

ALTERNATIVE EARTHEN FINAL COVERS (AEFCs)

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Introduction

- ❖ Birth of ET Monolithic Covers in Colorado
- ❖ The Concept

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ET Monolithic Final Covers

Soil covers consisting of one or more soil layers used in place of a prescribed final cover and having equivalent hydrologic performance.

- ❖ Applicability
- ❖ Performance Evaluation (EPA Alternative Cover Assessment Program)
- ❖ Equivalency Demonstration
- ❖ Construction and Maintenance
- ❖ Regulatory Implications

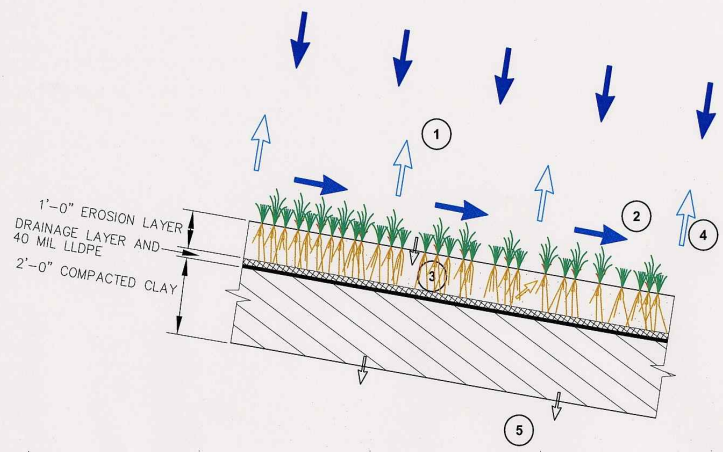
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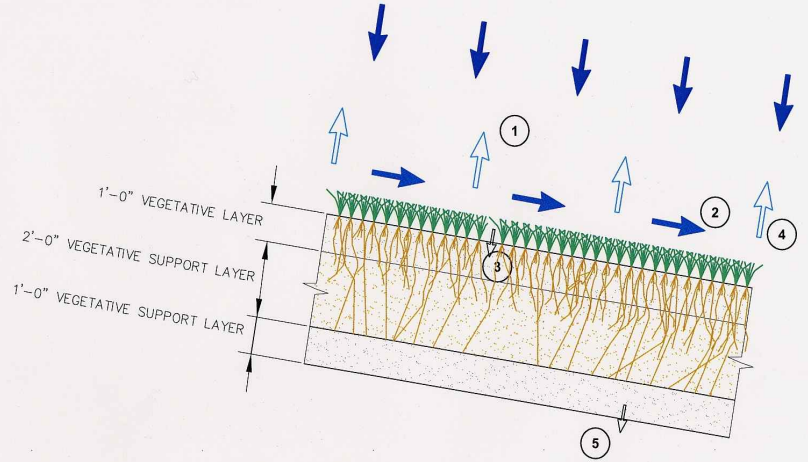
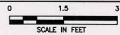
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PREScriptive SUBTITLE D COMPOSITE FINAL COVER SYSTEM



ET MONOLITHIC SOIL ALTERNATIVE FINAL COVER SYSTEM



LEGEND

- ① PRECIPITATION
- ② RUNOFF
- ③ INFILTRATION
- ④ EVAPOTRANSPIRATION
- ⑤ PERCOLATION, INCHES
- ➡ RAINFALL/RUNOFF
- ⬆ EVAPOTRANSPIRATION
- ⬇ INFILTRATION AND PERCOLATION

Applicability

- ❖ Assumed to be applicable in areas where precipitation is less than potential evapotranspiration (ACAP)

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Performance Evaluation

- ❖ EPA Alternative Cover Assessment Program
- ❖ Leachate Collection System

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Equivalency Demonstration

Estimate flow through prescribed Subtitle D final cover and ET Monolithic cover

❖ Unsat-H Computer Program

One-dimensional finite-difference computer program developed at Pacific Northwest National Laboratory. The program simulates water flow through unsaturated soils by solving a modified form of Richard's equation.

Additional Demonstration

❖ Moisture Balance in Deposited MSW

- ❖ Moisture is added by infiltration (Groundwater inflow?)
- ❖ Moisture is removed by:
 - ❖ LFG
 - ❖ Biodegradation Process

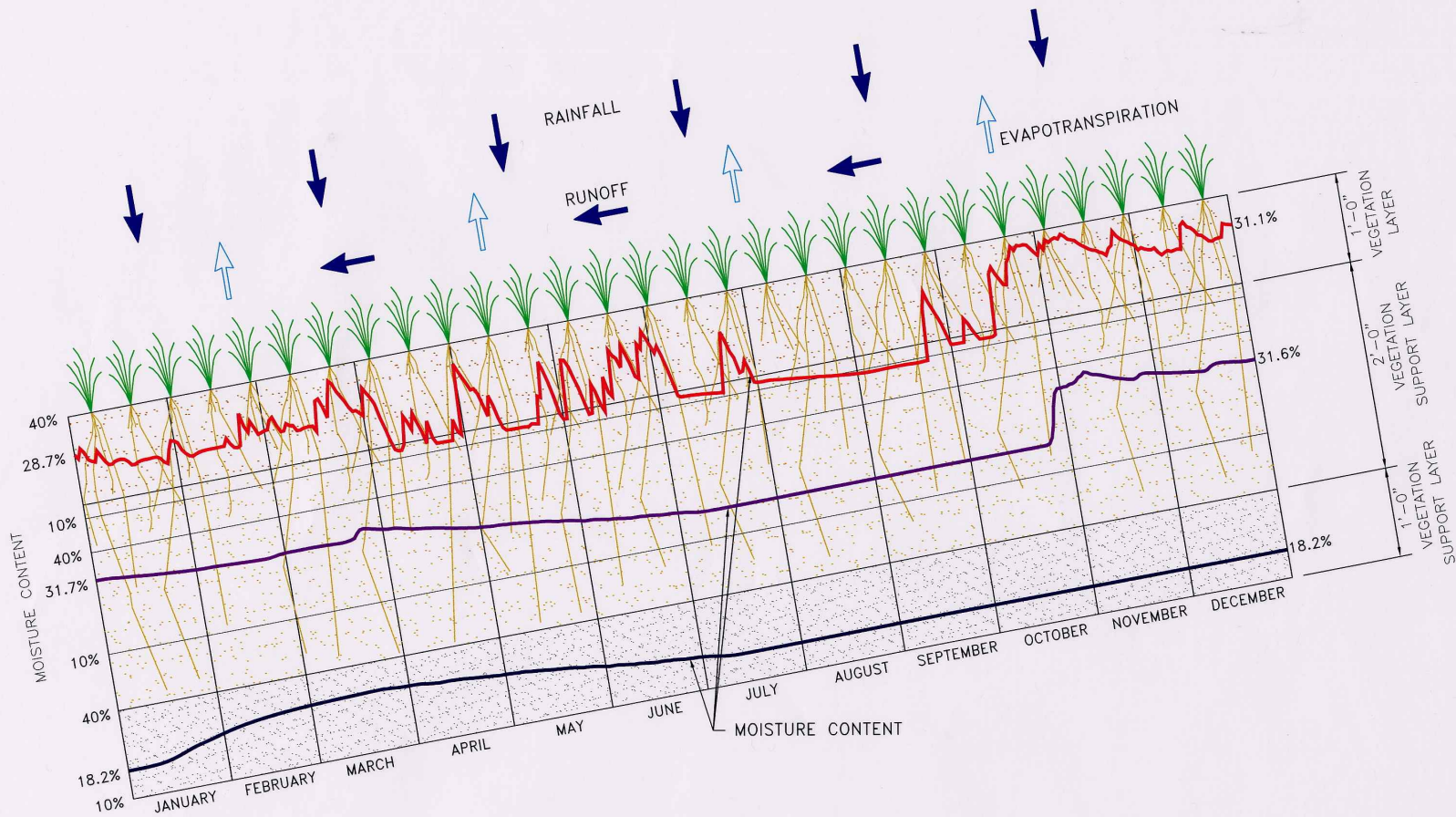
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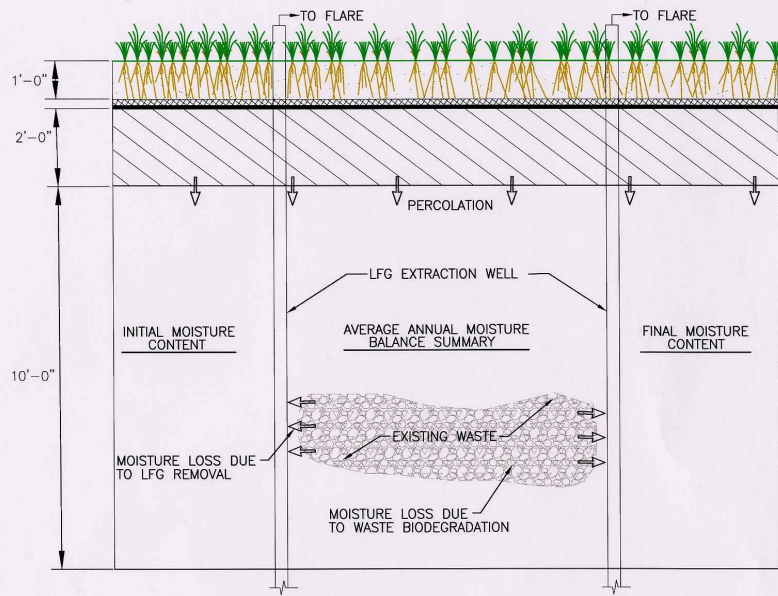
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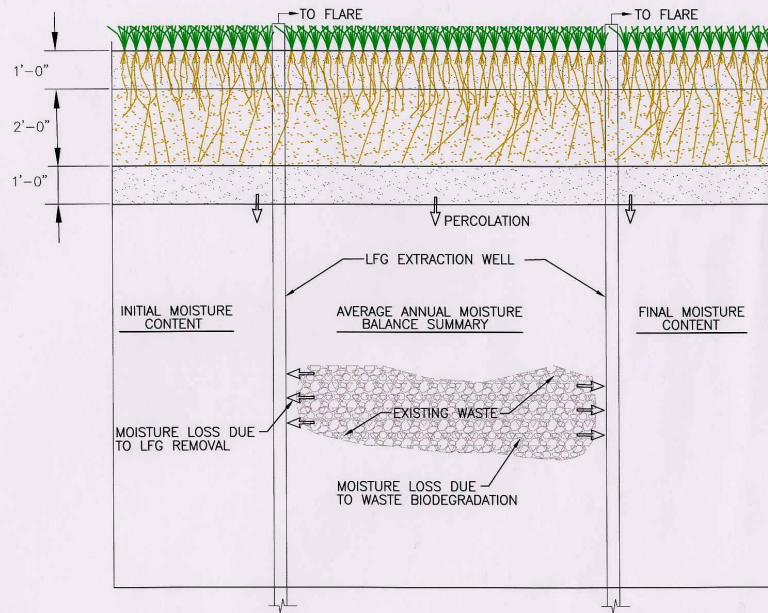


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PRESCRIPTIVE SUBTITLE D COMPOSITE FINAL COVER
NTS



ALTERNATIVE FINAL COVER
NTS

$$\text{FINAL MOISTURE CONTENT} = \text{INITIAL MOISTURE CONTENT} + \text{PERCOLATION} - \text{MOISTURE LOSS DUE TO WASTE BIODEGRADATION} - \text{MOISTURE DUE TO LFG REMOVAL}$$

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Construction and Maintenance

- ❖ Easier to Construct - CQA
- ❖ Lower Cost
- ❖ Long Term Maintenance
- ❖ Flexibility in Vegetation Establishment
- ❖ Geotechnical Stability

Regulatory Implications

- ❖ Current Regulatory Mindset
- ❖ Experiences of the Regulating Agency
- ❖ PR – Public Awareness

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