ZOE GRACE DETWEILER

Portfolio
2025

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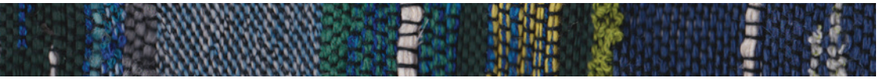
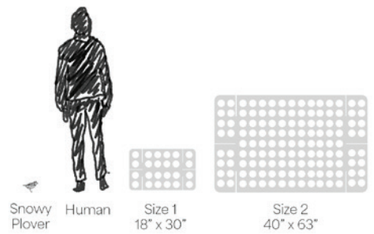
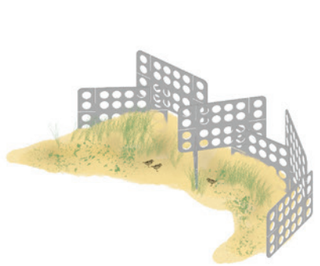


Designing

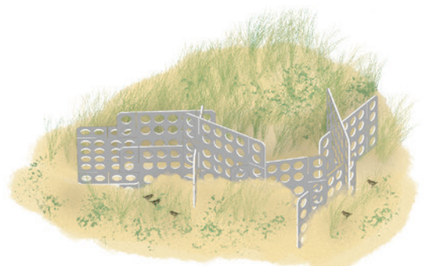
Mapping

Making

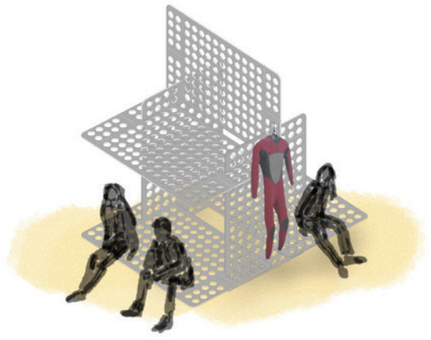




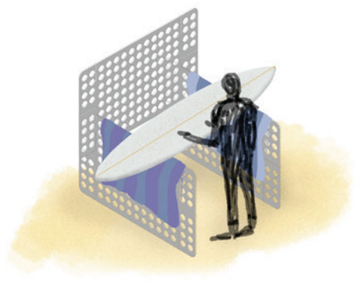
Sand Fence



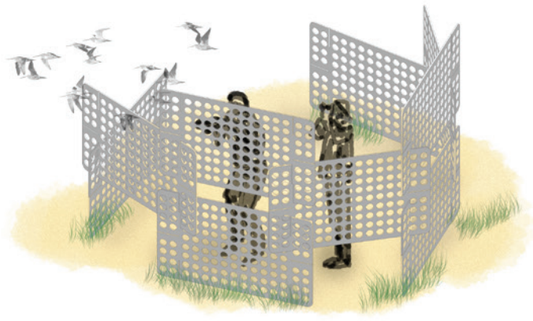
Dune Formation



Gathering



Utility



Recreation

01

Engine of Change

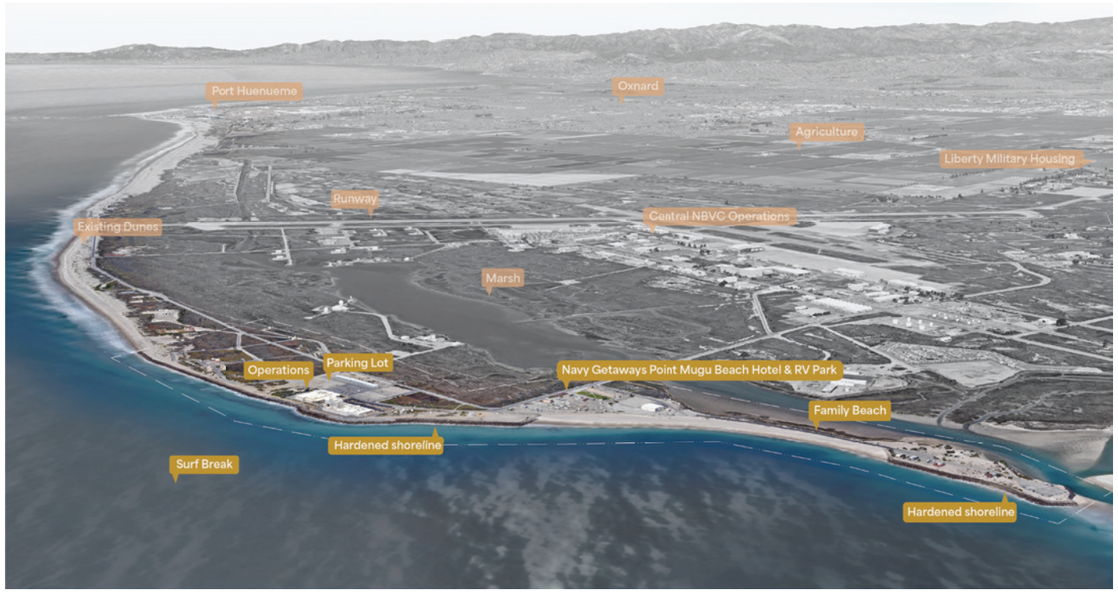
Situated at the edge of the Naval Base Ventura County, Engine of Change reimagines our relationship with the coast to a relationship of **adaptability, participation, and natural systems**. Through a sand motor and a **modular dune fencing system**, the project allows the natural forces of the wind and the waves to replenish the eroding beaches and create new space for **communal celebration** of our coastline. Base residents, local surfers, and the nearby agricultural community come together in a seasonal choreography to **steward** the sand dunes and enjoy the unique recreational opportunities the site affords.

Fall 2025
Instructor: Alexander Robinson

Project Location: Point Mugu, Oxnard

The site includes a salt marsh, a Naval and airforce base, a locally famous **surf break**, recreational space for military families, and is near the Oxnard **agricultural community**.

Ultimately, I decided to focus on the recreational beach area on the edge of the base. This was partially inspired by my own upbringing along the coast, which has inspired a lifelong **love of the beach** and its ecosystems.

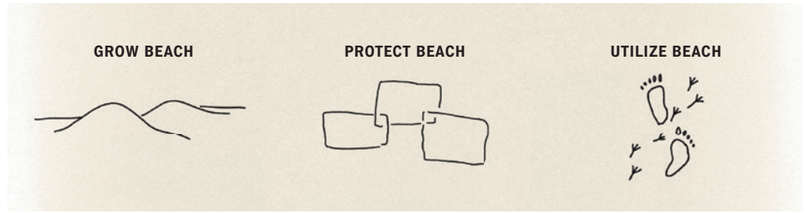


I identified key issues on the site, including rising sea levels, hardened infrastructure, and limited access to the Base for the surrounding community. From these, I identified **recreation, habitat,** and more **community participation** as the key opportunities.

This led me to my central design question:

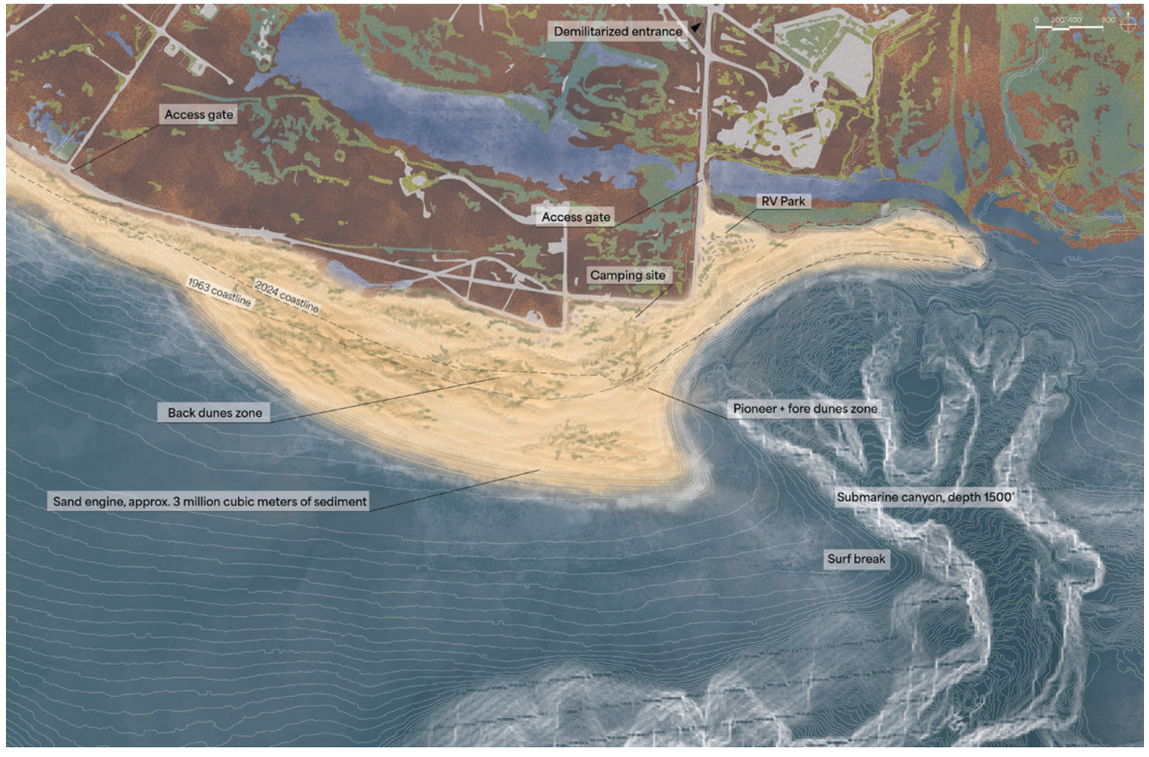
How do we create nature-based infrastructure to engage ongoing stewardship?

and my design strategy:



Step 1: Grow the Beach

As the beach is being eroded, the first step is to increase quantity of sand. Rather than use traditional beach nourishment methods, I proposed using a **Sand Motor** to augment the beaches. The Sand Motor method originated in the Netherlands, where it successfully used one extremely large deposit of sand that naturally moves within the littoral cell.



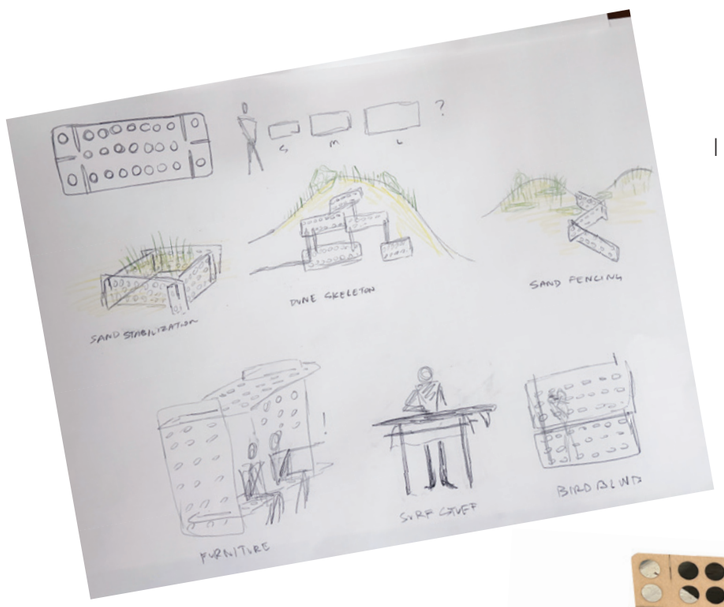
Step 2: Protect the Beach

Expanding on the existing strategy of sand fencing, I designed a **modular sand fencing** system to help the development of sand dunes on the site.

The form was inspired by **Marston mats**, a system used during WWII to quickly construct airstrips, and **Eames House of Cards**, a modular and playfully designed toy. This fused design and toy history with the **history** of the site, as marston mat was used to construct the first airstrip the Base.

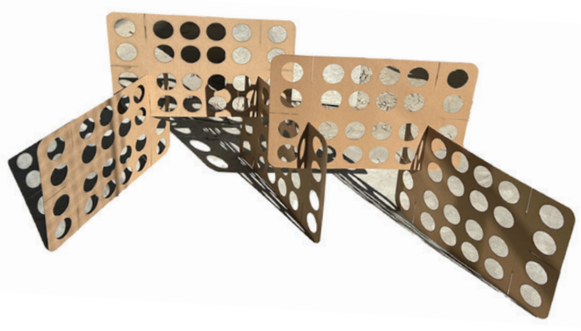
Image from U.S. Army Corps of Engineers

Image from Eames Office

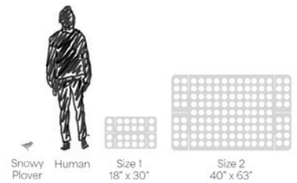


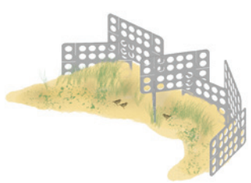
I knew the design needed to be highly adaptable to different needs and conditions at the beach.

I constructed a 1:1 scale model in chipboard to test out the design.



The system has two sizes, one primarily for sand fencing and **creating sand dunes**, and the larger size for supporting **recreational opportunities** at the beach. Both feature holes large enough to allow the **snowy plover** to fit through.





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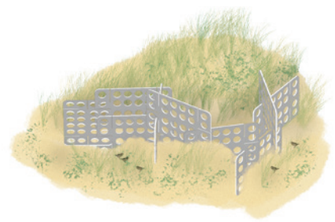
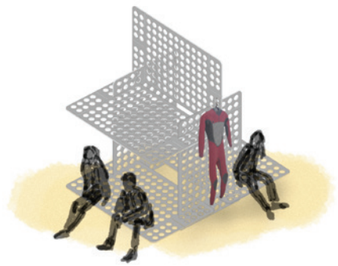


Dune Formation



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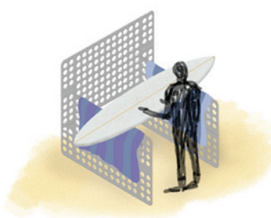

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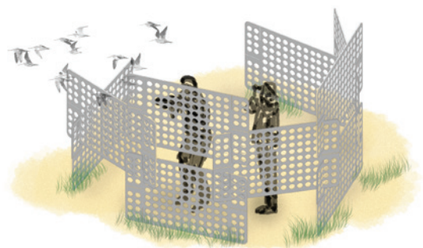
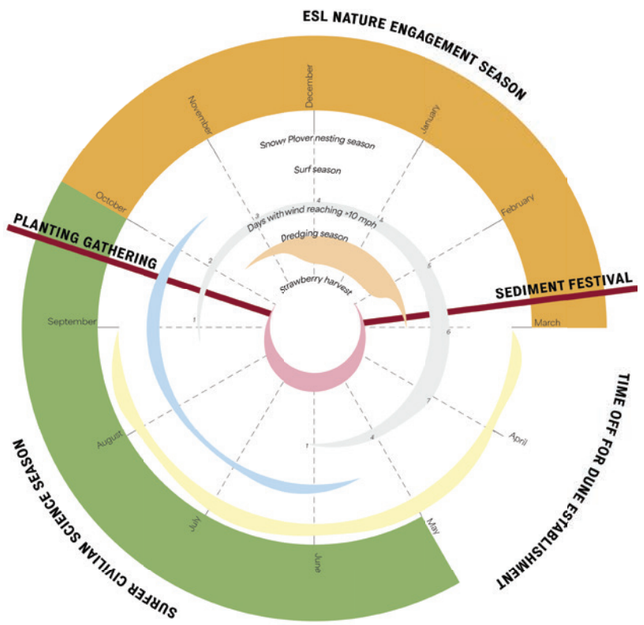
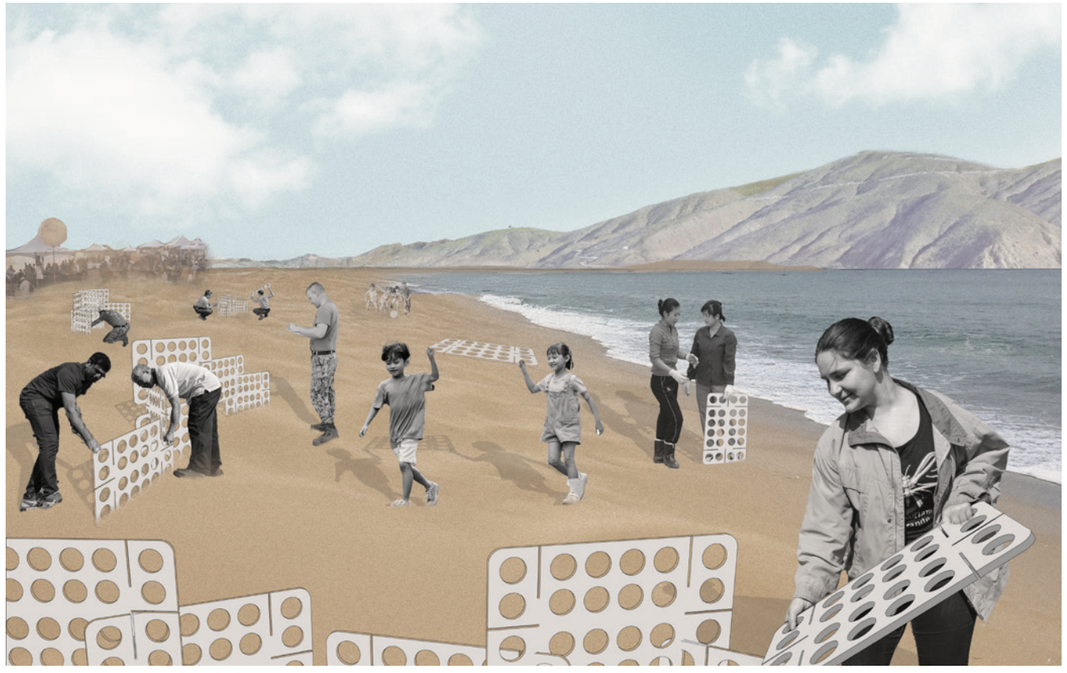


Recreation

Step 3: Utilize the beach

Going back to my original research question, I sought to create a **system of stewardship** to protect, grow, and use the beach. I designed an engagement calendar that fits into existing natural seasons on and nearby the site.



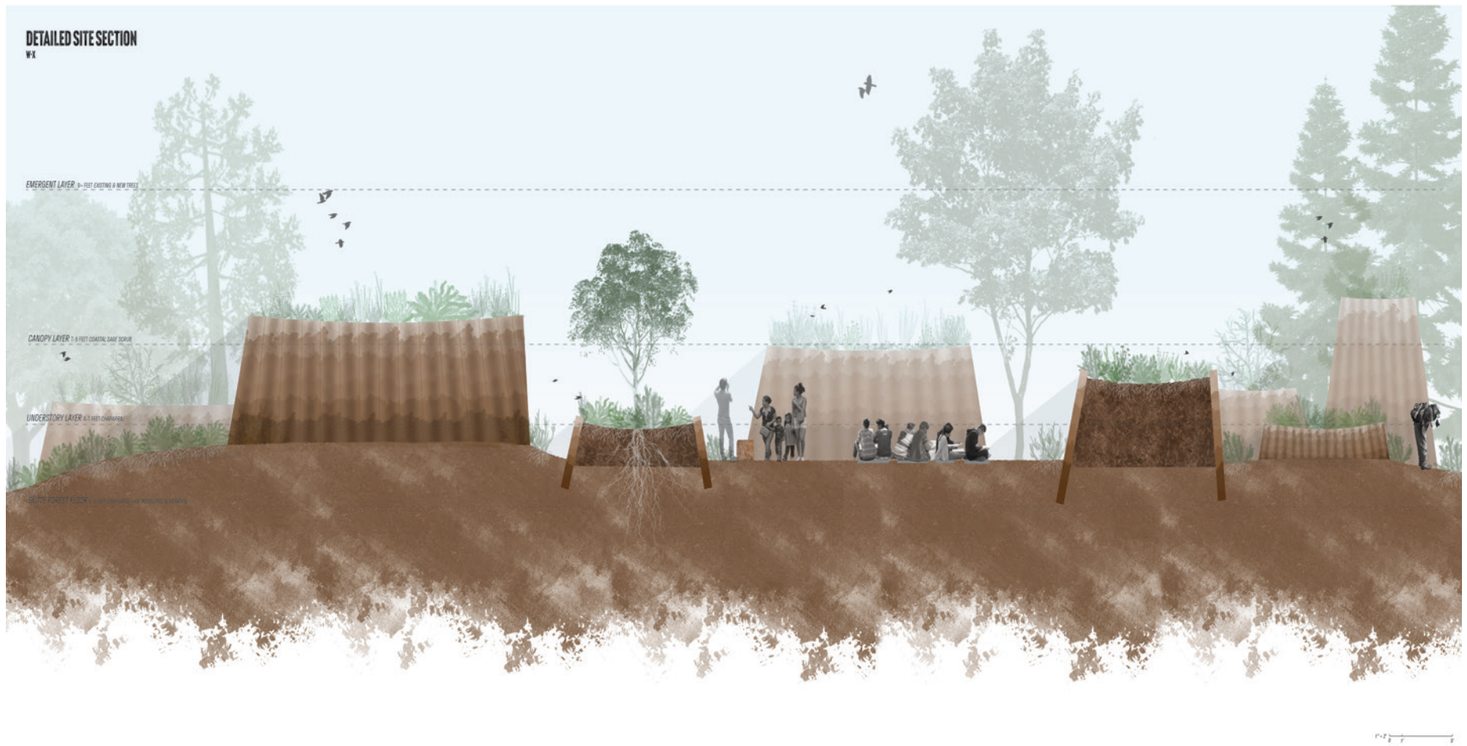


Spring: The community comes **together** at a **sediment festival** to place the sand fences, beginning the dune-making process.

Summer: The best surf season on the site is marked by **surfers** getting access to the beach in exchange for **monitoring** snowy plover nesting season and dune formation.

Fall: English learning nature walks are led by interested Base employees, making the site more **accessible** to nearby populations.

The Future: As the sea continues to rise, the fences can be picked up and moved as needed. Our coastal future must be **adaptable**, and we must be **open to change**.



02

Creative Reuse + Climate Resilient Environmental Education Center

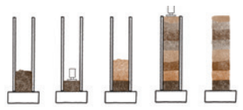
Using the topography of “buttes”, I envisioned a new environmental education center at a former country fire-fighter training center in Hahamongna Watershed Park in Pasadena, CA. Hahamongna is also home to the **Devil’s Gate Dam**, where a 2021 “big dig” removed 1.7 million cubic yards of **accumulated sediment** and destroyed the native riparian ecosystem atop the deposit. This site design project sought to create a new **“creative reuse”** for **continual maintenence** of the dam for the benefit of the education center. Instead of being trucked out to a landfill, accumulated sediment is transformed into **rammed earth** to create **habitat-island buttes**.

Spring 2023
Instructor: Takako Tajima

Project Location: Hahamongna Watershed Park, Pasadena

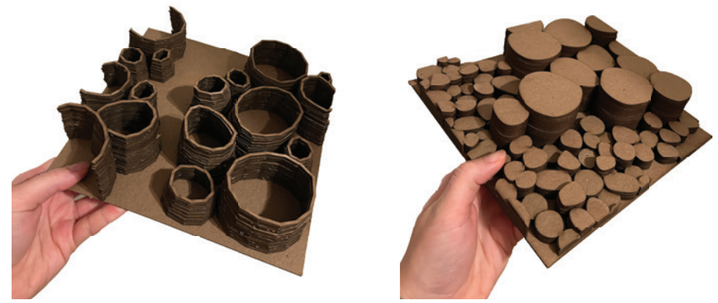
Devil's Gate Dam Sediment Removal History

Rammed Earth Construction



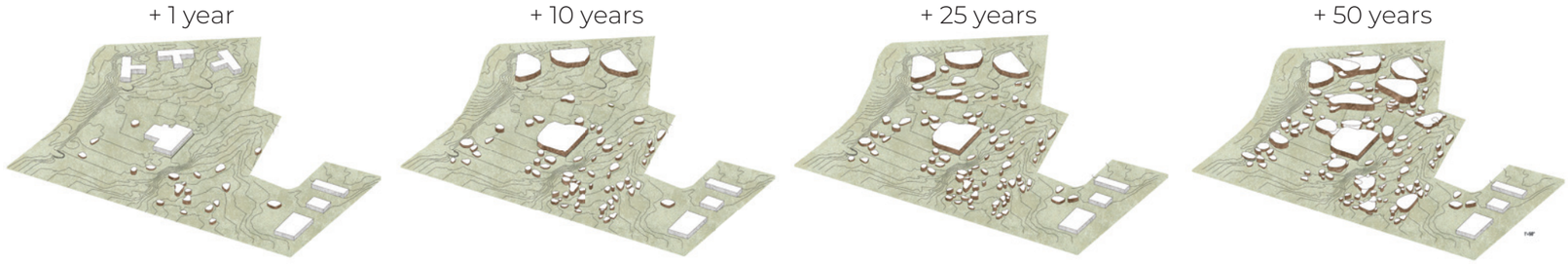
The design turns the sediment from the nearby dam into a **creative reuse material**.

Creative reuse is the act of taking something unused or a waste/by-product and turning it into something new (one of my favorite strategies in my own **art practice**).
Here, sediment is given second life as rammed earth.



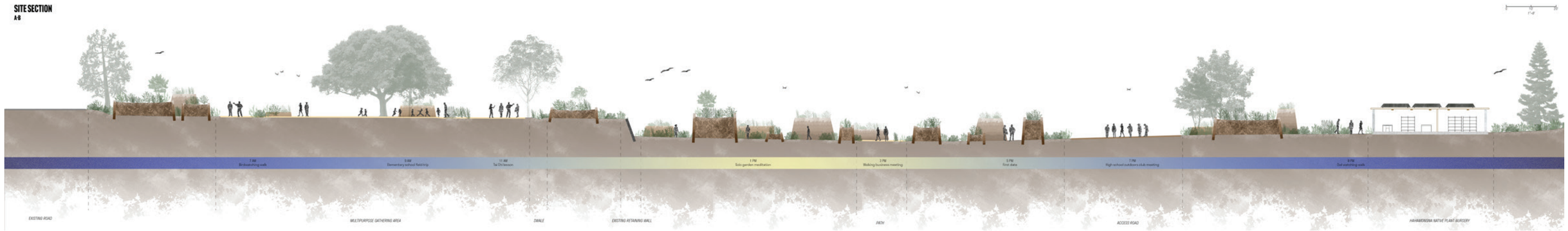
The overall concept was developed from **exploratory contour models**. I drew a hand-drawn site grading plan illustrating the **buttes** and **stormwater management** strategy. The plan adds buttes to the the existing topography, providing a large event space, swales and seasonal detention basins, fire access roads, and smaller programming spaces.

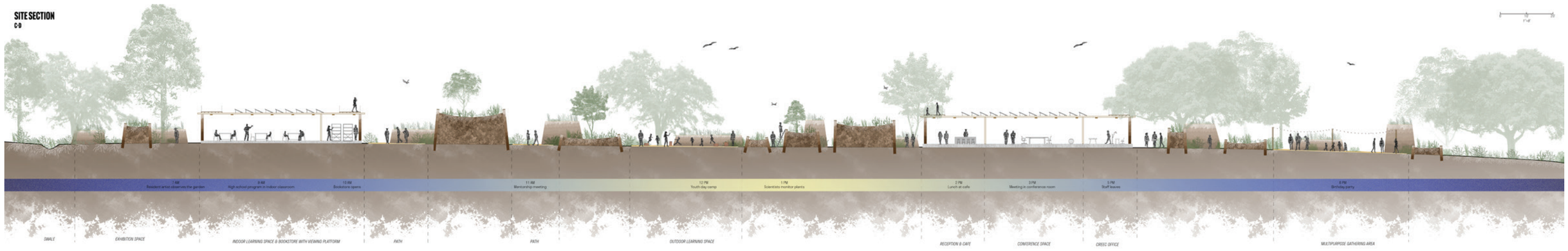
Phasing of Butte Accumulation



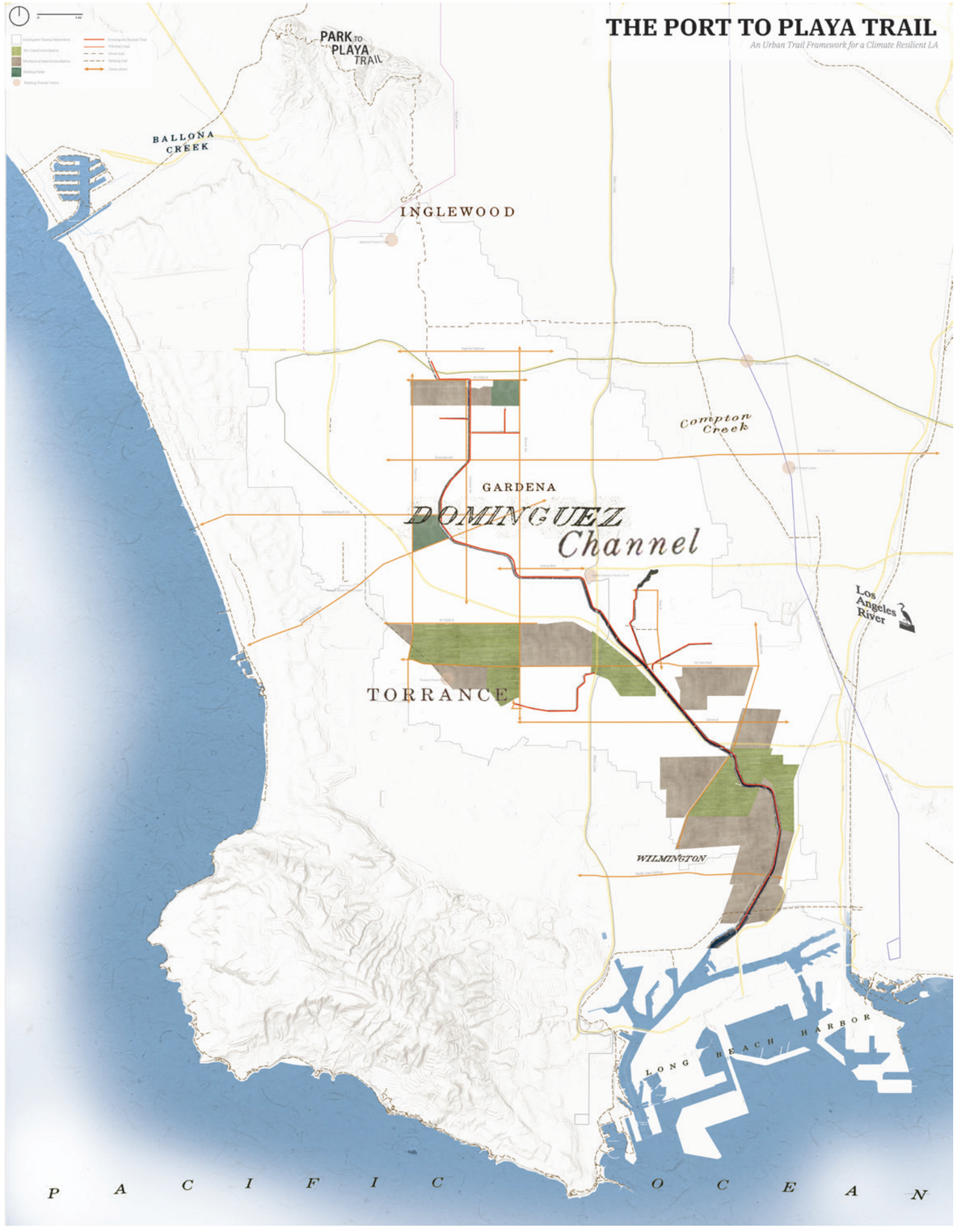
Sediment from throughout the watershed creates pockets of **undisturbed habitat** for birds and other wildlife. In particular, the buttes provide human-free nesting grounds for birds such as the **Least Bell's Vireo,** an endangered species that calls Hahamongna one of its homes. The structures also create programmable areas in their i**n-between spaces.**

Additionally, the buttes, like the sediment they are made from, **accumulate over time**. The County's current removal plan for Devil's Gate involves excavation of the sediment every Fall– so new Butte-raising could happen on a **seasonal calendar**. Rammed earth is also built iteratively, so the process easily includes community or school groups.





The site is available as **public space**, not just for environmental education. Anyone can come visit amongst the buttes-- the best environmental education is being excited to be outside!



03

The Port to Playa Trail

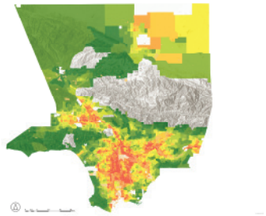
The Port to Playa Trail is an urban framework for an LA County-wide **trail network** centered on South LA's Dominguez Channel. Utilizing the county's **existing channelized waterways** and the industrial land surrounding them, the framework imagines a future for **climate resilience and ecological remediation**.

Fall 2023
Instructor: Jessica Henson

Project Location: Dominguez Channel, South Los Angeles

Industrial

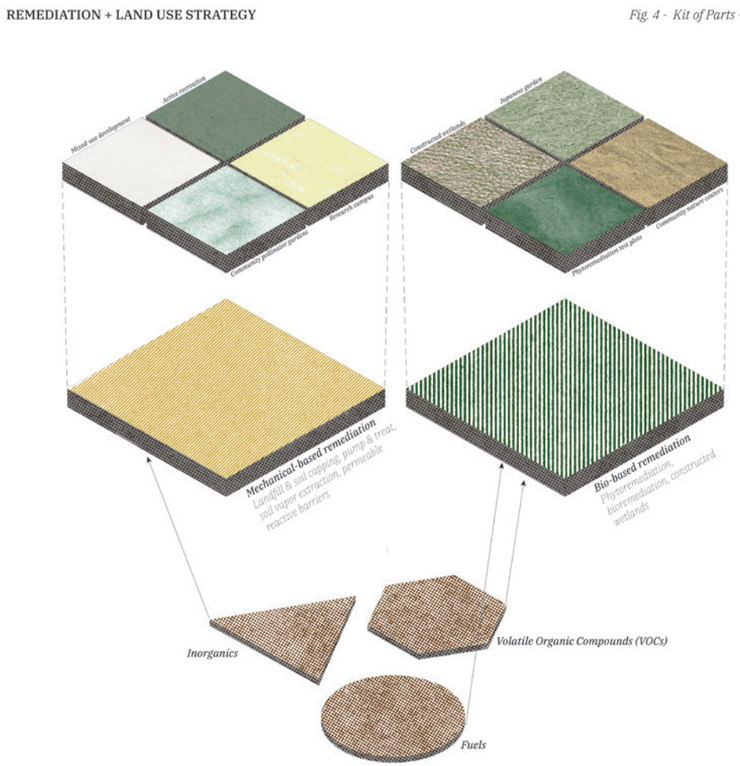
Parkland



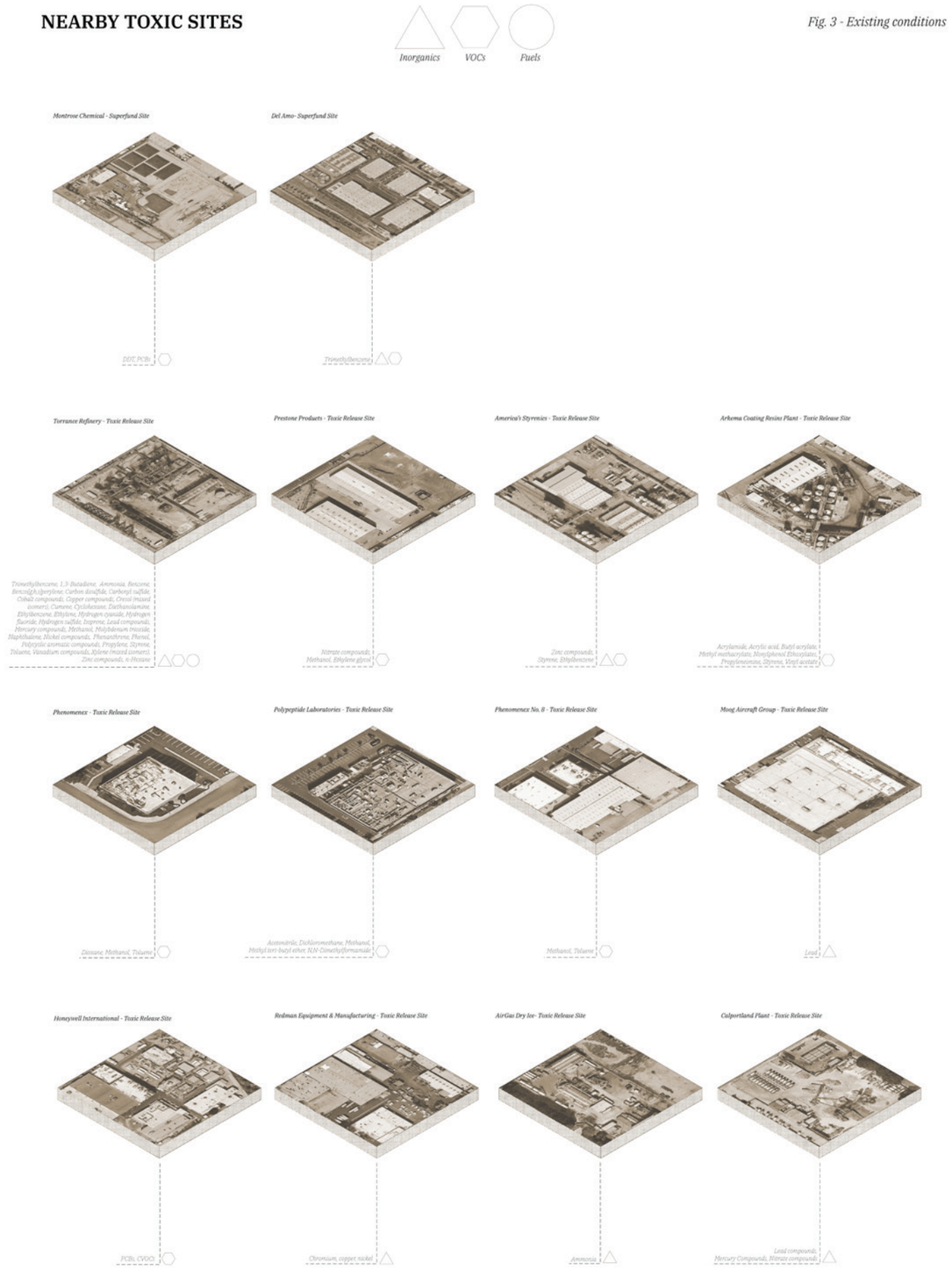
CalEnviroscreen 4.0

Communities in LA County need solutions that turn industrial sites into spaces that help **relieve**, rather than aggravate, **environmental burdens**. I identified an opportunity to transform one of the most **toxic sites** along the Dominguez Channel into **public space** and integrate it into the community.

The Torrance Refinery and the industrial parks surrounding it include two **Superfund sites** and numerous **toxic release sites**. First, using the EPA's Toxic Release Inventory, I analyzed which chemicals were being **released** where (seen at right).



Then, I created a **remediation + use matrix** (above) to determine **appropriate treatments and land uses** for each part of the overall site.



REMEDIATION

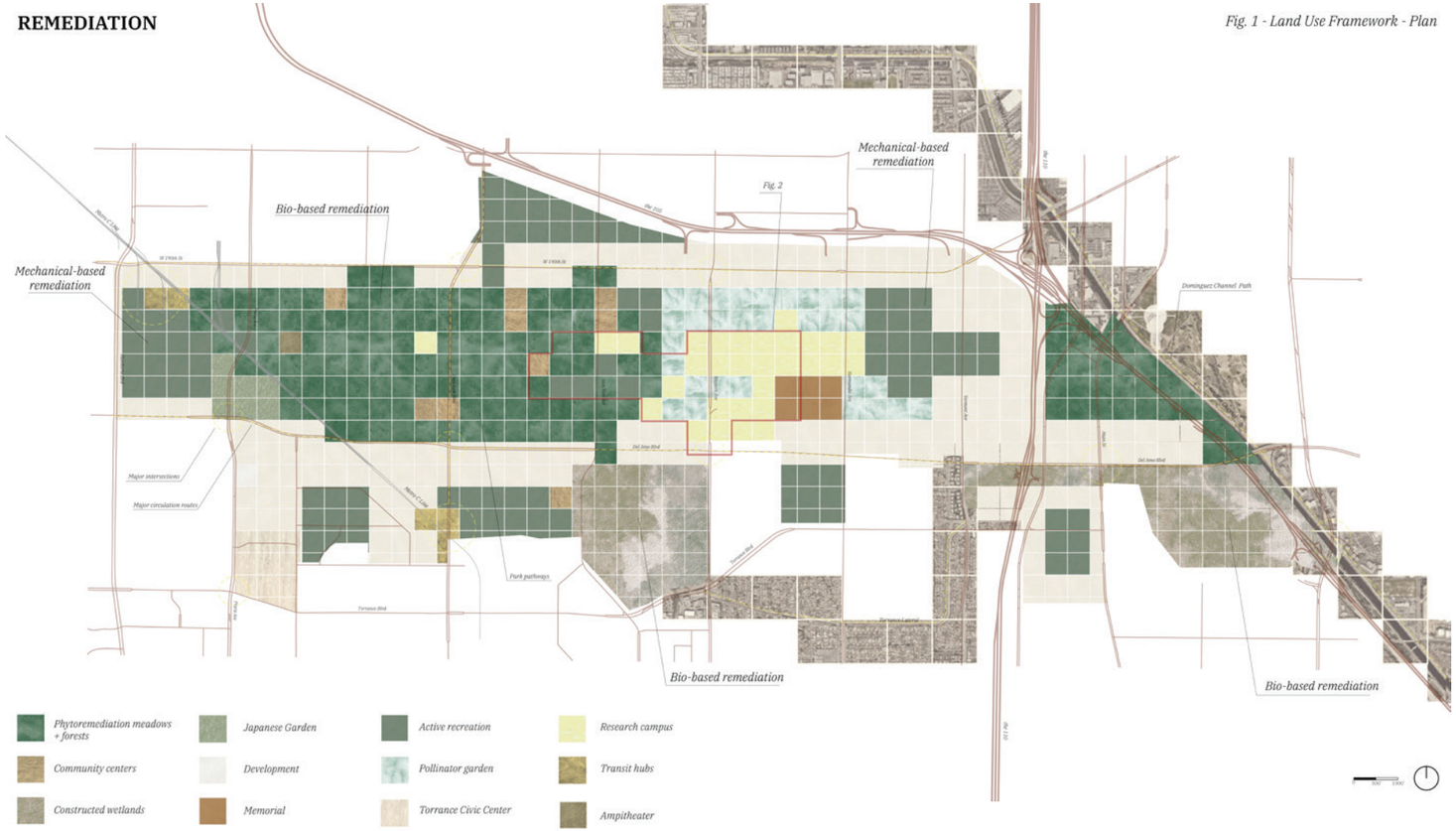


Fig. 1 - Land Use Framework - Plan

Using the strategies in the remediation matrix, each **pixel of the site** was assigned a remediation type, bio-based or mechanical-based, and then a subsequent appropriate **land use** for the proposed park. Because there are so many **different toxins** in the area, as well as **different needs** in the surrounding community, I knew a "one size fits all" method was not appropriate for this site. Instead, I sought to pair land uses that provided community **resources** with areas which could feasibly **support** them.

The land use plan also sets aside space for a capped **environmental memorial**, on the site of the former **Montrose Chemical DDT** manufacturing plant, one of the superfund sites today.

Eidetic montage imagining a memorial at the site.

SITE PLAN

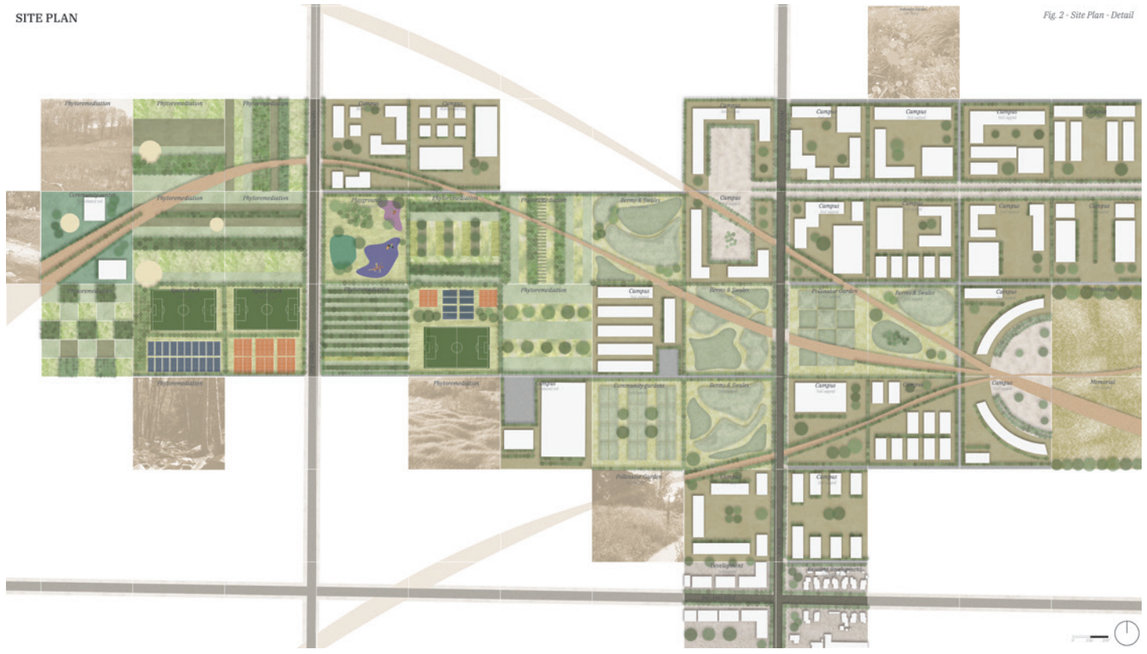


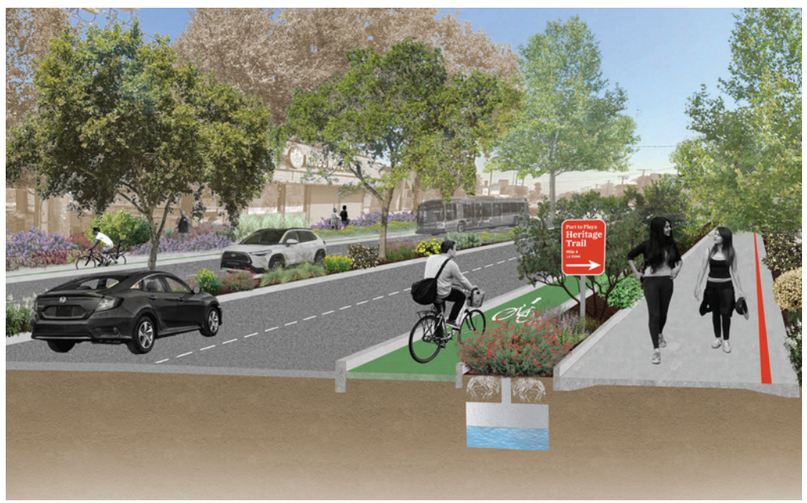
Fig. 2 - Site Plan - Detail

For the center of the site, I proposed a new **environmental research campus** to research **phytoremediation** on the location of the (current) Torrance Refinery. This site plan call out is the portion outlined in orange in the above.

This project also inspired me to write my heritage conservation thesis on the Montrose Chemical Company's DDT manufacturing & disposal—more explorations on memorialization of slow, man-made disasters in progress.

The Torrance Lateral extends from the main Channel into West Carson, Harbor Gateway, and Torrance. Currently, it is a dismal drainage canal. Instead, it could be an **integral thoroughfare** connecting the 200,000 people who live in the area to the Dominguez Channel and beyond.

Large swaths of the site are reserved for phytoremediation, spaces for experimental **learning**. There is currently little information about if any native plants are good remediators, something that could be discovered at this site.



The present street conditions around the area are not very inviting. Connectivity is essential, and best done multi-modally, This final step of the plan **integrates** the campus and park into the community using **green corridors**.

The framework also includes a **Heritage Trail** for South LA. While we can move forward by reducing the polluters in the area, we cannot ignore the **lasting impacts** the industries continue to have on the nearby communities.

This project also included making an object to present the existing conditons of the Dominguez Channel. I created a **weaving** highlighting five sites of **varying conditions** around the Channel. You can see more of my weaving in Section 07.

Figure 174. Proposed site plan of Culver City Park. This park offers the best opportunity for enhanced native habitat. Source: OLIN, 2024.

04

Professional Work: Culver City Parks Plan

While interning at OLIN's Los Angeles office, one of my main projects was the Culver City Parks Plan. I assisted in creating and laying out the Parks Plan document, now published online. I also rendered the existing and proposed plans to clearly describe the proposed improvements to the park. The Culver City Parks Plan also included a robust community engagement element, which I participated in. I especially enjoyed our day engaging with kids at the Culver Parks day camp. Working on this project was particularly impactful because I grew up in Culver City. Being able to hone my graphic skills while working on my childhood parks reaffirmed the significance of landscape architecture!

Summer 2024, Landscape Architecture Intern at OLIN

Jessica Henson, Project Director
Joanna Karaman, Project Manager
Andrew Dobshinsky, Planning Associate
Sarah Swanseen, Senior Landscape Architect
Andrea Binz, Landscape Designer

I used Adobe InDesign to design and layout the document for the Parks Plan to OLIN's graphic standards. I also wrote content for the book.

VETERANS MEMORIAL PARK PROPOSED CROSS SECTION

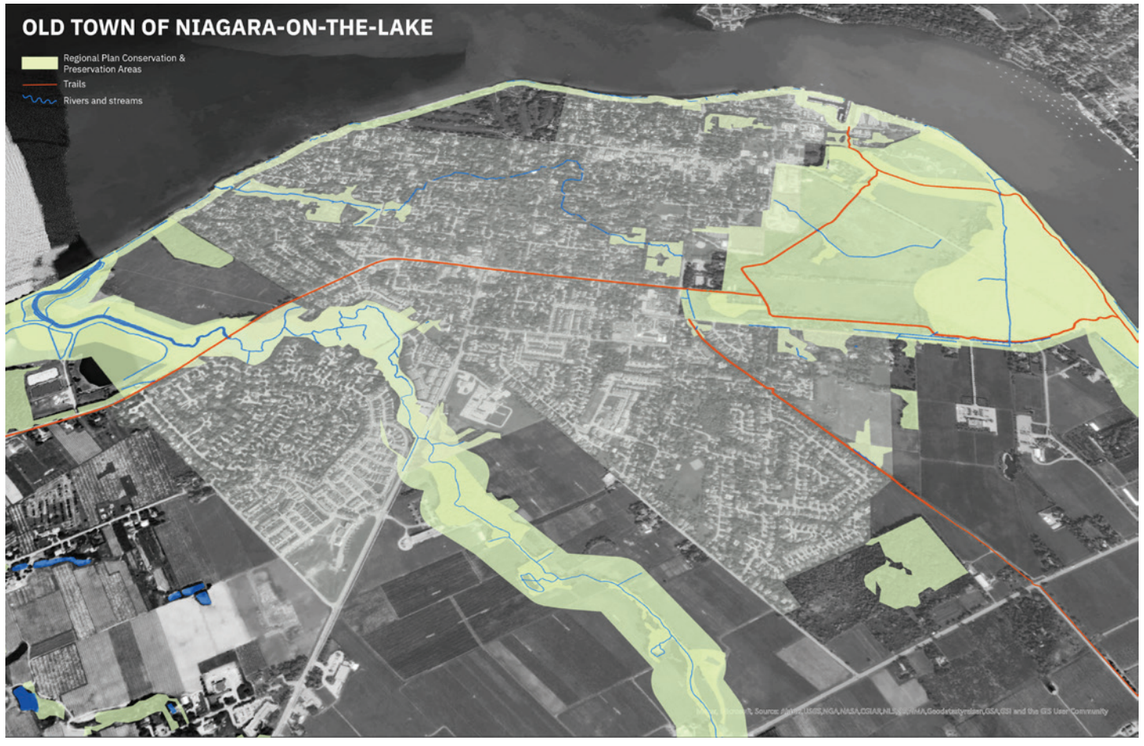
Using AutoCAD and Adobe Illustrator, I rendered existing and proposed plans for the parks, as well as a few sections of the proposed conditions. I also helped run the Culver City kids camp engagement day, where we had kids imagine their dream parks with a variety of playful art supplies.

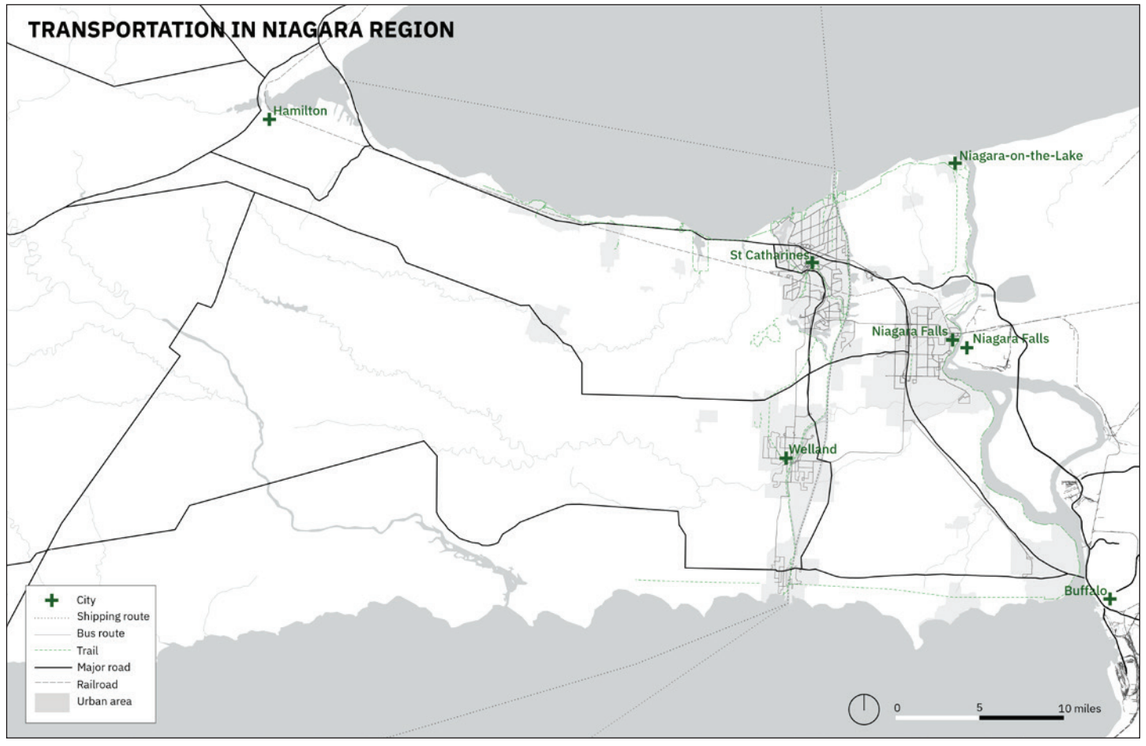
05

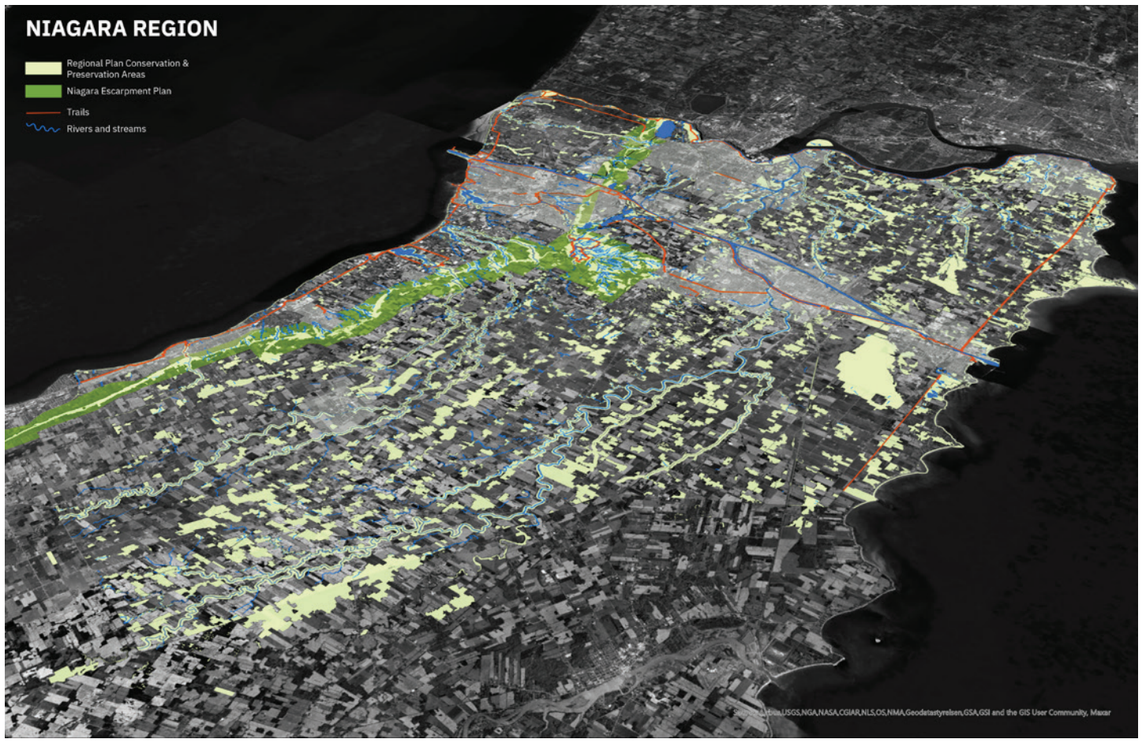
Niagara-on-the-Lake

This project included **mapping** the natural resources in the town of Niagara-on-the-Lake in Ontario, Canada. Using GIS, I assessed the **existing conditions** at multiple scales to create diagrams and maps, clearly conveying information about the region and pointing to suggestions for the future.

Fall 2023 Instructor: Vinayak Bharne


OLD TOWN OF NIAGARA-ON-THE-LAKE
Regional Plan Conservation & Preservation Areas
Trails
Rivers and streams


TRANSPORTATION IN NIAGARA REGION
Hamilton
Niagara-on-the-Lake
St Catharines
Niagara Falls
Niagara Falls
Welland
Buffalo
City
Shipping route
Bus route
Trail
Major road
Railroad
Urban area
0
5
10 miles


NIAGARA REGION
Regional Plan Conservation & Preservation Areas
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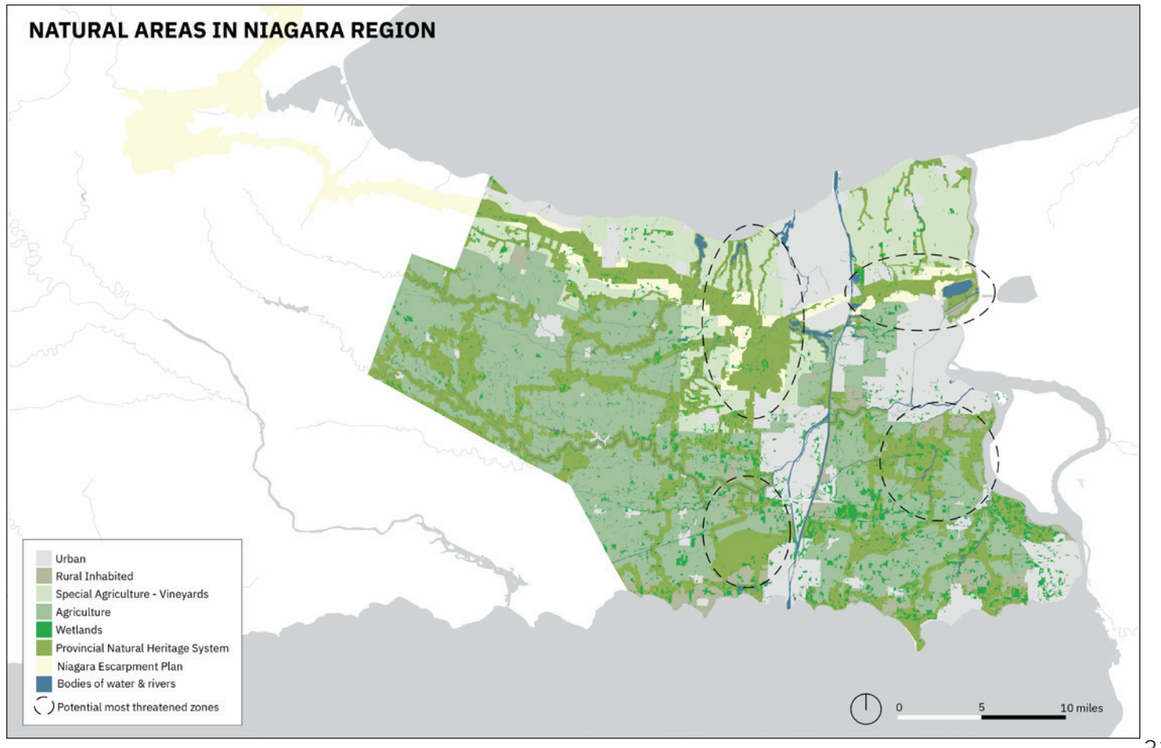
Trails
Rivers and streams

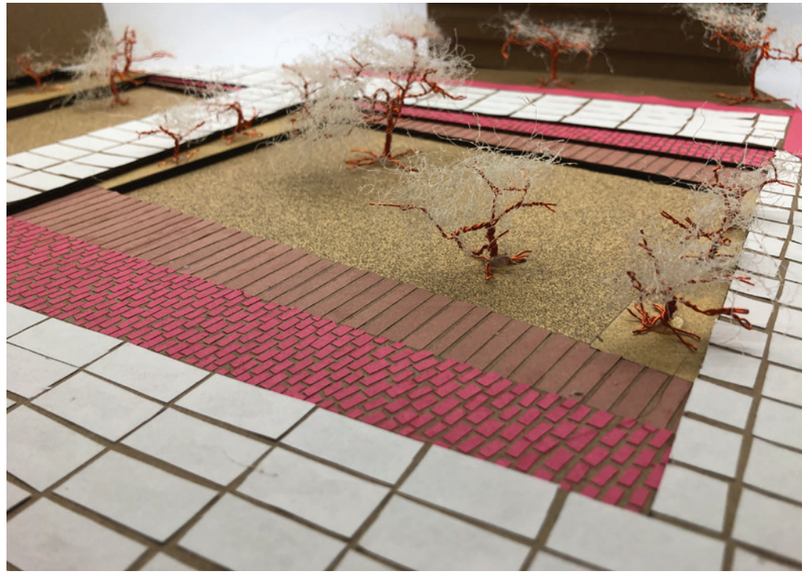

NATURAL AREAS IN NIAGARA REGION
Urban
Rural Inhabited
Special Agriculture - Vineyards
Agriculture
Wetlands
Provincial Natural Heritage System
Niagara Escarpment Plan
Bodies of water & rivers
Potential most threatened zones
0
5
10 miles

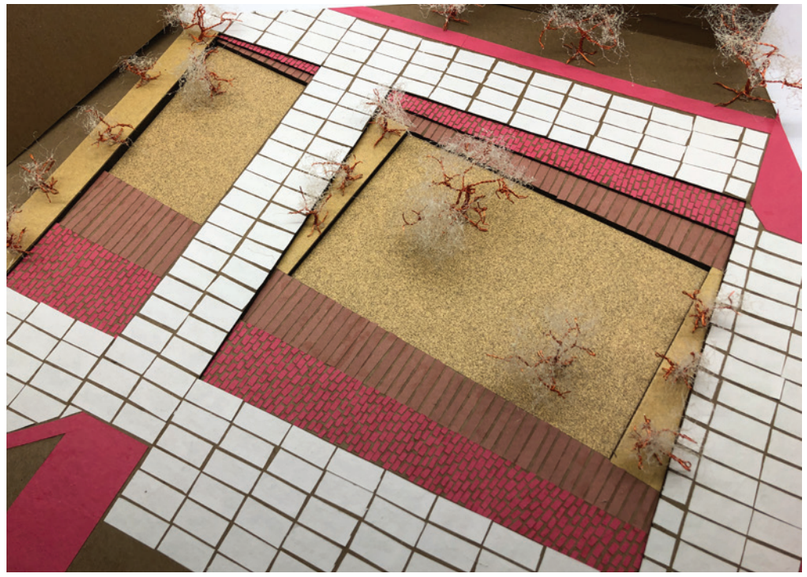
06

Fabrication

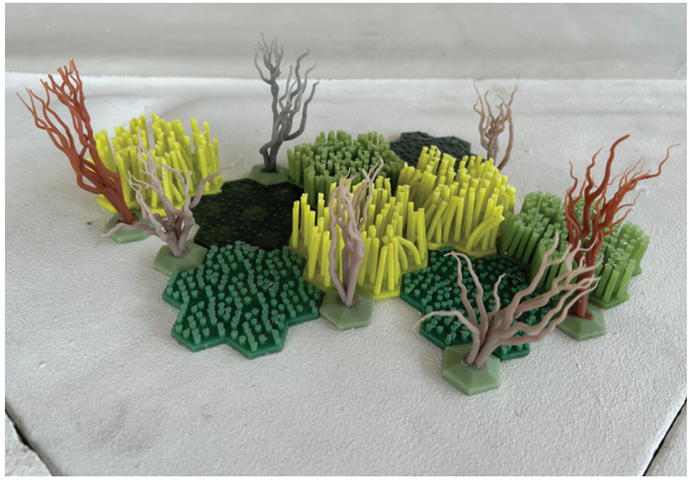
Modelmaking & the Inclusive Infrastructure Design Lab (formerly known as the LA River Integrated Design Lab)

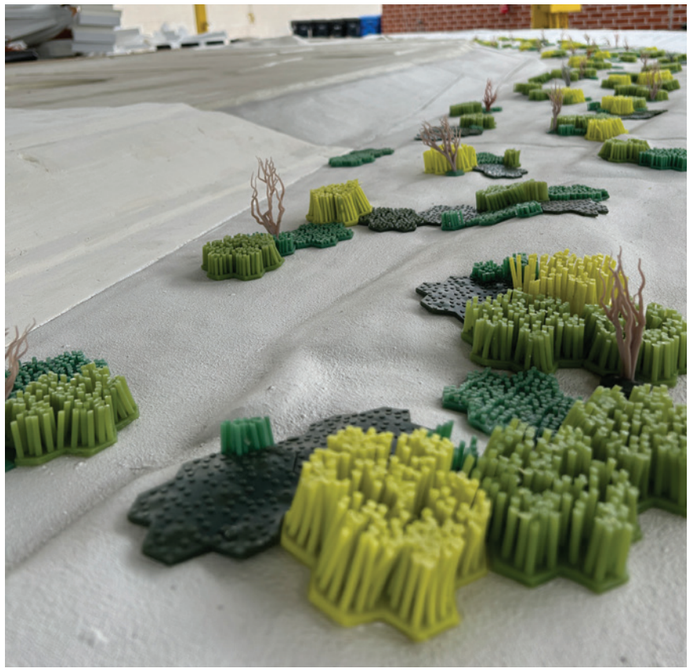
Laser cut topographic model of the Creative Reuse + Climate Resilient Environmental Education Center in Project 02.





Laser cut base and **handmade** application of a site design on USC's campus.





Model pick-and-place vegetation made for the Inclusive Infrastructure Design Lab using **3D printing** and **molded silicone**.

That's me working on the model!

07

Weaving

I have always enjoyed exploring different media of art. Some of my first favorite methods were lino block printing and painting of the natural world. However, a few years ago, I tried **SAORI weaving**, a style of weaving invented in Japan, and fell in love. It has since become my main form of artistic exploration.

One of my favorite parts of SAORI weaving is that there are many constraints — the loom is a heavily simplified version of traditional tapestry looms.

Because of this, every weaving is a design problem, balancing artistic vision with the limited capacity of the loom. The methods I use for curtains or for house decor are not the same I use for clothing or abstractions.

Each work requires its own approach, and I learn something new about the creative process each time.

Thank you!
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