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 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 or waste impoundments require treatment to reduce seepage rates and to impede the migration of 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 NRCS standards.

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

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.

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 Waste Impoundments

Design. Design of dispersant treated soil liners for waste impoundments shall be in accordance with National Engineering Handbook Series, Part 651, Agricultural Waste Management Field Handbook, Chapter 10, Appendix 10D and/or state regulatory requirements.

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.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service. Contact Dan Baumert at 207-990-9555 or email concerns to dan.baumert@me.usda.gov.

NRCS, ME
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Criteria Applicable To Ponds

Application Rate. For ponds, 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:

Dispersant Type	Application rate (lb./ 100 ft^2)
Polyphosphates	7.5
Soda Ash	15

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

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

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 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 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.

Unless otherwise specified the application shall include the following criteria:

- The area to be treated shall be cleared of all vegetation and trash and all stones or other objects large enough to interfere with operation of the compaction equipment.
- The moisture content of the soil must be near optimum for compaction.
- Sealing chemical shall be distributed evenly over the surface to be treated with a drill, seeder, or fertilizer spreader or by hand broadcasting. If broadcast by hand, the area must be staked or otherwise marked in grids of 100 ft^2.
- The chemicals shall be thoroughly mixed into the layer of soil being treated. Mixing shall be done with disk, rototiller, pulverizer, or similar equipment. A second mixing shall be perpendicular to the first mixing.
- If the moisture is inadequate for maximum compaction, water shall be added by sprinkling during the mixing operation. If the moisture content is to high, the soil shall be dried by disking or some other effective process.
- Each treated layer of soil shall be compacted to a dry density of 90 percent or more of maximum standard Proctor density with the soil at optimum or slightly higher moisture content.
- Treated areas shall be protected from puncture by livestock trampling. Areas near the normal waterline and at points of concentrated surface flow into the pond shall be protected against erosion.
- Sediment coagulation Chemicals, such as gypsum or iron sulfate, shall not be used to clear reservoir water after treatment.
- Construction shall be carried out in such a manner that erosion and air and water pollution are minimized. The completed job shall present a workmanlike finish.

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, excluding 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.