

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	12/27/2011
<b>PRACTICE: Surface Drainage, Main or Lateral 608</b>		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>		<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>	
<b>SOIL - EROSION</b>					
Sheet and Rill		Not Applicable		Not applicable.	
Wind		Slight Worsening		Improving drainage may increase surface soil drying.	
Ephemeral Gully		Slight to Moderate Improvement		Reducing soil profile saturation increases infiltration by improving drainage and therefore decreases water runoff.	
Classic Gully		Slight Worsening		Because of higher concentration and velocities from water collection.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Not Applicable		Not applicable.	
Irrigation Induced		Not Applicable		Not applicable.	
Mass Movement		Not Applicable		Not applicable.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
<b>SOIL – CONDITION</b>					
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		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		Not Applicable		Not applicable.	
Damage from Sediment Deposition		Not Applicable		Not applicable.	
<b>WATER – QUANTITY</b>					
Rangeland Hydrologic Cycle		Not Applicable		Not applicable.	
Excessive Seepage		Not Applicable		Not applicable.	
Excessive Runoff, Flooding, or Ponding		Slight to Substantial Improvement		Because of improved drainage.	
Excessive Subsurface Water		Slight to Substantial Improvement		Control of water table - subsurface water is collected and conveyed to a proper outlet.	
Drifted Snow		Not Applicable		Not applicable.	
Inadequate Outlets		Slight to Substantial Worsening		Water from drains increase pressure on outlets.	

Inefficient Water use on Irrigated Land	Slight to Substantial Improvement	Drains can collect water for beneficial use or reuse and improved soil, water air relationship.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Drains can collect water for beneficial use or reuse and improved soil, water air relationship.
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Moderate Worsening	Earthen ditches transport sediment that normally deposits to some degree.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Worsening	Because of sediment transport in the drainage system.
Aquifer Overdraft	Slight Worsening	Drains intercept water that may recharge aquifers.
Insufficient Flows in Water Courses	Slight to Moderate Improvement	Water collected by drains can enhance flows in water courses.
<b>WATER – QUALITY</b>		
<b>In Groundwater:</b>		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight Improvement	The action facilitates the removal of surface water, thus reducing percolation of water and nutrients.
• Excessive Salinity	Slight to Moderate Improvement	The action removes both surface and subsurface water and associated contaminants from the site.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	The action removes both surface and subsurface water and associated contaminants from the site.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	The action removes both surface and subsurface water and associated contaminants from the site.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
<b>In Surface Water:</b>		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Moderate Worsening	Increasing the rate of runoff from a field can increase the amount of soluble pollutants delivered to surface water.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Worsening	Increased drainage and runoff will carry sediments.
• Excessive Salinity	Slight to Moderate Worsening	The action removes both surface and subsurface water and associated contaminants from the site.
• Harmful Levels of Heavy Metals	Slight to Moderate Worsening	Heavy metals are carried with sediment to surface waters.
• Harmful Temperatures	Neutral	Surface water is conveyed relatively quickly, reducing the risk of warming.
• Harmful Levels of Pathogens	Slight to Moderate Worsening	Where pathogens are transported

• Harmful Levels of Petroleum	Slight to Moderate Worsening	by sediments Because of increased surface water runoff carrying petroleum
<b>AIR – QUALITY</b>		
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 <sub>2</sub> (Carbon Dioxide)	Not Applicable	Not applicable.
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable	Not applicable.
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Neutral	Planning and management must preclude transport of animal by-products in outflow.
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
<b>PLANTS – SUITABILITY</b>		
Plants not Adapted or Suited	Not Applicable	Not applicable.
<b>PLANTS - CONDITION</b>		
Productivity, Health, and Vigor	Slight to Moderate Improvement	Improved drainage enhances growing environment for non-hydrophytes. If hydrophytes are desired, drainage will increase the problem.
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	Slight to Substantial Improvement	Drainage improves forage quality and palatability.
Wildfire Hazard	Not Applicable	Not applicable.
<b>ANIMALS - FISH AND WILDLIFE</b>		
Inadequate Food	Neutral	Increase or decrease in food supply depends on plant species on the site and degree of drainage.
Inadequate Cover/Shelter	Neutral	Increase or decrease in cover/shelter depends on plant species on the site due to soil moisture/plant relationships.
Inadequate Water	Neutral	The action will increase available wet habitat for some species and decrease it for others.
Inadequate Space	Not Applicable	Not applicable.

Habitat Fragmentation	Not Applicable	Not applicable.
Imbalance Among and Within Populations	Slight Worsening	May restrict animal movement.
Threatened and Endangered Fish and Wildlife Species:		
• Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act	Neutral	When threatened or endangered species are present, protection and recovery are addressed in the planning process.
• Declining Species, Species of Concern	Neutral	When threatened or endangered species are present, protection and recovery are addressed in the planning process.
<b>ANIMALS – DOMESTIC</b>		
Inadequate Quantities and Quality of Feed and Forage	Moderate to Substantial Improvement	Quantity and quality of forage species will be improved if drainage is installed to enhance their production.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Not Applicable	Not applicable.
<b>HUMAN – ECONOMICS</b>		
Land - Change in Land Use	Substantial	Substantial if land use changes.
Land – Land in Production	Substantial increase.	
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight to moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate decrease	Slight to moderate decrease due to reduced soil wetness, better traction and reduced drag.
Labor – Change in Management Level	Negligible	
Risk - Yield	Slight Decrease	Slight decrease due to improved drainage.
Risk - Flexibility	Slight Decrease	Slight decrease due to more conductive growing conditions.
Risk - Timing	Substantial Increase	Substantial increase - practice must be installed before drainage benefits can be realized.
Risk – Cash Flow	Substantial Increase	Substantial increase because of installation costs.
Profitability – Change in Profitability	Situational	Slight decrease to moderate increase.
<b>HUMAN - CULTURAL</b>		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Increase	Construction impacts (mechanical).
<b>HUMAN – ENERGY</b>		
Depletion of Fossil Fuel Resources	Slight Increase	This practice requires regular maintenance and cleanout
Underutilization of Non-Fossil Energy Resources	Not Applicable	Not Applicable



## Human Considerations Explanation

<b>Considerations</b>	<b>Physical effects indicate:</b>
<b>Land - Change in Land Use</b>	The degree to which implementing the conservation practice is expected to cause a change from one land use to another.
<b>Land - Land in Production</b>	The degree to which implementing the conservation practice is expected to cause an increase or decrease in the amount of land in production.
<b>Capital - Change in Equipment</b>	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.
<b>Capital - Total Investment Cost</b>	A qualitative measure of the increase in total investment dollars required in order to implement the conservation practice.
<b>Capital - Annual Cost</b>	A qualitative measure of the expected change in annual capital costs required in order to operate and maintain the conservation practice.
<b>Capital - Credit &amp; Farm Program Eligibility</b>	Included to make conservation planners aware of the potential availability of funding for implementing conservation practices.
<b>Labor – Labor</b>	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.
<b>Labor - Change in Management Level</b>	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.
<b>Risk – Yield</b>	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.
<b>Risk – Flexibility</b>	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.
<b>Risk – Timing</b>	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.
<b>Risk - Cash Flow</b>	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.
<b>Profitability - Change in Profitability</b>	The degree to which farm or ranch profitability is expected to increase or decrease as a result of implementing the conservation practice.
<b>Cultural Resources and/or Historic Properties Present or Suspected to be Present</b>	The degree to which implementation of the conservation practice is expected to increase or decrease the risk of cultural resource disturbance, degradation, or loss.
<b>Depletion of Fossil Fuel Resources</b>	Inefficient use of fossil-originated energy sources (diesel, gasoline, propane, natural gas, coal), lubricants, and other materials.
<b>Underutilization of Non-Fossil Energy Sources</b>	Available and cost-effective alternative energy sources (solar, wind, biofuel, hydroelectric, geothermal) are not being used or are being used inefficiently.