

# Bear Creek Watershed Association

Approved October 14, 2009

## Policy 8 - Bear Creek Reservoir Aeration System Management

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### Statement of Basis and Purpose

#### *Bear Creek Reservoir Aeration Practice Manages Summer Dissolved Oxygen*

Bear Creek Reservoir has had problem maintaining the necessary concentration of Dissolved Oxygen in the water column. As such, the reservoir was previously placed on the Colorado 303(d) list for monitoring and evaluation. An aeration system was installed by the city of Lakewood to help maintain Dissolved Oxygen to benefit the fishery.

The current aeration system in Bear Creek Reservoir has been operational since the summer of 2002 and uses a fine-bubble diffusion system with aerators distributed across the hypolimnion. The Association and Lakewood operated the aeration system to assure oxygen transfer during phased on-off cycling, with the aeration system phased primarily on in the growing season. The aeration system can increase the Dissolved Oxygen concentrations throughout the water column by about 2 mg/l within a two-week period.

The Bear Creek Reservoir aeration system reduces chlorophyll productivity, possibly through the partial control of internal nutrient loading that can trigger algal blooms. The Association adopted a policy that makes the reservoir aeration system a permanent reservoir management tool. The Association determined through ongoing monitoring that the de-stratifying aeration system in Bear Creek Reservoir is a necessary and long-term or permanent management practice necessary to protect the quality reservoir fishery and prevent Dissolved Oxygen standard exceedances during summer months of June 1-September 30. Reservoir aeration is also a necessary management tool in low flow conditions.

### Policy Statement

The Bear Creek Watershed Association supports the use of a reservoir aeration system as a water quality management tool to maintain the fishery in Bear Creek Reservoir and support the Dissolved Oxygen standards of the reservoir:

1. The BCWA has determined through ongoing monitoring that the de-stratifying aeration system in Bear Creek Reservoir is a necessary and long-term or permanent management practice necessary to protect the reservoir fishery and prevent Dissolved Oxygen standard exceedances during summer months of June 1-September 30;
2. The existing de-stratifying aeration system in Bear Creek Reservoir undeniably benefits the mixed fishery in the reservoir;
3. The City of Lakewood is responsible for the mechanical operation of the aeration system in the reservoir, including cost of operation;

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4. The BCWA will work cooperatively with the City of Lakewood to monitor the Dissolved Oxygen profiles in the reservoir as part of the routine monitoring program and for a supplemental monitoring program in the growing season of July 1-September 30 each year;
5. The aeration system will be operational beginning approximately one-month prior to the regulatory growing season of July1-September 30 each year;
6. The City of Lakewood and BCWA have determined through ongoing monitoring that continuous operation of the aeration system in the growing season is necessary to maintain the Dissolved Oxygen Standards;
7. The City of Lakewood and BCWA staff will determine an aeration operational schedule for the reservoir using weekly profile samples taken at a minimum at the index site (40) during the growing season to adjust aeration operations; and
8. Monthly collected aeration data will be presented to the BCWA Board for review at regular meetings of the BCWA.