



October 2019-April 2021

FLOOD RESILIENCE ACTION PLAN IN CORALVILLE





Executive Summary

The city of Coralville has invested in extensive city-wide flood and stormwater protections and mitigation in order to avoid a recurrence of impacts felt from the 2008 flood. At the time, the 2008 flood resulted in city-wide damage to businesses, homes, and municipal services. Today, Coralville is uniquely positioned to expand and support neighborhood-level resilience to flooding that is less focused on riverine flood impacts from the Iowa River, and more focused on flash-flooding and residential displacement from nearby creeks. The purpose of the Coralville Flood Resilience Action Plan (FRAP) is to provide policy pathways and community-accessible tools that will empower and protect flood-vulnerable community members.

In order to create a plan that aims to assist the most flood-vulnerable community members, our team developed a strategic and deep community engagement process. We sought input from people who are currently served by community service providers, such as the Coralville Community Food Pantry, to expand our outreach to low-to-moderate income and ethnically diverse households. We also engaged the broader Coralville residential community and service providers themselves. Our outreach strategy was modified significantly due to the Covid-19 virus and the public health restrictions on gathering and social distancing; however, we were still able to engage with flood vulnerable community members and service providers during this unprecedented time. We are extremely grateful and inspired by the people and organizations that took the time to share their knowledge, experience, and provide feedback.

We recommend the city of Coralville review this plan every 2 years along with continued engagement of Coralville residents. The next Flood Resilience Action Plan (FRAP) should build upon the framework, insights, and tools that we developed for the City of Coralville.

Coralville's Community Resilience Framework:

"Resilience is being proactive and developing networks of support (neighbors, local groups, local government), so we can ask for help when we have hit our limits, and be willing to help each other."

Acknowledgments

A community plan would be nothing without the knowledge and input from the community, from everyday people. First and foremost we would like to acknowledge Coralville residents and community members who made this plan possible. From the people who entrusted us with their stories to those who exemplified resilience through their actions. During this unprecedented year of the COVID-19 pandemic and the Derecho storm we had our neighbors in our hearts and minds. We hope to make you proud of our collective efforts during these days as we hope to help facilitate our emergence from this year better, stronger, and more resilient.

We would equally like to acknowledge our partners and collaborators. To the City of Coralville, we appreciate your support and collaboration in this process. We would also like to acknowledge Dan Holderness, the City Engineer who led the development of many of the flood protections and will be retiring this year. We are grateful to the Iowa Watershed Approach (IWA) who entrusted us with this plan and provided us with feedback through the process. We are also grateful for the partnerships of the Clear Creek Watershed Coalition for their continued interest and support. Finally, we would like to provide our deepest gratitude to Coralville service providers, businesses, and nonprofits that help residents be more resilient, especially to the Coralville Community Food Pantry and Take a Kid Outdoors who were key partners in the development of this plan and community outreach process.



Neighbors helping each other after the derecho storm in August, 2020. Photo Credit: Astig Planning



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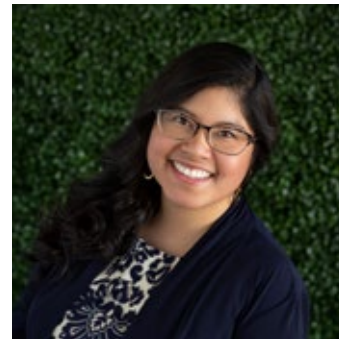
Our Team and Partners



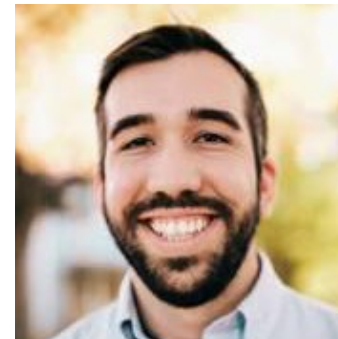
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Project Overview

Project Background

The Coralville Flood Resilience Action Plan (FRAP) is a project under the Iowa Watershed Approach (IWA), which the Iowa Flood Center funded through a Housing and Urban Development (HUD) National Disaster Resilience Competition. The IWA seeks to improve water quality, reduce flood risks, increase resilience, and meaningfully engage stakeholders to create a replicable program that can be used by other states seeking to do the same. Our team worked closely with the members of the IWA's Flood Resilience Program to produce a FRAP for Coralville that specifically:

- ▶ Develops a better understanding of the current social vulnerability and resiliency of a small, low-income, Iowa community dealing with frequent flooding and water quality issues.
- ▶ Identifies the strategies, opportunities, and partnerships that are most likely to reduce vulnerability and increase resiliency of the most vulnerable population.
- ▶ Engages the community in implementation of strategies, opportunities, and partnerships that verify the validity of the findings.
- ▶ Increases broader learning in and from the community (including final outcomes and outputs).



Our Approach

In order to accomplish the goals of the Flood Resilience Program, we outlined a community-led approach that highlights the experiences and knowledge of residents, and uses technical skills to bring that input into the planning process. An essential element of community resilience is focusing on the community. Community resilience is built and developed specifically for that community rather than taking a one-size fits all approach. This approach promotes social equity by centering marginalized communities, and enhances the local economy by engaging with businesses in advance of natural disasters, such as floods, to strengthen relationships and create resilience.

A holistic approach for flood resilience

- Community-led identification of strengths, limitations, and resources
- Reduces future flood losses
- Reduces the displacement of vulnerable populations, which widens wealth inequalities
- Facilitates vibrant and diverse local economy
- Traditional experts provide horizontal support for *further* enhancing community capacity and provided resources based on identified gaps



More specifically, our planning process for the Coralville FRAP began with an **Exploratory Phase** by gathering desktop research (watershed data, demographics, etc.), and then initiating outreach efforts to ground truth and elaborate on initial research. We then began our **Outreach & Education Phase** and met with individual community leaders in one-on-one in-person interviews to understand the nuanced impacts of flooding on marginalized community members. Due to public health risks of the Coronavirus (Covid-19) global health crisis that occurred at the outset of our community outreach, we strategically pivoted towards virtual engagement. The resultant **Work Phase** of our efforts included online workshops and socially-distant surveying at the community level.

Our Approach (cont'd)

Our two-part online workshop series resulted in a co-created community definition of resilience, and a community asset map. These community-level resources are important tools for continuing to facilitate Coralville's flood resilience at the neighborhood scale. Local service-oriented and non-profit organizations that assist low-income community members, such as the Coralville Community Food Pantry, United Way of East Central Iowa, and the Shelter House, provide many vital resources which can also supplement flood related needs. In order to understand the resources they provide to flood-vulnerable

community members and the strengths/gaps between organizations, our team conducted a network analysis survey that reached 120 service providers. The results from the nonprofit survey provide specific insight into the network of local service providers that already assist the community in times of crisis and how they can be further supported to provide more extensive service to flood vulnerable community members.

Our team also created a Business Resilience Pledge Campaign that sought to create resilience and strengthen relationships between businesses and the communities they serve. The **Writing Phase** of this plan culminated in the aggregation of the data and experiences we gathered over the course of the planning process. The drafts were reviewed and revised with staff in order to ensure actionable recommendations. The finalized plan was made available to community members at the Coralville Community Food Pantry, Coralville Public Library, and hosted on the FRAP website.



Guiding Framework

Institute for Social and Environmental Transition-International (ISET) Climate Resilience Framework

Our approach was guided by the internationally recognized ISET Climate Resilience Framework which provides training material and a toolkit for building capacity to address climate change as a complex concept and in collaboration with stakeholders. The ISET model aspires for bottom up and locally enhanced approaches to engaging communities in planning future resilience.

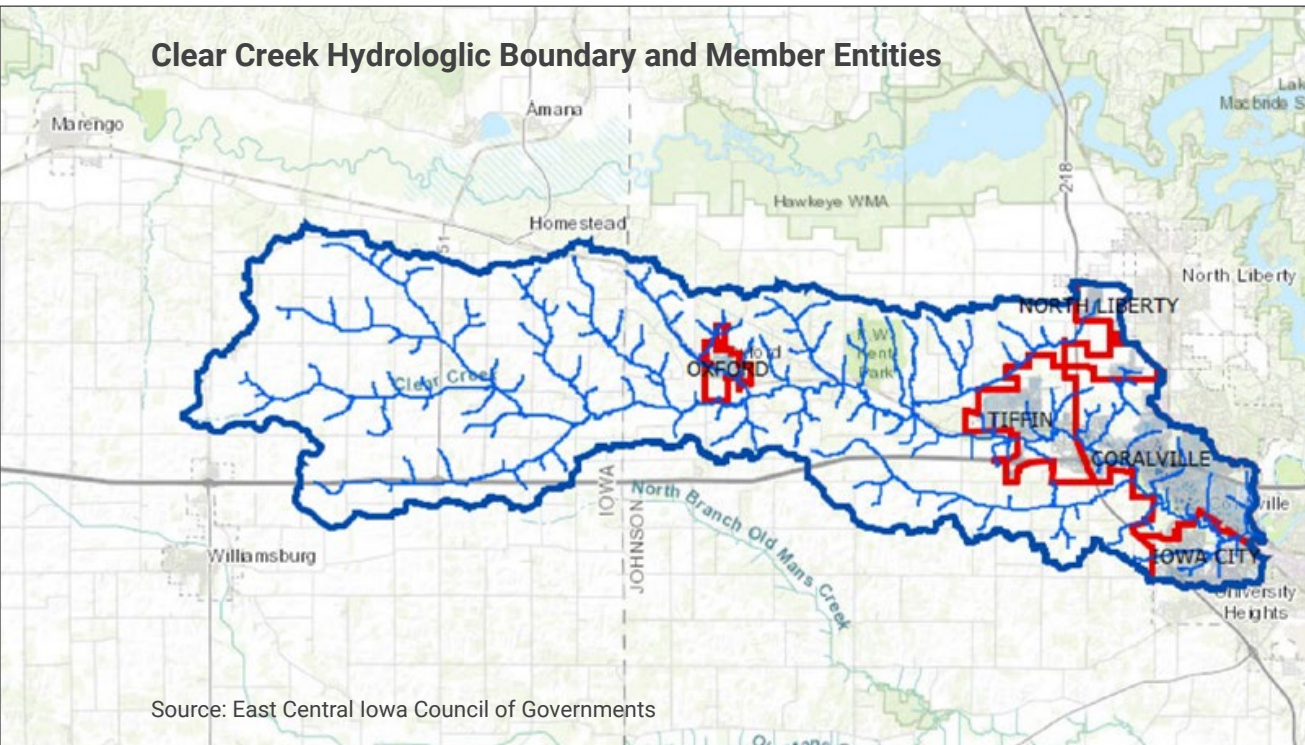
We used the ISET Climate Resilience training materials to guide the Coralville FRAP community engagement process and values. The workshop materials include interactive story-telling prompts and engagement activities meant to provide residents with a format for uncovering resilient actors in their stories and lives. The 'Vulnerability Risk Assessment' workshop was modified to incorporate an asset-based model that identified community strengths as well as vulnerabilities.

Overall, these materials helped to inform the development of our online workshops and interviews with residents. For instance, we used interviews as recommended to allow for a bottom-up understanding of the issues. We also adopted activity 1.0.1 for storytelling and community conversations in our workshops. We identified resilient actors during break out room sessions as part of an activity to create the resilience framework.



Watershed Context

Clear Creek Hydrologic Boundary and Member Entities



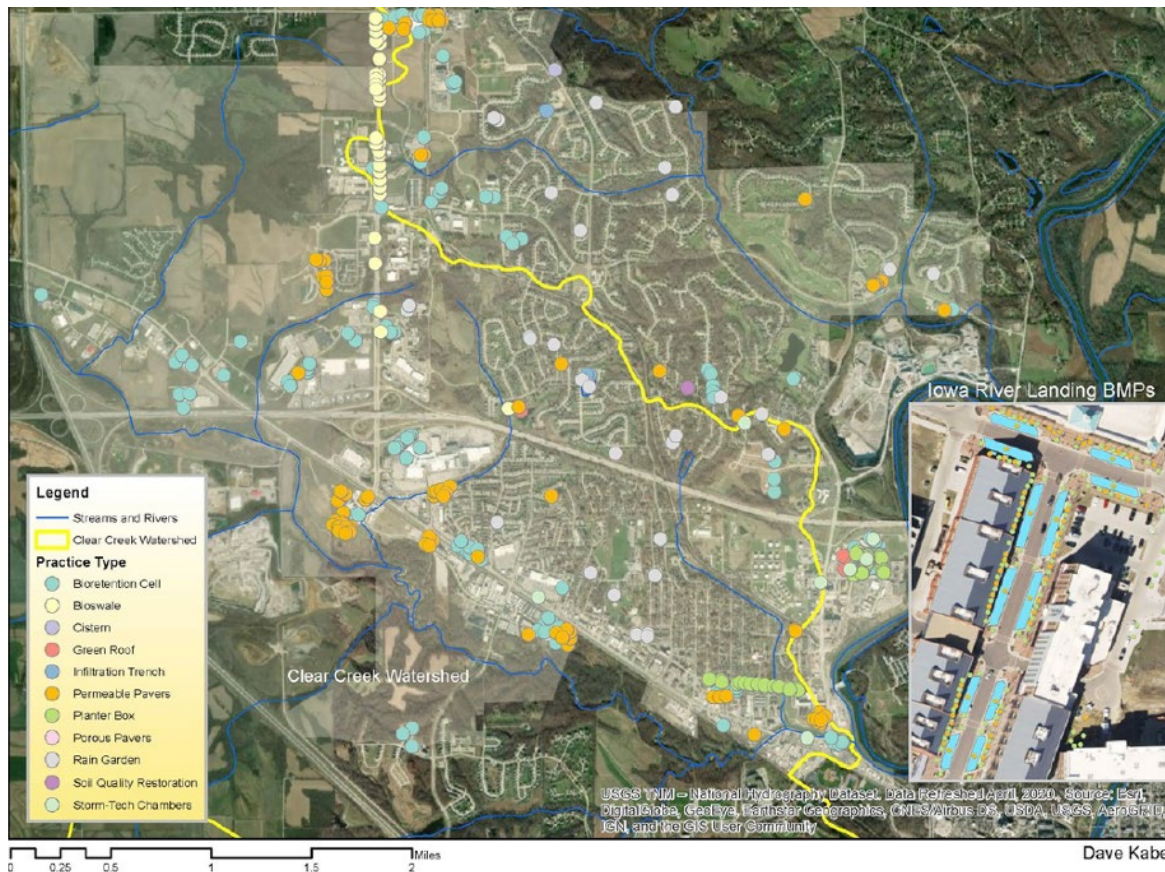
In order to understand the flood and stormwater impacts that the City of Coralville experiences, it is useful to look at its location within a larger watershed context. Coralville is located in the southeast corner of the Clear Creek Watershed where Clear Creek joins the Iowa River. This watershed spans over 66,000 acres and much of the upland area of the watershed contains intensive agricultural crop production that becomes a source for runoff that drains into nearby creeks. Urbanization within the city has straightened these same creeks and paved over surfaces that once would have absorbed and slowed water as it made its way through the watershed. Additionally, the US Army Corps of Engineers Dam, which creates the Coralville reservoir, is located five miles north of the city. In 1993 and again in 2008, water went over the spillway, causing millions of dollars of damage to private property and municipal infrastructure, as well as economic loss and emotional trauma.

Since the 2008 flood, the city has made significant improvements throughout town, including areas around Biscuit Creek, Clear Creek, and the Iowa river. The city of Coralville has invested approximately \$63 million dollars in flood mitigation protections, which is only a financial representation of the human-power required to initiate, manage, and complete these projects. To name a few, the flood protections include four pump stations along the Iowa River that manage high water from Clear Creek flowing into the city's stormwater infrastructure, as well as reconstructed and raised 1st Avenue bridge over Clear Creek.¹ In fact, the Coralville Engineering Department now has a technical handbook that contains 240 different scenarios for flood response. These extensive flood mitigation improvements are set to protect the city from catastrophic flooding events and have garnered much recognition throughout the Midwest.

¹ <https://www.coralville.org/794/Flood-Information>

Watershed Context (cont'd)

Additionally, Coralville has continually set the bar for installing stormwater improvement practices to improve water quality, such as permeable paver parking lots throughout town (including the mayor’s driveway!) and notable biocell curb cut-ins along 5th St.² Similarly, the city council has approved progressive post-construction ordinances and a post-construction policy that aims to improve the impacts of stormwater runoff from existing sites and encourage redevelopment.³



“The City of Coralville later invested in several home buyouts in the district. That land is now greenspace to help dissipate future flooding and the city has built an earthen berm with a trail along the river. The 180-acre Iowa River Landing District has been booming ever since, and is now home to Trader Joe’s, Von Maur, J. Jill, Lululemon, a major medical clinic, upscale apartments, another modern hotel and restaurants. Future plans for the district include a \$46 million area, as well as additional medical clinics, stores and restaurants.”

Corridor Rising (2018, p. 146)

² <https://www.iowadnr.gov/About-DNR/DNR-News-Releases/ArticleID/215/Coralville-Makes-Green-Strides-for-Water-Quality>

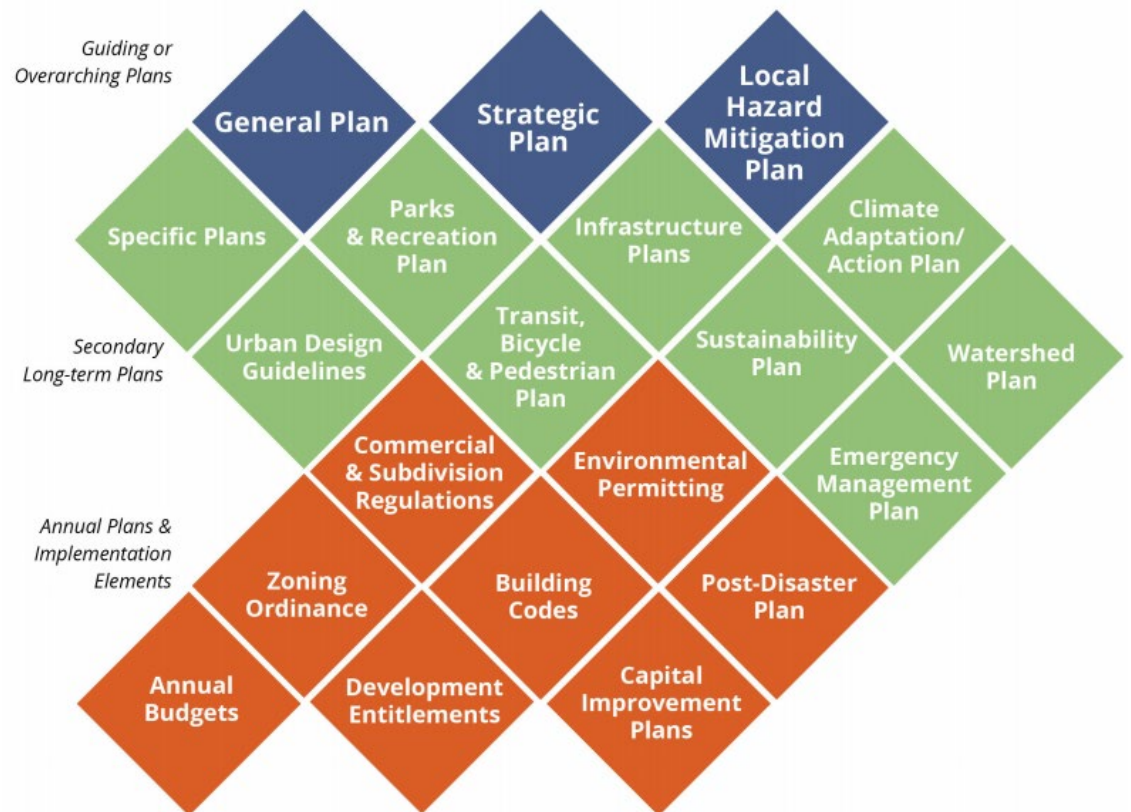
³ <https://www.coralville.org/DocumentCenter/View/6870/Post-Construction-Stormwater-Redevelopment-Policy-approved-2016-07-12?bidId=>

Existing Plans

This plan recognizes that Coralville is guided by other planning documents at different scales, and the FRAP planning efforts will be most effective when intersecting, enhancing, and supporting those plans. This aspect of the plan was modeled after the 2019 Regional Resilience Toolkit. Developed by national and local government agencies, this toolkit offers communication and outreach resources, collaboration tools, worksheets, and a pathway for integrating various planning processes into a single and consolidated action plan.⁴

The following plans provide opportunities for such efforts and interactions with the Coralville FRAP:

- ▶ **Watershed-scale plan**
Clear Creek Watershed Plan (2019)
- ▶ **County-scale plan**
The Johnson County, IA Countywide Hazard Mitigation Plan (2019)
- ▶ **City-scale plan**
Coralville Community Plan (2014)



⁴ In July of 2019, the U.S. EPA, FEMA, and the Metropolitan Transportation Commission/Association of Bay Area Governments published a Regional Resilience Toolkit. The authors created a visual representation of the various plans that are created and inform resilience plans.

Existing Plans (cont'd)

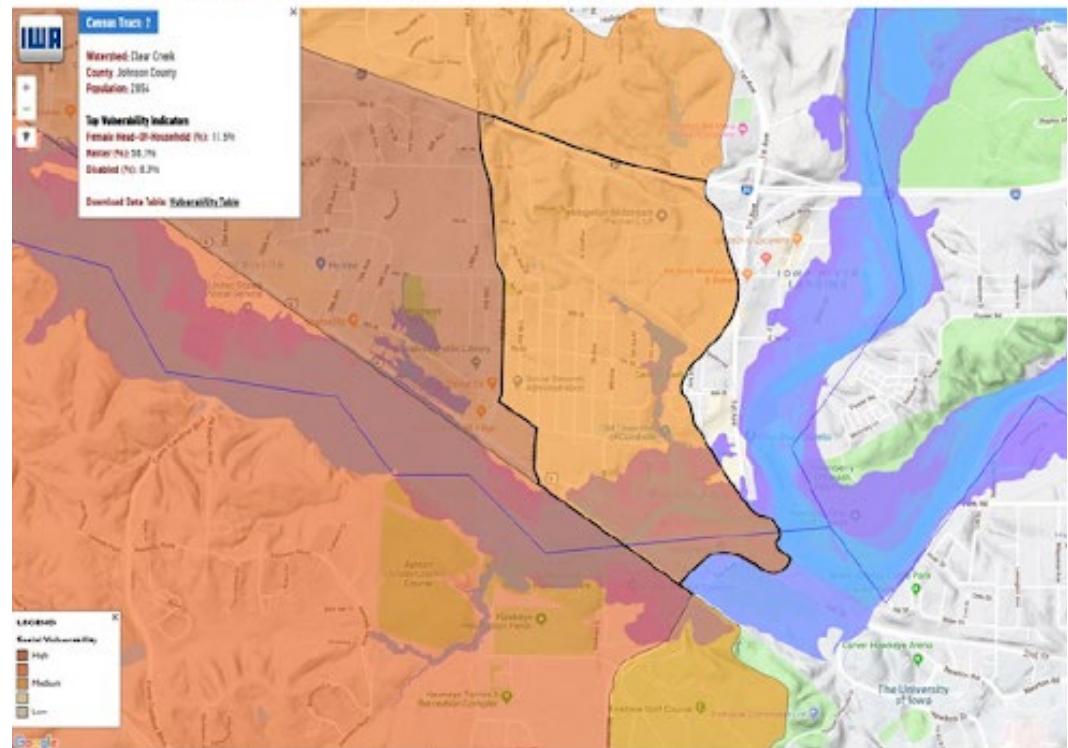
Clear Creek Watershed Plan (Iowa & Johnson Counties)⁵

This plan utilizes a similar vulnerability analysis as the FRAP by overlaying spatial flood data (0.2% annual flood risk) and 2010 Census Tract data. This analysis identifies similar population vulnerabilities to flood impacts that indicate a disproportionate impact on households with females as primary wage earners, renters, and residents with disabilities. The “Coralville Community Scenario Map” located on page 48 of the plan, provides a visual representation of the flood inundation areas in the city under these flood conditions. The alignment of this data at the watershed level supports the claim that flood-vulnerable community members, such as renters, should be included more explicitly in planning efforts aimed at reducing flood impacts and bolstering resilience.

The Johnson County, IA Countywide Hazard Mitigation Plan 2019⁶

This plan is required by the Federal Emergency Management Agency and was recently completed in 2019. It outlines the potential risks associated with specific natural hazards (flooding, drought, tornadoes, etc.), and provides recommended policies and practices that cities and unincorporated areas in Johnson County can take to reduce their vulnerability to natural hazards. Flooding and flash flooding are noted as common hazards that can result in extensive damages to property and loss of life. Muddy Creek, Clear Creek, and Biscuit Creek are identified as particularly vulnerable to flash flooding events that can be unexpected and result in blocked roadways and damaged vehicles which could affect Coralville (93). Due to extensive flood mitigation investments, large scale riverine flooding is noted as very unlikely; however, this does put downstream communities at greater risk (98). Researching further, our team finds that

Figure 2-31. Coralville Community Scenario Map



Source: Flood Mitigation Planning for the Clear Creek Watershed, IIHR

⁵ <https://team.iihr.uiowa.edu/index.php/s/bUZIq36nJmdHP>

⁶ <https://www.coralville.org/DocumentCenter/View/8198/JCEMA-HMP-2019>

Existing Plans (cont'd)

there are no direct mentions of assisting flood vulnerable communities, such as renters, or recommendations to stem displacement of residents. There is an opportunity for the Coralville FRAP to provide guidance on the next round of revisions for the countywide hazard mitigation plan, set for 2025, to incorporate recommendations to bolster resilience for community members that can be applied across the county.



Coralville Community Plan⁷

Finalized and adopted in March of 2014, the Coralville Community Plan is the city's comprehensive plan that provides long-range recommendations regarding economic growth, neighborhood and business sustainability, as well as sustainable development. This plan outlines a range of vital city assets and functions, such as commercial land use, business attraction and retention, and an infrastructure and hazards plan. Master plans for specific areas were created and built, such as the Iowa Riverfront Master Plan, as well as smaller sub area plans, such as the Southeast Commercial Area. Flood impacts are noted in the Infrastructure and Hazards Plan, wherein much of the focus is on hazard mitigation in the form of infrastructure improvements. In this section, there is a statement on proactive community outreach, "In addition to the mitigation steps above, the City can proactively reach out to residents and businesses about flood protection and safety, with special regard for those at most risk for flash and river floods"(74). This statement touches on the need to hold special regard for flood vulnerable community members, and this FRAP provides more specific recommendations as to how the city can accomplish that goal. This link highlights the ability to incorporate the FRAP's more detailed steps towards resilience that supports flood-vulnerable community members into the next Community Plan.

⁷ https://www.coralville.org/DocumentCenter/View/3219/Coralville-Community-Plan-2014_Part-1?bidId=

Community Engagement

Our community engagement and outreach aimed to center people and their voices in the planning process. Before COVID-19, we initially had two community engagement strategies: 1) creating spaces for community members to discuss flood resilience and vulnerability through an open house and workshops, and 2) taking community organizing approaches to engage community members one-on-one through canvassing, interviews, as well as a table and booth approach. However most of these approaches had to be modified to account for public safety guidelines.

In less than a month to respond to COVID-19, we re-strategized and developed methods that aimed to achieve the same timeline while also striving to center the voices of flood-vulnerable communities. We leveraged social media collaborations, a video campaign, emails, and phone calls to engage businesses in a resilience pledge campaign. We conducted interviews and surveys to reach people and service providers in the community while also prioritizing safety and public health guidelines. For instance, we utilized PPE for in-person surveys which we offered to residents while they waited in their cars for their food to be bagged at the local food bank. From this survey we gather community input and information on homes that are being affected by flooding. In short, we were adaptive to major changes and continued to engage residents, businesses, and service providers in the planning process during a pandemic.



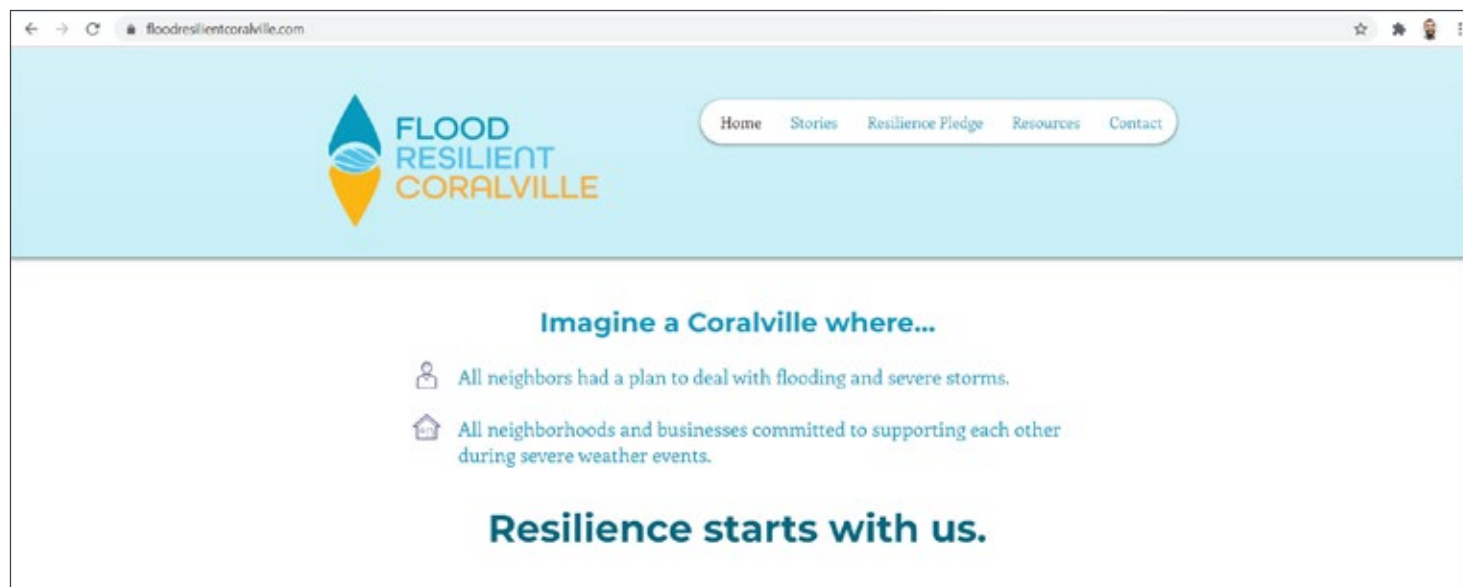
Community Interviews

Our team interviewed people at various levels in the community who had experiences and expertise with floods. Through these interviews, we asked for stakeholders to define resilience, share flood experiences, and identify known resources or opportunities for flood resilience. Community stories were used to 1) develop a community based framework for resilience from a diverse group of stakeholders and 2) inform the type of flooding that residents deal with in Coralville. The goal of this approach was to center the voices of people alongside service providers.

Website

The Coralville FRAP team designed a website as an option to keep people in the community informed about the planning process, local resources, and events. The website can be found at www.floodresilientcoralville.com and is intended for use by Coralville residents, as well as people in surrounding communities in Iowa. On the site, the public can find the FRAP plan, watch videos of our summer workshops, and learn about resources that they can use to empower themselves and fellow neighbors in their community.

The City of Coralville currently provides a portal to the website through the City's official site. Once the planning process has completed, either the City of Coralville or a local non profit partner will be responsible for maintaining and updating the website.



Resident & Nonprofit Community Surveys

For our community engagement, we created two surveys with the purpose of identifying and enhancing community resilience to floods. One was a 13 question survey which targeted service providers with the purpose of identifying community resources that could be leveraged by residents and service providers during times of crisis. This survey was distributed online using qualtrics and had a 30.81 response rate from service providers in the community. The second, a community survey, targeted low to moderate income residents at the Coralville Community Food Pantry, and had the purpose of enhancing community resilience through education and us listening to people to get a better understanding of floods. We surveyed a total of 66 community residents in person using social distancing and PPE equipment, while members waited for their groceries. The community survey was multilingual which consisted of Spanish, English, and Arabic, and included visual educational content.

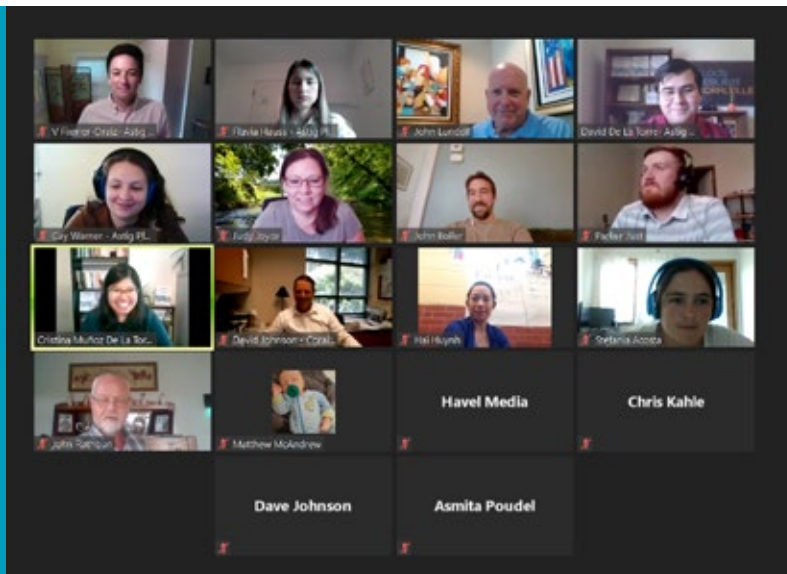


Educational Materials

During the FRAP process, we gathered and created resources and educational content to distribute to the community. The content we developed includes recorded presentations and stories from community members on flooding and resources in Coralville. Residents can listen to the Mayor give a presentation about the story of the city's resilience, as well as listen to a representative of the DNR talk about upcoming flood risk mapping and resources. Additionally, we designed outreach content that the city can continue to use to educate the public about flood types. Finally, residents can now look for local resources on the FRAP webpage to learn more about flooding and preparation.

Online Workshops

Our team also organized two interactive workshops in the summer which engaged 40 to 50 participants. We planned these events to be interactive using videos, games, a digital workspace, and breakout rooms. We raffled gift prizes for our attendees to promote the events. The gift cards were from local restaurants as a way to reciprocate and complement the business pledge campaign so that residents could support local businesses during the pandemic. The first event resulted in a community definition of resilience that we created together, while the second workshop resulted in the creation of the community resilience map.



Online Workshop: "I Am Resilient, We Are Resilient. Community Stories from the 2008 Flood to COVID-19."

Resident Postcard Outreach

Our team delivered postcards in targeted areas across the city of Coralville in advance of the workshops. We sent out to more than 2,000 households, and during this time we saw a significant increase of traffic on the Coralville FRAP website. We also distributed the postcards in hundreds of grocery bags at the Coralville Community Food Pantry before the workshops. The postcards were created in both english and spanish, and were designed to be engaging to help promote the workshops and the Coralville FRAP webpage.



Business Community Outreach

In addition to community residents, we also reached out to the business community to engage them in the FRAP process. We developed a business pledge campaign video which asked local businesses members to pledge to support disaster response efforts by signing up to donate or sponsor specific recovery items. Businesses responded with pledging to give water bottles, pet food, translation services among others. The video was created in collaboration with locally owned Coralville/ Iowa City businesses who offered content and feedback for the video. We reached out to businesses representing organizations such as the Iowa City Area Business Partnership, who announced the campaign to members in their We're In This Together newsletter. We also reached out to ICAD, MERGE, IRL Business Network, Coralville Rotary Club, Think Iowa City, United Way of Johnson and Washington County, and others. Additionally, we continued to reach out to businesses on the ground through phone calls to local businesses. Initially, the business pledge was gathering good engagement, but once COVID-19 hit, it was clear that businesses were facing challenges. This is why we also aimed to provide support to residents through the gift-cards and promoting residents to support local businesses.

Social Media & Multimedia

We used social media to support our planning efforts. We promoted our business pledge campaign video and workshop through social media, and leverage online partnerships to promote our message. Our social media outreach involved reaching out to organizations and talking to them about our work. We engaged with and received support from organization social media pages such as El Trueque Magazine, Iowa City Area Business Partnerships, the Center for Worker Justice, the Affordable Housing Coalition. We also leveraged support from partners such as the Coralville Community Food Pantry, Impact 7G, The Iowa Watershed Approach, Clear Creek Watershed Coalition, the City of Coralville, and others. In addition to collaborations, we also paid for social media promotions for our workshops. We developed media content including photos, boomerangs, visuals, slides, and short videos that we used to promote our events and announcements.



Findings and Recommendations

Five recommendations were developed through the planning, community engagement, and research process:

1. Launch survey that focuses on renters and identifies specific housing and flooding needs for this population.
2. Support re-housing efforts during and after flood events with careful attention to renters.
3. Address stormwater flooding issues experienced by Low to Moderate Income (LMI) residents in Coralville.
4. Strengthen the existing nonprofit networks that serve the area and provide incentives for cross-collaboration to create new or enhance needed services during emergencies.
5. Invest in education to increase public understanding of flooding, flood protections, and resources.

The following section offers more detailed information regarding the research and data for each of the FRAP recommendations. The format for each recommendation includes a 'Finding' that includes the data and research, and then a 'Recommendation' that outlines specific actions that can be taken.

Finding 1: Renters and homeowners experience frequent flooding

Our research indicated that renters and homeowners are experiencing frequent flooding issues. The interactive community resilience map identified apartment complexes that experience flooding. Information from website interaction identified homeowners that experienced flooding issues.

Renters represent 71.6% of Coralville's total population within the Coralville FRAP area (also delineated by Census Tract 3.02)⁸. Renters are sometimes seen as transient and not contributing to the fabric of the community. However, this is a misconception. In Coralville, for example, 37.6% of all current renters in the project area have been living in the same housing unit since 2014 or earlier, with almost 1% living in the same rental unit since 1990 (American Community Survey 5-year estimates 2019). These numbers would be greater if it took into account renters that moved to a different rental unit but remained within the census tract area. It illustrates that a significant portion of renters remain committed to the community and make lasting contributions to Coralville.

Renter households face several challenges that contribute to their social vulnerability and reduce their capacity to recover from any neighborhood flooding. According to the 2019 ACS 5-year estimates for Census Tract 3.02, our project area, households that rent have higher rates of poverty (14.4% vs 0% for owners), higher rates of households with children under 6 years old (11.1% vs 1.4% for owners), and are more likely to live in older housing units (1979 or earlier) that might be requiring significant upkeep (32.8% vs 13.4% for owners). The ACS estimates, within some margin of error, that structures older than 1949 are primarily occupied by renters rather than home-owners. This quick snapchat for Census Tract 3.02, which contains the Coralville FRAP project area illustrates that renters in the area consists of families with children, some below the poverty line, and many which are living in older housing units subject to substantial damage during any type of flooding. These households would benefit from community resilience efforts that would help combat vulnerability to riverine and storm-related flooding.

Recommendation

The level of flood impacts on renters is significant in the project area, and we would recommend a follow-up survey that specifically targets renters and identifies specific housing and flooding needs for this population. Similar efforts are being initiated in the City of Galveston, Texas where they are developing a survey for renters as part of community flood resilience efforts funded by The National Academies of Sciences Engineering and Medicine through Resilient America Program.⁹

⁸ All data around renters and homeowners were obtained from the U.S. Census Bureau's American Community Survey (ACS) 2019 five-year estimates for Census Tract 3.02 which can be found on their website: www.census.gov/programs-surveys/acs.

⁹ <https://www.houstontx.gov/mayor/Resilient-Houston-20200402-double-page.pdf>

Finding 2: Frequent Stormwater/Urban Flooding Displacement

The 2008 flood displaced several residents and is evidenced by the buyouts and subsequent redevelopment of properties along 5th Street, between First Avenue and Second Street. The previous neighborhood that was located in this neighborhood contained 11 apartments that were two-stories high, with the vast majority of the residents living on fixed incomes as retirees. There is no publicly available data on where these residents relocated.

Our community outreach process confirmed that there are some residents that are still displaced after the 2008 flood. The Covid-19 public health crisis made it difficult to locate and talk with community members that would be potentially made more vulnerable due to language barriers, access to financial resources (such as, loans and liquidated assets), and new immigrants that are far from their home countries and without social or family networks. The community members that we did reach indicated that they were still dealing with long-term impacts on their mental health and chronic homelessness.

Due to the substantial investments the city has directed toward flood protections along the Iowa River, our research indicates that displacement is largely centered on community members who reside in homes and/or apartment complexes that experience frequent urban/stormwater issues. Similar to the 2008 flood displacement impacts, publicly available data for persons or families that are currently displaced due to these urban/stormwater impacts are not available.

Recommendations

Based on our findings of post-flood or frequent stormwater/urban flooding displacement of individuals and families, we recommend planning efforts and the development of incentives to support rehousing programs within the city. In particular, this program should serve renters who are often left out of federal assistance programs. Our team recommends the following approaches:

- ▶ Developing an [emergency] housing action plan that reaches beyond emergency temporary shelter and plans for rehousing community members displaced as a result of flooding.
- ▶ Renter conscious engagement- Outreach in the future should account for renters as a high need category for disaster services. Planners and city staff should provide sufficient opportunities and resources for renters to provide their input on their experiences and needs. Future outreach efforts may also consider collaborations with renter groups, landlords, or programs that support tenants.
- ▶ Renter compensation- The city can also account for losses to households, including renters, accrued as a consequence of flooding and displacement.
- ▶ Health and legal aid- The city can partner with service providers to address high need service gaps.

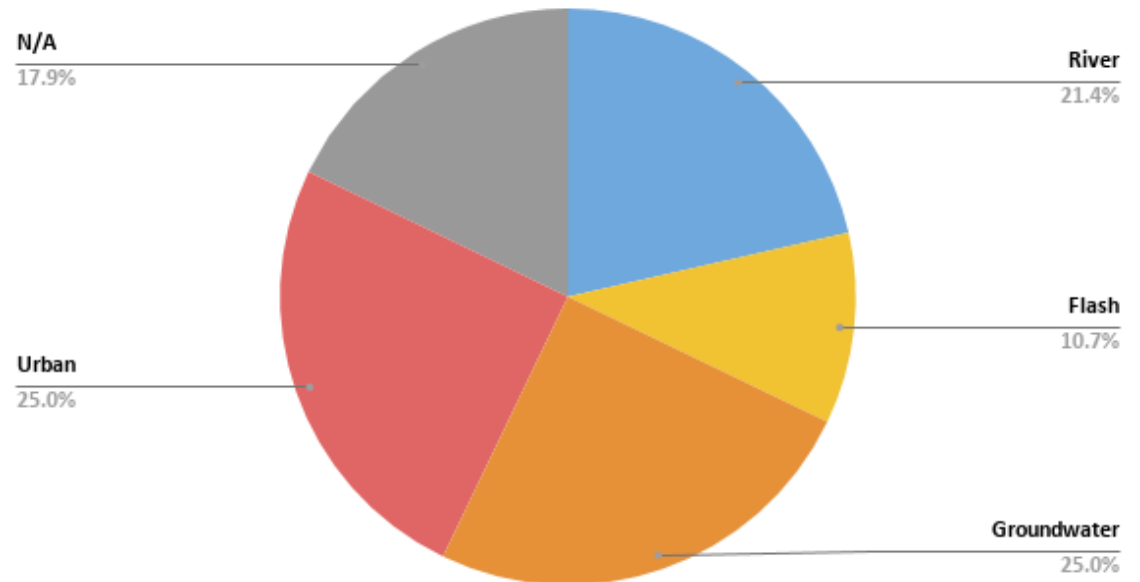
Finding 3: Stormwater flooding is an issue for Low-to-Moderate Income (LMI) residents

One of the main charges of the FRAP was to specifically investigate the extent to which flooding impacts Low-to-Moderate Income (LMI) community members. To reach LMI residents within the context of Covid-19, our staff worked with the Coralville Community Food Pantry to distribute multilingual surveys. There were 66 surveys completed at the CCFP and 42% of respondents indicated experiencing flood impacts. These community members are food-insecure and likely unable to access additional financial resources if stormwater/flooding issues impacted their housing. Additionally, the interview-based and mapping-based research we conducted highlighted stormwater flooding in houses and apartments in specific areas of the city.

We attempted to retrieve public information regarding complaint-based, city-level flood/stormwater-related data from the city but have been unsuccessful. Obtaining this data would further aid us in corroborating the community survey data that we gathered and assist the city in proactively investigating and addressing neighborhood-level stormwater issues.

Our community surveys identified frequent and recurring stormwater impacts on clusters of neighborhoods located adjacent to the I-80 highway, homes near 2nd St. experience flashy creek impacts, and neighbors along Holiday Rd. indicate debris from flash flooding that frequently blocks stormwater drains and impacts basements.

Flood Types Community Survey



Finding 3 (cont'd)

Some of these cases range from small to severe flooding issues. In one case, a Coralville Resident has had several flooding events from torrential storms due to a combination of water backing up from the storm drainage and the elevation of the backyard. As a single parent with an elderly parent living with them, she cannot afford to move. Another resident indicated that streets near their home flood due to inadequate storm drainage which has sometimes closed off both ways out of their neighborhood.

Recommendations

- ▶ It is recommended that Coralville consult neighboring cities on how they address proper drainage for buildings through their building permitting processes. For example, North Liberty has adopted policy changes supported by existing administrative chapters of the International Building Code. These policies require verifying that the building's foundation is placed at or above the elevation specified on the plan before releasing the footing inspection. According to North Liberty staff, some properties may even require additional steps to obtain certificate of occupancy to ensure protection from storm drainage events. Improvements to stormwater infrastructure
- ▶ Continued voluntary city buyouts for properties and wetland restoration
- ▶ Potential for future property buyouts through the city/state/FEMA
- ▶ Additional investment in social services and referrals
- ▶ Create policies that support renters
 - replacing damaged property post-flood event (flash flood/urban flooding)
 - Post-disaster urban renewal that retains renters

Finding 4: Service Gaps in Emergency Services Network

In early August we launched the Coralville Community Resilience Resource survey, which was distributed to 62 providers in the Johnson County area. The survey asked about the top 5 services provided to residents of Coralville that could also serve in the case of an emergency and the extent to which they would be able to help residents. In addition, the survey measured the top 5 collaborations among service providers in response to a flood emergency in the Coralville area, and the extent to which these existing collaborations also support referrals for residents.

Finding 4 (cont'd)

This survey identified a robust existing network of service providers in the area that provide key services important during emergencies. Among these services include food, medical and mental health services, access to volunteers for emergency response, and referral services to connect residents to other programs to meet their needs. There were also significant service gaps, in particular, much of the existing nonprofit and service provider infrastructure does not explicitly help owners and renters address household level flooding. Aside from American Red Cross in Cedar Rapids, none of the other organizations indicated services along these lines. Other service gaps include support for child care, energy assistance, immigration needs, translation, and transportation.

The figure above includes a portion of the social network aspect of the survey. One of the biggest findings in this area is service providers that provide unique services such as translation and transportation were not among those at the center of the network. This means that there is a large potential for a more robust network collaboration where much needed services can be provided to Coralville residents if those currently on the outskirts of the network were incentivized to collaborate with other organizations.



Nonprofit Survey - Top 5 Collaborations for Emergency Response in Coralville

Recommendations

To further strengthen the community resilience of Coralville requires strengthening the existing network that serves the area. We recommend providing incentives for cross-collaboration to create new services in Coralville, in particular for rental and housing assistance, household flooding, transportation, translation, and energy assistance. The Coralville Public Library and the Coralville Community Food Pantry were among those services that were central in the network. Because of their existing collaborations, these organizations would be great to facilitate future needs such as access to physical space for organizations that would want to come in and provide support in case of future emergencies.

Finding 5: Gaps in Public Understanding of Flooding and Resources

A. Education on flood types

Early on in our community-engagement efforts, we quickly learned that some community members had extensive knowledge about flooding and different flood types, while others did not. When we began to interview community members, many thought that we were only talking about riverine flooding comparable to the 2008 Midwest Floods. Other community members reached out to us about frequent flooding they experience that impacted their lives.

To identify the extent of various flood types in the community, we introduced a flood type infographic early in our presentations, workshops, and surveys to educate community members. Flood resilience can be enhanced with an understanding of different types of floods and developing actions to reduce their impacts. A gap in the public’s understanding of flooding can lead to a gap in services provided, such as with consistent stormwater flooding. Urban flooding refers to overflow of water due to maxed out capacity of sewer and water infrastructure. Groundwater flooding can happen when the level of



This infographic illustrates urban, groundwater, flash, and riverine flooding.

water within the rock or soil underground rises either due to heavy rain or snowmelt and usually this type of flood happens slowly over time. Flash flooding also occurs from heavy rainfall or fast melting snow but collects on the surface of roads and happens quickly. Finally, riverine flooding occurs when flow capacity of rivers is exceeded and water overtops river banks.

Finding 5 (cont'd)

B. Education on flood protections, risks, and resources

There is a strong public awareness of major floods, such as in 1992 and the 2008. In our initial conversations with the city, our team understood that this would be something that we would encounter as residents have personal experiences from these floods. While residents were aware of the major flooding events, we also note opportunities to educate the public further on flood risks and flood protections. This includes continued education on flood protections that the city has created as well as understanding of the topography and processes such as downstream processes. There is also an opportunity to educate residents on the available resources for flooding. The following recommendations are aimed at providing people with a clearer understanding of flooding and flood protections, as well as land use in their community.

Recommendations

- ▶ Educate the public and service providers on flooding.
 - Continue educational outreach on flood types.
 - Database of flood resources for corresponding types.
- ▶ Invest in education on city flood protections.
 - Outreach on flood mitigation and resilience history in Coralville.
 - Community resources & assistance.
- ▶ Use updated models for flood areas to determine future flood risk.
 - Use 2D Base Level Engineering (BLE) data to inform the community in real time.
 - Continue to build on the Community Asset map in an open-source manner so that residents can report issues, exchange resources and identify opportunities.

Funding Recommendations & Resources

There are several avenues of funding to assist with housing buyouts, and we would like to work with staff to put that list together and continue researching other sources/pathways. One funding area that is emerging across the nation is a specific focus on Resilience Planning that can provide resources to create plans or execute adopted plans. Two examples include:

- ▶ **National League of Cities and their Leadership in Community Resilience Grant Program**

According to the website: “City plans and programs designed to increase community resilience and connectivity in advance of climate shocks and other events can save lives and reduce recovery costs. These efforts can take many forms including community engagement, regional collaboration, reducing resident vulnerability to climate impacts, or capacity building for staff and elected officials.” The deadline to apply was December 23, 2020. It is very likely this grant will be offered again next year.

- ▶ **FEMA’s Building Resilient Infrastructure and Communities (BRIC)**

The University of Iowa’s Flood Resilient Team is currently applying for this funding and is enthusiastic about the opportunities for Coralville to apply. According to the website: “The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency.”

Resource 1: Website

Our team created a website for the FRAP (www.floodresilientcoralville.com) to not only provide an online presence for the project, including the timeline and project partners, but to generate an interactive space for people to tell their stories and access flood emergency information. People’s stories are very compelling and informative, and the homepage of the website is intentionally created to draw people to share their stories. The other pages of the website are dedicated to community resources, including directions on how to create a disaster preparedness kit, local and regional resources in the event of a disaster, and ways for community members to plug in and volunteer. The Business Resilience Pledge Campaign is also located on the website, and provides a way for community businesses to support the community should a future disaster occur.

Resource 2: Business Resilience Pledge Campaign

Our research indicated that one of the main hurdles immediately after the 2008 flood was the lag in resources locally available to distribute to the community. The Business Resilience Pledge Campaign was created during this project to create resilience and relationships between businesses and the communities they serve. Businesses pledged FEMA-listed resources that they would provide following a disaster and in return were given a placard they can display to identify them as community resilient partners. We are providing an outreach toolkit for a nonprofit partner to use for future community organizing. This includes outreach materials, such as a campaign video, a pledge poster, scripts to use for volunteer phone banking. The toolkit will be hosted on the website.

Resource 3: Community Resilience Map

We created an [online map](#) based on criteria and questions that allowed us to break down a diversity of experiences with people who undergo flooding. The three categories we used to develop the map are flooding issues, helpful resources, barriers to access those resources, and opportunities. We also broke down the flooding issues into four types of flooding in order to better understand the needs and resilience of the community. The four types of flooding include flash flooding, urban flooding, river flooding, and groundwater flooding.

The map was created as a publicly accessible resource based on data collected throughout the planning process and includes spatially infused information on issues and resources for the community. The spatial information is meant to inform the city and community of resources and areas of improvement. We are hoping to build on this map, including adding information that the city can use.

From the community resilience map, it is corroborated that there is not persistent city-wide level flooding due to the extensive flood mitigation structures since 2008. By focusing community outreach efforts on typically hard to reach populations, specifically LMI and renters, we were able to identify remaining pockets of flooding issues that occur at the household and neighborhood level. These pockets include a set of rental properties near 2nd Avenue and sets of properties owned by households on the north side of the highway, as well as smaller pockets of household level cases throughout the project area. We believe with additional resources available from national and state level initiatives to promote community resilience and with the current work that has been spearheaded through the Coralville FRAP, that the City of Coralville is well positioned to apply for competitive grants to address the remaining flood vulnerabilities that exist and further enhance community resilience in Coralville.



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