BROCHURE RV14.00-4
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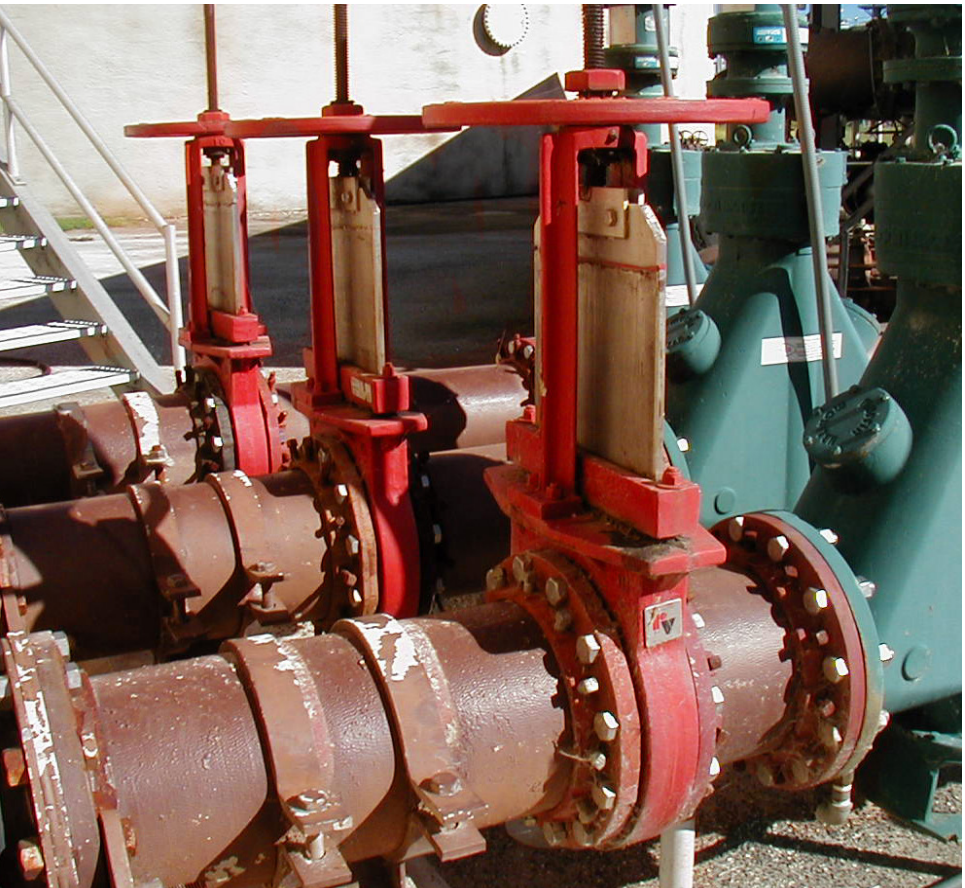
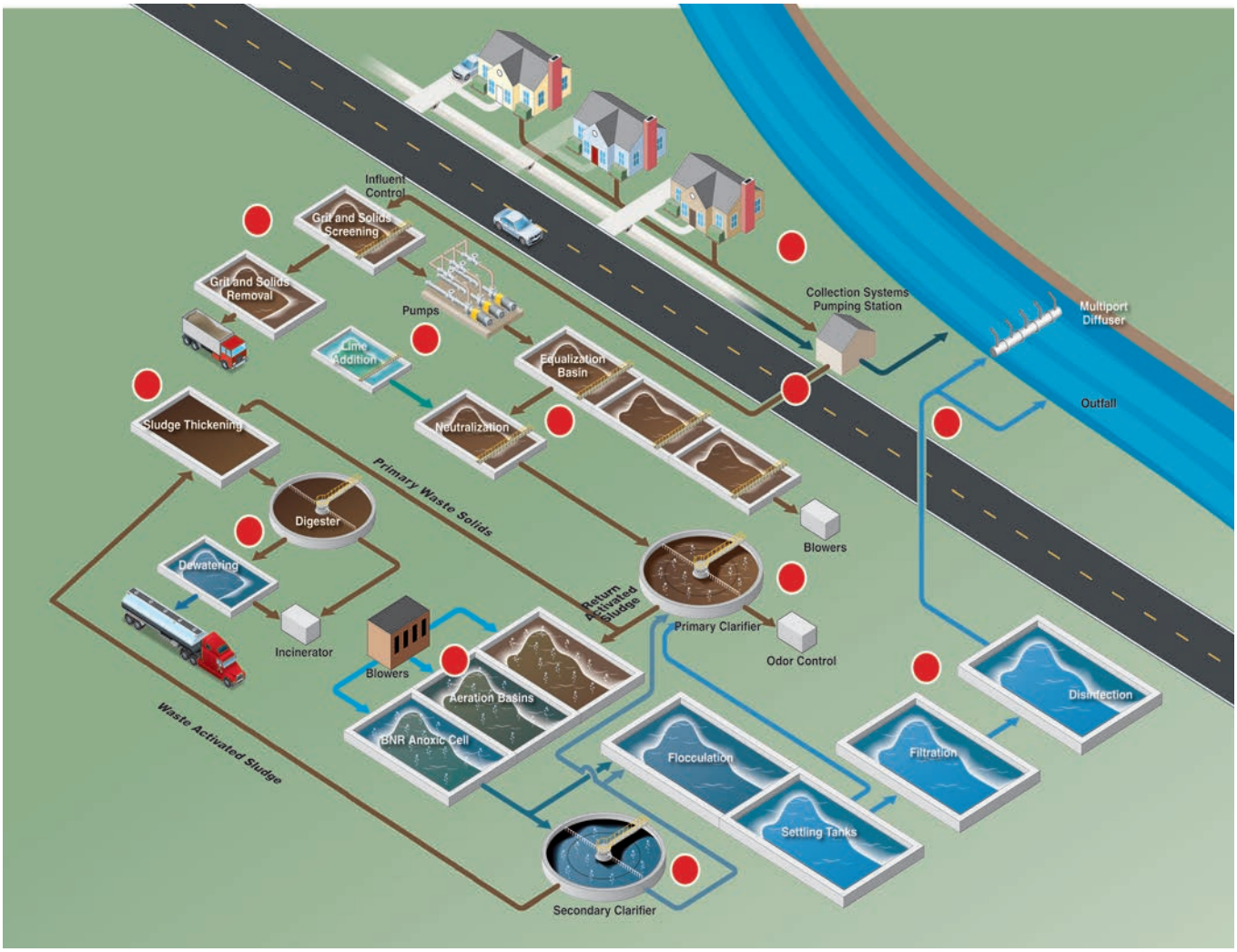
Red Valve

# Wastewater Treatment Product Solutions Guide




# Solutions for Wastewater Treatment

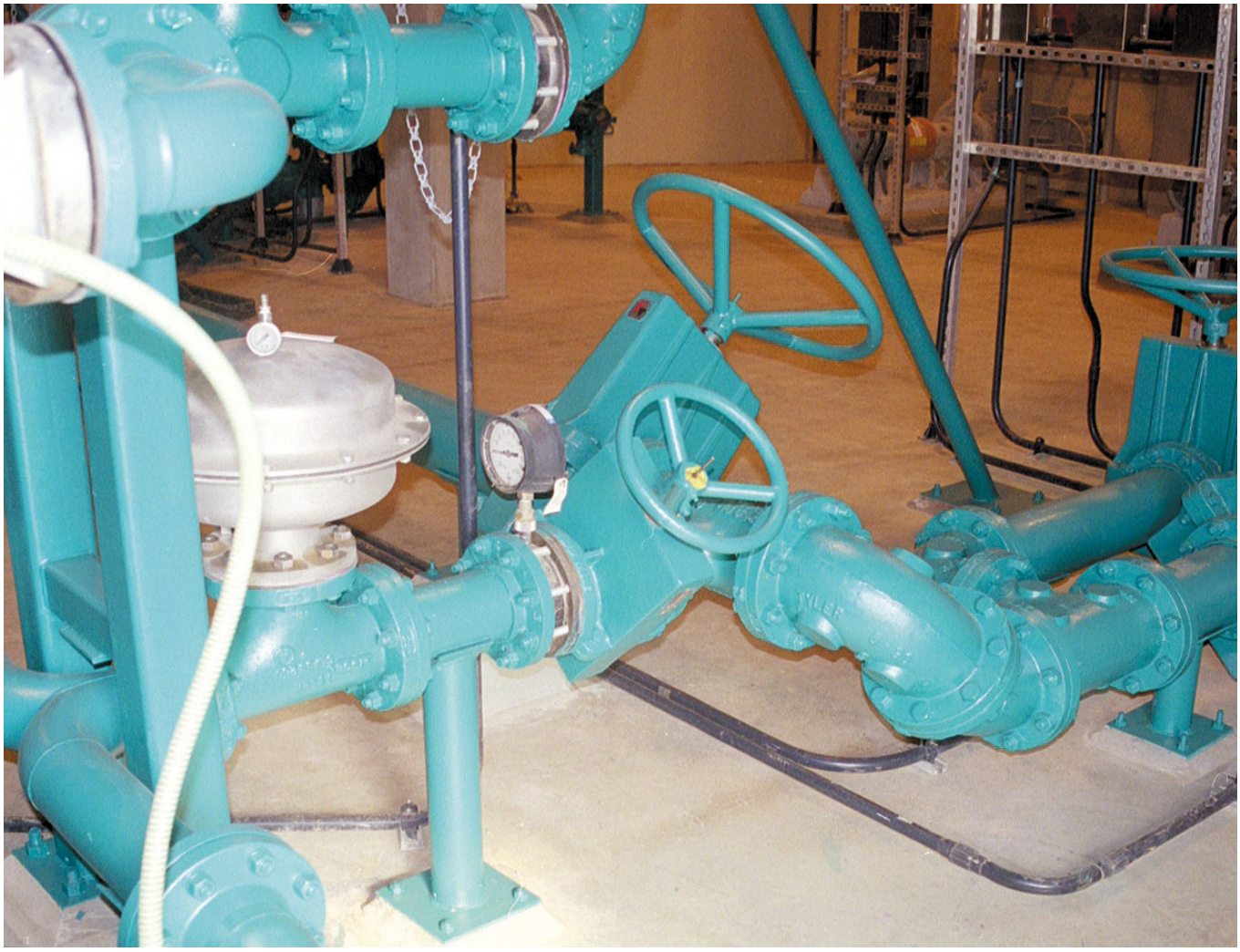



*Red Valve offers solutions for every step of your treatment process - from collection to final discharge.*

Red Valve works with designers and operators of wastewater treatment plants to provide innovative solutions to their most difficult challenges. Red Valve products are specifically engineered for the rigors of slurries such as sewage, sludge, scum and grit, as well as lime addition, digester gas control, backflow prevention and effluent discharge. Rely on Red Valve's solutions for every step of your treatment process - from collection to final discharge.

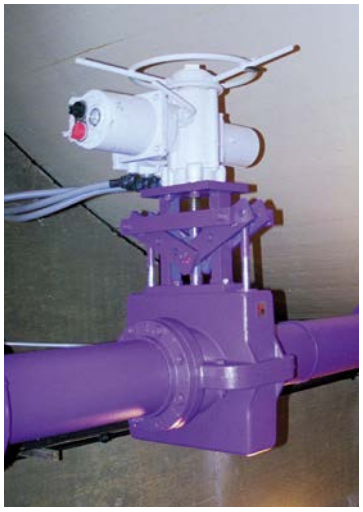
*The Red Valve PVM Underground Service Manual Pinch Valve (Series 75B) is an ideal choice for below-grade service.*

# Rely on Red for Your Toughest Applications

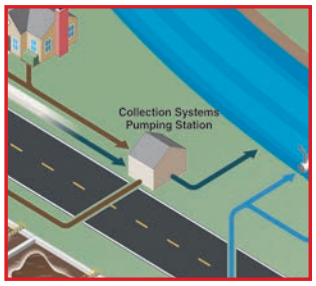


*Red Valve PVM Manual Pinch Valves (Series 75) and SPS Pressure Sensors are the ideal choice for sodium hypochloride and other corrosive chemical additives.*

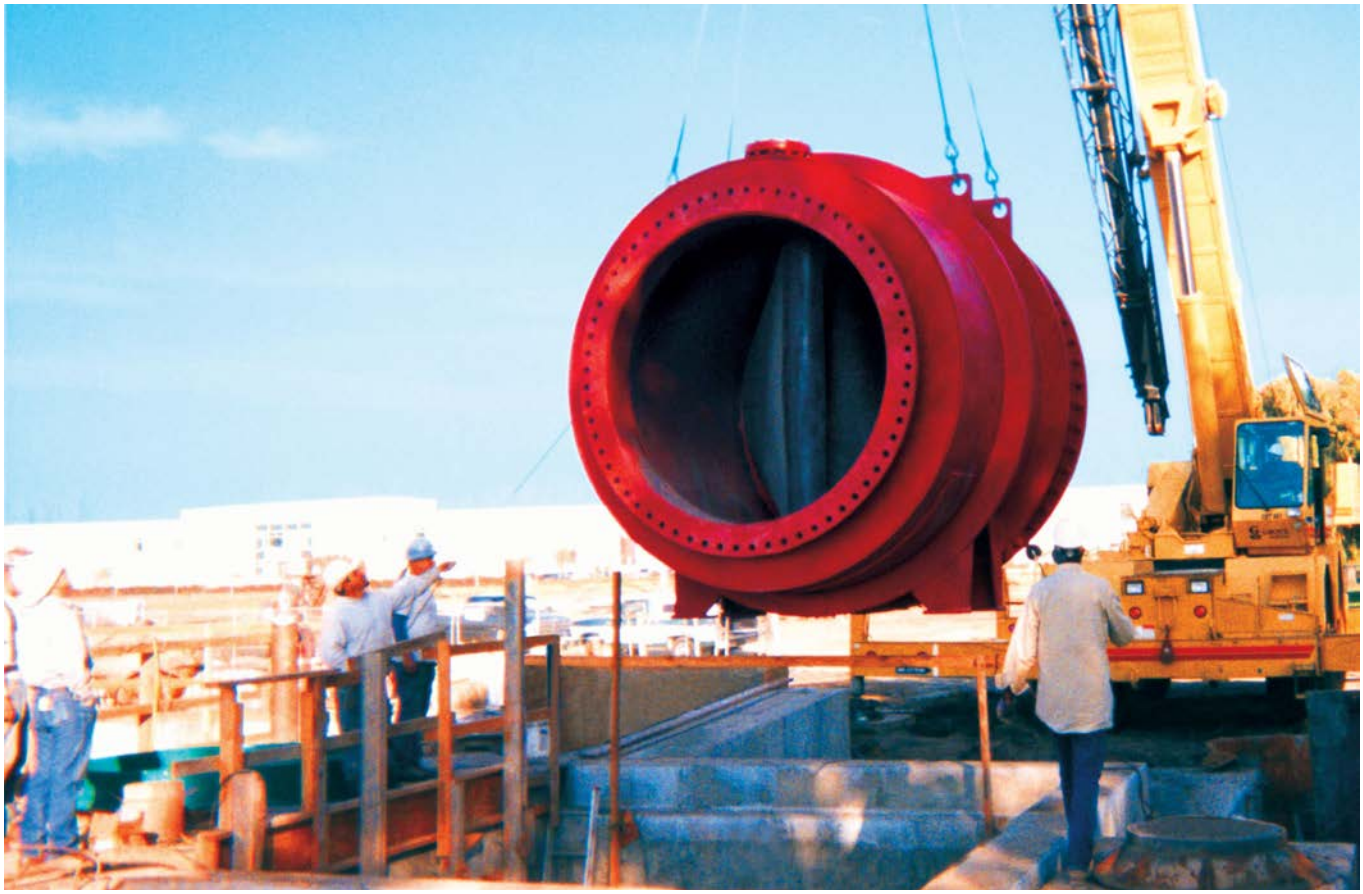
What sets Red Valve products apart from other metal valves is our advanced elastomer technology. In addition to providing a superior flow pattern, the elastomer sleeves deliver unsurpassed abrasion and corrosion resistance. As the only wetted part of the valve, the elastomer sleeve completely isolates the process fluid from the metal body and operating mechanism.



*A PCV Centerline Closure Control Pinch Valve (Series 5400E) with electric motor controlling digester sludge.*




# The Professional's Choice For Collection Systems

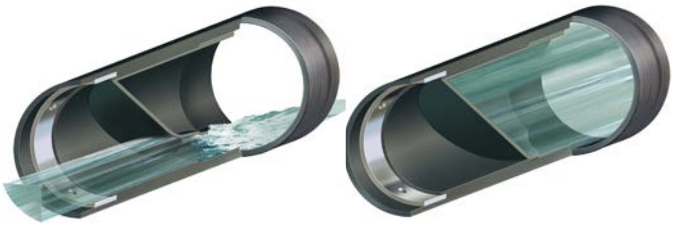


*The large-diameter Tideflex® 84" CIL In-Line Check Valve (Series 39) is used for stormwater backflow prevention.*

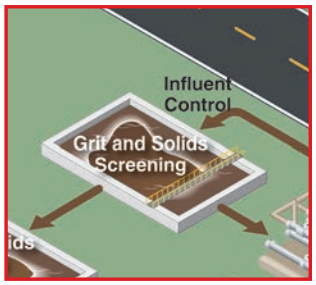
The CMU CheckMate UltraFlex® In-Line Check Valve and the TideFlex® CIL In-Line Check Valve are used in combined sewer overflow (CSO) systems to protect collection pumps from backflow during times of heavy rainfall or high tide. They operate on the same principle: forward hydraulic pressure opens the valve to allow flow and reverse pressure seals the valve, preventing backflow.

The Tideflex® CIL In-Line Check Valve (Series 33 & 39) is constructed of a fabricated steel or cast iron body with an integral elastomer check sleeve which handles flow with low head loss. The valve's operation is passive, requiring no outside energy source, levers or counterweights.

The CMU CheckMate UltraFlex® In-Line Check Valve is designed to be installed inside the pipe. The valve prevents backflow, odors, rodents and raw sewage from entering residences and businesses.



*Engineered elastomer CMU CheckMate UltraFlex® Valves (above) use forward hydraulic pressure to open the valve (left), and reverse pressure to seal the valve and prevent backflow (right).*




# Pump and Lift Stations Rely on Red Valve

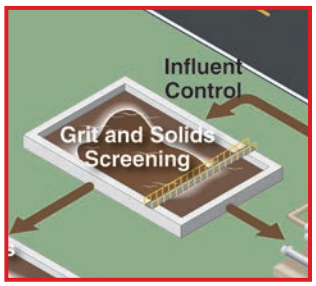
*This pump station features Tideflex® CIL In-Line Check Valves (Series 39), Red Valve PVM Manual Pinch Valves (Series 70), JRE Expansion Joints for vibration absorption and SPS Pressure Sensors for accurate readings.*

Wherever pumps are used to move or lift water, Red Valve products can be found, providing solutions for a wide range of applications. Wastewater is most often collected by gravity sewers and then lifted by pumps so it can flow through the treatment process. Red Valve products are designed to handle slurries, such as raw sewage, through full-port designs and abrasion-resistant elastomers. There are no flow direction changes, no cavities or dead spaces where material can build up.

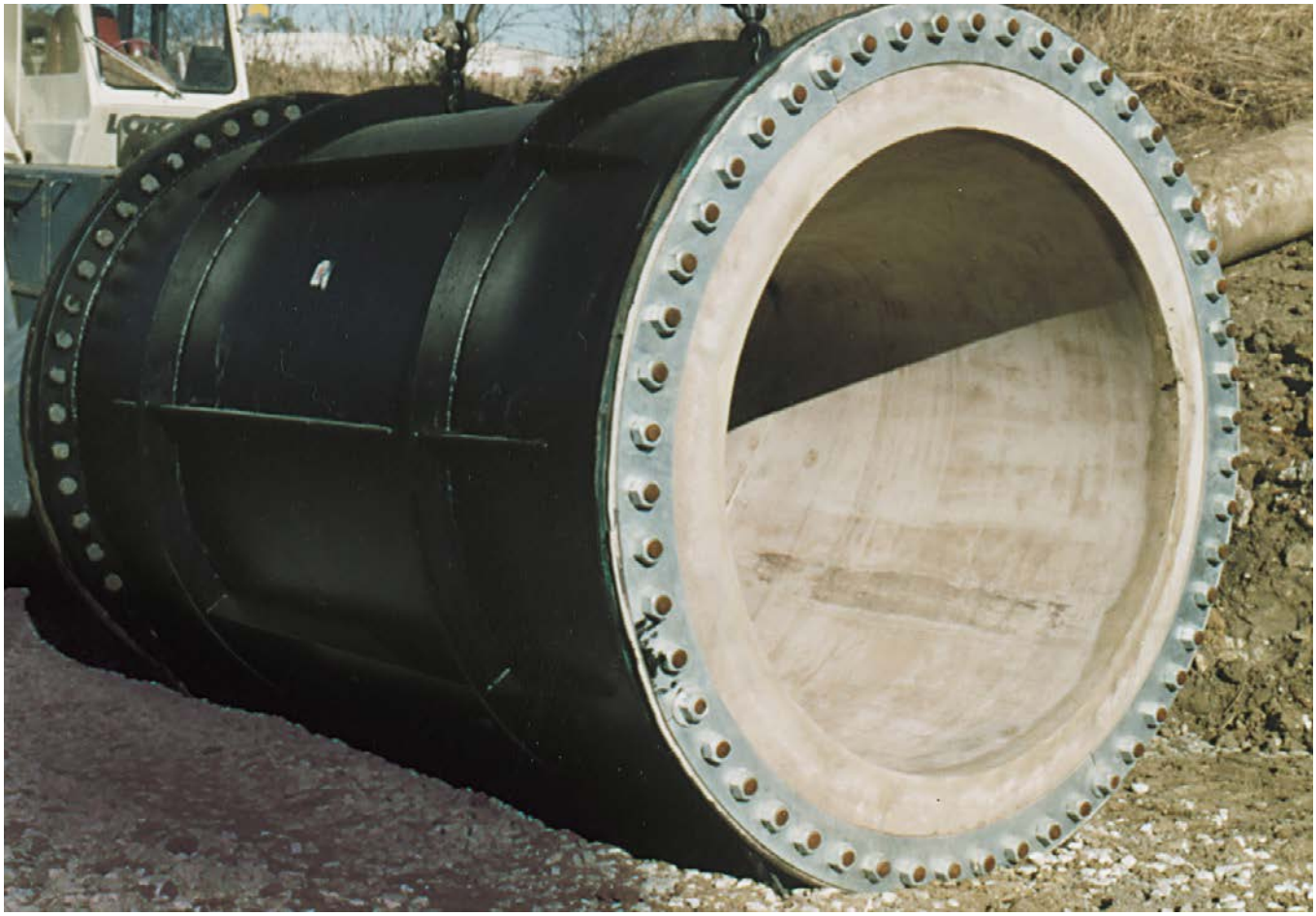
CMU CheckMate UltraFlex® In-Line Check Valves and CIL In-Line Check Valves (Series 39) provide unmatched backflow prevention to keep drainage lines empty and prevent flooding. They are often used at discharge points to prevent floodwaters or tidal surges from entering pipelines.

Red Valve Knife Gates Valves' rugged design and thin profile are also ideal for pump isolation or bypass lines. Removable elastomer cartridge seats on both sides of the gate ensure a bi-directional seal and excellent wear resistance.

The viscous nature of wastewater creates problems with accurate pressure measurement. Traditional gauges and diaphragm seals clog quickly and do not signal the pump to stop when a blockage is encountered, often damaging pumps and other process equipment. Red Valve Pressure Sensors feature a full-port opening and a 360-degree sensing element to ensure an accurate pressure reading, regardless of conditions. Red Valve Pressure Sensors will stay operational on difficult process fluids such as sewage, sludge and scum.



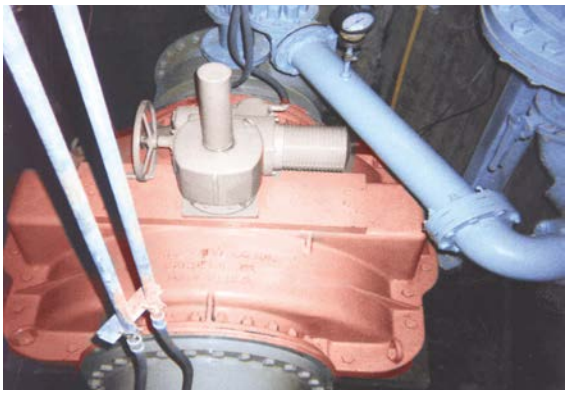

# Specify Red Valve For Reliable Influent Flow Control



*A 66" PAV Air-Actuated Pinch Valve (Type A Megaflex) ready to be installed on a flow equalization system.*

Influent flow control is one of the toughest aspects of wastewater treatment, especially in large-diameter systems where long-term reliability is key. Valves must handle items entering sewer lines such as tree branches, plastic bags, bottles, sand, grit, chemical spills, aluminum cans and other debris that can clog standard valves. Even when installed after initial screening, flow control valves handle concentrated sewage and abrasive grit, often moving at high speed.

Red Valve's large-diameter pinch valves have full-port openings with no obstructions or flow changes. Their flexible, durable elastomer sleeves prevent build-up, seal around solids and have no crevices for debris to collect.



*30" PCV Electric Actuated Pinch Valve (Series 5200E) used at a wastewater treatment plant for influent flow control.*

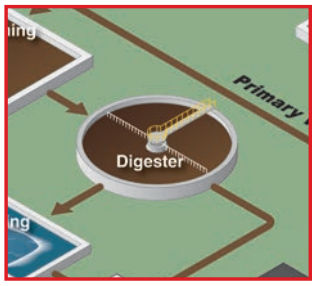

# Red Valve Is Your Workhorse For Grit Removal

*Large-Diameter PVM Manual Pinch Valves (Series 75) provide reliable service under the toughest conditions.*

In pretreatment, wastewater passes through a bar screen to remove large debris, then enters a degrit chamber to eliminate small solids like stones, gravel and metal particles. This abrasive grit quickly wears down metal-seated valves. The PVM Manual Pinch Valve (Series 75) uses a tough elastomer sleeve that absorbs particle impact, outlasting even costly metal alloys and offering easy, low-cost replacement.

Chemical solutions like carbon, ferric chloride and lime help equalize wastewater in early treatment stages. These harsh substances can damage metal valves, but Red Valve's Pinch Valves feature advanced elastomer sleeves that resist abrasion and corrosion. Their flexing action breaks apart solids with each actuation, even after long idle periods.

*PAV Air-Actuated Pinch Valves (Type A) on a distribution column.*



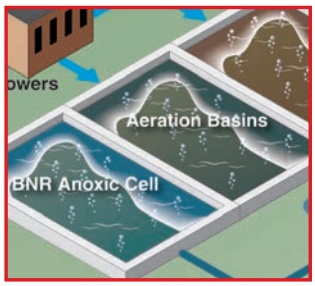

# World-Class Digester Performance

*From where raw sewage enters this digester plant, across the headwork section, during all sludge-processing phases and through effluent discharge, Red Valve Manual and Control Pinch Valves are in use.*

Today's digesters provide highly efficient mixing of waste-activated sludge. Unlike conventional digesters, egg digesters contain much smaller spots for solids to collect. Because the reduced surface area creates a smaller scum blanket, a higher percentage of waste is continuously mixed. To match this performance with the most efficient and reliable process equipment available, designers of digesters around the world rely on Red Valve Manual and Control Pinch Valves.

Digester gases are composed of methane, water and other compounds that create sulfurous and sulfuric acids, which can quickly corrode metal valves. Corrosion occurs not only in the valve's interior, but also in the closing mechanisms, affecting the valve's ability to achieve positive shutoff and causing significant maintenance problems.

Red Valve's rugged sleeves are constructed of non-permeable and corrosion-resistant elastomers. The sleeve isolates the valve body by keeping the process media completely enclosed. For isolation applications, Red Valve Manual Pinch Valves provide bi-directional shutoff that delivers reliable service—time after time, year after year.




# Virtually Maintenance-Free Aeration Mixing Systems


*Equalization Tank Mixing*


*Channel Mixing*

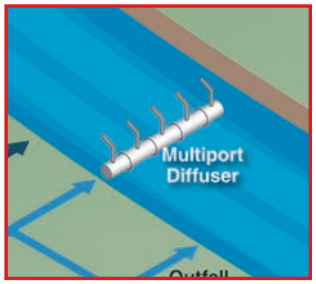

*Grit Tank Mixing Assemblies*


*Anoxic Zone Mixing*

Biological wastewater treatment systems require adequate mixing of the large fluid bodies to keep the biosolids in suspension. The design of proper mixing energy and operational run times is key to achieving an optimized process. Red Valve engineers design these mixing systems with sufficient energy based on the solids concentration and proper operational time. These types of biosolids have a tendency to readily settle to the bottom of the tank so it is key to have equipment that can quickly re-suspend these solids for process treatment optimization.

Red Valve's Aeration Mixing Systems are designed to achieve complete mixing from the tank floor to the water surface. The check valve diffuser design allows for the blower system to be cycled on and off. This is very beneficial for denitrification periods and creating anoxic conditions. The diffuser discharge end is located a few inches off the floor which provides complete resuspension of the settled solids which occurred during the off cycles.

These systems can provide virtually maintenance-free operation while also allowing operations to significantly reduce blower run times resulting in substantial costs savings for energy usage. These systems are constructed from durable stainless steel, providing a long operational life.




# World's Most Effective Effluent Diffuser Nozzles

*This Effluent Diffuser System was designed with a quantity of twelve 6" Tideflex® Nozzles with elbows to properly discharge to a shallow river.*

Red Valve provides a complete line of custom-engineered Tideflex® Effluent Diffuser Nozzles that help to protect the environment by maximizing the jet velocity of discharging effluent. This improves mixing and initial dilution while preventing backflow into the header pipe.

Wide bill and conventional Tideflex® Nozzles are custom-built to exact specifications and fabricated to ensure required hydraulics throughout the entire flow range. Tideflex® Nozzles can be fabricated with integral wire-reinforced Redflex rubber elbows, risers and custom tee and cross configurations. These are flexible, yet strong enough to deflect and return when impacted, reducing the possibility of damage to the outfall header pipe and risers.

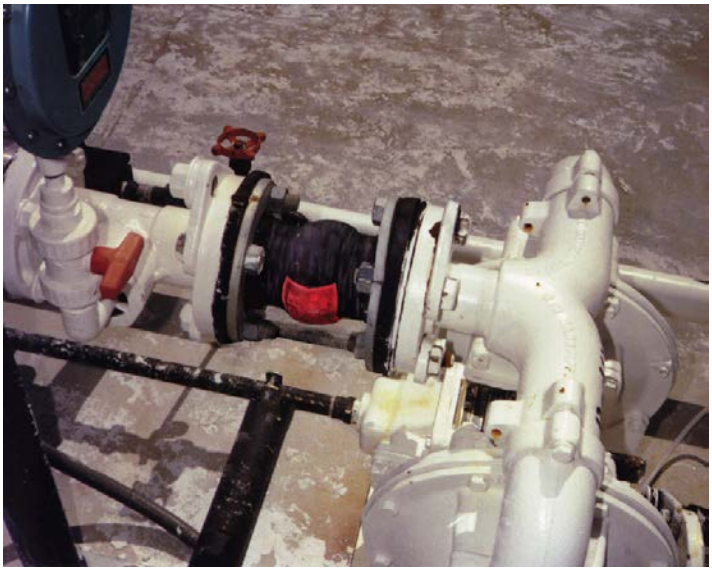
Each effluent diffuser outfall is unique. Red Valve has conducted extensive hydraulic tests on Tideflex® Diffuser Nozzles from 2-48" (50-1200mm) and has developed an exclusive computer model that Red Valve engineers run to assist in the design of multiport diffusers. The model output includes data and graphs of head loss, total head loss, jet velocity and effective diameter. This data is compared to conventional fixed-diameter orifices to illustrate the hydraulic advantages of Tideflex® Nozzles.

*Tideflex® Nozzles designed with integral Redflex rubber risers to reduce the possibility of damage from impact.*

# Maximum Flexibility With Redflex Expansion Joints

Redflex Expansion Joints and Rubber Fittings are designed to alleviate piping stress, compensate for movement, reduce noise and isolate vibration. Made in the United States by Red Valve, Redflex Expansion Joints can be custom-built in a variety of styles and configurations to accommodate pipe size reduction, misalignments and offsets. Red Valve offers flanged and slip-on connections, single or multiple arches and a range of elastomers to meet process conditions.

Redflex Expansion Joints are ideal for aeration systems, chemical feed pumps, pump vibration elimination, odor control systems, grit pumps and blower vibration elimination.



*Redflex Expansion Joints are used to align pipes and eliminate vibration.*

# Red Valve Pressure Sensors Provide Precise Measurement, No Fouling

The viscous nature of wastewater creates challenges with accurate pressure measurement. Traditional gauges and diaphragm seals clog quickly and do not signal the pump to stop when a blockage is encountered, often damaging the pumps and other process equipment. Red Valve Pressure Sensors solve this problem with full-port openings and 360-degree sensing sleeves to ensure accurate pressure readings, regardless of conditions. Red Valve Pressure Sensors never plug or foul like traditional diaphragm seals on slurries.

*A Red Valve Pressure Sensor, used with pressure gauges and transmitters, sends a signal to protect pumps from running dry.*

*Red Valve offers a worldwide, world-class custom service network. With corporate offices in Pittsburgh, PA, manufacturing facilities in Gastonia, NC, and a network of sales representatives around the globe, Red Valve has the sales engineering team to help you select the best choice of valves and related products for your applications.*

Red Valve®

The World Leader in Pinch and Check Valve Technology™

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