



August 2005

Utilities Data from July 2005

City of Melbourne Public Works & Utilities Department

Major 24-inch sewer line emergency repairs underway

In early July two sinkholes were noticed on the grounds at Florida Tech University in the utility easement adjacent to the new Life Science building.

Staff from the City's Water & Wastewater Operations Division investigated and determined that a large diameter sewer pipe had been breached. The 24-inch pipe is located 20-feet deep underground.

The pipe had been installed in the early 1980s. It was made of ductile iron that had an interior coating. This was before large-sized PVC pipe was used, which is today's standard. Over time the coating of the lined iron pipe had deteriorated allowing sewer gases to attack the pipe's raw iron.

"This is a major gravity sewer interceptor line that carries all the wastewater flows to the Grant Street Wastewater

Treatment Plant from Palm Bay Road north to University Boulevard, west of Babcock Street," explained Superintendent Tom Hogeland. He added that the pipe handles approximately one-and-a-half million gallons of wastewater every day.

In order to provide time to determine the best repair method for this critically-important sewer line, crews installed 350-feet of temporary pipeline, pieced together above ground between manholes to allow the wastewater to flow. Later, more temporary piping was added to increase the bypass to 1,250 feet. This allowed for free access between the two manholes where the ruptures occurred.

"The guys set up the bypass pretty quickly which gave us a chance to sort out our repair options," said Public Works & Utilities Director Bob Klapproth.

Well points were placed to dry the area where the pipe was breached. The well points are used to pump out the groundwater as preparation for repairs takes place.

"The well points were down three-feet deeper than the

manholes. They were recessed in the ground to allow the pumps to pull water from a depth of 20 feet," Hogeland said.

He and his staff looked at two types of repairs. The

first was an innovative try at lining the pipe. A lining contractor, Insituform Technologies, performed heavy cleaning and descaling, using robotics. They were hopeful the pipe could be repaired using cured-in-place pipe lining. However, once they could examine the pipe with the robotic camera, they discovered it had caved in at places and lining would not be an option. As a result, the conventional repair method is underway. Another contractor, Derrico Construction, is digging down 20-feet to the pipe to replace a 350-foot section.

"I have never seen ductile iron pipe cave in like this," Klapproth said. "Our theory is that in the manufacturing of the pipe the coating they applied had voids in it allowing the sewer gases to completely corrode sections of the pipe."

The project will take about a month to complete. The replacement is being done using a 20-foot long by eight-foot wide trench box for safety. The project price, including City and contractor costs, is \$150,000.

Due to the collapse of the pipe, which was relatively new compared to some other sewer pipe in the City that is more than 50 years old, the next step will be to inspect and evaluate the condition of the pipe that was installed at the same time.

"The project started at University Boulevard and went south almost to Palm Bay Road. It was put in the ground in about 1982," Hogeland said. "The pipe we have that is older is made of clay or concrete."

He said that the PVC pipe used in the replacement can hold up to the sewer gases and should last indefinitely.



The backhoe digs down 20 feet, next to the exposed manhole, to the pipe needing replacement. The blue pumps are used to keep the hole dry by pumping out groundwater.

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Monthly Water Usage and Raw/Finished Water Quality Statistics

Water Usage

- ◆ Water pumped to service: 501,934,000 gallons or 16.191 MGD average
- ◆ Maximum finished water pumped to service: 17.695 MGD on July 27, 2005
- ◆ Water billed: 381,074,700 gallons
- ◆ Fire hydrant flushing: 15,018,360 gallons
- ◆ Fire Department water usage: 47,500 gallons
- ◆ Brevard County water usage – sewer flushing: 19,200 gallons
- ◆ Flushing and testing new water mains: 87,437 gallons
- ◆ Committed capacity: 2.5965 MGD
- ◆ Capacity available for development: 8.5664 MGD (Based on 12-month average daily flow)

Water Quality Statistics

Lake water quality

- ◆ pH: 7.5

- ◆ Alkalinity: 57 mg/L
- ◆ Total hardness: 87 mg/L
- ◆ Chlorides: 48 mg/L
- ◆ Color: 252
- ◆ Total dissolved solids (TDS): 197 mg/L

Well water quality

- ◆ pH: 7.8
- ◆ Alkalinity: 120 mg/L
- ◆ Total hardness: 625 mg/L
- ◆ Chlorides: 748 mg/L
- ◆ Color: 6
- ◆ TDS: 1,618 mg/L

Finished water quality - pumped to service

- ◆ pH: 8.3
- ◆ Alkalinity: 35 mg/L
- ◆ Total hardness: 65 mg/L
- ◆ Chlorides: 48 mg/L
- ◆ Color: 2
- ◆ Total dissolved solids (TDS): 177 mg/L

Environmentally-friendly street sweeper fleet expands

The City has recently purchased a new street sweeper. This new model is the third environmentally-friendly street sweeper in the Streets and Stormwater Management Division's fleet.

The newest unit is an Elgin GeoCrosswinds, which recycles the air it uses to vacuum the streets and allows much less dust into the atmosphere. It replaces an older, less efficient Pelican sweeper.

Replacing the old sweeper was moved up a year due to an accident that left it beyond repair.

"We had to find the money to make sure we had enough sweepers to keep the City clean," said the division's Assistant Superintendent Mike Giorgio.



Darrell Manus (left), Calvin Mack and "Gator" Hembree with the newest sweeper. Not pictured are Ron Morris and Roy Portlock, who are also operators.

The new sweeper will be used in the daytime in the north end of the City.

"We have the City divided, with one sweeper working in the north, and the other in the south. Then we have a sweeper that operates at night in the downtown areas and other locations," explained Giorgio.

The sweepers run four days a week, with the fifth day being used for maintenance. Their combined monthly collection averages 250 cubic yards.

Operators were given training on the new sweeper on July 27, after which it was sent to the Fleet Maintenance Division for checking all the fluid levels and applying the City logo.

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Wastewater Treatment Operational Summary and Reuse Statistics

D.B. Lee WWTP

- ◆ Treated this month: 144.10 MG
- ◆ Treated daily: 4.65 MGD
- ◆ Reuse distribution — total month flow: 50.77 MG
- ◆ Reuse average daily flow for days run: 1.78 MGD
- ◆ Reuse number of days run: 30
- ◆ Plant efficiency, BOD removal: 98.7%
- ◆ % Reuse produced vs. total effluent: 37%
- ◆ Committed capacity: 1.0178 MGD
- ◆ Capacity available for development: 0.3697 MGD

(Based on 12-month average daily flow)

Grant St. WWTP

- ◆ Treated this month: 110.17 MG
- ◆ Treated daily: 3.55 MGD
- ◆ Reuse distribution — total month flow: 8.35 MG
- ◆ Reuse average daily flow for days run: 0.27 MGD
- ◆ Reuse number of days run: 31
- ◆ Plant efficiency, BOD removal: 97.7%
- ◆ Reuse produced vs. total effluent: 8%
- ◆ Committed capacity: 0.9599 MGD
- ◆ Capacity available for development: 1.0667 MGD

(Based on 12-month average daily flow)

Mechanics' ingenuity saves City money and time on repair

The climber screen on top of the influent structure at the Grant Street Wastewater Treatment Plant does a dirty but crucial job. Its mission starts at the beginning of the treatment process where it removes nonbiodegradables such as rags and plastics.

When it failed recently the plant managers were left with a difficult dilemma. They were told by the factory that manufactures the screens that it would take six to eight weeks to get parts for repairing the unit at a price of \$24,000. This price didn't include labor, which would be \$650 per day.

The cost was high, but that was not the worst of it. While the screen was down, the solids would have to be hand collected every 30 minutes to prevent an overflow.

"The screen not functioning can cause damage to equipment and produce high labor charges, along with



In front of the screen are, from left, mechanics Shayne Clark, Jeff Veasey and Leonard Concepcion. Dick Cowan also assisted.

an overall reduction in the treatment capacity," explained Maintenance Supervisor Lee Cheary.

Instead of waiting for the factory, wastewater treatment mechanics devised a plan to make the repairs themselves.

Performing the work in-house cost a little more than \$3,000, most of which was for rental of a crane to remove the damaged part and replace it after repairs.

"Leonard Concepcion and Dick Cowan did all the fabrication," Cheary said. "Shayne Clark and Jeff Veasey removed it and then reinstalled it after it was repaired. It was a team

effort."

The screen was repaired and back on-line in less than a week giving the City a cost savings of \$20,756.

"The guys deserve kudos," said Wastewater Treatment Superintendent Eric Blankman. "It was really a creative effort on their part."

Streets and Stormwater Management Monthly Summary

- ◆ Daytime street sweeper — hours run: 130
Cubic yards of material removed: 140
- ◆ Nighttime street sweeper — hours run: 114
Cubic yards of material removed: 130
- ◆ Asphalt repairs made: 51
- ◆ Tons of asphalt used: 33
- ◆ Feet of canals cleaned mechanically: 5,110
- ◆ Acres treated through aquatic spraying: 21
- ◆ Feet of storm drain pipe repaired: 80
- ◆ Concrete repairs: 15
- ◆ Cubic yards of concrete used: 23.75

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July Highlights

The level of Lake Washington decreased during the last month. At the end of July, the lake level was 15.9 feet above sea level. This compares to the lake level at the end of June, when it was 16.63 feet above sea level. Water quality remains good.

The D.B. Lee Wastewater Treatment Plant recorded 1.95 inches of rain during six days in July. The Grant Street Wastewater Treatment Plant received 3.18 inches of rain over eight days during July. A total of 59.12 million gallons of reclaimed water was distributed during July. This represents 23% percent of total plant flows for July.



Post Road tank

Workers are shown preparing the Post Road water tank for demolition. This 150,000 gallon tank, constructed in the 1950s, had become corroded and leaking, and as a result, had been taken offline. Due to water distribution system improvements, the tank is no longer needed. Demolition took one week.

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

Water Projects

Recently Completed:

- ◆ Hazelwood waterline extension

Under Construction:

- ◆ Aurora elevated water tank rehabilitation, \$82,000
- ◆ Turtle mound 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

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

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