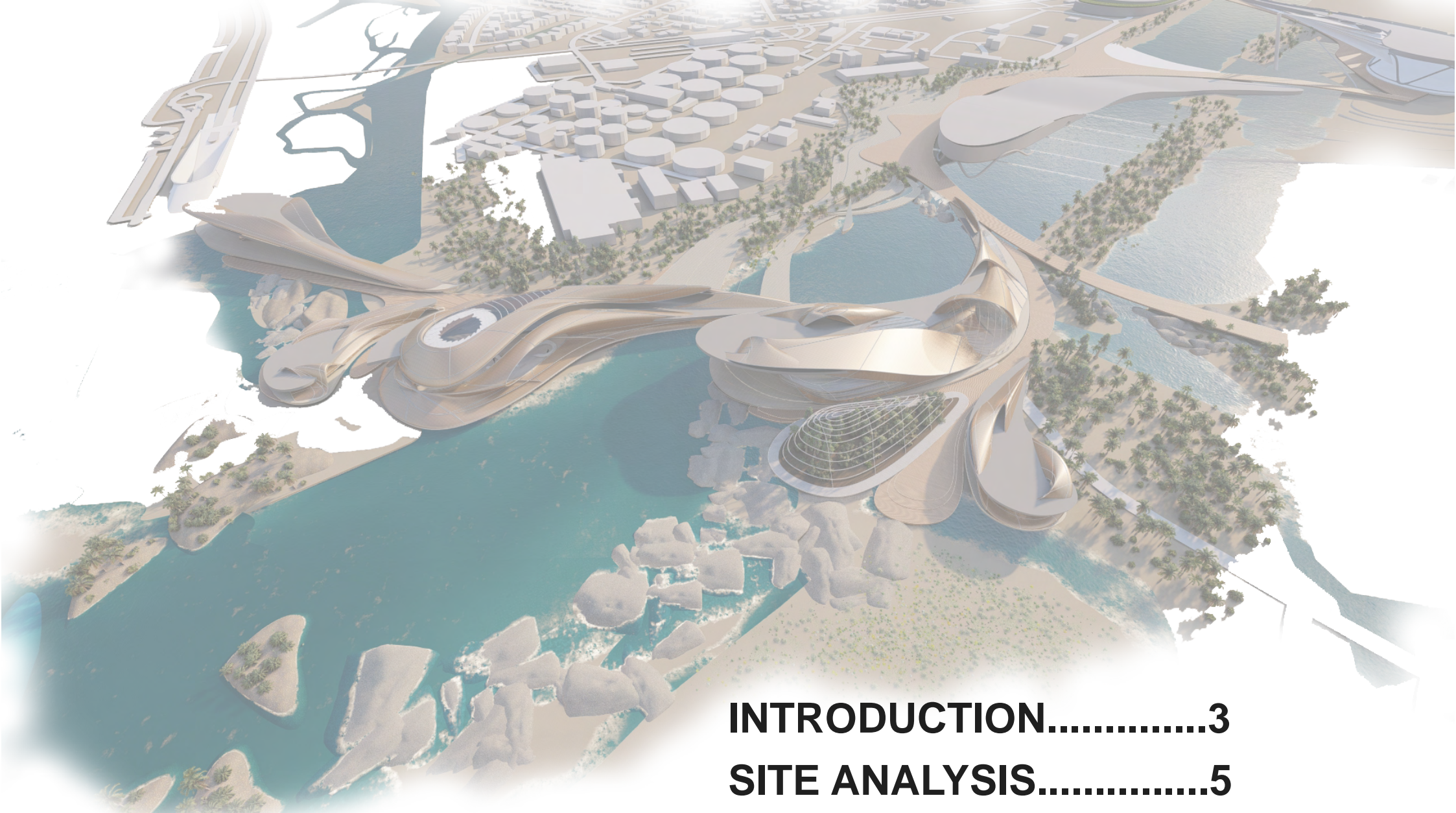


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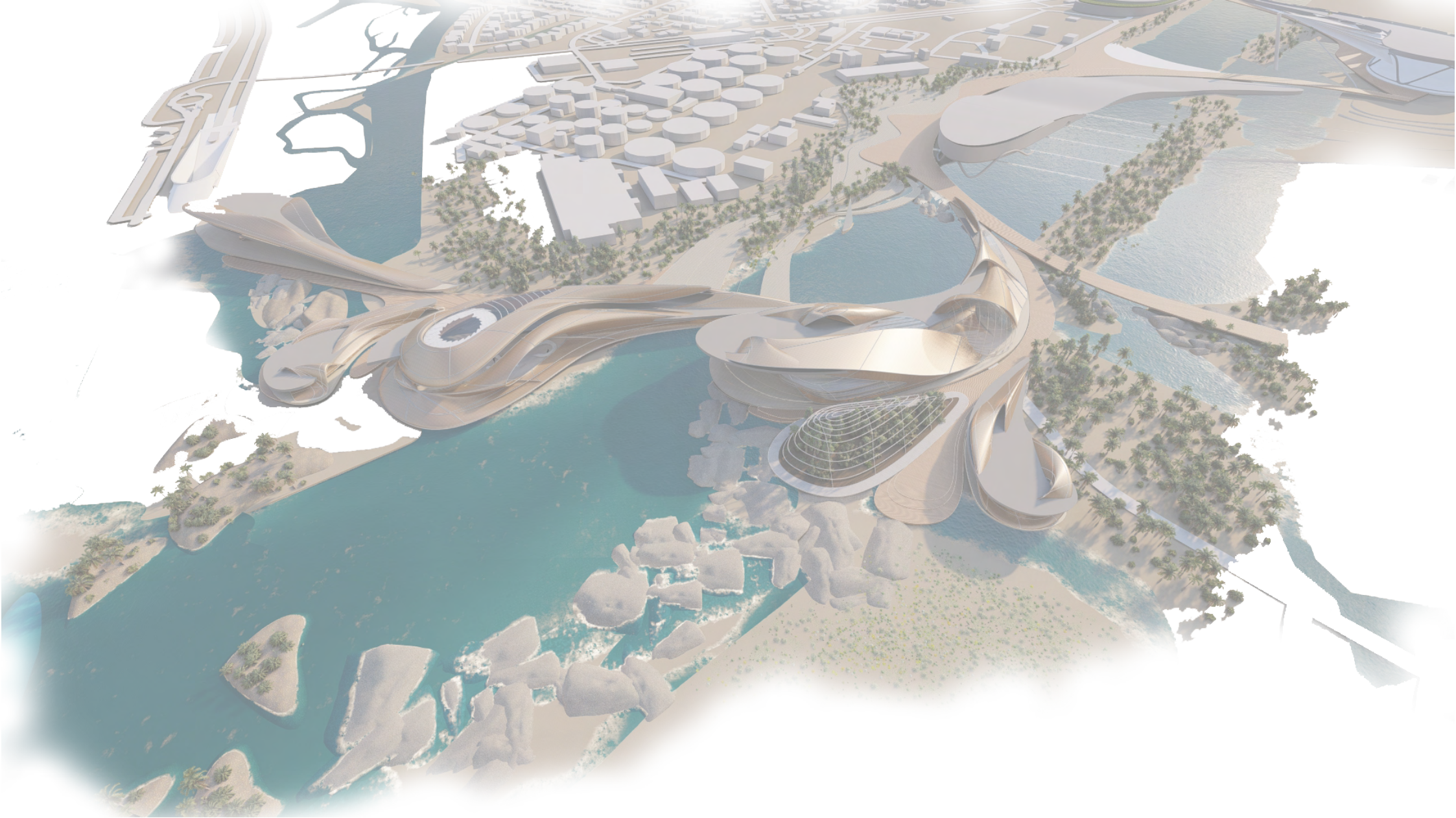
by BÜNYAMİN SÖNMEZ



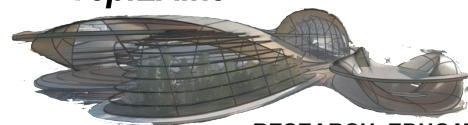


<b>INTRODUCTION.....</b>	<b>3</b>
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<b>CASE STUDIES.....</b>	
<b>THE PROJECT.....</b>	





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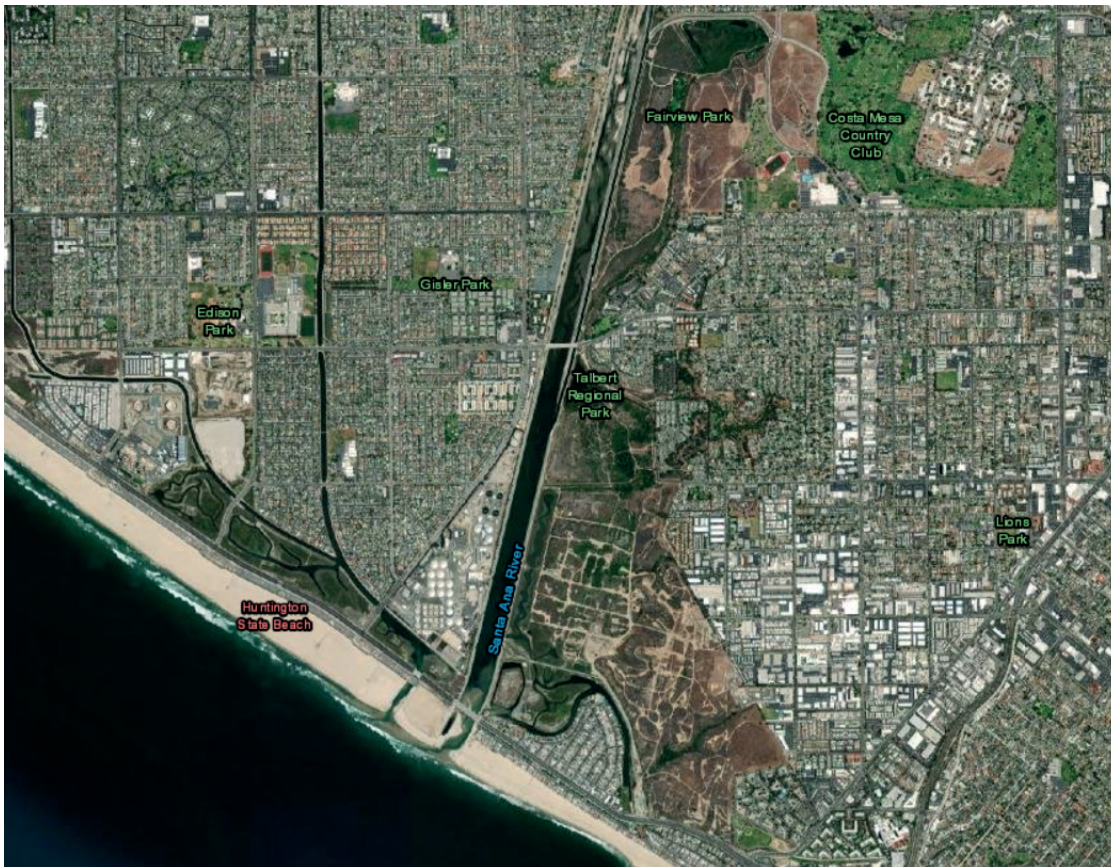
# INTRODUCTION



*Orange County is located in the Los Angeles metropolitan area in Southern California.*

This area, which has ecological diversity and needs to be examined and protected, is being restored and promoted with a new project. While protecting the environment, it is aimed to ensure the sustainability of the site and to investigate and protect the ecological diversity there.

In particular, the Talbert Regional Park located there is ignored and is host to many living. The park is located north and south of Victoria Street in Costa Mesa, California, just east of the Santa Ana River.

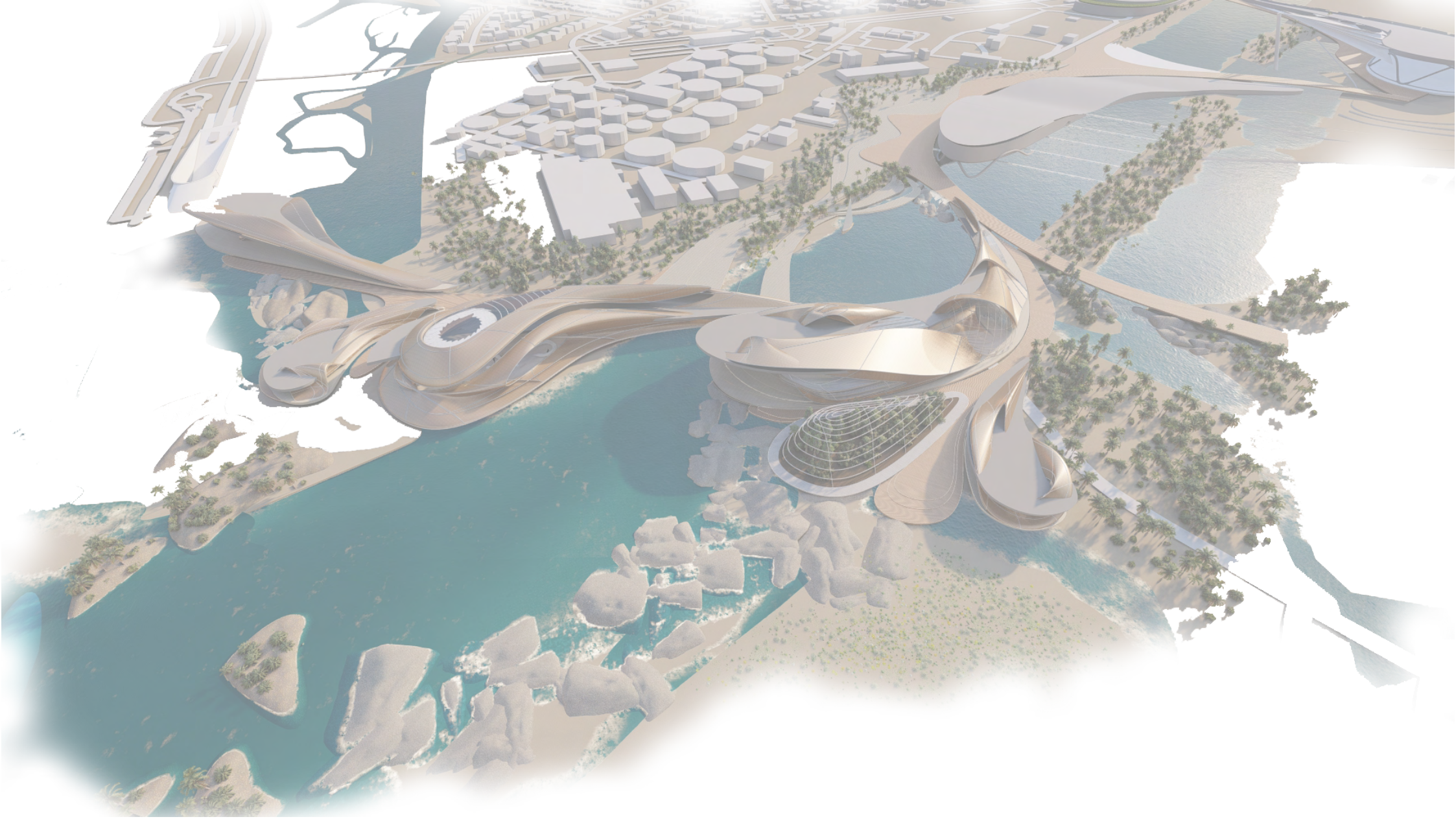


### **Existing Conditions**

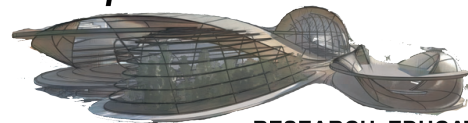
In addition to review of existing data from prior studies, biological surveys were conducted to obtain updated information on vegetation communities and wildlife. A water quality analysis of Victoria Pond was also conducted to review conditions for possible introduction of fish.







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# SITE ANALYSIS



# Site Photos



Photo depicts an area of Disturbed Quailbush Scrub toward the center of the Project site. Photo facing east.



Photo depicts Quailbush Scrub off of Victoria Street on the east side of the Santa Ana River channel. Photo facing north.



Photo show the large pond from the eastern edge. Photo facing west.



Photo depicts Quailbush Scrub off of Victoria Street on the east side of the Santa Ana River channel. Photo facing north.



Photo shows Victoria Pond located toward the center of the Project site.



Photo depicts some burned vegetation on the Project site. Photo facing south.



# Hydrology and Water Quality

Hydrologic and water quality data were obtained from the 1989 EDAW et al.

Saltwater intrusion, if detected in the aquifer underneath the Park, could beset any progress to mitigation and restoration of freshwater riparian habitat at the park. Consequently, salt water intrusion will need to be monitored carefully by the County, and restoration plans adjusted accordingly to take it into account.

The groundwater table at Talbert Regional Park fluctuates according to the seasons. The “wet” season is predominantly from November to March/April when rainfall is greatest. The average monthly rainfall during the wet season varies from 1.4 inches to 2.5 inches. During the dry season rainfall is less than 0.3 inches rainfall per month (EDAW et al. 1989).

A variety of water sources (groundwater, tidal, surface ponding and others) exist at South Talbert. This means a variety of wetland habitats (freshwater, brackish, and saltwater) could potentially be supported in the Park. The water table is seasonably high at South Talbert and a shallow, ser



Figure 11: Site Drainage at South Talbert

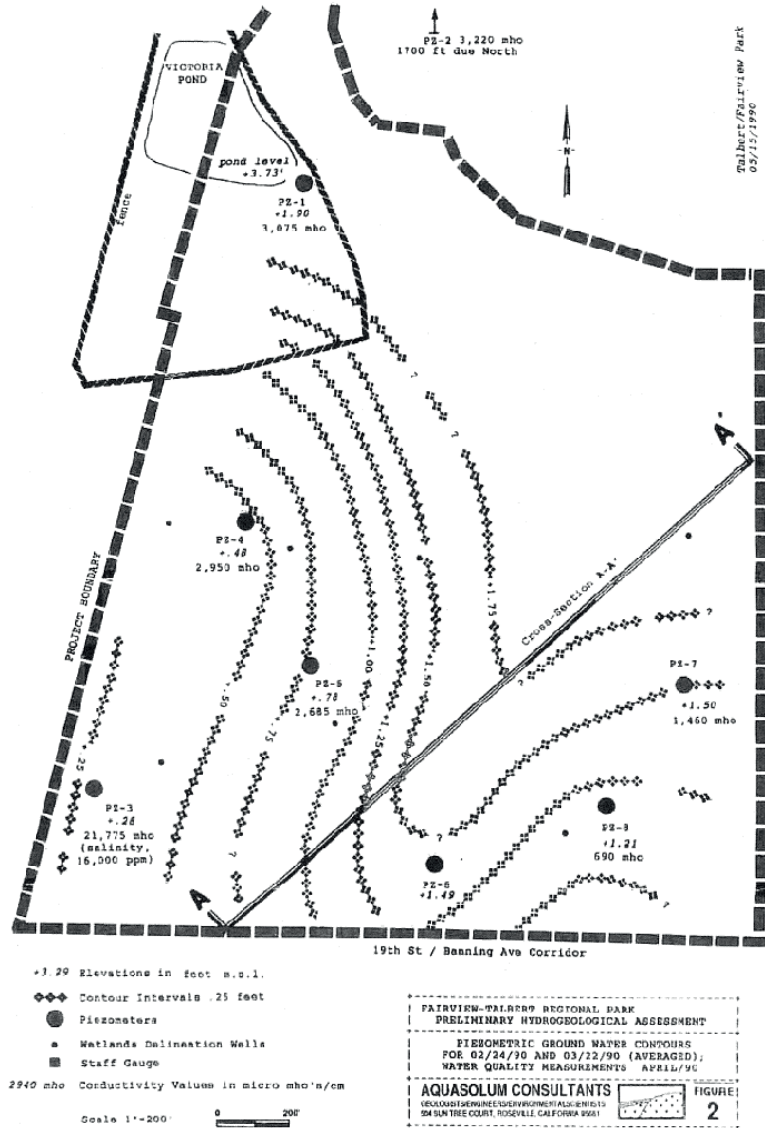


Figure 10: Groundwater Contours at South Talbert (Source: EDAW 1991)



## Soils

For a map of the soils at Talbert Regional Park, see Figure 13. North Talbert is predominantly comprised of Metz loamy sand, moderately fine substratum. The soils at South Talbert consist of a mix of Hueneme fine sandy loam (drained) on the north, Hueneme fine sandy loam on the east, Bolsa silt loam on the south, and a relatively small area of excavated “Pits” on the southeast corner.

The USGS classifies the Park area as an alluvial basin. An alluvial basin contains unconsolidated materials consisting of clay, silt, sand, gravel, and boulders that erode from the mountain slopes and watershed. The soils at Talbert Regional Park were “formed under hydric or seasonally hydric conditions” (EDAW et al. 1989).

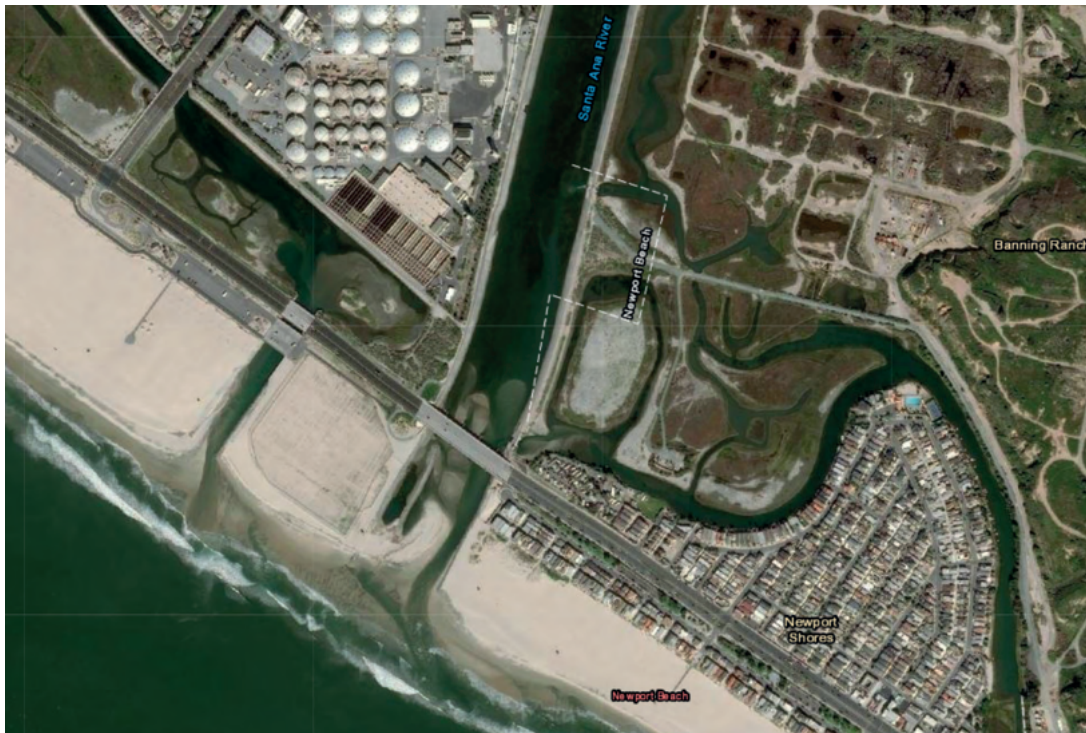


Figure 13: Soil Types Found at Talbert Regional Park (Source: EDAW 1989 & 1991)



## Site Access and Use

Talbert Regional Park appears to be used predominantly by hikers, nature watchers, casual bicyclists, and BMX bicyclists. Sheephills is a popular and well maintained BMX area within the Park.

Both North Talbert and South Talbert have extensive trail networks, which are accessible to the public by foot and bike.

A mixture of decomposed granite trails that transition to dirt trails and asphalt trails near the flood control levee make up the trails at Talbert North while the trails at South Talbert are predominantly earthen trails.

North Talbert has a parking lot located off Placentia Avenue at Fairview Park, approximately 1,500 feet east of North Talbert. Talbert North is accessible by foot or on bike from the parking lot and from Victoria Avenue. Vista Park and Fairview Park are adjacent to the North Talbert site. Vista Park and Fairview Park are owned and operated by the City of Costa Mesa.



Vista Park



Fairview Park

A paved multi-use trail is located atop the Santa Ana River flood control levee and is frequently used by pedestrians, joggers, and bicyclists. This trail provides access to both North Talbert and South Talbert and is available to the public from the flood control levee along the GreenvilleBanning Channel. Victoria Pond is visible from Victoria Avenue and the channel levee (see Figure 17). The pond is a scenic natural resource and supports fish, however access to the pond is restricted by a fence along its perimeter. Despite the fence, unauthorized fishing has been observed at Victoria Pond.



Figure 17: View of Victoria Pond from Victoria Street  
(Source: Google Street View)



Figure 15: Trails at South Talbert  
(Source: OC Parks Website)



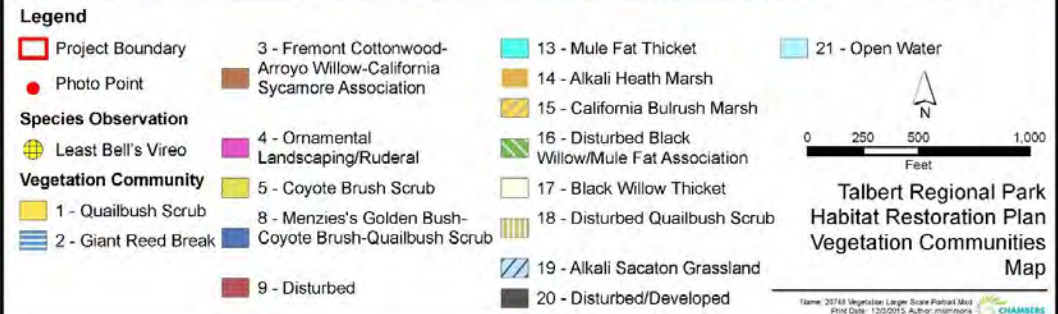
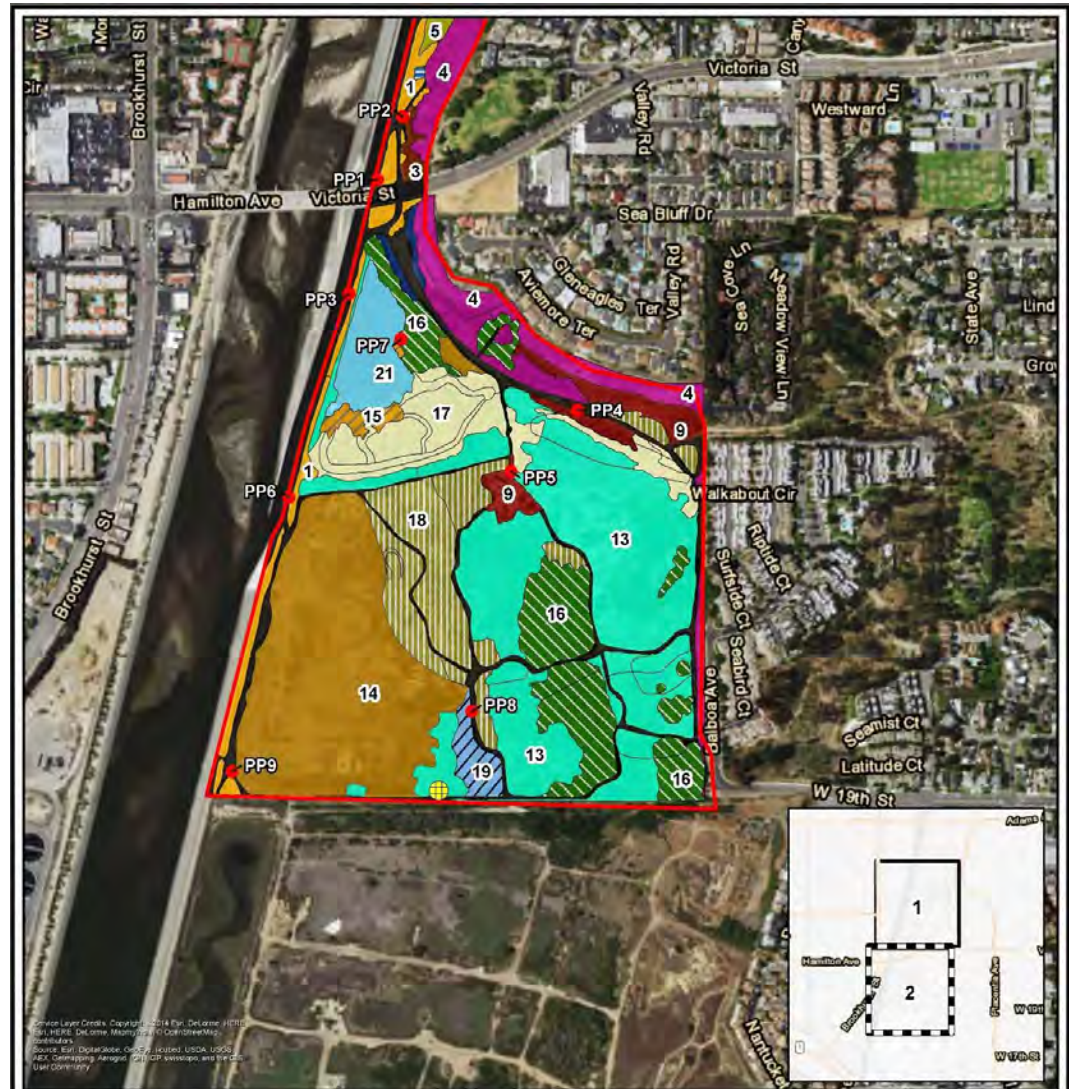
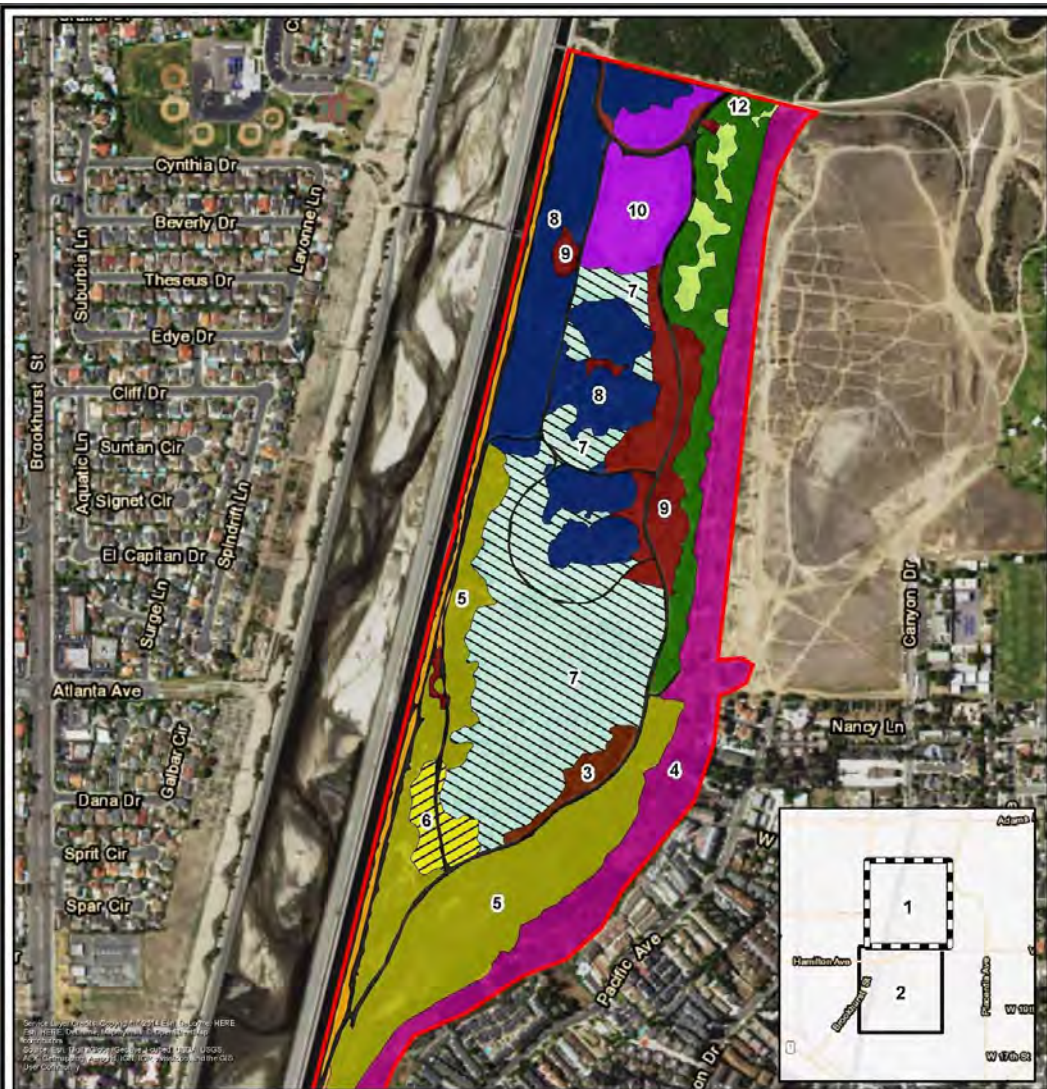


Figure 5: Vegetation and Habitat Map at Talbert North (Source: Chambers 2014)

Figure 6: Vegetation and Habitat Map at Talbert South (Source: Chambers 2014)





Overview of Public Access



Figure 29: Proposed Tidal Connection and Tidal Channels for the Salt Marsh

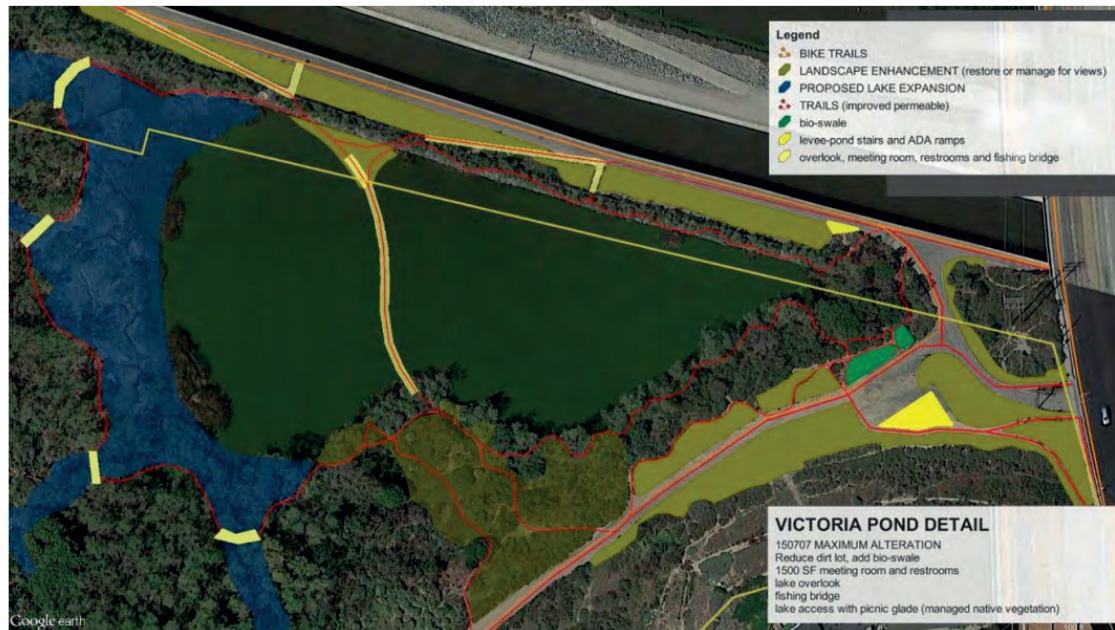


Figure 46: Alternative 3 Victoria Pond Access Improvements





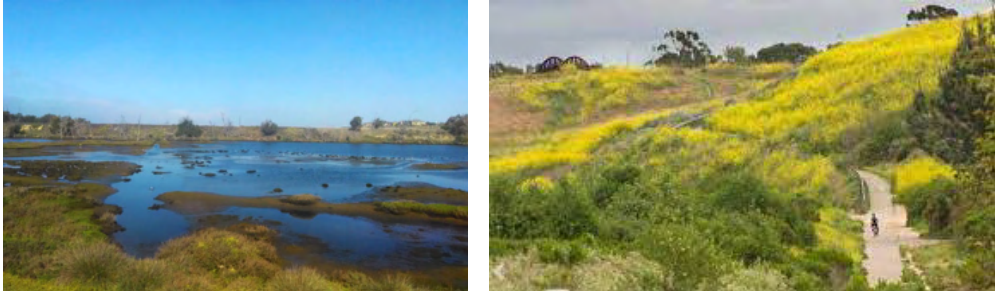
## Habitat

Placentia Drain at North Talbert can intercept urban runoff from the adjacent mesa and presents an opportunity for a bioswale or improved freshwater riparian habitat.



## Restoration

South Talbert presents an opportunity to design for a variety of habitats (salt marsh, emergent marsh, alkali meadows, freshwater riparian, grasslands, vernal pools). The high water table at South Talbert presents an opportunity to design additional freshwater habitat, i.e., emergent marsh or freshwater riparian habitat.



## Recreation

Sheephills is a unique recreational amenity that is a popular destination for BMX riders. The BMX trails and jumps appear to be well maintained by the BMX rider community. This group appears to also serve as stewards of the site over time.



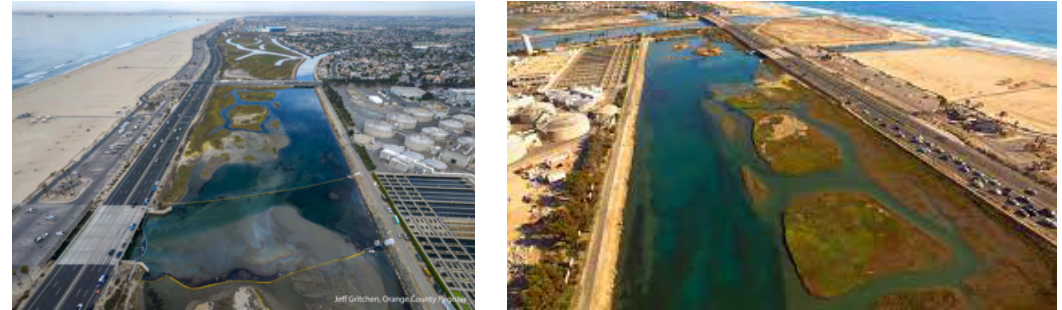
## Soils

Saline soils, particularly in the southwest areas of South Talbert, appear to be more conducive to establishing salt marsh habitat than freshwater riparian habitat. This further supports the opportunity to create salt marsh habitat within the Park.



## Hydrology

Alternatively, a new hydrologic connection to either the Greenville-Banning Channel or the Santa Ana River could be constructed to convey water from the river to South Talbert, which presents an opportunity for wetland restoration, i.e., salt marsh or brackish marsh.



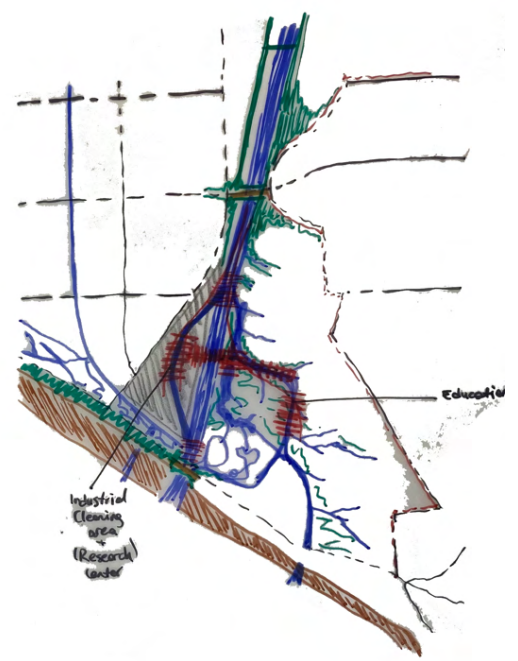
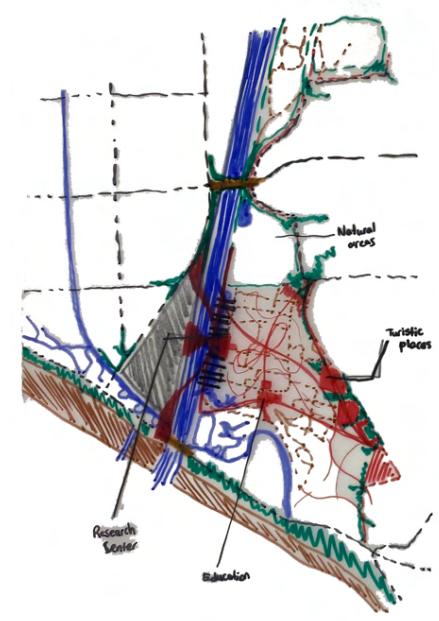
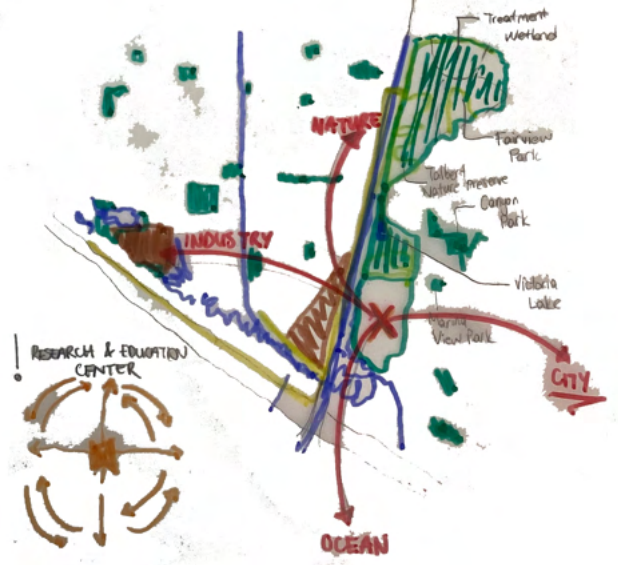
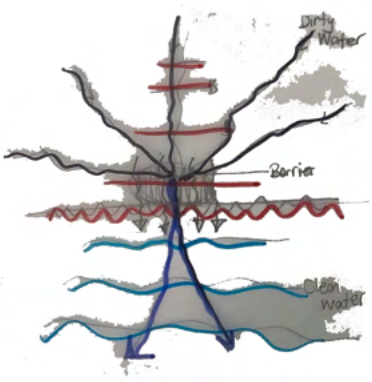
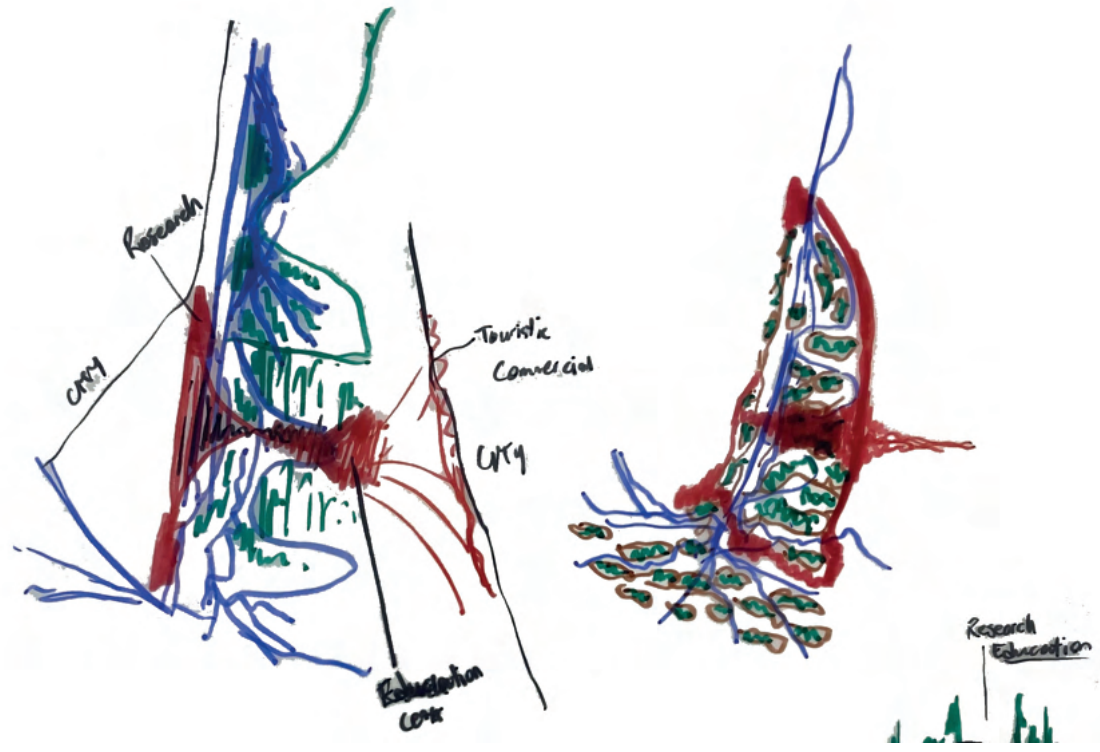
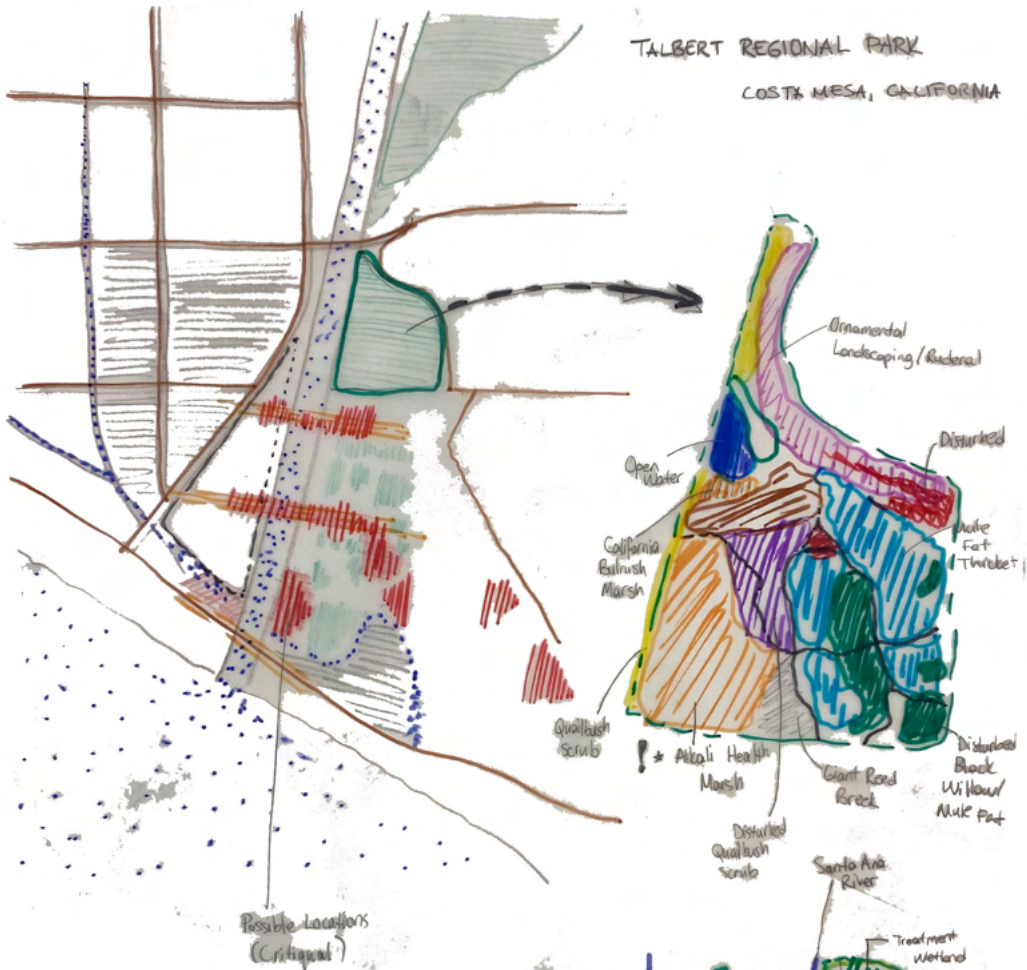
## Public access and recreation

The existing trail system and Victoria Pond presents a unique opportunity to create a focal point at Talbert Regional Park and provide the public with opportunities to passively enjoy the Park's scenery and aquatic resources. The existing network of Park trails present an opportunity for interpretive trails and public education of the natural resources at Talbert Regional Park.





TALBERT REGIONAL PARK  
COSTA MESA, CALIFORNIA





## SENSITIVE PLANTS

The following 21 plant species are considered Absent from the Project site due to lack of suitable habitat, out of geographic range, and/or the species is found outside the elevation range of the Project site :



intermediate mariposa-lily  
(*Calochortus weedii* var. *intermedius*)



Orcutt's pincushion  
(*Chaenactis glabriuscula*  
var. *orcuttiana*)



salt marsh bird's-beak  
(*Chloropyron maritimum*  
subsp. *maritimum*)



Nuttall's scrub oak  
(*Quercus dumosa*)



cliff spurge  
(*Euphorbia misera*)



California Orcutt grass  
(*Orcuttia californica*)



Laguna Beach dudleya  
(*Dudleya stolonifera*)



Santa Ana River woollystar  
(*Eriastrum densifolium* ssp. *sanctorum*)



San Diego button-celery  
(*Eryngium aristulatum*  
var. *parishii*)



San Fernando Valley spineflower  
(*Chorizanthe parryi* var. *fernandina*)



big-leaved crownbeard  
(*Verbesina dissita*)



prostrate vernal pool  
navarretia  
(*Navarretia prostrata*)



coast woolly-heads  
(*Nemacaulis denudata*  
var. *denudata*)



summer holly  
(*Comarostaphylis diversifolia* ssp. *diversifolia*)



Brand's star phacelia  
(*Phacelia stellaris*)



Sanford's arrowhead (*Sagittaria sanfordii*)



chaparral ragwort  
(*Senecio aphanactis*)



California seablite  
(*Suaeda californica*)



Ventura Marsh milk-vetch  
(*Astragalus pycnostachyus*  
var. *lanosissimus*)



Parish's brittlescale  
(*Atriplex parishii*)



Los Angeles sunflower  
(*Helianthus nuttallii* subsp. *parishii*)



The analysis of the database searches and reconnaissance survey resulted in 11 species with Low Potential to occur within the Project site due to low quality habitat present. These species are:



aphanisma  
(*Aphanisma blitoides*)



South coast saltscale  
(*Atriplex pacifica*)



Davidson's saltscale  
(*Atriplex serenana*  
var. *davidsonii*)



many-stemmed dudleya  
(*Dudleya multicaulis*)



decumbent goldenbush  
(*Isocoma menziesii*  
var. *decumb*)



Salt Spring checkerbloom  
(*Sidalcea neomexicana*)



mesa horkelia  
(*Horkelia cuneata* var. *puberula*)



Coulter's saltbush  
(*Atriplex coulteri*)



San Bernardino aster  
(*Symphyotrichum defoliatum*)



estuary seablite  
(*Suaeda esteroa*)



southern tarplant  
(*Centromadia parryi* ssp. *australis*)

The analysis of the reconnaissance survey and literature search resulted in three species with Moderate Potential to occur within the Project site due to the presence of suitable habitat on the Project site:



Lewis' evening-primrose  
(*Camissoniopsis lewisii*)



south coast branching phacelia  
(*Phacelia ramosissima*  
var. *austrolitorlis*)



Gambel's water cress  
(*Nasturtium gambelii*)

The following three plant species are considered to have a High Potential to occur on Project site due to the presence of suitable soils on site and due to the presence of other occurrences of the species within 5 miles of the site:



Coulter's goldfields  
(*Lasthenia glabrata*  
ssp. *coulteri*)



mud nama  
(*Nama stenocarpa*)



chaparral sand-verbena  
(*Abronia villosa* var. *aurita*)

The following species was Present on the Project site during the survey:



## SENSITIVE WILDLIFE

The following 16 wildlife species are considered Absent from the Project site due to lack of suitable habitat present. In addition, no record shows the existence of these species within 5 miles of the Project site:



green turtle (*Chelonia mydas*)



coastal cactus wren  
(*Campylorhynchus brunneicapillus sandiegensis*)



red-diamond rattlesnake  
(*Crotalus ruber*)



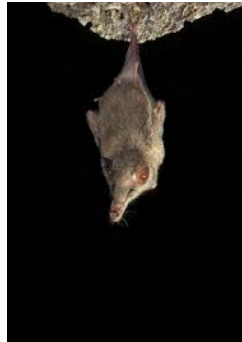
Santa Ana sucker  
(*Catostomus santaanae*)



Pacific pocket mouse  
(*Perognathus longimembris pacificus*)



tricolored blackbird  
(*Agelaius tricolor*)



Mexican long-tongued bat  
(*Choeronycteris mexicana*)



tidewater goby  
(*Eucyclogobius newberryi*)



Belding's savannah sparrow  
(*Passerculus sandwichensis beldingi*)



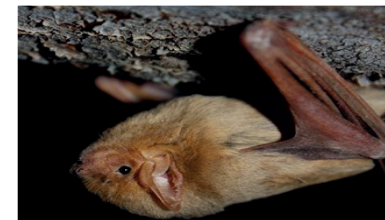
big free-tailed bat  
(*Nyctinomops macrotis*)



light-footed clapper rail  
(*Rallus longirostris levipes*)



western spadefoot  
(*Spea hammondi*)



western yellow bat  
(*Lasiurus xanthinus*)



California black rail  
(*Laterallus jamaicensis coturniculus*)



western yellow-billed cuckoo  
(*Coccyzus americanus occidentalis*)



coast horned lizard  
(*Phrynosoma blainvillii*)



The analysis of the reconnaissance survey and database searches resulted in 8 species with Low Potential to occur within the Project site due to low quality or unsuitable habitat present. In addition, known occurrences are recorded within 5 miles of the Project site:



bank swallow  
(*Riparia riparia*)



grasshopper sparrow  
(*Ammodramus savannarum*)

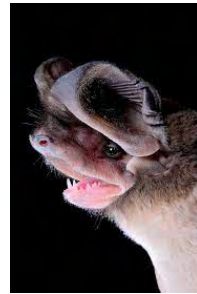


south coast marsh vole  
(*Microtus californicus stephensi*)



Orange-throated whiptail  
(*Aspidoscelis hyperythra*)

The analysis of the CNDDDB search and reconnaissance survey resulted in one species with Moderate Potential to occur within the Project site due to the presence of suitable habitat and known occurrences within 3 miles of the Project site in habitat similar to conditions at the Project site:



western mastiff bat  
(*Eumops perotis californicus*)



American Badger  
(*Taxidea taxus*)



western snowy plover  
(*Charadrius alexandrinus nivosus*)

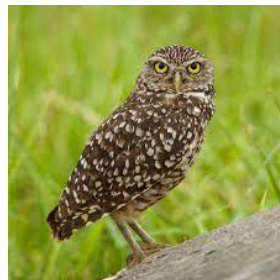


western Pond Turtle  
(*Emys marmorata*)

The analysis of the CNDDDB search and reconnaissance survey resulted in two species with High Potential to occur within the Project site due to known occurrences within one mile of the Project site and the presence of suitable habitat:



Coastal California gnatcatcher  
(*Poliptila californica californica*)



Burrowing owl  
(*Athene cunicularia*)



San Diego fairy shrimp  
(*Branchinecta sandiegonensis*)

The following three species were Present on the Project site during the survey:



California least tern  
(*Sternula antillarum browni*)

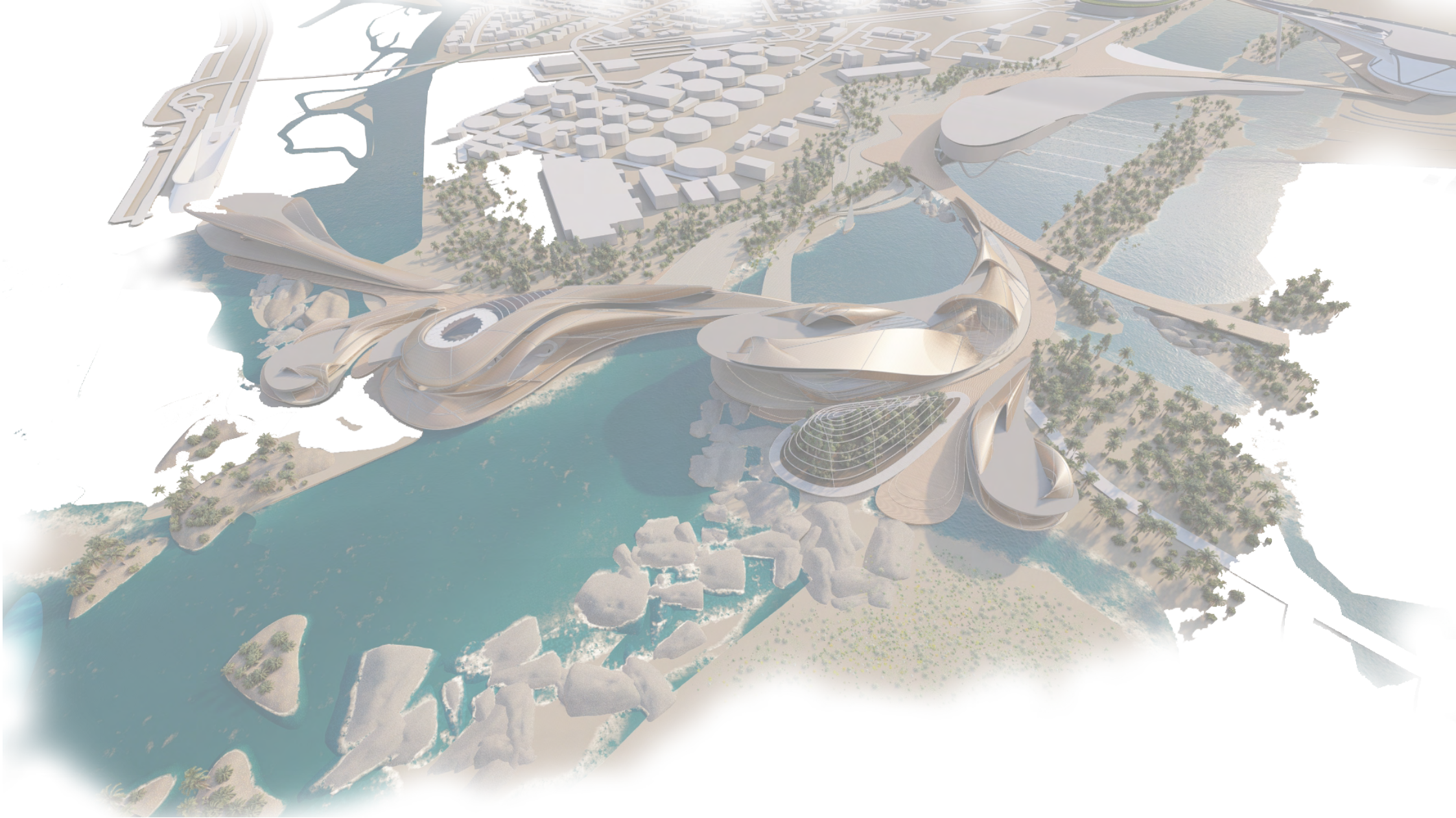


least Bell's vireo  
(*Vireo bellii pusillus*)

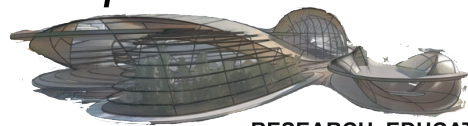


yellow-breasted chat  
(*Icteria virens*)





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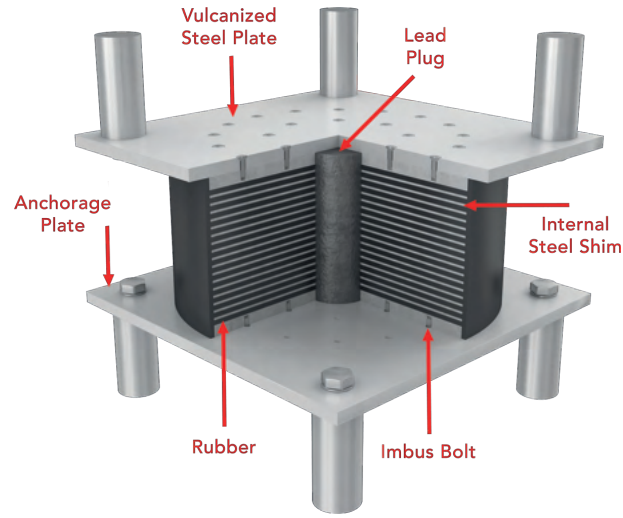
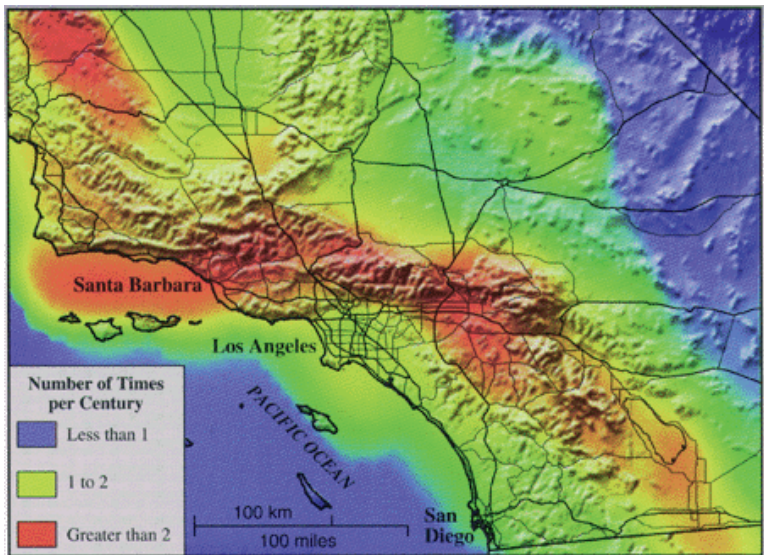
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# LITERATURE REVIEW



## Southern Californians Cope With Earthquakes

For decades Southern Californians have worked to reduce their vulnerability to earthquakes. The 1994 North-ridge shock, damaging as it was, proved the value of these efforts. Yet, much more needs to be done. Scientists are preparing new maps of the earthquake shaking hazard in Southern California. Such maps help make living in the region safer by focusing efforts to strengthen existing structures and by providing guidance in building new structures.

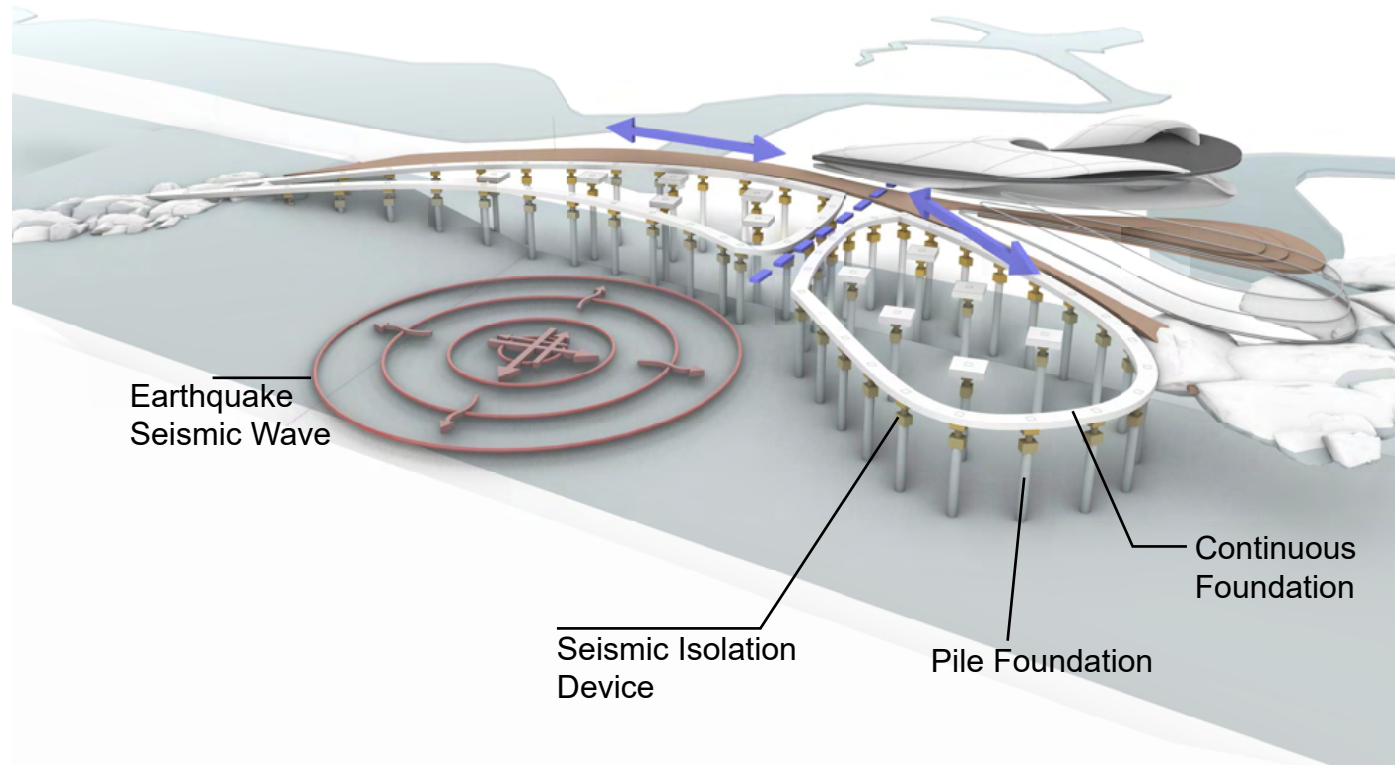


Seismic Isolation Device

## Seismic Isolation

Seismic isolation (earthquake isolation or base isolation) is a method that protects the structure and all the components inside the building from the destructive effects of the earthquake by creating a layer between the building and the ground thanks to special devices (earthquake isolation devices) placed between the building itself and its foundation.

Although the building is a long building horizontally in case of earthquake, it will act as two parts thanks to the designed foundation system. It aims to minimize damage thanks to its seismic isolation tool and structural solution.



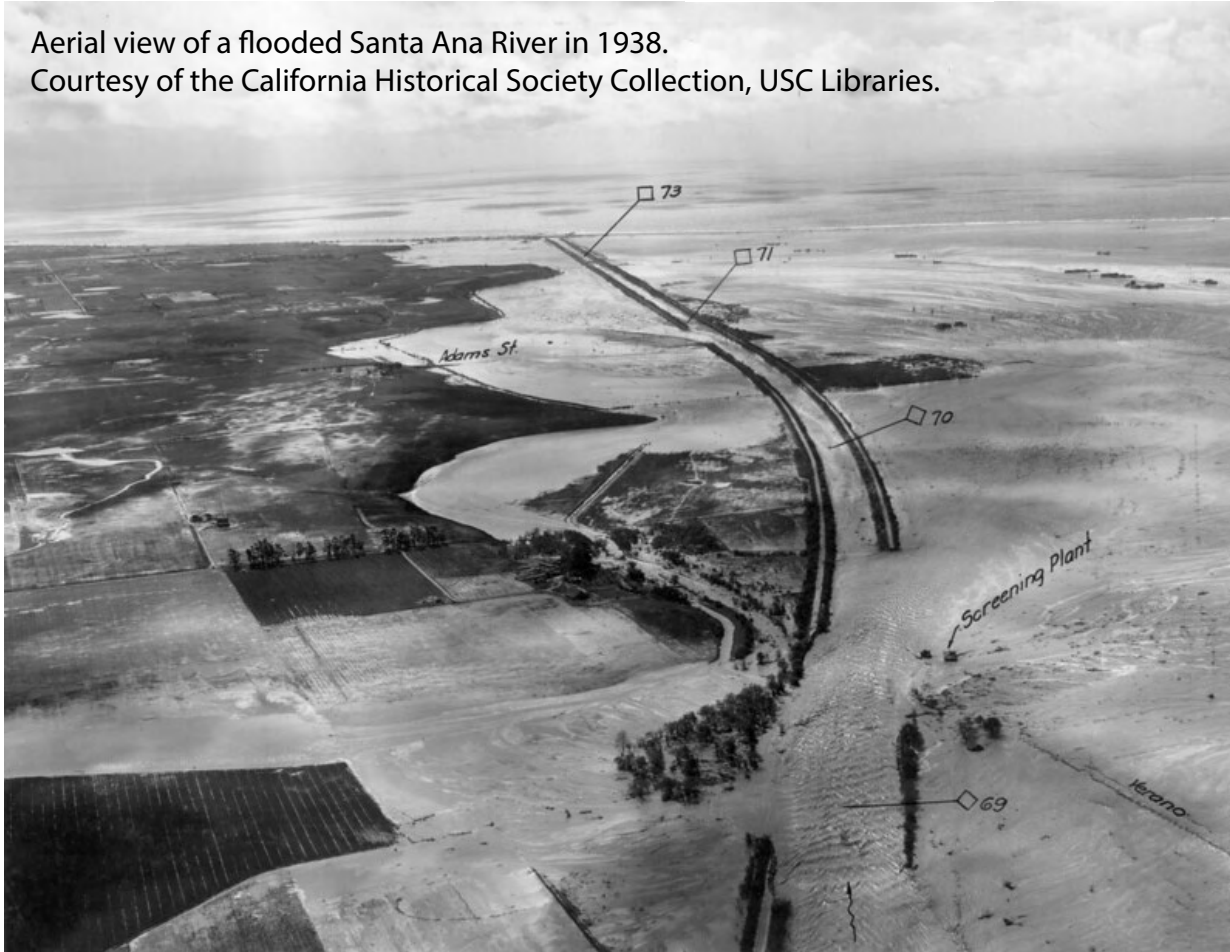


# The 'nightmare' California flood more dangerous than a huge earthquake

The Santa Ana River watershed became one of the nation's most productive agricultural regions, but with each town start, grove planting, or capital investment, the river came to be seen as more of a threat. Orange County was especially vulnerable; a swollen river rushing out of Santa Ana Canyon had the potential to jump its banks where the river turns south near Anaheim. If that happened, it would spread out in a sheet over the entire coastal plain.

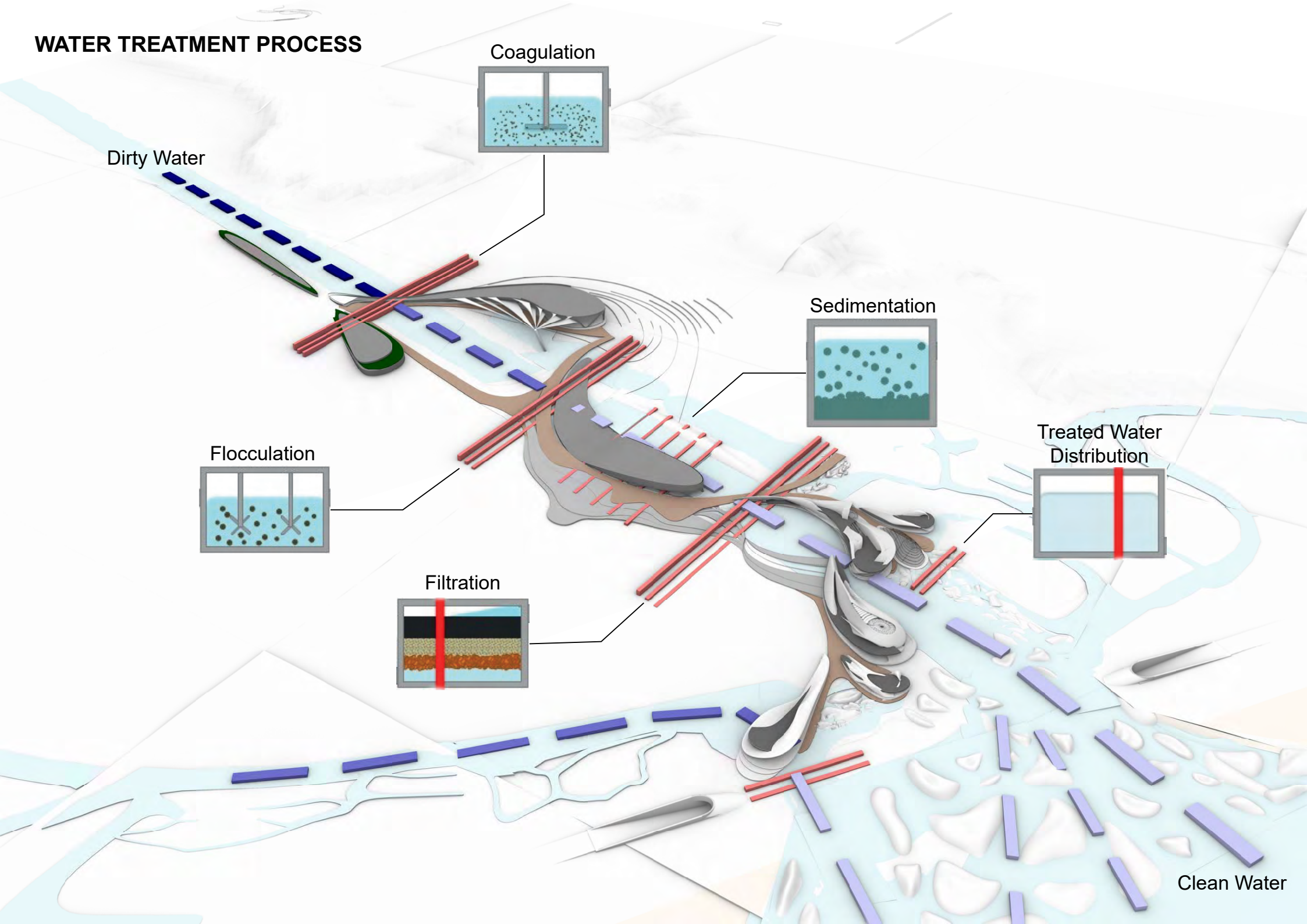


Aerial view of a flooded Santa Ana River in 1938. Courtesy of the California Historical Society Collection, USC Libraries.





# WATER TREATMENT PROCESS



Dirty Water

Coagulation

Flocculation

Filtration

Sedimentation

Treated Water  
Distribution

Clean Water



Since there is a danger of flooding for this region, landscape elements and the arrangement of buildings are designed in such a way as to create a barrier effect on it. The direction of the river, determined by nature in its own flow, is translated into natural forms through a straight channel made by human coercion. The water level, which varies according to the amount of seasonal precipitation, has been designed to integrate with landscape elements. The descending and rising water becomes whole in a natural way thanks to the cascading landscape system.

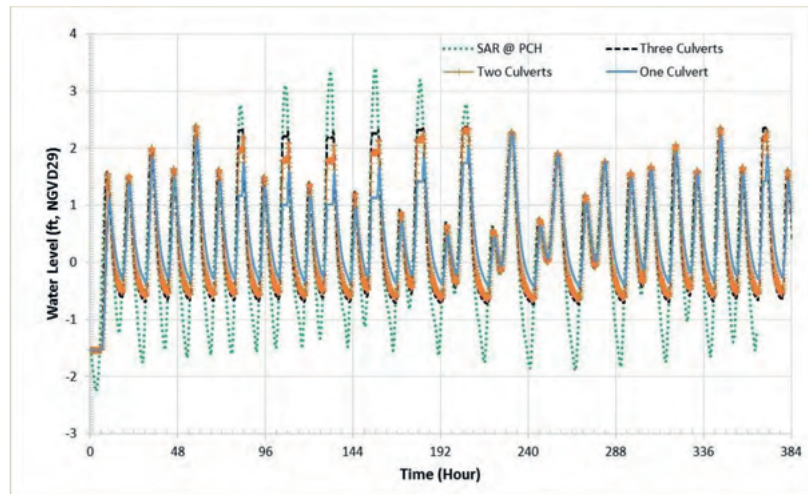


Figure 35: Tide Range in Talbert Park With Culverts Connecting to the GBC/Santa Ana River Only

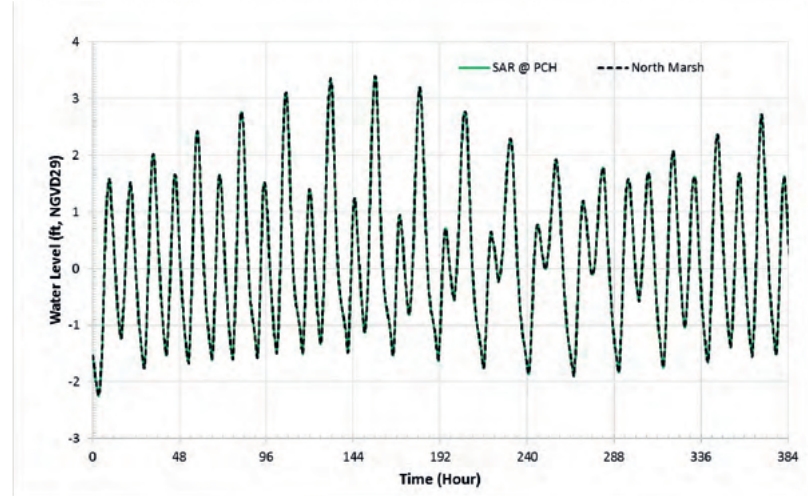
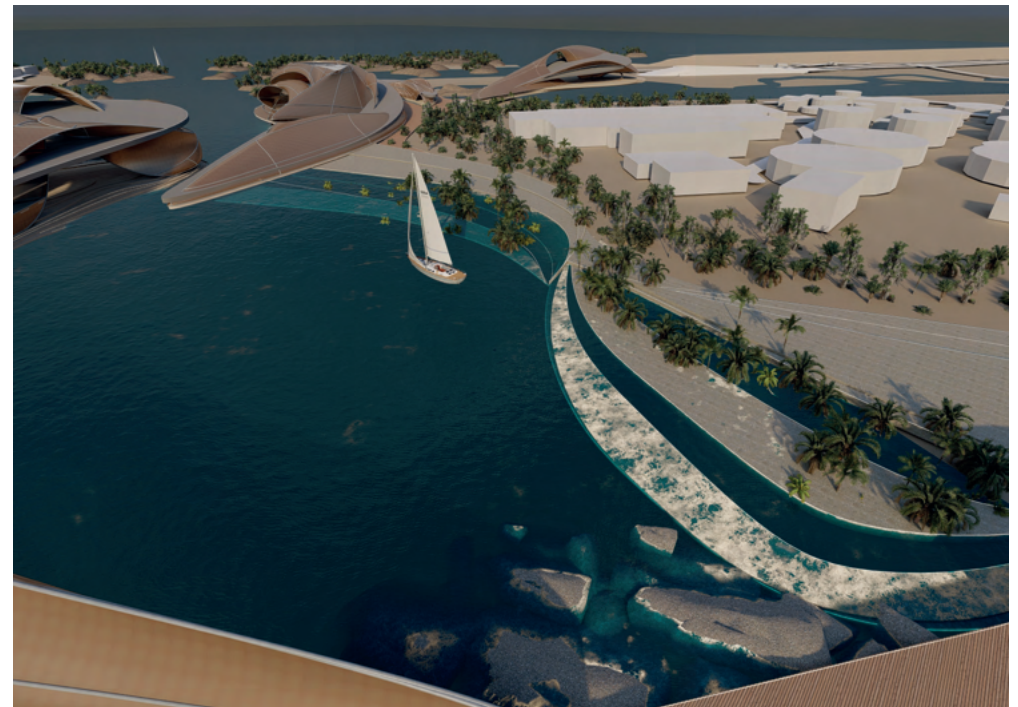
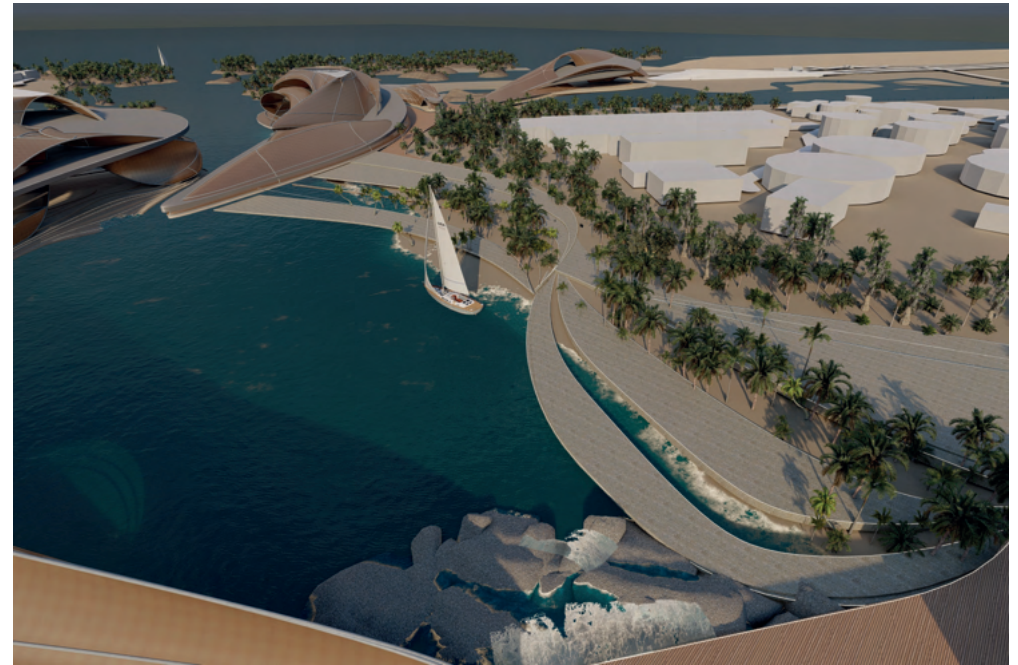


Figure 36: Tide Range in the Existing North Marsh as Connected to the Santa Ana River





# RESEARCH AREAS

## Bioassessment



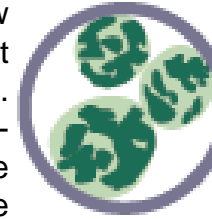
Biological assessment, or bioassessment, is the science of evaluating the health of an aquatic ecosystem by assessing the organisms that live within it. From algae to invertebrates to fish and amphibians, biological indicators of ecological condition play a key role in helping the environmental management community monitor the overall health of water bodies.

## Ecohydrology



Ecohydrology is the study of how changes to flow patterns impact the health of aquatic ecosystems. Streams, wetlands and other aquatic environments all experience routine natural variation in the timing, magnitude, duration and frequency of flows.

## Eutrophication



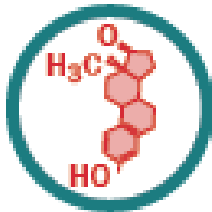
Eutrophication, or the accelerated accumulation of organic matter from overgrowth of aquatic plants, algae and bacteria, is an ecologically disruptive phenomenon that can impair water quality and, in some cases, harm animals and humans.

## Climate Change



Climate change has presented researchers with a wide variety of opportunities to track, predict and explore the societal and environmental implications of a changing planet.

## Emerging Contaminants



Emerging contaminants refer to the thousands of chemical contaminants in aquatic environments for which evidence is emerging that they may pose a threat to ecosystem and human health.

## Microbial Water Quality



Microbial water quality is a focused area of aquatic microbiology dedicated to minimizing the risk of human exposure to waterborne pathogens.

## Stormwater BMPs



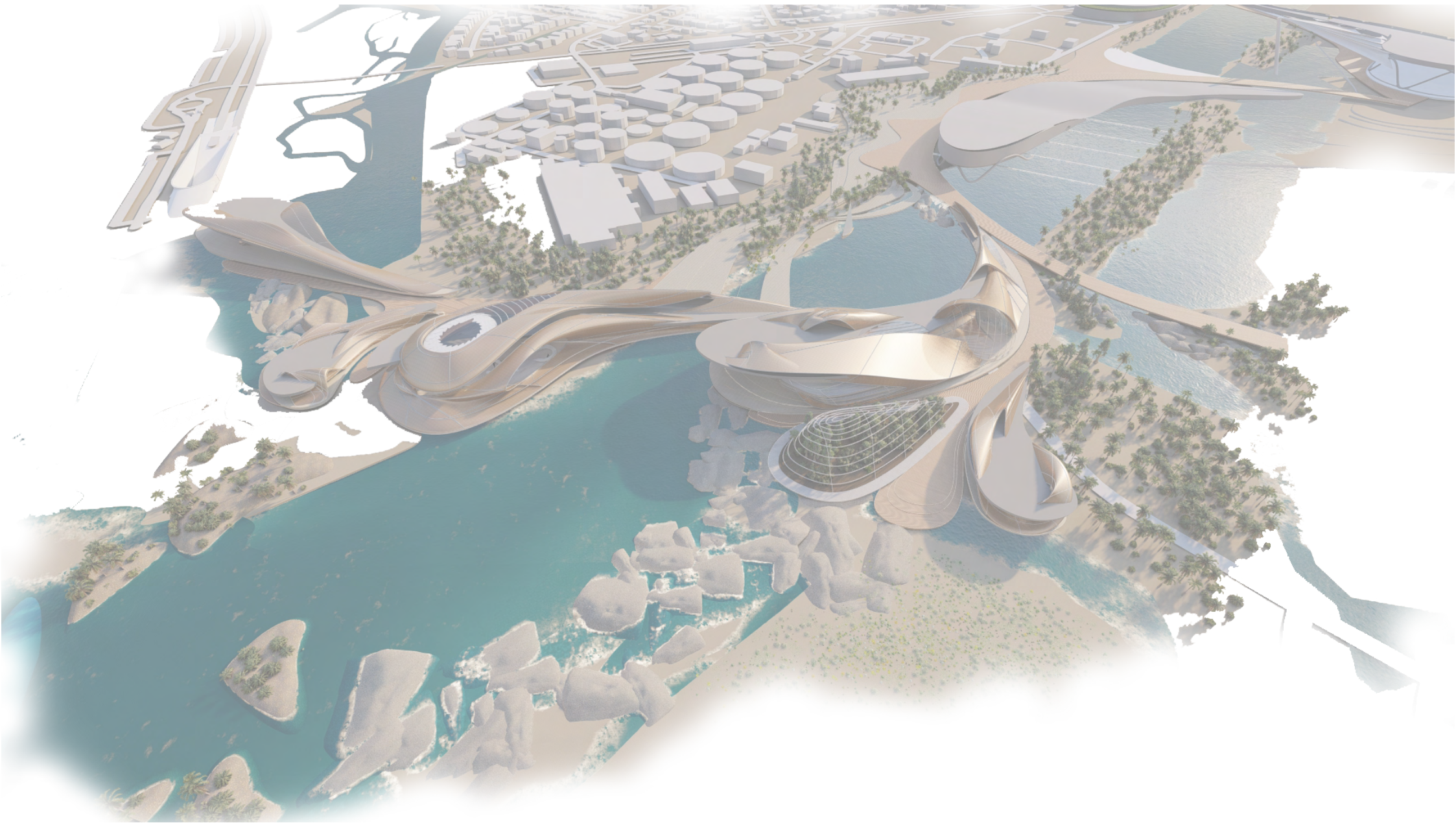
Stormwater BMPs (best management practices) are a disparate collection of management solutions for controlling the quality and quantity of water that runs off the land, both during wet and dry weather.

## Regional Monitoring

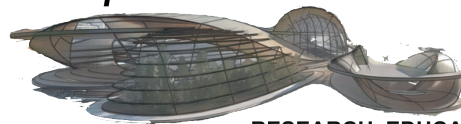


Regional monitoring is a type of environmental monitoring that enables the water-quality management community and its research partners to holistically examine the condition of aquatic ecosystems across time and space.





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# CASE STUDIES



# LA River Revitalization, Studio MLA

Lehrer's design thinking helped visualize MacAdams's dream of bringing people to the river. The Los Angeles River work is exemplary of Studio-MLA's practice of creating private work from efforts to contribute to the community.





# National Museum of Qatar / Atelier Jean Nouvel

The building is composed of large interlocking disks, spherical in section, and of different diameters and varying curvatures. Some disks are 'horizontal' and rest on other disks. The 'vertical' disks constitute the building's support and transfer the loads of the horizontal planes to the base. Like the exterior, the interior is a landscape of interlocking disks.





# Minghu Wetland Park, Turenscape

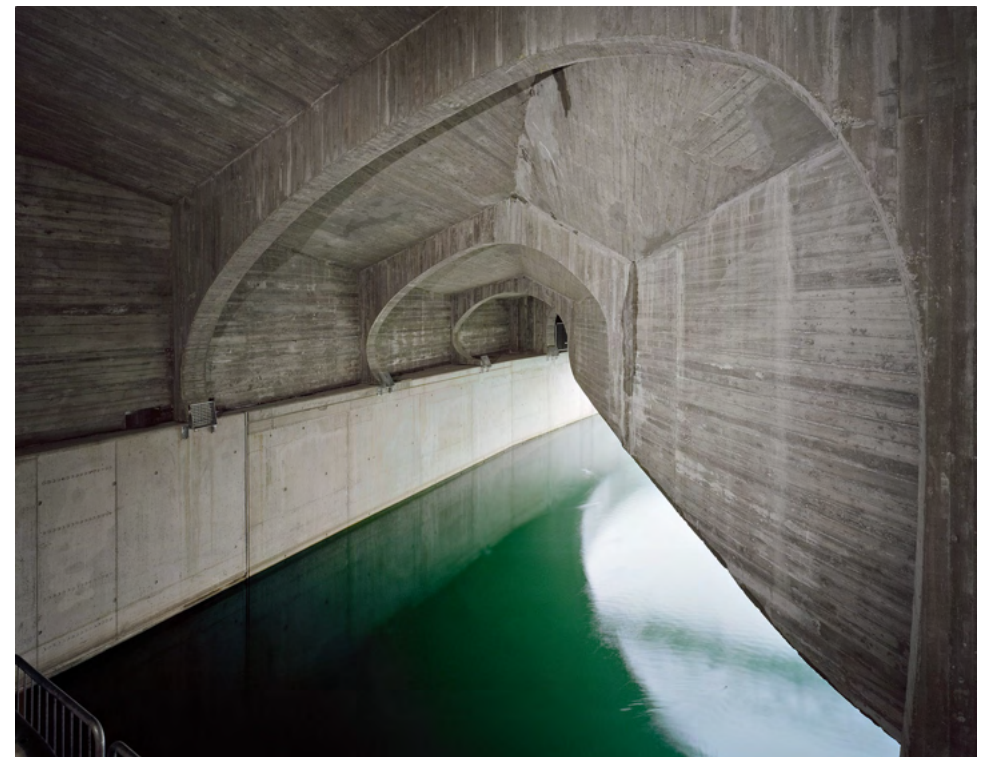
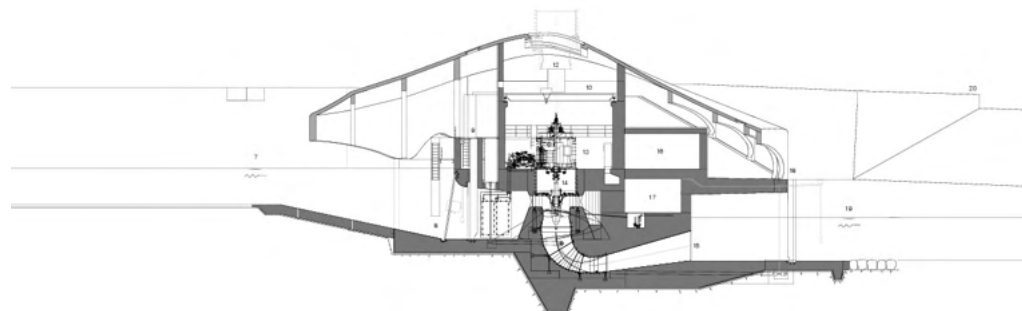
Through a series of regenerative design techniques, particularly measures to slow down the flow of storm-water, a channelized concrete river and a deteriorated peri-urban site have been transformed into a nationally celebrated wet-



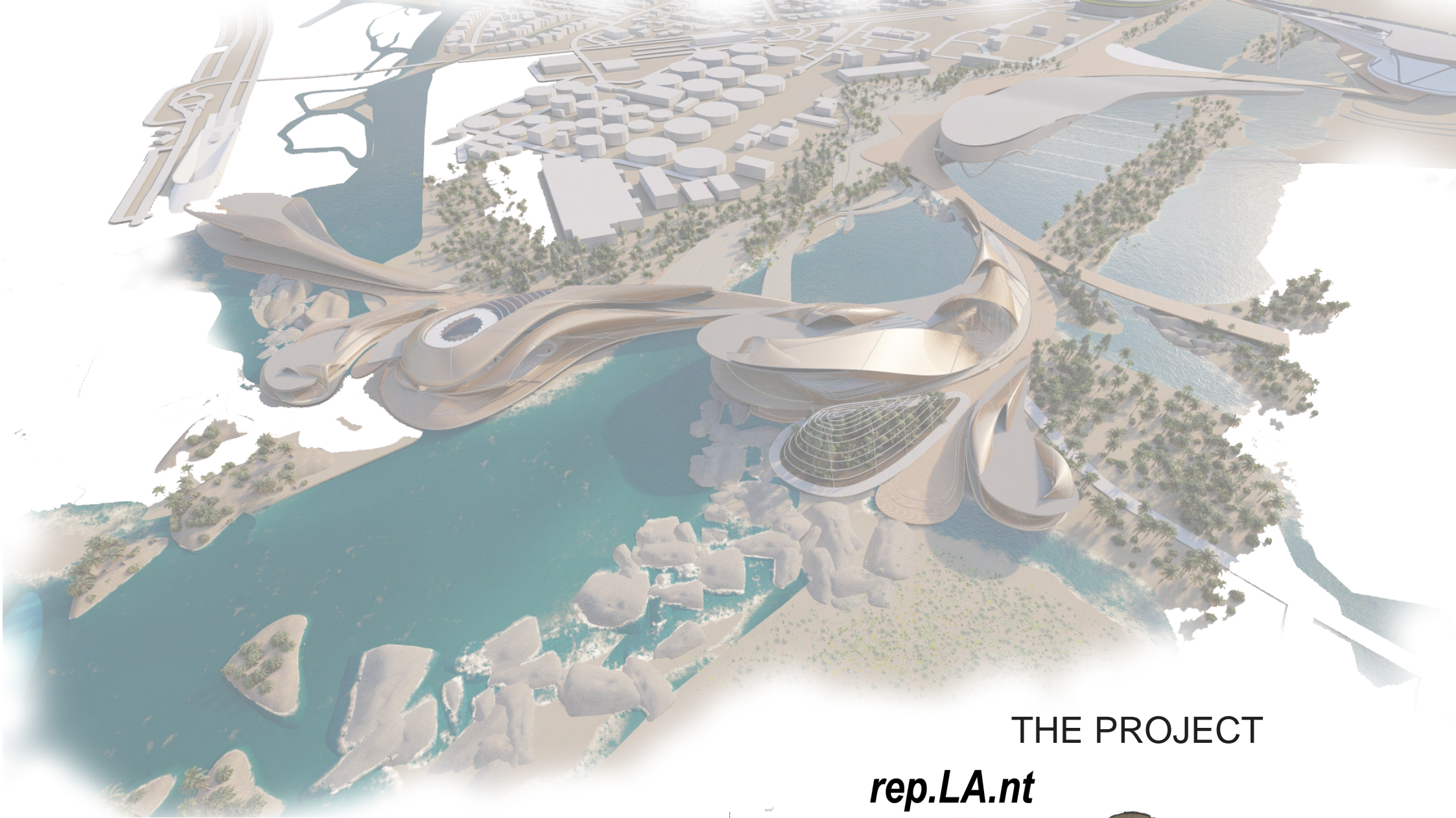


# Hydro-electric Powerstation / becker architekten

The starting point of the design considerations was the symbolic representation of the water dynamics, which change from a calm state at the water inlet to the churning and pitching of the water near to the turbines, before subsequently returning to a calm state after the electricity generation.

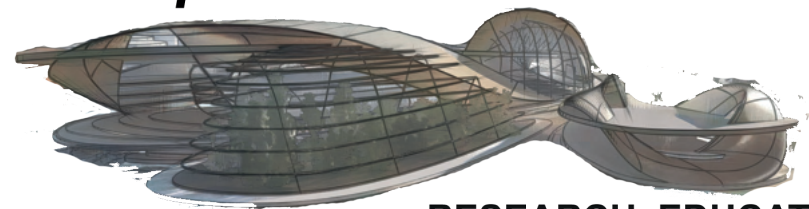






## THE PROJECT

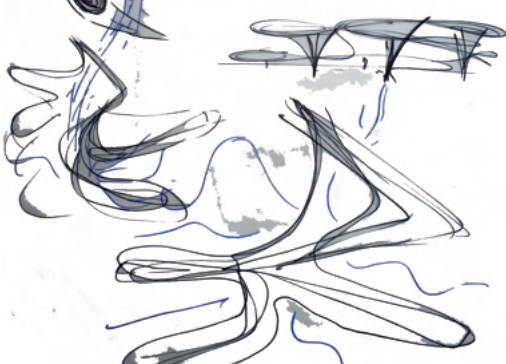
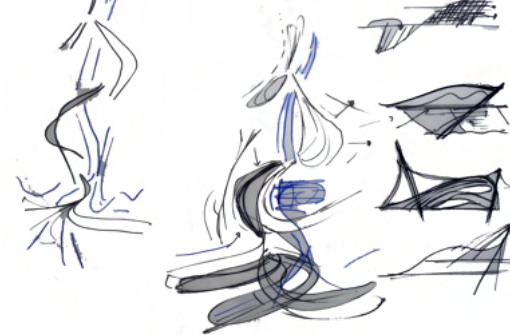
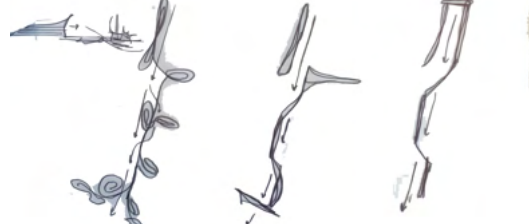
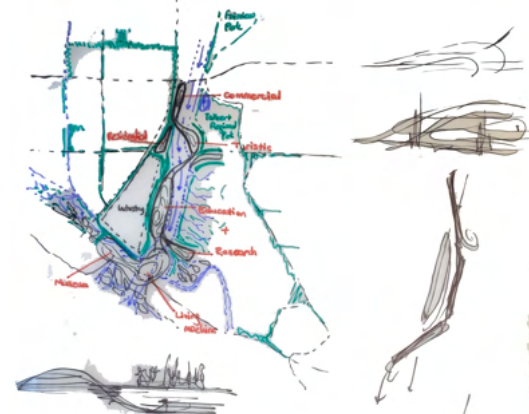
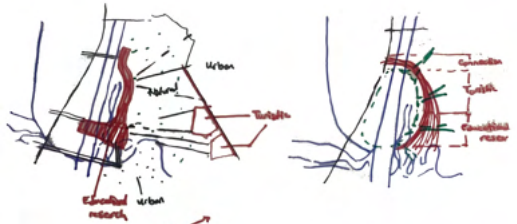
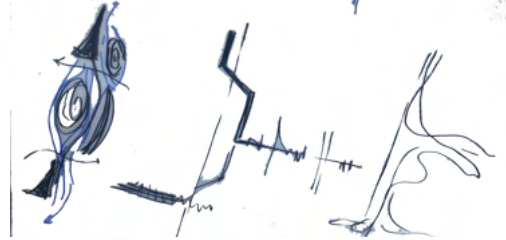
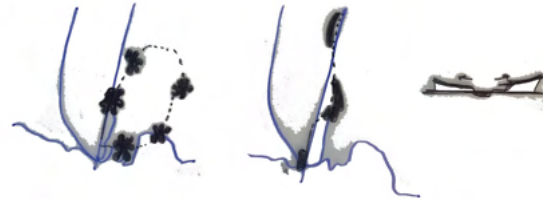
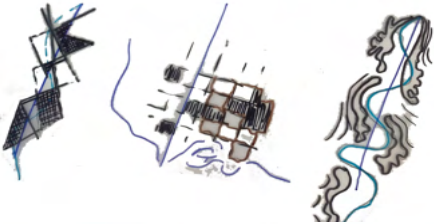
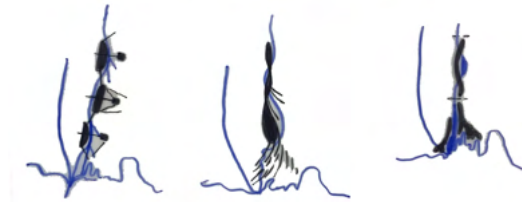
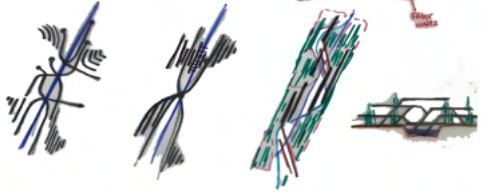
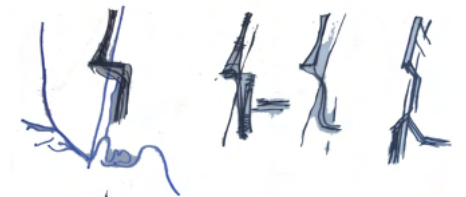
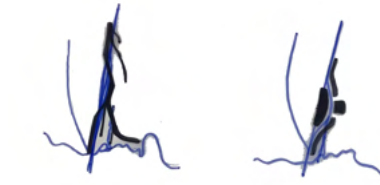
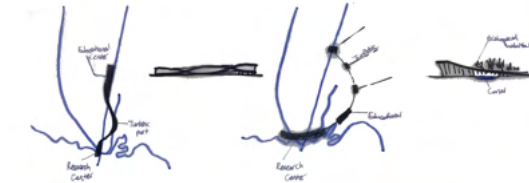
*rep.LA.nt*



**RESEARCH, EDUCATION &  
CONSERVATION CENTER**

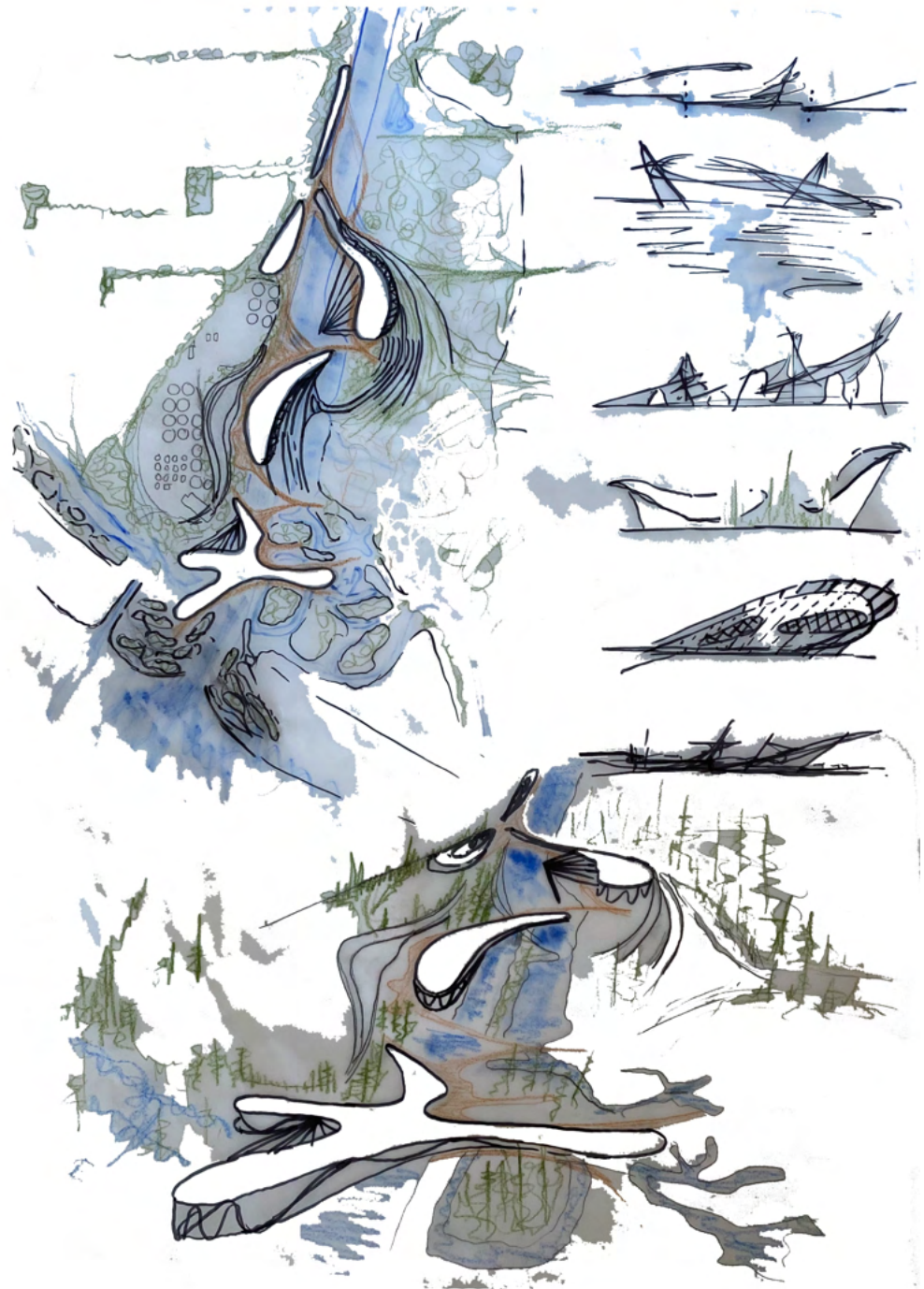
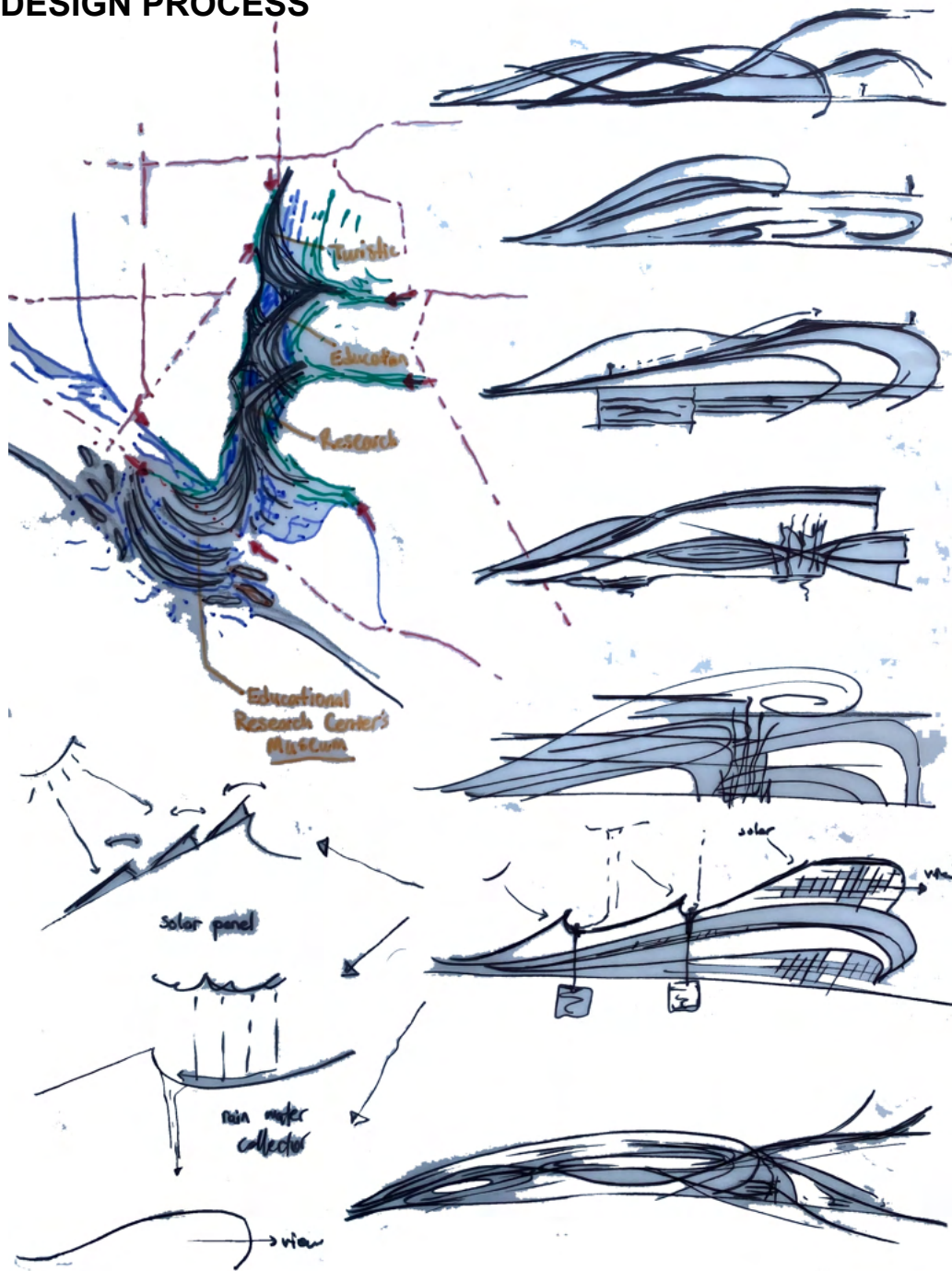


# DESIGN PROCESS

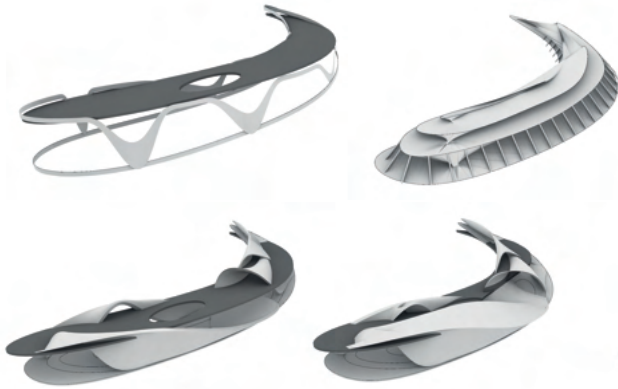
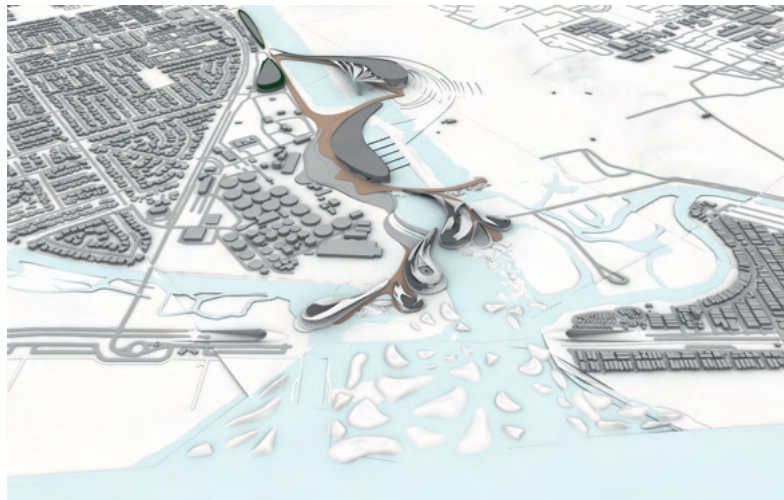
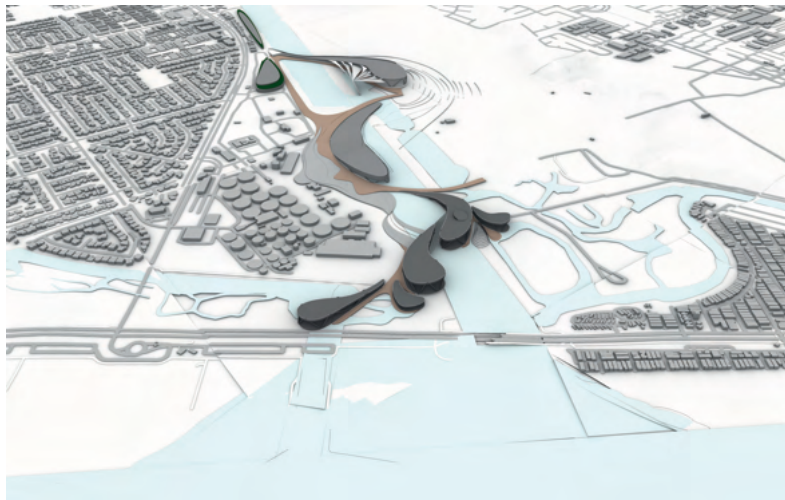
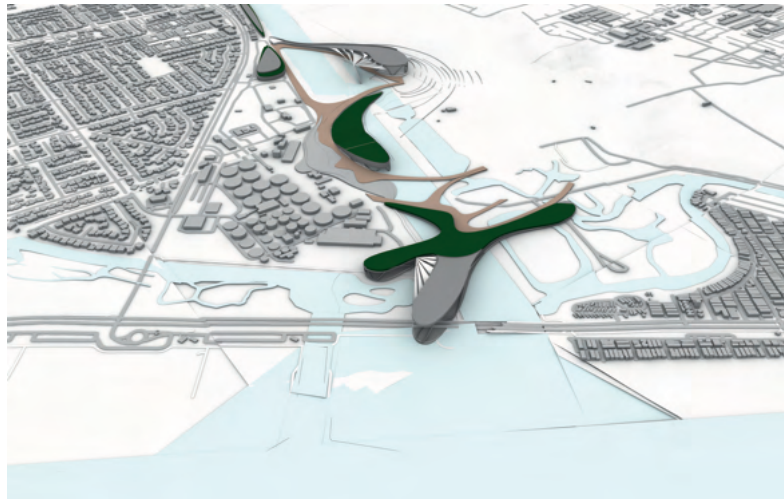




# DESIGN PROCESS

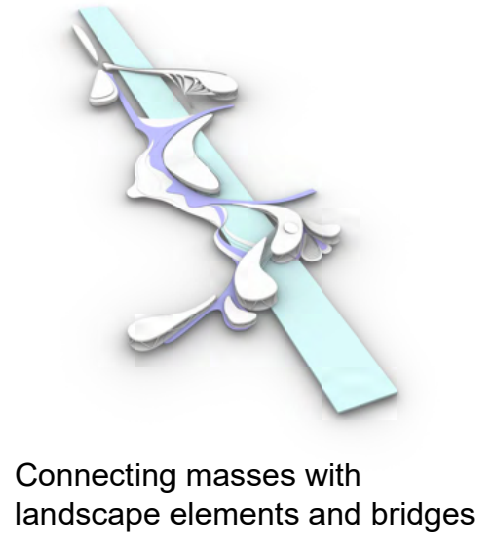
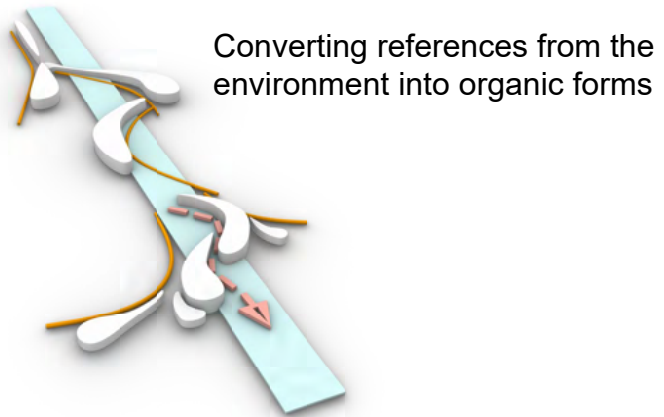
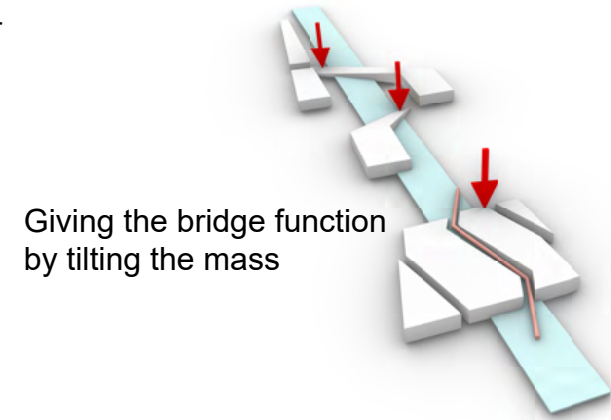
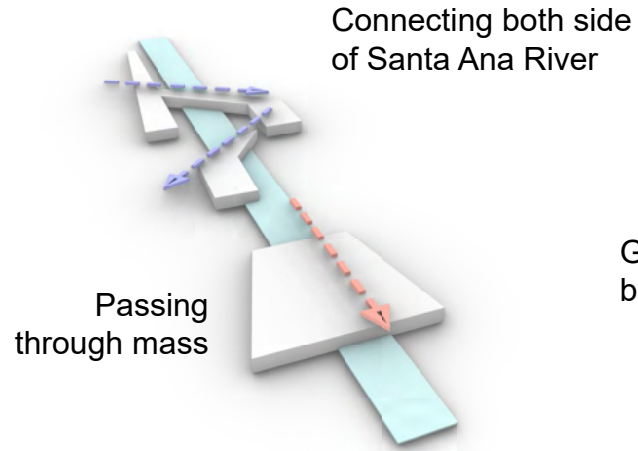
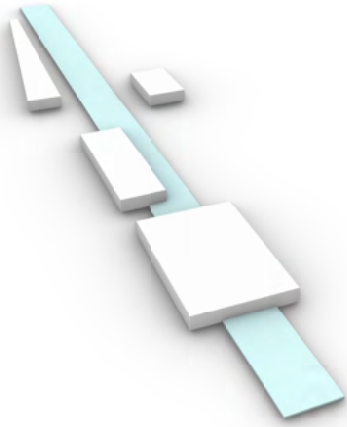








# DESIGN PROCESS





# FUNCTIONAL DIAGRAM

Residential Area

Touristic Center

Water Treatment Facility

Educational Area

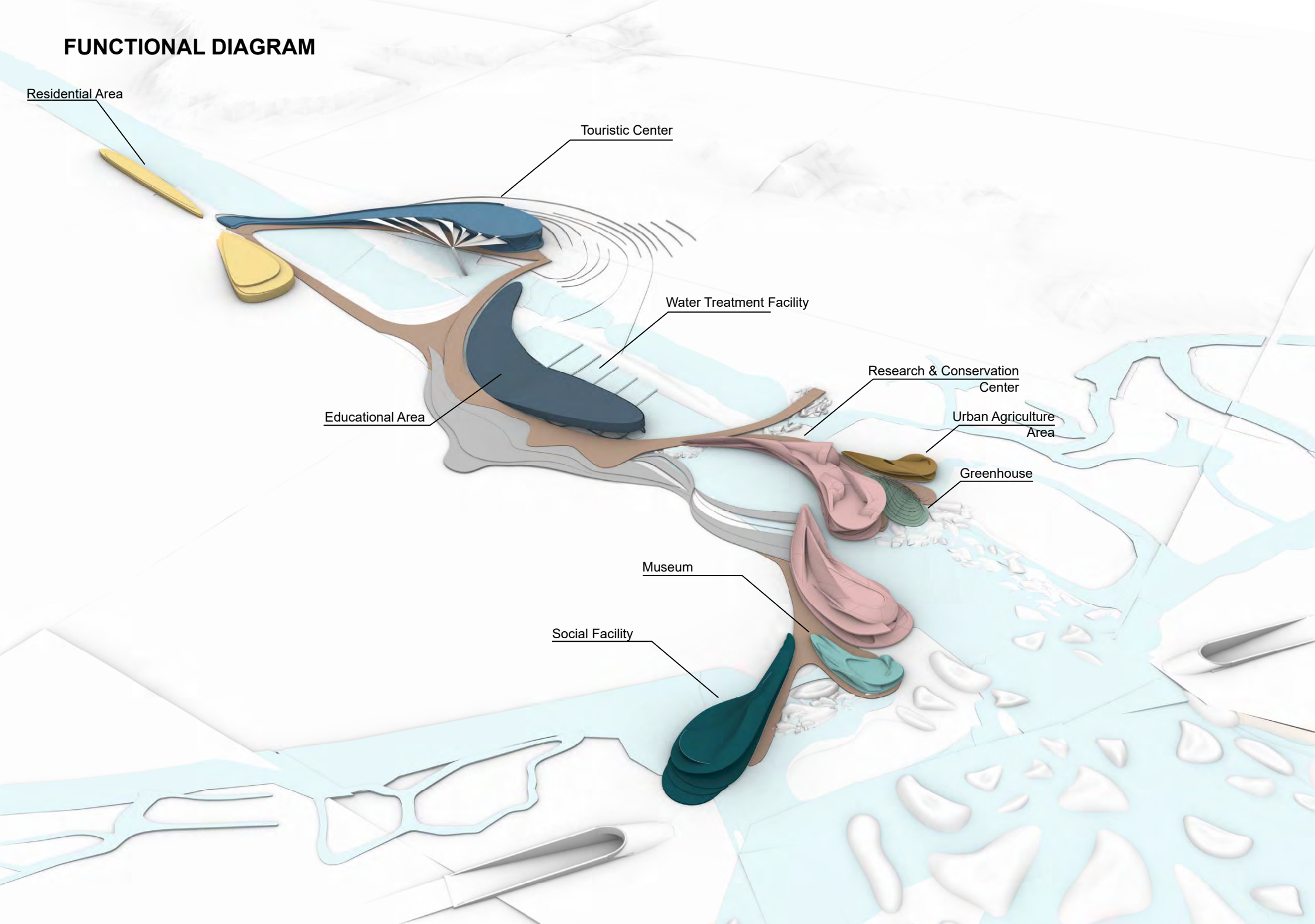
Research & Conservation Center

Urban Agriculture Area

Greenhouse

Museum

Social Facility







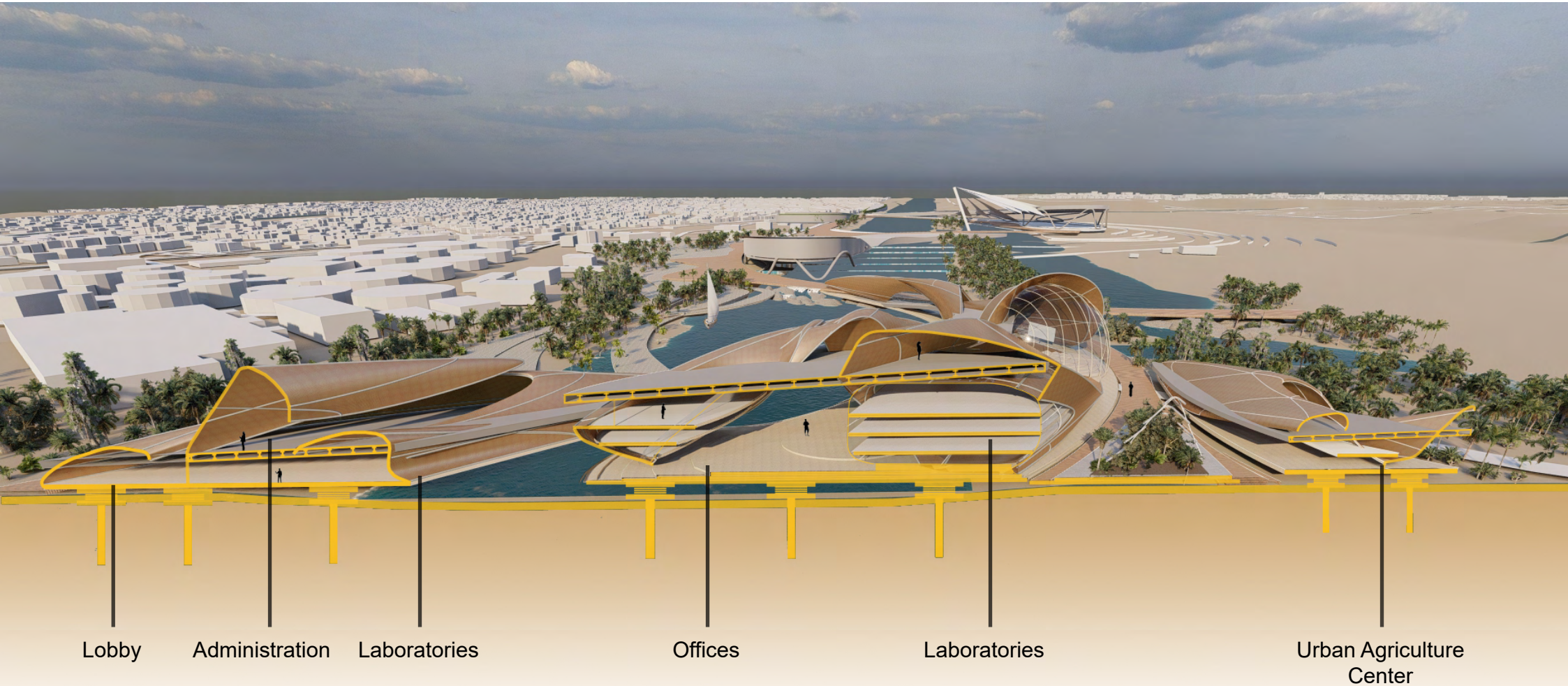
Laboratories

Vertical Core

Storage

Auditorium





Lobby

Administration

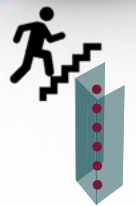
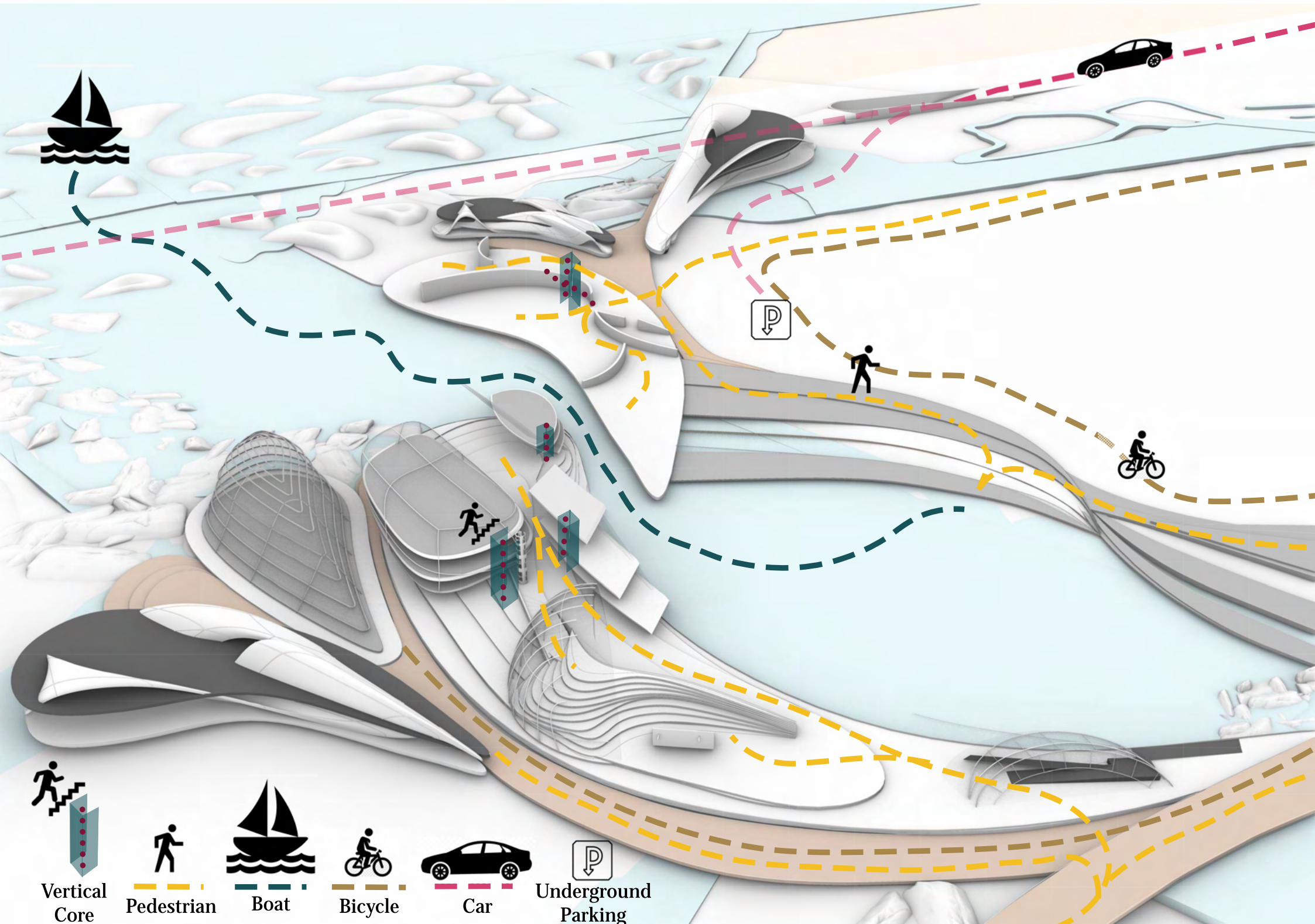
Laboratories

Offices

Laboratories

Urban Agriculture  
Center





Vertical Core



Pedestrian



Boat



Bicycle

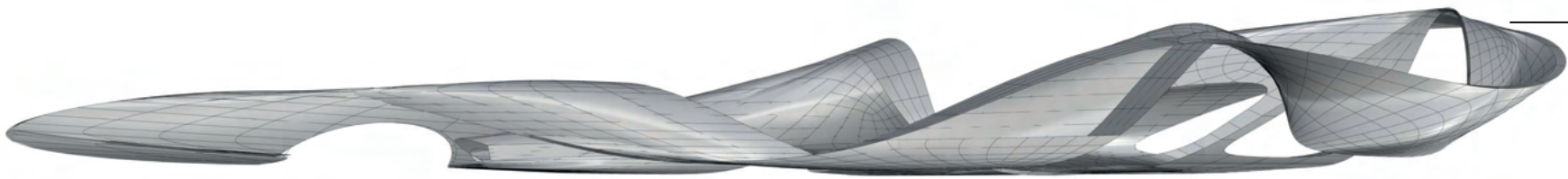


Car



Underground Parking

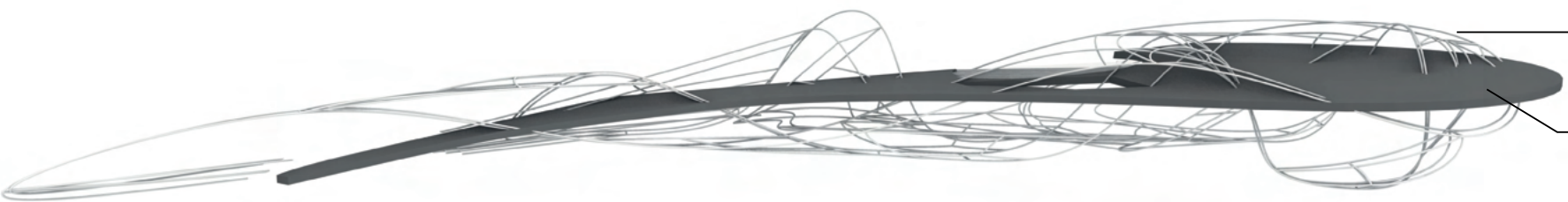




Digitally Fabricated Titanium Panels



Insulation



Steel Skeleton Structure

Steel Roof



Acrylic Glass

I Section Beam Floor

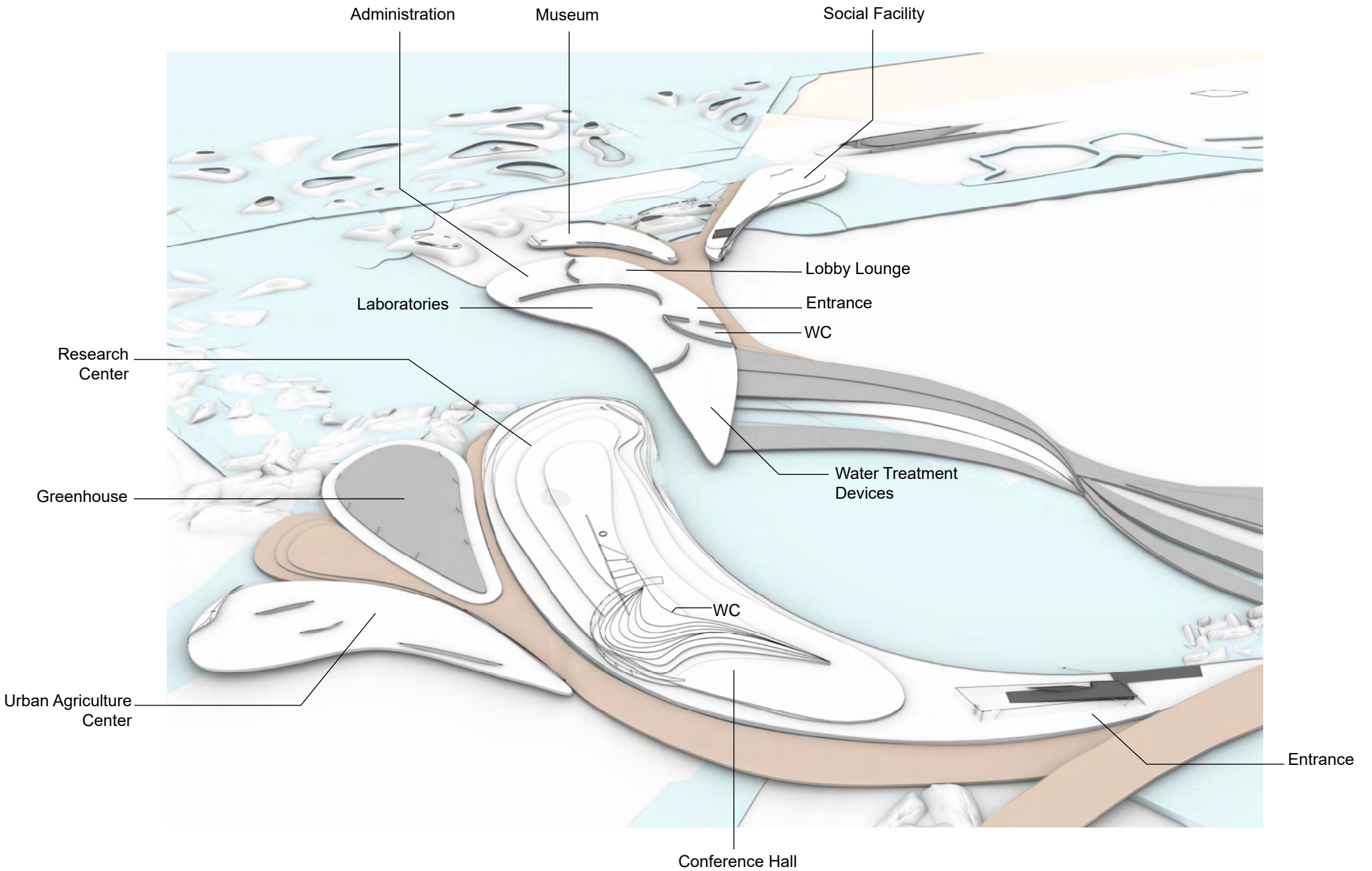


Continuous Foundation

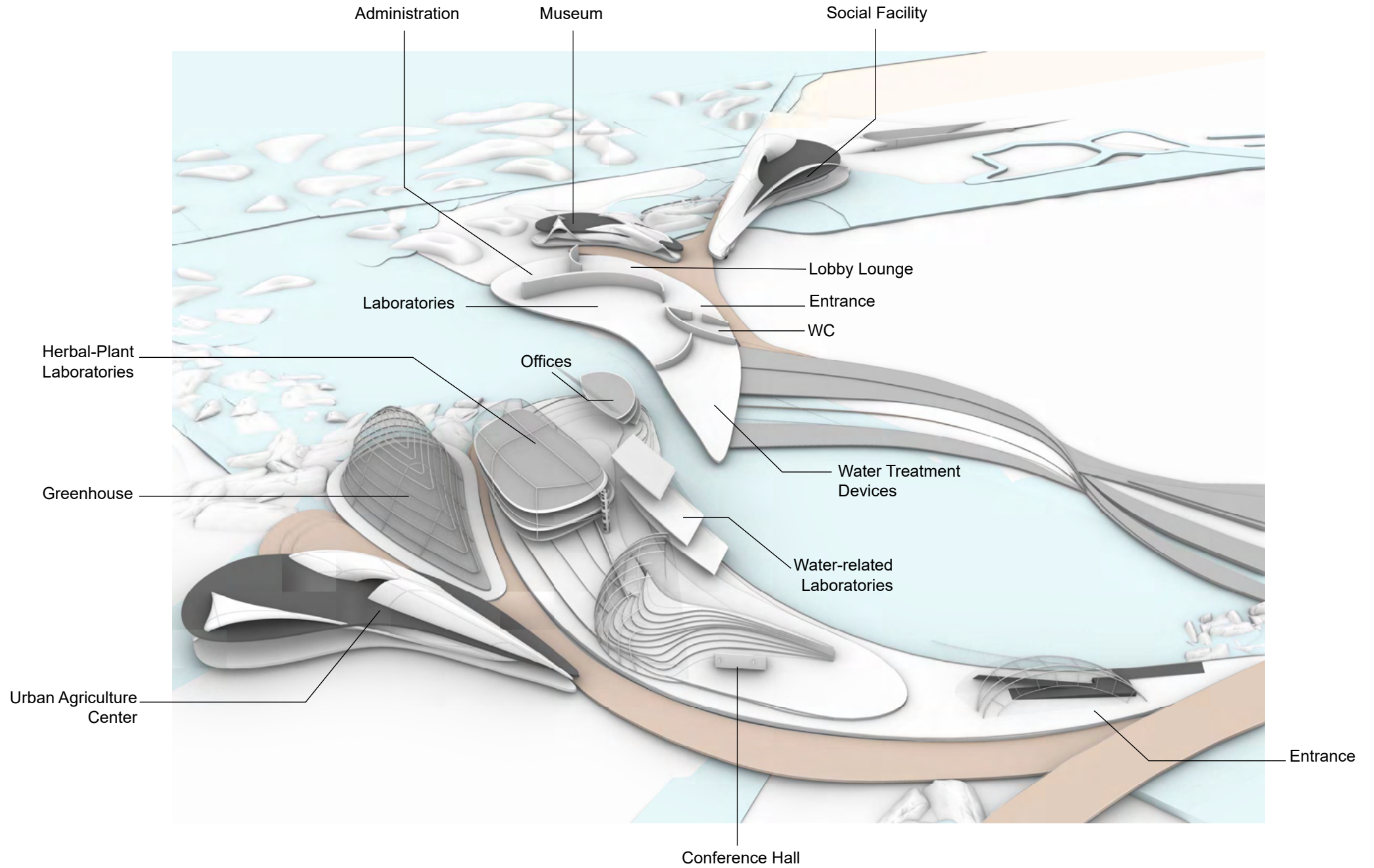
Seismic Isolation Device

Pile Foundation





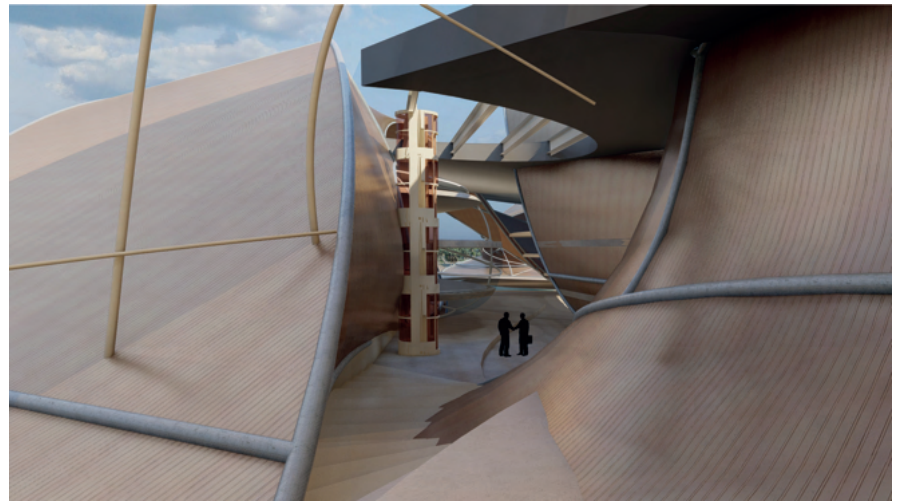




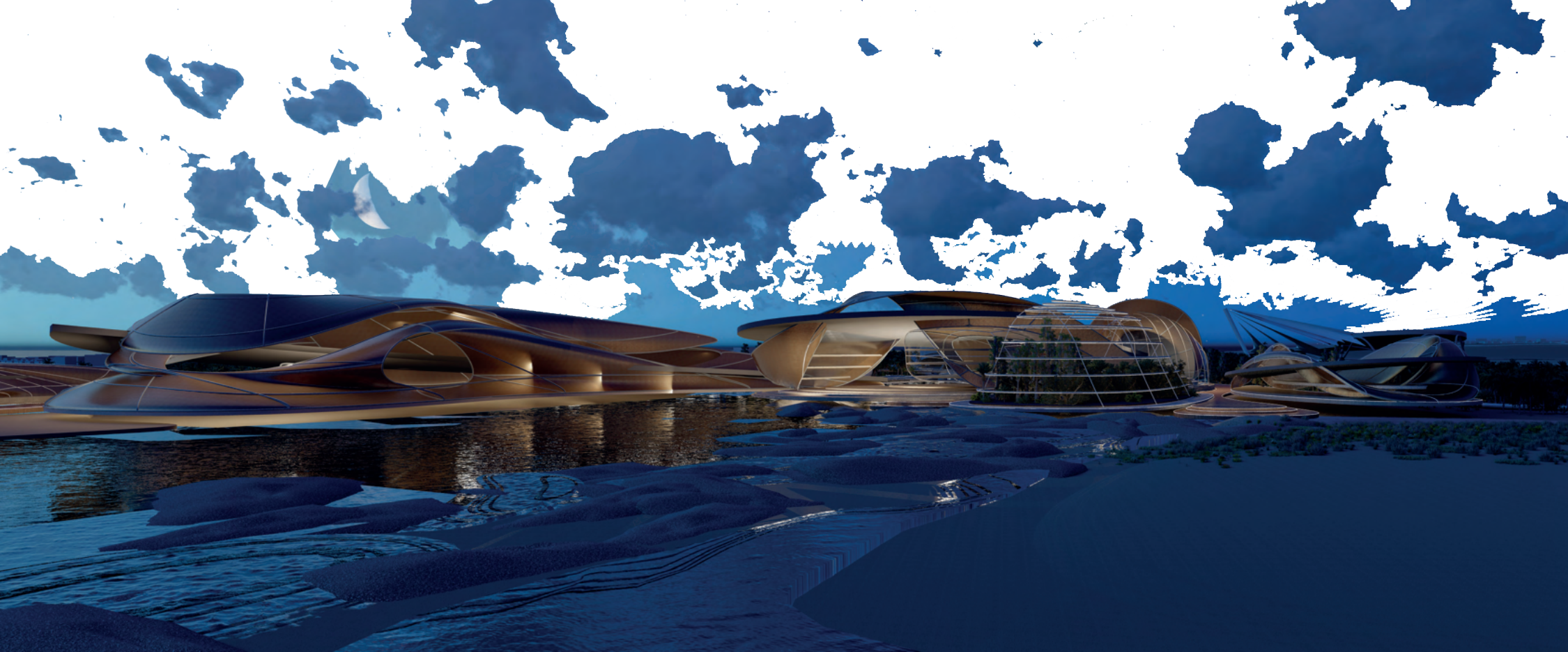
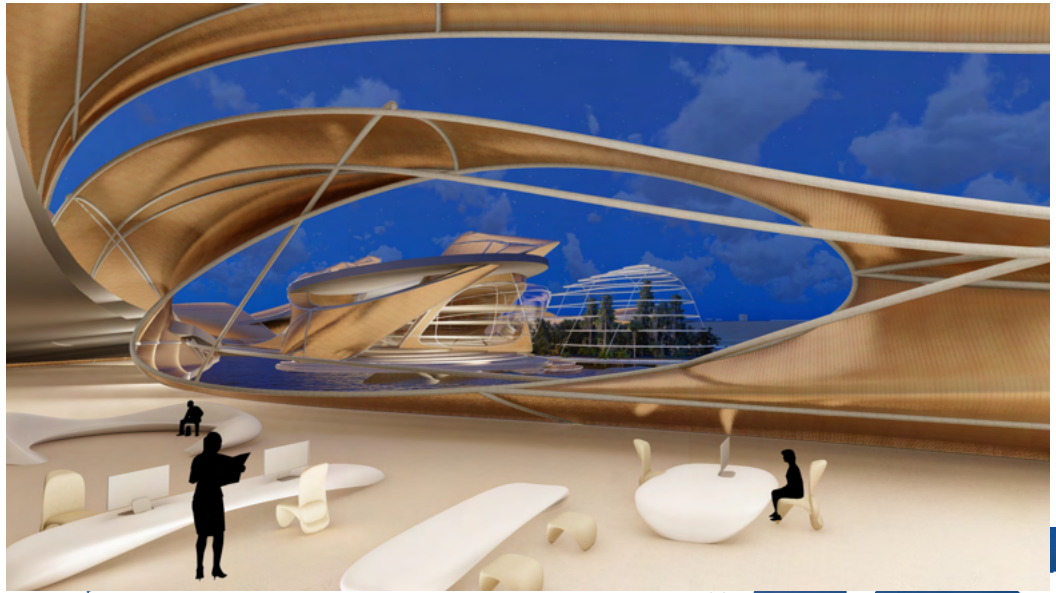




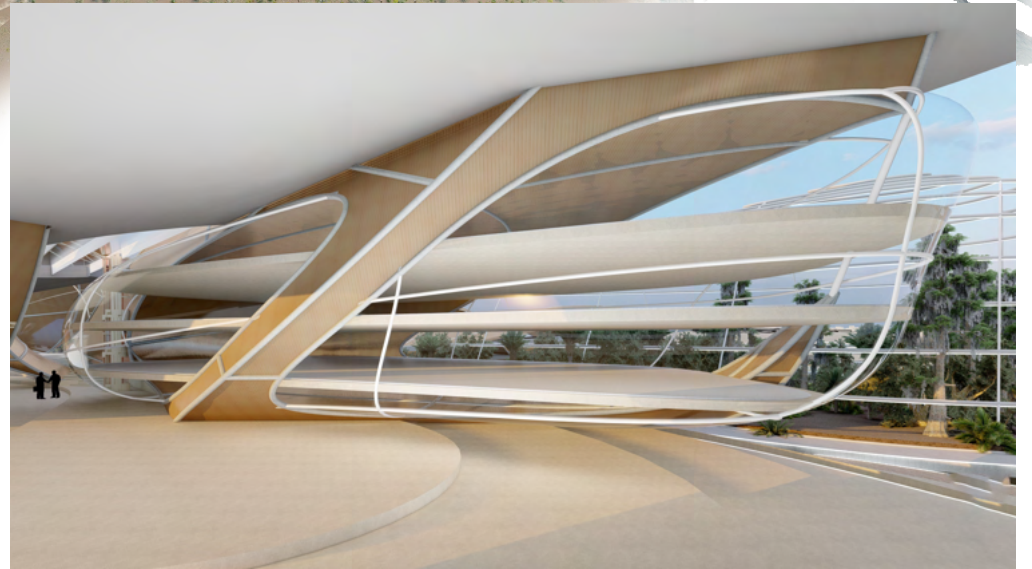














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