

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

POND SEALING OR LINING - FLEXIBLE MEMBRANE

(NO.)

Code: 521A

DEFINITION

A manufactured hydraulic barrier consisting of a functionally continuous sheet of synthetic or partially synthetic, flexible material.

PURPOSE

To control seepage from water and waste Impoundments for water conservation and environmental protection.

CONDITION WHERE PRACTICE APPLIES

On ponds and water storage structures that require treatment to control seepage rates within acceptable limits.

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

CRITERIA

Structures to be lined shall have been constructed to meet all applicable NRCS standards. 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.

Design of the flexible membrane shall be in accordance with manufacturer recommendations. All flexible membrane installations shall meet the material and installation requirements of the plans and specifications provided for each installation, and shall be certified by the installer.

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 stones, or any objects that could damage the liner. Maximum allowable particle size of soil cover material shall be 3/8-in (10 mm), unless the liner is cushioned by a needle punched, non-woven geotextile. Cover materials shall be stable under all operational and exposure conditions.

Minimum Criteria for Membranes	
Type	Limiting Parameter
HDPE	40 mil thickness
LLDPE	40 mil thickness
PVC	30 mil thickness
GCL	0.75 lb./sq. ft (bentonite)
EPDM	45 mil thickness

HDPE = High Density Polyethylene

LLDPE = Linear Low Density Polyethylene

PVC = Polyvinyl Chloride

GCL = Geosynthetic Clay Liner

EPDM = Synthetic Rubber

Subgrade preparation shall conform to manufacturer recommendations. Subgrade materials shall not contain sharp, angular stones, or any objects that could damage the liner or adversely impact its function.

All structures shall be fenced to protect the liner from damage and for the safety of humans, livestock, wildlife, and pets.

Manufacturer recommendations shall be followed with regard to protection from weather

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and exposure.

If venting is used, manufacturer recommendations shall be followed regarding vent type and spacing.

CONSIDERATIONS

Venting should be considered if gas build up under the liner is anticipated.

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.

Effects upon components of water budget, especially effects on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.

Potential use for water management.

Effects on the movement of silts, pathogens, and soluble materials by seepage toward the ground water.

Short term and construction related effects of this practice on the quality of the water resources.

Effects on wetlands or water related wildlife habitats.

Effects on the visual quality of downstream water resources.

Effects on the use and management of nutrients and pesticides and their effect on surface and ground water quality.

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.