

An Urban Flooding Case Study: The Village of Bedford Park

Presented by:

Alyssa Huff, P.E., CFM
Village of Bedford Park

Jack T.P. Chan, Ph.D., P.E.
MWRD

Jennifer Maercklein, P.E., CFM
V3 Companies



Metropolitan Water Reclamation District of Greater Chicago

STORMWATER
MASTER PLANNING

Agenda

1. Background: Bedford Park
2. Overview of Drainage Issues
3. Proposed Alternatives
4. Next Steps
5. Q&A



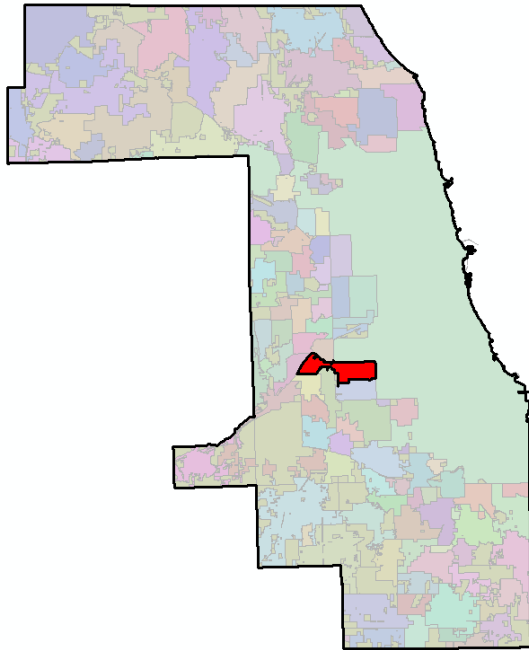
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Background: Village of Bedford Park

Village of Bedford Park:

- Cook County
- 6 Square Miles



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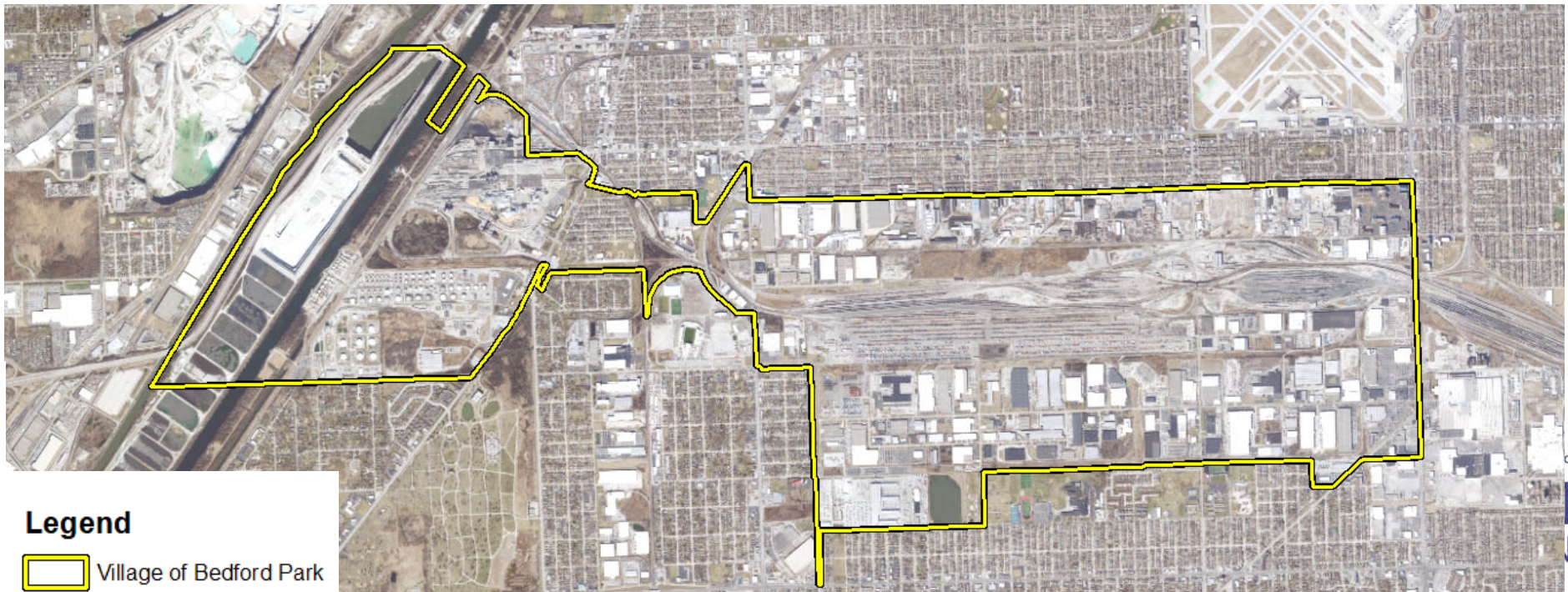
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Village of Bedford Park:

- Cook County
- 6 Square Miles
- Population: 602 People

• Primary Land Uses:

- Industrial (50%)
- Transportation/Other (40%)



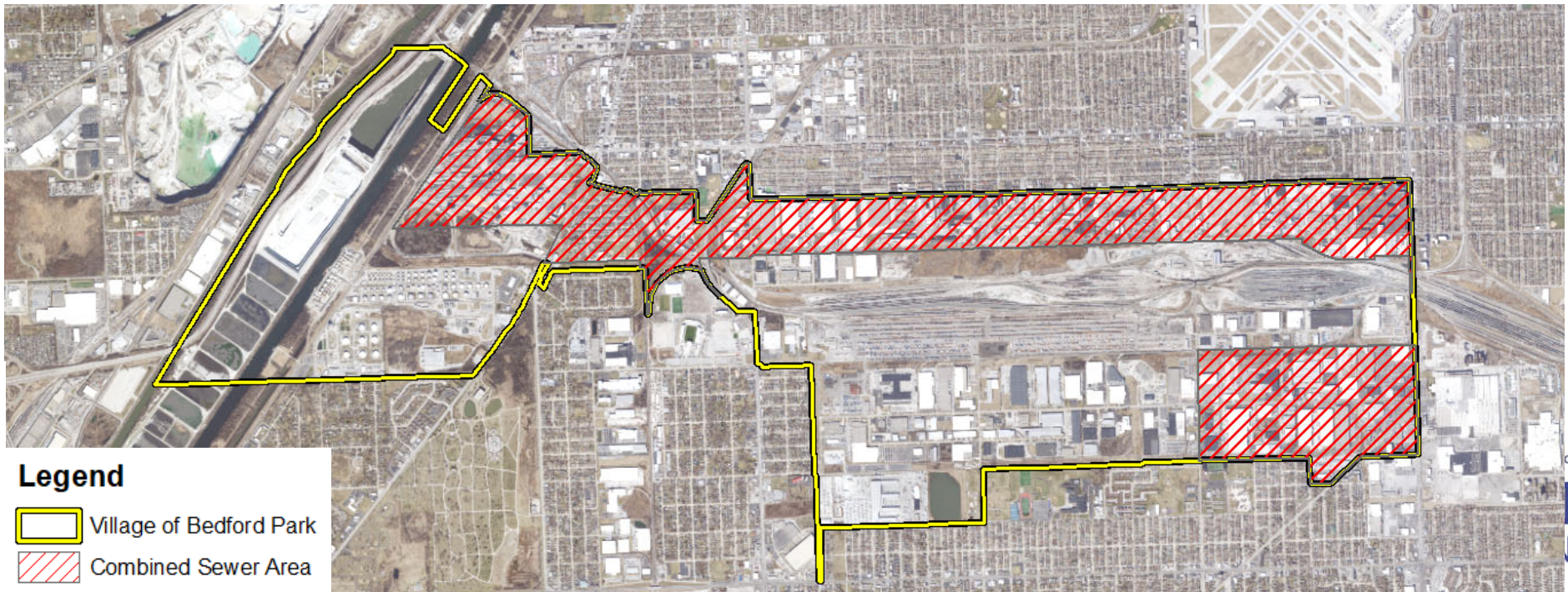
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Village of Bedford Park:

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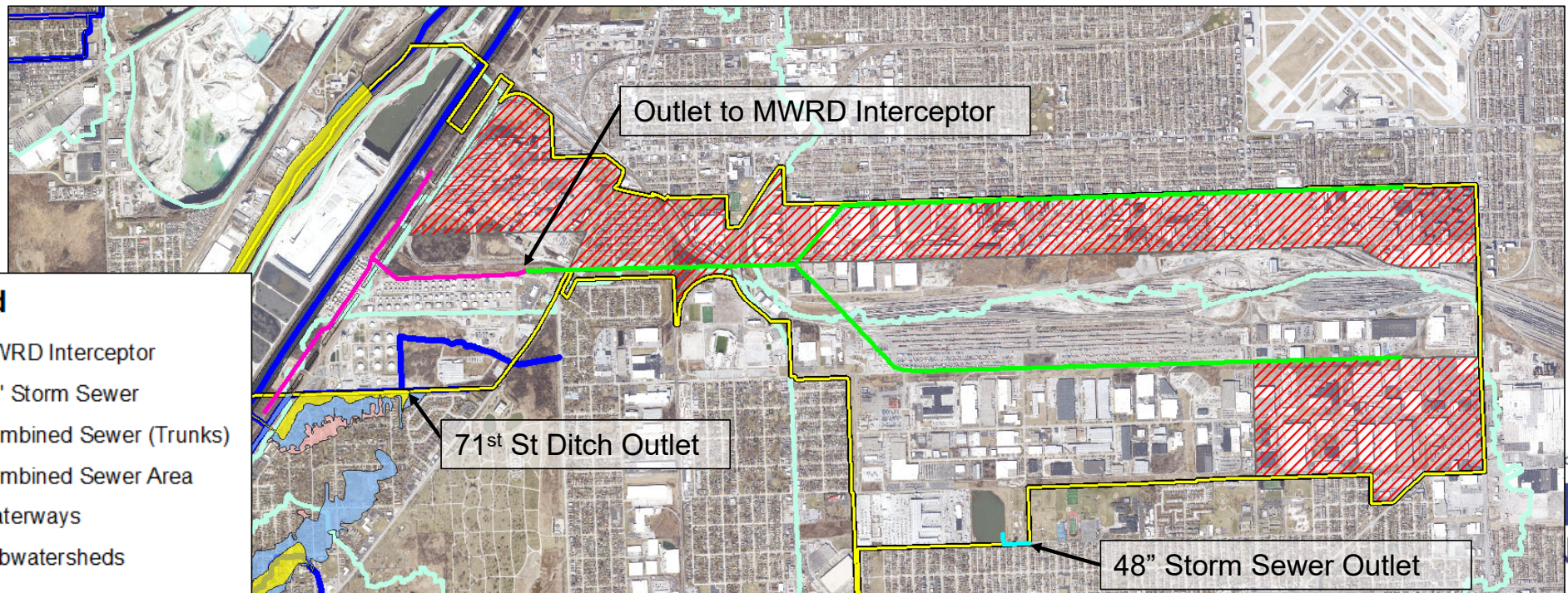
- Industrial (50%)
- Transportation/Other (40%)
- 33% Combined Sewer



Background: Village of Bedford Park

Drainage Outlets and Subwatersheds:

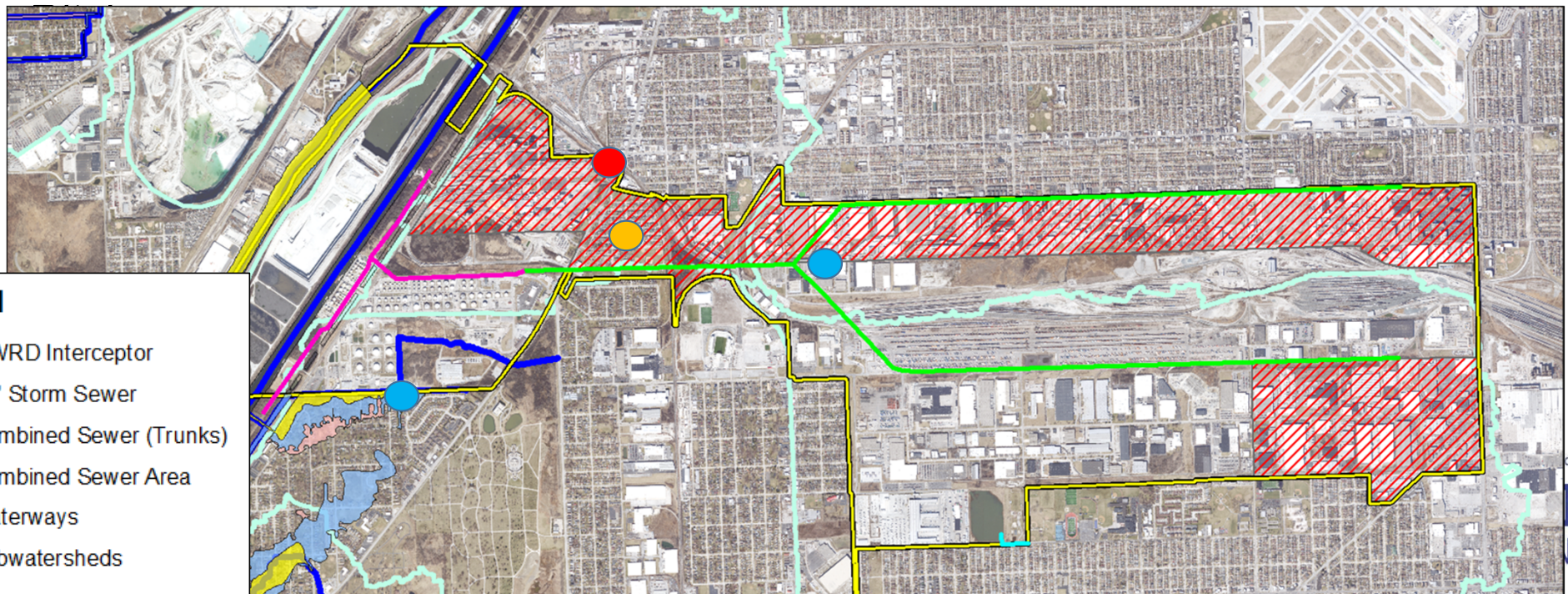
- Interceptor Sewer (CSSC and I&M Canal Subwatersheds)
- 71st St Ditch (71st Street Ditch Subwatershed)
- 48" Storm Sewer (Melvina Ditch Subwatershed)



Overview of Drainage Issues

Drainage Issues:

- Flooding at Archer Rd Viaduct under Railroad near 63rd St
- Desire to Separate Sewers, but no Outlet for Storm Sewer
- Limitations and Restrictions on New Drainage Outfalls to Comb Sewer, 71st St



Viaduct Flooding: Existing Conditions

Flooding at Archer Rd Viaduct under Railroad at 63rd St

- Highest Priority Drainage Issue in Bedford Park
- Highest Priority Drainage Issue in Summit
- Identified by CMAP in Transportation Resiliency Plan



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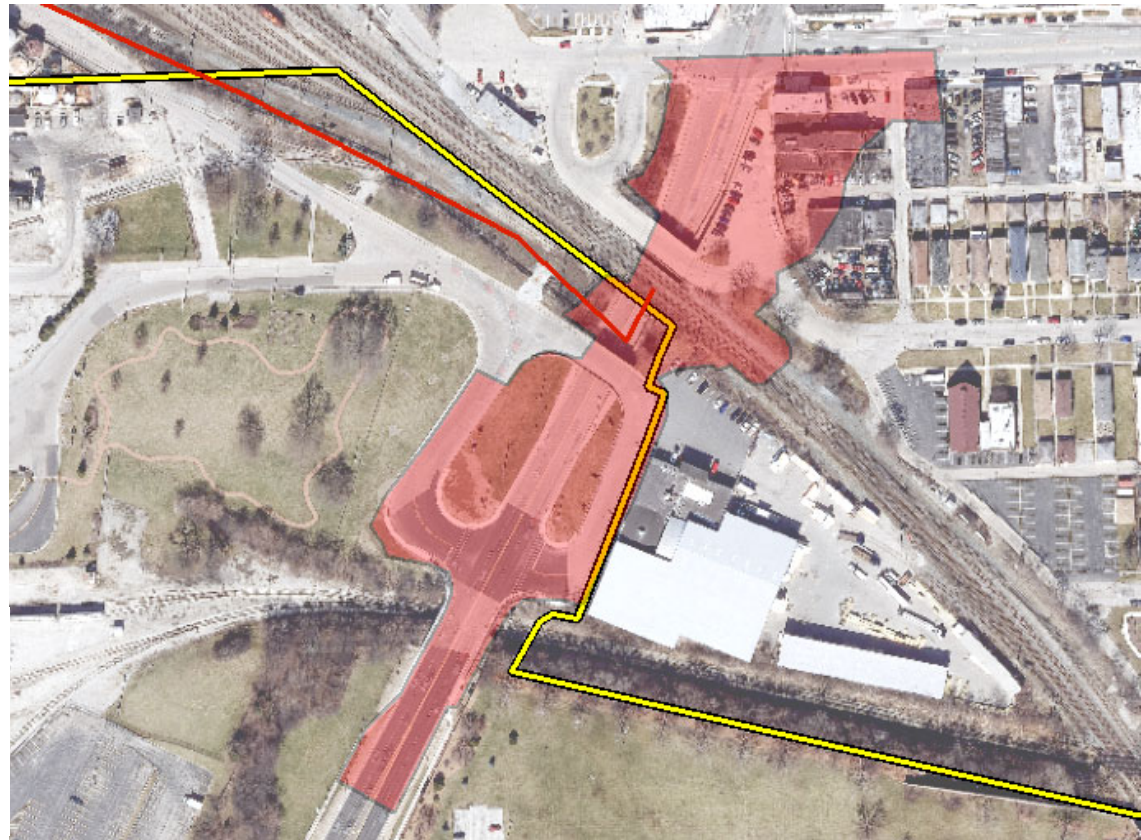
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Viaduct Flooding: Existing Conditions

Sewer Capacities and Tributary Areas

- Sewer Draining Viaduct:
 - 15" or 18" sewer
 - Constructed ~1939
 - Capacity = 5 - 8 cfs
 - Expected flow: 50yr Q = 40 cfs



Legend

-  Village of Bedford Park
-  15 or 18 in Viaduct Sewer
-  Viaduct Drain Area - approx 5 ac










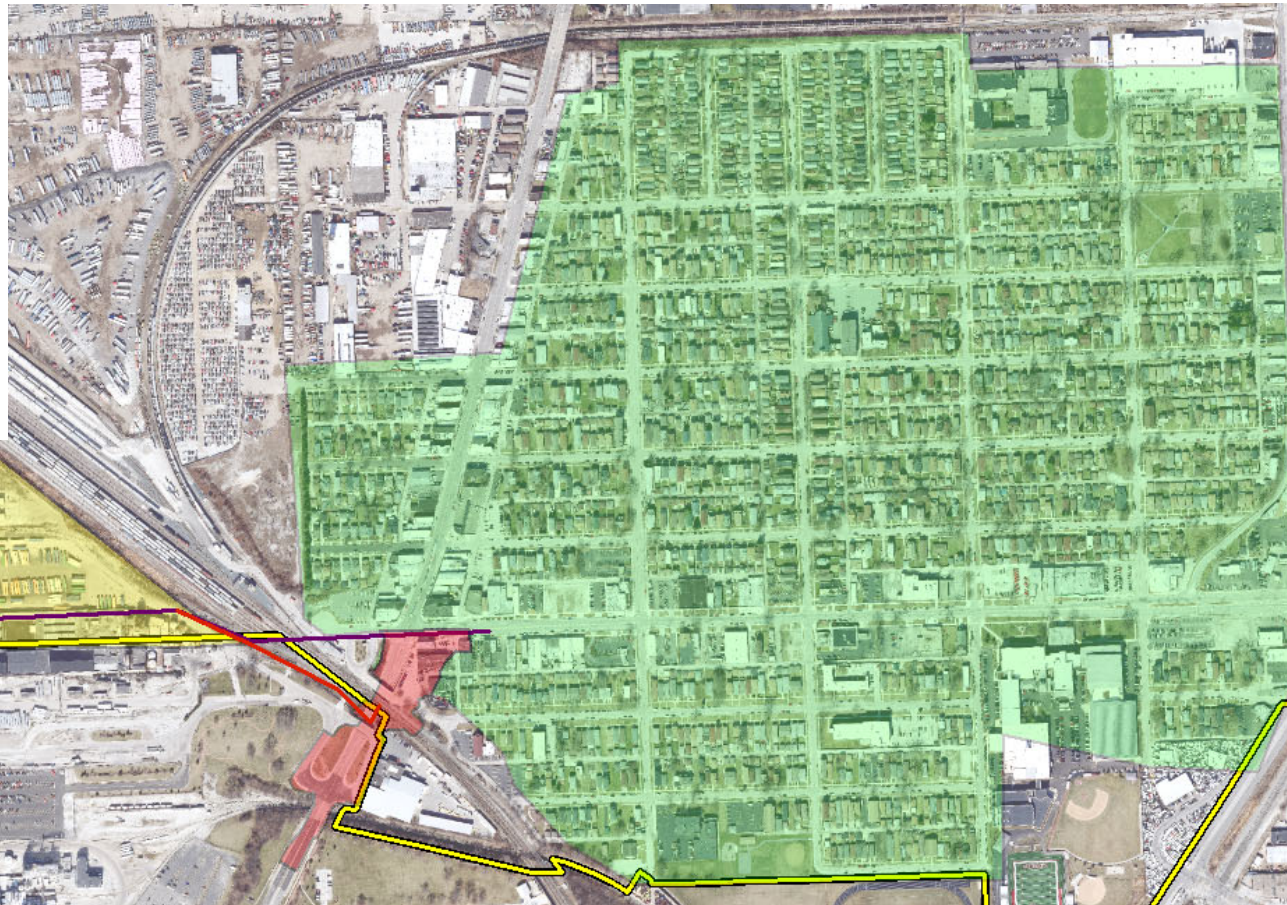
Viaduct Flooding: Existing Conditions

It is believed the Viaduct Sewer drains into 48" Summit Combined Sewer

- Capacity of 48" Summit Sewer: less than a 2-month storm

Legend










-  Village of Bedford Park
-  15 or 18 in Viaduct Sewer
-  Viaduct Drain Area - approx 5 ac
-  48 in Summit Combined Sewer
-  Summit Comb Sewer Drain Area - approx 185 ac
-  Ingression Drain Area to 48 in Summit Sewer - approx 38 ac
-  MWRD Interceptor

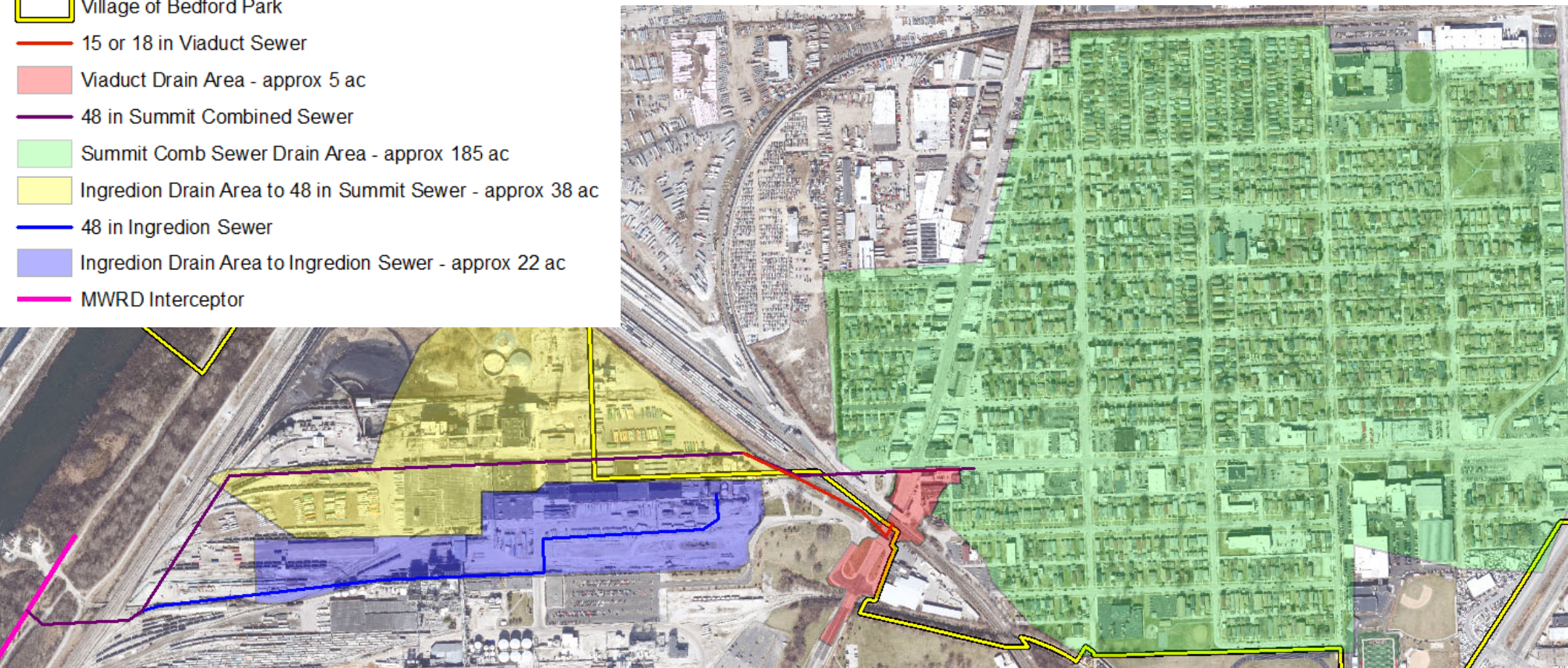


Viaduct Flooding: Existing Conditions

48" Summit Sewer joins w/48" Ingreption Sewer, continues as 48" to Interceptor

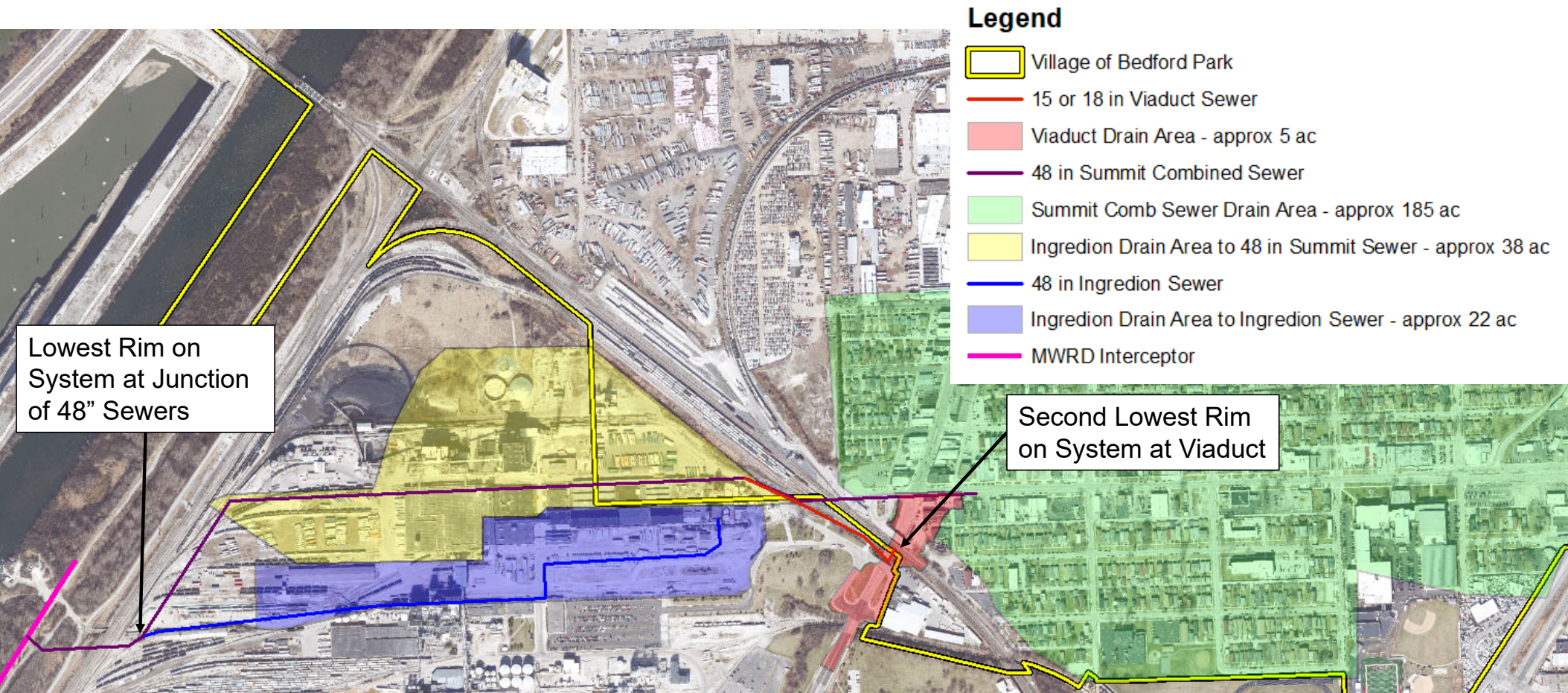
Legend

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-  Ingreption Drain Area to 48 in Summit Sewer - approx 38 ac
-  48 in Ingreption Sewer
-  Ingreption Drain Area to Ingreption Sewer - approx 22 ac
-  MWRD Interceptor



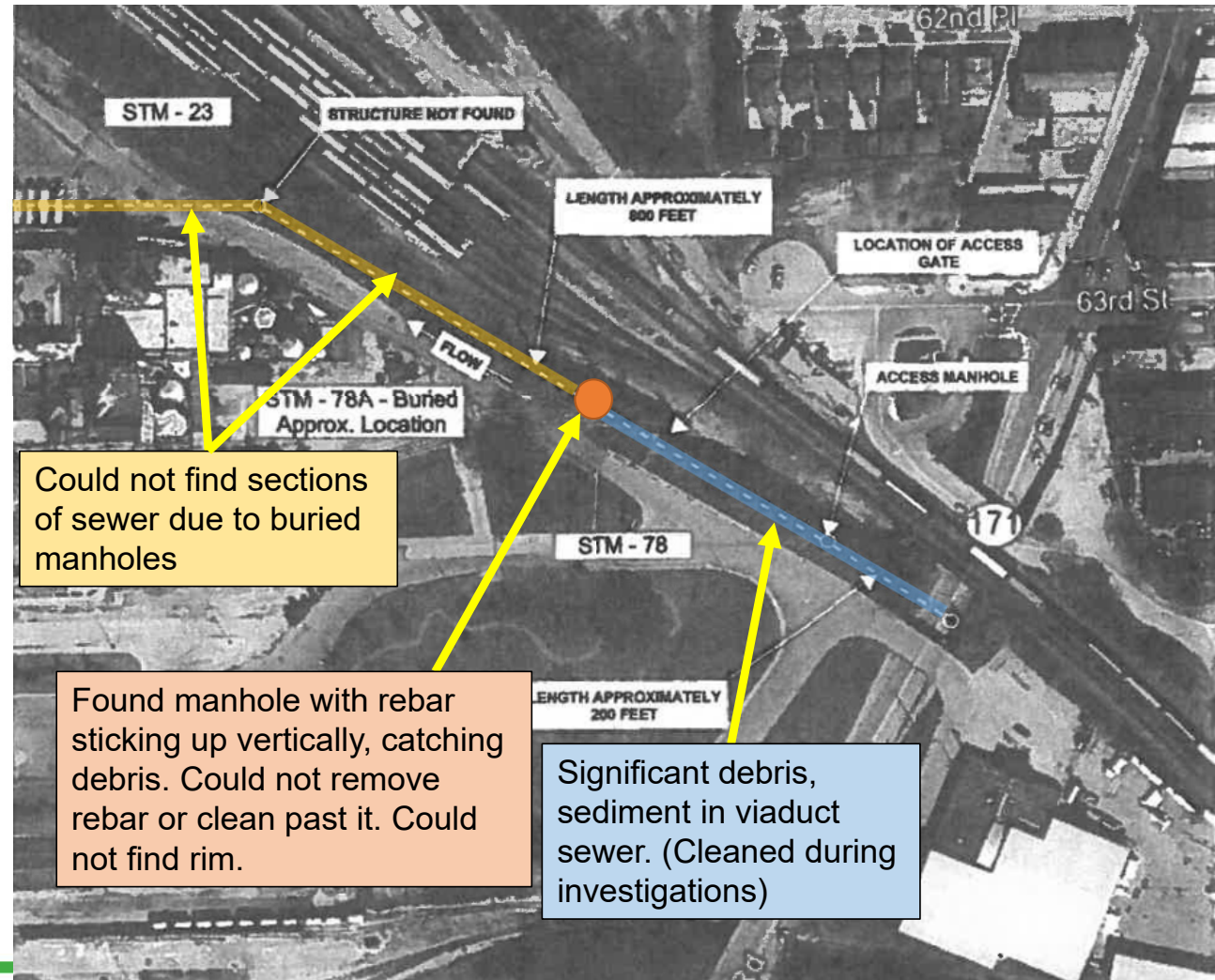
Viaduct Flooding: Existing Conditions

Lowest Points (lowest rims) on the entire system at 48" Junction and at Viaduct



Viaduct Flooding: Existing Conditions

Per IDOT Investigations:
Maintenance issues likely
contribute to flooding



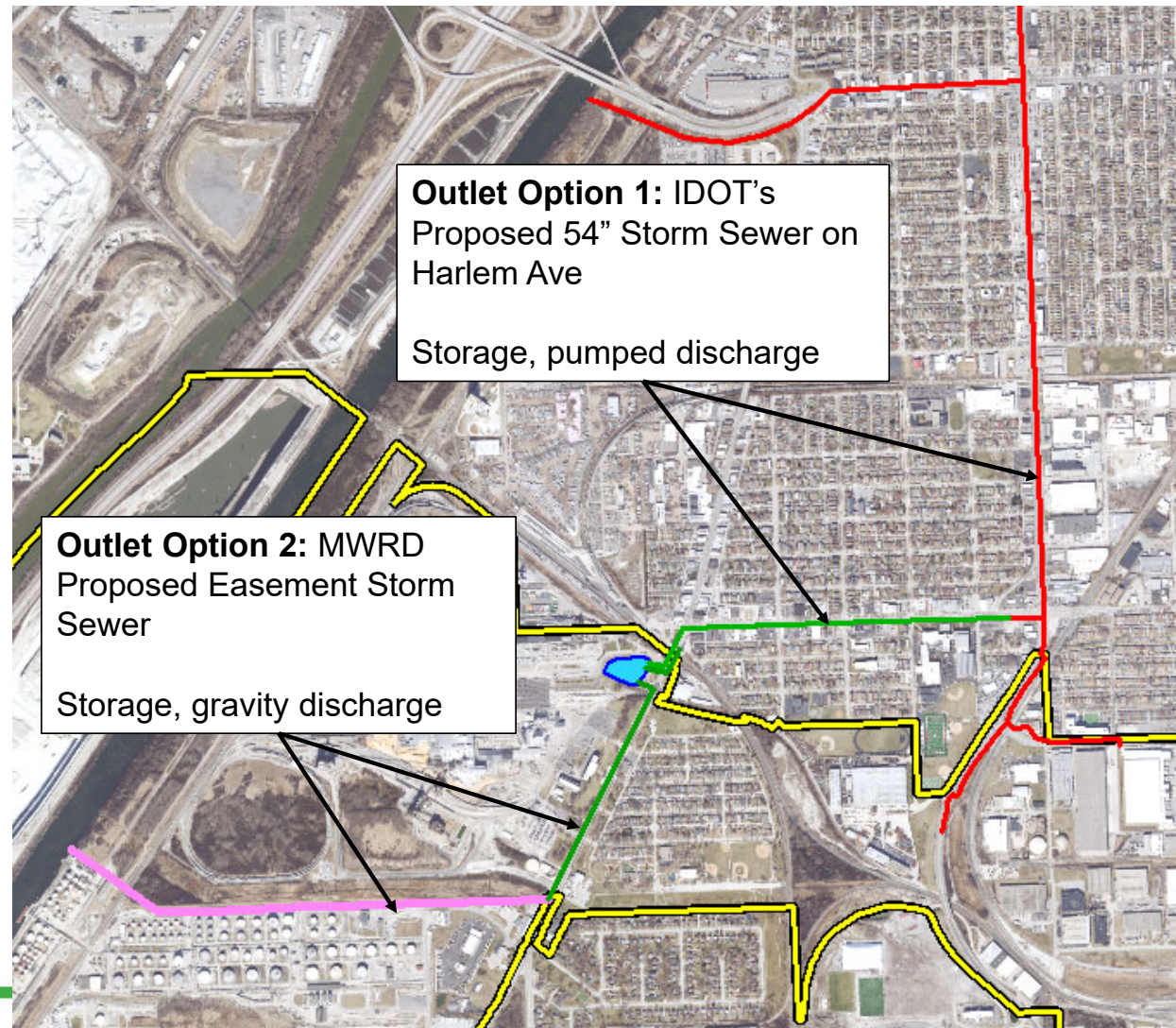
Viaduct Flooding: Proposed Alternatives

Short-term:

- Improved maintenance

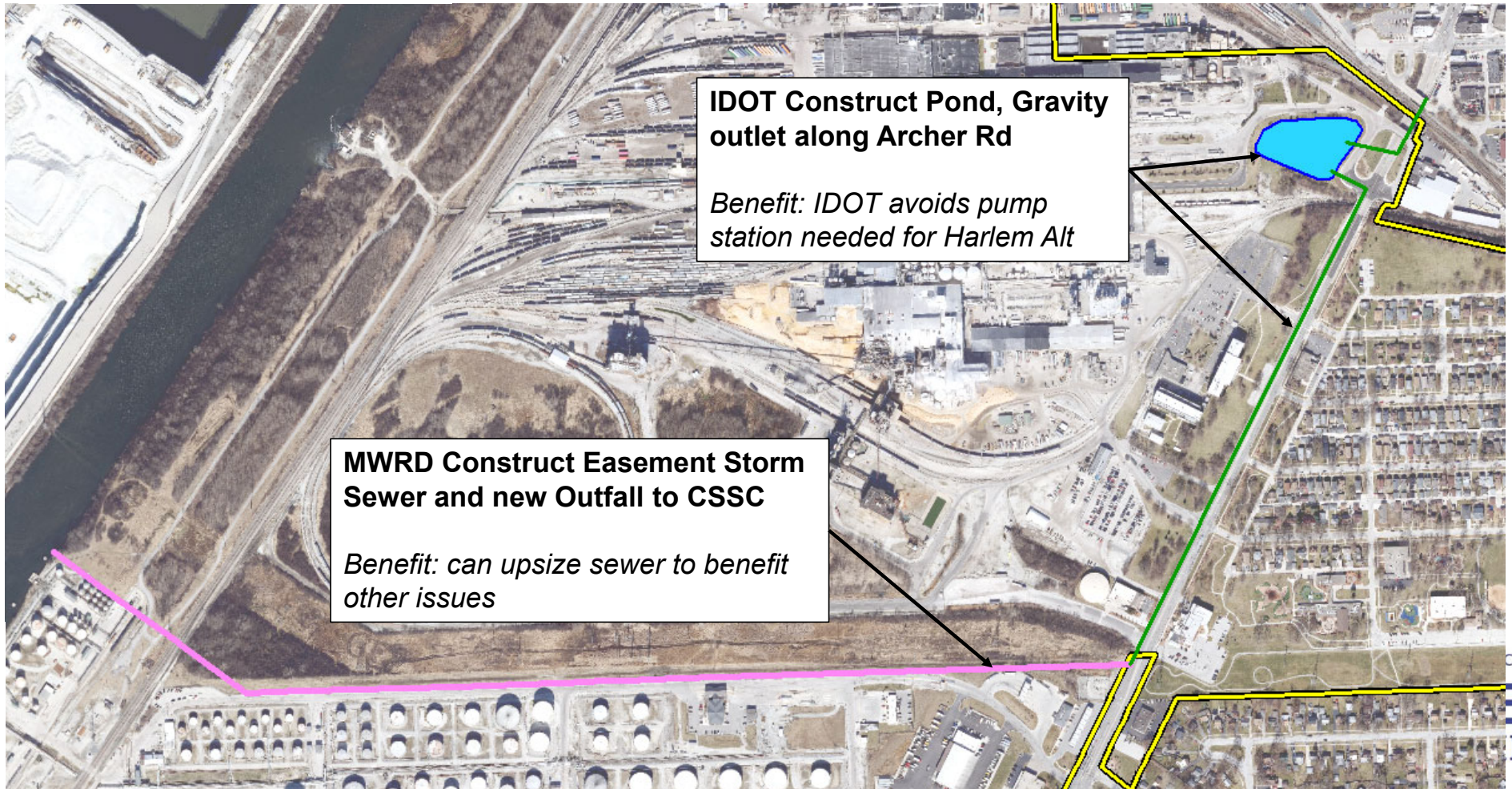
Long-term:

- Disconnect viaduct from 48" sewer
- Two identified feasible outlets:
 - IDOT prop Storm Sewer
 - MWRD prop Storm Sewer



Viaduct Flooding: Proposed Alternatives

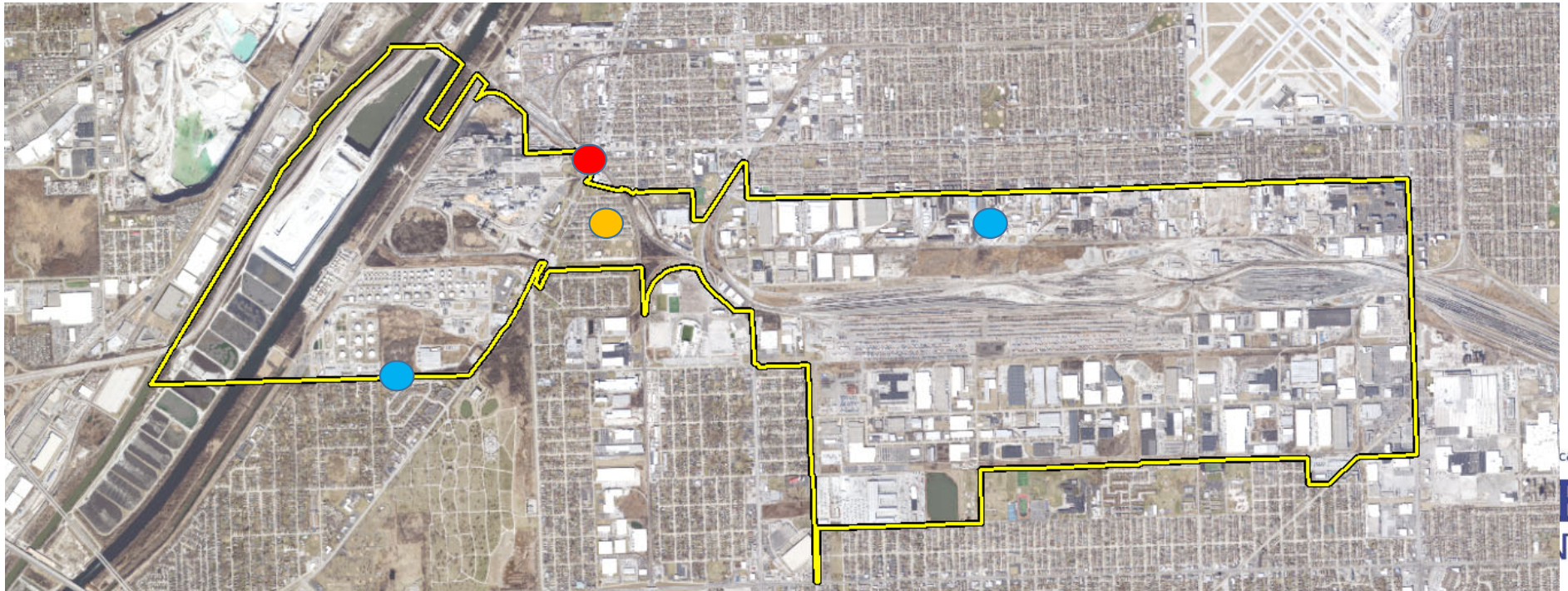
Recommendations



Benefits of a New Storm Sewer Outfall

Drainage Issues that Could Benefit from a New Storm Sewer Outfall:

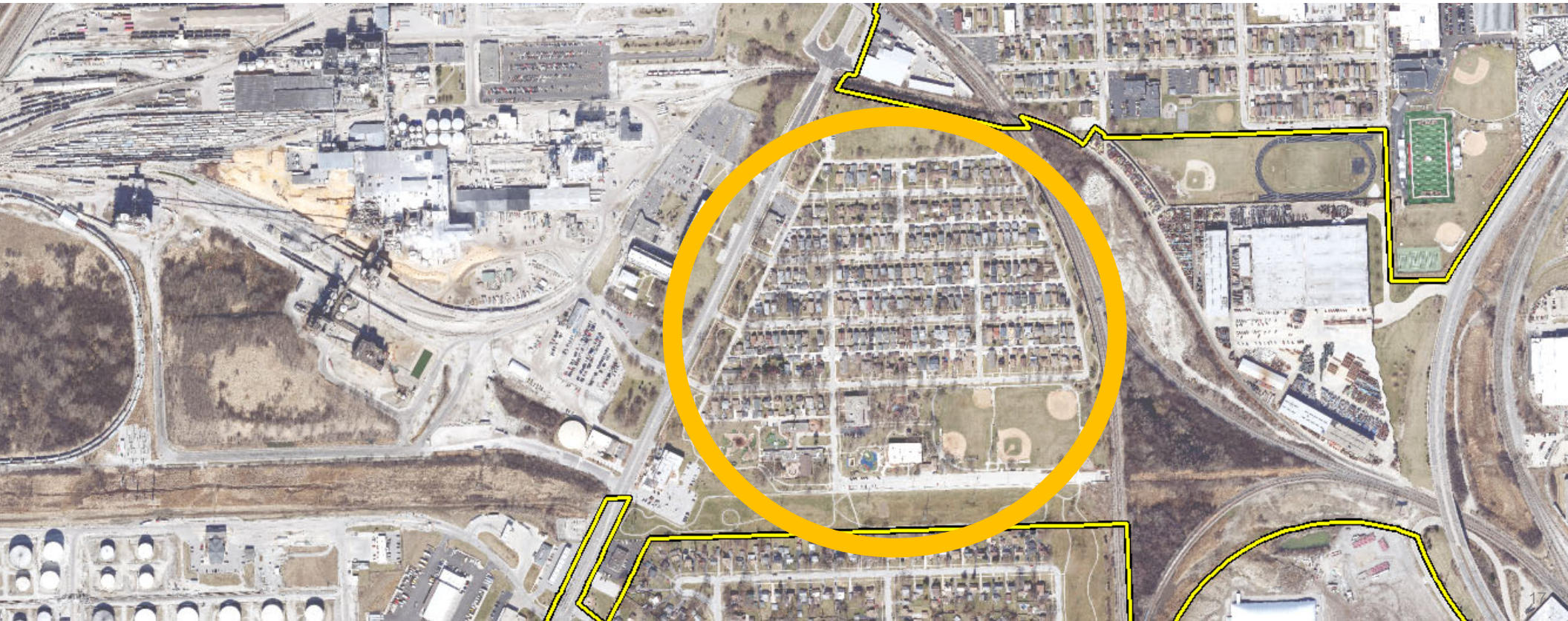
- Flooding at Archer Rd Viaduct under Railroad near 63rd St: **reduced**
- Desire to Separate Sewers, but no outlet for Storm Sewer: **outlet provided**
- Limitations and Restrictions on new drainage outfalls: **restrictions reduced**



Drainage Issues that Benefit from Prop MWRD Sewer

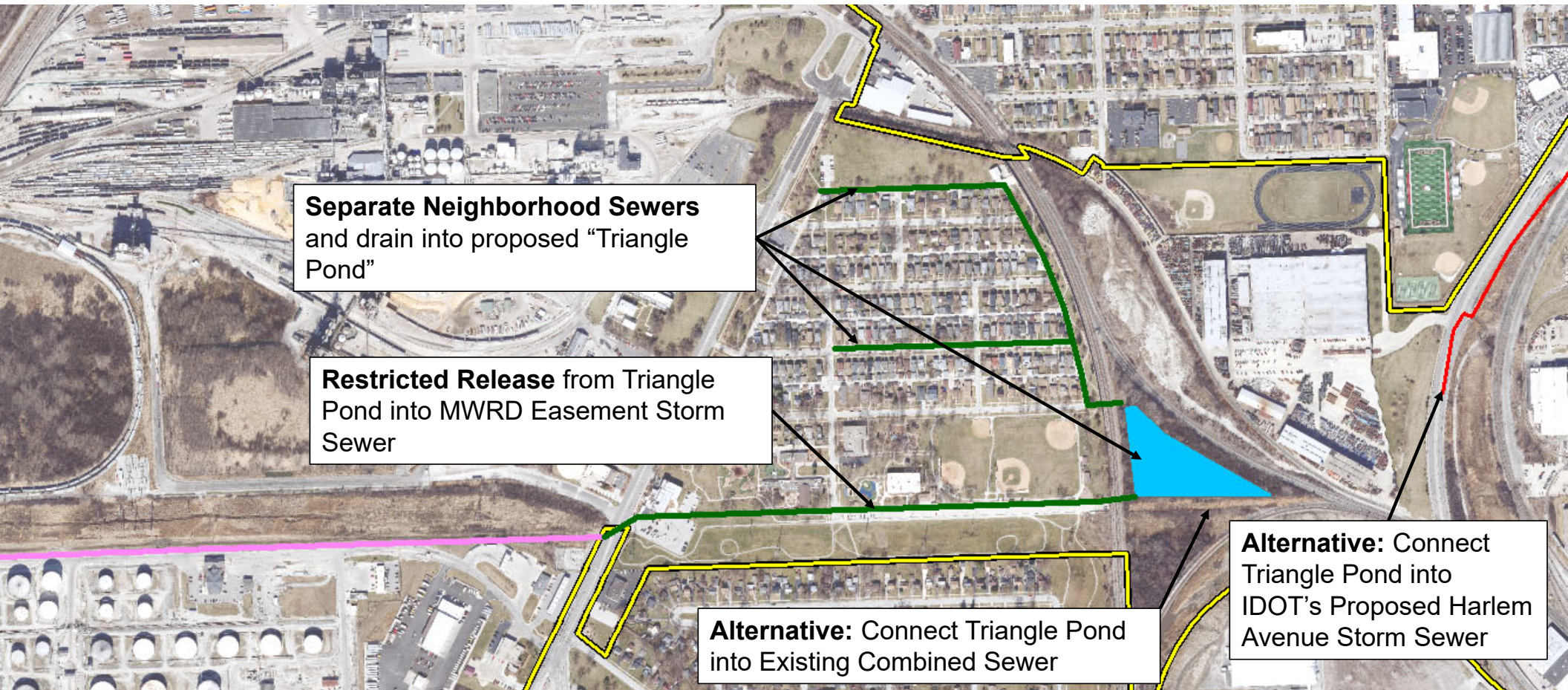
Neighborhood Sewer Separation: Existing Conditions

- No Structural Flooding, Poor Drainage, Desire to Separate Sewers
- No Available Outlet for Separated Sewer System



Drainage Issues that Benefit from Prop MWRD Sewer

Neighborhood Sewer Separation: Proposed Conditions



Drainage Issues that Benefit from Prop MWRD Sewer

Limitations on New Discharges to 71st St Ditch: Existing Conditions



Drainage Issues that Benefit from Prop MWRD Sewer

Limitations on New Discharges to 71st St Ditch: Proposed Conditions

71st Street Ditch floodplain

- flows are significantly reduced
 - 30% w/o cemetery storage
 - 65-70% w/ storage
- most homes benefit
- allow for small new (restricted) discharges while maintaining structural flood reduction benefits

Proposed MWRD Easement Storm Sewer

Construct Relief Sewer
from pond to proposed
Easement Sewer

Alternative:
Relief Sewer
without pond

Construct new pond
in cemetery

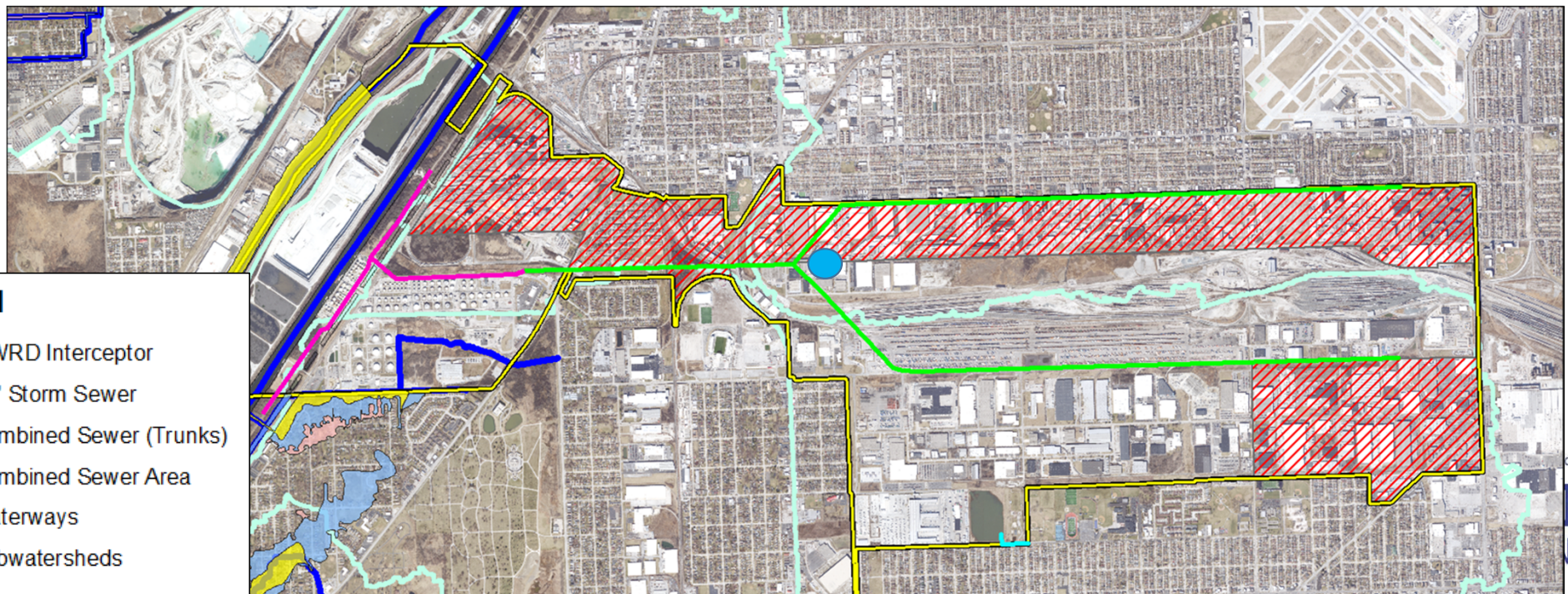
Approx 1900 acres
tributary to existing
Roberts Road Storm
Sewer



Drainage Issues that Benefit from Prop MWRD Sewer

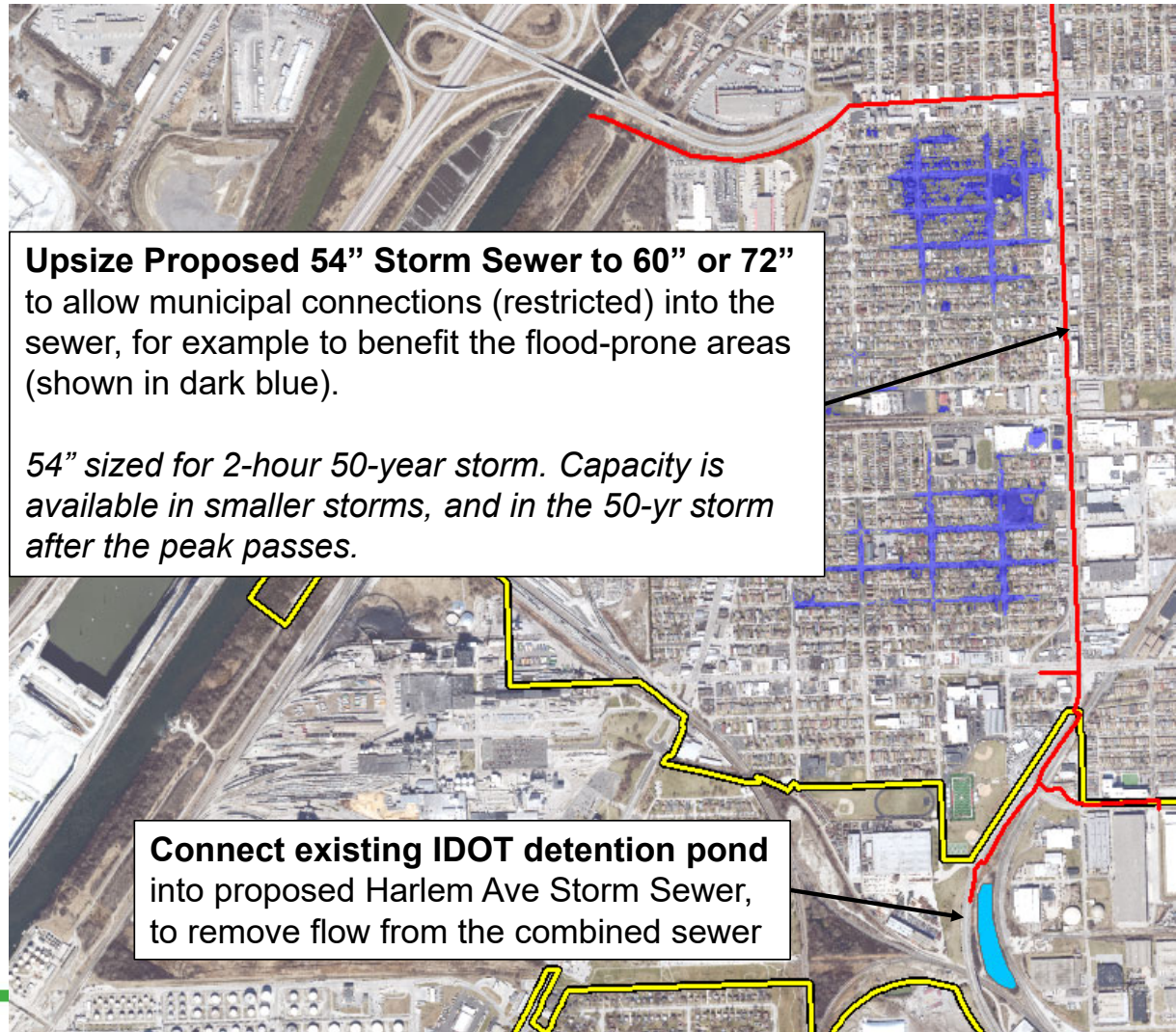
Limitations on New Outfalls into Existing Combined Sewer

- Previously described projects would reduce inflow to Combined Sewer
- Create new capacity for new connections



Additional Proposed Alternatives: IDOT

Additional Proposed Alternatives related to IDOT's Proposed Harlem Avenue Storm Sewer



Next Steps

Next Steps for Agencies:

- Continued meetings with IDOT regarding Viaduct solution
- Village participation (examples: funding, land acquisition, etc.)
- MWRD pursuing easement modifications

Next Steps for Project:

- Advance design from feasibility/15% to conceptual/30%, include survey, geotech, etc.
- MWRD will require new storage for any connection
 - All options presented herein have a storage component
 - Other (undefined future connections) will also require storage

