Successful Reclamation of a Fly Ash Fill with Alternative Funding Approach

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Background

• Novel Fly Ash Disposal Solution
  ➢ PG&E Energy Group required to dispose of fly ash from FL power plants ‘off site’
  ➢ Costain willing and able to accept delivery of fly ash
  ➢ Initially permitted by KY DSMRE
  ➢ Repermitted under jurisdiction of KY Waste Mgmt
2006 Aerial Photo of Ivel Fly Ash Fill
What is Fly Ash?

- Byproduct/Waste Product of the coal combustion process
- Created by the pollution controls now mandated on all coal-fired power plant stacks
- Primarily Silicon Dioxide and Calcium Oxide, with other trace elements
## Typical Values for Selected Elements as Contained in Soils and Fly Ash*

<table>
<thead>
<tr>
<th></th>
<th>Arsenic</th>
<th>Barium</th>
<th>Cadmium</th>
<th>Lead</th>
<th>Mercury</th>
<th>Selenium</th>
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<tbody>
<tr>
<td><strong>RANGE</strong></td>
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<tr>
<td>Soils</td>
<td>0.1-100</td>
<td>10.0-7000</td>
<td>0.01-7</td>
<td>8-1000</td>
<td>0.01-10</td>
<td>0.10-10</td>
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<tr>
<td>Ash</td>
<td>0.0003-391</td>
<td>0.02-10850</td>
<td>0.01-76</td>
<td>0.02-273</td>
<td>0.013-49.5</td>
<td>0.0003-49.5</td>
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<td><strong>AVERAGE</strong></td>
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<tr>
<td>Soils</td>
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<td>800</td>
<td>1</td>
<td>50</td>
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<tr>
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<td>1000</td>
<td>3</td>
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<tr>
<td>Ash</td>
<td>4.6</td>
<td>806.5</td>
<td>3.4</td>
<td>56.8</td>
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<td>7.7</td>
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</tbody>
</table>

* all data shown in parts per million (ppm)  

Data sources: EPA, NIST, USGS
Comparison Chart

Comparison Trace Metals - Soil v. Fly Ash v. West VA Coal (ppm)

- Soil Avg ppm
- Ash Avg ppm
- WV Coal ppm

Elements: Arsenic, Barium, Boron, Cadmium, Copper, Lead, Mercury, Nickel, Selenium, Zinc

(Values from West Virginia Geological and Economic Survey, Trace Elements in West VA Coals, March 2002)
Primary Players

• Costain Coal Company/Lodestar Energy, Inc.
• PG&E Energy Group
• Frontier Insurance
• KY Dept. for Natural Resources (fka DSMRE)
• KY Division of Waste Management
• Property Owners/Financial Institutions
• What Went Wrong?
Lodestar Energy Bankruptcy (2001)

- Stopped sending coal to PG&E
- Stopped accepting PG&E Fly Ash
Frontier Insurance Bankruptcy (2005)
  • Seized by State of NY in 2001
  (Medical malpractice liabilities)

Reclamation Performance Bond “evaporated”, leaving an unfunded environmental liability in Stratton Branch
“Emergency” Spillway Pipe
Fly Ash
Ultimate Solution

➢ Negotiated Settlement
  • Potential Responsible Parties (PRPs) were “convinced” to set up a reclamation trust w/Farmer’s Bank (trustee)
  • $2.4M fund established

➢ Successful Reclamation
  • Newbridge Services, Inc. hired by Cabinet to facilitate reclamation
  • Bill Adams hired as Reclamation Manager by Trust
Establishment of Underdrains
Underdrain Placement
On-going reclamation (2011)
Completed Reclamation
Completed Reclamation
2015
Conclusion

An area potentially hazardous to the environment and public health and safety was reclaimed successfully by using alternative funding approaches due to the efforts of the Kentucky Energy and Environment Cabinet, Department for Natural Resources.

- Division of Waste Management was forced by the Commissioner to relinquish jurisdiction of the site to the Office of Mine Reclamation and Enforcement, enabling the project to be completed.
Special Thanks

• Bill Adams
  Newbridge Services, Inc., Lexington, KY

• Steve Hohmann, Commissioner
  Kentucky Department for Natural Resources,
  Frankfort, KY