

**CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET**

STATE	North Dakota	FIELD OFFICE		DATE	
<b>PRACTICE: Conservation Cover 327</b>		Baseline Setting: Appropriate Land Use(s): Crop, Natural Area, Headquarters, Mined, Recreation, Watershed Protection, Wildlife			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
<b>SOIL – EROSION</b>					
Sheet and Rill		Slight to Substantial Improvement		Increased vegetation and cover will improve infiltration and decrease soil detachment by water.	
Wind		Slight to Substantial Improvement		An increase in vegetation and cover will protect the soil surface and decrease soil detachment by wind.	
Ephemeral Gully		Slight to Substantial Improvement		An increase in vegetation and cover will improve infiltration, protect the soil surface and decrease soil detachment by concentrated flow.	
Classic Gully		Slight Improvement		Increased cover will reduce runoff.	
Streambank		NA or Slight Improvement		Better vegetation and cover can reduce overland flow.	
Shoreline		Not Applicable		Not applicable.	
Irrigation Induced		Not Applicable		Not applicable.	
Mass Movement		NA or Slight Improvement		Water use by roots will reduce potential of mass movement; Soil is bound by roots.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
<b>SOIL – CONDITION</b>					
Organic Matter Depletion		Substantial Improvement		Establishing permanent vegetation will increase biomass production, infiltration and root establishment.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Moderate Improvement		Permanent vegetation will increase roots and organic matter and result in less field operations to cause compaction.	
Subsidence		Not Applicable		Not Applicable in ND.	
Contaminants:					
• Salts and other Chemicals		Slight to Moderate Improvement		Permanent cover may decrease evaporation that brings salts to the surface.	
• Animal Waste and other Organics - N		Not Applicable		Not a problem in ND.	
• Animal Waste and other Organics - P		Not Applicable		Not a problem in ND	
• Animal Waste and other Organics - K		Not Applicable		Not a problem in ND	
• Commercial Fertilizer - N		Not Applicable		Not a problem in ND	
• Commercial Fertilizer – P		Not Applicable		Not a problem in ND	
• Commercial Fertilizer – K		Not Applicable		Not a problem in ND	
• Residual Pesticides		Slight to Moderate Improvement		Land cover change can lead to less pesticide use and thus will reduce potential pesticide contamination.	
Damage from Sediment Deposition		Slight to Substantial Improvement		Permanent cover reduces erosion.	

<b>WATER – QUANTITY</b>		
Rangeland Hydrologic Cycle	Not Applicable	Not Applicable
Excessive Seepage	Neutral or Slight Improvement	Increased water use by permanent vegetation. However, increased infiltration could increase seepage. Rare in ND.
Excessive Runoff, Flooding, or Ponding	Slight to Substantial Improvement	Increased water use and infiltration will reduce runoff and ponding.
Excessive Subsurface Water	Slight to Substantial Improvement	Increased water use by permanent vegetation. However, increased infiltration could increase seepage.
Drifted Snow	Slight to Substantial Improvement	Permanent vegetation can trap snow.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Permanent cover increases infiltration and water use.
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Substantial Improvement	Permanent vegetation reduces sediment yield.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Substantial Improvement	Permanent vegetation reduces sediment yield.
Aquifer Overdraft	Slight to Substantial Improvement	Increased infiltration may improve aquifer recharge. This practice applied on irrigated land usually means cessation of irrigation.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
<b>WATER – QUALITY</b>		
<b>In Groundwater:</b>		
• Harmful Levels of Pesticides	Slight to Substantial Improvement	The action reduces the need for pesticide use and increases soil organic matter.
• Excessive Nutrients and Organics	Moderate to Substantial Improvement	Permanent vegetation will uptake excess nutrients. Nutrients are not applied with this practice.
• Excessive Salinity	Slight to Moderate Improvement	Permanent vegetation can take up salts and water reducing the leaching potential of salts.
• Harmful Levels of Heavy Metals	Neutral or Slight Improvement	Higher organic matter levels increase the buffering capacity of soil. Some species can take up some heavy metals. Not a problem in ND.
• Harmful Levels of Pathogens	Neutral or Slight Improvement	Permanent vegetation increases organic matter promoting microbial activity which competes with pathogens. Typically it is not a problem on cropland.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
<b>In Surface Water:</b>		
• Harmful Levels of Pesticides	Slight to Substantial Improvement	The action reduces the need for pesticide use, decreases runoff and erosion, and increases soil organic matter.

<ul style="list-style-type: none"> <li>Excessive Nutrients and Organics</li> </ul>	Slight to Moderate Improvement	Less erosion and runoff reduces transport of nutrients. Permanent cover can take up excess nutrients and convert them to stable organic forms. Nutrients are not applied with this practice.
<ul style="list-style-type: none"> <li>Excessive Suspended Sediment and Turbidity</li> </ul>	Slight to Substantial Improvement	Less erosion and runoff reduces sediment.
<ul style="list-style-type: none"> <li>Excessive Salinity</li> </ul>	Neutral or slight Improvement	Less runoff reduces transport of soluble salts. Permanent vegetation can use excess water which reduces seepage.
<ul style="list-style-type: none"> <li>Harmful Levels of Heavy Metals</li> </ul>	Not Applicable	Not Applicable
<ul style="list-style-type: none"> <li>Harmful Temperatures</li> </ul>	Not Applicable	Not applicable.
<ul style="list-style-type: none"> <li>Harmful Levels of Pathogens</li> </ul>	Neutral or Slight Improvement	Less erosion and runoff reduces delivery of pathogens. Cropland generates few or negligible pathogens.
<ul style="list-style-type: none"> <li>Harmful Levels of Petroleum</li> </ul>	Not Applicable	Not applicable.
<b>AIR – QUALITY</b>		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Permanent vegetation reduces wind erosion and generation of fugitive dust.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Permanent vegetation reduces wind erosion and generation of fugitive dust.
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:		
<ul style="list-style-type: none"> <li>CO<sub>2</sub> (Carbon Dioxide)</li> </ul>	Moderate to Substantial Improvement	Vegetation removes CO <sub>2</sub> from the air and stores it in the form of carbon in the plants and soil.
<ul style="list-style-type: none"> <li>N<sub>2</sub>O (Nitrous Oxide)</li> </ul>	Not Applicable	Not applicable.
<ul style="list-style-type: none"> <li>CH<sub>4</sub> (Methane)</li> </ul>	Not Applicable	Not applicable.
Ammonia (NH <sub>3</sub> )	Neutral or Slight Improvement	Anhydrous ammonia is not used with this practice.
Chemical Drift	Slight or Moderate Improvement	Pesticide applications typically decline with this practice.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Slight Improvement	Reduce fugitive dust emissions
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
<b>PLANTS – SUITABILITY</b>		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Plants selected are adapted and suited.
<b>PLANTS – CONDITION</b>		
Productivity, Health, and Vigor	Moderate to Substantial Improvement	Plants are selected and managed to maintain optimal productivity and health.

<b>Threatened or Endangered Plant Species:</b>		
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Not Applicable	Not Applicable
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Not Applicable	Not Applicable
Noxious and Invasive Plants	Substantial Degradation to Moderate Improvement	Weed control has commonly been deficient where this practice is applied. Establishment of permanent vegetation may provide competition that would slow the spread of noxious plants.
Forage Quality and Palatability	Neutral	Neutral. Most land does not produce forage in comparatively recent years before this practice was applied.
Wildfire Hazard	Moderate to Substantially Higher Risk	Fuel load is typically present year-round where this practice is applied.
<b>ANIMALS – FISH AND WILDLIFE</b>		
Inadequate Food	Slight to Moderate Improvement	Increased quality and quantity of vegetation provides more food for wildlife.
Inadequate Cover/Shelter	Slight to Substantial Improvement	Increased quality and quantity of vegetation provides more cover for wildlife.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Not Applicable	Quality is not constant, but space is.
Habitat Fragmentation	Slight to Substantial Improvement	Increased cover can connect to other cover areas.
Imbalance Among and Within Populations	Slight to Substantial Improvement	Habitat management is implemented to remove limiting factors.
<b>Threatened and Endangered Fish and Wildlife Species:</b>		
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Slight Improvement	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Slight to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.
<b>ANIMALS – DOMESTIC</b>		
Inadequate Quantities and Quality of Feed and Forage	Situational	Retired acres have commonly been opened for haying and grazing. Some producers became dependent on CRP for their forage supply.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Not Applicable	Not applicable.
<b>HUMAN – ECONOMICS</b>		
Land - Change in Land Use	Substantial	Substantial if large areas are planted, otherwise N/A.

Land – Land in Production	Substantial	Substantial decrease, land converted to permanent cover.
Capital – Change in Equipment	Moderate Decrease.	
<b>Capital - Total Investment Cost</b>	<b>Moderate.</b>	
Capital – Annual Cost	Slight increase initially, then decrease.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible the 1 <sup>st</sup> year; decline in labor required in later years.	
Labor – Change in Management Level	Slight increase initially, then decrease.	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Substantial Increase in the Concern	Land is typically enrolled in a program with use restrictions.
Risk - Timing	Moderate Increase Initially, then Decrease	Moderate increase during establishment of plants dependent on climate and season.
Risk – Cash Flow	Slight Increase	Slight increase due to establishment costs.
Profitability – Change in Profitability	Moderate to substantial decrease.	
<b>HUMAN – CULTURAL</b>		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Neutral or Slight Decrease in the Concern	Historic properties in agricultural context can be protected from erosion. Most sites converted to cropland are already destroyed.
<b>HUMAN – ENERGY</b>		
Depletion of Fossil Fuel Resources	Not Applicable	Not applicable.
Underutilization of Non-Fossil Energy Resources	Not Applicable	Not applicable.

### Human Considerations Explanation

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