NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

POND SEALING OR LINING
SOIL DISPERSANT TREATMENT

(No.)

CODE 521B

DEFINITION

A liner for a pond or waste impoundment consisting of a compacted soil-dispersant mixture.

PURPOSE

To reduce seepage losses from ponds, wetlands, or waste impoundments for water conservation and environmental protection.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where:

- Soils are suitable for treatment with dispersants
- Ponds, wetlands, or waste impoundments require treatment to reduce seepage rates and to impede the migration of water and contaminants to within acceptable limits

CRITERIA

General Criteria Applicable to All Purposes

Dispersant-treated soil liners shall comply with all federal, state, and local laws, rules, and regulations.

Lined structures shall meet all applicable Natural Resources Conservation Service (NRCS) standards.

Dispersant-treated soil liners shall be filter-compatible with the natural foundation materials on which they are compacted according to Chapter 26 of National Engineering Handbook Part 633, *Soil Engineering*.

Soil Properties - For chemical sealing, soils should have properties approximating the following:

- At least 50 percent finer than 0.074 mm (Number 200 sieve)
- At least 15 percent finer than 0.002 mm in diameter
- Less than 0.50 percent soluble salts (based on dry soil weight)

The minimum thickness of the finished compacted liner shall be 6 inches.

The dispersant shall be tetrasodium pyrophosphate (TSPP), sodium tripolyphosphate (STPP), or soda ash unless laboratory tests using other dispersant types are used for design. Commercial phosphatic fertilizer is not acceptable. Soda ash, technical grade, 99 to 100 percent sodium carbonate may be used.

The dispersant shall be finely granular. Of the material, 95 percent shall pass a number 30 sieve and less than 5 percent, a number 100 sieve.

Standard commercial sodium chloride is satisfactory in the granulated form normally available.

Other dispersants may be used in the form found to be satisfactory by local experience.

When laboratory permeability tests are required to determine application rates, the tests shall be performed using dispersant of the same quality and fineness as that proposed for use.

For protection against dispersant dust, personnel on-site during dispersant application and mixing shall wear mask and goggles.

Criteria Applicable To Ponds and Wetlands

Application rate. In the absence of laboratory tests or field performance data on soils similar to those to be treated, the minimum application of dispersant per 6-inch thickness of constructed liner shall be as follows:

Dispersant Type	Application Rate (lb./ 100 ft^2)
Polyphosphates	7.5
Soda ash	15
Sodium chloride	25
Other	As found to be adequate by local experience

Liner thickness. In the absence of more detailed testing and analyses, liner thickness shall be according to the following:

Water Depth (feet)	Liner Thickness (inches)
8 or less	6
8.1 - 16	12
16.1 - 24	18
24.1 - 30	24

Criteria Applicable to Waste Impoundments

Design. Design of dispersant-treated soil liners for waste impoundments shall be in accordance with Appendix 10D in Chapter 10 of National Engineering Handbook Part 651 (NEH 651), *Agricultural Waste Management Field Handbook*, and/or state regulatory requirements. Use the tables above for application rate and liner thickness in the absence of detailed testing and analyses.

Liner protection. The liner shall be protected against desiccation cracking, the effects of water surface fluctuations, wave action, surface erosion, erosion from pipe inlets, agitation equipment, animals, or items installed through the liner. Protective measures shall be designed into the system to protect the liner for these cases. As a minimum, at least 6 inches of soil cover shall be placed over the soil-dispersant liner.

CONSIDERATIONS

Flattening the slopes of ponds or waste impoundments to facilitate compactive efforts during construction should be considered. The stair-step method of construction as outlined in Appendix 10D in Chapter 10 of NEH 651 may be considered in lieu of slope flattening.

A protective compacted soil cover should be considered for protecting the soil-dispersant liner for ponds.

Consider using a flexible membrane liner for sites that have water depths greater than 24 feet.

PLANS AND SPECIFICATIONS

Plans and specifications for dispersant-treated soil liners for ponds, wetlands, and waste impoundments shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. Plans and specifications shall include such drawings, specifications, material requirements, quantities, construction requirements, equipment requirements, and other documents as are necessary to describe the work to be done.

OPERATION AND MAINTENANCE

Maintenance activities required for this practice consist of those operations necessary to prevent damaging the treated soil liner. This includes (but is not limited to) exclusion of animals and equipment from the treated area; protection of the liner during initial filling, agitation, or pumping operations; and repair of disturbed or eroded areas.