



BIODIVERSITY



Photo by Kath Williams

BIODIVERSITY AND RURAL LAND USE DESIGN TEAM

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INTRODUCTION TO BD CREDITS

Biodiversity is the variation of life forms within a given ecosystem, regional biome, or the entire planet. For the purposes of this document, biodiversity is discussed in terms of the Greater Yellowstone ecosystem, which at 18+ million acres, is one of the largest, relatively intact temperate zone ecosystems left on Earth.

Modern science has established that an ecosystem is a dynamic collection of plants, animals, and their physical environment interacting through a variety of processes and operating as a unit. Plants grow by drawing energy from the sun, and nutrients from soils and decaying matter. Animals eat plants and each other. When animals die, their decomposing carcasses cycle nutrients back into the system. An ecosystem is self-sustaining, consuming and producing both organic materials and energy.

From micro-organisms inhabiting acidic springs to bears foraging in alpine meadows to people cultivating arid valleys, all forms of life within the Greater Yellowstone region are inextricably linked. Human development of landscapes in the Greater Yellowstone region cannot be considered in isolation of the overall ecosystem and the myriad of life forms that will be affected by it.

The headwaters of three major river systems are within the Greater Yellowstone region – the Yellowstone, the Snake, and the Green rivers – support renowned trout fisheries and are the lifeblood of agriculture, towns, and cities. The region's heart – Yellowstone National Park, the world's first national park – holds the planet's most diverse and intact collection of geysers and hot springs, drawing visitors from around the world. The park is also a refuge for hundreds of wildlife species, including rare trumpeter swans, our largest herds of elk, and free-roaming bison, wolves, and grizzly bears.

Ecosystem Maps:

[Physical Relief \(398k\)](#)

[Political Jurisdictions \(479k\)](#)

[Forests, Wilderness & Parks \(423k\)](#)

[Land Ownership \(425k\)](#)



[\(click image to enlarge\)](#)

* Text excerpts and map links courtesy the Greater Yellowstone Coalition website at www.greateryellowstone.org



Introduction to Biodiversity Credits (continued)

While much of the region surrounding the ecosystem has been transformed from high plains to agricultural use, the Greater Yellowstone region still contains nearly all the living organisms present in pre-Columbian times, though not in the same numbers. Given its extraordinary biological diversity, the Greater Yellowstone region has much to lose if the anticipated trends in building and development on private lands continue without needed protections.

The goal of this credit category is to ensure biodiversity is maintained and enhanced in the Greater Yellowstone region. The environmental issues addressed in this credit category include:

- Adopting strategies that minimize wildlife-human conflicts
- Preservation of aquatic resources
- Conservation of surface and ground water
- Protecting wildlife habitat and migration corridors
- Managing landscapes to favor native vegetation and reduce invasive species
- Recognizing opportunities for habitat restoration and enhancement
- Appropriate use of fencing
- Management of domestic animals

Innovation is encouraged and exemplary performance will be awarded additional points.

BD PREREQUISITE 1: CO-EXISTING WITH WILDLIFE REQUIRED

INTENT

To advance practices that minimize the potential for conflicts with wildlife and support a harmonious and safe relationship between humans and the environment.

REQUIREMENTS

Properly contain all animal attractants (garbage, recycling, composting, and domestic animal food) in animal safe/bear proof containers.

AND

Eliminate private feeding of wildlife (salt licks, bird feeders, etc.) that lead to conflicts. On farms and ranches, employ sustainable storage for organic composting.

AND

In primary conservation areas or areas defined as occupied bear habitat, by the appropriate state wildlife agency, implement a plan for:

- No new fruit trees
- No stocking of ponds that are storing water for fire fighting, landscaping, etc.
- No permanent outside grills



BD CREDIT 1: PRESERVATION OF AQUATIC RESOURCES

1 - 3 POINTS

INTENT

To preserve continuity and function of waterways and wetlands.

REQUIREMENTS

Construction on sites adjacent to streams is commonly evaluated by floodway requirements: i.e., whether the site is within the 100-year floodplain. The actual impact of development is a function of the extent to which the development impedes fluvial processes, which include meander migration and other changes that need to be anticipated during the planning stage. Similarly, wetland impacts are commonly judged by affected acreage, rather than overall effects to function.

Wetlands and Stream Channels: The meander belt of a waterway is roughly outlined by the outside extent of the existing stream channel and includes associated wetlands. Development within this belt would be restricted, unless it can be established by professional evaluation that the channel is entrenched (i.e., that meander migration no longer occurs). Channel armoring is discouraged but may be permitted tangential to the outside of the meander belt, if it does not hinder downstream migration of meanders. Armoring must be consistent with natural material exposed in stream banks.

Development within jurisdictional wetlands on any given site shall be avoided in order to receive maximum points. If any development occurs in wetlands, steps must be taken to enhance wetland continuity and function and only 1 point can be achieved. Constructed wetlands must not only meet acreage requirements but must be demonstrated by professional evaluation to be consistent in function with patterns of existing regional wetlands. Consistency of function may include continuity with existing wetlands, unless the regional pattern is small, isolated wetlands (e.g., glacial potholes).

(2 points for placing development outside any wetlands and the meander belt;

OR

1 point for demonstrating that fluvial processes are not impeded by any development within these zones

Aquatic Habitat: Development should enhance patterns of shading, introduction of woody debris, and other off-channel impacts to streams. Constructed or reclaimed streams should mimic regional channel patterns for similar streams, including channel geometry, meander wavelength, riffle and pool sequencing, and gradient. An aquatic biologist should evaluate potential aquatic effects of any instream improvements.

Constructed water features, primarily referring to off-channel self-contained ponds and small waterways are generally discouraged in the Greater Yellowstone region. If considered, they must enhance function and continuity of existing wetlands and maintain water and sediment delivery to adjacent streams. Instream dams on perennial streams must be demonstrated to preserve seasonal flow patterns and sediment delivery. Constructed channels should mimic similar natural channel patterns.

All stocked fishing pond species must be sterile. No credits will be awarded if stocked ponds have connectivity with natural aquatic systems. If water is diverted from streams that contain native fish populations, the diversions on that stream should be passable by native fish. The diversion should be constructed in a manner that would prevent entrainment. **(1 point for demonstrating that the development has maintained the functional integrity of all aquatic habitats on or adjacent to the site)**



BD CREDIT 2: SURFACE AND GROUND WATER CONSERVATION

1 -3 POINTS

INTENT

To preserve or improve water quality and quantity at and near the developed area.

REQUIREMENTS

Create a surface and ground water conservation plan with the assistance of hydrologists and water quality specialists that will protect water quality and quantity in streams and groundwater sources. The plan must identify ways to conserve water quantity and quality through reduced irrigation, efficient systems, alternative sources of water for irrigation, water harvesting and storage, and storm water runoff. The plan should prevent contamination of ground water from septic systems and other pollution sources and promote connecting to or building central sewer systems if up-gradient to existing wells within 1 mile. The plan should also provide hydrologic proof that the proposed water use will not deplete existing groundwater resources or nearby stream flows. The plan should address application of fertilizers and pesticides and show that all federal permit requirements and Best Management Practices (BMP) have been followed for managing storm water runoff. (1 point)

AND FOR UP TO 2 ADDITIONAL POINTS

Maintain no more than .25 acres of landscaping per property that must be irrigated by ground water sources (1 point).

OR

Integrate rainwater harvesting mechanisms into all structures to capture rainwater for landscaping or ground water recharge. www.harvestingrainwater.com (1 point).

Innovation points will be considered for those projects that can help restore surface flows by limiting consumptive use of water on the property and by legally designating the remainder of non-consumptive water rights for instream use.

For further innovation points, projects can submit evidence that state water rights have been secured for instream purposes.

BD CREDIT 3: HABITAT CONSERVATION AND CONNECTIVITY

1 -2 POINTS

INTENT

To reduce or mitigate habitat impacts and fragmentation associated with new developments.

REQUIREMENTS

Contact the relevant state wildlife agency and request the following information to ensure understanding of, and compliance with, its official Comprehensive Wildlife Conservation Strategy (CWCS). If the agency is unable to provide such information, other creditable entities, such as the US Fish and Wildlife Service or the state's Natural Resource Data Center, may provide needed documentation.

- Identify the Species of Greatest Conservation Need (SGCN) for the site.
- Determine key habitat needs required to sustain each identified SGCN.



- If any of the identified SGCN species are migratory, locate any corridors on the property that are accommodating or can accommodate seasonal wildlife movement.

A) Avoidance of Key Habitats and Corridors: Document that development design completely avoids and permanently protects habitats and corridors for all Species of Greatest Conservation Need on owned property. (2 points)

OR

B) Habitat Mitigation Credit: Select the three SGCN species most impacted by the development for the design of habitat stewardship on or off-site. Evaluate the relevant habitat needs of each target species. For each potential habitat, evaluate how the area will accommodate target species needs. The plan must specifically address: vegetation, lighting, noise, proximity, and domestic animals including pets. (1 point)

AND/OR

C) Corridor Mitigation Credit: Design corridor stewardship plans for all migratory SGCN species impacted on the site. Evaluate the relevant corridor needs (including flyway) of each target species. For each potential corridor, evaluate how the area will accommodate movement by each target species. The plan must specifically address: vegetation, lighting, noise, proximity, and domestic animals including pets. (1 point)

BD CREDIT 4: VEGETATIVE MANAGEMENT

1 - 2 POINTS

INTENT

To conserve productive wildlife habitat by preserving native vegetation where feasible and by controlling invasive plant species.

REQUIREMENTS

Locate development in areas that no longer possess native vegetation and/or habitat value. (1 point)

OR

Preserve native vegetation critical to habitat conservation. Develop a master plan for maintaining existing and restored vegetation. (1 point)

AND

With professional assistance, prepare a weed management and monitoring plan that includes:

- Use the National Invasive Species Management Plan <http://www.invasivespeciesinfo.gov>.
- Inventory and map noxious weeds on the development site. Consider alternatives to toxic spraying as removal technique. Consider rangeland mitigation in context to adjacent riparian and water courses.
- All noxious weeds should be eradicated prior to commencement of any construction project.
- Implement restrictions that permit the planting of only native or non-invasive species in any landscaping.



- Avoid site disturbance (defined as areas within designated roadway prisms, utility corridors or designated building envelopes per plat).
- Ensure proper management of invasive species throughout the buildout of a development. Implement policy of contact avoidance with noxious weed infested areas. Seeds can become stuck in tire treads or mud on the vehicle and be carried to unaffected areas.
- Avoid transport of unidentified flowering plants.

A development site plan and summary report must include the following:

- Alternative site designs that must include measures taken to avoid impact to critical vegetation and habitat.
- Summary of the critical findings related to protection of habitat and vegetation.
- Outline of a long-term management plan that identifies responsible resources and funding in order to protect the habitat and vegetation.
- The inventory and report must be prepared by a professional who possesses the proper experience, education, certifications, and strong understanding of native ecology. Work with a local weed district to determine the appropriate strategy for preserving native species.

BD CREDIT 5: HABITAT RESTORATION AND ENHANCEMENT

1 POINT

INTENT

Re-establish native wildlife habitat to pre-development conditions where site restoration is feasible **OR** promote biodiversity by enhancing wildlife habitats on disturbed/developed sites.

REQUIREMENTS

No new artificial water features are permitted.

Identify previously disturbed areas that, if restored, would enhance the overall value of the property in terms of habitat and wildlife values.

AND

Restore all disturbed areas (excluding the building or road footprints and associated structures). **(1 point)**

OR

Enhance all disturbed areas (excluding the building or road footprints and associated structures, walkways, decks, etc.) returning them to a natural state that conforms to surrounding habitat.

(1 point)

OR

Restore, in conjunction with enhancement (a minimum of 50%), all disturbed areas (excluding the building or road footprints and associated structures, walkways, decks, etc.). **(1 point)**



BD CREDIT 6: FENCE SITING AND MATERIALS
1 POINT

INTENT

Preserve the integrity and function of wildlife and riparian corridors by minimizing the amount of property fencing and where installed, using only wildlife friendly designs and materials.

REQUIREMENTS

Option 1 Minimize Fencing: (1 point)

Use native vegetation, including trees and shrubs, to act as perimeter fencing

Do not erect rigid fencing within any riparian and wildlife corridors.

Restrict cross property fencing to within a 25 foot radius of a housing site for the purpose of controlling domestic pets.

OR

Option 2 Make Fencing Wildlife Friendly: (1 point)

Follow the fencing specifications provided below. The asset inventory should show if the property contains:

- A. Big game range
- B. Any important seasonal migration corridor
- C. Wildlife watering areas
- D. Road or highway frontage

No fencing shall be of buck and rail design unless a step-down is added every 500 yards for wildlife migration.

BD CREDIT 7: DOMESTIC ANIMAL MANAGEMENT
1 POINT

INTENT

Reduce disturbance to wildlife from domestic animals.

REQUIREMENTS

Implement CC&R's or policies that incorporate this language:

- that all pets should be kept indoors, in outdoor enclosures, or on a leash
- that pet owners neuter or spay their dogs and cats
- pet litter/waste is the responsibility of the pet owner and shall be picked up
- release of unwanted pets is prohibited including fish, reptiles and rodents
- that prohibits feeding of feral cats
- use alternative environmentally safe rodent control methods (1 point)