

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)*. BMP's 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 Property Assessment worksheet 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 the lake. Nitrogen and phosphorus contribute to aquatic plant and algae growth which depletes oxygen in the water, impedes water recreation, and is aesthetically unappealing. Lawn and garden pesticides can have a negative impact on the health of humans and fish and wildlife, if used incorrectly. It is important to keep in mind that many shoreline landowners and managers utilize water from the lake for drinking and irrigation.

Soil washing into the lake impacts the clarity of the 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. This Section outlines ways the conscientious homeowner can help maintain our lake's high water quality.

Special attention should be paid if the following conditions exist:

- 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 the lake.
- Lawn or landscape maintenance is being done close to the surface water.
- Fertilizers, pesticides, or soil amendments are being applied.

The use of pesticides and fertilizers within 25 feet of surface water is discouraged. Always contact a weed specialist before attempting to control weeds near or in surface water.

Improper application of pesticides may:

- 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 storm water drains. Stormwater drains lead directly to the lake.
- 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.

Improper use of fertilizers may:

- 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.
- May contribute to the severity of fungal diseases.
- Make certain weeds more competitive with the plants you are trying to grow.

Best Management Practices

Vegetative Buffers
Easy Care Lawns
Soil Stabilization
Don't Burn on Beach
Proper Pest Management
Proper Debris Disposal
Gardening Without Chemicals

Vegetative Buffers

The most effective and efficient action you can take to protecting surface water from lawn and garden activities is to add or preserve a vegetative buffer along the shoreline. A buffer between the lake and your land activities needs to consist of native or beneficial plants that have deep roots systems, do not need additional water, and do not require fertilizer application. This buffer alone will help preserve water quality by preventing soil erosion and absorbing nutrients and chemicals from lawn and garden practices.

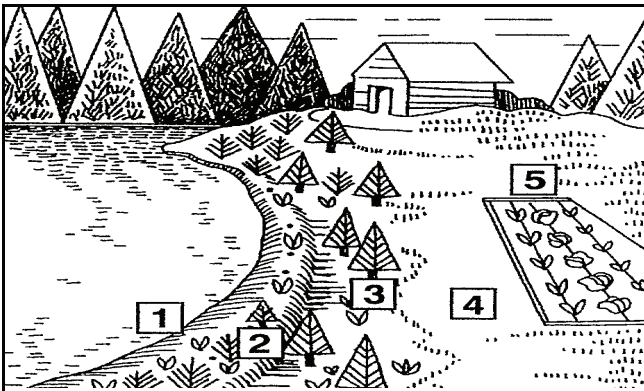


Figure 1: A well designed landscape plan includes ① natural vegetation along the water's edge; ② a natural vegetation filter strip; ③ well-established grass or ground cover; ④ a level flower or vegetable garden set back from the water front.

Maintain a vigorously growing filter zone or **vegetated buffer** of native grasses, trees, and shrubs, with deep roots systems. 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 25 foot deep from waters edge to any management activities associated with lawn care and surface waters. For more information on plant selection and design contact the Native Plant Society or the Lake*A*Syst program.

Easy Care Lawns

Your lawn is something you should be proud of. It is an attractive part of your landscape. In fact, a well-maintained lawn adds value to your property and helps to tie together your home and other landscape plants. A healthy lawn actually improves your living environment. On a hot day, your lawn 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 waters 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.** The lack of a vegetated buffer is one of the most significant problems associated with excessive nutrient run-off into the lake, as well property loss due to erosion.

Fertilizer Management Use caution when applying fertilizers near the water and adhere to the following guidelines:

- Have your soil tested to determine how much fertilizer is actually needed. This can save both time and money. Soil tests are available at your local extension office or hardware store.
- Fertilizer is fertilizer, whether 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.
- Choose fertilizers with low phosphorus levels. A healthy turf grass growing in our region generally doesn't need 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 they may be using and where. 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 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!

- Always sweep up any fertilizer that is on hard surfaces and reapply to the grass. Never wash it off.
- Do not spread fertilizer within **25 feet of surface waters** or wetlands.

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 high water mark.

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.
- Water deeply in the early morning and evening to avoid evaporation during the hot days. Grass would rather not have water at all, than to be watered when extremely hot out.
- Avoid overwatering at all times, but especially after applying fertilizers and pesticides.



- Leaving grass clippings on the lawn will:

-Shade the soil surface, retaining moisture.

-Provide nitrogen, potassium and phosphorus, reducing the need for fertilizer.

-Save time normally used on bagging

Seed or Sod?

- Sod should always be used if there is a slope and the danger of soil erosion exists.
- When using seed, cover with straw. This will retain moisture in soil and reduce erosion from rain drop impact
- Seeding is effective if runoff is not a problem
- When seeding, preparation of a good seedbed is necessary for success. Seed-soil contact is essential.
- Select seed varieties that are suitable for this region.

Pest Management for Lawns

If possible, avoid the use of chemical pesticides. Consult a professional from the University of Idaho Extension Office to determine if the use of a pesticide is justified. 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 more 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.**
- Leftover pesticides and containers should be disposed of properly. Never pour excess pesticides on the ground, into surface waters, or into sanitary treatment systems.
- When treating diseases or insect pests, use chemicals responsibly and use only the required amount.

Soil Stabilization and Erosion Control

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 dissolves and is available to plants. This makes aquatic invasive species and algae very happy. Native aquatic plants survive just fine without any additional nutrients added.

To Avoid This Problem:

- Maintain a vigorously growing filter zone or **vegetated buffer** of grass, trees, and shrubs with deep root systems.
- 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.
- 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.

Don't Burn on the Beach

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 such as *Eurasian Watermilfoil*.

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 shore to be washed away and never dump ashes in lake!

Proper Debris Disposal

Never dump leaves and vegetative debris into the lake or a stream because this releases nutrients and organic acids into the water and uses up valuable oxygen needed by fish.

Rake dead leaves and brush away from the water; compost vegetation in a sturdy structure away from the shoreline or burn at least 100 feet from water.

Gardens

Your garden is a complex ecosystem of plants, animals, insects, birds, fungi, worms, and microorganisms such as bacteria. All ecosystems have three basic interacting categories of organisms:

- Producers, are green plants that convert sunlight, carbon dioxide, and water into energy for plant growth;
- Consumers, are organisms that feed on live plant or animal material;
- Decomposers, use dead plant and animal material for energy.

A healthy garden ecosystem will have a balance between producers, consumers, and decomposers. If there is an imbalance, symptoms such as plant disease or an increase of damaging pests may result.

An imbalance in the ecosystem 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 lake and your drinking water is also reduced.

Pest management



It is best to avoid using pesticides as both beneficial insects (ladybugs) and pests (weeds, insects, and disease) may be killed. 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 in general, rotate plants each year to outsmart potential pests and minimize the threat of soil borne 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.
- Protect and use 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 it to your local household hazardous waste collection program. or go through the Idaho State Department of Agriculture Pesticide Disposal Program (see page 6).

Fertilizer Management

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. 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.

Irrigation Management

- 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 and examples are permeable landscape fabric and/or rock.
- 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.
- 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.

Location, Location, Location.

Flower and vegetable gardens can add to the quality of life of property owners living on shore, however certain precautions must be taken to prevent the possibility of water contamination.

- Gardens should **not** be located on slopes because they can promote accelerated soil erosion and runoff. An alternative on slopes is to install a terraced garden. Dense vegetation such as berry producing shrubs and native grasses should be established on slopes.
- Gardens should **not** be located on septic system drain fields or mounds.

RESOURCES:

Bonner County Weed Department

335 McGee Rd. Suite 107
Sandpoint, Idaho 83864
(208)263-3175 or 255-5681

Native Plant Society Kinnikinnik Chapter

PO Box 1092
Sandpoint, Idaho 83864
www.nativeplantsociety.org/

Bonner County Recommended Plants for Vegetative Buffers.

<http://www.co.bonner.id.us/planning/index.html>

Local Nurseries

Bonner County Solid Waste

335 McGee Rd. Suite 107
Sandpoint, Idaho 83864
(208)255-5681

ISDA Pesticide Disposal Program (PDP)

www.agri.idaho.gov

SUGGESTED READING:

Northern Idaho Lawns

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

Herbicides For Lawn Weed Control

U of I Extension publication No.608

The Encyclopedia of Organic Gardening

Notes:

Assessing and preventing the risk of lake water contamination

Lawn and Garden Management

Risk Assessment Sheet 2

ASSESSMENT 1 – *Lawn and Garden* – 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 Checklist** on page 4 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. Fertilizer rate is used at label recommendations and applied more than 100 ft 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 control of 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 or in a well-house.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Handling and disposal of pesticides, fertilizers, and other chemicals:	Any spills are cleaned up immediately. Disposal through a local household hazardous waste collection event or approved landfill.		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

ASSESSMENT 1 CONTINUED– *Lawn and Garden Care*. When finished turn to the **Action Checklist** on page 4 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 flow routes. 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 bales, silt fence) are used especially on steeper slopes until grass is established.	Soil is left bare during a 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 <hr/> <input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Proximity to surface water:	>500 feet to surface water.	300-500 feet to surface water.	10-300 feet to surface water.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Lawn type and maintenance	Turf-grass is suited to soil type, available sunlight, and climate. Grass is pest resistant and mowed high (a mixture of blue-grass, fescue, and rye is recommended).	Turf-grass is suited to the site, and is mowed short.	Grass type is not suited to available light, soil type, or climate. Grass is mowed as short as possible and growth is encouraged right up to shoreline.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Irrigation Management:	Application of water based on the requirement of plants. Watering is done in the morning or evening. Plants are suitable to climate and do not need extra water.	Watering is excessive or 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	The compost pile is well-maintained: It is aerated regularly and contains yard waste, vegetable food scraps, and other nitrogen sources (manure).	The compost pile is poorly maintained: It is not aerated or lacks the proper mix of materials. Pet wastes are added to the pile. Is located within 50-100 feet of surface waters.	The compost pile is poorly maintained: It contains excessive high-nitrogen material and is not turned regularly. The pile is less than 50 feet from the lake or a tributary.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High

ASSESSMENT 2 – *Location of Application in Relation to Water Resources*. When finished turn to the **Action Checklist** on page 4 and record your medium and high-risk practices.

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
Location of Fertilizer application in relation to surface waters:	Fertilizer is applied at the recommended rate more than 50 feet away from surface waters and surface runoff from post application watering does not drain into surface waters.		Fertilizer is applied 10 to 50 feet from the lake or its tributaries and the drainage of post application watering is not considered.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Location of well in relation to application area:	Application area is down gradient and over 25 ft from the well. No post application surface water reaches well area.	Application area is up gradient and over 25 feet from the well. Post application water drainage does not reach the wellhead.	Application is applied to the lawn area around the well. Post application surface water moves across wellhead area.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Solubility of fertilizer: (to dissolve in water)	Low solubility. 2-3lbs of a non-synthetic fertilizer is split applied (4x/ year). Or, use organic fertilizer or mulch.	Moderately-high solubility. Synthetic fertilizer used. Applied at full rate each time.	High solubility. Applied at full rate or higher 3 to 4 times a year.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Amount of fertilizer applied:	Application rate is based on soil tests. Recommended amount is measured out when applied.	No soil test. Fertilizer applied according to directions on bag.	No soil tests. Fertilizer is applied at an unknown rate.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Location of pesticide application related to the lake.	No pesticides are applied. Or spot application is used to control noxious weeds more than 10 feet away from surface water.	Weed and feed is used on the lawn, but more than 10 feet away from surface waters.	Pesticides are used within 10 feet of the lake. Homeowner tries to treat Eurasian water-milfoil himself.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Relative leachability of pesticide: (ability to move to the ground water)	Low	Medium	High	<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

