CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Texas	FIELD OFFICE	Any	DATE	5/5/2009
PRACTICE: Manure Transfer 634		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Headquarters, Pasture, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Slight Worsening	The land application process may disturb the soil surface and increase the potential of erosion by water.
Wind	Slight Worsening	The land application process may disturb the soil surface and increase the potential of erosion by wind.
Ephemeral Gully	Slight Worsening	The land application process may disturb the soil surface and increase the potential of erosion by water.
Classic Gully	Not Applicable	Not applicable.
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.
SOIL – CONDITION		
Organic Matter Depletion	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Slight Worsening	Land application equipment will tend to compact the soil in the area of travel.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Not Applicable	Not applicable.
• Animal Waste and other Organics - N	Neutral	Material may be applied in different fields, but does not increase or decrease total N.
• Animal Waste and other Organics - P	Neutral	Material may be applied in different fields, but does not increase or decrease total P.
• Animal Waste and other Organics - K	Neutral	Material may be applied in different fields, but does not increase or decrease total K.
• Commercial Fertilizer - N	Neutral	Material may be applied in different fields, but does not increase or decrease total N.
• Commercial Fertilizer – P	Neutral	Material may be applied in different fields, but does not increase or decrease total P.
• Commercial Fertilizer – K	Neutral	Material may be applied in different fields, but does not

		increase or decrease total K.
• 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	Neutral	To the extent wastewater application increase hydraulic loading of the soil, there is some potential for increasing seeps.
Excessive Runoff, Flooding, or Ponding	Neutral	To the extent wastewater application increase hydraulic loading of the soil, there is some potential for increasing seeps.
Excessive Subsurface Water	Neutral	To the extent wastewater application increase hydraulic loading of the soil, there is some potential for increasing seeps.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Neutral	Water content of material applied from waste storage/treatment facilities can increase soil moisture.
Inefficient Water use on Non-Irrigated Land	Slight Improvement	Water content of material applied from waste storage/treatment facilities can increase soil moisture.
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	Water content of material applied from waste storage/treatment facilities can increase soil moisture.
Insufficient Flows in Water Courses	Neutral	Water content of material applied from waste storage/treatment facilities can increase soil moisture.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The action decreases the potential for ground water contamination in the animal production area.
• Excessive Salinity	Slight to Moderate Improvement	The action insures wastes are properly handled and contaminants are not available for infiltration.
• Harmful Levels of Heavy Metals	Neutral	The action insures wastes are properly handled and contaminants are not available for infiltration.

• Harmful Levels of Pathogens	Slight to Moderate Improvement	The action insures wastes are properly handled and pathogens are not available for infiltration or runoff.
• 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	Proper handling of wastes will decrease the potential for surface water contamination in animal production areas.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Slight to Moderate Improvement	The action insures wastes are properly handled and reduces the potential for salt runoff.
• Harmful Levels of Heavy Metals	Neutral	Excess heavy metals are rarely associated with manure. There is a decrease in potential surface water contamination in the animal production areas. There may be limited increase in surface water contamination in the areas where manure is land applied.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight to Substantial Improvement	Decrease in potential surface water contamination in the animal production areas. May be limited increase in surface water contamination in the areas where manure is land applied.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight Worsening	Loading and unloading dry material can add particulates to the air.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight Worsening	Loading and unloading dry manure can add particulates to the air.
Excessive Ozone	Neutral	There is an increase in potential ozone precursor emissions.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• N_20 (Nitrous Oxide)	Not Applicable	Not applicable.
• CH_4 (Methane)	Slight to Moderate Worsening	Anaerobic conditions are conducive to the formation of methane.
Ammonia (NH_3)	Slight to Moderate Worsening	Emissions occur as manure is moved and land applied
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Slight Worsening	Movement and application of material will increase particulates, VOCs, and can

		increase odors.
Reduced Visibility	Slight Worsening	increased ammonia emissions can increase PM fines
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	Not Applicable	Not applicable.
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	Slight Worsening	Material may contain weed seeds and other contaminants as a result of livestock consuming feed containing weed seed.
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	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:		
• 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	Not Applicable	Not applicable.
Stress and Mortality	Not Applicable	Not applicable.
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Slight decrease	Slight short-term decrease, lose cropland as system is installed.
Capital – Change in Equipment	Substantial increase.	New equipment required for the practice.

Capital - Total Investment Cost	Moderate.	Materials, equipment and labor to install practice.
Capital – Annual Cost	Slight increase.	Operation and maintenance costs to keep system functional.
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Moderate to substantial decrease.	Reduced labor hauling & managing manure.
Labor – Change in Management Level	Slight decrease.	Reduced management of manure.
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Moderate Decrease	Moderate decrease due to increase in manure disposial options.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase due to implementation costs.
Profitability – Change in Profitability	Slight to moderate decrease.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight Increase	Construction impacts (mechanical)
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Substantial Increase	Transporting manure requires energy. The amount required depends on the weight of the material, transport mechanism and the distance transported. Systems using gravity flow may use substantially less energy.
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.