A FLOOD DISASTER MITIGATION PLAN FOR HISTORIC MADISON INCORPORATED

A CREATIVE PROJECT

SUBMITTED TO THE GRADUATE SCHOOL

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE

MASTER OF SCIENCE

BY

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ACKNOWLEDGEMENTS

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CHAPTER ONE – INTRODUCTION

The protections afforded by historic preservation professionals and their work infrequently address the preventative measures needed when historic resources are subject to extremes of building performance demands represented by natural disasters. Historically, building sites were chosen based on proximity to transport, commerce, and fertile farmlands. These benefits often outweighed the potential dangers of river frontages, most commonly flooding. Madison, Indiana, the focus of this study, is representative. The City of Madison is located in the southeast corner of Indiana along the Ohio River. Madison was settled in 1806 by pioneers who used the Ohio River to push westward into the Northwest Territory.¹

As historic properties faced hardships and began disappearing across the country, individuals in Madison, Indiana saw the need for a group focused on the protection of the city’s past. To fill this need, Mr. and Mrs. John T. Windle founded Historic Madison Incorporated in 1960. Today, the organization owns, operates and maintains 16 properties; four of the properties are open as museums and others are opened for special occasions.² Some of the organization’s historic structures are located in flood prone areas.

1.1 Statement of Purpose

The purpose of this creative project is to assist Historic Madison, Inc. in protecting their historic properties from damage caused by natural disasters. This project will provide Historic Madison Inc. information on possible risks to their properties and steps to take in the event of a natural disaster, specifically focused on the risks due to flash flooding and riverine flooding. Additionally, this project will furnish the organization with a disaster mitigation plan and recommendations on mitigation before floods occur, adaptation while floods are occurring, and recovery afterwards. This proposal intends to mitigate future damage to historic properties due to flooding and lay the foundation for future disaster mitigation plans for the remaining buildings not affected by flooding.

1.2 Discussion of content

The first portion of this report will be focused on literature review and evidence that supports the need for a disaster mitigation plan for Historic Madison Inc. Understanding the evidence for the importance of disaster mitigation planning for private organizations and privately owned properties offers supportive context for the creation of a disaster mitigation plan for Historic Madison Inc.

The second portion of this report will include the disaster mitigation plan and recommendations on the prevention of flooding, steps to be taken during a flood disaster, and the recovery process after a disaster. This will give the organization a better understanding of their properties and action steps to ensure they are protected from a flood disaster’s worst effects. In addition to the report, appendixes, which include a definition list, are included to provide a better understanding of the disaster mitigation plan.
1.3 Scope and Limits of this Project

The focus of this project is limited to properties owned by Historic Madison Inc., which would be affected in the event of a riverine flood of the Ohio River to the south or a flash flood from Crooked Creek to the north. This project focuses on these properties because of the recent devastating flash flood in August 2015 in which two of included properties were adversely affected.

1.4 Methodology

There were four stages to the creation of this project: preparation, fieldwork, analysis/derivation of findings, and compiling the report. Prior to the on-site investigations, secondary research occurred to obtain background information and create a context for this project. Secondary research was focused on literature review into disaster mitigation planning, historic or cultural resource disaster mitigation planning, flooding and City of Madison resources. Methods of collecting data on-site included:

- Photographic documentation of locations
- Photographic and visual documentation of current building conditions
- Archival research of past and recent floods within Madison, Indiana
- Visual investigation of previous flood damage

To form the disaster mitigation plan report, the information found through research during preparation, on-site data, and analysis of data were brought together as a body of evidence from which the project’s proposals emerge. This report will include steps in preparation for, response to, and recovery from a disaster.
1.5 Literature Review

Literature of the subject can be found in four categories; disaster mitigation planning, historic or cultural resource disaster mitigation planning, flooding and the built environment, and the City of Madison.

1.5.1 – Literature on disaster mitigation planning

The literature for disaster mitigation planning includes guides for facility management (QED Information Science, 1985; Gustin, 2013) and guides for businesses (Jasper, 2008; Baylus, 1991). “Disaster Recovery: Contingency Planning and Program Evaluation” (QED Information Science, 1985) is a manual for disaster mitigation planning and focuses on the management considerations in the preparation of a disaster recovery plan. Included in this book are checklists and worksheets to assist managers in understanding their areas of concern. One of the checklists included in “Disaster Recovery: Contingency Planning and Program Evaluation” is focused on disaster recovery priority concerns of management. This checklist can be found in Appendix B. “Disaster & Recovery Planning: A Guide for Facility Managers” (Gustin, 2013) focuses on major aspects of disaster mitigation planning and what strategies are available for companies to use to address the issues in disaster mitigation planning. Gustin also outlines the topics that should be included in a disaster plan. According to Gustin, a disaster plan should include an executive summary, emergency management elements, response procedures, supporting documents such as utility shutoffs, and resource lists.3 “Protecting Your Business: Disaster Preparation and the Law” (Jasper, 2008) lays out how to develop and implement an emergency plan. After laying out the

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basics, Jasper discusses how to plan for specific disasters including floods. This included the following:

- Determine your risk by asking your local emergency management office whether your facility is located in a flood plain. Learn the history of flooding in your area. Learn the elevation of your facility in relation to streams, rivers and dams.

- Review the community’s emergency plan. Learn the community’s evacuation routes. Know where to find higher ground in case of a flood.

- Establish warning and evacuation procedures for the facility. Make plans for assisting employees who may need transportation.

- Inspect areas in your facility subject to flooding. Identify records and equipment that can be moved to a higher location. Make plans to move records and equipment in case of flood.

- Purchase a National Oceanic and Atmospheric Administration (NOAA) Weather Radio with a warning alarm tone and battery backup. Listen for flood watches and warnings:
  - Flood Watch – A flood watch indicates that flooding is possible
  - Flood Warning – A flood warning indicates that flooding is already occurring or will occur soon.

- Ask your insurance carrier for information about flood insurance. Regular property and casualty insurance does not cover flooding.

- Consider the feasibility of flood-proofing your facility.

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"Disaster Recovery Handbook" (Baylus, 1991) discusses the purposes and need for a business disaster plan. Additionally, this book talks about how to create a plan and what is needed to maintain the plan. According to Eileen Baylus, editor, "companies can overcome the effect of a disaster and continue business functions through business recovery planning". The purpose of a business recovery plan is to "minimize the extent of disruption and damage and prevent its escalation" and "minimize the economic impact".

This body of literature shows that this disaster mitigation plan is necessary for Historic Madison Incorporated. A disaster mitigation plan has several items which must be included within it according to this group of literature. These items include: assessment of risks, procedures for how to handle events before, during and in response, and a process of how to test and update the plan.

1.5.2 – Literature on historic or cultural resource disaster mitigation planning

The literature for historic or cultural resource disaster mitigation planning include publications focused on museums and cultural resources (National Park Service, 2001; American Alliance of Museums, 2012; Dorge V. and Jones S., 1999; Bain, J.R., 2009) and publications focused on historic properties or preservation efforts (FEMA, 2005; 1000 Friends of Florida, 2006; 1000 Friends of Florida, 2008). “Cultural Resource Protection and Emergency Preparedness” (National Park Service, 2001) is a collection of articles focused on cultural resources and emergency preparedness. Charity Roy’s article on developing a disaster recovery plan lays out the steps to creating a plan and establishes a working outline for disaster plans. Before developing a disaster plan, Roy suggests companies first establish a planning team and identify critical assets

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6 Ibid, 4-5.
by determining the value of the building. Roy also suggests companies acquire a knowledge of the current conditions of the property and collection.\textsuperscript{7} This is related to this project since three of the buildings are used for storage of collections. “Developing a Disaster Preparedness/Emergency Response Plan” (American Alliance of Museums, 2012) is a guide for museums in developing a plan by outlining the elements in the plan and explains why a plan is essential to museums. American Alliance of Museums points out that each museum operates differently and therefore there are no set guidelines for disaster mitigation planning that would fit each. This publication does offer a guideline to common elements of a disaster plan. These elements include an introduction explaining how the plan was organized and where it is to be stored, a section on emergency preparedness and prevention, a section on response procedures with steps staff will take to respond to a disaster, a section on emergency clean-up procedures, and a section on institution-specific information including floor plans and contact of emergency coordinator.\textsuperscript{8}

“Building an Emergency Plan: A Guide for Museums and Other Cultural Institutions” (Dorge V. and Jones S., 1999) is broken up into three sections: for the director, for the emergency preparedness manager, and for the departmental team leaders. Each section includes the role of each person or people during the planning and implementation process of disaster mitigation planning. A table including the roles of each person can be found in Appendix C. “Historical Museum at Fort Missoula Museum Emergency Plan” (Bain, J.R., 2009) is an example of a disaster plan written for a museum. Within this plan, there is a section dedicated to flood damage and disaster plan for historic structures. This section discusses steps that should be taken with a historic building before, during and after a flood disaster. Many of the steps discussed in this publication

are applicable to this project and some will be suggested as a part of this project. “Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning” (FEMA, 2005) is a how to guide put together by FEMA for state and local governments. This publication is broken into four sections: organize resources, assess risks, develop a mitigation plan, and implement the plan and monitor process. These are the steps recommended by FEMA for the integration of historic properties and cultural resources into disaster mitigation planning. “Disaster mitigation planning for Florida’s Historic Resources: Including Case Studies” (1000 Friends of Florida, 2006) is one of the few publications focused on historic resources specifically. This publication is focused on integrating historic preservation into local emergency management and planning. Towards the end of the publication, there are four case studies of pilot programs of integrating historic preservation into local emergency management. One case study was done in Apalachicola, Franklin County, Florida. This city created a risk assessment ranking criteria scale specific to its own disasters (1000 Friends of Florida, 65). This is similar to a set of criteria needed for this project. Additionally, this publication includes a section on improving the ability of historic resources to withstand the impacts of disasters. Within the publication there is a list of mitigation do’s and don’ts for historic properties. Many of the items on the do list are focused on documentation and reversible protections of historic features (1000 Friends of Florida, 50). “Disaster Mitigation for Historic Structures: Protection Strategies” (1000 Friends of Florida, 2008) goes along with 1000 Friends of Florida’s other publication discussed previously. This publication is not focused on disaster mitigation planning but rather mitigation options. It also discusses building materials and what substitute materials would be appropriate if needed.

In many instances, historic resources are not included within general disaster mitigation plans. Therefore, this section of literature shows the importance of owners of historic properties to
establish their own plans with the focus of maintaining the historic integrity of the structure and protecting it from damage. Many of the examples within this literature include how to setup a disaster mitigation plan specific for historic structures or museums with artifacts.

1.5.3 – Literature on flooding and the built environment


This section of literature provides information on not only types of flooding but also ways to reduce impacts from the flood. While many of these publications are focused on newer construction structures many of the flood-resistant designs can be applied to a historic structure without destroying the historic integrity of the structure.
1.5.4 – Literature on City of Madison


The history of Madison, Indiana and Historic Madison, Inc. are important when establishing a disaster mitigation plan. Without this information, a disaster mitigation plan would not be possible to establish. In order to plan for a disaster, one must look at past cases.

1.5.5 – Conclusion

Historic Madison, Inc. needs a disaster mitigation plan focused on protecting the historic structures it owns in Madison, Indiana. The literature reviewed for this project point to the need to include an assessment of risks for each structure, procedures before, during, and in response from a disaster. The literature also provides examples of disaster mitigation plans focused on museums and historic properties with the goal to protect the historic fabric or the structure and the material inside. This set of literature points the layout of the disaster mitigation plan and the methodology to obtain the information needed for the plan which can be found under the Methodology section of this project.
CHAPTER TWO – EXECUTIVE SUMMARY: FLOOD DISASTER MITIGATION PLAN FOR HISTORIC MADISON, INC.

2.1 – State purpose

The purpose of this creative project is to assist Historic Madison, Inc. in protecting their historic properties from damage caused by flash flooding and riverine flooding. Additionally, this project will furnish the organization with a disaster mitigation plan and recommendations on mitigation before floods occur, adaptation while floods are occurring, and recovery afterwards. This proposal intends to mitigate future damage to historic properties due to flooding and lay the foundation for future disaster mitigation plans for the remaining buildings not affected by flooding.

2.2 – Methodology

There were four stages to the creation of this project: preparation, fieldwork, analysis/derivation of findings, and compiling the report. Prior to the on-site investigations, a literature review and historical research occurred to obtain background information and create a context for this project. Methods of collecting data on-site included:

- Photographic documentation of the sites of the historic buildings showing the relationship to rivers and streams
- Photographic and visual documentation of current building conditions
- Archival research of past and recent floods within Madison, Indiana
- Visual investigation of previous flood damage

To form the disaster mitigation plan report, the information found through research during preparation, on-site data, and analysis of data collection were brought together as a body of evidence from which the project’s proposals emerge. This report will include steps in preparation for, response to, and recovery from a disaster.
2.3 – Key personnel and their authority/responsibility

Clear, predetermined decision-making chains of command are essential to effective crisis response in disasters, including flooding. This section is focused on who will have the authority before, during, and after a disaster to make decisions based on this disaster mitigation plan. This section will also lay out responsibilities to be given to the staff of Historic Madison Inc. in the future.

- Assesses incident with help from Director of Preservation and Maintenance and declares disaster mitigation plan in effect
- Takes immediate steps to assign appropriate staff to reduce or eliminate risk
- Receives and evaluates reports from all subordinates
- When practical, informs Board of Directors which are listed in Appendix F
- With Office Manager, makes note of how operations will occur during emergency status

- Assesses incident with Executive Director
- Coordinates with Director of Programs in which volunteers are listed to help in the time of disaster
- Assess amount of damages at each property. For assessment, please refer to Appendix D for how to assess damages according to the *Field Manual: Safety Evaluation of Buildings after Windstorms and Floods.*
- Oversees workers at the properties

- Create list of volunteers willing to help in the time of disaster
- Coordinates with Director of Preservation and Maintenance in which volunteers are listed to help in the time of disaster
- Oversees volunteers at the properties with Director of Preservation and Maintenance

- Help Executive Director establish a command post and announce its location
- Help Director of Programs gather information on personnel available
- With Executive Director, make note of how operations will occur during emergency status
- Communicate between Historic Madison Inc. and public, emergency management officials, government officials, and press
2.4 – Levels of Risk

Summary of Level of Risk for Mechanical and Structural Systems

<table>
<thead>
<tr>
<th>Location</th>
<th>Elevation Level</th>
<th>Level of Risk for Mechanical Systems</th>
<th>Level of Risk for Structural Systems</th>
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<tbody>
<tr>
<td>Shrewsbury-Windle House</td>
<td>472.2 feet</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>Carriage House and Stable</td>
<td>463.4 feet</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>AME Church</td>
<td>475.3 feet</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Schroeder Saddletree Factory</td>
<td>476.6 feet</td>
<td>Low</td>
<td>High</td>
</tr>
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Note that the elevation of the Ohio River is 423 feet above sea level.

2.5 – Flood Preparedness Steps

2.5.1 – Shrewsbury-Windle House

<table>
<thead>
<tr>
<th>Steps for Flood Preparedness for Mechanical System</th>
<th>Steps for Flood Preparedness for Structural System</th>
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</thead>
<tbody>
<tr>
<td>Build interior flood wall around mechanical system</td>
<td>Have supply of filled sandbags ready to block windows and doorways to basement</td>
</tr>
<tr>
<td>Have supply of filled sandbags ready to place around mechanical system</td>
<td>If water-filled temporary wall is to be used have it stored near structure</td>
</tr>
<tr>
<td>If water-filled temporary wall is to be used have it stored near structure</td>
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</tbody>
</table>

2.5.2 – Carriage House and Stable

<table>
<thead>
<tr>
<th>Steps for Flood Preparedness for Mechanical System</th>
<th>Steps for Flood Preparedness for Structural System</th>
</tr>
</thead>
<tbody>
<tr>
<td>No steps necessary for mechanical system</td>
<td>Build exterior floodwall around basement door and windows</td>
</tr>
<tr>
<td></td>
<td>Have supply of filled sandbags ready to block windows and doorways to basement</td>
</tr>
<tr>
<td></td>
<td>If water-filled temporary wall is to be used have it stored near structure</td>
</tr>
</tbody>
</table>
### 2.5.3 – AME Church

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<thead>
<tr>
<th>Steps for Flood Preparedness for Mechanical System</th>
<th>Steps for Flood Preparedness for Structural System</th>
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</thead>
<tbody>
<tr>
<td>Move HVAC system from the basement to main floor</td>
<td>Replace missing insulation and patch holes in main floor walls</td>
</tr>
<tr>
<td>Repair current HVAC system and leave in current location</td>
<td>Build exterior floodwall to prevent water from entering basement</td>
</tr>
<tr>
<td>Move electrical panel to higher location</td>
<td>Have supply of filled sandbags ready to block doorway to basement</td>
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<tr>
<td>Raise AC unit to north of structure</td>
<td>If water-filled temporary wall is to be used have it stored near structure</td>
</tr>
<tr>
<td></td>
<td>Bring drain in basement up to code</td>
</tr>
</tbody>
</table>

### 2.5.4 – Ben Schroeder Saddle Tree Factory

<table>
<thead>
<tr>
<th>Steps for Flood Preparedness for Mechanical System</th>
<th>Steps for Flood Preparedness for Structural System</th>
</tr>
</thead>
<tbody>
<tr>
<td>No steps necessary for mechanical system</td>
<td>Fully dry basement walls and repair concrete</td>
</tr>
<tr>
<td></td>
<td>Remove and replace current concrete sidewalks surrounding residence</td>
</tr>
<tr>
<td></td>
<td>Add flood-proofing membrane around foundation wall of residence while replacing sidewalk</td>
</tr>
<tr>
<td></td>
<td>Create drain troughs from each downspout to lead water away from structure</td>
</tr>
<tr>
<td></td>
<td>Have supply of filled sandbags ready to block windows and doorway to basement</td>
</tr>
<tr>
<td></td>
<td>If water-filled temporary wall is to be used have it stored near structure</td>
</tr>
</tbody>
</table>

### 2.6 – Flood Mitigation Steps

#### 2.6.1 – Shrewsbury-Windle House

- Check soil for signs of erosion
- Fill soil at a slight angle away from structure if eroded to stabilize foundation and direct water away from structure
- Pump water out of basement after the ground surrounding the structure has begun to dry out. Do not pump water out while ground is still saturated.
- Dry basement through natural ventilation
- Remove debris by lightly brushing the debris off walls and floor. Do not add water.
- Check walls for major damage in the mortar
- Use old mortar debris to temporarily stabilize walls
- Fill voids in mortar with similar materials as the original mortar
• Check HVAC system for damage. If damaged, repair or replace system
• Raise system to prevent future potential damage

2.6.2 – Carriage House and Stable

• Pump water out of basement after the ground surrounding the structure has begun to dry out. Do not pump water out while ground is still saturated.
• Dry basement through natural ventilation
• Remove debris by lightly brushing the debris off walls and floor. Do not add water.
• Check walls for major damage in the mortar
• Use old mortar debris to temporarily stabilize walls
• Fill voids in mortar with similar materials as the original mortar
• Check floor around posts for changes
• If posts have shifted, move back to their original location
• Replace concrete blocks with concrete footers which are mostly buried

2.6.3 – AME Church

• Pump water out of basement after the ground surrounding the structure has begun to dry out. Do not pump water out while ground is still saturated.
• Dry basement through natural ventilation
• Once natural ventilation no longer works, close up structure and use a dehumidifier and air conditioner to complete drying process
• Remove debris by lightly brushing the debris off walls and floor. Do not add water.
• Check walls for major damage in the mortar
• Use old mortar debris to temporarily stabilize walls
• Fill voids in mortar with similar materials as the original mortar
• Turn off electrical
• Check wiring and connections for damage and repair as required
• Clear outlets of any debris or mud
• Expose outlets in floor by lifting hinged flooring sections which cover the outlets to help with drying process covering the outlets open to help dry out system
• Check HVAC system for damage
• Clean out any debris or mud
• Remove wet insulation in HVAC system and replace
• If HVAC system is damaged, repair or replace system
• Raise system to prevent future potential damage
• Check flooring of main structure for damage if waters reached that elevation
• If waters reached main level, cut holes near baseboards and remove wet insulation
2.6.4 – Ben Schroeder Saddle Tree Factory

- Check for remaining flood water inside structure before entering
- Turn off electricity
- If water is remaining in structure, remove debris from drain and all water to recede
- Remove debris by lightly brushing the debris off walls and floor while wet.
- Use fresh water to remove debris. Avoid high pressure water
- Dry basement through natural ventilation
- Check floor joists and electrical for damage if water reached that level
- Check walls for moisture under concrete
- Check soil for signs of erosion
- If erosion has occurred, remove and replace sidewalks and stabilize foundation
- Use drain troughs to direct water away from structure
CHAPTER THREE – INVENTORY OF BUILDINGS

The properties included within this project are the Shrewsberry-Windle House, the African Methodist Episcopal Church, the Ben Schroeder Saddletree Factory and Carriage House and Stable (Figure 2). The Shrewsberry-Windle House and the Carriage House and Stable are potentially affected by riverine flooding from the Ohio River. The African Methodist Episcopal (AME) Church and the Ben Schroeder Saddletree Factory are potentially affected by flash flooding from the Crooked Creek. The Shrewsberry-Windle House, the Carriage House and Stable, and Ben Schroeder Saddletree Factory have previously been documented by the National Parks Service. Those drawings are included in Appendix G.

3.1 – Documentation of buildings

3.1.1 – Shrewsberry-Windle House

The Shrewsberry-Windle House is an 1846-1849 Classic Greek Revival located at 301 West First Street. It retains its original stone foundation and has a high level of integrity. The house has
a north facing two story brick façade which is broken into
three bays. Three original circa 1849 wood windows are
located at grade below each window on the first story.
The Shrewsbury-Windle House features two main
entrances (Figure 3). A one-story portico over the garden
entrance, on the south facing façade, is supported by two
tall, fluted wooden columns. Leading up to the one-story
portico are stone steps. The garden entrance features its
original circa 1849 wooden door with stone surround and
stone decorative lintel. Additionally, the garden entrance
also features a sidelight on each side of the wooden door.
Limestone steps lead up to the recessed entrance from
First Street. The First Street entrance features a stone
cresting lintel and surround. The First Street entrance is
the original circa 1849 wood door and feature a sidelight
on each side. Both the garden south facing façade and the First Street north facing façade have the
same layout. The first story features one six by eight light wooden window on either side of the
entrance. Both windows include green wooden shutters and an iron balconette. The second story
features a six by six light wooden window with green wooden shutters centered in each bay. All
windows feature a stone lintel and sill. This residence features a wide tablature with dentils and
frieze-band windows\(^9\). The roof is flat with a parapet but features four brick chimneys.

Travel Itinerary: Madison, Indiana, 2016,
A single story servant wing is located on the east side of the First Street façade (Figure 4). The wing features a glazed wooden door with a four light transom. This door is located on the west end of the wing. To the east of this door is a six by six light wooden window which features green wooden shutters. The door and window feature stone lintels and the window also features a stone sill. The wing also includes a wide tablature with frieze-band windows similar to the main façade. The roof on the wing is also flat with a parapet and includes a brick chimney on the east edge.

The building also includes a basement with brick arched interior walls and earthen floors. The Shrewsbury-Windle House was designed by architect Francis Costigan for Capt. Shrewsbury, merchant, meatpacker, flour mill owner, and in later years, mayor of the city\textsuperscript{10}. The building is currently used for special events. Prolonged submersion of the materials in the basement are areas of concern in the case of a flood.

\textbf{3.1.2 – Carriage House and Stable}

The Carriage House and Stable is a circa 1887 structure located at 120 Elm Street. This is two story brick structure and features its original rubble stone foundation. The east facing main façade features its centered original circa 1887 wood double paneled door entrance (Figure 5). It features a projecting segmental brick arch pedimented brick crown over a decorative wood infill. A two by two light wooden window is found on either side of the main entrance. Both windows feature a stone sill and segmental brick arch lintel. The second story features paired wooden two

\textsuperscript{10} Ibid.
by two light windows placed centered over the main door. The windows also feature a wooden decorative infill, stone sill and segmental brick arch lintel. The cornice includes wooden Italianate brackets painted red. The roof is a front-facing gable and includes asphalt shingles.

This building also features a basement with an earthen floor. Wooden pillars support the first and second story. Centered on the south façade is a double wooden door which is the entrance to the basement. This door is painted grey to match the main entrance (Figure 6). There are also two window openings which have been covered with grey-painted wood. Both window openings are located between the door and the west edge of the south facing façade. The window openings also feature stone sills and segmental brick arch lintels. The building was built for John Robert Cravens, attorney-at-law, as a carriage house and stable. The building was later used a barn and warehouse. Currently the building is used to store artifacts from the Schroeder Saddle Tree Factory collection.\textsuperscript{11} The stability of the wooden pillars which support the first and second story is an area of concern during the prolonged submersion due to a flood.

3.1.3 – African Methodist Episcopal (AME) Church

The African Methodist Episcopal (AME) Church is an 1850 Greek Revival church located at 309 East Fifth Street. This church is a south facing single story brick façade (Figure 7). The building retains its original stone foundation. Leading up the the two entrances are limestone steps. The two entrances are evenly spaced on the south facing façade. Both entrances feature a circa 1850 double wooden paneled door original to the building. A four light wooden transom and stone lintel are found above each entrance. A marker is found centered between both entrances. The marker reads A.M.E. Church, Founded 1850. The building also features a front facing gable and asphalt shingles. Located on both the east and west facades are three evenly spaced two by two light wooden windows original to the building.

A metal door leading to the basement is found on the north façade (Figure 8). The basement features the original stone foundation, brick walls, and newly laid concrete floor. This church was built as a based for the newly created African Methodist Episcopal Church after members were asked at the Methodist Church on Main Street to sit in the gallery instead of with the white parishioners.¹²

This building was also used to house classes in the basement since African Americans were not allowed to attend public school before the American Civil War. The building was used by the congregation until they sold it to Pilgrim Holiness Church in 1926. The Pilgrim Holiness Church maintained ownership and use until they sold the church in 1943. In 2001 Historic Madison Inc. purchased the church and restored it to its historic appearance. Historic Madison Inc. used for Black History Month events. Despite being restored in 2001, this structure suffered damage during a flash flood from Crooked Creek in August 2015.

3.1.4 - Ben Schroeder Saddle Tree Factory

The Ben Schroeder Saddle Tree Factory is a collection of six buildings located at 106 Milton Street (Figure 9). The Ben Schroeder Saddle Tree Factory was donated to Historic Madison Inc. in 1974. In 1999 Phase 1 of the restoration project was completed and phase 2 of the restoration project was completed in 2001.\textsuperscript{14}

\textsuperscript{13} Ibid.
\textsuperscript{14} John Stacier in discussion with the author, December 2015.
A gravel road divides the site into two sections. Located to the east of the gravel road is the Residence, Bench shop, Blacksmith shop and Outhouse.

3.1.4a – Residence

The residence is located on the south-east corner of the site. Built in 1878, this residence is a Gothic Revival which has undergone several alterations. Originally used as the saddle tree shop, it was converted into a residence in 1882. In 1897 a wing to the south. A two room two story addition was added in 1903 to the north. The final alteration occurred in 1904 when the original saddletree shop and then center of the residence was torn down and rebuilt with the same materials.\textsuperscript{15}

Today the south facing main façade features a four bay brick Gothic Revival structure (Figure 10). The structure sits on its original stone foundation. The entrance features a circa 1897 glazed wooden door with single light wood transom. Stone steps lead up to the entrance and a stone lintel is located above the doorway. Three evenly spaced one by one light wooden windows are found to the east of the entrance. Each window features a stone sill and lintel and green painted wooden shutters. A small single light window is found in the gable of the south facing façade. This window features a stone sill. Covering part of the window from view from the road is the decorated vergeboard of the gable. The

roof has wood shingles and a brick chimney located in the center of the structure. The roof line features three gables. The remaining portion of the residence is located to the north of this structure.

Also to the north of the southern most portion of the residence is a double green painted wooden cellar door which leads to the basement (Figure 11). The basement features recently constructed temporary wooden stairs. The walls of the basement are a combination of the stone foundation and brick which have been cemented over. The basement floor has also recently been laid with cement and a drain leading to the Crooked Creek was also added. This allows for the basement to fill with water as the water level of Crooked Creek rises and then drains the water as it lowers. This allows for less damage to the structure in the case of a flash flood that would result from prolonged submersion.

3.1.4b – Bench Shop

The Bench shop is located to the north of the residence (Figure 12). Known as the oldest structure on the site the Bench shop was built pre-1885 and was originally one story. The second story was added in 1911 and the attic was added in 1927. Standing on its original stone foundation, this structure features timber framed construction with clapboard siding. The entrance to this building is located on the south-west corner of the west
façade. Leading up to the entrance is a stone step. The entrance is a circa 1800s red painted wooden paneled door with three light wooden transom window. Two evenly spaced six by six light wooden windows with wooden sills and lintels are located to the north of the entrance. The second story contains three evenly spaced six by six light wooden windows with wooden sills and lintels. A metal pipe leads from the northwest corner of the west façade of the structure across the gravel road to the woodshop. The south facing gabled roof features a tin roof and brick chimney located centered over the west façade. The east facing façade of this structure runs along the Crooked Creek and could be affected by flood waters in the event of a flash flood.

3.1.4c – Blacksmith Shop

The Blacksmith shop is a circa 1897 shed roofed structure attached to the west façade of the Bench Shop (Figure 13). This structure also features a stone foundation and timber frame construction. The Blacksmith shop has red painted board and batten to match the rest of the buildings. The entrance of this structure features a circa 1897 wood door designed to blend into the siding and is located on the north-west corner of the west facing façade. A six light wooden window is located centered to the south between the edge of the structure and the entrance on the west facing façade. The shed roof contains a metal roof and smoke pipe located above the window. The east facing façade of this structure runs along the Crooked Creek and could be affected by flood waters in the event of a flash flood.
3.1.4d – Outhouse

The Outhouse is located along the north façade of the Blacksmith shop on the north-east corner of the façade. The Outhouse features its original concrete foundation and wood board siding. A wooden entrance door is located on the west façade of this structure. The structure also includes a metal shed roof. The east facing façade of this structure runs along the Crooked Creek and could be affected by flood waters in the event of a flash flood.

Located to the west of the gravel road is the Boiler room, Woodworking shop, and Saw mill (Figure 14).

3.1.4e – Boiler Room

The Boiler room is a circa 1920 brick load bearing structure sitting on its original stone foundation. The east facing main façade features three red painted wooden glazed doors. The doors feature a red painted wooden lintel. The boiler room features a brick chimney on the south facing façade. The structure has a metal roof and a sawdust hopper is located on the roof of the boiler room. The original boiler room was destroyed in a fire in 1920. While this structure is part of the Schroeder Saddle Tree Factory, it would not be affected by a flash flood unless waters rose a significant amount.

3.1.4f – Woodworking Shop

The Woodworking shop, as standing, was built in 1904. The original woodworking shop was located north of the current structure. The original structure was built in 1885 as the original
sawmill. It was a one story structure and was later labeled as a machine shop on the 1897 Sanborn Fire Insurance Map.\textsuperscript{16} A fire in 1920 destroyed the original one story structure.

The Woodworking shop is a two-story timber frame structure which maintains its original stone foundation (Figure 15). The first story features clapboard siding while the second story is corrugated metal siding. The entrance to this building is located on the east facing façade. Leading up to the entrance is a stone step. The door is a circa 1904 red painted wood paneled door. The entrance features a two light wood transom and wood lintel. The entrance is located on the north-east corner of the east facing façade. Five evenly spaced six by six light red painted wooden windows are located south of the entrance on the east facing façade. The second story features six red painted wooden six by six light windows placed over the entrance and windows of the first story. The woodworking shop features a raised seam shed metal roof.\textsuperscript{17} The building also has a brick chimney located along the southern edge of the east façade. While this structure is part of the Schroeder Saddle Tree Factory, it would not be affected by a flash flood unless waters rose a significant amount.


3.1.4g – Saw Mill

The Saw Mill is a 1937 timber framed structure with wood siding. The building sits on its original stone foundation and maintains its metal shed roof. The east facing façade features three entrance doors. The center door is a wooden barn door which slides on a tract to open. The other two doors which are placed one on each side of the barn door are wooden doors. Two evenly spaced four by four light wooden windows are located between the doors and roofline on the east facing façade. While this structure is part of the Schroeder Saddle Tree Factory, it would not be affected by a flash flood unless waters rose a significant amount.
3.2 – List of building materials

3.2.1 – Shrewsbury-Windle House

<table>
<thead>
<tr>
<th>Material</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation</td>
<td>Rubble Stone</td>
</tr>
<tr>
<td>Basement Flooring</td>
<td>Compressed Earth</td>
</tr>
<tr>
<td>Load Bearing Exterior Walls</td>
<td>Brick</td>
</tr>
<tr>
<td>Sills and Lintels</td>
<td>Stone</td>
</tr>
<tr>
<td>Roof</td>
<td>Asphalt Shingles</td>
</tr>
<tr>
<td>Cornice</td>
<td>Wood</td>
</tr>
<tr>
<td>Interior Walls and Ceilings</td>
<td>Plaster</td>
</tr>
<tr>
<td>Interior Framing</td>
<td>Wood</td>
</tr>
<tr>
<td>Interior Flooring</td>
<td>Laminate and Wood: Ash and Pine</td>
</tr>
<tr>
<td>Doors and Windows</td>
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</tr>
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3.2.2 – Carriage House and Stable

<table>
<thead>
<tr>
<th>Material</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Foundation</td>
<td>Rubble Stone</td>
</tr>
<tr>
<td>Basement Flooring</td>
<td>Compressed Earth</td>
</tr>
<tr>
<td>Load Bearing Exterior Walls</td>
<td>Brick</td>
</tr>
<tr>
<td>Cornice</td>
<td>Wood</td>
</tr>
<tr>
<td>Roof</td>
<td>Asphalt Shingles</td>
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<td>Interior Floors</td>
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<td>Doors and Windows</td>
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3.2.3 – African Methodist Episcopal (AME) Church

<table>
<thead>
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<th>Location</th>
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<tbody>
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</tr>
<tr>
<td>Load Bearing Exterior Walls</td>
<td>Brick</td>
</tr>
<tr>
<td>Basement Flooring</td>
<td>Concrete</td>
</tr>
<tr>
<td>Sills and Lintels</td>
<td>Limestone</td>
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<tr>
<td>Roof</td>
<td>Asphalt Shingles</td>
</tr>
<tr>
<td>Interior Flooring</td>
<td>Wood</td>
</tr>
<tr>
<td>Interior Walls and Ceiling</td>
<td>Plaster</td>
</tr>
<tr>
<td>Basement Door</td>
<td>Metal</td>
</tr>
<tr>
<td>Main Door</td>
<td>Wood</td>
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<tr>
<td>Windows</td>
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### 3.2.4 – Ben Schroeder Saddle Tree Factory

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<tbody>
<tr>
<td>Foundation</td>
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<td>Basement Flooring</td>
<td>Concrete</td>
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<tr>
<td>Load Bearing Exterior Walls</td>
<td>Brick</td>
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<tr>
<td>Sills and Lintels</td>
<td>Limestone</td>
</tr>
<tr>
<td>Roof</td>
<td>Wood Shingles</td>
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<tr>
<td>Interior Flooring</td>
<td>Wood</td>
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<tr>
<td>Interior Walls and Ceiling</td>
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<td>Doors and Windows</td>
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<table>
<thead>
<tr>
<th>Material</th>
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<td>Foundation</td>
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</tr>
<tr>
<td>Exterior Walls</td>
<td>Clapboard Siding</td>
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<td>Roof</td>
<td>Tin</td>
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<td>Door and Windows</td>
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<th>Location – Blacksmith Shop</th>
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<td>Flooring</td>
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<td>Metal</td>
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<td>Material</td>
<td>Location – Woodworking Shop</td>
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<tr>
<td>Exterior Walls</td>
<td>Corrugated Metal Siding</td>
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<td>Metal</td>
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<td>Door and Windows</td>
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<table>
<thead>
<tr>
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<td>Exterior Walls</td>
<td>Corrugated Metal Siding</td>
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<td>Flooring</td>
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<tr>
<td>Roof</td>
<td>Metal</td>
</tr>
<tr>
<td>Door and Windows</td>
<td>Wood</td>
</tr>
</tbody>
</table>
CHAPTER FOUR – ASSESSMENT OF RISKS AND DEFINING LEVELS OF ACCEPTABLE RISK

4.1 – A Brief History of Flood Risk in Madison, Indiana

In order to understand the risks possible for each property, a first look at the history of the city and its relationship with flooding is essential. First, the topography of each site in relation to the Ohio River and Crooked Creek is noteworthy. The National Weather Service has predetermined flood categories for Madison, Indiana.

Table 1: National Weather Service Flood Categories in feet\(^{19}\)

<table>
<thead>
<tr>
<th>Category</th>
<th>Height</th>
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</thead>
<tbody>
<tr>
<td>Major Flood Stage</td>
<td>470</td>
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<tr>
<td>Moderate Flood Stage</td>
<td>457</td>
</tr>
<tr>
<td>Flood Stage</td>
<td>451</td>
</tr>
<tr>
<td>Action Stage</td>
<td>449</td>
</tr>
<tr>
<td>Low Stage</td>
<td>420</td>
</tr>
</tbody>
</table>

All of the properties owned by Historic Madison, Inc. which are affected by a potential flood disaster fall within the Major Flood Stage according to the National Weather Service except for the Carriage House and Stable. The Carriage House and Stable falls within the Moderate Flood Stage.

![Map of Madison West with Historic Madison Inc. Properties Labeled](image)

*Figure 16: Adapted from Topographic Map of Madison West with Historic Madison Inc. Properties Labeled*

The elevations for each Historic Madison, Inc. property should be known in order to determine level of risk at each location. As shown in Figure 16, all properties are located 450 feet above sea level. The elevation of the river is 423 feet above sea level. While this is true, we have historic records which show that these properties have been affected by flooding.

**Table 2: Elevations of Historic Madison Inc. Properties**

<table>
<thead>
<tr>
<th>Location</th>
<th>Elevation Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shrewsbury-Windle House</td>
<td>472.2 feet</td>
</tr>
<tr>
<td>Carriage House and Stable</td>
<td>463.4 feet</td>
</tr>
<tr>
<td>AME Church</td>
<td>475.3 feet</td>
</tr>
<tr>
<td>Ben Schroeder Saddletree Factory</td>
<td>476.6 feet</td>
</tr>
</tbody>
</table>

The first record of flooding in Madison, Indiana occurred in 1832, where the water from the Ohio River reached 459.60 feet. Despite its history of flooding, Madison, Indiana prospered as a industrial town into the 1900s. Factories rose along the Ohio River along with large Greek Revival homes. It was in 1937 when a flood would change the face of Madison, Indiana forever. The Great Flood of 1937 had a water level of 475.90 feet. The water level is shown in Figure 17. The elevation of the Muncie High School at the northwest corner is 472.6 feet. The elevation of the Shrewsbury house is 472.2 feet and would have had 3.7 feet of water in the basement. The elevation of the Carriage House and Stable is 463.4 feet and

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21 WTH Technology, Inc.


23 Ibid.
would have had 12.5 feet of water covering the basement and part of the ground floor.\textsuperscript{24} The Great Flood of 1937 changed the face of Madison, Indiana with the destruction of the riverfront factories which were never rebuilt.

No flood has matched the level of destruction of the Great Flood of 1937 but several have come close. In 1997 flood waters to 460.90 feet, the closest level to the water level of 1937 since 1964.\textsuperscript{25} This placed the water level 20 feet over flood stage according to Madison Courier on March 8, 1997 (Figure 18). While the elevation of the Carriage House and Stable is at 463.4 feet, the basement access door has an elevation of 456.4 feet.\textsuperscript{26} This would have led to 4.5 feet of water ending up in the basement. A list of floods can be found in Appendix E.

\textbf{4.2 – Levels of Risk}

While no level of water is acceptable inside any structure, buildings located in a flood zone must assume some level of water will have to be anticipated. Since the location and flood-proofing is different for each property, levels of risk will differ. In order to assess the level or risk for each property, one must also consider the flood plain of the area, figure 19.

\textsuperscript{24}WTH Technology, Inc.
\textsuperscript{25}Tony Kummer.
\textsuperscript{26}WTH Technology, Inc.
The following are categories of levels of risk:

**Table 3: Summary of Level of Risk for Mechanical and Structural Systems**

<table>
<thead>
<tr>
<th>Location</th>
<th>Elevation Level</th>
<th>Level of Risk for Mechanical Systems</th>
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</tr>
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</tr>
<tr>
<td>Schroeder Saddle Tree Factory</td>
<td>476.6 feet</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

**4.2.1 – Shrewsbury-Windle House**

The Shrewsbury-Windle House has no current flood-proofing. It sits at an elevation of 472.2 feet which falls into the major flood category. This generally puts the structure out of harm from most floods but has been affected in the past. With the location of the HVAC system on the floor of the basement, see Figure 20, the level of risk is high. The HVAC system would suffer
major damage if water levels reach over a foot in the basement. While this is true, the level of risk for the structural system would be moderate because the stone foundation and brick arched walls found in the basement can withstand water better than other materials. The structural system level of risk is moderate rather than low because of the inability to remove water from the basement besides letting it naturally dry out through ventilation without pumping the water out or adding sump pump with backflow protection. Additionally, there is a large amount of stored material in the basement which would inhibit the drying process.

4.2.2 - Carriage House and Stable

The Carriage House and Stable currently does not have any flood-proofing. It sits at an elevation of 463.4 feet which falls into the moderate flood category. While this is true, the entrance to the basement sits at an elevation of 456.4 feet which falls into the moderate flood category. Since the only mechanical system located in the building is electrical, the level of
risk for the mechanical system is low since the electrical is run near the floor joists of the first story. While this is true, the structural system of the building has a different level of risk. The first and second floors are supported by wooden posts sitting on concrete blocks on the compressed earthen floor, see Figure 21. Since wood is more susceptible to water damage than the stone foundation, the level of risk for this structure would be high. This level is given because the posts supporting the upper levels are merely sitting on the basement floor and should they move would cause issues for the rest of the structure. It can be presumed that the posts are made of hardwood lumber which would be less susceptible to water damage than if they were softwood lumber. The high level of risk is also given to this structure because of the amount of material stored within the basement of this building. The basement is full with lumber which would slow the drying process of the basement and prolonging the moisture could cause additional damage.

4.2.3 - AME Church

The AME Church currently has a metal door which seals tight to keep water out of the basement. Additionally, this structure also includes a drainage system in the basement if water were to get into the basement. It sits at an elevation of 475.3 feet which falls into the major flood category. This structure is susceptible to flash flooding from the Crooked Creek. Since this property had been flooded in 2008, the HVAC system was moved from the basement floor to the floor joists of the main level (Figure 22). In August 2015 the building was hit by a devastating flash flood of the Crooked Creek located north of
the structure. The flood destroyed the HAVC system and the electrical system despite being moved to the floor joists (Figure 23). This makes the level of risk moderate because had the water level not been over six feet this damage would not have occurred. Although the basement has eight-foot ceiling, the HVAC system hangs down from it. This makes the clearance level of water around six foot, falling into the moderate level of risk.

While this is true, the structural system has a different level of risk. The basement has a drainage system and stone foundation walls. With the wooden floor joists of the main level of the structure located eight feet above the basement floor, the level of risk for the structural system is low.

4.2.4 – Ben Schroeder Saddle Tree Factory

The Ben Schroeder Saddle Tree Factory currently has a drain leading to the Crooked Creek. This allows for the basement to fill with water as the water level of Crooked Creek rises and then drains the water as it lowers. This allows for less damage to the structure in the case of a flash flood that would result from prolonged submersion. The Ben Schroeder Saddle Tree Factory sits at an elevation of 476.6 feet which falls into the major flood category. This property is susceptible to flash flooding from the Crooked Creek. The residence is the
main structure which is susceptible to flash flooding as it is located closest to the river and at the lowest elevation point. All mechanical systems are located on the floor joists of the first level of the residence. Therefore, the level of risks for the mechanical systems is low since they are located over six feet above the basement floor. Similar to the other three properties, the structural system has a different level of risk. During the renovation of the property, the basement floor and foundation walls had a layer of concrete applied in addition to the added drain (Figure 24). While this makes for easy and quick clean up, it causes some concerns for the structure. There is evidence that moisture has gotten behind the concrete located on the foundation walls. This moisture was trapped by the concrete leading to damage on the original stone foundation (Figure 25). With this damage and possibility of further damage due to water from a potential flood, the level of risk for the structural system is high.
CHAPTER FIVE – ASSIGNMENT OF RESPONSIBILITY

Clear, predetermined decision-making chains of command are essential to effective crisis response in disasters, including flooding. This section is focused on who will have the authority before, during, and after a disaster to make decisions based on this disaster mitigation plan. This section will also lay out responsibilities to be given to the staff of Historic Madison Inc. in the future.

5.1 – Authority

Below is the general line of succession. Since Historic Madison Inc. does not currently have an individual trained in disaster mitigation this plan’s line of succession is based on current personnel. For the purpose of this disaster mitigation plan, the Executive Director of Historic Madison Inc. will act as the main source of authority. The next in authority would be the Director of Preservation and Maintenance followed by the Director of Programs and finally the office manager.

5.2 – Responsibilities

The following list includes the responsibilities of the Executive Director.

- Assesses incident with help from Director of Preservation and Maintenance and declares Disaster mitigation plan is in effect
- Takes immediate steps to assign appropriate staff to reduce or eliminate risk
- Receives and evaluates reports from all subordinates
- When practical, informs Board of Directors which are listed in Appendix F
- With Office Manager make note of how operations will occur during emergency status
The following list includes the responsibilities of the Director of Preservation and Maintenance

- Assesses incident with Executive Director
- Coordinates with Director of Programs in which volunteers are listed to help in the time of disaster
- Assess amount of damages at each property. For assessment please refer to Appendix D for how to assess damages according to the *Field Manual: Safety Evaluation of Buildings after Windstorms and Floods.*
- Oversee workers at the properties

The following list includes the responsibilities of the Director of Programs

- Create list of volunteers willing to help in the time of disaster
- Coordinates with Director of Preservation and Maintenance in which volunteers are listed to help in the time of disaster
- Oversee volunteers at the properties with Director of Preservation and Maintenance

The following list includes the responsibilities of the Office Manager

- Help Executive Director establish a command post and announce its location
- Help Director of Programs gather information on personnel available
- With Executive Director make note of how operations will occur during emergency status
  Communicate between Historic Madison Inc. and public, emergency management officials, government officials and press
CHAPTER SIX – FLOOD PREPAREDNESS

Disasters often cannot be foreseen. Organizations need to have measures in place before a disaster happens in order to effectively mitigate the potential damage. The steps that should be taken will vary for each property as presented in the text that follows.

Table 4: Summary of Level of Risk for Mechanical and Structural Systems

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<tr>
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6.1 – Shrewsbury-Windle House

The Shrewsbury-Windle House will generally not be affected by floods; however, it has been affected in the past. This shows that the property could again be affected by a flood and damage mitigation steps should be taken. The main area of concern at the Shrewsbury-Windle House is the mechanical system located on the basement floor. Since it would be too costly to move this system to an upper level of the house, an interior flood wall should be installed. This wall, figure 26, would stop water from surrounding the system and causing it to fail. If water levels rise above the wall construction...
the addition of a one-way flood vent would allow for the water to escape. This would be the best solution to rising floodwaters without changing much of the historic materials of the property. Figure 26 also shows a diagram of a constructed floodwall.

Another option to floodproofing the Shrewsbury-Windle House is to have a supply of sandbags and volunteer bag placement persons ready for the event of a flood. A substitute to sandbags would be a water filled temporary barrier, Figure 27. A riverine flood is something noticable beforehand and the property could be prepared for the event.

6.2 – Carriage House and Stable

Unlike the Shrewsbury-Windle House, the Carriage House and Stable has a low level of risk for the mechanical system but has a high level of risk for the structural system. In order to protect the structural system of the building, flood-proofing is necessary. There are many ways to flood-proof a building, many or very disturbing while others are less interfering. For this building it is recommended to take the less invasive approach in order to protect the historic integrity and fabric of the structure. The main source for floodwaters to enter the building is through the basement door and
windows. In order to prevent this, it is recommended to building an exterior floodwall as seen in Figure 28. This might look like an invasive approach however these flood walls can be removed. Another reversible option would be place sandbags or a temporary floodwall in front of the doorway and windows (Figure 27).

6.3 – AME Church

Similar to the Shrewsbury-Windle House, the AME Church has a low level of risk to the structural system, but the level of risk for the mechanical system is moderate. This level of risk was given because the August 2015 flash flood reached levels above six feet which destroyed the HVAC system and electrical system. Although it would alter the historic fabric of the building the only way to prevent this damage from happening in the future would be to move the systems from the basement to the main floor. While this would alter the historic fabric of the interior, it has already been altered with the addition of a restroom. Since the risk level is moderate, another option is to just repair the damaged HVAC system and leave it located where it is found currently. It is recommended to move the electrical panel to a higher point in the basement.

The AC unit which is located north of the structure also sustained damage, seen in Figure 29. Once the HVAC system is fixed, a way to prevent the AC unit from withstanding damage would be to raise the system, seen in Figure 30.

This building is still recovering from the August 2015 flood and therefore is in need of additional steps to be taken before the next flood event. It is recommended that this building
continue to be dried out and systems replaced. It is also recommended that all insulation which has already be removed to be replaced and the holes in the walls of the main level be patched.

Current flood-proofing measures failed during the August 2015 flood and therefore need addressed. The current flood-proofing includes the instillation of a metal door which seals shut to keep water out of the basement. This door was forced open by hydrostatic pressure. In order to prevent this from occurring again, alterations should put into place. The addition of an exterior floodwall, as seen in Figure 28, could prevent the water from reaching the doorway. A temporary floodwall could also be used, Figure 27. Additionally the current drain in the basement should be replaced and brought up to code.

6.4 – Ben Schroeder Saddle Tree Factory

Just like the Carriage House and Stable, the Ben Schroeder Saddle Tree Factory has a low level of risk for the mechanical system because they are out of reach of floodwaters. The structural system has a high level of risk. The residence at the Schroeder Saddle Tree Factory is the main
structure that would be affected by a potential flood. Currently the basement of the residence has a drain, Figure 31, which allows water to enter and exit the structure as the level of Crooked Creek rises and falls. This type of flood-proofing is called wet flood-proofing. This type of flood-proofing is generally used to limit the damages to enclosures. Since this structure currently has wet flood-proofing in place, the basement must have flood damage-resistant materials. Currently the basement has concrete covered floor and walls, however, the concrete on the walls are beginning to pull off the original stone foundation. This occurred because moisture got between the concrete and stone foundation. It is recommended that the walls be fully dried and the concrete repaired. The source of the moisture, as seen in Figure 32, might have come from the cracks in the sidewalk around the residence. It is recommended that the current sidewalk be removed and replaced with new concrete. Additionally, a drain trough leading from the residence located at each corner be installed to direct rainwater from the downspouts. This would help protect the foundation wall from gathering moisture. While

removing the sidewalk, a flood-proofing membrane could be installed around the residence to eliminate the possibility of moisture getting into the foundation wall.

Additional measures can be taken to ensure that flood waters do not damage the structure including the historic wood windows found at grade of the residence. These windows should be surrounded by a temporary floodwall or sandbags, Figure 27. These materials can be stored on the property either in the residence or one of the other buildings.

6.5 – Summary of Steps

6.5.1 – Shrewsbury-Windle House

<table>
<thead>
<tr>
<th>Steps for Flood Preparedness for Mechanical System</th>
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<tbody>
<tr>
<td>Build interior flood wall around mechanical system</td>
<td>Have supply of filled sandbags ready to block windows and doorways to basement</td>
</tr>
<tr>
<td>Have supply of filled sandbags ready to place around mechanical system</td>
<td>If water-filled temporary wall is to be used have it stored near structure</td>
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6.5.2 – Carriage House and Stable

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<tr>
<td>Repair current HVAC system and leave in current location</td>
<td>Build exterior floodwall to prevent water from entering basement</td>
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<tr>
<td>Move electrical panel to higher location</td>
<td>Have supply of filled sandbags ready to block doorway to basement</td>
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<tr>
<td>Raise AC unit to north of structure</td>
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CHAPTER SEVEN – EMERGENCY FLOOD RESPONSE PROCEDURES

7.1 – What to do

The process of what to do will vary depending on type of flood, time of notice of potential flood, and who is around at the time, as people travel and do other things concurrent with these unpredictable events. It will be easier to plan and prepare for a riverine flood over a flash flood because a riverine flood can be seen based on events upstream where as a flash flood can happen without warning.

During a potential riverine flood, the Shrewsbury-Windle House and Carriage House and Stable should have temporary floodwalls set up by either having assigned and volunteer personnel use a water-filled temporary wall or setting up sandbags. These temporary floodwalls will prevent water from entering the structure and causing damage as well as not detracting from the historic fabric of the properties.

At the Shrewsbury-Windle House, these efforts should be focused around preventing floodwaters from reaching the HVAC system. Temporary flood-proofing should be placed around the HVAC system in the basement of the Shrewsbury-Windle House and over the crawl-space doorway. If waters are predicted to fall within the major flood category, temporary flood-proofing should be placed along all entrances to the main level of the property as well as around the basement windows.

At the Carriage House and Stable, flood-proofing efforts should be focused on preventing floodwater from entering the basement doorway or windows. Temporary flood-proofing should be placed in front of the doorway, stacked to a height above predicted water levels. If water levels are predicted to be above a moderate flood category, temporary flood-proofing should be placed in front of each window opening of the basement.
Unlike riverine flooding, flash flooding will be harder to predict and usually has a faster rate of occurrence. One way to predict a flash flood is to check for any severe weather which might amount to a lot of rain. Measures discussed in the **Before Disaster** section should be taken in order for the Ben Schroeder Saddle Tree Factory and AME Church to be prepared for a flash flood disaster. It is recommended that during the event of a flash flood that personnel remain away from these structures for their own safety.

### 7.2 – Where to go

Since these properties are not used as a base for operation, during the event of a flood, personnel should remain away from the structures until after the flood waters have receded. Base of operation should take place at Historic Madison Inc.’s main office. If a flood event should occur while individuals are located at the property, those people should be evacuated if possible. If this is not possible, individuals should remain on the main levels of each structure. During a flood event, use of restrooms and running water should be done sparingly as possible to prevent a backflow from the sewage system.
CHAPTER EIGHT – FLOOD RECOVERY AND RENEWING OPERATIONS

8.1 – Assessing damages

Once a flood incident has receded, to assess the damages of each property, the Executive Director must first declare the Disaster mitigation plan in affect. It is then up to the Executive Director and Director of Preservation and Maintenance or their assignees, if they do not have the expertise to assess each building for damages and structural integrity.

Once a disaster has been declared, an expert should begin assessment by examining the exterior walls of each structure. It is recommended that this assessment begin by walking around the perimeter of the property and look for any disturbances near the structure such as soil erosion which will show exposed foundation walls. This does not commonly happen but when it does, soil erosion near the foundation walls is a sign that the foundation might be destabilized.\(^{28}\) The assessment of damages should follow the steps outlined in Appendix D.

In order to improve this disaster mitigation plan, photo documentation or written observations of conditions of flooded areas after the waters have receded are key to preparing for future flood events. This information should be compared to steps taken in the Flood Preparedness section and those steps should be evaluated on their ability to keep floodwaters from damaging systems. The steps from the Flood Preparedness section are as follows.

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8.2 – Mitigation

8.2.1 – Shrewsbury-Windle House

The best way to mitigate the effects of flood water in the building is to dry out the basement through natural ventilation since it is the least damaging process.\(^{29}\) Hydrostatic pressure would occur if the water in the basement would to be pumped out and the ground around the structure was still saturated. Since the basement floor is earthen it is best to try to remove any debris without adding more water into the basement, lightly brushing the debris off the walls and floor. Water in the basement might have damaged the mortar in the walls. Check to see if there is any major damage in the mortar. Old mortar as part of the debris could be placed back into the major voids to help stabilize the walls temporarily. Once the walls are stabilized and flood debris is cleaned up, these voids should be filled with similar materials as the original mortar.

If there is evidence of soil erosion around the structure, soil should be filled back in to help stabilize the foundation as seen in Figure 33. Filling soil at a slight angle away from the structure would help direct the drainage of water away from the building.

If damage has occurred to the HVAC system, it is recommended that the system be placed along the floor joists of the main level. The system could also be placed on a raised platform instead of the being placed near the floor joists. By raising the system, it would help prevent future damage. If possible, the system could be moved from the basement to a higher elevation of the main level of the building.

\(^{29}\) Ibid, 1.
8.2.2 – Carriage House and Stable

This structure does not have an HVAC system and the electrical system is raised into the floor joists of the main level. Therefore, structural system is the only concern for mitigation. Debris should be cleaned without the use of additional water since the floor of the basement is compressed earth. Lightly brush the debris off the floor and walls. The walls should be checked for any major damage such as missing mortar. Any major voids should be filled with the mortar debris to help stabilize the structure temporarily. Once the building is cleaned, the void should be filled with similar materials.

The supports of the main level are located in the basement and are major concerns because they are wooden posts sitting on concrete blocks. The floor around these posts should be checked to make sure there is no change and that the concrete blocks have not shifted. If there is signs that the posts have shifted, these should be moved back to their original location. One option for future mitigation would be to dig down into the floor and build concrete footers that are mostly buried into the ground. This would eliminate the concern of those posts and concrete blocks moving.
Additionally, the wooden posts could be set into the concrete footers while still wet to ensure they are solid. It is recommended to use original fabric or similar materials if replacing any materials in this building.

8.2.3 – AME Church

The main areas of concern for the AME Church are the HVAC system and electrical system. Make sure the electricity is turned off before checking for damage to the electrical system. Since there is a possibility that floodwaters may enter the main level of the structure, outlets should be cleared of any debris or mud. “Check wiring and connections for damage and repair as required. Let areas dry before closing them. Check heating and air conditioning ducts and clean out any mud or dirt before turning on the units. Large systems may need to be dismantled or cleaned by a professional”\(^3\). Since the electrical wiring runs through the floor joists of the main level, the flooring covering the outlets should be left open as well to help dry out the system. These sections of flooring should also be checked for water damage. Debris should be cleaned off the floor by lightly brushing while the mud is still wet. This process should also be done in the basement to remove debris from the walls and floor.

Removing water from the structure should be done carefully. If water is drained too quickly from the structure, hydrostatic pressure will cause the foundation walls to collapse. The next step would be to continue to dry out the structure. This is best done through ventilation since it is the least damaging. While this is true, this structure is not set up well for natural ventilation. “Experts recommend closing up the building and using dehumidifiers and air conditioners to complete the drying once the ventilation ceases to help”\(^3\). This process should be done very carefully since dehumidifiers can increase moisture damage within walls.

\(^3\) Ibid, 2.
\(^3\) Ibid.
Flood waters will also have an effect on insulation especially if the waters reach inside the main level of the structure. Figure 34 demonstrates how to properly remove the wall insulation and allowing the walls to ventilate. Insulation in the HVAC system should also be removed and replaced with dry insulation. While removing debris and mud from the walls, the mortar should be checked for damage. Any major voids should be noted. These voids can be filled with mortar debris to help keep the walls structurally sound. Eventually these voids could be filled with similar materials.

8.2.4 – Ben Schroeder Saddle Tree Factory

This structure has previously been flood-proofed meaning there are not many steps to take after a flood. In the basement of the residence, a drain connected to the Crooked Creek determines how much water enters and exits the structure based on the water level of the creek. Therefore, the basement should be checked to make sure there is not remaining water inside before entering the structure. Debris could have gotten lodged into the drain and stopped the flow of water from exiting the structure. All electrical should be turned off to prevent anyone from getting electrocuted. If
water is remaining in the basement, an individual planning on entering the structure should wear rubber overalls and gloves. The debris should be removed from the drain.

Once the water has receded, clean up can begin in the basement. It is best to remove the debris while it is still wet. Fresh water can be used to remove the debris but avoid using high pressure water. Once this process is complete, the basement should be allowed to dry out through natural ventilation.

Depending on the level of the water in the basement, the floor joists of the main level of the structure and the electrical system should be checked for damage or signs of water. Additionally, the walls and floor in the basement should also be checked to see if water seeped underneath the concrete.

Erosion around the structure is also an area for concern. Although the structure is surrounded by sidewalks, erosion underneath can impact the sidewalk. The erosion can cause the concrete to channel water towards the building instead of away from it. To mitigate this, the slabs can either be raised or removed and replaced.

8.3 – Summary of Steps

8.3.1 – Shrewsbury-Windle House

- Check soil for signs of erosion in proximity to walls and foundations, or areas that could affect them
- Fill soil at a slight angle away from structure if eroded to stabilize foundation and direct water away from structure
- Pump water out of basement after the ground surrounding the structure has begun to dry out. Do not pump water out while ground is still saturated.
- Dry basement through natural ventilation
- Remove debris by lightly brushing the debris off walls and floor. Do not add water.
- Check walls for major damage in the mortar
- Use old mortar debris to temporarily stabilize walls
- Fill voids in mortar with similar materials as the original mortar
- Check HVAC system for damage. If damaged, repair or replace system
- Raise system to prevent future potential damage
8.3.2 – Carriage House and Stable

- Pump water out of basement after the ground surrounding the structure has begun to dry out. Do not pump water out while ground is still saturated.
- Dry basement through natural ventilation
- Remove debris by lightly brushing the debris off walls and floor. Do not add water.
- Check walls for major damage in the mortar
- Use old mortar debris to temporarily stabilize walls
- Fill voids in mortar with similar materials as the original mortar
- Check floor around posts for changes
- If posts have shifted, move back to their original location
- Replace concrete blocks with concrete footers which are mostly buried

8.3.3 – AME Church

- Pump water out of basement after the ground surrounding the structure has begun to dry out. Do not pump water out while ground is still saturated.
- Dry basement through natural ventilation
- Once natural ventilation no longer works, close up structure and use a dehumidifier and air conditioner to complete drying process
- Remove debris by lightly brushing the debris off walls and floor. Do not add water.
- Check walls for major damage in the mortar
- Use old mortar debris to temporarily stabilize walls
- Fill voids in mortar with similar materials as the original mortar
- Turn off electrical
- Check wiring and connections for damage and repair as required
- Clear outlets of any debris or mud
- Expose outlets in floor by lifting hinged flooring sections which cover the outlets to help with drying process
- Check HVAC system for damage
- Clean out any debris or mud
- Remove wet insulation in HVAC system and replace
- If HVAC system is damaged, repair or replace system
- Raise system to prevent future potential damage
- Check flooring of main structure for damage if waters reached that elevation
- If waters reached main level, cut holes near baseboards and remove wet insulation

8.3.4 – Ben Schroeder Saddle Tree Factory

- Check for remaining flood water inside structure before entering
- Turn off electricity
- If water remains in structure, clear drain of debris and allow water to recede
- Remove debris by lightly brushing the debris off walls and floor while wet.
• Use fresh water to remove debris. Avoid high pressure water
• Dry basement through natural ventilation
• Check floor joists and electrical for damage if water reached that level
• Check walls for moisture under concrete
• Check soil for signs of erosion
• If erosion has occurred, remove and replace sidewalks and stabilize foundation
• Use drain troughs to direct water away from structure
CHAPTER NINE – COORDINATING WITH OUTSIDE ORGANIZATIONS

9.1 – Contacts

Duke Energy

1000 E Main Street, Mail Drop WP 890, Plainfield, IN 46168

Phone: (800) 343-3525

https://www.duke-energy.com/indiana.asp

Federal Emergency Management Agency (FEMA)

Region V Recovery Division

536 South Clark Street, 6th Floor, Chicago, IL 60605

Phone: (312) 408-5500

https://www.fema.gov/

Jefferson County Indiana Emergency

Dave Bell, Director

300 East Main Street, Madison IN 47250

Phone: (812) 801-3277

Email: jeffersonema@hotmail.com

Indiana Department of Environmental Management – Sandbag Disposal

Kelly Hall, Office of Land Quality

100 N. Senate Avenue, Indianapolis, IN 46204

Phone: (317) 234-8488

Email: khall@idem.IN.gov

http://www.in.gov/idem/

The IDEM can give guidance on sandbag disposal.
Indiana Department of Environmental Management – Sandbag Reuse

Tracy Barnes, Office of Land Quality
100 N. Senate Avenue, Indianapolis, IN 46204
Phone: (317) 234-6964
Email: tbarnes@idem.IN.gov
http://www.in.gov/idem/
IDEM can also give guidance to the reuse of sand and sandbags after a disaster.

The Madison Courier

310 West St, Madison, IN 47250
Phone: (812) 265-3641
http://madisoncourier.com/

Madison Water and Sewage

101 W. Main Street, Madison, IN 47250
Phone: (812) 265-8312
Email: madutil@madison-in.gov

Metronet

327 W Main Street, Madison, IN 47250
Phone: (812) 274-0880
Email: MADISON@METRONETINC.COM
https://www.metronetinc.com/
Midwest Art Conservation Center

2400 Third Avenue South, Minneapolis, MN 55404

Phone: (612) 870-3120

http://www.rap-arcc.org/about

MACC offers disaster scenario training for staff of member organizations

National Flood Insurance Program (NFIP)

500 C Street SW, Washington D.C. 20472

Phone: (888) 379-9531

Email: FloodSmart@dhs.gov

http://www.fema.gov/national-flood-insurance-program

National Trust for Historic Preservation

2600 Virginia Avenue NW, Washington D.C. 20037

Phone: (202) 588-6000

Email: info@savingplaces.org

http://www.preservationnation.org/

Office of Historic Preservation

101 W. Main Street, Madison, IN 47250

Phone: (812) 265-8324

Email: preservation@madison-in.gov

Vectren Energy

P.O. Box 209, Evansville, IN 47702

Phone: (800) 227-1376

https://www.vectren.com/
CHAPTER TEN – IMPLEMENTATION AND FUNDING

11.1 – Implementation

In order to establish disaster mitigation plan as a working document, implementation steps must be taken. Part of implementation is personnel training. Personnel training should cover the individual roles and responsibilities as outlined in Assignment of Responsibilities. Additionally, each employee should know the emergency response procedures and location of equipment such as sandbags or temporary flood wall. It is important for those involved in the assessment of the buildings after a disaster to understand the signs of a stable structure and the utility shutdown procedures to ensure safety. The next step in implementation would be to ask current volunteers of the organization if they would be willing to have their contact information as part of the disaster response and recovery contact list.

Another portion of the implementation of this disaster mitigation plan would be the protection from excessive damage repair costs of each building through the use of insurance. All of the Historic Madison Inc. properties included in this report are located in the Special Flood Hazard Area (SFHA) Zone AE. This means it has a 1% annual of flood.32 According to FEMA, “The SFHA is the area where the National Flood Insurance Program’s (NFIP’s) floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies”.33 While this is true, this only applies to properties purchased with a mortgage. The step of obtaining flood insurance for each property must be taken in order to qualify for federal assistance.

11.2 – Funding

When a disaster occurs finding a funding source for recovery is essential. There are various state, federal and private programs which provide assistance for disaster mitigation projects and disaster recovery programs. Several sources have been included within this section however, this list does not contain every source of funding that might be available.\textsuperscript{34}

11.2.1 – Federal Emergency Management Agency\textsuperscript{35}

FEMA has several programs focused on helping with hazard mitigation activities. This includes:

- Emergency Management Performance Grant (EMPG) program
  - This program comes through the Indiana emergency management agency. EMPG’s can be used to develop further disaster preparedness and assistance plans. The grants obtained through the EMPG program are given on a matching basis.

- Flood Mitigation Assistance (FMA) program
  - This program provides funding for project which help reduce the risk of flood damage to structures. This funding source can be only accessed by those whom have their structures covered under the National Flood Insurance Program.

- Hazard Mitigation Grant Program (HMGP)
  - This program funds mitigation actions in disaster-prone areas. To find more information about this grant can be found by contacting the local emergency management agency office.


\textsuperscript{35} Information about all funding sources included within this disaster mitigation plan can be found on the agency or organizations website.
• Increased Cost of Compliance (ICC) program
  ○ This program can only be accessed by groups who have their structures covered by the National Flood Insurance Program. This funding source can help cover the cost to elevate, flood-proof, demolish, or relocate a building up to $30,000. In addition to having flood insurance, all structures must comply with state or community floodplain management laws or ordinances in order to qualify for assistance.

• Pre-Disaster Mitigation (PDM) program
  ○ This program assists in the implementation of cost-effective hazard mitigation activities. While this is true, this program provides funds for government entities but the local government may pass on funds to local individuals and organizations.

11.2.2 – Other Federal Programs

Other federal programs which offer funding that could be used in the event of a disaster or for activities which help reduce the risk of flood damage include:

• Community Development Block Grants
  ○ The U.S. Department of Housing and Urban Development (HUD) offers grants which are focused on properties used for housing but could also be used for the redevelopment of disaster-affected neighborhoods.

• Disaster Assistance Loans
  ○ The Small Business Administration provides low-interest loans up to $500,00 for non-profit organizations for the repair, rehabilitation, or replacement of properties affected by a major federally declared disaster.
• Federal Rehabilitation Tax Credit
  
  o The National Park Service offers a federal income tax credit up to 20% of the cost of rehabilitating a historic building included on the National Register of Historic Places for commercial use. To obtain this tax credit the work must meet the Secretary of Interior’s Standards for Rehabilitation.

  **11.2.3 – State Programs**

  Indiana has several programs which offer assistance before and after a disaster. These programs include:

  • The State Emergency Management Agency provides disaster assistance and hazard mitigation grants to businesses and non-profits. This is done through three federal programs.
    
    o Emergency Management Performance Grant Programs
    
    o Hazard Mitigation Grant Program
    
    o Pre-Disaster Mitigation Program

  • The Historic Preservation Office (SHPO) has several funding sources which can help with the rehabilitation of disaster affected structures.
    
    o Historic Preservation Fund
    
    o State Tax Credit

  **11.2.4 – National Trust for Historic Preservation**

  The National Trust for Historic Preservation can provide assistance through low-interest, short-term loans and grants. The low-interest, short-term loans can be used to stabilize the property after a disaster. Grants offered through the National Trust for Historic Preservation include:
• The Preservation Services Fund
  o This program provides non-profit organizations matching grants from $500 to $5,000. These funds are focused on preservation plan which could include disaster mitigation planning for a historic property.

• The Cynthia Woods Mitchell Fund for Historic Interiors
  o This program provides non-profit organizations grants ranging from $2,500 to $10,000 to assist in the preservation and restoration of historic interiors which can also be used for structures affected by a flood disaster.
CHAPTER ELEVEN – NEXT STEPS

While this disaster mitigation plan is a plan to protect the four properties which might be affected by a flood disaster, being truly prepared for a disaster does not stop with this plan. Along with implementation comes the need for regular maintenance of the disaster mitigation plan and a test of the effectiveness of the plan. A regular review the contents of this plan is necessary and it should be updated whenever an employee’s emergency actions or responsibilities change, or when there is a change in the use of a structure, new equipment, or new types of hazards are introduced that require special actions. The most common outdated item in a disaster mitigation plan is the contact information which can be easily updated since it is mostly located within the Contacts chapter and the Assignment of Responsibilities chapter.

To ensure that this plan is effective, test drills are necessary. Once people know their roles and responsibilities, a test drill will allow them see how to execute on their tasks and whom to seek instruction from. If people are not trained, and clear on their responsibilities, the actual disaster scenario will go very badly. To test this disaster mitigation plan, the steps outlined in the Flood Preparedness chapter must first be completed in order to test the rest of the plan. In addition, if use of sandbags or the temporary water-filled flood wall are to be used in a disaster situation should be stored near the site in which they are to be used. If using sandbags, these can be prefilled with the sand while being stored. To test the steps outlined in the Flood Preparedness chapter, personnel whom are going to be active during a disaster situation should practice moving and setting up the sandbags or filling the water-filled temporary flood wall. Other steps which can be tested are those associated with assessing damages after a flood which can be found in the Flood Recovery and Renewing Operations chapter. All other steps of this plan cannot be tested before a disaster; however, this plan should be reviewed after a disaster to see how well these steps work
in a disaster situation. If the steps outlined do not perform as necessary, they should be updated to other steps which would work better in the situation.

This disaster mitigation plan is focused on those properties affected by a potential flood disaster. Most disaster mitigation plans consider all types of disasters and include every property owned by the organization. The next steps after this disaster mitigation plan would be to add additional chapters to cover the other potential disasters and include the other properties owned by Historic Madison Inc.
BIBLIOGRAPHY


Historic American Buildings Survey, Creator, Charles Lewis Shrewsbury, Francis J Costigan, Inc
Ratio Architects, Sponsor Historic Madison Inc, Benjamin L Ross, Kenneth M Boyce, and
David Kroll. Captain Charles L. Shrewsbury House, 301 West First Street High & Poplar
Streets, Madison, Jefferson County, IN. Documentation Compiled After, 1933. Drawing.
28, 2015).

Historic American Engineering Record, Creator, Ben Schroeder, Joseph Schroeder, John Benedict
Schroeder, Leo Schroeder, Charlie Schroeder, Jack E Boucher, and Alex Gratiot. Ben
Schroeder Saddle Tree Company, 106 Milton Street, Madison, Jefferson County, IN.

Historic American Engineering Record, Creator, Hardline: Design & Delineation. Carriage House
& Stables, 120 Elm Street, Madison, Jefferson County, IN. Documentation Compiled After,
(Accessed October 28, 2015.)

us/board-of-directors.


Jasper, Margaret C. Protecting Your Business: Disaster Preparation and the Law. New York:

http://madisonindiana.us/top-25-flood-records/.

National Trust for Historic Preservation. “Treatment of Flood-Damaged Older and Historic

National Weather Service. “Ohio River at Clifty Creek.” National Weather Service Advanced


Insurance Study: Jefferson County, Indiana and Incorporated Areas. FLOOD
INSURANCE STUDY NUMBER 18077CV000A, April 2015.


## APPENDIX A - GLOSSARY

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearing Wall</td>
<td>A wall that bears a load resting upon it.</td>
</tr>
<tr>
<td>Board and Batten</td>
<td>Wooden siding which is vertically oriented. The narrower strips of the wood are called battens.</td>
</tr>
<tr>
<td>Canopy</td>
<td>A projecting roof structure that shelters an entrance.</td>
</tr>
<tr>
<td>Cladding</td>
<td>One material over another</td>
</tr>
<tr>
<td>Clapboard</td>
<td>Wood boards used for siding. It is usually installed horizontally.</td>
</tr>
<tr>
<td>Cornice</td>
<td>The projecting moldings that form the top band at the roof line.</td>
</tr>
<tr>
<td>Dentils</td>
<td>Small rectangular blocks that look like a row of teeth.</td>
</tr>
<tr>
<td>Differential settlement</td>
<td>Occurs when a building's foundation settles unevenly.</td>
</tr>
<tr>
<td>Disaster Mitigation Plan</td>
<td>A disaster mitigation plan is a documented process or set of procedures to recover and protect a property in the event of a disaster.</td>
</tr>
<tr>
<td>Entablature</td>
<td>The horizontal band of elements above the column capitals in classical architecture.</td>
</tr>
<tr>
<td>Erosion</td>
<td>The process by which the surface of the earth is worn away.</td>
</tr>
<tr>
<td>Façade</td>
<td>The exterior faces of a building, often used to refer to the wall in which the building entry is located.</td>
</tr>
<tr>
<td>Flash Flooding</td>
<td>A flash flood is a rapid flooding of low-lying areas. It may be caused by heavy rains.</td>
</tr>
<tr>
<td>Foundation</td>
<td>The lowest load-bearing part of a building.</td>
</tr>
<tr>
<td>Foundation Connection</td>
<td>The part which connects the floor joist to the foundation.</td>
</tr>
<tr>
<td>Frieze-band Windows</td>
<td>Small windows found within the flat, middle portion of an entablature.</td>
</tr>
<tr>
<td>Glazed</td>
<td>glass</td>
</tr>
<tr>
<td>Gratings</td>
<td>Drain cover</td>
</tr>
<tr>
<td>Integrity</td>
<td>the ability of a property to convey its significance</td>
</tr>
<tr>
<td>Mitigation</td>
<td>The action of reducing the severity of the disaster. This step should be taken before a disaster might.</td>
</tr>
<tr>
<td>Moment Frame</td>
<td>Occurs when the beams are rigidly connected to the columns</td>
</tr>
<tr>
<td>Natural Disaster</td>
<td>A natural event that causes great damage or loss of life.</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Parapets</td>
<td>The portion of wall that projects above the adjacent roof. Roof looks flat from street level.</td>
</tr>
<tr>
<td>Recovery</td>
<td>The period of time after a disaster in which a disaster plan is enacted with steps to take.</td>
</tr>
<tr>
<td>Riverine Flooding</td>
<td>Riverine flooding occurs when heavy rainfall causes high water levels in rivers or creeks to overtop the banks.</td>
</tr>
<tr>
<td>Sedimentation</td>
<td>Collection of stone and sand.</td>
</tr>
<tr>
<td>Shear Wall</td>
<td>A shear wall is a wall which counters the effects of lateral load. A wall which is not load-bearing.</td>
</tr>
<tr>
<td>Superstructure</td>
<td>The part of the building above the foundation.</td>
</tr>
<tr>
<td>Transom</td>
<td>A small window placed above a door or window.</td>
</tr>
<tr>
<td>Vergeboard</td>
<td>Decorative boarding along a projecting roof eave. It is often carved or scrolled, and is highly ornamental.</td>
</tr>
</tbody>
</table>
### APPENDIX B—CHECKLIST OF DISASTER RECOVERY PRIORITY CONCERNS OF MANAGEMENT

This checklist was included in “Disaster Recovery: Contingency Planning and Program Evaluation”.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Staff Protection and Actions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Have all staff been trained in fire alarm, bomb threat, and other</td>
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<tr>
<td></td>
<td>emergency procedures?</td>
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<tr>
<td>2.</td>
<td>Do all staff understand that when the alarm sounds they:</td>
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<tr>
<td></td>
<td>• Immediately vacate the building?</td>
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<td></td>
<td>• Do not return to pick up items from desks?</td>
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<td></td>
<td>• Report to supervisors at designated points?</td>
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<tr>
<td>3.</td>
<td>Do all staff know who to call in times of emergency or where the</td>
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<td></td>
<td>emergency telephone list is located?</td>
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<td>4.</td>
<td>Do the disaster recovery planning teams understand that the protection</td>
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<td></td>
<td>and safety of people in the area is paramount?</td>
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<td>5.</td>
<td>Have good management notification procedures been developed for</td>
<td></td>
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<tr>
<td></td>
<td>any emergency of any size?</td>
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<td></td>
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<tr>
<td></td>
<td><strong>Maintenance of Customer Services and Cash Flow</strong></td>
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<tr>
<td>6.</td>
<td>Has management strictly prioritized the most necessary services to</td>
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<td></td>
<td>be maintained in an emergency?</td>
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<tr>
<td>7.</td>
<td>Are all user groups involved in customer services and cash handling</td>
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<tr>
<td></td>
<td>working with the plan teams?</td>
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<tr>
<td>8.</td>
<td>For on-line customer services, can alternate operations be brought up</td>
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<td></td>
<td>within 24 hours?</td>
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<tr>
<td>9.</td>
<td>Are most cash deposits sent directly to banks are not vulnerable to a</td>
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<td></td>
<td>disaster in the computer area?</td>
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<td>10.</td>
<td>Does the organization have plans for controlled public press releases</td>
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<td></td>
<td>in times of disaster?</td>
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</tbody>
</table>

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<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.</td>
<td><strong>Maintenance of Vital Documents</strong>&lt;br&gt;Have the vital documents and records of the organization been thoroughly analyzed and control procedures set up?</td>
<td></td>
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</tr>
<tr>
<td>12.</td>
<td>Does the organization use a remote, safe document storage vault?</td>
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</tr>
<tr>
<td>13.</td>
<td>Is there extensive use of Computer Output Microfilm/Microfiche or the microfilming of documents, and are copies stored in a safe vault?</td>
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<tr>
<td>14.</td>
<td>Are application and operations documentation of programs handling vital information backed up in safe storage?</td>
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<tr>
<td>15.</td>
<td>Is the Legal Department satisfied with the EDP handling of vital documents?</td>
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<tr>
<td>16.</td>
<td><strong>Protection of Facilities, Equipment, Programs, and Supplies</strong>&lt;br&gt;Are the organization’s Fire, Safety, and Engineering people working closely with Information Services?</td>
<td></td>
<td></td>
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<tr>
<td>17.</td>
<td>Have the fire and safety systems in the EDP facility area been reviewed by an independent person?</td>
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<tr>
<td>18.</td>
<td>Have discussions been held with all equipment vendors as to their response to an emergency situation?</td>
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<tr>
<td>19.</td>
<td>Has there been a recent review of the documentation level of programs and the existence of updated backup copies of the programs and the documentation?</td>
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</tr>
<tr>
<td>20.</td>
<td>Is there a complete listing of all supplies and copies of all forms available in a second site, and are emergency backups of critical forms held in a second site?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX C – INDIVIDUAL ROLES IN THE DISASTER PROGRAM

The table, found in *Building an Emergency Plan: A Guide for Museums and Other Cultural Institutions*, shows a list the responsibilities involved in the disaster program.\(^3\)

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibilities</th>
</tr>
</thead>
</table>
| Director                  | • Sets emergency program policy  
|                           | • Appoints EPM, EPC, ERC  
|                           | • Appoints communications coordinator, if necessary  
|                           | • With EPC, does initial vulnerability assessment  
|                           | • Presents assessment to board to secure board’s commitment  
|                           | • Establishes budget for program  
|                           | • Continues to act as liaison between EPM and board  
|                           | • Oversees development of list of resources  
|                           | • Oversees and guides involvement of community and media in the planning process |
| Emergency preparedness    | • Works with director to appoint EPC, ERC, and communications coordinator  
| manager (EPM)             | • Heads EPC  
|                           | • Works with EPC to appoint departmental teams and team leaders  
|                           | • Organizes and conducts staff drills  
|                           | • Keeps director up to date on progress  
|                           | • After disaster occurs, holds postmortem review meetings |

| Emergency preparedness committee (EPC) | • Oversees departmental teams and team leaders  
| | • Works with EPM, ERC, and team leaders to select response teams  
| | • Develops list of resources and establishes relations with such resources  
| | • Involves and establishes contacts with community and media  
| | • Uses initial vulnerability assessment to identify potential hazards  
| | • Distributes hazard data to departmental teams for development of detailed vulnerability and asset assessment report  
| | • Keeps EPM up to date on teams’ progress  
| | • Implements preventive/preparedness measures as recommended by departmental teams  
| | • Develops response plan and recovery plan based on information from departmental teams  
| | • Writes and distributes the emergency plan  
| Emergency response coordinator (ERC) | • Works with EPM, EPC, and team leaders to select response teams  
| | • Implements preventive/preparedness measures as recommended by departmental teams  
| | • During a disaster, sets up and runs emergency command center  
| Departmental preparedness teams | • Four teams: safety/security, collections, buildings/maintenance, administration/records  
| | • Each consists of 2 teams: preparedness team and response team  
| | • Each preparedness team submits 2 reports to EPC: (1) vulnerability/asset assessment and (2) outline of response procedures  
| | • Response teams contribute to the departmental preventive-preparedness measures, response plan, and recovery plan  
| | • All information and data are submitted to EPC for inclusion in the emergency plan |
APPENDIX D – DETAILED EVALUATION OF FLOOD-DAMAGED BUILDINGS

The following conditions should be investigated after a flood disaster.\textsuperscript{38}

<table>
<thead>
<tr>
<th>Condition</th>
<th>Minor/none</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall hazards:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collapse or partial collapse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building/story lean or drift</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fractured or displaced foundation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Structural Hazards:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure of significant element/connection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column, pier, or bearing wall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roof/floor framing or connection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superstructure/foundation connection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moment frame</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horizontal bracing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical bracing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shear wall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nonstructural Hazards:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parapets, ornamentation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canopy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cladding, glazing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceilings, light fixtures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stairs, exits, access walkways, gratings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interior walls, partitions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical &amp; electrical equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building contents, other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Geotechnical Hazards:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slope failure, debris impact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground movement, erosion, sedimentation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differential settlement</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To evaluate the building, the following steps should be taken according to Applied Technology Council.39

1. Begin the survey by walking around the exterior of the building.

2. Determine the structural elements of the foundation, the lowest-floor elevation, and whether any enclosures or obstructions existed below the lowest flood.

3. Examine structure orientation with respect to the probable direction of water flow. The greater the surface area resisting the direct impact of the water, the more damage the structure is likely to sustain.

4. Examine the building on all sides at grade level for signs of erosion, local scour, undermining of slabs or foundations, and sedimentation. Measure or estimate the depth of vertical erosion or sedimentation at the structure. Check for signs of active erosion and slope instability.

5. When geotechnical or hydraulic risks are suspected, a team that incudes a geotechnical engineer, geologist, or hydraulic engineer must make the Detailed Evaluation [as listed above].

6. Look for differential settlement and cracks or fractures in the exposed foundation elements.

7. Examine foundation (piles, piers, columns, footers, walls) for signs of distress such as major cracks, racking, or bowing.

8. Examine nonstructural elements such as breakaway walls, decks, parapets, sints or ornamentation for damage before entering the building.

9. Determine the stability and integrity of any stairs or building access to elevated buildings.

10. Before entering the building, look for falling risks and consider the likelihood of collapse.

    Do not enter obviously unsafe buildings.

11. Continue to inspect other conditions as listed on the list above if building is deemed safe to enter.
APPENDIX E – FLOODS OF MADISON, INDIANA

Ohio River

This list includes the top 26 floods recorded in Madison, Indiana based on water level.\textsuperscript{40} This is not a complete list of all floods.

<table>
<thead>
<tr>
<th>Flood Year</th>
<th>Flood Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1937</td>
<td>475.90 feet</td>
</tr>
<tr>
<td>1884</td>
<td>464.30 feet</td>
</tr>
<tr>
<td>1945</td>
<td>464.00 feet</td>
</tr>
<tr>
<td>1964</td>
<td>463.20 feet</td>
</tr>
<tr>
<td>1913</td>
<td>463.00 feet</td>
</tr>
<tr>
<td>1943</td>
<td>462.40 feet</td>
</tr>
<tr>
<td>1883</td>
<td>461.80 feet</td>
</tr>
<tr>
<td>1997</td>
<td>460.90 feet</td>
</tr>
<tr>
<td>1907</td>
<td>459.90 feet</td>
</tr>
<tr>
<td>1832</td>
<td>459.60 feet</td>
</tr>
<tr>
<td>1948</td>
<td>458.80 feet</td>
</tr>
<tr>
<td>1933</td>
<td>457.60 feet</td>
</tr>
<tr>
<td>1962</td>
<td>456.40 feet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flood Year</th>
<th>Flood Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1943</td>
<td>455.20 feet</td>
</tr>
<tr>
<td>1955</td>
<td>454.90 feet</td>
</tr>
<tr>
<td>1936</td>
<td>454.50 feet</td>
</tr>
<tr>
<td>1950</td>
<td>454.40 feet</td>
</tr>
<tr>
<td>1967</td>
<td>454.20 feet</td>
</tr>
<tr>
<td>1963</td>
<td>454.00 feet</td>
</tr>
<tr>
<td>1991</td>
<td>453.00 feet</td>
</tr>
<tr>
<td>2005</td>
<td>452.00 feet</td>
</tr>
<tr>
<td>1996</td>
<td>451.80 feet</td>
</tr>
<tr>
<td>1968</td>
<td>451.10 feet</td>
</tr>
<tr>
<td>1972</td>
<td>451.00 feet</td>
</tr>
<tr>
<td>1972</td>
<td>450.20 feet</td>
</tr>
<tr>
<td>2011</td>
<td>251.6 feet</td>
</tr>
</tbody>
</table>

Crooked Creek

This list includes flash floods recorded from heavy rainfall of the Crooked Creek. This list is not a complete list.

<table>
<thead>
<tr>
<th>Flood Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1846</td>
</tr>
<tr>
<td>1905</td>
</tr>
<tr>
<td>2008</td>
</tr>
<tr>
<td>2015</td>
</tr>
</tbody>
</table>

\textsuperscript{40} Tony Kummer.
APPENDIX F – BOARD OF DIRECTORS  

Executive Officers

John Galvin – President Emeritus
John M. Staicer – President/Executive Director
Merritt K. Alcorn – Chairman of Board
Dr. Robert Canida – Vice-President
John Muessel – Treasurer

Members of Board

Valecia Crisafulli
Molly Dodge
Dr. Thomas Eckert
Andrew Forrester
Kevin Harrell
Jane Jacobs
Margaret Seifert-Russell
Don Smith
Jill Wiest
Kevin Yancey
Greg Ziesemer

APPENDIX G - DRAWING DOCUMENTATION BY NATIONAL PARK SERVICE

The National Park Service has previously completed drawing documentation of the Shrewsbury-Windle House, the Carriage House and Stable, and the Ben Schroeder Saddletree Factory. Those drawings are included here to complement the Inventory of Buildings chapter.
THE SHREWSBURY HOUSE
HIGH AND POPULAR STREETS
MADISON, INDIANA

SOUTH ELEVATION, GARDEN FLOORS.

THE SHREWSBURY HOUSE, MADISON, IND.
CARRIAGE HOUSE & STABLE

The structure was probably built c. 1867 by John Robert Cravenes, attorney-at-law, as a carriage house and stable. The building was later used by the R. McKim Company as a barn. C & R Auto Parts, owned by Burton Chambers, used the structure as a warehouse in the 1950s and 1960s. Historic Madison, Inc. acquired it in 1990 and uses it as a collections storage facility for artifacts from the Schroeder Saddle Tree Factory. See HAER IN-26 for Factory project.

This recording project was sponsored from July to November of 1992 by the Historic Madison Foundation, Inc. (Madison, IN) to assist their efforts in developing a local industrial history museum. The contract for field work, measured drawings, and field photographs was awarded through a request for competitive bids to Hardlines: Design & Delineation of Bethesda, Maryland. The information for historical texts was provided by John M. Stecher, Director, Schroeder Saddle Tree Project, and John G. Galvin, President, the Historic Madison Foundation, Inc.

WEST ELEVATION

The sheet based on Hardlines: Design & Delineation and historical texts and personal interviews.

SECTION AA

EAST ELEVATION

BASEMENT PLAN

SECOND FLOOR PLAN

NORTH ELEVATION

Carriage house is a Classical Revival.
Sheet based on Handlines Design &
Deconstruction's field work and interviews.

Ibid.
The Ben Schroeder Saddle Tree Company was a major enterprise which manufactured saddles from a dried buffalo horn to make it into bone, leather, and a finished leather saddle. The woodwork reflected the craftsmanship of the American Indian. It was opened with the last frame in 1876 and was operated by the Indian immigrants who had come to the United States for a better life. The Ben Schroeder Company was the last to manufacture saddle trees in the United States.

This project is part of the Historic American Engineering Record's new design program. The historic and cultural significance of the historic engineering features and inventions in the United States, the Ben Schroeder Saddle Tree Company's prominence among Native American was considered during the creation of the design. The project was supported by the National Park Service in providing and interpreting the research on a local, national, and international level.

The views, measured drawings, and photographs used in this project were provided by the American Society of Civil Engineers, Inc. The views and measured drawings were collected by John B. Hopkins, American Society of Civil Engineers, Inc., and the National Park Service.

All drawings are for historical preservation only and are not to be used for commercial or engineering purposes. The views are for educational purposes only and may be used by the public for educational and informational purposes. The views are for educational purposes only and may be used by the public for educational and informational purposes.

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The oldest structure on the site is the first floor of the Bench Shop. An 1885 insurance policy lists this structure as a one-story frame saddle tree shop about six feet north of the vat house. A second floor and attic were added between 1911 and 1927. The blacksmith shop on the north side of the Bench Shop dates to 1897 or earlier.

The Woodworking Shop grew and changed considerably over time. It may have been a frame sawmill building described in an 1883 advertisement to the 1895 insurance policy. Insurance was taken on machinery, including boiler and engine, inside the sawmill. An 1897 Sanborn Fire Insurance Map shows this structure as a one-story frame machine shop with a boiler and steam engine. By 1904 a two-story addition was built on the south side of this building. A fire destroyed the north and of the structure on July 1, 1920, only a few weeks after an addition to the plant made at a cost of $5,000 including machinery and building (Madison County Herald, July 2, 1920). "The flames originated in the boiler room, a one-story frame structure that occupied the main factory (Madison County. July 2, 1920). Charred timbers are still visible from this fire. The brick boiler room was added to the south and of the factory when it was repaired.

In 1937, a shed-roofed sawmill was constructed on the north side of the Woodworking Shop. The Schroeder's saved lumber from logs harvested from their own woods in Jefferson County, Indiana. Some lumber was stacked in the yard north of the factory to air dry.

Other structures not drawn include a one-story frame vat house, which replaced the residence from 1882-1904. A coal shed and chicken coop (both framed, c.1900), located directly south of the Woodworking Shop boiler room, had collapsed upon their contents. The remains of these buildings were photographed and dismantled in July and August of 1922.

The garage, still standing, is south of the shed foundation. This one and one-half story frame structure was built in 1902 by Peter Stepanias. It measures 28' x 18' feet and features a gable roof with two sliding doors on the south side.

NOTES AND KEY
1. Work bench
2. Desk
3. The McCrory Mfg Co. glaze turning machine (Shane, OH)
4. Table saw frame
5. Ladder up to attic
6. Access door
7. Storage rack
8. Storage bin
9. Unidentified sewing machine
10. Swivel hopper
11. Vise
12. Engine exhaust stack and muffler
13. Log wrench
14. Pipe in swivel hopper
15. Skip hoist

Sheet based on Hershfield field notes, interviews and 1894-75 WIS field notes. Due to conditions receding, these drawing may not correspond exactly with 1870 WIS set.

The Ben Schroeder Saddle Tree Company (1878-1972) manufactured wooden saddle trees, the internal wooden frames of finished saddles. The company also manufactured homes, stoves, shoes, furniture, and work gloves during its 94-year history. The Schroeders made 250 types of trees for Western, English, and U.S. Cavalry McElroy saddles. Saddleries all across the United States and from Canada, Cuba, and other Central and South American countries bought Schroeder saddle trees upon which to build their saddles. Lumber came from the Schroeder's own woodlands or was purchased from sawmills or lumber dealers.

NORTH ELEVATION

Bendrows were the primary shaping machines in the factory. They made the compound cuts needed to fashion wooden blocks into saddle tree parts. Cardboard patterns and homemade jigs ensured uniformity. The company purchased two irregular turning lathes between 1918 and 1920 for turning quantities of identical saddle tree sides bars. These were damaged in the 1920 fire and were not replaced as the Schroeders elected to rely on bendrows for shaping all parts. Power rasps and belt sanders, as well as drawers and dowel shears, were used in final smoothing operations.

SOUTH ELEVATION

Muscle power was the first power source used to make saddle trees in the Schroeder factory. The first mention of steam power and machinery appears in an 1892 fire insurance policy which insured a frame sawmill building, $500, and machinery including a boiler and engine therein, $150.

The steam power system was updated in 1920 when the last boiler which ran two steam engines was installed. Power was transferred through a system of belts and pulleys to the machinery. Parts of the line shaft system are still in place. During the 1940s, a 35-hp Prime Oil Engine, an electric generator, and a series of motors running individual machines or clusters of machines, supplied the older steam powered line-shafting arrangement.

See M/I drawing in volume 5 for machinery labels.

65 Ibid.
In 1878, John Benedict Schroeder, a German immigrant, bought property on Milton Street in Madison and built a "one and one half story brick building (three rooms)" occupied as a saddle tree shop. By 1880, a frame structure was used as a unit house for storing animal hides adjacent to the brick building to the north. Ben married Elizabeth Stockus in 1882 and renovated the brick factory into a residence. The saddle tree shop was relocated to a frame building north of the wat house.

After the birth of his eighth child in 1897, Ben hired John Forse of Madison to construct an "addition to a dwelling house" with "three fancy gable pieces" to the south of the residence. In 1903, Ben hired Peter Stepanoffs to "build one addition of 2 rooms 2 stories high all to be brick." This north wing was constructed on the spot occupied by the frame unit house.

The last major structural change of the house occurred in 1904 when the central section of the house—the original saddle tree shop—was torn down and replaced as mentioned, to use all materials that fit to be used. Although Peter Stepanoffs wrote the contract specifications, John Forse was paid for the work. The Schroeder family lived in the house, making minor changes until 1975 when Joseph Schroeder died.

This sheet based on Hardines: Design & Delamination's field work and personal interviews, and 1974-1975 HAER field notes.

68 Ibid.