

Issue 7.

FKAA's Inability to Clear Force Main Blockages (even with uncomplicated, properly designed forcemains that are allowed to plug):

(The Long Key Park to Layton Treatment Plant force main was out of service from about a week before Thanksgiving day 2013 to after New Years due to inability to simply push through a blockage by applying higher pressure. This FM was placed in operation in 2006 and since it had one user at known flows, it should have been designed in a size to suit. That is not true of the CRS force mains)

FKAA is the State designated operators of the Monroe County-owned sewer collection system of the unincorporated Florida Keys. FKAA contracted design and construction of a sewer collection system for the City of Layton that included a force main carrying the raw sanitary sewage from Long Key State Park to the waste water treatment plant (WWTP) that was primarily built to serve Layton. This WWTP is located between Layton and Long Key State Park on County property that also includes a garbage transfer facility and a septage transfer facility.

About one week before Thanksgiving Day 2013, the force main from Long Key State Park became obstructed. FKAA service crews attempted to clear the obstruction by applying water pressure far in excess of service pressure and reportedly in excess of the working pressure of the force main pipe but were unable to clear the obstruction. The sewage that is normally pumped from Long Key State Park to the Layton WWTP was hauled by pump-out truck for weeks, and at the time of this writing was still being trucked.

FKAA has demonstrated that it is incapable of clearing a force main obstruction by flushing. The Long Key State Park force main served one connection of known established flows so it is reasonable to assume that it was sized large enough to carry the peak flows. The design was that of a Florida licensed Professional Engineer and reviewed and approved by the DEP as part of the permit approval process. It is therefore reasonable to assume that the force main was designed either small enough to scour accumulations or the Operations and Maintenance Manual required by the the DEP permit and 62-604.500 F.A.C. called for flushing sufficient to scour the pipe of obstructions during periods of low flow as a condition of the permit. Even with this uncomplicated force main, the pipe plugged and FKAA was unable to restore service in a timely manner.

The plans for the CRWS sewer collection and transmission system include many thousands of feet of force main with no access points installed except at the beginnings

of runs and intersections. If a flushing attempt is unsuccessful at clearing a force main blockage, there is little alternative but to mechanically clean (rod, ream, auger) or pressure jet the pipe (if the backwash can be contained and pumped or vacuumed for disposal.) If the force main length between access points is longer than the available cleaning equipment (typically intended for the 400' maximum manhole run), then the force main will have to be divided in sections by cutting or adding access points for cleaning. All of this takes time and the force main is inoperable in the interim. The CRWS design includes vast areas served by LPS force mains fed by grinder pumps that are independently incapable of a scouring flow and are unlikely to run simultaneously. In addition, there are thousands of feet of force main that will run beneath the seafloor and will therefore be inaccessible for mechanical cleaning. The CRWS system needs to be more carefully redesigned and it is only sensible to eliminate the use of low flow grinder pumps, minimize the quantity of force main, and ensure that those force mains that are used are kept well scoured by design rather than by maintenance operations that may or may not be performed.

Other utilities have been seen to require access points every 400 feet in their forcemains for the specific purpose of mechanical cleaning to clear blockages.

62-604.400 Design/Performance Considerations.

(1) All new collection/transmission systems and modifications of existing systems for which construction permits are required by the Department shall be designed:

(a) in accordance with the provisions of Rule 62-604.300, F.A.C.;

62-604.500 Operation and Maintenance .

(1) Even though operation permits are not issued for collection systems, the operation and maintenance provisions of Rule 62-604.500 are applicable to both new and existing domestic wastewater collection/transmission facilities.

(2) All collection/transmission systems shall be operated and maintained so as to provide uninterrupted service as required by this rule.

(3) All equipment necessary for the collection/transmission of domestic wastewater, including equipment provided pursuant to Rule 62-604.400(2), F.A.C., shall be maintained so as to function as intended. In the event odor, noise or lighting adversely affect neighboring developed areas at levels prohibited by Rule 62-604.400(2)(c), F.A.C., corrective action (which may include modifications of the collection/transmission system) shall be taken by the permittee. Other corrective action

may be required to ensure compliance with rules of the Department.

(4) Copies of record drawings and the operation and maintenance manual shall be available at a site within the boundaries of the district office or delegated local program permitting the collection/transmission system, for use by operation and maintenance personnel and for inspection by Department personnel.

(a) The operation and maintenance manual shall provide for reliable and efficient operation and maintenance of the collection/transmission system.

(b) The detail of the operation and maintenance manual shall be consistent with the complexity of the system. The manual shall be developed in accordance with the technical guidance document contained in paragraph 62-604.300(4)(i), F.A.C., and the unique requirements of the individual wastewater facility and shall provide the operator with adequate information and description regarding the design, operation, and maintenance features of the facility involved, including an emergency response plan.

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