CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Pennsylvania	FIELD OFFICE	Any	DATE	
PRACTICE: Pond Sealing or Lining, Bentonite Sealant 521C		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	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Not Applicable	Not applicable.
Streambank	Not Applicable	Not applicable.
Shoreline	Slight Improvement	Banks are protected by liners that extend above the water line.
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	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Slight Improvement	Lining decreases contamination immediately below the pond.
• Animal Waste and other Organics - N	Slight Improvement	Lining decreases contamination immediately below the pond used to store animal waste.
• Animal Waste and other Organics - P	Slight Improvement	Lining decreases contamination immediately below the pond used to store animal waste.
• Animal Waste and other Organics - K	Slight Improvement	Lining decreases contamination immediately below the pond used to store animal waste.
• Commercial Fertilizer - N	Slight Improvement	Lining decreases contamination immediately below the pond used to store animal waste.
• Commercial Fertilizer – P	Slight Improvement	Lining decreases contamination immediately below the pond used to store animal waste.
• Commercial Fertilizer – K	Slight Improvement	Lining decreases contamination immediately below the pond used to store animal waste.
• 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	Slight Improvement	Reduction in seepage due to less water seeping from ponds.
Excessive Runoff, Flooding, or	Not Applicable	Not applicable.

Ponding		
Excessive Subsurface Water	Slight to Moderate Improvement	Reduced seepage from the pond will result in less contribution to the ground water, particularly in the immediate area of the pond.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight to Substantial Improvement	Retention of water in pond will allow more optimal use of water.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Retention of water in pond will allow more optimal use of water.
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	Slight Worsening	Liner will reduce the potential for seepage and recharge of the aquifer.
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	Slight to Moderate Improvement	The action reduces the potential for seepage.
• Excessive Salinity	Moderate Improvement	The action prevents contaminants in the pond from moving below the pond to the groundwater.
• Harmful Levels of Heavy Metals	Slight Improvement	The action limits seepage to prevent leaching of heavy metals from the pond.
• Harmful Levels of Pathogens	Slight to Substantial Improvement	The action limits seepage to prevent leaching of pathogens from the pond.
• 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 Moderate Improvement	Liners reduce or prevent seepage losses from waste storage ponds, reducing the delivery of nutrients to surface water.
• 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	Not Applicable	Not applicable.
• 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)	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)	Not Applicable	Not applicable.
• 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	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight Improvement	Available water to facilitate grazing management improves growth and vigor of plants.
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	Not Applicable	Not applicable.
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	Slight Improvement	Duration of water in pond is extended.
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	Moderate to Substantial Improvement	Lining will prolong availability of water for livestock.

Stress and Mortality	Slight to Substantial Improvement	Reliable water supply decreases stress on animals.
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Not applicable.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Slight Decrease	Negligible to slight decrease due to reduction of seepage losses.
Risk - Flexibility	Substantial Decrease	Substantial decrease due to reduction of seepage losses.
Risk - Timing	Moderate Increase	Moderate increase - practice should be applied prior to excessive seepage losses.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase due to application costs.
Profitability – Change in Profitability	Situational	Moderate decrease to substantial increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight Decrease	On freshwater ponds water loss is prevented, saving energy associated with pumping
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.