



THE TOMORROW PLAN^{.COM}

Partnering for a Greener Greater Des Moines

Windsor Heights Planning & Zoning Commission
February 26, 2014

Agenda

① History of Watershed Management Authorities (WMAs)

② Developing a WMA



History of WMAs

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② Developing a WMA

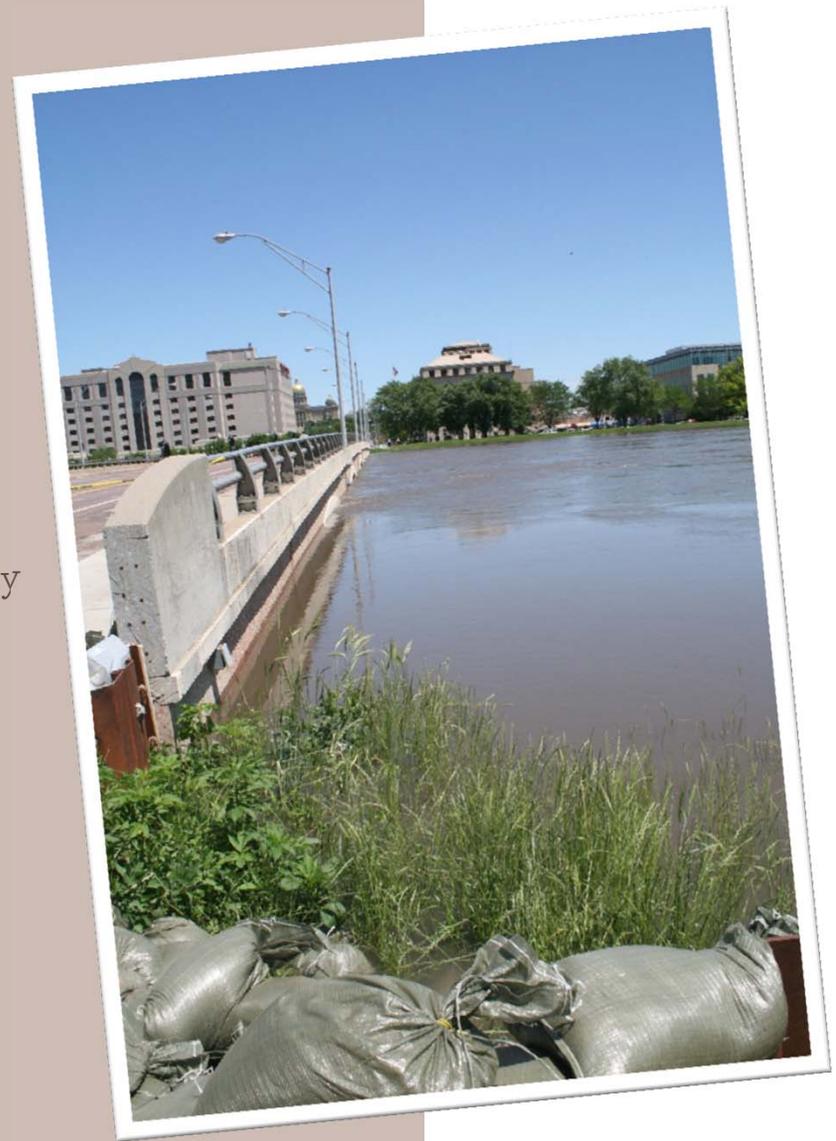
WMA Basics

- Iowa Legislature authorized creation of WMAs in 2010
 - Section 466B of Iowa Code
 - Recognized flooding problems stretch beyond the means of a single jurisdiction to effectively address
- WMAs are comprised of 2 or more cities, counties, or soil + water conservation districts in the watershed
- All players in the watershed must be invited

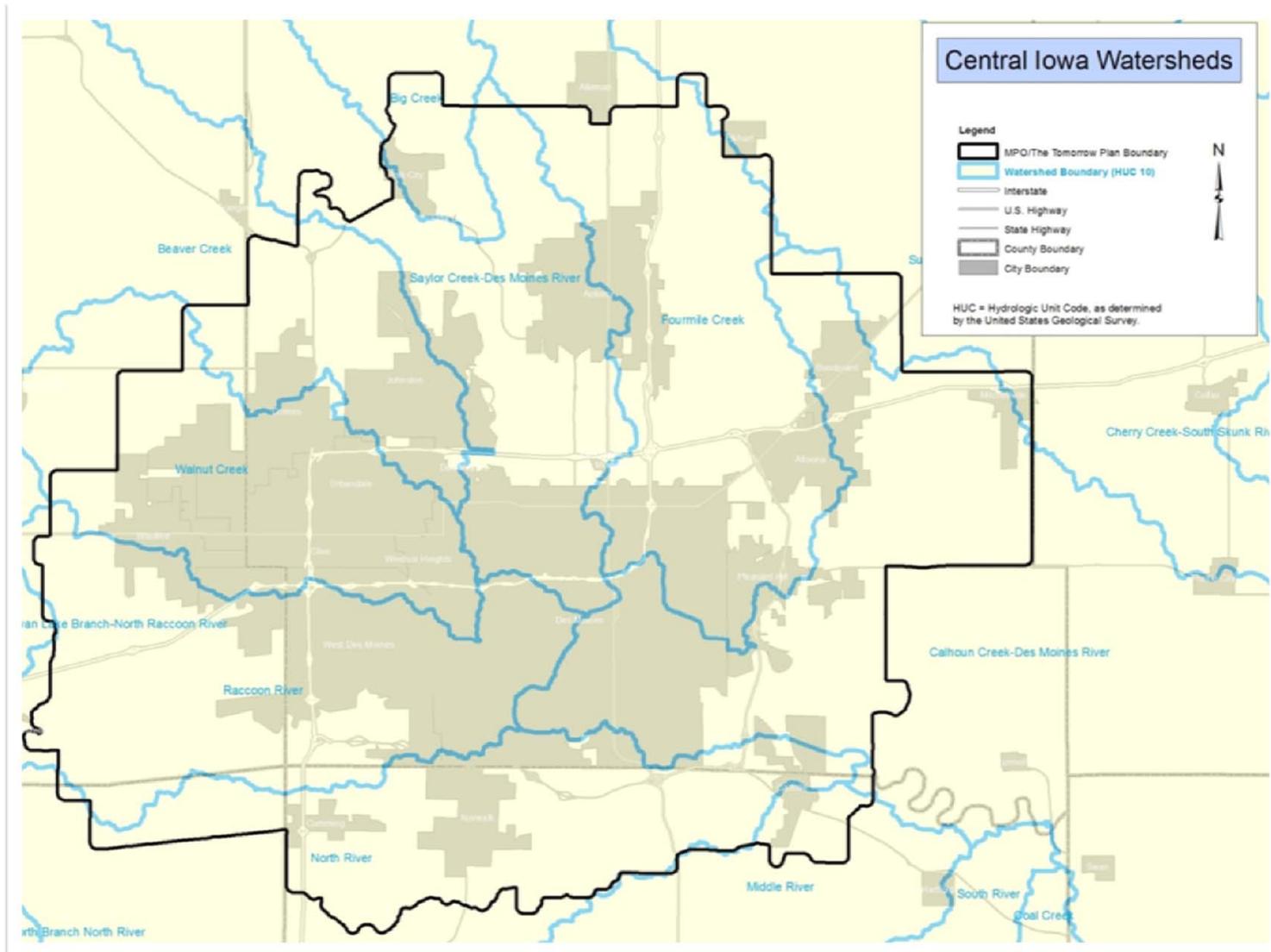


Why participate?

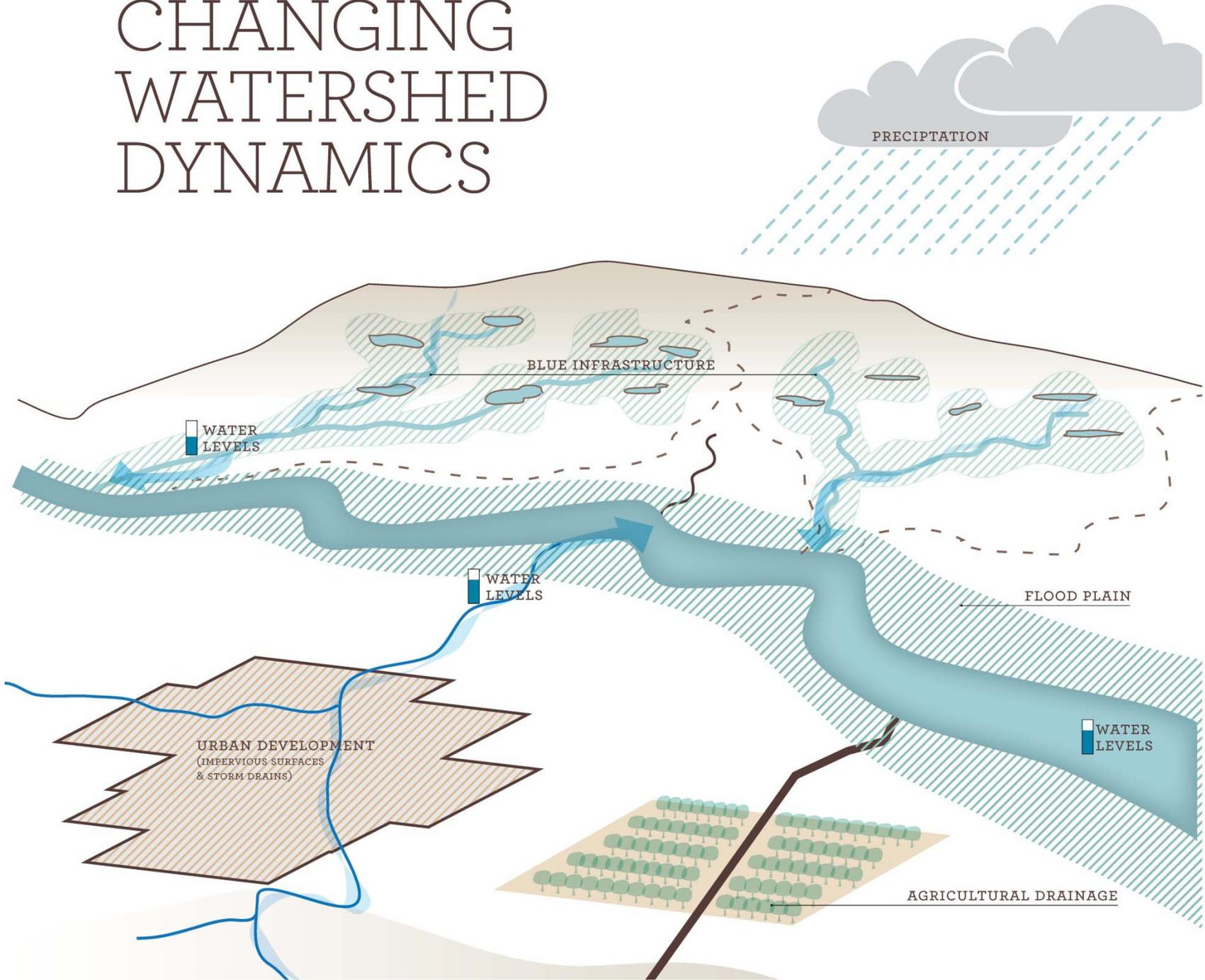
- To address flooding issues
- To develop coordination in the watershed
- To access funding
 - No up-front costs
 - Only potential costs must be approved by jurisdiction's governing body



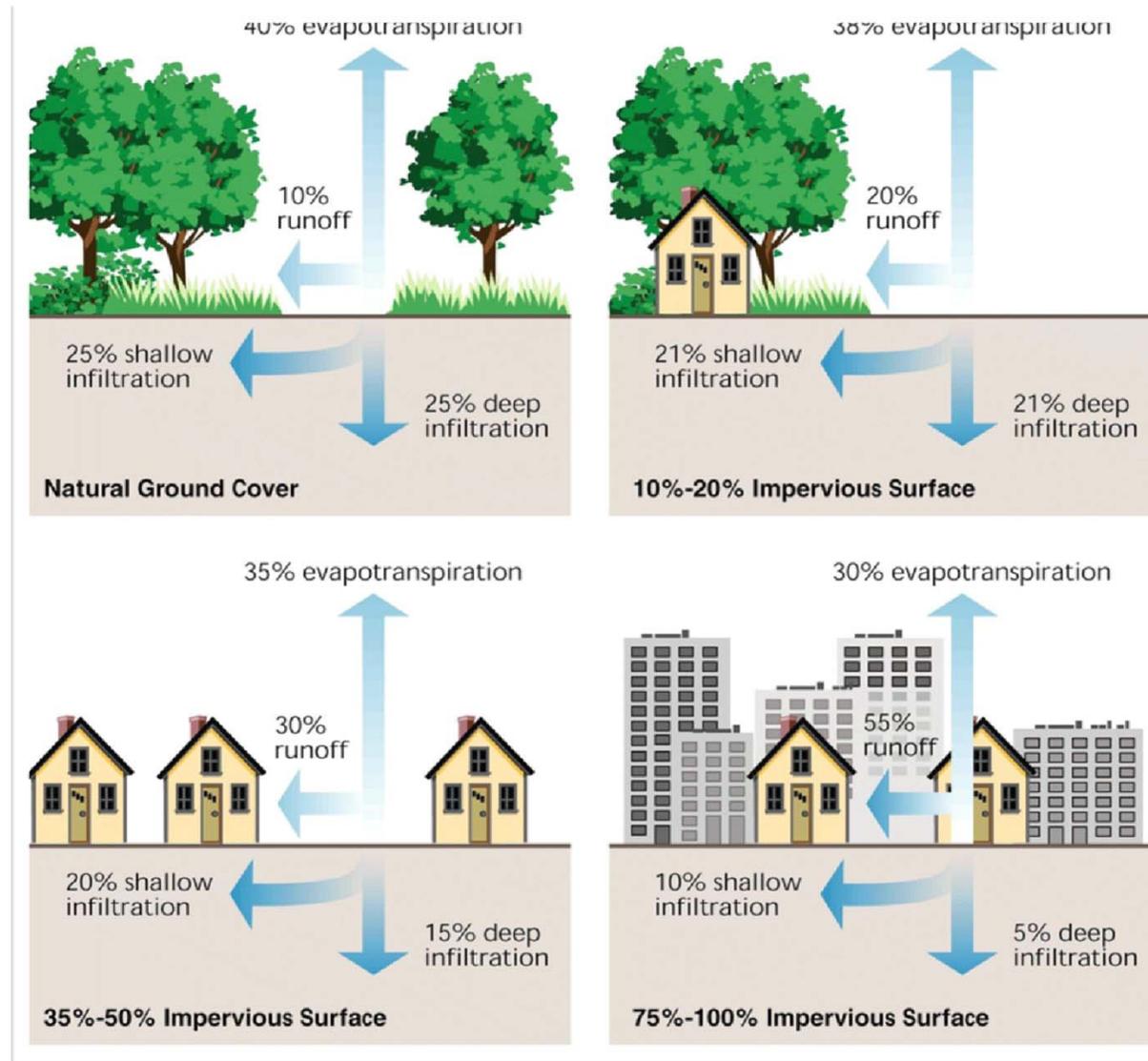
Watersheds cross political boundaries.



CHANGING WATERSHED DYNAMICS



Development impacts the water cycle.



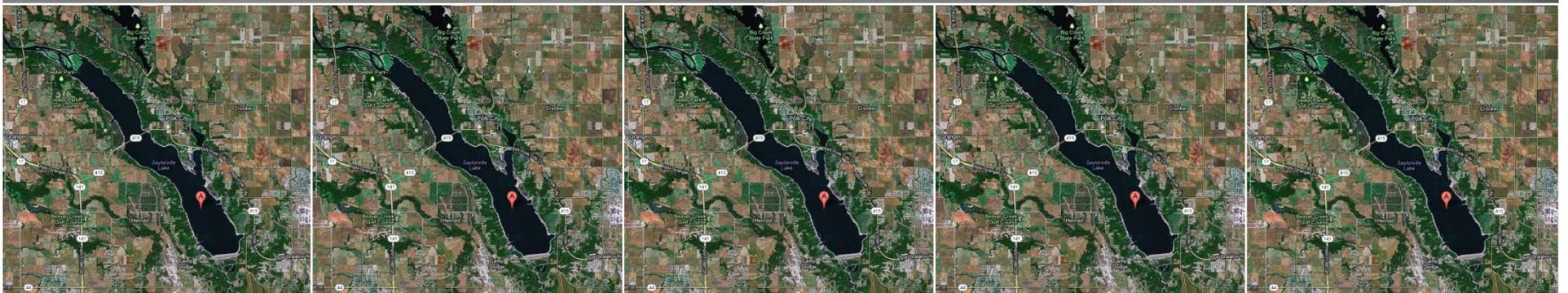
Watershed	Percent Impervious Cover	Percent Drained Agricultural Land	Percent in Study Area
LOWER RACCOON RIVER			
Jordan Creek	14.0	2.9	100.0
Johnson Creek	1.0	7.9	80.5
Sugar Creek	2.1	1.2	93.5
Walnut Creek	23.1	0	100.0
Little Walnut Creek - Walnut Creek	1.8	0	57.6
MIDDLE DES MOINES RIVER			
Camp Creek	1.5	2.7	41.3
Yeader Creek	12.0	2.4	83.0
Mud Creek	2.6	0.6	52.5
Spring Creek	1.8	2.8	76.6
Lower Fourmile Creek	19.6	0.1	100.0
Middle Fourmile Creek	6.9	0	98.8
Upper Fourmile Creek	1.7	0	38.7
Saylor Creek	23.7	1.9	100.0
Rock Creek	5.5	1.8	97.5
Murphy Branch	1.9	0	27.3
Beaver Creek	7.8	0	87.9
Big Creek	1.8	0	46.7
MIDDLE RIVER			
Middle River	5.1	14.1	18.9
NORTH RIVER			
North River	3.7	26.1	71.9
Middle Creek	5.7	15.5	100.0
Badger Creek	1.0	17.6	26.2
SOUTH SKUNK RIVER			
Santiago Creek	1.9	0	16.0

Approximately 33,000 acres of impervious surface in metro area

In The Tomorrow Plan's baseline growth scenario, the impervious cover is 63,000 acres in 2050—double what it is today.



This increase of ~30,000 acres is equivalent to paving Saylorville Lake 5 times:



Stormwater Quantity + Runoff

Elementary school
and baseball field



Photo: Jennifer Welch and the Polk County Soil & Water Conservation District

Stormwater Quantity + Runoff



Photo: Des Moines Register

Water Quality Issues

Dead zone could be record size

Scientists will take readings of the Gulf area this summer.

By Perry Beeman
pbeeman@dmreg.com

Scientists who performed a limited check of the Gulf of Mexico's oxygen levels in May expect this year's dead zone to be one of the biggest since regular monitoring started in 1985 — and possibly a record.

Iowa fertilizer runoff is one of the chief causes of the oxygen-depleted zone, formed in deep water in the spring through the fall when algae fed by the fertilizers die. The decomposing algae on the ocean bottom consume most of the available oxygen, killing marine life or forcing it to migrate to more hospitable waters.

The annual dead zone — a condition known as hypoxia — disrupts one of

the nation's most lucrative fisheries for shrimp and other seafood.

One of the chief goals of Iowa's voluntary and controversial Nutrient Reduction Strategy is to curb nitrogen and phosphorus runoff from farms. A separate section will require cutbacks at sewage treatment plants.

Many environmental groups have called for Iowa to require the state's agriculture industry to reduce its runoff. They cite data showing the dead zone has worsened, overall, during the last 20 years. They also say that same pollution is responsible for elevated bacteria counts at Iowa's lakes and makes drinking water more expensive to treat.

Des Moines Water Works is operating the world's largest nitrate-removal system this spring after encountering some of the highest nitrate readings on record in the

REGISTER SERIES

The Register last year reported extensively about the dead zone and Iowa's connections to the phenomenon. See the series at www.DesMoinesRegister.com/deadzone.

DEAD ZONE MEASUREMENT IN JULY

When the Louisiana Universities Marine Consortium takes its annual monitoring cruise July 21-28, the results will be posted at www.gulphypoxia.net.

Raccoon and Des Moines rivers. Those rivers are chief sources of tap water for a half-million customers in central

Nancy Rab Louisiana University Marine Consortium Tuesday reports July the zones 8,561 square Louisiana at nearly three size of last year she's right,

zone will cover an area the size of New Jersey.

The University of Michigan predicts this year's zone will be 7,300 square miles. The average since 1995 is 5,960 square miles. The record set in 2002, is 8,400 square miles.

The consortium's June forecast comes before the scientists head out in late July to measure the zone. At times, the June forecast has been considerably higher than what actually is found in July because of changes in rain fall or wind patterns or other factors.

Last year's dead zone



Des Moines Water Works

News Release

Historic Nitrate Levels in Des Moines Water Works' Source Water

Monday, May 13, 2013

Nitrate levels in Des Moines Water Works' source water reached historic levels last week, at 24 milligrams per liter (mg/l) in the Raccoon River and 17.87 mg/l in the Des Moines River. Currently at Des Moines Water Works' river intake locations, the Raccoon River is reporting 21.04 and the Des Moines River is reporting 17.56 mg/l; however, higher numbers are being seen upstream. This new record follows the continued upward trend of nitrate concentrations since fertilizer use and increased row-crop agriculture began in the mid-1960s. It has been calculated that last week's nitrate load surpassed last year's entire nitrate load.

Through extensive and expensive water treatment, Des Moines Water Works' finished drinking water currently has a

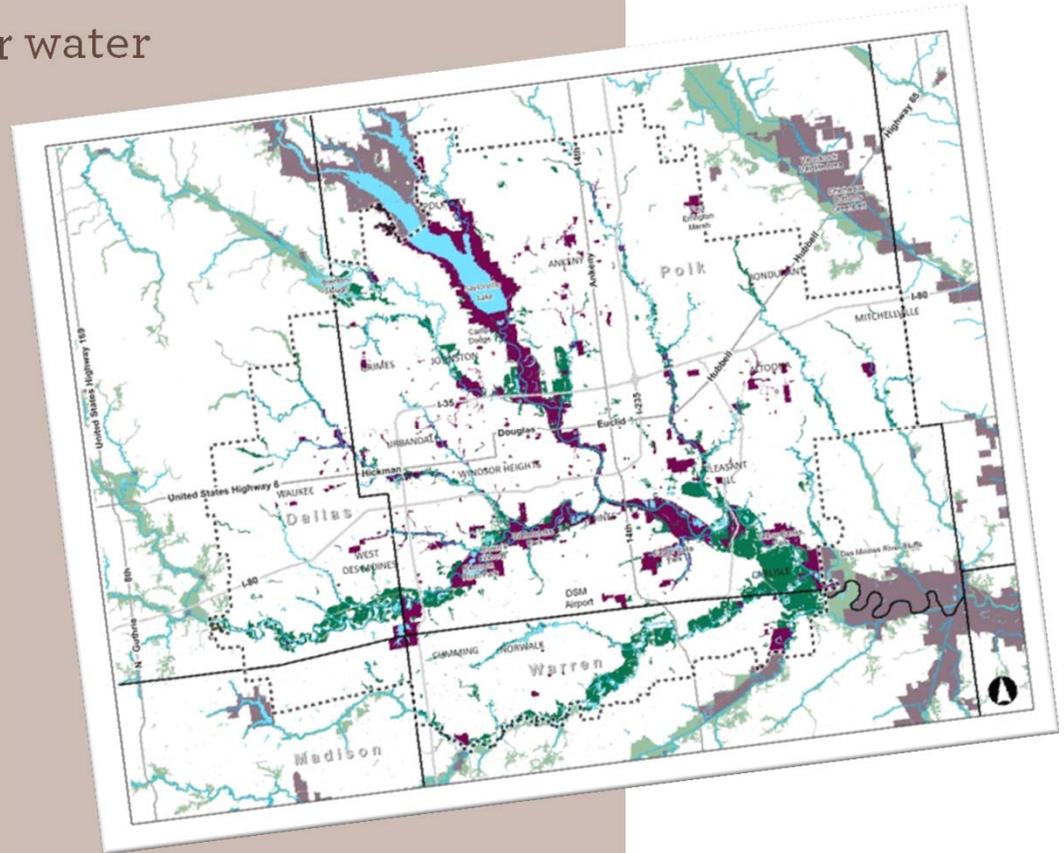
Opportunities for WMA: Funding

- Iowa Department of Agriculture
- Iowa Department of Natural Resources
- US Department of Agriculture
- US Army Corps of Engineers
- US Forest Service
- US Environmental Protection Agency

*Note: Some require WMAs
and/or watershed assessments*

Opportunities for WMA: Regional Approaches

- Watershed assessment – flood risks + water quality
- Allocate available funds for water quality + flood mitigation
- Engineering standards
- Land use planning/water engineering interaction
- Public education



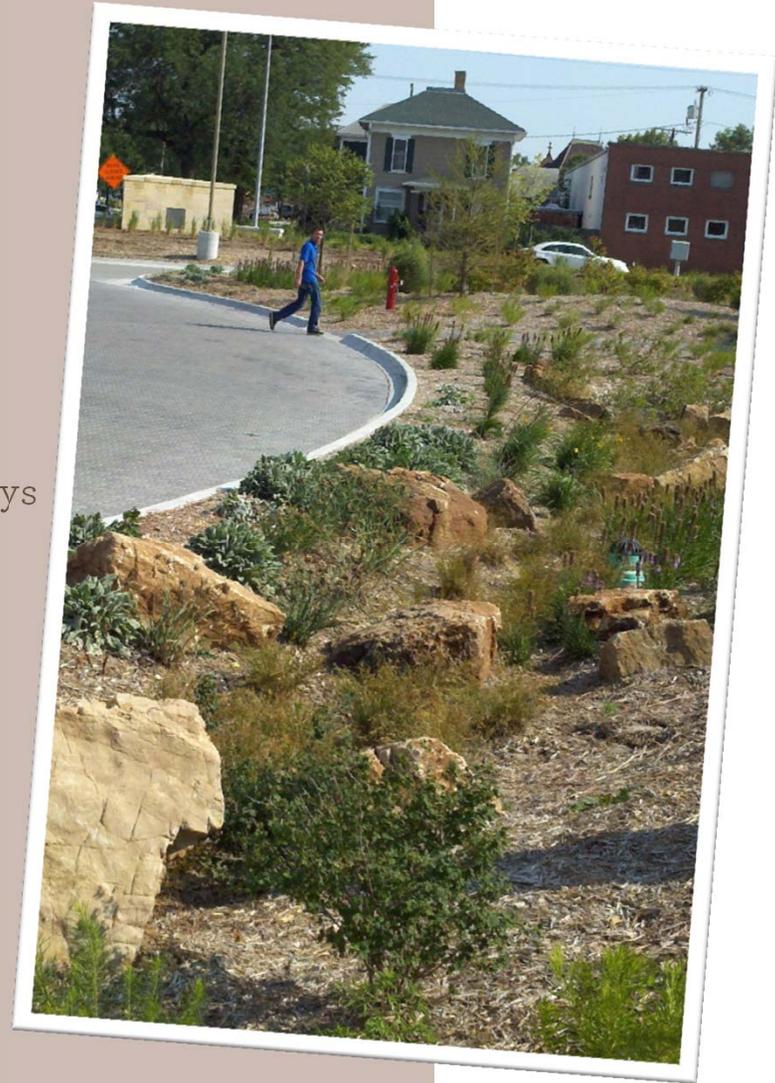
① History of WMAs

Developing a WMA

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Developing a WMA

- 2 or more cities, counties, or soil + water conservation districts in the watershed
 - Must be in same HUC 8
 - All other political subdivisions within watershed must be notified within 30 days + provided the opportunity to participate
 - 28E developed
- Political subdivisions may be in multiple WMAs
- Board of directors required



WMA Duties

- Assess + reduce flood risk
- Assess + improve water quality
- Monitor federal flood risk planning + activities
- Educate residents of the watershed regarding flood risks
- Allocate moneys made available to WMA to address water quality + flood mitigation
- Do *not* acquire property by eminent domain
- Can coordinate with other agencies



Walnut Creek Watershed

