

California Landfill 4" Force Main: Permanent Scaling Solution Project

FlowScience Electronic De-Scaling Results Summary



PROJECT ENGINEERS:

Joe Santos SCS **SCS ENGINEERS**

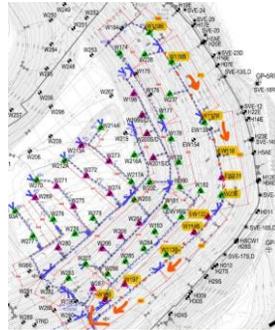
THE LANDFILL

The Landfill has provided safe, reliable and environmentally responsible waste disposal for business and municipalities throughout Southern California since the 1960s. Located near , The Landfill is permitted to handle approximately 6,700 tons of waste per day, or 1.8 million tons annually.

The Landfill team takes multiple steps to protect the environment. All waste is screened to ensure unacceptable waste is not accepted, and our standard operating procedures are designed to exceed regulatory standards.

SCALING ISSUE

The Landfill was experiencing consistent scaling of approximately 2200 linear feet of the lower 4" Force Main whereas jetting was required at least twice per year. The pipe itself would be approximately 50% scaled every 6 months and continual hydro-jetting was necessary to keep the critical line flowing. In some instances, areas of pipe needed to be cut out in super-saturated calcification points. The leachate scaling itself was familiar to other sites see in California by Gii Group.



2200 ft. Scaled Line

Leachate Scale Affecting Otay Landfill Force Main



Drawing to the right was used to determine FM affected area and FlowScience Leachate Scale Control System Placement and Design

FLOWSCIENCE LEACHATE SCALE CONTROL SYSTEMS INSTALLED



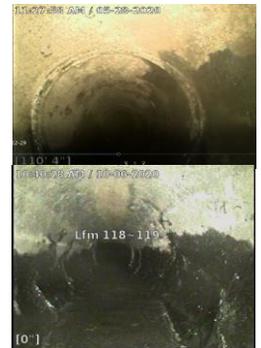
SYSTEM 1: FlowScience LSC 2XL (4 treatment pads) to be attached to the 4" PVC pipeline immediately following the W119B location. Prior to beginning formation of scaling.

SYSTEM 2: FlowScience LSC 1XL (2 treatment pads) to be attached to the 4" PVC pipeline immediately following the W236 location.

THE RESULTS

Upon evaluation of the drawings and the FlowScience Landfill Design form Gii connected with SCS Engineers and landfill OPS personnel to determine the solution to be provided to keep the Force Main scale free permanently. Taking under advisement the optional start-up solution, the line was jetted one more time prior to turning on the FlowScience Leachate Scale Control Systems. One system was added to the beginning of the line and another approximately 1200 feet downstream. Once systems were turned on, Otay LF personnel would camera the line at regular intervals. In early February 2020 Otay turned on two (2) FlowScience systems in hopes of keeping the line clear long term.

As of mid November 2020, the 4" FM continued to flow freely with only minor surface scaling becoming apparent at each camera interval. It was determined in a Zoom meeting that this minor residual scaling build-up was 99% likely attributed to varying flow rates. Further camera inspections have shown the continued scale inhibiting results and as of February 2021 there has been no additional maintenance needed to keep the FM clear and FlowScience continues to inhibit leachate scaling along the line. Personnel will continue to monitor the line and have been advised that FlowScience LSC system lifespan is approximately 15 years. The FlowScience LSC Systems have worked and have eliminated the need to jet and cut the Force Main with return on investment of under 1-year.



Force Main After 4 and 8 Months of FlowScience Treatment