Benefits of Using GPS-Controlled Construction Equipment at the Riley Pass Uranium Mine CERCLA Site

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US Forest Service
Riley Pass Uranium Mine CERCLA Site
North Cave Hills
Custer Gallatin NF
Harding Co., South Dakota
Riley Pass Uranium Mine CERCLA Site
North Cave Hills
Custer Gallatin NF
Harding Co., South Dakota
The Landscape

- Cold War era uranium mining
- Approximately 320 acres of disturbance spread over 12 sites (bluffs)
- Human health hazard from gamma radiation and heavy metals contamination
- High erosion rates and off site sedimentation
- Unstable and unproductive site
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# The Reclamation Approach

<table>
<thead>
<tr>
<th>Traditional Mine Reclamation</th>
<th>Natural Landform Reclamation</th>
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<tbody>
<tr>
<td>Uniform slopes</td>
<td>Complex slopes</td>
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<tr>
<td>Linear features such as on contour surface water ditches, and mid-slope benches</td>
<td>Diversity of slope aspect</td>
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<tr>
<td>Use of non-native design elements (e.g., rock lined ditches, sediment basins, and check dams)</td>
<td>Small drainage basins</td>
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<td>Natural channel morphology</td>
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<td>Strategic revegetation</td>
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Conventional vs. Landform Reclamation
The Decision to Use GPS-Controlled Equipment

- Complex grading design would require a full time survey crew
- Equipment operator would not be able to follow grade stakes
- Construction would require near continuous grade checking
- Nearest engineering services over 150 miles distant
Riley Pass Uranium Mine CERCLA Site
Bluff G Reclamation
Riley Pass Uranium Mine CERCLA Site
Bluff I Reclamation
2019 Design and Construction Issues at Hazardous Waste Sites
Challenges with GPS-Controlled Equipment at the Riley Pass Site

- Assistance with loading files into the equipment
- File size limitations
- Operator experience with GPS controlled grading
- Difficult to make design changes in CAD files in a timely manner
- Limited ability to make “field fits”
Riley Pass Uranium Mine CERCLA Site
Custer Gallatin NF
Bluff G

Pre-Reclamation

Post Reclamation
Riley Pass Uranium Mine CERCLA Site
Custer Gallatin NF
Bluff I

Pre-Reclamation

Post Reclamation
Acknowledgments

Design Engineer – TetraTech, Inc. (Helena, MT)
Construction Contractor – NorthWind Construction Services, LLC (Kellogg, ID)

Questions?