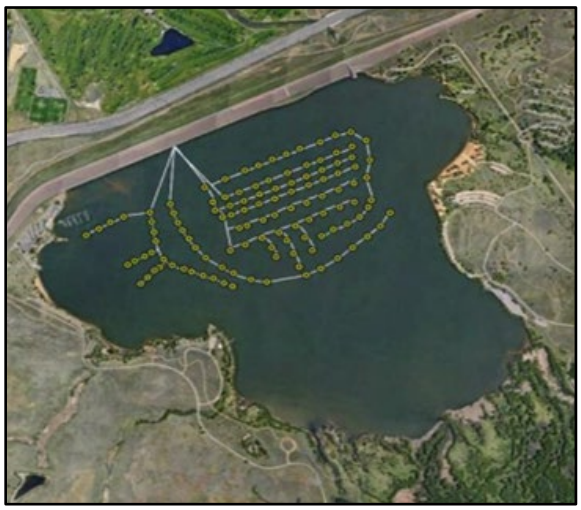
Cherry Creek Reservoir Destratification System (RDS) Fact Sheet

What is the RDS?

In 2008, Cherry Creek Basin Water Quality Authority (CCBWQA) installed a Reservoir Destratification System (RDS) in the Cherry Creek Reservoir that is operated on a seasonal basis. The RDS includes a compressor that feeds air to a system of HDPE pipes with 116 air diffusers in the bottom of the reservoir. The purpose of the RDS is to mix the water column to reduce thermal stratification of the reservoir, which may occur between April and October. Cherry Creek Reservoir is considered polymictic, meaning it mixes multiple times during the growing season. When thermal stratification of the reservoir occurs, typically on hot, windless summer days, low dissolved oxygen concentrations at the bottom of the reservoir lead to internal nutrient loading, which increases productivity (algal growth). Additionally, cyanobacteria have a buoyancy advantage over other algal types under stratified reservoir conditions and artificial mixing can limit growth of undesirable species causing harmful algal blooms.

Compressor Building – Southwest of the Marina



In-Reservoir Distribution System footprint – avoid boat anchors in this area.

How is the RDS operated?

The RDS is operational from mid-April through at least the end of September. Before start-up, the CCBWQA's System Operator visually verifies that ice is off the reservoir and confirms that the temperature in the compressor building is 38 degrees Fahrenheit or more. A written start-up and shut-down procedure are followed and documented. Routine system maintenance of the in-reservoir distribution system (air lines and diffusers) is conducted in late summer, with repairs occurring as needed.

CCBWQA maintains the system through contracts with an operations manager and maintenance contractors who provide routine and emergency system maintenance of the compressor and the in-reservoir distribution system (air lines and diffusers).

What does normal operation of the RDS look like?

Under normal operation, bubbles from the RDS rise gently to the water surface in a diffuse pattern.

Normal aeration plume appearing as bubbles distributed on the water surface.

What do abnormal conditions related to the RDS look like?

Broken aerator heads or breaks in the distribution lines may cause overly vigorous aeration plumes. Additionally, a total lack of aerator plumes showing on the surface of the reservoir during the normal operating season indicates that the compressor is not running and not working to destratify the reservoir. Boat anchors dropped within the footprint of the RDS distribution system can damage or break aerator lines when anchors are retrieved.

Two broken aerator heads showing overly vigorous aeration plumes

Broken main air distribution line near the distribution manifold

CCBWQA Contacts: In the case of abnormal conditions or if you have further questions about the RDS, please contact Rick Goncalves, CCBWQA Operations and Maintenance Manager (303) 901-2367 or rickg@rgengineers.com or Val Endyk, CCBWQA Administrative Assistant (303) 968-9098 or (303) 718-6636 or manager@ccbwqa.org.