

January 14, 2014

RE: Status Report on Aquatic Plant Growth in Larkspur Lake and Pond

To the Larkspur Board of Directors,

The Larkspur Water Board prepared this report in response to concerns raised about the unsightly growth of aquatic plants in Larkspur Lake and spreading cattails in the pond.

First, let's identify the plants. Three primary species of aquatic vegetation populate Larkspur waters: cattails, *Elodea Canadensis* (aka Canadian Waterweed), and fibrous algae, all of which are native and common across the United States and Canada. The extent to which these plants flourish depends on several variables including water temperature, sunlight, pH, and especially organic nutrients. In the last few years we have observed these native plants experiencing excellent growth conditions, not only in Larkspur, but in most waterways around Crested Butte including upper valley rivers and streams, Lake Irwin, and Grant Lake in Skyland.

Several attempts to mitigate the growth of these plants have been taken already including the partial list of actions described below:

1. Summer 2012 - aerators added to the lake to increase circulation of organic nutrients and increase density and distribution of dissolved oxygen;
2. Summer of 2012 - mechanical removal of plants, i.e. rake-a-lake day;
3. Summer of 2012 - implemented continual flow-through of water into and out of lake;
4. August 2012 – 20 gallons of enzymes (Microlyfe) added to lake in the attempt to reduce organics nutrients (plant food) in the lake.
5. July and August 2013 – Respectively 15 and 5 gallons of enzymes (Microlyfe) added to the lake.

In addition, in September 2013, we requested that the property manager refrain from fertilization of turf areas around the pond (which feeds into lake) in the effort to reduce nutrient runoff into the water. In summary, thousands of dollars and many volunteer hours have been invested thus far in attempting to control lake plant growth and maintain lake health. As the plants continue to grow we are forced to admit that aquatic plant control is a complex challenge and seemingly simple solutions are not always as effective as we would hope.

While the Water Board reflects on the effectiveness of past treatments and actively explores new ones, we also drafted a set of guiding principles to govern our actions.

#### Guiding Principles of Larkspur Lake Plant Management

1. Ensure the safety of Larkspur residents, pets, and wildlife.
2. Align plans and mitigating actions with the strategic vision of the HOA.
3. Maintain open communication with all stakeholders.
4. Implement a scientific approach to diagnosing problems and deciding the best course of corrective action.

5. Recognize and balance the diverse functions of Larkspur Lake including fire suppression, residential and association irrigation, boating, paddle-boarding, skating, aesthetic beauty, swimming dogs, sport fishing, wildlife habitat and waterfowl habitat.

We use these guiding principles to test our ideas, plans and actions. Some additional steps we are actively taking to manage and reduce unsightly plant growth on the surface of the lake include:

1. Establishing clear roles and responsibility definition between the Water Board, Association Property Manager, HOA Board of Directors and Water Operator.
2. Weekly recording of capacity, temperature, pH, nitrite and nitrate levels of the lake and pond throughout the spring, summer, and fall to correlate plant growth factors, seasonal fluctuations, and root cause(s) of overgrowth (using data to drive decisions).
3. Graphing of cattail encroachment on the small pond to record seasonal growth changes (quantify the threat).
4. Investigating and comparing chemical treatments including aquatic enzymes and dyes for:
  - a. Cost
  - b. Effectiveness
  - c. Safety
  - d. Unintended consequences
5. Researching aquatic plant composting methods (to avoid paying for costly disposal services).

Additional ideas to explore to as we embark upon the 2014 growing season include:

1. Schedule more community rake-a-lake events for careful mechanical removal of surface layer of fibrous algae and Canadian Waterweed.
2. Interviews with property managers at Skyland and the Bench to compare best practices.
3. Interviews with RMBL to understand the ecology of aquatic systems and what we could be doing differently.
4. Formation of a Larkspur association work committee to help carry out actions as defined by the Water Board.

We ask the Larkspur Association for patience as we confront the lake plant situation in a thoughtful and responsible manner. We also welcome all suggestions, feedback, and product ideas. We recognize that, in the eyes of the community and our visitors, success will be judged not necessarily by our efforts, but by our results. Larkspur Lake is the metaphorical and geographical heart of our community; it is our physical, visual, and recreational centerpiece, our circulatory system and our fire suppression. It is our expectation that by working together we can achieve the balance of function and attractiveness for this key amenity that we all desire.

Regards,

Larkspur Water Board

Jeff Duke, Jason Kidd, Jeff Bivens