

Farm Creek Trunk Sewer Replacement Project: Landowners' Concerns & Recommendations

PRESENTED TO CITY OF WASHINGTON, COMMITTEE OF THE WHOLE

JULY 12, 2021

*Alfaro
Dover
Morgan*

Presentation Overview

- Review of need for and purpose of Farm Creek Trunk Sewer replacement project
- Understanding of progress to date and current project status
- New trunk sewer design objectives and landowners' concerns
- Potential alternative alignments identified by landowners
- Recommended steps for resolution of concerns

REVIEW OF NEED FOR AND
PURPOSE OF FARM CREEK
TRUNK SEWER
REPLACEMENT PROJECT

Farm Creek Trunk Sewer Replacement - Area Map



- Both treatment plants are located north of Farm Creek
- Open access corridors are prevalent north of the railroad and Farm Creek
- Future City growth is expected to continue north of the railroad, given lack of north/south roads to provide access south of the railroad

City-Stated Goals and Purpose of Trunk Sewer Replacement



- Address existing trunk sewer performance, maintenance, and pollution issues
(see excerpt from *Preliminary Engineering Study* below)
- Reroute sewer flows from STP-1 to STP-2 due to IEPA-required decommissioning of STP-1, driven by 2013 violation for sewer overflow into Farm Creek
- Increase trunk line capacity to accommodate flow from STP-1 and future City development

Existing trunk sewer pipe & joints exposed

City of Washington, Illinois

Preliminary Engineering Study for the Farm Creek Trunk Sewer

Section 6–Recommendations

6.01 CONCLUSIONS

The City has documented numerous concerns with the existing 50-year-old Farm Creek Trunk Sewer including:

- Operational problems because of its proximity to Farm Creek.
- Instability and erosion of Farm Creek leading to exposed sewer pipe in several locations.
- Excess flow conditions in the sewer during wet weather and high creek flow conditions.
- Anticipated continued growth and development potentially exceeding trunk sewer capacity.

The City has also been mandated by the IEPA to decommission existing STP 1, which will result in additional burden on the trunk sewer by flow that was previously sent to STP 1.

Source: *Strand Associates, October 2019, p. 6-1*

Power of Farm Creek Led to Current Trunk Sewer Condition



Existing trunk sewer pipe & joint exposed – west Farm Creek bank

- Experience shows Farm Creek creek bed has eroded
- Exposed pipe = risk of surface water contamination
- The power of Farm Creek will continue to erode the creek bed

8' high bank created from erosion; original bank above, new Farm Creek bottom below



Current Trunk Sewer Condition

- Exposed existing trunk sewer with railroad bridge in background
- Large trees washed down creek during powerful flood event
- Proposed alignment will NOT alleviate these issues
 - Will be in close proximity to the current trunk line
 - A creek crossing is planned proximate to this location



Goals of a New Trunk Sewer

Thorough investigation and understanding of current problems is necessary to identify practical, logical, and effective solutions for trunk sewer replacement. The new trunk sewer should:

- Alleviate existing issues and problems with the Farm Creek Trunk Sewer
- Achieve durability and reliability in trunk sewer function / operation
- Be respectful of nature and the environment
- Be responsible to the taxpayer by implementing a cost-effective solution through both construction and ongoing operation and maintenance costs
- Be responsive to and consistent with long-range plans, initiatives, and missions, including from:
 - City of Washington, Tazewell County, and Tri-County Regional Planning Commission
 - Illinois DNR and Illinois EPA
 - Illinois Forestry Development Council and Illinois Forest Action Plan
 - US Army Corps of Engineers and US EPA

Landowners Agree With The Project...

- **Sewer infrastructure is essential** to the City and its property owners / taxpayers
- **Trunk sewer replacement is necessary** to address significant operation and maintenance issues with existing line
- The City is making a **responsible decision to design replacement trunk sewer with added capacity**, supporting future system demand
- Adequate capacity and infrastructure to **support IEPA-required decommissioning of STP-1** provides additional opportunity to improve trunk line design and operations

...Following Proper Planning and Analysis

The Farm Creek Trunk Sewer is critical public infrastructure that **impacts EVERY City ratepayer** - not just the individual property owners where the trunk line will be located

- Design approach must be **thoughtful and thorough to ensure long-term operational reliability**
- Alignment must be both **environmentally and fiscally responsible**
- **There is time to properly analyze prudent alternatives** - final engineering and loan funding are not completed

UNDERSTANDING OF PROGRESS TO DATE AND CURRENT PROJECT STATUS

Alignments Considered by City

- Two alignments considered and presented to City Council in October 2019:
 - Route A - Runs along Farm Creek, largely similar to current alignment
 - **Route B (selected alternative) - South of railroad tracks, generally more linear alignment of trunk line but with remote, serpentine access**
- **The City has not evaluated any alternative alignment to Route B** - the Route A alignment is essentially reflective of the existing alignment
- Alignments considered without public input, transparency, or documentation:
 - No public input or affected property owner input sought prior to City selection of Route B alignment
 - No discussion with property owners about easements prior to route selection
 - No documented consideration or analysis of any alternatives other than Route A and Route B - including no evaluation of alternatives located further north of Farm Creek within City of Washington

Project Progression Since Selection of Route B Alignment (October 2019)

- Landowners contacted to discuss easements (February 2020)
 - Raised concerns regarding proposed alignment's location relative to Farm Creek, wetlands, floodplain, remnant woodlands and protected trees
 - Questioned availability of alternative alignment analyses
- Design advanced to 50% design stage (August 2020)
 - New influent pumping station incorporated into trunk line replacement project to be completed concurrently
 - Landowners' concerns and questions about alternative alignments were not addressed
 - Costs increased (refer to slide 25 for further discussion)
- Proposed alignment continues to be revised, with costs likely to continue increasing



Permit Reviewers Have Requested More Information

- US Army Corps of Engineers has issued a number of requests before making a permit decision, including:
 - Investigation / verification of several more potential wetland areas
 - Investigation and assessment of stream and wetland impacts north of railroad tracks
 - Completion of archaeological study in all upland areas adjacent to wetlands
 - Additional information on alternative locations considered and options to avoid stream and wetland impacts
 - Identification of tree area to be removed and resulting impact on habitat of endangered bat species

US Army Corps of Engineers Correspondence Regarding Alternatives

Inquiry From US Army Corps of Engineers:

As a part of the application process we need to know what the City is doing to avoid stream and wetland impacts and/or minimize stream and wetland impacts for this project. Have other alternatives to this project location been discussed? I am new to the project so maybe this has already been discussed for example, on the northern side of the rail road tracks it seems the stream could be avoided completely.

Source: Email correspondence from US Army Corps of Engineers (Wendy Frohlich) to City of Washington and Strand Associates, May 24, 2021

Response From Strand Associates:

As part of the project planning, we have reviewed alternate alignments as a part of our preliminary engineering and also provided Samantha back in February 2021 a letter regarding alternate alignments. It is attached.

Source: Email correspondence from Strand Associates to US Army Corps of Engineers, June 10, 2021

The Interested Party also presented aerial exhibits of three alternate sewer routes located north of the existing railroad to be evaluated and considered by the City. Strand evaluated the specific alternate routes and provide considerations with summarized data in the enclosed Summary Table. It must be noted that the City previously evaluated potential routes north of the railroad as part of its preliminary engineering study efforts completed in 2019 and found the currently proposed route to be most practicable. This determination was made, not only on the basis of environmental considerations, but also on constructability, maintenance, and cost-effectiveness, which are equally important to the overall project.

Source: Letter correspondence from Strand Associates to US Army Corps of Engineers, February 25, 2021

NEW TRUNK SEWER DESIGN OBJECTIVES AND LANDOWNERS' CONCERNS

Design Objectives for New Trunk Line

City / Strand previously identified the following design objectives (Preliminary Engineering Study, October 2019):

- Tie to elevation of existing influent pumping station
 - *This objective appears to be no longer applicable - a new \$2.815M STP-2 influent pumping station is being proposed concurrent with the new trunk line*
- Minimize potential for excess flow into the system, particularly from inflow and infiltration
- Be accessible for maintenance
- Minimize railroad crossings
- Reduce wetland, floodplain, and other environmental impacts
- Reduce Farm Creek crossings
- Ensure adequate cover over any Farm Creek crossings (Strand indicated 5+ feet of cover required)
- Minimize or avoid conflicts with existing trunk sewer

Recommended, More Stringent Design Objectives Identified by Landowners Appear to be Available and Achievable:

- **Avoid** Farm Creek crossings
- **Avoid** wetland and floodplain areas
- **Avoid** potential for pollution and contamination of surface water and land
- **Avoid** destruction of trees and endangered species habitat
- **Avoid** archaeologically significant areas
- **Maximize** alignment within open access corridors
 - Ease of access during construction and maintenance
 - Faster land recovery rate post-construction

Multiple Farm Creek Crossings

- Historical impacts of erosion and continual creek bed changes indicate 5 feet cover at Farm Creek crossings may be inadequate
- Route B alignment includes 6 Farm Creek crossings
- Crossings increase project costs
- Results in limited - and unreliable - access to trunk line



Evidence of Farm Creek bed changes, bank erosion, and high water flow / debris impacts

Continued Erosive Influence of Farm Creek

- Erosive nature of Farm Creek is observed following normal rainfall events and exacerbated during flooding events
- Current issues with exposure / erosion of sewer line under erosive force of Farm Creek are likely to recur as a result of not moving away from creek influence
- Trunk line being proximate to, and crossing, Farm Creek will negatively impact sewer function and design integrity
 - Increased inflow and infiltration (I&I) volumes to be managed
 - Risk of future contamination of Farm Creek

Steep bank erosion & importance of adjacent riparian forest



Staking for new alignment eroded into Farm Creek during Summer 2020 flood event



Tributary Sewer Extensions

- Route B requires extension of several tributary sewer lines (which serve majority of City's service area)
- All tributary sewer extensions will have to cross under the railroad
- Installation of pump station at Timber Rail cul-de-sac will be necessary
- Tributary sewer extensions and railroad crossings increase project costs



***Steep RR embankment
directly adjacent to
Farm Creek & wetlands***

Impact of Tree Removal

- Route B alignment impacts remnant oak-hickory woodlands with protected trees
 - 93% of Route B alignment is in forest or forested riparian waterway
- Impacts will occur during - and possibly after - construction due to planned tree removal and root system damage due to construction
- Tree replacement will be required for adjacent properties included in the USDA Conservation Reserve Enhancement Program (CREP)
- Tree removal and replacement increase project costs
- Tree removal is inconsistent with City's comprehensive land use plan and other area agency land use plans

Mature high-quality oak-hickory riparian forest along alignment



Forested wetland with stake identifying centerline of proposed trunk line sewer



Continued Access Problems

- Multiple Farm Creek crossings will be required to access manholes and perform maintenance
- Manholes will not be accessible during peak flow periods / flood events when access is critical
- Planned crossings will be difficult to maintain and sustain, increasing life-cycle operating costs



Existing ford adjacent to STP-2; Farm Creek washed out portions and further eroded east bank to maintain flow around crossing. Note sizable trees that have been washed down the creek.



Farm Creek on May 9, 2021 following 2"-3" rainfall, looking NE at the railroad oxbow

Access is Limited

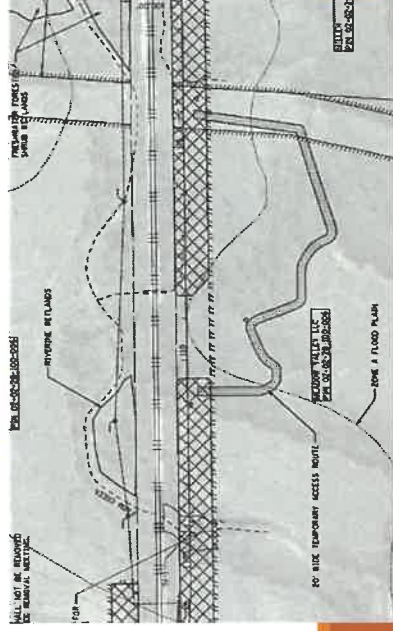
- Access is not continuous along trunk line
 - East half accessible from STP-1 only
 - West half accessible from STP-2 only
- North/south access is not available
 - Landlocked by railroad to north
 - No existing public ROW to south
- Access will be needed through private properties at multiple locations, further impacting property owners
 - Access is not linear along the railroad ROW, but serpentine around cliffs and wetlands
- Construction and maintenance of access roads will increase construction and life-cycle operating costs



Farm Creek, riparian forest, and wetlands looking SW away from railroad oxbow



Farm Creek following moderate rainfall of 2"-3" on May 8-9, 2021; photo taken May 9



Example of serpentine, non-linear access on private property

Source: Pre-Final Engineering for Permitting drawing set, Strand Associates, January 2021, Sheet 8

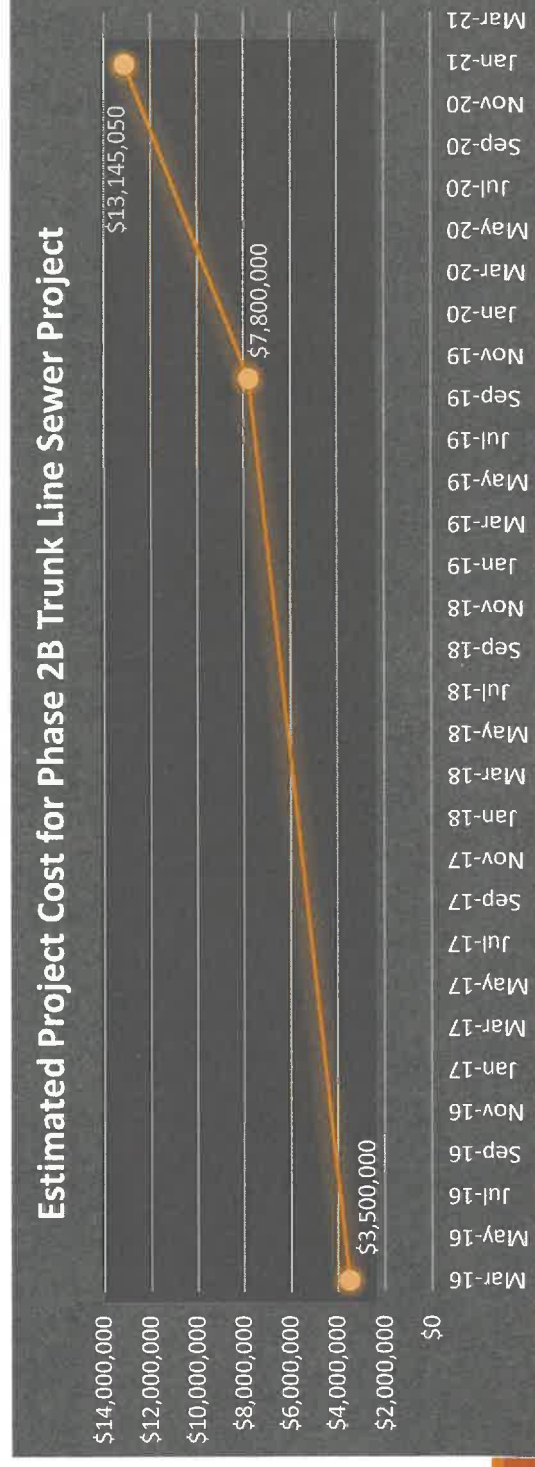
Landowners Have Sought Information & Alternatives for 15+ Months

- Since April 2020, affected landowners have requested additional information and expressed concerns with the proposed Route B alignment
 - Several FOIA requests were not responded to or did not provide information responsive to the request
 - No technical or cost analysis has been provided by the City for any alternatives beyond the Route A and Route B options presented to City Council in October 2019

- Landowners believe alternative alignments can be identified north of Farm Creek
 - Preliminary investigation by landowners has identified multiple reasonable, beneficial, and preferable alignments that should be studied to assess engineering and cost feasibility

Project Cost Escalation Over Time

- Project costs have increased significantly as design has proceeded - what is the current OPCC, and what is the City's project budget?
 - Specific impacts to project cost not identified in documents reviewed by landowners
 - No documentation that most recent increase was discussed in City Council or other public meetings
 - Ongoing permitting, permit conditions, and design changes expected to result in more cost increases



POTENTIAL ALTERNATIVE ALIGNMENTS IDENTIFIED BY LANDOWNERS

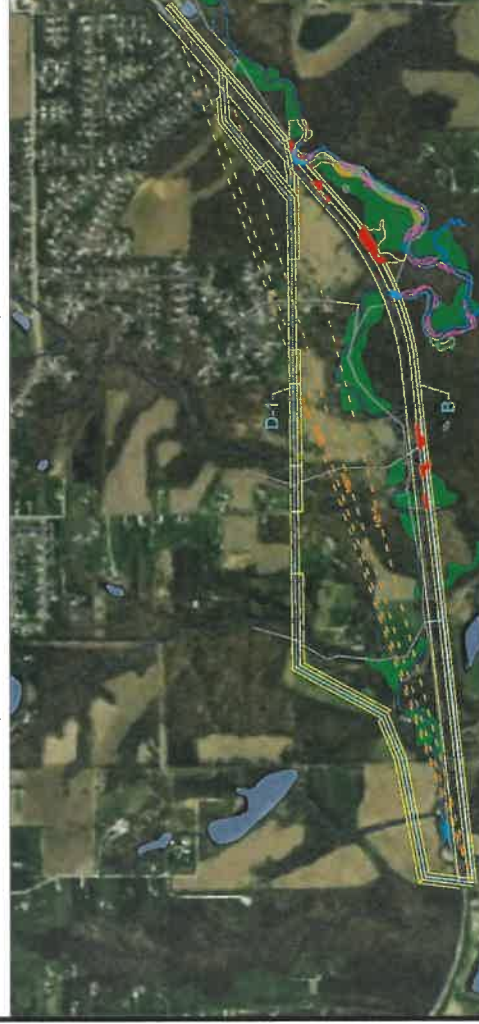
Alternative Alignments are Available

- Significant assumptions and objectives have changed:
 - Alternatives were described as being constrained to slope to final sewer elevation at current STP-2 influent pumping station elevation (630.42 feet MSL); this is no longer an issue, because the pumping station is being replaced concurrent with the trunk line and constructed at a lower elevation (~623 feet MSL)
- Landowners have identified a number of alternatives north of the railroad and Farm Creek that:
 - Avoid Farm Creek and wetland impacts
 - Significantly reduce sewer line presence in floodplain
 - Avoid remnant woodland and protected tree removal impacts
 - Are located predominantly in open access corridors, improving access for construction and maintenance and allowing for quicker land recovery
 - Are located nearer to development, reducing costs to access the sewer
 - Eliminate the need to extend tributary sewers across Farm Creek
 - Consistent with City and other local government planning

WETLANDS

(STRAND OPTION 'B' vs. PRACTICABLE ALTERNATIVE 'D-1')

FIGURE 7



FLOODPLAINS

(STRAND OPTION 'B' vs. PRACTICABLE ALTERNATIVE 'D-1')

FIGURE 9



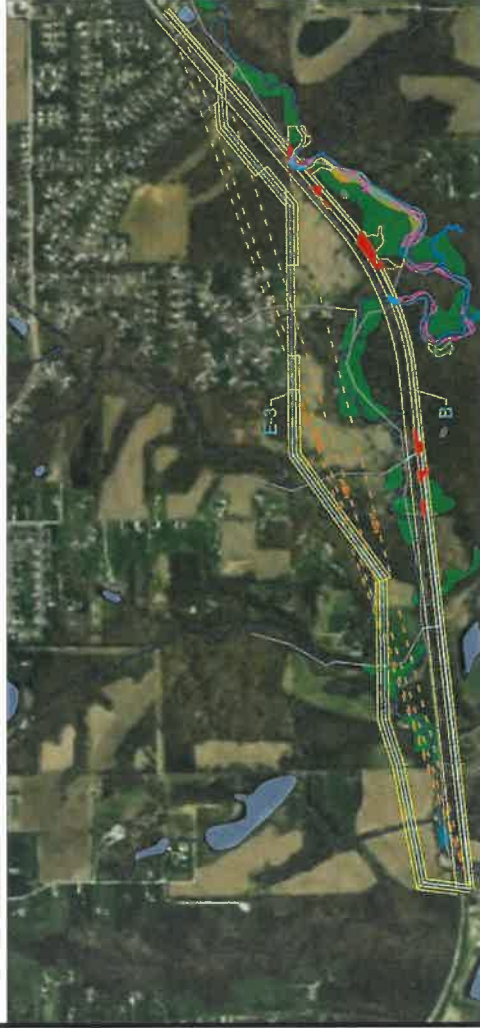
Potential North Alternative D-1

- Avoids Farm Creek (0 crossings)
- Avoids wetlands
- Maximizes avoidance of floodplain areas
- Maximizes use of open access corridors
- Meets the tributary sewers
- Utilizes existing and planned public ROW
- Consistent with City's Comprehensive Land Use Plan
- Provides continuous trunk line access with multiple access points
- Potential arrival at STP-2 at existing influent elevation

WETLANDS

(STRAND OPTION 'B' vs. PRACTICABLE ALTERNATIVE 'E-3')

FIGURE 8



Potential North Alternative E-3

- Avoids Farm Creek (0 crossings)
- Avoids wetlands in all but one location (200 feet)
- Significantly reduces placement within floodplain (compared to Route B)
- Reduces construction costs
 - Less trenchless construction
 - Fewer jack and bore locations
- Maximizes use of open access corridors
- Meets the tributary sewers
- Utilizes existing and planned public ROW
- Consistent with City's Comprehensive Land Use Plan
- Provides continuous trunk line access with multiple access points
- Potential arrival at STP-2 at existing influent elevation

FLOODPLAINS

(STRAND OPTION 'B' vs. PRACTICABLE ALTERNATIVE 'E-3')

FIGURE 10



Potential North Alternatives Appear Preferable to Route B Alignment

Feature / Element	Alternative D-1	Alternative E-3	Route B
Total Linear Feet (inc. trunk and tributary extensions)	10,455	10,205	10,425
Average Manhole Depth	24.04 ft	21.20 ft	22.35 ft
Trenchless Construction	3,100 LF	1,610 LF	3,095 LF
Jack & Bore Locations	8	5	12
Farm Creek Crossings	0	0	6
Floodplain Crossings	610 LF	1,310 LF	3,300 LF
Wetland Crossings	0 LF	200 LF	2,200 LF
Open Access Corridors	7,405 LF (74%)	7,145 LF (73%)	650 LF (7%)
Forest / Forested Riparian	2,570 LF (26%)	2,580 LF (27%)	8,735 LF (93%)
Alignment in Public ROW	2,710 LF (27%)	2,000 LF (21%)	0 LF (0%)

- Similar length
- Similar depth
- Similar - or less - trenchless construction
- Fewer jack and bore locations
- Avoid Farm Creek crossings
- Significantly reduce floodplain crossings
- Avoid (or nearly avoid) wetland crossings
- Substantially located in open access corridors, protecting valuable remnant oak-hickory woodlands and tree habitats
- Places approximately ¼ of alignment in existing public right-of-way (existing / planned future streets)
- Closer to generators, minimizing or avoiding tributary extensions

Compared to the Route B alignment, a northern alignment may have:

- Cost savings - both in construction and ongoing operation and maintenance
- Significantly less environmental impacts

RECOMMENDED STEPS FOR RESOLUTION OF CONCERNS

Request Completion of Alternatives Analysis

- Retain engineering consultant to identify and evaluate alternatives north of Farm Creek for comparison to proposed Route B alignment
 - Objective analysis, not impacted by pride of ownership or justification of prior work
 - Transparency and opportunity for public input
 - Drive public buy-in and support for identified preferred alternative before funding and permitting for the project is secured
- Next steps / timing
 - Develop and issue RFP (2 weeks)
 - Secure proposals (30 days to respond)
 - Select consultant by September 15
 - Complete alternatives analysis by December 31
 - Evaluate and select most practicable alignment for project by January 31, 2022

Components of Alternatives Analysis

An alternatives analysis would **identify alternate alignments north of Farm Creek and evaluate cost and environmental impacts** with comparison to proposed Route B alignment. Key considerations include:

- Meets standards for permitting and development
- Avoid flooding and erosive influence of Farm Creek, which is continually changing and is volatile during flood events
- Accessibility during construction and for ongoing maintenance
- Environmental protection for wetlands, floodplain, trees, and other sensitive features
- Number, size, and impact of easements required
- Total project construction cost
- Ongoing O&M costs
- Consistency with City's comprehensive plan and other local / regional agency plans

Benefits to City of Completing Alternatives Analysis

There are **NO negative impacts** to the City as a result of completing the alternatives analysis. Potential impacts are all positive and include:

- Potential for **cost reduction** during construction and/or lifecycle O&M if an alternative alignment is more cost-effective
- Potential for **increased performance** of sewer system if an alternative alignment is more accessible and more easily maintained
- Demonstrated **fiscal and environmental responsibility to City taxpayers**, ensuring the optimal alignment is selected; there is time to complete this prior to submittal of loan application to IEPA
- **Build credibility with, and buy-in from**, affected landowners

Questions / Discussion
