A dumptruck dropps off a load of clean fill material in the Mike Horse Creek drainage as a bulldozer waits to spread it out to rebuild the creeks floodplain.

Watershed moments

Roger Dey
BVD Editor

One definition of watershed, according to Merriam-Webster, is "a region or area bounded peripherally by a divide and draining ultimately to a particular watercourse or body of water." A more figurative definition is "a crucial dividing point, line or factor : a turning point."

Either way you define it, the cleanup of the Upper Blackfoot Mining Complex has had its share of watershed moments.

Last year, workers removing the contaminated mine waste that filled Beartrap Canyon broke through the Mike Horse Dam, effectively re-opening a watercourse that had been blocked for years and marking a turning point in the focus of the cleanup effort. A watershed moment in both senses.

By the end of this year's season, if everything goes to plan, crews working in the UBMC should see yet another such moment.

"I think it's neat that when we're

See WATERSHED Pg. 4

WATERSHED

from page 1

gonna be done this fall that the creek is gonna be running in a clean channel for the first time in I don't know how many years. For me that's really the coolest part about the whole project," said Superintendent Eddie Roatch, who has been working on the project from its outset, first with Helena Sand and Gravel and now with Missouri River contracting. He said the progress in two-and-a-half years is a "pretty incredible thing"

During a tour of the site Friday, Sept. 10 Montana Department of Environmental Quality Construction supervisor Shellie Haaland said they are moving about 5,000 yards of material each day, and she estimated there were only 15,000-20,000 yards of contaminated material remaining in Beartrap. By the end of this week, the last of it should be gone. By the end of the season, the last of the contaminated material in the Mike Horse should be gone as well.

Mike Horse Creek

The sheer volume of contaminated waste removed from the Beartrap canyon was monumental, but, the steep, narrow, highly mineralized and heavily mined Mike Horse valley has its own specific challenges when it comes to restoring the creek to its original location.

Keeping groundwater in the drainage, contaminated through both the natural mineralization and contact with exposed ore bodies such as the Little Nell vein, away from the surface water is the main priority.

Beau Downing, an environmental scientist with the state's Natural Resource Damage Program said the first 800 feet of the new Mike Horse stream channel has been constructed by Glacier Excavating of Eureka.

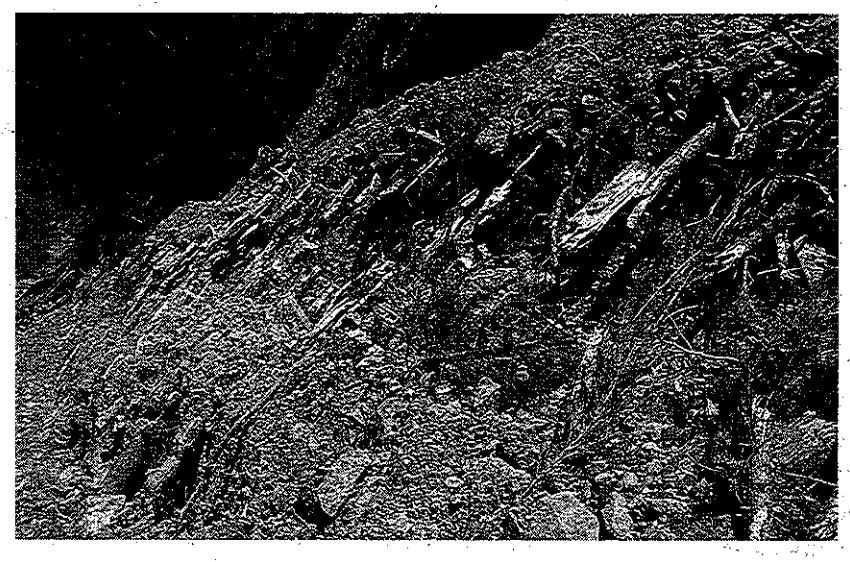
"We used geology to our advantage to create redundant (protections)," Downing said. An impermeable liner surrounded by glacial till from the repository site makes up the core of the channel. It's topped off with the clean fill material used to recreate the surrounding flood plain.

The new channel isn't just some pretty rock-lined ditch however. It's a messy-looking affair, with chunks of dead trees and rock protruding into the channel along its length. Downing said the goal is to slow stream velocity to buy time to help plants, such as the willow that will be planted along the channel, to grow.

Such efforts, including work to recreate a wetland that once existed below the Little Nell vein, are aimed at rebooting natural systems destroyed by decades of mining, Haaland said. A seep capture system will nonetheless remain in the upper end of the valley to collect contaminated groundwater and carry it down to the Water Treatment Plant.

The Mike Horse valley widens a bit as it nears the confluence with Beartrap Creek and crews were busy rebuilding the flood plain with clean material below the 300-level adit. The area was once the Mike Horse Mine mill site. Later, it was the site of a repository and pretreatment pond built by Asarco in the 90's.

The discovery of the so called "mystery pipe" that was draining contaminated water from an unknown source led to the removal of the pond to find it's source, due to concerns it was draining water out of the mine somewhere.



▲ *To slow stream velocity, bits of old trees jut into the channel that will carry Mike Horse Creek.*

◀ *At an overlook that provides a view of Beartrap Creek Montana DEQ Director Tom Livers and Project Construction Manager Shellie Haaland discuss progress on the UBMC cleanup*

That wasn't the case however, much to Haaland's delight.

"I'm so excited about the mystery pipe," she said. "We found it wasn't attached to anything."

The water it discharged was simply contaminated ground water, but removing the pond to discover that led to a better restoration job since it revealed contaminated material where none was supposed to exist.

"That great big lined pond . . . we were told that what was under that was country rock, 'oh, it's clean,' No, it wasn't," Haaland said. "It was absolutely terrible. We were able to get all of that out of the valley. We'll be able to put the creek back in the bottom of the valley and the water will actually not be contaminated."

With the source of the contaminated groundwater gone, so too is the lower seep capture system that collected it,

"What that means is lower cost at the water treatment plant," Haaland said. That seep capture system also collected significant amounts of clean runoff each spring, which would "tear up" the chemistry at the plant.

Although the source of the water in that pipe was discovered, Haaland said one question may never be answered. "I guess there still a mystery why in Gods green it was left there."

Beartrap Creek

Downing said the restoration progress is looking really good. Last year, Streamworks rebuilt and revegetated 1750 feet of Beartrap Creek's channel and floodplain. Water had been flowing through the new channel in July, but it was mostly dry last week, with the creek disappearing underground at the point where it used to be diverted around the old impoundment.

"All this water was being diverted around here, so you had no regeneration of the aquifer," Downing explained. "We brought back in all this clean fill, which is porous and then we built a stream channel, so this is all new surface. It's thick, it goes down five six feet in some places, so we're just waiting for it to rehydrate. We had connective flow up through the middle of July, so we did pretty good."

Downing pulled a rock with an insect clinging to it from a pool remaining in the new channel. He pointed out that life, in the form of macroinvertebrates, has already begun to return to the site.

DEQ Director Tom Livers, who had been to the Mike Horse area several times while the impoundment was still in place, also visited the UBMC on Friday's tour. He'd hoped to visit last year, when crews finally breached the Mike Horse Dam, but wasn't able to make it. This was his first look at the reclamation effort, in person, since 2014, when the Beartrap was still largely filled with mine tailings.

Walking along the new stream channel at what had been the upper end of the impoundment, he could watch an excavator load haul trucks near the confluence of the Mike Horse and Beartrap creeks. Two years ago, if you looked downstream from the same spot, the confluence was hidden by more than 300,000 yards of mine waste behind a 70-foot-tall earthen dam.

"It's pretty amazing," Livers said. "To see the impoundment gone and a lot of the infrastructure at the base of the mine, all that being gone, it's just remarkable. You can actually start to envision a mountain valley coming down there."