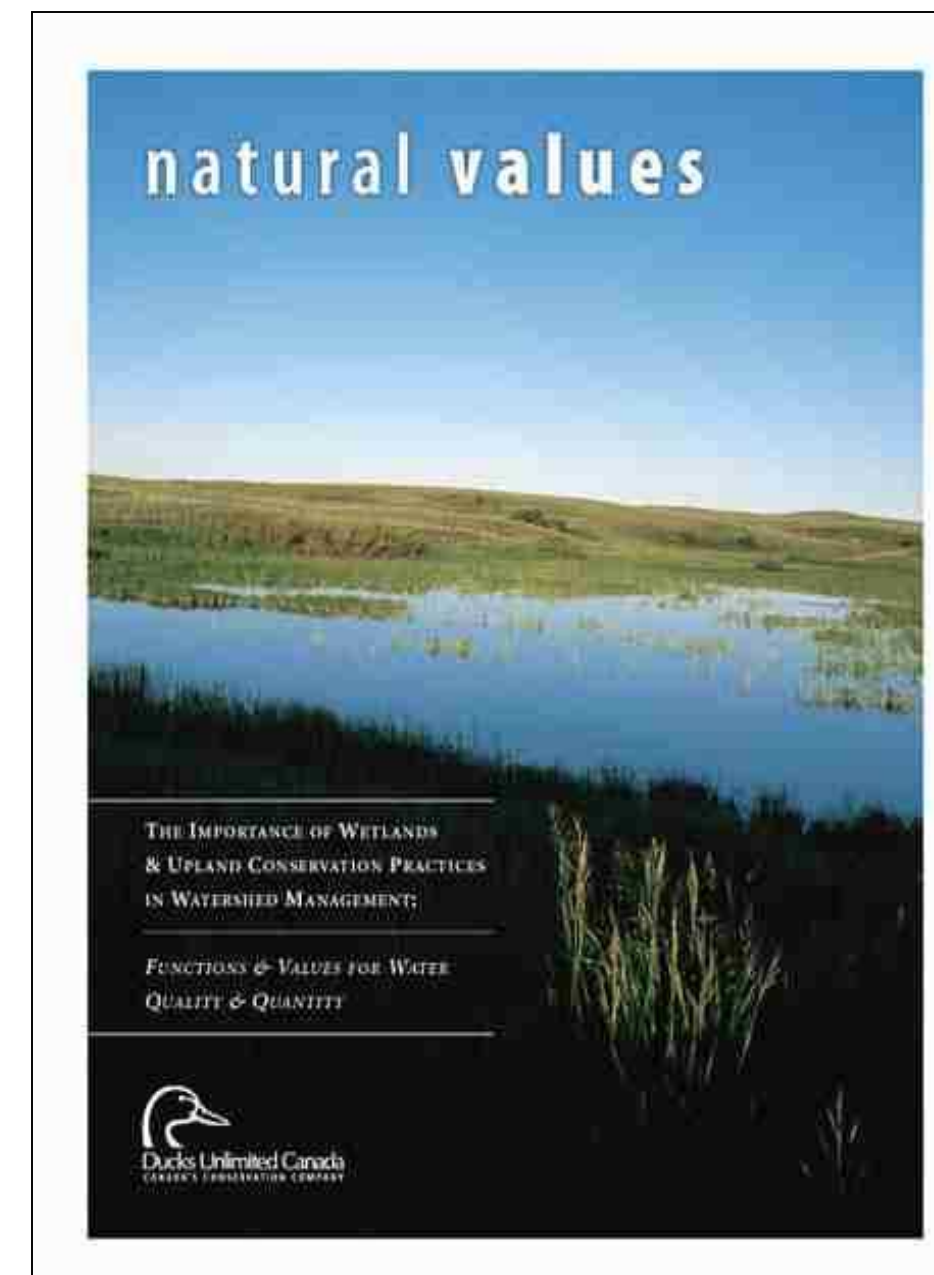


Natural Values the economic and environmental value of natural areas

The Role of Watersheds in Freshwater Quality

Freshwater is a vital resource for human society. Wetlands, riparian areas and uplands are all natural watershed features that are critical for sustainable water resource management. Properly functioning, healthy watersheds produce high quality water supplies. However, watersheds face a number of threats from human activities including:

- Urban and cottage expansion
- Waste treatment and disposal
- Industrial activities
- Recreational activities
- Wetland drainage
- High water demands
- Tillage of erodable soils
- Overgrazing of pasture and riparian areas
- Removal of vegetative buffer zones
- Poor management of fertilizers and pesticide



Natural Values is a DUC report that focuses on the function and value of wetlands, riparian areas, and permanent cover within watersheds. An overview of watershed management is presented including Integrated Watershed Management (IWM) planning and implications of land use for water quality.

Natural Water Filters

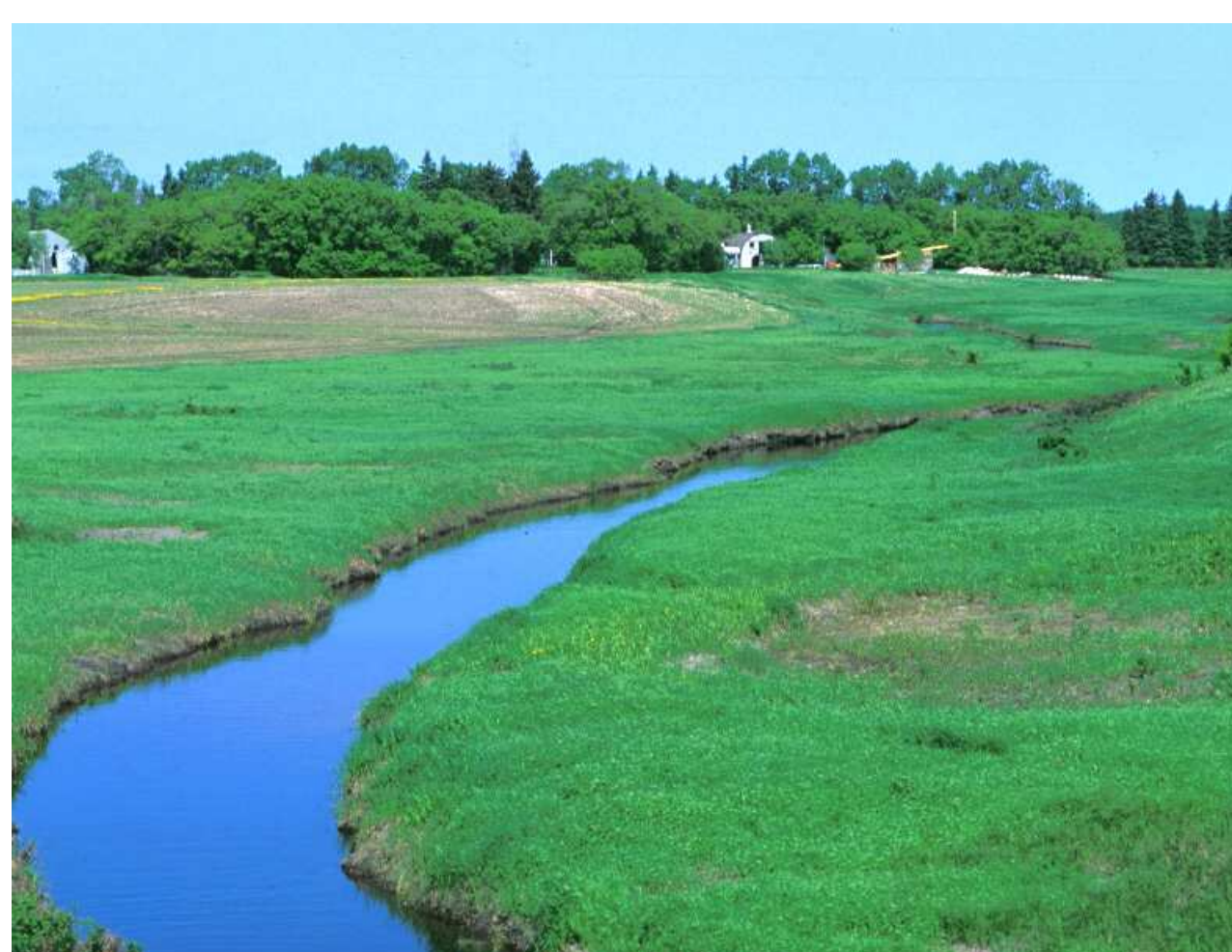
Water within healthy watersheds passes through a number of natural features that act as filters, including:



1. Wetlands

Wetlands are areas that are seasonally or permanently covered by water and have vegetation adapted to flooded or saturated soil conditions. Wetlands improve water quality and quantity by:

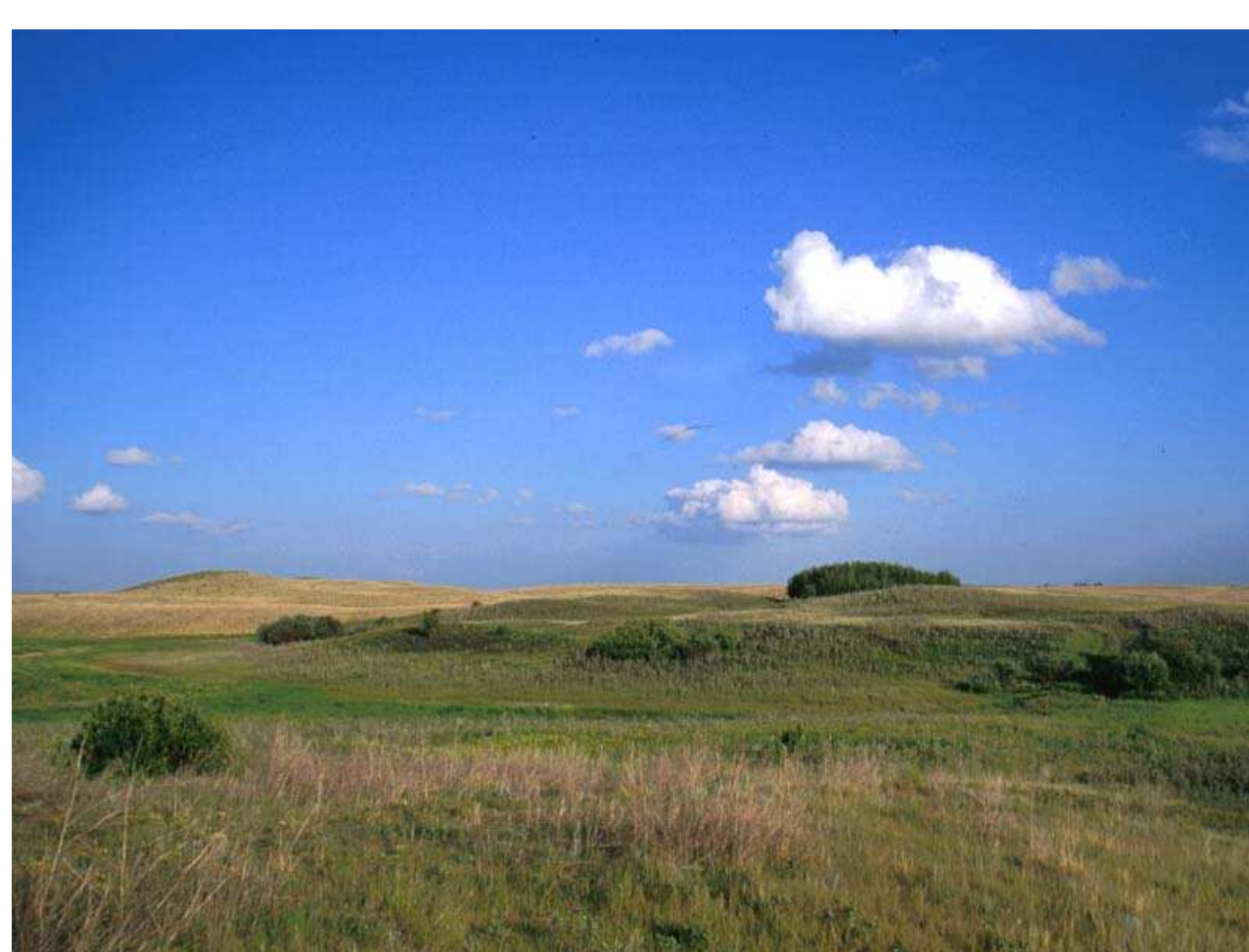
- Storing surface water and reducing flooding
- Retaining sediments and debris
- Absorbing nutrient pollution
- Breaking down pesticides
- Reducing harmful bacteria



2. Riparian Areas

Riparian areas occur between uplands and wetlands, streams or lakes. These areas act as natural filters of both surface and groundwater. Properly managed riparian areas improve the quality of freshwater by:

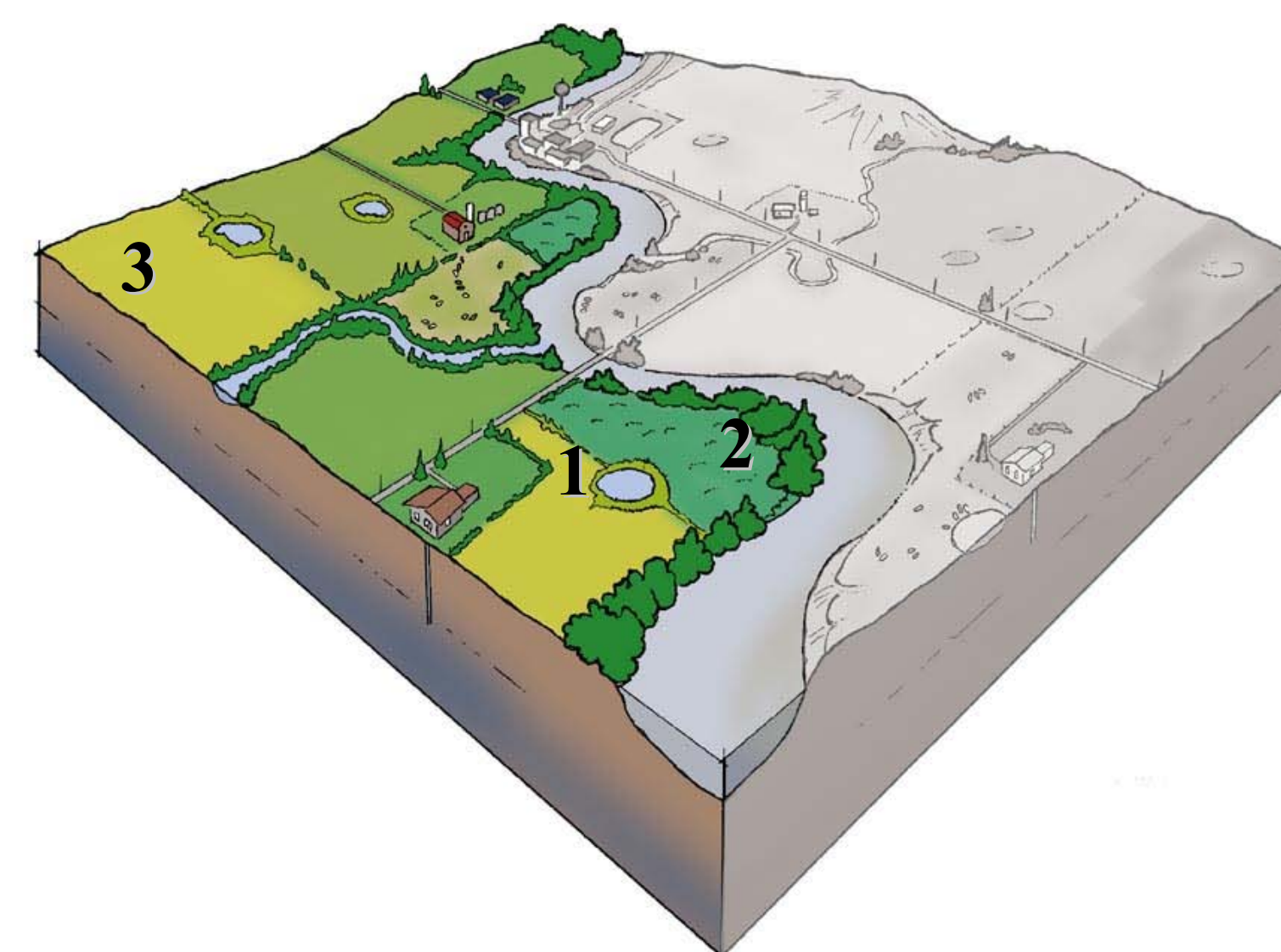
- Controlling erosion by slowing the surface flow of water
- Removing nutrient pollution from surface water flow
- Trapping harmful bacteria
- Reducing pesticides



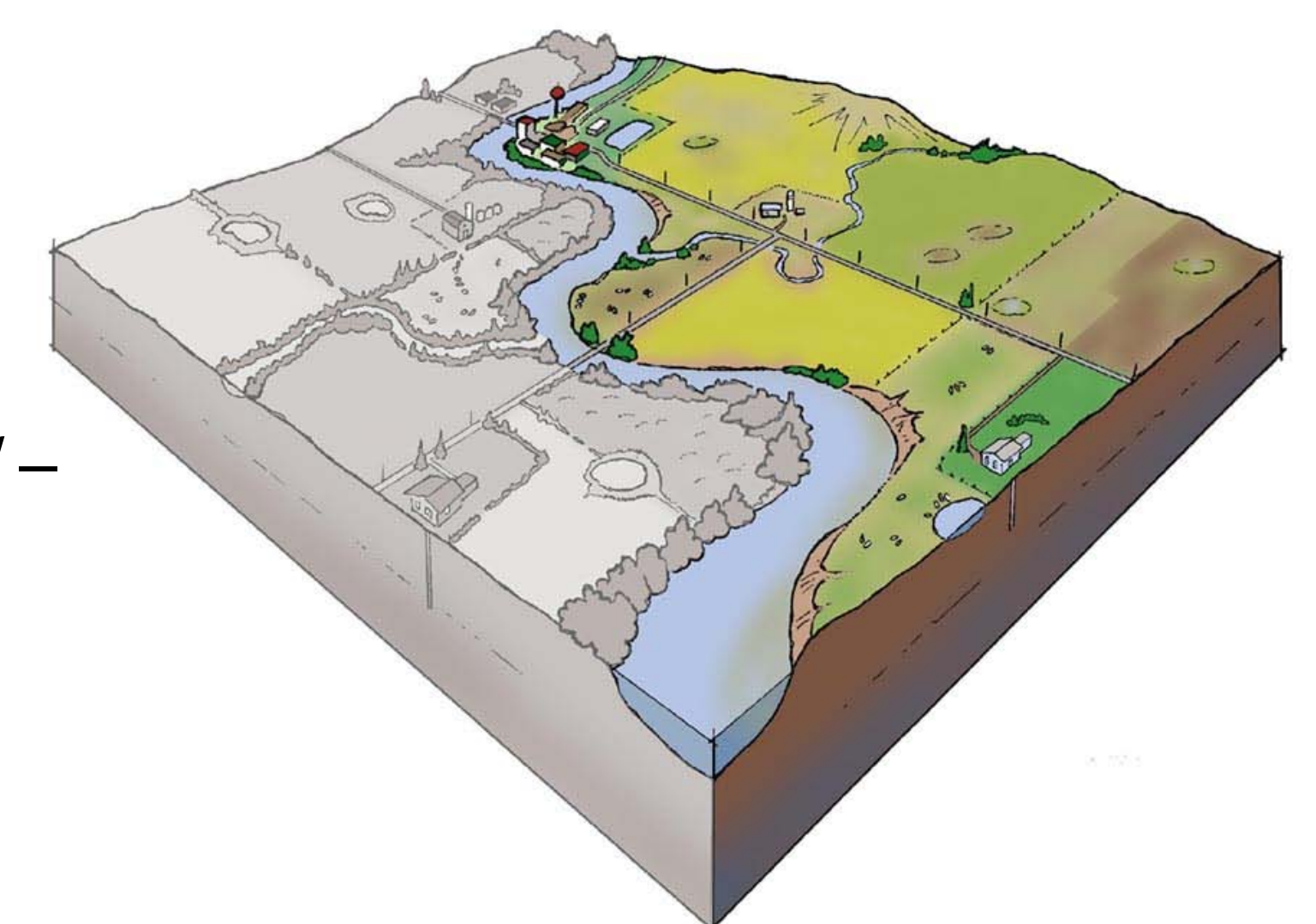
3. Uplands

Good land management means leaving vegetation on the soil. When properly managed, vegetative cover affects our water by:

- Reducing soil erosion from wind, rain and runoff
- Reducing levels of excess nutrients and pesticides in runoff
- Increasing water infiltration into the soil



Healthy Watershed – Multiple Natural Filters



Unhealthy Watershed – No Natural Filters

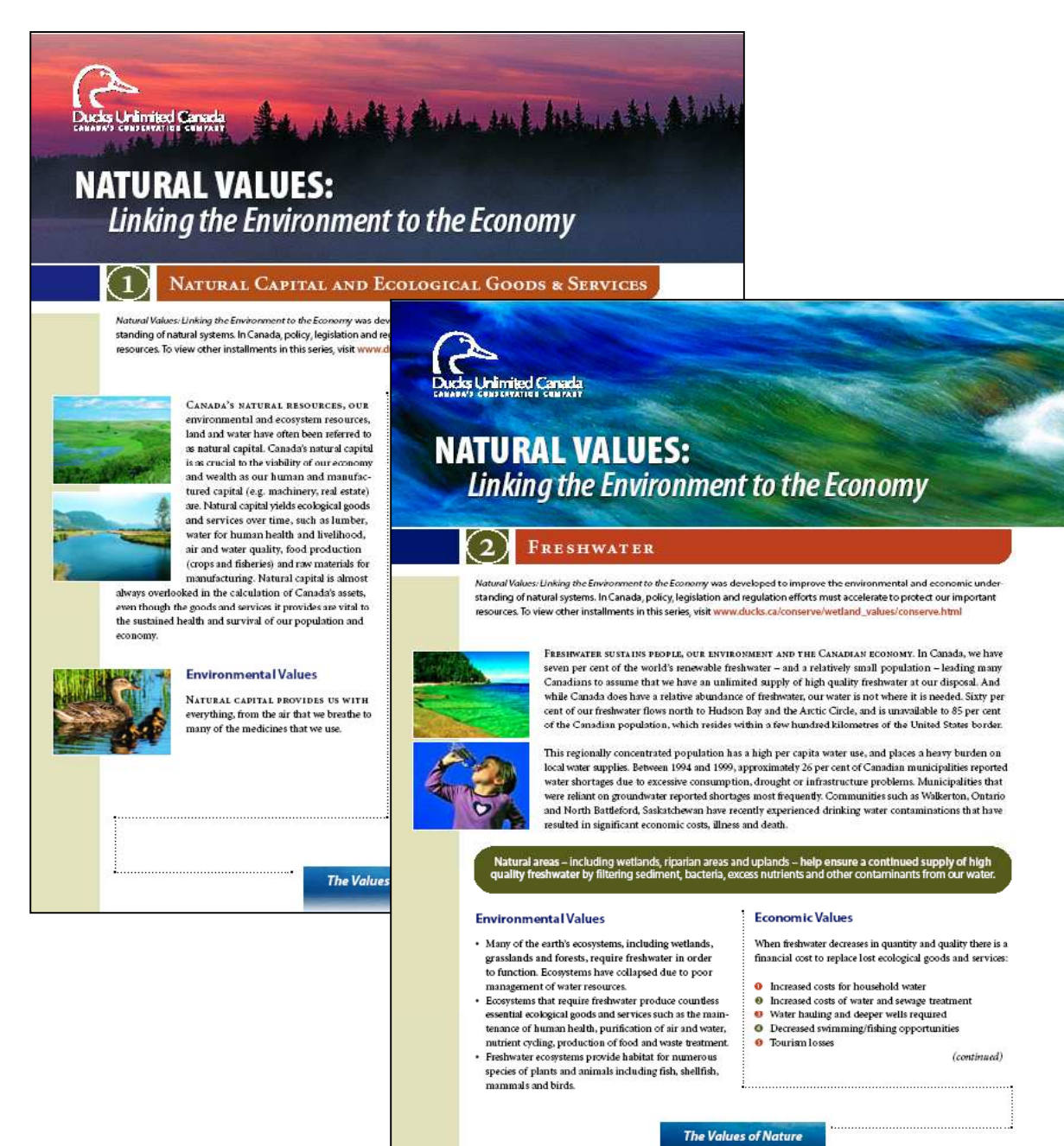
Range of percent retention for nitrogen, phosphorus, sediment, bacteria and pesticides in wetlands, uplands and riparian areas.

	Nitrogen Retention	Phosphorus Retention	Sediment Retention	Bacteria Retention	Pesticide Retention
Wetlands	Up to 87%	Up to 94%	Up to 98%	Up to 99% (constructed wetlands)	<1 day – several months ¹
Riparian areas	35-96%	27-97%	66-97%	70-74%	8-100%
No-till Uplands	71-90%	24-91%	50-99%	-	70-100%

¹ Time for residues to decrease by 50%

Natural Values: Linking the Environment to the Economy

Our health and quality of life depend on natural systems. However, Canada's natural lands are continually lost and converted to human uses such as urban development and industry. This loss occurs in part because the value of the goods and services provided by natural areas are not precisely known, despite the fact that recent studies suggest that their economic value far exceeds any gains made from their conversion.



To improve the understanding of the environmental and economic values of our natural lands, Ducks Unlimited Canada has developed a series of fact sheets titled *Natural Values: Linking the Environment to the Economy*. Fact sheet topics include the concepts of natural capital and ecological goods and services (EG&S), the environmental and economic values of specific ecosystems and their components, the unique goods and services provided by the different regions of Canada, and the role that Canadian policy plays in the conservation of our natural areas.