

Store-and-Release Covers for Waste Containment: Principles and Practice

Table of Contents

Preface

Acknowledgements

Chapter 1. Introduction to Store-and-Release Covers

Chapter 2. Issues in Cover Selection and Design

Regulatory Underpinning

Types of Covers

 Conventional Covers

 Store-and-Replace Covers

Design Philosophy and Issues

 Issues for the Site Owner

 Issues for the Design Team

 Issues for the Regulator

Chapter 3.

The Soil Profile: Concepts of Flow and Storage

 Saturated Soil Properties

Unsaturated Soil Hydraulic Behavior

 Soil Water Suction

 Soil Water Storage Concepts

 Soil Water Characteristic Curve

 Unsaturated Hydraulic Conductivity

 Flow and Hydraulic Gradients

Chapter 4.

Ecology of Store-and-Release Covers

Transpiration, Potential Evapotranspiration, & Water Balance

Vegetation Establishment

Revegetation Goals

Baseline Ecological Characterization

 Climate

 Soil

 Plants

Revegetation Design and Implementation

 Soil Handling

Plant Selection
Performance Evaluation Tools

Chapter 5.

Preliminary Design

Required Storage

Available Storage and Thickness for Monolithic Covers

Example

Equilibrium Gradient Conditions

Thickness Calculation Procedure

Available Storage and Thickness for Capillary Barriers

Thickness Calculation Procedure

Use of Geotextiles for Capillary Breaks

Field Application of SWCCs Measured in the Laboratory

Chapter 6.

Introduction to Water Balance Modeling

Model Attributes

Model Input

Boundary Conditions

Meteorological Data

Soil Properties

Vegetation Properties

Geometry

Spatial and Temporal Discretization

Reality Check

Chapter 7.

Lessons Learned from the Field

ACAP Field Performance Data

Need for Site-Specific Design

Importance of Vegetation

Providing Sufficient Storage Capacity

Performance in More Humid Climates

Expectations in Other Areas

Design Percolation Rate and Equivalency

Evaluating Cover Performance in the Field

Construction Issues

Important Issues in Construction

References

Tables

Figures

Appendix: ACAP Test Section Installation Instructions