SUPPORTING DOCUMENT
SOIL AND WATER CONSERVATION DISTRICT REPORT

Attached is the NRI Report by the Lake County Soil and Water Conservation District.

Lake County Soil & Water Conservation District

Natural Resources Review

RK123, LLC a Florida Limited Liability Company

109 Acres
Lake County

NRI
10-2722

Soil and Water Conservation District
of Lake County

100 N. Atkinson Rd., Suite 102A, Grayslake, IL 60030 * Phone: 847-223-1056 * Fax: 847-223-1127
E-mail : lcswcd@sbcglobal.net Website: www.lakeswcd.org

October 20, 2010

RK123, LLC
c/o JM Realty, LLC
425 Creekside Dr.
Palatine, IL 60074

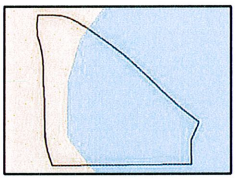
Dear Petitioners,

The Board of Directors of the Lake County Soil and Water Conservation District met and reviewed the following petition:

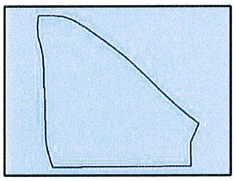
NRI No:	10-2722
Parcel Location:	General Legal Description—(Part of the NE ¼ and the N ½ of the SE ¼ of Section 6 and Part of the SW ¼ of Section 5, Ela Township) and General Street Location (SE corner of U.S. Route 12 and Old McHenry Road.)
Parcel Pin #:	14-05-300-003, 14-06-200-011, 14-06-400-004, 14-06-400-006, 14-06-400-007, and 14-06-400-011
Parcel Size:	109 Acres
Requested Action:	Conditional Use Permit and Zoning Change
Governing Unit:	Lake County
Current Zoning:	Estate
Requested Zoning:	GC – General Commercial
Existing Land Use:	Agriculture
Proposed Land Use:	Commercial Development and Open Space
Proposed Utilities:	Individual Wells and sanitary sewers

Executive Summary of Report 10-2722 and Recommendations:

Groundwater Contamination Potential:



Aquifer Sensitivity to Contamination by Nitrate Leaching (*This is the area beneath the soil profile down to bedrock)
The sensitivity map indicates the parcel has a very limited to limited sensitivity to contamination by Nitrates.



Aquifer Sensitivity to Contamination by Pesticides Leaching (*This is the area beneath the soil profile down to bedrock)
The sensitivity map indicates the parcel has a limited sensitivity to contamination by Pesticides.

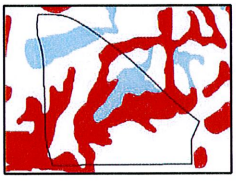
Soil Limitations (This evaluates the parcel from the surface down to approximately 5 feet.):

Basement Limitations – The parcel was not evaluated for Basement limitations due to the proposed use being commercial buildings. Limitations for commercial buildings, roads and landscaping can be found in the body of the report.

Septic Limitations- The parcel was not evaluated for septic system suitability due to the proposed use of sanitary sewers on the property.

Erosion Ratings
The NRCS Soils Survey indicates 15.22 acres or 14.07% of the parcel's soils are highly erodible (identified in red). These soils are especially prone to erosion and require special planning to prevent the loss of soil and subsequent sedimentation of downstream waterways. These soils need to be adequately considered in the soil erosion and sediment control (SESC) plan. It is very important that the reasons for the limitations are understood and incorporated into the site development plan. In order to specifically identify the location and extent of these and/or other soil limitations, a soil boring and analysis is highly recommended.

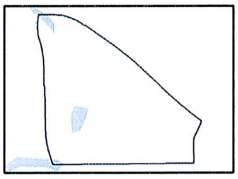
Prime Farmland Soils
The Natural Resources Conservation Service (NRCS) Soil Survey indicates that approximately 64.89 acres or 59.98% of the parcel are composed of prime farmland soils (identified in red).



Hydric Soils
The NRCS Soil Survey indicates 34.04 acres or 32.39% of the parcel are comprised of hydric soils (identified in red) and 16.92 acres or 15.64% of the parcel is comprised of soils with hydric inclusions (identified in blue).

Floodplain Information:

The FEMA Flood Insurance Rate Map
Indicates 100-year floodplain is present on 0.66 acres of this parcel (identified in blue).



U.S. Geological Survey (USGS) Flood of Record Map (Hydrologic Atlas)
The Flood of Record Map for this area indicates previous flooding during the 1960 flood of record on 3.32 acres of the parcel (identified in blue).

- Since the FEMA and Flood of Record maps indicate a past occurrence of flooding, and hydric soils are present (232A and 67A) that indicate drainageways, and low-lying or depressional areas, the petitioner is advised to contact the appropriate authorities to conduct a floodplain delineation and to determine what further steps are required.

Wetland Information:

USDA-NRCS Wetland Inventory
The NRCS Wetlands Inventory identifies 0 acres of wetlands on the parcel.

ADID Wetland Inventory
The ADID Wetland Study indicates there are no wetlands on the parcel.

Lake County Wetland Inventory

- The Lake County Wetland Inventory identifies four areas of possible wetlands comprising 2.44 acres of the parcel (identified in blue).

No information was submitted that suggests that a wetland delineation has been performed. It is strongly recommended that delineation be done to determine the location and extent of the possible wetlands on site (if this has not already been done).

Since the wetlands were not delineated on the site plans provided, it is not clear what the Petitioner intends to do with the wetlands on site except for the majority of them are located within the "Green Improved Open Space" area. It is generally not recommended that wetlands be destroyed or modified by filling, dredging or by other non-direct impacts such as water pollution or damage due to sedimentation. The Petitioner is strongly urged to incorporate the existing wetlands into the site plans and to provide sufficient buffers to guard against their degradation. Wetland buffers are exceedingly important to reduce the negative impacts of development on a wetland (see the Wetland Buffers Section).

Wetland Mitigation

If wetlands are to be impacted, the District strongly recommends that mitigation be done on the parcel in question. If that is not possible then the mitigation should at least be done within the subwatershed, or last case scenario, the watershed. WETLANDS SHOULD NEVER BE MITIGATED OUTSIDE THE WATERSHED.

As of August 14, 2001, Isolated Wetlands are under jurisdiction of the Lake County Stormwater Management Commission under the Watershed Development Ordinance (for corporated communities) and the Lake County Planning & Zoning Department under the Unified Development Ordinance (for unincorporated areas). The definition of Isolated Waters of Lake County is all waters such as lakes, ponds, streams (including intermittent streams), farmed wetlands, and wetlands that are not under U.S. Army Corps of Engineers jurisdiction.

Stormwater and Water Quality Treatment/Management Plan:

The stormwater improvements indicated on the NRI application are drainage ditches or swales, storm sewers and wet retention basins.

According to the Lake County Stormwater Management Commission, under the Watershed Development Ordinance (WDO), water quality must be significantly addressed. Prior to discharging (runoff or stormwater) to Waters of the U.S. or adjoining property, all development/s shall divert and detain at least 0.01inches of runoff for every 1% of impervious surface for the development with a minimum volume equal to 0.2 inches of runoff; or provide a similar level of treatment of runoff as approved, by installing basins or swales. The stormwater management plan for this development must be carefully developed and properly implemented, as this development will impact the quality, volume and timing of stormwater runoff from this area.

It is advised that neither on-site nor off-site wetlands directly receive stormwater from the site, or be used to accommodate stormwater detention requirements. Stormwater should be stored in a water quality detention facility before being discharged to a wetland or lake. Pre-treatment in a settling basin is highly recommended. Wet detention is preferred over dry detention as it provides an opportunity for water quality improvement of the runoff. Water quality is often not considered in these plans. The potential for degrading water quality in the area is high. Because this development will create a large amount of impervious surface, the potential for degrading water quality in the area is high.

Drainage Tile and Drainage Districts:

A review of maps identifying known field tile locations in Lake County did not indicate the presence of drainage tiles on the parcel. However, as these maps are known to contain errors and omissions, there is still the possibility that field tiles may be present. The petitioner did not indicate that they were aware of the presence of any tiles. A field tile survey is recommended for the parcel if this has not already been done, since the area was previously used as an agricultural field and contains hydric soils, and tiles are known to be present. Undetected field tiles can cause flooding and other hydrologic problems in the future.

A list of active Drainage Districts and individuals to call for drainage problems is located in the appendix of this report.

Open Space Management/Wetland Buffers:

The intention to include conservation/open space areas on the property necessitates the development of an open space management plan. This plan will insure the long-term health of the open space and wetlands. See the "Open Space" section in the appendix of this report.

Cultural Resources: None identified

Woodlands:

The parcel is covered with mature trees along the perimeter of the parcel, the old farmstead area and crisscrossing the central portion of the parcel. Currently there is NO preservation plan or any indication that a tree survey has been performed. Construction activities can indirectly destroy trees. Oak trees are particularly susceptible to long term, permanent damage caused by construction activities and require special consideration. It is also recommended that invasive non-native species be removed whenever possible. The petitioner is advised to consult the County or Municipal tree ordinance regarding the specific requirements for tree removal and planting.

Project Phasing & Sequencing Information:

The plan should be phased in workable units in a construction sequence so that only the area actively being developed is exposed. All the other areas should have good vegetative cover. The first phase should be adjacent to the high quality natural resources.

Install all perimeter controls properly; most importantly install all sediment trapping measures to the appropriate areas. Stabilize the construction entrance with gravel and filter fabric. Begin mass grading (preferably in phases). **Apply maintenance continually to all soil erosion and sediment control measures until the site is stabilized and compliant.** When the time is appropriate, all temporary control structures that are no longer necessary will need to be removed. Also, all control structure repairs and sediment removal will need to be done.

We respectfully submit this report and recommendations for your careful consideration. Should there be any questions regarding the information provided in this report, please contact Spring Duffey for assistance.

Sincerely,

Donald Lloyd
Chair, Board of Directors

cc: Mark Eiden,
Stevenson Mountsier, Lake County Board, District No. 17
Craig Taylor, Lake County Board, District No. 19
Brad Denz, Lake County
LCSWCD File

Report Prepared on Behalf of Lake County SWCD
By: *Spring M. Duffey, Resource Analyst, McHenry County Soil & Water Conservation District (815) 338-0099 ext. 3*

Lake County Soil & Water Conservation District

NATURAL RESOURCE INFORMATION REPORT (NRI)

NRI Report Number	10-2722
Date District Board Reviews Application	October 20, 2010
Petitioner	RK123, LLC a Florida Limited Liability Company
Request	Conditional Use Permit and Zoning Change
Size of Parcel	109 acres
Location	SE Intersection of US Route 12 and Old McHenry Road
Governing Unit	Lake County
Parcel Index Number(s)	14-05-300-003, 14-06-200-011, 14-06-400-004, 14-06-100-006, 14-06-400-007, 14-06-400-011
Zoning Change	GC – General Commercial
Proposed Use	Commercial Development and Open Space
Proposed Utilities	Individual Wells
Proposed Stormwater Improvements	Drainage Ditches/Swales, Storm Sewers and Wet Retention Basin

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PURPOSE AND INTENT

The purpose of this report is to inform officials of the local governing body and other decision-makers with natural resource information. This information may be useful when undertaking land use decisions concerning variations, amendments or relief of local zoning ordinances, proposed subdivision of vacant or agricultural lands and the subsequent development of these lands. This report is a requirement under Section 22.02a of the Illinois Soil and Water Conservation Districts Act.

The intent of this report is to present the most current natural resource information available in a readily understandable manner. It contains a description of the present site conditions, the present resources, and the potential impacts that the proposed change may have on the site and its resources. The natural resource information was gathered from standardized data, on-site investigations and information furnished by the petitioner. This report must be read in its entirety so that the relationship between the natural resource factors and the proposed land use change can be fully understood.

Due to the limitations of scale encountered with the various resource maps, the property boundaries depicted in the various exhibits in this report provide a generalized representation of the property location and may not precisely reflect the legal description of the PIQ (Parcel in Question).

This report, when used properly, will provide the basis for proper land use change decisions and development while protecting the natural resource base of the county. It should not be used in place of detailed environmental and/or engineering studies that are warranted under most circumstances, but in conjunction with those studies.

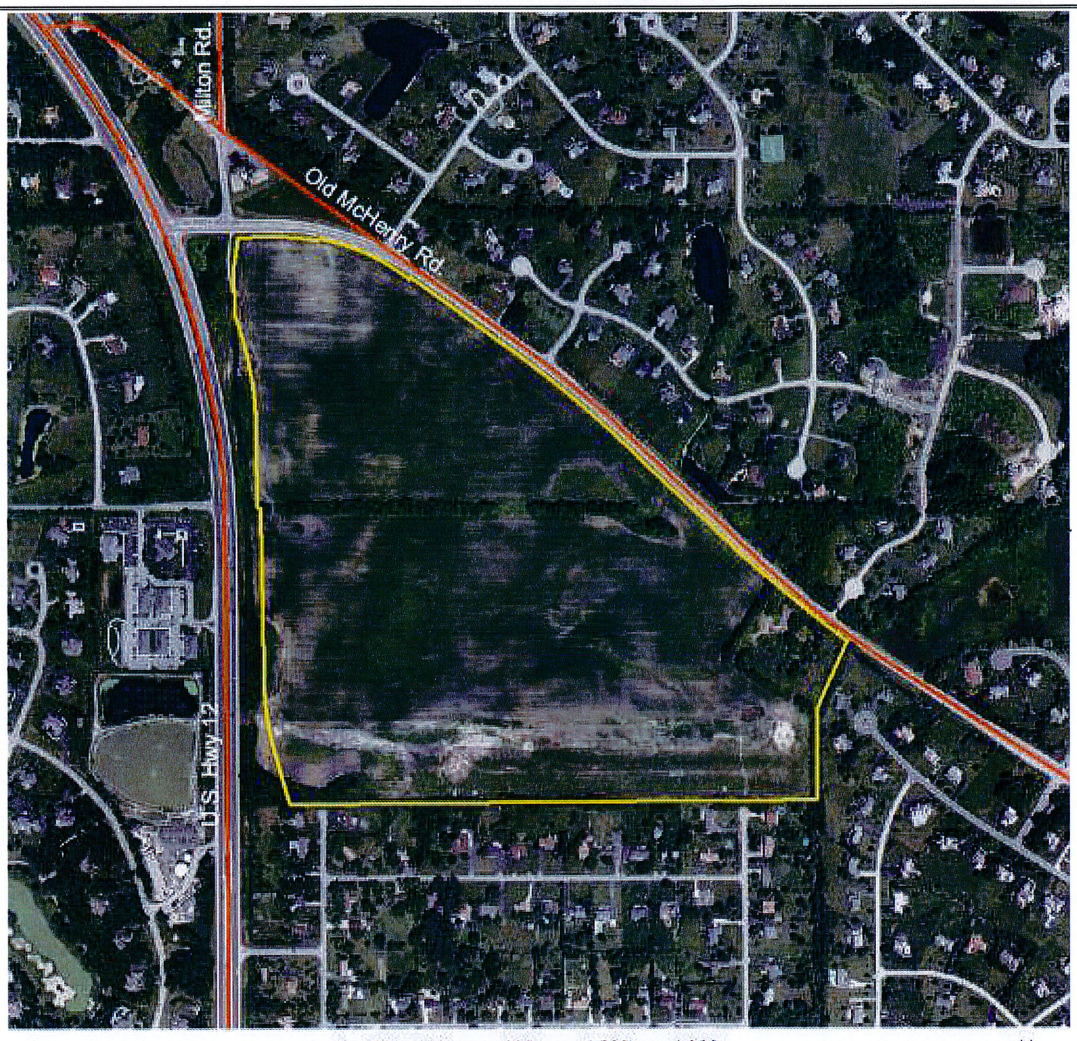
The conclusions of this report in no way indicate that a certain land use is not possible, but it should alert the reader to possible problems that may occur if the capabilities of the land are ignored. Any questions on the technical data supplied in this report or if anyone feels that they would like to see more additional specific information to make the report more effective, please contact:

Lake County Soil & Water Conservation District
c/o McHenry County Soil & Water Conservation District
1648 S. Eastwood Dr.
Woodstock, IL 60098
Phone: (815) 338-0099 ext. 3
FAX: (815) 338-7731
E-mail: Spring.Duffey@il.nacdnet.net

PARCEL LOCATION

Location Map for Natural Resources Information Report # 10-2722

In the Northeast Quarter and the Southeast Quarter of Section 6, and part of the Southwest Quarter of Section 5, Township 43 North, Range 10 East, on 109 acres. This parcel is located at the southeast intersection of U.S. Route 12 (N. Rand Road) and North Old McHenry Road, in the County of Lake. The surrounding land uses include residential and commercial.



ARCHAEOLOGIC/CULTURAL RESOURCES

Simply stated, cultural resources are all the past activities and accomplishments of people. They include the following: buildings; objects made or used by people; locations; and less tangible resources, such as stories, dance forms, and holiday traditions. The Soil and Water Conservation District most often encounters cultural resources as historical properties. These may be prehistoric or historical sites, buildings, structures, features, or objects. The most common type of historical property that the Soil and Water Conservation District may encounter is non-structural archaeological sites. These sites often extend below the soil surface, and must be protected against disruption by development or other earth moving activity if possible. Cultural resources are *non-renewable* because there is no way to "grow" a site to replace a disrupted site.

Those sites deemed to be significant and eligible for listing on the National Register of Historical Places are referred to as "historic properties." These may be prehistoric (before written history) or from the historic period, which in Illinois is after 1673. Anything older than 50 years needs to be evaluated for historic significance.

Landowners with historical properties on their land have ownership of that historical property. However, the State of Illinois owns all of the following: human remains, grave markers, burial mounds, and artifacts associated with graves and human remains over 100 years old.

Non-grave artifacts from archaeological sites and historical buildings are the property of the landowner. The landowner may choose to disturb a historical property, but may not receive federal or state assistance to do so. If an earth moving activity disturbs human remains, the landowner must contact the county coroner within 48 hours.

Historic Preservation Legislation: The National Historic Preservation Act of 1966 (NHPA Section 106) requires all Federal Agencies' "undertakings" to "take into account" their effect on historic properties. As of January 1, 1990, the State Agency Historic Resources Preservation Act (Public Act 86-707) requires the same for all private or public undertakings involving state agencies. An "undertaking" is defined to cover a wide range of Federal or State permitting, funding, and licensing activities. It is the responsibility of Federal/State Agencies to ensure the protection of historic resources and the State Historic Preservation Office (SHPO) regulates this effort.

The Applicant should contact the Archaeology Section, Preservation Services Division, Illinois Historic Preservation Agency, for information about compliance with Federal and State regulations at http://www.stae.il.us/hpa/.

The resource maps indicate there are no cultural resources located in the same township, range, and section as this PIQ.

What is Biological Diversity and Why Should it be Conserved?[1]

Biological diversity, or biodiversity, is the range of life on our planet. A more thorough definition is presented by botanist Peter H. Raven: "At the simplest level, biodiversity is the sum total of all the plants, animals, fungi and microorganisms in the world, or in a particular area; all of their individual variation; and all of the interactions between them. It is the set of living organisms that make up the fabric of the planet Earth and allow it to function as it does, by capturing energy from the sun and using it to drive all of life's processes; by forming communities of organisms that have, through the several billion years of life's history on Earth, altered the nature of the atmosphere, the soil and the water of our Planet; and by making possible the sustainability of our planet through their life activities now." (Raven 1994)

It is not known how many species occur on our planet. Presently, about 1.4 million species have been named. It has been estimated that there are perhaps 9 million more that have not been identified. What is known is that they are vanishing at an unprecedented rate. Reliable estimates show extinction occurring at a rate several orders of magnitude above "background" in some ecological systems. (Wilson 1992, Hoose 1981)

The reasons for protecting biological diversity are complex, but they fall into four major categories.

First, loss of diversity generally weakens entire natural systems. Healthy ecosystems tend to have many natural checks and balances. Every species plays a role in maintaining this system. When simplified by the loss of diversity, the system becomes more susceptible to natural and artificial perturbations. The chances of a system-wide collapse increase. In parts of the midwestem United States, for example, it was only the remnant areas of natural prairies that kept soil intact during the dust bowl years of the 1930s. (Roush 1982)

Simplified ecosystems are almost always expensive to maintain. For example, when synthetic chemicals are relied upon to control pests, the target species are not the only ones affected. Their predators are almost always killed or driven away, exasperating the pest problem. In the meantime, people are unintentionally breeding pesticide-resistant pests. A process has begun where people become perpetual guardians of the affected area, which requires the expenditure of financial resources and human ingenuity to keep the system going.

A second reason for protecting biological diversity is that it represents one of our greatest untapped resources. Great benefits can be reaped from a single species. About 20 species provide 90% of the world's food. Of these 20, just three, wheat, maize and rice-supply over one half of that food. American wheat farmers need new varieties every five to 15 years to compete with pests and diseases. Wild strains of wheat are critical genetic reservoirs for these new varieties.

Further, every species is a potential source of human medicine. In 1980, a published report identified the market value of prescription drugs from higher plants at over $3 billion. Organic alkaloids, a class of chemical compounds used in medicines, are found in an estimated 20% of plant species. Yet only 2% of plant species have been screened for these compounds. (Hoose 1981)

The third reason for protecting diversity is that humans benefit from natural areas and depend on healthy ecosystems. The natural world supplies our air, our water, our food and supports human economic activity. Further, humans are creatures that evolved in a diverse natural environment between forest and grasslands. People need to be reassured that such places remain. When people speak of "going to the country," they generally mean more than getting out of

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[1]Taken from *The Conservation of Biological Diversity in the Great Lakes Ecosystem: Issues and Opportunities*, prepared by the Nature Conservancy Great Lakes Program 79W. Monroe Street, Suite 1309, Chicago, IL 60603, January 1994

town. For reasons of their own sanity and well being, they need a holistic, organic experience. Prolonged exposure to urban monotony produces neuroses, for which cultural and natural diversity cure.

Historically, the lack of attention to biological diversity, and the ecological processes it supports, has resulted in economic hardships for segments of the basin's human population.

The final reason for protecting biological diversity is that species and natural systems are intrinsically valuable. The above reasons have focused on the benefits of the natural world to humans. All things possess intrinsic value simply because they exist.

Biological Resources Concerning the Subject Parcel

As part of the Natural Resources Information Report, staff checks office maps to determine if any nature preserves are within 500 feet of the parcel in question. If there is a nature preserve in the area, then that resource will be identified as part of the report. The SWCD recommends that every effort be made to protect that resource. Such efforts should include, but are not limited to erosion control, sediment control, stormwater management, and groundwater monitoring.

Office maps indicate** there are no nature preserves or State Natural Areas Inventory Site within 500 feet of the **parcel in question. (PIQ)

WOODLANDS

Existing mature trees should be preserved whenever possible. Woodlands provide a large number of benefits such as wildlife habitat, erosion control, air and water quality improvements, as well as aesthetic values. There is no indication that a tree inventory has been done. A tree preservation plan needs to be developed and this intent needs to be clearly conveyed to the contractors doing the work. Construction activities can indirectly destroy trees. Oak trees are particularly susceptible to long term, permanent damage caused by construction activities and require special consideration. It is also recommended that invasive non-native species be removed whenever possible. The petitioner is advised to consult the County or Municipal tree ordinance regarding the specific requirements for tree removal and planting.

Native woodlands are no longer a common occurrence throughout much of Lake County. Although forests originally covered nearly 40% of Illinois, today only about 12% of the state is forested, with most of this being secondary growth (Ill. Natural History Survey Reports, Nov/Dec 1993, No. 324). The composition of Illinois forests has changed markedly over the past three decades. 97% of the timberland is classified as hardwood forest. The forest acreage continues to increase from 4.2 million acres in 1985 to 4.3 million acres in 1998. (IL Forest Development Council News, IL DNR, Winter 2001/Volume 2, No. 1). Oak-hickory forests, which had made up half of the acreage, have declined by 14%, and make up 2.1 million acres. This decline is largely a result of wildfire suppression that allows maples to take over. Thus, the acres of maple-beech forest have risen more than 40-fold from 1962 to 1985, to one quarter of the total forest area, 696 thousand acres. Dutch elm disease and the conversion of forested bottomlands to agriculture have resulted in huge declines in the elm-ash-cottonwood forests, 906 thousand acres, falling from one third - one sixth of the Illinois forest area. Elm accounts for the greatest number of individual trees – 412 million. Other species groups with more than 100 million trees include hickory, red oak, sugar/black maple, ash, hackberry, and black cherry.

Woodlands provide many benefits such as wildlife habitat, erosion control, air and water quality improvements, and aesthetic values. Forests are responsible for much of the biological diversity in the state. Many species are dependent upon forests for food & shelter, including threatened/endangered species.

One of the most serious problems facing Illinois forests is the invasion of exotic plants and animals. Some of the most damaging plants includes European buckthorn, multiflora rose, honeysuckle, purple loosestrife, and garlic mustard.

Many trees, particularly hardwoods (especially oaks) are extremely sensitive to construction-induced disturbances. The area most susceptible to damage is within the "drip radius," the ground surface directly beneath the leafy canopy of the tree. Many trees have an extensive system of feeder roots, located within one foot of the surface, and supply the tree with the majority of its moisture and nutrient needs.

Construction activities can negatively impact trees in several different ways. Earth-moving activities that stockpile soil near trees can suffocate tree roots that, although buried, require oxygen. Vehicle traffic can compact the soil to a point where the roots no longer function effectively. Grading activities for road cuts and foundations can cause a localized drop in the water table, placing the trees under stress. The placement of pavement or stormwater management facilities near established trees can also radically change soil moisture. The removal of the accumulated organic materials normally present on a woodland floor, and the subsequent establishment of turf lawns, can drastically affect the soil temperature and nutrient balance. Injury to the bark of a tree can increase the chance of the tree being subjected to a potentially harmful disease.

If existing trees are to be maintained in a healthy state, the appropriate planning is necessary. Someone with a working knowledge of forestry should assess existing trees to determine which trees should be protected. Some tree species are not considered desirable due to their aggressive growth, behavior, and limited value to local wildlife. Proper management of

woodlands and open space includes the selective elimination of such trees and replacement by more desirable species. **Trees that are to be saved should be marked and protected with snow fencing or similar material, installed around the drip radius, to prevent root damage,** and vehicle traffic should be minimized around the drip line. Contractors should be informed of the intention to preserve trees and be expected to conduct their work accordingly.

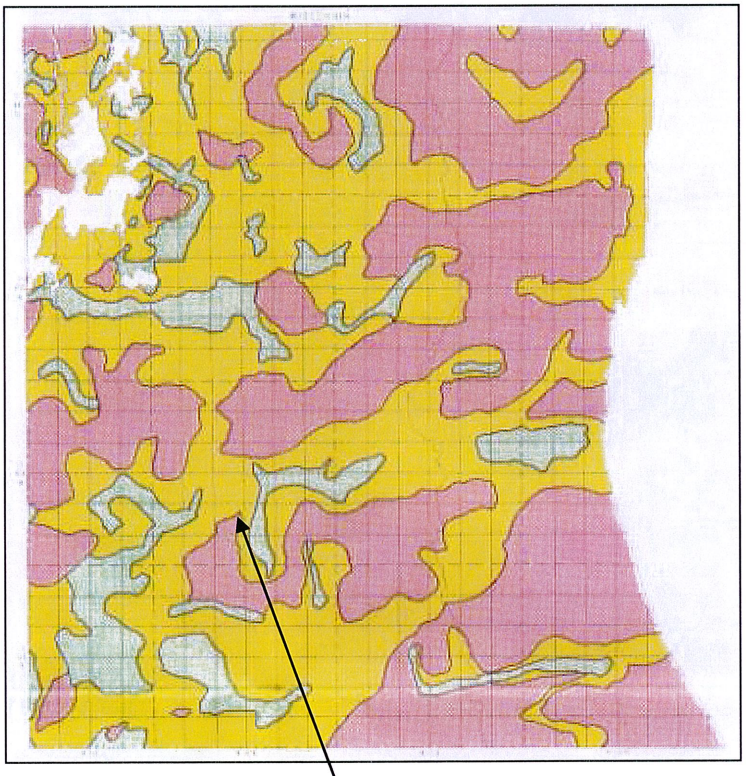
Tree damage resulting from construction activities may not be apparent for a number of years. While it is recognized that some tree loss is unavoidable, this should be minimized to the extent possible. It is highly recommended that trees lost to development activity be replaced by younger specimens of the native trees now found on the PIQ.

GEOLOGIC INFORMATION

Geology and the Proposed Land Use

As density of septic systems increases, the concern for pollution potential of local groundwater rises. Local geology plays an important role in determining the pollution potential. Groundwater pollution potential is an important factor when determining a specific area's suitability for a given land use. The local geology, is an important element of the natural resource base. This information, when compared to soils information, gives a clearer picture of conditions on this parcel.

The groundwater in thin sand and gravel deposits is not commonly tapped for water resources; however, contaminated groundwater may flow into aquifers of adjoining units, or it may migrate through the sand and gravel, especially along the contact with underlying fine-grained deposits, and discharge on slopes or into surface-water bodies. The fine-grained materials (10-50 feet thick, offer moderate protection for underlying aquifers from waste spreading or septic systems. Burial Aquifers are aquifers overlain by 10 feet or more of fine-grained deposits.



Section 5 & 6 that the PIQ lies in.

Burial Sand and Gravel Aquifers

Key:

Green – Good to excellent aquifers, 50 to more than 100 ft. of sand & gravel reported

Yellow – Fair to poor aquifers, 15-50 ft. of sand and gravel reported.

Pink – Poor aquifers and non-aquifers, less than 15 ft. of sand and gravel reported.

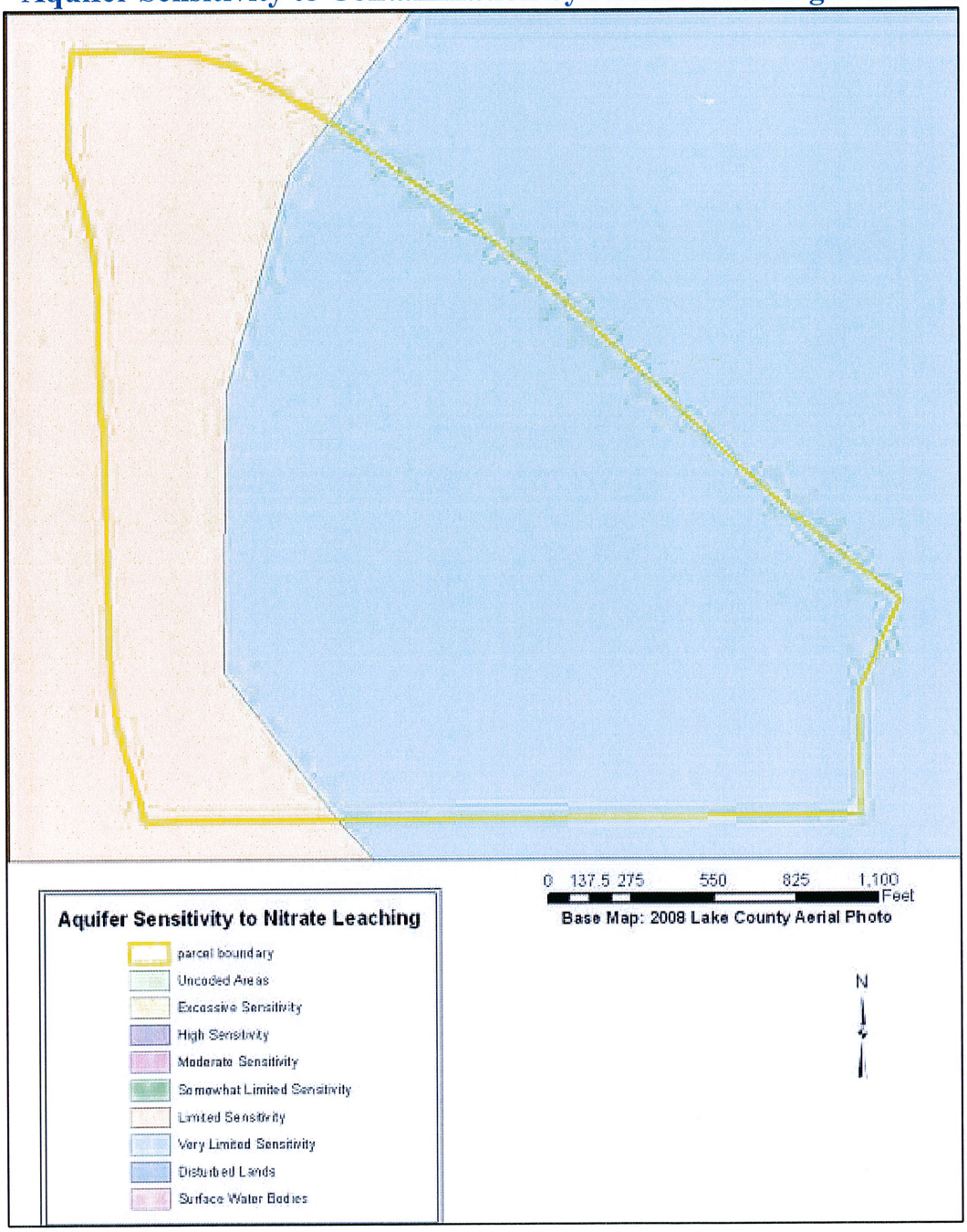
Aquifer Sensitivity to Contamination by Nitrate and Pesticide Leaching

(Information from Illinois State Geologic Survey Environmental Geology Report 148)

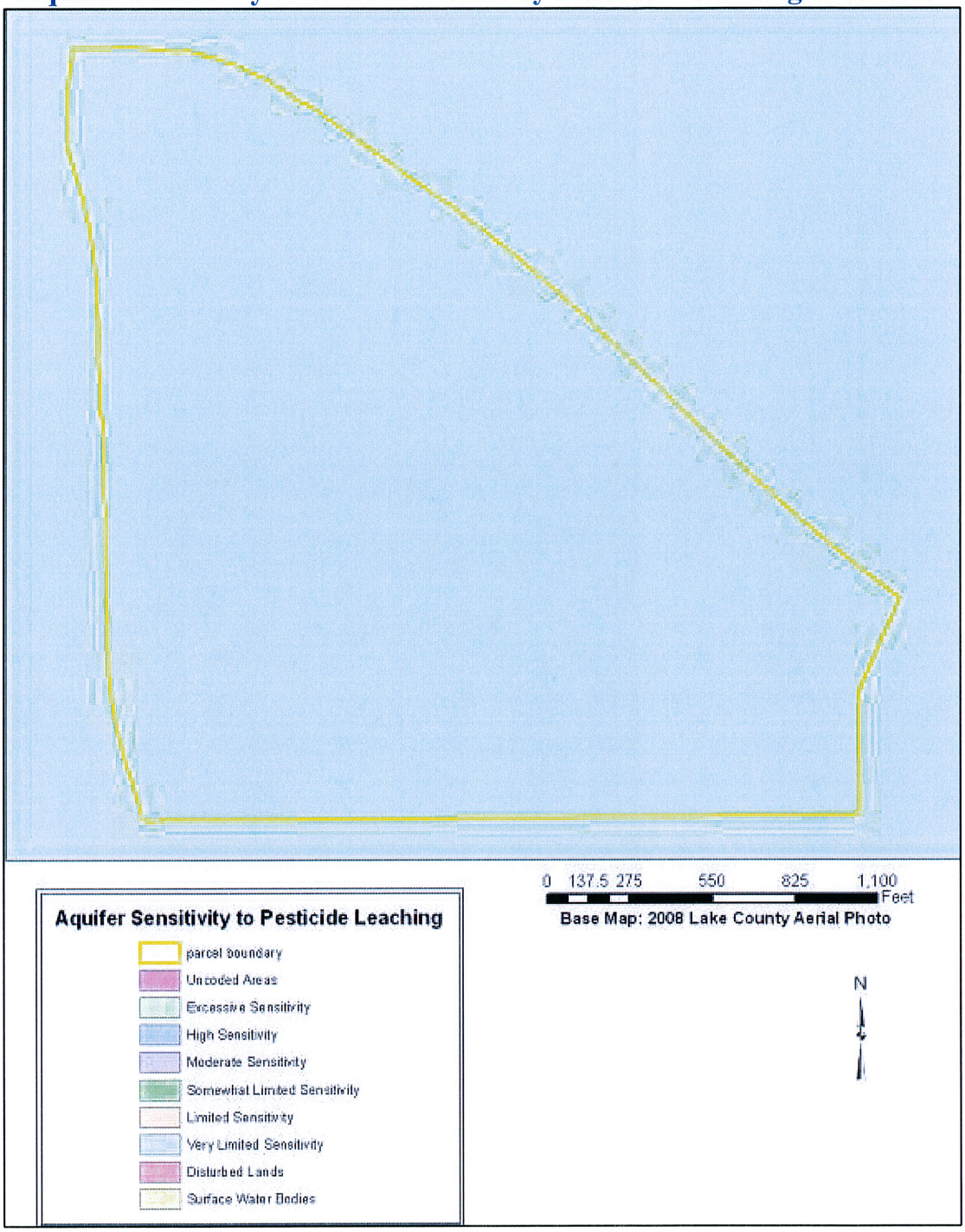
Purpose:

This data set was designed for statewide evaluation of agrichemical leaching characteristics and associated aquifer sensitivity to contamination. It was created to classify soils and aquifer settings according to predictions of leaching potential. The classifications have not been validated by the results of water quality sampling. Accordingly, the reliability of these aquifer sensitivity ratings as predictors of water quality has not been evaluated.

Aquifer Sensitivity to Contamination by Nitrate Leaching in Illinois



Aquifer Sensitivity to Contamination by Pesticide Leaching in Illinois



SOILS INFORMATION

Importance of Soils Information

Soils information comes from Natural Resources Conservation Service Soil Maps and Descriptions for Lake County. This information is important to all parties involved in determining the suitability of the proposed land use change.

Each soil polygon is given a number, which represents its soil type. The letter found after the soil type number indicates the soils slope class.

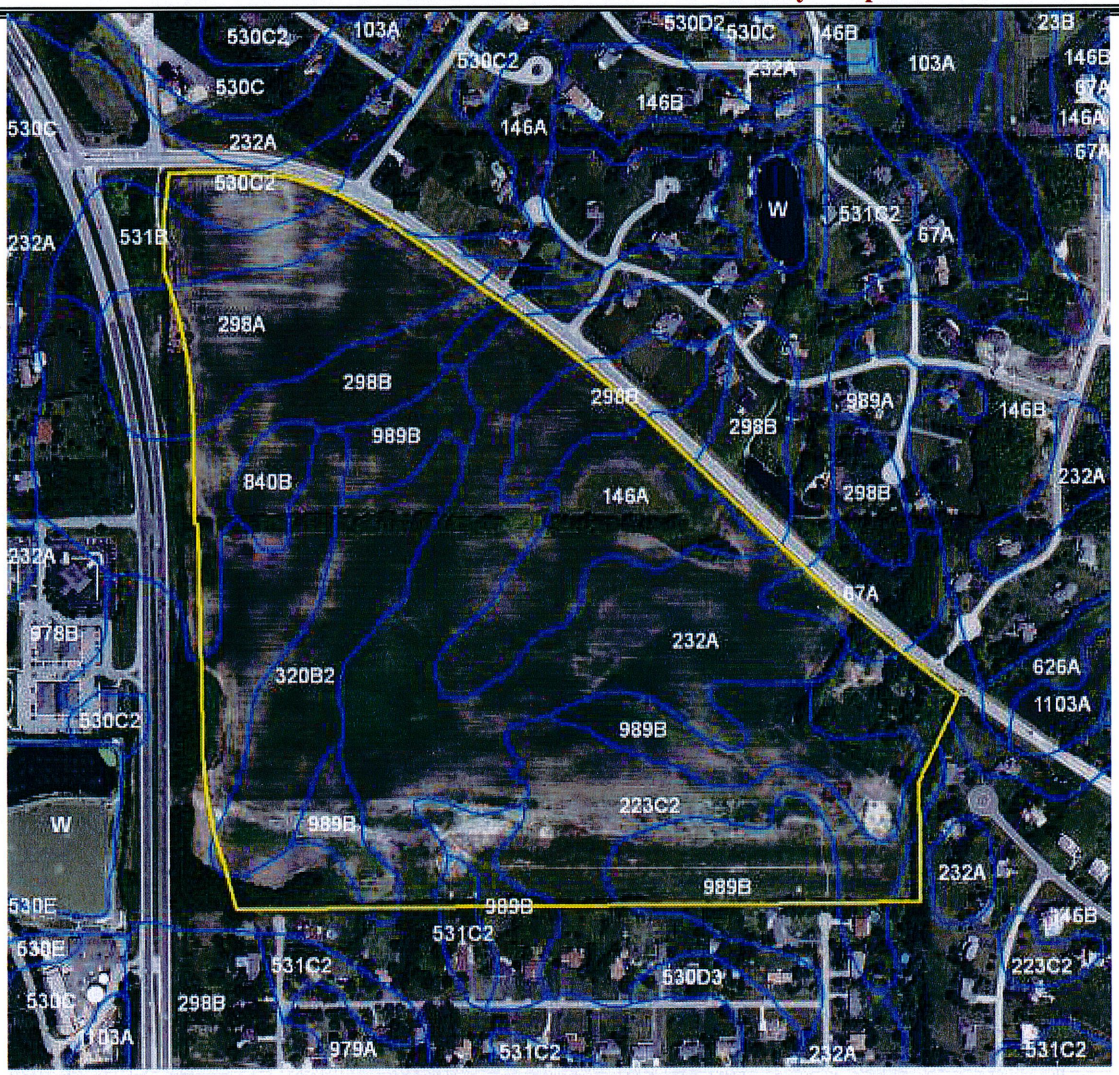
Each soil map unit has limitations for a variety of land uses such as septic systems, buildings with basements, and buildings without basements. It is important to remember that soils do not function independently of each other. The behavior of a soil depends upon the physical properties of adjacent soil types, the presence of artificial drainage, soil compaction, and its position in the local landscape.

The limitation categories (slight, moderate or severe) indicate the potential for difficulty in using that soil unit for the proposed activity and, thus, the degree of need for thorough soil borings and engineering studies. A limitation does not necessarily mean that the proposed activity cannot be done on that soil type. It does mean that the reasons for the limitation need to be thoroughly understood and dealt with in order to complete the proposed activity successfully. A severe limitation indicates that the proposed activity will be more difficult and costly to do on that soil type than on a soil type with a moderate or slight rating.

Soil survey interpretations are predictions of soil behavior for specified land uses and specified management practices. They are based on the soil properties that directly influence the specified use of the soil. Soil survey interpretations allow users of soil surveys to plan reasonable alternatives for the use and management of soils.

Soil interpretations do not eliminate the need for on-site study and testing of specific sites for the design and construction for specific uses. They can be used as a guide for planning more detailed investigations and for avoiding undesirable sites for an intended use. The scale of the maps and the range of error limit the use of the soil delineations.

Natural Resources Conservation Service Soil Survey Map of Area



Soil Map Unit Descriptions

Symbol	Description	Acres	Percent
146A	Elliott silt loam, 0 to 2 percent slopes	8.67	8.01%
146B	Elliott silt loam, 2 to 4 percent slopes	0.32	0.29%
223C2	Varna silt loam, 4 to 6 percent slopes, eroded	12.24	11.31%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	33.86	31.30%
298A	Beecher silt loam, 0 to 2 percent slopes	8.25	7.63%
298B	Beecher silt loam, 2 to 4 percent slopes	9.06	8.37%
320B2	Frankfort silty clay loam, 2 to 4 percent slopes, eroded	9.11	8.42%
530C2	Ozaukee silt loam, 4 to 6 percent slopes, eroded	1.96	1.81%
531B	Markham silt loam, 2 to 4 percent slopes	2.82	2.60%
531C2	Markham silt loam, 4 to 6 percent slopes, eroded	1.03	0.95%
67A	Harpster silty clay loam, 0 to 2 percent slopes	1.18	1.09%
840B	Zurich and Ozaukee silt loams, 2 to 4 percent slopes	1.94	1.79%
989B	Mundelein and Elliott silt loams, 2 to 4 percent slopes	17.76	16.42%

*SOURCE: National Cooperative Soil Survey

Soil Interpretations Explanation

Nonagricultural

General

These interpretative ratings help engineers, planners, and others to understand how soil properties influence behavior when used for nonagricultural uses such as building site development or construction materials. This report gives ratings for proposed uses in terms of limitations and restrictive features. The tables list only the most restrictive features. Other features may need treatment to overcome soil limitations for a specific purpose.

Ratings come from the soil's "natural" state, that is, no unusual modification occurs other than that which is considered normal practice for the rated use. Even though soils may have limitations, an engineer may alter soil features or adjust building plans for a structure to compensate for most degrees of limitations. Most of these practices, however, are costly. The final decision in selecting a site for a particular use generally involves weighing the costs for site preparation and maintenance.

Soil properties influence development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Soil limitation ratings of slight, moderate, and severe are given for the types of proposed improvements that are listed or inferred by the petitioner as entered on the report application and/or zoning petition. The most common types of building limitation that this report gives limitations ratings for is: septic systems. It is understood that engineering practices can overcome most limitations for buildings with and without basements, and small commercial buildings. Limitation ratings for these types of buildings are not commonly provided. Organic soils, when present on the parcel, are referenced in the hydric soils section of the report. This type of soil is considered to be unsuitable for all types of construction.

Limitations Ratings

1. ***Slight*** - This soil has favorable properties for the use. The degree of limitation is minor. The people involved can expect good performance and low maintenance.
2. ***Moderate*** - This soil has moderately favorable properties for the use. Special planning, design, or maintenance can overcome this degree of limitation. During some part of the year, the expected performance is less desirable than for soils rated slight.

3. ***Severe or Very Severe***- This soil has one or more properties that are unfavorable for the rated use. These may include the following: steep slopes, bedrock near the surface, flooding, high shrink-swell potential, a seasonal high water table, or low strength. This degree of limitation generally requires major soil reclamation, special design, or intensive maintenance, which in most situations is difficult and costly.

BUILDING LIMITATIONS

Building on Poorly Suited or Unsuitable Soils: Can present problems to future property owners such as cracked foundations, wet basements, lowered structural integrity and high maintenance costs associated with these problems. The staff of Lake County SWCD strongly urges scrutiny by the plat reviewers to avoid granting parcels with these soils exclusively.

Dwellings With or Without Basements - This applies to single-family houses of 3 stories or less. The foundations assumed to be spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or the depth of maximum frost penetration, whichever is deeper, for houses with basements, or at a depth of 7 feet if a basement is constructed. The ratings are based on properties affecting soil strength and settlement under a load, and those that affect excavation and construction costs.

Small Commercial Buildings - Ratings are for undisturbed soil for a small building of less than 3 stories without a basement. The foundation is assumed to be spread footings of reinforced concrete at a depth of 2 feet or the depth of maximum frost penetration, whichever is deeper.

Building Limitations

Symbol	Commercial	Roads	Lawns & Landscaping	Acres	Percent
146A	Very limited: depth to saturated zone, shrink-swell	Very limited: low strength, depth to saturated zone, shrink-swell, frost action	Somewhat limited: depth to saturated zone	8.67	8.01%
146B	Very limited: depth to saturated zone, shrink-swell	Very limited: low strength, depth to saturated zone, shrink-swell, frost action	Somewhat limited: depth to saturated zone	0.32	0.29%
223C2	Somewhat limited: shrink-swell, slope	Very limited: low strength, shrink-swell, frost action	Not limited.	12.24	11.31%
232A	Very limited: depth to saturated zone, shrink-swell, ponding	Very limited: depth to saturated zone, frost action, low strength, shrink-swell	Very limited:depth to saturated zone, ponding	33.86	31.30%
298A	Very limited: , depth to saturated zone, shrink-swell	Very limited: frost action, low strength, depth to saturated zone, shrink-swell	Somewhat limited: depth to saturated zone	8.25	7.63%
298B	Very limited: depth to saturated zone, shrink-swell	Very limited: depth to saturated zone, frost action, low strength, shrink-swell	Very limited: depth to saturated zone	9.06	8.37%

Continued: Symbol	Commercial	Roads	Lawns & Landscaping	Acres	Percent
320B2	Very limited: depth to saturated zone, shrink-swell	Very limited: frost action, low strength, depth to saturated zone, shrink-swell	Somewhat limited: depth to saturated zone	9.11	8.42%
530C2	Somewhat limited: depth to saturated zone, slope	Very limited: low strength, frost action, depth to saturated zone	Somewhat limited: depth to saturated zone	1.96	1.81%
531B	Somewhat limited: shrink-swell	Very limited: low strength, shrink-swell, frost action	Not limited.	2.82	2.60%
531C2	Somewhat limited: shrink-swell, slope, depth to saturated zone	Very limited: low strength, shrink-swell, frost action, depth to saturated zone	Somewhat limited: depth to saturated zone	1.03	0.95%
67A	Very limited: depth to saturated zone, ponding, shrink-swell	Very limited: depth to saturated zone, frost action, low strength, ponding	Very limited: depth to saturated zone, ponding	1.18	1.09%
840B	Somewhat limited: shrink-swell	Very limited: frost action, low strength, shrink-swell	Not limited.	1.94	1.79%
989B	Somewhat limited: depth to saturated zone, shrink-swell	Very limited: frost action, low strength, depth to saturated zone, shrink-swell	Somewhat limited: depth to saturated zone	17.76	16.42%

SOIL EROSION & SEDIMENT CONTROL

Erosion is the wearing away of the soil by water, wind, and other forces. Soil erosion threatens the Nation's soil productivity and contributes the most pollutants in our waterways. Water causes about two thirds of erosion on agricultural land. Four properties, mainly, determine a soil's erodibility:

1. Texture 2. Slope 3. Structure
4. Organic matter content

Slope has the most influence on soil erosion potential when the site is under construction. Erosivity and runoff increase as slope grade increases. The runoff then exerts more force on the particles, breaking their bonds more readily and carrying them farther before deposition. The longer water flows along a slope before reaching a major waterway, the greater the potential for erosion.

Soil erosion during and after this proposed construction can be a primary non-point source of water pollution. Eroded soil during the construction phase can create unsafe conditions on roadways, decrease the storage capacity of lakes, clog streams and drainage channels, cause deterioration of aquatic habitats, and increase water treatment costs. Soil erosion also increases the risk of flooding by choking culverts, ditches and storm sewers, and by reducing the capacity of natural and man-made detention facilities.

The general principles of erosion and sedimentation control measures include:

- reducing or diverting flow from exposed areas, storing flows or limiting runoff from exposed areas,
- staging construction in order to keep disturbed areas to a minimum,
- establishing or maintaining or temporary or permanent groundcover,
- retaining sediment on site and
- properly installing, inspecting and maintaining control measures.

<u>Erosion control practices are useful controls only if they are properly located, installed, inspected and maintained</u>.

Under the Watershed Development Ordinance of the Lake County Stormwater Management Commission, soil erosion and sedimentation control measures are required for any land disturbance. The following has to be met:

1. Any soil disturbance must be constructed in a way that will minimize any erosion.
2. Adjoining properties and channels need to be protected from erosion and sedimentation.
3. Soil erosion and sedimentation control measures need to be constructed prior to hydrologic disturbance.
4. The disturbed areas need to be protected with temporary (needs to be removed within 30 days after final site stabilization is achieved) or permanent measures within fourteen days following the end of hydrologic disturbance or redisturbance.
5. Land disturbance activities in streams need to be avoided.
6. Soil erosion and sedimentation control measures need to be appropriate in regard to the amount of tributary drainage areas.
7. All storm sewers that are functioning during construction need to be protected.
8. A stabilized construction entrance is required with the proper filter mat.
9. Embankments need to be constructed with side slopes no steeper than 3H:1V.
10. Stormwater conveyance channels and their outlets/pipes need to be designed and constructed (within 48 hours) to withstand the expected flow velocity from the 10-year frequency storm without erosion.
11. Temporary diversions need to be constructed to direct all runoff from the hydrologically disturbed areas to the appropriate sediment trap or basin.
12. Soil stockpiles shall not be located in a floodprone or buffer area, and should not erode.

This plan must go beyond the installation of silt fences. It should include provisions for soil stabilization and runoff control throughout the entire site and the entire construction process.

It has been shown that erosion on an active construction site is typically 20-200 times greater than that on a farm field. Sediment is one of the

single largest pollutants facing waterways and wetlands in the urban metropolitan area. Soil erosion and sediment deposition can adversely affect the existing natural drainageways, causing changes in the hydrologic flow and degradation of water quality in the area. For any development, it is imperative that a comprehensive SESC plan be developed and implemented properly. The wetland complex on-site and downstream may be at particular risk of degradation if a SESC plan is not in place.

Please refer to the SESC section located in the appendix of this report for site-specific recommendations and practices. Feel free to contact our office with any questions or for more specific guidance in this area.

Highly Erodible Soils

Symbol	Highly Erodible	Acres	Percent
146A	N	8.67	8.01%
146B	N	0.32	0.29%
223C2	Y	12.24	11.31%
232A	N	33.86	31.30%
298A	N	8.25	7.63%
298B	N	9.06	8.37%
320B2	N	9.11	8.42%
530C2	Y	1.96	1.81%
531B	N	2.82	2.60%
531C2	Y	1.03	0.95%
67A	N	1.18	1.09%
840B	N	1.94	1.79%
989B	N	17.76	16.42%
Total Highly Erodible		**15.22**	**14.07%**


232A
146A
103A
67A
530C2
531B
531C2
W
146B
67A
298A
298B
298B
989A
989B
298B
146B
840B
146A
298B
232A
978B
67A
232A
320B2
626A
530C2
989B
1103A
223C2
W
989B
989B
989B
232A
531C2
530C
298B
531C2
146B
223C2
0 140 280 560 840 1,120
Feet
Base Map: 2008 Lake County Aerial Photo
N
Highly Erodible Soils
parcel boundary
Soils
Yes

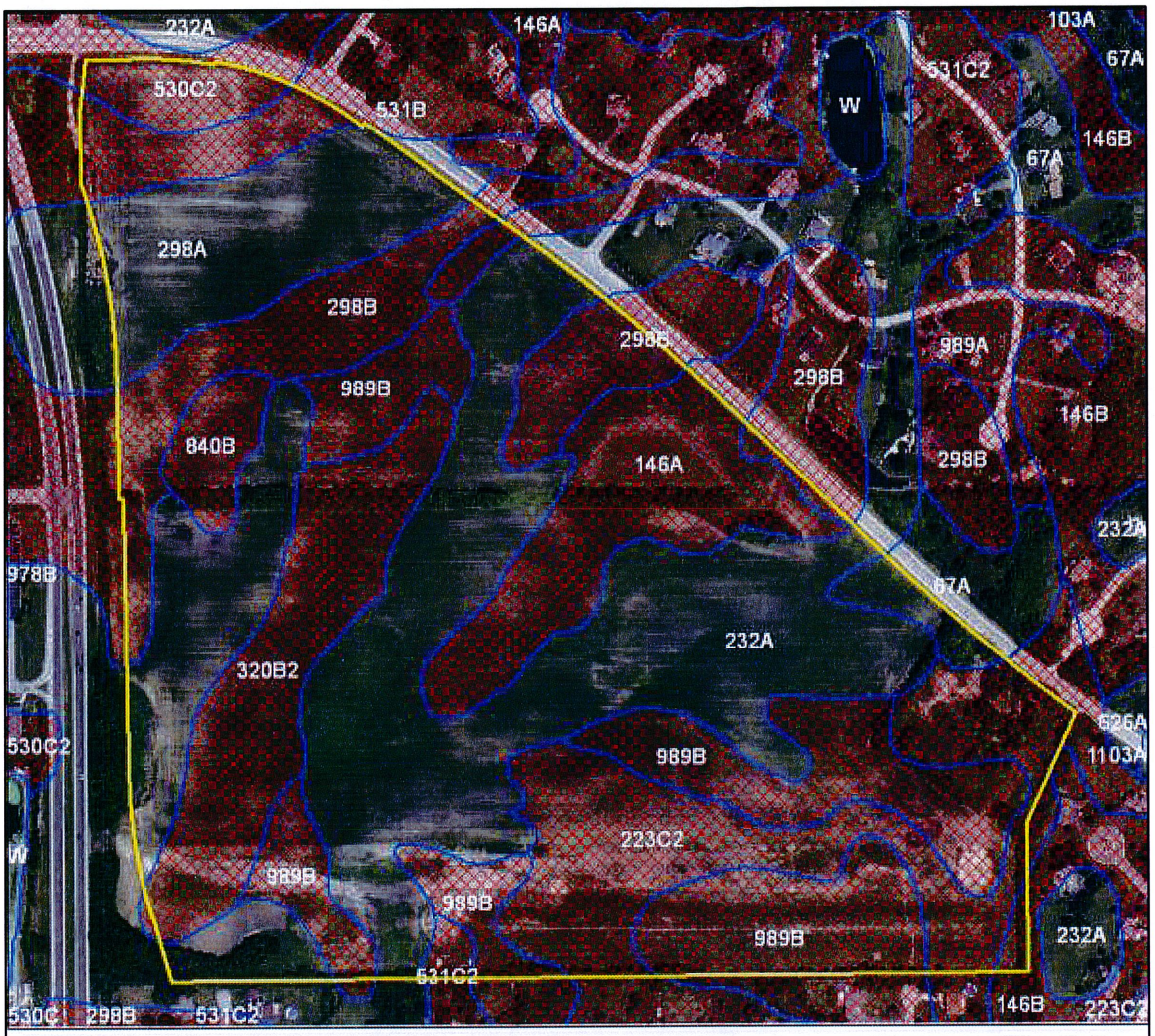
PRIME FARMLAND SOILS

Prime farmland soils are an important resource. Some of the most productive soils in the United States occur locally. Each soil map unit in the United States is assigned a prime or non-prime rating. Prime agricultural land does not need to be in the production of food & fiber.

Section 310 of the NRCS general manual states that urban or built-up land on prime farmland soils is not prime farmland. The percentages of soils map units on the parcel reflect the determination that urban or built up land on prime farmland soils is not prime farmland.

Prime Farmland Soils

Symbol	Prime	Acres	Percent
146A	Y	8.67	8.01%
146B	Y	0.32	0.29%
223C2	Y	12.24	11.31%
232A	N	33.86	31.30%
298A	N	8.25	7.63%
298B	Y	9.06	8.37%
320B2	Y	9.11	8.42%
530C2	Y	1.96	1.81%
531B	Y	2.82	2.60%
531C2	Y	1.03	0.95%
67A	N	1.18	1.09%
840B	Y	1.94	1.79%
989B	Y	17.76	16.42%
Total Prime		64.89	59.98%


232A
146A
103A
67A
530C2
531B
W
531C2
146B
67A
298A
298B
298B
989A
989B
298B
146B
840B
146A
298B
232A
978B
67A
232A
320B2
626A
530C2
989B
1103A
223C2
W
989B
989B
989B
232A
531C2
530C1
298B
531C2
146B
223C2
0 140 280 560 840 1,120
Feet
Base Map: 2008 Lake County Aerial Photo
N
Prime Farmland Soils
parcel boundary
Soils
Yes

Hydric Soils

Soils information gives another indication of flooding potential. The soils map on this page indicates the soil(s) on the parcel that the Natural Resources Conservation Service indicates as hydric. Hydric soils by definition have seasonal high water at or near the soil surface and/or have potential flooding or ponding problems. All hydric soils range from poorly suited to unsuitable for building. One group of the hydric soils, are the organic soils, which formed from dead organic material. Organic soils are unsuitable for building because of not only the high water table, but also their subsidence problems.

It is also important to add the possibility of hydric inclusions in a soil type. An inclusion is a soil polygon that is too small to appear on these maps. While relatively insignificant for agricultural use, hydric soil inclusions become more important to more intense uses such as a residential subdivision.
While considering hydric soils and hydric inclusions, it is noteworthy to mention that subsurface agriculture drainage tile occurs in almost all poorly drained and somewhat poorly drained soils. Drainage tile expedites drainage and facilitates farming. It is imperative that these drainage tiles remain undisturbed. A damaged subsurface drainage tile may return original hydrologic conditions to all of the areas that drained through the tile (ranging from less than one acre to many square miles.)

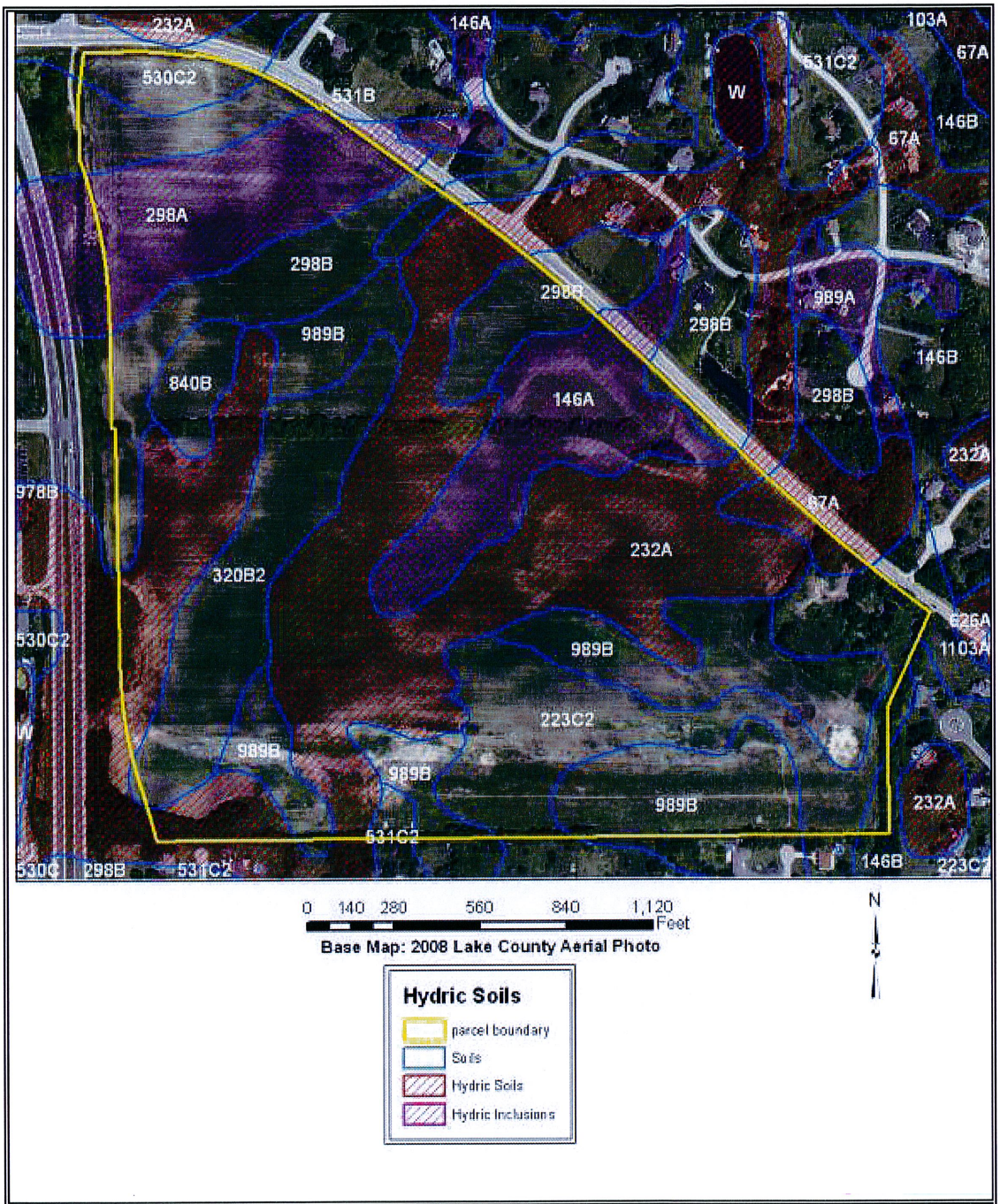
For an intense land use, such as a subdivision, the Lake County SWCD recommends the following:

1. A topographical survey with 1 foot contour intervals to accurately define the flood area on the parcel.
2. An intensive soil survey to define most accurately the locations of the hydric soils and inclusions
3. A drainage tile survey on the area to locate the tiles that must be preserved.

In general, the District does not recommend building on hydric soils because of the unfavorable properties they exhibit and because of their long term, negative effects on the structures built.

Hydric Soils

Symbol	Hydric	Hydric Inclusions	Acres	Percent
146A	N	Y	8.67	8.01%
146B	N	N	0.32	0.29%
223C2	N	N	12.24	11.31%
232A	Y	N	33.86	31.30%
298A	N	Y	8.25	7.63%
298B	N	N	9.06	8.37%
320B2	N	N	9.11	8.42%
530C2	N	N	1.96	1.81%
531B	N	N	2.82	2.60%
531C2	N	N	1.03	0.95%
67A	Y	N	1.18	1.09%
840B	N	N	1.94	1.79%
989B	N	N	17.76	16.42%
Total Hydric			**35.04**	**32.39%**
Total Soils with Hydric Inclusions			**16.92**	**15.64%**



Natural Resources Conservation Service Soils Map

Field Tile Map

DRAINAGE, RUNOFF AND FLOOD INFORMATION

Importance of Flood Information

A floodplain is defined as land adjoining a watercourse (riverine) or an inland depression (non-riverine) that is subject to periodic inundation by high water. Floodplains are important areas demanding protection since they have water storage and conveyance functions which affect upstream and down stream flows, water quality and quantity, and suitability of the land for human activity. Since floodplains play distinct and vital roles in the hydrologic cycle, development that interferes with their hydrologic and biologic functions should be carefully considered.

Flooding is both dangerous to people and destructive to their properties. The following maps, when combined with wetland and topographic information, can help developers and future homeowners to "sidestep" potential flooding or ponding problems.

FIRM is the acronym for the Flood Insurance Rate Map, produced by the Federal Emergency Management Agency. These maps define flood elevation adjacent to tributaries and major bodies of water, and superimpose that onto a simplified USGS topographic map. The scale of the FIRM maps is generally dependent on the size and density of parcels in that area. (This is to correctly determine the parcel location and flood plain location.) The FIRM map has three (3) zones. A is the zone of 100 year flood, zone B is the 100 to 500 year flood, and zone C is outside the flood plain.

The Hydrologic Atlas (H.A.) Series of the Flood of Record Map is also used for the topographic information. This map is different from the FIRM map mainly because it will show isolated, or pocketed flooded areas. The Flood of Record maps, show the areas of flood for various years. Both of these maps stress that the recurrence of flooding is merely statistical. That is to say a 100-year flood may occur twice in one year, or twice in one week, for that matter.

It should be noted that greater floods than those shown on the two maps are possible. The flood boundaries indicated provide a historic record only until the map publication date. Additionally, these flood boundaries are a function of the watershed conditions existing when the maps were produced. Cumulative changes in runoff characteristics caused by urbanization can result in an increase in flood height of future flood episodes.

Floodplains play a vital role in reducing the flood damage potential associated with an urbanizing area and, when left in an undisturbed state, also provide valuable wildlife habitat benefits. If it is the petitioner's intent to conduct floodplain filling or modification activities, the petitioner and the Unit of Government responsible need to consider the potentially adverse effects this type of action could have on adjacent properties. The change or loss of natural floodplain storage often increases the frequency and severity of flooding on adjacent property.

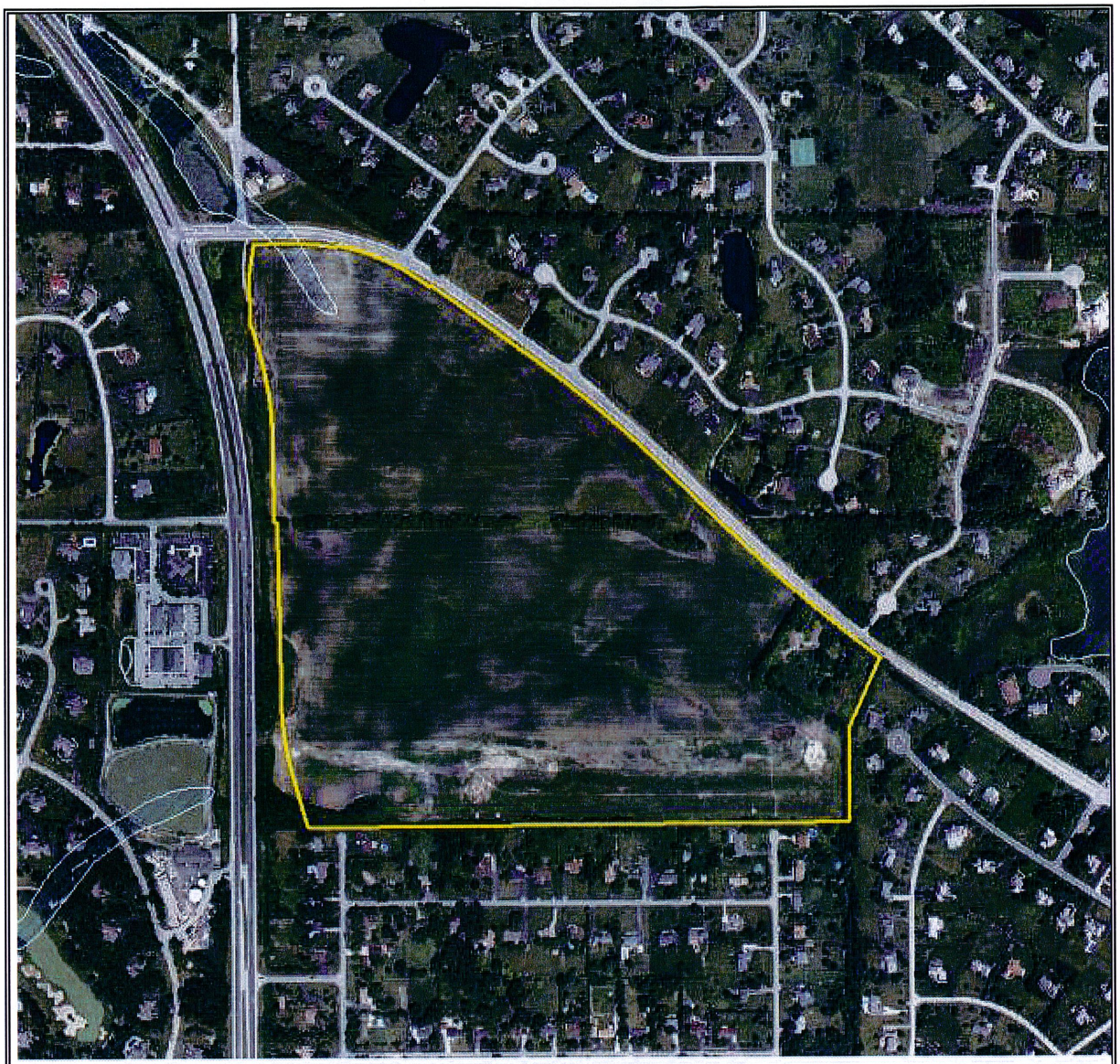
It is the policy of the Board to recommend against any construction within/neighboring a floodplain in the interest of preserving natural floodplain capacity and to insure that flooding problems are not magnified in Lake County.

If the available maps indicate the presence of a floodplain on the PIQ, the petitioner should contact the IDOT-DWR and FEMA to delineate a floodplain elevation for the parcel. If a portion of the property is indeed floodplain, applicable state, county and local regulations will need to be reflected in the site plans.

Another indication of flooding potential can be found in the soils information. Hydric soils indicate the presence of drainageways, areas subject to ponding, or a naturally occurring high water table. These need to be considered along with the floodplain information when developing the site plan and the stormwater management plan. If the site does include these hydric soils and development occurs, thus raising the concerns of the loss of water storage in these soils and the potential for increased flooding in the area.

USGS Flood of Record Map

The Flood of Record Map for this area indicates previous flooding on 3.32 acres of the parcel.

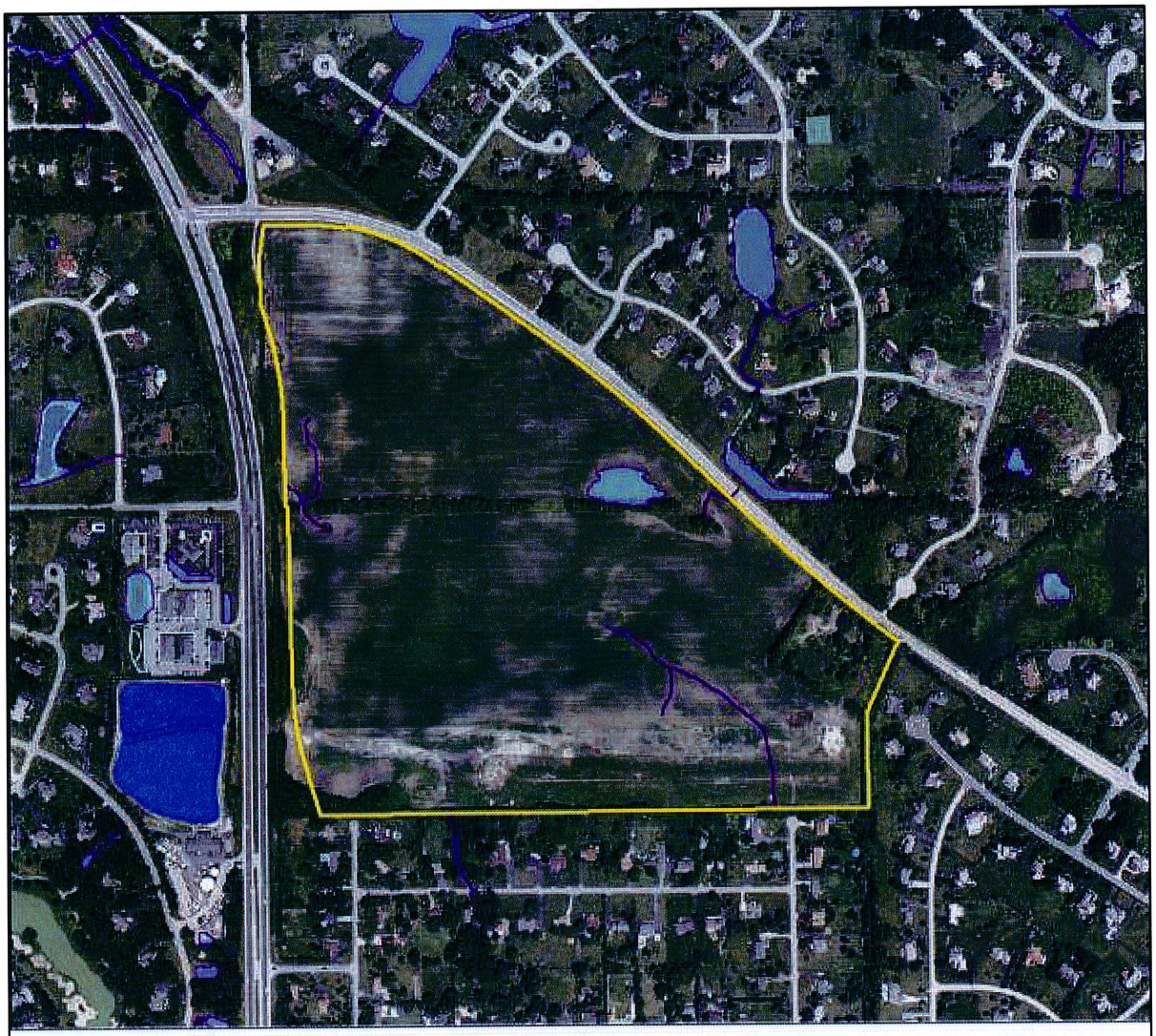


Federal Emergency Management Agency: Flood Insurance Rate Map

The map identifies 0.66 acres of the parcel as 100-year Floodplain.

LAKE COUNTY STORMWATER MANAGEMENT FLOOD HAZARD MITIGATION PLAN.
Blue: Indicates areas of flooding
The map indicates there has been no flooding on the property.

Lake County Stormwater Management Commission Courtesy Map. This map is provided for general location information only. Map features have been derived from various sources, each of which has its own scale and accuracy. The locations of all features are approximate. This map should not be used to determine building set-backs or as a basis for purchasing property. Field Surveys and delineations are required to verify the exact locations of property lines and other map features.



0 235 470 940 1,410 1,880
Feet

N

Base Map: 2008 Lake County Aerial Photo

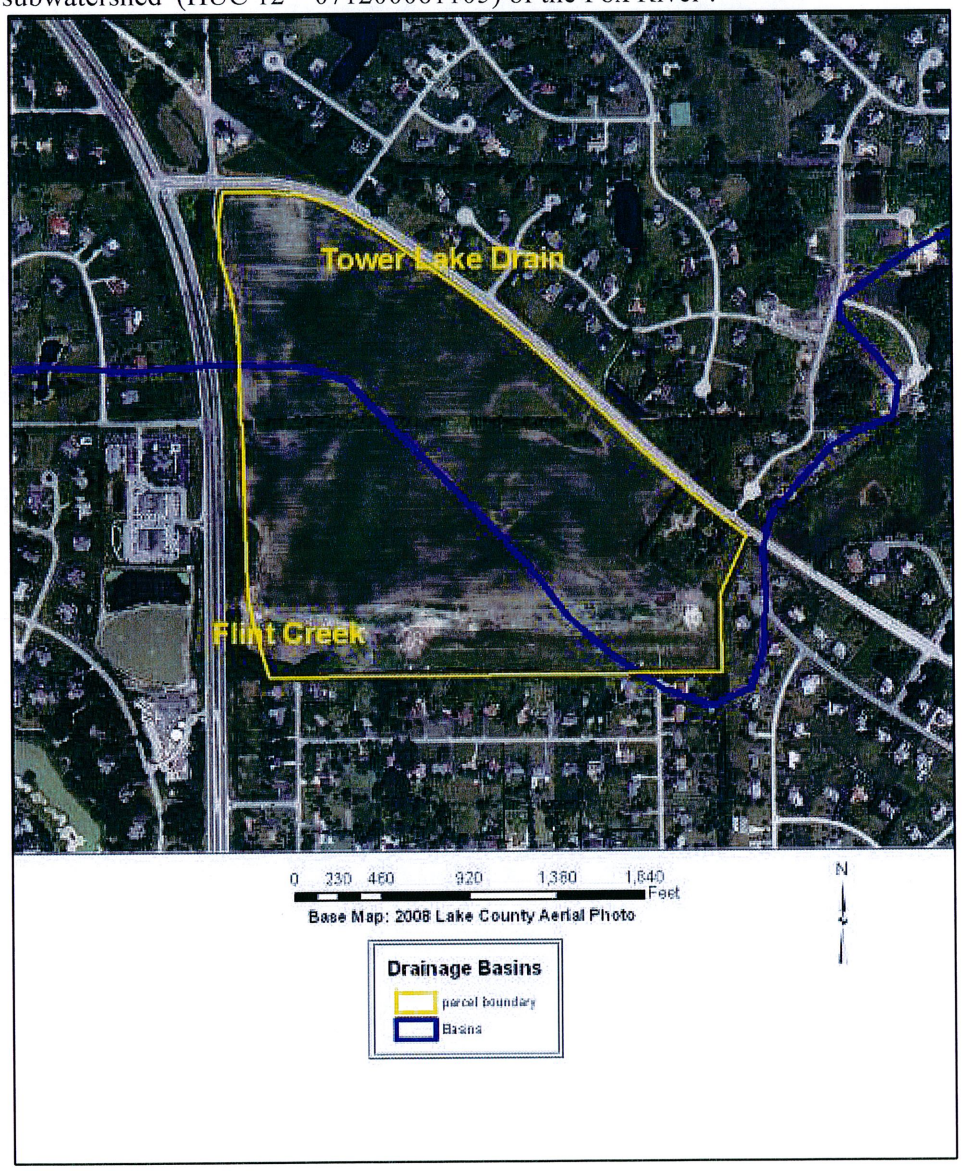
Water Features

- parcel boundary
- Lakes
- Detention Basins
- Drainage Ditches

WATERSHED PLANS

What is a watershed?

No matter where you live, you live in a watershed. A watershed is the area of land that contributes/drains water to a certain point/ to a single body of water, based on the topography of the surrounding area, such as a stream, lake, wetland, or estuary. Natural events and human activities affect the watershed it lies within and even surrounding watershed areas. There are many activities that impact watersheds: recreation & tourism, water uses and transfers, forestry, agriculture, waste disposal, transportation, power generation, industrial discharges, urbanization, and resource extraction. There are many resulting threats from these impacts, such as, habitat loss and degradation, water quality and flow modification, chemical pollutants, nutrients, sediments, pathogens, invasive species, and thermal modification. In Lake County, there is a 10 to >25 percent of waters threatened within watersheds, divided by the total number of water miles in those watersheds. This information above was gathered from the U.S. Environmental Protection Agency's "Protecting and Restoring America's Watersheds" Document. For detailed information about current subwatershed management plans and studies please contact the Lake County Stormwater Management Commission (847) 918-5260. The PIQ is in the Tower Lake Drain and the Flint Creek subwatershed (HUC 12 – 071200061105) of the Fox River .



WETLAND INFORMATION

These maps are not intended to be used as an absolute delineation of jurisdictional wetland boundaries. Rather, they are planning tools that can serve to identify the likely presence of wetlands in a given area. A wetland delineation can only be made by a field investigator whose work is recognized by the U.S. Army Corps of Engineers (COE). Jurisdictional wetlands/Waters of the U.S. are subject to the regulatory authority of the COE under Section 404 of the Clean Water Act, and isolated wetlands are subject to the regulatory authority of the Lake County Stormwater Management Commission (SMC) under the Watershed Development Ordinance (for corporated communities) and the Lake County Planning & Zoning Department under the Unified Development Ordinance (for unincorporated areas). A wetland delineation has to be performed to determine jurisdictional authority.

It is the policy of the District to strongly recommend against the destruction or major modification of wetlands by filling, dredging or by other non-direct impacts such as water pollution or damage due to sedimentation.

Importance of Wetland Information

Wetlands function in many ways to provide numerous benefits to society. They control flooding by offering a slow release of excess water downstream or through the soil. They cleanse water by filtering out sediment and some pollutants, and can function as rechargers of our valuable groundwater. They also are essential breeding, rearing, and feeding grounds for many species of wildlife.

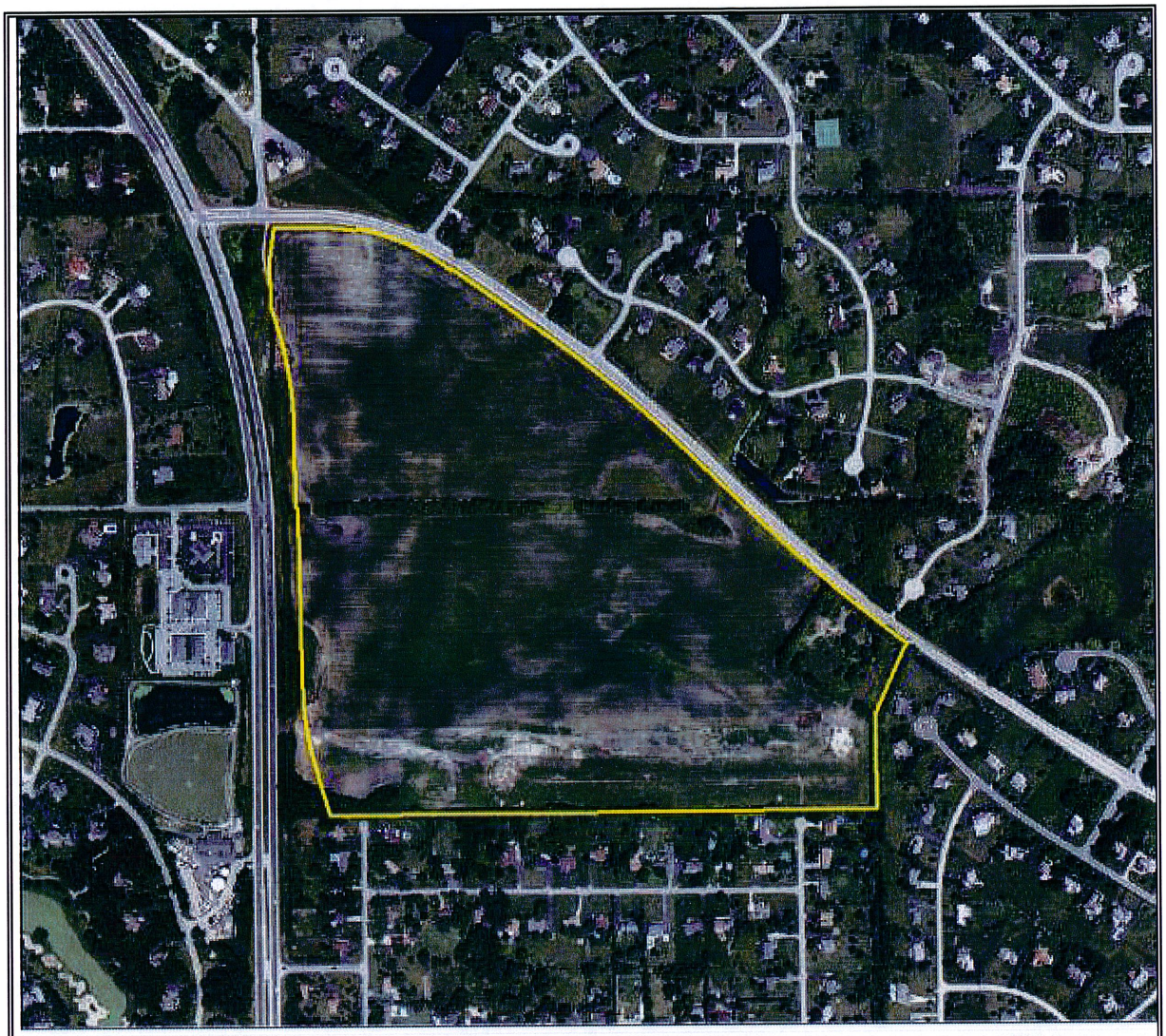
These benefits are particularly valuable in urbanizing areas as development activity typically adversely affects water quality, increases the volume of stormwater runoff, and increases the demand for groundwater. In an area where many individual homes rely on shallow groundwater wells for domestic water supplies, activities that threaten potential groundwater recharge areas are contrary to the public good. The conversion of wetlands, with their sediment trapping and nutrient absorbing vegetation, to biologically barren stormwater detention ponds can cause additional degradation of water quality in downstream or adjacent areas.

It has been estimated that over 95% of the wetlands that were historically present in Illinois have been destroyed while only recently has the true environmental significance of wetlands been fully recognized. America is losing 100,000 acres of wetland a year, and has saved 5 million acres total (since 1934). One acre of wetland can filter 7.3 million gallons of water a year. These are reasons why our wetlands are high quality and important.

USDA-NRCS Wetland Inventory

This section contains the NRCS (Natural Resources Conservation Service) Wetlands Inventory. The NRCS Wetlands Inventory is reproduced from an aerial photo at a scale of 1" equals 660 feet. The NRCS developed these maps in cooperation with U.S. EPA (Environmental Protection Agency,) and the U.S. Fish and Wildlife Service, using the National Food Security Act Manual, 3rd Edition. The main purpose of these maps is to determine wetland areas on agricultural fields and areas that may be wetlands but are in a non-agriculture setting.

The NRCS Wetlands Inventory in no way gives an exact delineation of the wetlands, but merely an outline, or the determination that there is a wetland within the outline. For the final, most accurate wetland **determination** of a specific wetland, a wetland ***delineation*** must be certified by NRCS staff using the National Food Security Act Manual (on agricultural land.)



Natural Resources Conservation Service: Wetland Inventory Map.

The map indicates there are no farmed wetlands on the parcel.

2002 LAKE COUNTY WETLAND INVENTORY

The map indicates there are four wetland areas comprising 2.44 acres of the parcel.

ADID (ADVANCED IDENTIFICATION OF AQUATIC RESOURCES)

Wetlands are some of the most productive and diverse ecological systems on Earth. The unique characteristics of plants, soils, and water distinguish these systems. Marshes, wet meadows, fens and bogs are some of the common wetland types found within McHenry County. There are also various streams scattered throughout the county, including several that rank among the highest quality in Illinois.

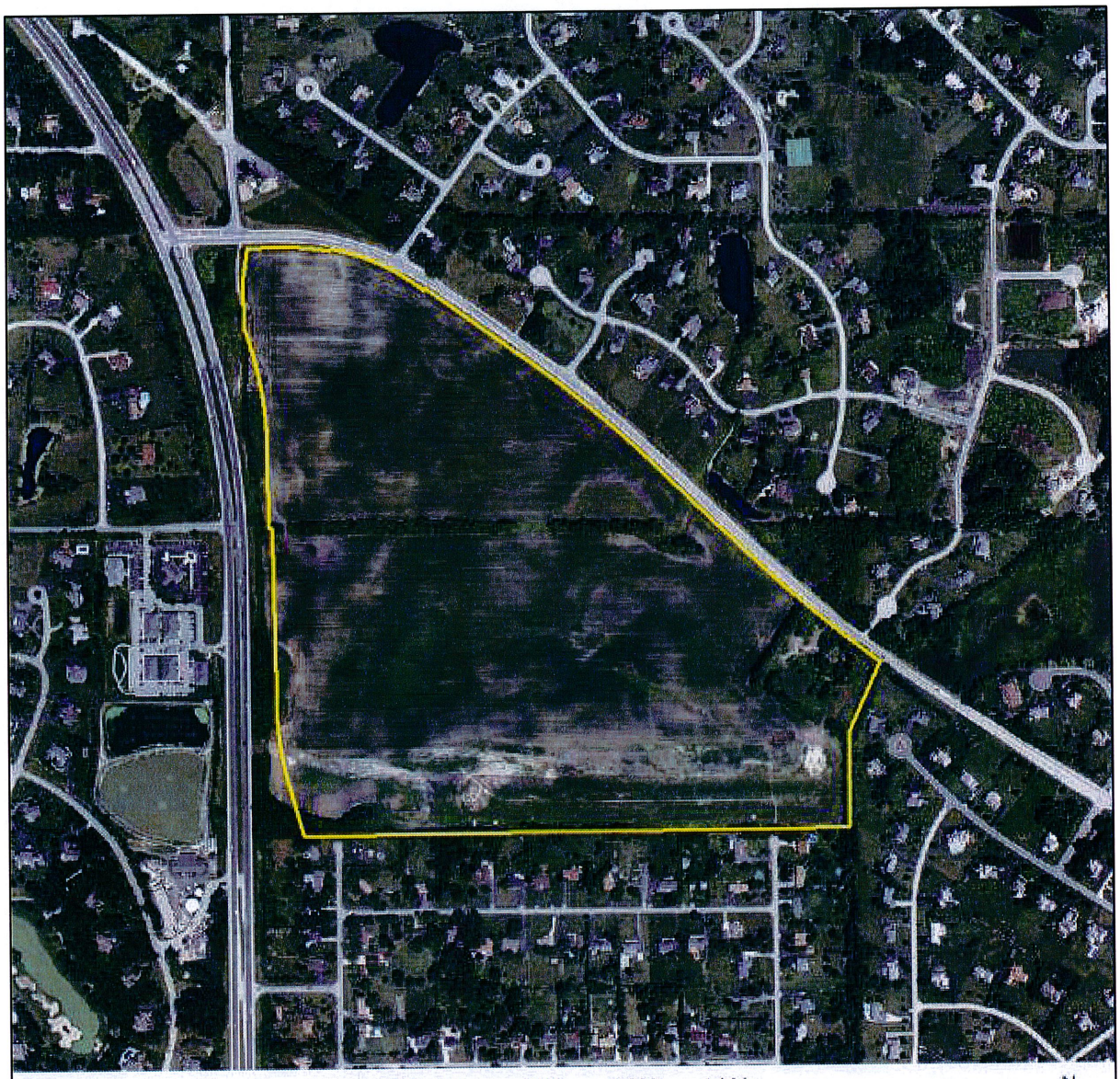
These wetlands, lakes and streams provide needed habitat and food for fish and wildlife. Diverse plants both common and rare are can be found in wetlands, and over 40 percent of Illinois' threatened and endangered plant and animal species rely on wetlands.

Wetlands have many other roles. They are critical to the control of flooding by storing vast quantities of runoff water during floods, and releasing it slowly to rivers and srteams as the floodwater recedes. This in turn helps to prevent erosion in downstream channels, aids in groundwater recharge, and stabilizes the baseflow in streams and rivers. Wetlands are also crucial in protecting water quality. Wetlands that border lakes and streams prevent erosion by holding soil in place and deflecting erosive flows and waves. They also remove sediment, nutrients, and toxic chemicals from runoff water.
Other benefits include groundwater recharge, discharge of clean water, recreation, enhancement of natural aesthetics and serve as buffers between adjacent developments.

This program designed by the EPA (Environmental Protection Agency), is intended to improve awareness of the functions and values of wetlands and other U.S. waters. It is also intended to inform landowners and developers that high quality sites may not be unsuitable for the disposal of dredged or fill material. These ADID projects can also provide guidance on the long-term protection and management of aquatic resources.

The wetland boundaries shown are not jurisdictional delineations. Any proposed drainage work in wet areas requires a certified wetland determination.

The ADID study indicates there are no ADID wetlands on the parcel in question.


0 200 400 800 1,200 1,600
Feet
N
Base Map: 2008 Lake County Aerial Photo
Lake County ADID Wetland Inventory Map
parcel boundary
ADID Wetlands

WETLAND AND FLOODPLAIN REGULATIONS

PLEASE READ THE FOLLOWING IF YOU ARE PLANNING TO DO ANY WORK NEAR A STREAM (THIS INCLUDES SMALL UNNAMED STREAMS), LAKE, WETLAND OR FLOODWAY.

The laws of the United States and the State of Illinois assign certain agencies specific and different regulatory roles to protect the waters within the State's boundaries. These roles, when considered together, include protection of navigation channels and harbors, protection against flood way encroachments, maintenance and enhancement of water quality, protection of fish and wildlife habitat and recreational resources, and, in general, the protection of total public interest. Unregulated use of the waters within the State of Illinois could permanently destroy or alter the character of these valuable resources and adversely impact the public. Therefore, please contact the proper regulatory authorities when planning any work associated with Illinois waters so that proper consideration and approval can be obtained.

WHO MUST APPLY

Anyone proposing to dredge, fill, rip rap, or otherwise alter the banks or beds of, or construct, operate, or maintain any dock, pier, wharf, sluice, dam, piling, wall, fence, utility, flood plain or flood way subject to State of Federal regulatory jurisdiction should apply for agency approvals.

REGULATORY AGENCIES:

- **Wetlands or U.S. Waters: U.S. Army Corps of Engineers**, Chicago District, 111 North Canal Street, Chicago, IL 60606-7206. Phone: (312).353.6400
- **Lake County Department of Building & Zoning (UDO):** (847) 360-6330
- **Lake County Stormwater Management Commission:** (847) 918-5260
- **Flood plains: Illinois Department of Natural Resources \ Office of Water Resources**, 201 W. Center Court, Schaumburg, IL 60196-1096, phone (708)705-4341
- **Water Quality \ Erosion Control: Illinois Environmental Protection Agency**, Division of Water Pollution Control, Permit Section, Watershed Unit, 2200 Churchill Road, Springfield, IL 62706, phone (217)782-0610.

COORDINATION

We recommend early coordination with the regulatory agencies BEFORE finalizing work plans. This allows the agencies to recommend measures to mitigate or compensate for adverse impacts. Also, the agency can make possible environmental enhancement provisions early in the project planning stages. This could reduce time required to process necessary approvals.

CAUTION: Contact with the United States Army Corps of Engineers is strongly advised before commencement of any work in or near a water of the United States. This could save considerable time and expense. Persons responsible for willful and direct violation of Section 10 of the River And Harbor Act of 1899 or Section 404 of the Federal Water Pollution Control Act are subject to fines ranging up to $27,500 per day of violation and imprisonment for up to one year or both.

THREATENED & ENDANGERED SPECIES

The State of Illinois provides habitat for 500 threatened and endangered species, including 356 plants and 144 animals. Twelve counties in Illinois have 50 or more endangered species, 5 of which are in northeastern Illinois. Lake County has the greatest known number of records of any county in the state at almost 300 ("Endangered Species of Illinois," by the U.S. Fish & Wildlife Service, IDOC Division of Natural Heritage & Endangered Species Protection Board).

Approximately 40% of the state's listed species depend on wetlands for survival. Thus, it is not surprising that Lake County has so many endangered species on record since it still has approximately 10% of its land area in natural shallow water wetland. This compares to a statewide figure of 2.6%. Thus, Lake County has a unique and valuable resource that needs to be protected and managed properly.

The two main causes for species decline are the loss of habitat and the degradation of habitat. While habitat loss is the primary reason species become endangered, the effects of habitat change are not always seen overnight. It is seldom simply a case of individual animals or plants being killed. More often, habitat loss and the resulting species declines are indirectly caused and are the result of cumulative impacts over a period of time.

It is because of this slow encroachment of habitat degradation, fragmentation and loss that wildlife habitat must be looked at on a greater scale than just the site. Cumulative impacts occur because a small amount of damage is being done over here and little over there and no one is looking at the whole picture. Thus, the villages and county are strongly encouraged to look at habitat management on a regional scale.

THERE IS A POSSIBILITY FOR ENDANGERED SPECIES ON THE SITE. IF A REQUEST HAS NOT ALREADY BEEN SUBMITTED, THE PETITIONER SHOULD ASK THE ILLINOIS DEPARTMENT OF NATURAL RESOURCES TO CHECK THIS PARCEL FOR THE PRESENCE OF THREATENED OR ENDANGERED SPECIES. SHOULD ANY SUCH SPECIES BE IDENTIFIED AS UTILIZING THIS PARCEL, THE PETITIONER WILL BE NOTIFIED ACCORDINGLY. FOR MORE INFORMATION ON HOW TO REQUEST AN ENDANGERED SPECIES CHECK ON THIS PARCEL, PLEASE VISIT
www.dnrecocat.state.il.us/ecopublic.

GLOSSARY

AGRICULTURAL PROTECTION AREAS (AG AREAS) - Allowed by P.A. 81-1173. An AG AREA consists of a minimum of 350 acres of farmland, as contiguous and compact as possible. Petitioned by landowners, AG AREAS protect for a period of ten years initially, then reviewed every eight years thereafter. AG AREA establishment exempts landowners from local nuisance ordinances directed at farming operations, and designated land can not receive special tax assessments on public improvements that do not benefit the land, e.g. water and sewer lines.

AGRICULTURE - The growing, harvesting and storing of crops including legumes, hay, grain, fruit and truck or vegetable including dairying, poultry, swine, sheep, beef cattle, pony and horse production, fur farms, and fish and wildlife farms; farm buildings used for growing, harvesting and preparing crop products for market, or for use on the farm; roadside stands, farm buildings for storing and protecting farm machinery and equipment from the elements, for housing livestock or poultry and for preparing livestock or poultry products for market; farm dwellings occupied by farm owners, operators, tenants or seasonal or year around hired farm workers.

B.G. - Below Grade. Under the surface of the Earth.

BEDROCK - Indicates depth at which bedrock occurs. Also lists hardness as rippable or hard.

FLOODING - Indicates frequency, duration, and period during year when floods are likely to occur.

HIGH LEVEL MANAGEMENT - The application of effective practices adapted to different crops, soils, and climatic conditions. Such practices include providing for adequate soil drainage, protection from flooding, erosion and runoff control, near optimum tillage, and planting the correct kind and amount of high quality seed. Weeds, diseases, and harmful insects are controlled. Favorable soil reaction and near optimum levels of available nitrogen, phosphorus, and potassium for individual crops are maintained. Efficient use is made of available crop residues, barnyard manure, and/or green manure crops. All operations, when combined efficiently and timely, can create favorable growing conditions and reduce harvesting losses -- within limits imposed by weather.

HIGH WATER TABLE - A seasonal high water table is a zone of saturation at the highest average depth during the wettest part of the year. May be apparent, perched, or artesian kinds of water tables.

Water Table, Apparent - A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water Table, Artesian - A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Water Table, Perched - A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

DELINEATION - For Wetlands: A series of orange flags placed on the ground by a certified professional that outlines the wetland boundary on a parcel.

DETERMINATION - A polygon drawn on a map using map information that gives an outline of a wetland.

HYDRIC SOIL - This type of soil is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (USDA Natural Resources Conservation Service 1987)

INTENSIVE SOIL MAPPING - Mapping done on a smaller more intensive scale than a modern soil survey to determine soil properties of a specific site, e.g. mapping for septic suitability.

LAND EVALUATION AND SITE ASSESSMENT (L.E.S.A.) - LESA is a systematic approach for evaluating a parcel of land and to determine a numerical value for the parcel for farmland preservation purposes.

MODERN SOIL SURVEY - A soil survey is a field investigation of the soils of a specific area, supported by information from other sources. The kinds of soil in the survey area are identified and their extent shown on a map, and an accompanying report describes, defines, classifies, and interprets the soils. Interpretations predict the behavior of the soils under different used and the soils' response to management. Predictions are made for areas of soil at specific places. Soils information collected in a soil survey is useful in developing land-use plans and alternatives involving soil management systems and in evaluating and predicting the effects of land use.

PALUSTRINE - Name given to inland fresh water wetlands

PERMEABILITY - Values listed estimate the range (in rate and time) it takes for downward movement of water in the major soil layers when saturated, but

allowed to drain freely. The estimates are based on soil texture, soil structure, available data on permeability and infiltration tests, and observation of water movement through soils or other geologic materials.

PIQ - Parcel in question

POTENTIAL FROST ACTION - Damage that may occur to structures and roads due to ice lens formation causing upward and lateral soil movement. Based primarily on soil texture and wetness.

PRIME FARMLAND - Prime farmland soils are lands that are best suited to food, feed, forage, fiber and oilseed crops. It may be cropland, pasture, woodland, or other land, but it is not urban and built up land or water areas. It either is used for food or fiber or is available for those uses. The soil qualities, growing season, and moisture supply are those needed for a well managed soil economically to produce a sustained high yield of crops. Prime farmland produces in highest yields with minimum inputs of energy and economic resources, and farming the land results in the least damage to the environment.

Prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The level of acidity or alkalinity is acceptable. Prime farmland has few or no rocks and is permeable to water and air. It is not excessively erodible or saturated with water for long periods and is not frequently flooded during the growing season. The slope ranges mainly from 0 to 5 percent. (Source USDA Natural Resources Conservation Service)

PRODUCTIVITY INDEXES - Productivity indexes for grain crops express the estimated yields of the major grain crops grown in Illinois as a single percentage of the average yields obtained under basic management from several of the more productive soils in the state. This group of soils is composed of the Muscatine, Ipava, Sable, Lisbon, Drummer, Flanagan, Littleton, Elburn and Joy soils. Each of the 425 soils found in Illinois are found in Circular 1156 from the Illinois Cooperative Extension Service.

SEASONAL - When used in reference to wetlands indicates that the area is flooded only during a portion of the year.

SHRINK-SWELL POTENTIAL - Indicates volume changes to be expected for the specific soil material with changes in moisture content.

SOIL MAPPING UNIT - A map unit is a collection of soil areas of miscellaneous areas delineated in mapping. A map unit is generally an aggregate of the delineations of many different bodies of a kind of soil or miscellaneous area but may consist of only one delineated body. Taxonomic class names and accompanying phase terms are used to name soil map units. They are described in terms of ranges of soil properties within the limits defined for taxa and in terms of ranges of taxadjuncts and inclusions.

SOIL SERIES - A group of soils, formed from a particular type of parent material, having horizons that, except for texture of the A or surface horizon, are similar in all profile characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineralogical and chemical composition.

SUBSIDENCE - Applies mainly to organic soils after drainage. Soil material subsides due to shrinkage and oxidation.

TERRAIN - The area or surface over which a particular rock or group of rocks is prevalent.

TOPSOIL - That portion of the soil profile where higher concentrations of organic material, fertility, bacterial activity and plant growth take place. Depths of topsoil vary between soil types.

WATERSHED - An area of land that drains to an associated water resource such as a wetland, river or lake. Depending on the size and topography, watersheds can contain numerous tributaries, such as streams and ditches, and ponding areas such as detention structures, natural ponds and wetlands.

WETLAND - An area that has a predominance of hydric soils and that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances does support, a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions.

CONTACT LIST

U.S. Army Corps of Engineers
Chicago District
111 N. Canal St., 6th Floor
Chicago IL 60606-7206
312/353-6400

Federal Emergency Management Agency
175 Jackson Blvd., 4th Floor
Chicago IL 60604
312/431-5501

U.S. Fish & Wildlife Service
Chicago Field Office
1250 South Grove Avenue., Suite 103
Barrington IL 60010
847/381-2253

Illinois Department of Natural Resources
Division of Natural Heritage
600 N. Grand Ave. W.
Northwest Office Plaza, Suite 4
Springfield IL 62706
217/785-8774

Illinois Department of Natural Resources
Private Lands Biologist
9511 W. Harrison St.
Des Plaines IL 60010
708/294-4129

Illinois Department of Transportation
Division of Water Resources
201 W. Center Court, 3rd Floor East
Schaumburg IL 60196-1096
708/345-9780

Lake County Health Department
Division of Environmental Health
3010 Grand Ave.
Waukegan IL 60085
847/360-6700

Chicago Metropolitan Agency for Planning
233 S. Wacker Drive, Ste. 800
Chicago IL 60606
312/454-0400

Lake County Planning and Development
18 N. County St.
Waukegan IL 60085
847/360-6330

Lake County Department of Transportation
P.O. Box 220, Winchester Rd.
Libertyville IL 60048
847/362-3950

U.S. Environmental Protection Agency
Water Division
111 W. Jackson Blvd.
Chicago IL 60604
312/353-2147

Illinois Historic Preservation Agency
Old State Capitol
Springfield IL 62701
217/782-4836

Illinois Environmental Protection Agency
Division of Water Pollution Control
9511 West Harrison Road
Des Plaines IL 60016
847/294-4045

Illinois Department of Agriculture
Bureau of Soil & Water
State Fairgrounds
P.O. Box 19281
Springfield IL 62794
217/782-6297

Illinois State Geological Survey
Natural Resources Building
615 E. Peabody Dr.
Champaign IL 61820
217/333-4747

USDA Natural Resources Conservation Service
1648 S. Eastwood Dr.
Woodstock IL 60098
815/338-0049 x3

Lake County Stormwater Management Commission
333-B Peterson Rd.
Libertyville IL 60048
847/918-5260

Lake County Forest Preserve District
2000 N. Milwaukee Ave.
Libertyville IL 60048
847/367-6640

Lake County Planning, Building & Development
18 N. County St.
Waukegan IL 60048
847/360-6350

REFERENCES

Soil Survey of Lake County, Illinois, USDA-SCS in cooperation with the Illinois Agricultural Experiment Station – September 1970.

Geology For Planning In Lake County, IL. State of IL Department of Registration and Education, Illinois State Geologic Survey 1973.

USDA-SCS Illinois Soil Interpretation Record for Lake County Soil Series – latest amended.

USDA-SCS National Soils Handbook – latest amended.

Lake County Board of Health Ordinance, Article V, Regulations of Individual Sewage Tank Absorption Fields, Northeast Illinois USDA-SCS MODERATE, 1983.

Regulatory Maps of Des Plaines and North Branch Chicago River, IDOT, Division of Water Resources – latest amended.

Federal Emergency Management Agency Flood Insurance Studies (FEMA), for incorporated and unincorporated Lake County, Published U.S. Federal Insurance Administration – latest amended.

Flood Hazard Analysis, Des Plaines River Tributaries, Lake, Cook, and DuPage Counties, USDA-SCS and IDOT – DWR – September 1981.

Lower Des Plaines Tributaries Watershed, Cook, DuPage, and Lake Counties, Illinois USDA-SCS, MSD, IDOT-DWR – July 1987.

Floods in Northeastern Illinois Quadrangles Hydrologic Investigations, Department of Interior, USGS.

Classification of Wetlands and Deep Water Habitats of the U.S., Department of Interior, Fish and Wildlife Service, December 1979.

Illinois Procedures and Standards for Urban Soil Erosion and Sedimentation Control, Published by Northeast Soil Erosion and Sediment Control Steering Committee – Green Book (originally published 1981, Revised in 1988).

A Field Guide to the Wetlands of Illinois, IDOC, 1988.

Virginia Erosion and Sediment Control Handbook, published by Commonwealth of Virginia, Virginia Soil and Water Conservation Commission, 2nd Edition – 1980.

USDA-SCS Technical Guide, Field Office, Grayslake, Illinois – latest amended.

USGS Topographic Series (7 ½ min. series), published by the Geographical Survey – latest amended.

IEPA – Stormwater Detention for Water quality Benefits, NIPC – January 1986.

Stormwater Management, IDOT-DWR, prepared by Southwest Illinois Metropolitan and Regional Planning Commission and Technical Advisory Committee, December 1982.

Lake County Soil and Water Conservation District, Subsurface Drainage Maps (on 1954 Aerials).

Lake County Planning and Zoning and Environmental Quality Aerial Maps of County – May 1980, 1986.

Natural Areas Inventory, Publish IDOC, Springfield, Illinois 62706, November 1978.

A Citizens' Guide to Protecting Wetlands. By The National Wildlife Federation. Washington, D.C., March 1989.

Potential for Contamination of Shallow Aquifers in Illinois (Plate 2). Illinois Department of Energy and Natural Resources – State Geological Survey Division. Natural Resources Building, 615 E. Peabody Drive, Champaign, Illinois 61820, 1984.

Illinois Environmental Protection Agency, Standards and Specification for Soil Erosion and Sediment Control, Illinois EPA – October 1987.

National Wetlands Inventory Maps, Department of the Interior, Fish and Wildlife Service, 1984.

2000 Land Atlas & Plat Book, Lake County IL, 11th Edition. Published by Rockford Map Publishers, Inc.

Appendix:

SOIL EROSION & SEDIMENT CONTROL

Development on this site must include the use of a Soil Erosion and Sedimentation Control (SESC) plan, under the Watershed Development Ordinance (WDO) of the Lake County Stormwater Management Commission. Soil erosion during and after this proposed construction can be a primary non-point source of water pollution. Eroded soil during the construction phase can create unsafe conditions on roadways, decrease the storage capacity of lakes, clog streams and drainage channels, cause deterioration of aquatic habitats, and increase water treatment costs. Soil erosion also increases the risk of flooding by choking culverts, ditches and storm sewers, and by reducing the capacity of natural and man-made detention facilities. It is important that a comprehensive SESC plan be developed for all phases of site development, that these practices are installed prior to any site disturbance, and rigorously maintained throughout all phases of the project.

The SESC plan for the proposed development must take into consideration the property's proximity to highly valued habitats and the potential for negatively impacting these areas. The plan needs to be comprehensive and properly implemented and maintained.

The general principles of erosion and sedimentation control measures include:

- reducing or diverting flow from exposed areas, storing flows or limiting runoff from exposed areas,
- staging construction in order to keep disturbed areas to a minimum,
- establishing or maintaining or temporary or permanent groundcover,
- retaining sediment on site and
- properly installing, inspecting and maintaining control measures.

Erosion control practices are useful controls only if they are properly located, installed, inspected and maintained.

The SESC plan for the proposed development must take into consideration the presence of highly erodible soils. The plan needs to be comprehensive and properly implemented and maintained.

For developments, the District recommends that the following erosion control measures be included in development plans, implemented and maintained throughout the life of projects. Each of these recommendations can be referenced by code number in the Illinois Urban Manual.

Silt Fencing (Code 920): Silt fences are very often installed improperly, overused, and not properly monitored or maintained. At all sites, silt fences should be trenched in (six inches) around any body of water and waterways. The silt fence should be used to handle sheet flow only, not concentrated flow such as in swales. The fence, which should be installed prior to any land disturbing activity, should be inspected weekly and after significant rain event.

Storm Sewer Inlet Protection: The use of straw bales for inlet protection is not recommended due to their lack of effectiveness and high maintenance requirements. Instead, any one of the 3 following practices will be much more effective:

a. Block and gravel system (Code 850)
b. Excavated drain (Code 855)
c. Fabric drop (Code 860) – this practice involves placing geotextile fabric under the grates. **This practice requires weekly inspections.**

Use of Detention Basins During Construction: The detention basin should be excavated prior to any other grading activities. The basin can be used as a sediment trap during construction if it is over-excavated or later cleaned out after construction has been completed. If the detention area will not be used as a sediment basin, a silt fence should be installed around the upslope perimeter of it to prevent it from filling in.

Rock Outlet Protection (Code 910): The outlet end of all culverts, conduits or channels should be stabilized with properly sized rip-rap placed over geotextile fabric. This will protect the outlet structure, prevent scour erosion and minimize downstream erosion by reducing the velocity and energy of concentrated stormwater flows at these points of high velocity flow.

Concentrated Flow Areas: The use of straw bales in areas of concentrated flow areas, such as swales, is not recommended. Their poor filtering ability and high maintenance requirements make them ineffective for soil erosion control. Alternatives to straw bales include:

a. Rock Check Dams (Code 905, Draft)
b. Silt fence in conjunction with a reinforcing wire fence with steel posts.
c. Silt dykes: These reusable, triangular fabric dykes can be used to control erosion in swales.

All swales should be protected with sod or erosion control blankets immediately after final grading.

Grading and Topsoil Activities: If the site will be mass graded, consideration must be given to protection of the site after topsoil removal and erosion prevention of the topsoil stockpile. To do this, the following concepts can be used:

a. Temporary seeding of graded area and topsoil
   stockpile (Code 965)
b. Mulching of graded area (Code 875)
c. Silt fencing around topsoil stockpile

Stabilized Construction Entrance: (Code 930) Special consideration should be given to the prevention of sediment being brought off-site. A stabilized pad of aggregate underlain with filter fabric should be located at any point where traffic will be entering or leaving the site to or from a public right-of-way during active construction.

Temporary Seeding: Per the County's Watershed Development Ordinance, all areas that will be exposed longer than 14 working days must be temporarily seeded or mulched. Appropriate seeding includes annual rye or oats.

For large drainage areas, temporary sediment basins should be installed (Code 960).

Porous Pavement (Code 890): A pavement consisting of strong materials having regularly interspersed void areas which are filled with pervious materials, such as sod, gravel or sand. The purpose of this practice is to reduce water pollution from low-volume traffic areas by providing a bearing surface having adequate strength to accommodate vehicles while allowing infiltration of surface water and filtration of pollutants. This practice is intended to achieve this purpose by:

1) Reducing volume and peak rate of runoff flow, thus reducing the likelihood of sewer overflows, flooding, and downstream erosion, and sediment pollution.
2) Reducing the loading and concentration of pollutants in the runoff.

Preventing the onset of erosion is much less expensive and much more effective than keeping erosion in check and conducting clean-up efforts when these efforts fail.

Detailed information on the most appropriate methods of controlling erosion and sedimentation in urbanizing areas may be found in the publication Procedures and Standards for Urban Soil Erosion and Sedimentation Control in Illinois (Greenbook) as well as the **Illinois Urban Manual**. These manuals and additional technical assistance may be obtained by contacting this office. A copy of the Lake County Stormwater Management Commission Technical Reference Manual can be obtained by calling 847-918-5260. The Northeastern Illinois Planning Commission (NIPC) has published the Suggested Soil Erosion and Sedimentation Control Ordinance: Guide for Local Officials. This can be ordered by calling 312-454-0400.

Our office is available for consultation on soil erosion and sediment control concerns. We also periodically sponsor workshops on this topic.

OPEN SPACE MANAGEMENT

Open space is an important resource, especially in an urban area as it provides recreational opportunities, valuable wildlife habitat and resource protection.

A common misconception regarding open space is that by merely protecting a natural area from direct or indirect impacts, its long-term survival has been insured. Open space must be properly managed. This can include the removal of undesirable (non-native or invasive) vegetation and the restoration of native plant communities to enhance habitat for local species of wildlife.

Woodland, wetland and native grassland areas are complex ecosystems that must be perpetually managed to insure their continued biological diversity. A typical landowner may not have knowledge of this type of management, possess the means by which to do it, or have the desire to perform the management, and may even undertake activities which adversely affect these areas.

Open space areas may be owned in a variety of ways. The most common technique is a property owners association in which each person owns a fractional share of the open land and has a legal responsibility to contribute to its maintenance and upkeep. The use of the land is restricted by deed restrictions. Trail systems can be developed to allow all residents of the subdivision to utilize these areas for passive recreation. A second option is private ownership (lot owners or the developer) with deed restrictions.

Tax responsibility can be a consideration. Open space in a development is taxable land, though the deed restrictions lower the value of the open space. This is offset, however, by the increased value of homes adjoining the open space.

Since homeowners' associations may not have the technical and financial resources to adequately manage such areas, and the area is still potentially subject to future land use change requests, transferring ownership to a conservancy group, park district, forest preserve district or other such resource-oriented organization is a better option. Trained personnel whose primary goal is to maintain the area into perpetuity can conduct management activities on an area-wide basis.

Minimally, an open space management plan needs to be developed and implemented which includes a funding mechanism to insure long-term management.

DRAINAGE DISTRICTS AND WHO TO CALL FOR DRAINAGE PROBLEMS

Active Drainage Districts in Lake County, Illinois:

East Skokie – (847) 831-2371 (includes areas in Highland Park, Lake Forest, Highwood, Lake Bluff, North Chicago, & Waukegan).
West Skokie – (312) 782-4780 (includes areas in Libertyville, Shields, West Deerfield, and Vernon Townships).
Union – (847) 945-0600 (includes areas in the communities of West Deerfield, Lake County and North Field, Cook County).
Slocum – (847) 526-1355 (includes areas in Cuba and primarily Wauconda Townships).
Squaw Creek – (847) 582-2255 (includes areas in Avon, Grant and primarily Fremont Townships).
Grubb School – (847) 395-5787 (includes areas in Antioch).
Avon-Fremont – (847) 223-2037 (includes areas in Avon and Fremont Townships).
Beach Park – (847) 336-2985 (includes areas in Beach Park, Park City, North Chicago, and Waukegan).

FOR MORE INFORMATION ON DRAINAGE DISTRICTS, PLEASE CALL THE LAKE COUNTY STORMWATER MANAGEMENT COMMISSION AT (847) 918-5260.

DRAINAGE PROBLEMS - WHO TO CALL IN LAKE COUNTY, IL

REFER TO:	WHEN THE CALL RELATES TO:	ADDITIONAL INFORMATION:
LAKE COUNTY STORMWATER MANAGEMENT COMMISSION (847) 918-5260 WWW.CO.LAKE.IL.US/SMC	1. Neighborhood, watershed or regional scale problems 2. Interjurisdictional issues 3. Involves a violation of the Lake County Watershed Development Ordinance [related to new development and in non-certified communities]	Relies on other governmental units to respond to smaller scale problems; has field staff to investigate drainage complaints in non-certified communities; funding available for repair or maintenance of drainage facilities and drainage problems; compiles drainage data for watershed planning and should be notified by Certified Communities of major problems.
LAKE COUNTY PLANNING, BUILDING, & DEVELOPMENT DEPARTMENT, ENGINEERING AND ENVIRONMENTAL SERVICES DIVISION (E&ES) (847) 377-2600	1. Complaint is on a parcel located in an unincorporated area. 2. Drainage complaints, erosion control, Site Development Permits 3. Individual, neighborhood, watershed scale problems 4. Involves a violation of the Lake County Unified Development Ordinance (related to older or new development).	Has field staff to inspect and respond to drainage complaints in unincorporated areas; can require remedial activity if in violation of the Lake County Unified Development Ordinance; funding available for repair or maintenance of drainage facilities; provides notification to SMC of regional scale problems.
LOCAL MUNICIPALITIES	1. Lot and Neighborhood level drainage concerns 2. Emergency response: sandbags, evacuation procedures	Usually have staff or budget through public works to handle common problems; have authority to enter lands to remove blockages even outside own boundaries.
TOWNSHIP HIGHWAY DEPARTMENTS	1. Drainage concerns are within the right-of-way of a township road.	Sometimes staff is able to reduce local flooding problems by improvements along ROW but is not common; policies vary from Township to Township; not able to assist in areas outside its own ROW.
LAKE CO. DIV. OF TRANSPORTATION (LCDOT) (847) 362-3950	1. Bridges, culverts, ditches, within the right-of-way (county roads)	Maintains all bridges, culverts and ditches within the ROW of county highway signs signified by blue and gold route markers saying Lake County.
LAKE COUNTY HEALTH DEPARTMENT (LCHD), DIVISION OF ENVIRONMENTAL HEALTH (847) 360-6740	1. Contamination of an individual well. 2. Failure of individual septic.	Primary concern for water quality specifically public beaches, indiv. wells & septics; required to respond within 14 days but can only assist if flooding problems results in failure of septic or contamination of well.
LAKE COUNTY SOIL AND WATER CONSERVATION DISTRICT (SWCD) (847) 223-1056 U.S. DEPT. OF AGRICULTURE (NRCS)	1. Agricultural drainage issues or drainage issues related to soil erosion.	Provides technical assistance and education; has some information on farm tiles; field staff makes site visits upon requests.
DRAINAGE DISTRICTS	1. Problem associated with drainage ditches and streams within a drainage district.	Provides information, technical assistance; field staff may be available for site visits in cases of severe drainage, soil erosion.
FOX WATERWAY AGENCY (847) 587-8540	1. Debris removal, shoreline protection, flood control, flood warning for Chain area.	Primarily responsible for dredging, debris removal, shoreline protection, flood control, flood warning for Chain O'Lakes area; has staff for site visits.
LAKE COUNTY EMERGENCY MANAGEMENT AGENCY (LCEMA) (SHERIFFS OFFICE) (847) 377-7100	1. Request for sandbags and evacuation procedures is coordinated by municipal EMA coordinators and township officials.	Primarily responsible for emergency services in a disaster; works closely with local ESDA coordinators during a disaster/flood event. Refer requests for sandbags and evacuation procedures to local municipality or to township; does not distribute insurance claims.
US GEOLOGICAL SURVEY - URBANA, IL (217) 344-0037	1. Provides real-time, unofficial river/stream stage information, rain totals (SMC rain/stream gages are the same as USGS gages)	Data available at: http://il.water.usgs.gov

STORMWATER MANAGEMENT AND WATER QUALITY IMPACTS

Development of a property results in compaction of soil and the addition of areas of impervious surfaces (rooftops, roadways, etc.) which will greatly increase the amount of stormwater runoff generated by the site.

The District strongly recommends the use of on-site stormwater management to reduce the potential for degrading water quality in the area. Runoff should be retained in on-site basins in order to provide sufficient opportunity to improve the water quality of the runoff to prevent degradation of the water quality in the area. Stormwater should be released at a rate that approximates natural, undisturbed runoff conditions. Insufficient stormwater management on the site could threaten the stormwater capacity of the surrounding drainageways or aggravate flooding conditions on surrounding properties or elsewhere in the watershed.

The District discourages allowing stormwater runoff produced by urban development to flow into natural flood control features such as floodplains and wetlands. On this site, these features are currently accepting and regulating the stormwater runoff that is generated by undeveloped land. If the runoff generated by impervious surfaces such as rooftops and roadways is loaded into these natural features, their flood control capabilities could be overburdened and flooding damage could result. In addition, pollutants association with stormwater runoff can degrade the water quality in the area.

The utilization of wet basin stormwater retention ponds is recommended by the District over the use of dry detention basins as wet basin designs tend to provide increased water retention times, allowing for greater water quality improvements to occur. Increased retention times allow more sediment to settle out of suspension. Because of this sediment-trapping tendency, suitable access needs to be provided to a wet basin to allow for periodic maintenance and sediment removal.

The basins should be installed in the first phase of the project as the basin or pond can serve as a sediment trap during the construction phase.

It is also encouraged to design the detention area to provide multiple benefits to the community. The incorporation of open space, constructed wetlands and recreational areas adds to the value of the detention facility as well as to its water quality improvement capabilities. In order to reduce the attraction of a resident Canada goose population, the retention pond should not be mowed down to the edge. Unmowed native plants are a natural deterrent to nuisance goose problems.

Numerous publications are available which provide guidance on planning stormwater management systems and incorporating multiple benefits. These include Stormwater Detention for Water Quality Benefits (NIPC, 1986), Stormwater Management (IDOT-DWR, 1983), the Lake County Technical Reference Manual (SMC, 1992), A Current Assessment of Urban Best Management Practices (Metropolitan Washington Council of Governments, 1992), Design of Stormwater Wetland Systems (Metropolitan Washington Council of Governments, 1992), The Use of Wetlands for Controlling Stormwater Pollution (Terrene Institute, 1992), and Urban Runoff Pollution Prevention and Control Planning (U.S. EPA Handbook, EPA/625/R-93/004, 1993).

NATIONAL POLLUTATN DISCHARGE ELIMINATION SYSTEM

Discharges of stormwater from construction sites that disturb 1 or more acres of land must be covered by an NPDES permit. Under the NPDES General Permits for Stormwater Discharges from Construction Sites, the EPA requires the development and implementation of a pollution prevention plan.

A pollution prevention plan for the construction is designed to reduce pollution at the construction site before it can cause environmental problems. Many of the practices and measures required for the pollution prevention plan represent the standard operating procedure at many construction sites. Stormwater management controls, erosion and sediment controls, inspection and maintenance have all been used at a number of construction projects.

The General NPDES permit can be obtained through the Illinois Environmental Protection Agency, Division of Water Pollution Control, 2200 Churchill Road, P.O. Box 19276, Springfield, Illinois 62794-9276.