

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
SOUTH DAKOTA SUPPLEMENTS ITALICIZED**

**POND SEALING OR LINING
FLEXIBLE MEMBRANE LINING**

(no.)
CODE 521A

DEFINITION

Installing a fixed lining of impervious material or treating the soil in a pond mechanically or chemically to impede or prevent excessive water loss.

PURPOSE

To reduce seepage *from water storage structures and ponds using flexible membranes..*

CONDITIONS WHERE PRACTICE APPLIES

On all ponds and water storage structures that require treatments to control seepage within acceptable limits.

On all waste storage and waste treatment facilities built in or of excavated earth, and which require treatment to prevent the migration of contaminants from the site.

CONSIDERATIONS

Water Quantity

1. Effects upon components of the water budget, especially effects on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.
2. Potential use for water management.

Water Quality

1. Effects on the movement of silts, pathogens, and soluble materials carried by seepage toward the ground water.
2. Short-term and construction-related effects of this practice on the quality of the water resource.

3. Effects on wetlands or water-related wildlife habitats.
4. Effects on visual quality of downstream water resources.
5. Effects on the use and management of nutrients and pesticides and their effect on surface and ground water quality.
6. *Venting should be considered if gas build up under the liner is anticipated.*
6. *If high water tables could adversely affect the proper functioning of the facility, interceptor or relief type drainage systems should be considered to control uplift pressures.*

Laws and Regulations

This practice must conform to all federal, state, and local laws and regulations. Laws and regulations of particular concern include those involving water rights, land use, pollution control, property easements, wetlands, preservation of cultural resources and endangered species.

CRITERIA

Structures to be lined shall have been constructed to meet applicable South Dakota standards, including Ponds (378); Irrigation Pits or Regulating Reservoirs (552); Irrigation Storage Reservoirs (436); Waste Treatment Lagoons (359); Waste Storage Facilities (313); and Wildlife Watering Facilities (648). All inlets, outlets, ramps and other appurtenances may be installed before, during, or after the liner placement, but shall be done in a manner that does not damage or impair the proper operation of the liner.

All flexible membranes shall be certified by the manufacturer to be suitable for the intended use.

Conservation practice standards are reviewed periodically and updated if needed. The current version of this standard is posted on our website at www.sd.nrcs.usda.gov or may be obtained at your local Natural Resources Conservation Service.

All flexible membranes shall meet the material and installation requirements of the plans and

Minimum Criteria for Synthetic Membranes	
Type	Limiting Parameter
<i>HDPE</i>	<i>40 mil thickness</i>
<i>LLDPE</i>	<i>40 mil thickness</i>
<i>PVC</i>	<i>30 mil thickness</i>
<i>GCL</i>	<i>0.75 lb./sq. ft. (bentonite)</i>

Note:

HDPE – High Density Polyethylene

LLDPE – Linear Low Density Polyethylene

PVC – Polyvinyl Chloride

GCL – Geosynthetic Clay Liner

Select soil materials shall be used as cover for liners where required for the proper performance, protection, and durability of the installation.

Cover soils shall not contain sharp, angular stone, or any objects that could damage the liner.

Maximum allowable particle size of soil cover material shall be 3/8-in. (10mm), unless the liner is cushioned by a needle punched, nonwoven geotextile.

specifications provided for each installation.

Synthetic membranes must not be placed on slopes steeper than three horizontal to one vertical.

All structures shall be fenced to protect liners from livestock traffic and damage.

Manufacturer recommendations shall be followed with regard to protection from weather and exposure.

PLANS AND SPECIFICATIONS

Plans and specifications shall be prepared for specific field sites in accordance with this standard and shall describe the requirements for applying the practice to achieve its intended uses.

OPERATION AND MAINTENANCE

A plan for operation and maintenance of the liner shall be prepared.