

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	12/27/2011
PRACTICE: Filter Strip 393		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
SOIL - EROSION					
Sheet and Rill	Not Applicable	Not applicable.			
Wind	Not Applicable	Not applicable.			
Ephemeral Gully	Not Applicable	Not applicable.			
Classic Gully	Not Applicable	Not applicable.			
Streambank	Not Applicable	Not applicable.			
Shoreline	Not Applicable	Not applicable.			
Irrigation Induced	Neutral	Captures sediment in tailwater runoff but does not reduce erosion.			
Mass Movement	Not Applicable	Not applicable.			
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.			
SOIL – CONDITION					
Organic Matter Depletion	Substantial Improvement	Decreased erosion, increased root mass and less oxidation from lack of soil disturbance under permanent cover will increase or maintain organic matter.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Substantial Improvement	Root penetration and organic matter helps restore soil structure.			
Subsidence	Neutral	Drainage has the predominant impact on subsidence.			
Contaminants:					
• Salts and other Chemicals	Slight Improvement	Selected plants can take up excess salts.			
• Animal Waste and other Organics - N	Slight to Moderate Improvement	Growing vegetation will take up N from organics, especially if vegetations is periodically harvested.			
• Animal Waste and other Organics - P	Slight to Moderate Improvement	Growing vegetation will take up P from organics, especially if vegetations is periodically harvested.			
• Animal Waste and other Organics - K	Slight to Moderate Improvement	Growing vegetation will take up K from organics, especially if vegetations is periodically harvested.			
• Commercial Fertilizer - N	Slight to Moderate Improvement	Growing vegetation will take up N from organics, especially if vegetations is periodically harvested.			
• Commercial Fertilizer – P	Slight to Moderate Improvement	Growing vegetation will take up P from organics, especially if			

		vegetations is periodically harvested.
• Commercial Fertilizer – K	Slight to Moderate Improvement	Growing vegetation will take up K from organics, especially if vegetations is periodically harvested.
• Residual Pesticides	Slight to Moderate Improvement	Increased organic matter adsorbs pesticides and increased biological activity will break them down.
Damage from Sediment Deposition	Slight to Moderate Worsening	Vegetation and surface litter traps sediment.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Not Applicable	Not applicable.
Excessive Runoff, Flooding, or Ponding	Neutral	Buffers slow runoff, potentially increasing ponding..
Excessive Subsurface Water	Not Applicable	Not applicable.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.
Reduced Capacity of Conveyances by Sediment Deposition	Substantial Improvement	Collects sediment preventing it from being deposited elsewhere.
Reduced Storage of Water Bodies by Sediment Accumulation	Substantial Improvement	Collects sediment preventing it from being deposited elsewhere.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Slight Worsening	Permanent vegetation uses available water and reduces runoff.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Improvement	There is a potential to increase infiltration and absorption by plant roots and breakdown of pesticides with biological activity.
• Excessive Nutrients and Organics	Slight to Substantial Improvement	Permanent vegetation will take up available nutrients and increase organic matter. The increased organic matter will increase cation exchange capacity which will hold nutrients.
• Excessive Salinity	Slight Improvement	The action will result in increased uptake by plants.
• Harmful Levels of Heavy Metals	Slight Improvement	Higher organic matter levels increases buffering capacity of the soil. Some plants can take up some heavy metals.
• Harmful Levels of Pathogens	Slight Improvement	The action captures and delays pathogen movement, but pathogen mortality may also be delayed because vegetative

		cover may protect pathogens from desiccation.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight to Substantial Improvement	The action reduces runoff and traps adsorbed pesticides. Also, the strips may attract beneficial insects or trap insect pests, reducing the need for pesticide applications.
• Excessive Nutrients and Organics	Substantial Improvement	Solid organics and sediment-attached nutrients are filtered out. Soluble nutrients infiltrate the soil and may be taken up by plants or utilized by soil organisms.
• Excessive Suspended Sediment and Turbidity	Substantial Improvement	Vegetation protects soil surface and traps sediment, nutrients and other materials.
• Excessive Salinity	Slight Improvement	The action slows runoff, which may increase water infiltration, reducing the potential for transport of salts to surface water.
• Harmful Levels of Heavy Metals	Moderate to Substantial Improvement	Runoff containing heavy metals is slowed, trapping sediment and increasing infiltration into the soil where metals are often tied up. Some plants can take up heavy metals.
• Harmful Temperatures	Neutral	Filter strips used in conjunction with riparian forest buffers improve watershed function.
• Harmful Levels of Pathogens	Moderate Improvement	Filter strips capture and delay pathogen movement, but mortality may also be delayed because vegetative cover may protect pathogens from desiccation.
• Harmful Levels of Petroleum	Slight Improvement	Filter strip slows runoff and increases infiltration of petroleum contaminants. Increased microbial activity in the filter strip breaks down petroleum contaminants.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight Improvement	Areas converted to permanent vegetation reduce the area susceptible to wind erosion.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight Improvement	Areas converted to permanent vegetation reduce the area susceptible to wind erosion.
Excessive Ozone	Neutral	There is a minimal reduction of ozone precursors through reduced surface temperatures offered by shade or ground

		cover, and minimal biofiltering of ozone concentrations due to interception by vegetation.
Excessive Greenhouse Gas:		
• CO ₂ (Carbon Dioxide)	Slight Improvement	Vegetation removes CO ₂ from the air and stores it in the form of carbon in the plants and soil.
• N ₂ O (Nitrous Oxide)	Not Applicable	Not applicable.
• CH ₄ (Methane)	Not Applicable	Not applicable.
Ammonia (NH ₃)	Not Applicable	Not applicable.
Chemical Drift	Not Applicable	The width of the filter strip provides a setback from pesticide application.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABILITY		
Plants not Adapted or Suited	Substantial Improvement	Plants selected are adapted and suited.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Substantial Improvement	Plants are selected and managed to maintain optimal productivity and health.
Threatened or Endangered Plant Species:		
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Not applicable.
• Declining Species, Species of Concern	Not Applicable	Not applicable.
Noxious and Invasive Plants	Moderate to Substantial Improvement	Filter strips are installed and managed to control target species. Dense, permanent cover limits invasion by noxious plants.
Forage Quality and Palatability	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Moderate Improvement	Increased quality and quantity of vegetation provides more food and cover for wildlife, but vegetation removal limits cover.
Inadequate Cover/Shelter	Slight to Moderate Improvement	Increased quality and quantity of vegetation provides more food and cover for wildlife, but vegetation removal limits cover.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Slight to Moderate Improvement	Increased quality and quantity of vegetation provides more food and cover for wildlife, but vegetation removal limits cover.
Habitat Fragmentation	Slight Improvement	Vegetation will help support wildlife habitat connectivity.

Imbalance Among and Within Populations	Slight Improvement	Vegetation can be installed and managed to favor target wildlife and fish species.
Threatened and Endangered Fish and Wildlife Species:		
• Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.
• Declining Species, Species of Concern	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Slight Improvement	There may be some use of the planting for feed and forage by livestock.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Not Applicable	Not applicable.
HUMAN – ECONOMICS		
Land - Change in Land Use	Slight	Slight, cropland converted to strips.
Land – Land in Production	Moderate decrease	Moderate decrease, lost cropland.
Capital – Change in Equipment	Negligible	Typically no new tillage equipment is purchased.
Capital - Total Investment Cost	Moderate.	Seedbed prep and seeding costs.
Capital – Annual Cost	Slight increase.	Operation and maintenance costs to maintain cover and control pests.
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase	Slight to moderate increase to maintain annually.
Labor – Change in Management Level	Slight to moderate increase.	Manage plant cover and control pests.
Risk - Yield	Slight Increase	Slight increase due to land use conversion.
Risk - Flexibility	Negligible	
Risk - Timing	Negligible	
Risk – Cash Flow	Slight Increase	Slight increase due to establishment costs.
Profitability – Change in Profitability	Slight decrease.	Cropland taken out of production
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Substantial Decrease	Historic properties in agricultural context can be protected from erosion by permanent vegetative cover.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Not Applicable	Not Applicable
Underutilization of Non-Fossil Energy Resources	Not Applicable	Not applicable.

Human Considerations Explanation

Considerations	Physical effects indicate:
Land - Change in Land Use	The degree to which implementing the conservation practice is expected to cause a change from one land use to another.
Land - Land in Production	The degree to which implementing the conservation practice is expected to cause an increase or decrease in the amount of land in production.
Capital - Change in Equipment	The degree to which implementing the conservation practice is expected to cause an increase or decrease in the amount of capital equipment required for farm or ranch operations.
Capital - Total Investment Cost	A qualitative measure of the increase in total investment dollars required in order to implement the conservation practice.
Capital - Annual Cost	A qualitative measure of the expected change in annual capital costs required in order to operate and maintain the conservation practice.
Capital - Credit & Farm Program Eligibility	Included to make conservation planners aware of the potential availability of funding for implementing conservation practices.
Labor – Labor	The degree to which implementing the conservation practice is likely to cause an increase or decrease in the total amount of overall farm or ranch labor required for operations.
Labor - Change in Management Level	The degree to which implementing the conservation practice is likely to cause an increase or decrease in the total amount of required active management on a farm or ranch.
Risk – Yield	The degree to which risk, as related to crop or livestock yields, is expected to increase or decrease as a result of implementing the conservation practice.
Risk – Flexibility	The degree to which risk, as related to the flexibility of farm or ranch operations, is expected to increase or decrease as a result of implementing the conservation practice. For example, converting from flood irrigation to a sprinkler system gives a farmer an increase in flexibility of irrigation, which results in a decrease in the level of risk associated with inflexibility of operations.
Risk – Timing	The degree to which risk, as related to the timing of farm or ranch operations, is expected to increase or decrease as a result of implementing the conservation practice.
Risk - Cash Flow	The degree to which risk, as related to cash flow in farm or ranch operations, is expected to increase or decrease as a result of implementing the conservation practice.
Profitability - Change in Profitability	The degree to which farm or ranch profitability is expected to increase or decrease as a result of implementing the conservation practice.
Cultural Resources and/or Historic Properties Present or Suspected to be Present	The degree to which implementation of the conservation practice is expected to increase or decrease the risk of cultural resource disturbance, degradation, or loss.
Depletion of Fossil Fuel Resources	Inefficient use of fossil-originated energy sources (diesel, gasoline, propane, natural gas, coal), lubricants, and other materials.
Underutilization of Non-Fossil Energy Sources	Available and cost-effective alternative energy sources (solar, wind, biofuel, hydroelectric, geothermal) are not being used or are being used inefficiently.