

## CASE STUDY



### FEATURING



## WATER TREATMENT PLANT REHABILITATION

Denver-Area Water Treatment Facility Uses Structure Guard® – Water to Rehabilitate Leaking and Corroded Flume and Weir

### OTHER STRUCTURE GUARD® - WATER APPLICATIONS AND USES:

- Concrete and Steel Potable Water Tanks
- Potable Water Pipelines
- Raw Water Tanks
- Raw Water Pipelines
- Fiberglass Potable Water Tanks
- NSF 61 & 61.5 Approved Certified for:
  - Pipe as small as 4" diameter and
  - Tanks 50 gallons and larger.
- With a 25 minute pot life and extended re-coat time, Structure Guard® - Water is the perfect product to coat long pipelines and large water tanks.

### WATER TREATMENT FACILITIES ARE VITAL TO THE QUALITY AND COST OF WATER TRANSMISSION AND DISTRIBUTION

Water treatment facilities play a key role in our water and wastewater systems by removing unwanted solids and bacteria, and by purifying wastewater into potable water. Critical to this process is the infrastructure within the treatment facilities and their ability to control flow, function properly and ensure that bacteria, other chemicals and debris cannot contaminate already-treated water. When aging water treatment facility pipes and structures begin to fail and leak, this can lead to major problems with contamination, flow rate/production and safety.

### PROBLEM

The operator of a water treatment facility in Denver, CO was looking for a cost-effective and efficient solution to their failing internal infrastructure. Two areas of particular concern exhibited extreme corrosion and deterioration. The first area was a 100 LF section of a 4' x 4' box shaped potable water flume located above a hallway. Water had begun leaking through multiple seams and puddling on heavily used walkways, creating a safety issue [see picture below]. Additionally, they identified a heavily corroded overflow weir used to ensure a uniform flow rate and avoid short-circuiting. The weir was corroded to the point where it was no longer functioning as designed and was impacting the facility's operating efficiencies.

### 3RD PARTY TESTING

Tensile Strength	ASTM D638	3,000 psi
Compression	ASTM D695	9,500 psi
Flexural Strength	ASTM D790	6,000 psi
Flexural Modulus	ASTM D790	430,000 psi
Adhesion Concrete	ASTM D4541	Substrate Failure
Adhesion Steel	ASTM D4541	1000 psi



*BEFORE: Wastewater Treatment Plant (WWTP) flume entry had begun to leak around the seams.*



*AFTER: WWTP After patching and sealing leaks with Hyperform®, the flume entry way fully rehabilitated with Structure Guard - Water.*



In acidic and corrosive environments with extremely low pH levels like this, finding a sustainable solution can be a challenge. The products used in water treatment plants must be NSF-61 approved. NSF-61 measures and sets a standard for the amount of possible chemicals/contaminants that leach into purified drinking water, ensuring products that come in contact with the water do not cause negative human health effects.

### SOLUTION

In place of a multi-component coating system, the single-component Structure Guard® - Water system was recommended as a more efficient and cost-effective solution. This contractor recommended an 80 mil thick application of Structure Guard® - Water as the coating and rehabilitation solution for this project. Structure Guard - Water is an NSF-61 approved, one-step self-priming 100% solids epoxy. With a 25-minute pot life and extended re-coat time, there was plenty of time to apply Structure Guard - Water, using an approved plural component sprayer to the specified 80 mil thickness.

The rehabilitation of the flume and weir included a four-step process:

- **Step 1: High-pressure cleaning and prep of both the flume and weir**
- **Step 2: Fill voids and patch cracks with rapid-set Quadex Hyperform®**
- **Step 3: Spray-apply 80mils of Structure Guard® - Water**
- **Step 4: Visual inspection, holiday testing and adhesion testing (Pull Test) at 780psi**

### RESULTS

Once applied with Structure Guard - Water, the coating passed all post-installation testing, including a pull test of 780psi. Given the extreme corrosion protection properties of this NSF-61 approved 100% solids epoxy, the flume and weir can once again perform as they were originally designed, while also providing a safe, leak free work environment with dry walkways. Meeting all objectives set forth by the treatment plant engineering team, the project was completed on time and within budget.



*BEFORE: Water had begun leaking through multiple seams and puddling on heavily used walkways, creating a safety issue. Additionally, they identified a heavily corroded overflow weir used to ensure a uniform flow rate and avoid short-circuiting.*



*BEFORE: 100LF section of a 4' x 4' boxed-shaped potable water flume was leaking and creating safety issues along the walkway.*



*AFTER: After the voids and cracks were sealed with Hyperform®, the flume was coated with 80 mils of Structure Guard - Water for long term protection.*



*BEFORE: A weir was so corroded it was no longer functioning.*



*AFTER: Application of Structure Guard - Water at 80mils thickness.*