at the mercy of the two diesel engine driven pumps. The two new electric drive pumps were down due to the lack of power. During the pump station rehabilitation, all the controls, automatic transfer switch and electrical wiring were installed for the generator. With the generator, the station can run at full capacity even during a power outage providing additional reliability. The existing pump station has a capacity of discharging up to 260,000 GPM or 580 CFS. At the permitted pumping schedules and capacity, the proposed finished floors within the District are reliably protected up to the 100-year 3-day storm event. By installing the new generator, the station is capable of pumping (with all four pumps) during a Hurricane.



- **Water Control Plan/Conceptual Permit Status**

The SFWMD Conceptual Permit was issued on January 27, 2014. The permit is issued for conceptual authorization and approval to modify the existing Plan of Reclamation to reflect a surface water management system that can be operated and maintained on property owned by SLID. The original POR (Plan of Reclamation) had been partially constructed. The new revised POR includes new lakes, STAs and new and modified internal water control to allow SLID more efficient operation of the surface water management system, added flood protection and required water quality treatment. The improvements are as identified in the updated POR April 2008 and are nearly all completed for final compliance. Desilting of the canals (in original POR) is no longer a priority due to satisfactory hydraulic conveyance performance of the canal system, the lack of bank failures and visual site inspections. This item will require continued monitoring and updates.

- **Water Treatment Plant #2**

As previously discussed, the District purchased an existing water treatment plant located at the west end of the District at the abandoned power plant now being demolished. The water treatment plant portion of the power plant has extreme value to the District and is located in an area that was planned for a future booster and repump facility. The facility currently has a Floridan aquifer well (approximately 1,000 feet deep) able to produce from 1,500 GPM up to 2,000 GPM. The well capacity would add over 2.0+ MGD of capacity to the existing water system. The facility has an existing 400,000 gallon concrete CROM storage tank for storage and repump. The facility currently has two (2) 25 HP high service pumps and one (1) 50 HP high service pump. This facility will require additional improvements for which the District filed for funding through the State and has been notified that it received the funding. The District developed a plan for improvements to integrate the water treatment plant into the existing system. This will also boost the pressure and flow to the remote portions of the existing system. This is a great opportunity for expansion of the SLID water system.

- **Pinedale Estates**

The District recently installed water service on Madrid Drive and extended the water main under US 98 for service south of US 98. The District has refined the cost estimate to serve Pinedale Estates and anticipates this to be scheduled as a fall project. The residents of Pinedale Estates expressed interest in service. Again, this project also was a part of the whole request of water projects just approved 8/14/19.

- **2019 Legislative Appropriation**

The District has received approximately \$1.0 million to install a forcemain along US98. The plan is complete and has been submitted to the state appropriation committee and will be funded based on this plan. The forcemain will be installed from the C-9 to Floral Drive to the west and from the WWTP to the east end of Arbuckle Creek.

- **District In-House Work**

District staff continues to perform needed maintenance and improvements to the stormwater system. Staff continues to complete drainage improvements affecting the District's overall drainage system as needed. This project is highly successful and enhanced the entire flood protection for the neighborhoods within the District. Additional drainage repairs and improvements are completed as needed. We provide continued consultation and assistance as needed or required on special projects. We are in constant communication with Staff on small in-house projects and provide engineering back-up as required. All work performed under our supervision meets all current rules and standards that are applicable. District staff is providing timely service regarding any flooding issues and/or required maintenance of the stormwater infrastructure.

- **Golf Course Purchase**

The golf course was purchased by Signature H property Group who continues to plan golf course upgrades and future clubhouse improvements. The group is in the process of planning a "downtown" city center type of development across from the clubhouse.

- **SLID FY 2018 – 2019**

We have reviewed the preliminary budget information as provided for FY2019 with the District Manager and have no objection, additions, deletions or comments. SLID has sufficient funds budgeted to adequately maintain and operate the "Works of the District" for FY2018-2019.

- **Staffing**

We have been working with the Manager and SLID staff and are happy to mention that SLID staff is very responsive and competent in each field of expertise. The operations of this District are at optimum efficiency. The staffing of the District is sufficient to maintain and operate the "Works of the District". The Manager, Director of Operations, District

Administrator and Field Superintendents are very knowledgeable of SLID's systems and the district has adequate and competent staff, and has retained best available up-to-date operational tools, instruments and equipment to operate. The District maintains its equipment, the work sites are clean and orderly, and new/leased equipment is acquired as needed. Staff continues to assist CAS team in completing work tasks which helps to save the District many thousands of dollars in additional outside fees and services. Joe and Diane both have provided hours of assistance in dealing with the SRF loan process and preparation of necessary forms and data. Joe was instrumental in securing the State Appropriation, SRF loans and assistance with SFWMD, FDOT and USCOE. We work together as a TEAM with SLID staff and this has proven to be successful.

- **Water Treatment Plant Improvements**

The 100 KW generator back-up power supply for the water treatment plant continues to experience operational problems and is requiring emergency back-up. Clay Shrum is working on initiating temporary back-up for the interim.

The District is in the process of replacing the existing 100 KW generator and controls as soon as funding becomes available. The electrical service will also be upgraded. District Staff, along with the District Engineer, are working with an electrical engineer to determine the most cost effective and most efficient solution to the replacement.

- **Water Main Extensions**


The District Manager and Staff are exploring opportunities to extend additional water service to south of US 98 to provide additional customers and service, and in some cases effective looping of the system.

One option explored is an extension from the water main along Duane Palmer at Garden Terrace; extending south past the FP&L transformer to US 98, directional bore under US 98 and extend along US 98 to Lakeshore Road and connect to the existing system at Lakeshore and Longbow Drive. This option will provide a much needed loop to the south service area and provide water service to US 98 commercial parcels.

The District completed the Madrid Drive water main extension to service Pinedale Estates Subdivision (50± homes) from Madrid Drive under US 98 to Revson Avenue. This option is for serving Pinedale Estates with a water main extension on the south side of US 98 at that location. The cost to extend the water main at Madrid across US 98 at this location was \$76,238. The District is evaluating costs to install water service within Pinedale Estates.

• Recommended Projects for FY 18/19

- 5-Year Update of WCP
- Assist District and FRWA with Master Utility Plan
- Expand water and sewer service
- Grow SLID through private investors
- Golf course improvements
- Continue to market the US98 Corridor

  
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9/11/2019

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Date