Innovative Management Techniques to deal with Mine Water Issues in the Sydney Coal Field
Nova Scotia, Canada

Outline of Presentation

- The formation of the Sydney Coalfield
- Location of the Sydney Coalfield
- Brief summary of operations in the Coalfield
- The 3 major mine pools and the issues
- Conclusions - what does the future hold?
The 1B Mine Pool

- Ten interconnected mines (1876–1998)
- More than 20 billion gallons of mine water
- Flooding began in 1986, equilibrium by 2003
- Treated 1.1 billion US gal with a PTS in 2009
- Issues with the two operating mines in 1992
- Needed to pump down the mine pool
1B Discharge Nov. 1992 – 10 days of pumping

Hydrograph of Water Level Rise - 1B Mine Pool

Neville Street Well Field – Nov. 2007

Mine Water Fe/Al Quality Trends 2003-2007

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GCL liner installation Oct 08’

Initial reed planting May 19/09

Reed growth to Aug 28/09

Neville Street Passive Treatment System: Total Iron at CPI, OSP, OWL

Date

Flow

The New Waterford Mine Pool

- Three interconnected mines (1910–1972)
- More than 10 billion gallons of mine water
- Flooding began in 1962
- Monitoring boreholes installed in 2008
- 200 US gpm, Acidity 5000mg/L, Fe 3500mg/L
- Mine pool predicted to outfall by August 2009**

The Sydney Mines Mine Pool

- Three interconnected mines (1854–1976)
- More than 12 billion gallons of mine water
- Flooding began in 1976
- Monitoring boreholes installed in 2008 **
- 200 US gpm, Acidity 1500mg/L, Fe 800mg/L
- Mine pool predicted to outfall by December 2013

*IMWA 2010 Sydney, Nova Scotia | “Mine Water & Innovative Thinking”*
One Treatment Plant – Combined Sydney Mines and New Waterford Mine Pool Flow Schematic

Pump ~200 US gpm

New Waterford Mine Pool
Flow: 200 USGPM
Iron: 350 mg/l
Manganese: 278 mg/l
Acidity: 5000 mg/l
Mine Water -184 ft/BSL

Sydney Mines Mine Pool
Flow: 200 USGPM
Iron: 800 mg/l
Manganese: 300 mg/l
Acidity: 1500 mg/l
Mine Water -290 ft/BSL

Conclusions

- Mine water issues are never simple – innovative solutions are always required. Save your mine plans.
- The 1B mine pool is being controlled by a PTS at the NSW - good mine water research will be required to get to an untreated discharge.
- The combined SM and NW mine pools will be controlled by an active treatment plant – good mine water research will be required to get to an untreated discharge.
- Common theme – good mine water research!!

Thank You