

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**POND SEALING OR LINING FLEXIBLE MEMBRANE, (NUMBER)**

**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.

**CONDITIONS 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 of excavated earth, and which require treatment to prevent the migration of contaminants from the site.

Any work involving the discharge of dredged or fill material into wetlands or other waters of the United States may require a permit according to Section 404 of the Clean Water Act.

**CRITERIA**

Flexible membrane liners shall be planned, designed and installed to meet all federal, state, local and tribal laws and regulations.

Any work involving the discharge of dredged or fill material into wetlands or other waters of the United States may require a permit according to Section 404 of the Clean Water Act.

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.

<b>Minimum Criteria for Membranes</b>	
<b>Type</b>	<b>Limiting Parameter</b>
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

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

## 521A - 2

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.

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 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.

### 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. Variability of the practice's effects caused by seasonal or climatic changes.
3. Effects on downstream flows or aquifers that would affect other water uses.
4. Potential use for water management to conserve water.

### Quality

1. Effects on the movement of sediment, pathogens, and soluble material substances carried by seepage water.
2. Effects on the visual quality of downstream water resources.
3. Short-term and construction-related effects of this practice on the quality of the pool and downstream water.
4. Effects on the movement of dissolved substances below the pool area and toward ground water.
5. Effects on wetlands or water-related wildlife habitat.

### PLANS AND SPECIFICATIONS

The following list of Construction Specifications is intended as a guide to selecting the appropriate specifications for a specific project. The list includes most, but may not contain all, of the specifications that are needed for a specific project:

- IA-1 Site Preparation
- IA-3 Structural Removal
- IA-5 Pollution Control
- IA-11 Removal of Water
- IA-21 Excavation
- IA-23 Earthfill
- IA-24 Drainfill
- IA-27 Diversions
- IA-45 Plastic (PVC, PE) Pipe
- IA-92 Fences

Plans and specifications for sealing ponds with flexible membrane linings shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

### OPERATION AND MAINTENANCE

Operation and maintenance of the liner will be consistent with the recommendations from

the manufacturer. For liners that require soil coverings to protect from ultraviolet light then any uncovered portions of the liner shall be recovered immediately to protect the liner.

Liners shall be protected from livestock and or equipment traffic and from the operation of agitation equipment and pumps.

Any tears or holes in the liner shall be repaired immediately to prevent leakage or further damage to the liner.