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Soil on reclaimed land at center of debate

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Forget the technical babble. If you have to reduce the debate over phosphate mining to one word, it's about dirt.

More precisely, it's about what's in the top 50 feet or so of the earth -- soil, clay, sand -- and how it's put back once phosphate ore is extracted for fertilizers and other products.

Can mining companies recreate the types of ecosystems that existed before a site is dug up? Will a diverse animal population return to the reclaimed lands? Will the new underground plumbing maintain the water flows that ultimately feed Charlotte Harbor and keep it a vital estuary?

Monday marks the start of a month-long administrative hearing in Tampa over IMC Phosphates' plans to strip-mine 4,200 acres in western Hardee County. The Florida Department of Environmental Protection has announced its intention to issue IMC a mining permit for the site, known as Ona.

Led by Charlotte County and the Peace River-Manasota Regional Water Supply Authority, mining opponents have challenged DEP's decision, and spent millions of dollars preparing their case.

And they are zeroing in like never before on soils, or the lack thereof, on reclaimed lands. They say that the absence of true soil -- a mixture of minerals, air, water and leafy matter suited to an environmental niche -- dooms reclamation from the start.

Their arguments may have already yielded results.

IMC has proposed a new, but untested, method for creating soils. It's one of several ways that opponents say their challenges have led to improvements in IMC's plans, although they say the changes don't go far enough.

Soil experts say native plants can't flourish in many reclaimed landscapes. Invasive plant species take over. One of the most noxious is cogon grass, which is particularly troublesome on reclaimed pasture land and flatwoods. Cattle won't eat it. The grass also reduces the diversity of animal species and can invade wetlands in the dry season.

"We've just seen thousands and thousands of acres of cogon grass" on reclaimed mining land, said Lew Carter, a soil scientist who is an expert witness for mining opponents.

In a 2002 study for the Central Florida Regional Planning Council, Carter and another consultant found that mining in Hardee County would leave the reclaimed landscape largely unsuitable for farming.

IMC spokeswoman Diana Youmans said the company is proud of its reclamation record -- 72,000 acres in all, including 14,000 acres of wetlands.

"It is very frustrating that many times a very small segment is pointed out as somehow being a negative result, when there are thousands of acres of land

that are being put to good use that have been mined and reclaimed," Youmans said.

Reclaimed areas also include golf course communities in south Lakeland, hundreds of acres converted to citrus groves, and world-class bass fishing lakes, she said.

"Reclamation is not an exact replication of what was there," she said. "But it is an incredible restoration of function, so that from this land we can recover the resource. Then the land can continue to be used for many things."

IMC also says that by bulldozing and contouring the land, creeks and streams will get necessary water flows.

Buried 30 or more feet under the Earth's surface, phosphate ore is concentrated in an underground layer with clay and sand. On the Ona site, this layer is believed to be 15- to 25-feet thick.

Miners use huge draglines, towering machines that scoop up earth with garage-sized buckets, to reach the pebble- like ore. The excess dirt, a clay-sand mix known as overburden, is placed in long piles along trenches.

Mixed with water to create a soupy "slurry," the phosphate, sand and clay are piped to a processing plant where they are separated.

The sand is later pumped back to fill in the mine trenches. In reclamation of higher-elevation habitats, such as flatwoods, a thick layer of the excess dirt covers the sand. To create wetlands, muck from other wetlands is often spread on the surface.

The mining process essentially turns the earth inside-out, segregating different types of sediments. Carter said native soils take 8,000 to 15,000 years to develop in harmony with plants in their ecosystem. In the jumble of sediment left post-mining, it could take ages for true soil to re-form, he said.

But last winter, IMC proposed changes in its reclamation plans for Ona.

Instead of attempting to plant native species immediately in the reclaimed land, IMC would grow a transition crop, such as millet or rye, in a thin veneer of dirt.

Before the crop bore seeds, it would be tilled in with the dirt and underlying layer of sand. The goal of this "green manuring" is to introduce organic materials to the soil and make it more conducive to planting native vegetation.

"The cover crop will greatly reduce the percentage of bare ground which might otherwise be colonized by invasive plant species," IMC wrote in its application.

In some instances, IMC will be able to use topsoil stockpiled in the mining process instead of the new method.

Kevin Erwin, an ecologist working on mining opponents' case, said the new proposal represents a complete departure from how reclamation has been done for the past 30 years.

"With this new process, in my opinion, IMC and the department are recognizing that what they've been doing in the past hasn't worked," Erwin said.

Carter said the problem with the new proposal is that it hasn't been proven to work.

"We have no idea whether they'll be able to establish the cover crop on it, how well that cover crop will grow," he said. He said altered water tables and drainage patterns could foil attempts to truly reclaim the land, even if the manuring process works.

The change reflects IMC's constant effort to improve its reclamation practices, Youmans said.

Mining opponents believe that their campaign, highlighted by the denial last year of a permit IMC sought for a Manatee County mine, has contributed to other changes in the Ona permit.

IMC originally sought to mine on more than 20,000 acres. In early 2003 DEP announced that it planned to issue the permit, and opponents filed a challenge.

But after the Manatee permit was denied, DEP re-assessed the application and suggested that IMC shrink the mine to 4,200 acres. IMC could pursue permits for the remaining 16,000 acres at later stages.

In more recent changes to its permit application, IMC has agreed to leave untouched 339 acres of wetlands, compared with 211 in its previous plans. It would also avoid mining in more streams and uplands than it had earlier proposed.

Erwin said IMC didn't have some of the streams on its maps, and didn't agree to protect them until he pointed out their existence.