

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	12/27/2011
PRACTICE: Prescribed Burning 338		Baseline Setting: Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		PHYSICAL EFFECTS		RATIONALE	
SOIL - EROSION					
Sheet and Rill		Slight to Substantial Improvement		Improved plant production and vegetative cover reduces erosion from water.	
Wind		Slight to Moderate Improvement		Improved plant production and vegetative cover reduces erosion from wind.	
Ephemeral Gully		Slight to Substantial Improvement		Improved plant production and vegetative cover reduces erosion from water.	
Classic Gully		Slight Improvement		Improved plant production and vegetative cover reduces erosion from water.	
Streambank		Slight Improvement		Improved plant production and vegetative cover decreases runoff and duration to streams.	
Shoreline		Slight Improvement		Improved plant production and vegetative cover decreases runoff and duration to shorelines.	
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		Slight Improvement		Improved plant production and vegetative cover decreases depletion.	
Rangeland Site Stability		Slight to Moderate Improvement		Improved plant production and vegetative cover increases surface stability.	
Compaction		Not Applicable		Not applicable.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Slight Worsening		Burning mineralizes organic materials.	
• Animal Waste and other Organics - N		Slight Improvement		Fire causes mineralization of N in plant materials and in the soil near the surface.	
• Animal Waste and other Organics - P		Slight Improvement		Fire causes mineralization of P in plant materials and in the soil near the surface.	
• Animal Waste and other Organics - K		Slight Improvement		Fire causes mineralization of K in plant materials and in the soil near the surface.	

• Commercial Fertilizer - N	Slight Improvement	Fire causes mineralization of N in plant materials and in the soil near the surface.
• Commercial Fertilizer – P	Slight Improvement	Fire causes mineralization of P in plant materials and in the soil near the surface.
• Commercial Fertilizer – K	Slight Improvement	Fire causes mineralization of K in plant materials and in the soil near the surface.
• Residual Pesticides	Slight Improvement	Residues in plants and litter are released to the atmosphere through burning.
Damage from Sediment Deposition	Slight Improvement	Improved plant production and vegetative cover decreases runoff and deposition.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Slight to Substantial Improvement	Restoration and/or maintenance of the function and structure of the ecological site.
Excessive Seepage	Not Applicable	Not applicable.
Excessive Runoff, Flooding, or Ponding	Slight Improvement	Improved plant production and vegetative cover reduces runoff.
Excessive Subsurface Water	Not Applicable	Not applicable.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight Improvement	Improved plant production and vegetative cover reduces runoff.
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	Improved plant production and vegetative cover reduces runoff and sediment.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	Improved plant production and vegetative cover reduces runoff and sediment.
Aquifer Overdraft	Not Applicable	Not applicable.
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 Improvement	The action increases plant vigor and uptake of nutrients.
• 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	Slight to Moderate Improvement	The action increases plant vigor and uptake of nutrients.
• Excessive Suspended Sediment and Turbidity	Slight Improvement	Improved plant production and vegetative cover reduces runoff and sediment.
• Excessive Salinity	Not Applicable	Not applicable.

• Harmful Levels of Heavy Metals	Slight Improvement	Initial removal of vegetation is followed by improved plant growth.
• Harmful Temperatures	Neutral	The action is designed or mitigated to maintain surface water temperatures.
• 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)	Slight to Moderate Improvement	Increased plant vigor reduces the potential for generation of particulates by wind erosion.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Increased plant vigor reduces the potential for generation of particulates by wind erosion.
Excessive Ozone	Neutral	There is a minimal reduction of ozone precursors through reduced incidence of wildfire. There is a short-term increase in ozone precursors (NO _x and VOC emissions) during the burn.
Excessive Greenhouse Gas:		
• CO ₂ (Carbon Dioxide)	Moderate to Substantial Improvement	CO ₂ emissions are decreased with the decreased incidence of wildfire.
• N ₂ O (Nitrous Oxide)	Not Applicable	Not applicable.
• CH ₄ (Methane)	Moderate Worsening	Combustion of organic material reduces CH ₄ emissions.
Ammonia (NH ₃)	Not Applicable	Not applicable.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Slight Worsening	Fire increases smoke, particulates, and associated odors.
Reduced Visibility	Neutral	Smoke can substantially affect visibility temporarily.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Slight to Moderate Worsening	Removal of tall vegetation eliminates shade and increases temperatures.
PLANTS – SUITABILITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Growing conditions are altered to allow more suitable species to grow.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Substantial Improvement	Growing conditions are altered to enhance health and productivity of the more desirable 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	Moderate to Substantial Improvement	Activities are designed and carried out to manage undesirable vegetation.
Forage Quality and Palatability	Substantial Improvement	Sites are restored improving forage quality and palatability.
Wildfire Hazard	Substantial Improvement	Activities are carried out to reduce fuel loading.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Substantial Improvement	Growing conditions are altered to provide a diverse plant community with adequate food for wildlife.
Inadequate Cover/Shelter	Slight to Substantial Improvement	Growing conditions are altered to provide a diverse plant community with adequate cover for wildlife.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Moderate to Substantial Improvement	Burning can restore desired habitats/space.
Habitat Fragmentation	Moderate to Substantial Improvement	Burning can restore and reconnect desired habitats/space.
Imbalance Among and Within Populations	Slight to Substantial Improvement	Stand is rejuvenated and more productive, increasing carrying capacity.
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	Substantial Improvement	Plant and/or site conditions are restored to improve production and quality of desirable forage species.
Inadequate Shelter	Slight Worsening	Some shrubs and trees which provide shelter are removed from area.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Slight to Moderate Improvement	Improved conditions result in more desirable plants and the control of poisonous plants.
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Moderate increase	Moderate increase, more land is reclaimed for production.
Capital – Change in Equipment	Slight Increase.	

Capital - Total Investment Cost	Slight.	Slight.
Capital – Annual Cost	Negligible	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase	Slight to moderate increase depending on period of burning.
Labor – Change in Management Level	Slight increase	Slight increase determining safe time and management logistics or burning.
Risk - Yield	Slight Decrease	Slight decrease due to improved forage production quality and quantity.
Risk - Flexibility	Moderate Increase	Moderate increase due to preparation of area prior to burn.
Risk - Timing	Substantial Increase	Substantial increase - practice must be applied according to climatic and fuel conditions.
Risk – Cash Flow	Slight Decrease	Slight decrease due to higher yield.
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	Adverse effects to historic structures and landscapes.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Moderate Decrease	This practice reduces energy requirements for fire fighting and pest control.
Underutilization of Non-Fossil Energy Resources	Slight Increase	Burning removes potential biomass fuel.

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.