Coastal Bluff Erosion
Development of Indicators for Regional Integrated Bluff Management

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Bluff erosion affects many coastal communities in Wisconsin
Coastal Bluff Processes

Bluff Recession  Wave Attack  Longshore Transport  Cross-shore Transport
How do we address the balance of nearshore sediment transport?
1. **Primary indicators**
   - Measurements of bluff and beach
   - Observations of coastline
Indicators for Regional Sediment Budgets

2. Process indicators

a. Measure **geomorphic** processes

b. Analyze **wave climate**
Indicators for Regional Sediment Budgets

2. Process indicators
   a. Quantify **geomorphic** processes
   b. Analyze **wave climate**
   c. Determine **longshore sediment transport (LST)** rates

Badger Sediment Streamer Trap

- Actual LST
- Potential LST
- Cross-shore transport

- Wave height & period
- Beach slope
- Beach sediment size
- Angle of incidence
Indicators for Regional Sediment Budgets

3. Outcome indicators
   a. Regional sediment budget balance
   b. Predict coastal and nearshore erosion risk
Regional Sediment Budget

Process Indicators

Clay & Silt
Sand & Gravel
Clay & Silt

Gravel, clay, & sand

Outcome Indicators

Balance

Balance

Balance

Deficit
Summary

*Indicators* characterize regional sediment budgets

- **Primary indicators**
- **Process indicators**
- **Outcome indicators**
Coastal Bluff Research

- Nearshore sediment transport measurements and models
- Regional sediment budgets
- Balance of coastal protection and ecosystem health
- Assess coastal hazards
- Guide coastal management