

## RIVER FLOODING STUDY & MITIGATION PROPOSED APPROACH

6/14/11

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The flood of August 2010 had a major impact upon the greater Ames community. Since that time, a great deal of time and effort has been invested in flood recovery and repair by local public servants.

Following the flood, the City Council established a new Council goal early this year to **mitigate flooding in our community**. This goal included the following two objectives, both of which were to include short-term and long-term mitigation actions:

- To reduce the possibility of damage in our community caused by river/watershed flooding.
- To reduce the possibility of damage in our community caused by localized flooding.

Long-term mitigation actions under the first objective are to include these steps:

- Invite ISU, Story County and the Iowa Flood Center to partner (with City leadership) on coordinated mitigation efforts
- Form a leadership group to plan and carry out coordinated mitigation efforts
- Identify needs, potential resources, and study steps, including public involvement
- Identify potential funding sources
- Carry out long-term, coordinated mitigation steps
- Identify and implement potential policy and regulatory changes for floodplain management (concurrent with above steps)

In accordance with Council's goal, City staff convened a group of representatives from the City, Story County, Iowa State University and the Iowa Department of Transportation to consider how best to accomplish this objective. The proposal below is an outgrowth of those efforts.

Although ten months have passed since the flood, it is important to realize that a very dynamic situation exists regarding flood-related research and development that affects our locale. Efforts are currently underway by the Iowa Department of Natural Resources, the Iowa Flood Center, and others to update our community's Flood Insurance Rating Maps (FIRM), to apply for funding to study some of the city's smaller watersheds, and to identify ways that the effects of climate change may be brought into consideration. Our local flood study should incorporate and build upon the results of these efforts.

All three jurisdictions have been active in this area since last year's flooding. ISU has worked closely with FEMA and the Iowa Department of Homeland Security to update their campus mitigation efforts. Story County has been working closely with IDNR and many other groups and researchers to develop updated flood maps and other predictive tools. The City has put a great deal of effort into flood repair/recovery and private

property buy-outs, and is making substantial progress on studies to mitigate localized flash flooding in various areas.

Better predicting and mitigating of the effects of flooding are high priorities for both Story County and Iowa State University. Staff from both organizations have brought vital knowledge and involvement to this effort. Joined by IDOT representatives, we together also met with Iowa Flood Center staff to explore areas of overlapping interest and work. We learned that many of the Flood Center's projects will have significant long-term benefit to our local flood prediction, flood monitoring and flood response efforts.

This report is being brought forward in response to a request by the Ames City Council. It should be noted that the Story County Board of Supervisors is also meeting on Tuesday, June 14, to discuss their goals and level of involvement in this process.

Since last summer's flood, it is clear that many stakeholders are understandably anxious to "do something" to mitigate the effects of future flooding. While some progress has already been made on this Council goal, we need to again emphasize that this will be a slow, deliberative process. This is due to the dynamic status of related research and other development currently being carried out by a number of other governmental entities. There will also be a great need to involve the many affected stake-holders as the process progresses and as policy-makers make their final decisions.

Presented below is a **proposed approach to a community-wide, multi-jurisdictional effort to engage the public and to identify possible causes, issues, approaches and potential ways to address flooding in Ames**. Staff will review these steps and the estimated timeframes with Council on Tuesday night. Council input will then be sought to confirm whether or not this approach is appropriate, and to give additional guidance on other goals or steps to be included.

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**Proposed Working Team**

City: Bob Kindred, John Dunn, John Joiner, Steve Osguthorpe  
ISU: David Miller, Cathy Brown, Steve Jones  
Story County: Leanne Harter, Darren Moon  
IDOT: Dave Claman, Jesse Tibodeau

Also include several interested citizens & ISU representatives

Timeframe: June 2011

## **Step 1 – Initial Community Engagement & Input**

*Goal: Gather input regarding possible causes, issues, approaches & solutions*

Conduct input processes with distinct interest groups, each with separate dates and time blocks

1. Property/business owners & residents in the floodplain and those who develop land there (i.e., those whose property is *directly affected* by flooding)
2. General Public – those affected by deluge flooding (outside the floodplain), the public at large, special interest groups, the University community, and others who are *indirectly affected* by flooding
  - a. Two meetings – one at City Hall, one at ISU
3. Academic community – ISU professors & researchers with expertise in these areas
4. Emergency responders – law enforcement, fire response, emergency medical, DOT, Emergency Management Agency, Red Cross, etc.
5. Other affected communities – Story City, Cambridge, neighboring counties, etc.

Timeframe: July-September 2011

Conduct technical focus sessions with any interested consulting engineering firms. Determine if they have examples of previous, similar RFP's that they have received that might help us prepare an appropriate scope of work to include in our own RFP.

Timeframe: June-August 2011

## **Step 2 – Develop Customized Meteorology Predictions**

*Goal: Identify the best available current research on the range of possible future rainfall levels that may impact our local watershed*

- Possible approaches –
  - Commission either one researcher or an interdisciplinary team to accomplish this work
  - If needed, consider funding a graduate student to help accomplish this work on a timely basis
- Resources: Existing research; National Weather Service
- Timeframe: Initiate September 2011, work completed by May 2012

### **Step 3 – Phase 1 Engineering Study**

*Goal: Identify physical inputs that impact our local flooding events*

- Update hydrology (physical characteristics in our drainage basin that impact our flooding), hydraulics (conveyance of floodwaters), drainage basin data, impacted locations, and other pertinent data
- Potentially collaborate with IDNR on portions of this work
  
- Timeframe: RFP out September-October 2011, firm selected November-December 2011 (*carried out somewhat concurrent with Step 2, since this phase will be dependent upon some of the Step 2 findings*). Work completed by June-August 2012

### **Step 4 – Phase 2 Engineering Study**

*Goal: Combine the results of Steps 3 and 4 to develop mitigation alternatives*

- Develop **scenario-based model** to reflect a *range* of inputs (rainfall levels, land uses, levels of elevating structures in floodplains, etc.) and resultant outputs (flooding levels)
- **Identify flood mitigation alternatives**
- **Evaluate flood mitigation alternatives**, including analysis of impacts within various scenarios
- **Regulatory summary**, including impacts within various scenarios
- Identify **funding opportunities**
  
- Timeframe: June-December 2012 (Builds upon Steps 2 & 3)

### **Step 5 – Mitigation & regulatory decisions**

*Goal: Public input and policy-maker decisions on acceptable risk level and associated mitigation and regulatory steps*

- Public input on array of possible mitigation improvements
- Public input on array of possible regulatory actions
- Policy-maker decisions
  
- Timeframe: January-May 2013

## **SUBSEQUENT PHASES**

### **Physical Improvements Phase**

- Confirm partnerships for funding and implementing improvements
- Carry out long-term, coordinated mitigation steps

### **Regulatory Track**

- Identify and implement potential policy and regulatory changes for floodplain management

### **Education Track**

- Public Education regarding anticipated rainfalls, public mitigation steps, potential private mitigation actions, flood insurance, etc.