Onion Creek Flood Risk Reduction Project

Project Overview

February 9, 2018

The Watershed Protection Department recommends buyouts as a flood risk reduction project in the Onion Creek neighborhood. The proposed buyouts will reduce the risks associated with flooding. We presented information about the proposed buyouts at a public meeting at the Onion Creek Club on November 14, 2017.

We have received many questions about the project before, during, and after the public meeting. We have done our best to respond to questions individually as they come up. We thought it might be helpful to compile some of the information in one place for everyone to see. The following information is grouped into broad categories such as *Options to Reduce Flood Risk, the Buyout Process and Impact to Property Values*. After reading this, if you find that you have additional questions, please send them to us and we'll do our best to answer your question. *(Please note: A list of questions was submitted by the Onion Creek Homeowners Association board after the November public meeting. We believe that we have answered all those questions in the information below. Those questions, as we received them, are available here.)*

Watershed Characteristics & Upstream Development

Flooding along Onion Creek is severe due to the size and characteristics of the watershed.

Watershed Size: At 344 square miles, Onion is the largest watershed in Austin (besides the Colorado River). Because the creek catches rainfall from such a large area, flood flows are expected to be deep.

Location: The lower or downstream portion of Onion Creek runs through southeast Austin. This means that the creek is at its fullest when it reaches subdivisions in Austin. It has picked up all the water and rainfall from the upstream sections of the watershed. The Onion Creek Neighborhood is in the upstream portion of Onion Creek that is within the City of Austin, which is which is why we often refer to it as Upper Onion Creek.

Topography & Soils: The topography within the watershed and the variability of the soil types also contribute to the size of the floodplain. In particular, the rolling terrain and areas with a thin soil layer on top of rock make the creek more vulnerable to flooding.

Buildings within the floodplain: Much of the development along the lower portion of Onion Creek occurred before the current floodplain regulations. This development also occurred before we understood the breadth and depth of the watershed's floodplain. As a result, there are a lot of houses and buildings in the footprint of the floodplain, making it more likely that

flooding will cause damage and threaten lives. These houses and buildings would not be allowed under today's floodplain regulations or with today's understanding of flood risk.

Upstream development: In the case of Onion Creek, upstream development does not contribute that much to flooding. Other cities and counties within the Onion Creek watershed have development regulations similar to the City of Austin's. There are significant limits on the amount of impervious cover that is allowed in the upper parts of the watershed. We conducted a "sensitivity analysis" as part of the floodplain and flood mitigation study. This analysis looked at the impact of current and future development on the width and depth of the floodplain. The results show that development in the watershed has very little to no impact on the flood risk in the lower portions of the watershed. This is mainly due to the large size of the Onion Creek watershed.

Options to Reduce Flood Risk

There are always three main types of solutions for a project to reduce the risk of flooding: hydrologic, hydraulic, and non-structural. Our project team started with these same three types.

- Hydrologic: The hydrology of a creek system helps us understand how much rain falls and the time it takes for that rainfall to reach the creek. The timing of the creek system can be modified. If all the rainfall doesn't reach the creek at once, we can reduce the peak flow, or the largest expected amount of flow, in the creek, which means that flood heights could be reduced. This means fewer homes and roadways are flooded. This is most often achieved through the use of detention ponds that capture flow, hold it for a certain period of time, and then release it back into the creek after the peak flows have already passed. Generally, hydrologic solutions work best for flooding that is occurring in the upstream portions of a watershed.
- Hydraulics: Hydraulics looks at how deep the water is expected to be. The goal of projects that affect the hydraulics is to create additional capacity within the creek. With more capacity, more water can flow through the creek system without spilling over the creek banks. More capacity can be achieved by making creeks wider and deeper. We can also change the materials that creeks are made of to make them slicker and allow water to flow more quickly. Another option is to construct levees or floodwalls that physically prevent water from going over the banks where it would naturally flow.
- Non-structural: Non-structural methods of reducing flood risk most often involve removing the buildings and roadways that are at risk of flooding. Afterwards, the watershed and creek system can function naturally.

The initial set of flood risk reduction solutions for Onion Creek included several different detention ponds, channel modifications, floodwalls, vegetation clearing strategies, as well as buyouts. We analyzed each of these options through hydrologic and hydraulic computer modeling. The modeling showed that some of the options were not effective at all at reducing flood risk. These were dropped. Some of the options appeared to have more potential. We presented these to the community at a public meeting in November 2016. Afterwards, we

performed more detailed modeling and put together conceptual designs for the options that were more effective at reducing flood risk. In addition, we evaluated many different combinations of individual solutions and chose the most effective combinations for further study. This more detailed analysis resulted in the six options that were considered to be the final alternatives:

1) regional detention at the Centex Quarry site
2) channel clearing and extreme vegetation control throughout the project area
3) buyouts
4) a combination of the Centex Quarry detention pond and channel modifications in the project area
5) a floodwall in the Pinehurst area combined with channel modifications in the Wild Dunes area
6) a floodwall in the Pinehurst area combined with buyouts in the Wild Dunes area

How effective a project is at reducing flood risks and the cost of a project are important. However, other factors are also important to us and the community, e.g., how long the project would take, feedback from the community, and impact to the environment. We developed an evaluation matrix to weigh all these different factors. Each of the final alternatives was scored using this matrix. A detailed discussion of each of the matrix elements can be found on page 43 of the final report. We shared these matrix components, along with preliminary details of each of the final six alternatives, with the neighborhood at a May 2017 public meeting.

Evaluation of Options

Centex West Pond – Our study evaluated several detention pond options, and the Centex West pond showed the most promise. However, the pond was not as effective at reducing the flood risk compared to other options. In addition, the pond would take at least 10 years to build, once funded. The pond would also not be a reliable option for reducing flood risk in the Onion Creek Neighborhood. It is possible that after constructing the pond, a significant amount of flood risk still exists within the neighborhood. The effectiveness of a detention pond is too dependent on where the rainfall occurs. If rainfall occurs downstream of a pond, then the pond is unable to capture enough water to reduce flooding. In a watershed the size of Onion, it's distinctly possible for rainfall located downstream of the pond to cause significant flooding. In addition, even if the rain fell entirely upstream of the pond, the Centex West Pond would not capture enough water to reduce flood risks to the desired level. Some houses in the project area would continue to be at risk of flooding.

All of the ponds evaluated were outside the City of Austin's jurisdiction, and all would be state-regulated dams. Because of this, they would require significant coordination with private property owners and local governments, including buying drainage easements to construct the pond. This coordination, along with the permitting requirements, would result in a project that could not be implemented for at least 10 years once funded.

Channel Clearing – Large scale clearing of vegetation from the channel would not result in a significant reduction of flood levels. Many houses in the project area would still be at risk of flooding. Channel clearing is also extremely detrimental to the health of the creek. It increases the likelihood of erosion and is not sustainable. Austin's current Land Development Code does not allow private developers to clear channels in this manner. Clearing vegetation from the channel would also require frequent and on-going efforts to maintain the vegetation at an unnaturally low and sparse level. The scale of the debris and vegetation that is reported to the City as needing to be cleared is very small in the context of the amount of debris and vegetation removal that was analyzed with this option.

Floodwall with Channel Modifications or Buyouts – While a floodwall could be designed to reduce flood risk in the neighborhood, there are significant drawbacks to this option, including: a significant amount of buyouts; an interior drainage system that introduces flood risk to the neighborhood; and the timing to complete a project of this scale. The floodwall would take several years to design and construct, and we would need to purchase about 48 homes in the Pinehurst area to build it. Unlike voluntary buyouts, we would have to purchase these houses under the threat of eminent domain. In addition, the floodwall would create flood risk on the neighborhood side of the wall. The design would include a substantial drainage system to manage this risk. This system would allow rain that falls on the neighborhood to drain to the creek. However, it is always possible for rainfall to exceed the capacity of a drainage system. For example, the rain on October 31, 2015, dropped approximately 12 inches of rain on the neighborhood itself. This amount of rain exceeds the design capacity of the typical storm drain system and poses a flood risk to homes on the neighborhood side of floodwall. Another factor to consider is that the floodwall would primarily provide a reduction in flood risk to the houses in the Pinehurst area, not to the houses in the Wild Dunes area. In order to reduce the risk along Wild Dunes with this option, either channel modifications would need to be implemented or buyouts. As explained in the previous section, channel modifications are not recommended as an effective way of reducing flood risk in this area. With buyouts in the Wild Dunes areas, a total of 71 properties would be acquired with the flood wall, more than 50% of all the houses as risk of flooding.

Reasons for Recommending Buyouts as a Flood Risk Reduction Strategy

One of goals of the Watershed Protection Department is to protect people and property from the impacts of flooding. In some situations, the most effective and reliable option is to remove the people and property from flood-prone areas rather than trying to control or redirect the natural floodplain.

The buyouts offer an opportunity for all owners of homes at risk of interior flooding to relocate to an area safer from flooding. Buyouts offer the certainty of eliminated flood risk. Once the house is removed, there will no longer be any risk of flooding to a home or its residents in that location regardless of the intensity of the flood. No other option can guarantee these same results. Unlike a construction project, buyouts can be implemented in a phased approach as funding is available. The Watershed Protection Department has the ability to access enough

funding immediately to begin working on the buyouts of approximately 50 houses within the next several months. WPD needs Council's approval to use the funding for this project. Staff is working on the request to be placed on a City Council agenda.

The City of Austin has successfully implemented more than a thousand flood-related buyouts since 1999. The City of Austin is not alone in the use of buyouts to effectively reduce the risk of flooding in the community. The Harris County Flood Control District has implemented more than 3,000 buyouts and the City of Tulsa has implemented more than 900.

Properties Included in Buyout Project

We have identified 138 houses in the Pinehurst and Wild Dunes area as being at risk of interior flooding during a 100-year flood event. We identified the houses based on the updated floodplain study. We compared how high the water is predicted to rise compared to the elevation of the first floor of the house. We recommend including houses in the buyout whose first floors are lower than the predicted 100-year flood depth. We identified the houses using the best available survey data for floor elevations. We will update the recommendation if newer, better survey data becomes available.

In order to avoid the isolation of properties, we included the possible acquisition of an additional nine properties. We don't think these nine houses will flood in a 100-year flood. However, they are surrounded by houses that are at risk. They would be eligible for buyouts if all of their adjacent neighbors accept buyouts.

WPD recommends prioritizing buyouts based on the expected depth of flooding inside the house during a 100-year flood. Those with higher expected flood depths are prioritized over lower expected depths. City staff recommends that these buyouts be implemented on an optional basis unless directed otherwise by City Council.

The identification of the houses at risk of flooding is based on the newly updated floodplain study, not the results of specific floods. Floodplain studies model and map theoretical storms. The updated floodplain study used data from the 2013 and 2015 floods and generally corresponds to those storms. However, the flood risk assessed by the study is not intended to exactly mirror either of those floods. As a result, there may be some houses that weren't impacted by either of the previous two floods that are considered to be at risk, and vice versa.

We have identified funding to implement approximately buyouts in the neighborhood (in addition to the 10 that are currently underway). These next 50 houses are referred to as Phase 1, and can most likely be initiated in batches of about 10 properties per month beginning in 2018 (pending Council approval of the use of funding). All other houses in the project area with 100-year flood risk will be in Phase 2. Phase 2 can be implemented (pending Council approval) over the next several years as project funding becomes available.

Buyout Process

The buyouts will be implemented in partnership with the City's Office of Real Estate Services and a private real estate consultant hired by the City. This consultant will be the primary point of contact for property owners if the buyout process is initiated. While the specifics of the buyout process and timeline will vary slightly from property to property based on the needs and desires of individual owners, the basic process is the same for everyone:

- **Initial meetings:** The consultant will conduct an initial 1-on-1 meeting with each property owner at the beginning of the buyout process for a specific property to explain the details and expected timeline for the process.
- **Appraisal:** The consultant will schedule a time for an independent appraiser to visit the property to inspect it and determine its fair market value. The fair market value is considered to be what a willing buyer would pay a willing seller for the property; it is ***not*** the appraisal value as determined by the Travis County Appraisal District (TCAD). Appointments for appraisal inspections are set for a time and date that is acceptable and convenient for the property owner. The owner is encouraged to accompany the appraiser during the inspection to answer any questions the appraiser may have and to ensure that all features of the house are captured in the inspection.
- **Offer:** The appraiser will determine the fair market value and issue a report to City staff. Another appraiser will review the report for accuracy. Once the appraisal report is reviewed and approved, the City will make an offer to the property owner for the fair market value of the property. Property owners will receive a copy of the appraisal report to review along with their offer. If an owner disagrees with the determination of fair market value, the owner can counter the City's offer by providing information they feel substantiates a higher fair market value.
- **Relocation eligibility:** At the same time that the offer is presented to the owner, the City will present a relocation eligibility letter to the owner describing the relocation assistance they are eligible for. The relocation eligibility assistance is additional money to ensure that property owners or tenants are better able to successfully relocate to a property that is equivalent in basic functionality. In some cases, no relocation money is needed for equivalent housing. The City also offers limited advisory services to assist homeowners and tenants with finding a replacement home. Owners are free to work with their own real estate agent to find and negotiate an offer on a replacement home. More information will be provided at the initial meeting about relocation assistance.
- **Closing:** The City will work with a property owner to set a closing date that is convenient for them. The City requires that the property be vacant on the day of the closing. In many cases, property owners choose to schedule the closing for the house that they're selling to the City and their new home on the same day.
- **Post-Closing:** Once acquired, the City will test for asbestos and lead inside the house. For health and safety reasons, we will abate and properly dispose of any asbestos or lead containing materials. Afterwards, a contractor will demolish the homes on the property, remove the foundation, and remove any sidewalks or driveways out to the limits of the street right-of-way. Utility connections will be terminated and capped and the lots will be regraded and revegetated.

Property Owners Who Don't Wish to Participate

We hope that everyone will accept our assistance to relocate to a house that is safer from the threats of flooding. However, property owners may choose not to sell. In these cases, we encourage the residents to make an evacuation and recovery plan for possible future flooding. The property owner might need a flood insurance policy, if required by their mortgage. Questions about flood insurance rates and impacts of repeated flood damages should be directed to the owner's flood insurance agent.

If the property has a substantial damage designation, the property owner will be required to bring the property into compliance with current floodplain regulations or request a variance from City Council. Agreeing to the acquisition offer is one way to bring the property into compliance with the floodplain regulations. To discuss other options, please call the floodplain hotline at the number at the bottom of this page.

Impacts on Property Values

The City has successfully completed over a thousand flood-related buyouts. The majority of these have been within the last five years. During that time, we have not seen a negative impact to property values either in or near the buyout areas. Instead, our appraisals have shown that property values in and near buyout projects have continued to rise just like the rest of the residential property values in the City. It has been our experience with other large buyout projects that the long-term implementation of a buyout project does not negatively impact property values or the ability of property owners to sell their property to other willing buyers.

Impacts on Neighborhood Character

There is no question that the implementation of buyouts in the Pinehurst and Wild Dunes area will forever change the way the neighborhood looks. But the buyouts also help provide for a safer, healthier, and more resilient community since future flood damages will be greatly reduced. The City is committed to working with the neighborhood to develop options and plans for how the acquired land could best be utilized in the future. These options may include nature trails, community gardens, wildflower meadows, and open space for the neighborhood to enjoy.

In the short-term, the City will add the acquired properties to our vegetation control schedule and the properties will be mowed up to six times per year during the growing season.

Next Steps

This project needs City Council approval to use the funding before it can move forward. Until we have that approval, we will not be able to finalize the prioritization or implementation timeline. Staff is working on the request to be placed on a City Council agenda. We will update the website identified at the bottom of this page once the Council date is set.