



Village of Homer Glen

Will County, Illinois

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Woodbine Area Drainage Study

Project Engineer: Logan Gilbertsen, P.E., CFM

Project Manager: Jarod Oliver, P.E.

Principal Engineer: Akram Chaudhry, P.E.

HR Green, Inc.
420 N. Front St. Suite 100
McHenry, Illinois 60050
Phone: (815) 385-1778
Fax: (815) 385-1781



Community and Nature . . . in Harmony

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General

The Village of Homer Glen (Village) has had a history of flooding in the Woodbine, Woodbine West, Pebble Creek, Saddle Brook Run and Stadler Ridge Estates neighborhoods. The team of HR Green, Inc. (HRG) and Applied Ecological Services (AES) has been contracted to complete a drainage study of the region. The goals of this drainage study are to identify the frequency and location of flooding, to propose potential solutions to address the flooding and to include features that will improve water quality within the Long Run Creek watershed. The project location is shown in Exhibit A – Project Location Map included in Appendix A of this report.

HRG utilized the hydraulic analysis software *XP SWMM 2014* to model the existing and proposed conditions. This hydrologic and hydraulic software allows the user to calculate the runoff produced from a given amount of rain and route it through detention basins, storm sewers, ditches, etc. Additionally, due to the complexity of the watershed and conveyance system, a two-dimensional (2D) surface was linked into the model to visualize the extents of surface flooding. This 2D modeling was completed in the low-laying areas and conveyance routes of the Woodbine subdivision and portions of the Pebble Creek subdivision. The remainder of Pebble Creek and portion of Saddle Brook Run within the study area were modeled using traditional 1D modeling. The XP SWMM models were calibrated for frequency and extents of flooding using information provided by Village and Homer Township Road District (HTRD) staff as well as data gathered from a residential survey.

The Stadler Ridge Estates and Woodbine West Estates subdivisions do not fall within the same watershed as the rest of the study area and were not included in the XP SWMM model.

Recommendations for these subdivisions were based on review of topographic information, original design plans, existing facilities, information provided by Village and HTRD staff and responses from a residential survey.

For the remainder of this study, flooding will be defined as stormwater ponding in roadways and yards to a depth of approximately one inch or greater.

Structural flooding will be defined as surface water reaching a structure. This study will not



address ground water specific issues but the improvements proposed in this report may help to reduce the yard flooding that can lead to increased sump pump run times or failures. This report will also not address localized drainage issues that may be caused by landscaping features or improper grading on isolated residential lots.

The attached appendices contain supporting information including exhibits depicting the extents of flooding during multiple different storm frequencies and multiple different improvement options. A soils report from the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) provided information about the native soil's ability to infiltrate stormwater, this report is attached. Calculations regarding the Time of Concentration are also included in Appendix K.

Since the project is located in Will County, the proposed improvements are subject to meeting the requirements of the Will County Stormwater Ordinance. The following design criteria were utilized for the proposed drainage system design:

- Storm sewer design storm event – 10 Year
- Rainfall – Based on data found in the Will County Technical Guidance Manual from Illinois State Water Survey Bulletin 70 – Rainfall Depths Averaged for Will County.
- Velocity – A minimum velocity of 3 fps and a maximum of 10 fps in all storm sewers. In areas where the minimum velocities could not be achieved, the storm sewers were designed at minimum slopes to achieve a full flow velocity of 3 fps.
- Time of Concentration
 - o Assumed a 5 minute time of concentration (T_c) for all connected impervious areas within the right of way
 - o For offsite flows, T_c 's were calculated using TR55.
- Runoff Coefficient - The XP SWMM model utilizes SCS Hydrologic methods to calculate flows. The Curve Numbers used are based on the NRCS soils report (used to determine hydrologic soils class) and the Stormwater Collection Systems Design Handbook Table 4.13 *Runoff Curve Numbers for Urban Areas* (published CN values). A CN of 80 was used for open spaces with type D soils including agricultural land and the former Woodbine Golf Course. A CN of 85 was used for residential areas with type D soils. Type D soils tend to be poorly drained and often consist of clays and silts.
- Detention – There are no detention requirements for this project since there is no increase in impervious area associated with the proposed improvements. All proposed detention serves the purpose of alleviating flooding downstream.

HRG utilized Will County topographic data which was generated based on a Digital Elevation Model (DEM) provided by the Illinois State Geologic Survey (ISGS). Local site survey was utilized to verify delineated drainage areas when available. All watersheds were delineated per the surface topography; the existence of drain tiles was not accounted for during the hydrologic study of the region. Exhibits B.1 and B.2 in Appendix B depict the general watershed divides in

the study area. In Exhibit B.2, the elevations were shown via a color ramp behind the watershed divides.

Existing Conditions

HRG coordinated with the Village to distribute a resident survey. This survey was sent to approximately 425 residents upon which, 149 responded. Exhibits C.1, C.2 and C.3 in Appendix C provide the locations of those residents who responded to the survey and indicate whether they are experiencing street, yard and/or structural flooding. The existing conditions 100 year inundation extents were added to Exhibit C.2 to show the correlation between the survey results and modeling results. The elevations are shown in Exhibit C.3 via a color ramp to show the correlation of low lying areas and residents reporting flooding. The results of this survey were used to calibrate the existing conditions models in XP SWMM.

Woodbine

The Woodbine subdivision has approximately 354.4 acres of land draining through its storm sewer system. This watershed consists of approximately 103.7 acres of residential area within the Woodbine subdivision as well as 114.7 acres of agricultural land south of 151st Street and 136.0 acres from the former Woodbine golf course and adjacent properties. The primary outlet for the Woodbine subdivision is a 42" storm sewer that drains through the Pebble Creek subdivision. From here, the storm sewer increases in size to a 60" which drains into the Culver Park detention basin and Long Run Creek tributary. It should be noted that the location where this existing 42" storm sewer leaves the Woodbine subdivision and flows into the Pebble Creek subdivision shows up as the headwater for a stream per statewide hydrologic stream data. This means that historically there was likely an open channel in this location (prior to development) that drained the upstream watershed. When development occurred a storm sewer with a finite capacity replaced the open channel which can increase the risk of flooding in the area.

The results of the residential survey generally agree with the XP SWMM model. Seventy-six (76) residents responded to the survey in the Woodbine subdivision alone. Of this sample, forty-four (44) reported some form of flooding.

According to the 2D XP SWMM model, this neighborhood experiences roadway and yard flooding during the following events to the noted extents:

- **1 Year Storm** - Statistically has a 100% chance of occurring on an annual basis
 - o At the intersection of Eagle Ridge Drive and Cantigny Lane as well as in the rear yard immediately west of that intersection.
- **2 Year Storm** - 50% chance of occurring on an annual basis
 - o In addition to the 1 year storm, flooding extends along Eagle Ridge drive from Cantigny Lane to Augusta Lane.

- **5 Year Storm** - 20% chance of occurring on an annual basis
 - o In addition to the 2 year storm, flooding extends into the rear yards at the northeast corner of Augusta Lane and Eagle Ridge Drive. Additional roadway flooding occurs during this storm at the intersection of Eagle Ridge Drive and Grenelefe Lane.
- **10, 25, 50, & 100 Year Storms** - 10%, 4%, 2% and 1% chance of occurring on an annual basis respectively.
 - o Locations of flooding are the same as smaller events but extents and depths increase.

Exhibits showing the existing conditions extent and depth of flooding during multiple storm frequencies are available in Appendix D.

- Exhibit D.1 – 1 Year Flooding Extent and Depths
- Exhibit D.2 – 2 Year Flooding Extent and Depths
- Exhibit D.3 – 5 Year Flooding Extent and Depths
- Exhibit D.4 – 10 Year Flooding Extent and Depths
- Exhibit D.5 – 25 Year Flooding Extent and Depths
- Exhibit D.6 – 50 Year Flooding Extent and Depths
- Exhibit D.7 – 100 Year Flooding Extent and Depths

Upon inspection of the subdivision design plans and data gathered by HRG surveyors, it appears that the storm sewer system in Woodbine may have been installed incorrectly. HRG compared plans prepared by Joseph A. Schudt & Associates (JAS) dating November 1990 for the Paulnita's Subdivision, later renamed Woodbine, with surveyed storm sewer data. The pipe sizes and slopes generally matched survey data with the exception of the section of pipe within Edmond J. Sendra Park. The original design plans for the subdivision called for a 54" storm sewer at this location; however, the existing storm sewer is a 42". Additionally, this portion of pipe is heavily back pitched and it appears that this is one of the primary causes of flooding in the area. After further investigation, it appears that the reason for the backwards slope to the storm sewer is that the Pebble Creek Subdivision was constructed prior to Woodbine. It is assumed that when Pebble Creek installed the pipe for Woodbine's future connection it was installed with an invert that was too high for Woodbine to tie into. A profile of this section of pipe can be seen in Figure 2.

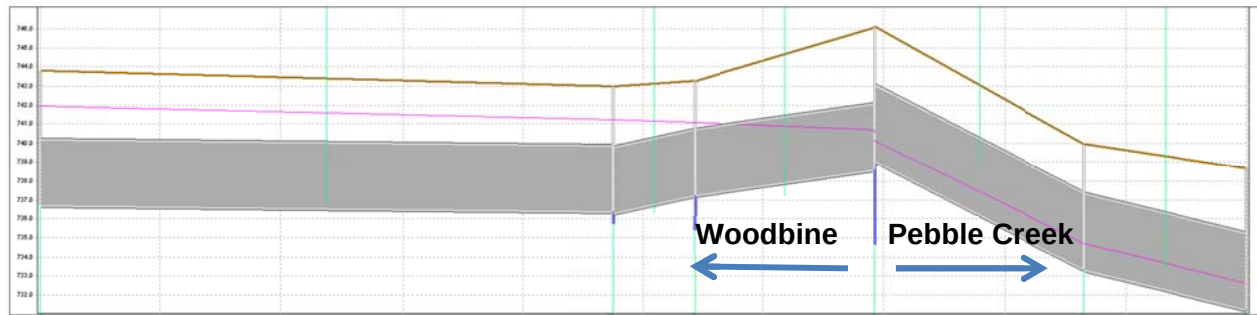


Figure 2: Existing storm sewer profile based on survey data

In 2007/2008, drainage improvements were constructed within the Woodbine subdivision. One of these improvements included the installation of an 18" PVC storm sewer along Cantigny Lane. Per the design plans prepared by Postl-Yore and Associates, Inc., this storm sewer should have been an 18" PVC pipe, however, per HRG survey, the section of pipe under Eagle Ridge Drive was installed as 12" and 15" pipe. These undersized pipes do not provide the designed benefits to reduce the flooding issues seen at this intersection and adjacent yards.

At an unknown date, a backflow preventer was installed along the 24" storm sewer in Edmond J. Sendra Park. It appears that this was designed to prevent the existing 42" main line of the storm sewer system from surcharging into the Park. It should be noted that this type of structure requires a hydraulic head differential to operate, this means that water must be deeper on the upstream side of the structure to allow any flow through. This structure does result in increased water surface elevations in the upstream pipes. This backflow preventer has been incorporated into the existing conditions XP SWMM model.

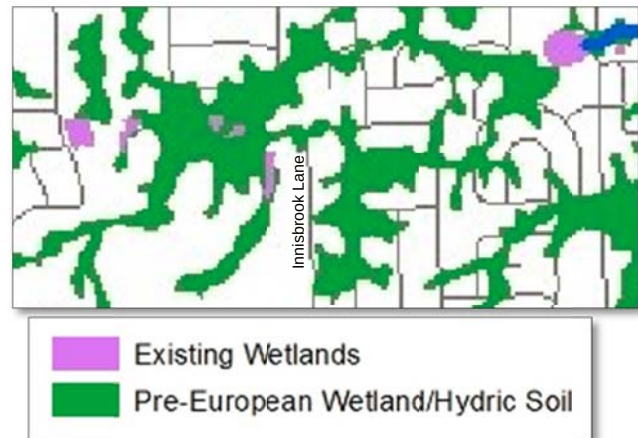
Lot 93 of the Woodbine subdivision has noted continuous yard flooding issues. This property has a catch basin located in the rear yard that was designed to collect the flows from a rear yard swale and drain it through a 12" pipe to the storm sewer system along Greenbrier Lane. According to a review performed by NIES Engineering, Inc. on July 26, 2007, adjacent properties have encroached into the drainage easements and this has increased the yard flooding issue for the residents at lot 93. This has been an ongoing issue that has been impacting multiple properties.



Adjacent to the Woodbine Subdivision is the former Woodbine golf course. This property was identified in the Illinois Environmental Protection Agency (IEPA) approved Long Run Creek Watershed Based Plan as location to potentially improve water quality. Historically there were wetlands on this site. Wetland or "Hydric Soils" generally form over poorly drained clay material associated with wet prairies, marshes, and other wetlands and from accumulated organic matter

from decomposing surface vegetation. Hydric soils are important because they indicate the presence of existing wetlands or drained wetlands where restoration may be possible. Most of the wetlands in Long Run Creek watershed were intact until the late 1830s when European settlers began to alter significant portions of the watershed's natural hydrology and wetland processes. Where it was feasible, wet areas were drained, streams channelized, and woodland and prairie cleared to farm the rich soils.

Functional wetlands do more for water quality improvement and flood reduction than any other natural resource. In addition, intact wetlands typically provide habitat for a wide variety of plant and animal species. They also provide groundwater recharge, filter sediments and nutrients, and slowly discharge to streams thereby maintaining water levels in streams during drought periods. Existing wetlands and historic wetland locations within the project vicinity are shown in Figure 4.



Pebble Creek

During a 50 year storm or other less frequent storm events it appears that the intersection of Cricketwood Drive and South Arboretum Drive experiences roadway flooding. It appears that this flooding is the result of the inlets at the intersection surcharging into the street. It should also be noted that this intersection has a relatively large local watershed and may require frequent maintenance to keep the inlets free of debris. If the inlet grates accumulate debris then it may cause localized flooding during smaller storm events. The HTRD is aware of this and has been actively addressing this issue throughout the area; their pre-storm activities most likely prevent many roadway flooding events.

Woodbine West Estates

Generally, the residents of Woodbine West Estates did not report many instances of flooding in the residential survey. Throughout the subdivision thirty-five (35) residents responded. Of that group only eleven (11) reported yard flooding and seven (7) reported basement flooding. Existing topography appears to support reports of yard flooding. A review of the topographic maps indicates some homes near the intersection of South Crème Road and Rathfarn Drive are sensitive to yard flooding. This intersection receives runoff from approximately 45.7 acres. According to the HTRD, the primary drainage conduit for this land is an existing 12" drain tile that is located primarily on private property. The HTRD has noted that this tile may be in need of maintenance and they have plans to improve the drain tile within their right-of-way (ROW).

The Village and the HTRD have reported that the detention ponds located on the northeast, northwest and southwest corners of the subdivision appear to be functioning properly. It has

been noted that most overtopping events associated with these basins has been the result of a clogged restrictor which the Village and HTRD staff have been able to address.

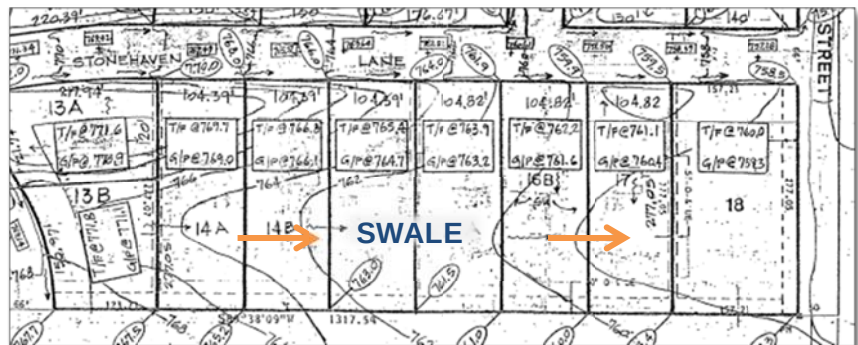
Saddle Brook Run

Saddle Brook Run appears to have minimal drainage issues. According to the residential survey, only three (3) out of fourteen (14) residents responding reported structural flooding. The three reports of flooding for this subdivision were said to be a basement flooding; however, these events may be isolated incidents as the residents noted that the causes of flooding were sump pump failures and a sewer backup. A review of the topography indicates that the area does not appear to have any pocketed areas that would be very susceptible to flooding and therefore no improvements will be recommended in this area.

Stadtler Ridge Estates

Sixteen (16) residents responded to the residential survey within the Stadtler Ridge Estates subdivision. Of these responses, ten (10) reported some form of flooding. According to the topography of the area, it appears that these flooding reports are reasonable and could be expected due to the size of the upstream watershed. This subdivision has approximately 58.5 acres of agricultural and residential land draining from the southwest to the southeastern corner of the subdivision. It should be noted that the primary drainage conduit for this subdivision is the same 12" field tile that serves portions of Woodbine West Estates and the 45.7 acre watershed north of 151st Street and east of Crème Road. This subdivision drains to a detention basin located on the southwest corner of the intersection of Crème Road and 147th Street. This basin has been reported to function well.

According to the original grading plan and plat dated March 27, 1990, a drainage swale was to be constructed on private property through the back yards of the homes located on the south side of Stonehaven Lane. It does not appear that there is a drainage easement in the current



location of this swale, however there is a 20' drainage and utility easement along the southern property lines. Please see Figure 5. From current (2015) aerial imagery it appears that this drainage swale has been encroached upon by multiple swimming pools and residential landscaping. This encroachment may have led to some of the reported yard flooding. Overall, this subdivision was designed to be drained via ditches along the roadway and through drainage easements. Action may be necessary to address the reported flooding in this subdivision.

Proposed Improvements

There are three primary solutions to managing stormwater. The first option is to convey it; this means installing large storm sewers and opening up ditches to allow stormwater runoff to drain away as quickly as possible. The second option is to detain the runoff; this incorporates detention basins which hold water for a period of time and slowly drain it down over a set timeline. The third option is to infiltrate the water into the ground. This can be done through naturalized detention basins, rain gardens, bioswales or many other methods. The soils in the area of the study are not well suited for infiltration, so the effects of this on major flood causing storms is minor and was not specifically accounted for as a stormwater outlet. HRG studied the effects of conveyance improvements, additional detention and a mix of the two to determine the best way to manage stormwater in the vicinity of the former Woodbine Golf Course. A majority of the flooding reports received from residents, Village and HTRD staff pertained to the Woodbine neighborhood. Therefore, many of the proposed improvements focus on addressing the drainage issues in this area.

Woodbine

The first option studied included adding detention basins at the northeast corner and southeast corner of the former Woodbine Golf Course. Detention was maximized while avoiding tree impacts where possible. The proposed concept grading supplies detention for approximately the 50 year storm and was designed in a manner as to minimize earthwork. The results of increasing detention on the former golf course had little impact on reducing flooding in the adjacent neighborhood. However, adding detention basins on the former golf course should be incorporated into any future improvements to the property. This property has been identified in the Long Run Creek Watershed Based Plan as a location to incorporate naturalized detention basins that will help manage flooding and will increase water quality. These naturalized detention basins would be planted with mesic prairie and wetland plants that are native to Illinois. These types of vegetation have root systems that can extend more than ten feet into the ground and can help to promote infiltration. Over time, the root systems can introduce preferential flow paths into the native clay soils and make infiltration a more viable method of stormwater volume control.

Wetland restoration projects are among the most beneficial in the context of improving watershed health. The wetland restoration process involves returning hydrology (water) and vegetation to soils that once supported wetlands but no longer do because of human impacts, such as drain tile and ditch draining and/or filling. Potential wetland restoration sites were identified in the Long Run Creek watershed plan. According to the report, Site 18 is a 26.7 acre drained hydric soil unit



located at the north and northeast portion of the former Woodbine Golf Course (See Figure 5).

The Village has expressed interest in providing additional stormwater detention on the northeast corner of the former Woodbine Golf Course property. HRG has created a concept grading plan and modeled its effects on the downstream drainage system. This detention basin would provide detention for approximately 110 acres of the property and surrounding areas. This basin would be located in an area that was historically a wetland per the Long Run Creek Watershed Based Plan. Restoring this area to a mesic prairie and wetland would reduce the sediment and nutrient load leaving the property and help to improve the water quality of Long Run Creek. **It should be noted that by incorporating best management practices (BMPs), such as using native landscaping to promote infiltration and improve water quality, the Village may be eligible for grants to help fund a substantial portion of this project.** The former Woodbine golf course was specifically identified in the Long Run Creek Watershed Based Plan as a location that holds potential to improve water quality. **The Watershed Based Plan has been approved by the Illinois Environmental Protection Agency (IEPA), this fact will greatly increase the project's eligibility for certain types of grant funding.**

The permanent pool of open water for this basin could be expanded if the Village chooses to do so. However, this would not serve the purpose of flood control. An expanded permanent pool could be incorporated into plans for future park improvements and could serve as an amenity to residents. It should be noted that any permanent pool should be designed to incorporate all necessary safety precautions. Typically, for a pond to support aquatic life it must be approximately nine (9) feet deep or have mechanical aeration. If one of these two guidelines is not met then the pond would run the risk of eutrophication in which the aquatic vegetation can overtake the pond and create a nuisance to residents. The design of a permanent pond should also account for mosquito control. Mechanical aeration using a fountain or submerged aerator can help to control nuisance insect populations. Since the addition of a permanent pool would not help in flood control, it has not been studied in detail in this study and should be addressed during the design phase of the park or the detention basins.

The construction of a naturalized detention basin near the southeast corner of the former Woodbine Golf Course will allow for additional control of where runoff from the property enters the Woodbine subdivision storm sewer system. Currently, runoff from the property enters the Woodbine subdivision through a network of shallow swales and shallow sheet flow. Many of the swales do not appear to be functioning properly. Namely the swale constructed in 2007/2008 per the Postl-Yore and Associates plans. Upon field investigation, it does not appear that this swale is functioning as intended and will either need to be regraded or a new method of directing stormwater should be constructed. Since the Village now owns the property, it would be advantageous to construct a detention basin that would intercept much of the flow from the former Woodbine Golf Course property. The construction of this basin would not require any modification of the existing Postl-Yore swale and could supply detention for approximately the 10 year storm. Again, by creating a naturalized detention basin, the Village may be eligible for grants.

Exhibit E.1a in Appendix E depicts the proposed basins discussed above as well as proposed conveyance improvements discussed below. Please see Exhibits E.1b, E.1c and E.1d in Appendix E for a more detailed conceptual plan of the proposed basins. The anticipated cost for these basins is approximately **\$798,000**. These basins can be incorporated into the overall Woodbine Property improvements and can be used to meet detention requirements that may arise from new impervious areas associated with future park projects.

It would be highly beneficial to the residents living along the eastern edge of the former Woodbine golf course property to have a ditch graded on the Village's property to convey into the proposed detention basin. This ditch would help to address some of the reported yard flooding along the property. Additionally, this ditch could be planted with native vegetation and if designed properly could function as a bio-swale. This project has the potential to receive water quality grants.

South of 151st Street is approximately 114.7 acres of agricultural land and wetland. This watershed drains to the north through an 18" culvert under 151st Street. On the south side of the roadway is a large wetland area that is currently acting as a 74 acre foot detention basin for the watershed. This area appears to be a protected area as there are signs identifying the area as a wetland. It is in the Village's best interest to ensure that this area remains as it is. The detention provided in this wetland is necessary to the performance of the downstream storm sewer systems. It is recommended that the culvert under 151st Street remain as an 18" culvert and that the storage in this wetland be protected and maintained indefinitely.

As noted in the Existing Conditions portion of this report, there are some discrepancies between surveyed data and the information shown on the original design plans. HRG looked at two different options regarding the conveyance systems within the Woodbine and Pebble Creek subdivisions.

1. Construct the storm sewer as it was originally intend to be constructed. This option would require replacing 392' of 42" and 48" reinforced concrete pipe (RCP) and installing new pipe with a positive slope. This construction would occur between Cricketwood Drive and Greenbrier Lane, primarily in Edmond J. Sendra Park and residential side yards. This option would also include removing the backflow preventer in Edmond J Sendra Park and increasing the size of existing 12" and 15" PVC storm sewer near Eagle Ridge Drive and Cantigny Lane to 18" PVC per the original design plans. Please see Exhibit E.1a in Appendix E for areas of storm sewer fixes (noted as Phase 1 – Fix Storm Sewer). The anticipated cost for these storm sewer fixes is approximately **\$321,000**.
2. Increase the capacity of the storm sewer system throughout the Woodbine subdivision until there is no flooding in a 10 year storm. This option would require the removal and replacement of approximately 3,900 linear feet of storm sewer. The 10 year storm has a 10% chance of occurring in any given year. Please see Exhibit E.1 in Appendix E for

areas of storm sewers to be upsized (noted as Phase 3 – Upsize Storm Sewer). The anticipated cost for these storm sewer fixes is approximately **\$1,349,000**.

During a staff update meeting there was concern expressed about the effects of these improvements to the existing detention basin in Culver Park. Table 1 below compares the water surface elevations in the basin during the 100 year 3-hour storm.

Table 1: Water Surface Elevations - Culver Park

Condition	Water Surface Elevation
Existing	729.7
Phase 1	730.2
Phase 2	730.2
Phase 3	730.3

It should be noted that the existing roadway centerline elevation along Parker Road is 731.5. This means that according to the modeling, the roadway would not overtop in the 100 year storm. Additionally, during a field investigation of the Culver Park basin it was noted that the outlet structure appears to be susceptible to clogging. The Village and HTRD may want to complete improvements to this outlet structure to coincide with the above mentioned neighborhood improvements. It has also been noted by the HTRD that the culvert under Parker Road in this location, an elliptical corrugated metal pipe (CMP), is in poor condition and it need of replacement. This was confirmed during a field investigation. Replacing this CMP with a concrete box culvert or concrete pipe should be completed if the control structure is modified. Any improvement to the control structure or downstream culvert will help to control the water surface elevation in the basin.

Lastly, the storm sewer draining Lot 93 on Greenbrier Lane should be studied in detail. It has been noted that there has been encroachment into the drainage easement surrounding a drainage structure in this area. This encroachment should be addressed or the storm sewer should be modified to accommodate the current condition of the drainage easement.

Woodbine West Estates

It appears that most of the drainage issues in the Woodbine West Estates subdivision are associated with the detention area between Rathfarn Drive and the HTRD building (Property PIN: 1605094000320000). According to the HTRD, there is a 12" drain tile that is located under this basin, which may be in poor condition. However, portions of this tile are located on private property



and would make maintenance of the entire tile difficult for the Village. This basin is located on land owned by Homer Township. Coordination between the Village and HTRD could take place to create a well-defined overflow and downstream channel for this basin, which would help to contain flows in the downstream channel rather than potentially flowing onto private property. Please see Figure 6.

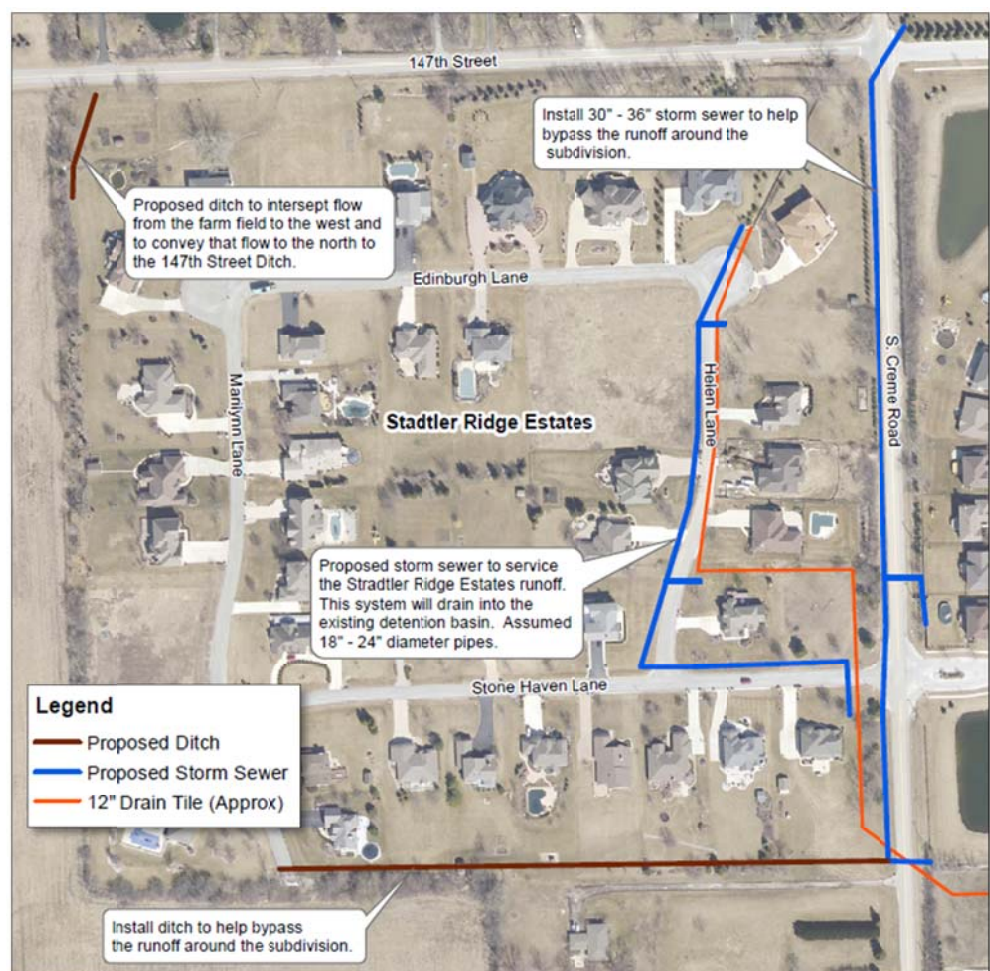
Stadtler Ridge Estates

This part of the study area could benefit from the addition of two new storm sewers to help alleviate flows that surcharge the 12" drain tile that flows through the subdivision to convey offsite flows around the development.

The first system could be an approximately 18" to 24" diameter storm sewer running along Stone Haven Lane from Crème Road to Helen Lane. From there the storm sewer would drain to the north along Helen Lane and eventually outlet into the existing detention basin. This storm sewer would help to alleviate some of the drainage issues within Stadtler Ridge Estates.

A second drainage system could be installed along the southern property lines of the homes on Stone Haven Lane. This ditch and storm sewer would convey runoff from the approximately 58.5 acre farm land along South Crème Road to the north and outlet on the northeast corner of 147th Street and Crème Road. Please see the exhibit below for a visual description.

Lastly, two reports of yard flooding were received from the residents located at the northwest corner of the subdivision.



It appears that these parcels have a drainage flow path crossing through their back yards which flows from the west to the northeast into the 147th Street ditch. A solution to this yard flooding could be to intercept the flow in a ditch along the western property line and convey it to the north to the 147th Street ditch. This project may not be a high priority as there does not appear to be an immediate threat to any structures and the existing flow path. It looks like the existing channel has been landscaped to accommodate the flow through the yards. Figure 8 illustrates these proposed improvements. These proposed improvements are also shown on Exhibit E.2 in Appendix E.

Recommendations

Woodbine

It is recommended that the Village address this project in a phased approach.

Phase 1

In order to get the most return for every dollar spent it is recommended that the Village at a minimum correct the back-pitched 42" storm sewer between Greenbrier Lane and Cricketwood drive and remove the backflow preventer in Edmond J Sendra Park. As previously noted in the Proposed Improvements section of this report, this will require replacing 392' of 42" and 48" reinforced concrete pipe (RCP) and installing new pipe with a positive slope. This small improvement will provide the most noticeable result out of all the proposed improvements. The undersized storm sewer at Eagle Ridge Drive and Cantigny Lane may be replaced to match the design plans; however this pipe is recommended to be replaced in Phase 3 and will therefore need to be replaced again. The timing of the phased implementation should be taken into consideration when determining whether or not to replace the pipes at Eagle Ridge Drive and Cantigny Lane. Phase 1 improvements are shown on Exhibit E.1a in Appendix E. Exhibits E.3a and E.3b show the resultant 10 and 100 year inundation extents if the Phase 1 improvements are completed. The anticipated cost for Phase 1 is approximately **\$321,000**.

Phase 2

Construct the detention basins on the former Woodbine Golf Course. This will help to improve water quality in the area and can also be viewed as an amenity to residents as the property is converted into a park. Many of the plants that can be planted in these basins are aesthetically pleasing wild flowers and attract many species of song birds. **Additionally, these basins can be used to meet any detention requirements that may come about from improvements to the future park's parking lot or trail system.** The sooner these basins get constructed, the sooner the native plant root systems can start to break up the tight native soils and promote infiltration. The rate of infiltration should increase over time as the native vegetation becomes more established. Phase 2 improvements are shown on Exhibit E.1a in Appendix E. Exhibits E.4a and E.4b show the resultant 10 and 100 year inundation extents if the Phase 1 and 2 improvements are completed. The anticipated cost for Phase 2 is approximately **\$798,000**. It should be noted that the basins can be modified during the design phase to accommodate

budgetary constraints and/or to meet a given level of protection that the Village would like to achieve. The basins depicted in Exhibit E.1a have been sized to detain approximately the 50 year and 10 year storms for the north and south basins respectively.

Phase 3

It is highly recommended that the storm sewer be replaced along much of Eagle Ridge Drive, Cantigny Lane and in parts of Edmond J. Sendra Park. Once the Phase 1 and Phase 2 improvements are completed the storm sewer system throughout the Woodbine subdivision can be improved to have the capacity to convey approximately the 10 year storm. In general, storm sewers are typically designed to convey the 10 year storm. The improvements outlined in Phase 3 will provide capacity for the 10 year storm with minor roadway and yard flooding in the 50 year storm. It does not appear that the 50 year storm would impact any structures with surface water. Phase 3 improvements are shown on Exhibit E.1a in Appendix E. Exhibits E.5a and E.5b show the resultant 10 and 100 year inundation extents if the Phase 1, 2 and 3 improvements are completed. The anticipated cost for Phase 3 is approximately **\$1,349,000**.

Table 2 below provides a summary of the approximate anticipated costs by Phase. A more detailed cost breakdown can be found in Appendix F.

Table 2: Phase Costs

Phases	Anticipated Cost
Phase 1	\$321,000
Phase 2	\$798,000
Phase 3	\$1,349,000
TOTAL	\$2,468,000

Tables 3 and 4 below summarize the expected results after each phase has been completed.

Table 3: Yard and street flooding

Phases	1 Yr Storm	2 Yr Storm	5 Yr Storm	10 Yr Storm	50 Yr Storm	100 Yr Storm
Existing	Flood	Flood	Flood	Flood	Flood	Flood
Phase 1	Ok	Ok	Flood	Flood	Flood	Flood
Phase 2	Ok	Ok	Ok	Flood	Flood	Flood
Phase 3	OK	Ok	Ok	Ok	Flood	Flood

Yard and street flooding events are indicated as a "FLOOD" in the above table.

Table 4: Structure flooding

Phases	1 Yr Storm	2 Yr Storm	5 Yr Storm	10 Yr Storm	50 Yr Storm	100 Yr Storm
Existing	Ok	Ok	Flood	Flood	Flood	Flood
Phase 1	Ok	Ok	Ok	OK	Flood	Flood
Phase 2	Ok	Ok	OK	OK	Flood	Flood
Phase 3	OK	Ok	Ok	Ok	Minor	Flood

Structure flooding events are indicated as a "FLOOD" in the above table.

Additionally, storm sewer improvements are recommended along lot 93 in the Woodbine Subdivision. The existing storm sewer is a 12" RCP with a designed slope of 0.22% which is considered to be too flat according to current storm sewer design standards. The properties in this area have a history of rear yard flooding caused by encroachment into the drainage easement and what appears to be a storm sewer with insufficient capacity. This 184' stretch of 12" RCP storm sewer from the rear yards to the street could be replaced during the proposed Phase 1 or Phase 3 improvements. It is recommended that the replacement storm sewer be an 18" diameter at a minimum. This improvement could address the yard flooding reported by the property owners at lot 93 and adjacent properties.

Pebble Creek

The Pebble Creek portion of the study area appears to have minimal drainage issues. Drainage issues in smaller storm events appear to be the result of clogged inlets. HRG recommends that the Village and HTRD staff continue to monitor and address maintenance issues throughout the area to prevent flooding in smaller storm events.

Saddle Brook Run

The Saddle Brook Run portion of the study area appears to have minimal drainage issues. A review of the topography of the area indicates that the area does not appear to have any areas that would be very susceptible to flooding and therefore no improvements will be recommended in this area.

Woodbine West Estates

Woodbine West Estates does not appear to have any major flooding issues. The drainage system consisting of a ditch and storm sewer that is recommended for bypassing flow around Stadtler Ridge Estates (please see Stadtler Ridge Estates recommendations) can be used to address yard flooding around the intersection of Crème Road and Rathfarn Drive.

It is recommended that coordination between the Village and HTRD take place to create a well-defined overflow and downstream channel for the basin located on the north end of the HTRD property. This would help to contain flows in the downstream channel rather than potentially flowing onto private property along Rathfarn Drive. This project is a low priority as it will address only one report of yard flooding.

Stadtler Ridge Estates

It is highly recommended that a ditch and storm sewer be constructed to route offsite flows around Stadtler Ridge Estates. The ditch is expected to be approximately 980' long and be two (2) feet deep. The storm sewer is expected to be approximately 30" to 36" in diameter. The estimated cost for this drainage system is approximately **\$472,000**.

Secondly, a sewer may be added within the subdivision to provide drainage relief to the existing roadside ditches, driveway culverts and 12" drain tile. This storm sewer would be approximately

18" to 24" in diameter and drain into the existing detention pond located on the southwest corner of Crème Road and 147th Street. Based on an initial inspection this would not negatively impact the performance of the basin, however this will need to be verified during the design of this storm sewer system. This storm sewer is expected to cost approximately **\$377,000**.

A more detailed cost breakdown of the Stadtler Ridge Estates improvements can be found in Appendix F.

Lastly, a small section of new ditch is recommended in the northwest corner of the subdivision. There appears to be a twenty foot drainage and utility easement in this location which could accommodate the ditch. This channel will help to direct offsite flows from the adjacent farm land into the 147th Street Ditch. This project is a low priority as it has the potential to help only select residents and it does not appear that there is a high risk to any structures in the existing condition. The anticipated cost of this ditch is **\$12,000**.

Conclusion

The subdivisions of Woodbine, Woodbine West Estates, Saddle Brook Run and Stadtler Ridge Estates have a wide variety of drainage issues and a large variation in the intensity of flooding. The Woodbine subdivision had the greatest number of reported flooding incidents and appears to have a history of frequent flooding. The recommendations for this report should be addressed as soon as possible. Many of the proposed improvements have been developed in detail and will supply a good starting point for the final design and construction plan development for these projects. Woodbine West Estates does not appear to have many serious flooding issues other than the occasional yard or basement flood. Saddle Brook Run had three reports of flooding but they appear to be relatively isolated incidents. Stadtler Ridge Estates is susceptible to flooding and the improvements recommended in this report should be considered for implementation as soon as possible.

The improvements recommended in this report will address many of the flooding issues within the study area; however, some very localized flooding issues or flooding on private property will remain that were identified as part of the resident questionnaire process. The Village should review the resident questionnaire responses and maps provided in this report to determine if smaller scale improvements may be able to benefit residents with localized flooding issues.

Overall, many flooding issues were discovered during the completion of this drainage study but all of them have a solution and the Village of Homer Glen should be commended for taking the initiative to serve their residents and address their drainage issues.

Appendix

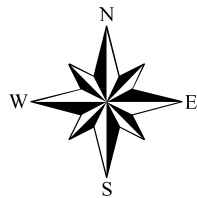
- A. General Location Map
- B. Drainage Area Exhibits
- C. Residential Survey Results
- D. XP SWMM 2D Flooding Exhibits – Woodbine
- E. Proposed Improvement Exhibits
 - o Woodbine subdivision
 - o Woodbine Park property
 - o Stadtler Ridge Estates
- F. Engineer's Opinion of Probable Construction Cost
- G. Flood Insurance Rate Map (FIRM)
- H. Calculations
 - o Time of Concentration Calculations
 - o Estimates of Probable Cost
 - o Detention Basin Volume Calculations
- I. EcoCAT Report
- J. IHPA Sign-off
- K. NRCS Soils Report
- L. Meeting Minutes
- M. Select Original Design Plans
- N. XP SWMM Model and Supporting Data (on disk)

Appendix A - General Location Map

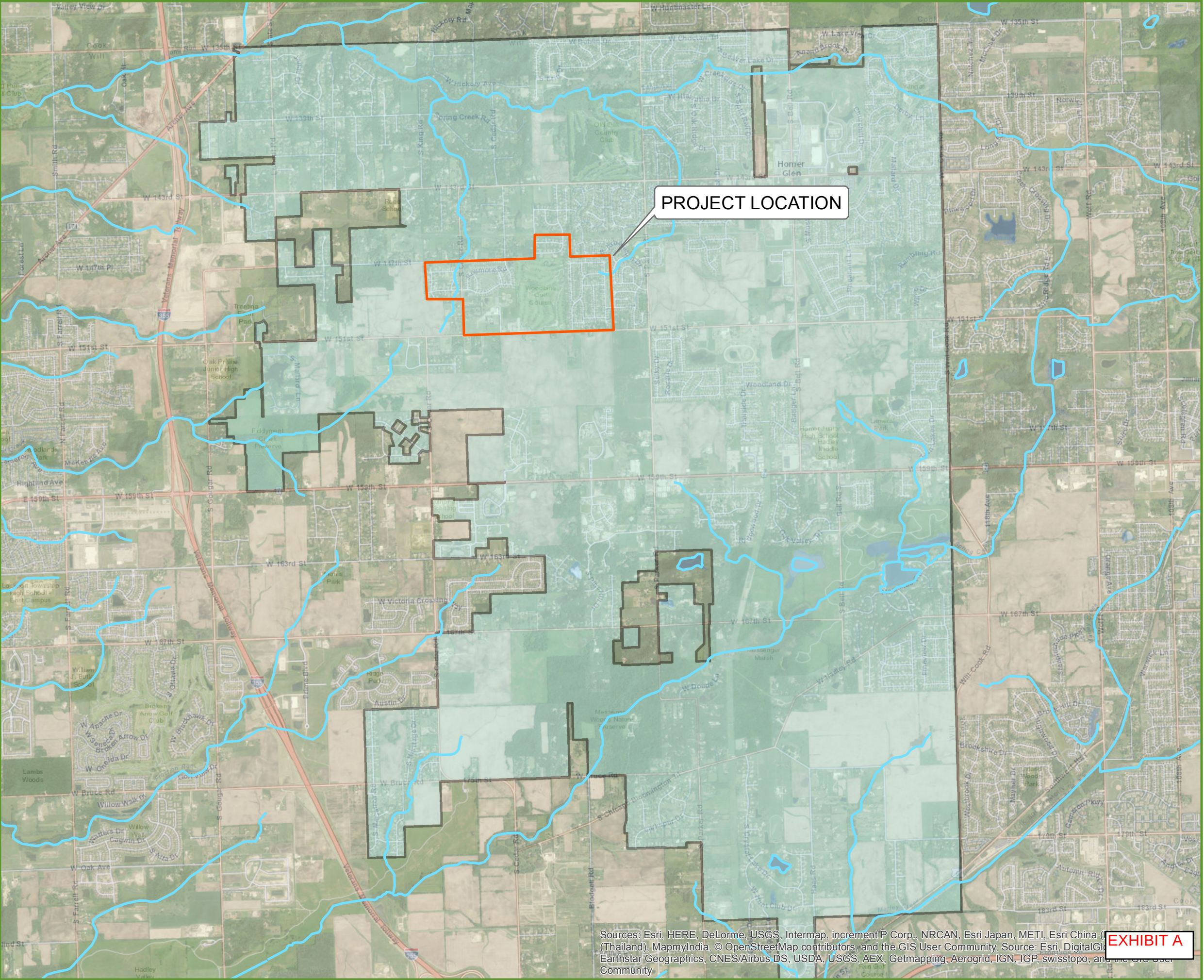
Village of Homer Glen

Project Location Map

- Legend**
- Streams
 - Village of Homer Glen



0 0.25 0.5 1 Miles



Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community. Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

EXHIBIT A

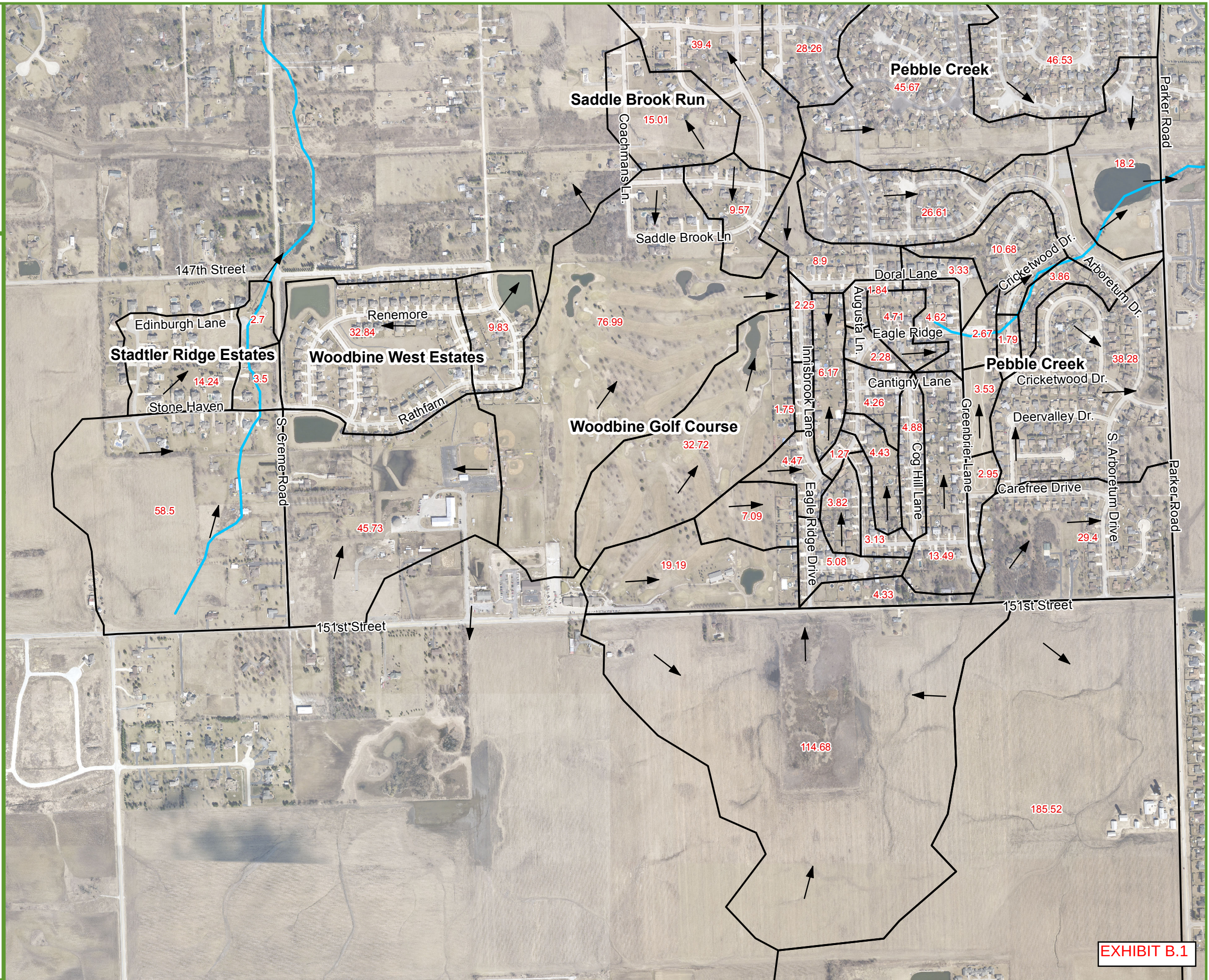
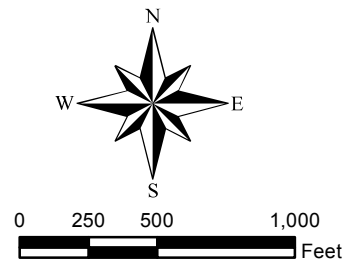
Appendix B – Drainage Area Exhibits

Village of Homer Glen

Drainage Patterns and Watersheds

Legend

- Watershed Divides
- Illinois Streams



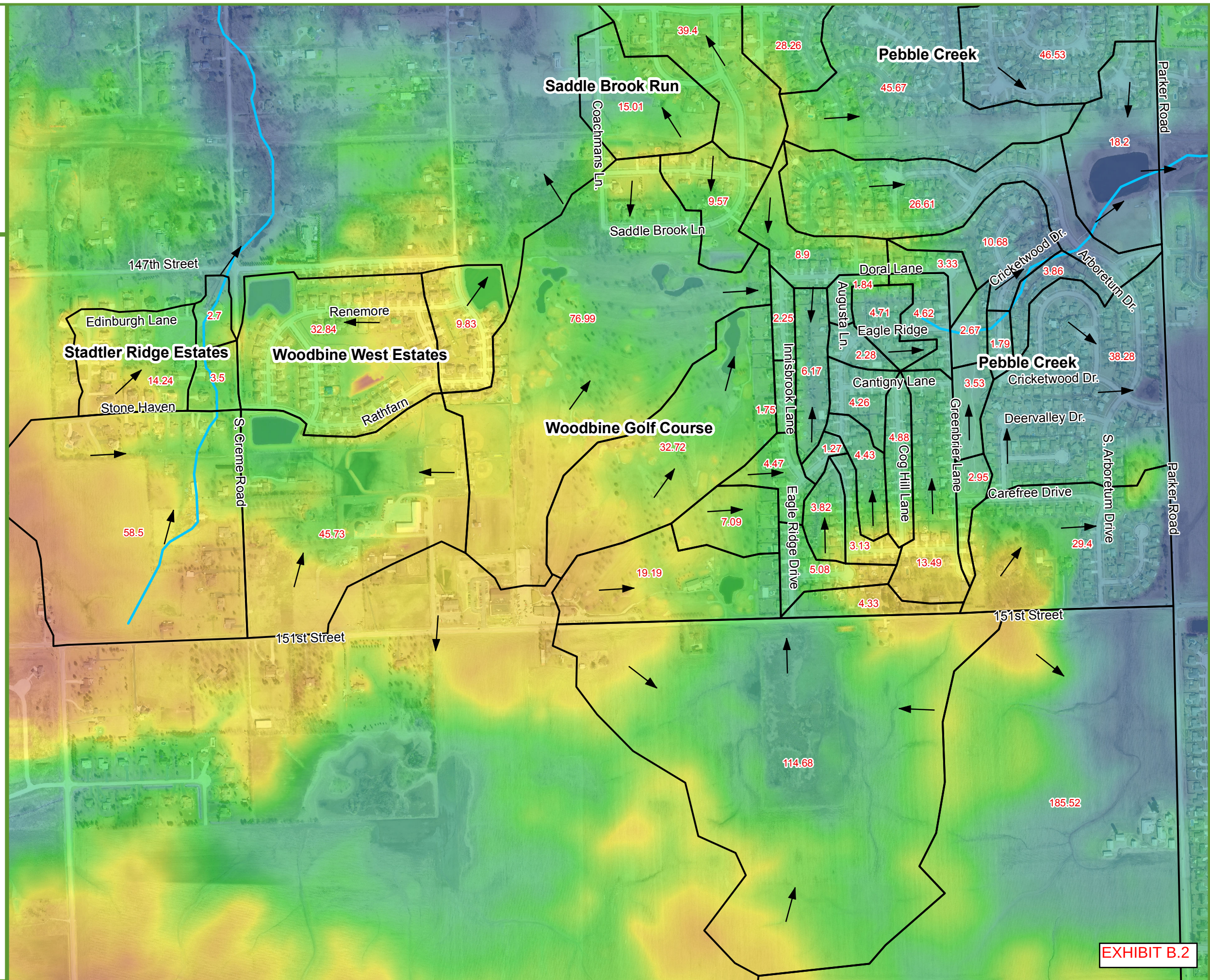
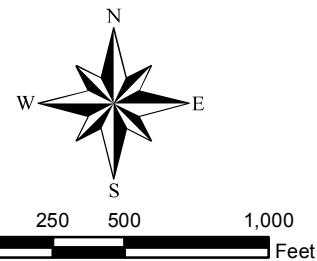
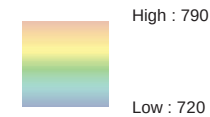
Village of Homer Glen

Drainage Patterns and Watersheds

Legend

- Watershed Divides
- Illinois Streams

Elevation



Appendix C – Residential Survey Results

Village of Homer Glen

Woodbine Drainage
Project
Resident Survey Results

Legend

- Flow Path
- Parcels
- Reported No Flooding
- Yard
- Yard, Street
- Basement
- Basement, Yard
- Basement, Yard, Street
- Watershed Divides



0 250 500 1,000
Feet

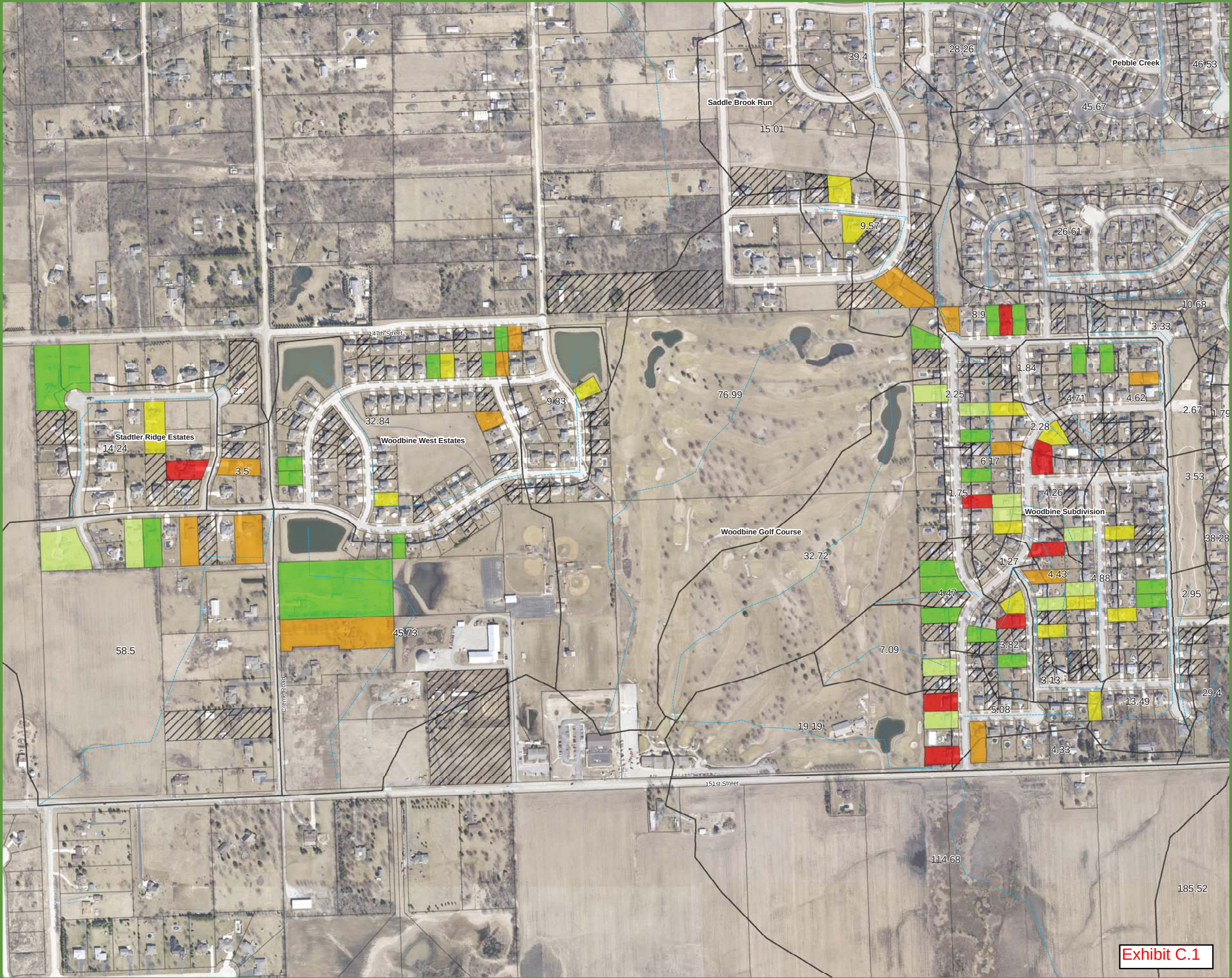


Exhibit C.1

Village of Homer Glen

Woodbine Drainage
Project
Resident Survey Results

Legend

- Flow Path
- Parcels
- Reported No Flooding
- Yard
- Yard, Street
- Basement
- Basement, Yard
- Basement, Yard, Street
- Watershed Divides

100Yr Inundation Depth (ft)

- 4.5 - 5
- 4.0 - 4.5
- 3.5 - 4
- 3.0 - 3.5
- 2.5 - 3
- 2.0 - 2.5
- 1.5 - 2
- 1.0 - 1.5
- 0.5 - 1
- 0 - 0.5

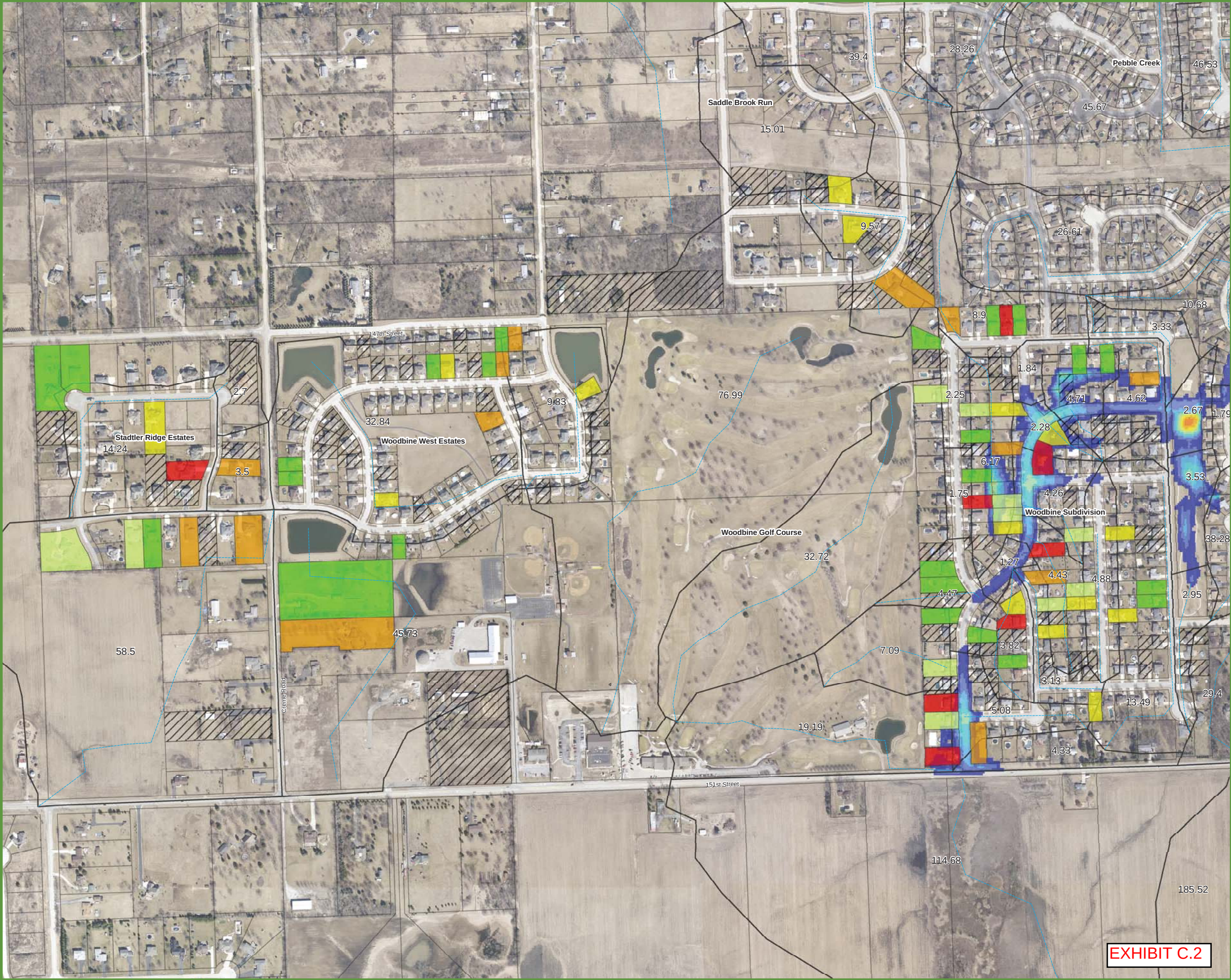


EXHIBIT C.2

Village of Homer Glen

Woodbine Drainage Project Resident Survey Results

Legend

- Flow Path
- Parcels
- Reported No Flooding
- Yard
- Yard, Street
- Basement
- Basement, Yard
- Basement, Yard, Street
- Watershed Divides

Elevation

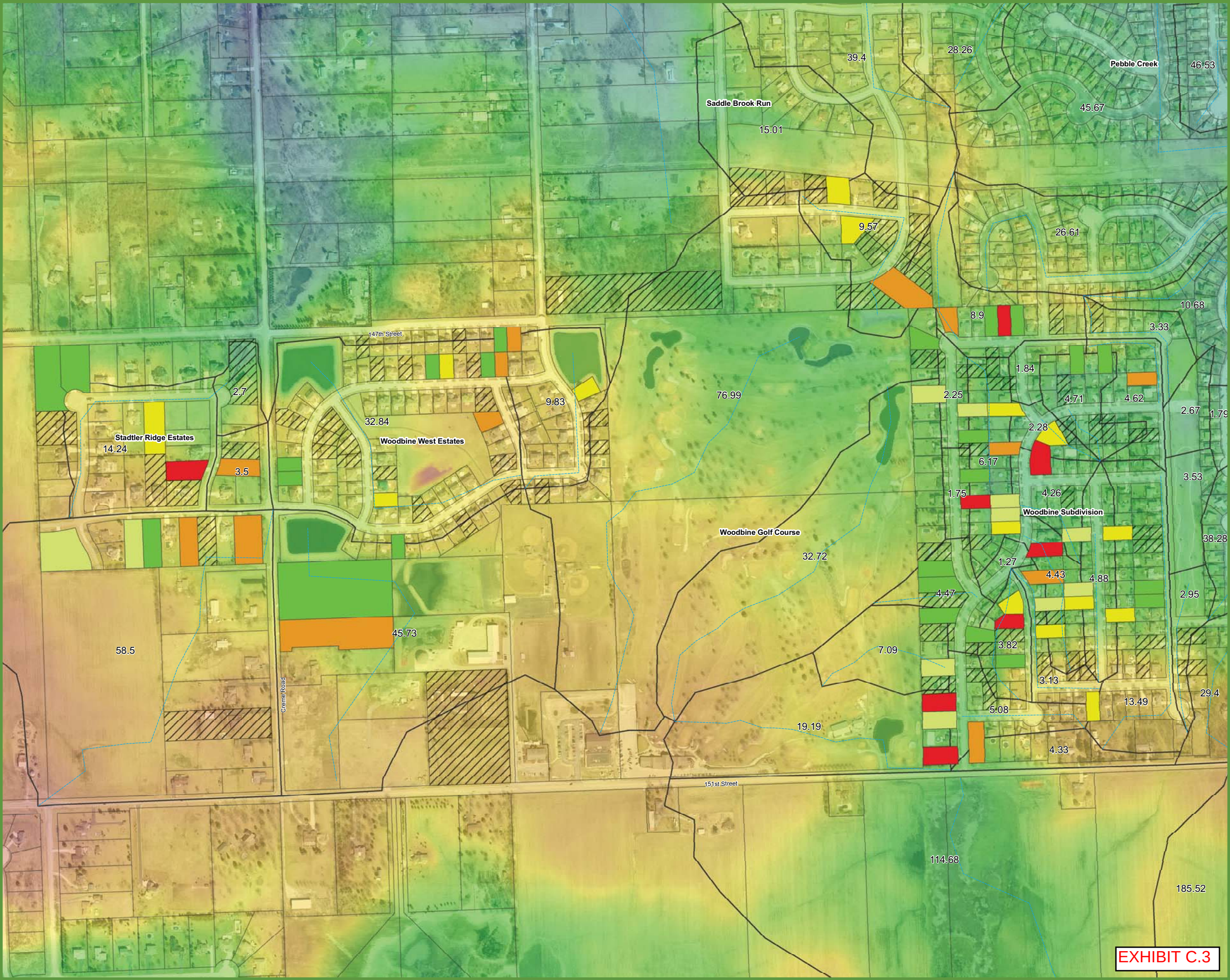
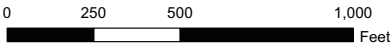
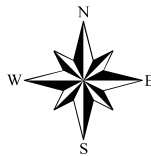
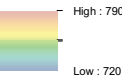


EXHIBIT C.3

Woodbine Area Regional Drainage Improvement Project Questionnaire																			
House Number	Street	Own / Rent	How long have you lived at your current address?	During this time, have you ever experienced any problems due to flooding?	In what years did your property flood?	What type of foundation structure does your home sit on? (Check all that apply)	Where did you get water and how deep did it get? (Check all that apply)	If you have a basement or a crawl space, do either or both of them have a sump pump? (Check all that apply)	If you do have a sump pump, did your home flood because of a sump pump failure?	What do you feel was the cause of your flooding?	Have you ever been blocked from vehicular access to your property due to flood waters in the roadway? (If yes, which roadways?)	Do you have flood insurance or a sewer/basement flood rider on your insurance policy?	Have you installed any flood protection measures on your property?	Do you have photos of flooding?	Name	Phone	Email	Is it okay to contact you about this questionnaire?	Please include any comments you may have about the flooding and/or other concerns in your area.
14407	147th Street	Own	Ten years or more	Yes	Every Year	Basement, Crawl Space	In Basement(1-2"), In yard only(3" or more)	Basement sump pump	No	Other	No	Yes	Sump pump, waterproofed walls	No	Al Janus	847-366-2691	N/A	Yes	Our yard and our neighbors yard flood with almost every rain fall
14413	147th Street	Own	Ten years or more	Yes	2003 to present	Basement	In yard only(6")	Basement sump pump	No	Standing rainwater collection almost only in my backyard and not really the surrounding yards.	No	No	sump pump	N/A	John Janeczek	708-645-7371	janeczeks@yahoo.com	Yes	It seemed to get worse every year. Then we built up with new landscaping in the back of the back yard. It just settles and eventually just floods in my yard and no one elses. It would be nice if a drain line can be built to the nearest retention pond. I have pictures I can send you via email, taken on my phone. 9/20, two days after heavy rains.
14431	147th Street	Own	One to five years	No	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	N/A	No	N/A	N/A	N/A	N/A	N/A
14507	147th Street	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump, regraded property to keep water away from building.	No	Terry Morrissey	630-915-8056	tmorrissey@comcast.net	Yes	N/A
14444	151st Street	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	sump pump	N/A	Lina Lamorte	708-702-1259	N/A	Yes	N/A
14055	Anne K Drive	Own	Ten years or more	Yes	2005, 2010	Basement	In basement(6")	Basement sump pump	Yes	storm sewer back up	No	Yes	Elevated storage in basement	No	N/A	N/A	N/A	N/A	N/A
14100	Anne K Drive	Own	Ten years or more	Yes	N/A	Basement	Basement (1/2" - 1")	Basement sump pump	N/A	Sump pump failure / power failure	No	Yes	Sump pump	No	Chas Williams	708-259-0141	copgrny1@yahoo.com	Yes	
14110	Anne K Drive	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump	N/A	Theodore P. Neitzke	708-476-4017	theoneitzke@shcglobal.net	Yes	The flooding / water damage we had was due to power failure. We do have sump pumps and a back up pump now. Thank you.
14140	Anne K Drive	Own	Ten years or more	N/A	2011	Basement	In basement (1")	Basement sump pump	Yes	Sump pump failure/ power failure	No	No	Sump pump	No	N/A	N/A	N/A	N/A	N/A
14150	Anne K Drive	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes, Actually on Coachman there is a low spot that does flood sometimes	No	Sump pump	No	N/A	N/A	N/A	N/A	N/A
14736	Ashborne Drive	Own	One to five years	Yes	2014	Basement	In basement(6"), In yard(1-2")	Basement sump pump	Yes	Storm sewer backup, ineffective drainage leaves standing water	No	Yes	sump pump, elevated shelving in basement	No	Mike Corrigan	708-527-9237	mcorrige11@gmail.com	Yes	Biggest concern is ineffective drainage of backyard. This extends to neighbors as well. 1" standing water nearly all summers.
14754	Ashborne Drive	Own	One to five years	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes, Rathfam Drive	Yes	Sump pump	No	N/A	N/A	N/A	N/A	N/A
14744	Augusta Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump	No	Andre Savimoutou	708-301-8832	N/A	N/A	During heavy rains , we get a big puddle of water on the north side of our yard leading to the street.
14758	Augusta Lane	Own	Ten years or more	Yes	2003, 2006	Basement	In basement(2")	Basement sump pump	Yes	First time was sump pump failure, 2nd was blocked drain line (tree roots)	Yes, Eagle Ridge Drive	Yes	Battery Back Up / Installed PVC Drain Line to prevent tree roots.	No	Larry Schlink	708-645-1299	lschlink@yahoo.com	Yes	During heavy rains the back 2-3' of property floods. Drain sewer located in NW corner (Backyard) of property floods.
13828	Big Run Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	Battery operated back up sump	No	N/A	N/A	N/A	N/A	N/A
13857	Big Run Lane	Own	Ten years or more	Yes	2003, 2013	Basement	In Basement (5")	Basement sump pump	Yes	Sump pump failure / power failure, standing water next to house	Yes, main entrance to Woodbine Estates- Eagle Ridge Drive also Arboretum	No	Sump pump, moved things out of basement	No	Greg Grill	708-301-0943	gggrille@usnet.org	Yes	N/A
13860	Big Run Lane	Own	Six to ten years	No	N/A	Basement	N/A	Basement sump pump	N/A	N/A	No	No	N/A	No	Beata Lenar	N/A	bea-lenar@wp.pl	Yes	N/A
13902	Big Run Lane	Own	One to five years	Yes/No	No actual flooding/pooling. No actual inside or outside flooding has occurred, however, when raining (even light raining), our sump will run excessively. At times it will run every 10 seconds.	Basement	N/A	Basement sump pump	No	Lack of drainage causing excessive soil saturation that creates drain tile to fill and sump pump to cycle.	No	N/A	Sump pump, battery back up system to sump pump, gutter drain extensions, extended sump pump drainage system, well window covers, portable generator.	No	Bill Skog	708-341-0866	bskogmstis@msn.com	Yes	Although we have never had flooding, I feel we have a drainage issues at our location. If this issue is not addressed, sump pump failure is enevidable due to the constant run time of our pump. I would be more than happy to answer any questions you may have for me, and hopefully my input can help aid your efforts to help resolve our issues. Contact me anytime. My cell # is (708-341-0866). Bill.
13916	Big Run Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes, the Woodbine entrance on Eagle Ridge Drive	No	N/A	N/A	William & Michelle Wolf	708-301-8362	michelywolf@comcast.net	Yes	N/A
13909	Cantigny	Own	One to five years	No	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	Sump pump	No	Dana Miele	708-921-4228	danamiele172@gmail.com	Yes	Our basement was completely redone from a flood before we moved in April 2013. The previous owner installed a battery backup on the sump pump for this reason.
14857	Cog Hill Lane	Own	Ten years or more	Yes	2011	Basement	In street only	Basement sump pump	N/A	N/A	Yes, Cog Hill Lane	No	Sump pump	No	Mary Jo Koby	708-301-7835	summerhere24@yahoo.com	Yes	N/A
14864	Cog Hill Lane	Own	Ten years or more	Yes	Around 2001 or 2002. Also 2013-2014. Not Sure.	Basement	In yard (6"), In street (12")	Basement sump pump	No	Storm sewer backup, upstream runoff, standing water next to house, saturated ground/leaks in basement walls	Yes, 151st Street between Parker and Crème. Also couldn't enter subdivision off 151st Street	No	Installed drain pipes	No	N/A	N/A	N/A	No	N/A
14865	Cog Hill Lane	Own	Ten years or more	Yes	July 1996- Heavy rain- basement got water & end of July or Early August- of 2003- Rain came down so fast- pump could not keep up- & water came through window wells	Basement	In basement (few inches)	Basement sump pump	N/A	Storm sewer backup, sump pump failure/ power failure	Yes, Main entrance on Eagle Ridge Drive- back in 1996	Yes	Sump pump	Yes	Madeline Porrech	708-495-0371	madeline_ip@comcast.net	Yes	N/A
14930	Cog Hill Lane	Own	Ten years or more	No	N/A	Basement	In yard (8"), In street (10'-12")	Basement sump pump	No	Storm sewer backup	Yes, Eagle Ridge Drive- Corners	No	Sump pump, moved things out of basement	No	N/A	N/A	csadinc@shcglobal.net	Yes	When it rains very hard and for a long period of time- the sewers are covered 1/ leaves & grass cuttings (some people let the grass clippings spray on the street). Our home has a storm sewer in front & back too! The back has a heavy- algae growth inside- and the front too! They need to be scraped and flushed out. Too much water runs down from top of block & floods street & past sidewalks. The town needs to clean and maintain the sewer better!!!! We very often have to go out and rake the sewer grates clean from leaves and debris so water can flow in- sometimes it is 3am. in the morning!! Peopl should be given a warning not to allow grass to fill the curb areas when cutting their grass!! Tickets if they continue to leave in street!! The township should be checking on subdivision curb areas & sewer grates and cleaning if necessary. Thank

Woodbine Area Regional Drainage Improvement Project Questionnaire																			
House Number	Street	Own / Rent	How long have you lived at your current address?	During this time, have you ever experienced any problems due to flooding?	In what years did your property flood?	What type of foundation structure does your home sit on? (Check all that apply)	Where did you get water and how deep did it get? (Check all that apply)	If you have a basement or a crawl space, do either or both of them have a sump pump? (Check all that apply)	If you do have a sump pump, did your home flood because of a sump pump failure?	What do you feel was the cause of your flooding?	Have you ever been blocked from vehicular access to your property due to flood waters in the roadway? (If yes, which roadways?)	Do you have flood insurance or a sewer/basement flood rider on your insurance policy?	Have you installed any flood protection measures on your property?	Do you have photos of flooding?	Name	Phone	Email	Is it okay to contact you about this questionnaire?	Please include any comments you may have about the flooding and/or other concerns in your area.
14936	Cog Hill Lane	Own	Ten years or more	Yes	N/A	Basement	In basement (2")	Basement sump pump	Yes	sump pump failure/ power failure	No	No	sump pump, battery backup system	No	Lou Kaczmarek	708-301-9089	N/A	Yes	In heavy rain backyard floods occasionally and sewer in front backs up or plugs with debris.
14945	Cog Hill Lane	Own	Ten years or more	Yes	2004	Basement	In basement (8")	Basement sump pump	Yes	Sump pump failure/power failure	Yes, Eagle Ridge Drive @ Grenelefe Lane	No	Sump pump, back up battery	No	N/A	N/A	N/A	N/A	N/A
14933	Crème Road	Own	Ten years or more	Yes	1986+	Basement	In yard(2')	Basement sump pump	No	Combination of a natural low spot & water redirected from Homer Highway Department and ball fields.	No	No	Small berm on back of property to slow down flooding.	Yes	Karen Adamczyk	N/A	adamczyk@hotmail.com	N/A	As long as Homer Township/Glen, Stadler Ridge, and Woodbine West maintain the drainage tiles that flow through all our properties, we are okay. Any deviations occur, then flooding or standing water will occur on the property.
14953	Crème Road	Own	Ten years or more	Yes	Every year	Basement	In basement (5"), In yard (up to 2')	Basement sump pump	No	Upstream runoff, Maintenance department	No	N/A	Sump pump, waterproofed walls, retaining walls	Yes	Robert & Lois Spano	708-645-1997	flo2911@comcast.net	Yes	We presented this in a council meeting about 3 years ago with no resolution
15024	Crème Road	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	sump pump	N/A	N/A	N/A	N/A	N/A	N/A
14647	Dixon Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump	No	N/A	N/A	N/A	N/A	N/A
14729	Dixon Lane	Own	Ten years or more	Yes	2014	Basement	In basement (0.5')	Basement sump pump	Yes	Sump pump failure/ power failure	Yes, Rathfarn & Crème intersection floods when retention pond gets too full.	No	Sump pump, moved things out of basement, drain tile	No	John Walters	630-303-0075	scw1896@aol.com	Yes	It was a 3 day plus power outage followed by a dead sump pump a month later.
14741	Dixon Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	N/A	N/A	Dave Fracassi	708-557-8563	dwfrac@yahoo.com	Yes	N/A
14753	Dixon Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump	No	N/A	N/A	N/A	N/A	N/A
N/A	Dixon Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump	No	N/A	N/A	N/A	N/A	N/A
13853	Doral Lane	Own	Six to ten years	Yes	2014(Spring-Summer), 2015 (Spring-Summer)	Basement	In yard (~4')	Basement sump pump	No	Unsure	No	No	Tried raising sod in some spots & placing a drain by patio- neighbor to south added rocks in alleyway between our houses and where sewer drain is located.	Yes (Can email them if wanted)	Sarah & Marty Pavlik	815-953-2305	s_frigo@hotmail.com	Yes	Our backyard has been super super soggy during late spring-early summer the past two years. It is noticeable to others and causes us concern. Our neighbor to the south has a similar problem but not to the same magnitude. Together we have questioned whether the sewer drain in the alleyway is working properly, for over the years more houses have added debris going in this sewer and somehow it is then clogged.
13856	Doral Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	Sump pump	No	Matthew Peksa	708-301-0848	mpeksa@comcast.net	Yes	We enjoy living in Homer Glen, however, the water bills are outrageously high. Thank you.
13901	Doral Lane	Own	Ten years or more	Yes	We get flooding every year since we moved in here since 2004 in the backyard where the yards meet.	Basement	In yard only (12")	Basement sump pump	No	flooding in yard only- not in house	No	No	sump pump, waterproofed walls, regraded property to keep water away from building	No	Gina & John Clark	708-301-6203	N/A	Yes	N/A
13936	Doral Lane	Own	Ten years or more	Yes	Every year when we have a significant rainfall the sides of our house floods and a water will stand for days.	Basement	In yard (3')	Basement sump pump	N/A	Upstream runoff, standing water next to house, houses behind us stand much higher causing damage to retaining wall. Had to replace posts on wooden fence 2 times. Had to get a vinyl fence.	Yes, Doral Lane, Augusta, Eagle Ridge	No	N/A	No	Susan Lenz	708-334-8371	susan-lenz@comcast.net	N/A	Every time it rains hard we have a stream running between our houses. We had damage to our retaining wall and wooden fence because of the runoff from the houses behind us. When we have days of rain at a time we get algae in the standing water.
13942	Doral Lane	Own	Ten years or more	Yes	Every Year	Basement, Crawl Space	In basement (1-2"). In yard (3-6"). In street	Basement sump pump	No	Upstream runoff, standing water next to house	Yes, Doral Lane, 151st Street & Eagle Ridge Drive	Yes	Sump pump, moved things out of basement, retaining walls, multiple drain tiles	No	Mark Havlicek	708-301-8020	N/A	Yes	Property behind us 3-4 feet higher which makes the runoff much worse for our entire block. It is a constant problem that needs to finally be addressed. There is always standing water on the sidewalks.
13949	Doral Lane	Own	One to five years	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump	No	Zack Lessentien	630-673-1304	zlessentien@gmail.com	Yes	In my short time living in the area I have never experienced anything close to flooding. We have had very heavy rains very often the past two years and no flooding. I live in the Woodbine subdivision and the streets/area has never been flooded. I think this would be hindrance to progressing our community. The Village should look into a park or something that will provide enjoyment for its citizens. I feel that it would also be a waste of beautiful land. Thank you.
13950	Doral Lane	Own	One to five years	Yes	2014	Basement	In yard (2")	Basement sump pump	Yes	storm sewer backup, sump pump failure / power failure	No	Yes	sump pump and installed back up sump pump	N/A	Regina & Patrick Pfeiffer	708-301-3853	smoanet1525@hotmail.com	Yes	The sump pump continuously runs (even on hot days & no rain for long periods of time). Our house / yard backs up to pebble creek subdivision & our property is significantly lower than Pebble Creek. We also don't feel as if there are enough sewer drains on our street. (Doral Lane)
14006	Doral Lane	Own	Ten years or more	Yes	We have been in this house for 21 years. The spring of '95 there was a huge flood but the house to the West of us was not built yet and we did not flood. Once the house to the west of us was built, floods sometimes chase one house.	Basement	In basement (1'). In yard (1')	Basement sump pump	No	There are no storm sewers in back of block. Behind our house is vacant 5 acres land that grades slowly downward toward our house.	Yes, Innisbrook Lane, Doral Lane	No	sump pump, moved things out of basement, added drain tiles, catch basins, tried to berm but over time has settled.	Yes	Ellen & Mark Bunganer	708-301-2160	thebunganers@aol.net	Yes	See attached letter and photos
14755	Eagle Ridge Drive	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Back up battery-operated sump in the event of power failures (which seems to happen quite often!)	No	Rimkus	N/A	N/A	N/A	N/A
14800	Eagle Ridge Drive	Own	Six to ten years	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump	N/A	N/A	N/A	N/A	N/A	N/A
14801	Eagle Ridge Drive	Own	One to five years	No	Although not while I was here; previous owners flooded from a window well left off.	Basement	In basement	Basement sump pump	No	Window well cover missing	No	No	Sump pump, battery backup, generator with outside plug-in outlet	No	N/A	N/A	N/A	N/A	N/A
14807	Eagle Ridge Drive	Own	Ten years or more	Yes	1997 & a couple of times in early 2000's (worst)	Basement	Basement (4 feet)	Basement sump pump	Yes	Storm sewer backup, sump pump failure/ power failure,saturated ground, windows blew out	Yes, Eagle Ridge Drive	No	Sump pump, moved things out of the basement, Generator	Yes	Val Gross	708-301-2780	vgross@comcast.net	Yes	On two occasions, Eagle Ridge Drive has flooded beyond belief. Water backing up everywhere. Looked like sewers just couldn't handle the water.
14816	Eagle Ridge Drive	Own	Six to ten years	Yes	2015 & in earlier years (2008-2009)	Basement	In basement (1-1.5"). In yard (6')	Basement sump pump	Yes	Storm sewer backup, sump pump failure / power failure, standing water next to house, saturated ground/ leaks in basement walls	No	Not sure	sump pump, moved things out of basement	No	Milena Djurakov	773-304-7167, 708-301-4863	milenadjurakov@aol.com	Yes	The humidity levels in our home have been extremely high; greater than 70%. We are worried about mold growths.We have two sump pumps. One failed due to flooding. We had a service tech from DoorBox come out to assess humidity levels and he stated there was a "Lake" under our home and that we had tons of water seepage coming in through the basement walls. Our cable/ Comcast goes out very often; with the lines being under ground I wonder if the ground being soaked has anything to do with this issue we often experience?
14817	Eagle Ridge Drive	Own	Ten years or more	Yes	Every year since 2002	Basement	In crawl space (1"). In yard (1"). In street (2')	Basement sump pump	No	Rain	Yes, Eagle Ridge Drive, Cantigny Lane	N/A	Sump pump, moved things out of basement	Yes	John Kozuch	708-707-2882	johnkozuch@comcast.net	Yes	N/A
14844	Eagle Ridge Drive	Own	Ten years or more	Yes	Our backyard always floods during heavy rains 2-3 times a year. Shed is under water at that	Basement	In yard (3'). In street (1')	Basement sump pump	N/A	Storm sewer backup, upstream runoff	Yes, Eagle Ridge Drive- residents access to 151st.	No	Sump pump	No	Cathy O'Callaghan	708-301-2863 (After 3:45 p.m.)	cathy_ocalaghan@comcast.net	Yes	N/A
14850	Eagle Ridge Drive	Own	Less than one year	Yes	N/A	Basement, Crawl Space	In yard (2"). In street (1")	Basement sump pump	No	Upstream runoff	Yes, Egle Ridge Drive & 151st entryway	Yes	Regraded property to keep water away from building	No	N/A	N/A	N/A	N/A	The flooding is in the rear of the roperty far from the house.
14858	Eagle Ridge Drive	Own	Ten years or more	Yes	Every year with heavy rains	Basement	In basement (2")	Basement sump pump	No	Sump pump failure/ power failure, standing water next to house	Yes, Eagle Ridge Drive	No	Sump pump, regraded property to keep water away from building, backup sump sump	No	Jim Castleton	630-263-1164	jim.castleton@comcast.net	Yes	N/A

Woodbine Area Regional Drainage Improvement Project Questionnaire																			
House Number	Street	Own / Rent	How long have you lived at your current address?	During this time, have you ever experienced any problems due to flooding?	In what years did your property flood?	What type of foundation structure does your home sit on? (Check all that apply)	Where did you get water and how deep did it get? (Check all that apply)	If you have a basement or a crawl space, do either or both of them have a sump pump? (Check all that apply)	If you do have a sump pump, did your home flood because of a sump pump failure?	What do you feel was the cause of your flooding?	Have you ever been blocked from vehicular access to your property due to flood waters in the roadway? (If yes, which roadways?)	Do you have flood insurance or a sewer/basement flood rider on your insurance policy?	Have you installed any flood protection measures on your property?	Do you have photos of flooding?	Name	Phone	Email	Is it okay to contact you about this questionnaire?	Please include any comments you may have about the flooding and/or other concerns in your area.
14907	Eagle Ridge Drive	Own	Ten years or more	Yes	Could be 2001 or 2002 (very bad in these years), possible 2003. Also 2013 or 2014 (had problems again at this time).	Basement	In basement (6"), In yard, In street(1")	Basement sump pump	No	Storm sewer backup, upstream runoff, standing water next to house, saturated ground/ leaks in basement walls, water was shooting from street cover- upwards	Yes, 151st Street between Parker and Crème. Also couldn't enter subdivision off 151st Street	Yes	Sump pump. Installed 2 new 1/2 HP 2" Injector Pumps. Also a watch dog battery back up pump in front waterhole- purchased 2 sump pro units to run main pumps when electric fails and added additional drain pipes and water boxes in backyard and side of house.	N/A	N/A	N/A	N/A	N/A	We've been waiting a long time for the Village to take control of this issue. I hope this is the beginning to results.
14934	Eagle Ridge Drive	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes, Eagle Ridge Drive	Yes	Sump pump, battery backup	No	Mark & Julie Parente	708-301-1760	julieparente6@gmail.com	Yes	N/A
14944	Eagle Ridge Drive	Own	Ten years or more	Yes	Last 8 years	Basement	In yard (6")	Basement and Crawl Space sump pump	No	Water drains off gold course into my back yard	Yes, Eagle Ridge Drive	No	Laid out drain pipes from rear to front street	No	Eugene Merda	708-301-1885	N/A	Yes	Our backyard takes up to 4th road. When this was a golf course, this part of the course, always had a lot of tall weeds, resulting in seeds, which spread on to our lot, resulting in a lot of weeds on my part. Now that this is no longer a golf course, hopefully next year, these tall weeds will be cut. As a senior citizen, this would help keep a lot. Thank
14952	Eagle Ridge Drive	Own	Ten years or more	No	N/A	Basement	N/A	Basement sump pump	N/A	N/A	Yes, Eagle Ridge Drive	No	Sump pump, gutter drain extenders	No	Gail & Davis Metta	708-301-5888	gmetta@comcast.net	Yes	N/A
14953	Eagle Ridge Drive	Own	Ten years or more	Yes	After 1995	Basement	In yard (8-10")	Basement sump pump	No	Neighbors changing grade and blocking water flow	Yes, Eagle Ridge Drive	No	Added rock to the rear yard (Last 10 feet) due to the standing water at rear of property	No	Steven Soyk	N/A	stevensoyk@shcglobal.net	Yes	Never had flooding inside house. The rear of yard was almost always saturated and had frequent standing water. When neighbor put in swimming pool, the dirt removed for the pool was spread across the rear of his lot blocking natural water flow to sewer.
14961	Eagle Ridge Drive	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes, 151st Street / Eagle Ridge Drive	No	Sump pump, back up sump	No	N/A	N/A	N/A	N/A	N/A
15006	Eagle Ridge Drive	Own	Six to ten years	Yes	2006- Till they reggraded behind yard and did French Drain. Might of Done 2011.	Basement	In yard(6-12"), In street(3"-2")	Basement sump pump	N/A	Upstream runoff	Yes, Eagle Ridge Drive & Canisgny? First street three houses in from 151st.	No	Sump pump, reggraded property to keep water away from building	No	Joe Pytel	630-546-4851	N/A	Yes	*Illegible response*
15011	Eagle Ridge Drive	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	Sump pump	No	Leslie Volp	708-301-8376	leslievolp@shcglobal.net	Yes	They need to clean out all the sewers so when they open the sewers the water will go down, and when they have big waterfall they need to open them sooner.
15016	Eagle Ridge Drive	Own	One to five years	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes, Eagle Ridge Drive	Yes	N/A	No	N/A	N/A	N/A	N/A	After speaking to neighbors who have lived here since the beginning, they advised us that the reason for flooding in the street is primarily due to the fact that when the subdivision was built the original piping in the street was way too small. I am sure the city has blueprints / records dating back to when the subdivision was built in 2004.
15026	Eagle Ridge Drive	Own	Ten years or more	Yes	1996- 2 times water in basement, 18" rain in 6 hour or so. Then at least twice more with 6" in basement. Then at least 10 times the street and yard	Basement	Basement (2 feet), In Yard only (up to garage). In street only (4 to 6 feet)	Basement sump pump	No	Storm sewer backup, upstream runoff, saturated ground/leaks in basement walls, all is due to inadequate drainage.	Yes, Eagle Ridge Drive	Yes	Sump pump, moved things out of the basement.	No	Broque Backal	708-751-0011	brbackal@hotmail.com	Yes	I have worked for many years with Bob Benet on the flooding in Woodbine Subdivision starting in early 2000. Bob is very aware of issues regarding the flooding. He has all the photos plus engineering surveys from all our years working on this problem. Bob will be more than happy to give you all his info and insight as will I.
15036	Eagle Ridge Drive	Own	Ten years or more	Yes	Every year starting in 1996	Basement	In yard (2"), In street (3-4")	Basement sump pump	No	Upstream runoff, inadequate sewer/storm water system	Yes, Eagle Ridge Drive directly in front of property	No	Waterproofed Walls	Yes	Marcia Matschek	708-341-3996	marciath@yahoo.com	Yes	Water flows from golf course property directly into our backyard. Amount of water has decreased since swale installed a few years ago, but driving heavy rainfall, water still flows into our yard. Street in front floods routinely during heavy rains to a depth of 2-3 feet. This will happen even if water in our backyard does not make it out to street.
15056	Eagle Ridge Drive	Own	Ten years or more	Yes	All 10	Basement	In basement (1/2"), In yard (3") In street(3")	Basement sump pump	No	Upstream runoff, they did a drainage project approximately 4 years ago & all that did was add more water on our property	Eagle Ridge Drive	Yes	Sump pump. New with backup protection	No	Thomas A. Putraitis	708-301-1786	N/A	Yes	According to the last drainage improvement project, we were told that the sewer pipe on Eagle Ridge Drive is too small, 6" in diameter, when it should be 12" pipe. Also all the water from the golf course runs from North to South on the East side of their property & is too small of a culvert. This property needs a bigger retention pond somewhere!
14665	Edinburgh Court	Own	Ten years or more	Yes	2013	Basement	Basement (7 1/2")	Basement sump pump	No	Sump pump failure / power failure	Yes, Crème Road	Yes	Sump pump, generator- whole house	No	N/A	N/A	N/A	N/A	Culvert next to our property prevents drainage due to weed, trees and debris in culvert. Owner when purchase property across street dumped many truck loads of dirt in ditch and on property which prevents drainage in front and natural flow of drainage in back utility box under water each time after heavy rain.
14736	Edinburgh Court	Own	One to five years	Yes	Every year	Basement	In yard only(3 feet)	Basement sump pump	No	Farmer's drain tile go to my yard	No	Yes	Have to hire to dig trench	No	N/A	N/A	N/A	N/A	Had a little problem when I moved in 2009. A little sitting water by driveway. Transportation department came out worked here 3 days made it worse and told me they can't fix it so I have a lot of frogs now.
14744	Greenbrier Lane	Own	One to five years	Yes	2012-2015- since moving in	Basement	In basement, In yard	Basement sump pump	No	Saturated ground/ leaks in basement walls	Yes, Eagle Ridge Drive	Yes	N/A	No	Jason Herrmann	708-268-4426	N/A	Yes	Backyard floods regularly and while standing water drains off more quickly, the ground stays so saturated you can't even walk on it for days after without mud/ water soaking your shoes.
14810	Greenbrier Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	Sump pump	No	N/A	N/A	N/A	N/A	N/A
14858	Greenbrier Lane	Own	Ten years or more	No	N/A	Basement	In street only	Basement sump pump	No	N/A	No	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14900	Greenbrier Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	ump pump	No	Kevin Gray	708-476-1608	kgray615@gmail.com	Yes	N/A
14906	Greenbrier Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes, Eagle Ridge Drive	No	ump pump	N/A	N/A	N/A	N/A	N/A	N/A
14930	Greenbrier Lane	Own	Ten years or more	Yes	2002-2015	Basement	In yard (2+')	Basement sump pump	No	High amount of mosquitos reappear or worse, sewer does not pull out water to keep up with even average rain. Backyard is constantly wet. Swale has been filled diagonal from us & inadequate sewer? 2 engineering firms have confirmed this. Please review our file! We have been on the books to get this repaired-fixed for 7+ years now we were promised we are part	No	No	N/A	N/A	N/A	N/A	N/A	N/A	
14938	Greenbrier Lane	Own	Ten years or more	Yes	Each time there is a heavy rain	Basement	In yard (4-6"), 1-2' in back right corner where storm sewer is located. See photos.	Basement sump pump	No	Standing water next to house	No	No	N/A	Yes (All photos taken this summer on 6/15/2015! Storm sewer is in back right corner of our lot where water is deepest.	Mark Mathivs	708-301-8841	m.mathivs@comcast.net	Yes	Our neighbors to the West have built a berm to further direct water away from their house and into our yard. They have changed the grade of the original landscape. Water also is blocked by our neighbors to the South and this also hampers drainage and creates more water in our yard. The water has moved the posts of our vinyl fence across the backyard.
14959	Greenbrier Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No	N/A	N/A	N/A	N/A	N/A
14960	Greenbrier Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump, waterproofed foundation walls	N/A	N/A	N/A	N/A	N/A	N/A
15011	Greenbrier Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes (roadways unknown)	Yes	N/A	No	N/A	N/A	N/A	N/A	N/A
13950	Grenelefe Lane	Own	Ten years or more	Yes	Roads around home flooded house did not flood	Basement	N/A	Basement sump pump	No	N/A	Yes, intersection of Eagle Ridge Drive & Grenelefe, Crème Road near Woodbine	No	Sump pump (2)	No	Eileen Turner	708-846-0926	N/A	Yes	The landscaping company cutting the grass at Woodbine Golf Course now dumps the cuttings in the drainage ditch along 151st Street leading up to Eagle Ridge Drive. This causes the drainage ditch to clog and flood Eagle Ridge! I walk that route 3-4 times a week & have witnessed all the grass cuttings dumped in the ditch!
13958	Grenelefe Lane	Own	Ten years or more	N/A	N/A	Basement	In basement (2")	Basement sump pump	Yes	Sump pump failure/ power failure	Yes, Eagle Ridge & Grenelefe Lane	No	Sump pump	N/A	Sue Steilen	708-301-0632	susesteilen@comcast.net	Yes	The drainage at the intersection of Grenelefe Lane & Eagle Ridge still needs some work
13963	Grenelefe Lane	Own	Ten years or more	Yes	Too many to remember- probably 10 out of the 20 years I have been here	Basement	In basement(6"), In yard(2.5')	Basement sump pump	No	Idle water next to house, Saturated ground/ leaks in basement	Yes, Eagle Ridge Drive & Grenelefe Intersection	Yes	Moved things out of basement	Yes	Tom Malecki	708-301-4607	thomasmalecki@shcglobal.net	Yes	Any heavy rain for extended time starts to flood the intersection of Grenelefe & Eagle Ridge. When it's really bad the water blocks access to the subdivision from 151st Street.
14737	Helen Lane	Own	One to Five years	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No	N/A	N/A	N/A	N/A	N/A
14801	Helen Lane	Own	One to five years	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	ump pump, waterproofed walls, property graded per village requirements before occupancy	No	Ellen Eleder	708-301-7403	N/A	Yes	N/A
14811	Helen Lane	Own	Ten years or more	Yes	We have a lot of standing water that occurs between ours and our neighbor, the pond across the street floods over to us & it is an olympic size pool between us. Mike Devivo said he would fix it. 6+ years not fixed.	Basement	In basement (3"), In yard(Olympic size)	Basement sump pump	No	Storm sewer backup, upstream runoff, standing water next to house, water from pond in Woodbine West	Yes, Crème Road	N/A	Sump pump, waterproffled walls, moved things out of basement	Yes	N/A	N/A	N/A	N/A	I think that politicians are crooked as hell & only make broken promises. 6+ years and Mike still has not done a damn thing to fix this issue for Stadler Ridge subdivision. He has promised at least 1/2 the subdivision it would be fixed and you guessed it..He lied!
14812	Helen Lane	Own	Ten years or more	Yes	Four or five occasions following heavy rains, most recently in 2014 and 2015	Basement	In basement (6-8"), in yard(2-3"), in street(4-6")	Basement sump pump and backup	Yes	Storm sewer backup, sump pump failure/ power failure, standing water next to house, saturated ground/ leaks in basement walls. All of the above contributed. No singular cause.	Yes, Crème Road between approximately 148th and 150th	Yes	ump pump, reggraded property to keep water away from building, waterproofed walls, moved things out of the basement	No	Wayne Slawinski	708-647-0799	N/A	Yes	Flooding worsened in recent years, as homes and in-ground pools were added to the area.
14824	Helen Lane	Own	Ten years or more	No	N/A	Basement	N/A	Basement sump pump	N/A	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14720	Imisbrook Lane	Own	Six to ten years	Yes	Every year- the backyard north back corner where drain is all the way across to the back south corner. While it works toward the home.	Basement	In yard (15'-21')	Basement sump pump	No	Storm sewer backup	No	No	Patricia Patterson	708-302-9190	N/A	N/A	N/A	N/A	N/A
14728	Imisbrook Lane	Own	Six to ten years	No	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	ump pump, waterproofed walls, reggraded property to keep water away from building. When house was built the grading pitched water away from the house.	N/A	Ware	708-557-5527	4434ware@att.net	Yes	N/A
14735	Imisbrook Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	N/A	Sump pump with battery back up, moved things out of basement, lifted things off floor on blocks/shelves	No	N/A	N/A	oneemeh@gmail.com	Yes	N/A
14750	Imisbrook Lane	Own	Ten years or more	Yes	Forgot year- 100 year flood and rear yard backup a number of times- (Note: there is a small drain in rear of property)	Basement / Crawl Space	In yard (10"), In street (10-12")	Basement sump pump	No	Note: While our yard had a lot of water- we have never experienced flooding in our basement	Yes, Imisbrook Lane	Yes	Sump pump	No	Dennis Sebranek	708-301-5098	dsebranek@hotmail.com	Yes	Drains installed at rear of property- 1995- however yard does backup during heavy rains. Front street drain can't handle volume of water during heavy rain and street floods.
14759	Imisbrook Lane	Own	Ten years or more	N/A	N/A	N/A	In yard(6"), In street(6")	Basement sump pump	No	storm sewer back up, heavy rain	Yes, Imisbrook Lane	Yes	Sump pump, back up sump	No	N/A	N/A	N/A	N/A	N/A
14807	Imisbrook Lane	Own	Ten years or more	Yes	Most every year we have water problems at the back of our lot. Our house is on higher ground and slides down to the back. My neighbors on both sides flood as well. We can't mow the lawn in the back of our yard some months because it stays wet.	Basement	In yard only	Basement sump pump	N/A	Storm sewer backup	N/A	Yes	N/A	N/A	Bob Fanello	847-344-9207	bob@bradfordsystems.com	Yes	N/A
14815	Imisbrook Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump	Yes	N/A	N/A	N/A	N/A	The pictures enclosed were taken 4 days after a rain. After heavy rain there is standing water in my backyard. While it is raining, the yard looks like a river is running through it.

Woodbine Area Regional Drainage Improvement Project Questionnaire																			
House Number	Street	Own / Rent	How long have you lived at your current address?	During this time, have you ever experienced any problems due to flooding?	In what years did your property flood?	What type of foundation structure does your home sit on? (Check all that apply)	Where did you get water and how deep did it get? (Check all that apply)	If you have a basement or a crawl space, do either or both of them have a sump pump? (Check all that apply)	If you do have a sump pump, did your home flood because of a sump pump failure?	What do you feel was the cause of your flooding?	Have you ever been blocked from vehicular access to your property due to flood waters in the roadway? (If yes, which roadways?)	Do you have flood insurance or a sewer/basement flood rider on your insurance policy?	Have you installed any flood protection measures on your property?	Do you have photos of flooding?	Name	Phone	Email	Is it okay to contact you about this questionnaire?	Please include any comments you may have about the flooding and/or other concerns in your area.
14829	Innisbrook Lane	Own	One to five years	Yes	2014-2015	Basement	In yard(1')	Basement sump pump	No	Storm sewer backup	No	No	Sump pump	Yes	N/A	N/A	N/A	N/A	N/A
14845	Innisbrook Lane	Own	Ten years or more	Yes	1996 / ?	Basement, Crawl Space	In basement (1"), In yard(3 feet), In street(2 feet)	Basement sump pump	No	Storm sewer backup	Yes, Eagle Ridge Drive, Innisbrook Lane	No	ump pump, waterproofed walls	No	Janet & Gary Riemersma	N/A	jciemersma@comcast.net	No	N/A
14901	Innisbrook Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump	No	N/A	N/A	N/A	N/A	N/A
14906	Innisbrook Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes, 151st Street & Eagle Ridge Drive- Seems okay now	No	Sump pump, waterproofed walls, regraded property to keep water away from building	N/A	Andrew Flowers	708-518-9061	N/A	Yes	The fence surrounding the Woodbine park needs inspection and repair. There is heavy activity over Woodbine Park by flying bats and and past dusk. Coyotes are frequently seen on park land and in Woodbine Estates Subdivision.
14924	Innisbrook Lane	Own	Ten years or more	Yes	Every year and more than one time. Every time we have more than a few hours of rain, water runs through the yard to the street for days. Many times we can't even cut the grass for weeks. The tractor will sink so bad that it can't be moved.	Basement	In yard only	Basement sump pump	N/A	N/A	No	No	N/A	No	Steve Roehl	708-301-5626	smrdmr00@gmail.com	Yes	The flooding in our yard is so bad that we would not be able to sell our house and/or it would definitely need to be disclosed at time of sale. This has always been a problem.
14738	Margus Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	No	N/A	Yes, Crème Road & Rathfarm Drive	No	ump pump	N/A	N/A	N/A	N/A	N/A	We have not experienced any flooding in or around our house.
14746	Margus Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Waterproofed Walls	No	John Pych	630-514-8481	N/A	Yes	N/A
14747	Margus Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	Crème Road, 147th to 149th	Yes	Generator	N/A	N/A	N/A	N/A	N/A	N/A
14759	Margus Lane	Own	Ten years or more	Yes	During the 3 day power outage summer of 2014 no flooding just water in basement	Basement	In basement	Basement sump pump	No	Power failure	No	Yes	Sump pump, Watch dog backup- free standing gas powered generator	No	Bess D. Andrews	708-932-6670	nofeardb@gmail.com	Yes	I have more of a concern with how many power outages we have had over the years and they seem to last longer. Many people don't have access to a generator during an outage that lasts longer than 12 hours (which is average for a watchdog to work). My house is the lowest in the subdivision so I protect myself 3 times over. We should be addressing flooding issues along with concerns to ComEd.
14738	Marilynn Lane	Own	Ten years or more	Yes	Most every time there is a rain	Basement	In yard only (3'-6")	Basement sump pump	N/A	Upstream runoff, the farm field west of us has drain pipes that end by our property line	No	N/A	N/A	No	Robert Kwiatkowski	708-404-5555	N/A	Yes	N/A
14774	Marilynn Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	Sump pump	No	N/A	N/A	N/A	N/A	N/A
N/A	N/A	Own	Ten years or more	Yes	Every year for 18 years. If we have lots of rain.	Don't know.	In basement, first floor, in yard, in street	Basement sump pump	No	N/A	Yes	Yes	Sump pump	Yes	Elizabeth Sobolak	708-301-5649	elusia123@aol.com	Yes	Yes we do have problem for 18 years. I was going to office so many time to claim and show the pictures but so far nobody do anything. If you check your records probably you have pictures and tape in you records. People in the office just listen and say sorry but the problem is still resolve. Thank you.
14709	Pebble Creek Drive	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes, Eagle Ridge Drive and 151st Street	No	ump pump	No	N/A	N/A	N/A	N/A	N/A
14419	Rathfarm Drive	Own	One to five years	No	N/A	N/A	N/A	N/A	N/A	N/A	No	N/A	Sump pump	No	N/A	N/A	N/A	N/A	N/A
14431	Rathfarm Drive	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes, Crème Road & Rathfarm Drive between pond overflowed into Crème Road.	Yes	Sump pump	No	Paul Nobis	630-270-5799	pabio14431@gmail.com	Yes	
14455	Rathfarm Drive	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump	N/A	Russell F. Fisher	312-234-2692	russ.fisher@gmail.com	Yes	N/A
14462	Rathfarm Drive	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump	N/A	N/A	N/A	N/A	N/A	N/A
14521	Rathfarm Drive	Own	Ten years or more	Yes	Every year for the last 7 or so. 2007-2015- the area behind my house. Was not like this from 2004 - 2007	Basement	In yard only	Basement sump pump	No	Standing water next to house	No	No	Sump pump	Yes	Luna Sweis	708-663-9213	lunasweis@yahoo.com	Yes	The property behind my house is normally filled with stagnant water after a good amount of rain. It takes a long time to drain. We feel it takes a long time to drain. We feel it causes many bugs. Also, because of the water, sometimes it cannot be mowed which causes more bugs and kids are not able to play there due to water / tall grass. I would love some answers to this problem. I have been addressing it for a few years with the township / highway department to no avail. Thank you!
N/A	Rathfarm Drive	Own	Six to ten years	No	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	Sump pump	No	N/A	N/A	N/A	No	N/A
14412	Renmore Road	Own	One to five years	Yes	2014 & during current heavy storms	Basement	In basement (1"). In yard (1")	Basement sump pump	Yes	Sump pump failure/ power failure	No	No	Sump pump, back-up generator for sump pump	Yes	N/A	N/A	N/A	N/A	N/A
14419	Renmore Road	Own	Ten years or more	No	N/A	N/A	N/A	Basement sump pump	N/A	N/A	No	No	N/A	No	Frank O'Lone	708-368-6246	folone@comcast.net	Yes	We live in Woodbine West and we do not have any more retention issues that I am aware of. Woodbine West has 3 retention ponds which handle all rain water issues. It is my understanding from our builder that the Army Corps of Engineers installed the ponds to handle a "100 Year Rain". A few years ago after 7+ inches of rain in two days, the Northwest pond and third in the series overflowed "slightly" onto Crème Road.
14424	Renmore Road	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	ump pump	No	Ted Murawski	708-921-3474	tedmurawski@att.net	Yes	Being one of the original homeowners in Woodbine West, I do not recall any or much flooding at all. Most of the water runoff issues from the golf course created more issues for Woodbine East. On a separate note, we do have concerns where visitors to the park will park their cars. We already get extra vehicles from the sports complex.
14436	Renmore Road	Own	Ten years or more	Yes	2005	Basement	In basement (2")	Basement sump pump	Yes	Sump pump failure/ power failure	Yes, 147th/Crème, main entrance on Crème	Yes	Sump pump, sump pump backup	No	N/A	N/A	N/A	N/A	Does Homer Glen have a neighborhood watch program? Should now that Park & Rec area back ups into my subdivision. People may be using our subdivision for parking and our ponds for illegally fish.
14442	Renmore Road	Own	Ten years or more	Yes		Basement	In yard only (6")	Basement sump pump		Upstream runoff	Yes, Front entrance of subdivision	Yes	Sump pump	No	N/A	N/A	N/A	N/A	N/A
14454	Renmore Road	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes, Crème Road at 148th Street & 147th Street at Crème Road	No	Sump pump, battery back up sump pump	No	N/A	N/A	N/A	No	N/A
14500	Renmore Road	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	Sump pump	No	N/A	N/A	N/A	N/A	N/A
14525	Renmore Road	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump	No	N/A	N/A	N/A	N/A	N/A
14531	Renmore Road	Own	One to Five years	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	N/A	No	N/A	N/A	N/A	N/A	N/A
14537	Renmore Road	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	Sump pump	N/A	Barry Littman	630-833-3100	N/A	Yes	I was not aware of any flooding in our area. Is there a problem where homes back up along the golf course?
14542	Renmore Road	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes, Crème Road	No	Sump pump	No	Ken Harvey	708-301-4711	N/A	Yes	N/A
14560	Renmore Road	Own	Six to ten years	Yes	Almost every year we lived here. After heavy rain, Crème Road floods into our yard.	Basement	In yard (4")	Basement sump pump	No	Storm sewer backup, standing water next to house, Flooding on Crème Road at Stadler Ridge Subdivision entrance.	No	No	Sump pump	N/A	Mike Skly	312-499-6044	mskly@hotmail.com	Yes	N/A
14604	Renmore Road	Own	Ten years or more	Yes	2003-2015	Basement	In yard (16")	Basement sump pump	No	Upstream runoff	Yes, Crème Road	Yes	ump pump, moved things out of basement	Yes	Tim Burke	708-301-7551	N/A	Yes	My house backs up to Crème Road. Everytime there is heavy rain, Crème road floods and overflows into my backyard.
14600	Saddle Brook Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	N/A	Sump pump	No	Jaseckas	708-675-0679	tjaseckas@gmail.com	N/A	We have been fortunate. Only experienced difficulty with sever weather on Main Street 143rd going East. Street had standing water on occasion but not flooding. Also some standing water on Saddle Brook during extreme weather conditions.
14615	Saddle Brook Lane	Own	One to five years	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump	No	Joe Sutherland	708-768-1374	jsutherland2534@gmail.com	Yes	N/A
14620	Saddle Brook Lane	Own	One to Five years	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump, portable back-up generator	No	Jack & Donna Michaelis	708-966-2046		Yes	Have lived here for 3 years and never had any problems with ground water. Our sump pump only runs during and after heavy rains.
14625	Saddle Brook Lane	Own	One to five years	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Sump pump	No	Mike Dudlo	708-712-4869	mud109@sbcdglobal.net	Yes	N/A
14630	Saddle Brook Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	N/A	N/A	N/A	N/A	N/A	N/A	We don't have flooding, however our sump pump goes off constantly. Even in the winter when you wouldn't think it would go off it does. There is obviously water under our property. Again, this does not cause any flooding.
14631	Saddle Brook Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Moved things out of basement	No	N/A	N/A	N/A	N/A	N/A
14635	Saddle Brook Lane	Own	Ten years or more	Yes	2011	Basement	In basement (2-3"). In yard(couple inches)	Basement sump pump	Yes	Sump pump failure / power failure	No	No	Generator	Yes	Bob Szajkovic	708-926-5469	bobs30012@comcast.net	Yes	I lived adjacent to the old 13th hole green. Between the green and fence there is a small retention valley. It frequently fills with water during moderate to heavy rains. I believe that area needs to remain or even be enlarged to keep water away from my house and my neighbors.
14645	Saddle Brook Lane	Own	Six to ten years	No	N/A	N/A	N/A	N/A	N/A	N/A	No	N/A	Yes	No	N/A	N/A	N/A	N/A	N/A

Woodbine Area Regional Drainage Improvement Project Questionnaire																			
House Number	Street	Own / Rent	How long have you lived at your current address?	During this time, have you ever experienced any problems due to flooding?	In what years did your property flood?	What type of foundation structure does your home sit on? (Check all that apply)	Where did you get water and how deep did it get? (Check all that apply)	If you have a basement or a crawl space, do either or both of them have a sump pump? (Check all that apply)	If you do have a sump pump, did your home flood because of a sump pump failure?	What do you feel was the cause of your flooding?	Have you ever been blocked from vehicular access to your property due to flood waters in the roadway? (If yes, which roadways?)	Do you have flood insurance or a sewer/basement flood rider on your insurance policy?	Have you installed any flood protection measures on your property?	Do you have photos of flooding?	Name	Phone	Email	Is it okay to contact you about this questionnaire?	Please include any comments you may have about the flooding and/or other concerns in your area.
14936	Saw Grass Lane	Own	Less than one year, ten years or more (down the block)	Yes	2007, 2010, 2012, 2014	Basement	In basement(5')	Basement sump pump	No	Upstream runoff, stranding water next to house, saturated ground/ leaks in basement walls	Yes, Pebble Creek Drive and Eagle Ridge Drive	Yes	sump pump, moved things out of the basement	No	N/A	N/A	N/A	N/A	Woodbine has always flooded. I've lived here almost 20 years and it always has been an ongoing problem. High taxes still gets flooded.
14921	Sawgrass Lane	Own	Ten years or more	Yes	1995-2004 (basement and yard), 2015- Yard only after sewer work done a few years ago.	Basement	In basement (approx 4"), In yard	Basement sump pump	No	Standing water next to house	No	No	Sump pump, added a second sump pump	No	Sarah Enright	708-301-6132	N/A	Yes	N/A
14937	Sawgrass Lane	Own	Ten years or more	Yes	1996 and 1999 and other years also. Can't remember specifically but multiple times.	Basement	In yard (6-12"). In Street (12")	Basement sump pump	N/A	Storm sewer backup, insufficient storm sewer coverage for back yard resulting in flooding in yard & standing water multiple times every year.	Yes, main entryway 151st & Eagle Ridge Drive as well as entry to Sawgrass Lane	Yes	We planted trees and bushes at our expense just to try to absorb some of the excess water in the yard- we are at the lowest point on block.	N/A	Patrick Lyons	708-684-1092	patrick.lyons@advocatehealth.com	Yes	We live in Woodbine subdivision and are original owners. Our block on Sawgrass Lane had sewers designed in to store 2-3 houses in yards. What was installed were sewers every 4-5 houses- this condition constitutes to not having sufficient drian relief between our homes causing standing water and flooding in our yards on heavy rain days.
14945	Sawgrass Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	Yes	Back up Sump pump	N/A	Steve Trainu	312-615-7082	sntrainu@comcast.net	Yes	I live in Woodbine East. Yard floods however it is manageable. We have limited number of sewers that run in the backyard.
14946	Sawgrass Lane	Own	N/A	N/A	N/A	Basement	In basement (3"), In yard(2ft), In Street	Basement sump pump	Yes/No	Storm sewer backup, sump pump failure/power failure	Yes, Eagle Ridge Drive	Yes	Sump pump	No	N/A	N/A	N/A	N/A	N/A
14951	Sawgrass Lane	Own	Ten years or more	Yes	Every year	Basement	In basement (2" or so)	Basement sump pump	Sometimes, often times it couldn't keep up with the amount of water coming in.	Heavy rain & saturated ground	Yes, 151st Street & just West of Parker Rd.	No	Sump pump, moved things up from floor.	No	N/A	N/A	N/A	N/A	N/A
14954	Sawgrass Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	No	No	N/A	N/A	N/A	N/A	After heavy rains, back yard floods due to runoff of neighbors yards. Yard slopes downwards. There is only one sewer to handle all drainage. It's at the bottom of our property. We put tons of rocks down, but the water rolls off the top, down to the sewers.
15002	Sawgrass Lane	Own	Ten years or more	Yes	Every year from October 1993 - Present	Basement	In yard(4')	Basement sump pump	No	Upstream runoff	No	No	Sump pump	No	Linda O'Halloran	708-301-2028	onphal@aol.com	Yes	N/A
14637	Stonehaven	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes, Crème Road	Yes	sump pump, regraded property to keep water away from building.	No	N/A	N/A	N/A	N/A	N/A
14613	Stonehaven Lane	Own	Ten years or more	Yes	N/A	Basement	In basement (1'), In yard	Basement sump pump	No	Sump pump failure/ power failure, standing water next to house	Yes, Crème Road & Stonehaven Lane Intersection	No	sump pump, moved things out of basement	Yes	Maria Leja	708-870-8718	mleja22@yahoo.com	Yes	Photos attached that I found.
14647	Stonehaven Lane	Own	Ten years or more	Yes	Our property (backyard) floods every time we have heavy rain.	Basement	In basement (2"), In yard (4")	Basement sump pump	No	Upstream runoff, water coming down from properties west of us and properties south from us.	Yes, Stonehaven Lane & Crème Road	Yes	Sump pump, Waterproofed Walls	Yes	Ronald Ramocki	708-645-0592	N/A	Yes	Flooding problem we have since day we moved to Homer Glen, we did question Village about regrading but was informed we can't do anything, because this is a way water runs off. After heavy rains we are unable to mow our lawn for weeks. Nothing grows in standing water, we can't put garden in backyard, because of mud, no use of our property, but taxes are going up, every year.
14700	Stonehaven Lane	Own	Ten years or more	No	N/A	N/A	N/A	N/A	N/A	N/A	Yes, Stonehaven Lane & Crème Road	Yes	Sump pump, waterproofed walls	No	N/A	N/A	N/A	N/A	We have been lucky enough not to have flooding because we are on higher ground. However, we have neighbors (multiple) to the East of us who have not been so lucky when we get the heavy rains.
14711	Stonehaven Lane	Own	Ten years or more	Yes	Approximately 3+ years ago it started. June/July rains- water would stand 1" or more deep- would not go down. No (Aug/Sep) it finally is dry in back, but back of yard has many low spots/ uneven spots due to standing water	Basement	In yard (2" +)	Basement sump pump	N/A	Field tile broken in yard? (see attached email from Homer Glen)	No	No	Sump pump	Yes	Brian Roe	708-301-1417	btrroe4@att.net	Yes	Possibly another factor for the flooding- all the backyards on our block were supposed to be graded farthest west home (highest) - (lowest)- home on Crème Road. Each lot going east was supposed to be graded 2' lower to have water drain to the east. Our yard gets water from the west and east because the neighbors a few doors east of us have their yard graded higher, so the water flows back into our yard. When we moved here 20 years ago, there were covenants addressing this. But the developer filed for bankruptcy & builders came in & did whatever they wanted.
14717	Stonehaven Lane	Own	Ten years or more	Yes	Every year	Basement	In yard, in street	Basement sump pump	No	Upstream runoff	No	No	sump pump, battery backup	No	N/A	N/A	N/A	N/A	N/A
14755	Stonehaven Lane	Own	Ten years or more	Yes	The last 7 years	Basement	In yard, in street	Basement sump pump	N/A	The (unknown word) has been alerted by new housing, the culverts have lifted up over the years and water cannot drain off. Drain tiles are broken.	Yes	Yes	Back-up generator	No	N/A	N/A	N/A	N/A	I hope someone from the Village would contact me and review the flooding issues.
14914	Imishbrook Lane	Own	Ten years or more	Yes	Every year	Basement	Yard	Basement sump pump	No	Upstream runoff, from golf course	Yes	No	Sump Pump	No	Paul Cocco	708-724-1692	cocco1963@comcast.net	Yes	Looking forward to resolution of the issues. Thank you
14759	Eagle Ridge Drive	Own	Ten years or more	No							No	Yes	Sump Pump, Regraded property						
14418	Remore Road	Own	Ten years or more	Yes	Many	Basement	Yard	Basement sump pump	No		No	No	Sump Pump	No	Sean Bruin	708-510-0679	seanbruin1@gmail.com	Yes	

Appendix D – XP SWMM 2D Flooding Exhibits – Woodbine

Village of Homer Glen

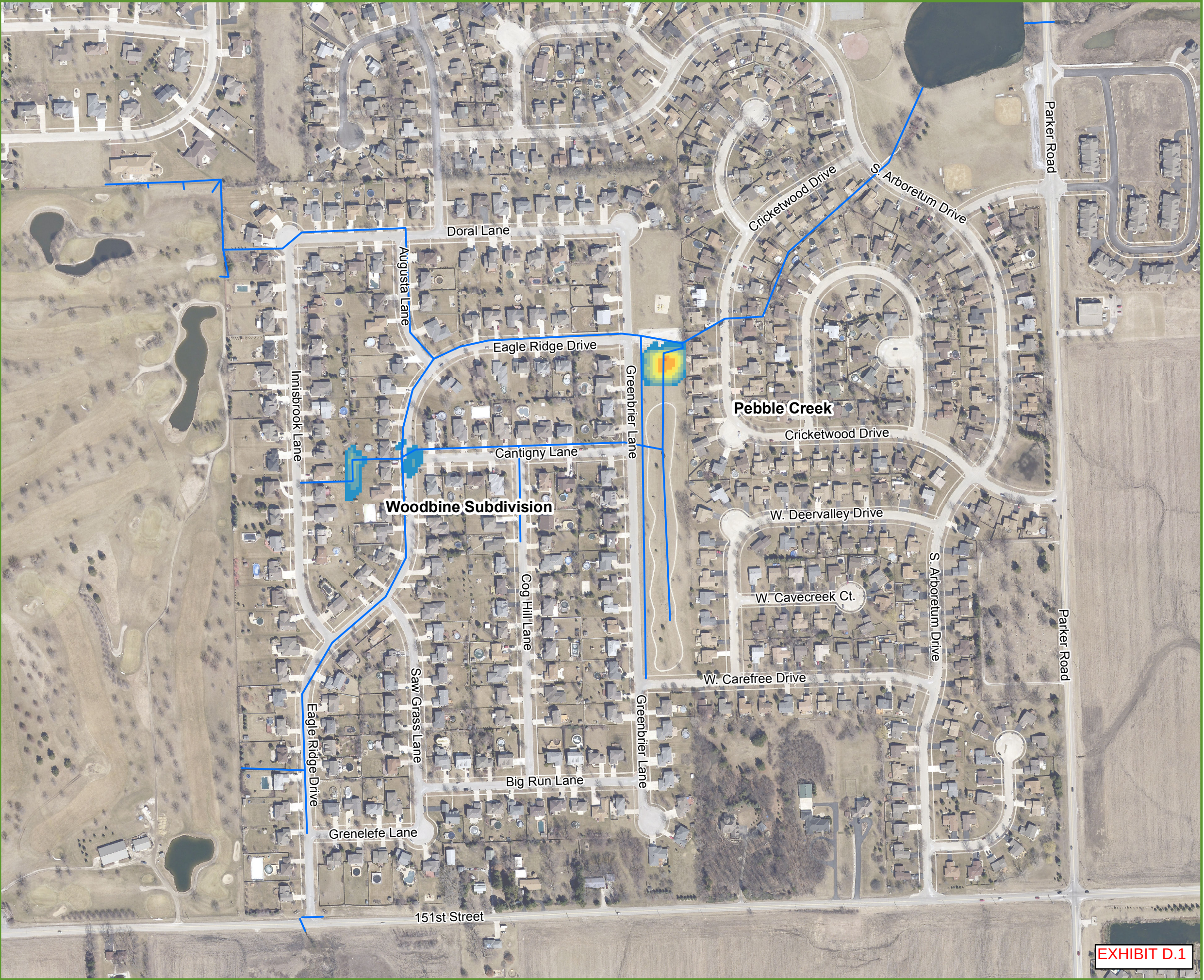
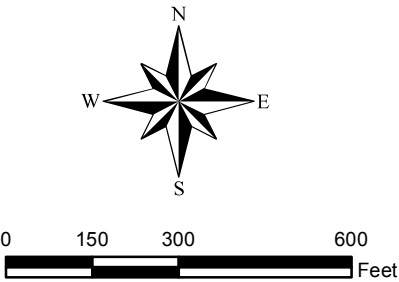
Existing
Inundation Map
(1-Year)

Legend

Existing Storm Sewers

1Yr Existing Flood Depth (feet)

0.0 - 0.25
0.25 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 - 4.5

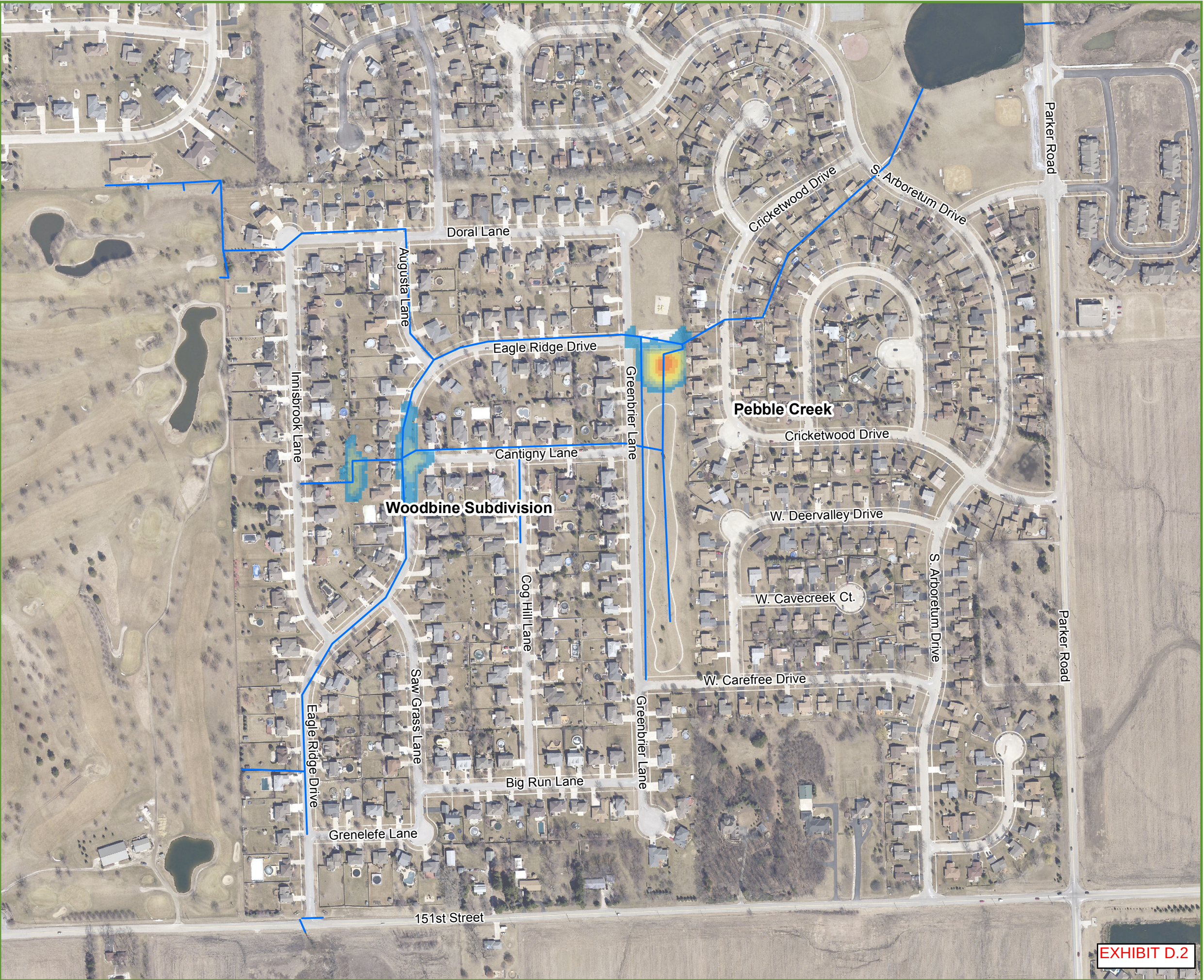
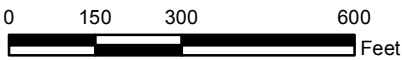
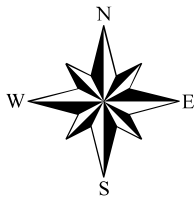


Village of Homer Glen

Existing
Inundation Map
(2-Year)

Legend

- Existing Storm Sewers
- 2Yr Existing Flood Depth (feet)
- 0.0 - 0.25
 - 0.25 - 0.5
 - 0.5 - 1.0
 - 1.0 - 1.5
 - 1.5 - 2.0
 - 2.0 - 2.5
 - 2.5 - 3.0
 - 3.0 - 3.5
 - 3.5 - 4.0
 - 4.0 - 4.5



Village of Homer Glen

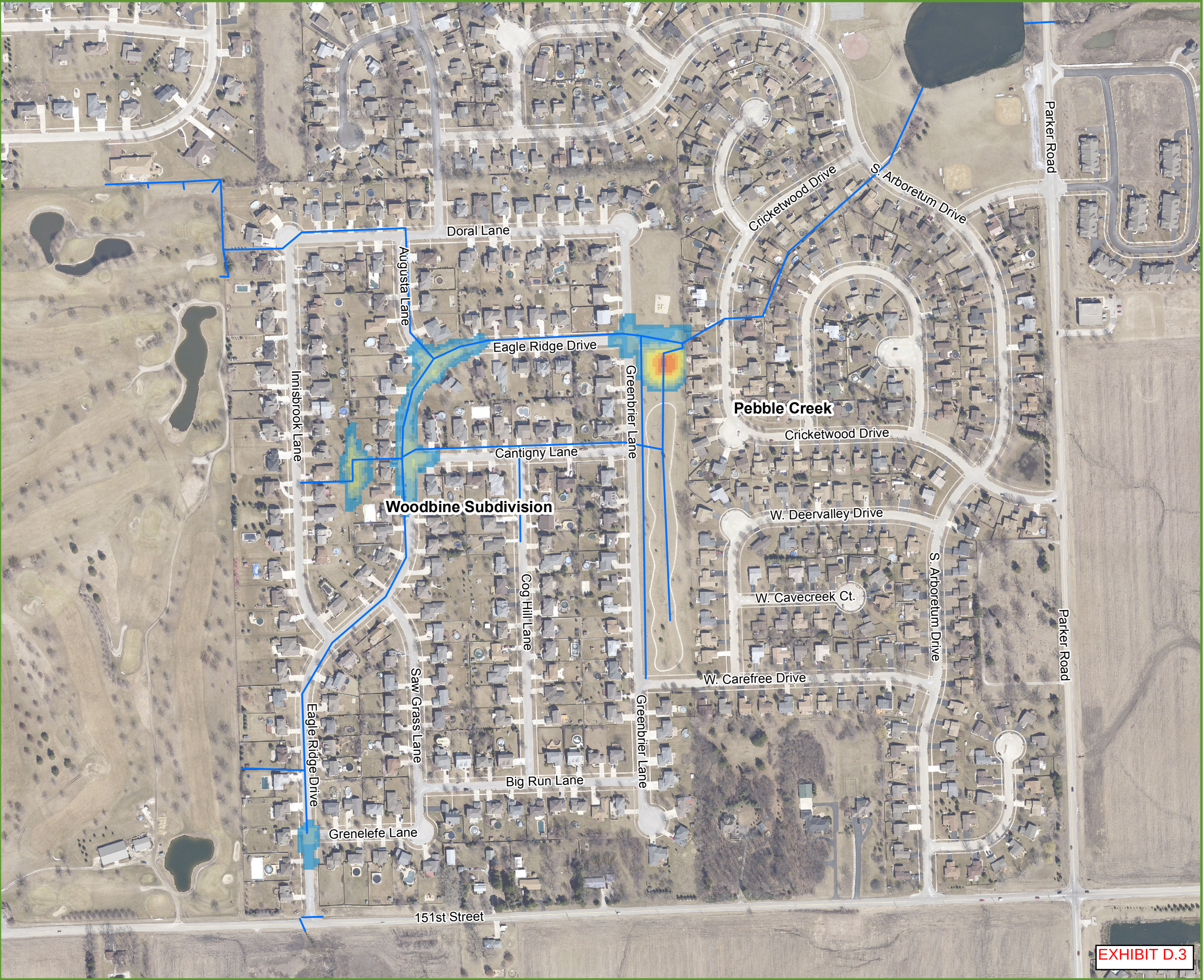
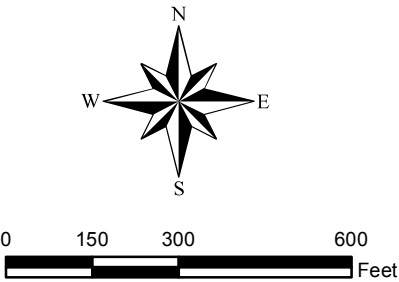
Existing
Inundation Map
(5-Year)

Legend

Existing Storm Sewers

5Yr Existing Flood Depth (feet)

0.0 - 0.25
0.25 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 - 4.5



Village of Homer Glen

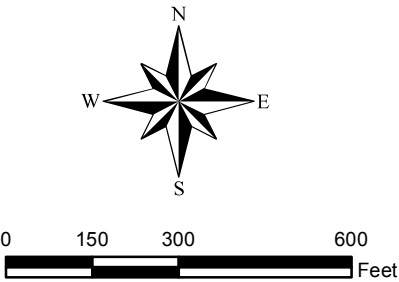
Existing
Inundation Map
(10-Year)

Legend

Existing Storm Sewers

10Yr Existing Flood Depth (feet)

0.0 - 0.25
0.25 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 - 4.5



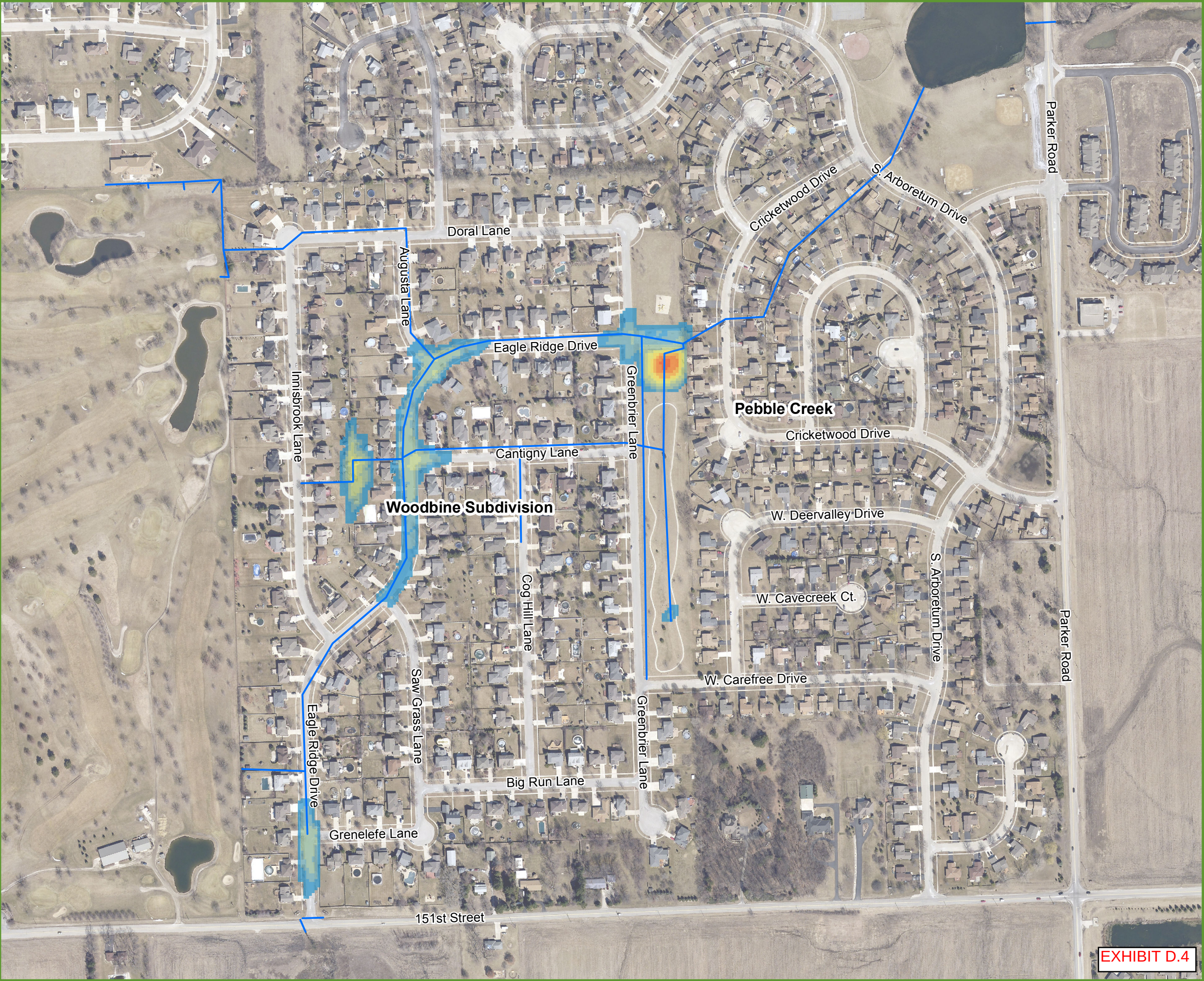


HRGreen



Village of
HOMER
GLEN

Community and Nature . . . in Harmony



Village of Homer Glen

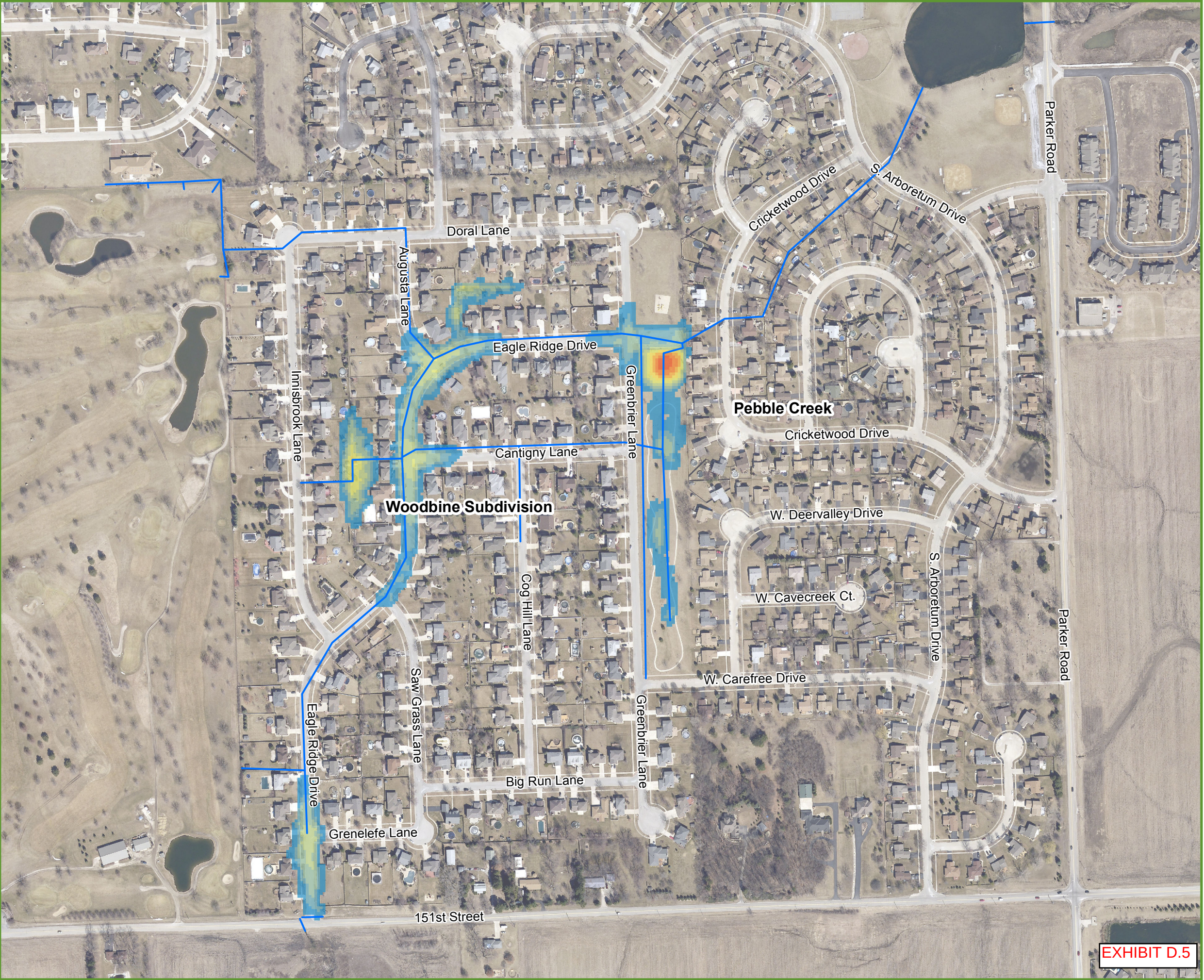
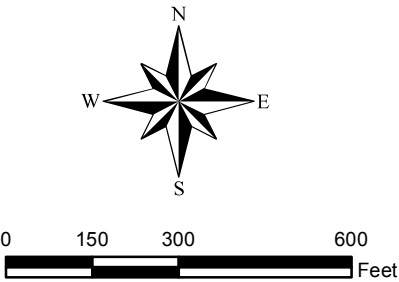
Existing
Inundation Map
(25-Year)

Legend

Existing Storm Sewers

25Yr Existing Flood Depth (feet)

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0.25 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
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2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 - 4.5



Village of Homer Glen

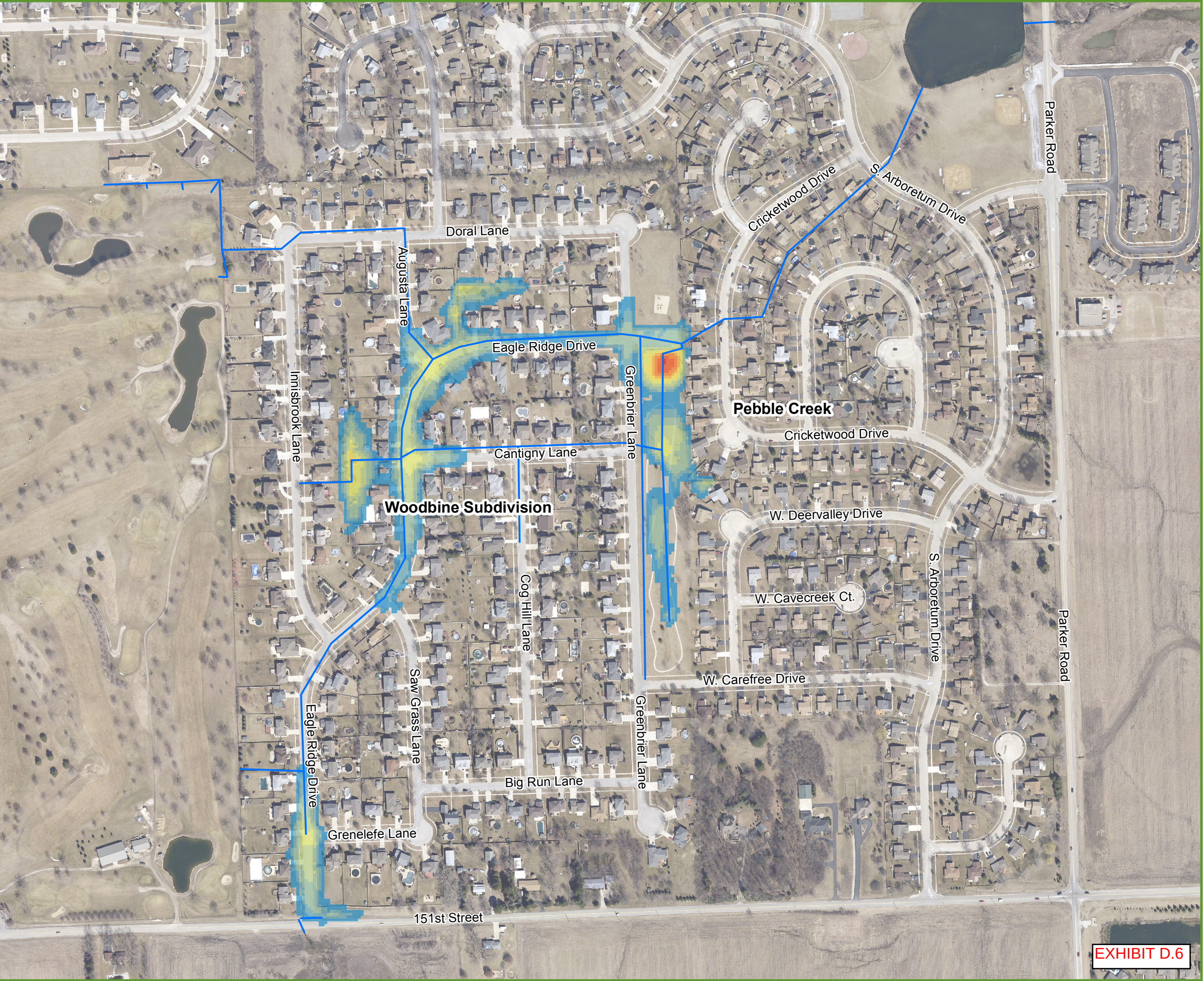
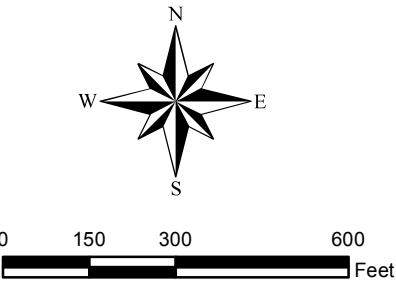
Existing
Inundation Map
(50-Year)

Legend

Existing Storm Sewers

50Yr Existing Flood Depth (feet)

0.0 - 0.25
0.25 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 - 4.5



Village of Homer Glen

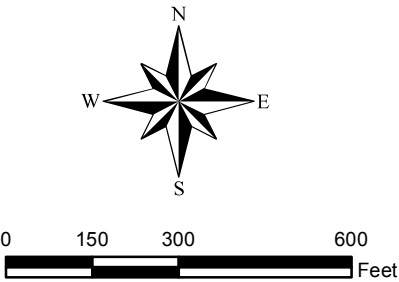
Existing
Inundation Map
(100-Year)

Legend

Existing Storm Sewers

100Yr Existing Flood Depth (feet)

0.0 - 0.25
0.25 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 - 4.5



Appendix E – Proposed Improvement Exhibit

Village of Homer Glen

Proposed Improvements

- Legend**
- Phase 1 - Fix Storm Sewer
 - Phase 2 - Add Detention
 - Phase 3 - Upsize Storm Sewer
 - Existing Storm Sewers



Village of Homer Glen

Woodbine Property Improvements

Legend

- Red Oak
- Swamp White Oak
- Proposed Storm Sewer
- Proposed Grading
- Existing Storm Sewers
- BioSwale - Native Prairie
- Mesic Prairie
- Wet-Mesic Prairie
- Wet Prairie
- Emergent

*Erosion blanket used over all areas except open water and emergent zone

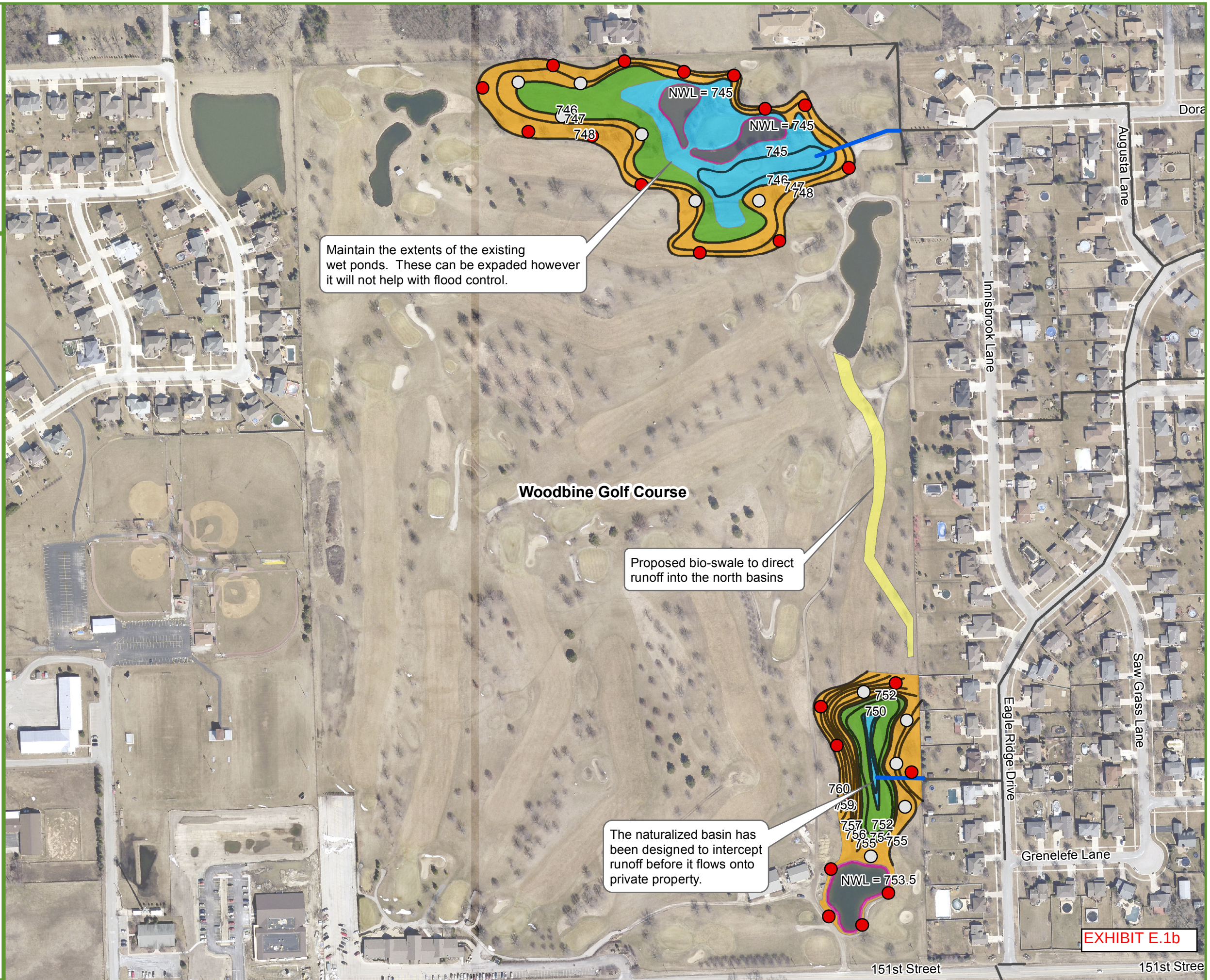
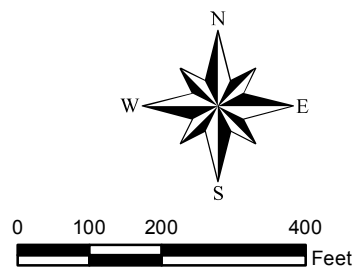


EXHIBIT E.1b

Village of Homer Glen

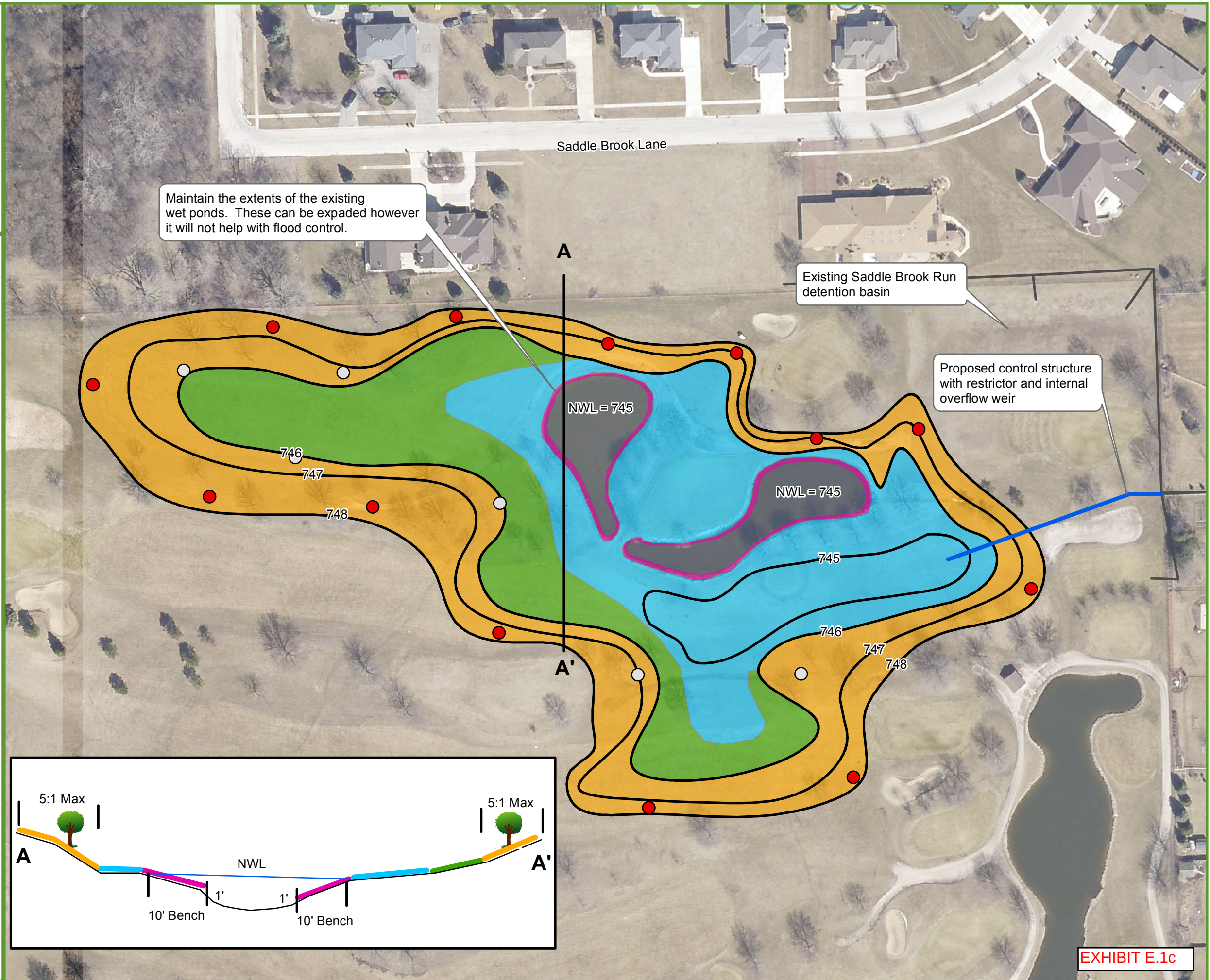
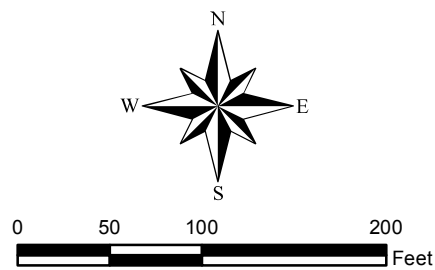
Woodbine Property Improvements

(North Basin)

Legend

- Red Oak
- Swamp White Oak
- Proposed Storm Sewer
- Proposed Grading
- Existing Storm Sewers
- Mesic Prairie
- Wet-Mesic Prairie
- Wet Prairie
- Emergent

*Erosion blanket used over all areas except open water and emergent zone



Village of Homer Glen

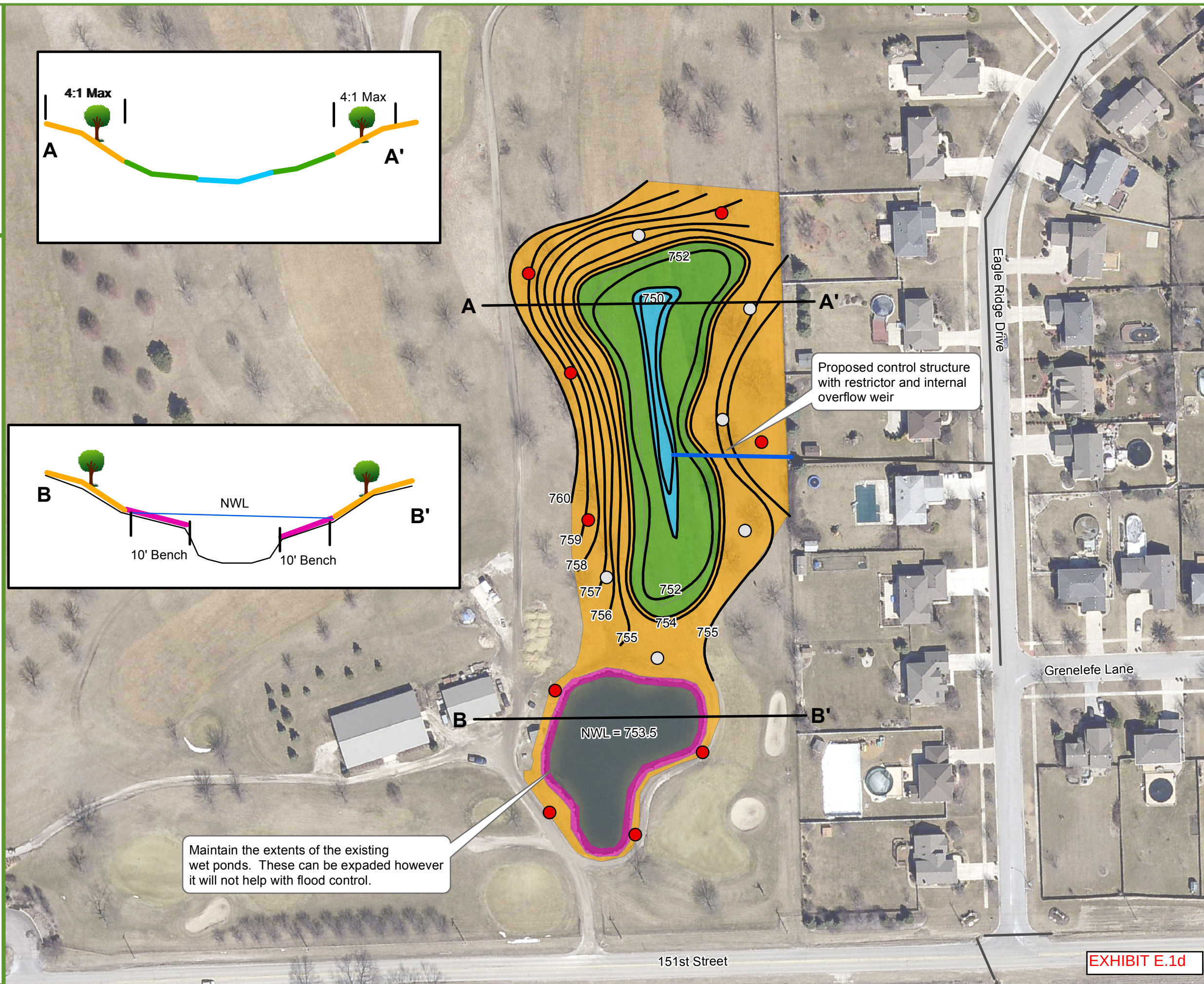
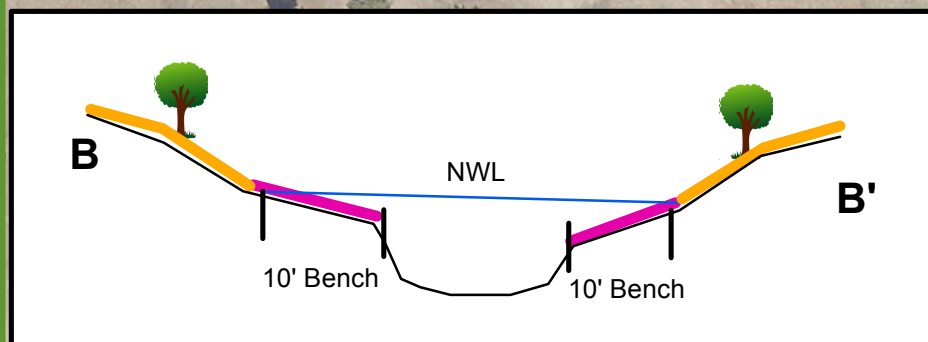
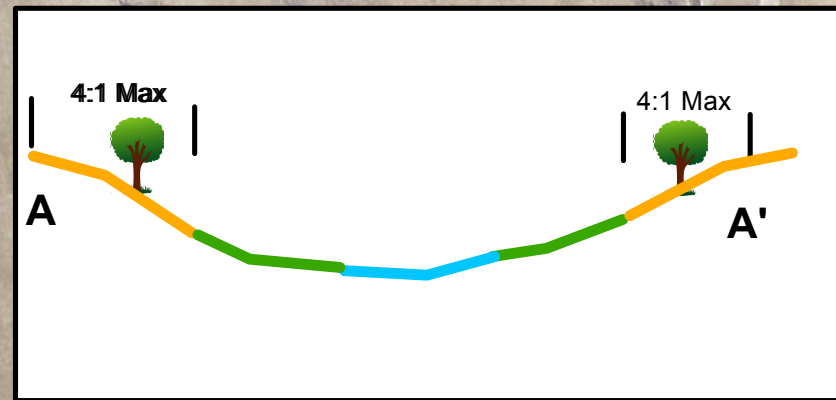
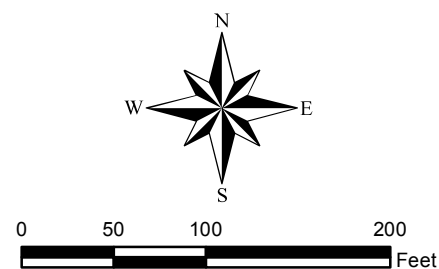
Woodbine Property Improvements

(South Basin)

Legend

- Red Oak
- Swamp White Oak
- Proposed Storm Sewer
- Proposed Grading
- Existing Storm Sewers
- Mesic Prairie
- Wet-Mesic Prairie
- Wet Prairie
- Emergent

*Erosion blanket used over all areas except open water and emergent zone

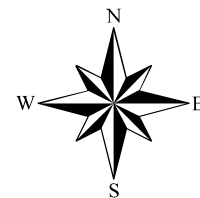


Village of Homer Glen

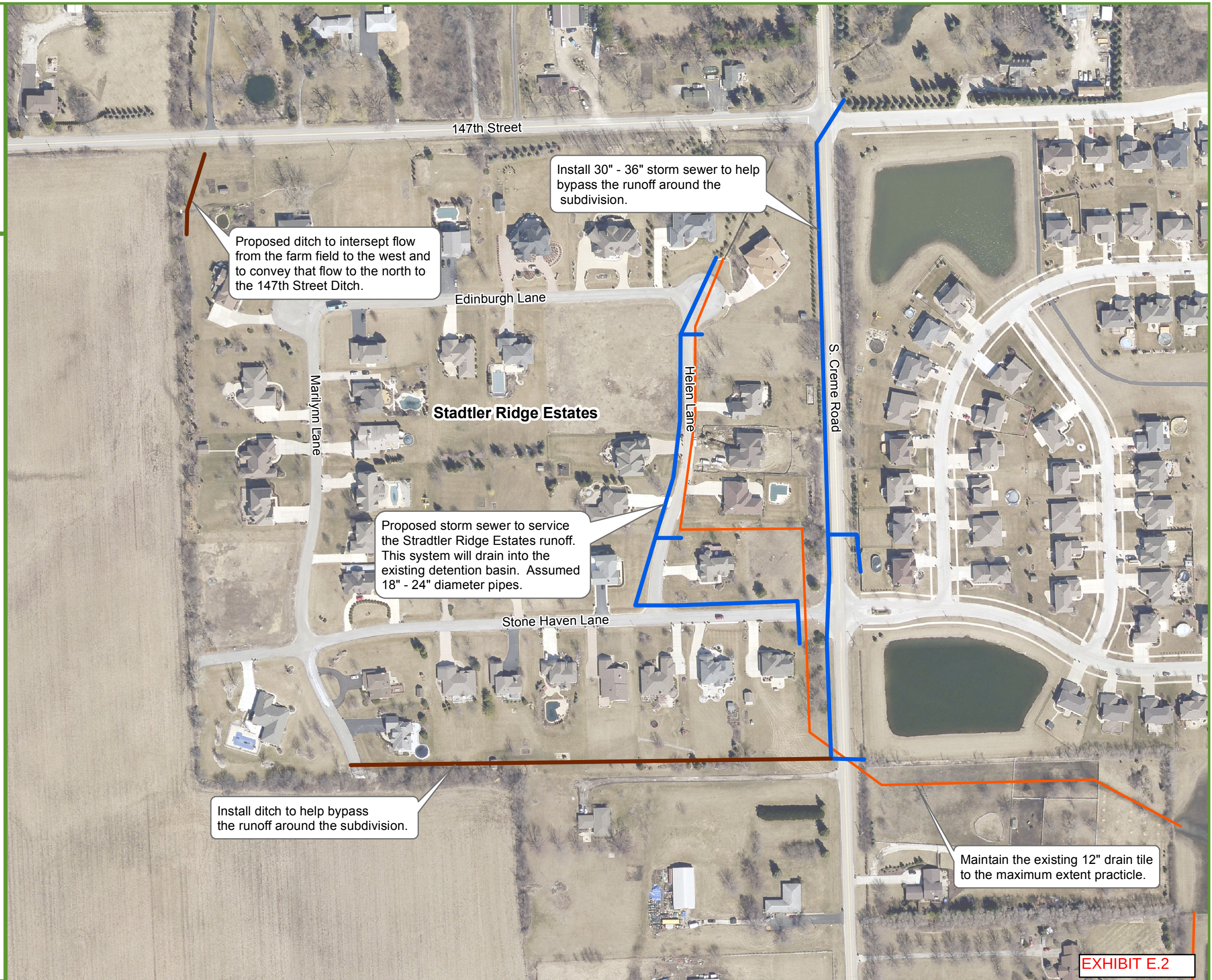
Stadtler Ridge Estates Improvements

Legend

- Proposed Ditch
- Proposed Storm Sewer
- 12" Drain Tile (Approx)



0 100 200 400
Feet



Village of Homer Glen

Proposed Improvements
Phase 1

Legend

Existing Storm Sewers

10Yr Inundation Depth (ft)

0.0 - 0.25
0.25 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 - 4.5

North arrow pointing North (N), South (S), East (E), and West (W).

Scale bar: 0, 150, 300, 600 Feet



HRGreen



Village of
HOMER
GLEN

Community and Nature . . . in Harmony



EXHIBIT E.3a

HRG PLOT: 3:20:26 PM 10/27/2015 BY: lgilber FILE: O:\66150239\Design\GIS\MXD\map-Exhibits-Inundation.mxd

Village of Homer Glen

Proposed
Improvements
Phase 1

Legend

Existing Storm Sewers

100Yr Inundation Depth (ft)

0.0 - 0.25
0.25 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 - 4.5

North arrow pointing North (N), South (S), East (E), and West (W).

Scale bar: 0, 150, 300, 600 Feet



HRGreen



Village of
HOMER
GLEN

Community and Nature . . . in Harmony



Village of Homer Glen

Proposed Improvements
Phase 2

Legend

Existing Storm Sewers

10Yr Inundation Depth (ft)

0.0 - 0.25
0.25 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 - 4.5

North arrow pointing North (N), South (S), East (E), and West (W).

Scale bar: 0, 150, 300, 600 Feet



HRGreen



Village of
HOMER
GLEN

Community and Nature . . . in Harmony

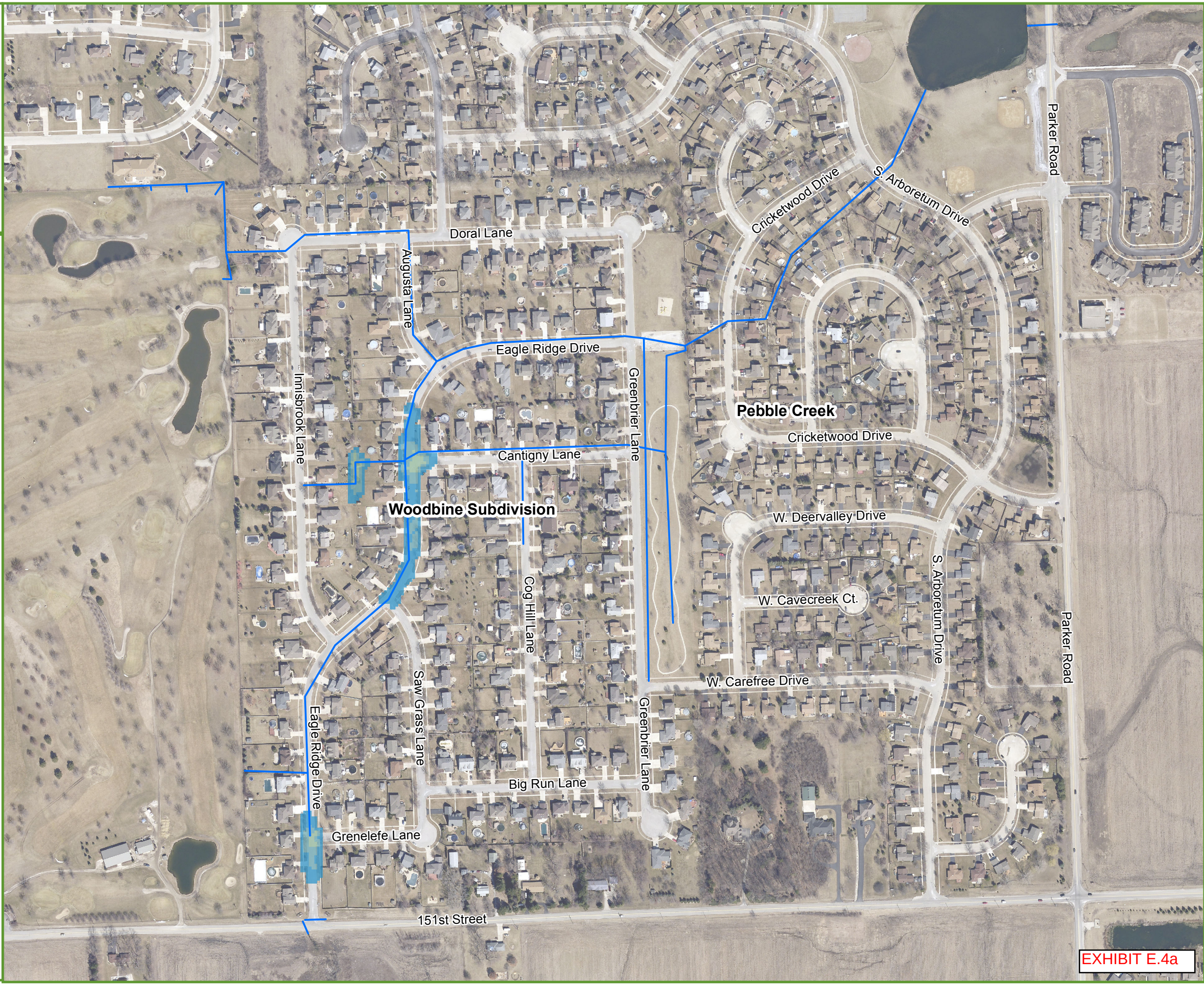


EXHIBIT E.4a

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Village of Homer Glen

Proposed Improvements Phase 2

Legend

Existing Storm Sewers

100Yr Inundation Depth (ft)

0.0 - 0.25
0.25 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 - 4.5

North arrow pointing North (N), South (S), East (E), West (W).

Scale bar: 0, 150, 300, 600 Feet



HRGreen



Village of HOMER GLEN
Community and Nature ... in Harmony

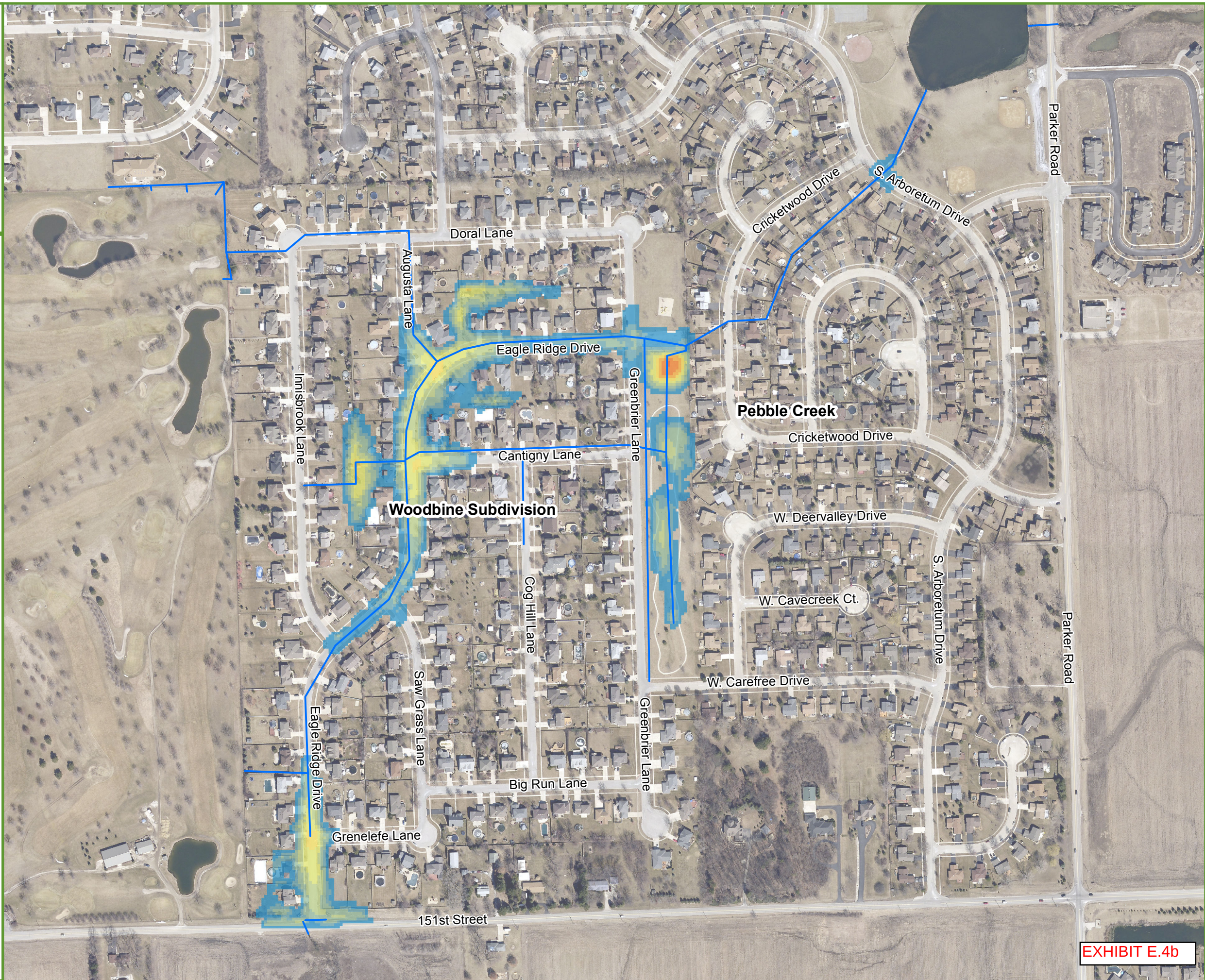


EXHIBIT E.4b

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Village of Homer Glen

Proposed
Improvements
Phase 3

Legend
Existing Storm Sewers

10 Yr Inundation - NONE

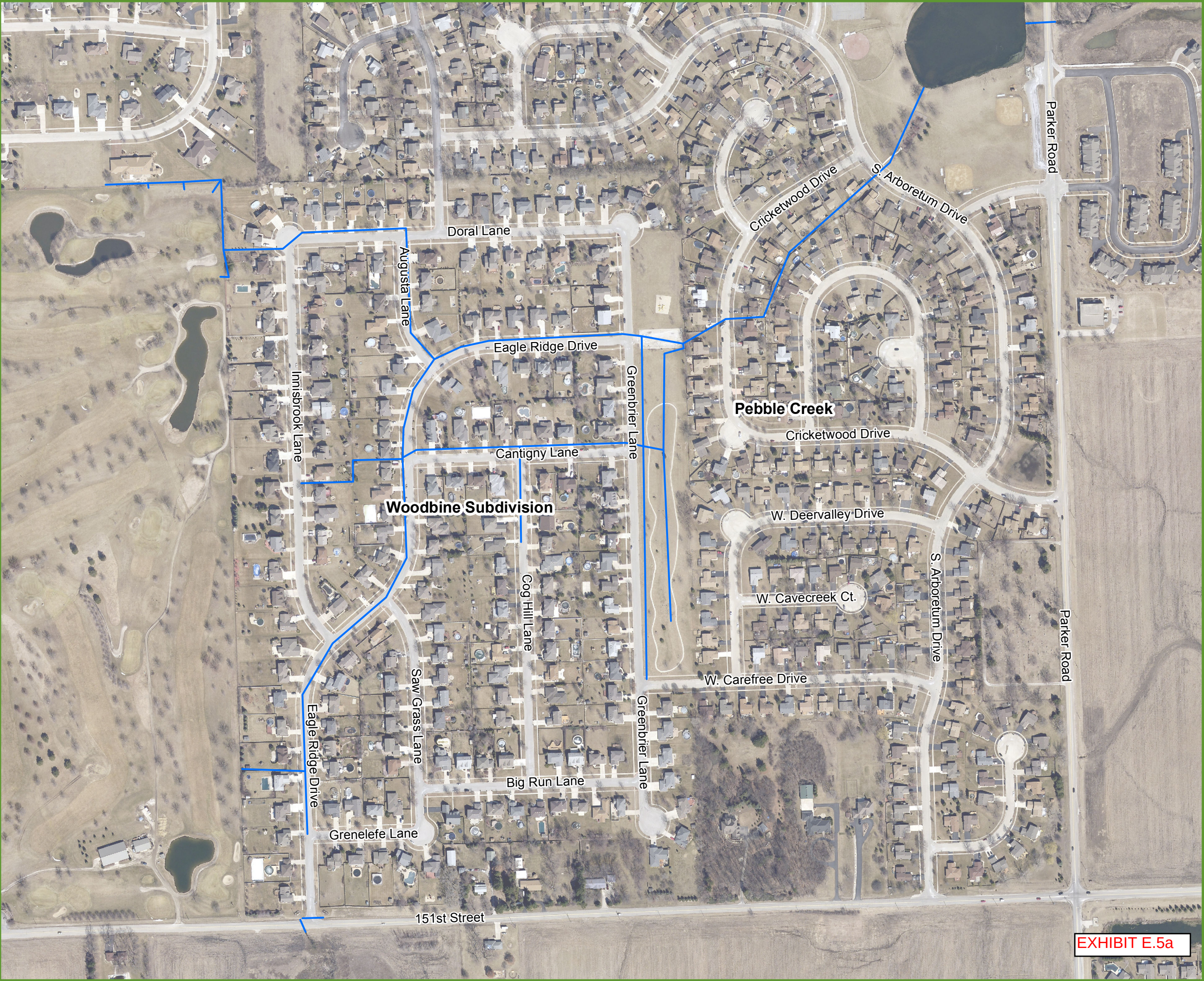
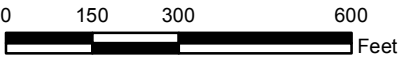
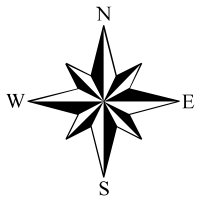


EXHIBIT E.5a

Village of Homer Glen

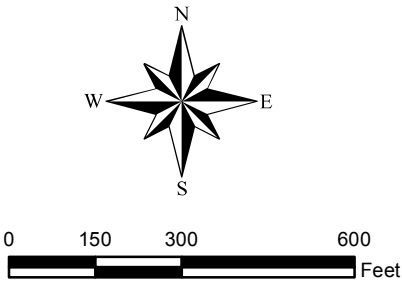
Proposed Improvements
Phase 3

Legend

Existing Storm Sewers

100Yr Inundation Depth (ft)

0.0 - 0.25
0.25 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 - 4.5



Appendix F – Engineer's Opinion of Probable Construction Cost

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS

Project #:86150239

Project:Woodbine Drainage Study

Location:Village of Homer Glen, Illinois

ByLRG

CheckedJO

Date10/26/2015

Date11/17/2015



				Woodbine Phase 1		Woodbine Phase 2		Woodbine Phase 3		Stadtler Ridge Bypass		Stadtler Ridge Local		
1.00	EARTHWORK	UNITS	UNIT COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	COST
1.01	Grading and Earthwork	cu. yd.	\$ 22.50		\$ -	17,117	\$ 385,132.50		\$ -	726	\$ 16,333.33		\$ -	\$ 401,465.83
SUB-TOTAL					\$ -		\$ 385,132.50		\$ -		\$ 16,333.33		\$ -	\$ 401,465.83

2.00	EROSION CONTROL	UNITS	UNIT COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	COST
2.01	Perimeter Erosion Barrier	lin. ft.	\$ 3.50	1,322	\$ 4,627.00	6,700	\$ 23,450.00	2,200	\$ 7,700.00	1,559	\$ 5,456.50	1,750	\$ 6,125.00	\$ 47,358.50
2.02	Inlet Protection	each	\$ 150.00	6	\$ 900.00		\$ -	18	\$ 2,700.00	6	\$ 900.00	5	\$ 750.00	\$ 5,250.00
2.03	Erosion Control Blanket (S75)	sq. yd.	\$ 1.75	352	\$ 616.39	16,097	\$ 28,169.75	241	\$ 421.75	1,541	\$ 2,696.75		\$ -	\$ 31,904.64
SUB-TOTAL					\$ 6,143.39		\$ 51,619.75		\$ 10,821.75		\$ 9,053.25		\$ 6,875.00	\$ 84,513.14

3.00	STORM SEWERS	UNITS	UNIT COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	COST
3.01	Storm Sewers - 4' - 5' Dia. Manhole	each	\$ 5,000.00	1	\$ 5,000.00		\$ -	6	\$ 30,000.00	2	\$ 10,000.00	10	\$ 50,000.00	\$ 95,000.00
3.02	Storm Sewers - 6' - 8' Dia. Manhole	each	\$ 6,500.00	8	\$ 52,000.00		\$ -	12	\$ 78,000.00	6	\$ 39,000.00		\$ -	\$ 169,000.00
3.03	Storm Sewers - 12" RCP Class A	lin. ft.	\$ 100.00		\$ -		\$ -		\$ -	203	\$ 20,300.00	147	\$ 14,700.00	\$ 35,000.00
3.04	Storm Sewers - 18" RCP Class A	lin. ft.	\$ 120.00	184	\$ 22,080.00		\$ -	159	\$ 19,080.00		\$ -		\$ -	\$ 41,160.00
3.05	Storm Sewers - 24" RCP Class A	lin. ft.	\$ 140.00	85	\$ 11,900.00		\$ -	250	\$ 35,000.00		\$ -	1,159	\$ 162,260.00	\$ 209,160.00
3.06	Storm Sewers - 30" RCP Class A	lin. ft.	\$ 150.00		\$ -		\$ -	564	\$ 84,600.00	678	\$ 101,700.00		\$ -	\$ 186,300.00
3.07	Storm Sewers - 36" RCP Class A	lin. ft.	\$ 160.00		\$ -		\$ -	2,309	\$ 369,440.00	678	\$ 108,480.00		\$ -	\$ 477,920.00
3.08	Storm Sewers - 42" RCP Class A	lin. ft.	\$ 175.00	218	\$ 38,150.00		\$ -	685	\$ 119,875.00		\$ -		\$ -	\$ 158,025.00
3.09	Storm Sewers - 48" RCP Class A	lin. ft.	\$ 185.00	174	\$ 32,190.00		\$ -		\$ -		\$ -		\$ -	\$ 32,190.00
3.10	Storm Sewer Removal - Structures Manhole	each	\$ 800.00	9	\$ 7,200.00		\$ -	18	\$ 14,400.00		\$ -		\$ -	\$ 21,600.00
3.11	Storm Sewer Removal - Pipe12"-30"	lin. ft.	\$ 15.00	269	\$ 4,035.00		\$ -	3,013	\$ 45,195.00		\$ -		\$ -	\$ 49,230.00
3.12	Storm Sewer Removal - Pipe 36"-48"	lin. ft.	\$ 25.00	392	\$ 9,800.00		\$ -	685	\$ 17,125.00		\$ -		\$ -	\$ 26,925.00
SUB-TOTAL					\$ 182,355.00		\$ -		\$ 812,715.00		\$ 279,480.00		\$ 226,960.00	\$ 1,501,510.00

4.00	MISCELLANEOUS IMPROVEMENTS	UNITS	UNIT COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	COST
4.01	Remove Backflow Preventer	lump sum	\$ 500.00	1	\$ 500.00		\$ -		\$ -		\$ -		\$ -	\$ 500.00
4.02	Fence Removal and Replacement	lin. ft.	\$ 100.00	35	\$ 3,500.00		\$ -		\$ -		\$ -		\$ -	\$ 3,500.00
4.03	Pavement Patching - HMA	sq. yd.	\$ 50.00	190	\$ 9,500.00		\$ -	1,789	\$ 89,450.00	151	\$ 7,565.00	255	\$ 12,750.00	\$ 119,265.00
4.04	Portland Cement Concrete Driveway Remove and Replace	sq. yd.	\$ 200.00	39	\$ 7,800.00		\$ -	117	\$ 23,400.00		\$ -	33	\$ 6,660.00	\$ 37,860.00
4.05	Sidewalk Removal and Replacement	sq. ft.	\$ 7.00	750	\$ 5,250.00		\$ -	3,450	\$ 24,150.00		\$ -		\$ -	\$ 29,400.00
4.06	Construction Entrance	lump sum	\$ 4,000.00	1	\$ 4,000.00	1	\$ 4,000.00	1	\$ 4,000.00	1	\$ 4,000.00	1	\$ 4,000.00	\$ 20,000.00
4.07	Temporary Fence	lin. ft.	\$ 4.00	600	\$ 2,400.00	2,000	\$ 8,000.00	600	\$ 2,400.00	600	\$ 2,400.00	600	\$ 2,400.00	\$ 17,600.00
4.08	Construction Layout	lump sum	\$ 8,000.00	1	\$ 8,000.00	1	\$ 8,000.00	1	\$ 8,000.00	1	\$ 8,000.00	1	\$ 8,000.00	\$ 40,000.00
SUB-TOTAL					\$ 40,950.00		\$ 20,000.00		\$ 151,400.00		\$ 21,965.00		\$ 33,810.00	\$ 268,125.00

5.00	LANDSCAPING	UNITS	UNIT COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	COST
5.01	Seeding - Turf Grass IDOT CL 1A Complete	sq. yd.	\$ 10.00	352	\$ 3,520.00		\$ -	241	\$ 2,410.00	1,541	\$ 15,410.00	582	\$ 5,820.00	\$ 27,160.00
5.02	Blanket Herbicide All Existing Vegetation	ac	\$ 1,200.00		\$ -	9.978	\$ 11,973.60		\$ -		\$ -		\$ -	\$ 11,973.60
5.03	Disc All Planting Areas Following Herbicide Treatement	ac	\$ 1,200.00		\$ -	9.978	\$ 11,973.60		\$ -		\$ -		\$ -	\$ 11,973.60
5.04	Blanket Herbicide All Existing Vegetation (post discing)	ac	\$ 1,200.00		\$ -	9.978	\$ 11,973.60		\$ -		\$ -		\$ -	\$ 11,973.60
5.04	Mesic Pairie Seeding (includes soil prep)	ac	\$ 2,500.00		\$ -	5.295	\$ 13,237.50		\$ -		\$ -		\$ -	\$ 13,237.50
5.05	Wet-Mesic Prairie Seeding (includes soil prep)	ac	\$ 2,500.00		\$ -	2.332	\$ 5,830.00		\$ -		\$ -		\$ -	\$ 5,830.00
5.06	Wet Prairie Seeding (includes soil prep)	ac	\$ 2,500.00		\$ -	2.351	\$ 5,877.50		\$ -		\$ -		\$ -	\$ 5,877.50
5.06	Oak Trees (Red and Swamp White)	each	\$ 600.00		\$ -	33	\$ 19,800.00		\$ -		\$ -		\$ -	\$ 19,800.00
5.07	Emergent Plugs	each	\$ 5.00		\$ -	2,800	\$ 14,000.00		\$ -		\$ -		\$ -	\$ 14,000.00
5.08	3-Year Maintenance - Mowing	trip	\$ 2,000.00		\$ -	3	\$ 6,000.00		\$ -		\$ -		\$ -	\$ 6,000.00
5.08	3-Year Maintenance - Spot Herbiciding	trip	\$ 1,500.00		\$ -	6	\$ 9,000.00		\$ -		\$ -		\$ -	\$ 9,000.00
5.09	3-Year Maintenance - Controlled Burn (end of 3rd year)	trip	\$ 8,000.00		\$ -	1	\$ 8,000.00		\$ -		\$ -		\$ -	\$ 8,000.00
5.10	Ecologist Monitoring & Reporting for three years	trip	\$ 700.00		\$ -	6	\$ 4,200.00		\$ -		\$ -		\$ -	\$ 4,200.00
SUB-TOTAL					\$ 3,520.00		\$ 121,865.80		\$ 2,410.00		\$ 15,410.00		\$ 5,820.00	\$ 149,025.80

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS

Project #: 86150239 By LRG Date 10/26/2015
Project: Woodbine Drainage Study Checked JO Date 11/17/2015
Location: Village of Homer Glen, Illinois



				Woodbine Phase 1	Woodbine Phase 2	Woodbine Phase 3	Stadtler Ridge Bypass	Stadtler Ridge Local		
				Woodbine Phase 1	Woodbine Phase 2	Woodbine Phase 3	Stadtler Ridge Bypass	Stadtler Ridge Local		
	SUMMARY OF PROBABLE COSTS	UNITS	UNIT COST	COST	COST	COST	COST	COST	COST	COST
0.0	ENGINEERING AND CONSTRUCTION OBSERVATION (15%)			\$ 34,945.26	\$ 86,792.71	\$ 146,602.01	\$ 51,336.24	\$ 41,019.75	\$	\$ 360,695.97
1.0	EARTHWORK			\$ -	\$ 385,132.50	\$ -	\$ 16,333.33	\$ -	\$	\$ 401,465.83
2.0	EROSION CONTROL			\$ 6,143.39	\$ 51,619.75	\$ 10,821.75	\$ 9,053.25	\$ 6,875.00	\$	\$ 84,513.14
3.0	STORM SEWERS			\$ 182,355.00	\$ -	\$ 812,715.00	\$ 279,480.00	\$ 226,960.00	\$	\$ 1,501,510.00
4.0	MISCELLANEOUS IMPROVEMENTS			\$ 40,950.00	\$ 20,000.00	\$ 151,400.00	\$ 21,965.00	\$ 33,810.00	\$	\$ 268,125.00
5.0	LANDSCAPING			\$ 3,520.00	\$ 121,865.80	\$ 2,410.00	\$ 15,410.00	\$ 5,820.00	\$	\$ 149,025.80
6.0	CONTINGENCY (20%)			\$ 53,582.73	\$ 133,082.15	\$ 224,789.75	\$ 78,715.56	\$ 62,896.95	\$	\$ 553,067.15
SUB-TOTAL				\$ 321,496.38	\$ 798,492.91	\$ 1,348,738.52	\$ 472,293.39	\$ 377,381.70	\$	\$ 3,318,402.89
TOTAL COST				\$ 321,496.38	\$ 798,492.91	\$ 1,348,738.52	\$ 472,293.39	\$ 377,381.70	\$	\$ 3,318,402.89

Project Assumptions/Notes/Comments:

HRG is not a construction cost estimator or construction contractor, nor should HRG'S rendering an opinion of probable construction costs be considered equivalent to the nature and extent of service a construction cost estimator or construction contractor would provide. HRG'S opinion will be based solely upon his or her own experience with construction. This requires HRG to make a number of assumptions as to actual conditions that will be encountered on site; the specific decisions of other design professionals engaged; the means and methods of construction the contractor will employ; the cost and extent of labor, equipment and materials the contractor will employ; contractor's techniques in determining prices and market conditions at the time, and other factors over which HRG has no control. Given the assumptions which must be made, HRG cannot guarantee the accuracy of his or her opinions of cost, and in recognition of that fact, the CLIENT waives any claim against HRG relative to the accuracy of HRG'S opinion of probable construction cost.

ADDITIONAL ASSUMPTIONS:

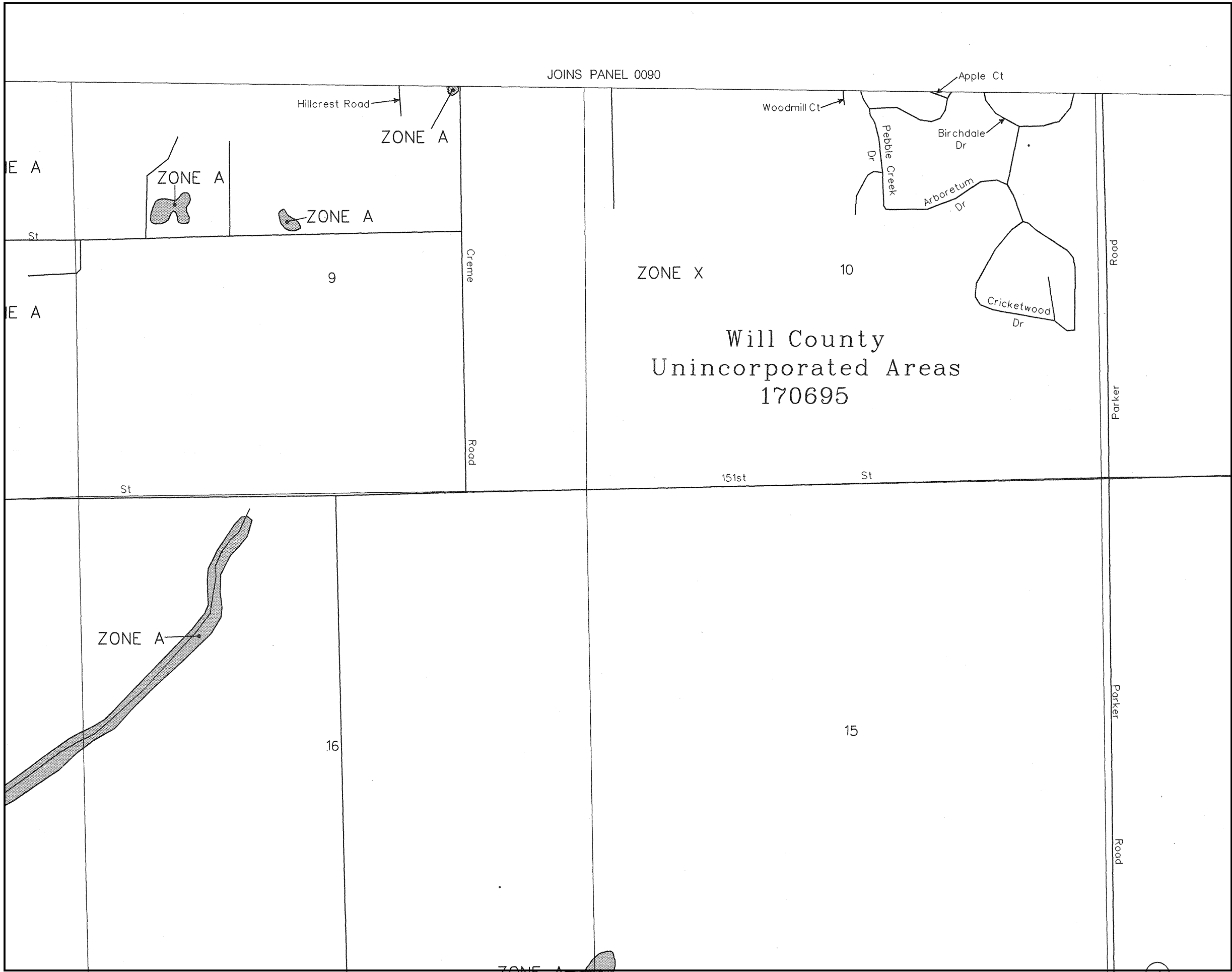
TOPSOIL RESPREAD USING ONSITE STOCKPILE, ALL ITEMS UNDER SECTION 3.0 'STORM SEWERS' INCLUDE TRENCH BACKFILL

ITEMS NOT INCLUDED:

CONSTRUCTION OBSERVATION
RECORD DRAWINGS
PUNCHLIST REVIEW

Printed on: 11/17/2015

Appendix G – Flood Insurance Rate Map (FIRM)



APPROXIMATE SCALE
1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
**WILL COUNTY,
ILLINOIS
AND INCORPORATED AREAS**

PANEL 180 OF 585

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
UNINCORPORATED AREAS	170695	0180	E

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
17197C0180 E

EFFECTIVE DATE :
SEPTEMBER 6, 1995



Federal Emergency Management Agency

EXHIBIT G

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Appendix H – Calculations

Village of Homer Glen

Time of Concentration

Legend

- TC-Flowpath
- Watershed Divides
- Illinois Streams

Only watershed accounted for in the 2D XP SWMM model had the TC calculated. The labels on the watersheds correspond with the calculated TC's.

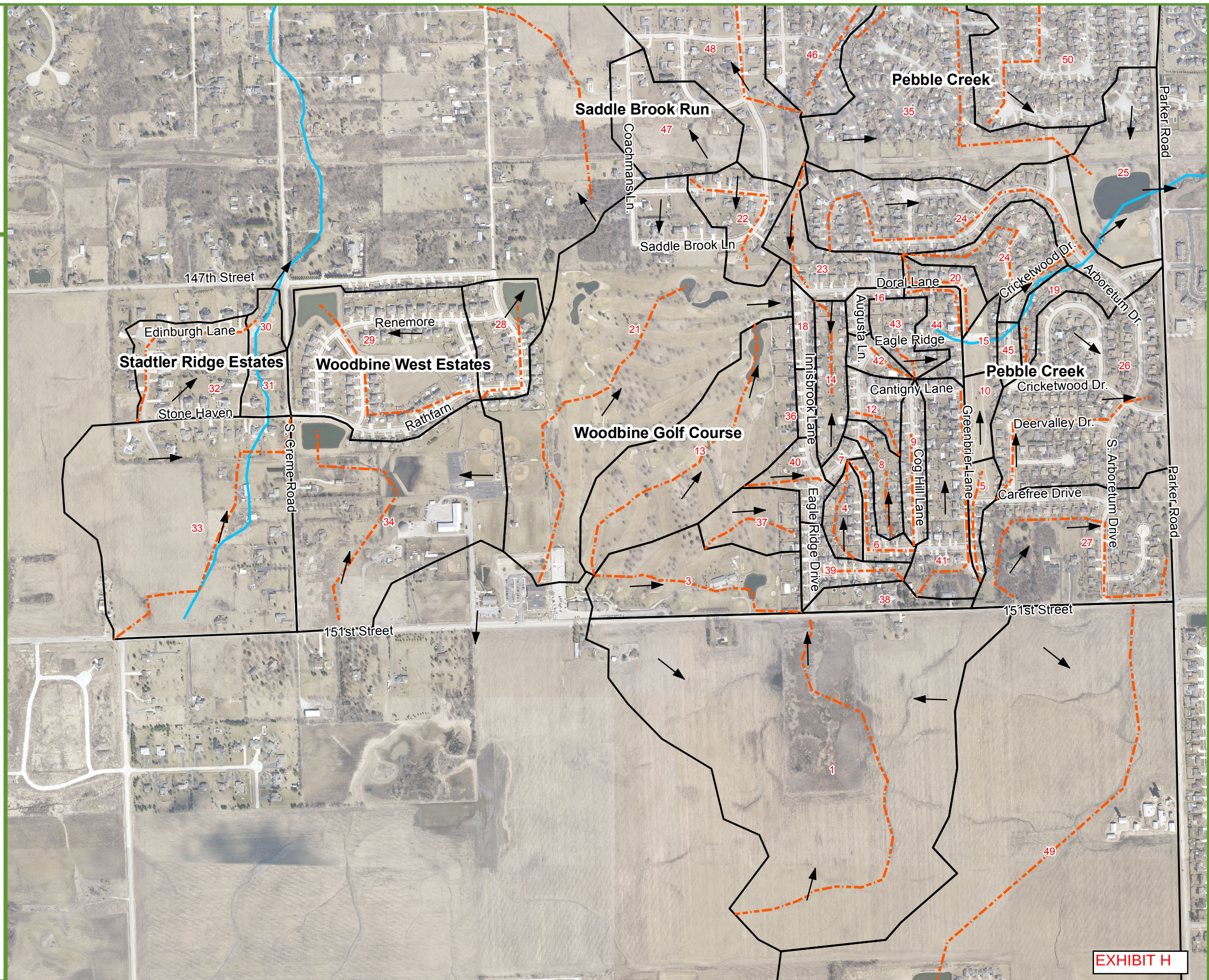
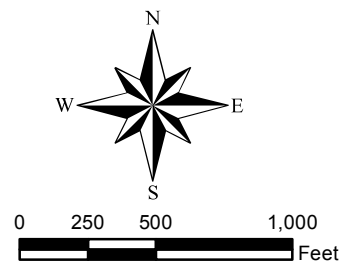


EXHIBIT H

Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 17	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P2^{0.5} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.063	0.01	
hr	0.02	0.00	= 0.02

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L / 3600V$

	U	U	U or P only
ft	2789		
ft/ft	0.009		
ft/s	1.54	0.00	
hr	0.50	0.00	= 0.50

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R = a / Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V = (1.49 * r^{2/3} * s^{1/2}) / n$
18. Flow length, L
19. $T_t = L / 3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.53

31.7 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow

Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover < 20%	0.06
Residue cover >20%	0.17
Grass:	
Short Grass Prairie	0.15
Dense Grasses (blue grass, native grass mixtures)	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:	
Light underbrush	0.40
Dense underbrush	0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 10	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.020	0.01	
hr	0.04	0.00	= 0.04

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	U	U	U or P only
ft	2397		
ft/ft	0.010		
ft/s	1.63	0.00	
hr	0.41	0.00	= 0.41

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.45

26.8 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow

Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover < 20%	0.06
Residue cover >20%	0.17
Grass:	
Short Grass Prairie	0.15
Dense Grasses (blue grass, native grass mixtures)	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:	
Light underbrush	0.40
Dense underbrush	0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 30	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.003	0.01	
hr	0.09	0.00	= 0.09

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	U	U	U or P only
ft	706		
ft/ft	0.018		
ft/s	2.16	0.00	
hr	0.09	0.00	= 0.09

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.18

10.8 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 1	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.048	0.01	
hr	0.03	0.00	= 0.03

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	U	U	U or P only
ft	1628		
ft/ft	0.016		
ft/s	2.03	0.00	
hr	0.22	0.00	= 0.22

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.25

15.0 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 0	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^2 \cdot 0.5 \cdot s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.046	0.01	
hr	0.03	0.00	= 0.03

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	U	U	U or P only
ft	3377		
ft/ft	0.007		
ft/s	1.37	0.00	
hr	0.69	0.00	= 0.69

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49 \cdot r^{2/3} \cdot s^{1/2})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.71

42.8 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 28	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.008	0.01	
hr	0.06	0.00	= 0.06

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	U	U	U or P only
ft	640		
ft/ft	0.033		
ft/s	2.92	0.00	
hr	0.06	0.00	= 0.06

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.12

7.0 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 27	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.008	0.01	
hr	0.06	0.00	= 0.06

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	U	U	U or P only
ft	507		
ft/ft	0.024		
ft/s	2.49	0.00	
hr	0.06	0.00	= 0.06

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.11

6.8 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 2	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.045	0.01	
hr	0.03	0.00	= 0.03

Shallow Concentrated flow

7. Surface Description (paved, "P" or unpaved, "U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L / 3600V$

	U	U	U or P only
ft	718		
ft/ft	0.021		
ft/s	2.32	0.00	
hr	0.09	0.00	= 0.09

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R = a / Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V = (1.49 * r^{2/3} * s^{1/2}) / n$
18. Flow length, L
19. $T_t = L / 3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.11

6.8 min

Assumed Channel Q = 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover > 20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 4	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	P		
	0.035		
ft	100	0	
in	3.04	3.04	
ft/ft	0.010	0.01	
hr	0.07	0.00	= 0.07

Shallow Concentrated flow

7. Surface Description (paved, "P" or unpaved, "U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L / 3600V$

	P	U	U or P only
ft	992		
ft/ft	0.020		
ft/s	2.88	0.00	
hr	0.10	0.00	= 0.10

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius, $R = a / P_w$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V = (1.49 * r^{2/3} * s^{1/2}) / n$
18. Flow length, L
19. $T_t = L / 3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.16

9.8 min

Assumed Channel Q = 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow	
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover < 20%	0.06
Residue cover > 20%	0.17
Grass:	
Short Grass Prairie	0.15
Dense Grasses (blue grass, native grass mixtures)	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:	
Light underbrush	0.40
Dense underbrush	0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 6	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P2^{0.5} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.094	0.01	
hr	0.02	0.00	= 0.02

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	U	U	U or P only
ft	768		
ft/ft	0.019		
ft/s	2.21	0.00	
hr	0.10	0.00	= 0.10

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.12

7.0 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80
Note: when selecting n in woods consider cover to a height of about 0.1 ft.		

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 9	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P2^{0.5}s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.022	0.01	
hr	0.04	0.00	= 0.04

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	U	U	U or P only
ft	443		
ft/ft	0.009		
ft/s	1.53	0.00	
hr	0.08	0.00	= 0.08

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.12

7.0 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 7	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.072	0.01	
hr	0.02	0.00	= 0.02

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	P	U	U or P only
ft	750		
ft/ft	0.022		
ft/s	3.01	0.00	
hr	0.07	0.00	= 0.07

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.09

5.5 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 11	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P2^{0.5} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.017	0.01	
hr	0.04	0.00	= 0.04

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	U	U	U or P only
ft	675		
ft/ft	0.009		
ft/s	1.54	0.00	
hr	0.12	0.00	= 0.12

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.16

9.8 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 25	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P2^{0.5} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.015	0.01	
hr	0.04	0.00	= 0.04

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	U	U	U or P only
ft	320		
ft/ft	0.013		
ft/s	1.83	0.00	
hr	0.05	0.00	= 0.05

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.09

5.5 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 24	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.031	0.01	
hr	0.03	0.00	= 0.03

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	U	U	U or P only
ft	273		
ft/ft	0.006		
ft/s	1.24	0.00	
hr	0.06	0.00	= 0.06

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.09

5.6 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow

Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover < 20%	0.06
Residue cover >20%	0.17
Grass:	
Short Grass Prairie	0.15
Dense Grasses (blue grass, native grass mixtures)	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:	
Light underbrush	0.40
Dense underbrush	0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 23	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P2^{0.5} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.019	0.01	
hr	0.04	0.00	= 0.04

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	P	U	U or P only
ft	598		
ft/ft	0.020		
ft/s	2.90	0.00	
hr	0.06	0.00	= 0.06

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.10

5.8 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow	
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover < 20%	0.06
Residue cover >20%	0.17
Grass:	
Short Grass Prairie	0.15
Dense Grasses (blue grass, native grass mixtures)	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:	
Light underbrush	0.40
Dense underbrush	0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 16	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.037	0.01	
hr	0.03	0.00	= 0.03

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	P	U	U or P only
ft	896		
ft/ft	0.016		
ft/s	2.56	0.00	
hr	0.10	0.00	= 0.10

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.13

7.6 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 26	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.029	0.01	
hr	0.03	0.00	= 0.03

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	P	U	U or P only
ft	1726		
ft/ft	0.014		
ft/s	2.39	0.00	
hr	0.20	0.00	= 0.20

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.23

14.0 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 3	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.038	0.01	
hr	0.03	0.00	= 0.03

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	U	U	U or P only
ft	767		
ft/ft	0.026		
ft/s	2.58	0.00	
hr	0.08	0.00	= 0.08

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.11

6.8 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow

Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover < 20%	0.06
Residue cover >20%	0.17
Grass:	
Short Grass Prairie	0.15
Dense Grasses (blue grass, native grass mixtures)	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:	
Light underbrush	0.40
Dense underbrush	0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

Printed on: 10/28/2015

\\hrgmhnas\data\86150239\Design\Calc\calc-Woodbine_TC-092215.xls

Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 15	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.018	0.01	
hr	0.04	0.00	= 0.04

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L / 3600V$

	U	U	U or P only
ft	246		
ft/ft	0.014		
ft/s	1.92	0.00	
hr	0.04	0.00	= 0.04

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R = a / P_w$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V = (1.49 * r^{2/3} * s^{1/2}) / n$
18. Flow length, L
19. $T_t = L / 3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.08

4.6 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow	
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover < 20%	0.06
Residue cover >20%	0.17
Grass:	
Short Grass Prairie	0.15
Dense Grasses (blue grass, native grass mixtures)	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:	
Light underbrush	0.40
Dense underbrush	0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

Printed on: 10/28/2015

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 18	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.040	0.01	
hr	0.03	0.00	= 0.03

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	U	U	U or P only
ft	1125		
ft/ft	0.014		
ft/s	1.94	0.00	
hr	0.16	0.00	= 0.16

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.19

11.4 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 19	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.012	0.01	
hr	0.05	0.00	= 0.05

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	U	U	U or P only
ft	902		
ft/ft	0.014		
ft/s	1.90	0.00	
hr	0.13	0.00	= 0.13

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.18

10.8 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

Printed on: 10/28/2015

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 20	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.001	0.01	
hr	0.13	0.00	= 0.13

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	P	U	U or P only
ft	2848		
ft/ft	0.008		
ft/s	1.87	0.00	
hr	0.42	0.00	= 0.42

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.55

33.0 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow		
Smooth surfaces (concrete, asphalt, gravel, or bare soil)		0.011
Fallow (no residue)		0.05
Cultivated soils:		
Residue cover < 20%		0.06
Residue cover >20%		0.17
Grass:		
Short Grass Prairie		0.15
Dense Grasses (blue grass, native grass mixtures)		0.24
Bermudagrass		0.41
Range (natural)		0.13
Woods:		
Light underbrush		0.40
Dense underbrush		0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

Printed on: 10/28/2015

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 32	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P^{2.0} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.001	0.01	
hr	0.17	0.00	= 0.17

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L/3600V$

	P	U	U or P only
ft	1835		
ft/ft	0.017		
ft/s	2.65	0.00	
hr	0.19	0.00	= 0.19

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R=a/Pw$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V=(1.49*r^{(2/3)}*s^{(1/2)})/n$
18. Flow length, L
19. $T_t = L/3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.100	0.01	
	0.035	0.035	
ft/s	0.00	0.00	
ft	1	0	
hr	0.00	0.00	= 0.00
			hr 0.36

21.7 min

Assumed Channel Q= 0.00
(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow	
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover < 20%	0.06
Residue cover >20%	0.17
Grass:	
Short Grass Prairie	0.15
Dense Grasses (blue grass, native grass mixtures)	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:	
Light underbrush	0.40
Dense underbrush	0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

Printed on: 10/28/2015

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Time of concentration (Tc)

Project	Woodbine - Homer Glen	By	LRG	Date	9/22/2015
Location	Drainage Area 33	Checked		Date	

Sheet Flow (Applicable to Tc only)

1. Surface description (table 3-1)
2. Mannings roughness coeff., (table 3-1)
3. Flow Length, L (total L not >100 ft)
4. Two-yr 24-hr rainfall, P2
5. Land Slope, s
6. $T_t = (0.007(nL)^{0.8}) / (P2^{0.5} s^{0.4})$

Segment ID			
	U		
	0.024		
ft	100	0	
in	3.04	3.04	
ft/ft	0.039	0.01	
hr	0.03	0.00	= 0.03

Shallow Concentrated flow

7. Surface Description (paved,"P" or unpaved,"U")
8. Flow length, L
9. Watercourse slope, s
10. Average velocity V (figure 3-1)
11. $T_t = L / 3600V$

	P	U	U or P only
ft	1		
ft/ft	0.000		
ft/s	0.00	0.00	
hr	0.00	0.00	= 0.00

Channel Flow

12. Cross sectional flow area, a
13. Wetted perimeter, Pw
14. Hydraulic radius. $R = a / P_w$
15. Channel Slope, s
16. Mannings roughness coeff., n
17. $V = (1.49 * r^{2/3} * s^{1/2}) / n$
18. Flow length, L
19. $T_t = L / 3600V$
20. Watershed or subarea Tc or Tt (add Tt in steps 6, 11, and 19)

ft^2	0	0	
ft	0.0	0	
ft	0.000	0	
ft/ft	0.003	0.01	
	0.013	0.035	
ft/s	3.00	0.00	
ft	3507	0	
hr	0.32	0.00	= 0.32
			hr 0.35

Assumed Channel Q= 0.00

(should be equal to or greater than actual average Q in channel)

Table 3.1 - Roughness coefficients (Manning's n) for sheet flow

Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover < 20%	0.06
Residue cover >20%	0.17
Grass:	
Short Grass Prairie	0.15
Dense Grasses (blue grass, native grass mixtures)	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:	
Light underbrush	0.40
Dense underbrush	0.80

Note: when selecting n in woods consider cover to a height of about 0.1 ft.

Printed on: 10/28/2015

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HRG Job No: 86150239
Project: Woodbine Drainage Study
Client: Village of Homer Glen

Calc by: LRG
Check by: JO
Date: 10/27/2015

Existing North Basin - Woodbine Property

Elevation (ft)	Area (acres)	Volume (ac-ft)	Cumulative Volume	NWL
744.90	0.00	0.00	0.00	
745.00	0.70	0.02	0.02	
746.00	0.72	0.71	0.73	
747.00	2.66	1.59	2.32	
748.00	7.46	4.86	7.18	

Proposed North Basin - Woodbine Property

Elevation (ft)	Area (acres)	Volume (ac-ft)	Cumulative Volume	NWL
744.90	0.00	0.00	0.00	
745.00	1.19	0.04	0.04	
746.00	4.36	2.61	2.65	
747.00	5.86	5.09	7.74	
748.00	7.62	6.72	14.46	

Added Detention: 7.28 ac-ft

Printed on: 11/6/2015

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HRG Job No: 86150239
Project: Woodbine Drainage Study
Client: Village of Homer Glen

Calc by: LRG
Check by: JO
Date: 10/27/2015

Existing South Basin - Woodbine Property

Elevation (ft)	Area (acres)	Volume (ac-ft)	Cumulative Volume
0.00	0.00	0.00	0.00
0.00	0.70	0.00	0.00
0.00	0.72	0.00	0.00
0.00	2.66	0.00	0.00
0.00	7.46	0.00	0.00

Proposed South Basin - Woodbine Property

Elevation (ft)	Area (acres)	Volume (ac-ft)	Cumulative Volume
750.00	0.06	0.00	0.00
751.00	0.14	0.10	0.10
752.00	0.42	0.27	0.36
753.00	0.93	0.66	1.02
754.00	1.08	1.00	2.03
755.00	1.53	1.30	3.33

Added Detention: 3.33 ac-ft

Printed on: 11/6/2015

\\HRGMHNAS\Data\86150239\Design\Calc\calc-PondVolume.xls

Appendix I – EcoCAT Report

Applicant: HR Green
Contact: Charles Pugh
Address: 420 N. Front St.
Suite 100
McHenry, IL 60050

IDNR Project Number: 1603459
Date: 09/21/2015
Alternate Number: 86150239

Project: Woodbine Area Regional Drainage Improvement
Address: 14240 W 151st St, Homer Glen

Description: The Village of Homer Glen plans to transform a former golf course into a park and detention basin in order to relieve to protect nearby subdivisions from flooding.

Natural Resource Review Results

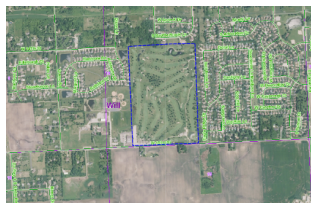
Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location.

Consultation is terminated. This consultation is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

Location

The applicant is responsible for the accuracy of the location submitted for the project.



County: Will

Township, Range, Section:
36N, 11E, 10

IL Department of Natural Resources

Contact

Keith Shank
217-785-5500
Division of Ecosystems & Environment

Government Jurisdiction

IL Environmental Protection Agency
N/A
N/A
Springfield, Illinois 62701

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

Terms of Use

By using this website, you acknowledge that you have read and agree to these terms. These terms may be revised by IDNR as necessary. If you continue to use the EcoCAT application after we post changes to these terms, it will mean that you accept such changes. If at any time you do not accept the Terms of Use, you may not continue to use the website.

1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.

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3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

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Unauthorized use, tampering with or modification of this system, including supporting hardware or software, may subject the violator to criminal and civil penalties. In the event of unauthorized intrusion, all relevant information regarding possible violation of law may be provided to law enforcement officials.

Privacy

EcoCAT generates a public record subject to disclosure under the Freedom of Information Act. Otherwise, IDNR uses the information submitted to EcoCAT solely for internal tracking purposes.

Appendix J – IHPA Sign-Off



September 21, 2015

Preservation Services Division
Illinois Historic Preservation Agency
1 Old State Capitol Plaza
Springfield, Illinois 62701-1507

Re: Woodbine Area Regional Drainage Improvement Project
Letter of No Objection

To whom it may concern,

The following information is being submitted requesting comments from a State Historic Preservation Officer regarding the proposed stormwater management improvements in Homer Glen, Illinois. Responses to the HPA's request for information are *italicized* below.

1. Names of all funding, licensing or permitting agencies, i.e., IEPA, COE, HUD, CDBG, OWR, etc.

The project requires permitting from the Illinois EPA.

2. Complete description of all elements of proposed undertaking.

The Village of Homer Glen plans to construct a detention basin in the northeast corner of the former Woodbine Gold Course and transform the remainder of the property into a park.

3. Any relevant permit, project or previous IHPA log numbers.

HR Green Project No. 86150239

4. Map clearly indicating project location, i.e., city maps, county maps, (USGS 7.5 minute topographic maps required for archaeological projects).

Please see attached map. Four total excavation pits for two portions of the project.

5. Project site plans and specifications, if applicable.

N/A. Plans and specifications are in progress.

6. Project address, i.e. street address, legal location.

14240 W 151st St, Homer Glen, IL 60491

If no structures are in the project area, please indicate so and provide the following additional information:

1. Existing site conditions, i.e., vacant lot, agricultural field (plowed, planted), pasture, etc.

The site is currently a golf course with some existing structures. Existing structures (golf course club house) will be reused by the Village.

2. Total acreage involved in project.
106 acres.

3. Documentation of any prior non-agricultural disturbance at project site (photos, soils report, etc).

See attached map. The entire site was disturbed upon creation of the golf course.

If structures will be impacted by the undertaking, please include the following additional information:

1. Current photos should be color 35mm (not photocopies), or may be digital, printed on 8½" x 11" paper no smaller than 4" x 4" each, of any standing structures within the project area.

N/A

2. Interior photos if project alters interior space and if structures are over 50 years old.

N/A

3. Possible date of original construction of structure.

N/A

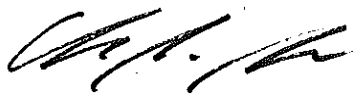
4. Any known historical information, i.e., is structure significant in the community or is it associated with an individual of significance.

N/A

Please feel free to contact us with any questions.

Sincerely,

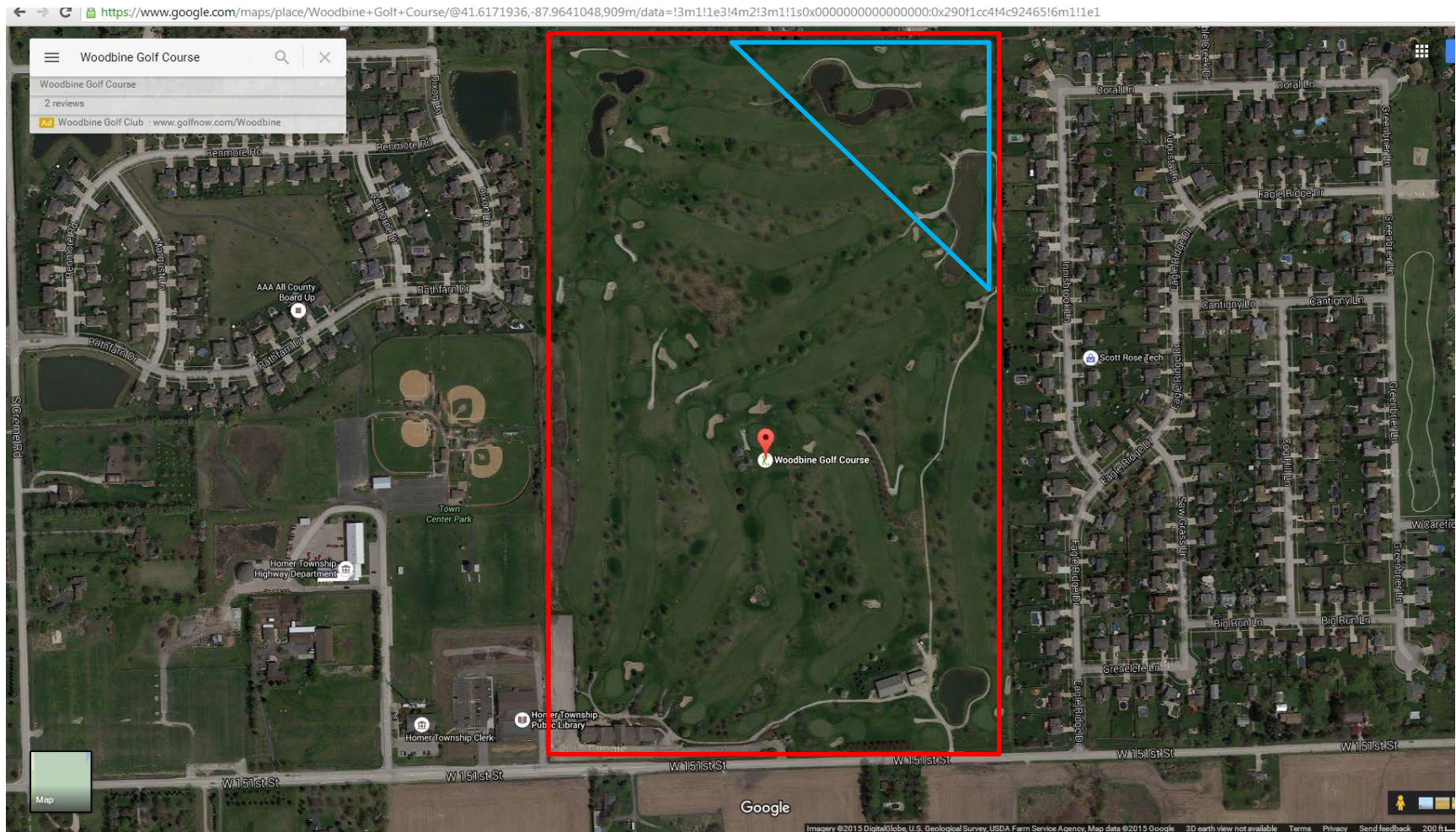
HR GREEN, INC.



Charles Pugh, EIT

A satellite map of Homer Glen, Illinois, with a red square highlighting a specific area. The map shows a grid of streets, including W 127th St, W 131st St, W 135th St, W 143rd St, W 147th St, W 151st St, W 167th St, W 179th St, and W 183rd St. Major roads like I-55 and I-80 are visible. Landmarks include Lewis University Airport, Hadley Valley Golf Course, and the Big Run Golf Club. The map also shows surrounding areas like Fairmont, Crest Hill, and Orchard Park. A search bar at the top left displays 'Homer Glen, IL' and a Google logo at the bottom center.

Project Area (red) with Proposed Detention Basin (blue).



Appendix K – NRCS Soils Report



United States
Department of
Agriculture

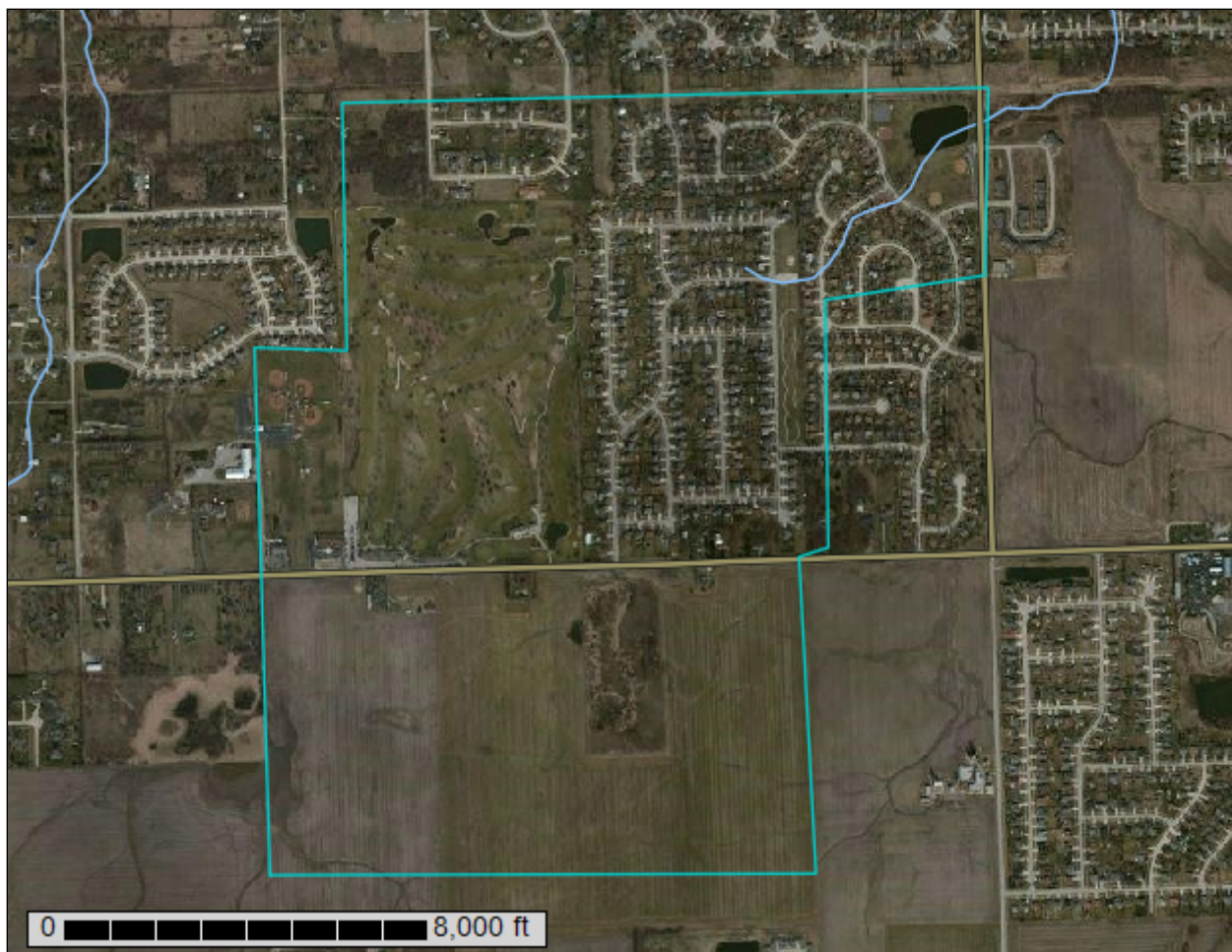
NRCS

Natural
Resources
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Service

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Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Will County, Illinois**

Homer Glen - Woodbine



September 22, 2015

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

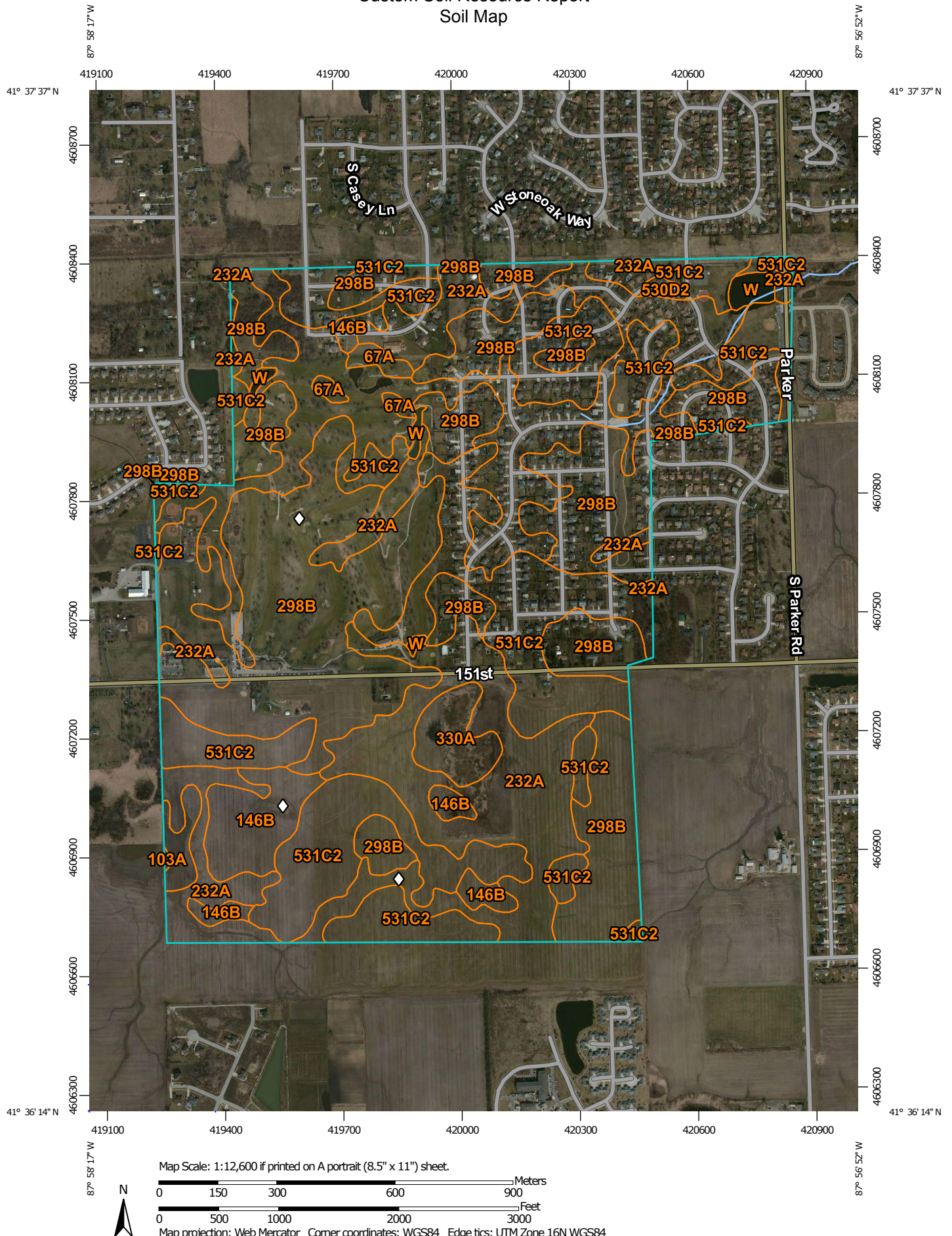
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Will County, Illinois
Survey Area Data: Version 9, Sep 13, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 13, 2012—Mar 28, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Will County, Illinois (IL197)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
67A	Harpster silty clay loam, 0 to 2 percent slopes	3.7	0.7%
103A	Houghton muck, 0 to 2 percent slopes	0.2	0.0%
146B	Elliott silt loam, 2 to 4 percent slopes	21.4	4.0%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	161.4	30.2%
298B	Beecher silt loam, 2 to 4 percent slopes	193.2	36.1%
330A	Peotone silty clay loam, 0 to 2 percent slopes	13.1	2.4%
530D2	Ozaukee silt loam, 6 to 12 percent slopes, eroded	1.3	0.2%
531C2	Markham silt loam, 4 to 6 percent slopes, eroded	137.1	25.6%
W	Water	3.9	0.7%
Totals for Area of Interest		535.3	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used.

Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Will County, Illinois

67A—Harpster silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 8t1f
Elevation: 510 to 1,020 feet
Mean annual precipitation: 28 to 40 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 140 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Harpster and similar soils: 98 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Harpster

Setting

Landform: Depressions on ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Calcareous loess over glacial drift

Typical profile

H1 - 0 to 18 inches: silty clay loam
H2 - 18 to 41 inches: silty clay loam
H3 - 41 to 56 inches: silt loam
H4 - 56 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D

Minor Components

Houghton

Percent of map unit: 1 percent
Landform: End moraines, outwash plains, depressions on ground moraines

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Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

Orthents, loamy

Percent of map unit: 1 percent
Landform: Ground moraines, lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluvium
Down-slope shape: Linear
Across-slope shape: Linear

103A—Houghton muck, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 8sxj
Elevation: 510 to 930 feet
Mean annual precipitation: 28 to 40 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 140 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Houghton and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Houghton

Setting

Landform: Depressions on ground moraines, depressions on outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material

Typical profile

Oa1 - 0 to 19 inches: muck
Oa2 - 19 to 34 inches: muck
Oa3 - 34 to 60 inches: muck

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 6.00 in/hr)
Depth to water table: About 0 to 12 inches

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Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Very high (about 23.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D

Minor Components

Ashkum

Percent of map unit: 5 percent
Landform: Ground moraines, end moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave

146B—Elliott silt loam, 2 to 4 percent slopes

Map Unit Setting

National map unit symbol: 2sss1
Elevation: 570 to 930 feet
Mean annual precipitation: 33 to 42 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 150 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Elliott and similar soils: 94 percent
Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elliott

Setting

Landform: Ground moraines, till plains
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Thin mantle of loess or other silty material over silty clay loam till

Typical profile

Ap - 0 to 9 inches: silt loam
A - 9 to 13 inches: silty clay loam
2Bt1 - 13 to 17 inches: silty clay
2Bt2 - 17 to 35 inches: silty clay loam
2Cd - 35 to 60 inches: silty clay loam

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Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: 25 to 39 inches to densic material
Natural drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D

Minor Components

Ashkum, drained

Percent of map unit: 4 percent
Landform: Ground moraines, till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave

Urban land

Percent of map unit: 1 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear

Orthents, clayey

Percent of map unit: 1 percent
Landform: Ground moraines, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear

232A—Ashkum silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2ssrw
Elevation: 520 to 930 feet

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Mean annual precipitation: 33 to 41 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 160 to 190 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Ashkum, drained, and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ashkum, Drained

Setting

Landform: Ground moraines, end moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Clayey colluvium over till

Typical profile

Ap - 0 to 12 inches: silty clay loam
Bg1 - 12 to 29 inches: silty clay
2Bg2 - 29 to 54 inches: silty clay loam
2Cg - 54 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D

Minor Components

Peotone, drained

Percent of map unit: 5 percent
Landform: Depressions on ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

Orthents, clayey

Percent of map unit: 2 percent

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Landform: Ground moraines, lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear

Urban land

Percent of map unit: 1 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear

298B—Beecher silt loam, 2 to 4 percent slopes

Map Unit Setting

National map unit symbol: nrt0
Elevation: 510 to 980 feet
Mean annual precipitation: 28 to 40 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 140 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Beecher and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Beecher

Setting

Landform: Ground moraines, end moraines
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Thin mantle of loess or other silty material and in the underlying till

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 24 inches: silty clay loam
H3 - 24 to 36 inches: silty clay loam
H4 - 36 to 60 inches: silty clay loam

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: 24 to 45 inches to densic material
Natural drainage class: Somewhat poorly drained
Runoff class: High

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 6 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 35 percent

Available water storage in profile: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C/D

Minor Components

Ashkum

Percent of map unit: 4 percent

Landform: Ground moraines, end moraines

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Concave

Orthents, clayey

Percent of map unit: 3 percent

Landform: Ground moraines, lake plains

Landform position (two-dimensional): Summit, backslope

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Convex

Urban land

Percent of map unit: 3 percent

Down-slope shape: Linear

Across-slope shape: Linear

330A—Peotone silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 8t10

Elevation: 510 to 1,020 feet

Mean annual precipitation: 28 to 40 inches

Mean annual air temperature: 45 to 54 degrees F

Frost-free period: 140 to 180 days

Farmland classification: Prime farmland if drained

Map Unit Composition

Peotone and similar soils: 94 percent

Minor components: 6 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peotone

Setting

Landform: Depressions on ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Colluvium

Typical profile

H1 - 0 to 13 inches: silty clay loam
H2 - 13 to 50 inches: silty clay
H3 - 50 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D

Minor Components

Houghton

Percent of map unit: 2 percent
Landform: Ground moraines, end moraines, outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

Orthents, clayey

Percent of map unit: 2 percent
Landform: Ground moraines, lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluvium
Down-slope shape: Linear
Across-slope shape: Linear

Urban land

Percent of map unit: 2 percent
Down-slope shape: Linear
Across-slope shape: Linear

530D2—Ozaukee silt loam, 6 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: 8t26

Elevation: 510 to 980 feet

Mean annual precipitation: 28 to 40 inches

Mean annual air temperature: 45 to 54 degrees F

Frost-free period: 140 to 180 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Ozaukee and similar soils: 92 percent

Minor components: 8 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ozaukee

Setting

Landform: Till plains

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Loess and/or till

Typical profile

H1 - 0 to 6 inches: silt loam

H2 - 6 to 20 inches: silty clay loam

H3 - 20 to 28 inches: silty clay loam

H4 - 28 to 60 inches: silty clay loam

Properties and qualities

Slope: 6 to 12 percent

Depth to restrictive feature: 20 to 45 inches to densic material

Natural drainage class: Moderately well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 24 to 42 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 40 percent

Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Minor Components

Blount

Percent of map unit: 4 percent

Landform: Ground moraines, end moraines

Landform position (two-dimensional): Summit, footslope

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Linear

Orthents, clayey

Percent of map unit: 2 percent

Landform: Ground moraines, lake plains

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Urban land

Percent of map unit: 2 percent

Down-slope shape: Linear

Across-slope shape: Linear

531C2—Markham silt loam, 4 to 6 percent slopes, eroded

Map Unit Setting

National map unit symbol: 8t16

Elevation: 510 to 980 feet

Mean annual precipitation: 28 to 40 inches

Mean annual air temperature: 45 to 54 degrees F

Frost-free period: 140 to 180 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Markham, eroded, and similar soils: 96 percent

Minor components: 4 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Markham, Eroded

Setting

Landform: Ground moraines, end moraines

Landform position (two-dimensional): Backslope, shoulder

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Thin mantle of loess or other silty material and in the underlying till

Typical profile

H1 - 0 to 8 inches: silt loam

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H2 - 8 to 20 inches: silty clay loam
H3 - 20 to 29 inches: silty clay loam
H4 - 29 to 60 inches: silty clay loam

Properties and qualities

Slope: 4 to 6 percent
Depth to restrictive feature: 20 to 55 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Minor Components

Orthents, clayey

Percent of map unit: 2 percent
Landform: Ground moraines, lake plains
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluvium
Down-slope shape: Convex
Across-slope shape: Convex

Urban land

Percent of map unit: 2 percent
Down-slope shape: Linear
Across-slope shape: Linear

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Landform: Perennial streams, rivers, drainageways, lakes, oxbows, channels

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group (Homer Glen - Woodbine)

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

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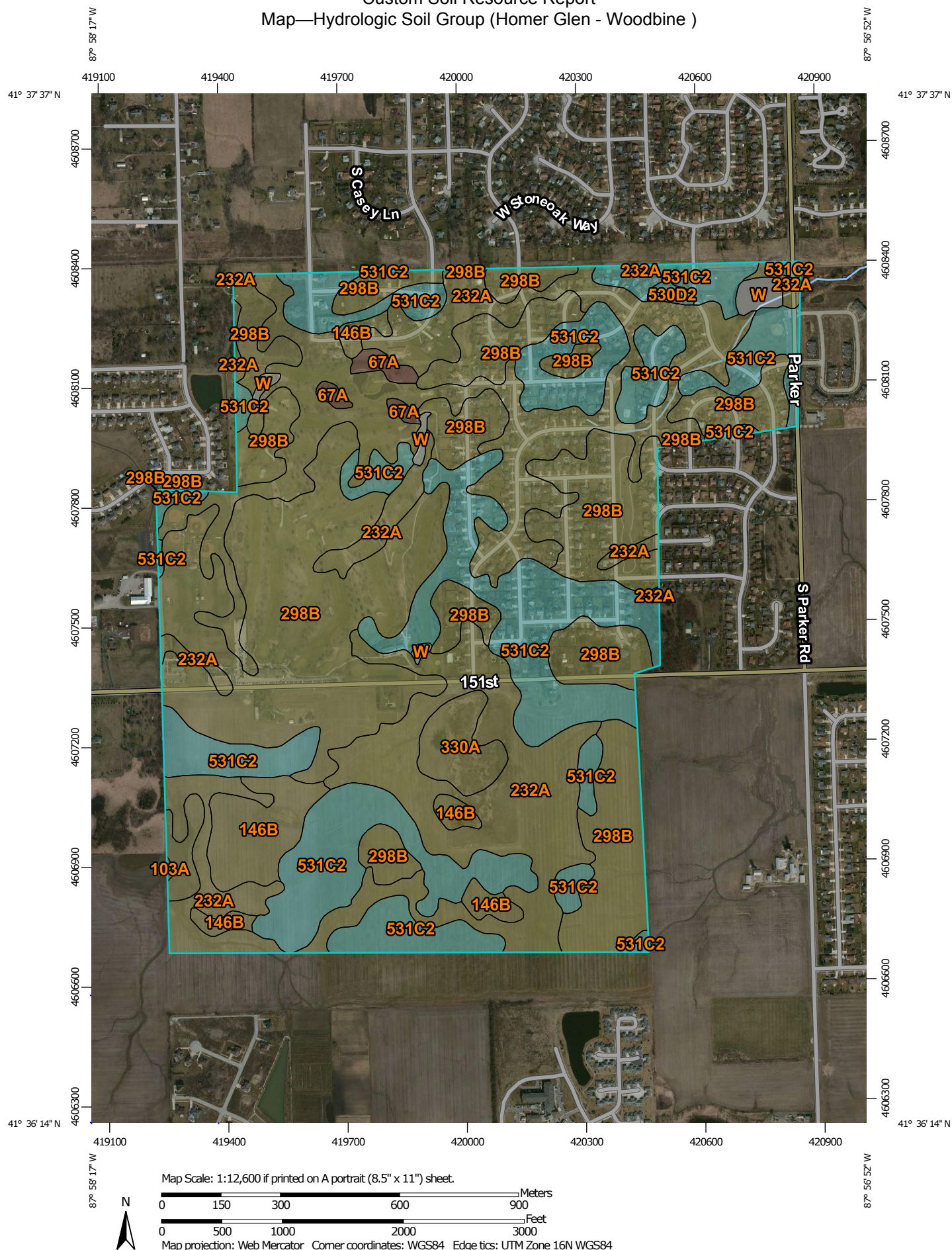
Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

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Map—Hydrologic Soil Group (Homer Glen - Woodbine)



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Will County, Illinois
 Survey Area Data: Version 9, Sep 13, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 13, 2012—Mar 28, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group (Homer Glen - Woodbine)

Hydrologic Soil Group— Summary by Map Unit — Will County, Illinois (IL197)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
67A	Harpster silty clay loam, 0 to 2 percent slopes	B/D	3.7	0.7%
103A	Houghton muck, 0 to 2 percent slopes	A/D	0.2	0.0%
146B	Elliott silt loam, 2 to 4 percent slopes	C/D	21.4	4.0%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	C/D	161.4	30.2%
298B	Beecher silt loam, 2 to 4 percent slopes	C/D	193.2	36.1%
330A	Peotone silty clay loam, 0 to 2 percent slopes	C/D	13.1	2.4%
530D2	Ozaukee silt loam, 6 to 12 percent slopes, eroded	C	1.3	0.2%
531C2	Markham silt loam, 4 to 6 percent slopes, eroded	C	137.1	25.6%
W	Water		3.9	0.7%
Totals for Area of Interest			535.3	100.0%

Rating Options—Hydrologic Soil Group (Homer Glen - Woodbine)

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more

Custom Soil Resource Report

than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

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Appendix L – Meeting Minutes

Meeting Notes

Subject:	Project Update Meeting		
Project:	Engineering Services for Woodbine Area Regional Drainage Improvement Project Plan		
Project Number:	86150239	Meeting Date:	10/06/2015
Meeting Location:	Homer Glen – Village Hall – 14915 S. Founders Crossing		
Notes by:	Jarod Oliver		

Attendees:

Mike Salamowicz	Village of Homer Glen
	Village of Homer Glen
Dale Hostert	Homer Township Road District
Akram Chaudhry	HR Green (HRG)
Logan Gilbertsen	HRG
Jarod Oliver	HRG

An agenda was distributed to all participants. A copy of the agenda is attached to these minutes. The meeting notes below follows the agenda items. **The meeting notes are provided under each of the agenda item in bold text.**

1. Project Update

Jarod Oliver provided the following updates.

- Scope Items
 - i. Preliminary Information Gathering
 - IDNR EcoCAT and IHPA completed
 - Resident Questionnaire – Provided to Village on September 1st
The Village provided a flash drive containing the questionnaire responses received to date (approximately 150). The Village is still processing a few questionnaires that were just received and those that contained pictures. The Village will forward these to HR Green. HR Green will create a GIS map of questionnaire responses.
 - ii. Detailed Topographic Survey
 - Initial survey pickups to aid in the creation of the existing conditions model have been completed.
 - Detailed topographic survey of 14240 W. 151st Street (Woodbine Golf Course) scheduled for October 19th through 30th (This survey required for completion of other project tasks)
The Village stated that if HR Green surveyors need vehicle access to the golf course property to notify them and they would coordinate access.
 - iii. Study and Report Phase
 - Existing Conditions Hydrologic and Hydraulic (H&H) Modeling – Model has been created. A few items need to be field verified to finalize existing conditions model. Resident questionnaire

Meeting Notes

responses and model will be utilized to develop a list of drainage issues.

- Proposed Conditions H&H Modeling – Scheduled to begin this week (Oct. 9th).
- Preliminary Plan – Scheduled to be completed by October 20th.
- Engineer's Estimate of Probable Construction Cost – Scheduled to be completed by October 27th.
- Final Report – Scheduled to be submitted on or before November 20th.

- Findings to date

Logan Gilbertsen provided the below summary of findings to date.

- i. Watershed delineation

- Provide watershed delineation map
 - To begin the modeling the watershed was delineated.
 - It was determined that Woodbine West and Stadtler Ridge do not fall within the same watershed as the other subdivisions within project limits or the Woodbine Golf Course property.
 - Woodbine West and Stadtler Ridge do not naturally flow towards Woodbine Golf Course and therefore would not benefit from a regional basin at the northeast corner of the property.
 - Focus of the modeling is on the areas that would benefit from a regional detention basin on the golf course.

Mike Salamowicz stated that even though Woodbine West and Stadtler Ridge are not within the same watershed as the other subdivisions and would not benefit from a regional basin options need to be developed to address flooding within these subdivisions as part of this contract.

- ii. Preliminary findings based on existing conditions model

- Provide 10-, 25- & 50-yr inundation maps
 - Based on the existing conditions model drainage issues have been identified along Eagle Ridge Drive and Cantigny Lane as well as in residential rear yards along Innisbrook Lane. There also appears to be ponding in the park just east of Greenbrier Lane.
 - Initial feedback from questionnaire? Do responses correspond with what model is showing?

The Village stated that the questionnaire responses do generally confirm what the existing inundation maps show.

- Any areas that the Village has knowledge of flooding that are not shown on the inundation maps?

The Village and Dale Hostert noted that in addition to flooding shown on provided inundation maps there are also flooding issues along Eagle Ridge Drive from Grenelefe Lane to 151st Street. Additionally, flooding is experienced along Arboretum Drive in the Pebble Creek subdivision.

Dale Hostert stated that debris clogging inlets has been an issue near Eagle Ridge Drive and 151st Street.

Meeting Notes

- Initial thoughts on improvements to address drainage issues
 - i. Regional basin on Woodbine Golf Course
HR Green stated that a regional basin at the north east corner of the Woodbine Golf Course property could collect flows from the golf course, attenuate their peak discharge and provided benefits to Woodbine East and Pebble Creek subdivisions.
 - ii. Address storm sewer within Woodbine East subdivision
HR Green noted that the storm sewer within Edmond J. Sendra Park which connects Woodbine East and Pebble Creek Subdivisions is back pitched likely contributing to flooding issues within Woodbine East. Correcting this issue and installing a storm sewer with a positive slope will likely alleviate some of the flooding issues within Woodbine East.
 - iii. Additional storage in park east of Woodbine East subdivision
HR Green noted that adding additional storate in Edmond J. Sendra Park may provide flood reductions.
The Village noted that they do not own this park. It is actually owned by the township. Creating a detention basin here would likely be difficult and costly due to existing park facilities that would have to be removed or relocated – playground, parking lot, walking path, etc.
 - iv. Route flows from south side of 151st Street through proposed regional basin
HR Green noted that routing flows from the south side of 151st Street through proposed regional basin may provide some benefits. HR Green however noted this may not be feasible due to existing topography and the distance this storm water would need to be conveyed. This will be investigated further by HR Green.

All of the above improvements will be investigated further and modeled to determine their viability as proposed improvements the Village should consider.

- Concerns for future improvements
 - i. Crossing near Eagle Ridge and 151st Street
HR Green stated that the depressional area south of 151st Street near Eagle Ridge Drive is a natural detention area and that future improvements should not increase the size of the culvert convey flows from this area to the north side of 151st Street. This type of improvemtn would lead to additional flooding issues in the Woodbine East subdivision.

Dale Hoster stated that this area was set aside by a local farmer a number of years ago. Dale also noted that storm water has not overtopped 151st at this location.

2. Next Steps

- Complete topographic survey
- Compile questionnaire responses and create GIS map of responses

Meeting Notes

- Complete field verifications to finalize existing conditions model
- Create proposed plan and H&H model
- Schedule update meeting with Village on October 19th and 20th to discuss preliminary plan and draft of final report
Next update meeting will be held at Village Hall on October 20th at 11:00 AM
- Schedule public information meeting on October 28th or 29th
The public information meeting was tentatively planned for October 29th from 4:00 PM to 7:00 PM. Location to be determined.

Akram Chaudhry suggested trying to combine the public information meeting with presentation to board this same night. The Village will look into this but doesn't know if it will be possible.

MEETING AGENDA

Project: Engineering Service for Woodbine Area Regional Drainage Improvement Project Plan

Project Number: 86150239

Meeting Location: Homer Glen - Village Hall - 14915 S. Founders Crossing

Meeting Date/Time: Tuesday, October 6, 2015 at 2:00 PM

1. Project Update

- Scope Items
 - i. Preliminary Information Gathering
 - IDNR EcoCAT and IHPA completed
 - Resident Questionnaire – Provided to Village on September 1st
 - ii. Detailed Topographic Survey
 - Initial survey pickups to aid in the creation of the existing conditions model have been completed.
 - Detailed topographic survey of 14240 W. 151st Street (Woodbine Golf Course) scheduled for October 19th through 30th (This survey required for completion of other project tasks)
 - iii. Study and Report Phase
 - Existing Conditions Hydrologic and Hydraulic (H&H) Modeling – Model has been created. A few items need to be field verified to finalize existing conditions model. Resident questionnaire responses and model will be utilized to develop a list of drainage issues.
 - Proposed Conditions H&H Modeling – Scheduled to begin this week (Oct. 9th).
 - Preliminary Plan – Scheduled to be completed by October 20th.
 - Engineer's Estimate of Probable Construction Cost – Scheduled to be completed by October 27th.
 - Final Report – Scheduled to be submitted on or before November 20th.
- Findings to date
 - i. Watershed delineation
 - Provide watershed delineation map
 - To begin the modeling the watershed was delineated.
 - It was determined that Woodbine West and Stadtler Ridge do not fall within the same watershed as the other subdivisions within project limits or the Woodbine Golf Course property.
 - Woodbine West and Stadtler Ridge do not naturally flow towards Woodbine Golf Course and therefore would not benefit from a regional basin at the northeast corner of the property.
 - Focus of the modeling is on the areas that would benefit from a regional detention basin on the golf course.
 - ii. Preliminary findings based on existing conditions model
 - Provide 10-, 25- & 50-yr inundation maps

- - Based on the existing conditions model drainage issues have been identified along Eagle Ridge Drive and Cantigny Lane as well as in residential rear yards along Innisbrook Lane. There also appears to be ponding in the park just east of Greenbrier Lane.
 - Initial feedback from questionnaire? Do responses correspond with what model is showing?
 - Any areas that the Village has knowledge of flooding that are not shown on the inundation maps?
- Initial thoughts on improvements to address drainage issues
 - i. Regional basin on Woodbine Golf Course
 - ii. Address storm sewer within Woodbine East subdivision
 - iii. Additional storage in park east of Woodbine East subdivision
 - iv. Route flows from south side of 151st Street through proposed regional basin
 - Concerns for future improvements
 - i. Crossing near Eagle Ridge and 151st Street

2. Next Steps

- Complete topographic survey
- Compile questionnaire responses and create GIS map of responses
- Complete field verifications to finalize existing conditions model
- Create proposed plan and H&H model
- Schedule update meeting with Village on October 19th and 20th to discuss preliminary plan and draft of final report
- Schedule public information meeting on October 28th or 29th

Meeting Notes

Subject:	Project Update Meeting		
Project:	Engineering Services for Woodbine Area Regional Drainage Improvement Project Plan		
Project Number:	86150239	Meeting Date:	10/20/2015
Meeting Location:	Homer Glen – Village Hall – 14915 S. Founders Crossing		
Notes by:	Logan Gilbertsen		

Attendees:

Mike Salamowicz	Village of Homer Glen (VOHG)
Jim Walkowski	VOHG
Sean Keane	VOHG
Dale Hostert	Homer Township Road District
Akram Chaudhry	HR Green (HRG)
Logan Gilbertsen	HRG

An agenda was distributed to all participants. A copy of the agenda is attached to these minutes. The meeting notes below follows the agenda items. **The meeting notes are provided under each of the agenda item in bold text.**

1. Project Update
 - Scope Items
 - i. Preliminary Information Gathering
 - Resident Questionnaire
 - a. Questionnaire Response Exhibit – **All agreed that this exhibit will be useful at the public meeting**
 - b. Questionnaire Response/Elevation Exhibit
 - c. Questionnaire Response/50-yr inundation Exhibit – **VOHG noted that this is good information but should not be discussed at the public meeting. This exhibit will be kept on the side if a specific need for it arises.**
 - ii. Detailed Topographic Survey
 - Detailed topographic survey of 14240 W. 151st Street – Will begin this week - Wednesday, Thursday or Friday
 - Crews intend to use ATV – Site access coordination
The Village provided the combination for the lock to access the property.
 - iii. Study and Report Phase
 - Existing Conditions Hydrologic and Hydraulic (H&H) Modeling – Updated 50-yr inundation map
 - Proposed Conditions H&H Modeling – Ongoing
 - Preliminary Plan – Scheduled to be completed by October 20th.
 - Engineer's Estimate of Probable Construction Cost – Scheduled to be completed by October 27th.
 - Final Report – Scheduled to be submitted on or before November 20th.

Meeting Notes

2. Draft Report

- Outline format
- Woodbine Options - Proposed
 - i. Phased Approach
 - Phase 1: Storm sewer fix
 - Phase 2: Add detention to the Woodbine property
 - a. **The Village expressed interest in expanding the permanent wet ponds to create a larger amenity for the Park.**
 - b. **Potential to stock with fish**
 - c. **HRG discussed that this would not necessarily help with flood control but the ponds could be expanded during construction of a naturalized detention pond.**
 - d. **HRG discussed that for a pond to maintain a healthy ecosystem it should be approximately 9' deep or have some sort of mechanical mixing. This will be discussed in the report.**
 - Phase 3: Increase the size and depth of the storm sewer system
 - a. **The Village requested some more modeling be done to determine if the backflow preventer in Sendra Park is necessary.**
 - b. **HTRD expressed concern about how the Culver Park detention pond will respond to this change. HRG will model the basin and report back.**
 - i. Other Locations
 - i. Survey responses will be used to focus modeling outside of the Woodbine subdivision
 - **Woodbine West was discussed in detail. It was determined that the primary issue in the area related to an existing 12" drain tile. HTRD sketched a potential fix on the exhibits provided at the meeting.**
 - **Stadtler Ridge was discussed for its drainage issues. HTRD was very familiar with the drainage patterns and provided some ideas for a potential storm sewer system that could help alleviate the drainage issues.**

3. Next Steps

- Complete topographic survey of Woodbine Golf Course – *On Track*.
- Complete modeling of locations in Woodbine West, Stadtler Ridge and Saddle Brook – *Proposed improvements will be discussed in the report.*
- Complete draft report for Village review – *On Track*
- Schedule public information meeting for October 29th from 4:00 to 7:00 PM.

MEETING AGENDA

Project: Engineering Service for Woodbine Area Regional Drainage Improvement Project Plan

Project Number: 86150239

Meeting Location: Homer Glen - Village Hall - 14915 S. Founders Crossing

Meeting Date/Time: Tuesday, October 20, 2015 at 11:00 AM

1. Project Update

- Scope Items
 - i. Preliminary Information Gathering
 - Resident Questionnaire
 - a. Questionnaire Response Exhibit
 - b. Questionnaire Response/Elevation Exhibit
 - c. Questionnaire Response/50-yr inundation Exhibit
 - ii. Detailed Topographic Survey
 - Detailed topographic survey of 14240 W. 151st Street – Will begin this week - Wednesday, Thursday or Friday
 - Crews intend to use ATV – Site access coordination
 - iii. Study and Report Phase
 - Existing Conditions Hydrologic and Hydraulic (H&H) Modeling – Updated 50-yr inundation map
 - Proposed Conditions H&H Modeling – Ongoing
 - Preliminary Plan – Scheduled to be completed by October 20th.
 - Engineer's Estimate of Probable Construction Cost – Scheduled to be completed by October 27th.
 - Final Report – Scheduled to be submitted on or before November 20th.

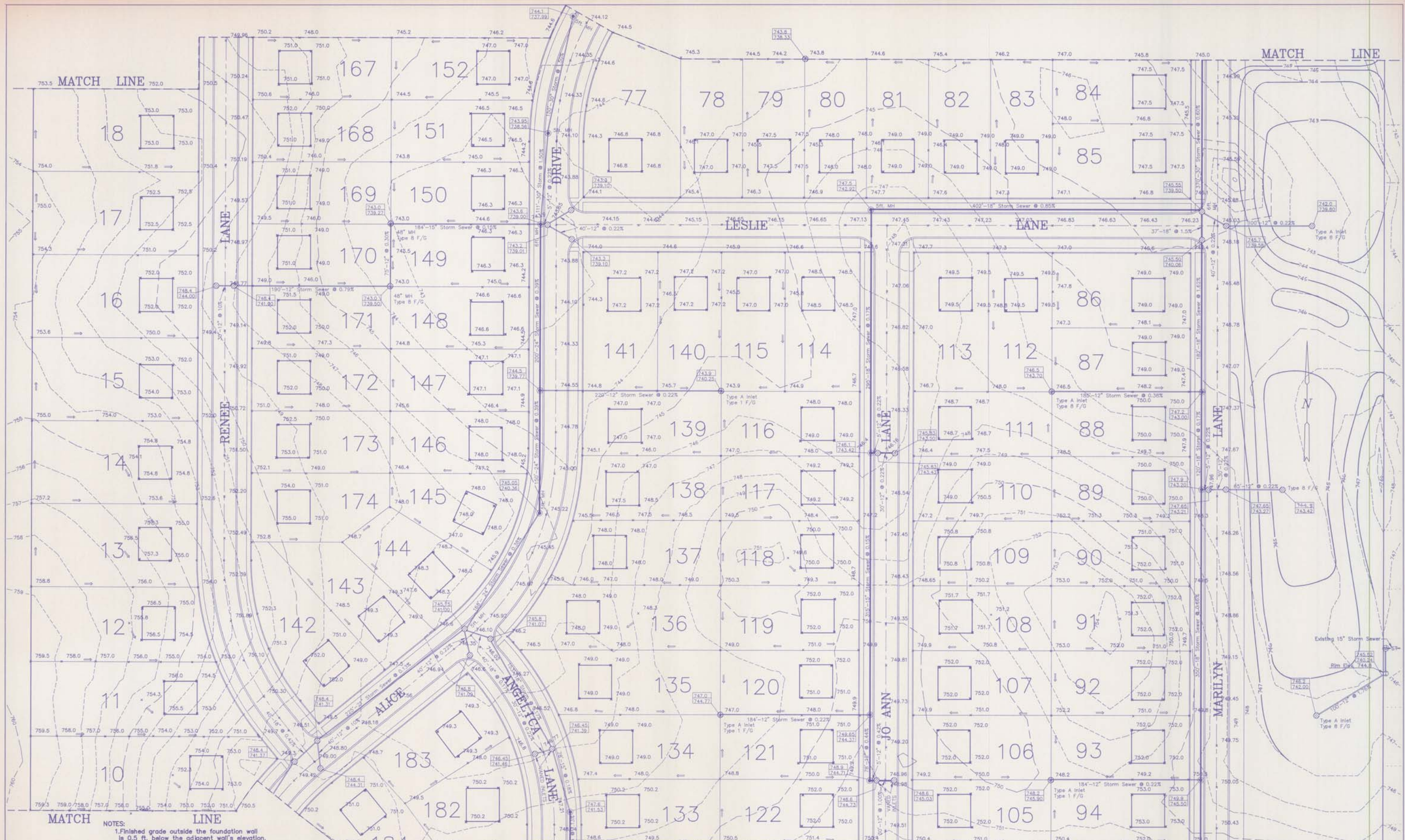
2. Draft Report

- Outline format
- Woodbine Options - Proposed
 - i. Phased Approach
 - Phase 1: Storm sewer fix
 - Phase 2: Add detention to the Woodbine property
 - Phase 3: Increase the size and depth of the storm sewer system
- Other Locations
 - i. Survey responses will be used to focus modeling outside of the Woodbine subdivision

3. Next Steps

- Complete topographic survey of Woodbine Golf Course
- Complete modeling of locations in Woodbine West, Statler Ridge and Saddle Brook
- Complete draft report for Village review
- Schedule public information meeting for October 29th

Appendix M – Select Original Design Plans



NOTES:
1. Finished grade outside the foundation wall is 0.5 ft. below the adjacent wall's elevation.
2. Foundation elevations are generally to be "stepped" in accordance with this grading plan, with the approval of the County Building Department.

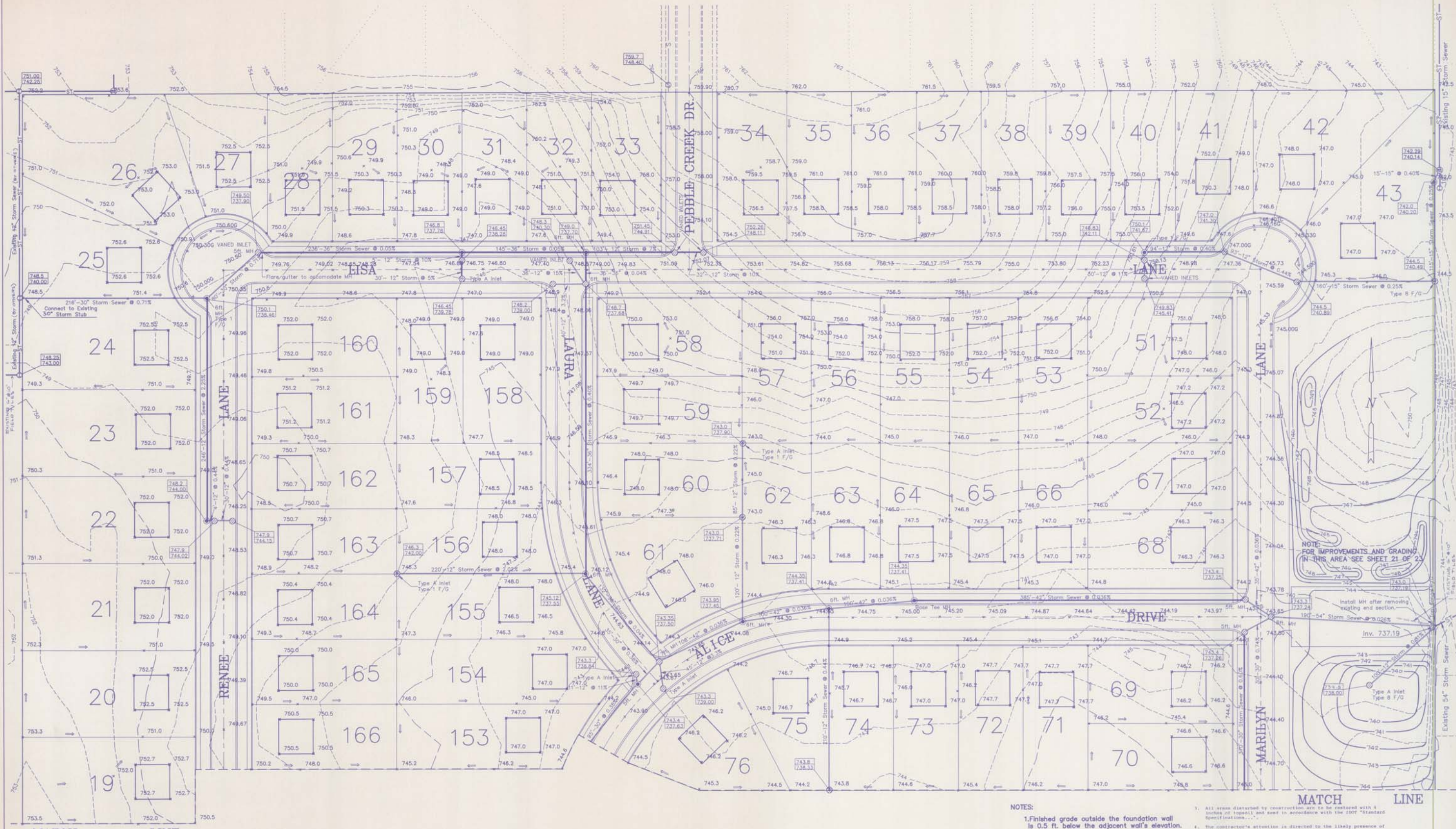
3. All areas disturbed by construction are to be restored with 4 inches of topsoil and seed in accordance with the 100% Standard Specifications...
4. The contractor's attention is directed to the likely presence of field tile in the following locations:
(a) A 10 or 12 inch tile flowing northwest from 151st Street that roughly parallels the right-of-way of Alice Drive.
(b) A 9 inch and 12 inch tile flowing generally eastward from the Woodline Golf Course near Lot 21 to the existing termination of the (existing) 14 inch storm sewer.
It is likely that these tiles will be encountered during construction along Laura Lane (near Station 3+00) and Alice Drive (near Station 1+00). Wherever encountered, these tiles must be connected to the storm sewer proposed as part of this development.



Joseph A. Schudt & Associates
19350 South Harlem Avenue, Frankfort, Illinois 60423
Civil Engineers Surveyors Land Planners
Phone (708) 720-1000 FAX (708) 720-1065

PAULNITA'S SUBDIVISION
Storm Sewer & Grading (Center)

DATE: 11-6-90
SCALE: 1"=50'
DRAWN: CAD
DESIGN: MJC
CHECK: MJC
Rev: 11-14-90
Sheet
18 OF 23
Job No.:
86-83



NOTES:

1. Finished grade outside the foundation wall is 0.5 ft. below the adjacent wall's elevation.
2. Foundation elevations are generally to be "stepped" in accordance with this grading plan, with the approval of the County Building Department.
3. All areas disturbed by construction are to be restored with 4 inches of topsoil and seed in accordance with the IDOT "Standard Specifications..."
4. The contractor's attention is directed to the likely presence of field tile in the following locations:
 - (a) A 10 or 12 inch tile flowing northwest from 151st Street that roughly parallels the right-of-way of Alice Drive.
 - (b) An 8 inch and 12 inch tile flowing generally westward from the Woodbine Golf Course near lot 23 to the existing termination of the (existing) 54 inch slope sewer.

It is likely that these tiles will be encountered during construction along Laura Lane (near station 3+80) and Alice Drive (east of Laura Lane). Wherever encountered, these tiles must be connected to the storm sewer proposed as part of this development.

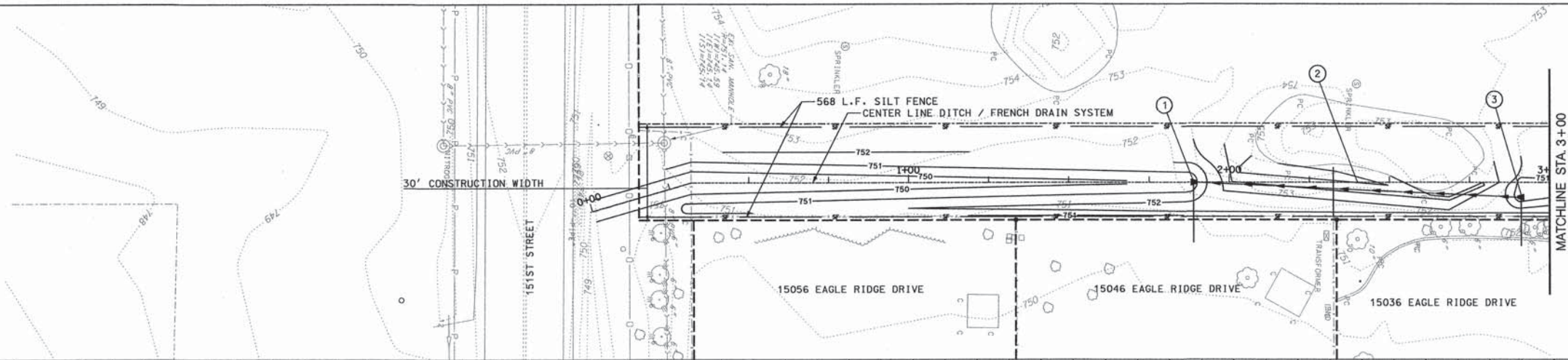
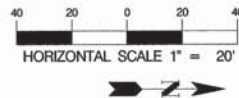


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19350 South Harlem Avenue, Frankfort, Illinois 60423
Civil Engineers Surveyors Land Planners
Phone: (708) 720-1000 FAX: (708) 720-1065

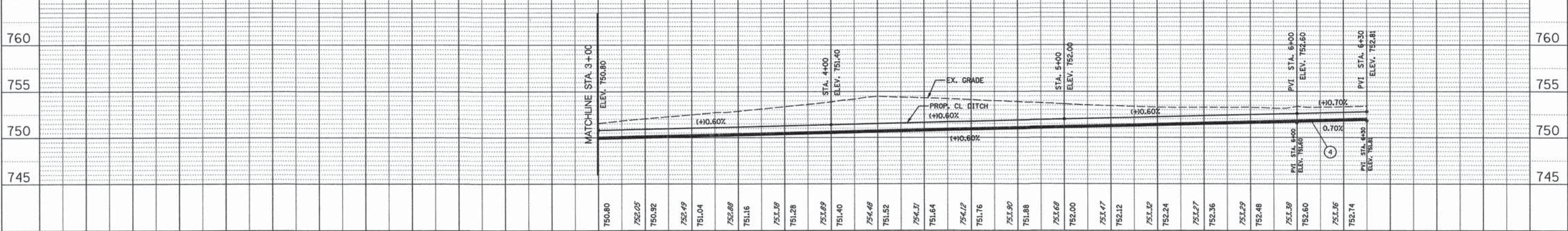
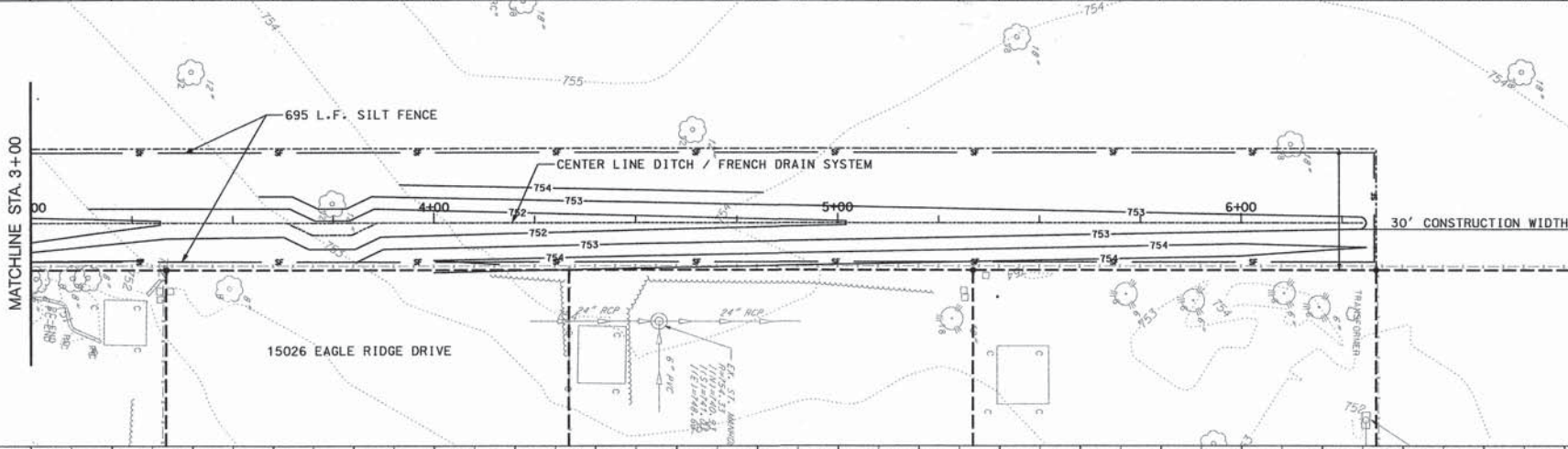
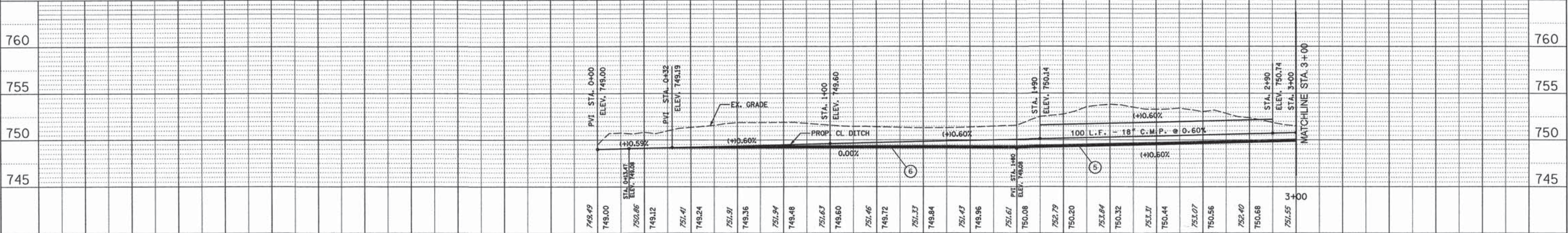
PAULNITA'S SUBDIVISION
Storm SEWER & Grading (North)

DATE: 11-6-90	REV: 11-14-90
SCALE: 1"=50'	
DRAWN: CAD	
DESIGN: MJC	
CHECK: MJC	
DATE: 05-25-95	

Sheet
19 of 23
Job No.:
86-83



SCHEDULE OF UNDER GROUND IMPROVEMENTS	
1.	18" C.M.P. FLARED END SECTION STA. 1+90 INV. = 750.14
2.	100 L.F. - 18" C.M.P., CL IV @ 0.60%
3.	18" C.M.P. FLARED END SECTION STA. 2+90 INV. = 750.74
4.	30 L.F. - 4" FRENCH DRAIN @ 0.70%
5.	420 L.F. - 4" FRENCH DRAIN @ 0.60%
6.	165 L.F. - 4" FRENCH DRAIN @ 0.00%



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	CHECKED			APPROVED			

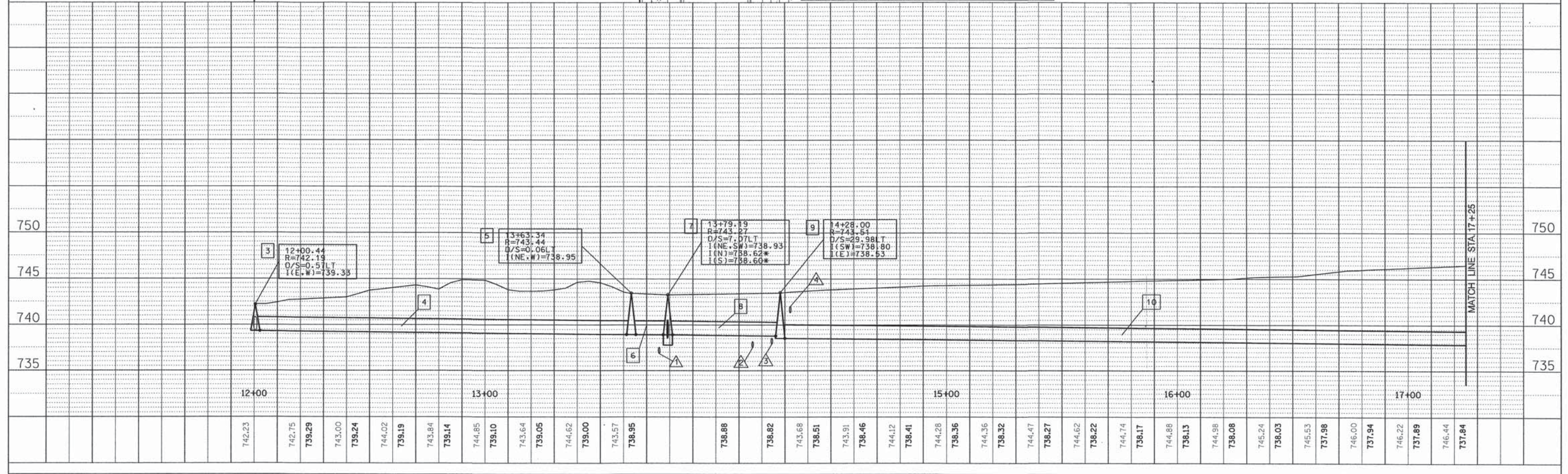
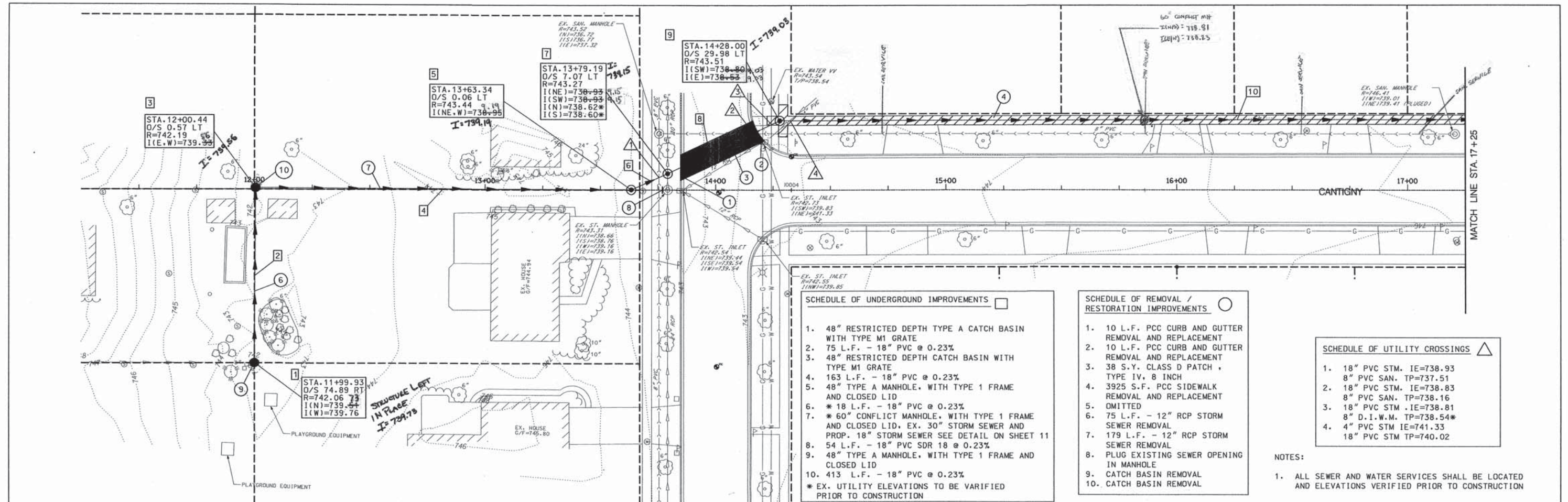
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TEL: (847) 840-0000
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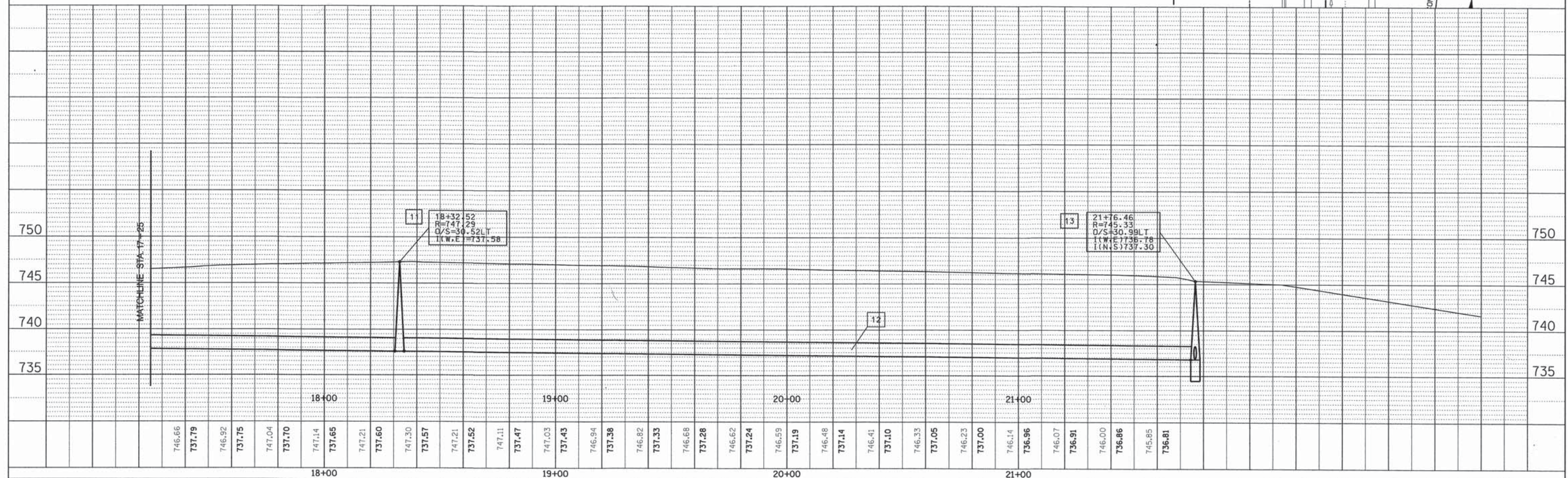
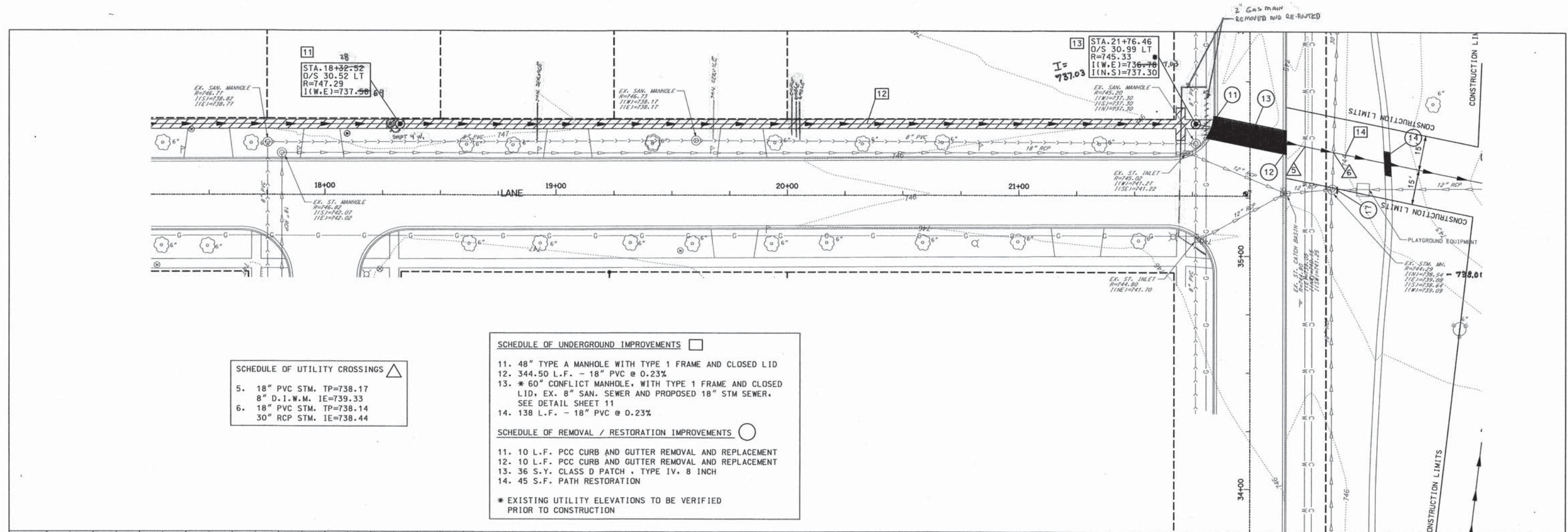
NO.	PER PLAN REVIEW LETTER	DATE

VILLAGE OF HOMER GLEN
WOODBINE SUBDIVISION STORM WATER
MFT SECTION 07-00010-00-SS

NORTH 151ST STREET BERM

DATE 06-8-07
PROJECT NO. 06971





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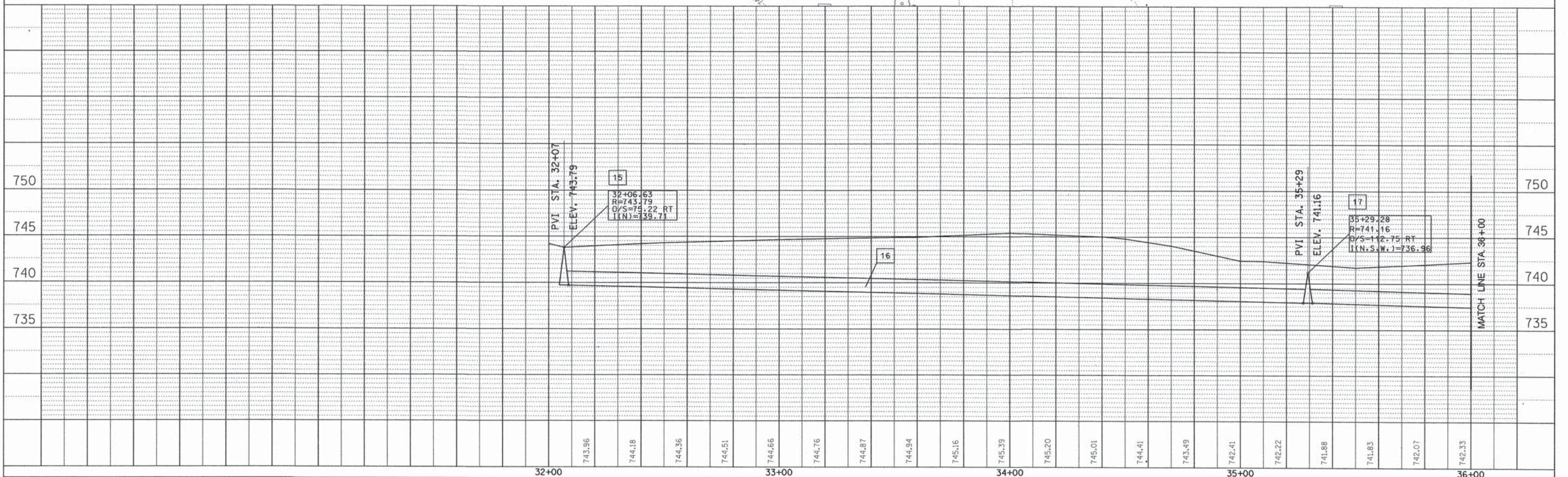
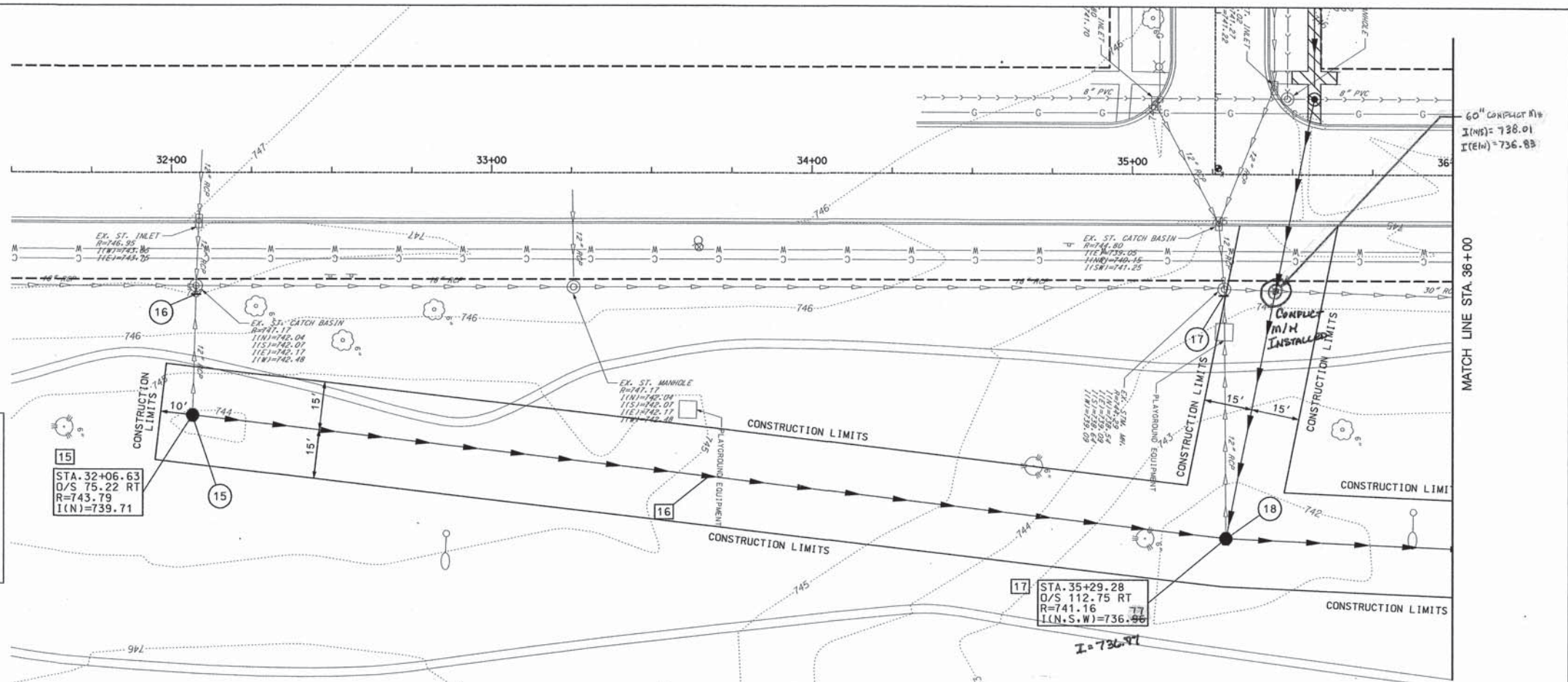
VILLAGE OF HOMER GLEN
WOODBINE SUBDIVISION STORM WATER
MFT SECTION 07-0010-00-SS

PLAN AND PROFILE
CANTIGNY STORM SEWER IMPROVEMENTS

DATE 06-8-07
PROJECT NO. 06971
6 OF 12

- SCHEDULE OF UNDERGROUND IMPROVEMENTS**
- 15. 24" RESTRICTED DEPTH CATCH BASIN TYPE C WITH TYPE M1 GRATE
 - 16. 325 L.F. - 12" PVC @ 1.00%
 - 17. 60" DIA CATCH BASIN TYPE A WITH TYPE M1 GRATE
- SCHEDULE OF REMOVAL / RESTORATION IMPORVEMENTS**
- 15. INLET REMOVAL
 - 16. PLUG EX. SEWER OPENING IN MANHOLE
 - 17. PLUG EX. SEWER OPENING IN MANHOLE
 - 18. INLET REMOVAL

NOTES:
1. ALL AREAS DISTURBED OUTSIDE OF THE CONSTRUCTION LIMITS SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT THE CONTRACTORS EXPENSE.



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	CHECKED			APPROVED			

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VILLAGE OF HOMER GLEN
WOODBINE SUBDIVISION STORM WATER
MFT SECTION 07-00010-00-SS

PLAN AND PROFILE - SENDRE PARK
STORM SEWER IMPROVEMENTS

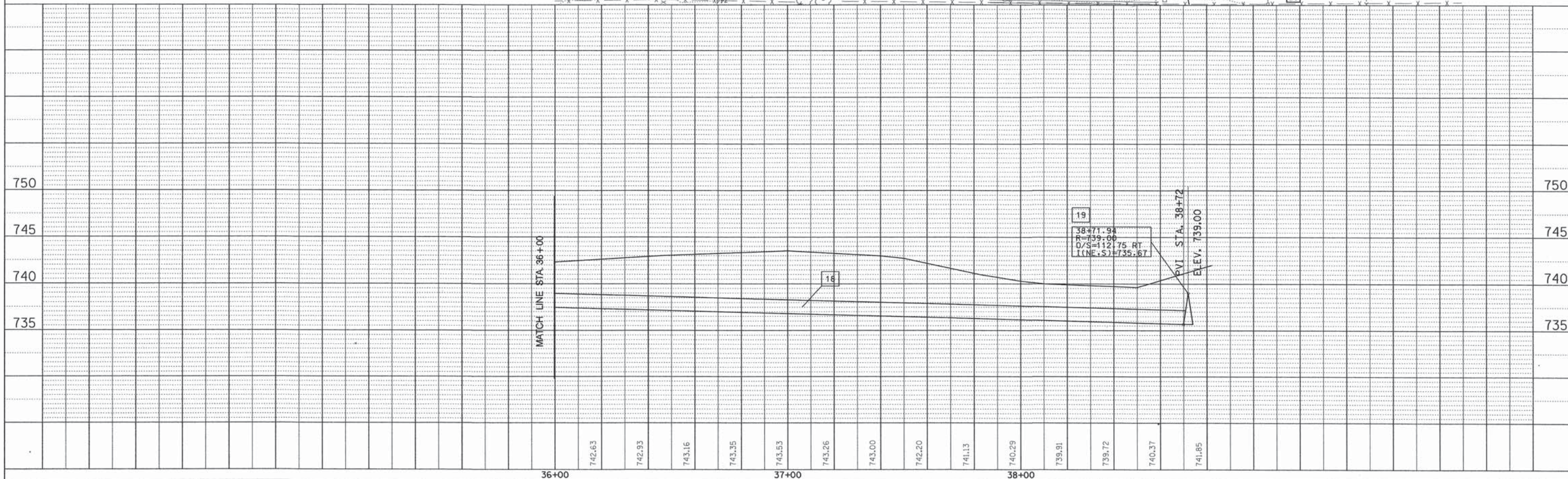
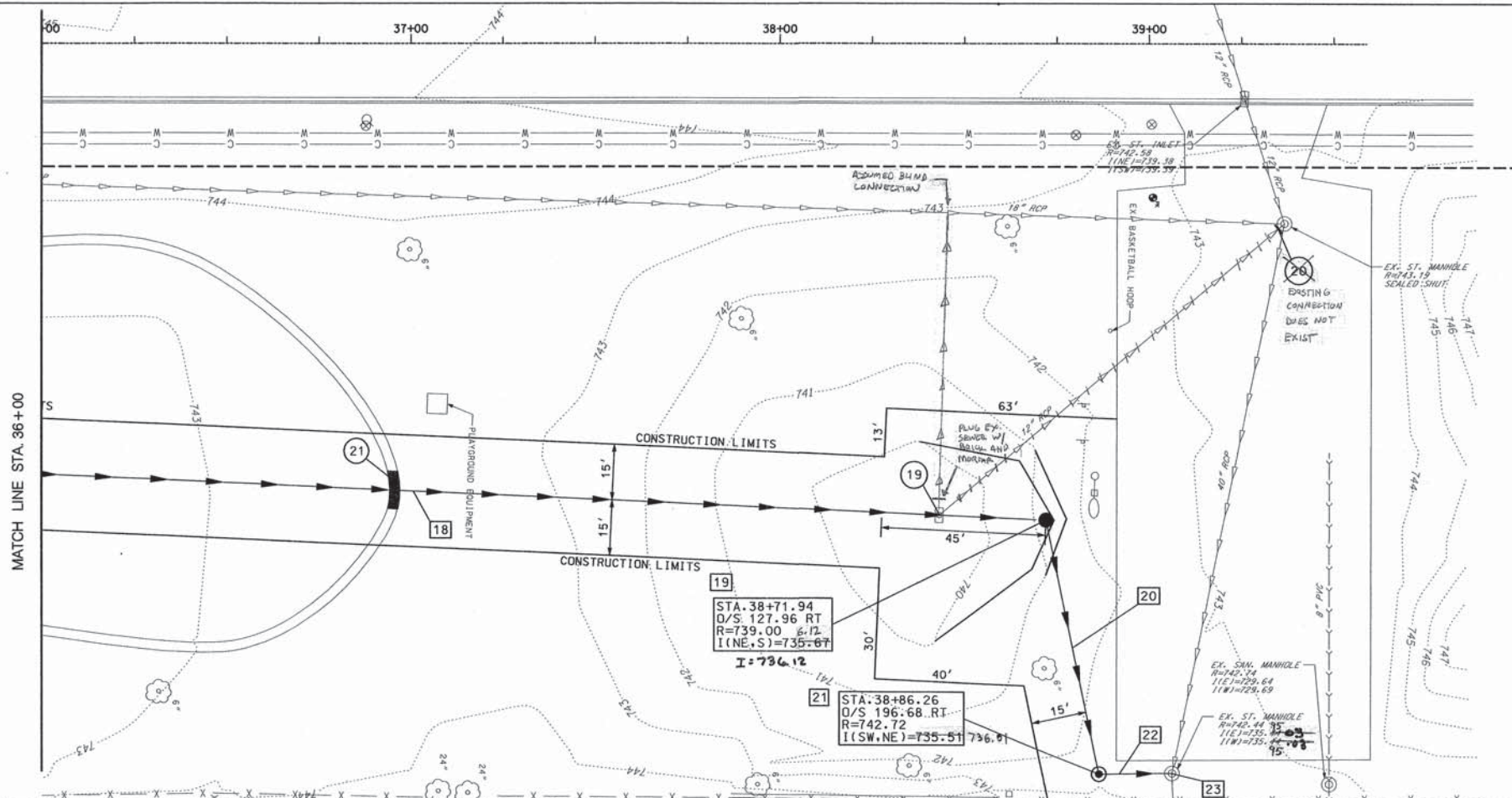
DATE 06-8-07
PROJECT NO. 06971

7 OF 12

- SCHEDULE OF UNDERGROUND IMPROVEMENTS**
- 18. 343 L.F. - 24" PVC @ 0.23%
 - 19. 60" DIA. TYPE A CATCH BASIN WITH TYPE M1 GRATE
 - 20. 71 L.F. - 24" PVC @ 0.23%
 - 21. 72" FLOW CONTROL MANHOLE, WITH TYPE 1 FRAME AND CLOSED LID, SEE DETAIL ON SHEET 10
 - 22. 20 L.F. - 24" PVC @ 0.23%
 - 23. MACHINE CORE EX. STRUCTURE
- SCHEDULE OF REMOVAL / RESTORATION IMPROVEMENTS**
- 19. INLET REMOVAL
 - 20. PLUG EX. STM. SEWER OPENING IN MANHOLE
 - 21. 27 S.F. PATH RESTORATION

NOTES:

1. ALL AREAS DISTURBED OUTSIDE OF THE CONSTRUCTION LIMITS SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT THE CONTRACTORS EXPENSE



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WOODBINE SUBDIVISION STORM WATER
MFT SECTION 07-00010-00-SS

PLAN AND PROFILE - SENDRE PARK
STORM SEWER IMPROVEMENTS

DATE 06-8-07
PROJECT NO. 06971

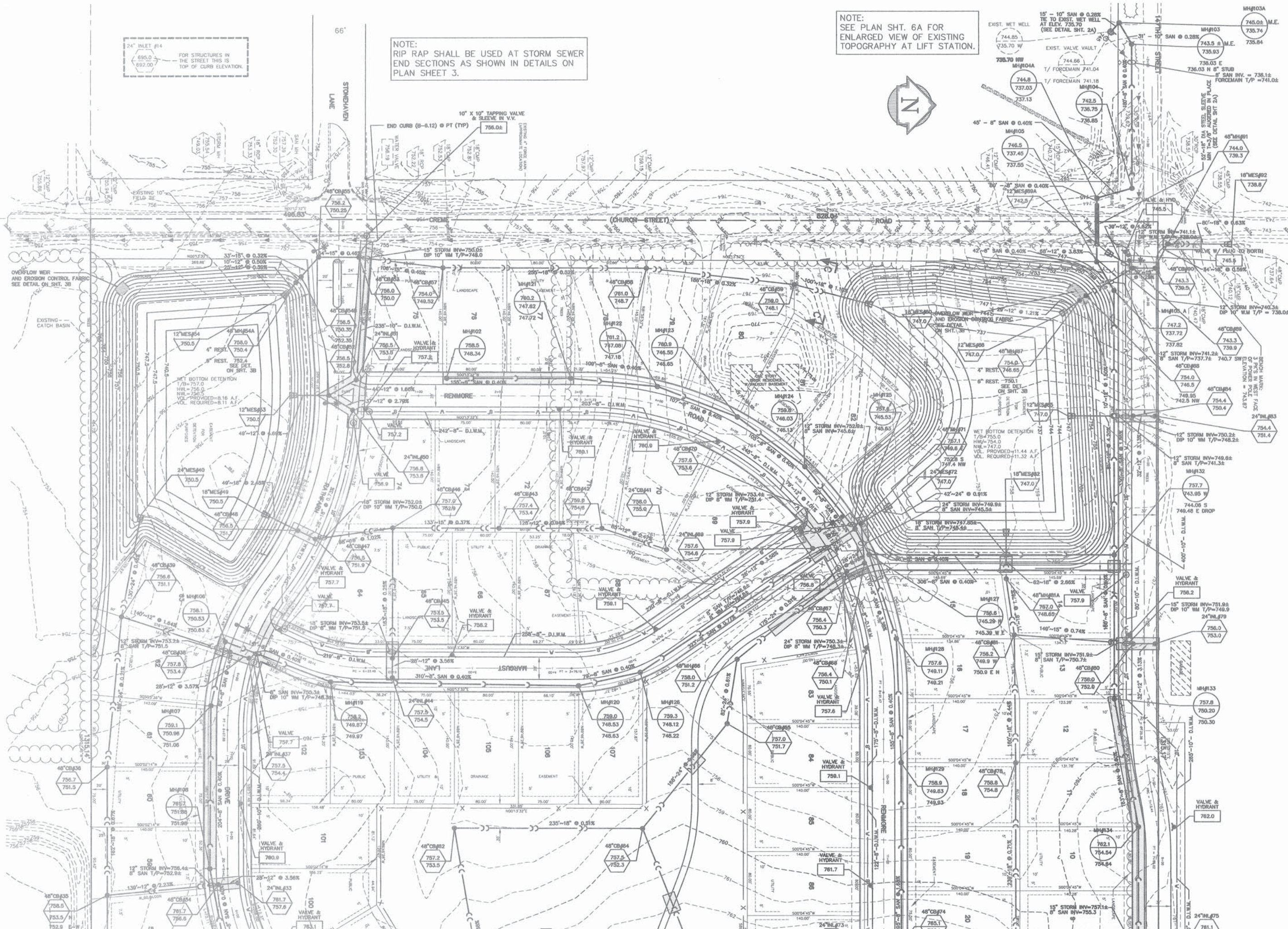
8 OF 12

INVERT NOTED

24" INLET #14
695.0
692.00
FOR STRUCTURES IN
THE STREET THIS IS
TOP OF CURB ELEVATION.

NOTE:
RIP RAP SHALL BE USED AT STORM SEWER
END SECTIONS AS SHOWN IN DETAILS ON
PLAN SHEET 3.

NOTE:
SEE PLAN SHT. 6A FOR
ENLARGED VIEW OF EXISTING
TOPOGRAPHY AT LIFT STATION.



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Civil Engineer Consultants - Planners - Land Surveyors
Country Club Hills, Illinois 60478
Phone: (708) 799-1000
Fax: (708) 799-1222
E-MAIL: emburke@earthlink.net

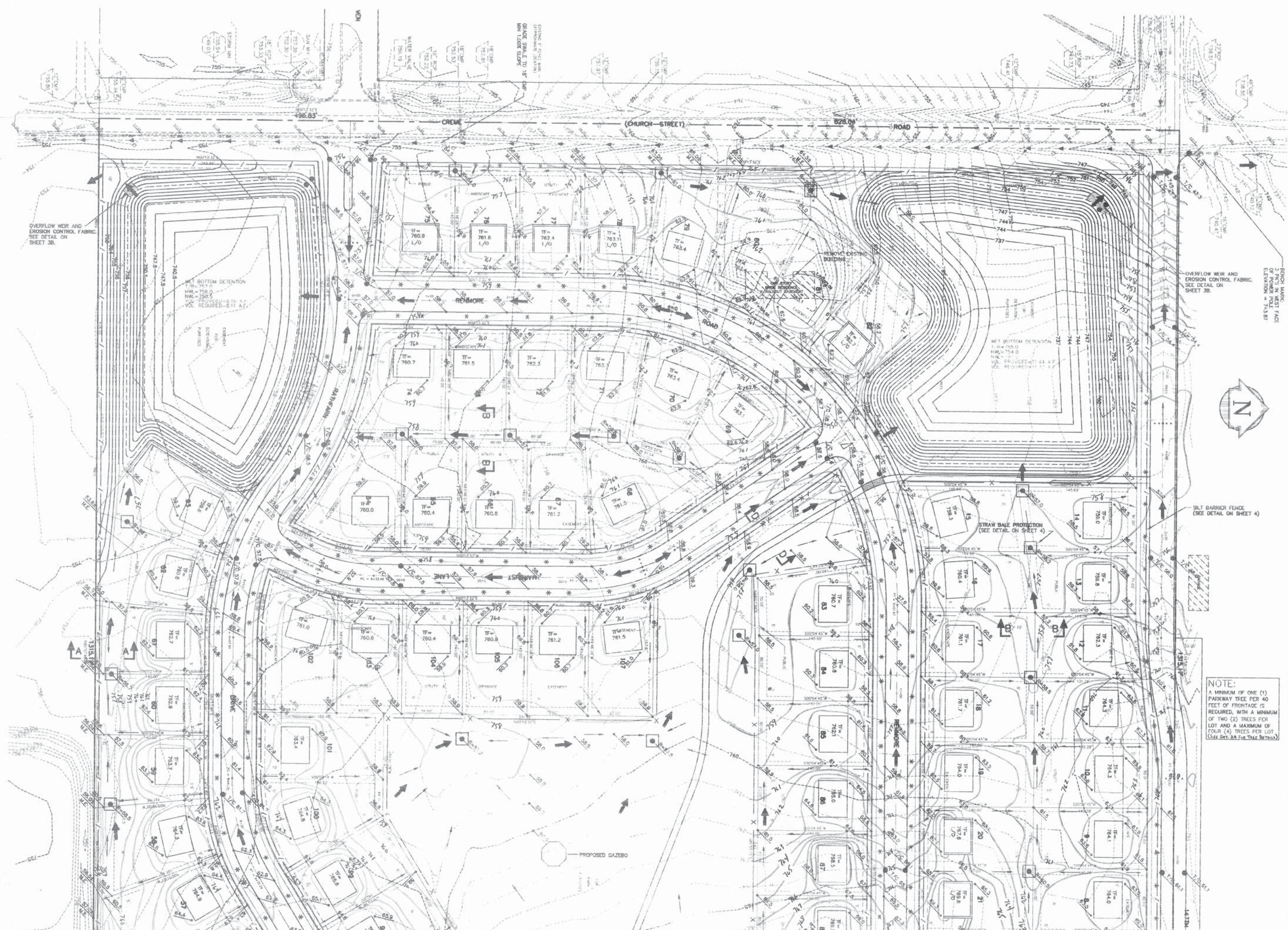
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03-15-01	REVIEW PER ILL. COUNTY REVIEW COMMENTS
01-13-01	REVIEW PER ILL. COUNTY REVIEW COMMENTS
10-11-00	REVIEW PER ILL. COUNTY REVIEW COMMENTS
9-11-00	REVIEW PER ILL. COUNTY REVIEW COMMENTS

WOODBINE WEST ESTATES
UTILITY, STREETS AND LIGHTING PLAN

RATHFARN BUILDERS
12832 PEBBLE DRIVE
PALOS PARK, ILLINOIS 60464 (708) 448-9087

Topo By: JEH
Plan By: JEH
Checked By: VC
Scale: 1"=50'-0"
Date: AUGUST, 2000
Sheet: 5 of 17
ENGINEERING
Job No. 99-060

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NOTE:
A MINIMUM OF ONE (1) PARKWAY TREE PER 40 FEET OF FRONTAGE IS REQUIRED, WITH A MINIMUM OF TWO (2) TREES PER LOT AND A MAXIMUM OF FOUR (4) TREES PER LOT. (SEE SHT. 3A FOR TREE DETAILS)



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Country Club Hills, Illinois 60478
Phone: (708) 799-1000
Fax: (708) 799-1222
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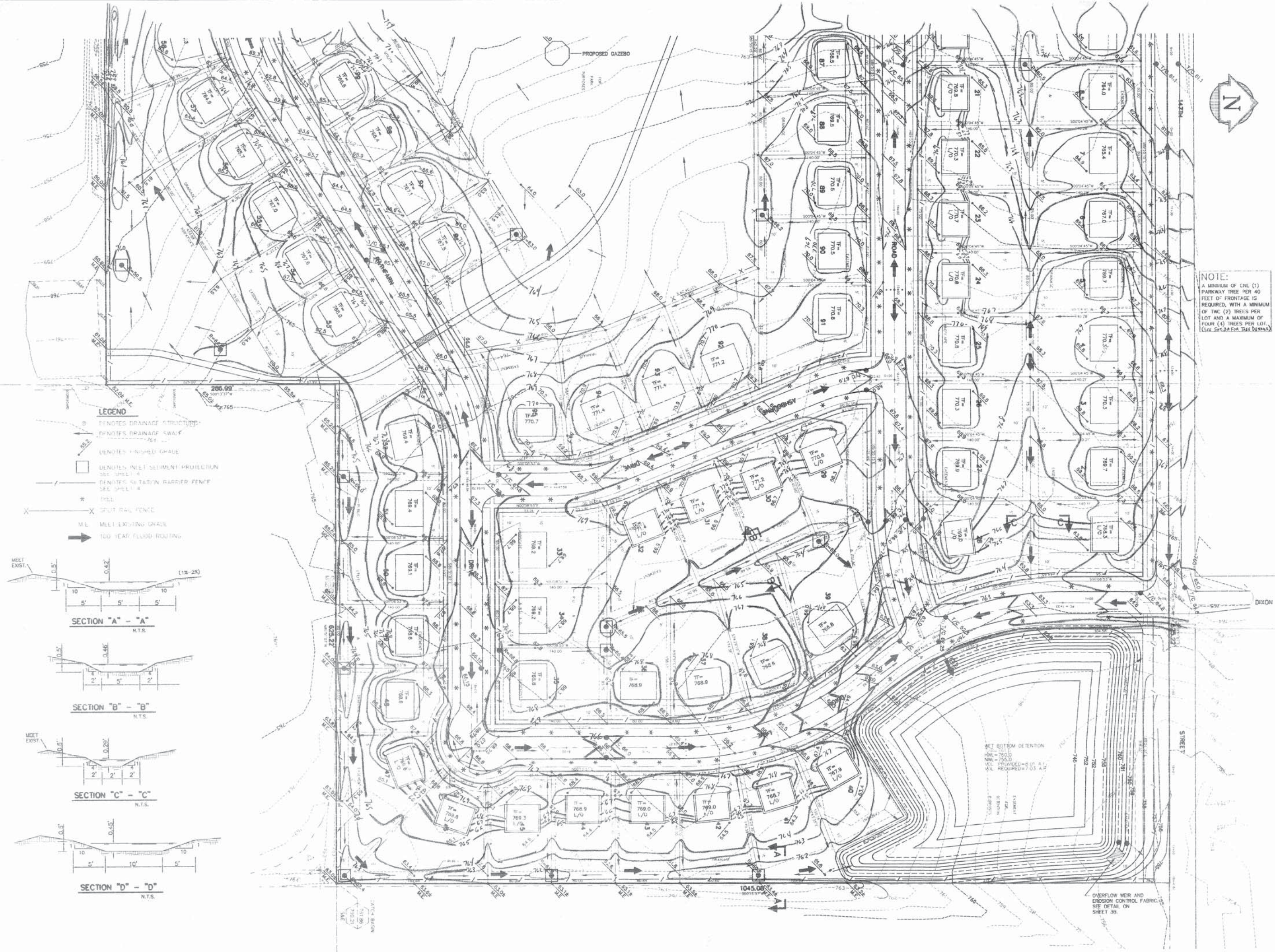
REVISIONS	
NO.	DESCRIPTION
1	ISSUED FOR PERMIT REVIEW
2	REVISED PER MLC COUNTY REVIEW
3	REVISED PER MLC COUNTY REVIEW
4	REVISED PER MLC COUNTY REVIEW

WOODBINE WEST ESTATES
GRADING AND EROSION CONTROL PLAN

RATHFARN BUILDERS
12832 PEBBLE DRIVE
PALOS PARK, ILLINOIS 60464 (708) 448-9087

Topo By	JEH
Plan By	JEH
Checked By	VC
Scale:	1"=50'-0"
Date:	AUGUST, 2000
Sheet:	7 of 17
ENGINEERING	
Job No.	99-060

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SECTION "A" - "A"

N.T.S.

SECTION "B" - "B"
N.T.S.

SECTION "C" - "C"
N.T.S.

SECTION "D" -- "D"

N.T.S.

LEGEND

NOTE:

A MINIMUM OF ONE (1) PARKWAY TREE PER 40 FEET OF FRONTAGE IS REQUIRED, WITH A MINIMUM OF TWO (2) TREES PER LOT AND A MAXIMUM OF FOUR (4) TREES PER LOT. (SEE SUB. 3A FOR TREE DETAILS)

WOODBINE WEST ESTATES
GRADING AND EROSION CONTROL PLAN

GRADING AND EROSION CONTROL PLAN

BRATFARN BUILDERS
12832 PEBBLE DRIVE
INDIC 50254 /7

12832 PEBBLE DRIVE
ILLINOIS 60464 (7

ILLINOIS 60464

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Civil Engineer Consultants - Planners - Land Surveyors
Country Club Hills, Illinois 60478
4101 Flossmoor Road
Phone: (708) 799-1000
Fax: (708) 799-1222
E-MAIL: archie@architect.com

Phone: (708) 799-1000 Fax: (708) 799-1222
E-MAIL: armpc@dentrac.com
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Topo By

Plan By

Checked

Scale:

1"=5'

Date: _____

AUGUST

AUGUST

Sheet:

8

C

STADTLER RIDGE ESTATES SUBD.

NOTE:

LOT OWNER AND/OR HOUSE CONTRACTOR SHALL:

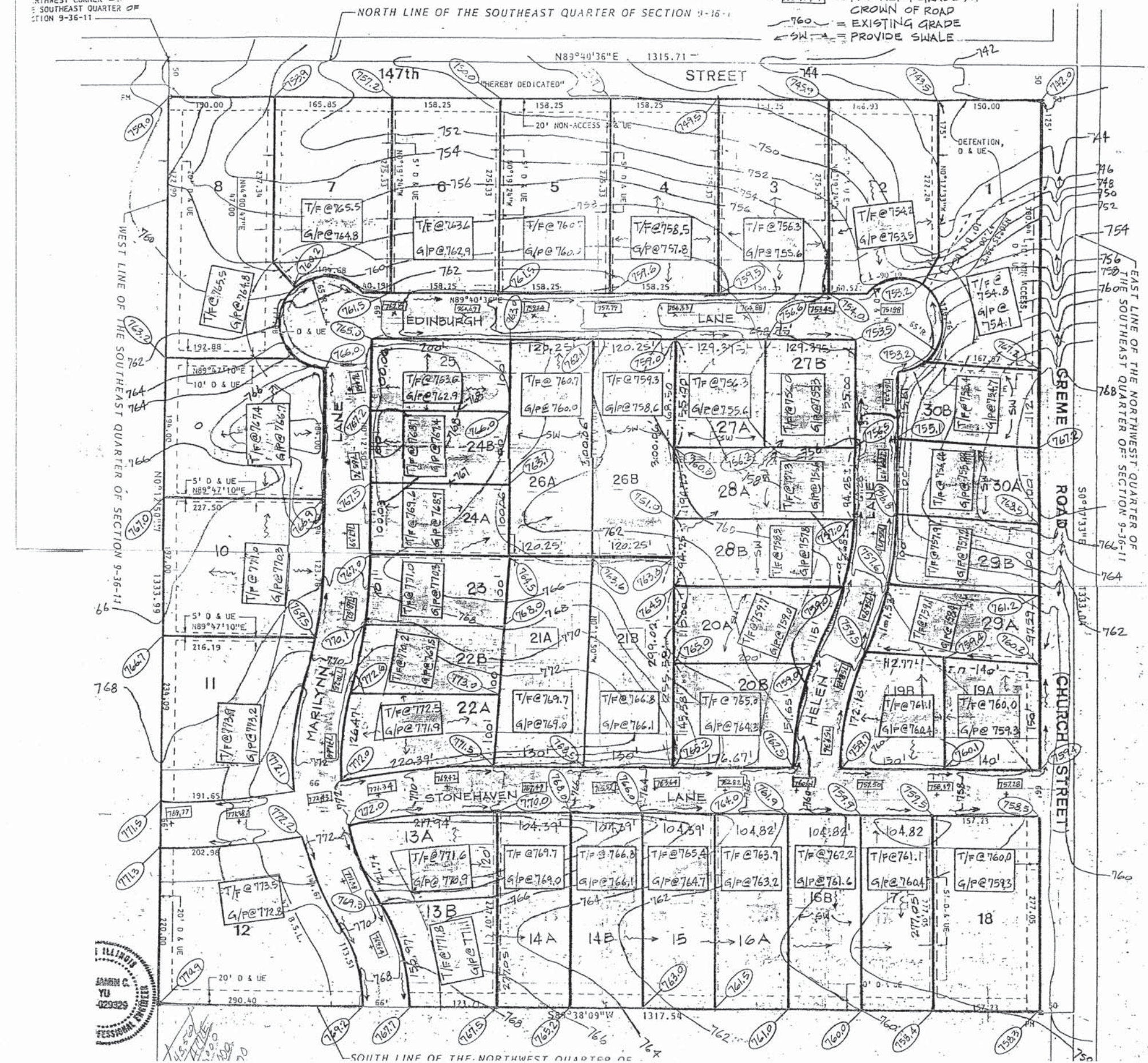
- #1. FINAL GRADE LOT SO THAT SIDE YARD SWALES ARE PROVIDED AND MAINTAINED FOR PROPER DRAINAGE.
- #2. RETAIN LICENSED SURVEYOR TO SET ALL GRADES & STAKE OUT HOUSE PER SUB. ARCHITECT'S APPROVAL LETTER.

FOUND
REBAR AT THE
NORTHWEST CORNER OF
SOUTHEAST QUARTER OF
SECTION 9-36-11

NORTH LINE OF THE SOUTHEAST QUARTER OF SECTION 9-36-11

KEY/INFORMATION:

- T/F @ = TYPICAL HOUSE
- G/P @ = PAD SITE
- T/F @ = TOP OF FOUNDATION
- G/P @ = GRADE OF HOUSE PAD
- + 757.79 = PAVEMENT GRADE AT CROWN OF ROAD
- 760 = EXISTING GRADE
- SW = PROVIDE SWALE





PRELIMINARY PLAT STADTLER RIDGE ESTATES SUBDIVISION

HOMER TWP. WILL COUNTY ILLINOIS

THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 9, TOWNSHIP 36 NORTH,
RANGE 11 EAST OF THE THIRD PRINCIPAL MERIDIAN, WILL COUNTY, ILLINOIS.

ALL DIMENSIONS ARE GIVEN IN FEET AND DECIMAL PARTS 1/100 AND ARE CORRECT AT 68° FAHRENHEIT.

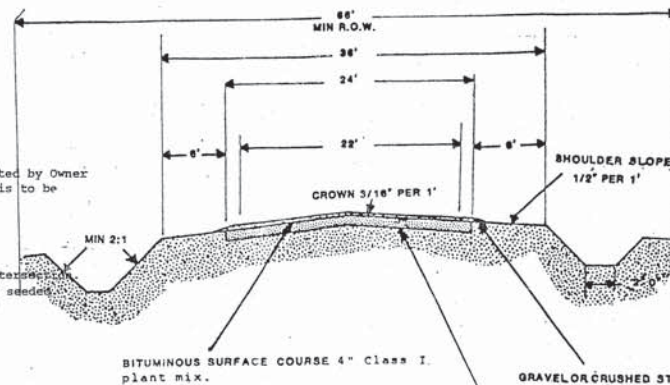
10" INDICATES IRON FOUND

1" INDICATES 9/16" X 30" IRON ROD SET

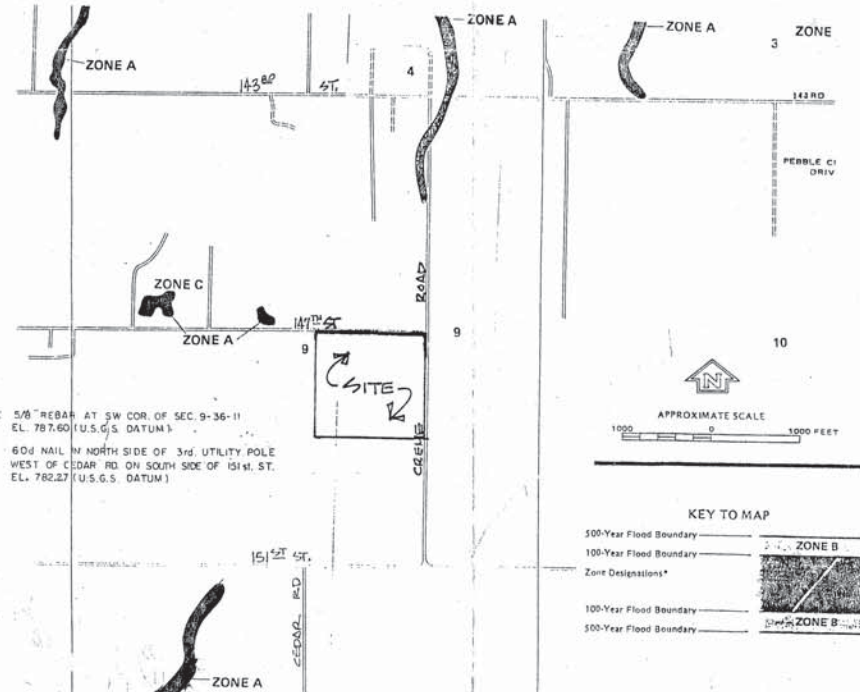
GENERAL NOTES

- One Parkway tree shall be provided for each lot, except for wooded lots.
- Individual sanitary systems and wells to be provided.
- No available central sewer and water mains exist within 1 mile of the proposed subdivision.
- Minimum lot area is one acre.
- All disturbed areas shall be seeded.
- A flood plain development permit is not required.
- Property is zoned R-2.
- The park donation will be provided according to Will county ordinance.
- No Drainage easement may be piped or filled between lots or in the road Right-of-Way.
- All field tile existing on the property have been located by Owner and provision for rerouting within drainage easements is to be made.
- All culverts have been located (on and off site).
- Return radii will be 20' minimum.
- Street signs shall be provided at each intersection.
- Street lights shall be provided as required at each intersection.
- Parkways, new ditches, and distribution areas shall be seeded.
- A Site Development Permit will be obtained.
- Subdivision contains 40.307 Acres.

COUNTRY SUBDIVISION TYPICAL SECTION



GRAVEL OR CRUSHED STONE BASE
9" COMPACTED BASE SHALL BE
CRUSHED STONE
CA-6 AS PROVIDED IN THE STANDARD
SPECIFICATIONS FOR ROAD AND
BRIDGE CONSTRUCTION, ILLINOIS
DEPARTMENT OF TRANSPORTATION.



SITE LOCATION & FLOOD PLAN MAP

DEVELOPER

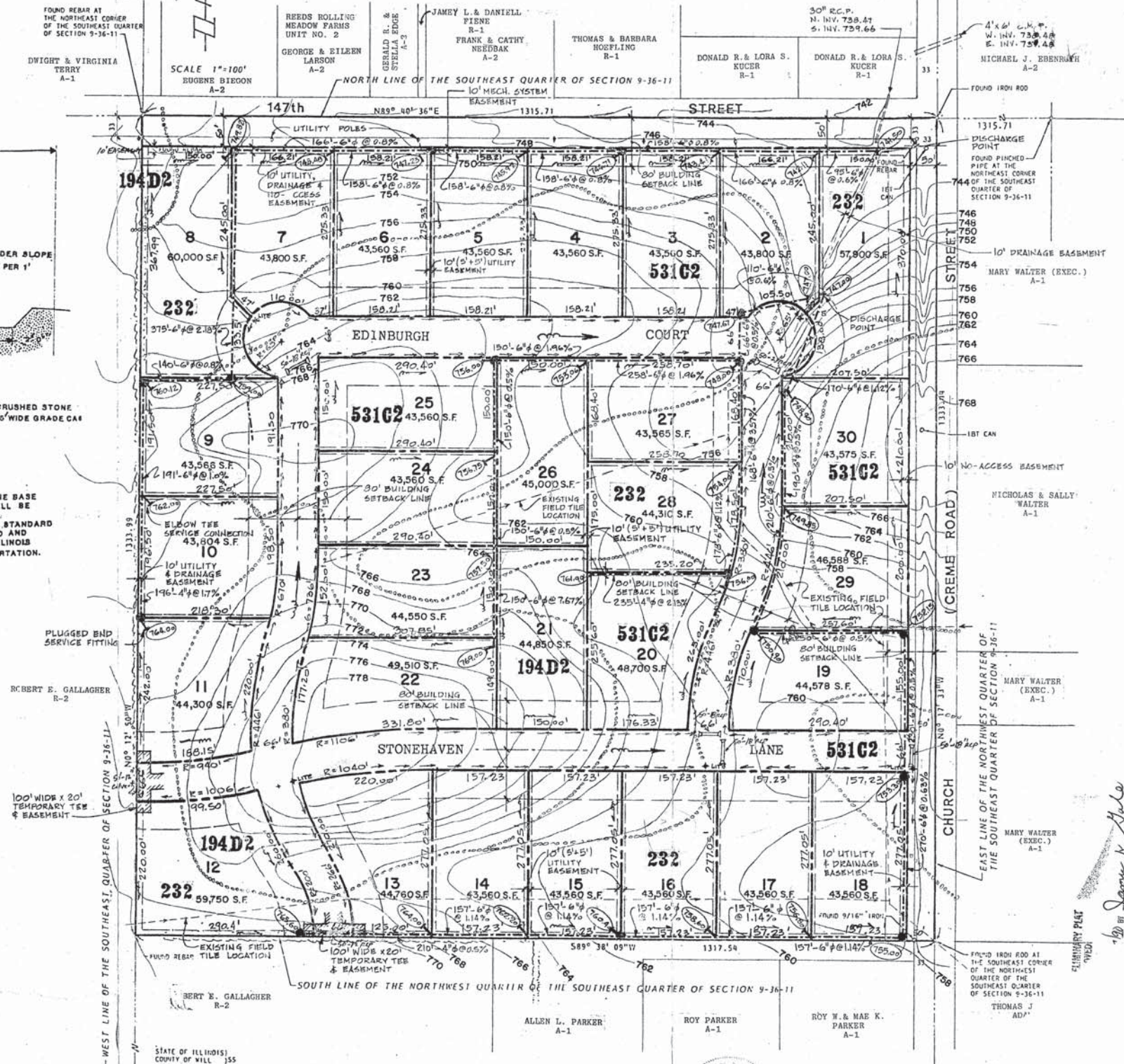
MR. & MRS. PAUL STADTLER
13700 S. 108th AVENUE
ORLAND PARK, IL 60462
(708) 460-1800

ENGINEER

BENJAMIN YU, P.E.
JAMES B. CLARAGE & ASSO
64 ORLAND SQUARE DRIVE
ORLAND PARK, IL 60462
(708) 349-8177

SURVEYOR

GEOTECH, INC. / JERALD M. PAPESH
1107 W. JEFFERSON STREET
JOLIET, ILLINOIS 60435
(815) 727-6361



STATE OF ILLINOIS
COUNTY OF WILL

TO: RIVER FOREST BANK, TRUST NO. 1120 DATE JUNE 4, 1964
AND PAUL STADTLER

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH "MINIMUM STANDARD
DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEY", JOINTLY ESTABLISHED AND ADOPTED IN 1914 AND 1954 IN 1986 AND MEETS
THE ACCURACY REQUIREMENTS OF A CLASS C SURVEY AS DEFINED THEREIN.

REVISED date 1-2

JOB NO. JC-90-03

131 349-8177

Appendix N – XP SWMM Model and Supporting Data (on disk)