
Ward 1 Drainage and Flood Improvements Study

ERA Project #W22062.00

Prepared For:

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Introduction

The City of Wood Dale (City) contracted Engineering Resource Associates, Inc. (ERA) to prepare a drainage and flood improvement study that identifies infrastructure improvements to reduce the flooding in Ward 1 as part of the City’s Capital Improvement Plan. Ward 1 is the southeast portion of the City as shown in Figure 1, taken from the City’s ward map. The City of Wood Dale has a population of approximately 14,000 people according to the 2020 census and comprises approximately 4.85 square miles in DuPage County. Ward 1 is primarily residential with open space at White Oak Park, Salt Creek Park, Wood Dale Grove, and Fisher Woods. Wood Dale Park District, Bensenville Park District, and DuPage County Forest Preserve own and maintain these various open space properties in and adjacent to Ward 1.

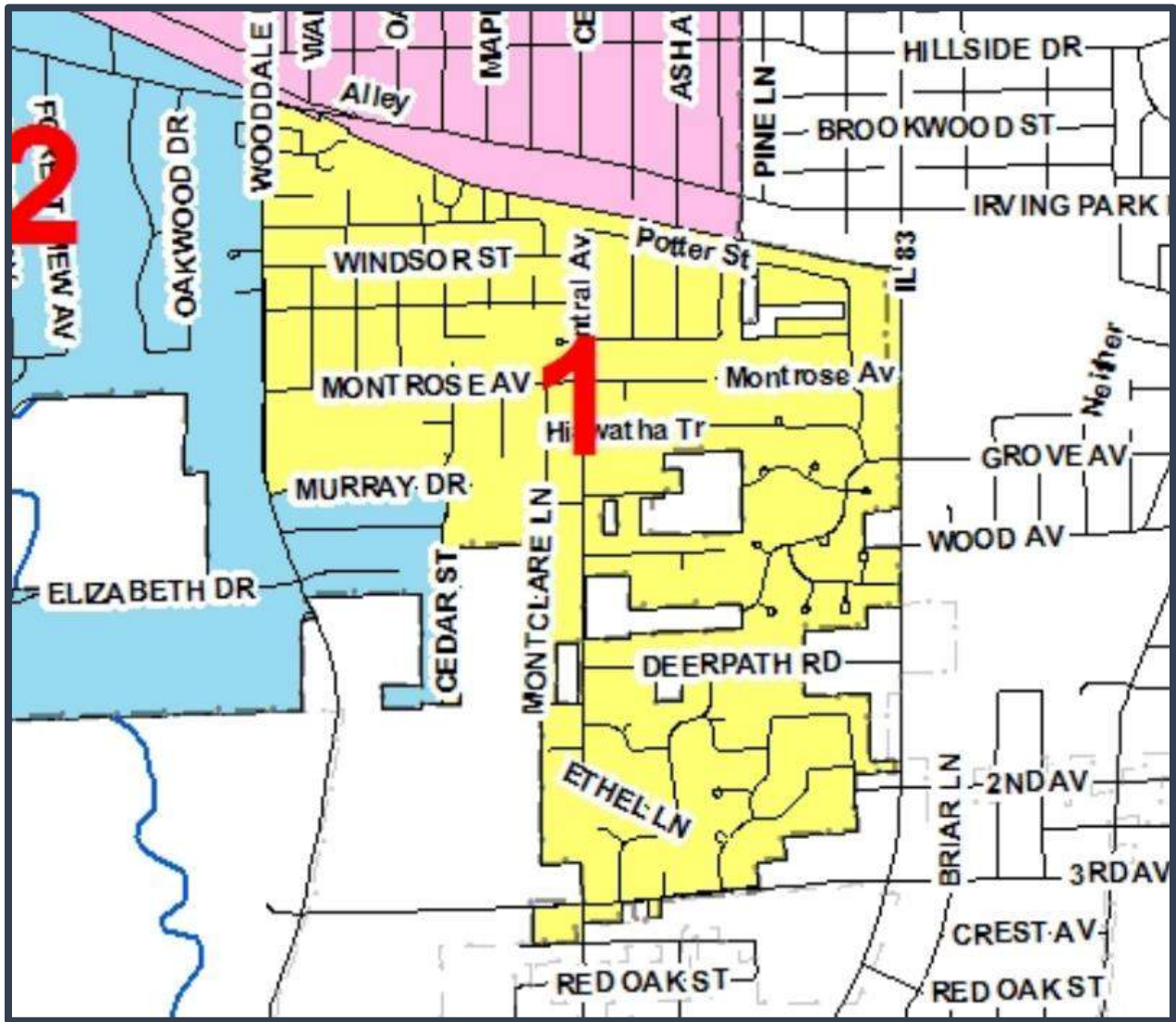


FIGURE 1: Wood Dale Ward Map; Ward 1 is shown in yellow.

The City identified 5 study areas in Ward 1 that are prone to flooding as noted in the 2013 Citywide Drainage and Flood Improvement Study. Area 1, 2 and 3 were identified in the Master Plan and are listed below and outlined in Figure 2:

- Area 1 – South Cedar, known as Area 10 in 2013 Study
- Area 2 – Montclare/Aspen, known as Area 8 in 2013 Study.
- Area 3 – Knollwood/Woodlane, known as Area 13 in 2013 Study.

Wood Dale Ward 1 Drainage and Flood Improvement Study

In these first three areas, there is limited conveyance infrastructure and uncontrolled runoff from the Forest Preserve and Park District properties adjacent to the flooded residential areas. ERA modeled and analyzed storm sewer improvements to increase conveyance in these areas.

Area 4 and 5 were not included in the 2013 study but were identified by City staff as flood-prone areas. Similar to Areas 1 through 3, these areas have poor conveyance systems that are undersized and ponding water can cause nuisance and structural flooding in these areas. Areas 4 and 5 are listed below and outlined in Figure 2.

- Area 4 - Deerpath/Edgewood
- Area 5 - Sunnyside Alley

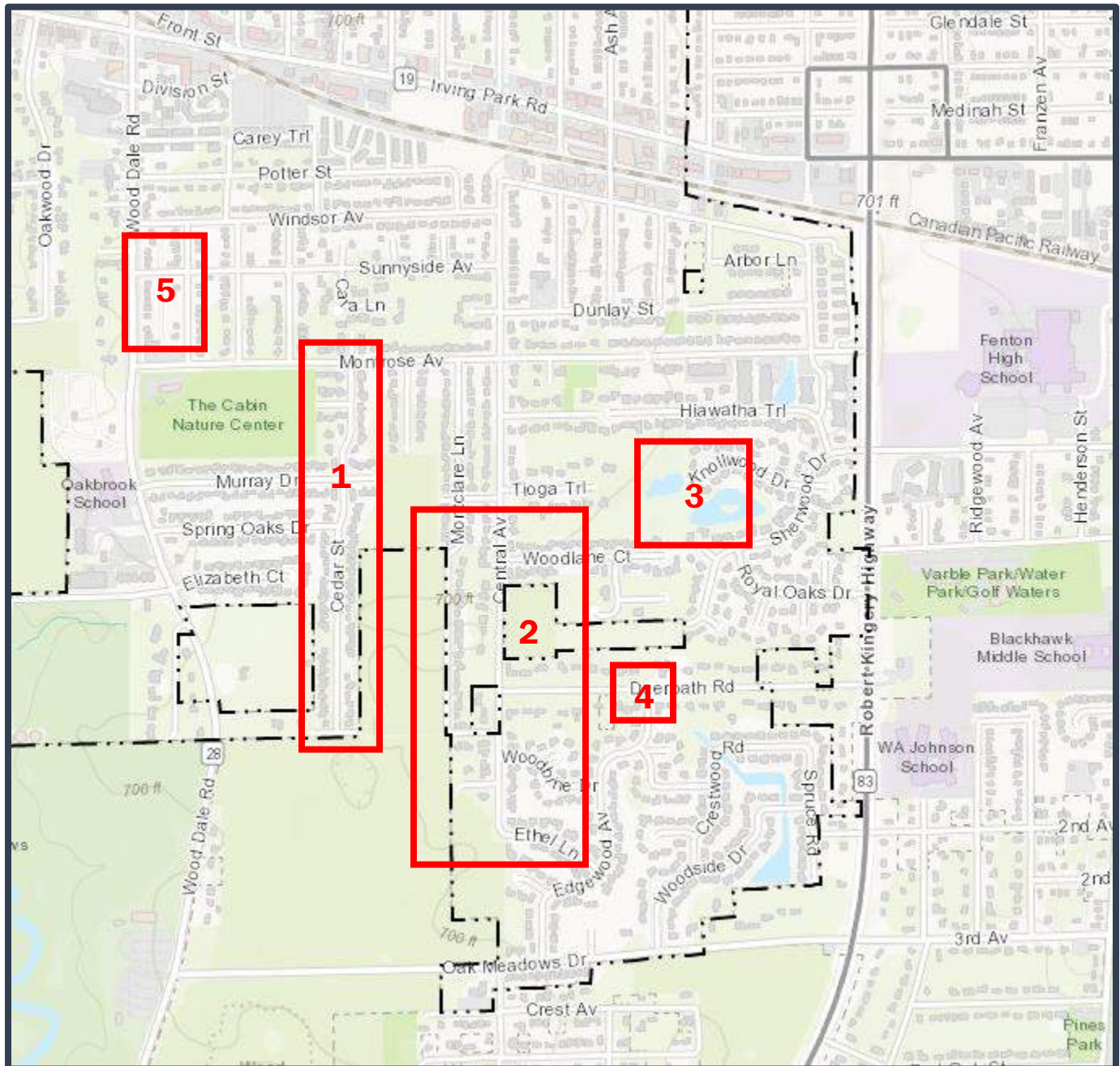


FIGURE 2: Wood Dale Ward Map with 5 study areas outlined in red boxes.

The City aims to use this Ward 1 update to the Storm Water Master Plan to prioritize projects in Ward 1. The goal of the study is to mitigate localized flooding for a 10-year rainfall event and provide water quality improvements where possible.

This report will describe the existing conditions in these five study areas, the methodology used to analyze them and the proposed alternatives. The end of the report includes a modified stormwater Capital Improvement Plan (CIP) for the City's budgetary purposes as well as a list of potential grant opportunities the City may pursue to offset the City's funding of these projects.

Means & Methods

ERA investigated and evaluated the subwatersheds for stormwater infrastructure vulnerabilities in the City's five study areas. All areas are outside of the floodplain. These local drainage problems are caused by aging and/or inadequately sized stormwater management system. The stormwater management system includes public and private ditches, storm sewers, detention ponds, culverts and depressional storage areas. ERA used two methods to analyze the five areas. Areas 1 through 4 were analyzed together due to their proximity, related nature, and scale of the study area. ERA surveyed and analyzed Area 5 separately.

AREAS 1, 2, 3 & 4

ERA developed a two-dimensional XPSWMM model to analyze the conveyance and storage of the existing stormwater system. ERA modeled proposed solutions and estimated the costs for the capital improvement projects identified.

The following resources were used to construct an existing conditions model for selected subwatersheds in XPSWMM-2D:

- GIS Data from DuPage County, including the 2017 topography and 2021 aerials.
- GIS Data from the City with the following information: storm sewer alignment, parcel lines, manhole locations, pipe diameters (over 10-inch diameter), culvert sizes
- As-built plans from the City of recent drainage projects in Area 3

The County's 2017 topographic information was imported into the XPSWMM-2D model to create a digital terrain model (DTM). The DTM is required to create the 2D surface grid needed to perform hydraulic computations for overland flows.

City storm sewer GIS data did not include invert elevation data. ERA used engineering judgement and applied a standard depth of cover over the provided storm sewer diameters. All RIM elevations were taken from the 2017 GIS topographic surface provided by DuPage County. The cover depth and pipe diameter were subtracted from the assumed RIM elevations to estimate the invert elevations. This was applied to all the storm sewer structures across Ward 1 and minor adjustments were made where necessary to run the model.

ERA subdivided Ward 1 into basins tributary to manholes in the study areas. ERA utilized SCS curve numbers and performed time of concentration calculations for each sub-catchment and assigned these attributes to the various nodes within the model. ERA used Illinois State Water Survey Bulletin 75 rainfall depth data and corresponding Huff rainfall distributions to perform a critical duration analysis and determine the critical storm duration for this study area. The critical duration of this model is the 3-hour storm event.

The modeled analyses did not include the following items:

- Groundwater analysis
- Field survey of the four modeled study areas
- Inlet capacity analysis
- Cost analysis of potential flood damages

- Detailed hydraulic information for the most upstream portions of each watershed outside the City limits

AREA 5

A depressional area exists in the alley at this location. Once ponding water is deep enough, it overtops to the west where there is significant fall towards Wood Dale Road. This area appears to be a local drainage problem caused by the topography of the alley and around the garages and side yards of the homes on this block. ERA surveyed the area to identify the existing overflow and design a lower overland flow path to encourage water to flow safely out to Wood Dale Road. ERA completed side yard swale calculations, rather than detailed XPSWMM modeling to identify drainage solutions in at this project location.

ERA recommends the establishment of adequate overland flow paths regardless of other recommended alternatives at all project improvements. The watershed will likely continue to experience increase in runoff due to redevelopment and more intense storm events. The only sure way to eliminate flood risks is to provide an overflow route that can safely pass extreme events.

COST ANALYSIS

All estimated costs are preliminary and may be revised based on future reviews by the City. The values may be used for future budgeting purposes and should be revised as updated costs become available. The Capital Improvement Plan (CIP) divides these improvements over ten years to keep the proposed annual storm sewer infrastructure costs between \$350,000 and \$900,000. The projects are ordered from downstream to upstream to ensure conveyance and storage are adequately provided during each phase of the project. See the CIP work map in Appendix B for a proposed schedule of work.

Modeled Analysis: Area 1, 2, 3 & 4

EXISTING CONDITIONS | AREA 1: South Cedar

Area 1, South Cedar Street, known as Area 10 in the 2013 study, is west of the Forest Preserve property. Stormwater flows from northwest to southeast in this area. A 30" storm sewer takes water from the rear yards of the east side of Cedar St and a portion of the Wood Dale Grove and flows west to the 15" storm sewer in the west right-of-way of Cedar St. The 15" storm sewer carries flows north to the existing 22" x 34" elliptical sewer. The 22" x 34" sewer conveys stormwater from Cedar St east to the Wood Dale Grove, a DuPage County Forest Preserve property.

The elevation of Cedar St is below 704' and stormwater is trapped in the right-of-way and ponds in the front and side yards of the homes on Cedar. Stormwater can pond up to 18" in the 10-year storm and up to 24" in the 100-year storm event. Figure 4 and Figure 5 show the approximate existing conditions of the 10-year, 3-hour and 100-year, 3-hour storm events. These XPSWMM images include half-foot increments of flooding depths. ERA notes that these flood limits are useful to depict the approximate limits of flooding for this study, but the accuracy is limited by the level of detail in the surface of the model (DTM).

PROPOSED CONDITIONS | AREA 1: South Cedar

To provide the 10-year level of service for this area, ERA proposed replacing the 6" and 10" storm sewers with an 18" storm sewer and the 15" in the west right-of-way with an elliptical 24"x38" storm sewer. At the outlet, the existing 22" by 34" elliptical storm sewer is proposed to be upsized with a 29" x 45" elliptical storm sewer that discharges to the Wood Dale Grove. Additional inlets may be needed along the curb line of Cedar St to collect stormwater into the proposed storm sewer. See Figure 3 for the proposed improvements.

In Area 1, elliptical storm sewers are used in the design to increase the conveyance without significantly lowering the invert at the outfall. This system discharges to grade in the Wood Dale Grove.

This alternative reduces the flooding in the roadway to less than 6" in the curb line in the 10-year storm and reduces the private property flooding in the 100-year storm. Figure 6 and Figure 7 show the approximate proposed conditions of the 10-year, 3-hour and 100-year, 3-hour storm events. These XPSWMM images include half-foot increments of flooding depths. For tabular results of the ponding improvements in Area 1, please refer to Table 1 and 2.

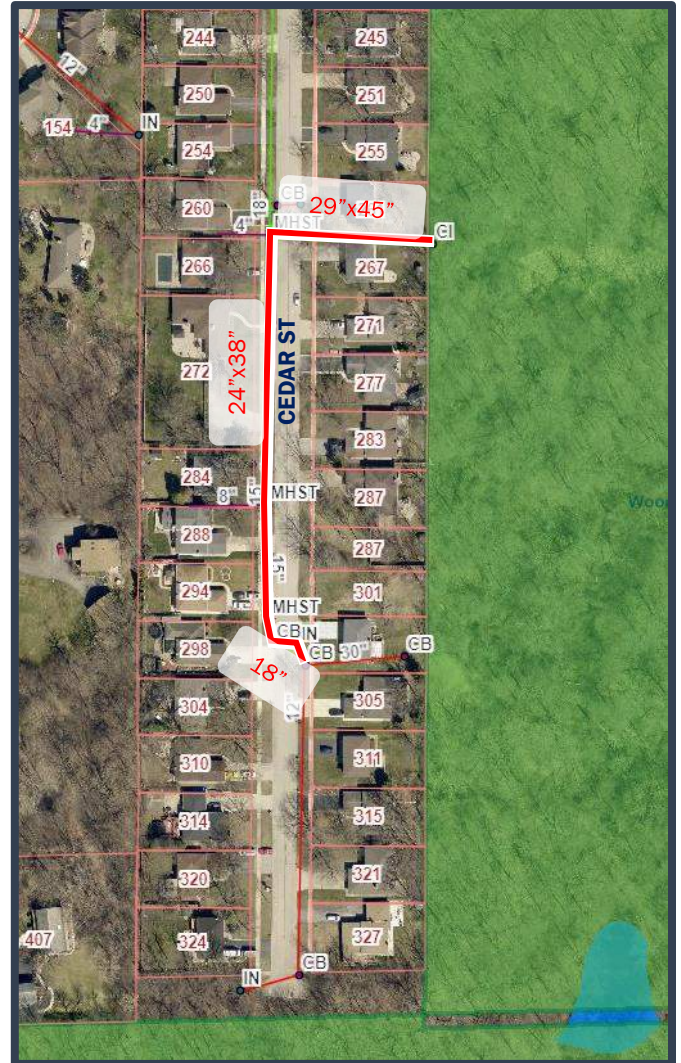


FIGURE 3: Proposed storm sewer improvements in Area 1

EXISTING CONDITIONS: AREA 1

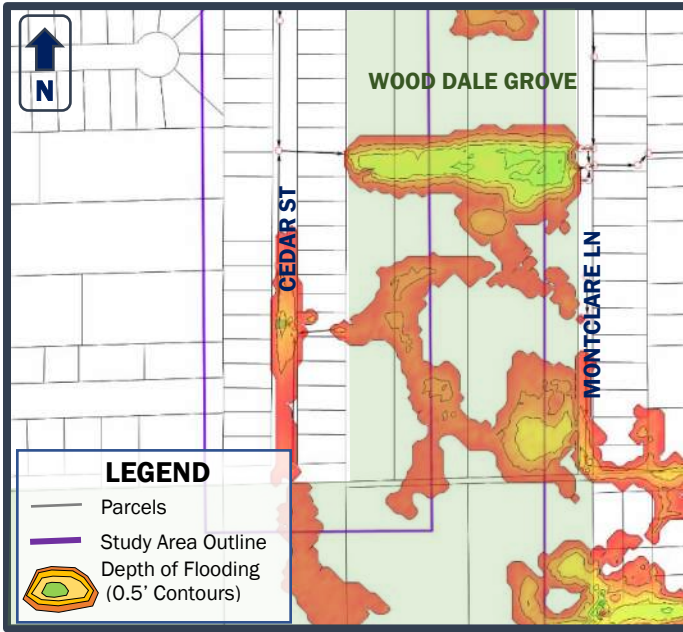


FIGURE 4: Area 1 Existing Conditions, 10-year, 3-hours

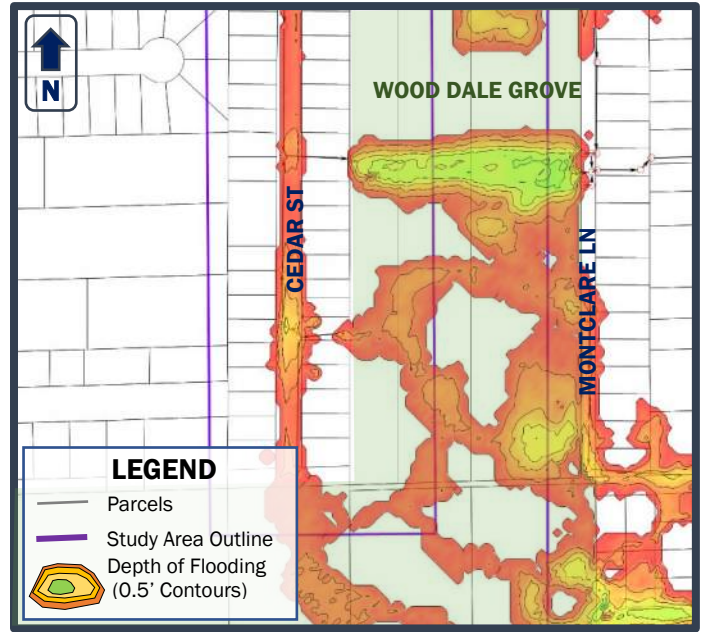


FIGURE 5: Area 1 Existing Conditions, 100-year, 3-hours

PROPOSED CONDITIONS: AREA 1

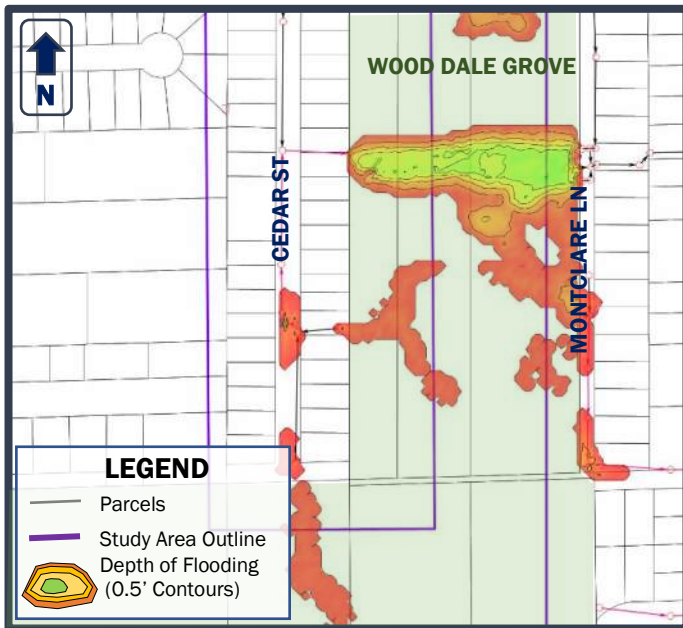


FIGURE 6: Area 1 Proposed Conditions, 10-year, 3-hours

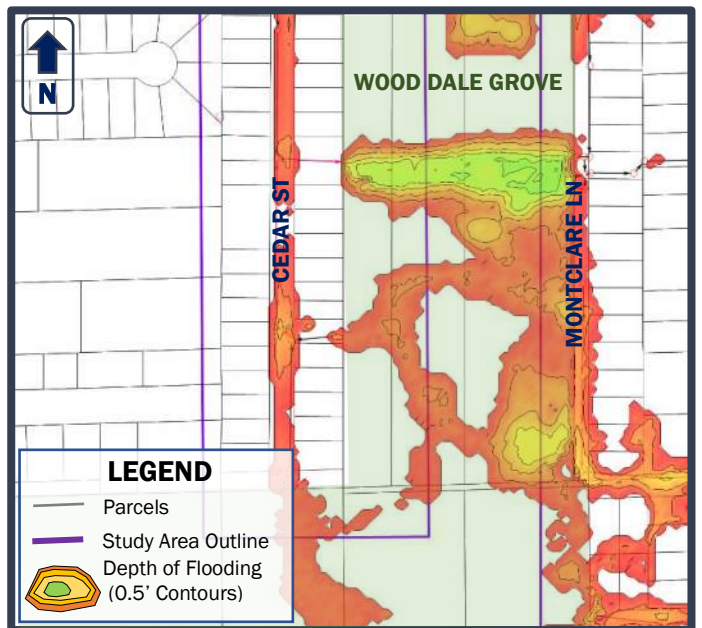


FIGURE 7: Area 1 Proposed Conditions, 100-year, 3-hours

EXISTING CONDITIONS | AREA 2: Montclare/Aspen

Area 2, Montclare/Aspen, known as Area 8 in the 2013 study, is the residential area east of the Forest Preserve property. Stormwater flows from northwest to southeast in this area. Stormwater from Area 1 flows across Wood Dale Grove and Montclare Lane and Aspen Rd receive flows which contribute to the flooding in Area 2. The northern portion of Area 2 drains towards the stormwater basins at Crestwood Rd and Woodside Dr through a series of overland flow paths and storm sewers. The south portion of Area 2 drains toward the dry bottom basins at Edgewood Ave. These two subwatersheds are highlighted in yellow in Figure 8. The flow arrows note the general direction of stormwater across the study areas which ultimately reach the intersection of Oak Meadows Dr and Route 83/Kingery Highway.

The existing storm sewer in the northern sub-watershed collects stormwater from Montclare Ln and Juniper Ave, flows south down Central Ave where it continues east on Woodbine Rd to Edgewood Ave where the storm sewer flows northeast to the existing 38" x 60" elliptical storm sewer that discharges from a headwall to the stormwater ponds. This storm sewer network ranges in pipe diameters between 4" and 24" with most of the trunk line being 18" diameter pipe. This conveyance system is undersized and created ponding at Montclare Ln and Juniper Ave. Stormwater can pond up to 18" in the 10-year storm and up to 24" in the 100-year storm event. Figure 10 and Figure 11 show the approximate existing conditions of the 10-year, 3-hour and 100-year, 3-hour storm events. These XPSWMM images include half-foot increments of flooding depths. ERA notes that these flood limits are useful to depict the approximate limits of flooding for this study, but the accuracy is limited by the level of detail in the surface of the model (DTM).

The southern sub-watershed is routed to the dry bottom ponds at Edgewood Ave. The existing 12" to 15" storm sewers collect stormwater from Aspen Rd and flow east to Central Ave and south to Ethel Ln where the pipe diameters increase to 18" to 21" until the storm sewer connects to the 24" on Edgewood Av and ultimately discharges via a 36" storm sewer at the dry bottom ponds. City staff report that these ponds fill and frequently overtop, backing up into the residential properties on Woodside Dr and Crestwood Ct. The outlet of these ponds flows south to Oak Meadows Dr, an Addison Township roadway.

These conveyance systems are undersized and created ponding in the roadway and on the residential properties. At Montclare Ln and Juniper Ave, stormwater can pond up to 18" in the 10-year storm and up to 24" in the 100-year storm and at Aspen Rd stormwater can pond up to 36" in the 10-year storm and 42" in the 100-year storm. Figure 10 and Figure 11 show the approximate existing conditions of the 10-year, 3-hour, and 100-year, 3-hour storm events. These XPSWMM images include half-foot increments of flooding depths. ERA notes that these flood limits are useful to depict the approximate limits of flooding for this study, but the accuracy is limited by the level of detail in the surface of the model (DTM).

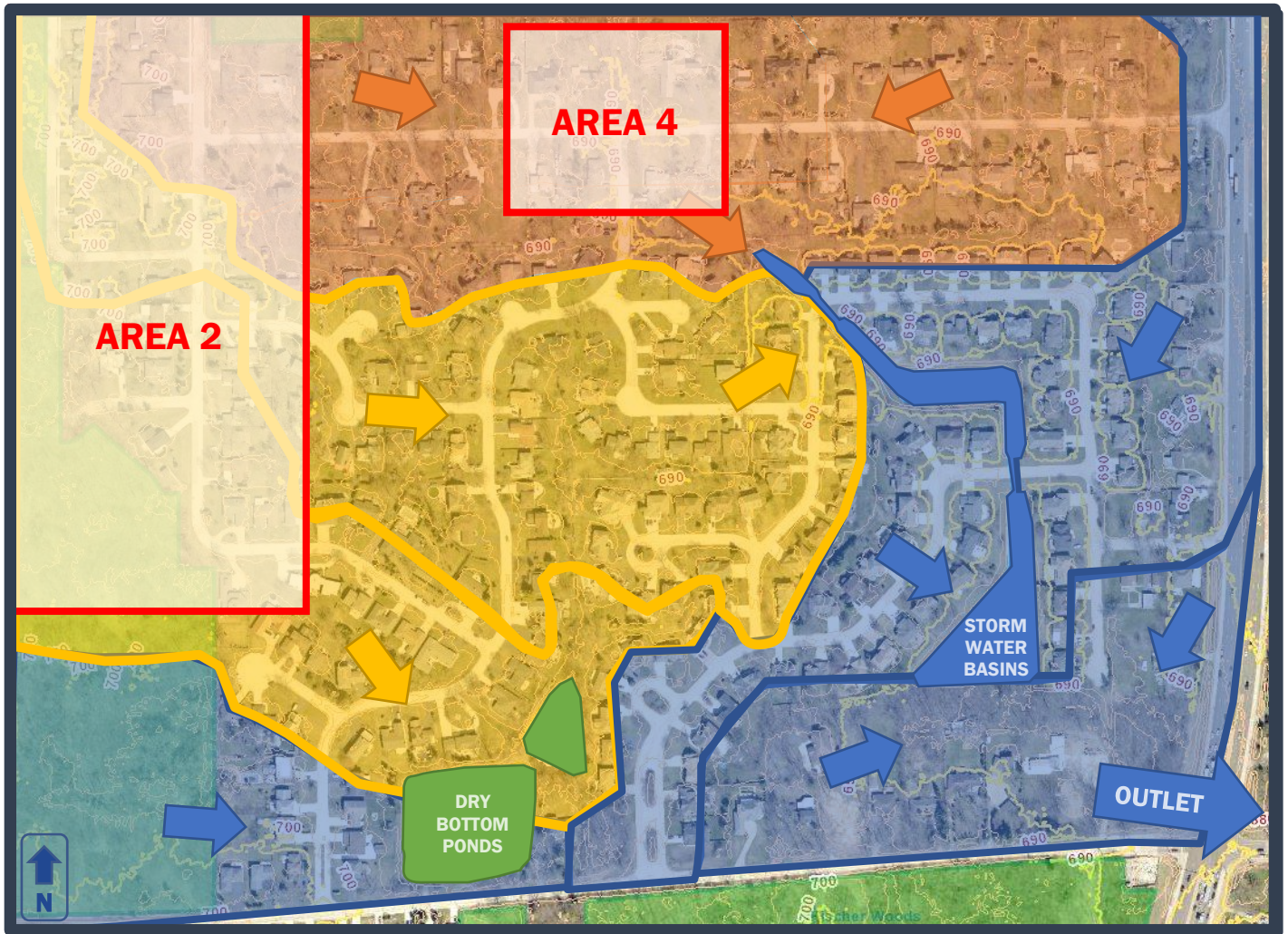


FIGURE 8: Tributary areas at study area 2 and study area 4. Due to their proximity and the related nature of their outfalls, ERA modeled these two locations together.

PROPOSED CONDITIONS | AREA 2: Montclare/Aspen

To provide the 10-year level of service for the northern sub-watershed in area, ERA proposed replacing the existing 6” and 10” storm sewers with an 18” storm sewer on Montclare Ln. The existing 12” to 18” storm sewers that carry stormwater from Montclare Ln to Juniper Dr, east to Central Ave, south to Woodbine Dr and west along Woodbine Dr to Edgewood Ave would be replaced with 24” storm sewer. At Edgewood Ave, the proposed storm sewer would increase to a 30” sewer until Butternut Dr. At the intersection of Edgewood Ave and Butternut Dr, flows would split north in a 48” storm sewer to the Area 4 improvements, and south, then east, along Butternut Ave via a 48” storm sewer to Crestwood Rd until discharging to the stormwater pond, downstream of the Crestwood Rd culvert. See Figure 9 for an approximate schematic of the proposed improvements and Appendix A for a more detailed depiction of the proposed storm sewer improvements.

To provide the 10-year level of service for the southern sub-watershed in this area, ERA proposed replacing the existing storm sewers with a 48” storm sewer in this area. The proposed storm sewer improvements would follow along the same route as the existing storm sewers and collect runoff from the Wood Dale Grove Forest Preserve at Aspen Rd with a 29” by 45” elliptical storm sewer until midblock where a 48” storm sewer will continue east to Central Ave and south to Ethel Ln where storm sewers carry stormwater southeast to Edgewood Ave. At Edwood Ave, the storm sewer crosses the right-of-way and continues between to residential properties before discharging

to the dry bottom stormwater basins. See Figure 9 for an approximate schematic of the proposed improvements and Appendix A for a more detailed depiction of the proposed storm sewer improvements.

These conveyance improvements require stormwater storage to avoid adverse impacts to the downstream properties. ERA considered three storage alternatives using the same upstream conveyance improvements in this area.

ALTERNATIVE A

Alternative A looked at creating 2.8 acre-feet of storage at the northwest corner of Kingery Hwy and Oak Meadows Dr, and did not include improvements at the Edgewood Ave/Oak Meadows Dr basins. This alternative did reduce the flooding conditions, but ponding still occurred in the 10-year storm in the roadway at Juniper Ave. City staff informed ERA that in addition to the five study areas in this project, residents at Crestwood Ct experience property flooding. Without expanding the basins at Edgewood Ave and Oak Meadows Dr, this flooding condition did not improve at Crestwood Ct.

ALTERNATIVE B

ERA proposes adding 2.8 acre-feet of storage to the vacant parcel at Kingery Hwy and Oak Meadows Dr and 3.4 acre-feet of storage at the existing stormwater basins at Edgewood and Oak Meadows. A 36" storm sewer connecting these two storage areas is required to maintain the high water level of the upstream basin. This proposed 36" storm sewer would replace the 15" storm sewer in the north right-of-way of Oak Meadows Dr. This proposed storage and conveyance improvements together make up Alternative B. Exhibit B in Appendix A depicts these improvements in more detail.

ERA recommends Alternative B. Alternative B reduces the flooding in the roadway to less than 6" in the curb line in the 10-year storm and reduces the private property flooding in the 100-year storm. Stormwater that could pond to depths of 18" at Juniper Ave and up to 30" at Aspen Ave during a 10-year storm event is reduced to 6" in the proposed conditions. For tabular results of the ponding improvements in Area 2, please refer to Table 1 and Table 2. Figure 12 and Figure 13 show the approximate proposed conditions of the 10-year, 3-hour and 100-year, 3-hour storm events. These XPSWMM images include half-foot increments of flooding depths. ERA notes that these flood limits are useful to depict the approximate limits of flooding for this study, but the accuracy is limited by the level of detail in the surface of the model (DTM).

ALTERNATIVE C

Alternative C looked at adding additional storage at the Edgewood Ave and Oak Meadows Dr basins below the outfall elevation. This requires a pump to drain the basin after rainfall events. The volume needed to provide a significant improvement in the level of service is an additional 7.2 acre-feet, of which 4.1 acre-feet must be pumped from the basins. Additionally, to excavate the additional 7.2 acre-feet of volume from these parcels, retaining walls and/or underground storage cisterns are required. Due to the high installation costs and ongoing pump operating and maintenance costs, this alternative is not recommended.

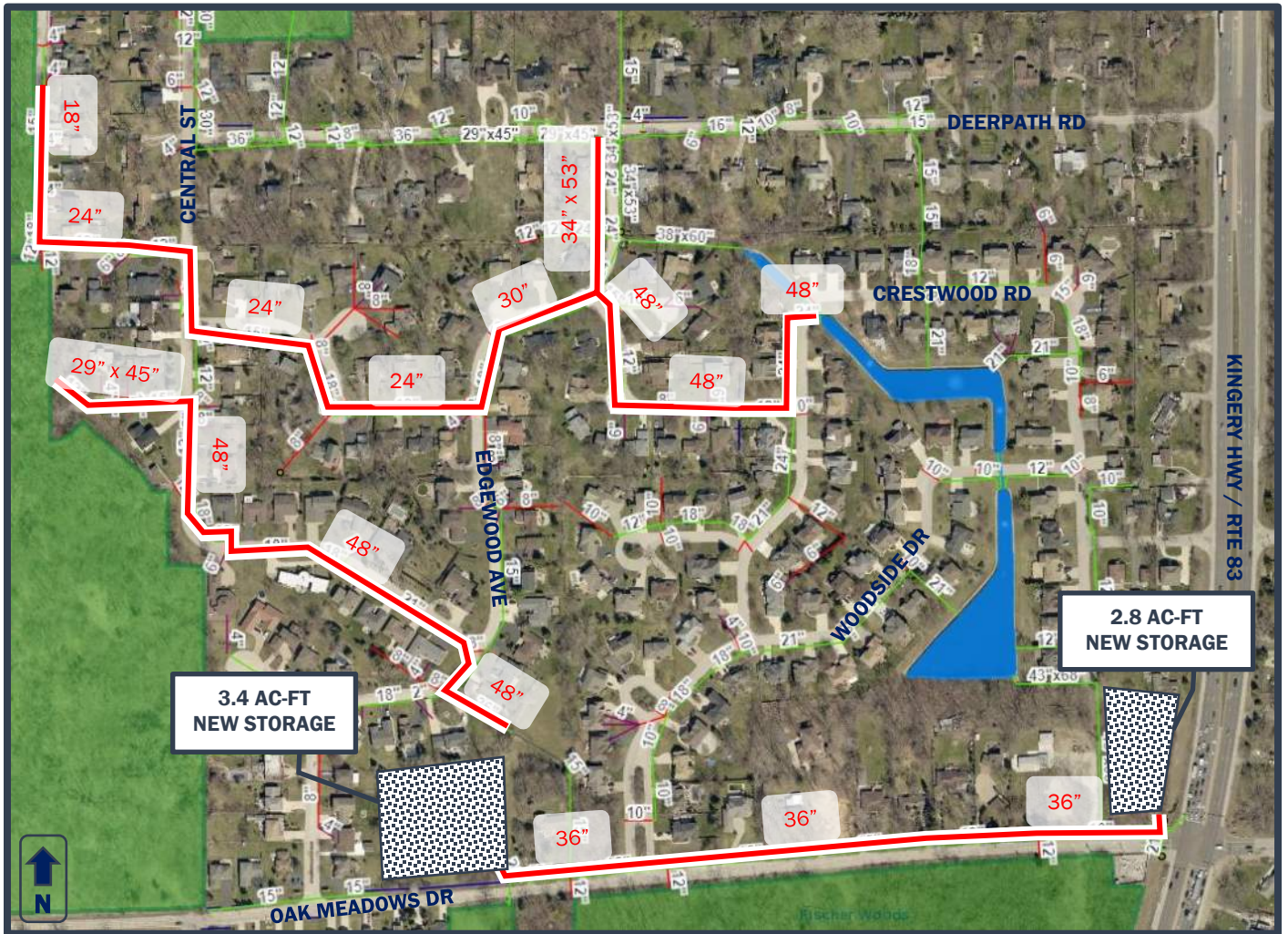


FIGURE 9: ALTERNATIVE B | Proposed storm sewer improvements in Area 2, 3 and 4

EXISTING CONDITIONS: AREA 2

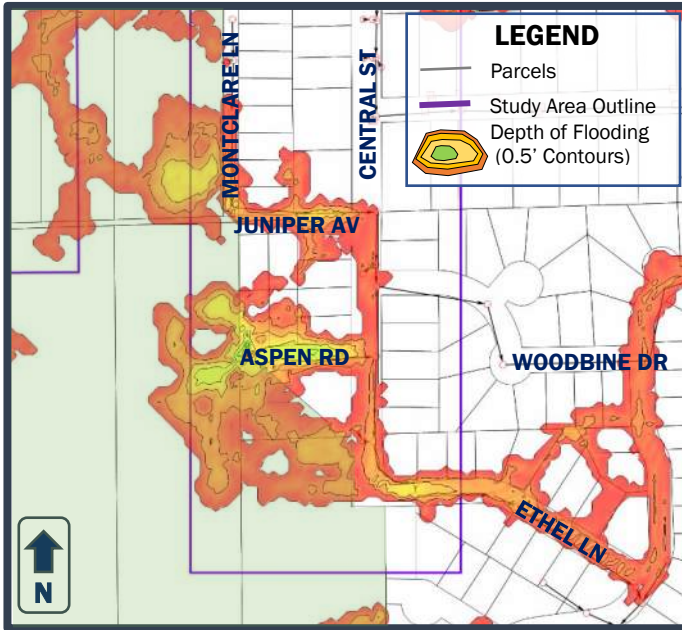


FIGURE 10: Area 2 Existing Conditions, 10-year, 3-hours

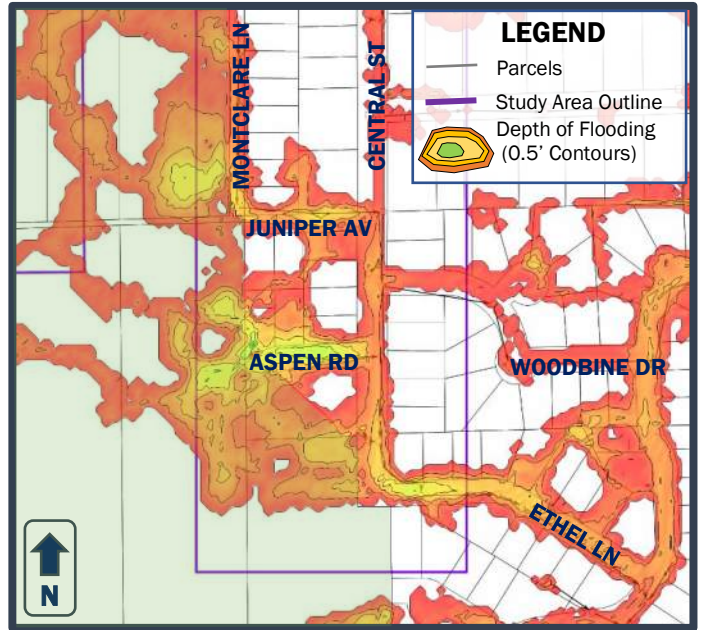


FIGURE 11: Area 2 Existing Conditions, 100-year, 3-hours

PROPOSED CONDITIONS: AREA 2

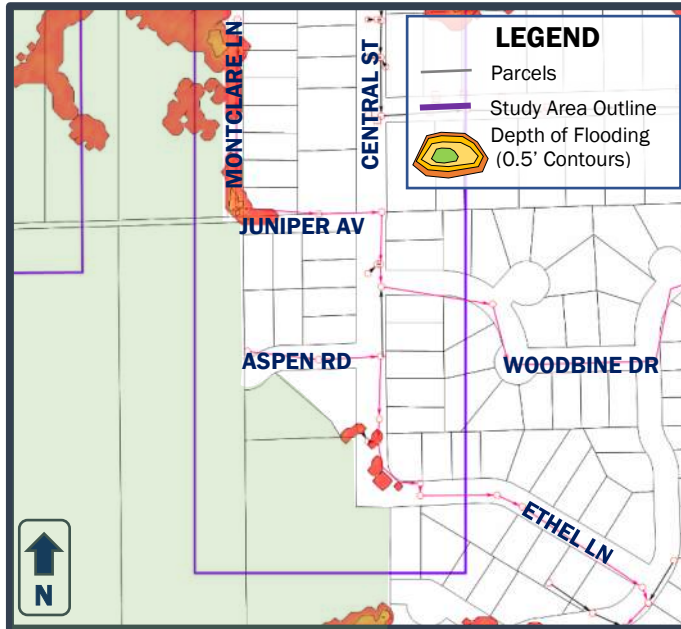


FIGURE 12: Area 2 Proposed Conditions, 10-year, 3-hours

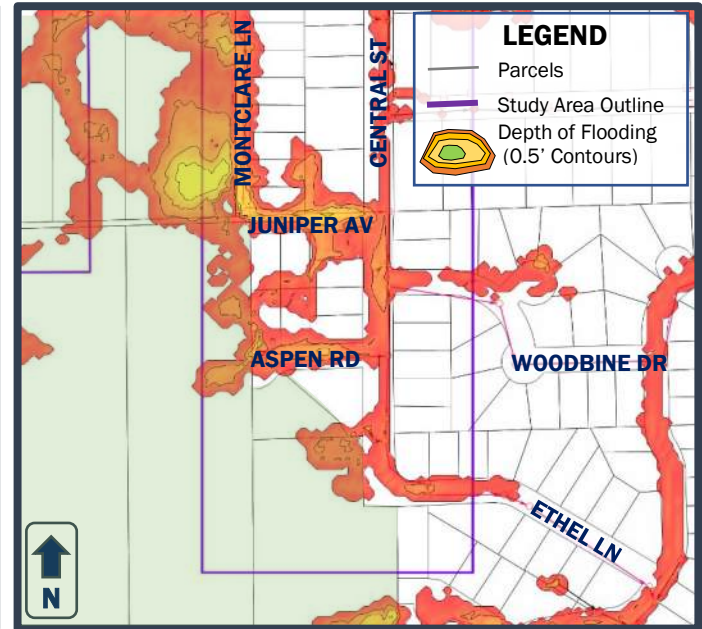


FIGURE 13: Area 2 Proposed Conditions, 100-year, 3-hours

EXISTING CONDITIONS | AREA 3: Knollwood/Woodlane

Area 3, Knollwood/Woodlane, known as Area 13 in the 2013 study, is the residential area at the Knollwood Dr cul-de-sac. During rainfall events, stormwater in this area backs up from the Hyatt-Hubbard Site at the Bensenville Park District parcels and overtops Knollwood Dr flooding the private properties. City staff completed improvements to the pump at Knollwood Dr recently and report the Royal Oaks Homeowners Association Pond does not overtop. When the Park District parcels overtop, an inlet at Knollwood Ave collects stormwater and conveys it via a 12” storm sewer to the Royal Oaks Homeowners Association Pond. This area can flood 12” to 18” and block residential driveway access at multiple residences.

Figure 15 and Figure 16 show the approximate existing conditions of the 10-year, 3-hour and 100-year, 3-hour storm events. These XPSWMM images include half-foot increments of flooding depths. ERA notes that these flood limits are useful to depict the approximate limits of flooding for this study, but the accuracy is limited by the level of detail in the surface of the model (DTM).

PROPOSED CONDITIONS | AREA 3: Knollwood/Woodlane

To provide the 10-year level of service for this area, ERA proposed replacing the 12” storm sewers with a 24” storm sewer to the Royal Oaks Homeowners Association Pond. See Figure 14 for the proposed improvements.

This improvement removes the flooding in the 10-year storm event and reduces the flooding in the roadway to less than 12” in the 100-year storm. Figure 17 and Figure 18 show the approximate proposed conditions of the 10-year, 3-hour and 100-year, 3-hour storm events. These XPSWMM images include half-foot increments of flooding depths. For tabular results of the ponding improvements in Area 3, please refer to Table 1 and 2.



FIGURE 14: Proposed storm sewer improvements in Area 3 from Knollwood Dr to Royal Oaks Homeowners Association Pond

EXISTING CONDITIONS: AREA 3

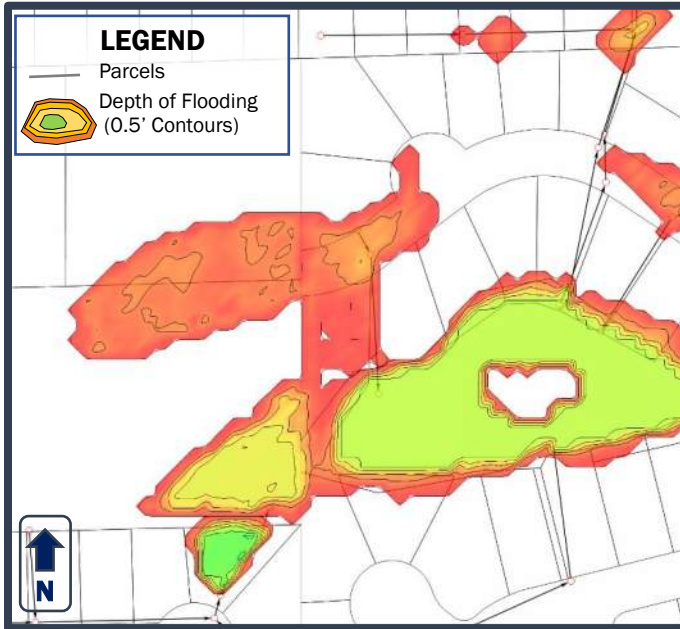


FIGURE 15: Area 3 Existing Conditions, 10-year, 3-hours

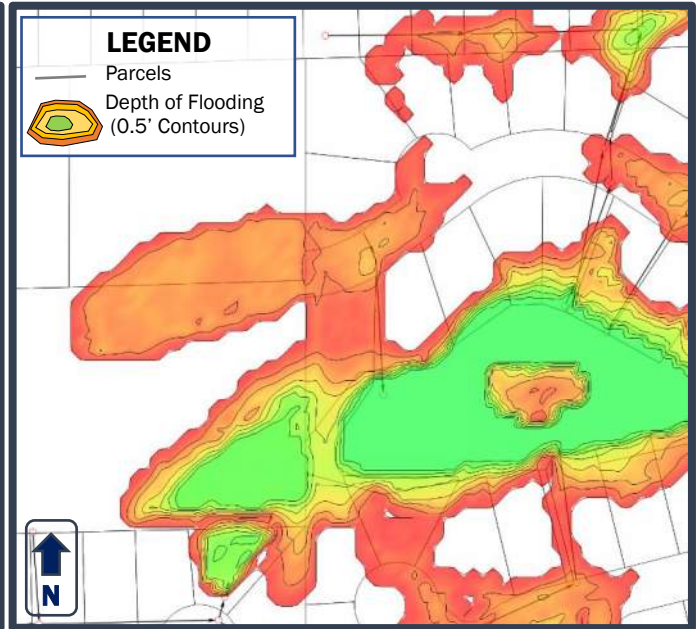


FIGURE 16: Area 3 Existing Conditions, 100-year, 3-hours

PROPOSED CONDITIONS: AREA 3

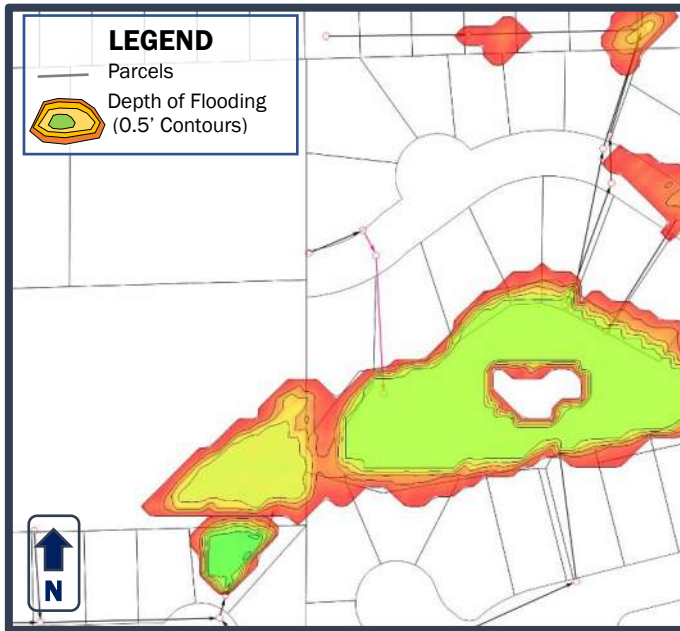


FIGURE 17: Area 3 Proposed Conditions, 10-year, 3-hours

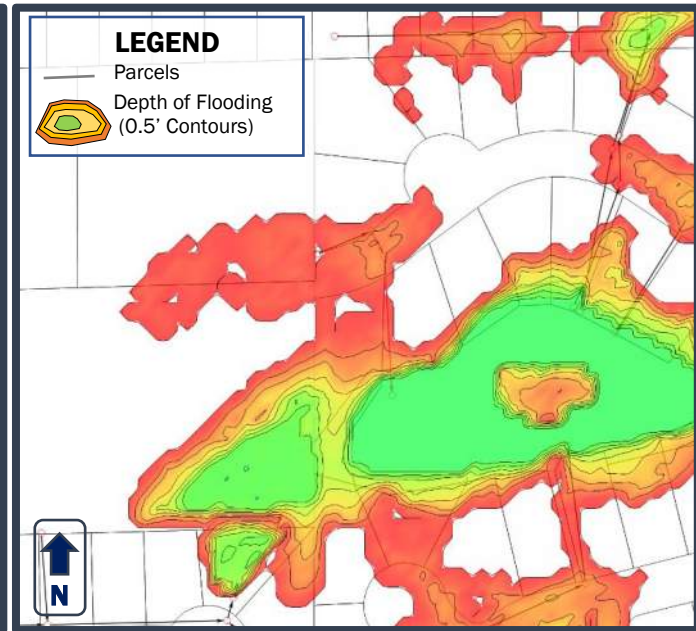


FIGURE 18: Area 3 Proposed Conditions, 100-year, 3-hours

EXISTING CONDITIONS | AREA 4: Deerpath/Edgewood

Area 4, is the residential area east of Area 2 at the intersection of Deerpath Rd and Edgewood Ave. Stormwater flows from the east and west to this low point of Deerpath Rd where it ponds and until it flows south down Edgewood Ave to the Woodside Subdivision Owners Associations ponds at Crestwood Rd. Figure 19 shows Area 4 and the sub-watershed in orange. This intersection can pond up to 12” in the 10-year storm and up to 24” in the 100-year storm event. Stormwater can block vehicle access and overtop into private properties.

The existing storm sewers in this area collect stormwater from the south right-of-way of Deerpath Rd. Stormwater is conveyed in 29” x 45” elliptical sewers west of Edgewood Ave and an 18” storm sewer east of Edgewood Ave. These two storm sewers converge at Edgewood Ave and flow south via a 24” storm sewer to the 19” x 30” elliptical storm sewer that crosses Edgewood to connect to the 38” by 60” elliptical storm sewer that discharges at the Woodside Subdivision Owners Associations ponds upstream of Crestwood Rd. The 24” and 19” x 30” elliptical storm sewers along Edgewood Ave are undersized.

Additionally, flows from Area 2, via the Woodbine Dr storm sewer, combine with flows from Area 4 at this location. The conveyance improvements at Area 2 increase flows to this junction, further requiring the storm sewer to be upsized before the outfall at the ponds.

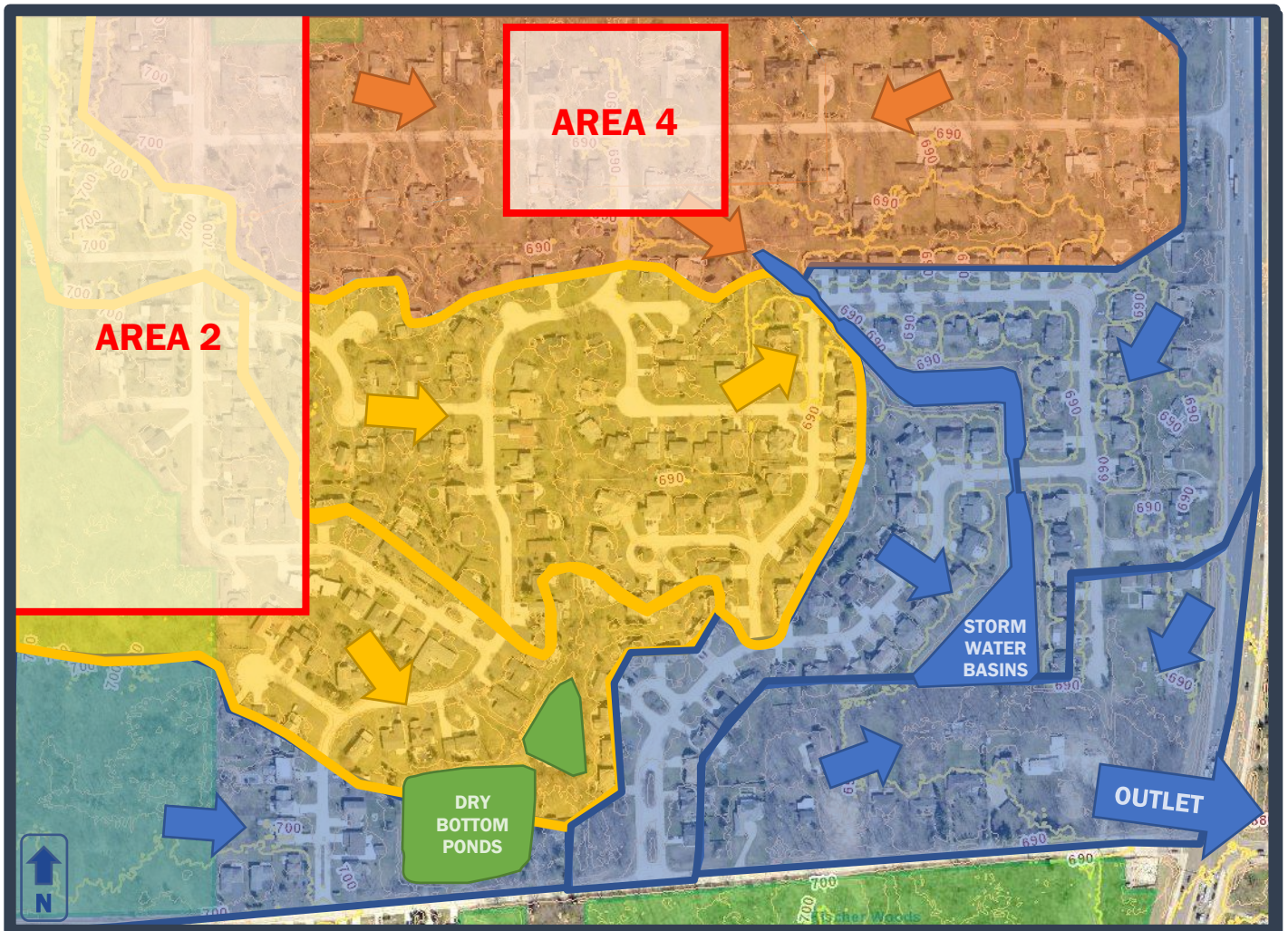


FIGURE 19: Tributary areas at study area 4. Due to the proximity to Area 2 and the related nature of their outfalls, ERA analyzed these two locations together.

PROPOSED CONDITIONS | AREA 4: Deerpath/Edgewood

To provide the 10-year level of service for this area, ERA proposed replacing the undersized 24" circular and 19" x 30" elliptical storm sewers along Edgewood Ave with 38" x 60" elliptical storm sewers to the existing 38" x 60" elliptical storm sewer that discharges to the pond. Elliptical pipes are recommended in this area due to the shallow storm sewer at the outfall. Additional inlets may be needed at the intersection of Deerpath and Edgewood to collect stormwater from both the ditch lines and curb lines. See Figure 20 for the proposed improvements.

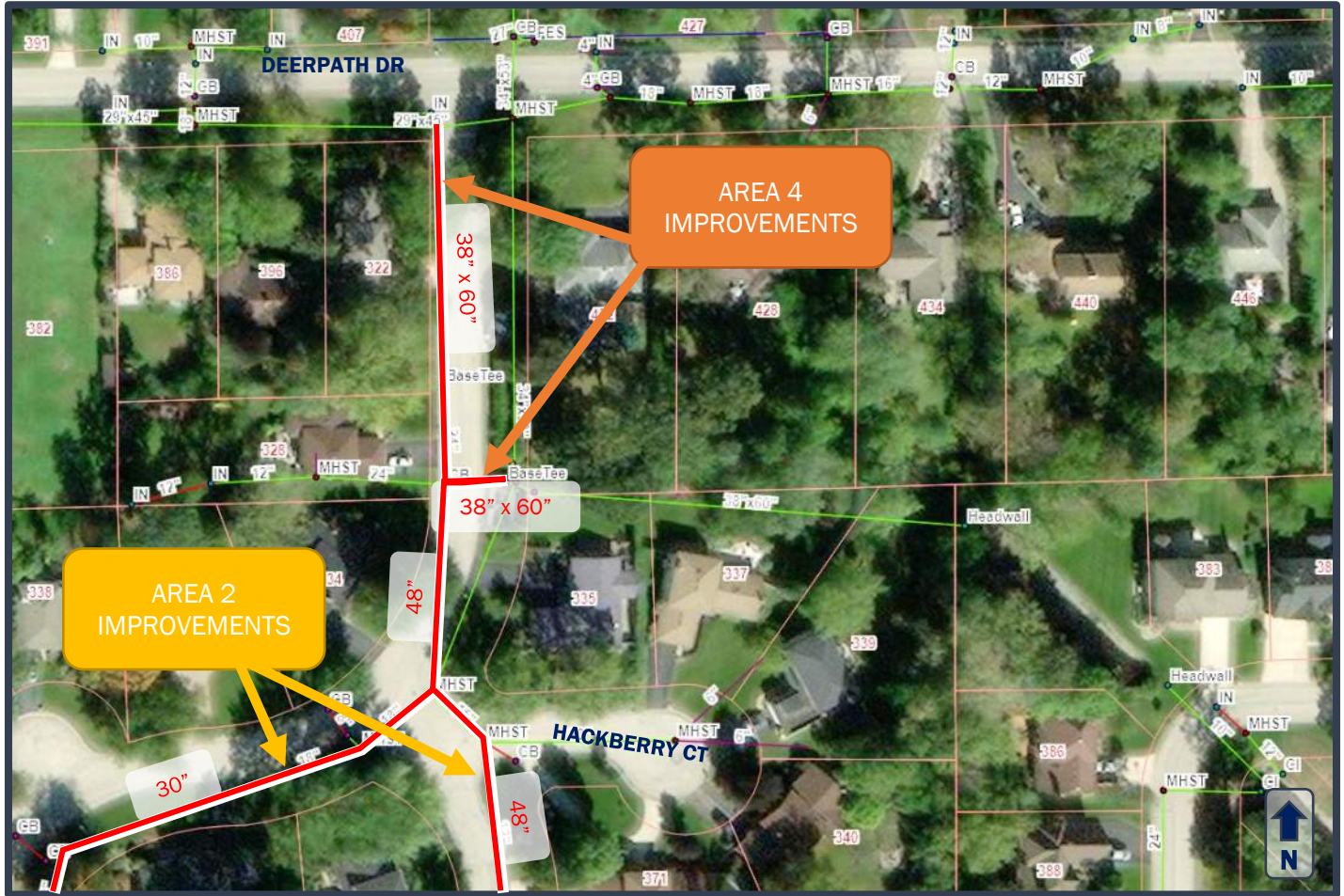


FIGURE 20: Proposed storm sewer improvements in Area 4 along Edgewood to Woodside Subdivision ponds.

This improvement reduces the flooding in the roadway to less than 6" in the curb line in the 10-year storm and reduces the private property flooding in the 100-year storm. For tabular results of the ponding improvements in Area 4, please refer to Table 1 and Table 2. Figure 23 and Figure 24 show the anticipated proposed conditions of the 10-year, 3-hour, and 100-year, 3-hour storm events and Figure 21 and Figure 22 show the approximate flooding depths in existing conditions. These XPSWMM images include half-foot increments of flooding depths. ERA notes that these flood limits are useful to depict the approximate limits of flooding for this study, but the accuracy is limited by the level of detail in the surface of the model (DTM).

EXISTING CONDITIONS: AREA 4

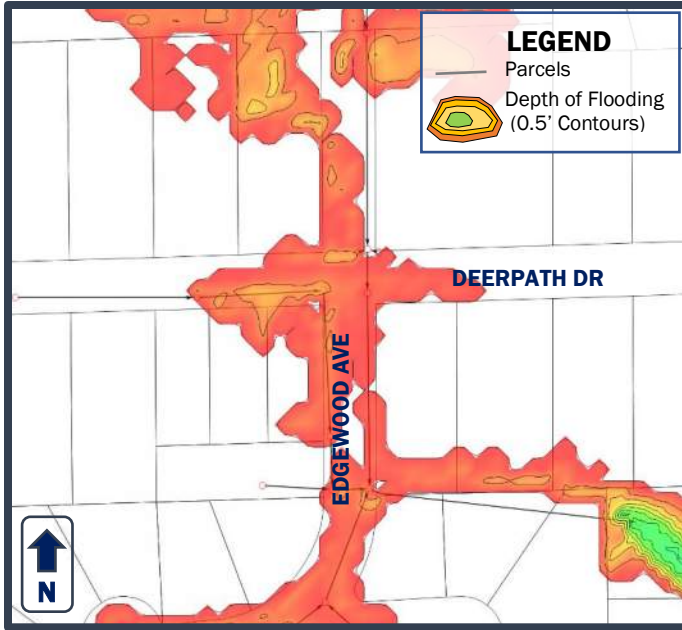


FIGURE 21: Area 4 Existing Conditions, 10-year, 3-hours

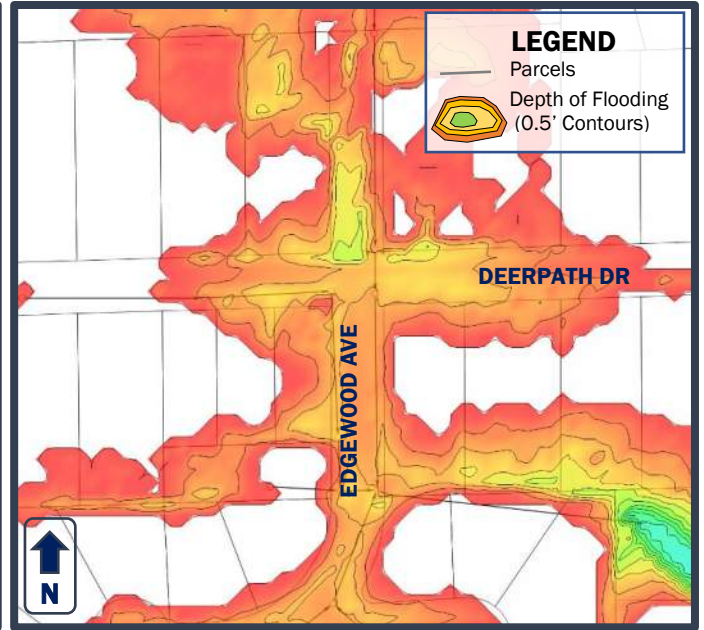


FIGURE 22: Area 4 Existing Conditions, 100-year, 3-hours

PROPOSED CONDITIONS: AREA 4

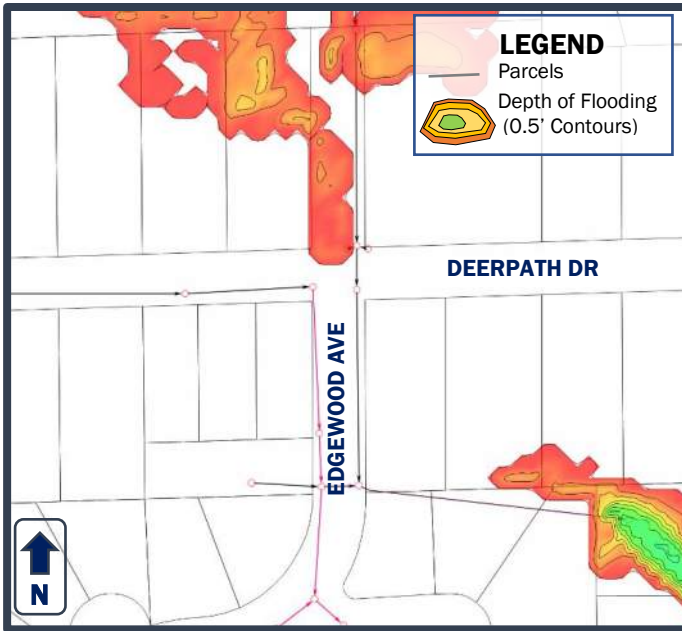


FIGURE 23: Area 4 Proposed Conditions, 10-year, 3-hours

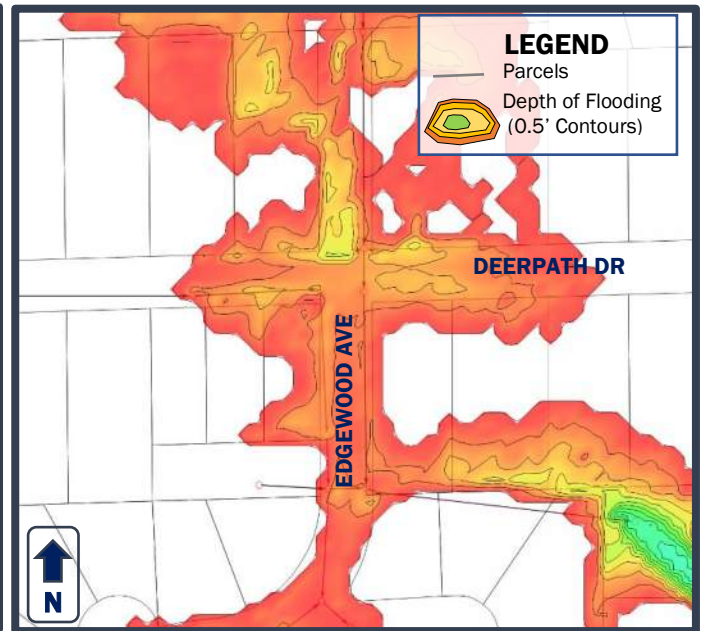


FIGURE 24: Area 4 Proposed Conditions, 100-year, 3-hours

Area 5: Sunnyside Alley

EXISTING CONDITIONS

Area 5, Sunnyside Alley collects stormwater from approximately five acres of residential area south of Sunnyside Ave, west of Elmwood Ave, north of Montrose Ave and west of Wood Dale Rd. This area is outlined in blue in Figure 25 below. In this area, stormwater flows to the low point in the alley between 125 N Wood Dale Rd and 120 Walnut Ave. An existing 12" storm sewer collects stormwater from this alley and conveys it north to Sunnyside Ave then west to Wood Dale Ave where it connects to a 24" storm sewer and continues north to Irving Park Road where a 42" storm sewer conveys flows west and eventually discharges to the Salt Creek.

This area can flood up to a half a foot or more in the alley and pond against four garages. Once the depth of ponding reaches six inches, stormwater flows towards the back of the residences on Wood Dale Rd without a well-defined flow path. These homes are lower than the elevation at the alley and may be at risk of damage from runoff during large storm events. The lowest adjacent grades at these homes can accept any runoff the 12" storm sewer cannot carry away from the site.

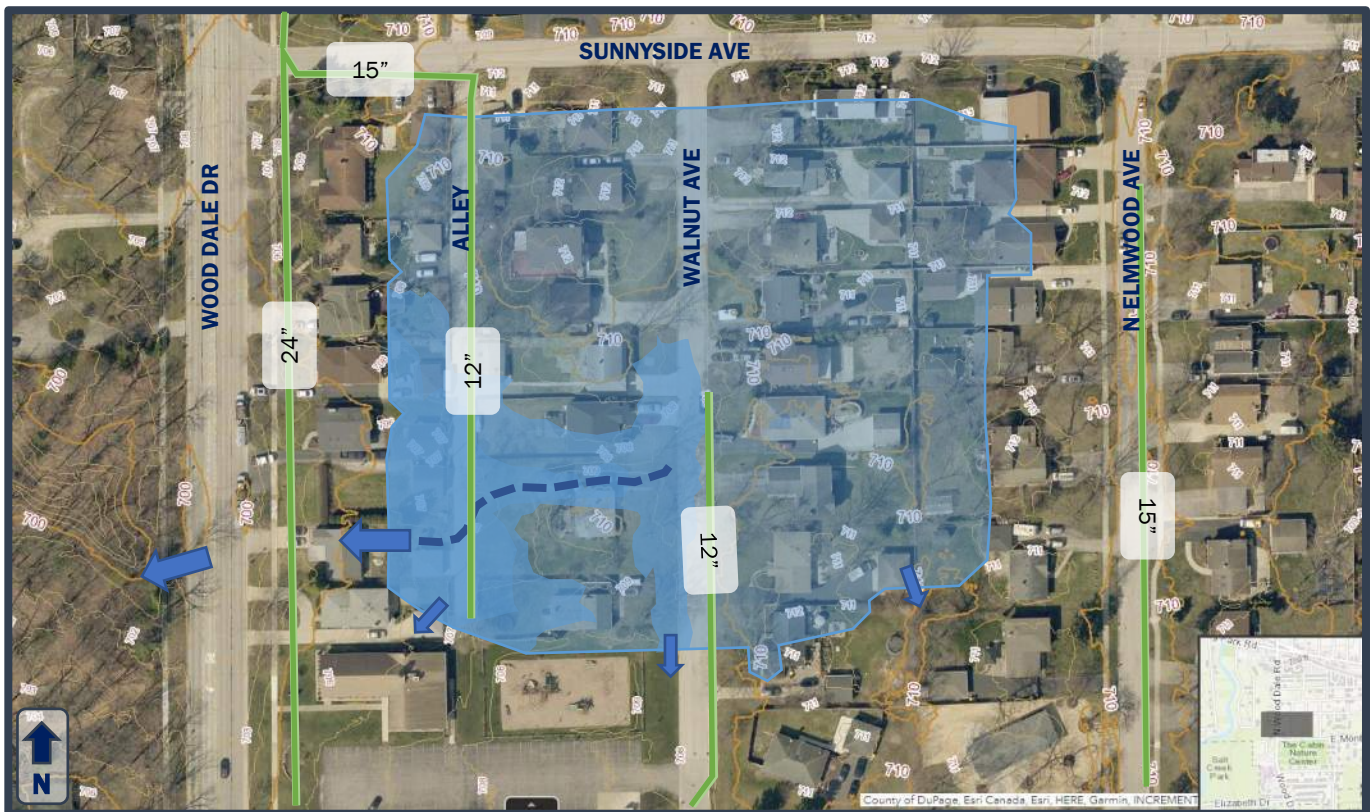


FIGURE 25: Tributary area of Area 5 at Sunnyside Alley. Overland flow path shown with dark blue arrows.

PROPOSED CONDITIONS

ERA determined this area requires a defined overland flow path to drain this area when the storm sewer is at capacity. ERA surveyed this alley to identify the limits of the depressional area. City staff and residents on Wood Dale Rd informed ERA of an agreement to add an overland flow path at 125 N Wood Dale Rd.

To direct stormwater to this parcel, the alley must be lowered for stormwater to reach the proposed swale that will carry stormwater from the depressional area in the alley out to Wood Dale Rd right-of-way. To convey the overland flows from the 5 acres draining to the alley, the swale should be approximately 16 feet wide and have a minimum of two and one half percent (2.5%) slopes out to Wood Dale Ave. This requires lowering the side yard of lot 125 N

Wood Dale Ward 1 Drainage and Flood Improvement Study

Wood Dale Rd one foot at the alley. The existing fence must be removed and replaced and the trees along the south lot line shall be protected during excavation. This may require hand dinging and root pruning in some areas.

Near the end of the proposed swale, the property owner has installed a row of bushes and coated chain-link fence perpendicular to the flow of the swale. The City shall coordinate with the property owner to identify solutions to maintain 2.5% slope out to the street with minimal disturbance to the bushes and fence. It is anticipated that a portion of the fence and existing bushes will need to be removed to establish the swale and keep it open for stormwater to flow to the right-of-way. See Figure 26 for proposed contours around the swale. Exhibits E and F in Appendix A depict the existing survey and proposed improvements in this project area.

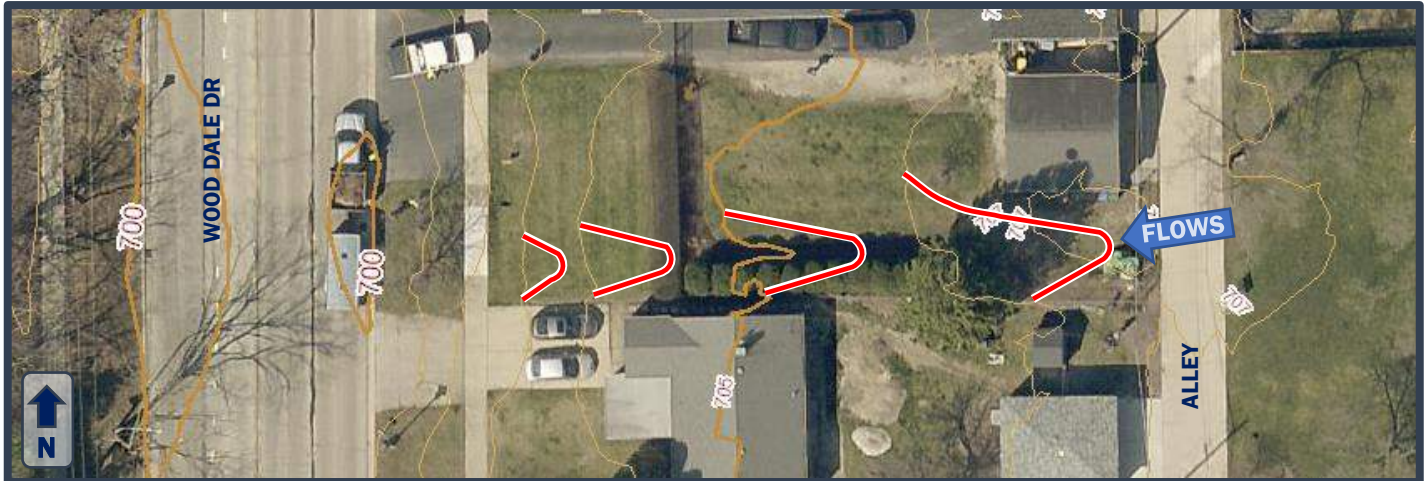


FIGURE 26: Proposed contours through side yard at 125 N Wood Dale Rd to promote drainage from depressional area.

Results and Recommendations

ERA designed storage and conveyance improvements and identified three alternatives to reduce flooding in Ward 1. Alternative A looked at creating 2.8 acre-feet of storage at the northwest corner of Kingery Hwy and Oak Meadows Dr. This alternative reduced the flooding conditions, but ponding still occurred in the 10-year storm in the roadway at Juniper Ave. For the tabular results of the ponding improvements in Area 2, please refer to Table 1 and Table 2. City staff informed ERA that in addition to the five study areas in this project, residents at Crestwood Ct experience property flooding. Without expanding the basins at Edgewood Ave and Oak Meadows Dr, this flooding condition did not improve at Crestwood Ct. This improvement releases 127 cubic feet per second to Bensenville to the east. This is a twelve percent (12%) reduction from the 145 cubic feet per second released in existing conditions.

Alternative B proposes adding an additional 3.4 acre-feet of storage to the Oak Meadows basin for a total of 11.84 acre-feet of storage on the west side of this neighborhood and installing a 36" storm sewer to a proposed 2.8 acre-foot pond at Kingery Highway/Rte. 83. Alternative B reduces the flooding in the roadway to less than 6" at the curb during the 10-year storm and reduces the private property flooding in the 100-year storm. This improvement releases 126 cubic feet per second to Bensenville to the east. This is a thirteen percent (13%) reduction from the 145 cubic feet per second released in existing conditions.

Alternative C proposed over excavating the west basin at Oak Meadows and installing a pump to drain the basin. To provide a significant improvement in the level of service compared to Alternative A or B, an additional 7.2 acre-feet must be excavated from these basins. Excavating an additional 7.2 acre-feet at these parcels will require retaining walls and/or underground storage cisterns. This improvement provides the lowest release rate to Bensenville with 99 cubic feet per second or thirty-two percent (32%) reduction from the existing conditions. However, due to the high installation costs and ongoing pump operating and maintenance costs, this alternative is not recommended.

ERA recommends Alternative B to improve the flooding conditions at Study Area 1, 2 and 4. Additionally, the storm sewer improvements at Knollwood Pond and the overland flow path at Study Area 5 are recommended to reduce ponding in these study areas. Table 1 and 2 on the next page provide the proposed water surface elevation and depth of ponding at Areas 1, 2, 3 and 4 during the 10- and 100-year storm events. Figure 27 shows the location of the five XPSWMM nodes listed in Table 1 and 2 that are used to compare the alternatives.

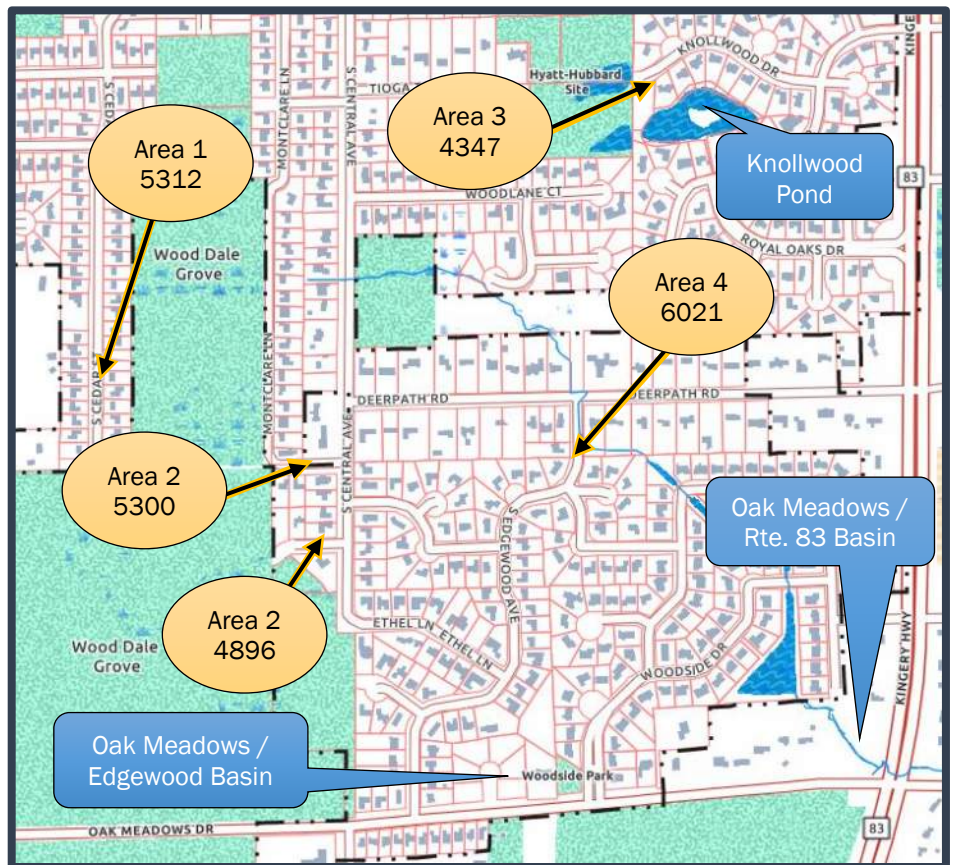


FIGURE 27: Location of nodes used analyze alternatives in XPSWMM. Results listed in Table 1 and 2.

Table 1: 10-YEAR, 3-HOUR PONDING ELEVATIONS AND DEPTHS AT STUDY AREAS 1, 2, 3 & 4

Location	RIM Elev	EXISTING CONDITIONS		ALT A PROPOSED CONDITIONS		ALT B PROPOSED CONDITIONS		ALT C PROPOSED CONDITIONS	
		Existing WSE	Existing Depth	Alt A Proposed Elevation	Alt A Proposed Depth	Alt B Proposed Elevation	Alt B Proposed Depth	Alt C Proposed Elevation	Alt C Proposed Depth
Area 1, Node 5312	702.16	703.46	1.30	702.64	0.48	702.64	0.48	702.64	0.48
Area 2, Node 5300	697.43	698.75	1.32	697.80	0.37	697.43	No Ponding	697.43	No Ponding
Area 2, Node 4896	695.76	697.42	1.66	694.87	No Ponding	694.84	No Ponding	694.86	No Ponding
Area 3, Node 4347	690.84	691.94	1.09	690.02	No Ponding	690.03	No Ponding	690.03	No Ponding
Area 4, Node 6021	689.36	690.40	1.04	688.89	No Ponding	688.43	No Ponding	688.43	No Ponding
Knollwood Pond	N/A	689.74	N/A	689.84	N/A	689.84	N/A	689.84	N/A
Oak Meadows / Edgewood Basin	N/A	693.01	N/A	691.61	N/A	690.33	N/A	690.90	N/A
Oak Meadows / Rte. 83 Basin	N/A	686.02	N/A	687.11	N/A	686.95	N/A	685.82	N/A

Table 2: 100-YEAR, 3-HOUR PONDING ELEVATIONS AND DEPTHS AT STUDY AREAS 1, 2, 3 & 4

Location	RIM Elev	EXISTING CONDITIONS		ALT A PROPOSED CONDITIONS		ALT B PROPOSED CONDITIONS		ALT C PROPOSED CONDITIONS	
		Existing WSE	Existing Depth	Alt A Proposed Elevation	Alt A Proposed Depth	Alt B Proposed Elevation	Alt B Proposed Depth	Alt C Proposed Elevation	Alt C Proposed Depth
Area 1, Node 5312	702.16	703.85	1.69	703.42	1.26	703.42	1.26	703.42	1.26
Area 2, Node 5300	697.43	699.03	1.60	699.02	1.59	698.99	1.56	698.99	1.56
Area 2, Node 4896	695.76	697.73	1.97	696.50	0.74	696.45	0.69	696.45	0.69
Area 3, Node 4347	690.84	692.15	1.31	691.70	0.86	691.70	0.86	691.70	0.86
Area 4, Node 6021	689.36	691.01	1.65	690.83	1.47	690.64	1.28	690.63	1.27
Knollwood Pond	N/A	691.50	N/A	691.59	N/A	691.59	N/A	691.59	N/A
Oak Meadows / Edgewood Basin	N/A	693.94	N/A	693.91	N/A	693.64	N/A	693.95	N/A
Oak Meadows / Rte. 83 Basin	N/A	689.16	N/A	689.12	N/A	689.12	N/A	688.92	N/A

Preliminary Engineer's Opinion of Probable Construction Costs

ERA prepared preliminary cost estimates for the proposed alternatives. ERA utilized 2022 DOT estimate for Illinois, recent bid tabs for similar construction done in DuPage County in neighboring municipalities and our understanding of construction costs to prepare these estimates. The total cost to implement all the improvements in Alternative B is approximately \$5,970,000. The City of Wood Dale annual stormwater CIP budget cannot accommodate the total installation in one year. ERA created a 10-year phased plan that considers the City's annual CIP budget for stormwater improvements.

These costs should be revised as needed and as market costs and demands fluctuate. This proposed budget anticipates ten years to implement the complete improvement, or an average of \$597,000 annually.

Cost Saving Opportunities

PROJECT SYNCING

Project timelines may be delayed or accelerated based on easement agreements or inter-governmental agreements, but when possible, stormwater improvement project should occur with other Public Works Department infrastructure projects in the same corridor to provide overall cost savings to the City. Combining stormwater projects with watermain, sanitary sewer, roadway resurfacing, or complete infrastructure replacement project allows for cost saving by eliminating redundant restoration costs. It also provides economy of scale in engineering design and during construction. An engineer can survey and produce final design plans for all utilities at once. A contractor will typically have lower line item bid costs for large reconstruction projects versus infrastructure projects that deal with a single utility.

INTRAGOVERNMENTAL PARTNERSHIPS

The City may consider pursuing partnerships with local governmental agencies that have open space available for stormwater management improvements. The Park District, Forest Preserves and County may have open space available for stormwater management improvements. Intragovernmental agreements can be entered to work on projects that meet the City's stormwater goals, while also meeting the stakeholder needs for the partnering local governmental agencies.

GRANT OPPORTUNITIES

The following matrices outline various grant programs available in Wood Dale for stormwater, flood protection and green infrastructure (GI) water quality improvement projects. GI practices can be effective in reducing flows to storm sewer systems and to local waterways and reduce the amount of sediment and erosion in ponds and streams. The proposed solutions outlined in this study incorporate GI as part of the design.

FUNDING OPPORTUNITIES FOR STORMWATER AND WATER QUALITY PROJECTS			
Grant Program	Green Infrastructure Grant Opportunities (GIGO)	IDNR Special Wildlife Funds Grant Program	Environmental Protection Agency 319h
Program Purpose	Fund stormwater management techniques or practices with the primary goal to preserve, restore, mimic, or enhance natural hydrology.	Provide funds for enhancing game and non-game wildlife habitats.	Control nonpoint source (NPS) pollution and support management programs through the federally funded reimbursement program.
Program Administrator	Illinois Environmental Protection Agency	Illinois Department of Natural Resources	Illinois Environmental Protection Agency
Eligible Projects	Bioinfiltration, retention/infiltration, detention pond creation/retrofit, wetland creation/modification, floodplain reconnection, watershed-wide projects, rainwater harvesting, downspout disconnections, BMP design and construction	Projects seeking to preserve, protect, acquire, or manage habitat in Illinois in accordance with Illinois Statewide Wildlife Action Plan	Development or Implementation of a Watershed Based Plan or TMDL, Best Management Practices Implementation to control or prevent NPS pollution; NPS Pollution Information and Outreach Activities; Monitoring/research
Eligible Applicants	Any Grant Accountability and Transparency Act (GATA) Pre-Qualified entity including watershed groups, units of government, universities and colleges, park districts, conservation organizations	Organized groups of volunteers for appropriate not-for-profit organizations and governmental entities	State and local governments, watershed organizations, citizens and environmental groups, land conservancies or trusts, public and private profit and not-for profit organizations, universities, and colleges
Application Process	2-10 projects awarded annually between \$75,000 and \$2,500,000 between FY2021 through FY2025	\$1 million program with awarded projects varying between \$10,000 and \$400,000	\$3.5 million available annually, applications received prior to end of July.
Local Match Required	25% match required	varies, typically 25% match	40% match required

Appendix A – Exhibits

Exhibit A: Study Area 1, 2 and 4 Improvements – Alternative A

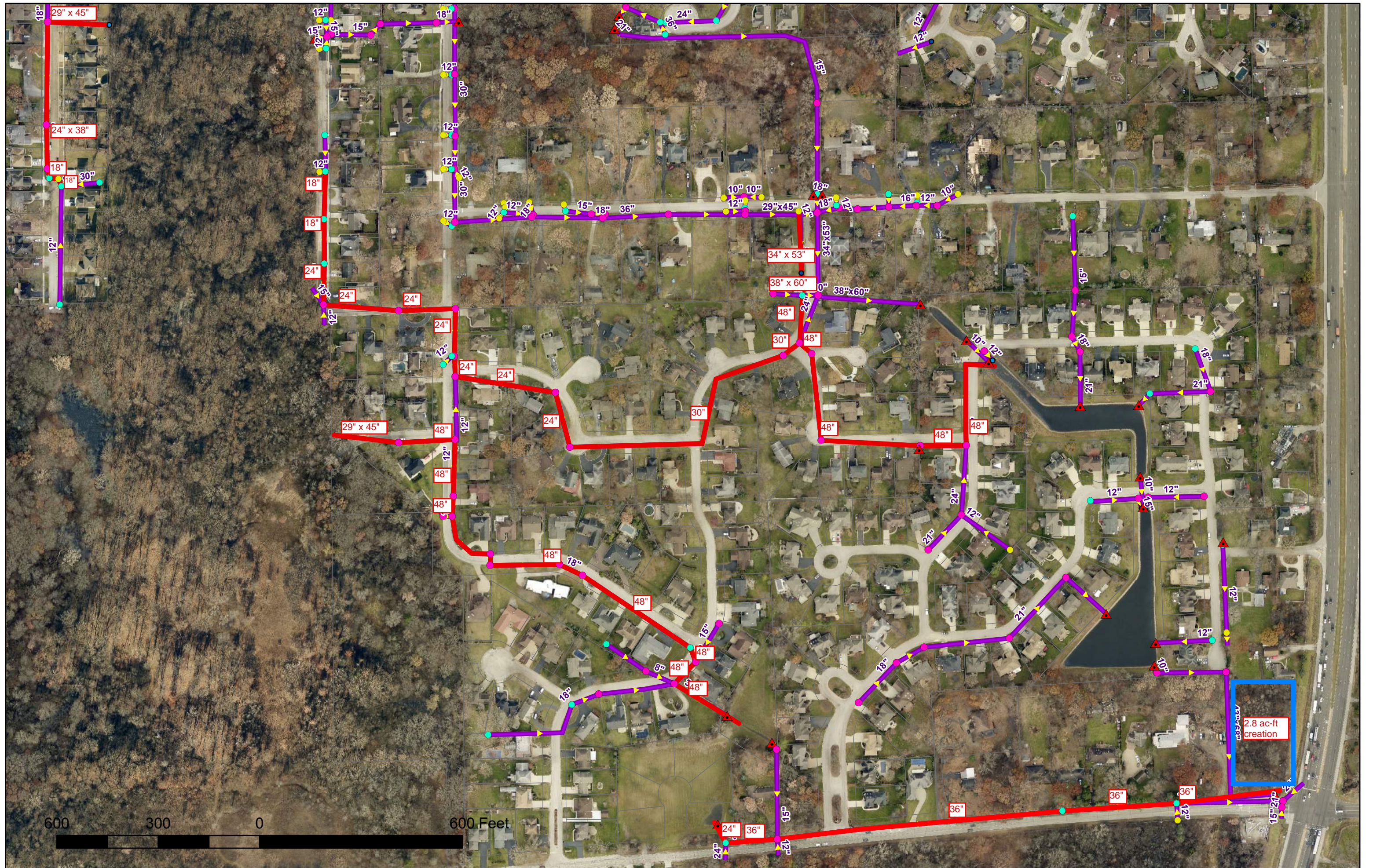
Exhibit B: Study Area 1, 2 and 4 Improvements – Alternative B

Exhibit C: Study Area 1, 2 and 4 Improvements – Alternative C

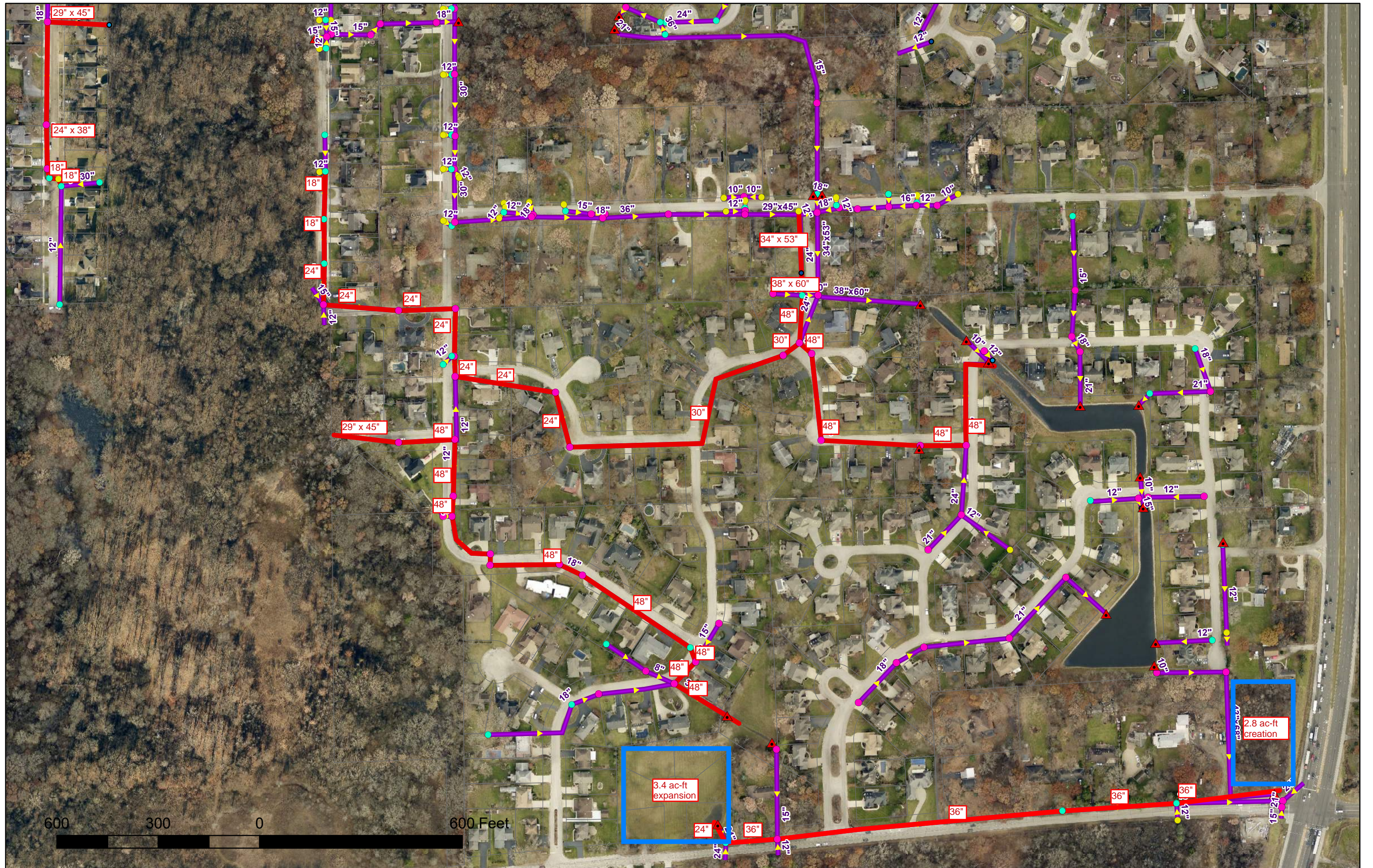
Exhibit D: Study Area 3 Improvements

Exhibit E: Study Area 5 Existing Condition Survey

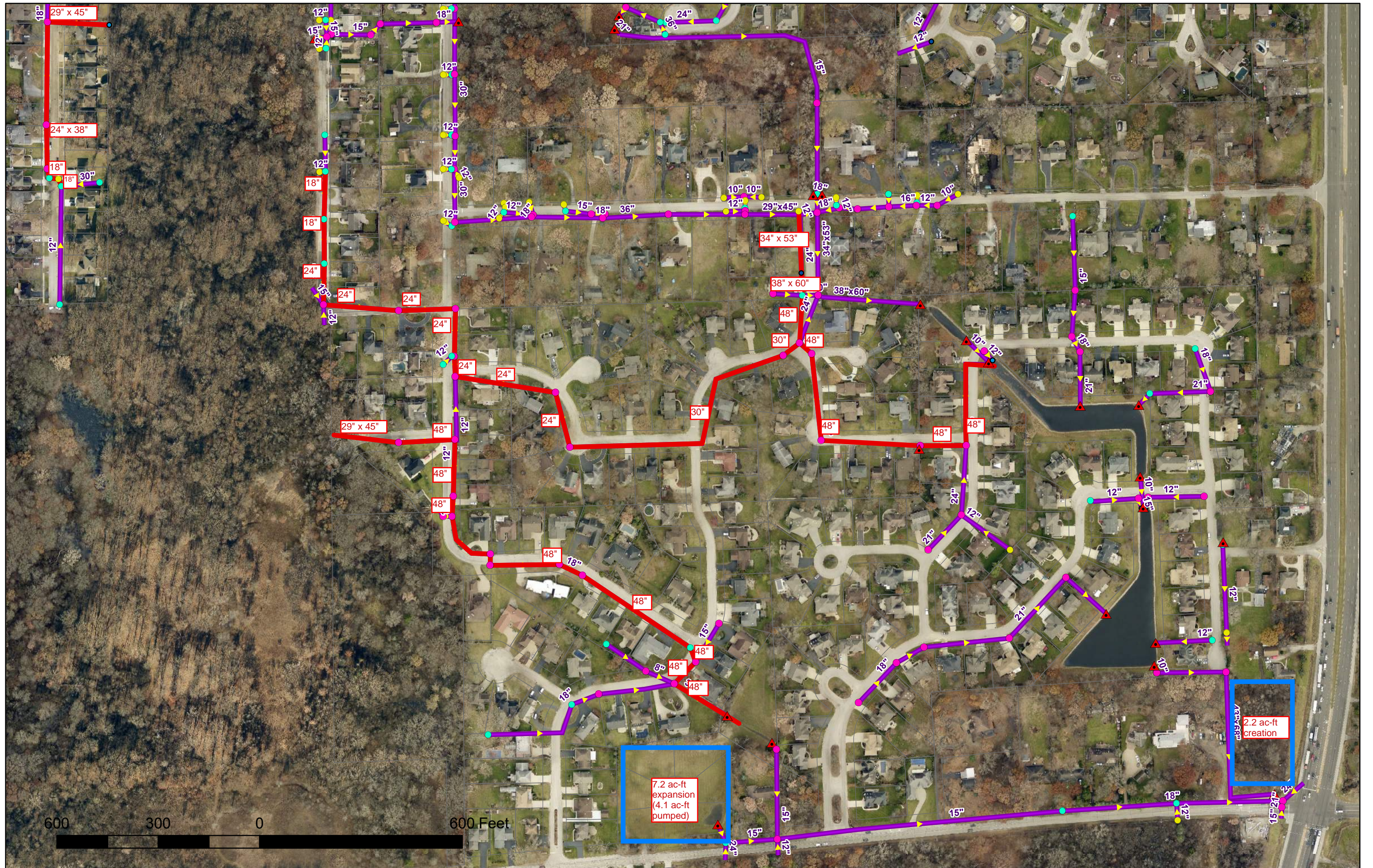
Exhibit F: Study Area 5 Proposed Improvements



Alt A

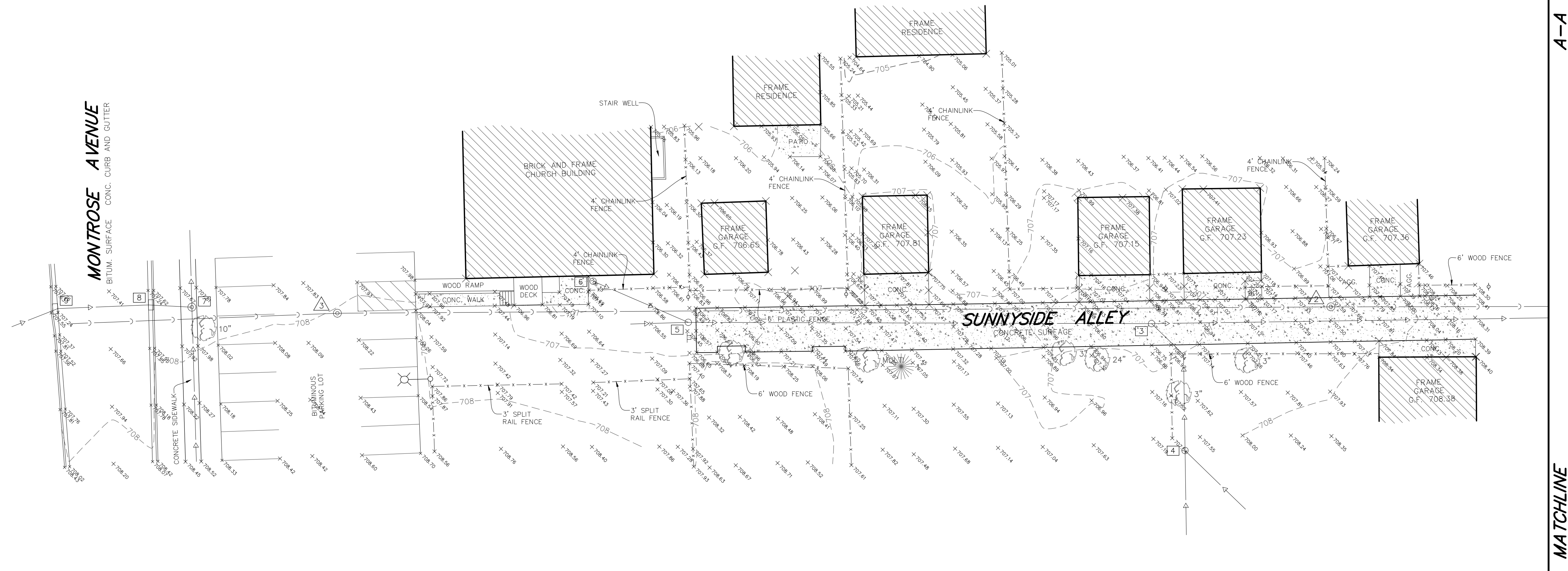


Alt B



Alt C





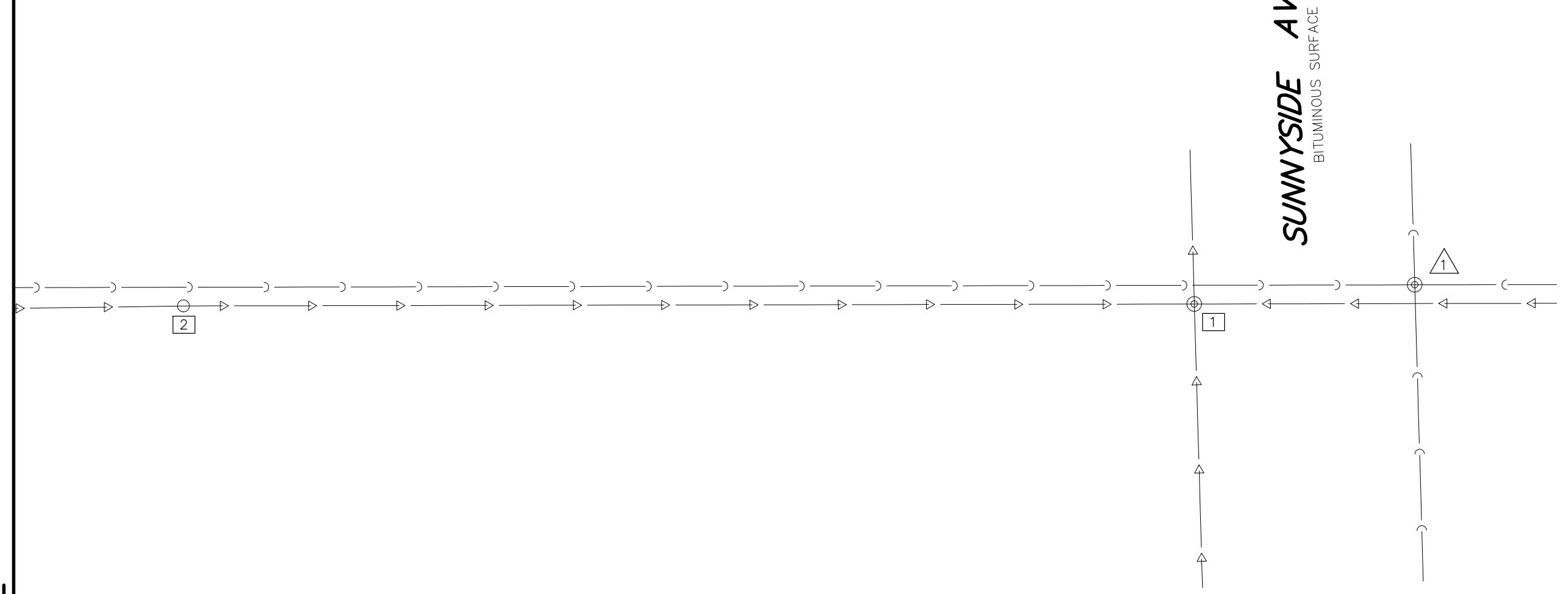
A-A

MATCHLINE

A-A

MATCHLINE

SUNNYSIDE AVENUE
BITUMINOUS SURFACE

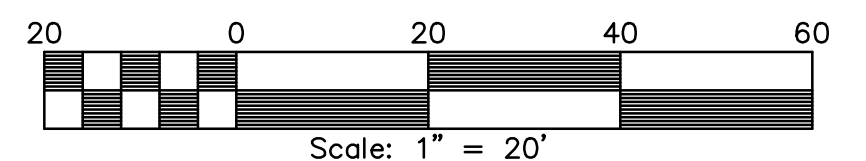


SANITARY STRUCTURES

- 1 SANITARY MANHOLE
RIM 710.44
INV 700.13 8" VCP N
INV 697.86 8" VCP S
INV 697.74 -" VCP E
INV 697.74 -" VCP W
- 2 SANITARY MANHOLE
RIM 707.44
INV 699.34 8" VCP S
INV 699.34 8" VCP N
- 3 SANITARY MANHOLE
RIM 707.92
INV 700.72 8" VCP S
INV 700.72 8" VCP N

STORM STRUCTURES

- 1 STORM MANHOLE
RIM 710.54
INV 707.29 12" RCP E
INV 705.59 8" RCP N
INV 701.54 12" RCP S
INV 701.49 15" RCP W
- 2 CATCH BASIN
RIM 708.90
INV 702.82 12" RCP S
INV 702.64 12" RCP N
- 3 CATCH BASIN
RIM 706.53
INV 703.65 6" PVC NE
INV 703.36 12" RCP S
INV 703.15 12" RCP N
- 4 YARD DRAIN
RIM 707.11
INV 705.81 4" PVC E
INV 705.81 6" PVC NW
INV 705.81 6" PVC W
- 5 CATCH BASIN
RIM 706.21
INV 705.28 4" PVC S
INV 705.23 4" PVC SW
INV 704.11 12" RCP N
- 6 CATCH BASIN
RIM 706.36
INV 705.27 6" PVC NE
- 7 STORM MANHOLE
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INV 703.57 12" RCP S
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INV 699.15 15" RCP W
- 8 CATCH BASIN
RIM 707.23
INV 704.16 12" RCP S
INV 704.16 12" RCP N
- 9 CATCH BASIN
RIM 707.22
INV 705.12 12" RCP SSE
INV 704.42 12" RCP N



REVISIONS:					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAWN BY: A.J.
CHECKED BY: A.K.
APPROVED BY: A.K.



35701 WEST AVENUE, SUITE 150
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FAX (630) 393-2152

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PHONE (312) 474-7841
FAX (312) 474-6099

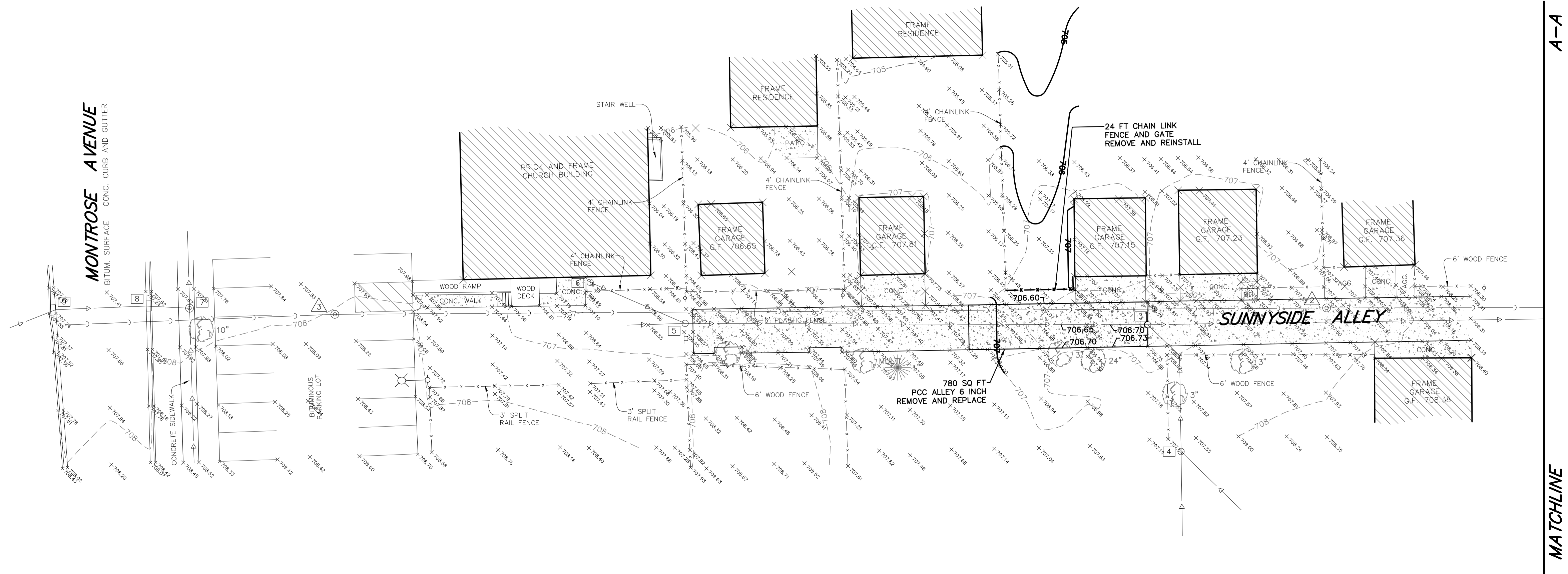
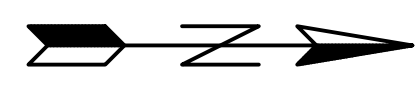
2416 GALEN DRIVE
CHAMPAIGN, ILLINOIS 61821
PHONE (217) 351-6268
FAX (217) 355-1902

CITY OF WOOD DALE
404 N. WOOD DALE ROAD
WOOD DALE, ILLINOIS 60191

TITLE:

SUNNYSIDE ALLEY DRAINAGE
IMPROVEMENTS PROJECT
EXISTING CONDITIONS PLAN

SCALE: 1"=20'
DATE: MAY, 2022
JOB NO: W22062
SHEET 1 OF 1



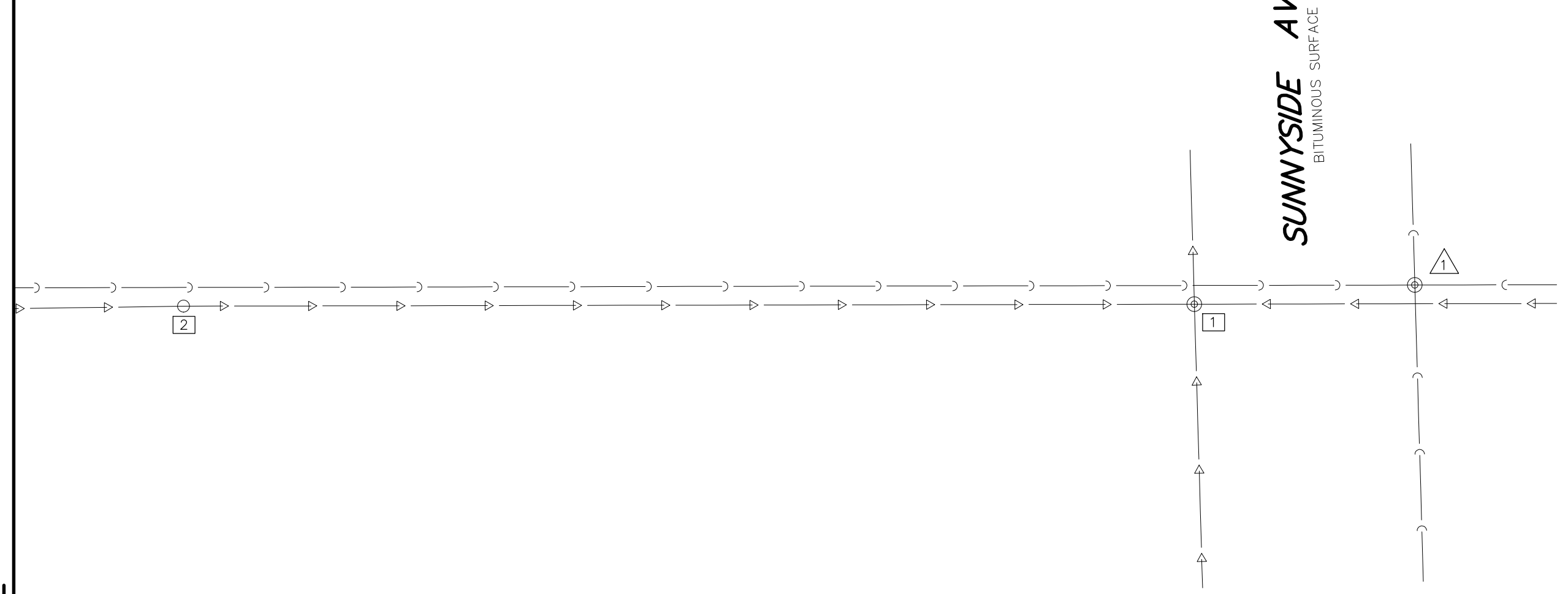
A-A

MATCHLINE

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MATCHLINE

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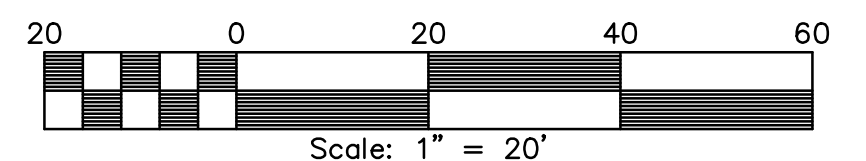


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CITY OF WOOD DALE
404 N. WOOD DALE ROAD
WOOD DALE, ILLINOIS 60191

TITLE: **SUNNYSIDE ALLEY DRAINAGE**
IMPROVEMENTS PROJECT
PROPOSED ALLEY IMPROVEMENTS

SCALE: 1"=20'
DATE: MAY, 2022
JOB NO: W22062
SHEET 1 OF 1

Appendix B – EOPCC and CIP Budget

Engineer’s Opinion of Probably Construction Costs

Alternative A: \$5,447,967.00

Alternative B: \$5,969,982.00

Alternative C: \$6,893,982.00

10-Year Stormwater Capital Improvement Plan

10-Year CIP Work Map

Engineer's Opinion of Probable Cost
PRELIMINARY COSTS
WOOD DALE, ILLINOIS
Ward 1 Storm Sewer Improvements
Prepared by Engineering Resource Associates, Inc.
4/18/2023

ALTERNATIVE A

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
1	TREE PROTECTION FENCING	FOOT	780	\$ 10.00	\$ 7,800.00
2	TREE ROOT PRUNING	EACH	15	\$ 250.00	\$ 3,750.00
3	TREE REMOVAL (SPECIAL)	ACRE	1.2	\$ 22,000.00	\$ 26,400.00
4	TRENCH BACKFILL	CU YD	6000	\$ 35.00	\$ 210,000.00
5	EXPLORATORY EXCAVATION	CU YD	180	\$ 90.00	\$ 16,200.00
6	TOPSOIL FURNISH AND PLACE, 4"	SQ YD	8920	\$ 15.00	\$ 133,800.00
7	SODDING, SALT TOLERANT	SQ YD	2800	\$ 30.00	\$ 84,000.00
8	INLET FILTERS	EACH	50	\$ 135.00	\$ 6,750.00
9	COMBINATION CURB AND GUTTER REMOVAL	FOOT	1850	\$ 28.00	\$ 51,800.00
10	HOT-MIX ASPHALT SURFACE REMOVAL 2"	SQ YD	5060	\$ 25.00	\$ 126,500.00
11	SIDEWALK REMOVAL	SQ FT	2600	\$ 10.00	\$ 26,000.00
12	DRIVEWAY PAVEMENT REMOVAL	SQ YD	1310	\$ 18.00	\$ 23,580.00
13	REMOVING INLETS	EACH	20	\$ 300.00	\$ 6,000.00
14	REMOVING MANHOLES	EACH	40	\$ 620.00	\$ 24,800.00
15	STORM SEWER REMOVAL 12"	FOOT	1780	\$ 22.00	\$ 39,160.00
16	STORM SEWER REMOVAL 15"	FOOT	2340	\$ 24.00	\$ 56,160.00
17	STORM SEWER REMOVAL 18"	FOOT	2100	\$ 26.00	\$ 54,600.00
18	STORM SEWER REMOVAL 21"	FOOT	390	\$ 28.00	\$ 10,920.00
19	STORM SEWER REMOVAL 24"	FOOT	1110	\$ 30.00	\$ 33,300.00
20	STORM SEWER REMOVAL 36"	FOOT	190	\$ 32.00	\$ 6,080.00
21	REMOVE EXISTING FLARED END SECTION	EACH	4	\$ 800.00	\$ 3,200.00
22	PORTLAND CEMENT CONCRETE DRIVEWAY PAVEMENT, 6 INCH	SQ YD	100	\$ 100.00	\$ 10,000.00
23	PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH (SPECIAL)	SQ FT	1560	\$ 22.00	\$ 34,320.00
24	DETECTABLE WARNINGS	EACH	12	\$ 46.00	\$ 552.00
25	STONE RIPRAP, CLASS A3	SQ YD	430	\$ 75.00	\$ 32,250.00
26	COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.12	FOOT	1850	\$ 65.00	\$ 120,250.00
27	AGGREGATE BASE COURSE, TYPE B 2"	SQ YD	90	\$ 20.00	\$ 1,800.00
28	HMA DRIVEWAY PAVEMENT	SQ YD	1310	\$ 50.00	\$ 65,500.00
29	ADJUSTING WATER MAIN 6"	FOOT	100	\$ 210.00	\$ 21,000.00
30	ADJUSTING WATER MAIN 8"	FOOT	100	\$ 290.00	\$ 29,000.00
31	ADJUSTING WATER SERVICE	FOOT	500	\$ 60.00	\$ 30,000.00
32	ADJUSTING SANITARY SEWER SERVICE LINE	FOOT	500	\$ 75.00	\$ 37,500.00
33	REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL	CU YD	4900	\$ 70.00	\$ 343,000.00
34	STORM SEWERS, CLASS B, TYPE 1, 18"	FOOT	350	\$ 130.00	\$ 45,500.00
35	STORM SEWERS, CLASS B, TYPE 1, 24"	FOOT	595	\$ 160.00	\$ 95,200.00
36	STORM SEWERS, CLASS B, TYPE 2, 24"	FOOT	1265	\$ 170.00	\$ 215,050.00
37	STORM SEWERS, CLASS B, TYPE 2, 30"	FOOT	850	\$ 190.00	\$ 161,500.00
38	STORM SEWERS, CLASS B, TYPE 2, 36"	FOOT	1700	\$ 210.00	\$ 357,000.00
39	STORM SEWERS, CLASS B, TYPE 2, 48"	FOOT	2650	\$ 260.00	\$ 689,000.00
40	STORM SEWERS, CLASS B, TYPE 2, SPAN 45 RISE 29	FOOT	375	\$ 250.00	\$ 93,750.00
41	STORM SEWERS, CLASS B, TYPE 2, SPAN 53 RISE 34	FOOT	250	\$ 280.00	\$ 70,000.00
42	STORM SEWERS, CLASS B, TYPE 2, SPAN 60 RISE 38	FOOT	145	\$ 300.00	\$ 43,500.00
43	CATCH BASINS, TYPE A, 4'-DIAMETER, TYPE 3 FRAME AND GRATE	EACH	20	\$ 3,800.00	\$ 76,000.00
44	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 3 FRAME AND GRATE	EACH	6	\$ 4,200.00	\$ 25,200.00
45	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 8 GRATE	EACH	9	\$ 6,700.00	\$ 60,300.00
46	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	5	\$ 6,200.00	\$ 31,000.00
47	MANHOLES, TYPE A, 8'-DIAMETER, TYPE 8 GRATE	EACH	5	\$ 8,800.00	\$ 44,000.00
48	MANHOLES, TYPE A, 8'-DIAMETER, TYPE 3 FRAME AND GRATE	EACH	16	\$ 7,900.00	\$ 126,400.00
49	PRECAST REINFORCED CONCRETE FLARED END SECTIONS, 24"	EACH	2	\$ 1,200.00	\$ 2,400.00
50	PRECAST REINFORCED CONCRETE FLARED END SECTIONS, 36"	EACH	1	\$ 4,000.00	\$ 4,000.00
51	PRECAST REINFORCED CONCRETE FLARED END SECTIONS, 48"	EACH	2	\$ 6,000.00	\$ 12,000.00
52	PRECAST REINFORCED CONCRETE FLARED END SECTIONS, EQUIVALENT ROUND-SIZE 36"	EACH	1	\$ 6,200.00	\$ 6,200.00
53	HOT-MIX ASPHALT BINDER COURSE, IL-9.5, N50	TON	563	\$ 150.00	\$ 84,450.00
54	HOT-MIX ASPHALT SURFACE COURSE, IL-9.5, MIX "D", N50	TON	1135	\$ 135.00	\$ 153,225.00
55	THERMOPLASTIC PAVEMENT MARKING - LINE 12"	FOOT	240	\$ 10.00	\$ 2,400.00
56	THERMOPLASTIC PAVEMENT MARKING - LINE 24"	FOOT	300	\$ 26.00	\$ 7,800.00
57	EARTH EXCAVATION	CU YD	4900	\$ 40.00	\$ 196,000.00
58	EROSION CONTROL BLANKET	SQ YD	640	\$ 8.00	\$ 5,120.00
59	SEEDING (SPECIAL)	ACRE	0.9	\$ 15,000.00	\$ 13,500.00
60	NATIVE PLANT PLUGS (SPECIAL)	EACH	3200	\$ 6.25	\$ 20,000.00
61	PRE-CONSTRUCTION VIDEOTAPING	L SUM	1	\$ 7,500.00	\$ 7,500.00
62	MOBILIZATION	L SUM	1	\$ 43,000.00	\$ 43,000.00
63	CONSTRUCTION LAYOUT	L SUM	1	\$ 65,000.00	\$ 65,000.00
64	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1	\$ 108,000.00	\$ 108,000.00

TOTAL \$ 4,539,967.00

20% CONTINGENCY \$ 908,000.00
PHASE 1 PROBABLE COST: \$ 5,447,967.00

Engineer's Opinion of Probable Cost
PRELIMINARY COSTS
WOOD DALE, ILLINOIS
Ward 1 Storm Sewer Improvements
Prepared by Engineering Resource Associates, Inc.
4/18/2023

ALTERNATIVE B

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
1	TREE PROTECTION FENCING	FOOT	780	\$ 10.00	\$ 7,800.00
2	TREE ROOT PRUNING	EACH	15	\$ 250.00	\$ 3,750.00
3	TREE REMOVAL (SPECIAL)	ACRE	1.3	\$ 22,000.00	\$ 28,600.00
4	TRENCH BACKFILL	CU YD	6000	\$ 35.00	\$ 210,000.00
5	EXPLORATORY EXCAVATION	CU YD	180	\$ 90.00	\$ 16,200.00
6	TOPSOIL FURNISH AND PLACE, 4"	SQ YD	19300	\$ 15.00	\$ 289,500.00
7	SODDING, SALT TOLERANT	SQ YD	2800	\$ 30.00	\$ 84,000.00
8	INLET FILTERS	EACH	50	\$ 135.00	\$ 6,750.00
9	COMBINATION CURB AND GUTTER REMOVAL	FOOT	1850	\$ 28.00	\$ 51,800.00
10	HOT-MIX ASPHALT SURFACE REMOVAL 2"	SQ YD	5060	\$ 25.00	\$ 126,500.00
11	SIDEWALK REMOVAL	SQ FT	2600	\$ 10.00	\$ 26,000.00
12	DRIVEWAY PAVEMENT REMOVAL	SQ YD	1310	\$ 18.00	\$ 23,580.00
13	REMOVING INLETS	EACH	20	\$ 300.00	\$ 6,000.00
14	REMOVING MANHOLES	EACH	40	\$ 620.00	\$ 24,800.00
15	STORM SEWER REMOVAL 12"	FOOT	1780	\$ 22.00	\$ 39,160.00
16	STORM SEWER REMOVAL 15"	FOOT	2340	\$ 24.00	\$ 56,160.00
17	STORM SEWER REMOVAL 18"	FOOT	2100	\$ 26.00	\$ 54,600.00
18	STORM SEWER REMOVAL 21"	FOOT	390	\$ 28.00	\$ 10,920.00
19	STORM SEWER REMOVAL 24"	FOOT	1110	\$ 30.00	\$ 33,300.00
20	STORM SEWER REMOVAL 36"	FOOT	190	\$ 32.00	\$ 6,080.00
21	REMOVE EXISTING FLARED END SECTION	EACH	4	\$ 800.00	\$ 3,200.00
22	PORTLAND CEMENT CONCRETE DRIVEWAY PAVEMENT, 6 INCH	SQ YD	100	\$ 100.00	\$ 10,000.00
23	PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH (SPECIAL)	SQ FT	1560	\$ 22.00	\$ 34,320.00
24	DETECTABLE WARNINGS	EACH	12	\$ 46.00	\$ 552.00
25	STONE RIPRAP, CLASS A3	SQ YD	430	\$ 75.00	\$ 32,250.00
26	COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.12	FOOT	1850	\$ 65.00	\$ 120,250.00
27	AGGREGATE BASE COURSE, TYPE B 2"	SQ YD	90	\$ 20.00	\$ 1,800.00
28	HMA DRIVEWAY PAVEMENT	SQ YD	1310	\$ 50.00	\$ 65,500.00
29	ADJUSTING WATER MAIN 6"	FOOT	100	\$ 210.00	\$ 21,000.00
30	ADJUSTING WATER MAIN 8"	FOOT	100	\$ 290.00	\$ 29,000.00
31	ADJUSTING WATER SERVICE	FOOT	500	\$ 60.00	\$ 30,000.00
32	ADJUSTING SANITARY SEWER SERVICE LINE	FOOT	500	\$ 75.00	\$ 37,500.00
33	REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL	CU YD	6650	\$ 70.00	\$ 465,500.00
34	STORM SEWERS, CLASS B, TYPE 1, 18"	FOOT	350	\$ 130.00	\$ 45,500.00
35	STORM SEWERS, CLASS B, TYPE 1, 24"	FOOT	595	\$ 160.00	\$ 95,200.00
36	STORM SEWERS, CLASS B, TYPE 2, 24"	FOOT	1265	\$ 170.00	\$ 215,050.00
37	STORM SEWERS, CLASS B, TYPE 2, 30"	FOOT	850	\$ 190.00	\$ 161,500.00
38	STORM SEWERS, CLASS B, TYPE 2, 36"	FOOT	1700	\$ 210.00	\$ 357,000.00
39	STORM SEWERS, CLASS B, TYPE 2, 48"	FOOT	2650	\$ 260.00	\$ 689,000.00
40	STORM SEWERS, CLASS B, TYPE 2, SPAN 45 RISE 29	FOOT	375	\$ 250.00	\$ 93,750.00
41	STORM SEWERS, CLASS B, TYPE 2, SPAN 53 RISE 34	FOOT	250	\$ 280.00	\$ 70,000.00
42	STORM SEWERS, CLASS B, TYPE 2, SPAN 60 RISE 38	FOOT	145	\$ 300.00	\$ 43,500.00
43	CATCH BASINS, TYPE A, 4'-DIAMETER, TYPE 3 FRAME AND GRATE	EACH	20	\$ 3,800.00	\$ 76,000.00
44	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 3 FRAME AND GRATE	EACH	6	\$ 4,200.00	\$ 25,200.00
45	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 8 GRATE	EACH	9	\$ 6,700.00	\$ 60,300.00
46	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	5	\$ 6,200.00	\$ 31,000.00
47	MANHOLES, TYPE A, 8'-DIAMETER, TYPE 8 GRATE	EACH	5	\$ 8,800.00	\$ 44,000.00
48	MANHOLES, TYPE A, 8'-DIAMETER, TYPE 3 FRAME AND GRATE	EACH	16	\$ 7,900.00	\$ 126,400.00
49	PRECAST REINFORCED CONCRETE FLARED END SECTIONS, 24"	EACH	2	\$ 1,200.00	\$ 2,400.00
50	PRECAST REINFORCED CONCRETE FLARED END SECTIONS, 36"	EACH	1	\$ 4,000.00	\$ 4,000.00
51	PRECAST REINFORCED CONCRETE FLARED END SECTIONS, 48"	EACH	2	\$ 6,000.00	\$ 12,000.00
52	PRECAST REINFORCED CONCRETE FLARED END SECTIONS, EQUIVALENT ROUND-SIZE 36"	EACH	1	\$ 6,200.00	\$ 6,200.00
53	HOT-MIX ASPHALT BINDER COURSE, IL-9.5, N50	TON	563	\$ 150.00	\$ 84,450.00
54	HOT-MIX ASPHALT SURFACE COURSE, IL-9.5, MIX "D", N50	TON	1135	\$ 135.00	\$ 153,225.00
55	THERMOPLASTIC PAVEMENT MARKING - LINE 12"	FOOT	240	\$ 10.00	\$ 2,400.00
56	THERMOPLASTIC PAVEMENT MARKING - LINE 24"	FOOT	300	\$ 26.00	\$ 7,800.00
57	EARTH EXCAVATION	CU YD	6650	\$ 40.00	\$ 266,000.00
58	EROSION CONTROL BLANKET	SQ YD	1420	\$ 8.00	\$ 11,360.00
59	SEEDING (SPECIAL)	ACRE	2.5	\$ 15,000.00	\$ 37,500.00
60	NATIVE PLANT PLUGS (SPECIAL)	EACH	8700	\$ 6.25	\$ 54,375.00
61	PRE-CONSTRUCTION VIDEOTAPING	L SUM	1	\$ 7,500.00	\$ 7,500.00
62	MOBILIZATION	L SUM	1	\$ 47,000.00	\$ 47,000.00
63	CONSTRUCTION LAYOUT	L SUM	1	\$ 71,000.00	\$ 71,000.00
64	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1	\$ 118,000.00	\$ 118,000.00

TOTAL \$ 4,974,982.00

20% CONTINGENCY \$ 995,000.00
PHASE 1 PROBABLE COST: \$ 5,969,982.00

**Engineer's Opinion of Probable Cost
PRELIMINARY COSTS
WOOD DALE, ILLINOIS**

Ward 1 Storm Sewer Improvements
Prepared by Engineering Resource Associates, Inc.
4/18/2023

ALTERNATIVE C

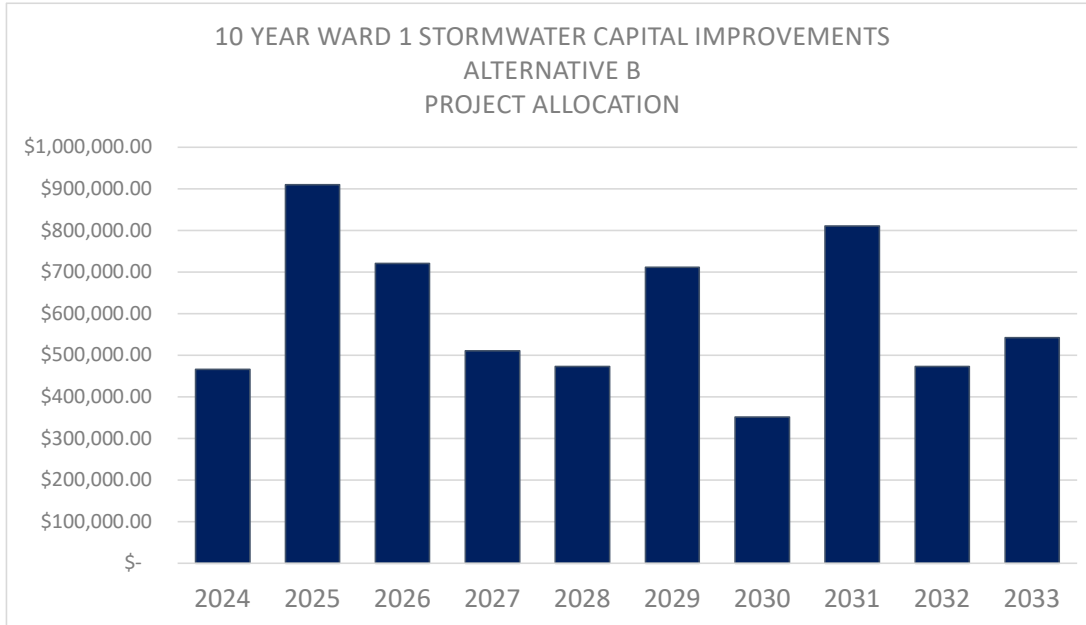
NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
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6	TOPSOIL FURNISH AND PLACE, 4"	SQ YD	19300	\$ 15.00	\$ 289,500.00
7	SODDING, SALT TOLERANT	SQ YD	2800	\$ 30.00	\$ 84,000.00
8	INLET FILTERS	EACH	50	\$ 135.00	\$ 6,750.00
9	COMBINATION CURB AND GUTTER REMOVAL	FOOT	1850	\$ 28.00	\$ 51,800.00
10	HOT-MIX ASPHALT SURFACE REMOVAL 2"	SQ YD	5060	\$ 25.00	\$ 126,500.00
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57	EARTH EXCAVATION	CU YD	8100	\$ 40.00	\$ 324,000.00
58	RETAINING WALL (SPECIAL)	SQ FT	6500	\$ 65.00	\$ 422,500.00
59	EROSION CONTROL BLANKET	SQ YD	1420	\$ 8.00	\$ 11,360.00
60	SEEDING (SPECIAL)	ACRE	2.5	\$ 15,000.00	\$ 37,500.00
61	NATIVE PLANT PLUGS (SPECIAL)	EACH	8700	\$ 6.25	\$ 54,375.00
62	PUMP STATION (SPECIAL)	EACH	1	\$ 150,000.00	\$ 150,000.00
63	PRE-CONSTRUCTION VIDEOTAPING	L SUM	1	\$ 7,500.00	\$ 7,500.00
64	MOBILIZATION	L SUM	1	\$ 55,000.00	\$ 55,000.00
65	CONSTRUCTION LAYOUT	L SUM	1	\$ 82,000.00	\$ 82,000.00
66	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1	\$ 137,000.00	\$ 137,000.00

TOTAL \$ 5,744,982.00

20% CONTINGENCY \$ 1,149,000.00
PHASE 1 PROBABLE COST: \$ 6,893,982.00

PROJECT: Ward 1 Storm Water Improvements
LOCATION: Wood Dale, DuPage County, IL
ERA JOB #: W22062.00

DATE: April 18, 2023
PREPARED BY: M. Garrow



FISCAL YEAR*	BUDGET**	PROJECT DESCRIPTION
2024	\$466,000	Rte. 83 and Oak Meadows Dr Basin Expansion
2025	\$910,000	Oak Meadows Dr Storm Sewer Improvements (approximately 1,600' storm sewer)
2026	\$721,000	Edgewood Ave and Oak Meadows Dr Basin Expansion
2027	\$511,000	Edgewood Ave and Ethel Ln Storm Sewer Improvements (approximately 810' storm sewer)
2028	\$473,000	Central Ave to Aspen Rd Storm Sewer Improvements (approximately 750' storm sewer)
2029	\$712,000	Crestwood Rd to Butternut Dr Storm Sewer Improvements (approximately 1,130' storm sewer)
2030	\$351,000	Deerpath Rd and Edgewood Ave Storm Sewer Improvements (approximately 540' storm sewer)
2031	\$811,000	Woodbine Dr Storm Sewer Improvements (approximately 1,330' storm sewer)
2032	\$473,000	Central Ave / Juniper Dr / Montclare Ln Storm Sewer Improvements (approximately 1,000' storm sewer)
2033	\$542,000	South Cedar and Knollwood Dr Storm Sewer Improvements (approximately 610' storm sewer)

*Fiscal Year ends April 30

**Budgeted costs from EOPCC - Alternative B and includes 20% contingency. All costs in 2023 dollars.

Ward 1: Drainage and Flood Improvements Study 10-Year Capital Improvement Plan Work Map

