

05 MASTER PLAN

EAST END LAGOON PARK & PRESERVE
Master Plan, Galveston, Texas



05 Master Plan

5.1 Programming

The design team developed a planning program for the East End Lagoon Park & Preserve. The program identifies key elements that need to be included as part of the master plan. For each site element, the design team explored the basic criteria for how best to implement a particular element.

Park & Preserve Operating Procedure

- The Park & Preserve is not gated or fenced, and is open to the public.
- There is no fee to access the Park & Preserve.
- Our goal is to use the Park & Preserve to tell the story of man's interaction with natural resources in coastal zones.
- The Park & Preserve will be managed to allow it to continue to be a dynamic and constantly changing landscape.
- Ecologists will manage the Park & Preserve to ensure there is a diversity of ecosystems and landscape features in order to continue to tell the story of coastal zones.
- The Park & Preserve is geared toward day use, and the only nighttime activities will be programmed and scheduled.
- There will be an estimated 2 to 3 full time staff for the Park & Preserve.
- A number of volunteers will be utilized to augment the work of paid staff.
- The Park & Preserve will be open year round.
- The Park & Preserve, and the environmental education center in particular, will be the hub of environmental tourism in the island/region.

Environmental education center

- The center will ultimately be 15,000 to 20,000 square feet.
- Construction and operation of the center will focus on sustainable materials and practices.

- Sustainability will be a major part of the interpretive experience, so materials and processes will be as "green" as possible.
- The center will be designed and constructed in phases.
- The center will include multi-use meeting spaces that can be used to generate revenue. These event spaces will also be used for after-hour activities.
- A warming kitchen will be included for use at events and other activities.
- A small cafeteria, such as a small sandwich stand, will be part of the retail center.
- Limited on-site parking (approximately 50 spaces) will be provided near the environmental education center.
- Parking at the environmental education center will be paid parking.
- A drop-off for cars and buses will be in front of or adjacent to the center.
- A retail center that focuses on products related to natural science and the coastal region will be included.
- The retail center will also include items such as sunscreen, frozen bait, snacks, drinks, fishing poles, and other day-to-day items.
- A lobby/reception area will be located near the front of the center.
- The center will include two kinds of exhibits – permanent exhibits and traveling exhibits that are changed periodically.
- The center will include classrooms that can be used for learning opportunities.
- Restroom facilities will be available in the center.
- The center will include administration and support offices for use by staff and volunteers.
- The center will include rental facilities such as kayaks, fishing poles, canoes, binoculars, and other equipment that could enhance the recreation and learning experience.

Beach

- It will be important to coordinate activities at East End Beach with the Park & Preserve.
- One option is to move some programmed activities to Stewart Beach.
- Continue to provide both free and paid parking on the beach.

Lagoon

- Kayaks and canoes are allowed. Provide an access point for putting in kayaks/canoes, but do not allow kayaks/canoes out into the ship channel where safety is a concern.
- Include a boat livery – rental concession for the lagoon .
- Provide active recreation as well nature/environmental experiences.
- Provide swimming facilities in selected locations.
- Address operational issues such as lifeguards, liability issues, etc.
- Open up the control structure at the north end of the lagoon to allow for better water movement. This will help create a healthier lagoon environment.
- Provide fishing opportunities, including small docks, etc.
- Provide trails that go all the way around the lagoon.
- It is likely not feasible to have a bridge or boardwalk cross the lagoon.

Parking / Traffic

- Avoid adding more roads within the site.
- Provide a series of parking “cells” around the site, especially along Boddeker Road.
- Ensure that adequate free parking is available to accommodate existing uses, such as fishing.
- Eliminate on-street parking along Boddeker Road. On-street parking along Apffel Park Road would be acceptable.
- Try to ensure that new parking areas are constructed only in locations that have already been disturbed.
- Provide an overall way-finding system that ties this all together – trails, parking, circulation, etc.
- Add parking gates to selected parking lots; they would allow us to reserve parking for events at the center without worrying about

beach users taking all the spots. This would also facilitate more revenue collection if fees were collected for parking lots. In times where there were no events at the center, gates would be up and beach parkers could use the lots.

Trails

- Provide a variety of walking experiences, including both paved and unpaved trails.
- Use boardwalks in selected areas, especially around the interpretive center, in order to provide ADA accessibility.
- Use trails to connect to major components on and around the site.
- Connect trails with the village center at BeachTown.
- Boardwalks would be designed to maintain wetland hydrology and to minimize impact to site.
- There should be opportunities to stay clean (be on boardwalk) or to get dirty (go hiking through the wetlands) to provide different experiences for visitors.
- Restrict the use of motorized vehicles on the site.

Landscape Restoration Opportunities

- Identify restoration opportunities along Boddeker Road.
- Restore areas in the salt marsh area to the east of the lagoon
- Areas for restoration include: the coastal prairie area; the dune edge; the lagoon edge; the beach zone north of Big Reef; and the black mangrove area.
- Restore bird and wildlife habit areas.
- Create restoration zones that function as living laboratories.
- Pursue teaming opportunities with Texas A&M. These types of opportunities could also include school kids.
- Extend the lagoon further to the east by deepening existing depressions or gullies to create more wetland coastline and opportunities for kayaking, wetland restoration activities, and birding.

Site

- Provide platforms that serve as gathering places and can be used for interpretive opportunities.
- Provide outdoor structures that offer simple shade and shelter.
- Include outdoor classroom spaces.

- Define trailheads that connect from the perimeter into the site.
- Provide seating opportunities.
- Provide raised platforms that are up high enough to serve as viewing decks.
- There are three different types of structures – open platforms; platforms with open, overhead structures such as trellises; and solid overhead structures and perhaps a wall or two.
- Do not run utilities to amenities other than the environmental education center and bait camp.
- There are utilities (sanitary and water) going to the LORAN site.
- Provide open outdoor structures without walls.
- Use a modular system for these outdoor structures.
- Provide minimal lighting throughout the site.

Big Reef

- Less programming expected here due to periodic dredging.
- Continue to tell the story of this area even as things change.
- Provide trails, access points, and overlook opportunities.
- At times the Big Reef area may be closed off due to construction activities

Environmental Education Center - The proposed environmental education center is located off of Boddeker Road just east of the lagoon. The building will be set a minimum of 100' away from the lagoon in order to minimize environmental impacts to jurisdictional wetlands. This part of the site is already disturbed, and emphasis will be on keeping construction impacts to a minimum.

Raised Platform - One of the biggest constraints for the environmental education center is that it had to be raised a minimum of 18' above sea level in order to avoid hazards associated with storm surges and severe weather impacts. As a result, the buildings are located on a raised platform. The advantage of this solution is that visitors have stunning views looking across the site that include the lagoon, the marsh areas, the beach and the dunes to the east, the Big Reef area, and the shipping channel.

Interpretive Pier - A 400'-long "interpretive pier" that runs parallel to Boddeker Road provides access to the raised platforms that house the environmental education center. The basic concept is that this structure would visually look like an old fishing pier on the site, and would appear to "fit" the site better than would a more utilitarian structure. The pier in essence functions as a long ramp that has a 5% slope and provides handicapped accessibility to the environmental education center. The east end of the pier is at ground level, and it connects to one of the major gateways into the site. Facilities at the gateway include an overhead structure that provides shade, interpretive panels that provide an overview of the Park & Preserve, and benches for the weary. Visitors can either follow paths leading into the site or traverse up the interpretive ramp.

Four landings, or platforms, are located along the interpretive pier. Each includes benches and interpretive panels, and is wide enough for a small group of people to gather. One of these landings, located about 2/3rds up the ramp, is covered to provide shade, and it is large enough to accommodate a class of school kids. This large landing including amphitheater seating facing the Park & Preserve, and the area below the landing can also be used as a gathering space.

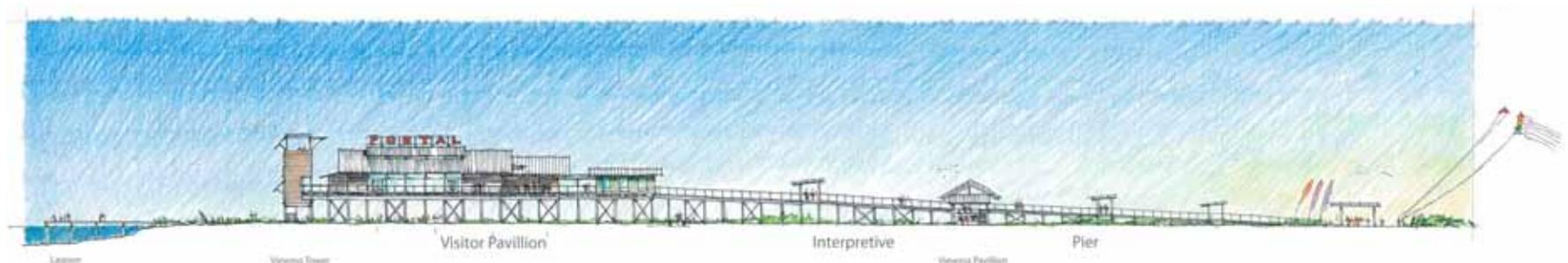


Figure 5.1: South Elevation

At each of the four landings are steps that allow visitors to access the interpretive pier at any of these points. There are also steps that lead directly to the environmental education center platform.

5.2 The Buildings

A series of modular buildings make up the environmental education center. This approach will allow the environmental education center to be developed in phases. Up to four individual buildings are shown on the

plans, but construction can be stopped at any point. It would be prudent for the City to re-evaluate their wants and needs before developing subsequent phases of the project.

The center includes multi-use meeting spaces that can be used to generate revenue. These event spaces will also be used for after-hour activities. Sustainability will be a major part of the interpretive experience, so materials and processes will be as transparent as possible.



Figure 5.2: Looking East from Lagoon at the environmental education center

The four phases for building development are as follows:

Phase I

The first phase of the environmental education center involves developing the interpretive pier, the first building platform, approximately 7140 sq. ft. of enclosed, climate controlled space, and a viewing tower that serves as the iconic image of the center. The building itself includes a small gift shop, office space for staff, a small warming kitchen for use with events and other activities, a mechanical/storage space, restrooms, and a multi-

purpose room. A lobby/reception area is located near the east side of the center. The retail center will also include items such as sunscreen, frozen bait, snacks, drinks, fishing poles, and other day-to-day items. A covered deck is located on the west end of the multi-purpose room. The decks offer 360-degree views. Below the main platform is space for storage and hands-on interpretative activities. The observation tower is located on the far west of the platform and extends one level about the main floor. An elevator could be located in the tower in order to ensure that all visitors have an opportunity to experience the views from the top level of the tower.

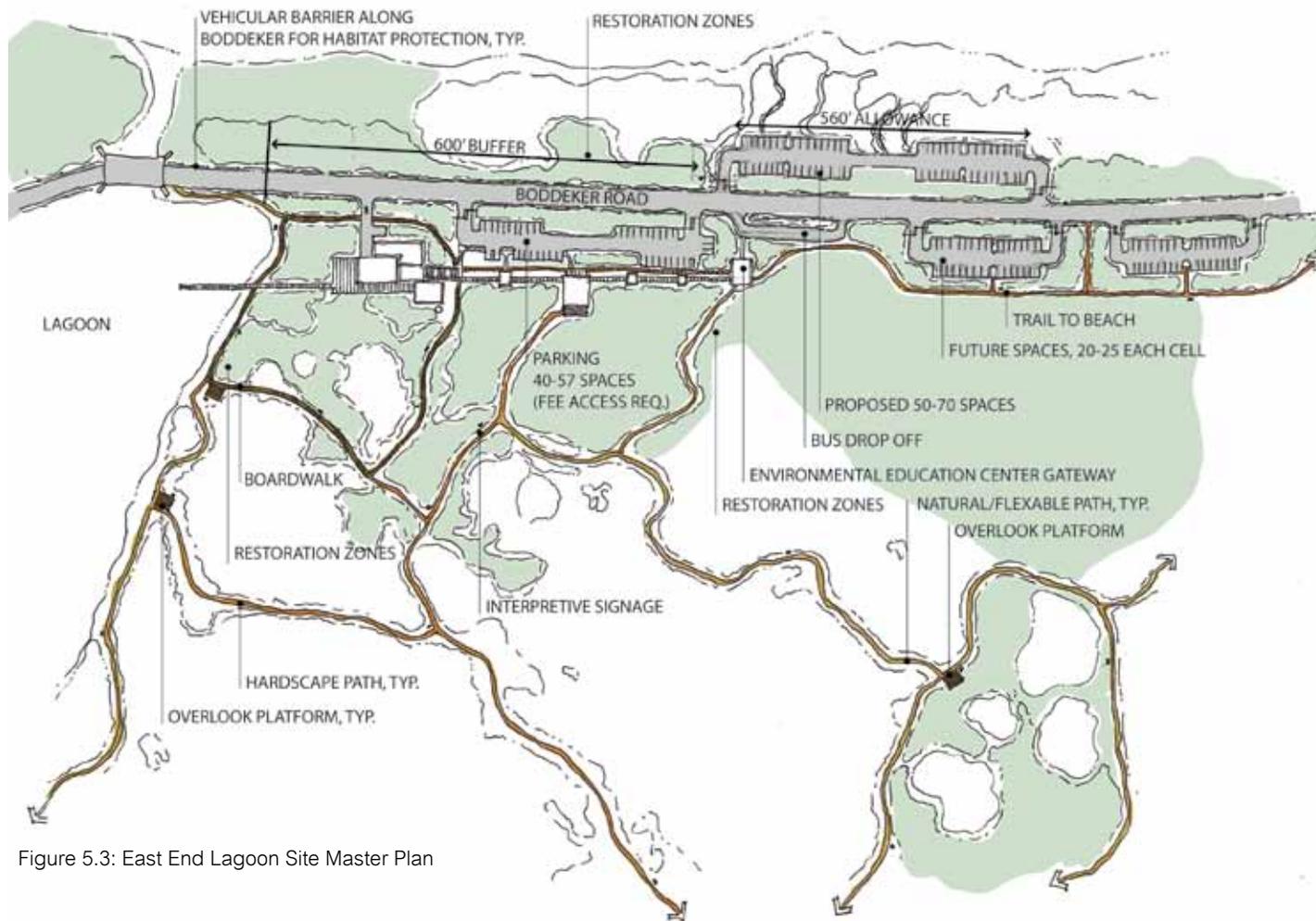


Figure 5.3: East End Lagoon Site Master Plan

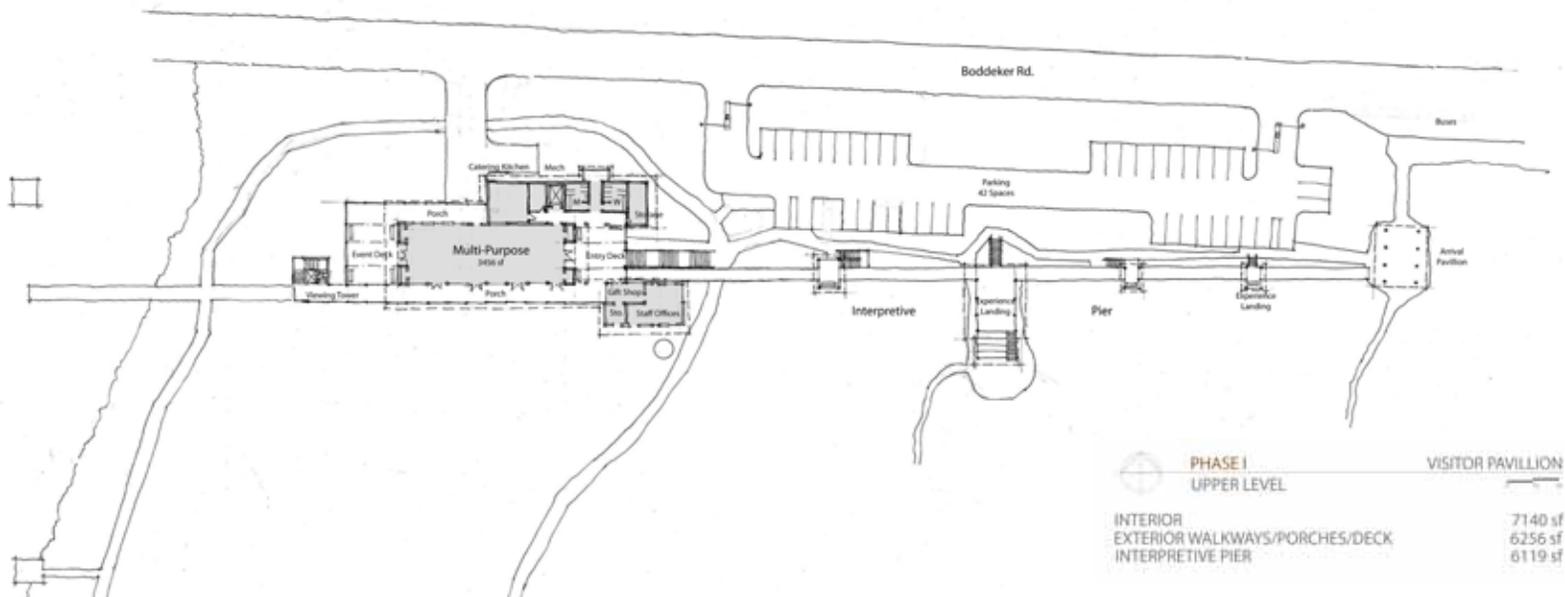


Figure 5.3: Phase I Main Level

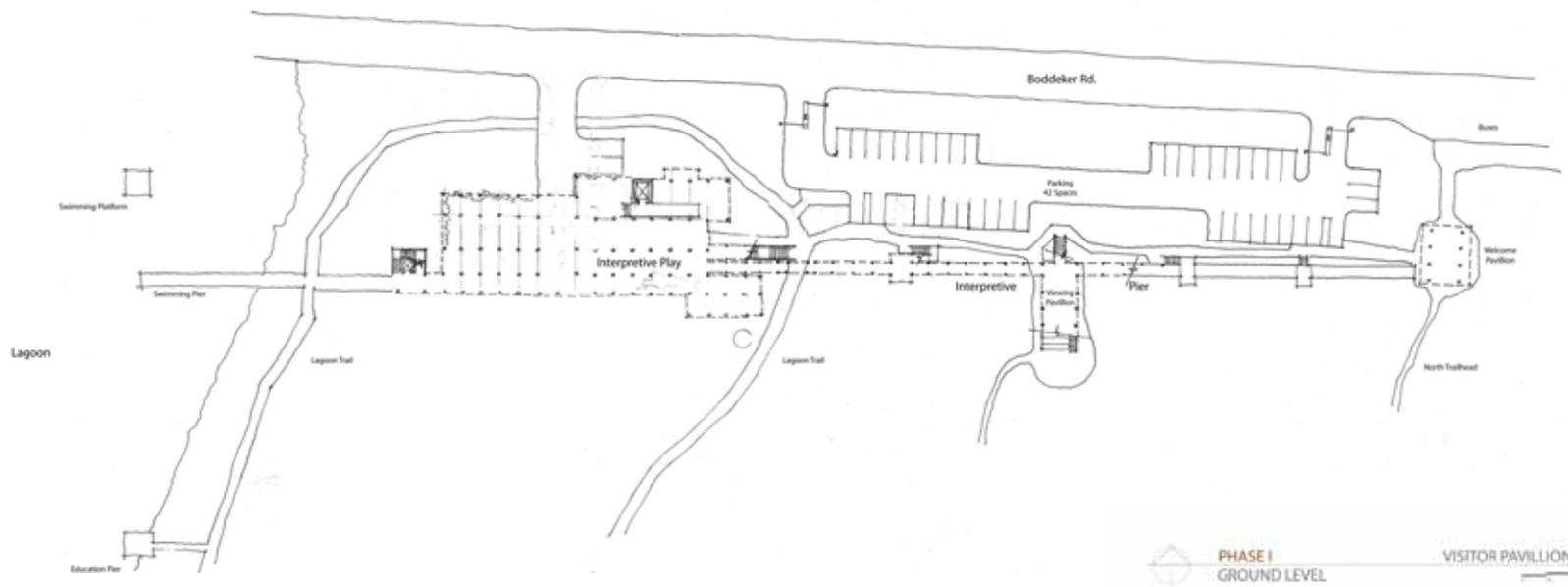


Figure 5.4: Phase I Lagoon Level

The multi-purpose room can be used as a classroom, meeting space, or event space. Renting this space out to various organizations and agencies as well as to individuals is expected to be one of the major revenue generators for the Park & Preserve. An elevator that can be used for both service activities as well as for visitor access is also including in this first phase of development. This means that ADA standards are met via the elevator as well as the interpretive pier, which serves as an ADA-compatible ramp.

The first phase of the environmental education center will also include a small parking cell near the center. This parking cell runs parallel to Boddeker Road and will include gates so that fees can be charged for visitors. A drop-off for cars and buses is located off of Boddeker Road. The first phase also includes tent camping and the Seawall Trailhead.

Phase II

In the second phase of the environmental education center, the building platform is expanded and a second structure, approximately 4,000 sq. ft. in size, is constructed. This additional space is intended as an environmental education and interpretive space and would include interpretive displays that tell the story of Galveston Island, barrier islands, and coastal environments. The gift shop is expanded and additional staff offices, storage space, and covered deck space is provided. A total of approximately 5,040 sq.ft. of interior space is added.

The deck wraps completely around the new building space, continuing to offer 360-degree views of the site.

The primary benefit of building Phase II is that the addition of a second building provides a lot more flexibility for providing interpretive opportunities for visitors. The Phase I multi-use space needs to be kept open for the most part in order to allow meetings, classroom activities, and other events to occur. As a result there is no space for permanent exhibits inside, and this limits opportunities to tell the story of the site, Galveston Island, and barrier islands as a whole. Some interpretive exhibits could be used in Phase I, but they would probably be limited to wall displays so the multi-use room would not be encumbered by physical structures in the space.

The Phase II building would be able to accommodate permanent exhibits as well as be used for classroom activities. The building space would also be designed to allow for groups to sleep over here via sleeping bags with pads, cots, or other removable sleeping gear. This activity would help generate revenue for the Park & Preserve and will help balance the budget. The decks wrapping around the Phase II building continue to offer stunning views of the lagoon and main body of the Park & Preserve. The decking on the east side of the building can also be used for events and other gatherings.

Because the Phase II building and decking is so close to the Phase I structure, the overall footprint of the environmental education center is kept to a minimum. This will reduce potential negative environmental impacts on the site. The intent is to stay far enough away from the lagoon so it is not impacted, and to avoid the wet areas on the site by building on the upland areas of the site. The building at the Seawall Trailhead is also located away from the edge of the lagoon.

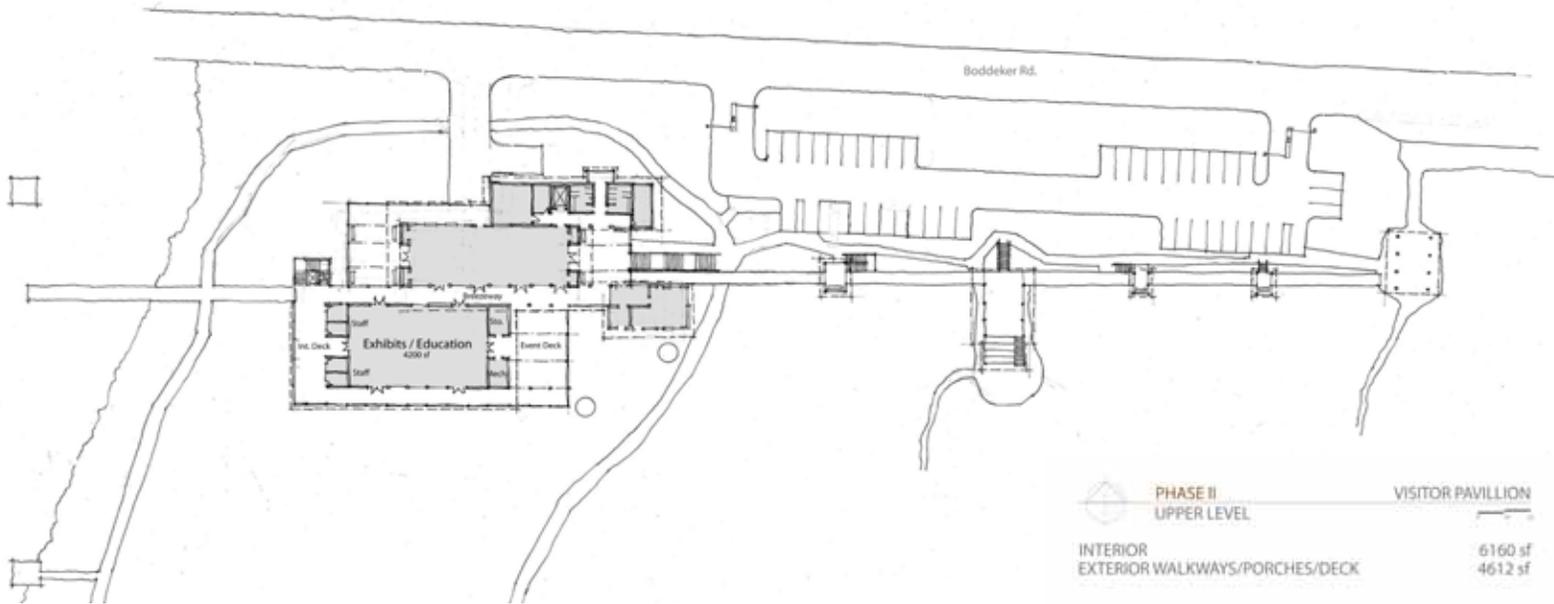


Figure 5.5: Phase II Main Level

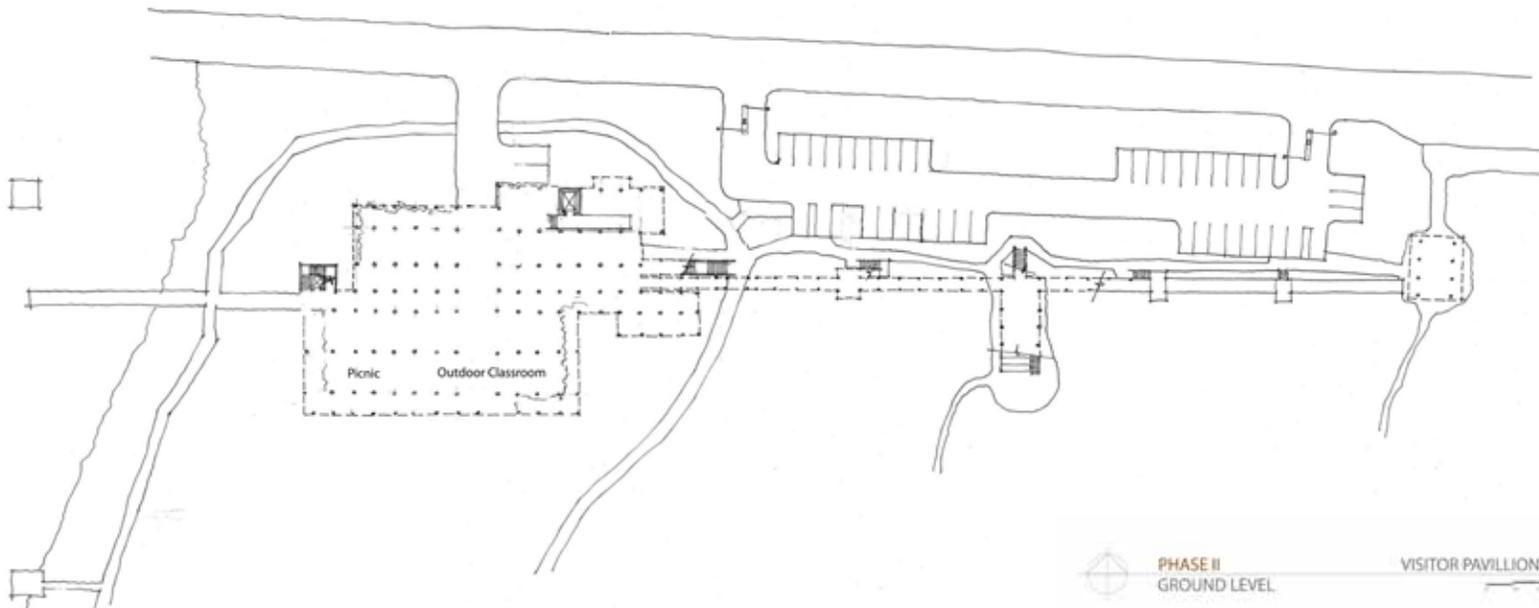


Figure 5.6: Phase II Lagoon Level

Phase III

The primary purpose of Phase III is to extend the amount of climate-controlled interior space, which provides greater flexibility in terms of exhibit and classroom space. In the next phase of the environmental education center, the platform is expanded further, and an additional building is added. This building includes space for an expanded multi-purpose room / classroom, and for expanded interpretive / retail space. A deck accessible from the multi-purpose room / classroom space is added, as is a wrap-around deck on the south side of the new building.

The layout of the decks will continue to allow great views to the main part of the Park & Preserve. The deck overlooking the lagoon is accessible only from inside the Phase III building, so its use will be limited. The views looking eastward toward the lagoon are still available from the decks constructed as part of the first two phases.

As with Phase II, the overall footprint of the environmental is kept to a minimum by locating the additional building and decking adjacent to that of Phase II. Construction impacts will also be minimized because access to the construction area will be underneath the building platform for the first two phases. The majority of the construction phasing will occur underneath the building platform, so impacts to the site and to the overall visitor experience will be minimal.

The basic idea is for any new construction to be done without compromising the experience for those visiting the site or the environmental education center. The buildings that were built in the first two phases of the project would not have to be closed during construction of the Phase III building.

Phase IV

In the fourth phase of the project, if desired, an additional building is added for use as an expanded flexible interpretive and multi-purpose space. This building also includes additional staff office space as well as restroom facilities and mechanical/storage space. An uncovered deck wraps-around the south and east side of the building.

As with Phase III, the decks in this phase continue to allow very good views to the main part of the Park & Preserve. There is no decking on the west end of the building, so there are no new views toward the lagoon from

Phase IV. The views looking eastward toward the lagoon are still available from the decks constructed as part of the first two phases.

Construction of Phase IV would require equipment and work crews to access the construction site from underneath the building platform that would be developed through the earlier three phases. This will have an impact on uses that are planned for underneath the platform.

One concern is that construction of the Phase IV building and decking may intrude upon the existing wetlands on the site. The edge of the wetlands needs to clearly be delineated before Phase IV is constructed, and if necessary the overall design of this phase may need to be modified in order to avoid the wetlands. Care will also have to be taken to ensure that construction staging and other construction activities do not have a negative environmental impact.

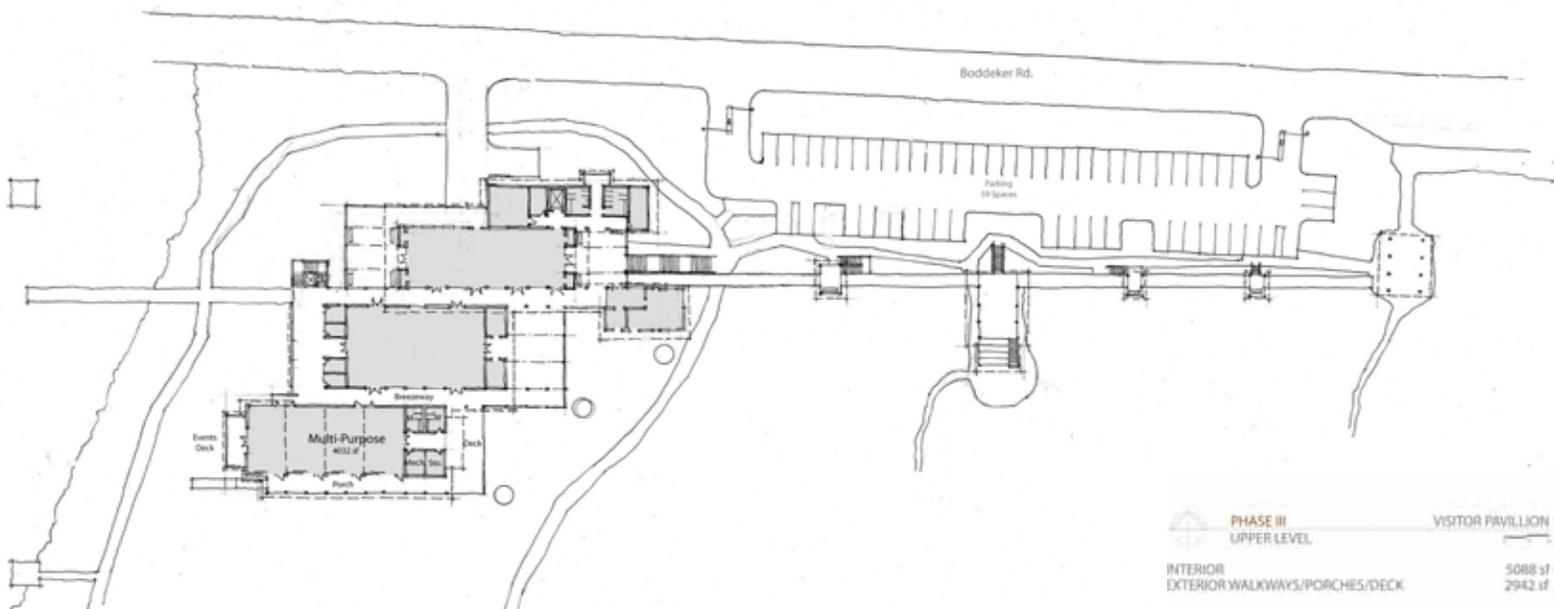


Figure 5.7: Phase III Main Level

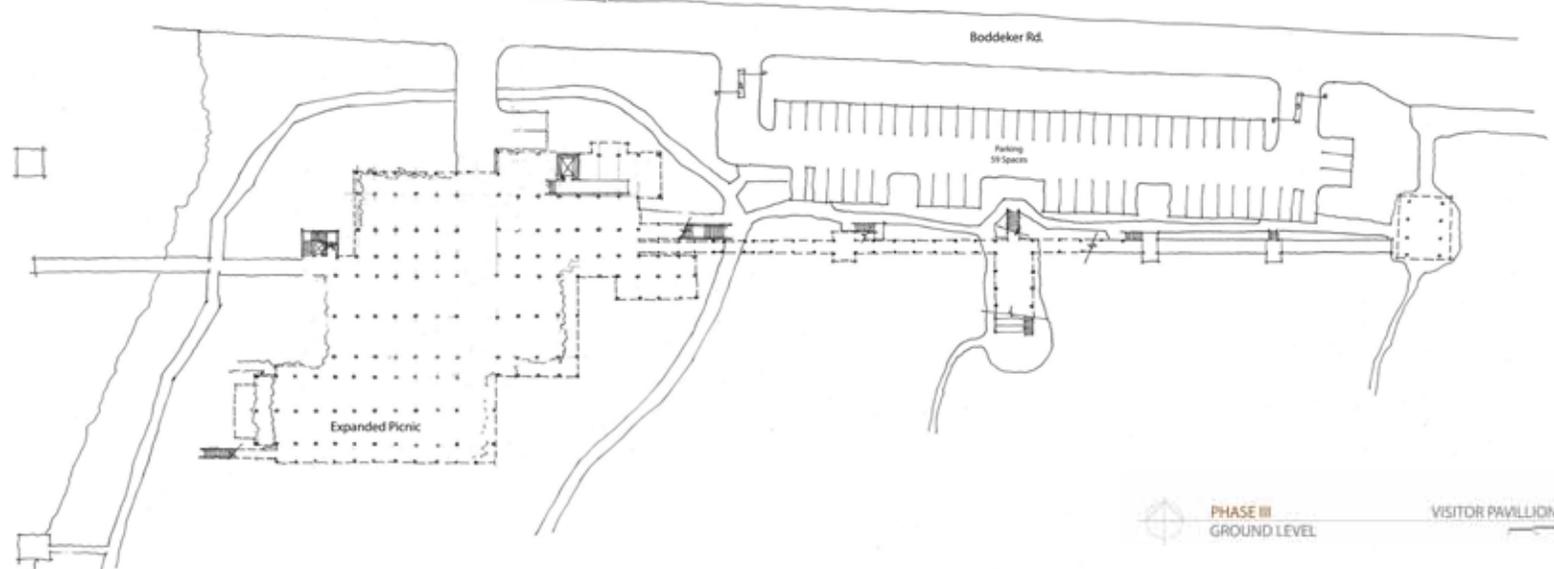


Figure 5.8: Phase III Lagoon Level

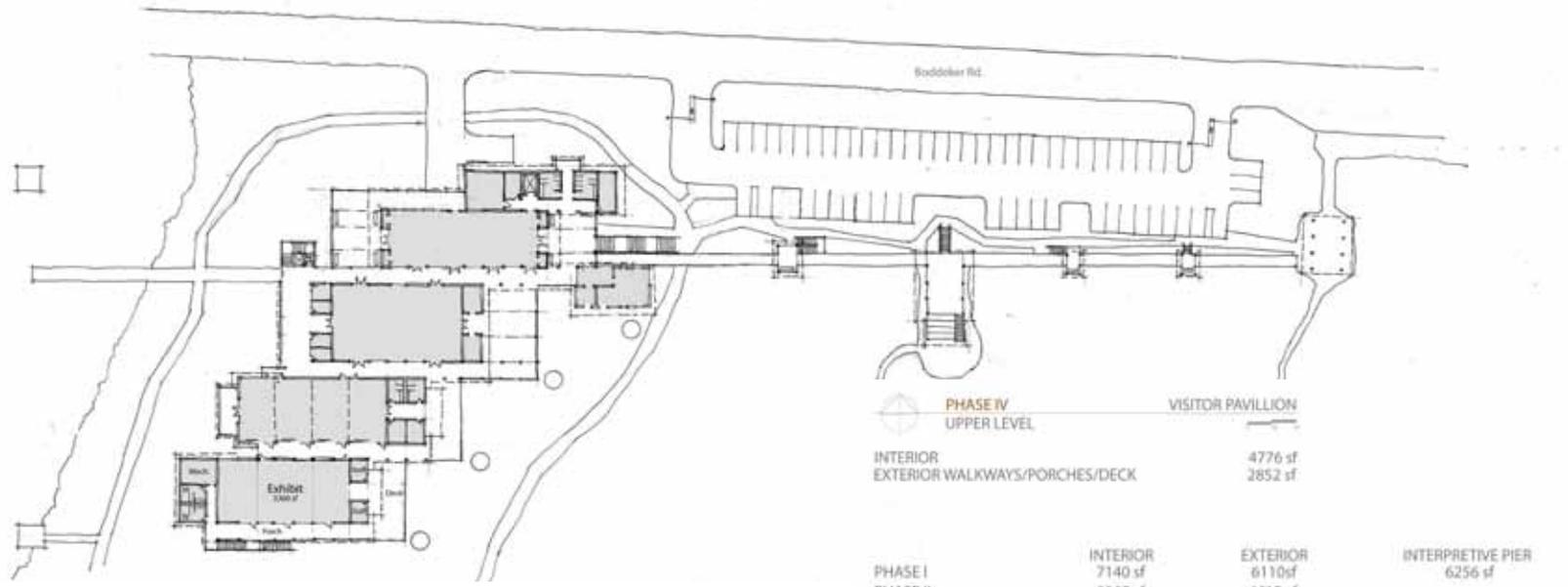


Figure 5.9: Phase IV Main Level

	INTERIOR	EXTERIOR	INTERPRETIVE PIER
PHASE I	7140 sf	6110sf	6256 sf
PHASE II	6160 sf	4612 sf	
PHASE III	5088 sf	2942 sf	
PHASE IV	4776 sf	2852 sf	
TOTAL	23164 sf	16662 sf	6119 sf

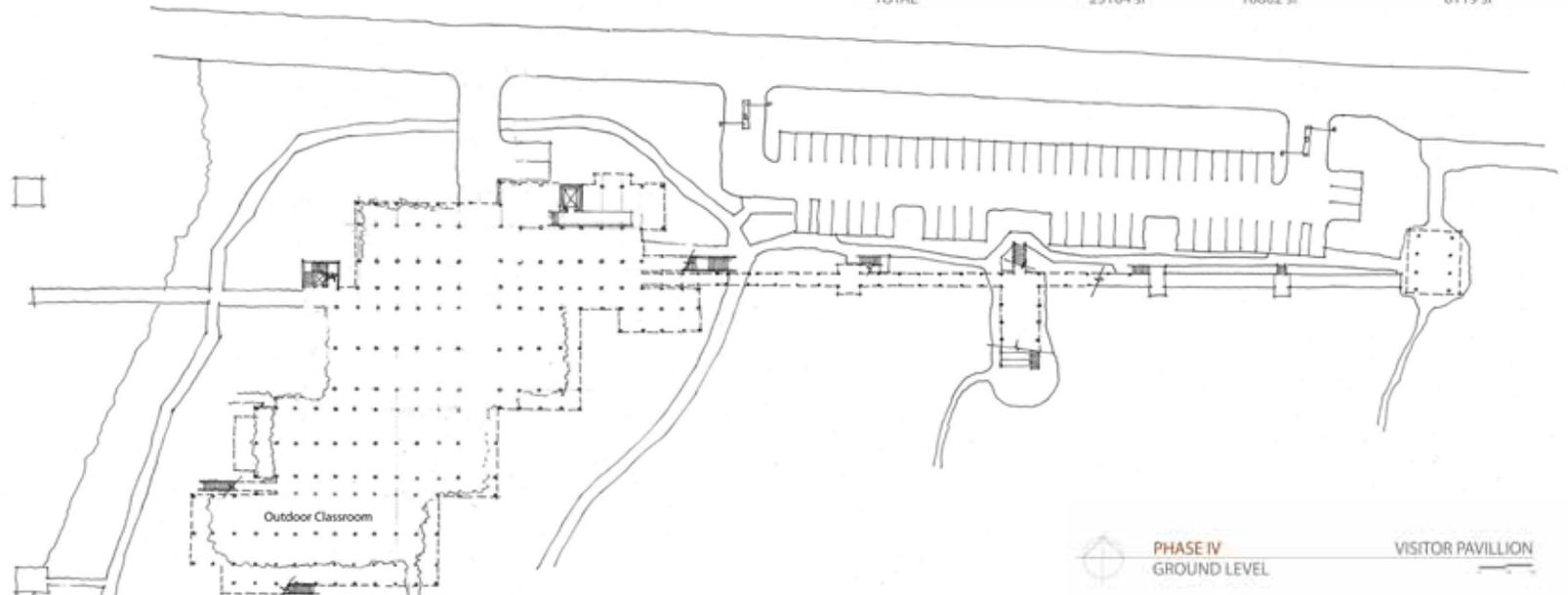


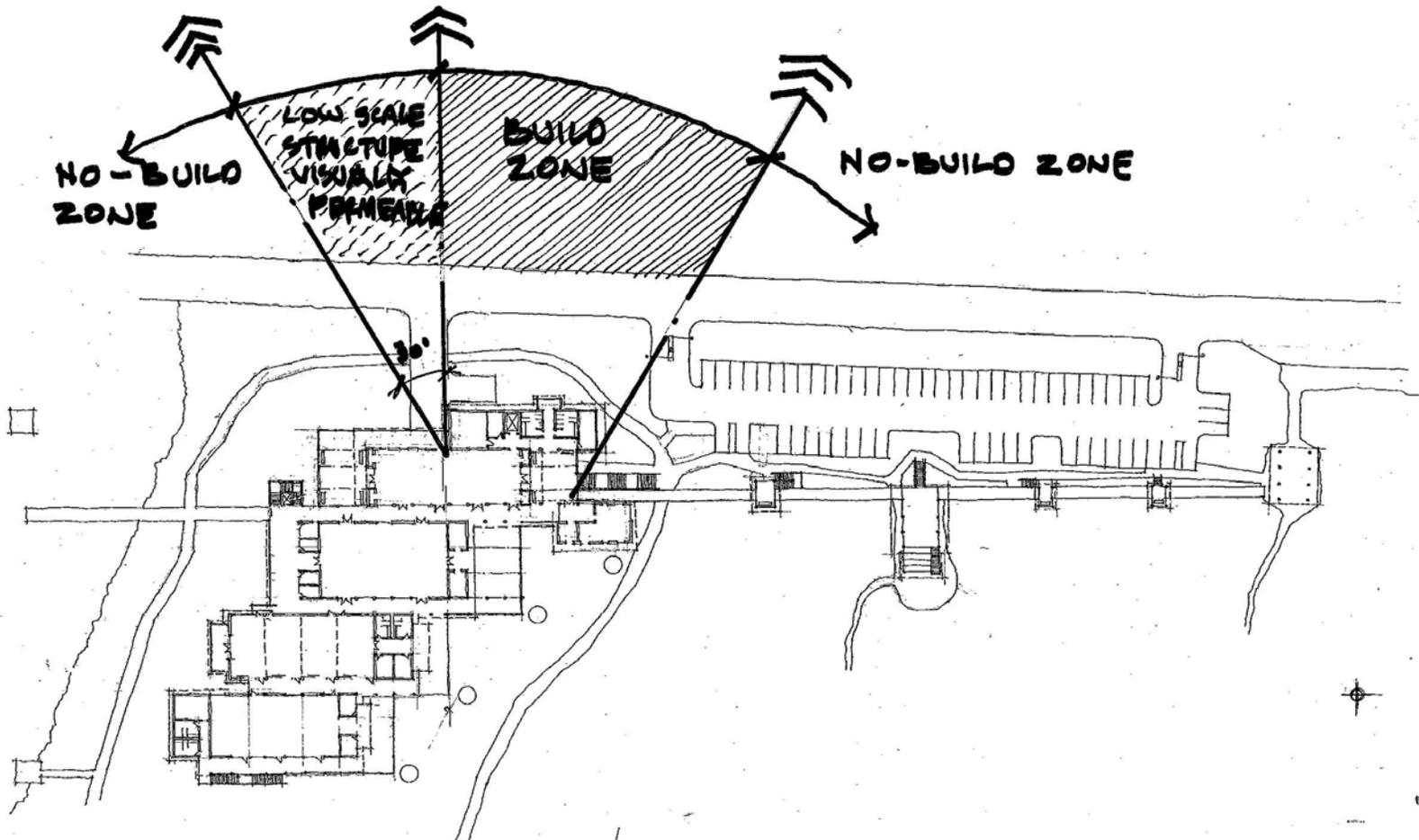
Figure 5.10: Phase IV Lagoon Level

Impact of City property

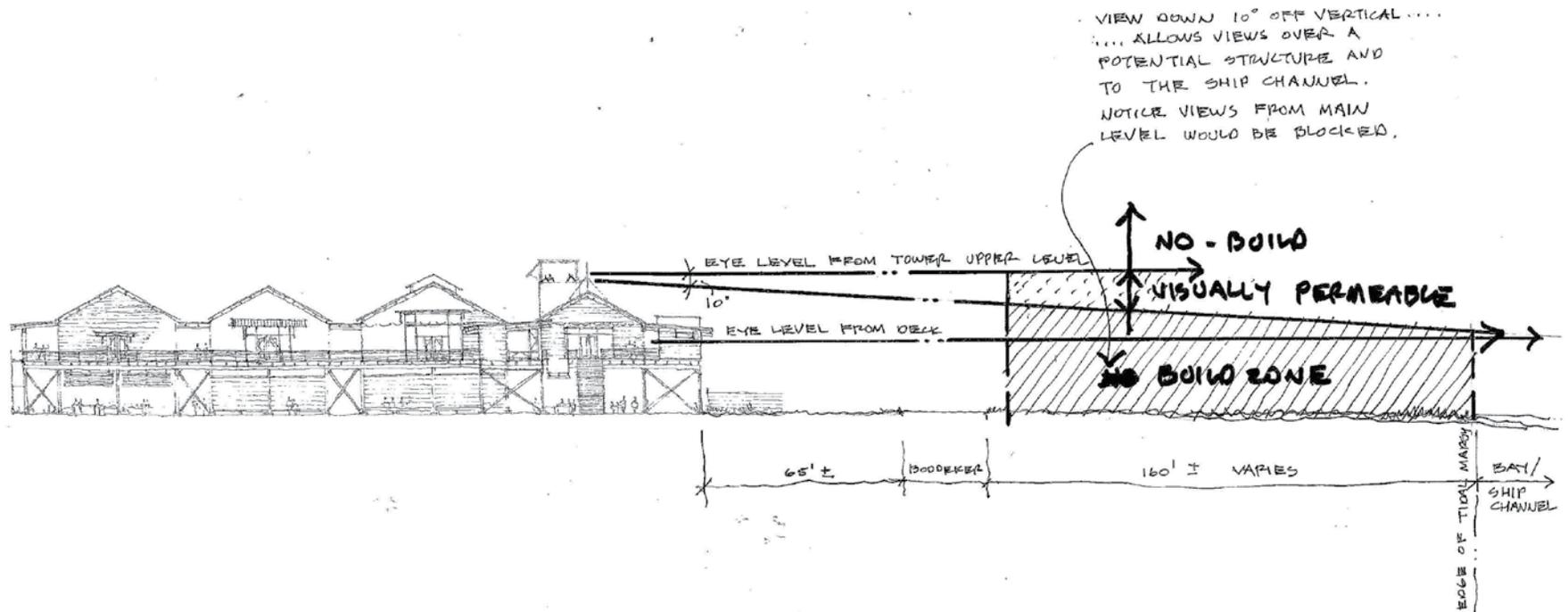
The City of Galveston owns the property between Boddeker Road and the ship channel, just east of the end of Seawall Boulevard, and there are concerns about how potential development of this site may impact the proposed environmental education center that would be on the other side of Boddeker Road. There are no immediate plans for the City to develop this property or to lease it to out for development by others, but there has been discussions that this would be a good location for future commercial

uses. One major issue is whether this type of development, if it occurs, will have a detrimental impact on the environmental education center. There are three major concerns:

- Will views from the environmental education center be reduced or blocked?
- Will the overall character of the environmental education center be reduced?
- Will parking be a problem?



Any new structure on the City property would have to be elevated in a manner similar to the environmental education center, so it could have a negative impact on views. The best way to minimize this problem is to restrict development to the area directly across from the center. There is a view zone from the decks and the multi-purpose room of the environmental education center that is blocked by the restroom and kitchen building mass, and any building in this area would not impact views. In addition, there is an area 30 degrees off north towards the west that might be able to accommodate lower development or a raised building that is visually permeable and would not completely block the view. For example, raised decks in this area would not be a major problem, although solid woods would restrict views. The section drawing illustrates a sight line from the observation tower that indicates areas that can be developed, and areas that should be left open. An uninterrupted 10 degree sightline below horizontal should be designed



5.3 Design Elements

Parking

Not all parking needs can be met on the East End Lagoon Park & Preserve without causing significant environmental damage to the site. The idea is to provide essential parking for the environmental education center while also providing parking for fisherman, hikers, and beach visitors.

Day-to-day parking would be handled by a series of parking “cells” located along Boddeker Road, with additional parking near the old NOAA hatchery. The free and paid parking for the East End Beach would remain, and bollards added to protect the dunes. Parking near the environmental education center will be paid, but other parking along Boddeker Road will be free of charge.



Figure 5.11: East End Lagoon Parking

No on-street parking would be allowed on Boddeker Road in order to reduce congestion as well as the visual and environmental impacts that cars would have here. Parallel parking is allowed along Apffel Park Road, and is being considered along Seawall Boulevard. One concern for parallel parking along Seawall Boulevard is that cars would block views of the site and environmental education center, and this would have a negative impact on the visitor experience. Our recommendation is to provide parallel parking along Seawall Boulevard, but only in selected locations.



Figure 5.12: East End Lagoon Park & Preserve parking at the environmental education center site

There is parking on the old LORAN site, but it is to be used by those using the tent camping that is located here.

The amount of parking would be as follows:

• NOAA hatchery site	10 to 15 spaces
• End of Seawall	30 to 40 spaces
• Seawall Trailhead	20 to 25 spaces
• Environmental Education Center	40 to 57 spaces
• Education Center Gateway	20 to 25 spaces
• Boddeker Road Trailhead	20 to 25 spaces
• North side of Boddeker Road	50 to 70 spaces
• Crossroads Trailhead	20 to 25 spaces
Total	210 to 282 spaces *

* Note: does not include parking on East Beach, at the LORAN camp site, or parallel parking along Seawall Boulevard or Apffel Park Road.

The amount of parking available on site will accommodate most day-to-day activities, but may be insufficient for busy weekends, especially if there are activities planned on the beach or at the environmental education center. During these types of events, the recommendation is to regulate traffic on Boddeker Road by turning away cars on the intersection of Boddeker Road and Seawall when all parking areas are full. This will reduce the amount of traffic driving up and down Boddeker Road and will greatly reduce the problem of people parking parallel along Boddeker Road.

During major events, the City and Park Board needs to establish parking off-site and provide some type of shuttle bus to bring visitors to the environmental education center or to the beach. This is the most effective way to accommodate large crowds without causing environmental damage to the Park & Preserve.

Trails

A network of trails, consisting of unpaved paths, paved trails, and boardwalks, will provide access throughout the site. Gateways, trailheads, viewing platforms, and bird blinds are used to enhance the visitor experience. Trails also provide access to the Big Reef area. A tent campground, with the tents located on raised platforms, is proposed for the LORAN site.

There will be a clear hierarchy of trails, with ADA accessible trails and boardwalks be located near the environmental education center and trailheads, and the vast majority of other trails being more informal. These later trails would be unpaved and constructed of crushed sea shells or other organic material, and would only be wide enough to accommodate

movement. These trails would have to be rehabilitation everyone couple of years, or after major storm surges or other natural events.

Cars are kept out of the Park & Preserve in order to preserve the environmental integrity of the site as well as maximize the visitor



Figure 5.13: East End Lagoon Trails

experience. The trail network is intended to provide access throughout the Park & Preserve as well as link to surrounding areas. For example, it is possible for residents or visitors of BeachTown to walk across Apffel Park Road, enter the Park & Preserve, and walk to the lagoon, Big Reef, the environmental education center, or any other part of the site.



Figure 5.14: Nature Center Site Trails at Nature Center Site



Figure 5.15: Trail examples

Four major gateways are identified. Each is considered to be a major trailhead and includes an iconic overhead structure that serves as a visual landmark as well as provides shade and protection for visitors. These four gateways are:

- Seawall Boulevard Gateway, located at the south end of the site, serves as the visual entrance into the East End Lagoon Park & Preserve and as a trailhead for pedestrians and cyclists coming into the site.
- Education Center Gateway, located just east of the lagoon on Boddeker Road, serves as the entrance to the interpretive pier and a trailhead for trails leading into the site. This gateway is adjacent to two parking lots, so it is anticipated that most users will drive and park to use this facility.
- Crossroads Gateway, located on Boddeker Road, serves as a major trailhead for the central part of the site. There is a parking lot here and is expected to be a popular location because of access to this gateway and to Big Reef.
- BeachTown Gateway is accessible off of Apffel Park Road and is intended as the primary ingress/egress point for the BeachTown development visitors. The architecture of this gateway will be consistent with standards discussed for all Park & Preserve structures, but should also reflect the architectural styles of BeachTown.

Trailheads are considered to be secondary entrances and are defined by simple, covered structures.



Figure 5.16: East End Lagoon Gateways, Trailheads, Overlooks, and Viewing platforms

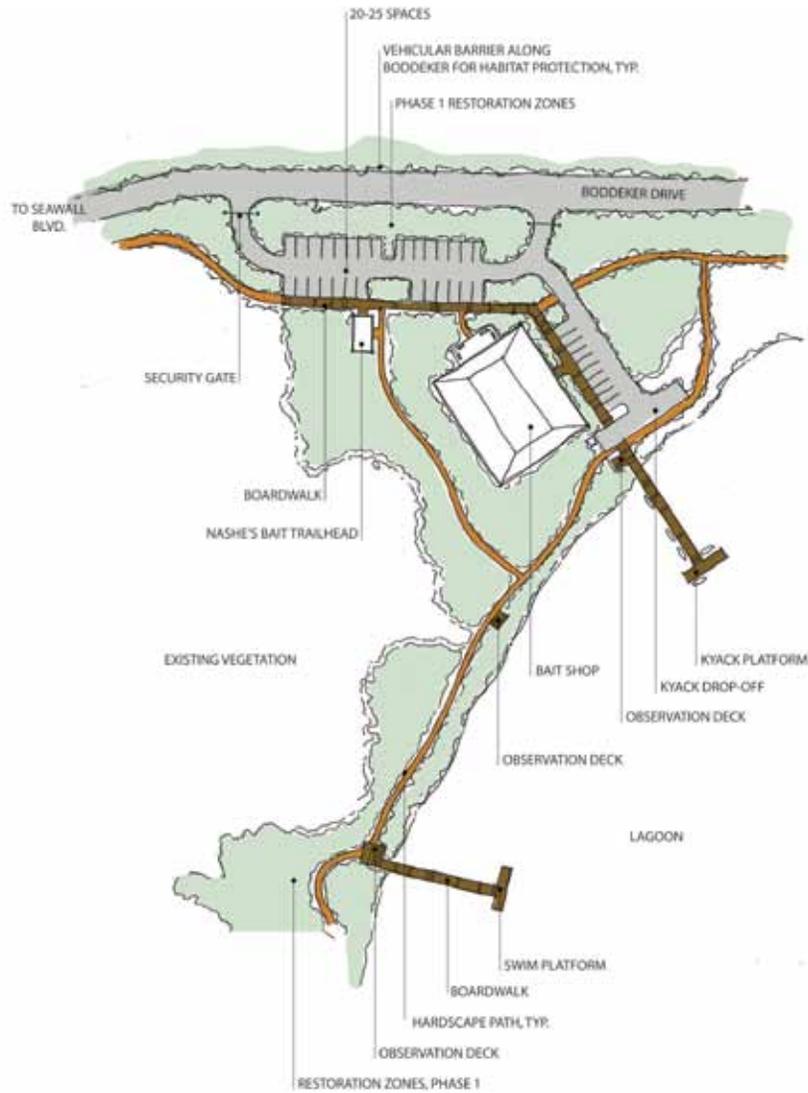


Figure 5.20: Seawall Trailhead



Figure 5.17: Gateways, Trailheads, Overlooks and Viewing Platforms at environmental education center site

Seawall Trailhead

This area is located at the corner of Seawall Boulevard and Boddeker Road adjacent to the lagoon. This trailhead includes a small parking lot (10 to 15 spaces), a bait shop, a small dock for kayaks and canoes, a swimming platform, and connection to a hard-surface trail that loops around the lagoon. The site is close enough to the environmental education center for people to park there and walk over.

This is a place where visitors can easily access the trail leading around the lagoon, or get to the lagoon itself. The architecture of the bait shop needs to be consistent with that being established at the environmental education center. The bait shop has limited facilities and will not be elevated.

Camp Site

A tent camping area is proposed for the old LORAN site. The entrance into the camp site is off of Boddeker Road, and it follows the path of the existing trail in order to minimize environmental impacts. Approximately 25 to 30 tent platforms are constructed on-site. The wooden platforms are 10'x10' in size and arranged in small clusters to encourage group outings. These clusters are connected via a raised boardwalk that creates a loop and provides connectivity for campers. The raised platforms reduce environmental impacts and help keep campers dry. The "tents" are made of canvas walls and are kept up throughout the camping season and taken down in the fall. They can also be dismantled and stored during severe storms.

A raised restroom facility, approximately 18' above the ground, is located in the center of the camping area. It is approximately 20'x25' in size and includes a shower facility below the main platform. A small parking lot is also located within the camping site. Both the restroom/shower facility and the campground are intended for the exclusive use of campers.



Figure 5.18: Camp Site Perspective

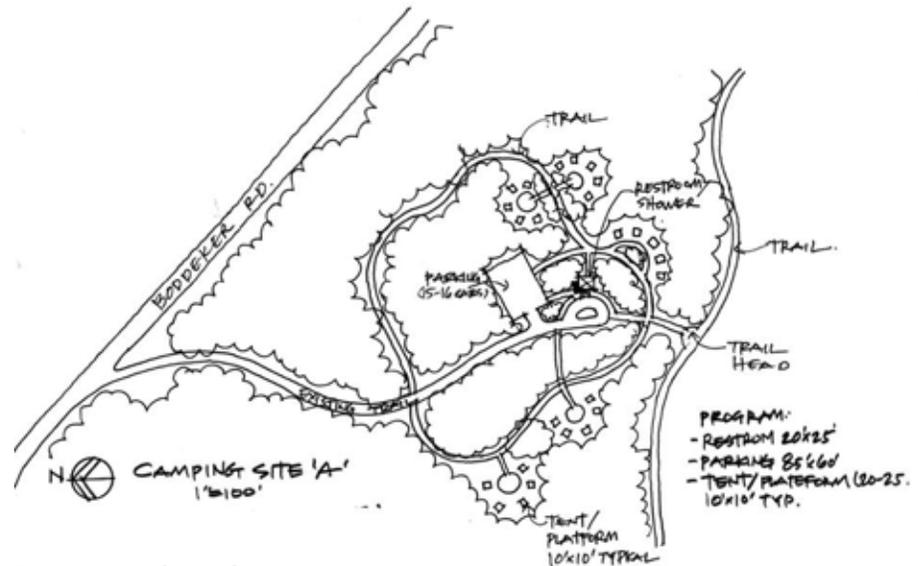


Figure 5.19: Camp Site Plan

Big Reef

Because of the predominantly wet conditions of the site, the majority of the pedestrian trails in the Big Reef area are boardwalks. These enable visitors to move through the site while staying dry. At the end of the two boardwalks heading toward the shipping channel are soft-surfaced trails that enable visitors to get off the boardwalk and walk to the edge of the channel. Five interpretive overlooks are located along the boardwalks, one of which is an existing bird watch tower.

A kayak dock/ramp is also included. The purpose of this ramp is to allow visitors to put in a kayak in order to gain better access to wildlife viewing areas along the water. The small lagoon will be closed so that kayakers can't paddle out into the shipping channel.

Big Reef is essentially an island in and of itself, and it offers easy sanctuary for wildlife. The sandy edge of Big Reef, especially at the southern end, is

part of an area Federally designated as critical habitat for the endangered Piping Plover. Its grassy and sandy hummocks provide nesting for skimmers, least terns, wilson's plovers, and many other species. Some amount of inter-tidally washed habitat needs to be set aside and clearly designated for Piping Plovers.

The Big Reef should be kept accessible to fisherman and the birding community. The southern end of the site needs to be protected from vehicular traffic with bollards or other structures in order to maintain the environmental integrity of the area. Dredging, de watering, sand staging, and other similar activities need to be restricted here as well.

There is an existing Nation-wide Permit from the U.S. Army Corps of Engineers for some wetland crossovers on Big Reef. In a letter from the U.S. Army Corps of Engineers to Horizon Environmental Service, Inc., dated October 1, 2002, the Corps determined that jurisdictional waters of the United States, including navigable waters and adjacent wetlands are located on the property. Specifically, the Gulf of Mexico, which is a navigable water of the U.S. and wetlands contiguous with the Gulf of Mexico are located on the property. The wetlands met the hydrophytic vegetation, wetlands hydrology, and hydric soil criteria of the 1987 Corps of Engineers Wetland Delineation Manual and are adjacent to the Gulf of Mexico. This permit has long expired, but it establishes that there were permitted structure(s) in the past, and it sets a precedence for any walkover that might be considered in this area.



Figure 5.21: Big Reef Character image



Figure 5.22: Big Reef area

Landscape Restoration & Site Improvements

When the East End Lagoon Park & Preserve site was transferred to the City of Galveston as part of the National Park Service's Federal Lands to Parks Program, the National Park Service included a statement on the transfer that said the land "will be preserved for beach access, protection of the coastal wetlands/beach dune habitat, and nature study, including natural trails and wildlife observation areas." It is critical that the overall vision for the Park & Preserve be consistent with this statement.

Landscape restoration efforts on-site should be part of the Park & Preserve's overall goal of providing environmental education opportunities for visitors. Specific areas for restoration include: the coastal prairie area; the dune edge; the lagoon edge; the beach zone north of Big Reef; and the black mangrove restoration and preservation.

The first phase of landscape restoration should focus on the areas along Boddeker Road and the proposed environmental education center. Other priority areas include the area around the NOAA/hatchery, including the entry road, and along the diagonal trail through the middle of the Park & Preserve.

Future phases of landscape restoration include the coastal prairie area, the dune edge, and the lagoon edge. Ninety-nine percent of coastal prairies in Texas have been lost over the years, so the coastal prairies on the East End Lagoon site should be protected. (Leap)

As part of lagoon restoration, fingers of the lagoon could be extended into further into the site in order to create more wetland coastline and opportunities for kayaking, wetland restoration activities, and birding. The salt marsh area to the east of the lagoon should also be restored.



Figure 5.23: Restoration Zones

The landscape areas that are restored around the environmental education center could directly be tied into programmed activities associated with the center. Restoring areas that are visually and physically accessible from the raised boardwalk would allow all visitors to experience the natural resources of the site. These restoration areas should represent the many ecosystems on the site. These include both upland and wetland restoration types.

Not all visitors will have the time, interest, or ability to walk very far into the site, so the restoration areas near the center can give them a glimpse of what else is on the site. It may even encourage some visitors to spend a little more time on site exploring the other, larger restoration projects.

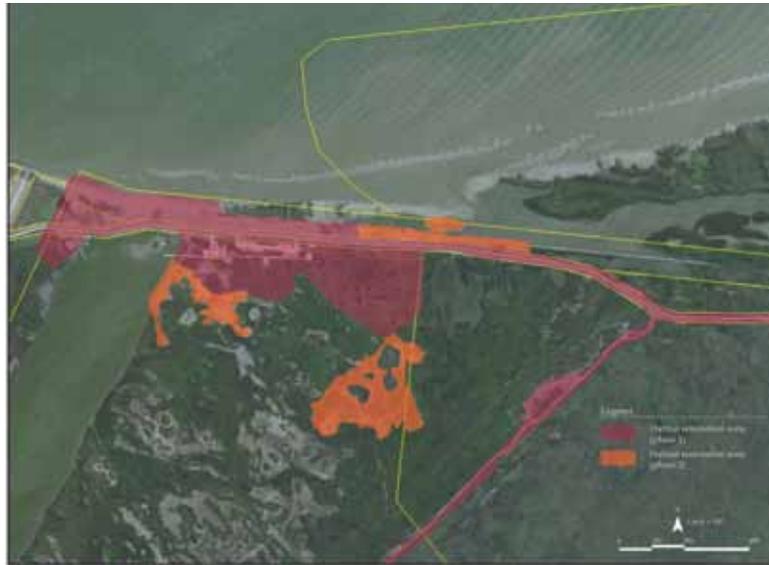


Figure 5.24: Restoration Area at environmental education center site

Overall Site Impact

One issue that has been discussed throughout the planning process is the importance of not over-developing the site. Too often, a project like this is developed to a point where the site itself is compromised because of too many improvements, too many changes, and too many visitors.

The basic idea behind the East End Lagoon Park & Preserve Master Plan is to keep development along the edges of the site, minimize impacts to natural resources, limit develop in the interior of the site, and to follow the concept of “laying lightly on the land.” The vast majority of the site is left undeveloped, although some of it will be restored in order to create a healthier natural environment. The end result of the recommendations in this master plan is that the East End Lagoon site will continue to be an undeveloped open space, but with trails, restored habitat, and some development along Boddeker Road.



Figure 5.25: Areas of Additional Disturbance due to building footprints and/or parking

5.4 INTERPRETIVE PHASING RECOMMENDATIONS

Phase I: Portal to the Preserve

The first phase of the East End Lagoon Park & Preserve project will focus on making the new preserve's natural resources publicly accessible and on providing the necessary interpretive support to ensure that guests have a safe, satisfying, and stimulating experience. Interpretive messaging in Phase I will concentrate on informing guests about the key habitats and plant and animal species of the East End Lagoon and environs, and about the interrelated natural history and cultural heritage of Galveston Island.

Visitor experience components to be implemented during Phase I would include:

- An interpretive trailhead and welcome and orientation pavilion located directly adjacent to the preserve's parking lots at the base of the "experience pier" leading up to the environmental education center. This shaded, open-air plaza will provide site identity, orientation, and visit planning information, and will serve as a marshalling point for group tours. It will serve as the gateway to both the environmental education center and the Preserve trail system.
- One or more "interpretive landings" incorporated into the experience pier leading from the welcome and orientation pavilion to the environmental education center. These shaded open-air platforms will include casual seating as well as interpretive messaging targeted toward specific aspects of the East End Lagoon Park & Preserve site experience, such as different habitat types, wildlife, or ecological characteristics. They are intended to help guests transition into the nature experiences of the Preserve, heightening their awareness and understanding of key features and themes. Linking them together with simple interpretive elements deployed along the pier itself will help make the pier a real destination, not just a walkway. (There are four potential interpretive landing on the pier. These could all be developed during Phase I, or rolled out incrementally across several project implementation phases.)
- A fully enclosed and climate controlled flexible multipurpose room sized to accommodate groups of up to 80 guests and divisible into two discrete spaces. This room can serve as a community meeting room, lecture hall, or environmental education classroom or seminar space, and also as rentable events space. While this room would not include permanent interpretive exhibits, it could potentially accommodate short-term changing displays.
- A small mission-related themed retail component which incorporates interpretive messaging into both the display and point-of-purchase graphics design and into the merchandising of the facility.
- Simple graphical identification and interpretation of viewshed features visible from the environmental education center's ample main-level decks.
- An interpreted viewing platform located at the top of a signature observation tower located at the west end of the environmental education center complex. The viewing platform, located approximately 30' above grade, will offer spectacular 360° views.
- A dedicated children's adventure play space designed to encourage and enable the preserve's youngest visitors to explore key themes and messages in a developmentally appropriate way. This area would be shaded and controlled so as to provide comfort and security for users and their caregivers. It could either be located at ground level beneath the environmental education center or somewhere else proximate to the environmental education center's site.
- Simple graphical identification and interpretation of natural systems, cultural heritage features, and plants and habitats visible from the environmental education center's ground-level paths and walkways. The walkways might also incorporate tactile and sculptural elements and simple viewing aids.
- A finger pier extending from the environmental education center into the north end of the lagoon. The pier will provide a location for estuarine biology field programs and classes and as a staging platform for water-borne tours of the preserve. It will also serve as a launch site for kayaks and canoes.
- Identification and interpretation of natural systems and features adjacent to the "eco-camp" to be located at the former LORAN station site, and along the paths or walkways linking the camp to the environmental education center.
- Interpretive "gateways" and trailheads at selected Preserve perimeter entry points, in addition to the entrance pavilion at

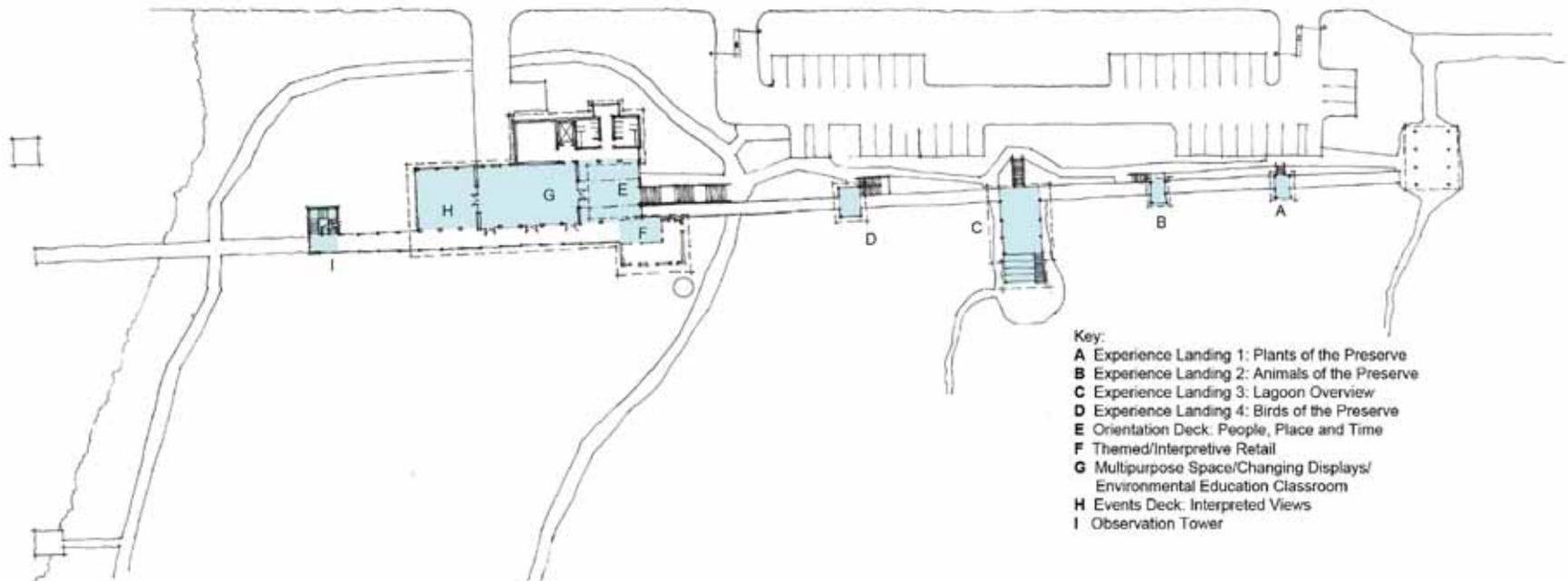


Figure 5.26: Phase I Main Level

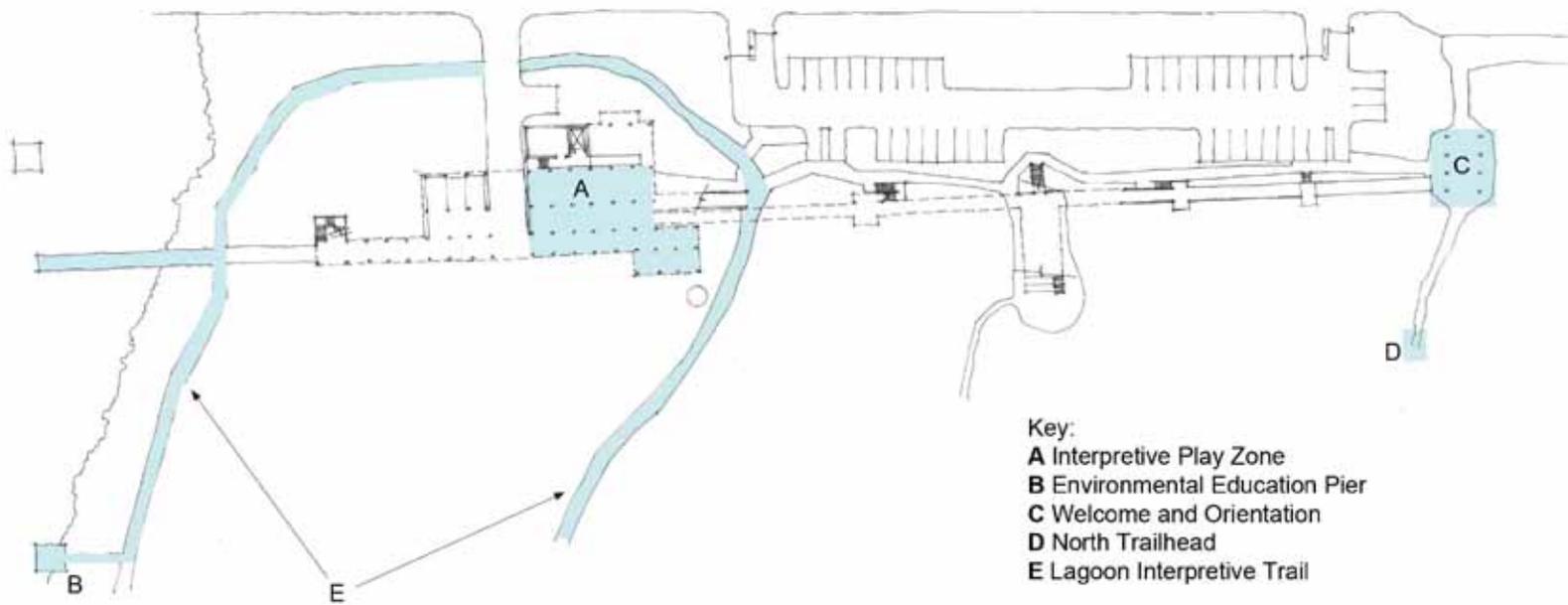


Figure 5.27: Phase I Lagoon Level

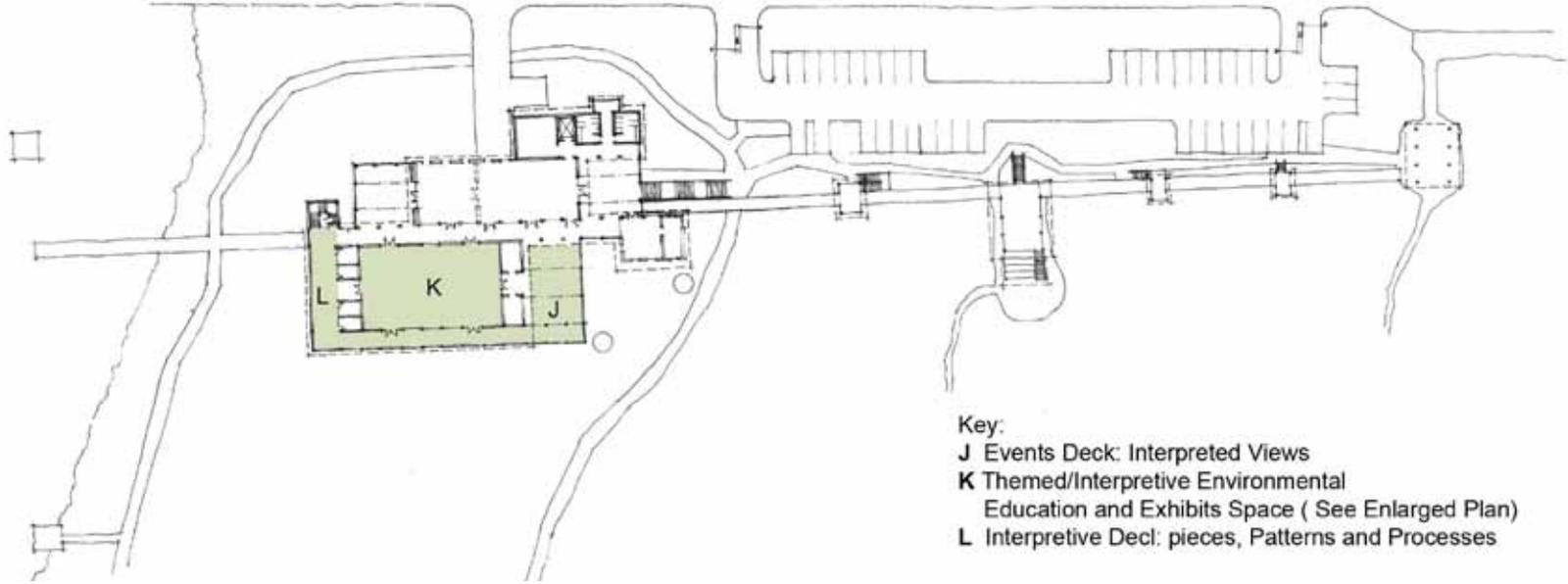


Figure 5.28: Phase II Main Level

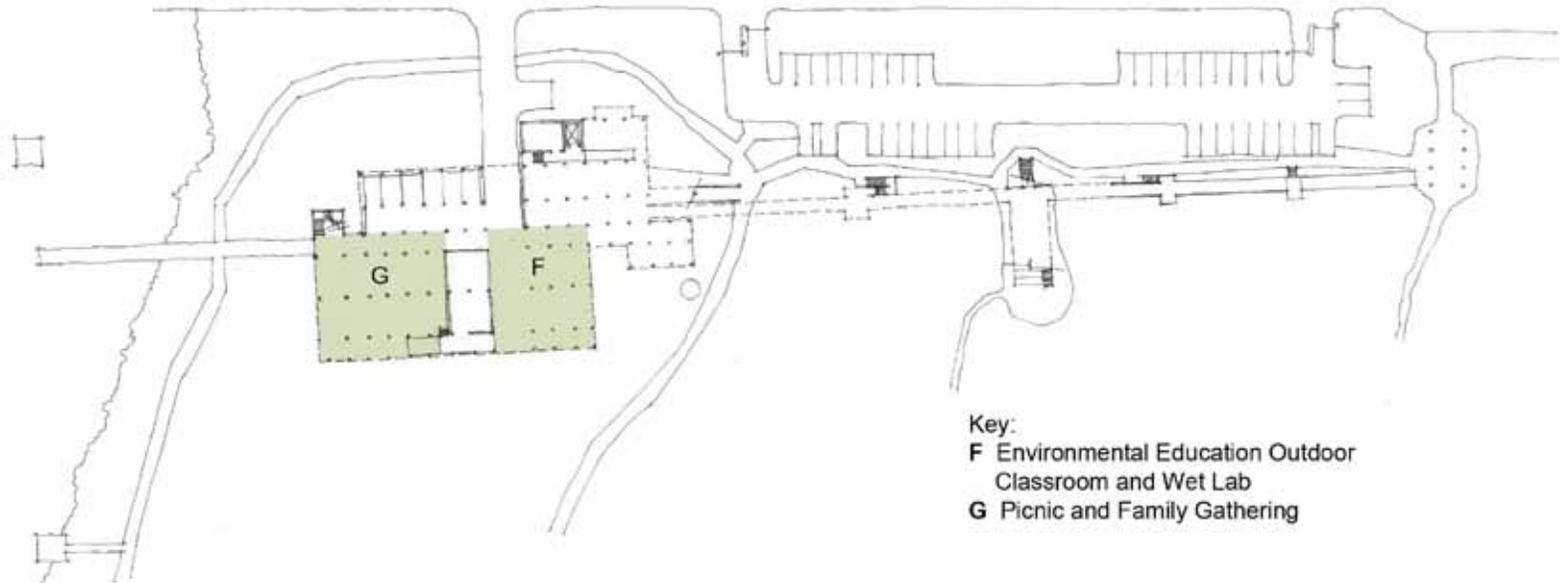


Figure 5.29: Phase II Lagoon Level

the environmental education center. These will provide site identity signage, abbreviated orientation and visit planning information, introductory natural history interpretation, and access to the preserve trail system. Proposed priorities for Phase I implementation would include the South End and Beachtown gateways.

- Selected walking and hiking trails, both interpreted and uninterrupted, which provide access to major habitat types and wildlife viewing opportunities within the Park & Preserve. Proposed priorities for Phase I implementation of interpreted trails would include a perimeter trail around the environmental education center site and along the east shore of the lagoon; a trail leading from the barrier dunes (at the former LORAN site) through the coastal prairie uplands to the east shore of the lagoon; and an all persons' trail which is fully ADA-accessible. Interpretive media and messages provided along trails will include habitat and ecosystem overviews, flora and fauna species identification, cultural heritage interpretation, viewing aids (such as sighting tubes, framing devices, or bayonet mounts for docent-attended spotting scopes), and simple hands-on or whole body interactive experiences.
- Selected aquatic trails, both interpreted and uninterpreted, which offer access to places and experiences within the Preserve that can only be reached by boat (canoes or kayaks.) These might include boathouse-style "float in" blinds for wildlife viewing, or platforms for classes and programs.
- Selected interpretive shelters, program platforms and wildlife viewing blinds constructed at key locations along the terrestrial and aquatic trails. These program components would serve as both interpretive nodes and visitor comfort stations, offering shade and seating. They would be sited so as to afford access to key features or habitats, but also so as not to encroach unduly upon the vital natural character of the Park & Preserve.
- Selected portable interpretive media, such as "dive card" style laminated graphics for species or habitat identification, field guides or notebooks, "discovery kits," or personal digital devices (smart-phones, PDA's, and MP3 players, etc.). These would be distributed from and returned to the environmental education center's reception desk or retail shop and would offer

opportunities for flexible, visitor-driven interpretive experiences.

- A fully implemented identity and wayfinding signage system, including a distinctive and highly recognizable East End Lagoon Park & Preserve logo or "brand," installed along vehicular access routes and at designated site entry points, at parking lots, and along trails.

Phase II: East End Environmental Education Center

Phase I of the East End Lagoon Park & Preserve project will be largely devoted to developing exterior interpretive components, either at the environmental education center or around the site, with only an absolute minimum of fully enclosed and climate-controlled space being constructed. In Phase II these exterior experiences will be augmented with additional interior exhibits. New trails, trailheads and site interpretation will be rolled out; additional administrative and support spaces will be provided; the project's retail presence will be expanded; and a dedicated children's adventure play zone will be created.

Visitor experience components to be implemented during Phase II will include:

- A flexible multi-use climate-controlled space within the environmental education center containing integrated environmental education and interpretive functions. This new facility will house not only informal education classrooms but changing and long-term exhibitions and will be capable of supporting relatively small-scale "camp in" functions. The exhibits in this space should be developed and designed in coordination with the Preserve's educational programs so that they function as effectively as teaching tools as they do as stand-alone exhibits for the general visitor. These exhibits would focus on exploring the unique interaction between cultural heritage and natural history that has shaped Galveston Island throughout its history, and on supporting and extending the exterior site-based interpretation of the Preserve and its habitats that was developed during Phase I.
- Additional interpretive "gateways" and trailheads, walking and hiking trails, aquatic trails, and interpretive shelters, program platforms, and wildlife viewing blinds.

- A large-scale shaded (and possibly insect-screened) outdoor environmental education classroom/wet lab/interpretive exhibit space located at grade level, beneath the environmental education center, with direct access to the lagoon. This space will accommodate multiple groups or classes engaged in hands-on wet biology activities. It could also incorporate a substantial estuarine species aquarium and/or touch tank component using a “flow-through” system of water drawn from and recharged to the lagoon, eliminating the requirement for expensive and labor-intensive life-support systems.

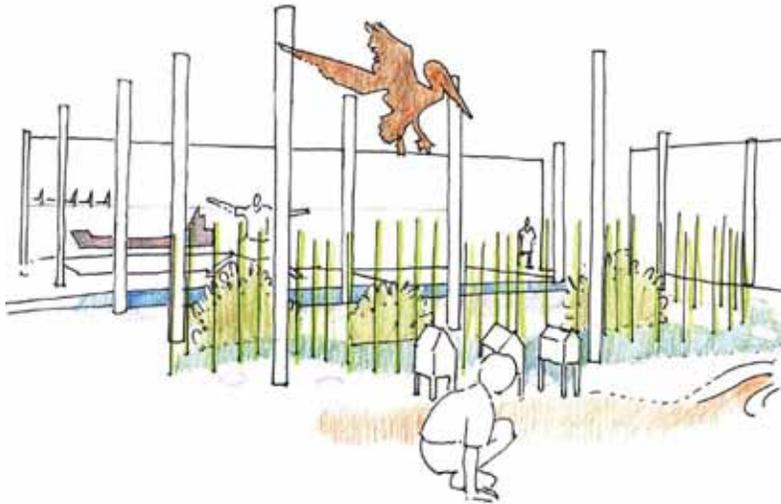


Figure 5.34: Interpretive play area below environmental education center

Phase III: Gulf Coast Discovery Lab

During Phase III of the East End Lagoon Park & Preserve project the environmental education center’s enclosed multipurpose and classroom spaces will be significantly expanded; a larger retail component will be developed; improvements and additional accommodations will be provided at the eco-camp; and any remaining site interpretive elements (gateways, trailheads, trails, shelters and blinds, etc.) will be completed.

The provision of additional multipurpose and classroom areas will free up space within the environmental education center for a dedicated long-term interpretive installation. This could either be accomplished through a renovation and expansion of the exhibits developed during Phase 2 or through the development of an entirely new exhibition in the new Phase 3 building. In either case, a secure, climate controlled exhibits gallery significantly expands the possible range of interpretive media. The environmental education center’s long-term exhibits would reflect the state of the art in natural history or science center interpretive techniques, utilizing traditional interpretive graphics and displays; objects and artifacts; audiovisual programs; interactive multimedia; hands-on and mechanical interactives; replicated environments; and possibly limited live animal exhibits (primarily fishes and marine invertebrates, reptiles and amphibians, insects, and possibly small birds and mammals); and animal contact opportunities (touch tanks, hands-on demonstrations.)

Exhibits and experiences installed in the long-term exhibition space would expand the environmental education center’s interpretive perspective to encompass the entire U.S. Gulf Coast. With Galveston serving as an immediate and tangible case study we would investigate the physical and ecological dynamics of barrier islands and estuaries, their environmental and economic value, and the natural and human-made threats to their continued existence. The intent of these exhibits will be to enrich our guests’ experience of the Park & Preserve site and natural resources by placing Galveston in a larger eco-regional context.

Phase 4: Global Perspectives

The final phase of the East End Lagoon Park & Preserve project would bring the development of an additional large-scale flexible interpretive or multipurpose space capable of housing programs, functions and events; major traveling exhibits; or additional permanent exhibits; as well as expanded administrative spaces. This phase of interpretation may not be needed depending upon how well previous phases meet project objectives.

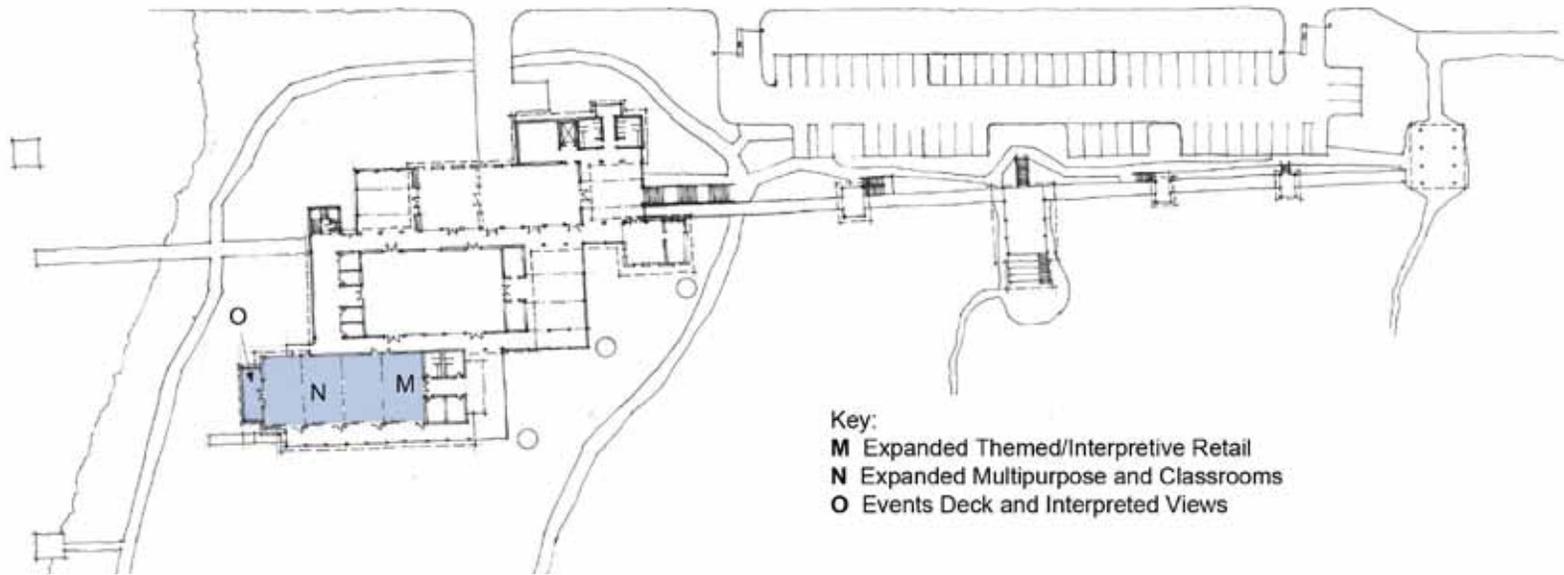


Figure 5.30: Phase III Main Level

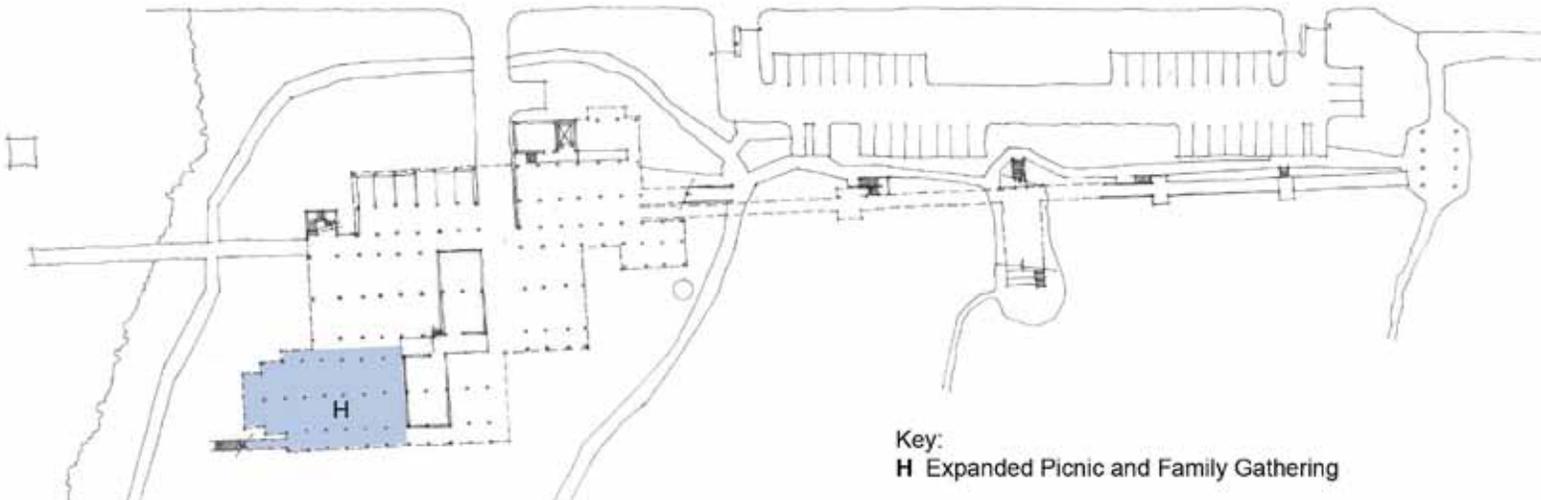


Figure 5.31: Phase III Lagoon Level

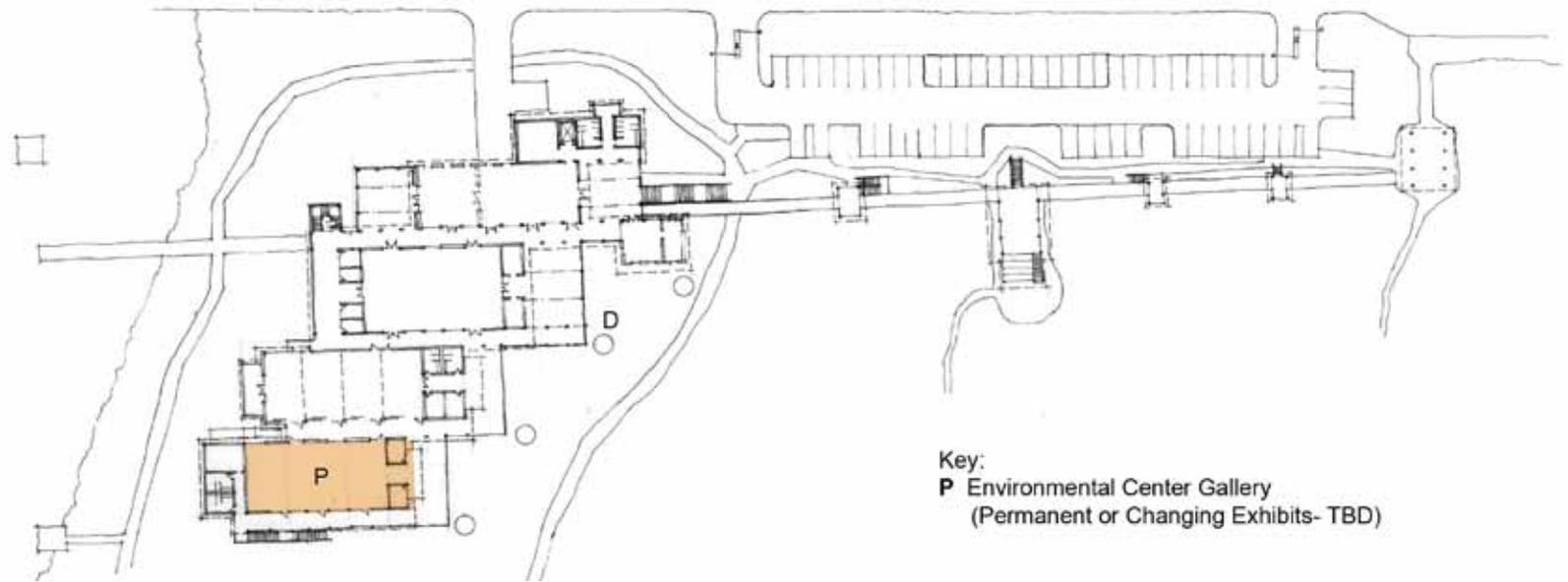


Figure 5.32: Phase IV Main Level



Figure 5.33: Phase IV Build out Potential