

Red Berry Drive Stormwater Drainage Improvements Study Summary

City of Wilmington Capital Improvement Project

Study to assess the existing drainage system and determine what improvements can be made to Red Berry Dr.

Wilmington, NC
December 9, 2021

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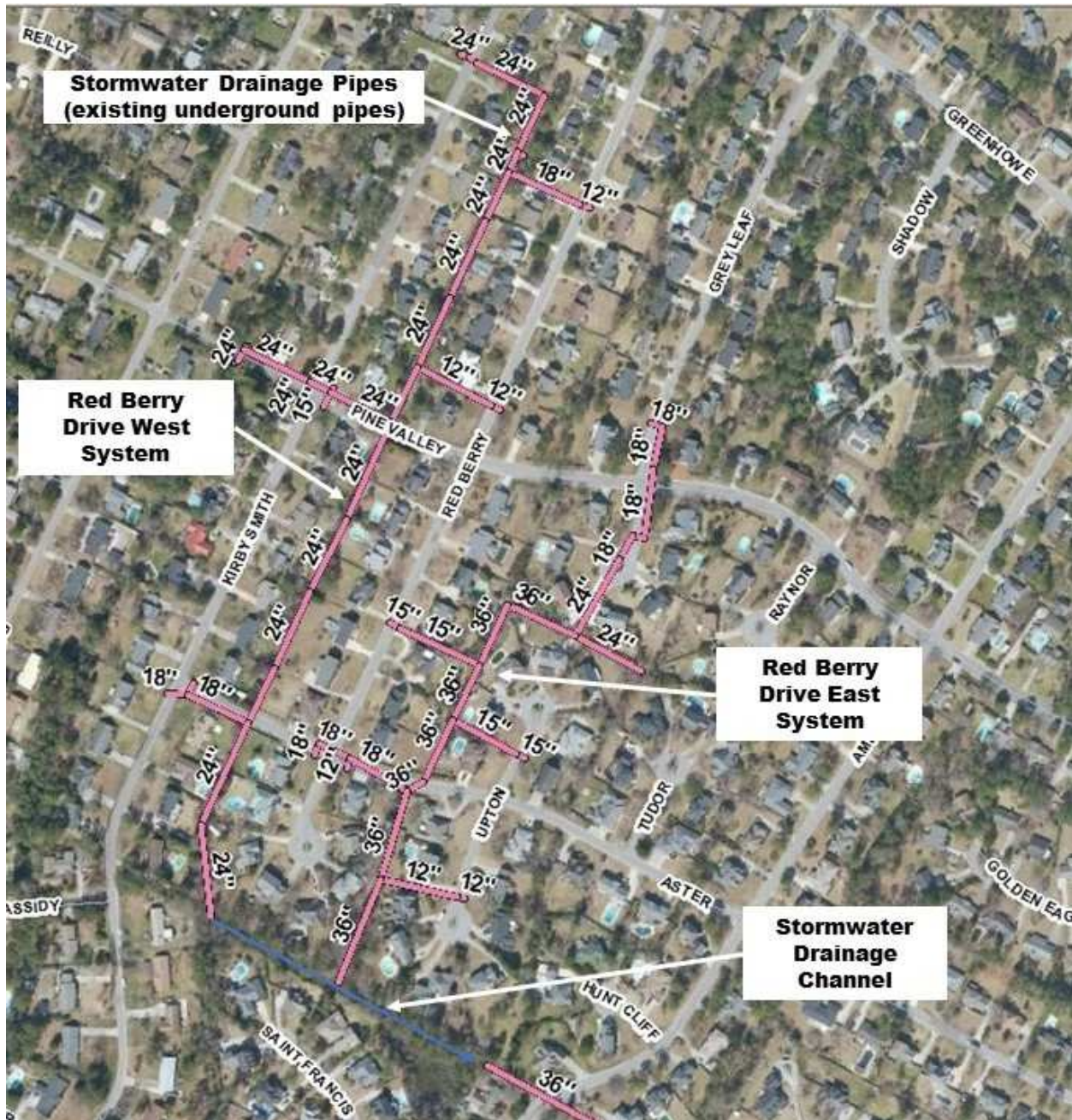
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Purpose of the Project

The purpose of the project is to reduce the flooding on Red Berry Drive and in the backyards between Red Berry Drive and Kirby Smith Drive. When it rains, the water runs off the land into underground pipes that carry water away. These pipes, called **stormwater drainage pipes**, have failed in several locations, contributing to the flooding in the area.

Figure 1. Existing stormwater drainage pipes (underground pipes)



Existing Conditions

A computer model was generated to study the existing conditions of the stormwater infrastructure on Red Berry Drive. This model reproduced the flooding that occurred during a recent rainfall event. On August 13, 2020, five inches (5") of rain fell over a 12-hour period. The City's stormwater infrastructure is typically designed to handle a rain event of seven and a half inches (7.5") of rain over a 24-hour period, which has a 10% chance of occurring each year and is referred to as the 10-year design event.

Figure 2. Photo of flooding

August 13, 2020 – Looking south at intersection of Red Berry Drive and Pine Valley Drive



Figure 3. Computer model flood depths at inlets

August 13, 2020 flooding model shows the depth of water at the storm drain inlets near Red Berry Drive and Pine Valley Drive.

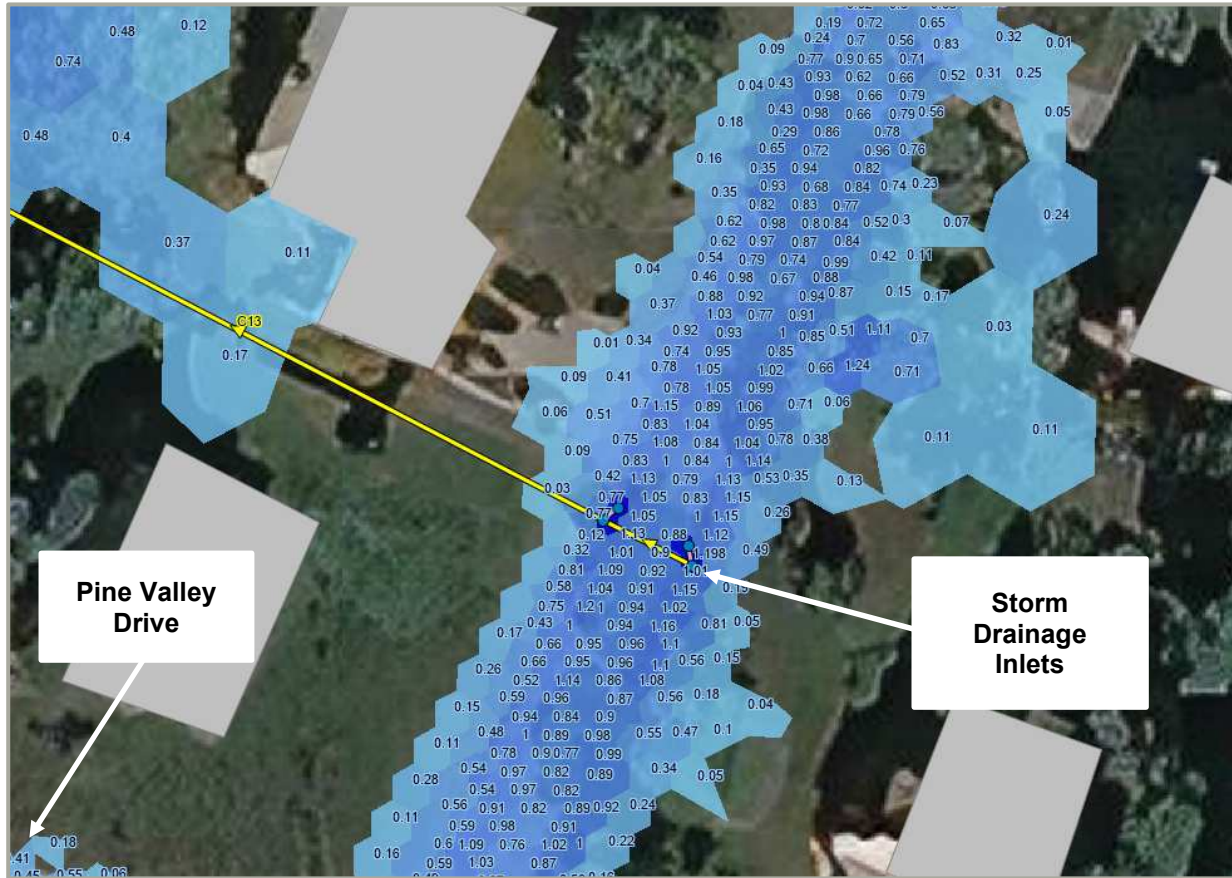


Figure 4. Computer model flood depths at homes

August 13, 2020 flooding model shows the depth of water in the backyards of homes along Red Berry Drive.

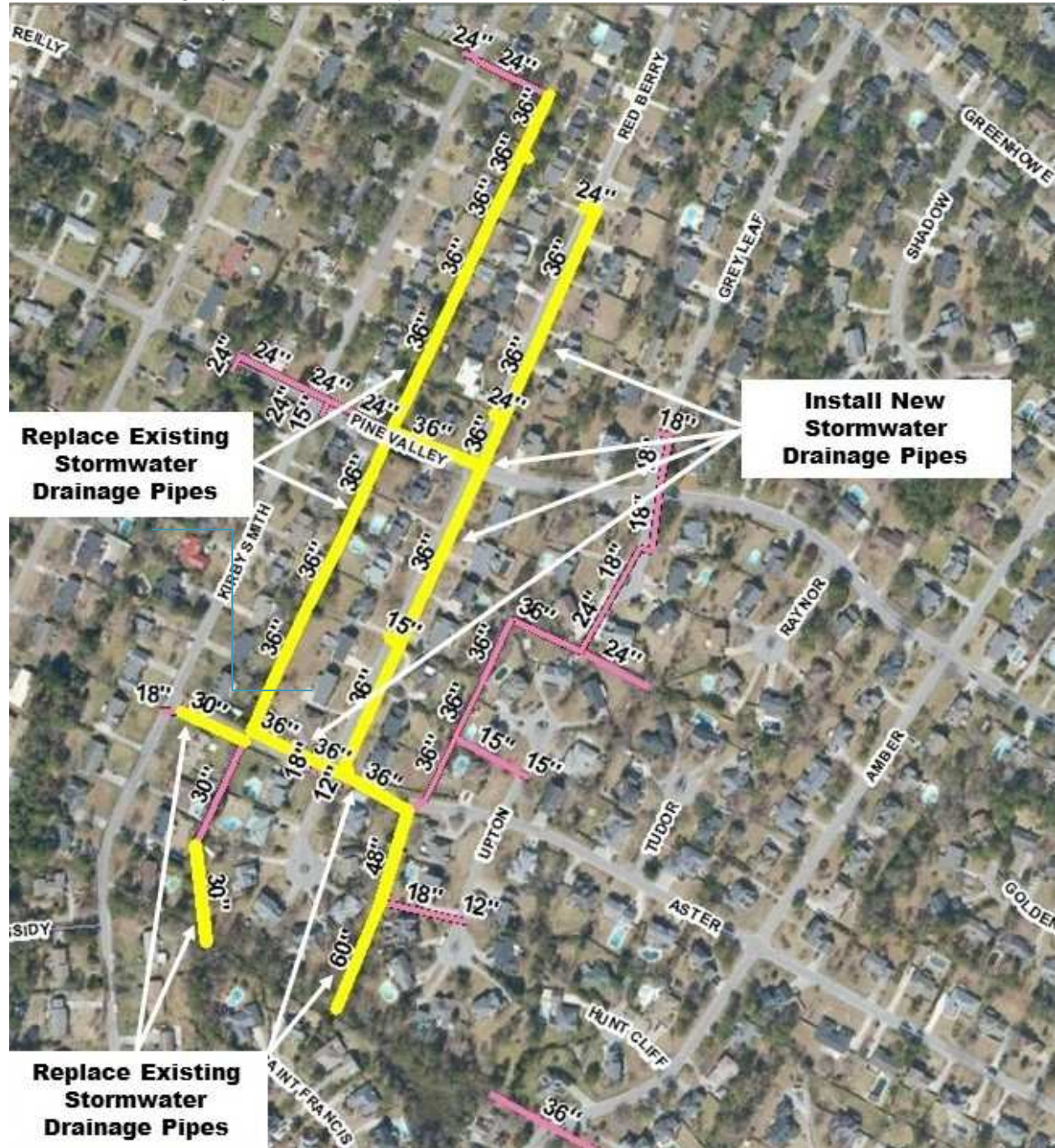


Proposed Improvements

The Red Berry West System between Red Berry Drive and Kirby Smith Drive will be replaced with concrete pipes that are three feet (3') in diameter, and a new stormwater drainage pipes will be constructed down Red Berry Drive.

Figure 5. Proposed improvements to the stormwater drainage system

The locations of proposed improvements (new underground pipes) are shown in yellow. The existing stormwater drainage system is shown in pink.



Improvement Results

The computer model of the proposed improvements shows that flooding would be almost eliminated during the August 13, 2020 rainfall event and the depth and time that Red Berry Drive is flooded is significantly reduced during the City Design Event.

Figure 6. Computer model of August 13, 2021 with proposed improvements

The proposed improvements to the stormwater drainage system under the conditions of the August 13, 2021 event (five inches (5") of rain fell over a 12-hour period).

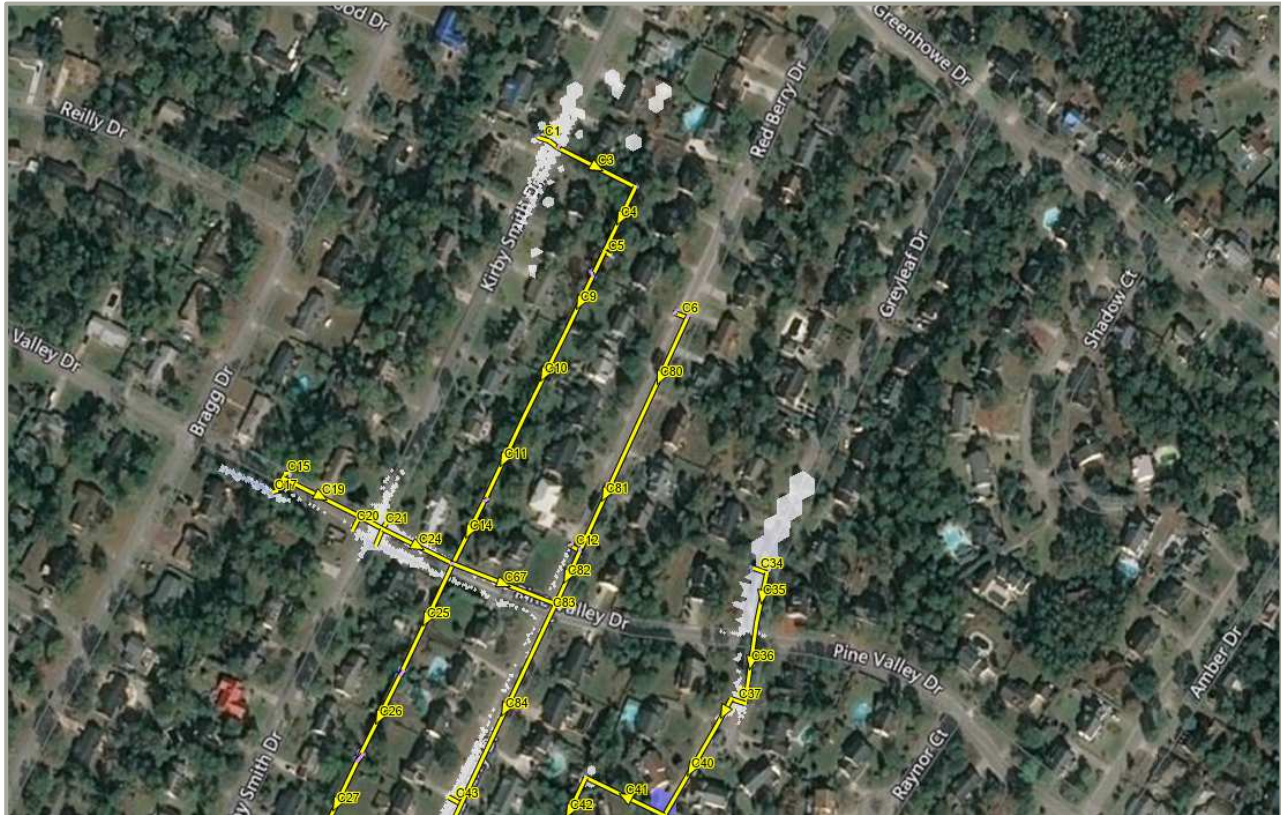


Figure 7. Computer model of City Design Event with proposed improvements

The proposed improvements to the stormwater drainage system under the of the City Design Event (seven and a half inches (7.5") of rain over a 24-hour period).

