Deer Creek - Robbed (not Alcoa!)

NE of Pittsburgh, PA.
Watershed 27 square miles.
Coal Mining 1900-1980
  Deep room and pillar
  Nearly entire watershed.
Robs base flow. Drought:
  • Up = Temp, TDS, & nutrients
  • Down = DO, fish diversity.
Its forever.
Lancaster Works – Wetland Augmentation

Mid - 1950s to 1985 : Metal fabrication
1988 GW P&T contain ClVOC plume.
2003 Community concern wetland drying up. Alcoa augments flow to wetland.
2007 Aquifer classification change.
2012 Pilot shutdown - will we be allowed to shutdown?
Duck Spring Wetland - An Ecosystem Service

Natural Degradation of cyanide in a manmade wetland.

Spent potliner leachate impacting a karst spring with flows 300-500 gpm.

2003 - 2007 Alcoa pilot testing lead to full scale in 2010 (6 acres).

TCN vs. FeCN vs. Free CN

Figure 7. Actual flow pattern in the wetland during the first 21-day monitoring event. Figure 10a. Average Cyanide Speciation in the Wetland during June-July 2004.
Paranam Suriname – Mining the GW resource

The Problem:
- Poor public well placement:
  - Saline intrusion
    - River and ship channel in drought.
    - Up coning.
  - Loss of wetlands.
    - Acid soil dewatering and oxidation of metal sulfides.
- Lack of sanitary sewerage.
- High system losses.
- Lack of funds.

Alcoa:
- Reducing water use:
  - 16ML/d to <3ML/d.
- Relocating a public well field.
- Turning over wells at mine sites w/ good location but w/restrictions.

K.Groen: 1998
Nassau – Planning a mine in a pristine environment.

Bauxite capped plateau w/3m rain a year. ESIA: Shoulder creeks excellent WQ Genetically unique fish. Turbidity critical. Huge impact on mine development plans:
• 2 of 4 ore areas to be left undisturbed.
• Mine drainage to less sensitive creeks.
• Progressive rearmor rehab.