



# Chapter 6

## Growth & Infrastructure

### Town of South Padre Island Comprehensive Plan

The near-term efforts of the Island to manage the pattern, arrangement, and timing of future development – consistent with its economic development agenda – will determine its ability to maximize its value and secure quality, sustainable development outcomes. Growth management refers to a proactive approach for guiding development to occur at a time and in a manner by which the Town can feasibly provide adequate facilities and services.

### Purpose

Growth that is not managed or adequately planned for often leads to inefficient development in the undeveloped areas of the extraterritorial jurisdiction (ETJ). These areas often lack adequate street infrastructure, utilities, and other services like parks, trails, and police and fire protection. On a day-to-day basis, the Island is faced with the challenge of balancing investment decisions between the maintenance of existing infrastructure, facilities, and services. Inefficient growth exacerbates this situation, often leading to costly service and infrastructure provisions. While growth of the Island appears inevitable, its pattern, types, density and location can be effectively managed through advanced planning, sound infrastructure investment policies, and adequate coordination of development with the timely provision of adequate utilities and services. Well managed and fiscally responsible growth will contribute to the economic health of the Island and, ultimately, enhance quality of life.

The purpose of this chapter is to evaluate and compare the anticipated infrastructure and facility needs against future growth and provide direction in managing it in a fiscally responsible manner. In coordination with the land use task, this element identifies

recommendations and policies that direct growth in a responsible and sequential manner – first to areas that have adequate and readily available infrastructure and then to areas currently beyond the Town limits, as needed to meet the land use demands through the Year 2025.

## Growth and Development Issues

The following issues are central to the ability of the Island to effectively manage its development and growth in a wise and sustainable manner.

1. **Managed Growth and Annexation** – The Town currently has an ETJ that extends to the Brazos Santiago Pass on the south end and five miles on the north. The Town is experiencing development pressures to the north. An opportunity exists to ensure that new development is orderly and fiscally responsible through the imposition of the subdivision regulations and, possibly, the use of annexation and zoning. While annexation will be important in controlling the quality and type of development, it must be strategically planned and undertaken in a staged and deliberate manner, annexing only those areas necessary to accommodate or exercise authority over premature future growth. Promoting growth and annexing areas beyond what is needed to accommodate the population by the Year 2025 can result in increased traffic and a loss of Town character. A staged and sequential approach to annexation concurrent with the adequate provision of services and infrastructure will result in fiscally responsible development.
2. **Capacity to Support Future Development** – New development must be supported with utilities and infrastructure including, among others, water and wastewater, drainage, and roadways. While the Town does not have direct control over the provision of utilities, they must continue to work closely and coordinate with the Laguna Madre Water District to ensure provision of water and wastewater in a timely, logical, and sequential manner. Increasing capacity of the Town's infrastructure can be accomplished not only by increasing the size of plants and extending lines, but also by optimizing efficiency and the sustainable use of resources through compact development and promotion of infill development, adaptive reuse of under-utilized structures, and redevelopment. Roadways and improved transportation can be controlled through the Town's subdivision ordinance and within the Town's ETJ. A number of issues have been discussed within Chapter 4 (Mobility) of this plan. Of particular importance in this chapter is the location of the Second Causeway, and the expansion of public transit (The WAVE) as a means to get people to/from the Island.

3. **Provision of Adequate and Feasible Public Services** – As growth continues, the organization and administration of the police and fire departments must change as well to accommodate increased calls and demands for service. This change will warrant additional space, equipment, personnel and facility needs.
4. **Effective Stormwater Management** – Drainage is a continuing issue on the Island; current drainage problems occur along sections of roadways, and between individual lots. Problems can be attributed to the flat topography, the non-curbed street sections, insufficiently sloped road profiles, and the frequency or nonexistence of storm inlets. Some areas within Town experience heavy ponding and flooding during rain events. Storm drainage on east-west cross streets must be addressed by re-grading the ditches and swales during regular maintenance and improving site development standards. As development occurs, the impervious surface coverage will increase.

Managed Growth

- 6.A. Continue to coordinate fiscally responsible and well-managed growth with the provision of adequate public facilities and services
- 6.B. Develop a staged annexation strategy to accommodate future growth and development over the next 20 years

Recommended Actions

- 6.1. In coordination with the land use plan and zoning map determine the requisite future growth area that is appropriate and adequate to

**A Well-Managed, Sequential Approach to Growth**

*This plan emphasizes a management plan that promotes infill development and the sequential timing and phasing of annexation and development. This does not mean growth will be limited, but rather encouraged in a managed and fiscally responsible fashion that seeks to promote economic development initiatives, while preserving the natural assets and character of the Island, increasing efficiency, and reducing costs of providing services and facilities.*

*Benefits of managed growth include:*

**Adequate and efficient provision of services**

*As growth continues to occur, municipal services and facilities will need to be extended to emerging growth areas. This will result in the need for additional staff, equipment, and facilities including police substations and fire stations. Advance planning and the sequential timing of annexation will allow the Town to adequately prepare to serve these areas.*

**Fiscally responsible provision of utilities**

*Annexation and growth plans should be highly coordinated with the Laguna Madre District's ability to provide adequate water and wastewater services. The further development occurs away from existing services, the more costly and inefficient utility extensions and provision of services will be. While developers currently pay for utility extensions, maintenance of the system is the responsibility of the district. A number of improvements will have to be made to meet the projected growth (see Water and Wastewater section that follows).*

**Efficient and effective thoroughfare system**

*Growth and sprawl leads to an increase in traffic congestion and the resulting need for transportation improvements. Encouraging a logical and sequential pattern of growth promotes a more compact form of development and helps minimize constraints placed on the transportation system.*

**Preservation of natural assets and Town character**

*Preservation of natural assets is instrumental in the continued economic growth and vitality of the Island. Development patterns that focus on infill and redevelopment and encourage clustering and compact development will contribute to maintaining these highly valued natural areas. It*

accommodate development to the Years 2015, 2020, and 2025. This area is where capital improvements and services should be directed.

- 6.2. Develop an annexation plan to strategically annex land in advance of development.<sup>1</sup> Based on the projected acreage demands for individual land use types<sup>2</sup> and the projected future population, **Table 6.1, Land Capacity and Annexation Needs**, displays the total acreage demands by land use type, the currently available acreage, the resulting deficiency of vacant land inside the Town limits, and the current land capacity by land use type (in years).
- 6.3. Periodically update **Table 6.1** and use it in decision making as to whether annexation is necessary and warranted. Generally,

Table 6.1, Land Capacity and Annexation Needs

Use Type	Total demand, 2007-2025 (in acres) <sup>1</sup>	Existing Vacant Land	Year 2025 Deficiency	Current Capacity (in years)
Single Family	382.5	79.3	303.2	3.1
Multi-Family	162.3	143.8	18.5	13.3
Recreational Vehicle	34.8	24.3	10.5	10.5
Hotel/Lodging	41.7	24.6	17.1	8.8
Office/Retail	99.7	106.7	-7	16.1
Marina	23.2	14.5	8.7	9.4
<b>Total</b>	<b>744.2</b>	<b>393.2</b>	<b>351</b>	<b>7.9</b>

<sup>1</sup> Comprehensive Resort Market Analysis, 2005

direct new development to occur on infill parcels and areas immediately adjacent to the Town limits before significant territory is annexed. This will allow maximum efficiency of existing infrastructure. Exceptions must comply with the annexation policies and criteria provided later in this chapter.

- 6.4. Coordinate the long-term capital improvement plan with the annexation plan to ensure the availability and capacity of “full municipal services” within two and one-half years from the date of annexation. This must be closely coordinated with the Laguna Madre Water District’s long-term plan for provision of water and wastewater service.

<sup>1</sup> Since there are fewer than 100 tracts of land within the future growth area, an annexation service plan is not required (Sec. 43.052, Texas Local Government Code).

<sup>2</sup> Comprehensive Resort Market Analysis Study, 2005

- 6.5. Assess the feasibility of providing “full municipal services”<sup>3</sup> and weigh them against the anticipated revenues of each annexation proposal.

#### Capacity to Support Future Development

- 6.C. Support a sensible development pattern that minimizes impacts and costs to public facilities and infrastructure.
- 6.D. Support a second causeway located north of the Convention Centre.
- 6.E. Support and improve on transit (The WAVE) to, from, and on the Island.
- 6.F. Manage adaptive reuse, infill development, and intensification in certain areas.
- 6.G. Coordinate with the Laguna Madre Water District to ensure adequate water and wastewater facilities.
- 6.H. Promote water conservation measures and incentives.

#### Recommended Actions

- 6.6. Utilize the Future Land Use Plan to guide decisions about annexation and zone change requests, consistent with the staging of adequate public facilities and services.
- 6.7. Periodically update the study to quantify the demands and needed acreage of different uses. Subsequently, amend the land use plan and zoning ordinance accordingly. In this way, the Island can optimize the use of its land without infringing on the rights of adjacent properties or compromising Town character.
- 6.8. Meet quarterly with the Laguna Madre Water District to coordinate their capacity improvements and utility service provision with the growth plan of the Island. The infrastructure program must encourage a logical sequencing of contiguous development.
- 6.9. Coordinate with the Laguna Madre Water District to establish a water conservation program including conservation rate structures, water accounting (large volume user audits) and loss control, landscape efficiency, water use restrictions, rebates and incentives, reuse and recycling, and public education.
- 6.10. The Town should support year-round shuttle service to and from the Valley International Airport in Harlingen, and the

“The District is an area of explosive growth potential, particularly north of South Padre Island and west of Laguna Vista. Spring and summer tourism can result in extended periods of peak water usage greatly in excess of the usage by the permanent resident population. As a result of existing needs, unanticipated and unprecedented rate of growth, the District has historically experienced a situation of trying to keep up with needs and demands of the system. The planning and design of water facilities in tourist areas differ from the standards or average design criteria for relatively permanent population communities. Water systems must be designed to accommodate peak population conditions during any day of a month.”

<sup>3</sup> “Full municipal services” include police and fire protection; emergency medical services; solid waste collection; and operation and maintenance of streets and street lights, parks, and any other publicly-owned facility, building, or service. Section 43.056(b), Texas Local Government Code

## GOALS

Brownsville / South Padre Island International Airport in Brownsville. If private enterprise options are not viable, then the town should strongly consider the feasibility of providing the shuttle as part of The WAVE service.

- 6.11. Amend the zoning ordinance<sup>4</sup> to encourage xeriscaping for the purpose of water conservation.
- 6.12. Amend the landscaping regulations to encourage the use of bio swales rather than raised parking islands.
- 6.13. Explore the feasibility and options for making greater use of treated effluent for irrigation purposes (parks, medians, etc).
- 6.14. Set aggressive, yet reasonable, targets for reductions of household consumption of potable water based on historical use trends, availability and ease of installation of low-cost conservation technologies, and expansion of green water systems for irrigation.
- 6.15. Encourage residents to replace conventional fixtures in pre-1992 housing units with low-flow fixtures. Consider utility bill inserts with coupons for low-cost, low-flow shower fixtures, which can be paid by the water utility or through a partnership with local home improvement stores.

#### Provision of Adequate and Feasible Public Services

- 6.I. Continue to provide adequate public services including public works, fire and police protection.
- 6.J. Continue to support the needs of the Public Works, Police and Fire Departments to ensure adequate protection of the population

#### Recommended Actions

- 6.16. Prepare annual estimates of the daily population and review and adjust police and fire staffing needs as necessary and warranted.
- 6.17. Identify and acquire a site for a police substation to the south, and eventually north, to accommodate annexation.
- 6.18. Identify and acquire sites for new fire stations to the north and south, concurrent with future development.
- 6.19. Plan and budget for additional fire and police staffing and the requisite vehicles, equipment, and facilities.
- 6.20. Establish an asset management system for all Town vehicles and equipment, with regular service scheduling and a standardized replacement and procurement program.

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<sup>4</sup> Sec. 20-21, Required Landscaping, Town Code of Ordinances

## Drainage

- 6.K. Employ best management practices
- 6.L. Improve storm water management systems

Recommended Actions

- 6.21. Evaluate and amend as needed the requirements for on-site detention/retention.
- 6.22. Prepare a storm water management plan to quantify existing and projected demands, capacity deficiencies, and needed capital improvements.
- 6.23. Amend the zoning ordinance to better control building, impervious cover, and the ratio of open space and landscape surface.
- 6.24. Prepare a drainage master plan to prioritize improvements, particularly for Gulf and Laguna Boulevards and each of the east-west streets.
- 6.25. Amend the development ordinances to:
  - a. Require the use of best management practices in collecting, storing, and conveying storm water.
  - b. Accomplish improved water quality. Options include clustering or contribution to a community stormwater system (known as avoidance); water gardens, rain barrels, and swales (minimization); or retention/detention (mitigation).

## GOALS

**Water and Wastewater**

The Laguna Madre Water District provides water and wastewater service to the Island and Port Isabel, the Village of Laguna Vista, and the unincorporated area of Laguna Heights.

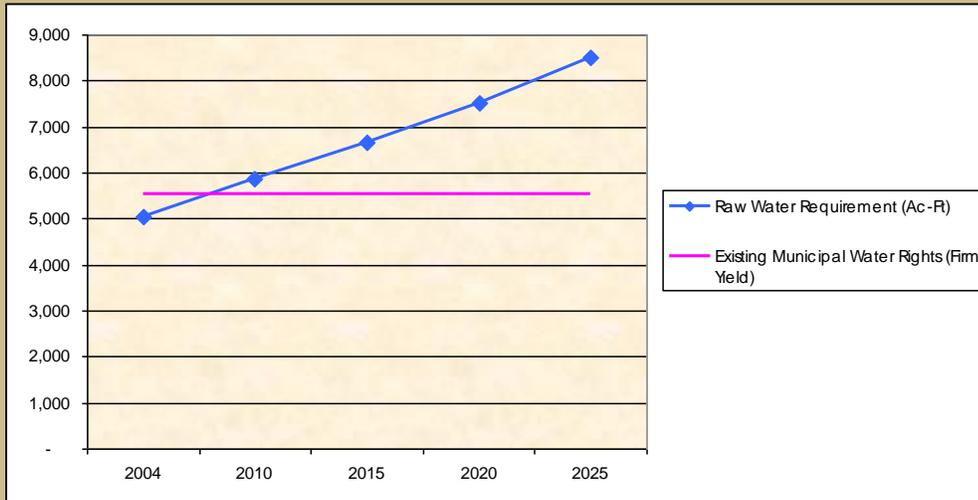
## Water

The District maintains its own water supply system from the Rio Grande River to two water treatment plants (WTPs) located in Port Isabel (WTP#1) and Laguna Vista (WTP#2). WTP#2 supplies the Island and Laguna Vista. The current total capacity of both plants is 9.1 million gallons per day (MGD); however, WTP#1 is planned for closure, with a planned upgrade of WTP#2 from five to ten MGD.

Based on a 2.5 percent growth rate,<sup>5</sup> to accommodate present and future growth, the district will have to complete several water supply, treatment, and distribution projects including purchasing additional water rights and providing for additional potable water capacity.

<sup>5</sup> Comprehensive Plan for Water and Wastewater Facilities, Laguna Madre Water District, 2004

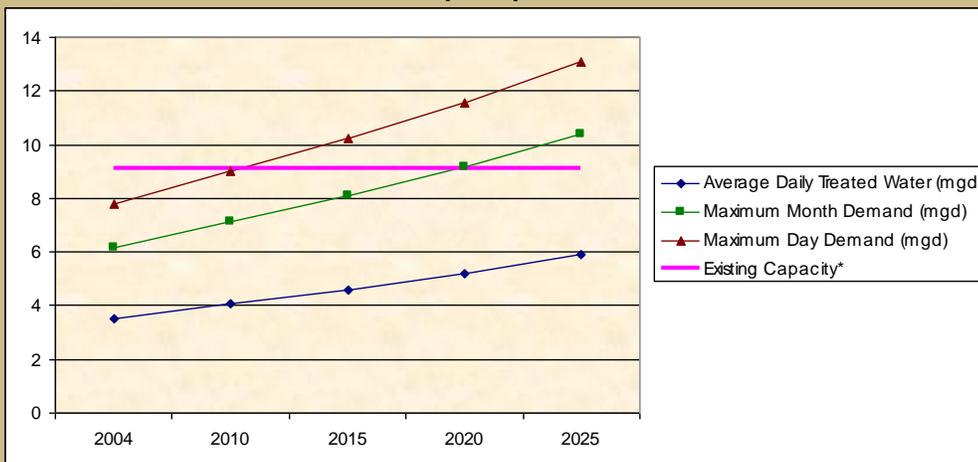
**Table 6.2, Raw Water Requirements**



Source: Table 6.1, Recommended Water Rights, Comprehensive Plan for Water and Wastewater Facilities, Laguna Madre Water District, 2004

NOTE: Over the next 20 years, the district will have to purchase an additional 3,500 acre feet of water rights.

**Table 6.3, Water Treatment Plan Capacity**



Source: Table 4.3, Summary of Projected Water Use, Comprehensive Plan for Water and Wastewater Facilities, Laguna Madre Water District, 2004

NOTE: Currently, the water plants are at 85 percent treatment capacity. In five years, they will be at 90 percent capacity based on 10 MGD. The District will need additional water treatment capacity of at least 2.0 MGD to satisfy short- and long-term needs.

The plan considered four options to obtain additional capacity:

Implement seawater desalination.

1. Purchase water from the Southmost Regional Water Authority.
2. Implement brackish groundwater desalination.
3. A 7.0 MGD expansion of Surface Water Plant No. 2 (instead of 5.0 MGD expansion).

Currently, the district is undergoing a pilot study for a 1 MGD seawater desalination plant on the north part of the Island. The study will determine its feasibility. Based on the seawater desalination

option, below are the water needs and priorities:

Immediate Needs (2005-2007):

1. Abandon Water Plant No. 1
2. Water Plant No. 2 Expansion of 5.0 MGD.

3. Conversion of existing 16" raw water line to potable transmission line.
4. Rehabilitation of Port Isabel Elevated Storage Tank.
5. Connection of Laguna Heights Elevated Storage Tank to Mainland.
6. Begin Seawater Desalination evaluation process to include: well field or sea water intake and discharge locations, test well drilling, right of way permits, discharge permit, preliminary design.

#### Short-Term Needs (2007-2010)

1. Seawater Desalination Phase 1 – 1.0 MGD.
2. 0.3 MG elevated storage tank west of Laguna Vista.
3. 0.3 MG elevated storage tank north of South Padre Island.
4. 16" waterline interconnection at Old Causeway in South Padre Island.

#### Long-Term Needs (2010-2025)

1. Seawater desalination phase 2 – 1.0 MGD.
2. Additional water treatment capacity needed until the Year 2025.

#### Wastewater

The district has four wastewater treatment plants (WWTPs), including two on the Island (3.35 MGD). The two plants include Isla Blanca (2.6 MGD), which treats the wastewater in the southern part of town, and Andy Bowie (0.75 MGD) for the northern area. Both plants discharge their treated effluent into the Laguna Madre.

The growth potential is in the area of the Andy Bowie plant, which will require expansion to accommodate future growth. The current potential for a 30-day flow exceeds the plant's current treatment capacity. Short-term needs include expansion of the plant to 1.5 MGD, which would satisfy the needs to the Year 2020. The Isla Blanca plant has sufficient capacity to treat the wastewater generated within its sewershed boundaries at full development. Improvements are needed to the collection system in both areas.

## **Annexation**

Generally, annexation should occur prior to or concurrent with development to properly plan for and coordinate the extension of adequate public facilities and services. The following goals should be considered in guiding the Town's decisions for annexation:

## GOALS

- 6.M. Establish criteria to consider the suitability and fiscal benefits of annexation.
- 6.N. Manage the long-term pattern of growth in a fiscally responsible manner, while balancing market demands and economic development objectives.
- 6.O. Coordinate future growth with infrastructure and public service investments such that the pattern and timing of development occurs in a fiscally responsible manner.
- 6.P. Annex in compliance with the policies of this plan.

### Recommended Actions:

- 6.26. Update and revise the Town's annexation plan once Home Rule is established, and develop an associated service plan to allow methodical expansion and maintenance of Town facilities and public services (in coordination with the Laguna Madre Water District where determined feasible and beneficial).
- 6.27. Maximize the efficiency of the existing infrastructure. Growth should first be directed toward vacant lots and under-utilized lands before the growth area is considered for annexation.
- 6.28. Commit capital facilities and public services in accordance with the Town's growth plan.
- 6.29. Use fiscal impact analyses to assess the projected costs of providing public services and weigh them against the anticipated revenues of each annexation and development proposal. The intangible benefits of annexation, such as the ability to impose the Town's zoning authority, should also be closely evaluated.
- 6.30. Consider negotiated agreements in lieu of annexation to provide for interim service arrangements, cost-sharing or fee mechanisms, and adherence to the Town's development standards, where short-term annexation is not feasible.

### **Disaster Recovery**

In addition to implementing the Town's Emergency Management Plan, provisions need to be put in place to help property owners recover from catastrophic events as quickly as possible, especially in the event of a natural or man-made disaster that causes significant damage, such as damage from hurricanes, high winds, high waves, earthquakes, off-shore oil or gas spills, etc.

- 6.Q. Include ordinances that address disaster recovery.
- 6.R. Establish Contracts and Memorandums of Understanding before a disaster happens.
- 6.S. Improve upon communication systems for residents, business owners, tourists, and the Town in order to assure easy access to necessary information following a disaster.

Recommended Actions:

- 6.31. Property owners should have the ability to put up temporary structures to live in, or for local businesses to continue operations, while cleaning up the damage and rebuilding formerly existing structures.
- 6.32. Property owners should be allowed to temporarily put unscreened dumpsters on their property following a disaster.
- 6.33. Consideration should be given to allowing the placement of these temporary structures within the Town's right of way, and existing parking lots, even if this causes a temporary reduction in parking that does not meet the parking requirements that are existence under normal circumstances.
- 6.34. Whenever possible, effected businesses should be allowed to remain open, utilizing temporary structures, and temporary access to utilities through the use of generators, port-a-potties, and bottled water to the extent that public safety allows.
- 6.35. Review and maintain contracts with private trash and brush removal vendors prior to the occurrence of a disastrous event to ensure that these services are significantly increased to respond to increased need for removal of debris.
- 6.36. Contracts should be put in place with dredge companies and trucking companies that can manage large volumes of sand so that the Town can act quickly in response to any incident involving a large loss of sand on our beach.
- 6.37. The Town needs to stay current with innovations in sand placement techniques and develop contracts with legitimate companies that can provide those services, especially in event of a disaster (i.e., post-disaster recovery).
- 6.38. Establish Memorandums of Understanding with the federal government, the State of Texas, Cameron County, and the Brownsville Port Authority to allow for quick response following a disaster.
- 6.39. Maintain and update as necessary, the Town's emergency website (<http://www.spiemergency.com>), with links to other websites and pertinent phone numbers. The site also has

downloadable content such as evacuation routes, the FEMA homeowner's plan, pet plan, storm tracking, and special assistance information.

- 6.40. The frequently asked questions on the Town website should include information regarding the addresses for emergency shelters as soon as this information becomes available.
- 6.41. Include updates and links to TXDOT's recovery plan, the Laguna Madre Water District's recovery plan, the utility companies' recovery plans, as well as to FEMA and SBA assistance.
- 6.42. Maintain and update pet rescue information on the town website.
- 6.43. Provide an information sheet at City Hall containing all pertinent information.
- 6.44. Once open, the CVB will need to implement an ad campaign to inform the public that businesses and the beach are open.
- 6.45. The Town should establish different locations for obtaining needed information for residents, tourists, and business owners.