CITY OF FORT WORTH

Feasible Options Study

Forest Park/Berry Watershed

Stakeholder Meeting
April 28, 2011

Feasible Options Study – Forest Park/Berry St. Area

Topics for Today's Meeting

- Background/Purpose
- Study Objectives & Constraints
- Economics of Forest Park/Berry Flooding
- Transit Oriented Development Coordination
- Detention Options
- Discussion

Information from Survey (ongoing)

- 14 respondents from study area
- Replies range from flooding 6+ times per year to flooding every 2+ years
- 5 replies – no flooding
- “every major rain we have issues”
- Most descriptions – nuisance damage, some vehicle damage
- Range of definitions of flooding

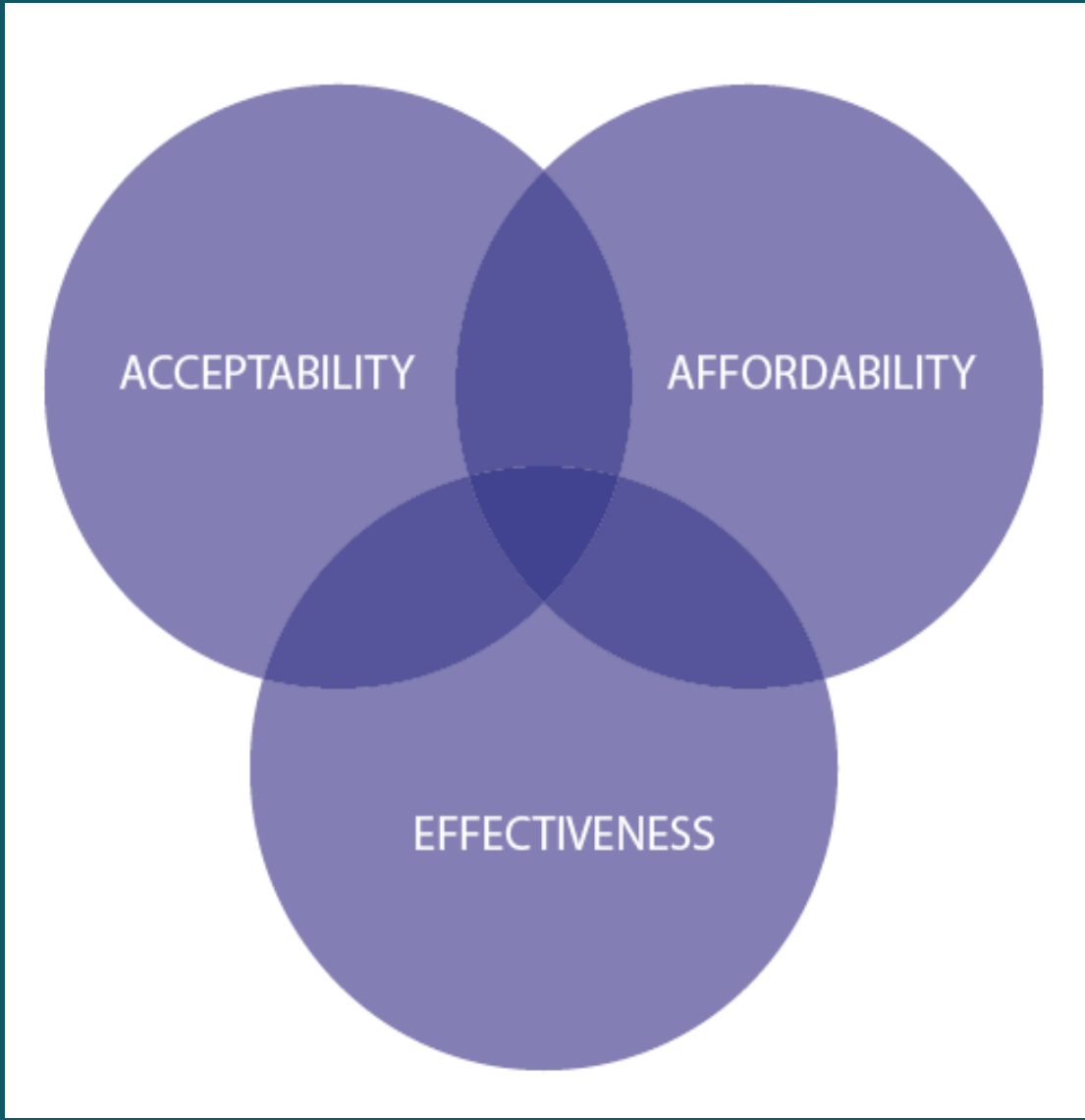
Objectives

- Reduce flood damages
- Increase Public Safety
- Enhance community by providing open/green/park/recreation space
- Provide measures to improve quality of runoff where possible

Constraints

- Project/plans must be implementable with respect to COFW financial resources
- Project must be acceptable by the community, and should not devalue the community
- Project implementation must treat citizens fairly and with respect
- Project must not increase flooding in other locations

The Challenge

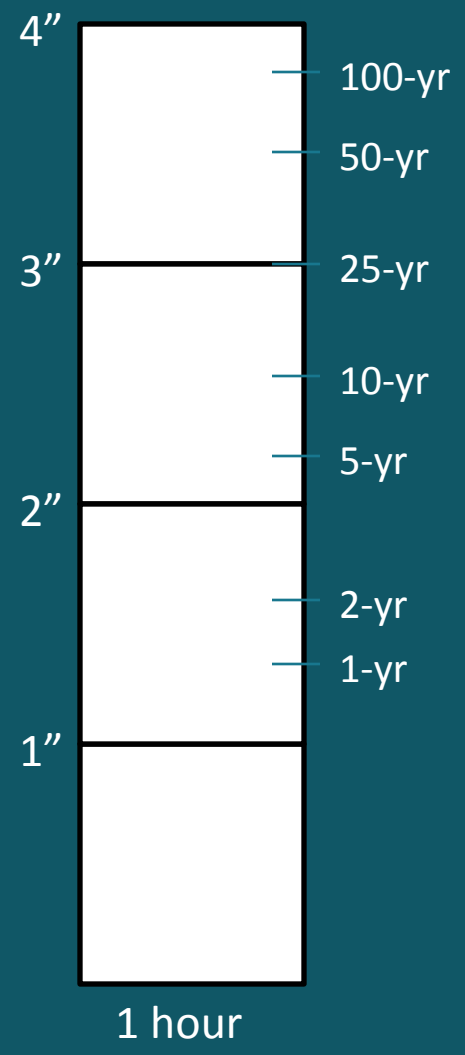


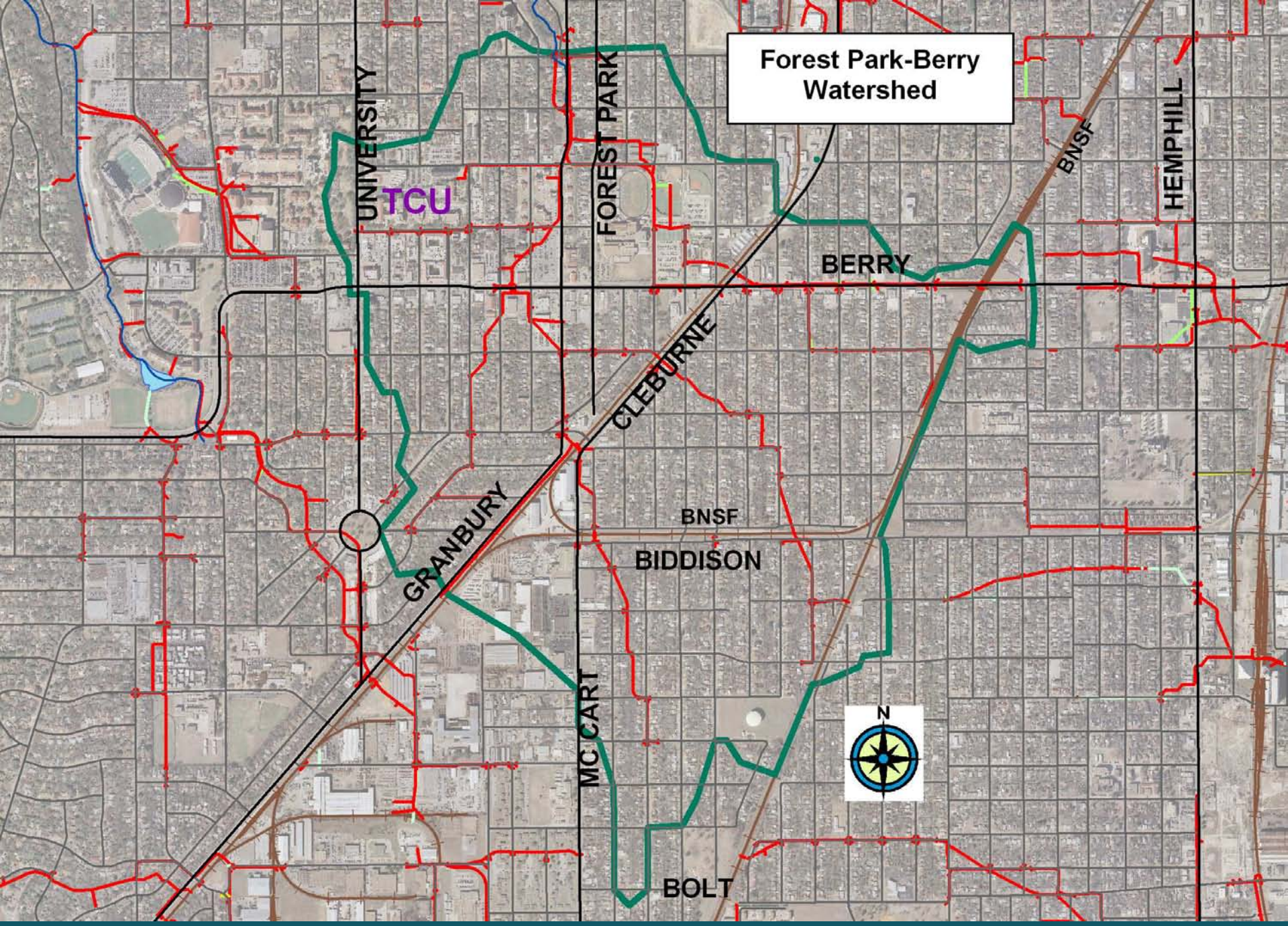
Economics of Flooding in the Watershed

- Understanding the scale and character of the flooding problem
- Important, because it helps us
  - Understand the character of the flooding
  - Match the best solution to the problem
  - Work out difficult and challenging issues

Level of Service: Let's Think in Terms of Inches of Rainfall in One Hour…

- Not all rainfall becomes runoff, as some is lost to absorption, etc…
- The amount loss is smaller in urbanized areas
- And events are usually more than one hour long, and peak rainfalls typically occur after saturation
- BUT THIS PROVIDES AN EFFECTIVE AND CLEAR SIMPLIFICATION

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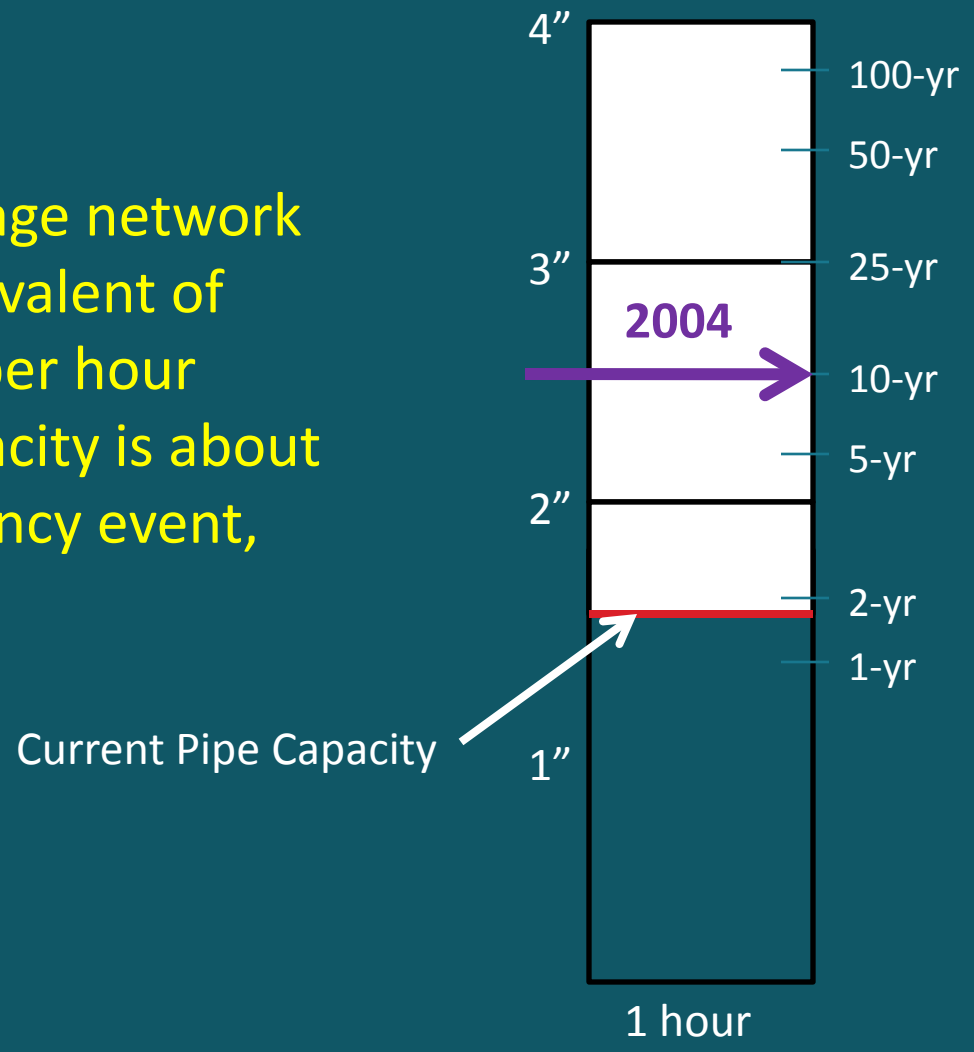
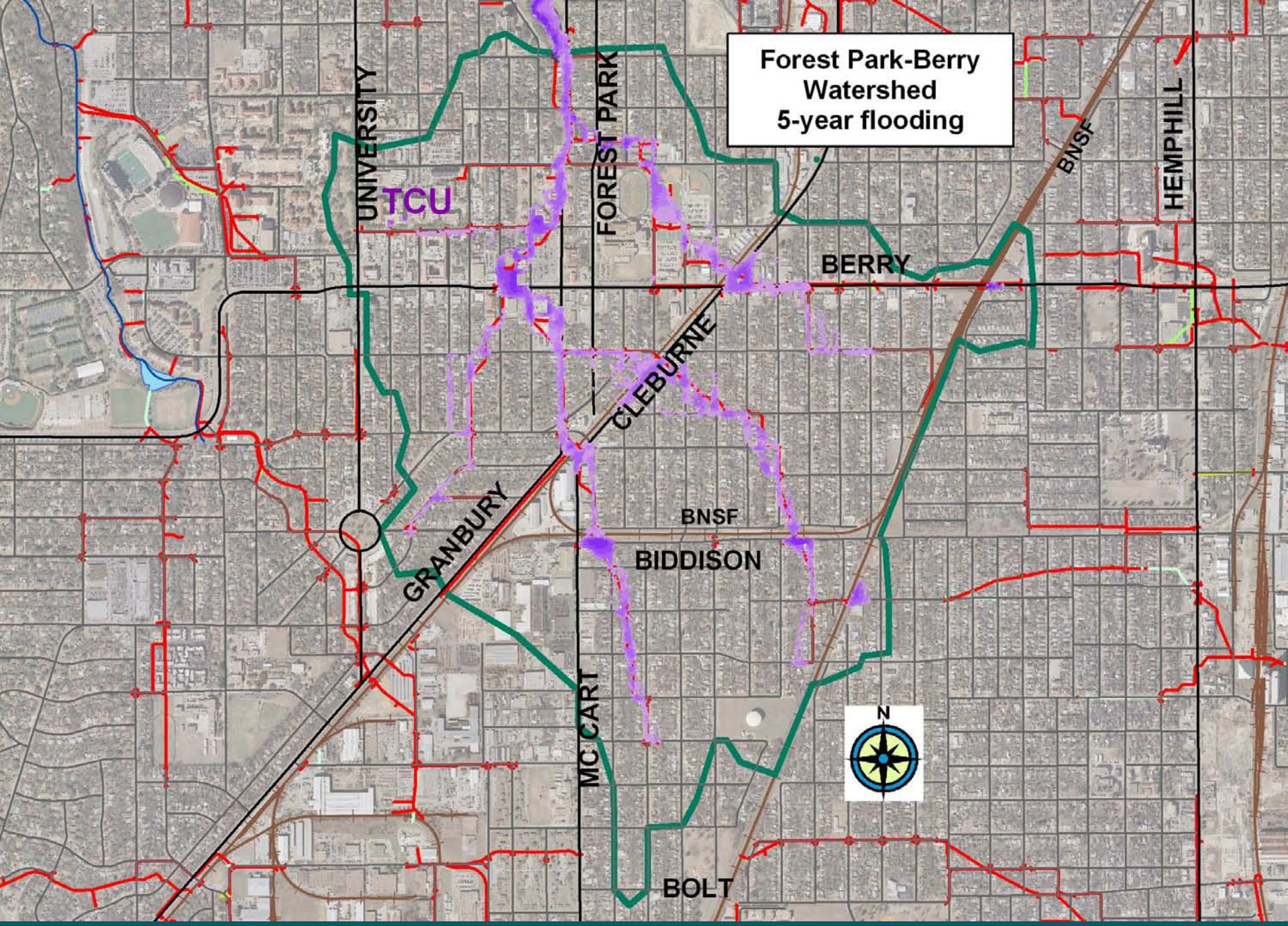
Current System Capacity

- The current drainage network can drain the equivalent of about 1.5 inches per hour
- The resultant capacity is about a two-year frequency event, maybe a little less



What if it rains more than 1.5”?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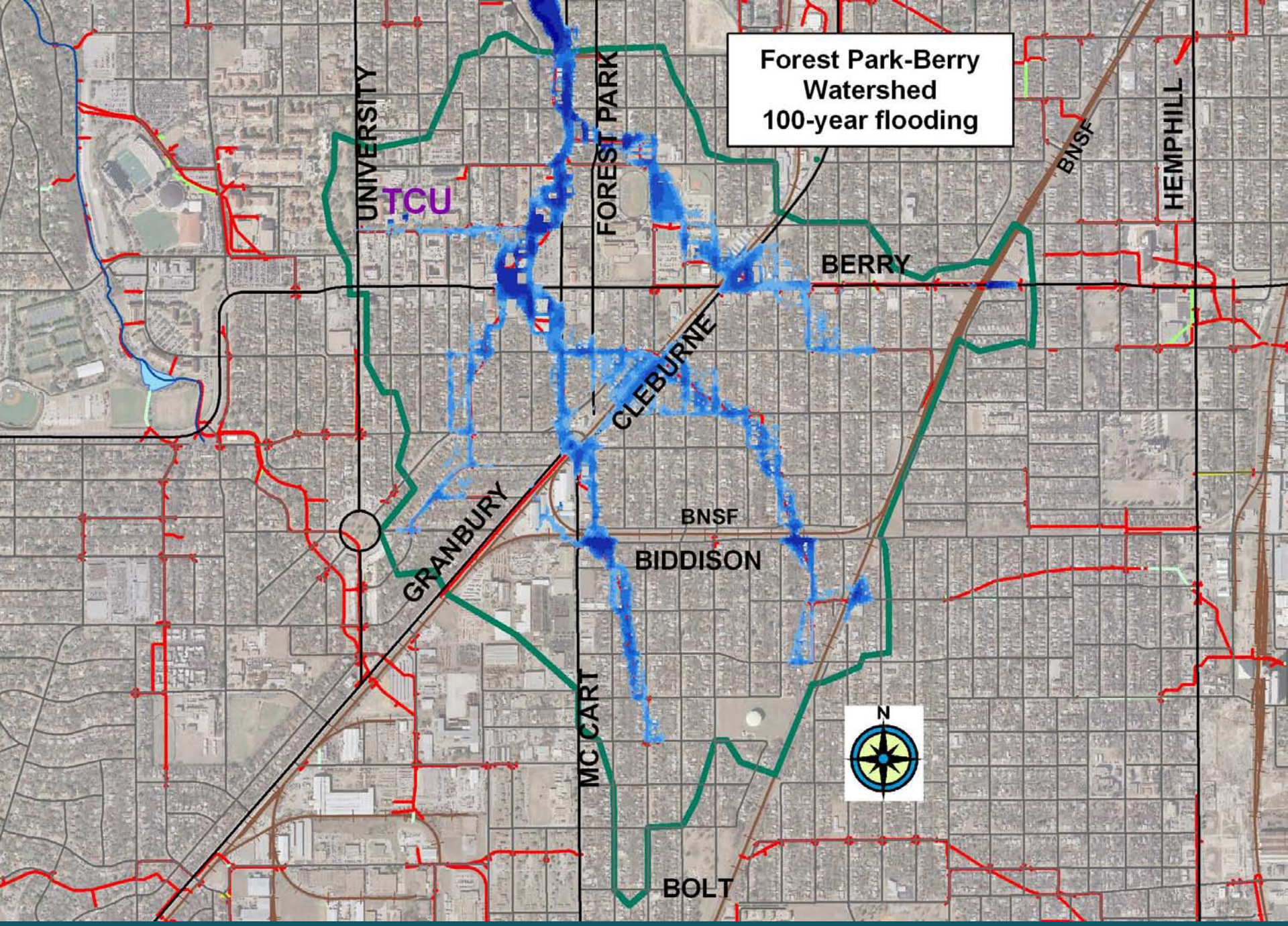
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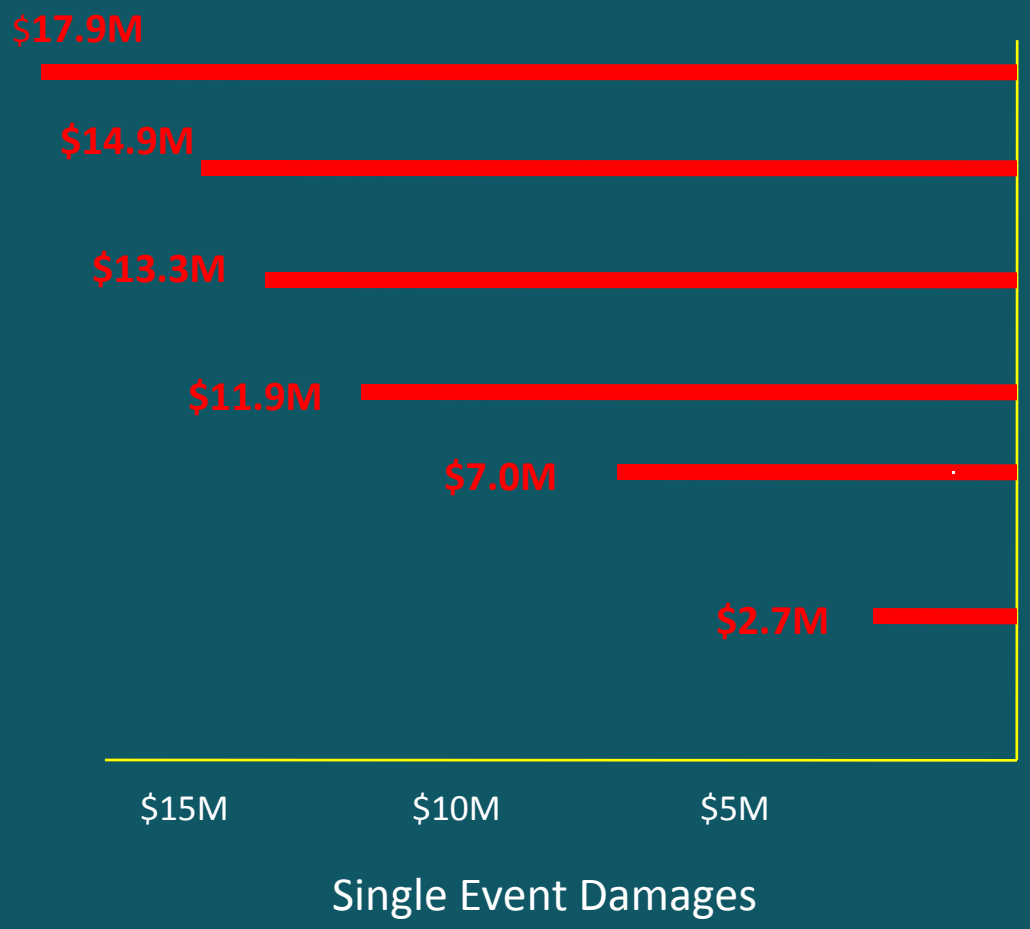
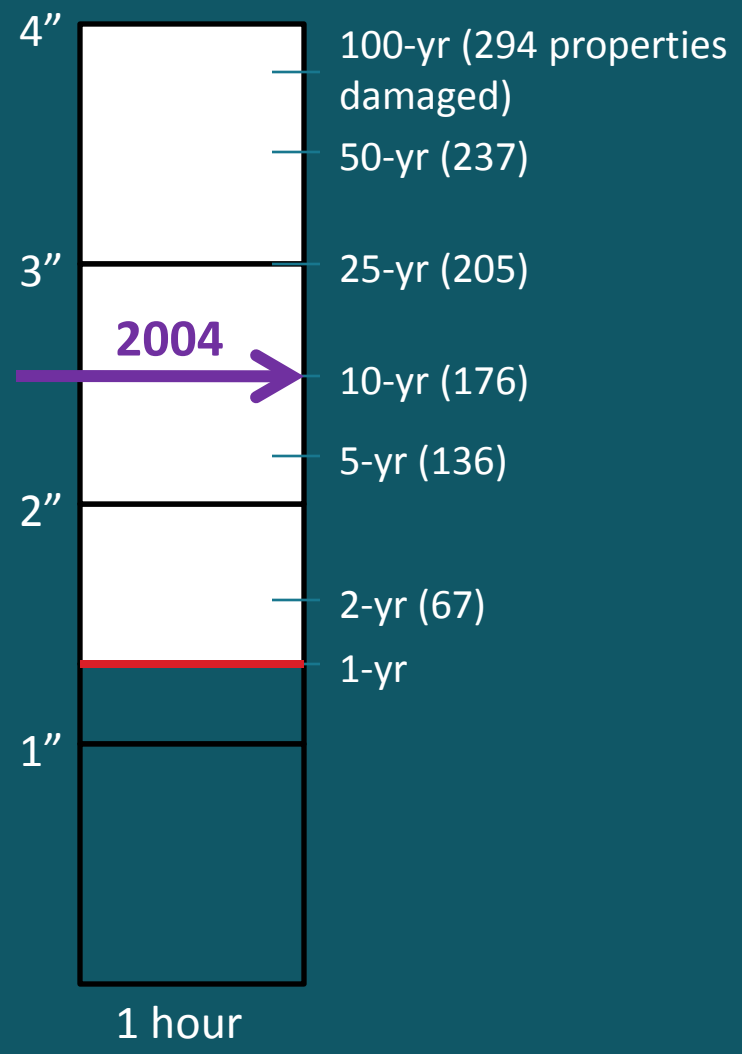
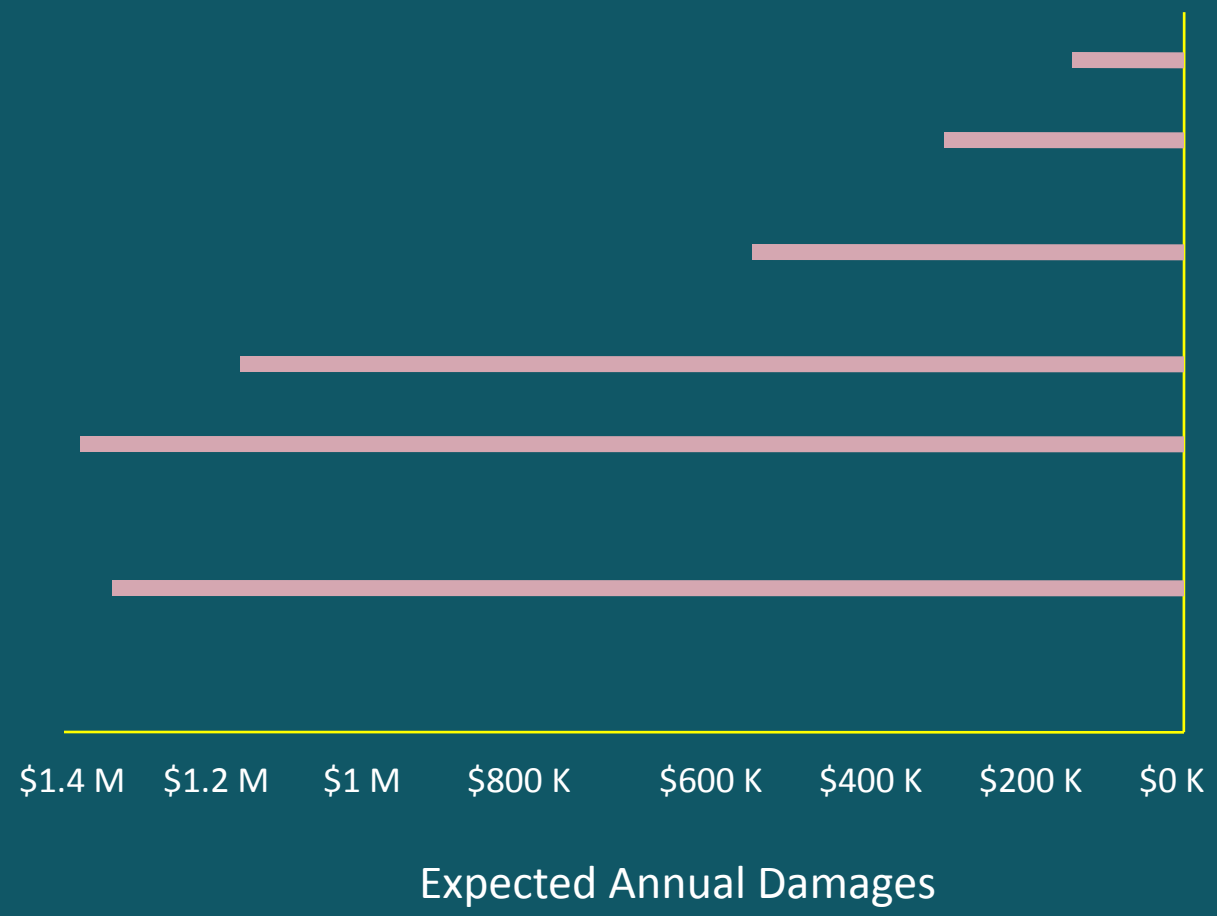
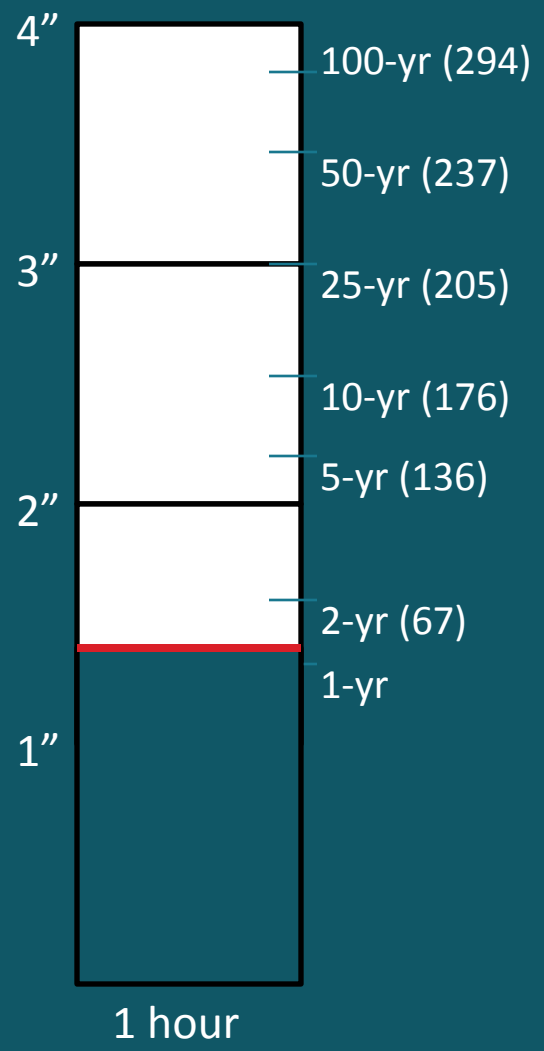




Expected Annual Damage (considers likelihood of event)





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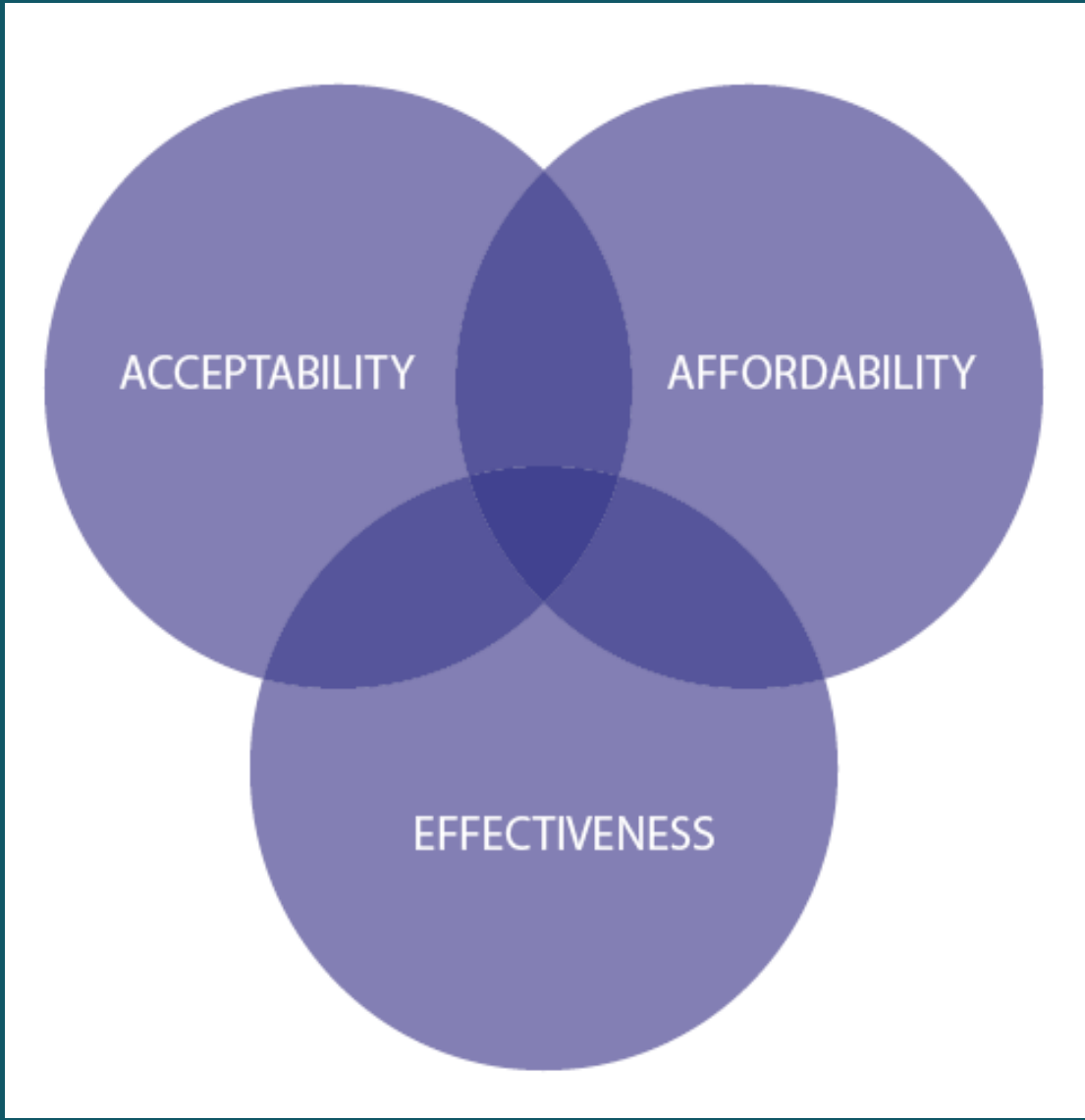
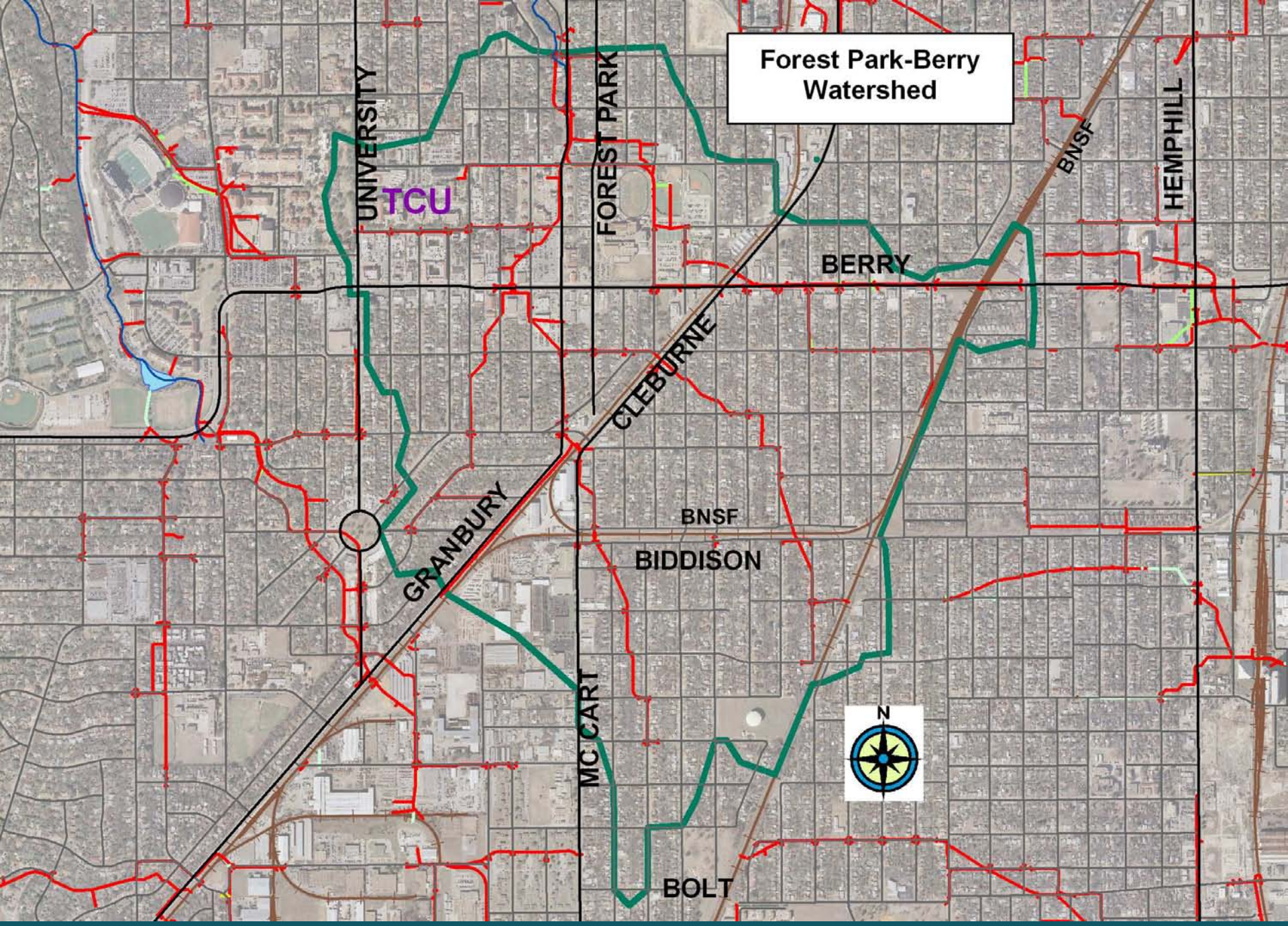


Mitigation Measures Involve One or More of…

- Increase conveyance (pipes, channels)
- Increase storage (detention)
- Increase absorption (Low Impact Development)
- Avoidance (floodproof, acquisition)
- Coping (flood insurance, flood warning)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Ideas/Alternatives from Previous Study

- Conveyance Enlargements (Increase Pipe Capacity)
  - Pipe Plans – High Cost and Impacts to Zoo Creek
  - Tunnel Plans – Even Higher Costs ($43 million)
- Detention
  - Surface Detention (30 acres, about 150 lots,$53 million)
  - Underground Detention ($136 million)
  - How much detention? *Enough to fill Amon Carter stadium twice!*
- All alternatives involved some degree of acquisition of property

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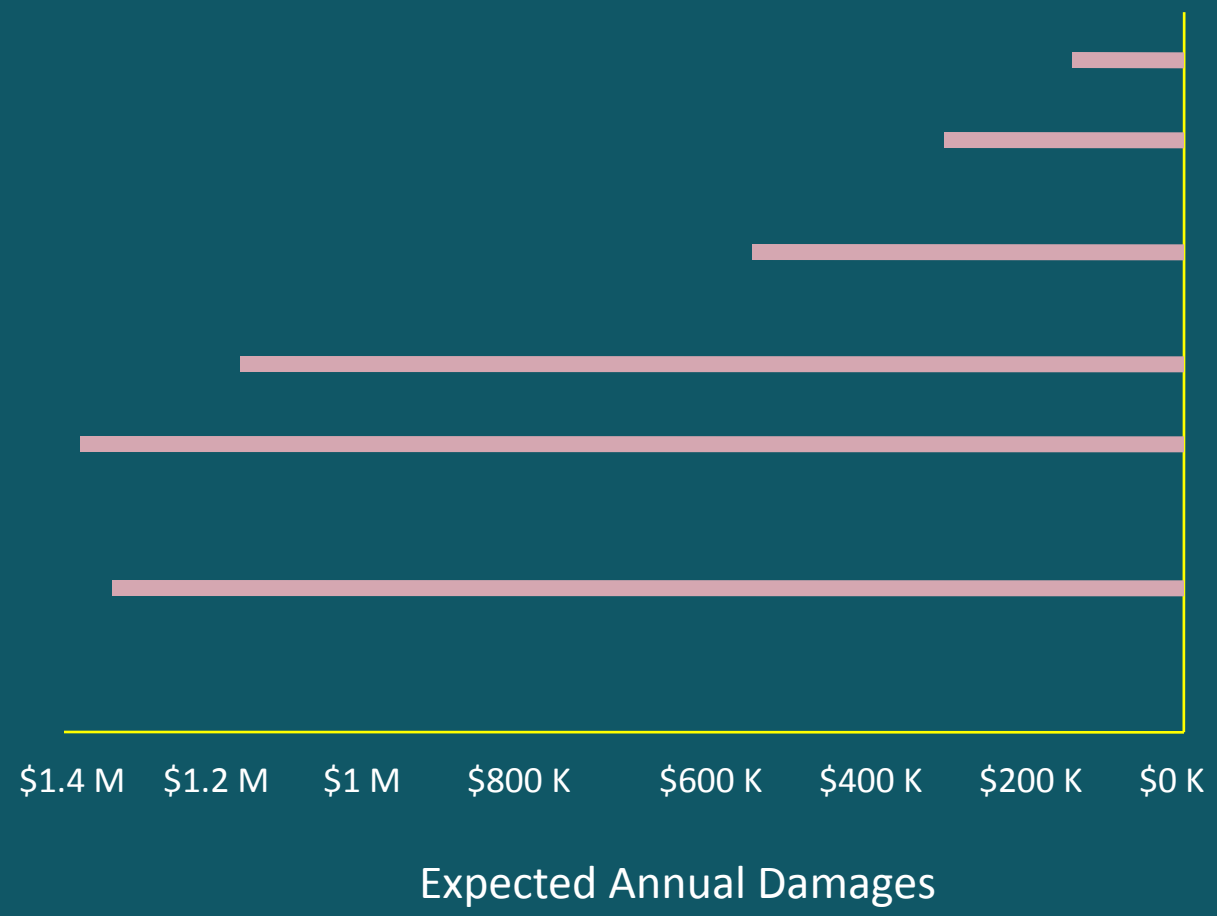
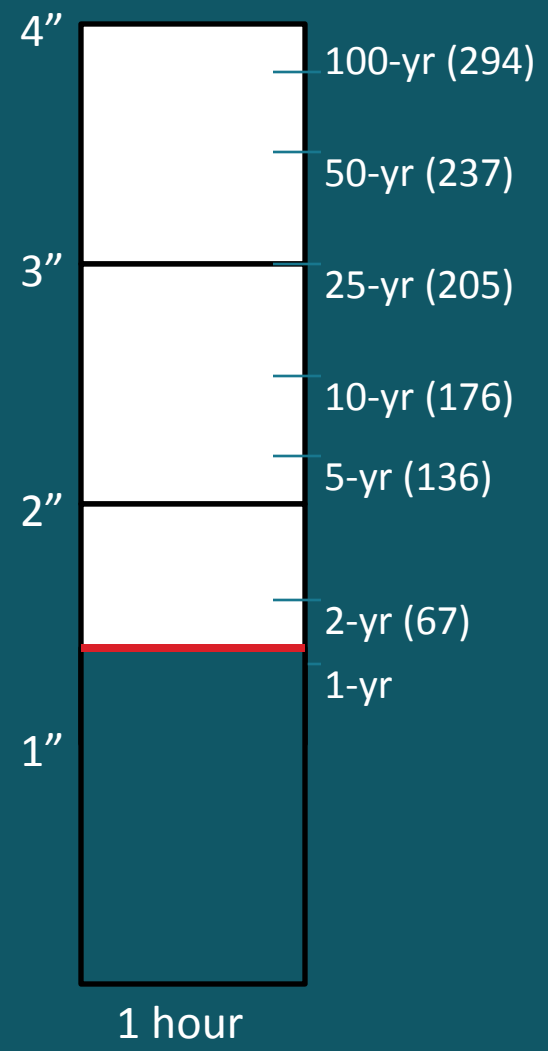


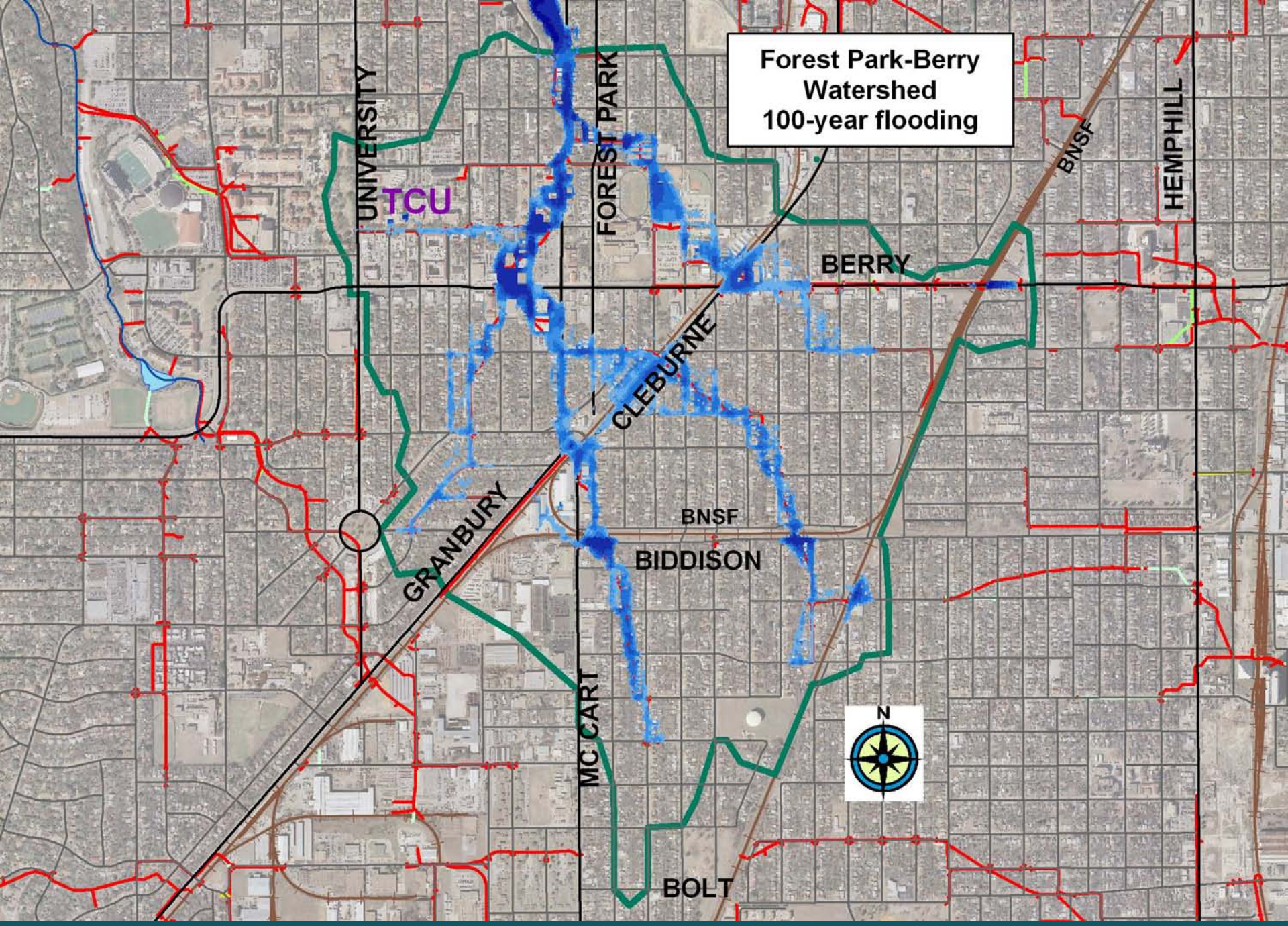


Alternative Detention Concepts

- What if we constructed detention, but less of it?
  - Economics indicate that substantial amount of problem could be addressed with a “smaller” solution
- More passive detention
- Detention via Form Based Code associated with Transit Oriented Development
- Detention in location of current flood prone areas, including Berry Street Commercial Areas

Transit Oriented Development

- Greenway Detention Tied to T Station
  - Implement through zoning ordinances associated with Transit Oriented Development Project (Form Based Code)
  - Opportunities for mixed use corridors that provide stormwater storage along with other uses such as pedestrian trails, bike trails, etc…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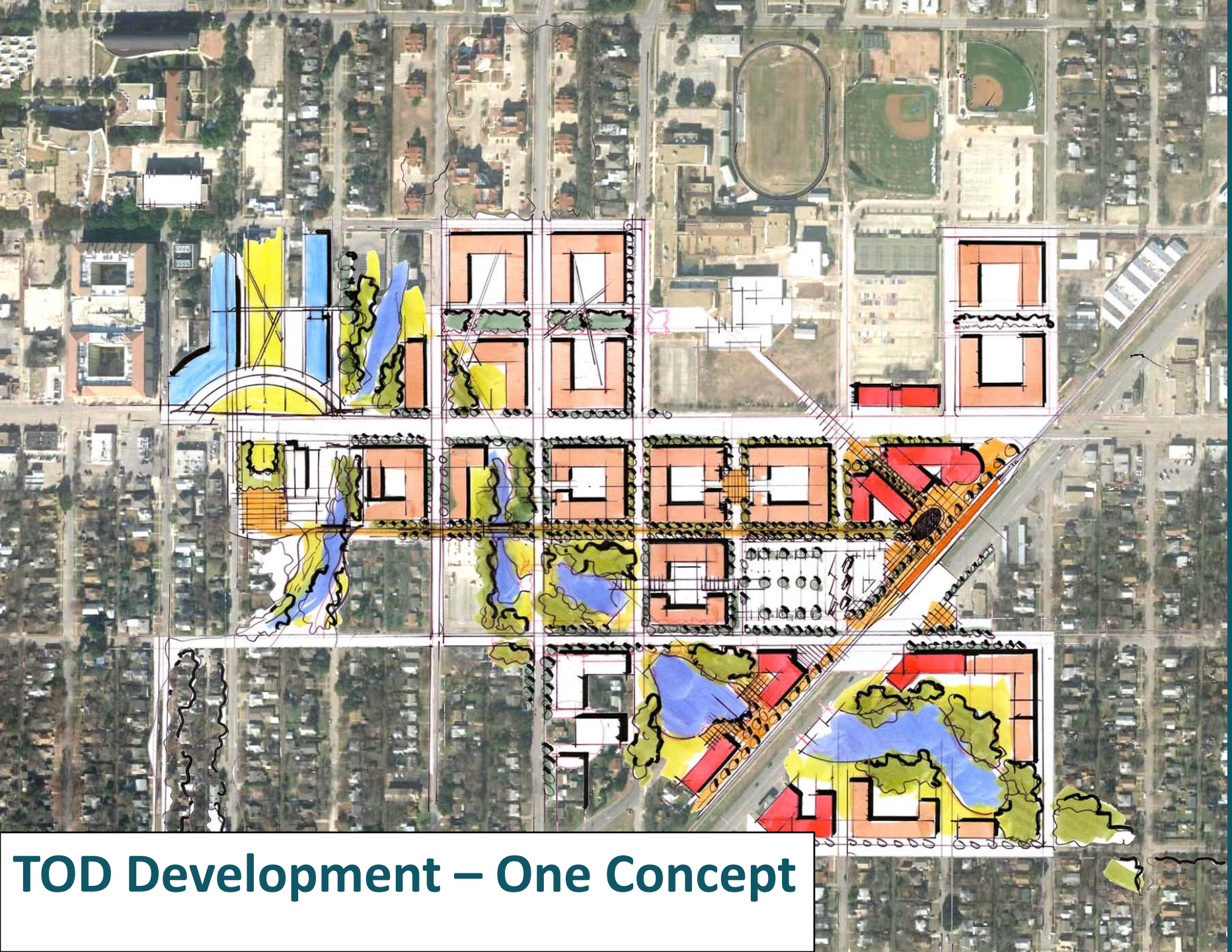
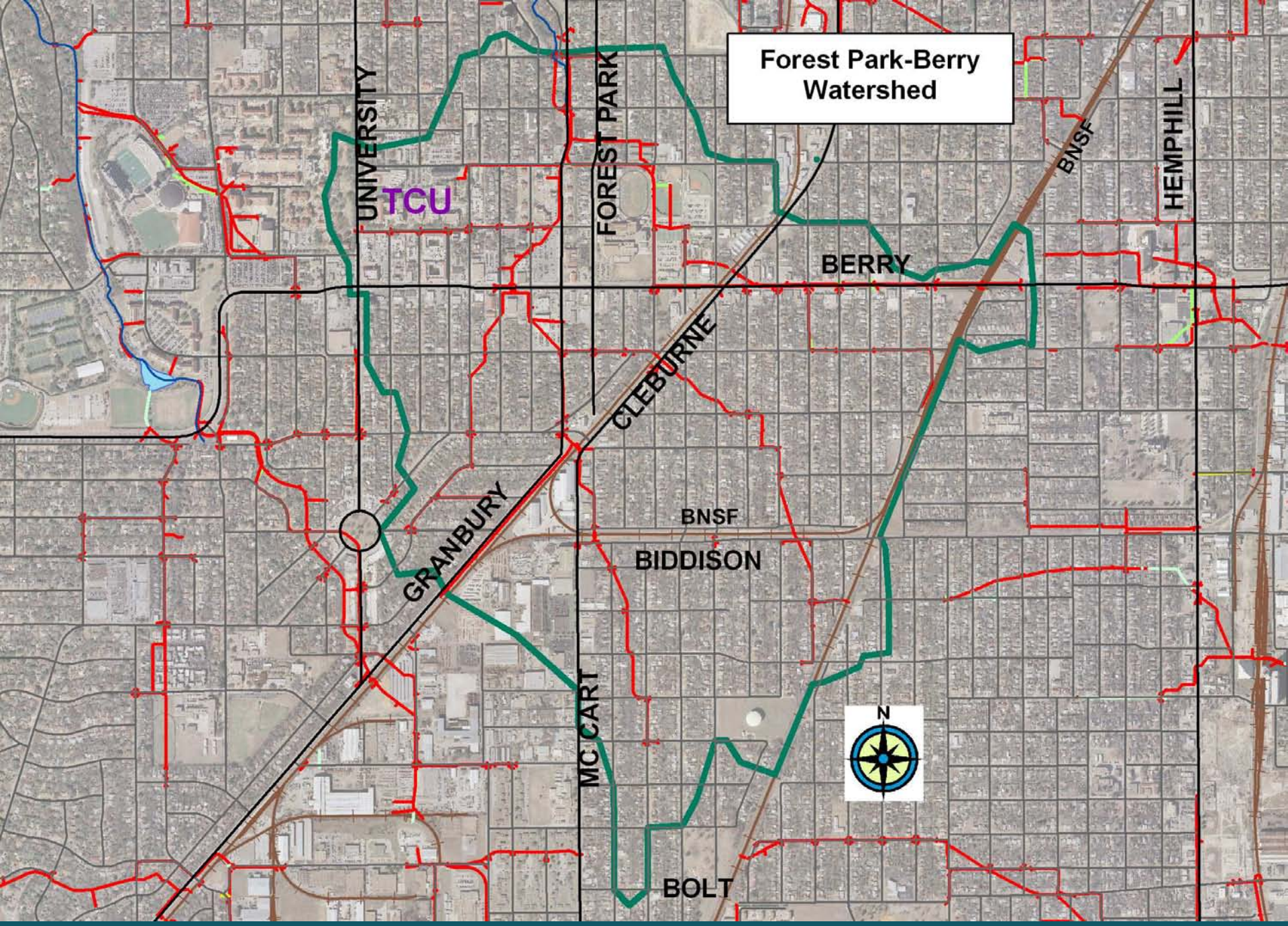


TOD Development – One Concept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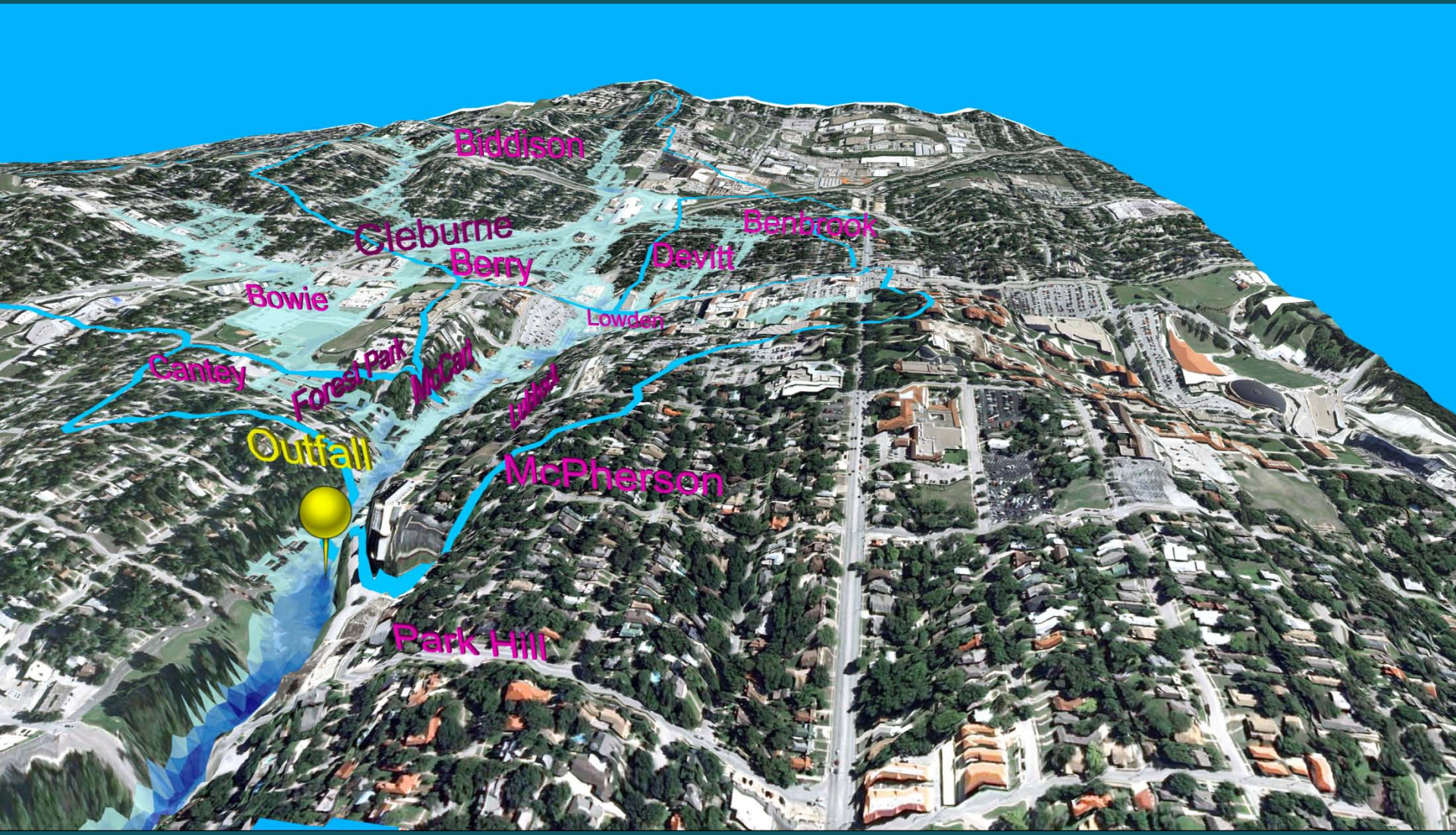
Reduced Detention

- Option – Use detention to Increase Level of Service by 1”
  - Level of Service would approach 2.5”, or about 10-year
  - Would address a substantial portion of the expected damages
- Aggressive detention – maximize use of acquired land
  - 6 acres of detention, about 35 lots
  - Estimated cost = $10.5 million
- Passive Detention – green-space corridors and sculpted basins, duplicating natural drainage features
  - 12 acres of detention, about 70 lots
  - Estimated cost = $17.5 million

Reduced Detention (Continued)

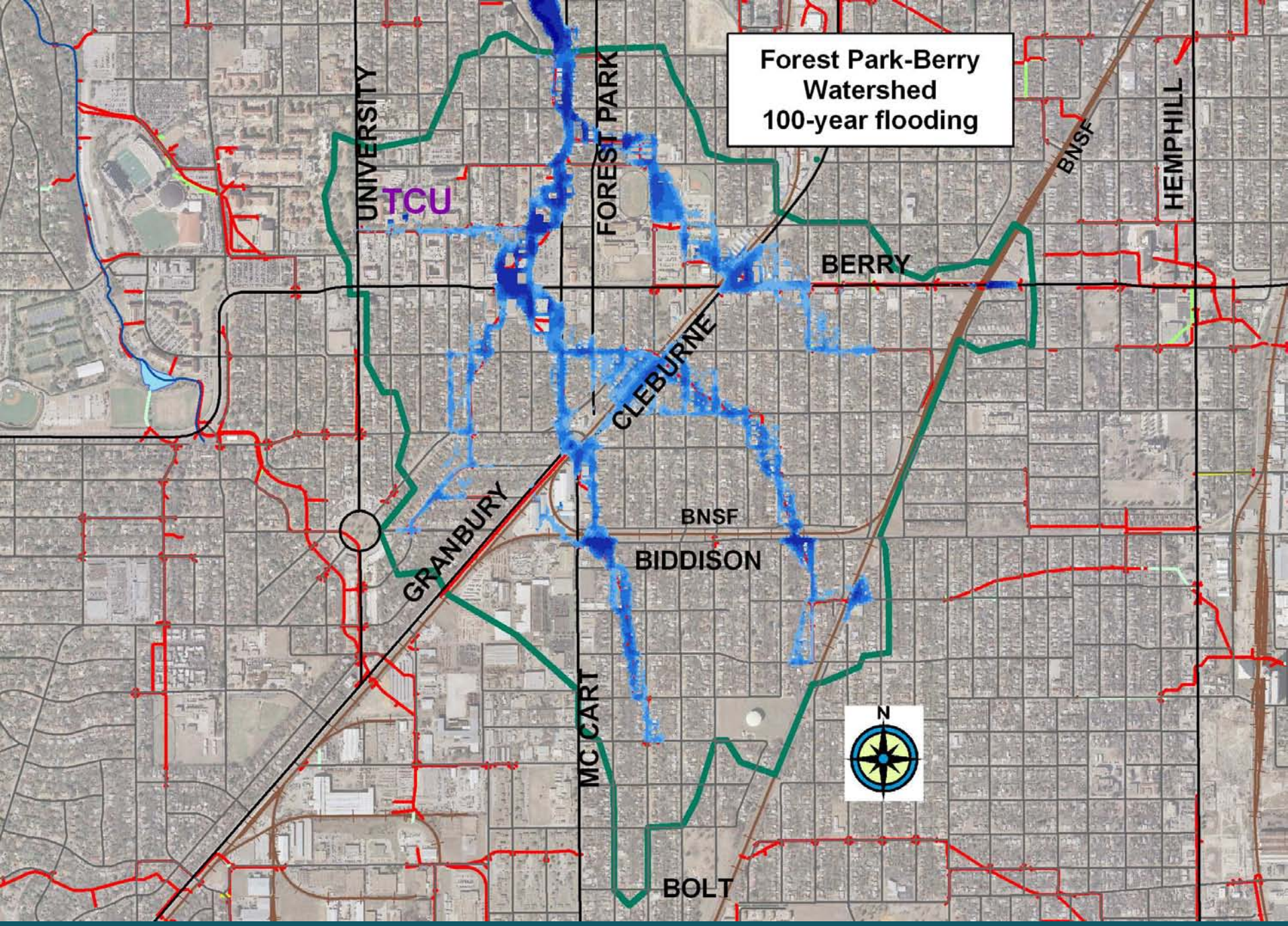
- Basin locations must be distributed to flood prone areas
- Additional Options include smaller or larger versions (i.e. .5” or 1.5”)
- Benefits
  - Could be combined with conveyance features
  - System independent – basins do not depend on other infrastructure
  - Could provide near term relief in a combined alternative

3-D View of Watershed



Berry Street Commercial Detention

- Option – Construct detention in location of natural drainage corridor north of Berry St.
- Would provide immediate relief to a flood prone area
  - By giving water a place to go
  - By acquiring and removing the lowest properties
- Would work well as a near term solution
- Could be combined with other detention and conveyance options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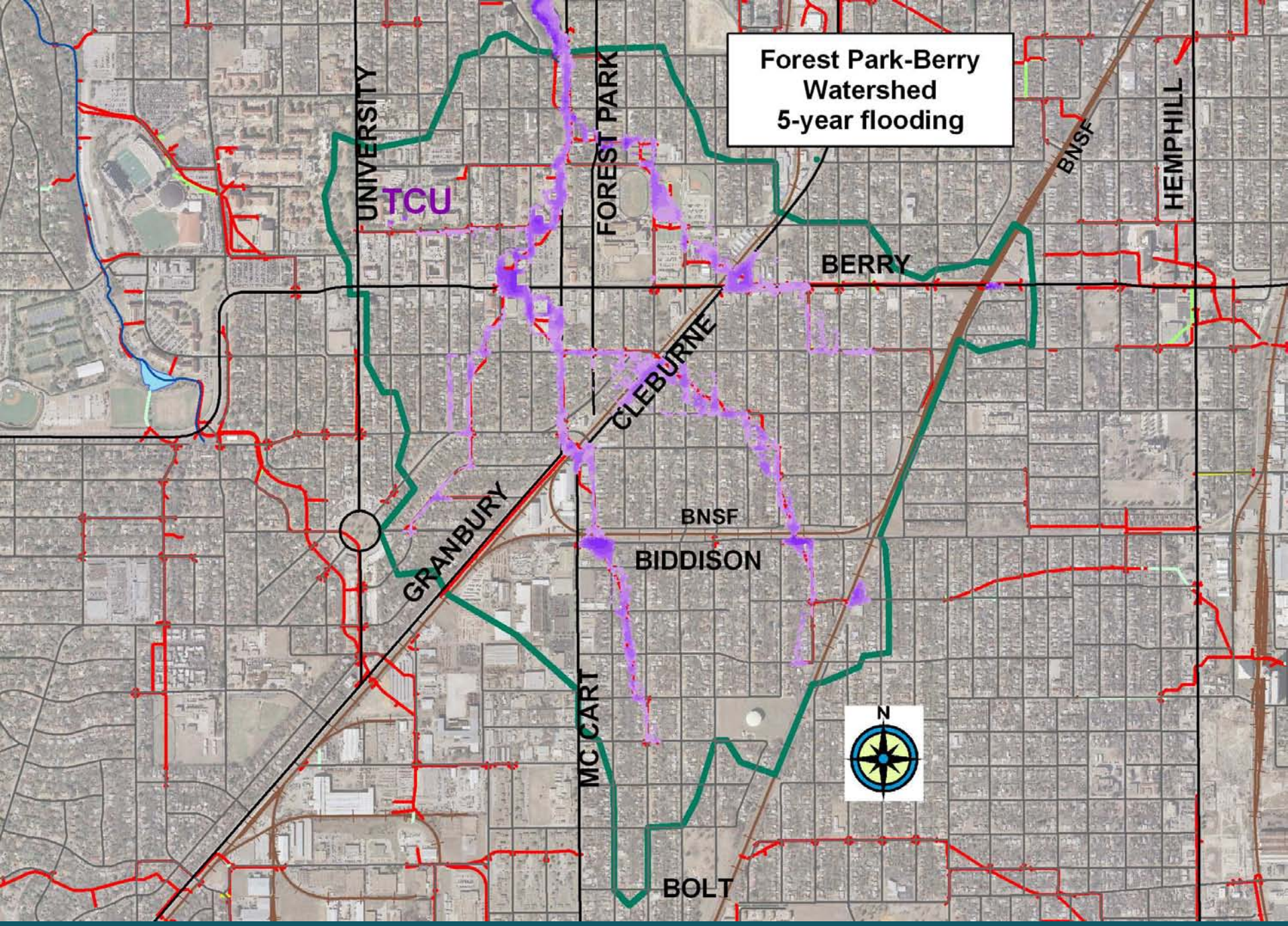
Questions/Discussion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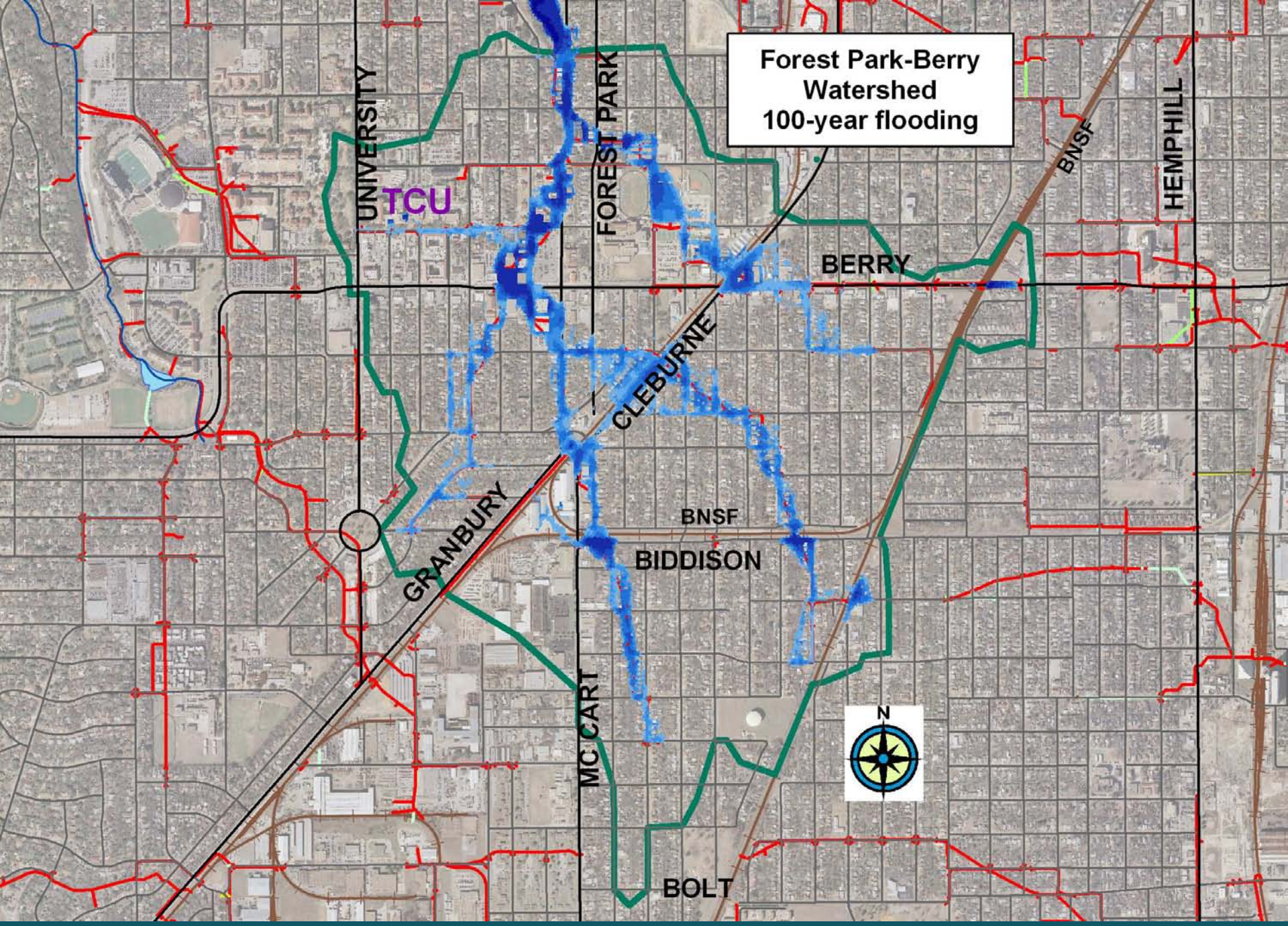
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