If the gods wanted to create conflict in the U.P., they would have put one of America’s richest bodies of ore directly under one of America’s most important trout streams.

And that’s just what they did.
lies just seven days away here in Big Bay, 30 miles north of Marquette, but if there are signs of the new season, it would take a local to discern them. Piles of snow still rise to the eaves of houses. Road signs barely emerge above plow drifts. Snowmobiles still veer in to Cram’s General Store, gussing up, grabbing jerky and beverages, and roaring away, leaving the blue haze and smell of two-stroke engine exhaust hovering above the snowy street. And snowflakes the size of quarters still fall, drifting down from low gray clouds blowing in off Lake Superior nearby. Spring just seven days away? Seven weeks is more like it.

Many of us in America would say the people who live here have chosen to do without, and doing without bare ground from November until May is just the beginning. They do without high paying jobs. They do without big houses. They do without much of the stuff that fills basements and garages and closets and yards in suburbs across the nation. They do without a mall nearby.

Some here live off the grid, building homes in the Huron Mountains and on the Yellow Dog Plain outside of town. Here, the power lines end, leaving 1,500 square miles of land without electrical service. People haul in generators, light with propane, use outhouses. Some park cars at the road and hop onto snowmobiles or clip into skis to go another two or three miles before reaching the spawning beds of the rare coaster brook trout.

But the people who live here think of it as living “with,” not “without.” They live with stars stretching across the night sky, with the howl of wolves on still summer evenings, with the glow from behind hills where before there had been only the blue haze and smell of two-stroke engine exhaust hovering above the snowy street. And snowflakes the size of quarters still fall, drifting down from low gray clouds blowing in off Lake Superior nearby. Spring just seven days away? Seven weeks is more like it.

The company’s footprint will be small, and that engineering controls and new materials will eliminate the risk of acid drainage, and it turned mine sites into lifeless wastelands, rendered groundwater undrinkable, killed fish and plants in streams.

Locals fear that the imprint of heavy industry will hobble the spirit of a land they love. For generations, people here have headed to the Yellow Dog Plain and the Huron Mountains for both work and play. They log and trap here. They hunt, fish, camp and pick berries. If the mine moves ahead, 30 semitruck loads of ore a day—60 trips counting each way as one—will weave through the Northern forests, the rumble of rock crushers will mix with bird song, industrial lights will glow from behind hills where before there had been only the light of stars.

But opposition is based on more than just lifestyle concerns. The mine’s environmental risk is too great, mine opponents say, because the ore body lies directly under a wetland that forms the headwaters of the Salmon Trout River, which is the last river on the Michigan mainland where the once-plentiful coaster brook trout still spawns.

Employees crossed the Atlantic in the mid-1800s just to reel in that big and beautiful coaster. The fish was easy to catch and a giant compared to the common brook trout. A typical brookie may weigh a half-pound to a pound, but the largest recorded coaster is a 14.5-pound monster from the Nipigon River in Canada.

Prior to 1890, fishermen found coasters for 1,000 miles along the Lake Superior coast, and biologists figure that they spawned in about 120 tributaries. But these days, coaster spawning is confirmed in just seven Canadian tributaries and three U.S. tributaries—including the Salmon Trout River.

Biologists have been struggling to increase the coaster population for five years in Michigan, mostly by planting fingerlings in U.P. rivers. But so far, the efforts have produced virtually no results, which makes the health of the Salmon Trout River the most important coaster brook trout. Rio Tinto, or more specifically, its wholly owned U.S. subsidiary, Kennecott Minerals, which is managing the project, is a promise kept.”

The company Web site backs it up with this: “A promise made is a promise kept.”

T he easy roll of the Huron Mountains rates as one of the Midwest’s most lovely displays of nature, there’s no denying. But today the hills are mere shadows of their former selves, topped out at about 1,900 feet, just 1,300 feet above the surface of Lake Superior. Back in the day, though—about 1.1 billion years ago—this area stood large and proud on the geologic stage. “Back then you would have seen volcanoes and magma all over the place,” says Dr. Ted Bornhorst, a geology professor at Michigan Technological University. And it’s back then when the seeds of this story were sown.

The geologic spectacle was the result of a giant crack in the earth’s crust that allowed magma from the earth’s mantle to surge to the surface. Today, in some places the magma lies 16 miles thick. The fissure, called the Midcontinental Rift, extended for hundreds of miles, arcing north through Wisconsin, following for a bit what is now the southern shore of Lake Superior, then curving south again and continuing down through the Lower Peninsula. By the time early man appeared, glaciers and weather had worn down the mountains to the mounds we see today.

Prehistoric people probably didn’t know about plate tectonics, but the land’s mineral riches were so blatant, even a caveman could see them. Holes discovered on the Keweenaw Peninsula, about 100 miles west of Bay City, are the remnants of copper mines perhaps 8,000 years old. In the 1800s, Europeans followed suit, mining what is the largest accumulation of native copper ever discovered on the planet.

Other metallic wonders exist near the area as well. In Negaunee and Ishpeming, 60 miles southwest of Big Bay, companies began mining iron in 1845 and haven’t quit. The value of iron ore unearthed here makes it one of the richest mining strikes in American history, dwarfing the value of gold discovered in the California gold rush.

Until recent decades, mining companies did nothing to control acid drainage, and it turned mine sites into lifeless wastelands, rendered groundwater undrinkable, killed fish and plants in streams. But the defiance expressed in a sign nailed to the side of Big Bay Outfitters, and other businesses干脆忽略 Big Bay here, expresses the dread most people here share: “Say no to sulfide mining!” Sulfide refers to the mineral nature of the ore body. The name also provides a clue as to why most locals are so passionately opposed to the mine.

Sulfide minerals are metals combined with sulfur, and when the rock is exposed to moisture and oxygen, it can produce what’s called acid mine drainage, a mix of sulfatic acid and minerals that for centuries has caused environmental damage at mines throughout the world. Until recent decades, mining companies did nothing to control acid drainage, and it turned mine sites into lifeless wastelands, rendered groundwater undrinkable, killed fish and plants in streams. Acid drainage still leaches from sulfide mining sites in Europe 2,000 years ago.
A hot nickel market is adding momentum to the project. China, India and the United States all need steel badly these days, and nickel is an integral component. The demand has tripled nickel prices on the London Minerals Exchange in the past few years. Understandably, Kennecott and its parent very much want the Yellow Dog mine—which the company calls the Eagle Project—to succeed. Company managers have high hopes for the other mineral rights they’ve leased and purchased in the U.P. as well—462,000 acres’ worth, equal to more than 720 square miles.

When there’s no snow on the ground, the Triple A highway is a strip of dust, gravel and potholes that ambles southwest from Big Bay, cutting across the Yellow Dog Plain before twisting and turning through the Huron Mountains on its way to L’Anse. But come winter, the Triple A is snowmobiles only, a groomed trail for skiers looking to see the backcountry in white. Locals Michelle Halley and Cynthia Pryor typically avoid snowmobiles, but this day on the cusp of spring finds each helmeted, suited up, and with a thumb on the throttle of a Ski Doo motoring along the Triple A. Halley graduated from Marquette high school and eventually returned as a Marquette-based attorney for the National Wildlife Federation. Pryor is president of the Yellow Dog Watershed Preserve; she’s also an off-the-griddle who skis a mile in to her home. For two years the two have led the fight against the mine, committing hundreds of hours of researching sulfide mining, organizing locals and lobbying for new laws. Today it’s to see the backcountry in white. Locals Michelle Halley and Cynthia Pryor turn their gaze from Pryor’s map and her eyes follow the coyote tracks back upstream. “We aren’t saying Kennecott will do any polling on purpose,” she says. “But it could still happen.” She fears that drainage could come from water entering the mine as mining occurs. Rain and snow—chief culprits in acid formation—could percolate through piles of rock that will be outside for a couple of years before being backfilled into the mine cavity. The thousand gallons of water used in crushing rock for shipping offers more potential for contamination. Or there could be subsidence, meaning the mine cavity could slump down, interrupting the flow of water to this delicate waterway called the Salmon Trout.

In their fight to protect the Yellow Dog Plain and the Salmon Trout River, Halley and Pryor have an ally in a group called the Wolf Pack. It’s a low-profile band of about 60 businesspeople and technologists who believe that Michigan can protect the environment and grow economically at the same time. On the Wolf Pack’s list is a judge, say, surgery today based on 1900 surgical technology, it’s not entirely fair to judge the Yellow Dog proposal based solely on past practices. When Jon Cherry, Kennecott’s project manager here in Marquette, says this mine is nothing like mines from the days of yore, he’s telling the truth.

The Kennecott office just outside Marquette proper still displays a plaque from the Michigan Department of Natural Resources. “We set the bar high,” says Mike Gokey, formerly executive director of the regional economic council, which passed a resolution supporting the mine if it can meet new regulations. “If they can’t meet the standard, I’ll be there in lockstep with opponents telling the mine to go away.”

people opposed to the mine on the Yellow Dog Plain are quick to bring up sulfide mining’s dreadful environmental legacy. Acid from 2,000-year-old mines is just one of the most common citations. But just as we wouldn’t expect a judge today to make the same judgment that Queen Elizabeth’s father, Sir Francis Bacon, would make 400 years ago, we won’t judge today’s smoking practices by the standards of yesteryear.

In their fight to protect the Yellow Dog Plain and the Salmon Trout River, according to Cherry. To make the argument, he pulls out a pint-sized sample jar filled with clay the color of deep-busted terra cotta. “This beautiful lucite clay deposit is out there. It’s just like modeling clay, very low permeability,” Cherry says. The clay is lovely, but for Kennecott, the true beauty has more to do with its geologic function; it is key to protecting the Salmon Trout River from mining. Cherry says. Picture the clay like a giant liner spread underground, the clay thickness varying between 20 feet and 50 feet, and its top surface depth running from about 10 feet to 50 feet. When rain falls and snow melts, water filters down through the soil until it reaches the clay. Water can’t go through this clay this fine, so it flows underground along the top of the clay layer, eventually finding an outlet where the Salmon Trout River begins.

By entering the earth at the outcropping of bedrock, the

If the mine does proceed? “It must be held to the highest achievable standards,” Pitman says.

**“This operation as proposed is far above any bar that would represent any reasonable environmental standard.”** —Dr. Theodore Bornholt, Michigan Technological University
June 2005

“We know that no process can be executed over time without defects.

There’s no such thing,” says Ray Pittman, Wolf Pack spokesman.

As for sulfuric acid drainage from piles of waste rock, Kennecott is also approaching that with care. Rock excavated from the tunnel will be stored on a double-lined pad. Another liner will cover the pile. The system will largely prevent water from contacting the rock, and any water that does get in will be collected by a leachate collection system and then be treated prior to discharge. As the ore body is excavated, this waste rock will be crushed to the size of aggregate, mixed with cement and placed back into the mine cavity for structural support. The lime in the cement will neutralize acid that might form later on. Cherry says he has nothing to stop one or manage it once it was operating. But as they say with legislation, the devil is in the details, and those details will exist in the regulations being tuned with today in this room adjacent to the St. Ignace ice rink.

Joni Cherry is here, as are some Kennecott lawyers and lobbyists. Also here, Dr. Bornhorst, members of other environmental groups, and Hal Fitch, the head of Michigan’s geology unit—he runs the meeting. One attendee, Chauncey Morin, is a 60-something guy with shoulder-length hair and long beard who calls himself Ramblerjack. Some say he has spent more time on the streams and rivers around Big Bay than anybody alive.

The agenda deals at times with mind-numbing minutiae, at other times with monumental issues. “I’ve never seen such passion in the minds of people. They are so dedicated—and the depths of their passion are a little frightening,” says Cherry. Pittman says the company will still be here in 50 years, long after most of the people here have moved on. The company will also minimize the impact of its machinery on the environment.

“We can keep it in perspective,” Pittman says. “It’s just another mining operation.”

Mine sites will avoid piercing the clay layer, never opening up a breach that would interrupt the ebb and flow of water. If acid drainage were to develop in the mine, the clay will prevent the contamination from reaching the Salmon Trout River. The company says it operated without receiving an environmental violation, and even Halley concedes that it now looks like a nature trail. But opponents say that during the mine life, about five years, the company reported 57 holes with leaks that were repaired. They also say that a small amount of acid drainage recently has been detected near a rail spur where loading occurred. The Salmon Trout is big and can prouably dilute this level of acidic acid—just the kind of thing that is vulnerable headwaters of the Salmon Trout River?

Sulfuric acid drainage recently has been detected near a rail spur where loading occurred. The Salmon Trout is big and can probably adequately dilute this level of acid. Kenecott intends to file its permit application this summer, backing away from legitimately protecting a vulnerable headwaters of the Salmon Trout River? Or which is it? The environmental disaster-in-waiting or the opportunity for mining?

The debate over mining on the Yellow Dog Plain can be summed up as the real world versus the perfect world.

The difference between what is drawn on a computer screen and what happens in an area with more than 200 inches of snowfall and crazy weather careening in off one of the world’s most temperate lakes.

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