Union-Mulberry Area Drainage Study & Improvements

Presented by

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Environment / Energy / Infrastructure

History

- Area developed in 1940s and 1950s
- Natural drainage was disrupted by railroad and piped through storm system
- 2008: Extreme storm hits area, causing flooding

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- Citizens demand solution
- City begins evaluating problem



Engineering Study

- City selected Jobes Henderson (now Hull & Associates) to evaluate the drainage issue
- Performed water in basement survey
- Reviewed construction plans
- Performed on-site observations





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Possible Causes

- Multiple scenarios evaluated:
 - Pipe capacity issue?
 - Detention issue?
 - Outdated subdivision regulations?



All three determined to be contributing factors



Possible Solutions

- Solutions evaluated include:
 - Contain
 - New storm sewer
 - Detention
 - Location
 - Number
 - Divert
 - Reconstruct streets to flood route
 - Maximizing existing infrastructure





Final Recommendations

- Phased approach
- Glassco Park detention pond
- New outlet along railroad tracks
- Flood route by rebuilding Mulberry and Maud
- New storm sewers to contain water and transport to Glassco Park
- Total Cost \$4,502,028





City Perspective

- Bigger project than initially thought
 - \$4,502,028 vs annual capital improvements \$800,000.
- Until funding could be identified, the project was set aside
- FEMA funding through Hazard Mitigation Program in 2013
 - Unusual project for the State and for FEMA Region 5
 - Unusually large mitigation grant due to super storm disaster
 - Phase 1 Glassco Park Detention including storm sewers and street rebuild
 - \$1,248,151 Federal
 - \$208,025 State
 - \$1,180,902 Local Funds



Hazard Mitigation Funds

- Related to federal disaster assistance
- Pre-application process
- Application process
- Prescribed Cost Benefit Analysis
 - FEMA formulated computer program
 - Statistical analysis
 - Benefits must exceed project cost
 - Not for the faint hearted





Storm Modeling

- Utilized AutoDesk SSA software package
 - Best option to analyze flood routing, ponding, and gravity sewers
- Pre and post to determine how to bring subdivisions up to current City of Lancaster standards for subdivisions
 - Gravity outlet and downstream storm sewer capacity
 - Nearest approximately ½ mile from Hunter's Run
 - Sewers to contain 5-year storm
 - Detention basin must handle 25-year storm









Public Involvement

- City Council presentation to explain project
- Neighborhood open house
 - Held at local school
- City webpage
- Letters to residents
- Design modifications based on public comment





Getting Into Design

- Detention solutions
 - Existing Glassco Park to be utilized but remain operational
 - Park to be lowered by 6 feet
 - After public review, added pump station and reduced depth of water storage
- Flood routing
 - Gravity sewer handled the 5-year storm
 - Larger storms routed through streets to Glassco Park
 - Existing streets lowered
 - Curb and gutter installed







Project Today

Construction completed in 2016







Project Today

- Park back in service
- Ballfields restored with new equipment
- New playground equipment
- Shelter house accessible



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