

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Pennsylvania	FIELD OFFICE	Any	DATE	
PRACTICE: Contour Orchard and Other Fruit Areas 331		Baseline Setting:			
		Appropriate Land Use(s): Crop			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS		RATIONALE	
SOIL - EROSION					
Sheet and Rill		Moderate to Substantial Improvement		Contouring reduces runoff velocities and changes overland flow direction, thus reducing the detachment and transport capacity of over-land flow.	
Wind		Not Applicable		Not applicable.	
Ephemeral Gully		Slight to Moderate Improvement		Contouring reduces runoff velocities and changes overland flow direction, thus reducing the detachment and transport capacity of concentrated over-land flow.	
Classic Gully		Slight Improvement		Reduces runoff causing erosion in the gully.	
Streambank		Slight Improvement		Reduces runoff causing erosion.	
Shoreline		Not Applicable		Not applicable.	
Irrigation Induced		Slight to Moderate Improvement		Contouring reduces slope grade and velocities of irrigation applied water.	
Mass Movement		Not Applicable		Not applicable.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
SOIL – CONDITION					
Organic Matter Depletion		Slight to Moderate Improvement		Reduced soil erosion decreases organic matter loss.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
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		Slight Worsening		Contouring can increase infiltration which may increase residual pesticides in the soil	
Damage from Sediment Deposition		Moderate to Substantial Improvement		Contouring reduces sheet and rill erosion and the resulting sediment deposition at the foot	

		of the slope or off-site.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight to Moderate Worsening	Increases water infiltration that may move laterally to a seep area, particularly during fallow periods.
Excessive Runoff, Flooding, or Ponding	Slight Improvement	Increases water infiltration which will slightly reduce the potential for flooding or ponding.
Excessive Subsurface Water	Slight Worsening	Increases infiltration which could contribute to excess subsurface water.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight Improvement	Contouring reduces slope grade, velocities of irrigation applied water and increases infiltration.
Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	Increases water infiltration resulting in improved water storage in the profile.
Reduced Capacity of Conveyances by Sediment Deposition	Moderate to Substantial Improvement	Contouring can reduce soil erosion and the resulting off-site sediment deposition.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Contouring reduces soil erosion and the resulting off-site sediment deposition.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Worsening	The action increases infiltration.
• Excessive Nutrients and Organics	Slight Worsening	The action reduces the velocity of runoff, resulting in increased water infiltration which could move nutrients and organics to groundwater.
• Excessive Salinity	Slight Worsening	The action reduces the velocity of runoff, resulting in increased water infiltration which could move salts to groundwater.
• Harmful Levels of Heavy Metals	Neutral	The action may result in increased water infiltration, but this will have a negligible effect on heavy metals in groundwater.
• Harmful Levels of Pathogens	Neutral	Increased water infiltration could move pathogens into the soil.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight Improvement	The action reduces runoff and erosion.
• Excessive Nutrients and Organics	Slight to Substantial Improvement	The action decreases sheet and

		rill erosion and may increase water infiltration, thereby reducing the transport of nutrients and organics to surface water.
• Excessive Suspended Sediment and Turbidity	Slight to Substantial Improvement	Contouring reduces sheet and rill erosion and slows the velocity of runoff, thereby reducing the transport of sediment to surface water
• 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	Slight to Moderate Improvement	Contouring decreases sheet and rill erosion and slows runoff velocities, thereby reducing the potential for transport of heavy metals to surface water.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Improvement	Contouring decreases sheet and rill erosion and slows runoff velocities, thereby reducing the potential for transport of pathogens to surface water
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Not Applicable	Not applicable.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Not Applicable	Not applicable.
Excessive Ozone	Not Applicable	Not applicable.
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	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Slight Improvement	Provides for biofiltering of windblown dust
Undesirable Air Movement	Slight to Moderate Improvement	Tall vegetation creates turbulence and slows undesired, leeward winds.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABILITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight Improvement	Increased infiltration increases the amount of available water

		for crop growth.
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	Not Applicable	Not applicable.
Inadequate Cover/Shelter	Not Applicable	Not applicable.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Not Applicable	Not applicable.
Habitat Fragmentation	Not Applicable	Not applicable.
Imbalance Among and Within Populations	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
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	Not applicable.	Not applicable.
Land – Land in Production	Slight decrease	Slight decrease, corners and end pieces taken out of production.
Capital – Change in Equipment	Negligible	
Capital - Total Investment Cost	Slight.	
Capital – Annual Cost	Slight to moderate increase	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase	Slight to moderate increase, more time required for tillage operations.
Labor – Change in Management Level	Negligible	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Slight to Moderate Increase	Slight to moderate increase due to following designed row

		pattern.
Risk - Timing	Negligible	
Risk – Cash Flow	Slight Increase	Slight increase due to higher fuel and labor requirements.
Profitability – Change in Profitability	Slight decrease.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Increase	Most applicable in establishing new orchard and fruit areas.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight Decrease	Increased infiltration reduces the amount of irrigation water and associated energy use required.
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.