



## Three Geology-Based Approaches to Repairing Rock Slopes Along A Rail Corridor

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## Overview

- Linear Projects Encounter Many Slopes, geologic settings and terrains.
- Geology outlines the problem
- Case Studies of three site settings:
  - Site 1 – The Eggs from Hell
  - Site 2 – Raveling/Slaking Shale
  - Site 3 – Valleyside Joints/Differential Weathering





# Problem Recognition







# Problem Recognition – Structural Control







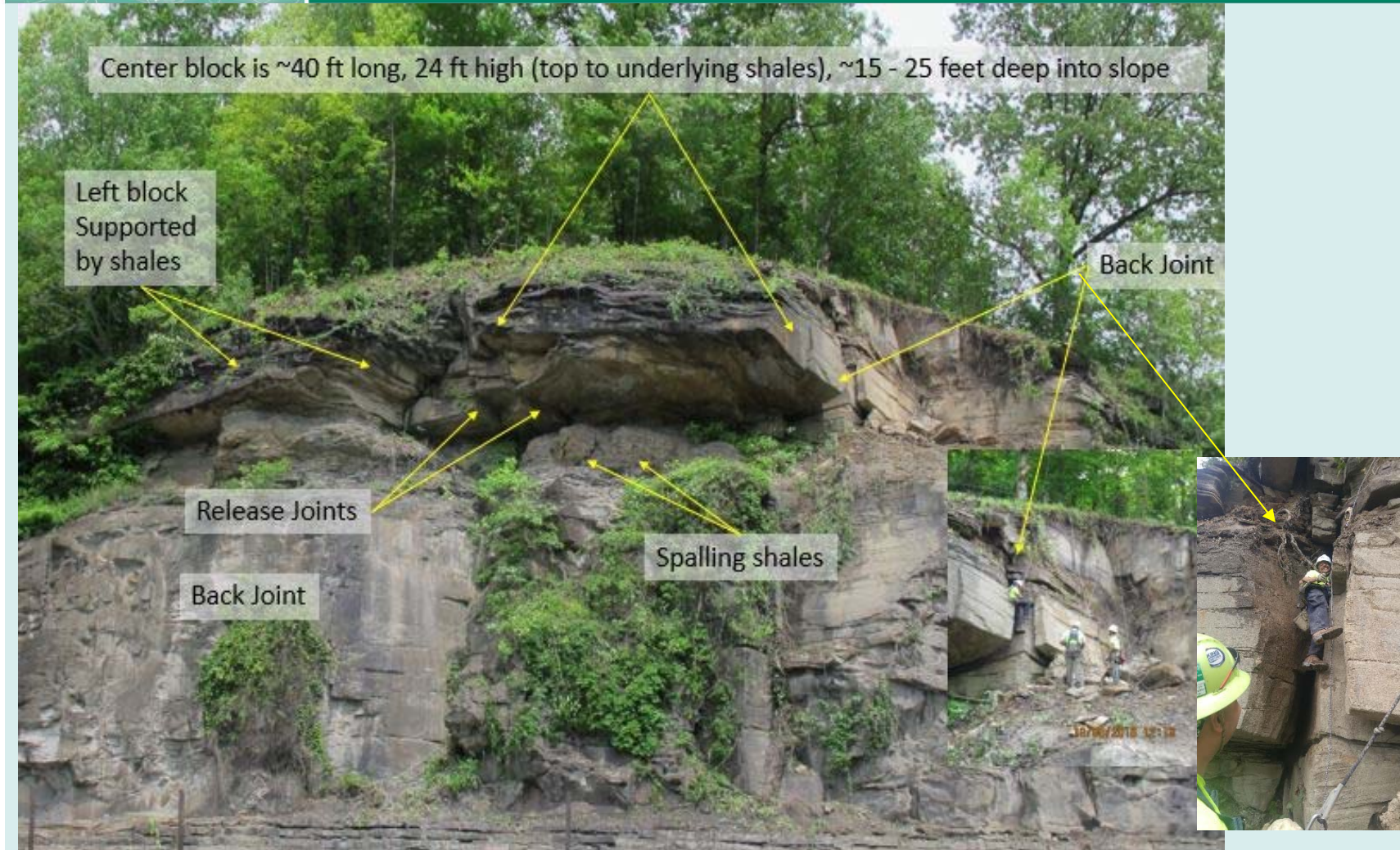
# Problem Recognition – Structural Control







# Problem Recognition – Differential Weathering





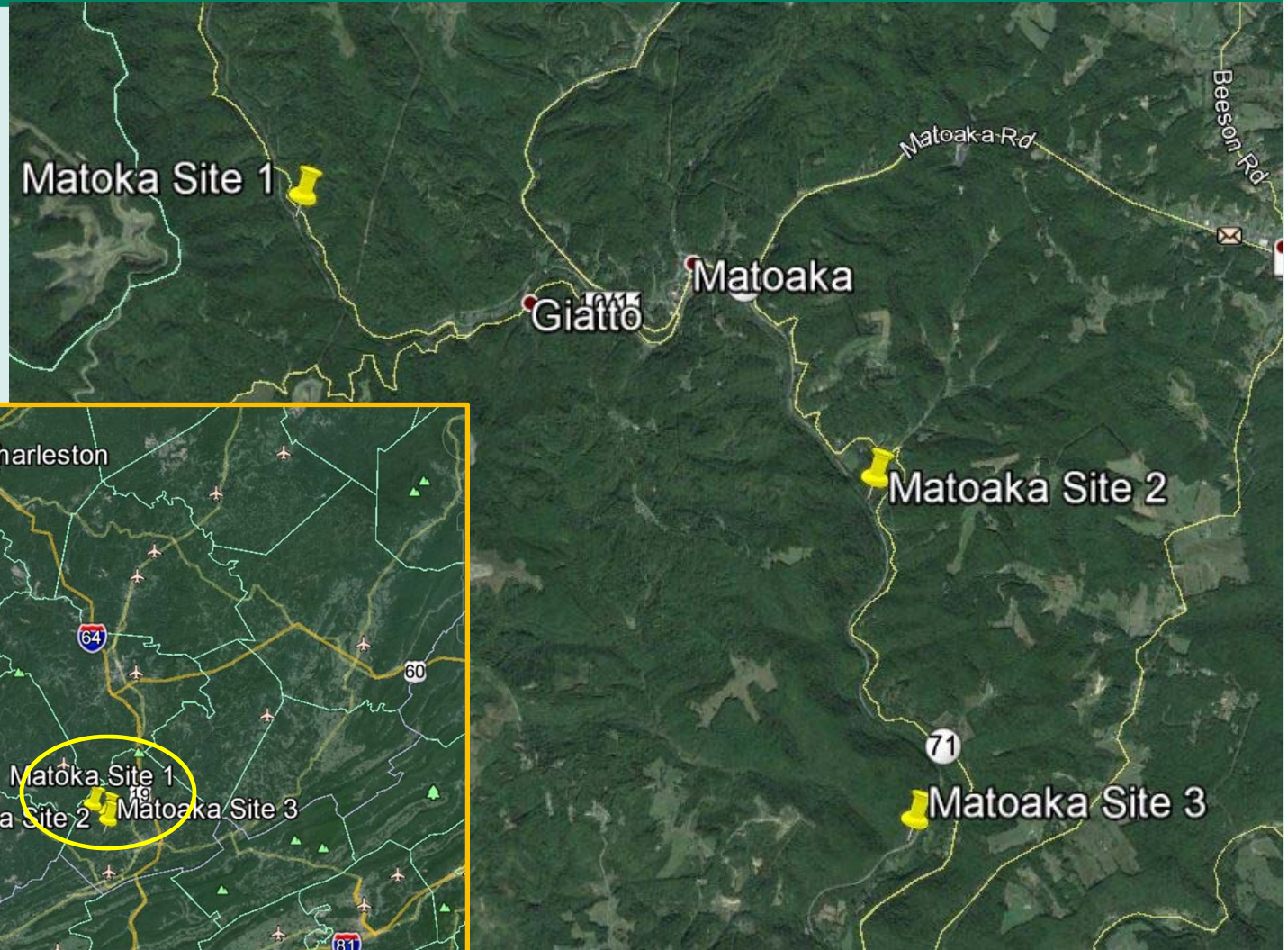


## Common Approaches to addressing Rockfalls

- Remove/Repair the Hazard
- Control the Hazard
- Avoid the Hazard



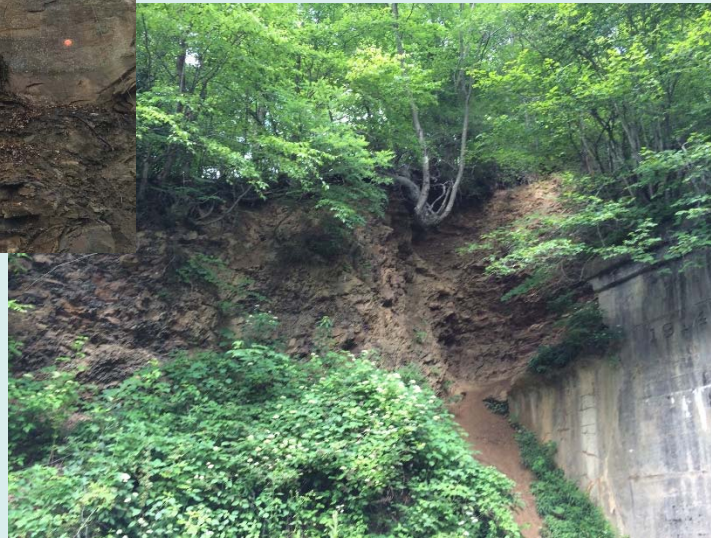
## Three Sites within ~5 miles of each other....







# Combinations







# Obscured views....







## Site 1 – The Eggs







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## Site 1 – The Eggs







## Site 1 – The Eggs







## Site 1 – The Eggs – scaling/trimming







## Site 1 – The Eggs - scaling airbag







## Site 1 – The Eggs – scaling bar







## Site 1 – The Eggs – Trimming/Boulder Buster







## Site 1 – The Eggs







## Site 1 – The Eggs







## Site 1 – The Eggs







## Site 1 – The Eggs - shotcrete facing on shales







## Site 1 – The Eggs – keyed in shotcrete







## Site 1 – The Eggs – completed North End







## Site 1 – The Eggs – Completed South End







# Raveling/Slaking Shale







# Raveling/Slaking Shale – Initial Assessment







# Raveling/Slaking Shale







# Raveling/Slaking Shale







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## Raveling/Slaking Shale







## Raveling/Slaking Shale







# Valleyside Joints/Differential Weathering







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# Questions?

