



Session B -- Innovations in Mining Site Remediation



ETSC's Mine Remediation History

- ◆ 1985 Big Five Tunnel, Colorado START project
- ◆ 1987 Technical Support Project Superfund, Solid Waste and ORD. Created ETSC and established an innovative technology ORD focal point
- ◆ Sister Program: Mine Waste Technology Program*
- ◆ Brother Program: Superfund Innovative Technology Evaluation (SITE)*
- ◆ 2012 Celebrating our 25 th anniversary with the 2012 Hard Rock Mining Conference – Tentative Date April, 2012 –Announcement Coming Very Soon

*Defunct



ITRC Mine Waste Technology Selection Guidance

- ◆ First Web-based technology guidance document developed by ITRC
 - Try it!
 - Send comments
- ◆ Team-based approach to mine materials guidance
 - Mine Waste Team (35 participants)
 - Includes representatives from federal agencies, states, industry, community stakeholders, university, and international organizations
- ◆ Volunteer basis – join now!
 - Web-based training and case studies available online (www.itrcweb.org/miningwaste-guidance)

Investigations Used to Select Innovative Remediation Alternatives at Mining Sites

- ◆ Conceptual site model and characterization is an important and significant step in the remediation process
 - Establish goals by assessing site conditions and developing an understanding of the site
 - Use systematic evaluation process
- ◆ Phased, integrated approach to mine remediation (including physical hazards)
- ◆ Adaptive use of CERCLA process and innovative approach

Wastewater as a Re-N-E-W-able Resource – Global to Local Perspectives and Lessons Learned

- ◆ Significant amounts of biosolid waste (wastewater residuals) are produced annually
- ◆ >50% of biosolids are land-applied after appropriate treatment
- ◆ The proper management and treatment of “wastewater” can address 5 of the top 10 problems for humanity [i.e., energy, water, food, environment, and disease (sanitation)]
- ◆ Use wastewater as a resource – the future of wastewater treatment (N-E-W)
 - Nutrient recovery (nutrient rich)
 - Energy production (self sufficiency)
 - Water (sustainable water system)

Diversity of Indigenous Plants during and after Revegetation of Copper Mine Tailings with Energy Crops

- ◆ Innovative re-use of copper mining area with scientific evaluation
 - Characterize site (i.e., contaminants, pH, physical structure, nutrients, salinity, water)
 - Select amendments (i.e., lime, sewage sludge/manure, attapulgite, bentonite, zeolite, phosphate rock)
 - Select plants
 - Evaluate plant performance

Management of Contaminated Sites in Chile with Emphasis in Mining Areas: Policies in Development

- ◆ Prior to the establishment of the Ministry of Environment, there was no institution that had direct power over contaminated sites
- ◆ Environmental legislation currently being developed (initial steps)
- ◆ Largest copper mine in the world; many other mines
- ◆ Many challenges – natural plan for remediation
 - Experienced countries assisting in process
- ◆ Various agencies working on technological innovations

German Lignite Remediation Program – Intension, Approaches, and Solutions

- ◆ Polluter-pay principle for remediation
- ◆ Program goes beyond soil protection act → land re-use
- ◆ The remediation standard is determined by mining law and depends on the degree of future planned utilization
- ◆ Unique financing arrangements

Additional Discussion Points

- ◆ Funding
- ◆ Organizations/Agencies involved in programs or studies
- ◆ Approach/techniques applied to site studies/activities