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Lower DuPage Watershed Watershed Assessment & Reconnaissance

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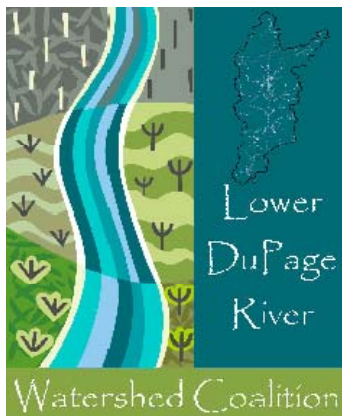


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WATERSHED ASSESSMENT & FIELD RECONNAISSANCE

1. Overview of Watershed Field Reconnaissance and Assessment

The watershed resource inventory (WRI) is a critical step in the development of a watershed plan. An important component of the WRI is field reconnaissance, through which a visual inventory of the watershed characteristics is conducted. The catalogue of observed conditions provides a source of information for the various stakeholders to become more familiar and aware of the watershed resources. These inventories also provide an opportunity to assess the current conditions of the watershed, provide reference information for future comparison, and identify project opportunities.

Traditionally, watershed reconnaissance and assessments have focused primarily on the stream corridor. Visually evaluating the streams, waterways, and riparian areas provide a wealth of information; however, excluding an assessment of upper watershed areas results in an incomplete picture. Runoff from the surrounding tributary areas transports pollutants from the various land uses to stream corridors and water bodies. There is a complex, yet inseparable link between stormwater management in the upland tributary areas of the watershed and the quality of the receiving waters.



Lower DuPage River in Shorewood

Strategic watershed reconnaissance was performed to complement the initial WRI and the BMP implementation strategy for the Lower DuPage River Watershed Plan. The reconnaissance effort included the evaluation of areas that were potential sources of non-point pollution and the identification of potential retrofit opportunities. The field reconnaissance and the assessments were guided by a process to target priority locations, both in the stream and throughout the upper watershed areas. The work conducted under the watershed plan development project was intended to be only the first step in an ongoing evaluation program. The reconnaissance and assessment methodology selected needed to have clear guidance documents to establish a standardized approach for future efforts. For this reason, the field observations were recorded following the Center for Watershed Protection's (CWP) Unified Subwatershed and Site Reconnaissance (USSR) methodology for the upper watershed areas and the Unified Stream Assessment (USA) methodology for stream corridors. The data from these two assessments provided a comprehensive picture of the watershed's possible sources of pollution along with potential curative opportunities. Together, the assessments provide the information to build an understanding of the long-term relationship between the practices within the upper watershed to the conditions observed along the stream corridors. As this relationship is studied along with future

assessments, the watershed coalition can use this information to prioritize BMP Implementation projects.

The watershed reconnaissance effort achieved two goals. First, extensive effort was invested in the collection and assessment of current conditions of the watershed. The approach balanced the assessment of locations that were representative of conditions across the watershed, as well as the identification of unique locations that merited individual attention. Secondly, a standardized procedure for conducting future assessments within the Lower DuPage was established. The reconnaissance performed as part of this initial effort provides a solid framework for the watershed coalition to continue the endeavor to assess and monitor the watershed.

2. Approach Methodology

A systematic approach was employed to efficiently conduct the watershed-wide reconnaissance to assess the threats of the variety of nonpoint pollutant sources throughout the watershed. The approach consisted of four phases to progressively hone down strategically selected targets within the watershed.



The first phase was to solicit information from the stakeholders via a combination of individual interviews and submitted reports. Stakeholder involvement established a bottom up approach to the watershed assessment, fostering a collaborative approach to harness the knowledge of the local stakeholders. The stakeholders included the various municipalities and other governmental agencies such as the Forest Preserve District of Will County, Will County Land Use Department, and local park districts. The stakeholders shared their insight into priority locations and representative areas within their respective jurisdictions. The second phase was to conduct a desktop reconnaissance of the watershed. By capitalizing on the availability of resources such as Google Earth, with recent aerial imagery, an efficient broad evaluation of the watershed was conducted. Through this process, representative locations were identified and evaluated for various land uses. This broad assessment provided insight into common stormwater management techniques used throughout the watershed. The assessed locations also provides the watershed coalition members insight into how current and past ordinances have influenced development and the techniques associated with implementing stormwater management. Many of the current ordinances encourage the use of stormwater best management practices (BMPs), such as the use of filter strips, riparian buffers, and native vegetation around stormwater basins; however, several very recent developments have rock-lined shorelines, mowed turf banks, and directly connected impervious areas (e.g. roof drains and pavement directly connected to storm sewers). The desktop reconnaissance also provided a means to identify specific locations where stream corridors or natural resources have been “boxed” in by development, which is not easily

discernable during ground level reconnaissance. These locations are identified as “Areas of Interest” (Table C2). These locations present unique opportunities for corridor protection or low impact development. The locations identified during the desktop reconnaissance, along with those identified by the stakeholders, were evaluated to determine which merited follow-up field reconnaissance. The



*Buffer encroachment identified in desktop reconnaissance
Images courtesy of Microsoft Bing maps, acquired on Jan 5, 2011*

third phase was conducting field reconnaissance to document and evaluate current field conditions at select locations. This was a critical step to validate conditions as well as to develop potential approaches or techniques to improve water quality. The final phase was to organize the data for inclusion in the Watershed Plan. The field data was organized within a searchable geographical information system (GIS) database. Additional support files were prepared as part of the reconnaissance effort, including a Microsoft Access database of the Stream Assessment, Microsoft Excel table of the upper watershed assessment, and organized file folders of the nearly 1,000 photographs. All of the photographs were geographically referenced with the latitudes and longitudes of the locations at which the photographs were taken. The photographs have been formatted for the option of uploading to a common platform such as Google Picasa web albums for easy viewing by stakeholders. These files are provided within the appendices of this report.

3. Stream Assessment

The approach used for the stream corridor assessment was a modified version of the CWP's USA methodology. The majority of the assessment was conducted by field staff entering the stream corridors at strategic access points (e.g., road crossings); however, a portion of the Lower DuPage River from the confluence of the East and West Branches down to Route 126 in Plainfield was observed during a canoe-based reconnaissance. The focus of the stream corridor assessment was to evaluate problem areas within the Lower DuPage River and its



Canoe Reconnaissance

tributaries. Assessments were categorized into one of eight categories: Channel Modification, Erosion, Impacted Buffer, Outfall, Stream Crossing, Trash and Debris, Utility Impacts, and Miscellaneous. At a few locations, more than one form was used to classify the conditions at that location. No utility impacts were observed. For the majority of the assessments, the form that coincided with the primary condition was used to document the conditions. Annotations were made within the comment field to document other visible conditions.



Bank erosion



Agricultural channel

All observed conditions were cataloged within a detailed Microsoft Access database created by the CWP. The database includes field forms for each of the eight aforementioned categories. Summary tables have been extracted from this data for inclusion into this report; however, the intent is for the database to be a living document that is routinely updated by the watershed group. As part of the management of the field reconnaissance data for the watershed plan, a GIS database was created to link the geographic locations of the assessments with the data contained within the database. This allows the data to be searched both by data entries and spatial information. A total of sixty-seven assessments were completed at sixty locations in the field. Summary tables (Tables A1 through A7) for each category, except the “Utility Impacts” category, are included in Appendix A.

Category	Channel Modification	Erosion	Impacted Buffer	Outfall	Stream Crossing	Trash & Debris	Utility Impacts	Miscellaneous
Occurrences	1	10	9	10	9	9	0	19

4. Stream Habitat Assessment

The Stream Assessment outlined in the previous section, focused on problem area identification to support the implementation and planning of water quality improvement initiatives. The quality of the physical habitat of a stream has a close relationship to the biological community that can be sustained. The structure of the CWP Unified Stream Assessment (USA) methodology does not incorporate this relationship within the evaluation. To complement the information gathered as part of the stream assessments, a limited stream habitat assessment was performed at three



Lower DuPage River

locations along the Lower DuPage River. These habitat assessments provide a record of the current condition of ten habitat parameters of the DuPage River at each location. This information can be compared to future data when a thorough, geographically dispersed assessment is conducted of the stream’s habitat. These initial assessments offer a snapshot of the stream’s condition, drawing attention to the need to incorporated both problem area assessments and habitat evaluations.

The approach used for the stream corridor assessment was the Stream Habitat Assessment Project Procedure developed by the Missouri Department of Natural Resources. The protocol is applicable for community-level surveys of aquatic macroinvertebrates in wadeable streams. This protocol includes the assessment of a very inclusive set of habitat parameters that can be easily transferred to other assessment approaches. This protocol was also used in the extensive habitat assessment for the Hickory Creek watershed plan, which was being developed concurrently. The table below presents a summary of the assessment. Each habitat parameter is assessed a final rating. In order of highest quality to the lowest the ratings are: Optimal, Suboptimal, Marginal, and Poor.

Assessment Location	Epifaunal substrate/available cover	Embeddedness	Velocity/depth regime	Sediment deposition	Channel flow status	Channel alteration	Riffle quality	Bank stability (left/right)	Vegetative protection (left/right)	Riparian vegetative zone width (left/right)
03	Suboptimal	Suboptimal	Marginal	Suboptimal	Suboptimal	Optimal	Marginal	Suboptimal	Suboptimal	Marginal
17	Suboptimal	Suboptimal	Marginal	Suboptimal	Suboptimal	Optimal	Marginal	Suboptimal	Suboptimal	Marginal
30	Suboptimal	Suboptimal	Marginal	Suboptimal	Suboptimal	Optimal	Suboptimal	Suboptimal	Suboptimal	Marginal

5. Upper Watershed Assessment

The approach used for the upper watershed assessment was a modified version of the CWP's USSR methodology. The USSR manual is intended for conducting a "windshield" survey of the entire watershed by driving every street within the watershed. The resources for this watershed plan did not allow for this level field reconnaissance. However, with the advancement of GIS analysis software tools, availability of high resolution aerials, and the availability of detailed municipal GIS data sets, the need to perform windshield reconnaissance to collect data was minimized. Much of the data, such as percent impervious, location of combined sewers, floodplain encroachment, or location of detention can be easily obtained from available GIS data sets. The methodology was employed to efficiently, yet thoroughly assess the watershed. The focus of the upper watershed assessment was to

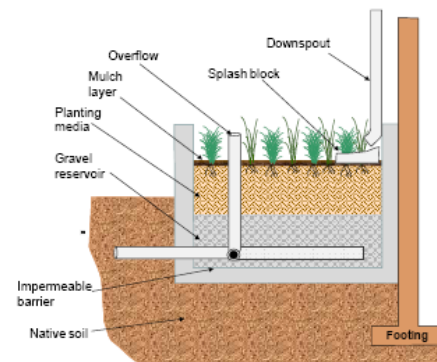


Rock-lined swale in residential complex

identify and then evaluate possible locations of nonpoint sources of pollution and potential restoration opportunities. During this effort, Geosyntec staff accessed its extensive knowledge of stormwater BMPs for both new developments and retrofits to evaluate opportunities for water quality improvements within the watershed. Resources such as the BMP international database <http://bmpdatabase.org/> features over 400 BMP studies, offers a wealth of information that is maintained under a cooperative agreement between the U.S. Environmental Protection Agency (USEPA) and the American Society of Civil Engineers (ASCE), as well as a broad coalition of partners including the Water Environment Research Foundation (WERF), ASCE Environmental and Water Resource Institute, Federal Highway Administration (FHWA) and the American Public Works Association (APWA). Wright Water Engineers, Inc. and Geosyntec Consultants are the entities maintaining and operating the database, including conducting analysis of newly submitted BMP data.



Roof runoff retrofit opportunity



Planter Box for downspouts

A total of forty-seven locations were assessed throughout the watershed. In addition, eleven locations were identified as areas of interest, primarily as locations that offer unique opportunities for corridor protection or low impact development. Observed conditions were cataloged in a Microsoft Excel table that was customized to meet the needs of the Lower DuPage watershed effort. As with the stream assessment data, a GIS database was created to link the geographic location of the assessment with the collected data. Summary tables are included at the end of this chapter. As with the stream assessment



Swale through urban neighborhood

data, the Microsoft Excel table and the GIS database are intended to be living documents. The information should be updated as needed by the watershed coalition. The documents provide a tool to assess the condition of the watershed and prioritize potential restoration opportunities. A “priority” column is included in the summary table for use by the coalition to indicate the relative priority of projects with an “H” for high, “M” for medium, “L” for low, and “NA” for non-applicable for non-project related observations. Based on the initial reconnaissance and assessment, twenty four locations are recommended as a high priority. The database will also be used to evaluate the effectiveness of ordinances on the improvement of water quality from potential nonpoint sources of pollution. Future assessments should evaluate the prominence or the effectiveness of stormwater BMPs in the watershed after target projects or ordinance revisions are implemented. A summary table of structural BMP opportunities is shown below. Full summary tables (Tables C1 and C2) are included in Appendix B.

Upper Watershed Assessment Summary Table of Structural BMP Opportunities

Land Use	Basin Retrofit	Filtration	Conveyance	Infiltration-Bioretenion	Rooftop Retrofits	Buffer Establishment
Single Family Residential	12	8	6	7	2	8
Multi Family Residential	6	5	3	2	3	2
Commercial / Institutional	4	7	2	1	3	5
Recreational (Parks, Golf Courses, etc.)	0	1	2	0	0	3

6. Summary of Findings

Overall, the watershed reconnaissance effort revealed ample opportunity for improvements in water quality through the implementation of the stream restoration projects, stormwater BMP retrofits, conservation design, and low impact development. Consistent with current stormwater regulations (e.g. the Will County Stormwater Ordinance), the stormwater management approach observed in much of the developed areas within the watershed appears to focus predominantly on stormwater discharge rate control (i.e. detention) with minimal attention given to water quality treatment. Additionally, several areas exist where neither rate control or water quality treatment measures were observed. These locations appear to have been developed prior to the establishment of the County Wide ordinance. The results of needed improvements in stormwater management and natural resources stewardship were also observed within the stream corridors of the Lower DuPage River and its tributaries. The findings presented in the attachments provide a brief representation of water quality improvement opportunities that exist within the watershed. Stakeholders are encouraged to use the information contained within the list of representative opportunities to evaluate other developed areas and stream segments to identify additional opportunities for water quality improvements and increased stewardship.

Appendix A
Stream Reconnaissance Summary Tables

Table A1
Channel Modification
Summary Table

SiteID	Outfall Tracking ID	Watershed	Date	Name	Survey Reach ID	Time	PhotoID:Camera#	PhotoID:Pic#s	SiteID	Notes
5	4	Lower DuPage	10/21/2010	JV,TA	dupage	2:39 PM	1	12,13,14	005	Resident placed gravel on shoreline,

Table A2
Erosion
Summary Table

SiteID	Outfall Tracking ID	Watershed	Date	Name	OutfallReachID	Time	PhotoID:Camera#	PhotoID:Pic#s	SiteID	Severity	Access	Notes
10	7	Lower DuPage	10/22/2010	JV,TA	hammel	9:14 AM	2	29,30,31	010	4	4	Resident's yard slumping into the creek, good candidate for stabilization
17	8	Lower DuPage	10/22/2010	JV,TA	dupage	3:00 PM	2	54	017	3	3	River reach under power line corridor
25	9	Lower DuPage	10/23/2010	JV,TA	lilley cache	11:41 AM	3	78	025	3	4	
29	10	Lower DuPage	10/23/2010	JV,TA	lilley cache	1:30 PM	3	88,89,90,91	029	4	4	Good site for bank stabilization
36	11	Lower DuPage	10/20/2010	MRB	dupage		6	170-172	36	1	5	New trail crossing, bridge, was being installed at the time. Silt fence was at top of bank. Footings were installed extremely close to wetland edge. Also refer to point 37
37	12	Lower DuPage	10/20/2010	MRB	dupage		6	166-169	37	2	5	Construction was ongoing, possibly associated with trail. Silt fence was installed too close to river, at top of bank. The silt fence was hanging over top of bank.
39	13	Lower DuPage	10/20/2010	MRB	dupage		6	154-158	39	4	4	Center of bank erosion reach is at the power line corridor. Severe erosion at tower footing
41	14	Lower DuPage	10/20/2010	MRB	dupage		6	138-146	41	4	3	There are several properties that have installed walls or concrete; others have allowed the natural forces of erosion to impact the manicured bank. Native veg. buffer would dramatically improve conditions. From points 42 through 40
42	15	Lower DuPage	10/20/2010	MRB	dupage		6	136-137	42	4	3	There are several properties that have installed walls or concrete; others have allowed the natural forces of erosion to impact the manicured bank. Native veg. buffer would dramatically improve conditions.
58	16	Lower DuPage	10/20/2010	MRB	dupage		6	27-32, 36	58	4	3	A few sections appear to have been stabilized with large, round boulders (not limestone rip-rap). This might have been done by farmers/past land owners with local stone. These sections appear relatively good, Picture #37

Table A3
Impacted Buffer
Summary Table

SiteID	Outfall Tracking ID	Watershed	Date	Name	OutfallReachID	Time	PhotoID:Camera#	PhotoID:Pic#s	SiteID	Restoration Area Length LT	Restoration Area Length RT	Notes
36	4	Lower DuPage	10/20/2010	MRB	dupage		6	170-172	36	500	500	New trail crossing is being installed on left bank. Footings are very close to river, top of bank.
38	5	Lower DuPage	10/20/2010	MRB	dupage		6	160-163	38	600	800	The right bank restoration would be associated with ER-39
40	6	Lower DuPage	10/20/2010	MRB	dupage		6	143-146	40	650	700	Left bank is private residential, combination of hardscape wall & lack of veg on banks with turf grass above. Right bank is unmanaged area between river and agricultural fields. Section upstream (IB-41) is primarily several homeowners, where this is one
41	7	Lower DuPage	10/20/2010	MRB	dupage		6	136-142	41	1100	1100	This section is upstream of IB-40. Section consists of several residential lots, banks vary from concrete faced wall (not formed) to eroding banks of turf grass. Restoration may receive acceptance with education, current fixes not working well
45	8	Lower DuPage	10/20/2010	MRB	dupage		6	124-128	45	250	300	The primary focus of this location is the concrete revetment wall being built on left (east) bank of residential lot. The wall consists of quick crete concrete bags places haphazard along the bank, which appears to have been disturbed.
46	9	Lower DuPage	10/20/2010	MRB	dupage		6	113-123	46	1600	0	The left bank is impacted, maintained as "manicured" turf grass banks. Majority of lots (approx 13) along S. Rivercrest Dr. are deep lots with room for at least a narrow buffer along the river to stabilize the bank.
48	10	Lower DuPage	10/20/2010	MRB	dupage		6	106-107	48	300	0	The farm lot downstream of W 127 bridge could serve as example for residential lot north of roadway. The buffer is actively mowed to bank, with very narrow (10ft) of buffer. It appears this could be easily increased to 50 ft.
54	11	Lower DuPage	1/5/2011	MRB	no name				54	1400	1400	It is unclear as to the ownership fo the stream buffer, west of Brook Road. It appears that several residents mow & landscape upto stream's top of bank. Others have left a wider stream buffer.
60	12	Lower DuPage	1/5/2011	MRB	no name		7	122-131,137,145-154;	60	3500	3500	The immediate stream buffer is not mowed, does not appear to be actively managed as native habitat. There is an area between homes & buffer that is mowed. Opportunity to restore & manage wider buffer. Area is west of Brook Rd and extends to Rt 59

Table A4
Outfall
Summary Table

SiteID	Outfall Tracking ID	Watershed	Date	Name	OutfallReachID	Time	Photo ID (Camera-Pic#)	#	SiteID	Notes
8	9	Lower DuPage	10/21/2010	JV,TA	dupage	4:00 PM	1	21,22,23,24	008	Potential storm water monitoring location
9	10	Lower DuPage	10/22/2010	JV,TA	no name	8:50 AM	2	25,26,27	009	Sediment buildup in outfall culvert, retention pond above
10	11	Lower DuPage	10/22/2010	JV,TA	hammel	9:23 AM	2	32	010	
21	12	Lower DuPage	10/23/2010	JV,TA	mink	9:45 AM	3	64,65,66,67	021	Beaver dam upstream from Airport road approx. 100ft, potential for removal.
2	13	Lower DuPage	10/23/2010	JV,TA	lilley cache	12:15 PM	3	79,80,81	02	
31	14	Lower DuPage	10/24/2010	JV,TA	spring	9:50 AM	4	94,95,96	031	
49	15	Lower DuPage	10/20/2010	MRB	dupage		6	95,96	49	
52	16	Lower DuPage	10/20/2010	MRB	dupage		6	85,86	52	Two CMP outfalls, one submerged and one above waterline. CMP bent. Maybe old draintile outfall or outfall to adjacent wetland detention owned by Riverview Farm Forest Preserve.
56	17	Lower DuPage	10/20/2010	MRB	dupage		6	56	56	The outfall should be repaired. The FES protruded out from bank. It should be pulled back and bank should be stabilized.
57	18	Lower DuPage	10/20/2010	MRB	dupage		6	51, 52, 53	57	No problems noted. Form completed to annotate outfall and pictures.

Table A5
Stream Crossing
Summary Table

SiteID	Outfall Tracking ID	Watershed	Date	Name	OutfallReachID	Time	PhotoID:Camera#	PhotoID:Pic#s	SiteID	Notes
1	6	Lower DuPage	10/21/2010	JV, TA	dupage	12:16 PM	1	1,2,3	001	
11	7	Lower DuPage	10/22/2010	JV,Ta	hammel	10:14 AM	2	33,34,35	011	
12	8	Lower DuPage	10/22/2010	JV,TA	rock run	11:30 AM	2	36,37,38,39	012	Snag upstream of the culvert could be removed
16	9	Lower DuPage	10/22/2010	JV,TA	rock run	1:31 PM	2	49,50,51	016	Bridge was fine, no blockage
23	10	Lower DuPage	10/23/2010	JV,TA	lilley cache	10:49 AM	3	70,71,72	023	
26	11	Lower DuPage	10/23/2010	JV,TA	lilley cache	12:15 PM	3	82	026	Move rip-rap to the bank
44	12	Lower DuPage	10/20/2010	MRB	dupage		6	129	44	Bridge is for W 135th St. Free Span bridge with concrete piers. Wood debris was lodged against left (east) pier.
47	13	Lower DuPage	10/20/2010	MRB	dupage		6	102, 104	47	Bridge is for W 127th St. Free Span bridge with concrete piers. Wood debris was lodged against left (east) and center pier.
51	14	Lower DuPage	10/20/2010	MRB	dupage		6	909,91	51	Bridge is for Rodeo Dr. Free Span bridge with concrete piers. Wood debris was lodged against right (west) bank.

Table A6
Trash & Debris
Summary Table

SiteID	Outfall Tracking ID	Watershed	Date	Name	OutfallReachID	Time	PhotoID:Camera#	PhotoID:Pic#s	SiteID	Material:OtherDescription
4	4	Lower DuPage	10/21/2010	JV,TA	dupage	2:09 PM	1	9,10,11	004	Trash: Can and bottles
18	5	Lower DuPage	10/22/2010	JV,TA	lilley cache	4:20 PM	2	55,56,57	018	
19	6	Lower DuPage	10/23/2010	JV,TA	lilley cache	8:30 AM	3	58,59,60	019	
25	7	Lower DuPage	10/23/2010	JV,TA	lilley cache	11:42 AM	3	75,76,77	025	
28	8	Lower DuPage	10/23/2010	JV,TA	lilley cache	1:15 PM	3	85,86,87	028	Log jam
44	10	Lower DuPage	10/20/2010	MRB	dupage		6	129	44	Natural woody debris
47	11	Lower DuPage	10/20/2010	MRB	dupage		6	102, 104	47	Natural woody debris
51	12	Lower DuPage	10/20/2010	MRB	dupage		6	90,91	51	Natural woody debris
55	13	Lower DuPage	10/20/2010	MRB	dupage		6	57,58	55	Woody debris with trash

Table A7
Miscellaneous
Summary Table

SiteID	Outfall Tracking ID	Watershed	Date	Name	OutfallReachID	Time	PhotoID:Camera#	PhotoID:Pic#s	SiteID	Restoration:Other Desc	Describe
2	3	Lower DuPage	10/21/2010	TA,JV	dupage	12:38 PM	1	4,5,6	002	Bank stabilization	Not severe, but has potential for improvement
6	4	Lower DuPage	10/21/2010	JV,TA	dupage	3:15 PM	1	15,16,17	006	Stream bank stabilization	not severe but could use reinforcing
7	5	Lower DuPage	10/21/2010	JV,TA	dupage	3:40 PM	1	18,19,20	007	Large snag removal	some trash on the bank, possible clear up
13	6	Lower DuPage	10/22/2010	JV,TA	rock run	12:00 PM	2	41,42,43	013		potential to improve storm water channel and surrounding riparian zone
14	7	Lower DuPage	10/22/2010	JV,TA	rock run	12:20 PM	2	44,45,46	014	Snag and trash removal	Very strong candidate for snag and trash removal for improved stream flow and fish movement
15	8	Lower DuPage	10/22/2010	JV,TA	rock run	1:06 PM	2	47,48	015		Site in good condition
20	9	Lower DuPage	10/23/2010	JV,TA	mink	8:40 PM	3	61,62,63	020	Sediment build up	large amount of sediment build up at crossing and in the channel
22	10	Lower DuPage	10/23/2010	JV,TA	lilley cache	10:18 AM	3	68,69	022		stream site in good condition
24	11	Lower DuPage	10/23/2010	JV,TA	lilley cache	11:17 AM	3	73,74	024		man made pond upstream of 127th on a golf course, rip-rap downstream of 127th. Culvert may impede fish movement
27	12	Lower DuPage	10/23/2010	JV,TA	lilley cache	12:47 PM	3	83,84	027		channel dry during survey, banks appear in good condition, stormwater culvert at Veterans Highway crossing
32	13	Lower DuPage	10/23/2010	JV,TA	spring	10:19 AM	3	97,98	032		stream in good condition
33	14	Lower DuPage	10/24/2010	JV,TA	spring	10:42 AM	4	99,100,101	033		retention pond and under ground culverts, stream not exposed
34	15	Lower DuPage	10/24/2010	JV,TA	spring	10:55 AM	4	102,103	034		retention pond and storm water basin
35	16	Lower DuPage	10/24/2010	JV,TA	no name	11:28 AM	4	104,105	035		Storm water retention pond and underground culverts
40	17	Lower DuPage	10/20/2010	MRB	dupage		6	147-148	40		This section, upstream of the bend has nice riffle. Would benefit from riparian management. The overbanks, especially surrounding the basin could serve as nice habitat if properly established with native veg. & maintained. Associated with IB-40.
43	18	Lower DuPage	10/20/2010	MRB	dupage		6	130-138	43		Pleasant stretch of the river (s. of 135th). Water was fairly clear at the time, long fibrous algae was visible. Banks were dense with woody growth. River banks would benefit from riparian management of invasive species management.
50	19	Lower DuPage	10/20/2010	MRB	dupage		6	94,97	50	Large Temporary pump and fuel tank	Large pump running with adjacent fuel tank on right bank (west). Pump was running with large (8 inch+) hose from river. Probably was used to flood fields for duck hunting. Fuel tank had no containment. Field was farmed very close to top of bank.
53	20	Lower DuPage	10/20/2010	MRB	dupage		6	69-74	53		Numerous duck blinds are present from S. Naper Plainfield Rd downstream to Hassert Blvd on right (west) bank. Opposite bank is mine.
59	21	Lower Dupage	10/20/2010	MRB	dupage		6	19-24	59		Confluence of East & West Branch, start of Lower DuPage. Form completed to document pictures.

Appendix B
Missouri Habitat Assessment Forms

Appendix C
Upper Watershed Reconnaissance Summary Tables

Table C1
Upper Watershed Assessment
Summary Table

Site ID	Priority	Land Use	Municipality	HOA/PM	Folder	Photos	Action Opportunity	Non-Structural	Non-Struct Notes	Structural	Basin Retrofit	Filtration	Conveyance	Infiltration-Bioretenion	Rooftop Retrofits	Buffer Establishment	Notes	Other
18	H	SFRes	Naperville		7	59-70	Y			Y	Y	Y	Y	Y			New, upscale neighborhood. Manicured turf basin. Opportunity for large scale use of native veg or just along low flow channel. Creation of micro-pool wetland areas within dry basin.	
35	H	SFRes	Shorewood		7	409-425	Y			Y	Y	Y	Y	Y			Mowed turf basins. Appears to have periodic low flow. Section have installed concrete low flow channel. Opportunity for use of native veg. for low flow channel and wetland pocket creation in basins. Use of native veg. in upland portions of basins.	
19	H	SFRes	Will County		7	205-209; 210-212	Y			Y	Y	Y	Y			Y	Very narrow creek corridor through residential. Opportunity for buffer enhancement. Upstream trib area is ag. Pics show erosion in ag channel and creek through neighborhood. Adjacent basin has rock line shoreline & manicured turf for upper slope.	
6	H	SFRes	Joliet		7	302-313	Y	Y	Buffer Mgt	Y	Y	Y		Y			Wide streets & long driveways. Reduce roadway width, parallel ROW rain gardens. Detention Retrofits. N. Basin: no buffer near Sunmeadow. Basin retrofit South of Salma St - remove concrete channel. Consider maintaining native veg. along gas pipeline corridor	Seasonal Pool discharge management
24	H	SFRes	Joliet		7	237-247	Y			Y	Y	Y		Y			One basin has concrete low flow swale with remainder manicured turf. Other basins have mowed turf to water's edge. Opportunity for native veg for all basins.	Streets are very wide, little to no use of onstreet parking. Potential opportunity for curb line raingardens.
10	H	SFRes	Joliet		7	362-371	Y	Y	Buffer Mgt	Y	Y		Y			Y	Old, upscale private residential. Creek through neighborhood is all lined with 6-8" limestone rip-rap. Basins along river provide opportunity for retrofit. Old (unused tennis courts) appear to be in floodplain & buffer of DuPage River.	Owernship and current use of tennis courts is in question. Potential for nice buffer restoration if they are removed.
33	H	SFRes	Naperville		7	72-92	Y			Y	Y					Y	Appears to have wide buffer to Spring Brook, evaluate buffer management adjacent to park. Basins have manicured turf, showing signs of erosion & slumping. Opportunity to tie basin habitat to riparian corridor. Neighborhood has wide, wide streets.	
34	H	SFRes	Naperville		7	15-24	Y			Y	Y						Basins are manicured turf to waters edge. Showing signs of erosion along banks and slumping.	
26	H	SFRes	Joliet		7	334-362	Y			Y		Y	Y			Y	Creek is concrete lined through residential neighborhood. No detention in neighborhood. Channel appears stable upstream & downstream of concrete section. Opportunity to tie creek & neighborhood BMPs/enhancements.	
8	H	SFRes	Plainfield		No		Y	Y	Buffer Mgt							Y	Evidence of protected buffer. Evaluate current stream buffer management. Opportunity to connect to downstream corridor.	
44	H	Park	Bolingbrook		5	74-87; 70-73 88-91	Y	Y	Turf Mgt	Y		Y				Y	Establish and manage native veg buffer along north bank of Lily Cache in Jaycee Park, currently mowed. Incorporate stormwater BMPs & rain gardens at park to educate local residents. Neighborhood to north has no SW management.	Demonstration project at park may influence local residents to adopt & install onsite BMPs within older neighborhoods without SW detention. Pics: 70-73 & 88-91 are of adjacent neighborhood.
20	H	Park	Bolingbrook	Park Dist	5	160-171; 180-181	Y			Y			Y			Y	Lily Cache enhancement: Rt 53 to Canterbury Ln. Upstream of Lions Park has narrow buffer, manicured turf. Hard armored at Park. Severe encroachment & impacts South of Briarcliff. Opportunity for native restoration & grade control (riffle & pools).	
43	H	MFRes	Bolingbrook		5	248-292	Y	Y	Snow & Turf Mgt	Y	Y	Y	Y	Y	Y	Y	Nice opportunity for retrofit of online basins and open space use for dispersed BMPs for roof top & parking lot stormwater BMPs. Aesthetics would greatly improve with BMP implementation.	
17	H	MFRes	Naperville		7	25 - 36	Y			Y	Y	Y	Y	Y			Series of dry and partial open water basins. Manicured turf, does not appear to be used as park space (along roadway). Severe lowflow erosion in southern basin (pics 31 & 32)	
22	H	MFRes	Bolingbrook		5	192-198; 204-212; 199-203	Y			Y	Y	Y	Y		Y		All swales and stormwater conveyance/storage is lined by large limestone rip rap. Very unsightly, excessive trash. Opportunity to enhance aesthetics, incorporate native swales, buffers to treat & convey water. Across the street from nice native area.	
16	H	MFRes	Naperville		7	4 - 14	Y			Y	Y	Y			Y		Dense Multi; opportunity for native veg buffer around basin; direct asphalt overland to basin across buffer; opportunity for rain gardens or cisterns to collect roof runoff from combined garages. Downspouts are connected.	
21	H	MFRes	Joliet		7	327-329	Y			Y	Y						Aerials show basin with concrete low flow. At the time of site visit, basin was partially full. Opportunity to remove concrete low flow swale and create wetland type basin.	
7	H	MFRes	Joliet		7	287-301	Y	Y	Wetland Mgt	Y		Y				Y	Open space could be gem. Side slopes are manicured. Evidence of Algae blooms. Improve/establish Mgt program. Establish buffer around wetland, direct runoff from roadway across buffer. Now directly connected. Evaluate Salt use.	
14	H	Insti	Naperville	School	7	48-55	Y			Y	Y	Y	Y	Y	Y		Sections of open space could have native Veg. Parking lot retrofit: bio-swale retrofit into parking lot along drainage way (pic 55). East edge has to curb, could sheet flow over buffer strip into open space. Very visible & close prox. to creek.	
15	H	Insti	Naperville	Church	7	106,116-117	Y			Y		Y			Y	Y	Opportunity is for management of rooftop runoff & buffer management along adjacent creek.	
45	H	Comm	Bolingbrook		5	64-68; 92-103	Y			Y	Y	Y				Y	Church and commercial building appears to have dry basin along Lily Cache creek. Opportunity for enhancement of basin and incorporation of filtration BMPs at SE edge of church parking lot. Could tie basin into creek buffer management.	

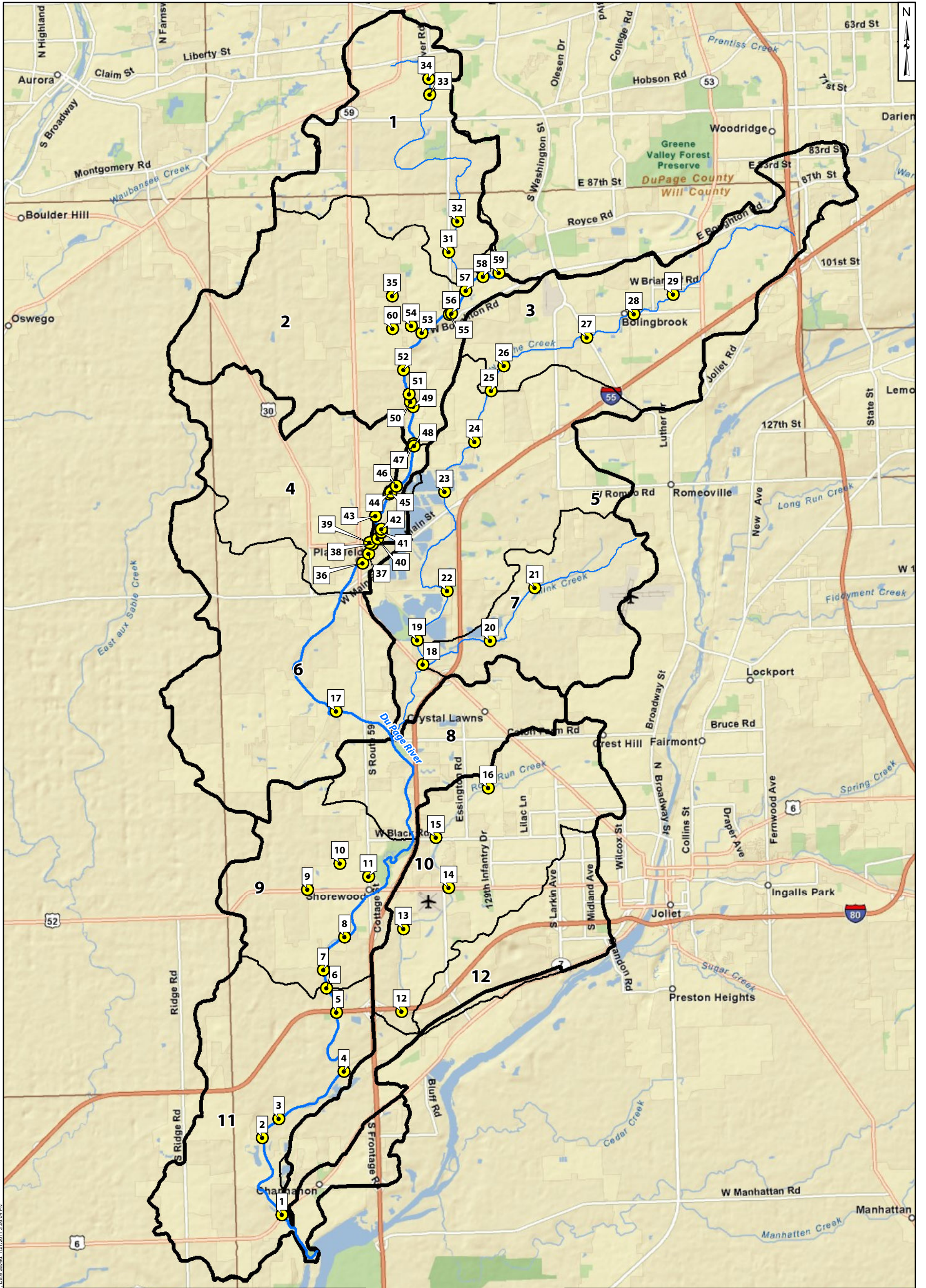
Table C1
Upper Watershed Assessment
Summary Table

Site ID	Priority	Land Use	Municipality	HOA/PM	Folder	Photos	Action Opportunity	Non-Structural	Non-Struct Notes	Structural	Basin Retrofit	Filtration	Conveyance	Infiltration-Bioretenention	Rooftop Retrofits	Buffer Establishment	Notes	Other
23	H	Comm	Bolingbrook		5	182-191	Y	Y	Alternative De-icing	Y		Y				Y	Lily Cache is piped from commercial area, daylight at commercial center (corner of Rt 53 & Northridge Ave). Opportunity for commercial BMPs and buffer enhancement. Current buffer is mowed turf, signs of erosion & sloughing.	
36	H	Comm	Joliet		No		Y			Y			Y				Concrete channels along Hennepin Dr. Evaluate opportunity for SW retrofits for Mall & complex. Complex appears to have no detention & minimal green space. Consider parking lot retrofits, urban BMP filtration devices (Filterra), roof retrofits.	
37	H	Comm	Will County		No			Y	Policy on redevelopment	Y						Y	Current use as storage yard encroaches on buffer, no apparent SW management. Evaluate opportunity to target redevelopment, require LID at time of redevelopment.	
9		SFRes	Will County		No		Y		Buffer Mgt	Y	Y	Y		Y		Y	Older Res. Online basins. Minimum to no pond buffers, mowed to waters edge. Evidence of erosion & slumping. Opportunity to connect to upstream and downstream corridor.	
3		SFRes	Shorewood		7	400-407	Y			Y	Y	Y					Basin buffer, parking filter strip	
4		SFRes	Shorewood		7	391-399	Y	Y	Buffer Mgt	Y	Y						Basin buffer on north	Seasonal Pool discharge management
29		SFRes	Plainfield		7	218-223	Y			Y	Y						Basins appear to have work being performed at water's edge, possible native installation? Opportunity to install native veg. & upland buffer with native veg. Very wide streets, opportunity for roadway rain gardens.	
25		SFRes	Joliet		7	248-267	Y			Y			Y			Y	Creek buffer through old small residential section is highly impacted. Each residence has small bridge over creek or armoring along creek. Downstream section flows through utility corridor.	
12		SFRes	Naperville		7	38-41	Y	Y	Turf Mgt	Y				Y	Y		No detention, adjacent to Spring Brook. Nice neighborhood, curb & gutter, wide streets. Potential opportunity for dispersed BMPs near inlets: i.e. parkway rain gardens	
13		SFRes	Naperville		7	44-47,56-58	Y	Y	Turf Mgt	Y				Y	Y		No detention, adjacent to Spring Brook. Nice neighborhood, curb & gutter, wide streets. Potential opportunity for dispersed BMPs near inlets: i.e. parkway rain gardens; potential to tie into demonstration project with adjacent middle school and greenway	
2		SFRes	Shorewood		No		Y			Y						Y	Opportunity for establishment & management of native veg. buffer along DuPage River. Pedestrian trail is present along east side. Area appears to be mowed.	
1		SFRes	Shorewood		No		N										New residential dev. Evidence of buffer encroachment along unnamed creeks to DuPage River, particularly at Woodland Way.	
30		MRes	Naperville		7	228-235	Y			Y	Y						Basin has narrow water's edge with cattails. Upland area is mowed turf. Opportunity to install and manage native buffer. Trail along basins, opportunity to create native habitat along trail & tie into basin enhancement.	
46		Insti	Plainfield		7	193-197	Y			Y	Y	Y			Y		Plainfield North High School. Very massive, dry detention basins. No noticeable stormwater water quality BMPs. Opportunity for wetland pocket creation in basins. Potential filter strips for parking lot or water reuse from roof tops.	
42		Indust	Bolingbrook		No		N									Y	Several adjacent, active mines. Evaluate reclamation plan. Activities encroach into DuPage River buffer. Evaluate opportunities to expand green infrastructure with mine reclamation.	
11		Golf	Joliet	Park Dist	7	373-381	Y	Y	Turf Mgt	Y			Y			Y	Stream buffer is manicured turf. Showing significant signs of erosion, down cutting & bank erosion.	
38		Comm	Shorewood		7	385-387		Y	Trash management at rear of store	Y	Y						Dead or lack of vegetation at bottom of basin. Excessive bounce or high salt load from de-icing may be affecting vegetation. Minimal green space. Potential opportunity for parking lot retrofit with filtration BMPs (Filterras).	
5		Comm	Plainfield		7	179-192	Y			Y		Y					Recent commercial development (north & south of Ferguson Rd. Online & off-line detention. Appears to have preserved nice buffer to creek. No dispersed BMPs in commercial development. Nice use of grass swale along Ferguson Rd.	
47		Comm	Plainfield		7	214-216	Y			Y		Y					Recent Commercial development (north & south of W 127th. Riprap shoreline detention. No dispersed water quality BMPs in commercial development. Basins are wedged into site with rip-rap at water's edge, very little to no green space in development	
39		Comm	Naperville		7	159-167	N										Appears to have avoided impacts to adjacent buffer. Very minimal green space. Potential opportunity for parking lot retrofit with filtration BMPs (Filterras).	
40		Comm	Bolingbrook		5	282,294, 296-297	N										Appears to have avoided impacts to adjacent buffer. Very minimal green space. Potential opportunity for parking lot retrofit with filtration BMPs (Filterras).	
41		Comm	Joliet		7	315-324	N										Rip rap shoreline of basins. Very minimal green space. Potential opportunity for parking lot retrofit with filtration BMPs (Filterras).	

Table C2
Areas of Interest
Summary Table




Site ID	Priority	Land Use	Municipality	HOA/PM	Folder	Photos	Action Opportunity	Target/Focus	Action	Comments
1		Ag	Will County		LD	93-105; 107-115; 118-121	Y	Buffer	LID	Sole farm area within residential area, borders creek. Opportunity to protect & enhance stream buffer. Conservation design. Corridor management. Includes pictures of upstream & downstream road crossing. (LID: Low Impact Development)
2		Ag	Plainfield				Y	Buffer	LID	West side of DuPage River. Opportunity to extend green infrastructure of the river corridor through protection or LID.
3		Ag	Shorewood		LD	400	Y	Buffer	LID	Well defined drainage way through ag field between to residential neighborhoods. Opportunity to protect and connect green corridor/green infrastructure through LID.
4		Ag	Will County				Y			Appears to be farmed wetland area. Reports of adjacent water problems (flooding). Could be target to preserve, restore green corridor. Green infrastructure.
5		Ag	Will County				Y	Buffer	LID	West side of DuPage River. Opportunity to extend green infrastructure of the river corridor through protection or LID.
6		Ag	Plainfield				Y	Buffer	LID	North side of DuPage River. Floodplain & floodway area, has been looked at for development. Opportunity to extend green infrastructure of the river corridor through protection or LID.
7		Ag	Will County				Y	Buffer	LID	Opportunity to connect green corridor along stream. Existing basins online. Future ones should be off line.
8		Ag	Plainfield				Y	Buffer	LID	Opportunity to connect green corridor along stream. Upstream corridor is protected as part of residential development.
9		Ag	Will County				Y	Buffer	Corridor protection	Opportunity to focus on corridor protection of stream. Evaluate policies to protect corridor & encourage/require LID immediately adjacent to stream.
10		Forest	Will County				Y	Buffer	Corridor protection	Both sides of DuPage River. Opportunity to preserve green infrastructure of the river corridor through protection (i.e. conservation easements) or LID.
11		Mix	Plainfield				Y	Buffer	Corridor protection	Opportunity to focus on corridor protection of stream. Evaluate policies to protect corridor & encourage/require LID immediately adjacent to stream.

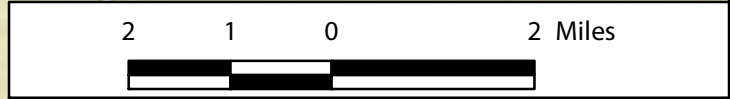
Appendix D
Maps



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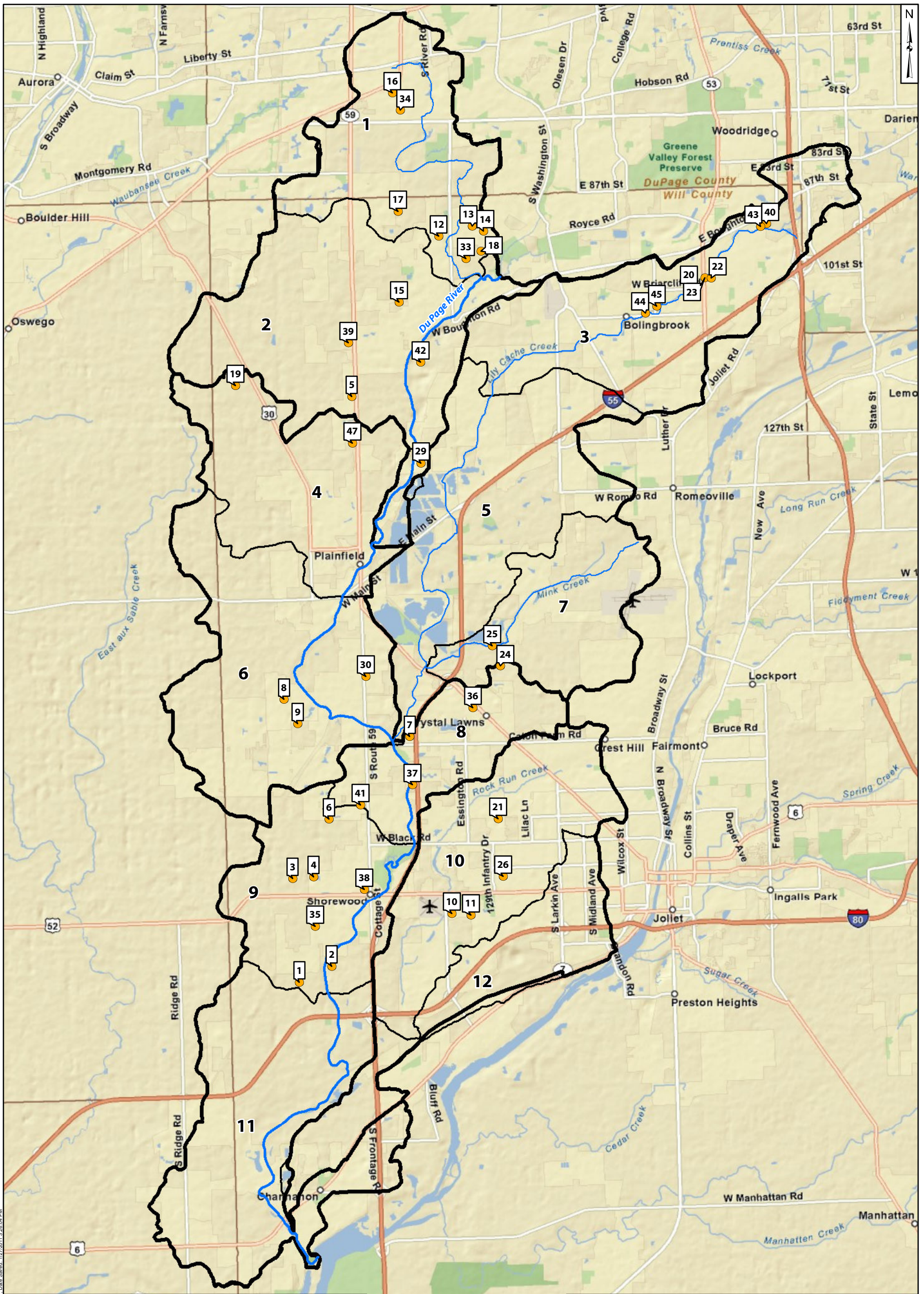
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-  Assessment Location
-  DuPage River Waterways
-  Lower DuPage River Watershed & Subwatersheds



In Stream Assessment
 Lower DuPage Watershed

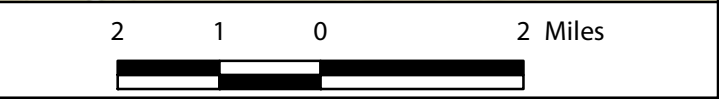
Figure
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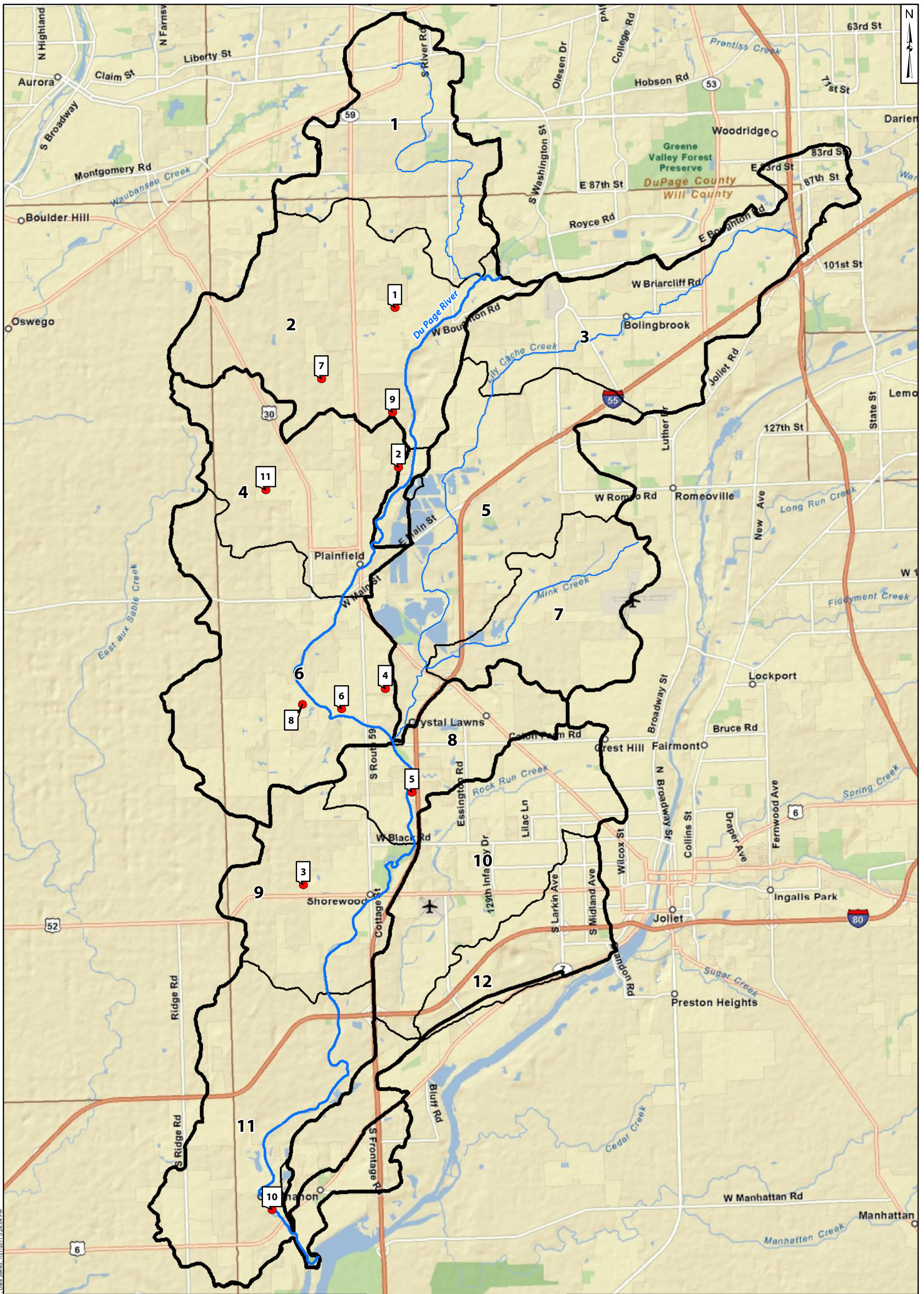
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- Assessment Location
- DuPage River Waterways
- Lower DuPage River Watershed & Subwatersheds



Upper Watershed Assessment
 Lower DuPage Watershed

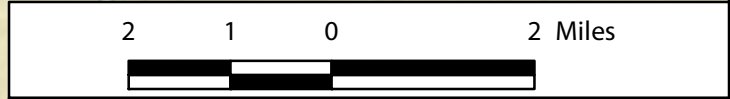
	Figure 2
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Legend

- Areas of Interest
- DuPage River Waterways
- Lower DuPage River Watershed & Subwatersheds



Areas of Interest
 Lower DuPage Watershed

Geosyntec
consultants

Figure
3

Appendix E
CD-ROM of Files