Chapter Five

Pearland Trail Master Plan

The City of Pearland is eager to proceed with the phased development of a city-wide trail network, so community will and desire for the implementation of this plan are not an issue. Therefore, this final plan chapter focuses on implementation considerations and logistics that will help the City move forward with initial trail projects and improvements in an orderly and well-planned fashion.

5.1 Three-Year Implementation Program

One reason implementation is the most important part of the planning process is because it is the point at which plan goals and policies are translated from concept into practice. Goals, objectives and policies that are visionary in the plan are transformed into detailed projects, programs, regulations, and other implementing actions.

In Table 5.1, Action Agenda, a format is provided for listing, prioritizing and expanding upon specific tasks that are to receive priority attention during the first three years following plan adoption. (The content currently shown in Table 5.1 is intended only as an example of how this table can be used – Parks & Recreation Department staff have been provided a blank template of the table for ongoing use by the City). It is essential that this table be completed by those involved in the plan development process as the first step toward implementation. Following completion, this table should be advanced to the City Council and City management for review and consideration.

The ultimate extent and timing of implementation activity will depend on policy decisions regarding the size of City budget allocations from year to year, the City’s aggressiveness in pursuing grant opportunities (some of which may also require City budget commitments to satisfy local matching fund requirements), and potential action by the City to amend its development code so that trail-related land dedications or improvements are addressed through the development review and approval process. Once an initial Action Agenda is authorized, the Parks and Recreation Department can initiate the first-year work program in conjunction with the City Manager, other departments, and other public and private implementation partners.

As indicated by item 4 in Table 5.1, one aspect of near-term implementation might focus on identifying, improving and directing users (via signage, etc.) to access points and short pathways that link to segments of the overall trail network. These opportunities are often available at the ends of cul-de-sacs or dead-end streets, along the unfenced perimeter of a residential neighborhood,
or via strategically-placed paths between private lots or commercial structures (10-foot minimum width).

### Table 5.1 Action Agenda

<table>
<thead>
<tr>
<th>#</th>
<th>Action</th>
<th>Action Type</th>
<th>Priority</th>
<th>Lead Entities</th>
<th>Funding Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Construct a Hike &amp; Bike Trail on Mary’s Creek from Centennial Park to west of FM 1128.</td>
<td>Capital Improvement</td>
<td>2</td>
<td>- Parks &amp; Rec</td>
<td>- Bond funds</td>
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<td></td>
<td>- Developer</td>
<td>- City operating budget</td>
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<td>- Developer participation</td>
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<td>2</td>
<td>Explore the possibility of further land dedication and/or trail construction requirements in the City’s Land Use and Urban Development Ordinance.</td>
<td>Regulation</td>
<td>2</td>
<td>- Planning &amp; Zoning</td>
<td>- City operating budget</td>
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<td></td>
<td></td>
<td></td>
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<td>- Parks &amp; Rec</td>
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<td>3</td>
<td>Begin preliminary design of <em>(project xyz)</em>.</td>
<td>Project Design</td>
<td>3</td>
<td>- Parks &amp; Rec</td>
<td>- City operating budget</td>
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<td></td>
<td>- TPWD grant</td>
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<tr>
<td>4</td>
<td>Study and identify specific locations (e.g., ends of cul-de-sacs and dead-end streets, unfenced edges of subdivisions, etc.) where neighborhood access to trail network alignments could be formalized with potential improvements, signage, etc.</td>
<td>Studies/Plans</td>
<td>3</td>
<td>- Parks &amp; Rec</td>
<td>- City operating budget</td>
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<tr>
<td>5</td>
<td>Investigate long-term trail possibilities for Clear Creek corridor.</td>
<td>Coordination</td>
<td>3</td>
<td>- Parks &amp; Rec</td>
<td>- City operating budget</td>
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<td>- Nearby cities</td>
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<td>- Harris Co. Flood Control</td>
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<td>- Drainage District</td>
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<td>- Corps of Engineers</td>
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<td>6</td>
<td>Design and print colorful trail guides/maps for the City’s initial trail segments.</td>
<td>Program</td>
<td>3</td>
<td></td>
<td>- City operating budget</td>
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<td></td>
<td>- Community support (e.g., sponsors, KPB)</td>
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</table>

### 5.2 Acquisition Tools

Given the potential cost, timing and complexity of the City possibly acquiring land for trail purposes, other means are available and used elsewhere for reserving appropriate linear corridors for trail improvements. The two primary means discussed in this section are: (1) land dedication requirements through municipal subdivision or parkland dedication ordinances, and (2) acquisition of easements for trail purposes.
Land Dedication Requirements

In its Sample City Non-Motorized Trail Plan, the Mountainland Association of Governments (MAG) in Utah urges local governments to include trail dedication requirements in their subdivision regulations once trail routes have been adopted and are represented in a City-approved plan. In this way proposed trail alignments can be preserved so that rights-of-way will be available for future “public thoroughfares.” MAG suggests that such an ordinance require a development applicant to meet early with City staff to interpret the trail master plan and its relationship to the proposed development. This would also include consideration of how any internal trail concepts within the development might connect with the city-wide trail network. MAG then offers model ordinance text based on Salt Lake City’s dedication requirements:

18.24.105 Trails.
The sub-divider shall dedicate trails necessary to provide public access to public lands and other trails shown on the city master plans or required by the planning Council. Trails shall be located so that the route is feasible for both construction and long-term maintenance … The specific location of the trail right-of-way shall be verified on the ground before the approval of the subdivision. The amount of land required for trail dedication without compensation shall not exceed five percent of the land within the subdivision excluding trails located within a standard street right-of-way.

In Texas, the City of Lewisville, north of Dallas, requires construction of hike and bike trail segments by private residential developments if they encompass or are adjacent to planned trail alignments shown on the City’s adopted park master plan. Dedication of associated rights-of-way and/or land for public use is accomplished through final plat approval. The trail construction requirement appears in Section 6-32(g) of the City’s Park Dedication Ordinance:

(6) Each development adjacent to a hike and bike trail as shown in the park master plan, shall be responsible for construction of such trail in accordance with city specifications, in addition to compliance with all other park dedication requirements.

The City of Dripping Springs, Texas, to the west of Austin, as part of its Parkland Dedication Ordinance (Ordinance No. 1520.1), allows certain parkland dedications proposed through residential developments to qualify as “greenways.” The ordinance defines a greenway as “a series of connected natural areas where recreation and an appreciation of nature are among the
primary values.” For the City to approve a greenway area for parkland dedication purposes, the land must provide a “substantial public use” by offering one of several features, one of which is “a major off-street trail or pathway system which connects, or has the reasonable possibility of connecting to other such trails.” Trails are clearly a community priority as the ordinance goes on to state that:

The City encourages applicants to include trails within the greenways whenever possible. Such trails may include hard or soft nature trails for pedestrians; multipurpose hard-surfaced trails for pedestrians and bicyclists/in-line skaters; separate/single purpose hard-surface trails for pedestrians or bicyclist/in-line skaters. Trails in greenbelts should ideally connect to a larger park area within the green space to allow for a broader number of informal active and passive recreational activities.

The National Park Service (NPS), in its publication, *Protecting Open Space: Tools and Techniques for Texans*, points out the advantages and disadvantages of municipal parkland and trail dedication requirements. Among the advantages, such dedication ordinances enable communities to ensure adequate land for public recreational purposes “in step with the pace of land development.” NPS points out that also having the developer construct the park or trail improvement can be cost-efficient because labor and heavy equipment will already be on site for other on-site infrastructure and improvements. On the other hand, NPS points out the potential legal risks of exaction ordinances if their requirements can be demonstrated to be excessive through successful litigation. NPS recommends instituting parkland and trail dedication requirements in communities where:

- significant growth and new land development is occurring;
- the local government has a strong park/trail master plan to guide the development of new park/trail facilities; and
- developers have typically complied well with local development ordinances.

However, NPS urges caution if:

- the exaction ordinances could be difficult and costly to administer;
- the local government does not have adequate resources to pay for the maintenance of newly dedicated/acquired lands; and/or
- the cost of exactions could become a deterrent to any new development.

**Trail Easements**

NPS also explores the option of trail easements, which “obtain the use of a corridor across another landowner’s property for public access purposes at a
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cost less than outright purchase of the corridor or tract in fee simple.” In other words, an easement represents a partial interest in a property, giving the easement holder the right to enter onto the property, develop a trail facility within a designated corridor, and allow others into that corridor to use the trail.

Such an easement could be acquired by a variety of public and/or private players and does not necessarily have to be held by the municipality. Another advantage of easements is that they are recorded in county deed records, meaning they run with the land and are legally binding on successive owners of the property. Some property owners may be willing to donate the easement to the community while others are interested in the income aspect.

NPS points out that trail easements often grant access for a fixed number of years, which is different from many other easements that are established in perpetuity. However, property owners may insist on a less open-ended access commitment given concerns about potential liability, interference with their use of the land, and potential problems such as litter and vandalism.

Of particular interest to Pearland, NPS notes that trail easements are a vehicle to enable one public agency (such as a municipality) to obtain certain rights related to another public agency’s property (such as a flood control or drainage district that does not have a recreational mandate or the capabilities or staffing to manage public use of a trail facility).

As with parkland/trail dedication requirements, NPS points out both advantages and disadvantages of trail easements. The primary advantage is that easements typically cost less than outright land purchases, so the City’s trail development funds can go further through the use of easements. Trails also occupy relatively narrow corridors, so they can be accommodated via easements within larger tracts of land that are used for various other purposes. The main disadvantage is that the easement puts the grantor (property owner) and grantee (municipality) in an ongoing relationship, which could prove tricky if disagreements emerge or certain expectations are not met. The landowner may also insist on certain restrictive terms to address concerns about the types of trail use and/or hours of public use, and these limitations may prove burdensome for the City (and trail users) over time. NPS particularly warns about term-limited easements where a property owner could choose not to renew the agreement after the City has already expended trail development and maintenance funds on a facility that will no longer be accessible for public use.

NPS concludes that trail easements are advisable in cases where:
• there would be substantial cost-savings in acquiring an easement rather than land in fee simple (full purchase);
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- the easement is in perpetuity, and the terms and conditions are defined well enough for future owners to conform to the original intent if the land changes hands; and/or
- the granting landowner is already a public entity, and adding public use would be easy.

NPS does not recommend use of trail easements when:
- the granting landowner is leery of government and/or public use;
- the landowner’s terms and conditions prove too restrictive to provide a reasonable amount of trail access and use; and/or
- the local government does not have adequate staff to effectively manage the trail easement to prevent negative impacts on the landowner.

5.3 Trail Design Considerations

As specific trail projects and improvements are authorized for detailed planning and design, the City should require attention to the following “checklist” considerations (some of which involve operational matters and/or public education beyond design and construction):

Safety
- Appropriate width (generally a minimum of 10 feet) for shared-use trails (e.g., walking, jogging, biking, skating, persons in wheelchairs) – and the possibility of excluding certain uses on particular trail segments.
  - Surface material.
  - Slopes.
  - Trail curvature.
  - Sight distance.
  - Adequate vertical clearance where trails go under bridges or other overhead structures/features (a 10-foot vertical clearance from the trail surface is generally recommended, with eight feet as a minimum at any point above the width of the trail).
  - Use of drainage grates and other features that are safe for bicycle tires to pass over while also limiting potential injuries to walkers and skaters.
  - Adequate setback of fences, landscaping and other potential obstructions from the trail (fences...
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should generally be no closer than five feet from the trail edge, and fences that are necessary on both sides of a trail should not create a narrow “canyon” effect for long stretches).

- Shade and benches so trail users can rest and avoid overheating during the warmest months.
- Signage regarding potentially hazardous locations (e.g., water safety, snake presence).
- Marked crosswalks, signage and potential pedestrian signalization and/or traffic calming measures where trail alignments must cross major roadways (and any railroad crossings must also be carefully designed).
- Bollards or other obstacles at trail access points to prevent unauthorized use by motorized vehicles, but of the type that can be removed or folded over in emergency situations.
- Public education on safe cycling and skating practices, use of safety equipment (helmets and padding, bicycle lights/reflectors, etc.), and other practices to increase user safety – and monitoring and police enforcement of trail rules and relevant City ordinances and laws.

Environmental Sensitivity

- Sensitive siting and design/construction methods in or near environmentally sensitive areas (e.g., limiting areas to be disturbed, construction fencing, erosion control measures, site-specific construction practices).
- Design and surface type that is appropriate for areas with high erosion potential.
- Protection of mature trees and associated root zones, as well as riparian vegetation along stream corridors.
- Re-vegetation with native and/or self-sustaining plant materials, especially in non-irrigated locations.
- Development of aesthetically pleasing “greenways” along trails (rather than focusing only on the cross section of the trail improvement itself).
- Access to ecological features and observation points for trail users (e.g., along water features, wetland edges, habitat and vegetated areas, unique views, etc.).
Community Character

- Minimizing impact on nearby residential areas, whether in terms of noise, lighting, litter, visual intrusion, etc. (which are all partly a function of how the trail is aligned relative to nearby homes and private properties).
- Designing consistent with the local setting in terms of materials, landscaping, types of amenities (lighting, benches, trash receptacles, etc.), and fitting in with the general “look and feel” of the surrounding area.
- Sensitive design where trail alignments traverse a downtown area, historic district, primarily residential streets, etc.
- Fencing, landscaped screening, or other physical separation and buffering to protect privacy of adjacent homes.

Maintenance

- Adequate funding support for ongoing, routine maintenance (e.g., minor surface repairs, surface sweeping and clearing debris after storms for user safety, trash collection and litter removal, cleaning of restrooms and drinking fountains, trimming of vegetation, etc.).
- Installation of root barriers where nearby trees may cause damage to the trail over time, or where other vegetation that aggressively seeks out water is present. Root spreading can also be a problem where one side of a trail is irrigated and the other is not.
- Monitoring of lighting and signs for maintenance attention.
- Community volunteerism to supplement City personnel efforts (e.g., “Adopt-a-Trail” initiatives, service projects).
- Design features to minimize maintenance needs, including appropriate base design and materials to ensure sound construction results, and careful drainage planning given local rainfall conditions and flat terrain. Use of recycled materials should be considered where they will reduce maintenance needs and overall costs (initial installation plus ongoing maintenance).
- If boardwalk-style improvements are planned anywhere on the trail system, all wood used in such construction should be pressure treated or rot-resistant lumber.
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- Advance planning and funding commitments for major rehabilitation or resurfacing projects.

Accessibility

- Trail gradients no greater than five percent.
- Design and installation of ramps which comply with Americans with Disabilities Act (ADA) standards (generally at grades no greater than eight percent, with a level landing – minimum of three feet long – provided for every 30 inches of vertical rise). Also use of slip-resistant surfaces on ramps.
- Use of hard surfaces, or compacted crushed stone at an appropriate diameter (less than 3/8 inches), on any trail segment anticipated for use by persons with disabilities. No loose gravel surfaces in such cases.
- Handrails (32 inches high) installed on all ramps and bridges.
- Address access and circulation through, around, over or under any major barriers for persons with disabilities.
- Eliminate any barriers along sidewalks and curbs and at intersections and street-crossing locations (including installation of curb ramps at each street corner).
- Stairs should not be incorporated in the trail system in any locations where wheelchairs, bicycles or skaters will access or use the trail (ramps are preferred to stairs even where grades must exceed the five percent maximum).
- Where bollards or other barriers are installed at trail access points to keep out motorized vehicles, maintain at least 32 inches of clearance for wheelchairs.
- Rest areas every 300 feet on fully accessible trails, set off to the side of the main trail section, and with signs or information at the trailhead regarding the distance between rest areas.
- At least one accessible parking space in all trail-related parking areas.
- Compliance with ADA standards whenever a new trail provides access between new parking lots and new public facilities, including recreation or institutional facilities, commercial or business sites, and any new transportation-related facility.

“If circulation and amenities are planned with (the disabled) in mind, the place is apt to function more easily for everyone.”

- William H. Whyte, noted observer of public spaces and their design and use

Bollards or other barriers help to keep motorized vehicles off trails but must not impede trail access for persons with disabilities.
Signage and Public Information

- Signage at trailheads and other access points regarding permitted trail uses, speed control, safety awareness on a shared-use path (e.g., rules for yielding, using a bell or signal to alert other users about to be passed), required or advised use of helmets for cyclists and/or skaters, and user courtesy policies (including respect for private property and owner privacy, no littering, dogs on leashes, etc.).
- More limited signage along trails for regulatory, informational, and wayfinding purposes, but to avoid adverse visual impacts.
- Use and placement of regulatory signs in accordance with standards set forth in the Manual on Uniform Traffic Control Devices (MUTCD). This includes:
  - Stop signs wherever a paved multi-use trail will cross a public street (unless vehicular traffic is required to stop at trail intersections).
  - Speed limit, slow, or danger/warning signs in areas with dangerous conditions ahead or limited sight distance.
  - Curve signs where an upcoming curve in the trail has a small radius and/or limited sight distance, especially if a trail user could potentially be forced off the trail if moving at a relatively high speed.
  - Dismount signs in areas where trail conditions or potential hazards warrant advising cyclists to dismount and walk these segments (e.g., areas with substandard trail width and/or vertical clearance, narrow bridges, busy street crossings).
  - School zone signs near school campuses for the safety of both school children and trail users.
  - Private property signs in appropriate locations on an as-needed basis.
- Placement of signs for maximum visibility and where they will not impede trail use or present a hazard.
- Consistency in sign design and placement to avoid public confusion (and sign sizes and letter heights appropriate for anticipated trail user speeds).
- Use of reflective coating and graffiti-proofing on all regulatory signs.
- Development of trail system guides and maps (trailhead locations, description of trail segments and amenities – potentially with a trail...
rating system regarding length and degree of difficulty, information on wheelchair accessibility and any barriers, destinations, nearby services, user courtesy policies, major street crossings and crosswalk locations, location of drinking fountains and/or restrooms).

Security
- Lighting.
- Trail and user visibility and elimination of potential “hiding” places (careful placement and design of fencing and landscaping, density and trimming of natural vegetation, etc.).
- Emergency telephones or call box systems (with direct access to 9-1-1) in key locations, especially along more remote trail segments.
- Particular focus on police monitoring and security measures in parking areas.
- Ease of access for emergency personnel and vehicles.

5.4 Potential Partners

As with the expansion and enhancement of its overall parks and recreation system, the City of Pearland has many potential partners to turn to in considering how best to develop, operate and maintain a comprehensive, city-wide trail network. In many cases the municipal government itself will be best positioned to lead or assist with a particular implementation task. But there will be instances where another public entity or a private or non-profit partner is better able to make something happen quickly or more cost-effectively. In some situations multiple “players” will need to be involved to move an action forward, which indicates the importance of partnerships and coordination.

Listed below are potential implementation partners for the City of Pearland as identified through this planning process and supplemented by committee and community input.

Public Agencies
- Neighboring/nearby cities
- Brazoria County
- Harris County
- Drainage districts
- School districts
- Houston-Galveston Area Council (H-GAC)
- Pearland Economic Development Corporation
- Texas Parks & Wildlife Department
Texas Department of Transportation

Semi-Public Entities
- Homeowners Associations
- Municipal Utility Districts (MUDs)

Community and Recreational Organizations
- Boy Scouts of America, Bay Area Council, [http://www.bacbsa.org](http://www.bacbsa.org)
- Elk’s Lodge #2732
- Girl Scouts, [http://www.gsst.org](http://www.gsst.org)
- Keep Pearland Beautiful, [http://www.pearlandbeautiful.org](http://www.pearlandbeautiful.org)
- Pearland Area Runners Club (PARC), [http://www.pearlandarearunnersclub.org](http://www.pearlandarearunnersclub.org)
- Pearland Fit, [http://www.pearlandfit.com](http://www.pearlandfit.com)
- Pearland Lions Club, [http://www.pearllandlions.8m.com](http://www.pearllandlions.8m.com) (and Lioness Club)
- Pearland Rotary Club
- United Way of Brazoria County, [http://www.uwbc.org](http://www.uwbc.org)
- Veterans of Foreign Wars (VFW) Post 7109 (and VFW Post #710 - Ladies Auxiliary)

Local/National Businesses
- Bicycle and sporting goods stores
- Builders/developers
- Building and improvements (e.g., Home Depot, Lowe’s)
- Fitness/wellness centers (e.g., Fitness Solutions)
- Individual property owners
- Pipeline companies and oil/gas/chemical companies
- Railroad (rails-to-trails opportunities)
- Utility companies

Other Area Organizations
- Houston Area Road Runners Association (HARRA), [http://www.harra.org](http://www.harra.org)
- Houston Trail Runners Extreme, [http://www.geocities.com/h_t_rex](http://www.geocities.com/h_t_rex)
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- Greater Houston Off Road Biking Association (local affiliate of the International Mountain Bicycling Association), [http://www.ghorba.org](http://www.ghorba.org)

Responses to the community survey (see Chapter 3 and Appendix A) also indicated a potentially significant volunteer base in Pearland that would be willing to help with fundraising and actual trail construction projects and maintenance. Typical fundraiser ideas were suggested (e.g., Kroger “Share” card, selling “recognition bricks” to donors, “penny drive” as a challenge between area schools). One individual also suggested breaking down trail improvement projects into enough component parts that a business, organization or individual could potentially sponsor a particular, tangible item. This could particularly apply to some of the potential trail amenities listed in Chapter 4, such as bike racks, benches, picnic tables, water fountains, restrooms, signage, map/brochures stands, exercise/stretching equipment, shade structures, and landscaping, as well as potential funding support for an overall trailhead location. In-kind donations of labor, materials or property could also prove highly valuable to implementation efforts. “Hands-on” support can occur through service projects of the type frequently undertaken by community organizations such as those listed above, as well as Eagle Scout projects and similar volunteer efforts.

Regional Bikeway Plan

The Houston-Galveston Area Council (H-GAC) is in the process of updating its Regional Bikeway Plan (a public comment draft dated 04/11/07 was in circulation at the time this Trail Master Plan was being finalized). This plan is intended to “serve as a guide for investment, interagency coordination and best practices in developing facilities for bicyclists in the 8-county Houston-Galveston Transportation Management Area (TMA),” which includes Brazoria County.

Interestingly, the draft plan, under a section entitled “Next Steps,” indicates H-GAC’s desire to continue “seeking partners to develop pedestrian-bicyclist mobility plans throughout the TMA” after completing a current project with the City of Sugar Land for its Town Center area. Both the City of Pearland and Brazoria County are included on a list of area governments H-GAC is targeting for this ongoing initiative. Through these partnership projects, H-GAC aims to help local communities develop additional pedestrian-bicyclist improvement projects which H-GAC could help fund, as discussed in the next section.

H-GAC’s draft plan itemizes specific actions the regional agency intends to take to achieve the Regional Bikeway Plan goals and also implement the pedestrian-bicyclist mobility goals of the 2025 Regional Transportation Plan.
(RTP). Below are selected items relevant to Pearland and this Trail Master Plan:

**Technical Assistance**
- H-GAC will continue to assist local entities in the development of pedestrian and bicyclist plans and projects (past support has addressed planning, coordination, design and funding strategies).

**Funding Support**
- H-GAC will actively promote the development of RTP-listed bikeways in future TIP calls for projects.
- H-GAC will work with project sponsors to identify pedestrian and bicyclist accommodations that can be included as part of current transportation projects and within existing budgets.

**Design Guidance**
- H-GAC will develop a workshop on pedestrian and bikeway suitability, cost estimation and design. [H-GAC and TxDOT have worked with local sponsors to identify cost-effective solutions to construct bikeways that meet American Association of State Highway and Transportation Officials, or AASHTO, guidelines.]
- H-GAC will showcase successful design solutions with the Pedestrian-Bicyclist Subcommittee.

**Long-Term Maintenance Guidance**
- H-GAC will propose a list of typical pedestrian and bikeway maintenance needs. [H-GAC continues to work with project sponsors to make maintenance a key component of their local planning efforts and outline their long-term maintenance plans for projects submitted to the Regional Transportation Plan and Transportation Improvement Program (TIP). H-GAC has also added the project maintenance plan to the evaluation criteria for approving a project for funding through the TIP.]
- H-GAC will conduct training workshops on effective maintenance programs.
- H-GAC will identify innovative funding sources and potential volunteer resources for project maintenance.

**Project Information and Coordination**
- H-GAC will provide project sponsors with information on planned bikeways within their project limits and provide training on how to use H-GAC’s on-line bikeway information. [H-GAC has developed the Regional Bikeway Map in a new GIS format that allows for online interactivity, partly to encourage project coordination.]
Training and Support

- H-GAC will work with local governments to develop and provide bikeway facility conditions information. [H-GAC has incorporated additional bikeway facility type and design information into GIS.]
- H-GAC will conduct additional training on bikeway facility suitability and project phasing.

Data and Mapping

- H-GAC will maintain and update the Regional Bikeway GIS database and promote its use in project planning throughout the TMA.
- H-GAC will release annual updates of the regional bikeway inventory in GIS format.
- H-GAC will work with local entities to receive bikeway project updates electronically, using locally adopted GIS formats.
- H-GAC will promote the use of consistent terminology and mapping conventions among local entities in the TMA.

Finally, H-GAC’s draft plan also includes the following discussion relevant to Pearland:

H-GAC recommends that [the Texas Department of Transportation] consider developing additional bicyclist facilities to link the Brazoria County cities utilizing existing tour routes developed by the Pearland Cycling Club (www.pearlandcyclingclub.org). The Pearland Cycling Club is a very active, community-based cycling group that bicycles throughout Pearland, Brazoria County and southern Harris County. The Pearland Cycling Club has developed biking routes for frequently traveled destinations such as Alvin, Lake Jackson, Freeport and other popular locations within the counties.

5.5 Cost and Funding Considerations

Even more than for park and recreation facility design, cost estimation for trail system development can be a tricky proposition. The reason is that the cost of building one linear mile of trail is highly variable depending on local terrain and conditions plus the specific design and improvements. A sampling of cost estimation guidance for trail projects from around the U.S. showed the following variations:

- a range of $2.50 to $7.00 per square foot based on a "normal, grassy site" with no significant vegetation removal required and not accounting for construction of bridges or other structures;
a narrower range of $3.50 to $5.00 per square foot depending on the degree of "difficulty"; and

- a $4.50 per square foot "rule of thumb" for preparing "rough" cost estimates.

Based on consideration of the area’s flat terrain and relatively lower-cost environment compared to some other parts of the country – plus input from design professionals with local experience in Pearland and the Houston metropolitan area – it was determined that $4 per square foot was a good starting point for estimating the cost of a basic, concrete-surface trail in Pearland (with recognition of potential cost inflation given the recent volatility of concrete prices). An additional 15 cents per square foot was added to cover hydroseeding treatment for several feet on either side of the trail. Based on these "ballpark" inputs, the following calculations indicate the potential cost of a one-mile trail segment:

10-foot wide trail = 10 square feet x $4 = $40 per linear foot of trail
4 feet of hydroseeding on either side of trail =
8 square feet x $0.15 = $1.20 per linear foot of trail
TOTAL = $41.20 per linear foot of trail

1 mile of trail = 5,280 linear feet = $41.20 x 5,280 = $217,536

It is anticipated that primary trails in the planned future trail network for Pearland will be designed with concrete surfaces given their expected utilization level, the durability and relative maintenance ease of concrete, and the need for hard surfaces near creeks and other areas subject to periodic flooding and potential erosion. Secondary trails will likely have other surface types, depending on their location, length, and anticipated use. In the sidebar box on the next page is comparative cost information for two typical surface alternatives, asphalt and crushed gravel. Recycled materials are increasingly available and another option.

Through the preliminary design process for specific trail projects, additional cost estimates would be needed for any trail-related amenities plus improvements at trailhead locations. Any necessary land and/or easement acquisition would represent another added cost. Then, standard cost expectations for engineering, testing, construction administration, contingencies, etc. would round out the overall project cost. However, ongoing operation and maintenance costs must also be considered.
City of Pearland staff estimated that the annual cost to mow and edge along a 10-foot wide concrete trail would be approximately $4.00 per linear foot of trail. This assumes weekly mowing of a 10-foot area on each side of the trail. For each one-mile trail segment, this would total roughly $21,000 per year. There may be instances where a trail traverses City parkland or other City-maintained areas or rights-of-way where mowing already occurs and is covered by existing maintenance budgets. In other cases a trail may be constructed along the edge of a school campus or in other locations where another agency or entity may already handle general mowing and maintenance. Given their proximity to neighborhoods or commercial areas, some trail segments may particularly lend themselves to volunteer mowing and upkeep assistance, which would ease the City’s maintenance cost.

The City’s current adopted Parks and Recreation Master Plan already includes, in Appendix F, a detailed compilation of potential external funding sources and programs (federal, state and private foundation grants) that could supplement typical local funds derived from the City’s general operating budget and bond funds. Many of these would be equally applicable to the specific purpose of developing and enhancing a city-wide trail system. Highlighted in this section are the most obvious and promising external funding sources available to the City of Pearland: (1) the Texas Parks & Wildlife Department, and (2) the Houston-Galveston Area Council.

Alternative Trail Surfaces and Cost Implications

If $4 per square foot for a basic concrete-surface trail is used as a benchmark, then comparative research indicates that an asphalt-surface trail would likely cost one-half to two-thirds as much, possibly in the $2.25-$2.75 range per square foot. While asphalt costs less up front, concrete will normally be much more durable and have a longer life before interim patching and eventual resurfacing is necessary. A crushed gravel surface is another option and would potentially be comparable or slightly lower in cost than the asphalt alternative. However, an “edge restraint” is usually preferred to combat erosion, the addition of which could end up making a crushed gravel design cost more than an asphalt surface. Aggregate-type surfaces like crushed gravel can be accomplished with a variety of products (including river stone/pea gravel), but their relative costs and quality for use in trail construction also can vary significantly.
**State Funding: Texas Parks & Wildlife Department**

The Recreation Grants Branch of the Texas Parks & Wildlife Department (TPWD) administers the Texas Recreation and Parks Account (TRPA), which receives revenue through a portion of Texas sales tax received on select sporting good items. Five specific grant programs are funded through TRPA, including the Outdoor Recreation Grant Program. This program provides 50% matching grant funds to acquire and develop parkland or to renovate existing public recreation areas. In the past, TPWD had two funding cycles per year. Due to funding limitations there is now one funding cycle per year with a maximum award of $400,000. Eligible sponsors include cities, counties, MUDs, and other special districts. Projects must be completed within three years of approval. Application deadline is July 31st each year. Awards are distributed in January. Additional information is available on the TPWD website at: [http://www.tpwd.state.tx.us/business/grants/trpa](http://www.tpwd.state.tx.us/business/grants/trpa).

TPWD also administers the National Recreational Trails Fund in Texas under the approval of the Federal Highway Administration (FHWA). This federally funded program receives its funding from a portion of federal gas taxes paid on fuel used in non-highway recreational vehicles. The grants can be up to 80% of project cost. Funds can be spent on both motorized and non-motorized recreational trail projects such as the construction of new recreational trails, improvement of existing trails, development of trailheads or trailside facilities, and for acquisition of trail corridors. Further details are available at: [http://www.tpwd.state.tx.us/business/grants/trpa/#trail](http://www.tpwd.state.tx.us/business/grants/trpa/#trail).

**Regional Funding: Houston-Galveston Area Council (H-GAC)**

Through its regional transportation planning role, H-GAC has included more than 40 pedestrian and bicyclist projects in its current Transportation Improvement Program (TIP), representing an investment in nearly of $87 million. The 2025 Regional Transportation Plan (RTP), with subsequent amendments, contains an additional 61 pedestrian and bicyclist projects with a projected cost in excess of $96 million. In addition, a number of local governments have made significant local funding commitments to bikeway development in their current capital improvement programs.

According to data contained in the current draft of H-GAC’s [Regional Bikeway Plan](http://www.tpwd.state.tx.us/business/grants/trpa/#trail) update, H-GAC has identified, through its RTP, the following funding amounts to support pedestrian and bike projects in 11 area cities:

- City of Alvin: $929,550
- City of Baytown: $2,768,169
- City of Galveston: $220,000
- City of Houston: $112,385,161
As discussed earlier in this chapter, H-GAC is intent on assisting more area local governments, including the City of Pearland, to develop pedestrian and bicyclist plans and projects so they may be nominated for funding in future annual updates of the regional TIP. With a Trail Master Plan now in place, Pearland should aggressively pursue this opportunity and tap into the resources that are already benefiting other area cities. In addition, having aspects of this adopted Trail Master Plan reflected in H-GAC’s Regional Bikeway Plan – which Pearland Parks & Recreation Department staff have already accomplished through input to H-GAC – will lend further credibility to other grant-seeking efforts by the City.

5.6 Public Information and Promotion

Pearland is fortunate to be able to “compare notes” with the community outreach efforts of other area cities that have developed local trails, including the following examples:

- **City of Baytown**: Through the Parks & Recreation portion of its website, Baytown provides a list of local trails and City parks that include trails. A link after each location takes the user to an interactive map function that provides not only a map but also an aerial photo view the user can manipulate to zoom in or out, change the direction of the view (north, south, east, west), and pan to surrounding neighborhoods and features. This enables the user to clearly see the layout and characteristics of the trail and what the surrounding area is like.

  [http://www.baytown.org/parks/parks/parks-by-amenities.htm]

- **City of Lake Jackson**: Through the Parks section of its website, the City provides an overall park system map that clearly shows the location of linear parkways within the community relative to major streets, neighborhoods, downtown and other destinations, and creeks and other natural features.


- **City of Missouri City**: The Parks & Recreation portion of the City website offers links to an overall trail system map (existing and proposed) and
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individual trail segments, with their own maps. The website descriptions also indicate trailhead locations and other access points relative to nearby streets and landmarks, trail length and surface type (including credit to Texas Parks & Wildlife for a grant that funded resurfacing), and the number of parking spaces available.

[http://www.ci.mocity.tx.us/depts/parks/parktfp.htm]

- City of Seabrook: Prominent links are provided on the home page of the City’s website to its Seabrook Trails Map and Seabrook Trails Brochure, which recognizes how many visitors are attracted to Seabrook for its trails and birding opportunities near Galveston Bay.

[http://www.ci.seabrook.tx.us]

- City of Sugar Land: For its recently-completed Oyster Creek Trail, the City provides a variety of information within the Parks & Recreation portion of its website. This includes links to a trail map plus aerial views of the trail, description of access points and trail amenities, and highlighting the fact that emergency call boxes have been installed along the trail. Recent upgrades are also announced, such as the installation of permanent restroom facilities to replace portable units. It is also pointed out that a BMX track for youngsters and teens is available at a City park that is adjacent to the trail location.

[http://www.sugarlandtx.gov/parks_rec/recreation/parks_facilities/community_parks/oyster_creek.asp]

As listed in Section 5.4 under the heading, Community and Recreational Organizations, Pearland also has the distinction of having a handful of very active bicycling and fitness groups that should provide a natural trail constituency. But these groups will likely also have high expectations for trail quality and maintenance, as well as regular information and updates from the City. Suggestions for trail-related events and publicity to engage the community include:

- Trail corridor tours
- Walk-a-thons or Bike-a-thons along the trails
- Trail work days for volunteer involvement in upkeep

Recent construction of a new trail segment in Sugar Land, Texas, in a setting similar to conditions in Pearland.
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“Name the Trail” poster/logo contests for individual trail segments
Photo competitions for the best photographs taken along the City’s trail network (nature subjects, active users, sunrise/sunset, etc.)
Decorative bicycle parade
Nature walks
Column in local newspaper or City newsletter regarding trail news and happenings

The 1993 publication, Trails in the Twenty-First Century, from the Rails-to-Trails Conservancy, offers the following pointers for developing and maintaining relationships with property owners who are adjacent to trails:

- Provide a specific contact person for adjacent landowners to contact if any specific problems arise.
- Maintain trails on a regular basis and consider involving citizens in trail upkeep with volunteer work groups and/or “adopt-a-trail” programs.
- Promptly respond to problems, such as unauthorized motorized vehicles use, vandalism, theft of trail signs, and graffiti. Consistent quality upkeep of the trail will build community confidence in the ability to manage the trail.
- Consider scheduling regular meetings to receive input from users, residents and landowners.
- Invite landowners on a trail tour led by City staff or someone else who is involved with trail management or planning.
- Make sure adequate facilities, such as restrooms and drinking fountains, are provided so that adjacent landowners are assured that trail users will stay on the trail.

Public restrooms at trailhead locations involve additional cost and maintenance but may alleviate a concern of nearby property owners.