

Alternative 1: Maximize Resilience

Fairfield-Suisun Sewer District Community Treatment Wetland



Fairfield-Suisun Community Wetland Project Summary

The Fairfield-Suisun Sewer District (FSSD) is exploring a new Community Wetland Project to clean water to meet new regulatory requirements before it flows to the Suisun Marsh. This project is envisioned to help protect the environmentally sensitive Suisun Marsh, the nation's largest brackish water marsh, and the nation's largest contiguous wetland on the Pacific Coast.

- The wetlands also have the potential to:
- Provide our community with green space, educational opportunities, and walking trails
 - Generate organic matter and sediment to gradually build up elevations to protect from floods
 - Support a diverse habitat for species that provide ecosystem benefits



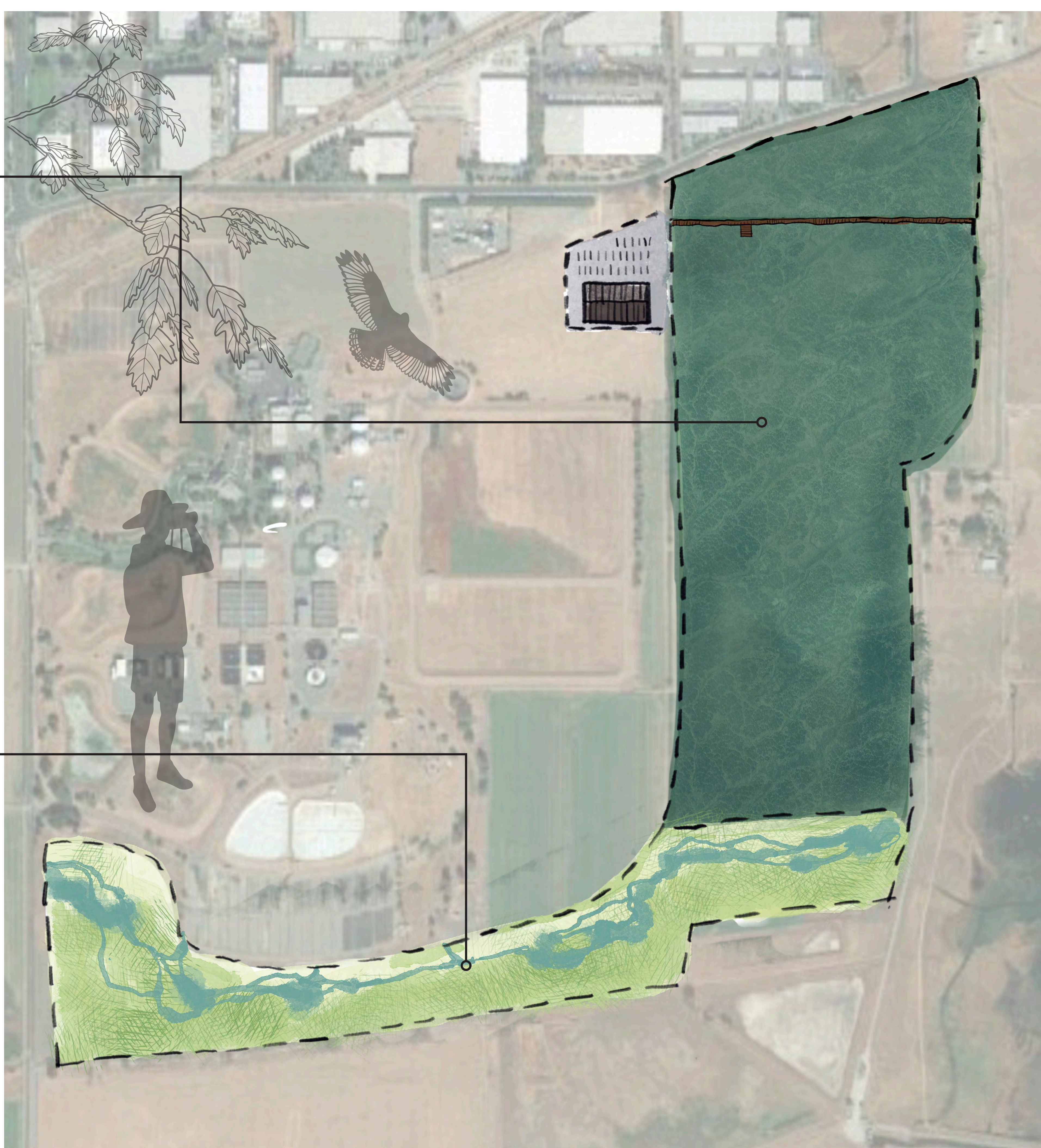
NITROGEN REMOVAL AND CARBON CAPTURE IN TREATMENT WETLAND

The nutrients contained in wastewater effluent will be used to capture atmospheric CO₂ in the form of native wetland plant biomass



CARBON STORAGE IN ENGINEERED PEATLAND

The carbon captured in-situ and in the upstream wetlands will accumulate in peat building wetlands and over many years will result in elevation gain.



	GOOD	BEST			
Sustainable operations and maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nitrogen removal and carbon capture (level of water treatment)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flood protection & sea level rise resilience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat value and diversity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Community access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

This option is my 1st Choice	This option is my 2nd Choice

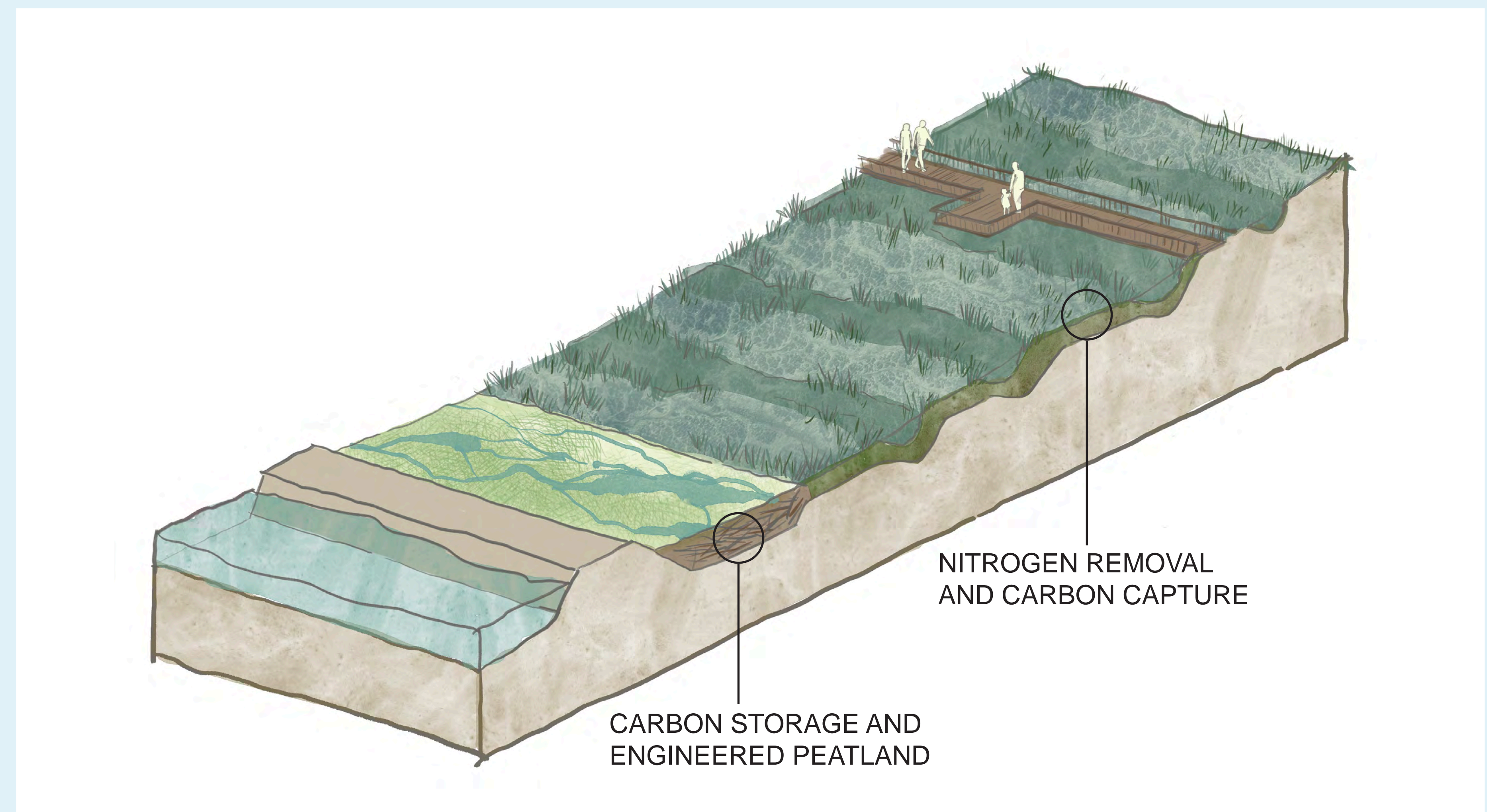
Description

- Provides the largest treatment wetland area, extending across the entire available area
- Maximizes biomass (plant) production, carbon capture, nutrient uptake, and elevation building potential for flood protection and sea level rise resilience
- Greatest flood protection and sea level rise resilience benefits
- Limited habitat diversity with less open water and wetland plant monoculture
- Public access would be limited to a visitor center and a boardwalk on the northern perimeter, via Cordelia Road

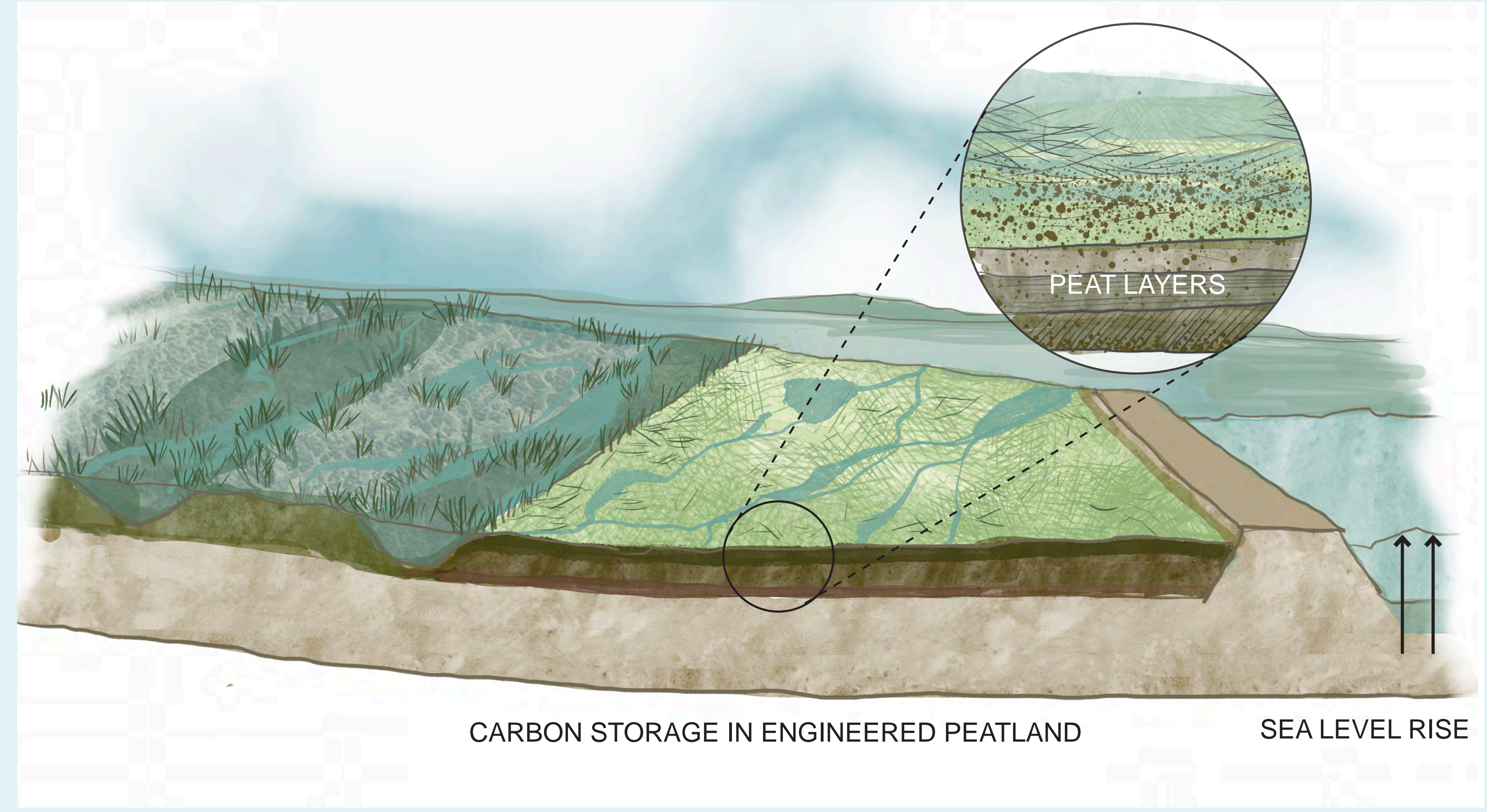
- Minimal public access and visibility may encourage unintended uses (e.g. camping)
- Simplest operation with minimal public access, recreational amenities, or dedicated habitat areas
- Expected to be least cost option

Approximate Cost

Construction Cost: \$30 - 40 million
Annual Operations & Maintenance Cost: \$0.5-1.5 million



Illustrative section through treatment wetland



Carbon storage in engineered peatland will result in elevation gain over time.

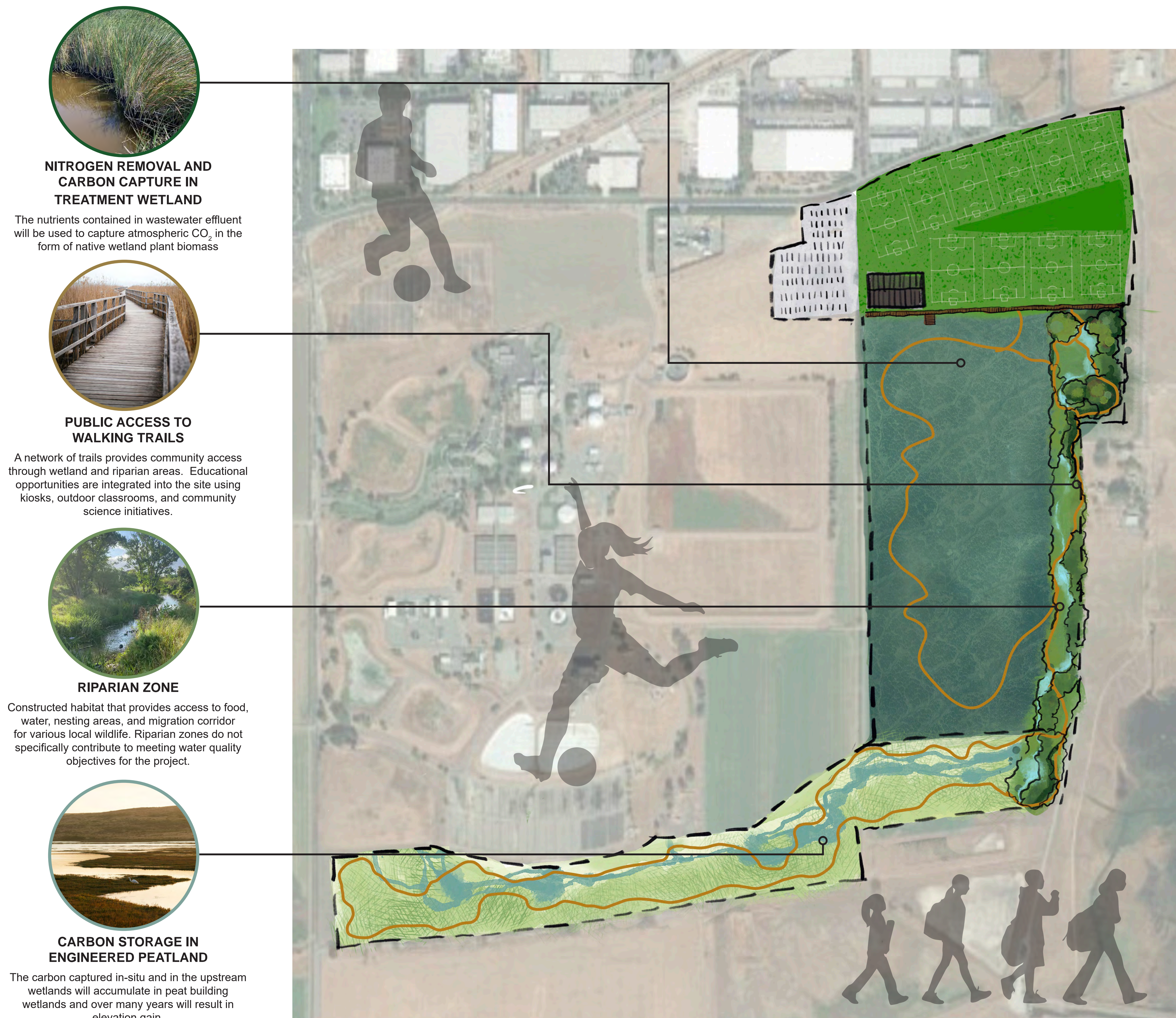
Alternative 2: Maximize Community Access and Recreation

Fairfield-Suisun Sewer District Community Treatment Wetland

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PUBLIC ACCESS TO WALKING TRAILS

A network of trails provides community access through wetland and riparian areas. Educational opportunities are integrated into the site using kiosks, outdoor classrooms, and community science initiatives.



RIPARIAN ZONE

Constructed habitat that provides access to food, water, nesting areas, and migration corridor for various local wildlife. Riparian zones do not specifically contribute to meeting water quality objectives for the project.



CARBON STORAGE IN ENGINEERED PEATLAND

The carbon captured in-situ and in the upstream wetlands will accumulate in peat building wetlands and over many years will result in elevation gain.

	GOOD	BEST			
Sustainable operations and maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nitrogen removal and carbon capture (level of water treatment)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flood protection & sea level rise resilience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat value and diversity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Community access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

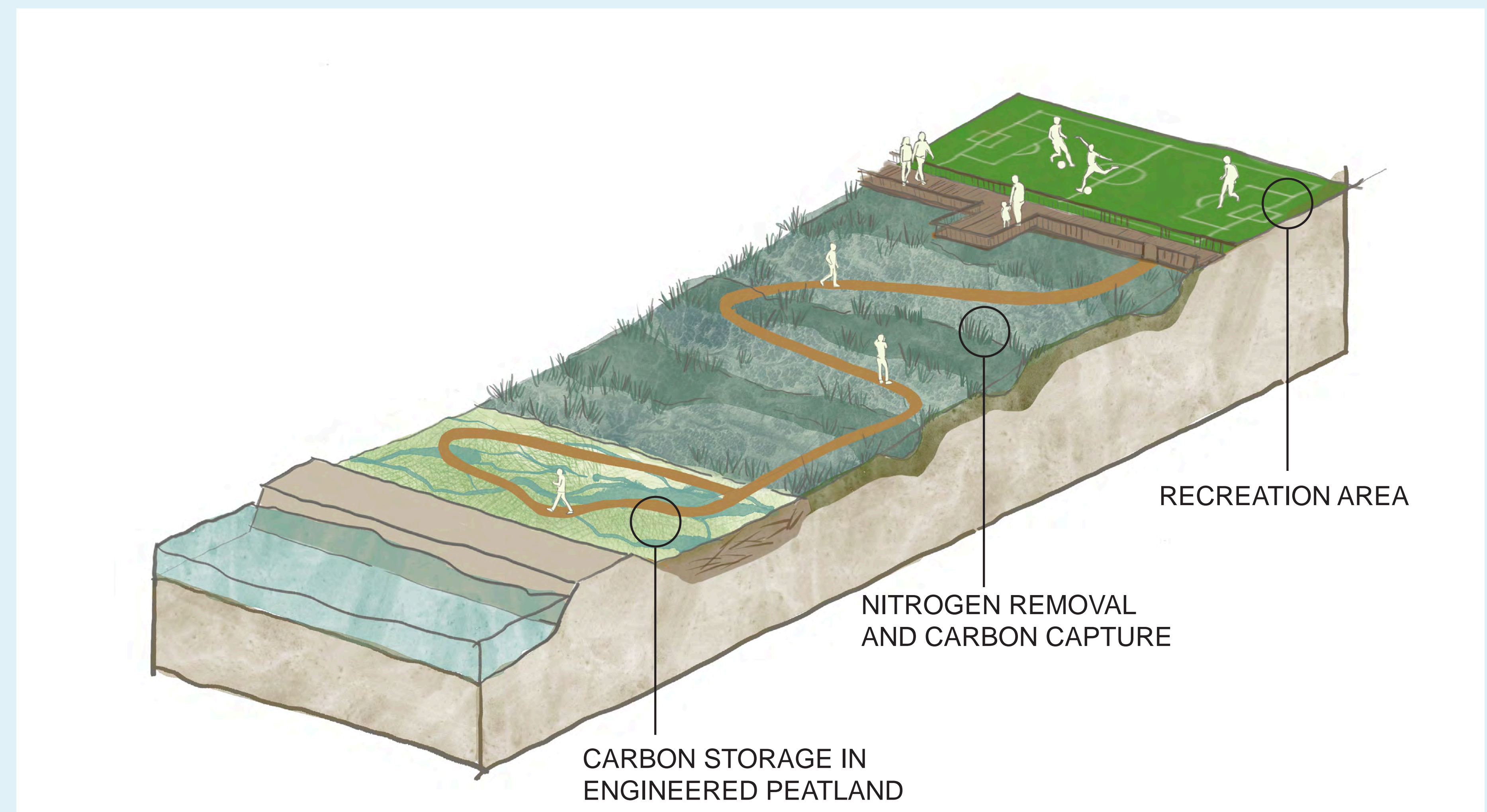
This option is my 1st Choice	This option is my 2nd Choice

Description

- Provides community access including an organized recreation area in partnership with others and walking paths through wetland and riparian areas
- Outdoor kiosks integrated throughout the site for educational opportunities
- Riparian zone at the east perimeter would provide a diverse landscape and habitat value
- Higher usage rates and visibility may discourage unintended uses (e.g. camping)
- Decreasing the treatment wetland area results in less nitrogen removal, carbon capture and elevation building for flood protection and sea level rise resilience
- As with other options, a visitor center and boardwalk is envisaged on the northern border, via Cordelia Road
- Public access in wetlands and riparian areas may be a habitat stressor.
- Mosquitos and odors may be a concern with proximity of wastewater infrastructure to recreation areas
- Partners required to provide irrigation and ongoing maintenance for recreation fields
- Increased operations and maintenance complexity associated with maintaining recreational areas (e.g., bathrooms, irrigation, walkways)
- Expected to be most expensive option due to site amenities and earthwork

Approximate Cost

Construction Cost: \$50 - 60 million (Including recreation fields at \$10 - 15 million)
Annual Operations & Maintenance Cost: \$1-3 million



Illustrative section through treatment wetland with recreational fields and walking trails



PUBLIC ACCESS TO WETLAND AND RIPARIAN AREA VIA BOARDWALK AND TRAILS

Recreational fields and walking trails through treatment wetland

Alternative 3: Maximize Habitat

Fairfield-Suisun Sewer District Community Treatment Wetland

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RIPARIAN ZONE
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CARBON STORAGE IN ENGINEERED PEATLAND
A network of trails provides community access through wetland and riparian areas. Educational opportunities are integrated into the site using kiosks, outdoor classrooms, and community science initiatives.



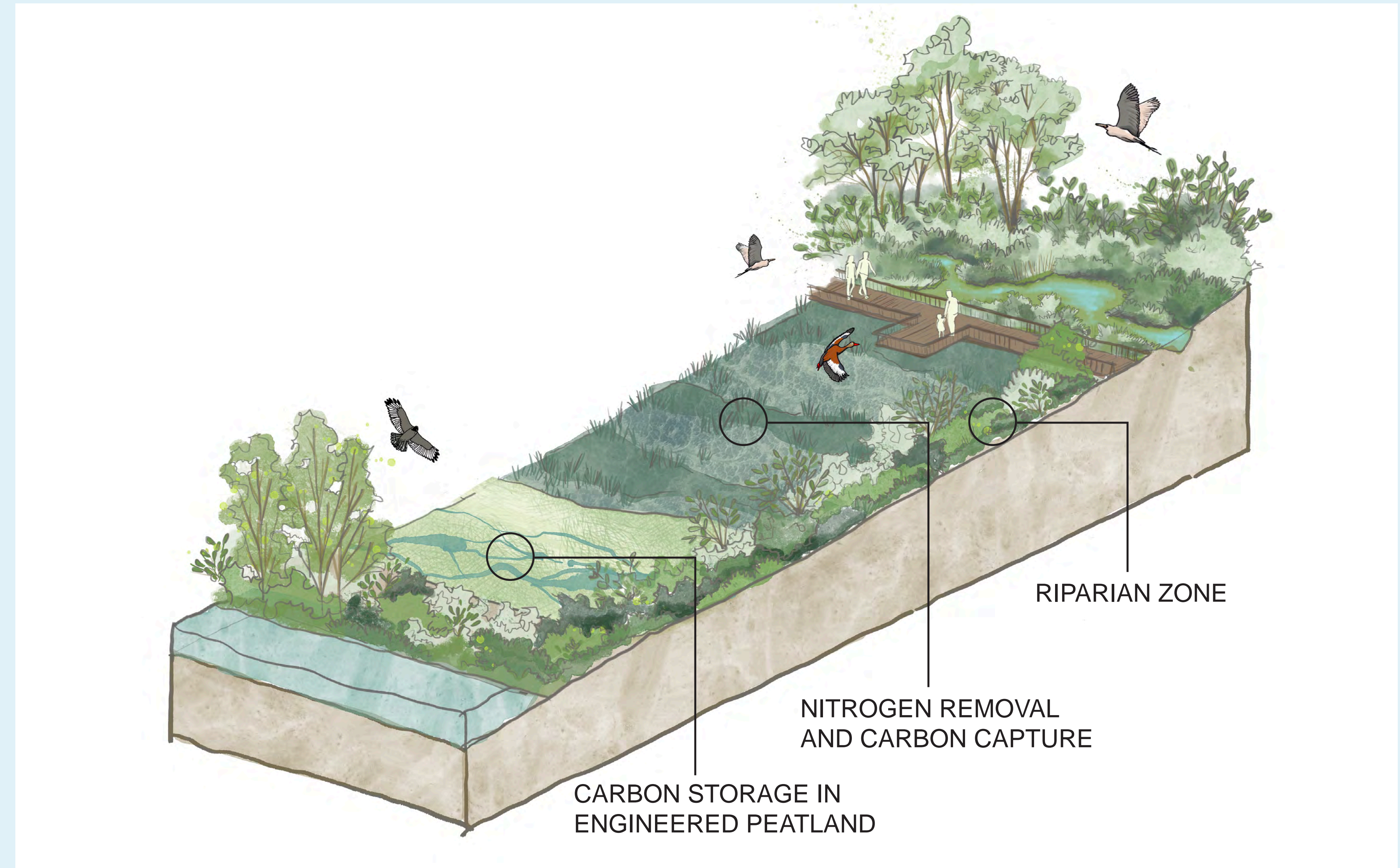
	GOOD	BEST			
Sustainable operations and maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nitrogen removal and carbon capture (level of water treatment)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flood protection & sea level rise resilience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat value and diversity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Community access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

This option is my 1st Choice	This option is my 2nd Choice

Description

- Provides diverse landscape and open water areas to maximize habitat value
- Increased operations and maintenance complexity associated with habitat areas (e.g., removing invasive species)
- Expected to be intermediate cost
- Wooded riparian to brackish marsh area on the eastern and southern perimeter maximizes wetland migration space
- Decreasing the treatment wetland area results in less carbon capture, nutrient uptake, and elevation building for flood protection and sea level rise resilience
- To maximize habitat benefits, public access would be limited to a visitor center and a boardwalk on the northern perimeter, via Cordelia Road
- Minimal public access and visibility may encourage unintended uses (e.g. camping)

Approximate Cost
Construction Cost: \$40 - 50 million
Annual Operations & Maintenance Cost: \$1-2 million



Illustrative section through treatment wetland and riparian zones for diverse habitat



Boardwalk at northern perimeter offers limited public access to observe birds and wildlife