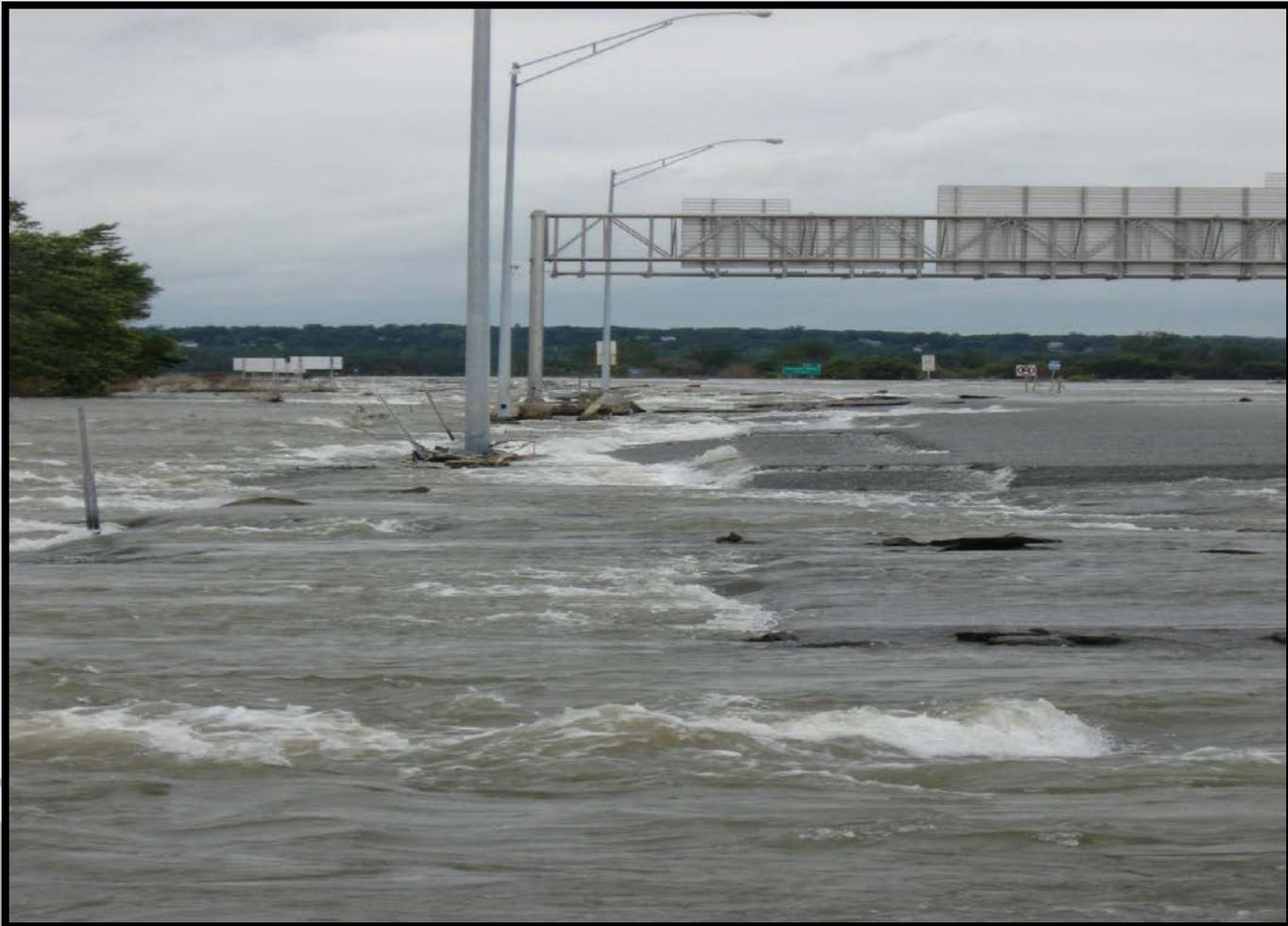


Traffic Management in Flooding Events



The 2011 Missouri River flood



Overview of flood event



Overview of flood event

- Snowpack in Northern Rockies was 212% above normal.
- One year's worth of rain fell in the Upper Missouri Basin the last two weeks of May.
- Water released from Gavins Point Dam June 25 exceeded twice the previous record and did not decrease until July 31.
- The Missouri River in Sioux City was above flood stage from June 5 to August 26 (82 days).
- Old oxbows / meanders filled with floodwater and groundwater.
- Longest duration flood event in U.S. history.

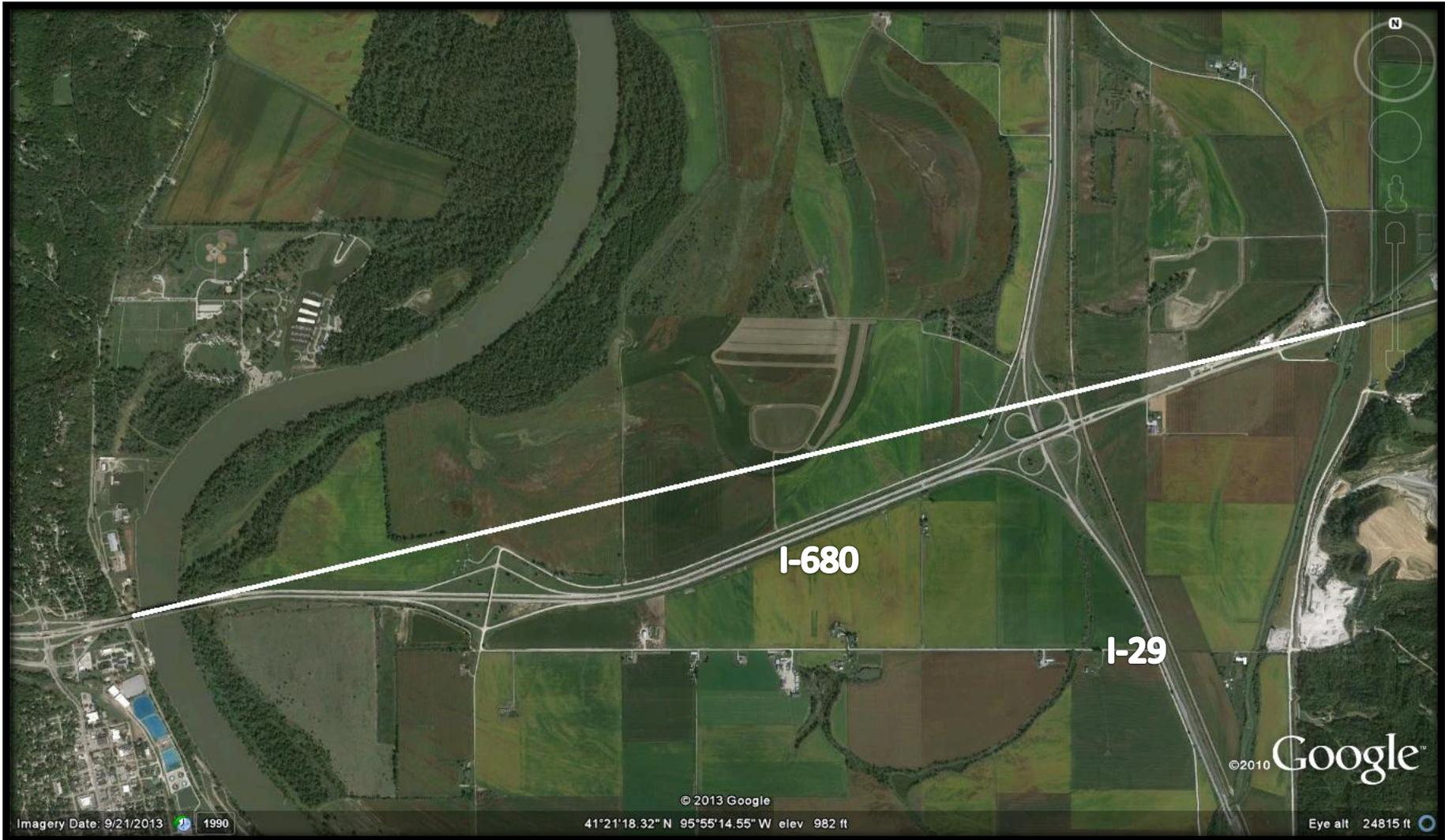
Welcome to Iowa



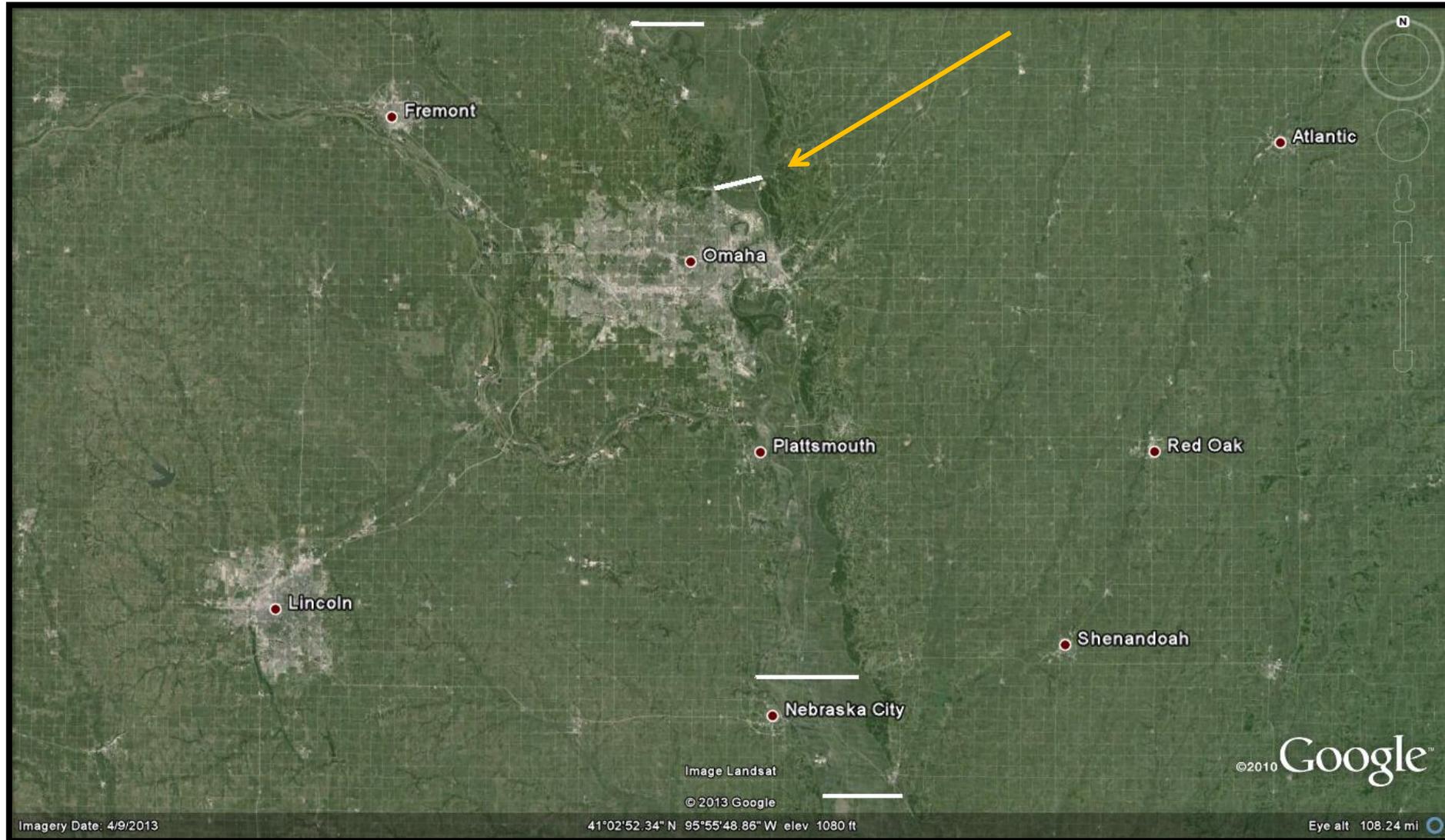
The 2011 Missouri River flood



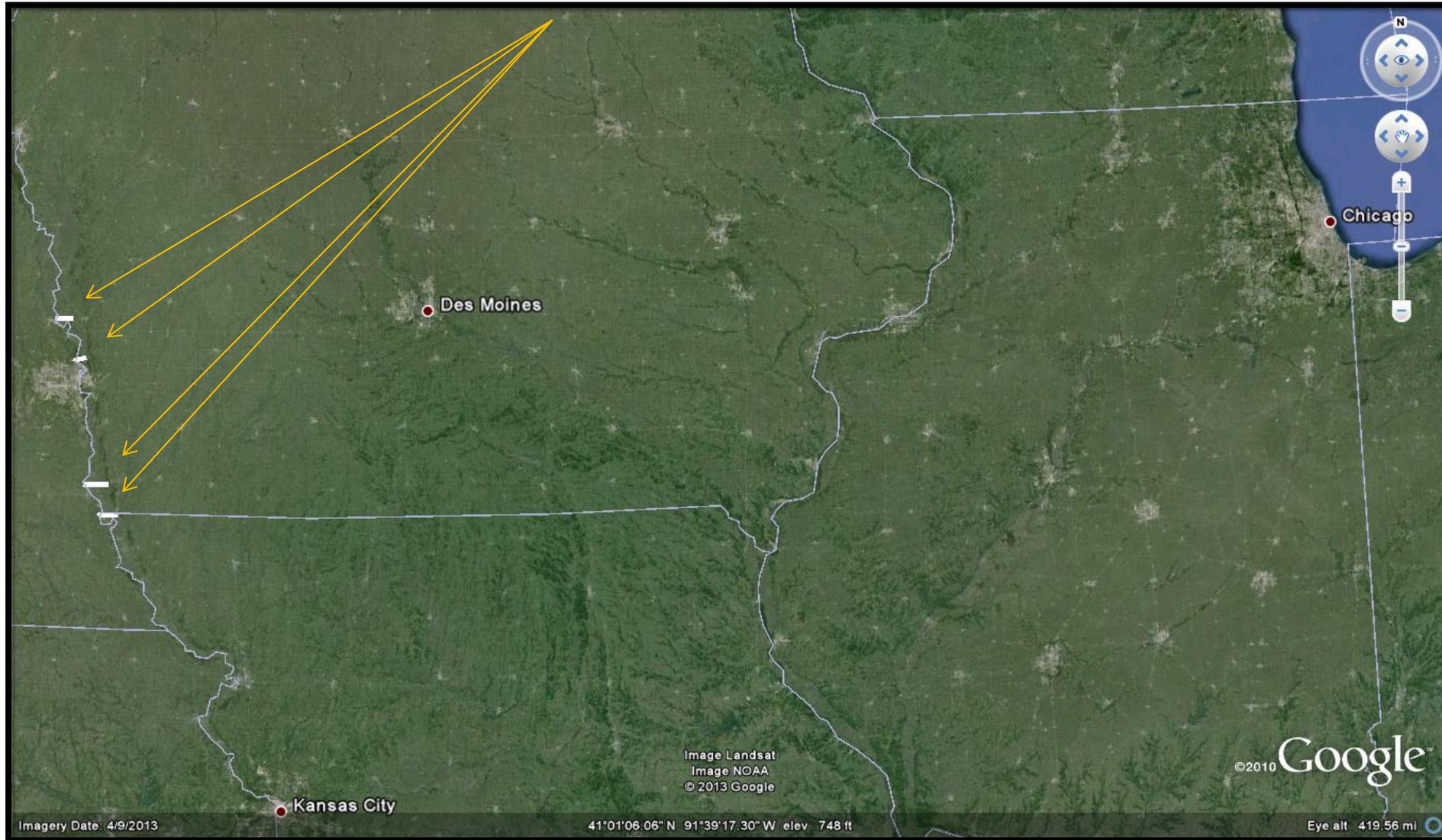
Flood area along I-680



These white lines represent the flood area. The line north of Omaha is the one from the previous slide.



The Missouri River basin created a very wide flood plain. I-29 is within the old flood plain



Iowa DOT response: HQ level

- **Implemented Incident Command System (ICS)**
- **Daily conference calls/webinars with local-state-federal partners, documented with situation reports**
- **Detour coordination conference calls with neighboring states (Kansas, Missouri, Nebraska)**
- **Participated in multiple U.S. Army Corps of Engineers conference calls**
- **External public communications were managed through the Public Information Officer in Iowa DOT's Office of Multimedia Services.**
- **Traveler information was provided by the DOT that included a call center giving directions to individual motorists.**
- **Iowa DOT's 24/7 Traffic Operations Center posted information via the Iowa 511, email, Twitter, and other subscription services.**



Iowa DOT response: local impacts

- **A 75-mile stretch of the Missouri River had no open highway crossings.**
- **Detours forced interstate traffic onto local roads.**
- **The decreased flow of goods and services led to economic displacement in communities along the river.**
- **One of the three interstate crossings in Omaha-Council Bluffs closed from June 9 to Nov. 2.**
- **Video glasses were a great asset in communicating the situation to those at HQ.**



Iowa DOT response: local impacts

- **Mitigation Measures employed:**
 - **Installation of TrapBags on shoulders and medians**
 - **Used pumps to keep water off roads**
 - **Raised roadway elevations with an asphalt overlay**
- **Coordination with local officials**
 - **Setting up local detour routes**
 - **DOT access to local resources, e.g. quarries**
 - **Providing information to affected residents**
 - **Coordinating closures with commute times. We even meet with Nebraska communities.**





Interstate Alternative

Utilized in the event of I-29 closure south of Council Bluffs.



Many DMS signs were used both permanent overhead and portables.
Simple messages were needed.



I-29/I-680 north of Omaha-Council Bluffs



I-29/I-680 interchange looking south



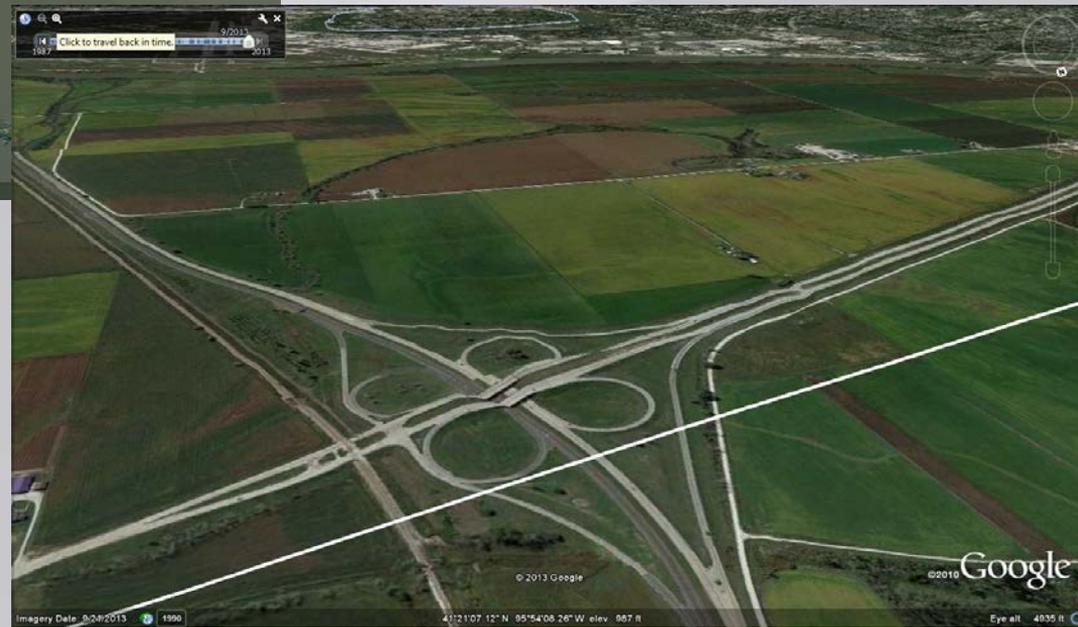
I-29/I-680 north of Omaha-Council Bluffs



I-29/I-680 interchange looking southwest to Omaha.



I-29/I-680 north of Omaha-Council Bluffs



Google Earth



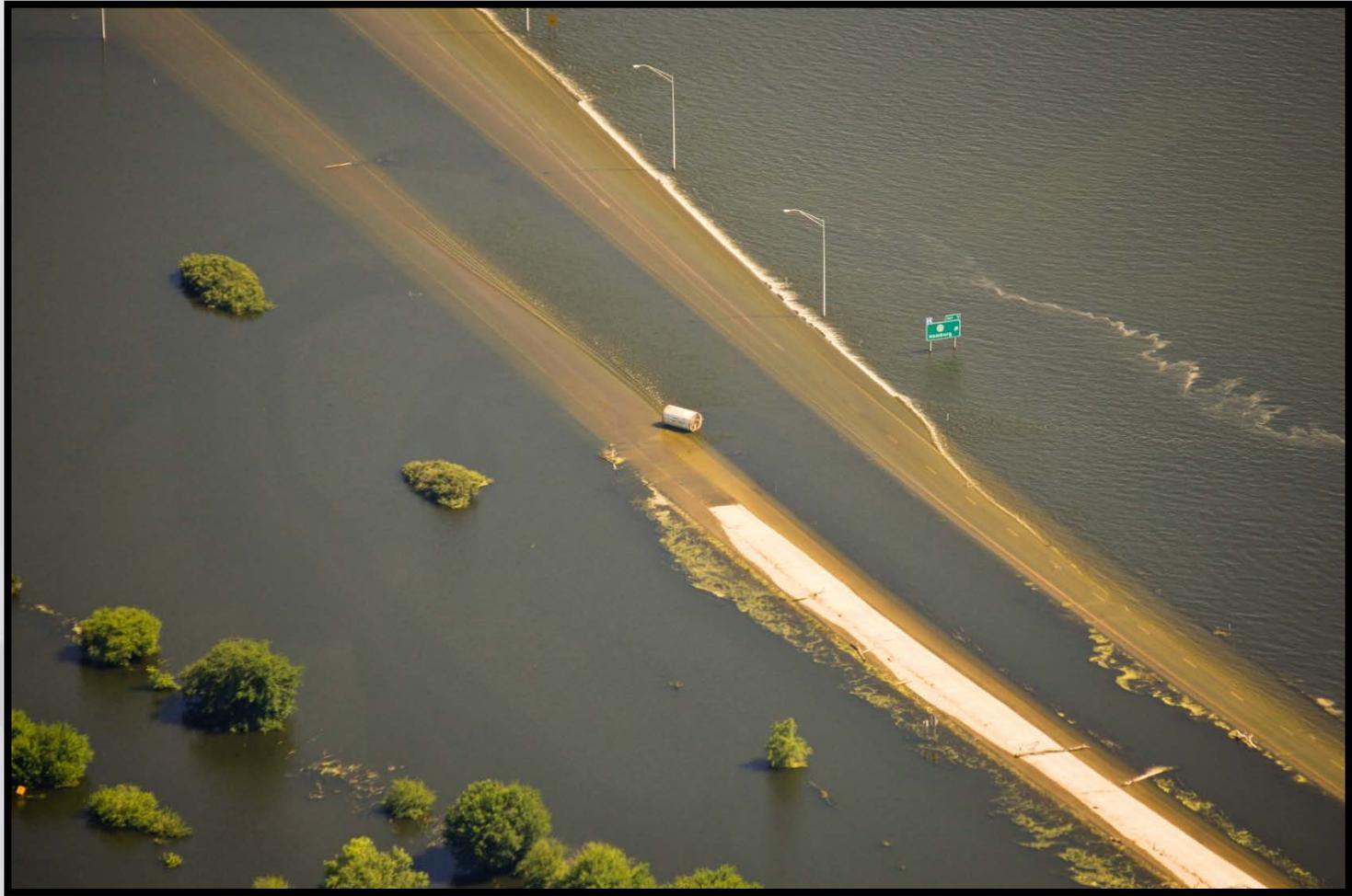
HESCO barriers



HESCO barriers were used to keep water out of Hamburg.



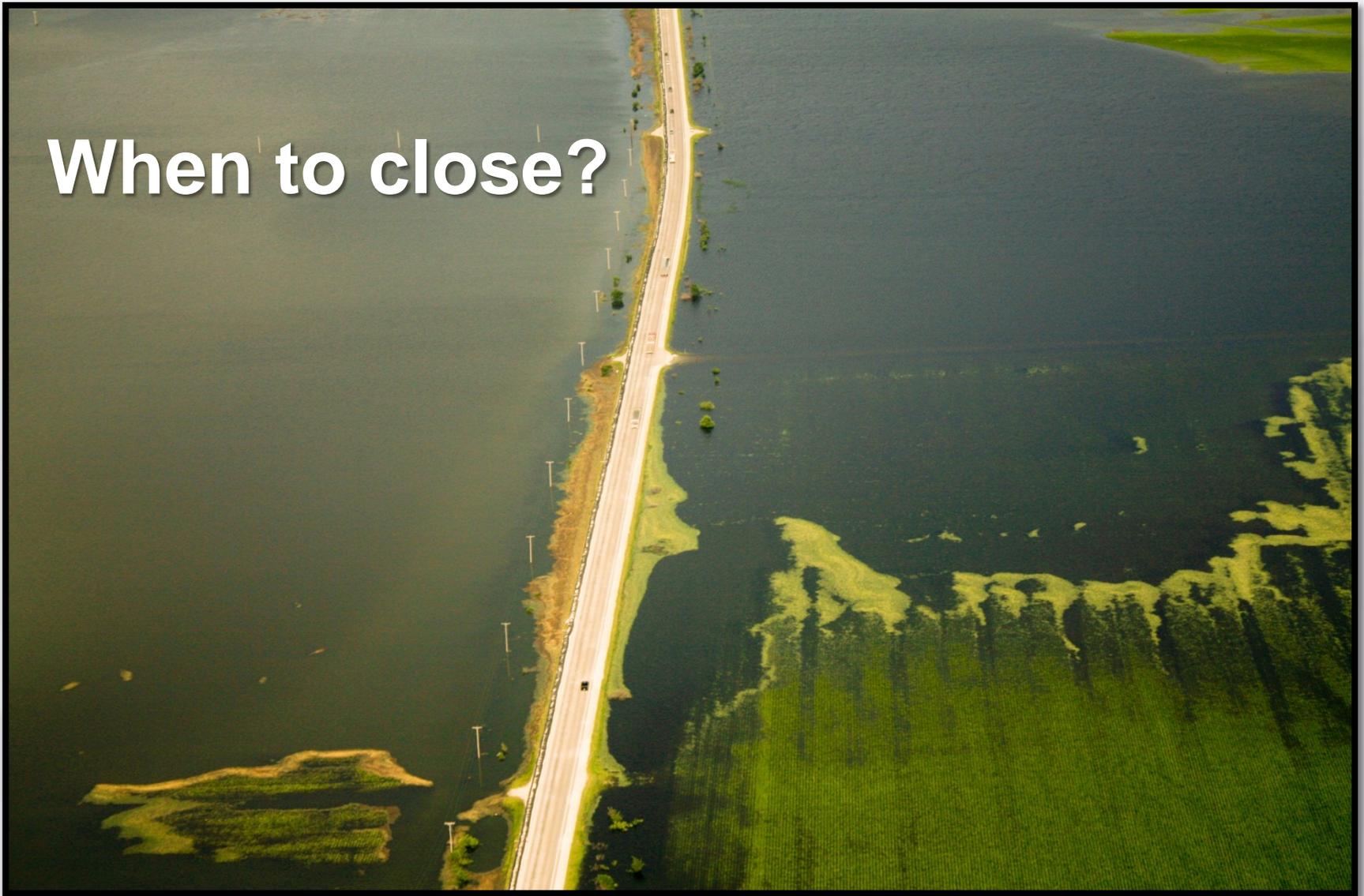
I-29 in southwest Iowa



Water and debris on roadway at milepost 1.



When to close?



When to close?

This closure would create more than a 75 miles out of distance travel for daily commuter traffic.



I-29 in southwest Iowa



I-29 looking north at milepost 15.



Trapbags = barrier



Trapbags = barrier



How long?



Iowa 2 closed June 17. The photo is the first time we were able to access the area on July 6.



How long?



The photo was taken Sept. 6.



There was debris



There were knuckleheads. This driver went around barricades and weaved through logs and debris and required rescue.



When to open?



Algae, debris, and road repairs.

Opening and restoring traffic



Damage assessments and road repairs are needed.



**Water receded to expose damage to I-680 on Aug. 31.
On Sept. 21, the bids were opened to reconstruct
3 miles.**

• I-680 Reconstruction Project Timeline

- Bid Letting September 21st
- PCI & Reilly Construction \$19,239,000
- Open to Traffic November 2nd

Impact to public

- Obvious concerns:**
- Out of distance travel**
- Flooded homes and properties**
- Lost income from business**

- **Keep in mind:**
 - **Public confidence in agency**
 - **Rumors**
 - **Stress**
 - **Impatience**

Steps we took

- **Public needs to have confidence in our work.**
- **Many employees were affected. Garage supervisors were advised of stress to themselves and employees.**
- **The Employee Assistance Program was widely distributed to employees**
- **Image is a major factor.**
- **All employees told to wear new vests, look and be professional, be patient.**
- **This emphasis had a positive effect in all aspects. The employees held themselves to a higher standard.**

Murphy's Law

Be flexible.

Murphy hits hardest those that struggle to adjust.

- **We experienced:**

- Relocating 3 DOT garages
- An Iowa DOT garage flooded
- Fort Calhoun Nuclear Plant had an unusual event
- Tour bus with 40 people flipped over
- Truck strike a high-voltage line closing the interstate detour during critical traffic switch
- Multiple breeches and false breeches

- **RAGBRAI – week-long state bicycle tour with 20,000 bikers start in flood area**
- **Not implemented - The city proposed a plan to close I-29 in Council Bluffs and build levee extension on it. This would have flooded casinos and would have taken 2 weeks. The plan needed to be evaluated and contingencies worked up.**
- **Levee blown up**
- **Flash flood closed a road 130 miles away on opposite side of district**
- **Flash downpour inundated the road with trapbag barriers and trapped vehicles**
- **FHWA starts the disaster 180-day emergency funding countdown on the date that South Dakota opens the gates in May**





Think Ahead

Make contingency plans

Remember your employees

Positive Public Image Helps Public Confidence

Stay flexible

**James Bane, P.E.
District 4 Maintenance Manager
Atlantic, Iowa**