

DEKALB COUNTY MULTI- JURISDICTIONAL HAZARD MITIGATION PLAN

Mo-Kan Regional Council, 224 N. 7th Street, St. Joseph, MO 64501

Final
Expires 10/04/2023

CONTRIBUTORS

DeKalb County Hazard Mitigation Planning Committee

Jurisdictional Representatives

Name	Title	Department	Jurisdiction/Agency/ Organization
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Sam Perkins	City Council member	City Council	Amity
Tina Good	City Clerk	Administration	Clarksdale
Amber M. Clary			
Patricia Fischer-Johnson	City Clerk	Administration	Maysville
Jody Barlow	City Clerk	Administration	Osborn
Hazel Fowler	City Clerk	Administration	Stewartsville
Stacy Benoit	City Clerk	Administration	Union Star
Angela Gallus	Volunteer	Volunteer	Weatherby
Emma Bridges	Volunteer	Volunteers	
Robert Smith	Superintendent	Administration	Maysville School District
Rick Goin	Superintendent	Administration	Osborn School District
Jay Albright	Superintendent	Administration	Stewartsville School District
Rick Calloway	Superintendent	Administration	Union Star School District

Stakeholder Representatives

Name	Title	Department	Jurisdiction/Agency/Organization
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Kyle White	Commissioner	Commission	DeKalb County
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EXECUTIVE SUMMARY

The purpose of hazard mitigation is to reduce or eliminate long-term risk to people and property from hazards. DeKalb County and participating jurisdictions and school/special districts developed this multi-jurisdictional local hazard mitigation plan update to reduce future losses from hazard events to the County and its communities and school/special districts. The plan is an update of a plan that was approved in September, 2013. The plan and the update were prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 to result in eligibility for the Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance Grant Programs.

The County Multi-Hazard Mitigation Plan is a multi-jurisdictional plan that covers the following jurisdictions that participated in the planning process:

- Unincorporated DeKalb County
- Amity
- Clarksdale
- Maysville
- Osborn
- Stewartsville
- Union Star
- Weatherby (adoption resolution pending)
- Maysville School District
- Osborn School District
- Stewartsville School District
- Union Star School District

DeKalb County and the entities listed above developed a Multi-Jurisdictional Hazard Mitigation Plan that was approved by FEMA in September, 2013 (hereafter referred to as the *2013 Hazard Mitigation Plan*). This current planning effort serves to update that previously approved plan.

The plan update process followed a methodology prescribed by FEMA, which began with the formation of a Mitigation Planning Committee (MPC) comprised of representatives from DeKalb County and participating jurisdictions. The MPC updated the risk assessment that identified and profiled hazards that pose a risk to DeKalb County and analyzed jurisdictional vulnerability to these hazards. The MPC also examined the capabilities in place to mitigate the hazard damages, with emphasis on changes that have occurred since the previously approved plan was adopted. The MPC determined that the planning area is vulnerable to several hazards that are identified, profiled, and analyzed in this plan. Winter storms, severe thunderstorms/hail/lightning/high winds, and tornadoes are among the hazards that historically have had a significant impact.

Based upon the risk assessment, the MPC updated goals for reducing risk from hazards. The goals are listed below:

Goal 1: Protect the lives, property and livelihoods of all citizens.

1. Objective: Provide sufficient warning of impending disasters.
2. Objective: Increase knowledge of natural hazards among citizens.
3. Objective: Protect residential and commercial structures in the present and future.

Goal 2: Reduce the impact of disasters.

1. Objective: Manage growth in designated areas through sustainable policies, principles and practices.

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

1. Objective: Increase disaster mitigation management capability in local governments.
2. Objective: Strengthen critical infrastructure.

To advance the identified goals, the MPC developed recommended mitigation actions, which are detailed in Chapter 4 of this plan. The MPC developed an implementation plan for each action, which identifies priority level, background information, ideas for implementation, responsible agency, timeline, cost estimate, potential funding sources, and more.

PREREQUISITES

44 CFR requirement 201.6(c)(5): The local hazard mitigation plan shall include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan. For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

This plan has been reviewed by and adopted with resolutions or other documentation of adoption by all participating jurisdictions and schools/special districts. The documentation of each adoption is included in Appendix D, and a model resolution is included on the following page.

The following jurisdictions participated in the development of this plan and have adopted the multi-jurisdictional plan.

- DeKalb County
- Amity
- Clarksdale
- Maysville
- Osborn
- Stewartsville
- Union Star
- Maysville School District
- Osborn School District
- Stewartsville School District
- Union Star School District

The plan will be amended upon the receiving the adoption resolution from Weatherby.

Model Resolution

(LOCAL GOVERNING BODY/SCHOOL DISTRICT), Missouri RESOLUTION NO. _____

A RESOLUTION OF THE (LOCAL GOVERNING BODY /SCHOOL DISTRICT) ADOPTING THE 2018 DEKALB COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS the (*local governing body/school district*) recognizes the threat that natural hazards pose to people and property within the (*local governing body/school district*); and

WHEREAS the (*local governing body/school district*) has participated in the preparation of a multi-jurisdictional local hazard mitigation plan, hereby known as the 2018 DeKalb County Multi-Jurisdictional Hazard Mitigation Plan, hereafter referred to as the *Plan*, in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the *Plan* identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the (*local governing body/school district*) from the impacts of future hazards and disasters; and

WHEREAS the (*local governing body*) recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the (*local governing body/school district*) will endeavor to integrate the *Plan* into the comprehensive planning process; and

WHEREAS adoption by the (*local governing body/school district*) demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*.

NOW THEREFORE, BE IT RESOLVED BY THE (LOCAL GOVERNMENT/SCHOOL DISTRICT), in the State of Missouri, THAT:

In accordance with (*local rule for adopting resolutions*), the (*local governing body/school district*) adopts the final *FEMA-approved Plan*.

ADOPTED by a vote of __ in favor and ____ against, and ____ abstaining, this _day of _____, _____.

By (Sig): _____
Print name: _____

ATTEST:
By (Sig.): _____
Print name: _____

APPROVED AS TO FORM:
By (Sig.): _____
Print name: _____

1 INTRODUCTION AND PLANNING PROCESS

1 INTRODUCTION AND PLANNING PROCESS	1.1
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1.1 PURPOSE

Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. Mitigation activities may be implemented prior to, during or after an incident. However, it has been demonstrated that hazard mitigation is most effective when based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs (<http://www.fema.gov/what-mitigation>).

Federal Emergency Management Agency (FEMA) has implemented the various hazard mitigation planning provisions through the Code of Federal Regulations (CFR) at 44 CFR Part 201. The CFR provisions set forth the mitigation plan requirement for local and tribal governments as a condition of receiving FEMA hazard mitigation assistance. Under 44 CFR §201.6, local governments, schools or other publicly funded districts must have adopted a FEMA-approved local hazard mitigation plan in order to apply for hazard mitigation project grants. Section 322 of the Robert T. Stafford Relief and Emergency Assistance Act (P.L. 93-288), as amended by the Disaster Mitigation Act of 2000 (DMA) (P.L. 106-390), provides for States, Tribes and local governments to undertake a risk-based approach to reducing risks to natural hazards through mitigation planning.

The plan also meets the minimum planning requirements for all FEMA mitigation programs, such as Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), Pre-Disaster Mitigation (PDM) and where appropriate, other FEMA mitigation related programs such as the National Earthquake Hazards Reduction Program (NEHRP), the National Flood Insurance Program (NFIP) and the Community Rating System (CRS). Entities that do not adopt the plan will not be eligible for mitigation grants.

The Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule were published in the Federal Register on February 26, 2002, (44 CFR §201.6) and finalized on October 31, 2007. (Hereafter, these requirements and regulations will be referred to collectively as the Disaster Mitigation Act or DMA). The DMA established the requirements for local hazard mitigation plans are in the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288). The communities and school districts were informed that adopting the plan is a prerequisite for mitigation grant eligibility. Entities that do not adopt the plan will not be eligible for mitigation grants.

1.2 BACKGROUND AND SCOPE

As required by 44 CFR §201.6(d)(3), local jurisdictions must review and revise their plan to reflect changes in development, progress in local mitigation efforts and changes in priorities and resubmit it for approval every five (5) years in order to continue to be eligible for mitigation project grant funding. The 2018 DeKalb County Multi-Jurisdictional Hazard Mitigation Plan is a revision of the previous five-year update adopted in September 2013, which was the first update of the original plan.

Jurisdictions that participated in the last plan and are continuing participation in the 2018 include:

- DeKalb County
- Village of Amity
- City of Clarksdale
- City of Maysville
- City of Osborn
- City of Stewartsville
- City of Union Star
- Village of Weatherby (in progress)
- Maysville School District
- Osborn School District
- Stewartsville School District
- Union Star School District

The Village of Weatherby is expected to submit adoption resolutions, thus completing their participation requirements.

The jurisdictions of Cameron, Stewartsville and Osborn are located in both DeKalb County and Clinton County. Stewartsville and Osborn are participating in the DeKalb County plan while Cameron is participating in the Clinton County plan.

Information in the plan will be used to help guide and coordinate mitigation activities and decisions for local land use policy.

1.3 PLAN ORGANIZATION

The 2018 HMP is organized into the following chapters:

- Chapter 1: Introduction and Planning Process
- Chapter 2: Planning Area Profile and Capabilities
- Chapter 3: Risk Assessment
- Chapter 4: Mitigation Strategy
- Chapter 5: Plan Maintenance Process
- Appendices

The plan format has been standardized across the state in order to create hazard mitigation plans that are more consistent with each other, making it easier to locate information as well as making plans more consistent from update to update. Chapter 5, Plan Maintenance Process, was added to expand the amount of information on maintaining the plan between updates. In the 2013 update, plan maintenance information was located in Section 4, Mitigation Strategy. Routine review and maintenance of mitigation actions and goals is important to make sure actions are being implemented on schedule and for the plan's goals to guide mitigation efforts. By increasing the focus on plan maintenance through the addition of a separate chapter, this aspect will receive the attention it deserves.

The table below (**Table 1.1**) shows each chapter and summarizes the changes made in the update.

Table 1.1. Changes Made in Plan Update

2013 HMP	2018 HMP
Section 1: Community Profiles	Chapter 1: Introduction and Planning Process
Section 2: Hazard Identification	Chapter 2: Planning Area Profile and Capabilities
Section 3: Vulnerability and Capability Assessment	Chapter 3: Risk Assessment
Section 4: Mitigation Strategy	Chapter 4: Mitigation Strategy
	Chapter 5: Plan Maintenance Process (new chapter)

1.4 PLANNING PROCESS

44 CFR Requirement 201.6(c)(1): [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Mo-Kan Regional Council was contracted to facilitate the plan's updating process. Mo-Kan staff met with the DeKalb County Commissioners, County Clerk and Deputy Clerk during the informational meeting to develop a list of area stakeholders and local jurisdiction representatives for the Mitigation Planning Committee (MPC). Presiding Commissioner Harold Allison also serves as the county's Emergency Management Director (EMD). The updating process included the kick-off meeting and three subsequent MPC meetings. Mo-Kan staff produced the draft and final plan update in a FEMA-approvable document, and coordinated with the Missouri State Emergency Management Agency (SEMA) and FEMA plan reviews.

The main topics at the MPC meetings are discussed in Section 1.4.2. Mo-Kan solicited public involvement in the planning process. Press releases were disseminated for the MPC meetings on August 28, 2017; September 18, 2017; October 16, 2017; and February 12, 2018. Appendix B provides documentation of the planning process including public involvement, solicitations and meeting notices.

The draft of the plan was posted on the DeKalb County website for public review and comment. A press release was sent to *DeKalb County Recorder* and *Cameron Newsleader*, notifying that the plan was available for public comment. Input from city and county officials was solicited through distribution of drafts of the plan to their jurisdictions.

Table 1.2 shows the representatives from local jurisdictions and stakeholders that attended meetings and participated on the MPC.

Table 1.2. Jurisdictional Representatives on DeKalb County Mitigation Planning Committee

Name	Title	Department	Jurisdiction/Agency /Organization
Harrold Allison Penny Gans	Presiding Commissioner Deputy Clerk	Commission	DeKalb County
Sam Perkins	City Council member	City Council	Amity
Tina Good	City Clerk	Administration	Clarksdale
Patricia Fischer- Johnson	City Clerk	Administration	Maysville
Jody Barlow	City Clerk	Administration	Osborn
Hazel Fowler	City Clerk	Administration	Stewartsville
Stacy Benoit	City Clerk	Administration	Union Star
Angela Gallus Emma Bridges	Volunteers	Volunteer	Weatherby
Robert Smith	Superintendent	Administration	Maysville School District
Rick Goin	Superintendent	Administration	Osborn School District
Jay Albright	Superintendent	Administration	Stewartsville School District
Rick Calloway	Superintendent	Administration	Union Star School District

1.4.1 Multi-Jurisdictional Participation

44 CFR Requirement §201.6(a)(3): Multi-jurisdictional plans may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

Each jurisdiction is required to participate in the planning process and officially adopt the plan, in order to be eligible for mitigation funding grants. The MPC established some minimum criteria that each jurisdiction must meet in order to be considered a “participant.” Plan participation requirements were defined as:

- Designation of a representative from each participating jurisdiction to serve on the MPC;
- Participation in two MPC meetings by either direct participation or authorized representation or host a work session with the specific jurisdiction;
- Each participating jurisdiction must provide to the MPC sufficient information to support plan development by completion and return of data collection questionnaires and

- validating/correcting critical facility inventories;
- Eliminate actions from the previously approved plan that were not implemented because they were impractical, inappropriate, not cost-effective, or otherwise not feasible;
- Review and comment on plan drafts;
- Actively solicit input from the public, local officials, and other interested parties about the planning process and provide an opportunity for them to comment on the plan;
- Provide documentation to show time donated to the planning effort; and
- All participants should formally adopt the mitigation plan prior to submittal to SEMA and FEMA for final approval.

The participation requirements were easily met by DeKalb County, who has full-time staff that were present at each meeting. Participation from the nine townships was very strong. Communities with full-time staff were able to attend meetings, in general, but the communities without full-time staff had difficulty. The MPC agreed that if a jurisdiction was unable to attend the meetings that participation requirements could be met by communicating with Mo-Kan to receive meeting materials and submitting the necessary paperwork. Not all jurisdictions have met participation requirements. See Table 1.3 for jurisdictional participation in the planning process.

Table 1.3. Jurisdictional Participation in Planning Process

Jurisdiction	Kick-off Meeting	Meeting #2	Meeting #3	Meeting#4	Data Collection Questionnaire Response	Update/Develop Mitigation Actions	Adoption Resolution	Sufficient Contact with Mo-Kan
DeKalb County	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Amity	No	No	No	No	Yes	Yes	Yes	Yes
Clarksdale	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Maysville	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Osborn	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stewartsville	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Union Star	No	Yes	No	No	Yes	Yes	Yes	Yes
Weatherby	No	Yes	Yes	No	Yes	Yes	No	Yes
Maysville School District	No	No	No	No	Yes	Yes	Yes	Yes
Osborn School District	No	No	No	Yes	Yes	Yes	Yes	Yes
Stewartsville School District	No	No	Yes	No	Yes	Yes	Yes	Yes
Union Star School District	No	No	No	Yes	Yes	Yes	Yes	Yes

1.4.2 The Planning Steps

FEMA's Local Mitigation Planning Handbook (March 2013), Local Mitigation Plan Review Guide (October 1, 2013), and Integrating Hazard Mitigation into Local Planning: Case Studies and

Tools for Community Officials (March 1, 2013) were used as the sources for the HMP update.

The update followed the 10-step planning process adapted from FEMA's Community Rating System (CRS) and Flood Mitigation Assistance programs. The 10-step process allows the Plan to meet funding eligibility requirements of the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, Community Rating System, and Flood Mitigation Assistance Program. Table 1.4 shows how the CRS process aligns with the Nine Task Process outlined in the 2013 Local Mitigation Planning Handbook.

Following Table 1.4 is a summary of how Mo-Kan staff used the Nine Task Process to develop the update to the Plan.

Table 1.4. County Mitigation Plan Update Process

Community Rating System (CRS) Planning Steps (Activity 510)	Local Mitigation Planning Handbook Tasks (44 CFR Part 201)
Step 1. Organize	Task 1: Determine the Planning Area and Resources Task 2: Build the Planning Team 44 CFR 201.6(c)(1)
Step 2. Involve the public	Task 3: Create an Outreach Strategy 44 CFR 201.6(b)(1)
Step 3. Coordinate	Task 4: Review Community Capabilities 44 CFR 201.6(b)(2) & (3)
Step 4. Assess the hazard	Task 5: Conduct a Risk Assessment 44 CFR 201.6(c)(2)(i) 44 CFR 201.6(c)(2)(ii) & (iii)
Step 5. Assess the problem	
Step 6. Set goals	Task 6: Develop a Mitigation Strategy 44 CFR 201.6(c)(3)(i); 44 CFR 201.6(c)(3)(ii); and 44 CFR 201.6(c)(3)(iii)
Step 7. Review possible activities	
Step 8. Draft an action plan	
Step 9. Adopt the plan	Task 8: Review and Adopt the Plan
Step 10. Implement, evaluate, revise	Task 7: Keep the Plan Current Task 9: Create a Safe and Resilient Community 44 CFR 201.6(c)(4)

Step 1: Organize the Planning Team (Handbook Tasks 1 & 2)

In May 2017 Mo-Kan entered into cooperative agreements with SEMA and DeKalb County to prepare this multi-jurisdictional plan for local jurisdictions in DeKalb County. Discussions on the development of the DeKalb County Multi-Jurisdictional Hazard Mitigation Plan began on June 26, 2017 with a meeting attended by Mo-Kan staff, DeKalb County Commissioners, County Clerk and Deputy Clerk. This meeting was conducted to discuss the timeline for developing the hazard mitigation plan, the planning process, identification of stakeholders and community organizations to include in the planning process and a date for the Kick-Off meeting to initiate participation of jurisdictions and public entities in the planning process. The attendees identified prospective representatives and stakeholders and a contact list was prepared for mailing an invitation letter to the Kick-Off Meeting. The list of invitees included local elected officials, municipal government staff, county government staff, emergency services personnel, school

administrators, members from health and social services organizations, utility providers, and volunteer organizations. A complete list of invitees is in Appendix B.

The MPC met on four occasions from August 2017 through February 2018 to collaborate on the Plan's update. Participants assisted in data collection; reviewed and revised goals, objectives and mitigation strategies; and provided reviews and comments on the plan throughout the update process. Communication with MPC members occurred throughout the planning process through face-to-face meetings, phone interviews, and email correspondence in addition to committee meetings. Table 1.5 shows the meeting schedule and items discussed for MPC meetings.

Table 1.5. Schedule of MPC Meetings

Meeting	Topic	Date
Informational Meeting	Met with the County Commissioners (Presiding Commissioner serves as the Emergency Management Director), County Clerk and Deputy Clerk to discuss the composition of the Mitigation Planning Committee. Discussed risk assessment methodology and the timeline for updating the plan.	June 26, 2017
Kick-off Meeting	Discussed the background and importance of HMP, timeline and participation requirements, review of 2013 plan and began working on community data questionnaire forms (See Appendix B).	August 28, 2017
Planning Meeting #2	Reviewed goals and actions, discussion of past and potential mitigation projects and begin working on hazard analysis and cascading disasters (See Appendix B).	September 18, 2017
Planning Meeting #3	Discussed achievements and creating new actions (See Appendix B).	October 16, 2017
Planning Meeting #4	Discussed the adoption process and plan maintenance. Finalization of the goals and objectives (See Appendix B).	February 12, 2018

Step 2: Plan for Public Involvement (Handbook Task 3)

44 CFR Requirement 201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval.

The MPC held their Kick-Off meeting on August 28, 2017. Some of the MPC members had participated in the 2013 update but the updating process was new for the majority. There was discussion on soliciting public input and the importance of public outreach. Several MPC members volunteered to distribute information at public events and facilities. It was determined to hold a series of public meetings and to present HMP update information at city council meetings, an area 911 meeting and other type of meetings. Mo-Kan staff and local jurisdictions disseminated public notices and press releases to the media, urging public attendance and input. Public notices, press releases, agendas and sign-in sheets for the following meetings are in Appendix B.

The Community Rating System (CRS) was discussed to determine if jurisdictions were interested in participation. DeKalb County has minimal issues with flooding. MPC members were usually present at the aforementioned meetings. The committee was open to public input at these meetings and incorporated this information into the plan when appropriate.

The MPC created a survey to get the public's feedback about what hazards they were the most concerned with and what mitigation actions they would like to see included in the update. The survey was posted on the county's website and distributed with the water bills in Union Star and Clarksdale.

Other meetings about the plan update included:

July 10, 2016 - ACCD (Andrew, Clinton, Caldwell and DeKalb Counties) 911
Attendees discussed communication capabilities and how to be ready to handle disasters.

November 29, 2017 – City of Maysville
Discussed the plan update and how to complete the forms with city staff.

November 29, 2017 – Fire Districts of DeKalb County
Representatives from fire districts throughout the county met to discuss the risk assessment and needs.

January 18, 2018 – DeKalb County Senior Center
Attendees completed surveys and were given Ready-In-Three materials. They also learned about the plan update.

February 13, 2018 – Maysville Chamber of Commerce
Discussed the plan update and the importance of businesses being prepared for disasters.

In addition, information regarding the hazard mitigation plan, as well as Ready-in-Three campaign materials were distributed at the following locations: DeKalb County Courthouse, DeKalb County Senior Center, Maysville City Hall and Clarksdale City Hall. Union Star community volunteers distributed Ready-In-Three materials to each house in the community.

Upon the draft's completion, it was posted on DeKalb County's website and distributed to each jurisdiction to either post on their website or to have a hard copy available for the public to review. Public feedback was encouraged.

Step 3: Coordinate with Other Departments and Agencies and Incorporate Existing Information (Handbook Task 3)

44 CFR Requirement 201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process. (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

At the informational meeting, held on June 26, 2017, the DeKalb County Commissioners were asked to compile a list of organizations to invite to participate in updating the plan, whose goals and interests interfaced with hazard mitigation. Invitations were sent to all jurisdictions located in DeKalb County, school districts, emergency management and responders, personnel, industry representatives, etc. A list of organizations and agencies receiving invitations is located in Appendix B. Invitation respondents were the MPC, whose input guided the plan update.

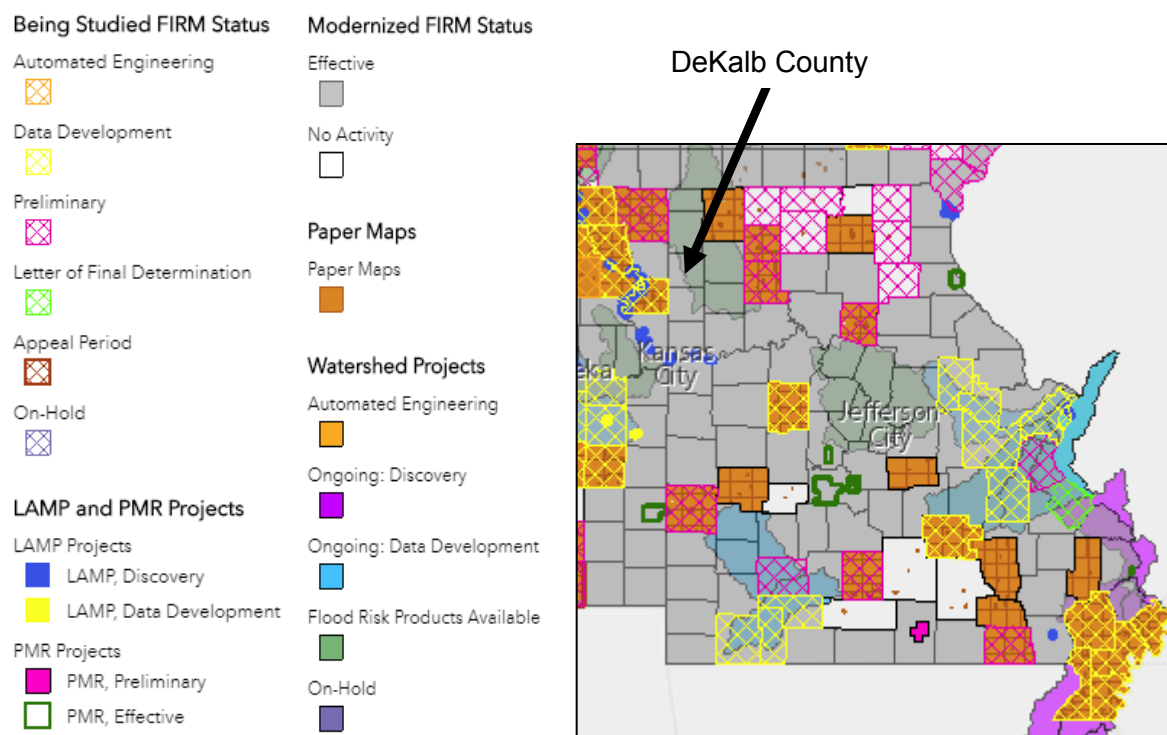
Coordination with FEMA Risk MAP Project

Risk Mapping, Assessment, and Planning (Risk MAP) is the Federal Emergency Management Agency (FEMA) Program that provides communities with flood information and tools they can use to enhance their mitigation plans and take action to better protect their citizens. Through collaboration with State, Tribal, and local entities, Risk MAP delivers quality data that increases public awareness and lead to actions that reduce risk to life and property.

DeKalb County has a Risk Map watershed project; flood risk product.

Figure 1.1, Missouri Study Status Map illustrates the current status of Missouri counties in regard to RiskMap projects, including DeKalb County.

Figure 1.1. Map of RiskMAP projects



(Source: <http://fema.maps.arcgis.com/apps/webappviewer/index.html?id=48cfac9a9ffb4003b565aaccf464d0ac>)

Integration of Other Data, Reports, Studies, and Plans

Additional input was solicited from other agencies and organizations that were not able to attend planning committees.

Data was collected and reviewed from multiple sources, which are referenced throughout the document. These sources include, but are not limited to, the US Census, Andrew County HMP (adjacent county), Flood Insurance Studies (FIS), Flood Insurance Rate Maps (FIRMS), State Department of Natural Resources (DNR) dam information, National Inventory of Dams (NID), dam inspection reports, local comprehensive plans and land use plans, US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics.

Step 4: Assess the Hazard: Identify and Profile Hazards (Handbook Task 5)

At the first MPC meeting, held on August 28, 2017, hazards from the 2013 plan were briefly identified and profiled. The MPC agreed that historically, tornados and severe weather had been the primary areas of concern. At the second MPC meeting, held on September 18, 2017, the hazards were discussed in more detail and a survey was workshopped that would be important for getting the public's feedback on which hazards they were most concerned about.

A list of previous disaster declarations was available to jurisdictions to assist in their risk assessment, but this list was not reviewed at a MPC meeting. The data collection questionnaire forms provided valuable information regarding each jurisdiction's experience with disasters. This information was used by the individual jurisdictions in evaluating their risk assessment and by Mo-Kan staff in generating the data for risk assessments for Chapter 3. The MPC reviewed each jurisdiction's data collection questionnaire at the fourth MPC meeting.

The 2013 DeKalb County HMP and 2010 State Plan provided a basis for the 2018 DeKalb County HMP. Buchanan County's updated HMP was referred to, since it followed the new outline and is an adjacent county.

Step 5: Assess the Problem: Identify Assets and Estimate Losses

Jurisdictions identified their respective assets on their Data Collection Questionnaire form, as well as during work sessions. These assets were compared against various GIS layers and HAZUS to access their vulnerability to disasters.

The city clerks, mayors and/or city council members of their respective jurisdictions collaborated to complete the data collection questionnaires. DeKalb County has full-time staff, but other communities had only one or no full-time staff. Providing information on the data collection questionnaires often fell to one person. The superintendents and/or principals completed the data collection questionnaires for their school districts. Most of the data on the school questionnaire forms was readily available, in a different format, for school emergency plans. The data retrieved from the questionnaires can be found in Chapter 3. This data includes information on regulatory, personnel, fiscal and technical capabilities, and existing mitigation initiatives.

Inventory estimates for each jurisdiction's building stock in the county were derived through the use of HAZUS MH 3.2. These estimates were given by total building type, as well as total

dollars of assets. The methodology for estimating losses varies by hazard. Loss estimates are included for various hazard profiles in the Risk Assessment chapter.

Step 6: Set Goals (Handbook Task 6)

At the second MPC meeting, goals from the previous plan were reviewed. The decision was made to wait until the fourth meeting, held on February 13, 2018, to make changes to the goals. This decision was based on allowing the jurisdictions more time to examine what progress had been made and to determine if there are new needs. The 2013 plan goals were:

Goal 1: Protect the lives, property and livelihoods of all citizens.

1. Objective: Provide sufficient warning of impending disasters.
2. Objective: Increase knowledge of natural hazards among citizens.
3. Objective: Protect citizens' lives.
4. Objective: Protect residential and commercial structures in the present and future.

Goal 2: Reduce the impact and/or occurrence of natural disasters on the county.

1. Objective: Decrease the occurrence of certain disasters.
2. Objective: Manage growth in designated areas through sustainable policies, principles and practices.

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

1. Objective: Increase disaster mitigation management capability in local governments.
2. Objective: Strengthen critical infrastructure.

The MPC continued the 2013 goals and objectives. DeKalb County's 2018 HMP goals are:

Goal 1: Protect the lives, property and livelihoods of all citizens.

1. Objective: Provide sufficient warning of impending disasters.
2. Objective: Increase knowledge of natural hazards among citizens.
3. Objective: Protect residential and commercial structures in the present and future.

Goal 2: Reduce the impact of disasters.

1. Objective: Manage growth in designated areas through sustainable policies, principles and practices.

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

1. Objective: Increase disaster mitigation management capability in local governments.
2. Objective: Strengthen critical infrastructure.

Step 7: Review Possible Mitigation Actions and Activities

At the second MPC meeting, held on September 18, 2017, the mitigation strategy from the previous plan was reviewed and a new strategy was discussed. Representatives from the jurisdictions also reviewed the previous actions and reported on progress made on previously proposed actions. A packet for each jurisdiction was provided that included evaluation and STAPLEE forms, information on how to complete the forms and the actions to be evaluated. Criteria for evaluation of the past actions was discussed during the meeting but due to the sheer number of actions needing to be evaluated, jurisdiction representatives evaluated actions outside of the scheduled MPC meetings.

Participants were to consider the potential cost of each action in relation to the anticipated future cost savings. Members were encouraged to continue forwarding only those actions that substantively addressed long-term risks identified in the risk assessment. There was little difference in the risk assessment of natural hazards from the 2013 plan.

The STAPLEE method was used to prioritize actions that would continue forward. The modified STAPLEE method determined if an action is socially acceptable, technically feasible, administratively possible, politically acceptable, legal, economically beneficial and environmentally sound. The STAPLEE method also considered if lives will be saved or if disaster damages would decrease through implementation. However, several MPC members said that certain actions scored higher than they felt their level of importance was. The representatives used their discretion on including those low-scoring actions with high importance since a STAPLEE method is a guideline to assist in ranking and not the only factor in determining importance.

At the third MPC meeting, held on October 16, 2017, new actions were discussed. MPC members were encouraged to continue actions that addressed long-term risks identified in the risk assessment. Copies of the FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013)* were made available for jurisdictions to reference.

Step 8: Draft an Action Plan

At the third MPC meeting, held October 16, 2017 new actions were discussed. The individual jurisdictions submitted their new actions after discussion with their respective city council or school board. It was at the individual jurisdiction's discretion on whether to include actions with low STAPLEE scores.

Step 9: Adopt the Plan (Handbook Task 8)

Jurisdictions were provided a copy of the plan to make available to the public. The public and the jurisdictions were asked for feedback. The plan was adopted by DeKalb County and other jurisdictions in May and June. Adoption resolutions can be found in Appendix D.

Step 10: Implement, Evaluate, and Revise the Plan (Handbook Tasks 7 & 9)

At each MPC meeting, plan maintenance was discussed. At the fourth MPC meeting, held on February 12, 2018, the discussion was more in depth and included strategies for plan implementation, monitoring and plan review dates. DeKalb County, and local jurisdictions set up general dates to review the plan. Details of plan maintenance and review are in Chapter 5.

2 PLANNING AREA PROFILE AND CAPABILITIES

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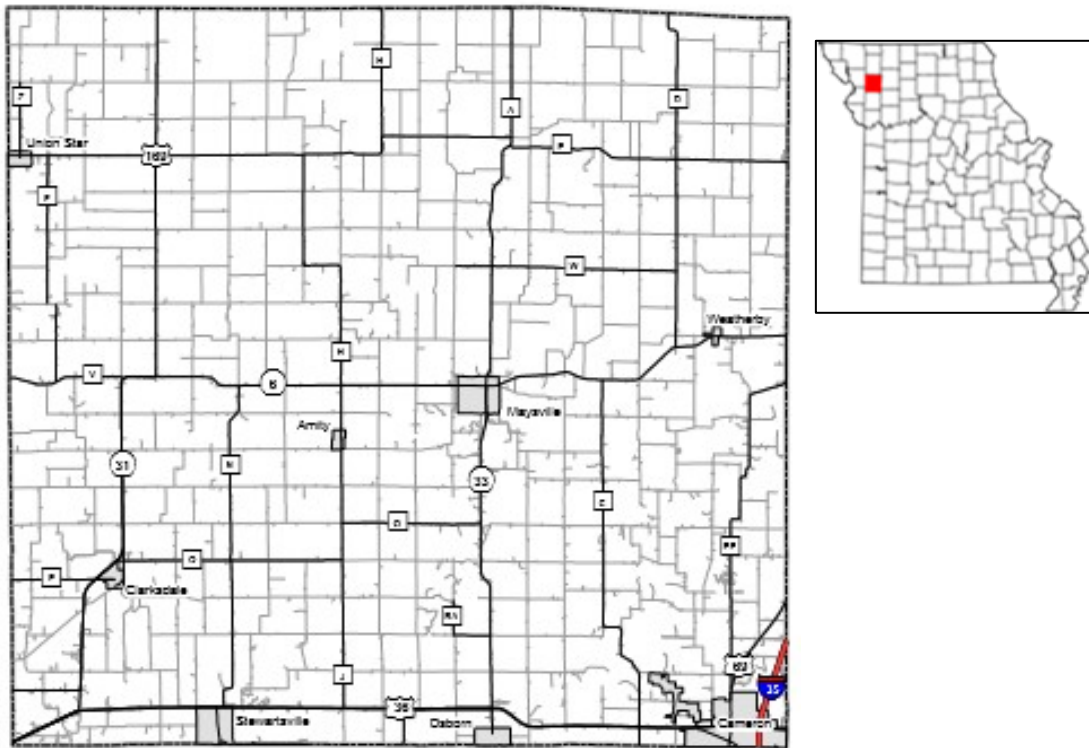
2.1 DeKalb County Planning Area Profile

DeKalb County is bordered by Andrew, Buchanan, Clinton, Caldwell, Daviess and Gentry counties in Missouri. As shown in Figure 2.1 on the following page, the county seat of Maysville is located near the geographic center of the county. Incorporated communities are Amity, Clarksdale, Maysville, Osborn, Stewartsville, Union Star and Weatherby. The City of Cameron is situated partially in DeKalb County and partially in Clinton County and is participating in Clinton County's Hazard Mitigation Plan.

According to the U.S. Bureau of the Census July 1, 2016 Population Estimates, the population of DeKalb County is 12,613. This is an 8.76 percent increase from 2000 U.S. Census population of 11,597. The change is similar when compared to Missouri's population growth rate of 8.3 percent in the same timeframe, but lags behind the United States' population growth rates of 13.20 percent. DeKalb County's median household income (MHI) increased 37.54% from \$31,654 in 2000 to \$43,538 in 2016. During the same timeframe Missouri and the United States experienced an increase in median income of 30.73 percent and 31.73 percent, respectively. From 2000 to 2016, the median house value in the county rose from \$72,700 to \$104,600, an increase of 43.88 percent. This increase lagged behind the state and national median house value increases of 57.06 percent and 65.21 percent, respectively (Source: <http://www.factfinder.census.gov>).

Figure 2.1.

Map of DeKalb County



2.1.2 Geography, Geology and Topography

In accordance with the United States Census Bureau the county is about 426 square miles; and about 424 square miles is land, and two square miles is water. The county is predominately rural with centrally located Maysville serving as the county seat. Cameron, located in both Clinton and DeKalb county is the largest population center, with 9,788 residents. Agriculture is the primary land use.

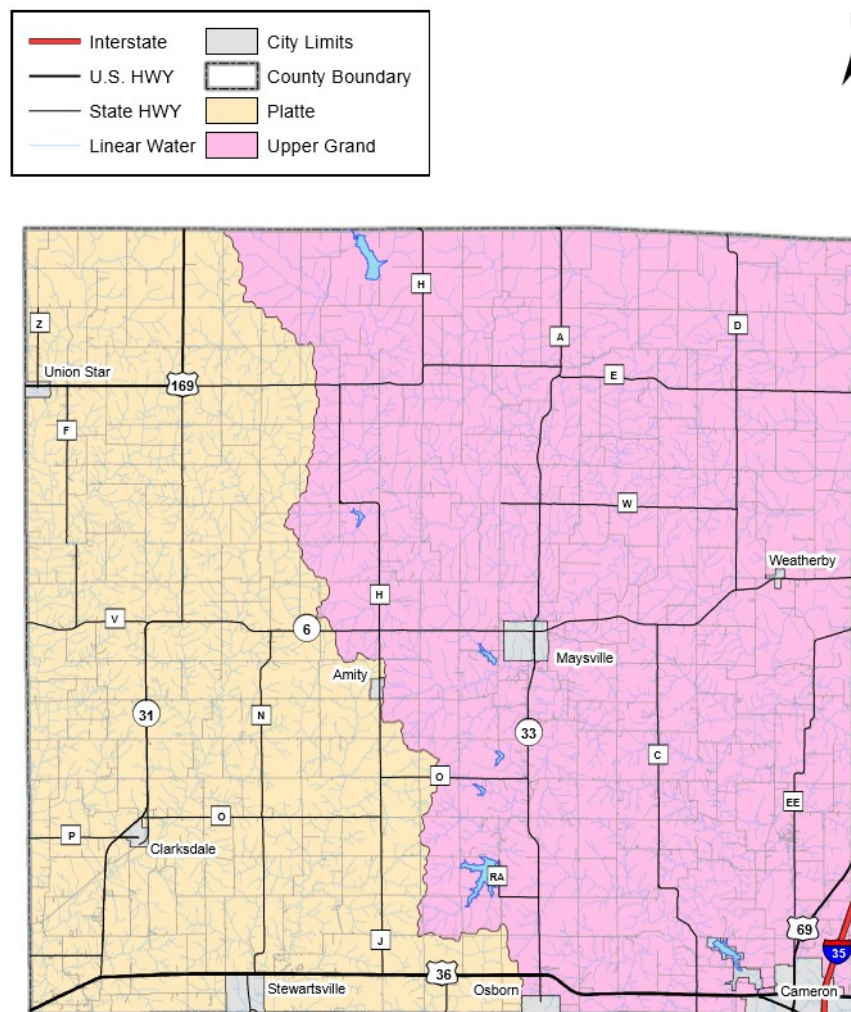
The general geology of DeKalb County can be described as an interbedded limestone and shale bedrock, with glacial till deposited in the soils. There are four associations of soil in this county; an association is a distinctive proportional pattern of soil. The Lamoni-Zook-Shelby association occupies 53 percent of the county, Lagonda-Grundy occupies 29 percent, and Zook-Kennebec and Armstrong-Gara-Ladoga each cover 9 percent.

DeKalb County does not have any major river, but there is one fork and two larger creeks. Third Fork Grand River runs from the north to the south, flowing next to Union Star along the western border of DeKalb County. Lost Creek runs from the north to southeast; beginning in the north central part of the county forming King Lake, and then running from the central part of the county to almost straight east, before spilling into Grindstone Creek. Grindstone Creek runs from the northeast to the southwest and is along the eastern border of DeKalb County.

There are two watersheds in DeKalb County. The Platte watershed includes the communities of

Amity, Clarksdale, Stewartville and Union Star. The Upper Grand watershed includes the communities of Cameron, Maysville, Osborn and Weatherby. Figure 2.2 on the next pages shows the two 8-digit hydrological unit (HUC) watersheds in county (Source: MoDNR).

Figure 2.2. DeKalb County HUC 8 Watersheds



(Source: Mo-Kan)

2.1.3 Climate

The climate of northwest Missouri is continental in nature with cold winters, hot summers and is subject to extreme changes in temperature, humidity, cloudiness and wind speeds. Weather reports from the Amity Weather Station state the mean average temperature is 52.3°, show that July is the warmest month, and has a mean maximum temperature of 86.5° (76.5° is mean average temperature for the month). January is the coldest month and has mean average minimum temperature of 16.4° (25.6° is the mean average temperature for the month). (Source: http://mrcc.isws.illinois.edu/mw_climate/climateSummaries/climSummOut_temp.jsp?stnId=USC00230143). The average rain fall is 38 inches per year and average snow fall is 18 inches per year (Source: <https://www.ncdc.noaa.gov/temp-and-precip/> and <http://www.bestplaces>)

2.1.4 Population/Demographics

Table 2.1 provides the populations for each city, village, and the unincorporated county for 2000 and 2016 American Community Survey population estimates, as provided by the United States Census Bureau, with the number and percentage change.

The county population will not be completely accurate since portions of some of the jurisdictions overlap into the adjacent counties, such as the case with the cities of Union Star, Stewartsville, Osborn and Cameron. Cameron, the largest incorporated area, is participating in Clinton County's Plan since the majority of its population reside in Clinton County.

Table 2.1 DeKalb County Population 2000-2016 by Community

Jurisdiction	2000 Census Total Population	2016 ACS Population Estimates	2000-2016 # Change	2000-2016 % Change
DeKalb County	11,597	12,892	1,295	10%
Village of Amity	70	53	-17	-24%
City of Clarksdale	351	258	-93	-26%
City of Maysville	1,212	1,094	-118	-10%
City of Osborn	455	493	38	8%
City of Stewartsville	759	863	104	12%
City of Union Star	433	358	-75	-17%
Village of Weatherby	123	92	-31	-25%
Unincorporated and the City of Cameron	8,194	9,681	1,487	18%

(Source: U.S. Bureau of the Census, Decennial Census, *population includes the portions of these cities in adjacent counties
https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml#)

According to the 2016 American Community Survey, 4.3 percent of DeKalb County's population is under 5 years old, which is lower than the matching statewide and national percentages of 6.2. DeKalb County's percentage of over population of 65 years old is 15.7, which is higher than the statewide and national percentages of 15.3 and 14.5, respectively. The county has 3,774 households, with the number of persons per household being 2.43 in DeKalb County. This is similar to the statewide average of 2.48 and slightly smaller than the national average of 2.64.

The vulnerability analyses in the next chapter of this plan will include Social Vulnerability Index (SoVI®) information from the Hazards and Vulnerability Research Institute at the University of South Carolina. The University developed an index to evaluate and rank the ability to respond to, cope with, recover from, and adapt to disasters. The index synthesizes 30 socioeconomic variables which research literature suggests contribute to reduction in a community's ability to prepare for, respond to, and recover from hazards. SoVI® data sources include primarily those from the United States Census Bureau. DeKalb County has a SoVI® score of -5.940000057 and in the national percentile of 1.7 percent.

Figure 2.3 shows how DeKalb County compares to the state and nation in social vulnerability to environmental hazards. A higher percentage indicates a higher vulnerability. Scores in the top 20 percent of the United States are more vulnerable counties (red) and scores in the bottom 20 percent of the United States indicate the least vulnerable counties (blue). DeKalb County scores in the low range for vulnerability (Source: <http://webra.cas.sc.edu/hvri/products/sovi.aspx>).

Figure 2.3. Social Vulnerability

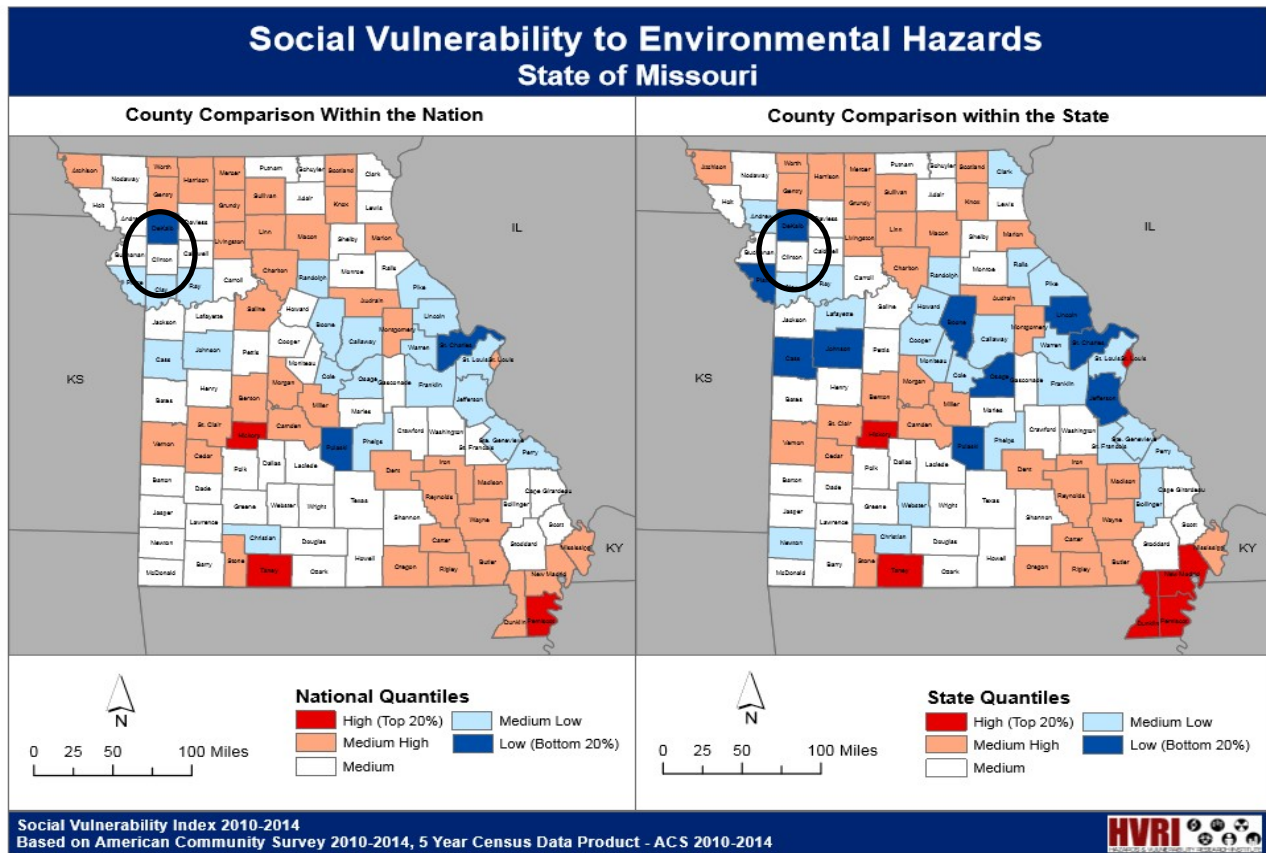


Table 2.2 provides additional demographic and economic indicators for the county.

Table 2.2 Unemployment, Poverty, Education, and Language Percentage Demographics

Jurisdiction	Total In Labor Force	Percent of Population Unemployed	Percent of Families Below the Poverty Level	Percentage of Population (High School graduate)	Percentage of Population (Bachelor's degree or higher)	Percentage of population (spoken language other than English)
DeKalb County	4,426	2.2%	14.2%	85.9%	13.6%	2%
Village of Amity	8	4.8%	59.1%	65%	5%	0%
City of Clarksdale	118	8.5%	8.5%	87%	12%	1.2%
City of Maysville	494	4.1%	15.3%	91.8%	20.3%	2%
City of Osborn	302	7.3%	4.5%	88.3%	8.7%	.02%
City of Stewartsville	487	2.7%	4.3%	91.7%	14.6%	0%
City of Union Star	193	14%	16.8%	91.2%	9.9%	3.6%
Village of Weatherby	41	12.2%	25%	76.1%	0%	0%

(Source: U.S. Census, 2016 American Community Survey, 5-year Estimates)

2.1.5 History

The Native Americans that lived in DeKalb County were the Kansa, Osage, and Missourians. They were nomadic people that were known to follow herds of large game species including buffalo, turkey, elk, bear and waterfowl. Numerous Native American artifacts have been discovered along Grindstone Creek. The first European settlers came to DeKalb County around 1839. The county's present boundaries were drawn on February 25, 1845. The county was named after American Revolution War hero General Johann de Kalb. The City of Osborn was also founded that same year. Stewartsville was platted in 1854 under the name of Tethetown, followed by Cameron in 1855. The Union Star post office has been open since 1863. The Village of Amity was platted in 1870. Clarksdale and Weatherby were both platted in 1885. Agriculture and two railroad lines played an important role in the county's growth in the late 1800s but the use of motor cars and trucks made transporting people and livestock more efficient. The DeKalb County Historical Society was formed in 1969 to preserve the county's history and continues to maintain a museum and research center on the square in Maysville.

2.1.6 Occupations

Table 2.3 displays occupation statistics for the incorporated cities and the county as a whole.

Table 2.3. Occupation Statistics, DeKalb County, Missouri

Jurisdiction	Management, Business, Science, and Arts Occupations	Service Occupations	Sales and Office Occupations	Natural Resources, Construction, and Maintenance Occupations	Production, Transportation, and Material Moving Occupations
DeKalb County	31%	16%	20%	10%	21%
Village of Amity	14%	28%	28%	0%	28%
City of Clarksdale	21%	6%	32%	14%	27%
City of Maysville	27%	21%	30%	8%	13%
City of Osborn	23%	21%	33%	5%	16%
City of Stewartsville	19%	19%	19%	11%	31%
City of Union Star	24%	23%	15%	12%	25%
Village of Weatherby	6%	50%	25%	11%	8%

(Source: U.S. Census, 2012-2016 American Community Survey 5-Year Estimates)

2.1.7 Agriculture

According to the USDA 2012 Census on Agriculture, DeKalb County has 863 farms with a total acreage of 242,855 acres. The neighboring counties of Andrew, Clinton and Buchanan have 826, 758 and 727 farms, respectively. The average size per farm is 281 acres, which is near the state average of 285 acres. The neighboring counties of Andrew, Clinton and Buchanan have average

size farms of 240, 253 and 260 acres, respectively. The market value of agricultural products sold is \$59,933,000 with \$36,441,000 (61 percent)) coming from crops, nursery and green house products and \$23,492,000 (39 percent) from livestock, poultry and their products. Beef cattle production is a significant farming activity with 11,542 beef cows on 306 farms and 22,492 hogs and pigs on 337 farms. Other significant farming activity included the production of 2,041,956 bushels of corn from 170 farms, 1,553,007 bushels of soybeans from 222 farms and 54,314 tons of forage from 419 farms. In addition, 60 percent of principal operators reported their primary occupation being something other than farming. The 2011-2015 Community Survey 5-Year Estimates show that 112 were employed in agriculture, fishing and forestry operations, which is 8.5 percent of the DeKalb County work force.

2.1.8 FEMA Hazard Mitigation Assistance Grants in Planning Area

DeKalb County has not received any recent hazard mitigation assistant grants, other than the statewide grant for funds to update the hazard mitigation plan. Through the updating process several jurisdictions expressed interest in applying for grants for outdoor warning sirens.

2.2 Jurisdictional Profiles and Mitigation Capabilities

Individual profiles for each participating jurisdiction are included, along with discussion of previous mitigation initiatives in the planning area. A summary table follows the profiles that indicates specific capabilities of each jurisdiction that relate to their ability to implement mitigation opportunities. The unincorporated county is profiled first, followed by the incorporated communities, the special districts, and the public school districts.

2.2.1 Unincorporated DeKalb County

DeKalb County's jurisdiction includes all unincorporated areas within the county boundaries. The governing body of DeKalb County is the County Commissioner, which consists of three commissioners. The county departments include:

- Board of Supervisors or Board of Commissioners
 - Presiding Commissioner – Harold Allison
 - West District Commissioner – Kyle White
 - East District Commissioner – Gary McFee
- County Assessor
 - Tanya Zimmerman
- County Attorney
 - Eric Tate
- County Clerk
 - Melissa Meek
- County Recorder
 - JoAnn Marshall
- County Sheriff
 - Andy Clark
- County Treasurer
 - Jessica Lee
- Emergency Management

- Harold Allison
- General Services
- Tri-County Health Department (DeKalb, Gentry and Worth counties), Administrator
 - Lilli Parsons
- Medical Examiner
 - Heath Turner
- Public Administrator
 - Connie Bay
- Public Works
 - Bill Gray

Mitigation Initiatives/Capabilities

DeKalb County's Presiding Commissioner fills the Emergency Management Director (EMD) role. The Emergency Management Director is responsible for:

- Planning, organizing and directing the county's emergency management plan with other government and business officials
- Speaking before various groups to promote interest and cooperation in emergency situations
- Advising and assisting businesses in industrial emergency management programs
- Meeting with state and federal officials to coordinate county program
- Preparing necessary documentation to affected agencies
- Planning and coordinating county's disaster drills

The EMD organizes the Local Emergency Planning Committee (LEPC) bi-annual meetings. Table 2.4 lists mitigation capabilities for the unincorporated county.

Table 2.4. Unincorporated DeKalb County Mitigation Capabilities

Capabilities	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	Yes
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	Yes
County Mitigation Plan	Yes
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	Yes
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	Yes
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	

Zoning Ordinance	Yes – three townships have zoning
Building Code	Yes
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	No
Storm Water Ordinance	No
Drainage Ordinance	No
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Debris Management Plan	No
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
National Flood Insurance Program (NFIP) Participant	No
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	
ISO Fire Rating	Varies
Capabilities	Status Including Date of Document or Policy
Economic Development Program	No
Land Use Program	Yes
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	Yes
Hazard Analysis/Risk Assessment (County)	Yes
Flood Insurance Maps	Yes
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	Yes
Staff/Department	
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Director	Yes – County Commissioner
NFIP Floodplain Administrator	No
Bomb and/or Arson Squad	No
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	Yes

County Emergency Management Commission	Yes
Sanitation Department	No
Transportation Department	Yes
Economic Development Department	No
Housing Department	No
Planning Consultant	No
Regional Planning Agencies	Yes
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	Yes
Salvation Army	No
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc).	Yes
Local Funding Availability	
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Capabilities	Status Including Date of Document or Policy
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	No
Impact fees for new development	Yes
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	Yes

(Source: Data Collection Questionnaire, 2017)

2.2.2 Village of Amity

The Village of Amity is located near the center of DeKalb County on Route J. The population has declined by 24 percent since 2000. There is no outdoor warning siren. The village does not have Reverse 911 or any other type of warning system. There is no staff and the village relies on the county for emergency management, public safety and public education programs. The government consists of a board and chairman. Essential and critical facilities include one church. No new infrastructure or facilities are anticipated over the next five years, nor is growth. Table 2.5 lists the mitigation capabilities of the City of Clarksdale.

Table 2.5. City of Amity Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Plan	No
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	No

County Mitigation Plan	Yes
Local Mitigation Plan (PDM)	No
County Mitigation Plan (PDM)	No
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	Status Including Date of Document or Policy
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	Yes
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	No
Storm Water Ordinance	No
Drainage Ordinance	No
Capability	Status Including Date of Document or Policy
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Debris Management Plan	No
Program	Status Including Date of Document or Policy
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
National Flood Insurance Program (NFIP) Participant	No
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	Yes
Economic Development Program	N/A
Land Use Program	N/A
Public Education/Awareness	N/A
Property Acquisition	N/A
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes fire dept.
Studies/Reports/Maps	Status Including Date of Document or Policy
Hazard Analysis/Risk Assessment (Local)	N/A
Hazard Analysis/Risk Assessment (County)	N/A
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	N/A
Vulnerable Population Inventory	N/A
Land Use Map	N/A
Staff/Department	Status Including Date of Document or Policy
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No

Public Works Official	No
Emergency Management Coordinator	No
NFIP Floodplain Administrator	No
Bomb and/or Arson Squad	No
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	No
Economic Development Department	No
Housing Department	No
Planning Consultant	No
Regional Planning Agencies	Yes
Historic Preservation	No
Non-Governmental Organizations (NGOs)	Status Including Date of Document or Policy
American Red Cross	No
Salvation Army	No
Capability	Status Including Date of Document or Policy
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.)	Yes Lions
Local Funding Availability	Status Including Date of Document or Policy
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	No
Impact fees for new development	N/A
Ability to incur debt through general obligation bonds	N/A
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	N/A

(Source: Data Collection Questionnaire, 2017)

2.2.3 City of Clarksdale

Clarksdale is located in southwestern DeKalb County on Missouri Route 6. The population has experienced a 26 percent decrease since 2000. There is one outdoor warning siren located on the water tower and remotely activated by the DeKalb County Sheriff's Office. The community does not have Reverse 911 or any other type of warning system. The city employs three part-time staff which are the city clerk, city treasurer and water supervisor. The city relies on the county for emergency management, public safety and public education programs. Volunteers distributed Ready-In-Three materials to all households as part of public outreach for updating the hazard mitigation plan. The city government consists of a mayor, city council and four alderman. There are designated public shelters at the Clarksdale Christian Church and Clarksdale Baptist Church, but it's unknown if the shelters are in accordance with FEMA standards. The community participates in the NFIP and the most common flooding issue is water seeping into basements. Essential and critical facilities include City Hall, Fire Department, senior housing, two churches and the water tower. New infrastructure over the next five years includes new waterlines, if the Community Development Block Grant (CDBG) application is successful. The city recently installed a fire hydrant to allow the fire department to still have water even if the rest of the city did not due to a water leak repair. No new facilities or growth is expected during the next five years. Table 2.6 lists the mitigation capabilities of the City of Clarksdale.

Table 2.6. City of Clarksdale Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	N/A
Builder's Plan	N/A
Capital Improvement Plan	N/A
Local Emergency Plan	N/A
County Emergency Plan	N/A
Local Recovery Plan	N/A
County Recovery Plan	N/A
Local Mitigation Plan	Yes
County Mitigation Plan	Yes, 2013
Economic Development Plan	N/A
Transportation Plan	N/A
Land-use Plan	N/A
Flood Mitigation Assistance (FMA) Plan	N/A
Watershed Plan	N/A
Firewise or other fire mitigation plan	N/A
School Mitigation Plan	N/A
Critical Facilities Plan (Mitigation/Response/Recovery)	N/A
Policies/Ordinance	Status Including Date of Document or Policy
Zoning Ordinance	No
Building Code	Under fire limits Chapter 40 code
Floodplain Ordinance	Yes
Subdivision Ordinance	No
Tree Trimming Ordinance	No - have for weeds
Nuisance Ordinance	Yes
Storm Water Ordinance	Yes for people that have sewer
Drainage Ordinance	No
Capability	Status Including Date of Document or Policy
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	Yes for weeds
Debris Management Plan	No
Program	Status Including Date of Document or Policy
Zoning/Land Use Restrictions	Yes ordinance on no junk yards
Codes Building Site/Design	No
National Flood Insurance Program (NFIP) Participant	Yes
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	Yes
Economic Development Program	N/A
Land Use Program	N/A
Public Education/Awareness	N/A
Property Acquisition	N/A
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes fire dept.
Studies/Reports/Maps	Status Including Date of Document or Policy
Hazard Analysis/Risk Assessment (Local)	N/A
Hazard Analysis/Risk Assessment (County)	N/A
Flood Insurance Maps	N/A
FEMA Flood Insurance Study (Detailed)	N/A

Evacuation Route Map	N/A
Critical Facilities Inventory	N/A
Vulnerable Population Inventory	N/A
Land Use Map	N/A
Staff/Department	Status Including Date of Document or Policy
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Coordinator	No
NFIP Floodplain Administrator	Yes
Bomb and/or Arson Squad	No
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	No
Economic Development Department	No
Housing Department	No
Planning Consultant	No
Regional Planning Agencies	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	Status Including Date of Document or Policy
American Red Cross	No
Salvation Army	No
Capability	Status Including Date of Document or Policy
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.)	Yes, Lions
Local Funding Availability	Status Including Date of Document or Policy
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	Yes
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes water & sewer
Impact fees for new development	N/A
Ability to incur debt through general obligation bonds	N/A
Ability to incur debt through special tax bonds	Yes
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	N/A

(Source: Data Collection Questionnaire, 2017)

2.2.4 City of Maysville

The City of Maysville is centrally located in the county and serves as the county seat. Missouri Route 33 and Missouri Route 6 intersect the city. The population has experienced a 10 percent decrease since 2000. There is one outdoor warning siren which is activated by the county sheriff's department. The city does not have Reverse 911 or any other type of warning system. There are several public tornado shelters that include the courthouse and Methodist Church. It's unknown if the shelters are in accordance with FEMA standards. The city employs seven full-time staff (two water department staff, one public works staff, one policeman and two clerks) and one-part time code enforcement staff. The city relies on the county for emergency

management and most public education programs. The city government consists of a mayor and city council. The major employers include the nursing home, school district, Independent Farmers Bank, courthouse and gas station. The community does not participate in the NFIP and experiences minimal flooding issues. Essential and critical facilities include the courthouse, city hall, school, Methodist Church, fire station, nutrition center, nursing home and assisted living facility. The nursing home has a backup generator. No new infrastructure, facilities or growth is expected during the next five years. However, there is interest in applying for sidewalk grants. The Maysville Junior-Senior High School is located inside city limits. Table 2.7 lists the mitigation capabilities of Maysville

Table 2.7. City of Maysville Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Plan	No
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	Yes
County Mitigation Plan	Yes
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	Status Including Date of Document or Policy
Zoning Ordinance	No
Building Code	Yes, 2012
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	No
Storm Water Ordinance	No
Drainage Ordinance	No
Capability	Status Including Date of Document or Policy
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Debris Management Plan	No
Program	Status Including Date of Document or Policy
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
National Flood Insurance Program (NFIP) Participant	No
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	No
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No

Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	Status Including Date of Document or Policy
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	Status Including Date of Document or Policy
Building Code Official	Yes
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	Yes
Emergency Management Coordinator	No

(Source: Community Data Form 2017)

2.2.5 City of Osborn

The City of Osborn is situated in southern DeKalb County, residing in both DeKalb and Clinton Counties, but primarily in DeKalb County. It's located just south of US Highway 36. The population has experienced an 8 percent increase since 2000. There is one outdoor warning siren that is manually activated by the local fire district. The city does not have Reverse 911 or any additional type of warning system. The city employs two full-time staff, city clerk and a water/sewer/maintenance person, and two part-time staff, back up operator and mowing/maintenance person. The city relies on the county for emergency management and public education programs. The city government consists of a mayor and a board of four alderman. The major employers include the Osborn School District (35 employees) United Cooperative (six employees) and Sur-Gro (five employees). The community does not participate in the NFIP and experiences minimal flooding issues. Essential and critical facilities include city hall, school, water treatment plant and United Cooperative's Anhydrous plant. No new facilities or infrastructure is planned for the near future. The Osborn High School is located on the north end of town. Table 2.9 lists the mitigation capabilities of Osborn.

Table 2.8. City of Osborn Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Plan	No
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	Yes
County Mitigation Plan	Yes
Economic Development Plan	No
Transportation Plan	No

Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	Status Including Date of Document or Policy
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes
Storm Water Ordinance	No
Drainage Ordinance	No
Capability	Status Including Date of Document or Policy
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Debris Management Plan	No
Program	Status Including Date of Document or Policy
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
National Flood Insurance Program (NFIP) Participant	No
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	Yes, 6
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	No
Studies/Reports/Maps	Status Including Date of Document or Policy
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	Status Including Date of Document or Policy
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	Yes, full time
Emergency Management Coordinator	No

(Source: Data Collection Questionnaire, 2017)

2.2.6 Stewartsville

The City of Stewartsville is located in southern DeKalb County, just south of US Highway 36. The population has experienced a 12 percent increase since 2000. Its close proximity to a major highway and 15 minute commute to the region's largest population (the City of St. Joseph) may be contributing factors. There is one outdoor warning siren, providing full coverage of the community, that is manually activated by fire department personnel. The city does not have Reverse 911 or any other type of warning system, besides the outdoor warning siren. The city relies on the county for emergency management, public safety and most public education programs. The city government consists of a mayor and four aldermen. The largest employers are the school district and Dollar General retail store. The community participates in the NFIP. Essential and critical facilities include City Hall, Police Department, Fire Department, medical clinic and the high school. Recent infrastructure improvements included several resurfaced roads and deeper ditches for storm water in parts of town and a bridge as part of a CDBG grant. No new facilities or infrastructure is planned for the near future. The Stewartsville High School is located on the west side of town. Table 2.10 lists the mitigation capabilities of Stewartsville

Table 2.9. Stewartsville Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	Yes
County Mitigation Plan	Yes
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	Status Including Date of Document or Policy
Zoning Ordinance	No
Building Code	Yes, 8/9/2006
Floodplain Ordinance	Yes, 2/8/2000
Subdivision Ordinance	Yes, 6/14/2005
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes, 8/18/2000
Storm Water Ordinance	No
Drainage Ordinance	No
Capability	Status Including Date of Document or Policy
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Debris Management Plan	No
Program	Status Including Date of Document or Policy
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
National Flood Insurance Program (NFIP) Participant	Yes
NFIP Community Rating System (CRS) Participating Community	No

Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	No
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	Status Including Date of Document or Policy
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	n/a
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	Status Including Date of Document or Policy
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Coordinator	No
NFIP Floodplain Administrator	Yes
Bomb and/or Arson Squad	No
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	No
Economic Development Department	No
Housing Department	No
Planning Consultant	No
Regional Planning Agencies	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	Status Including Date of Document or Policy
American Red Cross	No
Salvation Army	No
Capability	Status Including Date of Document or Policy
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.)	Yes
Local Funding Availability	Status Including Date of Document or Policy
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	No
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes

Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Unsure
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	No

(Source: Data Collection Questionnaire, 2017)

2.2.7 Union Star

The City of Union Star is located in northwestern DeKalb County on US Highway 169, and immediately west of the city limits lies Andrew County. The population has experienced a 17 percent decrease since 2000. There is one outdoor warning siren, providing full coverage of the community, that is manually activated by fire department personnel. The city does not have Reverse 911, public tornado shelters/safe rooms or any other type of warning system. The city employs one full-time staff, city clerk, and two part-time maintenance staff and relies on the county for emergency management, public safety and most public education programs. There is a Union Star Fire District, which recently provided free smoke alarms and installations. Volunteers distributed Ready-In-Three materials to all households as part of public outreach for updating the hazard mitigation plan. The city government consists of a mayor and city council. The largest employers are the school district and bank. The community participates in the NFIP and experiences minimal flooding issues. Essential and critical facilities include City Hall, Fire Department and the high school. No new infrastructure, facilities or growth is expected during the next five years. However, there is interest in applying for sidewalk grants. The Union Star R-II High School is located immediately north of the city. Table 2.11 lists the mitigation capabilities of Union Star

Table 2.10. Union Star Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	Yes, 2016
County Emergency Plan	Yes
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	Yes
County Mitigation Plan	Yes
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	Status Including Date of Document or Policy
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	Yes
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes
Storm Water Ordinance	No
Drainage Ordinance	No
Capability	Status Including Date of Document or Policy
Site Plan Review Requirements	No
Historic Preservation Ordinance	No

Landscape Ordinance	No
Debris Management Plan	No
Program	Status Including Date of Document or Policy
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
National Flood Insurance Program (NFIP) Participant	Yes
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	No
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes
Studies/Reports/Maps	Status Including Date of Document or Policy
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	Status Including Date of Document or Policy
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Coordinator	No
NFIP Floodplain Administrator	Yes
Bomb and/or Arson Squad	No
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	No
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	No
Economic Development Department	No
Housing Department	No
Planning Consultant	No
Regional Planning Agencies	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	Status Including Date of Document or Policy
American Red Cross	No
Salvation Army	No
Capability	Status Including Date of Document or Policy
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No

Community Organizations (Lions, Kiwanis, etc.)	Yes
Local Funding Availability	Status Including Date of Document or Policy
Ability to apply for Community Development Block Grants	Yes
Ability to fund projects through Capital Improvements funding	No
Authority to levy taxes for a specific purpose	Yes
Fees for water, sewer, gas, or electric services	Yes
Impact fees for new development	Yes
Ability to incur debt through general obligation bonds	Yes
Ability to incur debt through special tax bonds	Unsure
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	No

(Source: Data Collection Questionnaire, 2017)

2.2.8 Village of Weatherby

The Village of Weatherby is situated in eastern DeKalb County, located on Missouri Route 6. The population decreased by 25 percent since 2000. There is one outdoor warning siren that is remotely activated by the county sheriff's department. The village does not have Reverse 911, public tornado shelter or any additional type of warning system. The lack of public shelter for senior citizens is of particular concern to the community since 26 percent of the population is 60 years of age or older. The village has a part-time city clerk and relies on the county for emergency management and public education programs. The city government consists of a mayor and four city council members. The major employer is the post office and MU Auto, each employing one person. No new facilities or infrastructure is planned for the near future, nor is growth expected.

Table 2.12 lists the mitigation capabilities of the Village of Weatherby

Table 2.11. Village of Weatherby Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	No
Builder's Plan	No
Capital Improvement Plan	No
Local Emergency Plan	No
County Emergency Plan	No
Local Recovery Plan	No
County Recovery Plan	No
Local Mitigation Plan	Yes
County Mitigation Plan	Yes
Economic Development Plan	No
Transportation Plan	No
Land-use Plan	No
Flood Mitigation Assistance (FMA) Plan	No
Watershed Plan	No
Firewise or other fire mitigation plan	No
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	Status Including Date of Document or Policy
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes, 1997

Storm Water Ordinance	No
Drainage Ordinance	No
Capability	Status Including Date of Document or Policy
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Debris Management Plan	No
Program	Status Including Date of Document or Policy
Zoning/Land Use Restrictions	No
Codes Building Site/Design	No
National Flood Insurance Program (NFIP) Participant	No
NFIP Community Rating System (CRS) Participating Community	No
Hazard Awareness Program	No
National Weather Service (NWS) Storm Ready	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	No
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	No
Studies/Reports/Maps	Status Including Date of Document or Policy
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No
Evacuation Route Map	No
Critical Facilities Inventory	No
Vulnerable Population Inventory	No
Land Use Map	No
Staff/Department	Status Including Date of Document or Policy
Building Code Official	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Coordinator	No

(Source: Data Collection Questionnaire, 2017)

The following table summarizes the mitigation capabilities of the county and unincorporated cities.

Table 2.12. Mitigation Capabilities Summary Table

CAPABILITIES	DeKalb County	Village of Amity	City of Clarksdale	City of Maysville	City of Osborn	City of Stewartsville	City of Union Star	Village of Weatherby
Planning Capabilities								
Comprehensive Plan	Yes	No	No	No	No	No	No	No
Builder's Plan	No	No	No	No	No	No	No	No
Capital Improvement Plan	No	No	No	No	No	No	No	No
Local Emergency Plan	Yes	No	No	No	No	Yes	Yes	No
County Emergency Plan	Yes	No	No	No	No	No	No	No
Local Recovery Plan	No	No	No	No	No	No	No	No
County Recovery Plan	No	No	No	No	No	No	No	No
Local Mitigation Plan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Mitigation Plan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Debris Management Plan	No	No	No	No	No	No	No	No
Economic Development Plan	No	No	No	No	No	No	No	No
Transportation Plan	No	No	No	No	No	No	No	No
Land-use Plan	Yes	No	No	No	No	No	No	No
Flood Mitigation Assistance (FMA) Plan	No	No	No	No	No	No	No	No
Watershed Plan	No	No	No	No	No	No	No	No
Firewise or other fire mitigation plan	No	No	No	No	No	No	No	No
School Mitigation Plan	Yes	No	No	No	No	No	No	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No	No	No	No	No	No	No	No
Policies/Ordinance								
Zoning Ordinance	Yes	No	No	No	No	No	No	N/A

CAPABILITIES	DeKalb County	Village of Amity	City of Clarksdale	City of Maysville	City of Osborn	City of Stewartsville	City of Union Star	Village of Weatherby
Building Code	No	No	Yes	No	No	Yes	No	No
Floodplain Ordinance	No	No	Yes	No	No	Yes	Yes	No
Subdivision Ordinance	No	No	No	No	No	Yes	No	No
Tree Trimming Ordinance	No	No	No	No	No	No	No	No
Nuisance Ordinance	No	No	Yes	No	Yes	Yes	Yes	Yes
Storm Water Ordinance	No	No	Yes	No	No	No	No	No
Drainage Ordinance	No	No	No	No	No	No	No	No
Site Plan Review Requirements	No	No	No	No	No	No	No	No
Historic Preservation Ordinance	No	No	No	No	No	No	No	No
Landscape Ordinance	No	No	No	No	No	No	No	No
Program								
Zoning/Land Use Restrictions	Yes	No	Yes	No	No	No	No	No
Codes Building Site/Design	No	No	No	No	No	No	No	No
National Flood Insurance Program (NFIP) Participant	No	No	Yes	No	No	Yes	Yes	No
NFIP Community Rating System (CRS) Participating Community	No	No	No	No	No	No	No	No
Hazard Awareness Program	No	No	No	No	No	No	No	No
National Weather Service (NWS) Storm Ready	No	No	No	No	No	No	No	No
Building Code Effectiveness Grading (BCEGs)	No	No	No	No	No	No	No	No
ISO Fire Rating	Varies	No	Yes	No	Yes	Yes	No	No
Economic Development Program	No	No	No	No	No	No	No	No
Land Use Program	Yes	No	No	No	No	No	No	No
Public Education/Awareness	No	No	No	No	No	No	No	No

CAPABILITIES	DeKalb County	Village of Amity	City of Clarksdale	City of Maysville	City of Osborn	City of Stewartsville	City of Union Star	Village of Weatherby
Property Acquisition	No	No	N/A	No	No	No	No	No
Planning/Zoning Boards	No	No	No	No	No	No	No	No
Stream Maintenance Program	No	No	No	No	No	No	No	No
Tree Trimming Program	No	No	No	No	No	No	No	No
Engineering Studies for Streams (Local/County/Regional)	No	No	No	No	No	No	No	No
Mutual Aid Agreements	Yes	No	Yes	No	No	No	Yes	No
Studies/Reports/Maps								
Hazard Analysis/Risk Assessment (Local)	Yes	No	No	No	No	No	No	No
Hazard Analysis/Risk Assessment (County)	Yes	No	No	No	No	No	No	No
Flood Insurance Maps	Yes	No	No	No	No	No	No	No
FEMA Flood Insurance Study (Detailed)	No	No	No	No	No	No	No	No
Evacuation Route Map	No	No	No	No	No	No	No	No
Critical Facilities Inventory	No	No	No	No	No	No	No	No
Vulnerable Population Inventory	No	No	No	No	No	No	No	No
Land Use Map	Yes	No	No	No	No	No	No	No
Staff/Department								
Building Code Official	No	No	No	No	No	Yes	No	No
Building Inspector	No	No	No	No	No	Yes	No	No
Mapping Specialist (GIS)	No	No	No	No	No	No	No	No
Engineer	No	No	No	No	No	No	No	No

CAPABILITIES	DeKalb County	Village of Amity	City of Clarksdale	City of Maysville	City of Osborn	City of Stewartsville	City of Union Star	Village of Weatherby
Development Planner	No	No	No	No	No	No	No	No
Public Works Official	No	No	No	Yes	Yes	Yes	No	No
Emergency Management Coordinator	No	No	No	No	No	No	No	No
NFIP Floodplain Administrator	No	No	Yes	No	No	Yes	Yes	No
Bomb and/or Arson Squad	No	No	No	No	No	No	No	No
Emergency Response Team	No	No	No	No	No	No	No	No
Hazardous Materials Expert	No	No	No	No	No	No	No	No
Local Emergency Planning Committee	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County Emergency Management Commission	No	No	No	No	No	No	No	No
Sanitation Department	No	No	No	No	No	No	No	No
Transportation Department	No	No	No	No	No	No	No	No
Economic Development Department	No	No	No	No	No	No	No	No
Housing Department	No	No	No	No	No	No	No	No
Planning Consultant	No	No	No	No	No	No		No
Regional Planning Agencies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Historic Preservation	No	No	No	No	No	No	No	No
Non-Governmental Organizations (NGOs)								No
American Red Cross	Yes	No	No	No	No	No	No	No
Salvation Army	No	No	No	No	No	No	No	No
Veterans Groups	No	No	No	No	Yes	No	No	No
Environmental Organization	No	No	No	No	No	No	No	No
Homeowner Associations	No	No	No	No	No	No	No	No
Neighborhood Associations	No	No	No	No	No	No	No	No
Chamber of Commerce	No	No	No	Yes	No	No	No	No

CAPABILITIES	DeKalb County	Village of Amity	City of Clarksdale	City of Maysville	City of Osborn	City of Stewartsville	City of Union Star	Village of Weatherby
Community Organizations (Lions, Kiwanis, etc.	No	No	Yes	No	No	Yes	Yes	No
Apply for Community Development Block Grants	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund projects through Capital Improvements funding	Yes	No	Yes	No	Yes	Yes	No	Yes
Authority to levy taxes for specific purposes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Fees for water, sewer, gas, or electric services	No	No	Yes	Yes	Yes	Yes	Yes	No
Impact fees for new development	Yes	No	N/A	No	No	No	Yes	No
Incur debt through general obligation bonds	Yes	No	N/A	No	Yes	No	Yes	No
Incur debt through special tax bonds	Yes	No	Yes	No	Yes	No	Unsure	No
Incur debt through private activities	No	No	No	No	No	No	No	No
Withhold spending in hazard prone areas	Yes	No	N/A	No	No	No	No	No

(Source: Data Collection Questionnaires, 2017)

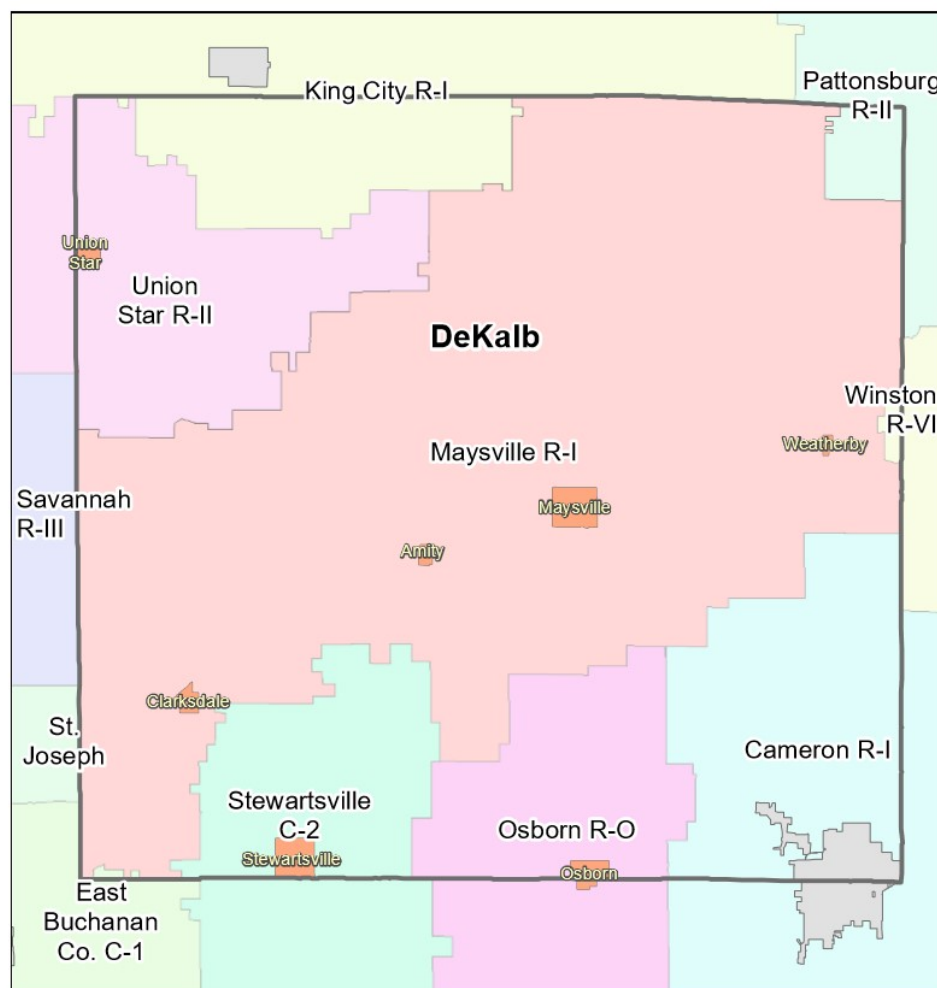
2.2.9 Special Districts

The fire districts participated in updating the plan. However, they are not adopting the plan as special districts, but with the jurisdictions that they primarily serve.

2.2.10 Public School District Profiles and Mitigation Capabilities

This section provides general information about participating school districts in DeKalb County. There are four school districts with facilities in DeKalb County and all are participants in the plan. Figure 2.4 is a map of school district boundaries in DeKalb County. Cameron R-I has facilities in Clinton County and the school district participants in that county's plan.

Figure 2.4. **School Districts in DeKalb County**



(Source: Mo-Kan)

Table 2.13. Maysville School District Buildings and Enrollment Data, 2017

District Name	Building Name	Building Enrolment
Maysville R-I	Maysville Jr.-Sr. High	244
Maysville R-I	Maysville Elementary	312

(Source: <http://mcids.dese.mo.gov/quickfacts/Pages/District-and-School-Information.aspx>)

Table 2.14. Osborn School District Buildings and Enrollment Data, 2017

District Name	Building Name	Building Enrolment
Osborn R-O	Osborn High	55
Osborn R-O	Osborn Elementary	56

(Source: <http://mcids.dese.mo.gov/quickfacts/Pages/District-and-School-Information.aspx>)

Table 2.15. Stewartsville School District Buildings and Enrollment Data, 2017

District Name	Building Name	Building Enrolment
Stewartsville C-2	Stewartsville High	104
Stewartsville C-2	Stewartsville Elementary	117

(Source: <http://mcids.dese.mo.gov/quickfacts/Pages/District-and-School-Information.aspx>)

Table 2.16. Union Star School District Buildings and Enrollment Data, 2017

District Name	Building Name	Building Enrolment
Union Star R-II	Union Star High	64
Union Star R-II	Union Star Elementary	72

(Source: <http://mcids.dese.mo.gov/quickfacts/Pages/District-and-School-Information.aspx>)

The Osborn and Union Star School Districts are expecting little population change over the next five years but the Stewartsville School District is expecting a 5 to 10 percent increase.

Table 2.17. Summary of Mitigation Capabilities-School Districts

Capability	Maysville School District	Osborn School District	Stewartsville School District	Union Star School District
Planning Elements				
Master Plan/ Date	Yes, 2013	Yes, 2015	No	Yes, 3-1-16
Capital Improvement Plan/Date	Yes, 2013	Yes, 2015	Yes	No
School Emergency Plan / Date	Yes, yearly update	Yes, 2015	Yes, 2010	Yes, 8-15-17
Weapons Policy/Date	Yes, yearly update	Yes, 2017	Yes	Yes, 5-31-13
Personnel Resources				
Full-Time Building Official	Yes, two Principals	Yes, Superintendent	Yes, Superintendent	Yes, Superintendent
Emergency Manager	Yes, Counselor	Yes, Superintendent	Yes, Principal	Yes
Grant Writer	Yes, various people	No	No	No
Public Information Officer	Yes, Superintendent	Yes, Superintendent & Principal	Yes, Superintendent	Yes
Financial Resources				
Capital Improvements Project Funding	Yes	Yes	Yes	Yes
Local Funds	Yes	Yes	Yes	Yes
General Obligation Bonds	Yes	No	Yes	No
Special Tax Bonds	Yes	No	Yes	No
Private Activities/Donations	Yes	Yes	Yes	No
State And Federal Funds/Grants	Yes	No	No	No
Other				
Fire Evacuation Training	Yes	Yes	Yes	Yes
Tornado Sheltering Exercises	Yes	Yes	Yes	Yes
Public Address/Emergency Alert System	Yes	Yes	Yes	Yes
NOAA Weather Radios	Yes	Yes	Yes	Yes
Lock-Down Security Training	Yes	Yes	Yes	Yes
Mitigation Programs	No	No	No	No
Tornado Shelter/Safe room	Yes	Yes	Yes	No
Campus Police	No	No	No	No

(Source: Data Collection Questionnaires, 2017)

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44 CFR Requirement §201.6(c)(2): [The plan shall include] A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

The goal of the risk assessment is to estimate the potential loss in the planning area, including loss of life, personal injury, property damage, and economic loss, from a hazard event. The risk assessment process allows communities and school/special districts in the planning area to better understand their potential risk to the identified hazards. It will provide a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

Although this plan is an update from 2013, there has been minimal change of risk in the planning area.

This chapter is divided into four main parts:

- **Section 3.1 Hazard Identification** identifies the hazards that threaten the planning area and provides a factual basis for elimination of hazards from further consideration;
- **Section 3.2 Assets at Risk** provides the planning area's total exposure to natural hazards, considering critical facilities and other community assets at risk;
- **Section 3.3 Land Use and Development** discusses areas of planned future development
- **Section 3.4 Hazard Profiles, Vulnerability and Problem Statements** provides more detailed information about the hazards impacting the planning area. For each hazard, there are three sections: 1) Hazard Profile provides a general description and discusses the threat to the planning area, the geographic location at risk, potential severity/magnitude/extent, previous occurrences of hazard events, probability of future occurrence, risk summary by jurisdiction, impact of future development on the risk; 2) Vulnerability Assessment further defines and quantifies populations, buildings, critical facilities, and other community/school or special district assets at risk to natural hazards; and 3) Problem Statement briefly summarizes the problem and develops possible solutions.

3.1 Hazard Identification

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the type...of all natural hazards that can affect the jurisdiction.

The plan profiles all natural hazards that can affect DeKalb County. The natural hazards that can affect the county have been identified in the 2013 DeKalb County Hazard Mitigation Plan and the 2013 Missouri State Plan. Natural hazards are naturally occurring climatological, hydrological or geologic events that have a negative effect on people and the built environment. Technological hazards refer to hazards that stem from technological or industrial conditions that can include hazardous materials events, national security hazards, power failure, telecommunications failure, etc. Only natural hazards are included.

3.1.1 Review of Existing Mitigation Plans

The MPC reviewed the hazards identified in the previously approved plan, as well as the hazards identified in the most recent state plan.

In Missouri, local plans customarily include only natural hazards, as only natural hazards are required by federal regulations to be included. The MPC determined to include only natural hazards since many of the MPC members were new to the process of updating the plan and felt that their efforts would be best served concentrating on natural disasters.

3.1.2 Review Disaster Declaration History

Federal and/or state declarations may be granted when the severity and magnitude of an event surpasses the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. When the local government's capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. If the disaster is so severe that both the local and state governments' capacities are exceeded; a federal emergency or disaster declaration may be issued allowing for the provision of federal assistance.

FEMA also issues emergency declarations, which are more limited in scope and do not include the long-term federal recovery programs of major disaster declarations. Table 3.1 lists the federal FEMA disaster declarations that included the planning area from 1990 to present.

Table 3.1. FEMA Disaster Declarations that included DeKalb County, Missouri, 1990-Present

Disaster Number	Description	Declaration Date Incident Period	Individual Assistance (IA) Public Assistance (PA)
4238	Severe Storms, Tornadoes, Straight-line winds, Flooding	8/7/2015 5/15/2015-7/27/2015	PA
1961	Missouri Severe Winter Storm and Snowstorm	3/23/2011 1/31/2011-2/5/2011	PA
1934	Missouri Severe Storms, Flooding, and Tornadoes	8/17/2010 6/12/2010-7/31/2010	PA

1736	Missouri Severe Winter Storms	12/15/2007 12/6/2007- 12/15/2007	PA
1708	Missouri Severe Storms and Flooding	06/11/2007 05/05/2007-5/18/2007	IA PA
1524	Missouri Severe Storms, Tornadoes, and Flooding	06/11/2004 05/18/2004-05/31/2004	IA PA
1403	Missouri Ice Storm	02/06/2002 01/29/2002-02/13/2002	IA PA
995	Missouri Flooding, Severe Storm	07/09/1993 06/10/1993-10/25/1993	IA PA
1253	Missouri Severe Storms and Flooding	10/14/1998 10/04/1998-10/11/1998	PA
1054	Missouri Severe Storm, Tornadoes, Hail, Flooding	06/02/1995 05/13/1995-06/23/1995	IA PA

(Source: Federal Emergency Management Agency <http://www.fema.gov/disasters><http://www.fema.gov/disasters>)

3.1.3 Research Additional Sources

Below are additional sources of data on locations and past impacts of hazards in the planning area:

- Missouri Hazard Mitigation Plans (2010 and 2013)
- DeKalb County 2013 Hazard Mitigation Plan
- Federal Emergency Management Agency (FEMA)
- Missouri Department of Natural Resources (MDNR)
- National Drought Mitigation Center Drought Reporter
- US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics
- National Agricultural Statistics Service (Agriculture production/losses)
- Data Collection Questionnaires completed by each jurisdiction
- State of Missouri GIS data
- Environmental Protection Agency
- Flood Insurance Administration
- Hazards US (HAZUS)
- Missouri Department of Transportation
- Missouri Division of Fire Marshal Safety
- Missouri Public Service Commission
- National Fire Incident Reporting System (NFIRS)
- National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCEI);

-
- Pipeline and Hazardous Materials Safety Administration
 - County and local Comprehensive Plans to the extent available
 - County Emergency Management
 - County Flood Insurance Rate Map, FEMA
 - Flood Insurance Study, FEMA
 - SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin
 - U.S. Army Corps of Engineers
 - U.S. Department of Transportation
 - United States Geological Survey (USGS)
 - Various articles and publications available on the internet (sources are cited in the body of the plan where applicable)

The only centralized source of data for many of the weather-related hazards is the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI). Although it is usually the best and most current source, there are limitations to the data which should be noted. The NCEI documents the occurrence of storms and other significant weather phenomena having sufficient intensity to cause loss of life, injuries, significant property damage, and/or disruption to commerce. In addition, it is a partial record of other significant meteorological events, such as record maximum or minimum temperatures or precipitation that occurs in connection with another event. Some information appearing in the NCEI may be provided by or gathered from sources outside the National Weather Service (NWS), such as the media, law enforcement and/or other government agencies, private companies, individuals, etc. An effort is made to use the best available information but because of time and resource constraints, information from these sources may be unverified by the NWS. Those using information from NCEI should be cautious as the NWS does not guarantee the accuracy or validity of the information.

The NCEI damage amounts are estimates received from a variety of sources, including those listed above in the Data Sources section. For damage amounts, the NWS makes a best guess using all available data at the time of the publication. Property and crop damage figures should be considered as a broad estimate. Damages reported are in dollar values as they existed at the time of the storm event. They do not represent current dollar values.

The database currently contains data from January 1950 to March 2014, as entered by the NWS. Due to changes in the data collection and processing procedures over time, there are unique periods of record available depending on the event type. The following timelines show the different time spans for each period of unique data collection and processing procedures.

1. Tornado: From 1950 through 1954, only tornado events were recorded.
2. Tornado, Thunderstorm Wind and Hail: From 1955 through 1992, only tornado, thunderstorm wind and hail events were keyed from the paper publications into digital data. From 1993 to 1995, only tornado, thunderstorm wind and hail events have been extracted from the Unformatted Text Files.
3. All Event Types (48 from Directive 10-1605): From 1996 to present, 48 event types are recorded as defined in NWS Directive 10-1605.

Injuries and deaths caused by a storm event are reported on an area-wide basis. With NCEI data, a death or injury listed in connection with that county search did not necessarily occur in that county.

3.1.4 Hazards Identified

The hazards that significantly impact the planning area are listed below and were chosen for further analysis in alphabetical order. Not all hazards impact every jurisdiction. The symbol "x" indicates the jurisdiction is impacted by the hazard, and a "-" indicates the hazard is not applicable to that jurisdiction.

Table 3.2. Hazards Identified for Each Jurisdiction

Jurisdiction	Dam Failure	Drought	Earthquake	Extreme Heat	Fires (Structural/Urban/Wild)	Flooding (River and Flash)	Land Subsidence /Sinkholes	Levee Failure	Severe Winter Weather	Thunderstorm/Lightning /Hail/High Wind	Tornado
DeKalb County	X	X	X	X	X	X	-	-	X	X	X
Village of Amity	-	X	X	X	X	-	-	-	X	X	X
City of Clarksdale	X	X	X	X	X	X	-	-	X	X	X
City of Maysville	X	X	X	X	X	X	-	-	X	X	X
City of Osborn	X	X	X	X	X	X	-	-	X	X	X
City of Stewartville	X	X	X	X	X	X	-	-	X	X	X
City of Union Star	X	X	X	X	X	X	-	-	X	X	X
Village of Weatherby	-	X	X	X	X	-	-	-	X	X	X
Maysville School District	X	X	X	X	X	X	-	-	X	X	X
Osborn School District	X	X	X	X	X	X	-	-	X	X	X
Stewartville School District	X	X	X	X	X	X	-	-	X	X	X
Union Star School District	X	X	X	X	X	X	-	-	X	X	X

3.1.5 Multi-Jurisdictional Risk Assessment

The risk assessment evaluates each participating jurisdiction's vulnerability to each hazard that can affect the planning area. Many of the hazards identified in the risk assessment have the same probability of occurrence throughout the planning area. The hazards that vary across the planning area in terms of risk include dam failure, flash flood, structural or wildland fire, riverine flood and flash flood. These differences are detailed in each hazard profile under geographic location and vulnerability. DeKalb County is fairly uniform in terms of climate, topography, and building construction characteristics.

3.2 Assets at Risk

This section assesses the planning area population, structures, critical facilities and infrastructure, and other important assets that may be at risk to hazards. The inventory of assets for each jurisdiction were derived from parcel data from the DeKalb County structures dataset downloaded from Missouri Spatial Data Information Service (MSDIS), local jurisdiction data collection questionnaires, and HAZUS MH 3.2.

3.2.1 Total Exposure of Population and Structures

Unincorporated County and Incorporated Cities

In the following three tables, population data is based on 2010 Census Bureau data. Building counts and building exposure values are based on parcel data provided by the State of Missouri Geographic Information Systems (GIS) database which can be found at the following website, http://sema.dps.mo.gov/programs/mitigation_management.php. Contents exposure values were calculated by factoring a multiplier to the building exposure values based on usage type. The multipliers were derived from the HAZUS MH 2.1 and are defined below in Table 3.3. Land values have been purposely excluded from consideration because land remains following disasters, and subsequent market devaluations are frequently short term and difficult to quantify. Another reason for excluding land values is that state and federal disaster assistance programs generally do not address loss of land (other than crop insurance). It should be noted that the total valuation of buildings is based on county assessors' data which may not be current. In addition, government-owned properties are usually taxed differently or not at all, and so may not be an accurate representation of true value. Public school district assets and special districts assets are included in the total exposure tables assets by community and county.

Table 3.3 shows the total population, building count, estimated value of buildings, estimated value of contents and estimated total exposure to parcels for the unincorporated county and each incorporated city. For multi-county communities, the population and building data may include data on assets located outside the planning area. Table 3.4 provides the estimated building value exposures for the county and each city in the planning area broken down by usage type. Finally, Table 3.5 provides the estimated building count total for the county and each city in the planning area broken out by building usage types (residential, commercial, industrial, agricultural, religious, governmental and educational).

Table 3.3. Maximum Population and Building Exposure by Jurisdiction

Jurisdiction	2016 Population	Building Count	Building Exposure (\$)	Contents Exposure (\$)	Total Exposure (\$)
Village of Amity	53	31	\$4,736,000	\$2,368,000	\$7,104,000
City of Clarksdale	258	147	\$33,452,000	\$18,232,000	\$51,684,000
City of Maysville	1,094	506	\$139,337,000	\$79,308,300	\$218,645,300
City of Osborn	493	27	\$5,669,000	\$3,525,000	\$9,194,000
City of Stewartsville	863	315	\$78,673,000	\$44,908,000	\$123,581,000
City of Union Star	358	207	\$45,153,000	\$25,400,000	\$70,553,000
Village of Weatherby	92	61	\$11,455,000	\$5,919,500	\$17,374,500
Unincorporated and Cameron	9,681	2,970	\$771,627,000	\$459,717,500	\$1,231,344,500
Totals	12,892	4,264	\$1,090,102,000	\$639,378,300	\$1,729,480,300

(Sources: Population, 2016 U.S. Census; Building Count and Building Exposure, Missouri GIS Database: http://sema.dps.mo.gov/programs/mitigation_management.php; Contents Exposure derived by applying multiplier to Building Exposure based on HAZUS MH 2.1 standard contents multipliers per usage type as follows: Residential (50%), Commercial (100%), Industrial (150%), Agricultural (100%). For purposes of these calculations, government, school, and utility were calculated at the commercial contents rate)

Table 3.4. Building Values/Exposure by Usage Type

Jurisdiction	Residential	Commercial	Industrial	Agricultural	Religion, Government and Education	Total
Village of Amity	\$4,736,000	\$0	\$0	\$0	\$0	\$4,736,000
City of Clarksdale	\$30,440,000	\$1,804,000	\$0	\$250,000	\$958,000	\$33,452,000
City of Maysville	\$117,274,000	\$17,350,000	\$1,191,000	\$223,000	\$3,299,000	\$139,337,000
City of Osborn	\$4,443,000	\$845,000	\$156,000	\$0	\$225,000	\$5,669,000
City of Stewartsville	\$67,874,000	\$4,521,000	\$344,000	\$0	\$5,934,000	\$78,673,000
City of Union Star	\$39,662,000	\$2,308,000	\$156,000	\$461,000	\$2,566,000	\$45,153,000
Village of Weatherby	\$11,071,000	\$215,000	\$0	\$0	\$169,000	\$11,455,000
Unincorporated and Cameron	\$636,282,000	\$92,619,000	\$12,463,000	\$17,142,000	\$13,121,000	\$771,627,000
Totals	\$911,782,000	\$119,662,000	\$14,310,000	\$18,076,000	\$26,272,000	\$1,090,102,000

(Source: Missouri GIS Database, http://sema.dps.mo.gov/programs/mitigation_management.php)

Table 3.5. Building Counts by Usage Type

Jurisdiction	Residential Counts	Commercial Counts	Industrial Counts	Agricultural Counts	Religion, Government and Education Counts	Total
DeKalb County	3,869	216	49	88	42	4,264
Village of Amity	31	0	0	0	0	31
City of Clarksdale	142	2	0	1	2	147
City of Maysville	450	41	4	2	9	506
City of Osborn	23	2	1	0	1	27
City of Stewartville	296	15	1	0	3	315
City of Union Star	192	8	1	1	4	207
Village of Weatherby	59	1	0	0	1	61
Unincorporated	2,674	147	42	84	13	2,970

(Source: Missouri GIS Database, http://sema.dps.mo.gov/programs/mitigation_management.php; Public School Districts and Special Districts)

Even though schools and special districts' total assets are included in the tables above, additional discussion is needed, based on the data that is available from the districts' completion of the Data Collection Questionnaire and district maintained websites. The number of enrolled students at the participating public school districts is provided in Table 3.6 below. Additional information includes the number of buildings, building values (building exposure) and contents value (contents exposure). These numbers will represent the total enrollment and building count for the public school districts regardless of the county in which they are located.

Table 3.6. Population and Building Exposure by Jurisdiction-- Public School Districts

Public School District	Enrolment	Building Count	Building Exposure	Contents Exposure (\$)	Total Exposure (\$)
Maysville School District	556	unknown	unknown	unknown	\$47,227,470
Osborn School District	111	2	\$2,079,888	unknown	\$7,299,283
Stewartville School District	221	1	\$7,680,683	\$1,028,951	\$8,709,634
Union Star School District	136	2	\$5,827,942	\$979,525	\$6,807,467

(Source: Data Collection Forms and <http://mcids.dese.mo.gov/quickfacts/Pages/District-and-School-Information.aspx>)

3.2.2 Critical and Essential Facilities and Infrastructure

This section will include information from the Data Collection Questionnaire and other sources to identified hazards concerning the vulnerability of participating jurisdictions' critical, essential, high potential loss, and transportation/lifeline facilities. Definitions of each of these types of facilities are provided below.

- Critical Facility: Those facilities essential in providing utility or direction either during the response to an emergency or during the recovery operation.
- Essential Facility: Those facilities that if damaged, would have devastating impacts on disaster response and/or recovery.
- High Potential Loss Facilities: Those facilities that would have a high loss or impact on the community.
- Transportation and lifeline facilities: Those facilities and infrastructure critical to transportation, communications, and necessary utilities.

Table 3.7 includes a summary of the inventory of critical and essential facilities and infrastructure in the planning area. The list was compiled from the Data Collection Questionnaire as well as the following sources:

- Files from the Emergency Management Director, including Chemical Facilities (Tier II Facilities) information
- LEPC meetings
- HAZUS MH 3.2
- Meetings with city councils, boards and agencies

Table 3.7. Inventory of Critical/Essential Facilities and Infrastructure by Jurisdiction

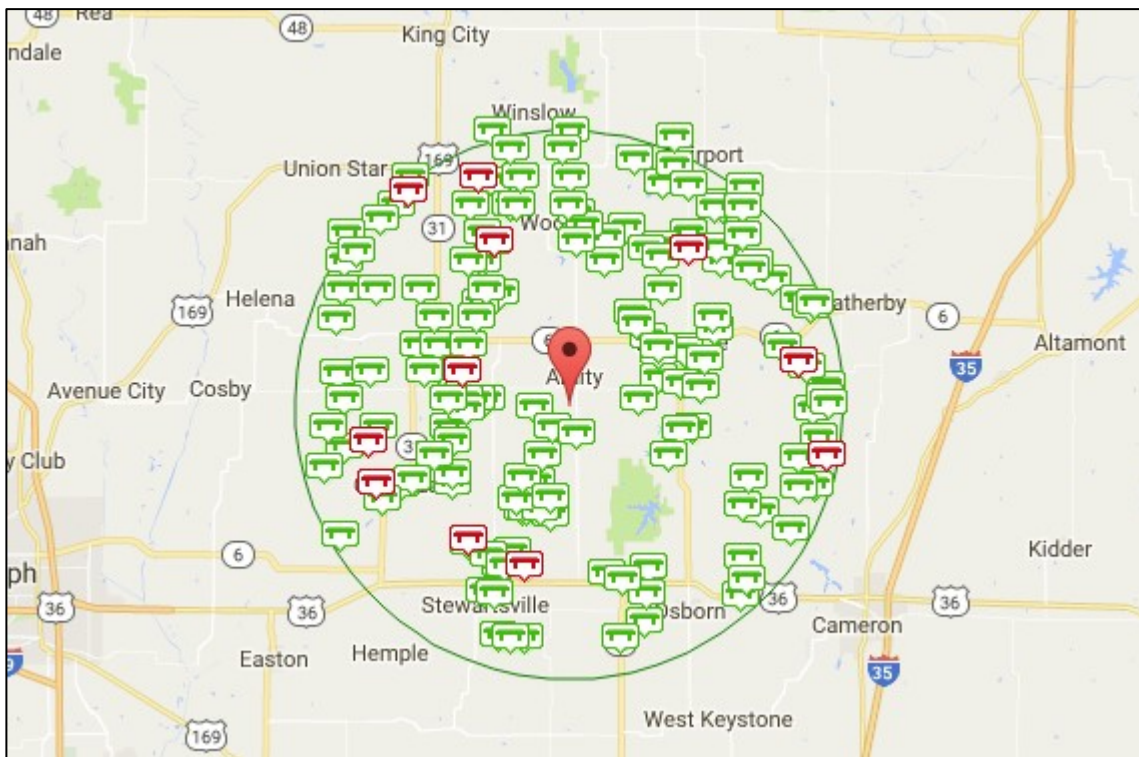
	Airport Facility	Bus Facility	Childcare Facility	Communications Tower	Electric Power Facility	Emergency Operations	Fire Service	Government	Housing	Shelters	Hospital/Health Care	Military	Natural Gas Facility	Nursing Homes	Police Station	Potable Water Facility	Rail	Sanitary Pump Stations	School Facilities	Stormwater Pump	Tier II Chemical Facility	Wastewater Facility	Total
Village of Amity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Clarksdale	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	5
City of Maysville	0	1	1	0	1	1	1	0	0	1	1	0	0	1	1	1	0	1	1	0	0	0	12
City of Osborn	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1	0	1	1	0	0	0	6
City of Stewartsville	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	4
City of Union Star	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
Village of Weatherby	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unincorporated	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	0	1	1	0	0	0	4	4	2	2	2	0	0	1	1	2	0	2	4	0	0	1	27

(Source: Data Collection Questionnaires)

Figure 3.1 shows the locations of bridges in DeKalb County that are included in the National Bridge Inventory data set. According to the Federal Highway Administration there are 238 bridges in the county, in which 123 are classified as good, 102 are fair, 13 poor and 16 are structurally deficient. Structurally deficient bridges are shown in red in Figure 3.1.

The term scour critical refers to one of the database elements in the National Bridge Inventory. This element is quantified using a “scour index”, which is a number indicating the vulnerability of a bridge to scour during a flood. Bridges with a scour index between 1 and 3 are considered “scour critical”, or a bridge with a foundation determined to be unstable for the observed or evaluated scour condition. There are two county and five state scour critical bridges identified in DeKalb County.

Figure 3.7. Structurally Deficient Bridges



(Source: <http://t4america.org/map-tools/bridges/>)

3.2.3 Other Assets

Assessing the vulnerability of the planning area to disaster also requires data on the natural, historic, cultural, and economic assets of the area. This information is important for many reasons.

- These types of resources warrant a greater degree of protection due to their unique and irreplaceable nature and contribution to the overall economy.
- Knowing about these resources in advance allows for consideration immediately following a hazard event, which is when the potential for damages is higher.
- The rules for reconstruction, restoration, rehabilitation, and/or replacement are often different for these types of designated resources.
- The presence of natural resources can reduce the impacts of future natural hazards, such as

wetlands and riparian habitats which help absorb floodwaters.

- Losses to economic assets like these (e.g., major employers or primary economic sectors) could have severe impacts on a community and its ability to recover from disaster.

Specific natural, historic, cultural, and economic assets in the planning area, are included below.

Threatened and Endangered Species: Table 3.8 shows Federally Threatened, Endangered, Proposed and Candidate Species in the county.

Table 3.8. Threatened and Endangered Species in DeKalb County

Common Name	Scientific Name	Status
Indiana bat	Myotis sodalis	Endangered
Northern long-eared bat	Myotis septentrionalis	Threatened
Topeka shiner	Notropis topeka	Endangered

(Source: U.S. Fish and Wildlife Service, <http://www.fws.gov/midwest/Endangered/lists/missouri-cty.html>)

Natural Resources: Table 3.9 lists the names and locations of parks and conservation areas in the planning area.

Table 3.9. Parks in DeKalb County

Area Name	Address	City
Pony Express Conservation Area	7163 SW State Route RA	Osborn, MO
King Lake Conservation Area	CR 500 south (DeKalb and Gentry Counties)	King City, MO

(Source: <http://mdc4.mdc.mo.gov/applications/moatlas/AreaList.aspx?txtUserID=quest&txtAreaNm=s>)

Park Name	Address	City
Recreation Park	221 Seminary	Cameron, MO 64429
Wallace State Park	10621 NE Hwy 121	Cameron, MO 64429
Beaver Park	400 S Elm	Cameron, MO 64429
McCorkle Park	100 W. Third	Cameron, MO 64429
Stewartville City Park	Main Street	Stewartville, MO 64490
Maysville City Park	Wilson Street	Maysville, MO 64469
Ray Schnitker Community Park	255 Walnut St.	Union Star, MO 64494

(Source: Google Maps and Community Data Questionnaire forms)

Historic Resources: The National Register of Historic Places is the official list of registered cultural resources worthy of preservation. It was authorized under the National Historic Preservation Act of 1966 as part of a national program. The purpose of the program is to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources. The National Register is administered by the National Park Service under the Secretary of the Interior. Properties listed in the National Register include districts, sites, buildings, structures and objects that are significant in American history, architecture, archeology, engineering, and culture.

Table 3.10 lists properties that are on the National Register of Historic Places.

Table 3.10. DeKalb County Properties on the National Register of Historic Places

Property	Address	City	Date Listed
Dalton-Upton House	North of Stewartville, Mo	Stewartville, MO	April 12, 1982
DeKalb County Courthouse	109 W. Main St	Maysville, MO	February 5, 1998
Riggs, Absolom House (Mathias House)	R.F.D. #1	Weatherby, MO	April 12, 1982

(Source: <http://dnr.mo.gov/shpo/mnrlist.htm>)

Economic Resources: Table 3.11 shows the major types of industry in the county.

Table 3.11. DeKalb County Employment by Industry

Industry	Estimate	Percentage
Agriculture, forestry, etc.	222	5%
Construction	205	5%
Manufacturing	614	15%
Wholesale trade	195	5%
Retail trade	449	11%
Information	38	1%
Finance	284	7%
Professional, scientific, etc.	207	5%
Education and health	1,055	25%
Arts, entertainment, etc.	164	4%
Other	212	5%
Public administration	332	8%

(Source: American Community Survey, 2012-2016)

Agriculture: Agriculture has traditionally been an important part of the county's economy. According to the 2012 Census of Agriculture, crop and livestock sales are in excess of \$59,930,000 and 434 people are employed as farmers or farm hands in DeKalb County.

3.3 Land Use and Development

3.3.1 Development Since Previous Plan Update

The overall population in DeKalb County has remained relatively stable. The largest population growth is in the City of Cameron area, which is participating in the Clinton County plan. However, most of the other communities have experienced population decline. Table 3.12 shows the population growth statistics for all cities in DeKalb County as well as the county as a whole.

Table 3.12. DeKalb County Population Growth, 2000-2016

Jurisdiction	2000 Census Total Population	2016 ACS Population Estimates	2000-2016 # Change	2000-2016 % Change
Amity	70	53	-17	-24%
Clarksdale	315	258	-93	-26%
Maysville	1,212	1,094	-118	-10%
Osborn	455	493	38	8%
Stewartsville	759	863	104	12%
Union Star	433	358	-75	-17%
Weatherby	123	92	-31	-25%
Unincorporated and Cameron *	8,194	9,681	1,487	18%
Totals	11,597	12,892	1,295	10%

(Source: U.S. Bureau of the Census, Decennial Census and 2016 American Community Survey)

Population growth or decline is generally accompanied by increases or decreases in the number of housing units, but as demonstrated below, this is not always the case. Table 3.15 shows the change in numbers of housing units in the planning area from 2000 to 2016.

Table 3.13. Change in Housing Units, 2000-2016

Jurisdiction	Housing Units 2000	Housing Units 2016	2000-2016 # Change	2000-2016 % Change
Amity	36	44	8	22.22%
Clarksdale	151	127	-24	-15.89%
Maysville	491	560	69	14%
Osborn	195	259	64	13.03%
Stewartsville	308	372	64	20.78%
Union Star	199	210	11	5.53%
Weatherby	61	49	-12	-19.67%
Unincorporated and Cameron *	2,398	2,694	296	12.34%
Totals	3,839	4,315	476	12.40%

(Source: U.S. Bureau of the Census, Decennial Census; Population Statistics are for entire incorporated areas as reported by the U.S. Census Bureau)

The changes in development for each participating jurisdiction since the previous plan update is discussed below. Within each hazard section under the heading “Previous and Future Development” these changes in development that have impacted the community’s vulnerability to specific hazards, will be discussed.

DeKalb County

DeKalb County consists of nine townships. Highway 36 runs through three townships—Colfax, Grand River and Washington—with zoning regulation. The county population has increased 10 percent since 2000, with only Osborn, Stewartsville and the Cameron area (Cameron is participating in Clinton County’s plan) experiencing population gains. These communities are located near Highway 36. The other communities located further from the highway all experienced population loss.

Since the 2013 plan, a notable change has been the establishment of a wind farm in December 2016,

consisting of 97 turbines. The owner of the wind farm, NextEra, is responsible for the wind turbines in the event of fire and the local fire districts are responsible for maintaining a perimeter.

Overall, the county's risk to natural hazard remains the same as in the 2013 plan.

Village of Amity

Although Amity has experienced a 24 percent population decrease since 2000. The community's risk to natural hazards remains the same as in the 2013 plan.

City of Clarksdale

Clarksdale has experienced a 26 percent population decrease since 2000. The community's risk to natural hazards remains the same as in the 2013 plan.

City of Maysville

Maysville has experienced a 10 percent population decrease since 2000. The community's risk to natural hazards remains the same as in the 2013 plan.

City of Osborn

Osborn has experienced an eight percent population increase since 2000. Its location near US Hwy 36, between St. Joseph and Cameron, makes Osborn a reasonable commuting distance to both communities. The community's risk to natural hazards remains the same as in the 2013 plan.

City of Stewartville

Stewartville has experienced a 12 percent population increase since the last plan. Its location on US Hwy 36, between St. Joseph and Cameron, makes Stewartville a reasonable commuting distance to both locations. The community completed a bridge and road improvement project in 2017. Stewartville's risk to natural hazards remains the same as in the 2013 plan.

City of Union Star

Union Star has experienced a 17 percent population decrease since 2000. The community's risk to natural hazards remains the same as in the 2013 plan.

Village of Weatherby

Weatherby has experienced a 25 percent population decrease since 2000. The community's risk to natural hazards remains the same as in the 2013 plan.

3.3.2 Future Land Use and Development

The remaining discussion in this section provides future growth and development information, where available, relative to each participating jurisdiction.

DeKalb County

DeKalb County has a comprehensive plan. No future development is anticipated.

Village of Amity

The village does not have a comprehensive plan or land use plan. No future development is anticipated.

City of Clarksdale

The community does not have a comprehensive plan or land use plan. No future development is anticipated. Clarksdale is in the process of making water system improvements.

City of Maysville

The community does not have a comprehensive plan or land use plan. No future significant development is anticipated.

City of Osborn

The community does not have a comprehensive plan or land use plan. No significant future development is anticipated. Osborn is in the process of making water system improvements.

City of Stewartville

The community does not have a comprehensive plan or land use plan. No significant future development is anticipated.

City of Union Star

The community does not have a comprehensive plan or land use plan. No future development is anticipated.

Village of Weatherby

The village does not have a comprehensive plan or land use plan. No future development is anticipated.

School District's Future Development**Maysville School District**

The school district expects enrollment to remain stable over the next five years.

Osborn School District

The school district expects enrollment to remain stable over the next five years. The only planned remodeling or expansion is to move the main office to the ground floor level.

Stewartville School District

The school district expects a five to 10 percent increase in enrollment over the next five years. An elementary wing extension is being considered.

Union Star School District

Little change in enrollment is expected over the next five years. There are no planned construction or remodeling activities.

3.4 Hazard Profiles, Vulnerability, and Problem Statements

Each hazard will be analyzed individually in a hazard profile. The profile will consist of a general hazard description, location, severity/magnitude/extent, previous events, future probability, a discussion of risk variations between jurisdictions, and how anticipated development could impact risk. At the end of each hazard profile will be a vulnerability assessment, followed by a summary problem statement.

Hazard Profiles

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the...location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Each hazard identified in Section 3.1.4 will be profiled individually in this section in alphabetical order. The level of information presented in the profiles will vary by hazard based on the information available. With each update of this plan, new information will be incorporated to provide better evaluation and prioritization of the hazards that affect the planning area. Detailed profiles for each of the identified hazards include information categorized as follows:

Hazard Description: This section consists of a general description of the hazard and the types of impacts it may have on a community or school/special district.

Geographic Location: This section describes the geographic location of the hazard in the planning area. Where available, use maps to indicate the specific locations of the planning area that are vulnerable to the subject hazard. For some hazards, the entire planning area is at risk.

Severity/Magnitude/Extent: This includes information about the severity, magnitude, and extent of a hazard. For some hazards, this is accomplished with description of a value on an established scientific scale or measurement system, such as an EF2 tornado on the Enhanced Fujita Scale. Severity, magnitude, and extent can also include the speed of onset and the duration of hazard events. Describing the severity/magnitude/extent of a hazard is not the same as describing its potential impacts on a community. Severity/magnitude/extent defines the characteristics of the hazard regardless of the people and property it affects.

Previous Occurrences: This section includes available information on historic incidents and their impacts. Historic event records form a solid basis for probability calculations.

Probability of Future Occurrence: The frequency of recorded past events is used to estimate the likelihood of future occurrences. Probability was determined by dividing the number of recorded events by the number of years and multiplying by 100. This gives the percent chance of the event happening in any given year. For events occurring more than once annually, the probability will be reported 100% in any given year, with a statement of the average number of events annually.

Vulnerability Assessments

Requirement §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

Requirement §201.6(c)(2)(ii)(B): [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.

Requirement §201.6(c)(2)(ii)(C): [The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

Requirement §201.6(c)(2)(ii): (As of October 1, 2008) [The risk assessment] must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged in floods.

Following the hazard profile for each hazard will be the vulnerability assessment. The vulnerability assessment further defines and quantifies populations, buildings, critical facilities, and other community assets at risk to damages from natural hazards. The vulnerability assessments will be based on the best available county-level data, which is in the 2013 Missouri Hazard Mitigation Plan. The county-level assessments in the State Plan were based on the following sources:

- Statewide GIS data sets compiled by state and federal agencies; and
- FEMA's HAZUS-MH loss estimation software.

The vulnerability assessments in the DeKalb County plan will also be based on:

- Written descriptions of assets and risks provided by participating jurisdictions;
- Existing plans and reports;
- Personal interviews with planning committee members and other stakeholders; and
- Other sources as cited.

Within the Vulnerability Assessment, the following sub-headings will be addressed:

Vulnerability Overview

Previous and Future Development: This section will include information on how changes in development have impacted the community's vulnerability to this hazard. It will describe how changes in development that occurred in known hazard prone areas since the previous plan have increased or decreased the community's vulnerability. Any anticipated future development in the county, and how that would impact hazard risk in the planning area will be examined.

Hazard Summary by Jurisdiction: For hazard risks that vary by jurisdiction, this section will provide an overview of the variation and the factual basis for that variation.

Problem Statements

Each hazard analysis must conclude with a brief summary of the problems created by the hazard in the planning area, and possible ways to resolve those problems. It will include jurisdiction-specific information in those cases where the risk varies across the planning area.

3.4.1 Dam Failure

Hazard Profile

Hazard Description

A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams are typically constructed of earth, rock, concrete, or mine tailings. Dam failure is the uncontrolled release of impounded water resulting in downstream flooding, affecting both life and property. The failure can be caused by any of the following:

- Overtopping - inadequate spillway design, debris blockage of spillways or settlement of the dam crest.
- Piping- internal erosion caused by embankment leakage, foundation leakage and deterioration of pertinent structures appended to the dam.
- Erosion- inadequate spillway capacity causing overtopping of the dam, flow erosion, and inadequate slope protection.
- Structural Failure- caused by an earthquake, slope instability or faulty construction.

Federally regulated dams fall under the jurisdiction of the US. Army Corps of Engineers (USACE) and the U.S. Department of Agriculture and Forest Service. Dams regulated by the state are non-federally regulated dams that are over 35 feet in height. Missouri Department of Natural Resources (MDNR) Water Resources Center maintains the Dam and Reservoir Safety Program in Missouri. They ensure these dams are safely constructed, operated, and maintained pursuant to Chapter 236 of Revised Statutes of Missouri. The MDNR has data on the regulated and non-regulated dams in the state and uses the dam hazard classification system shown in Table 3.14.

Table 3.14. MDNR Dam Hazard Classification Definitions

Hazard Class	Definition
Class I	The area downstream from the dam that would be affected by inundation contains ten (10) or more permanent dwellings or any public building. Inspection of these dams must occur every two years.
Class II	The area downstream from the dam that would be affected by inundation contains one (1) to nine (9) permanent dwelling, or one (1) or more campgrounds with permanent water, sewer and electrical services or one (1) or more industrial buildings. Inspection of these dams must occur once every three years.
Class III	The area downstream from the dam that would be affected by inundation does not contain any of the structures identified for Class I or Class II dams. Inspection of these dams must occur once every five years.

(Source: Missouri Department of Natural Resources, http://dnr.mo.gov/env/wrc/docs/rules_reg_94.pdf)

The USACE maintains the National Inventory of Dams (NID), which includes data and the hazard classification of dams described in Table 3.15.

Table 3.15. NID Dam Hazard Classification Definitions

Hazard Class	Definition
High Hazard	Loss of human life is probable and one or more is expected. Losses for the economy, the environment and lifeline are also expected.
Significant Hazard	No loss of human life expected; however losses are expected for the economy, the environment and lifeline.
Low Hazard	No loss of human life expected and low/generally limited effect to owner on economic/environmental and lifeline losses.

(Source: National Inventory of Dams)

There is not a direct correlation between the MDNR classifications and the NID classifications.

Geographic Location

Dams in Planning Area

The MDNR database lists 69 dams in DeKalb County and ten of those dams are regulated.

Regulated Class I Dam:

- Maysville New City Dam

Regulated Class II Dams:

- Buffalo Bill Dam
- Cameron City Reservoir #1
- Cameron City Reservoir #2
- King Lake Dam
- Pony Express Lake Dam

Regulated Class III Dams:

- Grindstone – Lost Muddy Watershed A-8 Dam
- Grindstone GLM C-4 Dam
- Grindstone L-M-C Site A-2
- G-L-M Creek A-6

The USACE lists 69 dams in their NID for DeKalb County; 15 of these dams are classified as high hazard, with the failure of the dam likely resulting in loss of human life and one is classified as significant, with no expected loss of human life but economic, environmental or lifeline losses expected.

High Hazard Dams:

- Buffalo Bill Dam
- Cameron City Reservoir #1 Dam
- Cameron City Reservoir #2 Dam
- Cameron #3 Dam
- Duce Lake Dam
- Far West Stake RLD Church Lake Dam
- Grindstone – Lost Muddy Watershed B-21 Dam

- Grindstone – Lost Muddy Watershed A-39 Dam
- Grindstone – Lost Muddy Watershed A-26 Dam
- King Lake Dam
- Jestes Lake Dam
- Maysville New Reservoir Dam
- Maysville New City Dam
- Pony Express Lake Dam
- Redman Lake Dam

Significant Hazard Dam

- Grindstone – Lost Muddy Watershed B-5 Dam

Table 3.16 is a list of the high hazard dams in DeKalb County, using both the MDNR (Class I) and NID (high hazard) classification systems. The table includes names, locations, and other pertinent information for all high hazard dams in the planning area. The term “acre-foot.” is a unit of volume commonly used in reference to large-scale water resources, such as reservoirs, aqueducts, canals, sewer flow capacity, irrigation water, and river flows (Source: <https://en.wikipedia.org/wiki/Acre-foot>).

Table 3.16. High Hazard Dams in the DeKalb County Planning Area

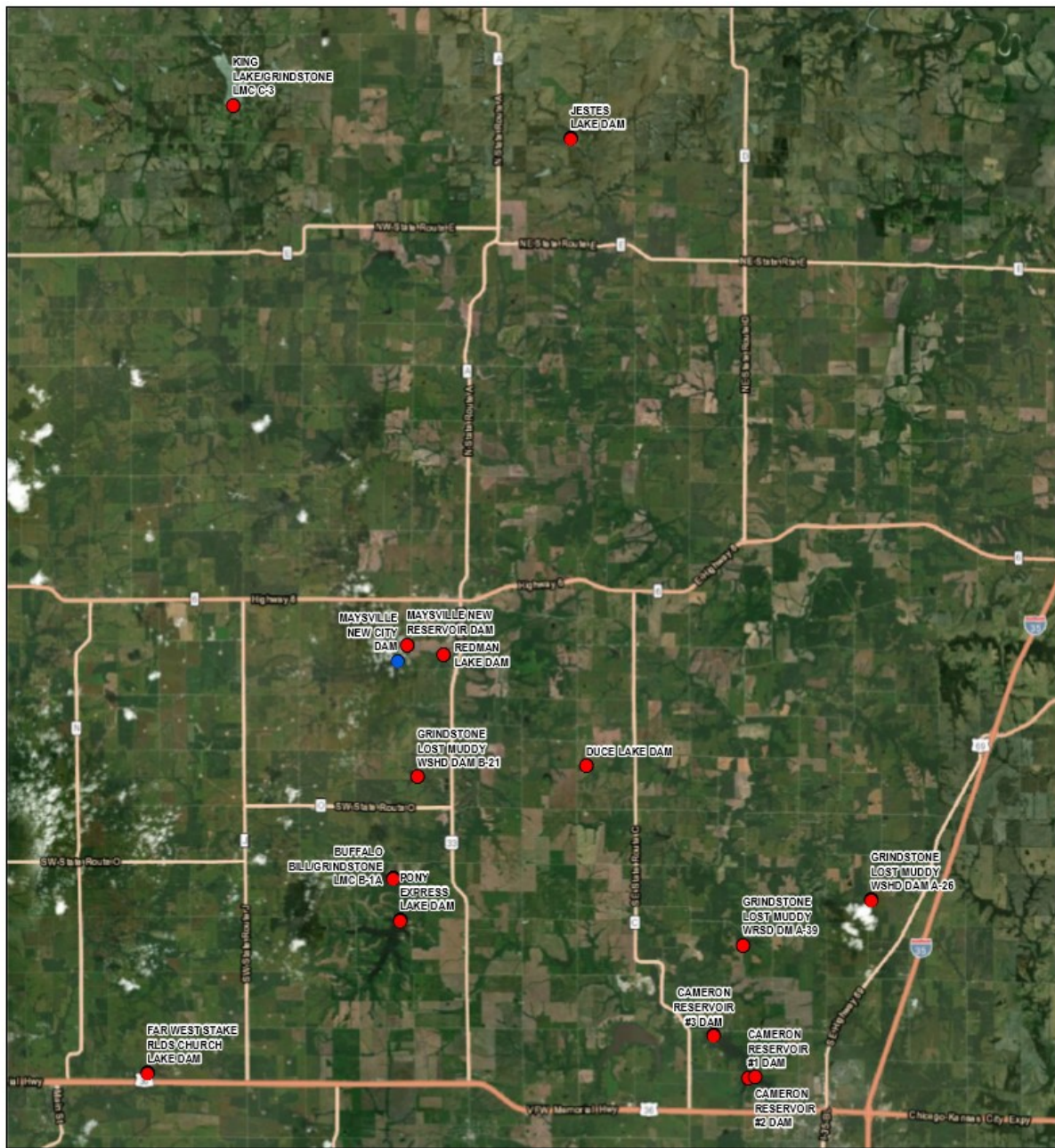
Dam Name	Emergency Action Plan (EAP)AP	Dam Height (Ft)	Normal Storage	Last Inspection Date	River	Nearest Downstream City	Distance To Nearest City (Miles)	Owner
Buffalo Bill Dam	Yes	41	271	07/30/2013	West Fork Lost	Pattonsburg	-	MO Dept. of Conservation
Cameron City Reservoir #1 Dam	Yes	36	154	02/10/2015	Grindstone Creek	Cameron	0	City of Cameron
Cameron Reservoir #2 Dam	Yes (8/23/11)	38	251	03/19/2014	Grindstone Creek	Cameron	0	City of Cameron
Cameron #3 Dam	NR	33	833	07/05/1979	Tributary to Grindstone Creek	Cameron	3	City of Cameron
Duce Lake Dam	NR	23	78	Unknown	Grindstone Creek	Santa Rosa	16	Clarence Duce

Far West Stake RLD Church Dam	NR	25	51	Unknown	Castile Creek	Stewarts- ville	0	Far Wst Stake RLDS Chrch
Grindstone – Lost Muddy Watershed B-21 Dam	Yes	34	166	Not Inspected	Tributary to West Fork Creek	Pattonsburg	-	Grndstn-lst- mdy wrsd sbd
Grindstone – Lost Muddy Watershed A-39 Dam	Yes	31	117	06/01/2008	Grindstone Creek	Pattonsburg	-	Grndstn-lst- mdy-wrsd sbd
Grindstone – Lost Muddy Watershed A-26 Dam	Yes	25	37	Unknown	Grindstone Creek	Pattsonsburg	–	Grnsn-ls-md wrsd sbdistr
Jestes Lake Dam	NR	25	67	Unknown	North Fork Lost Creek	Santa Rosa	0	Keith Jestes
King Lake Dam	Yes (01/02/14)	40	1,293	02/10/2015	Lost Creek			MO Dept. of Conservation
Maysville New City Dam	NR	48	1157	10/01/2014	NA	Maysville	0	City of Maysville
Maysville New Reservoir Dam	NR	20	220	Unknown	West Fork Lost Creek	Maysville	0	City of Maysville
Pony Express Lake Dam	Yes	40	2,400	10/03/2012	West Fort Lost Creek	Santa Rosa	22	MO Dept. of Conservation
Redman Dam	NR	30	120	Unknown	West Fork Lost Creek	Maysville	0	Carl Redman

Sources: Missouri Department of Natural Resources, <http://dnr.mo.gov/env/wrc/dam-safety/statemap.htm> and National Inventory of Dams, http://nid.usace.army.mil/cm_apex/f?p=838:12

Figure 3.12 provides the locations of NID high hazard dams, identified in red that are in DeKalb County. If a dam is NID high hazard dam and a Class I MDNR dam, it is identified in blue. The highest concentration of NID high hazard dams are found near Maysville and Cameron. Inundation maps for the remaining High Hazard are also located in Appendix A.

Figure 3.8.



Hazard Potential

- Class I and High Hazard
- High Hazard

(Source: U.S. Army Corps of Engineers, Missouri Department of Natural Resources)

Upstream Dams Outside the Planning Area

Dams located outside of DeKalb County are unlikely to impact the county in the event of failure.

Severity/Magnitude/Extent

The severity/magnitude of dam failure would be similar in some cases to the impacts associated with flood events (see the flood hazard vulnerability analysis and discussion). Based on the hazard class definitions, failure of any of the High Hazard/Class I dams could result in a serious threat of loss of human life, serious damage to residential, industrial or commercial areas, public utilities, public buildings, or major transportation facilities. Catastrophic failure of any high hazard dams has the potential to result in greater destruction due to the potential speed of onset and greater depth, extent, and velocity of flooding. For this reason, dam failures could flood areas outside of mapped flood hazards. Dam failure can result not only in the loss of life, but also property damaged and loss of income if agricultural fields are flooded.

Previous Occurrences

There are no records of recent dam failure in DeKalb County. Since there are zero recorded events causing damage in the planning area, a calculation of a probability percent is not possible. According to information from the 2013 State Plan, Missouri's percentage of high hazard dams in the DNR inventory puts the State at about the national average for that category.

Probability of Future Occurrence

There is no record of a dam failure within the county so it is not possible to calculate the probability of future occurrence. If development occurs in inundation zones the likelihood of loss of life increases in the event of dam failure. Additionally, the probability of dam failure increases as many of the smaller and privately owned dams continue to deteriorate without the benefit of further regulation or improvements. Regular inspection and maintenance schedules for dams greatly reduces the probability of dam failure. MDNR Class I dams must be inspected every two years, Class II every three years and Class III every five years. By adhering to this schedule the likelihood of failure will be kept to a minimum.

Vulnerability

Vulnerability Overview

Vulnerability to dam failure in DeKalb County is limited to structures located in dam inundation zones. The dams are located in unincorporated parts of the county and no critical structures are located in the inundation zones. Currently, there are ten state regulated dams with heights of 35 or greater. One of these dams, Maysville New City Dam, is rated High Hazard/Class I dam. Five dams are rated Class II and four are rated Class III. Although failure potential certainly exists for these non-regulated dams, it is very difficult to attempt to analyze vulnerability due to data limitations. There are no federally regulated dams in DeKalb County.

Potential Losses to Existing Development: (including types and numbers, of buildings, critical facilities, etc.)

Table 3.17 lists the exposure vulnerability for the ten state regulated dams (over 35 feet in height) in DeKalb County.

Table 3.17 Vulnerability Analysis for Failure of State-regulated Dams

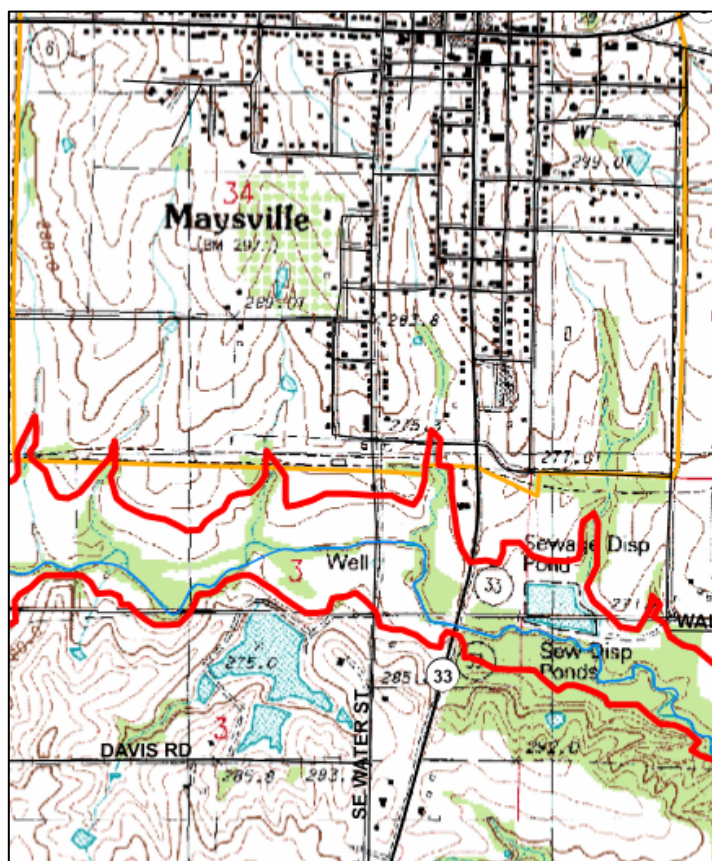
Jurisdiction	Estimated # of Buildings Vulnerable	Average Exposure Value Per Structure	Estimated Total Potential Building Exposure	Estimated Total Population Exposure	Estimated Building Losses
DeKalb County	35	\$82,530	\$6,049,514	188	\$3,024,757

(Source: 2013 State Plan)

Maysville New City Dam

A portion of the Maysville New City Dam inundation zone is shown in Figure 3.4. This is the only dam in DeKalb County that is both a Class I state regulated dam and a high hazard NID dam. Approximately 30 minutes after a breach, the flood waters would reach the southwest side of Maysville city limits and then the sewage disposal ponds. If flood waters stayed within the inundation zone, shown in red, residential structures would be spared. However, as previously noted, depending on the speed and velocity of a breach and flooding, inundation zones might be exceeded and residential structures could be impacted. No Emergency Action Plan (EAP) is required.

Figure 3.4 Maysville New City Dam Inundation Zone in Maysville



(Source: MDNR, Maysville New City Dam Report)

Pony Express Lake Dam

The Pony Express Lake Dam inundation zone is not located near any city limits. However, a breach would impact several rural residential and agricultural structures, as shown in Figure 3.5. There is an EAP.

Figure 3.5 **Pony Express Lake Dam Inundation Zone**



(Source: MDNR, Pony Express Lake Dam Report)

Cameron City Reservoir Dams #1 and #2

Cameron City Reservoir Dams #1 and #2 are located south of Cameron City Reservoir Dam #3, as shown in Figure 3.6. Flood waters from a breach in Cameron City #1 or #2 would flow into #3, raising the water level. Figure 3.7 shows the flood arrival times in the event of Cameron City #3 breach. There are EAPs and recent inspections for the Cameron City #1 and #2 since they are state regulated. However, Cameron City #3 is not regulated by the state since the dam height is just under 35 feet. It was last inspected in 1979 and is not required to have an EAP. The duration of the inundation zone, a portion of the inundation zone is shown in red in the figures below, does not encroach heavily populated areas. At the four-hour mark after a breach, there are several structures located just outside of the inundation zone which could be threatened.

Figure 3.6 Cameron City Reservoir Dam #1 and 2 Inundation Zones

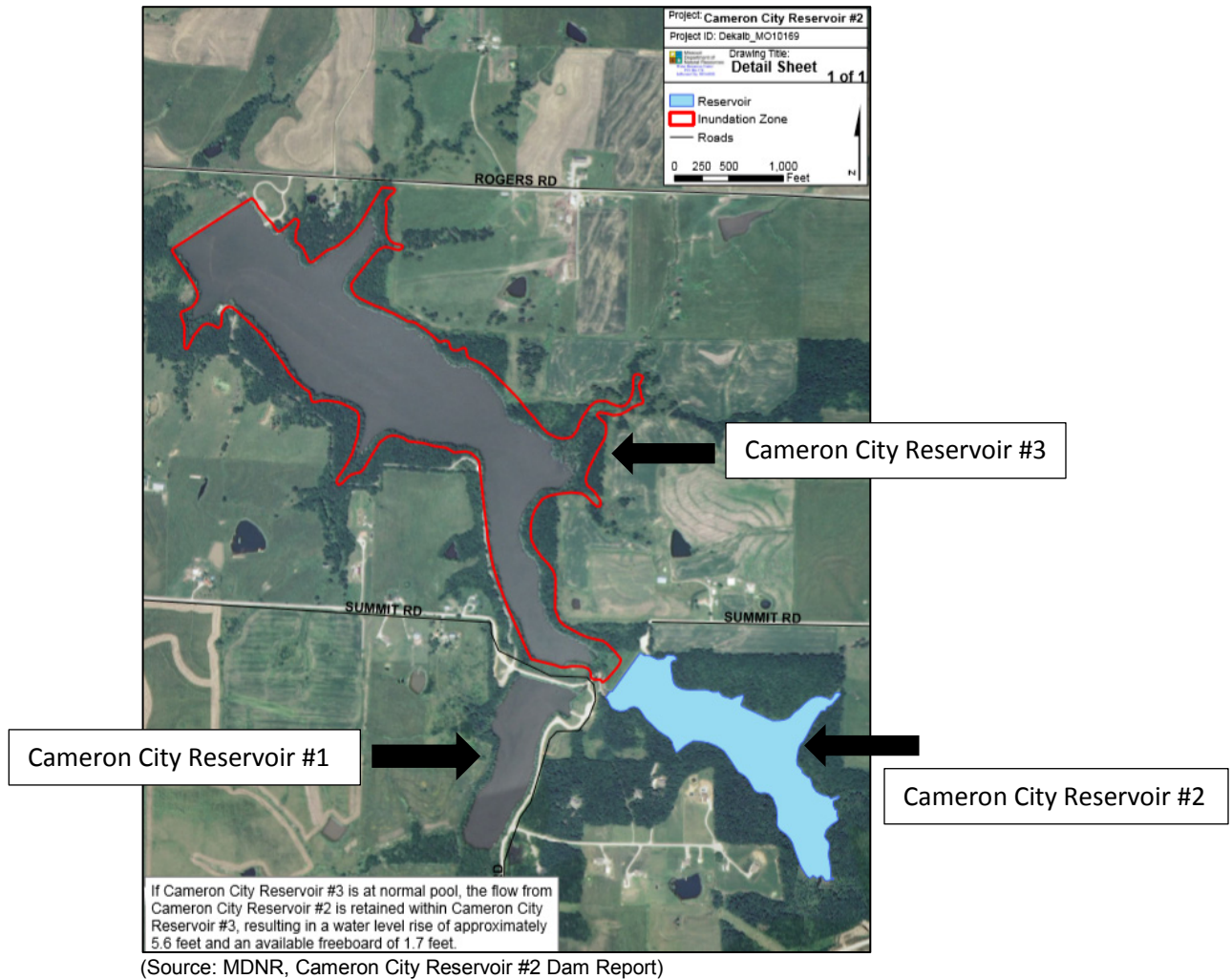
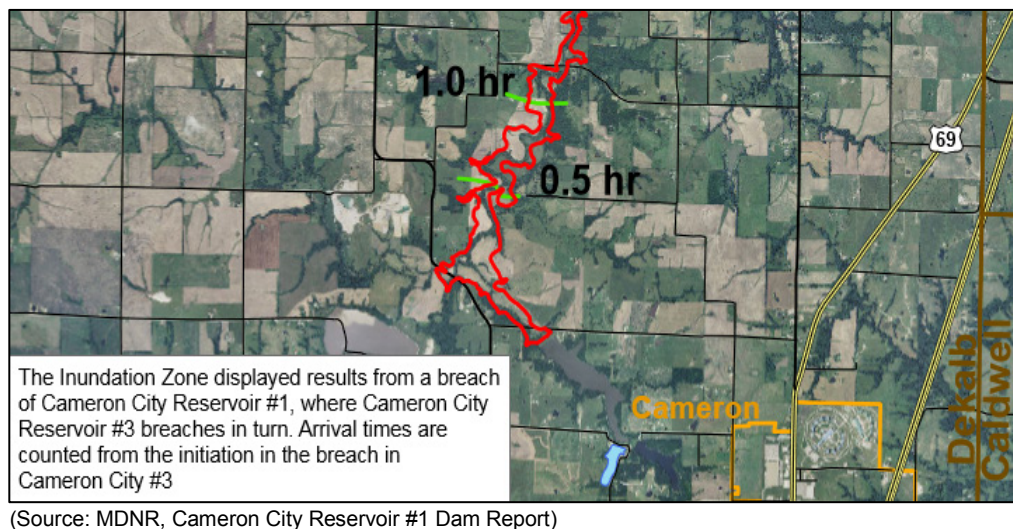


Figure 3.7 Cameron City Reservoir Dam #1 and 2 Inundation Zones



Impact of Previous and Future Development

Future development in DeKalb County could impact the amount of damages caused by a dam failure in the planning area if development occurs in the dam inundation area. Most of DeKalb County is rural but the southeast area of the county, the City of Cameron, is experiencing growth. Caution must be exercised in developing areas in and near inundation zones of High Hazard/Class I dams.

Hazard Summary by Jurisdiction

Vulnerability to dam failure varies across the planning area. The City of Maysville has a sewer disposal pond located in an inundation zone. According to the 2013 State Plan an estimated 188 people and 35 buildings are vulnerable to a dam failure.

Problem Statement

Although the probability of dam failure in the county is low the potential for damage remains. Eight dams have emergency action plans. Emergency action plans written for dams include procedures for notification and coordination with local law enforcement and other governmental agencies, information on the potential inundation area, plans for warning and evacuation, and procedures for making emergency repairs. Residents near a Class I or Class II hazard dams should become familiar with what action to take if there is a dam breach. Public education campaigns can help inform and prepare citizens.

3.4.2 Drought

Hazard Profile

Hazard Description

Drought is generally defined as a condition of moisture levels significantly below normal for an extended period of time over a large area that adversely affects plants, animal life, and humans. A drought period can last for months, years, or even decades. There are four types of drought conditions relevant to Missouri, according to the State Plan, which are as follows.

- Meteorological drought is defined in terms of the basis of the degree of dryness (in comparison to some “normal” or average amount) and the duration of the dry period. A meteorological drought must be considered as region-specific since the atmospheric conditions that result in deficiencies of precipitation are highly variable from region to region.
- Hydrological drought is associated with the effects of periods of precipitation (including snowfall) shortfalls on surface or subsurface water supply (e.g., streamflow, reservoir and lake levels, ground water). The frequency and severity of hydrological drought is often defined on a watershed or river basin scale. Although all droughts originate with a deficiency of precipitation, hydrologists are more concerned with how this deficiency plays out through the hydrologic system. Hydrological droughts are usually out of phase with or lag behind the occurrence of meteorological and agricultural droughts. It takes longer for precipitation deficiencies to show up in components of the hydrological system such as soil moisture, streamflow, and ground water and reservoir levels. As a result, these impacts also are out of phase with impacts in other economic sectors.
- Agricultural drought focus is on soil moisture deficiencies, differences between actual and potential evaporation, reduced ground water or reservoir levels, etc. Plant demand for water depends on prevailing weather conditions, biological characteristics of the specific plant, its stage of growth, and the physical and biological properties of the soil.
- Socioeconomic drought refers to when physical water shortage begins to affect people.

(Source: <http://www.drought.unl.edu/> <http://droughtreporter.unl.edu/>)

Geographic Location

The entire planning area is at risk to drought. Drought most directly impacts the agricultural sector. DeKalb County covers 426 square miles and approximately 380 square miles (89 percent) is land in farm use and 4.5 square miles (1 percent) is water. Of the 242,855 acres of land in farm use, only nine acres are irrigated. From 2002 to 2012, the number of farms decreased by 2.3 percent but acres in farm land increased by 7.8 percent (Source: http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Missouri). Farming is spread throughout the county.

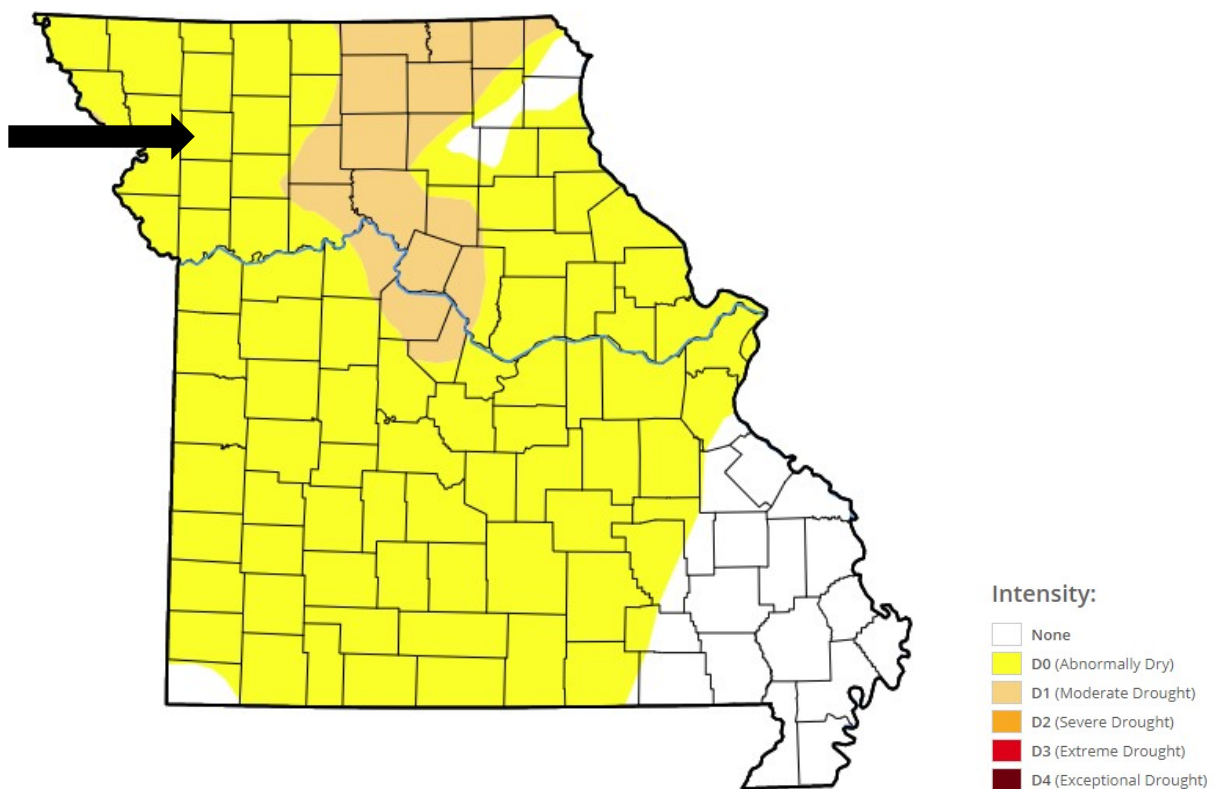
Severity/Magnitude/Extent

The National Drought Monitor Center at the University of Nebraska at Lincoln summarized the potential severity of drought as follows. Drought can create economic impacts on agriculture and related sectors, including forestry and fisheries, because of the reliance of these sectors on surface

and subsurface water supplies. In addition to losses in yields in crop and livestock production, drought is associated with increases in insect infestations, plant disease, and wind erosion. Droughts also bring increased problems with insects and disease to forests and reduce growth. The incidence of forest and range fires increases substantially during extended droughts, which in turn place both human and wildlife populations at higher levels of risk. Income loss is another indicator used in assessing the impacts of drought because so many sectors are affected. Finally, while drought is rarely a direct cause of death, the associated heat, dust and stress can all contribute to increased mortality.

The U.S. Drought Monitor is an example of the geographic area that could be in drought at any given moment in time. It is only a snapshot of conditions at a given moment in time. Figure 3.8 shows that DeKalb County is located in D0 – Abnormally Dry zone.

Figure 3.8. U.S. Drought Monitor Map of Missouri on March 15, 2018



(Source: U.S. Drought Monitor, <http://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?MO>)

The USDA's Risk Management Agency tracks insured crop loss payments in the county as a result of drought. Table 3.18 shows the crop loss payments in DeKalb County from 2007 to 2016. Crop loss payments were the highest in 2012, with a total of \$15,744,557.00.

Table 3.18 Crop Loss Payments in DeKalb County from 2007-2016

Year	Crop Loss Payment
2016	\$19,559.00
2015	\$0
2014	\$90,647.50
2013	\$6,018,363.00
2012	\$15,744,557.00
2011	\$256,876.00
2010	\$132,537.00
2009	\$0
2008	\$937,044.00
2007	\$549,901.00

(Source: <http://www.rma.usda.gov/data/cause.html>)

The Palmer Drought Indices measure dryness based on recent precipitation and temperature. The indices are based on a “supply-and-demand model” of soil moisture. Calculation of supply is relatively straightforward, using temperature and the amount of moisture in the soil. However, demand is more complicated as it depends on a variety of factors, such as evapotranspiration and recharge rates. These rates are harder to calculate. Palmer tried to overcome these difficulties by developing an algorithm that approximated these rates, and based the algorithm on the most readily available data — precipitation and temperature.

The Palmer Index has proven most effective in identifying long-term drought of more than several months. However, the Palmer Index has been less effective in determining conditions over a matter of weeks. It uses a “0” as normal, and drought is shown in terms of negative numbers; for example, negative 2 is moderate drought, negative 3 is severe drought, and negative 4 is extreme drought. Palmer’s algorithm also is used to describe wet spells, using corresponding positive numbers.

Palmer also developed a formula for standardizing drought calculations for each individual location based on the variability of precipitation and temperature at that location. The Palmer index can therefore be applied to any site for which sufficient precipitation and temperature data is available.

None of the communities in DeKalb County use water from a well as the only source of water. There are no surface water sites in the county (Source: http://maps.waterdata.usgs.gov/map_per/index.html).

Previous Occurrences

DeKalb County experienced droughts in 2000 and 2012-2013. (Source: NCEI.noaa.gov/stormevents). The Drought Impact Report included reports about drought disaster declarations in “Drought-related USDA disaster declarations in 2013” (Dates of Impact: 2013-01-09 to 2013-05-16), “USDA Designates 97 Counties in Missouri as Primary Natural Disaster Areas with Assistance to Producers in Surrounding States” (Dates of Impact: 2012-04-01 to unknown) and “All but three Missouri counties received drought disaster designation” (Dates of Impact: 2011-07-01 to 2011-10-18) (Source: <http://droughtreporter.unl.edu/>). There are three reports from 2017 mentioning drought (Dates of Impact: 2017-05-01 to 2017-08-16, 2017-05-01 to 2017-09-28 and 2017-05-01 to 2017-12-18), which is an indicator that a drought event may be currently taking place.

Probability of Future Occurrence

A 20-year period is used from which to draw data on drought events in order to obtain a more accurate estimate of probability. Over the 20-year record period, DeKalb County was in a drought for

13 months. There are a total of 240 months in the record period. The calculated risk percent from the number of months of drought and the total number of months in the record period equates to the annual average percentage of 5.42 percent probability of drought occurrence in the county. Although drought is not predictable, long-range outlooks and predicted impacts of climate change could indicate an increased chance of drought persistence and severity. The thirteen events took place in 2000 (one event), 2012 (six events) and 2013 (six events) (Source: <https://www.NCEI.noaa.gov/stormevents>).

Vulnerability

Vulnerability Overview

The agriculture sector is particularly vulnerable to drought. Periods of dry weather can reduce stock ponds and force the early sale of livestock. Between 2007 and 2012, the number of cattle has decreased by nearly 48 percent, which lessens the demand for stock ponds (Source: Ag. Census 2012 and 2007). However, drought can still stress stock ponds water levels and be disruptive to crop production. Those relying on private wells are likely to be impacted by reductions in the groundwater supply.

Potential Losses to Existing Development

The 2013 State Plan shows that from 1998 through 2012 there were \$22,983,620.00 in insured crop loss payments in DeKalb County (Source: [http://sema.dps.mo.gov/docs/ programs/LRMF/ mitigation /MO Hazard Mitigation Plan 2013.pdf](http://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO_Hazard_Mitigation_Plan_2013.pdf)). In addition, according to the USDA Risk Management Agency, there was a total of \$6,128,569.50 in insured crop loss payments from 2013-2016. (Source: <http://www.rma.usda.gov/data/cause.html>). According to this data, the total losses divided by the 19- year timeframe ($\$22,983,620.00 + \$6,128,569.50/19$) equals \$1,532,220.50 per year. There are no anticipated structural losses, loss of life or injuries associated with this hazard.

Impact of Previous and Future Development

DeKalb County experienced a 7.8 percent increase of acres in farm land from 2002 - 2012, which increases exposure to drought-related agricultural losses. In addition, increases in population result in higher demand for treated water, adding strain on water supply systems.

Impact of Climate Change

A new analysis, performed for the Natural Resources Defense Council, examined the effects of climate change on water supply and demand in the contiguous United States. The study found that more than 1,100 counties will face higher risks of water shortages by mid-century as a result of climate change. Two of the principal reasons for the projected water constraints are shifts in precipitation and potential evapotranspiration (PET). Climate models project decreases in precipitation in many regions of the U.S., including areas that may currently be described as experiencing water shortages of some degree.

The Natural Resources Defense Council developed a new water supply sustainability index. The risk to water sustainability is based on the following criteria:

- Projected water demand as a share of available precipitation
- Groundwater use as a share of projected available precipitation
- Susceptibility to drought
- Projected increase in freshwater withdrawals
- Projected increase in summer water deficit

The risk to water sustainability for counties meeting two of the criteria are classified as “moderate” while those meeting three of the criteria are classified as “high,” and those meeting four or more are classified as “extreme.” Counties meeting less than two criteria are considered to have low risk to water sustainability. According to the Natural Resources Defense Council, without climate change the water sustainability index for DeKalb County is low. With climate change, the water supply sustainability index increases to moderate (Source: <https://www.nrdc.org/issues/climate-change>).

Hazard Summary by Jurisdiction

Although the probability of drought is the same for the entire county, farming and livestock enterprises in the unincorporated parts of the county would feel the greatest impact. These impacts are mitigated somewhat by the purchase of crop insurance. The communities in DeKalb County are on water systems. However, many rural residents rely on limited source wells, which would be impacted during water shortages. In cities, the drought conditions would be the same as those experienced in rural areas, but the magnitude would be different with only lawns and local gardens impacted. In addition, building foundations could be weakened due to shrinking and expanding soils. School and special districts would be the least impacted by drought, however, those districts in communities with single source wells may experience water shortages prior to those in larger communities.

Problem Statement

Although drought most likely will not cause structural damage, the impact is greatest on the agriculture sector and if persistent enough, could cause reductions in groundwater and water shortages in communities that provide potable water services. Potential solutions to mitigate the impact of drought would be for communities to develop an ordinance to restrict the use of public water resources for non-essential usage, such as landscaping, washing cars, filling swimming pools, etc. during extreme drought periods. Schools can also implement water conservation measures at all district facilities.

3.4.3 Earthquakes

Hazard Profile

Hazard Description

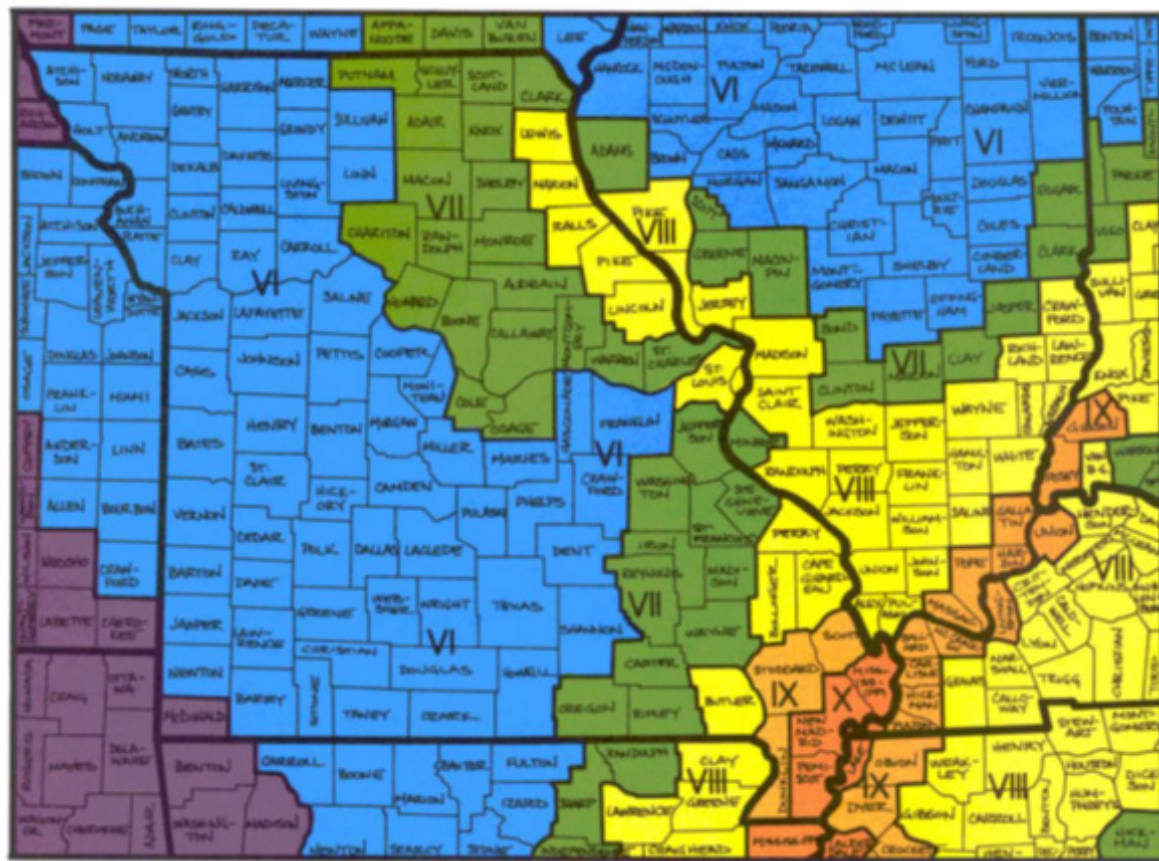
An earthquake is a sudden motion or trembling that is caused by a release of energy accumulated within or along the edge of the earth's tectonic plates. Earthquakes occur primarily along fault zones and tears in the earth's crust. Along these faults and tears in the crust, stresses can build until one side of the fault slips, generating compressive and shear energy that produces the shaking and damage to the built environment. Heaviest damage generally occurs nearest the earthquake epicenter, which is that point on the earth's surface directly above the point of fault movement. The composition of geologic materials between these points is a major factor in transmitting the energy to buildings and other structures on the earth's surface.

The greatest hazard from earthquakes in DeKalb County comes from the New Madrid Seismic Zone situated in the boot-heel area of southeast Missouri. The potential of high magnitude earthquakes occurring along the New Madrid Fault presents risk that does not vary across the planning area. The Nemaha uplift in central Kansas is also prone to seismic activity, however, the center of the Humbolt fault zone near the Nemaha Uplift is approximately 250 miles southwest of DeKalb County and produces lower magnitude seismic events.

Geographic Location

Figure 3.9 shows the highest projected Modified Mercalli intensities by county from a potential magnitude 7.6 earthquake whose epicenter could be anywhere along the length of the New Madrid Seismic Zone. The secondary maps in Figure 3.9 show the same regional intensities for 6.7 and 8.6 earthquake, respectively.

Figure 3.9. Impact Zones for Earthquake Along the New Madrid Fault



This map shows the highest projected Modified Mercalli intensities by county from a potential magnitude ~ 7.6 earthquake whose epicenter could be anywhere along the length of the New Madrid seismic zone.



(Source: http://sema.dps.mo.gov/docs/programs/Planning,%20Disaster%20&%20Recovery/State%20of%20Missouri%20Hazard%20Analysis/2012-State-Hazard-Analysis/Annex_F_Earthquakes.pdf)

PROJECTED EARTHQUAKE INTENSITIES

MODIFIED MERCALLI INTENSITY SCALE

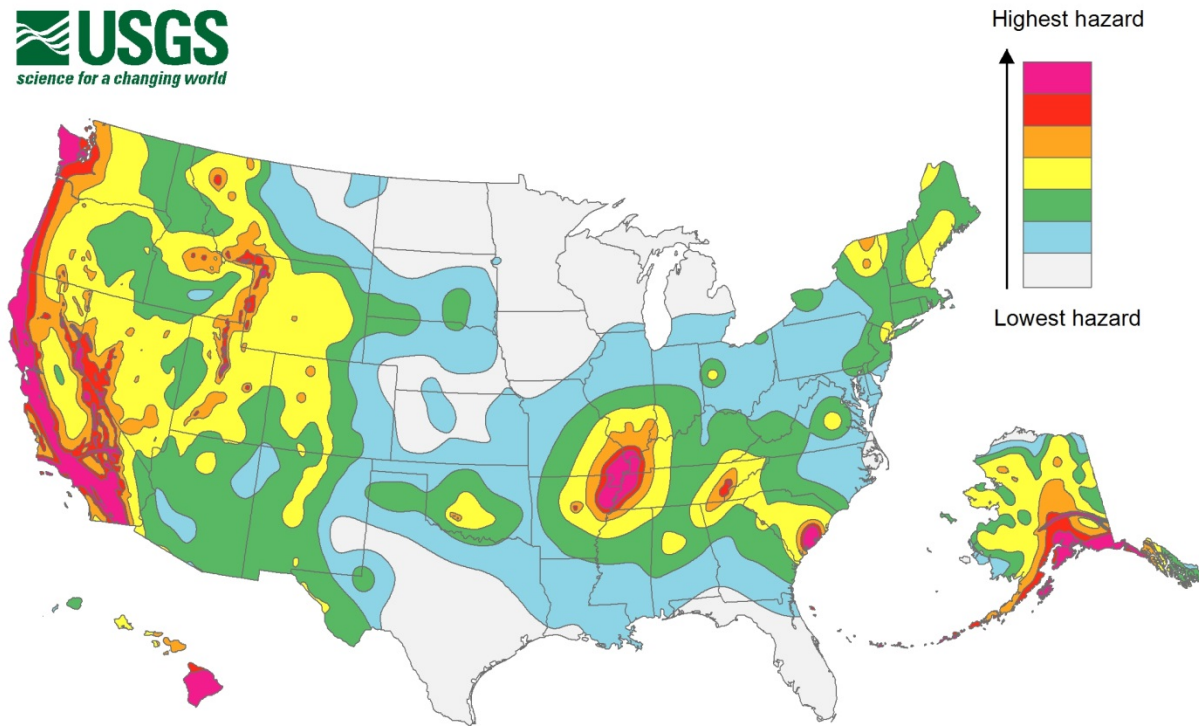
I	People do not feel any Earth movement.	IX	Most buildings suffer damage. Houses that are not bolted down move off their foundations. Some underground pipes are broken. The ground cracks conspicuously. Reservoirs suffer severe damage.
II	A few people might notice movement.	X	Well-built wooden structures are severely damaged and some destroyed. Most masonry and frame structures are destroyed, including their foundations. Some bridges are destroyed. Dams are seriously damaged. Large landslides occur. Water is thrown on the banks of canals, rivers, and lakes. Railroad tracks are bent slightly. Cracks are opened in cement pavements and asphalt road surfaces.
III	Many people indoors feel movement. Hanging objects swing.	XI	Few if any masonry structures remain standing. Large, well-built bridges are destroyed. Wood frame structures are severely damaged, especially near epicenters. Buried pipelines are rendered completely useless. Railroad tracks are badly bent. Water mixed with sand, and mud is ejected in large amounts.
IV	Most people indoors feel movement. Dishes, windows, and doors rattle. Walls and frames of structures creak. Liquids in open vessels are slightly disturbed. Parked cars rock.	XII	Damage is total, and nearly all works of construction are damaged greatly or destroyed. Objects are thrown into the air. The ground moves in waves or ripples. Large amounts of rock may move. Lakes are dammed, waterfalls formed and rivers are deflected.
V	Almost everyone feels movement. Most people are awakened. Doors swing open or closed. Dishes are broken. Pictures on the wall move. Windows crack in some cases. Small objects move or are turned over. Liquids might spill out of open containers.		
VI	Everyone feels movement. Poorly built buildings are damaged slightly. Considerable quantities of dishes and glassware, and some windows are broken. People have trouble walking. Pictures fall off walls. Objects fall from shelves. Plaster in walls might crack. Some furniture is overturned. Small bells in churches, chapels and schools ring.		
VII	People have difficulty standing. Considerable damage in poorly built or badly designed buildings, adobe houses, old walls, spires and others. Damage is slight to moderate in well-built buildings. Numerous windows are broken. Weak chimneys break at roof lines. Cornices from towers and high buildings fall. Loose bricks fall from buildings. Heavy furniture is overturned and damaged. Some sand and gravel stream banks cave in.		
VIII	Drivers have trouble steering. Poorly built structures suffer severe damage. Ordinary substantial buildings partially collapse. Damage slight in structures especially built to withstand earthquakes. Tree branches break. Houses not bolted down might shift on their foundations. Tall structures such as towers and chimneys might twist and fall. Temporary or permanent changes in springs and wells. Sand and mud is ejected in small amounts.		

Intensity is a numerical index describing the effects of an earthquake on the surface of the Earth, on man, and on structures built by man. The intensities shown in these maps are the highest likely under the most adverse geologic conditions. There will actually be a range in intensities within any small area such as a town or county, with the highest intensity generally occurring at only a few sites. Earthquakes of all three magnitudes represented in these maps occurred during the 1811 - 1812 "New Madrid earthquakes." The isoseismal patterns shown here, however, were simulated based on actual patterns of somewhat smaller but damaging earthquakes that occurred in the New Madrid seismic zone in 1843 and 1895.

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Figure 3.10 illustrates seismicity in the United States. DeKalb County is located in the blue zone, which is the second lowest hazard area.

Figure 3.10. United States Seismic Hazard Map



Source: United States Geological Survey at http://earthquake.usgs.gov/hazards/products/conterminous/2014/HazardMap2014_lg.jpg

Severity/Magnitude/Extent

The extent or severity of earthquakes is generally measured in two ways: 1) the Richter Magnitude Scale is a measure of earthquake magnitude; and 2) the Modified Mercalli Intensity Scale is a measure of earthquake severity. The two scales are defined as follows.

Richter Magnitude Scale

The Richter Magnitude Scale was developed in 1935 as a device to compare the size of earthquakes. The magnitude of an earthquake is measured using a logarithm of the maximum extent of waves recorded by seismographs. Adjustments are made to reflect the variation in the distance between the various seismographs and the epicenter of the earthquakes. On the Richter Scale, magnitude is expressed in whole numbers and decimal fractions. For example, comparing a 5.3 and a 6.3 earthquake shows that the 6.3 quake is ten times bigger in magnitude. Each whole number increase in magnitude represents a tenfold increase in measured amplitude because of the logarithm. Each whole number step in the magnitude scale represents a release of approximately 31 times more energy.

Modified Mercalli Intensity Scale

The intensity of an earthquake is measured by the effect of the earthquake on the earth's surface. The intensity scale is based on the responses to the quake, such as people awakening, movement of furniture, damage to chimneys, etc. The intensity scale currently used in the United States is the Modified Mercalli (MM) Intensity Scale. It was developed in 1931 and is composed of 12 increasing levels of intensity. They range from imperceptible shaking to catastrophic destruction, and each of the 12 levels is denoted by a Roman numeral. The scale does not have a mathematical basis, but is based on observed effects. Its use gives the laymen a more meaningful idea of the severity.

Previous Occurrences

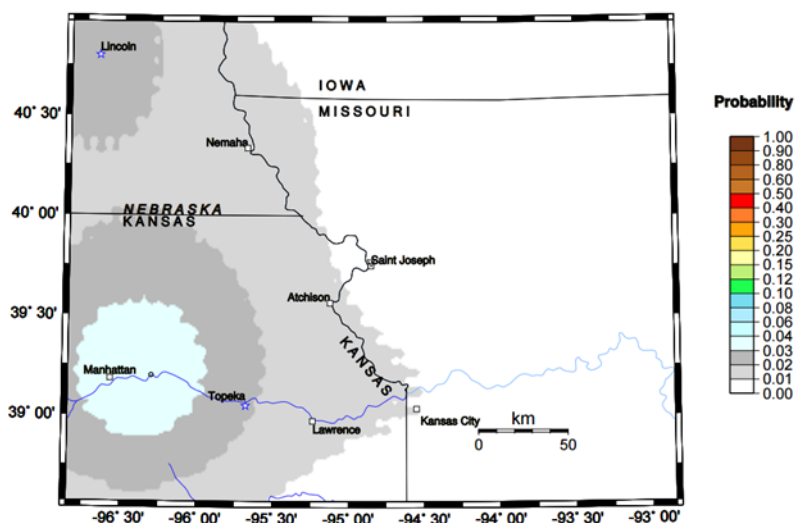
Earthquakes are rare in DeKalb County. There have been no reported earthquakes since 1931 according to Homefacts.com.

On February 13, 2016 a neighboring county, Buchanan County, felt tremors from a 5.1 earthquake originating near Fairview, Oklahoma. No damage was reported. There is speculation that the earthquake was the result of man-made activity, fracking. Thus, man-made activity may contribute to future earthquake activity in DeKalb County.

Probability of Future Occurrence

The United States Geological Survey (USGS) earthquake probability map for the DeKalb County area is shown in Figure 3.11. DeKalb County falls into the 0 - .01% probability range, indicated by white on the map. No known earthquakes have occurred in DeKalb County.

Figure 3.11. 2009 Earthquake Probability Mapping



(Source: <https://geohazards.usgs.gov/eqprob/2009/output/284df9fac901f367aef66cff2ec5f19e.pdf>)

Hazard Summary by Jurisdiction

Earthquake risk and intensity is not likely to vary greatly throughout the planning area. However, damages could differ if there are structural variations in the planning area built environment, such as a community having a high number of older structures. Many of the school districts' building are newer than 1939 and would be able to better withstand earthquakes than older structures in the

communities.

Impact of Previous and Future Development

Future development is not expected to increase the risk contributing to the overall damage exposure.

Vulnerability

Vulnerability Overview

Ground shaking is the most damaging effect from earthquakes. Ground shaking will impact all structures and critical infrastructure such as roads and electrical transmission systems. In the event of a 7.6 magnitude earthquake, damage to structures would vary depending on the quality of construction. In addition, some underground utilities may be damaged. Injuries may occur but fatalities are unlikely.

Potential Losses to Existing Development

A scenario based on an event with a 2% probability of exceedance in 50 years, was done to model a worst case scenario, as demonstrated in the 2013 State Plan. The methodology is based on probabilistic seismic hazard shaking grids developed by the U.S. Geological Survey (USGS) for the National Seismic Hazard Maps that are included with Hazus. The USGS maps provide estimates of peak ground acceleration and spectral acceleration at periods of 0.3 second and 1.0 second, respectively, which have a 2% probability of exceedance in the next 50 years. The International Building Code uses this level of ground shaking for building design in seismic areas. This scenario used a 7.7 driving magnitude in HAZUS-MH, which is the magnitude used for typical New Madrid fault planning scenarios in Missouri. Table 3.19 depicts the estimated losses in the county based on this scenario.

Table 3.19 Estimated Earthquake Losses for DeKalb County

Jurisdiction	Structural Damage	Non-Structural Damage	Contents Damage and Inventory Loss	Loss Ratio (%) **	Income Loss	Total Economic Loss to Buildings ***
DeKalb County	\$1,134,000	\$3,131,000	\$876,000	.48	\$1,238,000	\$6,379,000

(Source: Hazus 2.1)

**Loss ratio is the sum of structural and nonstructural damage divided by the entire building inventory value within a county

***Total economic loss to buildings includes inventory loss, relocation loss, capital-related loss, wages loss, and rental income loss

****Note: Total loss numbers provide an estimate of total losses and due to rounding, these numbers may differ slightly from the global summary report outputs from HAZUS

Impact of Previous and Future Development

Future development is not expected to increase the risk other than contributing to the overall exposure of potential damage.

Hazard Summary by Jurisdiction

Since the earthquake intensity is not likely to vary greatly across the planning area, the risk will be the same throughout. As previously stated, damages could differ in communities that have older

structures. Table 3.20 lists the timeframe housing structures were built in the county's jurisdictions.

Table 3.20 **Age of Housing Structures in DeKalb County**

Year Structure Built	DeKalb County	Amity	Clarksdale	Maysville	Osborn	Stewartsville	Union Star	Weatherby
2014 or later	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2010 to 2013	.0.7%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%
2000 to 2009	15.6%	12.5%	0.9%	9.7%	10.3%	23.4%	4.2%	7.1%
1980 to 1999	28.5%	25.0%	40.2%	12.3%	38.6%	17.2%	15.5%	7.1%
1960 to 1979	32.5%	31.3%	32.1%	45.2%	16.7%	41.6%	25.6%	2.4%
1940 to 1959	7.1%	0.0%	17.0%	8.4%	11.6%	5.5%	20.2%	0.0%
1939 or earlier	15.6%	31.3%	9.8%	23.6%	22.7%	17.4%	34.5%	83.3%
Total # of Housing Units	4,315	44	126	560	259	372	210	49

(Source: <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>)

Problem Statement

Based on intensity damage description in Figure 3.9, a 7.6 magnitude earthquake along the New Madrid fault may result in slight damage to older, poorly built structures, if any. Over 30 percent of the housing structures in Amity, Union Star and Weatherby were built prior to 1940 and may be impacted more by an earthquake. Impact to older homes can be somewhat mitigated during remodeling and renovation. Potential damages to future development can be mitigated by all jurisdictions adopting and enforcing IBC 2012 building codes.

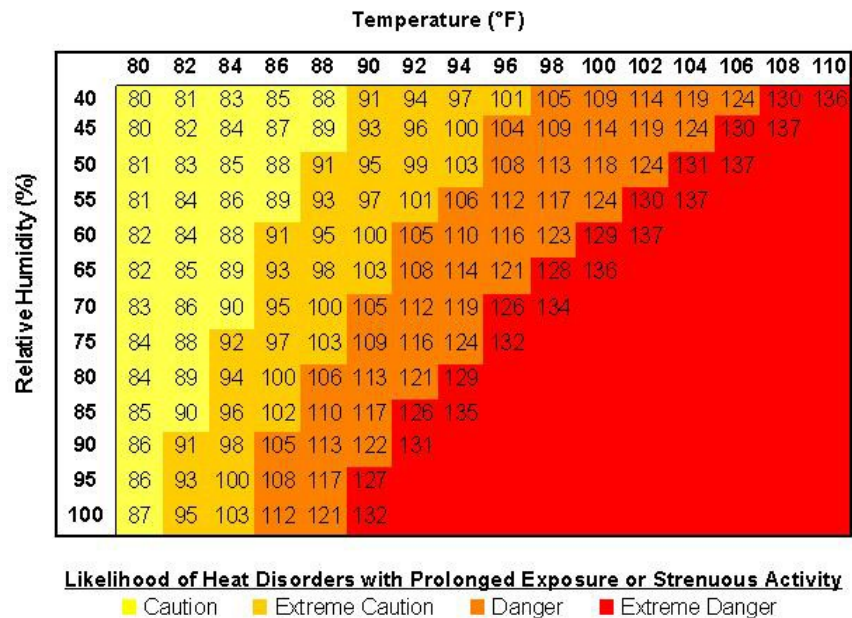
3.4.4 Extreme Heat

Hazard Profile

Hazard Description

Extreme temperature events, both hot and cold, can impact human health and mortality, natural ecosystems, agriculture, and other economic sectors. The remainder of this section profiles extreme heat. Extreme cold events are profiled in combination with Winter Storm in Section 3.4.11. According to information provided by FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Ambient air temperature is one component of heat conditions, with relative humidity being the other. The relationship of these factors creates what is known as the apparent temperature. The Heat Index chart shown in Figure 3.12 uses both of these factors to produce a guide for the apparent temperature or relative intensity of heat conditions.

Figure 3.12. Heat Index (HI) Chart



(Source: National Weather Service (NWS))

Note: Exposure to direct sun can increase Heat Index values by as much as 15°F. The shaded zone above 105°F corresponds to a HI that may cause increasingly severe heat disorders with continued exposure and/or physical activity.

Geographic Location

Extreme heat is an area-wide hazard event, and the risk of extreme heat does not vary across the planning area.

Severity/Magnitude/Extent

Extreme heat can cause stress to crops and animals. According to USDA Risk Management Agency, losses to insurable crops during the 10-year time period from 2007 to 2016 were \$341,694.00 (Source: <http://www.rma.usda.gov/data/cause.html>). Extreme heat can also strain

electricity delivery infrastructure overloaded during peak use of air conditioning during extreme heat events. Another type of infrastructure damage from extreme heat is road damage. When asphalt is exposed to prolonged extreme heat, it can cause buckling of asphalt-paved roads, driveways, and parking lots.

From 1988-2011, there were 3,496 fatalities in the U.S. attributed to summer heat. This translates to an annual national average of 146 deaths. During the same period, no deaths were recorded in the planning area, according to NCEI data. The National Weather Service stated that among natural hazards, no other natural disaster—not lightning, hurricanes, tornadoes, floods, or earthquakes—causes more deaths.

Those at greatest risk for heat-related illness include infants and children up to five years of age, people 65 years of age and older, people who are overweight, and people who are ill or on certain medications. However, even young and healthy individuals are susceptible if they participate in strenuous physical activities during hot weather. In agricultural areas, the exposure of farm workers, as well as livestock, to extreme temperatures is a major concern. Table 3.21 lists typical symptoms and health impacts due to exposure to extreme heat.

Table 3.21. Typical Health Impacts of Extreme Heat

Heat Index (HI)	Disorder
80-90° F (HI)	Fatigue possible with prolonged exposure and/or physical activity
90-105° F (HI)	Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and/or physical activity
105-130° F (HI)	Heatstroke/sunstroke highly likely with continued exposure

(Source: National Weather Service Heat Index Program, www.weather.gov/os/heat/index.shtml)

The National Weather Service has an alert system in place (advisories or warnings) when the Heat Index is expected to have a significant impact on public safety. The expected severity of the heat determines whether advisories or warnings are issued. A common guideline for issuing excessive heat alerts is when for two or more consecutive days: (1) when the maximum daytime Heat Index is expected to equal or exceed 105 degrees Fahrenheit (°F); and the night time minimum Heat Index is 80°F or above. A heat advisory is issued when temperatures reach 105 degrees and a warning is issued at 115 degrees.

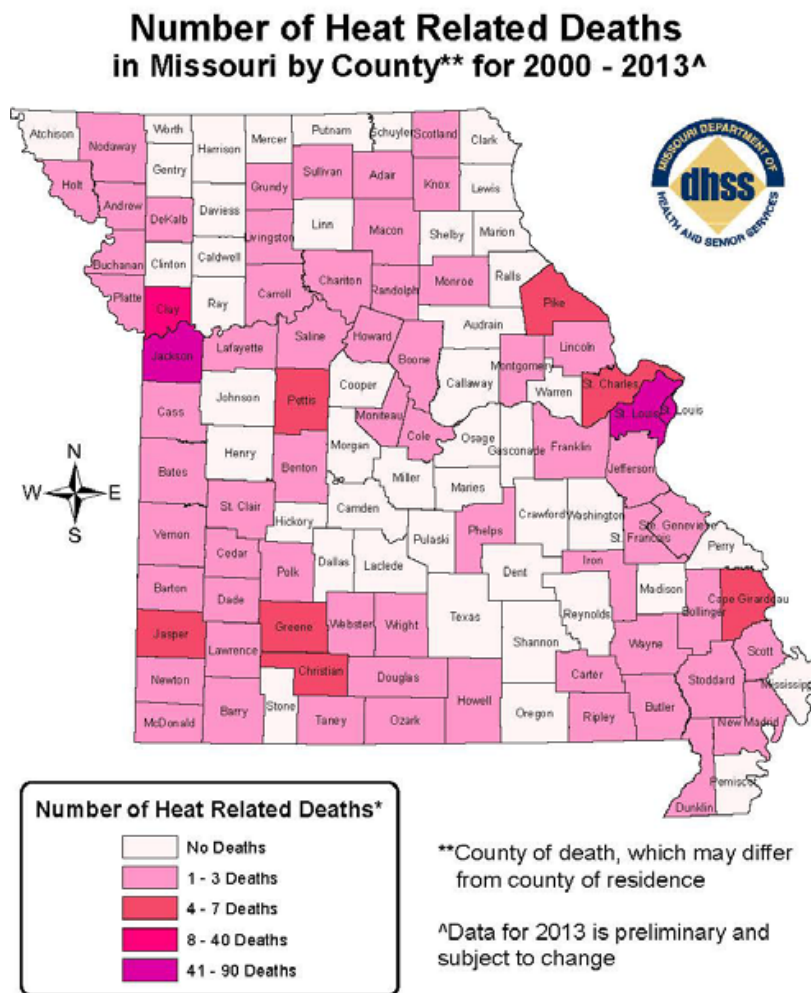
Previous Occurrences

The NCEI database reports two events of heat from 1988-2017, with no deaths in DeKalb County. No crop damage reported. An upper level ridge of high pressure, persisted across the area from August 6th through August 17th. The combination of heat and humidity, produced heat index readings in the 105 to 115 degree range in 2007 and unusually strong upper level ridge of high pressure, dominated the central United States with very hot and dry conditions, from July 18th through 25th in 2012. Temperatures topped out from 100 to 110 degrees in 2012.

Figure 3.13 shows the number of heat related deaths in DeKalb County between 2000-2013. The map illustrates in light pink that between 1-3 deaths occurred due heat during this timeframe, which differs from the NCEI database that shows no deaths from heat during this timeframe. Data limitation indicates that extreme heat events could be underreported in the NCEI.

Figure 3.13.

Heat Related Deaths in Missouri 2000 - 2013



Probability of Future Occurrence

There are two recorded heat events in the National Climatic Data Center (NCEI) database from 1988 to 2017 for DeKalb County. There were no deaths, according to the NCEI. No injuries or property or crop damage associated with these events in the NCEI data for DeKalb County.

The probability that an extreme heat event will occur in DeKalb County in any given year is 14.5 percent. This equates to dividing 29 years with two, the number of events. Data limitation indicates that extreme heat events could be underreported in the NCEI.

Vulnerability

Vulnerability Overview

High humidity, which often accompanies heat in Missouri, can make the effects of heat even more harmful. While heat-related illness and death can occur from exposure to intense heat in just one afternoon, heat stress on the body has a cumulative effect. Consequently, the persistence of a heat wave increases the threat to public health. The people most at risk are children under five years of

age and adults over the age of 65 as well as people who work outdoors. The agriculture sector can also suffer crop loss during periods of extreme heat. Extreme heat may also cause buckling of roads.

Potential Losses to Existing Development

For agricultural losses, the USDA Crop Insurance payments during the 10-year period from 2007 – 2016 were used and annualized to determine an average annual loss. Losses from heat totaled \$7341,694.00 and this equates to \$34,169.40 in average annual losses countywide.

Impact of Previous and Future Development

Population growth can result in increases in the age-groups that are most vulnerable to extreme heat. Population growth also increases the strain on electrical infrastructure, as more electricity is needed to accommodate the growing population. Although some jurisdictions are experiencing a modest increase in population, it is not significant enough to change the jurisdiction's vulnerability.

Hazard Summary by Jurisdiction

Those at greatest risk for heat-related illness and deaths include children up to five years of age, people 65 years of age and older, people who are overweight, and people who are ill or on certain medications. To determine jurisdictions within the planning area with populations more vulnerable to extreme heat, demographic data was obtained from the 2010 census on population percentages in each jurisdiction comprised of those under age 5 and over age 65. Data was not available for overweight individuals and those on medications vulnerable to extreme heat. Table 3.22 below summarizes vulnerable populations in the participating jurisdictions. Note that school and special districts are not included in the table because students and those working for the special districts are not customarily in these age groups.

Table 3.22. Population Under Age 5 and Over Age 65, 2016 Census Data

Jurisdiction	Population Under 5 Yrs	Population Under 5 Yrs %	Population 65 Yrs and Over	Population 65 Yrs and Over %
DeKalb County	546	4.3%	1,991	15.7%
Village of Amity	0	0%	12	54.5%
City Of Clarksdale	17	6.6%	55	21.3%
City of Maysville	93	8.5%	274	25%
City of Osborn	15	3.0%	95	19.3%
City of Stewartsville	102	11.8%	115	13.3%
City of Union Star	20	5.6%	66	18.4%
Village of Weatherby	6	6.5%	14	15.2%

(Source: U.S. Census Bureau, 2016 American Community Survey)

Problem Statement

Older and younger segments of the population are more vulnerable to the impact of extreme heat. In addition, people living in poverty may be more vulnerable during periods of extreme heat due to a lack of air conditioning or utilities in their homes. Institutionalized populations such as those living in nursing homes become more vulnerable to extreme heat due to power outages. This problem has been mitigated due to the installation of emergency generators at a number of these facilities. The jurisdictions can expand their partnerships with local community organizations who donate fans and offer weatherization programs to vulnerable populations in the county.

3.4.5 Fires (Urban/Structural and Wild)

Hazard Profile

Hazard Description

The incident types considered for urban/structural fire include all fires in the following categories: 1) general fires, 2) structure fire, 3) fire in mobile property used as a fixed structure, and 4) mobile property (vehicle) fire. The fire incident types for wildfires include: 1) natural vegetation fire, 2) outside rubbish fire, 3) special outside fire, and 4) cultivated vegetation, crop fire.

The Missouri Division of Fire Safety (MDFS) indicates that approximately 80 percent of the fire departments in Missouri are staffed with volunteers. Whether paid or volunteer, these departments are often limited by lack of resources and financial assistance. The impact of a fire to a single-story building in a small community may be as great as that of a larger fire to a multi-story building in a large city.

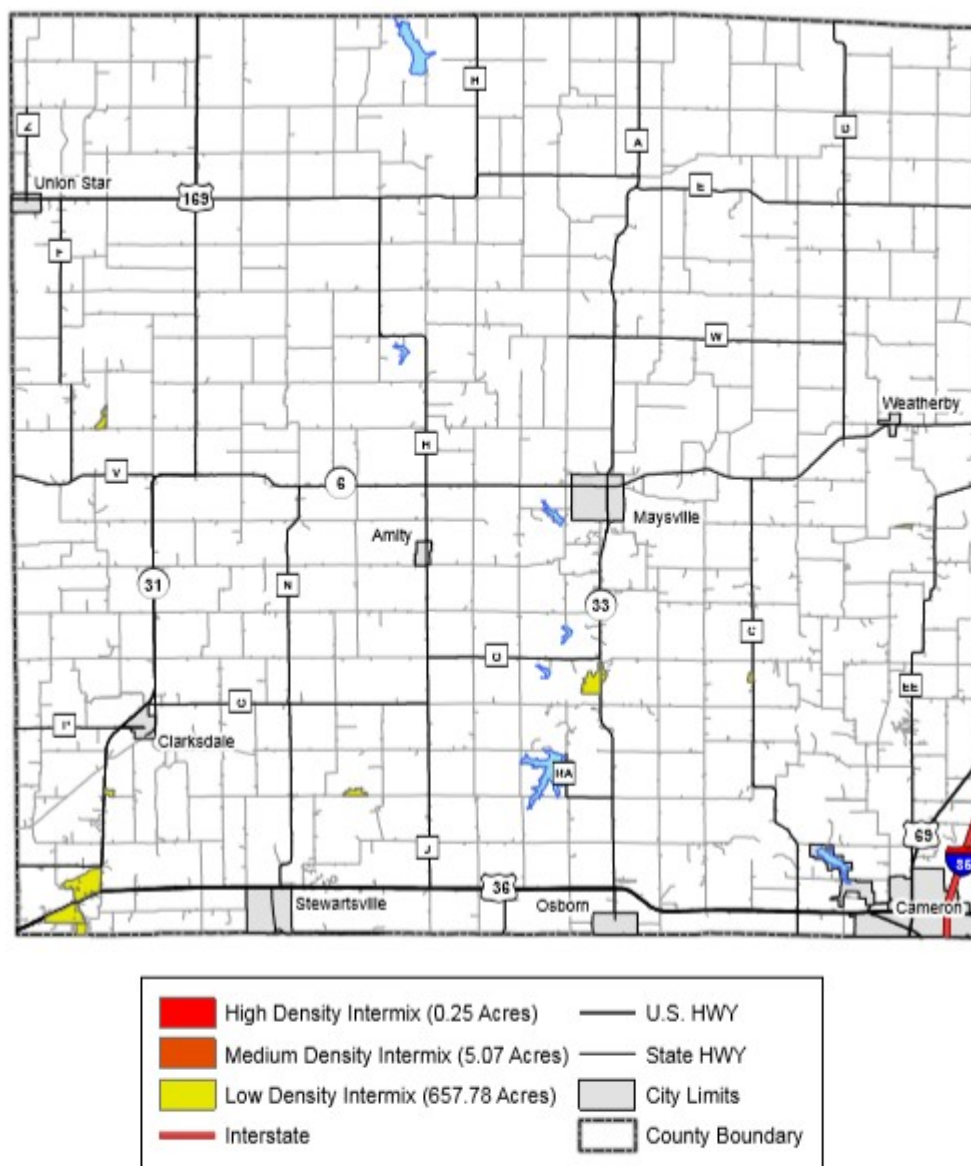
The Forestry Division of the Missouri Department of Conservation (MDC) is responsible for protecting privately owned and state-owned forests and grasslands from wildfires. To accomplish this task, eight forestry regions have been established in Missouri for fire suppression. The Forestry Division works closely with volunteer fire departments and federal partners to assist with fire suppression activities. Currently, more than 900 rural fire departments in Missouri have mutual aid agreements with the Forestry Division to obtain assistance in wildfire protection if needed.

Most of Missouri fires occur during the spring season between February and May. The length and severity of both structural and wildland fires depend largely on weather conditions. Spring in Missouri is usually characterized by low humidity and high winds. These conditions result in higher fire danger. In addition, due to the recent lack of moisture throughout many areas of the state, conditions are likely to increase the risk of wildfires. Drought conditions can also hamper firefighting efforts, as decreasing water supplies may not prove adequate for firefighting. It is common for rural residents to burn their garden spots, brush piles, and other areas in the spring. Some landowners also believe it is necessary to burn their forests in the spring to promote grass growth, kill ticks, and reduce brush. Therefore, spring months are the most dangerous for wildfires. The second most critical period of the year is fall. Depending on the weather conditions, a sizeable number of fires may occur between mid-October and late November.

Geographic Location

The risk of structural fire probably does not vary widely across the planning area. However, damages due to wildfires would be higher in communities with more wildland–urban interface (WUI) areas. The term refers to the zone of transition between unoccupied land and human development and needs to be defined in the plan. Within the WUI, there are two specific areas identified: 1) Interface and 2) Intermix. The interface areas are those areas that abut wildland vegetation and the Intermix areas are those areas that intermingle with wildland areas. Figure 3.14 is a WUI map of DeKalb County, that identifies the density intermix. Low density intermix is found in a few unincorporated areas in the county. There is no interface in the county.

Figure 3.14 Wildland—Urban Interface and Intermix Areas in DeKalb County



*No interface is present in DeKalb County

(Source: http://silvis.forest.wisc.edu/maps/wui_main)

Severity/Magnitude/Extent

Structural and urban fires are a daily occurrence throughout the State. Statewide, approximately 100 fatalities occur annually, as well as numerous injuries affecting the lives of the victims, their families, and many others—especially those involved in fire and medical services. Unlike other disasters, structural fires can be caused by human criminal activity: arson. All citizens pay the costs of arson whether through increased insurance rates, higher costs to maintain fire and medical services, or the costs of supporting the criminal justice system.

Wildfires damage the environment, killing some plants and occasionally animals. Firefighters have been injured or killed, and structures can be damaged or destroyed. The loss of plants can heighten

the risk of soil erosion and landslides. Although Missouri wildfires are not the size and intensity of those in the Western United States, they could impact recreation and tourism in and near the fires.

Wildland fires in Missouri have been mostly a result of human activity rather than lightning or some other natural event. Wildfires in Missouri are usually surface fires, burning the dead leaves on the ground or dried grasses. They do sometimes “torch” or “crown” out in certain dense evergreen stands like eastern red cedar and shortleaf pine. However, Missouri does not have the extensive stands of evergreens found in the western US that fuel the large fire storms seen on television news stories.

While very unusual, crown fires can and do occur in Missouri native hardwood forests during prolonged periods of drought combined with extreme heat, low relative humidity, and high wind. Tornadoes, high winds, wet snow and ice storms in recent years have placed a large amount of woody material on the forest floor that causes wildfires to burn hotter and longer. These conditions also make it more difficult for fire fighters to suppress fires safely.

Often wildfires in Missouri go unnoticed by the general public because the sensational fire behavior that captures the attention of television viewers is rare in the state. Yet, from the standpoint of destroying homes and other property, Missouri wildfires can be quite destructive.

Previous Occurrences

According to MDC Wildfire Data, there have been 579 fires reported in DeKalb County from September 2002 to February 2018. A total of 16,684.13 acres burned as a result of these reported fires. The highest number of fires was 77 in 2012, burning 3,101 acres, followed by 69 fires in 2009 burning 1,676. In 2005 only 40 fires were recorded but 2,2267 acres burned.

Probability of Future Occurrence

Based on fire reporting statistics from the MDC in Table 3.23, there were a total of 578 reported wildfires from December 2002 – February 2018 (183 months). This equates to an average of 3.16 wildfire events month or 37.90 annually and a 100% probability of occurrence in any given year.

Vulnerability

Vulnerability Overview

The 2013 State Plan provides the detailed statistical data that was used for the vulnerability analysis for urban/structural fire for each county from 2009-2012, as shown in Table 3.23. See the 2013 State Plan (page 3.491) for specific data explanations. According to this data, the average annual number of fires in Missouri was 23,051 causing estimated total annual average damages in the amount of \$3,709,720,410. The table that follows provides the results for the overall vulnerability rating calculated by assigning an equal weight to each of the five contributing factors. National Fire Incident Reporting System (NFIRS) data from 2004 to 2008 was used to determine vulnerability as stated in the State Plan. However, only 61 percent of fire departments in Missouri reported to the NFIRS.

Another possible application for the death/injury rating is to develop a death/injury rating per the number of fires. Other factors to consider if data is available are the age of structures, building materials used, surrounding terrain and vegetation, occupancy status and status of regulatory oversight.

Table 3.23 Statistical Data and Factor Rating for Wildfire Vulnerability, 2004-2012

Jurisdiction	Average Annual # of Wildfires	Likelihood Rating	Acres Burned	Average Annual Acres Burned	Average Acres Burned Rating	Total Buildings Damaged	Overall Vulnerability
DeKalb County	34.7	2 (medium-low)	7,215.15	802	4 (medium-high)	3	3 (medium)

(Source: 2013 State Plan)

Wildfires occur throughout wooded and open vegetation areas of Missouri. They can occur any time of the year, but mostly occur during long, dry hot spells. Any small fire, if not quickly detected and suppressed, can get out of control. Most wildfires are caused by human carelessness or negligence. However, some are precipitated by lightning strikes and in rare instances, spontaneous combustion. Structures and people in WUI areas in the county and cities are more vulnerable to the impact of wildfires due to the level of fuel mixed with structures.

Potential Losses to Existing Development

Individual jurisdiction data is not readily available for the area.

Impact of Previous and Future Development

It is anticipated that there will be future development in WUI areas throughout unincorporated areas of the county. Future growth in WUI areas of the county will increase the risk and exposure to wildfires. It is expected that WUI development in cities will be mitigated by development regulations reducing the risk to wildfire hazard.

Hazard Summary by Jurisdiction

Table 3.24 summarizes the structure exposure for DeKalb County and its jurisdictions for wildfires. Communities with more WUI areas will be at greater risk of wildland fires. The exposure amount indicates the dollar amount of assets at risk and the variability of vulnerability from place to place.

Table 3.24 Wildfire Structure Exposure by Jurisdiction

	County Housing Units /sq. mi.	Housing Density Rating	Total Building Exposure (\$)	Building Exposure Rating	Average Annual Property Loss (\$)	Property Loss Ratio Rating	Total Deaths	Total Injuries	Overall Vulnerability Rating
DeKalb County	10.3	1 (low)	891,756,000	2 (medium-low)	432,096	3 (medium)	1	1	1 (low)

(Source: 2013 State Plan)

Problem Statement

Wildfire occurrence is frequent within DeKalb County. These events can destroy, damage, and threaten structures in hazard prone areas. Populations and structures in WUI areas of the county have an increased risk to wildfires due to the level of fuel mixed with structures. Cities that have adopted landscape ordinances can include fire safe landscape design requirements in these areas.

The school districts that have facilities located in WUI areas have a slightly elevated risk of wildfire due to the proximate amount of fuel present.

The county and its communities can promote fire resistant construction materials and landscape design techniques to mitigate the risk to wildfire in future development. Information about these materials and techniques are included in the MDC publication, "Living with Wildfire". Including this information in education and awareness programs for the public may potentially mitigate wildfire damage in the county.

3.4.6 Flooding (Flash and River)

Profile

Hazard Description

A flood is partial or complete inundation of normally dry land areas. Riverine flooding is defined as the overflow of rivers, streams, drains, and lakes due to excessive rainfall, rapid snowmelt, or ice. There are several types of riverine floods, including headwater, backwater, interior drainage, and flash flooding. Riverine flooding is defined as the overflow of rivers, streams, drains, and lakes due to excessive rainfall, rapid snowmelt or ice melt. The areas adjacent to rivers and stream banks that carry excess floodwater during rapid runoff are called floodplains. A floodplain is defined as the lowland and relatively flat area adjoining a river or stream. The terms “base flood” and “100- year flood” refer to the area in the floodplain that is subject to a one percent or greater chance of flooding in any given year. Floodplains are part of a larger entity called a basin, which is defined as all the land drained by a river and its branches.

Flooding caused by dam and levee failure is discussed in Section 3.4.1 and Section 3.4.8 respectively. It will not be addressed in this section.

A flash flood occurs when water levels rise at an extremely fast rate as a result of intense rainfall over a brief period, sometimes combined with rapid snowmelt, ice jam release, frozen ground, saturated soil, or impermeable surfaces. Flash flooding can happen in Special Flood Hazard Areas (SFHAs) as delineated by the National Flood Insurance Program (NFIP), and can also happen in areas not associated with floodplains.

Ice jam flooding is a form of flash flooding that occurs when ice breaks up in moving waterways, and then stacks on itself where channels narrow. This creates a natural dam, often causing flooding within minutes of the dam formation.

In some cases, flooding may not be directly attributable to a river, stream, or lake overflowing its banks. Rather, it may simply be the combination of excessive rainfall or snowmelt, saturated ground, and inadequate drainage. With no place to go, the water will find the lowest elevations – areas that are often not in a floodplain. This type of flooding, often referred to as sheet flooding, is becoming increasingly prevalent as development outstrips the ability of the drainage infrastructure to properly carry and disburse the water flow.

Most flash flooding is caused by slow-moving thunderstorms or rain events repeatedly moving over the same area. Flash flooding is a dangerous form of flooding which can reach full peak in only a few minutes. Rapid onset allows little or no time for protective measures. Flash flood waters move at very fast speeds and can move boulders, tear out trees, scour channels, destroy buildings, and obliterate bridges. Flash flooding can result in higher loss of life, both human and animal, than slower developing river and stream flooding.

In certain areas, aging storm sewer systems are not designed to carry the capacity currently needed to handle the increased storm runoff. Typically, the result is water backing into basements, which damages mechanical systems and can create serious public health and safety concerns. This combined with rainfall trends and rainfall extremes all demonstrate the high probability, yet generally unpredictable nature of flash flooding in the planning area.

Although flash floods are somewhat unpredictable, there are factors that can point to the likelihood of flash floods occurring. Weather surveillance radar is being used to improve monitoring capabilities of

intense rainfall. This, along with knowledge of the watershed characteristics, modeling techniques, monitoring, and advanced warning systems has increased the warning time for flash floods.

Geographic Location

Riverine flooding is most likely to occur in SFHAs. Maps in Figures 3.15 to 3.19 shows SFHA's for DeKalb County and jurisdictions that have a 100-year flood plain in their city limits. The 100-year flood plain boundaries are based on Hazus MH 3.2, which closely, but not completely, follows the preliminary Flood Insurance Rate Maps (FIRMs). According to these maps no schools or critical facilities are located in SFHAs.

Figure 3.15 DeKalb County 100-Year Flood Plain

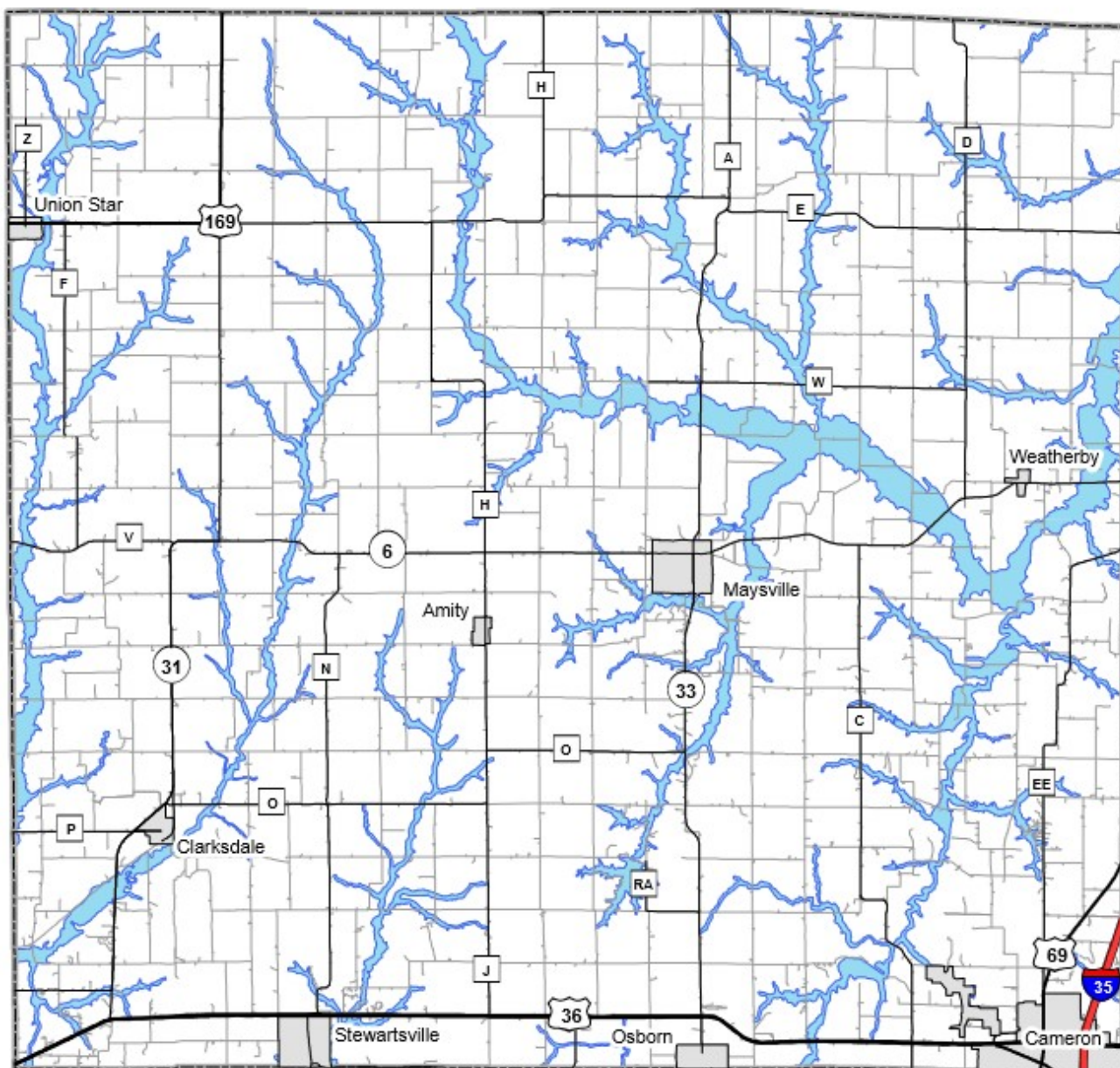


Figure 3.16

Clarksdale 100-Year Flood Plain

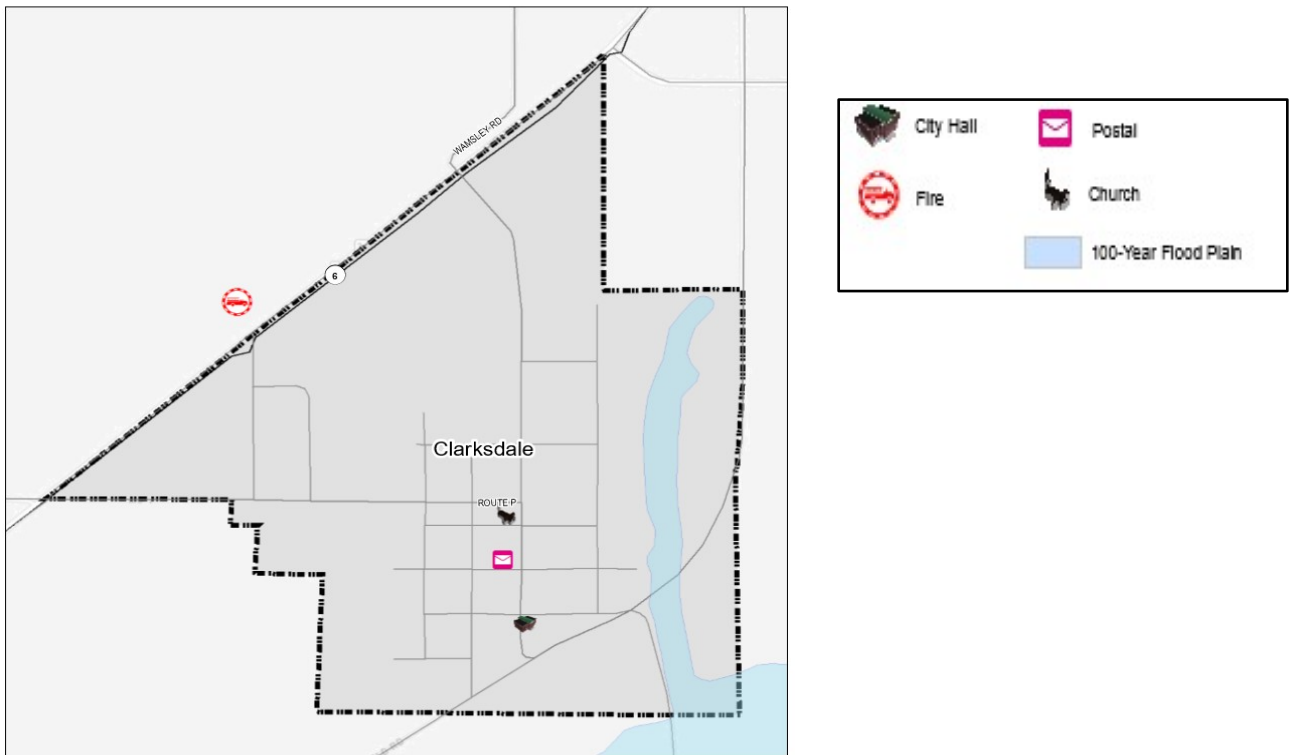


Figure 3.17

Maysville 100-Year Flood Plain

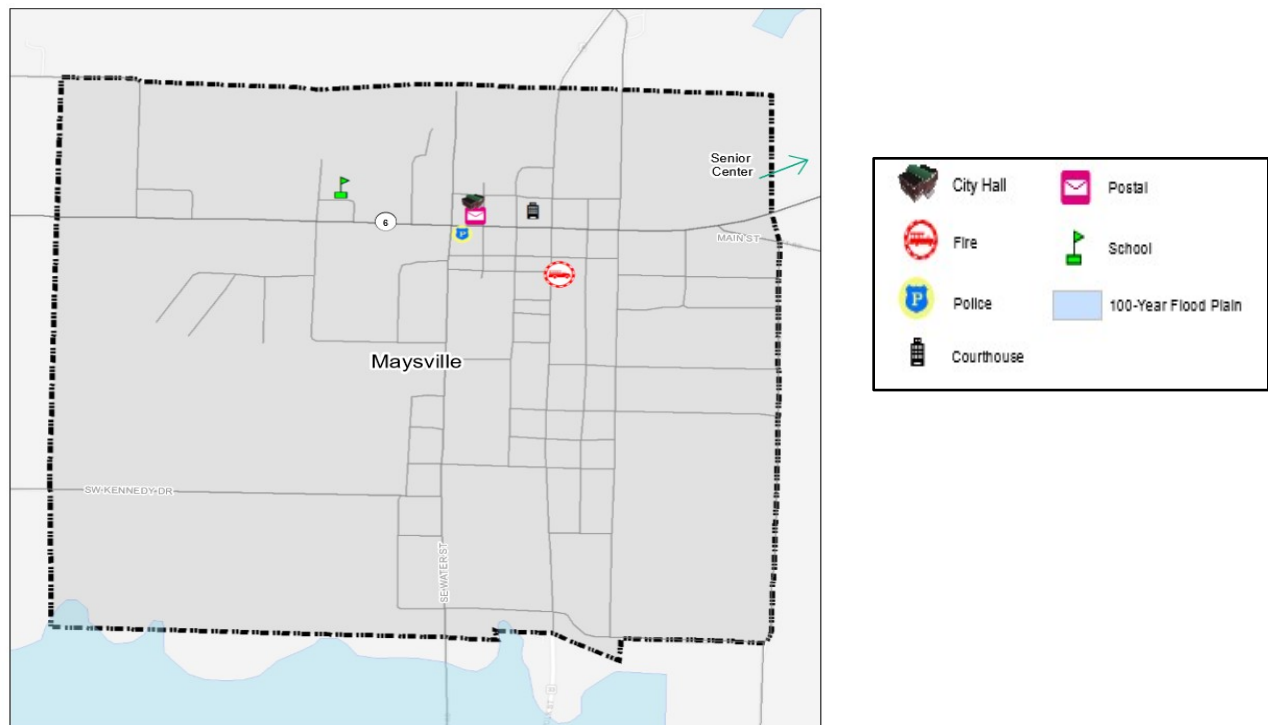


Figure 3.18

Stewartsville 100-Year Flood Plain

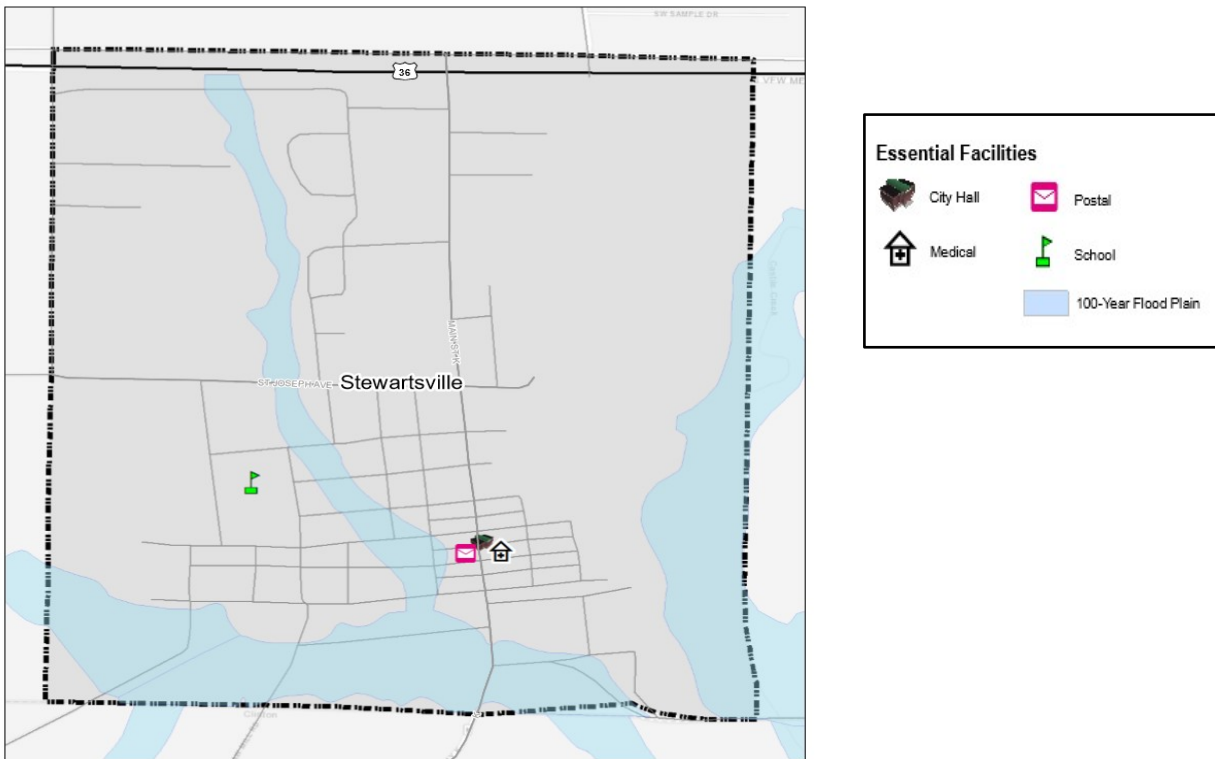
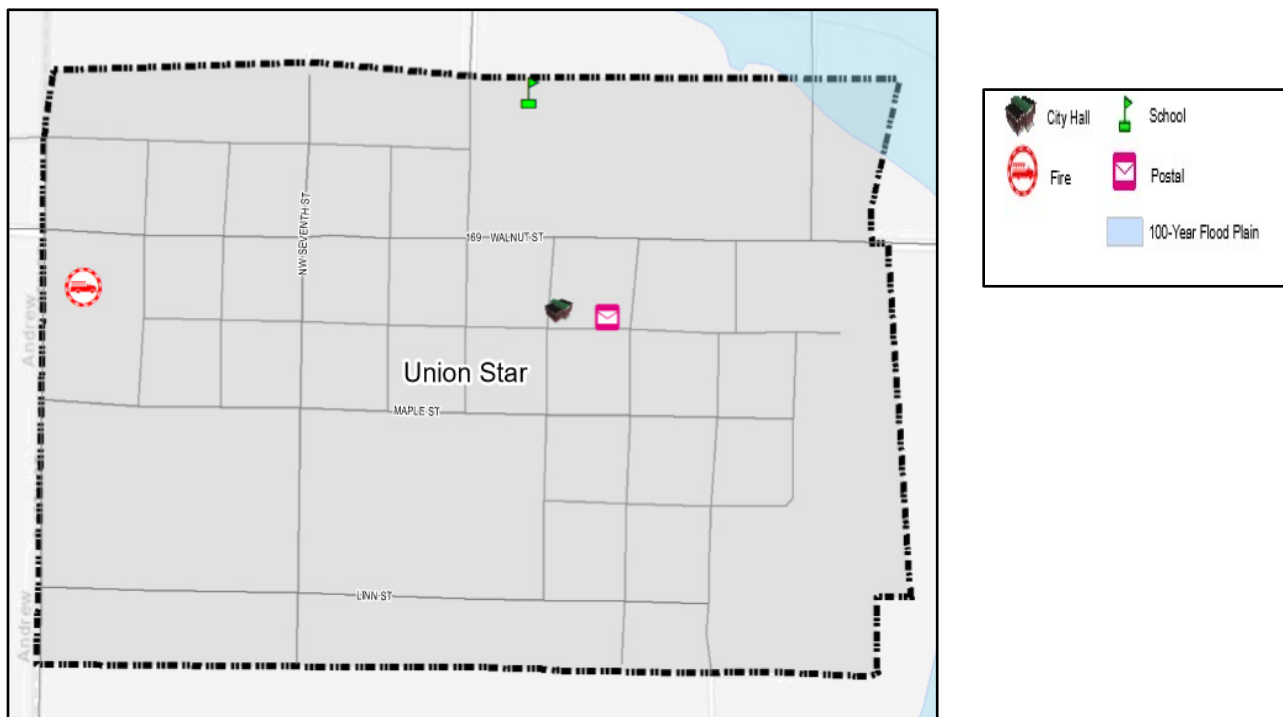


Figure 3.19

Union Star 100-Year Flood Plain



Flash flooding events pose the most pervasive hazard of the two flood types in the county due to permeability of soils, slopes, increasing urban development and extensive network of streams and rivers. Sustained rainfall or downpours at the rate of one inch per hour have caused street flooding in incorporated areas and made a significant number of low water crossings impassible. In the instances of low water crossings, flash flooding occurs in the floodplain while low-lying areas in all jurisdictions are susceptible to flash floods outside the 100-year floodplain. They also occur in areas without adequate drainage to carry away the amount of water that falls during intense rainfall events. A review of the NCEI storm event database determined which jurisdictions are most prone to flash flooding from 1996 to December 2017 are listed in Table 3.25.

Table 3.25. DeKalb County NCEI Flood Events by Location, 1996-2017

Location	# of Events
Clarksdale – 4/05/2017, 04/05/2017	2
Fairport (unincorporated) -- 9/13/2016, 4/05/2017	2
Maysville -- 6/26/2011	1
Weatherby—9/14/2016	1
Total	6

(Source: National Climatic Data Center)

Flash flooding occurs in SFHAs and those locations in the planning area that are low-lying. They also occur in areas without adequate drainage to carry away the amount of water that falls during intense rainfall events. Table 3.26 shows the number of flash flood events by location recorded in NCEI for the 21-year period. NCEI event narratives may show that a given stretch of road is repeatedly underwater during flash flood events, so this information is included in the risk assessment.

Table 3.26. DeKalb County NCEI Flash Flood Events by Location, 1996-2017

Location	# of Events
Amity – 5/18/2004, 5/30/2004	2
Clarksdale – 6/12/2003	1
Maysville – 6/02/2010, 07/16/2015	2
Osborn – 6/16/1996, 05/30/2004, 05/15/2009, 6/04/2010, 6/04/2010, 05/16/2015	6
Union Star – 9/18/2004	1
Weatherby – 6/15/2009	1
Total	13

(Source: National Climatic Data Center)

Severity/Magnitude/Extent

Missouri has a long and active history of flooding over the past century, according to the 2013 State Hazard Mitigation Plan. Flooding along Missouri's major rivers generally results in slow-moving disasters. River crest levels are forecast several days in advance, allowing communities downstream sufficient time to take protective measures, such as sandbagging and evacuations. Nevertheless, floods exact a heavy toll in terms of human suffering and losses to public and private property. By contrast, flash flood events in recent years have caused a higher number of deaths and major property damage in many areas of Missouri.

Flooding presents a danger to life and property, often resulting in injuries, and in some cases, fatalities. Floodwaters themselves can interact with hazardous materials. Hazardous materials stored in large containers could break loose or puncture as a result of flood activity. Examples are bulk propane tanks. When this happens, evacuation of citizens is necessary.

Public health concerns may result from flooding, requiring disease and injury surveillance. Community sanitation to evaluate flood-affected food supplies may also be necessary. Private water and sewage sanitation could be impacted, and vector control (for mosquitoes and other entomology concerns) may be necessary.

When roads and bridges are inundated by water, damage can occur as the water scours materials around bridge abutments and gravel roads. Floodwaters can also cause erosion undermining road beds. In some instances, steep slopes that are saturated with water may cause mud or rock slides onto roadways. These damages can cause costly repairs for state, county, and city road and bridge maintenance departments. When sewer back-up occurs, this can result in costly clean-up for home and business owners as well as present a health hazard.

National Flood Insurance Program (NFIP) Participation

Table 3.27 lists NFIP participants in the planning area. Table 3.28 lists the number of policies in force, amount of insurance in force, number of closed losses, and total payments for each jurisdiction.

Table 3.27. NFIP Participants in DeKalb County

Community ID #	Community Name	Current Effective Map Date	Regular- Emergency Program Entry Date
90630	City of Clarksdale	11/19/2003 (M)	11/19/2003
290117	City of Stewartville	11/19/2003 (M)	08/19/1985
290512	City of Union Star	11/19/2003	08/19/1985

(Source: NFIP Community Status Book, 9/26/2013; BureauNet, <http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-status-book>; M= No elevation determined – all Zone A, C, and X; NSFHA = No Special Flood Hazard Area; E=Emergency Program)

Table 3.28. NFIP Policy and Claim Statistics as of January 2018

Community Name	Policies in Force	Insurance in Force	Closed Losses	Total Payments
City of Stewartville	2	\$132,000	0	\$0

(Source: NFIP Community Status Book, [insert date]; BureauNet, <http://bsa.nfipstat.fema.gov/reports/reports.html>; *Closed Losses are those flood insurance claims that resulted in payment. Loss statistics are for the period from January 1978 to January 2018)

Repetitive Loss/Severe Repetitive Loss Properties

Repetitive Loss Properties are those properties with at least two flood insurance payments of \$5,000 or more in a 10-year period. According to the Flood Insurance Administration, no jurisdictions included in the planning area have repetitive loss properties.

Severe Repetitive Loss (SRL): A SRL property is defined it as a single family property (consisting of one-to-four residences) that is covered under flood insurance by the NFIP; and has (1) incurred flood-related damage for which four or more separate claims payments have been paid under flood insurance coverage with the amount of each claim payment exceeding \$5,000 and with cumulative amounts of such claims payments exceeding \$20,000; or (2) for which at least two separate claims payments have been made with the cumulative amount of such claims exceeding the reported value of the property. There are no validated Severe Repetitive Loss residential structures located in DeKalb County.

Previous Occurrences

Past Presidential Flooding Disaster Declarations in DeKalb County and their impact are listed in Table 3.29.

Table 3.29 Presidential Disaster Declarations for Flood, 1975-2012

Date	Declaration #	Disaster
July 9, 1993	DR 995	Flooding, Severe Storm (IA, PA)
June 2, 1995	DR 1054	Severe Storm, Tornado, Hail, Flooding (IA, PA)
October 14, 1998	DR 1253	Severe Storm and Flooding (PA)
June 11, 2004	DR 1524	Severe Storms, Tornadoes, and Flooding (IA)
June 11, 2007	DR-1708	Severe Storms and Flooding (IA)
August 17, 2010	DR 1934	Severe Storms, Flooding and Tornado (PA)

(Source: 2013 State Plan)

Tables 3.30 and 3.31 are based off NCEI information for the last 22 years for both flash and river flooding.

Table 3.30. NCEI DeKalb County Flash Flood Events Summary, 1996 to 2017

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
1996	1	0	0	0	0
2003	1	0	0	0	0
2004	4	0	0	0	0
2009	1	0	0	0	0
2010	1	0	0	0	0
2011	1	0	0	0	0
2015	1	0	0	0	0
Total	13	0	0	0	0

(Source: NCEI, data accessed 3/28/2018)

Most flash flood resulted in road closures. In Amity in 2004 and Cameron in 2010 flash flood events resulted in the evacuation of trailer parks due to rapidly rising water.

Table 3.31. NCEI DeKalb County Riverine Flood Events Summary, 1996 to 2017

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2011	1	0	0	0	0
2016	2	0	0	0	0
2017	3	0	0	0	0
Total	6	0	0	0	0

(Source: NCEI, data accessed 03/28/2018)

The riverine flood events typically reported 6 to 8 inches of water covering roadways.

Probability of Future Occurrence

Over the past 22 years, 6 riverine flood events have occurred. Based on this historical data, the average is (6 floods/22 years) .27 riverine flood events occur per year. Thus, there is a 27 percent chance of a riverine flood occurrence in a given year.

Over the past 22 years, 13 flash flood events have occurred. Based on this historical data, the average is (13 floods/22 years), 0.59 flash flood events occur per year. Thus, there is a 59 percent chance of a flash flood occurrence in a given year.

Vulnerability

Vulnerability Overview

Since 1975, DeKalb County has been included in six of the 13 Presidential Disaster Declarations. Periods of heavy rain falling at the rate of one-inch per hour floods low water crossings throughout the county making many roads impassable. This creates a severe threat to motorists that attempt to drive through flood waters over the roadway. Riverine flooding occurs less frequently than flash flooding. Fortunately, there are no repetitive loss properties in the county. Low lying areas outside of the floodplain are frequently flooded. Street flooding over roadways has been reported in all communities in the county. There are no schools in SFHAs in DeKalb County. Increases in development add to surface runoff and can exacerbate flash flooding in areas that previously have not experienced flooding.

Potential Losses to Existing Development

Table 3.32 shows the potential loss to existing development in the event of a 100-year flood, as shown in the 2013 State Plan. In addition, 524 households would be displaced, with 54 needing shelter.

Table 3.32 Total Direct Building Loss and Income Loss to DeKalb County

Jurisdiction	Structural Damage	Contents Damage	Inventory Loss	Total Direct Loss	Income Loss	Calc Loss Ratio
DeKalb County	\$4,813,517.29	\$5,195,930.67	\$259,018.37	\$10,268,466.33	\$27,791.67	2.70

(Source: 2013 State Plan)

Impact of Previous and Future Development

Future development could impact flash and riverine flooding in the planning area. Development in low-lying areas near rivers and streams or where interior drainage systems are not adequate to provide drainage during heavy rainfall events can increase the risk of flood. Future development would also increase impervious surfaces causing additional water run-off and drainage problems during heavy rainfall events.

Hazard Summary by Jurisdiction

Clarksdale and Stewartsville have a flood plain that goes deep into the city limits, making those communities at risk to flood hazards. Clarksdale has one church and two outbuildings located in the flood plain, while Stewartsville has 29 homes and two active businesses in the flood plain. It should be noted that all communities in DeKalb County can be impacted by flooding of major roads and low water crossings. There are no school facilities in SFHAs and no previous damages were reported on the Data Collection Questionnaire for schools.

Problem Statement

Floods are frequent events and have been listed in six out of 13 Presidential Disaster Declarations that have included DeKalb County. Three communities in the county participate in the NFIP. Their

participation in the NFIP enables residents to purchase flood insurance. Street flooding in incorporated areas can be addressed through storm water management projects and enforce stormwater management regulations.

3.4.7 Land Subsidence/Sinkholes

Hazard Profile

Hazard Description

Sinkholes are common where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that naturally can be dissolved by ground water circulating through them. As the rock dissolves, spaces and caverns develop underground and ultimately the land above the spaces collapse. In Missouri, sinkhole problems are usually a result of surface materials above openings into bedrock caves eroding and collapsing into the cave opening. These collapses are called “cover collapses” and geologic information can be applied to predict the general regions where collapse will occur. Sinkholes range in size from several square yards to hundreds of acres and may be quite shallow or hundreds of feet deep.

The sudden collapse of the land surface above them can be dramatic and range in size from broad, regional lowering of the land surface to localized collapse. However, the primary causes of most subsidence are human activities: underground mining of coal, groundwater or petroleum withdrawal, and drainage of organic soils. Fifty-eight mineral mines have operated in DeKalb County.

Sinkholes can develop as a result of subsurface void spaces created over time due to the erosion of subsurface limestone (karst).

Land subsidence occurs slowly and continuously over time, as a general rule. On occasion, it can occur abruptly, as in the sudden formation of sinkholes. Sinkhole formation can be aggravated by flooding.

According to the U.S. Geological Survey (USGS), the most damage from sinkholes tends to occur in Florida, Texas, Alabama, Missouri, Kentucky, Tennessee, and Pennsylvania. Fifty-nine percent of Missouri is underlain by thick, carbonate rock that makes Missouri vulnerable to sinkholes. Sinkholes occur in Missouri on a fairly frequent basis. Most of Missouri’s sinkholes occur naturally in the State’s karst regions (areas with soluble bedrock). They are a common geologic hazard in southern Missouri, but also occur in the central and northeastern parts of the state. Missouri sinkholes have varied from a few feet to hundreds of acres and from less than one to more than 100 feet deep. The largest known sinkhole in Missouri encompasses about 700 acres in western Boone County, southeast of where Interstate 70 crosses the Missouri River. Sinkholes can also vary in shape from shallow bowls and saucers to forms with vertical walls. Some hold water and form natural ponds.

Other potential causes of collapse include man-made features-- such as septic tanks, cisterns, pipelines, and old hand-dug wells and shallow mine workings-- all of which lose their structural integrity as they age. However, unlike sinkholes, these features normally remain stable once remediated.

Geographic Location

There are no known documented sinkholes in DeKalb County.

Severity/Magnitude/Extent

Sinkholes vary in size and location, and these variances will determine the impact of the hazard. A sinkhole could result in the loss of a personal vehicle, a building collapse, or damage to infrastructure such as roads, water, or sewer lines. Groundwater contamination is also possible from a sinkhole.

Because of the relationship of sinkholes to groundwater, pollutants captured or dumped in sinkholes could affect a community's groundwater system. Sinkhole collapse could be triggered by large earthquakes. Sinkholes located in floodplains can absorb floodwaters but make detailed flood hazard studies difficult to model.

The 2013 State Plan included only seven documented sinkhole "notable events". The plan stated that sinkholes are common to Missouri and the probability is high that they will occur in the future. To date, Missouri sinkholes have historically not had major impacts on development nor have they caused serious damage. Thus, the severity of future events is likely to be low.

Previous Occurrences

Although the 2013 State Plan states that sinkholes are a regular occurrence in Missouri, they are rarely events of any significance. There are no documented sinkholes occurrences in the DeKalb County.

Probability of Future Occurrence

Since there are no records of previous event dates in the planning area, the probability of a future occurrence cannot be calculated.

Vulnerability

Vulnerability Overview

DeKalb County has not experienced any sinkhole events.

Potential Losses to Existing Development

It is difficult to estimate future losses based on historical losses since no known losses have occurred.

Impact of Previous and Future Development

Even though Missouri has a moderate probability of a sinkhole event, the soil and subsoil structure of DeKalb County make significant land movement events unlikely.

Hazard Summary by Jurisdiction

DeKalb County has not experienced any sinkhole events.

Problem Statement

Even though the county has not experienced any sinkhole events, jurisdictions should be mindful that an event could occur, particularly at a former mineral mining site.

3.4.8 Levee Failure

Hazard Profile

Hazard Description

Levees are earth embankments constructed along rivers and coastlines to protect adjacent lands from flooding. Floodwalls are concrete structures, often components of levee systems, designed for urban areas where there is insufficient room for earthen levees. When levees and floodwalls and their appurtenant structures are stressed beyond their capabilities to withstand floods, levee failure can result in injuries and loss of life, as well as damages to property, the environment, and the economy.

Levees can be small agricultural levees that protect farmland from high-frequency flooding. Levees can also be larger structures, designed to protect people and property in larger urban areas from less frequent flooding events such as the 100-year and 500-year flood levels. For purposes of this discussion, levee failure will refer to both overtopping and breach as defined in FEMA's Publication "So You Live Behind a Levee" (<http://content.asce.org/ASCELeveeGuide.html>). Following are the FEMA publication descriptions of different kinds of levee failure.

Overtopping: When a Flood Is Too Big

Overtopping occurs when floodwaters exceed the height of a levee and flow over its crown. As the water passes over the top, it may erode the levee, worsening the flooding and potentially causing an opening, or breach, in the levee.

Breaching: When a Levee Gives Way

A levee breach occurs when part of a levee gives way, creating an opening through which floodwaters may pass. A breach may occur gradually or suddenly. The most dangerous breaches happen quickly during periods of high water. The resulting torrent can quickly swamp a large area behind the failed levee with little or no warning.

Earthen levees can be damaged in several ways. For instance, strong river currents and waves can erode the surface. Debris and ice carried by floodwaters—and even large objects such as boats or barges—can collide with and gouge the levee. Trees growing on a levee can blow over, leaving a hole where the root wad and soil used to be. Burrowing animals can create holes that enable water to pass through a levee. If severe enough, any of these situations can lead to a zone of weakness that could cause a levee breach. In seismically active areas, earthquakes and ground shaking can cause a loss of soil strength, weakening a levee and possibly resulting in failure. Seismic activity can also cause levees to slide or slump, both of which can lead to failure.

Geographic Location

Missouri is a state with many levees. Currently, there is no single comprehensive inventory of levee systems in the state. Levees have been constructed across the state by public entities and private entities with varying levels of protection, inspection oversight, and maintenance. The lack of a comprehensive levee inventory is not unique to Missouri.

There are two concurrent nation-wide levee inventory development efforts, one led by the United States Army Corps of Engineers (USACE) and one led by Federal Emergency Management Agency (FEMA). The National Levee Database (NLD), developed by USACE, captures all USACE related levee projects, regardless of design levels of protection. The Midterm Levee Inventory (MLI), developed by FEMA, captures all levee data (USACE and non-USACE) but primarily focuses on

levees that provide 1 percent annual-chance flood protection on FEMA Flood Insurance Rate Maps (FIRMs).

It is likely that agricultural levees and other non-regulated levees within the planning area exist; these are not inventoried or inspected. These levees that are not designed to provide protection from the 1-percent annual chance flood would overtop or fail in the 1-percent annual chance flood scenario. Therefore, any associated losses would be taken into account in the loss estimates provided in the Flood Hazard Section.

None of DeKalb County's population is protected from regulated levees. Population protected from low-head agricultural levees which are not regulated is unknown. In the event of a breach, it is unlikely that widespread damage would occur.

Severity/Magnitude/Extent

Levee failure is typically an additional or secondary impact of another disaster such as flooding or earthquake. The main difference between levee failure and losses associated with riverine flooding is magnitude. Levee failure often occurs during a flood event, causing destruction in addition to what would have been caused by flooding alone. In addition, there would be an increased potential for loss of life due to the speed of onset and greater depth, extent, and velocity of flooding because of levee breach.

As previously mentioned, agricultural levees and levees that are not designed to provide flood protection from at least the 1-percent annual chance flood likely do exist in the planning area. However, none of these levees are shown on the Preliminary DFIRM, nor are they enrolled in the USACE Levee Safety Program. As a result, an inventory of these types of levees is not available for analysis. Additionally, since these types of levees do not provide protection from the 1-percent annual chance flood, losses associated with overtopping or failure are captured in the Flood Section of this plan.

The USACE regularly inspects levees within its Levee Safety Program to monitor their overall condition, identify deficiencies, verify that maintenance is taking place, determine eligibility for federal rehabilitation assistance (in accordance with P.L. 84-99), and provide information about the levees on which the public relies. Inspection information also contributes to effective risk assessments and supports levee accreditation decisions for the National Flood Insurance Program administered by the Federal Emergency Management Agency (FEMA).

The USACE now conducts two types of levee inspections. Routine Inspection is a visual inspection to verify and rate levee system operation and maintenance. It is typically conducted each year for all levees in the USACE Levee Safety Program. Periodic Inspection is a comprehensive inspection led by a professional engineer and conducted by a USACE multidisciplinary team that includes the levee sponsor. The USACE typically conducts this inspection every five years on the federally authorized levees in the USACE Levee Safety Program.

Both Routine and Periodic Inspections result in a rating for operation and maintenance. Each levee segment receives an overall segment inspection rating of Acceptable, Minimally Acceptable, or Unacceptable. Table 3.33 below defines the three ratings.

Table 3.33**Definitions of the Three Levee System Ratings**

Levee System Inspection Ratings	
Acceptable	All inspection items are rated as Acceptable.
Minimally Acceptable	One or more levee segment inspection items are rated as Minimally Acceptable or one or more items are rated as Unacceptable and an engineering determination concludes that the Unacceptable inspection items would not prevent the segment/system from performing as intended during the next flood event.
Unacceptable	One or more levee segment inspection items are rated as Unacceptable and would prevent the segment/system from performing as intended, or a serious deficiency noted in past inspections (previous Unacceptable items in a Minimally Acceptable overall rating) has not been corrected within the established timeframe, not to exceed two years.

Previous Occurrences

There is no levee system in the planning area, therefore there have been no breaches or incidents.

Probability of Future Occurrence

There is no probability of future occurrence since there is no levee system.

Vulnerability***Vulnerability Overview***

The planning area is not vulnerable to a levee breach or incident.

Potential Losses to Existing Development

There are no buildings or property protected by a levee system so there is no potential loss to existing development.

Impact of Previous and Future Development

There is no known impact to previous and future development.

Hazard Summary by Jurisdiction

No jurisdictions in DeKalb County have levee protected areas.

Problem Statement

DeKalb County does not have a regulated levee system so there have been no levee breaches or incidents. However, it's likely low-head agricultural levees exist in the planning area.

3.4.9 Thunderstorm/High Winds/Lightning/Hail

Hazard Profile

Hazard Description

A thunderstorm is formed from a combination of moisture, rapidly rising warm air and a force capable of lifting air such as warm or cold fronts, a sea breeze or a mountain. At any given moment across the world, there are about 1,800 thunderstorms occurring. The United States experiences 100,000 thunderstorms each year. Approximately 1,000 tornadoes develop from these storms.

Thunderstorms

A thunderstorm is defined as a storm that contains lightning and thunder which is caused by unstable atmospheric conditions. When cold upper air sinks and warm moist air rises, storm clouds or 'thunderheads' develop resulting in thunderstorms. This can occur singularly, as well as in clusters or lines. The National Weather Service defines a thunderstorm as "severe" if it includes hail that is one inch or more, or wind gusts that are at 58 miles per hour or higher. Severe thunderstorms in Missouri most often occur in the spring and summer during the afternoon and evenings, but can occur at any time. Other hazards associated with thunderstorms are heavy rains resulting in flooding (discussed separately in Section 3.4.6) and tornadoes (discussed separately in Section 3.4.10).

High Winds

A severe thunderstorm can produce winds causing as much damage as a weak tornado. The damaging winds of thunderstorms include downbursts, microbursts, and straight-line winds. Downbursts are localized currents of air blasting down from a thunderstorm, which induce an outward burst of damaging wind on or near the ground. Microbursts are minimized downbursts covering an area of less than 2.5 miles across. They include a strong wind shear (a rapid change in the direction of wind over a short distance) near the surface. Microbursts may or may not include precipitation and can produce winds at speeds of more than 150 miles per hour. Damaging straight-line winds are high winds across a wide area that can reach speeds of 140 miles per hour.

Lightning

All thunderstorms produce lightning which can strike outside of the area of precipitation. In fact, lightning has been known to fall more than 10 miles away from the rainfall area. Lightning is a discharge of electricity that shoots through the air causing vibrations and creating the sound of thunder.

Hail

According to the National Oceanic and Atmospheric Administration (NOAA), hail is precipitation that is formed when thunderstorm updrafts carry raindrops upward into an extremely cold atmosphere causing them to freeze. The raindrops then form into small frozen droplets. They continue to grow as they come into contact with super-cooled water which will freeze on contact with the frozen rain droplet. As long as the updraft forces can support or suspend the weight of the hailstone, hail can continue to grow before it hits the earth.

At the time when the updraft can no longer support the hailstone, it will fall to the earth. For example, a ¼" diameter or pea sized hail requires updrafts of 24 miles per hour, while a 2 ¾" diameter or baseball sized hail requires an updraft of 81 miles per hour. According to the NOAA, the largest hailstone in

diameter recorded in the United States was found in Vivian, South Dakota on July 23, 2010. It was eight inches in diameter, almost the size of a soccer ball. Soccer-ball-sized hail is the exception, but even small pea-sized hail can do damage.

Geographic Location

DeKalb County is at risk for thunderstorms. Figure 3.20 shows lightning frequency in the state. DeKalb County is identified with an arrow. It is located in the orange zone on the map, indicating a six to eight average flash density per square kilometer per year. Much of the state is in the same zone.

Figure 3.20. Location and Frequency of Lightning in Missouri

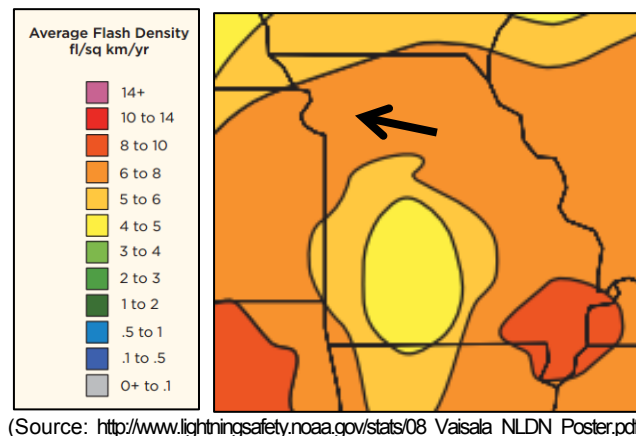
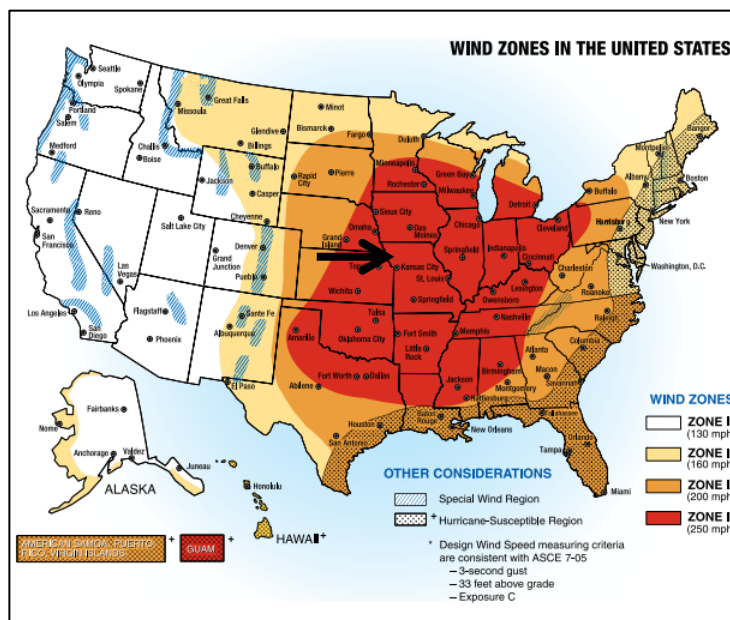


Figure 3.21 shows wind zones in the United States. DeKalb County is identified with an arrow. It is located in the red zone, Zone IV, on the map. Winds can reach 250 miles per hour in this zone.

Figure 3.21. Wind Zones in the United States



(Source: FEMA 320, Taking Shelter from the Storm, 3rd edition, http://www.weather.gov/media/bis/FEMA_SafeRoom.pdf)

Severity/Magnitude/Extent

Severe thunderstorm losses are usually attributed to the associated hazards of hail, winds, lightning and heavy rains. Losses due to hail and high wind are typically insured losses that are localized and do not result in presidential disaster declarations. However, in some cases, impacts are severe and widespread making federal assistance necessary. Hail and wind have devastating impacts on crops. Severe thunderstorms/heavy rains that lead to flooding are discussed in the flooding hazard profile. Hailstorms cause damage to property, crops, and the environment, and can injure and even kill livestock. In the United States, hail causes more than \$1 billion in damage to property and crops each year. Even relatively small hail can destroy plants in a matter of minutes. Vehicles, roofs of buildings and homes, and landscaping are also commonly damaged by hail. Hail has been known to cause injury, occasionally fatal, to humans.

In general, assets in DeKalb County vulnerable to thunderstorms with lightning, high winds, and hail include people, crops, vehicles, and structures. Although this hazard results in high annual losses, private property insurance and crop insurance usually cover the majority of losses. Considering insurance coverage as a recovery capability, the overall financial impact on jurisdictions is reduced.

Most lightning damages occur to electronic equipment located inside buildings. Structural damage can also occur when a lightning strike causes a building fire. In addition, lightning strikes can cause damages to crops if fields or forested lands are set on fire. Communications equipment and warning transmitters and receivers can also be rendered useless by lightning strikes.

Based on information provided by the Tornado and Storm Research Organization (TORRO), Table 3.34 below describes typical damage impacts of the various sizes of hail.

Table 3.34. Tornado and Storm Research Organization Hailstorm Intensity Scale

Intensity Category	Diameter (mm)	Diameter (inches)	Size Description	Typical Damage Impacts
Hard Hail	5-9	0.2-0.4	Pea	No damage
Potentially Damaging	10-15	0.4-0.6	Mothball	Slight general damage to plants, crops
Significant	16-20	0.6-0.8	Marble, grape	Significant damage to fruit, crops, vegetation
Severe	21-30	0.8-1.2	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
Severe	31-40	1.2-1.6	Pigeon's egg > squash ball	Widespread glass damage, vehicle bodywork damage
Destructive	41-50	1.6-2.0	Golf ball > Pullet's egg	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
Destructive	51-60	2.0-2.4	Hen's egg	Bodywork of grounded aircraft dented, brick walls pitted
Destructive	61-75	2.4-3.0	Tennis ball > cricket ball	Severe roof damage, risk of serious injuries
Destructive	76-90	3.0-3.5	Large orange > Soft ball	Severe damage to aircraft bodywork
Super Hailstorms	91-100	3.6-3.9	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
Super Hailstorms	>100	4.0+	Melon	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

(Source: Tornado and Storm Research Organization (TORRO), Department of Geography, Oxford Brookes University)

Notes: In addition to hail diameter, factors including number and density of hailstones, hail fall speed and surface wind speeds affect severity. <http://www.torro.org.uk/site/hscale.php>)

Straight-line winds are defined as any thunderstorm wind that is not associated with rotation (i.e., is not a tornado). It is these winds, which can exceed 100 miles per hour, which represent the most common type of severe weather. They are responsible for most wind damage related to thunderstorms. Since thunderstorms do not have narrow tracks like tornadoes, the associated wind damage can be extensive and affect entire (and multiple) counties. Objects like trees, barns, outbuildings, high-profile vehicles, and power lines/poles can be toppled or destroyed, and roofs, windows, and homes can be damaged as wind speeds increase.

The tables below (Tables 3.35 through Table 3.36) summarize past crop damages as indicated by crop insurance claims. The tables illustrate the magnitude of the impact on the planning area's agricultural economy. Thunderstorms and lightning were not listed as the cause of loss for any insurance claims in DeKalb County from 2007 – 2016.

Table 3.35. Crop Insurance Claims Paid in DeKalb County from High Winds, 2007-2016

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2011	Corn	Wind/Excess Wind	\$302,881.00
2011	Soybeans	Wind/Excess Wind	\$21,289.00
Total			\$324,170.00

(Source: USDA Risk Management Agency, Insurance Claims, <http://www.rma.usda.gov/data/cause.htm>)

Table 3.36. Crop Insurance Claims Paid in Clinton County from Hail, 2007-2016

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2007	Soybeans	Hail	\$31,593.00
2008	Wheat	Hail	\$15,030.00
2008	Wheat	Hail	\$5,435.00
2009	Wheat	Hail	\$71,375.00
2009	Soybeans	Hail	\$898.00
2011	Soybeans	Hail	\$53,778.00
2012	Corn	Hail	\$12,773.00
2012	Corn	Hail	\$84,495.00
2012	Soybeans	Hail	\$19,910.00
2012	Soybeans	Hail	\$18,881.00
2013	Wheat	Hail	\$50,727.00
2013	Soybeans	Hail	\$1,106.00
2013	Soybeans	Hail	\$4,188.00
2015	Wheat	Hail	\$3,427.00
2015	Soybeans	Hail	\$2,094.00
2016	Corn	Hail	\$2,229.00
2016	Soybeans	Hail	\$11,671.00
Total			\$389,610.00

(Source: USDA Risk Management Agency, Insurance Claims, <http://www.rma.usda.gov/data/cause.htm>)

The onset of thunderstorms with lightning, high wind, and hail is generally rapid. Duration is less than six hours and warning time is generally six to 12 hours. Nationwide, lightning kills 75 to 100 people each year. Lightning strikes can also start structural and wildland fires, as well as damage electrical systems and equipment.

Previous Occurrences

The tables below include NCEI reported events and damages for the past 22 years for thunderstorms, wind, and hail. There were no NCEI reported events for lightning. One limitation of NCEI reported lightning events is the fact that only those that result in fatality, injury, and/or property and crop damage are reported.

There were 37 days with recorded thunderstorm wind events in DeKalb County, causing two injuries and \$15,050 in property damage. Table 3.64 lists only thunderstorm wind events resulting in injuries or property damage.

Table 3.37 NCEI Thunderstorm Wind Events in DeKalb County, 1996-2017

Jurisdiction	Date	Wind Speed (in knots)	Injuries	Property Damage
Osborn	04/02/2010	61 kts. EG	0	\$5,000
Clarksdale	06/18/2010	52 kts. EG	0	\$3,000
Osborn	06/26/2011 22:45	52 kts. EG	0	\$300
Osborn	06/26/2011 23:01	57 kts. MG	0	\$2,000
Weatherby	02/28/2012	52 kts. EG	0	\$3,000
Stewartsville	05/24/2012	52 kts. EG	0	\$1,000
Osborn	05/19/2003	52 kts. EG	0	\$250
Union Star	05/27/2013	52 kts. EG	0	\$500
Osborn	04/13/2014	60 kts. EG	2	\$0
Total			2	\$15,050

(Source: NCEI, <https://www.NCEI.noaa.gov/stormevents>)

There were 64 days with recorded hail events in DeKalb County, with no injuries and \$10,000 in property damage reported. Table 3.65 lists only the hail events with hail over two inches in diameter.

Table 3.38 NCEI Thunderstorm Hail Events in DeKalb County, 1996-2017

Jurisdiction	Date	Size (in inches)	Injuries	Property Damage
Weatherby	05/24/2004	2.00 in.	0	0
Maysville	05/24/2004	2.75 in.	0	\$10,000
Union Star	06/07/2009	2.00 in.	0	0
Weatherby	06/07/2009	2.00 in.	0	0
Stewartsville	05/06/2012	2.75 in.	0	0
Total			0	\$10,000

(Source: NCEI, <https://www.NCEI.noaa.gov/stormevents>)

Table 3.39 NCEI High Wind/Strong Wind Events in DeKalb County, 1996-2017

Jurisdiction	Date	Wind Speed (in knots)	Injuries	Property Damage
DeKalb County	11/11/2015	52 kts.	0	0

Probability of Future Occurrence

Thunderstorm Wind

There have been 37 recorded thunderstorm wind events over a 22-year period from 1996 to 2017. This equates to three thunderstorm wind events in any given year with a 100% probability of occurrence. There was one event that resulted in two injuries and 8 events resulted in \$15,050.00 of property damage. This equates to 1.68 damaging events per year with annualized losses of \$684.10.

Lightning

There were no NCEI reported events for lightning. One limitation of NCEI reported lightning events is the fact that only those that result in fatality, injury, and/or property and crop damage are reported.

Hail

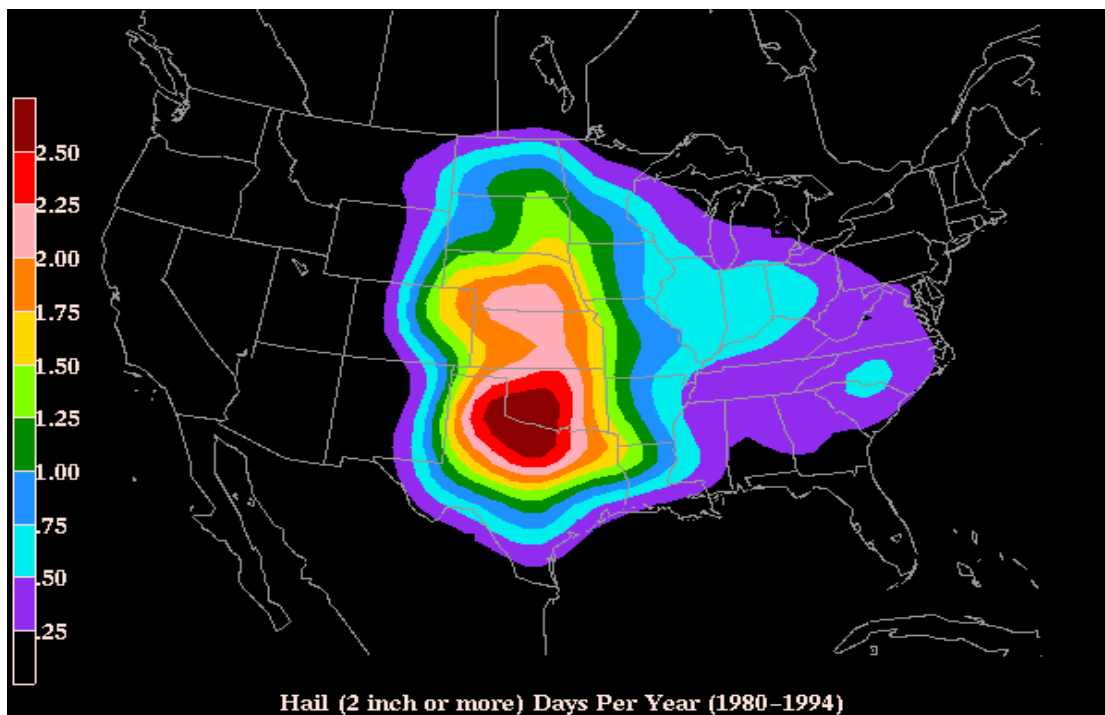
There have been 64 recorded hail events over a 22-year period from 1996 to 2017. This equates to 2.9 hail events in any given year with a 100% probability of occurrence. There was one event that resulted in \$10,000.00 of property damage. This equates to .05 damaging events per year with annualized losses of \$454.55.

Strong Wind

There has been one recorded strong wind event over a 22-year period from 1996 to 2017. This equates .05 strong wind event in any given year. There were no reports of damage or injuries from the NCEI database so there are no annualized losses.

Figure 3.22 is based on hailstorm data from 1980-1994. It shows the probability of hailstorm occurrence (2" diameter or larger) based on number of days per year. DeKalb County is located in the light green zone, indicating the county's probability of hailstorm with 2" diameter or larger hail is 1.25 to 1.50 days per year.

Figure 3.22. Annual Hailstorm Probability (2" diameter or larger), 1980-1994



(Source: NSSL, <http://www.nssl.noaa.gov/users/brooks/publichtml/bighail.gif>)

Vulnerability

Vulnerability Overview

Severe thunderstorms are a common occurrence in DeKalb County. Wind, hail, and lightning are all contributing elements of severe thunderstorms. The 2013 State Plan focused on damaging winds in excess of 67 miles per hour (58 knots), hail in excess of 0.75 inches or larger and damaging lightning strikes to analyze vulnerability, risk, and estimated losses to this hazard.

The method used to determine vulnerability to severe thunderstorms was statistical analysis of data from several sources: National Climatic Data Center (NCEI) storm events data (1993 to December 31 2012), Crop Insurance Claims data from USDA's Risk Management Agency (2009-2012), U.S. Census Data (2010), USDA's Census of Agriculture (2007), and the calculated Social Vulnerability Index for Missouri Counties from the Hazards and Vulnerability Research Institute in the Department of Geography at the University of South Carolina. Table 3.40 provides the housing density, building exposure, crop exposure, and social vulnerability data. These are the common data elements for the analysis of wind, hail, and lightning with one exception; the lightning analysis did not consider crop exposure as crop loss is an unlikely result of lightning events. Table 3.41 provides additional statistical data compiled for vulnerability analysis from the 2013 State Plan.

Table 3.40 Housing Density, Building Exposure and Crop Exposure Data

Jurisdiction	County Housing Units/sq. mi.	Total Building Exposure (\$)	Crop Exposure (2007 Census of Agriculture)*	Social Vulnerability Index (1-5)
DeKalb County	10.3	\$891,756,000.	\$26,390,000.	1

(Source: 2013 State Plan)

Table 3.41 Additional Statistical Data Compiled for Vulnerability Analysis

Jurisdictions	County Annualized Property Loss and Crop Claims-Wind (\$)	Annualized Property Loss and Crop Claims-Hail (\$)	Annualized Property Loss-Lightning (\$)	Combined Annualized Losses (wind, hail, lightning) (\$)
DeKalb County	\$1,078,682.00	\$722,458.00	\$0.00	\$1,801,140.00

(Source: 2013 State Plan)

Potential Losses to Existing Development

The average annual loss determined from historical losses for high wind and hail are indicators of the potential losses to existing development. High wind events in DeKalb County have damaged private property and commercial buildings. Based on the \$15,050.00 loss from thunderstorm wind damage recorded in the NCEI database from 1996-2017, potential losses for future events is annualized at \$684.10.

Previous and Future Development

Additional development would result in the exposure of more households and businesses vulnerable to damages from severe thunderstorms/high winds/lightning/hail.

Hazard Summary by Jurisdiction

Although thunderstorms/high winds/lightning/hail events are area-wide, there may be demographics indicating higher losses in one jurisdiction as compared to another. Structures built before 1939 are considered to be more vulnerable to the impact of high wind and hail damage. Please see Table 3.20 for ages of structures in jurisdictions in DeKalb County. Risk to new development is somewhat mitigated by IBC 2012 building codes.

Problem Statement

Poorly built structures, barns, outbuildings are more vulnerable to the impact of high winds during thunderstorms. High winds can topple utility poles and lead to power outages. Both high winds and hail can damage roofs. Hail can also damage crops and dent cars and trucks. People are also at risk of injury and death during high wind events. Crop insurance mitigates the risk to farmers and the agriculture sector within the county.

The risk of injury and death in the county can be mitigated by identifying safe refuge areas in public buildings, nursing homes and other facilities that house vulnerable populations that do not have a saferoom. Retrofitting school district facilities to better withstand high winds will provide more protection for students and staff. Additional warnings and alerts will also provide the public and schools more time to take cover during high wind events. Education and hazard awareness programs would also increase public safety in the event of severe thunderstorm events.

3.4.10 Tornado

Hazard Profile

Hazard Description

National Weather Service (NWS) defines a tornado as “a violently rotating column of air extending from a thunderstorm to the ground.” It is usually spawned by a thunderstorm and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. Often, vortices remain suspended in the atmosphere as funnel clouds. When the lower tip of a vortex touches the ground, it becomes a tornado.

High winds not associated with tornadoes are profiled separately in this document in Section 3.4.9, Thunderstorm/High Wind/Hail/Lightning.

Essentially, tornadoes are a vortex storm with two components of winds. The first is the rotational winds that can measure up to 500 miles per hour, and the second is an uplifting current of great strength. The dynamic strength of both these currents can cause vacuums that can overpressure structures from the inside.

Although tornadoes have been documented in all 50 states, most of them occur in the central United States due to its unique geography and presence of the jet stream. The jet stream is a high-velocity stream of air that separates the cold air of the north from the warm air of the south. During the winter, the jet stream flows west to east from Texas to the Carolina coast. As the sun moves north, so does the jet stream, which at summer solstice flows from Canada across Lake Superior to Maine. During its move northward in the spring and its recession south during the fall, the jet stream crosses Missouri, causing the large thunderstorms that breed tornadoes.

A typical tornado can be described as a funnel-shaped cloud in contact with the Earth’s surface that is “anchored” to a cloud, usually a cumulonimbus. This contact on average lasts 30 minutes and covers an average distance of 15 miles. The width of the tornado (and its path of destruction) is usually about 300 yards. However, tornadoes can stay on the ground for upwards of 300 miles and can be up to a mile wide. The NWS, in reviewing tornadoes occurring in Missouri between 1950 and 1996, calculated the mean path length at 2.27 miles and the mean path area at 0.14 square mile.

The average forward speed of a tornado is 30 miles per hour but may vary from nearly stationary to 70 miles per hour. The average tornado moves from southwest to northeast, but tornadoes have been known to move in any direction. Tornadoes are most likely to occur in the afternoon and evening, but have been known to occur at all hours of the day and night.

Geographic Location

In contrast to thunderstorms, which can cause widespread damage, tornadoes represent a hazard that is a more defined area. With this tradeoff of a smaller impact area, the damage will be much more catastrophic. The geographic location in which these tornadoes have occurred in the past will be discussed in previous occurrences. The numbers on the markers correspond with the class of tornado.

Severity/Magnitude/Extent

Tornadoes are the most violent of all atmospheric storms and are capable of tremendous destruction. Wind speeds can exceed 250 miles per hour and damage paths can be more than one-mile wide and

50 miles long. Tornadoes have been known to lift and move objects weighing more than 300 tons a distance of 30 feet, toss homes more than 300 feet from their foundations, and siphon millions of tons of water from water bodies. Tornadoes also can generate a tremendous amount of flying debris which becomes airborne shrapnel that causes additional damage. If wind speeds are high enough, debris can be thrown at a building with enough force to penetrate windows, roofs, and walls. However, the less spectacular damage is much more common.

Tornado magnitude is classified according to the EF- Scale (or the Enhance Fujita Scale, based on the original Fujita Scale developed by Dr. Theodore Fujita, a renowned severe storm researcher). The EF- Scale (see Table 3.42) attempts to rank tornadoes according to wind speed based on the damage caused. This update to the original F Scale was implemented in the U.S. on February 1, 2007.

Table 3.42. Enhanced F Scale for Tornado Damage

FUJITA SCALE			DERIVED EF SCALE		OPERATIONAL EF SCALE	
F Number	Fastest ¼-mile (mph)	3 Second Gust (mph)	EF Nu	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

(Source: The National Weather Service, www.spc.noaa.gov/faq/tornado/ef-scale.html)

The wind speeds for the EF scale and damage descriptions are based on information on the NOAA Storm Prediction Center as listed in Table 3.43. The damage descriptions are summaries. For the actual EF scale it is necessary to look up the damage indicator (type of structure damaged) and refer to the degrees of damage associated with that indicator. Information on the Enhanced Fujita Scale's damage indicators and degrees of damage is located online at www.spc.noaa.gov/efscale/ef-scale.html.

Table 3.43. Enhanced Fujita Scale with Potential Damage

Enhanced Fujita Scale			
Scale	Wind Speed (mph)	Relative Frequency	Potential Damage
EF0	65-85	53.5%	Light. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e. those that remain in open fields) are always rated EF0.
EF1	86-110	31.6%	Moderate. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	10.7%	Considerable. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes complete destroyed; large trees snapped or uprooted; light object missiles generated; cars lifted off ground.
EF3	136-165	3.4%	Severe. Entire stores of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200	0.7%	Devastating. Well-constructed houses and whole frame houses completely levelled; cars thrown and small missiles generated.
EF5	>200	<0.1%	Explosive. Strong frame houses levelled off foundations and swept away; automobile-sized missiles fly through the air in excess of 300 ft.; steel reinforced concrete structure badly damaged; high rise buildings have significant structural deformation; incredible phenomena will occur.

(Source: NOAA Storm Prediction Center, <http://www.spc.noaa.gov/efscale/ef-scale.html>)

Enhanced weather forecasting has provided the ability to predict severe weather likely to produce tornadoes days in advance. Tornado watches can be delivered to those in the path of these storms several hours in advance. Lead time for actual tornado warnings is about 30 minutes. Tornadoes have been known to change paths very rapidly, thus limiting the time in which to take shelter. Tornadoes may not be visible on the ground if they occur after sundown or due to blowing dust or driving rain and hail.

Previous Occurrences

Table 3.44 includes NCEI reported tornado events and damages since 1995 in the planning area. Prior to that date, only destructive tornadoes were recorded

There are limitations to the use of NCEI tornado data that must be noted. For example, one tornado may contain multiple segments as it moves geographically. A tornado that crosses a county line or state line is considered a separate segment for the purposes of reporting to the NCEI. Also, a tornado that lifts off the ground for less than five minutes or 2.5 miles is considered a separate segment. If the tornado lifts off the ground for greater than five minutes or 2.5 miles, it is considered a separate tornado. Tornadoes reported in Storm Data and the Storm Events Database are in segments.

Table 3.44. Recorded Tornadoes in DeKalb County, 1993 – 2017

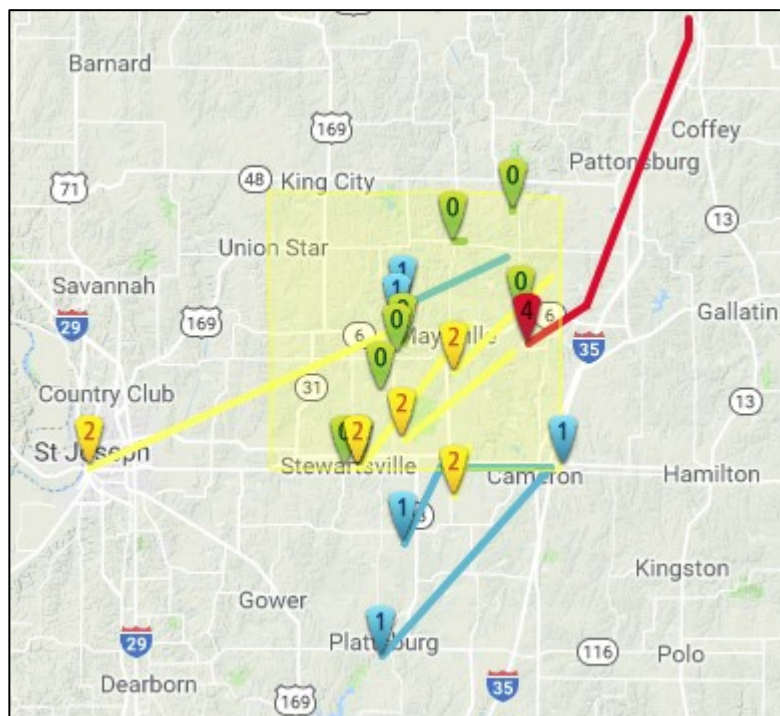
Date	Beginning Location	Ending Location	Length (miles)	Width (yards)	F/EF Rating	Death	Injury	Property Damage	Crop Damages
05/29/2004	Osborn	Osborn	1	150	F1	0	0	\$10,000	\$0
05/29/2004	Osborn	Osborn	2	100	F2	0	0	\$0	\$0

05/29/2004	Maysville	Maysville	1	50	F0	0	0	\$0	\$0
05/29/2004	Weatherby	Weatherby	4	800	F4	3	6	\$300,000	\$0
05/29/2004	Fairport	Fairport	1	50	F0	0	0	\$0	\$0
04/15/2006	Stewartsville	Stewartsville	1.5	50	F0	0	0	\$0	\$0
04/15/2006	Stewartsville	Maysville	13	100	F2	0	0	\$75,000	\$0
06/07/2009	Amity	Amity	0.1	25	EF0	0	0	\$0	\$0
06/07/2009	Weatherby	Weatherby	0.1	25	EF0	0	0	\$0	\$0
09/09/2014	Fairport	Fairport	.75	25	EF0	0	0	\$0	\$0
Total						3	6	\$385,000	\$0

(Source: National Climatic Data Center, <http://www.NCEI.noaa.gov/stormevents/>)

There were 10 tornado events recorded in the NCEI database from 1995-2017. Three deaths, six injuries and \$385,000 in property damage were reported. The event report from the fatal tornado event that occurred in 2004 in Weatherby stated that, "Large F4 tornado touched down 2 miles south of Weatherby and moved east northeast. The tornado killed 3 persons near Weatherby. The 80 and 60 year old fatalities occurred in a destroyed frame house. Two mobile homes were destroyed with one having the 54-year old fatality. The tornado crossed into Daviess county four miles east of Weatherby." Figure 3.23 shows historic tornado paths in the planning area.

Figure 3.23. DeKalb County Map of Historic Tornado Events



(Source: Missouri Tornado History Project, <http://www.tornadohistoryproject.com/tornado/Missouri>)

There are no insurance payments for crop damages from 2007 - 2015 as a result of tornadoes.

Probability of Future Occurrence

According to the NCEI, 10 tornadoes have occurred during the 23-year period from 1995 to 2015 resulting in a probability percentage of 43 percent chance of a tornado of any magnitude event in the planning area in any given year.

Vulnerability

Vulnerability Overview

Tornado Alley refers to the area of the United States where tornadoes are most likely to occur. Some view it as the area where the most dangerous tornadoes occur, such as F4 and F5 tornadoes on the Fujita rating system, but this is not necessarily true. Most dangerous tornadoes are sporadic. Tornado Alley is in reference to the most frequently reported tornadoes. Figure 3.24 refers to this area known as Tornado Alley. This area averages three tornadoes or more per year per 10,000 square miles in general. DeKalb County is located in the center of Tornado Alley, which poses a high risk for future tornadoes.

Figure 3.24. Tornado Alley in the U.S.



(Source: <http://www.tornadochaser.net/tornalley.html>)

The 2013 State Plan looked at four factors to determine tornado vulnerability. This vulnerability analysis measured the likelihood of future tornado impacts, average annual property loss ratio (total building exposure value divided by average annualized historic losses), population change (percent change), and housing change (percent change). Scales were created to rank these factors: likelihood (1-3), loss ratio with exposure as of 2012 (1-3), population change from 2000 - 2010 (1-3), housing change from 2000-2010 (1-3). The factor scores were added up for each county for the purposes of ranking the counties by total vulnerability. This approach attempts to identify where tornadoes could have the greatest impacts. Devastating tornadoes could still impact counties that ranked lower in this process. For this reason, the low end of the risk is still considered Moderate and the top end Very High. Counties with a total risk score of 8 to 9 were considered to be at very high risk. DeKalb County is considered to have moderate risk. The State's data shows a 29.27 percent likelihood of occurrence in a year

Potential Losses to Existing Development

In the 2013 State Plan, a statistical vulnerability methodology was used to determine annualized tornado losses by county. This methodology used the National Climatic Data Center data for tornado losses between 1950 and July 31, 2012. It is important to realize that one limitation to this data is that many tornadoes that might have occurred in uninhabited areas, as well as some in inhabited areas, may not have been reported. The incompleteness of the data suggests that it is not appropriate for

use in parametric modeling. In addition, NOAA data cannot show a realistic frequency distribution of different Fujita scale tornado events, except for recent years. Thus a parametric model based on a combination of many physical aspects of the tornado to predict future expected losses was not used. The statistical model used for this analysis was probabilistic based purely on tornado frequency and historic losses. It is based on past experience and forecasts the expected results for the immediate or extended future. The approach to the 2013 update of tornado risk in Missouri included an update of the tornado events and annualized losses and an enhanced analysis and representation of the risk assessment results. The number of tornado occurrences was updated by adding the events that have been reported in each county from July 31, 2009 through July 31, 2012. Table 3.45 shows the annualized historic losses.

Table 3.45 Tornado Probability, Potential Loss, and Risk Summary

Jurisdiction	# of Tornadoes	Likelihood of Occurrence	Total Exposure	Annualized Historic Loss	Loss Ratio	Total Vulnerability
DeKalb County	18	29.27%	\$891,756,000	\$18,756	.0002%	Moderate

(Source: 2013 State Plan)

Previous and Future Development

Development may result in an increase in population in terms of increased exposure to damage. Due to the vulnerability of mobile homes to tornado and high wind damage, some jurisdictions do not allow mobile home parks. As expansion occurs, DeKalb County and local jurisdictions monitor the warning siren coverage area. Several jurisdictions will be applying for grants to acquired outdoor warning sirens.

Hazard Summary by Jurisdiction

In DeKalb County, a tornado could occur due to its location in Tornado Alley and historical precedence. The county also has an at-risk population of homes that are valued below \$50,000 (16.8 percent) and mobile homes (14.3 percent). These homes are at risk due to the fact that they could have weak structural protection from high winds associated with tornadoes due to lower grade materials used, inadequate construction standards or possible lack of foundation.

Homes that are over 25-years old also face the risk of older building codes and deteriorating structure. A tornado, of any magnitude, could have a large, adverse impact on these homes. Because 68.4 percent of homes in DeKalb County were built before 1990, the impact of a tornado could be substantial. Please see Table 3.20 for the ages of homes of jurisdictions in DeKalb County.

A tornado event could occur anywhere in the planning area, but some jurisdictions would suffer heavier damages because of the age of the housing, concentration of buildings and higher number of mobile homes. School district assets are also at risk from tornadoes and conduct regular tornado drills. Churches throughout the county also serve as public shelters.

Problem Statement

Tornadoes are the most violent of all atmospheric storms and are capable of tremendous destruction. Wind speeds can exceed 250 miles per hour and damage paths can be more than one-mile wide and 50 miles long. According to the NCEI, over the past 23 years significant tornado events in DeKalb County have resulted in three deaths, six injuries and \$385,000 in property damage. Information in the 2013 State Plan indicates that DeKalb County has a very high vulnerability to tornadoes based on frequency of occurrence and previous damages.

The risk of property damage, injury, and death in the county can be mitigated by constructing FEMA safe rooms in facilities that house vulnerable populations such as nursing homes government buildings, and schools. In addition, identifying safe refuge areas in public buildings, nursing homes and other facilities that house vulnerable populations that do not have a safe room could reduce risk. Retrofitting school district facilities with protective filming of windows and installation of blast proof doors will provide more protection for students and staff at school facilities. Additional warnings and alerts will also provide the public and schools more time to take cover during tornado. In addition, public safety fairs provide an opportunity to disseminate information to homeowners about individual safe room construction in homes. Cities can adopt or update and enforce IBC 2012 building codes that include construction techniques such as roof tie down straps for mobile homes to mitigate damage to future development.

3.4.9 Winter Weather/Snow/Ice/Severe Cold

Hazard Profile

Hazard Description

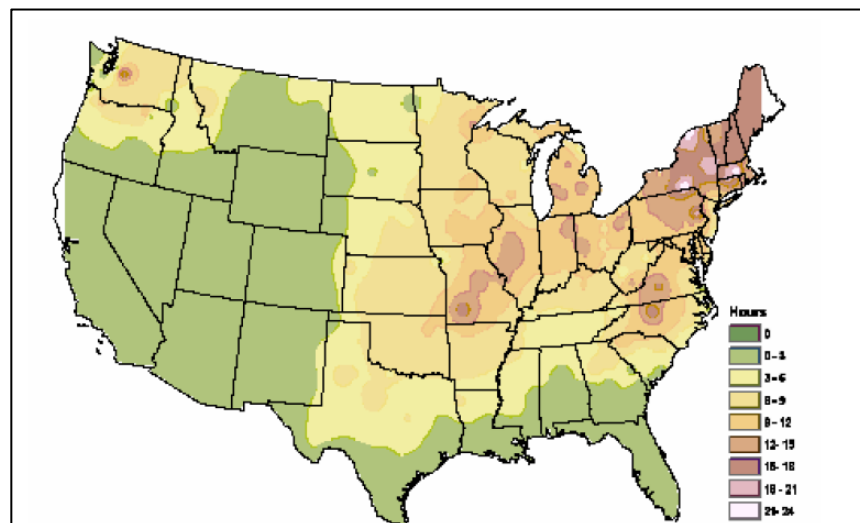
A major winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall, and cold temperatures. The National Weather Service describes different types of winter storm events as follows.

- **Blizzard**—Winds of 35 miles per hour or more with snow and blowing snow reducing visibility to less than ¼ mile for at least three hours.
- **Blowing Snow**—Wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.
- **Snow Squalls**—Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.
- **Snow Showers**—Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
- **Freezing Rain**—Measurable rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces, such as trees, cars, and roads, forming a coating or glaze of ice. Most freezing-rain events are short lived and occur near sunrise between the months of December and March.
- **Sleet**—Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects.

Geographic Location

The entire county is vulnerable to heavy snow, ice, extreme cold temperatures and freezing rain. Figure 3.25 shows the zones of average number of hours of freezing rain per year. DeKalb County is located in the light yellow zone, indicating that the county receives three to six hours of freezing rain per year.

Figure 3.25. NWS Statewide Average Number of Hours per Year with Freezing Rain



(Source: American Meteorological Society. "Freezing Rain Events in the United States." <http://ams.confex.com/ams/pdfpapers/71872.pdf>)

Severity/Magnitude/Extent

Severe winter storms include extreme cold, heavy snowfall, ice, and strong winds which can push the wind chill well below zero degrees in the planning area. Heavy snow can bring a community to a standstill by inhibiting transportation (in whiteout conditions), weighing down utility lines, and by causing structural collapse in buildings not designed to withstand the weight of the snow. Repair and snow removal costs can be significant. Ice buildup can collapse utility lines and communication towers, as well as make transportation difficult and hazardous. Ice can also become a problem on roadways if the air temperature is high enough that precipitation falls as freezing rain rather than snow.

Extreme cold often accompanies severe winter storms and can lead to hypothermia and frostbite in people without adequate clothing protection. Cold can cause fuel to congeal in storage tanks and supply lines, stopping electric generators. Cold temperatures can also overpower a building's heating system and cause water and sewer pipes to freeze and rupture. Extreme cold also increases the likelihood for ice jams on flat rivers or streams. When combined with high winds from winter storms, extreme cold becomes extreme wind chill, which is hazardous to health and safety.

The National Institute on Aging estimates that more than 2.5 million Americans are elderly and especially vulnerable to hypothermia, with the isolated elders being most at risk. About 10 percent of people over the age of 65 have some kind of bodily temperature-regulating defect, and 3-4 percent of all hospital patients over 65 are hypothermic.

Also at risk are those without shelter, those who are stranded, or who live in a home that is poorly insulated or without heat. Other impacts of extreme cold include asphyxiation (unconsciousness or death from a lack of oxygen) from toxic fumes from emergency heaters; household fires, which can be caused by fireplaces and emergency heaters; and frozen/burst pipes.

Buildings with overhanging tree limbs are more vulnerable to damage during winter storms when limbs fall. Businesses experience loss of income as a result of closure during power outages. In general, heavy winter storms increase wear and tear on roadways though the cost of such damages is difficult to determine. Businesses can experience loss of income as a result of closure during winter storms.

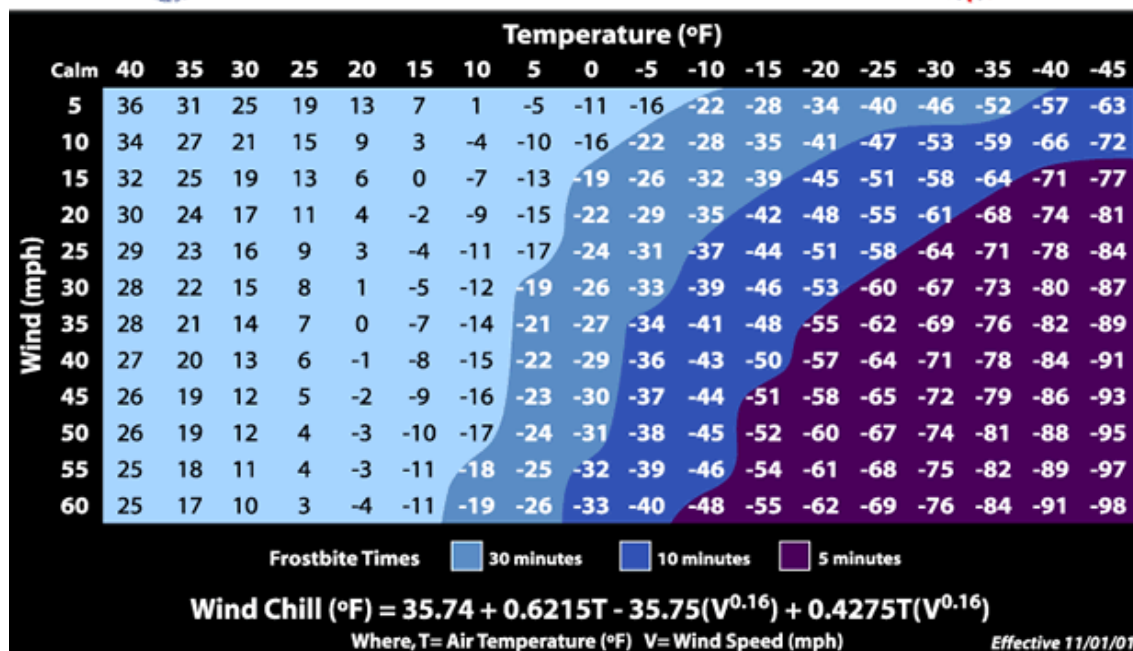
Overhead power lines and infrastructure are also vulnerable to damages from winter storms. In particular, ice accumulation during winter storm events damage to power lines due to the ice weight on the lines and equipment. Damages also occur to lines and equipment from falling trees and tree limbs weighted down by ice. Potential losses could include cost of repair or replacement of damaged facilities, and lost economic opportunities for businesses.

Secondary effects from loss of power could include burst water pipes in homes without electricity during winter storms. Public safety hazards include risk of electrocution from downed power lines. Specific amounts of estimated losses are not available due to the complexity and multiple variables associated with this hazard. Standard values for loss of service for utilities reported in FEMA's 2009 BCA Reference Guide, the economic impact as a result of loss of power is \$126 per person per day of lost service.

Wind can greatly amplify the impact of cold ambient air temperatures. Provided by the National Weather Service, Figure 3.26 shows the relationship of wind speed to apparent temperature and typical time periods for the onset of frostbite.

Figure 3.26.

Wind Chill Chart



(Source: National Weather Service, <http://www.nws.noaa.gov/om/winter/windchill.shtml>)

Winter storms, cold, frost and freezing take a toll on crop production in the planning area. Table 3.46 shows the USDA's Risk Management Agency payments for insured crop losses in the planning area as a result of cold conditions and snow for the past 10 years.

Table 3.46. Crop Insurance Claims Paid in DeKalb County as a Result of Cold Conditions and Snow, 2007-2016

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2007	Wheat	Freeze and Cold Winter	\$72,712.00
2008	Wheat	Freeze, Cold Wet Weather, Cold Winter	\$44,054.00
2009	Wheat	Freeze	\$115,849.00
2010	Wheat and Corn	Freeze and Cold Wet Weather	\$8,637.00
2011	Wheat, Corn and Soybeans	Cold Wet Weather	\$101,855.00
2012	Wheat and Corn	Cold Wet Weather	\$1,983.00
2013	Wheat, Corn and Soybeans	Cold Wet Weather, Other (Snow – Lightning)	\$99,077.00
2014	Wheat and Soybeans	Frost and Cold Winter	\$240,224.69
2015	Wheat	Cold Winter	\$11,629.75
2016	Wheat and Soybeans	Cold Winter and Cold Wet Weather	\$4,907.68
Total			\$700,929.12

(Source: USDA Risk Management Agency, <http://www.rma.usda.gov/data/cause.htm>)

Previous Occurrences

Table 3.47 includes NCEI reported events and damages for the past 21 years in DeKalb County.

Table 3.47. NCEI DeKalb County Winter Weather Events Summary, 1997-2017

Type of Event	Inclusive Dates	# of Injuries	Property Damages	Crop Damages
Cold/Wind Chill	01/10/1997	0	\$0	\$0
Winter Storm	02/21/1997	0	\$0	\$0
Heavy Snow	04/10/1997	0	\$100,000	\$0
Ice Storm	12/21/1997	0	\$0	\$0
Ice Storm	100/4/1998	0	\$0	\$0
Heavy Snow	12/05/1999	0	\$0	\$0
Extreme Cold/Wind Chill	100/6/2000	0	\$0	\$0
Extreme Cold/Wind Chill	12/10/2000	0	\$0	\$0
Winter Storm	12/11/2000	0	\$0	\$0
Winter Storm	01/28/2001	0	\$0	\$0
Winter Storm	02/09/2001	0	\$0	\$0
Heavy Snow	02/27/2001	0	\$0	\$0
Heavy Snow	01/30/2002	0	\$0	\$0
Winter Storm	01/25/2004	0	\$0	\$0
Winter Storm	02/05/2004	0	\$0	\$0
Winter Storm	01/04/2005	0	\$0	\$0
Winter Weather	01/20/2006	0	\$0	\$0
Ice Storm	11/29/2006	0	\$0	\$0
Ice Storm	12/10/2007	0	\$250,000	\$0
Winter Storm	12/22/2007	0	\$0	\$0
Heavy Snow	02/05/2008	0	\$0	\$0
Winter Storm	02/16/2008	0	\$0	\$0
Ice Storm	12/18/2008	0	\$0	\$0
Blizzard	12/07/2009	0	\$0	\$0
Blizzard	12/24/2009	0	\$0	\$0
Winter Storm	01/06/2010	0	\$0	\$0
Winter Weather	02/07/2010	0	\$0	\$0
Winter Storm	02/21/2010	0	\$0	\$0
Winter Weather	01/10/2011	0	\$0	\$0
Winter Storm	01/22/2011	0	\$0	\$0
Blizzard	02/01/2011	0	\$0	\$0
Winter Storm	02/24/2011	0	\$0	\$0
Winter Weather	12/19/2011	0	\$0	\$0
Winter Weather	02/04/2012	0	\$0	\$0
Winter Weather	02/13/2012	0	\$0	\$0
Winter Storm	12/20/2012	0	\$0	\$0
Winter Storm	02/21/2013	0	\$0	\$0
Winter Storm	02/26/2013	0	\$0	\$0
Winter Storm	03/23/2013	0	\$0	\$0
Winter Weather	05/02/2013	0	\$0	\$0
Heavy Snow	12/21/2013	0	\$0	\$0
Cold/Wind Chill	01/05/2014	0	\$0	\$0
Heavy Snow	02/04/2014	0	\$0	\$0
Winter Storm	12/27/2015	0	\$0	\$0
Ice Storm	01/15/2017	0	\$0	\$0
Total			\$350,000	\$0

(Source: NCEI, data accessed 01/08/2018)

Probability of Future Occurrence

The probability for all of the different types of winter weather are included as one probability, since one storm generally includes several different types of events. There were 45 severe winter weather events in DeKalb County from 1995 to 2017 (21 years). This equates to a 100% probability of occurrence in any given year with approximately 2.14 events in any given year.

Vulnerability

Vulnerability Overview

Heavy snow can bring a community to a standstill by inhibiting transportation (in whiteout conditions), weighing down utility lines, and by causing structural collapse in buildings not designed to withstand the weight of the snow. Repair and snow removal costs can be significant. Ice buildup can collapse utility lines and communication towers, as well as make transportation difficult and hazardous. People over 65 and those living in poverty have an increased risk of hypothermia and frostbite due to extreme cold and wind chill.

In the 2013 State Plan, seven factors were considered in determining overall severe winter storm vulnerability as follows: housing density, likelihood of occurrence, building exposure, crop exposure, average annual property loss ratio, average annual crop insurance claims and social vulnerability. The state ranked each of these criteria using a scale from one to five, one being lowest and five being the highest, to rank each county's vulnerability to severe winter weather. Data was collected from 1993-2012. Table 3.48 lists exposure and loss amounts.

Table 3.48 **Vulnerability Analysis for Severe Weather**

Jurisdiction	Housing Units/sq. mi.	Total Building Exposure	Crop Exposure	Total Incidents	Total \$ Property Loss	Total Crop Insurance Paid
DeKalb County	10.3	\$891,756,000	\$26,390,000	37	\$14,969,541	\$291,749

(Source: 2013 State Plan)

DeKalb County received a vulnerability rating of high and a social vulnerability index of five, the highest score.

Potential Losses to Existing Development

According to the NCEI, during the 21-year period from 1997 to 2017, a total of \$350,000 in property losses equates to \$16,667 in average annual losses in DeKalb County.

Previous and Future Development

Future commercial development can expect functional downtime and decreased revenues during periods of severe winter weather. Road construction in the county will increase the need for snow removal and salt to keep transportation lifelines open during periods of severe winter weather.

Hazard Summary by Jurisdiction

Severe winter weather can cause power outages and put structures at risk to fires when individuals in homes resort to using portable fuel heaters. The risk of extreme cold deaths and frostbite varies among segments of the populations. People over 65 and those living below the poverty level have an

increased vulnerability to severe winter weather. Table 3.49 includes information on populations over 65 and the percent living below the poverty level by jurisdiction.

Table 3.49 Population Living Below the Poverty Level and Over 65

Jurisdiction	Percent of Families Below the Poverty Level	Percentage of Population Over 65
DeKalb County	14.2%	15.7%
Village of Amity	59.1%	54.5%
City of Clarksdale	8.5%	21.3%
City of Maysville	15.3%	25%
City of Osborn	4.5%	19.3%
City of Stewartsville	4.3%	13.3%
City of Union Star	16.8%	18.4%
Village of Weatherby	25%	15.2%

(Source: American Community Survey, 2011-2015)

Amity and Weatherby are the jurisdictions with the highest percent of families living in poverty. Amity and Maysville have the highest percentage of population over 65.

Problem Statement

Heavy snow can bring a community to a standstill by inhibiting transportation (in whiteout conditions), weighing down utility lines, and by causing structural collapse in buildings not designed to withstand the weight of the snow. Repair and snow removal costs can be significant. Ice buildup can collapse utility lines and communication towers, as well as make transportation difficult and hazardous. People over 65 and those living in poverty and the homeless have an increased risk of hypothermia and frostbite due to extreme cold and wind chill.

Public works departments and road districts can develop snow removal plans and maintain adequate snow removal equipment and salt to quickly open roads after periods of heavy snow and freezing rain. To minimize power outages throughout the county, jurisdictions can work with local electric co-ops and utility companies to develop vegetation management programs in rights of way. This vegetation management plan can minimize damage from tree limbs which may fall when laden with ice from ice storms.

4 MITIGATION STRATEGY

4	MITIGATION STRATEGY	4.1
4.1	Goals.....	4.1
4.2	Identification and Analysis of Mitigation Actions.....	4.2
4.3	Implementation of Mitigation Actions	4.11

44 CFR Requirement §201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section presents the mitigation strategy updated by the Mitigation Planning Committee (MPC) based on the [updated] risk assessment. The mitigation strategy was developed through a collaborative group process. The process included review of [updated] general goal statements to guide the jurisdictions in lessening disaster impacts as well as specific mitigation actions to directly reduce vulnerability to hazards and losses. The following definitions are taken from FEMA’s *Local Hazard Mitigation Review Guide (October 1, 2012)*.

- **Mitigation Goals** are general guidelines that explain what you want to achieve. Goals are long-term policy statements and global visions that support the mitigation strategy. The goals address the risk of hazards identified in the plan.
- **Mitigation Actions** are specific actions, projects, activities, or processes taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. Implementing mitigation actions helps achieve the plan’s mission and goals.

4.1 Goals

44 CFR Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

This planning effort is an update to DeKalb County’s existing hazard mitigation plan approved by FEMA in 2013. Therefore, the goals from the 2013 DeKalb County Hazard Mitigation Plan were reviewed to see if they were still valid, feasible, practical, and applicable to the defined hazard impacts. The MPC conducted a discussion session during their second meeting to review and update the plan goals. To ensure that the goals developed for this update were comprehensive and supported State goals, the 2013 State Hazard Mitigation Plan goals were reviewed. The MPC also reviewed the goals from surrounding county plans. The 2018 plan’s goals and objectives are:

Goal 1: Protect the lives, property and livelihoods of all citizens.

1. Objective: Provide sufficient warning of impending disasters.
2. Objective: Increase knowledge of natural hazards among citizens.
3. Objective: Protect residential and commercial structures in the present and future.

Goal 2: Reduce the impact of disasters.

1. Objective: Manage growth in designated areas through sustainable policies, principles and practices.

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

1. Objective: Increase disaster mitigation management capability in local governments.

2. Objective: Strengthen critical infrastructure.

4.2 Identification and Analysis of Mitigation Actions

44 CFR Requirement §201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

During the second MPC meeting changes in risk since adoption of the previously approved plan were discussed. The second meeting concluded with the distribution of a list of possible mitigation actions to prompt discussions within and among the jurisdictions. Actions from the previous plan included completed actions, on-going actions, and actions upon which progress had not been made. The MPC Each jurisdiction was instructed to provide information regarding the “Action Status” using the following status choices:

- Completed, with a description of the process (if provided)
- Continue, with an update of the progress or a reason for the lack of progress (if provided)
- Delete, with a description for the reason for deletion (if provided)

Former actions that have been completed were deleted since the jurisdiction has that capability. New actions were created that reflected the changes in development and priorities, such as actions for acquiring additional outdoor warning sirens for areas with recent growth. Plan actions have been revised to reflect progress. For the third meeting, individual jurisdictions, including school and special districts, discussed mitigation strategy. They were also provided a link to the FEMA’s publication, *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013)*. This document was developed by FEMA as a resource for identification of a range of potential mitigation actions for reducing risk to natural hazards and disasters. The MPC reviewed:

- A list of actions proposed in the previous mitigation plan, the current State Plan, and approved plans in surrounding counties,
- Key issues from the risk assessments, including the Problem Statements concluding each hazard profile and vulnerability analysis, and
- Public input during meetings, responses to Data Collection Questionnaires, and other efforts to involve the public in the plan development process.

Table 4.1 provides a summary of the 2013 action statuses for each jurisdiction.

Table 4.1. Action Status Summary

Jurisdiction	Completed Actions			Deleted Actions			Continuing Actions		
DeKalb County	1.1.8, 3.1.5, 3.2.9	3.1.1, 3.1.6,	3.1.4, 3.2.8,	1.1.1, 1.1.4, 1.3.2, 1.4.1, 2.2.1, 3.2.2,	1.1.2, 1.1.9, 1.3.9, 2.1.7, 2.2.2, 3.2.3,	1.1.3, 1.2.1, 1.3.12, 2.1.1, 3.1.2, 3.2.10	1.2.2, 1.2.7, 1.2.10, 1.2.14, 1.3.3, 1.3.7, 1.3.11, 2.1.5, 2.2.3, 3.1.8,	1.2.5, 1.2.8, 1.2.12, 1.2.15, 1.3.5, 1.3.8, 1.3.13, 2.1.8, 3.1.3, 3.1.9,	1.2.6, 1.2.9, 1.2.13, 1.3.1, 1.3.6, 1.3.10, 2.1.4, 2.1.9, 3.1.7, 3.2.1,
Amity	1.1.6,	1.4.2		1.3.11, 2.1.7, 3.1.3	1.3.13, 3.1.9,	2.1.2, 3.2.8,	1.2.12,	1.4.3	
Clarksdale	1.4.3,	3.1.9					1.1.5, 2.2.1,	1.4.2, 3.2.8	2.1.6,
Maysville	1.2.13,	3.1.3		1.1.5, 1.3.3, 1.3.13, 2.2.1,	1.2.12, 1.3.4, 2.1.2, 3.1.3,	1.3.11, 1.3.10, 2.1.7, 3.2.8	3.1.9,	1.2.13,	1.3.3
Maysville School District	1.1.4, 1.2.4, 3.1.3		1.2.3,	1.3.11,	1.2.11		1.1.2,	3.2.4	
Osborn	1.1.6, 1.4.3,	1.4.2, 3.2.8		1.1.5, 2.1.7		2.1.3,	3.1.9		
Osborn School District	1.1.4, 1.3.3,	1.2.3, 3.1.3	1.2.4,	1.3.11,	3.2.4		1.1.2, 3.1.3		1.2.11,
Weatherby				1.4.2, 3.2.8	1.4.3,	2.1.7,	3.1.9		
Stewartsville	1.4.2, 3.2.8	1.4.3,	3.1.9,	2.2.1,	3.2.8		1.1.7,	2.1.6	
Stewartsville School District	1.1.4, 3.2.4		1.2.3,				1.2.11, 3.1.3	1.2.4,	1.3.3,
Union Star	1.4.2,	1.4.3,	3.1.9	1.1.7,	2.1.3		1.1.5,	2.1.6,	3.2.8
Union Star School District	1.1.4, 1.3.11, 3.2.4	1.2.3, 1.3.13,	1.2.4, 3.1.3,	1.2.11, 2.1.2, 3.1.9,	1.4.2, 2.1.6, 3.2.8	1.4.3, 2.2.1,	1.1.2,	1.3.3	

Table 4.2 provides a summary of the completed and deleted actions from the previous plan.

Table 4.2. Summary of Completed and Deleted Actions from the Previous Plan

Completed Actions	Completion Details (date, amount, funding source)
1.1.2 – Union Star School District – Explore use of electronic technology such as text alerts and email to alert people to an emergency.	In place for seven years.
1.1.4 – Maysville School District – Recommend NOAA weather radios in continuous operation in all facilities offering public accommodations such as schools, nursing homes, government office, etc.	Completed. Radio in continuous operation.
1.1.4 – Osborn School District – Recommend NOAA weather radios in continuous operation in all facilities offering public accommodations such as schools, nursing homes, government office, etc.	Completed. Radio in continuous operation.
1.1.4 – Stewartsville School District – Recommend NOAA weather radios in continuous operation in all facilities offering public accommodations such as schools, nursing homes, government office, etc.	Completed. Radios in place.
1.1.4 – Union Star School District – Recommend NOAA weather radios in continuous operation in all facilities offering public accommodations such as schools, nursing homes, government office, etc.	Completed.
1.1.6 – Amity – Place emergency sirens in communities and populates areas that don't have them.	Completed.
1.1.6 – Osborn – Place emergency sirens in communities and populates areas that don't have them.	Completed, in place for 10 years.
1.1.8 – DeKalb County – Train spotters in each community to provide rapid identification of severe weather.	Held storm spotter trainings.
1.2.3 – Maysville School District – Educate school children on disaster preparedness.	Curriculum and programming has been implemented and is ongoing.
1.2.3 – Osborn School District – Educate school children on disaster preparedness.	Curriculum and programming has been implemented and is ongoing.
1.2.3 – Stewartsville School District – Educate school children on disaster preparedness.	Curriculum and programming has been implemented and is ongoing.
1.2.3 – Union Star School District – Educate school children on disaster preparedness.	Completed. Revision of program including intruder drills and disasters. 8 hours of programming in 2015; 4 hours each subsequent year.
1.2.4 – Maysville School District – Encourage local fire departments and other emergency responders to participate in regular disaster drills at school.	Completed. Done with EMT and Sheriff.

1.2.4 – Osborn School District – Encourage local fire departments and other emergency responders to participate in regular disaster drills at school.	Completed. Strategy has been implemented and will be ongoing with regular participation in school emergency drills. We have implemented intruder and First Aid training with county sheriffs and first responders.
1.2.4 – Union Star School District – Encourage local fire departments and other emergency responders to participate in regular disaster drills at school.	Completed.
1.2.13 – Mayville - Encourage citizens to take water-saving measures, such as using low-flow showerheads and toilets. Include alerts about boil order and advisories.	Do as needed.
1.4.2 – Amity – Anchor manufactured homes and exterior attachments such as carports and decks.	Completed.
1.4.2 – Osborn – Anchor manufactured homes and exterior attachments such as carports and decks.	Completed. Ordinance #2012-02 & 2016-10 regulates this.
1.4.2 – Stewartville – Anchor manufactured homes and exterior attachments such as carports and decks.	City code in place.
1.4.2 – Union Star – Anchor manufactured homes and exterior attachments such as carports and decks.	Anchoring is required by ordinance.
1.4.3 – Clarksdale – Citizens that live in areas of timber or tall grass should be encouraged to remove vegetation, yard debris and other combustible materials near structures.	Ordinance 65 of the City of Clarksdale passed.
1.4.3 – Osborn – Citizens that live in areas of timber or tall grass should be encouraged to remove vegetation, yard debris and other combustible materials near structures.	Ordinance #2010-14 implemented 11/10/2010.
1.4.3 – Stewartville – Citizens that live in areas of timber or tall grass should be encouraged to remove vegetation, yard debris and other combustible materials near structures.	Ordinance in place.
1.4.3 – Union Star – Citizens that live in areas of timber or tall grass should be encouraged to remove vegetation, yard debris and other combustible materials near structures.	Sent multiple letters to residents requiring tall grass and weeds to be cut.
1.3.3 –Osborn School District – Assess public facilities for the location of suitable safe areas in case of tornado or severe storm. If available, these areas should be clearly marked.	Completed. Our building is static; safe areas remain unchanged.
1.3.11 – Union Star School District –Inventory facilities with generators and/or emergency power that be used as shelters in the event of natural disasters.	Completed. Also have source for back-up heating source.
1.3.13 – Union Star School District – Form and train community emergency response teams.	Completed.
3.1.1 – DeKalb County - Safeguard the most important government records in case of power failure.	Implemented a generator.

3.1.3 – Maysville School District – Work with state/local government to raise awareness of earthquake mitigation. activities in home, school and businesses.	Currently conduct earthquake drills as required.
3.1.3 – Osborn School District – Work with state/local government to raise awareness of earthquake mitigation. activities in home, school and businesses.	Currently conduct earthquake drills as required.
3.1.3 – Union Star School District – Work with state/local government to raise awareness of earthquake mitigation. activities in home, school and businesses.	Completed. Also participated in nation earthquake drill.
3.1.4. – DeKalb County - Continue involvement in regional wholesale water commission.	Current capacity.
3.1.5 – DeKalb County - Encourage property owners, businesses and residents to participate in mitigation policy formation.	Completed.
3.1.6 – DeKalb County - Inform all county and municipal employees and elected officials that a disaster mitigation plan has been developed.	Completed.
3.1.9 – Clarksdale – Have debris management plan for the county and cities to take care of debris after storms.	Currently have a yard waste site for tree limbs. Property owner responsible for building debris.
3.1.9 – Maysville – Have debris management plan for the county and cities to take care of debris after storms.	Have a regular brush area open 1X/month.
3.1.9 – Stewartsville – Have debris management plan for the county and cities to take care of debris after storms.	City has a plan in place for post-storm debris.
3.1.9 – Union Star – Have debris management plan for the county and cities to take care of debris after storms.	City has a designated area. Working in coordination with Fire Department..
3.2.4 – Stewartsville School District – Because schools accommodate vulnerable populations and often serve as emergency shelters, it is vital the buildings function after a seismic event.	Completed. Inventories are reviewed annually. Facilities planning is an on-going process and we will continue to address needs as they arise.
3.2.4 – Union Star School District – Because schools accommodate vulnerable populations and often serve as emergency shelters, it is vital the buildings function after a seismic event.	Plan in place.
3.2.8 – Osborn – Make sure each town has at least one generator and one facility equipped to run off alternate power.	Completed 8/2017.
3.2.8 – DeKalb County – Make sure each town has at least one generator and one facility equipped to run off alternate.	The DeKalb County courthouse in Maysville has a generator.
3.2.8 – Stewartsville – Make sure each town has at least one generator and one facility equipped to run off alternate. power.	City has a generator and city hall is capable of alternate power.
3.2.9 – DeKalb County - Establish a permanent, more functional emergency operations center.	Sheriff's office operates as the Emergency Operating Center.

Deleted Actions	Reason for Deletion
1.1.1 – DeKalb County – Create reverse 911 to send out mass telephone announcements in case of emergency.	Implemented WENS.
1.1.2 – DeKalb County – Explore electronic technology, such as text alerts and emails to alert people to an emergency.	Implemented WENS.
1.1.3 – DeKalb County – Encourage residents to purchase NOAA weather radios so everyone has access to info. In times of severe weather.	WENS program installed.
1.1.4 – DeKalb County - Recommend NOAA weather radio in continuous operation in all facilities offering public accommodations, such as schools, nursing homes, government offices, etc.	Not measurable.
1.1.7 – Union Star - Replace outdated warning sirens to have backup power and be automatically activated.	No funding.
1.1.9 – DeKalb County – Make sure cell phone numbers are included in emergency alert systems such as reverse 911 or text alerts.	Not practical to list all cell phone numbers.
1.2.1 – DeKalb County – Continue 2-1-1- telephone system to provide non-emergency information to assist citizens in need.	Not practical.
1.2.11– Maysville School District -- Include safety strategies for winter driving in driver safety strategies	Drivers' education is not taught at school.
1.2.11– Union Star School District -- Include safety strategies for winter driving in driver safety strategies.	Training on texting, cell phone, drinking, drugs and driving has been implemented.
1.2.12 – Maysville – Educate citizens about safe use of generators and other power/heat sources.	No funding.
1.3.2 – DeKalb County - Work with private organizations to encourage the construction of community tornado shelters in office buildings, factories, apartment complexes, sports arenas, churches and other facilities where large numbers of people live or congregate.	Combined with 1.3.1.
1.3.10 – Maysville – Designate certain air conditioned facilities as heat emergency centers.	Not practical.
1.3.11 – Maysville School District – Inventory facilities with generators for emergency power to be used a shelter in case of natural disaster.	Not the school's responsibility.
1.3.11 – Amity – Inventory facilities with generators for emergency power to be used a shelter in case of natural disaster.	No shelter facility in this community.

1.3.11 – Maysville – Inventory facilities with generators for emergency power to be used a shelter in case of natural disaster.	Under staffed.
1.3.11 – Osborn School District –Inventory facilities with generators and/or emergency power that be used as shelters in the event of natural disasters.	Completed. Also have source for back-up heating source.
1.3.12 – DeKalb County - Review emergency access routes and evacuation routes and mitigate any problem areas.	Not measurable.
1.3.13 – Amity – Form and train community emergency response teams.	Not applicable; no community response team.
1.3.13 – Maysville – Form and train community emergency response teams.	Requires outside expertise; we are not certified to conduct such training.
1.3.3 – Maysville –Assess public facilities for the location of suitable safe areas in case of tornado or severe storms.	Understaffed.
1.3.4 – Maysville –Evaluate the availability of safe areas for public housing.	Not practical.
1.3.9 – DeKalb County - Continue to participate in a program to provide fans and air conditioners to people in the community who do not have them and are at risk during a heat wave.	Program needs to be coordinated.
1.4.2 – Union Star School District – Anchor manufactured homes and exterior attachments such as carports and decks.	Not applicable.
1.4.2 – Weatherby – Anchor manufactured homes and exterior attachments such as carports and decks.	Not applicable.
1.4.3 – Union Star School District – Citizens that live in areas of timber or tall grass should be encouraged to remove vegetation, yard debris and other combustible materials near structures.	Not applicable.
1.4.3 – Weatherby – Citizens that live in areas of timber or tall grass should be encouraged to remove vegetation, yard debris and other combustible materials near structures.	Not applicable.
1.1.5 – Osborn – Develop an ongoing campaign with seasonal or monthly disaster themes and promote with a variety of advertising.	No resources.
2.1.1 – DeKalb County - Trim trees near power lines to reduce the potential for limbs to break lines.	Not responsible for action.
2.1.2 – Amity – Pass ordinance to prioritize or control water use, particularly for emergency use such as firefighting.	Not applicable.
2.1.2 – Maysville – Pass ordinance to prioritize or control water use, particularly for emergency use such as firefighting.	We have not been forced to do this yet.

2.1.2 – Union Star School District – Pass ordinance to prioritize or control water use, particularly for emergency use such as firefighting.	Not applicable.
2.1.3 – Osborn – Designs for water delivery system should include considerations of drought events.	Not applicable.
2.1.3 – Union Star – Designs for water delivery system should include considerations of drought events.	Not applicable.
2.1.6 – Union Star School District – Communities that participate in the National Flood Insurance Program will continue doing so.	Not applicable.
2.1.7 – Amity – Communities that do not participate in the National Flood Insurance Program will consider doing so.	Not applicable.
2.1.7 – DeKalb County – Communities that do not participate in the National Flood Insurance Program will consider doing so.	Not applicable.
2.1.7 – Maysville – Communities that do not participate in the National Flood Insurance Program will consider doing so.	We aren't in a flood plan area.
2.1.7 – Osborn – Communities that do not participate in the National Flood Insurance Program will consider doing so.	Not relevant.
2.1.7 – Weatherby – Communities that do not participate in the National Flood Insurance Program will consider doing so.	Not relevant.
2.2.1 –DeKalb County – Require the building of wind resistant shelter with the capacity to handle the population of any new mobile home park or park undergoing renovations.	Not applicable.
2.2.1 – Maysville – Require the building of wind resistant shelter with the capacity to handle the population of any new mobile home park or park undergoing renovations.	Not applicable. No mobile home parks.
2.2.1 – Stewartsville – Require the building of wind resistant shelter with the capacity to handle the population of any new mobile home park or park undergoing renovations.	No mobile home parks.
2.2.1 – Union Star School District – Require the building of wind resistant shelter with the capacity to handle the population of any new mobile home park or park undergoing renovations.	No applicable.
2.2.2 – DeKalb County - Offer builders tax incentives to encourage the construction of safe rooms in homes and commercial buildings.	Not practical.
3.1.2 – DeKalb County - Develop snow day policies for non-essential government personnel.	Combined with 1.3.6.

3.1.3 – Maysville – Work with state/local government to raise awareness of earthquake mitigation activities in home, school and businesses.	No resources.
3.1.9 – Amity – Have debris management plan for the county and cities to take care of debris after storms.	Not applicable. Community volunteers address debris disposal when necessary.
3.1.9 – Union Star School District – Have debris management plan for the county and cities to take care of debris after storms.	Not applicable
3.1.9 – Weatherby – Have debris management plan for the county and cities to take care of debris after storms.	Weatherby utilizes the County plan in place.
3.2.2 – DeKalb County - Use snow fences or trees and vegetation to limit blowing and drifting snow over critical roadways.	Not practical.
3.2.3 – DeKalb County - Encourage electric and telecommunication utilities to anchor and strengthen above ground transmission lines and poles.	Not measurable.
3.2.4 – Osborn School District – Because schools accommodate vulnerable populations and often serve as emergency shelters, it is vital that the building functions after a seismic event. The structures and surrounding area should be inventories and potential hazards incorporated in the capital improvement plans.	No improvements have been made to the building that would enhance this capability.
3.2.8 – Amity – Make sure each town has at least one generator and one facility equipped to run off alternate power.	Not applicable. No community shelter.
3.2.8 – Maysville – Make sure each town has at least one generator and one facility equipped to run off alternate power.	No funding. The county courthouse has a generator.
3.2.8 – Stewartsville – Make sure each town has at least one generator and one facility equipped to run off alternate power.	Not relevant.
3.2.8 – Union Star School District – Make sure each town has at least one generator and one facility equipped to run off alternate power.	Not applicable.
3.2.8 – Weatherby – Make sure each town has at least one generator and one facility equipped to run off alternate power.	Not relevant.
3.2.10 – DeKalb County - Make sure cell phone and wireless internet/data towers have back up power.	Not applicable.

(Source: Community Evaluations)

4.3 Implementation of Mitigation Actions

44 CFR Requirement §201.6(c)(3)(ii): The mitigation strategy shall include an action strategy describing how the actions identified in paragraph (c)(2)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefits review of the proposed projects and their associated costs.

Jurisdictional MPC members were encouraged to meet with others in their community to finalize the actions to be submitted for the updated mitigation strategy. Throughout the MPC consideration and discussion, emphasis was placed on the importance of a benefit-cost analysis in determining project priority. The Disaster Mitigation Act requires benefit-cost review as the primary method by which mitigation projects should be prioritized. The MPC decided to pursue implementation according to when and where damage occurs, available funding, political will, jurisdictional priority, and priorities identified in the Missouri State Hazard Mitigation Plan. The benefit/cost review at the planning stage primarily consisted of a qualitative analysis, and was not the detailed process required grant funding application. For each action, the plan sets forth a narrative describing the types of benefits that could be realized from action implementation. The cost was estimated as closely as possible, with further refinement to be supplied as project development occurs.

FEMA's STAPLEE methodology was used to assess the costs and benefits, overall feasibility of mitigation actions, and other issues impacting project. During the prioritization process, the MPC used worksheets to assign scores. The worksheets posed questions based on the STAPLEE elements as well as the potential mitigation effectiveness of each action. Scores were based on the responses to the questions as follows:

Definitely yes = 3 points
Maybe yes = 2 points
Probably no = 1
Definitely no = 0

The following questions were asked for each proposed action.

S: Is the action socially acceptable?

T: Is the action technically feasible and potentially successful?

A: Does the jurisdiction have the administrative capability to successfully implement this action?

P: Is the action politically acceptable?

L: Does the jurisdiction have the legal authority to implement the action?

E: Is the action economically beneficial?

E: Will the project have an environmental impact that is either beneficial or neutral? (score "3" if positive and "2" if neutral)

Will the implemented action result in lives saved?

Will the implanted action result in a reduction of disaster damage?

The final scores are listed below in the analysis of each action. Not all actions have a STAPEE form. Those that were submitted are attached to this plan as Appendix C. The STAPLEE final score for each action, absent other considerations, such as a localized need for a project, determined the priority. Low priority action items were those that had a total score of between 0 and 24. Moderate priority actions were those scoring between 25 and 29. High priority actions scored 30 or above. A blank STAPLEE worksheet is shown in Figure 4.1

Figure 4.1. Blank STAPLEE Worksheet

XXXXXX COUNTY
MULTI-JURISDICTIONAL
LOCAL HAZARD MITIGATION PLAN

Action Title:		Jurisdiction:	
Action ID:			
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score	
S: Is it Socially acceptable?			
T: Is it Technically feasible and potentially successful?			
A: Does the jurisdiction have the administrative capacity to execute this action?			
P: Is it Politically acceptable?			
L: Is there Legal authority to implement?			
E: Is it Economically beneficial?			
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)			
Will historic structures be saved or protected?			
Could it be implemented quickly?			
STAPLEE Score			

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): _____

Priority Level: ☐ High (30+ points) ☐ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #): _____

The goals and actions the MPC created are consistent with the hazards identified in the plan. Each jurisdiction focused on the hazards identified with the highest probability and historic damage in their area but a common concern throughout the distract was preparing for severe thunderstorms and tornados. Final mitigation actions took the results of STAPLEE worksheets into consideration. Actions are organized by the goal statement that they fall under and worksheets for some of the continuing and new mitigation actions are located in Appendix C. Not all continuing actions have worksheets. The 2013 actions that have been continued to the 2018 plan have different actions numbers. The 2013 action number is identified on the action sheet by the new

number. New actions are identified as such.

Actions are divided into two categories, mitigation actions (listed first) and response actions. Mitigation actions

are specific actions, projects, activities, or processes taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. These include potentially FEMA fundable activities, such as acquiring an outdoor warning siren, participation in NFIP, and construction of a safe room. The response actions are more focused on public education and preparedness.

Goal 1: Protect the lives, property and livelihoods of all citizens.**Mitigation Action****2018 Action 1.1.1: (2013 Action 1.1.7)**

Action Worksheet	
Name of Jurisdiction:	Stewartsville
Risk / Vulnerability	
Problem being Mitigated:	Ample warning of impending severe weather
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.1.1
Name of Action or Project:	Outdoor warning siren
Action or Project Description:	Replace outdated warning sirens to have backup power and be automatically activated.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Warned public
Plan for Implementation	
Responsible Organization/Department:	Mayor
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing
Report of Progress	Notice of Intent for upgrade is in process

Goal 1: Protect the lives, property and livelihoods of all citizens.

Mitigation Action

2018 Action 1.1.2: (2013 Action:1.1.6)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of warning
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.1.2
Name of Action or Project:	Outdoor warning siren
Action or Project Description:	Place outdoor warning sirens in populated areas that do not have them.
Applicable Goal Statement:	Protect the lives, property and livelihood of all citizens
Estimated Cost:	Unsure
Benefits:	Warning of impending disaster
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing, in progress.
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Mitigation Action

2018 Action 1.1.3: (New Action)

Action Worksheet	
Name of Jurisdiction:	Maysville
Risk / Vulnerability	
Problem being Mitigated:	Lack of warning
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.1.3
Name of Action or Project:	Outdoor warning siren
Action or Project Description:	Place outdoor warning sirens in area not covered by the community's other siren.
Applicable Goal Statement:	Protect the lives, property and livelihood of all citizens
Estimated Cost:	Unsure
Benefits:	Warning of impending disaster
Plan for Implementation	
Responsible Organization/Department:	City Council
Action/Project Priority:	Medium
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	New Action
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Mitigation Action

2018 Action 1.1.4: (New Action)

Action Worksheet	
Name of Jurisdiction:	Osborn
Risk / Vulnerability	
Problem being Mitigated:	Lack of warning
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.1.4
Name of Action or Project:	Outdoor warning siren
Action or Project Description:	Acquire outdoor warning siren
Applicable Goal Statement:	Protect the lives, property and livelihood of all citizens
Estimated Cost:	Unsure
Benefits:	Warning of impending disaster
Plan for Implementation	
Responsible Organization/Department:	City Council
Action/Project Priority:	Medium
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	New Action
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Mitigation Action

2018 Action 1.1.5: (New Action)

Action Worksheet	
Name of Jurisdiction:	Weatherby
Risk / Vulnerability	
Problem being Mitigated:	Lack of warning
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.1.5
Name of Action or Project:	Outdoor warning siren
Action or Project Description:	Acquire outdoor warning siren
Applicable Goal Statement:	Protect the lives, property and livelihood of all citizens
Estimated Cost:	Unsure
Benefits:	Warning of impending disaster
Plan for Implementation	
Responsible Organization/Department:	City Council
Action/Project Priority:	Medium
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	New Action
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Mitigation Action

2018 Action 1.2.1: (2013 Action 1.2.12)

Action Worksheet	
Name of Jurisdiction:	Amity
Risk / Vulnerability	
Problem being Mitigated:	No source of heat or air conditioning during a power outage
Hazard(s) Addressed:	Severe Winter Weather, Thunderstorms, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.1
Name of Action or Project:	Generator
Action or Project Description:	Acquire a generator through a grant for the community's only critical facility (church).
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens.
Estimated Cost:	Unsure
Benefits:	Back up source for warming and cooling station for local residents.
Plan for Implementation	
Responsible Organization/Department:	City Council
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, in progress
Report of Progress	Further assessment is needed to carry out this action

Goal 1: Protect the lives, property and livelihoods of all citizens.

Mitigation Action

2018 Action 1.2.2: (2013 Action 1.2.12)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	No source of heat or air conditioning
Hazard(s) Addressed:	Severe Winter Weather, Thunderstorms, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.2
Name of Action or Project:	Generator
Action or Project Description:	Acquire a generator for a second critical facility.
Applicable Goal Statement:	Protect citizen's lives. Protect residential and commercial structures in the present and future.
Estimated Cost:	Unsure
Benefits:	Back up source for warming and cooling station for local residents.
Plan for Implementation	
Responsible Organization/Department:	Emergency Management
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing, in progress
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Mitigation Action

2018 Action 1.3.1: (2013 Action 1.3.5)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of shelter
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.3.1
Name of Action or Project:	Safe room at Pony Express RV Park
Action or Project Description:	Build a tornado safe room at Pony Express RV Park near Maysville.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Protected citizens
Plan for Implementation	
Responsible Organization/Department:	County Commission
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 2: Reduce the impact of disasters

Mitigation Action

2018 Action 2.1.1: (2013 Action 2.1.4)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Flooding
Hazard(s) Addressed:	Flood, Thunderstorm
Action or Project	
Action/Project Number:	2.1.1
Name of Action or Project:	Storm water management
Action or Project Description:	Construction of detention basins, small lakes or riparian corridors to channel and catch storm water.
Applicable Goal Statement:	Reduce the impact of disasters
Estimated Cost:	Unsure
Benefits:	Decrease in flooding
Plan for Implementation	
Responsible Organization/Department:	County Commissioners
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, Grants
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain Ordinance
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 2: Reduce the impact of disasters

Mitigation Action

2018 Action 2.1.2: (2013 Action 2.2.1)

Action Worksheet	
Name of Jurisdiction:	Clarksdale
Risk / Vulnerability	
Problem being Mitigated:	Unmanaged development
Hazard(s) Addressed:	Thunderstorm, Tornadoes
Action or Project	
Action/Project Number:	2.1.2
Name of Action or Project:	Safe room
Action or Project Description:	Require the building of a safe room with the capacity to handle the population of any new mobile home park or park undergoing renovation or expansion.
Applicable Goal Statement:	Reduce the impact and/or occurrence of natural disasters in the county.
Estimated Cost:	Unsure
Benefits:	Protected public
Plan for Implementation	
Responsible Organization/Department:	Mayor
Action/Project Priority:	Low
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, private, grants
Local Planning Mechanisms to be Used in Implementation, if any:	Code of Ordinances
Progress Report	
Action Status	Continuing
Report of Progress	We are in the process of writing building codes for Clarksdale and the aforementioned action will be included.

Goal 2: Reduce the Impact of Disasters

Mitigation Action

2018 Action 2.1.3: (2013 Action 2.1.6)

Action Worksheet	
Name of Jurisdiction:	Clarksdale
Risk / Vulnerability	
Problem being Mitigated:	Flooding
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	2.1.3
Name of Action or Project:	NFIP Participation
Action or Project Description:	Adoption and enforce floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs)
Applicable Goal Statement:	Reduce the impact of disasters
Estimated Cost:	Varies
Benefits:	Reduce losses from flooding
Plan for Implementation	
Responsible Organization/Department:	City Council
Action/Project Priority:	High
Timeline for Completion:	5 year
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain ordinance
Progress Report	
Action Status	Continuing, in progress
Report of Progress	

Goal 2: Reduce the Impact of Disasters

Mitigation Action

2018 Action 2.1.4: (2013 Action 2.1.6)

Action Worksheet	
Name of Jurisdiction:	Stewartsville
Risk / Vulnerability	
Problem being Mitigated:	Flooding
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	2.1.4
Name of Action or Project:	NFIP Participation
Action or Project Description:	Adoption and enforce floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs)
Applicable Goal Statement:	Reduce the impact of disasters
Estimated Cost:	Varies
Benefits:	Reduce losses from flooding
Plan for Implementation	
Responsible Organization/Department:	City Council
Action/Project Priority:	High
Timeline for Completion:	5 year
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain ordinance
Progress Report	
Action Status	Continuing, in progress
Report of Progress	

Goal 2: Reduce the Impact of Disasters

Mitigation Action

2018 Action 2.1.5: (2013 Action 2.1.6)

Action Worksheet	
Name of Jurisdiction:	Union Star
Risk / Vulnerability	
Problem being Mitigated:	Flooding
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	2.1.5
Name of Action or Project:	NFIP Participation
Action or Project Description:	Adoption and enforce floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs)
Applicable Goal Statement:	Reduce the impact of disasters
Estimated Cost:	Varies
Benefits:	Reduce losses from flooding
Plan for Implementation	
Responsible Organization/Department:	City Council
Action/Project Priority:	High
Timeline for Completion:	5 year
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain ordinance
Progress Report	
Action Status	Continuing, in progress
Report of Progress	

Goal 2: Reduce the impact of disasters

Mitigation Action

2018 Action 2.1.6: (2013 Action 3.2.4)

Action Worksheet	
Name of Jurisdiction:	Maysville School District
Risk / Vulnerability	
Problem being Mitigated:	Unprotected public
Hazard(s) Addressed:	Thunderstorm, Tornadoes
Action or Project	
Action/Project Number:	2.1.6
Name of Action or Project:	Safe room
Action or Project Description:	Require the building of a safe room with the capacity to handle the population of any significant renovation or expansion of school facilities
Applicable Goal Statement:	Reduce the impact of natural disaster in the county.
Estimated Cost:	Unsure
Benefits:	Protected public
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	High
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	School emergency plan
Progress Report	
Action Status	Continued - Modified
Report of Progress	

Goal 2: Reduce the impact of disasters

Mitigation Action

2018 Action 2.1.7: (New Action)

Action Worksheet	
Name of Jurisdiction:	Osborn School District
Risk / Vulnerability	
Problem being Mitigated:	Unprotected public
Hazard(s) Addressed:	Thunderstorm, Tornadoes
Action or Project	
Action/Project Number:	2.1.7
Name of Action or Project:	Safe room
Action or Project Description:	Require the building of a safe room with the capacity to handle the population of any significant renovation or expansion of school facilities
Applicable Goal Statement:	Reduce the impact of natural disaster in the county.
Estimated Cost:	Unsure
Benefits:	Protected public
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	High
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	School emergency plan
Progress Report	
Action Status	New Action
Report of Progress	

Goal 2: Reduce the impact of disasters

Mitigation Action

2018 Action 2.1.8: (New Action)

Action Worksheet	
Name of Jurisdiction:	Stewartsville School District
Risk / Vulnerability	
Problem being Mitigated:	Unprotected public
Hazard(s) Addressed:	Thunderstorm, Tornadoes
Action or Project	
Action/Project Number:	2.1.8
Name of Action or Project:	Safe room
Action or Project Description:	Require the building of a safe room with the capacity to handle the population of any significant renovation or expansion of school facilities
Applicable Goal Statement:	Reduce the impact of natural disaster in the county.
Estimated Cost:	Unsure
Benefits:	Protected public
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	High
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	School emergency plan
Progress Report	
Action Status	New Action
Report of Progress	

Goal 2: Reduce the impact of disasters

Mitigation Action

2018 Action 2.1.9: (New Action)

Action Worksheet	
Name of Jurisdiction:	Union Star School District
Risk / Vulnerability	
Problem being Mitigated:	Unprotected public
Hazard(s) Addressed:	Thunderstorm, Tornadoes
Action or Project	
Action/Project Number:	2.1.9
Name of Action or Project:	Safe room
Action or Project Description:	Require the building of a safe room with the capacity to handle the population of any significant renovation or expansion of school facilities
Applicable Goal Statement:	Reduce the impact of natural disaster in the county.
Estimated Cost:	Unsure
Benefits:	Protected public
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	High
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	School emergency plan
Progress Report	
Action Status	New Action
Report of Progress	

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Mitigation Action

2018 Action 3.2.1: (2013 Action 3.2.8)

Action Worksheet	
Name of Jurisdiction:	Clarksdale
Risk / Vulnerability	
Problem being Mitigated:	Lack of electricity
Hazard(s) Addressed:	Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	3.2.1
Name of Action or Project:	Generator
Action or Project Description:	Acquire a generator so at least one critical facility is equipped to run off alternate power.
Applicable Goal Statement:	Ensure continued operation of government and emergency functions in a disaster
Estimated Cost:	Unsure
Benefits:	Source of electricity during a disaster
Plan for Implementation	
Responsible Organization/Department:	Mayor
Action/Project Priority:	High
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, in progress
Report of Progress	

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Mitigation Action

2018 Action 3.2.2: (2013 Action 3.2.8)

Action Worksheet	
Name of Jurisdiction:	Union Star
Risk / Vulnerability	
Problem being Mitigated:	Lack of electricity
Hazard(s) Addressed:	Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	3.2.2
Name of Action or Project:	Generator
Action or Project Description:	Acquire a generator/s to power a critical facility and sewer lift stations.
Applicable Goal Statement:	Ensure continued operation of government and emergency functions in a disaster
Estimated Cost:	Unsure
Benefits:	Source of electricity during a disaster
Plan for Implementation	
Responsible Organization/Department:	Mayor
Action/Project Priority:	28, Medium
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Modified - Continuing, in progress
Report of Progress	Modified to look into acquiring a larger-capacity generator or adding generators to run sewer lift stations.

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.1.a (2013 Action 1.1.2)**

Action Worksheet	
Name of Jurisdiction:	Osborn School District
Risk / Vulnerability	
Problem being Mitigated:	Warnings to community on impending hazardous weather or other emergencies
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.1.a
Name of Action or Project:	Broadcasting alerts
Action or Project Description:	Use electronic media and radios to communicate alerts and warnings. Current system uses phone messages; upgrade system to include cell phones and utilize texting technology. Purchase radios for busses.
Applicable Goal Statement:	Protect the lives, property and livelihood of all citizens
Estimated Cost:	Unsure
Benefits:	Increase warning and reaction time for severe weather and emergencies
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing, in progress
Report of Progress	Ongoing as new technology allows

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.1.b (2013 Action 1.1.2)**

Action Worksheet	
Name of Jurisdiction:	Union Star School District
Risk / Vulnerability	
Problem being Mitigated:	Warnings to community on impending hazardous weather or other emergencies
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.1.b
Name of Action or Project:	Broadcasting alerts
Action or Project Description:	Use electronic media and radios to communicate alerts and warnings. Current system uses phone messages; upgrade system to include cell phones and utilize texting technology. Purchase radios for busses.
Applicable Goal Statement:	Protect the lives, property and livelihood of all citizens
Estimated Cost:	Unsure
Benefits:	Increase warning and reaction time for severe weather and emergencies.
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	High
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing, in progress
Report of Progress	Updating system to add texting capabilities

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.1.c:** (2013 Action 1.1.5)

Action Worksheet	
Name of Jurisdiction:	Clarksdale
Risk / Vulnerability	
Problem being Mitigated:	Ample warning of impending severe weather
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.1.c
Name of Action or Project:	Awareness campaign
Action or Project Description:	Develop an ongoing campaign with seasonal or monthly disaster themes and promote with a variety of advertising.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Informed public
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing
Report of Progress	Working to incorporate disaster information/themes in the monthly newsletter

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.1.d: (2013 Action 1.1.5)**

Action Worksheet	
Name of Jurisdiction:	Union Star
Risk / Vulnerability	
Problem being Mitigated:	Public not aware of disaster protocol, safety measures.
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.1.d
Name of Action or Project:	Awareness campaign
Action or Project Description:	Develop an ongoing campaign with seasonal or monthly disaster themes and promote with a variety of advertising.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Informed public
Plan for Implementation	
Responsible Organization/Department:	City Clerk
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing
Report of Progress	Modification. Distribute "Ready in 3" literature door-to-door and educate citizens about the existence of the County Hazard Notification System.

Goal 1: Protect the lives, property and livelihoods of all citizens.

Response Action

2018 Action 1.1.e (2013 Action 1.1.2)

Action Worksheet	
Name of Jurisdiction:	Maysville School District
Risk / Vulnerability	
Problem being Mitigated:	Warnings to community on impending hazardous weather or other emergencies
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.1.e
Name of Action or Project:	Broadcasting alerts
Action or Project Description:	Use electronic media and radios to communicate alerts and warnings. Current system uses phone messages; upgrade system to include cell phones and utilize texting technology. Purchase radios for busses.
Applicable Goal Statement:	Protect the lives, property and livelihood of all citizens
Estimated Cost:	Unsure
Benefits:	Increase warning and reaction time for severe weather and emergencies
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing, in progress
Report of Progress	Ongoing as new technology allows

Goal 1: Protect the lives, property and livelihoods of all citizens.

Response Action

2018 Action 1.2.a: (2013 Action:1.2.2)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of public information about disaster preparedness
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.a
Name of Action or Project:	Public education
Action or Project Description:	Implement public education campaign on disaster preparedness.
Applicable Goal Statement:	Protect the lives, property and livelihood of all citizens
Estimated Cost:	Unsure
Benefits:	Prepared public
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, in progress
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.2.b: (2013 Action:1.2.4)**

Action Worksheet	
Name of Jurisdiction:	Stewartsville School District
Risk / Vulnerability	
Problem being Mitigated:	Lack of hazard response drills
Hazard(s) Addressed:	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.b
Name of Action or Project:	Disaster drills
Action or Project Description:	Encourage local fire departments and other emergency responders to participate in regular disaster drills at school. Purchase radios and other necessary equipment to carry out drills and inform students of an emergency.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	School children and responders prepared for a disaster
Plan for Implementation	
Responsible Organization/Department:	Superintendent, Fire Department
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	School budget, grants
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing
Report of Progress	Superintendent reached out to Fire Chief and first responders to develop a plan.

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.2.c:** (2013 Action 1.2.5)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Delay in information
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.c
Name of Action or Project:	Public service announcements
Action or Project Description:	Have public service announcement made and prepared to deliver to media during emergencies, using state resources as a guide. Include phone numbers for emergency services, Red Cross, hospitals, SEMA, etc.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	None
Benefits:	Informed public
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing, in progress
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.2.d: (2013 Action 1.2.6)**

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Difficult to access information
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.d
Name of Action or Project:	Webpage info
Action or Project Description:	Develop a web page for the Local Emergency Planning Committee and emergency services to be part of the DeKalb County web site and link to other county web sites.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase knowledge of natural disasters among citizens
Plan for Implementation	
Responsible Organization/Department:	County Clerk
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing, in progress
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.2.e:** (2013 Action 1.2.7)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.2.e
Name of Action or Project:	Tornado safe room public education campaign
Action or Project Description:	Conduct a public education campaign to inform citizens of the benefits of constructing tornado safe rooms in their home or business.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase knowledge of natural disasters among citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, in progress
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Response Action

2018 Action 1.2.f: (2013 Action 1.2.8)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Dam Failure
Action or Project	
Action/Project Number:	1.2.f
Name of Action or Project:	Dam education campaign
Action or Project Description:	Participate in SEMA public education campaign to inform dam owners and citizens living near dams about the need to properly maintain and upgrade these structures.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase knowledge of natural disasters among citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing, in progress
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.2.g: (2013 Action 1.2.9)**

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Severe winter weather
Action or Project	
Action/Project Number:	1.2.g
Name of Action or Project:	Home winterization public education campaign
Action or Project Description:	Public education campaign to inform citizens on how to winterize their homes, shut off water and all utilities in case of emergency.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase knowledge of natural disasters among citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing, in progress
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.2.h: (2013 Action 1.2.10)**

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Severe winter weather
Action or Project	
Action/Project Number:	1.2.h
Name of Action or Project:	Winter travel public education campaign
Action or Project Description:	Distribute information to travelers about winter hazards.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase knowledge of natural disasters among citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director and Sheriff's Office
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing, in progress
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.2.i: (2013 Action 1.2.11)**

Action Worksheet	
Name of Jurisdiction:	Osborn School District
Risk / Vulnerability	
Problem being Mitigated:	Unsafe roadways
Hazard(s) Addressed:	Severe winter weather
Action or Project	
Action/Project Number:	1.2.i
Name of Action or Project:	Winter driving training
Action or Project Description:	Include safety strategies for winter driving in driver safety training.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Better prepared drivers
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, in progress.
Report of Progress	October 4, 2017 held a safe driving workshop in regards to texting and driving under the influence. Adding winter safety to the workshop in the future.

Goal 1: Protect the lives, property and livelihoods of all citizens.

Response Action

2018 Action 1.2.j: (2013 Action 1.2.11)

Action Worksheet	
Name of Jurisdiction:	Stewartsville School District
Risk / Vulnerability	
Problem being Mitigated:	Unsafe roadways
Hazard(s) Addressed:	Severe winter weather
Action or Project	
Action/Project Number:	1.1.j
Name of Action or Project:	Winter driving training
Action or Project Description:	Include safety strategies for winter driving in driver safety training.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Better prepared drivers
Plan for Implementation	
Responsible Organization/Department:	Sheriff, Superintendent
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing, in progress.
Report of Progress	Safe driving workshop for students held 10/4/2017 which focused on texting while driving and driving under the influence. Working to incorporate safe winter driving into the program.

Goal 1: Protect the lives, property and livelihoods of all citizens.

Response Action

2018 Action 1.2.k: (2013 Action 1.2.13)

Action Worksheet	
Name of Jurisdiction:	Maysville
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Drought, Heat Wave
Action or Project	
Action/Project Number:	1.2.k
Name of Action or Project:	Water and conservation
Action or Project Description:	Inform citizens on how to take water-saving measures, such as using low-flow showerheads and toilets. Include alerts about boil order and advisories.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase citizens knowledge of natural hazards
Plan for Implementation	
Responsible Organization/Department:	City Council
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing
Report of Progress	Working to develop outreach information for water saving/conservation. Information on boil orders is disseminated when applicable.

Goal 1: Protect the lives, property and livelihoods of all citizens.

Response Action

2018 Action 1.2.1: (2013 Action 1.2.13)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Drought, Heat Wave
Action or Project	
Action/Project Number:	1.2.1
Name of Action or Project:	Water and conservation
Action or Project Description:	Inform citizens on how to take water-saving measures, such as using low-flow showerheads and toilets. Include alerts about boil order and advisories.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase citizens knowledge of natural hazards.
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.2.m: (2013 Action 1.2.14)**

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Wildfire
Action or Project	
Action/Project Number:	1.2.m
Name of Action or Project:	Wildfire public education campaign
Action or Project Description:	Individuals will be informed about wildfires and the importance of identifying several escape routes away from their home by car and foot.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase citizens knowledge of natural hazards.
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Response Action

2018 Action 1.2.n: (2013 Action 1.2.15)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Wildfire
Action or Project	
Action/Project Number:	1.2.n
Name of Action or Project:	Fire hazard level information
Action or Project Description:	Broadcast fire hazard level and open burning information on weather radio and local media. Work in conjunction with local fire districts to provide information.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens.
Estimated Cost:	Unsure
Benefits:	Increase citizens knowledge of natural hazards.
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Response Action

2018 Action 1.2.o: (2013 Action 1.3.6)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Public traveling in hazardous conditions
Hazard(s) Addressed:	Severe Winter Weather
Action or Project	
Action/Project Number:	1.2.o
Name of Action or Project:	Snow day plans
Action or Project Description:	Work with businesses and departments of county government to implement snow-day policies to reduce the amount of people on the road during severe winter weather.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase knowledge of natural hazards among citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.2.q: (2013 Action 1.3.10)**

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of identified heat emergency shelters for vulnerable populations
Hazard(s) Addressed:	Heat Wave
Action or Project	
Action/Project Number:	1.2.q
Name of Action or Project:	Heat Emergency Shelters
Action or Project Description:	Designate certain air conditioned facilities, such as the senior center, as heat emergency shelters.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens.
Estimated Cost:	Unsure
Benefits:	Protect vulnerable citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.2.r:** (2013 Action 1.3.11)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of identified electricity during a natural disaster
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.r
Name of Action or Project:	Inventory of facilities with generators
Action or Project Description:	Inventory facilities with generators and/or emergency power that can be used as shelters in the event of natural disasters.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens.
Estimated Cost:	None
Benefits:	Protect vulnerable citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing.
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Response Action

2018 Action 1.2.s: (2013 Action 1.3.4)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of emergency access and evacuation routes
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.s
Name of Action or Project:	Emergency access and evacuation routes
Action or Project Description:	Establish emergency access routes and evacuation routes.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	None
Benefits:	Protect citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Response Action

2018 Action 1.2.t: (2013 Action 1.3.13)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of emergency response
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.t
Name of Action or Project:	CERT
Action or Project Description:	Form and train Community Emergency Response Teams (CERT).
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Protect citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.2.u: (2013 Action 1.3.8)**

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Public traveling in hazardous conditions
Hazard(s) Addressed:	Severe Winter Weather
Action or Project	
Action/Project Number:	1.2.23
Name of Action or Project:	Winter Weather Shelters
Action or Project Description:	Work with Red Cross to establish shelters for vulnerable populations and stranded motorists during severe winter weather.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens.
Estimated Cost:	Unsure
Benefits:	Protect vulnerable citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 2: Reduce the impact of disasters

Response Action

2018 Action 1.2.v: (2013 Action 2.2.3)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Property damage from ice
Hazard(s) Addressed:	Severe winter weather
Action or Project	
Action/Project Number:	1.2.v
Name of Action or Project:	Public information campaign about “ice dams”
Action or Project Description:	Information to home owners and public building maintenance about how to prevent roof and wall damage from “ice dams.”
Applicable Goal Statement:	Reduce the impact of disasters
Estimated Cost:	Unsure
Benefits:	Informed public
Plan for Implementation	
Responsible Organization/Department:	County Commissioners
Action/Project Priority:	Medium
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.3.a:** (2013 Action 1.3.3)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Safe spaces not identified
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.3.a
Name of Action or Project:	Safe area assessment
Action or Project Description:	Assess public facilities and identify suitable areas safe during times of severe storms or tornados. If available, these areas should be clearly marked.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Informed public
Plan for Implementation	
Responsible Organization/Department:	County Commission
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.3.b:** (2013 Action 1.3.3)

Action Worksheet	
Name of Jurisdiction:	Maysville
Risk / Vulnerability	
Problem being Mitigated:	Safe spaces not identified proactively.
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.3.b
Name of Action or Project:	Safe area assessment
Action or Project Description:	Assess public facilities and identify suitable areas safe during times of severe storms or tornados. If available, these areas should be clearly marked.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Informed public
Plan for Implementation	
Responsible Organization/Department:	Police chief, mayor
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.3.c:** (2013 Action 1.3.3)

Action Worksheet	
Name of Jurisdiction:	Stewartsville School District
Risk / Vulnerability	
Problem being Mitigated:	Safe spaces not identified
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.3.c
Name of Action or Project:	Safe area assessment
Action or Project Description:	Assess public facilities and identify suitable areas safe during times of severe storms or tornados. If available, these areas should be clearly marked.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Informed public
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing
Report of Progress	The school has a nice area for staging in the event of a disaster, contingent upon the facilities not suffering major damage. Have not reached out to local officials.

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.3.d: (2013 Action 1.3.3)**

Action Worksheet	
Name of Jurisdiction:	Union Star School District
Risk / Vulnerability	
Problem being Mitigated:	Safe spaces not identified
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.3.d
Name of Action or Project:	Safe area assessment
Action or Project Description:	Assess public facilities and identify suitable areas safe during times of severe storms or tornados. If available, these areas should be clearly marked.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Informed public
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing.
Report of Progress	We have identified suitable areas. Working to clearly mark these areas for easy identification.

Goal 1: Protect the lives, property and livelihoods of all citizens.

Response Action

2018 Action 1.3.e: (2013 Auction 1.3.7)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Public traveling in hazardous conditions
Hazard(s) Addressed:	Severe Winter Weather
Action or Project	
Action/Project Number:	1.3.e
Name of Action or Project:	Volunteer Groups Assist with Winterizing Homes
Action or Project Description:	Work with volunteer groups to assist at-risk residents in winterizing their homes.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens.
Estimated Cost:	Unsure
Benefits:	Protect at-risk residents
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.**Response Action****2018 Action 1.4.a:** (2013 Action 1.4.3)

Action Worksheet	
Name of Jurisdiction:	Amity
Risk / Vulnerability	
Problem being Mitigated:	Fire Hazard
Hazard(s) Addressed:	Wildfire
Action or Project	
Action/Project Number:	1.4.a
Name of Action or Project:	Tall grass management
Action or Project Description:	Residential area with tall grass and excessive vegetation should be mitigated to lessen the potential for grass fires, spread of fire from one location to another, and potential for ignition from lightning strikes.
Applicable Goal Statement:	Protect citizen's lives. Protect residential and commercial structures in the present and future.
Estimated Cost:	None
Benefits:	Reduction in the probability of fire spread, and structure damage
Plan for Implementation	
Responsible Organization/Department:	Mayor
Action/Project Priority:	29, Medium
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	City Ordinance
Progress Report	
Action Status	Continuing, in progress
Report of Progress	Outreach to property owners and citizens in the development stage

Goal 1: Protect the lives, property and livelihoods of all citizens.

Response Action

2018 Action 1.4.b: (2013 Action 1.4.2)

Action Worksheet	
Name of Jurisdiction:	Clarksdale
Risk / Vulnerability	
Problem being Mitigated:	Structure instability, potential for movement or dislocation during tornado, strong wind, or other storm
Hazard(s) Addressed:	Earthquake, Severe Winter Weather, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.4.b
Name of Action or Project:	Anchoring
Action or Project Description:	Require the anchoring of manufactured homes and exterior attachments such as carports and decks.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	None
Benefits:	Reduce potential for structure damage and hazards associated with flying debris
Plan for Implementation	
Responsible Organization/Department:	Mayor
Action/Project Priority:	High
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	City Ordinances
Progress Report	
Action Status	Continuing
Report of Progress	In the process of writing City Building Codes, and this will be incorporated.

Goal 2: Reduce the impact of disasters

Mitigation Action

2018 Action 2.1.a: (2013 Action 2.1.5)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Flooding
Hazard(s) Addressed:	Flood, Thunderstorm
Action or Project	
Action/Project Number:	2.1.a
Name of Action or Project:	Watershed and storm water practices
Action or Project Description:	Develop environmentally sound watershed and storm water practices to decrease flash flooding.
Applicable Goal Statement:	Reduce the impact of disasters
Estimated Cost:	Unsure
Benefits:	Decrease in flash flooding
Plan for Implementation	
Responsible Organization/Department:	County Commissioners
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain Ordinance
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 2: Reduce the impact of disasters

Mitigation Action

2018 Action 2.1.b: (2013 Action 2.1.8)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Loss of property
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Severe Winter Weather, Wildfire
Action or Project	
Action/Project Number:	2.1.b
Name of Action or Project:	Address development in hazard-prone areas
Action or Project Description:	Craft new plans and update comprehensive land use plans to address development in hazard-prone areas and identify strategies for decreasing vulnerability to hazards.
Applicable Goal Statement:	Reduce the impact of disasters
Estimated Cost:	Unsure
Benefits:	Decrease in loss of property
Plan for Implementation	
Responsible Organization/Department:	County Commissioners
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain ordinance
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 2: Reduce the impact of disasters

Mitigation Action

2018 Action 2.1.c: (2013 Action 2.1.9)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Flooding
Hazard(s) Addressed:	Dam failure, Flood, Thunderstorm
Action or Project	
Action/Project Number:	2.1.c
Name of Action or Project:	Flood hazard maps
Action or Project Description:	Develop an accurate countywide series of maps detailing the flood plain, flash flood danger zones and other hazard areas.
Applicable Goal Statement:	Reduce the impact of disasters
Estimated Cost:	Unsure
Benefits:	Decrease in flooding
Plan for Implementation	
Responsible Organization/Department:	County Commissioners
Action/Project Priority:	Very high
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain ordinance
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Response Action

2018 Action 3.1.a: (2013 Action 3.1.3)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of practicing hazard mitigation best practices
Hazard(s) Addressed:	Earthquake
Action or Project	
Action/Project Number:	3.1.a
Name of Action or Project:	Earthquake mitigation
Action or Project Description:	Work with state and local governments to raise awareness of earthquake mitigation activities in homes, schools and businesses.
Applicable Goal Statement:	Increase disaster mitigation management capability in local governments.
Estimated Cost:	
Benefits:	Prepared public
Plan for Implementation	
Responsible Organization/Department:	County Commissioners
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Response Action

2018 Action 3.1.b: (2013 Action 3.1.7)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of resources
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	3.1.b
Name of Action or Project:	Mutual aid agreements
Action or Project Description:	Execute and maintain mutual aid agreements with all relevant agencies.
Applicable Goal Statement:	Increase disaster mitigation management capability in local governments
Estimated Cost:	None
Benefits:	Additional resources available if needed
Plan for Implementation	
Responsible Organization/Department:	County Commissioners and Fire Districts
Action/Project Priority:	Very high
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Response Action

2018 Action 3.1.c: (2013 Action 3.1.8)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of emergency management staff
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	3.1.c
Name of Action or Project:	Emergency Management Director position
Action or Project Description:	Expand the county emergency management director position to full time.
Applicable Goal Statement:	Increase disaster mitigation management capability in local governments
Estimated Cost:	Unsure
Benefits:	Staffed position
Plan for Implementation	
Responsible Organization/Department:	County Commissioners
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 3: Ensure continued operation of government and emergency functions in a disaster.**Response Action****2018 Action 3.1.d: (2013 Action 3.1.9)**

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of debris management system
Hazard(s) Addressed:	Flood, Severe Winter Weather, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	3.1.d
Name of Action or Project:	Debris Management
Action or Project Description:	Have a debris management plan for the county to take care of debris after storms
Applicable Goal Statement:	Ensure continued operation of government and emergency functions in a disaster.
Estimated Cost:	Unsure
Benefits:	Quick removal of debris after a storm
Plan for Implementation	
Responsible Organization/Department:	County Commissioners
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing, in progress
Report of Progress	

Goal 3: Ensure continued operation of government and emergency functions in a disaster.**Response Action****2018 Action 3.1.e:** (2013 Action 3.1.9)

Action Worksheet	
Name of Jurisdiction:	Maysville
Risk / Vulnerability	
Problem being Mitigated:	Lack of debris management system
Hazard(s) Addressed:	Flood, Severe Winter Weather, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	3.1.e
Name of Action or Project:	Debris management
Action or Project Description:	Have a debris management plan for the county and cities to take care of debris after storms.
Applicable Goal Statement:	Ensure continued operation of government and emergency functions in a disaster
Estimated Cost:	Unsure
Benefits:	Quick removal of debris after a storm
Plan for Implementation	
Responsible Organization/Department:	Mayor
Action/Project Priority:	Medium
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	Code of Ordinances
Progress Report	
Action Status	Continuing, in progress
Report of Progress	We have a location identified for debris which is currently open once a month. We are working to develop a plan for excessive debris management after a storm.

Goal 3: Ensure continued operation of government and emergency functions in a disaster.**Response Action****2018 Action 3.1.f:** (2013 Action 3.1.9)

Action Worksheet	
Name of Jurisdiction:	Osborn
Risk / Vulnerability	
Problem being Mitigated:	Lack of debris management system
Hazard(s) Addressed:	Flood, Severe Winter Weather, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	3.1.f
Name of Action or Project:	Debris management
Action or Project Description:	Have a debris management plan for the county and cities to take care of debris after storms.
Applicable Goal Statement:	Ensure continued operation of government and emergency functions in a disaster
Estimated Cost:	Unsure
Benefits:	Quick removal of debris after a storm
Plan for Implementation	
Responsible Organization/Department:	Mayor
Action/Project Priority:	High
Timeline for Completion:	Ongoing
Potential Fund Sources:	Local, grants
Local Planning Mechanisms to be Used in Implementation, if any:	Code of Ordinances
Progress Report	
Action Status	Continuing, in progress
Report of Progress	We have a location identified for debris. We are working to develop an official plan.

Goal 3: Ensure continued operation of government and emergency functions in a disaster.**Response Action****2018 Action 3.1.g: (2013 Action 3.1.3)**

Action Worksheet	
Name of Jurisdiction:	Osborn School District
Risk / Vulnerability	
Problem being Mitigated:	Understanding hazard mitigation best practices
Hazard(s) Addressed:	Earthquake
Action or Project	
Action/Project Number:	3.1.g
Name of Action or Project:	Earthquake mitigation
Action or Project Description:	Work with state and local governments to raise awareness of earthquake mitigation activities in homes, schools and businesses.
Applicable Goal Statement:	Increase disaster mitigation management capability in local governments
Estimated Cost:	Unsure
Benefits:	Increase warning and reaction time for severe weather
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	26, Medium
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	School emergency plan
Progress Report	
Action Status	Continuing, in progress
Report of Progress	We continue to prepare students/staff with earthquake drills. Working to incorporate information about home safety as well as school safety.

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Response Action

2018 Action 3.1.h: (2013 Action 3.1.3)

Action Worksheet	
Name of Jurisdiction:	Stewartsville School District
Risk / Vulnerability	
Problem being Mitigated:	Understanding hazard mitigation best practices
Hazard(s) Addressed:	Earthquake
Action or Project	
Action/Project Number:	3.1.h
Name of Action or Project:	Earthquake mitigation
Action or Project Description:	Work with state and local governments to raise awareness of earthquake mitigation activities in homes, schools and businesses.
Applicable Goal Statement:	Increase disaster mitigation management capability in local governments
Estimated Cost:	Unsure
Benefits:	Increase warning and reaction time for severe weather
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	High
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	School emergency plan
Progress Report	
Action Status	Continuing, in progress
Report of Progress	Working to understand what best practices are used for this goal

Goal 3: Ensure continued operation of government and emergency functions in a disaster.**Response Action****2018 Action 3.1.i:** (2013 Action 3.1.9)

Action Worksheet	
Name of Jurisdiction:	Weatherby
Risk / Vulnerability	
Problem being Mitigated:	Lack of debris management system
Hazard(s) Addressed:	Flood, Severe Winter Weather, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	3.1.i
Name of Action or Project:	Debris management
Action or Project Description:	Have a debris management plan for the county and cities to take care of debris after storms
Applicable Goal Statement:	Ensure continued operation of government and emergency functions in a disaster.
Estimated Cost:	Unsure
Benefits:	Quick removal of debris after a storm
Plan for Implementation	
Responsible Organization/Department:	Mayor
Action/Project Priority:	Medium
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	Code of Ordinances
Progress Report	
Action Status	Continuing, in progress
Report of Progress	We are working to coordinate a debris management plan with the county.

Goal 3: Ensure continued operation of government and emergency functions in a disaster.**Response Action****2018 Action 3.2.j:** (2013 Auction 3.2.1)

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Dispatch centers in poor locations
Hazard(s) Addressed:	Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	3.2.j
Name of Action or Project:	Evaluate dispatch center locations
Action or Project Description:	Evaluate the location of 911 dispatch center and consider other possible locations.
Applicable Goal Statement:	Ensure continued operation of government and emergency functions in a disaster.
Estimated Cost:	Unsure
Benefits:	Protected infrastructure
Plan for Implementation	
Responsible Organization/Department:	County Commissioners and Sheriff
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing, in progress
Report of Progress	

5 PLAN MAINTENANCE PROCESS

5 PLAN MAINTENANCE PROCESS	5.1
<i>5.1 Monitoring, Evaluating, and Updating the Plan.....</i>	<i>5.1</i>
5.1.1 Responsibility for Plan Maintenance	5.1
5.1.2 Plan Maintenance Schedule	5.2
5.1.3 Plan Maintenance Process.....	5.2
5.2 Incorporation into Existing Planning Mechanisms	5.3
5.3 Continued Public Involvement.....	5.4

This chapter provides an overview of the overall strategy for plan maintenance and outlines the method and schedule for monitoring, updating and evaluating the plan. The chapter also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

5.1 Monitoring, Evaluating, and Updating the Plan

44 CFR Requirement 201.6(c)(4): The plan maintenance process shall include a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

5.1.1 Responsibility for Plan Maintenance

The Mitigation Planning Committee (MPC) is not a standing committee. Responsibility for maintenance will reside with the individual jurisdictions for monitoring, evaluation and maintenance. Maintenance activities for the participating jurisdictions, including school and special districts, may involve:

- Meet bi-annually, and after a disaster event, to monitor and evaluate the implementation of the plan;
- Act as a forum for hazard mitigation issues;
- Disseminate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of high priority, low- or no-cost recommended actions;
- Maintain vigilant monitoring of multi-objective, cost-share, and other funding opportunities to help the community implement the plan's recommended actions for which no current funding exists;
- Monitor and assist in implementation and update of this plan;
- Keep the concept of mitigation in the forefront of community decision making by identifying plan recommendations when other community goals, plans, and activities overlap, influence, or directly affect increased community vulnerability to disasters;

- Report on plan progress and recommended changes to the County Commissioners and governing bodies of participating jurisdictions; and
- Inform and solicit input from the public.

It's the MPC representative's primary duty to see the plan successfully carried out and to report to the community's governing boards and the public on the status of plan implementation and mitigation opportunities. Other duties include reviewing and promoting mitigation proposals, hearing stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information in areas accessible to the public.

5.1.2 Plan Maintenance Schedule

The DeKalb County Emergency Management Director (EMD) will be responsible for initiating the plan review at the LEPC meeting every other year. For the other jurisdictions, their MPC representative will be responsible for initiating reviews.

In coordination with all participating jurisdictions, a five-year written update of the plan will be submitted to the Missouri State Emergency Management Agency (SEMA) and FEMA Region VII per Requirement §201.6(c)(4)(i) of the Disaster Mitigation Act of 2000, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule.

5.1.3 Plan Maintenance Process

Progress on the proposed actions can be monitored by evaluating changes in vulnerabilities identified in the plan. During the bi-annual meeting the MPC (or other designated responsible entity) should review changes in vulnerability identified as follows:

- Decreased vulnerability as a result of implementing recommended actions,
- Increased vulnerability as a result of failed or ineffective mitigation actions,
- Increased vulnerability due to hazard events, and/or
- Increased vulnerability as a result of new development (and/or annexation).

Future five-year updates to this plan will include the following activities:

- Consideration of changes in vulnerability due to action implementation;
- Documentation of success stories where mitigation efforts have proven effective;
- Documentation of unsuccessful mitigation actions and why the actions were not effective;
- Documentation of previously overlooked hazard events that may have occurred since the previous plan approval;
- Incorporation of new data or studies with information on hazard risks;
- Incorporation of new capabilities or changes in capabilities;
- Incorporation of growth data and changes to inventories; and
- Incorporation of ideas for new actions and changes in action prioritization.

In order to best evaluate any changes in vulnerability as a result of plan implementation, the participating jurisdictions will adopt the following process:

- Each proposed action in the plan identified an individual, office, or agency responsible for action implementation. This entity will track and report on an annual basis to the jurisdictional MPC (or designated responsible entity) member on action status. The entity will provide input on whether the action as implemented meets the defined objectives and is likely to be successful in reducing risk.
- If the action does not meet identified objectives, the jurisdictional MPC (or designated responsible entity) member will determine necessary remedial action, making any required modifications to the plan.

Changes will be made to the plan to remedy actions that have failed or are not considered feasible. Feasibility will be determined after a review of action consistency with established criteria, time frame, community priorities, and/or funding resources. Actions that were not ranked high but were identified as potential mitigation activities will be reviewed as well during the monitoring of this plan. Updating of the plan will be accomplished by written changes and submissions, as the (MPC or designated responsible entity) deems appropriate and necessary. Changes will be approved by the DeKalb County Commissioners and the governing boards of the other participating jurisdictions.

5.2 Incorporation into Existing Planning Mechanisms

44 CFR Requirement §201.6(c)(4)(ii): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

Where possible, plan participants, including schools, will use existing plans and/or programs to implement hazard mitigation actions. Those existing plans and programs were described in Chapter 2 of this plan. Based on the capability assessments of the participating jurisdictions, communities in DeKalb County will continue to plan and implement programs to reduce losses to life and property from hazards. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through the following plans:

- Comprehensive plans of participating jurisdictions;
- Ordinances of participating jurisdictions;
- Local Emergency Operations Plans;
- Capital improvement plans and budgets;
- Other community plans within the county, such as water conservation plans, storm water management plans, and parks and recreation plans; and
- School District Emergency Plans

The MPC (or designated responsible entity) members involved in updating these existing planning mechanisms will be responsible for integrating the findings and actions of the mitigation plan, as appropriate. The MPC (or designated responsible entity) is also responsible for monitoring this integration and incorporation of the appropriate information into the five-year update of the multi-jurisdictional hazard mitigation plan.

Additionally, the DeKalb County Emergency Management Director(EMD) will provide the updated mitigation strategy with current status of each mitigation action to the county commission as well as all mayors, city clerks, and school district superintendents as appropriate. The EMD will request that the mitigation strategy be incorporated, where appropriate, in other planning mechanisms

The table below lists the potential planning mechanisms by jurisdiction into which the Hazard Mitigation Plan will be integrated.

Table 5.1 Changes Made in Plan Update

Jurisdiction	Planning Mechanisms	Integration Process for Previous Plan	Integration Process for Current Plan
DeKalb County	Comprehensive Plan, Local Emergency Operating Plan	Comprehensive Plan, Local Emergency Operating Plan	Comprehensive Plan, Local Emergency Operating Plan
Amity	None	Unknown	None
Clarksdale	Building Code, Storm Water Ordinance, Landscape Ordinance, Zoning/Land Use Restriction, Floodplain Ordinance	Unknown	Building Code, Storm Water Ordinance, Landscape Ordinance, Zoning/Land Use Restrictions, Floodplain Ordinance
Maysville	Code of Ordinances	Unknown	Code of Ordinances
Osborn	None	Unknown	None
Stewartsville	Emergency Operations Plan, City Mitigation Plan, Building Code, Floodplain Ordinance, Subdivision Ordinance	Unknown	Emergency Operations Plan, City Mitigation Plan, Building Code, Floodplain Ordinance, Subdivision Ordinance
Union Star	Floodplain Ordinance, City Emergency Operations Plan	Unknown	Floodplain Ordinance, City Emergency Operations Plan
Weatherby	None	None	None
Maysville School District	Unknown	Unknown	Unknown
Osborn School District	School Emergency Plan, Master Plan, Capital Improvement Plan	School Emergency Plan	School Emergency Plan
Stewartsville School District	School Emergency Plan, Capital Improvement Plan	School Emergency Plan	School Emergency Plan
Union Star School District	School Emergency Plan, Master Plan	School Emergency Plan	School Emergency Plan

5.3 Continued Public Involvement

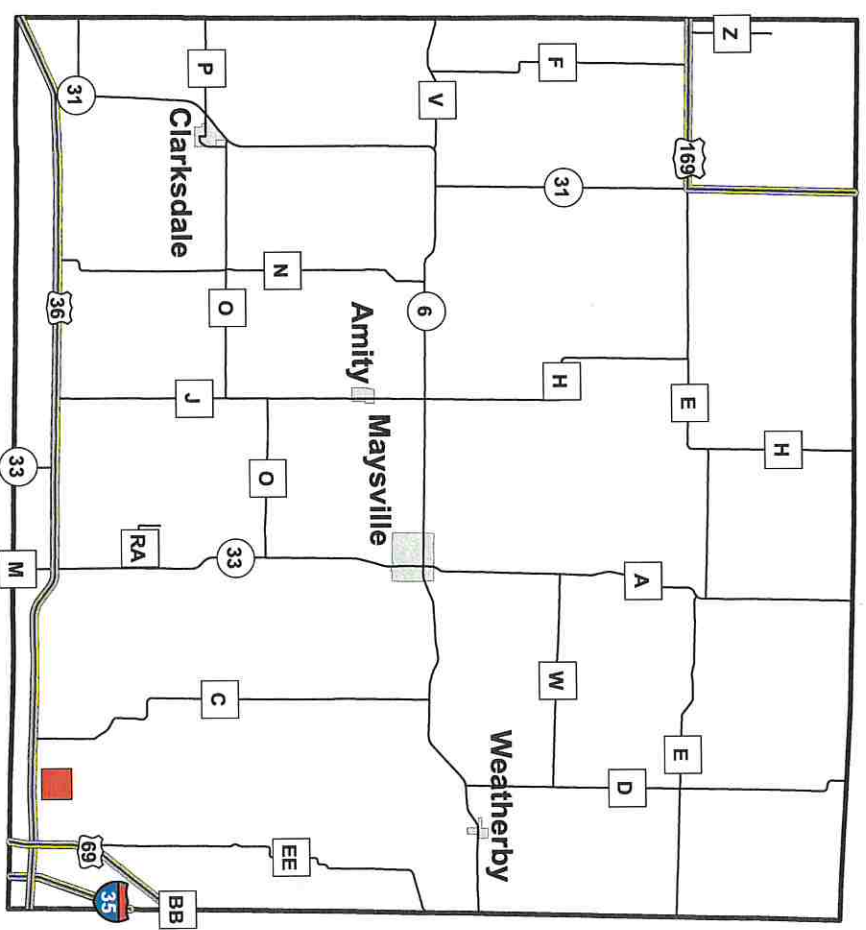
44 CFR Requirement §201.6(c)(4)(iii): [The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

The hazard mitigation plan update process provides an opportunity to publicize success stories resulting from the plan's implementation and seek additional public comment. Information about the reviews will be posted in the local newspaper as well as on the DeKalb County website following each review of the mitigation plan. When the MPC reconvenes for the five-year update, it will coordinate with all stakeholders participating in the planning process. Included in

this group will be those who joined the MPC after the initial effort, to update and revise the plan. Public notices will be posted and public participation will be actively solicited, at a minimum, through available website postings and press releases to local media outlets, primarily newspapers.

Appendix A: Dam Inundation Zones and Inspection Reports

Cameron City Reservoir #1 Dam Breach Inundation Map



Dekalb County, Missouri
DEKALB_MO10042

Note: Actual areas inundated will depend on the actual dam failure criteria and may differ from the areas shown. Due to limitations, methods, assumptions, and procedures used to develop the inundation area, the map should only be used for evacuation and emergency purposes.



Missouri
Department of
Natural Resources
Water Resources Center
P.O. Box 176
Jefferson City, MO 65102

Explanation Sheet

Explanation of Maps

The following maps indicate the areas which are predicted to be inundated during the occurrence of a sunny day breach of the dam. The pool elevation at failure is assumed to be at the emergency spillway crest elevation or at the crest of the dam in the absence of an emergency spillway.

Use of Maps

The following maps provide a baseline for evaluation of existing emergency action plans and environmental hazards downstream of

Definition of Terms

Pool Elevation- Water level in the reservoir.

Dam Crest- The lowest elevation measured along the dam crest.

Spillway Crest- The lowest elevation measured along the crest of the spillway.

Arrival Time- Elapsed time between the breach initiation and the time that water levels first begin to rise at any given point.

Assumed Conditions of Flooding

The pool elevation at failure is assumed to be at the emergency spillway crest elevation or at the crest of the dam in the absence of an emergency spillway. The assumed overtopping erodes a section of the dam resulting in a dangerous and quick release of water. For the hydraulic analysis flow initiation is required and therefore a baseflow of water has been included in the analysis.

Dam Facts Cameron City Res. #1

ID: MO_10042

County: Dekalb

Location: S10, T57 N, R30 W

Height of Dam: 36'

Tributary: Trib to Grindstone Creek

Lake Area: 16.8 acres

Max Storage Capacity: 310 ac-ft

Date of Aerial Photo: August 27, 2009

**NOTE: LIDAR Elevation data unavailable for Dekalb County.
Analysis was completed with 10 meter Digital Elevation Model**

Breach Parameters (Froehlich, 1995) Cameron City Res. #3

Side slopes: 1.4:1

Bottom width: 90.6'

Bottom elevation: 889.5'

Breach formation time: 0.80 hr

Pool Elevation at Failure: 918.40'

Pool Volume at Failure: 1838 ac-ft

Downstream Crossings

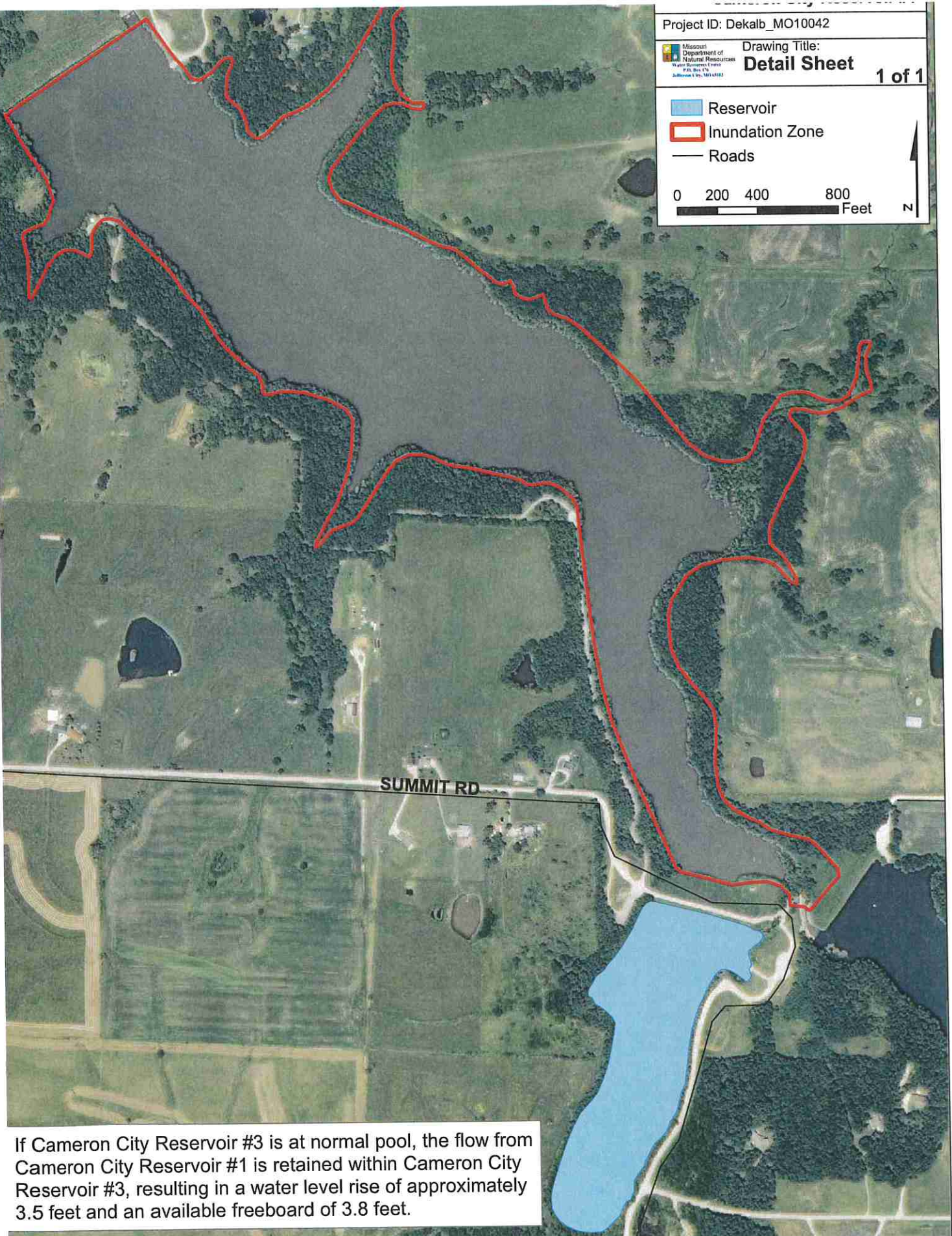
Rogers Road	Willow Road
Gridley Road	Valley Road
Wamsley Road	Dallas Road
Grindstone Road	Wolf Creek Road
Ketchum Road	State Hwy 6

Cameron City Reservoir #3 lies below Cameron City Reservoir #1. Two scenarios involving the failure of Cameron City Res. #1 are presented in these maps. First, if Cameron City Res. #3 is at normal pool, it has the storage capacity to hold the volume of Cameron City Res. #1. Second, if Cameron City Res. #3 is above normal pool elevation, it does not have the necessary storage capacity, the inundation zone resulting from the combined volumes of both reservoirs flowing through a breach in Cameron City Res. #3 is mapped.

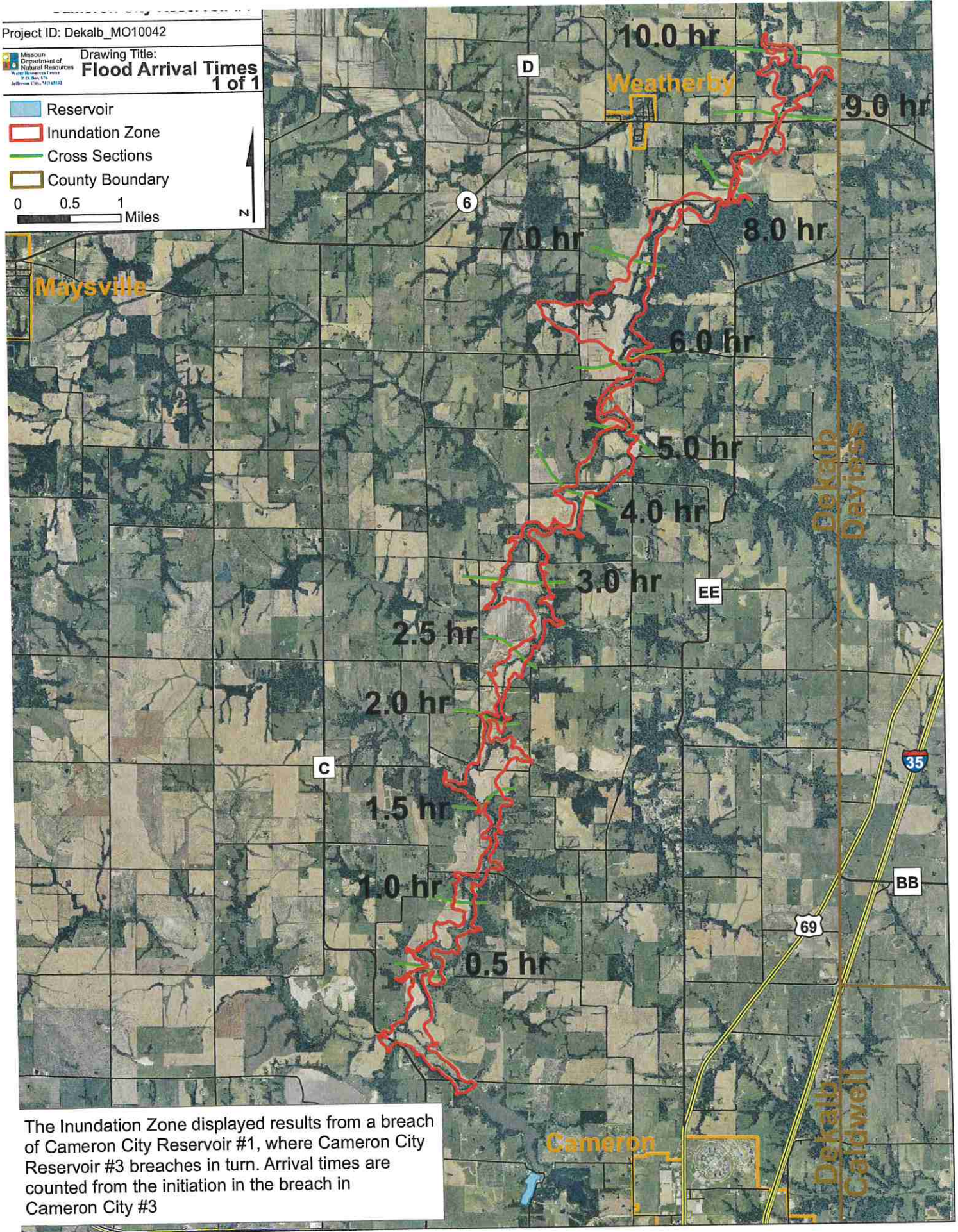
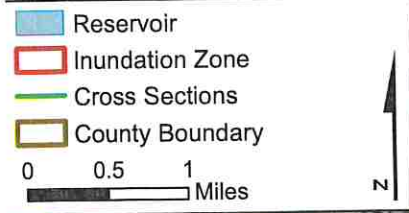
-  Reservoir
-  Inundation Zone
-  Roads

0 200 400 800
Feet

N

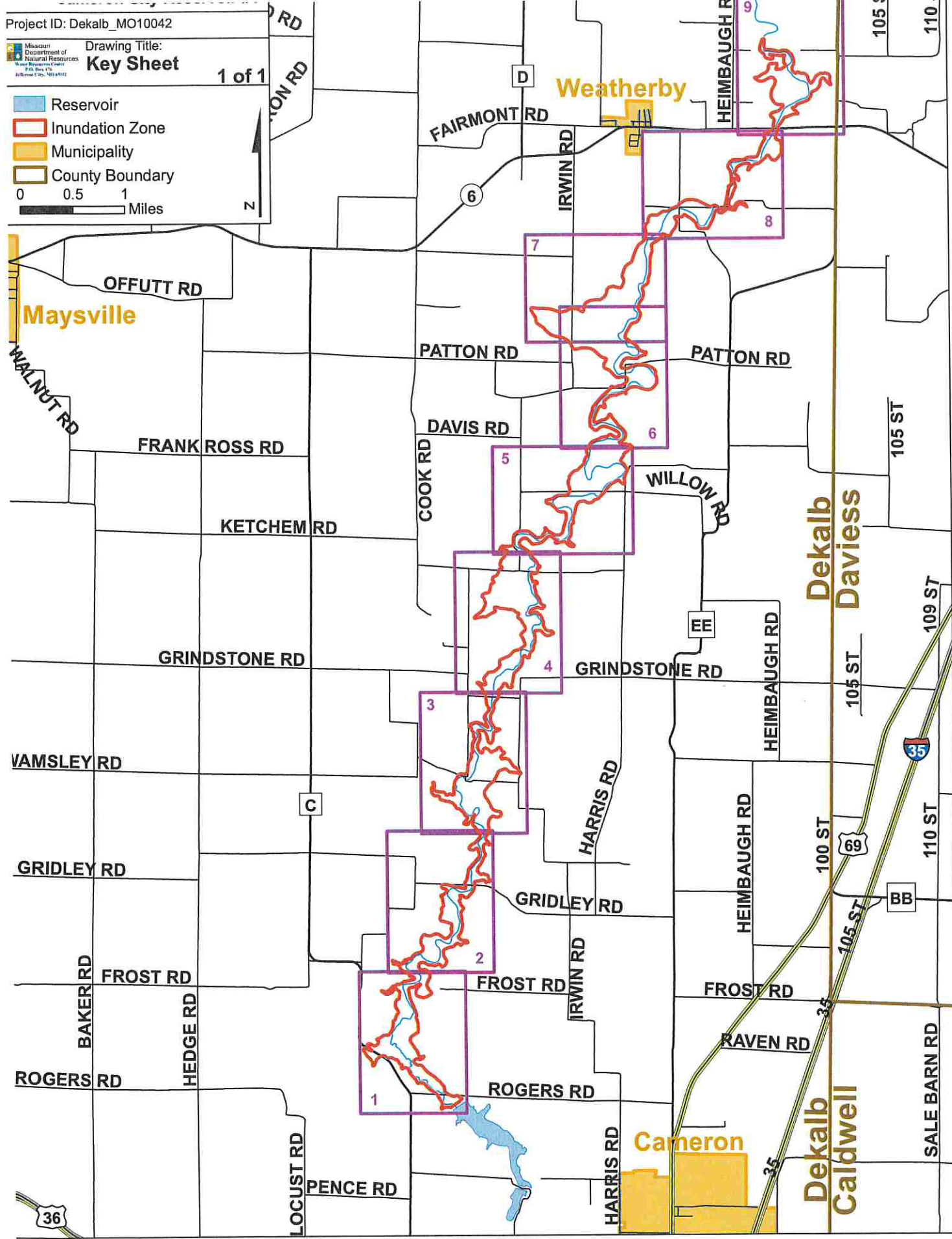


If Cameron City Reservoir #3 is at normal pool, the flow from Cameron City Reservoir #1 is retained within Cameron City Reservoir #3, resulting in a water level rise of approximately 3.5 feet and an available freeboard of 3.8 feet.



The Inundation Zone displayed results from a breach of Cameron City Reservoir #1, where Cameron City Reservoir #3 breaches in turn. Arrival times are counted from the initiation in the breach in Cameron City #3

-
- Reservoir
Inundation Zone
Municipality
County Boundary
- 0 0.5 1 Miles



FLOW DIRECTION

FROST RD

ROGERS RD

C

Project: **Cameron City Reservoir #1**

Project ID: Dekalb_MO10042

 Drawing Title:
Detail Sheet 1 of 9

-  Reservoir
-  Inundation Zone
-  Roads

0 250 500 1,000 Feet N

Project ID: Dekalb_MO10042

Missouri
Department of
Natural Resources

1600 West Main Street
Jefferson City, MO 64502

Drawing Title:
Detail Sheet

3 of 9

Inundation Zone

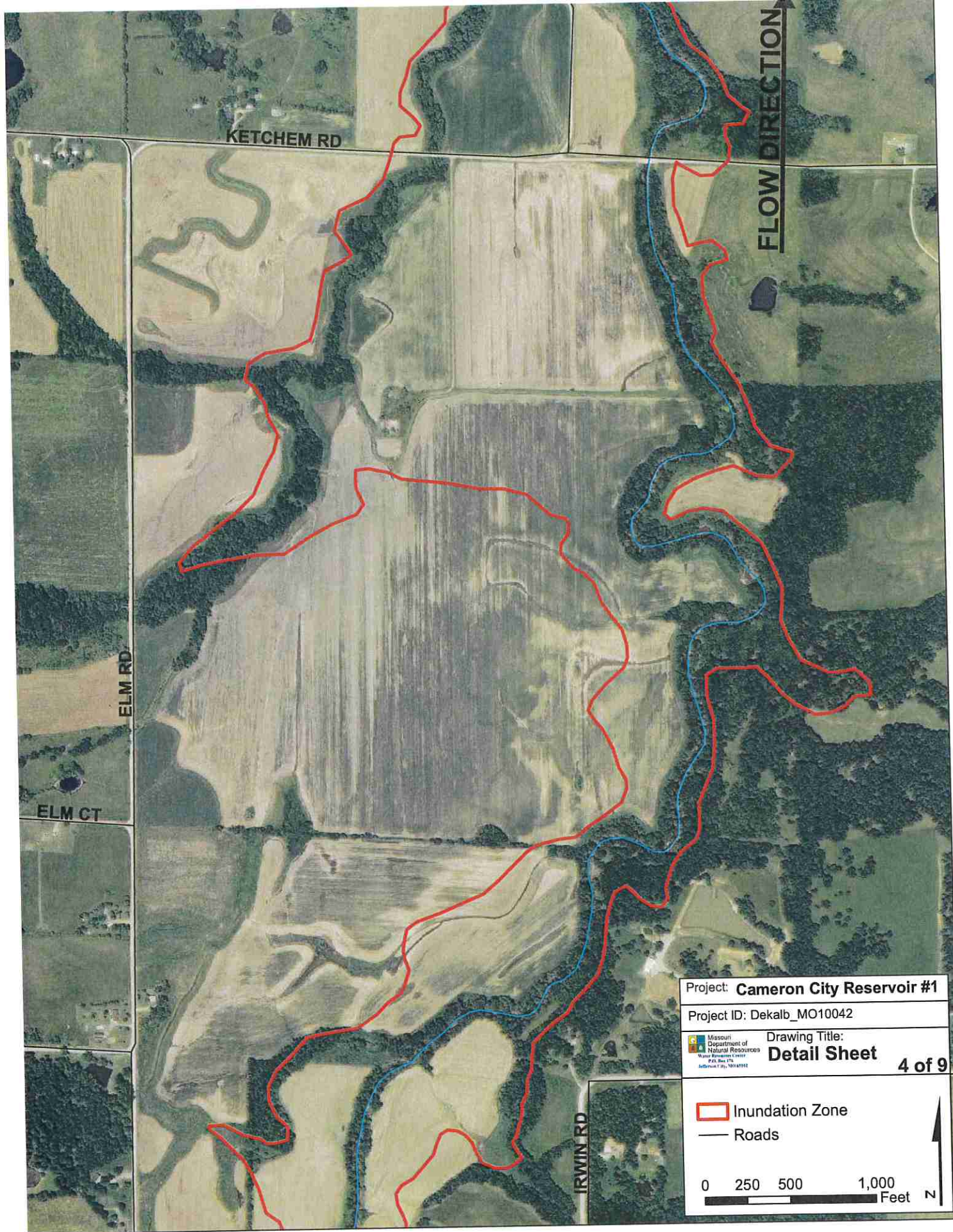
Roads

02505001,000

Feet

N

An aerial photograph of a rural landscape with a river and its surrounding inundation zone. The river is highlighted with a blue line, and the area that would be flooded is outlined in red. The map includes several roads: GRINDSTONE RD at the top, ELM RD on the left, IRWIN RD on the right, and WAMSLEY RD at the bottom. A vertical arrow on the left side of the map points upwards and is labeled 'FLOW DIRECTION'. A legend in the top left corner identifies the red outline as the 'Inundation Zone' and the black line as 'Roads'. Below the legend is a scale bar showing distances from 0 to 1,000 feet and a north arrow pointing upwards.





Project: **Cameron City Reservoir #1**

Project ID: Dekalb_MO10042

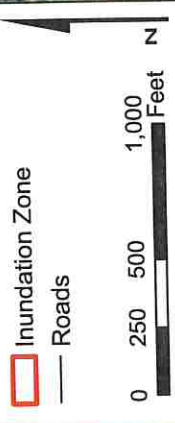
Missouri
Department of
Natural Resources
Water Resources Unit
P.O. Box 178
Jefferson City, MO 64101

Drawing Title:
Detail Sheet

4 of 9

 Inundation Zone
 Roads

0 250 500 1,000
Feet 

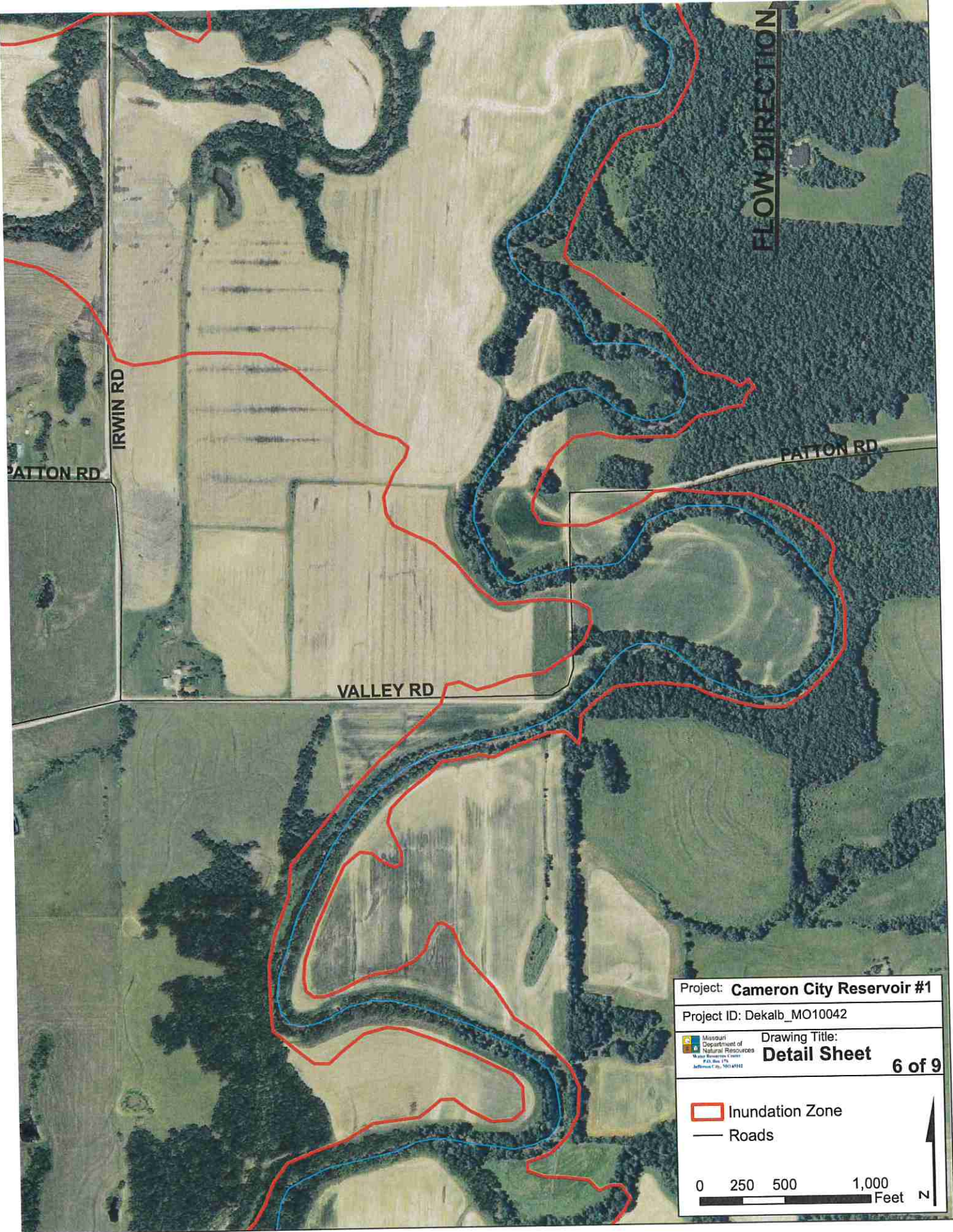


FLOW DIRECTION

WILLOW RD

HARRIS RD

IRWIN RD




Project: **Cameron City Reservoir #1**

Project ID: Dekalb_MO10042


 Drawing Title:
Detail Sheet 6 of 9

 Inundation Zone
 Roads

0 250 500 1,000 Feet 

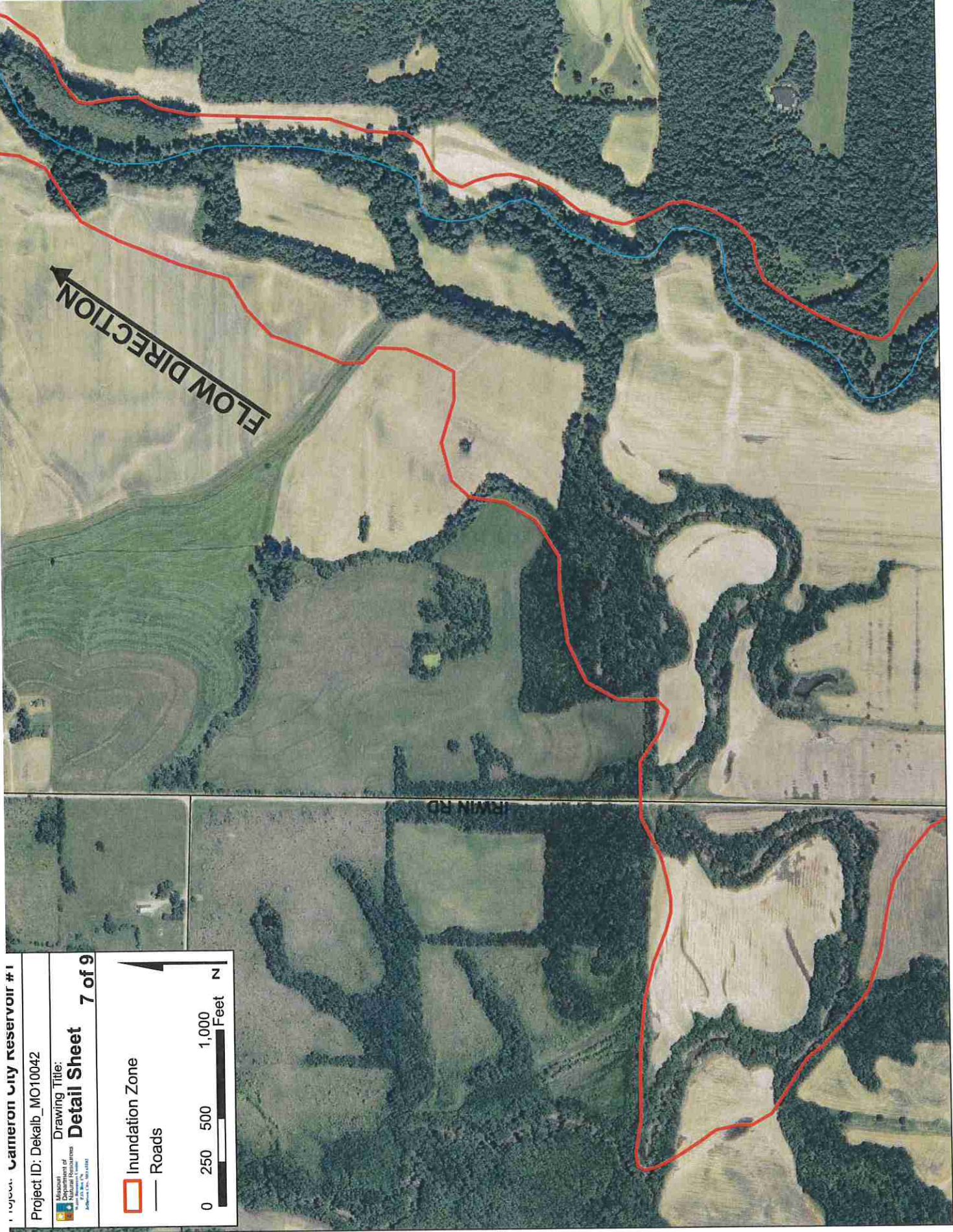


 Inundation Zone


 Roads




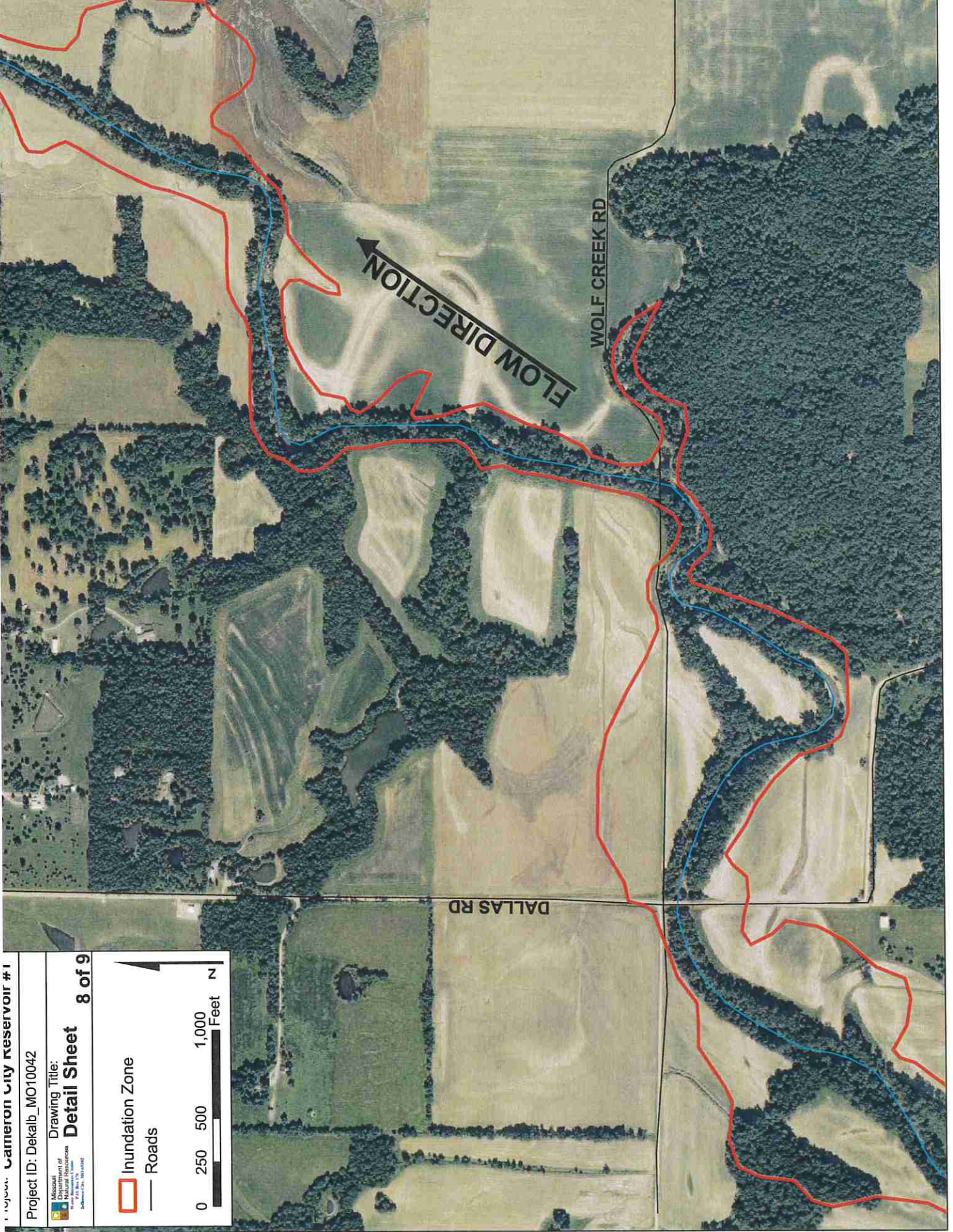
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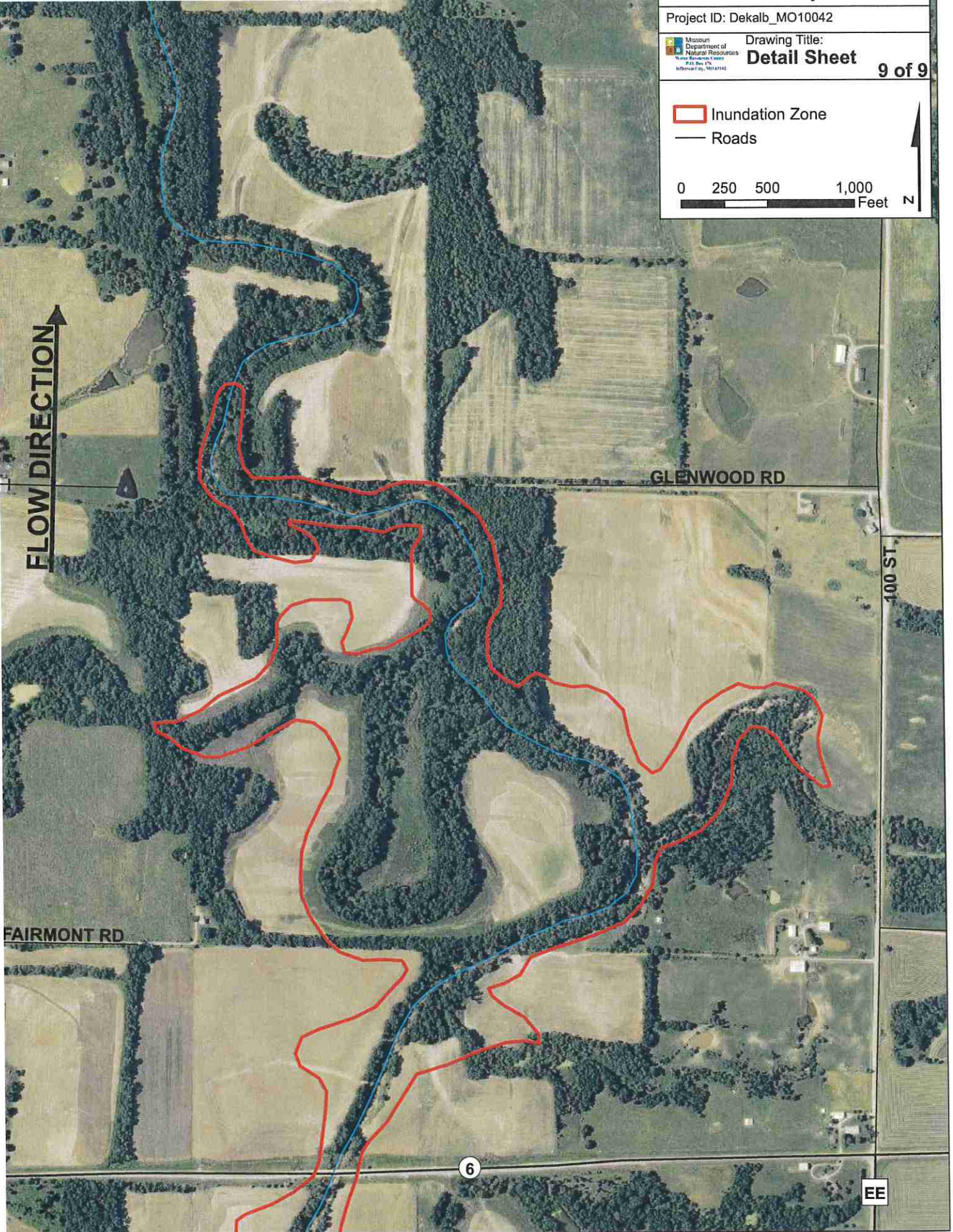
 Inundation Zone

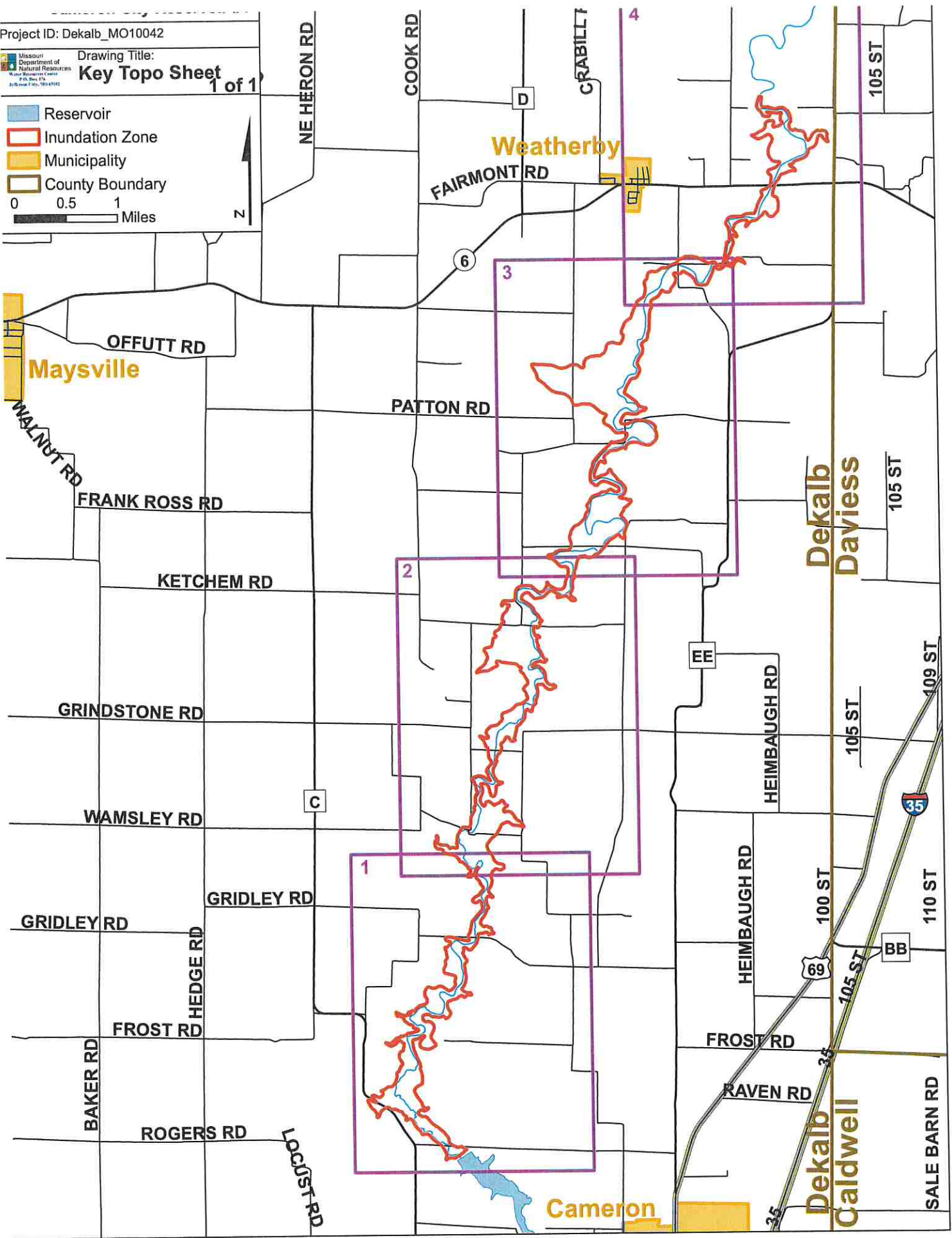
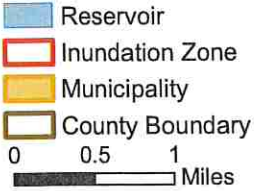
 Roads



 Inundation Zone
 Roads

0 250 500 1,000
Feet








FLOW DIRECTION

GRAND RIVER

Project: **Cameron City Reservoir #1**
Project ID: Dekalb_MO10042
Drawing Title: **Topo Map** 1 of 4

 Reservoir
 Inundation Zone
— Roads

0 500 1,000 2,000 Feet

 N



FLOW DIRECTION

Creek

RAILROAD GRADE
OLD
Crindstone

Fordham

Creek

Wamsley
Camp

Project: **Cameron City Reservoir #1**

Project ID: Dekalb_MO10042

Drawing Title:
Topo Map

2 of 4

 Inundation Zone
 Roads

0 500 1,000 2,000
Feet









Schambaugh-Cope Cem





FLOW DIRECTION

Last Cr

Grindstone Creek

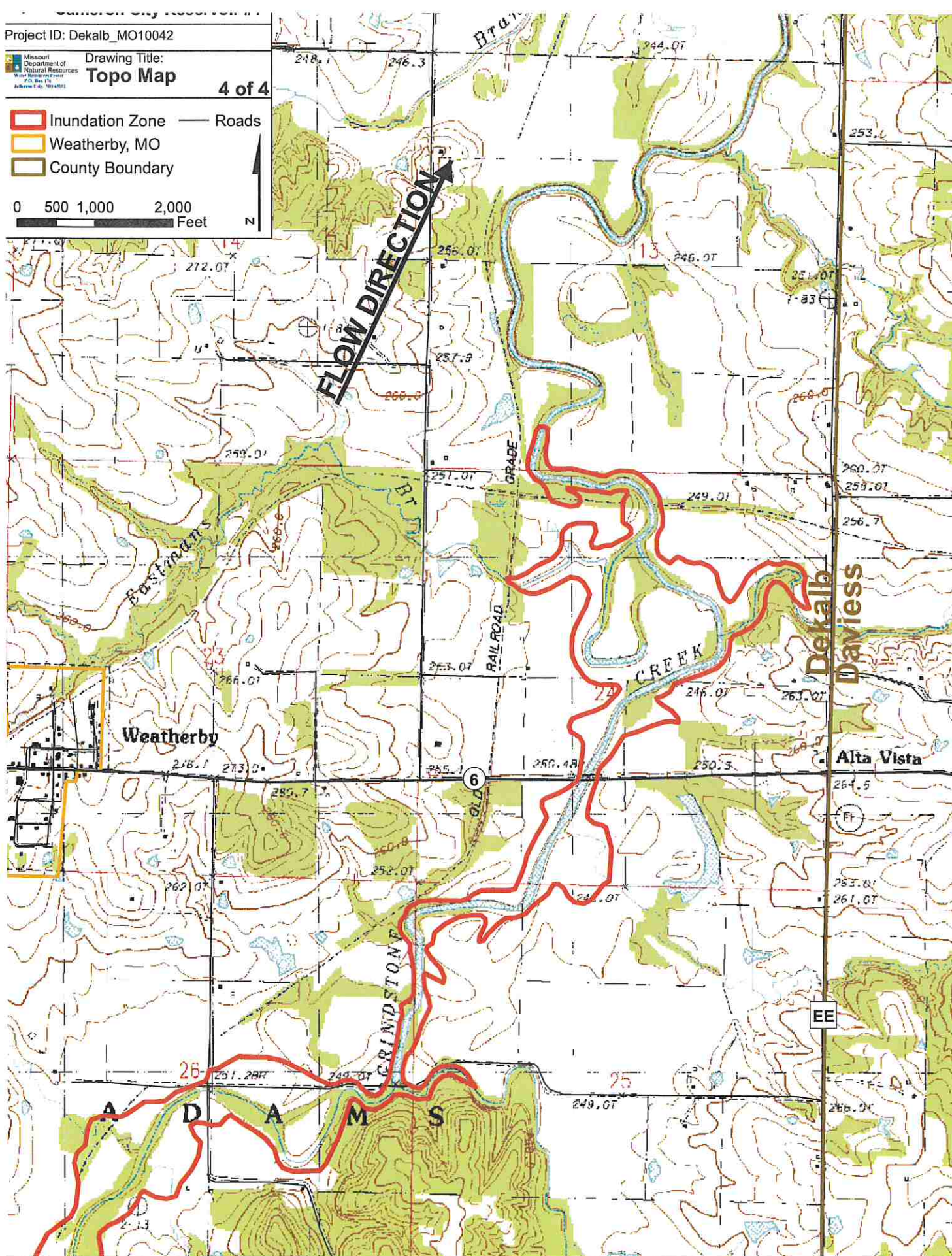
Rice

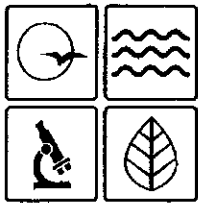
Project: Cameron City Reservoir #1	
Project ID: Dekalb_MO10042	
 Missouri Department of Natural Resources Water Resources Center P.O. Box 174 Jefferson City, MO 64101	Drawing Title: Topo Map
	3 of 4
 Inundation Zone	
 Roads	
0 500 1,000 2,000 Feet	
	

-  Inundation Zone
-  Roads
-  Weatherby, MO
-  County Boundary

0 500 1,000 2,000
Feet

N





Missouri Department of dnr.mo.gov

NATURAL RESOURCES

Eric R. Greitens, Governor

Carol S. Comer, Director

February 6, 2018

City Of Cameron
C/O Mr. Paul Rinehart
205 North Main Street
Cameron, Missouri 64429

RE: Cameron City Reservoir #1 Dam (MO10042) DeKalb County

Dear Mr. Rinehart:

As a result of an inspection of the Cameron City Reservoir #1 Dam on January 9, 2018, I am pleased to inform you that Registration Permit R-276 has been renewed and is enclosed for your use. The term of the permit will be three years from the expiration date of the last registration permit issued for the dam and will expire on March 26, 2021. At that time, the dam will be reinspected by the Dam and Reservoir Safety Program at no cost to you. The permit is being renewed for three years based on the downstream environmental zone classification.

Please refer to the enclosed inspection report and summary for additional information on the inspection. If you have any questions, please feel free to contact Jerry Scheible, P.E. at (573) 368-2175.

Thanks for your cooperation in renewing this permit.

Sincerely,

MISSOURI GEOLOGICAL SURVEY

Ryan P. Stack, P.E.
Chief Engineer
Dam and Reservoir Safety Program

RPS/clb
Enclosure



**STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
DAM AND RESERVOIR SAFETY COUNCIL**

REGISTRATION PERMIT

Pursuant to Chapters 236.400 through 236.500 of the Revised Statutes of Missouri and the rules established by the Dam and Reservoir Safety Council, and on the basis of an inspection by the Department of Natural Resources for the City of Cameron Reservoir #1 Dam, DeKalb County, all of which are made a part hereof by reference, **PERMISSION IS HEREBY GRANTED** to the City of Cameron, hereafter known as the permittee, whose address for the purpose of notices and other communications pertaining to this permit is 205 North Main Street, Cameron, Missouri 64429, which address is subject to change by written notice from the permittee, **TO OPERATE** said dam and reservoir located in Section 10, Township 57 North, Range 30 West, having identification number of MO10042, a dam height of 36 feet, a principal spillway elevation of 938.0 feet (UTM NAD83, Zone 15N, GEOID12A), a minimum crest elevation of 947.2 feet (UTM NAD83, Zone 15N, GEOID12A), a reservoir area of 22 acres at the water storage elevation, and approximate UTM Coordinates of 4,402,150 meters North and 391,900 meters East, Zone 15, subject to the following provisions:

GENERAL PROVISIONS:

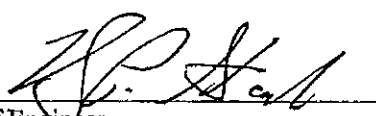
1. No liability shall be imposed upon or incurred by the State of Missouri and/or the Dam and Reservoir Safety Council, or any of their officers, agents, employees, and members, officially or personally, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the permittee or any of its agents, employees, or contractors, or closed corporations or successors relating to any matter hereunder. This permit shall not be construed as estopping or limiting any legal claim or right of action of the state against the permittee, its agents, employees or contractors for any damages or injury resulting from any such act or omission by them or for violation of or failure to comply with the provisions of the permit or applicable provisions of law.
2. The permittee shall comply with all Federal, State and local laws and regulations, and shall obtain such other permits as may be required.

3. In cases where the doing by the permittee of anything authorized by this permit shall involve the taking, using or damaging of any property rights or interest of any other person or persons, or of any publicly owned lands or improvements thereon or interests therein, it is the sole responsibility of the permittee, before proceeding therewith, to obtain the written consent of all persons, agencies, or authorities concerned, and to acquire all property, rights and interests necessary therefore, including flood easements or permissions for all properties which may be inundated by the dam on a temporary or permanent basis in the upstream impoundment area below the top of dam elevation.
4. The permittee shall notify the Dam and Reservoir Safety Council in writing upon the sale or other transfer of interest in the dam or reservoir.
5. Based on conditions existing at the time of issuing this permit, the Downstream Environment Zone is Class 2. Future development in the vicinity of the dam and flood plain below the dam may result in a change in classification. This change will necessitate hydraulic and structural upgrading of the dam so the dam is in compliance with the rules and regulations of the Missouri Dam and Reservoir Safety Council. Permittee or its representatives, successors or assigns shall perform any such upgrading upon a change in classification and upon notification from the Missouri Dam and Reservoir Safety Council.
6. The permittee shall not alter, enlarge, reduce, repair or remove the dam, reservoir or appurtenances without first obtaining a construction permit from the Dam and Reservoir Safety Council.
7. The permittee shall immediately notify in writing the Chief Engineer of any conditions relating to structural stability of and seepage through the dam discovered during the term of this permit which differs from those conditions identified in the renewal inspection summary.
8. The terms and provisions of this permit shall extend to and bind the successors in authority of the Dam and Reservoir Safety Council and the legally assigned successors in interest of the permittee.
9. Maintenance of the dam and reservoir herein permitted shall be the responsibility of the permittee.
10. The term of this permit shall be three (3) years from the expiration date of the last registration permit issued for the dam and will expire on March 26, 2021. The permittee shall apply for renewal not less than sixty (60) days prior to this expiration date.

Executed at Rolla, Missouri on this 6th day of
February, 2018

DAM & RESERVOIR SAFETY COUNCIL

By


Chief Engineer

Dam and Reservoir Safety Program

DEPARTMENT OF NATURAL RESOURCES
DAM & RESERVOIR SAFETY PROGRAM
DAM INSPECTION REPORT

DATE: January 31, 2018

COVER SHEET

NAME OF DAM: Cameron City Reservoir #1 Dam

I.D. #: MO10042

LOCATION: County: Dekalb

Section: 10, Twp. 57 N, Rge. 30 W

OWNER: <u>City Of Cameron</u>
ADDRESS: <u>C/O Mr. Paul Rinehart</u>
<u>205 North Main Street</u>
CITY/STATE/ZIP: <u>Cameron, Missouri 64429</u>
TELEPHONE: <u>816-632-2844</u>
<u>H2oplant@cameronmo.com</u>

PERMIT #	HAZARD CLASS	TYPE OF DAM
R-276	CLASS II	EARTHFILL

TYPE OF SPILLWAY (s) Principal Open channel on right abutment
Emergency None

☒ I hereby certify that the Cameron City Reservoir #1 Dam was inspected on January 9, 2018 in accordance with RSMO 236.400 through RSMO 236.500.

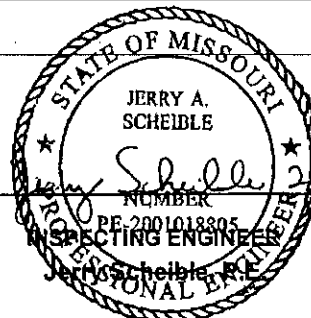
☒ I hereby certify that the Cameron City Reservoir #1 Dam did not have any observed defects that required correction at the time of the inspection.

☒ Judgement of Slope Stability – The embankment and appurtenant structures appeared to be in good overall condition at the time of the inspection, with no indications of slope instability or excessive seepage.

☐ Defects were found that will have to be corrected prior to the permit being renewed.

STATION	ELEVATION	COMMENTS
PS	938.0	Principal spillway
Dam	947.2	Minimum crest of dam
WL	937.4	Water surface on day of inspection

Elevations are in feet and are based on UTM NAD83 Zone 15N GEOID12A



Inspection Checklist

NAME OF DAM:	Cameron City Reservoir #1 Dam	INSPECTION DATE: January 9, 2018
ID #: MO 10042	COUNTY: Dekalb	HAZARD CLASS: 2

HAZARD CLASSIFICATION: ☒ Unchanged ☐ Changed

Item	Condition*	Comments
1. Vegetation	M.R.	Trees and woody vegetation are encroaching onto the dam from the left groin. Cut and remove approximately 10 feet of the vegetation to clear the dam and left groin.
2. Seepage	N.P.	
3. Principal Spillway	N.P.	
4. Emergency Spillway	N.A.	
5. Embankment	N.P.	
6. Reservoir Area	N.P.	
7. Lake Drain Gates or Valves	N.A.	
8. Spillway Outlet Channels	M.R.	Cut and remove the trees and woody vegetation in the spillway channel between the spillway crest and the road.
9. Embankment Drain Outlets	N.A.	
10. Riprap	M.R.	Wave erosion is occurring on the upstream face of the dam. The riprap should be replaced in the areas where it has sloughed off. Replacement of the riprap along the water's edge of the entire upstream face may be required in the future.

*N.P. = No observable problem; M.R. = Maintenance Required; D.O. = Defect Observed; E.C = Emergency Condition;
O.R. = Observation Required; N.A. = Not Applicable

Required Freeboard	Available Freeboard
7.9 feet	9.2 feet

RECOMMENDATION:

- ☒ Permit is being renewed
- ☐ Permit is not being renewed



Upstream face showing areas where the rip rap should be replaced



Downstream face



Principal spillway inlet showing larger trees encroaching on the channel

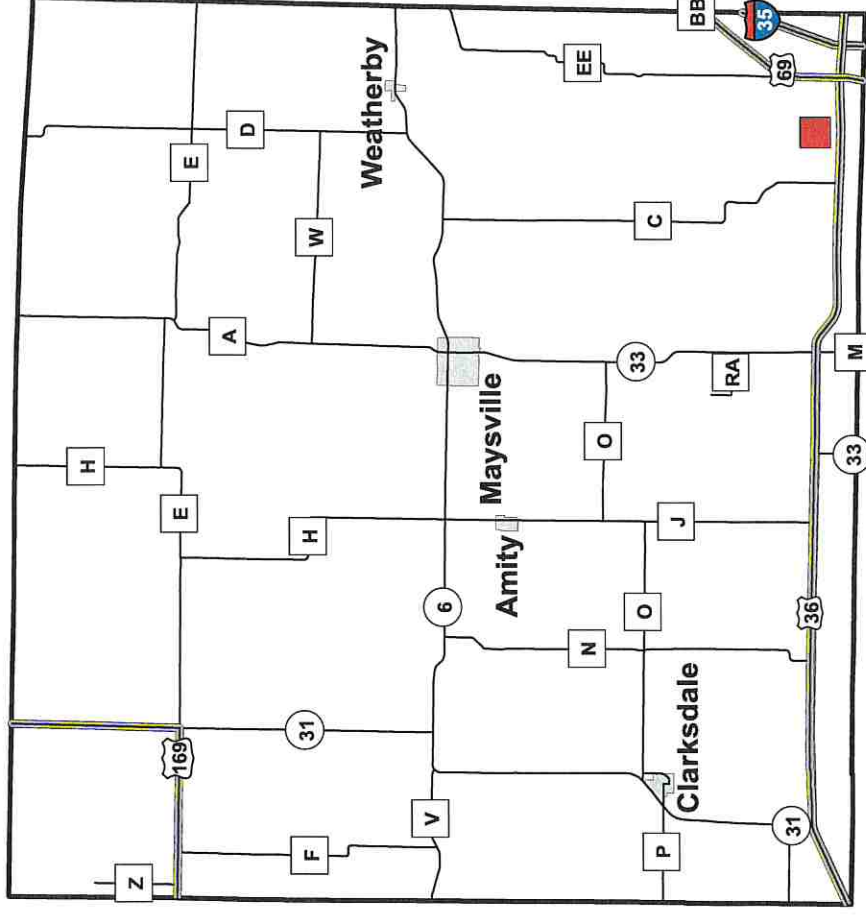


Principal spillway below low water crossing



Excess vegetation in left downstream groin

Cameron City Reservoir #2 Dam Breach Inundation Map



Dekalb County, Missouri
DEKALB_MO10169



Missouri
Department of
Natural Resources
Water Resources Center
P.O. Box 176
Jefferson City, MO 6510

Note: Actual areas inundated will depend on the actual dam failure criteria and may differ from the areas shown. Due to limitations, methods, assumptions, and procedures used to develop the inundation area, the map should only be used for evacuation and emergency purposes.

Explanation Sheet

Project:	Cameron City Reservoir #2
	Dam Breach Analysis
Drawing Title:	Explanation Sheet
	1 of 1
<div><div><div>Missouri Department of Natural Resources Water Resources Center Jefferson City, MO 64102</div></div><div>Project ID: DEKALB_MO10169</div></div>	

Explanation of Maps

The following maps indicate the areas which are predicted to be inundated during the occurrence of a sunny day breach of the dam. The pool elevation at failure is assumed to be at the emergency spillway crest elevation or at the crest of the dam in the absence of an emergency spillway.

Use of Maps

The following maps provide a baseline for evaluation of existing emergency action plans and environmental hazards downstream of

Definition of Terms

Pool Elevation- Water level in the reservoir.

Dam Crest- The lowest elevation measured along the dam crest.

Spillway Crest- The lowest elevation measured along the crest of the spillway.

Arrival Time- Elapsed time between the breach initiation and the time that water levels first begin to rise at any given point.

Assumed Conditions of Flooding

The pool elevation at failure is assumed to be at the emergency spillway crest elevation or at the crest of the dam in the absence of an emergency spillway. The assumed overtopping erodes a section of the dam resulting in a dangerous and quick release of water. For the hydraulic analysis flow initiation is required and therefore a baseflow of water has been included in the analysis.

Dam Facts

Cameron City Res. #2

ID: MO_10169

County: Dekalb

Location: S10, T57 N, R30 W

Height of Dam: 38'

Tributary: Trib to Grindstone Creek

Lake Area: 31.9 acres

Max Storage Capacity: 523 ac-ft

Date of Aerial Photo: August 27, 2009

NOTE: LiDAR Elevation data unavailable for Dekalb County.

Analysis was completed with 10 meter Digital Elevation Model

Breach Parameters (Froehlich, 1995) Cameron City Res. #3

Side slopes: 1.4:1

Bottom width: 99.72'

Bottom elevation: 889.5'

Breach formation time: 0.89 hr

Pool Elevation at Failure: 918.40'

Pool Volume at Failure: 2051.5 ac-ft

Downstream Crossings

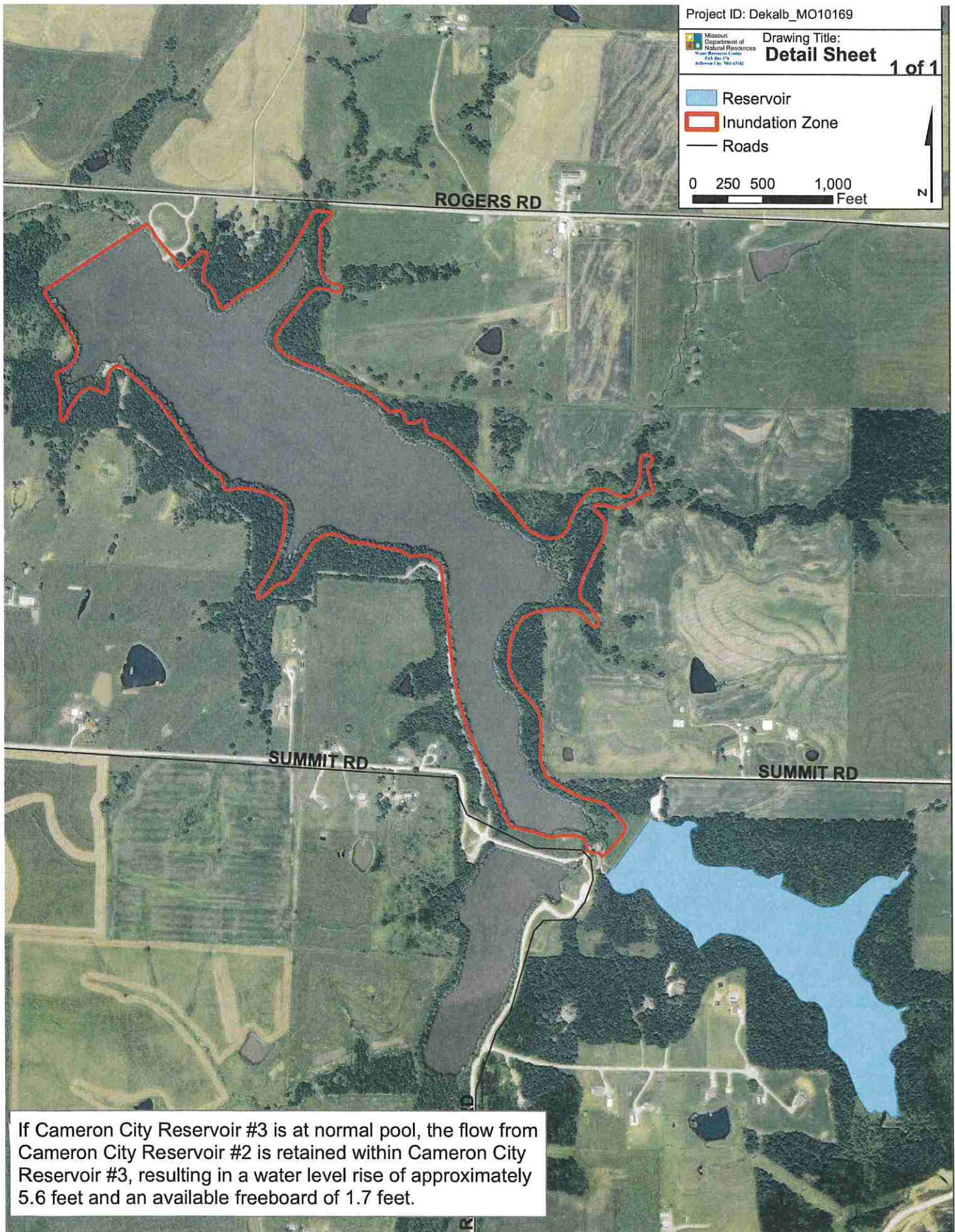
Rogers Road	Willow Road
Gridley Road	Valley Road
Wamsley Road	Dallas Road
Grindstone Road	Wolf Creek Road
Ketchum Road	State Hwy 6

Cameron City Reservoir #3 lies below Cameron City Reservoir #2. Two scenarios involving the failure of Cameron City Res. #2 are presented in these maps. First, if Cameron City Res. #3 is at normal pool, it has the storage capacity to hold the volume of Cameron City Res. #2. Second, if Cameron City Res. #3 is above normal pool, it does not have the necessary storage capacity, the inundation zone resulting from the combined volumes of both reservoirs flowing through a breach in Cameron City Res. #3 is mapped.

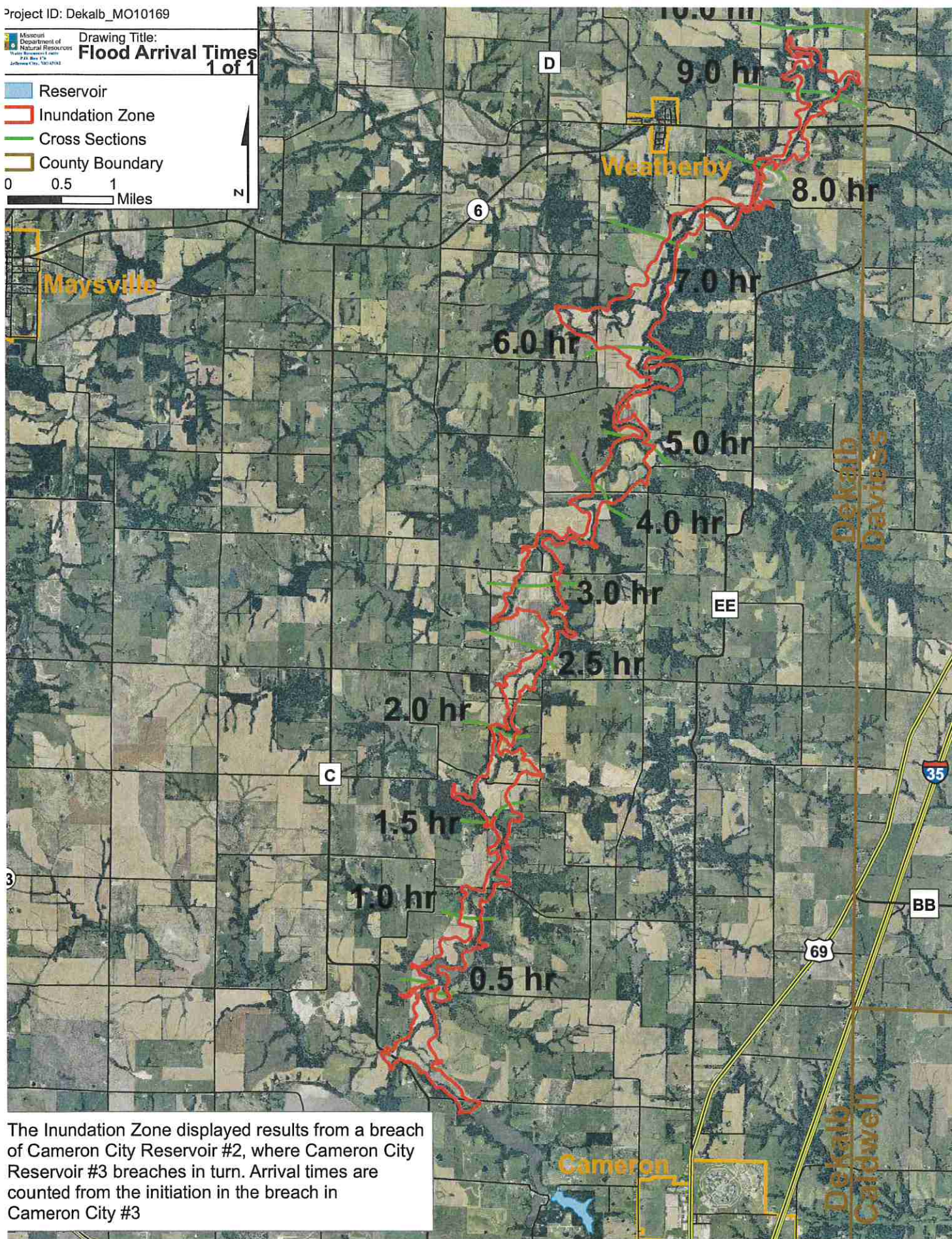
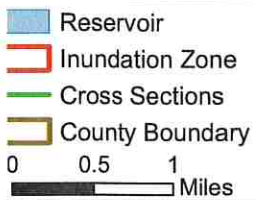
-  Reservoir
-  Inundation Zone
-  Roads

0 250 500 1,000
Feet

N



If Cameron City Reservoir #3 is at normal pool, the flow from Cameron City Reservoir #2 is retained within Cameron City Reservoir #3, resulting in a water level rise of approximately 5.6 feet and an available freeboard of 1.7 feet.



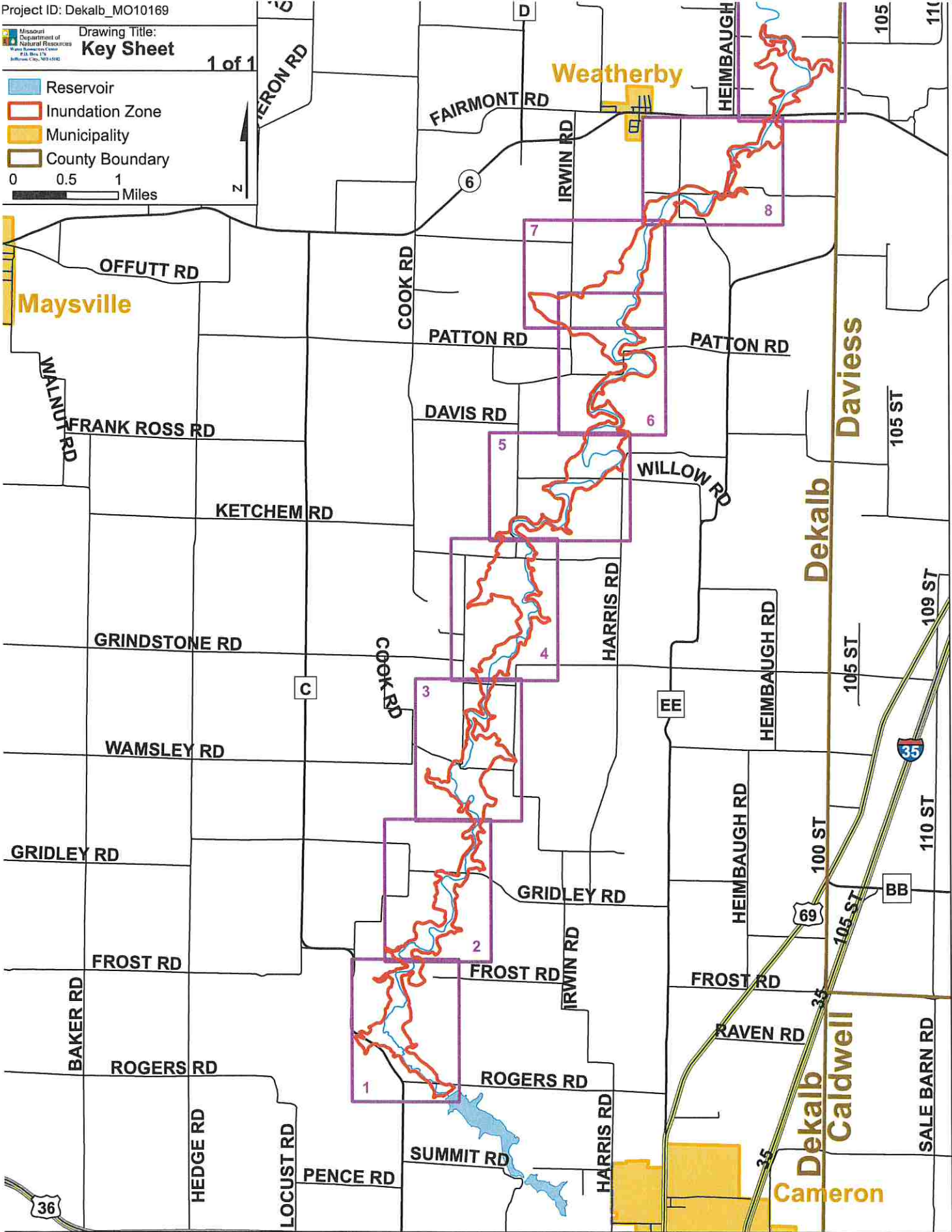
The Inundation Zone displayed results from a breach of Cameron City Reservoir #2, where Cameron City Reservoir #3 breaches in turn. Arrival times are counted from the initiation in the breach in Cameron City #3

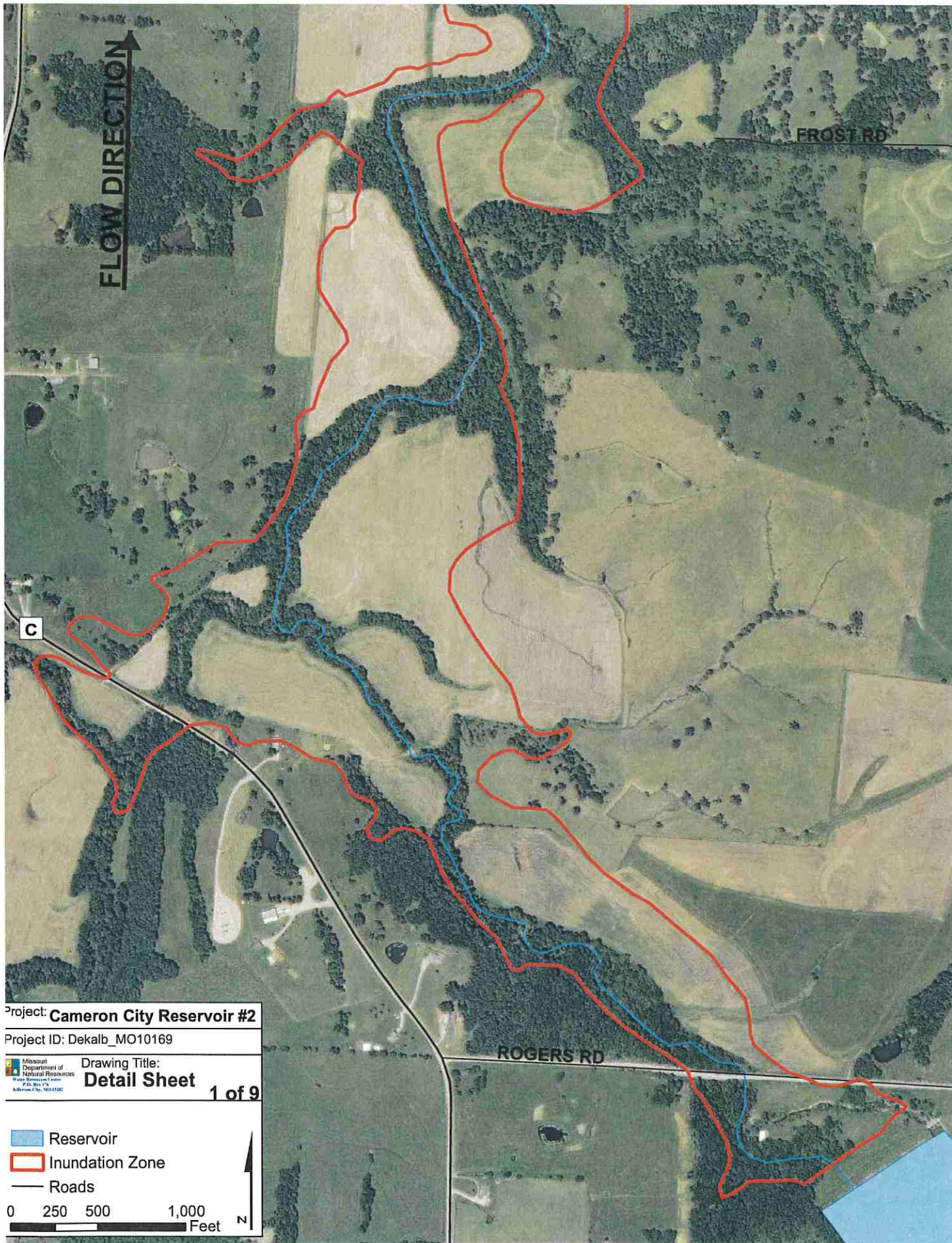


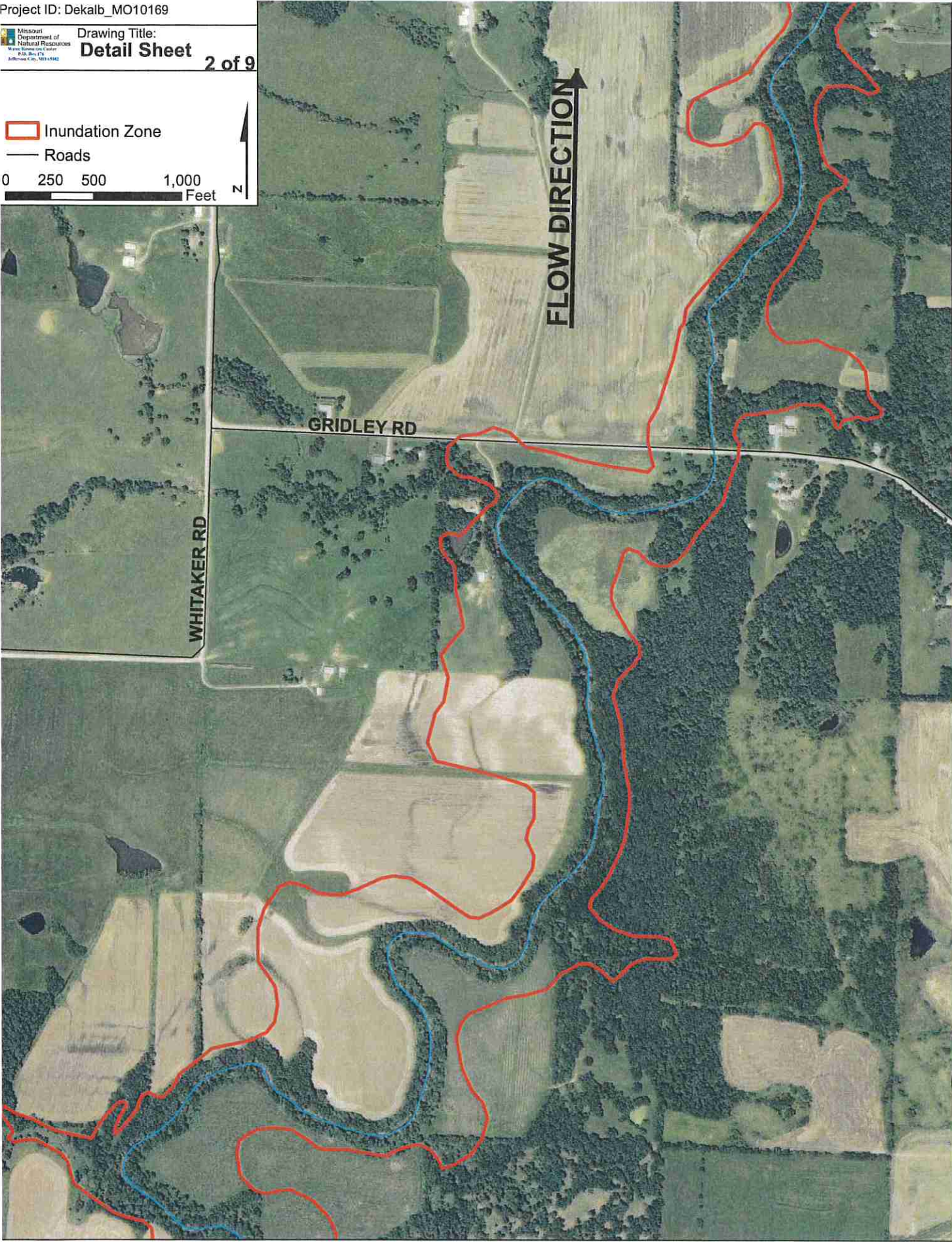
Drawing Title:
Key Sheet

1 of 1

- Reservoir
 - Inundation Zone
 - Municipality
 - County Boundary
- 0 0.5 1 Miles



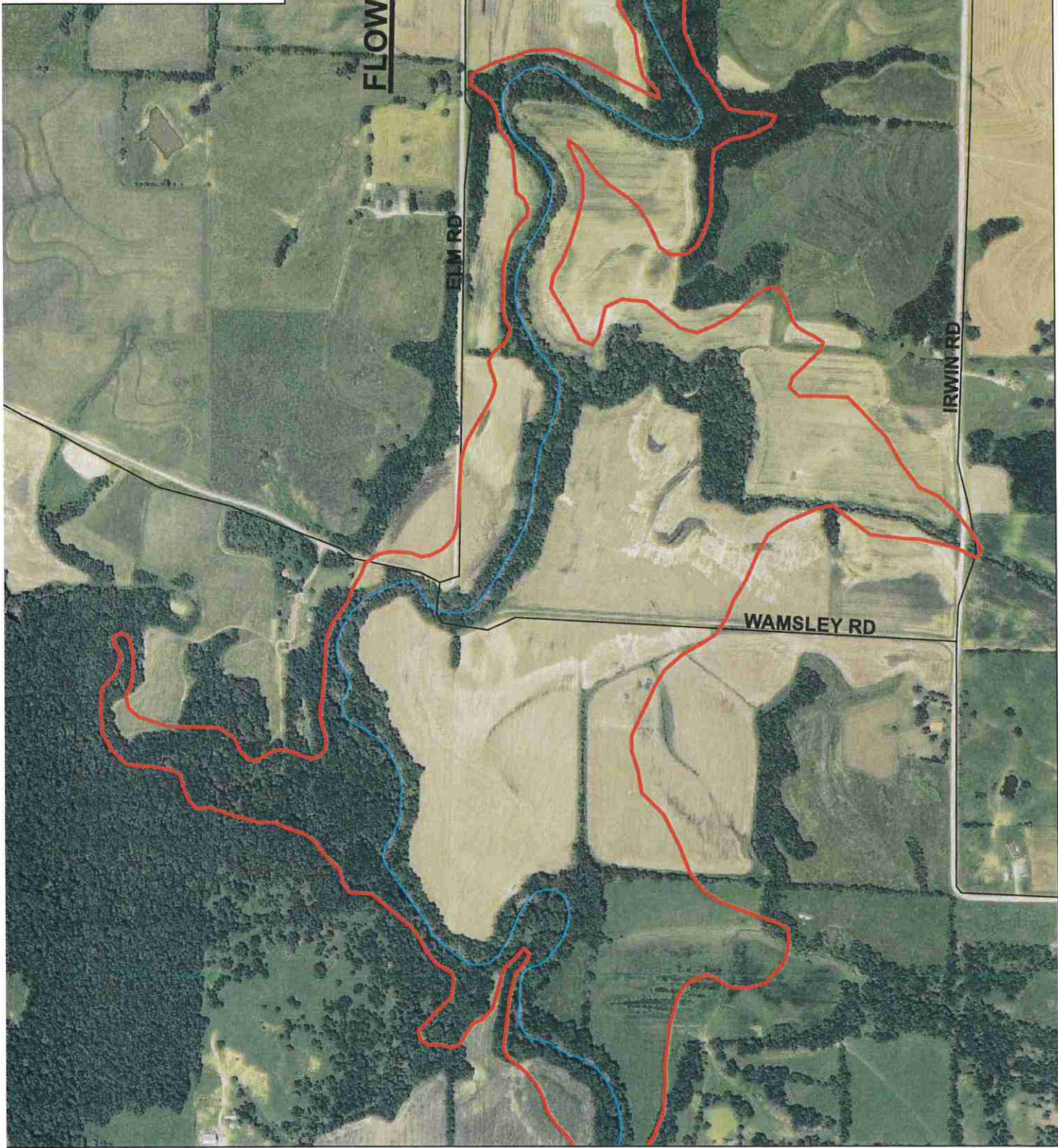


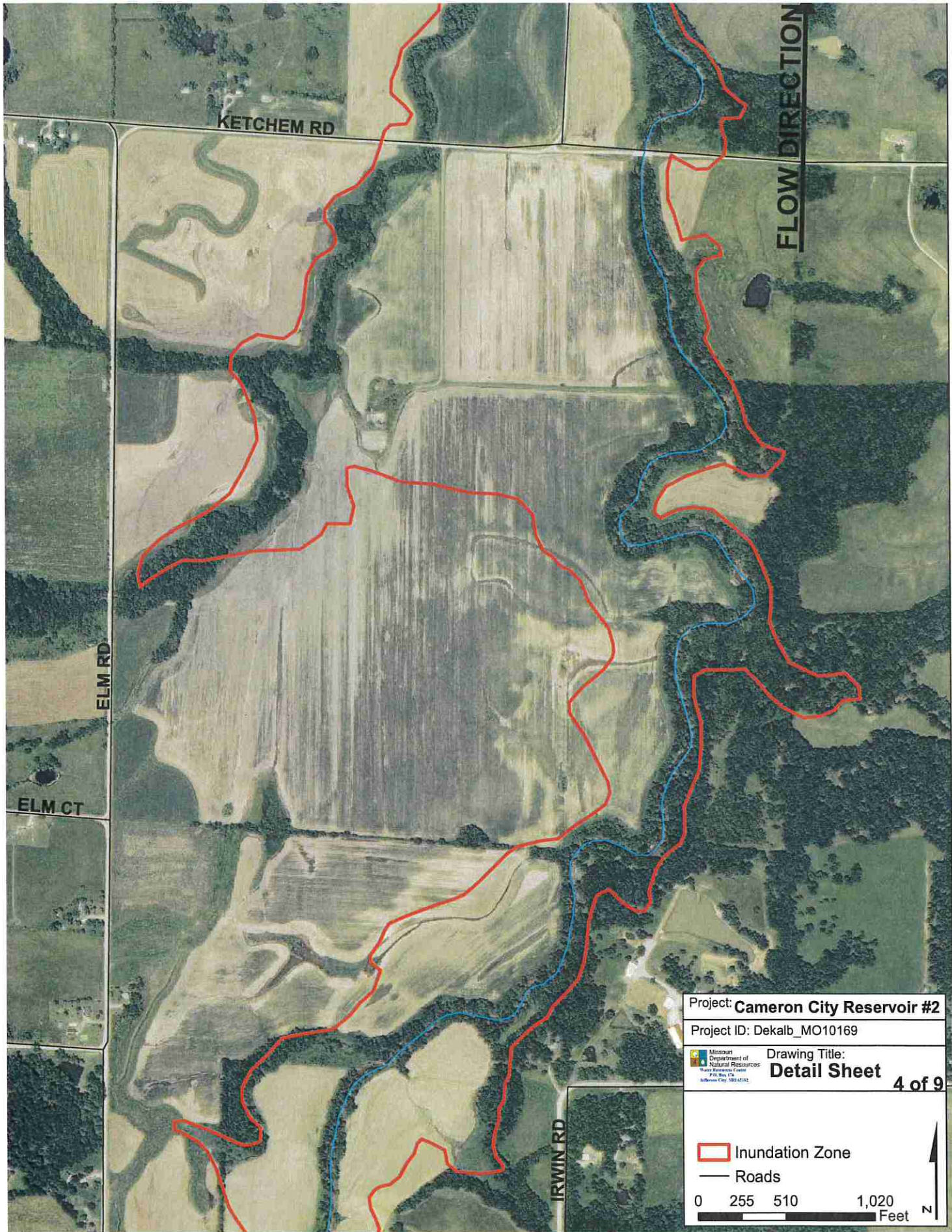


 Inundation Zone

 Roads

0 250 500 1,000
Feet







Project: **Cameron City Reservoir #2**

Project ID: Dekalb_MO10169

 Missouri
Department of
Natural Resources
Water Resources Center
P.O. Box 176
Jefferson City, MO 64102

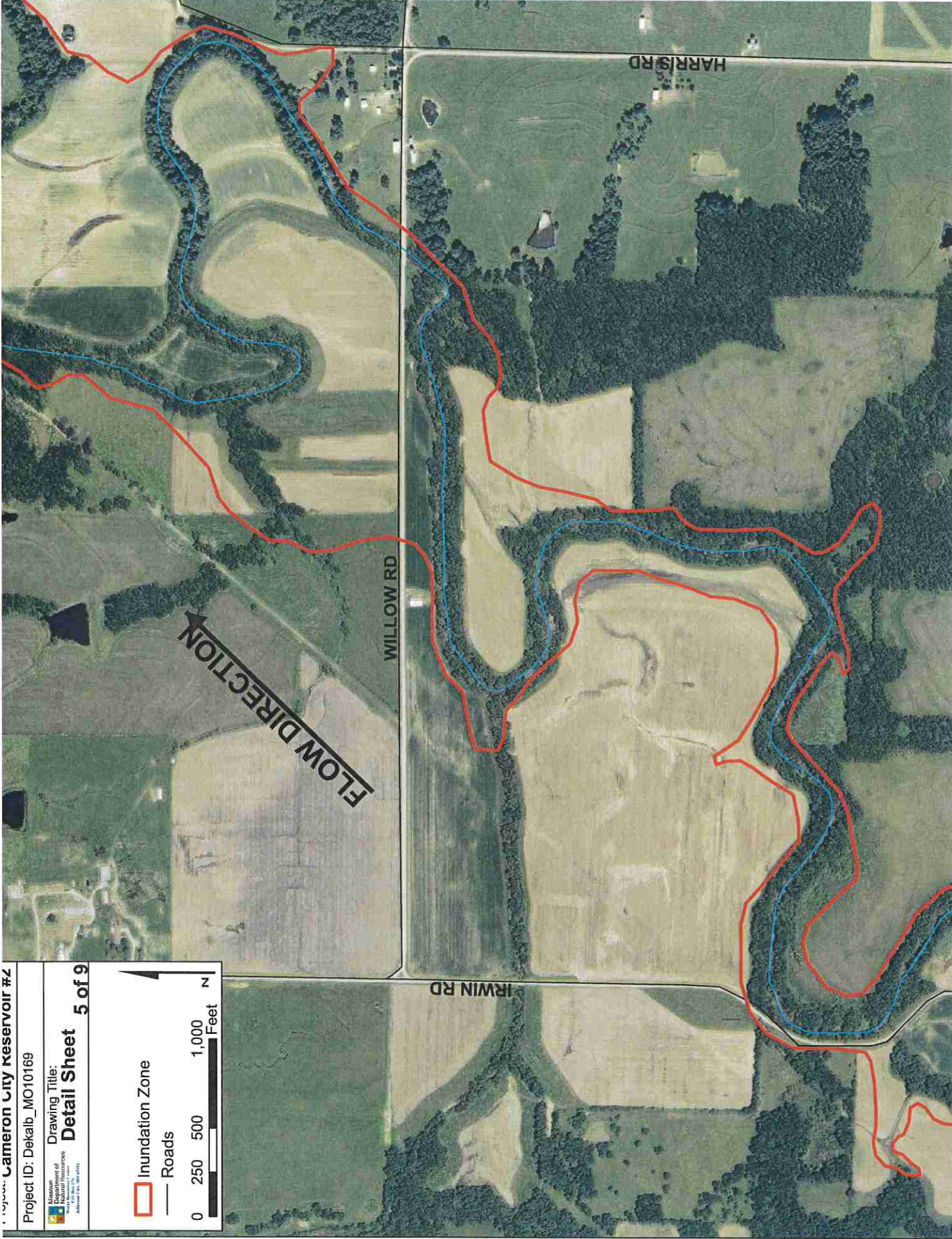
Drawing Title:
Detail Sheet

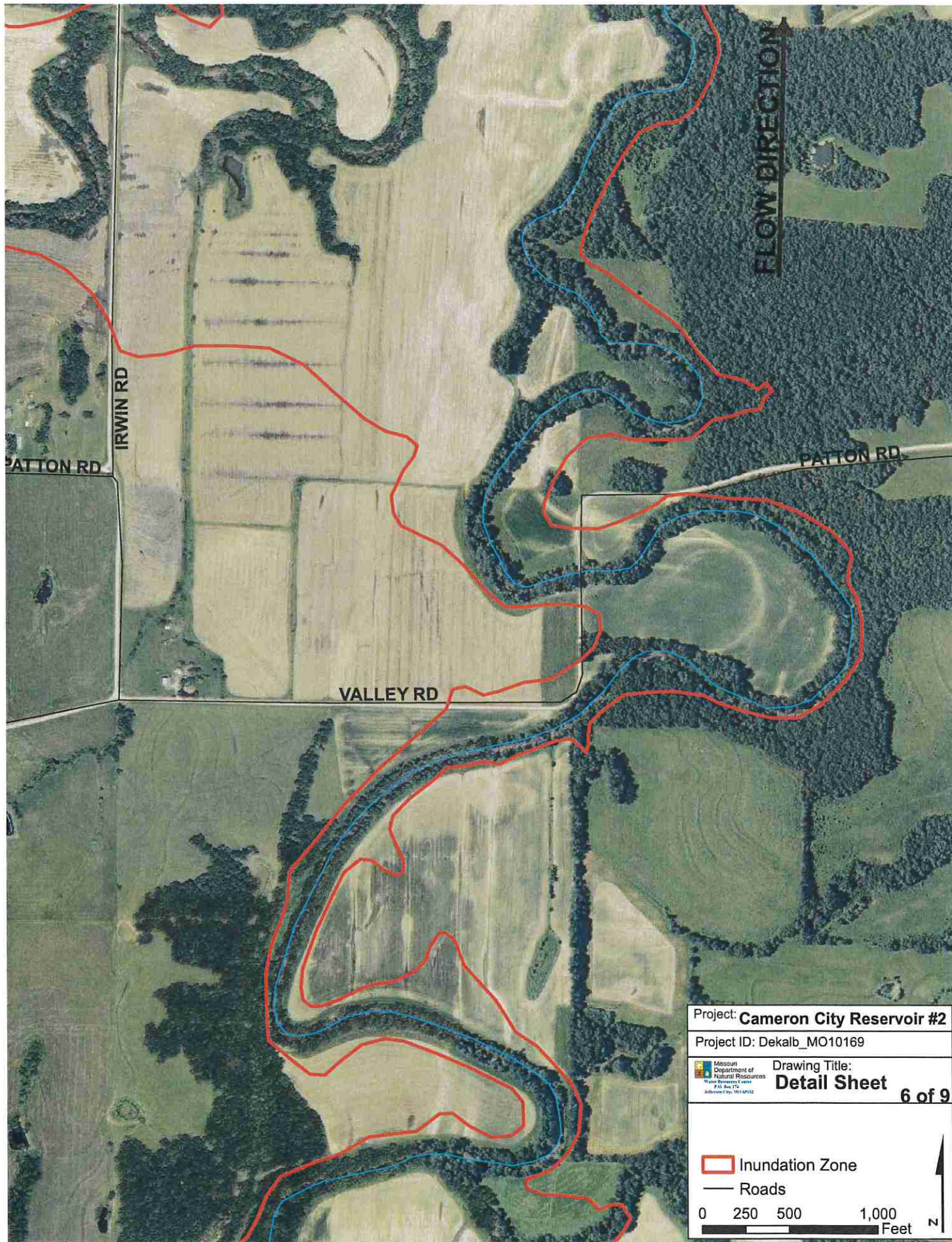
4 of 9

 Inundation Zone
 Roads

0 255 510 1,020
Feet







Project: **Cameron City Reservoir #2**

Project ID: Dekalb_MO10169


Drawing Title:
Detail Sheet 6 of 9

Missouri Department of
Natural Resources
Water Resources Center
P.O. Box 176
Jefferson City, MO 64102


 Inundation Zone
 Roads

0 250 500 1,000
Feet






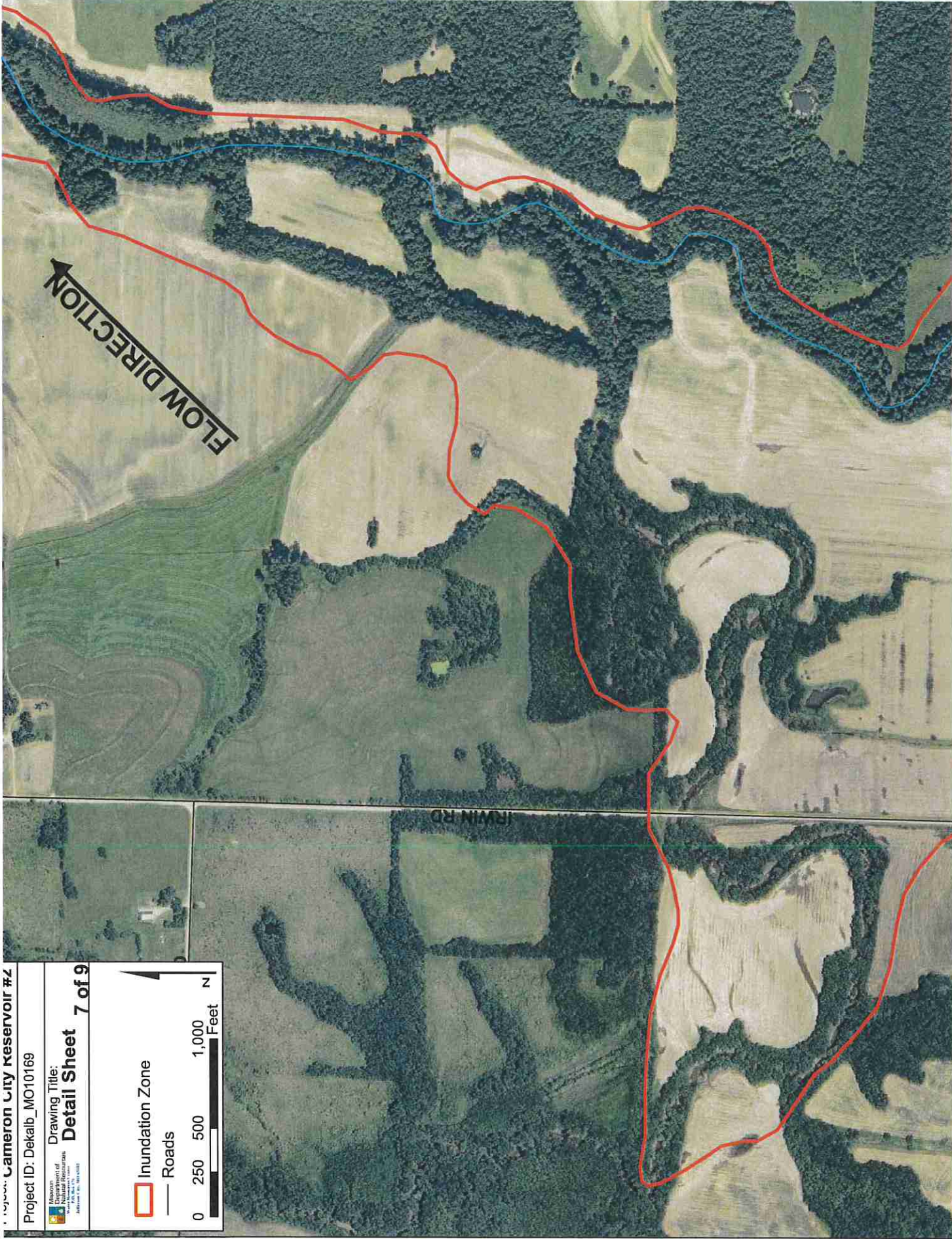
0 250 500 1,000 Feet

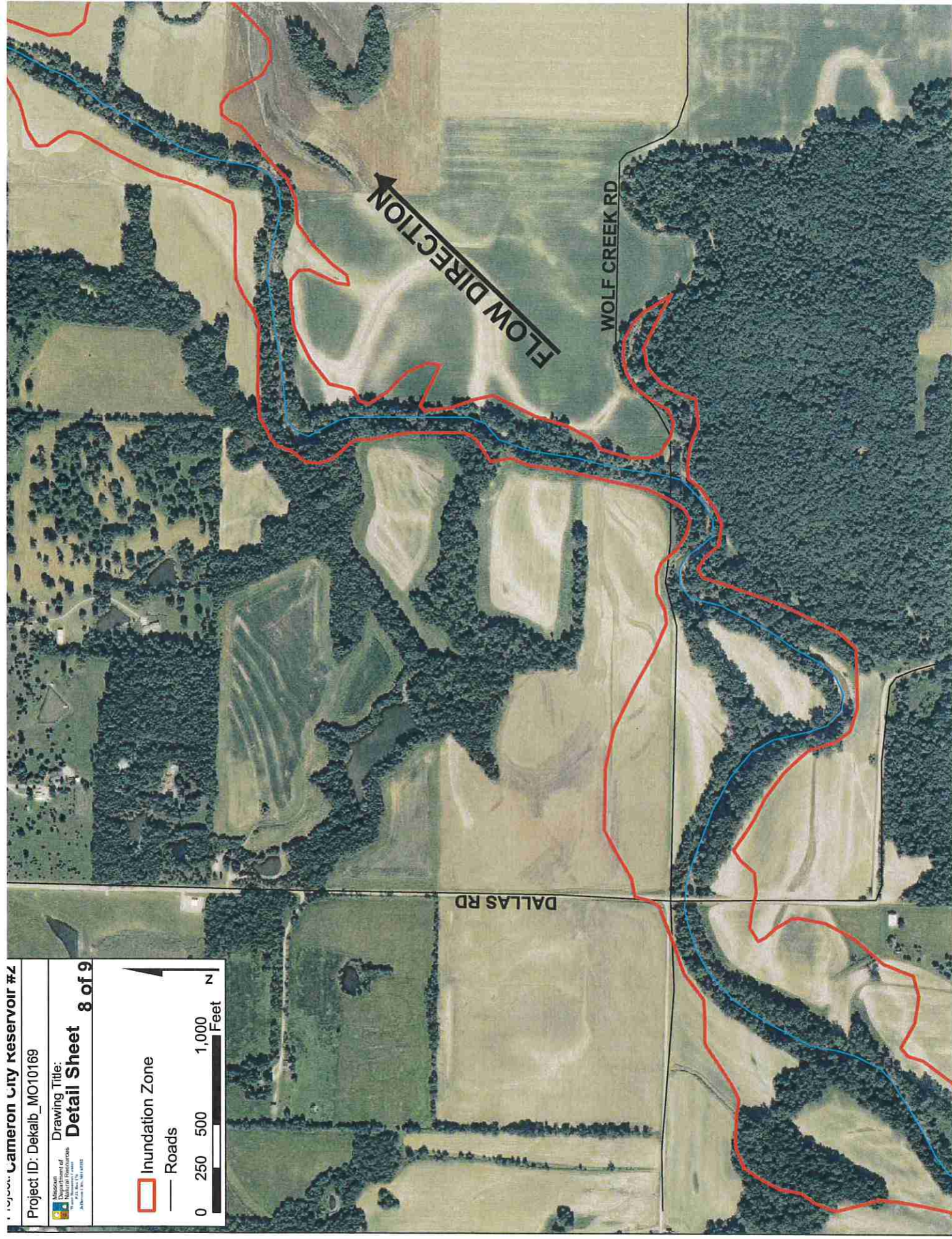


Inundation Zone



Roads






Cameron City Reservoir #2


Project ID: Dekalb MO10169

Drawing Title:
Detail Sheet 8 of 9

 Inundation Zone

 Roads

0 250 500 1,000 Feet



 Inundation Zone

 Roads

0 250 500 1,000
Feet

N

FLOW DIRECTION

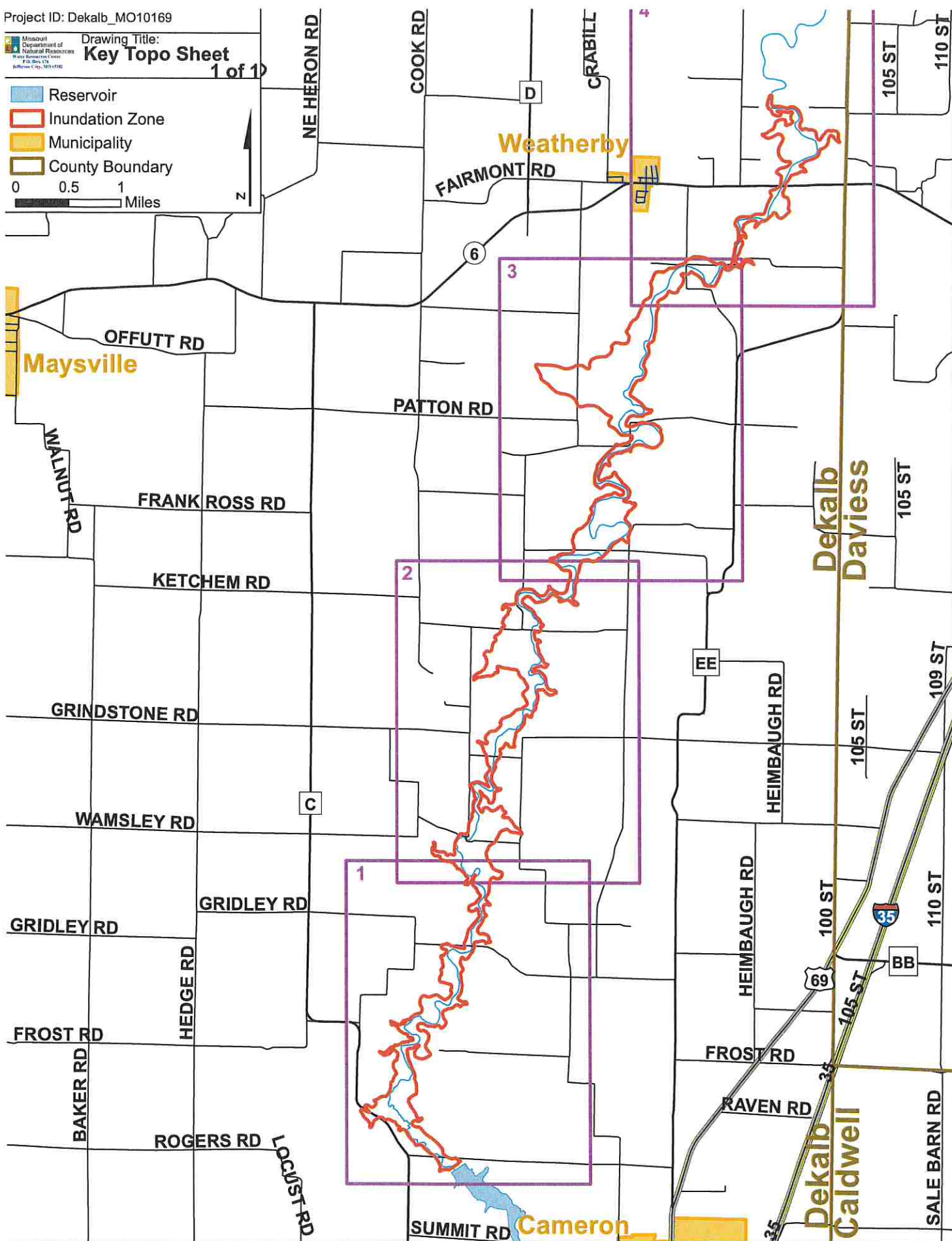
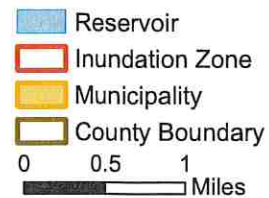
GLENWOOD RD

100 ST

AIRMONT RD

6

EE





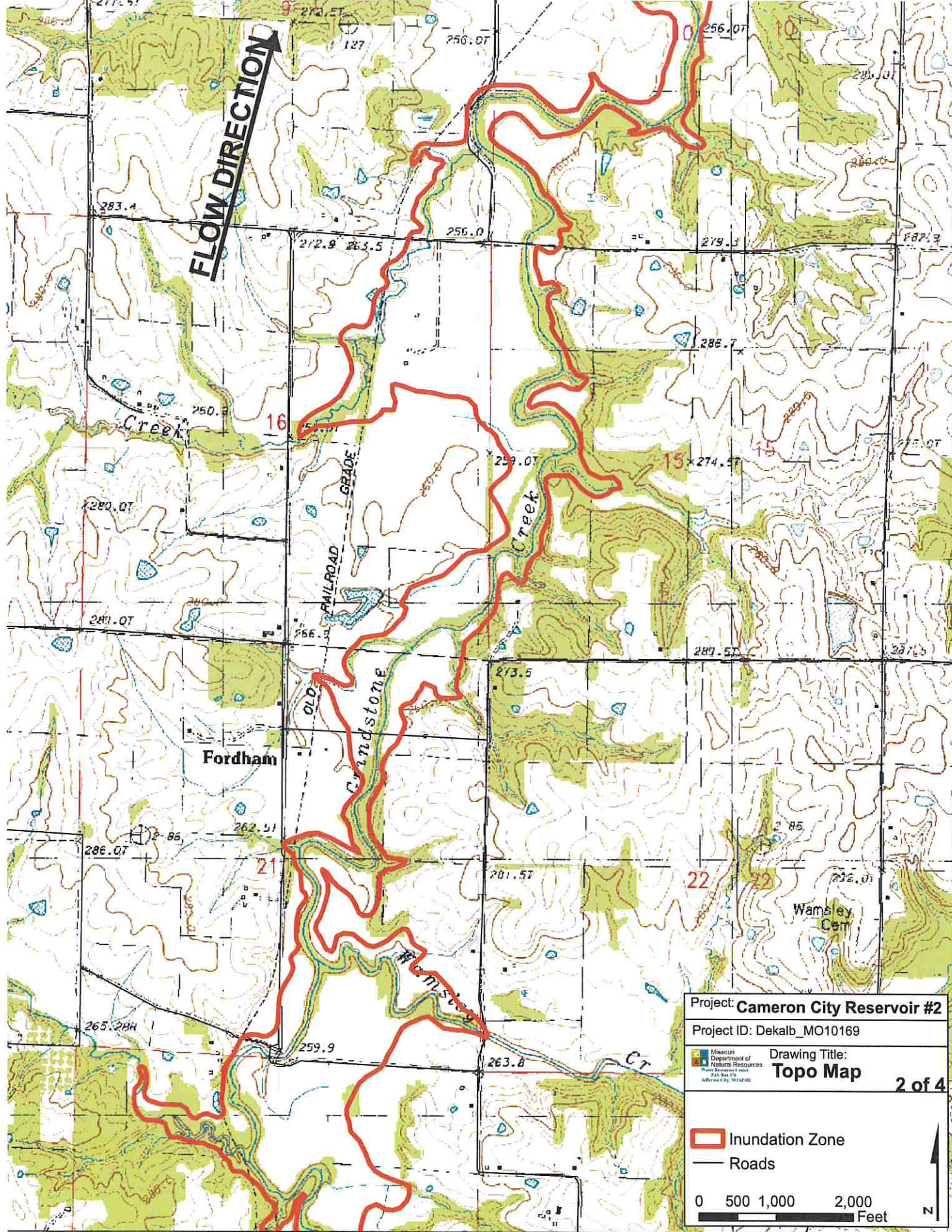
Project: **Cameron City Reservoir #2**

Project ID: Dekalb_MO10169

Drawing Title:
Topo Map 1 of 4

Reservoir
Inundation Zone
Roads

0 500 1,000 2,000 Feet



FLOW DIRECTION

Creek

RAILROAD GRADE
OLD
Crandstone

Fordham

Wamsley Cem

Project: **Cameron City Reservoir #2**

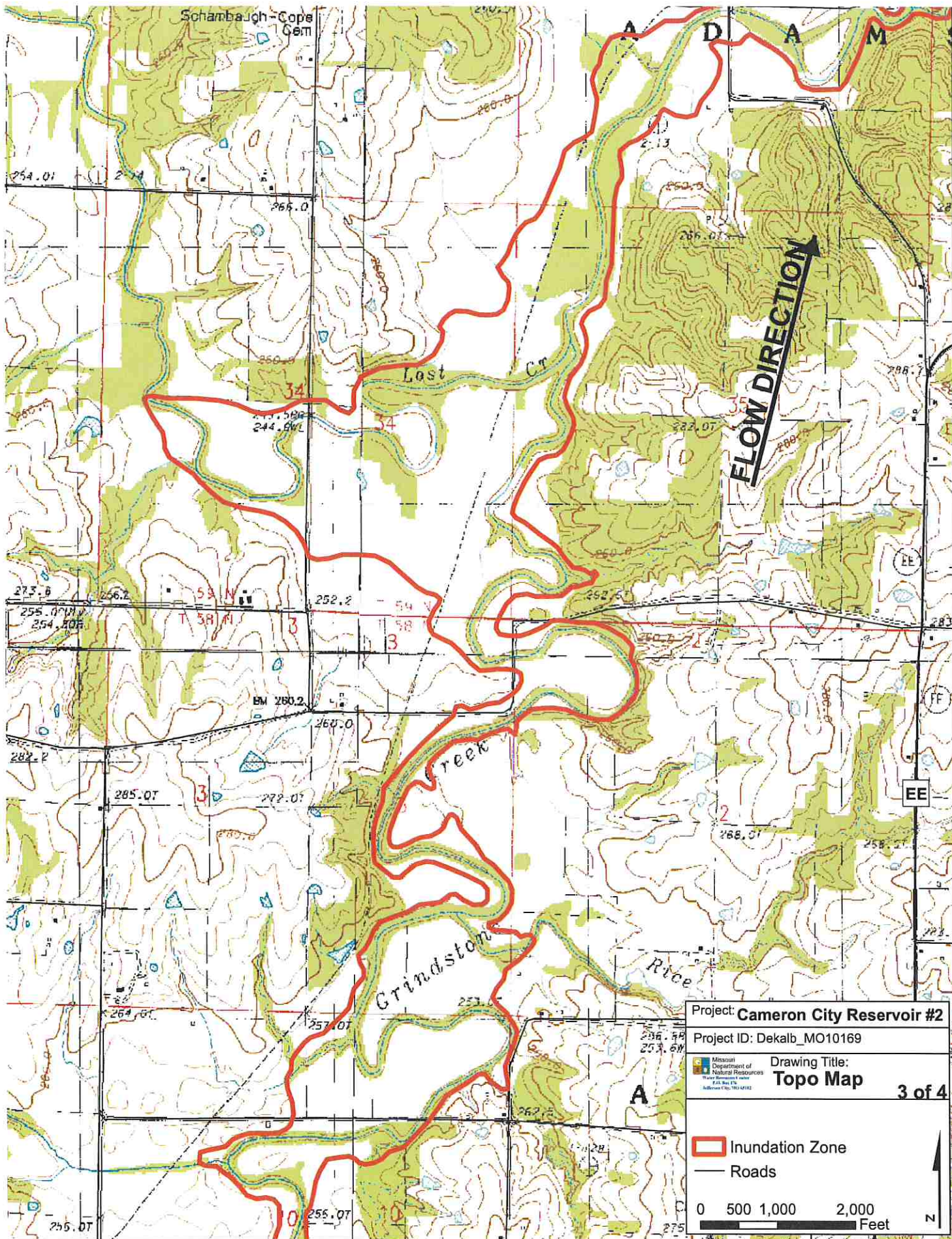
Project ID: Dekalb_MO10169

Drawing Title:
Topo Map 2 of 4

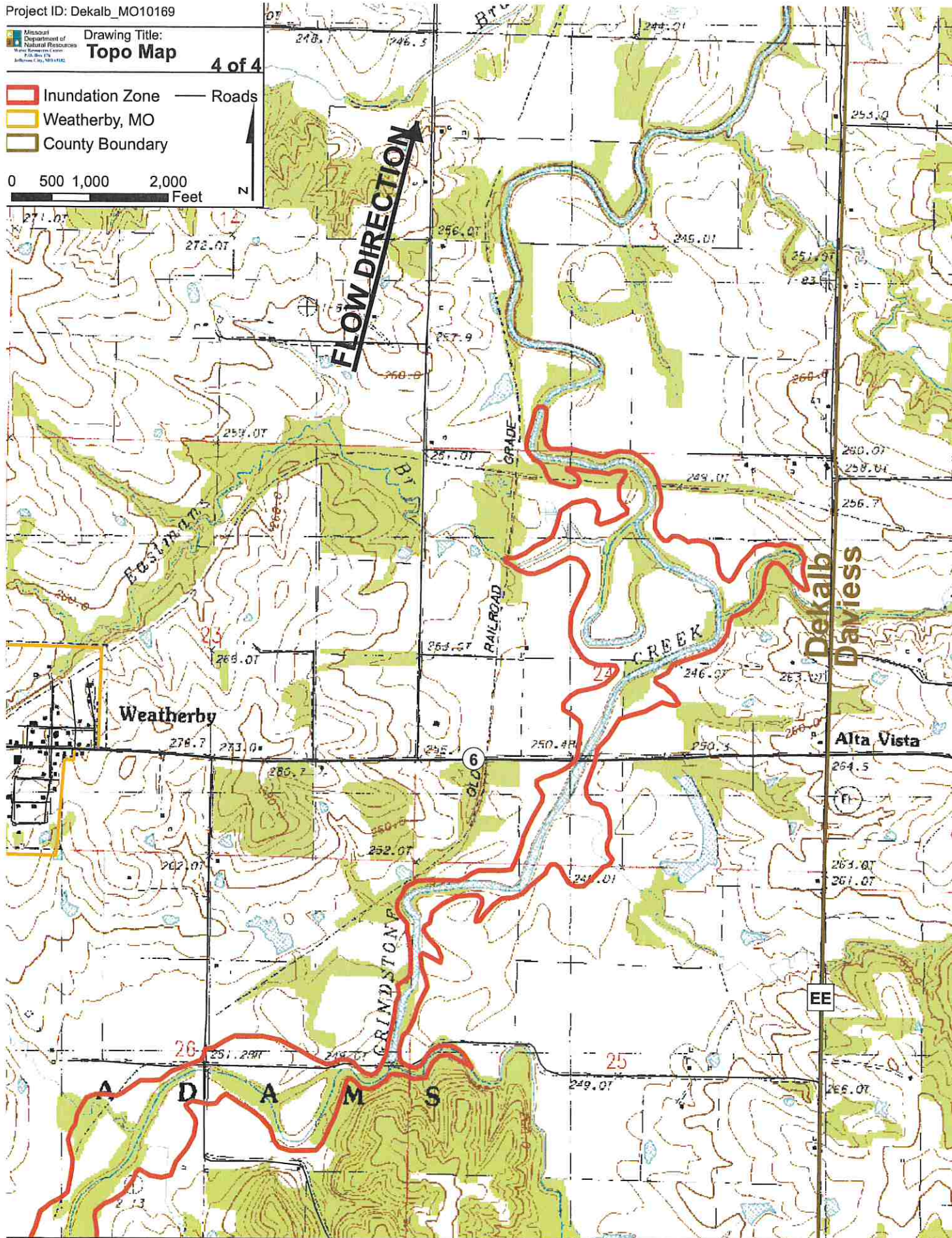
 Inundation Zone
 Roads

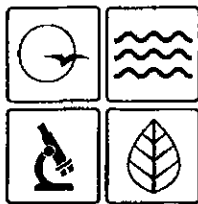
0 500 1,000 2,000
Feet





0 500 1,000 2,000 Feet





Missouri Department of dnr.mo.gov
NATURAL RESOURCES
Eric R. Greitens, Governor Carol S. Comer, Director

573/368-2175

April 5, 2017

City of Cameron
C/O Mark Gaugh
205 North Main Street
Cameron, Missouri 64429

RE: Cameron Reservoir #2 Dam (MO10169) DeKalb County

Dear Mr. Gaugh:

As a result of an inspection of the Cameron Reservoir #2 Dam on March 22, 2017, I am pleased to inform you that Registration Permit R-277 has been renewed and is enclosed for your use. The term of the permit will be three years from the expiration date of the last permit issued and will expire on March 26, 2020. Prior to the permit expiring, the dam will be reinspected by the Dam and Reservoir Safety Program at no cost to you. The permit is being renewed for three years based on the downstream environmental zone classification.

Please refer to the enclosed inspection report for additional information on the inspection. If you have any questions, please feel free to contact David Donovan at (573) 368-2175.

Thanks for your cooperation in renewing this permit.

Sincerely,

MISSOURI GEOLOGICAL SURVEY

Ryan P. Stack, P.E.
Chief Engineer
Dam & Reservoir Safety Program

RPS/clb
Enclosure



**STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
DAM AND RESERVOIR SAFETY COUNCIL**

REGISTRATION PERMIT

Pursuant to Chapters 236.400 through 236.500 of the Revised Statutes of Missouri and the rules established by the Dam and Reservoir Safety Council, and on the basis of an inspection by the Department of Natural Resources for the Cameron Reservoir #2 Dam, DeKalb County, all of which are made a part hereof by reference, **PERMISSION IS HEREBY GRANTED** to the City of Cameron, hereafter known as the permittee, whose address for the purpose of notices and other communications pertaining to this permit is 205 North Main Street; Cameron, Missouri 64429, which address is subject to change by written notice from the permittee, **TO OPERATE** said dam and reservoir located in Section 10, Township 57 North, Range 30 West, having identification number of MO10169, a dam height of 38 feet, a principal spillway elevation of 943.8 feet (UTM NAD83 Zone 15N GEOID12A), a minimum crest elevation of 949.0 feet (UTM NAD83 Zone 15N GEOID12A), a reservoir area of 32 acres at the water storage elevation and approximate UTM Coordinates of 4,402,200 Meters North and 392,200 Meters East, Zone 15, subject to the following provisions:

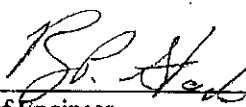
GENERAL PROVISIONS:

1. No liability shall be imposed upon or incurred by the State of Missouri and/or the Dam and Reservoir Safety Council, or any of their officers, agents, employees, and members, officially or personally, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the permittee or any of its agents, employees, or contractors, or closed corporations or successors relating to any matter hereunder. This permit shall not be construed as estopping or limiting any legal claim or right of action of the state against the permittee, its agents, employees or contractors for any damages or injury resulting from any such act or omission by them or for violation of or failure to comply with the provisions of the permit or applicable provisions of law.
2. The permittee shall comply with all Federal, State and local laws and regulations, and shall obtain such other permits as may be required.

3. In cases where the doing by the permittee of anything authorized by this permit shall involve the taking, using or damaging of any property rights or interest of any other person or persons, or of any publicly owned lands or improvements thereon or interests therein, it is the sole responsibility of the permittee, before proceeding therewith, to obtain the written consent of all persons, agencies, or authorities concerned, and to acquire all property, rights and interests necessary therefore, including flood easements or permissions for all properties which may be inundated by the dam on a temporary or permanent basis in the upstream impoundment area below the top of dam elevation.
4. The permittee shall notify the Dam and Reservoir Safety Council in writing upon the sale or other transfer of interest in the dam or reservoir.
5. Based on conditions existing at the time of issuing this permit, the Downstream Environment Zone is Class 2. Future development in the vicinity of the dam and flood plain below the dam may result in a change in classification. This change will necessitate hydraulic and structural upgrading of the dam so the dam is in compliance with the rules and regulations of the Missouri Dam and Reservoir Safety Council. Permittee or its representatives, successors or assigns shall perform any such upgrading upon a change in classification and upon notification from the Missouri Dam and Reservoir Safety Council.
6. The permittee shall not alter, enlarge, reduce, repair or remove the dam, reservoir or appurtenances without first obtaining a construction permit from the Dam and Reservoir Safety Council.
7. The permittee shall immediately notify in writing, the Chief Engineer of any conditions relating to structural stability of and seepage through the dam discovered during the term of this permit which differs from those conditions identified in the renewal inspection summary.
8. The terms and provisions of this permit shall extend to and bind the successors in authority of the Dam and Reservoir Safety Council and the legally assigned successors in interest of the permittee.
9. Maintenance of the dam and reservoir herein permitted shall be the responsibility of the permittee.
10. The term of this permit shall be three (3) years from the expiration date of the last registration permit issued for the dam and will expire on March 26, 2020. The permittee shall apply for renewal not less than sixty (60) days prior to this expiration date.

Executed at Rolla, Missouri on this 5th day of
April, 2017

DAM & RESERVOIR SAFETY COUNCIL

By 
Chief Engineer
Dam and Reservoir Safety Program

DEPARTMENT OF NATURAL RESOURCES
DAM & RESERVOIR SAFETY PROGRAM
DAM INSPECTION REPORT

DATE: March 31, 2017

COVER SHEET

NAME OF DAM: Cameron Reservoir #2 Dam

I.D. # : MO10169

LOCATION: County: Dekalb

Section: 10, Twp. 57 N, Rge. 30 W

OWNER: <u>City Of Cameron</u>
ADDRESS: <u>C/O Mark Gaugh</u>
<u>205 North Main Street</u>
CITY/STATE/ZIP: <u>Cameron, Missouri 64429</u>
TELEPHONE: <u>816-632-2177</u>
<u>Paul Rinehart (816) 632-2844 h2oplant@cameronmo.com</u>

PERMIT #	HAZARD CLASS	TYPE OF DAM
R-277	CLASS II	EARTHFILL

TYPE OF SPILLWAY (s) Principal Ogee weir on left abutment
Emergency None

☒ I hereby certify that the Cameron Reservoir #2 Dam was inspected on March 22, 2017 in accordance with RSMO 236.400 through RSMO 236.500.

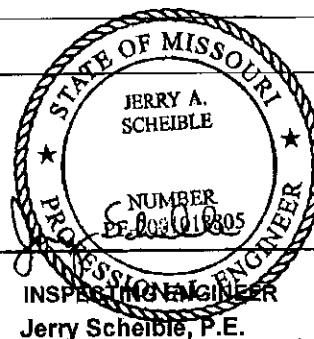
☒ I hereby certify that the Cameron Reservoir #2 Dam did not have any observed defects that required correction at the time of the inspection.

☒ Judgement of Slope Stability – The embankment and appurtenant structures appeared to be in good overall condition at the time of the inspection, with no indications of slope instability or excessive seepage.

☐ Defects were found that will have to be corrected prior to the permit being renewed.

STATION	ELEVATION (FT)	COMMENTS
TBM	948.20	Temporary benchmark-top of right concrete wingwall of principal spillway
PS	943.80	Principal spillway crest
Dam	949.00	Dam crest low point
WL	943.80	Water level on day of inspection

Elevations are in feet and are based on UTM NAD88 Zone 15N GEOID12A



INSPECTION ENGINEER
Jerry Scheible, P.E.

Inspection Checklist

NAME OF DAM:	Cameron Reservoir #2 Dam	INSPECTION DATE: March 22, 2017
ID #: MO 10169	COUNTY: DeKalb	HAZARD CLASS: 2

HAZARD CLASSIFICATION: ☒ Unchanged ☐ Changed

Item	Condition*	Comments
1. Vegetation	M.R.	Cut and remove woody vegetation encroaching on right side of concrete spillway channel.
2. Seepage	N.P.	
3. Principal Spillway	N.P.	
4. Emergency Spillway	N.A.	
5. Embankment	M.R.	Fill and compact animal burrow near center of the toe of the dam.
6. Reservoir Area	N.P.	
7. Lake Drain Gates or Valves	N.P.	
8. Spillway Outlet Channels	O.R.	Monitor the undercutting of the principal spillway concrete apron.
9. Embankment Drain Outlets	N.A.	
10. Riprap	N.P.	

*N.P. = No observable problem; M.R. = Maintenance Required; D.O. = Defect Observed; E.C = Emergency Condition;
O.R. = Observation Required; N.A. = Not Applicable

Required Freeboard	Available Freeboard
5.2 feet	5.2 feet

RECOMMENDATION:

- ☒ Permit is being renewed
- ☐ Permit is not being renewed

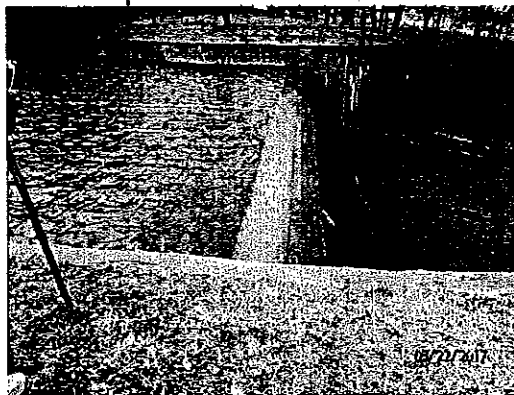
Photographs of MO10169 on March 22, 2017



Upstream face and crest



Downstream face



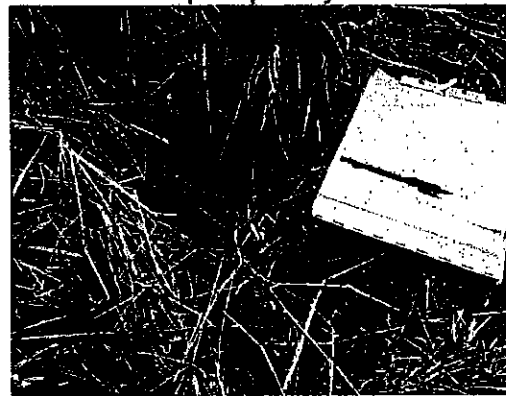
Principal spillway inlet



Principal spillway outlet



Undercutting of spillway apron

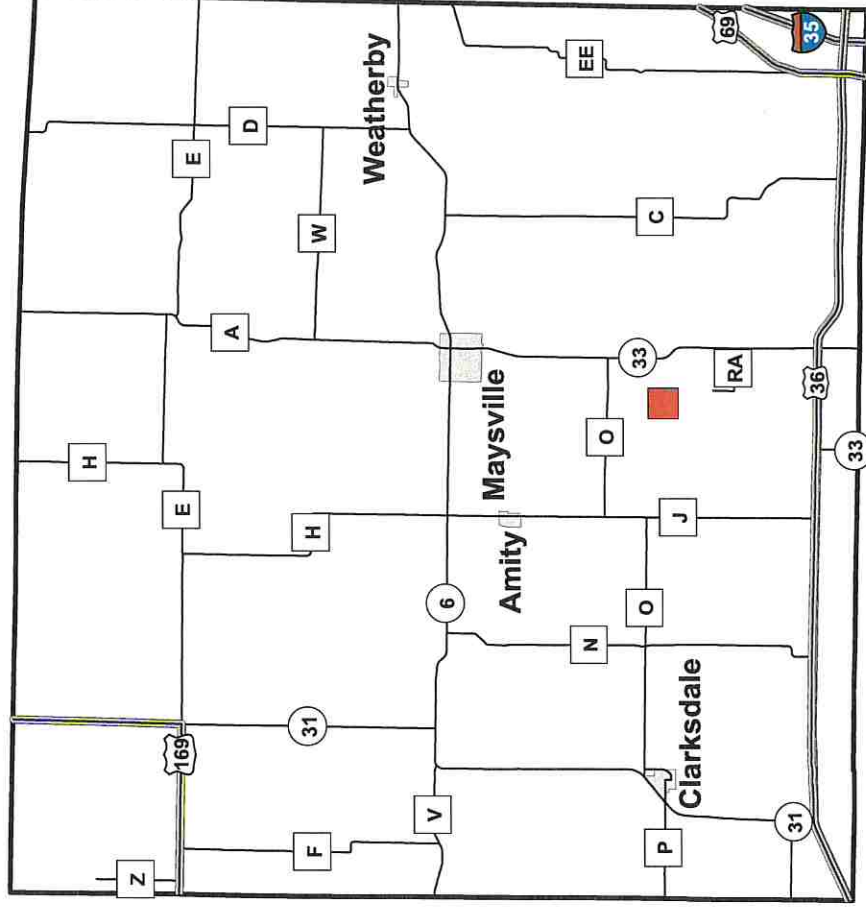


Rodent burrow



Vegetation to be removed

Grindstone LMC B1-A Breach Inundation Map



Dekalb County, Missouri
DEKALB_MO12201

Note: Actual areas inundated will depend on the actual dam failure criteria and may differ from the areas shown. Due to limitations, methods, assumptions, and procedures used to develop the inundation area, the map should only be used for evacuation and emergency purposes.



Missouri
Department of
Natural Resources
Water Resources Center
P.O. Box 176
Jefferson City, MO 6510

Explanation Sheet

Project:	Grindstone LMC B1-A Dam Breach Analysis
Drawing Title:	Explanation Sheet 1 of 1
<div><div><div>Missouri Department of Natural Resources Water Resources Center Jefferson City, MO 65112</div></div><div>Project ID: DEKALB_MO12201</div></div>	

Explanation of Maps

The following maps indicate the areas which are predicted to be inundated during the occurrence of a sunny day breach of the dam. The pool elevation at failure is assumed to be at the emergency spillway crest elevation or at the crest of the dam in the absence of an emergency spillway.

Use of Maps

The following maps provide a baseline for evaluation of existing emergency action plans and environmental hazards downstream of the regulated structure.

Definition of Terms

Pool Elevation- Water level in the reservoir.

Dam Crest- The lowest elevation measured along the dam crest.

Spillway Crest- The lowest elevation measured along the crest of the spillway.

Arrival Time- Elapsed time between the breach initiation and the time that water levels first begin to rise at any given point.

Assumed Conditions of Flooding

The pool elevation at failure is assumed to be at the emergency spillway crest elevation or at the crest of the dam in the absence of an emergency spillway. The assumed overtopping erodes a section of the dam resulting in a dangerous and quick release of water. For the hydraulic analysis flow initiation is required and therefore a baseflow of water has been included in the analysis.

Dam Facts

ID:	MO_12201
County:	Dekalb
Location:	S28, T58 N, R31 W
Height of Dam:	41'
Tributary:	Trib to West Fork Lost Creek
Lake Area:	45.2 acres
Max Storage Capacity:	1380 ac-ft
Side slopes:	1.4:1
Bottom width:	65.7'
Bottom elevation:	933'
Breach formation time:	0.51 hr
Pool Elevation at Failure:	961.573'
Pool Volume at Failure:	953 ac-ft


Breach Parameters (Froehlich, 1995)

Downstream Crossings

Lakesite Road	State Hwy 6
Wamsley Road	Hedge Road
State Hwy 33	
Ketchum Road	
Walnut Road	
Offutt Road	

NOTE: LiDAR Elevation data unavailable for Dekalb County.
Analysis was completed with 10 meter Digital Elevation Model

Project ID: Dekalb_MO12201

Missouri Department of Natural Resources
Nemo Denegabit Locum
P.O. Box 176
Jefferson City, MO 64101

Drawing Title:
Key Sheet

1 of 1

Reservoir

Inundation Zone

Maysville, MO

00.250.51

Miles

N

This map illustrates the inundation zones and reservoirs in Maysville, Missouri. The map features a grid of roads and a network of water bodies. The inundation zones are outlined in red and numbered 1 through 6. The reservoirs are shown in blue. The map includes a legend, a scale bar, and a north arrow.

Legend:

- Reservoir (Blue area)
- Inundation Zone (Red outline)
- Maysville, MO (Yellow area)

Scale: 0 0.25 0.5 1 Miles

North Arrow: N

Roads: MAPLE RD, LAKESIDE RD, KENNEDY RD, FRANK ROSS RD, KETCHEM RD, WAMSLEY RD, GRINDSTONE RD, BAKER RD, HEDGE RD, OFFUTT RD, PATTON RD, SHERIDAN RD, MONT RD, GLENWOOD RD, NE HERON RD.

Map Details: The map shows a network of roads and a network of water bodies. The inundation zones are outlined in red and numbered 1 through 6. The reservoirs are shown in blue. The map includes a legend, a scale bar, and a north arrow.

Project ID: Dekalb_MO12201

Missouri Department of Natural Resources

Wildlife Resources Center

PA1, Box 176

Jefferson, MO 64501

Drawing Title:
Detail Sheet

1 of 7

Reservoir

Inundation Zone

Roads

02505001,000

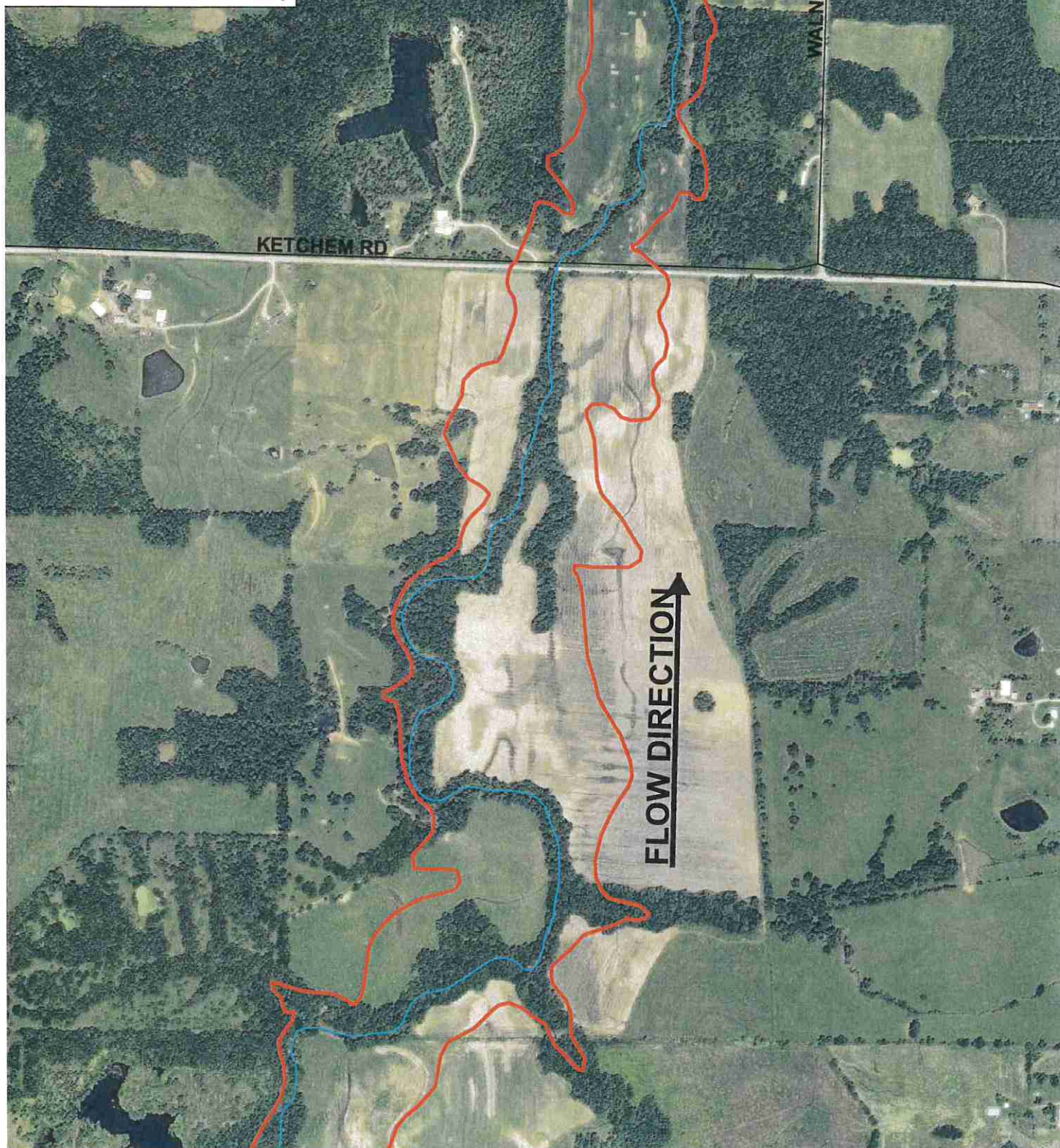
Feet



N

This is an aerial photograph of a rural landscape with a blue reservoir in the lower-left corner. A red line outlines a large, irregularly shaped area labeled as the 'Inundation Zone'. A blue line follows a winding path through the landscape, likely representing a waterway. Two roads are visible: 'WAMSLEY RD' running horizontally across the middle and 'LAKESIDE RD' running vertically on the left side. A black arrow in the upper right points towards the top right, labeled 'FLOW DIRECTION'. The map is overlaid with a grid of white lines.

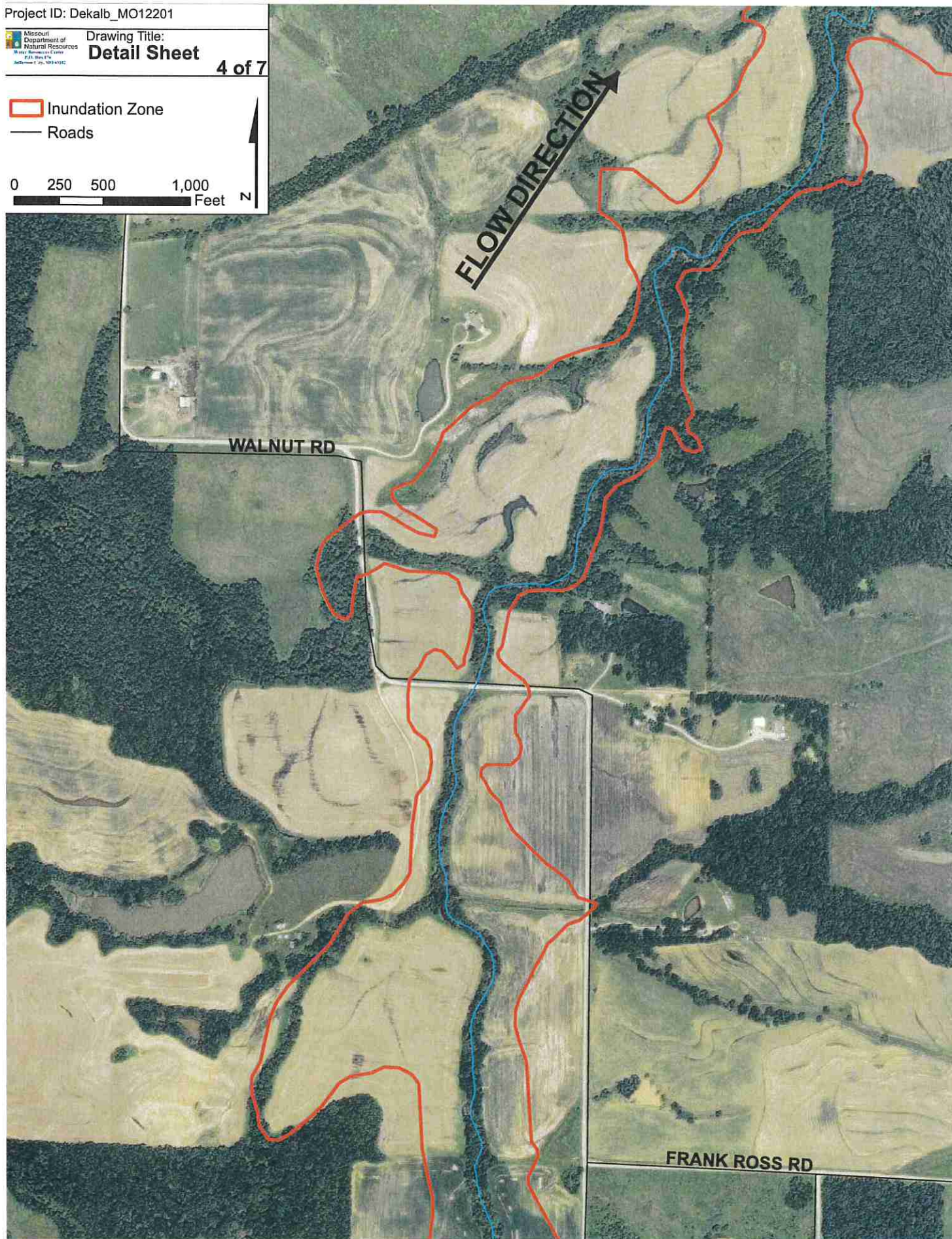
— Roads

0 250 500 1,000 Feet N



 Inundation Zone
 Roads

0 250 500 1,000 Feet N



— Roads

0 250 500 1,000 Feet

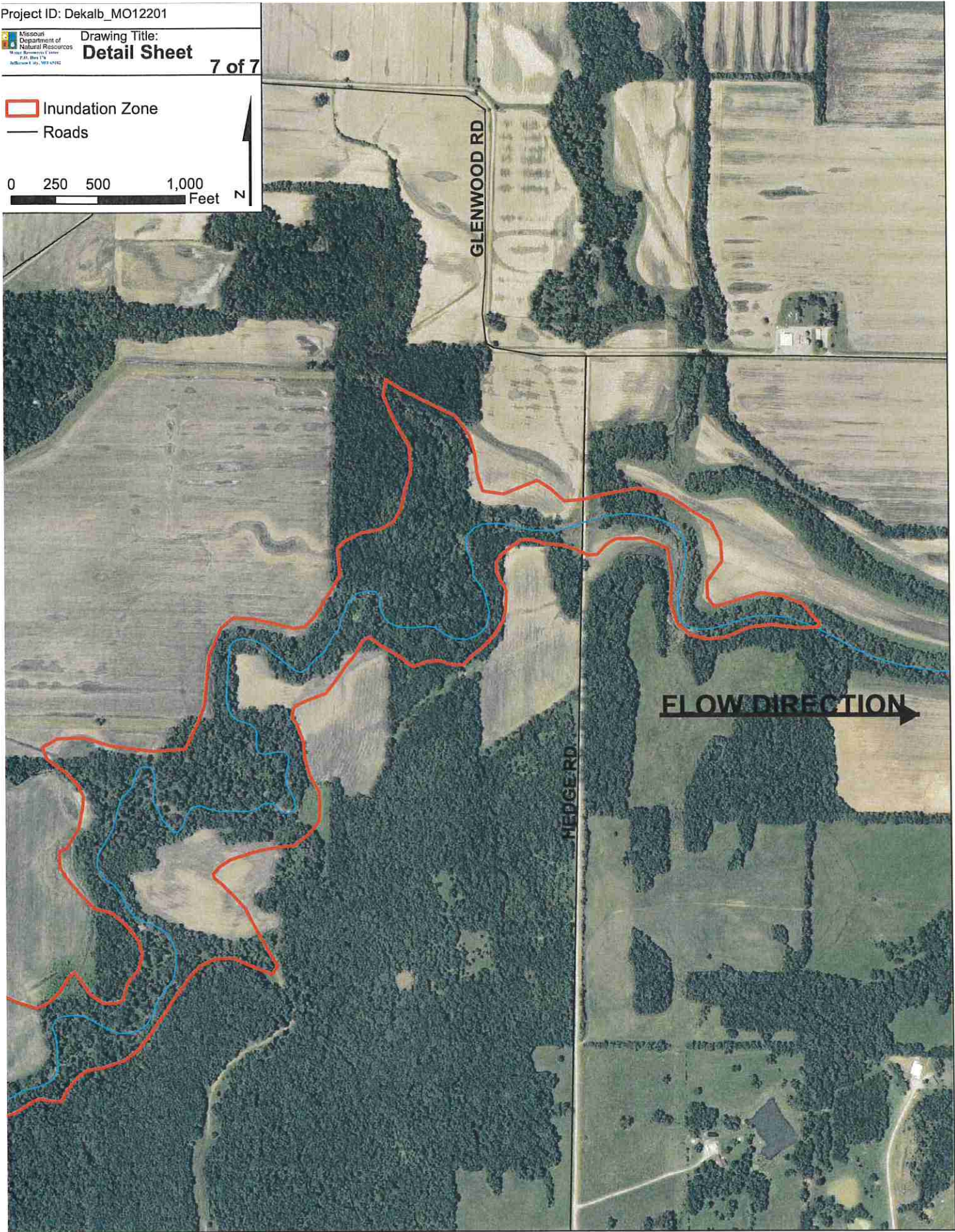
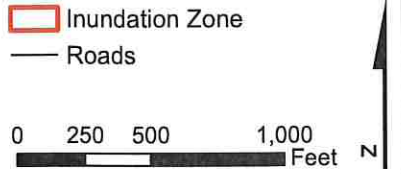
FLOW DIRECTION




DYER LOOP RD

SHERIDAN RD

6

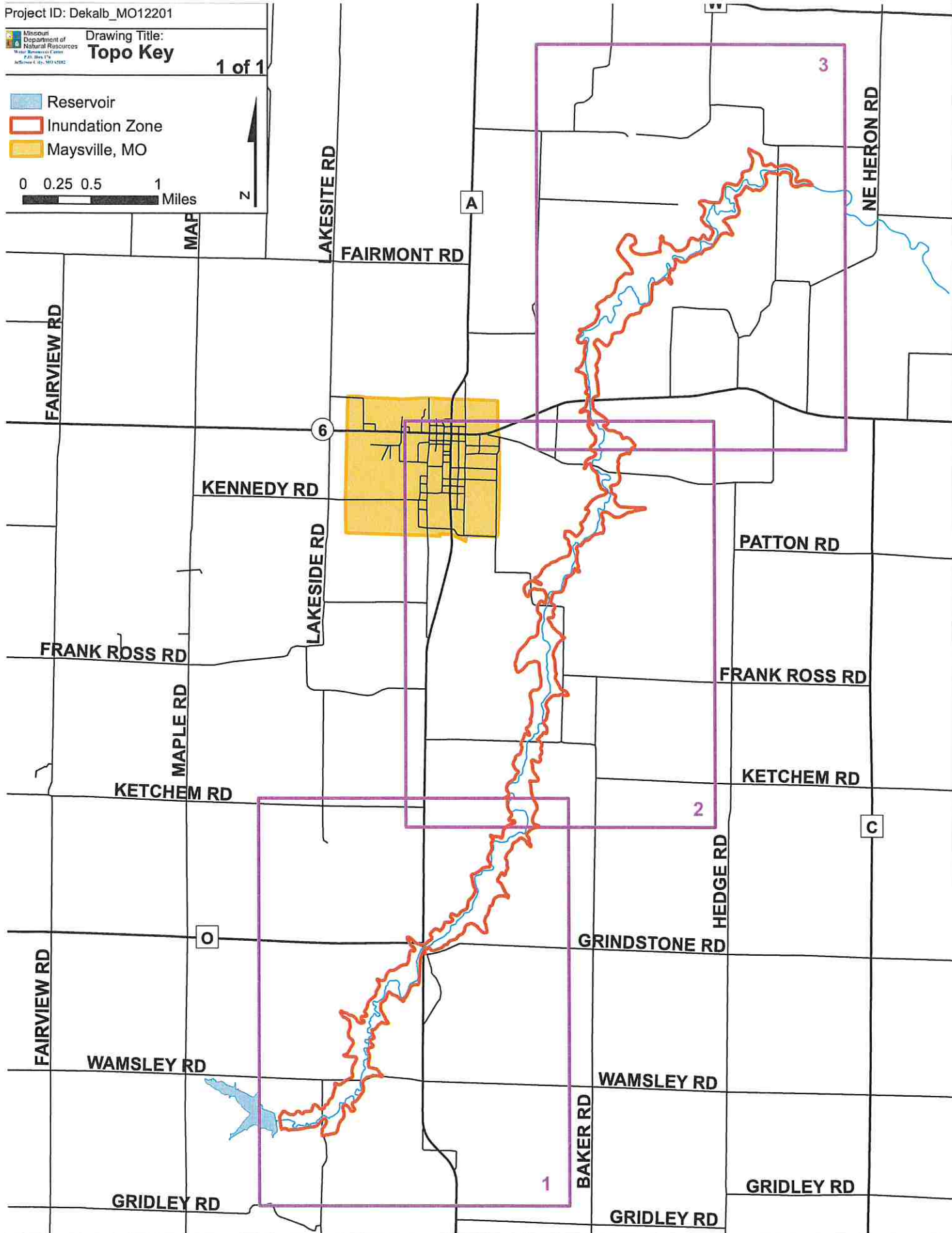
OFFUTT RD



-  Reservoir
-  Inundation Zone
-  Maysville, MO

0 0.25 0.5 1
Miles

N

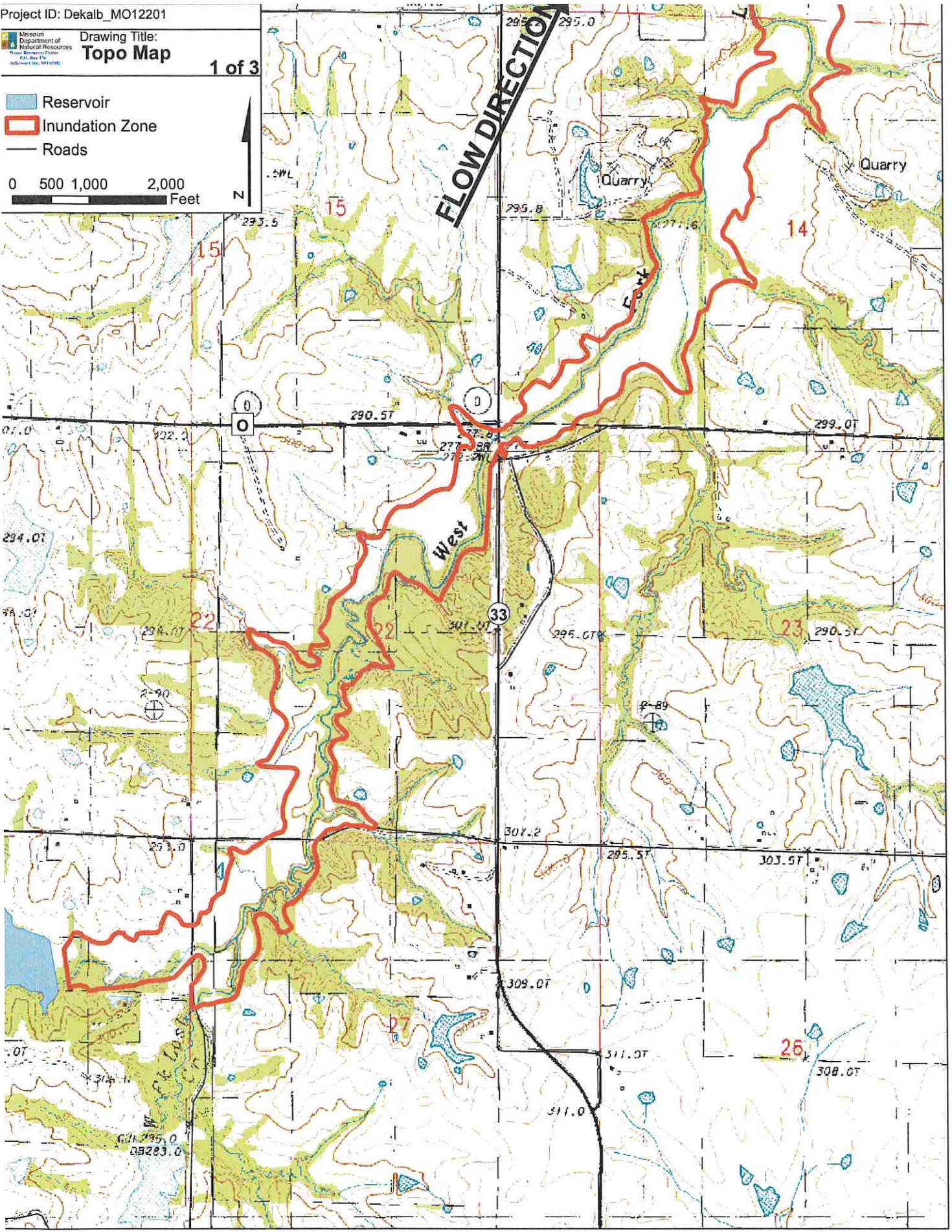


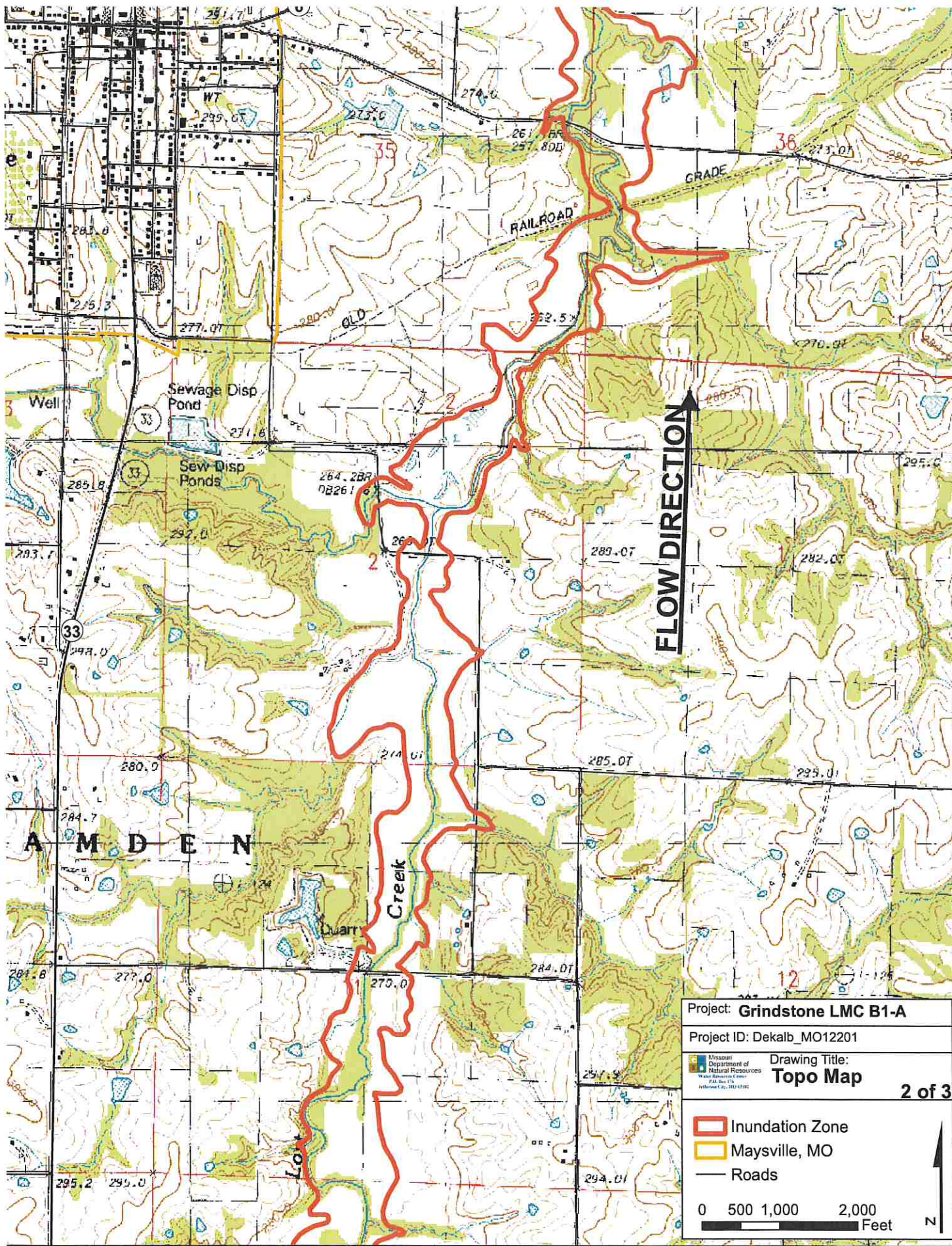
-  Reservoir
-  Inundation Zone
-  Roads

0 500 1,000 2,000
Feet

N

FLOW DIRECTION





Project: **Grindstone LMC B1-A**

Project ID: Dekalb_MO12201





Drawing Title:
Topo Map

2 of 3

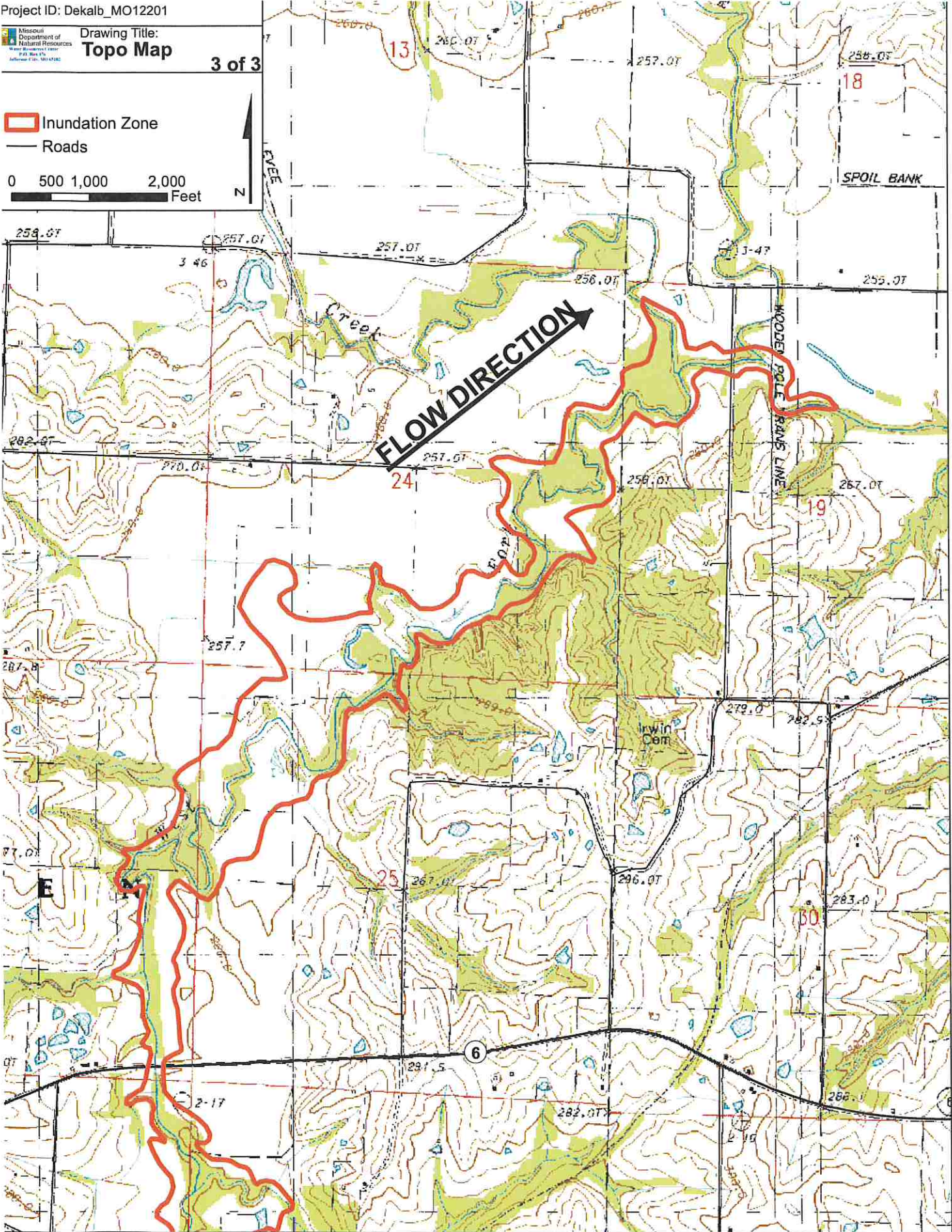
- ▬ Inundation Zone
- ▬ Maysville, MO
- ▬ Roads

0 500 1,000 2,000 Feet

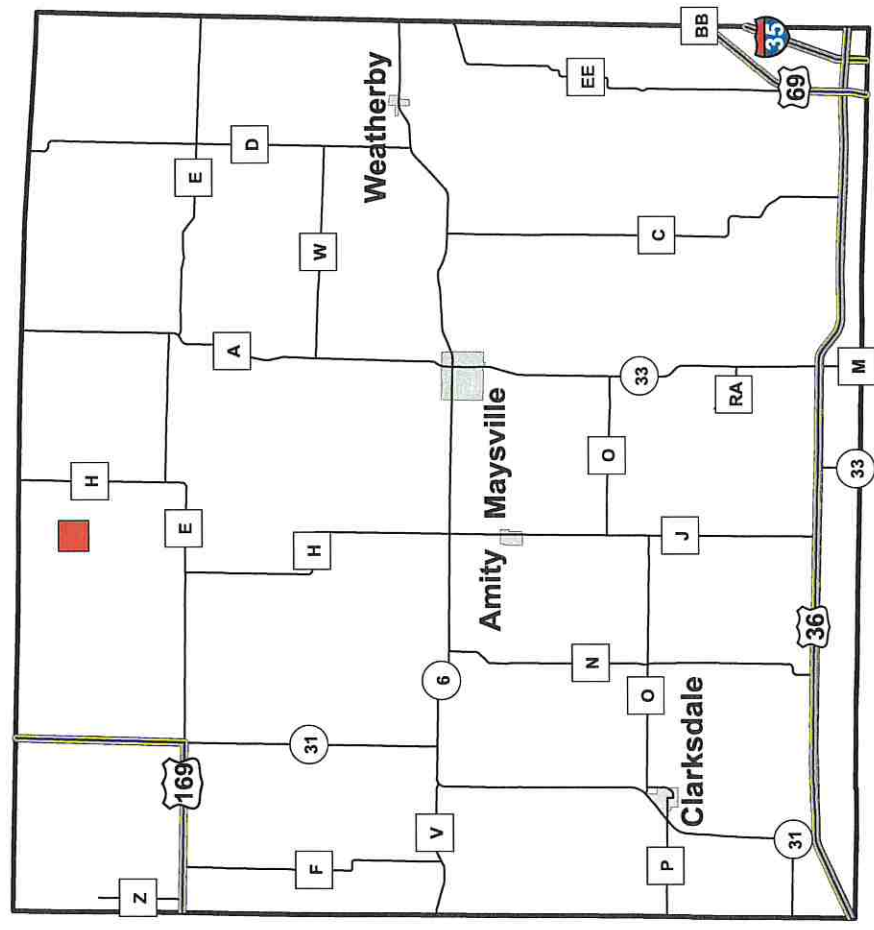


 Inundation Zone
 Roads

0 500 1,000 2,000
Feet



Grindstone LMC C-3 Breach Inundation Map



Missouri
Department of
Natural Resources
Water Resources Center
P.O. Box 176
Jefferson City, MO 65201



Dekalb County, Missouri
DEKALB_MO10384

Note: Actual areas inundated will depend on the actual dam failure criteria and may differ from the areas shown. Due to limitations, methods, assumptions, and procedures used to develop the inundation area, the map should only be used for evacuation and emergency purposes.

Explanation Sheet

Project:	Grindstone LMC C-3 Dam Breach Analysis
Drawing Title:	Explanation Sheet 1 of 1
<div><div><div>Missouri Department of Natural Resources Wildlife Conservation Jefferson City, MO 64102</div></div><div>Project ID: DEKALB_MO10384</div></div>	

Explanation of Maps

The following maps indicate the areas which are predicted to be inundated during the occurrence of a sunny day breach of the dam. The pool elevation at failure is assumed to be at the emergency spillway crest elevation or at the crest of the dam in the absence of an emergency spillway.

Use of Maps

The following maps provide a baseline for evaluation of existing emergency action plans and environmental hazards downstream of the regulated structure.

Definition of Terms

Pool Elevation- Water level in the reservoir.

Dam Crest- The lowest elevation measured along the dam crest.

Spillway Crest- The lowest elevation measured along the crest of the spillway.

Arrival Time- Elapsed time between the breach initiation and the time that water levels first begin to rise at any given point.

Assumed Conditions of Flooding

The pool elevation at failure is assumed to be at the emergency spillway crest elevation or at the crest of the dam in the absence of an emergency spillway. The assumed overtopping erodes a section of the dam resulting in a dangerous and quick release of water. For the hydraulic analysis flow initiation is required and therefore a baseflow of water has been included in the analysis.

Dam Facts

ID: MO_10384

County: Dekalb

Location: S13, T60 N, R32 W

Height of Dam: 40'

Tributary: Lost Creek

Lake Area: 187.2 acres

Max Storage Capacity: 8,916 ac-ft

Breach Parameters (Froehlich, 1995)

Side slopes: 1.4:1

Bottom width: 143.7'

Bottom elevation: 937.5'

Breach formation time: 1.58 hr

Pool Elevation at Failure: 955.448'

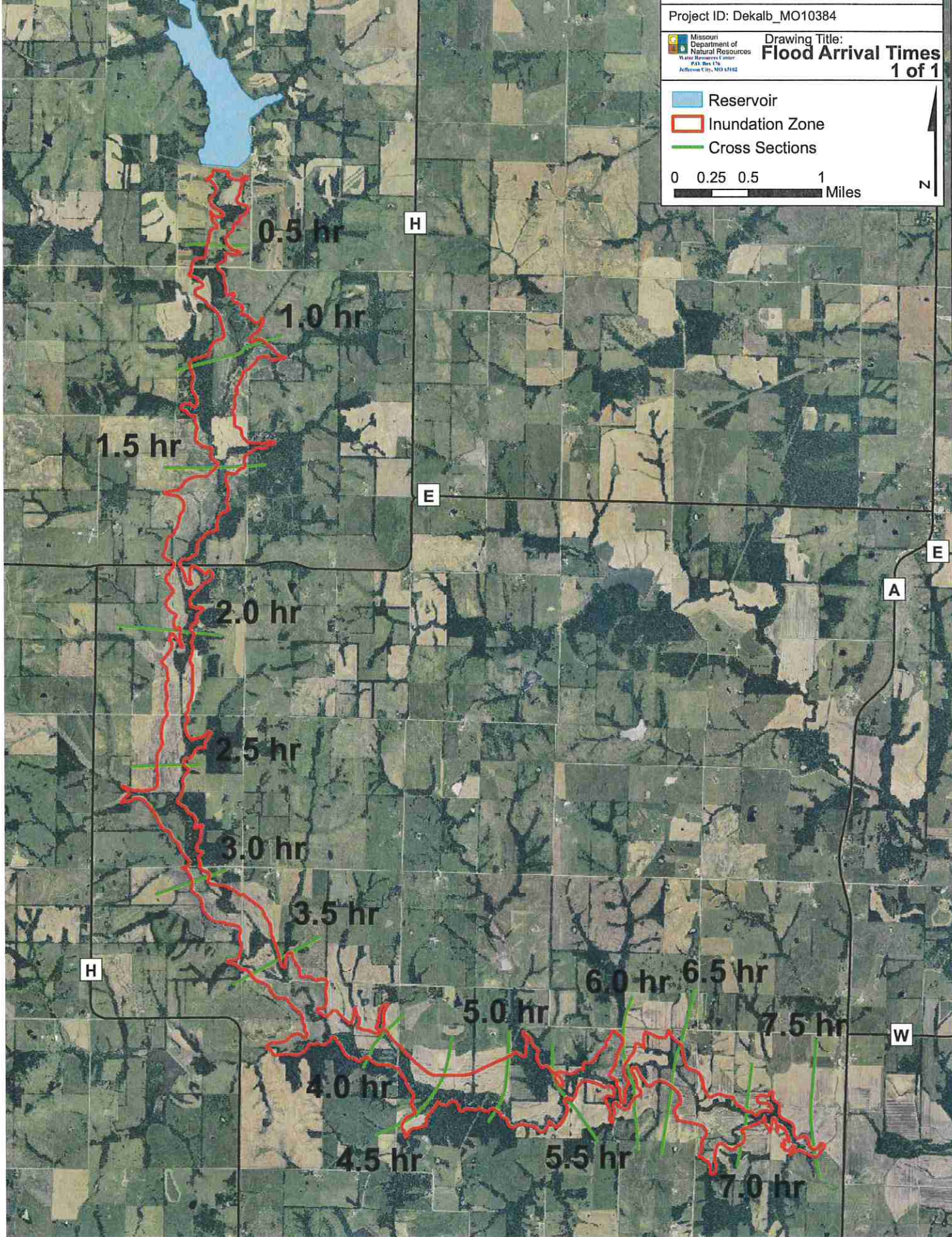
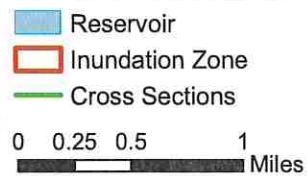
Pool Volume at Failure: 4,773 ac-ft

Downstream Crossings

Pleasant Rd	Fairview Rd
Main Rd	Cherry Rd
Route E	Lakesite Rd
Stewart Rd	Route A
Gospel Rd	
Ridgeline Rd	
Crabill Rd	

NOTE: LiDAR Elevation data unavailable for Dekalb County.
Analysis was completed with 10 meter Digital Elevation Model

Date of Aerial Photo: August 27, 2009



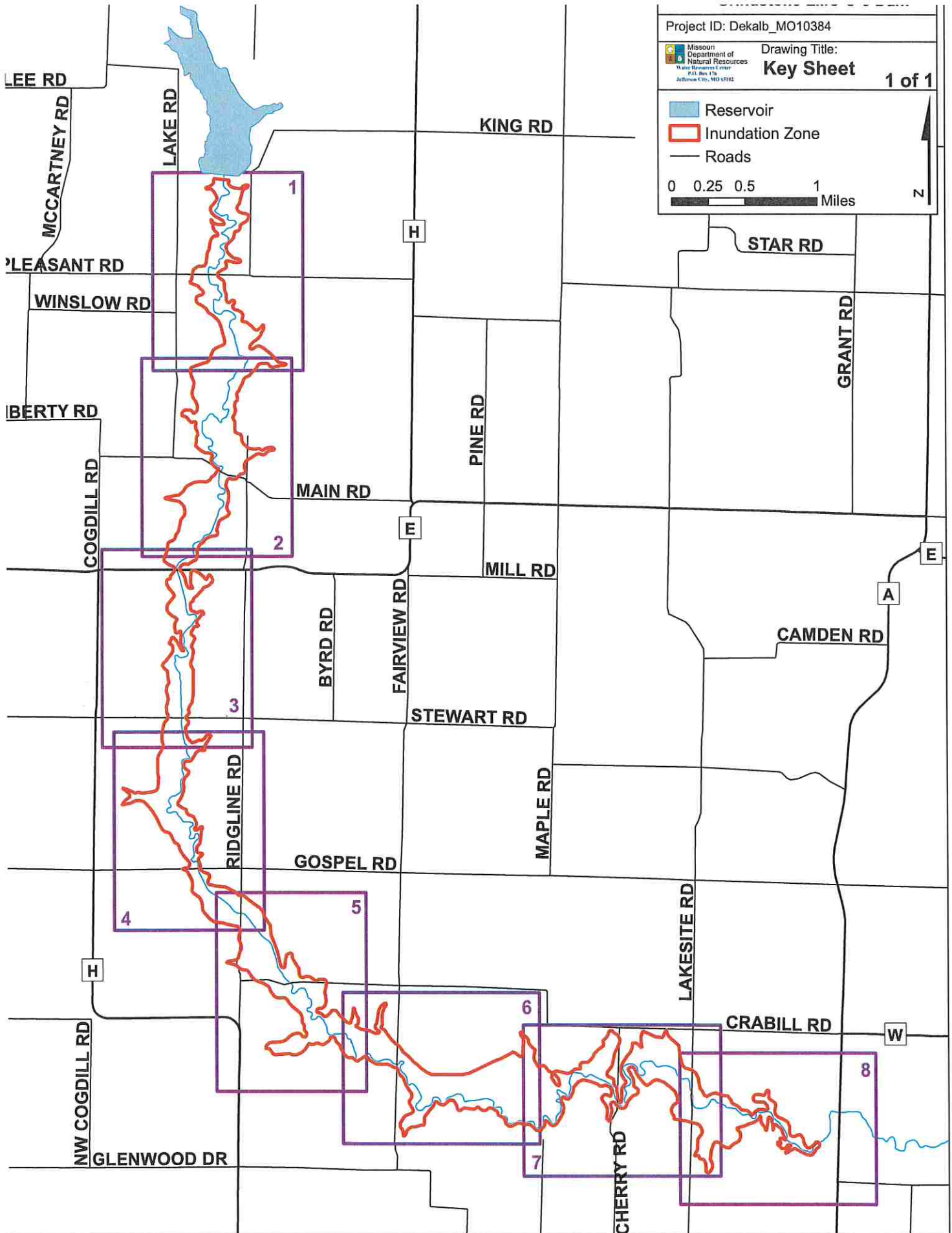
 Reservoir

 Inundation Zone

 Roads

0 0.25 0.5 1
Miles

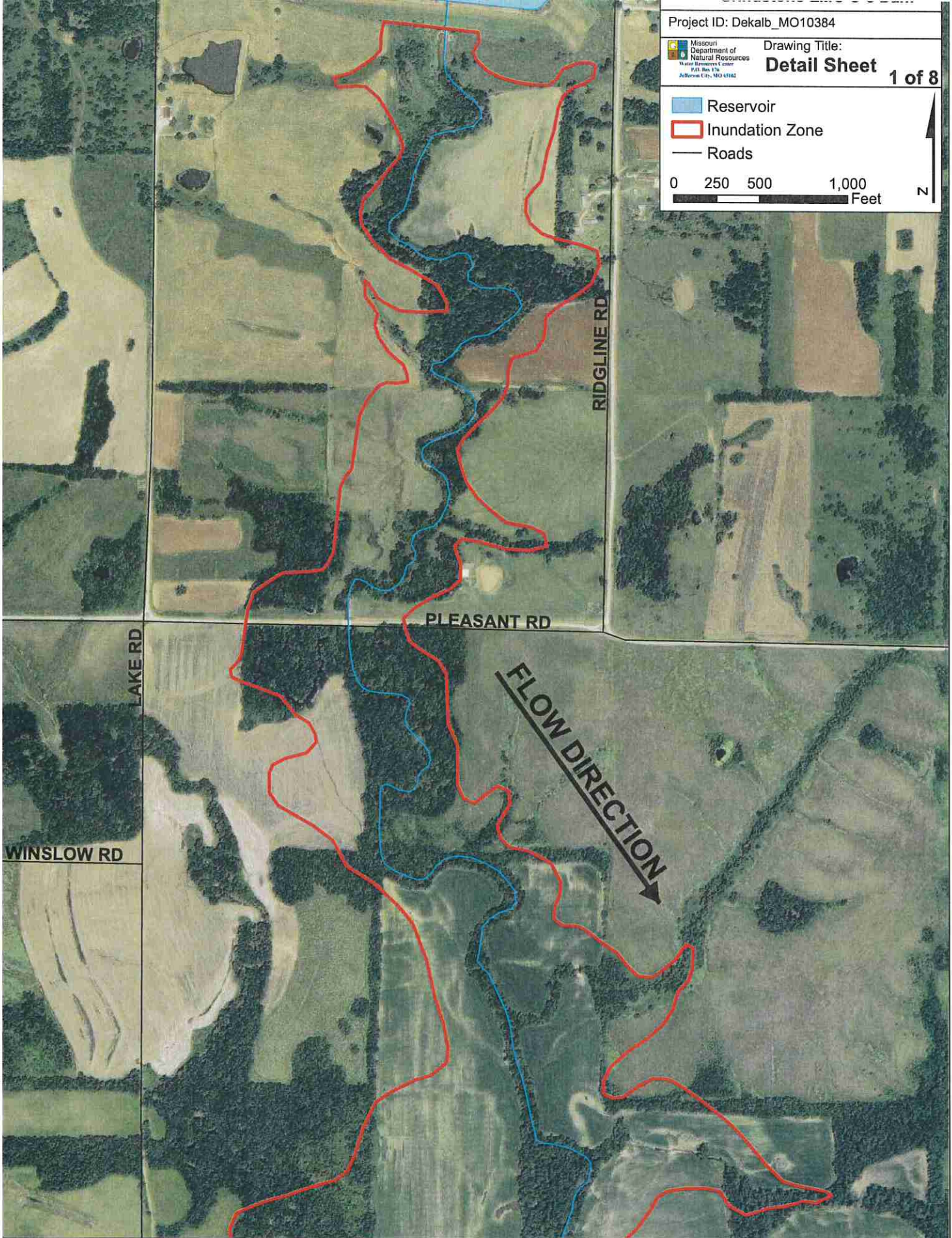
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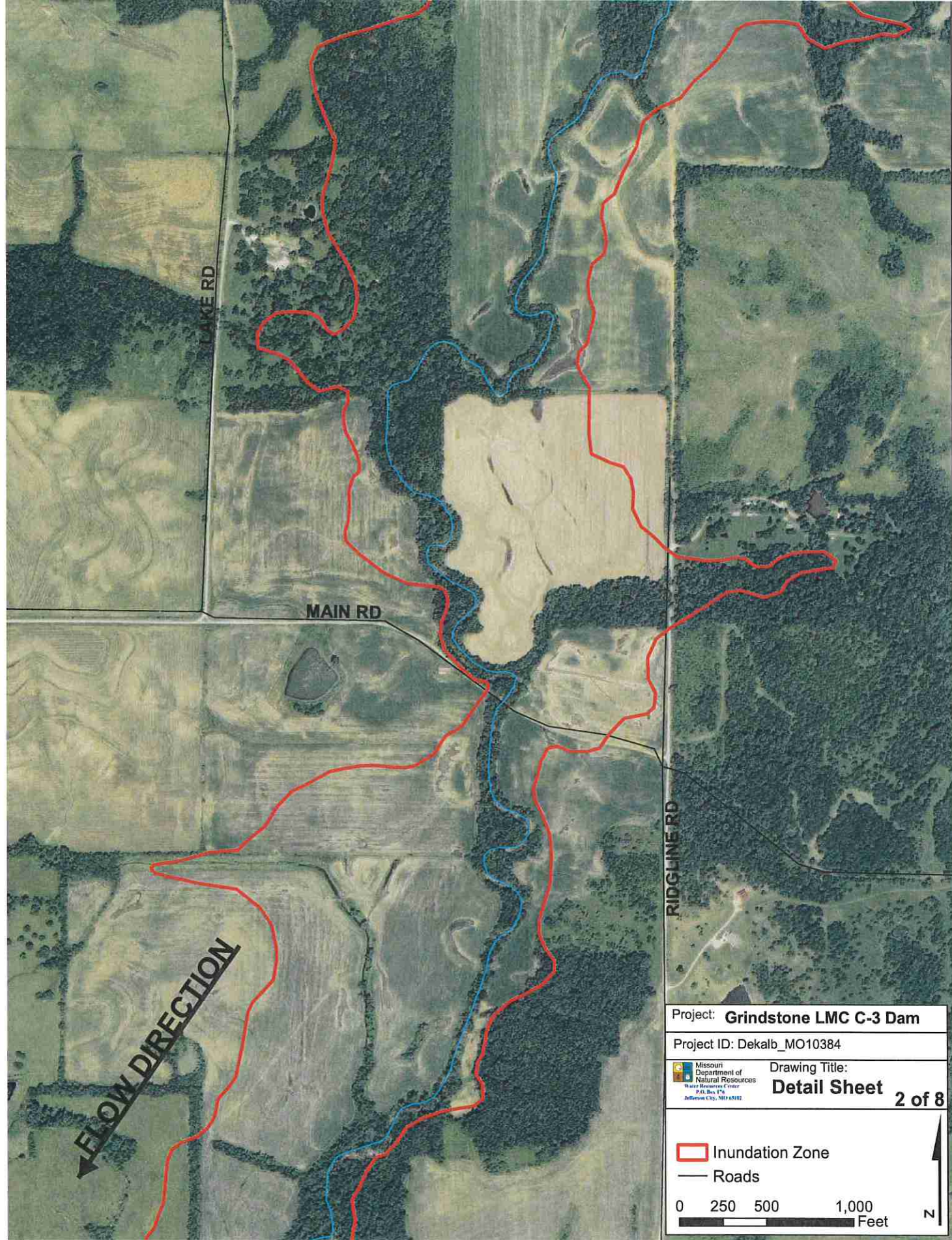


-  Reservoir
-  Inundation Zone
-  Roads

0 250 500 1,000
Feet

N






Project: **Grindstone LMC C-3 Dam**

Project ID: Dekalb_MO10384

Missouri
Department of
Natural Resources
Water Resources Center
P.O. Box 176
Jefferson City, MO 65102

Drawing Title:

Detail Sheet 2 of 8

 Inundation Zone

 Roads

0 250 500 1,000
Feet

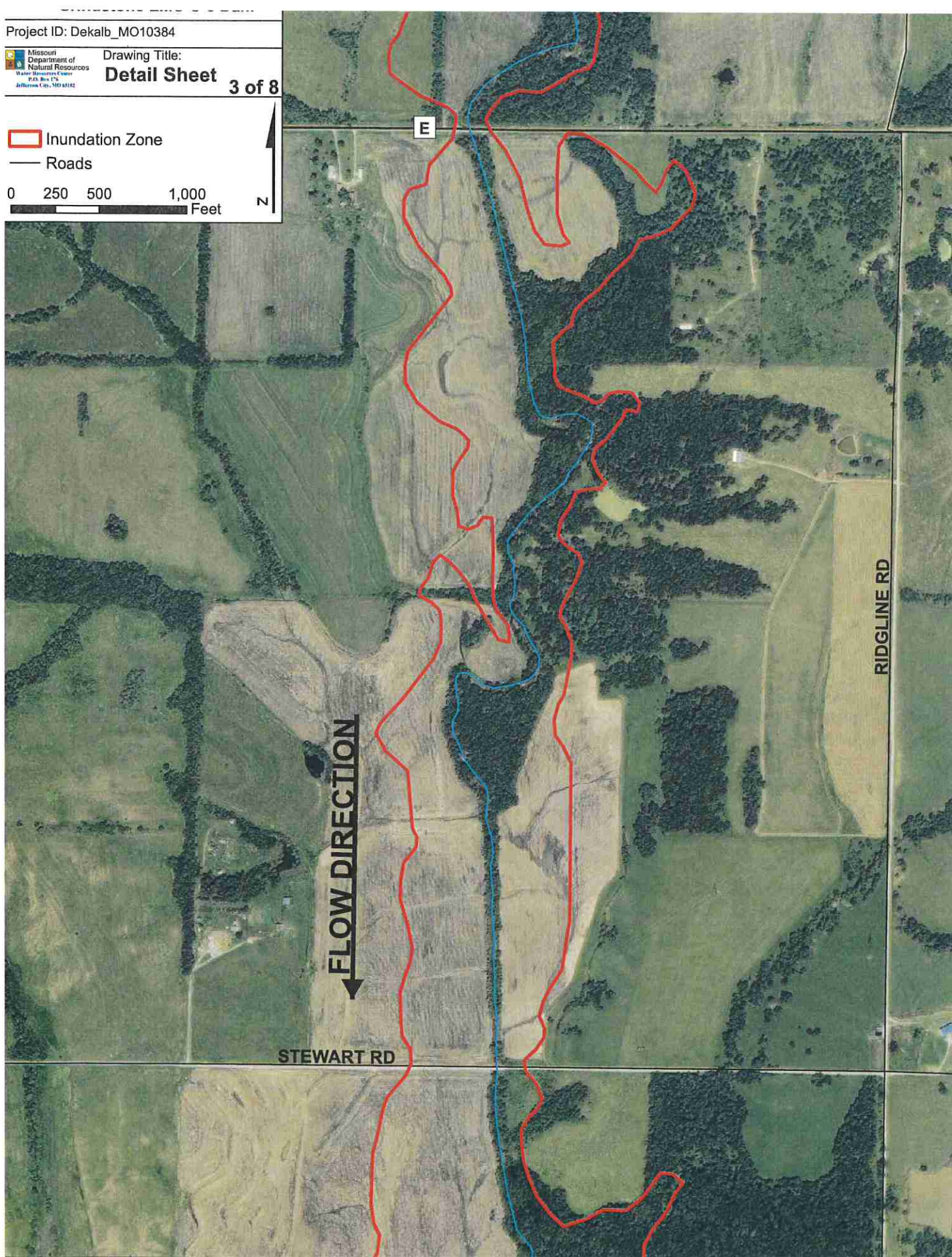


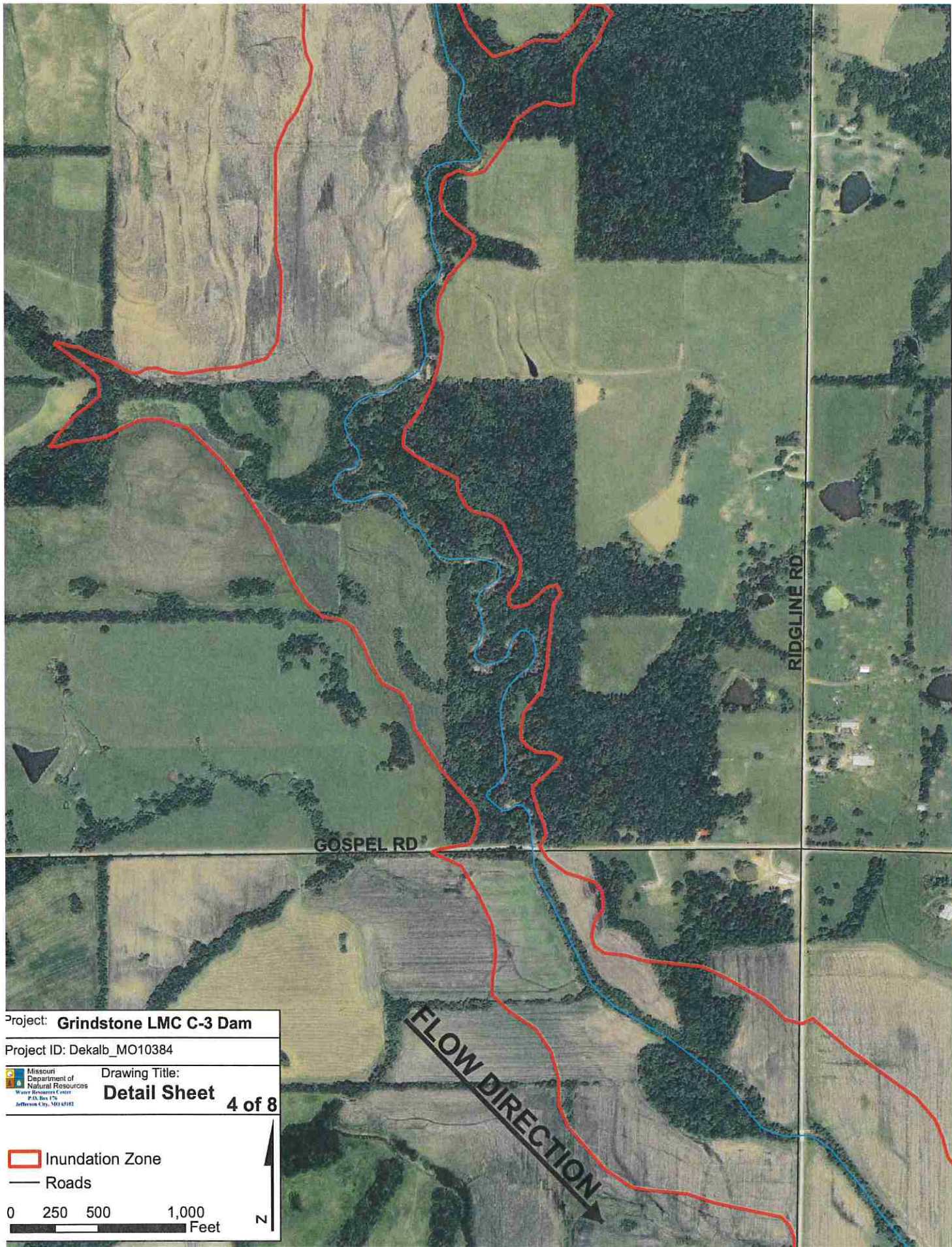
 Inundation Zone

 Roads

0 250 500 1,000 Feet


N







Project: **Grindstone LMC C-3 Dam**


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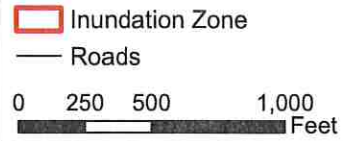
 Drawing Title:
Detail Sheet 4 of 8

 Inundation Zone

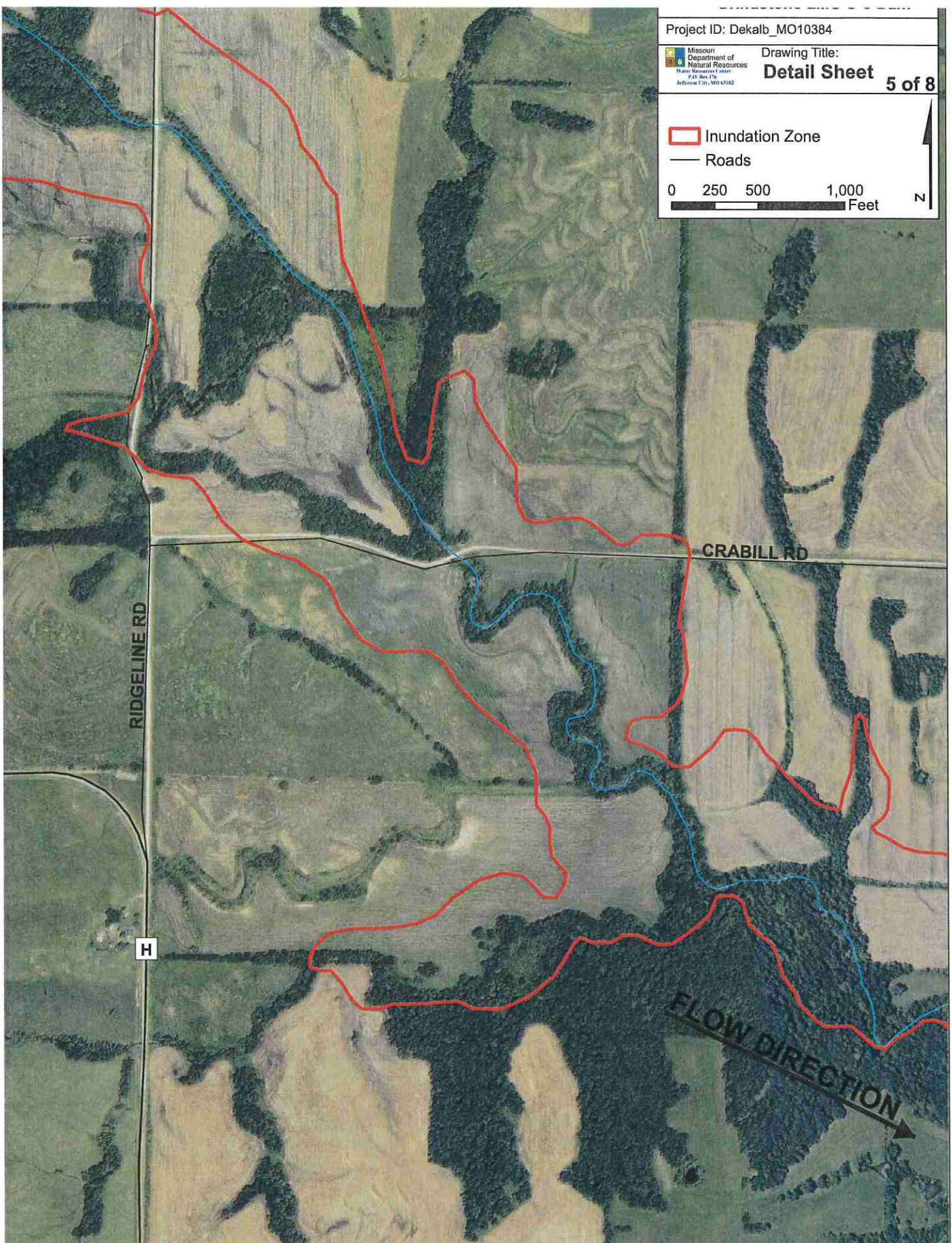
 Roads

0 250 500 1,000 Feet

 N




N

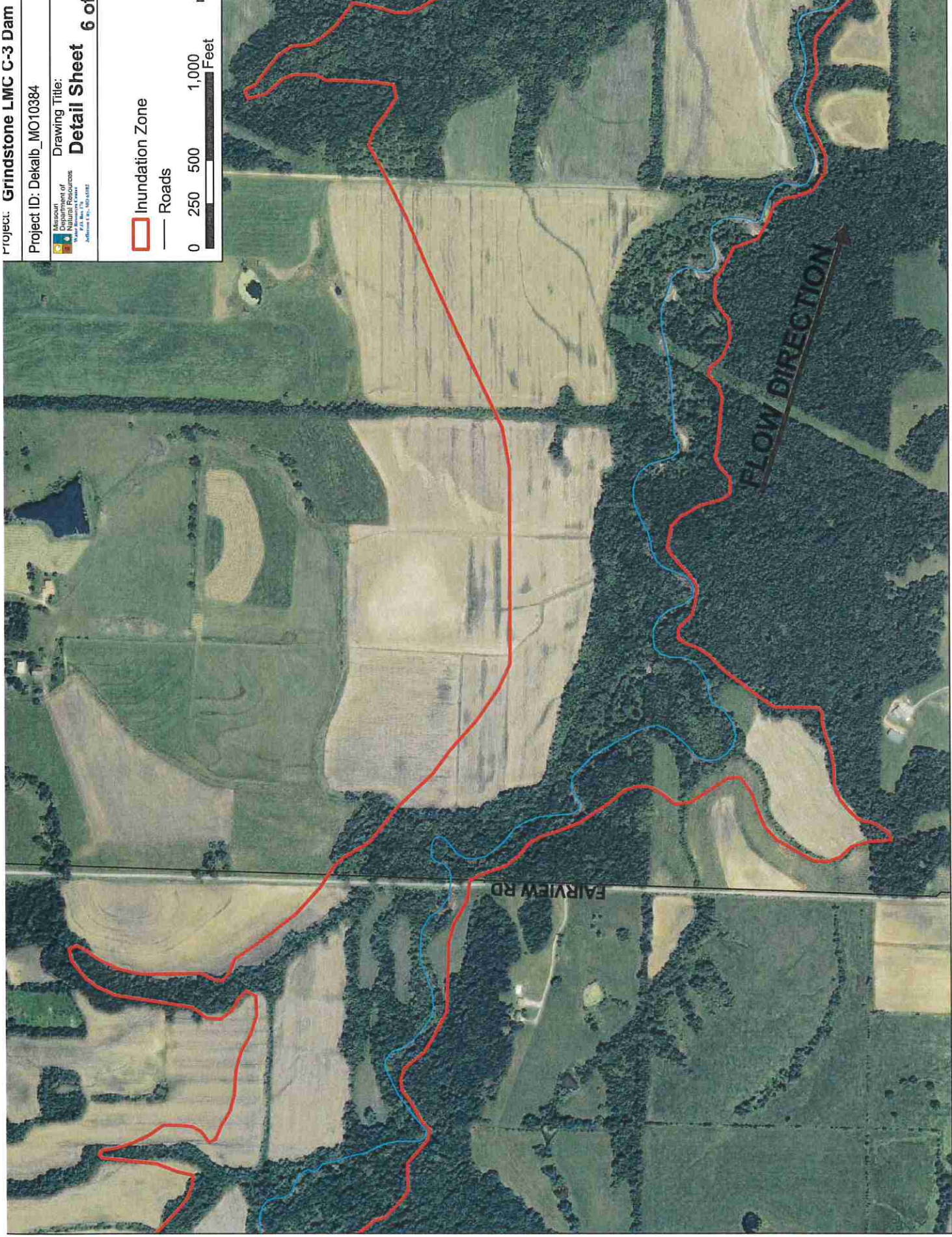


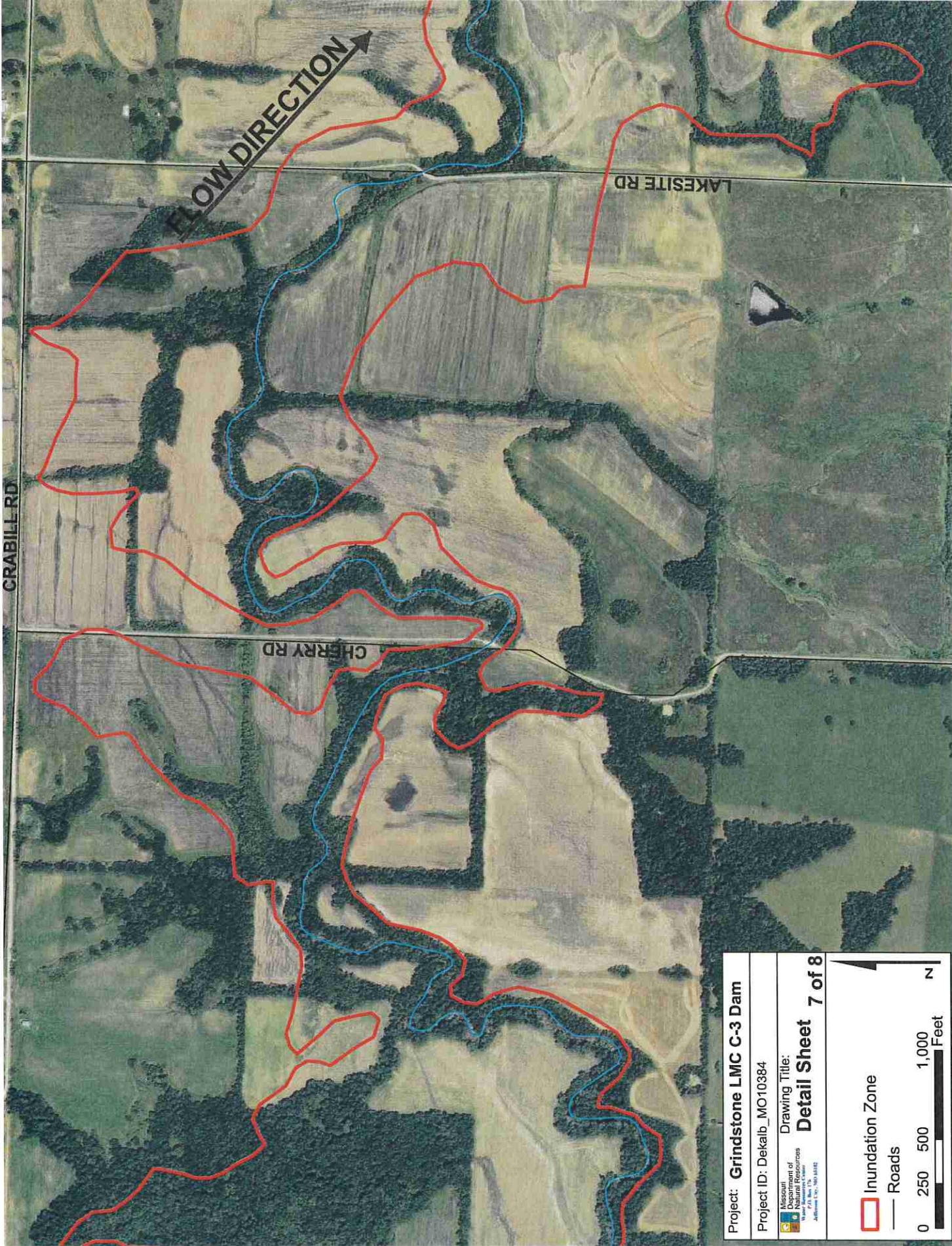
Missouri
Department of
Water Resources
Jefferson City, MO 64502


 Inundation Zone

 Roads

0 250 500 1,000 Feet





Project: Grindstone LMC C-3 Dam	
Project ID: Dekalb_MO10384	
 Missouri Department of Natural Resources Wildlife Conservation Division Jefferson City, MO 64502	Drawing Title: Detail Sheet 7 of 8
	  0 250 500 1,000 Feet

Inundation Zone

Roads

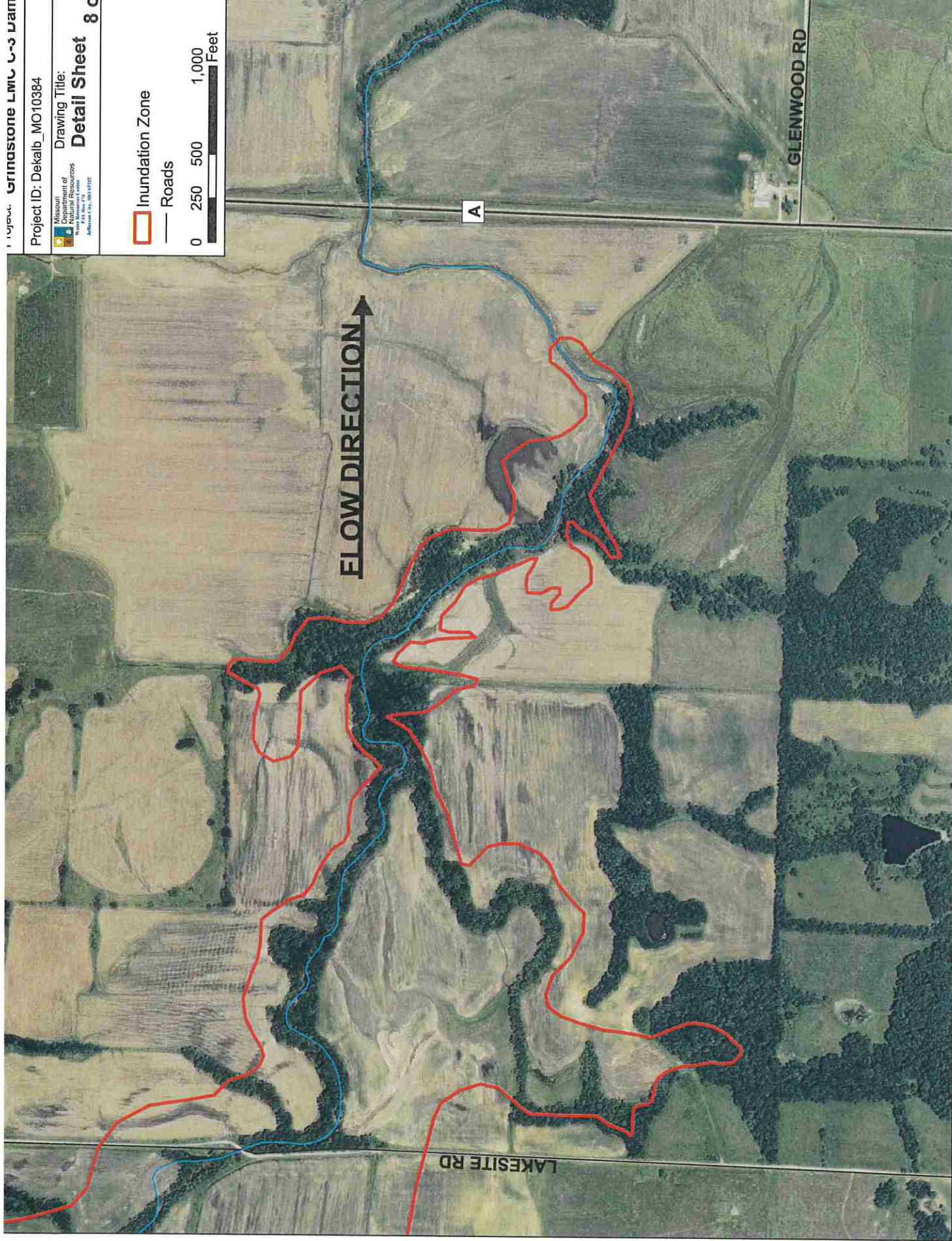


FLOW DIRECTION

A

LAKE SITE RD

GLENWOOD RD





Project ID: Dekalb_MO10384

Missouri
Department of
Natural Resources
Water Resources Center
P.O. Box 176
Jefferson City, MO 65112

Drawing Title:

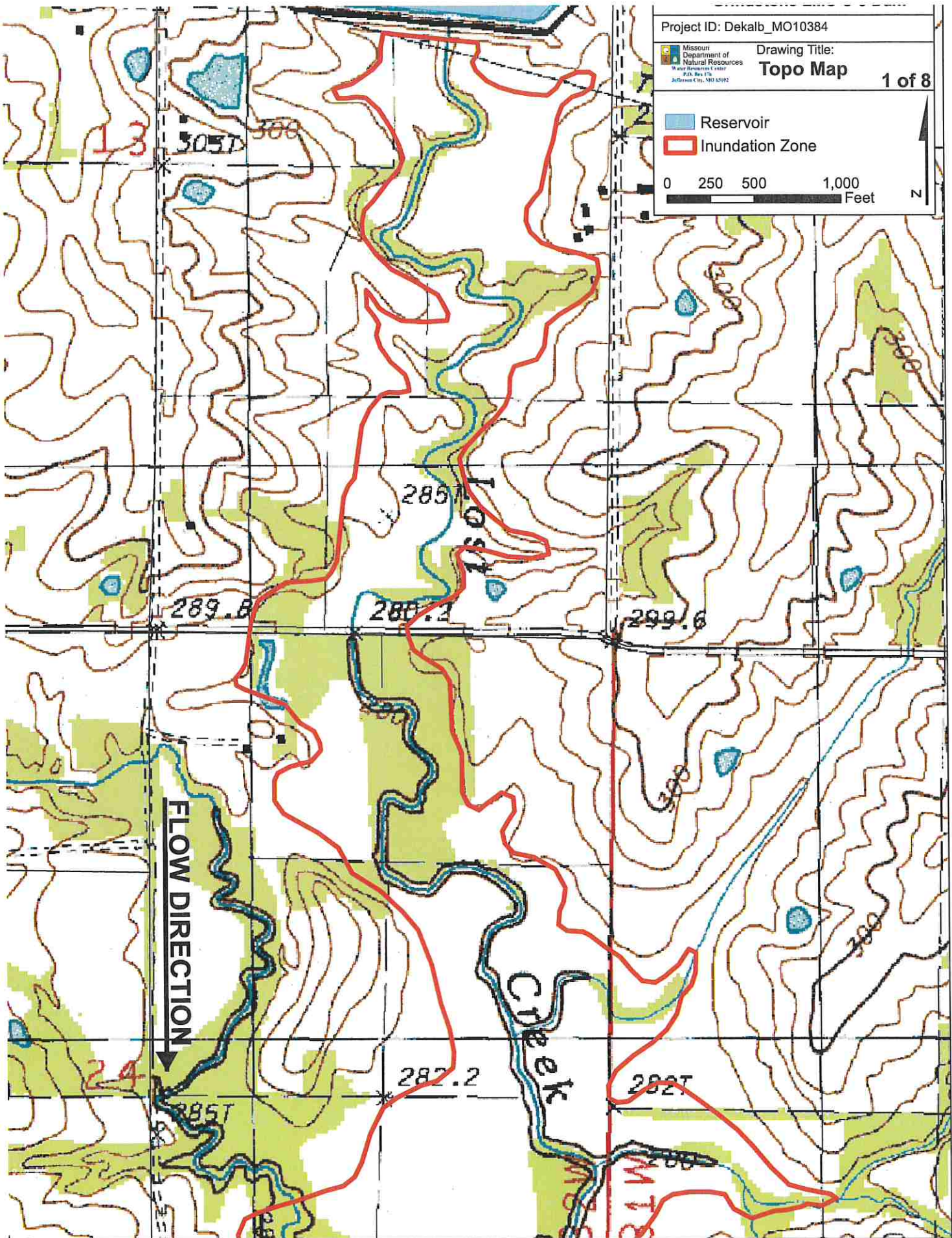
Topo Map

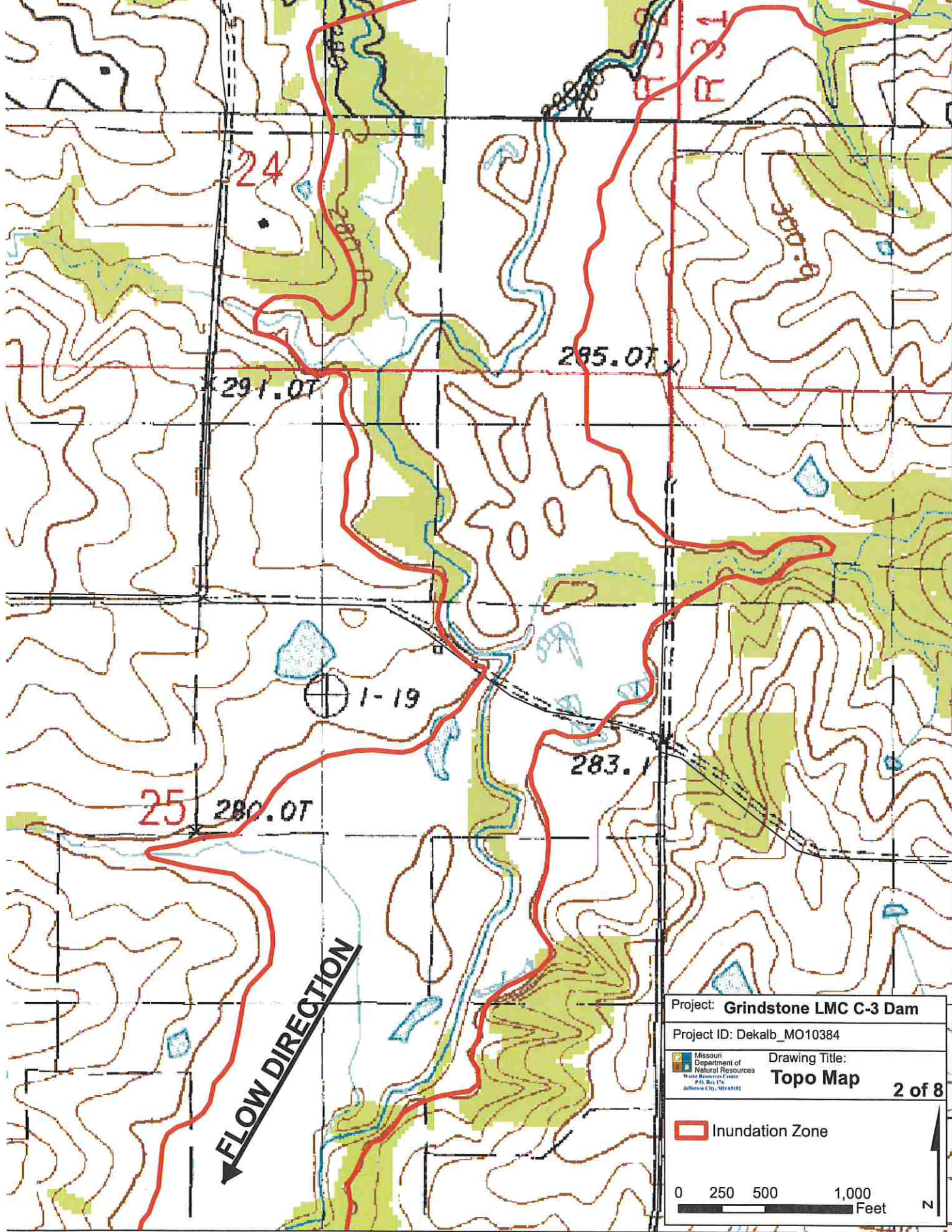
1 of 8

-  Reservoir
-  Inundation Zone

0 250 500 1,000
Feet

N





Project: **Grindstone LMC C-3 Dam**

Project ID: Dekalb_MO10384

Missouri
Department of
Natural Resources
Water Resources Center
P.O. Box 176
Jefferson City, MO 65102


Drawing Title:
Topo Map

2 of 8

 Inundation Zone

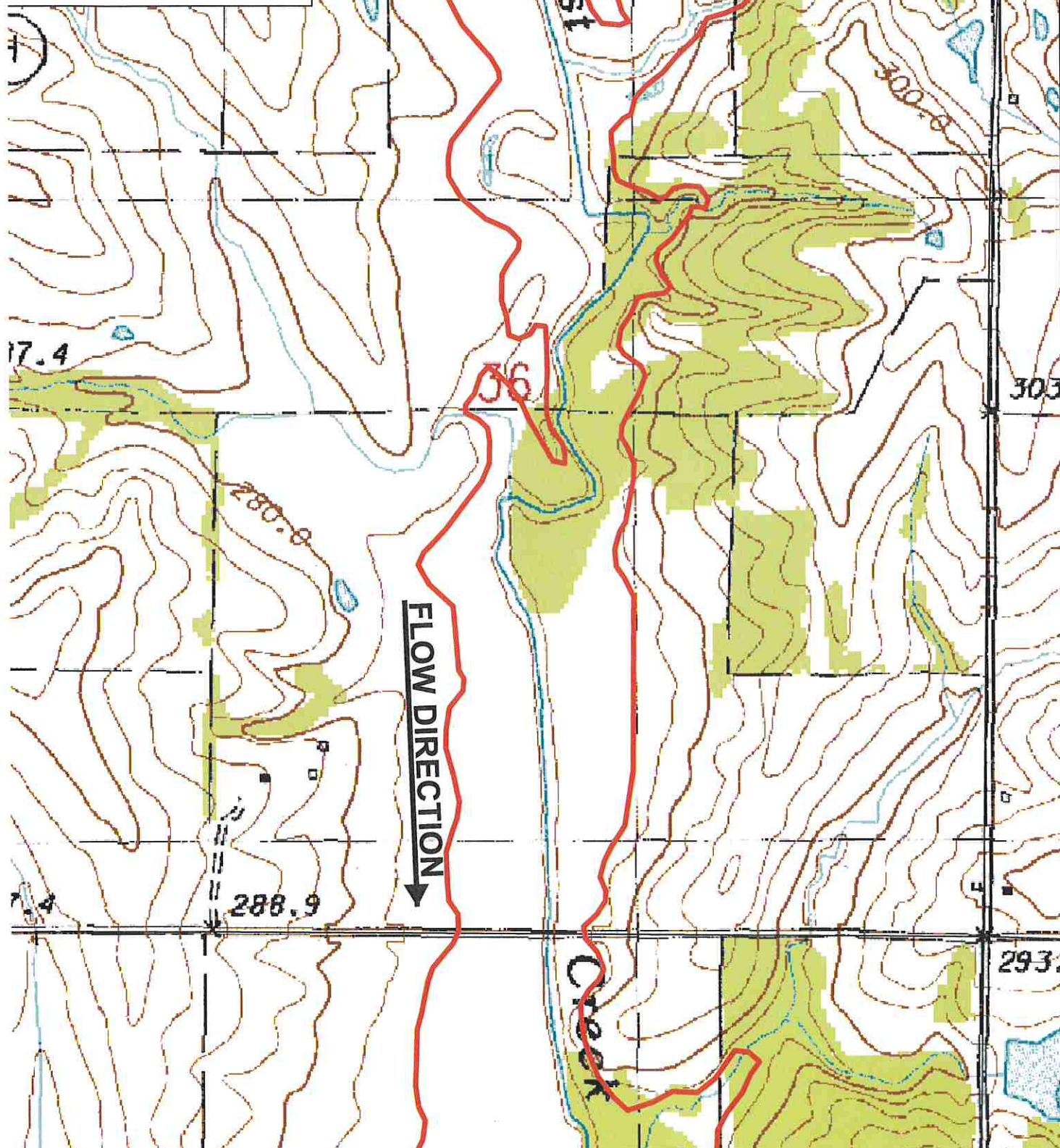
0 250 500 1,000
Feet



 Inundation Zone

0 250 500 1,000
Feet

N




Project ID: Dekalb_MO10384

Missouri Department of
Natural Resources
Water Resources Center
210 West 17th
Jefferson City, MO 64102

Drawing Title:

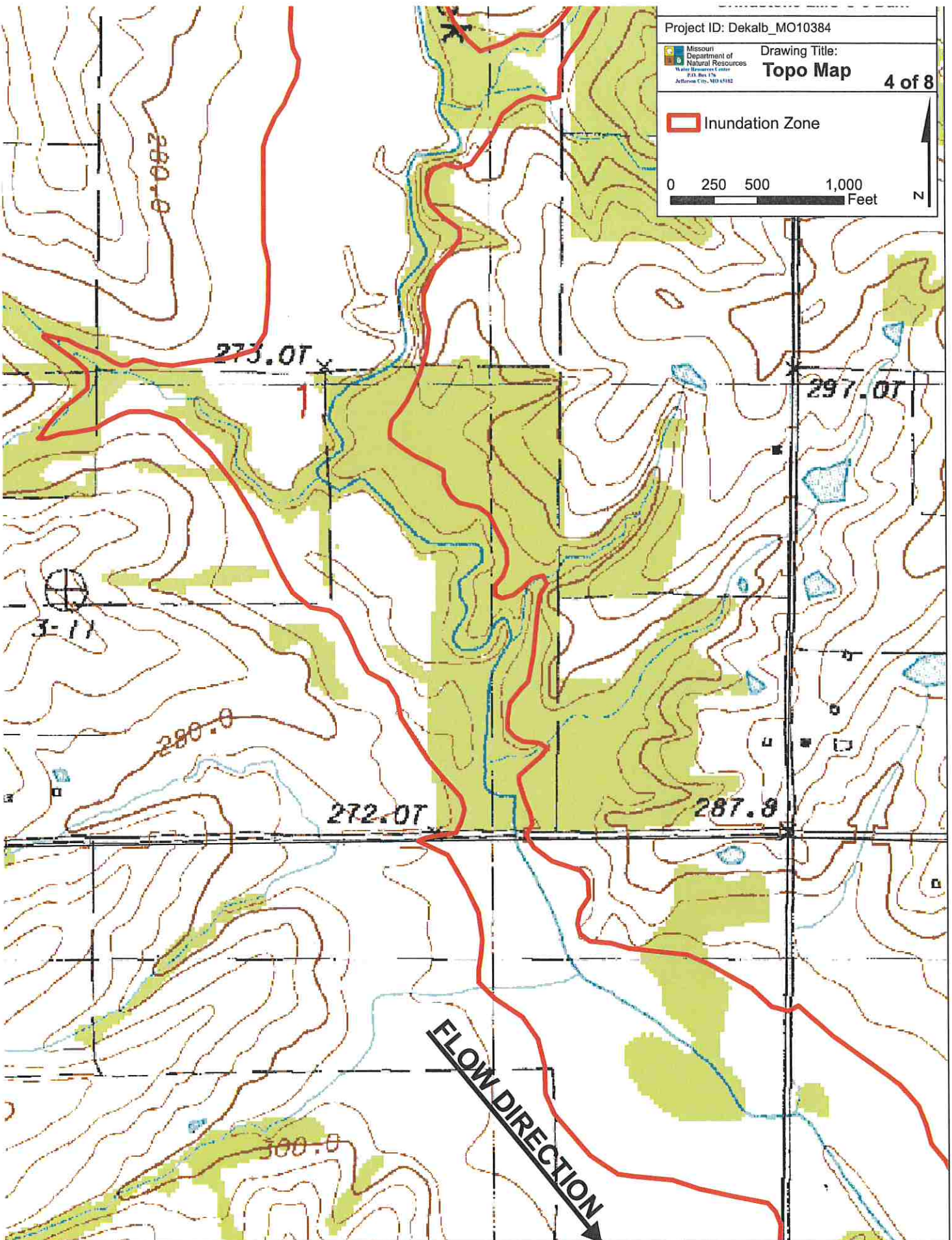
Topo Map


4 of 8

 Inundation Zone

0 250 500 1,000
Feet

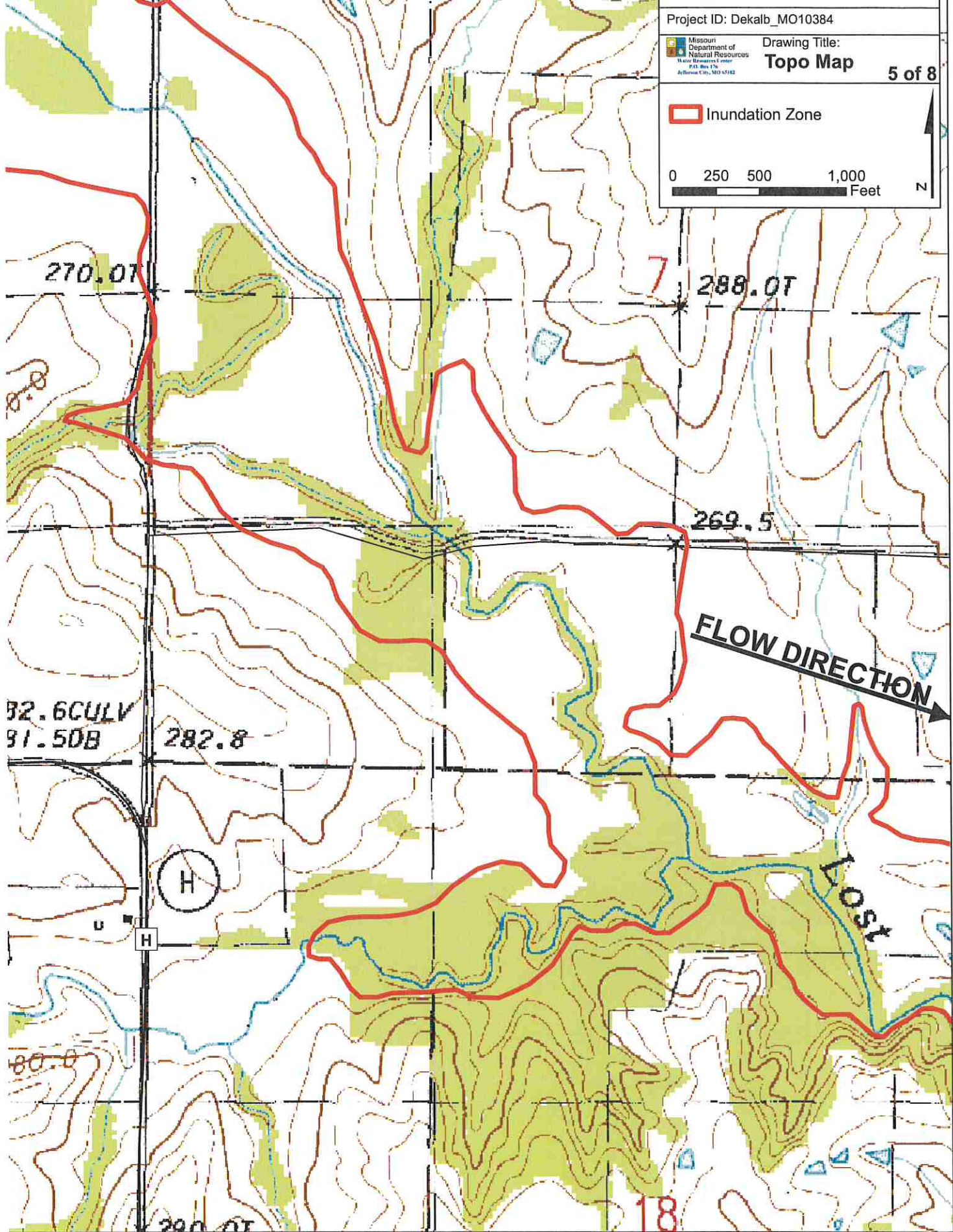
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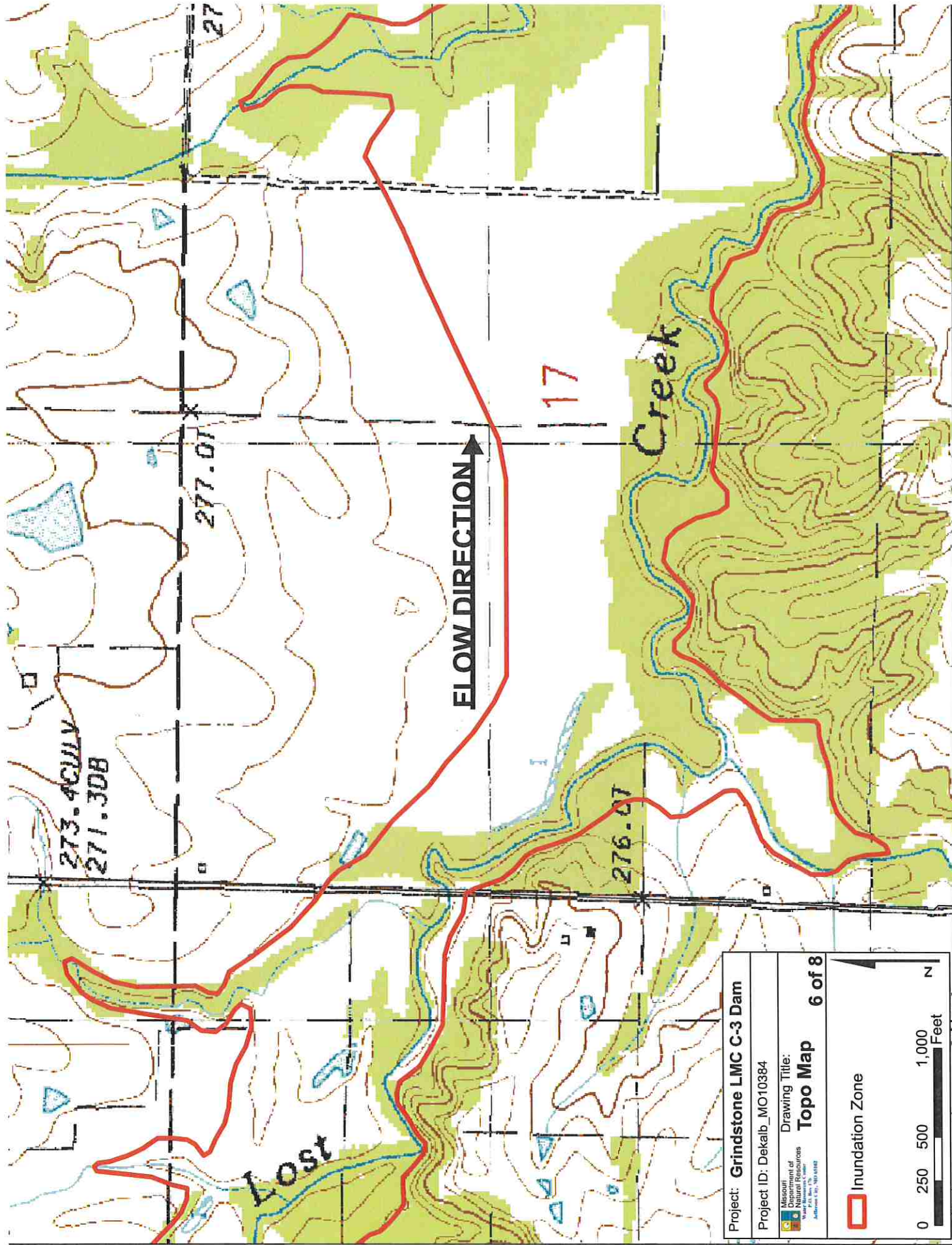


 Inundation Zone

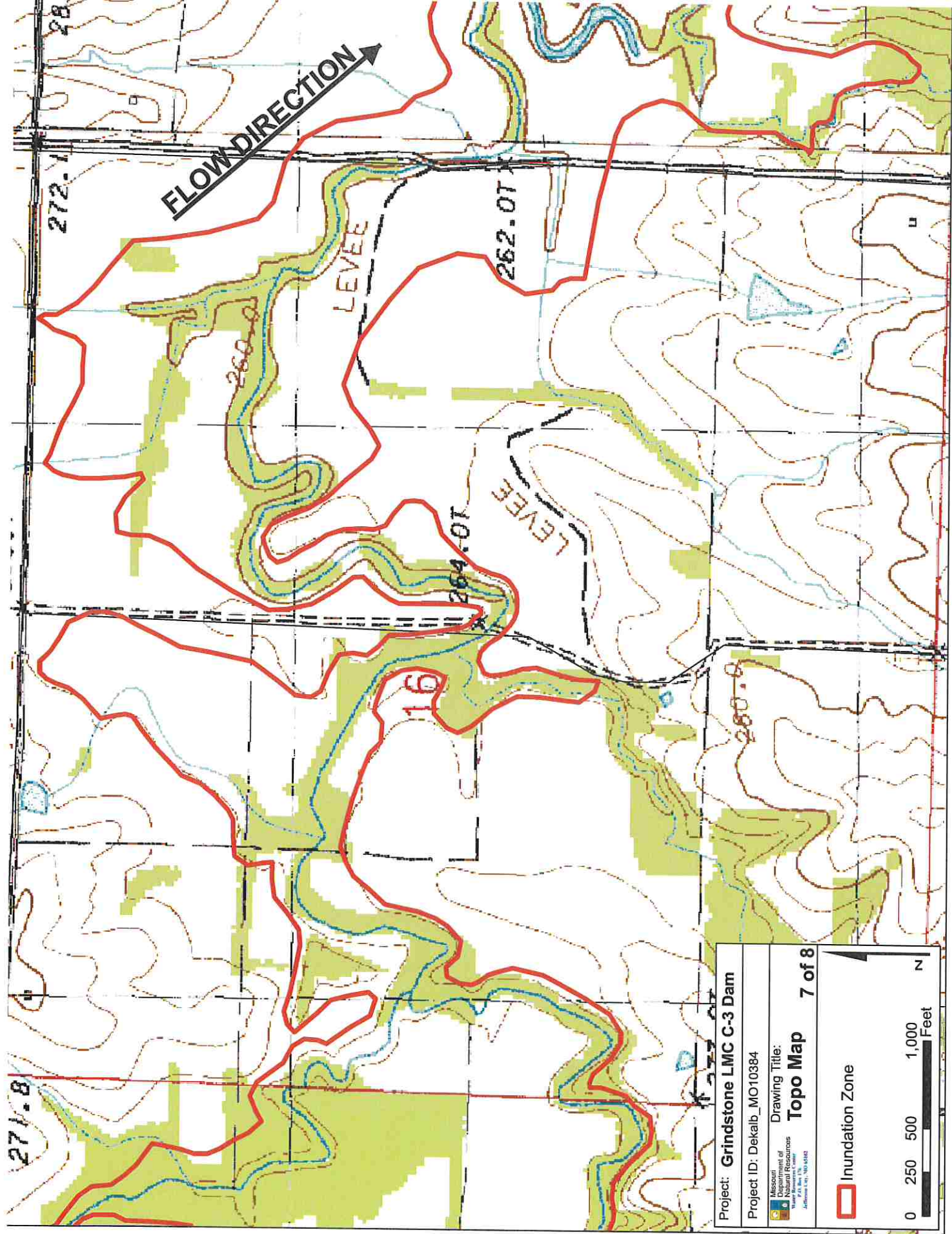
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Feet

N



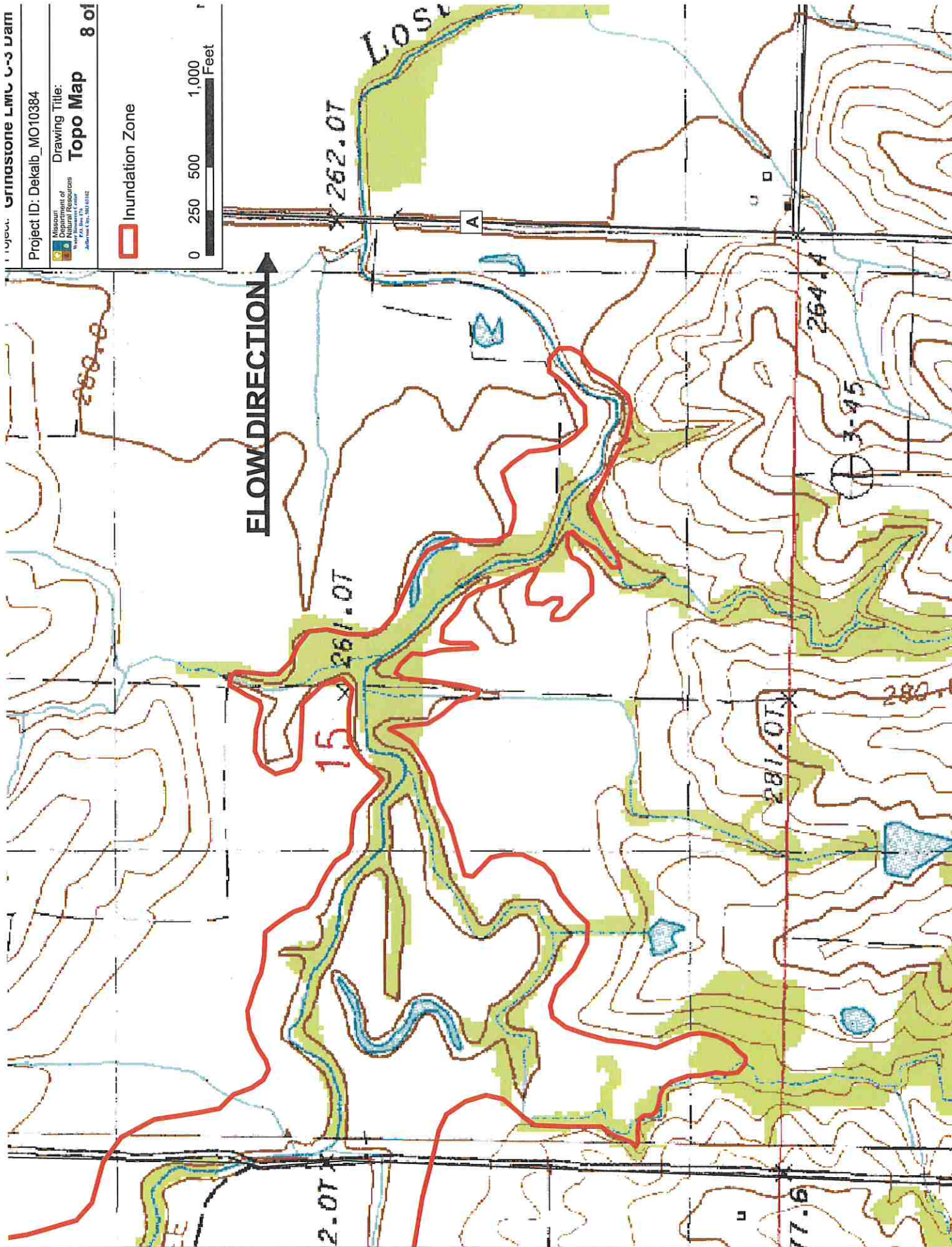


Project: Grindstone LMC C-3 Dam	
Project ID: Dekalb_MO10384	
 Missouri Department of Natural Resources Wildlife Conservation Division Jefferson City, MO 64501	Drawing Title: Topo Map
6 of 8	
 N	
0 250 500 1,000 Feet	
 Inundation Zone	



 Inundation Zone


FLOW DIRECTION



Appendix B: Planning Process

Mailing List for HMP Update

Jurisdiction	Contact Name	Title	Elected Y/N	Address	Address 2	Phone	Email
DeKalb County	Harold Allison	Presiding Commissioner	Y	PO Box 248	Maysville, MO 64469	816-261-3685	harold@haroldallison.com
	Penny Gans	Chief Deputy Clerk	N	PO Box 248	Maysville, MO 64469	816-649-4557	depclerk@unitedfiber.email
	Bill Gray	Road & Bridge Supervisor	N	PO Box 248	Maysville, MO 64469	816-724-0652	roadandbridge@unitedfiber.email
	Andy Clark	Sheriff	Y	PO Box 248	Maysville, MO 64469	816-262-2954	dcso@unitedfiber.email
Village of Amity	Michael Harwood	Chairman	Y	2811 SW State Route J	Amity, MO 64422	816-449-5842	
	Sam Perkins			4160 SW 2nd	Amity, MO 64422		sp@perkins@highlandcc.edu
City of Cameron	Darlene Breckenridge	Mayor	Y	804 S Chestnut St	Cameron, MO 64429	816-632-6815	
	Rick Bashor	Chief of Police	N	101 N Chestnut St	Cameron, MO 64429	816-632-6521	
City of Clarksdale	Shirley Kretschmar	Mayor	Y	106 E Stone St.	Clarksdale, MO 64430	816-393-5280	
	Amber Clary		N	PO Box 271	Stewartsville, MO 64490	816-261-0120	
City of Maysville	Gerry Pearl	Mayor	Y	PO Box 470	Maysville, MO 64469	816-449-8427	
	Tim Gee	Chief of Police	N	PO Box 470	Maysville, MO 64469	816-289-7601	
City of Osborn	David E Meek	Mayor	Y	291 Morrell St	Osborn, MO 64474	816-675-2577	
	Hazel	City Clerk	N	501 Main Street	Stewartsville, MO 64490	816-669-3278	
City of Stewartsville	Mark R Francis	Mayor	Y	1105 DeKalb St	Stewartsville, MO 64469	816-669-3278	
	Sam Clary		N	PO Box 271	Stewartsville, MO 64469	816-262-0421	
City of Union Star	Barbara Steiner	Mayor	Y	905 College St	Union Star, MO 64494	816-593-2533	
	Stacy Benoit	City Clerk	N	PO Box 96	Union Star, MO 64494	816-593-2533	
Village of Weatherby	Angela Gallus	Mayor	Y	239 N Main St	Weatherby, MO 64497	816-449-2707	
Maysville School District	Robert Smith	Superintendent	N	PO Box 68,	Maysville, MO 64469	816-449-2308	smithr@maysville.k12.mo.us
Osborn School District	Rick Goin	Superintendent	N	275 Clinton Ave	Osborn, MO 64474	816-675-2217	rick.goin@osbornwildcats.org
Stewartsville School District	Jay Albright	Superintendent	N	902 Buchanan St	Stewartsville, MO 64469	816-669-3792	jalbright@stewartsville.k12.mo.us
Union Star School District	Rick Calloway	Superintendent	N	6132 NW State Route Z	Union Star, MO 64494	816-593-2294	rcalloway@usts2.com
Adams Township	Ronnie Meek	Trustee-Treasurer	Y	1586 SE Cook Rd	Maysville, MO 64469	816-724-0476	
Camden Township	Warren McElwain	Trustee-Treasurer	Y	PO Box 512	Maysville, MO 64469	816-449-5314	
Colfax Township	Robert W Saunders	Trustee-Treasurer	Y	7981 SW State Route J	Osborn, MO 64474	816-675-2305	
Dallas Township	David Brown	Trustee-Treasurer	Y	6740 NE Harris Rd	Pattonsburg, MO 64670	816-449-2245	
Grand River Township	Mark Robinson	Trustee-Treasurer	Y	7415 SE Inwin Rd	Cameron, MO 64429	816-724-4081	
Grant Township	Brent Jestes	Trustee-Treasurer	Y	8557 NE Baker Rd	Maysville, MO 64469	816-449-0002	
Polk Township	Mark Humphrey	Trustee-Treasurer	Y	8671 NW Bowen Rd	King City, MO 64463	660-535-4940	
Sherman Township	John Gabbard	Trustee-Treasurer	Y	3389 SW McCartney Rd	Amity, MO 64422	816-449-5366	
Washington Township	Joe Aughinbaugh	Trustee-Treasurer	Y	8897 SW Hickory Rd	Stewartsville, MO 64469	816-669-3501	
Cameron Rural Fire District				101 W 2nd St	Cameron, MO 64429		
Central DeKalb Fire				PO Box 21	Maysville, MO 64469		
Clarksdale Fire	Quinten Graeff		N	6975 SW Highway 6	Clarksdale, MO 64430	816-449-0566	
Osborn Fire	Jason Graeff		N	463 W Emma Street	Osborn, MO 64474	816-390-2222	
Stewartsville Fire	John Hanson		N	PO Box 6	Stewartsville, MO 64490	816-724-4230	
Union Star Fire	Terry Workman		N	PO Box 188	Union Star, MO 64494	816-262-4854	
Tri-County Health Department				302 N Park St	Stanberry, MO 64489	660-783-2707	



DeKalb County Multi-Jurisdictional Hazard Mitigation Plan Update

Planning Meeting #1

Monday, August 28, 2017
DeKalb County Courthouse
Maysville, Missouri



Meeting Agenda

- Welcome and Introductions
- Background & Purpose
- Grant Programs Linked to Approved Plan
- HMP Planning Tasks
- Timeline
- **In-Kind Match**
- Next Step



Sign-in Sheet

Date: Monday, August 28, 2017
 Time: 12:00 PM
 Location: DeKalb County Courthouse

Name	Jurisdiction	Email
ERIN GRISWOLD	CITY OF STEWARTSVILLE	STEWPublicworks@STEW wireless
Penny Gans	DeKalb County	depclerk@unitedfiber.email
Garry McFee	DeKalb Co.	
Cassandra Stanford	DeKalb	
Kimber Zubeck	DeKalb Co.	Kimber.Zubeck@prosecutors.mo.gov
Katherine Scotton	DeKalb Co.	depcol1@unitedfiber.email
Joni Roage	DeKalb Co Court Security	
Erik Tate	DeKalb County	erik.tate@prosecutors.mo.gov
Hazel Allison	DeKalb County	
Kyle White	DeKalb County	
Josh Mygatt	City of Maysville	
David Oabler	City of Maysville	

Sign-in Sheet

Date: Monday, August 28, 2017
 Time: 12:00 PM
 Location: DeKalb County Courthouse

Name	Jurisdiction	Email
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May LaTolley	City	marla4@yahoo.com
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David Brown	Dallas Township	heavenscentfarm15@gmail.com
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Shelly King	Camden	
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Ken DeLeon	City	
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RICK BASHON	CAMDEN	CHIEFPO110@CamdenMO.org
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Joyce Bottorff	Trico Health	joyce.bottorff@lpha.mo.gov
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Charlene James	Camden	
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Gala Ellis	Grant	
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Ted Elie	Grant	
----------	-------	--

Bruce	Moore & Bridge	
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Shane Rohde	Adams	
-------------	-------	--

MARK Humphrey	Polk Twshp	
---------------	------------	--

Mark	GRAND RIVER	
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Mark O'Dea	Grand River	
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Paul	Grand River	
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Subject: DeKalb County Multi-jurisdictional Hazard Mitigation Plan Update

On behalf of DeKalb County, you are invited to the first of four planning meetings to update the DeKalb County Multi-jurisdictional Hazard Mitigation Plan. The existing plan, approved by FEMA in 2013 was developed in accordance with the Disaster Mitigation Act of 2000. To maintain eligibility for certain FEMA Hazard Mitigation Assistance grants, the Act requires jurisdictions to develop a plan to assess their risks to hazards and identify actions that can be taken in advance to reduce future losses. The law requires Hazard Mitigation Plans to be updated every five years. Your participation is a key element to the success of the plan update effort.

DeKalb County Multi-Jurisdictional Hazard Mitigation Plan Update
Community Room at the DeKalb County Courthouse
109 W. Main Street, Maysville, MO 64469
Monday, August 28, 12:00 pm

The hazard mitigation planning process is heavily dependent on the participation of representatives from local government agencies and departments, the public, and other stakeholder groups. A Hazard Mitigation Planning Committee will be formed to support this project and will include representatives from the County, cities, school districts, private-non-profit entities, business partners, academic institutions, and other local, state, and federal agencies acting in or serving DeKalb County.

At the kickoff meeting, we will discuss the benefits of updating the hazard mitigation plan, the project schedule, and all of the hazards that affect DeKalb County, such as tornadoes, floods, extreme temperatures, severe winter weather, and more. **DeKalb County requests your assistance in forwarding this invitation to others in your jurisdiction. Appropriate participants in the planning committee include, but are not limited to: emergency responders, county clerks, city clerks, elected officials, county and city employees, business partners, private-non-profit representatives, school principals, school superintendents and community volunteers.**

The Mo-Kan Regional Planning Commission has taken the lead in developing this plan. The point of contact is Rebecca Thacker, Community Development Planner. To successfully complete this project and ensure your organization is eligible for FEMA hazard mitigation assistance funding, we need your participation and input. Jurisdictions (including county and city governments and public school districts) that do not participate in an approved Hazard Mitigation Plan are **NOT eligible** to apply for FEMA's Hazard Mitigation Assistance grants.

Please confirm your attendance or provide contact information for your designated alternate by responding to Rebecca Thacker at [\(816\) 233-3144](tel:8162333144) or rebecca@mo-kan.org by August 23.

Thank you,

Rebecca Thacker
Community Development Planner



DeKalb County Hazard Mitigation Plan Update

Planning Meeting #2

Monday, September 18, 2017
DeKalb County Courthouse
Maysville, Missouri

Meeting Agenda

- Determine/Update Mitigation Goals
- Review 2013 Mitigation Actions
- Chapter 3 – Hazard Profile and Vulnerability Assessment
- Previous Occurrences
- Public Outreach
- Next Steps

Sign-in Sheet

Date: September 18, 2017

Time: 12:00 PM

Location: DeKalb County Courthouse

Name

Organization

Email

MARK HUMPHREY

Polk Township

mhumphrey57@centurylink.net

Penny Gars

DeKalb County

depclerk@unitedfiber.email

Ben Ranton

DeKalb County

Ben May

DeKalb County Road & Bridge

Mark O'Dell

Grand River Township

Sumo Lyle

GRAND RIVER TOWNSHIP

Ellis

DeKalb Co Roads & Bridge

Charlene James

DeKalb Co Deputy Collector

Kyle White

DEKALB COUNTY

Toni Poage

DeKalb Court Security

Tanya Zimmerman

DeKalb Co. Assessor

Jessica Lee

DeKalb County Collector/Treasurer

Katherine Scotton

Deputy DeKalb County Collector

Kimber Zubeck

DeKalb County Prosecutor's Office

Gala Ellis

DeKalb Co. Deputy Recorder

Sign-in Sheet

Date: September 18, 2017

Time: 12:00 PM

Location: DeKalb County Courthouse

Name	Organization	Email
Hold Allison	Presiding Commissioner DeKalb Co	
Kasey Keesaman	DeKalb County Sheriff's Office	Kasey 45K @Yahoo.com
Jody Barlow	City of Osborn	clerk@cityofosborn.com
Bill Saunders	CalFax Township	
Gary	DEKALB CO.	
Angie Gallus	City of Weatherby	sagallus2@yahoo.com
Emma Bridges	City of Weatherby	wervillage@gmail.com
Stacy Benoit	City of Union Star	unionstarcityclerk@gmail.com
Amber M. Clary	City of Clarksdale	santafered33@yahoo.com
Tina Goud	City of Clarksdale	cityofclarksdale@yahoo.com
Mike Spady	MOKAN REGIONAL COUNCIL	



DeKalb County Hazard Mitigation Plan Update

Planning Meeting #3

Monday, October 16, 2017
DeKalb County Courthouse
Maysville, Missouri

Meeting Agenda

- Review examples of other HMPs mitigation goals
- Discuss new mitigation actions
- Public outreach – SurveyMonkey
- Next steps

Sign-in Sheet

Date: Monday, October, 16 2017
 Time: 12:00 PM
 Location: DeKalb County Courthouse

Name	Jurisdiction	Email
Rebecca Thacker	ma-kan	rebecca@ma-kan.org
Kyle White	DEKALB CO	Kyle.white720@yahoo.com
MARK HUMPHREY	Polk Township	mhumphrey57@centurylink.net
Penny Gans	DeKalb Co	depclerk@unitedfiber.email
Rick Goin	OSBORN R/O	rick.goink@osbornwildcats.org
Terald Wft	Grand River Township	
MARK O'Dell	Grand River Township	
David Brown	Dallas Township	heavenscent-farms15@gmail.com
Russell Lynch	GRAND RIVER TOWNSHIP	
Shane Rohde	Adams Township	rohdefarms1@hotmail.com
Charlene James	Camden Township	
Jay Albright	Stewartville C-2	jalbright@stewartville.k12.mo.us
Jody Barlow	City of Osborn	clerk@cityofosborn.com
Emma Bridges	City of Weatherly	wervillage@gmail.com
Angie Gallus	City of Weatherly	sagallus2@yahoo.com

Sign-in Sheet

Date: Monday, October, 16 2017
Time: 12:00 PM
Location: DeKalb County Courthouse

Name

Jurisdiction

Email

Larold Dablen *City of Maysville*

Joshua Mygatt *City of Maysville*



Subject: DeKalb County Multi-Jurisdictional Hazard Mitigation Plan Update

On behalf of DeKalb County, you are invited to the third of four planning meetings to update the DeKalb County Multi-Jurisdictional Hazard Mitigation Plan. To maintain eligibility for certain FEMA Hazard Mitigation Assistance grants, the Act requires jurisdictions to develop a plan to assess their risks to hazards and identify actions that can be taken in advance to reduce future losses. Your participation is a key element to the success of the plan update effort.

DeKalb County Multi-Jurisdictional Hazard Mitigation Plan Update
Address: DeKalb County Courthouse, 109 W. Main Street, Maysville, MO 64469
Date and Time: Monday, October 16, 2017, 12:00 pm

At the meeting we will discuss creating new actions for the plan update. **Please turn in the evaluations of past actions and the data questionnaire form at the meeting, if you have not already done so.** DeKalb County requests your assistance in forwarding this invitation to others in your jurisdiction. Participants in the planning committee include, but are not limited to: emergency responders, county clerks, city clerks, elected officials, county and city employees, business partners, private-non-profit representatives, school principals, school superintendents and community volunteers.

To successfully complete this project and ensure your organization is eligible for FEMA hazard mitigation assistance funding, we need your participation and input. Jurisdictions (including county and city governments and public school districts) that do not participate in an approved Hazard Mitigation Plan are **not eligible** to apply for FEMA's Hazard Mitigation Assistance grants.

Mo-Kan Regional Council is the contact in developing this plan. Please confirm your attendance or provide contact information for your designated alternate by contacting me at (816) 233-3144 or rebecca@mo-kan.org by October 13.

Thank you,

Rebecca Thacker
Community Development Planner

Thursday, October 5, 2017

DeKalb and Clinton Counties Hazard Mitigation Plan meetings



Clinton and DeKalb Counties are seeking public participation in updating the separate Clinton and DeKalb County Multi-Jurisdictional Hazard Mitigation Plan. The purpose of the plans is to mitigate the impact of hazards and to reduce the loss of life and property. The public can help by serving on the planning committee and/or by distributing information at public events.

The DeKalb planning committee will comprise of representatives from DeKalb County, the incorporated cities, public school districts, agencies, businesses and community volunteers. The second of four meetings will be held at 12:00 pm on Monday, October 16 at the Community Room at the DeKalb County Courthouse, 109 W. Main Street, Maysville, MO 64469.

The DeKalb County plan update will address a comprehensive list of hazards – ranging from severe winter storms and floods to drought and

tornados – and will assess the likely impacts of these hazards on communities and school districts in DeKalb County. The committee will also update current strategies and identify additional activities to

reduce the vulnerability of people and property for the impacts of hazards. Monday's meeting will focus on creating new mitigation actions.

The Clinton planning committee is comprised of representatives from Clinton County, the incorporated cities, public school districts, agencies, businesses and community volunteers. The second of four meetings will be held at 1:00 pm on Tuesday, October 17 at the Clinton County Courthouse, 207 N. Main Street, Plattsburg, MO 64477.

Tuesday's meeting in Clinton County will focus on updating the plan's goals and objectives. The planning committee will also begin updating the status of each hazard mitigation action that was included in the previous plan for Clinton County.

Feedback from the public will be incorporated into the draft plan, which will be available for public review

and comment. Upon the formal adoption by each participating jurisdiction the plan will be presented to Missouri State Emergency Management Agency (SEMA) and Federal State Emergency Management Agency (FEMA) for approval. Jurisdictions that participate in updating the plan will remain eligible for hazard mitigation assistance grants.

Mo-Kan Regional Council is partnering with Clinton and DeKalb Counties to update the plans. For more information about participating in updating the plan and/or to RSVP to the upcoming meeting, contact Rebecca Thacker at Mo-Kan at (816) 233-3144 or rebecca@mo-kan.org.

DeKalb County

Commission

October 16, 2017

Present were: Presiding Commissioner Harold Allison, East District Commissioner Garry McFee, West District Commissioner Kyle White, and County Clerk Melissa Meek.

East District Commissioner Garry McFee made the motion to accept the minutes for the October 10th meeting with West District Commissioner Kyle White making the second. Motion carried.

County Clerk, Melissa Meek, presented the paperwork from The Senior Citizens Tax Board of DeKalb County where they have approved Peggy Harwood as a member of their board. She has agreed to fulfill the term and position of treasurer held by Illah Marie Pulley. West District Commissioner Kyle White made the motion to accept the Tax Boards approval with East District Commissioner Garry McFee making the second. Motion carried. The Commission thanks Mrs. Harwood for her

willingness to serve on this board and hold the position of treasurer.

Gary Dixon of the Maysville Baptist Church requests the approval from the Commission to hold Pray Across America on October 30 from 1 p.m. until 2 p.m. on the Courthouse Lawn. The Commission approved request.

The Commission has requested County Clerk Melissa Meek obtain bids for carpet to be installed in the Courtroom.

Melissa advised that the census at Sunset home was down this month.

Road & Bridge Supervisor, Bill Gray, met with the Commission to discuss the bridge on Water Street, culverts, rock and work for next year. The Commission approved the engineering study from Veenstra & Kimm concerning the bridge on Water St.

The Commission met with Rebecca Thacker of MOKAN for Hazard Mitigation. Rebecca also discussed transportation needs with the TAC Committee and Commission. The TAC

Committee meets quarterly and gives wants and needs of transportation priorities to MOKAN and MOKAN relays this information on to MODOT. Currently the I-35 Hwy 36 junction is of high priority for all involved. The curve at Osborn was to be completed in 2017, but now has been pushed back to 2018 due to funding. Other areas of concern are O, H, W and 33 Highways. The Commission thanks Rebecca for taking their concerns back to MODOT for review.

Melissa Meek advised that another City may want to join the emergency notification system that the County has in place. The cost for anyone wanting to do this is \$500.00 for the first year and \$1000.00 for every year after. The cost is a flat rate not based on patron usage.

Accounts payable were reviewed and approved per the Commission.

Assessor Tanya Zimmerman discussed GIS with the Commission and the selling of subscriptions to abstractors. The cost is yet to be determined nor what fund these monies would


go into. More information will be gathered. Transportation Committee with MOKAN and County Clerk Melissa Meek, David Farr and Assessor Tanya Road & Bridge Supervisor Bill Zimmerman will sit on the Gray and East District Commission and East District Commission. Garry McFee will sit on Committee.

BOB DORTON

TREE SERVICE

816-632-4801

ASAP CERTIFIED ARBORIST - TREE TRIMMING - TREE REMOVAL



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DeKalb County Hazard Mitigation Plan Update

Planning Meeting #4

Monday, February 12, 2018
DeKalb County Courthouse
Maysville, Missouri

Meeting Agenda

- Required documents
- Survey Results
- Chapter 1 - Mitigation goals
- Chapter 2 – Provide feedback
- Chapter 5 - Plan maintenance
- Adoption Process - Public comment and resolution
- In-kind documentation
- Public outreach

Sign-in Sheet

Date: February 12, 2018
Time: 12:00 PM
Location: DeKalb County Courthouse

Name	Organization	Email
Rick Callaway	Union Star School	rcalloway@usr2.com
Garold Dabley	city of maysville	
Joshua Mygatt	City of Maysville	
Kyle White	DEKALB CO.	
MARK HUMPHREY	DeKalb Township	
Garry McFee	DeKalb Co.	
Harold Allison	DeKalb Co.	
Tina Good	Clarksdale	cityofclarksdale@yahoo.com
Penny Gans	DeKalb Co	depclerke@unitedfiber.email
Jody Barlow	City of Osborn	clerk@cityofosborn.com
Stacy Benoit	Union Star	unionstarcityclerk@gmail.com



Subject: DeKalb County Multi-Jurisdictional Hazard Mitigation Plan Update

On behalf of DeKalb County, you are invited to the fourth and final planning meetings to update the DeKalb County Multi-Jurisdictional Hazard Mitigation Plan. To maintain eligibility for certain FEMA Hazard Mitigation Assistance grants, jurisdictions are required to develop a plan to assess their risks to hazards and identify actions that can be taken in advance to reduce future losses. Your participation is a key element to the success of the plan update effort.

DeKalb County Multi-Jurisdictional Hazard Mitigation Plan Update
Address: DeKalb County Courthouse, 109 N. Main Street, Maysville, MO 64469
Date & Time: Monday, February 12, 2018, 12:00 pm

At the meeting we will discuss the adoption of the updated plan and plan maintenance. **The data questionnaire form and evaluations of past actions should be submitted at the February 12th meeting, at the very latest.** If you have not received these forms or have any questions on how to complete them, please contact me.

DeKalb County requests your assistance in forwarding this invitation to others. To successfully complete this project and ensure your organization is eligible for FEMA hazard mitigation assistance funding, we need your participation and input. Jurisdictions (including county and city governments and public school districts) that do not participate in an approved Hazard Mitigation Plan are **not eligible** to apply for FEMA's Hazard Mitigation Assistance grants.

Mo-Kan Regional Council is the contact in developing this plan. Please confirm your attendance or provide contact information for your designated alternate by contacting me at (816) 233-3144 or rebecca@mo-kan.org by February 8th.

Thank you,

Rebecca Thacker
Community Development Planner

DAILY CONGREGATE MEALS SIGN-IN SHEET

Thursday January 18, 2018

DEKALB COUNTY SENIOR CITIZENS COUNCIL, INC.

If applicable, please check column	1st 1st Time	Under 60		RES Under 60 Handicapped	SIGNATURE	If applicable, please check column	1st 1st Time	Under 60		RES Under 60 Handicapped
		VOL	Guest or Staff					VOL	Guest or Staff	
1 David Pope					21 Judy Peters					
2 Lyle Webb					22 Betty Vanson					
3 Kenny Swoy					23 Bert O'Sherard					
4 Wayne Webb					24 Joyce Sherard					
5 Frances Hall					25 Sharon Murphy					
6 Jim Chandler					26 Richard Meelf					
7 Nola M. Gottle					27 Le Muell					
8 Rebecca Thompson					28					
9 Martha Sherman					29					
10 L. Little					30					
11 Vesta Surko					31					
12 Bill Wager					32					
13 Ruth Owen					33					
14 Doc Owen					34					
15 Guy Nunn					35					
16 David Nunn					36					
17 Helen Owens					37					
18 Dick 9th					38					
19 Dorothy Schubarz					39					
20 R Thompson					40					

Maysville Area Chamber of Commerce Agenda

February 13, 2018

Call meeting to order: 7:00 AM at Subway hosted by Kathy Kagay

Pledge and Prayer

Present minutes from last meeting for approval

Treasurer's Report

Chamber Recognition for the Month: *Mach IV*

Membership report:

Building Rental & Maintenance report:

Old Business:

*Website status: We do have a domain : **maysvillemochamber.com***

Corner Stone Technologies are designing the Chamber website they will be needing information from Chamber members and businesses on what they want to be on the website.

Cyber Security Workshop: The seminar/workshop is going to have to be put hold

Next year's Chamber Officers

Lux Construction has their signs up on the North sign will be pro-rating 2017 rent and add it to 2018 when 2018 rent bills are sent out.

Update on the ad for the Missouri Highway 36 book: Barb Owen

New Business:

Rebecca Thacker with MO-KAN

Chamber Dinner & Silent Auction April 13th Committees to be formed & meal cost

Announcements: business/community

Next meeting, March 13th Host & Venue?

Sign-in Sheet

Date: February 13, 2018

Time: 7:00 am

Location: Maysville's Chamber of Commerce Meeting

Name

Organization

Barbara Conway Owen

Kathy Kagay

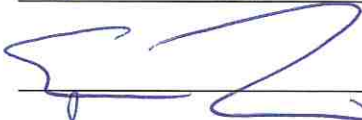
Subway

Jim Crawbee

Mike Edwards

Tracy Taylor

Pat Fisher Johnson



Luxx Construction LLC

Stephanie Williams

NCMBF

Mary Meek

County Clerk

Larry Zimmerman

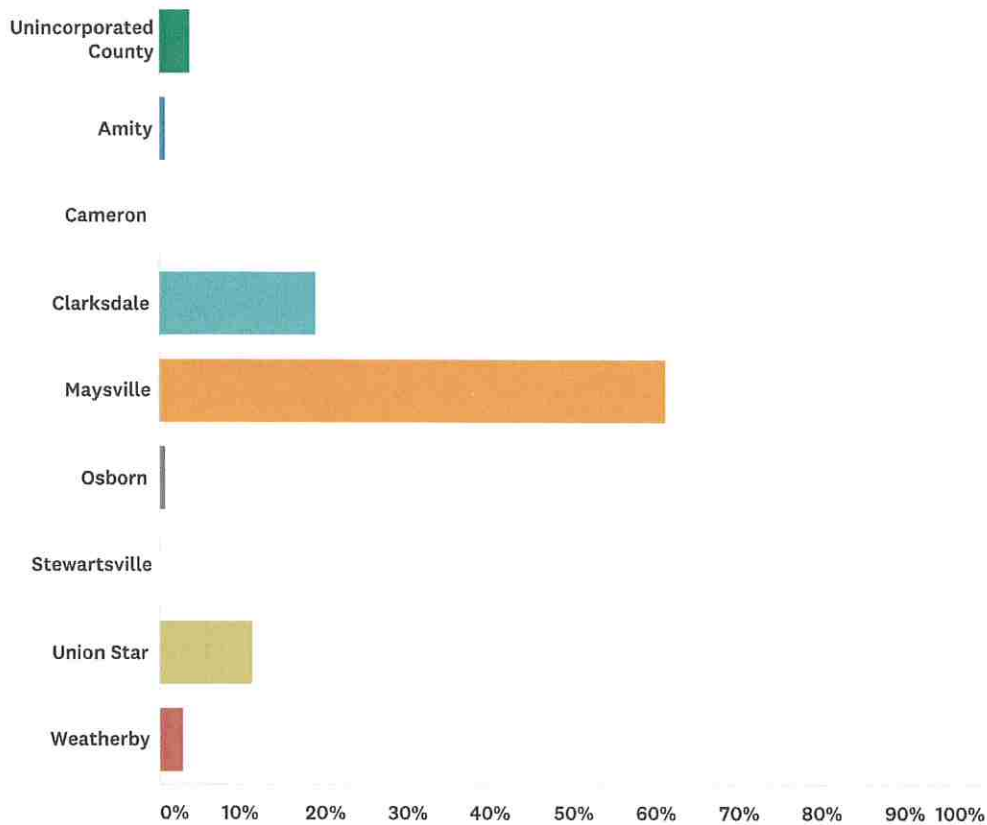
County Assessor

Larry Zieber

Independent Farmers Bank

Q1 Please select your jurisdiction from the list

Answered: 132 Skipped: 2



ANSWER CHOICES

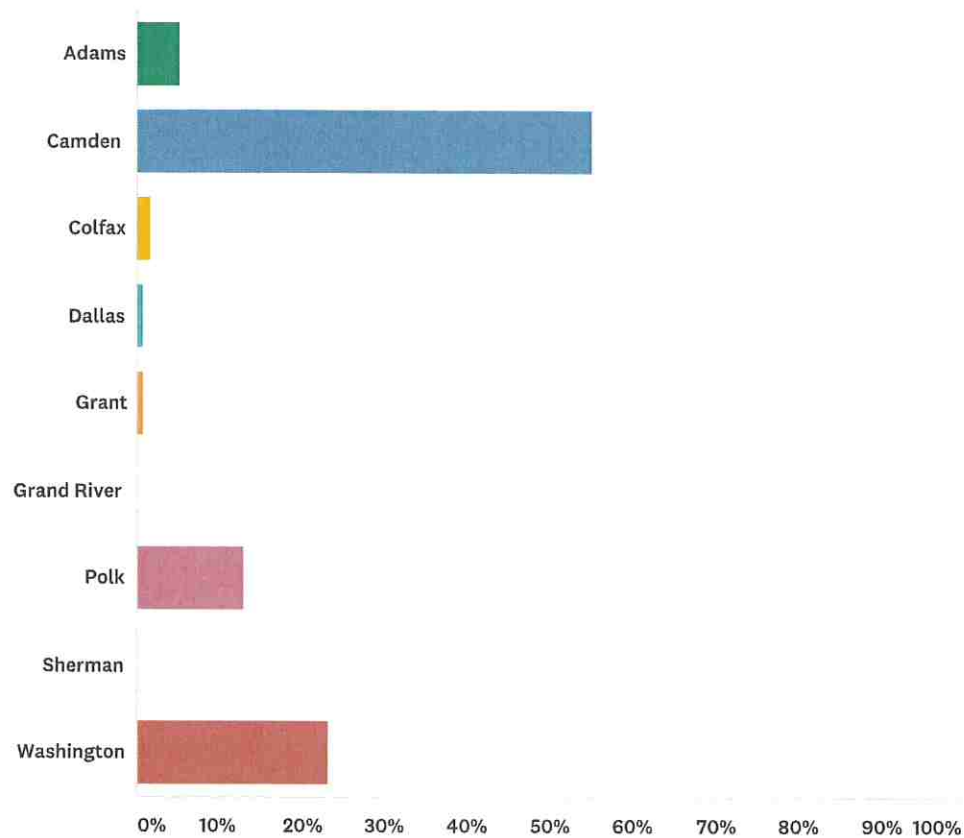
RESPONSES

Unincorporated County	3.79%	5
Amity	0.76%	1
Cameron	0.00%	0
Clarksdale	18.94%	25
Maysville	61.36%	81
Osborn	0.76%	1
Stewartsville	0.00%	0
Union Star	11.36%	15
Weatherby	3.03%	4

Total Respondents: 132

Q2 Please select your township from the list.

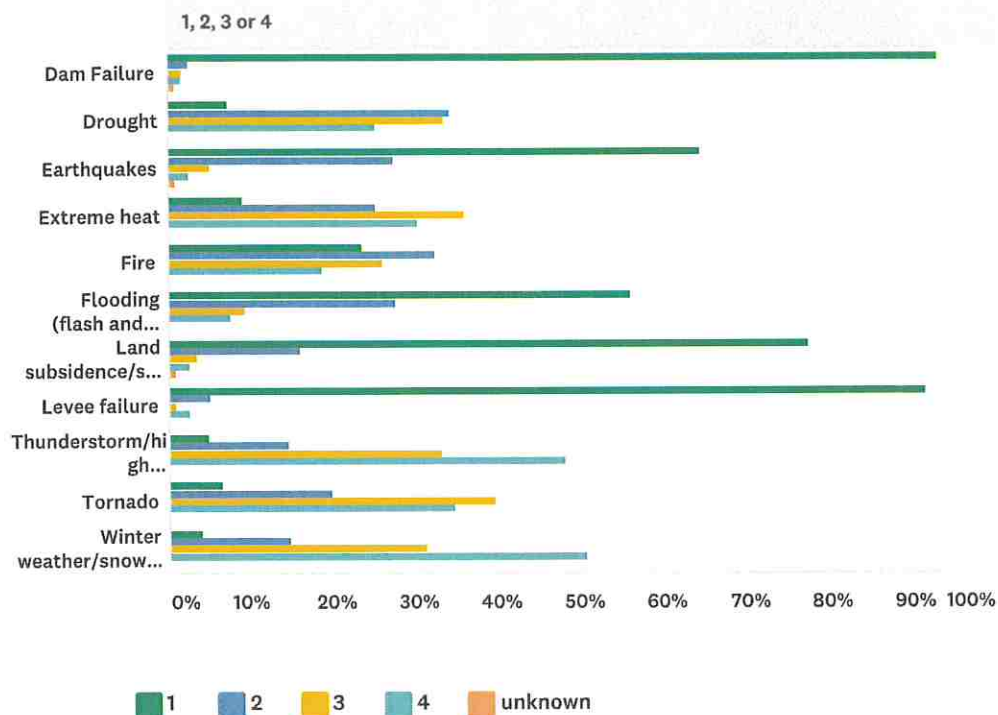
Answered: 116 Skipped: 18



ANSWER CHOICES	RESPONSES	
Adams	5.17%	6
Camden	55.17%	64
Colfax	1.72%	2
Dallas	0.86%	1
Grant	0.86%	1
Grand River	0.00%	0
Polk	12.93%	15
Sherman	0.00%	0
Washington	23.28%	27
TOTAL		116

Q3 Please indicate your opinion on the likelihood for each natural hazard to impact YOUR JURISDICTION (identified above). Please rate each hazard 1 through 4 as follows: 1=Unlikely, 2=Occasional, 3=Likely, 4=Highly Likely

Answered: 125 Skipped: 9



1, 2, 3 or 4

	1	2	3	4	UNKNOWN	TOTAL
Dam Failure	93.33% 112	2.50% 3	1.67% 2	1.67% 2	0.83% 1	120
Drought	7.32% 9	34.15% 42	33.33% 41	25.20% 31	0.00% 0	123
Earthquakes	64.46% 78	27.27% 33	4.96% 6	2.48% 3	0.83% 1	121
Extreme heat	8.94% 11	25.20% 31	35.77% 44	30.08% 37	0.00% 0	123
Fire	23.39% 29	32.26% 40	25.81% 32	18.55% 23	0.00% 0	124
Flooding (flash and river)	55.83% 67	27.50% 33	9.17% 11	7.50% 9	0.00% 0	120
Land subsidence/sinkholes	77.50% 93	15.83% 19	3.33% 4	2.50% 3	0.83% 1	120
Levee failure	91.60% 109	5.04% 6	0.84% 1	2.52% 3	0.00% 0	119

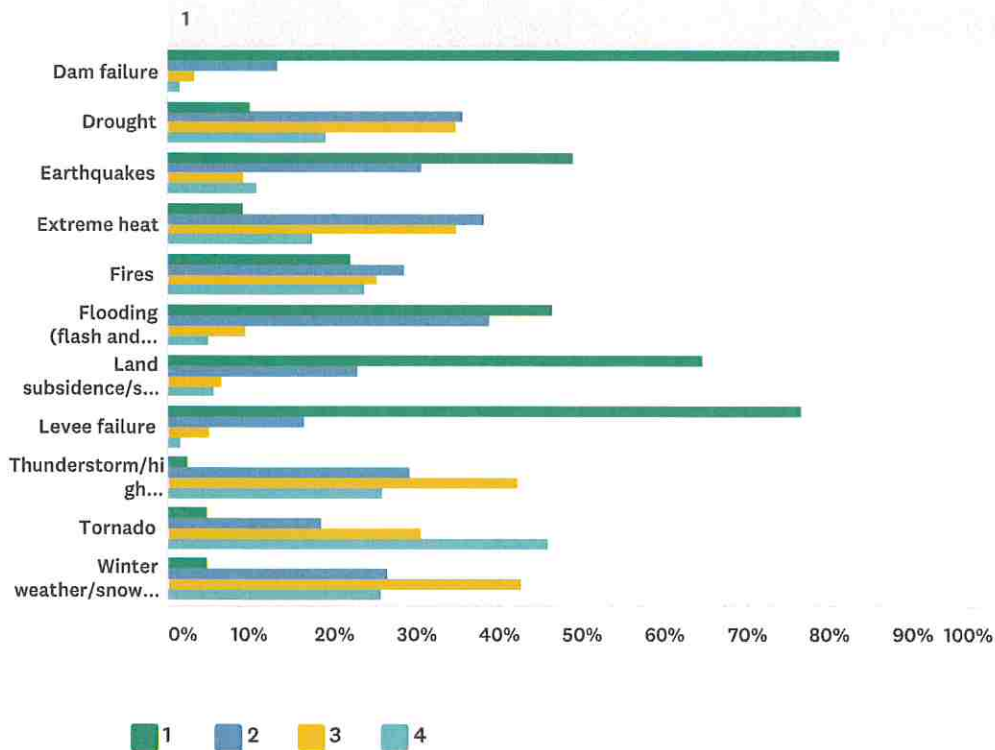
DeKalb County

SurveyMonkey

Thunderstorm/high winds/lightning/hail	4.80%	14.40%	32.80%	48.00%	0.00%	
	6	18	41	60	0	125
Tornado	6.56%	19.67%	39.34%	34.43%	0.00%	
	8	24	48	42	0	122
Winter weather/snow/ice/severe cold	4.07%	14.63%	30.89%	50.41%	0.00%	
	5	18	38	62	0	123

Q4 Please indicate your opinion on the potential magnitude of each hazard's impact on YOUR JURISDICTION (identified above). Please rate each hazard 1 through 4 as follows: 1=Negligible, 2=Limited, 3=Critical, 4= Catastrophic

Answered: 124 Skipped: 10



	1	2	3	4	TOTAL
Dam failure	81.67% 98	13.33% 16	3.33% 4	1.67% 2	120
Drought	10.00% 12	35.83% 43	35.00% 42	19.17% 23	120
Earthquakes	49.17% 59	30.83% 37	9.17% 11	10.83% 13	120
Extreme heat	9.17% 11	38.33% 46	35.00% 42	17.50% 21	120
Fires	22.13% 27	28.69% 35	25.41% 31	23.77% 29	122
Flooding (flash and river)	46.61% 55	38.98% 46	9.32% 11	5.08% 6	118
Land subsidence/sinkholes	64.75% 79	22.95% 28	6.56% 8	5.74% 7	122
Levee failure	76.86% 93	16.53% 20	4.96% 6	1.65% 2	121

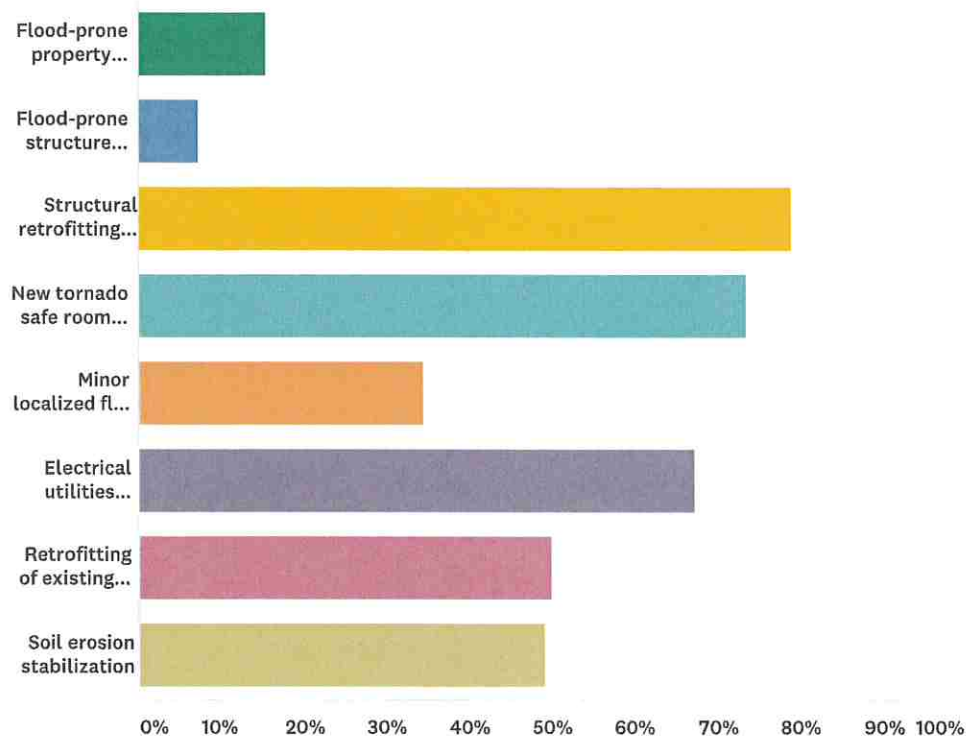
DeKalb County

SurveyMonkey

Thunderstorm/high winds/lighting/hail	2.44%	29.27%	42.28%	26.02%	
	3	36	52	32	123
Tornado	4.84%	18.55%	30.65%	45.97%	
	6	23	38	57	124
Winter weather/snow/ice/severe cold	4.84%	26.61%	42.74%	25.81%	
	6	33	53	32	124

Q5 FEMA Hazard Mitigation Assistant Grants are administered by the State Emergency Management Agency. Listed below are some types of projects considered for the grants. Please check all those that could benefit your jurisdiction, in your opinion.

Answered: 110 Skipped: 24



ANSWER CHOICES

RESPONSES

Flood-prone property acquisition & structure demolition/relocation	15.45%	17
Flood-prone structure elevation	7.27%	8
Structural retrofitting of existing buildings to add a tornado safe room	79.09%	87
New tornado safe room construction	73.64%	81
Minor localized flood reduction projects (stormwater management or localized flood control projects)	34.55%	38
Electrical utilities infrastructure retrofit	67.27%	74
Retrofitting of existing buildings and facilities from wind damage	50.00%	55
Soil erosion stabilization	49.09%	54
Total Respondents: 110		

Q6 Please comment on any other issues that the DeKalb County Multi-Jurisdictional Hazard Mitigation Planning Committee should consider in developing a strategy to reduce future losses caused by natural hazards.

Answered: 8 Skipped: 126

Appendix C: Mitigation Actions

2018 Action: 1.1.1

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: <i>Explore use of electronic technology such as text alerts / email to alert people of emergencies.</i>		Jurisdiction: <i>Osborn School</i>
Action ID: <i>1.1.2</i>		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	<i>2</i>	
T: Is it Technically feasible and potentially successful?	<i>2</i>	
A: Does the jurisdiction have the administrative capacity to execute this action?	<i>2</i>	
P: Is it Politically acceptable?	<i>2</i>	
L: Is there Legal authority to implement?	<i>1</i>	
E: Is it Economically beneficial?	<i>2</i>	
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	<i>2</i>	
Will historic structures be saved or protected?	<i>2</i>	
Could it be implemented quickly?	<i>2</i>	
STAPLEE Score		

Mitigation Effectiveness Criteria	Evaluation Rating	Score <i>17</i>
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	<i>6</i>
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	<i>5</i>
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score):

*28*Priority Level: ☐ High (30+ points)☒ Medium (25-29 points)☐ Low (less than 25 points)

Completed by (name/title/phone #):

Goen, Superintendent 816-675-2217

Action Title: <i>Education</i>		Jurisdiction: <i>Union Star</i>
Action ID: <i>1.1.5</i>		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		<i>3</i>
T: Is it Technically feasible and potentially successful?		<i>3</i>
A: Does the jurisdiction have the administrative capacity to execute this action?		<i>3</i>
P: Is it Politically acceptable?		<i>3</i>
L: Is there Legal authority to implement?		<i>3</i>
E: Is it Economically beneficial?		<i>3</i>
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		<i>2</i>
Will historic structures be saved or protected?		<i>0</i>
Could it be implemented quickly?		<i>3</i>
STAPLEE Score		<i>23</i>

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	<i>10</i>
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	<i>10</i>
Mitigation Effectiveness Score		<i>20</i>

Total Score (STAPLEE Score + Mitigation Effectiveness Score):

*43*Priority Level: ☒ High (30+ points)☐ Medium (25-29 points)☐ Low (less than 25 points)

Completed by (name/title/phone #):

Shayla B. ... city clerk
816-593-2533

2018 Action: 1.2.2

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: Educate School children on disaster preparedness		Jurisdiction: Maysville School
Action ID: 1.2.3		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		3
T: Is it Technically feasible and potentially successful?		3
A: Does the jurisdiction have the administrative capacity to execute this action?		3
P: Is it Politically acceptable?		3
L: Is there Legal authority to implement?		3
E: Is it Economically beneficial?		3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		0
Could it be implemented quickly?		3
STAPLEE Score		23

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	8
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	0
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): _____

Priority Level: ☒ High (30+ points)

☐ Medium (25-29 points)

☐ Low (less than 25 points)

Completed by (name/title/phone #):

Robert Smith
Supt
8/6 449-2308
816-449-0321

2018 Action: 1.2.3

**SHOW-ME COUNTY
MULTI-JURISDICTIONAL
LOCAL HAZARD MITIGATION PLAN**

Action Title: <i>Encourage local FD and other Responders to participate in disaster drills at school</i>		Jurisdiction: <i>Maysville School</i>
Action ID: <i>1.2.4</i>		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		<i>3</i>
T: Is it Technically feasible and potentially successful?		<i>2</i>
A: Does the jurisdiction have the administrative capacity to execute this action?		<i>3</i>
P: Is it Politically acceptable?		<i>3</i>
L: Is there Legal authority to implement?		<i>3</i>
E: Is it Economically beneficial?		<i>2</i>
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		<i>3</i>
Will historic structures be saved or protected?		<i>2</i>
Could it be implemented quickly?		<i>3</i>
STAPLEE Score		<i>24</i>

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	<i>8</i>
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	<i>6</i>
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): _____

Priority Level: ☒ High (30+ points) ☐ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #):

Robert S. R.
 Supt
 8/6 449-2308
 449-0321

2018 Action: 1.2.4

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title:		Jurisdiction:
Action ID: 1.2.4		Stewartville C-2
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	Y	3
T: Is it Technically feasible and potentially successful?	Y	3
A: Does the jurisdiction have the administrative capacity to execute this action?	Y	3
P: Is it Politically acceptable?	Y	3
L: Is there Legal authority to implement?	Y	2
E: Is it Economically beneficial?	Y	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	Y	3
Will historic structures be saved or protected?	Y	3
Could it be implemented quickly?	Y	3
STAPLEE Score		24

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	9
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	9
Mitigation Effectiveness Score		18

Total Score (STAPLEE Score + Mitigation Effectiveness Score):

44

Priority Level: ☒ High (30+ points)☐ Medium (25-29 points)☐ Low (less than 25 points)

Completed by (name/title/phone #):

Jan Albright, Superintendent
816-669-3792

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title: "Educate citizens on safe use of generators and other power/heat sources."		Jurisdiction: Amity	
Action ID: 1.2.12			
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score	
S: Is it Socially acceptable?	2		
T: Is it Technically feasible and potentially successful?	1		
A: Does the jurisdiction have the administrative capacity to execute this action?	3		
P: Is it Politically acceptable?	2		
L: Is there Legal authority to implement?	0		
E: Is it Economically beneficial?	3		
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	2		
Will historic structures be saved or protected?	3		
Could it be implemented quickly?	1		
STAPLEE Score	17		

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	6
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	6
Mitigation Effectiveness Score		12

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 29

Priority Level: ☐ High (30+ points)

☒ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #):

Sam Perkins, Councilman, 816-449-0009

2018 Action: 1-2-12

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title:		Jurisdiction:
Action ID: 1-2-12		Stewartsville C-2
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	Y	3
T: Is it Technically feasible and potentially successful?	Y	3
A: Does the jurisdiction have the administrative capacity to execute this action?	Y	3
P: Is it Politically acceptable?	Y	3
L: Is there Legal authority to implement?	N	0
E: Is it Economically beneficial?	Y	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	Y	3
Will historic structures be saved or protected?	n/A	n/A
Could it be implemented quickly?	2 Y	2
STAPLEE Score		20

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	9
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	9
Mitigation Effectiveness Score		18

Total Score (STAPLEE Score + Mitigation Effectiveness Score):

38

Priority Level: ☒ High (30+ points)

☐ Medium (25-29 points)

☐ Low (less than 25 points)

Completed by (name/title/phone #):

Jan Albright, Superintendent
816-664-3792

2018 Action: 1.3.4

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title:		Jurisdiction:
Action ID: 1.3.3		Stewartville C-2
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	Y	3
T: Is it Technically feasible and potentially successful?	Y	3
A: Does the jurisdiction have the administrative capacity to execute this action?	Y	3
P: Is it Politically acceptable?	Y	3
L: Is there Legal authority to implement?	Y	2
E: Is it Economically beneficial?	Y	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	Y	3
Will historic structures be saved or protected?	Y	3
Could it be implemented quickly?	N	0
STAPLEE Score		23

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	9
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	9
Mitigation Effectiveness Score		18

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 41

Priority Level: ☒ High (30+ points)

☐ Medium (25-29 points)

☐ Low (less than 25 points)

Completed by (name/title/phone #):

Gay Albright, Superintendent
616-669-3792

2018 Action: 1.3.5

**SHOW-ME COUNTY
MULTI-JURISDICTIONAL
LOCAL HAZARD MITIGATION PLAN**

Action Title: 1.3.3		Jurisdiction: USA 2 School District
Action ID:		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	Y 3	3
T: Is it Technically feasible and potentially successful?	Y 3	3
A: Does the jurisdiction have the administrative capacity to execute this action?	Y 3	3
P: Is it Politically acceptable?	Y	3
L: Is there Legal authority to implement?	Y	3
E: Is it Economically beneficial?	Y	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	Y Positive	3
Will historic structures be saved or protected?	N/A	
Could it be implemented quickly?	Yes	3
STAPLEE Score		24

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	5
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	5
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): **34**

Priority Level: ☒ High (30+ points) ☐ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #): **[Signature] Superintendent**
816-593-2294

2018 Action: 1-4.1

**SHOW-ME COUNTY
MULTI-JURISDICTIONAL
LOCAL HAZARD MITIGATION PLAN**

Action Title: "Citizens that live in areas of timber or tall grass should be encouraged to remove vegetation, yard debris and combustibles near structures."		Jurisdiction: Amity	
.Action ID: 1.4.3			
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score	
S: Is it Socially acceptable?	2		
T: Is it Technically feasible and potentially successful?	0		
A: Does the jurisdiction have the administrative capacity to execute this action?	0		
P: Is it Politically acceptable?	1		
L: Is there Legal authority to implement?	0		
E: Is it Economically beneficial?	3		
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	3		
Will historic structures be saved or protected?	3		
Could it be implemented quickly?	3		
STAPLEE Score	15		

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	7
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	7
Mitigation Effectiveness Score		14

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 29

Priority Level: ☐ High (30+ points) ☒ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #): Sam Perkins, Councilman, 816-449-0009

**SHOW-ME COUNTY
MULTI-JURISDICTIONAL
LOCAL HAZARD MITIGATION PLAN**

2018 Action: 3.1.7

Action Title: <u>Work with state/local government awareness of earthquake mitigation activities in home, school and business</u>		Jurisdiction: <u>Osborn School</u>
Action ID: <u>3.1.3</u>		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		2
T: Is it Technically feasible and potentially successful?		2
A: Does the jurisdiction have the administrative capacity to execute this action?		1
P: Is it Politically acceptable?		2
L: Is there Legal authority to implement?		1
E: Is it Economically beneficial?		2
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		2
Will historic structures be saved or protected?		1
Could it be implemented quickly?		1
STAPLEE Score		

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	14
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	7
Mitigation Effectiveness Score		5

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 26

Priority Level: ☐ High (30+ points) ☒ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #): Goin, Superintendent 816-675-2217

2018 Action: 3-1-8

SHOW-ME COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

Action Title:		Jurisdiction:
Action ID: 3-1-3		Stewartville C-2
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?	Y	3
T: Is it Technically feasible and potentially successful?	Y	3
A: Does the jurisdiction have the administrative capacity to execute this action?	Y	3
P: Is it Politically acceptable?	Y	3
L: Is there Legal authority to implement?	Y	2
E: Is it Economically beneficial?	Y	3
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)	Y	3
Will historic structures be saved or protected?	Y	2
Could it be implemented quickly?	N	1
STAPLEE Score		21

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	9
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	9
Mitigation Effectiveness Score		18

Total Score (STAPLEE Score + Mitigation Effectiveness Score):

39

Priority Level: ☒ High (30+ points)

☐ Medium (25-29 points)

☐ Low (less than 25 points)

Completed by (name/title/phone #):

Gay Albright, Superintendent
814-669-3792

Action Title: <u>Generators</u>		Jurisdiction: <u>Union Star</u>
Action ID: <u>3.2.8</u>		
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		<u>3</u>
T: Is it Technically feasible and potentially successful?		<u>3</u>
A: Does the jurisdiction have the administrative capacity to execute this action?		<u>3</u>
P: Is it Politically acceptable?		<u>3</u>
L: Is there Legal authority to implement?		<u>3</u>
E: Is it Economically beneficial?		<u>1</u>
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		<u>2</u>
Will historic structures be saved or protected?		<u>0</u>
Could it be implemented quickly?		<u>2</u>
STAPLEE Score		<u>20</u>

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	<u>7</u>
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	<u>1</u>
Mitigation Effectiveness Score		<u>8</u>

Total Score (STAPLEE Score + Mitigation Effectiveness Score): 28Priority Level: ☐ High (30+ points)☒ Medium (25-29 points)☐ Low (less than 25 points)

Completed by (name/title/phone #):

Shirley D. Dineen city clerk
816-593-2533

Appendix D: Adoption Resolutions

Resolution # 7/6/18

Adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, DeKalb County recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, DeKalb County fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan," and approved it as to form and content; and

Whereas, DeKalb County desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for DeKalb County demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out responsibilities under the plan;

Now, therefore, be it resolved, that DeKalb County has adopted the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan.

Date: 16 July 18

Certifying Official: Harold Allen

Attest: Melissa Sheen
DeKalb County
Clerk

Resolution #

Adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, Village of Amity recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, Village of Amity fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan," and approved it as to form and content; and

Whereas, Village of Amity desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for Village of Amity demonstrates the jurisdictions' commitment to

authorizes responsible agencies to carry out responsibilities under the plan;

Now, therefore, be it resolved, that Village of Amity has adopted the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan.

Date: 7-17-2018

Certifying Official: Samuel D Perkins

Attest: [Signature]

Adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, City of Clarksdale recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, City of Clarksdale fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan," and approved it as to form and content; and

Whereas, City of Clarksdale desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for City of Clarksdale demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out responsibilities under the plan;

Now, therefore, be it resolved, that City of Clarksdale has adopted the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan.

Date: 6/20/18

Certifying Official: 

Attest: 

Resolution # 03

Adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, City of Maysville recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, City of Maysville fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan," and approved it as to form and content; and

Whereas, City of Maysville desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for City of Maysville demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out responsibilities under the plan;

Now, therefore, be it resolved, that City of Maysville has adopted the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan.

Date: 8-10-18

Certifying Official: Larry Keel

Attest: Patricia Fisher Johnson

Resolution # 2018-03

Adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, City of Osborn recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, City of Osborn fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan," and approved it as to form and content; and

Whereas, City of Osborn desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for City of Osborn demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out responsibilities under the plan;

Now, therefore, be it resolved, that City of Osborn has adopted the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan.

Date: 4-11-18

Certifying Official: David E. Meek

RESOLUTION #2018-507

Adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, City of Stewartsville recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, City of Stewartsville fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan," and approved it as to form and content; and

Whereas, City of Stewartsville desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for City of Stewartsville demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out responsibilities under the plan;

Now, therefore, be it resolved, that City of Stewartsville has adopted the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan.

Date: 7/10/18

Mayor:


Mark Francis

Attest:


City Clerk, Hazel Fowler

Adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, Union Star recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, Union Star fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan," and approved it as to form and content; and

Whereas, Union Star desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for Union Star demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out responsibilities under the plan;

Now, therefore, be it resolved, that Union Star has adopted the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan.

Date:

March 14, 2018

Certifying Official:

Babara Stein

Resolution # 1

Adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, Osborn School District recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, Osborn School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan," and approved it as to form and content; and

Whereas, Osborn School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for Osborn School District demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out responsibilities under the plan;

Now, therefore, be it resolved, that Osborn School District has adopted the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan.

Date: June 21, 2018

Certifying Official: 

Attest: 

Resolution # _____

Adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, Stewartsville School District recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, Stewartsville School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan," and approved it as to form and content; and


Whereas, Stewartsville School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for Stewartsville School District demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out responsibilities under the plan;

Now, therefore, be it resolved, that Stewartsville School District has adopted the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan.

Date: 7-12-18

Certifying Official: 

Attest: 

Resolution # _____

Adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, Maysville School District recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, Maysville School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan," and approved it as to form and content; and

Whereas, Maysville School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for Maysville School District demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out responsibilities under the plan;

Now, therefore, be it resolved, that Maysville School District has adopted the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan.

Date: _____

Certifying Official: _____

Attest: _____

Adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, Union Star School District recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, Union Star School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan," and approved it as to form and content; and

Whereas, Union Star School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for Union Star School District demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out responsibilities under the plan;

Now, therefore, be it resolved, that Union Star School District has adopted the "DeKalb County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan.

Date: 6/21/18

Certifying Official: 

Attest: Samantha Gillip