

# **Group 8**

# **Traditional Barriers Methods**

- **Geotextile wrapped faced wall (“Back to Back”)**
- **Soft Dikes**

# Special Issues

- **Maintenance – cutting grass**
- **Design to include long term subsidence – can the structure be raised in the future**
- **Pumping station function as they do now in the same location**
- **Freeboard conflict**
- **Acceptance of innovations – construct innovative trial levees**

# Factor of Safety

- **Always assign risk to the factors of safety in the design and reliability to the model used**
- **Alternative investigation (e.g. geophysical and insitu testing before borings) for subsurface conditions to improve reliability and reduce conservatism**

# Innovative Materials



- **Use of light weight fills (e.g., geof foam, foamed concrete, aggregate, tire shreads, tire bales, etc.)**
- **Use of construction debris**
- **Research the use of high organic material (> 10%) as it relates seepage issues**
- **Recycled asphalt and concrete, rock, etc.**
- **Study using waste material for embankment fills.**
- **Alternate binders for soil improvement**

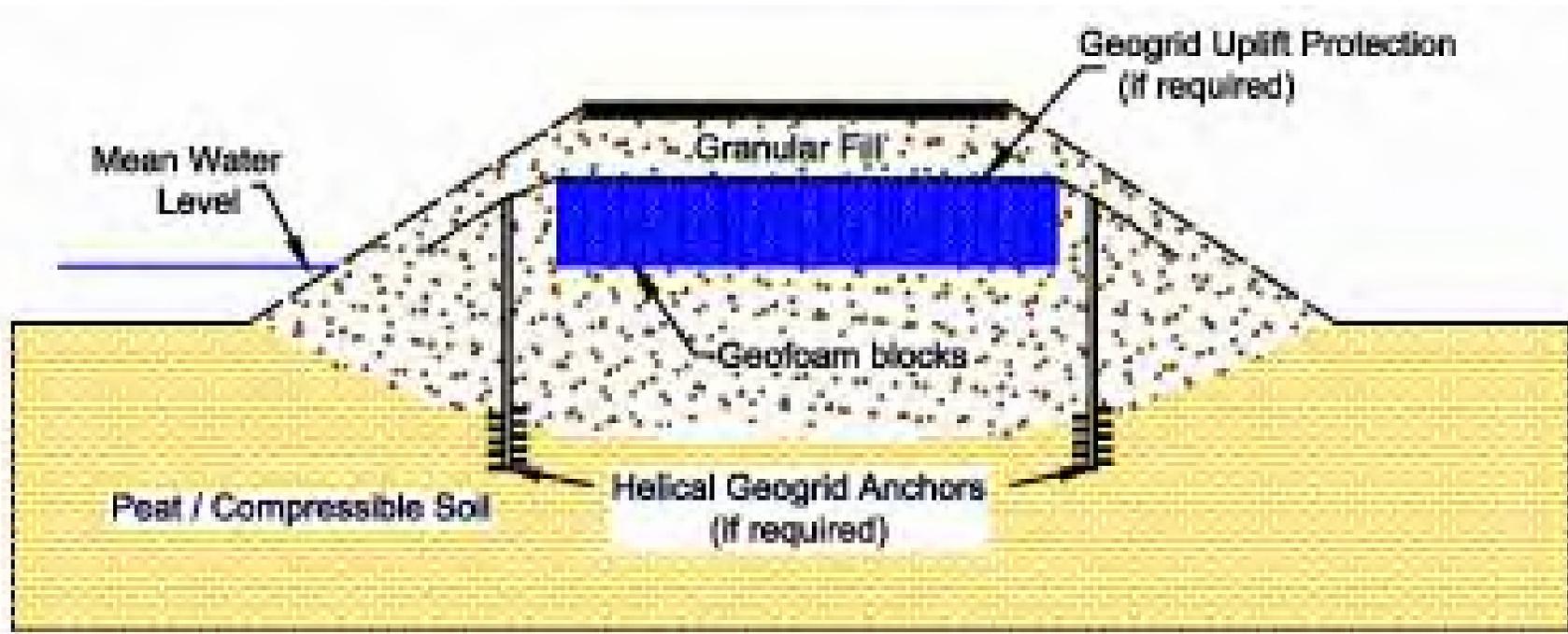
# Innovative Barriers (Levees)

- Using step faces wire face baskets with geosynthetics filled with sand or materials.
- Use large benches for maintenance of grass.
- Sloped or vertical back to back walls using geocomposites (reinforcement and drainage) and hydraulic sand fills.



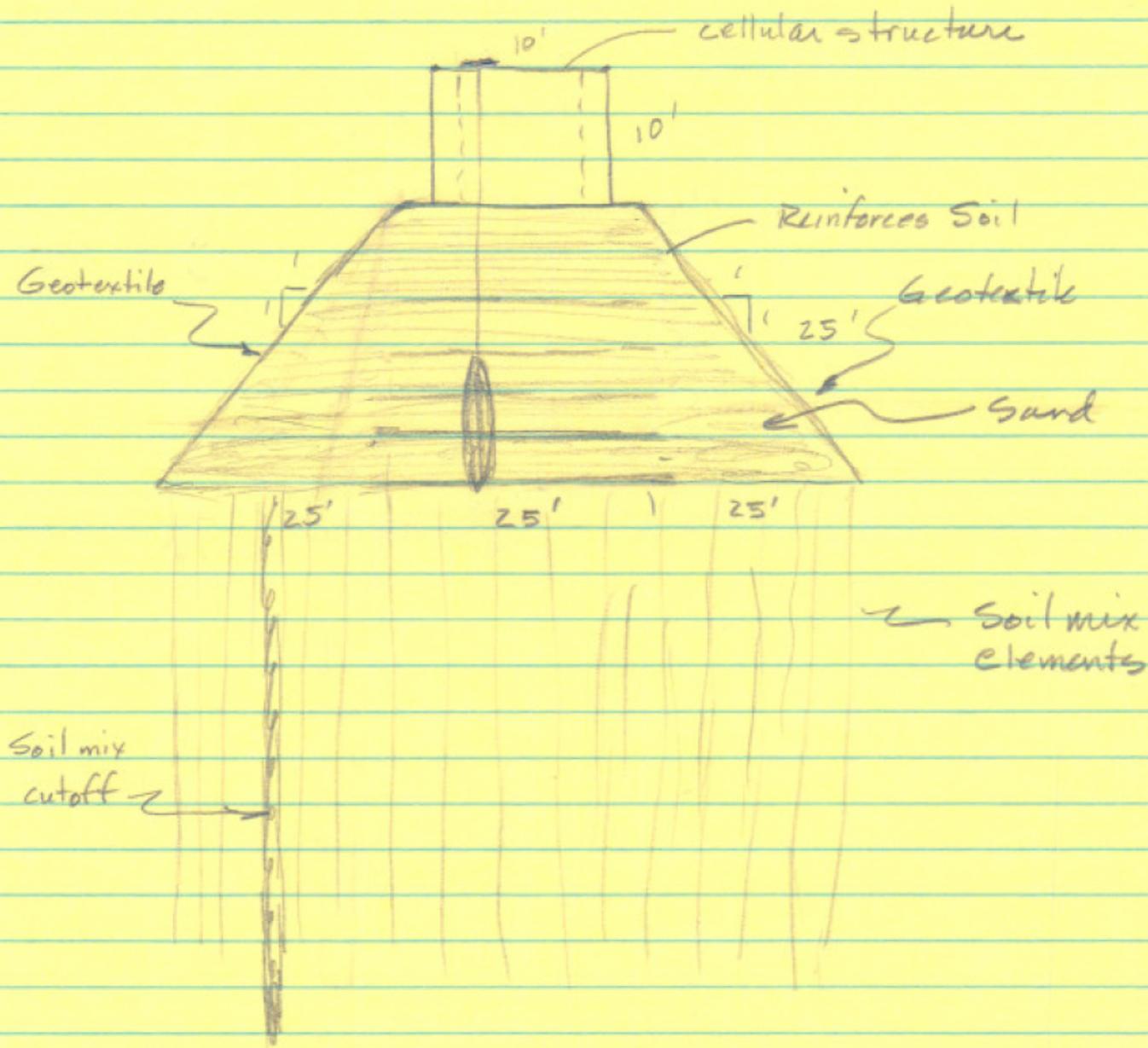
# Innovative Barriers (Levees)

- Use excavated and replace with geofoam with or without tie-down. Use the excavated materials for embankment construction.



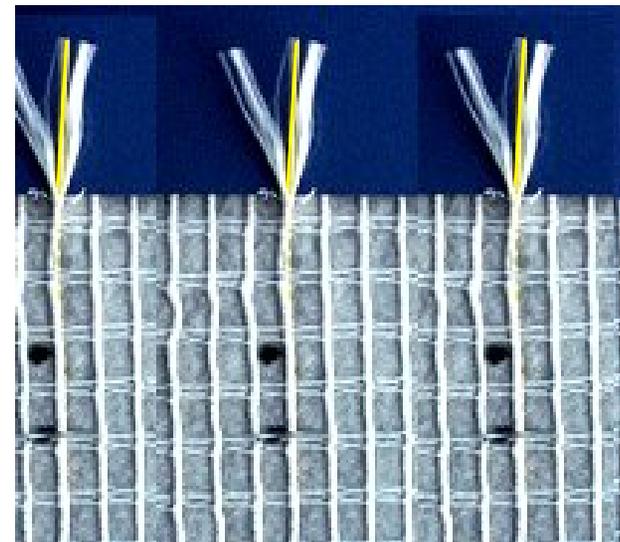
# **Innovative Barriers (Levees)**

- **Soil nail walls to stabilize and reduce foot print of existing levees, then raise levees with geosynthetic reinforcements**
- **Composite structure reinforced using 20 to 25 ft high geotextile reinforced 1H:1V embankment for base and 10 to 15 ft high cellular structure for top with post construction tie down at the base of embankment.**



# Innovative Barriers (Levees)

- Look at alignment to avoid funnel and pinch points
- Mitigate waves to minimize heights
- Early warning systems for indicating levee failures (e.g., smart geosynthetics)



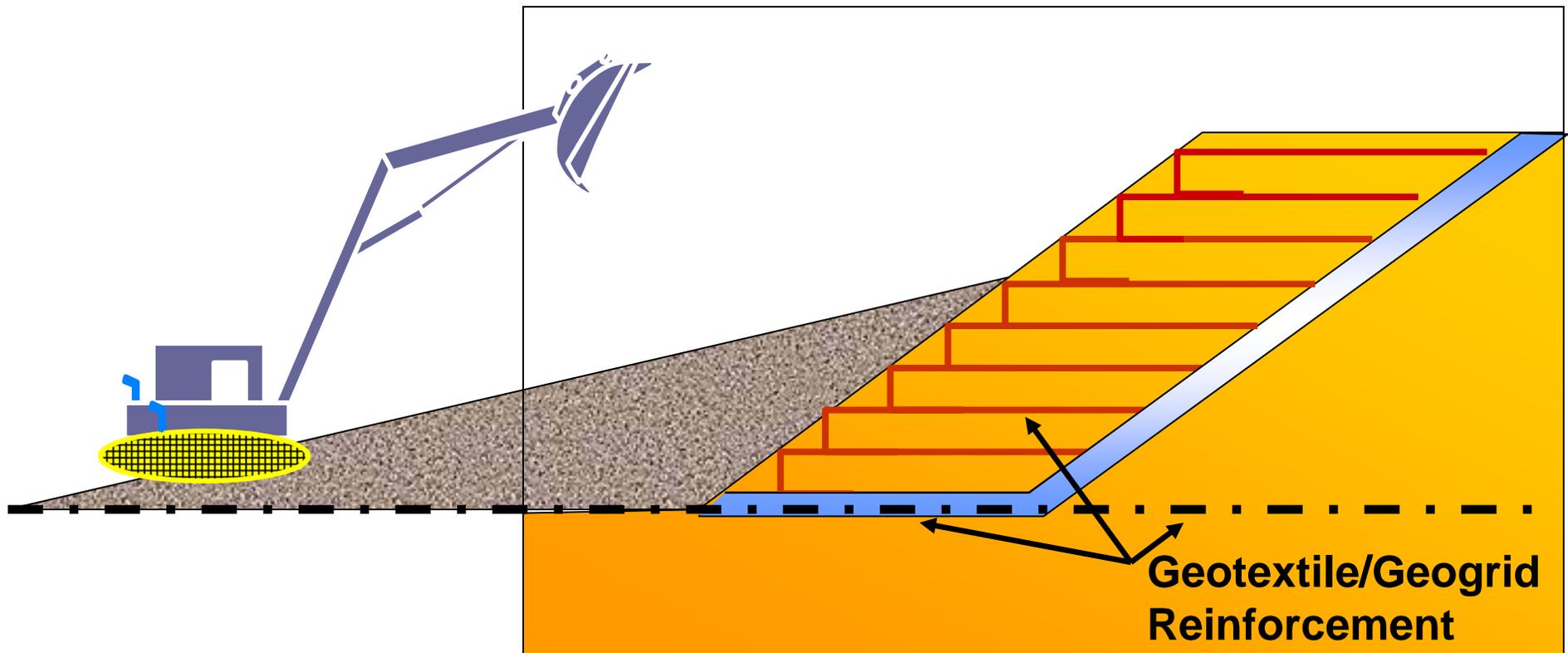
# **Innovative Barriers (Walls)**

- **Hollow model wall sections (cellular) self-filled with water to add weight**
- **Inverted buttress wall with stepped face**
- **Early warning systems for indicting failure**

# Ground improvement

- **Secant, tangent, or tied back anchored walls to confine the foundation where shallow poor foundation conditions exist**
- **Feasibility study of vacuum consolidation using geomembrane and wick-drains should be made**
- **Soil mixing for cutoffs and stability (cut out and sand fill or mass stabilize surface)**
- **Construct steep reinforced slopes buried in toe berm. Remove berm after consolidation**

# Construct stabilization berms and remove/reuse after consolidation







**Just a small change of  
point of view !**

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