

Residential Landscape Care Best Practices to Minimize Impact on Water Quality

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Prepared by Friends of Fish Creek

Many of the streams and creeks that flow into the Snake River in Jackson Hole have demonstrated elevated levels of algae that are well above what would be considered healthy for this area. Elevated algae levels can negatively impact fish habitat and human health. While we are not at crisis levels yet we want to solve this well before we get anywhere close. A prime cause of the algae is directly related to excess levels of nutrients entering the surface and ground water. It has been determined that one of the largest sources of this nutrient pollution comes from excessive residential lawn fertilizer applications.

There is evidence that most homeowners and landscapers use way more fertilizer than needed, use the wrong type of fertilizer and then apply too much water. With the porous soils and high water table found in many parts of Teton County, much of these excess nutrients end up in our ground and surface water.

The following guidelines are outlined to assist residences in achieving beautiful landscaping while better protecting water quality in the valley's pristine waterways.

In the event you are building a new home or undertaking a substantial landscape renovation, we have another document that provides guidance for designing a landscape to minimize nutrient impacts on the water. This document can be accessed on our website.

- 1. Minimize the amount of maintained lawn area on your property.**
 - a. Large expanses of manicured lawns may look nice but, particularly in low lying areas of the West Bank, can have a significant impact on our water quality.
 - b. One way to help reduce potential impacts on water quality is to simply reduce the amount of maintained lawn on your property. Consider converting some or all into naturalized meadows utilizing native and or extremely drought tolerant grasses.
 - c. These meadows can be made to look stunning especially in the western mountain environment of Jackson Hole. They require no fertilizer, few if any pesticides and, once established, very little water. Small number of weeds should be tolerated and won't be noticed. If weeds do become problematic, a correctly timed

herbicide can be spot sprayed to keep the area in control. Meadow areas can be left totally natural or trimmed at a height of four to six inches in spring and/or fall. Beautiful, waving fine fescue and native grasses used on 50% of Shooting Star's golf course acreage are a great example of this concept.

- d. There are various alternatives for converting over to a meadow. We have produced a separate document covering these alternatives which also can be found on our website.
- e. A major additional benefit of converting maintained lawn areas into natural meadows is it will create a superior natural filtration system(bio-filter) that greatly aids in protecting ground and surface water quality. Bio filtration with the use of naturalized vegetation is one of the best methods to filter potential negative inputs before being received by water resources. Additional benefits:
 - a. Better wildlife habitat
 - b. No need for frequent mowing
- f. There has also been much written about other environmental benefits of eliminating or reducing the amount of maintained lawn. See New York Times 6/16/17 piece by Paul Bogard titled "Beyond Blades of Grass" for a very interesting point of view. This article is on our website.

2. **For those lawn areas being kept highly maintained there are several ways to minimize their impact on water quality.** A uniformly beautiful green lawn does not have to receive excessive nutrients, pesticides, herbicides and irrigation. Rather, it just needs the right TLC from a truly knowledgeable professional or homeowner who puts our waterways at the top of their priority list.

a. Check topsoil depth

- i. Having only a few inches of topsoil on top of river cobble or gravel is going to be very difficult to produce a nice lawn. Excessive fertilizer and irrigation will likely be required to even get close to a desired product.
- ii. With out proper topsoil depth to filter and slow down the water/fertilizer movement, much of this fertilizer will end up in the ground water as it easily runs through the porous rock/gravel layer. A foot or so of good topsoil is required to buffer the system, grow healthier turf and protect the groundwater.
- iii. It may be possible to improve the soil quality and depth via a twice annual "top dressing" with high quality top soil and compost. Explore this with your landscape professional.

- b. **Create "riparian buffers" around maintained landscaping.** If any portion of your maintained lawn/landscaping abuts a stream, pond or

drainage ditch then a “riparian buffer” is needed to eliminate the connectivity of maintained landscaping with any water resource.

- i. A riparian buffer is ideally a twenty foot wide strip separating the lawn from the water. These buffers zones have been proven to drastically reduce unintended escaped nutrient runoff into waterways. If your property can not accommodate a full twenty feet then make it as large as possible but it should be at least five feet wide.
- ii. Its purpose is to catch and filter out any fertilizer particles and other chemicals before they reach water bodies. They act as wonderful natural runoff bio-filters which contain, utilize, break down and safely release potential escaped nutrients and chemicals over time.
- iii. The buffer should consist of native and/or extremely drought tolerant grasses, shrubs and trees. It should be allowed to grow naturally, without fertilizer and only require minimal water during very hot, dry spells. If your buffer is less than the ideal 20 feet then it will need to be protected from excess traffic and given the best chance to function properly in a healthy manner.
- iv. Weeds/mowing can be dealt with the same as if a meadow. See 1.c. above.
- v. If you are unable or unwilling to put in these buffers then absolutely avoid applying fertilizer within twenty feet of any water body.
- vi. If you do not use any fertilizer or other chemicals then a buffer may not be needed.

c. Use slow release and/or organic fertilizer

- i. Most homeowners and landscapers use synthetic, quick release products. These products are readily available at home centers and distributors and it is what most have been using forever. Using these products produces a green lawn very quickly because all of the nitrogen is available immediately. So the plants quickly consume as much as they can, get a quick growth spurt and a quick color change to dark green. There are four problems with this:
 1. This is not healthy for the grass plants. The sudden and large amount of nitrogen produces a flush of top growth with out a corresponding growth of the roots which can lead to weak and diseased turf that is more susceptible to insect damage.
 2. Numerous applications will be needed during the growing season.
 3. All of this growth requires more mowing.
 4. All of the excess nitrogen that is not absorbed by the turf at each application flows directly into the ground water or surface water contributing to our nitrogen problem.

- ii. The very simple way to solve all four of these problems is to switch to slow release fertilizer products.
 - 1. There are two types.
 - a. 100% organic products naturally release their nitrogen over months and even years.
 - b. Synthetic slow release products are derived from chemicals but also deliver the nitrogen slowly, just like organics, via various control release technologies.
 - 2. Only one application of organics or slow release synthetics per year is needed. Mid May to mid June is best time for this in our area.
 - 3. Continuous use of organics or slow release over multiple seasons also has the added benefit of improving soil health.
 - iii. The one drawback to organic/slow release products is they do not work as well in colder temperatures that we often find in Jackson during the spring and lawns may be a little lighter green until June.
 - 1. If “early” green is important then contract with a local turf professional to apply a spring foliar application of iron plus light rate of nitrogen(see rate recommendation in next section).
 - 2. Quick release can be applied safely if performed by a licensed professional via a foliar spray at very low applications rates that allow for immediate, 100% absorption by the turf.
 - iv. We are developing an approved list of organic and synthetic slow release products for homeowners and for landscape professionals.
- d. **Limit annual fertilizer usage** to no more than two pounds of “actual” nitrogen per one thousand square feet of lawn area.
- i. Most lawns receive way more fertilizer than they need largely because most homeowners and landscapers do not clearly understand how much to use, they don’t monitor how much they actually use at each application and don’t calculate an annual total. There is also a general misconception that “more is probably better than less”.
 - ii. This over usage is a major contributor to our water quality issues.
 - iii. Professional landscapers should be able to easily figure out how to apply at this rate. We need to come up with some help for homeowners who maintain their own lawns as the instructions on the bag are not always clear and then they have to be interpolated based on the type of spreader used. We will

develop something for this.

- iv. Foliar applications of quick release nitrogen should be made no more than two times per month at rates of no more than .2 pounds of nitrogen per thousand square feet per application. These foliar amounts will count against the total allowed two pounds per year.

e. Minimize watering

- i. Most lawns with irrigation systems are usually over watered due to owner/landscaper setting times/frequencies to water automatically regardless of weather conditions.
- ii. Excess water flushes fertilizer through the soil quickly requiring even more fertilizer and results in the likelihood of nitrogen moving into our water.
- iii. Work with your landscape professional to come up with a watering program that is right for your soil conditions and have them update the data every two weeks as the weather changes. Watering at night and no more than every other day will allow the turf a chance to dry in between cycles. This promotes deeper roots and healthier grass plants. Sunnier areas require more water than shady areas and should be adjusted accordingly. Start with shorter duration times and then increase if needed.
- iv. If you are putting in a new irrigation system consider installing moisture sensors that can help determine the correct amount of water to each zone. Also consider a rain sensor that shuts the system off on days that there is sufficient natural rainfall. Some of the newer residential systems also connect to a network of local weather stations that provide automatic data feeds of various weather parameters in your area that are used by your system to automatically adjust your watering amounts.
- v. Irrigation controllers also have seasonal adjustment features that make it easy to do a global percentage increase or decrease to all zones.
- vi. Install drip irrigation for trees and shrubs

f. Mowing

- i. You may be able to reduce the frequency of mowing due to less fertilizer and water and thus slower growth.
- ii. Set mower blade at 3" or higher. This creates a thicker and stronger turf that will require less water and be more resistance to weeds, disease and insects.
- iii. Mow frequently enough to allow clippings to be left in place. Ideally, lawns should be mowed when surface is dry. If well dispersed, the clippings will not impede growth and will help to improve soil health and reduce fertilizer needs.
- iv. Consider using a "mulching" mower. The mulching feature grinds up the cuttings which helps them decompose quicker and

generally leaves no visible cuttings on the turf.

- g. **Minimize pesticide and herbicide(weed killer) usage.** These contain chemicals that need careful attention and are often not necessary

- i. **Herbicides**

- 1. After establishing a healthy lawn per this document's suggestions, it is likely that any weeds present will be very tolerable.
 - 2. Hand pulling may then be a first option with spot spraying being the next logical step.
 - 3. Avoid broadcast treatment if at all possible.
 - 4. Should a broadcast treatment be needed perform a single, carefully planned application between Memorial Day and Fourth of July. Read and follow directions thoroughly and completely.

- ii. **Pesticides**

- 1. Most healthy lawns in our area will not require pesticides. With the healthy bird population we have in this area, most damaging insects will naturally be kept in balance.
 - 2. Grubs can sometimes get a bit out of control. If this occurs then you may need to perform one, well timed pesticide treatment. Read and follow directions carefully. Several natural grub treatments exist that have proven quite effective in our region.

- h. **Tree fertilization**

- i. Many of the local landscape companies offer liquid tree fertilization via injection into the root zone
 - ii. Most established native trees and shrubs will do fine with no fertilizer at all or maybe just a little compost or other granular slow release product around the root zone once a year.
 - iii. The injected liquid fertilizer has the potential to end up leaching and degrading ground water quality.
 - iv. The one exception here are newly planted trees that appear to be struggling. Work with your tree supplier to determine a proper course of action that may include some type of fertilizer application until the tree is established.
 - 1. Be sure any injected fertilizer goes into the root zone and not below. Many of our most popular native trees and shrubs have shallow root zones.