ENGINEERING
RESOURCE ASSOCIATES

2016 Project 1 Flood Prone Area Study

Wheaton, Illinois

Image by ERA, Inc

Flood Study

ERA Project #160212

Prepared for:

City of Wheaton

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1.0 INTRODUCTION

1.1 LOCATION AND INTENT OF STUDY

The *2016 Project 1 Flood Prone Area Study* is located within an approximately 318-acre drainage sub-basin tributary to Winfield Creek in the City of Wheaton. Located in the northeastern section of the City, the sub-basin is bound generally by Prairie Avenue on the south, Winfield Creek on the west, Glencoe Street on the east, and Daly Road on the north and can be found on Exhibit 1. The City of Wheaton has experienced frequent and severe flooding within the sub-basin and desires to analyze it to determine flood risk structures, determine the major causes of the flooding, and to develop a plan to improve the flooding conditions within the sub-basin.

The sub-basin was developed in the 1950's as a moderately dense single-family residential subdivision on majority 1/4 acre lots. It is fully developed with limited vacant lots and open spaces. Relatively lax stormwater design regulations and drainage conveyance requirements at the time of development have resulted in undersized storm sewer and a lack of positive overland flow paths. As shown on Exhibit 2, three flood prone areas within the sub-basin were identified by the City as having unique flooding characteristics to be studied in detail: *Wakeman and Cadillac Upland Depressional Area*, *Thomas Overland Flow Path*, and *Turf/Countryside/Ranch Flood Prone Area*. Below is a general description of the three flood prone areas:

- The *Wakeman and Cadillac Upland Depressional Area* has approximately 100-acres of tributary area to a location where the only positive outlet is a 36-inch diameter sewer. When the system surcharges water fills the depressional area located near the intersection of Wakeman Avenue and Cadillac Drive causing flooding to adjacent homes.
- The *Thomas Overland Flow Path* serves an area of approximately 190 acres and is the major overland flow route through the sub-basin. The sub-basin was developed with poorly defined overland flow paths and a lack of stormwater storage that results in frequent flooding of homes along the route when storm sewers surcharge.
- The *Turf, Countryside, and Ranch Flood Prone Area* is a four-block residential area approximately 23 acres in size. The area is characterized by lots with little positive slope to existing roadways, homes constructed at grade, and a general lack of positive drainage. It results in first floor flooding of homes. In addition, this area is part of the downstream leg of the Thomas Overland Flow path as well. The overland flows are blocked and must overtop the roadway crests of Countryside and Turf which results in frequent flooding near Driving Park.

The existing deficiencies within the entire sub-basin were analyzed using the stormwater modeling program, XPSWMM-2D. The program performs the hydrologic and hydraulic computations of conveyance, storage, and flood level parameters within the stormwater drainage system. The results of the model were used to evaluate the existing drainage and quantify flood risk structures. Several proposed alternative improvements were explored to reduce the frequency and severity of flooding.

1.2 OVERVIEW OF HYDROLOGIC AND HYDRAULIC ANALYSES

DATA COLLECTION AND ANALYSIS

HYDROLOGIC & HYDRAULIC ANALYSIS SETUP

Various sources were used to identify the location and determine the extent and frequency of stormwater drainage problems within the *2016 Project 1 Flood Prone Area Study* sub-basin. Readily available information was used to compile a computer model and assess the existing conditions of the drainage network. The computer model which performed the Hydrologic and Hydraulic computations was the proprietary software program called XPSWMM-2D.

The following resources were used to construct a stormwater model in XPSWMM-2D:

- City of Wheaton Sewer Atlas Maps
- DuPage County 2-ft contours
- Survey data
    - Rim/invert information for storm sewer
    - Overland flow route topography
    - Topographic shots of relevant building elevations, roadways, and rear yard grades
- Aerial Maps

A combination of the City's storm sewer atlases augmented with rim and invert survey information was utilized to construct the underground hydraulics within the XPSWMM-2D model. The storm sewer trunk line was modeled from the upper reaches of the sub-basin to the outlet to Winfield Creek at Cole Avenue. Detailed topographic survey was merged with the County's 2-ft contours to create a digital terrain model (DTM) which was used to create a 2D surface grid needed to perform hydraulic computations for overland flows. The sewer network that was analyzed is shown on Exhibit 2.

The area tributary to the storm sewer network was broken down into sub-catchments tributary to manholes within the storm sewer system. Exhibit 3 shows this breakdown. SCS curve numbers and time of concentration calculations were performed and assigned to each sub-catchment within the model. Illinois State Water Survey Bulletin 71 rainfall depth data and corresponding Huff rainfall distributions were used to perform a critical duration analysis to determine what storm duration is critical for the sub-basin. The duration that produced the greatest runoffs within the storm system was the 2-hour storm. For all analysis, the sub-basin was evaluated for the 2-hour critical duration and 24-hour: 1-, 5-, 10-, 25-, 50-, and 100-yr storm events.

Supplemental hydrologic and hydraulic calculations were also performed to identify flood risk structures within the *Turf, Countryside, and Ranch Flood Prone Area* which has extremely localized flooding not suitable for XPSWMM analysis. Based on field visits to the area it was concluded that a secondary analysis was required to determine flood risk structures. The topography is extremely flat and the structures lack modern flood protection and drainage standards. The homes are mostly slab-on grade with adjacent grades at or above top of foundations. The tributary areas to the rear and side yards were relatively small therefore it was necessary to produce a secondary analysis to quantify the number of structures at risk of flooding. Rationale method and Manning's equation calculations were performed to determine flow rates between homes and high water levels in side yard swales which determine structures at risk of flooding.

For each storm event, the XPSWMM-2D model was used to determine the extent of drainage issues within the sub-basin. The 2D model includes a DTM surface which depicts the topography of the sub-basin. When the hydraulic grade line rises above the rims of the storm sewer network, the model performs overland hydraulic calculations based on the topography of the area as it would in a real storm event. The model then can demonstrate the extents, water elevation, depth, and velocity of the water flowing over land after it surcharges the storm sewer system. The 2D model output was utilized to identify and quantify at risk structures based on surveyed building elevation information.

LIMITATIONS OF STUDY AND ASSUMPTIONS

The *2016 Project 1 Flood Prone Area Study* did not include the following items:

- Groundwater analysis
- Detailed topographic study of the entire project area
- Inlet capacity analysis
- Cost analysis of potential flood damages

The capacity of the sewer system assumes that all structures and pipes are clean and unobstructed. The *Study's* hydraulic and hydrologic model was developed using the best available information from the City of Wheaton's storm sewer atlas, as-built plans, survey information, and two-foot County topography. The *Study's* accuracy is limited to the information found in these resources.

RESIDENT FEEDBACK

The City has previously performed a questionnaire requesting information from the residents on the type of flooding they may have experienced on their property. The City provided a map that shows which residents reported overland flooding within the Study area. The resident responses were very helpful to provide anecdotal evidence of ponding concerns and overland flow route issues. This information was also used as a "reality check", to verify the results the of the modeling.

2.0 WAKEMAN AND CADILLAC UPLAND DEPRESSIONAL AREA

2.1 PROBLEM AREA DESCRIPTION

This depressional area is centered approximately 350 feet northeast of the intersection of Cadillac Drive and Wakeman Avenue on residential lots between Parkway Drive and Wakeman Avenue. The area is drained by a 36" storm sewer that reaches capacity during the 10-yr event at which point surcharging flows start to pond within the adjacent depressional area. The ponded area is minimal during the 10-yr event, however during the 500-yr critical duration event the ponding extends approximately 5-acres on private property and sections of Wakeman Avenue right-of-way as seen in Exhibit 4. The depressional area has an overflow crest elevation of 760.20' in the side yard between 604 and 608 Parkway Drive. Once flows exceed the crest, they cross over the Parkway Drive right-of-way and through the rear yards of 567 Parkway Drive and 1611 Driving Park Rd where they converge with the Thomas Overland Flows. The overflow is only engaged in the 100-yr critical duration storm event.

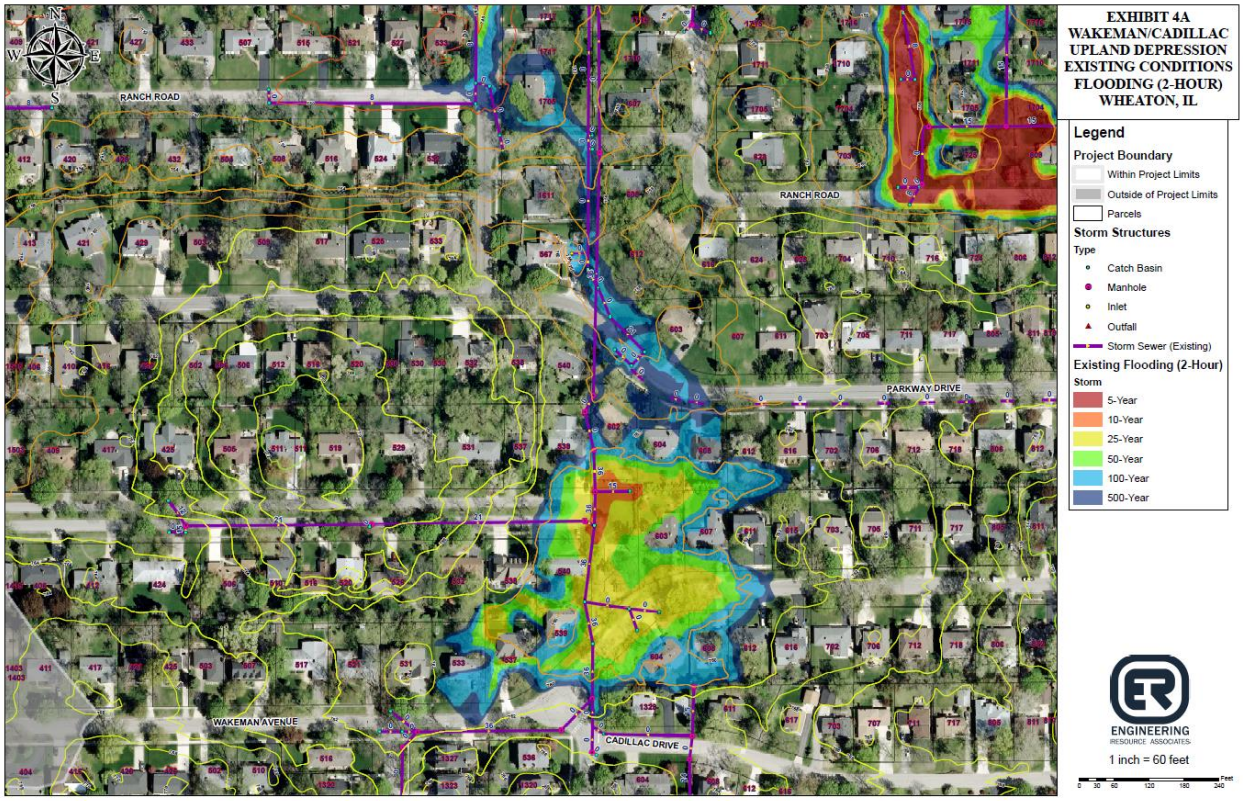

Exhibit 4A: Wakeman and Cadillac Upland Depressional Area Existing Critical Duration Flooding Limits, N.T.S. (full scale drawing in Appendix)

2.2 FLOODING IMPACTS

Below are tables summarizing the list of at-risk structures within the *Wakeman and Cadillac Upland Depressional Area* for the 100-yr and 500-yr critical duration storm events. A structure was considered at-risk to overland flooding when the maximum water surface elevation was higher than the top of foundation; higher than the bottom of a door, window, or other openings of a structure; or higher than the top of a window well. Only at-risk structures are included in the tables below. A comprehensive table of all structures analyzed for flood risk, including an analysis of the 2-hr critical duration and 24-hr, 1-, 5-, 10-, 25-, 50-, 100-, and 500-yr storm events can be found in the Appendix. A summary of the

number of flood risk structures within the Wakeman and Cadillac Upland Depressional Area for each storm event analyzed is shown in Table 1 below.

Table 1: Wakeman and Cadillac Upland Depressional Area – Number of Flood Risk Structures

	Storm Frequencies						
	1-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year
2-Hour (Critical Duration)	0	0	0	1	6	10	12
24-Hour	0	0	0	0	0	0	0

There are 12 at-risk structures for the 500-yr frequency critical duration event and 10 at-risk structures for the 100-yr frequency storm event as shown in Table 1. An internal survey of at-risk structures within the 500-yr frequency storm event was performed that includes the elevation of the lowest floor of the home, the square footage of the basement, as well as the square footage of any finished basement area. The internal structure survey is to be used by the City for FEMA's Benefit Cost Analysis Software (BCA) for funding opportunities. Tabulations of internal surveys of residential properties who responded to the survey request have been included in the Appendix.

Table 2: Wakeman and Cadillac Upland Depressional Area - Critical Duration (2 hr) Flood Risk Structures

Address No.	Street	T/F Elev. (ft)	L/E Elev. (ft)	500-Year WSEL (ft)	100-Year WSEL (ft)	50-Year WSEL (ft)	10-Year WSEL (ft)
539	HAWTHORNE BLVD	761.04	760.51	760.75	760.41	759.92	758.61
540	HAWTHORNE BLVD	759.62	759.28	760.75	760.41	759.92	758.61
538	HAWTHORNE BLVD	761.00	759.91	760.75	760.41	759.92	758.61
567	PARKWAY DRIVE	753.89	753.64	756.78	756.37	*	*
602	PARKWAY DRIVE	760.57	759.88	760.75	760.41	759.92	758.61
607	WAKEMAN AVENUE	760.58	760.17	760.75	760.41	759.92	758.61
603	WAKEMAN AVENUE	760.01	759.56	760.75	760.41	759.92	758.61
539	WAKEMAN AVENUE	760.77	760.14	760.75	760.41	759.92	758.61
604	WAKEMAN AVENUE	760.10	759.52	760.75	760.41	759.92	758.61
608	WAKEMAN AVENUE	760.41	760.15	760.75	760.41	759.92	758.61
1711	DRIVING PARK ROAD	752.36	751.68	751.85	751.58	*	*
1705	DRIVING PARK ROAD	751.31	750.94	753.05	752.25	*	*

*no surface flooding

2.3 ALTERNATIVES

A proposed conditions analysis was conducted for the Wakeman and Cadillac Upland Depressional Area. The analysis looked at several alternatives that would remove structures from 100-yr flood risk. The following alternatives were evaluated.

Property Buyouts

This alternative considers buying out impacted homes and turning the lots into open space. There are 10 homes at-risk for 100-yr overland flooding. Based on Milton Township Assessor's information it as anticipated that a complete 100-yr buyout would cost as estimated $3,690,291. A 3x multiplier was added to the Township's assessed value and ten percent cost was added to the multiplied value to cover demolition and restoration costs. A loss of property tax was not considered in this tabulation of property buyouts. A tabulation of property buyouts can be found in the Appendix.

Storm Sewer Improvements

As shown on Exhibit 8, storm sewer improvements consist of a secondary outlet to the Winfield Creek at Cole Avenue which serves as an outlet for a new 48" storm sewer which conveys flows from Parkway Drive north and west through the Driving Park Rd, Ranch Rd, Washington Street, and Cole Ave right-of-way to the Creek. The secondary system takes advantage to the fact that Ranch Rd and Washington St are in poor condition and scheduled to be reconstructed in the near future. Further upstream, the storm sewer improvements also include upsizing the storm sewer from Parkway Drive to the Cadillac and Wakeman Depressional area. No downstream impacts are anticipated with this alternative. There remain 2 structures that flood in the 100-yr storm event. Their buyout costs have been added to the estimated construction costs as tabulated in detail in the Appendix. The storm sewer improvements would cost an estimated $2,235,093.

3.0 Thomas Overland Flow Path

3.1 PROBLEM AREA DESCRIPTION

The *Thomas Overland Flow Path* flows from east to west through the center of the study sub-basin. The overland flow route begins to concentrate into channelized flow west of the intersection of Thomas Road and Stoddard Avenue. It traverses private lots between Stoddard Avenue and President Street contained within swales to President Street. The President Street storm system becomes overwhelmed and surcharged flows converge on Webster Court.

The overland flow path heads south on the Webster Court right-of-way, west along the Ranch Road right-of-way, and north along the Cherry Court right-of-way. Flows are primarily contained within the right-of-way within this area, however impacts to structure are seen during larger storm events. Flows reach the northern end of Cherry Court and then flow northwesterly through the rear lots of properties on Countryside Drive. The flow path has no definition at this point and flows spread out impacting many structures on Countryside Drive. The overland flow path heads north on the Driving Park right-of-way where it ponds considerably before flowing west through the rear yards between the Turf and Bridle Lane.

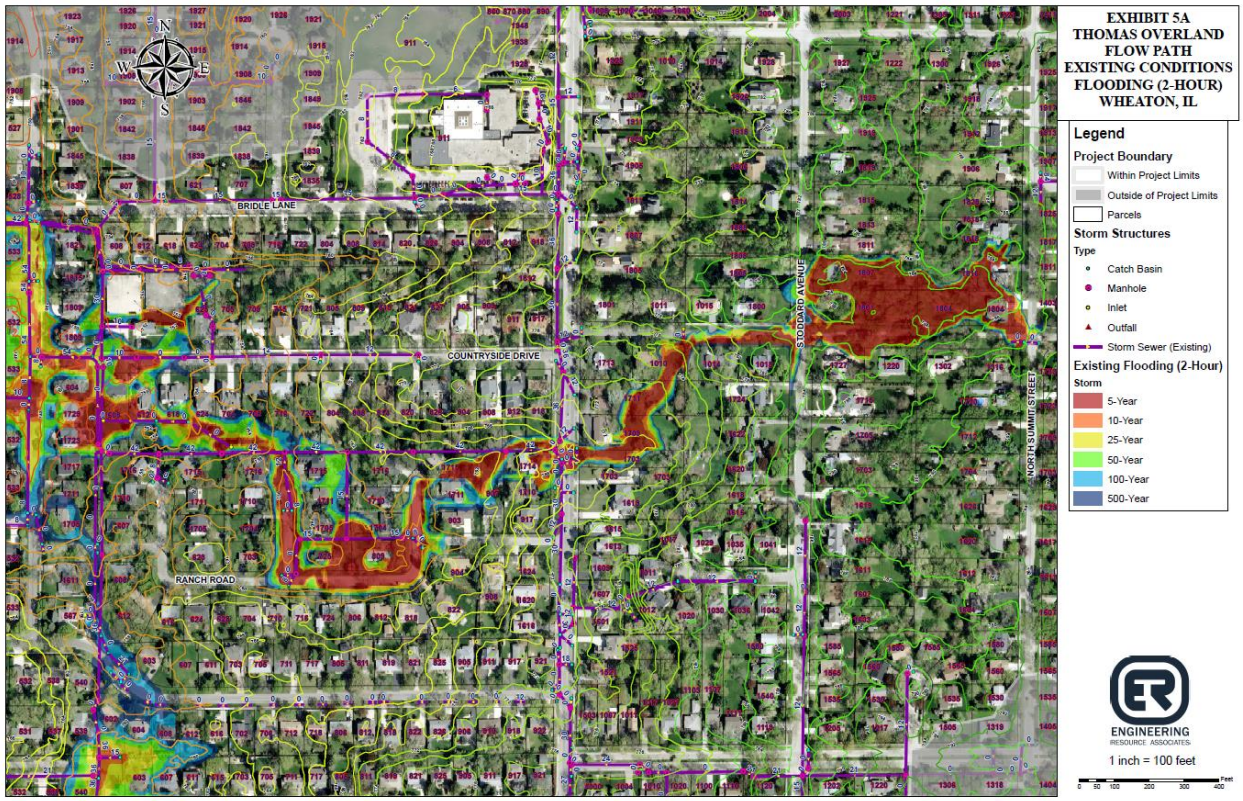

Exhibit 5A: *Thomas Overland Flow Path* Existing Critical Duration Flooding Limits, N.T.S. (full scale drawing in Appendix)

3.2 FLOODING IMPACTS

Below are tables summarizing the list of at-risk structures within the *Thomas Overland Flow Path* for the 100-yr and 500-yr critical duration storm events. A structure was considered at-risk to overland flooding when the maximum water surface elevation was higher than the top of foundation; higher than a door, window, or other openings of a structure; or higher than the top of a window well. A comprehensive table of structures analyzed for risk, including structures found to not be at risk, can be found in the

Appendix. A summary of the number of flood risk structures within the Thomas Overland Flow Path for each storm event analyzed is shown in Table 4 below.

Table 3: Thomas Overland Flow Path – Number of Flood Risk Structures

	Storm Frequencies						
	1-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year
2-Hour (Critical Duration)	1	4	5	6	7	10	10
24-Hour	3	4	4	5	5	5	5

There are 10 at-risk structures for the 500-yr frequency critical duration event and 10 at-risk structures for the 100-yr frequency storm event as shown in Table 3. An internal survey of at-risk structures within the 500-yr frequency storm event was performed that includes the elevation of the lowest floor of the home, the square footage of the basement, as well as the square footage of any finished basement area. The internal structure survey is to be used by the City for FEMA's Benefit Cost Analysis Software (BCA) for funding opportunities. Tabulations of internal surveys of residential properties who responded to the survey request have been included in the Appendix.

Table 4: Thomas Overland Flow Path - Critical Duration (2 hr) Flood Risk Structures

Address No.	Street	T/F Elev. (ft)	L/E Elev. (ft)	500-Year WSEL (ft)	100-Year WSEL (ft)	50-Year WSEL (ft)	10-Year WSEL (ft)
1715	CHERRY COURT	760.04	759.22	760.21	760.05	757.00	756.90
1711	CHERRY COURT	758.82	758.79	759.85	759.80	759.63	*
1714	PRESIDENT STREET	764.91	763.97	766.74	766.36	766.30	766.20
1709	PRESIDENT STREET	770.11	770.05	771.48	770.17	770.14	770.08
725	RANCH ROAD	758.61	T/F	758.79	758.64	758.48	758.20
809	RANCH ROAD	758.74	T/F	758.96	758.77	758.60	758.28
907	RANCH ROAD	763.43	760.03	763.65	762.17	762.07	761.87
1711	WEBSTER COURT	761.75	T/F	762.63	762.06	762.00	761.85
612	COUNTRYSIDE DRIVE	751.79	750.80	751.79	751.54	751.20	750.54
608	COUNTRYSIDE DRIVE	750.87	749.96	750.83	750.69	750.53	750.16

*no surface flooding

3.3 ALTERNATIVES

A proposed conditions analysis was conducted for the Thomas Overland Flow Path. The analysis looked at several alternatives that would remove structures from 100-yr flood risk. The following alternatives were evaluated.

Property Buyouts

This alternative considers buying out impacted homes and turning the lots into open space. There are 10 homes at-risk for 100-yr overland flooding. Based on Milton Township Assessor's information it as anticipated that a complete 100-yr buyout would cost as estimated $ 4,257,990. A 3x multiplier was added to the Township's assessed value and ten percent cost was added to the multiplied value to cover demolition and restoration costs. A loss of property tax was not considered in this tabulation of property buyouts. A tabulation of property buyouts and their estimated costs are included in the Appendix.

Detention and Storm Sewer Improvements

As shown on Exhibit 9, storm sewer improvements consist of a new alignment along Parkway Drive connecting downstream to the proposed storm sewer to alleviate flooding at the Wakeman and Cadillac Depressional Area. The proposed 36" storm sewer continues east along Parkway Drive and ends at President Street. This storm sewer provides relief to the southern leg of the President Street storm system. In addition to storm sewer, a 5 acre-ft detention facility is proposed at 1709 and 1703 President St to attenuate flows and provide relief to the northern leg of the President Street storm system. In addition to the buyout required for the detention construction, there remain 2 structures that flood in the 100-yr storm event. Their buyout costs have been added to the estimated construction costs as tabulated in detail in the Appendix. The storm sewer and detention improvements would cost an estimated $2,455,758.

4.0 Turf, Countryside, and Ranch Flood Prone Area

4.1 PROBLEM AREA DESCRIPTION

There are two issues affecting flooding within the *Turf, Countryside, and Ranch Flood Prone Area.* First, the Thomas Overland Flow Path continues through this area prior to discharging to Winfield Creek. The overland flow path exists through the rear yards between Turf and Bridle Lane, and along the Turf Lane right-of-way. Large diameter storm sewers within the Turf and Bridle rear yard corridor reach capacity and create surcharging within the Driving Park Road right-of-way. Flows must pond prior to reaching the overland flow routes along Turf Lane and the Turf and Bridle rear yard corridor. The impounded flows impact structures along Turf Lane, Driving Park Road, and Countryside Drive. The flows within the Turf and Bridle rear yard corridor have conveyance depths that also put adjacent structures at risk.

The second flooding issue is the previously mentioned highly localized reported flooding. The topography is extremely flat and the structures lack modern flood protection and drainage standards. Within this area minimal or no swales exist, the homes are mostly slab-on grade, and the finished floors have no freeboard to adjacent grades. With minimal building protection standards, even minimal flows through the properties cause flooding of structures.

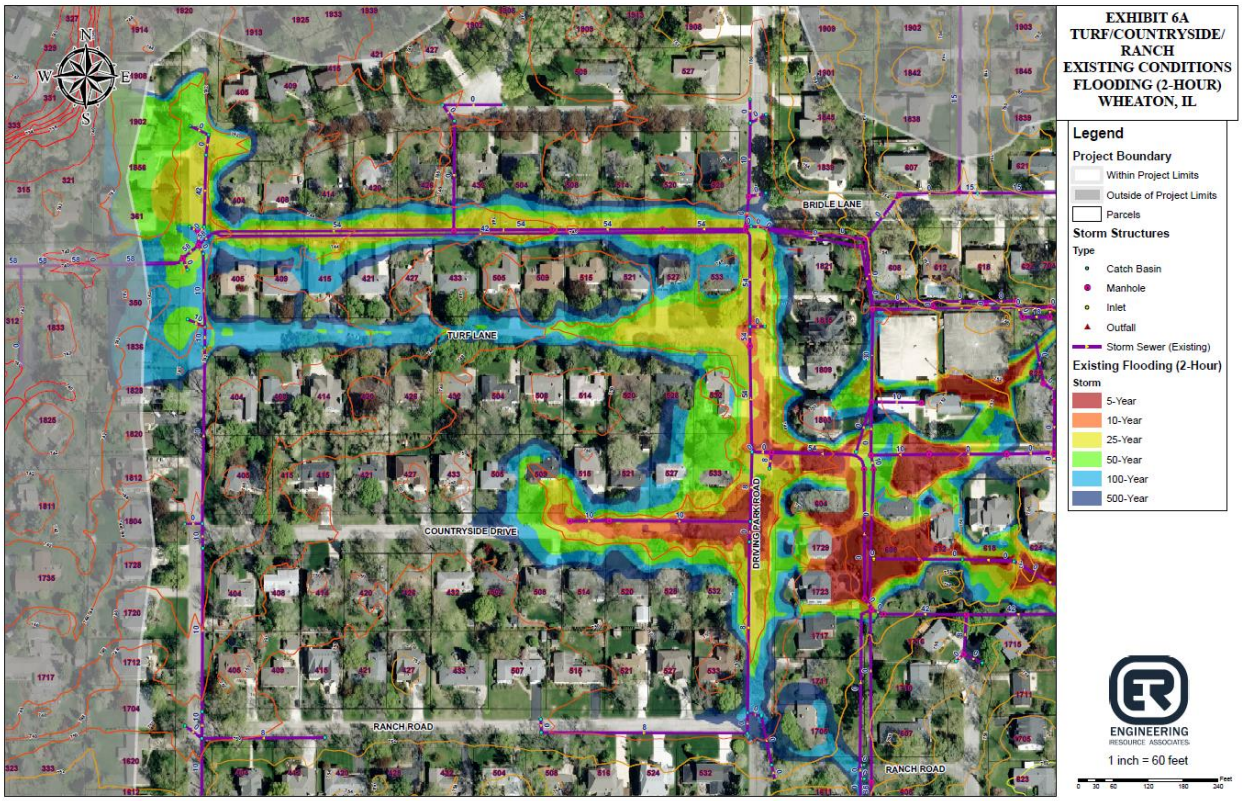

Exhibit 6A: *Turf, Countryside, and Ranch Flood Prone Area* Critical Duration Existing Flooding Limits, N.T.S. (full scale drawing in Appendix)

4.2 FLOODING IMPACTS

Below are tables summarizing the list of at-risk structures within the *Turf, Countryside, and Ranch Flood Prone Area* for the 100-yr and 500-yr critical duration storm events. A structure was considered at-risk to overland flooding when the maximum water surface elevation was higher than the top of foundation; higher than a door, window, or other openings of a structure; or higher than the top of a window well. Only at-risk structures are included in the tables below. A comprehensive table of structures analyzed for risk, including structures found to not be at risk, can be found in the Appendix. A summary of the number of flood risk structures within the Turf, Countryside, and Ranch Flood Prone Area for each storm event analyzed is shown in Table 7 below.

Table 5: Turf, Countryside, and Ranch Flood Prone Area – Number of Flood Risk Structures

	Storm Frequencies						
	1-Year	**5-Year**	**10-Year**	**25-Year**	**50-Year**	**100-Year**	**500-Year**
2-Hour (Critical Duration)	0	1	2	5	9	15	24
24-Hour	0	2	2	2	2	2	5

There are 24 at-risk structures for the 500-yr frequency critical duration event and 15 at-risk structures for the 100-yr frequency storm event as shown in Table 5. An internal survey of at-risk structures within the 500-yr frequency storm event was performed that includes the elevation of the lowest floor of the home, the square footage of the basement, as well as the square footage of any finished basement area. The internal structure survey is to be used by the City for FEMA's Benefit Cost Analysis Software (BCA) for funding opportunities.

Table 6: Turf, Countryside, and Ranch Flood Prone Area - Critical Duration (2hr) Flood Risk Structures

Address No.	Street	T/F Elev. (ft)	L/E Elev. (ft)	500-Year WSEL (ft)	100-Year WSEL (ft)	50-Year WSEL (ft)	10-Year WSEL (ft)
404	BRIDLE LANE	743.82	743.75	743.89	743.61	743.17	*
532	TURF LANE	749.35	748.77	749.16	748.83	748.47	747.97
509	COUNTRYSIDE DRIVE	748.22	747.85	749.16	748.83	748.47	747.97
521	COUNTRYSIDE DRIVE	749.07	748.66	749.16	748.83	748.47	747.97
527	COUNTRYSIDE DRIVE	748.74	748.29	749.16	748.83	748.47	747.97
533	COUNTRYSIDE DRIVE	748.56	748.14	749.16	748.83	748.47	747.97
514	COUNTRYSIDE DRIVE	749.19	748.90	749.16	748.83	748.47	747.97
520	COUNTRYSIDE DRIVE	749.06	T/F	749.16	748.83	748.47	747.97
528	COUNTRYSIDE DRIVE	749.06	748.62	749.16	748.83	748.47	747.97
532	COUNTRYSIDE DRIVE	748.95	748.60	749.16	748.83	748.47	747.97
604	COUNTRYSIDE DRIVE	750.04	749.50	750.83	750.69	750.53	750.16
1729	DRIVING PARK ROAD	751.20	750.56	750.83	750.69	750.53	750.16
1717	DRIVING PARK ROAD	750.93	750.40	750.83	750.69	750.53	750.16
1723	DRIVING PARK ROAD	751.17	750.56	750.83	750.69	750.53	750.16
405	TURF LANE	743.78	T/F	743.85	743.58	743.31	*
409	TURF LANE	744.14	743.71	744.33	744.19	744.05	*
415	TURF LANE	744.48	743.78	744.85	744.66	744.30	*
521	TURF LANE	749.52	749.11	749.16	748.83	748.47	747.97
527	TURF LANE	748.88	748.34	749.16	748.83	748.47	747.97
533	TURF LANE	748.46	T/F	749.16	748.83	748.47	747.97
528	TURF LANE	749.27	748.88	749.16	748.83	748.47	747.97
509	TURF LANE	749.16	748.73	748.73	748.48	*	*
433	TURF LANE	747.91	747.52	747.56	747.33	*	*
427	TURF LANE	746.29	745.94	745.95	745.76	745.35	*

*no surface flooding

Table 7 below show the flood risk structures from the secondary analysis. These properties were not considered for buyouts.

Table 7: Turf, Countryside, and Ranch Flood Prone Area - Localized Drainage At-risk Structures

Address No.	Street	T/F Elev. (ft)	500-Year WSEL (ft)	100-Year WSEL (ft)	50-Year WSEL (ft)	10-Year WSEL (ft)
420	Ranch	753.75	754.18	754.14	754.12	754.08
428	Ranch	754.10	754.19	754.16	754.13	754.09
432	Ranch	754.26	754.30	754.28	754.24	754.2
508	Ranch	753.96	754.27	754.24	754.22	754.18
404	Countryside	747.43	748.02	747.99	747.98	747.95
408	Countryside	748.14	748.72	748.69	748.68	748.65
420	Countryside	749.99	750.11	750.08	750.07	750.03
504	Countryside	750.23	750.36	750.32	750.31	750.26
508	Countryside	749.18	749.79	749.75	749.73	749.68
408	Turf	744.50	744.51	744.48	744.47	744.43
420	Turf	746.26	746.32	746.29	746.26	746.22
432	Turf	748.38	748.70	748.67	749.66	749.54
504	Turf	749.51	749.65	749.61	749.59	749.54

4.3 ALTERNATIVES

Lower Roadway Profile of Turf Lane and Countryside Drive

This alternative evaluates the impact of lowering the roadway profiles of Turf Lane and Countryside Drive to reduce ponding within the depressional area on Driving Park Road. The only positive overland flow route in existing conditions is located within the private yards between Bridle Lane and Turf Lane. By lowering the roadway profiles, water that previously ponded and was conveyed on private property is routed instead in the right-of-way. This alternative has a cost estimated at $1,267,558. There remains 1 structure that floods in the 100-yr storm event. Its buyout cost has been added to the estimated construction costs as tabulated in detail in the Appendix. No downstream impacts are anticipated with this alternative. It should be noted that this is a right-of-way improvement to alleviate ponding near Driving Park and will have no impact on the localized private yard flooding due to the poor subdivision design standards in this neighborhood. The cost estimate for the lowering of the roadways can be found in the Appendix.

Structure Buyouts

This alternative considers buying out impacted homes and turning the lots into open space. There are 15 homes at-risk for 100-yr overland flooding. Based on Milton Township Assessor's information it as anticipated that a complete 100-yr buyout would cost $6,220,500. The homes that are affected by localized flooding only are not included in this tabulation since they are unlikely candidates for buyouts due to the nature of flooding experienced.

Swale Improvements

To eliminate the localized drainage issues, the swales in between affected homes will need to be regraded. It is estimated to cost $50,000 to eliminate the localized drainage issues for the 13 at-risk structures

5.0 Recommendations

Appendix

Exhibits

Cost Estimates

ENGINEERING RESOURCE ASSOCIATES, INC.
Consulting Engineers, Scientists & Surveyors

Engineer's Opinion of Probable Construction Cost 10/19/2017
Turf Lane - Lowering Roadway Profile
Turf, Ranch, and Countryside Alternatives

DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT COST	TOTAL COST
PAVEMENT REMOVAL	SQ YD	2500	$25.00	$62,500.00
EARTH EXCAVATION	CU YD	833	$50.00	$41,650.00
GEOTECHNICAL FABRIC	SQ YD	2500	$3.00	$7,500.00
PRIME COAT	POUND	625	$1.00	$625.00
TACK COAT	POUND	63	$1.00	$63.00
AGGREGATE BASE COURSE, 4"	CU YD	280	$20.00	$5,600.00
HMA SURFACE COURSE, 2"	TON	280	$120.00	$33,600.00
HMA BINDER COURSE, 2.5"	TON	350	$100.00	$35,000.00
HMA BASE COURSE, 5"	TON	700	$70.00	$49,000.00
DRIVEWAY REMOVE & REPLACE	SQ YD	320	$50.00	$16,000.00
REMOVAL OF UNSUITABLE MATERIALS	CY	416	$50.00	$20,800.00
PGE	CY	416	$65.00	$27,040.00
MOBILIZATION	L SUM	1	$12,000.00	$12,000.00
TRAFFIC CONTROL & PROTECTION	L SUM	1	$15,000.00	$15,000.00
100-YR BUYOUTS	L SUM	1	$286,176.00	$286,176.00
			Subtotal	$612,554.00
			20% Contingency	$122,510.80
			15% Engineering Cost	$91,883.10
			Total Cost	**$826,947.90**

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Engineer's Opinion of Probable Construction Cost 10/19/2017
Countryside - Lowering Roadway Profile
Turf, Ranch, and Countryside Alternatives

DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT COST	TOTAL COST
PAVEMENT REMOVAL	SQ YD	2500	$25.00	$62,500.00
EARTH EXCAVATION	CU YD	833	$50.00	$41,650.00
GEOTECHNICAL FABRIC	SQ YD	2500	$3.00	$7,500.00
PRIME COAT	POUND	625	$1.00	$625.00
TACK COAT	POUND	63	$1.00	$63.00
AGGREGATE BASE COURSE, 4"	CU YD	280	$20.00	$5,600.00
HMA SURFACE COURSE, 2"	TON	280	$120.00	$33,600.00
HMA BINDER COURSE, 2.5"	TON	350	$100.00	$35,000.00
HMA BASE COURSE, 5"	TON	700	$70.00	$49,000.00
DRIVEWAY REMOVE & REPLACE	SQ YD	320	$50.00	$16,000.00
REMOVAL OF UNSUITABLE MATERIALS	CY	416	$50.00	$20,800.00
PGE	CY	416	$65.00	$27,040.00
MOBILIZATION	L SUM	1	$12,000.00	$12,000.00
TRAFFIC CONTROL & PROTECTION	L SUM	1	$15,000.00	$15,000.00
			Subtotal	$326,378.00
			20% Contingency	$65,275.60
			15% Engineering Cost	$48,956.70
			Total Cost	**$440,610.30**

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Engineer's Opinion of Probable Construction Cost 10/19/2017
Ranch Road - Storm Sewer Installation
Wakeman Alternative

DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT COST	TOTAL COST
TRENCH BACKFILL	CU YD	3887	$50.00	$194,350.00
CLASS "D" PATCH	SQ YD	2058	$90.00	$185,220.00
SURFACE PATCH	SQ YD	2340	$25.00	$58,500.00
STORM SEWERS 12" RCP	FOOT	275	$80.00	$22,000.00
STORM SEWERS 48" RCP	FOOT	2260	$190.00	$429,400.00
MANHOLE TYA 4' DIA. TY1 FCL	EACH	11	$4,000.00	$44,000.00
CATCH BASINS TYC TY11 F&G	EACH	22	$2,250.00	$49,500.00
CONNECT TO EXISTING STRUCTURE	EACH	2	$500.00	$1,000.00
TRAFFIC CONTROL AND PROTECTION	L SUM	1	$30,000.00	$30,000.00
MOBILIZATION	L SUM	1	$40,560.00	$40,560.00
100-YR BUYOUTS	L SUM	1	$601,095.00	$601,095.00
			Subtotal	$1,655,625.00
			20% Contingency	$331,125.00
			15% Engineering Cost	$248,343.75
			Total Cost	**$2,235,093.75**

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Engineer's Opinion of Probable Construction Cost 10/18/2017
Parkway Drive - Storm Sewer Installation
Thomas Overflow Alternative

DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT COST	TOTAL COST
TRENCH BACKFILL	CU YD	2204	$50.00	$110,200.00
STORM SEWERS 12" RCP	FOOT	175	$80.00	$14,000.00
STORM SEWERS 36" RCP	FOOT	1310	$170.00	$222,700.00
MANHOLE TYA 4' DIA. TY1 FCL	EACH	7	$4,000.00	$28,000.00
CATCH BASINS TYC TY11 F&G	EACH	14	$2,250.00	$31,500.00
CONNECT TO EXISITNG STRUCTURE	EACH	2	$500.00	$1,000.00
TRAFFIC CONTROL AND PROTECTION	L SUM	1	$15,000.00	$15,000.00
CLASS "D" PATCH	SQ YD	1028	$90.00	$92,520.00
SURFACE PATCH	SQ YD	1194	$25.00	$29,850.00
MOBILIZATION	L SUM	1	$21,500.00	$21,500.00
100-YR BUYOUTS	L SUM	1	$168,680.00	$168,680.00
			Subtotal	$734,950.00
			20% Contingency	$146,990.00
			15% Engineering Cost	$110,242.50
			Total Cost	**$992,182.50**

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Engineer's Opinion of Probable Construction Cost 10/18/2017
Detention
Thomas Overflow Alternative

DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT COST	TOTAL COST
TREE REMOVAL (OVER 15 UNITS DIAMETER)	UNIT	15	$40.00	$600.00
TEMPORARY FENCE	FOOT	980	$5.00	$4,900.00
EARTH EXCAVATION (SPECIAL)	CU YD	8065	$55.00	$443,575.00
PERIMETER EROSION BARRIER	FOOT	980	$4.00	$3,920.00
RESTRICTOR MANHOLE	EACH	2	$4,000.00	$8,000.00
CONNECT TO EXISTING STRUCTURE	EACH	2	$500.00	$1,000.00
TRAFFIC CONTROL AND PROTECTION	L SUM	1	$10,000.00	$10,000.00
CLASS "D" PATCH	SQ YD	14	$90.00	$1,260.00
SURFACE PATCH	SQ YD	17	$25.00	$425.00
STORM SEWERS 24" RCP	FOOT	30	$120.00	$3,600.00
CONNECT TO EXISITNG STRUCTURE	EACH	1	$500.00	$500.00
TRENCH BACKFILL	CU YD	12	$50.00	$600.00
SEEDING, SPECIAL	SQ YD	4840	$8.00	$38,720.00
MOBILIZATION	L SUM	1	$42,000.00	$42,000.00
LAND ACQUISITION AND DEMO	L SUM	1	$525,030.00	$525,030.00
			Subtotal	$1,084,130.00
			20% Contingency	$216,826.00
			15% Engineering Cost	$162,619.50
			Total Cost	**$1,463,575.50**

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Engineer's Opinion of Probable Construction Cost 10/18/2017
Swale Improvements
Turf, Ranch, and Countryside Alternatives

DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT COST	TOTAL COST
SWALE REGRADING	EACH	13	$3,000.00	$39,000.00
MOBILIZATION	L SUM	1	$2,000.00	$2,000.00
			Subtotal	$41,000.00
			20% Contingency	$8,200.00
			Total Cost	**$49,200.00**

Time of Concentration Calculations

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PROJECT: Wheaton Flood Prone Area Study 2016
LOCATION: Wheaton, IL
PROJECT #: 160212

TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 7

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	**Unit**	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	750.00
Downstream Elevation	ft	748.03
Land Slope, s	ft/ft	0.0197
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.25

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	745
Upstream Elevation	ft	748.03
Downstream Elevation	ft	741.60
Watercourse Slope, s	ft/ft	0.0086
Average Velocity, V	fps	1.50
$T_t = L / 3600 V$	hr	0.14

$T_c = T_t + T_t + T_t$	hr	0.39
Use in Model (5 min. minimum)	min	23

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PROJECT: Wheaton Flood Prone Area Study 2016
LOCATION: Wheaton, IL 05/04/2016
PROJECT #: 160212

TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 1

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	**Unit**	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	768.00
Downstream Elevation	ft	765.89
Land Slope, s	ft/ft	0.0211
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.24

Shallow Concentrated Flow

Surface Description (u or p)		u
Flow Length, L	ft	1790
Upstream Elevation	ft	765.89
Downstream Elevation	ft	742.00
Watercourse Slope, s	ft/ft	0.0133
Average Velocity, V	fps	1.86
$T_t = L / 3600 V$	hr	0.27

$T_c = T_t + T_t + T_t$	hr	0.51
Use in Model (5 min. minimum)	min	31

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LOCATION: Wheaton, IL
PROJECT #: 160212

TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 20

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	756.09
Downstream Elevation	ft	754.75
Land Slope, s	ft/ft	0.0134
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.29

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	260
Upstream Elevation	ft	754.75
Downstream Elevation	ft	747.60
Watercourse Slope, s	ft/ft	0.0275
Average Velocity, V	fps	2.68
$T_t = L / 3600 V$	hr	0.03

$T_c = T_t + T_t + T_t$	hr	0.32
Use in Model (5 min. minimum)	min	19

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LOCATION: Wheaton, IL
PROJECT #: 160212

TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 18

ASSUMPTIONS: Manning's Roughness Coeff., n

grass areas:	0.24
paved areas:	0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	762.10
Downstream Elevation	ft	760.85
Land Slope, s	ft/ft	0.0125
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.29

Shallow Concentrated Flow

Surface Description (u or p)		p
Flow Length, L	ft	212
Upstream Elevation	ft	760.85
Downstream Elevation	ft	755.70
Watercourse Slope, s	ft/ft	0.0243
Average Velocity, V	fps	3.17
$T_t = L / 3600 V$	hr	0.02

$T_c = T_t + T_t + T_t$	hr	0.31
Use in Model (5 min. minimum)	min	19

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LOCATION: Wheaton, IL
PROJECT #: 160212

TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 12

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	768.04
Downstream Elevation	ft	766.00
Land Slope, s	ft/ft	0.0204
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.24

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	680
Upstream Elevation	ft	766.00
Downstream Elevation	ft	761.20
Watercourse Slope, s	ft/ft	0.0071
Average Velocity, V	fps	1.36
$T_t = L / 3600 V$	hr	0.14

$T_c = T_t + T_t + T_t$	hr	0.38
Use in Model (5 min. minimum)	min	23

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LOCATION: Wheaton, IL
PROJECT #: 160212

TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 6

ASSUMPTIONS: Manning's Roughness Coeff., n

grass areas:	0.24
paved areas:	0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	773.60
Downstream Elevation	ft	768.45
Land Slope, s	ft/ft	0.0515
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.17

Shallow Concentrated Flow

Surface Description (u or p)		u
Flow Length, L	ft	575
Upstream Elevation	ft	768.45
Downstream Elevation	ft	763.80
Watercourse Slope, s	ft/ft	0.0081
Average Velocity, V	fps	1.45
$T_t = L / 3600 V$	hr	0.11

$T_c = T_t + T_t + T_t$	hr	0.28
Use in Model (5 min. minimum)	min	17

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LOCATION: Wheaton, IL
PROJECT #: 160212

TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 10

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	Exist.
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	794.00
Downstream Elevation	ft	789.61
Land Slope, s	ft/ft	0.0439
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.18

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	1167
Upstream Elevation	ft	789.61
Downstream Elevation	ft	770.70
Watercourse Slope, s	ft/ft	0.0162
Average Velocity, V	fps	2.05
$T_t = L / 3600 V$	hr	0.16

$T_c = T_t + T_t + T_t$	hr	0.34
Use in Model (5 min. minimum)	min	20

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LOCATION: Wheaton, IL
PROJECT #: 160212

TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 15

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	Exist.
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	800.00
Downstream Elevation	ft	799.17
Land Slope, s	ft/ft	0.0083
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.35

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	1192
Upstream Elevation	ft	799.17
Downstream Elevation	ft	780.00
Watercourse Slope, s	ft/ft	0.0161
Average Velocity, V	fps	2.05
$T_t = L / 3600 V$	hr	0.16

$T_c = T_t + T_t + T_t$	hr	0.51
Use in Model (5 min. minimum)	min	32

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PROJECT: Wheaton Flood Prone Area Study 2016
LOCATION: Wheaton, IL
PROJECT #: 160212

TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 16

ASSUMPTIONS: Manning's Roughness Coeff., n

grass areas:	0.24
paved areas:	0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	762.00
Downstream Elevation	ft	760.00
Land Slope, s	ft/ft	0.0200
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.24

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	960
Upstream Elevation	ft	760.00
Downstream Elevation	ft	746.50
Watercourse Slope, s	ft/ft	0.0141
Average Velocity, V	fps	1.91
$T_t = L / 3600 V$	hr	0.14

$T_c = T_t + T_t + T_t$	hr	0.38
Use in Model (5 min. minimum)	min	23

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PROJECT: Wheaton Flood Prone Area Study 2016
LOCATION: Wheaton, IL
PROJECT #: 160212

TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 11

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	762.00
Downstream Elevation	ft	760.00
Land Slope, s	ft/ft	0.0200
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.24

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	316
Upstream Elevation	ft	760.00
Downstream Elevation	ft	749.70
Watercourse Slope, s	ft/ft	0.0326
Average Velocity, V	fps	2.91
$T_t = L / 3600 V$	hr	0.03

$T_c = T_t + T_t + T_t$	hr	0.27
Use in Model (5 min. minimum)	min	16

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PROJECT: Wheaton Flood Prone Area Study 2016
LOCATION: Wheaton, IL
PROJECT #: 160212

TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 24

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	772.00
Downstream Elevation	ft	770.51
Land Slope, s	ft/ft	0.0149
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.27

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	740
Upstream Elevation	ft	770.51
Downstream Elevation	ft	760.89
Watercourse Slope, s	ft/ft	0.0130
Average Velocity, V	fps	1.84
$T_t = L / 3600 V$	hr	0.11

$T_c = T_t + T_t + T_t$	hr	0.38
Use in Model (5 min. minimum)	min	23

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PROJECT: Wheaton Flood Prone Area Study 2016
LOCATION: Wheaton, IL
PROJECT #: 160212

TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 25

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	776.00
Downstream Elevation	ft	774.51
Land Slope, s	ft/ft	0.0149
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.27

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	1200
Upstream Elevation	ft	774.51
Downstream Elevation	ft	757.40
Watercourse Slope, s	ft/ft	0.0143
Average Velocity, V	fps	1.93
$T_t = L / 3600 V$	hr	0.17

$T_c = T_t + T_t + T_t$	hr	0.44
Use in Model (5 min. minimum)	min	26

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PROJECT: Wheaton Flood Prone Area Study 2016
LOCATION: Wheaton, IL
PROJECT #: 160212

TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 2

ASSUMPTIONS: Manning's Roughness Coeff., n

grass areas:	0.24
paved areas:	0.011

Sheet Flow	Unit	Exist.
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	800.20
Downstream Elevation	ft	800.00
Land Slope, s	ft/ft	0.0020
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.61

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	1800
Upstream Elevation	ft	800.00
Downstream Elevation	ft	772.30
Watercourse Slope, s	ft/ft	0.0154
Average Velocity, V	fps	2.00
$T_t = L / 3600 V$	hr	0.25

$T_c = T_t + T_t + T_t$	hr	0.86
Use in Model (5 min. minimum)	min	52

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LOCATION: Wheaton, IL
PROJECT #: 160212

TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 22

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	777.00
Downstream Elevation	ft	775.60
Land Slope, s	ft/ft	0.0140
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.28

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	1200
Upstream Elevation	ft	775.60
Downstream Elevation	ft	758.00
Watercourse Slope, s	ft/ft	0.0147
Average Velocity, V	fps	1.95
$T_t = L / 3600 V$	hr	0.17

$T_c = T_t + T_t + T_t$	hr	0.45
Use in Model (5 min. minimum)	min	27

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TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 8

ASSUMPTIONS: Manning's Roughness Coeff., n

grass areas:	0.24
paved areas:	0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.012
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	793.30
Downstream Elevation	ft	792.00
Land Slope, s	ft/ft	0.0130
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.03

Shallow Concentrated Flow		
Surface Description (u or p)		p
Flow Length, L	ft	885
Upstream Elevation	ft	792.00
Downstream Elevation	ft	776.50
Watercourse Slope, s	ft/ft	0.0175
Average Velocity, V	fps	2.69
$T_t = L / 3600 V$	hr	0.09

$T_c = T_t + T_t + T_t$	hr	0.12
Use in Model (5 min. minimum)	min	7

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TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 19

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	780.00
Downstream Elevation	ft	779.00
Land Slope, s	ft/ft	0.0100
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.32

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	1290
Upstream Elevation	ft	779.00
Downstream Elevation	ft	761.80
Watercourse Slope, s	ft/ft	0.0133
Average Velocity, V	fps	1.86
$T_t = L / 3600 V$	hr	0.19

$T_c = T_t + T_t + T_t$	hr	0.51
Use in Model (5 min. minimum)	min	31

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TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 13

ASSUMPTIONS: Manning's Roughness Coeff., n

grass areas:	0.24
paved areas:	0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	792.30
Downstream Elevation	ft	791.60
Land Slope, s	ft/ft	0.0070
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.37

Shallow Concentrated Flow

Surface Description (u or p)		u
Flow Length, L	ft	1238
Upstream Elevation	ft	791.60
Downstream Elevation	ft	778.00
Watercourse Slope, s	ft/ft	0.0110
Average Velocity, V	fps	1.69
$T_t = L / 3600 V$	hr	0.20

$T_c = T_t + T_t + T_t$	hr	0.57
Use in Model (5 min. minimum)	min	34

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TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 14

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	772.00
Downstream Elevation	ft	768.50
Land Slope, s	ft/ft	0.0350
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.20

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	690
Upstream Elevation	ft	768.50
Downstream Elevation	ft	762.00
Watercourse Slope, s	ft/ft	0.0094
Average Velocity, V	fps	1.57
$T_t = L / 3600 V$	hr	0.12

$T_c = T_t + T_t + T_t$	hr	0.32
Use in Model (5 min. minimum)	min	19

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TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 9

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	774.00
Downstream Elevation	ft	772.75
Land Slope, s	ft/ft	0.0125
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.29

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	405
Upstream Elevation	ft	772.75
Downstream Elevation	ft	766.00
Watercourse Slope, s	ft/ft	0.0167
Average Velocity, V	fps	2.08
$T_t = L / 3600 V$	hr	0.05

$T_c = T_t + T_t + T_t$	hr	0.34
Use in Model (5 min. minimum)	min	20

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TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 3

ASSUMPTIONS: Manning's Roughness Coeff., n

grass areas:	0.24
paved areas:	0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	771.30
Downstream Elevation	ft	768.70
Land Slope, s	ft/ft	0.0260
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.22

Shallow Concentrated Flow

Surface Description (u or p)		u
Flow Length, L	ft	390
Upstream Elevation	ft	768.70
Downstream Elevation	ft	762.00
Watercourse Slope, s	ft/ft	0.0172
Average Velocity, V	fps	2.11
$T_t = L / 3600 V$	hr	0.05

$T_c = T_t + T_t + T_t$	hr	0.27
Use in Model (5 min. minimum)	min	16

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TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 21

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	790.00
Downstream Elevation	ft	789.60
Land Slope, s	ft/ft	0.0040
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.46

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	892
Upstream Elevation	ft	789.60
Downstream Elevation	ft	766.14
Watercourse Slope, s	ft/ft	0.0263
Average Velocity, V	fps	2.62
$T_t = L / 3600 V$	hr	0.09

$T_c = T_t + T_t + T_t$	hr	0.55
Use in Model (5 min. minimum)	min	33

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TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 5

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	775.90
Downstream Elevation	ft	772.60
Land Slope, s	ft/ft	0.0330
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.20

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	1278
Upstream Elevation	ft	772.60
Downstream Elevation	ft	766.14
Watercourse Slope, s	ft/ft	0.0051
Average Velocity, V	fps	1.15
$T_t = L / 3600 V$	hr	0.31

$T_c = T_t + T_t + T_t$	hr	0.51
Use in Model (5 min. minimum)	min	31

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TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 17

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	Exist.
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	799.20
Downstream Elevation	ft	797.00
Land Slope, s	ft/ft	0.0220
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.23

Shallow Concentrated Flow		
Surface Description (u or p)		u
Flow Length, L	ft	570
Upstream Elevation	ft	797.00
Downstream Elevation	ft	766.14
Watercourse Slope, s	ft/ft	0.0541
Average Velocity, V	fps	3.75
$T_t = L / 3600 V$	hr	0.04

$T_c = T_t + T_t + T_t$	hr	0.27
Use in Model (5 min. minimum)	min	16

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TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 23

ASSUMPTIONS: Manning's Roughness Coeff., n
grass areas: 0.24
paved areas: 0.011

Sheet Flow	Unit	**Exist.**
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	796.00
Downstream Elevation	ft	795.00
Land Slope, s	ft/ft	0.0100
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.32

Shallow Concentrated Flow		
Surface Description (u or p)		p
Flow Length, L	ft	570
Upstream Elevation	ft	795.00
Downstream Elevation	ft	766.14
Watercourse Slope, s	ft/ft	0.0506
Average Velocity, V	fps	4.57
$T_t = L / 3600 V$	hr	0.03

$T_c = T_t + T_t + T_t$	hr	0.35
Use in Model (5 min. minimum)	min	21

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TIME OF CONCENTRATION, TR-55 METHOD

Subcatchment 4

ASSUMPTIONS: Manning's Roughness Coeff., n

grass areas:	0.24
paved areas:	0.011

Sheet Flow	Unit	Exist.
Manning's Roughness Coeff., n		0.24
Flow Length, L (L ≤ 300 ft)	ft	100
2-yr 24-hr Rainfall, P_2	in	3.04
Upstream Elevation	ft	796.00
Downstream Elevation	ft	792.00
Land Slope, s	ft/ft	0.0400
$T_t = [0.007 (nL)^{0.8}] / [P_2^{0.5} s^{0.4}]$	hr	0.18

Shallow Concentrated Flow

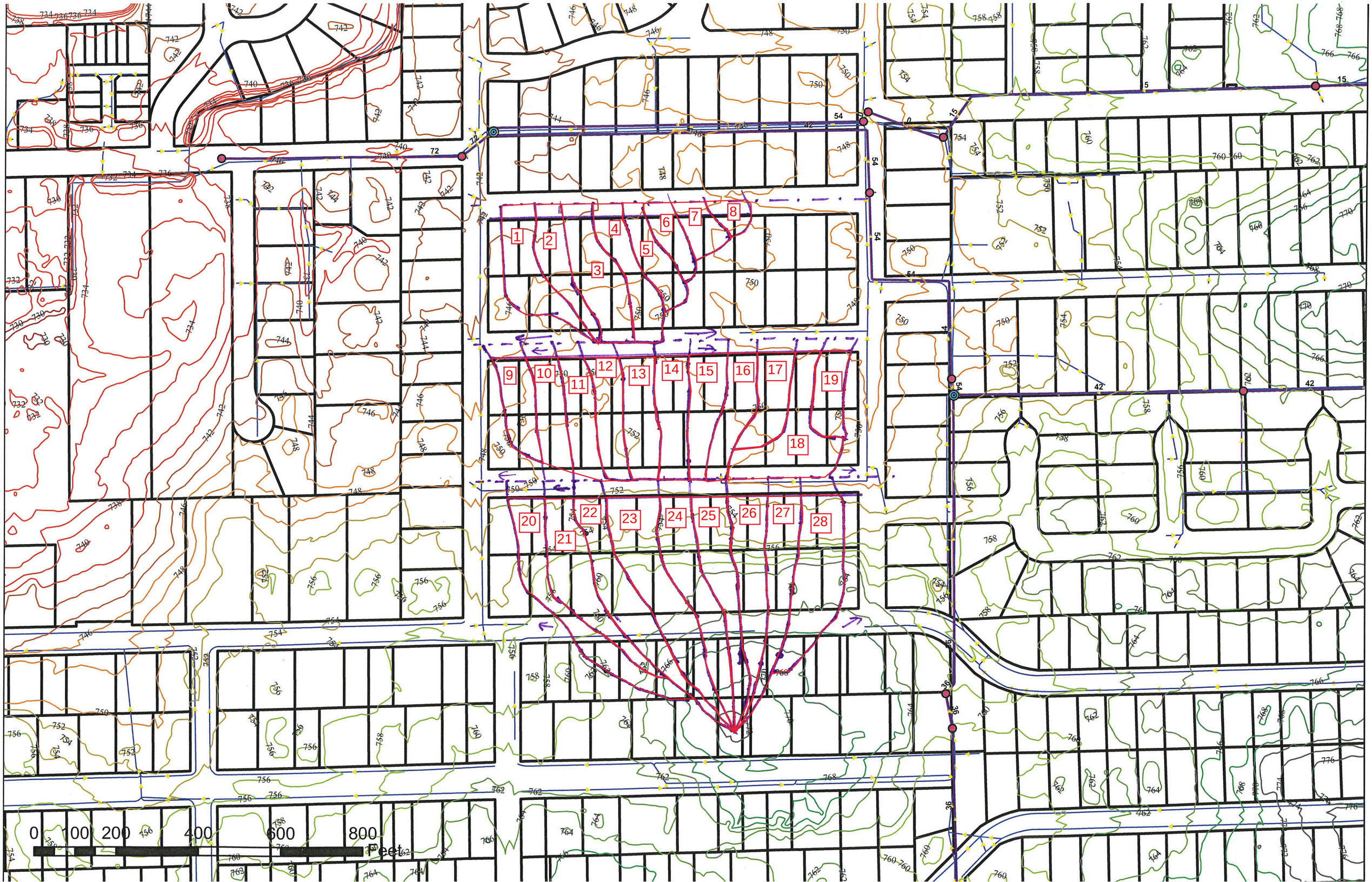
Surface Description (u or p)		p
Flow Length, L	ft	875
Upstream Elevation	ft	792.00
Downstream Elevation	ft	766.14
Watercourse Slope, s	ft/ft	0.0296
Average Velocity, V	fps	3.49
$T_t = L / 3600 V$	hr	0.07

$T_c = T_t + T_t + T_t$	hr	0.25
Use in Model (5 min. minimum)	min	15

Electronic Copy of XPSWMM Model

(CD Here)

Ranch, Countryside, and Turf Secondary Analysis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500-yr Localized Flooding Calculations

West		T/F	East		Drainage Area #	Area (SF)	C	I (in/hr)	500-yr Flow (cfs)	Bottom of Swale	Slope	Flow Depth	WSEL	West	East	
404	Ranch	754.64	412	Ranch	20	37490	0.7	6.76	4.07	751.43	2.8	0.32	751.75	FALSE	FALSE	
412	Ranch	754.15	420	Ranch	21	34609	0.7	6.76	3.76	752.71	2.6	0.31	753.02	FALSE	FALSE	
420	Ranch	753.75	428	Ranch	22	38240	0.7	6.76	4.15	753.87	3.3	0.31	754.18	YES	YES	
428*	Ranch	754.10	432	Ranch	23	49159	0.7	6.76	5.34	753.93	3.5	0.26	754.19	YES	FALSE	
432	Ranch	754.26	504	Ranch	24	37167	0.7	6.76	4.04	754.00	3.6	0.3	754.30	YES	FALSE	
504	Ranch	754.50	508	Ranch	25	31345	0.7	6.76	3.41	754.00	3.9	0.27	754.27	FALSE	YES	
508	Ranch	753.96	516	Ranch	26	31911	0.7	6.76	3.47	753.31	3.8 **				FALSE	**all goes to 516/524
516	Ranch	753.47	524	Ranch	27	29746	0.7	6.76	3.23	752.28	7.3	0.39	752.67	FALSE	FALSE	
524	Ranch	754.18	532	Ranch	28	43618	0.7	6.76	4.74	752.42	3.5	0.32	752.74	FALSE	FALSE	
532	Ranch	753.00														
404	Countryside	747.43	408	Countryside	9	18474	0.7	4.3	1.28	747.82	1.8	0.20	748.02	YES	FALSE	
408	Countryside	748.14	414	Countryside	10	19601	0.7	4.3	1.35	748.50	1.3	0.22	748.72	YES	FALSE	
414	Countryside	749.66	420	Countryside	11	20829	0.7	4.3	1.44	749.30	0.7	0.29	749.59	FALSE	FALSE	
420	Countryside	749.99	426	Countryside	12	20342	0.7	4.3	1.41	749.86	0.8	0.25	750.11	YES	FALSE	
426	Countryside	753.13	432	Countryside	13	24080	0.7	4.3	1.66	750.43	1.3	0.25	750.68	FALSE	FALSE	
432**	Countryside	751.03	504	Countryside	14	23352	0.7	4.3	1.61	750.09	0.8	0.27	750.36	FALSE	YES	
504**	Countryside	750.23	508	Countryside	15	22042	0.7	4.3	1.52	749.50	0.6	0.29	749.79	FALSE	YES	
508	Countryside	749.18	514	Countryside	16	21500	0.7	4.3	1.49	748.81	1.2	0.29	749.10	FALSE	FALSE	
514	Countryside	749.19	520	Countryside	17	19484	0.7	4.3	1.35	748.77	1.2	0.22	748.99	FALSE	FALSE	
520	Countryside	749.06	528	Countryside	18	36738	0.7	4.3	2.54	748.74	1.4	0.30	749.04	FALSE	FALSE	
528	Countryside	749.06	532	Countryside	19	15686	0.7	4.3	1.08	748.45	1.6	0.18	748.63	FALSE	FALSE	
532	Countryside	748.95														
404	Turf	744.36	408	Turf	1	28412	0.7	6.76	3.09	743.80	1.7	0.31	744.11	FALSE	FALSE	
408	Turf	744.50	414	Turf	2	19831	0.7	6.76	2.15	744.25	1.7	0.26	744.51	YES	FALSE	
414	Turf	746.70	420	Turf	3	32087	0.7	6.76	3.49	744.60	1.5	0.34	744.94	FALSE	FALSE	
420	Turf	746.26	426	Turf	4	23589	0.7	6.76	2.56	746.01	1.2	0.31	746.32	YES	FALSE	
426	Turf	747.10	432	Turf	5	17293	0.7	6.76	1.88	746.76	0.6	0.32	747.08	FALSE	FALSE	
432	Turf	748.38	504	Turf	6	12346	0.7	6.76	1.34	748.47	1.1	0.23	748.70	YES	FALSE	
504	Turf	749.51	508	Turf	7	11308	0.7	6.76	1.23	749.31	0.2	0.34	749.65	YES	FALSE	
508	Turf	750.06	514	Turf	8	6853	0.7	6.76	0.74	749.23	0.2	0.26	749.49	FALSE		

n=0.024

Manning's Equation used to Solve for depth of flow. Based on field observation it was assumed that all swales represented trapezoidal cross-section with 2-ft bottom and 5:1 side slopes unless otherwise noted.

*rectangular cross-section with 5' bottom

**rectangular cross-section with 3' bottom

100-yr Localized Flooding Calculations

West		T/F	East		Drainage Area	Area (SF)	C	I (in/hr)	100-yr Flow (cfs)	Bottom of Swale	Slope	Flow Depth	WSEL	West	East	
404	Ranch	754.64	412	Ranch	20	37490	0.7	5.6	3.37	751.43	2.8	0.28	751.71	FALSE	FALSE	
412	Ranch	754.15	420	Ranch	21	34609	0.7	5.6	3.11	752.71	2.6	0.28	752.99	FALSE	FALSE	
420	Ranch	753.75	428	Ranch	22	38240	0.7	5.6	3.44	753.87	3.3	0.27	754.14	YES	YES	
428*	Ranch	754.10	432	Ranch	23	49159	0.7	5.6	4.42	753.93	3.5	0.23	754.16	YES	FALSE	
432	Ranch	754.26	504	Ranch	24	37167	0.7	5.6	3.34	754.00	3.6	0.28	754.28	YES	FALSE	
504	Ranch	754.50	508	Ranch	25	31345	0.7	5.6	2.82	754.00	3.9	0.24	754.24	FALSE	YES	
508	Ranch	753.96	516	Ranch	26	31911	0.7	5.6	2.87	753.31	3.8 **				FALSE	**all goes to 516/524
516	Ranch	753.47	524	Ranch	27	29746	0.7	5.6	2.68	752.28	7.3	0.34	752.62	FALSE	FALSE	
524	Ranch	754.18	532	Ranch	28	43618	0.7	5.6	3.93	752.42	3.5	0.29	752.71	FALSE	FALSE	
532	Ranch	753.00														
404	Countryside	747.43	408	Countryside	9	18474	0.7	3.56	1.06	747.82	1.8	0.17	747.99	YES	FALSE	
408	Countryside	748.14	414	Countryside	10	19601	0.7	3.56	1.12	748.50	1.3	0.19	748.69	YES	FALSE	
414	Countryside	749.66	420	Countryside	11	20829	0.7	3.56	1.19	749.30	0.7	0.25	749.55	FALSE	FALSE	
420	Countryside	749.99	426	Countryside	12	20342	0.7	3.56	1.16	749.86	0.8	0.22	750.08	YES	FALSE	
426	Countryside	753.13	432	Countryside	13	24080	0.7	3.56	1.38	750.43	1.3	0.22	750.65	FALSE	FALSE	
432**	Countryside	751.03	504	Countryside	14	23352	0.7	3.56	1.34	750.09	0.8	0.23	750.32	FALSE	YES	
504**	Countryside	750.23	508	Countryside	15	22042	0.7	3.56	1.26	749.50	0.6	0.25	749.75	FALSE	YES	
508	Countryside	749.18	514	Countryside	16	21500	0.7	3.56	1.23	748.81	1.2	0.21	749.02	FALSE	FALSE	
514	Countryside	749.19	520	Countryside	17	19484	0.7	3.56	1.11	748.77	1.2	0.20	748.97	FALSE	FALSE	
520	Countryside	749.06	528	Countryside	18	36738	0.7	3.56	2.10	748.74	1.4	0.26	749.00	FALSE	FALSE	
528	Countryside	749.06	532	Countryside	19	15686	0.7	3.56	0.90	748.45	1.6	0.16	748.61	FALSE	FALSE	
532	Countryside	748.95														
404	Turf	744.36	408	Turf	1	28412	0.7	5.6	2.56	743.80	1.7	0.28	744.08	FALSE	FALSE	
408	Turf	744.50	414	Turf	2	19831	0.7	5.6	1.78	744.25	1.7	0.23	744.48	FALSE	FALSE	
414	Turf	746.70	420	Turf	3	32087	0.7	5.6	2.89	744.60	1.5	0.31	744.91	FALSE	FALSE	
420	Turf	746.26	426	Turf	4	23589	0.7	5.6	2.12	746.01	1.2	0.28	746.29	YES	FALSE	
426	Turf	747.10	432	Turf	5	17293	0.7	5.6	1.56	746.76	0.6	0.28	747.04	FALSE	FALSE	
432	Turf	748.38	504	Turf	6	12346	0.7	5.6	1.11	748.47	1.1	0.20	748.67	YES	FALSE	
504	Turf	749.51	508	Turf	7	11308	0.7	5.6	1.02	749.31	0.2	0.30	749.61	YES	FALSE	
508	Turf	750.06	514	Turf	8	6853	0.7	5.6	0.62	749.23	0.2	0.23	749.46	FALSE		

n=0.024

Manning's Equation used to Solve for depth of flow. Based on field observation it was assumed that all swales represented trapezoidal cross-section with 2-ft bottom and 5:1 side slopes unless otherwise noted.

*rectangular cross-section with 5' bottom

**rectangular cross-section with 3' bottom

50-yr Localized Flooding Calculations

West		T/F	East		Drainage Area	Area (SF)	C	I (in/hr)	50-yr Flow (cfs)	Bottom of Swale	Slope %		Flow Depth	WSEL	West	East	
404	Ranch	754.64	412	Ranch	20	37490	0.7	4.78	2.88	751.43	2.8		0.26	751.69	FALSE	FALSE	
412	Ranch	754.15	420	Ranch	21	34609	0.7	4.78	2.66	752.71	2.6		0.25	752.96	FALSE	FALSE	
420	Ranch	753.75	428	Ranch	22	38240	0.7	4.78	2.94	753.87	3.3		0.25	754.12	YES	YES	
428*	Ranch	754.10	432	Ranch	23	49159	0.7	4.78	3.78	753.93	3.5		0.2	754.13	YES	FALSE	
432	Ranch	754.26	504	Ranch	24	37167	0.7	4.78	2.85	754.00	3.6		0.24	754.24	FALSE	FALSE	
504	Ranch	754.50	508	Ranch	25	31345	0.7	4.78	2.41	754.00	3.9		0.22	754.22	FALSE	YES	
508	Ranch	753.96	516	Ranch	26	31911	0.7	4.78	2.45	753.31	3.8	**				FALSE	**all goes to 516/524
516	Ranch	753.47	524	Ranch	27	29746	0.7	4.78	2.28	752.28	7.3		0.31	752.59	FALSE	FALSE	
524	Ranch	754.18	532	Ranch	28	43618	0.7	4.78	3.35	752.42	3.5		0.27	752.69	FALSE	FALSE	
532	Ranch	753.00															
404	Countryside	747.43	408	Countryside	9	18474	0.7	3.04	0.90	747.82	1.8		0.16	747.98	YES	FALSE	
408	Countryside	748.14	414	Countryside	10	19601	0.7	3.04	0.96	748.50	1.3		0.18	748.68	YES	FALSE	
414	Countryside	749.66	420	Countryside	11	20829	0.7	3.04	1.02	749.30	0.7		0.22	749.52	FALSE	FALSE	
420	Countryside	749.99	426	Countryside	12	20342	0.7	3.04	0.99	749.86	0.8		0.21	750.07	YES	FALSE	
426	Countryside	753.13	432	Countryside	13	24080	0.7	3.04	1.18	750.43	1.3		0.20	750.63	FALSE	FALSE	
432**	Countryside	751.03	504	Countryside	14	23352	0.7	3.04	1.14	750.09	0.8		0.22	750.31	FALSE	YES	
504**	Countryside	750.23	508	Countryside	15	22042	0.7	3.04	1.08	749.50	0.6		0.23	749.73	FALSE	YES	
508	Countryside	749.18	514	Countryside	16	21500	0.7	3.04	1.05	748.81	1.2		0.20	749.01	FALSE	FALSE	
514	Countryside	749.19	520	Countryside	17	19484	0.7	3.04	0.95	748.77	1.2		0.19	748.96	FALSE	FALSE	
520	Countryside	749.06	528	Countryside	18	36738	0.7	3.04	1.79	748.74	1.4		0.24	748.98	FALSE	FALSE	
528	Countryside	749.06	532	Countryside	19	15686	0.7	3.04	0.77	748.45	1.6		0.15	748.60	FALSE	FALSE	
532	Countryside	748.95															
404	Turf	744.36	408	Turf	1	28412	0.7	4.78	2.18	743.80	1.7		0.26	744.06	FALSE	FALSE	
408	Turf	744.50	414	Turf	2	19831	0.7	4.78	1.52	744.25	1.7		0.22	744.47	FALSE	FALSE	
414	Turf	746.70	420	Turf	3	32087	0.7	4.78	2.46	744.60	1.5		0.28	744.88	FALSE	FALSE	
420	Turf	746.26	426	Turf	4	23589	0.7	4.78	1.81	746.01	1.2		0.25	746.26	FALSE	FALSE	
426	Turf	747.10	432	Turf	5	17293	0.7	4.78	1.33	746.76	0.6		0.26	747.02	FALSE	FALSE	
432	Turf	748.38	504	Turf	6	12346	0.7	4.78	0.95	748.47	1.1		0.19	748.66	YES	FALSE	
504	Turf	749.51	508	Turf	7	11308	0.7	4.78	0.87	749.31	0.2		0.28	749.59	YES	FALSE	
508	Turf	750.06	514	Turf	8	6853	0.7	4.78	0.53	749.23	0.2		0.22	749.45	FALSE		

n=0.024

Manning's Equation used to Solve for depth of flow. Based on field observation it was assumed that all swales represented trapezoidal cross-section with 2-ft bottom and 5:1 side slopes unless otherwise noted.

*rectangular cross-section with 5' bottom

**rectangular cross-section with 3' bottom

10-yr Localized Flooding Calculations

West Structure	T/F	East Structure	Drainage Area	Area (SF)	C	I (in/hr)	10-yr Flow (cfs)	Bottom of Swale	Slope	Flow Depth	WSEL	West	East	
404 Ranch	754.64	412 Ranch	20	37490	0.7	3.3	1.99	751.43	2.8	0.22	751.65	FALSE	FALSE	
412 Ranch	754.15	420 Ranch	21	34609	0.7	3.3	1.84	752.71	2.6	0.21	752.92	FALSE	FALSE	
420 Ranch	753.75	428 Ranch	22	38240	0.7	3.3	2.03	753.87	3.3	0.21	754.08	YES	FALSE	
428* Ranch	754.10	432 Ranch	23	49159	0.7	3.3	2.61	753.93	3.5	0.16	754.09	FALSE	FALSE	
432 Ranch	754.26	504 Ranch	24	37167	0.7	3.3	1.97	754.00	3.6	0.2	754.20	FALSE	FALSE	
504 Ranch	754.50	508 Ranch	25	31345	0.7	3.3	1.66	754.00	3.9	0.18	754.18	FALSE	YES	
508 Ranch	753.96	516 Ranch	26	31911	0.7	3.3	1.69	753.31	3.8 **			FALSE		**all goes to 516/524
516 Ranch	753.47	524 Ranch	27	29746	0.7	3.3	1.58	752.28	7.3	0.26	752.54	FALSE	FALSE	
524 Ranch	754.18	532 Ranch	28	43618	0.7	3.3	2.31	752.42	3.5	0.22	752.64	FALSE	FALSE	
532 Ranch	753.00													
404 Countryside	747.43	408 Countryside	9	18474	0.7	2.1	0.62	747.82	1.8	0.13	747.95	YES	FALSE	
408 Countryside	748.14	414 Countryside	10	19601	0.7	2.1	0.66	748.50	1.3	0.15	748.65	YES	FALSE	
414 Countryside	749.66	420 Countryside	11	20829	0.7	2.1	0.70	749.30	0.7	0.18	749.48	FALSE	FALSE	
420 Countryside	749.99	426 Countryside	12	20342	0.7	2.1	0.69	749.86	0.8	0.17	750.03	YES	FALSE	
426 Countryside	753.13	432 Countryside	13	24080	0.7	2.1	0.81	750.43	1.3	0.17	750.60	FALSE	FALSE	
432** Countryside	751.03	504 Countryside	14	23352	0.7	2.1	0.79	750.09	0.8	0.17	750.26	FALSE	YES	
504** Countryside	750.23	508 Countryside	15	22042	0.7	2.1	0.74	749.50	0.6	0.18	749.68	FALSE	YES	
508 Countryside	749.18	514 Countryside	16	21500	0.7	2.1	0.73	748.81	1.2	0.16	748.97	FALSE	FALSE	
514 Countryside	749.19	520 Countryside	17	19484	0.7	2.1	0.66	748.77	1.2	0.16	748.93	FALSE	FALSE	
520 Countryside	749.06	528 Countryside	18	36738	0.7	2.1	1.24	748.74	1.4	0.20	748.94	FALSE	FALSE	
528 Countryside	749.06	532 Countryside	19	15686	0.7	2.1	0.53	748.45	1.6	0.12	748.57	FALSE	FALSE	
532 Countryside	748.95													
404 Turf	744.36	408 Turf	1	28412	0.7	3.3	1.51	743.80	1.7	0.22	744.02	FALSE	FALSE	
408 Turf	744.50	414 Turf	2	19831	0.7	3.3	1.05	744.25	1.7	0.18	744.43	FALSE	FALSE	
414 Turf	746.70	420 Turf	3	32087	0.7	3.3	1.70	744.60	1.5	0.24	744.84	FALSE	FALSE	
420 Turf	746.26	426 Turf	4	23589	0.7	3.3	1.25	746.01	1.2	0.21	746.22	FALSE	FALSE	
426 Turf	747.10	432 Turf	5	17293	0.7	3.3	0.92	746.76	0.6	0.22	746.98	FALSE	FALSE	
432 Turf	748.38	504 Turf	6	12346	0.7	3.3	0.65	748.47	1.1	0.15	748.62	YES	FALSE	
504 Turf	749.51	508 Turf	7	11308	0.7	3.3	0.60	749.31	0.2	0.23	749.54	YES	FALSE	
508 Turf	750.06	514 Turf	8	6853	0.7	3.3	0.36	749.23	0.2	0.18	749.41	FALSE		

n=0.024

Manning's Equation used to Solve for depth of flow. Based on field observation it was assumed that all swales represented trapezoidal cross-section with 2-ft bottom and 5:1 side slopes unless otherwise noted.

*rectangular cross-section with 5' bottom

**rectangular cross-section with 3' bottom

At-risk Structure Determination Table

Existing 500-yr Inundation Zone Structures

Area	Address	Street	T_F	L_E	Low Entry Description	1 2hr	Above T/F	Above L/E	5 2 hr	Above T/F	Above L/E	10 2hr	Above T/F	Above L/E	25 2hr	Above T/F	Above L/E	50 2hr	Above T/F	Above L/E	100 2 hr	Above T/F	Above L/E	500 2 hr	Above T/F	Above L/E	1 24hr	Above T/F	Above L/E	5 24 hr	Above T/F	Above L/E	10 24hr	Above T/F	Above L/E	25 24hr	Above T/F	Above L/E	50 24hr	Above T/F	Above L/E	100 24 hr	Above T/F	Above L/E	500 24 hr	Above T/F	Above L/E
Thomas	608	COUNTRYSIDE DRIVE	750.87	749.96	Attch. Garage	0	no	no	750.11	no	YES	750.16	no	YES	750.28	no	YES	750.53	no	YES	750.69	no	YES	750.83	no	YES	0	no	no	750.13	no	YES	750.14	no	YES	750.17	no	YES	750.19	no	YES	750.21	no	YES	750.32	no	YES
Thomas	608	RANCH ROAD	757.51	0.00	T/F at NW Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	753.75	no	no	755.47	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Thomas	612	COUNTRYSIDE DRIVE	751.79	750.80	Attch. Garage	0	no	no	750.11	no	no	750.54	no	no	751.00	no	YES	751.20	no	YES	751.54	no	YES	751.89	YES	YES	0	no	no	750.13	no	no	750.14	no	no	750.17	no	no	750.19	no	no	750.21	no	no	750.32	no	no
Thomas	618	COUNTRYSIDE DRIVE	753.26	752.58	Attch. Garage	0	no	no	750.11	no	no	750.16	no	no	750.28	no	no	750.53	no	no	750.69	no	no	750.83	no	no	0	no	no	750.13	no	no	750.14	no	no	750.17	no	no	750.19	no	no	750.21	no	no	750.32	no	no
Thomas	725	RANCH ROAD	758.61	0.00	T/F at SW Corner	0	no	no	758.15	no	no	758.2	no	no	758.31	no	no	758.48	no	no	758.64	YES	YES	758.79	YES	YES	758.09	no	no	758.13	no	no	758.14	no	no	758.17	no	no	758.19	no	no	758.24	no	no	758.24	no	no
Thomas	809	RANCH ROAD	758.74	0.00	T/F at SW Corner	758.09	no	no	758.2	no	no	758.28	no	no	758.43	no	no	758.6	no	no	758.77	YES	YES	758.96	YES	YES	758.12	no	no	758.18	no	no	758.2	no	no	758.23	no	no	758.26	no	no	758.29	no	no	758.32	no	no
Thomas	903	RANCH ROAD	761.88	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	760.25	no	no	760.48	no	no	760.51	no	no	760.68	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Thomas	907	RANCH ROAD	763.43	760.03	Attch. Garage	0	no	no	0	no	no	761.87	no	YES	762	no	YES	762.07	no	YES	762.17	no	YES	763.65	YES	YES	762.27	no	YES	762.51	no	YES	762.51	no	YES	762.52	no	YES	762.54	no	YES	762.54	no	YES	762.55	no	YES
Thomas	1704	WEBSTER COURT	760.29	0.00	T/F at SE Corner	758.1	no	no	758.23	no	no	758.3	no	no	758.54	no	no	758.68	no	no	758.87	no	no	758.97	no	no	758.14	no	no	758.19	no	no	758.21	no	no	758.25	no	no	758.28	no	no	758.3	no	no	758.34	no	no
Thomas	1705	CHERRY COURT	760.81	0.00	T/F South Side	758.04	no	no	758.15	no	no	758.2	no	no	758.33	no	no	758.49	no	no	758.7	no	no	759.81	no	no	758.09	no	no	758.13	no	no	758.15	no	no	758.17	no	no	758.19	no	no	758.22	no	no	758.24	no	no
Thomas	1709	PRESIDENT STREET	770.11	770.05	T/F at SE Corner	770.01	no	no	770.05	no	YES	770.08	no	YES	770.12	YES	YES	770.14	YES	YES	770.17	YES	YES	771.48	YES	YES	772.03	YES	YES	772.03	YES	YES	771.22	YES	YES	771.48	YES	YES	771.55	YES	YES	771.69	YES	YES	771.69	YES	YES
Thomas	1710	PRESIDENT STREET	768.89	767.07	Sill at South Sideyard	766.04	no	no	766.09	no	no	766.15	no	no	766.31	no	no	766.41	no	no	766.51	no	no	766.68	no	no	766.03	no	no	766.04	no	no	766.06	no	no	766.1	no	no	766.11	no	no	766.13	no	no	766.2	no	no
Thomas	1711	CHERRY COURT	758.82	758.79	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	759.63	YES	YES	759.8	YES	YES	759.85	YES	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Thomas	1711	WEBSTER COURT	761.75	0.00	T/F at NW Corner	761.56	no	no	761.76	YES	YES	761.85	YES	YES	761.95	YES	YES	762	YES	YES	762.06	YES	YES	762.63	YES	YES	761.6	no	no	761.67	no	no	761.72	no	no	761.76	YES	YES	761.8	YES	YES	761.84	YES	YES	761.89	YES	YES
Thomas	1714	PRESIDENT STREET	764.91	763.97	Door Rear Center	766.05	YES	YES	766.12	YES	YES	766.2	YES	YES	766.22	YES	YES	766.3	YES	YES	766.41	YES	YES	766.74	YES	YES	766.43	YES	YES	766.45	YES	YES	766.66	YES	YES	766.7	YES	YES	766.72	YES	YES	766.73	YES	YES	766.74	YES	YES
Thomas	1715	CHERRY COURT	760.04	759.22	Attch. Garage	756.31	no	no	756.82	no	no	756.9	no	no	757.11	no	no	757	no	no	760.05	YES	YES	760.21	YES	YES	756.71	no	no	756.83	no	no	756.85	no	no	756.91	no	no	756.95	no	no	756.98	no	no	757.03	no	no
Thomas	1715	WEBSTER COURT	762.66	0.00	T/F at SW Corner	761.21	no	no	761.36	no	no	761.6	no	no	761.68	no	no	761.9	no	no	762.04	no	no	762.37	no	no	761.82	no	no	761.86	no	no	761.93	no	no	762.02	no	no	762.1	no	no	762.17	no	no	762.17	no	no
Thomas	1716	CHERRY COURT	758.31	758.14	Attch. Garage	756.31	no	no	756.82	no	no	756.9	no	no	757.11	no	no	757.42	no	no	757.69	no	no	757.92	no	no	756.71	no	no	756.83	no	no	756.85	no	no	756.9	no	no	756.92	no	no	756.97	no	no	757.02	no	no
Turf	404	BRIDLE LANE	743.82	743.75	T/F at SE Corner	0	no	no	0	no	no	0	no	no	742.9	no	no	743.17	no	no	743.61	no	no	743.89	YES	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	743.02	no	no
Turf	405	TURF LANE	743.78	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	743.19	no	no	743.31	no	no	743.58	no	no	743.85	YES	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	743.04	no	no
Turf	408	BRIDLE LANE	744.30	0.00	T/F at SE Corner	0	no	no	0	no	no	0	no	no	743.59	no	no	743.62	no	no	744.09	no	no	744.19	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	743.49	no	no
Turf	409	TURF LANE	744.14	743.71	Attch. Garage	0	no	no	0	no	no	0	no	no	744.02	no	YES	744.05	no	YES	744.19	YES	YES	744.33	YES	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	743.86	no	YES
Turf	414	BRIDLE LANE	745.91	745.53	WW at Rear Center	0	no	no	0	no	no	0	no	no	744.16	no	no	744.41	no	no	744.72	no	no	744.89	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	744.22	no	no
Turf	415	TURF LANE	744.48	743.78	Attch. Garage	0	no	no	0	no	no	0	no	no	744.22	no	YES	744.3	no	YES	744.66	YES	YES	744.85	YES	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	744.26	no	YES
Turf	420	BRIDLE LANE	746.18	0.00	T/F at Rear Center	0	no	no	0	no	no	0	no	no	744.86	no	no	744.89	no	no	745.28	no	no	745.35	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	744.6	no	no
Turf	421	TURF LANE	745.28	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	744.5	no	no	744.7	no	no	745	no	no	745.23	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	744.48	no	no
Turf	426	BRIDLE LANE	746.54	0.00	T/F at SE Corner	0	no	no	0	no	no	0	no	no	745.35	no	no	745.41	no	no	746	no	no	746.1	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	745.41	no	no
Turf	427	TURF LANE	746.29	745.94	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	745.35	no	no	745.76	no	no	745.95	no	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	744.75	no	no
Turf	432	BRIDLE LANE	747.39	747.36	WW at SE Corner	0	no	no	0	no	no	0	no	no	746.25	no	no	746.42	no	no	746.73	no	no	746.99	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	746.33	no	no
Turf	433	TURF LANE	747.91	747.52	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.33	no	no	747.56	no	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.3	no	no
Turf	504	BRIDLE LANE	747.55	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	746.36	no	no	746.55	no	no	746.91	no	no	747.23	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	746.41	no	no
Turf	505	COUNTRYSIDE DRIVE	749.58	0.00	T/F at SW Corner	0	no	no	747.7	no	no	747.97	no	no	748.16	no	no	748.47	no	no	748.83	no	no	749.16	no	no	747.67	no	no	748.03	no	no	748.06	no	no	748.09	no	no	748.11	no	no	748.12	no	no	748.19	no	no
Turf	505	TURF LANE	748.54	748.16	Attch. Garage	0	no	no	0	no	no	0	no	no	746.31	no	no	746.52	no	no	747.91	no	no	748.07	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	746.39	no	no
Turf	508	BRIDLE LANE	748.94	0.00	T/F at Rear Center	0	no	no	0	no	no	0	no	no	746.65	no	no	746.92	no	no	747.33	no	no	747.59	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	746.79	no	no
Turf	509	COUNTRYSIDE DRIVE	748.22	747.85	Attch. Garage	0	no	no	747.7	no	no	747.97	no	YES	748.16	no	YES	748.47	YES	YES	748.83	YES	YES	749.16	YES	YES	747.67	no	no	748.03	no	YES	748.06	no	YES	748.09	no	YES	748.11	no	YES	748.12	no	YES	748.19	no	YES
Turf	509	TURF LANE	749.16	748.73	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	748.48	no	no	748.73	no	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	746.46	no	no
Turf	514	BRIDLE LANE	749.01	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	746.95	no	no	747.2	no	no	747.64	no	no	748	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.06	no	no
Turf	514	COUNTRYSIDE DRIVE	749.19	748.90	Attch. Garage	0	no	no	747.7	no	no	747.97	no	no	748.16	no	no	748.47	no	no	748.83	no	no	749.16	no	YES	747.67	no	no	748.03	no	no	748.06	no	no	748.09	no	no	748.11	no	no	748.12	no	no	748.19	no	no
Turf	515	COUNTRYSIDE DRIVE	750.04	749.30	Attch. Garage	0	no	no	747.7	no	no	747.97	no	no	748.16	no	no	748.47	no	no	748.83	no	no	749.16	no	no	747.67	no	no	748.03	no	no	748.06	no	no	748.09	no	no	748.11	no	no	748.12	no	no	748.19	no	no
Turf	515	TURF LANE	749.57	749.17	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.28	no	no	748.79	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.09	no	no
Turf	520	BRIDLE LANE	749.95	0.00	T/F at SE Corner	0	no	no	0	no	no	0	no	no	747	no	no	747.27	no	no	747.77	no	no	748.11	no	no	745.2	no	no	745.2	no	no	745.21	no	no	745.38	no	no	746.13	no	no	746.13	no	no	747.1	no	no
Turf	520	COUNTRYSIDE DRIVE	749.06	0.00	T/F at NE Corner	0	no	no	747.7	no	no	747.97	no	no	748.16	no	no	748.47	no	no	748.83	no	no	749.16	YES	YES	747.67	no	no	748.03	no	no	748.06	no	no	748.09	no	no	748.11	no	no	748.12	no	no	748.19	no	no
Turf	520	TURF LANE	750.45	749.82	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	740.54	no	no	748.81	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	521	COUNTRYSIDE DRIVE	749.07	748.66	Attch. Garage	0	no	no	747.7	no	no	747.97	no	no	748.16	no	no	748.47	no	no	748.83	no	YES	749.16	YES	YES	747.67	no	no	748.03	no	no	748.06	no	no	748.09	no	no	748.11	no	no	748.12	no	no	748.19	no	no
Turf	521	TURF LANE	749.52	749.11	Attch. Garage	0	no	no	747.7	no	no	747.97	no	no	748.16	no	no	748.47	no	no	748.83	no	no	749.16	no	YES	747.67	no	no	748.03	no	no	748.06	no	no	748.09	no	no	748.11	no	no	748.12	no	no	748.19	no	no
Turf	527	COUNTRYSIDE DRIVE	748.74	748.29	Attch. Garage	0	no	no	747.7	no	no	747.97	no	no	748.16	no	no	748.47	no	YES	748.83	YES	YES	749.16	YES	YES	747.67	no	no	748.03	no	no	748.06	no	no	748.09	no	no	748.11	no	no	748.12	no	no	748.19	no	no
Turf	527	TURF LANE	748.88	748.34	Attch. Garage	0	no	no	747.7	no	no	747.97	no	no	748.16	no	no	748.47	no	YES	748.83	no	YES	749.16	YES	YES	747.67	no	no	748.03	no	no	748.06	no	no	748.09	no	no	748.11	no	no	748.12	no	no	748.19	no	no
Turf	528	BRIDLE LANE	750.61	750.32	WW at SE Corner	0	no	no	0	no	no	0	no	no	747.6	no	no	747.74	no	no	748.09	no	no	748.37	no	no	747.28	no	no	747.28	no	no	747.28	no	no	747.3	no	no	747.41	no	no	747.41	no	no	747.62	no	no
Turf	528	COUNTRYSIDE DRIVE	749.06	748.62	Attch. Garage	0	no	no	747.7	no	no	747.97	no	no	748.16	no	no	748.47	no	no	748.83	no	YES	749.16	YES	YES	747.67	no	no	748.03	no	no	748.06	no	no	748.09	no	no	748.11	no	no	748.12	no	no	748.19	no	no
Turf	528	TURF LANE	749.27	748.88	Attch. Garage	0	no	no	747.7	no	no	747.97	no	no	748.16	no	no	748.47	no	no	748.83	no	no	749.16	no	YES	747.67	no	no	748.03	no	no	748.06	no	no	748.09	no	no	748.11	no	no	748.12	no	no	748.19	no	no
Turf	532	COUNTRYSIDE DRIVE	748.95	748.60	Attch. Garage	0	no	no	747.7	no	no	747.97	no	no	748.16	no	no	748.47	no	no	748.83	no	YES	749.16	YES	YES	747.67	no	no	748.03	no	no	748.06	no	no	748.09	no	no	748.11	no	no	748.12	no	no	748.19	no	no
Turf	532	TURF LANE	749.35	748.77	Attch. Garage	0	no	no	747.7	no	no	747.97	no	no	748.16	no	no	748.47	no	no	748.83	no	YES	749.16	no	YES	747.67	no	no	748.03	no	no	748.06	no	no	748.09	no	no	748.11	no	no	748.12	no	no	748.19	no	no
Turf	533	COUNTRYSIDE DRIVE	748.56	748.14	Attch. Garage	0	no	no	747.7	no	no	747.97	no	no	748.16	no	YES	748.47	no	YES	748.83	YES	YES	749.16	YES	YES	747.67	no	no	748.03	no	no	748.06	no	no	748.09	no	no	748.11	no	no	748.12	no	no	748.19	no	YES
Turf	533	TURF LANE	748.46	0.00	T/F at SW Corner	0	no	no	747.7	no	no	747.97	no	no	748.16	no	no	748.47	YES	YES	748.83	YES	YES	749.16	YES	YES	747.67	no	no	748.03	no	no	748.06	no	no	748.09	no	no	748.11	no	no	748.12	no	no	748.19	no	no
Turf	604	COUNTRYSIDE DRIVE	750.04	749.50	Attch. Garage	0	no	no	750.11	YES	YES	750.16	YES	YES	750.28	YES	YES	750.53	YES	YES	750.69	YES	YES	750.83	YES	YES	0	no	no	750.13	YES	YES	750.14	YES	YES	750.17	YES	YES	750.19	YES	YES	750.21	YES	YES	750.32	YES	YES
Turf	624	COUNTRYSIDE DRIVE	754.25	0.00	T/F West Sideyard	0	no	no	750.11	no	no	750.16	no	no	750.28	no	no	750.53	no	no	750.69	no	no	750.83	no	no	0	no	no	750.13	no	no	750.14	no	no	750.17	no	no	750.19	no	no	750.21	no	no	750.32	no	no
Turf	704	COUNTRYSIDE DRIVE	755.78	0.00	T/F West Sideyard	0	no	no	750.11	no	no	750.16	no	no	750.28	no	no	750.53	no	no	750.69	no	no	750.83	no	no	0	no	no	750.13	no	no	750.14	no	no	750.17	no	no	750.19	no	no	750.21	no	no	750.32	no	no
Turf	1717	DRIVING PARK ROAD	750.93	750.40	Attch. Garage	0	no	no	750.11	no	no	750.16	no	no	750.28	no	no	750.53	no	YES	750.69	no	YES	750.83	no	YES	0	no	no	750.13	no	no	750.14	no	no	750.17	no	no	750.19	no	no	750.21	no	no	750.32	no	no
Turf	1723	DRIVING PARK ROAD	751.17	750.56	Attch. Garage	0	no	no	750.11	no	no	750.16	no	no	750.28	no	no	750.53	no	no	750.69	no	YES	750.83	no	YES	0	no	no	750.13	no	no	750.14	no	no	750.17	no	no	750.19	no	no	750.21	no	no	750.32	no	no
Turf	1729	DRIVING PARK ROAD	751.20	750.56	Attch. Garage	0	no	no	750.11	no	no	750.16	no	no	750.28	no	no	750.53	no	no	750.69	no	YES	750.83	no	YES	0	no	no	750.13	no	no	750.14	no	no	750.17	no	no	750.19	no	no	750.21	no	no	750.32	no	no
Turf	1803	DRIVING PARK ROAD	750.11	0.00	T/F at Rear Center	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	1809	DRIVING PARK ROAD	750.62	750.20	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	1815	DRIVING PARK ROAD	750.27	749.61	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	1821	DRIVING PARK ROAD	749.10	748.83	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Wakeman	537	WAKEMAN AVENUE	761.82	761.08	Attch. Garage	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	no	760.41	no	no	760.75	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	538	HAWTHORNE BLVD	761.00	759.91	T/F at SE Corner	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	YES	760.41	no	YES	760.75	no	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	539	HAWTHORNE BLVD	761.04	760.14	Attch. Garage	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	no	760.41	no	YES	760.75	no	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	539	WAKEMAN AVENUE	760.77	760.14	Attch. Garage	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	no	760.41	no	YES	760.75	no	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	540	HAWTHORNE BLVD	759.62	759.28	Attch. Garage	0	no	no	0	no	no	758.61	no	no	759.42	no	YES	759.92	YES	YES	760.41	YES	YES	760.75	YES	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	567	PARKWAY DRIVE	753.89	753.64	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	756.37	YES	YES	756.78	YES	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Wakeman	602	PARKWAY DRIVE	760.57	759.88	T/F at SE Corner	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	YES	760.41	no	YES	760.75	YES	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	603	WAKEMAN AVENUE	760.01	759.56	Attch. Garage	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	YES	760.41	YES	YES	760.75	YES	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	604	PARKWAY DRIVE	760.82	0.00	T/F at Rear Center	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	no	760.41	no	no	760.75	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	604	WAKEMAN AVENUE	760.10	759.52	Attch. Garage	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	YES	760.41	YES	YES	760.75	YES	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	607	WAKEMAN AVENUE	760.58	760.17	Attch. Garage	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	no	760.41	no	YES	760.75	YES	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	608	PARKWAY DRIVE	761.31	760.91	WW at SE Corner	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	no	760.41	no	no	760.75	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	608	WAKEMAN AVENUE	760.41	760.15	Attch. Garage	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	no	760.41	YES	YES	760.75	YES	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	611	WAKEMAN AVENUE	762.40	761.68	Attch. Garage	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	no	760.41	no	no	760.75	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	612	PARKWAY DRIVE	760.98	0.00	T/F at SW Corner	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	no	760.41	no	no	760.75	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	612	WAKEMAN AVENUE	761.12	0.00	T/F at NE Corner	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	no	760.41	no	no	760.75	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	1329	SANTA ROSA AVENUE	762.32	762.32	Top of Stairwell	0	no	no	0	no	no	758.61	no	no	759.42	no	no	759.92	no	no	760.41	no	no	760.75	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.28	no	no
Wakeman	1611	DRIVING PARK ROAD	756.58	0.00	T/F at NE Corner	0	no	no	750.11	no	no	750.16	no	no	750.28	no	no	750.53	no	no	750.69	no	no	750.83	no	no	0	no	no	750.13	no	no	750.14	no	no	750.17	no	no	750.19	no	no	750.21	no	no	750.32	no	no
Wakeman	1705	DRIVING PARK ROAD	751.31	750.94	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	752.25	YES	YES	753.05	YES	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Wakeman	1711	DRIVING PARK ROAD	752.36	751.68	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	751.58	no	no	751.85	no	YES	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no

Proposed WSELs

Area	Address	Street	T_F	L_E	Low Entry Description	1 2hr	Above T/F	Above L/E	5 2 hr	Above T/F	Above L/E	10 2hr	Above T/F	Above L/E	25 2hr	Above T/F	Above L/E	50 2hr	Above T/F	Above L/E	100 2 hr	Above T/F	Above L/E
Turf	404	BRIDLE LANE	743.82	743.75	T/F at SE Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	408	BRIDLE LANE	744.30	0.00	T/F at SE Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	414	BRIDLE LANE	745.91	745.53	WW at Rear Center	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	420	BRIDLE LANE	746.18	0.00	T/F at Rear Center	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	426	BRIDLE LANE	746.54	0.00	T/F at SE Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	432	BRIDLE LANE	747.39	747.36	WW at SE Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	504	BRIDLE LANE	747.55	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	508	BRIDLE LANE	748.94	0.00	T/F at Rear Center	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	514	BRIDLE LANE	749.01	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	520	BRIDLE LANE	749.95	0.00	T/F at SE Corner	745.95	no	no	745.95	no	no	745.95	no	no	745.96	no	no	745.96	no	no	745.96	no	no
Turf	528	BRIDLE LANE	750.61	750.32	WW at SE Corner	747.27	no	no	747.27	no	no	747.27	no	no	747.37	no	no	747.37	no	no	747.37	no	no
Wakeman	1329	SANTA ROSA AVE	762.32	762.32	Top of Stairwell	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Thomas	1716	CHERRY COURT	758.31	758.14	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	756.02	no	no
Thomas	1715	CHERRY COURT	760.04	759.22	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Thomas	1711	CHERRY COURT	758.82	758.79	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Thomas	1705	CHERRY COURT	760.81	0.00	T/F South Side	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	758.02	no	no
Turf	505	COUNTRYSIDE DRIVE	749.58	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.85	no	no
Turf	509	COUNTRYSIDE DRIVE	748.22	747.85	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.84	no	no
Turf	515	COUNTRYSIDE DRIVE	750.04	749.30	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.85	no	no
Turf	521	COUNTRYSIDE DRIVE	749.07	748.66	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.85	no	no
Turf	527	COUNTRYSIDE DRIVE	748.74	748.29	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.85	no	no
Turf	533	COUNTRYSIDE DRIVE	748.56	748.14	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.85	no	no
Turf	514	COUNTRYSIDE DRIVE	749.19	748.90	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.85	no	no
Turf	520	COUNTRYSIDE DRIVE	749.06	0.00	T/F at NE Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.85	no	no
Turf	528	COUNTRYSIDE DRIVE	749.06	748.62	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.85	no	no
Turf	532	COUNTRYSIDE DRIVE	748.95	748.60	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.85	no	no
Turf	1803	DRIVING PARK ROAD	750.11	0.00	T/F at Rear Center	750.01	no	no	750.03	no	no	750.04	no	no	750.04	no	no	750.07	no	no	750.09	no	no
Turf	604	COUNTRYSIDE DRIVE	750.04	749.50	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	750.3	YES	YES
Turf	608	COUNTRYSIDE DRIVE	750.87	749.96	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	750.3	no	YES
Turf	612	COUNTRYSIDE DRIVE	751.79	750.80	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	750.3	no	no
Turf	618	COUNTRYSIDE DRIVE	753.26	752.58	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	750.3	no	no
Turf	624	COUNTRYSIDE DRIVE	754.25	0.00	T/F West Sideyard	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	750.3	no	no
Turf	704	COUNTRYSIDE DRIVE	755.78	0.00	T/F West Sideyard	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	750.3	no	no
Turf	1809	DRIVING PARK ROAD	750.62	750.20	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	750.11	no	no
Turf	1729	DRIVING PARK ROAD	751.20	750.56	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	750.3	no	no
Turf	1723	DRIVING PARK ROAD	751.17	750.56	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	750.3	no	no
Turf	1717	DRIVING PARK ROAD	750.93	750.40	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	750.3	no	no
Turf	1821	DRIVING PARK ROAD	749.10	748.83	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	1815	DRIVING PARK ROAD	750.27	749.61	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Wakeman	1611	DRIVING PARK ROAD	756.58	0.00	T/F at NE Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	750.3	no	no
Wakeman	539	HAWTHORNE BLVD	761.04	760.51	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Wakeman	540	HAWTHORNE BLVD	759.62	759.28	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	YES
Wakeman	538	HAWTHORNE BLVD	761.00	759.91	T/F at SE Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Wakeman	567	PARKWAY DRIVE	753.89	753.64	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	755.43	YES	YES
Wakeman	602	PARKWAY DRIVE	760.57	759.88	T/F at SE Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Wakeman	604	PARKWAY DRIVE	760.82	0.00	T/F at Rear Center	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Wakeman	608	PARKWAY DRIVE	761.31	760.91	WW at SE Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Wakeman	612	PARKWAY DRIVE	760.98	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Thomas	1714	PRESIDENT STREET	764.91	763.97	Door Rear Center	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	766.43	YES	YES
Thomas	1710	PRESIDENT STREET	768.89	767.07	Sill at South Sideyard	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	766.03	no	no
Thomas	1709	PRESIDENT STREET	770.11	770.05	T/F at SE Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Thomas	725	RANCH ROAD	758.61	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	758.02	no	no
Thomas	809	RANCH ROAD	758.74	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	758.11	no	no
Thomas	903	RANCH ROAD	761.88	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Thomas	907	RANCH ROAD	763.43	760.03	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no

Thomas	608	RANCH ROAD	757.51	0.00	T/F at NW Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	405	TURF LANE	743.78	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	409	TURF LANE	744.14	743.71	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	415	TURF LANE	744.48	743.78	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	421	TURF LANE	745.28	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	515	TURF LANE	749.57	749.17	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	521	TURF LANE	749.52	749.11	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.85	no	no
Turf	527	TURF LANE	748.88	748.34	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.85	no	no
Turf	533	TURF LANE	748.46	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.85	no	no
Turf	520	TURF LANE	750.45	749.82	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	528	TURF LANE	749.27	748.88	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.85	no	no
Turf	532	TURF LANE	749.35	748.77	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	747.85	no	no
Turf	509	TURF LANE	749.16	748.73	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	505	TURF LANE	748.54	748.16	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	433	TURF LANE	747.91	747.52	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Turf	427	TURF LANE	746.29	745.94	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Wakeman	607	WAKEMAN AVENUE	760.58	760.17	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Wakeman	603	WAKEMAN AVENUE	760.01	759.56	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Wakeman	611	WAKEMAN AVENUE	762.40	761.68	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Wakeman	537	WAKEMAN AVENUE	761.82	761.08	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Wakeman	539	WAKEMAN AVENUE	760.77	760.14	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Wakeman	604	WAKEMAN AVENUE	760.10	759.52	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Wakeman	608	WAKEMAN AVENUE	760.41	760.15	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Wakeman	612	WAKEMAN AVENUE	761.12	0.00	T/F at NE Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	759.41	no	no
Thomas	1704	WEBSTER COURT	760.29	0.00	T/F at SE Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	758.14	no	no
Thomas	1715	WEBSTER COURT	762.66	0.00	T/F at SW Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	762.09	no	no
Thomas	1711	WEBSTER COURT	761.75	0.00	T/F at NW Corner	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	761.69	no	no
Wakeman	1711	DRIVING PARK ROAD	752.36	751.68	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no
Wakeman	1705	DRIVING PARK ROAD	751.31	750.94	Attch. Garage	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no	0	no	no

Buyout Valuations Table

100-yr Buyout Valuations

Area	Address	Street	FCV (from County)	Multiplier and Demo
Thomas	725	RANCH ROAD	$ 99,700.00	$ 329,010.00
Thomas	809	RANCH ROAD	$ 86,920.00	$ 286,836.00
Thomas	907	RANCH ROAD	$ 105,890.00	$ 349,437.00
Thomas	1709	PRESIDENT STREET	$ 73,580.00	$ 242,814.00
Thomas	1711	CHERRY COURT	$ 78,370.00	$ 258,621.00
Thomas	1711	WEBSTER COURT	$ 116,080.00	$ 383,064.00
Thomas	1714	PRESIDENT STREET	$ 84,470.00	$ 278,751.00
Thomas	1715	CHERRY COURT	$ 280,560.00	$ 925,848.00
Thomas	612	COUNTRYSIDE DRIVE	$ 280,520.00	$ 925,716.00
Thomas	608	COUNTRYSIDE DRIVE	$ 84,210.00	$ 277,893.00
Turf	409	TURF LANE	$ 84,160.00	$ 277,728.00
Turf	415	TURF LANE	$ 107,260.00	$ 353,958.00
Turf	509	COUNTRYSIDE DRIVE	$ 77,610.00	$ 256,113.00
Turf	521	COUNTRYSIDE DRIVE	$ 65,610.00	$ 216,513.00
Turf	527	COUNTRYSIDE DRIVE	$ 73,350.00	$ 242,055.00
Turf	527	TURF LANE	$ 283,780.00	$ 936,474.00
Turf	528	COUNTRYSIDE DRIVE	$ 77,710.00	$ 256,443.00
Turf	532	COUNTRYSIDE DRIVE	$ 71,790.00	$ 236,907.00
Turf	532	TURF LANE	$ 217,830.00	$ 718,839.00
Turf	533	COUNTRYSIDE DRIVE	$ 67,220.00	$ 221,826.00
Turf	533	TURF LANE	$ 77,980.00	$ 257,334.00
Turf	604	COUNTRYSIDE DRIVE	$ 86,720.00	$ 286,176.00
Turf	1717	DRIVING PARK ROAD	$ 86,770.00	$ 286,341.00
Turf	1723	DRIVING PARK ROAD	$ 266,220.00	$ 878,526.00
Turf	1729	DRIVING PARK ROAD	$ 240,990.00	$ 795,267.00
Wakeman	538	HAWTHORNE BLVD	$ 208,160.00	$ 686,928.00
Wakeman	539	WAKEMAN AVENUE	$ 184,590.00	$ 609,147.00
Wakeman	540	HAWTHORNE BLVD	$ 73,790.00	$ 243,507.00
Wakeman	567	PARKWAY DRIVE	$ 108,360.00	$ 357,588.00
Wakeman	602	PARKWAY DRIVE	$ 107,590.00	$ 355,047.00
Wakeman	603	WAKEMAN AVENUE	$ 87,340.00	$ 288,222.00
Wakeman	604	WAKEMAN AVENUE	$ 93,650.00	$ 309,045.00
Wakeman	607	WAKEMAN AVENUE	$ 84,440.00	$ 278,652.00
Wakeman	608	WAKEMAN AVENUE	$ 78,720.00	$ 259,776.00
Wakeman	1705	DRIVING PARK ROAD	$ 91,630.00	$ 302,379.00