Environmental Action Plan
The Woodlands, TX

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Environmental Planning & Management

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Executive Summary

Located 27 miles north of the city of Houston, Texas, The Woodlands is a 27,000 acre community containing a mix of residential housing, commercial areas, businesses and green spaces. Situated in Montgomery County, Although a small portion lies east of Interstate 45, The Woodlands is, for the most part, physically contained by the main thoroughfare between the cities of Houston and Dallas. Along this main thoroughfare lies the downtown-like portion of The Woodlands. This area, called Town Center, contains indoor and outdoor commercial spaces, office buildings and high density residential units. The Woodlands is divided into seven 'villages' where the majority of residents live. These villages consist mainly of single family homes. Scattered throughout the villages is a mix of everyday amenities such as grocery stores, schools, parks, recreational facilities and doctors offices.

With an eighth village currently being developed and continuing construction in the Village of Sterling Ridge and Town Center, The Woodlands is still growing in population and physical size. Currently, The Woodlands is experiencing approximately seven percent annual growth in population. With this increase in population, there has been an explosion of commercial and residential building. Further development of The Woodlands must be conducted in a way that enhances the ecological and social network found within its boundaries.

With increasing concerns over global warming and record loses in species diversity, the human impact on the Earth cannot be ignored. It is more important now than ever to be stewards to the natural environment and begin to reverse the damage we have inflicted. As the human population grows exponentially, society will continue to convert previously undeveloped land for human usage. This must be conducted in a way that first, does no harm and second, more importantly, enhances the ecosystems we inhabit.

Originally founded in 1974, The Woodlands was first developed around a master plan concept that took great care to enhance the ecological and social aspects of the community. In 1996, new ownership of The Woodlands moved development practices away from this original vision. To reinstate environmentally sensitive development procedures, The Woodlands needs to return to this integrative perspective of the original master plan. Additionally, there is a need to go further to integrate the additional advances in understanding and technology that have come about over the past 32 years.

Therefore, the purpose of this Environmental Action Plan is to aid The Woodlands in continuing the legacy of environmental stewardship within the community in light of the recent and projected increases in population. Due to significant population growth that has occurred and is projected in the next four years, an Environmental Action Plan is needed in order to manage this growth in a smart and environmentally sound way.

The Environmental Action Plan for The Woodlands, Texas will include a description of the decision making entities found within the community; trend analysis of the history of planning within the community, population growth and land coverage; inventory of current environmental conditions; description of environmental stressors; and environmental action recommendations for the community.

Goals and Objectives

Vision Statement: To encourage and promote the environmental health and sustainability of The Woodlands as well as maintain the quality of life for residents during this period of growth.

Goals:

I. To maintain the high level of preservation of forest cover and wildlife habitat within The Woodlands

II. Encourage the continued conservation of floodplain areas found within the community.

III. Encourage the use of best building practices for new residential and commercial construction within the community.

IV. Improve traffic conditions and hence air quality for the community.

V. To improve recycling rates within the community.

VI. To overall maintain the high quality of life standards for the residents of The Woodlands.

Objectives:

I. Permanently set aside areas of land for wildlife habitat

II. Reduce the amount of disturbed land on new development sites.

III. Adopt community-wide buffer zones around bodies of water located in The Woodlands.

IV. Adopt a system of swales for new residential developments.

V. Develop a comprehensive public transportation system to aid movement within the community.

VI. Create greater accessibility to recycling centers within The Woodlands.

VII. Design educational centers for the areas natural areas to engage and give the community a sense of involvement and ownership.

VIII. Build new commercial and public use spaces using the best building practices currently available.

IX. Continue to monitor the opinions of residents within The Woodlands and evaluate current practices.

Structure of Decision Making

Privately owned and operated, The Woodlands does not have the traditional governmental and decision-making structure of a typical town or community. In its place has developed a multi-layered decision-making body comprising of the stakeholders and residents of the community.

The Woodlands Development Company (TWDC)
The Woodlands Development Company started as the real estate subsidiary of the Mitchell Energy and Development Corporation. In 1996, TWDC was bought from the Mitchell Corporation by a joint partnership between Morgan Stanley and Crescent Real Estate Equities. In January of 2004, Crescent sold their interest in The Woodlands to the Rouse Company, a development company familiar with master-planned communities. In 2004, the Rouse Company was sold to General Growth Properties Inc., another shopping mall developer. As a subsidiary of General Growth Properties, TWDC is in charge of the new development occurring in The Woodlands. To operate and manage the community, TWDC has established two distinct entities: The Town Center Improvement District and The Community Associations of The Woodlands.

Town Center Improvement District (TCID)
The Town Center Improvement District is a public agency responsible for coordinating partnership initiatives for The Woodlands Town Center. Formed in 1993 by the Texas State Legislature, TCID addresses issues related to growth in the downtown area of The Woodlands referred to as Town Center. Funding for TCID comes from sales and use taxes paid by businesses and consumers within the district.

The Community Associations of The Woodlands
In lieu of a traditional government structure, The Woodlands Development Company has established a system of community coordination efforts. The Community Associations of The Woodlands, Texas, is a private, not-for-profit corporation, created in 1992. There are a total of seven individual Community Associations, one for each of the seven 'villages' that comprise The Woodlands. The Associations provide, or contract from others to provide services including police and fire protection, garbage and recycling collection, parks and pathway maintenance, streetscape maintenance, covenant enforcement and recreation programming. Residents of The Woodlands pay annual assessments to support the community services provided by their association. The Community Associations of The Woodlands is governed by a board of directors composed of representatives from the community associations and The Woodlands Development Company.

To keep abreast of the opinions of their residents, The Woodlands Community Associations conduct a survey of current residents every 18 months. The 2005 residence survey determined the current environmental and community concerns of residents. These concerns include:

- Traffic Congestion
- Recycling Infrastructure
- Overdevelopment, excessive tree removal
- Species Habitat Protection

The Environmental Action Plan for The Woodlands takes into consideration this feedback from residents due to their high level of involvement in the community.

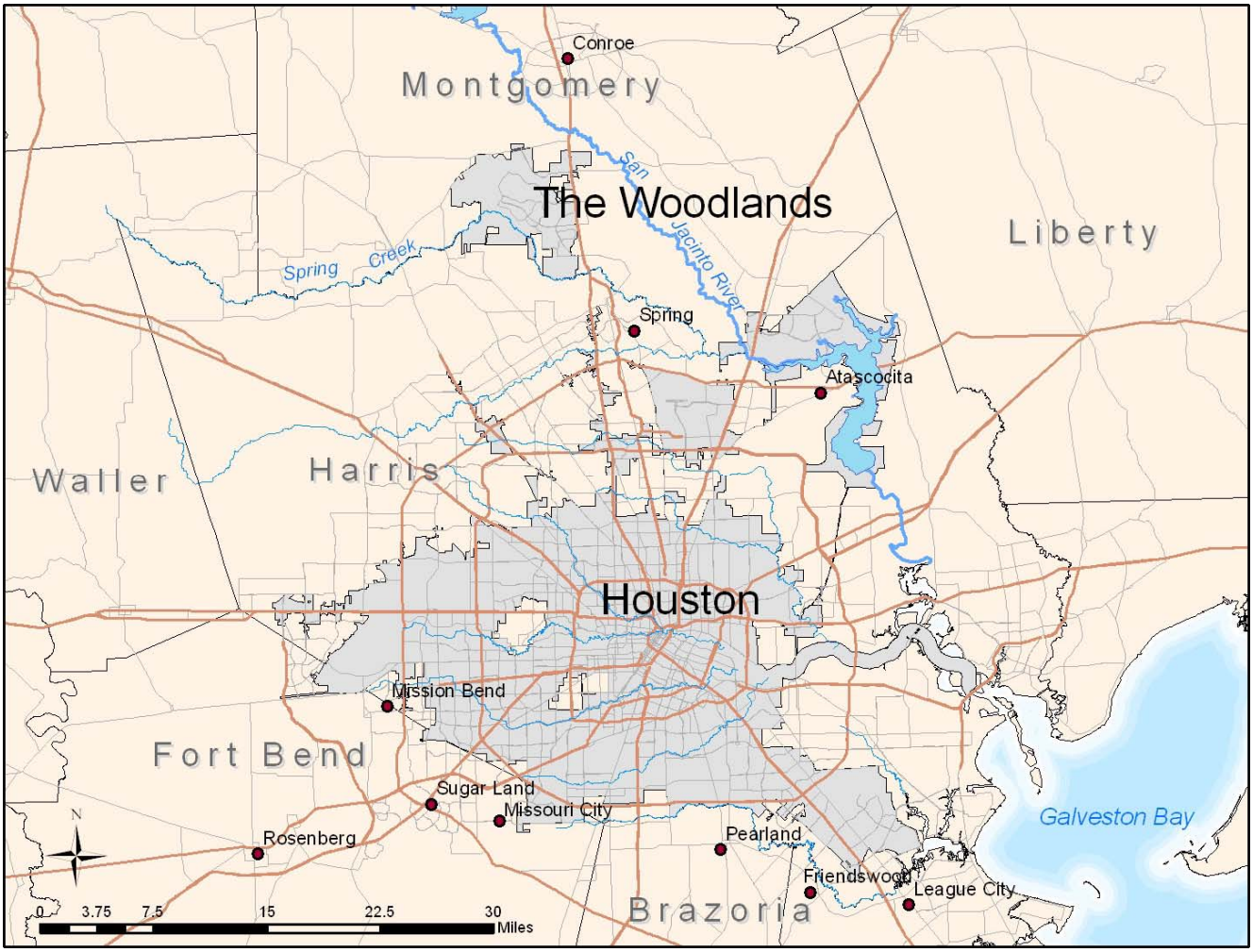


Figure 1. The Woodlands, Texas and surrounding area.

Trend Analysis

History of Development

The first stages of development for The Woodlands began in 1974. Billionaire George Mitchell bought the initial acres, a former lumber mill located 27 miles north of Houston, Texas that eventually expanded to 27,000 acre master planned community over time. Mitchell brought in a planning team comprising some of the top names in the country to develop his recent acquisition into The Woodlands community. The planning team assembled for development of The Woodlands' initial master plan included economic consultant Robert L. Gladstone, environmental consultant Ian McHarg, engineer Richard P. Browne and urban planner William L. Pereira. This original plan resulted in 25 percent of the total land area being declared off-limits for building. This land would instead be designated as lakes, golf courses, forest preserves, parks and nautral wooded buffers. This policy has led to a screening of trees and undergrowth in front of developments along roads. The result is that instead of buildings, parking lots and huge commercial signs, one sees nothing but trees while traveling through the community.

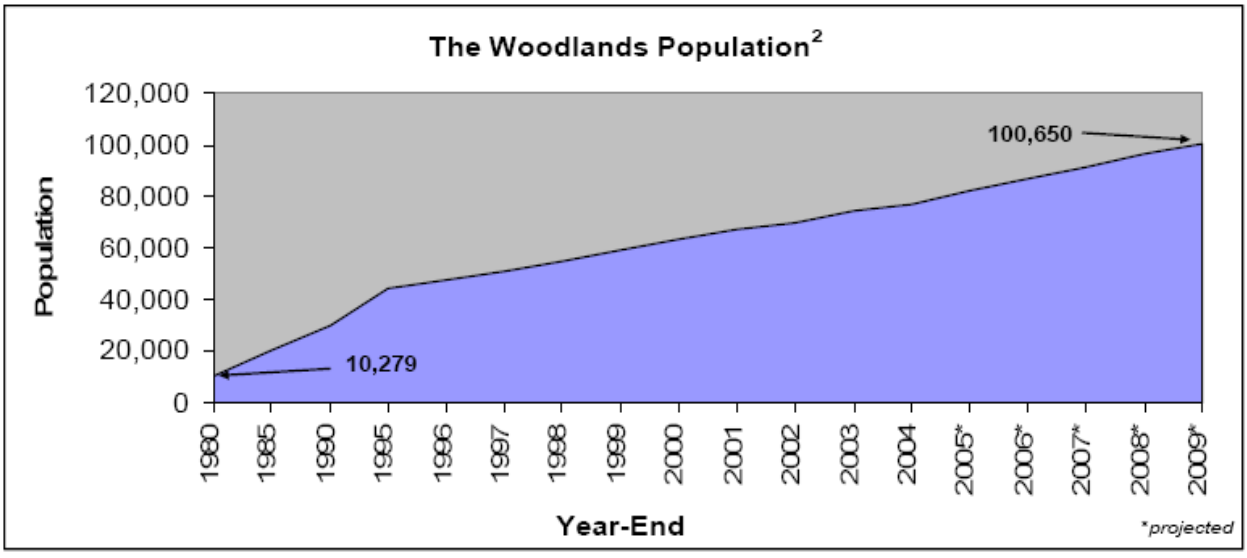
Other goals of the original master plan include:

- Minimum disruption of the hydrological regimen of the ground plane's surface and subsurface.
- Establishment of a natural drainage system in the form of floodplains, swales and ponds.
- Protection of wildlife habitats and movements corridors so that wildlife living on the site might remain

Due to financial difficulties, Mitchell sold The Woodlands in 1997 to what is now known as *The Woodlands Development Company*. This new ownership marked a noticeable change in the way development has been executed in The Woodlands. Many of the goals of the original master plan have been modified or ignored. For example, the vegetation screens that were so unique to The Woodlands have become noticeably thinner in new developments. Additionally, many of the water drainage and preservation strategies have been modified to allow for building along the waterways of the community. Overall, development patterns have moved away from environmental sensitivity and towards initial low-cost building techniques and profit generation.

Population[1]

According to the most current population data figures (January 2006), The Woodlands is home to 80,659 residents. The population is projected to top 100,000 by the year 2010. This will result in an average of seven percent annual growth rate over the next four years. Along with these additional residents will come additional housing units, additional cars on the road and additional demands for commercial services.



Source: The Woodlands Governance

Figure 2. Population trend for The Woodlands, Texas.

[1] Population information retrieved from www.thewoodlands.com

Land Use

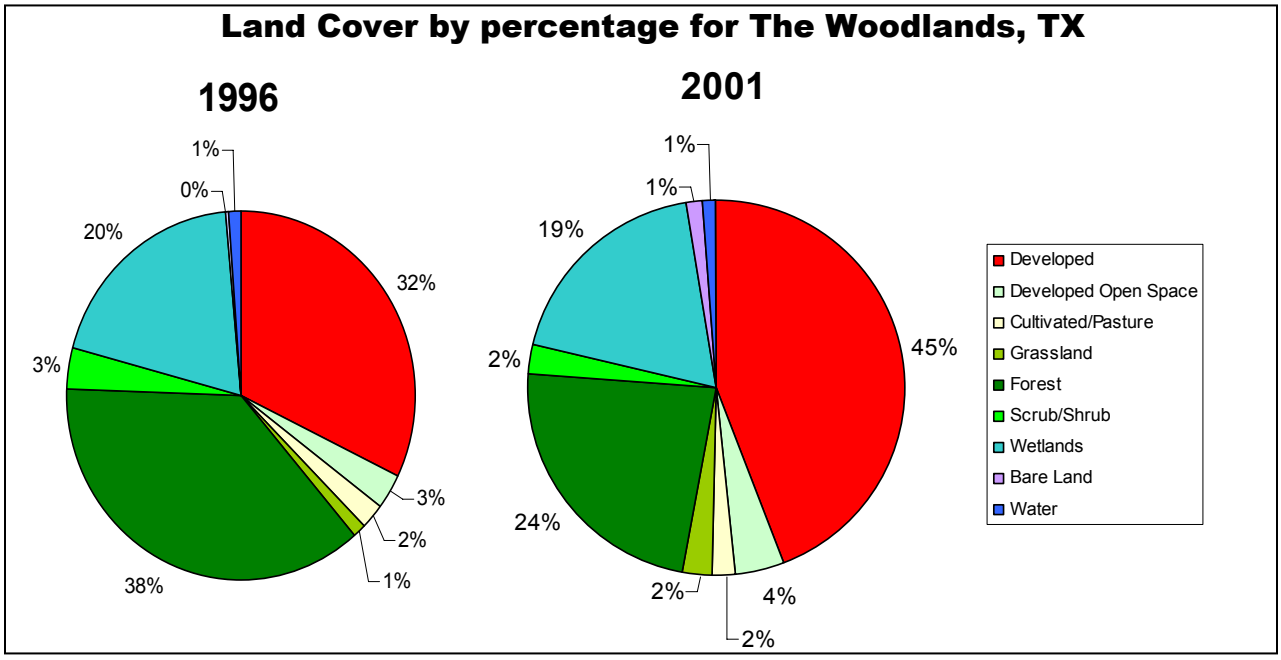
As a developing community, The Woodlands is in the process of converting a considerable amount of previously undeveloped, forested land into residential properties, commercial developments, offices, roadways and parks.

Land Cover in The Woodlands, TX			
CLASS	**1996 (acres)**	**2001(acres)**	**Percent Change**
Developed	**9,603**	**13,159**	**+ 37%**
Developed Open Space	**908**	**1214**	**+ 34%**
Cultivated/Pasture	**667**	**588**	**- 12%**
Grassland	**356**	**733**	**+ 106%**
Forest	**11,041**	**6,957**	**- 37%**
Scrub/Shrub	**1,028**	**740**	**- 28%**
Wetlands	**5,836**	**5,642**	**- 3%**
Bare Land	**95**	**400**	**+ 321%**
Water	**330**	**336**	**+ 1.8%**

Source: NOAA Coastal Change Analysis Program

Figure 3. Land cover and percent change between 1996 and 2001 for The Woodlands, Texas.

As of 1996, The Woodlands had developed a total of 9,603 acres of land. Between 1996 and 2001, an additional 3,556 acres were developed. In 1996, total developed land comprised 32 percent of the community's land area. In 2001, this percentage increased to 45 percent of land area. Over this same time period, The Woodlands gained a noteworthy amount of land classified as grassland, bare land and developed open space. Conversely, The Woodlands lost a total of 4,084 acres of its namesake forest between these years. Additionally, the community also lost a percentage of its land classified as cultivated/pasture, scrub/shrub and wetlands. The development of previously undeveloped land in The Woodlands is expected to continue through 2011.



Source: NOAA Coastal Change Analysis Program

Figure 4. 1996/2001 Land cover by percentage for The Woodlands, Texas

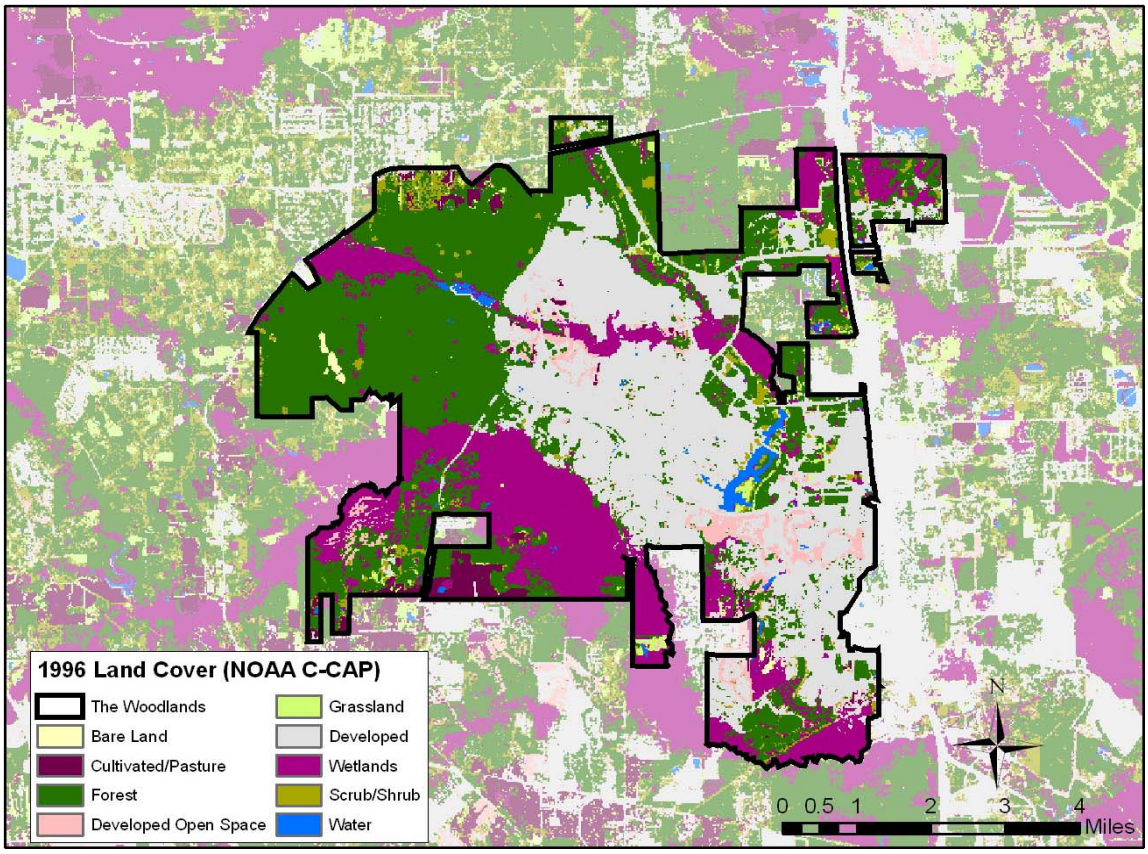


Figure 5. 1996 Land cover in The Woodlands, Texas

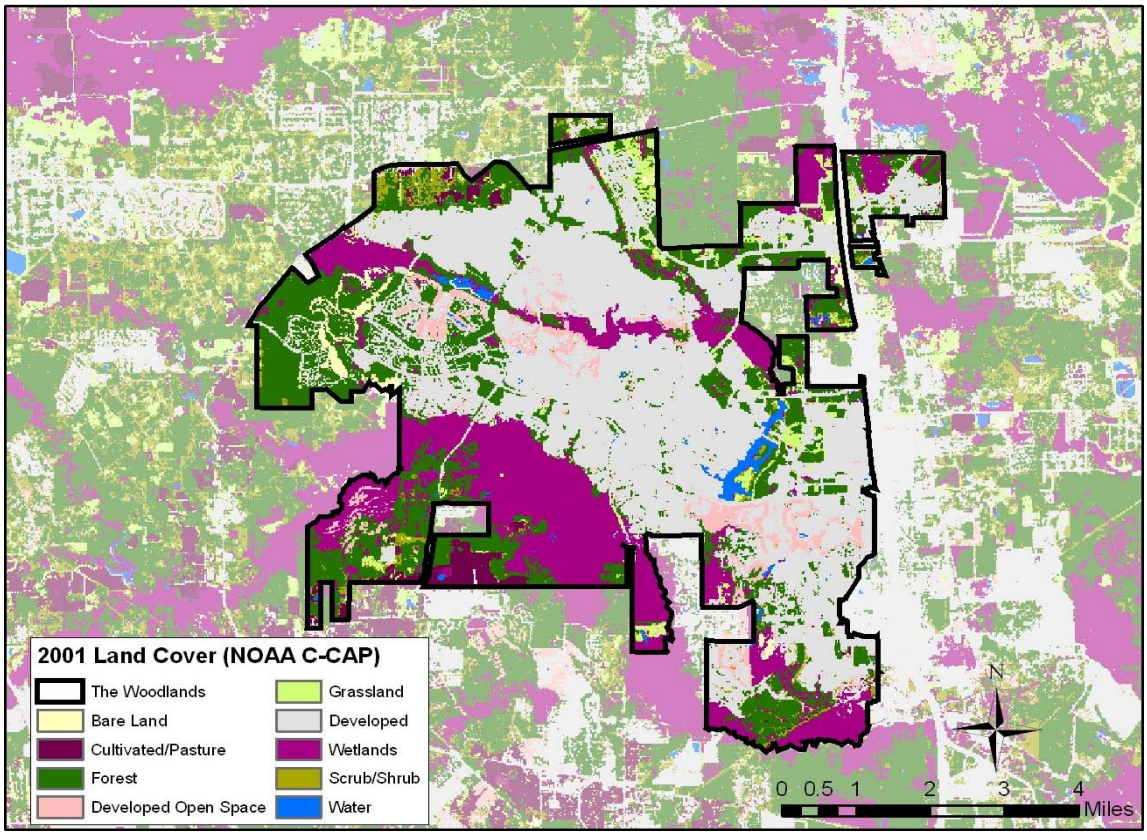


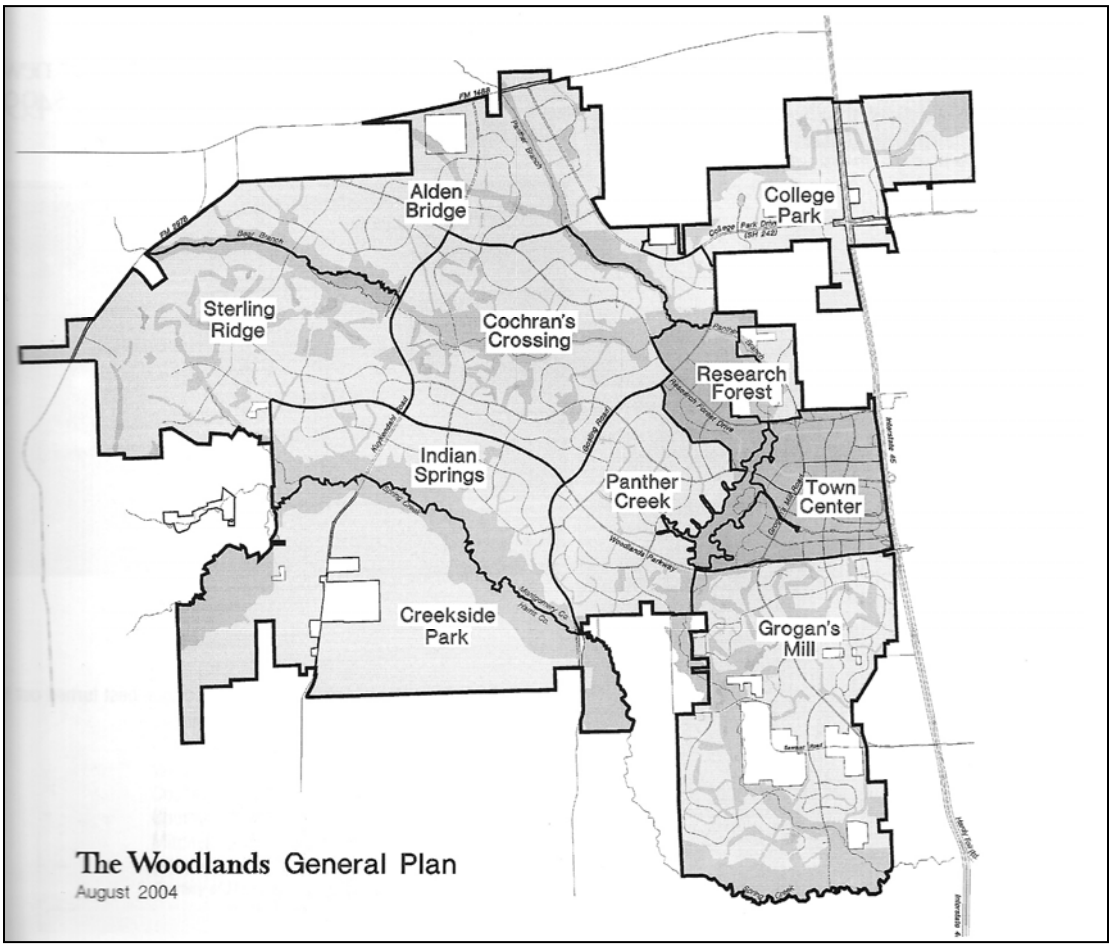
Figure 6. 2001 Land cover in The Woodlands, Texas.

Current Environmental Conditions

Built Environment Inventory

Residential Villages

The Woodlands is divided into seven residential communities or "villages". Each village contains a village center consisting of various retail amenities that residents use on a daily basis such as grocery stores, mailing centers, banks, dry cleaners and day care centers as well as various restaurants, specialty stores and boutiques. As of January 2006, there were a total of 33,285 residential units built in The Woodlands[2]. The majority of these (25,700) are single family homes. There are a total of 25 schools, two libraries and two recreational centers located in the villages. Development of an eighth village, the Village of Creekside Park, will be completed in 2011.



Source: The Woodlands: The Inside Story of Creating a Better Hometown

Figure 7. Residential Villages of The Woodlands, Texas.

[2] *The Woodlands Town Center Area Information.* http://www.thewoodlands.com/woodlands-commercial/pdfs/areainformation.pdf.

Town Center

Sited on the 1,200 acre tract of land flanked by Interstate 45, Town Center is the central business and urban-style residential area within The Woodlands. The area contains a total of 18 million square feet of built space that includes offices, retail, entertainment, health care and urban type residential developments. The majority of the 30,000 jobs located in The Woodlands are located in Town Center.

Specifically, Town Center consists of:

- The Woodlands Mall (indoor retail development consisting of 205 stores and 6 restaurants)
- Market Street (an outdoor retail center of 16 restaurants and 33 stores designed to evoke an urban setting)
- Pinecroft Center (a strip-mall style shopping center)
- Two movie theatres
- Two hotel properties consisting of 1,400 hotel rooms
- The Woodlands Conference Center
- Anadarko Tower office building
- 18,000 seat Cynthia Woods Mitchell Pavilion
- Two medical centers
- Residential community situated on the east shore of Lake Woodlands largely consisting of townhouses, condominiums and brownstone-style houses.

Figure 8. View of The Woodlands Mall and surrounding parking lot.

Hike and Bike Pathways

There is a total of 145 miles of hike and bike pathways for non-motorized use located throughout The Woodlands. These pathways experience a high level of use by residents for a variety of activities, such as walking, jogging, bicycling and roller-blading. Pathways are linked throughout neighborhoods to parks and area shopping centers.

Figure 9. Typical hike and bike pathway found in The Woodlands

Recreational Areas

There are 105 parks located in The Woodlands of varying sizes offering a variety of uses. Amenities of these parks range from multi-field athletic facilities, outdoor play areas to swimming pools, pavilions and fishing docks. Additionally, there are seven golf courses located throughout The Woodlands covering a total of 1,690 acres.

Figure 10. Evergreen Park, located in The Woodlands Town Center.

Roads and Transportation

Currently there is a total of 398 miles of roadways within the boundaries of The Woodlands. The number is projected to increase to approximately 600 miles once the planned developments are completed[3]. There three "park and ride" facilities located within The Woodlands to facilitate commuting into the city of Houston. The community lacks any form of intra-community public transportation network.

Recycling

As part of the waste management contract in The Woodlands, a voluntary curbside recycling program is in place. Curbside collection includes paper, cardboard, aluminum and plastic materials. Yard trimming and glass as well as other recyclables are accepted at The Woodlands Recycling Center located on Research Forest Drive. This recycling facility is open Wednesdays, 4 to 7 p.m. and Saturdays, 9 a.m. to 2 p.m.

Figure 11. The Woodlands Recycling Center located on Research Forest Drive.

Forests and Wildlife Resources

Forests and Vegetation

The Woodlands is located in the South Central Plains of Texas. Locally referred to as the "piney woods", this region represents the western edge of the southern coniferous forest belt. Once blanketed by a mix of pine and hardwood forests, much of the region is now comprised of loblolly and shortleaf pine. There are currently 6,957 acres of forest in The Woodlands with 1,620 acres designated as preserved. There is also a large variety of native understory plant species. (See Table 1 in Appendix for native plant list for The Woodlands).

[3] *The Woodlands Town Center Area Information.* http://www.thewoodlands.com/woodlands-commercial/pdfs/areainformation.pdf.

Wildlife

Due to the open spaces that exist within The Woodlands, a multitude of animal species reside within its boundaries. Most notable is the diverse collection of bird species. There are over 200 species of birds that can be found inhabiting The Woodlands.

Recently, a pair of bald eagles, a species currently designated as Threatened by the U.S. Fish and Wildlife Service (USFWS), have arrived in The Woodlands[4]. The bald eagles first nested along Lake Woodlands in 1999 and have successfully fledged 8 young since that time. Under the requirements of the Endangered Species Act, this nesting site must be left untouched for five years, even if the nesting site is abandoned[5].

The Red-cockaded Woodpecker, designated as Endangered by the USFWS, has also been spotted within The Woodlands. The species' preferred habitat is extensive, open, old-growth pine forests such as certain areas of The Woodlands.

Water

The Woodlands contains numerous natural tributaries to the San Jacinto River as well as man-made lakes, reservoirs and drainage corridors. Panther Branch flows through the Village of Alden Bridge located in the northeast portion of The Woodlands. Panther Branch was dammed in 1984 to create Lake Woodlands. Bear Branch Reservoir is located between the Villages of Alden Bridge and Sterling Ridge and functions as flood protection for these villages. Bear Branch continues its path through the Village of Cochran's Crossing where it then merges with Panther Branch. Spring Creek defines the current southern boundary of The Woodlands. Spring Creek flows along the edge of the Villages of Grogan's Mill and Indian Springs. The soon-to-be developed eighth Village of Creekside Park will be located to the south of Spring Creek bringing it definitively within The Woodlands.

[4]U.S. Fish and Wildlife Service. http://ecos.fws.gov/tess_public/StateListing.do?status=listed&state=TX.
[5] Personal communication with Linda Crum.

Figure12. A typical wetland area found in The Woodlands.

Water Body Buffers

The Woodlands is part of the San Jacinto Watershed. This watershed eventually empties into The Gulf of Mexico. The Woodlands' original master plan called for the establishment of a natural drainage system in the form of floodplains, swales, ponds. In accordance with this plan, pre-1997 developments preserved a buffer zone around the various streams. The developers also left floodplains untouched. The development that has occurred post-1997 has been in an alternate fashion. Floodplains throughout the community are now mowed on a regular basis. Many of the golf courses built post-1997 have taken advantage of the waterways for the scenic views they provide. Additionally, post-1997 development has seen the infilling of an increasing amount of wetlands to make room for housing units.

Figure 13. Bear Creek Floodplain, located behind the Bear Branch Sportsfields.

The Woodlands Waterway

What first started out as a drainage corridor in the 1974 master plan has now been developed into The Woodlands Waterway. The Woodlands Waterway is a $20 million dollar development project that began construction in the late 1990s. The project involves an initial 1.5 mile segment of the water body that begins at Lake Woodlands, runs through Town Center and empties into Lake Robbins. The Woodlands Waterway project has resulted in intensive modification of the water body's banks and surrounding areas. Native vegetation and wetlands have been transformed into impervious pavement and grassy lawns.

Figure 14. Current construction of The Woodlands Waterway, located in Town Center.

Figure 15. The Woodlands Waterway turning basin adjacent to The Woodlands Mall.

Figure 16. Section of The Woodlands Waterway located in Town Center.

Drainage

The pre-1997 developments were built with streets and lawns at the same level. Drainage ditches, or swales, were built along the sides of the roads to funnel the water away from buildings and streets. While many motorists in Houston and its suburbs frequently complain of flooded streets during rainstorms, the pre-1997 developments in The Woodlands do not suffer from flooding. The development that has occurred post-1997 has been built in an alternate fashion. Streets are graded lower than the buildings and lawns. Curbs, gutters and sewers have been built along the sides of the streets to guide rainwater away from houses. Now, instead of the swales, the streets act as retention ponds for the rainwater until the storm sewers can accept the runoff. The result is the complaints from The Woodlands residents not unlike those in other Houston areas.

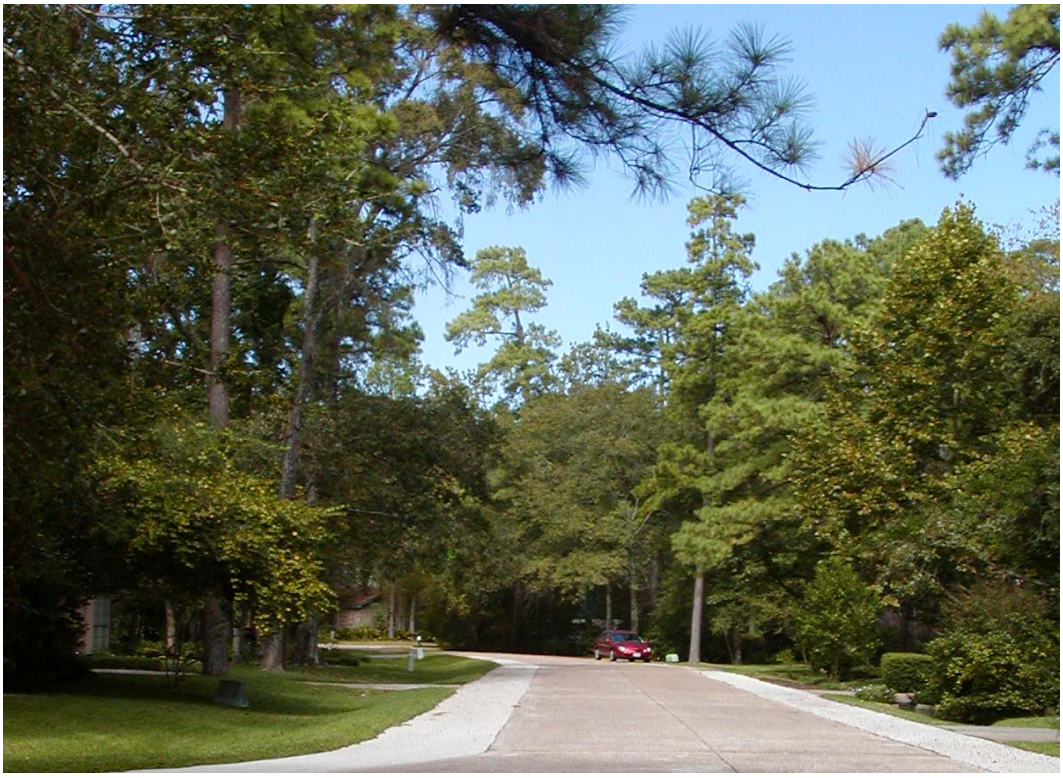


Figure 17. Pre-1997 road design with elevated roads and retention swales.

Figure 18. Post-1997 road design with sloping front lawns and storm sewers.

Environmental Stressors

Transportation

The primary means of transportation for the residents of The Woodlands is the automobile. The increasing number of residents in The Woodlands will lead to a direct increase in the number of cars that travel the community's roads. Therefore, issues of congestion, travel time increases and increased car idling all raise concerns about the air quality of The Woodlands.

Air Pollution

The federal Clean Air Act of 1970, amended significantly in 1990, requires that the U.S. Environmental Protection Agency to establish appropriate air quality standards. Of the six criteria pollutants of the act, ozone is the only criteria pollutant for which the eight-county Houston-Galveston area (which contains The Woodlands) currently fails to meet the national air quality standard[6]. Ozone poses health problems for all members of the Houston-Galveston area including respiratory aggravation and increased number of hospital and emergency room visits.

Figure 19. A typical intersection found in The Woodlands during the off-peak traffic time period.

[6] Houston-Galveston Area Council. *Clean Air Action.* www.cleanaireaction.org.

Water Quality

The Woodlands is located in an area that is accustomed to frequent intense rainstorms and hurricanes. Therefore, the community can experience times of heavy storm water runoff. With an increase in population comes an increased amount of impervious surfaces. Additionally, the clearing of trees and vegetation to make room for human development can lead to an increase in erosion of soils. The filling of wetlands and subsequent building directly on the waters edge decreases the storm water runoff absorption abilities of these areas. Wetlands also serve the purpose of filtering out sediments, excess nutrients and many chemical contaminants. Without these buffer zones, The Woodlands creeks and springs could experience degradation in their water quality which would in turn compromise many water related recreational activities enjoyed by residents. This degradation in water quality would also impact water in the downstream sections of the San Jacinto watershed.

Vegetation

As with many areas of the United States disturbed by human activity, The Woodlands has seen an influx of invasive species. Invasive species reproduce rapidly crowding out native species, damaging natural areas, and altering ecosystems. One invasive species, the Chinese Tallow, grows extensively along the Gulf Coast. This tree has been recognized by The Woodlands as a particular problem due to its effect in crowding out native species. Other invasive species found in The Woodlands include: Brazilian Peppertree, Elephant Ear, Japanese Privet and Tropical Soda Apple[7].

Built Environment

The current building design used throughout the United States is extremely energy and resource intensive. Current buildings in the United States also produce considerable quantities of pollution. They account for approximately:

- 136 million tons of construction and demolition debris per year[8]
- 12 percent of potable water use[9]
- Two-thirds of all electricity use[10]
- 35 percent of carbon dioxide emissions[5]
- 49 percent of sulfur dioxide emissions[5]
- 25 percent of nitrous oxide emissions[5]
- 10 percent of particulate matter emissions[5]

Buildings also raise concerns about indoor air quality and its effects on the human inhabitants. It is estimated that humans spend 90 percent of their time indoors[11].

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[7] National Biological Information Infrastructure.
[8] EPA. *Characterization of Building-Related Construction and Demolition Debris in the United States.*
[9] U.S. Geological Service. *Water Use in the United States.*
[10] U.S. Department of Energy. *Smart Communities Network.*
[11] EPA. *Indoor air quality.*

Recommendations

Natural Spaces

1) Permanently set aside areas of land for wildlife habitat.

Due to the presence of Endangered and Threatened species within The Woodlands, it is crucial that their habitats are preserved. As both species have inhabited areas outside of the designated open space areas, additional areas should be set aside to accommodate their behavior. Additionally, as both species prefer mature pines, a policy of leaving a percentage of this older growth in new development areas should be implemented. These tracts of land should include the Bald Eagles' nesting site and surrounding buffer as well as the oldest growth tracts identified within the land waiting to be developed.

The Woodlands should work with the U.S. Forest Service and the Big Thicket National Preserve organization to develop a plan to preserve and enhance the type of environment most suited for these species. Combined with the water body buffer areas, land designated as preserved should once again be increased to the original master plan's 25 percent of total land area. Golf courses should not be included in this total.

2) Design educational centers for the areas natural areas to engage and give the community a sense of involvement and ownership.

The Woodlands Arboretum

For many residents of The Woodlands, name and site recognition of such areas as The Woodlands Mall, The Woodlands Pavilion and other made-made landmarks is quite high. To ensure the continued stewardship of its land, The Woodlands should extend this pedagogy to the native vegetation and species found throughout its community. This can be done by placing information about the plant and animal species on signage along hike and bike pathways. The Woodlands should also develop an arboretum with clearly labeled examples of native species. This arboretum should be designed to host schools, programs, tours and seminars by providing them with an interactive educational tool.

Additionally, various other educational programs should be developed to augment those already in place.

Invasive Species Control and Education Program

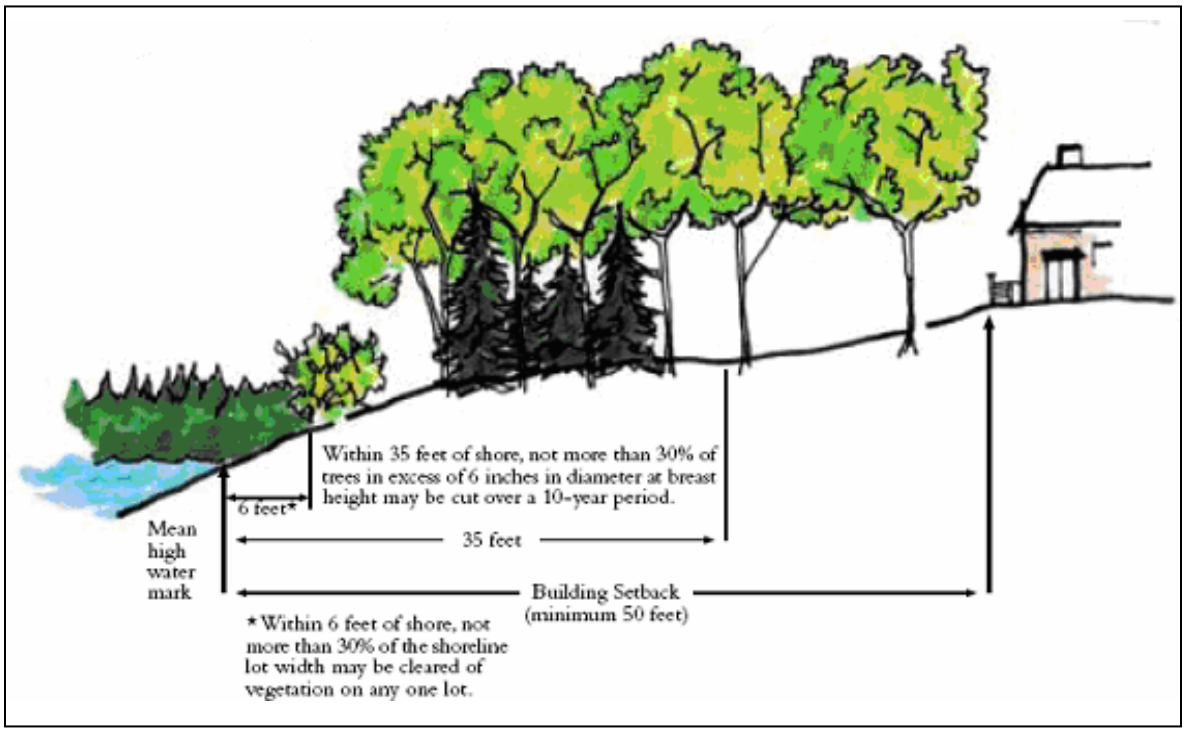
In 2003, The Community Associations of The Woodlands department of Environmental Services conducted a pilot invader species initiative in the Village of Grogan's Mill. This program is currently being continued within the Village of Grogan's Mill. As invasive species are detrimental to the native vegetation of The Woodlands, this program should be developed to encompass the additional villages located in The Woodlands. The program can function as an educational tool for local schools, scouting troops and other educational entities.

Water

The water that flows through The Woodlands is part of the San Jacinto watershed. It is important that the community does not increase the burden of communities downstream. Therefore, the following policies should be established within the existing undeveloped sites so as to preserve water quality and prevent excessive runoff.

1) Adopt community-wide buffer zones around bodies of water located in The Woodlands.

The New York State Adirondack Park Agency has developed a policy of restricting the amount of vegetation clearing and building construction that can occur in proximity to a body of water. The Woodlands should adopt these same policies for all buildings larger than 100 square feet.



Source: Citizen's Guide to Adirondack Park Agency Land Use Regulation

Figure 20. Adirondack Park Agency's water buffer development guidelines.

Summer temperatures in The Woodlands can rise above 100 degrees Fahrenheit quite frequently. This has led many residents to install swimming pools on their property. The chemicals people use to maintain safe swimming conditions for their pools are pollutants for natural waterways. Therefore, this no-building policy would include the restriction of swimming pools so as to prevent contamination of natural waterways from these chemicals. Additionally, The Community Associations of The Woodlands should develop an education program to inform residents of chlorine alternatives available in pool care.

Since 1996, The Woodlands has also adopted the policy of regularly mowing the floodplain areas found throughout the community. Vegetation improves the floodplain's habitat by providing food and nesting areas for a variety of species. Vegetation also moderates summer water temperatures and impedes erosion. Therefore, this buffer zone would also require that floodplain's vegetation is left in its natural state and mowing ceases.

2) Adopt a system of swales for new residential developments.

Due to the success of the previous system of swales in the older developments to prevent flooding, The Woodlands should once again reinstate the policy of swales and retention ponds throughout the new developments. This will ensure the continuing mobility of residents on road and pathways during periods of heavy rain. As Houston-area residents are very aware of the flooding problems that exist throughout the region, this can become a marketing tool for The Woodlands.

Transportation

1) Develop a comprehensive public transportation system to aid movement within the community.

The rapid residential and commercial growth within The Woodlands presents a great challenge to the community's mobility and air quality. The development of a comprehensive intra-community transit plan is an essential step in addressing these challenges and providing connectivity to major activity centers within the community. This plan should be implemented in phases to ensure a solid groundwork to support the ultimate goal of an intra-community public bus network.

Year One

The Woodlands should first perform a due diligence report to gather all pertinent information regarding transportation and mobility within The Woodlands. Included in this due diligence should be a traffic study to identify traffic volume and operational issues.

Three to Five Years

As the community grows in population, there will not only be more cars on the road but more pedestrians using the hike and bike pathways. To ensure for their safety additional measures should be taken to aid in their movement while simultaneously not interfering with the increasing traffic flow. Therefore, the following elements should be integrated into the community:

- Pedestrian bridges over the roadways with the highest traffic volume
- Strategic placement of traffic circles to replace stop signs at intersections that experience a lower volume of traffic
- A 'two-wheeled vehicle lane' along roads to encourage the use of bicycles, scooters and other small powered vehicles for commuting purposes and not just recreation
- Pervious surface cut-through paths throughout neighborhoods to encourage pedestrian travel to the village centers
- Retiming of traffic lights

Extended Plan

Once the proper supporting elements have been established, the development of an intra-Woodlands public bus system should commence. This system should connect the eight village centers with schools, libraries, recreation centers, parks and Town Center. Terminal stations should be built at each village center and curb-cuts covered shelters should be built at the stops to give the system a context in which to operate.

Recycling

1) Create greater accessibility to recycling centers within The Woodlands.

As The Woodlands continues to grow, recycling opportunities should grow accordingly. A second recycling facility should be created to serve the growing resident population. The Woodlands Recycling Center is currently a drive-through facility that can become very congested during its hours of operation. To create greater accessibility to the facility, hours of operation should be extended. To cut down on congestion and idling vehicles a curbside drop-off opportunity should be implemented. Residents will then be able to hand over their recyclables to recycling center employees creating more jobs for the community as well as easing the perceived hassle of recycling efforts.

Built Environment

1) ***Build new commercial and public use spaces using the best building practices currently available.***

The US Green Building Council's LEED (Leadership in Energy and Environmental Design) Green Building Rating System is a widely recognized, voluntary standard used to define high performance green buildings. To take advantage of the best building practices available, The Woodlands should develop all new commercial and public use buildings to meet at least the silver level of certification within the LEED for New Construction (NC) standards. Additionally, as The Woodlands moves into its 33rd year of existence, many of the older structures throughout the community will go through extensive renovations. Therefore, these renovations should adhere to the design recommendations defined in the USGBC's LEED for Existing Buildings (EB) standards.

By utilizing these LEED standards, The Woodlands will enhance the quality of life for its residents. The Woodlands will also be able to use these structures as a marketing tool by emphasizing the enhanced comfort and improved indoor air quality they provide to residents.

2) Reduce the amount of disturbed land on a new development sites.

The Woodlands could not fully live up to its name unless it is located within the woods. Thus, for every new site developed in The Woodlands, builders should be required to leave undisturbed at least 40 percent of previously undeveloped lot area. Sixty percent of this undeveloped lot area should then be required to consist of natural vegetation including understory shrub. An additional option would be for the backyards of homes to be completely imbedded into undisturbed forested areas.

For all roads and commercial development sites being built in The Woodlands, the policy of leaving a thick screen of undisturbed vegetation and trees should be reinstated. This policy will provide habitat opportunities for wildlife while preserving the forested community feel of The Woodlands residents have expressed enjoying so much.

Feedback

1) Continue to monitor the opinions of residents within The Woodlands and evaluate current practices.

As with any healthy relationship, open communication is a key feature. Therefore, The Woodlands should continue to survey its residents to gauge what the community is doing well and where improvements may occur. The Community Associations of The Woodlands should have the responsibility of collecting this information and communicating it to The Woodlands Development Company. It is in the best interests of all parties involved to integrate concerns and suggestions that would enhance the social and ecological systems of The Woodlands for years to come.

Appendix

Table 1. Native vegetation list for The Woodlands, Texas.

Common Name	Scientific Name
NATIVE CANOPY TREES	
Cypress, Bald	*Taxodium distichum*
Elm, Winged	*Ulmus alata*
Elm, Cedar	*Ulmus crassifolia*
Gum, Black	*Nyssa sylvatica*
Gum Sweet	*Liquidambar styraciflua*
Holly, American	*Ilex opaca*
Maple, Drummond Red	*Acer rubrum*
Maple, Southern Sugar	*Acer barbatum*
Magnolia, Southern	*Magnolia grandiflora*
Oak, Water	*Quercus nigra*
Oak, White	*Quercus alba*
Oak, Bur	*Quercus macrocarpa*
Oak, Shumard	*Quercus shumardii*
Oak, Nuttall	*Quercus nuttallii*
Pine, Slash	*Pinus elliottii*
Pine, Loblolly	*Pinus taeda*
NATIVE UNDERSTORY TREES & SHRUBS	
American Beauty Berry	*Callicarpa americana*
Birch, River	*Belula nigra*
Buckeye, Red	*Aesculus pavia*
Buckthorn, Carolina	*Rhamnus caroliniana*
Button Bush	*Cephalanthus occidentalis*
Cherry-laurel, Carolina	*Prunus caroliniana*
Coral Berry	*Symphoricarpos orbiculatus*
Dogwood, Flowering	*Cornus florida*
Fringe Tree	*Chionanthus virginicus*
Holly, Tall Inkberry	*Ilex coriacea*
Holly, Possumhaw	*Ilex decidua*
Holly, Yaupon	*Iles vomitoria*
Leatherwood (Titi)	*Cyrilla racemiflora*
Loblolly-bay	*Gordonia lasianthus*
Magnolia, Sweet Bay	*Magnolia virginiana*
Maple, Chalk	*Acer leucoderme*
Parsley Hawthorne	*Crataegus marshalli*
Pine, Slash	*Pinus elliottii*
Pine, Loblolly	*Pinus taeda*
Plum, Mexican	*Prunus mexicana*
Redbud	*Cercis canadensis*
Sassafras	*Sassafras albidum*
Silverbell, Two-winged	*Halesia diptera*
Snowbell, Bigleaf	*Styrax grandifolius*
Sumac	*Rhus*
Summersweet Clethra	*Clethra alnifolla*
Sweetspire, Virginia	*Itea virginica*
Virburnum, Arrowwood	*Virburnum dentatum*
Virburnum, Rusty Blackhaw	*Virburnum rufidulum*
Wax Myrtle, Southern	*Myrica cerlfera*
Witch Hazel	*Hamamelis virginiana*

Source: The Community Associations of The Woodlands.

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