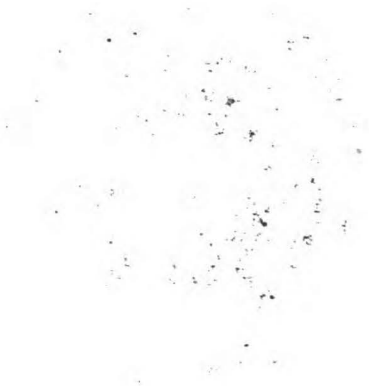
PONDS

FOR WATER SUPPLY AND RECREATION

By Soil Conservation Service



Agriculture Handbook No. 387

Issued January 1971

SOIL CONSERVATION SERVICE • U.S. DEPARTMENT OF AGRICULTURE

linings for ponds because they practically eliminate seepage if properly installed.

Thin films of these materials are structurally weak, but if not broken or punctured, they are almost completely watertight. Black polyethylene films are less expensive and have better aging properties than vinyl. Vinyl, on the other hand, is more resistant to impact damage and is readily seamed and patched with a solvent cement. Polyethylene can be joined or patched by heat sealing, special adhesives, or tape. Butyl rubber can be joined or patched with a special cement.

All plastic membranes should have a cover of earth or earth and gravel not less than 6 inches thick to protect against punctures. Butyl-rubber membranes need not be covered except in areas traveled by livestock. In these areas a minimum of 9 inches should be used on all types of flexible membranes. The bottom 3 inches of cover should be no coarser than silty sand.

Clear the pond area of all vegetation; fill all holes and remove roots, sharp stones, or other objects that might puncture the film. If the material is stony or of very coarse texture, cover it with a cushion layer of fine-textured material before placing the lining.

Some plants may penetrate both vinyl and polyethylene film. If nutgrass, johnsongrass, quackgrass, and other plants having high penetration are present, it is desirable to sterilize the subgrade, especially the side slopes. Several good chemical sterilizers are available commercially. Sterilization is not required for covered butyl-rubber linings which are 20 to 30 mils thick.

Lay the linings in sections or strips, allowing a 6-inch overlap for seaming. Vinyl and butyl-rubber linings should be smooth but slack. Polyethylene should have up to 10 percent slack. Be extremely careful to avoid punctures. Anchor the top of the lining by burying it in a trench dug completely around the pond at or above the normal water level. The anchor trench should be 8 to 10 inches deep and about 12 inches wide.

If recommendations of the manufacturers and distributors of flexible membranes are available, follow them.

Pond safety

Ponds, like any body of water, attract people so that there is always a chance of injury or drowning. You may be planning to build a pond for watering livestock, irrigation, or any of the other purposes discussed in this handbook, but your family and friends may want to picnic beside the pond or use it for fishing, swimming, boating, or ice skating, and you can never tell what a small child passing by may do.

Your pond can become a source of joy as well as profit but only if it is safe. To prevent injuries or drownings and to protect yourself financially you can take some of the following steps.

Before construction

Almost all states have laws on impounding water and on the design, construction, and operation of ponds. In many states small farm ponds are exempt from any such laws. You should become familiar with those that apply in your state and be sure that you or your engineer comply with them.

Find out what your community or state laws are regarding your liability in case of injury or death resulting from use of your pond, whether you authorize such use or not. This is particularly important if you intend to open your pond to the public and charge a fee for its use. You may find that you will need to protect yourself with insurance.

You should decide definitely how the water is going to be used so that you or your engineer can plan the needed safety measures before construction starts. For example, if the water is to be used for swimming, guards over conduits are required. You may wish to provide for beaches and diving facilities; the latter require a minimum depth of water of about 10 feet.

During construction

There are other safety measures that your contractor should take during pond construction. All trees, stumps, and brush must be removed. Remove all rubbish, wire, junk machinery, and fences that might be hazardous to boating and swimming. Eliminate sudden dropoffs and deep holes.

After completion

Mark safe swimming areas and place warning signs at all danger points. Place lifesaving devices such as ring buoys, ropes, planks, or long poles at swimming areas to facilitate rescue operations should the need arise. Place long planks or ladders at ice skating areas for the same reason.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1971 O—389-728