

WASHOUT

SPRING STORMS
BATTER POORLY
PROTECTED SOIL
AND STREAMS

**ENVIRONMENTAL
WORKING GROUP**

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About EWG

The mission of the Environmental Working Group (EWG) is to use the power of public information to protect public health and the environment. EWG is a 501(c)(3) non-profit organization, founded in 1993 by Ken Cook and Richard Wiles.

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WASHOUT: SPRING STORMS BATTER POORLY PROTECTED SOIL AND STREAMS

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AFTER A YEAR OF RECORD-SETTING DROUGHT, STORM AFTER STORM PUMMELED THE MIDWEST THIS SPRING.

Media attention has understandably focused on flooding, especially given the devastating floods that have repeatedly struck the region in recent years. This year, it looks as if the Midwest will dodge the bullet – flooding has been damaging and heart-breaking for those affected, but nothing yet has resembled the scope and devastation of the 1993 and 2008 floods.

But the Corn Belt's rich soil and streams, especially in Iowa, haven't been as lucky. The storms that pushed streams and rivers out of their banks have battered largely unprotected cropland soils throughout the region, sending tons of mud and farm chemicals into road ditches and streams across the heartland.

HEAVY RAINS ROLL ACROSS IOWA

In what has become the wettest spring on record, a series of heavy rains rolled across Iowa between May 25 and May 29, delivering 1-to-2 inches of rain to most of the state, and localized amounts of as much as seven inches in several areas. Iowa State University's unique and important Iowa Daily Erosion Project (IDEP) suggests just how heavily damaged Iowa's soil and streams were over this five-day period. (See animated graphic at <http://www.ewg.org/research/spring-storm-batter-midwest-soil-and-streams>)



A massive fan of mud -- eroded soil -- collected at the end of the gully cutting through this unprotected field. Many gullies connect to streams, a direct pipeline for polluted runoff.

In 50 townships covering 1.2 million acres, farmland suffered average erosion of more than 5 tons per acre over that five-day period. In 15 of those townships encompassing 346,000 acres, fields suffered average erosion of 7.5-to-13 tons per acre – far more than the annual rate of 5 tons/acre

considered “tolerable” for most Iowa soils by USDA’s Natural Resources Conservation Service. In other words, those 1.2 million acres of farmland may have lost more precious topsoil in five days than what is tolerable over an entire year. And most soil scientists think that a truly sustainable rate of erosion is far lower.

On vulnerable and/or poorly protected farmland, the IDEP data paints an even more disturbing picture of catastrophic rates of erosion and runoff. In 115 townships, the hardest hit fields lost more than 20 tons of topsoil per acre in less than a week. In 16 townships, the most vulnerable and/or poorly protected fields may have lost a devastating 40 tons or more soil per acre that week.

Though this spring was particularly dangerous, storms ravage the Midwest’s fertile soil and streams every year. In April 2011, EWG’s Losing Ground report and website analyzed the Iowa State erosion data for the period between 2002 and 2010. It showed that some parts of Iowa suffer serious damage nearly every year, and almost all Iowa farmland had suffered damaging erosion at some point between 2002 and 2010. The IDEP data covers only the state of Iowa, but the same situation is occurring throughout the Corn Belt.

ESTIMATES UNDERSTATE THE SEVERITY OF EROSION AND RUNOFF

Soil erosion and polluted runoff are actually worse – likely far worse – than even the IDEP estimates, because the project cannot currently account for the erosion and runoff caused by ephemeral gullies. These gullies – called ephemeral because farmers refill them temporarily with tillage each spring – appear quickly when runoff water flows through the lowest parts of a field and cuts a channel through unprotected soil.

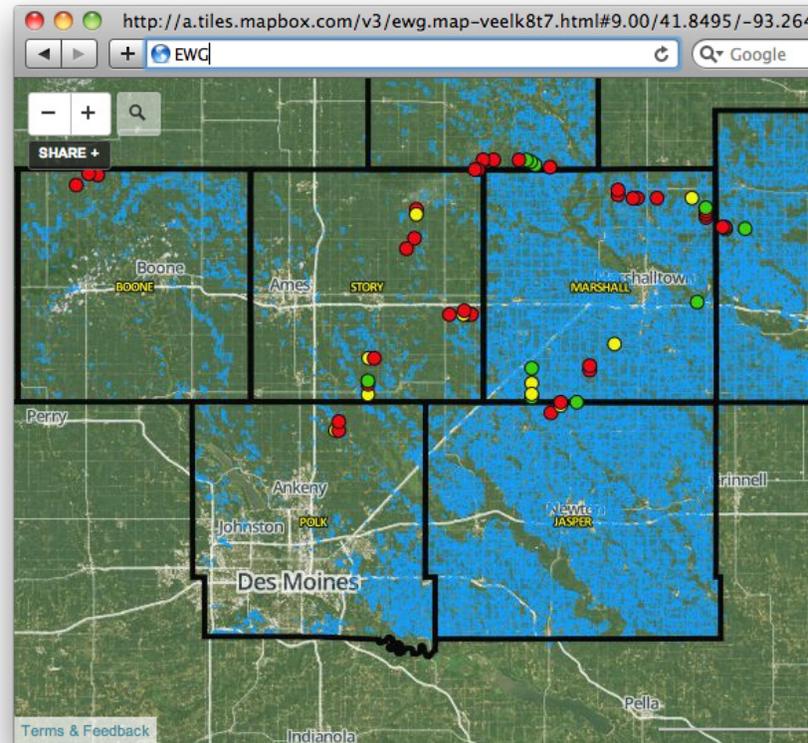
This gully erosion is the most visible and most damaging form of soil erosion because it creates a direct pipeline carrying mud and farm chemicals into ditches, streams and, in some cases, into

underground drainage systems. The picture the IDEP data paint is devastating, but the reality on the ground is worse.

A CLOSER LOOK FROM IOWA’S RURAL ROADWAYS

To see how bad things looked on the ground and to evaluate how well conservation practices stood up to the heavy rains, EWG staff took a road trip on May 30-31, 2013. On May 30 they drove a random loop through five counties east of EWG’s Midwest office in Ames, Iowa. The next day they toured a couple of counties to the west.

On both days they found gullies scarring field after field. Roadside ditches were full of mud and polluted



EWG toured nine counties in central Iowa to document the effects of intense spring rain on farm fields. [Click here](http://a.tiles.mapbox.com/v3/ewg.map-veelk8t7.html#9.00/42.1394/-93.6981) to see an interactive version with photos of each location: <http://a.tiles.mapbox.com/v3/ewg.map-veelk8t7.html#9.00/42.1394/-93.6981>

runoff – a very bad sign for Iowa’s already polluted streams. An aerial view would have revealed more

gullies delivering pollution directly to streams and rivers out of sight of public roads.

Over the two days EWG staff took photos to record examples of the various types of erosion and conservation systems visible along Iowa's rural roads. The location of each photo was recorded by a dot on an interactive map (Please go to <http://www.ewg.org/research/spring-storm-batter-midwest-soil-and-streams>). Cropland considered highly erodible is shaded in blue. The tour revealed widespread serious erosion everywhere, not just on land considered highly erodible.

The images are also available in a simple slide show format which can be found on the same [website](#).

Most of the photos – including several hundred that were not included because they are too repetitive – depict an ugly picture of excessive erosion and runoff. The majority of fields observed during several hundred miles of driving were poorly protected and suffered badly under the pounding rains.

CONSERVATION WORKS

There is one important silver lining to this otherwise dark cloud – where conservation practices were in place and properly maintained, they clearly worked. No-till, grassed waterways, terraces, contour grass strips and other buffer practices – especially in combination – were very effective in stemming the gully erosion and runoff that was prevalent on unprotected fields. Every no-till field with properly placed grass waterways showed only nominal signs of erosion. Well-protected fields suffered little damage even where poorly protected fields just down or across the road had suffered badly.

Landowners can't control how much rain falls on their fields, but the pictures clearly show that they can do a great deal to protect those fields from erosion and to keep polluted runoff out of Iowa's streams, even in the heaviest rains. Proper no-till management of contours and grass buffers are well-established conservation practices that would have effectively protected most of the fields EWG observed from the

five days of intense rain. This damage documented in these photos simply did not need to occur.



A network of wide and well-maintained grass waterways, combined with minimal tillage, left this field nearly unaffected by the heavy rains.

Heavy rain is nature's doing, but the resulting erosion and polluted runoff is entirely a man-made disaster.

POOR CONSERVATION HAS CONSEQUENCES

The battering that Midwest soils and streams have taken this year hasn't made national headlines, but it has not gone totally unnoticed.

The [St. Louis Post Dispatch reported](#) on June 21 that, "Soil scientists say they're seeing more erosion on farmland than they have in years. That could mean trouble for crops, particularly corn this season – and it could have long-term consequences for [Missouri's] farmland."

[According to AgWeb.com](#), University of Missouri adjunct associate professor of soil science Newell Kitchen recently noted that, "Even the untrained eye of citizens who don't think about agriculture on a day-to-day basis can see the erosion on side slopes." Kitchen went on to say that, "From the freeway between Kansas City and St. Louis, it doesn't take much to see the scars of erosion that has taken place..."

An [editorial in the Storm Lake Times](#) [Storm Lake, Iowa] on May 31 said, "Watching the inlet to Storm Lake on Monday, it looked like Willy Wonka had just opened the chocolate milk spigot. Upstream the erosion was sickening." The editorial writer also observed that, "Meantime, more than \$1 million per year is spent trying to remove farmland from the lake. And it just keeps coming in, frustrating our efforts."

Data showing that the amount of nitrate in Iowa streams was at record levels also made the news. [The Des Moines Register](#) reported that the "deluge is washing fertilizer off the farms and into rivers that provide drinking water to much of the state." Bill Stowe, manager of the Des Moines Water Works, which serves about 500,000 people in central Iowa,



Another case of a broken grass waterway that resulted in severe erosion where the waterway ends.

noted that nitrate levels in the city's source water were "the worst we've ever seen." The water works draws water from both the Des Moines and Raccoon Rivers, which were reporting record high levels of nitrates. The threat to Des Moines's drinking water is part of a much larger story about agriculture's [impact on drinking water in the Midwest](#).

ALL WE LACK IS LEADERSHIP AND POLITICAL WILL

By 1975, Iowa had lost fully one-half of its topsoil to erosion due to bad tillage practices over the preceding 75 years, but from the 1970s to the 1990s

farmers made great progress in reducing soil erosion and runoff. Conservation efforts during that period could not undo the damage, but they worked to keep things from getting worse. Still, there was no room for backsliding due to budget cuts or market changes.

Today, however, the gullies scarring Midwest fields are only the most visible evidence that conservation is not keeping up with a new wave of soil loss as high crop prices spur farmers to plant every square foot. It is great to see farmers making money – real money, in fact. But conservation efforts must intensify in lockstep with rising production or today's profits will come at the expense of soils, streams and the region's future.

The heavy rains that pummeled farmland this spring are predicted to grow in frequency and severity. It will take the application of multiple conservation practices working in combination on every farm to protect soil and water from this dangerous trend in the weather. Landowners do have the tools to take advantage of high prices while still keeping the soil on their fields and out of America's streams and rivers. Widespread use of the simple, conventional conservation practices frequently visible during EWG's roadside erosion tour would go a long way toward that goal – while also reducing nutrient, chemical and manure runoff.

Perry Beeman, a Des Moines Register reporter, recently published a story headlined, "[State Has 'Long Way to go' on Flood Prevention, Mitigation.](#)" In the story, published on June 23, he wrote, "Five years after the historic flood of 2008, Iowa has failed to take the most pressing actions to protect its residents from another devastating deluge... A long list of recommendations intended to lessen the fury and risk of more frequent flooding across the state remains largely ignored or unfinished."

EWG's drive around the Iowa showed that growers also have a long way to go to protect against the fury of the storms that threaten the state's soil and streams each spring.

It is time to set the alarm bells ringing – again.

It is time to require that every landowner, no matter the size of the farm or the type of crop,

employ at least basic conservation practices to stem gully erosion and minimize runoff. Full enforcement of the so-called “conservation compliance” provisions of the current farm bill is a good place to start. These provisions, first enacted in 1985, ask farmers to take simple steps to cut erosion and runoff from their most vulnerable cropland as a condition for receiving the farm subsidies that bolster their incomes. When it was fully enforced, this long-standing quid pro quo succeeded in cutting soil erosion by 40 percent on the most highly erodible cropland. It is past time to get serious again about the honoring this straightforward bargain. Many of the fields EWG surveyed are likely subject to the conservation *quid pro quo*, but enforcement appears to be spotty.

Moreover, it is essential that this *quid pro quo* be reattached to the generous crop insurance subsidies that have become the most expensive way that taxpayers support farm income.

Iowa doesn't have to wait for the federal government to act. Conservation districts should fully employ their existing authority under Iowa's Soil Conservation District Law, and the governor and the legislature should work together to give the law more teeth.

The solution to this problem does not require decades of research and preparation. By using practices and techniques already employed profitably by many (but not enough) farmers around the country, farmers across Iowa could stem the tragic legacy of environmental abuse that starts with erosion and finally see some improvement in the state's water quality.

All we lack is leadership and political will.