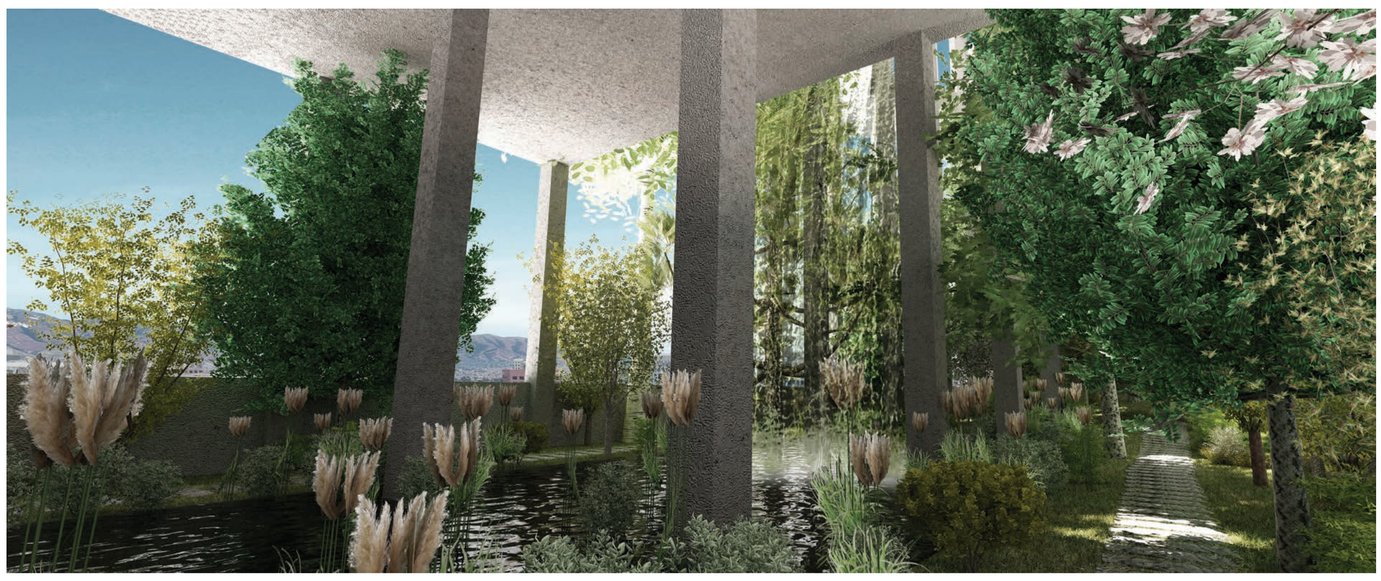










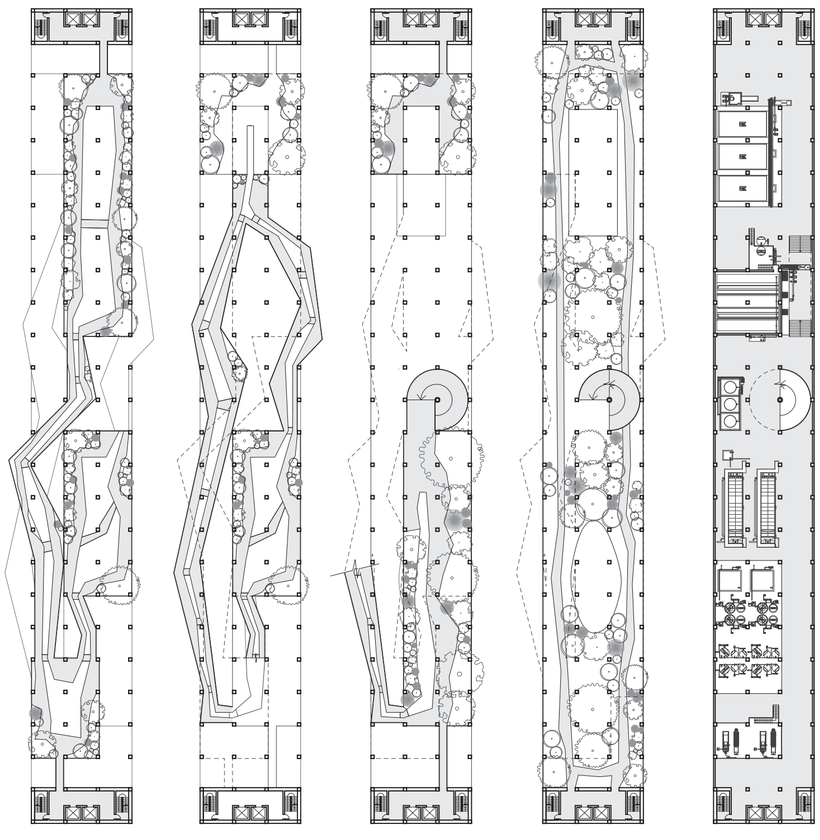
Levitated Garden

What if the icon for Silicon Valley was a monument to clean water and a sustainable future? This project proposes to help clean our environment by merging sustainable technology with nature to create a “Levitated Garden” of water filtering forests in the sky.

Levitated Garden is a monumental building residing in the heart of Downtown San Jose. Levitated Garden deals with the current and future water issues of San Jose. Water is vital to survival. This exposure aims to educate and challenge the technologies, exposing and celebrating water filtration systems. To provide clean drinking water and clean river for aquatic living beings and fauna to live in. Instead of the usual groundscape of the water filtration system, we brought it up, reducing the land footprint and away from the pollution of the ground level, at the same time, introducing levitation pods of greenery. In this way, it also allows the vertical greenery to attract migratory birds, revitalising the ecosystem in Downtown San Jose. Levitated Garden intends to expose the everyday process of filtration system, making it as transparent as possible.

Levitated Garden is divided by a thick slab of machinery and is lifted 30 feet above ground to leave the landscape untouched and to encourage more activities to happen below. On the top of the machinery is an undulated terrain of nature where it is the last collection point of the filtration system before letting it flow back into the river. The top part of the Levitated Garden consists of several levitated green pods for natural filtration systems. The water filtration system starts from underground, pumping the river water up to the level of filtration machinery, moving the water from the left of the building all the way to the right. After clearing out large amounts of toxic waste and dirt, it would then be pumped all the way up to the highest green pod where that would be the beginning point of the natural filtration system. This natural filtration system uses aquatic plants, like, cattails, waterlilies and rushes, would absorb the remaining smaller dirt particles as nutrients while helping to clean the water. In order to fully filtrate the water, it flows down from pod to pod like a river, along with pathways where people could travel down the same way. A parallel movement of people and water where the water circulation and filtration is also the path that people take, from elevators going up (water pumping up) and ramps going down (water flowing down). There are also additional water features like waterfall, as a way to increase the oxygen percentage in the water as another way of cleansing it. The pods are meant to inhabit lush greenery where it would cultivate big trees and native species to attract migratory birds and local fauna. The cores of the project is located on either ends of the monument, framing the entire city skyline through the green pods. In order to soften the cores, vertical greenery are added to it.

Floor Plans



6th Floor Plan - Green Pods

5th Floor Plan - Green Pods

4th Floor Plan - Green Pods

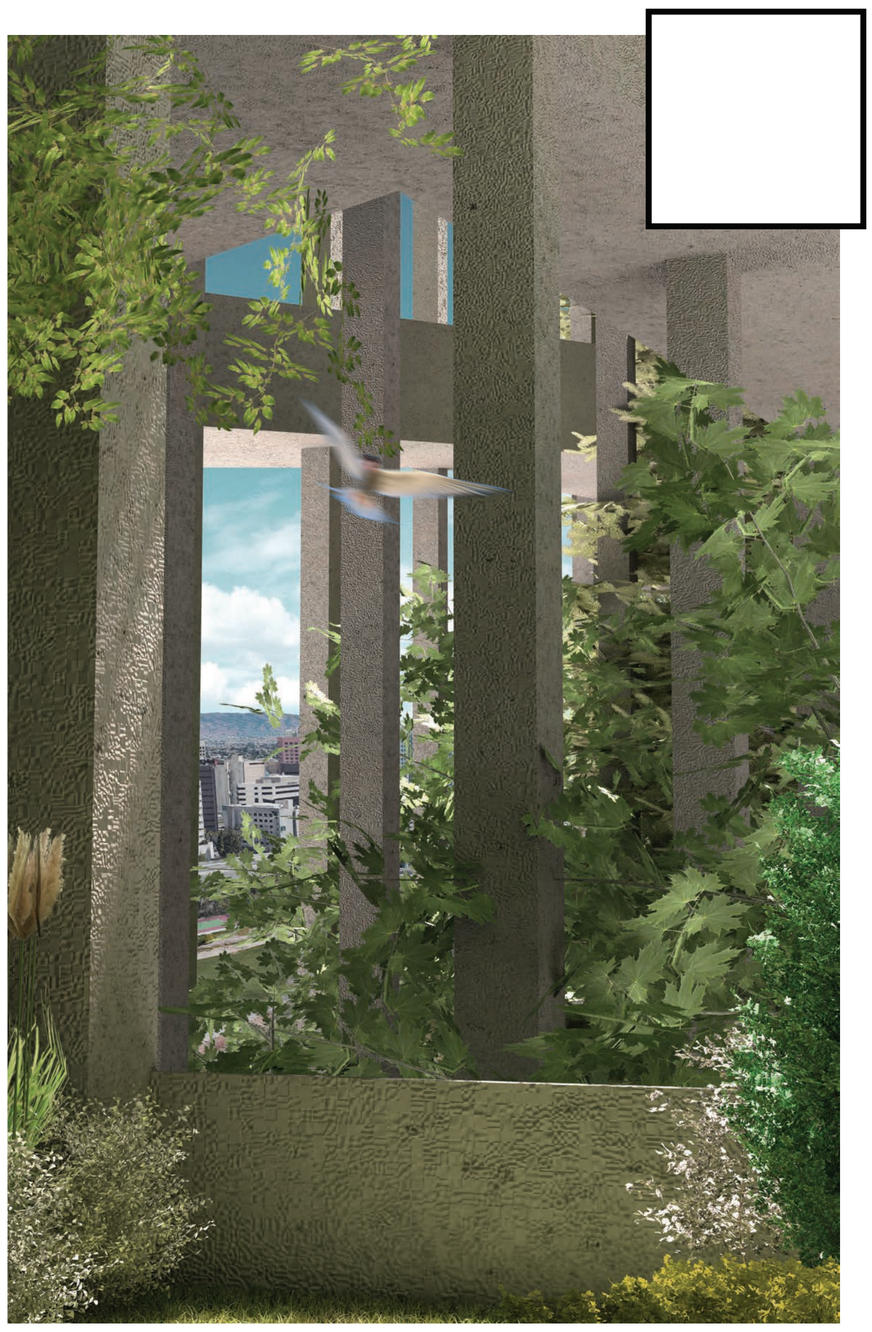
3rd Floor Plan - Slab of Greenery

2nd Floor Plan - Mechanical Water Filtration System

Site Plan - Ground FLoor Plan







River Filtration System Diagram



Cross Section

Fauna

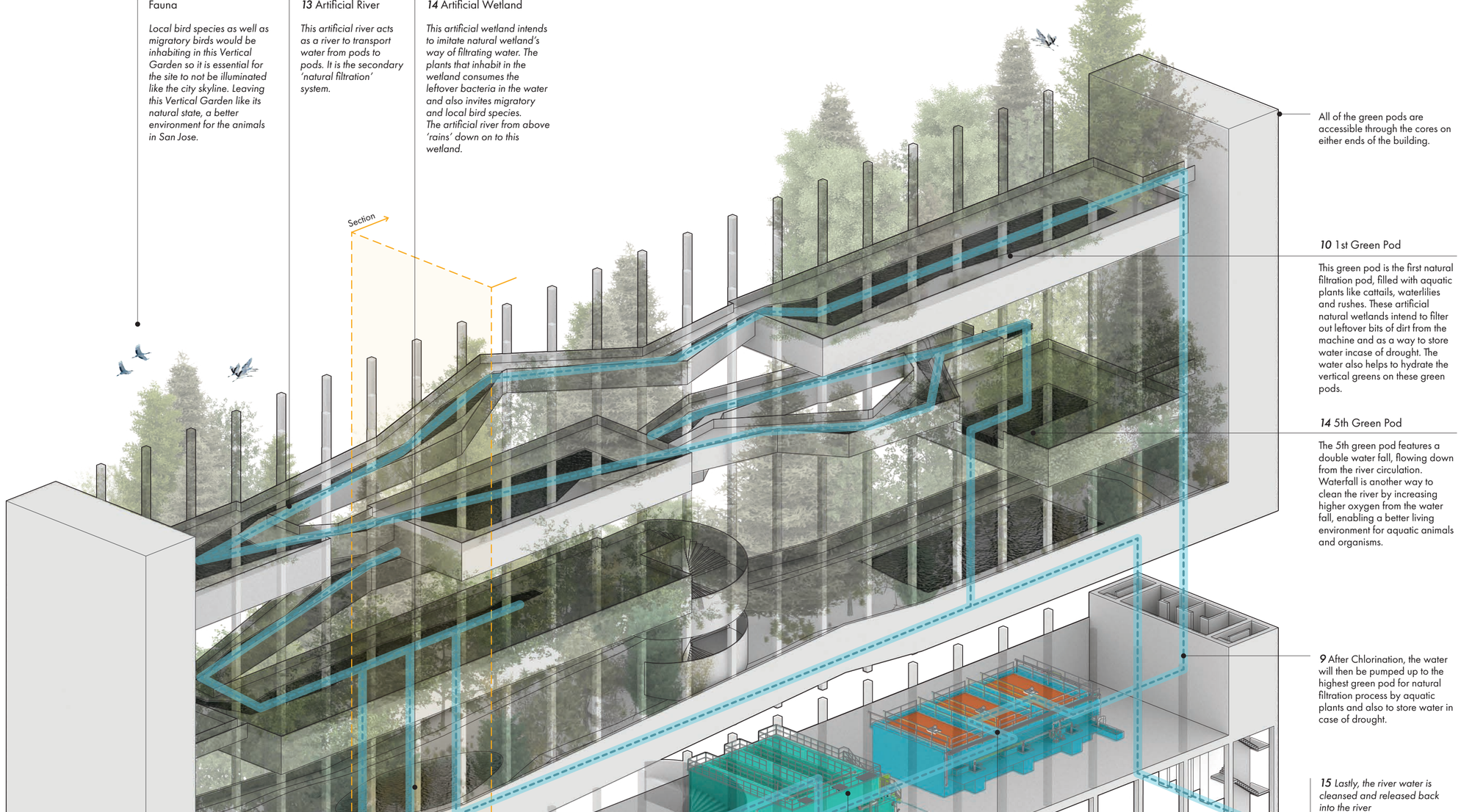
Local bird species as well as migratory birds would be inhabiting in this Vertical Garden so it is essential for the site to not be illuminated like the city skyline. Leaving this Vertical Garden like its natural state, a better environment for the animals in San Jose.

13 Artificial River

This artificial river acts as a river to transport water from pods to pods. It is the secondary 'natural filtration' system.

14 Artificial Wetland

This artificial wetland intends to imitate natural wetland's way of filtrating water. The plants that inhabit in the wetland consumes the leftover bacteria in the water and also invites migratory and local bird species. The artificial river from above 'rains' down on to this wetland.



All of the green pods are accessible through the cores on either ends of the building.

10 1st Green Pod

This green pod is the first natural filtration pod, filled with aquatic plants like cattails, waterlilies and rushes. These artificial natural wetlands intend to filter out leftover bits of dirt from the machine and as a way to store water incase of drought. The water also helps to hydrate the vertical greens on these green pods.

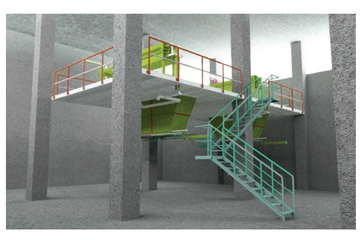
14 5th Green Pod

The 5th green pod features a double water fall, flowing down from the river circulation. Waterfall is another way to clean the river by increasing higher oxygen from the water fall, enabling a better living environment for aquatic animals and organisms.

9 After Chlorination, the water will then be pumped up to the highest green pod for natural filtration process by aquatic plants and also to store water in case of drought.

15 *Lastly, the river water is cleansed and released back into the river*

2 Mechanical Screens



The Mechanical Screens, screens or strains out the larger items. This is often accomplished using a large metal screen, which is placed in front of the water source intake. Large items are trapped on the screen as the water passes through it and they have to be routinely raked or cleaned off. There are trash containers at the bottom to collect all types of waste.

2 Mechanical Screens

This process screens or strains out the larger items from the river

1 *Water pumped up from the river*

3 Pretreatment Basin

In these basins, it degreases, pickles, rinse and flushes the river.

4 Flocculation Basins

Chemicals (coagulants) are added to the water to clump the nonsettling particles together into larger, heavier masses of solids called floc.

5 Sedimention Basins

During sedimentation, floc settles to the bottom of the water supply, due to its weight.

6 Filtration Basins

Once the floc has settled to the bottom of the water supply, the clear water on top will pass through filters of varying compositions (sand, gravel, and charcoal) and pore sizes, in order to remove dissolved particles, such as dust, parasites, bacteria, viruses, and chemicals.

7 UV Disinfection Station

It disinfects and/or remove microorganisms from contaminated water.

8 Chlorination

Chlorination helps the river tb killing bacteria and viruses that causes harm to aquatic animal. After this process, humans can also safely drink the water.

1 *River is being sucked and pumped from underground*

San Jose Water Research

Even years after the California Gold Rush, there has been detection of mercury and other toxic contaminations in San Jose's waterbodies and animal lives. This is a big issue to all living organisms. Animals at the top of the food chain that consume fish or other aquatic animals contaminated with mercury are the most vulnerable, including humans. In order to prevent too much contamination run off from the mine waste into the Quadalupe River and eventually flowing down to the San Francisco Bay, Levitated Garden proposes a wall of river filtration system for better living conditions for every living beings. It demonstrates a live and transparent filtration system through new technologies as well as artificial natural ways through the floating green pods.

Another issue in San jose is drought and flood. The city suffers from a prolonged period of drought that forced nearly one million residents to cut back their water usage. At the same time, the sea level rise could lead to excess salt in San Jose, California's drinking water. (Business Insider) With Levitated Garden's levitated green pods, it acts as a water tower, storing the river water and rainwater. In case of drought, it could balance out the water level in San Jose.

Plant Palette



Abies Pinsapo

- Attracts birds
- A species of fir native to southern Spain and northern Morocco. Related to other species of Mediterranean firs, it is considered the Andalusian National Tree.



Celtis Australis

- Attracts birds
- A deciduous tree native to southern Europe, North Africa, and Asia Minor. The tree was introduced to England in 1796.



Platanus Orientalis

- Attracts birds
- A large, deciduous tree of the Platanaceae family, growing to (98 ft) or more, and known for its longevity and spreading crown. In fall its deep green leaves may change to blood red, amber, and yellow.



Robinia Pseudoacacia

- Attracts birds
- A medium-sized hardwood deciduous tree, belonging to the tribe Robinieae.



Cortaderia Selloana

- Attracts birds
- A flowering plant native to southern South America, including the Pampas region after which it is named.



Acer Buergerianum

- Attracts birds
- A species of maple native to eastern China (from Shandong west to southeastern Gansu, south to Guangdong, and southwest to Sichuan), Taiwan and Japan.



Pinus Sylvetris

- Attracts birds
- A species of pine that is native to Eurasia, ranging from Western Europe to Eastern Siberia, south to the Caucasus Mountains and Anatolia, and north to well inside the Arctic Circle in Fennoscandia.



Prunus Avium

- Attracts birds
- A flowering plant in the rose family, Rosaceae. It is native to Europe, Anatolia, Maghreb, and Western Asia.



Ulmus Pumila

- A tree native to Central Asia. It is also known as the Asiatic elm and dwarf elm.
- It is the last tree species encountered in the semi-desert regions of central Asia.



Water Celery

- A plant of the water dropwort genus originating from East Asia.
- It has a widespread native distribution in temperate Asia and tropical Asia, and is also native to Queensland, Australia.