# CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | Pennsylvania | FIELD OFFICE | Any | DATE | |
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| **PRACTICE: Conservation Cover 327** | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Natural Area, Headquarters, Mined, Recreation, Watershed Protection, Wildlife | | | |

| **RESOURCES, CONSIDERATIONS AND CONCERNS** | **PHYSICAL EFFECTS** | **RATIONALE** |
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| **SOIL - EROSION** | | |
| 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 Moderate 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 | Slight Improvement | Better vegetation and cover can reduce overland flow. |
| Shoreline | Not Applicable | Not applicable. |
| Irrigation Induced | Not Applicable | Not applicable. |
| Mass Movement | 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. |
| **SOIL – CONDITION** | | |
| 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 | Neutral | If it affects drainage the practice can have an impact on subsidence. |
| Contaminants: | | |
| • Salts and other Chemicals | Slight to Moderate Improvement | Permanent cover may increase salt uptake. |
| • Animal Waste and other Organics - N | Slight to Moderate Improvement | Permanent cover increases N uptake. |
| • Animal Waste and other Organics - P | Slight to Moderate Improvement | Permanent cover increases P uptake. |

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| • Animal Waste and other Organics - K | Slight to Moderate Improvement | Permanent cover increases K uptake. |
| • Commercial Fertilizer - N | Slight to Moderate Improvement | Permanent cover increases N uptake. |
| • Commercial Fertilizer – P | Slight to Moderate Improvement | Permanent cover increases P uptake. |
| • Commercial Fertilizer – K | Slight to Moderate Improvement | Permanent cover increases K uptake. |
| • Residual Pesticides | Slight to Substantial 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. |
| **WATER – QUANTITY** | | |
| Rangeland Hydrologic Cycle | Not Applicable | Not Applicable |
| Excessive Seepage | Slight Improvement | Increased water use by permanent vegetation. However, increased infiltration could increase seepage. |
| Excessive Runoff, Flooding, or Ponding | Slight to Moderate Improvement | Increased water use and infiltration will reduce runoff and ponding. |
| Excessive Subsurface Water | Slight Improvement | Increased water use by permanent vegetation. However, increased infiltration could increase seepage. |
| Drifted Snow | Slight 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 Moderate 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 Improvement | Increased infiltration may improve aquifer recharge. |
| Insufficient Flows in Water Courses | Not Applicable | Not applicable. |
| **WATER – QUALITY** | | |
| In Groundwater: | | |
| • 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. |
| • Excessive Salinity | Slight to Substantial Improvement | Permanent vegetation can take up salts and water reducing the leaching potential of salts. |
| • Harmful Levels of Heavy Metals | Slight to Moderate Improvement | Higher organic matter levels increase the buffering capacity of soil. Some species can take up some heavy metals. |

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| • Harmful Levels of Pathogens | Slight to Substantial Improvement | Permanent vegetation increases organic matter promoting microbial activity which competes with pathogens. |
| • Harmful Levels of Petroleum | Not Applicable | Not applicable. |
| In Surface Water: | | |
| • 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. |
| • Excessive Nutrients and Organics | 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. |
| • Excessive Suspended Sediment and Turbidity | Slight to Substantial Improvement | Less erosion and runoff reduces sediment. |
| • Excessive Salinity | Substantial Improvement | Less runoff reduces transport of soluble salts. Permanent vegetation can use excess water which reduces seepage. |
| • Harmful Levels of Heavy Metals | Slight to Moderate Improvement | Decreased erosion and runoff reduces heavy metal delivery to surface water. Permanent vegetation can uptake heavy metals. |
| • Harmful Temperatures | Not Applicable | Not applicable. |
| • Harmful Levels of Pathogens | Slight Improvement | Less erosion and runoff reduces delivery of pathogens. |
| • 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 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: | | |
| • $CO_2$ (Carbon Dioxide) | Moderate to Substantial Improvement | Vegetation removes CO2 from the air and stores it in the form of carbon in the plants and soil. |
| • $N_20$ (Nitrous Oxide) | Not Applicable | Not applicable. |
| • $CH_4$ (Methane) | Not Applicable | Not applicable. |
| Ammonia ($NH_3$) | Not Applicable | Not applicable. |
| Chemical Drift | Not Applicable | Not applicable. |
| Objectionable Odors | Not Applicable | Not applicable. |
| Reduced Visibility | Slight Improvement | Reduce fugitive dust emissions |

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| Undesirable Air Movement | Not Applicable | Not applicable. |
| Adverse Air Temperature | Not Applicable | Not applicable. |
| **PLANTS – SUITABLIITY** | | |
| Plants not Adapted or Suited | Moderate to Substantial Improvement | Plants selected are adapted and suited. |
| **PLANTS - CONDITION** | | |
| Productivity, Health, and Vigor | Moderate to 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 | Slight to Moderate Improvement | The cover can allow T&E species to reestablish. |
| • Declining Species, Species of Concern | Slight to Moderate Improvement | The cover can allow T&E species to reestablish. |
| Noxious and Invasive Plants | Moderate to Substantial Improvement | Establishment of permanent vegetation may provide competition that would slow the spread of 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 for wildlife. |
| Inadequate Cover/Shelter | Slight to Moderate Improvement | Increased quality and quantity of vegetation provides more cover for wildlife. |
| Inadequate Water | Not Applicable | Not applicable. |
| Inadequate Space | Slight to Moderate Improvement | Increased cover will increase space for wildlife. May be used to connect other cover areas. |
| Habitat Fragmentation | Slight to Moderate 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. |
| Threatened and Endangered Fish and Wildlife Species: | | |
| • Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Slight Improvement | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. |
| • Declining Species, Species of Concern | Slight Improvement | 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 | Not Applicable | Not applicable. |
| Inadequate Stock Water | Not Applicable | Not applicable. |

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| Stress and Mortality | Not Applicable | Not applicable. |
| **HUMAN – ECONOMICS** | | |
| 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. | |
| Capital - Total Investment Cost | Moderate. | |
| Capital – Annual Cost | Slight increase. | |
| Capital – Credit and Farm Program Eligibility | Situational. | |
| Labor - Labor | Negligible | |
| Labor – Change in Management Level | Slight increase. | |
| Risk - Yield | Not applicable. | Not applicable. |
| Risk - Flexibility | Negligible | |
| Risk - Timing | Moderate Increase | 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. | |
| **HUMAN - CULTURAL** | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Slight to Substantial Decrease | Historic properties in agricultural context can be protected from erosion. |
| **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: |
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| **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. |