City of Panama City

Repetitive Loss Area Analysis Report

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Background

Flooding is the most common natural hazard in the United States. More than 20,000 communities experience floods and this hazard accounts for more than 70 percent of all Presidential Disaster Declarations. In the United States, over 8 million residential and commercial structures are currently build in areas at risk to flooding. The cost of recovery is spread over local, state and federal governments and the victims themselves, who are directly affected by these disasters.

The National Flood Insurance Program (NFIP) is continually faced with the challenge of balancing the financial soundness of the program with the competing expectation of keeping premiums affordable. Repetitive loss properties are one of the two largest obstacles to achieving financial soundness of the NFIP. Since the inception of the NFIP, almost $9 billion have been paid repetitive loss properties, about one-fourth of all NFIP payments. While the NFIP has resulted in forty years of successful floodplain management, and many of these structures are no longer insured, repetitive loss properties are still a drain on the NFIP. Currently, repetitive loss properties represent 1.3% of all policies, but are expected to account for 15% to 20% of future losses.

Private insurance companies faced with high losses have several options to keep a profit. They can raise income through premium rate increases, decrease payments to insurers or reduce the exposure of the hazard. Unfortunately, the NFIP can only do what is allowed by statute. If losses increase, the Federal Emergency Management Agency (FEMA) is authorized by Congress to make incremental adjustments to increase the premium rates and reduce overall coverage. FEMA is not permitted to eliminate coverage for any policy holder including high-risk properties. Actuarial rates cannot be charged to buildings built before State and local floodplain management regulations went into effect. Since repetitive flood claims must be paid, FEMA has no choice but to spread these costs among all policyholders.

Sometimes floodplain management regulations mitigate repetitive flood losses when a building is substantially damaged. A structure where the cost to the repair is equal to or exceeds 50 percent of the building's value is considered substantially damaged. A substantially damaged building must be brought up to the same flood protection level as a new building under a community's floodplain management ordinance. Many repetitive loss buildings are not in a regulated floodplain or they do not get substantially damaged and remain at risk to future damage.

Many owners of properties that experience repetitive flooding are not aware of the magnitude of damage they are exposed to because they either purchased the property after the last flood or the seller or lender did not disclose the flood hazard. Disclosure of repetitive flooding is a problem due to the fact that

repetitive loss areas are not shown on Flood Insurance Rate Maps (FIRMs) but instead must be identified and mapped by local communities.

City of Panama City has been a regular participant in the NFIP since July of 1977. In addition to meeting the basic requirements of the NFIP, the City has completed additional components to participate in the Community Rating System (CRS) program since October of 2001. City of Panama City is currently a CRS Class 6 which rewards all policyholders in the SFHA with a 20 percent reduction in their flood insurance premiums. Non-SFHA policies (Standard X Zone policies) receive a 10% discount, and preferred risk policies receive no discount.

As of December 31, 2018, there are currently 2,519 NFIP Policies in force in City of Panama City with insurance coverage of over $7.1 million. The City has 720 paid losses against the NFIP totaling more than $21 million with 41of those losses being substantial damaged claims from Hurricane Michael.

A repetitive loss property does not have to currently be carrying a flood insurance policy to be considered a repetitive loss property. In some cases, a community will find that properties on its repetitive loss list are not currently insured. An insured property with claims on that property will make it a repetitive loss property. Once it is designated as a repetitive loss property, that property remains as a repetitive loss property from owner to owner; insured policy to no policy; and even after that property has been mitigated. There are 41 repetitive loss properties in Panama City and 25 of those properties are currently insured (See the Repetitive Loss Requirement Section for greater detail).

TERMINOLOGY

REPETITIVE LOSS: Any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period, since 1978. Two of the claims paid must be more than 10 days apart but, within 10 years of each other. A repetitive loss property may or may not be currently insured by the NFIP.

SEVERE REPETITIVE LOSS: As defined by the Flood Insurance Reform Act of 2004, SRLs are 1-4 family residences that have had four or more claims of more than $5,000 or at least two claims that cumulatively exceed the building's value. The Act creates new funding mechanisms to help mitigate flood damage for these properties.

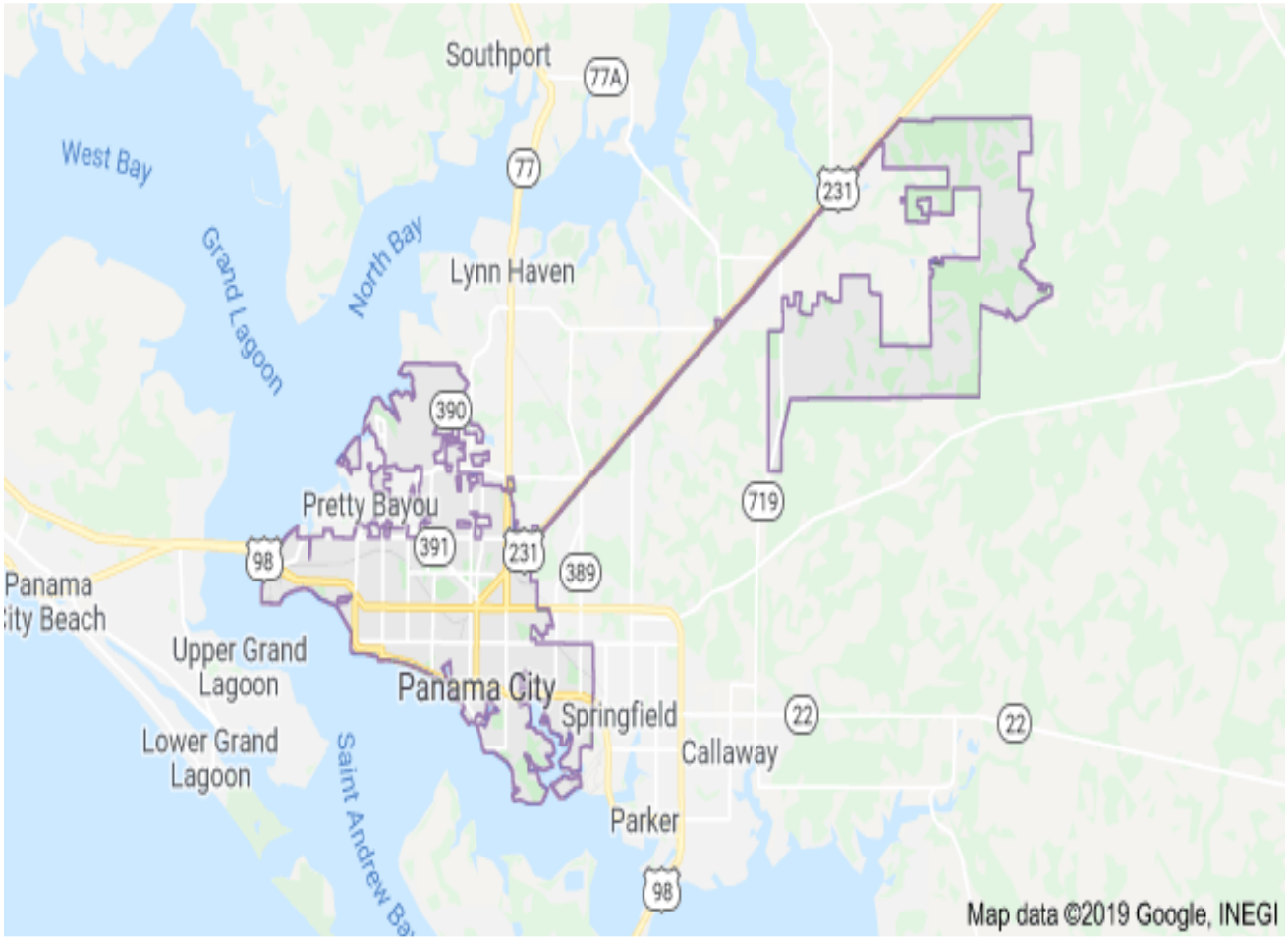
According to repetitive loss data received from FEMA as of September 2018, there are 37 unmitigated and 4 mitigated repetitive loss properties within Panama City. Two of these properties are classified as severe repetitive loss, and it remains unmitigated. An updated Local Mitigation Plan (LMS) is currently under development by Bay County. Since the LMS examines the entire County and does not assess individual properties, the City has opted to complete this Repetitive Loss Area Analysis (RLAA) using the 2017 *CRS Coordinator's Manual.* This RLAA will benefit the City by examining potential mitigation measures for specific repetitive loss areas and increasing credit in the CRS Program.

Setting

Panama City is a city and the county seat of Bay County, Florida, United States. Located along U.S. Route 98, it is the largest city between Tallahassee and Pensacola within the Florida Panhandle and along the Emerald Coast. According to the U.S. Census Bureau, Panama City encompass an area of 35.4 square miles, of which 29.3 square miles is land and 6.2 square miles, or 17.39%, is water area.

Panama City is a humid subtropical climate, with short, mild winters and long, hot and humid summers. In January, the average low is 42 degrees and in July the average high is 90 degrees. Average annual rainfall is approximately 61 inches. The City experience rainy season from July to September, with an average precipitation around 12 inches per month. The City has generally flat topography and low elevation, ranging from sea level at the coast to a high point of approximately 42 feet above sea level in Bay County. Much of the City is covered by wetlands.

Location Map of Panama City



Repetitive Loss Requirement

Repetitive loss data must be maintained and updated annually in order to participate in the CRS. Since many of the losses under the NFIP come from repetitively flooded properties, addressing these properties is a priority for participating in the CRS Program. Depending on the severity of the repetitive loss problem, a CRS community has different responsibilities.

- **Category A:** A community with no unmitigated repetitive loss properties. No special requirements from the CRS.
- **Category B:** A community with at least one, but fewer than 50, unmitigated repetitive loss properties. Category B communities are required by the CRS to research and describe their repetitive loss problem, create a map showing the location of all repetitive loss properties (areas) and complete an annual outreach activity directed to repetitive loss properties.
- **Category C:** A community with 50 or more unmitigated repetitive loss properties. Category C communities are required to do everything in Category B and prepare either a floodplain management plan that covers all repetitive loss properties (areas) or prepare a RLAA for all repetitive loss areas.

Since the latest repetitive loss data obtained from FEMA for City of Panama City contained a total of 37 unmitigated repetitive loss properties, the City is designated as a Category B repetitive loss community.

Mapping Repetitive Loss Areas

Twenty Repetitive Loss Areas were identified within City of Panama City in accordance with the principles outlined in the CRS guidance titled *Mapping Repetitive Loss Areas* dated August 15, 2008. The 20 Repetitive Loss Areas included in the 37 unmitigated repetitive loss properties are included in the RLAA.

A detailed map of each Repetitive Loss Area is provided in Appendix A along with an overview map of the City of Panama City Repetitive Loss Areas.

Section 2

The RLAA Process

The RLAA planning process incorporated requirements from Section 510 of the 2017 *CRS Coordinator's Manual*. The planning process also incorporated requirements from the following guidance documents: 1) FEMA publication *Reducing Damage from Localized Flooding: A Guidance for Communities*, Part III Chapter 7; 2) CRS publication *Mapping Repetitive Loss Areas* dated August 15, 2008; and 3) Center for Hazards Assessment Response and Technology, University of New Orleans draft publication *The Guidebook to Conducting Repetitive Loss Area Analyses*. Most specifically, this RLAA included all five planning steps included in the 2017 *CRS Coordinator's Manual*:

Step 1: Advise all the properties in the repetitive loss areas that the analysis will be conducted and request their input on the hazard and recommended actions.

Step 2: Contact agencies or organizations that may have plans or studies that could affect the cause or impacts of the flooding. The agencies and organizations must be identified in the analysis report.

Step 3: Visit each building in the repetitive loss area and collect basic data.

Step 4: Review alternative approaches and determine whether any property protection measures or drainage improvements are feasible.

Step 5: Document the findings. A separate analysis report must be prepared for each area.

Beyond the 5 planning steps, additional credit criteria must be met:

1. The community must have at least one repetitive loss area delineated in accordance with the criteria in Section 503.
2. The repetitive loss area must be mapped as described in Section 503.a. A Category "C" community must prepare analyses for all of its repetitive loss areas if it wants to use RLAA to meet its repetitive loss planning prerequisite.
3. The repetitive loss area analysis report (s) must be submitted to the community's governing body and made available to the media and the public. The complete repetitive loss area analysis report(s) must be adopted by the community's governing body or by an office that has been delegated approval authority by the community's governing body.
4. The community must prepare an annual progress report for its area analysis.
5. The community must update its repetitive loss area analyses in time for each CRS cycle verification visit.

STEP 1: Advise All Property Owners

Before field work began on the RLAA, individual letters were mailed to property owners within the 20 identified Repetitive Loss Areas on June 1, 2017. The sample letter on the following pages 10-12 shows an example of the property owner notification letter. Copies of all letters are maintained on file with the City of Panama City Floodplain Manager. In accordance with the Privacy Act of 1974, the letters will not be shared with the general public.

Mailed Questionnaire

Future mailings will be mailed out to the repetitive loss area property owners. The questionnaire asks about the type of foundation and if the building has a basement, if the building has experienced any flooding, and the type of flooding, cause of flooding, flood protection measures and whether the owner has flood insurance. The Flood Protection Questionnaire is shown on the following pages 13-15.

CITY OF PANAMA CITY

POST OFFICE BOX 1880
PANAMA CITY, FLORIDA 32402

[DATE]

[NAME]
[ADDRESS]
[CITY], FL [ZIP]

RE: Repetitive Loss Area: [PARCEL NUMBER]

Dear Property Owner,

You have received this letter because your property is in an area that has been flooded several times. We are in Hurricane season and flooding is often associated with hurricanes, much of the flooding we experienced recently is due to Hurricane Michael. This flooding can occur as a result of backed up inlets, undersized pipes, debris blocking pipes or inlets, etc. The City of Panama City wanted to let you know if any flooding occurs don't hesitate to call Jennifer Aldridge at 850-872-3004. The City has done a Repetitive Loss Analysis study in your area if you would like more information on that please contact Jennifer Aldridge at jaldridge@pcgov.org or 850-872-3004.

As a participant in the National Flood Insurance Program (NFIP) Community Rating System (CRS), the City of Panama City is required to annually provide you with the attached property protection and insurance information:

1. Prepare for flooding by doing the following:
- Know the flood safety guidance contained in this letter.
- Know how to shut off the electricity and gas to your house when a flood comes.
- Make a list of emergency numbers and identify a safe place to go.
- Make a household inventory, especially of contents.
- Put insurance policies, valuable papers, medicine, etc., in a safe place.
- Collect and put cleaning supplies, camera, waterproof boots, etc., in a handy place.
- Develop a disaster response plan – See the Red Cross website: www.redcross.org/services/disaster/ for a copy of the brochure "Your Family Disaster Plan"
- Get a copy of *Repairing Your Flooded Home.* We have copies at the City Hall.

2. Consider some permanent flood protection measures.
    - Mark your fuse or breaker box to show the circuits for the floodable areas. Turning off the power to the basement can reduce property damage and save lives.

- Check your building for water entry points. These can be basement windows, doors, and dryer vents. These can be protected with low walls or temporary shields.
- Install a floor drain plug, standpipe, overhead sewer, or sewer backup valve to prevent sewer backup flooding.
- More information can be found in *Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding*. Copies are in the Bay County Public Library or at www.fema.gov/hazards/floods/lib312.shtm
- Note that some flood protection measures may need a building permit and others may not be safe for your type of building, so be sure to talk to the EPCI.

3. Get a flood insurance policy.
   - Homeowner's insurance policies do not cover damage from floods. However, because Panama City participates in the National Flood Insurance Program, you can purchase a separate flood insurance policy. This insurance is backed by the Federal government and is available to everyone, even properties that have been flooded. Because Panama City participates in the Community Rating System, you will receive a reduction in the insurance premium.
   - If your area is not mapped as a Special Flood Hazard Area, you may qualify for a lower-cost Preferred Risk Policy.
   - Some people have purchased flood insurance because it was required by the bank when they got a mortgage or home improvement loan. Usually, these policies just cover the building's structure and not the contents. During the kind of flooding that happens in your area, there is usually more damage to the furniture and contents than there is to the structure. Be sure you have contents coverage.
   - Don't wait for the next flood to buy insurance protection. In most cases, there is a 30-day waiting period before National Flood Insurance Program coverage takes effect.
   - Contact your insurance agent for more information on rates and coverage.

4. National Pollutant Discharge Elimination System (NPDES):
   - The City of Panama has made available to the public copies of the "The Florida Yards & Neighborhoods Handbook" brochures. This brochure describes protecting Florida's unique natural resources by conserving water, reducing waste and pollution, creating wildlife habitat, and preventing erosion which can reduce flooding as well. You can find copies of this at City Hall, 501 Harrison Ave., Panama City, FL 32401.
   - The City's website has information on NPDES and how to make our natural waters clean and pollution free. Please visit the website at http://www.pcgov.org/167/Engineering for information on recycling, household hazardous, illicit discharge, pollution prevention, and educational materials on wetlands, oceans and watersheds.

If you have any questions or comments, please call Jennifer Aldridge at (850) 872-3004, you can also visit the City's website at www.pcgov.org for more information on how to protect your home from a flood hazard.

Sincerely,

Jennifer Aldridge

Jennifer Aldridge, E.I., CFM
Disaster Recovery Project Manager

Enclosures

FLOODPLAIN PROTECTION QUESTIONNAIRE

Name: _____

Address: _____

1. How many years have you occupied the building at this address?

- ☐ Less than 1
- ☐ 1-5 years
- ☐ 5-10 years
- ☐ 10+ years

2. Do you rent or own this building?

- ☐ Rent
- ☐ Own

3. What type of foundation does the building have?

- ☐ Slab
- ☐ Crawl Space
- ☐ Basement
- ☐ Other: _____

4. Has this building or property ever been flooded or had a water problem?

- ☐ Yes
- ☐ No (If "no", please skip to question 9)

5. In what year(s) did it flood? _____

6. Where did you get water and how deep did it get?

- ☐ In basement: _____ deep
- ☐ In crawl space: _____ deep
- ☐ Over 1st floor: _____ deep
- ☐ In yard only: _____ deep
- ☐ Water was kept out of building by sandbagging, sewer valve, or other protective measure

7. What was the longest time that water stayed in the building? _____

FLOODPLAIN PROTECTION QUESTIONNAIRE, *CONTINUED*

8. What do you feel was the cause of your flooding? Check all that affect your building.

- ☐ Storm sewer backup
- ☐ Sanitary sewer backup
- ☐ Standing water next to building
- ☐ Drainage from nearby properties
- ☐ saturated ground / leaks in basement walls
- ☐ Overbank flooding from: _____
- ☐ other: _____

9. What flood protection measures have you installed on the property?

- ☐ Sump pump
- ☐ Waterproofed the outside walls
- ☐ Re-graded yard to keep water away
- ☐ Moved things out of basement
- ☐ Backup power system / generator
- ☐ Sandbagged
- ☐ none
- ☐ other: _____

10. Did any of the measures checked in item 9 work? If so, which ones? If not, do you know why they did not work?

_____

_____

11. Is the building located in a Federal Emergency Management Agency (FEMA) floodplain?

- ☐ Yes
- ☐ No
- ☐ I don't know

12. Do you have FEMA Flood Insurance?

- ☐ Yes
- ☐ No
- ☐ I don't know

13. Do you want information on protecting your building/property from flooding?

- ☐ Yes
- ☐ No

FLOODPLAIN PROTECTION QUESTIONNAIRE, *CONTINUED*

14. Please include any additional information and comments you may have about flooding in your area:

_____

_____

_____

_____

_____

_____

Please help us by completing this survey and returning it to:

Jennifer Aldridge, Floodplain Administrator

City of Panama City
City Manager Department
501 Harrison Avenue
Panama City, FL 32401
Phone (850) 872-3004

Survey can also be found on the CPC website pcgov.org

Surveys can also be emailed to jaldridge@pcgov.org

STEP 2. Contact Agencies and Organizations

City of Panama City contacted external agencies that have plans or studies that could affect the cause or impacts of flooding within the identified repetitive loss areas. Since those letters were sent out no outside agencies have come forward with any information in the repetitive loss areas.

Summary of Studies and Reports

FEMA Flood Insurance Study

FEMA most recent FIS for City of Panama City, FL is dated June 2, 2009 and also preliminary FIS dated October 25, 2019 (which is under City review). The FIS revised and updates information on the existence and severity of flood hazards within the City. The FIS also includes revised digital Flood Insurance Rate Maps (FIRMs) which reflect updated Special Flood Hazard Areas (SFHAs) and flood zones for the County.

Flood Insurance Claims Data

The Privacy Act of 1974 (5 U.S.C. 522a) restricts the release of flood insurance policy and claims data to the public. This information can only be released to state and local governments for the use in floodplain management related activities. Therefore, all claims data in this report are only discussed in general terms.

Capital Improvement Plan

Preparation of the City of Panama City annual budget includes the preparation of a long-range Capital Improvement Program. This planning document is a five-year outlook for anticipated capital projects designed to facilitate decision makers in the replacement of capital assets. The projects are primarily related to improvement in roads and drainage, parks and recreation, public utilities and facilities.

City of Panama City – Comprehensive Plan, Updated 2019

The City of Panama City Comprehensive Plan is intended to guide growth and development decisions over the next 20 years. The Comprehensive Plan includes a set of goals and policies as well as an official Future Land Use Map, both of which are intended to inform decisions related to capital investment and rezoning.

City of Panama City – Redevelopment Plan

The Redevelopment Plan was developed concurrently with the City's Economic Development Plan, Downtown Master Plan, Pre-Disaster Recovery Plan, and Recovery Action Plan to lay out a comprehensive strategy for recovery and redevelopment in the City. The plan addresses one of key infrastructures in our City which is stormwater.

STEP 3: Building Data Collection

City of Panama City has 4 drainage studies starting from 2003 all the way to 2017. These reports are Robinson Bayou Drainage Study, Watson Bayou Drainage Study, Bayou George Drainage Study, Goose Bayou Drainage Study, and Posten_Huntington Bayou Drainage Study. These studies have data collection from on-site field surveys with GPS coordinates, elevations collected and pictures of the City's stormwater system in those basins.

Data was also gathered, in the most current studies and when possible, through conversations with property owners and/or residents in the repetitive loss areas. These conversations provided detail on the extent of flooding, potential causes of flooding, and recollections from past flood events, which help to better understand flooding issue for these areas.

Problem Statement:

Of the 20 identified Repetitive Loss Areas in the City of Panama City, only 8 of those areas is vulnerable to primarily storm surge flooding. The other areas are due either structures being built below the base flood elevation or stormwater facilities not designed to current conditions.

The approach to reducing repetitive flooding in these areas will require a combination of flood-proofing techniques, education, and drainage improvement projects.

Repetitive Loss Area 1

Repetitive Loss Area is completely located within the 100-year floodplain. The St. Andrews Bay is located just south of this Repetitive Loss Area. The area is commercial with slab on grade foundation types. In general, elevations should be considered as a mitigation measure in this particular area.

Table 2.1 – Repetitive Loss Overview for Area 1

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
1	1	1	7	8	Jenks Avenue, 4th Street, Grace Avenue & Oak Avenue

Area 1 contains a total of 7 properties. There were no vacant lots discovered during the field survey.

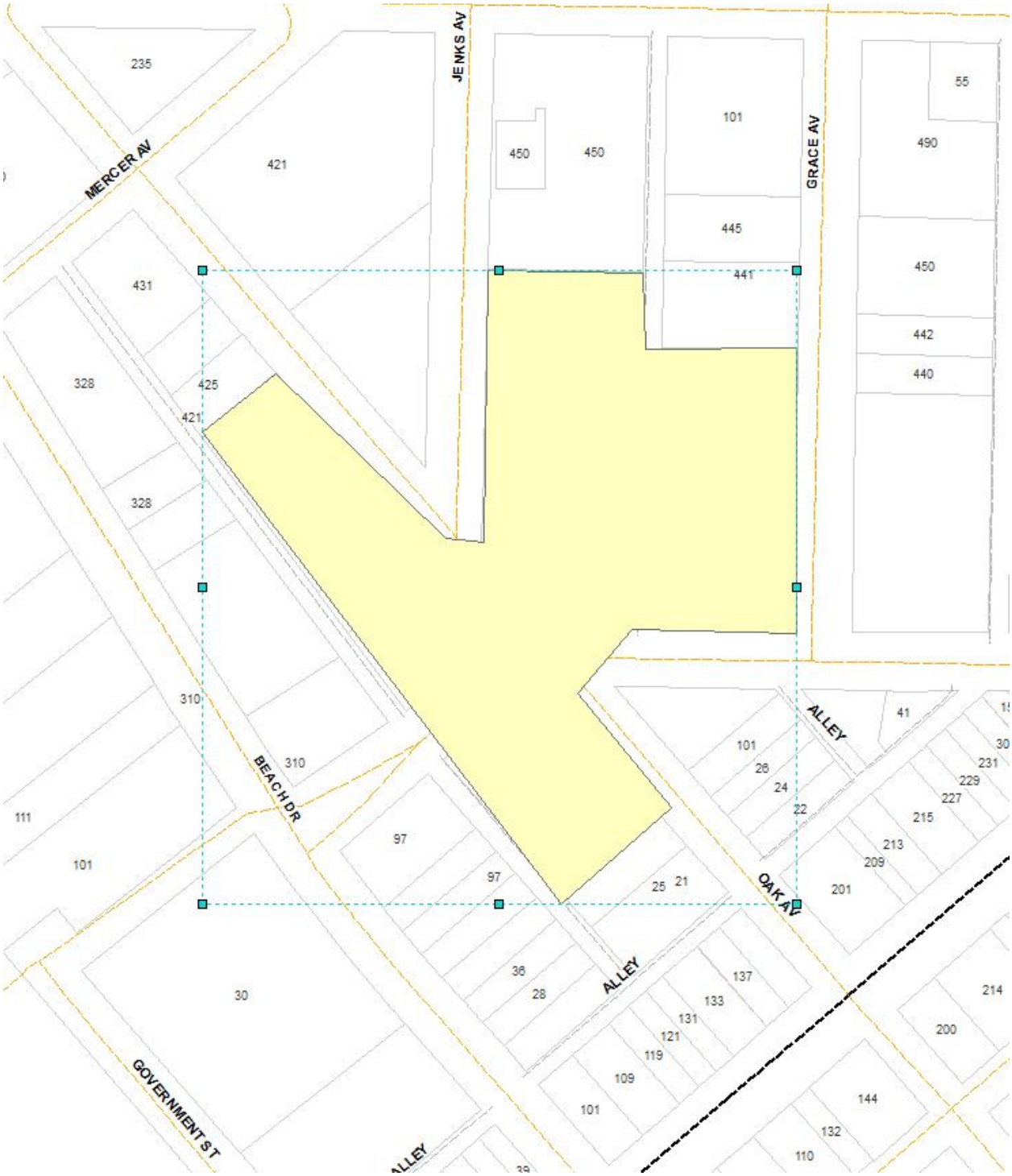


Figure 2.1 – Repetitive Loss Area 1

Example Properties in Repetitive Loss Area 1

Repetitive Loss Area 2

Repetitive Loss Area 2 is all located in Flood Zone X. The area is just north of St. Andrews Bay. The entire area is residential and contains slab on grade foundation types. The neighborhood streets does have curbing and some lots appear to be above the elevation of the road. One property owner said their garage has flooded two to three times due to their garage not elevated properly and possible neighborhood drainage. In general, elevations should be considered mitigation for this area and the City is looking into upgrading the stormwater with possible the Hazard Mitigation program.

Table 2.2 – Repetitive Loss Overview for Area 2

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
2	1	1	7	8	Garden Club Drive, Skyland Avenue & Wood Avenue

Area 2 contains a total of 7 properties. There were no vacant lots discovered during the field survey.

Figure 2.2 – Repetitive Loss Area 2

Example Properties in Repetitive Loss Area 2

Repetitive Loss Area 3

Repetitive Loss Area 3 is about 50/50 Flood Zone X and the 100-yr floodplain. This Repetitive Loss Area is north of 11th Street between Lisenby Avenue and Buena Vista Blvd. The area is residential with slab on grade foundation. There has been no reported flooding in the area in the last 5 years and it is believed that due to the construction of a stormwater facility that was designed in a park just north of the area fixed any flooding issues. Recommend this area be removed from the RL list.

Table 2.3 – Repetitive Loss Overview for Area 3

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
3	1	1	18	19	Christel Avenue, 12th Street & Marie Ann Blvd.

Area 3 contains a total of 19 properties. There are two vacant lots discovered during the field survey.

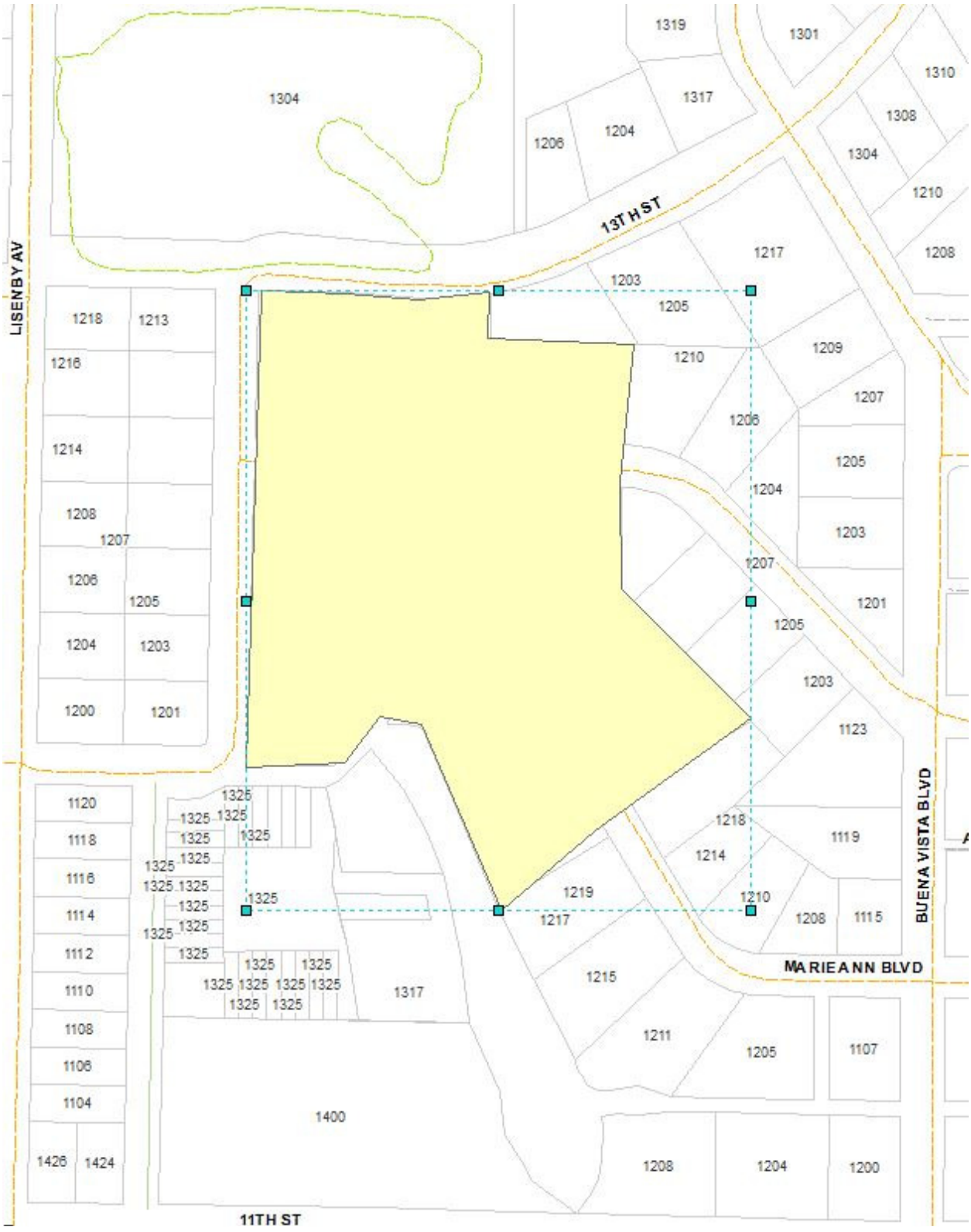


Figure 2.3 – Repetitive Loss Area 3

Example Properties in Repetitive Loss Area 3

Repetitive Loss Area 4

Repetitive Loss Area 4 is within the 100-yr floodplain. It is just north of St. Andrews Bay. The area is residential with slab on grade foundation and some structures on piles. One property owner said their home does flood frequently and requested a grant for elevation of the home and they were denied because they were not a severe repetitive loss property. The City is will to revisit their application but has not been instructed to pursue a second application submittal. In general, elevations should be considered mitigation for this area.

Table 2.4 – Repetitive Loss Overview for Area 4

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
4	1	1	9	10	Beach Drive, Arthur Avenue, & 9th Street

Area 4 contains a total of 10 properties. There were no vacant lots discovered during the field survey.

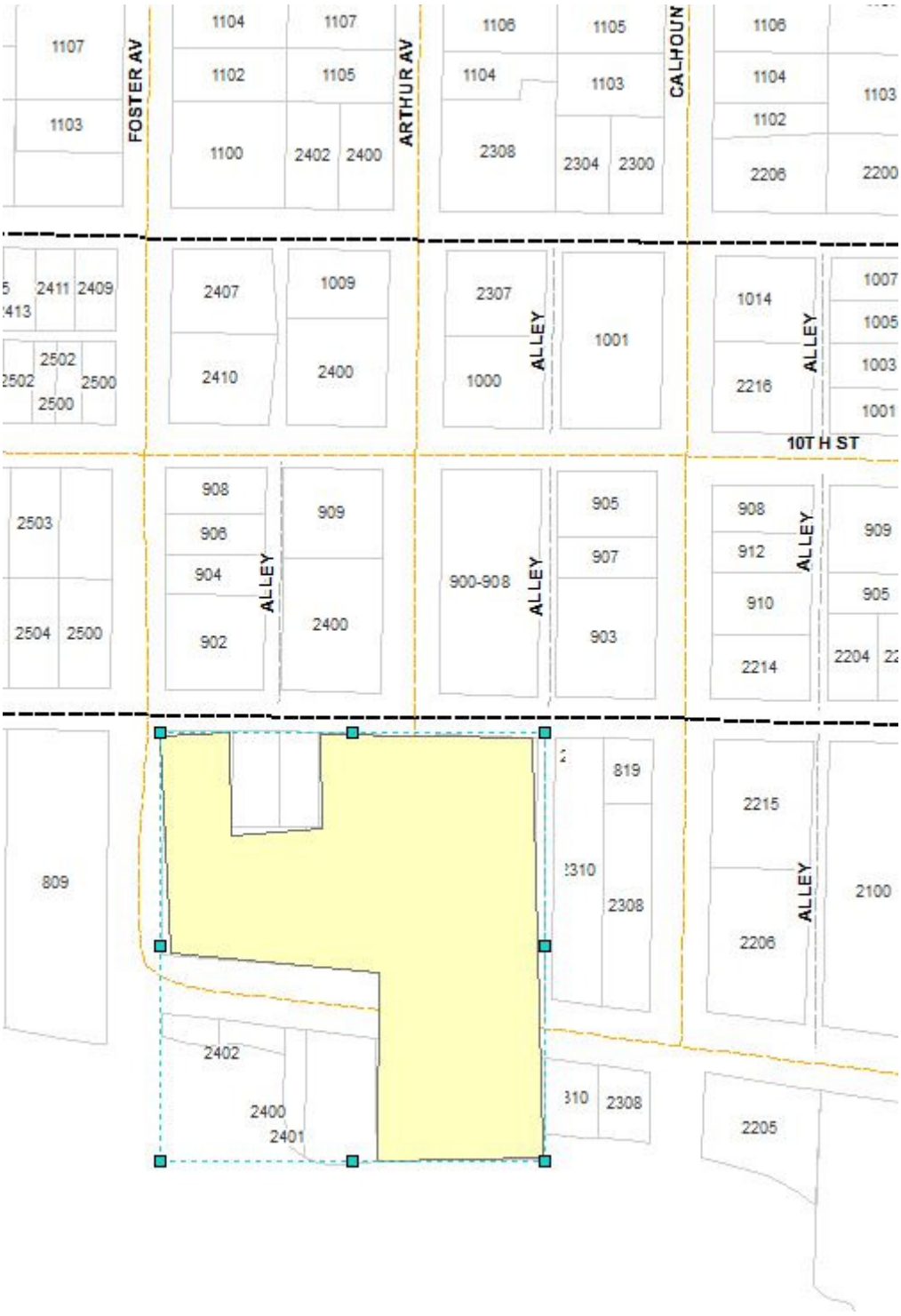


Figure 2.4 – Repetitive Loss Area 4

Repetitive Loss Area 5

Repetitive Loss Area 5 is located completely in 100-yr floodplain. It is located north of St. Andrews Bay. This is a residential area with pile foundation and slab on grade foundations. In general recommend elevations on structures to mitigate.

Table 2.5 – Repetitive Loss Overview for Area 5

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
5	1	1	2	3	Grant Avenue

Area 5 contains a total of 3 properties. There were no vacant lots discovered during the field survey.

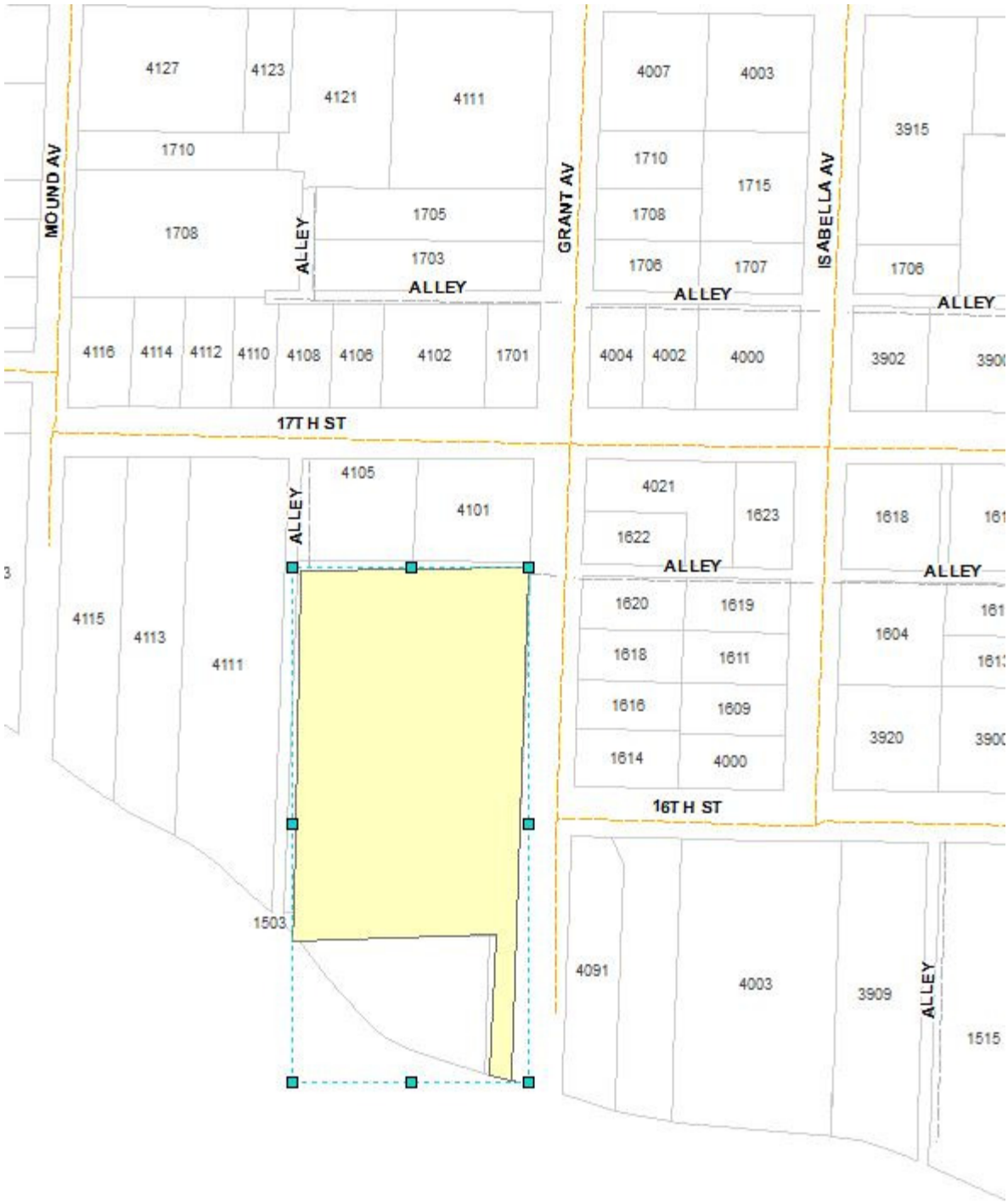


Figure 2.5 – Repetitive Loss Area 5

Example Properties in Repetitive Loss Area 5

Repetitive Loss Area 6

Repetitive Loss Area 6 is located 55% in a 100-yr floodplain and 45% in a 500-yr floodplain. It is located north of BUS 98 and just west of the City of Panama City's Utility Complex. This is residential area with slab on grade structures. There are a few homes that have flooded and talking with a few of those homeowners that have flooded during multiple rain events they would like to elevate their home or demolish and rebuild to code; most of the homes are not built to current code. In general mitigation with elevating.

Table 2.6 – Repetitive Loss Overview for Area 6

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
6	2	2	35	37	Chestnut Avenue, Beck Avenue, 21st Street, 20th Street, and Wilmont Avenue

Area 6 contains a total of 37 properties. There were no vacant lots discovered during the field survey

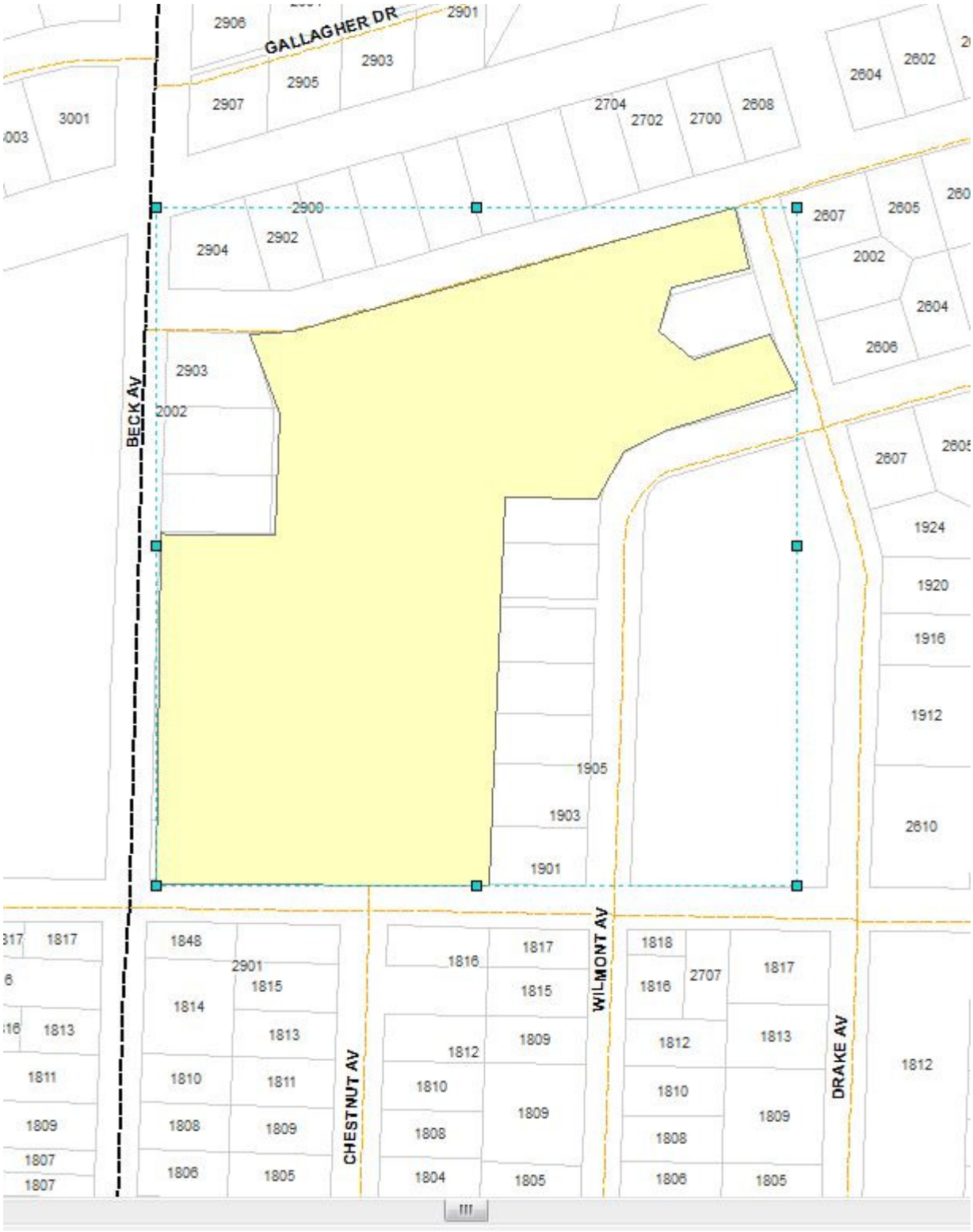


Figure 2.6 – Repetitive Loss Area 6

Example Properties in Repetitive Loss Area 6

Repetitive Loss Area 7

Repetitive Loss Area 7 is completely located in a 500-yr floodplain. Is is located just south of the Boys and Girls Club on 19th Street. This is a residential area with slab on grade homes and townhomes. This area floods on a regular basis. The City has contact with the residents in this area and multiple homes flood during major flood events. There was a 2017 drainage study done for this area and the recommendation is to upsize the stormwater pipes.

Table 2.7 – Repetitive Loss Overview for Area 7

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
7	2	2	30	32	Lake Avenue, Cincinnati Avenue, HWY 98, 19th Street, and Bayview Avenue

Area 7 contains a total of 32 properties. There were no vacant lots discovered during the field

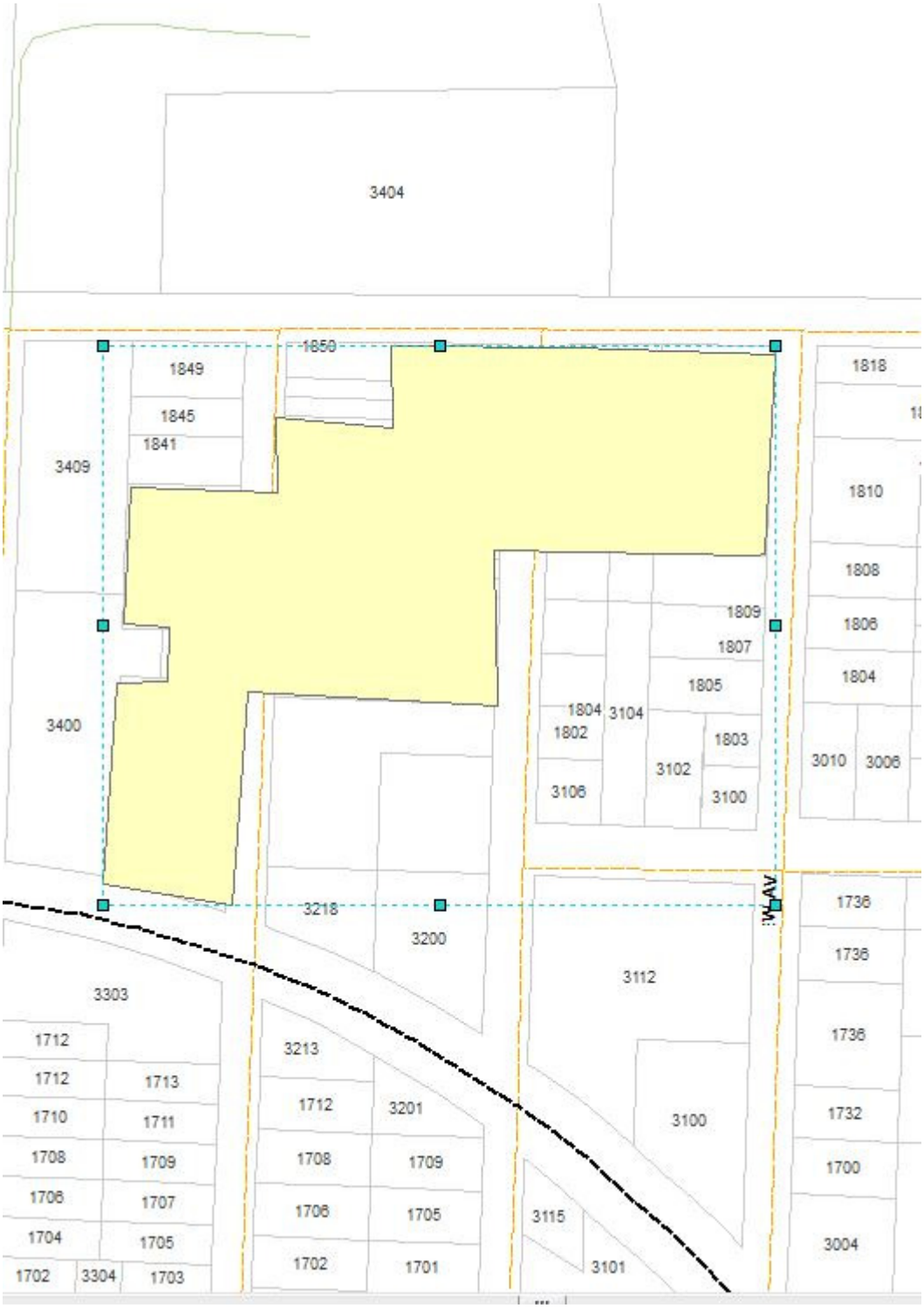


Figure 2.7 – Repetitive Loss Area 7

Example Properties in Repetitive Loss Area 7

Repetitive Loss Area 8

Repetitive Loss Area 8 is primarily located in a 500-yr floodplain with a few parcels in a 100-yr floodplain. This area is located just east of Frankford Avenue. This is a residential area with slab on grade foundation. Most of this area homes are built well above the road. In general recommend removal of area off the repetitive loss list.

Table 2.8 – Repetitive Loss Overview for Area 8

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
8	1	0	14	15	20th Street & Clay Avenue

Area 8 contains a total of 15 properties. There were no vacant lots discovered during the field

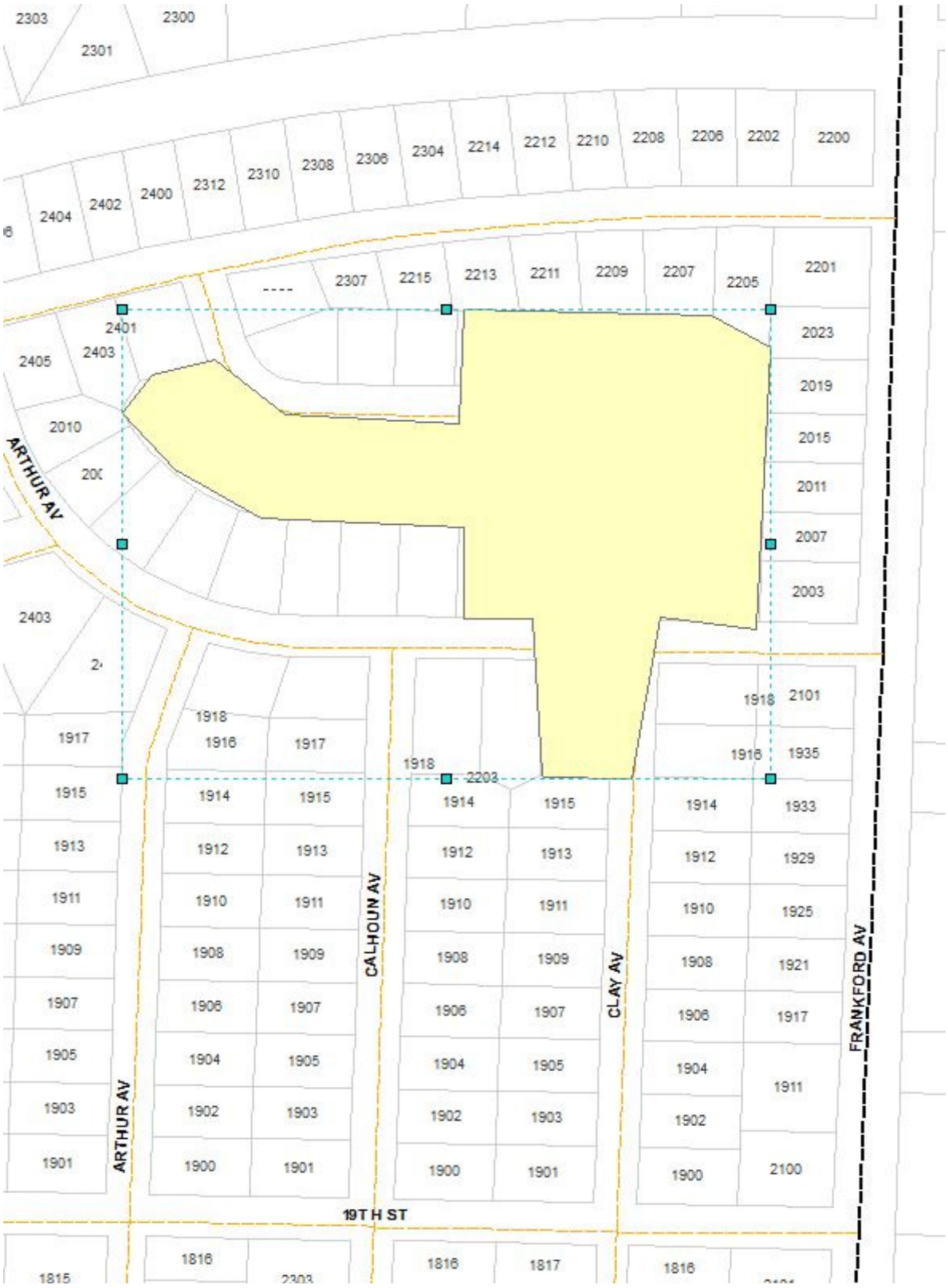


Figure 2.8 – Repetitive Loss Area 8

Repetitive Loss Area 9

Repetitive Loss Area 9 is completely in a 100-yr floodplain. This area is located just southwest of the St. Andrews Bay. This is a residential area with some on piles or slab on grade foundations. Since Hurricane Michael homes were significantly damaged therefore homes are being brought up to current code. In general, mitigation should be done by elevation.

Table 2.9 – Repetitive Loss Overview for Area 9

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
9	3	2	27	30	Harbour Place, Kings Harbour Road & Harbour Circle

Area 9 contains a total of 30 properties. There were no vacant lots discovered during the field

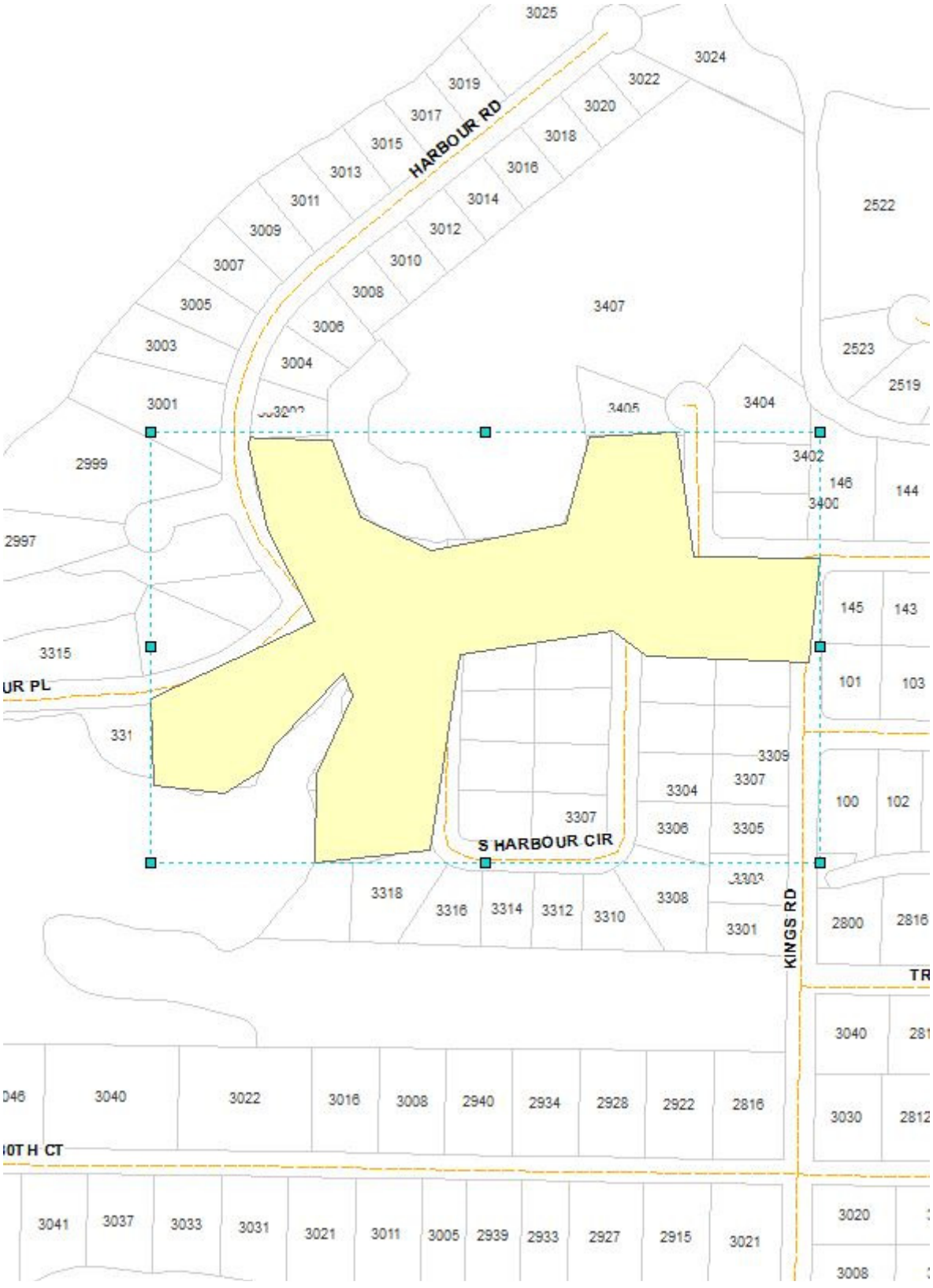


Figure 2.9 – Repetitive Loss Area 9

Example Properties in Repetitive Loss Area 9

Repetitive Loss Area 10

Repetitive Loss Area 10 is completely in a 100-yr floodplain. This area is located just north of the old airport of Panama City and southwest of St. Andrews Bay. This is a residential area with majority slab on grade with a few homes on piles. This area is low area and some of the homes are older homes so they are not built up to current code. In general, mitigation by elevating.

Table 2.10 – Repetitive Loss Overview for Area 10

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
10	2	2	49	51	Capri Drive & Calabria Road

Area 10 contains a total of 51 properties. There were no vacant lots discovered during the field

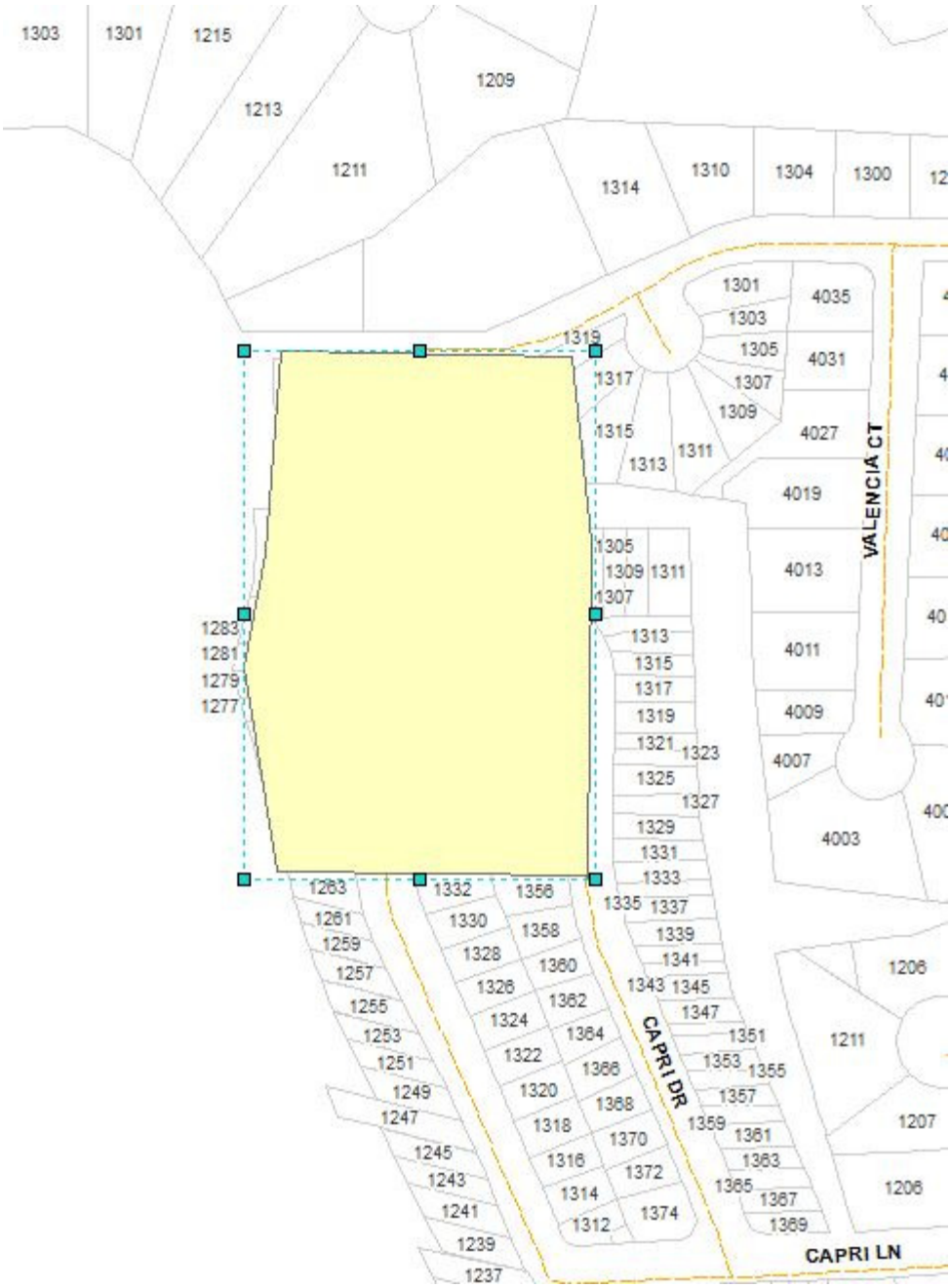


Figure 2.10 – Repetitive Loss Area 10

Example Properties in Repetitive Loss Area 10

Repetitive Loss Area 11

Repetitive Loss Area 11 is completely located in a 100-yr floodplain. This area is located south of HWY 390. This is a residential area with slab on grade foundations. Spoken with a three residents and their homes flood but due to Hurricane Michael these homes are having to be demolished and rebuilt. This area also has just property flooding and the City is looking into upgrading the stormwater system.

Table 2.11 – Repetitive Loss Overview for Area 11

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
11	3	3	7	10	28th Place, Lanny Lane & Marron Drive

Area 11 contains a total of 10 properties. There were no vacant lots discovered during the field

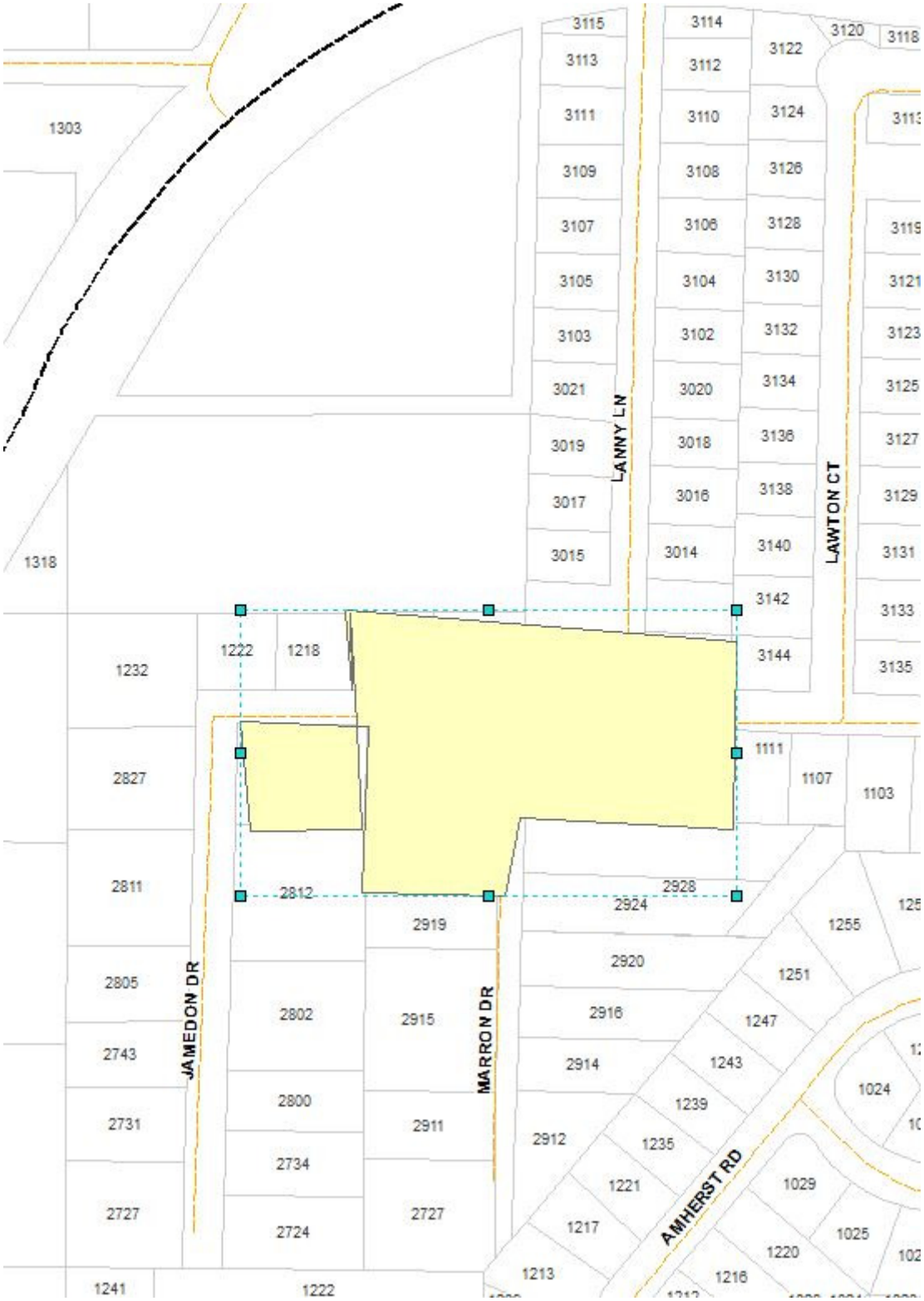


Figure 2.11 – Repetitive Loss Area 11

Example Properties in Repetitive Loss Area 11

Repetitive Loss Area 12

Repetitive Loss Area 12 is in a 100-year floodplain and 500-yr floodplain. This area is located north of 23rd Street. This is a residential and commercial area with slab on grade foundations.

Table 2.12 – Repetitive Loss Overview for Area 12

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
12	2	2	1	3	Stanford Road & 23rd Street

Area 12 contains a total of 3 properties. There were no vacant lots discovered during the field

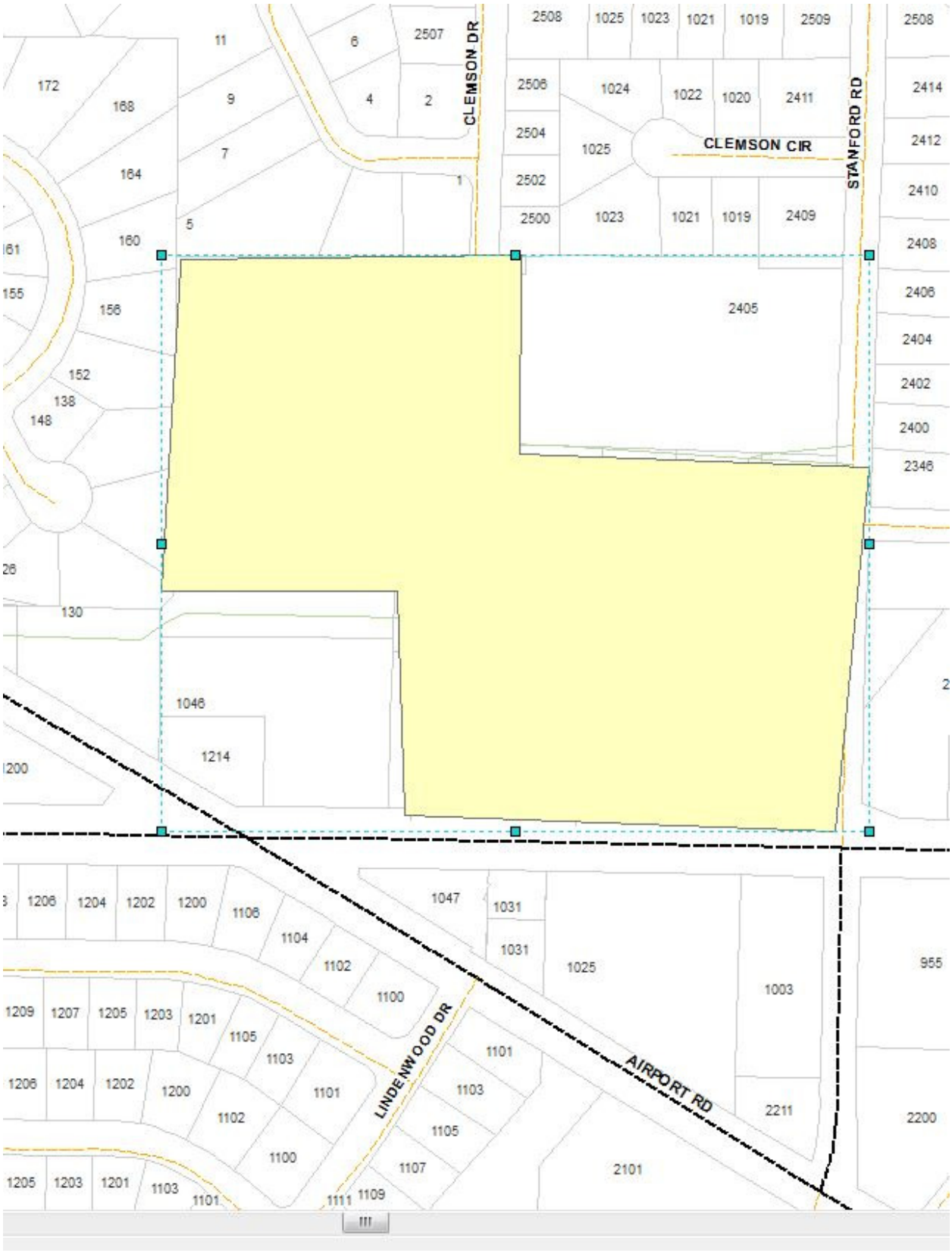


Figure 2.12 – Repetitive Loss Area 12

Example Properties in Repetitive Loss Area 12

Repetitive Loss Area 13

Repetitive Loss Area 13 is completely in a 100-yr floodplain. This area is located north of 23rd Street and west of Jenks Avenue. This is a residential area with slab on grade homes. The City has been in contact with the residents in the area and there has been no reported flooding in the last ten years recommend removing this area from the repetitive loss list.

Table 2.13 – Repetitive Loss Overview for Area 13

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
13	1	0	12	13	Fairmont Drive & Jenks Avenue

Area 13 contains a total of 13 properties. There were no vacant lots discovered during the field

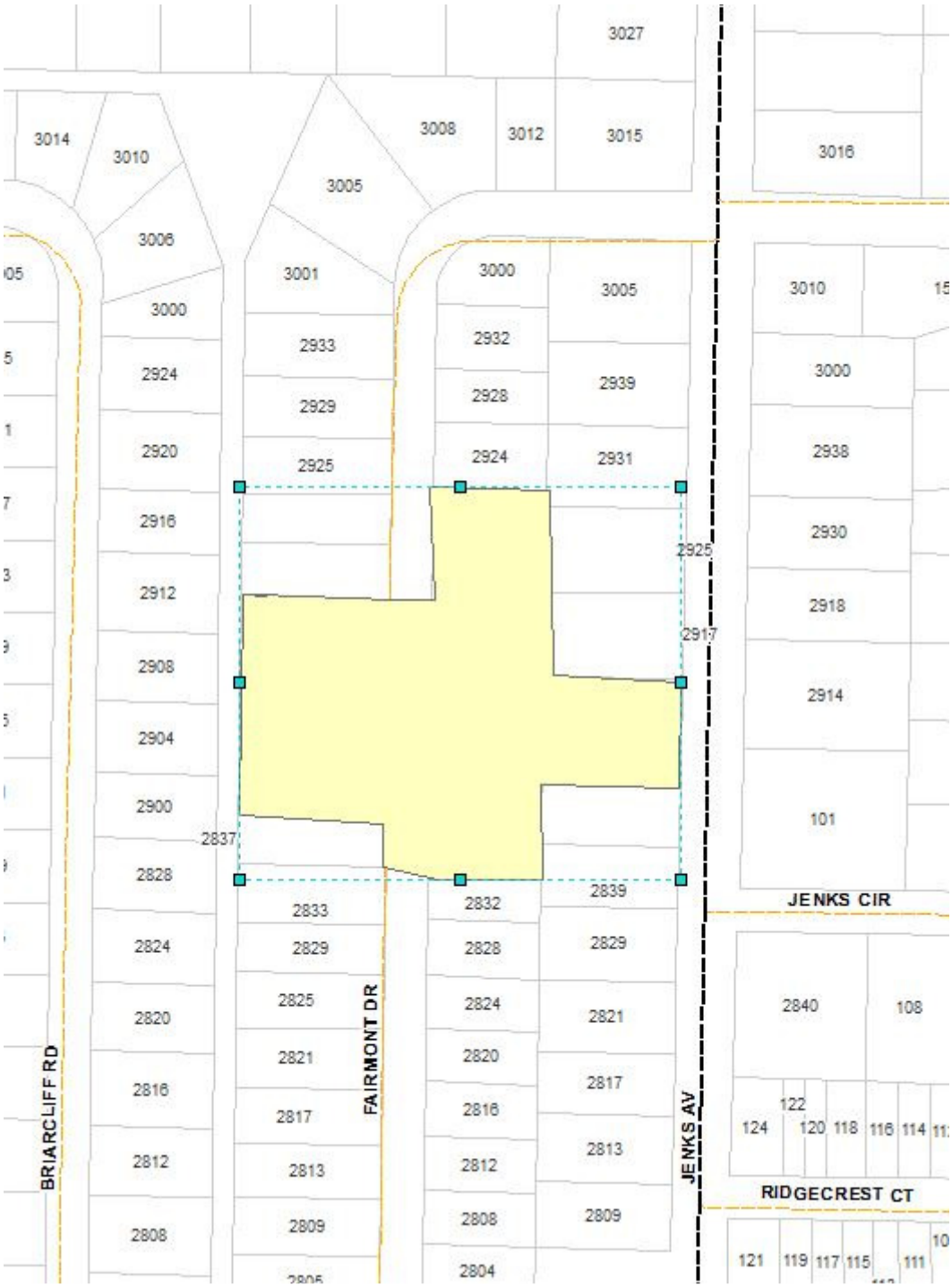


Figure 2.13 – Repetitive Loss Area 13

Example Properties in Repetitive Loss Area 13

Repetitive Loss Area 14

Repetitive Loss Area 14 is in a 500-year floodplain. This area is located north of 23rd Street and west of HWY 77. This is a commercial area with slab on grade and structures built with fill then slab on grade. This area has no reported flooding in the last ten years recommend removing this area from the repetitive loss list.

Table 2.14 – Repetitive Loss Overview for Area 14

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
14	1	0	3	4	23rd Street & HWY 77

Area 14 contains a total of 4 properties. There were no vacant lots discovered during the field

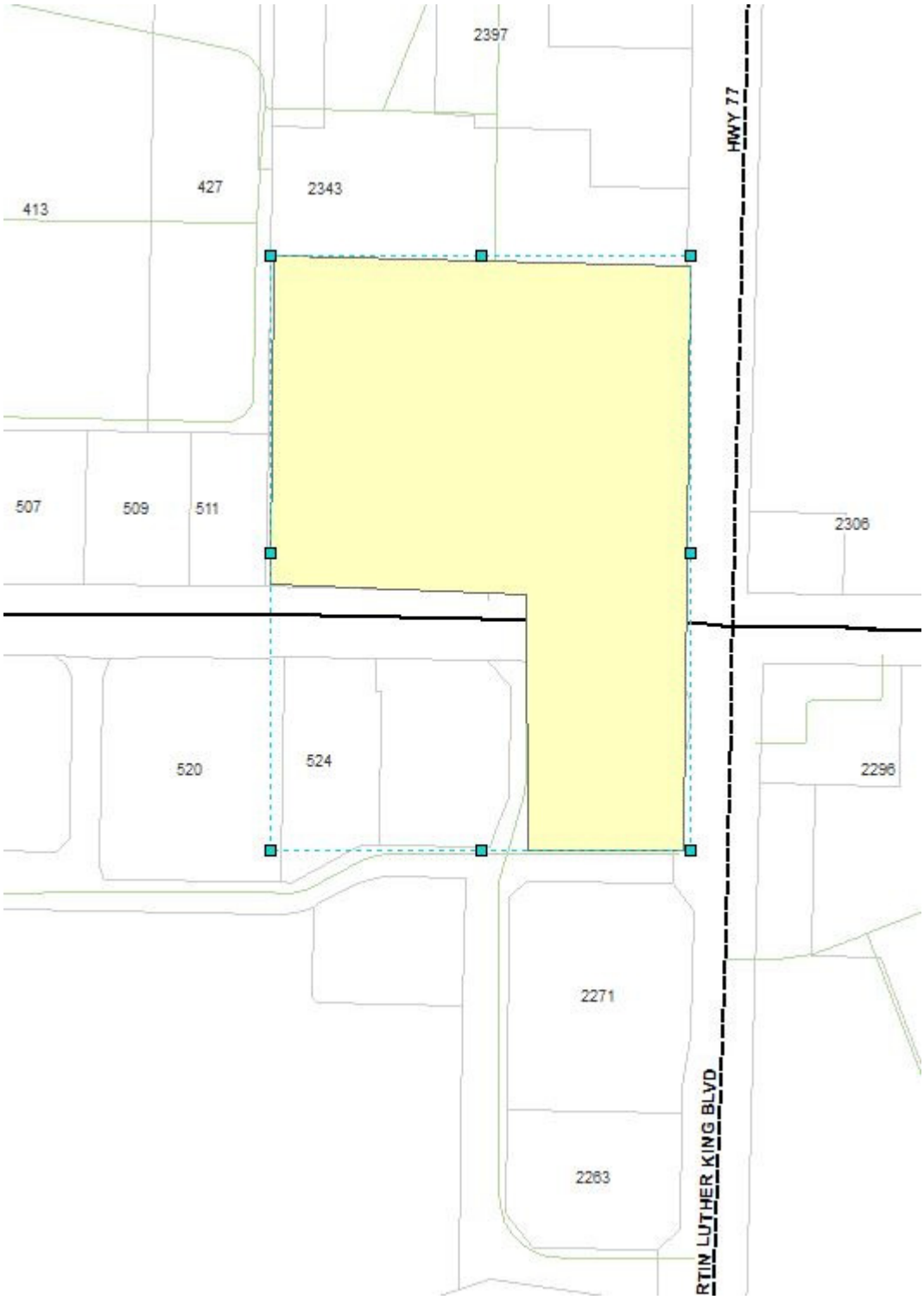


Figure 2.14 – Repetitive Loss Area 14

Example Properties in Repetitive Loss Area 14

Repetitive Loss Area 15

Repetitive Loss Area 15 is in completely in a 500-yr floodplain. This area is located in just south of 15th Street and west of Harrison Avenue. This area is commercial and residential with slab on grade foundation. This area floods during heavy rain events. City staff has recommended upgrade on FDOT's stormwater facilities.

Table 2.15 – Repetitive Loss Overview for Area 15

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
15	1	1	14	15	Harrison Avenue, Grace Avenue & Luverne Avenue

Area 15 contains a total of 15 properties. There are 5 vacant lots discovered during the field

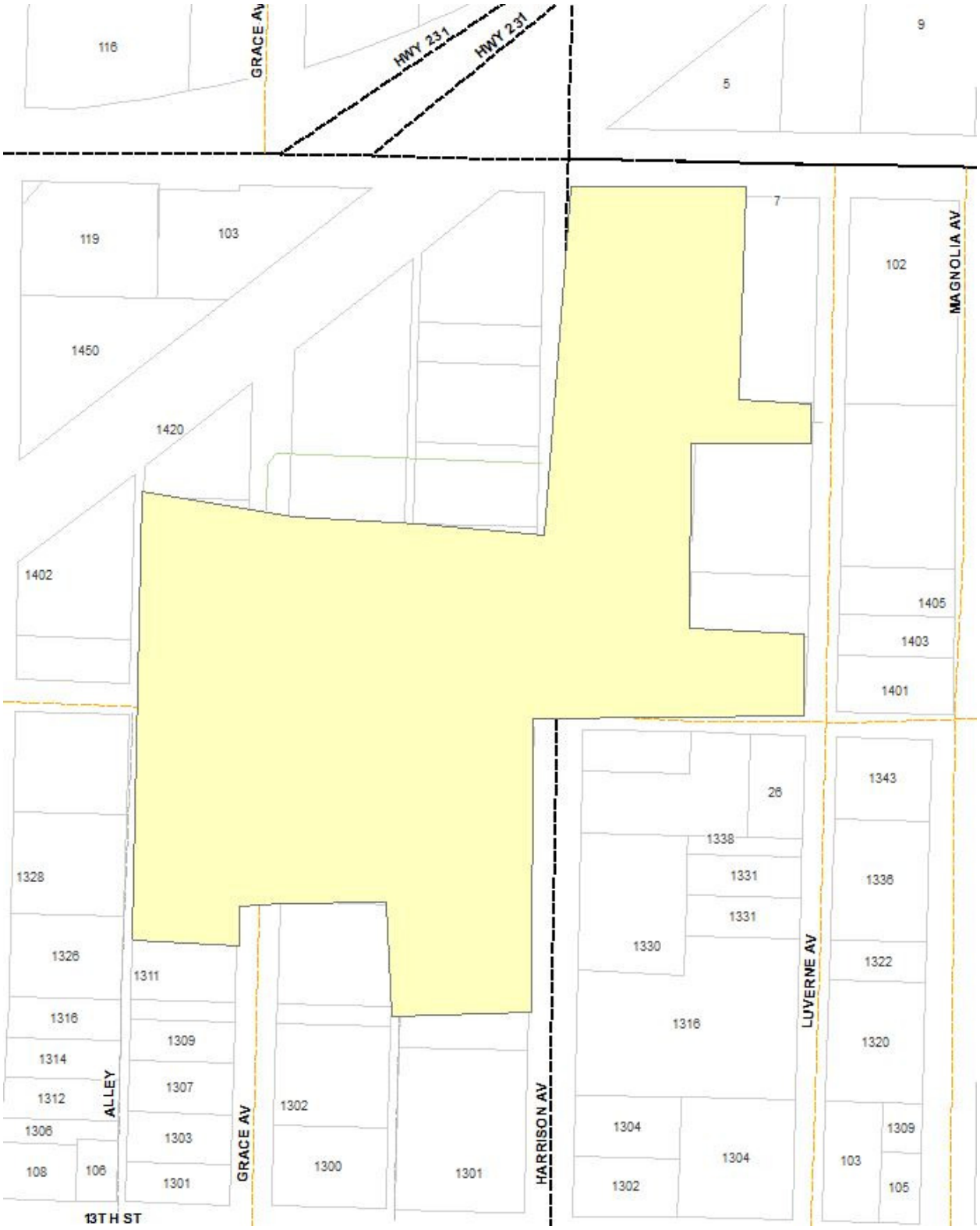


Figure 2.15 – Repetitive Loss Area 15

Example Properties in Repetitive Loss Area 15

Repetitive Loss Area 16

Repetitive Loss Area 16 is located mostly in a 500-yr floodplain with a little portion of the area in a 100-yr floodplain. This area is located just north of Massalina Bayou. This is a commercial area with slab on grade structures. This area is subject to storm surge and recommended mitigation is elevation.

Table 2.16 – Repetitive Loss Overview for Area 16

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
16	1	1	2	3	Magnolia Avenue & McKenzie Avenue

Area 16 contains a total of 3 properties. There were no vacant lots discovered during the field

Figure 2.16 – Repetitive Loss Area 16

Example Properties in Repetitive Loss Area 16

Repetitive Loss Area 17

Repetitive Loss Area 17 is completely in a 100-yr floodplain. This area is located just east of St. Andrews Bay. This is a multi-family/residential area with slab on grade foundations. There has been known flooding this area for at least 10 years recommend removal from the RL list. Due to the area only having 1 property no map or picture will be provided due to the Privacy Act of 1974.

Table 2.17 – Repetitive Loss Overview for Area 17

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
17	1	1	0	1	Beach Drive

Area 17 contains a total of 1 property. There were no vacant lots discovered during the field

Repetitive Loss Area 18

Repetitive Loss Area 18 is completely located in a 100-yr floodplain. This area is located northeast of St. Andrews Bay and is a residential area with slab on grade foundations. This area has no known flooding in the past 10 years and homes appear to be up to code. Recommend removal from RL list.

Table 2.18 – Repetitive Loss Overview for Area 18

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
18	1	0	3	4	Bunkers Cove Road

Area 18 contains a total of 4 properties. There was 1 vacant lot discovered during the field

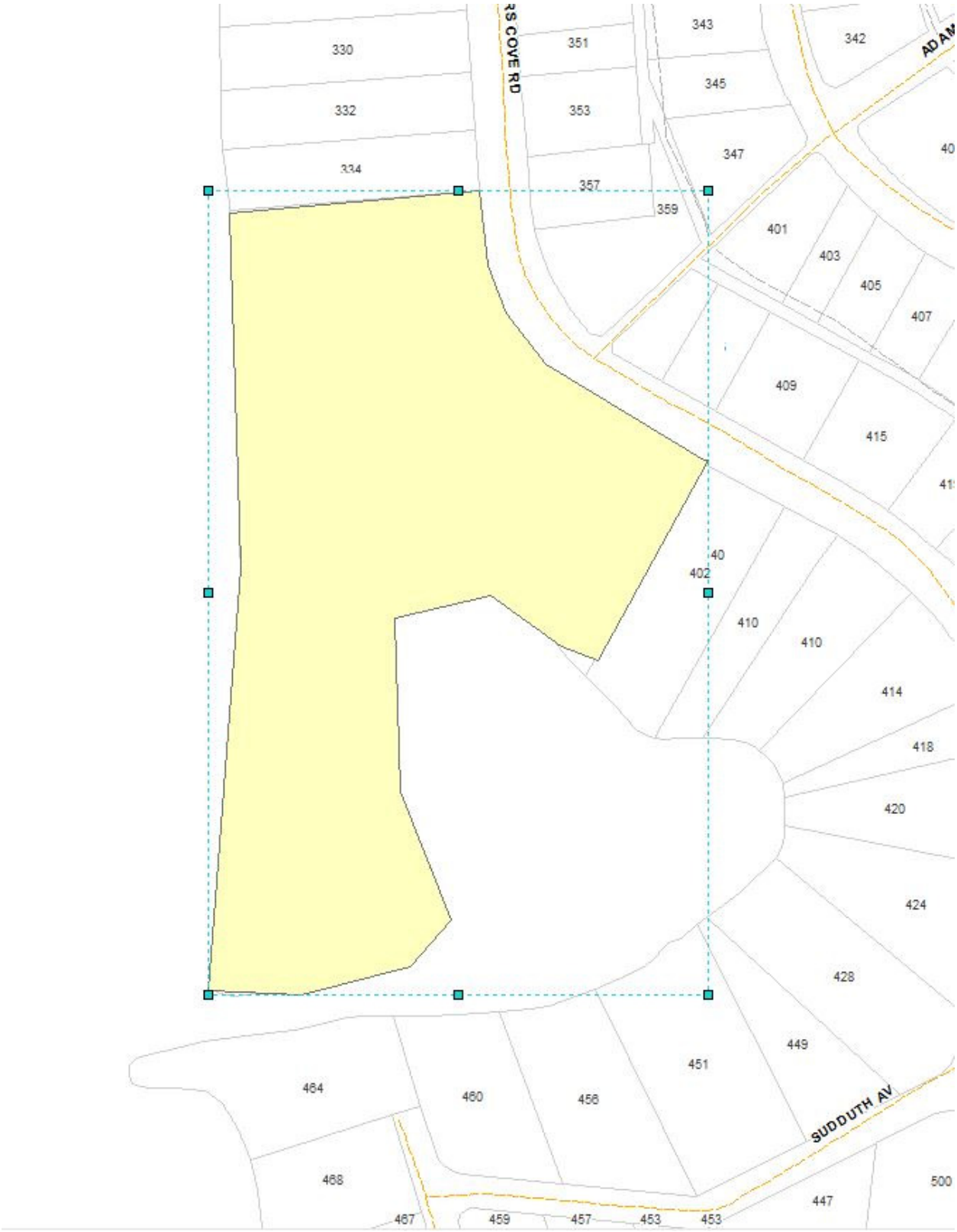


Figure 2.17 – Repetitive Loss Area 18

Example Properties in Repetitive Loss Area 18

Repetitive Loss Area 19

Repetitive Loss Area 19 is completely in a 100-yr floodplain. This area is located east of East Avenue and is a residential area with slab on grade foundation. This area is built with older homes and recommend mitigation with elevation and the City working on upgrading the City's stormwater infrastructure to fix the street flooding.

Table 2.19 – Repetitive Loss Overview for Area 19

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
19	1	1	6	7	James Avenue & 1st Court

Area 19 contains a total of 7 properties. There were 0 vacant lot discovered during the field

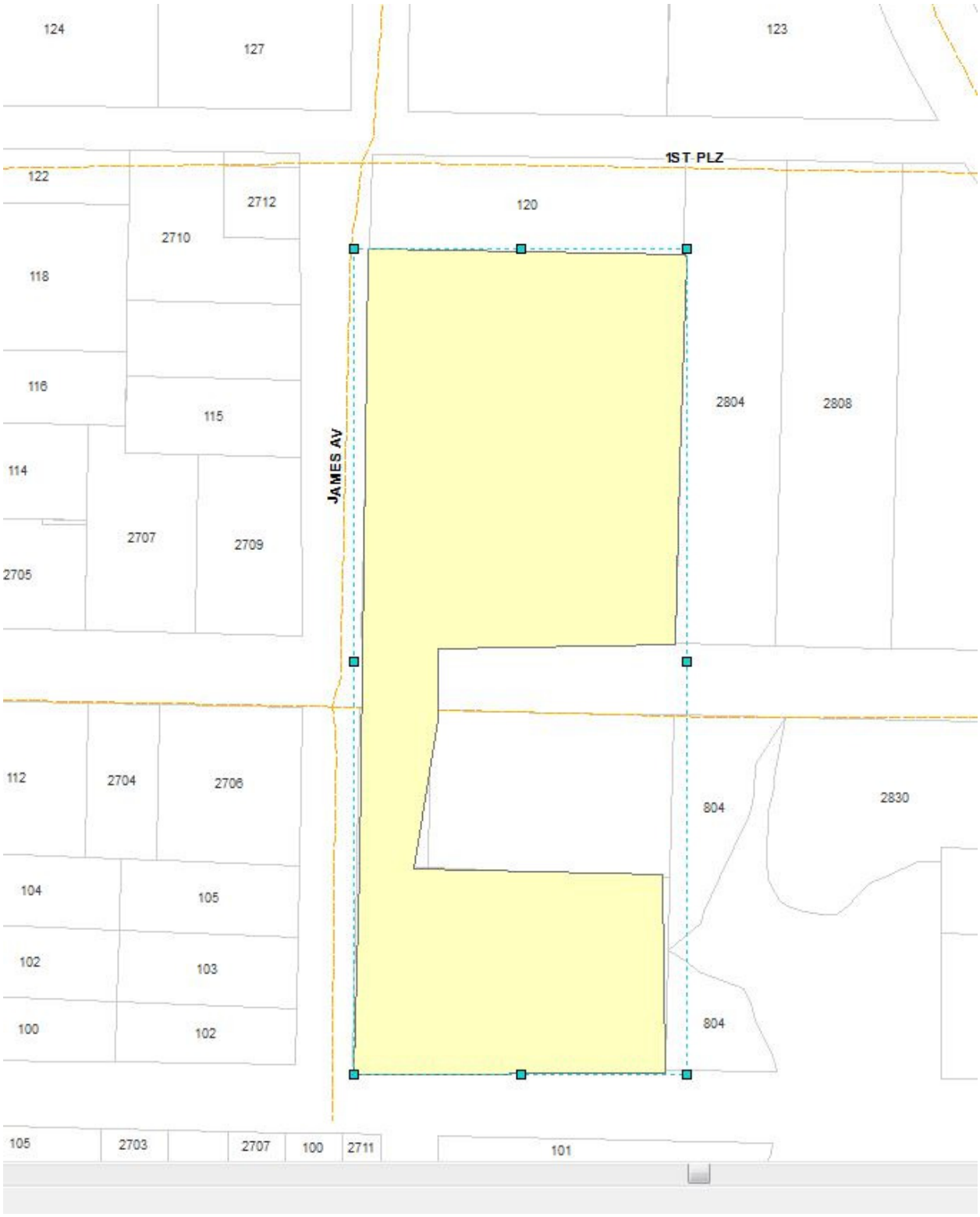


Figure 2.18 – Repetitive Loss Area 19

Example Properties in Repetitive Loss Area 19

Repetitive Loss Area 20

Repetitive Loss Area 20 is located in a 100-yr floodplain and 500-yr floodplain. This area is residential and commercial area with slab on grade structures. This area has street flooding and has a severe repetitive loss property in this area. Mitigation is recommended through elevation or demolition to bring structures up to current code and stormwater infrastructure upgrade.

Table 2.20 – Repetitive Loss Overview for Area 20

Repetitive Loss Area	# of RL Properties	# of Historic Claims Properties	# of Additional Properties	Total # of Properties in RL Area	Road Names
20	2	1	17	19	9th Circle, East Avenue, Kraft Avenue & 10th Street

Area 20 contains a total of 19 properties. There were 0 vacant lot discovered during the field

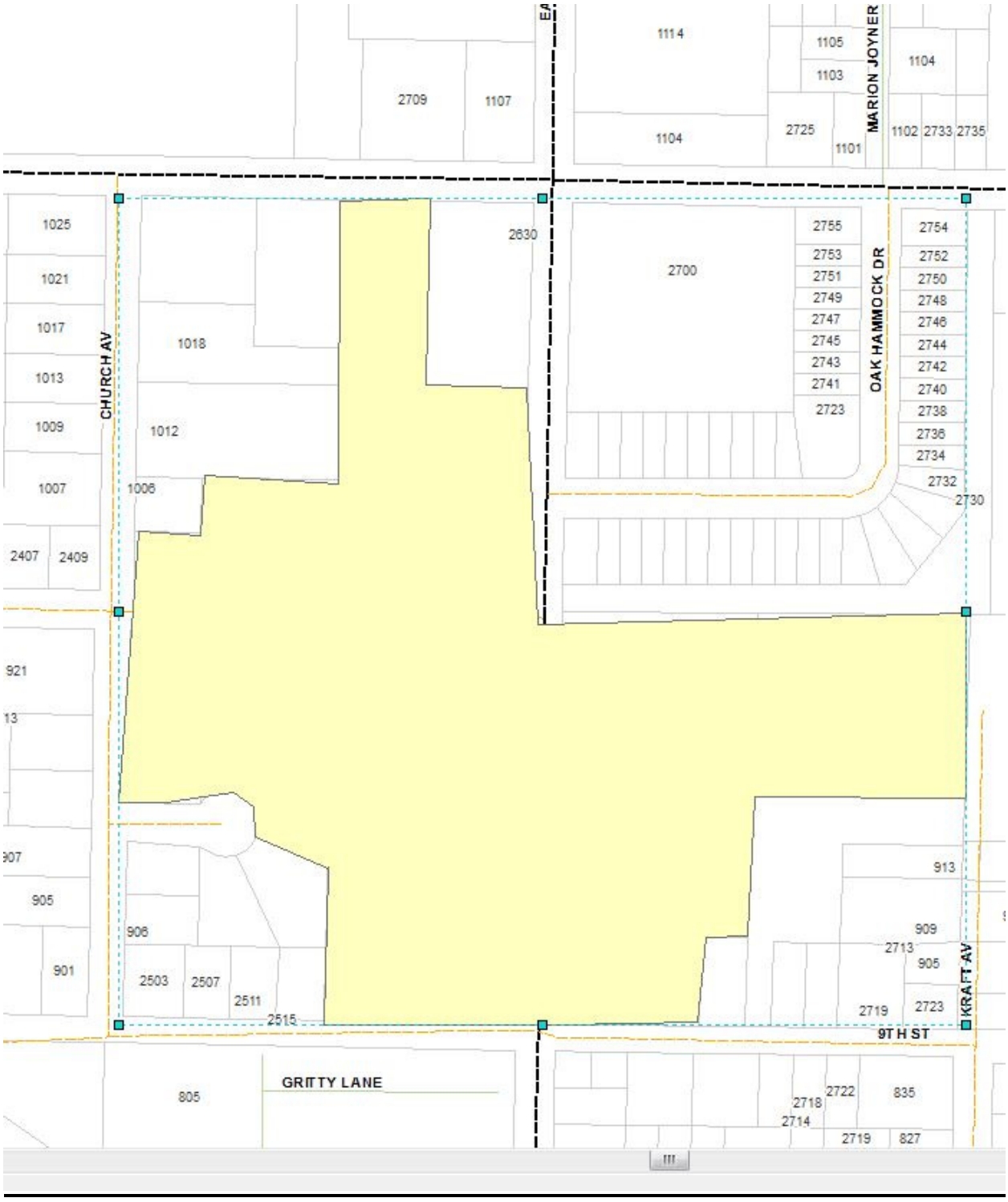


Figure 2.19 – Repetitive Loss Area 20

Example Properties in Repetitive Loss Area 20

STEP 4. Review Alternative Mitigation Approaches

Mitigation Alternatives

According to the 2017 CRS Coordinator's Manual, mitigation measures should fall into one of the following floodplain management categories:

- Prevention
- Property Protection
- Natural Resource Protection
- Emergency Services
- Structural Projects
- Public Information and Outreach

Property protection is essential to mitigating repetitive loss properties and reducing future flood losses. There are many ways to protect a property from flood damage. Property protection measures recognized in the 2017 CRS Coordinator's Manual include relocation, acquisition, building elevation, retrofitting, sewer backup protection, and insurance. Different measures are appropriate for different flood hazards, building types and building conditions. Table 2.20 below, found in the 2017 CRS Coordinator's Manual, lists typical property protection measures.

- Demolish the building or relocate it out of harm's way.
- Elevate the building above the flood level.
- Elevate damage-prone components, such as the furnace or air conditioning unit.
- Dry flood-proof the building so water cannot get into it.
- Wet flood-proof portions of the building so water won't cause damage.
- Construct a berm or redirect drainage away from the building.
- Maintain nearby streams, ditches, and storm drains so debris not obstruct them.
- Correct sewer backup problems.

Figure 2.20 – Typical Property Protection Measures

Improving stormwater drainage and storage capacity throughout Panama City can eliminate some building damage and road closures in these areas. Similarly, improving and protecting natural floodplain functions can help manage tidal floodwaters and reduce flood damages resulting from high tides, storm surge, and sea level rise. These structural and large-scale mitigation methods require large capital expenditures and cooperation from private property owners. Promoting flood-proofing techniques and flood insurance coverage and increasing public education and awareness of the flood hazards can be the next best alternative for property owners is this area. The City's websites, mailing distributions, and press releases can help get these messages out to business owners and residents.

Mitigation Funding

There are several types of mitigation measures, listed in Table 2.21 below, which can be considered for each repetitive loss property. Each mitigation measure qualifies for one or more grant programs. Depending on the type of structure, severity of flooding and proximity to additional structures with similar flooding conditions, the most appropriate measure can be determined. In addition to these grant funding projects, several mitigations measures can be taken by the homeowner to protect their home.

Table 2.21 – Mitigation Grant Programs

Types of Projects Funded	HMGP	FMA	PDM	SRL	IIC	SBA
Acquisition of the entire property by a gov't agency	D	D	D	D		
Relocation of the building to a flood free site	D	D	D	D	D	D
Demolition of the structure	D	D	D	D	D	D
Elevation of the structure above flood levels	D	D	D	D	D	D
Replacing the old building with a new elevated one	D			D	D	D
Local drainage and small flood control projects	D			D		
Dry flood-proofing (non-residential buildings only)		D	D	D	D	D
Percent paid by Federal program	75%	75%	100%/75%	75%	100%	0%
Application Notes	1,2	1	1	1	3	2,4

Application notes:

1. Requires a grant application from your local government
2. Only available after a Federal Disaster Declaration
3. Requires the building to have a flood insurance policy and to have been flooded to such an extent that the local government declares it to be substantially damaged. Pays 100% up to $30,000.
4. This a low interest loan that must be paid back

Potential Mitigation Measures

Structural Alternatives:

- Dry flood-proofing. Commercial structures and even residential structures are eligible for dry flood-proofing; however, in many instances this requires human intervention to complete the measure and ensure success. For example, installing watertight shields over doors or windows requires timely action by the homeowner; especially in a heavy rainfall event.
- Wet flood-proofing. Wet flood-proofing a structure involves making the uninhabited portions of the structure resistant to flood damage and allowing water to enter during flooding. For example, in a basement or crawl space, mechanical equipment and ductwork would not be damaged.
- For basements, especially with combined storm sewer and sewer systems, backflow preventer valves can prevent storm water and sewer from entering crawlspaces and basements.
- Acquire and/or relocate properties/target abandoned properties.
- Elevate structures and damage-prone components, such as the furnace or air conditioning unit, above the base flood elevation BFE.

- Construct engineered structural barriers, berms, and floodwalls (Note: Assuming lot has required space for a structural addition.).
- Increase road elevations above the BFE of the 100-year floodplain.
- Implement drainage improvements such as increasing capacity in the system (up-sizing pipes) and provide additional inlets to receive more stormwater.
- Improve stormwater system maintenance program to ensure inlets and canals are free of clogging debris.

Non-structural Alternatives:

- Relocate internal supplies, products/goods above the flooding depth.
- Improve the City's floodplain and zoning ordinances.
- Consider expanding riparian impervious surface setbacks.
- Provide public education through posting information about local flood hazards on City's websites, posting signs at various locations in neighborhoods or discussing flood protection measures at local neighborhood association meetings.
- Promote the purchase of flood insurance.
- Implement volume control and runoff reduction measures in the City's Stormwater Management Regulations.

Current Mitigation Projects

City's Comprehensive Drainage Improvements

The City of Panama City is working on improving all of the City's drainage structures through HMGP funding. Since over 100k trees were lost due to Hurricane Michael in Panama City; the City is looking to re study some of the drainage studies that were done Pre-Hurricane Michael and implementing those studies with the improvements to upgrade the City's stormwater infrastructures.

The City's Recovered Wetlands Project

The City of Panama City, after suffering the devastating effects of Hurricane Michael, is proposing a comprehensive drainage and stormwater management project. The proposed project will restore and improve many acres of ravaged wetlands, resulting in an appreciable reduction in floodwater elevations and enhance the environment of Panama City. The project, as currently proposed, will first remove thousands of downed trees, which are inhibiting the natural flow of water through the wetlands. This will be followed by the removal of invasive species which have taken hold or proliferated in the absence of the destroyed canopy. The hydraulics of the recovered wetlands will be engineered to provide diversity of ecology and habitat along with providing available floodplain storage. The Bay County Audubon Society wholly supports the proposed project. We understand the scope of the project will utilize land under mitigation and conservancy easements under oversight of the Audubon Society for floodplain storage and embrace the idea of having diverse wetlands emerge from the Hurricane impacted areas. The proposed project will improve the ecology and habitat diversity of Panama City and is therefore a worthwhile project for the citizens and birds of the area.

Advantages and Disadvantages of Mitigation Measures

Seven primary mitigation measures are discussed here: acquisition, relocation, barriers, flood-proofing, drainage, elevation, and insurance. In general, the cost of acquisition and relocation will be higher than other mitigation measures but can completely mitigate risk of any future flood damage. Building small barriers to protect single structures is a lower cost solution, but may not be able to offer complete protection from large flood events and may impact flood risk on other properties. Where drainage issues are the source of repetitive flooding, drainage improvements can provide flood mitigation benefits to multiple properties. Each of these solutions is discussed in greater detail below.

Acquisition:

Property acquisition and/or relocation complex processes requiring transferring private property to property owned by the local government for open space purposes. Acquisition is a relatively expensive mitigation measure, but provides the greatest benefit in the lives and property are protected from flood damage. The major cost for the acquisition method is for purchasing the structure and land. The total cost for acquisition should be based on the following:

- Purchase of Structure and land
- Demolition
- Debris removal, including any landfill processing fees
- Grading and stabilizing the property site
- Permits and plan review

Table 2.22 – Advantages and Disadvantages of Acquisition

Advantages	Disadvantages
• Permanently removes problem since the structure no longer exists. • Allows a substantially damaged or substantially improved structure to be brought in compliance with the community's floodplain management ordinance or law. • Expands open space and enhances natural and beneficial uses. • May be fundable under FEMA mitigation grant programs.	• Cost maybe prohibitive. • Resistance may be encountered by local communities due to loss of tax base, maintenance of empty lots, and liability for injuries on empty, community owned lots.

These are 3 criteria that must be met for FEMA to fund an acquisition project:

- The local community must inform the property owners interested in the acquisition program that the community will not use condemnation authority to purchase their property and that the participation in the program is strictly voluntary,

- The subsequent deed to the property to be acquired will be amended such that the landowner will be restricted from receiving any further Federal disaster assistance grants, the property shall remain in open space in perpetuity, and the property will be retained in ownership by a public entity, and
- Any replacement housing or relocated structures will be located outside the 100-yr floodplain.

Relocation:

Relocation involves lifting and placing structure on a wheeled vehicle and transporting that structure to a site outside the 100-yr floodplain and placed on a new permanent foundation. Like acquisition, this one of the most effective mitigation measures.

Table 2.23 – Advantages and Disadvantages of Relocation

Advantages	Disadvantages
• Removes flood problem since the structure is relocated out of the flood-prone area. • Allows a substantially damaged or substantially improved structure to be brought into compliance with a community's floodplain management ordinance. • May be fundable under FEMA mitigation grant programs.	• Cost may be prohibitive. • Additional costs are likely if the structure must be brought into compliance with current code requirements for plumbing, electrical, and energy systems.

The cost for relocation will vary based on the type of structure and the condition of the structure. It is considerably less expensive to relocate a home that is built on a basement or crawl space as opposed to a structure that is a slab on grade. Additionally, wood sided structures are less expensive to relocate than structures with brick veneer. Items to consider in estimating cost for relocation include the following:

- Site selection and analysis and design of the new location
- Analysis of existing size of structure
- Analysis and preparation of the moving route
- Preparation of the structure prior to the move
- Moving the structure to the new location
- Preparation of the new site
- Construction of the new foundation
- Connection of the structure to the new foundation
- Restoration of the old site

Barriers:

A flood protection barrier is usually an earthen levee/berm or a concrete retaining wall. While levees and retaining walls can be large spanning miles along a river, they can also be constructed on a much smaller scale to protect a single home or group of home.

Table 2.24 – Advantages and Disadvantages of Barriers

Advantages	Disadvantage
• Relative cost of mitigation is less expensive than other alternatives. • No alterations to the actual structure or foundation are required. • Home owners can typically construct their own barriers that will complement the style and functionality of their house and yard.	• Property is still located within the floodplain and has potential to be damaged by flood if barrier fails or waters overtop it. • Solution is only practical for flooding depths less than 3 feet. • Barriers cannot be used in areas with soils that have high infiltration rates.

The cost of constructing a barrier will depend on the type of barrier and the size required to provide adequate protection. An earthen berm will generally be less expensive compared to an equivalent concrete barrier primarily due to the cost of the materials. Another consideration is space; an earthen barrier requires a lot of additional width per height of structure compared to a concrete barrier to ensure proper stability. Key items to consider for barriers:

- There needs to be adequate room on the lot
- The pump is required to remove water that either falls or seeps onto protected side of the barrier
- Human intervention will be required to sand bag or otherwise close any openings in the barrier during the entire flood event

Flood-proofing:

Wet flood-proofing a structure consists of modifying the uninhabited portions (such as crawlspace or an unfinished basement) to allow floodwaters to enter and exit. This ensures equal hydrostatic pressure on the interior and exterior of the structure which reduces the likelihood of wall failures and structural damage. Wet flood-proofing is practical in only a limited number of situations.

Table 2.25 – Advantages and Disadvantages of Wet Flood-proofing

Advantages	Disadvantages
• Often less costly than other mitigation measures. • Allows internal and external hydrostatic pressures to equalize, lessening the loads on walls and floors.	• Extensive cleanup may be necessary if the structure becomes wet inside and possibly contaminated by sewage, chemicals and other materials born by floodwaters. • Pumping floodwaters out of a basement too soon after a flood may lead to structural damage. • Does not minimize the potential damage from a high-velocity flood flow and wave action.

A dry flood-proofed structure is made watertight below the level that needs flood protection to prevent floodwaters from entering. Making the structure watertight involves sealing the walls with waterproof coatings, impermeable membranes, or a supplemental layer of masonry or concrete; installing watertight shields over windows and doors; and installing measures to prevent sewer backup.

Table 2.26 – Advantages and Disadvantages of Dry Flood-proofing

Advantages	Disadvantages
• Often less costly than other retrofitting methods. • Does not require additional land. • May be funded by a FEMA mitigation grant program.	• Requires human intervention and adequate warning to install protective measures. • Does not minimize the potential damage from high-velocity flood flow and wave action. • May not be aesthetically pleasing.

Drainage Improvements:

Methods of drainage improvements include overflow channels, channel straightening, restrictive crossing replacements, and runoff storage. Modifying the channel attempts to provide a greater carrying capacity for moving floodwaters away from areas where damage occurs. Whenever drainage improvements are considered as a flood mitigation measure, the effects upstream and downstream from the proposed improvements need to be considered.

Table 2.27 – Advantages and Disadvantages of Drainage Improvements

Advantages	Disadvantages
• Could increase channel carrying capacity through overflow channels, channel straightening, crossing replacements, or runoff volume storage. • Minor projects may be fundable under FEMA mitigation grant programs.	• May help one area but create new problems upstream or downstream. • Channel straightening increases the capacity to accumulate and carry sediment. • May require property owner cooperation and right-of-way acquisition.

Elevation:

Elevating a structure to prevent floodwaters from reaching living is an effective and one of the most common mitigation methods. Elevation may also apply to roadways and walkways. The goal of the elevation process is to raise the lowest floor of a structure or roadway/walkway bed to or above the required level of protection.

Table 2.28 – Advantages and Disadvantages of Drainage Improvements

Advantages	Disadvantages
• Elevating to or above the BFE allows a substantially damaged or substantially improved house to be brought into compliance. • Often reduces flood insurance premiums. • Reduces or eliminates road closures due to overtopping. • May be fundable under FEMA mitigation grant programs.	• Cost may be prohibitive. • The appearance of the structure and access to it may be adversely affected. • May require property owner cooperation and right-of-way acquisition. • May require road or walkway closures during construction.

Flood Insurance:

Insurance differs from other property protection activities in that it does not mitigate or prevent damage caused by a flood. However, flood insurance does help the owner repair and rebuild their property after a flood, and it can enable the owner to afford incorporating other property protection measures in that process. Insurance offers the advantage of protecting the property, as long as the policy is in force, without requiring human intervention for the measure to work.

Table 2.29 – Advantages and Disadvantages for Flood Insurance

Advantages	Disadvantages
• Provides protection outside of what is covered by a homeowners' insurance policy. • Can help to find other property protection measures after a flood through increased cost of compliance (ICC) coverage. • Provides protection for both structure and contents. • Can be purchased anywhere in a community, including outside of a flood zone.	• Cost may be prohibitive. • Policyholders may have trouble understanding policy and filing claims. • Does not prevent or mitigate damage.

STEP 5. Conclusion and Recommendations

Conclusion

Based on the field and survey and collection of data, the analysis of existing studies and reports, and the evaluation of various structural and non-structural mitigation measures, City of Panama City proposes that the following projects should be implemented for the Repetitive Loss Areas. Table 2.30 examines current mitigation actions in this area.

Table 2.30 – Current Mitigation Actions

	Current Mitigation Actions
1	Property owners send in documented flooding and identified concerns in returned questionnaires from this analysis.
2	Property owners are aware of flooding causes. Some property owners have undertaken specific flood-proofing measures at their own expenses.
3	The City has undertaken comprehensive drainage project to improve drainage throughout the City
4	The City has undertaken to restore and improve acres of ravaged wetlands, resulting in reduction of floodwater elevations and enhance the environment of Panama City.

Prioritization

In order to facilitate the implementation of the following recommended mitigation actions, a prioritization schedule is included based on the following:

- Cost
- Funding Availability
- Staff Resources
- Willingness of Property Owner to Participate
- Additional Planning Requirements

An overall priority rating of high, medium, or low is assigned to each recommendation action, using the following scale:

- High Priority (should be completed within 2 years).
- Medium Priority (should be completed within 2 to 4 years).
- Low Priority (should be completed within 4 to 5 years).

Recommendations

The City will encourage property owners to use flood-proofing measures to help protect lower levels of their property. The City will also increase its public education efforts to increase awareness of flood preparedness and flood protection measures including moving valuable items to above the flood elevation and permanently elevating vulnerable HVAC units. At the same time, the City will work with property owners, citizens, the county, state and other regional and federal agencies to implement capital improvement projects which will help to eliminate flooding in the repetitive loss areas.

Mitigation Action 1: Flood Insurance Outreach

Property owners should obtain and keep a flood insurance policy on their structures (building and contents coverage). The City will target all properties in the repetitive loss areas on an annual basis to remind them of the advantages of maintaining flood insurance. The City will also educate the public on Increased Cost of Compliance (ICC) coverage through this and other outreach efforts.

Responsibility

The City's Floodplain Manager will provide the most relevant up-to-date flood insurance information to all property owners within the repetitive loss areas through annual outreach and other efforts.

Funding

The cost will be paid for from the City's operating budget

Priority: High

Mitigation Action 2: Property Protection Outreach

Property owners should not store personal property in basements and crawl spaces since personal property is not covered by a flood insurance policy without contents coverage. The City will increase its outreach efforts on an annual basis for the identified repetitive loss areas to include this specific information in the outreach materials.

Responsibility

The City's Floodplain Manager will provide the most relevant up-to-date information to all property owners within the repetitive loss areas.

Funding

The cost will be paid for from the City's operating budget

Priority: High

Mitigation Action 3: Flood-proofing

When appropriate, property owners should consider flood-proofing measures such as flood gates or shields, flood walls, hydraulic pumps, and elevating electrical services including electrical outlets.

Responsibility

The City's Floodplain Manager will promote effective flood protection measures and provide advice and assistance to property owners who may wish to implement such measures in an on-going program.

Funding

The cost of protection measures will be paid for by individual property owners. Advice and assistance will require staff time.

Priority: Medium

Mitigation Action 4: Acquisition and Demolition

Continue acquisition and/or demolition mitigation of high-risk flood-prone properties. The highest priorities are properties at the greatest flood risk and where drainage improvements will not provide an adequate level of protection.

Responsibility

The City's Floodplain Manager and the property owners will work together for those properties that wish to mitigate by acquisition or demolition.

Funding

The acquisition and demolition can be paid for using FEMA's Hazard Mitigation Grant Program (HMGP), Flood Mitigation funding (FMA), or Pre-disaster Mitigation funding (PDM). Staff time to develop the list of target properties will require funds from the City's operating budget.

Priority: Low

Mitigation Action 5: Drainage-Related CIP Projects

Prioritize CIP projects to focus on drainage improvement projects in the watersheds which contain the identified repetitive loss areas.

Responsibility

The City's Floodplain Manager will work with the City's Engineering Department to prioritize repetitive loos areas for drainage improvements.

Funding

The cost will be paid for by FEMA's Hazard Mitigation Grant Program and/or the City's CIP budget.

Priority: High

Mitigation 6: Flood Protection Assistance

Encourage property owners to elevate inside and outside mechanical equipment above the BFE, install flood resistant materials in crawl spaces, and consider additional flood protection measures.

Responsibility

The City's Floodplain Manager will promote effective flood protection measures and provide advice and assistance to property owners who may wish to implement such measures in an ongoing program.

Funding

The cost of flood protection measures will be paid for by individual property owners. Advice and assistance will require staff time.

Priority: Medium

Mitigation Action 7: Natural Drainage Maintenance

Blockages in natural channels can cause upstream drainage issues and flooding. If natural floodplains and drainage features are blocked or filled they lose their ability to manage floodwaters, forcing those waters elsewhere where they may cause property damage.

Responsibility

The City's Public Works Department will make these changes and continue inspecting and managing to the drainage maintenance system.

Funding

The cost will be paid for by the City's general funds

Priority: Medium

SECTION 3 References

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