

Summary of the King County, Washington, West Point WWTP Flood of 2017

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SUBMISSION TYPE

30 minute presentation

6-12 page paper plus 30-minute presentation

3 foot wide x 4 foot high large format poster

KEYWORDS

Case study, Electrical failure, hydraulic control valve, flood, float switch, abnormal operations, SCADA alarm flood

ABSTRACT

On February 9, 2017, the King County, Washington West Point Wastewater Treatment Plant experienced a catastrophic failure of the entire plant due to a cascade of system failures resulting in a complete flood of the Primary Treatment process area. This led to plant bypasses and discharges of raw wastewater into Puget Sound for several months while the plant was decontaminated, equipment replaced and retested, and systems restarted. Damages topped \$50 million. Life safety was at risk.

The failures began at 2 am during a rainstorm with the plant running at full capacity, 440 MGD. An electrical failure in the Effluent Pump Station which pumps all plant effluent into Puget Sound decreased pumping capacity and began to overflow the station's wet well. While operators were trying to restart the station, the hydraulic discharge valves for each pump also failed. From there, a safety interlock triggered the hydraulic isolation of the pump station and confined flow to the Primary Treatment Tanks. High level float switches in those tanks, meant to shut off flow into them, failed to operate which allowed the tanks to overflow for half an hour. This flooded the underground gallery system surrounding that part of the plant from base up to grade level and damaged all electrical systems and equipment in those galleries.

This presentation summarizes the several studies done to determine the root causes of failures, actions taken to mitigate future failures, and the overall consequences of the accident.----

ABOUT THE AUTHORS

Brian Lee Mast, P.E. Mr. Mast graduated with a BSEE from Rose-Hulman Institute of Technology in Terre Haute, Indiana. His career quickly became exclusively Instrumentation and Controls for

the water and wastewater treatment industry. His work has covered the full spectrum of greenfield designs to evaluation and modification of existing control systems.

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