

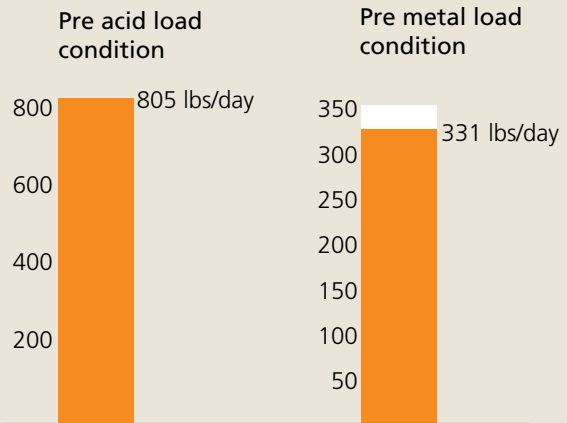
Project Status: Complete 8/1/2006

ODNR Project Number: Jk-MI-34

Pre-construction



Flint Run East site discharge  
Photo by Ben McCament

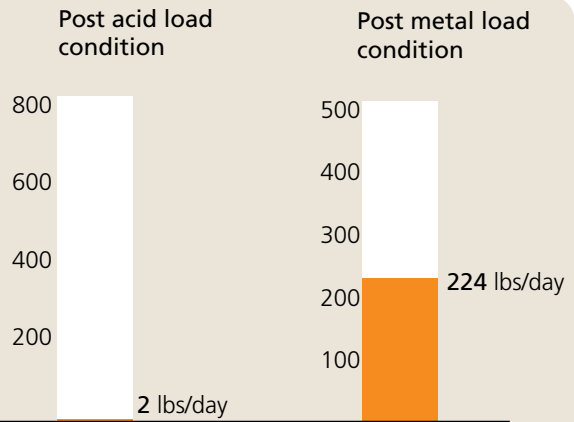


Data derived using the Mean Annual Load Method (Stoertz, 2004).

Post-construction



Air photo of Flint Run site near completion  
Photo by Ben McCament



Data derived using the Mean Annual Load Method (Stoertz, 2004).

Flint Run East is located in Section 28 of Milton Township in Jackson County and lies within the 14-digit HUC unit #05090101050030. The project site is 56 acres and is located in Little Raccoon Creek next to Lake Milton. Flint Run East project is Phase I of the Flint Run Reclamation Project Lake Milton is Phase II. The project discharge was measured at the tributary draining the Flint Run East treatment site. The design was completed by RD Zande for a cost of \$241,702. The treatment approach for this site was to dewater the strip pits and install passive acid mine drainage treatment systems. The major consideration during the design process was to reduce groundwater infiltration into the valley coal refuse pile. The goal has been met 100%. Construction was complete Aug. 1, 2006, by Berridge Reclamation for a cost of \$1,456,106. The major responsibility of the construction company was to complete the reclamation and install passive treatment systems. The funding sources for this project were ODNR-DMRM for the design and ODNR-MRM, EPA-319 and OSM ACSI for construction. Figure 3 to 4 (shown on page 3) estimate approximately 803 lbs/day of acid and 107 lbs/day of metals were reduced from entering into Little Raccoon Creek as a result of this AMD reclamation project.

Treatment Installed	Quantity & Units
Earthwork	56 acres
Erosion Control	13,000 linear feet
Dewatering Existing Impoundments	12,827,200 gallons of water
Sediment Pond	87,400 square feet
Steel Slag Leach Bed	32,500 square feet
Fresh Water Storage Pond	84,800 square feet
Limestone Leach Bed	10,400 square feet
Wetland, passive	4,800 square feet
Successive Alkaline Producing Systems (SAPS)	32,500 square feet
Open Limestone Channel	13,650 linear feet

### Water quality report

Water quality data was collected at the project discharge as well as multiple stations pre- and post-construction. The graphs below show changes in pH (Figure 1) and acidity (Figure 2) along the mainstem of the receiving stream downstream of the project discharge as a result of the AMD reclamation project.

Figure 1. Pre and Post pH

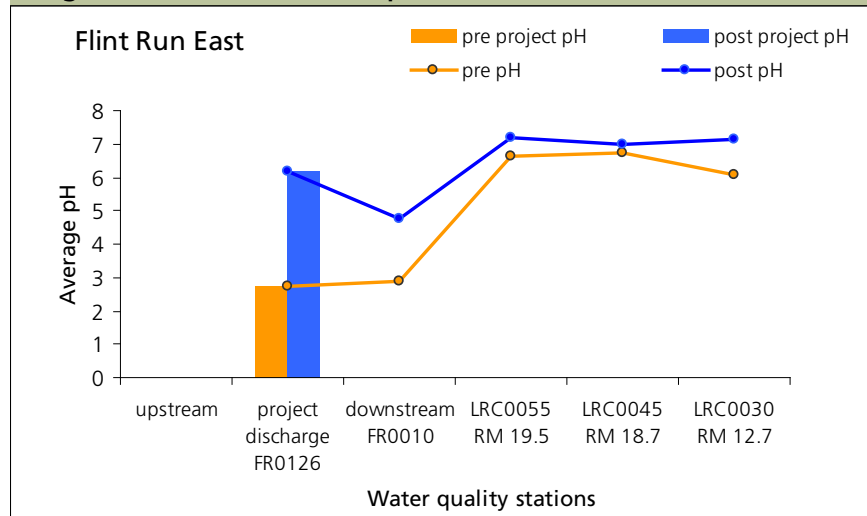
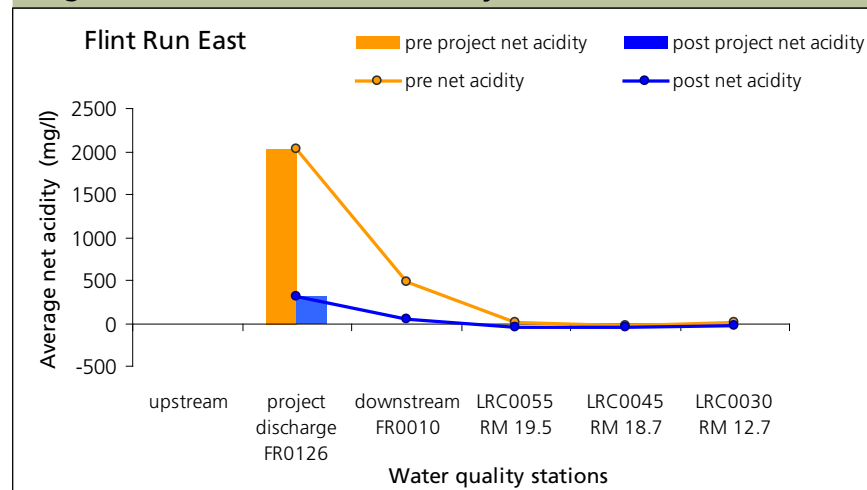


Figure 2. Pre and Post Acidity



Initial results from the Flint Run East Project indicate, pH and net acidity have improved downstream of the reclamation site for 7.0 miles. Pre-construction data showed pH in the range of 2.9 – 6.7 at the project discharge and downstream. However, after installation of the Flint Run East Project, post-construction data shows pH in the range of 4.8 – 7.2 at the discharge, and downstream. The net acidity concentrations decreased 84 percent at the project discharge showing net alkaline conditions for 7.0 miles downstream to station LRC0030.

### Water Quality – load reductions

Using the Mean Annual Load Method (Stoertz, 2004) acid and metal load reduction occurring at this project were plotted and shown in Figure 3 and 4. Acidity, iron, aluminum and discharge were measured pre- and post-construction at the project discharge from 1/1/1975 to 5/31/2006 for pre-construction and from 6/1/2006 to 6/30/2007 for post-construction.

Figure 3. Acid Load Reduction

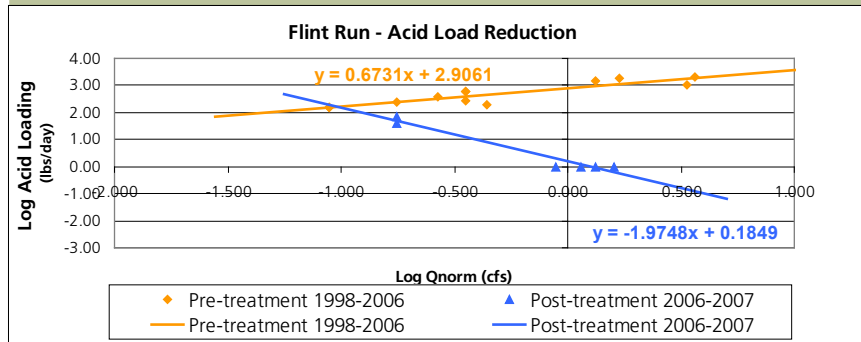
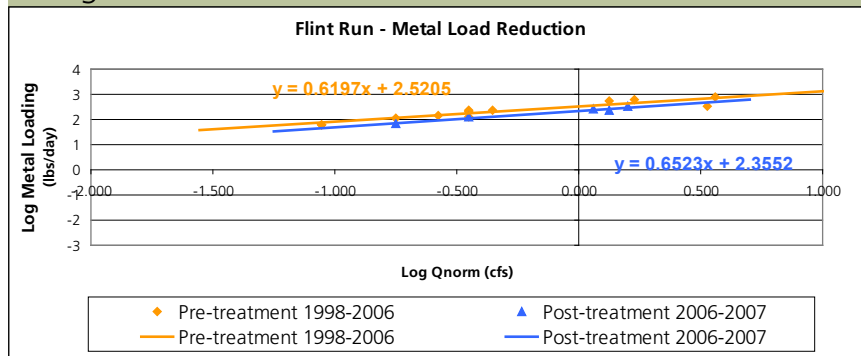


Figure 4. Metal Load Reduction



Stoertz, Mary W. and Douglas H. Green, 2004. Mean Annual Acidity Load: A Performance Measure to Evaluate Acid Mine Drainage Remediation. Ohio Department of Natural Resources Conservation and Restoration Innovations 2004 Applied Research Conference at Ohio University.