

# WARD 1 Drainage Investigation



Report Results

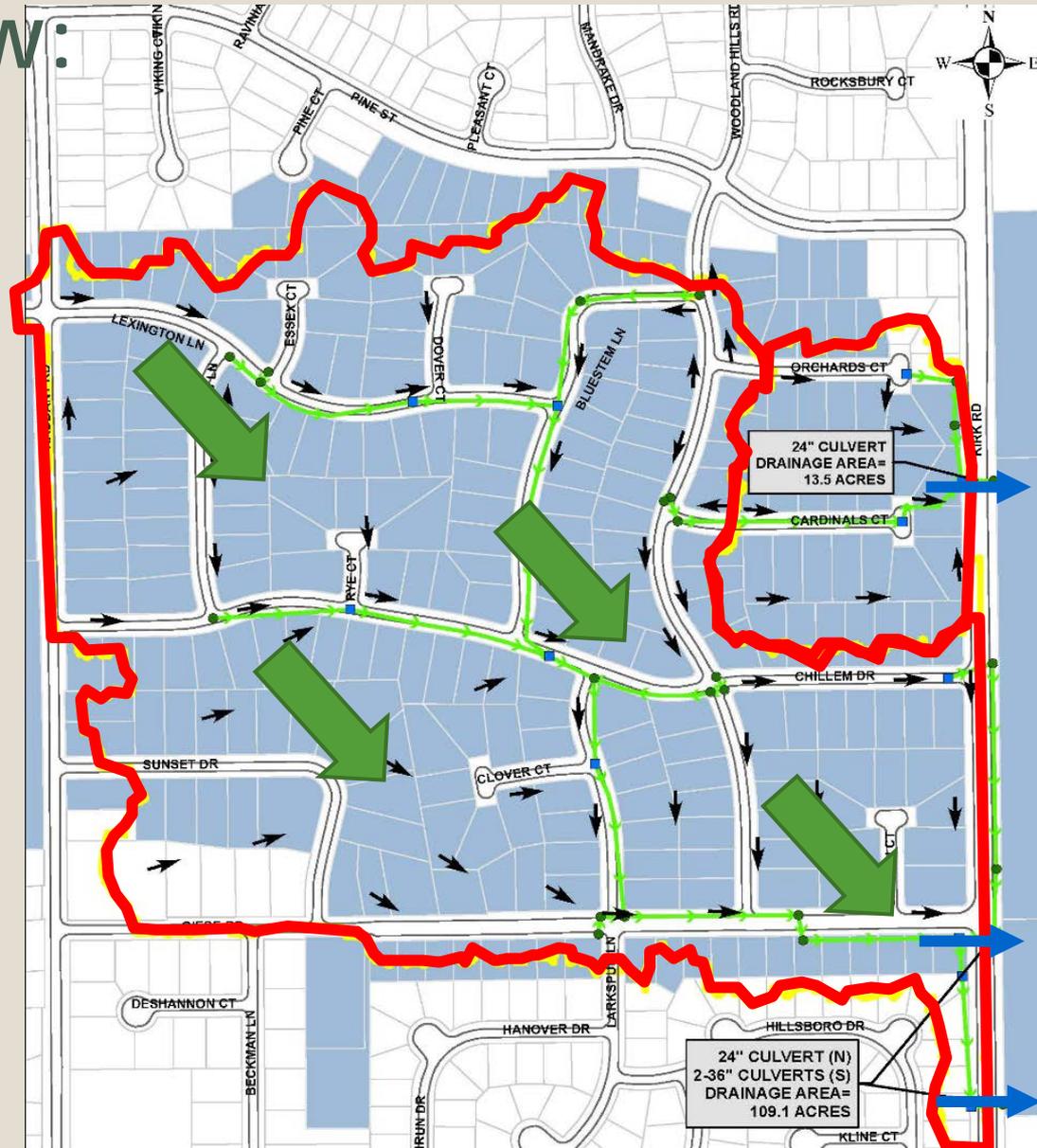
Presented to City of Batavia-Committee of the Whole

August 23, 2016

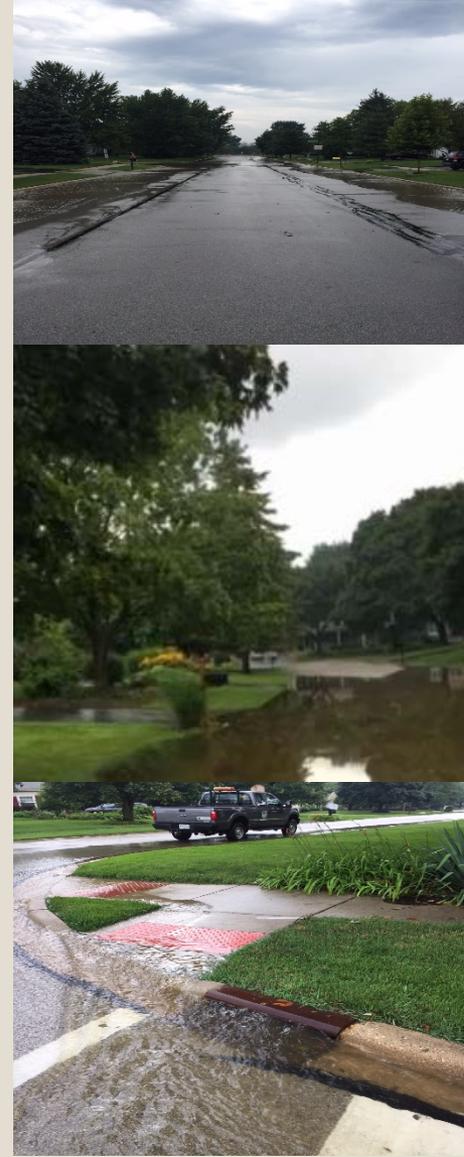
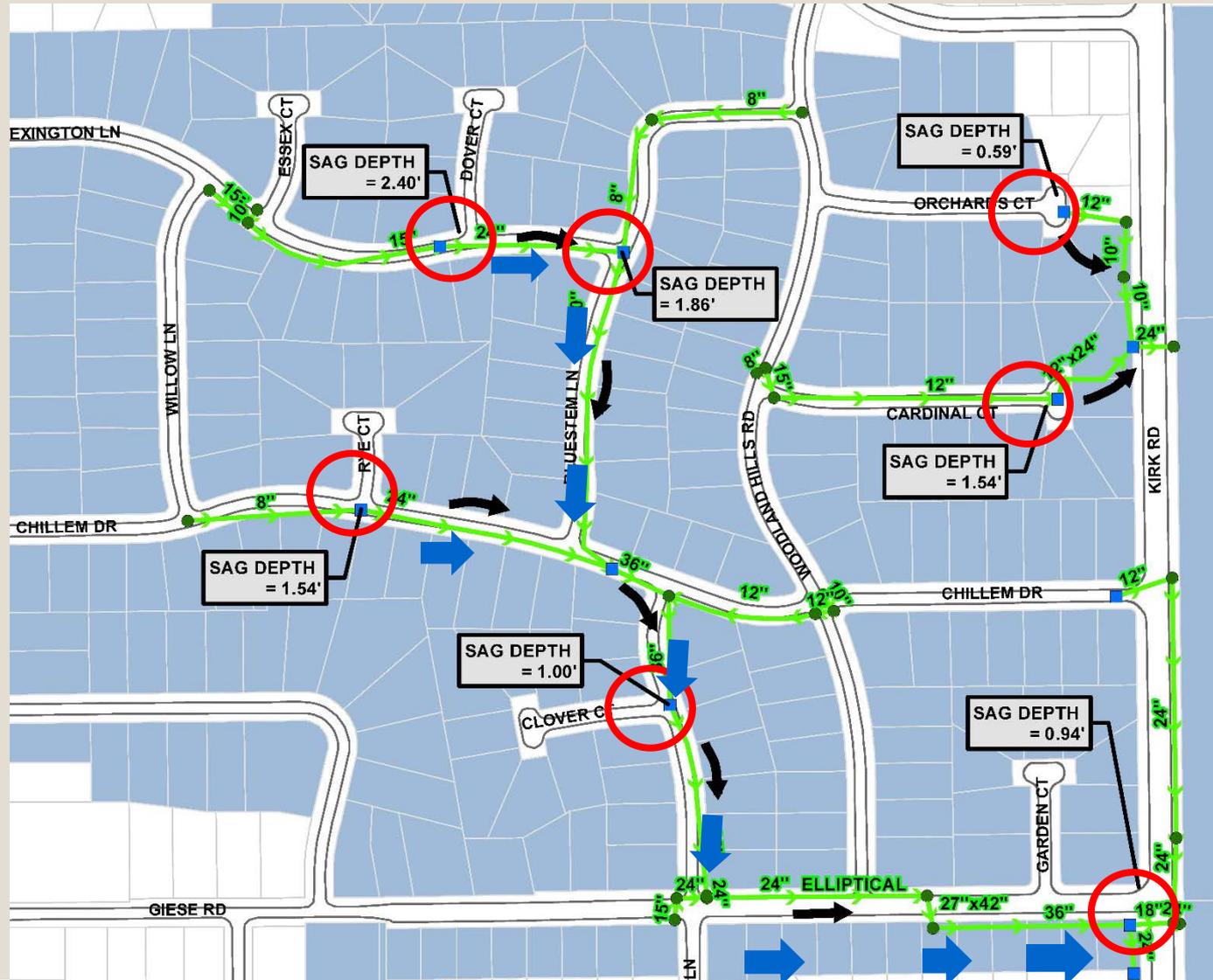


# Ward 1 Overview:

- Improvements constructed in 1967
- Drains northwest to southeast towards Kirk Road.
- Drains under Kirk Road through 4- culverts (2-24", 2-36") (122+ acres)
- Roadway sags that fill with water during high intensity storm events.



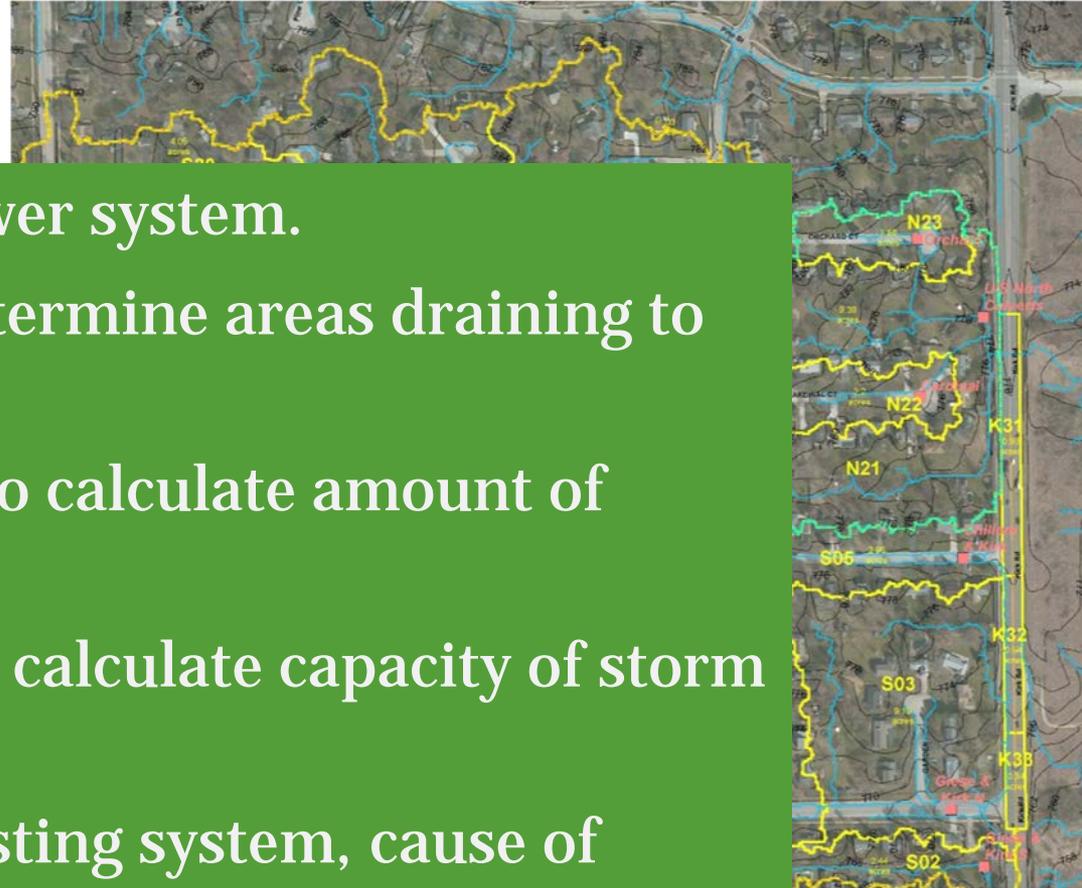
# Existing Drainage Systems



# WBK Scope of Services included:

- Full analysis of existing storm sewer system.
- Summary of discoveries including where pipes are undersized, locations where additional structures/grates are required.
- Future projects where improvements are needed.

# Tasks Completed:



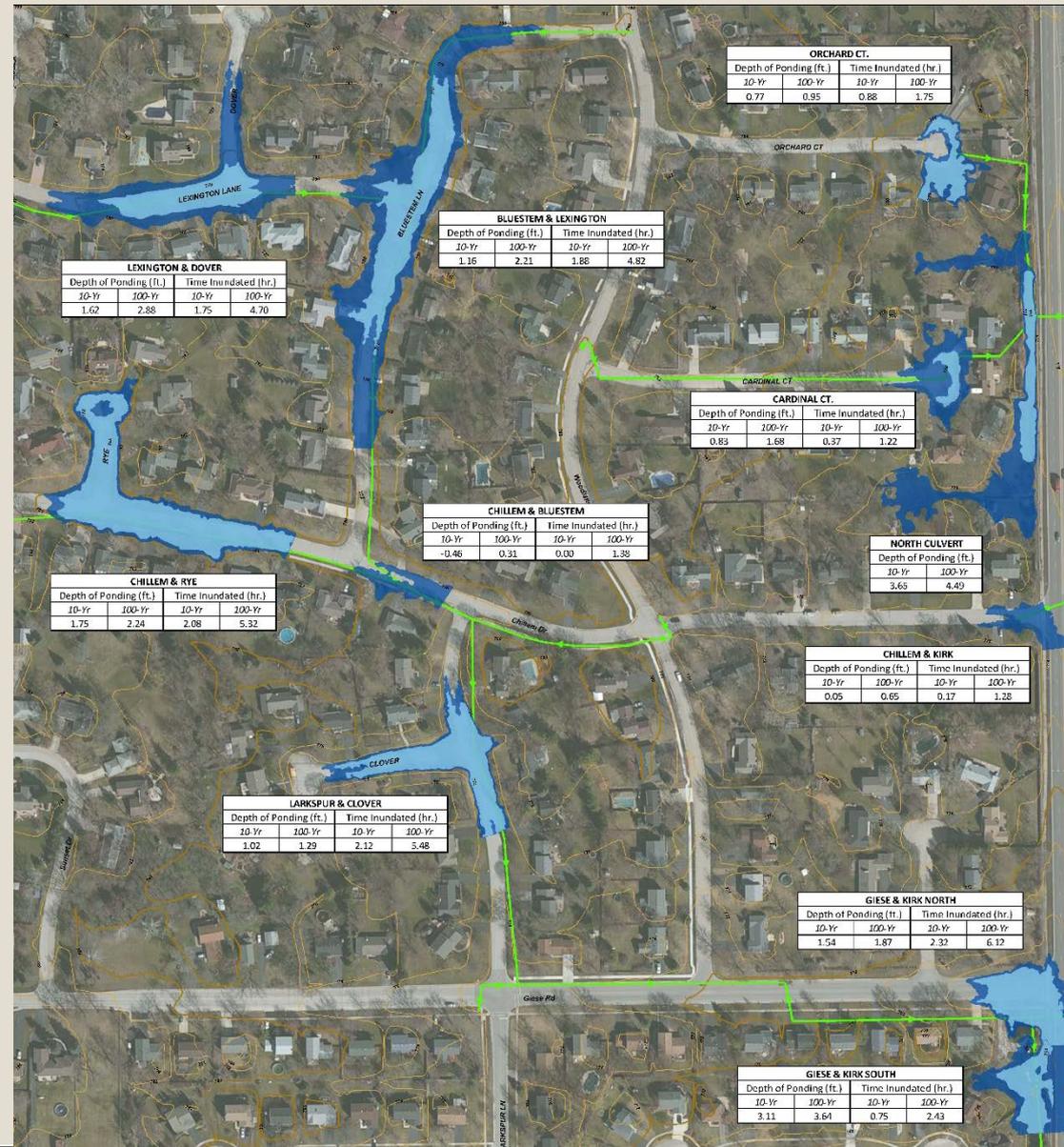
- Survey of entire storm sewer system.
- Analyze topography to determine areas draining to each structure and sag.
- Create hydrologic model to calculate amount of water.
- Create hydraulic model to calculate capacity of storm sewer system.
- Determine capacity of existing system, cause of flooding, and evaluate proposed flood reduction projects.





# Modeling Results

- Restrictions in system limit the effectiveness of the storm sewer (Giese).
- Grate capacity is limiting factor in some sags, but overall, undersized storm sewers is the primary cause of ponding.



# Possible Future Projects

- Goals:
  - Reduce depth and duration of ponding in sags
  - Upsize/ Modify storm sewer to convey 10-year storm runoff.

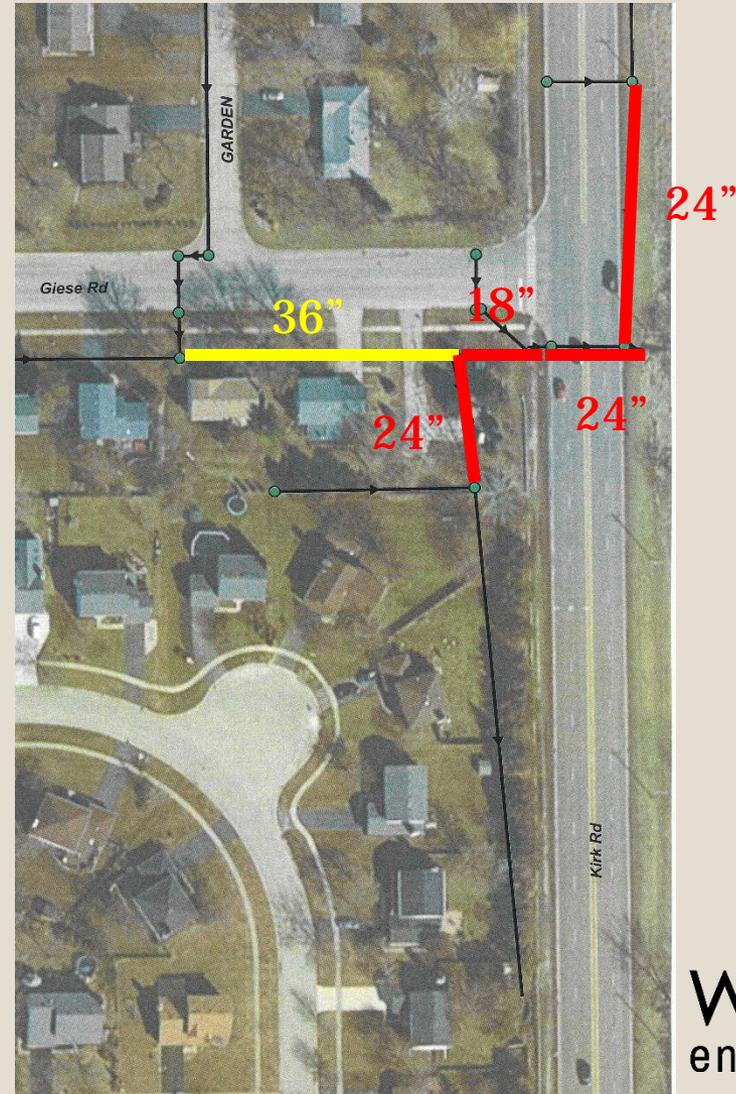
# Possible Future Projects

- Upsize main storm sewer along Giese, Larkspur, Chillem, Bluestem, and Lexington to reduce depth and duration of ponding in sags.
- Maintenance & modification of culverts/ outlets under Kirk Rd. (KDOT).
- Replace storm sewer draining Orchard Court. (10"-15").
- Replace 6" & 8" storm sewer (upstream of sags) along Chillem, Lexington, & Bluestem to meet current design standards.



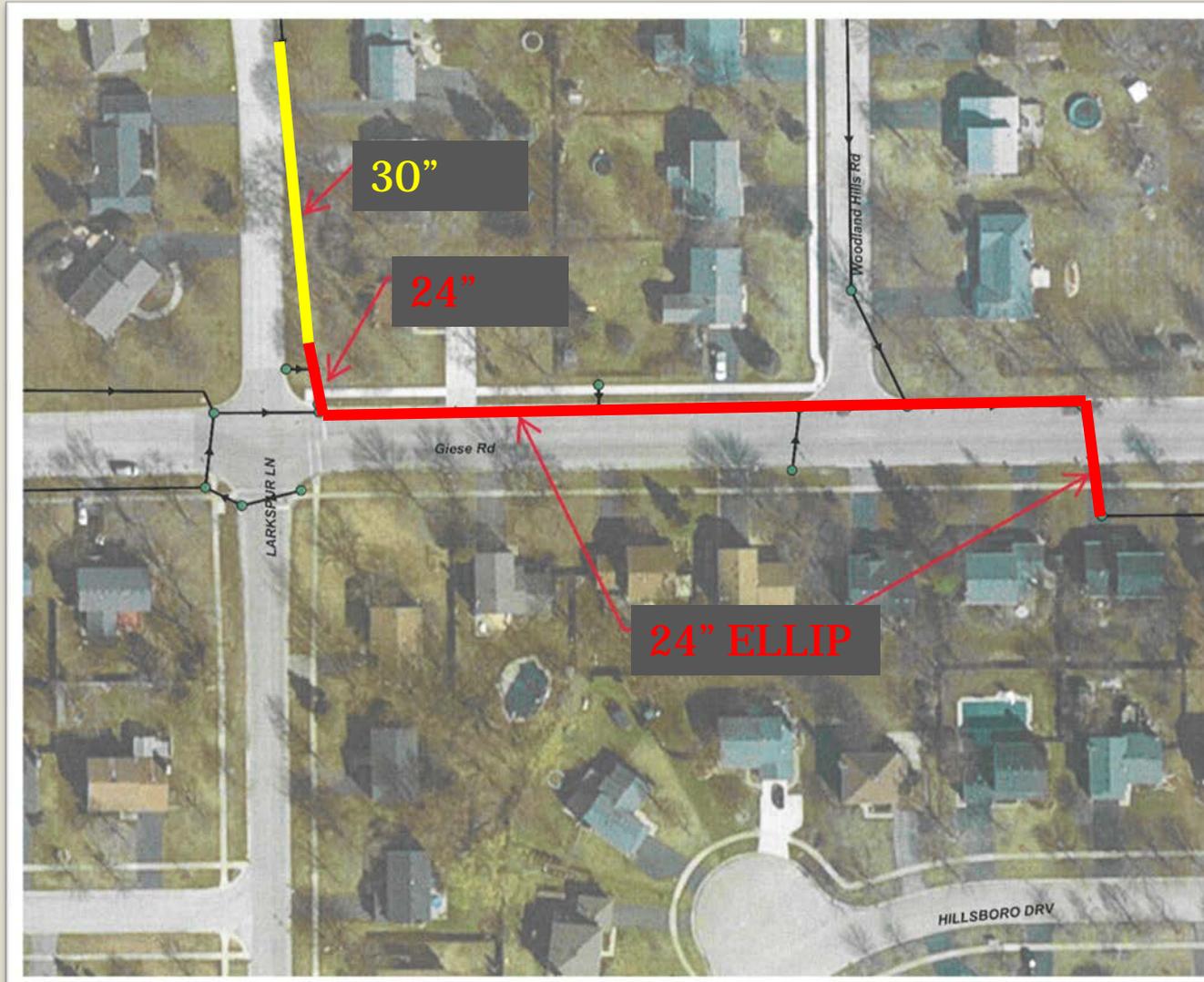
# Possible Future Projects- Giese Road

- **Problem:** 36" pipe conveying 83 cfs drains into 18" and 24" pipes with a combined capacity of 40 cfs
- **Solution:** Replace 18" and 24" pipes with 24" pipe and 4'x6' box culvert, respectively.
- **Problem:** 24" pipe draining Kirk Road connected to 24" cross road culvert reduces capacity.
- **Solution:** Increase capacity of 24" cross road culvert by disconnecting Kirk Road storm sewer.



# Possible Future Projects- Giese

- **Problem:** 30" pipe with 42 cfs capacity drains into 24" sewers with 17 cfs capacity. (cause of water bubbling up out of structures)
- **Solution:** Upsize 24" pipes to 54" and 60" pipes



# Future Projects Reduce Depth and Duration of Flooding

## 10 year results

	Change WSE (ft)
Sag Location	
Giese/Kirk N	-0.65
Giese/Kirk S	-1.04
Chillem/Kirk	-0.01
Larkspur/Clover	-0.62
Chillem/Bluestem	
Chillem/Rye	-1.29
Bluestem/Lexington	-0.71
Lexington/Dover	-1.34
Orchard Court	-0.34

## EXISTING



## PROPOSED

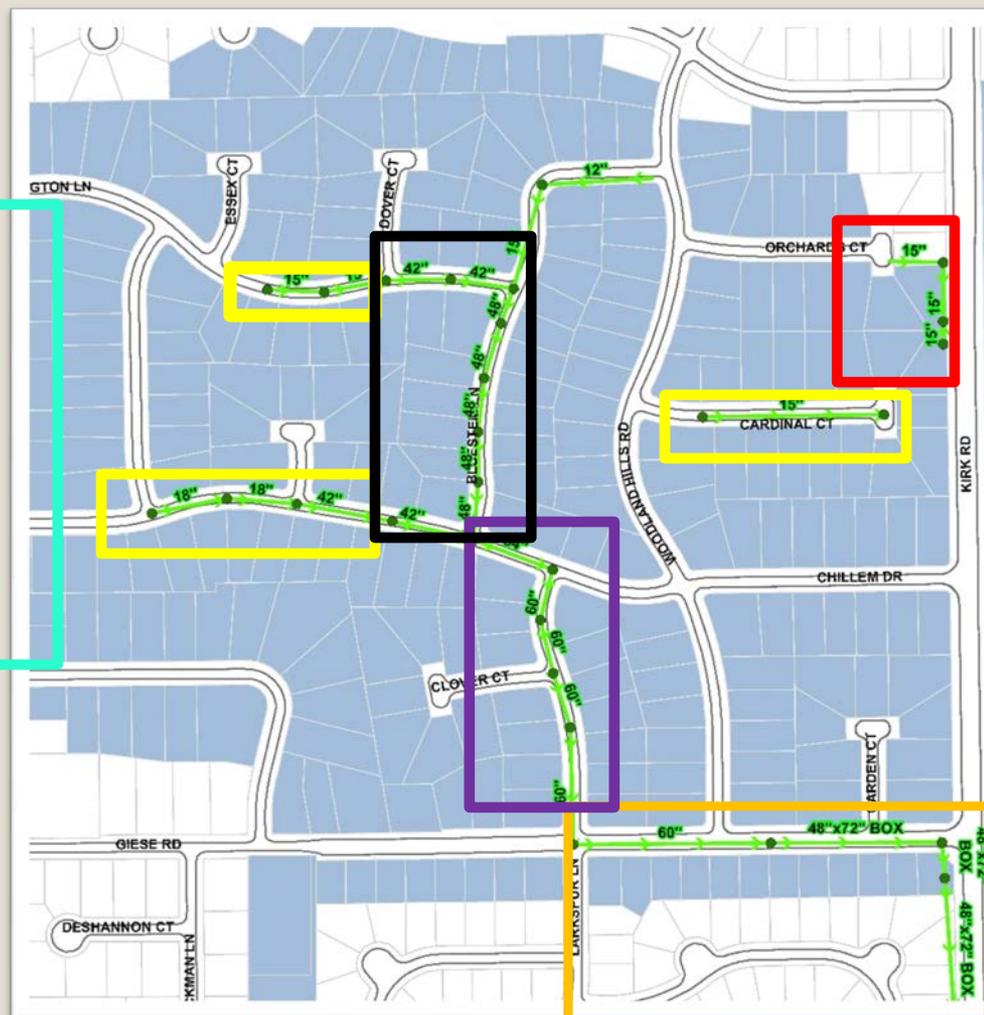


## 100 year results

	Change WSE (ft)
Sag Location	
Giese/Kirk N	-0.05
Giese/Kirk S	-0.10
Chillem/Kirk	-0.01
Larkspur/Clover	-0.19
Chillem/Bluestem	-0.19
Chillem/Rye	-0.26
Bluestem/Lexington	-0.41
Lexington/Dover	-0.90
Orchard Court	-0.07

# Future storm sewer projects

LOCATION	COST
1 Giese Road	\$ 765,000
2 Orchard Court	\$ 55,000
3 Larkspur Lane	\$ 331,000
4 Bluestem & Lexington	\$ 333,000
Lexington, Chillem, Bluestem 5 & Cardinal "non sag" locations	\$ 356,000
6 Raddant Road	\$ 355,000
Total=	\$ 2,195,000



- ❖ Improvements to be phased in over several years.
- ❖ City of Batavia to coordinate with KDOT on Kirk Road Improvements

# QUESTIONS?

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