CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Pennsylvania	FIELD OFFICE	Any	DATE	

PRACTICE: Spring Development 574	Baseline Setting:
	Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife

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	Slight Improvement	Collection of water reduces runoff.
Streambank	Slight Improvement	Spring development removes seeps and flows that keep stream banks saturated and easily erodible.
Shoreline	Not Applicable	Not applicable.
Irrigation Induced	Not Applicable	Not applicable.
Mass Movement	Slight Improvement	Spring development removes seeps and flows that keep slopes saturated and available for mass wasting.
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	Slight Worsening	Increased animal traffic around developed water source will increase compaction potential especially if the soil is moist.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Not Applicable	Not applicable.
• Animal Waste and other Organics - N	Slight to Moderate Improvement	Better water distribution allows less animal concentration.
• Animal Waste and other Organics - P	Slight to Moderate Improvement	Better water distribution allows less animal concentration.
• Animal Waste and other Organics - K	Slight to Moderate Improvement	Better water distribution allows less animal concentration.
• Commercial Fertilizer - N	Slight to Moderate Improvement	Better water distribution allows less animal concentration.
• Commercial Fertilizer – P	Slight to Moderate Improvement	Better water distribution allows less animal concentration.
• Commercial Fertilizer – K	Slight to Moderate Improvement	Better water distribution allows less animal concentration.
• 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 to Moderate Improvement	Water collected and removed from site.
Excessive Runoff, Flooding, or Ponding	Slight Improvement	Water collected and removed from site.
Excessive Subsurface Water	Slight to Moderate Improvement	Subsurface water collected and removed from the site.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight to Moderate Improvement	Provides a dependable supply of water allowing improved management.
Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	Provides a dependable supply of water allowing improved management.
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	By definition springs are at the land surface, not in aquifer.
Insufficient Flows in Water Courses	Slight Worsening	Spring flows diverted from water courses.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Slight Improvement	Water development will decrease livestock trampling in wet areas and nearby streams.
• Excessive Salinity	Slight Improvement	Spring flows provide some dilution effect.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Spring flows are typically better quality than surface flows allowing opportunity for dilution. Effect depends on the proportion of one flow to the other.
• Harmful Temperatures	Neutral	Springs are cooler than surface water and their proximity to streams moderates stream temperatures, via hyporheic exchange. Development of springs may decrease amount of hyporheic water in channel. .
• Harmful Levels of Pathogens	Slight Improvement	Spring flows are typically better

		quality than surface flows allowing opportunity for dilution. Effect depends on the proportion of one flow to the other.
• Harmful Levels of Petroleum	Slight Improvement	Spring flows are typically better quality than surface flows allowing opportunity for dilution. Effect depends on the proportion of one flow to the other.
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 to Moderate Improvement	Available water to facilitate irrigation or 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	Neutral	When threatened or endangered plants are present, protection and recovery are addressed in the planning process.
• Declining Species, Species of Concern	Neutral	When threatened or endangered plants are present, protection and recovery are addressed in the planning process.
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	Moderate to Substantial Improvement	Provides water for terrestrial species.
Inadequate Space	Slight to Moderate Improvement	Additional habitat/space is

		available once spring water is available.
Habitat Fragmentation	Slight to Moderate Improvement	Multiple spring developments can reconnect habitats.
Imbalance Among and Within Populations	Slight Improvement	Management is designed to minimize limiting factors.
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	Slight to Substantial Improvement	Improved distribution of animals makes forage more readily available to livestock.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Substantial Improvement	The spring increases the quality and quantity of water for livestock.
Stress and Mortality	Moderate to Substantial Improvement	Available water reduces stress and mortality.
HUMAN – ECONOMICS		
Land - Change in Land Use	Slight to Substantial	N/A, if currently grazed or wildlife, substantial if change from cropland.
Land – Land in Production	Substantial increase	Substantial increase if land is brought into production.
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase.	
Labor – Change in Management Level	Slight to moderate increase.	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Slight Decrease	Slight decrease in risk due to dependable water supply.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Moderate Increase	Moderate increase due to construction costs.
Profitability – Change in Profitability	Slight to moderate increase.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Increase	Construction impacts.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Moderate Decrease	Energy associated with pumping is saved when this practice is

		implemented.
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.