

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Pennsylvania	FIELD OFFICE	Any	DATE	
PRACTICE: Hedgerow Planting 422		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	Slight Improvement		Dense vegetation traps saltating particles.		
Ephemeral Gully	Not Applicable		Not applicable.		
Classic Gully	Not Applicable		Not applicable.		
Streambank	Not Applicable		Not applicable.		
Shoreline	Not Applicable		Not applicable.		
Irrigation Induced	Not Applicable		Not applicable.		
Mass Movement	Not Applicable		Not applicable.		
Road, Roadsides, and Construction Sites	Not Applicable		Not applicable.		
SOIL – CONDITION					
Organic Matter Depletion	Slight to Moderate Improvement		Permanent vegetation increases soil organic matter in the footprint of the practice.		
Rangeland Site Stability	Not Applicable		Not applicable.		
Compaction	Slight Improvement		Root development in the footprint of the practice will improve soil structure and porosity.		
Subsidence	Not Applicable		Not applicable.		
Contaminants:					
• Salts and other Chemicals	Not Applicable		Not applicable.		
• Animal Waste and other Organics - N	Not Applicable		Not applicable.		
• Animal Waste and other Organics - P	Not Applicable		Not applicable.		
• Animal Waste and other Organics - K	Not Applicable		Not applicable.		
• Commercial Fertilizer - N	Not Applicable		Not applicable.		
• Commercial Fertilizer - P	Not Applicable		Not applicable.		
• Commercial Fertilizer - K	Not Applicable		Not applicable.		
• Residual Pesticides	Neutral		The action is used as a pest management mechanism in some locations.		
Damage from Sediment Deposition	Slight Worsening		Airborne soil may be deposited in or downwind of hedgerow.		
WATER – QUANTITY					
Rangeland Hydrologic Cycle	Not Applicable		Not applicable.		
Excessive Seepage	Not Applicable		Not applicable.		
Excessive Runoff, Flooding, or Ponding	Not Applicable		Not applicable.		
Excessive Subsurface Water	Not Applicable		Not applicable.		
Drifted Snow	Slight to Moderate Improvement		Tall vegetation will trap snow		

		upwind of structures and animal concentration areas.
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	Not Applicable	Not applicable.
Reduced Storage of Water Bodies by Sediment Accumulation	Not Applicable	Not applicable.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight Improvement	The action reduces pesticide drift and may reduce runoff and erosion. Also, the borders may attract beneficial insects or trap insect pests which reduce the need for pesticide applications.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Nutrients from runoff are removed when the strips of vegetation are established where they can intercept overland flow or wind-borne soil.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Slight Improvement	Use of this practice along small streams increases shade and moderates stream temperatures.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Permanent rows of trees or shrubs can reduce wind erosion and intercept and trap airborne particles.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Permanent rows of trees or shrubs can reduce wind erosion and intercept and trap airborne particles.
Excessive Ozone	Neutral	There is a minimal reduction of ozone precursors through reduced surface temperatures

		offered by shade and minimal biofiltering of ozone concentrations due to interception by tree and shrub foliage.
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)	Slight to Moderate Improvement	Interception of NH ₃ by plants
Chemical Drift	Slight to Moderate Improvement	Hedgerows will intercept chemical drift
Objectionable Odors	Slight to Moderate Improvement	Will reduce wind velocities and will intercept VOCs and particulates.
Reduced Visibility	Slight to Moderate Improvement	May remove dust or airborne particles
Undesirable Air Movement	Substantial Improvement	Tall vegetation creates turbulence and slows undesired, leeward winds.
Adverse Air Temperature	Moderate to Substantial Improvement	Tall vegetation provides shade and moderates temperatures.
PLANTS – SUITABILITY		
Plants not Adapted or Suited	Substantial Improvement	Plants selected are adapted and suited.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Substantial Improvement	Plants selected will be maintained at optimal growing conditions for the intended purpose.
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	Vegetation is installed and managed to control undesired species.
Forage Quality and Palatability	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Moderate to Substantial Improvement	Selected plants improve food supply and availability.
Inadequate Cover/Shelter	Moderate to Substantial Improvement	Selected desirable plants improve cover for wildlife.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Moderate to Substantial Improvement	Provides additional vertical habitat/space.
Habitat Fragmentation	Slight to Moderate Improvement	Vegetation can help support

		wildlife habitat structure, diversity, extent and connectivity.
Imbalance Among and Within Populations	Slight Improvement	Habitat management is implemented to remove limiting factors.
Threatened and Endangered Fish and Wildlife Species:		
<ul style="list-style-type: none"> 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.
<ul style="list-style-type: none"> 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	Not Applicable	Not applicable.
Inadequate Shelter	Slight Improvement	Hedgerows can provide some shade and protection from wind.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Not Applicable	Not applicable.
HUMAN – ECONOMICS		
Land - Change in Land Use	Slight.	
Land – Land in Production	Slight decrease	
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Substantial.	
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Moderate increase.	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Negligible	
Risk - Timing	Slight Increase	Slight increase - practice should be applied during growing season.
Risk – Cash Flow	Slight Increase	Slight increase due to establishment costs.
Profitability – Change in Profitability	Situational	Slight decrease to moderate increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Increase	Initial plantings; changes in setting can have adverse effects.
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.