

Issue 2. Explosion Risk

Failure to Comply with National Electrical Code, Specified Pumps are not Explosion-Proof:

The specified E/One grinder pump is not rated as explosion proof. This important detail is not mentioned in the manufacturers promotional or technical literature but is buried in the installation instructions which state on page 4,: ***“This pump is not to be installed in locations classified as hazardous in accordance with National Electric Code, ANSI/NFPA 70”***.

While local ordinances in some jurisdictions permit an exception for individual residential grinder pumps, no such exception was found for Monroe County. Worse, these same grinder pumps have been specified for use in neighborhood lift stations where as many as 4 non-explosion proof E/One grinder pumps are used to push the waste water collected from a neighborhood gravity sewer system to the transmission force main. When septic tanks are pumped out during maintenance or for septic tank abandonment, there are always a couple of shady septic tank pumpers who will dump their truckload down a convenient manhole late at night. Septage can be expected to contain flammable gases, especially after sitting in a pump-out truck for hours in the hot sun. Furthermore, the introduction of any flammable substance, such as might occur with a propane leak near a grinder pump vent or the introduction of a flammable cleaning solvent down a drain, or an accumulation of flammable sewer gasses, might result in a catastrophic explosion, endangering life and property while rendering the system inoperable until repairs could be completed. See **Exhibit W**, where an electrical engineer reviewing a quadraplex neighborhood pump station submittal for the CRWS has correctly identified the pump station as a hazardous environment and has also noted that the level switches are not explosion proof. The reviewer did not notice that the pumps themselves are not explosion proof as required. That critical information is buried in Installation Instructions for the E-One pump.

Recommended Standards for Wastewater Facilities (incorporated by reference 62-604.300 (g) F.A.C. (also known as the **Ten States Standards**), **Section 42.35** states: *“Electrical systems and components (e.g., motors, lights, cables, conduits, switch boxes, control circuits, etc.) in raw waste water wet wells, or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors may be present, shall comply with the National Electric Code requirements for Class 1, Division 1, Group D locations.”* and **Section 44.1** states *“Submersible pumps and motors shall be designed specifically for raw waste water use, including totally submerged operation during a portion of each pumping cycle and shall meet the requirements of the national Electric Code for such units. An effective method to detect shaft seal failure or potential seal failure shall be provided”*

National Fire Protection Association (NFPA) 820 defines any sanitary sewer as Class 1, Division 1, Group D unless ventilated to at least 12 air changes per hour.. **NEC Article 501 and NFPA 70** require an explosion-proof pump in that environment.

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