



# PW/Utilities Connection



## October 2006

Utilities Data from Sept. 2006 City of Melbourne Public Works & Utilities Department

### Phase II improvements at water plant now halfway complete

Phase II improvements at the surface water treatment plant have reached the half-way mark.

“We have started all the major items,” said Assistant City Engineer Martha Campbell, who is serving as the project manager. “Substantial completion should be by August 2007 and then we will just have clean up left.”

Ozone generators that will produce the ozone gas will be housed in the ozone generator building, shown in the top photo. The equipment is being fabricated now at a plant in New Jersey. Campbell said that prior to the equipment being shipped to the Melbourne plant, representatives from both the City and the City’s consulting engineering firm overseeing the construction will witness the factory acceptance test.

“They will start the ozone generators up and run them in the factory,” Campbell said. “We have to make sure they are working properly. If there are any problems, they can be addressed at the factory.”

The concrete pours on the ozone contactor basin,



*Ozone generator building*

shown in the middle photo (right) have been completed, along with the concrete pours for the pump station, shown in the bottom photo (right).

“We still have to put the roofs on,” Campbell said. “Also, we are first testing the pump station by filling it with water to check for leaks. Everything has to be saturated for three days. Then we monitor any drop in the tank, in the evaporation pan, and the rain gauge.”

In another piece of the overall project, following the cleaning project a few months ago, the former lime settling basin is being converted to a filter backwash recycle station.

The station is shown in the bottom photo on the left. A worker is using a saw to retrofit the tank for its new use. Once put into service, the backwashed water will remain in the tank before it goes to the sludge units.

The general contractor for this \$15 million project is Wharton-Smith.



*Ozone contactor basin.*



*Filter backwash recycle station.*



*Raw water pump station.*

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## Monthly Water Usage and Raw/Finished Water Quality Statistics

### Water Usage

- ◆ Water pumped to service: 448,328,000 gallons or 14.944 MGD average
- ◆ Maximum finished water pumped to service: 15.597 MGD on Sept. 24, 2006
- ◆ Fire hydrant flushing: 17,567,770 gallons
- ◆ Committed capacity: 3.1256 MGD
- ◆ Capacity available for development: 7.6541 MGD (Based on 12-month average daily flow)

### Water Quality Statistics

#### Lake water

- ◆ Level: 15.25 feet above MSL on September 30, 2006 (Prior month comparison: 15.07 feet on August 31)
- ◆ pH: 7.8
- ◆ Alkalinity: 80 mg/L

- ◆ Total hardness: 119 mg/L
- ◆ Chlorides: 72 mg/L
- ◆ Color: 270
- ◆ Total dissolved solids (TDS): 267 mg/L

#### Well water

- ◆ pH: 7.8
- ◆ Alkalinity: 123 mg/L
- ◆ Total hardness: 655 mg/L
- ◆ Chlorides: 794 mg/L
- ◆ Color: 7
- ◆ TDS: 1,678 mg/L

#### Finished water - pumped to service

- ◆ pH: 8.3
- ◆ Alkalinity: 31 mg/L
- ◆ Total hardness: 63 mg/L
- ◆ Chlorides: 54 mg/L
- ◆ Color: 3
- ◆ Total dissolved solids (TDS): 271 mg/L

## Old water lines being replaced to improve distribution quality

Like many established cities throughout Florida, Melbourne has more than a thousand miles of water distribution pipe in the ground, much of it more than 50 years old. This older piping is made of galvanized steel or cast iron, which is subject to deterioration by corrosion. Aging pipes that have become weaker are more affected by changes in the soil, temperature, moisture organic materials, and other factors. Metallic pipes are also prone to rust and scale buildup.

"This type of material would never be allowed today, but that's all they had back then," said Tom Hogeland, Superintendent of the Utilities Operations Division "Back then, there was no PVC, like we use now."

Polyvinyl Chloride or PVC pipe is slightly flexible which is an advantage due to soil fluctuations. It is economical, strong, durable, and easier to install. It is also resistant to leaks and corrosion.

The City replaces much of this pipe every year. For the larger projects, the work is contracted out, due to permitting and other complexities that make outsourcing more economical. However, for smaller replacements, the City is doing the line replacements with in-house water distribution crews.



Equipment Operator Robert Sigman uses backhoe to dig trench. Pipe will be fed into casing. Crew includes Rob Smith (left), Skeet Phillips, Manny Parker, and Shannon Brogan.

About eight to 10 of these smaller replacements are being done each year. Priority is given to areas that have been receiving the most complaints, and where repairs have been made, but due to the weakened condition of the existing pipe, breaks are still occurring.

"A lot of the replacements are two-inch pipe that we can tie-in with existing eight-inch pipe on each end so they are assured to have flow," Hogeland said. "When we replace two inch with two inch we aren't required to get permits and we can get

these done in two to three weeks ourselves."

His crews replace about five miles of lines per year. They have a contract with Y-Com to first perform directional drilling under the roads so that minimal asphalt and concrete repairs are needed.

"Y-Com puts in the casings under the roads and drive-ways and we put in the lines and dig in the green areas when we need to," Hogeland said.

The most recent projects include Wayne Avenue and Cocoa Avenue in Indialantic, along with Westminster Avenue, Hawthorne Drive, and Wickham Park, which should all be complete by the end of the year.

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Public Works/Utilities Data from Sept. 2006

## Wastewater Treatment Operational Summary and Reuse Statistics

### D.B. Lee WWTP

- ◆ Treated this month: 164.42 MG
- ◆ Treated daily: 5.48 MGD
- ◆ Reuse production — total month flow: 46.96 MG
- ◆ Reuse average daily flow: 1.57 MGD
- ◆ Reuse number of days run: 30
- ◆ Plant efficiency, BOD removal: 99.40%
- ◆ Committed capacity: 0.8983 MGD
- ◆ Capacity available for development: 1.4350 MGD  
(Based on 12-month average daily flow)
- ◆ Rainfall: 7.6 inches over 10 days

### Grant St. WWTP

- ◆ Treated this month: 102.86 MG
- ◆ Treated daily: 3.43 MGD
- ◆ Reuse production — total month flow: 5.57 MG
- ◆ Reuse average daily flow: 0.19 MGD
- ◆ Reuse number of days run: 30
- ◆ Plant efficiency, BOD removal: 99.31%
- ◆ Committed capacity: 1.6743 MGD
- ◆ Capacity available for development: 0.5332 MGD  
(Based on 12-month average daily flow)
- ◆ Rainfall: 4.44 inches over 8 days

A total of 52.53 million gallons of reclaimed water was produced during September, representing 20 % of total plant flows.

## Project to refurbish all four blend CT pumps almost complete

The last of four blend CT (contact time) pumps is being refurbished. These pumps carry the treated water from the surface water plant that has been blended with the groundwater from the reverse osmosis plant. The destination is to the ground storage tanks.

Florida Armature Works, Inc. of Kissimmee rebuilt the motors on the pumps. The City's maintenance crew from the Water Production Division installed them.

By using City staff to do the installation, \$2,000 per pump, or \$8,000, has been saved.



Maintenance Foreman Joe Dean (L) and Supervisor Bill Spann check lower pump-end bowl assembly.

Bill Spann, maintenance supervisor, expects the refurbished pumps should easily have a 10-year life.

“Continual vibration caused the loss of the bushings in the lower ends,” Spann explained. “They are only four years old but we have had to redo them all. The shaft was slightly off, which was a manufacturer’s defect. Unfortunately, that didn’t come to light until after the two-year warranty expired.”

Three of the pumps are needed at most

times, with the fourth coming into service during periods of high demand.

## Streets and Stormwater Management Monthly Summary

- ◆ Daytime street sweeper — hours run: 45.5  
Cubic yards of material removed: 109
- ◆ Nighttime street sweeper — hours run: 32.5  
Cubic yards of material removed: 95
- ◆ Asphalt repairs made: 33
- ◆ Tons of asphalt used: 26.5
- ◆ Feet of canals cleaned mechanically: 1,375
- ◆ Acres treated through aquatic spraying: 21
- ◆ Feet of storm drain pipe repaired: 2,421
- ◆ Concrete repairs: 12
- ◆ Cubic yards of concrete used: 54.5

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## Inhouse crew makes piping modifications for reuse project

A key element of the future of the City's reuse system is the link that will be constructed between the D.B. Lee and Grant Street Wastewater Treatment Plants. This project, which is currently in the bidding process, will connect these two independent systems.

To aid in the connection of the two systems, staff from the Wastewater Treatment Division recently completed a project that will allow the reuse stor-



age tank at the Melbourne Municipal Golf Course to be filled from either system while maintaining adequate pressure in the distribution system.

Significant piping modifications at the golf course's reuse storage tank, pictured, will eventually allow the reclaimed water from the DB Lee plant to also fill the tank. Now, water can only come from the Grant Street plant, providing no redundancy in case of problems.

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

### Water Projects

#### **Under Construction:**

- ◆ Phase II surface water treatment plant improvements, \$11,322,000
- ◆ Miscellaneous two-inch to six-inch waterline upgrades, \$874,857
- ◆ St. Andrews water line replacement

#### **Under Design or in Bid Process:**

- ◆ Wickham Road ground storage tank and booster pump station
- ◆ Automatic transfer switch and generator enclosure at the surface water treatment plant's belt press building
- ◆ Pineda Causeway 16" water main
- ◆ Wickham Road 8" water main
- ◆ Babcock Street water line relocation between Fee Avenue and Melbourne Avenue
- ◆ 36" water main clearing, Phase II
- ◆ Waterlines in annexation areas — Deerwood and El Dorado
- ◆ Rehabilitation to RO wells #1, 2 & 3
- ◆ Backup well #4
- ◆ Unidirectional flushing program

& Individual Distribution System Evaluation (IDSE) plan

- ◆ Water model update
- ◆ Harlock Rd water main extension

### Wastewater Projects

#### **Under Construction:**

- ◆ Various CIPP sewer line rehabilitation projects, Wastewater Collection: \$867,143, Wastewater Treatment: \$423,000
- ◆ Lift Station #43 (Front Street) upgrade, \$567,000
- ◆ Bell Street sewer aerial crossing, \$140,000
- ◆ Lift Station #55 upgrade
- ◆ St. Andrews lift station and subaqueous force main

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#### **Under Design or in Bid Process:**

- ◆ Reuse master plan
- ◆ Water & Wastewater Operations maintenance building
- ◆ Electrical upgrade to the sludge belt press building at D.B. Lee and Grant Street WWTPs

- ◆ D.B. Lee WWTP administration building
- ◆ Lift Station #29 (Aurora & Marywood) and Lift Station #46 (BCC) renovations
- ◆ Grant Place lift station and force main
- ◆ Reuse interconnect

### Streets & Stormwater Projects

#### **Under Construction:**

- ◆ Eber Road widening from Babcock Street to Dairy Road, \$3,840,879
- ◆ Various CIPP pipe rehabilitation projects, \$855,000

#### **Under Design or in Bid Process:**

- ◆ Babcock and Hibiscus intersection improvements
- ◆ Gramling Park Road drainage improvements
- ◆ Melbourne Avenue drainage at Pennwood Avenue

*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](mailto:utilities-admin@melbourneflorida.org)*