



Urban Advantage

*This transformation from concrete ditch to urban creek results in a thriving compact shopping area that could be in almost any neighborhood.*

# Choices for Growth

## Quality of life and the natural environment

*As our towns and cities grow, we have choices to make about our natural areas, our historic heritage, our mobility, our sense of community – even our health and safety.*

For most coastal communities it is not a question whether or not to grow, but how. As we spread out over the land, we spend more and more time in our cars, and less time with our families, friends, and neighbors. Research shows that this high-stress lifestyle is not only eroding our sense of community, but is also eroding the natural environment that sustains our lives.

The loss of natural areas degrades our quality of life and deprives us of free natural services we need to maintain the quality of water that runs off our land and into our bays and bayous.

The long tradition of human settlement tells us we can design and build towns and cities in ways that enhance our quality of life at the same time we preserve and enhance the health of the environment in which we live.

We need to think about the pattern of future growth if we are to preserve some of the things that are most important to us and to our children.

We have choices. To make wise ones, we have to look at the Big Picture and think through the consequences of our decisions. We have to put all our options on the table. Everyone must have the opportunity to help make the important decisions that will benefit the whole community.

We have to be fair to everyone – people already living here, and the people who will move here; the developers and the taxpayers; the people on this side of town and the people on that side of town.

This is about the future, about improving our communities, our homes. Every decision we make is an opportunity to make them even better.





Rice farms are an important part of our heritage, and provide economic support for our region.

Joy Codrell

# The big picture

*There are three strategies for a healthy, quality environment: preserve open space, encourage compact growth, and control urban stormwater runoff. Building a quality place requires vision and planning.*

In the end, it's not about balancing environmental needs against human needs. It's about learning how each is dependent on the other and integrating these needs. It is not possible to have a healthy city or town without adjacent farms and natural areas. The health and quality of these areas and the towns and cities are dependent on each other.

A full understanding of both urban and natural ecologies enables the integration of both city and country, without destroying the integrity of either.

Sprawling development is inefficient and wasteful of community resources. As it occurs, it has a powerful negative effect on the surrounding ecosystem.

There is a threefold approach to quality of life solutions for growth that protect as much natural ecosystem as possible: preserve open space, encourage compact growth, and use best management practices that enable the soil to retain and absorb as much stormwater as possible.

Incorporating these strategies, techniques, and practices into local planning can increase community vitality by improving the balance of the social, economic, and environmental aspects of a community and its sense of place.

It is up to the citizens who live in each locality to decide how to grow. Above all, it requires thinking big, beyond the single project, beyond next year. It requires seeing how neighborhoods and business districts are linked, as well as how the center city and its surrounding environment are linked to other cities and towns, and how that might change over time.

Developers won't abandon a town that has a vision and plan for its future. On the contrary, a quality plan attracts the best developers.

Cities in Texas have more power to determine their futures than they generally use. Counties, on the other hand, have much less



Citizens have the power to develop a plan for their future, and everyone can benefit from planning.



Roseate spoonbills require wide open spaces with abundant wetlands. Along the Texas Gulf Coast, birding is a significant economic activity.

Ann Brinly

power to affect development in most parts of the state, and this imbalance can make planning difficult in unincorporated areas. But counties can have enormous effect on

development because of their road-planning and building role, and roads are usually the first incursion into natural areas. No municipal plan can succeed without a working part-

nership with the surrounding county.

In spite of the challenges, Texas citizens working together can determine the shape of the built environment in which they live.

## The importance of imperviousness

*The water quality of a bay or bayou degrades in direct proportion to the amount of developed land in its watershed.*

In the natural environment, pervious soil absorbs water, filtering and cleaning it before restoring it to the water system. But pavement and other hard surfaces make developed land impervious to rainfall.

Water runs quickly off pavement, roofs, and other impervious surfaces, carrying harmful materials into our streams and rivers and then into our marshes and bays, where the food chain absorbs much of them. Runoff from developed land contains the fertilizers and pesticides we add to our landscapes, the oil that leaks from our cars, the heavy metals that fly off our brakes and tires, and all the other chemicals and materials that we use to build and maintain our communities and lifestyles.

The amount of imperviousness – or paved-over land – in a watershed is the best overall indicator of water quality in the receiving water body.

There are dangerous thresholds for imperviousness in a watershed. If as little as ten percent is impervious, the draining river can be significantly degraded. Imperviousness over 25% causes enough degradation

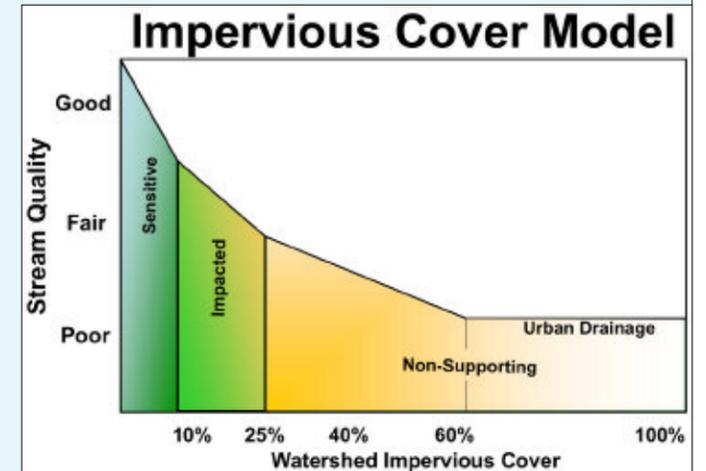
that a healthy and diverse aquatic ecosystem may no longer be supported, and the draining river may no longer be fishable or swimmable.

These numbers have profound implications for planning. The impervious cover model below suggests that, if we want to maintain and improve the water quality of our bays and bayous, we must do everything we can to preserve watersheds with relatively little imperviousness. Preservation of natural areas is the most important thing we can do in terms of water quality.

Development replaces natural land with impervious land, so the next important thing we can do is examine how we can manage expansion. Compact, efficient de-

velopment provides a good solution for encouraging growth in town and urban centers rather than sprawling beyond the edges.

Finally, we must take advantage of every opportunity to introduce pervious surfaces into our developments, where appropriate.



*This model is a summary of many separate studies. The data show that on a broad scale there are important thresholds in terms of imperviousness for stream quality (both water quality and aquatic life). Conditions may vary considerably for individual streams. Adapted from Center for Watershed Protection and NEMO materials.*



©Stephan Meyers

*Because we might not understand all the ways that nature serves us, it is wise to preserve as much of it as we can.*

# Preserving natural areas

*No other environmental management practice is as effective for maintaining and improving runoff water quality as preserving natural open areas.*

Natural areas are areas that are undeveloped with few impervious surfaces such as concrete, asphalt, or rooftops. The best of these areas are places that are closest to their original natural state, and acting as “green infrastructure” for the benefit of all life.

Preserving large areas of undeveloped land is the least expensive and most important investment we can make for future water quality. If we develop land, sooner or later we have to replace the natural functions we destroy, and at great financial cost.

Developing natural space often produces increased flooding, so we have to spend our assets to manage that, and we’re never as successful as nature is. We also have to spend money to filter the water we use.

## Basic elements of a natural area plan

- Map important remaining natural areas
- Rank the areas
- Pursue public and private financing

Nature can provide these services better and cheaper than we can, and because we might not understand all the ways that nature serves us it is wise to preserve as much of it as we can. No other water quality improvement practices can equal the water quality benefits of undisturbed natural areas.

## Natural area inventory and plan

Ideally, we might like to preserve all the remaining natural areas in our community. That kind of preservation is rarely achievable economically or politically. We will thus have to make hard choices, and engage in a planning process to see what is achievable.

All natural areas are not equal. Some areas are much more special and valuable than others. As stated earlier, open space that is closest to its natural state is the most valuable in terms of serving as green infrastructure.

It is not necessary to preserve every acre of open space in a community to achieve productive results. Preserving well chosen tracts and parcels of high quality (and even not so high quality) land can make a big difference, both in water quality and the character of our place. A plan is needed to guide preservation choic-

es, which must be made at the local level.

The first step is to conduct a natural area inventory. Initially, this can be as simple as an inventory of developed versus undeveloped land, which could be derived from an existing land use map, for example. Eventually, all the natu-

## Natural areas provide services such as:

- Clean air
- Clean water
- Flood reduction

ral areas in a community need to be mapped out – wetlands, woodlands, prairies, marshes, and all the rest.

Existing maps may show many of these areas already. Be sure to consult state resources agencies, such as the Texas Parks and Wildlife Department, or local management agencies, such as drainage or flood control districts. It’s not necessary to conduct a detailed inventory, such as might be required for a ju-

isdictional wetland delineation, for example. It is just necessary to know the locations and approximate boundaries of the natural areas.

High quality aerial photos are the best tools for conducting natural area inventories. Free color infrared photographs from 1995 on are available for the entire state from the Texas Natural Resources Information System (tnris.org). More recent photographs are available from Houston-Galveston Area Council (h-gac.com) for the Houston Gulf Coast area.

With a little training, knowledgeable local citizens could analyze these photographs and develop useful maps. Consultants are also available to conduct these inventories, and if a broad brush approach is specified, the cost should be reasonable.

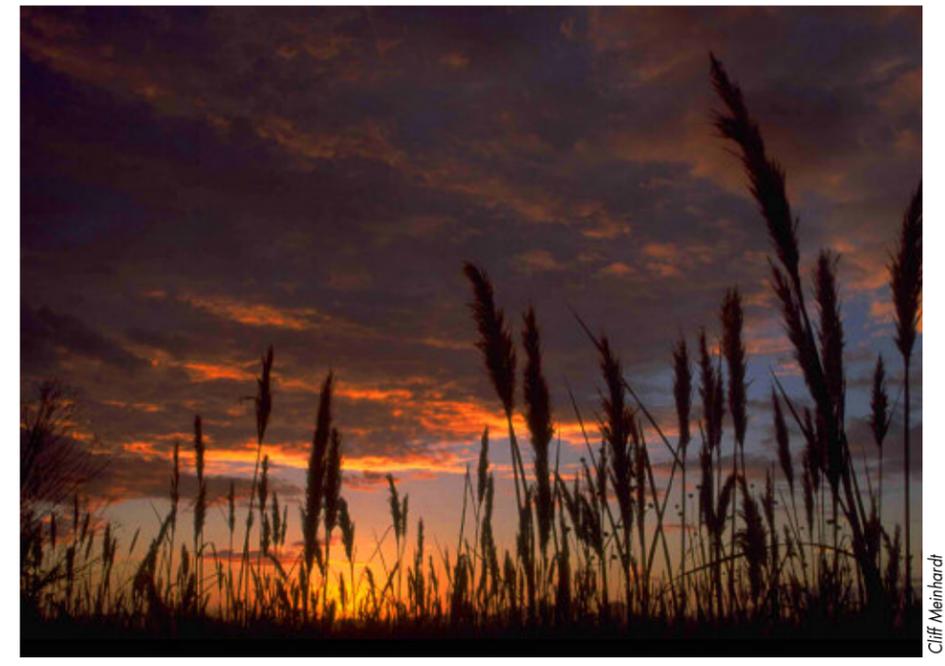
The maps constructed could be as simple as acetate overlays on aerial photographs. More expensive and sophisticated computer-based geographic information systems can be used if budgets allow. But lack of a budget for the latter should not deter communities from developing the simpler maps.

The next step is to prioritize natural areas in terms of which should be preserved first. In general, the larger the tract and the more undisturbed it is, the more valuable it is in terms of green infrastructure. Lands that are adjacent to streams particularly have very high value because they act as a buffer to help cleanse stormwater runoff before it enters the waterway.

But many other variables enter into this process. Which lands, for example, are under the most threat? Perhaps some of the best open space will not soon be in the path of development, and therefore need not be targeted immediately for preservation. Cost is always a factor. A good natural area plan will thus involve both an inventory of undeveloped land in the community (including a rating in terms of the quality and functionality of each tract or fragment), and a rating in terms of ecological value, cost, and threat, and perhaps cultural value as well (some tracts may have particular historical or other significance).

Finally, there must be a plan for the actual acquisition or setting aside of the properties. A variety of tools too numerous to mention here are available. Land can be zoned or regulated out of development, but tools like these have political costs and are not pursued in some communities.

If outright purchase is impossible, there are



Cliff Meinhardt

*Native coastal prairies give us a sense of “place” and provide both beauty and natural services.*

several legal instruments that can be used to protect natural areas. A simple conservation easement, for example, might allow owners to maintain use of their property but prohibit development. Such easements can be purchased

for much less than the sale price of a property, and some landowners will donate the easements or provide them at less than market value. See the resources in the Appendix for a more detailed list of additional instruments.

## Green infrastructure

Natural areas or ecosystems are much more than pretty places to look at. They provide us with essential goods and services. The most obvious example is the air we breathe, which is maintained by plant life. Natural areas also lessen flooding by storing water in the soil and in wetlands. These same features maintain the water

of place.” We readily identify with unique natural areas, be it a special creek or bayou, or perhaps a particular patch of prairie or forest. These areas are just as much a part of the infrastructure of our communities as the built-out areas, and are part of the legacy that most citizens want to pass on to their children.

*Prairie potholes like these both clean and retain floodwaters.*



John Jacob



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Compact development means using less land while making life safer and more convenient for residents and creating economic vitality.

# Compact development

*To make wise decisions about what, where, and how to build next, we have to see different patterns of growth and realize we have choices for the future that use less land, but are more livable, safer, and convenient*

If the same urban growth pattern that we have seen since the end of World War II continues unabated, many large, valuable tracts of natural areas will be lost to development.

*Traditional design features make cities much more livable and walkable, using far less land, and still allow the use of cars.*

Many of these tracts should be preserved because of their unique natural resource or cultural values.

But the traditional patterns of growth that people all over the world have used for centuries are far more compact and convenient, and thus preserve water quality because they reduce imperviousness.

At first glance, the idea of compact growth and reducing impervious surfaces seems to be a contradiction. After all, dense, compact growth has much more impervious surface on a per acre basis than a typical suburban development.

The critical issue is the scale at which we are measuring imperviousness. From the

point of view of maintaining water quality in our bays and bayous, the only scale that matters is the watershed scale, and at that scale it is better to concentrate imperviousness in

smaller areas (compact growth) instead of spreading it out over a larger area (conventional suburban growth). Rather than breaking large natural areas into many small impervious places, compact growth gathers up the damage in concentrated areas. Compact growth simply creates less per capita imperviousness.

The current pattern of development has only been with us for the past 50 years or so. It is a pattern of development that is based on the existence of personal cars, a mobility that most people value highly.

This style of growth separates uses – homes from schools, jobs from stores, and so on. Every errand and need is accomplished by getting in a car to get access to the service or place. Often the distances are substantial, with a five-mile drive to a grocery store not uncommon at the suburban edges.

Enormous quantities of pavement are necessary to accommodate the cars, including driveways and parking spaces. Viewed from

the air, it is very clear that the green space that survives is in small patches well scattered throughout the development. Disconnected from each other, these small green spaces are essentially useless for maintaining water quality, limiting flooding, or sustaining wildlife.

This style of development leads to ever-increasing consumption of natural areas, and thus ever-declining health of the watershed.

From a quality of life perspective, we are losing easy access to the prairies, rivers, and forests that sustain us, and when we get to them we often find them scarred and struggling.

Closer to home, the inability to walk for even the simplest errands, the lack of interac-

## Three key elements of livable, compact growth:

- Walkable streets
- Human-scaled blocks
- Usable public spaces

*From Calthorpe and Fulton, "The Regional City"*



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Density does not necessarily mean crowded. To be an attractive alternative, compact development must go hand in hand with good design.

tion with neighbors, increased air pollution from increased driving, and more time spent commuting than most of us want, are negative impacts on our quality of life, and we often feel helpless to do anything about it.

These negatives have inspired many urban planners to look back at how cities were designed before the car. The exciting result is that they have found a wealth of traditional design features that can make cities much more livable and walkable, while using far less land, and still allowing the use of cars.

Densifying urban growth may be the best option to conserve natural areas. Although they are at extreme opposite ends of the density spectrum, Manhattan and the City of Houston are interesting studies. Each has 1.9 million people living in it. Yet Manhattan concentrates all those residents and millions of jobs in four percent of the land area that

Houston occupies. Even so, Manhattan's Central Park is larger than Houston's entire downtown and Midtown combined.

At typical suburban densities of 3,000 people per square mile, 100,000 people occupy at least 30 square miles of land. At 15,000 people per square mile, the density of the French Quarter in New Orleans, only about 7 square miles of land are used, a savings of 23 square miles of natural area.

Density does not have to mean crowded. To be an attractive alternative, compact development must use good design. Well planned traditional development can actually be more livable than spread-out conventional subdivision development, as the number of people flocking to the growing number of compact towns and cities attests.

Historically, Texas cities and towns were compact, like this downtown in Bay City.



John Jacob

# Smart growth

*A way to restore community and economic vitality while preserving natural areas*

In recent years there has been a renaissance in urban design that focuses on the human scale. Several names are used, including smart growth, sensible growth, livable communities, and new urbanism. We use smart growth because it has

*Smart growth impacts smaller areas. On a watershed scale, this provides a large return in terms of water quality and eco-services*

the broadest base of practice in the US.

Smart growth means development that accommodates growth in economically viable, environmentally responsible, socially fair, and collaboratively determined ways.

Smart growth results in compact, efficient development that restores community and vitality to existing center cities and suburbs. Smart growth development is town-centered; transit and pedestrian oriented; has a mix of housing, commercial, and retail uses; and preserves natural areas and other environmental amenities.

Smart growth impacts smaller areas. On a watershed scale, this provides a large return in terms of water quality and other ecologi-



Older shopping centers can be redeveloped into modern, popular places with more amenities.

## Smart growth principles

- Mix land uses
- Take advantage of compact design
- Provide a range of housing choices for a variety of family sizes, types, and incomes
- Create distinctive communities with a strong sense of place
- Create walkable neighborhoods
- Preserve green space, farmland, natural beauty, critical environmental areas
- Invest in existing communities, achieve balanced regional development
- Provide transportation choices
- Make development decisions predictable, fair, and cost effective
- Encourage citizen and stakeholder participation in development decisions

cal services because of the larger, more ecologically functional natural areas that are left undeveloped.

Many of us associate the word “urban” with crowded concrete jungles, but well designed urbanism actually enables a small-town feel of increased interaction with neighbors and local merchants. And, of course, the most vibrant cities in the world – places like Paris, London, and New York – are very dense and help preserve large natural areas around them.

Look at the older areas that were laid out before about 1940. Many people consider these older downtowns charming and “quaint,” something that could perhaps be capitalized on for tourists or fairs. But older downtowns can be much more than that. They can be the nuclei of new and vibrant growth that increases both the competitiveness of the city and the quality of life of its citizens. They can also be models for future new development.

Perhaps there is no greater opportunity to create win/win situations than in thinking about how to apply smart growth principle to our existing small towns and small cities. As the desire to live in or near small towns

grows, we have the chance to revitalize many places that have been largely overlooked as developers have built suburban housing subdivisions that have no services connected to them. Civic leaders in smaller towns can attract homebuyers to move in closer to their centers - if they actually have a vibrant center. Focusing growth near the town can help protect the surrounding natural areas.

There is no “one-size-fits-all” solution. Every community has its own values, and successful ones tend to have a common vision of where they want to go and what they value in their community. Their plans for future development reflect these values.

## Keys to smart growth

There are some key areas that require close attention if smart growth is the goal. Chief among them is that things need to be close together so people can walk to places and use their cars less. That means different kinds of business and uses, including schools and parks, have to be clustered together and close to homes. This kind of development is called “mixed use.”

Many existing neighborhoods in the Houston region could easily achieve average densities of 20-40 residential units per acre (at least 20,000 people/square mile). This kind of density can result in a very high quality of life: access to a diversity of shopping and entertainment, a significant number of nearby jobs, good parks and schools with reduced dependence on private cars. It is the presence of large numbers of people that enables the evolution of shopping and other service facilities.

The reduction of need for cars is enhanced if there is dependable transit service. Transit-oriented developments offer the most diverse and stimulating urban lifestyles possible.

Small towns and cities do not usually want to become big cities. But the small town center enables walking to a variety of places and familiarity with your neighbors – the very things that smart growth accomplishes.

All these add up to efficient land use and high quality of life: neighbors and merchants know each other, security comes from having “eyes on the street,” and there is opportunity for creative interaction at a number of scales. In the next pages, we’ll look at these keys.



Smart growth produces popular places where people can gather, get a cup of coffee or some lunch, and just watch other people.

## Creating town centers

*Clustering a variety of uses with good design produces a place that people are drawn to*

While a smaller town or city like Palacios or Texas City is not going to want the kind of urban core that Houston has, it can still implement important design principles to encourage compact, smart development to maintain a small town feel, improve quality of life, and create economic growth.

Town centers are the heart of a community. They can encompass a variety of land uses, including residential, retail, office, and civic and cultural institutions, in a relatively compact space. Since the streets are generally in place and the building/lot coverage ratios are already high, the water quality impacts of the town center development have already occurred. Hence, polluted runoff is not significantly increased by increasing the density of people living, working, and recreating in the town center.

A town center is different from a mall, although they share some aspects. There may not be much civic life associated with the mall; indeed, the mall is usually physically separated from the surrounding community by a vast parking area, and actually competes with local businesses.

Concentrating multiple destinations within walking distance of one another allows for reduced surface parking, as people can make their “trip chains” on foot.

A vibrant town center can be a key to eco-

nomics in a community. Tourism, specialty retail, and cultural institutions can thrive in such environments. Additionally, a town center creates a community “identity” that is useful in attracting and retaining businesses and new residents.

Most towns and cities older than about 50 years already have a pretty good town center, but many have been neglected for development on the edge. Many communities try to maintain the older town center as a “quaint” tourist destination. But the older town centers can be far more: the center of community life.

Revitalization of downtowns can be as simple as sprucing up sidewalks and planting

trees, or a public-private partnership could develop a key corner with a new building or two.

## Its all about the public realm

The key to designing a great town center, or any great neighborhood, is in the layout and design of the streets and sidewalks – what’s called the “public realm.” An interesting public realm makes for an interesting community, a community where people want to stay and that people want to come back to.

Walkability is a key element in good urban design. There are several elements that make a great public realm:

- Storefronts that front the sidewalks, and aren’t set back for parking.
- Active and interesting storefronts, not blank, sterile walls.
- Sidewalks that are wide enough and de-

*The public realm is all the space between the property lines, where people walk and drive.*



Illustration by James Dougherty, Dover Kohl & Partners Town Planning, Coral Gables FL



Traditional connectivity, as seen as right, enables walking and biking to most destinations. Drivers don't need the busy collector road in the center. But the collector is required for all drivers in the community on the left, who have no choice but to drive. There are always fewer cars on the streets in the connected community, but more interactivity, and child safety is greatly improved.

streets, use of trees at edges, raised crosswalks, and medians. Communities can use traffic calming techniques to enable pedestrian and bike activity in a town center or around community facilities.

### Parking

Requirements for excessive parking have probably done more to destroy the urban fabric of our downtowns than any other practice. Often more space is required for parking than the offices the parking lots service, further disconnecting urban uses. And the provision of free or less-than-market-value parking on public streets is one of the single largest factors of downtown congestion. Up to 30% of downtown traffic may be engaged in trolling for a parking space.

The minimum parking spaces that planners often use as requirements for specific urban uses are frequently based on limited data. Most cities and planning authorities would do better to turn their minimum requirements into maximum allowed spaces. Removing requirements altogether for off-street parking and allowing the market to set parking prices would be one of the single most important steps a city or town could take to reclaim its downtown. Revenues generated from public parking could be returned to the neighborhoods for public improvements.

If structured parking is provided downtown, be sure the ground floor has provision for street-level retail with minimal setbacks from the street. On-street parking design can have a great impact on traffic calming and walkability. Angled parking protects pedestrians and slows traffic. (See Donald Shoup, "The High Cost of Free Parking," Planners Press, 2004)

### Civic Buildings

Civic buildings often form the heart of a community, and can include town halls, police and fire stations, courthouses, Post Office, and schools. Municipalities should guard existing structures if they help to form a center, and should resist moving them to suburban areas.

### Schools

School location is a major determinant of where development will occur. Local governments working with school districts can site schools to encourage infill development and more walkable communities.

Parents driving kids to school are a major source of morning congestion. Making walking or bicycling a safe and viable way for kids to reach the school will produce congestion relief as well as health benefits. In many areas, schools also serve as community centers and present the opportunity to combine several types of trip destinations.

Keys to more accessible schools include:

- Locate the school to provide maximum access to pedestrians and bicyclists
- Plan the site to provide pedestrian access points that minimize crossing points with vehicles.
- Use "traffic calming" to reduce vehicle speeds
- Provide adequate pedestrian facilities around the school.
- Develop an overall circulation plan within the school attendance zone for pedestrian and bicycle access.

- Cluster programs, activities, and recreational amenities on the school campus.

### Parks, Squares, and Plazas

Providing parks or open space within walking distance of each home is a key component of improving neighborhood livability. While people need occasional access to large natural areas, small, highly used parks are more important to the fabric of daily urban life. Pocket parks can be an acre or so, or a single lot. Paley Park in New York City, for example, is less than one-tenth of an acre, but is one of the most highly used and beloved parks in the city.

One key to the success and use of a park is the real and perceived degree of safety. "Eyes on the park" means people are around it and use it constantly, particularly in the evening and at night. This kind of use only occurs in

fairly dense neighborhoods. The best parks have either businesses or houses directly fronting the park on all sides.

Key components of high-use urban parks:

- Access and linkages: parks should be easy to get to, particularly on foot, and have unrestricted access on all sides.
- Comfort: People feel safe when other people are present.
- Uses and activities: fairs and markets help draw the community to the park and promote familiarity with it.
- Sociability: well designed parks are community centers where people naturally gather.

(adapted from Projects for Public Spaces)

Tools to create neighborhood parks include:

- Park dedication in subdivision ordinance.
- Public/private partnerships for land acquisition and maintenance.

- signed to encourage activity on them, including occasional tables outside restaurants and coffee shops.
- Safe, calm traffic. Narrow streets are more interesting and safer than wide streets for the pedestrian.
- Curb extensions and other devices to make it safe for people of all ages and abilities to cross the street.

blocks, more frequent intersections, and limiting cul-de-sacs. These measures also allow improved response time for emergency services and cost savings for solid waste collection, utility line repairs, and water distribution.

Removing local trips from surrounding arterials helps reduce congestion and minimizes the need for future roadway widening. And fewer trips means less air and water pollution.

Where additional roadway connections are not feasible, bicycle and pedestrian connections can be developed. These can be particularly useful in providing access to schools, parks and retail areas.

Traffic calming devices are an affordable and effective component of improving connectivity and vehicle/pedestrian safety. Traffic calming devices are self enforcing physical measures intended to slow motor vehicle traffic down, reduce vehicular traffic flow on a particular street or network of streets, or both. Some examples include speed bumps, sidewalk extensions, traffic circles, narrow

### Improving Connectivity

A way to encourage non-motorized travel and reduce vehicle trip lengths is to improve street connectivity. Street connectivity refers to the efficient linkages between residential or local roads and arterial roads, and can apply to town centers or adjacent residential areas.

A neighborhood with good connectivity provides a pedestrian with the shortest, most direct route from his or her home to nearby retail areas, schools, parks and other neighborhood destinations. The means to accomplish improved street connectivity include shorter

## Cluster Development

One method of achieving higher densities is known as cluster subdivision development. A cluster subdivision generally includes houses on smaller parcels of land, while the land that traditionally would have been included for a larger lot is converted to a common shared open space for the residents. Typically, road frontage, lot size, setbacks, and other subdivision regulations are redefined to permit the developer to preserve ecologically sensitive areas, historical sites, or other unique characteristics of the land being subdivided.

These developments are often called "conservation subdivisions," and the houses in them usually fetch a higher price than conventional subdivisions without the natural open space. Many people will give up some lot space to have high quality natural space nearby.

Conservation developments provide environmental benefit in terms of an increase in pervious surfaces as compared with conventional subdivisions. But the benefit only occurs on the subdivision level, rather than at the watershed level. This can be an effective method for very large developments of at least several thousand acres, particularly if the open natural areas are kept in one piece. A

collection of smaller conservation subdivisions might have the same total open space as the larger development, but the

open areas would be highly fragmented and thus much less useful for maintenance of water quality or for habitat values.



Cluster development, shown at right above, differs from conventional suburban development (left) in that homes and other buildings are clustered to allow the community to share most of the land. This not only gives people opportunities for recreation, but also preserves the natural services. Both developments have the same lot yield.



Photo courtesy Tom Fox/SWA Group

Laid-back banks of creeks and bayous in developed areas can handle more water during storm events and still be valuable human amenities.

# Controlling stormwater runoff

Best management practices include preventing pollution and treating affected water

The guidelines and practices that are designed to reduce pollution from stormwater runoff are generally called best management practices (BMPs). There are many such practices, and water quality BMPs are classified by the degree to which they prevent pollution from occurring in the first place, and by the scale of treatment of affected water.

The latter can be further separated into those that treat runoff close to the site that produced it, and BMPs that treat stormwater in a more centralized fashion. BMPs “preventing pollution” generally fall under the name of “low impact development” and try to imitate natural processes by maximizing the amount of pervious surfaces onsite so that most stormwater runoff infiltrates into the soil.

It is particularly important to know where particular BMPs fit in the urban context. That some BMPs do not perform well in dense urban environments, for instance, does not mean they are not useful elsewhere, nor does it mean that dense urban environments are beyond help in terms of stormwater management.

Of course, the dense urban district is itself a water quality BMP because of the natural open areas that it preserves by virtue of using less space per capita. It’s perhaps the most useful BMP of all on a watershed scale.

## Prevention practices WaterSmart landscaping

Landscapes consume up to 50% of municipal water supplies in summer and are a major source of nutrient and pesticide contamination, often the major source. In their attempt to maintain lawns, homeowners may apply 10 times the amount of pesticide per acre that a farmer would. Much can be done to educate homeowners about this.

More importantly, homeowners and profes-



Andy Sipocz

Natural wetlands retain and purify water.

sional groundskeepers can be encouraged to use native and noninvasive adapted plants that require few fertilizers and little or no pesticides. Most localities now have landscapers and landscape architects versed in environmentally friendly landscapes. Municipalities and other entities should show the way by converting their own public landscapes to a WaterSmart standard. See [www.watersmart.cc](http://www.watersmart.cc)

## Good housekeeping

Household hazardous waste collection days are among many BMPs in this area. Education on the proper use, storage, and management of hazardous materials at home and at work are essential to a good stormwater management program. It’s also useful to encourage homeowners and others to use alternative, nontoxic products. Information is available at: [epa.gov/owow/nps/urbanmm/mm09.pdf](http://epa.gov/owow/nps/urbanmm/mm09.pdf).

## Construction site erosion control

Construction sites are notorious sources of sediments. By law, all construction sites over one acre must have a stormwater protection plan and erosion control practices in place. The most common practice is to place silt fences around the perimeter of the disturbed site. A better practice may be to use compost or a compost/mulch mix as a filter berm to



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Native plants use far less water, while requiring few fertilizers and little or no pesticides.

contain sediments. One advantage of using compost is that clean up costs are virtually nil as the berm can be raked back into the soil.

## Low Impact Development (LID)

The basic idea of Low Impact Development is to keep as much stormwater as possible onsite by using every tool to give stormwater a chance to infiltrate into the soil. Practices include onsite measures such as vegetated swales, rain gardens, green roofs, and porous pavement, and larger scale practices such as retention ponds.

These practices are most appropriate in suburban settings where there is sufficient space to implement them. Vegetated swales, for example, are not always appropriate in urban areas. A green roof, however, could find application in almost any setting.

## Centralized stormwater runoff treatment

The classic engineering approach to stormwater management is through large centralized systems of channels and basins. These systems may work best for managing and treating runoff from dense urban zones.

Centralized systems need not be sterile concrete wastelands. Naturalized wetlands and ponds can be engineered into most detention basins so they become valuable amenities rather than eyesores. Most runoff collectors in denser urban zones are likely to be concrete lined, but accommodations can be made for naturalized greenbelts that can grace the urban core



Drawing courtesy of Duany-Plater Zyberk and Company

Natural Reserve	Natural preserve	Sub-urban	Neighborhood center	Urban center	Urban core
	Watersmart landscaping				
	Good housekeeping				
		Porous pavement			
		Bioretention/swales			
		Detention basins			
			Tree boxes, sand filters		
			Green roofs		
			Water quality inlet separators		

Selected stormwater treatment practices categorized by appropriateness to the type of development. The graphic at the top shows what each of the development types looks like. The darkest boxes in the table below indicate the most appropriate location for the specific practice, with lighter colors indicating potential but less important applications in that context.



Sidewalks and shops not only produce a sense of community among residents, but provide a means to attract dollars from visitors.

## Resources

### Zoning and other ordinances

Zoning and subdivision ordinances are two primary tools that communities can use to encourage increased density development.

Overlay zones can protect important resources and sensitive areas. Typical objectives of overlay zoning include floodplain management, historic preservation, and provision of affordable housing. Overlay zoning ordinances apply in addition to the underlying zoning regulations, which regulate the type of uses permitted, such as residential or commercial, while the overlay zone imposes specific requirements within a defined area.

Overlay zoning could be used in a town center to promote:

- Uniform “build-to” lines
- Street-front windows
- Shared parking
- Minimizing/eliminating curb cuts

Form-based codes are an emerging form of zoning that focus, not on land use or density, but on the actual form and placement of buildings, streets, and parking. Form-based codes are much simpler than the standard “Euclidean” codes and are much better at enabling mixed use and vibrant urban neighborhoods.

### Tax Increment Reinvestment Zones

A tax increment reinvestment zone (TIRZ) is a financing tool created under the Texas Tax Code, in Chapter 311. In a TIRZ, a

zone’s base taxable value is established during the year the TIRZ is created – the “base year.” For a period of years, participating taxing units, such as cities and school districts, receive tax revenue only on the base year values. As property values rise, taxes on the remainder, the “incremental value,” flow back to the TIRZ to finance public improvements within its boundaries. TIRZs also have regulatory authorities to ensure development is supportive of the overall plan for the zone.

### Public Improvement Districts (PIDs)

Like a TIRZ, a PID, authorized by Chapter 372 of the Texas Local Government Code, can provide funds for construction of public improvements. But in a PID, property owners pay an assessment that corresponds to the value of the benefit they receive from improvements. PIDs may also provide supplemental services, such as marketing, business development, public safety, and urban planning.

### TIRZ/PID Combination

This combination can be effective in increasing development and redevelopment potential and financing opportunities. It can be an effective way to finance comprehensive improvements on a district-wide basis, while focusing strategic investments in a particular area.

### Enterprise Zones

Enterprise zones are economic development tools that municipalities and counties, in partnership with the State, can use when packaging local and state tax and regulatory benefits

to offer new or expanding businesses in economically distressed areas. Any community with a poverty rate of at least 20% is automatically an enterprise zone in Texas. A business outside an enterprise zone may be nominated to participate as an enterprise project.

Cities, counties, and other taxing units may offer incentives such as tax abatement, tax increment financing, sales tax refunds, utility reductions, and regulatory incentives to businesses within an enterprise zone. Businesses may be nominated as enterprise projects, which allows them to obtain state sales, use tax, and franchise tax benefits for five years.

### 4B Sales Tax

The “4B” sales tax allows cities to use local tax revenues for quality of life improvements to attract and retain employers. This tax, which must be established by a local ballot initiative, may be used, among other things, to fund:

- Tourism, entertainment, and recreation facilities
- Related store, restaurant, concession, parking, and transportation facilities
- Related street, water, and sewer facilities
- Affordable housing

### Transfer of Development Rights (TDR)

TDR programs use market forces to simultaneously promote conservation in high value natural, agricultural, and open space areas while encouraging smart growth in developed and developing sections of a community. In a TDR program, a community identifies an area within its boundaries it would like to



Good design in the public realm provides safety and convenience for walkers and bicyclists adds value to any neighborhood.

protect from development (the sending zone) and another area where more intense development is desired (the receiving zone). Landowners in the sending zone are allocated development credits they can sell to developers, speculators, or the community itself. In return for selling these credits, the landowner in the sending zone agrees to place a permanent conservation easement on his or her land. The purchaser of the credits can apply them to develop at higher density than otherwise allowed within the receiving zone.

The law to support TDR programs does not yet exist in Texas. Development rights can be acquired, however, through donated or purchased conservation easements.

### Planned Unit Development (PUD)

PUD regulations encourage and allow more creative developments than might be possible under existing zoning regulations. PUDs allow design flexibility and permit more diversification and integration of uses and structures. An intrinsic and often neglected premise upon which the approval of a PUD must be conditioned is that, while greater density or more lenient requirements may be granted, the PUD should contain features not normally required of traditional developments.

The PUD district may be utilized to:

- Encourage uses of land that reduce transportation needs and conserve energy and natural resources.
- Preserve existing landscape features and amenities and provide for more usable and suitably located recreational facilities,

ties, open spaces, and scenic areas.

- Lower development and building costs by permitting smaller networks of utilities and streets and the use of more economical building types and shared facilities.
- Permit combining and coordinating of land uses, building types, and building relationships within a development, that otherwise would not be provided.

### Texas Main Street Program

The Texas Main Street Program helps Texas cities revitalize historic downtowns and neighborhood commercial districts through preservation and economic development strategies. The program is among the most successful revitalization programs in the nation, having assisted more than 130 Texas cities.

While it is primarily a self-help program, selected communities are eligible to receive a range of services as well as grants. For instance, awards may be provided for construction of public infrastructure in a designated Main Street area through the Department of Agriculture’s Texas Capital Fund Main Street Improvements Program, which can fund the following types of projects:

- Land acquisition for infrastructure improvements
- Water & sewer facilities or lines
- Road/street construction/improvements
- Natural gas line construction/improvements
- Electric, telephone, and fiber optic line construction or improvements
- Traffic signals and signs
- Drainage

- Sidewalk construction/improvements
- Public parking construction/improvements
- Construction required to eliminate architectural barriers for the handicapped.

## Web Sites

The Trust for Public Land (tpl.org) has a wealth of resources including a four-volume series entitled “Local Greenprinting for Growth,” a step-by-step guide to defining a conservation vision for a community, obtaining the funds for conservation, and acquiring and managing conservation lands.

The National NEMO Network has a useful “open space planning packet” full of fact sheets and step by step guides available at [nemo.uconn.edu/publications/index.htm#planning](http://nemo.uconn.edu/publications/index.htm#planning)

### Compact/smart growth

Information on smart growth can be found at a number of sources, including:

Gulf Coast Institute  
[www.gulfcoastinstitute.org](http://www.gulfcoastinstitute.org)  
 Smart Growth America  
[www.smartgrowthamerica.org](http://www.smartgrowthamerica.org)  
 Urban Advantage transformations  
[urban-advantage.com](http://urban-advantage.com)

### Stormwater best management practices

Center for Watershed Protection  
[www.cwp.org](http://www.cwp.org)  
 Low Impact Development Center  
[www.lowimpactdevelopment.org](http://www.lowimpactdevelopment.org)  
 Texas NonPoint Source Book  
[www.txnpsbook.org](http://www.txnpsbook.org)



## What do we want for our future?

### This

- Walkable neighborhoods, towns, and cities where we know our neighbors?
- Access to beautiful natural areas?
- Fishable and swimable bays and bayous?
- Clean air and water?

### Or this

- More air pollution?
- More time spent in our car and less with family and neighbors?
- Degraded water bodies and natural areas?

We have choices.

A collaborative publication



[www.texas-sea-grant.tamu.edu](http://www.texas-sea-grant.tamu.edu)



[www.glo.state.tx.us/coastal/cmp.html](http://www.glo.state.tx.us/coastal/cmp.html)



[www.noaa.gov](http://www.noaa.gov)



[www.rpts.tamu.edu/](http://www.rpts.tamu.edu/)



[texasextension.tamu.edu](http://texasextension.tamu.edu)

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