Locust Lake State Park . . . Dam and Discharge Area
First Stop – Mary D Overflow
Construction of this DEP site was completed in Spring 2010. Water here is net Alkaline with a pH of approximately 6.
First Stop – Mary D Overflow
Discharge water is oxygenated and iron is allowed to precipitate in the wetland systems
First Stop – Mary D Overflow
Wayne Lehman discussed the leaking that occurred through the constructed berm. This problem was solved by installing a clay core within the berm to decrease permeability.
First Stop – Mary D Overflow
On the walk back to the vans we were passed by a group of 4-wheelers. Wayne Lehman mentioned that during World War II, it had been made illegal to replace the material used for strip mining as it took energy that could have been used for the war. This law was later replaced by others requiring mining operations to return the land back to a somewhat natural contour.
Second Stop – Reevesedale South Dip Tunnel Project. Wayne Lehman gave some background information on passive remediation techniques for abandoned mine drainage. This location has an oxic Limestone Tunnel that discharges into wetlands where the iron accumulates.
Second Stop – Water is diverted from the stream channel to the limestone drain and discharged into the upper wetland in these photographs.
Second Stop – Notice expansion of the rust-colored plume in these photographs and the discharge area to the lower wetlands (top right)
Third Stop – Silvercreek Treatment System
This system was installed in 2010 and cost $800,000. It consists of several levels of settling ponds which allow the iron to oxidize and precipitate out of solution.
Third Stop – The discharge in the first pool has the characteristic aqua-blue coloration of water rich in reduced iron. As oxidation occurs, the iron precipitates as the rust-red coloration seen in subsequent pools.
Third Stop – Notice the loss of iron-coloration with each successive holding pool. There is iron staining on the rocks which separate each holding pool. Depth is approximately 10ft.
Third Stop – There is iron staining on the rocks (above) and successive pools show a decrease of coloration (below). Notice the silt fences in the final holding pool.
Third Stop – Notice the color change on either side of the silt fences in the final holding pool.
Third Stop – The final discharge area is shown above (left). Wayne Lehman gave a summary of a court case in Virginia that may hold environmental groups who install such systems as the Silvercreek Treatment system liable for discharging water that is not up to water quality standards. These passive systems are designed to make an impact upon the quality of the water, but not necessarily to return water to drinking water standards.
Fourth Stop – Wheeler Site – This stream channel has been lined with clay and rip rap to decrease the recharge that was occurring to the underground mine pool thus decreasing abandoned mine discharge. The old flume can be seen at the bottom right.
Fourth Stop – A walk up the hill from the old flume (top left) took us to some piles of anthracite and the entrance to the abandoned mine.
Fourth Stop – The entrance to the mine (top left) and the ventilation system for the old mine (top right). The ventilation system still allows air from the mine at 54°F to exit at the surface.
Fifth Stop – Wadesville Strip Mine, Mammoth Coal Vein – Notice the size of the strip mining operation
Fifth Stop – The port-a-potty in the top left photo provides a measure of the scale of the mine and the iron staining (bottom right) shows that this mining operation has encountered a pyrite-rich seam.