Chapter 3. Natural and Environmental Resources Protection

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OVERVIEW

The City of Chaska is rich in natural beauty and resources. Its landscape is gently rolling to hilly, with significant concentrations of woodland, especially along the river floodplains, creek ravines, river bluffs and other areas of steep slopes. The East and West Chaska Creeks carry surface run-off water to the Minnesota River, which forms the south edge of the City. The creeks' main and tributary channels have been protected as an extensive wooded ravine system throughout most of the City. The steep and wooded Minnesota River bluff is very apparent as it rises approximately 100 feet above the large river floodplain below. In addition to Lake Bavaria and Hazeltine Lake, several smaller man-made lakes exist, as well as numerous wetlands and ponds.

The City's systems of natural and environmental resources/features are extremely valuable for both functional and aesthetic purposes. For example, wetlands serve as natural stormwater retention areas during run-off periods. They also serve as natural habitat and movement corridors for numerous species of plant and animal wildlife. Their positive impact on residential environments has also been recognized. This combination of functional and aesthetic values applies to most other environmental resources, including woodlands, steep slopes, lakes, and the creeks system.

In addition, the City protects access to its environmental resources, including aggregate and energy resources.

GENERAL NATURAL AND ENVIRONMENTAL RESOURCES GOAL

Natural and environmental resources are protected for the benefit of the overall health of the community's natural and human environment.

GENERAL NATURAL AND ENVIRONMENTAL RESOURCES POLICIES

1. The City's significant natural and environmental resources shall be preserved for their functional value as well as their positive aesthetic impact upon proximate urban development.
2. Prohibit new development from encroaching upon vital natural resources such as wetlands, wooded steep slopes, bluffs/ravines, drainage ways and floodplains,
3. Encourage new developments to capitalize upon the positive influence of Chaska's significant natural environment. Development that is designed with sensitivity to the environment will provide quality living areas while also preserving natural and environmental resources.
4. New urban development shall use the Environmental Features Map **(**FIGURE 3.7**)**, where appropriate, as a basis for preserving significant natural and environmental features.

WATERSHED MANAGEMENT

Chaska is located within multiple watersheds, which are under the jurisdiction of three (3) watershed districts/management organizations (see FIGURE 3.1). Most of the city is under the jurisdiction of the Carver County Watershed Management Organization (CCWMO), which encompasses both the East Chaska Creek and West Chaska Creek watersheds. The Lower Minnesota River Watershed District (LMRWD) is located in the southeast portion of the city, while the Riley-Purgatory Bluff Creek Watershed District (RPBCWD) is located in the northeast edge of the city.

FLOOD CONTROL / PREVENTION

The U.S. Corps of Engineers and Minnesota DNR have delineated floodplains of the Minnesota River and East and West Chaska Creeks. The City adopted a Flood Protection Ordinance in 1976, which established regulations within the "100 Year" floodplain based on a Floodway District and a Flood Fringe District (FIGURE 3.2); the City will be adopting an updated amendment and new Floodplain map by FEMA in December 2018. No structures for human habitation are permitted within the Floodway District portion of the floodplain.

Like many older communities along the Minnesota River, Chaska has suffered substantial property damage from periodic floods. Major floods occurred in 1951, 1952, 1965, and 1969. After the 1952 flood, the City constructed a dike around the old town area. In 1965, the largest flood recorded at Chaska overtopped the levee by five feet. Subsequently, the dike was raised another four feet. Major damage was averted in 1969 by sandbagging and pumping seepage.

Congress authorized a flood control project in Chaska in 1976, but construction did not start until 1989 with the final stage completed in 1998. The project included a variety of measures to reduce flood damage along the Minnesota River and East and West Chaska Creeks. It also included trails and other recreational features to enhance recreation opportunities in the area. Principal features of the project were:

1. Improve and extend the existing levee.
2. Construct a West Chaska Creek diversion channel leaving 0.4 miles of existing channel to carry local run-off only.
3. Construct a major East Chaska Creek bypass channel leaving 2.3 miles of the existing channel to carry local run-off only.
4. Construct 1.5 miles of paved recreation trails on top of the levee and around Courthouse Lake. The lake will be protected from flooding to preserve the trout fishery maintained by the State DNR.

FIGURE 3.1: WATERSHED MANAGEMENT DISTRICTS & ORGANIZATIONS

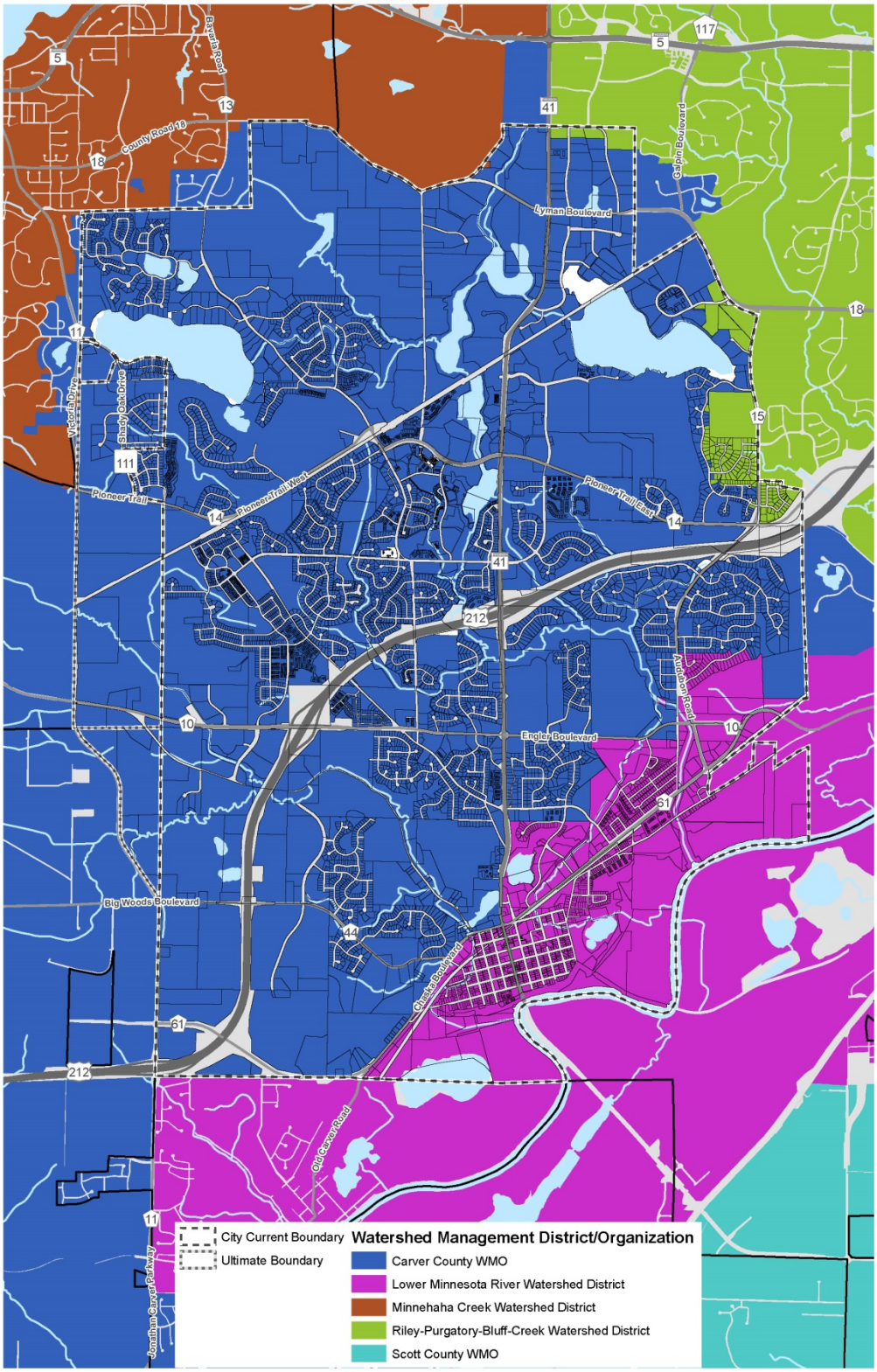
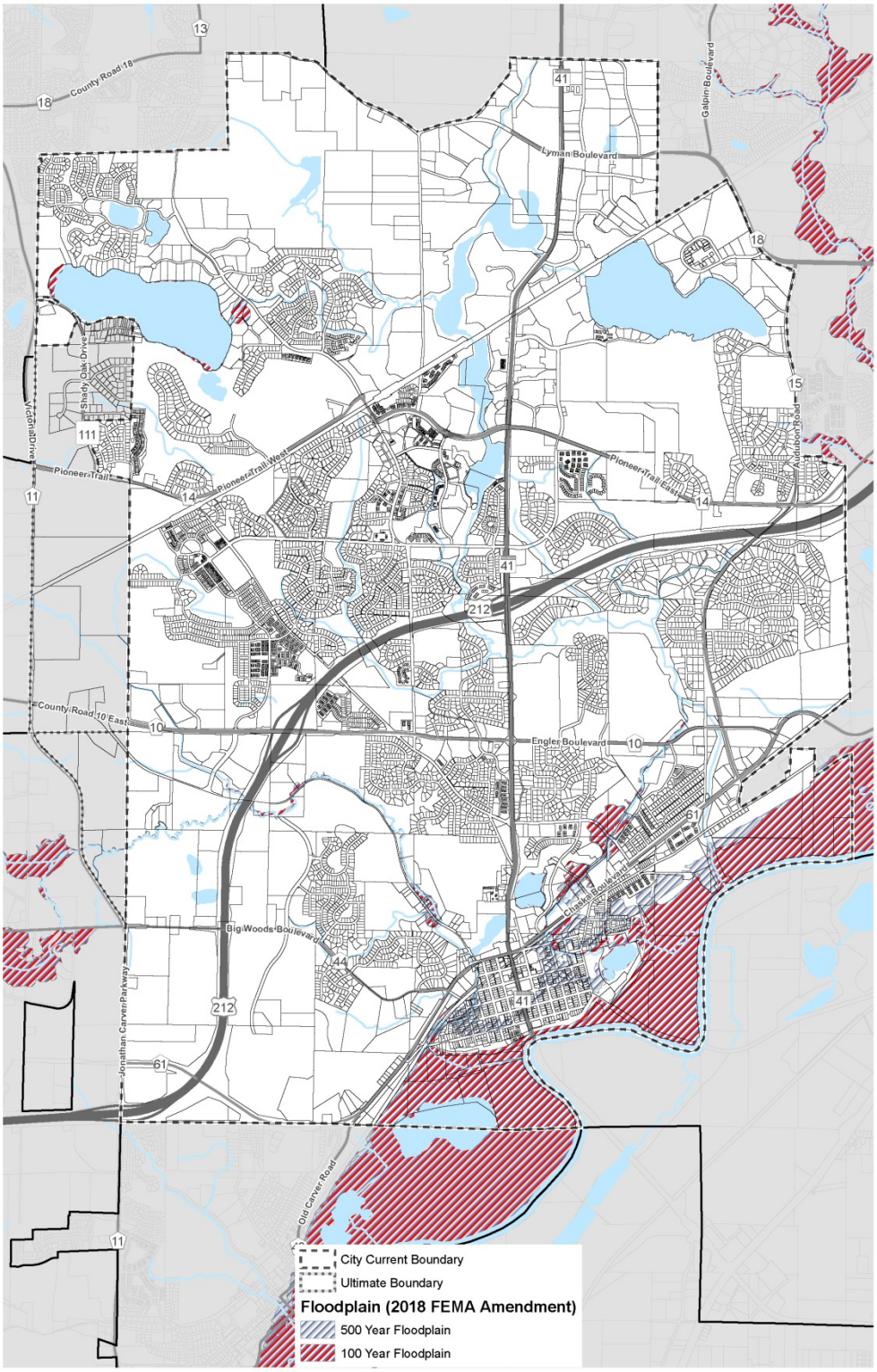


FIGURE 3.2: FLOODPLAINS



Remaining undeveloped and unprotected portions of the river and creek floodplains will be subject to existing floodplain regulations.

While the primary benefit of the flood control project was protection of property from flood damage, it also eliminated the Flood Fringe District from lower Chaska, which placed significant restrictions on new development and expansion or remodeling of existing buildings. Previously, buildings in the Flood Fringe District could not be enlarged nor could they be improved/remodeled beyond 50 percent of their value unless elevated or flood proofed. In most cases, such remedies were not physically or economically feasible.

In summary, the flood control project prevents property damage due to flooding, allows the development of lower Chaska to be completed, permits former Flood Fringe District commercial properties to be redeveloped, and allows the value of former Flood Fringe District residential and commercial properties to be maintained and enhanced.

SURFACE WATER MANAGEMENT PLAN

The City of Chaska has a Local Surface Water Management Plan (LSWMP) that serves as a comprehensive planning document to guide the City in conserving, protecting, and managing its surface water resources. Chaska's current LSWMP was last updated in 2015 and formally adopted by the City Council on November 16, 2015. The current LSWMP is intended to provide guidance for the City's surface water system through the end of 2024. Refer to Chapter 10 for a full summary of the LSWMP. The City has diligently followed its surface water management plan to guide development and redevelopment activities but also as a guide for identifying and implementing retrofits to the existing system.

The City of Chaska has been successful in maintaining its natural drainage patterns throughout most of its development. The City's goal is to foster continued optimum use of that natural drainage system while enhancing the overall quality of water entering lakes and wetlands. The intent is to prevent flooding while using identified Best Management Practices (BMPs) to enhance surface water quality with minimal capital expenditures by the City. The LSWMP provides clear guidance on how Chaska intends to manage surface water in terms of both water quality and quantity.

PUBLIC WATERS, DNR

Minnesota DNR has classified the Minnesota River, East Chaska Creek, and West Chaska Creek as "Public Waters". Any change in the course of these waterways requires a permit from the DNR.

DRAINAGEWAY / FLOOD CONTROL POLICIES

1. Existing floodplain regulations applicable to the Minnesota River and East and West Chaska Creeks shall be aggressively enforced.
2. The natural drainage systems consisting primarily of the East and West Chaska Creeks and their tributaries shall be preserved and protected for their functional values as drainageways and wildlife movement corridors.
3. Valleys and ravines formed by the drainage system shall be preserved in their natural state for functional and ecological reasons as well as for their aesthetic value.
4. As urbanization occurs within the various drainage areas, stormwater run-off retention facilities shall be provided so that the normal run-off rate from undeveloped land is not increased. Without such retention ponds or basins, creek flowage would be substantially increased, causing severe erosion and flood damage safety problems, and water quality is degraded.

LAKES / WETLANDS

The City of Chaska contains a wide variety of lakes and wetlands. Several Federal, State, and local agencies have regulatory powers over public lakes and wetlands in Chaska.

Chaska contains two relatively large open water lakes — Lake Bavaria and Hazeltine Lake. Both lakes drain into East Chaska Creek. Lake Grace, Jonathan Lake (Upper Lake Grace), McKnight Lake, and Big Woods Lake are man-made lakes created by impounding East Chaska Creek flowage. Several "clayhole" lakes exist within the old town area, left over from earlier years when brick manufacturing operations were active in Chaska, including Courthouse Clayhole Lake, Firemen's Clayhole Lake, and Brickyard Clayhole Lake. Chaska Lake, which straddles the southern border of the City within the Minnesota River floodplain, is also within the Minnesota Valley National Wildlife Refuge, Chaska Unit.

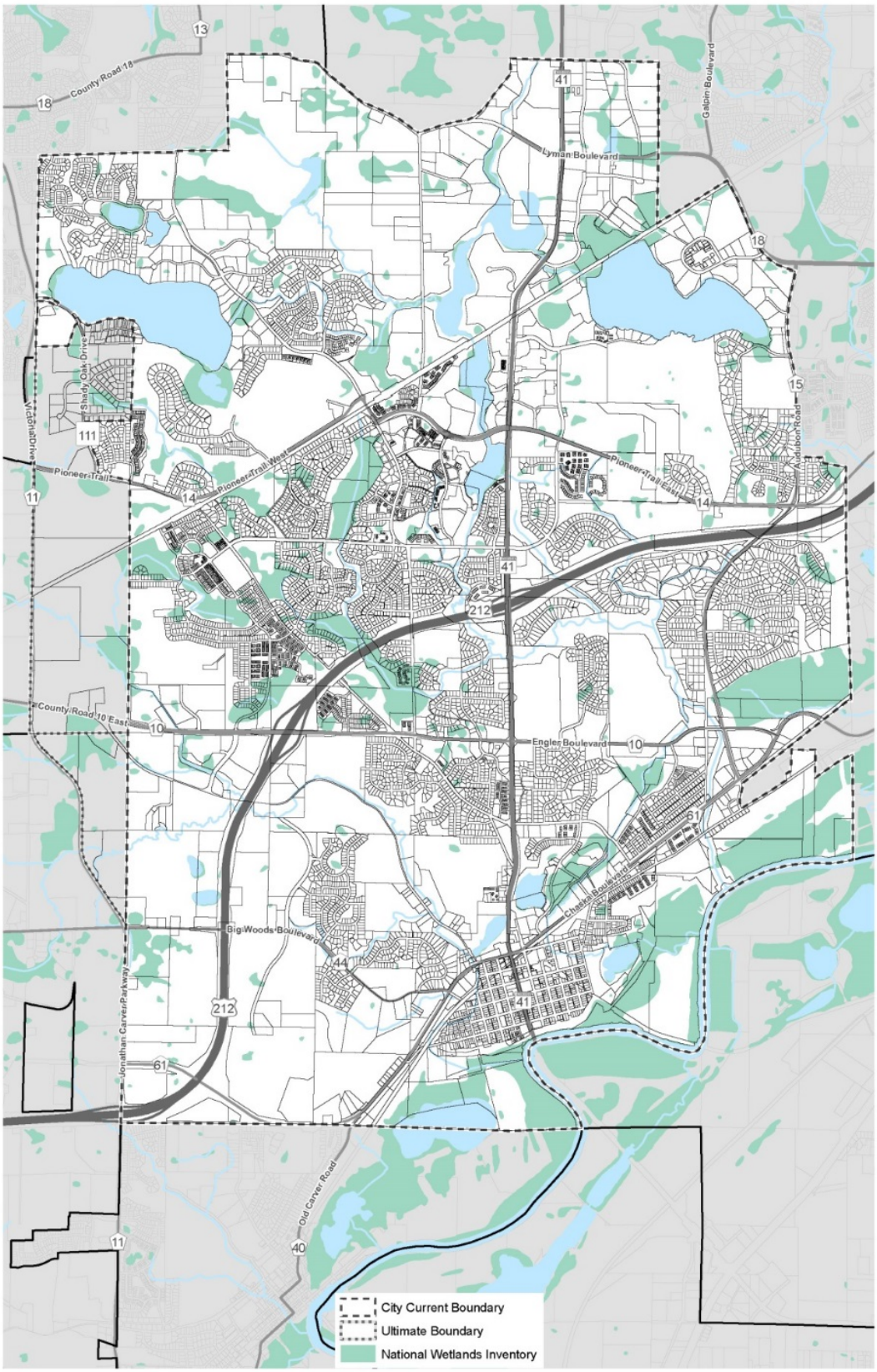
Jonathan Association, the City of Chaska, and Hazeltine Golf Club own much of the shoreland around Lake Hazeltine. The City owns a one-half mile length of shoreland on Lake Bavaria. The City owns the entire frontage of Lake Grace, Jonathan Lake, McKnight Lake, and most of Big Woods Lake. The County and the City also own land around the three clayhole lakes.

The Minnesota DNR has designated five lakes in Chaska as "Public Waters": Bavaria, Hazeltine, Chaska, Courthouse Clayhole, and Firemen's Clayhole. The DNR has also surveyed and classified the wetlands in Minnesota according to the standard classification system of the U.S. Department of the Interior, Fish, and Wildlife Service. Lake Grace, Jonathan Lake (Upper Lake Grace), McKnight Lake, Big Woods Lake, and Brickyard Clayhole Lake are classified as "wetlands" along with other significant wetlands within the City. These public lakes and wetlands (Types 3,

4, or 5) are protected by the DNR (see FIGURE 3.3). Any disruption to a public water or Type 3, 4, or 5 public wetland requires a permit from the DNR.

Under Section 404(e) of the Clean Water Act, the U.S. Corps of Engineers has broad discretionary authority regarding wetland protection. While the DNR limits its regulations to wetlands over 2.5 acres in size, the Corps' authority is not limited to size or to only wetland Types 3, 4, and 5. When a development is proposed, the Corps reviews it to determine if wetland protection measures are required.

FIGURE 3.3: NATIONAL WETLANDS INVENTORY



The State of Minnesota enacted a Wetland Conservation Act (WCA) in 1991, which regulates wetlands as defined and delineated by the 1989 Federal Manual for Identifying and Delineating Jurisdictional Wetlands. The State Board of Water and Soil Resources (BWSR) administers these regulations, but the authority to manage and enforce wetland regulations in Chaska has been delegated to the City as the designated Local Government Unit (LGU). When development is proposed which will potentially impact a wetland regulated by the WCA, the City requires an on-site survey by a qualified person to identify and delineate the wetland in detail. The 1989 National Wetlands Inventory (NWI) map prepared by the U.S. Fish and Wildlife Service is used as a general guide to identify wetlands that are regulated by the WCA.

LAKES / WETLANDS POLICIES

1. Lakes and wetlands are part of the natural ecosystem that provide areas for water retention, natural filtering of stormwater runoff, and natural habitats for plant and animal wildlife. If properly maintained, they can also provide important educational and recreational assets, conserve the natural beauty of the landscape, and enhance property values.
2. Lakes and wetlands shall be considered an integral part of the City's storm water drainage system. Alteration for ponding purposes may potentially occur but should be accomplished in such a manner that wildlife habitat is preserved or strengthened.
3. When areas in proximity to regulated lakes and wetlands are proposed for urbanization, detailed site plans shall be required to demonstrate how the resource will be protected from potential negative effects from urban development.

SHORELAND MANAGEMENT

The State DNR requires local governments to adopt and enforce shoreland management regulations adjacent to designated public waters, which are designated on the Minnesota Public Water Inventory (PWI). In Chaska, such public waters are:

LAKES

- Hazeltine
- Bavaria
- Chaska
- Courthouse Clayhole
- Firemen's Clayhole

RIVERS / STREAMS

- Minnesota River
- West Chaska Creek
- East Chaska Creek *

* Includes Lake Grace, Jonathan Lake, McKnight Lake, and Big Woods Lake

Chaska adopted shoreland regulations in 1986 as an amendment to its zoning ordinance. Such regulations apply to the shoreland within 1,000 feet from a lake or pond, and 300 feet from a river or stream. They regulate the use of land within the delineated shoreland, the size and shape of lots, the size and location of structures, the installation and maintenance of private water supply and sewage treatment systems, the grading and filling of land, and the cutting of vegetation. The regulations are treated as an overlay district relative to underlying zoning districts.

In 1989, the DNR adopted an updated set of standards for shoreland management. Once again, localities were required to adopt the revised regulations, but on a priority basis. For example, the first priority communities in the metro area were those located on Minnetonka and White Bear Lakes. Chaska amended its shoreland management ordinance to include 1989 updated standards.

The City of Chaska has worked closely with DNR officials in the enactment and enforcement of shoreland regulations. The designs of specific developments, such as Hazeltine Shores Apartments and Chevalle, have been significantly altered to meet shoreland standards. As a result, a higher quality end result has been achieved.

SHORELAND POLICIES

1. The City of Chaska recognizes that it is in the best interest of the public health, safety, and welfare to provide for the wise use, subdivision, and development of shorelands of public waters, which are designated on the Minnesota Public Water Inventory (PWI).
2. The City of Chaska will continue to work closely with DNR officials to update and enforce shoreland management regulations as required.

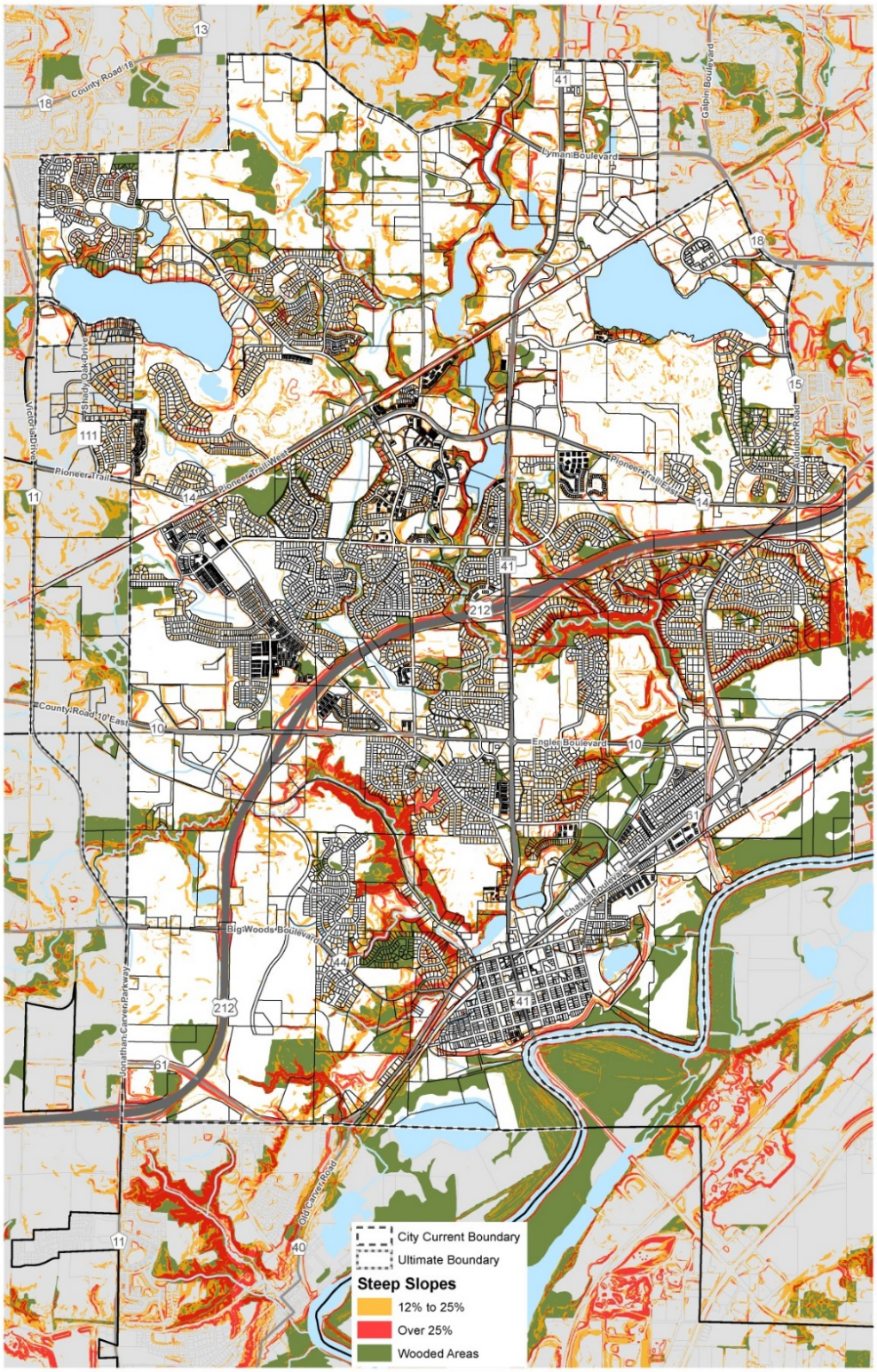
WOODLAND / STEEP SLOPES

Chaska contains a significant amount of land with steep slopes. This is usually found along the two Chaska Creeks drainage systems, along the Minnesota River bluff line, and around lakes. Since this land was not suitable for cropland, much of the steep slopes have extensive tree cover. Vegetation deters soil erosion on the steep slopes and is valuable for wildlife habitat and visual amenity.

There are a few areas within Chaska where native stands of predominantly hardwood trees are found on level to rolling terrain. These upland wooded areas were never cleared for cropland use. Woodland concentrations are also found in proximity to some low, wetland areas. These are usually not hardwood stands but are still valuable for environmental purposes.

FIGURE 3.4 on the following page shows in a generalized manner the steep slopes and woodland concentrations. A correlation between steep slopes and woodlands is evident.

FIGURE 3.4: STEEP SLOPES



WOODLANDS / STEEP SLOPES POLICIES

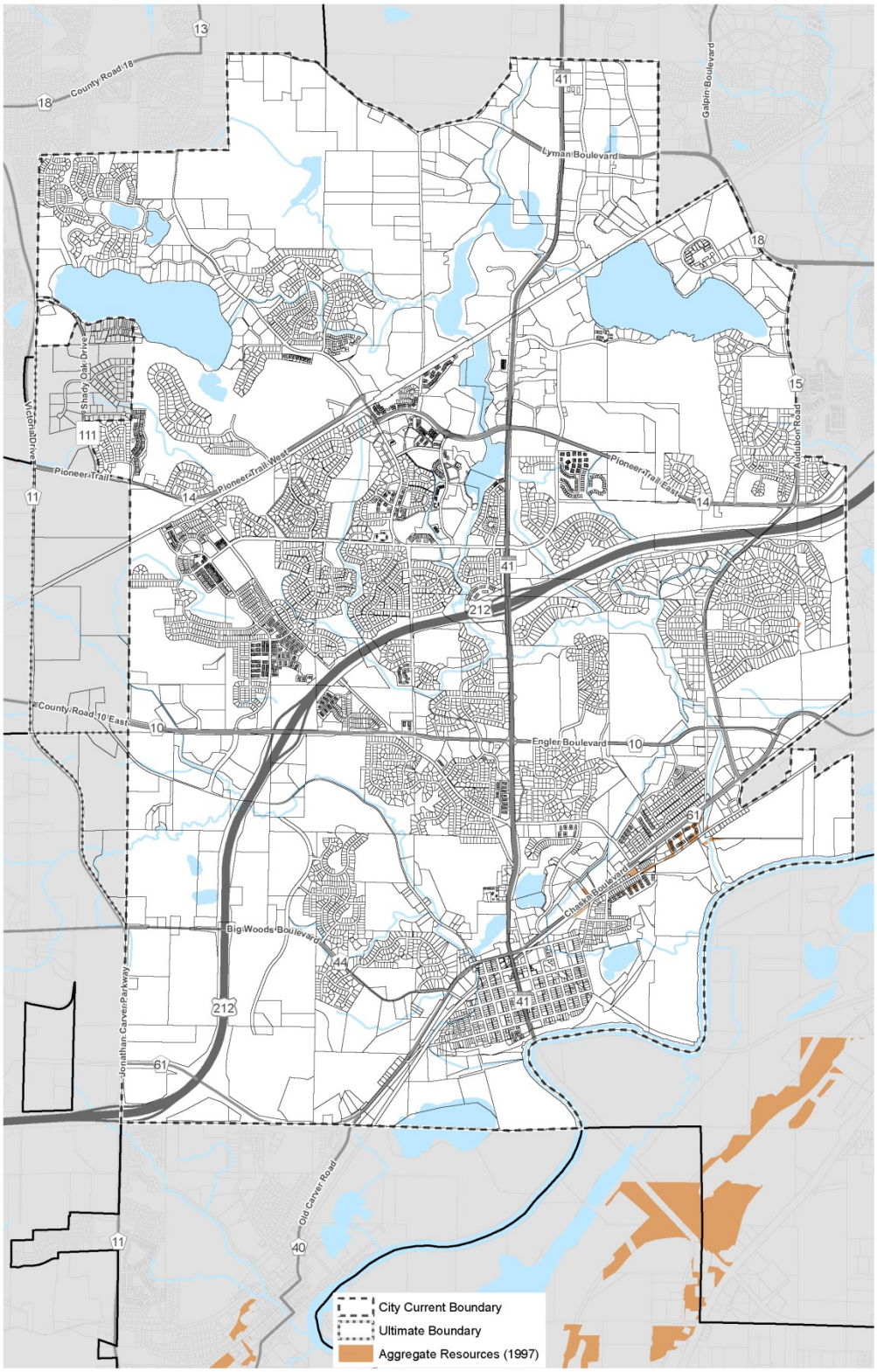
1. Wooded land with an 18 percent slope or greater shall be preserved in its natural state for environmental value, particularly to deter soil erosion on the steep slopes and protect natural wildlife habitat areas. In addition, buildings and parking shall be set back at least 50 feet from the edge of the 18 percent slope and a 30-foot "no-grade/mow" zone provided for adjacent to the edge of the 18 percent slope for purposes of erosion control.
2. Where possible, woodland areas of less than 18 percent slope shall be preserved for their ecological, historic, and aesthetic value. Where urbanization does occur within such upland wooded areas, it should be sensitively designed by use of large lots, cluster development, etc. so that the overall woodland effect is preserved.
3. Detailed site plans shall be required for areas within or proximate to woodlands to ensure that potential negative impacts are minimized.

ENVIRONMENTAL RESOURCES

AGGREGATE RESOURCES

The Metropolitan Land Planning Act requires local comprehensive plans contain a land use plan that includes the local government's goals, intentions, and priorities concerning aggregate resources. In 2000, the Metropolitan Council and the Minnesota Department of Natural Resources (MN DNR) developed the *Minnesota Geological Survey: Aggregate Resources Inventory of the Seven-County Metropolitan Area*. Sizable deposits of moderate- to poor-quality sand and gravel are present along the southeastern border of Carver County along the Minnesota River (FIGURE 3.5). However, most of the deposit is not available for mining due to urbanization of the land as well as the potential environmental impacts to the Minnesota River. Section 9.4 of the City's Zoning Ordinance contains the City's requirements regarding land excavation and reclamation.

FIGURE 3.5: AGGREGATE RESOURCES, 1997



SOLAR ACCESS & PROTECTION

The Metropolitan Land Planning Act (Minnesota Statutes 473.859, Subd. 2) requires that local comprehensive plans include an element for the protection and development of access to direct sunlight for solar energy systems. The City will protect such access by requiring minimum standards for lot sizes, amounts of open space, yard setbacks, and maximum building heights for urban residents. Land uses should not preclude the possible use of solar energy systems. The City will review and revise, as necessary, the Zoning and Subdivision Ordinances to ensure protection of solar access. Currently the structure setback and height standards within the Zoning Ordinance are sufficient to prevent potential interference to solar collectors from adjacent structures and vegetation.

Solar reserves are those quantities of solar energy that can be estimated with reasonable certainty to be economically producible. The Metropolitan Council has developed a solar resource calculation (TABLE 3.1) and map (FIGURE 3.6) to help Chaska determine how much solar energy is available for development and to identify where there are good sites for solar development, and where there may be land use conflicts.

TABLE 3.1: ROOFTOP SOLAR RESOURCES CALCULATION

Community	Gross Potential (Mwh/yr)	Rooftop Potential (Mwh/yr)	Gross Generation Potential (Mwh/yr)	Rooftop Generation Potential (Mwh/yr)
Chaska	28,613,021	1,460,586	2,861,302	146,058

Source: Metropolitan Council, 2017

The total potential generation of the rooftop solar resource in Chaska is 146,058 Mwh/yr (Met Council). Solar installations are not limited to rooftop applications. This analysis does not include ground-mount systems, but the City should consider criteria for potential future locations of ground-mount solar fields, such as commercial parking lots, public right of ways, and future development sites.

Chaska is committed to protecting solar access in new development and subdivisions. The city will work with developers at the beginning of projects to ensure that platting of lots and streets can maximize the amount of solar exposure on paved surfaces in winter and ensure that potential private solar energy systems on lots will not be obstructed from solar resources. The city will explore the possibility of enacting an ordinance to protect solar access that will benefit property owners as well as the environment.

FIGURE 3.6: GROSS SOLAR POTENTIAL, CHASKA

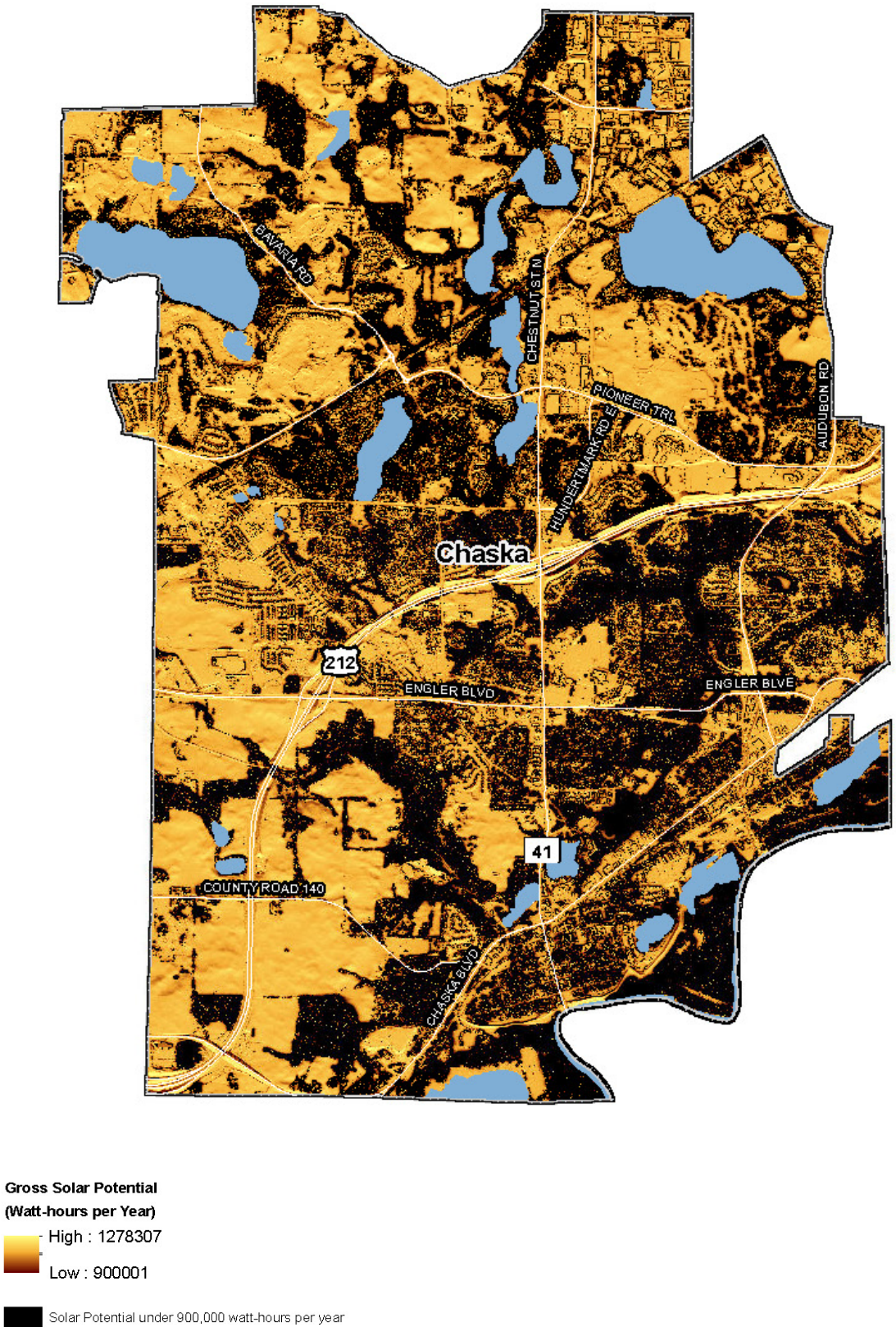
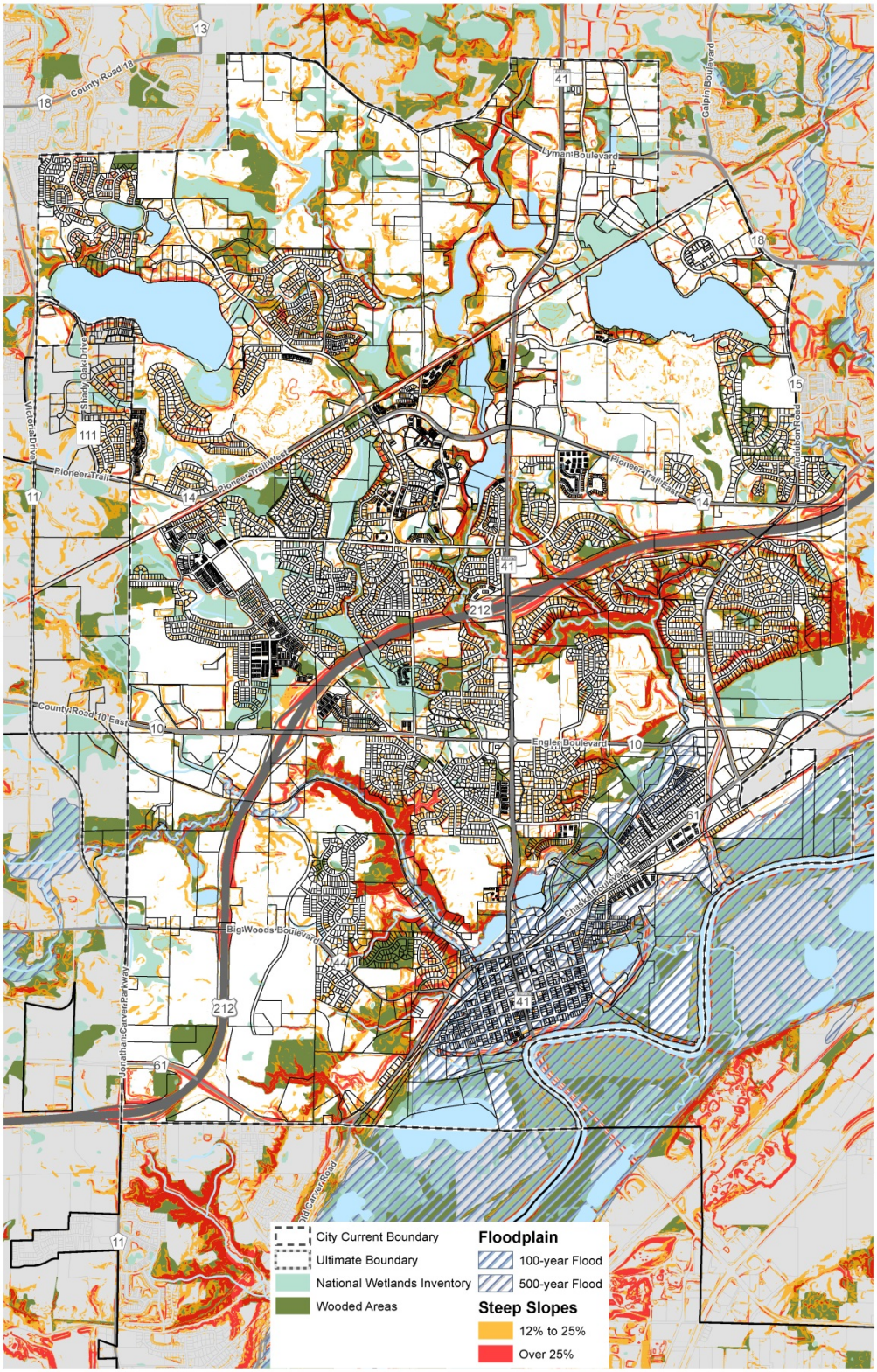


FIGURE 3.7: ENVIRONMENTAL FEATURES



ENVIRONMENTAL RESOURCES GOAL

Access to valuable environmental resources, including aggregate and energy resources, are protected for current and future urban development.

ENVIRONMENTAL RESOURCES POLICIES

1. Ensure that any excavation or mining of aggregate resources are compatible with existing and planned development of the surrounding area and do not negatively impact the natural environment or city infrastructure.

2. Protect solar access in new developments and subdivisions to enable potential development of solar energy systems.

3. Encourage the City, businesses, and residents to participate in renewable energy programs or install renewable energy systems.

4. Promote and support energy efficient building design and operations for both new and renovated buildings.