



PW/Utilities Connection



July 2005

Utilities Data from June 2005 City of Melbourne Public Works & Utilities Department

New engineering techs working together to ID utility features

A goal of the Public Works & Utilities Departmental is to update maps of utilities infrastructure and computerize the information. With two new employees who have recently started with the City, this objective is beginning to move within reach.

The department has recently hired two engineering technicians — one as a replacement for an employee who had left the City, and one in a newly-created position. They have already been working both alone and together and are beginning to make large strides toward the mapping goal.

Craig Silverman is in the newly created position, working in the water and wastewater operations division. He began working for the City two months ago and had been in a similar position with the local gas company. His first task has been to take site plans and transfer the information to the City's water atlases.

"They've become very out of date," Silverman said. "It will probably take a few more months to do all the as-builts, then we'll move on to GIS."

Geographic information system (GIS) is a computer-based tool for mapping and analyzing things that exist and happen on the surface of the earth. GIS technology integrates common database operations such as query and statistical analysis with unique visualization offered by maps. GIS performs map-making and geographic analysis better and faster than conventional manual methods.

"He's probably 75-80 percent caught up and he has only been here six weeks," said Water & Wastewater



Darrell Manchester (l), environmental compliance supervisor, oversees a recent fire flow test. Matt Tanguay takes notes as Craig Silverman observes.

Operations Superintendent Tom Hogeland. "We were way behind on as-builts. He's been very diligent."

Hogeland explained that once the as-builts are up to date, Silverman will then begin inventorying all the valves and fire hydrants within the water distribution system. The overall objective is to transfer all this information to the GIS system, so that when completed it will be readily available on-line.

The newest of the two engineering techs is Matt Tanguay, who started working for the City's Public Works & Utilities

Department in early July. His focus has been taking paper maps and integrating them into a GIS format.

"The goal is to have our water and reuse systems on GIS to be accessible to the public like our wastewater system is," said Utility Engineer Michelle Shoultz.

Tanguay has had similar mapping experience. While earning his environmental science degree last May from Florida Tech, he worked as an intern for the St. Johns River Water Management District mapping invasive and noninvasive vegetation on the barrier island using GIS.

"We want Craig and Matt to get really familiar with our system," Shoultz said. "When they go out into the field, one can use the paper map while the other uses the GPS (global positioning system) equipment to collect the data. Then they download the information into the GIS system after returning to the office. We're hoping to get all the information online for use by staff and the public."

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Public Works/Utilities Data from June 2005

Monthly Water Usage and Raw/Finished Water Quality Statistics

Water Usage

- ◆ Water pumped to service: 447,257,000 gallons or 14.909 MGD average
- ◆ Maximum finished water pumped to service: 15.667 MGD on June 19, 2005
- ◆ Water billed: 421,204,500 gallons
- ◆ Fire hydrant flushing: 17,349,293 gallons
- ◆ Fire Department water usage: 37,250 gallons
- ◆ Brevard County water usage – sewer flushing: 19,200 gallons
- ◆ Flushing and testing new water mains: 2,108 gallons
- ◆ Committed capacity: 2.5104 MGD
- ◆ Capacity available for development: 8.7172 MGD (Based on 12-month average daily flow)

Water Quality Statistics

Lake water quality

- ◆ pH: 7.7

- ◆ Alkalinity: 61 mg/L
- ◆ Total hardness: 104 mg/L
- ◆ Chlorides: 66 mg/L
- ◆ Color: 204
- ◆ Total dissolved solids (TDS): 241 mg/L

Well water quality

- ◆ pH: 7.8
- ◆ Alkalinity: 119 mg/L
- ◆ Total hardness: 610 mg/L
- ◆ Chlorides: 723 mg/L
- ◆ Color: 6
- ◆ TDS: 1,555 mg/L

Finished water quality - pumped to service

- ◆ pH: 8.2
- ◆ Alkalinity: 37 mg/L
- ◆ Total hardness: 88 mg/L
- ◆ Chlorides: 66 mg/L
- ◆ Color: 2
- ◆ Total dissolved solids (TDS): 249 mg/L

Major Phase II surface water plant improvements set to begin

The Phase II Surface Water Treatment Improvement Project is gearing up. The project includes construction of an ozone treatment system that will be used for disinfection and taste and odor control. Regulatory requirements for disinfection are becoming more stringent and the new ozone treatment will allow the City to meet the new standards.

Construction for the project is estimated to be \$12 million. In addition to the ozone treatment system, it also includes rehabilitation of the raw water intake structure in Lake Washington, building a new south raw water pump station, improvements to the backwash recovery system, rehabilitation of the existing electrical system, and new chemical feed systems

"The project will take about two years and will be done in increments so they can blend the project elements in with the operation of the plant," said Assistant City Engineer Martha Campbell, who will be serving as the City's project manager.



Improvements to the raw water intake structure will be the first element of the major Phase II surface water improvements project.

The heart of the project is adding ozone to the treatment process. Ozone, or O₃ is generated by applying a high electrical current to a stream of pure oxygen (O₂).

"The process is not unlike the creation of ozone naturally when lightning strikes occur," explained Assistant Public Works & Utilities Director Harold Nantz. He said that ozone is a powerful oxidizing agent used to disinfect water. Surface water naturally contains organic substances, which the ozone treatment will be used to destroy.

"Ozone is the most effective water disinfectant there is," said Campbell. "It's widely used by the bottled water industry because it's also great for taste."

Besides the ozone treatment, which will be one of the last elements of the project to be constructed, the raw water intake structure will be improved with a new dock, stairwell, gates and lighting, and the south raw water pumping station will be rebuilt.

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Wastewater Treatment Operational Summary and Reuse Statistics

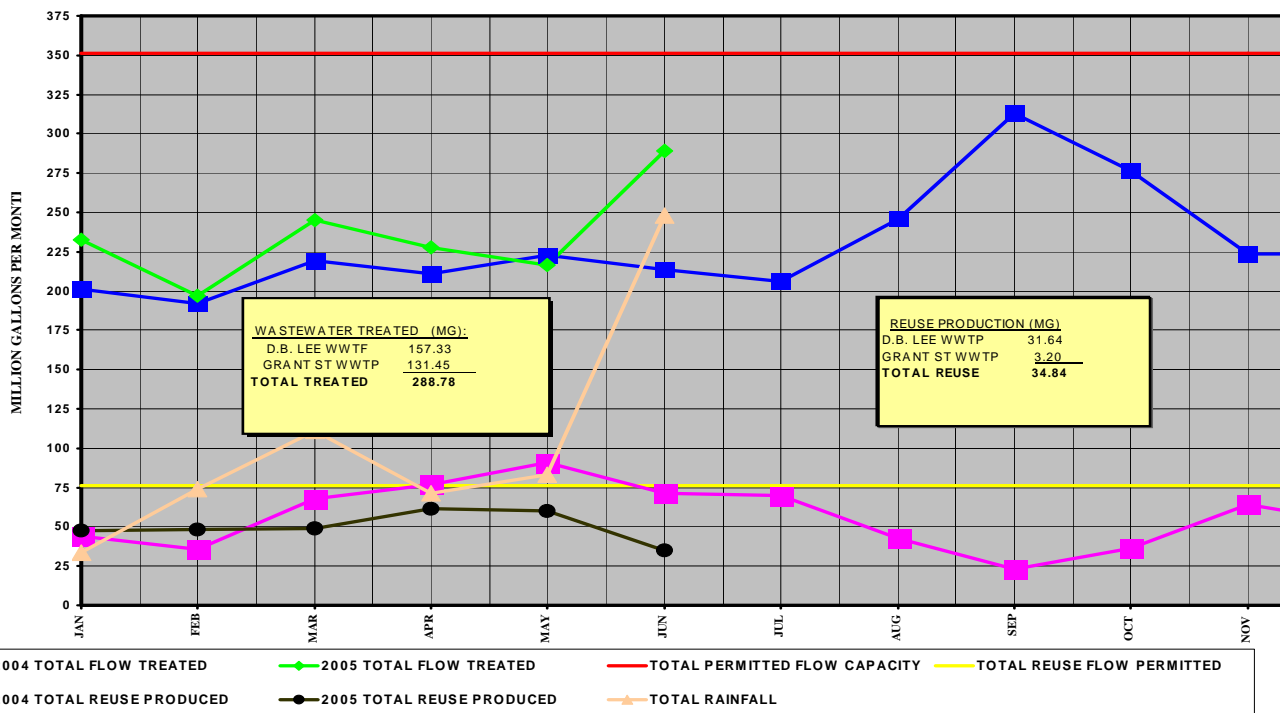
D.B. Lee WWTP

- ◆ Treated this month: 157.33 MG
- ◆ Treated daily: 5.24 MGD
- ◆ Reuse distribution — total month flow: 31.62 MG
- ◆ Reuse average daily flow for days run: 1.44 MGD
- ◆ Reuse number of days run: 22
- ◆ Plant efficiency, BOD removal: 98.7%
- ◆ Committed capacity: 0.9833 MGD
- ◆ Capacity available for development: 0.4192 MGD
(Based on 12-month average daily flow)

Grant St. WWTP

- ◆ Treated this month: 131.45 MG
- ◆ Treated daily: 4.38 MGD
- ◆ Reuse distribution — total month flow: 1.03 MG
- ◆ Reuse average daily flow for days run: 0.11 MGD
- ◆ Reuse number of days run: 30
- ◆ Plant efficiency, BOD removal: 97.4%
- ◆ Committed capacity: 0.8817 MGD
- ◆ Capacity available for development: 1.2250 MGD
(Based on 12-month average daily flow)

SUMMARY OF WASTEWATER TREATMENT AND REUSE PRODUCTION



An interesting depiction is found on the chart above. Notice the black line, which shows the decrease in reuse water used in the month of June. Compare that with the beige line showing the large jump in rainfall for the month.

Streets and Stormwater Management Monthly Summary

- ◆ Daytime street sweeper — hours run: 150.5
Cubic yards of material removed: 172
- ◆ Nighttime street sweeper — hours run: 42
Cubic yards of material removed: 41
- ◆ Asphalt repairs made: 46
- ◆ Tons of asphalt used: 39
- ◆ Feet of canals cleaned mechanically: 4,235
- ◆ Acres treated through aquatic spraying: 21
- ◆ Feet of storm drain pipe repaired: 157
- ◆ Concrete repairs: 20
- ◆ Cubic yards of concrete used: 17.25

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Utilities Data from June 2005

June Highlights

The level of Lake Washington increased significantly during the last month. At the end of June, the lake level was 16.63 feet above sea level. This compares to the lake level at the end of May, when it was 13.97 feet above sea level. Water quality remains good.

The D.B. Lee Wastewater Treatment Plant recorded 14.73 inches of rain during 18 days in June. The Grant Street Wastewater Treatment Plant received 11.72 inches of rain over 21 days during June. A total of 32.65 million gallons of reclaimed water was distributed during June. This represents 11% percent of total plant flows for June.

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

Water Projects

Recently Completed:

- ◆ Parkway Drive and Turtle Mound water line extension, \$657,000
- ◆ Waterline upgrade, Olde Eau Gallie, \$347,409
- ◆ Replacement of RO membranes, \$469,000
- ◆ Northern Oak water line extension
- ◆ Water Treatment Plant storage building, \$98,000
- ◆ Fee Avenue waterline replacement under FEC, \$120,330

Under Construction:

- ◆ Aurora elevated water tank rehabilitation, \$82,000
- ◆ Hazelwood waterline extension
- ◆ Turtlemound North waterline extension, \$471,200
- ◆ Eau Gallie River sub-aqueous crossing, \$124,535
- ◆ Post Road elevated water tank demolition, \$47,806

Under Design or in Bid Process:

- ◆ Phase II surface water treatment plant improvements
- ◆ Wickham Road ground storage tank and booster pump station
- ◆ Miscellaneous two-inch to six-inch waterline upgrades
- ◆ Automatic transfer switch and

generator enclosure at the surface water treatment plant's belt press building

- ◆ Chlorine scrubber at Avenue B booster station

Wastewater Projects

Recently Completed:

- ◆ Lift Station 24 replacement, \$451,440

Under Construction:

- ◆ Demolition of old treatment units at D.B. Lee WWTF, \$624,700
- ◆ New monitoring network for reuse system at DB Lee WWTP

Under Design or in Bid Process:

- ◆ Reuse master plan
- ◆ Water & Wastewater Operations maintenance building
- ◆ Lift station 55 upgrade
- ◆ Grant Street Wastewater Treatment Plant lighting upgrade
- ◆ Sarno Road force main upgrade
- ◆ Electrical upgrade to the sludge belt press building at D.B. Lee and Grant Street WWTPs
- ◆ D.B. Lee WWTP administration building
- ◆ Lift Station #43 (Front Street) upgrade
- ◆ Garage doors at Grant Street WWTP

Streets & Stormwater Projects

Recently Completed:

- ◆ Pineapple Avenue pedestrian bridge at Cliff Creek, \$115,429

Under Construction:

- ◆ Sherwood Park drainage improvements, \$358,285
- ◆ Eber Road widening from Babcock Street to Dairy Road, \$3,840,879
- ◆ Paradise Cay CIPP, \$325,835
- ◆ Laurie Road drainage improvements, \$363,510

Under Design or in Bid Process:

- ◆ Hoag Avenue paving and drainage improvements
- ◆ Upgrade of stormwater system at Charles Dr./Almar Subdivision
- ◆ Upgrade of existing culvert crossing under Pirate Lane

General Public Works:

Under Construction

- ◆ Public Works & Utilities Administration Building, \$512,391

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