Floodplain Housing Study

CDBG Disaster Recovery Program

Cities of Chamois, Hermann, Newburg, Steelville, Waynesville

MRPC

Community Development Block Grant (CDBG)

Disaster Recovery Program

Floodplain Housing Study

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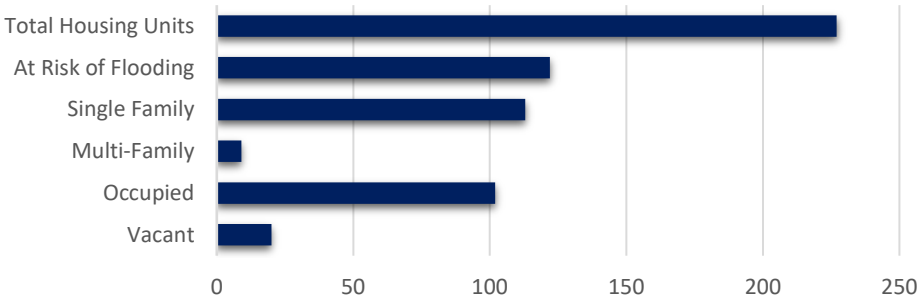
As noted in FEMA's Planning Considerations: Disaster Housing article, disaster housing recovery is the cornerstone, often the linchpin, of a community's recovery and ultimate resilience. By helping survivors achieve sustainable housing after a disaster, state and local leaders move their communities toward stability and resiliency for future incidents. Achieving widespread sustainable housing after a disaster helps determine a community's ability to recover. In addition, flooding is the costliest natural disaster and takes a heavy toll on society, costing lives, damaging homes and property, and disrupting businesses and livelihoods.

This study sought to look beyond vulnerable housing by identifying opportunities to preserve and create new housing outside of flood prone areas where residents may continue to live within their community and the region. Each city is provided with a breakdown of statistics and property conditions in residential areas in order to support future efforts to mitigate the impacts of flooding. The following graphs breakdown results from the housing survey and highlight information related to properties in the floodplain.

Chamois – Results of the study indicate that most of Chamois' flood-prone housing would be best suited for relocation or demolition. Opportunities for new construction are located to the west and south of city limits and are predominantly uphill.

Figure 1: Chamois Housing Information

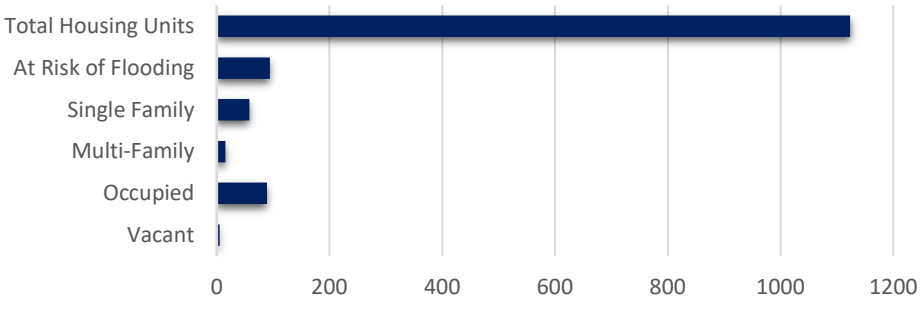


	Vacant	Occupied	Multi-Family	Single Family	At Risk of Flooding	Total Housing Units
Total	20	102	9	113	122	227

Source: MRPC Survey and 2021 ACS

Hermann – Hermann's housing survey results show that a limited number of homes should be considered for demolition, whereas most historic structures should be raised in order to reduce flood impacts on lower levels. Opportunities for new construction are located to the southwest along Highway 100 West and to the east and uphill.

Figure 2: Hermann Housing Information

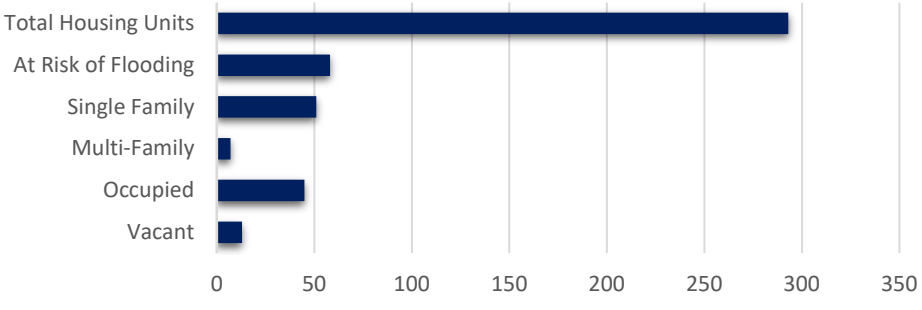


	Vacant	Occupied	Multi-Family	Single Family	At Risk of Flooding	Total Housing Units
Total	5	89	15	58	94	1123

Source: MRPC Survey and 2021 ACS

Newburg – Newburg's housing survey results indicate that many of the residential structures in the floodplain are in standard condition; however, there is room for demolition of and new construction for multi-use and multi-family buildings. Additional opportunities for new construction are located to the northeast and northwest sides of Main Street. Most properties identified for new residential uses are located in the city limits; however, one larger parcel is available just east of the city limits.

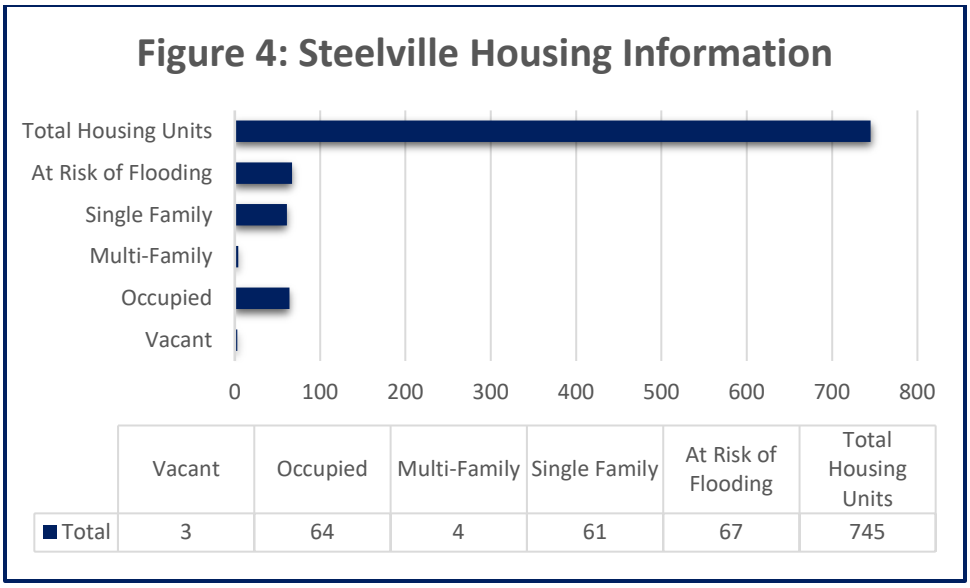
Figure 3: Newburg Housing Information



	Vacant	Occupied	Multi-Family	Single Family	At Risk of Flooding	Total Housing Units
Total	13	45	7	51	58	293

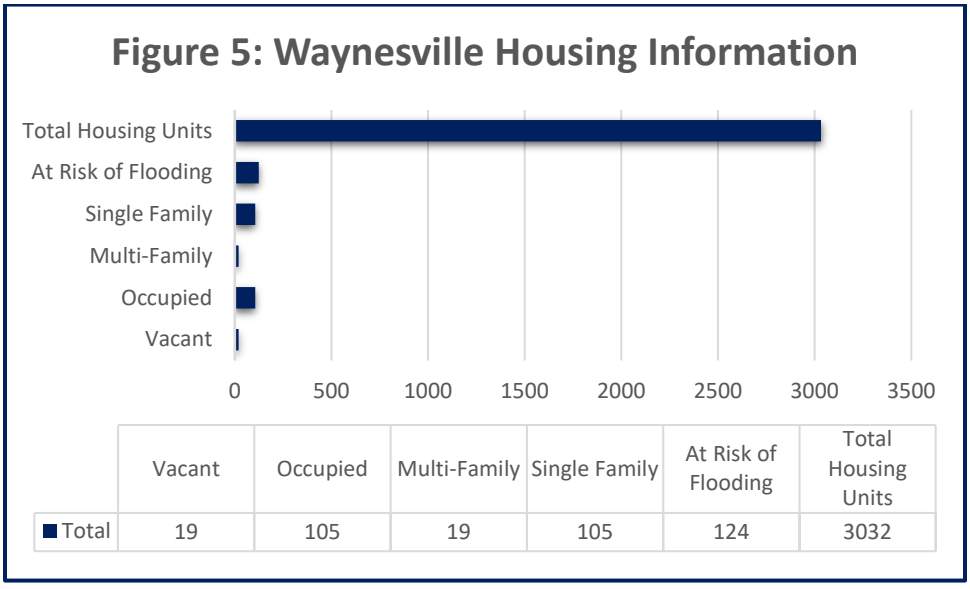
Source: MRPC Survey and 2021 ACS

Steelville – The city's housing survey results show that a majority of the residential structures in the floodplain are in standard condition; however, there is room for demolition of and new construction for multi-family buildings and mobile home parks outside of the floodplain. Opportunities for new construction are located mostly on the northeast and southeast sides of the community and all are located in city limits, as compared to the other cities within this report which require annexation of developable properties.



Source: MRPC Survey and 2021 ACS

Waynesville – Waynesville's survey results indicate that the overall impact to its housing availability is limited; however, a large number of single-family homes are prone to flooding and most are in standard condition. To mitigate flood impacts, recommendations generally include raising structures and possible grade work to the exterior of the property. Waynesville also has the largest number of multi-family and mobile home properties in the floodplain which would best benefit from demolition and new construction at a higher elevation. Currently, there are limited recommendations for new construction along the north and west parts of the city. Additional opportunities may exist farther from city limit boundaries.

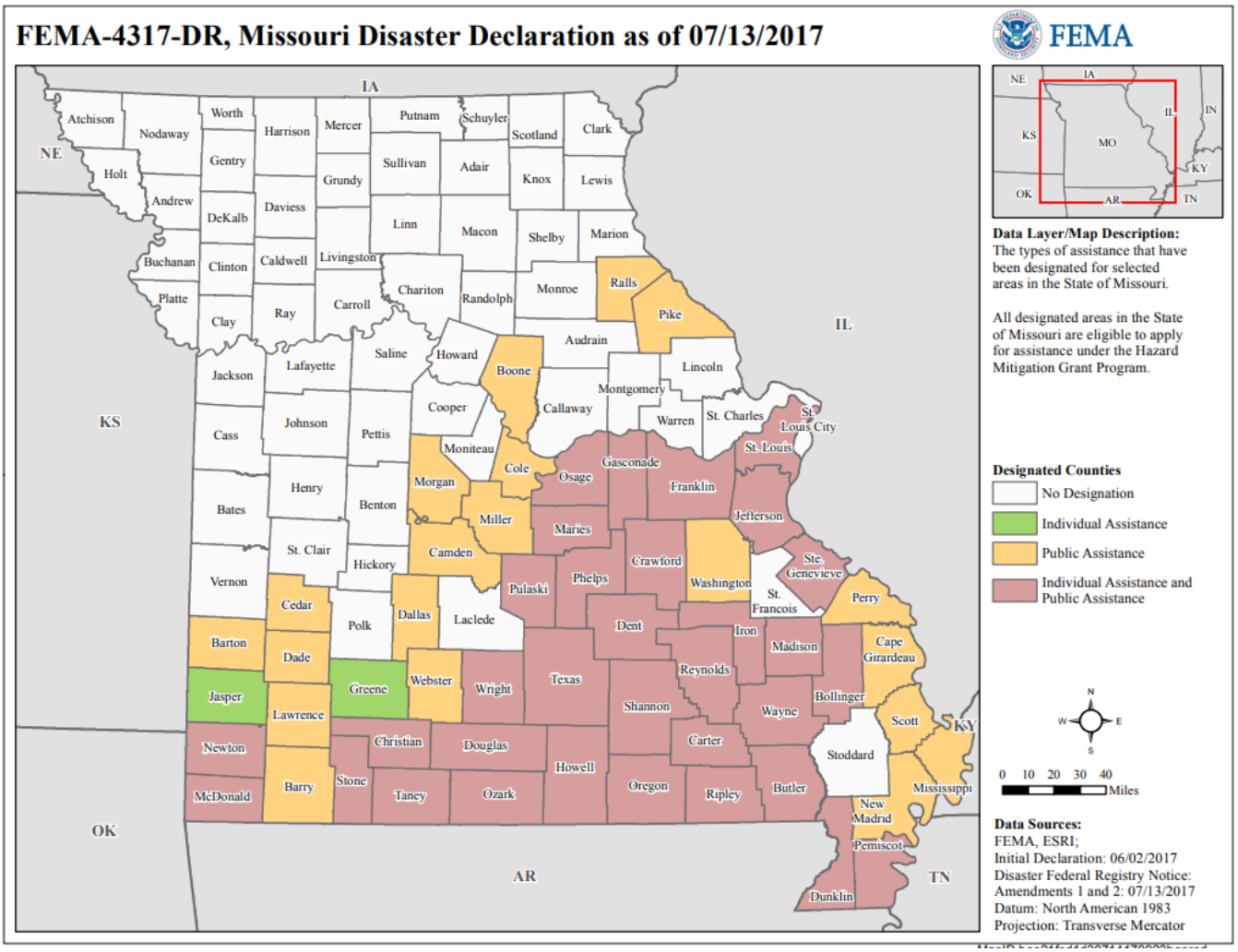


Source: MRPC Survey and 2021 ACS

INTRODUCTION

The storms that would become FEMA Disaster Declaration 4317 started on a Friday night, April 28, 2017, and the rain continued through Sunday, April 30, 2017. The powerful storm system brought torrential rainfall and historic flooding over the Missouri Ozarks, including the eight counties that comprise the Meramec Region. Storm total rainfall amounts ranged from four to 11 inches throughout Crawford, Dent, Gasconade, Maries, Osage, Phelps, Pulaski and Washington counties. The immense amount of rainfall resulted in widespread and historic flooding with roads, bridges and buildings destroyed, and several roads flooded, including state highways and Interstate 44. On June 2, 2017, the Federal Emergency Management Agency (FEMA) declared disasters in 55 counties, including all eight of the Meramec region's counties. The following map depicts the declaration area and highlights whether each county received individual or public assistance or both.

Map 1: 2017 Disaster Declaration Counties



Source: https://www.fema.gov/es/disaster/4317

The following table provides a breakdown of the preliminary damage assessment results from an after-action report written to summarize the disaster. The table identifies residential damages within the

five counties (Crawford, Gasconade, Osage, Phelps and Pulaski) that correspond to the cities discussed in this study.

Table 1: Damage Assessment Results

FEMA-4317-DR-MO Preliminary Damage Assessment Results									
(1% affected dwellings eligible for Individuals and Households Program - IHP)									
County	**Destroyed**	**Major**	**Minor**	**Affected**	**Total**	**Percent Owner**	**Percent Insured**	**Percent Low Income**	**HUD FMR for 2 bdrm**
Crawford	1	3	19	0	23	26%	0%	91%	$681
Gasconade	7	6	19	0	32	100%	13%	0%	$637
Osage	5	11	11	2	29	86%	28%	34%	$647
Phelps	8	22	4	6	40	88%	35%	5%	$711
Pulaski	16	36	18	12	82	66%	17%	13%	$835
Total for 5 counties	37	78	71	20	206	73.2%	18.6%	28.6%	$702.20
MO Disaster Declaration Totals (37 counties)	369	848	477	202	1896	77%	17%	55%	$689

https://ded.mo.gov/sites/default/files/DR-4317%20APA4.pdf

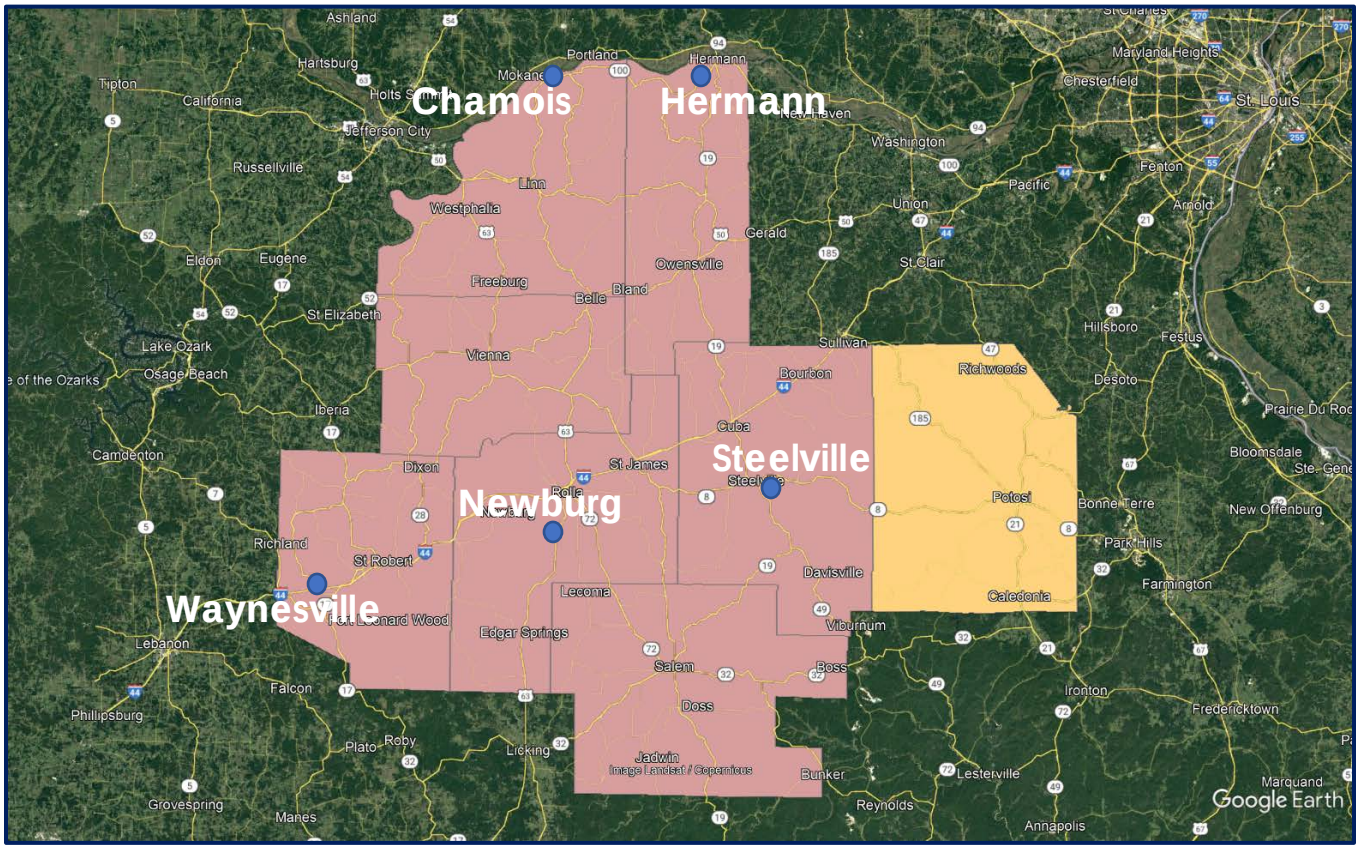
While the report does not break down damages by community, it shows that Pulaski County sustained the most damage to residential structures. Additionally, almost all structures damaged in Crawford County were low-income rental households. Perhaps the most intriguing aspect of the statistics is that only an average of 18.6% of households were insured, which limits a homeowner's ability to repair the home or bring it into compliance.

BACKGROUND & METHODOLOGY

In 2019, the Meramec Regional Planning Commission (MRPC) was awarded a CDBG disaster recovery grant through the Missouri Dept. of Economic Development to conduct a floodplain housing study in the Meramec Region. This report assesses residential housing that exists within FEMA designated floodplain zones and puts forth a plan to aid communities impacted by repeated flooding events. MRPC looked at the hardest hit areas from the 2017 flood disaster and identified seven communities that sustained repeated flood damages. Utilizing FEMA's National Disaster Housing Strategy framework as a guide, MRPC worked with five of the seven communities to complete housing studies. The study includes the cities of Chamois, Hermann,

Newburg, Steelville, and Waynesville, which are in the disaster declaration counties of Osage, Gasconade, Phelps, Crawford and Pulaski, respectively.

Map 2: Meramec Region 2017 Disaster Counties



Source: MRPC GIS Shapefiles

This plan is intended to serve as a guide for future residential development and land use decisions that will improve each community's housing situation in disaster-prone areas. Each city's chapter gives general background information and provides housing assessments and potential properties for residential development. The study also lists a number of funding opportunities for mitigation within the floodplain and for housing construction assistance outside of the floodplain boundaries.

MRPC sent staff the communities to assess each property for information such as condition and age, as well as collected assessed values for each property within a floodplain. The following results for each city include aggregated data of MRPC's assessment of only the residential properties within designated floodplains.

STUDY OBJECTIVES

The housing study complements both types of plans: Hazard Mitigation and Economic Resiliency (within CEDS) and provides detail on the housing within the region that is most vulnerable to flood hazards. Incorporating this data into each county's Hazard Mitigation Plan will strengthen mitigation efforts and allow jurisdictions to focus action items on addressing housing needs to prevent future

losses of life and property during flood disasters. While each county's plan is unique to its location and flood impacts, two goals are primarily shared by all five counties:

Goal 1: Reduce risks and vulnerabilities of people in hazard prone areas through current technology, better planning, and hazard mitigation activities.

Goal 2: Reduce the potential impact of natural disasters on new and existing properties and infrastructure and the local economy.

The addition of housing study data to these plans will significantly improve efforts under these two goals.

Additionally, the Meramec Region's Comprehensive Economic Development Strategy addresses disaster and economic recovery and resiliency. The strategy identified for the region is to reduce the vulnerability to natural hazards and expedite the recovery. Housing is also specifically identified as an objective for:

Goal 3: Promote revitalized, healthy, safe, and resilient communities.

The Meramec Region considers a high quality of life to be one of its best assets. This standard of living includes safe neighborhoods, quality schools, outdoor recreation, tourism, and a low cost of living. Oftentimes, these local amenities greatly impact a region's ability to retain and attract new workers.

Goal 4: Promote smart and sustainable housing developments.

Strategy 1: Improve quality and affordability of housing stock.

Strategy 2: Encourage use of financing tools and incentives at state and federal levels.

Strategy 3: Identify the need and increase availability of housing for vulnerable populations.

Strategy 4: Encourage residential development with adequate infrastructure.

The study also looks beyond vulnerable housing to identify opportunities to preserve and create new housing outside of flood prone areas where area residents may continue to reside within their community and the region, while maintaining a safe and affordable home.

CHAMOIS

COMMUNITY CHARACTERISTICS

Map 3: Aerial view of Chamois

The City of Chamois was founded in 1818 and platted in 1856. Located in Osage County, Chamois is nestled on the south bank of the Missouri River. Dooling Creek, a tributary of the Missouri, also flows past the north and west sides of the city limits.

With a current population of 402, the city has 145 civilians employed in the workforce as of the 2021 American Community Survey (ACS). The city is 0.40 square miles in area (approximately 256 acres), with 0.03 acres of the land covered in water. The city also sits at an approximate elevation of 538 ft. above sea level.

The city's taxable sales and use tax for 2022 totaled $1,394,719.48. Based on 2021 ACS data, the greatest number of citizens are employed in manufacturing (22.8%), education and healthcare services (20.7%), and retail trade (10.3%). The median average household income in the City of Chamois is $39,063 with a poverty rate of 21%. The median home value is just $41,100 as of the 2021 ACS; however, the average cost to rent a home is $639 per month.

As of the 2012 FIRM (Flood Insurance Rate Maps), approximately 146 properties are at risk for flooding, 122 which are identified as residential (single-family, duplex or multi-family). ACS data shows that the entire town has approximately 227 housing units total, which means that 54% of the residential properties in Chamois have a moderate to high flood risk.

FLOOD HISTORY & FREQUENCY

Data from the National Weather Service (NWS): Advanced Hydrologic Prediction Service (https://water.weather.gov/ahps2/hydrograph.php?wfo=lsx&gage=hrnm7) provides background information for communities affected by flooding and lists impacts as it relates to water levels and flood stages. In Chamois alone, four of the top ten historic river crests have happened since 2015 with increasing frequency occurring over the past decade. The following data provides an overview of the top 10 historic and 10 most recent flood crest stages for the Chamois area. Additional dates and flood crests can be found on the NWS website. The 2017 event ranks fourth in historic crests at 28.30 feet, with the flood of 1993 bringing the highest flood waters at 33.30 feet in July 1993. However, flooding in Jun 2019 surpassed the 2017 event.

Historic Crests (Top 10)

(1) 33.30 ft on 07/31/1993
(2) 29.60 ft on 06/07/2019
(3) 28.70 ft on 04/24/1973
(4) 28.30 ft on 05/04/2017
(5) 28.00 ft on 12/29/2015
(6) 27.92 ft on 06/02/2013
(7) 27.17 ft on 09/16/2008
(8) 26.70 ft on 05/18/1990
(9) 26.30 ft on 04/13/1994
(10) 26.30 ft on 02/25/1985

Recent Crests

(1) 23.70 ft on 06/28/2021
(2) 19.90 ft on 04/12/2021
(3) 23.30 ft on 03/19/2021
(4) 17.70 ft on 08/02/2020
(5) 22.00 ft on 05/30/2020
(6) 20.90 ft on 03/20/2020
(7) 17.00 ft on 03/12/2020
(8) 20.10 ft on 01/11/2020
(9) 21.80 ft on 10/08/2019
(10) 20.50 ft on 09/01/2019

Based on the crest information, properties within close proximity to the city begin to flood at a 29.9 ft. crest which is considered between a moderate to major flood stage. At this height, water begins to flood the utility road behind the outfield fence at Chamois City Park, located in the northwest corner of the city. If the water rises another 1.4 ft., backwaters from Dooling Creek begin flooding nearby homes and properties along Main Street north of Hwy 100. The following picture shows flooding of a multi-family development along North Main Street, just east of Dooling Creek, during the 2019 flood. The table on the next page provides flood water levels and impact areas for the city and surrounding land.

Source: Elise Brochu, Mayor of Chamois 2019 flood

Flood Categories (in feet)	
Major Flood Stage	**31**
Moderate Flood Stage	**28**
Flood Stage	**27**
Action Stage	**15**

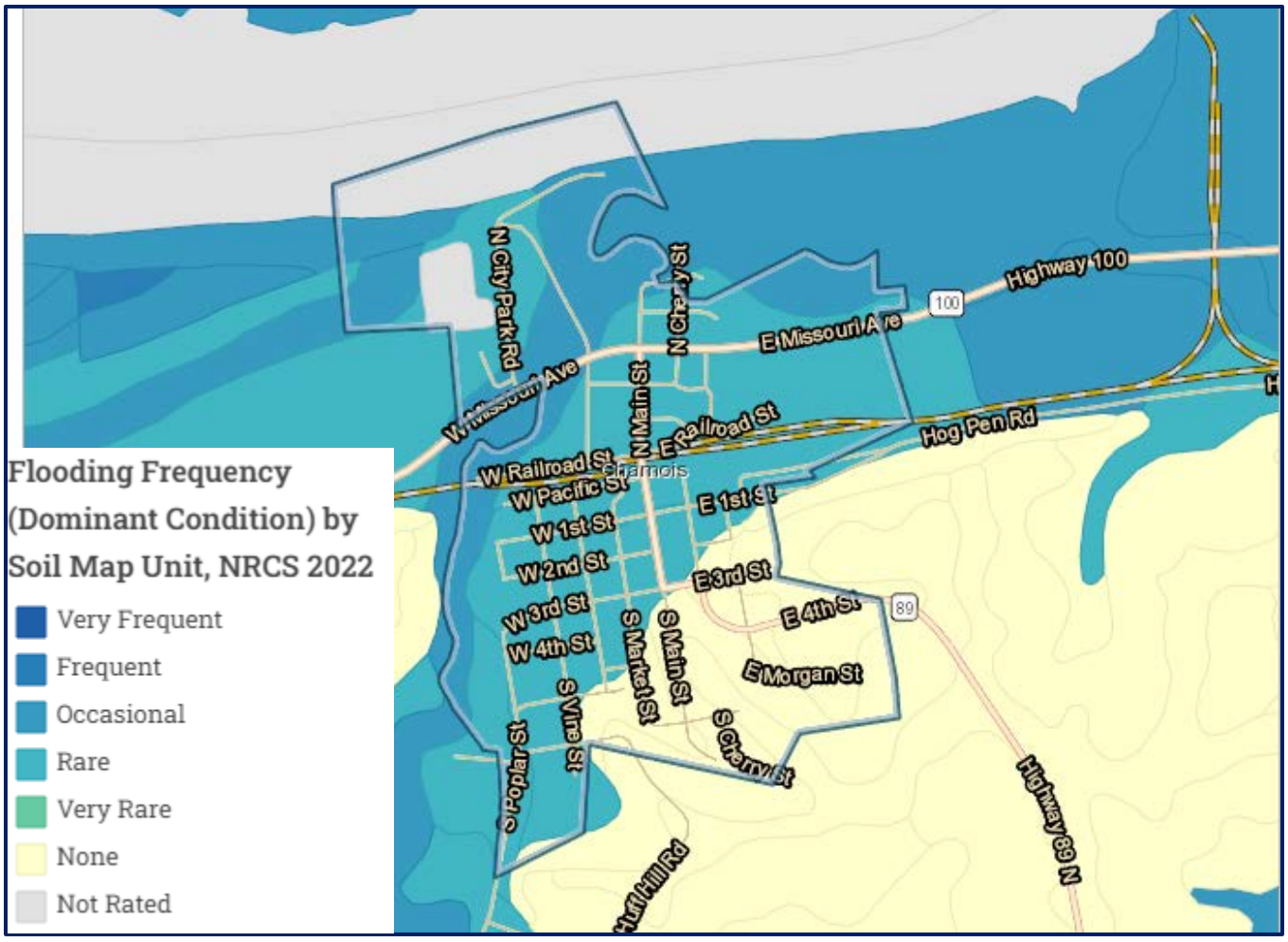
Flood Crest/Impact Area

24.2	The upstream campsite at the Chamois River access campgrounds begins flooding near this height.
24.3	Highway 94 near Portland begins flooding near this height.
25	Both sections of the Chamois levee system just upstream of Chamois are overtopped near this level.
25.4	Highway 100 between Morrison and State Route Z begins flooding near this level.
25.5	Levee A-1 just east of Chamois is overtopped near this level.
25.6	Highway 100 just west of Chamois begins flooding near this level.
25.7	The Chamois levee just west of Chamois is overtopped near this height.
26	Highway 100 between St. Aubert and Chamois begins flooding due to creek backwater. Near this height, Missouri Highway 94 will be closed from Route PP to Bluffton. The Jacobs and Tebbetts East levees near Tebbetts are overtopped near this level.
26.5	The Steedman levee northwest of Chamois is overtopped near this level.
27.2	Near this height, Missouri Route C at Missouri Highway 94 near Mokane will be closed in both directions.
27.7	The A-1 levee between Chamois and Morrison is overtopped near this height.
28	Highway 100 near the power plant begins to flood. Also, the Mokane levee just east of Mokane overtops near this height.
28.5	Highway 100 closed between Chamois and Morrison.
29.9	The utility road behind the outfield fence at Chamois city park begins flooding.
30	The Chamois city park begins to flood.
30.2	The playground area of the city park and covered 3rd base line bleachers begin to flood.
30.4	Near this height, Route Z west of Morrison will be closed in both directions.
30.6	The gazebo at the Chamois city park begins flooding near this height.
30.8	At this height, the outfield of the Chamois City Park ballfield and a utility shed near the left field fence begins flooding.
31.3	Near this height, backwater along Dooling Creek will begin flooding homes, garages, and sheds along Main Street north of Hwy 100.
32.3	At this height, a farmhouse along City Park Road begins flooding.
34.4	The main floor of the Chamois Community Center (422 North City Park Road) begins to flood near this height. Near this height, a barn and farmhouse along City Park Road also begin to flood.
35.3	The Chamois sewage treatment pond levee is overtopped at this height.

Chamois Flood Frequency Map

Flooding frequency is also visualized through mapping supported by the University of Missouri Extension Center for Applied Research and Engagement Systems (CARES). This map depicts the likelihood of flooding in any given year and graphically depicts which parts of Chamois will be inundated. While similar to a traditional FEMA FIRM map, this map provides a greater breakdown of frequency from none to very frequent. Descriptions of each category are listed below the map. It should be noted that areas outside of the traditional floodplain, in Zone X, are still shown with a chance of flooding, albeit it categorized as "rare," it is not without risk. Properties extending from 3rd Street west and south to the southern city boundary are unlikely to flood but still have a 1 to 5% chance in a year. This potential should be considered when looking at availability of land for housing developments.

Map 4: Chamois Flooding Frequency



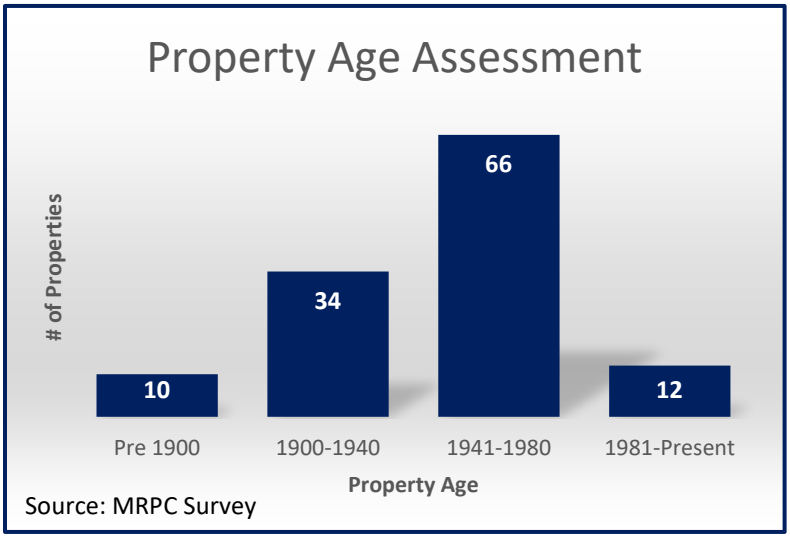
Source: https://careshq.org/map-room/

- None - Flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.
- Very Rare - Flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.
- Rare - Flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.
- Occasional - Flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.
- Frequent - Flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.
- Very Frequent - Flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

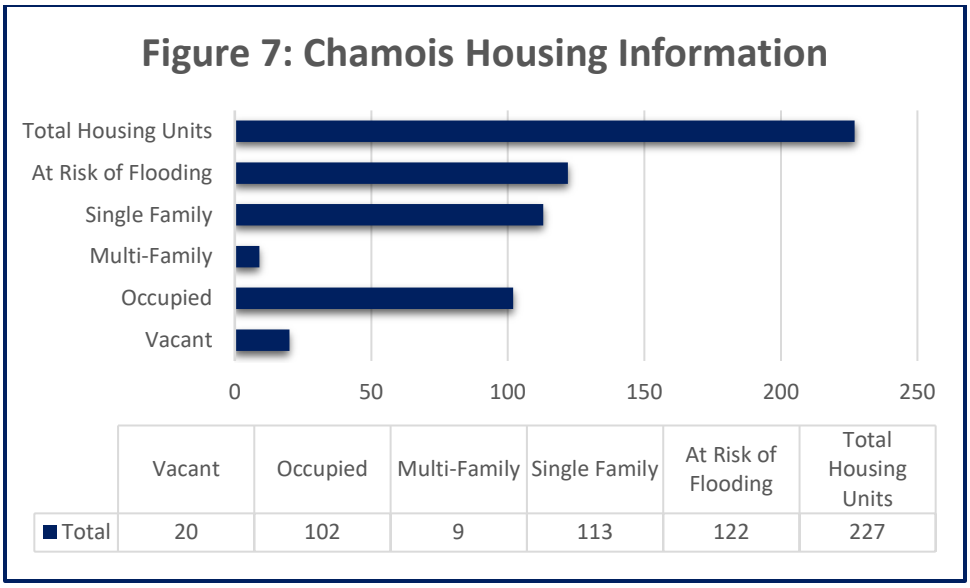
HOUSING SURVEY RESULTS

Based on a 2021 windshield survey of residential properties located within the floodplain, the following survey results were gathered to assess the condition of structures and the respective property. Items reviewed also included if the properties had any apparent signs of reinvestment (e.g. new siding, roofs, fences), sidewalks, off-street parking, etc. Full details can be found in the appendix of this report based on site addresses and parcel IDs. There are 252 housing units in Chamois– 146 of which are at risk for flooding – 83% of those are single-family dwellings. Upon a visual inspection, 86% of 146 residential properties appear occupied, and the remainder are vacant.

Figure 6: Property Age



Results of the study indicate that most of Chamois' flood-prone housing would be best suited for relocation or demolition. Opportunities for new construction are located to the west and south of city limits and are predominantly uphill.

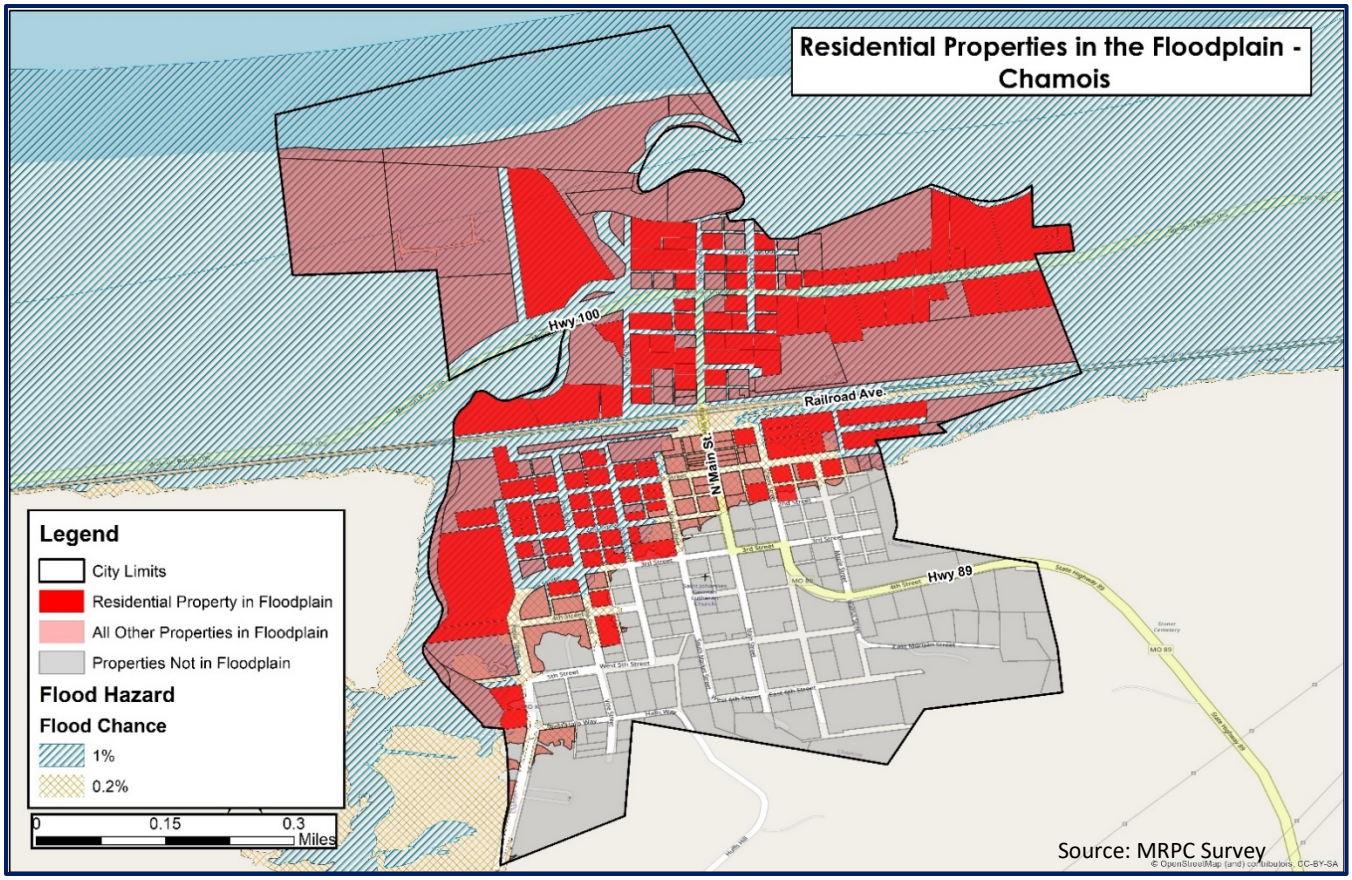


	Vacant	Occupied	Multi-Family	Single Family	At Risk of Flooding	Total Housing Units
Total	20	102	9	113	122	227

Source: MRPC Survey and 2021 ACS

The dark red in Map 5 identifies the location of residential properties within the floodplain, whether they be single-family, duplex, multi-family or mixed-use.

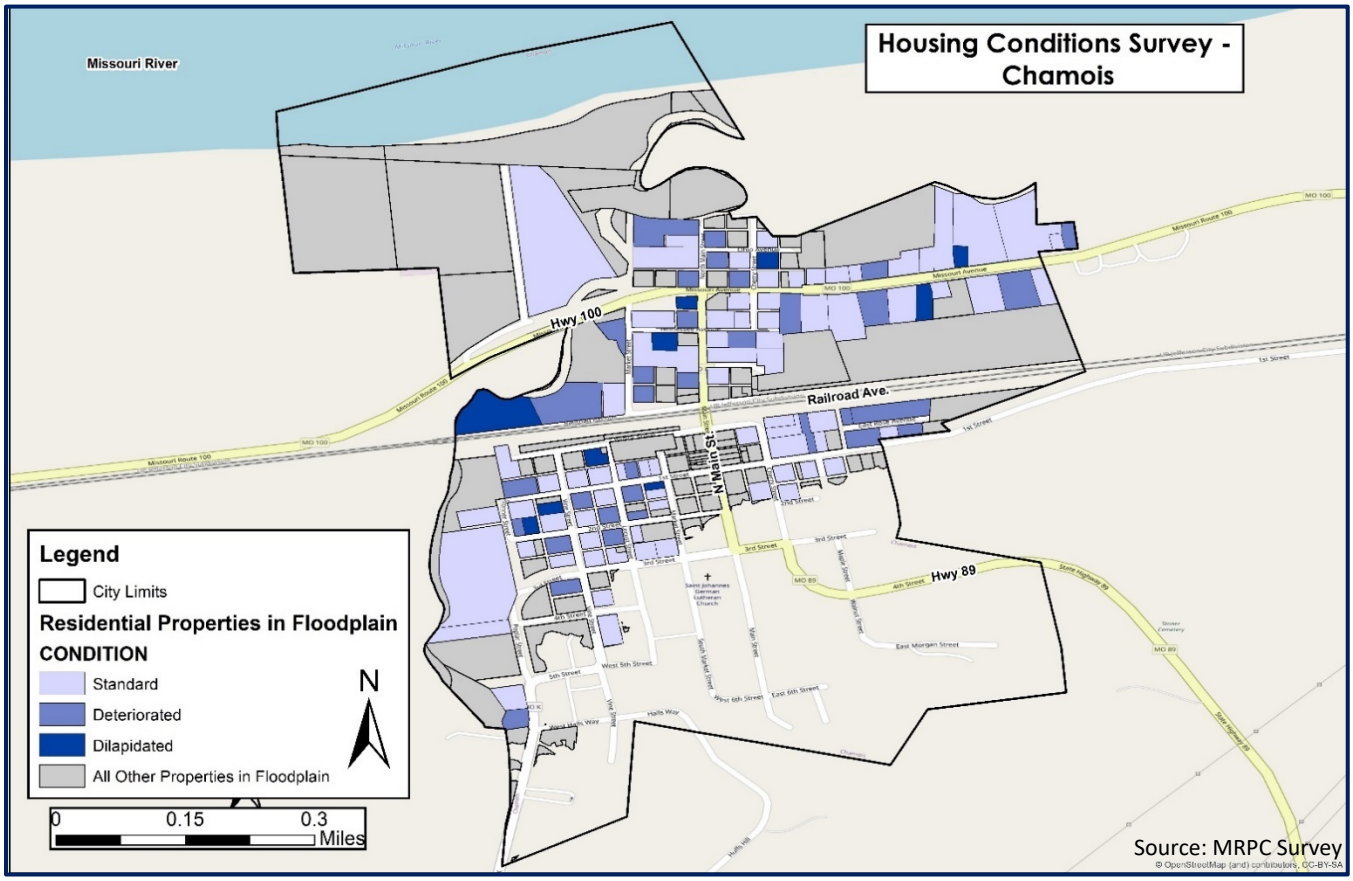
Map 5: Chamois Residential Properties



Residential structures in Chamois were primarily built in the 20th century, with 61.5% of them being in standard condition. Despite the relatively good condition of the buildings, the assessed values are low

with more than half of the properties assessed at under $25,000 and 89.1% of properties have an assessed value of $50,000 or less. The remaining 38.5% of residential properties in the floodplain are in deteriorated or dilapidated condition. Map 6 depicts the locations of properties based on their condition assessment at the time of the survey. This information was collected to identify possible residential properties that could be demolished and removed from the floodplain to improve flood impacts to the community. A larger map and property details are also provided in the appendices.

Map 6: Chamois Residential Properties Housing Conditions

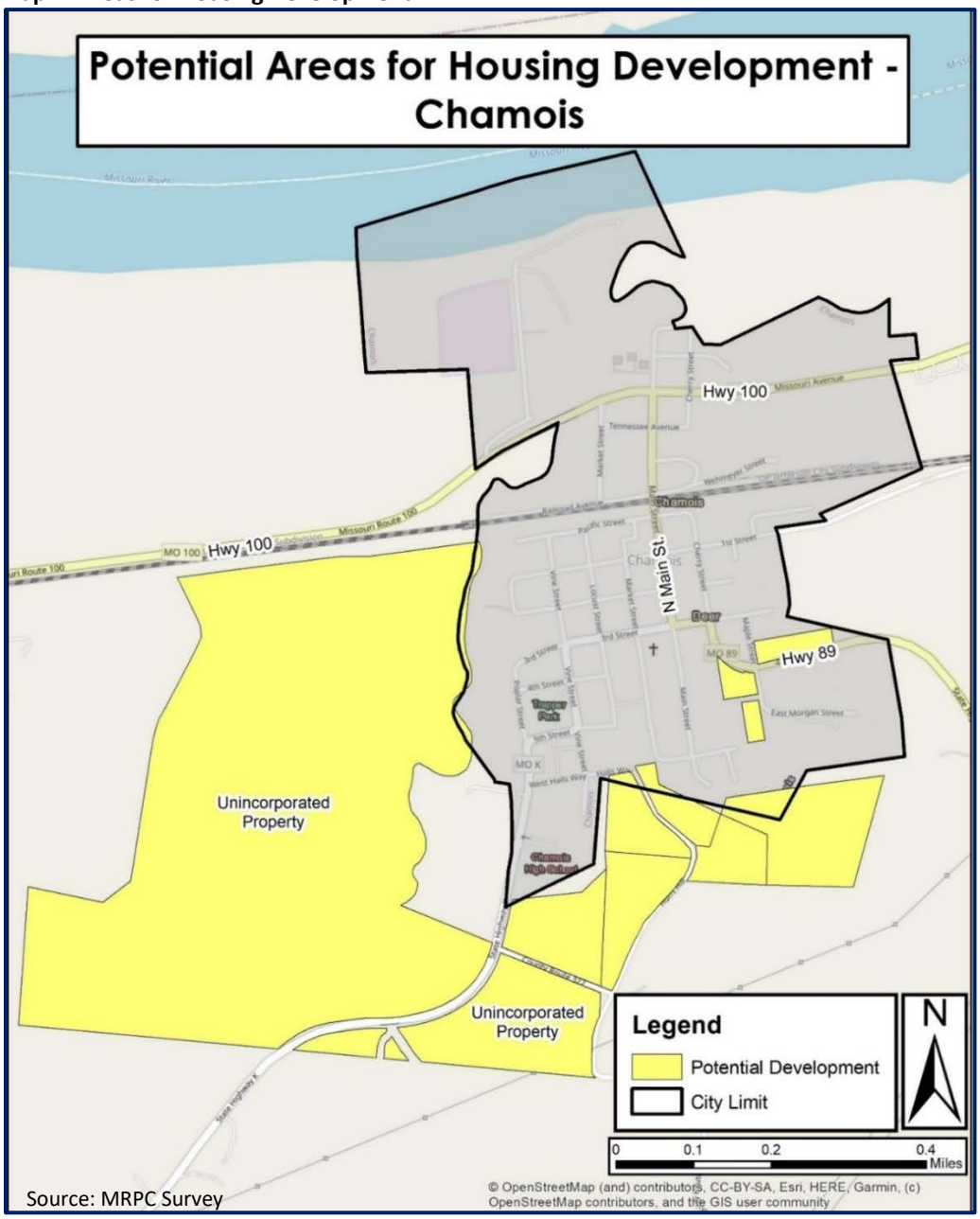


The image on the right shows a multi-family complex in the floodplain along North Main St. in standard condition on the exterior of the property. This is the same property depicted in the flooding image on page 13 of the report. While this property has a higher threat of regular flooding, it is not likely to be demolished based on its appearance alone. Recommendations for mitigation of standard condition structures and new housing locations are discussed in the last section of this chapter.

FUTURE DEVELOPMENT

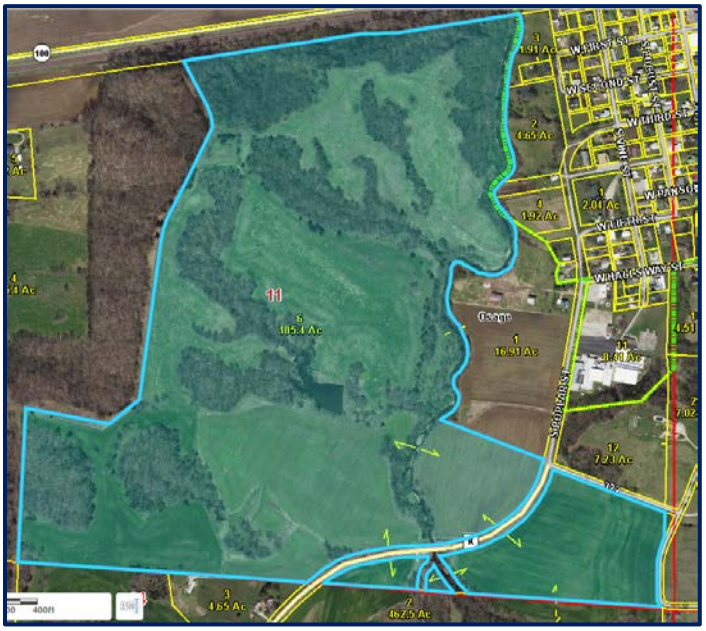
Much of the city is located within the floodplain leaving little option for potential infill, and with the flood line from the river just south of the railroad tracks, options for future development may be limited. After review of floodplain maps, visits to Chamois to view vacant land, and a review of parcel information, planning staff has highlighted 10 properties within and adjacent to the city limits. Each property is highlighted based solely on its proximity to the community, the amount of land outside of the floodplain, and the potential for residential development. This section details properties that are more conducive to house development. Land prices and infrastructure costs have not been factored into these recommendations. These suggestions are based solely on the location of the properties in proximity to the city and the topography of the land. All property is privately owned at the time of this report. Any recommendations in this study do not require any actual development. All maps on the following pages are sourced from the county's assessor information and GIS mapping.

Map 7: Areas for Housing Development



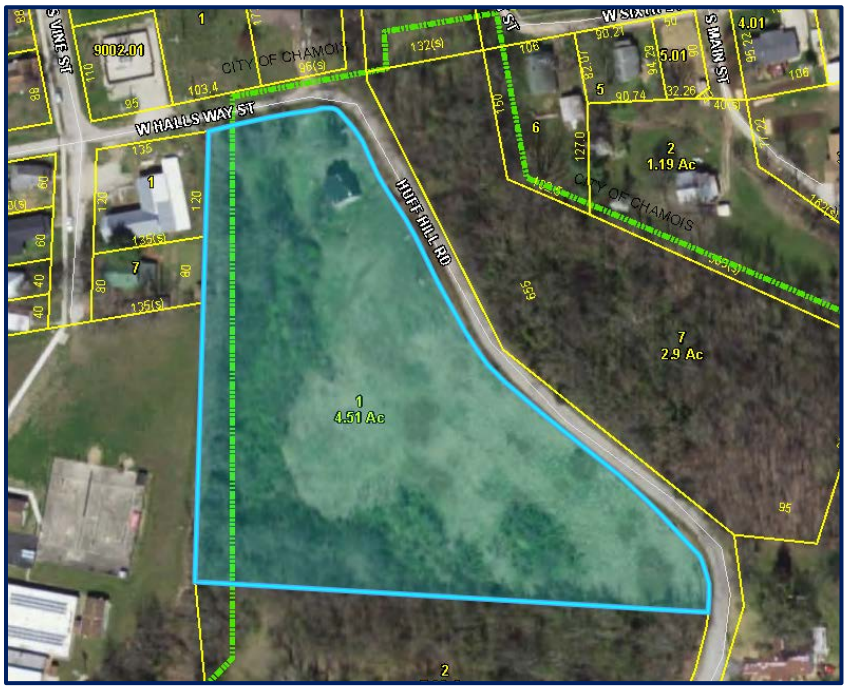
Source: MRPC Survey

- Approximately 185.4 acres of farmland exists along the western and southern limits of Chamois. The property connects across Dooling Creek and Highway K. While areas along the creek and Highway 100/railroad are identified in the floodplain, there is enough of an elevation change to develop large portions of the property for residential purposes. This acreage would be conducive to the development of duplexes or multi-family housing for the portions east of Highway K and south of County Road 322, and single-family units could be developed on the larger part, west of Dooling Creek.

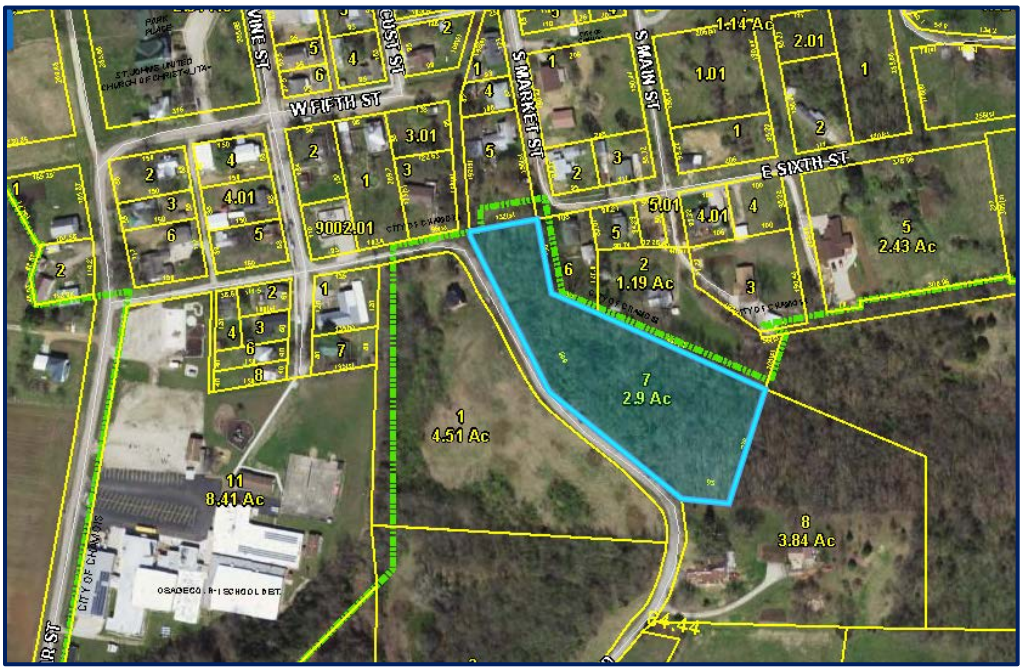


- The 7.23 and 7.02 acres of land highlighted in the following aerial are currently owned by the same owner and a single-family home is situated in the center of the lot. This land is suitable for additional single-family lots to the north and south of the existing home. The properties are currently unincorporated but could be annexed based on their immediate adjacency to the city limit boundary (shown in green).

- A 4.51-acre property at the southwest intersection of West Halls Way St. and Huff Hill Rd. is home to a vacant, dilapidated residence at the northern quarter of the lot; however, the rest of the parcel remains vacant to the south as the slope increases along Huff Hill Rd. This property would also require annexation but is located adjacent to city limits and has a paved road for easy access. Staff recommends that this parcel could also be developed with residential uses and is far from the impacts of flooding.

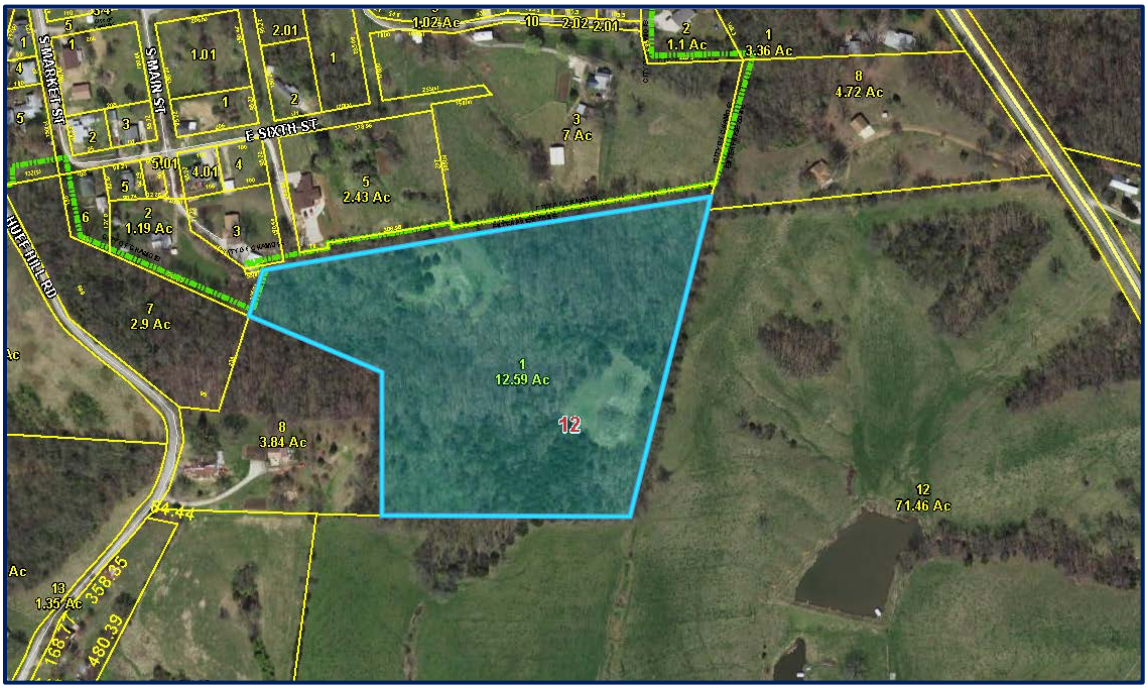


- The 2.9-acre parcel east of Huff Hill Rd. slopes upwards as it follows Huff Hill Rd. to the south; however, the vacant property provides potential for residential development outside of the floodplain. Annexation is recommended for this parcel.

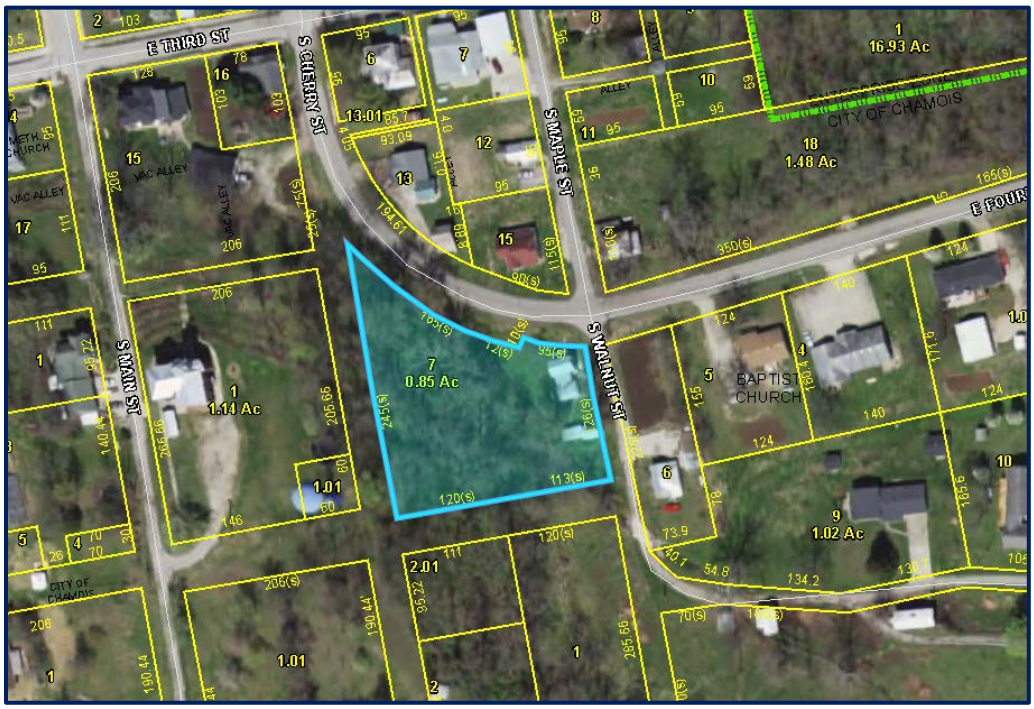


- A 3.84-acre parcel currently has a home on the southern half of the property; however, if the 2.9-acre parcel to the north and then larger parcel to the east are developed, this parcel may be considered to provide cross-access for a residential development and would require annexation.

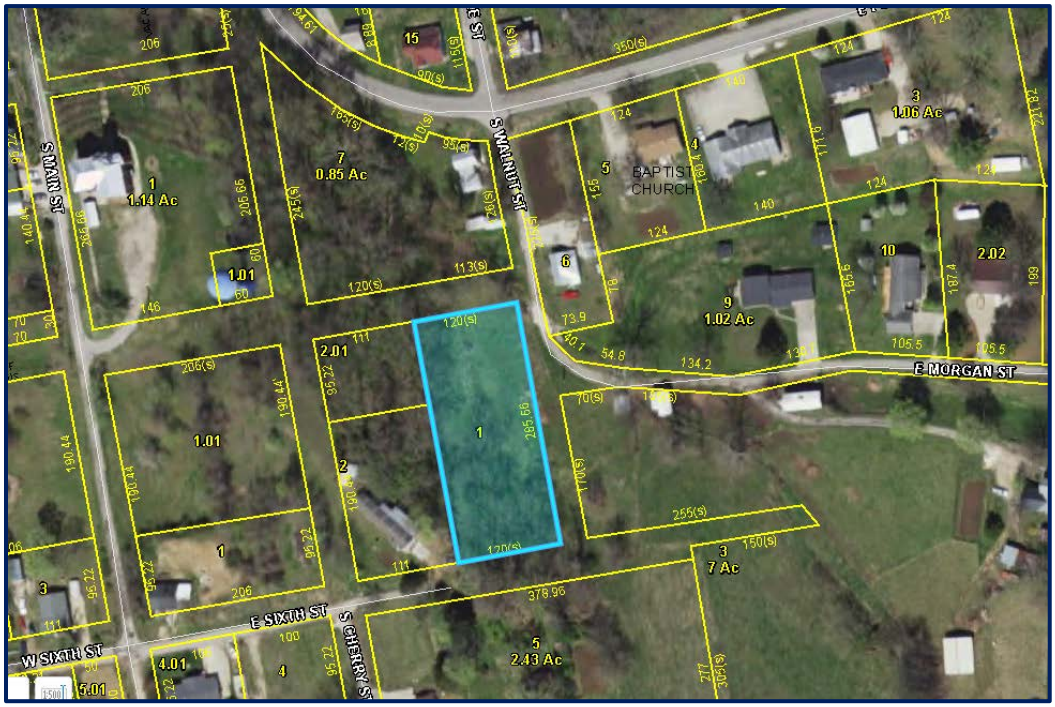
- There is approximately another 12.59 acres, mostly wooded, located just south of the Chamois city limits between Huff Hill Rd. and Hwy 89 that could be considered for future development. Annexation would be required and access to the lot could be provided from Huff Hill Rd., South Main St., or South Cherry St. Consistent with other properties along Huff Hill Rd., this property should be considered for annexation prior to development.



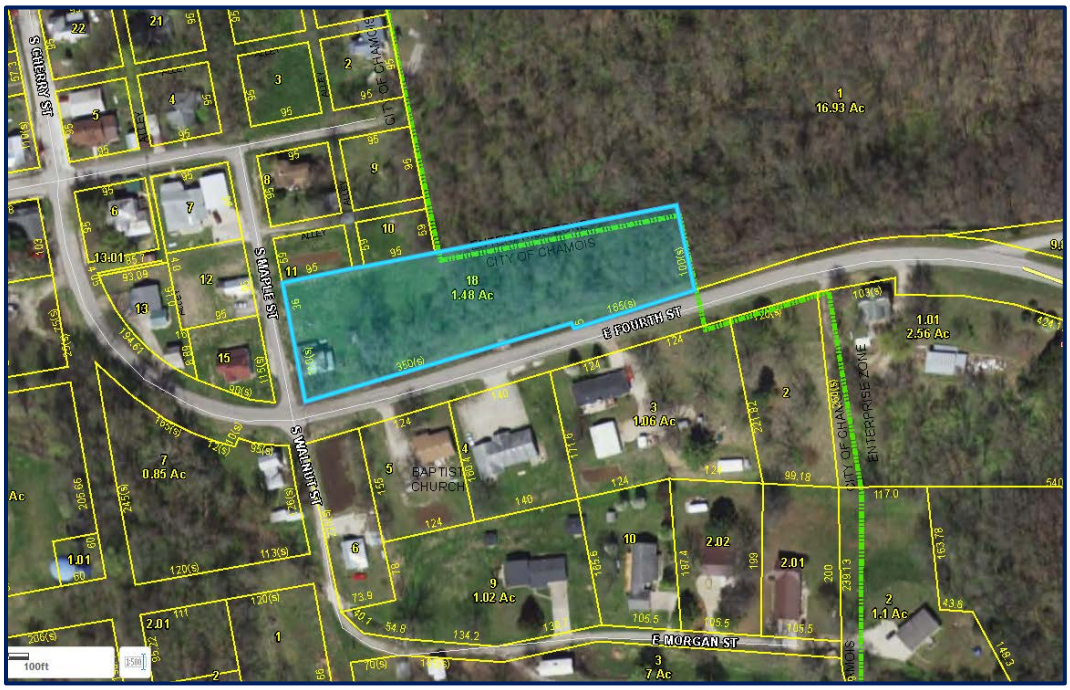
- A 0.85 acre parcel, currently in city limits, has an existing single-family home on the far eastern side of the property. Since the lot is situated on a corner, the western half of the property could be subdivided and developed with another single-family home.



- A rectangular lot along South Walnut St. and East Morgan St. is currently vacant and has potential for the development of a single-family home. While the property slopes up from the grade of the road, the lot is already within city limit and is outside of the floodplain boundaries.



- A 1.48-acre parcel, situated along the north side of East 4th St./Hwy 89, is mostly wooded and located within city limits. Based on the location of the existing single-family residence, the remainder of the property could accommodate six additional residential lots with approximate dimensions of 66 ft. in width by 100 ft. in depth. Final dimensions would be determined by the city's zoning ordinance for single-family lots.



MITIGATION RECOMMENDATIONS

Chamois has a mix of property conditions within the floodplain and mitigation solutions should be considered on a case-by-case basis. Depending on the project, consultation from a local architect, engineer, contractor, landscaper, or other expert in design and construction may be required. Also, changes to properties and buildings in floodplains require permits or other local approvals as noted in the city's floodplain ordinance. It is also recommended to consult with adjacent property owners when proposing flood mitigation measures such as extending downspouts or regrading areas between homes. Changes to the flow of water from one property to another can have negative impacts on adjacent parcels when there may not have been a previous issue.

The following general recommendations are based on residential types of mitigation for structures in the floodplain as outlined in FEMA's "Protect Your Home from Flooding" report. Any of the recommendations for improvements inside and outside of the home can be applied to any type of residential structure (e.g. single-family, duplex, multi-family):

Outside of the Home

For the exterior areas of residential properties in the floodplain that are identified in STANDARD condition per the housing survey, consider taking the following actions:

- Maintain proper water runoff and drainage. Routinely clean and maintain gutters, downspouts, and splashpads so that rainwater from roofs flow easily away from residences. Also, ensure that any nearby drainage ditches or storm drains are clear of debris and functioning properly.
- Improve lot grading. Determine how water flows or accumulates around residences to identify potential trouble spots (often easy to see during an average rainstorm). Stormwater should always drain away from buildings; if necessary, change landscaping to improve runoff. This may include building up any sunken areas around the foundation, digging small depressions to properly channel water, and otherwise improving the yard so that it slopes away from homes.
- Reduce impervious surfaces around residential structures. Retaining and creating natural green space around residences can help reduce sewer overflows by reducing stormwater runoff. Consider options such as rain gardens, vegetated swales, or pervious pavements, which allow more water to be absorbed by the ground.
- Install a rain barrel. A rain barrel is an alternative method for dealing with rainwater. Rain barrels are typically connected to gutter downspouts and collect the runoff from roofs. The stored water can be utilized for non-potable uses such as watering the lawn and gardens or washing your car.
- Elevate utilities and service equipment. Raise and anchor air conditioning condensers, heat pumps, water meters and other service equipment onto pedestals or platforms that are at least one foot above the base flood elevation established for the surrounding property.
- Anchor outdoor fuel tanks. Attach outdoor fuel tanks to a large concrete slab that weighs enough to resist the force of floodwaters or install inexpensive ground anchors that are connected across the top of the tank with metal straps. Unanchored fuel tanks can be easily moved and ruptured by floodwaters and pose serious threats to people, property, and the environment. Fuel tanks should also be elevated above the regulatory base flood elevation as adopted by the FEMA FIRM map. If not feasible then all filling and ventilation tubes should be elevated so that floodwaters cannot enter the tank.

Inside the Home

For interior areas of residential properties in the floodplain that are identified in STANDARD condition per the housing survey, below the base flood elevation, consider making the following alterations:

- Protect valuable possessions. Move important documents and other valuable or sentimental items to a safer location well above the potential flood elevation and/or inside watertight containers.
- Seal foundations and basement walls. Close any foundation cracks with mortar and masonry caulk or hydraulic cement, which expands and fills gaps completely. Seal walls in basements with waterproofing compounds to avoid seepage. Make sure any floor drains are clear of obstructions.
- Install flood vents. Flood vents are small, permanent openings that allow floodwater to flow freely through an enclosure such as a crawlspace or garage. Properly positioned and installed, flood vents protect homes during floods by preventing water pressure buildup that can destroy

walls and foundations. Once installed, make sure flood vents are kept free of debris and will allow the free flow of floodwater.

- Install a sump pump. Sump pumps, which pump groundwater away from the home, can be an excellent defense against basement seepage and flooding. They draw in the groundwater from around the house and direct it away from the structure through drainage pipes. Be sure to choose a device with battery-operated backup, in case of electrical power failure.
- Prevent sewer backups. Install drain plugs for all basement floor drains to prevent sewer backups. Another recommended option, regardless of the base flood elevation, is to install sewer backflow valves for all pipes entering the building. These devices, which allow water to flow only one direction, prevent floodwater and wastewater from backing up into your home through toilets, sinks, and other drains. They are available in a variety of designs that range from simple to complex, but should be installed by a qualified, licensed plumber.
- Use flood-resistant building materials. Replace wooden floorboards and carpets with ceramic tile, vinyl, rubber, or other flood-resistant materials. Use moveable rugs instead of fitted carpets. Replace internal walls and ceilings with flood-resistant material such as lime plaster, cement board, concrete, or pressure-treated and decay-resistant wood. Replace wooden doors and window frames with metal or other flood-resistant options.
- Raise electrical system components. Increase the height of electric service panels (fuse and circuit breaker boxes) and all outlets, switches, and wiring to at least one foot above the base flood elevation. These modifications should be made by a licensed electrician.
- Protect utilities and service equipment. Move the main parts of any heating, ventilation, and air conditioning (HVAC) systems to a higher floor or the attic. Consider raising other major appliances, such as washers, dryers, and hot water heaters, above the ground floor. If relocation or elevation is not possible, protect service equipment in place using low floodwalls and shields. Alternative options such as replacing traditional hot water heaters with tankless units should also be considered.
- Anchor indoor fuel tanks. Anchor fuel tanks by attaching them to a large concrete slab that weighs enough to resist the force of floodwaters.
- Install a flood alert system. A variety of flood sensors and other early warning devices can alert residents to the risk of imminent flooding so that residents can take preventative or protective actions before extensive damage occurs.

For All Homes in The Floodplain

For residential properties in the floodplain that are identified in STANDARD or DETERIORATED condition per the housing survey, consider taking the following actions:

- Raise the structure. Elevating a home to meet the floodplain standards (usually one foot above the base flood elevation) is a common method of retrofitting structures in the floodplain. Of the 136 properties in standard or deteriorated condition in Chamois, this report considers those properties with identified repetitive damage (identified by Chamois and SEMA/FEMA) to be the best candidates for elevation. This can include building a storage-only/garage foundation

underneath the existing home. The second option includes abandonment of the first floor and retrofit to accommodate a storage-only foundation, with a new upper level and roof built.

- Relocate the structure. This option would allow for the original home to stay mainly intact, but the owner would have to find a new lot (outside of the floodplain) to place the home. Additionally, costs for moving homes can increase due to the size of the structure and distance moved from original location. Relocation is a mitigation technique usually used for historic homes that may also require approvals from local and state preservation agencies.

For residential properties in the floodplain that are identified in DETERIORATED condition per the housing survey, consider taking the following actions:

- Using any of the tools above may improve the conditions of the deteriorated home; however, per floodplain regulations, no substantial improvements may be made. A substantial improvement, as defined in 44 CFR § 59.1, means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the start of construction of the improvement. Additional information on substantial improvements can be found in the following document provided by FEMA on page 28.
- Deteriorated structures that would require more than a 50% investment to improve the structure should consider demolition. There is more than one option for demolition:
    - If Chamois is considering a floodplain buyout of substantially damaged/repetitive loss structures, flood buyout grants are potentially available to purchase the residential properties (home and lot). While this option removes the home from the floodplain, the long-term ownership remains with the city and does not go back to the original owner, as the city would use grant funds to purchase the property.
    - Non-floodplain related demolition grants can assist communities with demolition, where the lot is eventually sodded or seeded and open to new development. Any new development in the floodplain is subject to the ordinances of Chamois.

For residential properties in the floodplain that are identified in DILAPIDATED condition per the housing survey, consider taking the following actions:

- Demolition of the structure. This plan identifies approximately 10 residential properties as being in a dilapidated condition, where the exterior of the home appears to have visible damage to the structure. This includes holes in roofs, windows, doors and/or significant damage to the siding of a home.
- Floodplain mitigation for these structures is the same as the previously identified mitigation measures for dilapidated homes, where costs to renovate would be more than 50% of the appraised value (substantial damage/improvement).

Online Resources

The following online resources provide a wealth of information and guidance on mitigation techniques for homes in the floodplain as outlined in this section.

Elevating Your House
https://www.fema.gov/sites/default/files/documents/fema_elevating-your-house-chapter-5.pdf

Homeowner's Guide to Retrofitting
www.fema.gov/media-library/assets/documents/480

Protect Your Home from Flooding: Low-cost Projects You Can Do Yourself
https://www.fema.gov/sites/default/files/documents/fema_protect-your-home-from-flooding-brochure_2020.pdf

Reducing Flood Risk to Residential Buildings That Cannot Be Elevated
www.fema.gov/media-library/assets/documents/109669

Protecting Your Home and Property from Flood Damage
www.fema.gov/media-library/assets/documents/21471

Protecting Building Utility Systems from Flood Damage
www.fema.gov/media-library/assets/documents/3729

Protect Your Property from Flooding
www.fema.gov/media-library/assets/documents/13261

Answer to Questions About Substantially Improved/Substantially Damaged Buildings
https://www.fema.gov/sites/default/files/2020-07/fema_p213_08232018.pdf

FEMA, Protect Your Property
www.fema.gov/protect-your-property

FloodSmart
www.floodsmart.gov

HERMANN

COMMUNITY CHARACTERISTICS

Map 8: Aerial View of Hermann

The City of Hermann was founded in 1837 by German immigrants near the center of the Missouri Rhineland and south of the Missouri River. Frene Creek, a tributary of the Missouri, also flows through the heart of the community and across Highway 19.

As the county seat for Gasconade County, Hermann has a current population of 2,347, as of the 2021 American Community Survey (ACS). The city is 2.71 sq. miles in area (1734 acres), with 0.18 acres of land covered in water per the US Census. The city also sits at an approximate elevation of 528 ft. above sea level.

The city's taxable sales and use tax for 2022 totaled $53,834,270.00. Based on 2021 ACS data, the greatest number of citizens are employed in education and healthcare services (19%), manufacturing (16%), and retail trade (13.9%). The median average household income in the City of Hermann was $55,161 with a poverty rate of just 8.8%. The median home value is $146,200 as of the 2021 ACS; however, the average cost to rent a home is just $463 per month. It is noted that rental rates continue to increase across the region.

As of the 2011 FIRM (Flood Insurance Rate Maps), approximately 393 properties are at risk for flooding, 94 which are identified as residential (single-family, duplex or multi-family). ACS data shows that the entire town has approximately 1,123 housing units total, which means that only 8.4% of the residential properties in Hermann have a moderate to high flood risk.

FLOOD HISTORY & FREQUENCY

Data from the National Weather Service (NWS): Advanced Hydrologic Prediction Service (https://water.weather.gov/ahps2/hydrograph.php?wfo=lsx&gage=hrnm7) provides background information for communities affected by flooding and lists impacts as it relates to water levels and flood stages. In Hermann, four of the top ten historic river crests have happened since 2013 with increasing frequency occurring over the past decade. The following data provides an overview of the top 10 historic and 10 most recent flood crest stages for the Hermann area. Additional dates and flood crests can be found on the NWS website. The 2017 event ranks fourth in historic crests at 35.62 feet, with the flood of 1993 bringing the highest flood waters at 36.97 feet in July 1993.

Historic Crests (Top 10)

(1) 36.97 ft on 07/31/1993
(2) 36.22 ft on 05/19/1995
(3) 35.79 ft on 10/05/1986
(4) 35.62 ft on 05/04/2017
(5) 35.50 ft on 06/01/1844
(6) 34.82 ft on 12/30/2015
(7) 33.66 ft on 04/24/1973
(8) 33.52 ft on 06/08/2019
(9) 33.33 ft on 07/19/1951
(10) 33.14 ft on 06/02/2013

Recent Crests

(1) 27.89 ft on 06/29/2021
(2) 24.35 ft on 04/12/2021
(3) 27.76 ft on 03/19/2021
(4) 21.08 ft on 08/02/2020
(5) 23.94 ft on 06/10/2020
(6) 23.07 ft on 06/05/2020
(7) 26.06 ft on 05/31/2020
(8) 21.15 ft on 05/18/2020
(9) 21.39 ft on 04/28/2020
(10) 21.34 ft on 03/28/2020

Based on the crest information, properties within proximity to the city begin to flood at a 25 ft. crest which is considered between flood stage and a moderate flood stage.

Flood Categories (in feet)	
Major Flood Stage	**33**
Moderate Flood Stage	**26**
Flood Stage	**21**
Action Stage	**19**

This flood stage begins to inundate the local park along the west side of the city. As water rises, areas along the east side of the city begin to flood, and at 32.29ft., the main Frene Creek Bridge across Highway 19 is impacted. The picture shows flooding in the Hermann city park and RV area.

Source: Experience Hermann website

Flood Crest/Impact Area

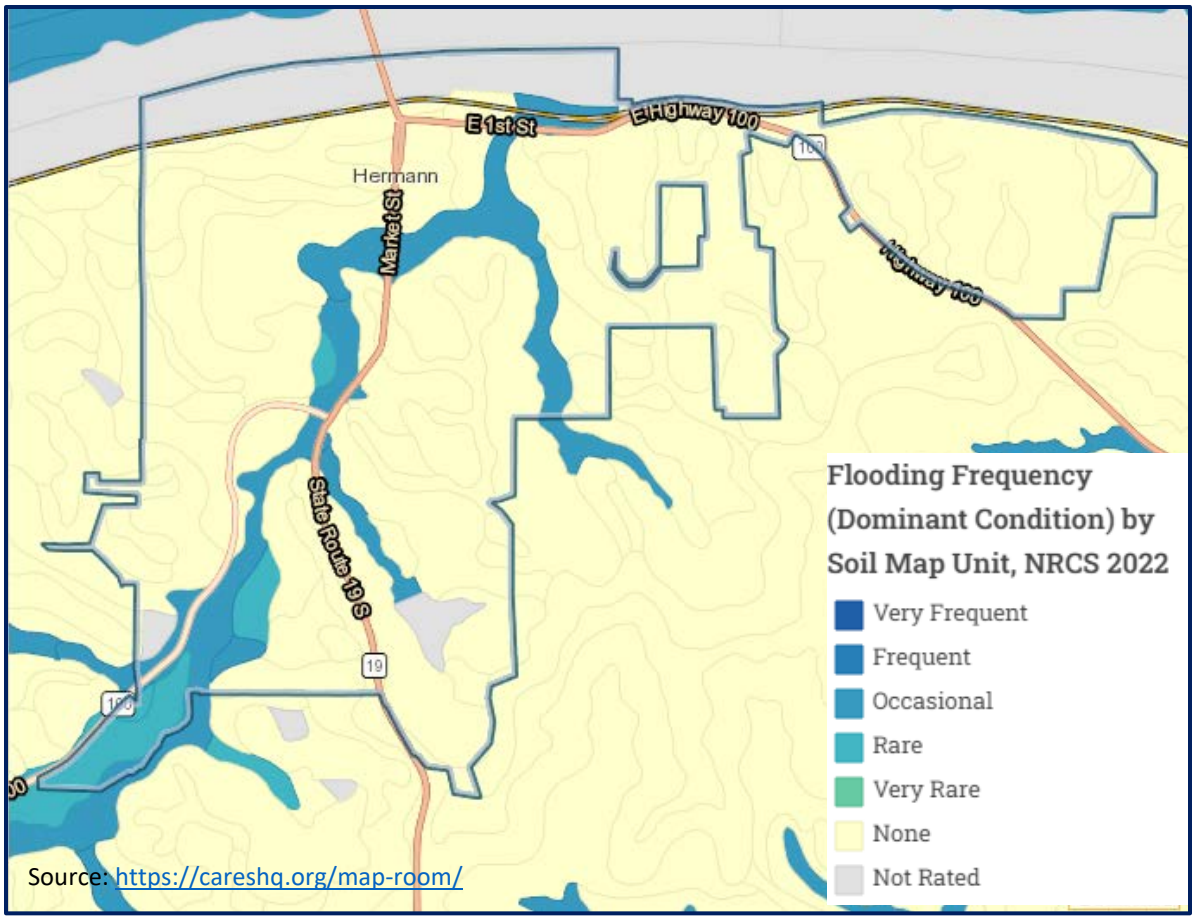
20.2	Gasconade Park boat ramp...BBQ grills...and parking area begins flooding near this height.
21	Minor flooding of cropland begins...particularly just north of the Highway 19 bridge along the Loutre River.
21.3	The southern end of School House Road south of Rhineland begins flooding near this height.
22.3	Southern portions of Old Rock Road and Twisters Road south of Rhineland begin flooding near this height.
25	City Lions Club Athletic Field begins to flood.
25.1	Katy Trail near Portland Floods
25.2	The Bait shop just below the bridge floods.
25.9	State Route B in northwest Franklin County west of New Haven is closed near this height between Berger and Etlah.
26	Near this height, Gutenberg Street begins flooding.
28	Near this height, 2 picnic shelters along Mozart Road in Hermann City Park begin flooding.
29.2	Missouri Route 94 is closed between Treloar and Pickney near this height.
29.8	The east end of Oak Street in Gasconade begins flooding near this level.
30.8	Near this height, Missouri State Highway 94 between Missouri Highway 19 and Route B will be closed in both directions.
31	Hermann Farm Stable and Wagon Works and the city amphitheater grounds begin flooding near this height.
31.5	Just northeast of Morrison, the Morrison Lower levee is overtopped near this height. Also, the restrooms at the Hermann City Campgrounds and a car wash on Gutenberg Road begin flooding near this height.
32	A Hermannhof Winery storage shelter begins flooding on the east side of Frene Creek.
32.29	Market Street (Highway 19) begins flooding near the bridge over Frene Creek.
32.5	Hermann Ford and a vacant grocery store on 6th Street begin flooding near this level.
32.6	The Corps of Engineers Gasconade Harbor Facility boatyard area begins to flood near this height.
33	The Tri-County Levee District Section One protecting the area south of Rhineland, including the Hermann airport, is overtopped near this level.

33.3	A house at the end of Oak Street in Gasconade begins flooding at the base of the concrete foundation near this height.
33.6	Near this height, Missouri State Highway 100 will be closed in both directions east of Hermann.
34	Union Pacific Railroad tracks flood. The Tri-County Levee Section Two between McKittrick and Gore will overtop near this height.
34.1	Missouri State Highway 100 in Hermann between State Route 19 and Washington Street will be closed near this height.
34.2	The picnic shelter and restrooms at the Hermann Riverfront Park begin flooding near this height.
34.3	Missouri State Highway 94 between Route B and Route N will be closed near this height.
34.5	Near this height, Missouri State Highway 94 between Rhineland and State Highway 19 will be closed in both directions. Also, the Tri-County Levee Section One along the left bank between Bluffton and McKittrick will overtop near this height.
35	The agricultural levee protecting Rush Island northeast of Hermann is overtopped near this height. This is the Tri-County Levee District Section Two.
35.4	Near this height, Missouri Highway 100 will be closed through Gasconade.
35.8	Homes and structures on the east side of Gasconade begin flooding along the Gasconade River near this height.
36	The Berger Levee between Berger and just northwest of New Haven will overtop near this height. The lower patio dining area at Hermannhof begins flooding near this height.
38	The New Haven federal levee will overtop near this height.
38.2	The Katy Trail east of Logan Creek floods

Hermann Flood Frequency Map

Flooding frequency is also visualized through mapping supported by the University of Missouri Extension Center for Applied Research and Engagement Systems (CARES). This map depicts the likelihood of flooding in any given year and graphically depicts which parts of Hermann will be inundated. While similar to a traditional FEMA FIRM map, this map provides a greater breakdown of frequency from none to very frequent. Descriptions of each category are listed below the map. It should be noted that areas outside of the traditional floodplain, in Zone X, are still shown with a chance of flooding, albeit it categorized as “rare,” it is not without risk. Properties along the south side of Highway 100 West are unlikely to flood but still have a 1 to 5% chance in a year. This potential should be considered when looking at availability of land for housing developments.

Map 9: Hermann Flooding Frequency



- None - flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.
- Very Rare - flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.
- Rare - flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.
- Occasional - flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.
- Frequent - flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.
- Very Frequent - flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

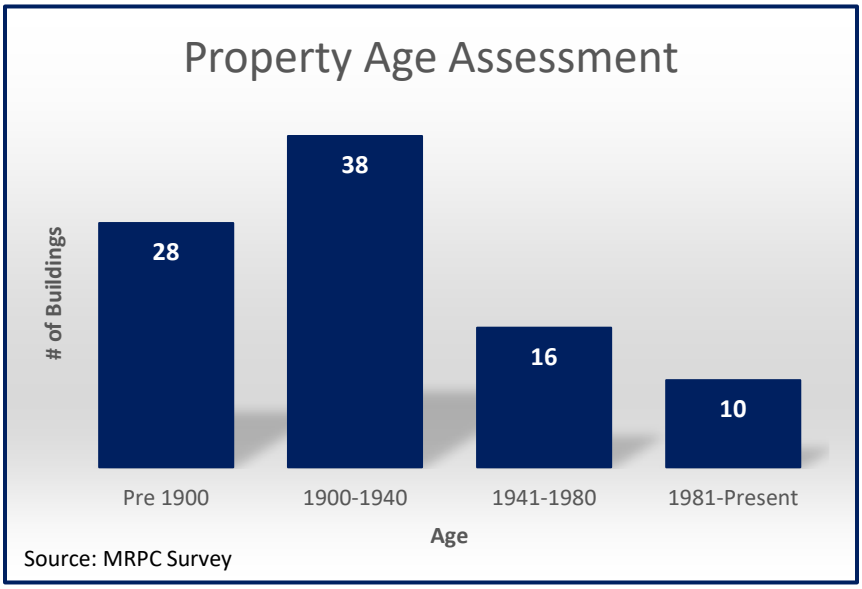
HOUSING SURVEY RESULTS

Based on a 2021 windshield survey of residential properties located within the floodplain, the following survey results were gathered to assess the condition of structures and the respective property. Items reviewed also included if the properties had any apparent signs of reinvestment (e.g. new siding, roofs, fences), sidewalks, off-street parking, etc. Full details can be found in the appendix of this report based on site addresses and parcel IDs.

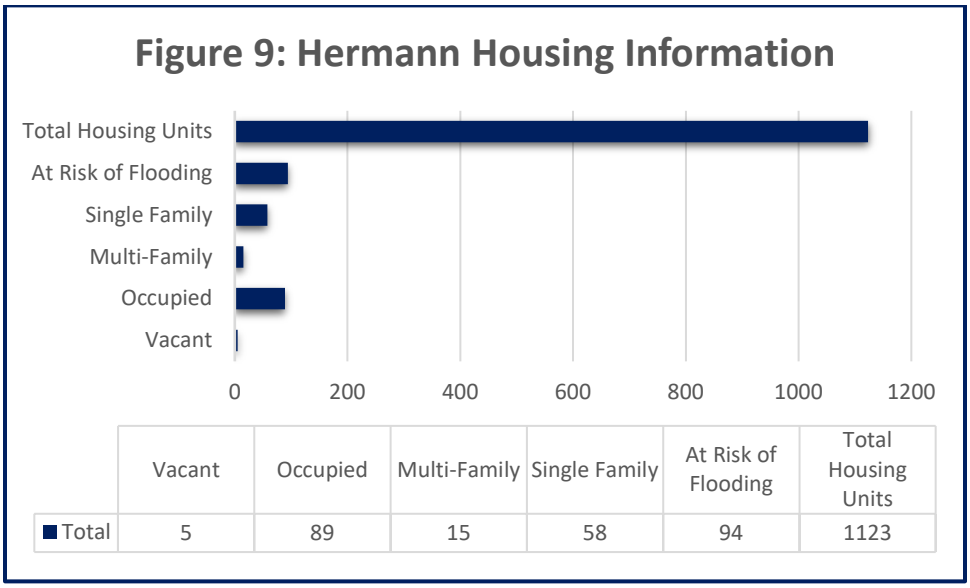
There are 1,123 housing units in Hermann – 94 of which are at risk for flooding – 62% of the buildings

are being used as single- family residential units, and 21% of them being used as short-term rentals. A visual inspection shows 95% of them are occupied with the remainder being vacant. The rest are split between mixed-use property or multi-family units. The dark red in Map 9 identifies the location of residential properties within the floodplain, whether they be single-family, duplex, multi-family or mixed-use.

Figure 8: Property Age

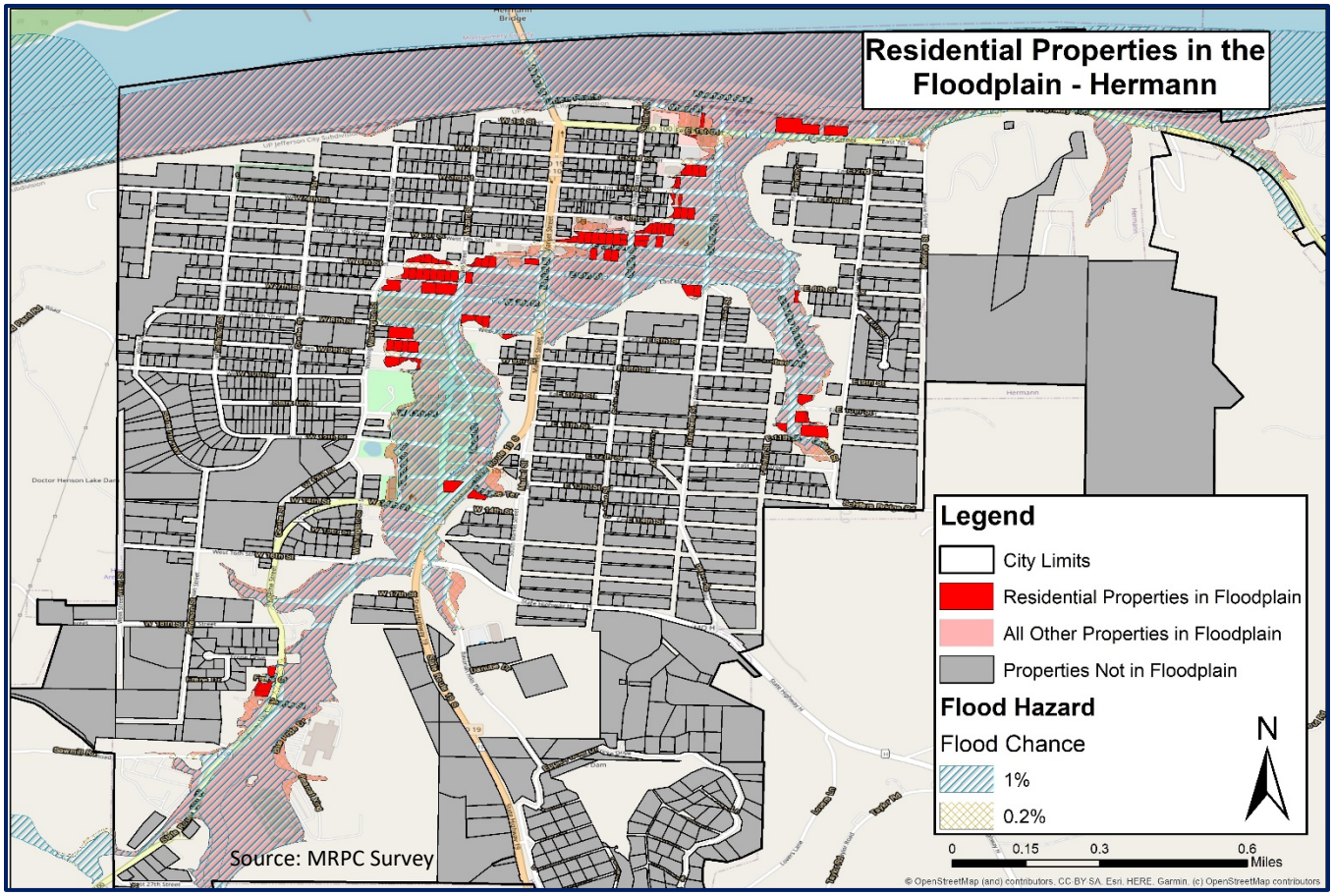


Hermann's housing survey results show that a limited number of homes should be considered for demolition, whereas most historic structures should be raised in order to reduce flood impacts on lower levels. Opportunities for new construction are located to the southwest along Highway 100 West and to the east and uphill.



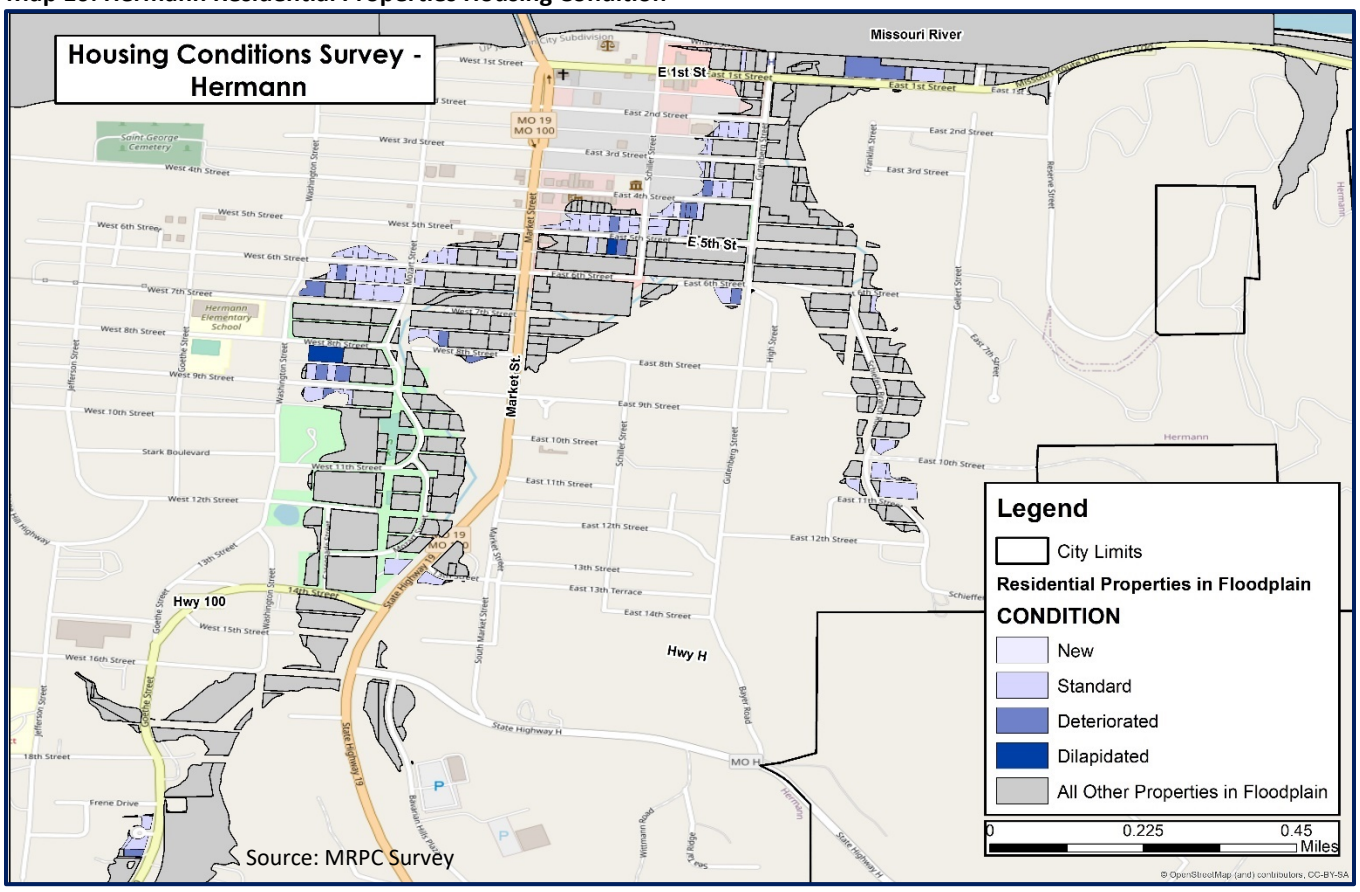
Source: MRPC Survey and 2021 ACS

Map 9: Hermann Residential Properties



Most of the residential structures in Hermann were built prior to 1940, and 61.5% of those homes were identified in standard condition despite their historic nature. Of the total residential properties in the floodplain, 79.8% of structures are in standard repair or better. Only one property was identified as "new" in the floodplain. The remaining 20.2% of residential properties in the floodplain are in deteriorated or dilapidated condition. The assessed property values are spread out, but a majority have values greater than $50,000 (76.3%), which is consistent with the fact that most residences are in standard condition. Map 10 depicts the locations of properties based on their condition assessment at the time of the survey. This information was collected to identify possible residential properties that could be demolished and removed from the floodplain to improve flood impacts to the community. A larger map and property details are also provided in the appendices.

Map 10: Hermann Residential Properties Housing Condition



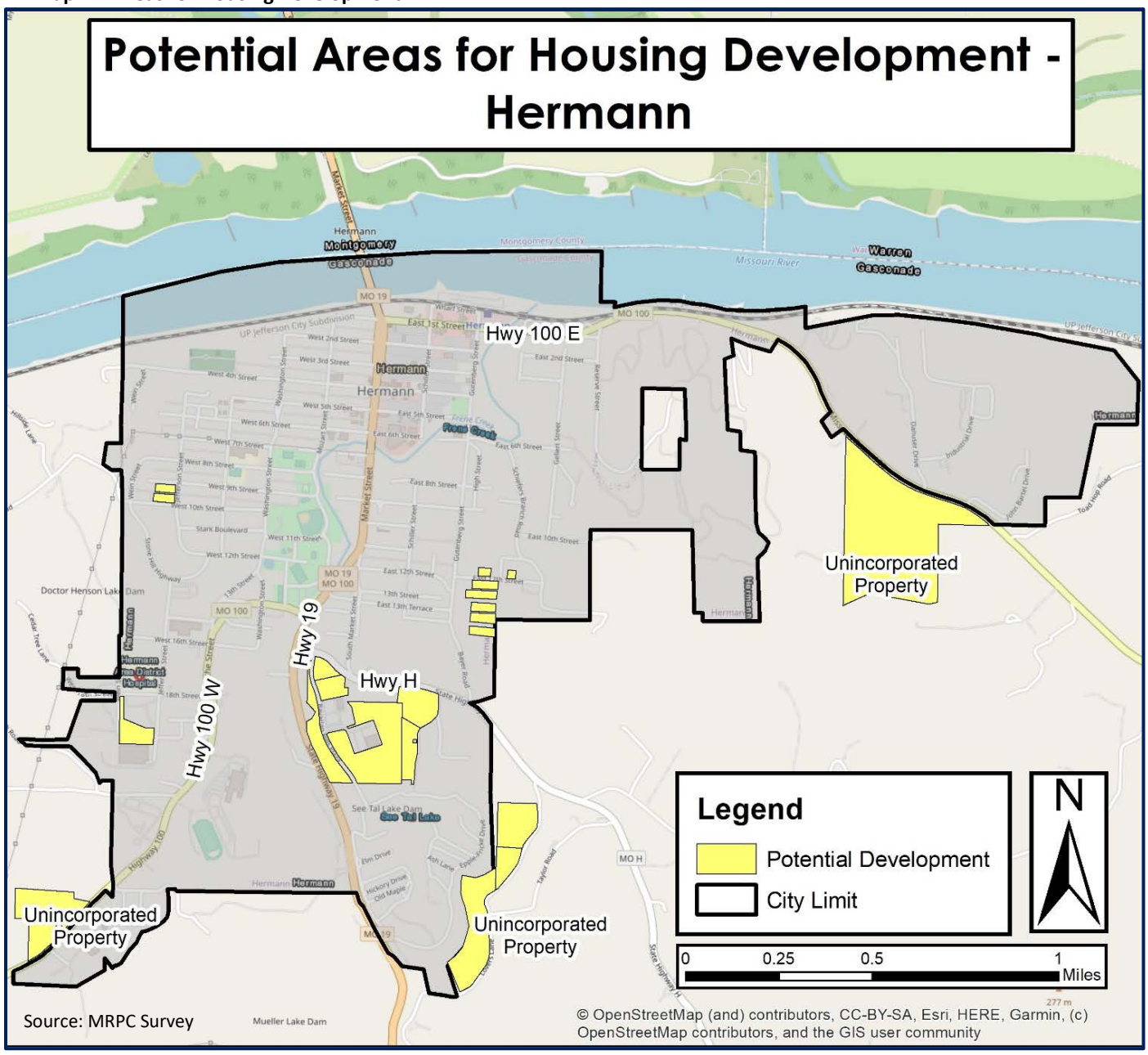
The image below shows two single-family structures in the floodplain along West Sixth St. in standard condition on the exterior of the property. These properties are adjacent to Hermann Manor to the south, which is also in standard condition. While these properties have a higher threat of regular flooding, they are not likely to be demolished based on their appearance alone. Recommendations for mitigation of standard condition structures and new housing locations are discussed in the last section of this chapter.

Source: Google Earth Street View

FUTURE DEVELOPMENT

The city has several potential locations for both infill and expansion to move residential structures to a safer location. After review of floodplain maps, visits to Hermann to view vacant land, and a review of parcel information, planning staff has highlighted 19 properties within and adjacent to the city limits. Each property is highlighted based solely on its proximity to the community, the amount of land outside of the floodplain, and the potential for residential development. This section details properties that are more conducive to house development. Land prices and infrastructure costs have not been factored into these recommendations. These suggestions are based solely on the location of the properties in proximity to the city and the topography of the land. All property is privately owned at the time of this report. Any recommendations in this study do not require any actual development. All maps on the following pages are sourced from the county's assessor information and GIS mapping.

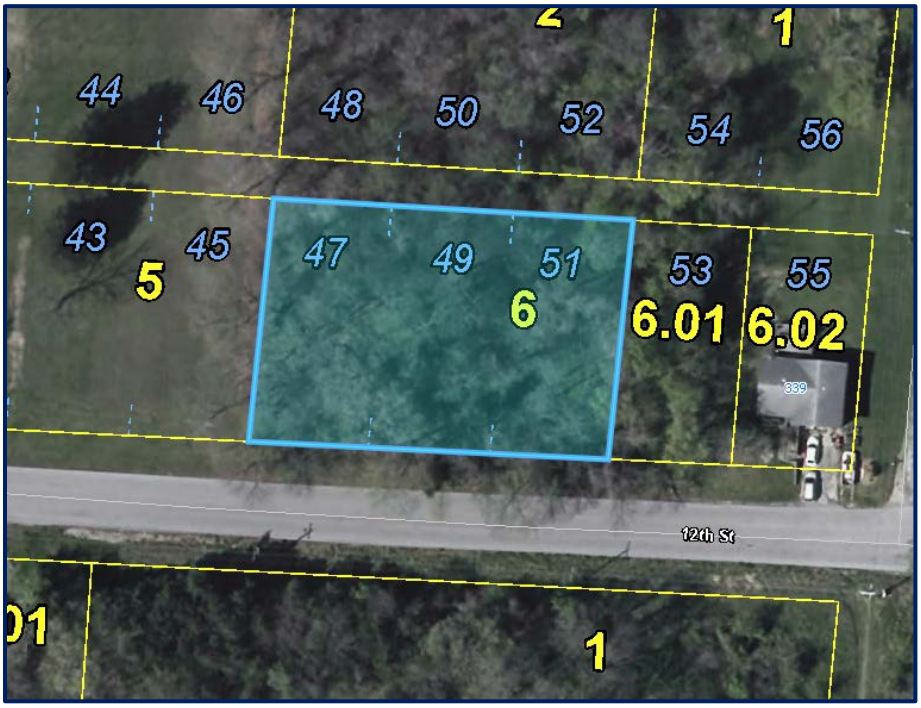
Map 11: Areas for Housing Development



- A 58.17-acre property located south of the intersection of Hwy. 100 and Danhauser Rd. is home to the Rocky Top Vineyards and Distillery; however, the rest of the property is vacant to the north and south of Copper Mule Distillery Rd. This property would also require annexation but is adjacent to city limits and has easy access to Hwy. 100, with a private road that runs through it to public streets to the north and east.

- A 0.33-acre property located at the northeast intersection of East 12th St. and Franklin St. is home to a single residence mobile home on the eastern half of the double lot; however, the western half of the property remains vacant with face for a single-family home. This property is located within city limits and lies along a paved road for easy access.

- A 0.50-acre property wooded located at the northwest intersection of East 12th St. and Franklin St. is a vacant three-lot property with no current developments. This property relatively flat, is located within city limits and lies along a paved road for easy access to the south.



- A 1.02 -acre wooded property located at the southwest intersection of East 12th St. and Franklin St. is a vacant property with no current developments and space for multiple single-family homes. This property relatively flat, is located within city limits and lies along a paved road to the north for easy access. This parcel appears suitable for residential uses and is far from the impacts of flooding.

- A 1.51-acre property located west of the intersection of East 12th St. and Gutenberg St. has a single-family home on the western edge of the lot; however, the eastern 3/4 of the property remains vacant and wooded. This property is located within city limits, lies along a paved road for easy access on the western border and features platted undeveloped subdivision roads on the north, south and east borders.

- A 0.99-acre wooded property located southeast of the intersection of East 12th St. and Gutenberg St. is a vacant property with no current developments. This property is relatively flat and is located within city limits. While there are currently no developed roads that border the property, it features platted subdivision roads on the north, south and east borders.

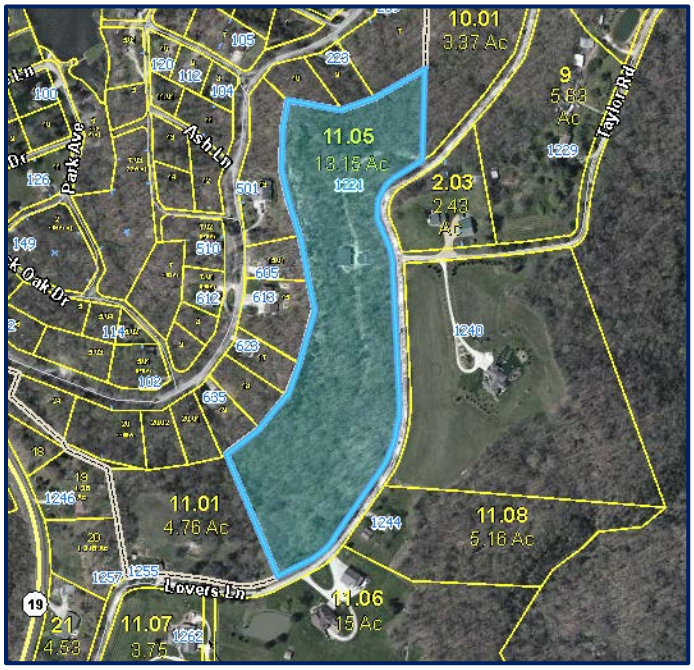
- A 0.99-acre wooded property located northeast of the intersection of East 13th St. and Gutenberg St. is vacant with no current developments. This property relatively flat and is located within city limits. While there are currently no developed roads that border the property, it features platted undeveloped subdivision roads on the north, south and east borders.

- A 0.99-acre wooded property located southeast of the intersection of East 14th St. and Gutenberg St. is vacant with no current developments. This property is relatively flat and is located within city limits. While there are currently no developed roads that border the property, it features platted undeveloped subdivision roads on the north, south and east borders.

- A 7.86-acre wooded property located southwest of the intersection of Hwy. H and Lovers Ln. is a vacant property with no current developments. This property is sloped with the highest elevations along its eastern boundary and would have to be annexed as it is not within city limits. This property is easily accessed due to Lovers Ln. running along its entire eastern border.

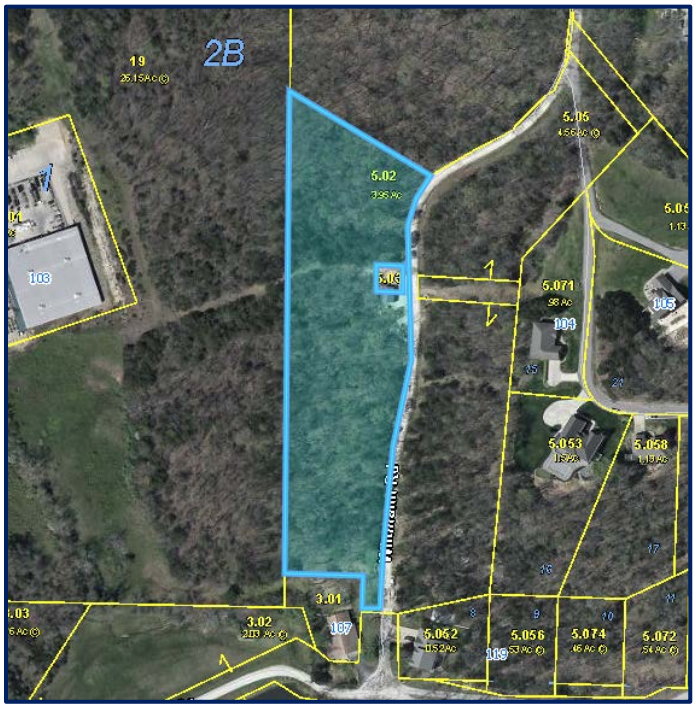
- A 3.37-acre wooded property located southwest of the intersection of Hwy. H and Lovers Ln. is a vacant property with no current developments. This property is sloped with the highest elevations along its eastern boundary and would have to be annexed as it is not within city limits. This property is easily accessed due to Lovers Ln. running along its entire eastern border.

- A 11.05-acre primarily wooded property located west of the intersection of Taylor Rd. and Lovers Ln. has a single-family home located across from Taylor Rd. with no current developments to its north and south. This property is sloped with the highest elevations along its eastern boundary and would have to be annexed as it is not within city limits. This property is easily accessed due to Lovers Ln. running along its entire eastern border.



- A 5.01-acre wooded property located southwest of the intersection of Hwy. H and Whittman Rd. is a vacant property with no current developments. This property is relatively flat and is within city limits. This property is easily accessed due to Hwy H. running along its northern border and Wittman Rd. along its eastern border.

- A 3.95-acre primarily wooded property located northwest of the intersection of Epple-Fricke Dr. and Whittman Rd. has a single-family home along the eastern boundary with no other current developments. This property is relatively flat and is within city limits. This property is easily accessed due Wittman Rd. along its eastern border.

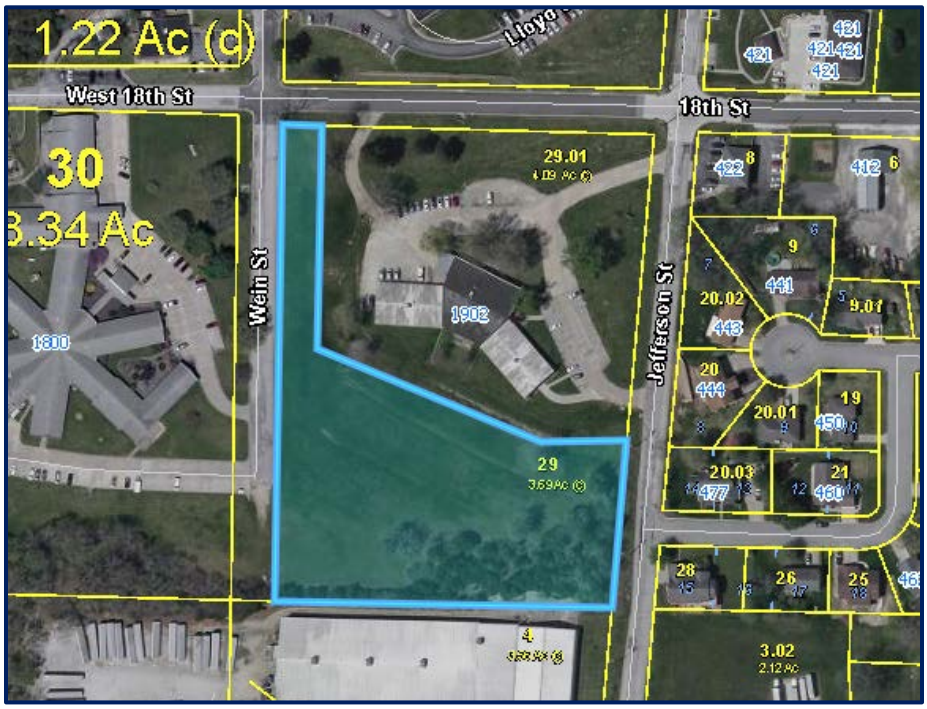


- A 26.15-acre property located southwest and southeast of the intersection of Hwy. H and Bavarian Hills Plaza is a vacant property with no current developments. This property is relatively flat and is within city limits. The property is easily accessed due to Bavarian Hills Plaza bisecting the property, running from its northern to southern border.

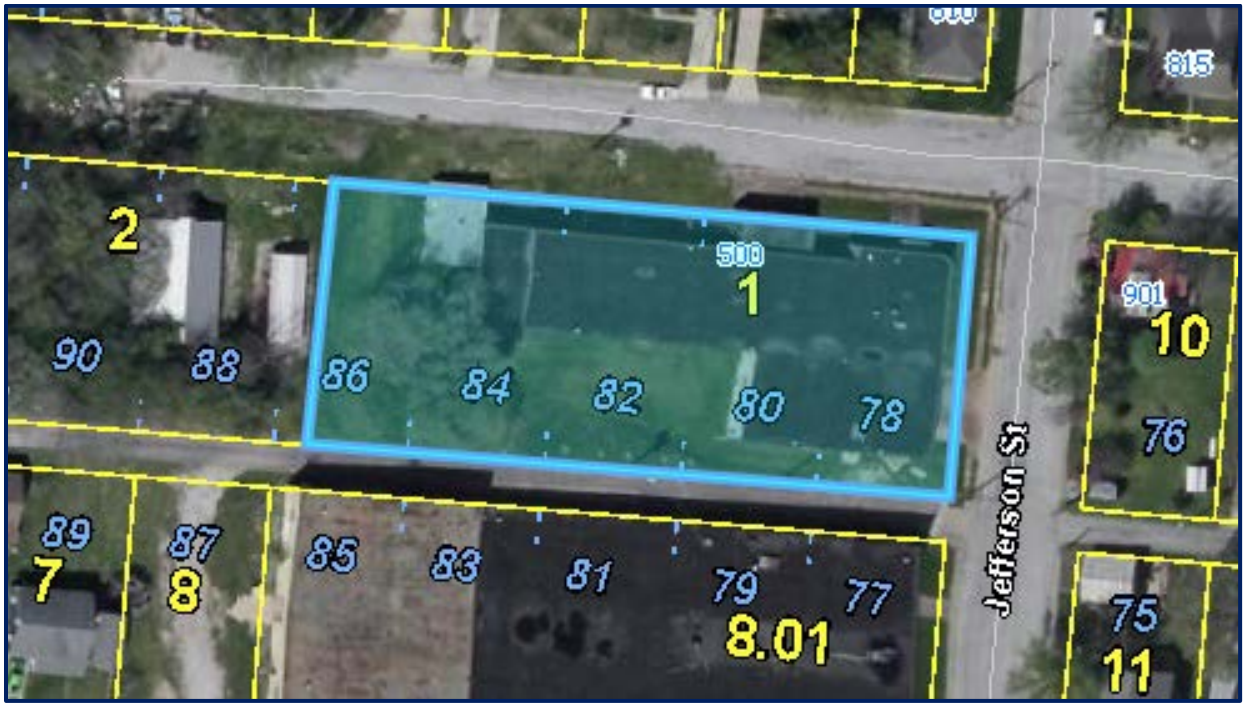
- A 2.80-acre property located southeast of the intersection of Hwy. H and Bavarian Hills Plaza is a vacant property with no current developments. This property is relatively flat and is within city limits. This property is easily accessed due to Bavarian Hills Plaza running along its western border.

- A 12.75-acre property located southwest of the intersection of Hwy. 100 and West 27th St. is a single residence property, with two agricultural structures and house located near the southeast property line, and no current developments to the north, west or south. This property is gently sloped with its northwestern corner featuring the highest elevations and would need to be annexed due to not being within the city limits. This property is easily accessed due to Hwy. 100 running along its southeastern border.

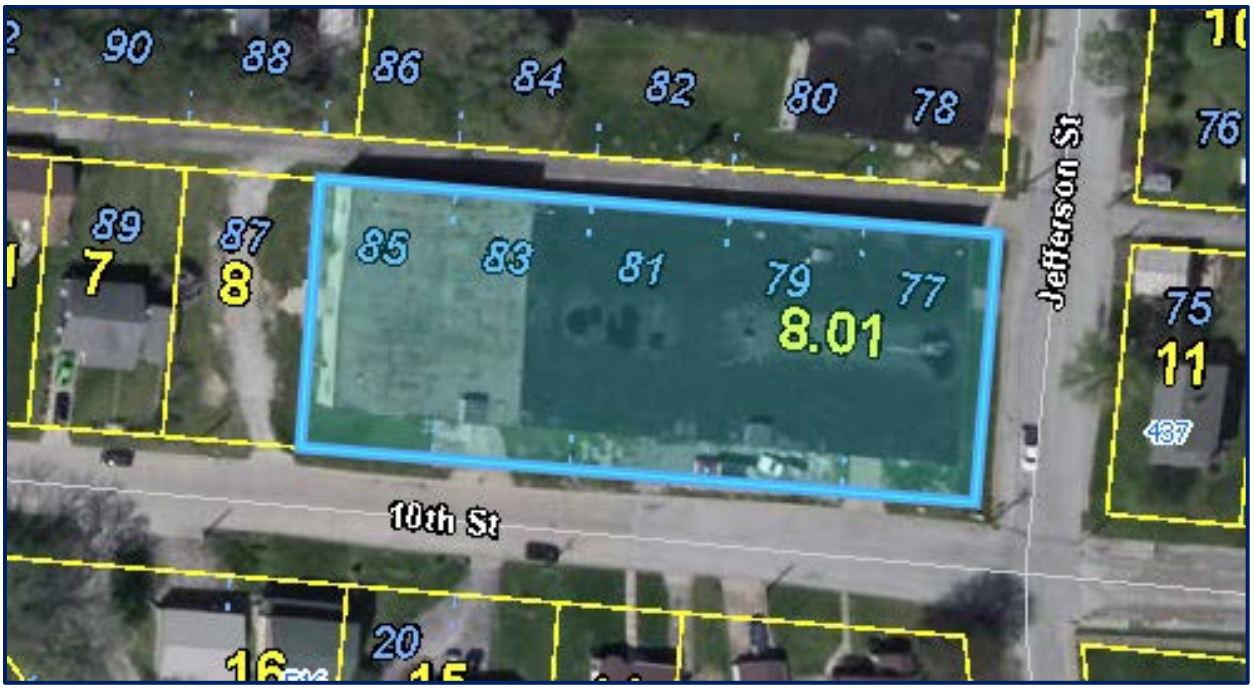
- A 3.69-acre property located southeast of the intersection of Wein St. and 18th St. is a vacant property, with no current developments. This property is relatively flat and is located within the city limits. This property is easily accessed due to Wein St. along its western border, 18th St along its northern border, and Jefferson St. along its eastern border.



- A 0.79-acre property located southwest of the intersection of Jefferson St. and 9th St. is home to a vacant, dilapidated industrial building at the northeast half of the property with the rest being vacant. This property is relatively flat and is located within the city limits. This property is easily accessed due to 9th St. along its northern border and Jefferson St. along its eastern border.



- A 0.83-acre property located northwest of the intersection of Jefferson St. and 10th St. is home to a vacant, dilapidated industrial building that takes up most of the property. This property is relatively flat with some upward slope toward the western border and is located within the city limits. This property is easily accessed due to 10th St. along its southern border and Jefferson St. along its eastern border.



MITIGATION RECOMMENDATIONS

Hermann's residential property within the floodplain is mostly in standard condition; however, mitigation solutions should be considered on a case-by-case basis. Depending on the project, consultation from a local architect, engineer, contractor, landscaper, or other expert in design and construction may be required. Also, changes to properties and buildings in floodplains require permits or other local approvals as noted in the city's floodplain ordinance. It is also recommended to consult with adjacent property owners when proposing flood mitigation measures such as extending downspouts or regrading areas between homes. Changes to the flow of water from one property to another can have negative impacts on adjacent parcels when there may not have been a previous issue.

The following general recommendations are based on residential types of mitigation for structures in the floodplain as outlined in FEMA's "Protect Your Home from Flooding" report. Any of the recommendations for improvements inside and outside of the home can be applied to any type of residential structure (e.g. single-family, duplex, multi-family). Due to the historic nature of several residential buildings in the city of Hermann, exterior home and property improvements will likely require approval by the local historic preservation board (Landmarks Commission) and/or the Missouri State Historic Preservation Office (SHPO). It is recommended to reach out to city officials prior to initiating any construction for repairs, raising, or relocating of the home:

Outside of the Home

For the exterior areas of residential properties in the floodplain that are identified in NEW or STANDARD condition per the housing survey, consider taking the following actions:

- Maintain proper water runoff and drainage. Routinely clean and maintain gutters, downspouts, and splashpads so that rainwater from roofs flow easily away from residences. Also, ensure that any nearby drainage ditches or storm drains are clear of debris and functioning properly.
- Improve lot grading. Determine how water flows or accumulates around residences to identify potential trouble spots (often easy to see during an average rainstorm). Stormwater should always drain away from buildings; if necessary, change landscaping to improve runoff. This may include building up any sunken areas around the foundation, digging small depressions to properly channel water, and otherwise improving the yard so that it slopes away from homes.
- Reduce impervious surfaces around residential structures. Retaining and creating natural green space around residences can help reduce sewer overflows by reducing stormwater runoff. Consider options such as rain gardens, vegetated swales, or pervious pavements, which allow more water to be absorbed by the ground.
- Install a rain barrel. A rain barrel is an alternative method for dealing with rainwater. Rain barrels are typically connected to gutter downspouts and collect the runoff from roofs. The stored water can be utilized for non-potable uses such as watering the lawn and gardens or washing your car.
- Elevate utilities and service equipment. Raise and anchor air conditioning condensers, heat pumps, water meters and other service equipment onto pedestals or platforms that are at least one foot above the base flood elevation established for the surrounding property.
- Anchor outdoor fuel tanks. Attach outdoor fuel tanks to a large concrete slab that weighs enough to resist the force of floodwaters or install inexpensive ground anchors that are connected across the top of the tank with metal straps. Unanchored fuel tanks can be easily moved and ruptured by floodwaters and pose serious threats to people, property, and the environment. Fuel tanks should also be elevated above the regulatory base flood elevation as adopted by the FEMA FIRM map. If not feasible then all filling and ventilation tubes should be elevated so that floodwaters cannot enter the tank.

Inside the Home

For interior areas of residential properties in the floodplain that are identified in NEW or STANDARD condition per the housing survey, below the base flood elevation, consider making the following alterations:

- Protect valuable possessions. Move important documents and other valuable or sentimental items to a safer location well above the potential flood elevation and/or inside watertight containers.
- Seal foundations and basement walls. Close any foundation cracks with mortar and masonry caulk or hydraulic cement, which expands and fills gaps completely. Seal walls in basements

with waterproofing compounds to avoid seepage. Make sure any floor drains are clear of obstructions.

- Install flood vents. Flood vents are small, permanent openings that allow floodwater to flow freely through an enclosure such as a crawlspace or garage. Properly positioned and installed, flood vents protect homes during floods by preventing water pressure buildup that can destroy walls and foundations. Once installed, make sure flood vents are kept free of debris and will allow the free flow of floodwater.
- Install a sump pump. Sump pumps, which pump groundwater away from the home, can be an excellent defense against basement seepage and flooding. They draw in the groundwater from around the house and direct it away from the structure through drainage pipes. Be sure to choose a device with battery-operated backup, in case of electrical power failure.
- Prevent sewer backups. Install drain plugs for all basement floor drains to prevent sewer backups. Another recommended option, regardless of the base flood elevation, is to install sewer backflow valves for all pipes entering the building. These devices, which allow water to flow only one direction, prevent floodwater and wastewater from backing up into your home through toilets, sinks, and other drains. They are available in a variety of designs that range from simple to complex, but should be installed by a qualified, licensed plumber.
- Use flood-resistant building materials. Replace wooden floorboards and carpets with ceramic tile, vinyl, rubber, or other flood-resistant materials. Use moveable rugs instead of fitted carpets. Replace internal walls and ceilings with flood-resistant material such as lime plaster, cement board, concrete, or pressure-treated and decay-resistant wood. Replace wooden doors and window frames with metal or other flood-resistant options.
- Raise electrical system components. Increase the height of electric service panels (fuse and circuit breaker boxes) and all outlets, switches, and wiring to at least one foot above the base flood elevation. These modifications should be made by a licensed electrician.
- Protect utilities and service equipment. Move the main parts of any heating, ventilation, and air conditioning (HVAC) systems to a higher floor or the attic. Consider raising other major appliances, such as washers, dryers, and hot water heaters, above the ground floor. If relocation or elevation is not possible, protect service equipment in place using low floodwalls and shields. Alternative options such as replacing traditional hot water heaters with tankless units should also be considered.
- Anchor indoor fuel tanks. Anchor fuel tanks by attaching them to a large concrete slab that weighs enough to resist the force of floodwaters.
- Install a flood alert system. A variety of flood sensors and other early warning devices can alert residents to the risk of imminent flooding so that residents can take preventative or protective actions before extensive damage occurs.

For All Homes in The Floodplain

For residential properties in the floodplain that are identified in NEW, STANDARD or DETERIORATED condition per the housing survey, consider taking the following actions:

- Raise the structure. Elevating a home to meet the floodplain standards (usually one foot above the base flood elevation) is a common method of retrofitting structures in the floodplain. Of the 94 properties in new, standard or deteriorated condition in Hermann, this report considers those properties with identified repetitive damage (identified by Hermann and SEMA/FEMA) to be the best candidates for elevation. This can include building a storage-only/garage foundation underneath the existing home. The second option includes abandonment of the first floor and retrofit to accommodate a storage-only foundation, with a new upper level and roof built.
- Relocate the structure. This option would allow for the original home to stay mainly intact, but the owner would have to find a new lot (outside of the floodplain) to place the home. Additionally, costs for moving homes can increase due to the size of the structure and distance moved from original location. Relocation is a mitigation technique usually used for historic homes that may also require approvals from local and state preservation agencies.

For residential properties in the floodplain that are identified in DETERIORATED condition per the housing survey, consider taking the following actions:

- Using any of the tools above may improve the conditions of the deteriorated home; however, per floodplain regulations, no substantial improvements may be made. A substantial improvement, as defined in 44 CFR § 59.1, means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the start of construction of the improvement. Additional information on substantial improvements can be found in the following document provided by FEMA on page 51.
- Deteriorated structures that would require more than a 50% investment to improve the structure should consider demolition. There is more than one option for demolition:
    - If Hermann is considering a floodplain buyout of substantially damaged/repetitive loss structures, flood buyout grants are potentially available to purchase the residential properties (home and lot). While this option removes the home from the floodplain, the long-term ownership remains with the city and does not go back to the original owner, as the city would use grant funds to purchase the property.
    - Non-floodplain related demolition grants can assist communities with demolition, where the lot is eventually sodded or seeded and open to new development. Any new development in the floodplain is subject to the ordinances of Hermann.

For residential properties in the floodplain that are identified in DILAPIDATED condition per the housing survey, consider taking the following actions:

- Demolition of the structure. This plan identifies approximately two residential properties as being in a dilapidated condition, where the exterior of the home appears to have visible damage to the structure. This includes holes in roofs, windows, doors and/or significant damage to the siding of a home. Both homes are also estimated to be older than 1940, which may require approval from the Landmarks Commission prior to demolition.

- Floodplain mitigation for these structures is the same as the previously identified mitigation measures for dilapidated homes, where costs to renovate would be more than 50% of the appraised value (substantial damage/improvement).

Online Resources

The following online resources provide a wealth of information and guidance on mitigation techniques for homes in the floodplain as outlined in this section.

Elevating Your House
https://www.fema.gov/sites/default/files/documents/fema_elevating-your-house-chapter-5.pdf

Homeowner's Guide to Retrofitting
www.fema.gov/media-library/assets/documents/480

Protect Your Home from Flooding: Low-cost Projects You Can Do Yourself
https://www.fema.gov/sites/default/files/documents/fema_protect-your-home-from-flooding-brochure_2020.pdf

Reducing Flood Risk to Residential Buildings That Cannot Be Elevated
www.fema.gov/media-library/assets/documents/109669

Protecting Your Home and Property from Flood Damage
www.fema.gov/media-library/assets/documents/21471

Protecting Building Utility Systems from Flood Damage
www.fema.gov/media-library/assets/documents/3729

Protect Your Property from Flooding
www.fema.gov/media-library/assets/documents/13261

Answer to Questions About Substantially Improved/Substantially Damaged Buildings
https://www.fema.gov/sites/default/files/2020-07/fema_p213_08232018.pdf

FEMA, Protect Your Property
www.fema.gov/protect-your-property

FloodSmart
www.floodsmart.gov

NEWBURG

COMMUNITY CHARACTERISTICS

Map 12: Aerial view of Newburg

The town of Newburg was founded in 1883. Located in Phelps County, Newburg is located along the north bank of Little Piney River, with all residences in the floodplain situated north of the riverbanks.

With a current population of 363, the city has 127 civilians employed in the workforce as of the 2021 American Community Survey (ACS). The city is 0.65 square miles in area (416 acres), with 0.01 acres of land covered in water. The city also sits at an approximate elevation of 728 ft. above sea level.

The city's taxable sales and use tax for 2022 totaled $246,390.20. Based on the 2021 ACS, the greatest number of its workforce is employed in arts, entertainment, and recreation (31.9%), public administration (19.5%), and retail trade (14.2%). As of 2021, the median average household income in the City of Newburg was $19,464 with a poverty rate of 46.9%. The median home value is only $54,700 as of the 2021 ACS; however, the average cost to rent a home is $573 per month.

As of the 2008 FIRM (Flood Insurance Rate Maps), approximately 149 properties are at risk for flooding, 58 which are identified as residential (single-family, duplex, multi-family or mixed-use). ACS data shows that the entire town has approximately 293 housing units total, which means that 19.8% of the residential properties in Newburg have a moderate to high flood risk.

FLOOD HISTORY & FREQUENCY

Data from the National Weather Service (NWS): Advanced Hydrologic Prediction Service (https://water.weather.gov/ahps2/hydrograph.php?wfo=lsx&gage=hrnm7) provides background

information for communities affected by flooding and lists impacts as it relates to water levels and flood stages. In Newburg, only three of the top ten historic river crests have happened since 2013 with increasing frequency occurring over the past decade. The following data provides an overview of the top 10 historic and 10 most recent flood crest stages for the Newburg area. Additional dates and flood crests can be found on the NWS website. The 2017 event ranks ninth in historic crests at 15.46 feet, with the flood of 1915 bringing the highest flood waters at 16.70 feet in August 1915. However, flooding in December 2015 surpassed the 2017 event.

Historic Crests (Top 10)

(1) 16.70 ft on 08/20/1915
(2) 16.60 ft on 06/17/1985
(3) 16.26 ft on 06/26/1935
(4) 16.20 ft on 08/14/1946
(5) 16.16 ft on 12/28/2015
(6) 16.11 ft on 12/03/1982
(7) 16.09 ft on 11/14/1993
(8) 15.52 ft on 05/03/1991
(9) 15.46 ft on 04/30/2017
(10) 15.22 ft on 08/07/2013

Recent Crests

(1) 10.29 ft on 04/29/2021
(2) 11.74 ft on 01/11/2020
(3) 10.41 ft on 05/01/2019
(4) 11.72 ft on 02/24/2018
(5) 15.46 ft on 04/30/2017
(6) 16.16 ft on 12/28/2015
(7) 11.20 ft on 06/19/2015
(8) 7.07 ft on 04/03/2014
(9) 15.22 ft on 08/07/2013
(10) 12.73 ft on 03/15/2012

Based on the crest information, properties within proximity to the city begin to flood at a 29.9 ft. crest which is considered between a moderate to major flood stage.

Flood Categories (in feet)	
Major Flood Stage	**16**
Moderate Flood Stage	**15**
Flood Stage	**12**
Action Stage	**11**

At moderate flood stage, flood water begins to impact areas near the river in Newburg. If the water rises another foot, properties along First Street and Water Street begin to flood. The following picture shows flooding of a single-family home from an STL Today article during the 2013 flood. The table on the next page provides flood water levels and impact areas for the city and surrounding land.


Source: STL Today Newspaper

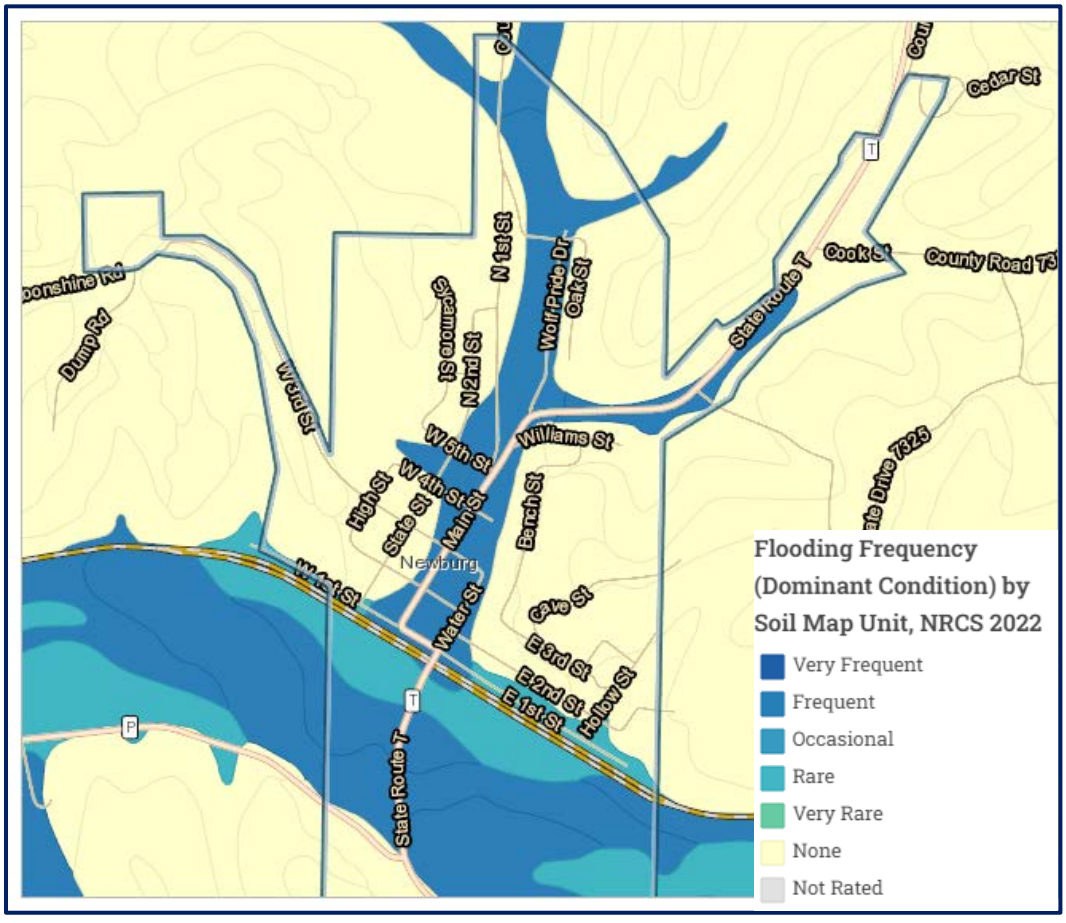
Flood Impact Area

12	Low lying locations near the river flood.
15	Flood water begins to impact locations near the river in Newburg.
16	Homes and businesses near the river on First Street and Water Street flood.
25	The Water Street Bridge (State Highway T) at the gage site floods.
27	Approximate level of the one percent chance flood.

Newburg Flood Frequency Map

Flooding frequency is also visualized through mapping supported by the University of Missouri Extension Center for Applied Research and Engagement Systems (CARES). This map depicts the likelihood of flooding in any given year and graphically depicts which parts of Newburg will be inundated. While similar to a traditional FEMA FIRM map, this map provides a greater breakdown of frequency from none to very frequent. Descriptions of each category are listed below the map. It should be noted that areas outside of the traditional floodplain, in Zone X, are still shown with a chance of flooding, albeit it categorized as “rare,” it is not without risk. Properties along First Street are unlikely to flood but still have a 1 to 5% chance in a year. This potential should be considered when looking at availability of land for housing developments.

Map 13: Newburg Flooding Frequency



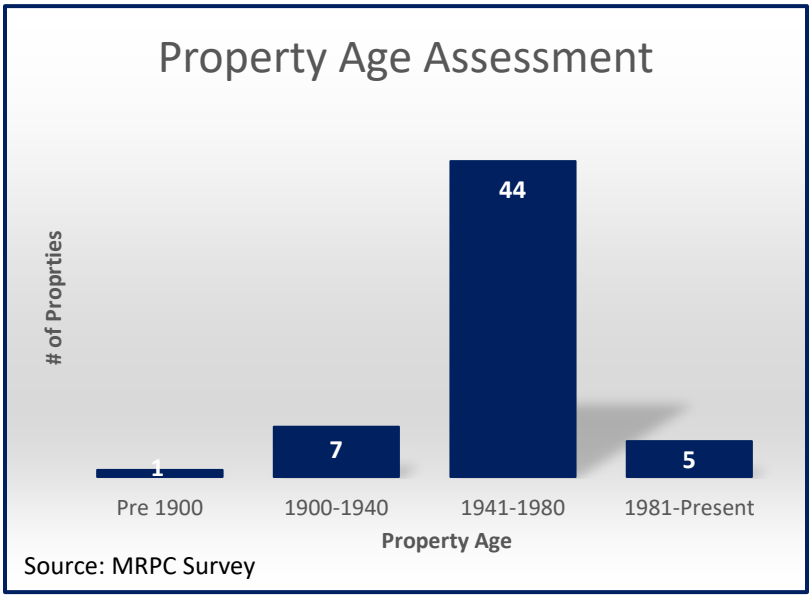
Source: https://careshq.org/map-room/

- None - Flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.
- Very Rare - Flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.
- Rare - Flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.
- Occasional - Flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.
- Frequent - Flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.
- Very Frequent - Flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

HOUSING SURVEY RESULTS

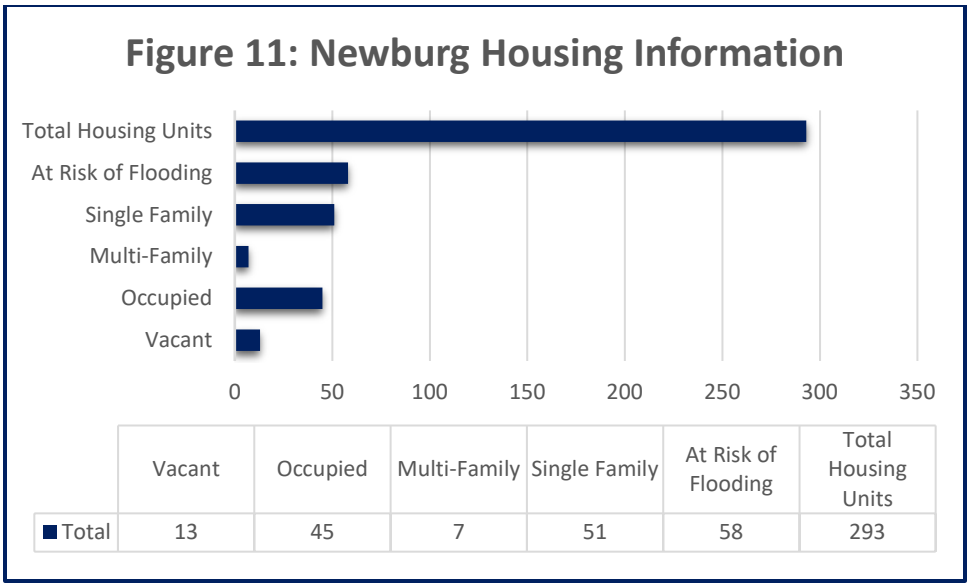
Based on a 2021 windshield survey of residential properties located within the floodplain, the following survey results were gathered to assess the condition of structures and the respective property. Items reviewed also included if the properties had any apparent signs of reinvestment (e.g. new siding, roofs, fences), sidewalks, off-street parking, etc. Full details can be found in the appendix of this report based on site addresses and parcel IDs. There are 293 housing units in Newburg– 149 of which are at risk for flooding – 38.9% of those are single-family dwellings. Upon a visual inspection, 83% of residential properties appear occupied, 15% are vacant, and the remainder were for sale at the time of the survey.

Figure 10: Property Age



Source: MRPC Survey

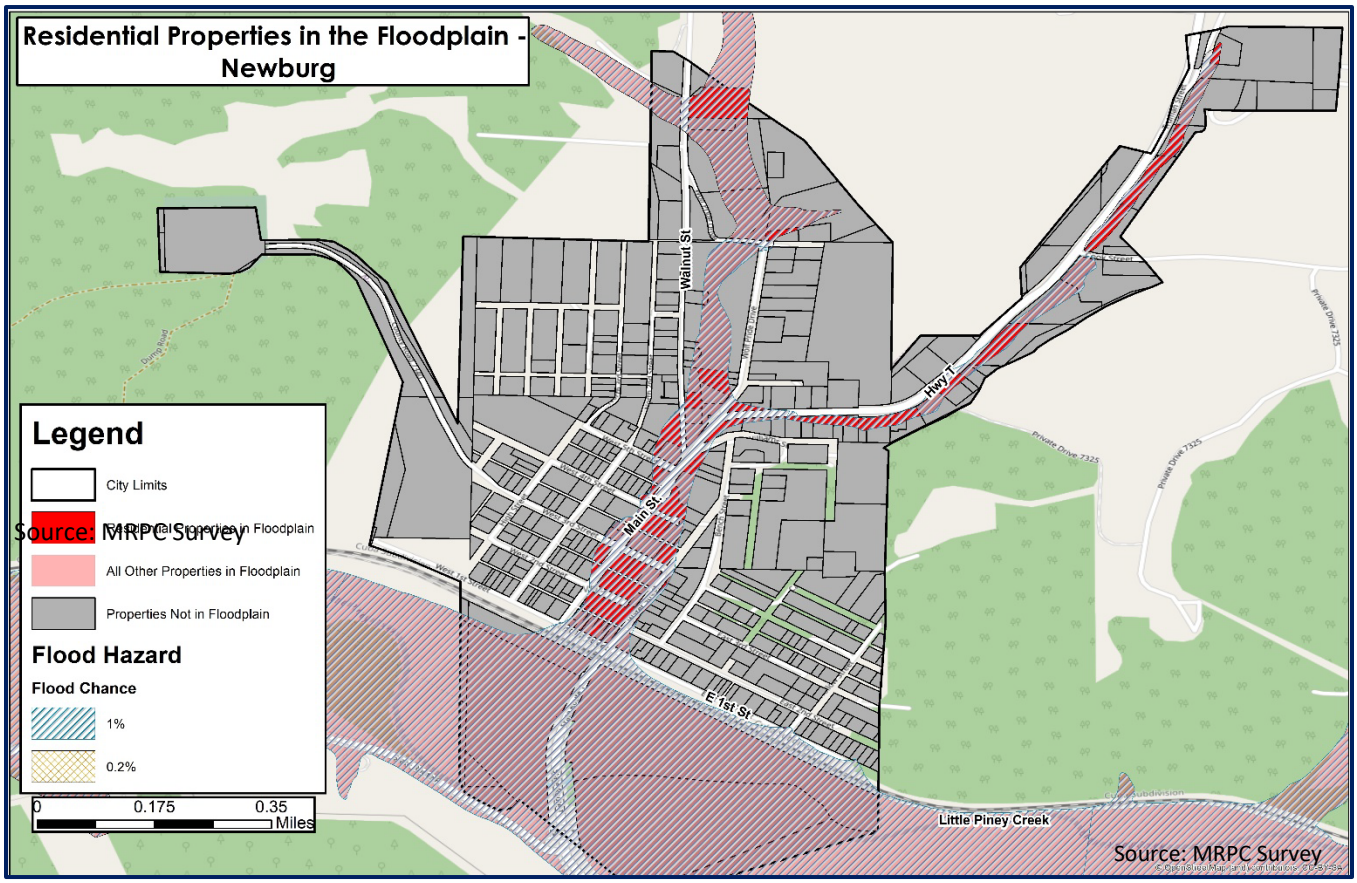
Newburg's housing survey results indicate that many of the residential structures in the floodplain are in standard condition; however, there is room for demolition of and new construction for multi-use and multi-family buildings. Additional opportunities for new construction are located to the northeast and northwest sides of Main Street. Most properties identified for new residential uses are located in the city limits; however, one larger parcel is available just east of the city limits.



Source: MRPC Survey and 2021 ACS

The dark red in Map 14 identifies the location of residential properties within the floodplain, whether they be single-family, duplex, multi-family or mixed-use.

Map 14: Newburg Residential Properties



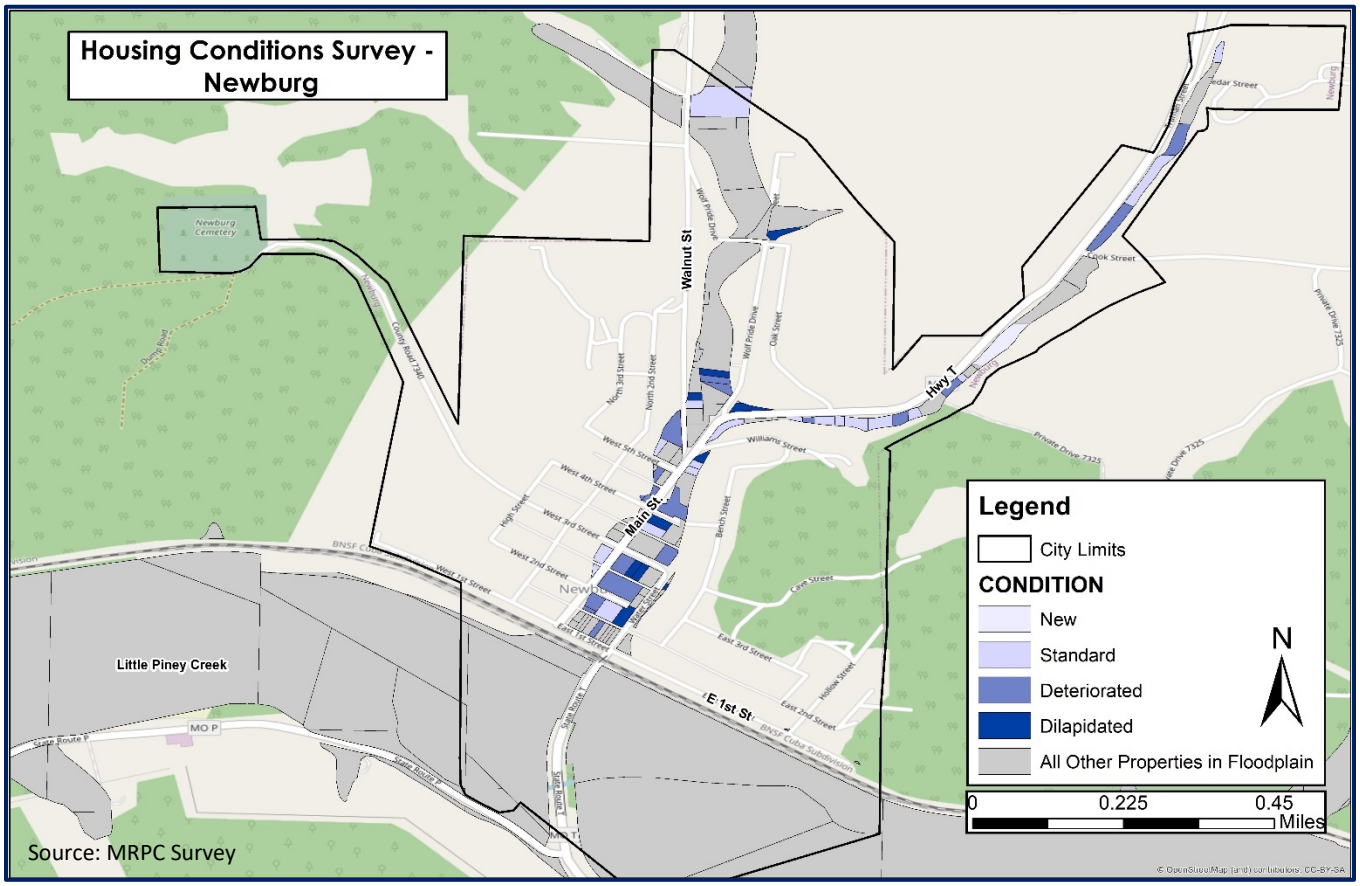
More than three-quarters of the housing stock was built between 1941 and 1980. There are a mix of property conditions based on the survey; however, only 38% of residential properties in the floodplain

are in standard condition. Unfortunately, 41% of the properties were identified as deteriorated, with the remainder being in a dilapidated condition. The following picture depicts properties along Highway T in standard condition within the floodplain.

Source: Google Street View

Map 15 depicts the locations of properties based on their condition assessment at the time of the survey. This information was collected to identify possible residential properties that could be demolished and removed from the floodplain to improve flood impacts to the community. A larger map and property details are also provided in the appendices.

Map 15: Newburg Residential Properties Housing Conditions

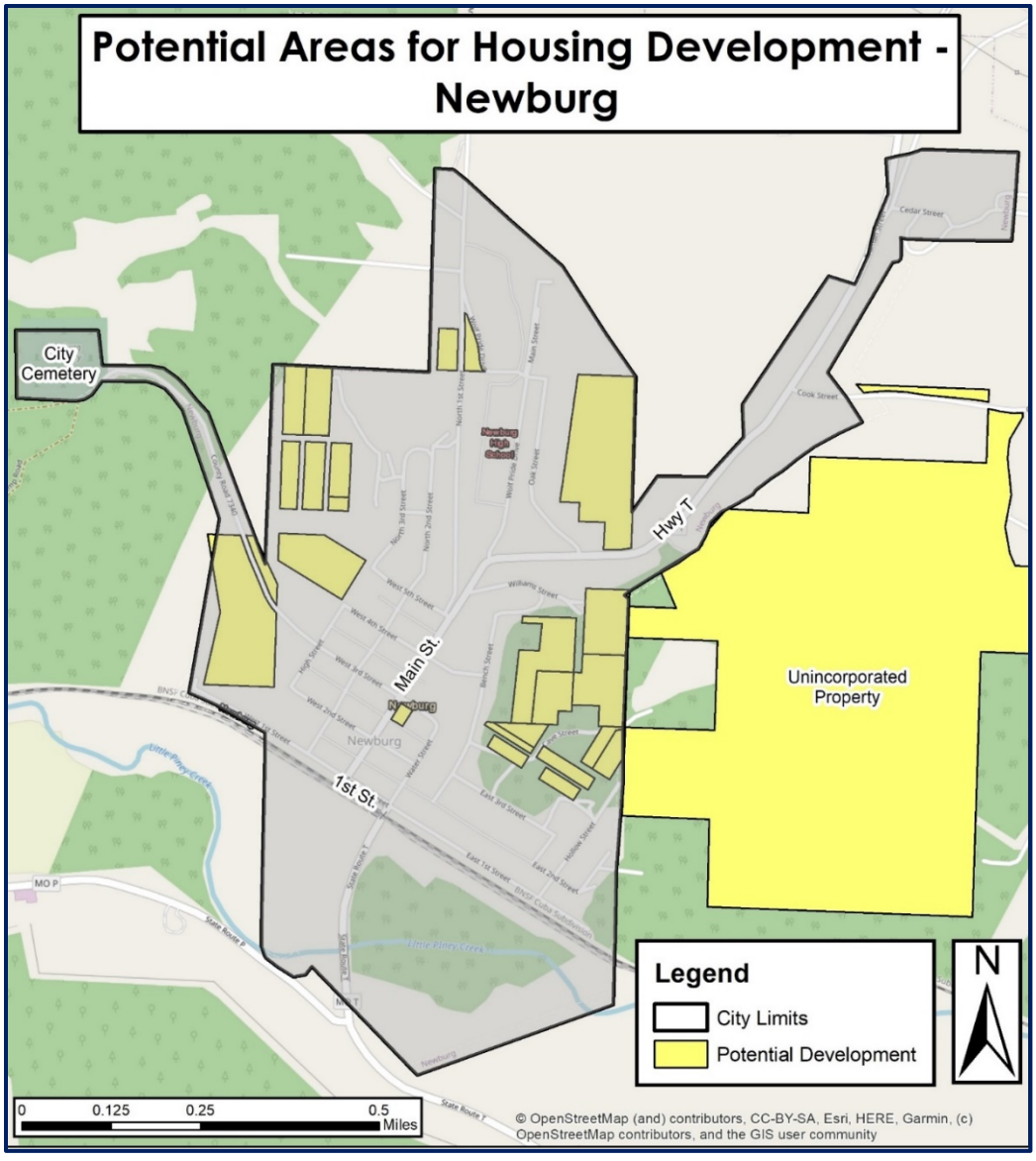


Source: MRPC Survey

FUTURE DEVELOPMENT

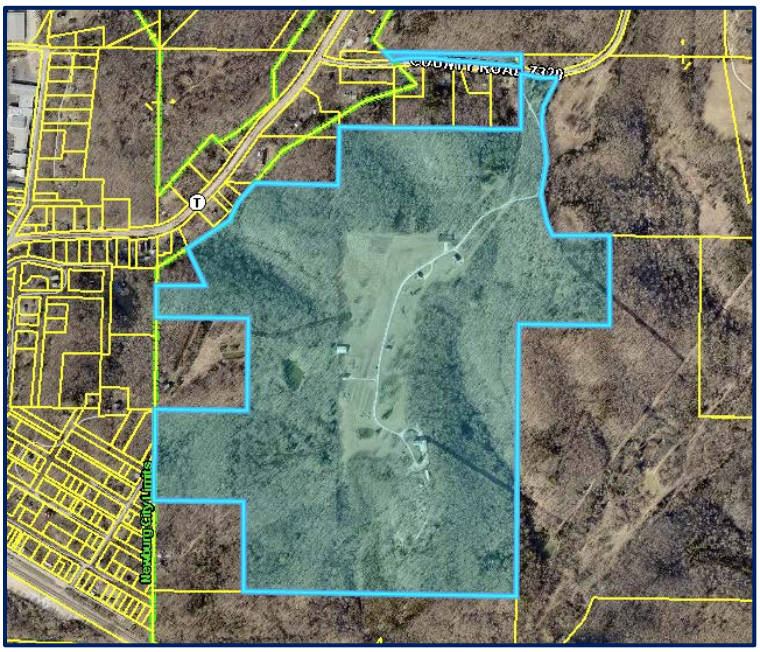
A majority of Main Street and the downtown commercial area is located within the floodplain leaving little option for potential infill. However, based on review of existing residential structures outside of the floodplain, there are potential options for demolition and redevelopment on existing lots to the north and west of Main Street. After review of floodplain maps, visits to Newburg to view vacant land, and a review of parcel information, 23 properties within and adjacent to the city limits have been identified. Each property is highlighted based solely on its proximity to the city, the amount of land outside of the floodplain, and the potential for residential development. This section details properties that are more conducive to house development. Land prices and infrastructure costs have not been factored into recommendations. These suggestions are based solely on the location of the properties in proximity to the city and the topography of the land. Additionally, no contact was made with property owners to determine their interest in future development. All property is privately owned at the time of this report. Any recommendations in this study do not require any actual development. All maps on the following pages are sourced from the county's assessor information and GIS mapping.

Map 16: Areas for Housing Development



Source: MRPC Survey

- A 178.93-acre property located south of the intersection of Hwy. T and West Cook St. features three single-family homes, with multiple agricultural structures and homes located in a clearing near the center of the property with no current developments to the north, west, east or south. This primarily wooded property is relatively flat at the center and gently to heavily sloped in the woodlands, with its center featuring the highest elevations. This property would need to be annexed due to not being within the city limits. This property is easily accessed by Private Drive 7325 running across the property, connecting to both Hwy. T and Cook St.



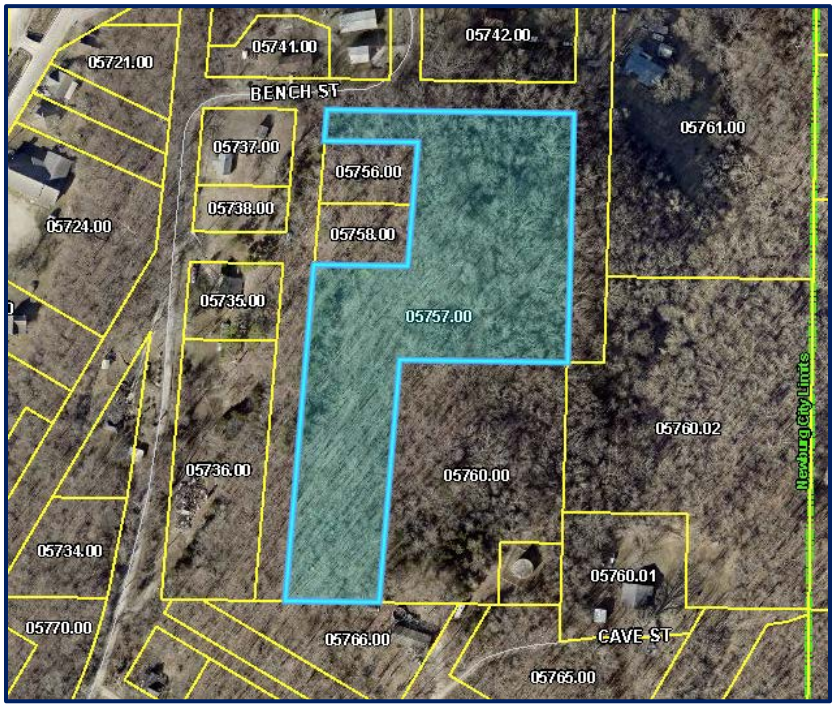
- A 12.77-acre wooded property located northeast of the intersection of Hwy. T and Wolf Pride Dr. is vacant with no current developments. This property is sloped up the east side and is within city limits. This property is easily accessed due to Hwy. T running along its southern border and is within walking distance of the Newburg Public Schools.

- A 3.41-acre primarily wooded property located northwest of the end of Williams St. has a single-family home in the northwest corner with no other current developments. This property is gently sloped up to the east and is within city limits. This property is easily accessed from Williams St. and features an undeveloped, platted roadway along its western border.

- A 3.84-acre wooded property located north of the end of Cave St. is vacant with no current developments. This property is gently sloped up to the northeast and is within city limits. This property is easily accessed from Cave St. and features an undeveloped platted roadway along its northwestern border.

- A 2.36-acre wooded property located north of the end of Cave St. is vacant with no current developments. This property is gently sloped up to the east and is within city limits. This property is easily accessed from Cave St. and features an undeveloped platted roadway to its northeastern corner.

- A 4.34-acre primarily wooded property located northeast of the intersection of Cave St. and Bench St. is vacant with no current developments. This property is gently sloped up to the east and is within city limits. This property is easily accessed from Bench St. at its northwest corner, and features undeveloped platted roadways to its west, north and east.



- A 0.96-acre lightly wooded property located northeast of the intersection of Cave St. and Bench St. features a single-family home in its northeast corner with no other current developments. This property is gently sloped up to the northeast and is within city limits. This property is easily accessed from Cave St. on its eastern border.

- A 0.46-acre lightly wooded property located northeast of the intersection of Cave St. and Bench St. is vacant with no current developments. This property is gently sloped up to the northeast and is within city limits. This property is easily accessed from Cave St. at its southeast border and features an undeveloped platted roadways to its southwest.

- A 0.69-acre lightly wooded property located northeast of the intersection of Cave St. and Bench St. is vacant with no current developments. This property is gently sloped up to the northeast and is within city limits. This property is easily accessed from Cave St. which bisects to the south and features undeveloped platted roadways to its south, north, and east.

- A 0.69-acre lightly wooded property located north of the intersection of 3rd St. and 4th St. is vacant with no current developments. This property is gently sloped up to the northeast and is within city limits. This property is easily accessed from 4th St. at its southwest border features undeveloped platted roadways to its south and north.

- A 1.03-acre lightly wooded property located in between Cave St. and Hollow St. is vacant with no current developments. This property is gently sloped up to the northeast and is within city limits. This property is easily accessed from Cave St. on its northwest border and features undeveloped platted roadways to its north and south.

- A 1.06-acre lightly wooded property located north of Hollow St. is vacant with no current developments. This property is gently sloped up to the northeast and is within city limits. While this property currently unreachable by public roads, it features an undeveloped platted roadway on its southern border.

- A 0.83-acre lightly wooded property located north of Hollow St. is vacant with no current developments. This property is gently sloped up to the northeast and is within city limits. While this property currently unreachable by public roads, it features an undeveloped platted roadway on its southern border.

- A 0.32-acre property located south of the intersection of Main St. and 3rd St. is home to a vacant and occupied commercial buildings that takes up most of the property. This property is relatively flat and is located within the city limits. This property is easily accessed due to Main St. along its northwestern border and 3rd St. along its northeastern border.

- A 10.69-acre wooded property primarily located between C.R. 7340 and the western city limits is vacant with no current developments. This property is gently sloped up to the northeast and is within city limits. This property is easily accessed by C.R. 7340 which bisects its northeast corner.

- A 4.30-acre wooded property located north of the intersection of High St. and 4th St. is vacant with no current developments. This property is gently sloped up to the west and is within city limits. This property is easily accessed by High St. and 4th St. at its southern corner, and it features an undeveloped platted roadway on its southwestern and southeastern borders.

- A 1.48-acre wooded property located west of Sycamore St. with its western border on the city limits and is vacant with no current developments. This property is gently sloped up to the east and is within city limits. While this property currently unreachable by public roads, it features undeveloped platted roadways on its northern, eastern, and southern border.

- A 1.72-acre wooded property located between Sycamore and the city limits and is vacant with no current developments. This property is gently sloped up to the east and is within city limits. While this property currently unreachable by public roads, it features undeveloped platted roadways on its northern, eastern, western, and southern border.

- A 1.38-acre wooded property located between Sycamore and the city limits and is vacant with no current developments. This property is relatively flat and is within city limits. While this property currently unreachable by public roads, it features undeveloped platted roadways on its northern, eastern, and western border.

- A 0.34-acre wooded property located between Sycamore and the city limits, is vacant with no current development. This property is relatively flat and is within city limits. While this property currently unreachable by public roads, it features undeveloped platted roadways on its southern, eastern, and western border.

- A 2.23-acre wooded property located northwest of Ash St., borders the city limits to its north, and is vacant with no current developments. This property is gently sloped up to the northeast and is within city limits. While this property currently unreachable by public roads, it features an undeveloped platted roadway on its southern border.

- A 2.23-acre wooded property located northwest of Ash St., borders the city limits to its north and west, and is vacant with no current development. This property is gently sloped up to the northeast and is within city limits. While this property currently unreachable by public roads, it features an undeveloped platted roadway on its southern border.

- A 1.83-acre wooded property located southwest and southeast of the intersection of Walnut St. and Wolf Pride Dr. is vacant with no current developments. This property is gently sloped up to the west and is within city limits. This property is easily accessed from Wolf Pride Dr. on its eastern border and N Walnut St. which bisects it from north to south. It also features an undeveloped platted roadway on its southern border.

MITIGATION RECOMMENDATIONS

Newburg has a mix of property conditions within the floodplain and mitigation solutions should be considered on a case-by-case basis. Depending on the project, consultation from a local architect, engineer, contractor, landscaper, or other expert in design and construction may be required. Also, changes to properties and buildings in floodplains require permits or other local approvals as noted in the city's floodplain ordinance. It is also recommended to consult with adjacent property owners when proposing flood mitigation measures such as extending downspouts or regrading areas between homes. Changes to the flow of water from one property to another can have negative impacts on adjacent parcels when there may not have been a previous issue.

The following general recommendations are based on residential types of mitigation for structures in the floodplain as outlined in FEMA's "Protect Your Home from Flooding" report. Any of the recommendations for improvements inside and outside of the home can be applied to any type of residential structure (e.g. single-family, duplex, multi-family or mixed-use):

Outside of the Home

For the exterior areas of residential properties in the floodplain that are identified in STANDARD condition per the housing survey, consider taking the following actions:

- Maintain proper water runoff and drainage. Routinely clean and maintain gutters, downspouts, and splashpads so that rainwater from roofs flow easily away from residences. Also, ensure that any nearby drainage ditches or storm drains are clear of debris and functioning properly.
- Improve lot grading. Determine how water flows or accumulates around residences to identify potential trouble spots (often easy to see during an average rainstorm). Stormwater should always drain away from buildings; if necessary, change landscaping to improve runoff. This may include building up any sunken areas around the foundation, digging small depressions to properly channel water, and otherwise improving the yard so that it slopes away from homes.
- Reduce impervious surfaces around residential structures. Retaining and creating natural green space around residences can help reduce sewer overflows by reducing stormwater runoff. Consider options such as rain gardens, vegetated swales, or pervious pavements, which allow more water to be absorbed by the ground.
- Install a rain barrel. A rain barrel is an alternative method for dealing with rainwater. Rain barrels are typically connected to gutter downspouts and collect the runoff from roofs. The stored water can be utilized for non-potable uses such as watering the lawn and gardens or washing your car.
- Elevate utilities and service equipment. Raise and anchor air conditioning condensers, heat pumps, water meters and other service equipment onto pedestals or platforms that are at least one foot above the base flood elevation established for the surrounding property.
- Anchor outdoor fuel tanks. Attach outdoor fuel tanks to a large concrete slab that weighs enough to resist the force of floodwaters or install inexpensive ground anchors that are connected across the top of the tank with metal straps. Unanchored fuel tanks can be easily moved and ruptured by floodwaters and pose serious threats to people, property, and the environment. Fuel tanks should also be elevated above the regulatory base flood elevation as adopted by the FEMA FIRM map. If not feasible then all filling and ventilation tubes should be elevated so that floodwaters cannot enter the tank.

Inside the Home

For interior areas of residential properties in the floodplain that are identified in STANDARD condition per the housing survey, below the base flood elevation, consider making the following alterations:

- Protect valuable possessions. Move important documents and other valuable or sentimental items to a safer location well above the potential flood elevation and/or inside watertight containers.
- Seal foundations and basement walls. Close any foundation cracks with mortar and masonry caulk or hydraulic cement, which expands and fills gaps completely. Seal walls in basements with waterproofing compounds to avoid seepage. Make sure any floor drains are clear of obstructions.
- Install flood vents. Flood vents are small, permanent openings that allow floodwater to flow freely through an enclosure such as a crawlspace or garage. Properly positioned and installed, flood vents protect homes during floods by preventing water pressure buildup that can destroy

walls and foundations. Once installed, make sure flood vents are kept free of debris and will allow the free flow of floodwater.

- Install a sump pump. Sump pumps, which pump groundwater away from the home, can be an excellent defense against basement seepage and flooding. They draw in the groundwater from around the house and direct it away from the structure through drainage pipes. Be sure to choose a device with battery-operated backup, in case of electrical power failure.
- Prevent sewer backups. Install drain plugs for all basement floor drains to prevent sewer backups. Another recommended option, regardless of the base flood elevation, is to install sewer backflow valves for all pipes entering the building. These devices, which allow water to flow only one direction, prevent floodwater and wastewater from backing up into your home through toilets, sinks, and other drains. They are available in a variety of designs that range from simple to complex, but should be installed by a qualified, licensed plumber.
- Use flood-resistant building materials. Replace wooden floorboards and carpets with ceramic tile, vinyl, rubber, or other flood-resistant materials. Use moveable rugs instead of fitted carpets. Replace internal walls and ceilings with flood-resistant material such as lime plaster, cement board, concrete, or pressure-treated and decay-resistant wood. Replace wooden doors and window frames with metal or other flood-resistant options.
- Raise electrical system components. Increase the height of electric service panels (fuse and circuit breaker boxes) and all outlets, switches, and wiring to at least one foot above the base flood elevation. These modifications should be made by a licensed electrician.
- Protect utilities and service equipment. Move the main parts of any heating, ventilation, and air conditioning (HVAC) systems to a higher floor or the attic. Consider raising other major appliances, such as washers, dryers, and hot water heaters, above the ground floor. If relocation or elevation is not possible, protect service equipment in place using low floodwalls and shields. Alternative options such as replacing traditional hot water heaters with tankless units should also be considered.
- Anchor indoor fuel tanks. Anchor fuel tanks by attaching them to a large concrete slab that weighs enough to resist the force of floodwaters.
- Install a flood alert system. A variety of flood sensors and other early warning devices can alert residents to the risk of imminent flooding so that residents can take preventative or protective actions before extensive damage occurs.

For All Homes in The Floodplain

For residential properties in the floodplain that are identified in STANDARD or DETERIORATED condition per the housing survey, consider taking the following actions:

- Raise the structure. Elevating a home to meet the floodplain standards (usually one foot above the base flood elevation) is a common method of retrofitting structures in the floodplain. Of the 47 properties in standard or deteriorated condition in Newburg, this report considers those properties with identified repetitive damage (identified by Newburg and SEMA/FEMA) to be the best candidates for elevation. This can include building a storage-only/garage foundation

underneath the existing home. The second option includes abandonment of the first floor and retrofit to accommodate a storage-only foundation, with a new upper level and roof built.

- Relocate the structure. This option would allow for the original home to stay mainly intact, but the owner would have to find a new lot (outside of the floodplain) to place the home. Additionally, costs for moving homes can increase due to the size of the structure and distance moved from original location. Relocation is a mitigation technique usually used for historic homes that may also require approvals from local and state preservation agencies.

For residential properties in the floodplain that are identified in DETERIORATED condition per the housing survey, consider taking the following actions:

- Using any of the tools above may improve the conditions of the deteriorated home; however, per floodplain regulations, no substantial improvements may be made. A substantial improvement, as defined in 44 CFR § 59.1, means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the start of construction of the improvement. Additional information on substantial improvements can be found in the following document provided by FEMA on page 74.
- Deteriorated structures that would require more than a 50% investment to improve the structure should consider demolition. There is more than one option for demolition:
    - If Newburg is considering a floodplain buyout of substantially damaged/repetitive loss structures, flood buyout grants are potentially available to purchase the residential properties (home and lot). While this option removes the home from the floodplain, the long-term ownership remains with the city and does not go back to the original owner, as the city would use grant funds to purchase the property.
    - Non-floodplain related demolition grants can assist communities with demolition, where the lot is eventually sodded or seeded and open to new development. Any new development in the floodplain is subject to the ordinances of Newburg.

For residential properties in the floodplain that are identified in DILAPIDATED condition per the housing survey, consider taking the following actions:

- Demolition of the structure. This plan identifies approximately 11 residential properties as being in a dilapidated condition, where the exterior of the home appears to have visible damage to the structure. This includes holes in roofs, windows, doors and/or significant damage to the siding of a home.
- Floodplain mitigation for these structures is the same as the previously identified mitigation measures for dilapidated homes, where costs to renovate would be more than 50% of the appraised value (substantial damage/improvement).

Online Resources

The following online resources provide a wealth of information and guidance on mitigation techniques for homes in the floodplain as outlined in this section.

Elevating Your House
https://www.fema.gov/sites/default/files/documents/fema_elevating-your-house-chapter-5.pdf

Homeowner's Guide to Retrofitting
www.fema.gov/media-library/assets/documents/480

Protect Your Home from Flooding: Low-cost Projects You Can Do Yourself
https://www.fema.gov/sites/default/files/documents/fema_protect-your-home-from-flooding-brochure_2020.pdf

Reducing Flood Risk to Residential Buildings That Cannot Be Elevated
www.fema.gov/media-library/assets/documents/109669

Protecting Your Home and Property from Flood Damage
www.fema.gov/media-library/assets/documents/21471

Protecting Building Utility Systems from Flood Damage
www.fema.gov/media-library/assets/documents/3729

Protect Your Property from Flooding
www.fema.gov/media-library/assets/documents/13261

Answer to Questions About Substantially Improved/Substantially Damaged Buildings
https://www.fema.gov/sites/default/files/2020-07/fema_p213_08232018.pdf

FEMA, Protect Your Property
www.fema.gov/protect-your-property

FloodSmart
www.floodsmart.gov

STEELVILLE

COMMUNITY CHARACTERISTICS

Map 17: Aerial view of Steelville

The city of Steelville was founded in 1835 and is located along the Meramec River, with Yadkin Creek bordering Main Street to the south. As the county seat for Crawford County, Steelville has a current population of 1,607, with 1,352 civilians employed in the workforce as of the 2021 American Community Survey (ACS). The city is 2.42 square miles in area (1,549 acres), with less than 1% of the land covered in water. The city also sits at an approximate elevation of 755 ft. above sea level.

The city's taxable sales and use tax for 2022 totaled $21,878,829.85. Based on 2021 ACS, the greatest number of citizens are employed in manufacturing (28.3%), retail trade (22.7%) and educational and healthcare services (22.1%). The median average household income in the city of Steelville was $37,167 with a poverty rate of 15.9%. The median home value is $76,300 as of the 2021 ACS; however, the average cost to rent a home is $682 per month. It is noted that rental rates continue to increase across the region.

As of the 2008 FIRM (Flood Insurance Rate Maps), approximately 280 properties are at risk for flooding, 67 which are identified as residential (single-family, duplex or multi-family). ACS data shows that the entire town has approximately 745 housing units total, which means that 9% of the residential properties in Steelville have a moderate to high flood risk.

FLOOD HISTORY & FREQUENCY

Data from the National Weather Service (NWS): Advanced Hydrologic Prediction Service

(https://water.weather.gov/ahps2/hydrograph.php?wfo=lsx&gage=hrnm7) provides background information for communities affected by flooding and lists impacts as it relates to water levels and flood stages. In Steelville, four of the top ten historic river crests have happened since 2013 with increasing frequency occurring over the past decade. The following data provides an overview of the top 10 historic and 10 most recent flood crest stages for the Chamois area. Additional dates and flood crests can be found on the NWS website. The 2017 event does not currently rank amongst the top ten in historic crests, with the flood of 1966 bringing the highest flood waters at 24.20 feet and flooding in December 2015 came in second.

Historic Crests (Top 10)

(1) 24.20 ft on 02/10/1966
(2) 16.12 ft on 12/28/2015
(3) 15.93 ft on 03/18/2008
(4) 14.90 ft on 04/19/2013
(5) 14.76 ft on 05/08/2009
(6) 12.59 ft on 06/19/2015
(7) 11.83 ft on 04/28/2011
(8) 11.69 ft on 10/30/2009
(9) 11.54 ft on 03/18/2013
(10) 11.44 ft on 09/14/2008

Recent Crests

(1) 7.28 ft on 02/08/2019
(2) 16.12 ft on 12/28/2015
(3) 12.59 ft on 06/19/2015
(4) 7.19 ft on 08/10/2013
(5) 8.35 ft on 06/01/2013
(6) 10.10 ft on 05/04/2013
(7) 14.90 ft on 04/19/2013
(8) 11.54 ft on 03/18/2013
(9) 8.87 ft on 03/11/2013
(10) 8.77 ft on 01/30/2013

Unfortunately, flood crest information is limited for Steelville and flood categories are not currently provided by the NWS website. The closest flood information is provided for flooding near the Huzzah Valley Resort and Route E. These locations are approximately nine miles and 11 miles from Steelville, respectively.

Flood Crest/Impact Area

8	At this level, Huzzah Valley Resort will consider evacuating the campgrounds and shutting down the riverfront, though inundation would happen at a higher level.
12	Near this height, Route E will be closed near the confluence of the Courtois Creek and Huzzah Creek.

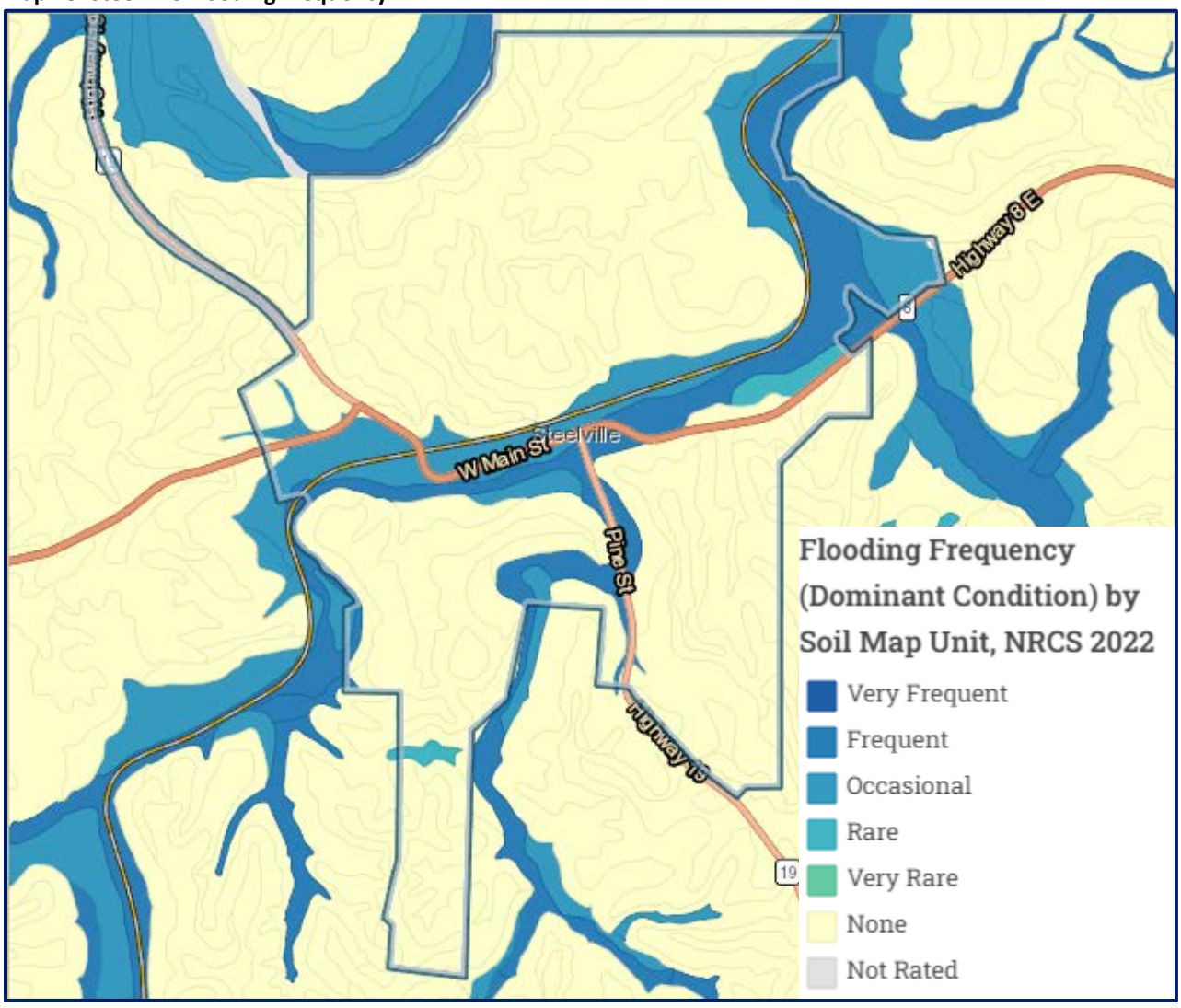
The picture on the right depicts flooding along Yadkin Creek in 1898. While not in the top ten of historic crests, the 1898 flood damaged most of the historic downtown. Flood waters have also inundated the former city hall and mobile home park along Cedar Street, which is just north of the creek.


Source: City of Steelville

Steelville Flood Frequency Map

Flooding frequency is also visualized through mapping supported by the University of Missouri Extension Center for Applied Research and Engagement Systems (CARES). This map depicts the likelihood of flooding in any given year and graphically depicts which parts of Steelville will be inundated. While similar to a traditional FEMA FIRM map, this map provides a greater breakdown of frequency from none to very frequent. Descriptions of each category are listed below the map. It should be noted that areas outside of the traditional floodplain, in Zone X, are still shown with a chance of flooding, albeit it categorized as "rare," it is not without risk. Properties along the north side of Main and Frisco Streets are unlikely to flood but still have a 1 to 5% chance in a year. This potential should be considered when looking at availability of land for housing developments.

Map 18: Steelville Flooding Frequency



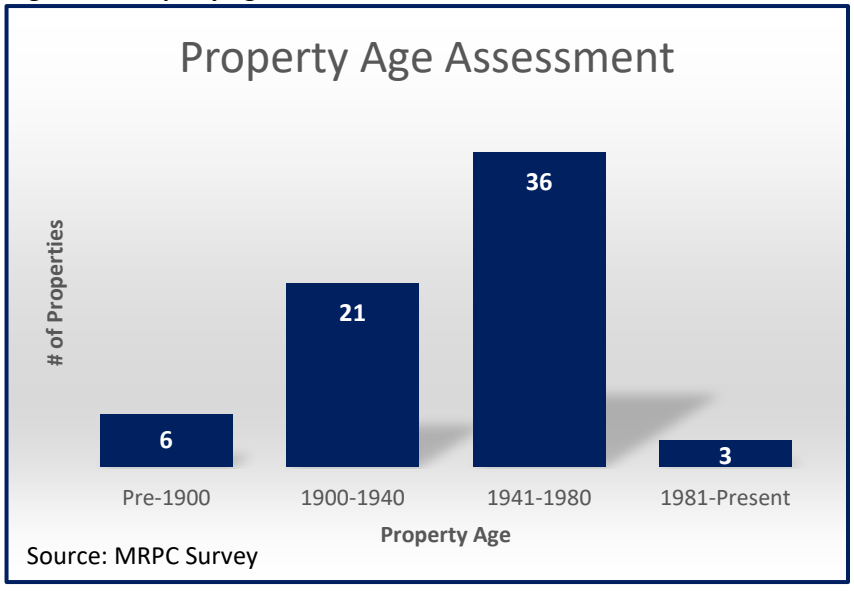
Source: https://careshq.org/map-room/

- None - Flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.
- Very Rare - Flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.
- Rare - Flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.
- Occasional - Flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.
- Frequent - Flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.
- Very Frequent - Flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

HOUSING SURVEY RESULTS

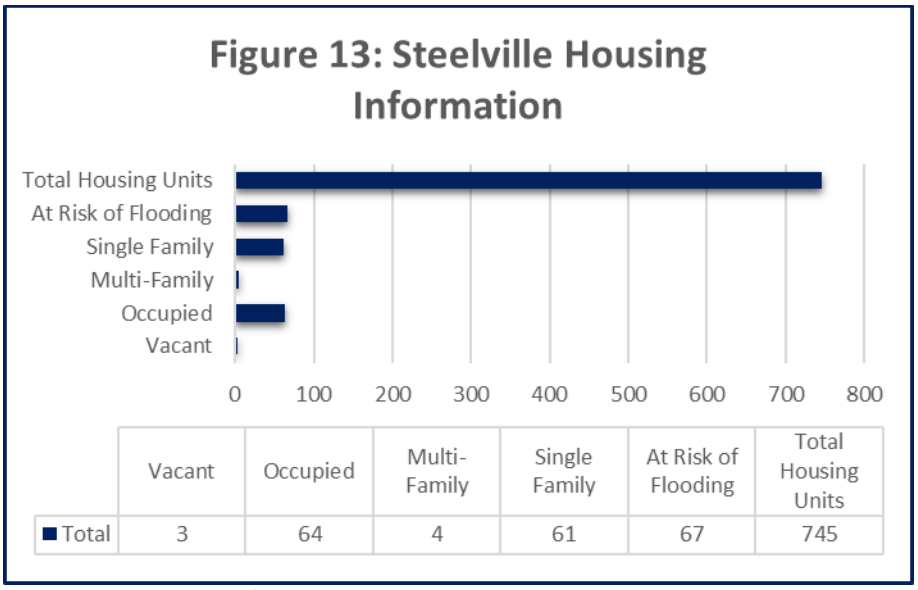
Based on a 2021 windshield survey of residential properties located within the floodplain, the following survey results were gathered to assess the condition of structures and the respective property. Items reviewed also included if the properties had any apparent signs of reinvestment (e.g. new siding, roofs, fences), sidewalks, off-street parking, etc. Full details can be found in the appendix of this report based on site addresses and parcel IDs. There are 745 housing units in Steelville– 67 of which are at risk for flooding – 92.5% of those are single-family dwellings. Upon a visual inspection, 96% of 67 residential properties appear occupied, and the remainder are vacant.

Figure 12: Property Age



Source: MRPC Survey

The city's housing survey results show that a majority of the residential structures in the floodplain are in standard condition; however, there is room for demolition of and new construction for multi-family buildings and mobile home parks outside of the floodplain. Opportunities for new construction are located mostly on the northeast and southeast sides of the community and all are located in city limits, as compared to the other cities within this report which require annexation of developable properties.

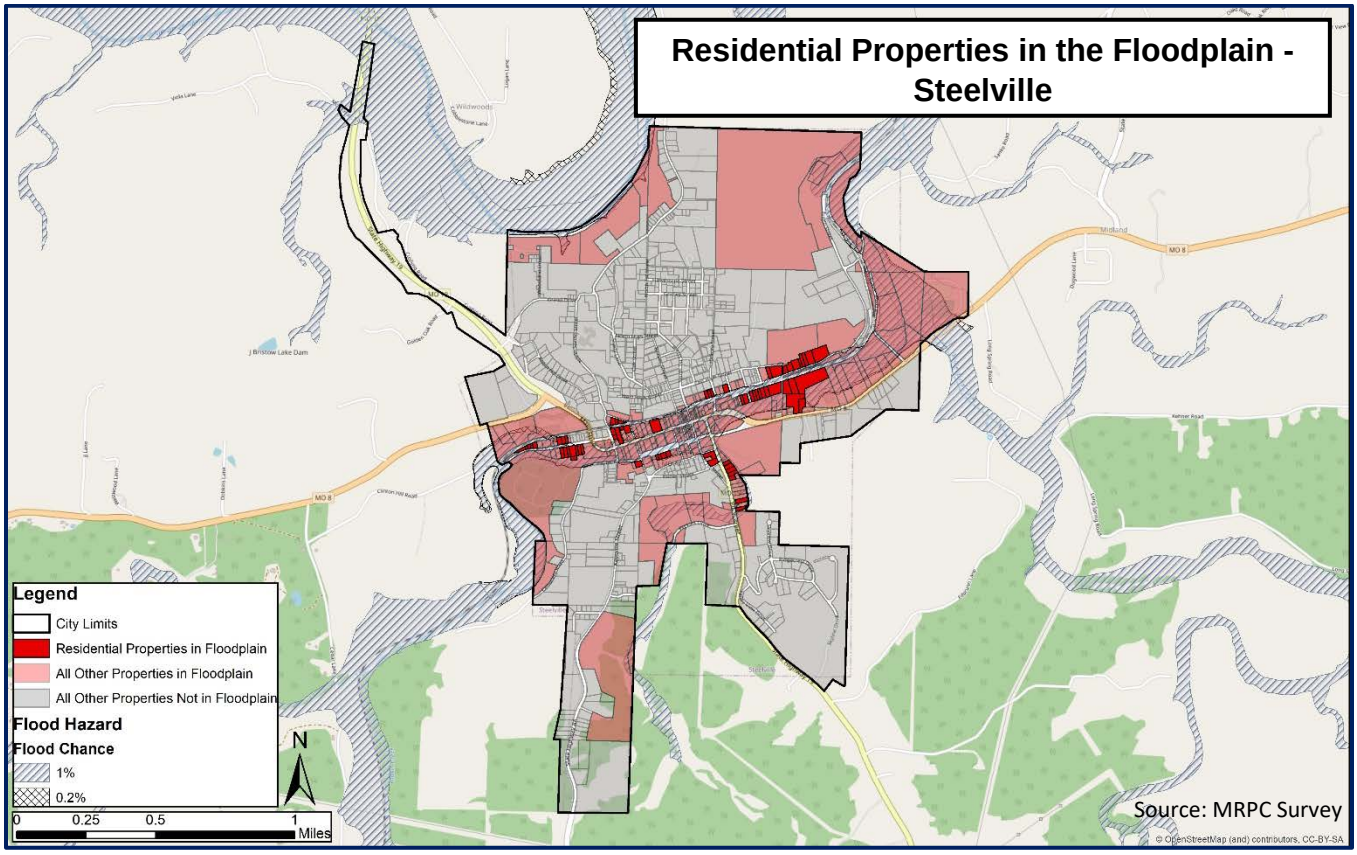


	Vacant	Occupied	Multi-Family	Single Family	At Risk of Flooding	Total Housing Units
Total	3	64	4	61	67	745

Source: MRPC Survey and 2021 ACS

The dark red in Map 19 identifies the location of residential properties within the floodplain, whether they be single-family, duplex, multi-family or mixed-use.

Map 19: Residential Properties in the Floodplain

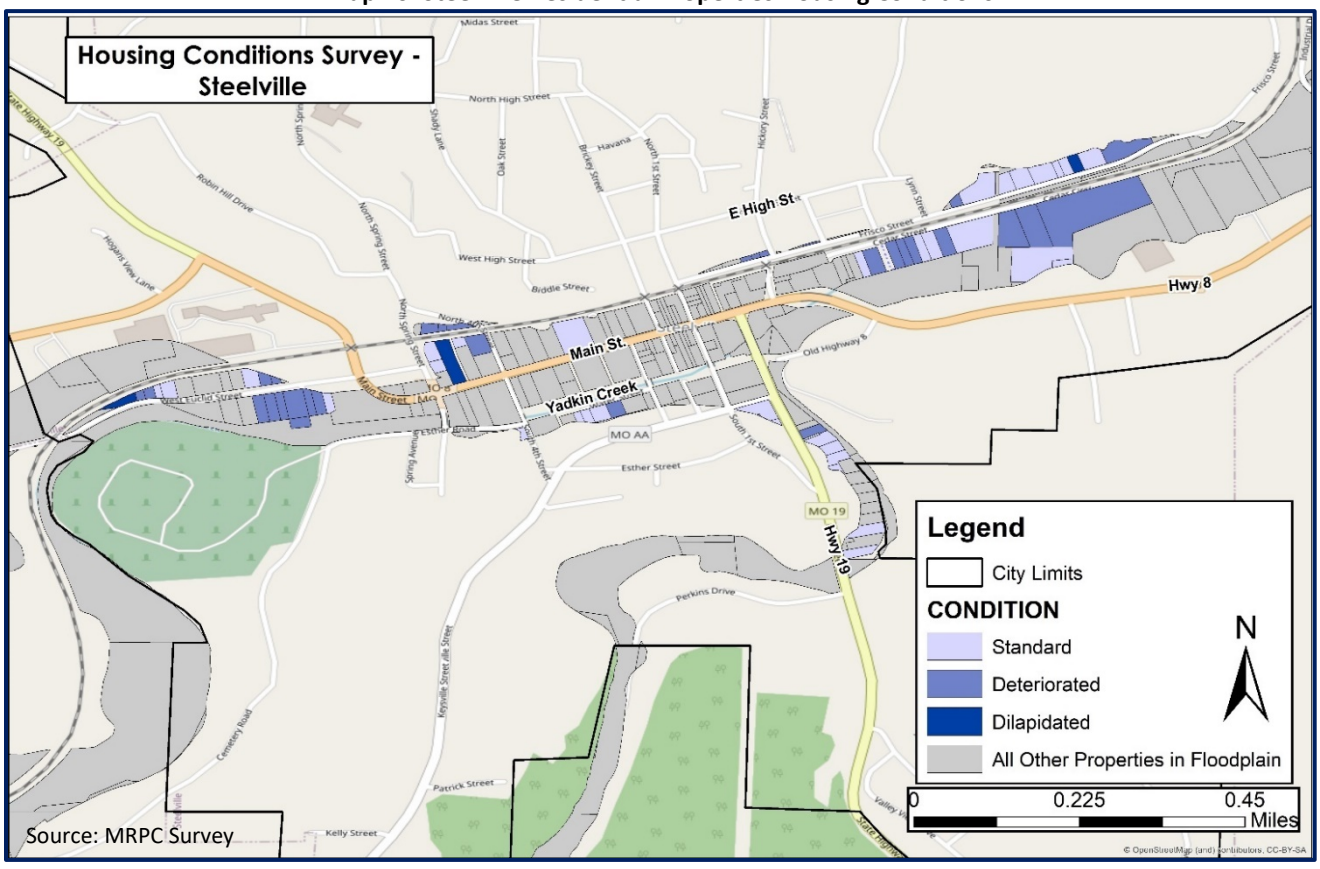


The image on the next page shows a single-family home in the floodplain along Cedar St. in standard condition on the exterior of the property. While this property has a higher threat of regular flooding, it is not likely to be demolished based on its appearance alone. Recommendations for mitigation of

standard condition structures and new housing locations are discussed in the last section of this chapter.

There is almost an equal split of properties in the standard versus deteriorated condition with 49% of the properties standard and 46% deteriorated. Only three structures in the area are considered dilapidated. The majority of assessed property values fall between $25,001 and $50,000 with 40% falling in that range. The next largest is $50,000 to $75,000 range with 30% of properties and the remainder split between under $25,000 or above $75,000. Map 20 depicts the locations of properties based on their condition assessment at the time of the survey.

Map 20: Steelville Residential Properties Housing Conditions



This information was collected to identify possible residential properties that could be demolished and removed from the floodplain to improve flood impacts to the community. A larger map and property details are also provided in the appendices.

FUTURE DEVELOPMENT

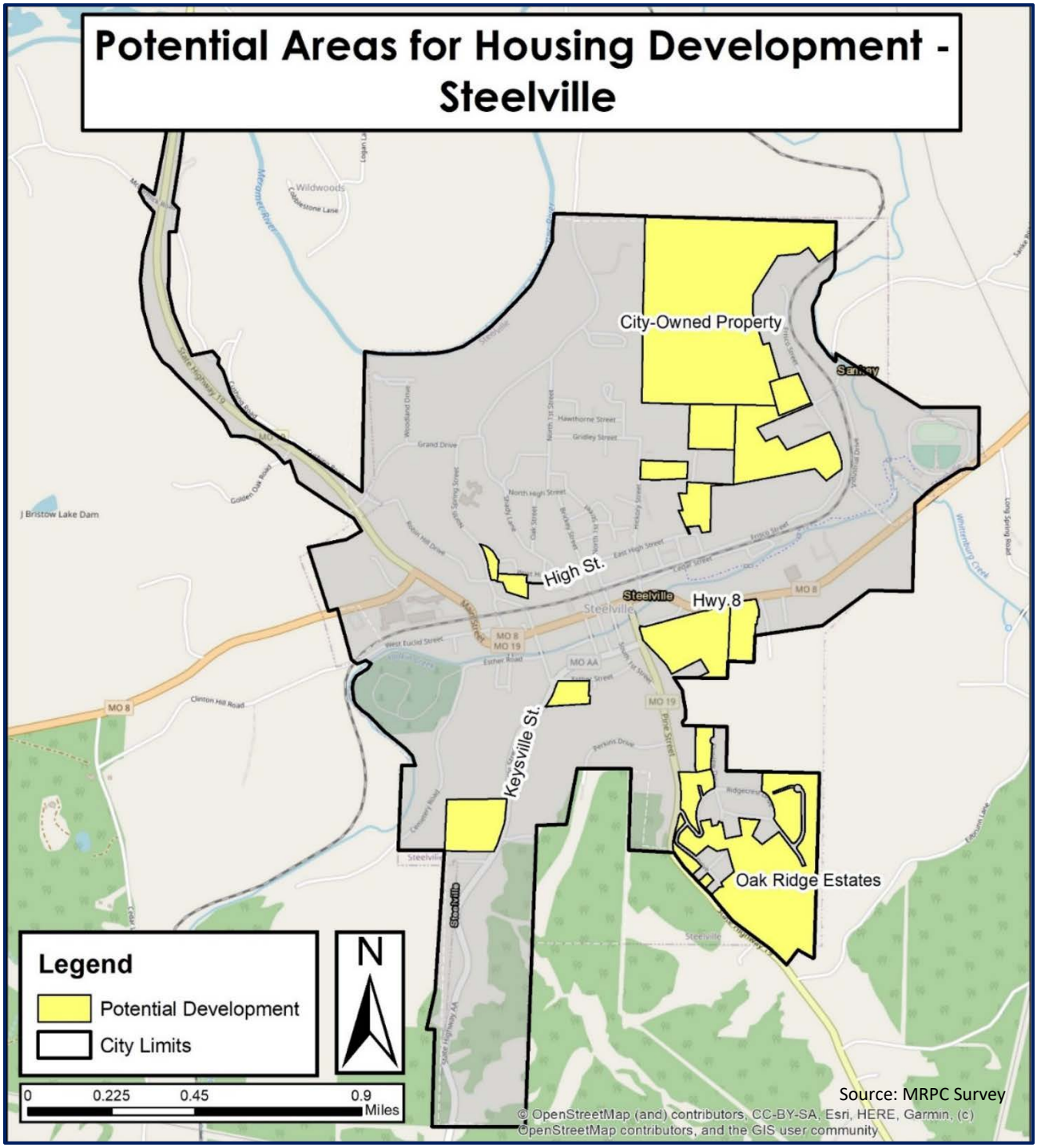
Much of the city's downtown is located within the floodplain; however, the number of residential properties is not significant. There are several vacant properties inside city limits that could provide development potential for future residential uses. After review of floodplain maps, visits to Steelville to view vacant land, and a review of parcel information, planning staff has highlighted 16 properties within and adjacent to the city limits. Each property is highlighted based solely on its proximity to the community, the amount of land outside of the floodplain, and the potential for residential development.

The picture below depicts the entrance to Mill Spring Estates along South Highway 19, which is currently in the process of single-family development. Oak Ridge Estates is adjacent to this area and would connect to the existing subdivision.

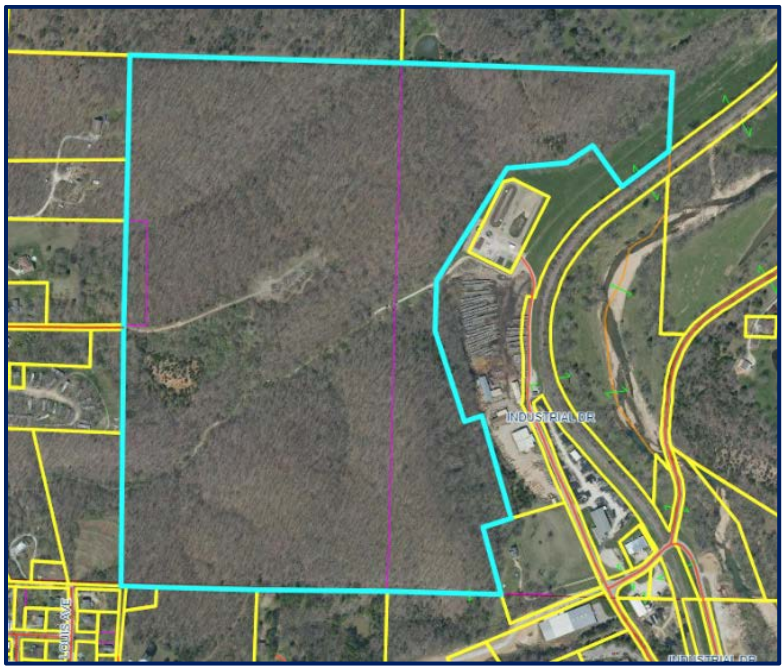
Source: Google Street View

This section details properties that are more conducive to residential development. Land prices and infrastructure costs have not been factored into these recommendations. These suggestions are based solely on the location of the properties in proximity to the city and the topography of the land. Additionally, no contact was made with property owners to determine their interest in future development. All property is privately owned at the time of this report. Any recommendations in this study do not require any actual development. All maps on the following pages are sourced from the county's assessor information and GIS mapping.

Map 21: Areas for Housing Development

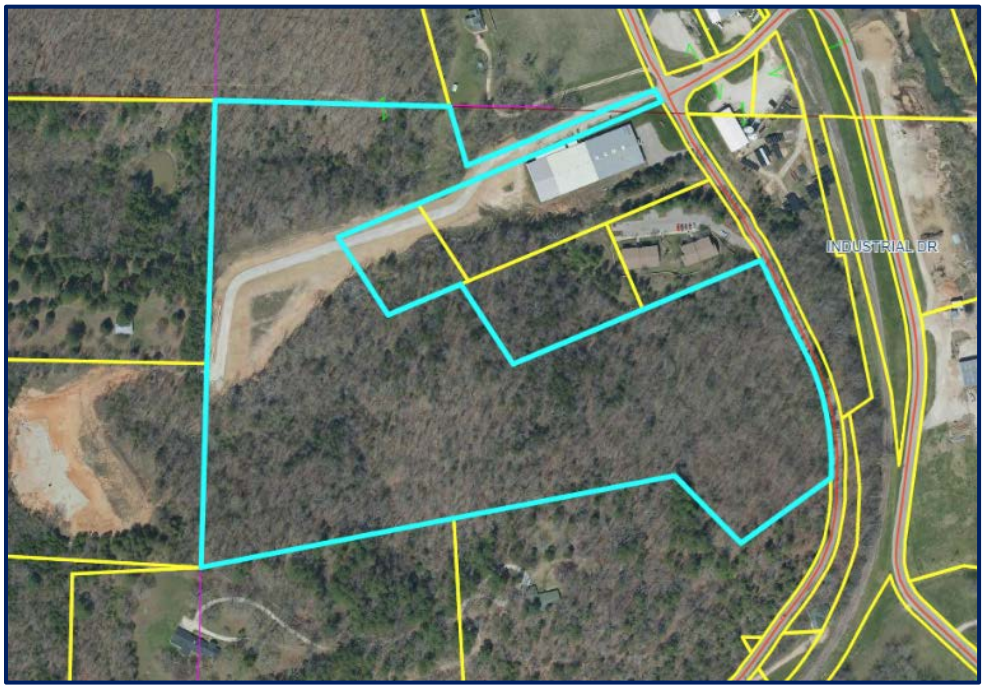


- A 96.43-acre wooded property located west of Industrial Dr. and east of Bird's Nest Rd. is vacant with no current developments. This property is gradually sloped up toward the west and south, is within city limits and is owned by the city. This property is easily accessed due to Industrial Dr. running along its northeastern border and features a road easement to Bird's Nest Rd. on its western border.



- A 5.10-acre primarily open property located northwest of the intersection of Industrial Dr. and Fran Wynn Blvd. features a single-family home near its northwestern corner with no other current developments. This property is gently sloped up to the west and is located within city limits. This property is easily accessed from Industrial Dr. on its eastern border and Fran Wynn Blvd. on its southern border.

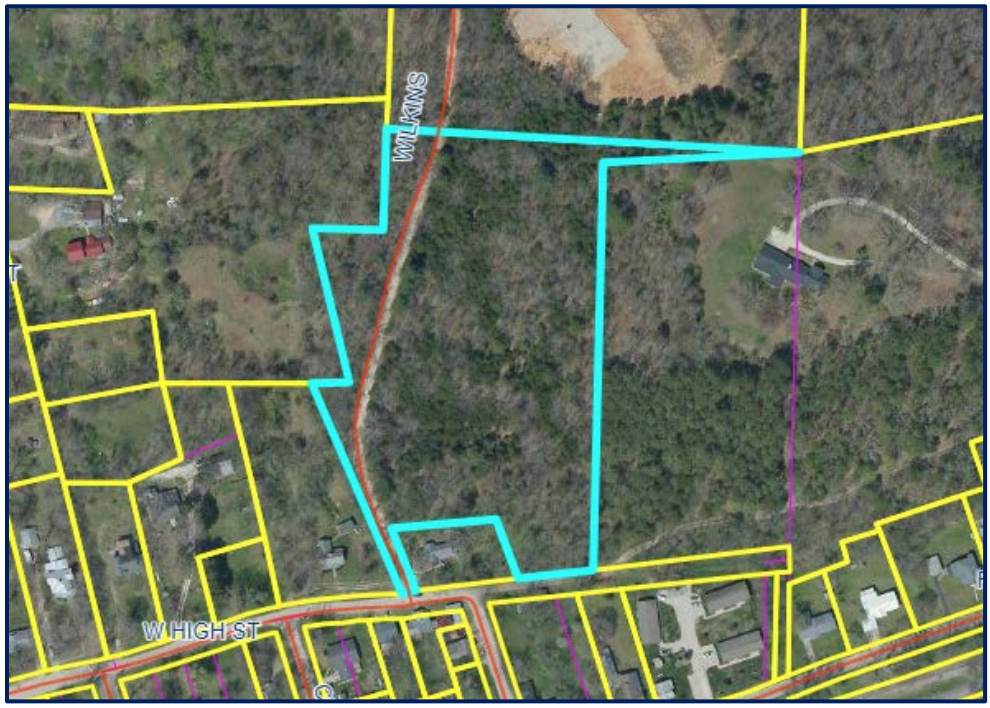
- A 24.10-acre mostly wooded property located southwest of the intersection of Industrial Blvd. and Frisco St. is vacant with no current developments. This property is gradually sloped up toward the west and is within city limits. This property is easily accessed due to Industrial Dr. and Frisco St. meeting at its northeastern border.



- A 9.50-acre primarily wooded property located east of the intersection of Lynn St. and East High St. contains one single-family home near its western boundary with no other current developments. This property is relatively flat and is within city limits. This property is not directly connected to any public roads and is currently accessed from a private drive connected to East High St to the south.

- A 3.20-acre partially wooded property located southeast of the intersection of Hickory St. and Jones Ln. is vacant with no current developments. This property is gently sloped up to the northwest and is within city limits. This property is easily accessed from Hickory St. along its western border.

- A 6.20-acre wooded property located north of the intersection of East High St. and Lynn St. is vacant with no current developments. This property is gently sloped up to the northeast and is within city limits. This property is easily accessed from East High St. on its southern border.



- A 1.75-acre wooded property located southeast of the intersection of West High St. and North Spring St. is vacant with no current developments. This property is relatively flat and is within city limits. This property is easily accessed from West High St. on its northern border and North Spring St. on its western border.

- A 2.50-acre lightly wooded property located southwest of the intersection of West High St. and Biddie St. is planned for subdivision but contains one single-family home near its northeastern corner with no other current developments. This property is relatively flat and is within city limits. This property is easily accessed from Biddie St. on its eastern boundary and West High St. from its northeastern corner.

- A 20.80-acre partially wooded property located southeast of the intersection of Matred Ln. and Pine St. is vacant with no current developments. This property is sloped up to the south and is within city limits. This property is easily accessed from Pine St. on its northwestern border, and Matred Ln. and Hwy. 8 along its northern border.

- A 7.50-acre wooded property located southeast of the intersection of Hwy. 8 and Matred St. is vacant with no current developments. This property is gently sloped up to the southwest and is within city limits. This property is easily accessed from Hwy. 8 on its northern border.

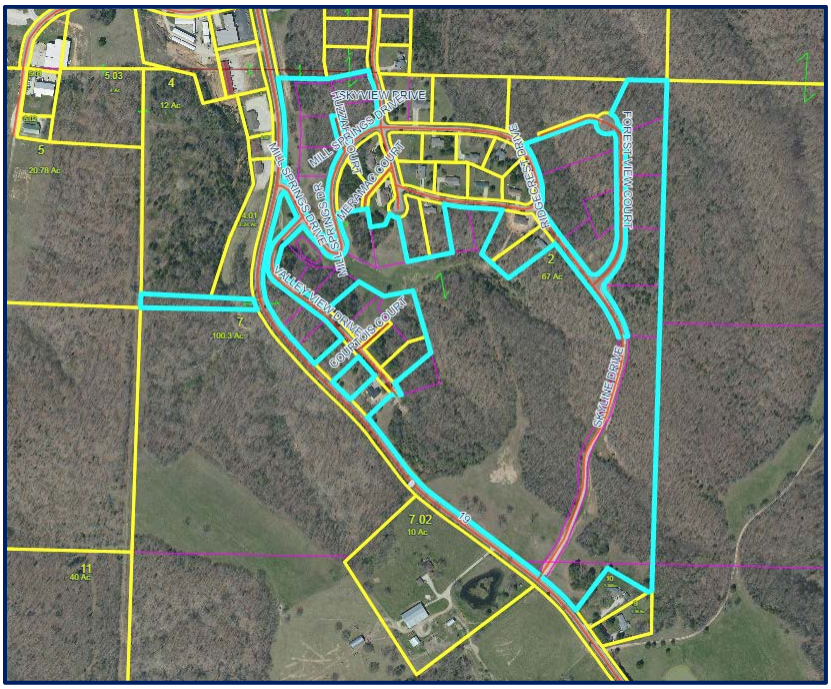
- A 4.60-acre partially wooded property located southeast of the intersection Hwy. AA and Esther St. contains a dilapidated home in its southwest corner, is prepared to subdivide, but currently has no other developments. This property is relatively flat and is located within city limits. This property is easily accessed from Hwy. AA on its western border and Esther St. on its northern border.

- A 14.50-acre wooded property located west of the intersection of Hwy. AA and Patrick St. contains 2 vacant and dilapidated single-family homes in the northeastern corner with no other current developments. This property is gently sloped up to the southeast and is within city limits. This property is easily accessed from Hwy. AA on its eastern border.

- A 2.67-acre wooded property split in two parcels located northwest of the intersection of Skyview Dr. and Ridgecrest Ct. is vacant with no current developments. This property is sloped up to the east and is within city limits. This property is easily accessed from Skyview Dr. on its eastern border.

- A 0.74-acre wooded property located northwest of the intersection of Skyview Dr. and Ridgecrest Ct. is vacant with no current developments. This property is sloped up to the east and is within city limits. This property is easily accessed from Skyview Dr. on its eastern border.

- A 67.00-acre partially wooded property located north of the intersection loop of Skyline Dr. and Hwy. 19 is being prepared to subdivide but is currently vacant with no developments. This property is sloped up to its southern border and is within city limits. This property is easily accessed Hwy. 19 on its western border and contains several existing residential streets within its boundaries.



- A 3.18-acre wooded property located northeast of the intersection of Ridgecrest Dr. and Forest View Ct. is vacant with no current developments. This property is relatively flat and is within city limits. This property is easily accessed from Forest View Ct. on its southern border and Ridgecrest Dr. at the southwestern corner.

MITIGATION RECOMMENDATIONS

Steelville has a mix of property conditions within the floodplain and mitigation solutions should be considered on a case-by-case basis. Depending on the project, consultation from a local architect, engineer, contractor, landscaper, or other expert in design and construction may be required. Changes to properties and buildings in floodplains may also require permits or other local approvals as noted in the city's floodplain ordinance. It is also recommended to consult with adjacent property owners when proposing flood mitigation measures such as extending downspouts or regrading areas between homes. Changes to the flow of water from one property to another can have negative impacts on adjacent parcels when there may not have been a previous issue.

The following general recommendations are based on residential types of mitigation for structures in the floodplain as outlined in FEMA's "Protect Your Home from Flooding" report. Any of the recommendations for improvements inside and outside of the home can be applied to any type of residential structure (e.g. single-family, duplex, multi-family):

Outside of the Home

For the exterior areas of residential properties in the floodplain that are identified in STANDARD condition per the housing survey, consider taking the following actions:

- Maintain proper water runoff and drainage. Routinely clean and maintain gutters, downspouts, and splashpads so that rainwater from roofs flow easily away from residences. Also, ensure that any nearby drainage ditches or storm drains are clear of debris and functioning properly.
- Improve lot grading. Determine how water flows or accumulates around residences to identify potential trouble spots (often easy to see during an average rainstorm). Stormwater should always drain away from buildings; if necessary, change landscaping to improve runoff. This may include building up any sunken areas around the foundation, digging small depressions to properly channel water, and otherwise improving the yard so that it slopes away from homes.
- Reduce impervious surfaces around residential structures. Retaining and creating natural green space around residences can help reduce sewer overflows by reducing stormwater runoff. Consider options such as rain gardens, vegetated swales, or pervious pavements, which allow more water to be absorbed by the ground.
- Install a rain barrel. A rain barrel is an alternative method for dealing with rainwater. Rain barrels are typically connected to gutter downspouts and collect the runoff from roofs. The stored water can be utilized for non-potable uses such as watering the lawn and gardens or washing your car.
- Elevate utilities and service equipment. Raise and anchor air conditioning condensers, heat pumps, water meters and other service equipment onto pedestals or platforms that are at least one foot above the base flood elevation established for the surrounding property.
- Anchor outdoor fuel tanks. Attach outdoor fuel tanks to a large concrete slab that weighs enough to resist the force of floodwaters or install inexpensive ground anchors that are connected across the top of the tank with metal straps. Unanchored fuel tanks can be easily moved and ruptured by floodwaters and pose serious threats to people, property, and the

environment. Fuel tanks should also be elevated above the regulatory base flood elevation as adopted by the FEMA FIRM map. If not feasible then all filling and ventilation tubes should be elevated so that floodwaters cannot enter the tank.

Inside the Home

For interior areas of residential properties in the floodplain that are identified in STANDARD condition per the housing survey, below the base flood elevation, consider making the following alterations:

- Protect valuable possessions. Move important documents and other valuable or sentimental items to a safer location well above the potential flood elevation and/or inside watertight containers.
- Seal foundations and basement walls. Close any foundation cracks with mortar and masonry caulk or hydraulic cement, which expands and fills gaps completely. Seal walls in basements with waterproofing compounds to avoid seepage. Make sure any floor drains are clear of obstructions.
- Install flood vents. Flood vents are small, permanent openings that allow floodwater to flow freely through an enclosure such as a crawlspace or garage. Properly positioned and installed, flood vents protect homes during floods by preventing water pressure buildup that can destroy walls and foundations. Once installed, make sure flood vents are kept free of debris and will allow the free flow of floodwater.
- Install a sump pump. Sump pumps, which pump groundwater away from the home, can be an excellent defense against basement seepage and flooding. They draw in the groundwater from around the house and direct it away from the structure through drainage pipes. Be sure to choose a device with battery-operated backup, in case of electrical power failure.
- Prevent sewer backups. Install drain plugs for all basement floor drains to prevent sewer backups. Another recommended option, regardless of the base flood elevation, is to install sewer backflow valves for all pipes entering the building. These devices, which allow water to flow only one direction, prevent floodwater and wastewater from backing up into your home through toilets, sinks, and other drains. They are available in a variety of designs that range from simple to complex, but should be installed by a qualified, licensed plumber.
- Use flood-resistant building materials. Replace wooden floorboards and carpets with ceramic tile, vinyl, rubber, or other flood-resistant materials. Use moveable rugs instead of fitted carpets. Replace internal walls and ceilings with flood-resistant material such as lime plaster, cement board, concrete, or pressure-treated and decay-resistant wood. Replace wooden doors and window frames with metal or other flood-resistant options.
- Raise electrical system components. Increase the height of electric service panels (fuse and circuit breaker boxes) and all outlets, switches, and wiring to at least one foot above the base flood elevation. These modifications should be made by a licensed electrician.
- Protect utilities and service equipment. Move the main parts of any heating, ventilation, and air conditioning (HVAC) systems to a higher floor or the attic. Consider raising other major appliances, such as washers, dryers, and hot water heaters, above the ground floor. If

relocation or elevation is not possible, protect service equipment in place using low floodwalls and shields. Alternative options such as replacing traditional hot water heaters with tankless units should also be considered.

- Anchor indoor fuel tanks. Anchor fuel tanks by attaching them to a large concrete slab that weighs enough to resist the force of floodwaters.
- Install a flood alert system. A variety of flood sensors and other early warning devices can alert residents to the risk of imminent flooding so that residents can take preventative or protective actions before extensive damage occurs.

For All Homes in The Floodplain

For residential properties in the floodplain that are identified in STANDARD or DETERIORATED condition per the housing survey, consider taking the following actions:

- Raise the structure. Elevating a home to meet the floodplain standards (usually one foot above the base flood elevation) is a common method of retrofitting structures in the floodplain. Of the 136 properties in standard or deteriorated condition in Chamois, this report considers those properties with identified repetitive damage (identified by Chamois and SEMA/FEMA) to be the best candidates for elevation. This can include building a storage-only/garage foundation underneath the existing home. The second option includes abandonment of the first floor and retrofit to accommodate a storage-only foundation, with a new upper level and roof built.
- Relocate the structure. This option would allow for the original home to stay mainly intact, but the owner would have to find a new lot (outside of the floodplain) to place the home. Additionally, costs for moving homes can increase due to the size of the structure and distance moved from original location. Relocation is a mitigation technique usually used for historic homes that may also require approvals from local and state preservation agencies.

For residential properties in the floodplain that are identified in DETERIORATED condition per the housing survey, consider taking the following actions:

- Using any of the tools above may improve the conditions of the deteriorated home; however, per floodplain regulations, no substantial improvements may be made. A substantial improvement, as defined in 44 CFR § 59.1, means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the start of construction of the improvement. Additional information on substantial improvements can be found in the following document provided by FEMA on page 94.
- Deteriorated structures that would require more than a 50% investment to improve the structure should consider demolition. There is more than one option for demolition:
    - If Steelville is considering a floodplain buyout of substantially damaged/repetitive loss structures, flood buyout grants are potentially available to purchase the residential properties (home and lot). While this option removes the home from the floodplain, the

long-term ownership remains with the city and does not go back to the original owner, as the city would use grant funds to purchase the property.

- Non-floodplain related demolition grants can assist communities with demolition, where the lot is eventually sodded or seeded and open to new development. Any new development in the floodplain is subject to the ordinances of Steelville.

For residential properties in the floodplain that are identified in DILAPIDATED condition per the housing survey, consider taking the following actions:

- Demolition of the structure. This plan identifies approximately three residential properties as being in a dilapidated condition, where the exterior of the home appears to have visible damage to the structure. This includes holes in roofs, windows, doors and/or significant damage to the siding of a home.
- Floodplain mitigation for these structures is the same as the previously identified mitigation measures for dilapidated homes, where costs to renovate would be more than 50% of the appraised value (substantial damage/improvement).

Online Resources

The following online resources provide a wealth of information and guidance on mitigation techniques for homes in the floodplain as outlined in this section.

Elevating Your House
https://www.fema.gov/sites/default/files/documents/fema_elevating-your-house-chapter-5.pdf

Homeowner's Guide to Retrofitting
www.fema.gov/media-library/assets/documents/480

Protect Your Home from Flooding: Low-cost Projects You Can Do Yourself
https://www.fema.gov/sites/default/files/documents/fema_protect-your-home-from-flooding-brochure_2020.pdf

Reducing Flood Risk to Residential Buildings That Cannot Be Elevated
www.fema.gov/media-library/assets/documents/109669

Protecting Your Home and Property from Flood Damage
www.fema.gov/media-library/assets/documents/21471

Protecting Building Utility Systems from Flood Damage
www.fema.gov/media-library/assets/documents/3729

Protect Your Property from Flooding
www.fema.gov/media-library/assets/documents/13261

Answer to Questions About Substantially Improved/Substantially Damaged Buildings
https://www.fema.gov/sites/default/files/2020-07/fema_p213_08232018.pdf

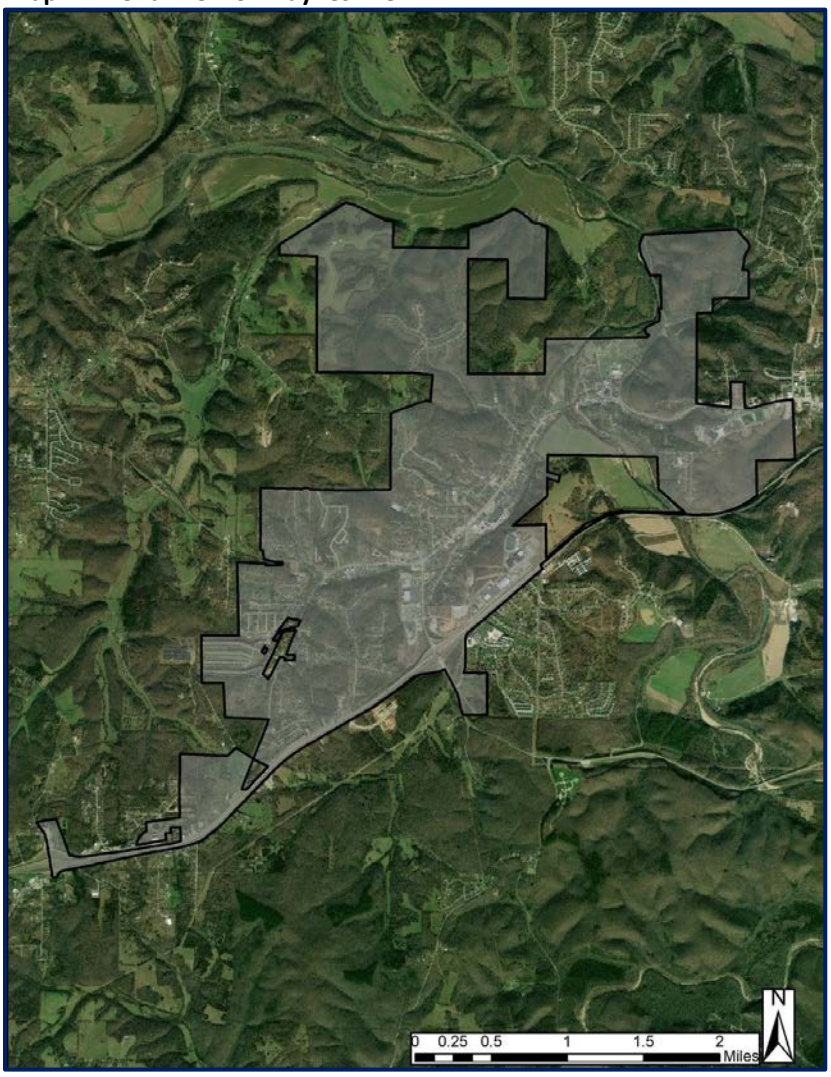
FEMA, Protect Your Property
www.fema.gov/protect-your-property

FloodSmart
www.floodsmart.gov

WAYNESVILLE

COMMUNITY CHARACTERISTICS

Map 22: Aerial view of Waynesville



The City of Waynesville was established in 1833 and declared the county seat in 1843. The Roubidoux Creek, a tributary for the Gasconade River, runs just west of downtown. Cross Creek feeds into the Roubidoux and follows Route 66/Highway 17 to the southwest.

As the county seat for Pulaski County, Waynesville has a current population of 5,336 and civilian workforce of 2,531 as of the 2021 American Community Survey (ACS). Since the ACS does not include federal workers in this count, the citizens that work for the federal government (Fort Leonard Wood) are not listed. The city is 7.18 square miles in area (4,595 acres), with 0.03 square miles of land covered in water per the US Census. The city also sits at an approximate elevation of 807 ft. above sea level.

The city's taxable sales and use tax for 2022 totaled $48,843,162.92. Based on the 2021 ACS, the greatest number of citizens are employed in educational and healthcare services (29.4%), manufacturing (29.1%), and public administration (16.5%). As of 2021, the median average household income in the city of Waynesville was $63,354 with a poverty rate of 27.5%. The median home value is $182,100 as of the 2021 ACS; however, the average cost to rent a home is $873.

As of the 2010 FIRM (Flood Insurance Rate Maps), approximately 305 properties are at risk for flooding, 122 which are identified as residential (single-family, duplex or multi-family). ACS data shows that the entire town has approximately 3,032 housing units total, which means that only 4% of the residential properties in Waynesville have a moderate to high flood risk.

FLOOD HISTORY & FREQUENCY

Data from the National Weather Service (NWS): Advanced Hydrologic Prediction Service (https://water.weather.gov/ahps2/hydrograph.php?wfo=lsx&gage=hrnm7) provides background information for communities affected by flooding and lists impacts as it relates to water levels and flood stages. In Waynesville alone, six of the top ten historic river crests have happened since 2015 with increasing frequency occurring over the past decade. The following data provides an overview of the top 10 historic and 10 most recent flood crest stages for the Waynesville area. Additional dates and flood crests can be found on the NWS website. The 2017 event ranks third in historic crests at 18.16 feet, with the flood of 2013 bringing the highest flood waters at 20.07 feet in August 2013.

Historic Crests (Top 10)

(1) 20.07 ft on 08/06/2013
(2) 18.45 ft on 03/19/2008
(3) 18.16 ft on 04/30/2017
(4) 14.55 ft on 12/27/2015
(5) 13.67 ft on 10/31/2009
(6) 12.96 ft on 01/11/2020
(7) 12.62 ft on 05/02/2019
(8) 10.85 ft on 02/25/2018
(9) 10.84 ft on 05/06/2022 **(P)**
(10) 10.38 ft on 03/22/2012

(P): Preliminary values subject to further review.

Recent Crests

(1) 7.43 ft on 05/20/2022 **(P)**
(2) 10.84 ft on 05/06/2022 **(P)**
(3) 8.36 ft on 04/14/2022 **(P)**
(4) 9.98 ft on 02/18/2022 **(P)**
(5) 9.75 ft on 03/13/2021
(6) 8.28 ft on 01/26/2021
(7) 8.27 ft on 06/10/2020
(8) 8.97 ft on 05/18/2020
(9) 7.45 ft on 03/25/2020
(10) 9.51 ft on 03/20/2020

Based on the crest information, properties within proximity to the city begin to flood at an eight-foot crest which is considered between a moderate to major flood stage.

Flood Categories (in feet)	
Major Flood Stage	**20**
Moderate Flood Stage	**14**
Flood Stage	**7**
Action Stage	**6**

At this height, water begins to flood parts of Spring Road near Business 66/Highway 17 in Waynesville. The picture on the right shows flooding at Roubidoux Park during the 2017 flood event, just west of downtown. The table on the next page provides flood water levels and impact areas for the city and surrounding land.

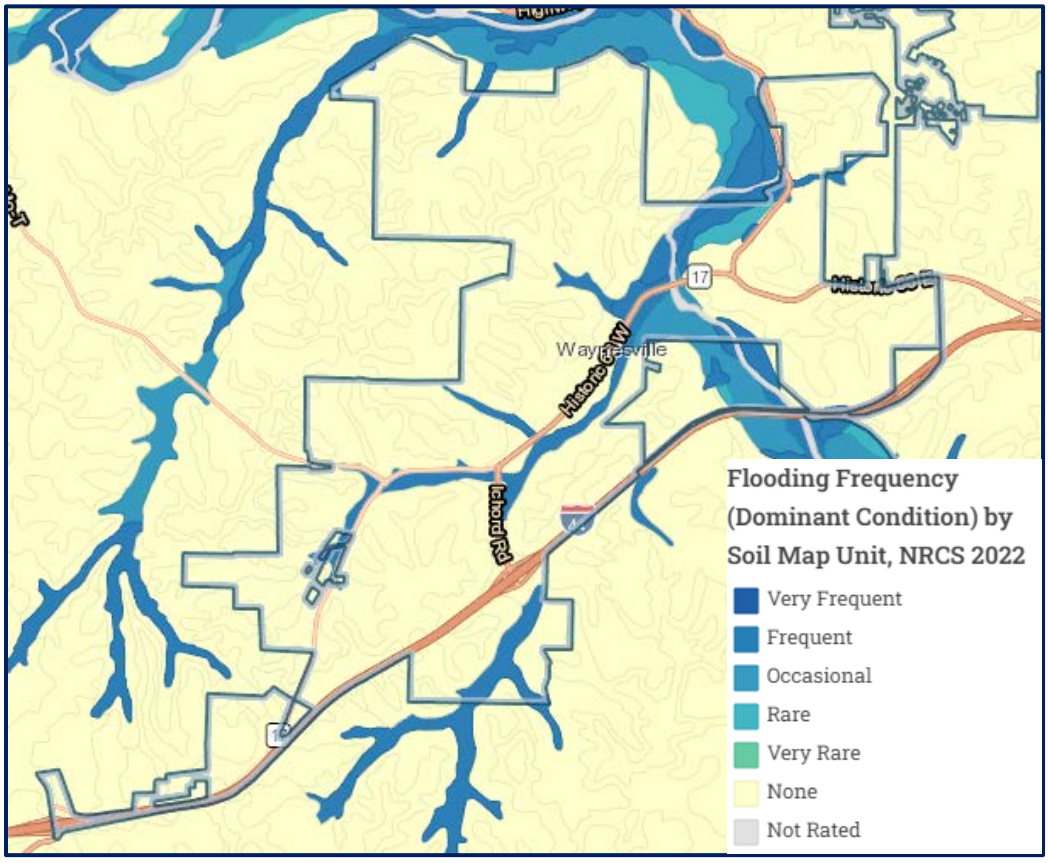
Source: Mid Missouri Aerial, LLC

Flood Crest/Impact Area	
2.5	The low water crossing near Cedar Hill Cemetery floods.
8	Low parts of Spring Road south of Business 66 in Waynesville flood.
9	The RV Park on the west side of Roubidoux in Waynesville just north of the Business 66 bridge floods. Spring Road near I-44 floods.
18	Flooding occurs on Booker Road east of Highway 17 on the north side of Waynesville.
20	Flood waters back up into Mitchell Creek in Waynesville. Homes and businesses near the river flood.

Waynesville Flood Frequency Map

Flooding frequency is also visualized through mapping supported by the University of Missouri Extension Center for Applied Research and Engagement Systems (CARES). This map depicts the likelihood of flooding in any given year and graphically depicts which parts of Waynesville will be inundated. While similar to a traditional FEMA FIRM map, this map provides a greater breakdown of frequency from none to very frequent. Descriptions of each category are listed below the map. It should be noted that areas outside of the traditional floodplain, in Zone X, are still shown with a chance of flooding, albeit it categorized as "rare," it is not without risk. Properties along the west side of Highway 17 are unlikely to flood but still have a 1 to 5% chance in a year. This potential should be considered when looking at availability of land for housing developments.

Map 24: Waynesville Flooding Frequency



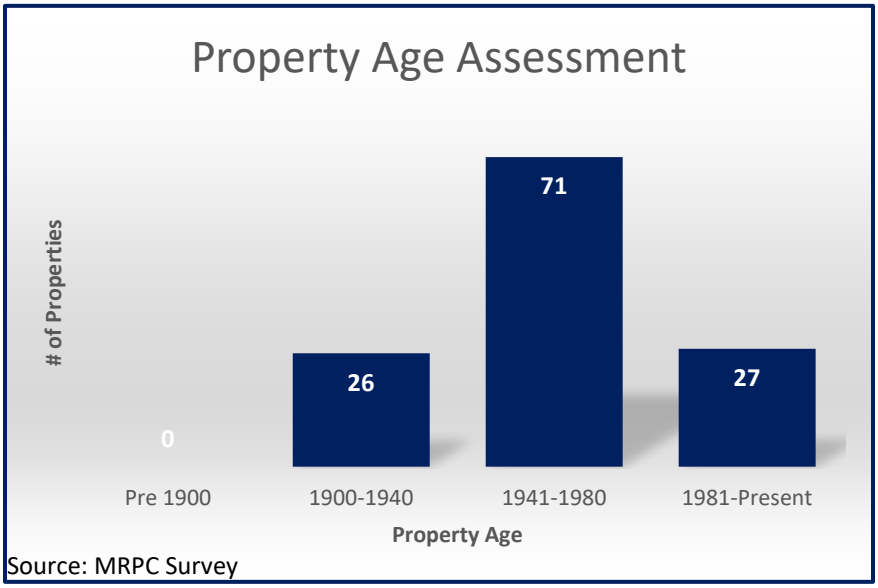
Source: https://careshq.org/map-room/

- None - Flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.
- Very Rare - Flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.
- Rare - Flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.
- Occasional - Flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.
- Frequent - Flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.
- Very Frequent - Flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

HOUSING SURVEY RESULTS

Based on a 2021 windshield survey of residential properties located within the floodplain, the following survey results were gathered to assess the condition of structures and the respective property. Items reviewed also included if the properties had any apparent signs of reinvestment (e.g. new siding, roofs, fences), sidewalks, off-street parking, etc. Full details can be found in the appendix of this report based on site addresses and parcel IDs. There are 3,032 housing units in Waynesville– 122 of which are at risk for flooding – 85% of those are single-family dwellings. Upon a visual inspection, 86% of 122 residential properties appear occupied, and the remainder are vacant.

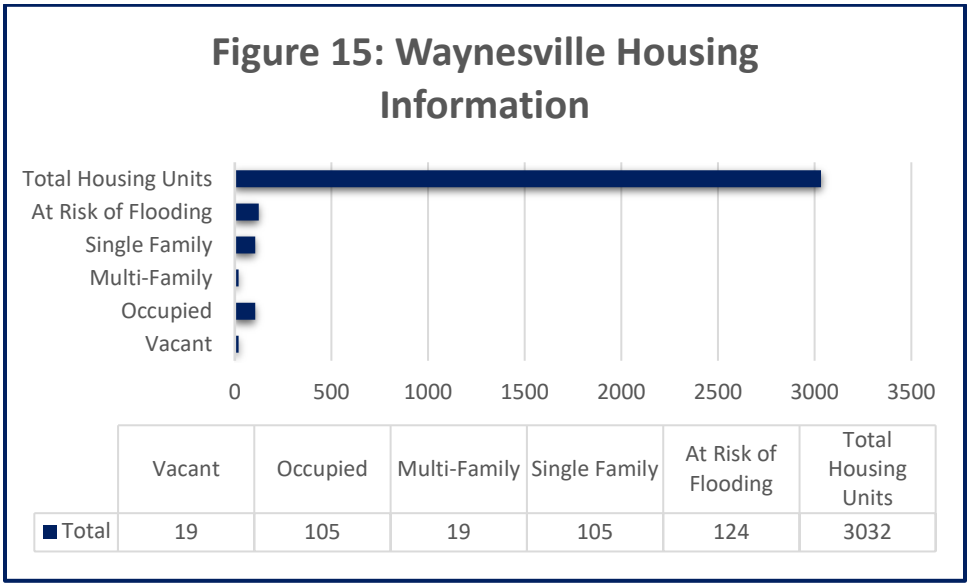
Figure 14: Property Age Assessment



Source: MRPC Survey

Waynesville's survey results indicate that the overall impact to its housing availability is limited; however, a large number of single-family homes are prone to flooding and most are in standard condition. To mitigate flood impacts, recommendations generally include raising structures and possible grade work to the exterior of the property. Waynesville also has the largest number of multi-family and mobile home properties in the floodplain which would best benefit from demolition and

new construction at a higher elevation. Currently, there are limited recommendations for new construction along the north and west parts of the city. Additional opportunities may exist farther from city limit boundaries.

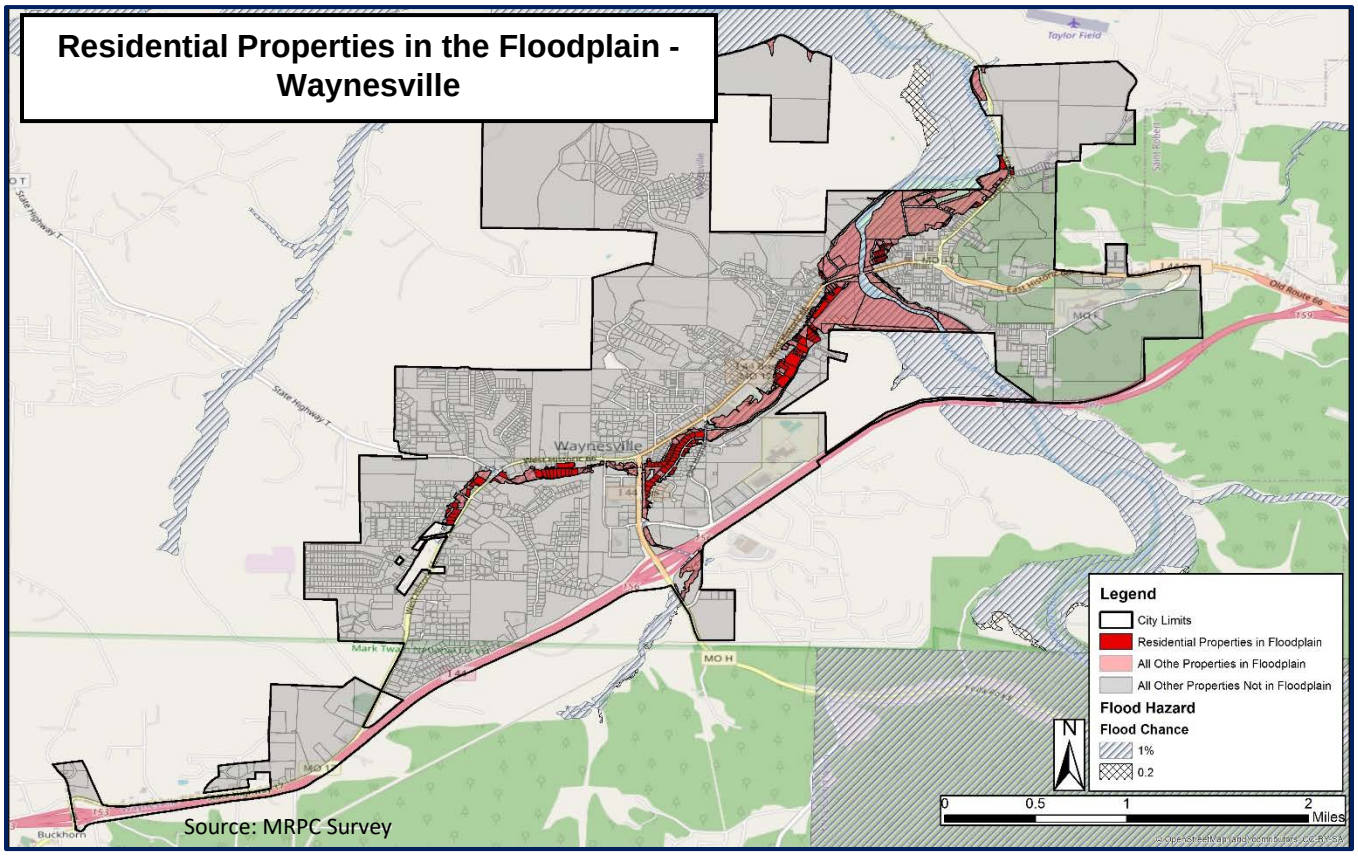


	Vacant	Occupied	Multi-Family	Single Family	At Risk of Flooding	Total Housing Units
Total	19	105	19	105	124	3032

Source: MRPC Survey and 2021 ACS

The dark red in Map 25 identifies the location of residential properties within the floodplain, whether they be single-family, duplex, multi-family or mixed-use.

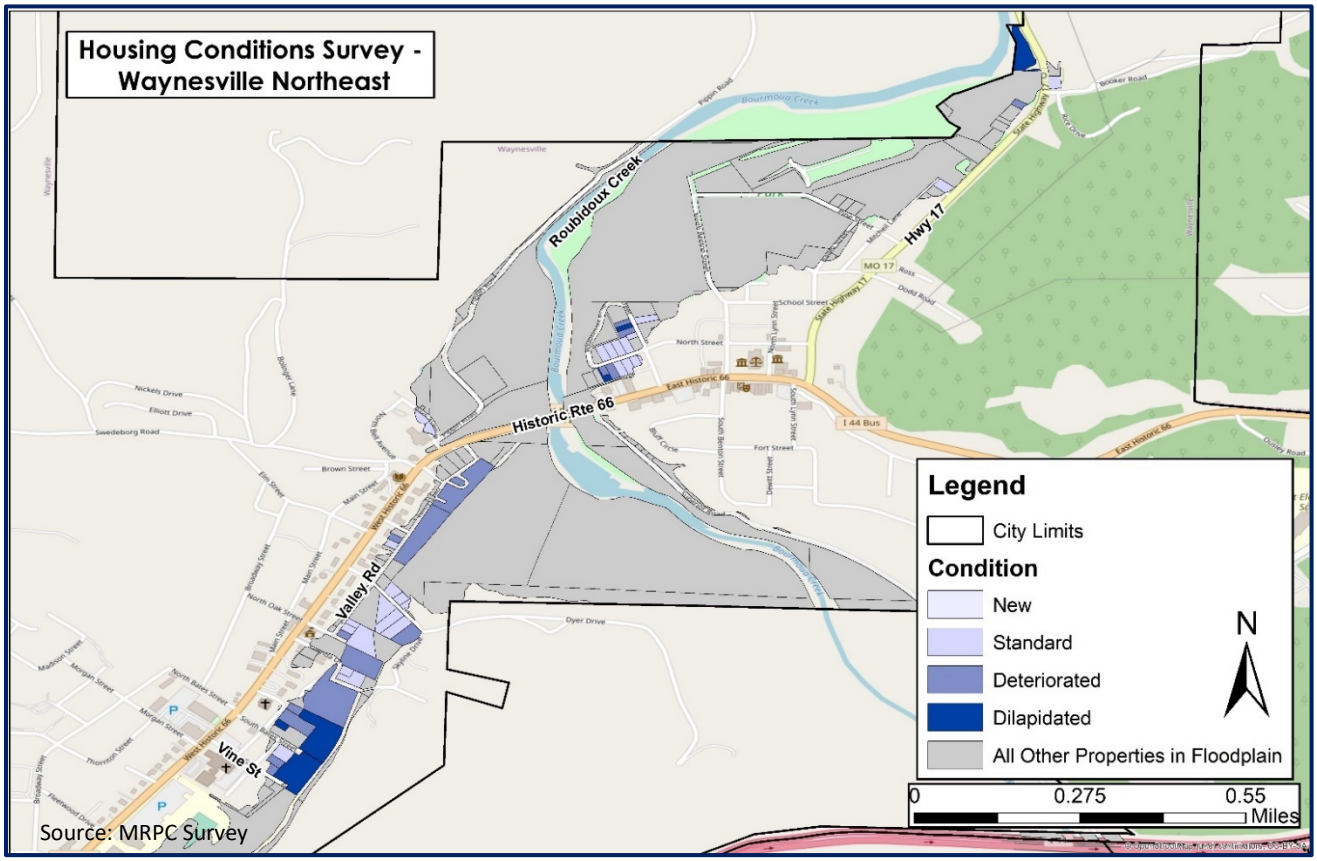
Map 25: Waynesville Residential Properties



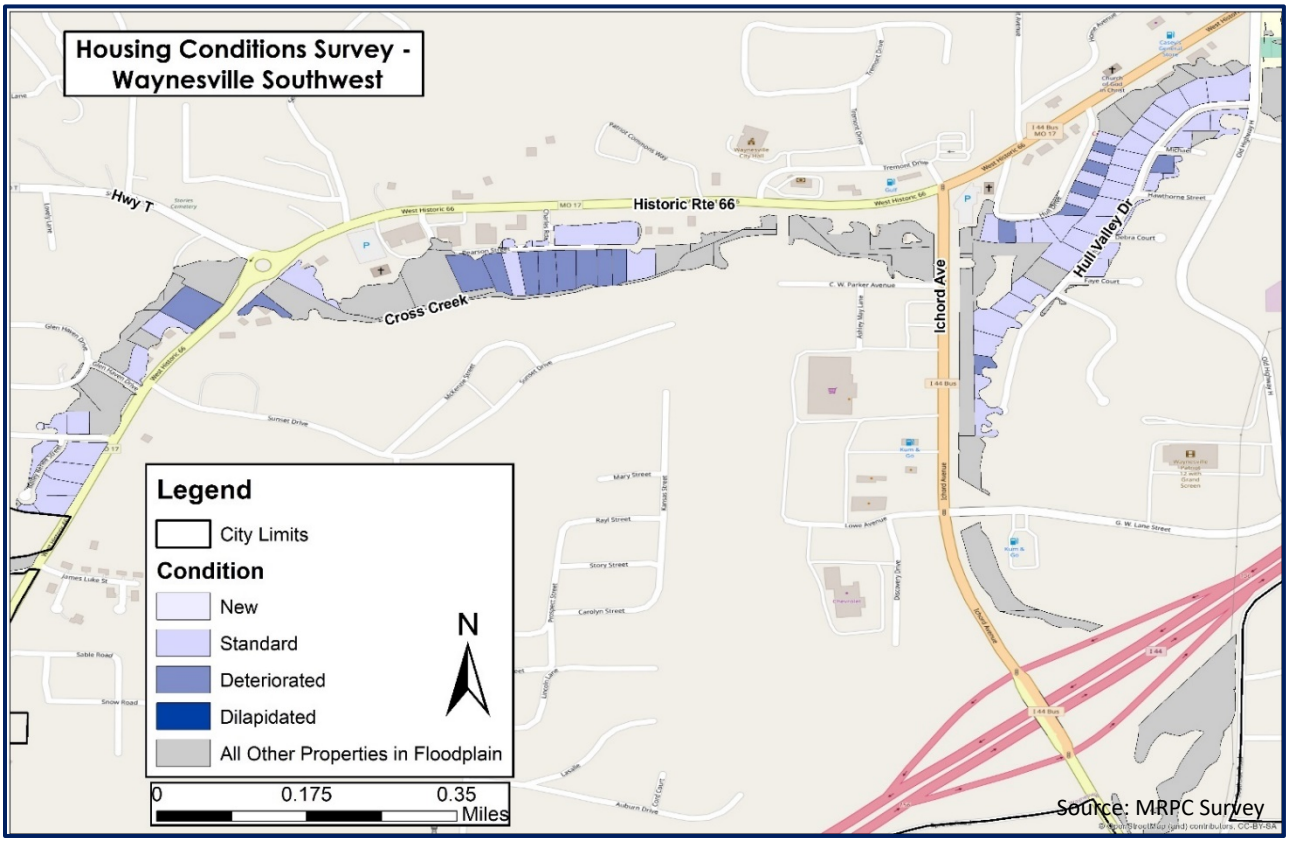
Residential structures in Waynesville were primarily built in the 20th century, with 67% of them being in new or standard condition. Most of the buildings were built in the mid-20th century with 57% being built between 1941-1980. The remainder is equally split between 1900-1940 and 1980 or newer. 65% of the structures are of standard repair with only 35% falling in deteriorated or worse condition. Assessed value covers a wide range of home values primarily between the $25,000 - $50,000 and $50,0001 - $75,000 range in Waynesville.

Map 26 depicts the locations of properties based on their condition assessment at the time of the survey. This information was collected to identify possible residential properties that could be demolished and removed from the floodplain to improve flood impacts to the community. A larger map and property details are also provided in the appendices. Recommendations for mitigation of standard condition structures and new housing locations are discussed in the last section of this chapter.

Map 26: Waynesville Residential Properties Housing Conditions – Northeast Section



Map 26: Waynesville Residential Properties Housing Conditions – Southwest Section

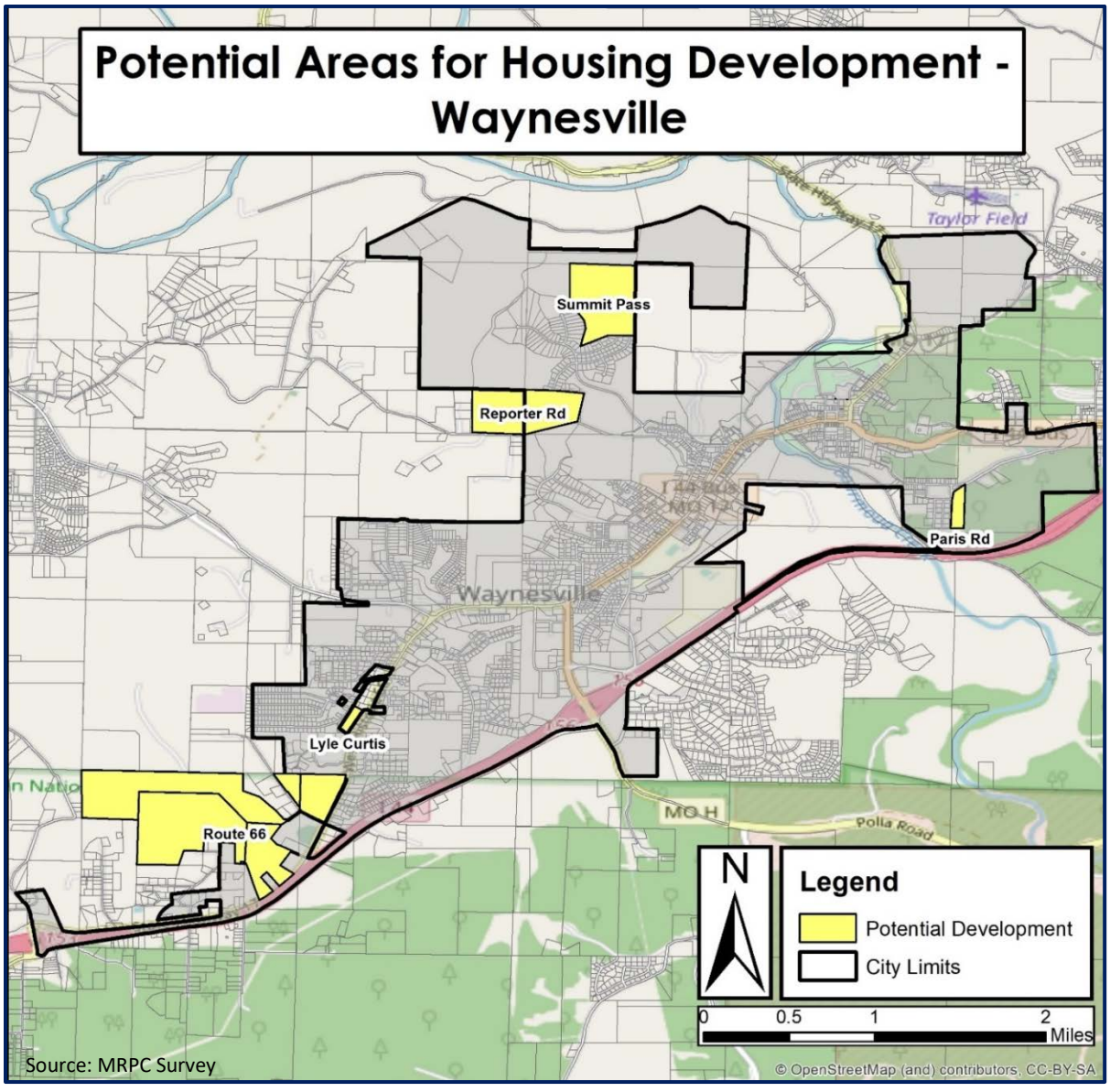


FUTURE DEVELOPMENT

Much of the city's main roadway corridors are located within the floodplain. After review of floodplain maps, visits to Waynesville to visit with local leaders and view vacant land, and a review of parcel information, 19 properties within and adjacent to the city limits have been identified for potential residential development. Each property is highlighted based solely on its proximity to the community, the amount of land outside of the floodplain, and the potential for residential development. This section details properties that are more conducive to house development. Land prices and infrastructure costs have not been factored into these recommendations. These suggestions are based solely on the location of the properties in proximity to the city and the topography of the land. Additionally, no contact was made with property owners to determine their interest in future development. All property is privately owned at the time of this report. Any recommendations in this study do not require any actual development. All maps on the following pages are sourced from the county's assessor information and GIS mapping.

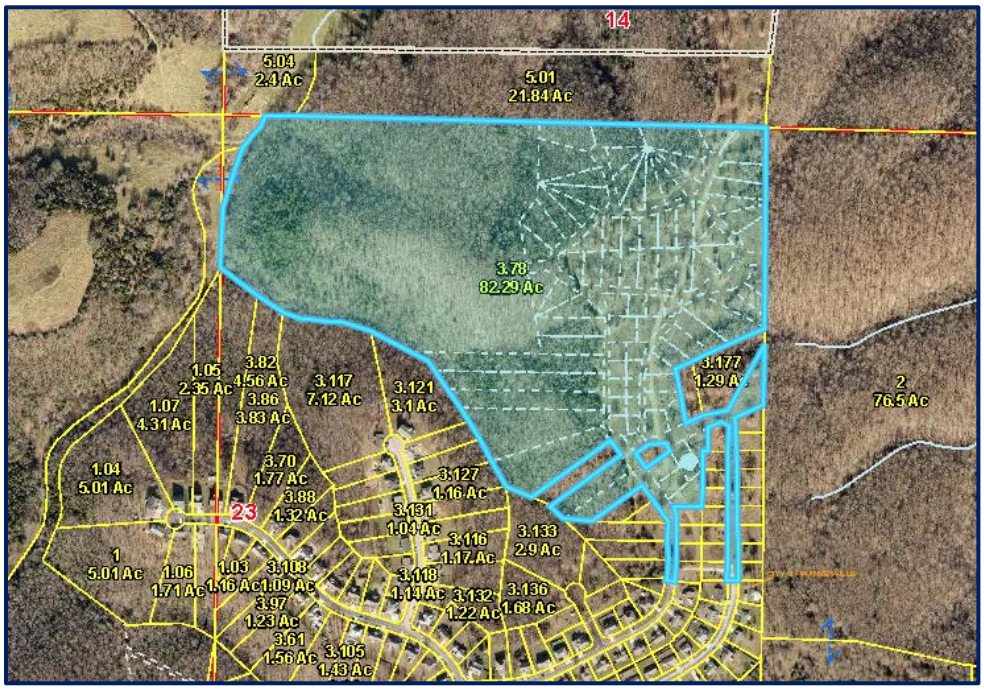
The following picture shows the entrance to Summit Pass Subdivision which is under construction and has a section that is yet undeveloped for single-family residences.

Map 27: Areas for Housing Development



- A 2.34-acre wooded property located east of the intersection of Paris Rd. and Ozark Dr. is vacant with no current development. This property is gradually sloped up toward the west and is within city limits. This property is easily accessed due to Paris Rd. running along its western border.

- An 82.29-acre partially wooded property, located northeast of the intersection loop of La Vista St. and Mesa St., will be subdivided, but is currently vacant with no development. This property is relatively flat on its eastern half with increasing slopes downward to its western border. This property is easily accessed from La Vista St. and Mesa St. on its southeastern border, with plans to continue the streets into the developing subdivision.



- A 10.85-acre partially wooded property located north of the intersection of Swedeborg Rd. and Retrieval Ln. features a single-family home near its north property line with no other current developments. This property is gently sloped up to the south and would have to be annexed as it is not within city limits. This property is easily accessed from Swedeborg Rd. on its southern border.

- A 4.00-acre partially wooded property located north of the intersection of Swedeborg Rd. and Retrieval Ln. features a single-family home near its south property line with no other current developments. This property is gently sloped up to the south would have to be annexed as it is not within city limits. This property is easily accessed from Swedeborg Rd. on its southern border.

- A 6.97-acre partially wooded property located northwest of the intersection of Swedeborg Rd. and Retrieval Ln. features a single-family home near its south property line with no other current developments. This property is gently sloped up to the south would have to be annexed as it is not within city limits. This property is easily accessed from Swedeborg Rd. on its southern border.

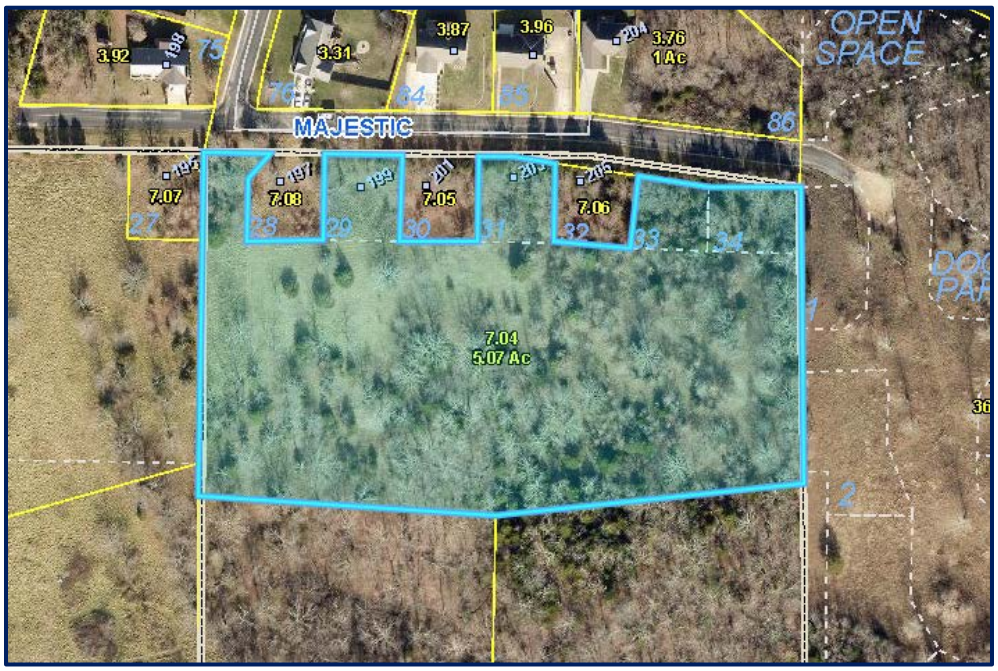
- A 2.14-acre partially wooded property located northwest of the intersection of Swedeborg Rd. and Retrieval Ln. features a single-family home near its eastern property line with no other current developments. This property is gently sloped up to the south would have to be annexed as it is not within city limits. This property is easily accessed from Swedeborg Rd. on its southern border.

- A 16.53-acre wooded property located northwest of the intersection of Swedeborg Rd. and Retrieval Ln. is vacant with no current developments. This property is gently sloped up to the south would have to be annexed as it is not within city limits. This property currently cannot be accessed by public roads, although it has the same owner as the property directly south which borders Reporter Rd.

- A 10.80-acre primarily open property located northeast and northwest of the intersection of Reporter Rd. and Majestic St. is being subdivided and developed in its northern half and is vacant with no current developments to the south. This property is relatively flat with gentle downward slopes to the east and west and is within city limits. The property is easily accessed with Reporter Rd. at its southern border and newly built Majestic St. running the length of the property from Reporter Rd. to the northern development.

- A 6.64-acre primarily open property located northwest of the intersection of Reporter Rd. and Majestic St. features a single-family home near its south property line, a pond northeast of the home, and no other current developments. This property is gently sloped up to the west and lies within city limits. This property is easily accessed from Reporter Rd. on its southern border.

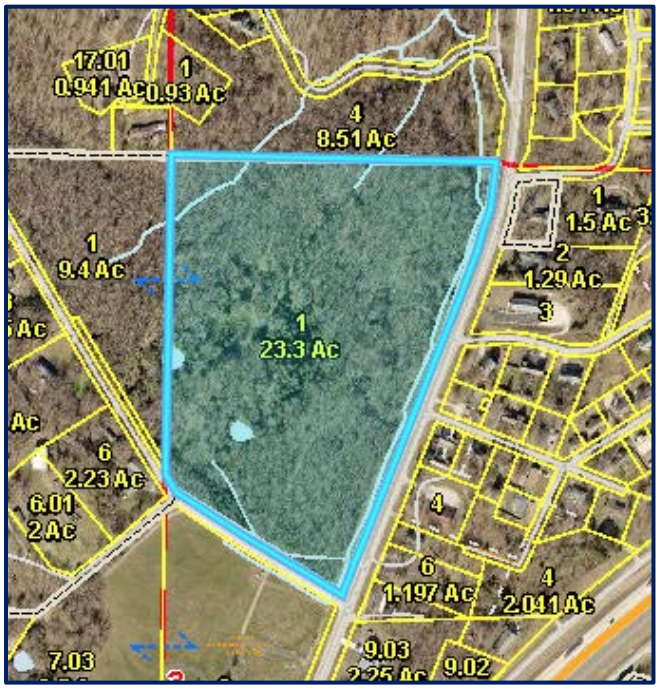
- A 5.07-acre partially wooded property located northwest of the intersection of Reporter Rd. and Majestic St. is being subdivided and developed in its north half and is vacant with no current developments to the south. This property gently slopes up to the west and is within city limits. The property is easily accessed with Reporter Rd. at its northern border and a newly built Majestic St. spur running through the northern active development and connecting to Reporter Rd. to the south.



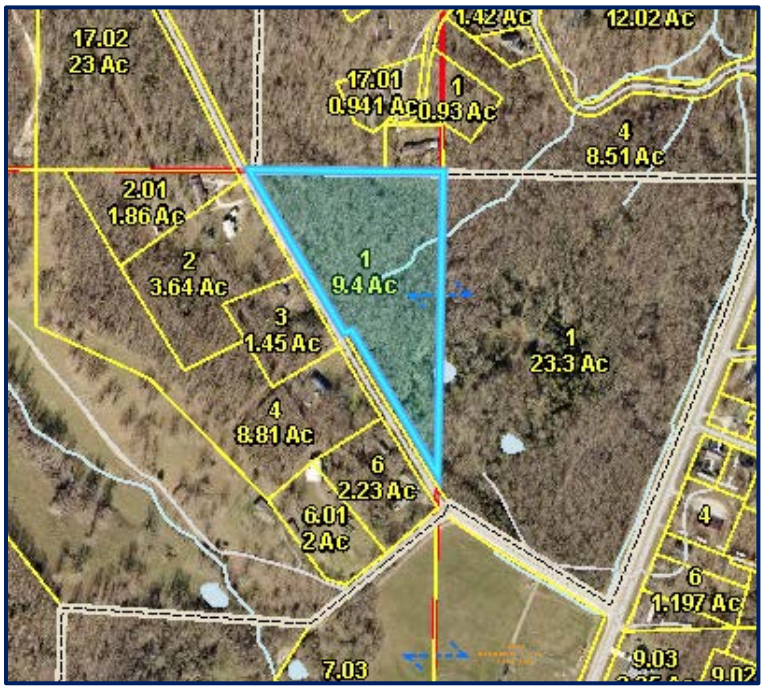
- A 4.50-acre partially wooded property located northwest of the intersection of Reporter Rd. and Majestic St. features a single-family home in its southern half and no other current developments to the north. This property is gently sloped up to the west and lies within city limits. This property is easily accessed from Reporter Rd. on its southern border.

- A 7.01-acre primarily wooded property located northwest of the intersection of Reporter Rd. and Majestic St. features a single-family home in the southwestern ¼ of the property and no other current developments. This property is relatively flat and lies within city limits. This property is easily accessed from Reporter Rd. on its southern border.

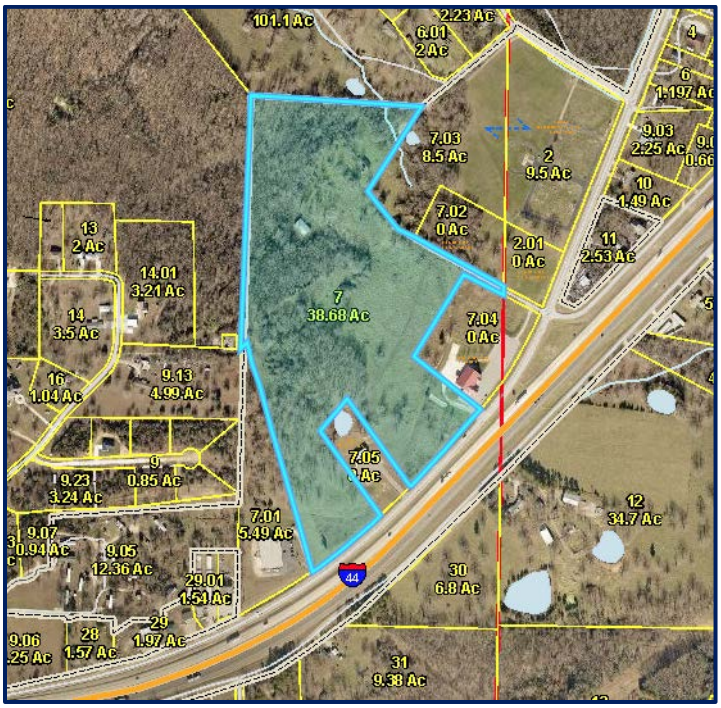
- A 23.3-acre wooded property located north of the intersection of U.S. Rte. 66 and Royal Oak Ln. is vacant with no current developments. This property is relatively flat and would have to be annexed as it is not within city limits. This property is easily accessed due to U.S. Rte. 66 running along its eastern border and Royal Oak Ln. on its southwest border.



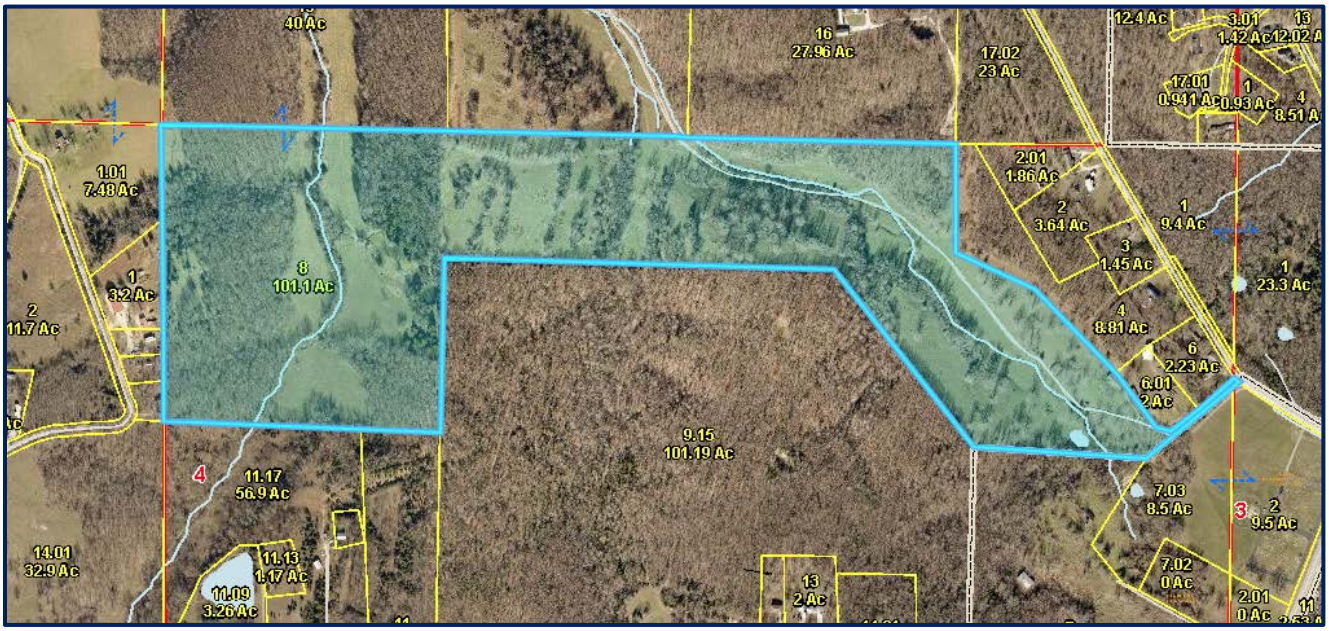
- A 9.40-acre wooded property located north of the intersection of Royal Oak Ln. and Royal Leaf Ln. is vacant with no current developments. This property gradually slopes up to the west and would have to be annexed as it is not within city limits. This property is easily accessed due to Royal Leaf Ln. running along its southwestern border.



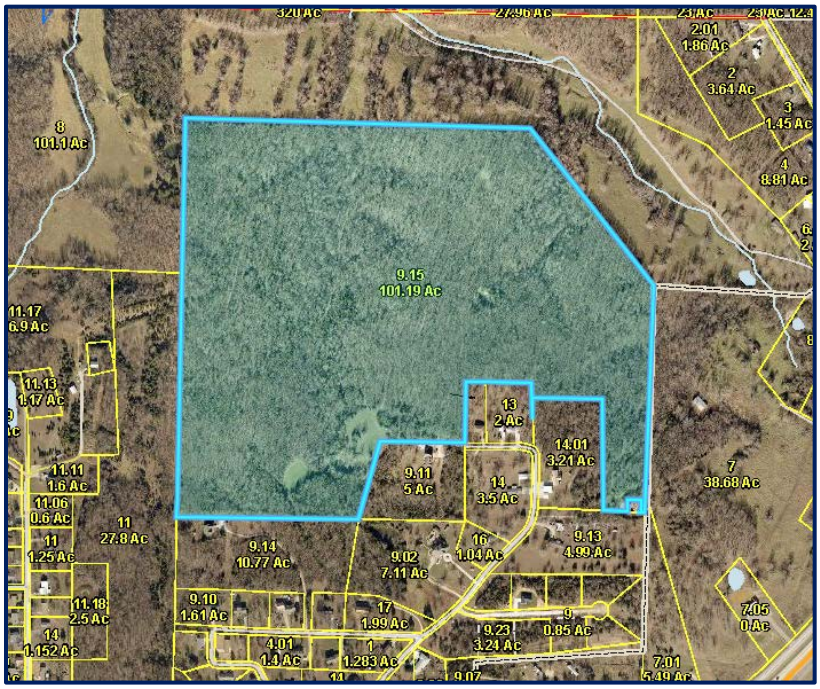
- A 38.68-acre partially wooded property located west of the intersection of U.S. Rte. 66 and Risky Rd. is vacant with no current developments. This property is relatively flat to the east with slopes and higher elevations to the west and is located within city limits. This property is easily accessed due U.S. Rte. 66 running along its southeastern border and Royal Leaf Ln. at its northeast corner.



- A 100.10-acre partially wooded property located on both sides of the southernmost part of Royal Leaf Ln. with no current developments. This property has gently sloped woodlands up from the streams and open bottoms and would have to be annexed as it is not within city limits. This property is easily accessed due to Royal Leaf Ln. bisecting its eastern half.



- A 101.19-acre wooded property located south of Royal Leaf Ln. and north of Ridgeview Ln. with no current developments. This property is gently sloped and would have to be annexed as it is not within city limits. This property is easily accessed at the end of Ridgeview Ln on its southern border.



- A 26.15-acre property located southeast of the intersection of U.S. Rte. 66 and Lyle Curtis Cir. occupies an institutional development south of Rocklin Dr. and no current developments on the open ground to the north. This property is relatively flat and is within city limits. The property is easily accessed due Rocklin Dr. on in southern border, U.S. Rte. 66 on its eastern border and Lyle Curtis Cir. on its northern border.

- A 1.00-acre lightly wooded property located south of the intersection of Rocky Dale Dr. and Lyle Curtis Cir. with no current developments. This property is relatively flat and is located within city limits. This property is easily accessed by Rocky Dale Dr. on its northwest boundary and Rocklin Dr. at its southern corner.

MITIGATION RECOMMENDATIONS

Waynesville has a mix of residential types (single-family, duplex, multi-family) within the floodplain and mitigation solutions should be considered on a case-by-case basis. Depending on the project, consultation from a local architect, engineer, contractor, landscaper, or other expert in design and construction may be required. Also, changes to properties and buildings in floodplains require permits or other local approvals as noted in the city's floodplain ordinance. It is also recommended to consult with adjacent property owners when proposing flood mitigation measures such as extending downspouts or regrading areas between homes. Changes to the flow of water from one property to another can have negative impacts on adjacent parcels when there may not have been a previous issue.

The following general recommendations are based on residential types of mitigation for structures in the floodplain as outlined in FEMA's "Protect Your Home from Flooding" report. Any of the recommendations for improvements inside and outside of the home can be applied to any type of residential structure:

Outside of the Home

For the exterior areas of residential properties in the floodplain that are identified in NEW or STANDARD condition per the housing survey, consider taking the following actions:

- Maintain proper water runoff and drainage. Routinely clean and maintain gutters, downspouts, and splashpads so that rainwater from roofs flow easily away from residences. Also, ensure that any nearby drainage ditches or storm drains are clear of debris and functioning properly.
- Improve lot grading. Determine how water flows or accumulates around residences to identify potential trouble spots (often easy to see during an average rainstorm). Stormwater should always drain away from buildings; if necessary, change landscaping to improve runoff. This may include building up any sunken areas around the foundation, digging small depressions to properly channel water, and otherwise improving the yard so that it slopes away from homes.
- Reduce impervious surfaces around residential structures. Retaining and creating natural green space around residences can help reduce sewer overflows by reducing stormwater runoff. Consider options such as rain gardens, vegetated swales, or pervious pavements, which allow more water to be absorbed by the ground.
- Install a rain barrel. A rain barrel is an alternative method for dealing with rainwater. Rain barrels are typically connected to gutter downspouts and collect the runoff from roofs. The stored water can be utilized for non-potable uses such as watering the lawn and gardens or washing your car.
- Elevate utilities and service equipment. Raise and anchor air conditioning condensers, heat pumps, water meters and other service equipment onto pedestals or platforms that are at least one foot above the base flood elevation established for the surrounding property.
- Anchor outdoor fuel tanks. Attach outdoor fuel tanks to a large concrete slab that weighs enough to resist the force of floodwaters or install inexpensive ground anchors that are connected across the top of the tank with metal straps. Unanchored fuel tanks can be easily moved and ruptured by floodwaters and pose serious threats to people, property, and the environment. Fuel tanks should also be elevated above the regulatory base flood elevation as adopted by the FEMA FIRM map. If not feasible then all filling and ventilation tubes should be elevated so that floodwaters cannot enter the tank.

Inside the Home

For interior areas of residential properties in the floodplain that are identified in NEW or STANDARD condition per the housing survey, below the base flood elevation, consider making the following alterations:

- Protect valuable possessions. Move important documents and other valuable or sentimental items to a safer location well above the potential flood elevation and/or inside watertight containers.
- Seal foundations and basement walls. Close any foundation cracks with mortar and masonry caulk or hydraulic cement, which expands and fills gaps completely. Seal walls in basements with waterproofing compounds to avoid seepage. Make sure any floor drains are clear of obstructions.

- Install flood vents. Flood vents are small, permanent openings that allow floodwater to flow freely through an enclosure such as a crawlspace or garage. Properly positioned and installed, flood vents protect homes during floods by preventing water pressure buildup that can destroy walls and foundations. Once installed, make sure flood vents are kept free of debris and will allow the free flow of floodwater.
- Install a sump pump. Sump pumps, which pump groundwater away from the home, can be an excellent defense against basement seepage and flooding. They draw in the groundwater from around the house and direct it away from the structure through drainage pipes. Be sure to choose a device with battery-operated backup, in case of electrical power failure.
- Prevent sewer backups. Install drain plugs for all basement floor drains to prevent sewer backups. Another recommended option, regardless of the base flood elevation, is to install sewer backflow valves for all pipes entering the building. These devices, which allow water to flow only one direction, prevent floodwater and wastewater from backing up into your home through toilets, sinks, and other drains. They are available in a variety of designs that range from simple to complex, but should be installed by a qualified, licensed plumber.
- Use flood-resistant building materials. Replace wooden floorboards and carpets with ceramic tile, vinyl, rubber, or other flood-resistant materials. Use moveable rugs instead of fitted carpets. Replace internal walls and ceilings with flood-resistant material such as lime plaster, cement board, concrete, or pressure-treated and decay-resistant wood. Replace wooden doors and window frames with metal or other flood-resistant options.
- Raise electrical system components. Increase the height of electric service panels (fuse and circuit breaker boxes) and all outlets, switches, and wiring to at least one foot above the base flood elevation. These modifications should be made by a licensed electrician.
- Protect utilities and service equipment. Move the main parts of any heating, ventilation, and air conditioning (HVAC) systems to a higher floor or the attic. Consider raising other major appliances, such as washers, dryers, and hot water heaters, above the ground floor. If relocation or elevation is not possible, protect service equipment in place using low floodwalls and shields. Alternative options such as replacing traditional hot water heaters with tankless units should also be considered.
- Anchor indoor fuel tanks. Anchor fuel tanks by attaching them to a large concrete slab that weighs enough to resist the force of floodwaters.
- Install a flood alert system. A variety of flood sensors and other early warning devices can alert residents to the risk of imminent flooding so that residents can take preventative or protective actions before extensive damage occurs.

For All Homes in The Floodplain

For residential properties in the floodplain that are identified in NEW, STANDARD or DETERIORATED condition per the housing survey, consider taking the following actions:

- Raise the structure. Elevating a home to meet the floodplain standards (usually one foot above the base flood elevation) is a common method of retrofitting structures in the

floodplain. Of the 117 properties in new, standard or deteriorated condition in Waynesville, this report considers those properties with identified repetitive damage (identified by Waynesville and SEMA/FEMA) to be the best candidates for elevation. This can include building a storage-only/garage foundation underneath the existing home. The second option includes abandonment of the first floor and retrofit to accommodate a storage-only foundation, with a new upper level and roof built.

- Relocate the structure. This option would allow for the original home to stay mainly intact, but the owner would have to find a new lot (outside of the floodplain) to place the home. Additionally, costs for moving homes can increase due to the size of the structure and distance moved from original location. Relocation is a mitigation technique usually used for historic homes that may also require approvals from local and state preservation agencies.

For residential properties in the floodplain that are identified in DETERIORATED condition per the housing survey, consider taking the following actions:

- Using any of the tools above may improve the conditions of the deteriorated home; however, per floodplain regulations, no substantial improvements may be made. A substantial improvement, as defined in 44 CFR § 59.1, means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the start of construction of the improvement. Additional information on substantial improvements can be found in the following document provided by FEMA on page 117.
- Deteriorated structures that would require more than a 50% investment to improve the structure should consider demolition. There is more than one option for demolition:
    - If Waynesville is considering a floodplain buyout of substantially damaged/repetitive loss structures, flood buyout grants are potentially available to purchase the residential properties (home and lot). While this option removes the home from the floodplain, the long-term ownership remains with the city and does not go back to the original owner, as the city would use grant funds to purchase the property.
    - Non-floodplain related demolition grants can assist communities with demolition, where the lot is eventually sodded or seeded and open to new development. Any new development in the floodplain is subject to the ordinances of Waynesville.

For residential properties in the floodplain that are identified in DILAPIDATED condition per the housing survey, consider taking the following actions:

- Demolition of the structure. This plan identifies approximately seven residential properties as being in a dilapidated condition, where the exterior of the home appears to have visible damage to the structure. This includes holes in roofs, windows, doors and/or significant damage to the siding of a home.

- Floodplain mitigation for these structures is the same as the previously identified mitigation measures for dilapidated homes, where costs to renovate would be more than 50% of the appraised value (substantial damage/improvement).

For multi-family residential properties in the floodplain that are identified in DILAPIDATED or DETERIORATED condition per the housing survey, consider taking the following actions:

- Of the 20 duplexes/multi-family parcels in the floodplain, 13 were identified to be either dilapidated or deteriorated based on the housing survey. Of the 13, seven include multiple mobile home units or stand-alone structures that appear to be vacant or uninhabitable. It is recommended that all of these structures are demolished or removed from the respective sites permanently. While mobile home units can ideally be moved to another location upon notice of a flood, it appears that the existing structures have been in place long enough that moving would likely not occur in time. Recommendations for the development of new multi-family and/or mobile home parks are outlined in the Future Development section of this chapter.

Online Resources

The following online resources provide a wealth of information and guidance on mitigation techniques for homes in the floodplain as outlined in this section.

Elevating Your House
https://www.fema.gov/sites/default/files/documents/fema_elevating-your-house-chapter-5.pdf

Homeowner's Guide to Retrofitting
www.fema.gov/media-library/assets/documents/480

Protect Your Home from Flooding: Low-cost Projects You Can Do Yourself
https://www.fema.gov/sites/default/files/documents/fema_protect-your-home-from-flooding-brochure_2020.pdf

Reducing Flood Risk to Residential Buildings That Cannot Be Elevated
www.fema.gov/media-library/assets/documents/109669

Protecting Your Home and Property from Flood Damage
www.fema.gov/media-library/assets/documents/21471

Protecting Building Utility Systems from Flood Damage
www.fema.gov/media-library/assets/documents/3729

Protect Your Property from Flooding
www.fema.gov/media-library/assets/documents/13261

Answer to Questions About Substantially Improved/Substantially Damaged Buildings
https://www.fema.gov/sites/default/files/2020-07/fema_p213_08232018.pdf

FEMA, Protect Your Property
www.fema.gov/protect-your-property

FloodSmart
www.floodsmart.gov

FUNDING SOURCES & GENERAL RECOMMENDATIONS

FEMA provides funding for mitigation to reduce the loss of life and property by lessening the impact of disasters such as flooding. Mitigation planning breaks the cycle of disaster damage, reconstruction, and repeated damage. Hazard mitigation includes long-term solutions that reduce the impact of disasters in the future. The funds also help communities to comply with regulations by building outside the floodplain. The following section provides a variety of funding sources that both communities and individuals can benefit to reduce housing flood risks. Note that all underlined items in this chapter are links to funding programs and online resources.

Funding Sources for Properties – In the Floodplain

Hazard Mitigation Grant Program (HMGP) provides funding to state, local, tribal and territorial governments so they can develop hazard mitigation plans and rebuild in a way that reduces, or mitigates, future disaster losses in their communities. When requested by an authorized representative, this grant funding is available after a presidentially declared disaster. In this program, homeowners and businesses cannot apply for a grant. However, a local community may apply for funding on their behalf. All state, local, tribal and territorial governments must develop and adopt hazard mitigation plans to receive funding for their hazard mitigation projects.
https://www.fema.gov/grants/mitigation/hazard-mitigation

Building Resilient Infrastructure & Communities (BRIC), (Formerly PDM, Pre-Disaster Mitigation) will support states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. 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.
Building Resilient Infrastructure and Communities | FEMA.gov

Flood Mitigation Assistance (FMA) is a competitive grant program that provides funding to states, local communities, federally recognized tribes and territories. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance Program. FEMA chooses recipients based on the applicant's ranking of the project and the eligibility and cost-effectiveness of the project.

FEMA requires state, local, tribal and territorial governments to develop and adopt hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance, including funding for hazard mitigation assistance projects. For more information, refer to the Hazard Mitigation

Assistance Guidance. Flood Mitigation Assistance (FMA) Grant | FEMA.gov

Pre-Disaster Mitigation (PDM) Grant program makes federal funds available to state, local, tribal and territorial governments to plan for and implement sustainable cost-effective measures designed to reduce the risk to individuals and property from future natural hazards, while also reducing reliance on federal funding from future disasters.
Pre-Disaster Mitigation (PDM) Grant | FEMA.gov

Floodplain Management - Increased Cost of Compliance Coverage If your home or business is damaged by a flood, you may be required to meet certain building requirements in your community to reduce future flood damage before you repair or rebuild. To help you cover the costs of meeting those requirements, the National Flood Insurance Program offers Increased Cost of Compliance (ICC) coverage. Flood insurance policyholders in high-risk flood areas (also known as special flood hazard areas) may receive up to $30,000 to help offset the costs to bring their home or business into compliance with their local community's floodplain management ordinance or regulations. To help reduce future flood damage, there are four options or any combination to choose for your property: (1) elevation, (2) relocation, (3), Demolition and (4) floodproofing.
Increased Cost of Compliance Coverage | FEMA.gov

Housing Development Funding Sources - Outside the Floodplain

USDA Rural Development

Multifamily Housing Direct Loans provides loans to eligible borrowers unable to get financing through traditional lenders. Multifamily Direct Loans feature terms and conditions that support the development or preservation of affordable rural rental housing for low-income, elderly, or disabled people. Loan funds can be used for all construction hard costs and land-related costs, including land acquisition and development.
https://www.rd.usda.gov/sites/default/files/fact-sheet/508_RD_FS_RHS_MFHDirectLoans.pdf

Multifamily Guaranteed Rural Rental Housing provides up to a 90 percent guarantee for loans made by commercial lenders to borrowers developing or rehabilitating multifamily rental housing for low- and moderate income tenants in rural areas.
https://www.rd.usda.gov/sites/default/files/fact-sheet/508_RD_FS_RHS_MFGuarantee.pdf

Missouri Housing Development Commission

MHDC Rental Housing Production and Preservation Program provides funding to developers for the acquisition and rehabilitation or new construction of rental housing for low- and moderate-income families. The MHDC funds are typically combined with Low Income Housing Tax Credits to fund affordable multifamily housing developments.
Missouri Housing Development Commission - Program Compliance (mhdc.com)

HOME Program provides a financing source for several eligible activities that increase the supply of affordable housing for low and very low income persons. One of these activities is the acquisition and rehabilitation or new construction of rental housing. As HOME Administrator for the State of Missouri, MHDC uses a portion of its annual HOME allocation to finance rental production at a very low interest rate, which results in rents that are affordable to low income families.
Missouri Housing Development Commission (mhdc.com)

Low-Income Housing Tax Credit (LHTC) provides a federal tax credit to investors in affordable housing. The LIHTC can be used each year for 10 years and is allocated to the owner of an affordable housing development. Investors take an ownership interest in the development to utilize the tax credits, thereby generating equity to construct or acquire and rehabilitate the development. The Internal Revenue Service (IRS) allocates LIHTC to each state in an amount equal to the greater of **(i)** $2.8125 times its population, or **(ii)** $3,245,625.
Missouri Housing Development Commission - Low Income Housing Tax Credit Program (mhdc.com)

The Missouri Housing Trust Fund was created by the state Legislature in 1994 to help meet the housing needs of very low-income families and individuals. The Missouri Housing Development Commission administers the Trust Fund, which provides funding for a variety of housing needs, such as homeless prevention; rehab or new construction of rental housing, rental assistance; and home repair to eligible organizations providing housing assistance to Missourians.
MHDC

Federal Home Loan Bank

The Affordable Housing Program (AHP) Implementation Plan (IP) outlines sections of the AHP regulation (12 C.F.R. 1291) that requires the Federal Home Loan Bank of Des Moines ("Bank") to implement policy governing the AHP competitive program and the homeownership down payment program(s). On November 17, 2022, the Advisory Council reviewed the 2023 IP. Approval of the 2023 IP was provided by the Housing and Community Investment Committee on November 18, 2022, and by the Board of Directors on December 7, 2022. The 2023 IP will take effect on January 1, 2023.
CID_2023_AHP_Implementation_Plan.pdf (fhlbdm.com)

Housing Assistance Council

Housing Assistance Council (HAC) makes short-term loans at below market interest rates to local nonprofits, for profits and government entities developing affordable housing for low-income, rural residents. HAC's loans enable borrowers to acquire land, pay architectural and environmental fees and cover other costs that arise before construction loans are available. Loans from these funds are used for a wide variety of housing development purposes, for all types of affordable and mixed income housing projects, and for both rental and ownership units.
http://www.ruralhome.org/hac-services/lending

Veterans

The Home Depot Foundation – Serving Veterans is deeply committed to serving veterans and works with nonprofit organizations across the country to give back to our nation's heroes. Our Veteran Housing Grants Program was created to help nonprofits fund the development and repair of multi-unit veteran housing facilities. Awards typically range from $100,000 to $500,000.
Grants | The Home Depot- Specific to veterans

For Single Family Repairs or Construction:

Single Family Housing Repair Loans & Grants in Missouri also known as the Section 504 Home Repair program, this provides loans to very-low-income homeowners to repair, improve or modernize their homes or grants to elderly very-low-income homeowners to remove health and safety hazards.
Single Family Housing Repair Loans & Grants in Missouri | Rural Development (usda.gov)

Community Grants - State Farm® is committed to helping build safer, stronger and better-educated communities. Good Neighbor Citizenship® company grants focus on safety, community development and education.
Good Neighbor Citizenship Company Grants | State Farm®

HOME Programs, Multifamily provides a financing source for several eligible activities that increase the supply of affordable housing for low and very low income persons. Funding is determined annually by HUD and depends on congressional appropriation. One of these activities is the acquisition and rehabilitation or new construction of rental housing. As the HOME Administrator for the state of Missouri, MHDC uses a portion of its annual HOME allocation to finance rental production at a very low interest rate, which results in rents that are affordable to low-income families.
MHDC

Assistance with purchasing:

Single Family Housing Direct Home Loans in Missouri also known as the Section 502 Direct Loan Program, this program assists low- and very-low-income applicants obtain decent, safe and sanitary housing in eligible rural areas by providing payment assistance to increase an applicant's repayment ability. Payment assistance is a type of subsidy that reduces the mortgage payment for a short time. The amount of assistance is determined by the adjusted family income.
Single Family Housing Direct Home Loans in Missouri | Rural Development (usda.gov)

MHDC's First Place Loan Program offers first-time homebuyers affordable interest rates and the option for forgivable down payment and closing cost assistance.
180854_firstplace_br.pdf (mhdc.com)

General Recommendations

For each of the communities surveyed, a majority of properties were identified in standard condition. This generally means that owners and cities will not pursue demolition, so long as the structures do not sustain repetitive losses from flooding. Mitigation opportunities include raising the lowest elevation of

the structure and maintaining proper drainage on the outside of the homes. For the deteriorated and dilapidated properties, communities should pay special attention to the ongoing conditions of each location to ensure substantial improvements are not made without proper permits, which would require them to be brought into compliance with local floodplain ordinances.

Mitigating future floodplain damages is in the best interest of each community and will positively impact the economic and housing conditions in the long-term. For larger mitigation projects, such as demolition of dilapidated structures, funding should be pursued to support the removal of buildings within the floodplain. In any city where there may be a net loss of residential units, additional planning should be done to help replace structures lost to demolition and to ensure affordable and appropriate housing is available for all displaced residents.

APPENDIX 1A: Chamois Survey Results

2021 Flood Housing Inventory Survey

H) Flood Zones 1. Floodway (AE) 2. 0.2% (X) 3. 1% (A) 4. Floodway/1% 5. 0.2/1% 6. Floodway/1/0.2%	**N) Reinvestment Evidence** 1. Landscape 2. Siding 3. Roof 4. Addition 5. Other (fence, garage, shed, porch, deck, etc.)
I) Land Use 1. Single Family 2. Multi-Family 3. Multi-Use 4. Vacant Land	**O) Parking Location** 1. On-Street 2. Off-Street
J) Structural Age 1. Before 1900 2. 1900-1940 3. 1941-1980 4. 1981-Present	**P) Lot Status** 1. For Sale 2. For Rent 3. Occupied 4. Vacant
K) Structural Condition 1. New 2. Standard 3. Deterioration 4. Dilapidated	**Q) Occupancy** 1. Owner 2. Renter 3. Vacant
L) Environmental Condition 1. Good 2. Fair 3. Poor	**R) Photos Obtained?** 1. Yes 2. No
M) Sidewalks 1. Yes 2. No	**S) Appraised Value** If an * after, it has both commercial & residential appraised values in total. All values were obtained from county assessor's data.

Chamois

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
200 S Locust St.	03101202010 000900	3	1	3	2	1	1	1	1	3	1	$50
407 W Second St	03101101005 000500	3	1	3	4	3	2		2	4	3	$4,050
406 N. Cherry	03101202001 002000	3	1	2	4	3	1		2	4	3	$4,308
204 N. Market	03101202003 002800	3	2	3	3	3	2		2	3	1	$4,308
104 W Tennessee	03101202003 001600	3	1	3	4	3	2		2	4	3	$4,572
105 N Locust St	03101101003 000400	3	1	2	4	3	2		2	1	3	$4,924
305 E Rose	03101202005 000200	3	2	3	3	2	1	3	1	3	1	$5,892
302 N. Cherry	03101202004 001800	3	1	3	2	2	2		2	4	3	$6,725
(404/406) N Main	03101202002 000900	3	1	2	3	4	3		2	4	3	$7,354
301 E Rose	03101202005 000700	3	1	1	3	1	1	5	2	3	1	$8,034
103 S Market	03101202007 000400	2	1	2	2	1	1		2	3	1	$8,434
304 N. Cherry	03101202004 001700	3	1	2	2	1	2	3	2	3	1	$8,551
314 E Missouri	03101202004 000900	3	1	2	4	2	2		2	4	3	$8,631
305 N. Main	03101202003 000900	3	1	2	3	2	2	3	2	4	3	$8,658
219 N Market	03101101001 000500	3	1	3	3	2	2	5	2	3	1	$9,081
201 E Missouri	03101202001 002100	3	1	4	2	1	2		2	3	1	$9,371
208 N. Main	03101202003 002300	3	1	1	2	1	1	2.3	2	3	1	$9,385
101 S Market	03101202007 000401	2	1	2	4	2	1		1	4	3	$10,399

Chamois

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
101 N Market	03101202006 001300	3	1	2	2	1	1	3	1	3	1	$11,048
307 W First St	03101101003 000600	3	1	2	2	1	1		2	3	1	$11,096
104 E Pacific St	03101202005 001200	2	1	2	2	2	2	2	2	3	1	$11,170
401 S Poplar St	03101104003 000200	5	1	2	2	1	2	2	2	3	1	$11,378
414 N. Cherry	03101202001 001300	3	1	1	3	2	2				1	$11,833
208 N Market	03101202003 002700	3	1	1	3	2	2	5	2	3	1	$11,846
107 S Locust St	03101101004 000300	3	1	2	3	2	2	5	2	3	1	$11,847
207 W First St	03101202006 001600	2	1	2	2	3	1	5	1	3	1	$12,228
409 W First St	03101101002 000800	3	1	2	3	3	1		2	3	1	$12,815
309 N. Main	03101202003 000300	3	1	4	4	2	2		2	4	3	$12,858
204 E Missouri	03101202004 001600	3	1	4	3	2	2		2	3	1	$15,151
407 N. Cherry	03101202002 000800	3	1	3	2	1	2	3	2	3	1	$15,383
300 W First St	03101101004 000100	3	1	3	2	1	1	2,3	2	3	1	$15,496
227 (+) W Railroad	03101101001 001300	3	1	2	4	3	2			4	3	$15,643
205 W Railroad	03101101001 000800	3	1	2	3	2	2	5	2	3	1	$15,867
207 E First St	03101202005 000900	2	1	2	3	1	1	3	2	3	1	$16,154
331 E Missouri	03101202001 000300	3	1	2	2	1	2	5	2	3	1	$16,159
101 W. Missouri	03101202002 001300	3	1	3	3	2	2		2	3	1	$16,211
321 E Missouri	03101202001 000700	3	1	3	4	3	2		2	4	3	$16,912

Chamois

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
100 S Vine	03101101004 000200	3	1	4	3	1	1	3	1	3	1	$17,292
111 E Wehmeyer	03101202004 002000	3	1	4	2	2	2		2	3	1	$17,619
307 E Missouri	03101202001 002400	3	1	3	2	2	2	5	2	3	1	$17,966
212 E First	03101202008 000600	2	1	2	2	1	2	1	2	3	1	$18,216
105 S. Cherry	03101202008 001300	2	1	2	2	1	2	5	2	3	1	$18,446
309 E Missouri	03101202001 002500	3	1	3	2	1	2	5	2	3	1	$19,053
105 S Market	03101202007 000800	2	1	2	2	1	1	1,2,3	2	3	1	$19,291
103 S Vine	03101101005 000300	3	1	3	4	3	1		1	3	1	$19,591
410 N. Cherry	03101202001 001600	3	1	3	2	2	1	5	2	3	1	$20,660
203 N Market	03101101001 001000	3	1	2	2	1	2	3,5	2	3	1	$20,865
409 W Second St	03101101005 000600	3	1	3	3	1	2		2	3	1	$20,901
308 E Missouri	03101202004 001100	3	1	3	3	2	2		2	3	1	$21,112
201 S Vine	03101101007 000100	3	1	3	3	1	1	1	2	3	1	$21,250
107 E Missouri	03101202002 001500	3	1	3	3	1	2		2	3	1	$21,797
307 N. Cherry	03101202003 000100	3	1	4	2	2	2	3	2	3	1	$22,266
309 E First St	03101202005 002700	2	1	3	2	2	2	2,3	2	3	1	$22,514
311 E Missouri	03101202001 002600	3	1	3	3	2	2		2	4	3	$22,810
207 E Missouri	03101202001 002300	3	1	3	2	1	2	5	2	3	1	$23,077

Chamois

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
301 W First St	03101101003 000500	3	1	4	2	1	1		1	3	1	$23,244
205 W Second	03101202007 000700	3	1	3	3	1	2	3	2	3	1	$23,276
108 N. Cherry	03101202005 001100	3	1	3	2	1	1		2	3	1	$23,960
202 S Vine	03101101008 000200	3	2	3	2	1	2	2,3	2	3	1	$24,145
408 N. Main St.	03101202002 000600	3	1	2	3	1	1	5	2	3	1	$24,226
205 W First St	03101202006 001500	2	1	1	3	1	1		1	3	1	$24,325
208 E First	03101202008 000700	2	1	3	2	1	1		2	3	1	$24,379
411 N. Main	03101202002 000301	3	1	3	3	1	2	3	2	3	1	$24,606
105 W Tennessee	03101202003 000800	3	1	3	2	1	2	3	2	3	1	$24,839
205 N. Main	03101202003 002500	3	1	1	3	2	2	5	2	3	1	$24,868
209 N. Main	03101202003 002501	3	1	4	2	1	2	2,3,5	2	3	1	$25,187
319 E Missouri	03101202001 000800	3	1	3	2	1	2	3	2	3	1	$25,244
105 E Wehmeyer	03101202003 002000	3	2	3	2	2	2	5	2	3	1	$25,532
323 E Missouri	03101202001 000600	3	1	3	2	2	2	5	2	3	1	$25,735
207 W Third St	03101101008 000400	5	1	3	2	1	1	2,3,5	2	3	1	$25,872
107 S Vine	03101101005 000400	3	1	2	2	2	1	5	1	3	1	$25,976
316 E Missouri	03101202004 000800	3	1	3	2	1	2	2	2	3	1	$26,703
209 E First St	03101202005 002200	2	1	3	2	1	1	3	2	3	1	$27,190
333 E Missouri	03101202001 000200	3	1	3	3	2	2		2	3	1	$28,391

Chamois

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
317 E Missouri	03101202001 000901	3	1	3	2	1	2	3	2	3	1	$28,607
205 S Vine	03101101007 000400	3	1	3	2	1	1	1	1	3	1	$28,663
315 E Missouri	03101202001 002700	3	1	3	2	1	2	5	2	3	1	$30,199
322 E Missouri	03101202004 000500	3	1	3	2	1	2	3,5	2	3	1	$31,288
328 E Missouri	03101202004 000200	3	1	3	3	2	2	5	2	3	1	$32,073
204 S Vine	03101101008 000300	3	1	4	2	1	1		2	3	1	$32,873
208 W First St	03101202007 000500	3	1	2	3	1	1	5	2	3	1	$32,978
106 S Vine	03101101004 000400	3	1	2	2	1	2	3	2	3	1	$33,693
303 N. Cherry	03101202003 001200	3	2	3	2	2	1	3	1	3	2	$34,342
102 N. Cherry	03101202005 002100	2	1	3	2	1	1	3,5	2	3	1	$34,369
326 E Missouri	03101202004 000300	3	1	3	2	1	2	3	2	3	1	$34,899
215 N. Main	03101202003 001800	3	1	3	2	1	2	3	2	3	1	$35,534
410 W Pacific St	03101101002 000200	3	1	1	2	3	2		2	3	1	$35,568
507 S Poplar St	03101104004 000200	2	1	3	3	2	2	2	2	3	1	$35,688
302 E Missouri	03101202004 001400	3	1	3	2	2	2	2,3	2	3	1	$36,657
312 E Missouri	03101202004 001000	3	1	3	2	1	2		2	3	1	$37,574
401 W First St	03101101002 000600	3	1	2	2	1	2		2	3	1	$37,719
302 W Second St	03101101008 000100	3	1	3	3	2	2		2	3	1	$37,731
102 E Tennessee	03101202003 001400	3	1	3	2	1	2	2,3	2	3	1	$38,882

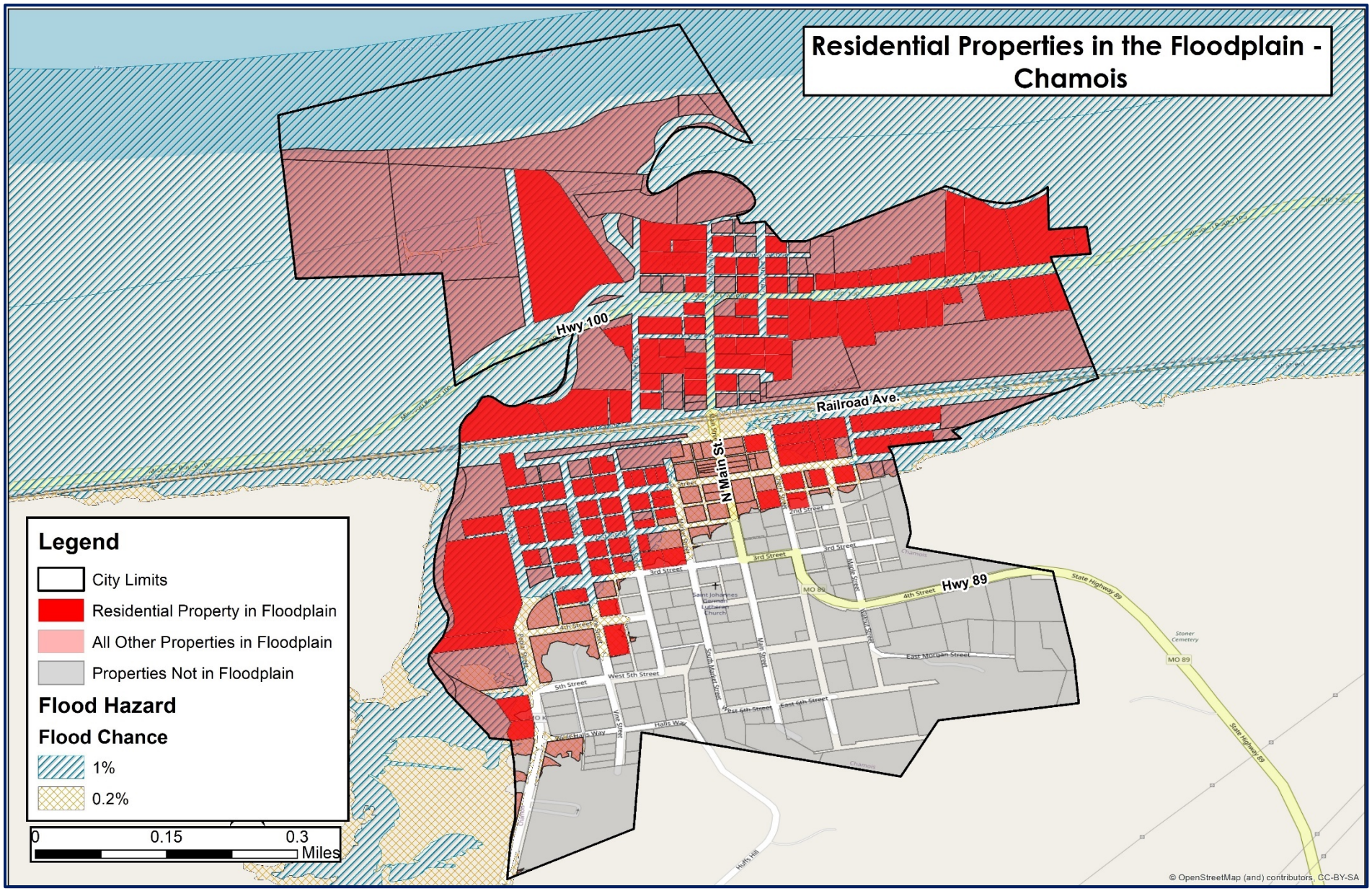
Chamois

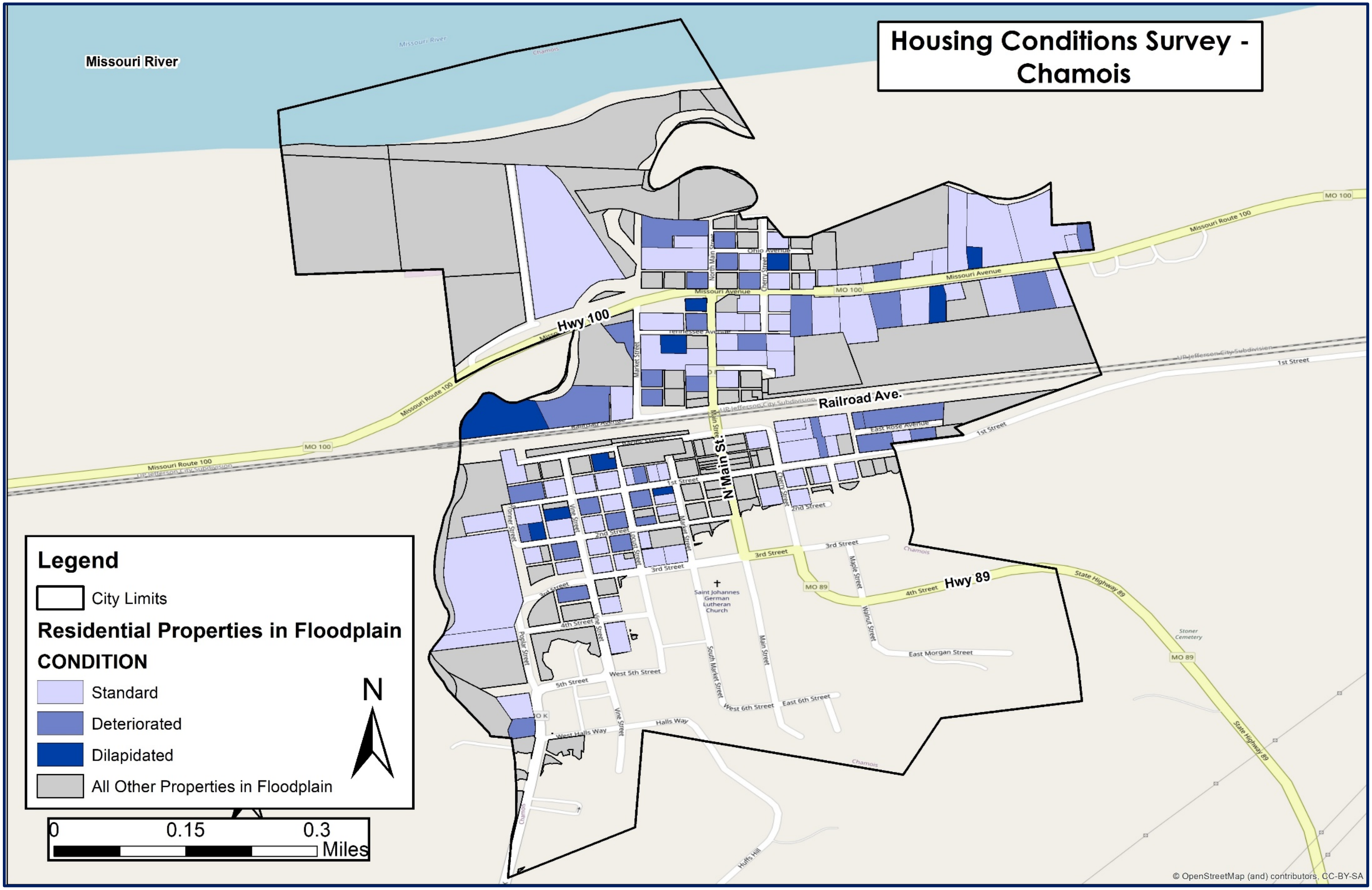
Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
329 E Missouri	03101202001 000400	3	1	3	2	1	2	5	2	3	1	$40,046
301 S Vine	03101101010 000100	5	1	2	3	1	1	2	2	3	1	$41,299
409 N. Main	03101202002 000400	3	1	3	2	2		2	3		1	$41,996
306 E Missouri	03101202004 001200	3	1	3	2	1	2	2,3,5	2	3	1	$43,859
207 S Market	03101202010 000801	2	1	3	2	1	1		2	3	1	$46,013
324 E Missouri	03101202004 000400	3	1	3	3	1	2		2	3	1	$46,956
106 N. Cherry	03101202005 001000	5	1	3	2	1	1	3	2	3	1	$47,847
304 S Vine	03101101009 000300	3	1	2	2	2	2	1	2	3	1	$47,967
306 W Fourth St	03101104001 000200	2	1	2	2	1	1		2	3	1	$49,873
408 W First St	03101101005 000200	3	1	3	2	1	1	3	2	3	1	$50,505
408 W Second St	03101101007 000300	3	1	3	2	1	2	1,3,5	2	3	1	$52,394
101 S Stonner Ave.	03101101006 000100	3	1	3	2	1	2	3	2	3	1	$52,642
303 E Missouri	03101202001 001800	3	1	3	2	1	2	5	2	3	1	$55,448
106 S. Cherry	03101202008 001400	2	1	4	2	1	1	1,3,5	2	3	1	$57,324
302 N. Main	03101202003 001000	3	1	1	2	1	1	3	2		1	$61,132
312 E Rose	03101202005 002800	3	1	4	3	2	2	3,5	1	3	1	$62,958
102 S Cherry	03101202008 000900	2	1	4	2	1	1	5	2	3	1	$68,902
107 S Stonner Ave	03101101006 000200	3	1	3	2	1	1	2,3	2	3	1	$69,611

Chamois

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
205 W Third St	03101202010001000	5	1	3	2	1	1	4	2	3	1	$70,457
410 N. City Park Rd	03101100000000200	3	1	2	2	1	2	2,3,5	2	3	1	$75,459
405 N. Main	03101202002001000	3	2	3	2	2	2		2	3	2	$175,003
214 N. Main	03101202003002000	3	2	3	3	1	2		2	3	1	
(307) E Rose	03101202005000200	3	2	3	4	3	1		1	4	3	
109 N Eruse Ave	03101202005000800	3	1	2	2	2	1	5	2	3	1	

APPENDIX 1B: Chamois Maps




Housing Conditions Survey - Chamois
Missouri River
Hwy 100
Railroad Ave.
N Main St.
Hwy 89
Legend
City Limits
Residential Properties in Floodplain
CONDITION
Standard
Deteriorated
Dilapidated
All Other Properties in Floodplain
N
0
0.15
0.3
Miles
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APPENDIX 2A: Hermann Survey Results

2021 Flood Housing Inventory Survey

H) Flood Zones 1. Floodway (AE) 2. 0.2% (X) 3. 1% (A) 4. Floodway/1% 5. 0.2/1% 6. Floodway/1/0.2%	**N) Reinvestment Evidence** 1. Landscape 2. Siding 3. Roof 4. Addition 5. Other (fence, garage, shed, porch, deck, etc.)
I) Land Use 1. Single Family 2. Multi-Family 3. Multi-Use 4. Vacant Land	**O) Parking Location** 1. On-Street 2. Off-Street
J) Structural Age 1. Before 1900 2. 1900-1940 3. 1941-1980 4. 1981-Present	**P) Lot Status** 1. For Sale 2. For Rent 3. Occupied 4. Vacant
K) Structural Condition 1. New 2. Standard 3. Deterioration 4. Dilapidated	**Q) Occupancy** 1. Owner 2. Renter 3. Vacant
L) Environmental Condition 1. Good 2. Fair 3. Poor	**R) Photos Obtained?** 1. Yes 2. No
M) Sidewalks 1. Yes 2. No	**S) Appraised Value** If an * after, it has both commercial & residential appraised values in total. All values were obtained from county assessor's data.

Hermann

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
410 E 6TH	02703600100 3008000	5	1	3	2	1	2	1	2	3	1	$64,640
411 E 10TH	02703600101 0007000	2	1	4	2	2	2	5	2	3	1	$54,460
410 E 10TH	02703600101 1002000	5	1	4	2	1	2		2	3	1	$49,610
418 E 10TH	02703600101 1002012	2	1	4	2	1	2	1,2,3	2	3	1	$36,510
1011 SCHIEFFER S BRANCH RD	02703600101 1008000	5	2	4	2	1	2		2	3	2	355380*
1012 SCHIEFERS BRANCH RD	02703600101 1005010	2	1	4	2	2	2		2	3	1	$53,790
236 E 6TH	02703600200 7001000	3	1	3	3	3	2		1	3	1	$7,290
232 E 6TH	02703600200 7002000	5	1	3	2	2	2	3,5	1	3	1	$46,690
112 W 8TH	02703600201 3003000	2	1	2	3	2	2	2,5	2	3	1	$74,440
127 W 8TH	02703600201 2010000	5	1	3	3	2	2		1	3	1	$45,380
129 W 8TH	02703600201 2009000	2	1	2	2	2	2	2,5	2	3	1	$40,420
133 W 8TH	02703600201 2008000	2	1	3	2	1	2	5	2	3	1	$70,720
111 13TH TERRACE	02703600300 4001000	5	3		2	1	2	3	2	3	1	$174,990
163 STATE HWY 100 WEST	02703500401 8001000	2	1	3	3	2	2		2	4	3	$33,670
163B STATE HWY 100 WEST	02703500401 8001000	2	1	4	3	2	2	5	2	3	1	$33,670

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Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
159 FRENE CT. UNIT E	02703500401 7023030	2	2	4	2	1	2	1	2	3	1	$123,900
159 FRENE CT.	02703500401 7023000	2	1	4	2	1	2	1,3	2	3	1	$136,810
216 W 9TH	02703500101 6002000	5	1	3	2	1	1	3	2	3	1	$65,620
220 W 9TH	02703500101 6003000	5	1	3	2	1	1		2	3	1	$49,110
224 W 9TH	02703500101 6004000	2	1	1	3	2	1	3	2	3	1	$36,450
230 W 9TH	02703500101 6005000	2	1	3	2	1	1	3	2	3	1	$83,700
221 W 9TH	02703500100 9009000	3	1	1	3	1	1	1	2	3	1	$40,480
227 W 9TH	02703500100 9008000	3	1	2	2	2	2		2	3	1	$41,080
231 W 9TH	02703500100 9007000	5	1	1	3	1	2		2	3	1	$51,100
233 W 9TH	02703500100 9006000	2	1	1	2	2	2	3	2	3	1	$58,100
219 W 8TH	02703500100 9001000	3	1	1	4	2	2		2	4	1	$37,030
W 7TH (& Mozart St)	02703500100 1017000	3	2	3	2	1	1	2,3	2	3	1	$0
W 7TH (& Mozart St)	02703600200 5008000	3	2	3	2	1	1	2,3	2	3	1	$0
609 WASHING TON	02703500100 1019000	5	1	3	3	2	2		2	3	1	$67,040
230 W 6TH	02703500100 1011000	2	1	2	2	1	1	3	2	3	1	$119,910
226 W 6TH	02703500100 1012000	2	1	1	3	1	1	5	2	3	1	$69,670
220 W 6TH	02703500100 1013000	5	1	2	2	1	1	3,5	2	3	1	$118,110
214 W 6TH	02703500100 1015000	3	1	2	2	1	1	1,5	2	3	1	$94,810

Hermann

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
210 W 6TH	02703500100 1016000	3	1	1	2	1	1	3	2	3	1	$77,830
206 W 6TH	02703600200 5007000	5	1	1	2	1	1	3,5	2	3	1	$80,790
202 W 6TH	02703600200 5006000	5	5	1	2	1	1	3,5	2	3	4	80670*
229 W 6TH	02703500100 1006000	2	1	1	2	1	1		2	3	1	$92,120
223 W 6TH	02703500100 1005000	2	2	2	2	2	1		1	3	2	$103,150
221 W 6TH	02703500100 1004000	2	1	2	2	1	1	3	2	3	1	$66,490
217 W 6TH	02703500100 1003000	2	1	2	2	1	1	5	2	3	1	$77,070
215 W 6TH	02703500100 1002000	2	1	2	2	1	1		2	3	1	$94,350
209 W 6TH	02703500100 1001000	2	1	2	2	1	1	5	2	3	1	$90,460
201 W 6TH	02703600200 4013000	2	1	1	2	1	1	3,4	2	3	1	$80,720
136 W 6TH	02703600200 5005000	5	2	2	2	1	1	5	2	3	2	$84,270
515 MOZART	02703600200 4014000	2	5	1	2	1	1	1,2	2	3	4	70030*
133 W 6TH	02703600200 4016000	2	5	1	2	1	1	2,3	2	3	4	76740*
129 W 6TH	02703600200 4017000	5	5	2	2	1	1	2,3	2	3	4	90740*
125 W 6TH	02703600200 4018000	5	5	2	2	1	1		2	3	4	$72,920
413 MARKET	02702500302 1015000	2	3		2	1	1	4	2	3	1	164270*
508 MARKET	02703600200 4022000	3	5	2	2	1	1	3,5	2	3	4	136890*
128 E 5TH	02703600200 3003000	3	1	2	4	1	1		2	4	3	$29,020
132 E 5TH	02703600200 3002000	3	1	3	3	3	1		2	3	1	$28,300

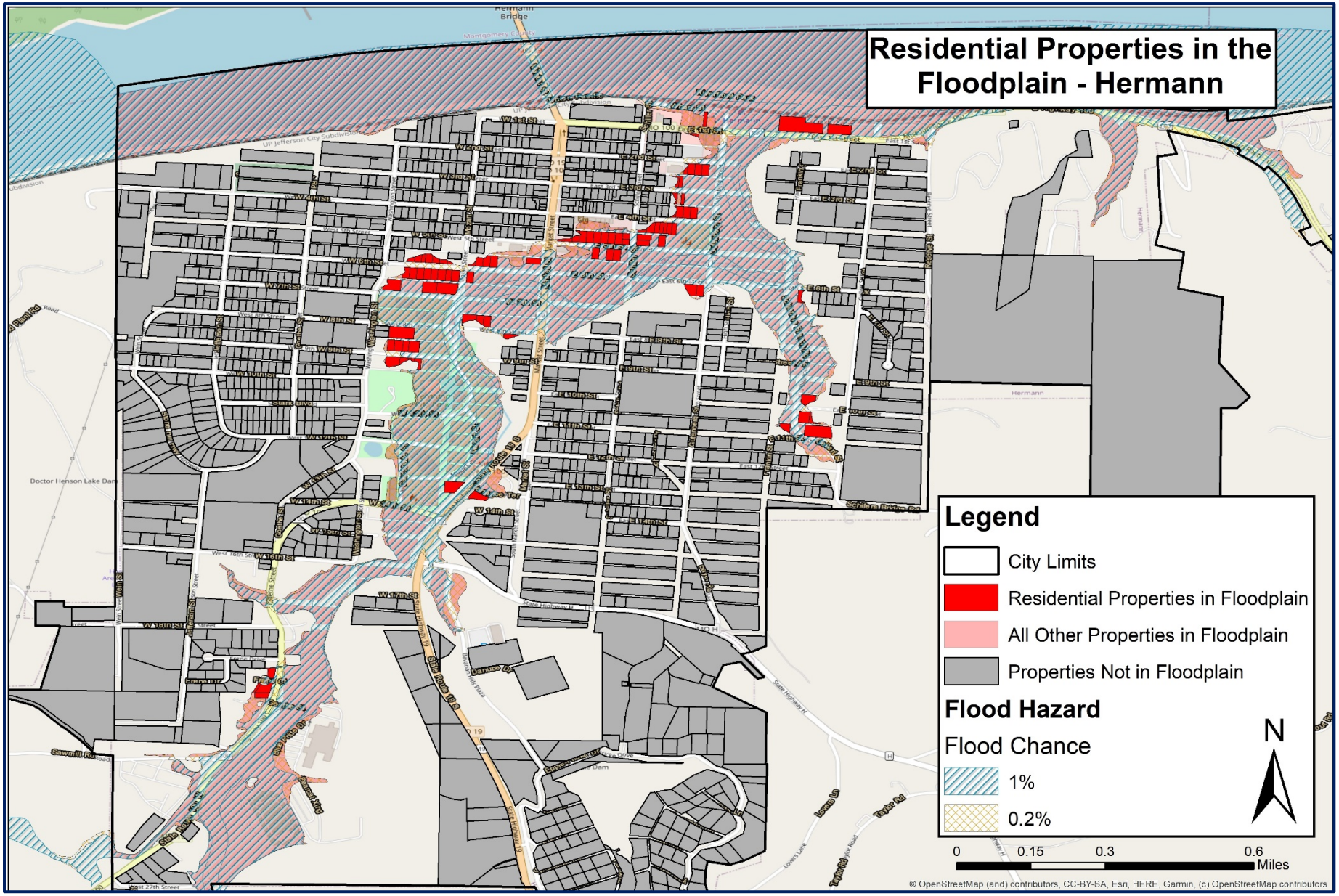
Hermann

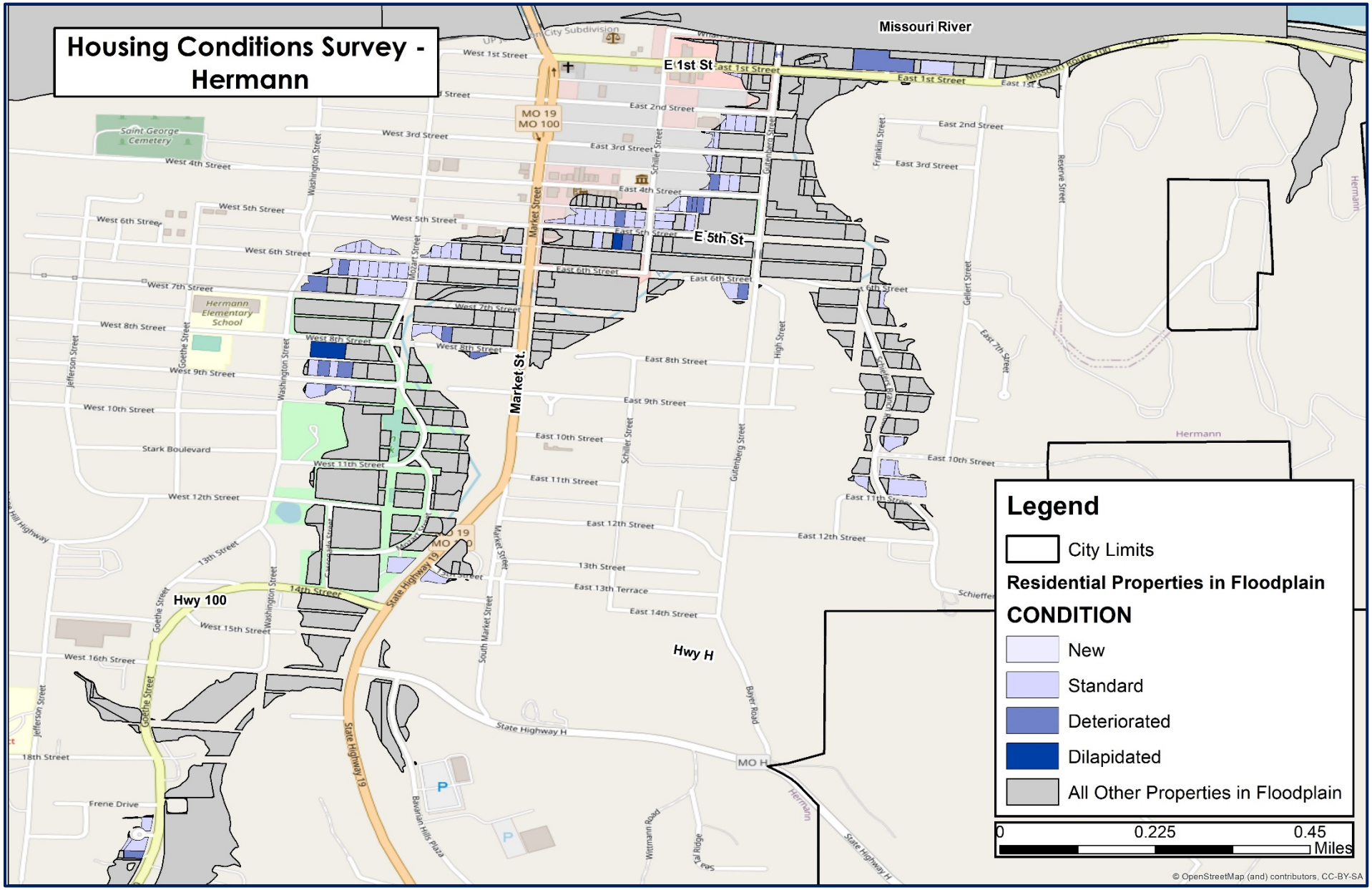
Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
109 E 5TH	02702500302 1016000	2	1	1	2	1	1	1,5	2	3	1	$86,430
113 E 5TH	02702500302 1017000	2	1	2	2	1	1	3	2	3	1	$80,930
117 E 5TH	02702500302 1018000	5	5	1	2	1	1	1,3	2	3	4	68150*
121 E 5TH	02702500302 1019000	5	5	2	2	1	1	1,5	2	3	4	99900*
127 E 5TH	02702500302 1020000	3	1	1	2	1	1	3,4,5	2	3	1	$100,230
129 E 5TH	02702500302 1021000	3	1	1	3	2	1		2	3	1	$65,170
133 E 5TH	02702500302 1022000	3	5	2	2	1	1	3,5	2	3	4	76230*
139 E 5TH	02702500302 1024000	3	1	3	2	2	1	2	1	3	1	$22,390
408 SCHILLER	02702500302 1023000	3	5	1	2	1	1	1,5	2	3	4	53430*
413 SCHILLER	02702500302 0012000	3	5	2	2	1	1	1,3	2	3	4	71160*
215 E 5TH	02702500302 0015000	3	5	2	2	2	1	3,5	2	3	4	56510*
409 SCHILLER	02702500302 0011000	3	5	1	2	1	1	1,3	2	3	4	78950*
407 SCHILLER	02702500302 0010000	5	1	3	2	1	1		2	3	1	$82,360
206 E 4TH	02702500302 0007000	2	5	1	2	1	1	2,3,5	2	3	4	72170*
210 E 4TH	02702500302 0006000	5	5	4	1	1	1		2	3	4	150350*
212 E 4TH	02702500302 0005000	5	1	2	3	3	1		2	3	1	$52,310
216 E 4TH	02702500302 0003000	5	1	2	3	2	1		2	3	1	$48,490
218 E 4TH	02702500302 0002000	3	1	2	2	1	1	2,5	2	3	1	$42,870
229 E 4TH	02702500301 7022000	5	5	1	2	1	1	3,5	2	3	4	76360*

Hermann

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
225 E 4TH	02702500301 7021000	5	5	2	2	1	1		2	3	4	148560*
223 E 4TH	02702500301 7020000	2	1	1	3	2	1		2	3	1	$59,710
217 E 4TH	02702500301 7019000	2	1	2	2	1	1	3,5	2	3	1	$112,860
222 E 3RD	02702500301 7004000	3	1	2	2	1	1	1	2	3	1	$59,340
216 E 3RD	02702500301 7006000	2	5	2	2	1	1	1,2,5	2	3	4	110460*
221 E 3RD	02702500301 0017000	5	1	2	2	1	1	1,2,3,5	1	3	1	$48,530
219 E 3RD	02702500301 0016000	2	1	2	2	1	1	3	1	3	1	$73,810
234 E 2ND	02702500301 0002000	5	3	2	2	1	1	2	2	1	3	
228 E 2ND	02702500301 0003000	5	1	3	2	1	1		2	3	1	$75,430
224 E 2ND	02702500301 0004000	5	5	2	2	1	1		2	3	4	80330*
222 E 2ND	02702500301 0005000	2	1	2	2	1	1	2,5	2	3	1	$73,020
218 E 1ST	02702500300 7008000	2	3	1	2	1	1	5	2	3	2	156750*
222 E 1ST	02702500300 7007000	2	3	1	2	1	1	5	2	3	2	135480*
224 E 1ST	02702500300 7006000	2	3	1	2	1	1	5	2	3	2	157160*
226 E 1ST	02702500300 7005000	2	3	1	2	1	1	5	2	3	2	121840*
407 E 1ST	02702500400 2007000	3	3	1	3	1	1		2	4	3	179560*
415 E 1ST	02702500400 2005000	3	5	1	2	1	1	1,5	2	3	4	$185,240
217 E 3RD	02702500301 0015000	2	1	2	2	1	1	3	1	3	1	$74,240

APPENDIX 2B: Hermann Maps




Housing Conditions Survey - Hermann
Missouri River
E 1st St
E 5th St
Market St.
Hwy 100
Hwy H
MO 19
MO 100
Legend
City Limits
Residential Properties in Floodplain
CONDITION
New
Standard
Deteriorated
Dilapidated
All Other Properties in Floodplain
0
0.225
0.45
Miles
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APPENDIX 3A: Newburg Survey Results

2021 Flood Housing Inventory Survey

H) Flood Zones 1. Floodway (AE) 2. 0.2% (X) 3. 1% (A) 4. Floodway/1% 5. 0.2/1% 6. Floodway/1/0.2%	**N) Reinvestment Evidence** 1. Landscape 2. Siding 3. Roof 4. Addition 5. Other (fence, garage, shed, porch, deck, etc.)
I) Land Use 1. Single Family 2. Multi-Family 3. Multi-Use 4. Vacant Land	**O) Parking Location** 1. On-Street 2. Off-Street
J) Structural Age 1. Before 1900 2. 1900-1940 3. 1941-1980 4. 1981-Present	**P) Lot Status** 1. For Sale 2. For Rent 3. Occupied 4. Vacant
K) Structural Condition 1. New 2. Standard 3. Deterioration 4. Dilapidated	**Q) Occupancy** 1. Owner 2. Renter 3. Vacant
L) Environmental Condition 1. Good 2. Fair 3. Poor	**R) Photos Obtained?** 1. Yes 2. No
M) Sidewalks 1. Yes 2. No	**S) Appraised Value** If an * after, it has both commercial & residential appraised values in total. All values were obtained from county assessor's data.

Newburg

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
75 E 1ST STREET	71-08-5.0-22-004-008-011.000	1	1	2	3	2	1		2	4	1	$15,700
70 E 2ND ST	71-08-5.0-22-004-008-005.000	1	1	3	2	2	1	2,5	1	3	1	$19,550
60 E 2ND ST	71-08-5.0-22-004-008-003.000	1	1	3	2	2	1	2,5	1	3	1	$25,700
151 WATER STREET	71-08-5.0-22-004-008-001.000	1	1	3	4	3	2		1	4	1	$200
192 MAIN STREET	71-08-5.0-22-004-008-007.000	1	2	2	3	2	1		2	3	2	$28,300
198 MAIN STREET	71-08-5.0-22-004-008-006.000	1	2	2	3	2	1	5	2	3	2	$16,700
220 MAIN STREET	71-08-5.0-22-004-004-003.000	1	1	3	3	2	1		2	3	1	$65,910
240 MAIN STREET	71-08-5.0-22-001-030-002.000	1	3	2	3	2	1	3	1	3	1	$149,500
E 3RD STREET	71-08-5.0-22-004-004-002.000	1	1		4	3	1		2	4	3	
E 3RD STREET	71-08-5.0-22-001-030-001.000	1	1	3	4	3	1		2	4	3	$4,400
217 MAIN STREET	71-08-5.0-22-004-005-001.000	1	3	3	2	2	1		2	3	1	$31,800
275 MAIN STREET	71-08-5.0-22-001-029-001.000	1	2	4	2	1	1	2,3	2	3	2	$0

Newburg

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
248 WATER ST	71-08-5.0-22-004-003-006.001	1	1	3	3	2	1	2	1	3	1	$25,800
294 WATER STREET	71-08-5.0-22-004-003-003.000	1	1	2	4	3	1		1	4	1	$4,520
(81) E 3RD STREET	71-08-5.0-22-001-031-022.000	1	1	3	3	2	2	5	2	3	1	$26,400
396 MAIN STREET	71-08-5.0-22-001-031-018.000	1	1	3	2	1	1	2,3,5	2	3	1	$27,700
398 MAIN STREET	71-08-5.0-22-001-031-017.000	1	1	3	4	3	1		2	4	1	$10,700
15 & 21 E 4TH STREET	71-08-5.0-22-001-031-009.000	1	2	3	3	1	2		2	3	1	$35,100
11 W 4TH STREET	71-08-5.0-22-001-022-011.000	1	1	3	3	2	1	2,3	1	3	1	$20,700
435 MAIN STREET	71-08-5.0-22-001-022-012.000	1	1	3	3	2	1	2,3	1	4	1	$18,400
21 W 4TH STREET	71-08-5.0-22-001-022-010.000	1	1	3	3	2	1	2,3	2	3	1	$15,800
30 W 5TH STREET	71-08-5.0-22-001-022-002.000	1	1	3	3	2	1	2	2	3	1	$13,700
25 W 5TH STREET	71-08-5.0-22-001-016-015.000	1	1	3	2	1	1	2,3,5	2	3	1	$27,400
525 N WALNUT STREET	71-08-5.0-22-001-016-012.000	1	1	3	3	3	2		2	3	1	$44,000

Newburg

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
530 MAIN STREET	71-08-5.0-22-001-031-003.000	1	1	3	2	1	1	3	2	3	1	$0
540 MAIN STREET	71-08-5.0-22-001-031-002.000	1	1	3	4	2	1		2	4	3	$19,750
570 MAIN ST	71-08-5.0-22-001-037-011.000	1	1	3	2	2	1	2,3	2	3	1	$16,590
534 N WALNUT ST	71-08-5.0-22-001-003-012.001	1	1	3	2	3	2	2	2	3	1	$54,700
538 N WALNUT STREET	71-08-5.0-22-001-003-012.000	1	1	3	4	3	2		2	3	1	$6,000
631 WOLF PRIDE DRIVE	71-08-5.0-22-001-003-009.000	1	1	3	3	2	1		2	3	1	$33,500
651 WOLF PRIDE DRIVE	71-08-5.0-22-001-003-008.000	1	1	3	3	2	1		2	3	1	$15,700
671 WOLF PRIDE DRIVE	71-08-5.0-22-001-003-007.000	1	1	3	4	2	1		2	3	1	$18,450
808 WOLF PRIDE DRIVE	71-08-5.0-15-000-000-022.000	3	1	3	4	3	2		2	4	3	$34,750
870 N WALNUT STREET	71-08-5.0-15-000-000-017.000	3	1	3	2	1	2	5	2	3	1	$78,430
15 STATE ROUTE T	71-08-5.0-22-001-001-015.000	1	1	3	4	3	2		2	1	1	$43,000
55 STATE ROUTE T	71-08-5.0-22-001-001-016.000	1	1	3	4	3	2		2	3	1	$24,990

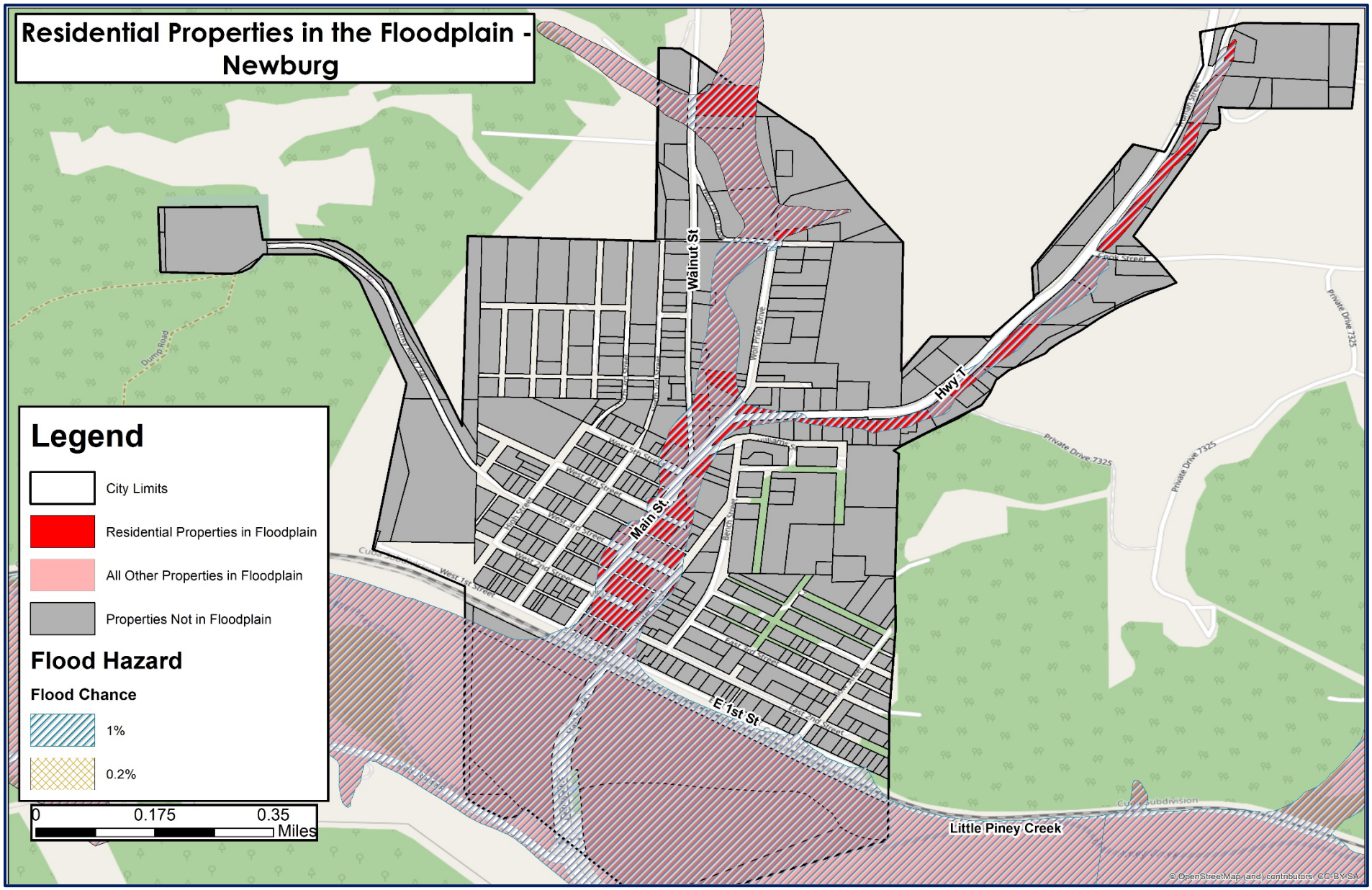
Newburg

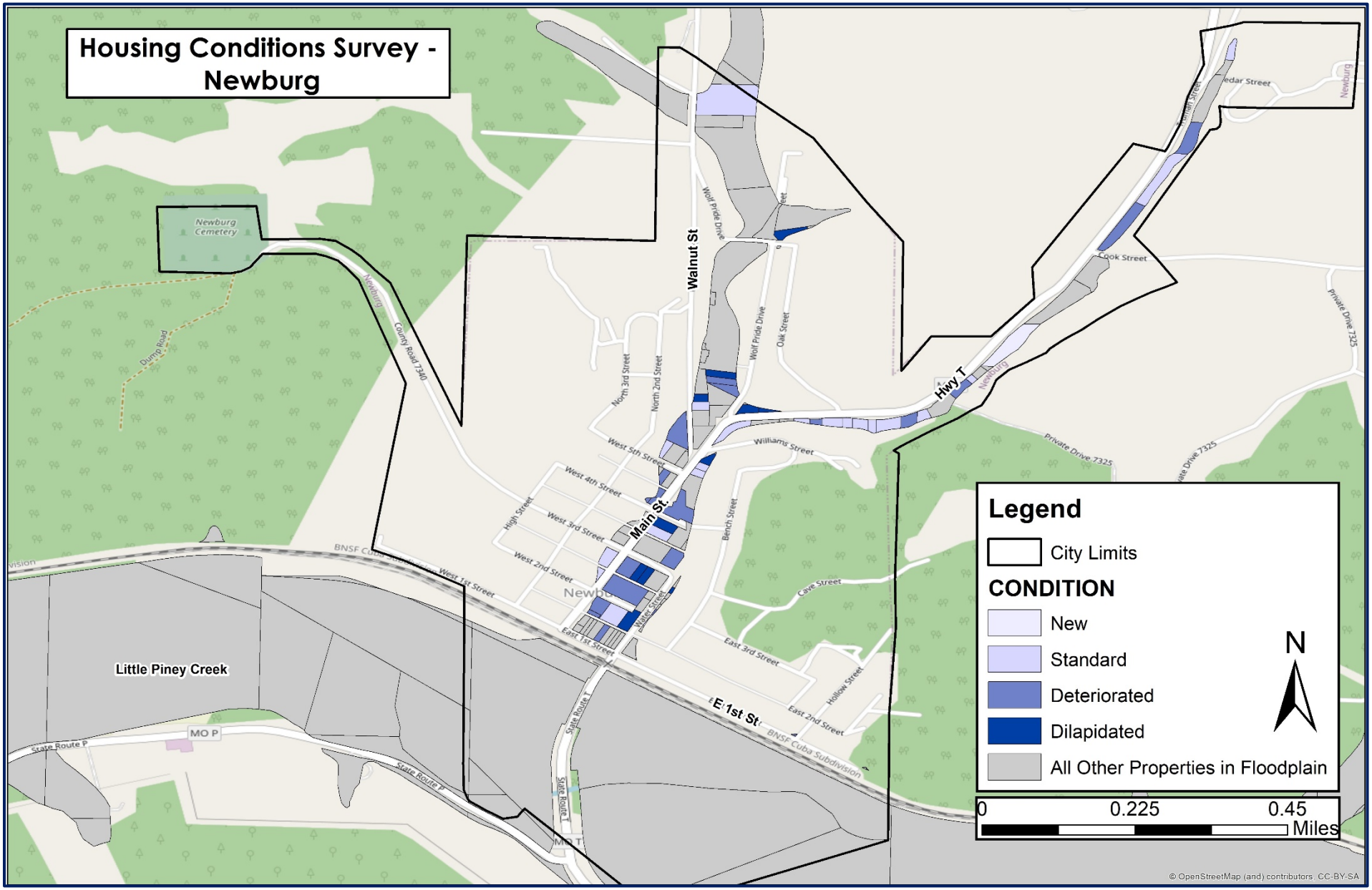
Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
120 STATE ROUTE T	71-08-5.0-22-001-037-006.000	3	1	4	3	1	2		2	3	1	$5,000
130 STATE ROUTE T	71-08-5.0-22-001-037-005.000	3	1	4	2	1	2	2,3,5	2	3	1	$51,230
190 STATE ROUTE T	71-08-5.0-22-001-037-004.000	3	1	3	2	1	2	3,5	2	3	1	$32,630
200 STATE ROUTE T	71-08-5.0-22-001-037-003.000	3	1	3	2	1	2		2	3	1	$32,200
210 STATE ROUTE T	71-08-5.0-22-001-037-002.000	3	1	3	2	1	2	3,5	2	3	1	$88,730
230 STATE ROUTE T	71-08-5.0-22-001-037-001.000	3	1	3	2	1	2	2,3,5	2	3	1	$88,300
240 STATE ROUTE T	71-08-6.0-23-000-000-022.000	3	1	3	3	2	2	In progress	2	3	1	$24,300
250 STATE ROUTE T	71-08-6.0-23-000-000-021.000	3	1	3	2	1	2		2	3	1	$61,680
310 STATE ROUTE T	71-08-6.0-23-000-000-017.000	3	1	3	3	2	2		2	3	1	$33,700
320 STATE ROUTE T	71-08-6.0-23-000-000-018.000	3	1	3	2	2	2	3,5	2	3	1	$51,900
410 STATE ROUTE T	71-08-6.0-23-000-000-009.000	3	1	4	1	1	2		2	3	1	$161,690
201 COOK ST	71-08-6.0-14-000-000-043.000	3	1	3	3	1	2	3,5	2	3	1	$103,060

Newburg

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
790 STATE ROUTE T	71-08-6.0-14-000-000-041.000	3	1	3	3	2	2	5	2	3	1	$71,790
11720 LEE STREET	71-08-6.0-14-000-000-032.001	3	1	3	2	2	2	3	2	3	1	$58,950
107 E 1ST STREET	71-08-5.0-22-004-009-018.000	1	2	2	3	2	1		1	3	2	$16,960
255 HOLLOW STREET	71-08-5.0-22-004-009-001.000	1	1	1	3	2	2	3,5	2	3	1	$20,200
205 E 1ST STREET	71-08-5.0-22-004-018-012.000	1	1	2	3	2	1	3	2	3	1	$19,210
265 E 1ST STREET	71-08-5.0-22-004-018-003.000	1	1	3	3	3	1	3	2	3	1	$8,830

APPENDIX 3A: Newburg Maps




Housing Conditions Survey - Newburg
Legend
City Limits
CONDITION
New
Standard
Deteriorated
Dilapidated
All Other Properties in Floodplain
N
0
0.225
0.45
Miles
Walnut St
Main St
Hwy T
E 1st St
Little Piney Creek
Newburg Cemetery
Newburg County Road 7340
Dump Road
Wolf Pride Drive
North 3rd Street
North 2nd Street
Oak Street
Cook Street
Private Drive 7325
Williams Street
West 5th Street
West 4th Street
West 3rd Street
West 2nd Street
West 1st Street
High Street
Bench Street
Cave Street
East 1st Street
East 3rd Street
East 2nd Street
Hollow Street
Market Street
BNSF Cuba Subdivision
State Route P
MO P
State Route T
MO T
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APPENDIX 4A: Steelville Survey Results

2021 Flood Housing Inventory Survey

H) Flood Zones 1. Floodway (AE) 2. 0.2% (X) 3. 1% (A) 4. Floodway/1% 5. 0.2/1% 6. Floodway/1/0.2%	**N) Reinvestment Evidence** 1. Landscape 2. Siding 3. Roof 4. Addition 5. Other (fence, garage, shed, porch, deck, etc.)
I) Land Use 1. Single Family 2. Multi-Family 3. Multi-Use 4. Vacant Land	**O) Parking Location** 1. On-Street 2. Off-Street
J) Structural Age 1. Before 1900 2. 1900-1940 3. 1941-1980 4. 1981-Present	**P) Lot Status** 1. For Sale 2. For Rent 3. Occupied 4. Vacant
K) Structural Condition 1. New 2. Standard 3. Deterioration 4. Dilapidated	**Q) Occupancy** 1. Owner 2. Renter 3. Vacant
L) Environmental Condition 1. Good 2. Fair 3. Poor	**R) Photos Obtained?** 1. Yes 2. No
M) Sidewalks 1. Yes 2. No	**S) Appraised Value** If an * after, it has both commercial & residential appraised values in total. All values were obtained from county assessor's data.

Steelville

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
Euclid St	118033405017000	3	3	1	4	3	2		2	4	3	$44,500
285 Euclid St	118033405017010	3	3	1	3	3	2	5	2	3	1	$16,900
283 Euclid St	118033405016000	3	3	1	3	2	2		2	3	1	$27,100
Euclid St	118033405015000	3	3	1	2	3	2	2	2	3	1	$32,200
Euclid St	118033405014000	3	4	1	2	2	2		2	3	1	$25,600
231 Euclid St	118033405011020	5	3	1	2	1	2	2	2	3	1	$29,400
Euclid St	118033405010000	2	3	1	3	2	2		2	3	1	$5,200
217 W Euclid St	118033405009000	2	2	1	3	2	2	5	2	3	1	$40,300
228 Euclid St	118033413014000	1	3	1	3	3	1	3	2	3	1	$48,400
Euclid St	118033413013000	1	3	1	3	3	1		2	3	1	$24,100
114 Euclid St	118033413012000	1	3	1	3	3	1		1	3	1	$27,600
208 Euclid St	118033413010000	1	3	1	3	2	1	5	2	3	1	$51,700
Euclid St	118033413011000	1	3	1	3	3	2		2	3	1	$4,000
120 W Euclid St	118033413009000	1	3	1	3	2	1	3	1	3	1	$31,700
116 W Euclid St	118033413008000	1	2	1	3	2	1	3	2	3	1	$19,500
112 W Euclid St	118033413007000	1	2	1	2	1	1	2	2	3	1	$43,500
3 Church St	118033411001000	5	3	1	2	1	2	2,5	2	3	1	$61,700
310 Water St	118034314004000	6	3	1	2	1	2		2	3	1	$60,200

Steelville

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
306 Water St	118034314004010	4	3	1	2	1	2		2	3	1	$67,000
(304) Water St	118034314003000	4	3	1	3	1	2	5	2	3	1	$44,800
SE Cor Keysville & First Street	118034317001000	5	4	2	2	1	2	1,2,3,5	2	3	2	$377,400
304 Pine Street	118034317002000	2	3	1	2	1	2	3	2	3	1	$64,800
(103) Spring St	118033408005000	2	2	1	2	1	2	2,3	2	3	1	$41,500
105 Spring St	118033408004000	5	2	1	2	1	2	5	2	3	1	$63,800
401 Main St	118033408003000	6	2	1	4	2	2		2	4	3	$39,500
111 Elm	118033408002010	3	3	5	2	1	2	2,3	2	3	2	$37,100
144 Fourth Street	118033408001000	5	3	2	3	2	2	5	2	3	1	$77,600
232 N Fourth St	118033402003000	5	2	1	3	2	2	5	2	3	1	$43,800
220 N Fourth St	118033402002000	5	3	1	3	2	2	5	2	3	1	$27,600
208 N 4th St	118033402001000	5	3	1	3	1	2		2	3	1	$49,800
Main Street	118034306006000	3	3	1	2	1	1	2	2	3	1	$112,500
203 Frisco	118034216003000	2	1	1	3	2	1	5	2	3	1	$62,100
205 Frisco	118034216004000	2	2	1	3	2	1		1	3	1	$81,000
207 Frisco	118034216005000	2	2	1	3	2	1		2	3	1	$70,800
307 Pine St	118034319004000	3	3	1	3	3	2		2	3	1	$56,400
311 Pine St	118034319006000	3	3	1	2	1	2	5	2	3	1	$48,800

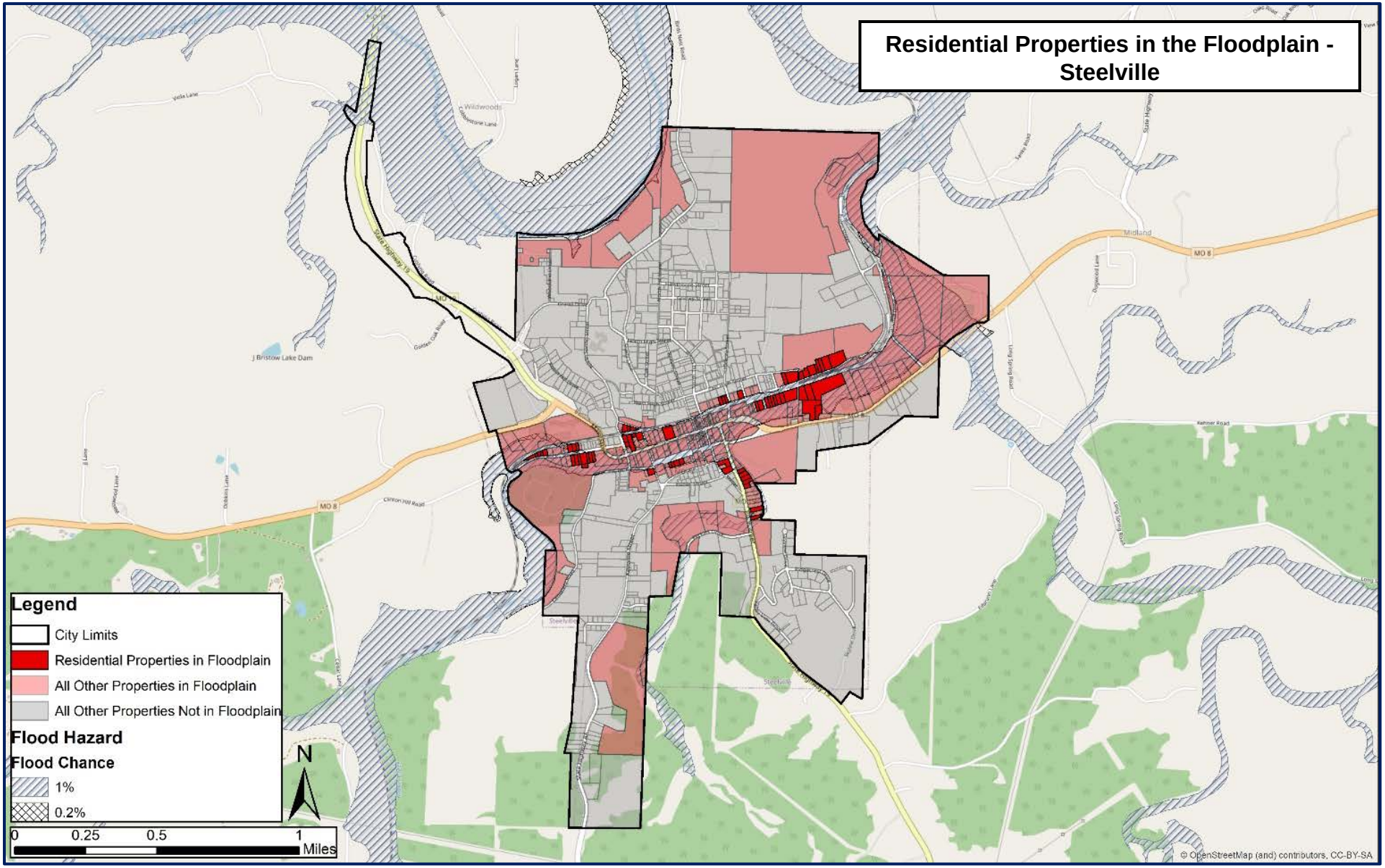
Steelville

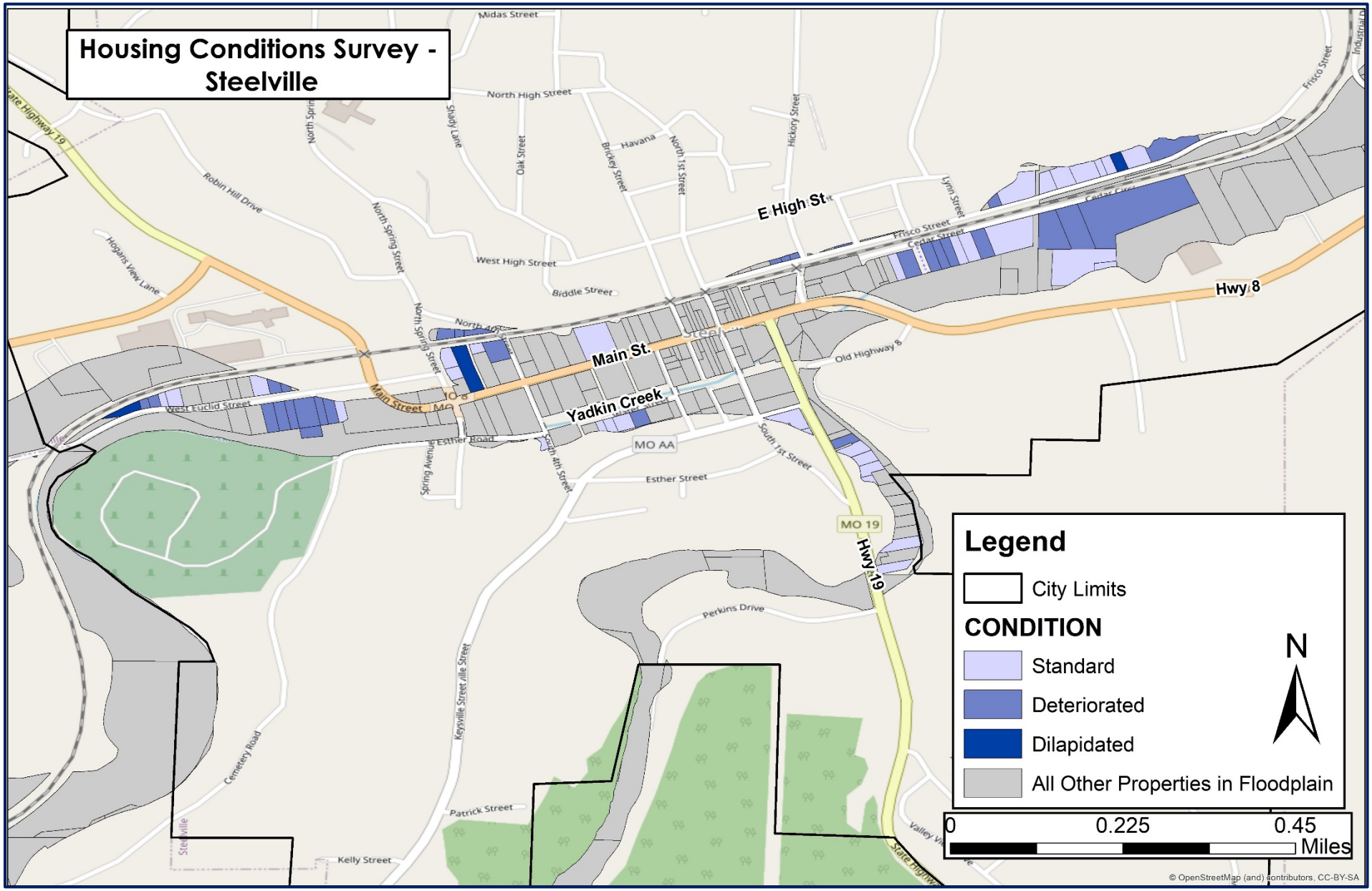
Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
313 Pine St	118034319007000	3	3	1	2	2	2	2	2	3	1	$78,700
(315) Pine St	118034319008000	3	3	1	2	1	2	2	2	3	1	$55,000
(327) Pine St	118034319014030	3	3	1	2	1	2	2,3,4	2	3	1	$56,500
(333) Pine St	118034319014010	3	3	1	2	1	2		2	3	1	$34,100
305 Frisco	118034215005000	2	2	1	3	1	1	5	2	3	1	$115,300
118 Cedar	118034220008000	1	2	1	2	2	1		2	3	1	$19,900
120 Cedar	118034220007000	1	1	1	3	2	1		2	3	1	$55,700
202 Cedar	118034220006000	1	3	1	3	1	1		2	3	1	$50,200
204 Cedar	118034220006010	4	2	1	3	2	1		1	3	1	$23,100
208 Cedar	118034220005000	4	2	1	3	3	1		2	3	1	$35,000
Cedar	118034220004000	4	3	1	2	1	1	5	2	3	1	$2,000
210 Cedar	118034220003000	4	1	1	2	1	1	5	2	3	1	$57,700
212 Cedar	118034220002000	4	1	1	3	1	1	3	2	3	1	$29,900
218 Cedar	118034220001000	4	1	1	2	1	1	5	2	3	1	$65,800
224 Cedar Dr	118034104007000	1	3	1	3	2	1		2	3	1	$20,500
226 Cedar	118034104006000	4	2	1	3	1	1		2	3	2	$22,200
Hwy 8 E	118034104008000	4	3	1	2	1	2	2	2	3	1	$12,500
Cedar Dr/Cedar Circle	118034104005000	4		2	3	2	2		2	3	1	$60,900

Steelville

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
605 Frisco	118034212002000	5	1	1	3	2	1		2	3	1	$46,800
607 Frisco St	118034212001000	5	2	2	2	1	2	2,3	2	3	2	$299,300
613 Frisco St	118034103011000	3	3	1	2	1	2		2	3	1	$57,600
615 Frisco St	118034103010000	3	3	1	2	1	2		2	3	1	$72,100
(619?) Frisco St	118034103009000	5	2	1	2	1	2	5	2	3	1	$50,000
(621?) Frisco St	118034103008000	5	2	1	2	1	2	1,2,3,5	2	3	1	$22,200
623 Frisco St	118034103007000	5	2	1	2	1	2	5	2	3	1	$41,100
625 Frisco St	118034103006000	5	2	1	4	2	2		1	4	3	$38,300
627 Frisco St	118034103005000	5	2	1	2	1	2	1,2,3,5	2	3	1	$73,000
631 Frisco St	118034103004000	5	4	1	3	3	2		2	3	3	$45,900

APPENDIX 4B: Steelville Maps




Housing Conditions Survey - Steelville
Midas Street
North High Street
E High St
West High Street
Biddle Street
Main St.
Yadkin Creek
Hwy 8
Old Highway 8
Frisco Street
Cedar Street
Lynn Street
Hickory Street
North 1st Street
Brickkey Street
Havana
Oak Street
Shady Lane
North Spring Street
Robin Hill Drive
Hogans View Lane
West Euclid Street
Esther Road
Spring Avenue
South 4th Street
Esther Street
South 1st Street
MO AA
MO 19
Hwy 19
Perkins Drive
Cemetery Road
Keysville Street
Patrick Street
Kelly Street
Steelville
Legend
City Limits
CONDITION
Standard
Deteriorated
Dilapidated
All Other Properties in Floodplain
N
0
0.225
0.45
Miles
© OpenStreetMap (and) contributors, CC-BY-SA

APPENDIX 5A: Waynesville Survey Results

2021 Flood Housing Inventory Survey

H) Flood Zones 1. Floodway (AE) 2. 0.2% (X) 3. 1% (A) 4. Floodway/1% 5. 0.2/1% 6. Floodway/1/0.2%	**N) Reinvestment Evidence** 1. Landscape 2. Siding 3. Roof 4. Addition 5. Other (fence, garage, shed, porch, deck, etc.)
I) Land Use 1. Single Family 2. Multi-Family 3. Multi-Use 4. Vacant Land	**O) Parking Location** 1. On-Street 2. Off-Street
J) Structural Age 1. Before 1900 2. 1900-1940 3. 1941-1980 4. 1981-Present	**P) Lot Status** 1. For Sale 2. For Rent 3. Occupied 4. Vacant
K) Structural Condition 1. New 2. Standard 3. Deterioration 4. Dilapidated	**Q) Occupancy** 1. Owner 2. Renter 3. Vacant
L) Environmental Condition 1. Good 2. Fair 3. Poor	**R) Photos Obtained?** 1. Yes 2. No
M) Sidewalks 1. Yes 2. No	**S) Appraised Value** If an * after, it has both commercial & residential appraised values in total. All values were obtained from county assessor's data.

Waynesville

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
1512 HULL VALLEY DRIVE	11703500200 2017003	5	1	4	2	1	2	3	2	3	1	$129,860
1510 HULL VALLEY DR	11703500200 2017002	5	1	4	2	1	2	3	2	3	1	$123,020
1508 HULL VALLEY DRIVE	11703500200 2016000	5	1	4	3	2	2		2	3	1	$121,780
1506 HULL VALLEY DR	11703500200 2015000	5	1	4	2	2	2	3	2	4	3	$123,010
1504 HULL VALLEY DR	11703500200 2014000	6	1	4	2	1	2	3,5	2	3	1	$113,430
1502 HULL VALLEY DRIVE	11703500200 2013000	6	1	4	2	1	2	5	2	3	1	$92,540
1500 HULL VALLEY DRIVE	11703500200 2012000	6	1	4	2	2	2	2,3,5	2	3	1	$85,270
1308 HULL VALLEY	11703500200 2009000	4	1	3	2	1	2	3,5	2	3	1	$93,610
1306 HULL VALLEY DR	11703500200 2008000	4	1	3	2	1	2	5	2	3	1	$102,440
1304 HULL VALLEY DRIVE	11703500200 2007000	1	1	3	2	2	2	3,5	2	3	1	$78,890
1403 HULL VALLEY DRIVE	11703500200 2041000	3	1	3	2	1	2	3	2	3	1	$102,770
1401 HULL VALLEY DR	11703500200 2042000	3	1	3	2	1	2	3	2	3	1	$79,890
1303 HULL VALLEY DRIVE	11703500200 2048000	3	1	3	2	1	2	3	2	3	1	$82,700
1302 HULL VALLEY DRIVE	11702600300 8014000	1	1	3	2	2	2	3	2	4	3	$99,880

Waynesville

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
1300 HULL VALLEY DRIVE	11702600300 8015000	1	1	3	2	2	2	3	2	3	1	$101,560
1204 HULL VALLEY DR	11702600300 8016000	1	1	3	2	1	2	3	2	3	1	$80,270
1104 HAWTHORNE ST	11702600301 1011000	1	1	3	2	1	2	2	2	3	1	$97,930
1203 HULL VALLEY DRIVE	11702600301 1010000	3	1	3	2	1	2	2,3	2	3	1	$87,450
1202 HULL VALLEY DR	11702600300 8017000	1	1	3	2	1	2	3,5	2	3	1	$98,140
1201 HULL VALLEY DRIVE	11702600301 1009000	3	1	3	3	1	2	5	2	3	1	$98,060
1105 MICHAEL DRIVE	11702600301 1008000	1	1	3	2	1	2		2	3	1	$92,060
1200 HULL VALLEY DRIVE	11702600300 8018000	1	1	3	2	1	2	3,5	2	3	1	$94,230
1107 HULL VALLEY DRIVE	11702600301 1003000	4	1	3	2	1	2	2	2	3	1	$103,880
1108 HULL VALLEY DRIVE	11702600300 8019000	1	1	3	2	1	2	3,5	2	3	1	$86,920
1106 HULL VALLEY DR	11702600300 8020000	1	1	3	2	1	2	3	2	3	1	$82,300
1104 HULL VALLEY DRIVE	11702600300 8021000	1	1	3	2	1	2	3	2	3	1	$88,860
1103 HULL VALLEY DR	11702600301 1002000	4	1	3	2	3	2	3	2	4	3	$76,900
1102 HULL VALLEY DRIVE	11702600300 8022000	1	1	3	2	1	2	2,3	2	3	1	$119,550

Waynesville

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
1100 HULL VALLEY DR	11702600300 8023000	1	1	3	2	1	2	2,3	2	3	1	$130,600
105 HULL DRIVE	11702600300 8006000	5	1	3	2	1	2	2,3	2	3	1	$59,500
107 HULL DRIVE	11702600300 8007000	5	1	3	3	2	2		2	4	3	$60,420
109 HULL DRIVE	11702600300 8008000	5	1	3	2	2	2		2	3	1	$59,260
111 HULL DRIVE	11702600300 8009000	5	1	3	3	2	2		2	3	1	$73,740
113 HULL DRIVE	11702600300 8010000	5	1	3	2	1	2	5	2	3	1	$88,660
115 HULL DRIVE	11702600300 8011000	5	1	3	3	1	2	3	2	3	1	$79,060
117 HULL DRIVE	11702600300 8012000	5	1	3	2	1	2	5	2	1	3	$77,980
119 HULL DRIVE	11702600300 8013000	5	1	3	3	1	2	3	2	3	1	$80,890
121 HULL DR	11703500200 2006000	5	1	3	2	1	2	3,5	2	3	1	$74,090
123 HULL DR	11703500200 2005000	5	1	3	2	1	2	3,5	2	3	1	$76,500
(125) HULL DR	11703500200 2004000	5	1	3	2	1	2	5	2	1	3	$85,800
127 HULL DR	11703500200 2003000	5	1	3	3	2	2	5	2	3	1	$61,000
129 HULL DR	11703500200 2002000	5	1	4	2	1	2	3,5	2	3	1	$144,070
U.S. Rte 66 & CHARLES ST	11803400100 3002000	2	2	4	2	1	2		2	3	1	$58,450
1607 PEARSON STREET	11803400100 3004001	5	1	4	2	1	2	3,5	2	3	1	$36,030
1609 PEARSON STREET	11803400100 3004000	5	1	4	3	2	2		2	3	1	$65,020

Waynesville

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
(1701 PEARSON STREET)	11803400100 3005000	5	1	3	3	2	2		2	3	1	$49,020
(1711 PEARSON STREET)	11803400100 3006000	5	1	3	3	2	2		2	3	1	$71,990
1713 PEARSON ST	11803400100 3007000	5	1	3	3	2	2	3	2	3	1	$58,870
1801 PEARSON ST	11803400100 3008000	5	1	3	3	2	2		2	3	1	$58,600
1802 PEARSON ST	11803400100 3015000	2	1	3	2	2	2	5	2	3	1	$69,770
1803 (PEARSON ST)	11803400100 3009001	5	1	3	3	2	2		2	3	1	$24,020
(1805) PEARSON ST	11803400100 3009000	5	1	3	2	1	2	2	2	3	1	$54,540
(1807 PEARSON ST)	11803400100 3010000	5	2	3	3	1	2		2	3	1	$15,820
(1809-A U.S. RTE 66)	11803400100 3020001	5	2	4	3	1	2	5	2	3	2	$322,120
2011 HISTORIC RT 66 W	11803400100 3025000	3	1	3	2	1	2	3	2	3	1	$99,700
2200 HISTORIC RT 66	11803400100 2005000	4	1	3	3	2	2	3,5	2	4	3	$66,800
2204 HISTORIC RT 66 W	11803400100 2006000	6	1	4	2	1	2	2,3	2	3	1	$88,700

Waynesville

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
(2206 HISTORIC RT 66 W)	11803400000 1004001	6	1	3	2	1	2	3,5	2	3	1	$58,230
100 JARED STREET	11803400000 1005011	4	1	4	2	1	2		2	3	1	$176,040
102 JARED ST	11803400000 1005012	4	1	4	2	1	2		2	3	1	$141,750
104 JARED STREET	11803400000 1005013	2	1	4	1	2			2	3	1	$177,710
103 JARED STREET	11803400000 1005001	5	1	4	2	1	2	5	2	3	1	$172,880
101 BAILEY RENEE CT	11803400000 1005009	1	1	4	2	1	2		2	3	1	$135,510
103 BAILEY RENEE COURT	11803400000 1005008	1	1	4	2	1	2		2	3	1	$165,160
105 BAILEY RENEE COURT	11803400000 1005007	1	1	4	2	1	2		2	3	1	$131,580
107 BAILEY RENEE CT	11803400000 1005006	1	1	4	2	1	2		2	3	1	$136,520
108 BAILEY RENEE COURT	11803400000 1005005	5	1	4	2	1	2	3	2	3	1	$134,090
102 BAILEY RENEE COURT	11803400000 1005002	3	1	4	2	1	2		2	3	1	$150,890
Vine & Roosevelt to Bates	11702600400 1007000	4	2	4	4	3	2		2	3	1	$29,330
707 PIKE STREET	11702600400 1005000	2	1	3	3	2	1	3	2	3	1	$48,270
705 PIKE ST	11702600400 1004000	5	1	4	3	3	1		2	4	3	$43,260
703 PIKE STREET	11702600400 1003000	3	1	3	2	1	1	3,5	2	3	1	$70,690

Waynesville

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
621 ANDERSON STREET	117026001016005002	5	1	3	4	3	2		2	4	3	$41,300
619 ANDERSON STREET	117026001016005000	3	2	3	3	2	2		2	3	1	$43,380
(617 ANDERSON STREET)	117026001016004000	3	1	3	3	1	2		2	3	1	$34,060
(202 GLENDA DRIVE)	117026001016014000	4	2	4	3	2	2		2	3	1	$108,470
115 GLENDA STREET	117026001009013000	4	1	3	2	2	2		2	3	1	$84,720
113 GLENDA DRIVE	117026001009012000	3	1	2	2	1	2	3,5	2	3	1	$46,950
111 GLENDA DRIVE	117026001009011000	4	1	3	3	1	2		2	3	1	$87,670
203 S OAK	117026001009017000	4	1	2	2	1	2	2,3	2	3	1	$115,680
201 S OAK ST	117026001009009000	3	1	3	3	2	2		2	3	1	$34,360
511 VALLEY ROAD	117026001009008000	3	1	2	2	1	2	2,3,5	2	3	1	$40,670
509 VALLEY RD	117026001009007000	3	1	2	2	1	2	2,3,5	2	3	1	$39,750
204 DYER STREET	117026001009001002	4	1	2	2	2	2	2	2	3	1	$55,020
206 DYER STREET	117026001009001003	3	1	2	2	1	2	2,3	2	3	1	$51,270
208 DYER STREET	117026001009001001	3	1	2	3	1	2		2	3	1	$57,170
203 DYER STREET	117026001007001006	4	1	2	2	1	2	5	2	3	1	$44,360

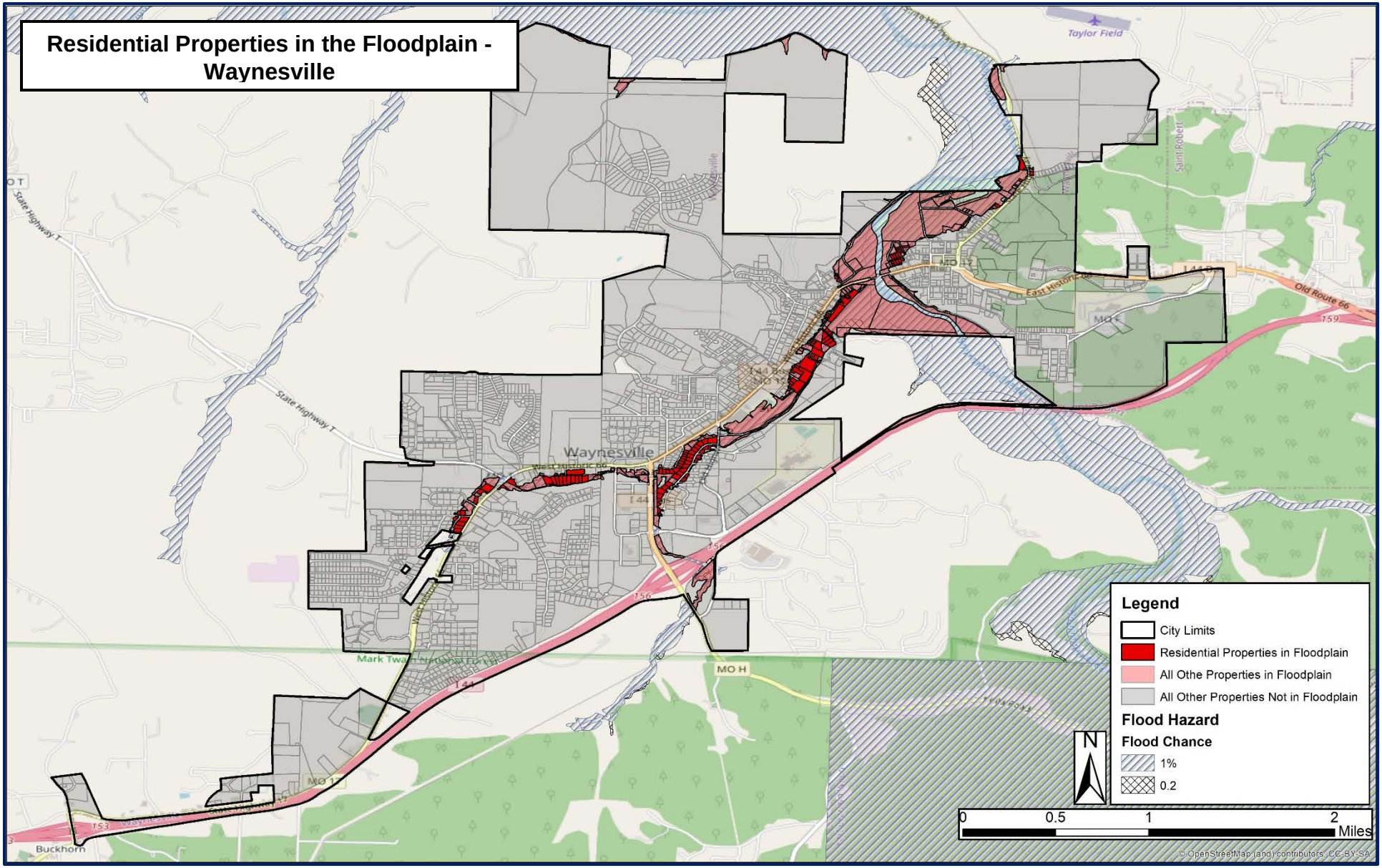
Waynesville

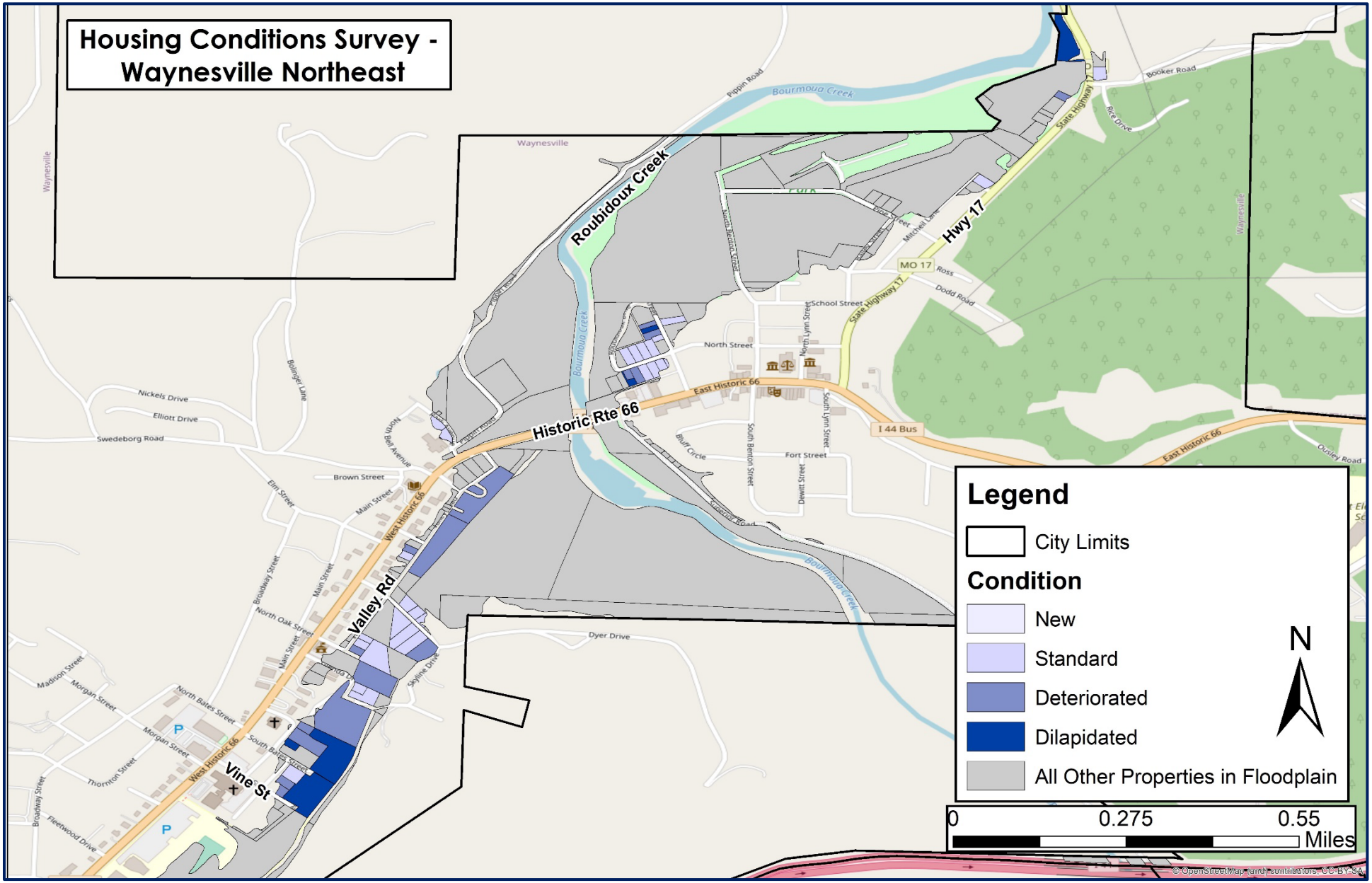
Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
205 DYER STREET	11702600100 7001002	5	1	2	2	1	2		2	2	3	$35,920
(207) DYER STREET	11702600100 7001003	2	1	2	2	1	2	3	2	4	3	$44,200
(407) HISTORIC RT 66 W	11702600101 0003000	2	2	2	2	1	2	3,5	2	3	1	$65,010
(403) HISTORIC RT 66 W	11702600101 0002000	2	2	3	3	2	1		2	3	1	$88,830
VALLEY ROAD *notes	11702600100 7001001	3	2	2	3	2	2		2	3	1	$100,510
VALLEY ROAD *notes	11702500200 4002000	3	2	2	3	2	2		2	3	1	$69,060
VALLEY ROAD *notes	11702500200 4005000	3	2	2	3	2	2		2	3	1	$29,280
(201 PARK ST) & PIPPIN RD	11602300400 0050000	5	2	2	2	1	2	3	1	4	3	$23,300
(203 PARK ST)	11602300400 0052000	2	2	3	2	1	2	1,2,3,4,5	2	3	1	$134,230
(205 PARK ST)	11602300400 0052000	2	2	3	3	2	2	2,5	2	3	1	$0
(209 PARK ST)	11602300400 0052000	2	2	3	4	2	2		2	4	3	$0
104 NORTH STREET	11602400300 7013000	4	1	2	3	2	1		2	3	1	$11,160
106 NORTH ST	11602400300 7014000	4	1	2	3	2	1		2	3	1	$18,790
108 NORTH ST	11602400300 7015000	3	1	3	2	1	1	3,5	2	3	1	$15,160
110 NORTH STREET	11602400300 7016000	5	1	2	2	1	1	2,3,5	2	4	1	$32,220

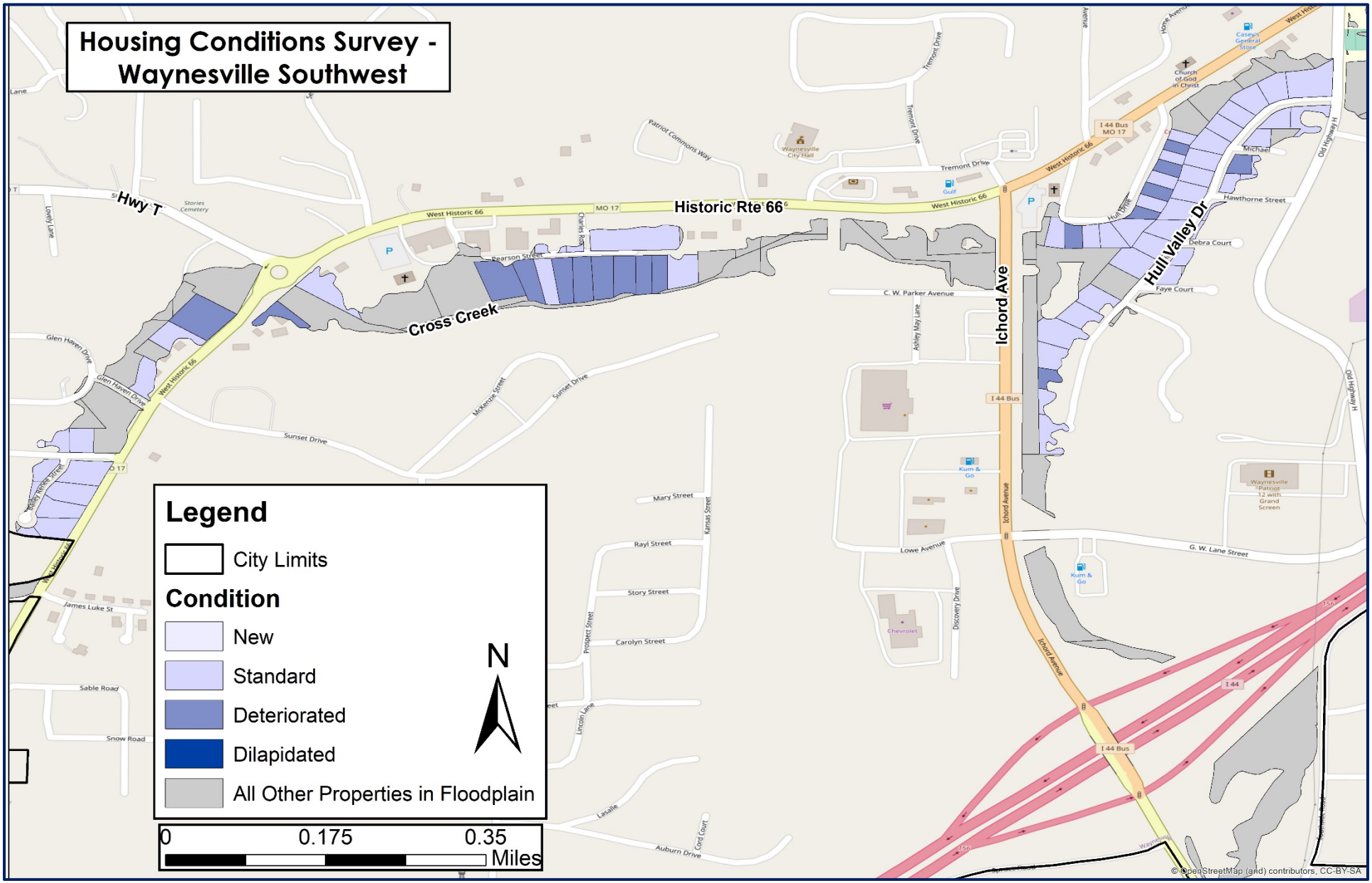
Waynesville

Physical Address	Parcel	Flood Zone	Land Use	Structure Age	Structure Condition	Enviro. Condition	Side walks	Reinvest. Evidence	Parking	Lot Status	Occ.	Appraised Value
112 NORTH STREET	11602400300 7017000	2	1	2	2	1	1	2,5	2	3	1	$39,400
114 NORTH STREET	11602400300 7018000	2	1	3	2	1	1	3,5	2	3	1	$24,520
105 N ST/202 ROUBIDO UX ST	11602400300 6007000	1	1	3	2	1	1	2,3	2	3	1	$60,960
107 NORTH STREET	11602400300 6008000	1	1	3	2	1	1	2,3	2	3	1	$32,950
109 NORTH ST	11602400300 6009000	4	1	3	2	1	1	3	2	3	1	$58,940
111 NORTH ST	11602400300 6010000	5	1	3	2	1	1	3	1	3	1	$49,080
203 OLIVE ST	11602400300 6011001	5	1	2	2	2	1	3	2	3	1	$34,730
205 OLIVE ST	11602400300 6013000	3	1	3	3	3	1		2	3	1	$38,300
207 OLIVE ST	11602400300 6014000	3	1	2	4	3	1		2	4	1	$33,080
209 OLIVE ST	11602400300 6015000	3	1	2	3	2	1	2	2	3	1	$25,940
204 OLIVE ST	11602400300 5004000	3	1	3	2	1	1	2,3	2	3	1	$60,750
607 N HIGHWAY 17	11602400400 1026000	5	1	3	2	1	2	2,3,5	2	3	1	$52,510
809 HWY 17	11602400000 0013000	3	1	2	3	1	2	5	2	3	1	$50,070
100 A&B BOOKER RD	11602400000 0027001	5	2	4	2	2	2		2	4	3	$200,780
903 N HWY 17	11602400000 0010000	5	1	3	4	3	2		2	4	3	$45,480

APPENDIX 5B: Waynesville Maps




Housing Conditions Survey -
Waynesville Northeast
Roubidoux Creek
Bourmouu Creek
Hwy 17
Historic Rte 66
East Historic 66
West Historic 66
Valley Rd
Vine St
I 44 Bus
Legend
City Limits
Condition
New
Standard
Deteriorated
Dilapidated
All Other Properties in Floodplain
N
0
0.275
0.55
Miles


Housing Conditions Survey -
Waynesville Southwest
Hwy T
Historic Rte 66
West Historic 66
MO 17
Cross Creek
Ichord Ave
Hull Valley Dr
C. W. Parker Avenue
Tremont Drive
Patriot Commons Way
Pearson Street
Glen Haven Drive
Sunset Drive
McKenzie Street
Mary Street
Rayl Street
Story Street
Carolyn Street
Lowe Avenue
G. W. Lane Street
Discovery Drive
Prospect Street
Kansas Street
Lincoln Lane
Lasalle
Cord Court
Auburn Drive
Sable Road
Snow Road
James Luke St
Hawthorne Street
Debra Court
Faye Court
Ashley May Lane
I 44 Bus
I 44
Legend
City Limits
Condition
New
Standard
Deteriorated
Dilapidated
All Other Properties in Floodplain
N
0
0.175
0.35
Miles
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