Jordan Creek FRM Pilot Study, Springfield, MO
Civil Works Review Board

PROJECT BRIEFING

COL Glen Masset

District Commander, Little Rock District

29 May 2013

Headquarters, US Army Corps of Engineers

Washington, DC

US Army Corps of Engineers

BUILDING STRONG®

Presentation Outline

- Purpose
- BLUF
- Background
- Project Delivery Process
- Overview of Study and Recommended Plan
- Agency Technical Review
- Independent External Peer Review
- OWPR Policy Compliance Review
- Environmental Operating Principles
- NEPA Compliance
- USACE Strategic Campaign Plan
- Public Involvement
- Assessment of the Project Delivery Process
- Summary
- Recommendation

Purpose of Briefing

- Provide an overview of the Jordan Creek FRM Study and the Recommended Plan
- Answer questions and address comments
- Obtain CWRB approval for State & Agency Review
- Discuss the next steps in the approval process toward a Chief's Report

City swamped

Nearly four inches of rain sends city into rescue mode as stormwater threatens motorists.

By Amos Bridges
ABRIDGES@NEWS-LEADER.COM

Springfield firefighters rescued dozens of stranded motorists Friday as torrential rain flooded parks and streets across the city.

Almost four inches of rain fell on Springfield, according to the National Weather Service. About an inch came before 8 a.m., and flooding followed soon after.

Before noon, Fassnight Creek had swollen beyond its banks and emergency responders were scrambling to rescue people in stalled cars and deter others from crossing submerged roadways.

The downpour finally abated about 3 p.m., but by that time Sequiota Park was under water and flooding had spread to neighborhoods across the city. Long before rush hour, traffic was backed up along most major thoroughfares as drivers navigated a maze of still-flooded streets on the way home.

The city's single water rescue unit criss-crossed the city throughout the day, with regular fire crews wading into the floodwaters when calls for help came simultaneously.

By 5 p.m., about three dozen water rescues had been performed, said city spokeswoman Louise Whall.

In many cases, occupants had escaped their marooned vehicles before firefighters arrived, but others were more dire — three teens were rescued from trees they climbed to escape rising water at a trail near Golden Avenue and Battlefield Road.

"We've had no injuries so far, so that's great ... but I

See Flooding, Page 4A

DEAN CURTIS / NEWS-LEADER

An elderly man is rescued after high waters on South Grant Avenue by Fassnight Creek stalled his car.

AMBER ARNOLD / NEWS-LEADER

After a rescue effort, Loretta Sampson hugs her son, Drew, 17, (left) and his friend, Brandon Peterson, 18, after they were pulled, along with another friend, from a path that flooded with rain water. More photos from this event, **4A**

Record-breaking rainfall

Springfield flooded under more than 3.8 inches of rainfall yesterday, breaking the record for 1.4 inches set on June 13, 1964. The average monthly rainfall for April, May and June of this year continues to be greater than the same period in 2007

Daily rainfall 2007
Daily rainfall 2008
Average monthly rainfall 2007
Average monthly rainfall 2008

3.88 inches
Measurements taken from Springfield National Airport at 6 p.m.

4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
April May June

*Gaps in the chart indicate daily rainfall lines represent unavailable data.

SOURCE: National Weather Service

JESSICA WALLACE / NEWS-LEADER

Assessment and forecast

Friday's record rainfall: By 9 p.m. the rain total at the Springfield airport had reached 3.88 inches, bringing the yearly total to 36.7 inches. The previous record for that day was 1.41 inches set on June 13, 1964. "So we demolished it," said meteorologist Brian Barjenbruch.

What's normal: A normal year-to-date total would be 19.31 inches, said Weather Service meteorologist Drew Albert. "Last year by this time we had 23.07 inches," he said.

Today's forecast: Mostly sunny weather with a high of 86.

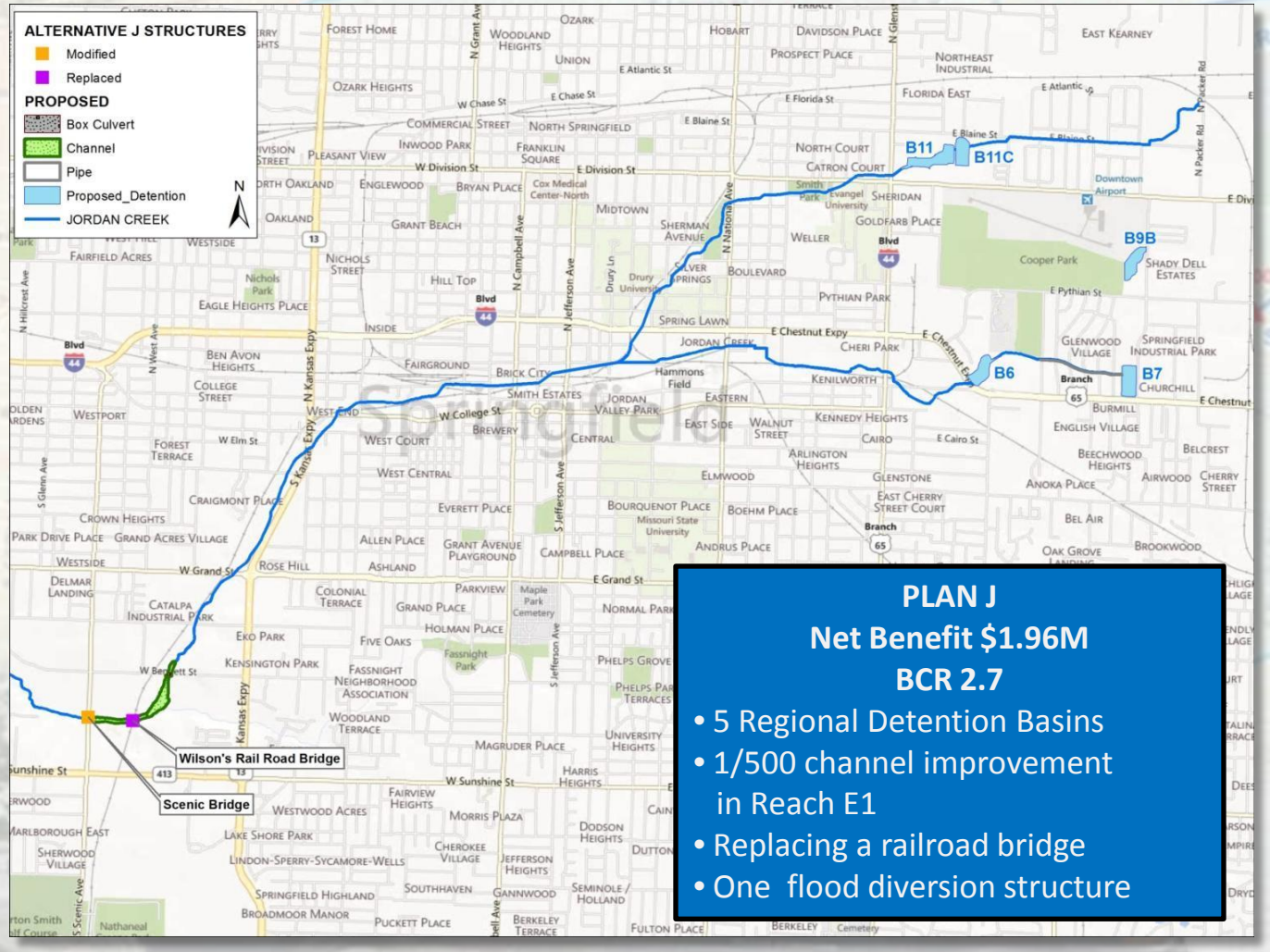
Tonight: Mostly clear with a low of 65.

Sunday: Mostly sunny with a high of 87 degrees.

– News-Leader Staff

BLUF

Recommendation – Plan J



Plan J – NED and Selected Plan

- Greatest net benefits
- $22M Total Project Cost
- No locally preferred plan

Pilot Study

- One of Five National Pilot Studies
- Focus on SMART Planning Principles
  - Balancing level of uncertainty and risk with level of detail
  - Early and ongoing vertical team integration
  - Determining Federal Interest early
  - Varying methods for alternative comparison and selection
  - Resourcing the priority studies
- Revised and Refocused decision points
- Used a Risk Register

Vertical Team Integration

Non-Federal Sponsor
City of Springfield

- **Project Management**
- **Planning**
  - Plan Formulation
  - Economics
  - Environmental Analysis
- **Real Estate**
- **Office of Counsel**
- **ATR Teams**
- **External Peer Review**

- **Engineering**
  - Structural
  - Hydrology & Hydraulics
  - Geotechnical
  - Cost
  - Environmental
- **OWPR**
- **SWD**
- **SWD RIT**

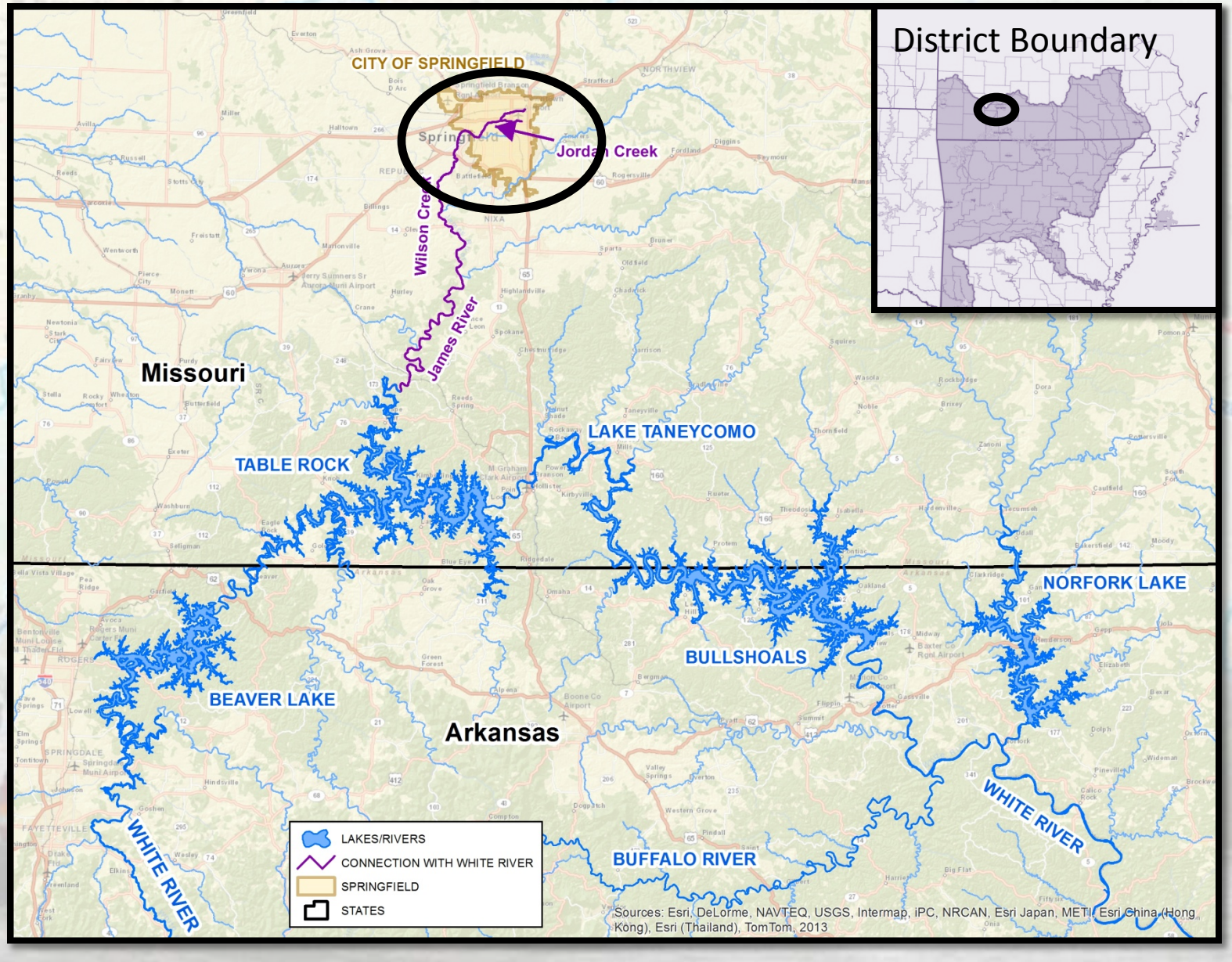
Study Authority

This report was prepared as an interim response to the White River Basin, Arkansas and Missouri Comprehensive Study Resolution passed on 11 May 1962 by the US Senate Committee on Public Works.

The resolution states the following:

Resolved by the Committee on Public Works of the United States Senate, that the Board of Engineers for Rivers and Harbors, created under Section 3 of the River and Harbor Act, approved June 12, 1902, be and is hereby, requested to review the reports on the White River and Tributaries, Missouri and Arkansas, printed in House Document Numbered 499, Eighty-third Congress, second session, and other reports, with a view to determining
the advisability of modifying the existing project at the present time, with particular reference to developing a comprehensive plan of improvement for the basin in the interest of flood-control, navigation, hydro-electric power development, water supply, and other purposes, coordinated with related land resources.

Project Vicinity Map



Project Purpose and Objectives

Purpose

- To reduce flood risk through the Jordan Creek Valley in Springfield, Missouri.

Objectives

- Reduce overall flood damages in the project area.
- Reduce residual risk to property by removing properties from the flood plain.
- Reduce risk to life and safety.

Flooding and Project History

- 1909 flooding caused $500,000 in damages
- 1993 and 2000 approximately 1/100 ACE event
- Initiated Corps Study in 2002
  - Signed FCSA in 2004
  - Pilot Study in 2011

Problem Description

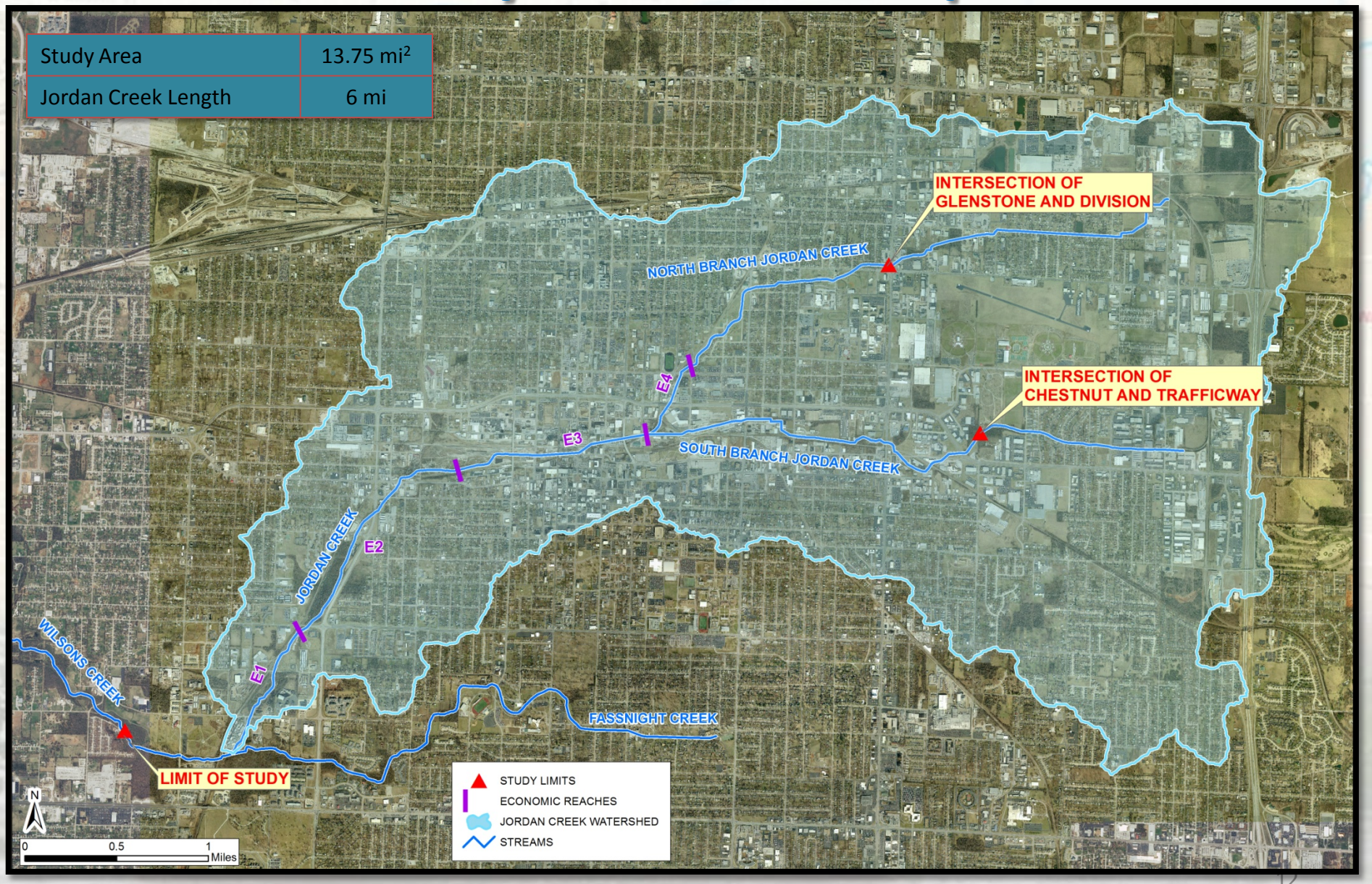
- **Flash flooding**
  - Creates safety issues
- **2000 flood calculated to be a 1/100 Annual Chance Exceedance (ACE)**
  - 5 to 6 ft of water through downtown
  - Velocity of 6 ft/sec

July 2000

June 2009

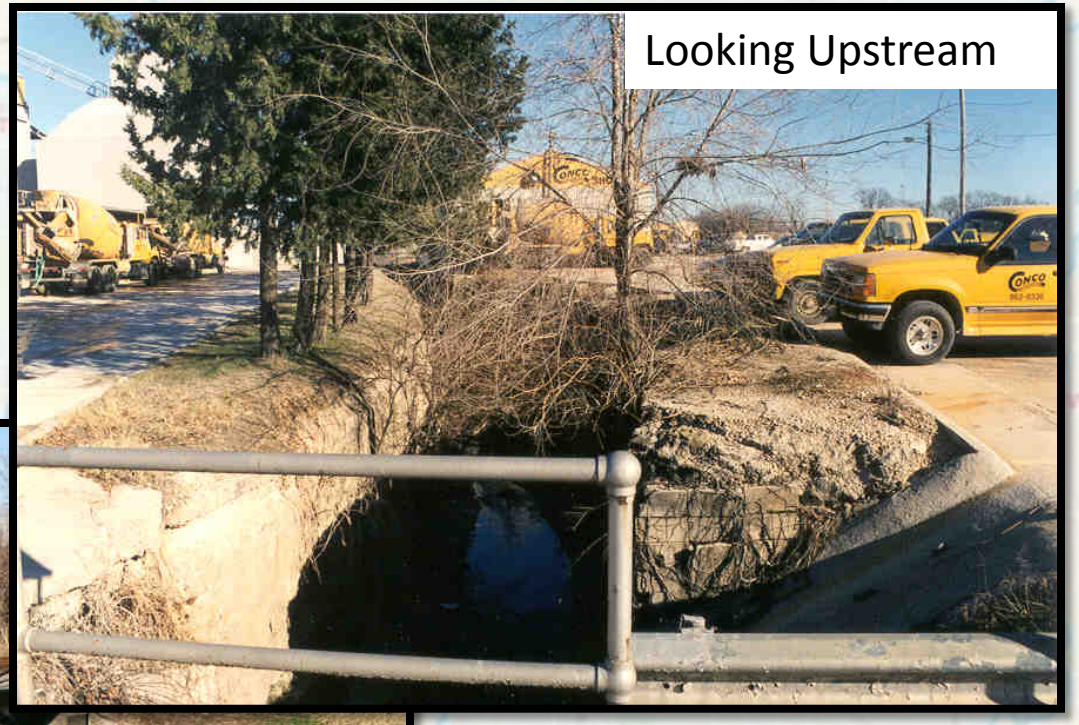
Study Location Map

Study Area	13.75 mi^2
Jordan Creek Length	6 mi



North Branch (Reach E4)

South Branch (Reach E6)



North and South Branch (Reaches E3, E4, and E6)

Downtown Area (Reach E3)

Stream Corridor

Booneville Avenue

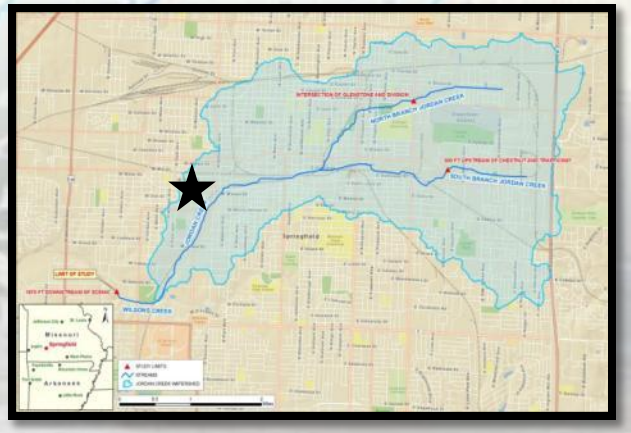
Sidewall of the Box Culvert

Lower Jordan Creek (Reach E2)

Looking upstream toward Downtown

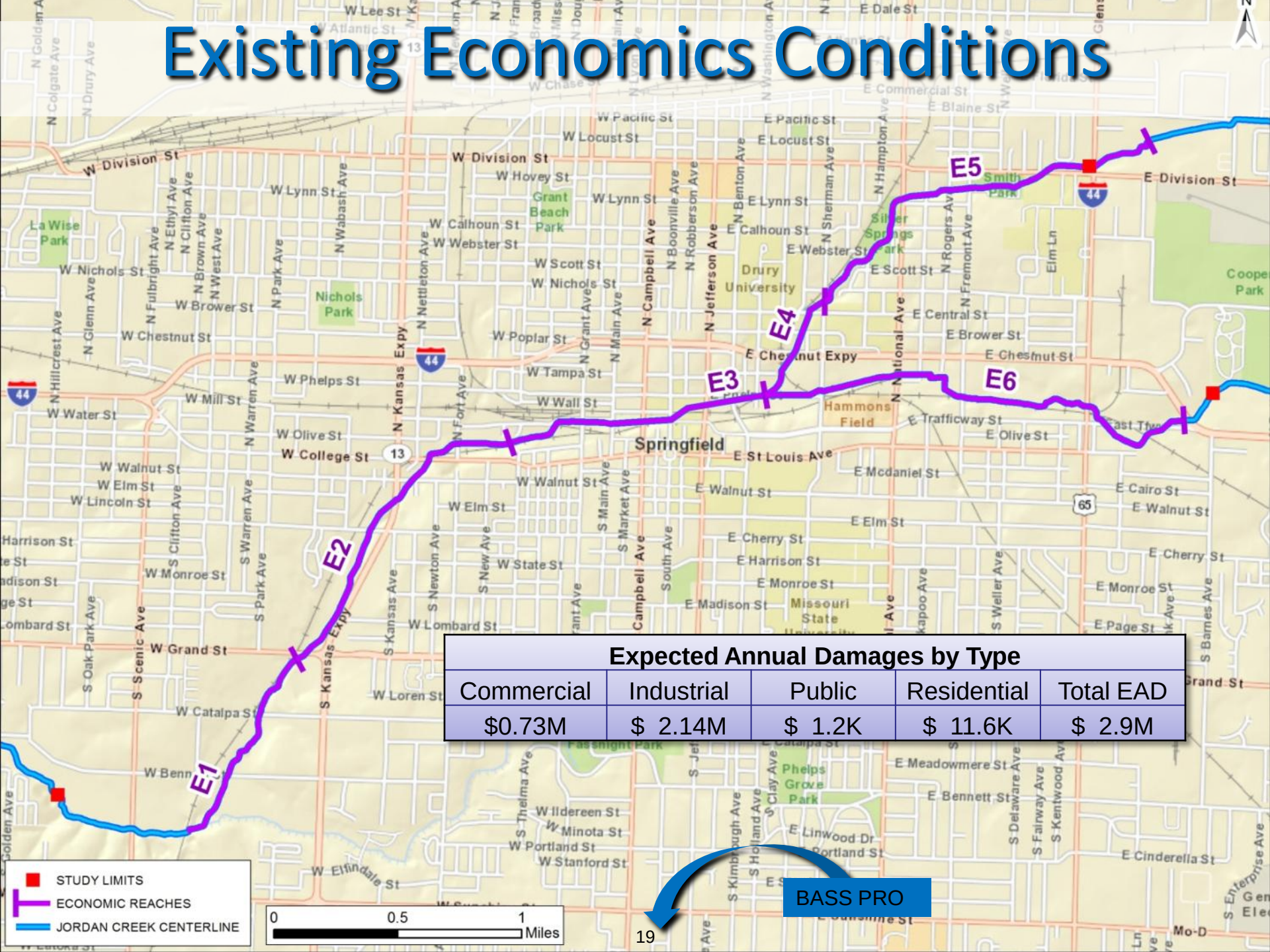
Looking upstream

Flooding in 2009



Wilsons Creek (Reach E1)

Existing Economics Conditions



Expected Annual Damages by Type				
Commercial	Industrial	Public	Residential	Total EAD
$0.73M	$ 2.14M	$ 1.2K	$ 11.6K	$ 2.9M

Decision Making Process

- **Traditional NED analysis**
  - Conducted incremental analysis to optimize the benefits over the project area
- **Reducing Flood Risk**
  - Residual Risk
  - Potential for high velocity and depths in populated areas
  - Number of structures removed from the flood plain.
  - Plan effectiveness for the 1/100 ACE
- **Risk Informed Decision**
- **Environmental Considerations**
  - Minimize adverse impacts (no mitigation required)

Plan Formulation

Management Measures

Buy-outs, Flood Warning, Flood Proofing, Detention Ponds, Flood walls, Diversions, Channel modification, Relocation of Bridges

Viable Array

No Action
5 Varying Non-structural Plans
Detention Basins Plan
11 Varying Structural plans

Final Array

No Action and
3 Structural Plans

Recommended Plan

Detention Basins with Channel Modification
(Plan J)

No Action Plan

Future Without Project Assumptions

- The watershed will be developed to 98% capacity
- City continues enforcement of zoning and floodplain policies
- Land re-development modeled as increased infiltration rate
- Water quality and lack of habitat in Jordan Creek remains unchanged
- HTRW will remain in-situ

Climate Change

- **Effects on future conditions**
  - Predicted to increase the intensity of rainfall events
  - Less rainfall overall but higher intensity

- **Risk Mitigation**
  - Effects are the same for the each of the plans evaluated
  - Qualitative analysis determined it would not change the decision

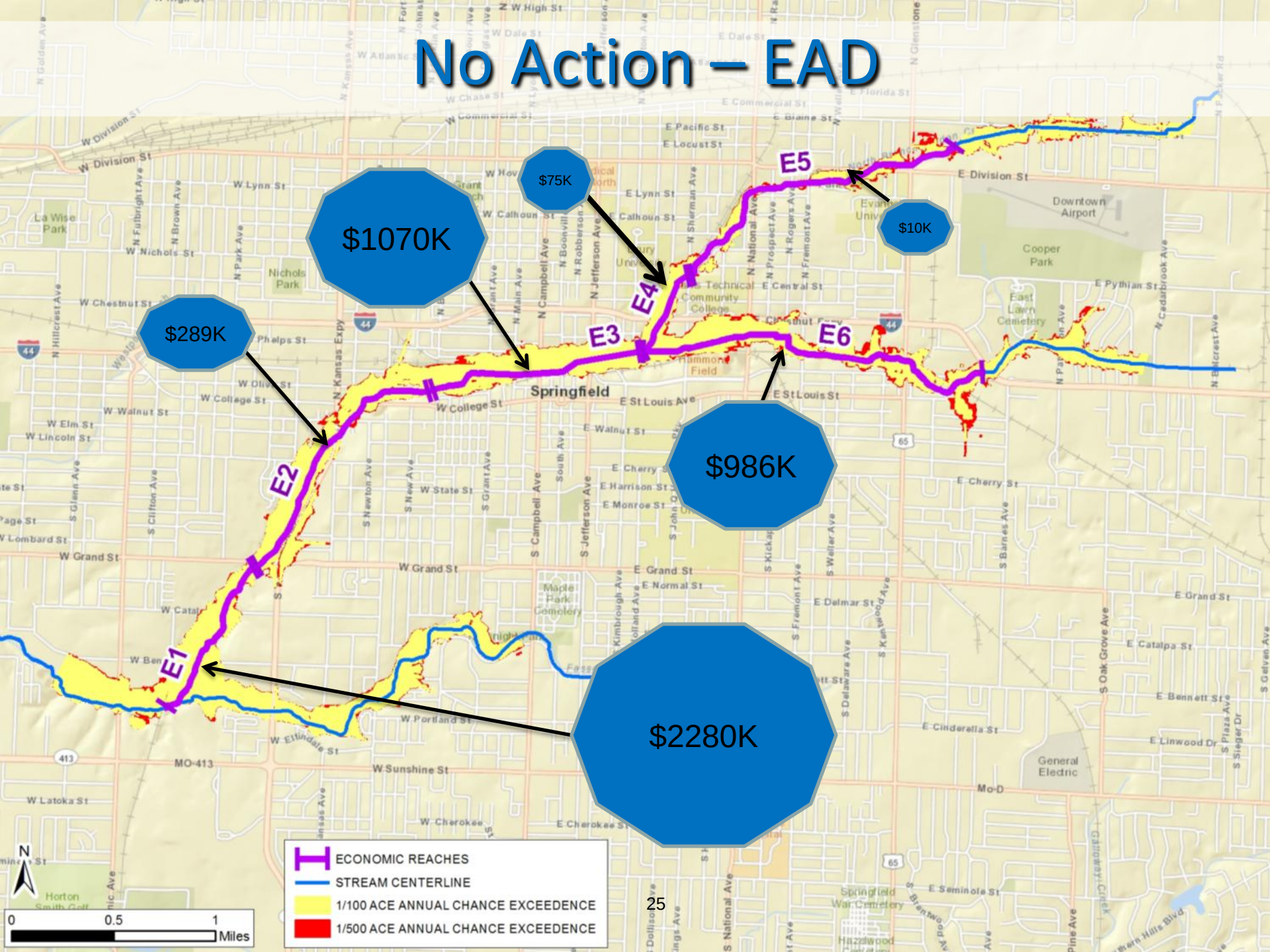
No Action Plan

Future without Project Conditions

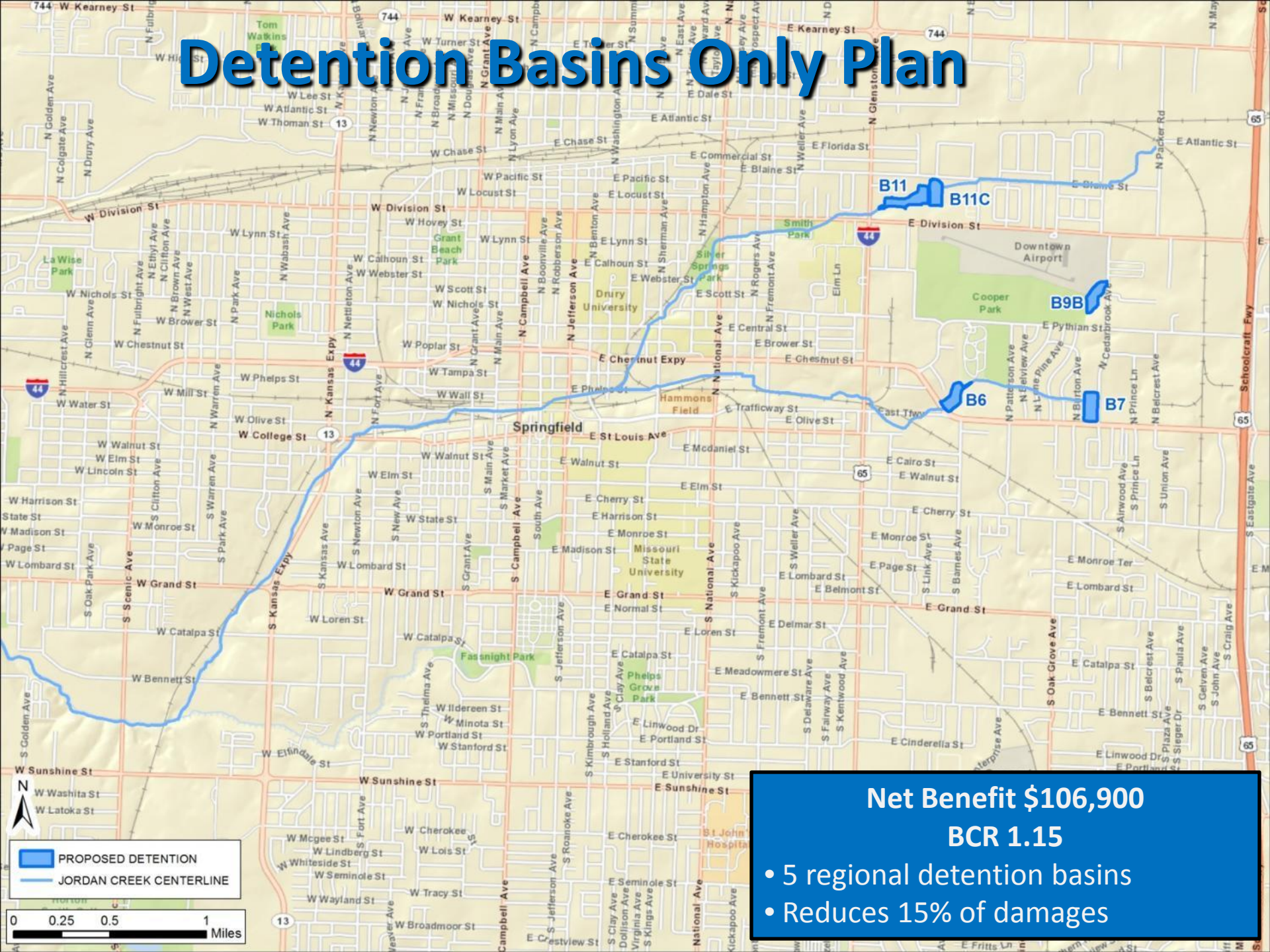
- Increase in flow led to a large increase in damages
- Expected annual damages increase from $2.9M in the year 2003, to $4.6M a year in the future without project conditions (base yr 2020).
- Conducted sensitivity analysis – VT concurrence on use of FWOP economics to compare alternatives

Ultimate Hydrology: Expected Annual Damages by Type					
Commercial	Industrial	Public	Residential	Infrastructure	Total EAD
$ 1.1M	$ 3.4M	$ 1.2K	$ 15.2K	$128K	$ 4.6M

No Action – EAD



Detention Basins Only Plan

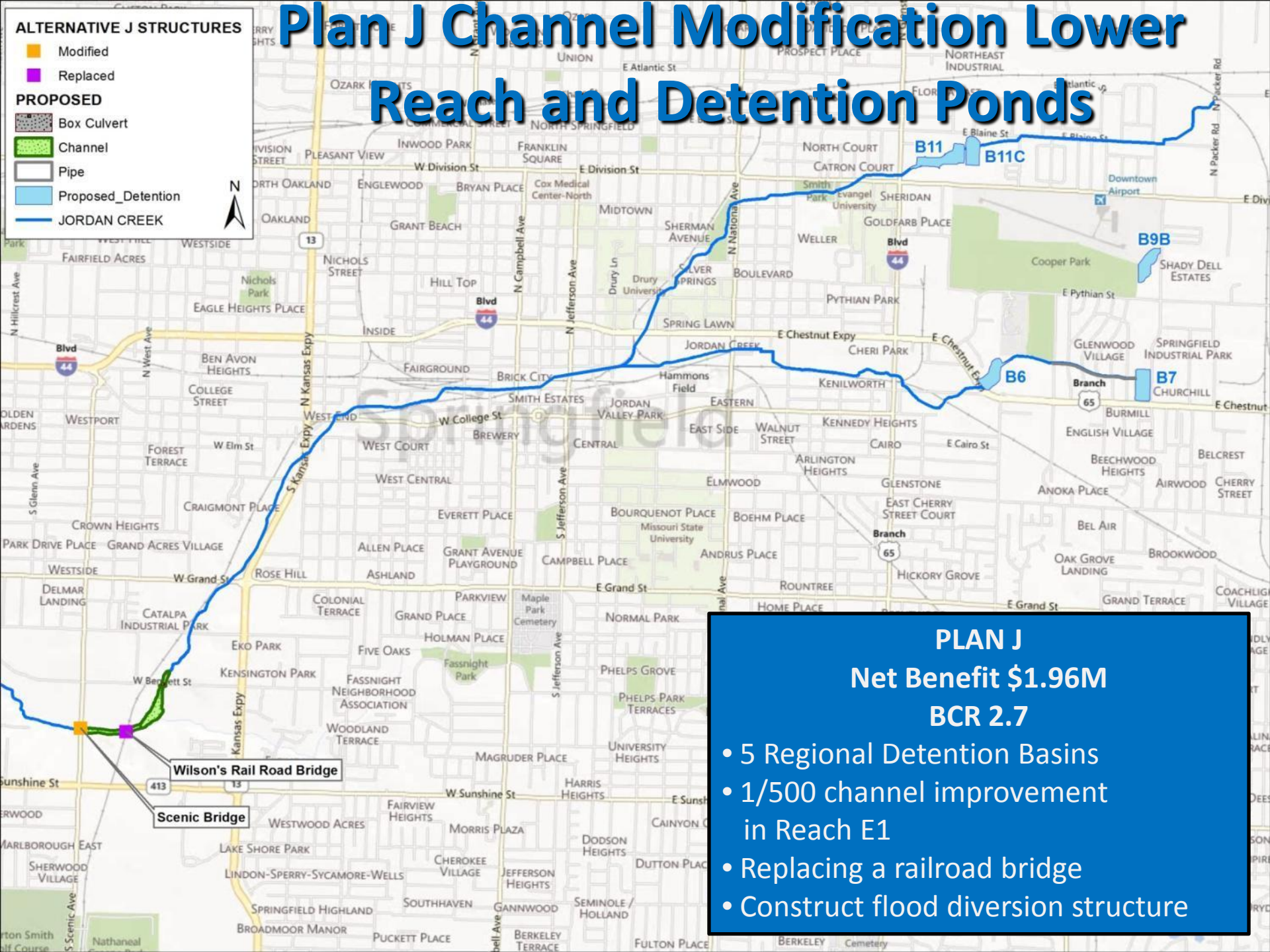


Net Benefit $106,900

BCR 1.15

- 5 regional detention basins
- Reduces 15% of damages

Plan J Channel Modification Lower Reach and Detention Ponds



PLAN J

Net Benefit $1.96M

BCR 2.7

- 5 Regional Detention Basins
- 1/500 channel improvement in Reach E1
- Replacing a railroad bridge
- Construct flood diversion structure

Plan G2 - Channel Modification Lower & Downtown Reaches with Detention Basins

PLAN G2
Net Benefit $1M
BCR 1.3

- 5 Regional Detention Basins
- 1/500 channel improvement in Reach E1
- Channel mods through the downtown – 1/25 ACE
- Remove /Replace underground Culvert
- Numerous Stream Crossings modified

Plan Comparison Objectives

Criteria	No Federal Action Plan	Detention Basins Only	Plan J	Plan G2
Reduce overall flood damages in the project area from 2020 to 2070.				
Reduction (EAD)	NA	$0.8M	$3.0M	$4.2M
Residual (EAD)	$4.6M	$3.8M	$1.6M	$0.4M
Reduce residual risk to property by removing properties from the flood plain.				
Buildings Removed from the 1/100 ACE	162 buildings were flooded	16 (10%)	41 (25%)	81 (50%)
Reduce risk to life and safety by reducing flood levels.				
Reduced depth flooding at 1/100 ACE (ft)	0	.5	.5	2 – 3
Residual depth of flooding at 1/100 ACE (ft)	5 – 6	4.5 – 5.5	4.5 – 5.5	2 – 4
Event Streets Inundate (ACE)	1/2	1/5	1/5	1/25

Plan Comparison
Benefits and Costs

	Detention Only	Plan J (detention and E1)	Plan G2 (detention and E1, E3, and E6)
Total Project cost	$11,500K	**$21,873K**	$55,874K
Annual OM Costs	$186K	**$234K**	$643K
Annualized Cost	$699K	**$1,173K**	$3,231K
Annualized Benefits	$806K	**$3,134K**	$4,257K
Net Benefits	$107K	**$1,961K**	$1,026K
BCR	1.2	**2.7**	1.3

Recommended Plan Total Costs

Plan J – NED Plan	TOTAL
Total Investment Costs	$21.9M
Non-Federal	$7.7M
LERRD	$6.5M
Cash	$1.2M
Federal	$14.2M
Net Annual Benefits	$1.96M
Benefit to Cost Ratio (3.75% Interest)	2.7
Benefit to Cost Ratio (7% Interest)	1.7

Acknowledging Risk

- **Project Performance - Recommended Plan**
  - Implementation of Plan J provides approximately $3M in expected annual benefits
  - Plan J flood damage reduction in the downtown reaches (E3, E4 and E6) for a 1/10 ACE is 44%.
  - Reach 1 – No damages for 1/100 ACE; $100K damage for a1/500 ACE – Floodwall not overtopped
- **Residual Flooding - Recommended Plan**
  - The damage reduced downtown for a 1/25 ACE is only 27%
  - Damage reduced in Reach E1 is 99% – residual damages approximately $21.5K EAD

Acknowledging Risk

- **Long Term Risk to the Project Area – Recommended Plan**
  - Residual flooding will still occur
  - Damages are reduced along Jordan Creek and are minimized in reach E1.
- **Flooding in Recent History – Recommended Plan**
  - Provides approximately 65% reduction in damages for the 1/100 annual chance exceedance (ACE) which occurred in 2000.

Current Risk Communication

- Communicates flood risk to the public
- Updated Emergency Action Plan
- Remap the floodplain through FEMA and sent out 1100 letters to inform people they were in the floodplain
- Public meeting on “Renew Jordan Creek” to discuss flood risk

City of Springfield's "Renew Jordan Creek"

- Includes Plan J
- Increase pervious sites
- Cleaning up brownfields sites
- Adding green space along the Jordan Creek corridor
- Artists are painting storm drains to increase public awareness for water quality

Public and Agency Involvement

- **Public**
  - 1 public scoping meeting in 2004
    - 4 comments
  - City has held several subsequent meetings
  - 30-day review on the draft report (Feb-Mar 2013)
    - No Comments
- **Agency**
  - US Fish and Wildlife Service (USFWS)
    - Planning Aid Letter
  - Missouri Department of Natural Resources
    - On site evaluations
  - Missouri State Historic Preservation Office (SHPO)
  - Environmental Protection Agency (EPA)

Environmental Compliance

- Completed an Environmental Assessment
- 404 B – April 18, 2013
- MO SHPO concluded no impacts
- No compensatory mitigation required
- No Biological Assessment required
- FONSI supported

District Policy Compliance

- **Draft Report**
  - DQC Certification - 24 Jan 2013
  - Legal Certification - 28 Jan 2013
- **Final Draft Report Submittal**
  - DQC Certification - 26 April 2013
  - Legal Certification – 26 April 2013

Agency Technical Review (ATR)

- **ATR led by FRM - PCX**
- **ATR conducted incrementally throughout scoping and alternative analysis phases**
  - FSM
  - Prior to Decision Point 2
- **ATR, OWPR, Public Review and IEPR of draft report were concurrent**
- ATR – total comments 217 over 4 reviews (58 on draft report)
- ATR
  - 1 critical ATR comment on sediment analysis. Resolved.
- **Cost MCX Certification April 15, 2013**

OWPR Policy Compliance Review

- **Vertical Team Integration Timeline**
  - FSM – July 2010
  - Pilot Initiation – February 2011
  - Risk Workshop – March 2011
  - IPR 1 – Scoping – June 2011
  - IPR 2 – July 2011
  - Decision Point 1 – August 2011
  - IPR 3 – November 2011
  - IPR 4 – August 2012
  - Mini-Charrette – Oct 2012 (resolved economics)
  - DP2 – 14 Dec 2012
- **Concurrent review was conducted with, OWPR, ATR, Public Review and IEPR**
  - Policy Guidance Memorandum – April 2013
  - OWPR - 7 comments, all resolved

Independent External Peer Review

- **Battelle Memorial Institute contracted panel of 4**
  - **Structural/Geotechnical and Civil/Cost Engineering,**
  - **Civil Works Planning/Economics**
  - **Hydrologic and Hydraulic Engineer**
  - **Biologist**
- **IEPR comments**
  - 15 comments: 3 high, 7 medium, 5 low
  - All 15 comments have been resolved
- **Comments requested incorporation of more detail about assumptions to justify conclusions**

IEPR Conclusion

The project is technically sound from an overall hydraulic engineering, structural engineering, geotechnical engineering, civil/cost engineering, and environmental and planning perspective

IEPR Findings – Comment 1

Comment 1: The Panel could not verify (1) impacts on the project's hydrology, (2) benefits, (3) the National Economic Development (NED) Plan, and (4) the benefit/cost ratio (BCR) because the reasonableness of the without-project assumptions and projections could not be determined based on the limited rationale provided.

- **Resolved**
  - **Actions taken include:**
    - **Briefed the IEPR team on risk based decision making.**
    - **Clarified the future without project assumptions.**
    - **Clarified likelihood of future development.**
    - **Clarified why the development assumptions were made.**
    - **H and H assumptions were linked directly to the flow increase.**

IEPR Findings – Comment 2

Comment 2: The accuracy and robustness of the hydrologic and hydraulic modeling results could not be determined because the hydrologic impacts of without-project assumptions and the risks and uncertainties associated with hydrologic modeling were not documented.

- **Resolved**
  - **Actions Taken**
    - **H and H Assumptions were linked directly to their percent impact on flow.**
    - **Risks and uncertainties were better explained.**
    - **Additional description of the analysis was added to the H & H report.**

IEPR Findings – Comment 3

Comment 3: The screening of alternatives to identify the National Economic Development Plan may not have identified maximum net benefits for the lower and upper reaches of Jordan Creek, and possible minor improvements for the middle reaches were not considered.

- **Resolved**
  - **Actions Taken:**
    - **Tables were added to show analysis conducted.**
    - **Incremental analysis by reach was described.**
    - **Detention Basin analysis was further described.**

IEPR Findings - Other

- **Lack of details in the main and supporting documents made it difficult to assess the adequacy and acceptability of the data used. Additional supporting information was needed on the:**
  - **Impacts to the Indiana bat, which is currently listed as endangered throughout all counties in Missouri**
  - **Impacts to karst geology and cave-dwelling threatened and endangered species, and the potential presence of losing stream segments**
  - **Quantitative comparison of the alternatives' degree of flood inundation (elevation and coverage) and the duration of the flood inundation**
  - **Comparison of historic rainfall data to the data applied in the hydrologic modeling**
- **Resolved**
  - **Actions Taken:**
    - **Added information to clarify lack of impact to Indiana Bat and Karst geology on any T&E species.**
    - **Confirmed additional quantitative analysis not necessary.**
    - **Further explained effectiveness and risk associated with using synthetic rainfalls as opposed to historic.**

IEPR Findings - Other

The potential cumulative effects of the Jordan Creek flood risk management project in conjunction with the impacts of other actions that have occurred or may occur in the project area have not been considered

- **Resolved**
  - **Actions Taken:**
    - **Additional documentation on cumulative effects analysis included in report**
    - **FONSI confirmed**

IEPR Findings - Other

- **Inconsistencies and discrepancies were noted in some of the data provided:**
  - Descriptions of the Wilsons Creek Railroad Bridge replacement and the modifications required for the Scenic Bridge differ
  - The estimated annual benefits and total construction costs for Plan J within the main text and the appendices differ
  - The Macroinvertebrate Stream Condition Indices (MSCI) scores in Table 4-5 do not corroborate the statement that Jordan Creek should support biological communities comparable to those found at the reference site
  - Cost estimate details do not match the descriptions provided in the Engineering Appendix for the proposed retaining walls and outlet structures associated with the detention basins
- **Resolved**
  - **Actions Taken:**
    - **All inconsistencies corrected in Final Report**

Updated Environmental Operating Principles

- **<u>Environmentally sound plan formulation and design (EOP 1, 2 & 5)</u>**
  - Minimal negative impacts to the riparian cooridor
  - Grading plan in the basins reducing disturbances of wetlands
- **<u>Environmental balance and sustainability (EOP 1, 2, 3 & 4)</u>**
  - Project avoids or minimizes environmental impacts while maximizing future safety and economic benefits to the community
  - Project complies with applicable Federal laws and Corps guidance
- **<u>Assess and mitigate cumulative impacts (EOP 2, 4 & 5)</u>**
  - No environmental mitigation required
  - Used risk management techniques to come to a decision
- **<u>Seeks public input and comment (EOP 7)</u>**

Campaign Plan

2. **Deliver enduring and essential water resource solutions through collaboration with partners and stakeholders**
   - 2a – Integrated, sustainable flood risk management
   - 2b – Implemented collaborative approaches with sponsor, stakeholders, and the public to build consensus and trust
3. **Deliver innovative, resilient, sustainable solutions to the Nation**
   - 3d – Develop and apply innovative approaches to delivering quality infrastructure via expedited planning processes
4. **Build and cultivate a competent, disciplined, and resilient team equipped to deliver high quality solutions**
   - 4a – Multidisciplinary PDT enhanced technical competencies to model hydraulics and conduct economic inventories & analyses
   - 4b – Communicating with teams, stakeholders, and the public strategically and transparently, including use of a project website
   - 4d – Used established tools and systems to model hydraulics and economics, developing highly skilled regional workforce

Project Summary

- **Improvements**
  - 5 regional detention basins
  - 1 railroad bridge replacement
  - 1 flood diversion structure
  - 2100 feet of channel modification
- **Benefits**
  - $3.1M in estimated annual damages prevented
  - 35% reduction in residual damages
- **$22M construction project**

Schedule

Task	Date
Initiation of Pilot	Feb 2011
Decision Point 3 (Civil Works Review Board)	May 2013
Decision Point 4 (Chief's Report)	August 2013
Water Resources Development Act	TBD
Pre-construction Engineering and Design	Pending authorization - 2 years
Construction	Pending authorization - 4 years

Recommendation

Approval to initiate State and Agency Review for the Jordan Creek Flood Risk Management Study, Springfield, Missouri, Final Integrated Feasibility Report and Environmental Assessment Dated May 15, 2013.

Division Commander's Briefing

THOMAS W. KULA

Brigadier General, USA

Southwestern Division

29-May-2013

US Army Corps of Engineers

BUILDING STRONG®

Pilot Study as part of Planning Modernization

- Jordan Creek - First among the 5 nation-wide pilot studies, testing the concepts for changes identified as necessary for CW Transformation
- Collaborative Effort – Sponsor did H&H analysis. Vertical Team Integration was key
- Used Risk Informed “Decision making” process to make the right decision with right amount of data
- Improved Efficiency of Planning

SWD Rationale for Supporting Recommendation

- <u>LEGAL AND POLICY COMPLIANCE:</u>
  - Report complies with all applicable policies and laws in place at the time of its completion
  - Risk Register documents the various decisions and its risk and uncertainty
  - Project is consistent with the Environmental Operating Principles and supports the Strategic Campaign Plan.
  - District Counsel's legal certification: April 2013

SWD Rationale for Supporting Recommendation (cont.)

- NED Plan provides positive economic benefits
- NED Plan supported by Sponsor and other agencies

SWD Quality Assurance Activities

- Coordinated with vertical team to ensure that project is technically and policy compliant
- Reviewed DQC, ATR and IEPR comments/responses to ensure appropriate resolution
- Worked with SWL to successfully resolve HQ review comments during various phases of study
- Review Plan (RP) for Feasibility Studies approved by MSC on 27-Sptemeber 2012. RP for PED to be finalized once the PED phase is initiated

Importance of the Project

- The project would reduce expected annual flood damages along Jordan Creek by 65%, with greatest reduction occurring in Reach 1
  - Reduces flood damages at a few commercial businesses and at a major pharmaceutical plant that makes the chemical ingredients needed in a medicine of national significance
- The project would also reduce disruptions to traffic and emergency health and safety services
- Within our core mission to reduce flood risk damages

SWD Recommendation

The Civil Works Review Board approve the release of the Jordan Creek Flood Risk Management Study, Springfield, Missouri, Final Feasibility Report and Environmental Assessment, May 2013, for State and Agency Review

Agency Technical Review (ATR)

- **ATR led by FRM – PCX**
  - 12 disciplines participated in ATR process
- **ATR conducted incrementally throughout scoping and alternative analysis phases**
  - FSM, Spring 2010 (prior to pilot study)
  - Prior to Decision Point 1, August 2011
  - Prior to Decision Point 2, July 2012 (webinar)
  - Draft Feasibility Report, February 2013

ATR Team

ATR Member	Discipline	District
Stacey Underwood	ATR Lead	CENAB
Tim Axtman	Plan Formulation	CEMVN
Johnny Chan	Economist	CENAN
Chris Spaur	Environmental	CENAB
Adam Oestreich	Real Estate	CENAB
William Bolte	Cost	CENWW
Kevin Whorton	Civil Engineering	CENAN
Jim Snyder	Geotechnical	CENAB
Dennis Seibel	H&H	CENAB
Mike Deering	Risk Analysis	IWR-HEC
David Force	Structural	CELRC
Mike Dougherty	GIS	CEMVR

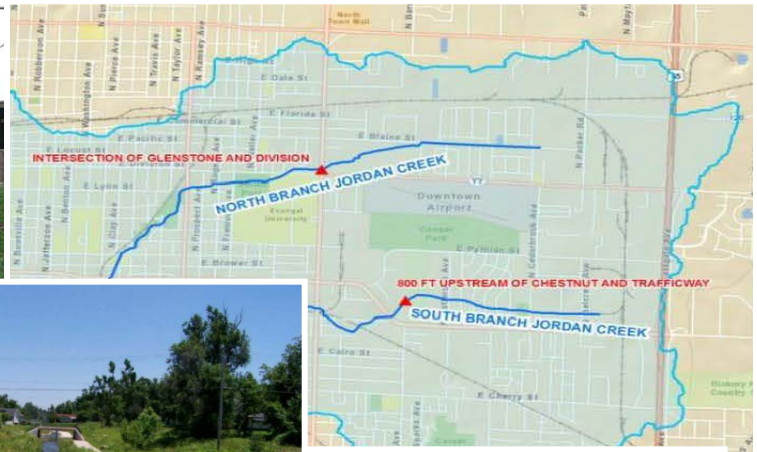
Agency Technical Review (ATR)

- **Total Number of Comments**: 217 over 4 reviews (58 on draft report) – all resolved
- **Significant Comments on Draft Report**
  - Future damages/future development included in benefits
  - High residual risk with selected plan
  - 1 critical ATR comment related to sediment transport and maintenance of channel
- **Cost MCX Certification April 15, 2013**
- **Review Report Completed April 23, 2013**

Battelle
The Business of Innovation

Jordan Creek-Springfield, Greene County, Missouri Feasibility Study Report and Environmental Assessment

Presented to the CWRB on
May 29, 2013



Battelle

Karen Johnson-Young, PMP
Program Manager

Lynn A. McLeod, PMP
Project Manager

IEPR – Jordan Creek

Springfield Panel Members	Panel Discipline
Robert Fleming, P.E. (Lead Panel Member)	Structural/Geotechnical Engineering; Civil/Cost Engineering
Harry Shoudy	Civil Works Planning/Economics
Michael Kabiling, Ph.D., P.E., C.F.M.	Hydrology and Hydraulic Engineering
Steve Stumne, C.W.S.	Biology/Ecology

The Springfield IEPR was conducted in February 2013

- Panel Reviewed the February 2013 version of the documents
- Project documents were prepared following the SMART Planning Process.
  - This was the first IEPR of documents prepared under this process

IEPR – Jordan Creek

Final IEPR Report submitted on March 26, 2013

Results:

- 15 Final Panel Comments
  - 3 high significance
  - 7 medium significance
  - 5 low significance

Post-Final Panel Comments/Response results documented on April 15, 2013

Results:

- PDT Evaluator Responses to Final Panel Comments
  - 15 concurs
- Panel BackCheck Responses to the PDT Responses
  - 15 concurs

IEPR – Jordan Creek

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Notable Panel Findings from the Final IEPR Report

- The project is technically sound from an overall hydraulic engineering, structural engineering, geotechnical engineering, civil/cost engineering, and environmental and planning perspective
- Lack of details in the main and supporting documents made it difficult to assess the adequacy and acceptability of the data used. Additional supporting information was needed on the:
  - Reasonableness of the without-project assumptions and projections and the identification of the national economic development plan
  - Hydrologic impacts of without-project assumptions, risks and uncertainties associated with hydrologic modeling, and inundation reduction benefits claimed
  - Impacts to the Indiana bat, which is currently listed as endangered throughout all counties in Missouri
  - Impacts to karst geology and cave-dwelling threatened and endangered species, and the potential presence of losing stream segments
  - Quantitative comparison of the alternatives' degree of flood inundation (elevation and coverage) and the duration of the flood inundation
  - Comparison of historical rainfall data to the data applied in the hydrologic modeling
- The potential cumulative effects of the Jordan Creek flood risk management project in conjunction with the impacts of other actions that have occurred or may occur in the project area have not been considered

IEPR – Jordan Creek

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Notable Panel Findings from the Final IEPR Report

- The screening of alternatives to identify the National Economic Development Plan may not have identified maximum net benefits for the lower and upper reaches of Jordan Creek, and possible minor improvements for the middle reaches were not considered
- Inconsistencies and discrepancies were noted in some of the data provided:
  - Descriptions of the Wilsons Creek Railroad Bridge replacement and the modifications required for the Scenic Bridge differ, which could result in minor changes to the project costs
  - The estimated annual benefits and total construction costs for Plan J within the main text and the appendices differ
  - The Macroinvertebrate Stream Condition Indices (MSCI) scores in Table 4-5 do not corroborate the statement that Jordan Creek should support biological communities comparable to those found at the reference site
  - Cost estimate details do not match the descriptions provided in the Engineering Appendix for the proposed retaining walls and outlet structures associated with the detention basins

Conclusions

- All concerns and questions brought forward by the Panel were addressed by the PDT during the Comment/Response process.

HQ USACE Policy Review

Jeffrey L. Trulick

Review Manager/Biologist

Office of Water Project Review

Planning and Policy Division

29 May 2013

US Army Corps of Engineers

PLANNING SMART
BUILDING STRONG®

HQ Team Reviews

- Feasibility Scoping Meeting-2010
- Pilot Study – February 2011
- Decision Point #1 (Reaffirmed Fed Int)
- Decision Point #2 (affirmed Alt array)
- Decision Point #3-TSP
- Draft Report/EA
- Decision Point #4-CWRB

Policy Issues from DP & Draft Report Reviews

- Federal Interest
- Use of MCDA in project planning
- Habitat mitigation
- HTRW/rights of access
- Future w/o project damages
- H&H Modeling
- Residual Risk

Significant Areas of Policy Concern:

- FWOP increased damages at frequent events
- Use of MCDA in formulation
- Residual Risk

Future without Project Damages

- **CONCERN:** The economic analysis was showing large damages at frequent events, which could overstate project justification.

- **REASON:** **"**The future without-project condition provides the basis from which alternative plans are formulated and impacts are assessed. Since impact assessment is the basis for plan evaluation, comparison and selection, clear definition and full documentation of the without-project condition are essential." ER 1105-2-100.

- **RESOLUTION:** Refinement of the economic analysis to more accurately reflect a realistic future without project condition.

- **RESOLUTION IMPACT:** Concern is resolved.

Plan Formulation

- **CONCERN:** Use of MCDA may not be needed due to limited plan formulation and decision criteria.

- **REASON:** ER 1105-2-100 provides guidance to scale the effort and tools to the complexity of the effort.

- **RESOLUTION:** Analysis using MCDA was not warranted due to no ER planning objective or formulation.

- **RESOLUTION IMPACT:** Concern is resolved.

Residual Risk

- **CONCERN:** Federal justified project protects downtown from frequent flood events. Substantial residual flood risks remain for larger, less frequent events.

- **REASON:** ER 1105-2-101 requires full analysis and disclosure of remaining residual risk.

- **RESOLUTION:** Team documented other FRM actions by others in the project are which will supplement USACE project and address this risk, although some remains.

- **RESOLUTION IMPACT:** Concern is resolved.

HQUSACE POLICY COMPLIANCE REVIEW TEAM RECOMMENDATION

Approval to release the draft Chief's Report, Feasibility Report and NEPA Document for S&A Review as required by the Flood Control Act of 1944.

Lessons Learned—District

- Pilot Process helped inform SMART planning principles -- critical thinking (risk informed)
- District priority – Leadership kept PDT focused
- District Quality Control – Key to success
- Continue to formalize and document DQC findings to assist with concurrent review
- Charge Questions for IEPR and ATR need to be updated for SMART planning

Lessons Learned—Division

- Project had great collaboration vertically and with sponsor
- Fully funded pilot study helped the PDT complete study efficiently within 27 months
- Risk Register was used to make risk informed decision with the right amount of data
- Right people needed – for 3x3x3 to work we need the right people with the right experience