

Sylvan Rodriguez Park Habitat Restoration Project

Final Report



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Abbreviations

HPARD	Houston Parks and Recreation Department
GBEP	Galveston Bay Estuary Program
TCEQ	Texas Commission on Environmental Quality
NRMP	Natural Resources Management Program
SCA	Student Conservation Association

Executive Summary

The Sylvan Rodriguez Habitat Restoration Project focused on the restoration of a 23-acre section of forested and riparian buffer habitat within Sylvan Rodriguez Park. The restoration project included the removal of invasive woody species and the establishment of 1,407 native trees and shrubs. The community was actively engaged in the restoration process to educate on the importance of native habitats and to increase community acceptance of natural areas. Monthly volunteer workdays were hosted by Houston Parks and Recreation Department at the site, and one community volunteer event also took place during the grant period. To increase visitor access to the natural area and create environmental education opportunities, six interpretive signs and a 450-foot boardwalk were installed.

Introduction

Much of the Houston area was part of the historic coastal prairie ecosystem, except for the forested areas running along Houston's bayou system. These forested areas—riparian buffers—play critical roles in the health of the bayous and the water quality of Galveston Bay. While much of Sylvan Rodriguez Park was once historic coastal prairie habitat, the sections along Horsepen Bayou and the unnamed tributary to the southeast of the park are appropriate locations for forested riparian buffers. This project set out to restore the habitat quality of the riparian areas and woodland edges of this park.

Before the restoration project started, much of the proposed project area was overrun by invasive species such as Chinese Tallow (*Triadica sebifera*) and Privets (*Ligustrum* sp.). These invasive species alter ecosystem services and reduce the biodiversity of a habitat. The project was designed to increase the resilience of the landscape to natural weather effects, improve the quality of water flowing into downstream sites, and retain floodwaters.

Houston Parks and Recreation Department's (HPARD) Natural Resources Management Program (NRMP) has found that community involvement in the restoration process can increase the acceptance and understanding of natural areas in parks. A focus of the Sylvan Rodriguez Park project was to involve the community in the restoration activities, provide environmental education opportunities throughout the park, and improve visitor access to the natural area.

Project Significance and Background

The Sylvan Rodriguez Park habitat restoration project is the largest restoration project that the NRMP has undertaken. The 72 acres of natural area, although overgrown with invasive woody species, still included native and locally rare prairie plants before the

restoration project began. This signaled to the NRMP that this site has seen little disturbance and had the potential to contain high quality habitat once restored.

The 23 acres of forested and riparian buffer habitat at this site has an impact on the water quality in Horsepen Bayou and downstream in Galveston Bay. The restored forested buffer will slow the flow of water as it enters the bayou, shade the waterway, and remove sediment and pollutants from stormwater runoff before it enters the bayou.

The methods used at Sylvan Rodriguez Park have informed the NRMP about best management practices that will be used in future restoration projects. The overall project will help the department reach a broader goal to increase nature-based infrastructure within parks to mitigate flooding, improve water quality, reduce erosion, create wildlife habitat, and establish areas for passive recreation.

Methods

Habitat Restoration

HPARD secured a hydro-axe subcontractor to mechanically remove invasive species within the project area (see [Appendix A](#) for treatment area and [Appendix B](#) for pictures). In addition to the clearing done by the subcontractor, HPARD staff continued to clear more areas in the project site using chainsaws.

HPARD hired two Student Conservation Association (SCA) interns to assist with the habitat restoration at this park (see [Appendix B](#) for pictures).

HPARD hosted one community tree planting event, in which 20 volunteers planted 915 trees in the project site (see [Appendix C](#) for list of trees planted in the project area).

HPARD also hosted monthly volunteer workdays at Sylvan Rodriguez Park on the second Wednesday of each month in which volunteers planted native plants and removed invasive species (See [Appendix B](#) for pictures). These workdays produced a total of 243 volunteer hours.

Education and Access

HPARD subcontracted the design and fabrication of six interpretive signs that covered six different topics: riparian forests, wetlands, coastal prairies, birds, wildlife, and an overview of Sylvan Rodriguez Park (see [Appendix D](#)).

HPARD subcontracted the design and construction of a 450-foot boardwalk to increase visitor access to the habitat restoration area. The construction started in November of 2021, and a supplemental construction report will be attached to this document after construction is completed.

Results and Observations

The riparian restoration project at Sylvan Rodriguez Park was a success. The hydro-axe contractor was able to efficiently remove the invasive trees while leaving the native trees standing without damage. The large number of interested and highly motivated volunteers living in the neighborhoods directly surrounding the park made the volunteer events and workdays very productive. The two SCA interns helped improve the site, while also propagating trees at HPARD’s tree farm for future installment in the riparian area. The interns were also well trained in habitat restoration methods, vital skills they will use throughout their careers.

The restoration efforts resulted in the planting of 1,407 trees, 23 acres of invasive species removal, installation of six interpretive signs, and construction of a boardwalk. All these accomplishments will result in a more resilient, educational, and accessible park.

Table 1. Summary of Project Costs.

Summary of Project Costs	GBEP (Cash)	HPARD (Cash)	In-kind and Other Sources
Task 3: Habitat Restoration			
Invasive Species Management	\$30,000 hydroaxe contractor \$3,750 herbicide contractor	\$20,000 herbicide contractor	HPARD staff provided additional herbicide application, mechanical invasive species removal, and supervision and training of SCA interns.
Native Species Planting	\$24,654.94 SCA interns	\$0	\$14,250 in trees grown by HPARD
Task 4: Community Engagement			
Community Workdays	\$0	\$0	HPARD staff coordinated and oversaw all community workdays.
Interpretive Signage	\$2580 sign printing	\$1800 sign design	HPARD staff created the content and wrote the text for the signs.
Boardwalk Construction	\$39,015.06	\$442,084.94	\$0
Total Project Cost	\$100,000	\$463,884.94	\$14,250

Discussion

Due to the high volume of Chinese Tallow existing at the start of the project, new seedlings quickly appeared at the site after the initial invasive species removal occurred. The treatment of these seedlings will be an ongoing challenge for the NRMP, as the neighboring pieces of land also contain many large Chinese Tallow trees that will provide an ongoing seed source into the restoration site. Although mechanical and chemical removal are effective, this management challenge has increased the need for long-term options such as prescribed fire.

The soil is heavy clay throughout most of this site. Planting trees in the clay soil was more difficult than expected because of the speed at which the clay dries out and the difficulty of working in dry clay when planting trees. The NRMP learned that planting seedlings, as opposed to larger 5-gallon or 15-gallon trees, was more effective for this soil type.

This site holds the most water of any other NRMP project site. This caused a variety of problems concerning the timing of work that required heavy equipment. Mowing also needs to be carefully coordinated during the small amount of time the site is dry.

Appendix A. Invasive Species Treatment Area

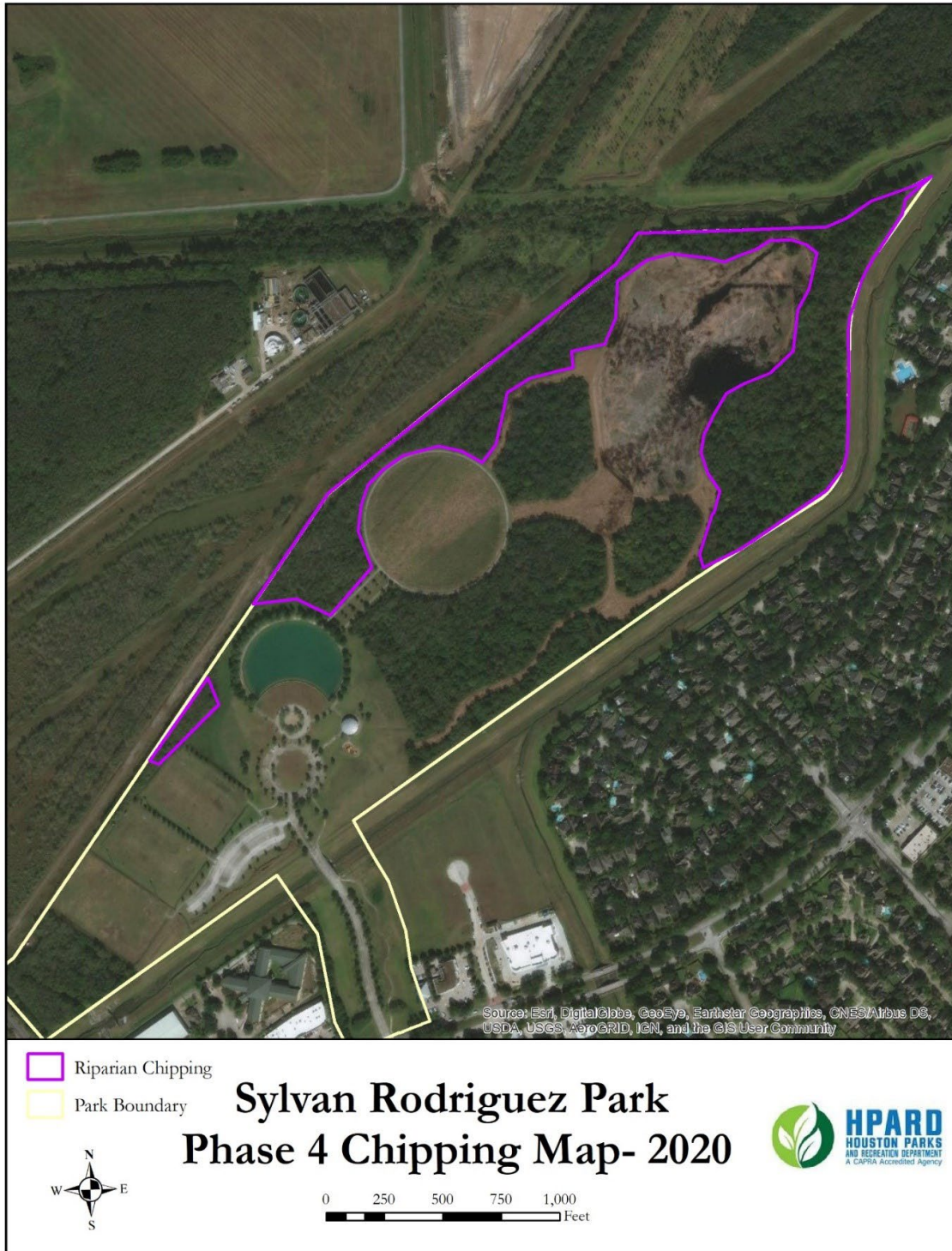


Figure 1. Invasive Species Treatment Area.

Appendix B. Photos of Project Implementation

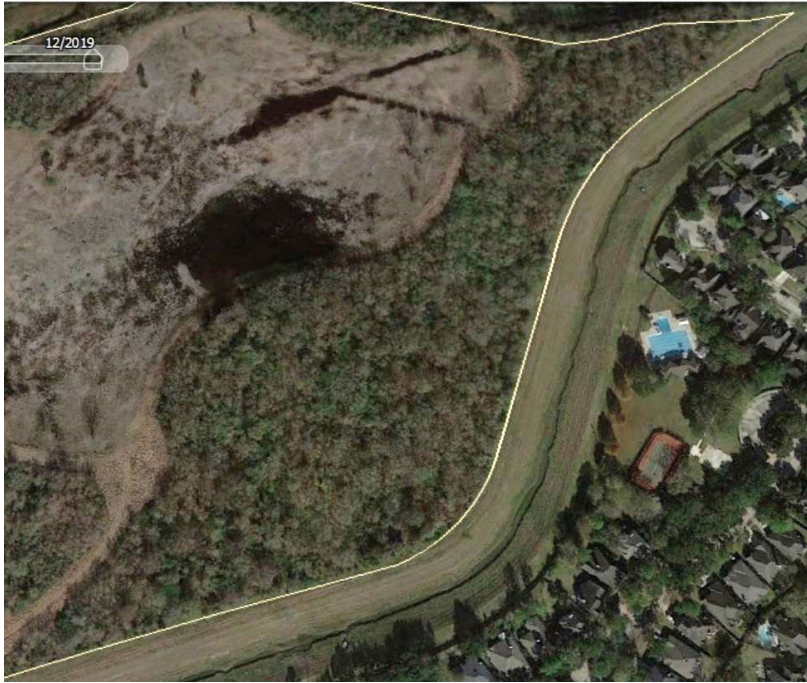


Figure 2. Google Earth imagery of the partial riparian area before invasive species removal.

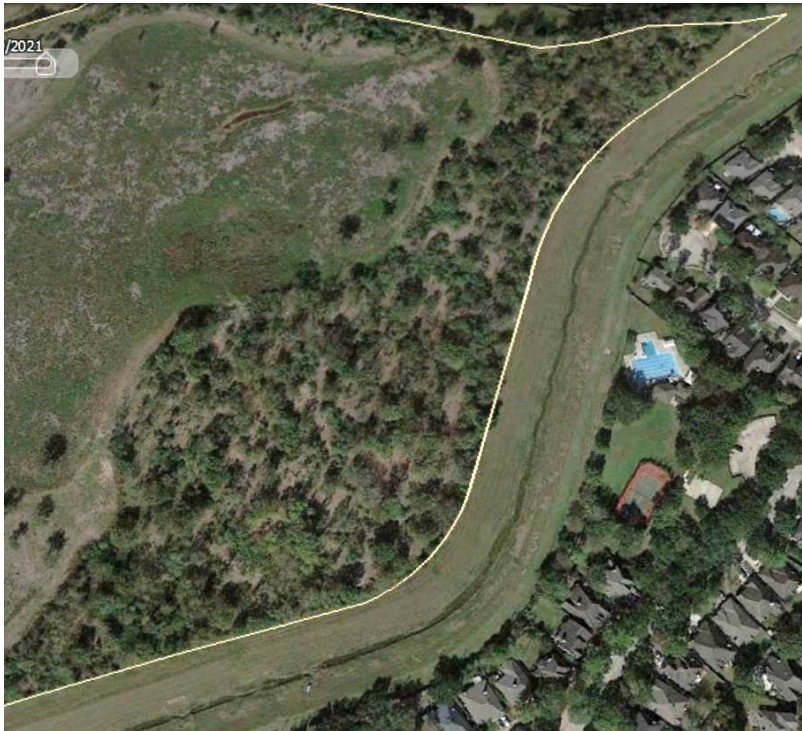


Figure 3. Google Earth imagery of the partial riparian area after invasive species removal.



Figure 4. SCA intern planting at Sylvan Rodriguez Park.



Figure 5. Monthly volunteer workday at Sylvan Rodriguez Park.

Appendix C. List of Trees Planted at Sylvan Rodriguez Park

Table 2. List of trees planted at Sylvan Rodriguez Park.

Species	Size (gallons)	Number
Pecan	5	55
Sweet Bay Magnolia	5	10
Live Oak	5	50
Sweetgum	5	40
Green Ash	5	20
American Sycamore	5	26
Eastern Redbud	5	8
Two-Winged Silverbell	5	35
Red Maple	5	20
River Birch	5	35
Hackberry	5	50
Wax Myrtle	5	30
Loblolly Pine	5	50
Mexican Plum	5	20
Black Cherry	5	5
White Oak	5	50
Overcup Oak	5	30
Water Oak	5	34
Willow Oak	5	30
Shumard Oak	5	30
Bald Cypress	5	15
American Elm	5	20
Cedar Elm	5	72
American Hornbeam	5	35

Table 3. List of trees planted at Sylvan Rodriguez Park

Species	Size (gallons)	Number
White Fringetree	5	35
Roughleaf Dogwood	5	20
Western Mayhaw	5	20
Water Tupelo	5	15
Yaupon Holly	5	15
Mexican Plum	15	10
Green Ash	15	15
Yaupon Holly	15	15
Eastern Redcedar	15	25
American Sycamore	15	5
Shumard Oak	15	15
Bald Cypress	15	20
Cedar Elm	15	25
Loblolly Pine	15	10
Live Oak	Seedling	82
Bald Cypress	Seedling	114
Cedar Elm	Seedling	106
Red Maple	Seedling	66
Wax Myrtle	Seedling	24

Appendix D. Interpretive Signs*



Figure 6. Installed interpretive signage at project site.



Figure 7. Installed interpretive signage at project site.



Figure 8. Installed interpretive signage at project site.



Figure 9. Installed interpretive signage at project site.

*The last two interpretive signs will be included in a supplemental construction report.