**The Source**

*Spiral is a sacred symbol that represents the journey and change of life as it unfolds; taking a labyrinth-like passage that leads to Source. The spiral symbol can represent the consciousness of nature beginning from its center expanding outwardly. Spirals have been linked to nature, the seasons, and the path of life: birth, growth, death and reincarnation. Sammy Fontanez. TainoAge*

Following symbolism reflects in our proposal for the Lagi Fly Ranch competition. From the narrative side, our ambition was to grasp the ancient context of this magical place and tell its story through our project. Inspired by the primitive language, petroglyphs, that can be found in this region, we proposed our piece of art/infrastructure, the Source.

Spiraling, colorful, thermal, earth wall, surrounds a secret orchard and leads to the central water & energy collector. A contemporary, agricultural, desert *Hortus Conclusus,* where low-tech knowledge mixes with modern technology and ancient art.

Inspiring past

We believe that looking back doesn't necessarily mean a regression. By gathering smart, simple solutions from our ancestors, we can reduce the impact of our infrastructure and at the same time, combine it with a handful of contemporary solutions.

Our project relates directly to the XVI century strategy of growing fruit trees called “fruit walls”. Back then, before the energy consuming glasshouses, there was an original solution to grow fruit trees in harsh climates. Planted trees were surrounded by thick, protective masonry walls with high thermal mass capabilities. They stored the heat from the sun and released it at night, creating a microclimate that could increase the temperature during cold nights by more than 10°C. Beside their microclimate abilities, walls protect young trees from the strong or cold winds.

The wall

To reduce the footprint of the construction we used rammed earth instead of masonry. We plan to build it from the local soil and pigment it with natural iron oxide. The wall become a piece of art that relate to the colours of the topography, fly gazer and natural pigments, that were used by the ancient artists in their cave paintings.

The wall is additionally perforated for social and ecological reasons. One type of perforations goes through as a number of peepholes, to create an atmosphere of mystery and discovery for the Fly Ranch visitors. Additionally, during the night, thanks to the inner illumination, create point lights, “stars” like lighting effects.

On the other hand, smaller, pattern-like perforations are created only from the inside. They serve as hotels, shelters for insects and bees that will ensure the necessary pollination process of the trees and emphasize the project symbiosis with the cycles of nature

The Orchard

The secret orchard, our agricultural Hortus Conclusus, will host dwarf or semi-dwarf fruit trees that grow well in the Nevada region like apples, apricots, plums, citrus trees, cherries. Thanks to the protective thermal walls, they will grow in a dedicated, hospitable microclimate that will allow them to develop fast, well and provide efficient fruit harvest. On the other hand, bees hidden in the inner wall surfaces will ensure their pollination.

The Heart

Spiralling orchard path leads to the central heart that represents water and sun.

A cylindrical water tank collects rainwater from the walls gutter and from net canopy that serves also as a dew harvester. Water tank is crowned with the solar photovoltaic panel disk to provide energy for the automatic, vaporized watering and night illumination. Additional energy will be stored in portable batteries.

**Fly Ranch general strategy- project location**

Before we decided about the project location, we envisioned a broader strategy for the whole Fly Ranch site. We believe that the whole area would benefit from the overall programming of its infrastructure and facilities. Despite the final function of the whole area we divided the ranch into three programmatic zones.

1. On the north, near the geyser Water & Energy zone. Area that will focus mainly on alternative energy harvesting- mainly solar and geothermal. Additionally, it will host solutions for water collection, harvesting and purification.

2.Middle zone, focus on Agriculture & Shelter, solutions like the Source and other strategies for sustainable food production, plus ecological shelters/ village and other necessary facilities.

3. South zone, the old Burning Man site, will represent the Recycle & Reuse zone. It will promote ideas and solutions for waste treatment and material reuse.

All three areas will blend with each other, connected with an infinite loop of energy that will flow through the entire site. From the produced energy, to food production and shelters, ending up in the recycle zone that will recover all the possible resources back to the ranch ecosystem. We imagine an acupuncture of solutions that will match to the specific energy zones and be part of this energy loop.

Our project is a part of this system, located in the middle part of the Fly Ranch site- Agriculture & Shelter zone. Deepening from the chosen scale & necessary excavations it can be located either in the primary site boundary or low impact zone.

**Technology & strategies**

* Rammed earth
* Thermal mass- fruit walls
* Photovoltaic panels & energy storage
* Rainwater collection & dew harvesting
* Automatic vaporized irrigation
* Water & energy storage
* Insect hotel

**List of activities**

Beside agricultural & infrastructural role the Source will host & support social activities:

* Community garden/orchard: place when local community gather and care about the orchard
* Educational events: place for education and workshops about the sustainable agriculture
* Meeting place sheltered from sun & wind: on day to day basis meeting place sheltered from sun, wind where you can sit, relax or even cool down in sunny days
* Yoga and meditation garden: seclusion and nature fits perfectly for yoga & meditation workshops

**Primary Materials**

* local clay and sand for the rammed earth mixture
* iron oxide pigments for the wall pigmentation
* local rocks, stone for the foundations
* polypropylene mesh net ( recyclable)
* steel or plastic water tank ( recyclable)
* photovoltaic panels
* composted soil for the initial planting
* chosen types of young ( 2 years ) fruit trees seedlings with developed initial roots system

**Output**

* 250 kg of fruits per year, deepening from the tree type apples, apricots, citrus, mulberries. This result is available when trees achieve their fruiting age- approx two years for the two year old seedlings.
* 9000 litres of water Water tank collector for rain water & dew harvesting. Most of it will be used for the orchard irrigation. Surplus water will
* 2200 kwh/year part of the energy will be used for the irrigation system and illumination. Excess energy will be stored in the portable batteries and used for other purposes.
* Compost from fallen leaves, bad apples and other organic waste that can be used for heating in colder months or as an organic fertilizer

**Input**

* Man labour to build a rammed earth wall. Volunteers that later on can profit from the secret orchard output plus few specialists to construct the wooden boarding.
* Additional water supplies for watering the trees in their early stages until the water tank will be filled up.
* Thanks to the walled protection & automatic irrigation, young orchard will need less maintenance than normally. Nevertheless, at the beginning young trees will need maintenance like every young orchard/ garden: pruning, protecting from insects, organic fertilizing etc
* If the water tank will fill up, the water will have to be partially pumped out to the external storage.

**Prototype strategy & conceptual cost**

Project is scalable so the final prototype size will be adapted to match the available funds. We will try to fit into the desired budget of 15 000 - 20 000 $. We will prototype the size S version of the project. Smaller version than the one presented.

The most expensive part will be the wall itself, because the rammed earth is a low-impact but labour intensive solution. We believe that thanks to the following 3 factors we will be able to reduce to cost to fit the budget:

* We will try to use local soil for the construction to avoid transport and material costs
* Thanks to the fact that the wall will not be a bearing wall, we can ask for help from unqualified volunteers for the construction process. Main cost of the rammed earth comes from the labour and not from the cost of materials .
* We will go for a low-impact low-tech, process without cement, special foundations and other costly enhancers. Formwork will be hired from the closest possible company.

To sum up, the main parts of the project: wall, orchard and water tank, are low-tech, low impact solutions that require mostly on site labour and a group of volunteers, that later on can profit from the orchard outputs. The rest of the project: mesh canopy, solar panels & vaporized irrigation system are “nice to have” functionalities. Each part can be adapted to fit in the budget. Like using a recycled water tank or simplifying each solution.

**Decommission and lifespan**

After a few years, when fruit trees will grow to their maximum size and become more resistant to the harsh conditions, the installation could be decommissioned. Water tank, and solar panels could be disassembled and reused elsewhere. The beauty of this proposal is that the earth wall could be just dismantled on site, without complicated transport or machinery. What will be left is just pure nature, a desert orchard, oasis.

**Environmental impact**

Thanks to the following solutions & strategies we will achieve positive environmental impact of our proposal:

**Materials**: Using in 90 % Natural materials: rammed earth: sand, stone, clay

**Transport** : Reduce the unnecessary transport: using local resources, materials & closeby collaborators

**Recycling & Reuse:** equipment : water tank, net will be chosen based on their recycleablity & possibility of future reuse

**Self-sufficiency**: proposal will produce its own alternative energy and collects water

**Greenery:** Planted trees will absorb C02, produce oxygen & provide sustainable food & shelter for insects and animals

**Waste:** Installation will practically not produce any waste beside the organic compost: fallen leaves, rotten fruits, cutted branches that are more of a resource than waste

**Decommission**: Natural, earth walls could be dismantled in place. The rest of equipment will be recycled or reused elsewhere. Matured orchard trees will be left as a natural long lasting benefit for this region.