

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Pennsylvania	FIELD OFFICE	Any	DATE	
PRACTICE: Waste Treatment 629		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
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		Some chemicals such as PAM used as amendments could reduce irrigation induced erosion when the waste stream is surface irrigated		
Mass Movement	Not Applicable		Not applicable.		
Road, Roadsides, and Construction Sites	Not Applicable		Not applicable.		
SOIL – CONDITION					
Organic Matter Depletion	Slight Improvement		Using amendments and separation could create high organic residues that when land applied could increase soil organic matter in excess of the application of untreated manure		
Rangeland Site Stability	Not Applicable		Not applicable.		
Compaction	Slight Improvement		If the treatment process includes a storage component, it will allow better management of waste as to rate and timing of application, which allows application when compaction is least likely.		
Subsidence	Not Applicable		Not applicable.		
Contaminants:					
• Salts and other Chemicals	Neutral		Could be slight worsening to slight improvement depending on whether salts are concentrated or removed from the land applied waste stream		
• Animal Waste and other Organics - N	Slight to Moderate Improvement		Using treatment options allows the manipulation of the waste stream to reduce nitrogen concentrations		
• Animal Waste and other Organics - P	Slight to Moderate Improvement		Using treatment options allows the manipulation of the waste stream to reduce phosphorus concentrations		
• Animal Waste and other Organics - K	Slight to Moderate Improvement		Using treatment options allows the manipulation of the waste		

		stream to reduce potassium concentrations
• Commercial Fertilizer - N	Not Applicable	Not applicable.
• Commercial Fertilizer – P	Not Applicable	Not applicable.
• Commercial Fertilizer – K	Not Applicable	Not applicable.
• Residual Pesticides	Not Applicable	Not applicable.
Damage from Sediment Deposition	Not Applicable	Not applicable.
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	Neutral	Treatment with some amendments such as PAM could alter the intake rates of soils receiving an altered waste strea,
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight Improvement	Altered waste stream with minimum solids will be compatible with irrigation needs
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	Neutral	Altered waste stream with minimum solids will be compatible with irrigation needs
Insufficient Flows in Water Courses	Neutral	Altered waste stream with minimum solids will be compatible with irrigation needs
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Substantial Improvement	Amendments and other treatment options are often used to remove nutrients and organics from the waste stream
• Excessive Salinity	Slight to Moderate Improvement	Amendments and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Amendments and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Amendments and other treatment options can be used to alter the waste stream to remove

		salts, metals, and some pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Substantial Improvement	Amendments and other treatment options are often used to remove nutrients and organics from the waste stream
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Slight to Moderate Improvement	Treatment options such as amendments can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Treatment options such as amendments can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Treatment options such as amendments can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight Improvement	Some treatment options may result in less dust and other particulate matter
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Moderate to Substantial Improvement	Treatment can be very effective in reducing emissions such as ammonia fraction
Excessive Ozone	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO ₂ (Carbon Dioxide)	Slight Improvement	Treatment may have an impact on the release of a number of manure constituents
• N ₂ O (Nitrous Oxide)	Slight Improvement	Treatment may have an impact on the release of a number of manure constituents
• CH ₄ (Methane)	Slight to Substantial Improvement	Treatment options often include components that capture methane for beneficial use
Ammonia (NH ₃)	Moderate to Substantial Improvement	A number of treatments are very successful in reducing ammonia emissions from manure
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Moderate to Substantial Improvement	A number of treatment options are very successful in reducing odor emissions from manure
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	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Moderate Improvement	Treatment can alter the waste stream to better meet the needs of the plant
Threatened or Endangered Plant Species:		
<ul style="list-style-type: none"> Plant Species Listed or Proposed for Listing Under the Endangered Species Act 	Not Applicable	Not applicable.
<ul style="list-style-type: none"> Declining Species, Species of Concern 	Not Applicable	Not applicable.
Noxious and Invasive Plants	Not Applicable	Not applicable.
Forage Quality and Palatability	Slight to Moderate Improvement	Treatment can alter the waste stream to better meet the needs of the plant
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:		
<ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act 	Not Applicable	Not applicable.
<ul style="list-style-type: none"> Declining Species, Species of Concern 	Not Applicable	Not applicable.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Neutral	Treatment could favorably alter the waste stream to better provide the needs of growing feed and forage, but this would be minor impact
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Slight Improvement	Some alternatives are used to treat the waste stream to the point water can be reused by livestock
Stress and Mortality	Slight to Substantial Improvement	Suppressing emissions of ammonia and other manure constituents may well improve overall animal health and reduce mortality
HUMAN – ECONOMICS		
Land - Change in Land Use	Situational	Situational. Negligible to slight amount of land may be converted from productive land use to headquarters.

Land – Land in Production	Slight Decrease	Negligible to slight amount of land may be taken out of production.
Capital – Change in Equipment	Substantial increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Moderate to substantial.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase.	
Labor – Change in Management Level	Moderate to Substantial Increase	Moderate to substantial management required to operate waste management system.
Risk - Yield	Moderate to Substantial Decrease	Appropriate use of value added byproducts could result in a moderate to substantial reduction in risk to yields.
Risk - Flexibility	Moderate to Substantial Increase	Moderate to substantial increase because of design criteria.
Risk - Timing	Substantial Increase	Substantial increase, depending on state and/or federal laws.
Risk – Cash Flow	Substantial Increase	Substantial increase due to implementation costs.
Profitability – Change in Profitability	Moderate Increase	Situational. Negligible to moderate increase in profitability where biogas and other value added byproducts are put to profitable use.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Increase	Buried historic properties may be affected by chemical changes of organic materials are present.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Substantial Increase	Depending on type of treatment energy inputs can increase significantly
Underutilization of Non-Fossil Energy Resources	Slight to Moderate Decrease	This practice provides the mechanism for utilizing methane and nutrient energy sources.

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.