

Chapter 8

SANDY CREEK SUBWATERSHED

8.1.1 Subwatershed Location

The Sandy Creek subwatershed is located in the southeastern portion of the Tyler Creek Watershed. This subwatershed has an area of 2,217 acres, or 3.5 square miles. The boundary of the Sandy Creek subwatershed shown in Figure 8.1. The subwatershed is located within Elgin Township, and is roughly bordered, by US Route 20 on the south, Highland Avenue on the north, Coombs Road on the west, and Lyle Avenue on the east.

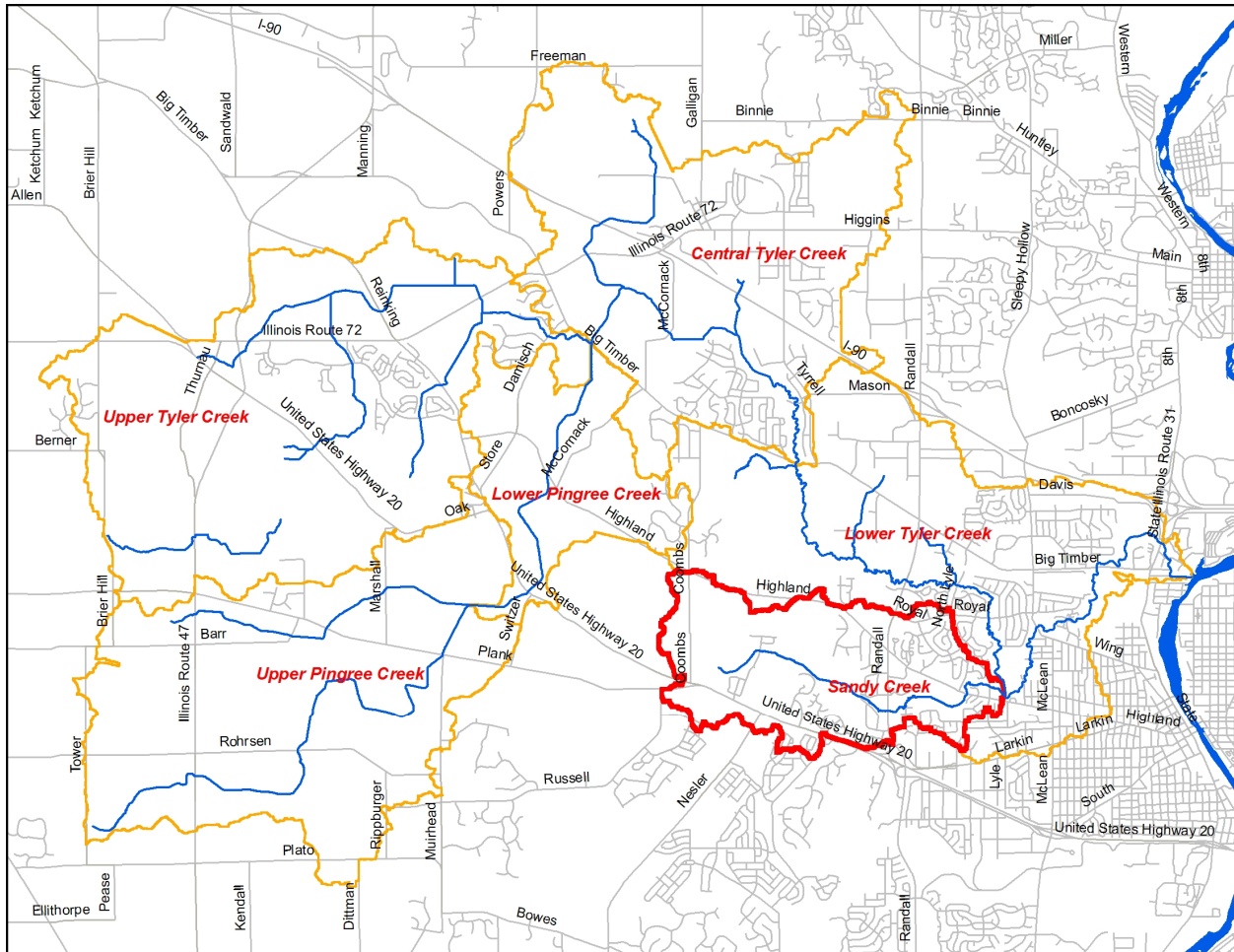


Figure 8.1. Subwatersheds in the Tyler Creek Watershed

8.1.2 Topography & Geology

The topography of the subwatershed is moderately sloping, generally between 2% and 4%, with a maximum elevation of 948 feet at Highland and Coombs Road and a minimum elevation of 792 feet where Tyler Creek joins the Fox River.

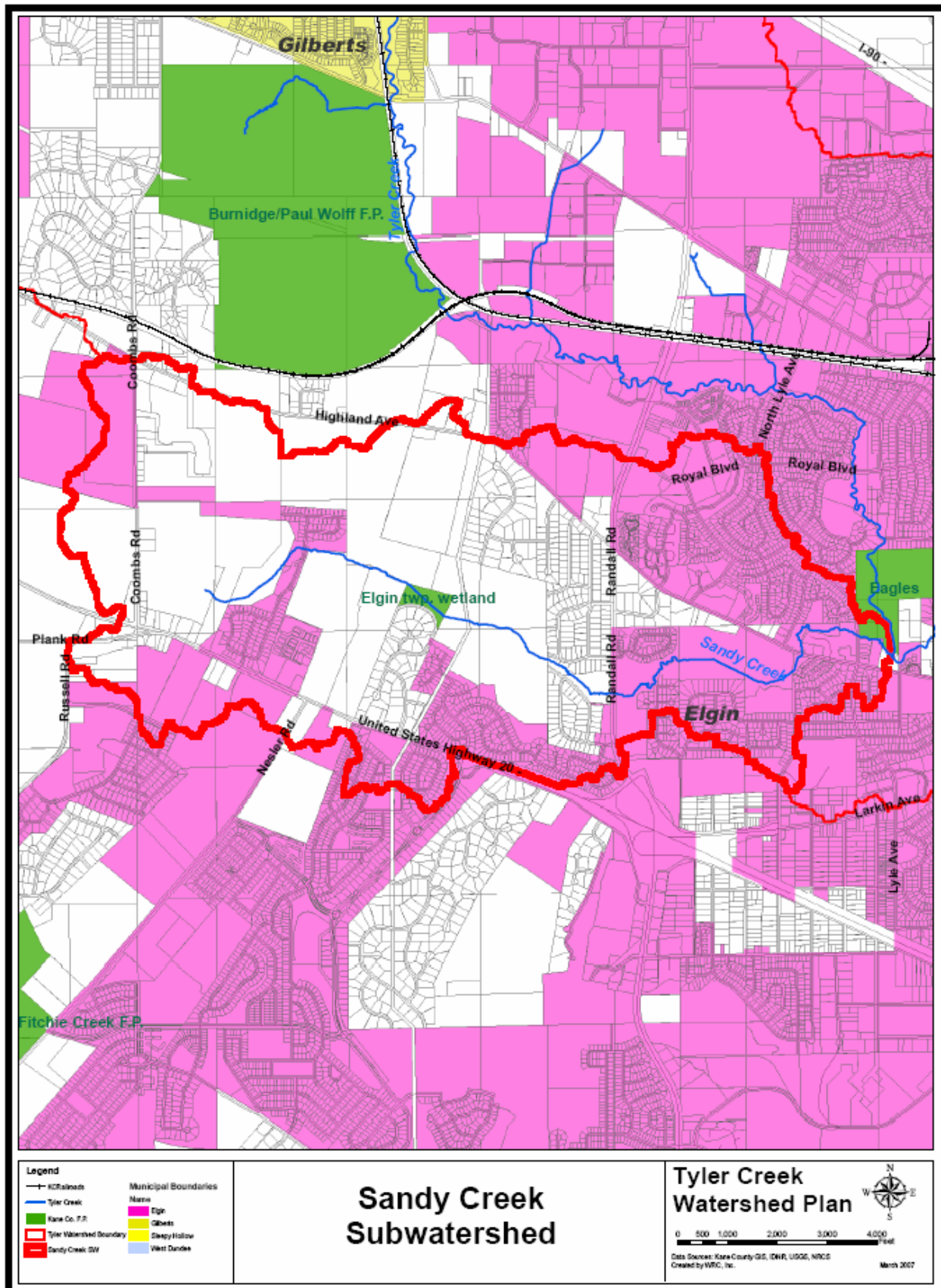


Figure 8.2. Subwatershed Map

8.1.3 Soil Conditions

The glacial advances result in a wide variety of soil associations. The soils in the Upper Tyler subwatershed consist of mainly silty loams soil units on 2% to 4% slopes. Each major grouping of soil associations have potential impact on current and future land uses within the subwatershed. For example, hydric (wetland) soils constitute 511 acres, or 23% of the 2,217 acre subwatershed, and indicate those areas that contain functional wetlands, or former / degraded wetland areas that could be restored or enhanced.

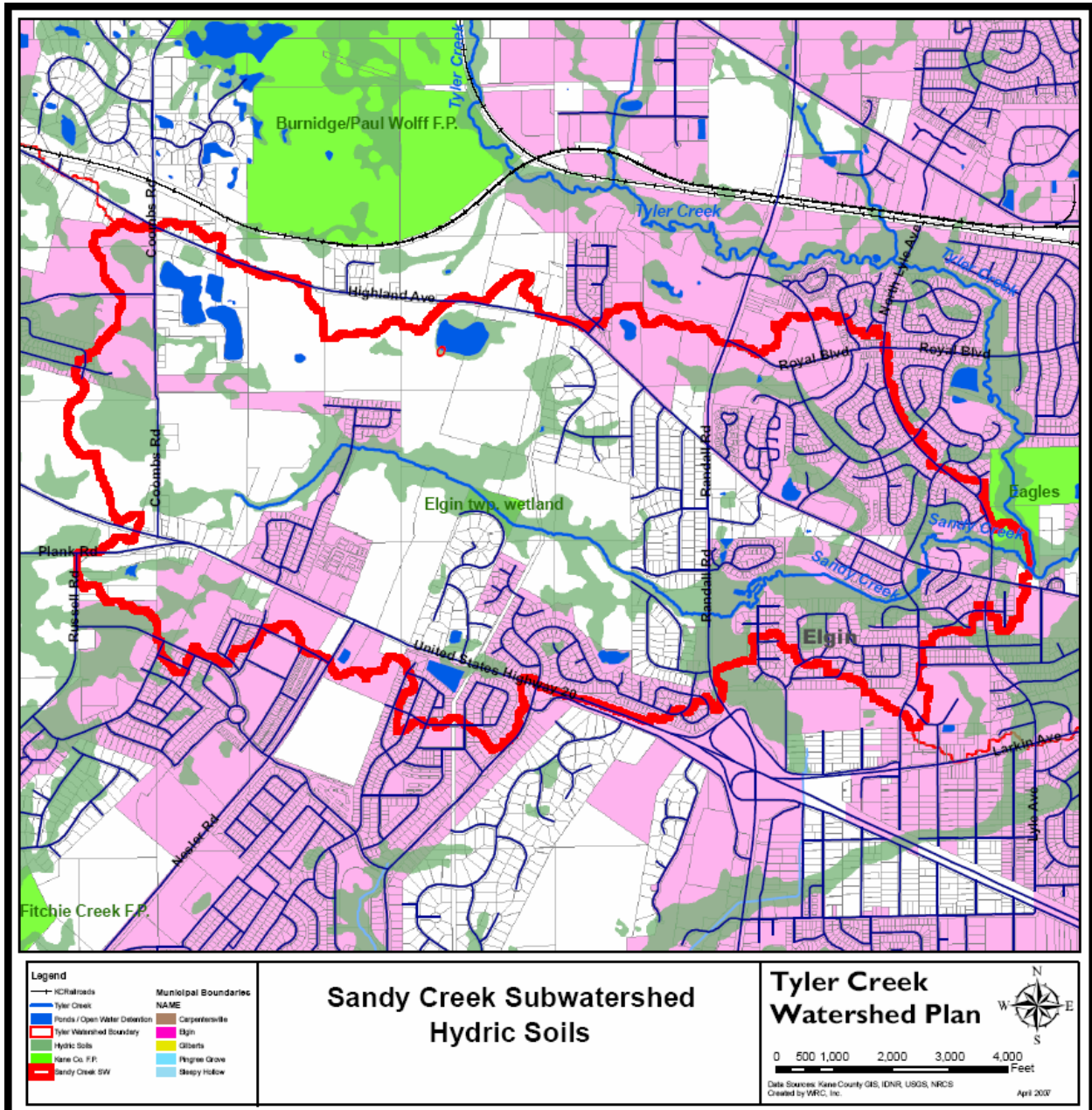


Figure 8.3: Hydric Soils

8.1.4 Subwatershed Drainage Features

Streams

Sandy Creek is the only stream in the subwatershed. Sandy Creek begins at an agricultural tile outlet near the northeast intersection of US Route 20 and Coombs Road. Although Sandy Creek appears to have been almost completely channelized in the past (when the subwatershed was entirely devoted to agricultural uses), the steeper gradient of the stream and lack of on-going channel maintenance has allowed the stream to begin the re-adjustment process back to a natural, meandering stream. Evidence can be seen in the sinuosity that the channel exhibits in the agricultural parcels at the west end of the subwatershed and is even more evident in reaches such as the residential development on the west side of Randall Road. The stream corridor ranges in size from about 60 feet on agricultural parcels to more than 200 feet in most sections downstream of Randall Road.

Analysis of aerial photography indicates that only about 54% of Sandy Creek is channelized, although the absence of on-going channel maintenance by landowners has allowed the stream to begin re-meandering in several sections upstream of Randall Road.

Urban Drainage Systems

Analysis of land uses and aerial photography, landcover data, and County GIS data indicates that about 30% of the Sandy Creek subwatershed is now drained using storm sewer systems. This network of sewers is principally under the jurisdiction of the City of Elgin, and the area roughly corresponds to the developed areas within the corporate limits of the City and is concentrated in the eastern half of the subwatershed. There are 12 stormwater detention facilities constructed with the subwatershed; all but one of those appears to be under the jurisdiction of the City of Elgin. Given the approximate age of the storm sewer system as a whole and the stormwater regulations under which they were constructed, there do not appear to be any type of structures in the system installed to mitigate the poor water quality associated with the urban stormwater runoff.

There is also one on-line detention facility on Sandy Creek, owned and maintained by the Lincolnwood Terrace Townhouse Association. The on-line basin is located just east of the intersection of Highland Avenue and North Airlite Street. This stormwater facility is an open water pond with a concrete spillway that creates a five to six foot head above the downstream channel invert. As the basin is constructed on-line, the pond volume has been drastically reduced by the continual inflow of sediment from further upstream in the watershed. The Lincolnwood Terrace Townhouse Association has previously sought technical and financial assistance to have the basin dredged to restore the open water aesthetics that were present when the pond was constructed.

Agricultural Tile Systems

Due to the predominantly urbanized nature of the subwatershed, it is unlikely that there many functioning underground drain tile systems remaining in the subwatershed, particularly in the eastern two-third's of the subwatershed. The western one-third may contain some tile systems, as this region has yet to be fully developed and contains many areas of gently sloping to nearly flat hydric soil complexes. Historically, these were the areas that had poor drainage characteristics, but that farmers could successfully convert to agricultural usage by the installation of agricultural drain tile systems.

Identifying agricultural drain tile networks is important in watershed planning because current local flooding and drainage problems can often be linked to damage or age-related failure of drain tile systems. From a watershed preservation / restoration perspective, it is important to identify functional drain tile systems to determine opportunities for their removal or reconfiguration for the purposes of restoring valuable wetland habitat. It is probable that many of the depressional and low lying areas in the subwatershed that are now drained by tile systems were once wetland and wet prairie ecosystems that supported very diverse habitats.

8.1.5 Population

The use and analysis of population data in watershed planning is critical because there is a direct correlation between the number of people residing in a watershed and the degree of impacts to the quality and quantity of the watershed's natural resources.

According to the 2000 US Census, the population in the subwatershed was about 5,123 people, or only 1,479 persons per square mile.

8.1.6 Landuse / Landcover

Land cover data for the Sandy Creek subwatershed is available from the Illinois Department of Natural Resources using LANDSAT data collected between 1998 and 1999. The dominant land cover, according to this data, was urban land cover, comprising 42% of the subwatershed. Row crop agriculture accounted for roughly 39% of the subwatershed area. Rural grasslands accounted for another 9%, while wooded areas and wetlands account for the remaining 10% of the subwatershed.

Land Cover Description	Total Acres	Percent of SW
Barren & Exposed Land	2.3	0.10%
Corn, Soybeans, Other Small Grains & Hay (row crop agriculture)	873.3	39.39%
Winter Wheat	0	0.00%
Rural Grassland	188.5	8.50%
Low Density Urban	157.3	7.09%
Medium Density Urban	385.2	17.37%
High Density Urban	33.5	1.51%
Urban Grassland	355.2	16.02%
Shallow Marsh – Emergent Wetland	9.5	0.43%
Shallow Water Wetland	0	0.00%
Partial Forest /Savannah Upland	40.0	1.80%
Upland Forest	132.8	5.99%
Floodplain Forest	1.0	0.05%
Coniferous Forest	0	0.00%
Deep Marsh / Emergent Wetland	2.9	0.13%
Open Water	35.8	1.61%
TOTAL	2,217.3	100.0%

Table 8.1

8.1.7 Existing Watershed Development

Development in the subwatershed has occurred principally through the efforts of the City of Elgin in their expansion westward into the agricultural land that existed west of the Fox River. Much of this development lies in the area between the Fox River and Randall Road. As of 2006, about 46% of the Sandy Creek subwatershed is within Elgin's municipal borders (1,020 of 2,217 acres). There are about 275 acres of unincorporated, county-regulated residential subdivisions in the subwatershed, most of which were developed between 1970 and 1990. About half of these older, unincorporated developments are characterized by ½ acre lots with private wells and septic systems. The other half appear to be newer (late 1980s or 1990s) and are similar in character but on minimum 1 acre lots.

The City of Elgin is the only municipality that has jurisdiction in the subwatershed.

Municipality	Area (acres)	Percent of SW
City of Elgin	1,020	46%
Unincorporated	1,197	54%

Table 8.2

There are 26.3 miles of roads in the subwatershed, which equates to about 90 acres of impervious cover (roadway pavement only – excluding parking lots, sidewalks, and driveways).

8.1.8 Natural Resources

Kane County Forest Preserve Properties

There is only one property in the subwatershed controlled by the Kane County Forest Preserve District. It is the 9.5 acre Elgin Township Wetland, located at the north end of the Hidden Hill Subdivision near US Route 20, east of Nestler Road.

Other Publicly Protected Land

The City of Elgin owns 14 parcels totaling 30 acres within the subwatershed. Twelve of these parcels, totaling 26 acres, are located along the Sandy Creek stream corridor or its adjacent wetlands.

Wetlands

Kane County completed an Advanced Identification (ADID) Wetland Study in 2004. This study identified a total of 22 wetlands, totaling 209.1 acres, or 9% of the Sandy Creek subwatershed. Of these 6 wetlands, totaling 152.6 acres (72%) were determined to be of High Habitat Quality or High Functional Value, rating an ADID classification.

ADID Code	Wetland Type	Number of Wetlands	Total Area (acres)
HFV	High Functional Value	6	152.6
HHQ	High Habitat Quality	0	0
APH	Artificial Pond in Hydric Soils	5	12.5
APN	Artificial Pond in Non-hydric Soils	0	0
W	Other Wetlands (lower quality)	11	44.0
	TOTAL	22	209.1

Table 8.3

Threatened & Endangered Species

The Kane County ADID Wetland Study indicates that there are no Threatened or Endangered species in the Sandy Creek subwatershed. No other records of T&E Species were found.

Existing Greenways

While there is no formal greenway established along Sandy Creek, there are a reasonably adequate collection of public and private out-lot parcels through which the stream flows, between Randall Road and its confluence with Tyler Creek. The private out-lots are owned by the Oak Club Townhouse Association, the soon-to-be-created Tuscan Woods HOA (now Ryland Group, Inc.), and the Manor Homes of Sandy Creek HOA. Sandy Creek east of North Lyle Avenue flows through three private residential lots before emptying into Tyler Creek. Upstream of Randall Road, Sandy Creek flows through two HOA out-lot parcels that are part of the Almora Heights & Countryside subdivision.

8.2 Analysis of Subwatershed Data and Problem Identification

8.2.1 Water Quality Data

The FRWMN, administered by the not-for-profit group, *Friends of the Fox River*, maintains ten volunteer stream monitoring sites along Tyler Creek. At this time, the FRWMN does not have a monitoring station in the Sandy Creek Subwatershed.

Because there are no monitoring stations in the subwatershed, it is impossible to quantify the water quality characteristics of Sandy Creek. At least one water quality monitoring station should be established to collect periodic data on water quality constituents or benthic macroinvertebrates. Sampling benthic macroinvertebrates (as done by the FRWMN) is a simple procedure that could be accomplished with volunteers and would provide at least qualitative information about the habitat in the stream channel and the quality of the water flowing through the sample reach.

8.2.2 Flooding Problems

There are no documented flooding problems along Sandy Creek. The 100-year floodplain has been previously calculated and mapped from the confluence with Tyler Creek upstream to US Route 20. Existing floodplain mapping indicates that there may be as many as 17 dwellings within the regulatory floodplain.

8.2.3 Projected Development & Growth

As the entire subwatershed falls within the City of Elgin's Comprehensive Planning Area, it is likely that all future development in the subwatershed will be done by the City of Elgin. There are about 650 acres of land available for new development. Elgin currently has approved more than 850 single family or multi-family residential homes to be constructed on 430 acres as part of six new developments. The remaining 220+/- acres of agricultural land is slated for low density residential development (2.1-4.0 units per net acre) as part of Elgin's Comprehensive Plan.

The end result will be an addition of more than 1,000 new residences and between 2,500 and 3,300 new people. If not carefully planned and designed, the net affect the proposed land use changes in the subwatershed will result in profoundly negative impacts on water quality, total runoff, stream stability, and the ecological integrity of Sandy Creek, as well as Tyler Creek.

8.2.4 Estimated Pollutant Loads

Pollutant load estimates in the Sandy Creek subwatershed under existing and future condition land uses are summarized below. Nutrient loads are expected to decrease as agricultural uses decline. Future land use however, assumed low density development will replace agriculture. In addition to nutrient and sediment loads, urban runoff contains a host of other pollutants such as oils and grease, heavy metals. Strategies for reducing existing pollutant loadings are discussed in Chapters 3 and 4.

Pollutant	Existing Condition	Future Condition
Total N (lbs/yr)	9,514	5,953
Total P (lbs/yr)	849	279
Sediment (tons / yr)	577	335
Runoff (acre-ft per yr.)	631	737
Fecal Coliform (FC in 10 ⁹ FCU)	15,184	15,503

Table 8.4 Estimated annual pollutant loads from the Sandy Creek Subwatershed

8.2.5 Natural Area Protection Problems

Forest Preserve Sites

The Elgin Township Wetland property, as noted in the ADID Wetland study, is threatened by invasive species (Reed Canary Grass).

Wetlands

- The most significant wetland issue in the Sandy Creek subwatershed is the protection of ADID Wetland #1364. This wetland is 83 acres in size and extends up the Sandy Creek stream corridor from Randall Road to the headwaters of Sandy Creek near Coombs Road. This wetland spans several parcels which are planned for new residential development. It is also being degraded by invasive species, most notably Reed Canary Grass.

8.3 Subwatershed-specific Recommendations to Protect Watershed Resources

The following is a summary list of recommendations for the Sandy Creek Subwatershed to help stakeholders and decision makers meet the Goals and Objectives set forth for Tyler Creek. Background information regarding how each type of recommendation addresses watershed concerns and/or impairments (existing or future) can be found in Section 2.5.

Type: Education/Outreach; Regulatory; Natural Area Restoration; Monitoring; Permanent Habitat Protection, Water Quality; Flood Control

Target Goals: Which watershed plan goals the recommendation is intended to address.

Initial Cost: the initial cost, in 2007 dollars to initiate the recommended action, if applicable.

Annual Cost: the long term expected annual cost (in 2007 dollars) to successfully implementation of the recommendation

Responsible Party: Identifies the LEAD agency, entity, or landowner who will ultimately have to execute the recommendation. SUPPORTING parties, such as government agencies, grant sources, etc. may also be identified here.

Priority: A ranking of High, Medium, or Low, where High is represents a recommendation of utmost importance to be pursued immediately and Low represents those recommendations which may take more time and are less critical in terms their impact on meeting the watershed plan goals.

The project cost estimates contained in this report should be considered preliminary, and are only presented to identify the potential magnitude of cost, from a watershed scale perspective. No site-specific investigation, analysis, or design of any recommended project, from which accurate cost information could be obtained, was completed as part of the preparation of the 2007 Tyler Creek Watershed Plan.

If a watershed stakeholder decides to apply for grant funding assistance to implement any of the recommended projects presented in this report, they should first undertake any additional studies /research needed to determine an updated / accurate project cost. They should not solely rely on the cost estimates presented in the TCWP report as the basis for their grant request.

Monitoring Projects

Recommendation 4-1

Establish a stream monitoring station on Sandy Creek at North Lyle Avenue on Kane County Forest Preserve Property. Monitoring protocol should include biological (macroinvertebrates) and basic chemical constituents (temp, DO, pH, TSS, phosphorus, nitrogen, etc.)

Type: Monitoring

Target Goals: Goal 4, Objective 2.

Initial Cost: \$1500

Annual Cost: \$ 750

Responsible Party: Friends of the Fox River – Fox River Watershed Monitoring Network / City of Elgin

Priority: Medium

Water Quality Projects

Recommendation 4-8

Retrofit dry-bottom, turf grass detention basin to include native plantings and minor re-grading to increase pollutant load removal from parking lot runoff.

Type: Water Quality

Target Goals: Goal 1, Objective 5

Initial Cost: \$25,000

Annual Cost: \$500 (for maintenance of replanted vegetation in basin)

Responsible Party: Home Depot USA, Inc.

Priority: Medium

Natural Habitat Restoration Projects

The following recommendations are site-specific natural area restoration projects that should be implemented to increase natural habitat quality and diversity along the Tyler Creek stream corridor.

Recommendation 4-2

Remove or modify the on-line stormwater basin spillway to reduce the impoundment and re-establish sediment transport function and fish passage in Sandy Creek.

Type: Natural Habitat Restoration

Target Goals: Goal 1, Objective 3

Initial Cost: \$125,000

Annual Cost: \$500 (for maintenance of replanted vegetation in basin)

Responsible Party: Lincolnwood Terrace Townhome Association. Support from City of Elgin.

Priority: High

Recommendation 4-3

Prepare and implement an ecological restoration plan for the 29 acre ADID wetland (#1379) along Sandy Creek east of Randall Road.

Type: Natural Habitat Restoration

Target Goals: Goal 1, Objectives 2 & 3

Initial Cost: \$87,000

Annual Cost: \$5000

Responsible Party: City of Elgin / Oaks Club Townhome Association

Priority: Low

Recommendation 4-4

Prepare and implement an ecological restoration plan for the 80+ acre ADID wetland (#1364) along Sandy Creek west of Randall Road. Provide permanent protection of wetland where it extends across undeveloped parcels.

Type: Natural Habitat Restoration

Target Goals: Goal 1, Objectives 1,2 & 3

Initial Cost: \$200,000

Annual Cost: \$10,000

Responsible Party: City of Elgin, working with private landowners.

Priority: Medium

Permanent Habitat Protection Recommendations

Recommendation 4-5

Encourage Hidden Hill Subdivision HOA to work with Kane County Forest Preserve District to restore 9 acres of ADID Wetland 1364 on KCFPD property located at north end of subdivision.

Type: Permanent Habitat Protection

Target Goals: Goal 1, Objectives 1,2,3

Initial Cost: \$27,000

Annual Cost: \$2,700

Responsible Party: Kane County Forest Preserve District

Priority: Medium

Recommendation 4-6

Protect ADID Wetland 1364 on properties planned for future development. Encourage developers to incorporate this wetland corridor into their development plan as a part of their Green Infrastructure.

Type: Permanent Habitat Protection

Target Goals: Goal 1, Objectives 1,2,3

Initial Cost: municipal staff & elected official time working with developer

Annual Cost: \$0

Responsible Party: City of Elgin

Priority: Medium

Recommendation 4-7

Protect portions of ADID Wetland 1364 on these parcels planned for future development. Encourage developers to incorporate this wetland corridor into their design as a part of their Green Infrastructure Plan for the proposed land development.

Type: Permanent Habitat Protection

Target Goals: Goal 1, Objectives 1,2,3

Initial Cost: municipal staff & elected official time working with developer

Annual Cost: \$0

Responsible Party: City of Elgin

Priority: Medium

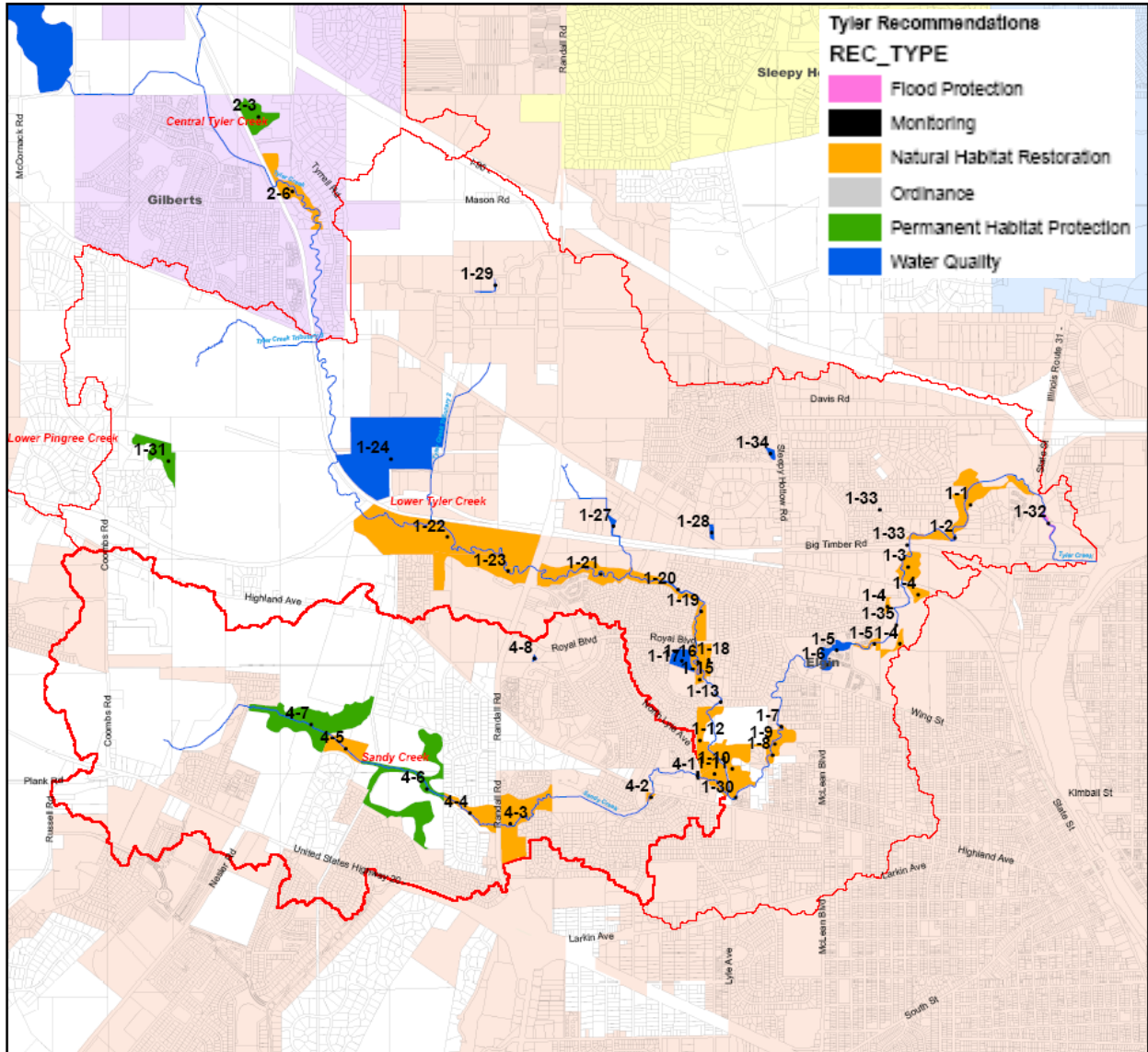


Figure 8.5 : Subwatershed Recommendations Location Map

Table 8.5 Summary of recommended BMPs for the Sandy Creek Subwatershed

REC NUMBER	REC TYPE	DESCRIPTION	RESPONSIBLE PARTY	INITIAL COST	ANNUAL COST	PRIORITY
4-1	Monitoring	Establish stream monitoring station on Sandy Cr at N Lyle Ave for macroinvertebrates and basic WQ constituents - grab samples	Fox River Watershed Monitoring Network	\$1,500	\$750	Medium
4-2	Natural Habitat Restoration	Remove private on-line dam on Sandy Creek at Highland Avenue and restore pond bottom to natural stream corridor with passive recreation features for residents	Linwood Terrace HOA	\$125,000	\$500	High
4-3	Natural Habitat Restoration	Wetland restoration on City of Elgin property and townhome association property	City of Elgin / Private Landowner HOA	\$87,000	\$5,000	Low
4-4	Natural Habitat Restoration	Wetland restoration of ADID Wetland 1364 on HOA property	HOA / City of Elgin support	\$200,000	\$10,000	Medium
4-5	Natural Habitat Restoration	Wetland restoration of portion of ADID Wetland 1364 on KCFP property at Hidden Hill Subdivision	KCFPD	\$27,000	\$2,700	Medium
4-6	Permanent Habitat Protection	Protect and restore portion of ADID Wetland 1364 on property planned for future development	City of Elgin	N/A	N/A	Medium
4-7	Permanent Habitat Protection	Protect and restore portion of ADID Wetland 1364 on property planned for future development	City of Elgin	N/A	N/A	Medium
4-8	Water Quality	Retrofit dry bottom detention basin to increase pollutant removal from Home Depot parking lot runoff	Home Depot USA, Inc.	\$25,000	\$500	Medium

Recommended BMPs, costs and projected load reductions for the Sandy Creek watershed are presented in Table 8.6. The main pollutants of concern in this largely undeveloped watershed are nutrients for agricultural uses. There are no water quality data that can be used to verify the degree of impairments from these pollutants. The recommended BMPs in conjunction with the proposed monitoring program will ensure the pollutant loads are reduced over time.

Table 8.6 Recommended BMPs for the Sandy Creek Subwatershed

BMP Category	BMP Location	Project Locations ²	BMP		Removal Efficiency**			Total Cost (\$)	Pollutant Load Reduction (lbs/year)			Percentage Reduction (%)		
			Size	Unit	TN	TP	TSS		TN	TP	TSS	TN	TP	TSS
Natural Habitat Restoration	Site-specific	4-3, 4-4, 4-5	118	acres	30%	35%	60%	\$314,000	760	79	92	8.0	9.3	16.0
Permanent Habitat Protection	Site-specific	4-6, 4-7	69	acres	53%	51%	88%	-	785	67	79	8.2	7.9	13.7
Dam Removal	Site-specific	4-2	1	each	-	-	-	\$125,000	190	17	12	2.0	2.0	2.0
Point Source Control	Site-specific	4-1	1	lump sum	-	-	-	\$1,500	95	8	6	1.0	1.0	1.0
Detention Basin Retrofit	Site Specific	4-8	1	lump sum	32%	55%	68%	\$25,000	7	1	1	0.1	0.1	0.2
Rain Gardens	Watershed	Subwatershed wide – urban parcels	1	acres	46%	61%	10%	\$10,700	10	1	0	0.1	0.1	0.0
Nutrient Management	Watershed-specific	Subwatershed wide – agricultural parcels	10	acres	70%	28%	-	\$1,000	150	5	-	1.6	0.6	-
Regulatory	Watershed-Specific	Subwatershed wide	1	lump sum	-	-	-	\$10,000	476	42	29	5.0	5.0	5.0
Total								\$487,200	2,472	222	218	26.0	26.1	37.8

² = Site specific location numbers correspond with BMPs specified in table 8.5 and map figure 8.5

** TN = total Nitrogen; TP = total Phosphate; TSS = total Suspended Solids or Sediment; “-“ = “not available” or nominal values have been applied

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