

PW/Utilities Connection



July 2007

Utilities Data from June 2007 City of Melbourne Public Works & Utilities Department

Belt press upgrades underway at both treatment plants

The belt presses are moving into the computer age at both the D.B. Lee and Grant Street Water Reclamation Facilities. Work is underway at both plants to upgrade the controllers and electrical equipment.

The old relay logic controls are being replaced with SCADA (Supervisory Control and Data Acquisition) programmable-based control systems.

"This will provide automation for the controls," said Water Reclamation Superintendent Eric Blankman. "It will give us the ability to track and monitor the processes remotely, and also will provide the belt press operators with the ability to monitor the plants remotely."

In addition, all of the underground wiring and control cabinets are being replaced and relocated above ground.



Worker with FIE installs conduit in belt press room at the D.B. Lee Water Reclamation Facility.

"These upgrades will correct issues related to the wet environment in the belt press building," said Assistant City Engineer Martha Campbell.

There are two belt presses at each of the plants. The presses concentrate the wastewater sludge by removing water, reducing the volume by 15 times. The belt presses were installed in 1986 at both facilities.

"There have been changes and improvements in technology since then," Blankman said. "We got our money's worth but now it's in the City's best interest to make these improvements in the controls."

Florida Industrial Electric (FIE) is performing the work, with assistance by subcontractor Data Flow Systems, Inc. The project cost is \$406,900. FIE recently performed similar work for belt press controller upgrades at the John A. Buckley Surface Water Treatment Plant.

New stairwell structure to provide protection from wind

During the hurricanes of 2004, it became apparent that there was a need for a structure to provide wind protection at the D.B. Lee Water Reclamation Facility's influent structure.

"It became a two-person job to close the door during the hurricanes," said Water Reclamation Superintendent Eric Blankman.

The stairwell leads to the operator's control room on the second level.

A \$27,727 change order to a contract the City had with L.A. Construction Services, Inc. for the Eau Gallie Pier Project was approved to facilitate the project. The aluminum structure is rated for winds of 125 miles per hour.



Looking down the influent structure stairwell, the new aluminum shield will protect operators entering and exiting the second-floor control room during strong storm events.

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Monthly Water Usage and Raw/Finished Water Quality Statistics

Water Usage

- ◆ Water pumped to service: 440,193,000 gallons or 14.673 MGD average
- ◆ Maximum finished water pumped to service: 15.459 MGD on June 18, 2007
- ◆ Fire hydrant flushing: 18,512,815 gallons
- ◆ Committed capacity: 3.2748 MGD
- ◆ Capacity available for development: 7.8712 MGD (Based on 12-month average daily flow)

Water Quality Statistics

Lake water

- ◆ Level: 13.07 feet above MSL on June 30, 2007 (Prior month comparison: 12.42 feet on May 31, 2007)
- ◆ pH: 7.9
- ◆ Alkalinity: 72 mg/L

- ◆ Total hardness: 173 mg/L
- ◆ Chlorides: 140 mg/L
- ◆ Color: 116
- ◆ Total dissolved solids (TDS): 403 mg/L

Well water

- ◆ pH: 7.7
- ◆ Alkalinity: 120 mg/L
- ◆ Total hardness: 661 mg/L
- ◆ Chlorides: 798 mg/L
- ◆ Color: 7
- ◆ Total dissolved solids (TDS): 1,701 mg/L

Finished water - pumped to service

- ◆ pH: 8.4
- ◆ Alkalinity: 33 mg/L
- ◆ Total hardness: 120 mg/L
- ◆ Chlorides: 108 mg/L
- ◆ Color: 3
- ◆ Total dissolved solids (TDS): 340 mg/L

Water plant's ferric sludge being used to improve river quality

The old saying, "One man's trash is another man's treasure," is proving true for the City of Melbourne and the St. Johns River Water Management District.

Melbourne's "trash" in this case is 765 tons of ferric sulfate sludge. This is a by-product of the Actiflo surface water treatment process. The District has collected the sludge and is in the process of turning it into environmental "treasure."

The ferric sludge is being used to bind up phosphorus and nitrogen on land in Palatka that had been used to farm potatoes. The former cropland had many old canals that transported stormwater runoff directly into natural waterways. This nutrient-rich runoff from fertilizers that had been applied to the farm made their way to the Lower St. Johns River Basin. These nutrients encourage algae blooms that deplete oxygen from the water and block sunlight from reaching underwater vegetation critical to fish and wildlife habitats.

The District has been working on a project to build

stormwater ponds and wetland areas to help restore the health of the St. Johns River. They are applying Melbourne's ferric sludge at one of these former agricultural areas at 15 tons per acre. A manure spreader is applying the sludge on approximately 51 acres of the 56-acre site.



Melbourne's ferric residual is being applied with a manure spreader over the top level of soil at the future wetland site in Palatka.

The next step is to apply dolomite over the ferric and mix the two materials into the soil.

The goal is to reduce the total nutrients by 60 percent for phosphorus, 50 percent for nitrogen, and 70 percent for total suspended solids in water routed through the newly-created wetlands area.

According to Water Production Superintendent Fred Davis, it takes about two to three weeks for the City's plant to process the amount of dried ferric sludge hauled off by the District. The District has taken larger quantities of this commodity two other times for use in the restoration of Lake Apopka.

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Wastewater Treatment Operational Summary and Reuse Statistics

D.B. Lee WWTP

- ◆ Treated this month: 138.52 MG
- ◆ Treated daily: 4.62 MGD
- ◆ Reuse production — total month flow: 61.92 MG
- ◆ Reuse average daily flow: 2.06 MGD
- ◆ Reuse number of days run: 30
- ◆ Plant efficiency, BOD removal: 99.60%
- ◆ Committed capacity: 0.8122 MGD
- ◆ Capacity available for development: 1.9462 MGD
(Based on 12-month average daily flow)
- ◆ Rainfall: 12.65 inches over 12 days

Grant St. WWTP

- ◆ Treated this month: 96.72 MG
- ◆ Treated daily: 3.22 MGD
- ◆ Reuse production — total month flow: 8.47 MG
- ◆ Reuse average daily flow: 0.28 MGD
- ◆ Reuse number of days run: 30
- ◆ Plant efficiency, BOD removal: 99.10%
- ◆ Committed capacity: 1.4839 MGD
- ◆ Capacity available for development: 1.0836 MGD
(Based on 12-month average daily flow)
- ◆ Rainfall: 10.04 inches over 9 days

A total of 70.39 million gallons of reclaimed water was produced during June, representing 30% of total plant flows.

New Ballard Park lighting provides safety and aesthetics

The 2004 hurricanes did significant damage to the shoreline at Ballard Park, located on the Indian River Lagoon about a mile south of the Eau Gallie Causeway. Several feet of the park's shoreline was washed away during the storms. Along with the dirt and grass went irrigation pipes and heads and several City lamp posts. Those that did not wash away were left damaged.



Pictured in front of palm tree cluster is one of the new street lights at Ballard Park.

A \$13,241 FEMA-funded project has recently been completed by in-house staff to replace the lighting at the park. These new lights and poles are more hurricane resistant, safer, energy-efficient, and provide a better lighting pattern than the ones they replaced.

"The Facilities Maintenance Division did the installation, including all new wiring," explained supervisor Gene Henderson. "We set it up on a single controller where everything can be controlled with one switch."

In addition to the underground wiring and relay switching, the seven new poles are made of fiberglass. With the park's wet environment next to the river, the poles won't rust or corrode, and they won't carry a potentially dangerous electrical charge should the wiring inside the poles short out.

"These poles are much lighter in weight than the old metal poles but they are very sturdy and strong," Henderson said.

Four of the poles hold single lights and three hold double lights. The lights are low-profile, armless and rated for 130-mph winds.

This low-level lighting turns on automatically from dusk to dawn and has been adjusted for minimal spillage onto surrounding properties.

"We now have a nice light pattern that is attractive and low maintenance," said Facilities Maintenance Superintendent Marv Sharp.

Streets and Stormwater Management Monthly Summary

- ◆ Daytime street sweeper — hours run: 194
Cubic yards of material removed: 355
- ◆ Nighttime street sweeper — hours run: 63
Cubic yards of material removed: 149
- ◆ Asphalt repairs made: 26
- ◆ Tons of asphalt used: 37.5
- ◆ Feet of canals cleaned mechanically: 1,650
- ◆ Acres treated through aquatic spraying: 21
- ◆ Feet of storm drain pipe repaired/replaced/lined: 80
- ◆ Concrete repairs: 25
- ◆ Cubic yards of concrete used: 20.5

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Surplus brush fire truck refurbished by Fleet saves money

The City's ability to fight brush fires has just been increased thanks to an old military surplus truck. The Fleet Management Division has completely refurbished the truck over a two-month period.

This six-wheel-drive brush truck, built for off-road use and capable of going through four feet of water, was purchased for \$3,500. Since February, City mechanics have refurbished the fuel system, brakes,

wiring, and added firefighting equipment.

"We took an old truck and made it new again," said Assistant Fleet Superintendent Kenny Tinsley. "The final price, with all the improvements, is \$29,493. The same new truck would have cost \$39,000."

The brush truck will augment three others in the fleet, with two being staged in the south and two in the north end of the City.



Kenny Tinsley and Asst. Fire Chief Tom Flamm inspect refurbished brush truck.

What's Done, What's Underway and What's Coming Up

Water Projects

Recently Completed:

- ◆ Waterlines in annexation areas — Deerwood and El Dorado, \$1,722,656

Under Construction:

- ◆ Phase II surface water treatment plant (SWTP) improvements, \$11,322,000
- ◆ Rehabilitation to RO wells #1, 2 & 3, \$692,725
- ◆ Backup well #4, \$1,320,900
- ◆ Harlock Rd water main extension
- ◆ Country Road annexation water line extension

Under Design or in Bid

Process:

- ◆ Automatic transfer switch and generator enclosure at the SWTP's belt press building
- ◆ Pineda Causeway 16" water main
- ◆ Wickham Road 8" water main
- ◆ Eau Gallie water line replacement, Phase I, Segments V & VI; portion of segments I & II, Phase II
- ◆ Water line upgrade at Turtle-mound Rd.-Grand Haven subdivision
- ◆ 2006 misc. water line replacements
- ◆ 2007 misc. water line replacements (Phase I & Phase II - Ballard Park)

- ◆ North water treatment plant demolition
- ◆ Scrubber blow down pump station and force main

Wastewater Projects

Recently Completed:

- ◆ St. Andrews lift station and sub-aqueous force main

Under Construction:

- ◆ Various manhole rehabilitation projects, \$274,340
- ◆ Lift Station #55 upgrade, \$159,564
- ◆ FY '07 CIPP rehabilitation projects, \$1,200,000
- ◆ Water & Wastewater Operations maintenance building, \$571,800
- ◆ Electrical upgrade to the sludge belt press building at D.B. Lee and Grant Street WWTPs, \$406,900
- ◆ Crane Field reuse project
- ◆ FIT/Leonard Weaver wastewater collection rehabilitation, \$2,100,000

Under Design or in Bid

Process:

- ◆ Reuse master plan, phase II

- ◆ D.B. Lee WWTP admin. bldg.
- ◆ Lift Station #29 (Aurora & Mary-wood) and Lift Station #46 (BCC) renovations
- ◆ Grant Place L.S. and force main
- ◆ Sarno Road force main improvements
- ◆ Grant Street WWTP admin. bldg.
- ◆ Hibiscus Blvd. reuse project
- ◆ Nasa Blvd. reuse project

Streets & Stormwater

Projects

Recently Completed:

- ◆ FY '06 CIPP pipe rehabilitation projects, \$855,000

Under Construction:

- ◆ FY '07 CIPP pipe rehabilitation projects, \$1,350,000
- ◆ Melbourne Avenue drainage at Pennwood Avenue, \$184,290

Under Design or in Bid

Process:

- ◆ Babcock and Hibiscus intersection improvements
- ◆ Gramling Park Road drainage improvements

For more information about this report, please contact the Melbourne PW/Utilities Administration Department at (321) 674-5761 or send an e-mail to utilities-admin@melbourneflorida.org