

SECTION 2

LAWN AND GARDEN MANAGEMENT

This fact sheet addresses the impacts lawn and garden management can have on water quality and how *you* can make a difference with *Best Management Practices (BMPs)*. BMPs are actions you can take to protect our natural resources. **The ultimate goal of this information is to minimize negative impacts to water quality.**

1. Read the facts and information in the following pages.
2. Fill out the Risk Assessment Worksheets in order to analyze your property's specific needs.
3. Fill out the Action Worksheet, then **take action!**

Why are Lawns and Gardens a Potential Problem?

Lawn and gardening activities on the shoreline often involve fertilizing, weed and pest control, and soil disturbance. Soluble nutrients found in fertilizers are beneficial to yards and gardens, but can cause problems when they enter surface water like lakes, rivers, and streams. Nitrogen and phosphorus contribute to aquatic plant and algae growth which depletes oxygen in the water, impedes water recreation, and is aesthetically unappealing (Figure 2-1). Lawn and garden pesticides can have a negative impact on the health of humans, fish and wildlife, if used incorrectly. It is important to keep in mind that many shoreline landowners and managers utilize surface water for drinking and irrigation.

Soil eroding into the lake impacts the clarity of water and carries fertilizers and pesticides. The proximity of many homes to the lakeshore increases the risk that these materials will enter the water and cause problems. There are many ways the conscientious homeowner can help maintain high water quality for everyone to enjoy. Please refer to the *Kootenai County Site Disturbance Ordinance* (Resource Directory page 2-8) to find out local building setback limits.



Figure 2-1 Algae bloom impacts clarity of water and is aesthetically unappealing.



Courtesy of the Washington State Water Quality Consortium

Pay Special Attention If:

- There are areas of bare and exposed erodible soil on shoreline, flowerbeds, lawns, vegetable gardens, etc...
- The property slopes toward surface water.
- There are impervious surfaces, such as sidewalks and driveways close to surface water.
- Lawn or landscape maintenance is being done close to the surface water.
- Fertilizers, pesticides, or soil amendments are being applied.

Best Management Practices

Vegetative Buffers
Easy Care Lawns
Garden Wisely
Proper Debris Disposal
Soil Stabilization

Vegetative Buffers

The most effective and efficient action you can take to protect surface water from lawn and garden activities is to add or preserve a native vegetative buffer or riparian area along the shoreline (Figures 2-2 & 2-3). A buffer between surface water and your land activities should consist of native or beneficial plants that have deep root systems, do not need additional water, and do not require fertilizer application. The lack of a vegetated buffer is one of the most significant problems associated with excessive nutrient runoff into lakes, rivers, and streams, as well as, property loss due to soil erosion.

Create a diverse buffer using native grasses, trees, and shrubs. This does not need to take up 100% of your shoreline. A minimum of 50% would be acceptable. For maximum pollution prevention, buffers should be at least 25 foot deep from the water's edge to any management activities associated with lawn and garden care. For more information on plant selection and design please read Section 8: Riparian, Pasture and Forest Management and consult the Resource Directory on page 2-8.



Figure 2-2 A healthy vegetative buffer protects surface water and adds beauty to your landscape.



Figure 2-3 The property on the left leaves sloping bare soil/sand exposed to stormwater. The property on the right is attractive with abundant plants and access.

Easy Care Lawns

Lawns can be an attractive part of your landscape. In fact, a well-maintained lawn or lawn alternative (Figures 2-4 & 2-5) adds value to your property and helps to tie together your home and other landscape plants. Healthy vegetation actually improves your living environment. On a hot day, greenery reduces the glare of the sun, keeps surrounding areas cooler, and will attract birds and other wildlife.

However, lawns should never be maintained all the way to the water's edge. This will only accelerate erosion due to the shallow roots of turf grass. In almost all cases a vegetated buffer should be integrated into the shoreline's landscape design. With proper management, dense turf provides a good ground cover to prevent soil erosion but should not be used as a long term solution within 25' of the high water mark. Traditional lawn management activities like mowing, fertilizing, and herbicides are harmful to water quality. Use the BMPs that follow to reduce contaminants from entering surface water.



Figure 2-4 Creeping thyme replaces traditional lawn. This plant is drought tolerant and doesn't require fertilizer or mowing.



Figure 2-5 Native grasses don't require water, fertilizer or mowing.

Fertilizer Management for Lawns

- Have your soil tested to determine how much fertilizer is actually needed (Figure 2-6). This can save both time and money. Soil tests are available at your local extension office, NRCS or hardware store.
- Fertilizer is fertilizer, whether it is organic or chemical, too much is never a good idea next to surface water. If chemical fertilizers are used, select slow-release (water insoluble) forms. For proper application, please follow the instructions on the fertilizer bag.
- Choose fertilizers with low phosphorus levels. A healthy turf grass growing in our region generally doesn't need excess phosphorus.
- Nitrogen moves quickly through the soil, so pay close attention to application rates. It can quickly reach groundwater.
- If you utilize a professional lawn care service, familiarize yourself with the type of pesticides and fertilizers being used and how they are applied. In some cases they may unnecessarily include a "weed and feed" product at every application.
- Mulching mowers recycle grass clippings and can eliminate the need for one fertilizer application per year.
- Water your lawn sparingly after fertilizing. This prevents excess water and fertilizers from running into surface waters.
- Choosing native grasses will decrease your need to fertilize and water. More time to play!

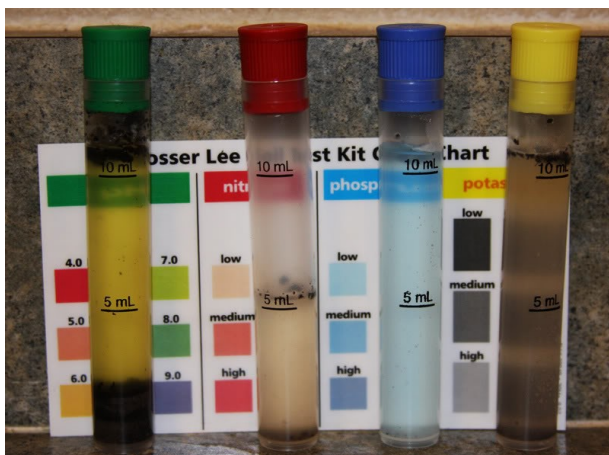


Figure 2-6 A soil test kit can help you determine the levels of phosphorus, nitrogen, potassium and pH of the soil on your property.

Improper Use of Fertilizers Could:

- Contaminate surface water with excess nutrients such as nitrogen and phosphorus.
- Contaminate drinking water from ground water wells with nitrates, which is hazardous, especially to pregnant women, infants, and small children.
- Contribute to severe fungal diseases on plants.
- Make some weeds more competitive with the plants you are trying to grow.

Improper Application of Pesticides Could:

- Harm or kill beneficial insects and earthworms associated with your lawn or garden.
- Harm wildlife and pets that come into contact with your lawn or garden.
- Result in chemical runoff, during rainfall or irrigation, into streams, rivers, lakes, and stormwater drains.
- Leach through the soil directly into ground water which is used for drinking water.
- Create pest resistance to the applied chemicals so that they will be more difficult to control in the future.



Pest Management for Lawns



If possible, avoid the use of chemical pesticides and herbicides. Consult a professional from the UI Extension Office to determine if the use of pesticides is justified (Resource Directory 2-8).

The following practices will minimize the potential of contamination from pesticides:

- Properly identify the problem. Most plant problems are caused by environmental conditions or human activities, not insects and diseases.
- Determine if there is an economic or aesthetic justification for initiating control of the pest.
- Consider control options other than the use of a chemical pesticide; biological controls and pest-resistant plant varieties are becoming readily available.
- Use the least toxic and most degradable product.
- Read the pesticide label carefully, and pay special attention to safety precautions and warnings about use near water.
- Do not apply pesticides when it is windy to avoid the possibility of drift.
- When purchasing pesticides, buy only what is needed to control the problem during the current season.
- For empty pesticide containers, triple rinse the containers and reapply the rinse water to the areas already treated. Empty containers should be disposed of properly at your local transfer station. Never pour excess pesticides on the ground, into surface waters, or into sanitary treatment systems.
- When controlling diseases, insects, and weeds use chemicals responsibly and use only the required amount.



Irrigation Management-Water Wisely

Over-watering may cause pesticides, fertilizers, and sediment to either runoff to surface waters, or leach and contaminate the ground water you use for drinking.

- Established lawns only need *1" to 2" of water per week*. A tuna can is a useful measuring tool.
- Install an irrigation system. Set system for early mornings or evenings. Make sure system is working correctly and that water is not being wasted on sidewalks, walkways and driveways (Figure 2-7).
- Drip systems use water efficiently and reduce the risk of erosion, by watering individual plants rather than the entire soil surface. Consider installing in vegetable gardens and gardens with new plantings (Figure 2-8).
- Water deeply in the early morning or evening to avoid evaporation during the hot days.
- Avoid overwatering at all times, but especially after applying fertilizers and pesticides.
- Leave grass clippings on the lawn to shade the soil surface. This retains moisture and provides nitrogen, potassium and phosphorus. Recycling at its best.

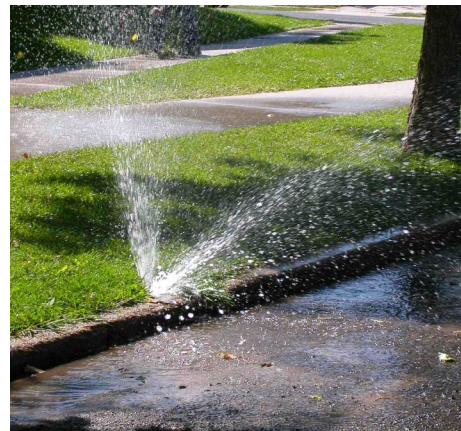


Figure 2-7 *An improperly functioning sprinkler wastes water on street.*



Figure 2-8 *A drip system watering individual plant.*

Garden Wisely

Flower and vegetable gardens can add to the quality of life, however certain precautions must be taken to prevent the possibility of surface water contamination.

Your garden is a complex ecosystem of plants, animals, insects, birds, fungi, worms, and microorganisms such as bacteria. A healthy garden ecosystem will have a balance between producers, consumers, and decomposers. If an imbalance occurs, symptoms such as plant disease or an increase of damaging pests may result. This imbalance can be caused by improper applications of pesticides, fertilizers, and water or by removing organic matter, such as leaves, from the garden. By using gardening BMPs, you will reduce the potential for gardening problems and thus the need for chemical controls. By reducing the use of chemicals, the risk of contaminating the surface water and your drinking water is also reduced.

Location, Location, Location.



- Unless your garden is made up of densely growing, low maintenance native plants, your garden should be located at least 200' from surface water and drain away from surface water.
- If your garden is located on a slope draining toward surface water, apply fertilizers and pesticides sparingly and only when absolutely necessary. Mulch all bare soil to prevent erosion.
- Terraced gardens on slopes can help slow water and provide long term erosion prevention. Dense berries, shrubs, groundcovers and native grasses also provide excellent erosion prevention on slopes.
- Gardens should never be located on septic system drainfields or mounds.



Figure 2-9 A beneficial ladybug eating the dreaded aphid.

Pest Management in the Garden

It is best to avoid using pesticides. The following pest management BMPs will help keep your garden ecosystem healthy.

- Create a garden with diversity. Plant a combination of different types of plants to create a balanced ecosystem, and if possible, rotate plants each year to outsmart potential pests and minimize the threat of soilborne diseases.
- Maximize conditions for healthy plant growth. Choose plants that are suited for your climate and are resistant to diseases in the area. Group plants according to water and light requirements and space them to allow ample root and top growth at maturity.
- Use and protect beneficial insects. Develop garden habitats to ensure a healthy environment for beneficial insects. Also, learn to recognize the eggs and larvae of beneficial insects so as to not harm them.
- Use the least toxic solution for your problems. Some low toxic methods to solve problems include biological controls, insect traps, or mechanical means to remove pests. Also, learn to live with a low level of plant damage.
- If you do use herbicides or pesticides, use them carefully. Identify the insect and weed pests and select the appropriate chemical. Also, buy only what you need, and be sure to follow label directions.
- Store and dispose of herbicides and pesticides properly. Store any extra in a secured area, and if you need to dispose of these chemicals, take them to your local household hazardous waste collection program or go through the Idaho State Department of Agriculture Pesticide Disposal Program (Resource Directory page 2-8).

Fertilizer Management in the Garden

Fertilizer should be added only in the amounts needed, at the appropriate time, and in a form that makes the nutrients available to plants. Nutrient management BMPs to implement in your garden includes:

- Test your soil for nitrogen (N), phosphorus (P), potassium (K), sulfur (S), pH, and organic matter. Soil samples should be taken to a depth of 12 inches.
- Build a healthy soil. Add organic matter, such as compost to enhance the structure, aeration, and nutrient and water holding capacity of the soil. Organic matter can also be added by growing a green manure cover crop, such as clover. Also, try to supply needed nutrients using organic fertilizers, such as composted manure, cottonseed meal, bone meal, blood meal, and greensand. Most gardening shops have these types of fertilizers. If not, you can order from gardening retailers that specialize in providing organic fertilizers and pesticides.
- Apply fertilizers properly. Based on your soil test and plant needs, apply the proper rate of nutrients and apply it at the correct growth stage of the plant. Overfeeding plants can be as detrimental as underfeeding, but this risk can be reduced if organic fertilizers are used, because the nutrients are released slowly. Synthetic fertilizers are also useful, as they can provide readily needed nutrients.



- Reduce the need for watering by improving soil structure. Each year be sure to add organic matter such as compost, grass clippings, tilled in cover crops (green manure) and other dead plant materials.
- Drip systems use water efficiently by watering individual plants rather than the entire soil surface. Consider installing in vegetable gardens and gardens with new plantings.

Irrigation Management in the Garden

- Reduce the need for watering by mulching. Mulches not only slow the evaporation of water from the soil surface but also can improve a soil's water holding capacity, keep the soil cooler on hot summer days, reduce weed growth, and help prevent soil erosion. Examples of organic mulches include grass clippings, leaves, and straw. Inorganic mulches may also be used, such as permeable landscape fabric and/or rock.
- Irrigate only when the plants need water. Check whether the soil is dry several inches below the surface. If it is dry, then water, but water slow enough so that it soaks into the root zone and does not run off the soil surface. The depth of the root zone depends on the plant, but in general this is 6 to 8 inches deep. If possible, use a drip irrigation system to conserve water.

Proper Debris Disposal

Avoid burning on the beach or near shore because the remaining ash results in an immediate release of nitrogen and phosphorous which encourages algae and aquatic weed growth. This is of special concern with the tremendous expansion of the aquatic invasive species Eurasian watermilfoil. The burning of trade or construction waste is prohibited per IDAPA 58.01.01. 600-617. Burning of debris requires a local fire district permit.

If you feel you must continue burning on the shore, burn in a metal or stone container that can be emptied of ash easily. Never leave ashes on the shore to be washed away, and **never dump ashes in lake!**

Watch Your Ash!



Debris Disposal Continued

Never dump leaves and vegetative debris into the lake or a stream, this releases nutrients and organic acids into the water and uses up valuable oxygen needed by fish. Rake leaves and brush away from the water (unless they are being used as mulch); compost vegetation in a sturdy structure away from the shoreline or burn at least 100 feet from water.

Soil Stabilization

Surface waters are contaminated by soil particles (sediment) that are washed or blown into the water. Sediment makes water cloudy, covers spawning beds, and carries phosphorus. Unlike nitrogen, which moves quickly through the soil, phosphorus attaches itself to the soil particle and holds on tight. When soil is washed into water the phosphorus may dissolve and become available to plants. This makes aquatic invasive species and algae grow. Please read Section 6: New Construction for detailed information on erosion control. Also, please refer to the *Kootenai County Site Disturbance Ordinance* (Resource Directory page 2-8) to become aware of setback limits.

To Avoid This Problem:

- Maintain a vigorously growing vegetated buffer of grass, trees, and shrubs with deep root systems to protect your property from shoreline erosion (Figure 2-10 and 2-12).
- Cover all areas of bare exposed soil with vegetation as soon as possible. If in a pinch, temporarily cover areas with mulch, such as straw, leaves, or wood mulch (Figure 2-11).
- Steep slopes should have dense vegetation with deep root systems or terracing. This will slow stormwater runoff and retain soil. Steep turf lawns are not recommended.



Figure 2-10 *Property loss and sediment loading due to shoreline erosion. A healthy vegetative buffer instead of turf could help prevent this.*



Figure 2-11 *This comparison shows how effective mulch is at preventing erosion.*



Figure 2-12 *Native plants such as this Douglas Spirea, bring beauty to your garden.*

Resource Directory

Bonner County Weed Supervisor

1500 Highway 2, Suite 208
Sandpoint, ID 83864
208 263-8511

Bonner County Solid Waste and Hazardous Materials Transfer Station

(208)255-5581

Bonner County Planning/Shoreline Ordinances

1500 Highway 2, Suite 208
Sandpoint, ID 83864
(208) 265-1458

Idaho Native Plant Expert

Idaho Panhandle National Forest
(208) 765-7417

ISDA Pesticide Disposal Program (PDP)

www.agri.idaho.gov
(208) 332-8628

Suggested Reading:

Deep-Planting Techniques to Establish Riparian Vegetation in Arid and Semi-Arid Regions.

Dreesen, DR, Fenchel, GA, USDA-NRCS, Native Plants Journal (2008).

Forest Nursery Notes, Fall 2002 USFS.

www.rngr.net/publications/fnn

Herbicides For Lawn Weed Control

UI Extension publication No. 608

Landscaping with Native Plants in the Idaho Panhandle

A publication by the Kinnikinnick Native Plant Society. <http://www.nativeplantsociety.org/>

Northern Idaho Lawns

Northern Idaho Fertilizer Guide. U of I Extension publication No. 911.

The Encyclopedia of Organic Gardening

J.I. Rodale (2000)

The Practical Streambank Bioengineering Guide

Bentrup, D, Hoag, CJ (1998)

<http://www.plant-materials.nrcs.usda.gov/pubs/idmpcputsguid.pdf>

References

Figure 2-9 Lady bug eating aphid.

www.ladybugindoorgardens.com/aphid.html
(Accessed April 6, 2012)

Advertisement on page 2-3.

OurWaterWeb.org (Accessed April 5, 2012)

Figure 2-12 Douglas Spirea.

lifestyle-landscapes.com

Figures 2-10 and 2-11.

Stormwater Erosion Education Program (SEEP)

RISK ASSESSMENT WORKSHEETS

Lawn and Garden Management

Assessment Sheet 1: Lawn and Garden Management

The assessment table below will help you identify potential environmental risks related to your lawn and garden maintenance practices. For each question indicate your risk level in the right-hand column. Some choices may not correspond exactly to your situation. Choose the response that best fits. When finished turn to the **Action Worksheet** on page 2-11 and record your medium and high-risk practices. Your goal is to lower your risks. Use the BMP recommendations in the Lawn and Garden Management Section 2 to help you decide how to best reduce pollution.

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
Fertilizers	Soil is tested for nutrients. Recommended fertilizer rate is used. Applied more than 100 feet from any surface water source.	Soil is not tested. Fertilizer is used at an unknown rate, 50 to 100 feet from any surface water.	Soil is not tested. Fertilizer is applied at a higher rate than label recommendation. Fertilizer is applied 10-20 feet from the lake or its tributaries.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Pesticides	Do not use chemicals to control weeds, insects, or diseases. Encourage natural defenses (lady bugs and wasps). Use non-toxic solutions (pull weeds).	Limited use of chemicals, spot spray mostly.	Rely on chemical control for pests.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Storage of pesticides, fertilizers, and other chemicals	Chemicals are stored in waterproof containers in a secure area protected from stormwater and over 100 feet away from the lake or its tributaries.	Chemicals are stored in waterproof containers but not in a secured area.	Chemicals are stored in non-waterproof containers outdoors or within reach of stormwater.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Handling and disposal of pesticides, fertilizers, and other chemicals	All spills are cleaned up immediately. Disposal through a local household hazardous waste collection event or approved landfill.	Spills are cleaned up. Waste is disposed in household trash.	Spills are not cleaned up. Disposal of chemicals consists of burning or dumping at an unapproved landfill or on the property.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Vegetation buffer	Shrubs, ground cover, and trees are planted between the lake and the lawn and garden to reduce soil erosion and uptake excess nutrients and pesticides.	A natural buffer is present along the shoreline, but the lawn is manicured as close as possible to the lake.	No natural or planted vegetation buffer is present between the lake and the lawn and garden.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High

Assessment Sheet 1 Continued: Lawn and Garden Management

When finished turn to the **Action Worksheet** on page 2-11 and record your medium and high-risk practices.

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
Grass clippings, leaves, and other yard waste	Grass clippings, leaves and other yard wastes are swept off paved surfaces and onto lawns away from water flows. Leaves and other wastes are composted.		Leaves and other yard wastes are raked into piles near the lake and burned on-site.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Bare soil, gardens, & landscaping projects	Areas of bare soil are seeded and topped with a layer of mulch or straw. Sediment retention barriers (straw wattles, silt fence) are used on steeper slopes until grass is established.	Soil is left bare during construction project, but natural features slow and treat most runoff.	Soil is left bare and no natural features or sediment retention barriers are used.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Proximity to surface water	<u>≥200 feet to surface water.</u>	<u><200 feet to surface water.</u>	<u><100 feet to surface water.</u>	
Lawn type and maintenance	Turf-grass is located at least 100 feet from surface water.	Turf-grass is located 25 feet from surface water.	Turf-grass grows right up to shoreline with continuous mowing, fertilizer, and chemical pest control.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Irrigation management	Watering is done in the morning or evening. Plants are suitable to climate and do not need extra water.	Watering is not measured.	Heavy application of water. There is excessive water runoff. Time of watering is not adjusted according to pesticide and fertilizer applications.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Composting	Debris from property is composted at least 100 feet from surface water.	Do not compost, but burn 100 feet from surface water.	Compost pile is located < 50 feet from surface water. Pet wastes are added to the pile.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High

