Selection Criteria

Last Meeting:

- Revisit structural flooding value relative to 100 point scale
- Eliminate project readiness component
- Revisit cost benefit and include in criteria
- When applying criteria, do not use Harvey flooded homes data - tail water in brays – dual event.
- Use prior events: tax day, memorial day
- There is a need to complete this effort as we want to begin design of additional streets with BBB16 funding

Selection Criteria

Criteria for Street Replacement

1. Structural Flooding – 25 Points Maximum **Increased to 40 points maximum**
   - Structures that have flooded have been assigned a score based on the year the structure was constructed (See attached). The maximum number a points a block can receive from structural flooding is capped at 25 points.

2. Existing Drainage Infrastructure – 10 Points Maximum
   - The criteria compares the existing capacity of a storm sewer system on a block to the 2-year design standard for storm sewers. A maximum of 10 points is accounted for in this section for storm sewers that carry a capacity of 25% of the 2-year design standard.

3. Drainage Study – 10 Points Maximum
   - A maximum of 10 points is assigned to a block if excessive ponding has been identified in the drainage study.

4. Drainage Area – 5 Points Maximum **Increased to 10 points maximum**
   - The criteria assigns points based on the size of the drainage area. More points are added for larger drainage areas. The maximum number of points for the criteria is 10 points for drainage areas greater than 50 acres.

Selection Criteria

Criteria for Street Replacement

5. Open Ditch – 5 Points Maximum
   - Blocks served by open ditch drainage are assigned 5 points and blocks served by underground storm sewer systems are assigned 0 points.

6. Project Readiness – 35 Points Maximum **To be eliminated**
   - A great deal of emphasis has been placed on project readiness. Projects that have a complete design were assigned 35 points, partial designs were assigned 15 points and no design received 0 points.

7. Regional Systems – 5 Points Maximum
   - Regional drainage projects received 5 points and local projects received 0 points.

8. Redevelopment Opportunity – 5 Points Maximum
   - Blocks that exhibit the opportunity for future redevelopment received a score of 5 points. Blocks that do not received 0 points.

9. Benefit Cost Ratio (20 points) **To be added**

Selection Criteria

Criteria #1: Structural Flooding Damage (Maximum 40 Points) **Increased from 25 max**

Criteria #1 assigns a point system based on the age of the home which correlates to the City's criteria in place at the time the finished floor of the structure was constructed. This criteria determines the severity of the flood compared to the finish floor elevation of the structures. Flooded homes constructed to current City standards indicates areas that experience higher levels of flooding therefore receiving the maximum number of points.

Tier I Homes (Pre 1980 Construction) includes the earliest Bellaire homes that were constructed with few guidelines for finished floor elevations and were constructed at very low elevations relative to the surrounding ground elevation. Homes flooded in Tier I receive 16 points each.

Tier II Homes (1984-1994) followed guidelines setting finished floors at or above the street centerline or the top of rim of the nearest sanitary sewer manhole. Homes flooded in Tier II receive 24 points each.

Tier III Homes (1995-2004) followed the NFIP guidelines that required finished floors to be constructed at or above the 100 - year base flood elevation. Homes flooded in Teir III receive 32 points each.

Tier IV Homes (2005-present) followed the City of Bellaire adopted ordinance Section 9-70.18 requiring any residential structure to have the lowest floor (including basement) elevated as a minimum, to one foot above the highest of the base flood elevation shown on the effective FIRM and the flood hazard recovery data map. Homes flooded in Tier IV receive the maximum of 40 points.

Selection Criteria

- **Criteria #4: Drainage Area (Maximum 10 Points)** **Increased from 5**
  Larger Drainage areas are responsible for collecting and conveying large amounts of rain and runoff. 5 points have been assigned to blocks where the storm sewer transports flows from larger areas.

6. Project Readiness – 35 Points Maximum **To be eliminated**
   - A great deal of emphasis has been placed on project readiness. Projects that have a complete design were assigned 35 points, partial designs were assigned 15 points and no design received 0 points.

Selection Criteria

Criteria #8: Benefit Cost Ratio (Maximum 20 Points) **New**

This criteria was established to determine the street blocks that would provide the best cost benefit to reconstruct with improved storm sewer. The formula uses the flooded structures from Criteria #1 and the average repair cost for homes for each tier to determine a total benefit. The total benefit for each block is then divided by the block length in order to determine the benefit per linear foot. This allows shorter blocks to be fairly assessed in terms of benefit. The benefit per linear foot is then divided by the cost of installing a 100-year system per linear foot to reach the final Benefit Cost Ratio for each block.

Selection Criteria

Tier #1 * Repair Cost

Tier #2 * Repair Cost

Tier #3 * Repair Cost

Tier #4 * Repair Cost

Sum of Total Repair Cost = TOTAL BENEFIT

TOTAL BENEFIT/Block Length = BENEFIT/LF

$$\frac{\text{BENEFIT/LF}}{\text{100YR Storm Cost}} = \text{BCR}$$

Tier #1 (Pre 1980): Average Repair Cost = $30,000
Tier #2 (1980-1994): Average Repair Cost = $65,000
Tier #3 (1995-2004): Average Repair Cost = $80,000
Tier #4 (2005-today): Average Repair Cost = $50,000

*Cost data from Harvey permits issued in Bellaire