



Chatfield Watershed Authority

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MEMORANDUM

To: Chatfield Watershed Authority
Board

From: Chatfield Watershed Authority TRC

Subject: Updated Issues and Concerns for 2008 RMH

Date: January 29, 2008

The purpose of this memo is to summarize the TRC's discussion of the 34+ issues and questions which arose during our discussions, to date, with the Water Quality Control Division (WQCD). The TRC has reviewed the listing of issues (16 Jan, 2008) and refined and narrowed the list of issues that require attention and discussion with WQCD prior to the 2008 Chatfield water quality standards and Chatfield Reservoir Control Regulation rulemaking hearings before the Water Quality Control Commission. The current primary issues are more broadly summarized as follows:

- **Chlorophyll and Total Phosphorus Relationship**

The Division is recommending an alternative to the traditional, regression equation approach utilized historically in the Chatfield Control Regulation #73. The Division's proposal is based on a response ratio (of chlorophyll to Total Phosphorus) combined with concentration/load translators. The simple ratio in conjunction with a translator approach is being suggested in order to calculate the allowable load. However, the relationship between the phosphorus and chlorophyll concentration is not well described by the ratio model being proposed. The correlation between the model and the data is not ideal, indicating that there are potentially other factors that may be incorporated into an analysis of the data and better explain the resulting chlorophyll a levels in the reservoir. Data suggest that other variables may be essential to incorporate to more precisely describe the relationship between chlorophyll and nutrients (e.g. flow, biology, carbon, etc.).

- **Establishment of Chlorophyll a goal/standard @ 17 ug/l**

The WQCD proposes to change from a chlorophyll a goal to a standard for chlorophyll. This raises questions about how chlorophyll a levels relate to protecting the beneficial uses of Chatfield Reservoir. What is the potential affect on the TMAL? These questions are not addressed by the chlorophyll-phosphorus translator approach.

- **Effect of Watershed Hydrology on Total Phosphorus, Chlorophyll and Exceedance Frequency**

The issues of exceedance frequency are very important, as there currently is no specification of an acceptable exceedance frequency for Chatfield Reservoir. According to the Division, the "...exceedance frequencies are derived empirically by applying percentiles of the response ratios to data from various Colorado lakes." This only provides the number of exceedances – not the level that is acceptable. It is critical that the recommendation for exceedance frequency be based upon science and experience at Chatfield Reservoir (even if the recommendation is retaining the status quo).

- **Effect of Watershed Hydrology on Total Phosphorus, Chlorophyll**

The hydrology and water quality effects related to the impending Chatfield Reallocation Project also need to be considered. There is considerable uncertainty with how the proposed changes in the amount of water flowing through the reservoir as a result of variable retention time, water rights administration, water supply operations will influence the complex biological, chemical, and physical interactions in the reservoir. An increase in storage of 20,000 acre-feet for municipal purposes could affect how the reservoir functions and the resulting phosphorus and chlorophyll concentrations.

In addition, factors listed in the Hydrology section need to specifically include flood events. The effects of floods, especially on ungaged sources (such as Deer Creek and Massey Draw), on phosphorus budgets needs to be included in the state's analysis.

- **The growing season and its relationship with beneficial uses in the reservoir.**

It appears the growing season, currently July through September, may need to be more closely associated with the beneficial uses of the reservoir. The growing season may be more appropriately termed "season of concern", particularly since the recreational use period is an important beneficial use from May to September.