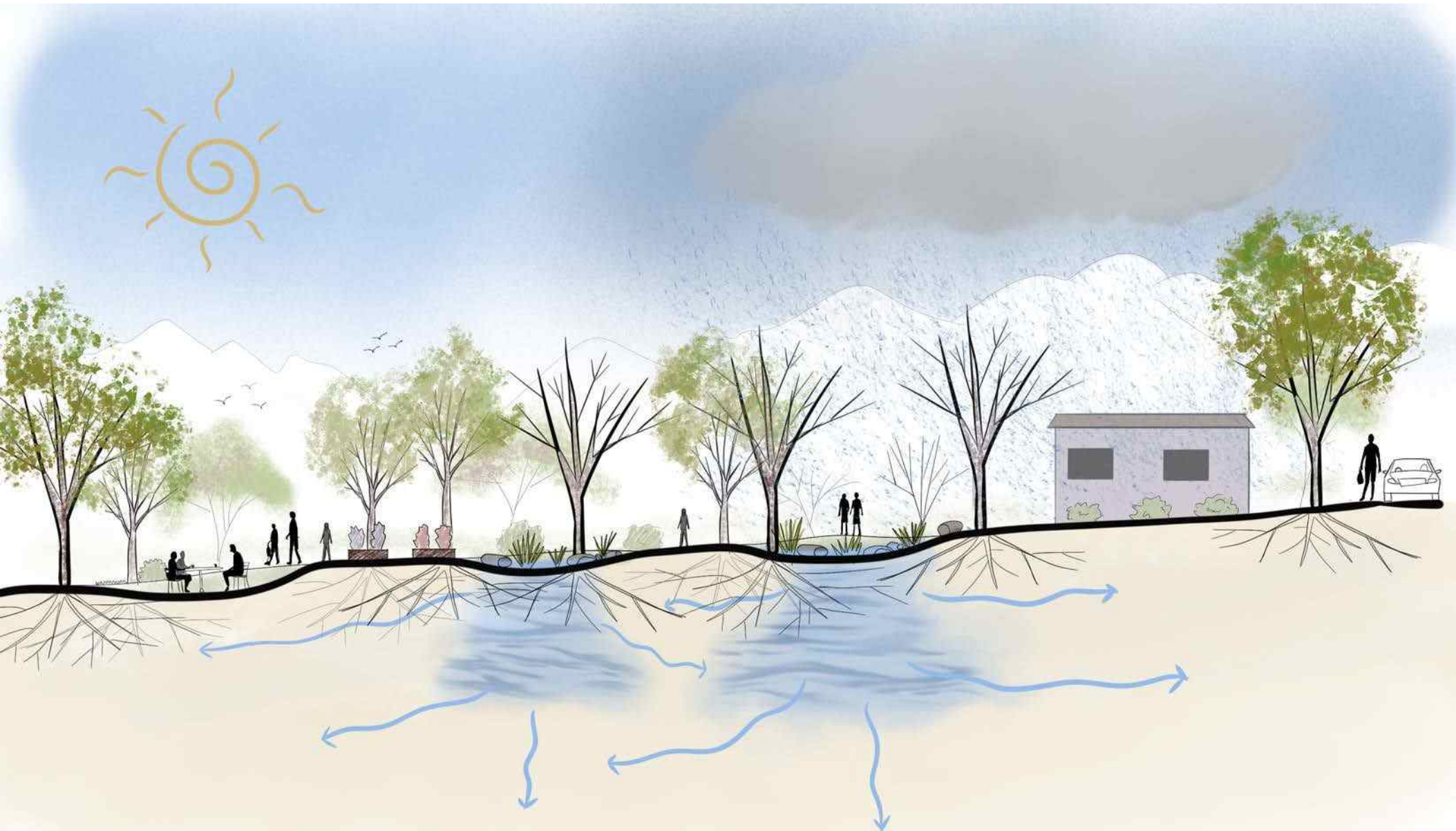


Resiliency In The WUI



Resiliency in the WUI

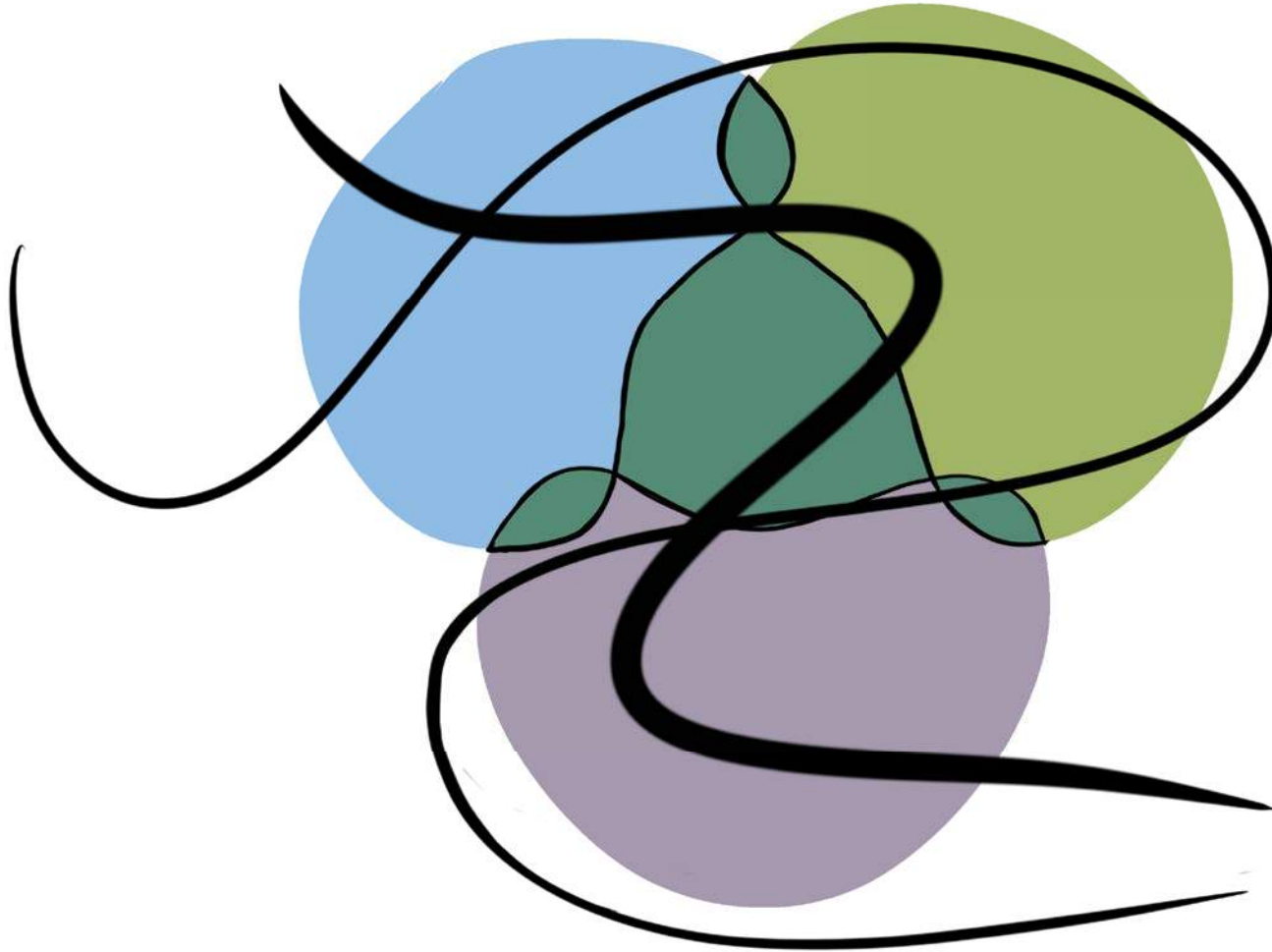
Where Reciprocal Relationships Build Capacity to Thrive: A Janes Village Case Study

What if a neighborhood could produce more of what it needs, and become more resilient because its resources are shared?

Resiliency in the Wildland-Urban Interface (WUI), asks what happens when a neighborhood becomes the system for resilience.

Through water-focused design, local energy and food production, shared spaces, native and climate-adaptive planting, and collective stewardship, the neighborhood becomes a living system that is capable of providing, adapting, regenerating, and thriving.

The project is based on the idea that resilience is relational. Water, soil, landscape, energy, and community are not separate systems; they exist within interconnected, reciprocal relationships that can strengthen one another.



By reconnecting people with the land and with each other, resilience becomes less about preparing for what might happen and more about building the capacity to thrive.

This project is dedicated to the people of Altadena some of the kindest, strongest people I know. You are my inspiration and your spirit has shown us what resiliency truly is.



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Terminology

WUI-Wildland-Urban Interface, defined as ≥ 1 house per .5 acre and within 1 mile of wildlands.

Plant the Rain-building landforms to *clean, slow, spread, sink* rainfall before doing anything else. Examples: berms, basins, terraces.

CS³ (CS cubed, CS to the third power)-Clean, Slow, Spread, Sink rainfall.

Regenerative-having the ability to be self-sustaining.

Waste loop-path that waste travels from extraction to landfill.

Close the waste loop-using materials that either regenerate (plants) or salvaged materials (urbanite, brick, etc) to keep production of materials down and landfills clear of waste.

Urban heat effect-Heat produced from paved, mostly dark surfaces such as roadways a walls.

Aquifer-groundwater

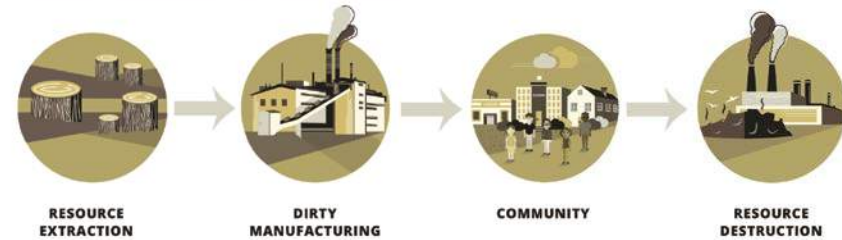
Evapotranspiration (Eto)-The rate at which moisture evaporates from the ground and transpiration of living plant material.

Biodigester-System that converts organic waste into usable energy in the form of natural gas.

Hugelkultur- German for “Hill culture.” The practice of mounding and/or burying larger wood pieces like branches and logs, mixed with other organic materials and covered with layers of soil. As the carbon breaks down, fungi become more abundant and they create healthy, sponge-like, regenerative soil. Excellent use for trees that need to be felled on site.

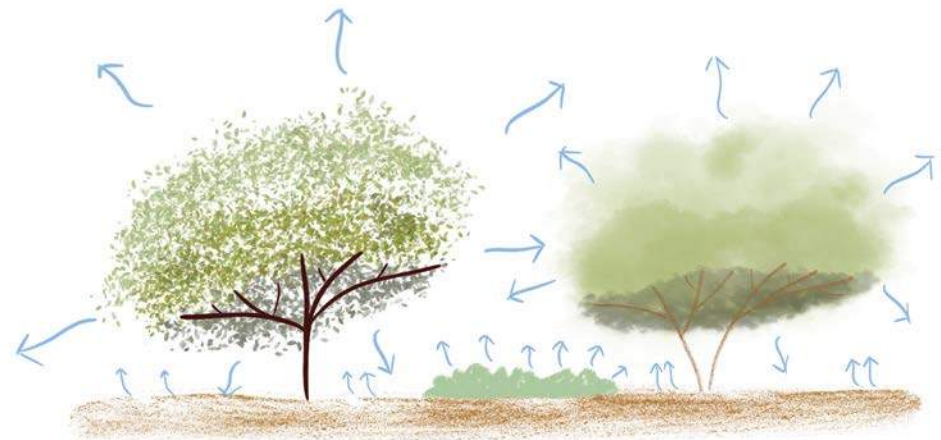
Waste Loop

Our current production system goes one way – FROM THE EARTH TO THE DUMP.



<https://ecocycle.org/learn-about-zero-waste/what-is-zero-waste/>

Evapotranspiration (ETo)



Background

The definition of insanity is doing the same thing over and over expecting different results

On January 7, 2025, an ***“offline” electric tower in Eaton Canyon, owned and operated by SCE, caused one of the most devastating fires in California’s history.*** Over 9,000 structures were burned and 19 lives were lost.

LA County failed to notify residents that they needed to evacuate. 19 months later, the most common statement is “I am still waiting for my evacuation order...” Nobody has gotten answers as to ***why.***

LA County fire department ***dispatched fire fighters to La Canada, miles to the west,*** rather than to where the fires were actually happening.

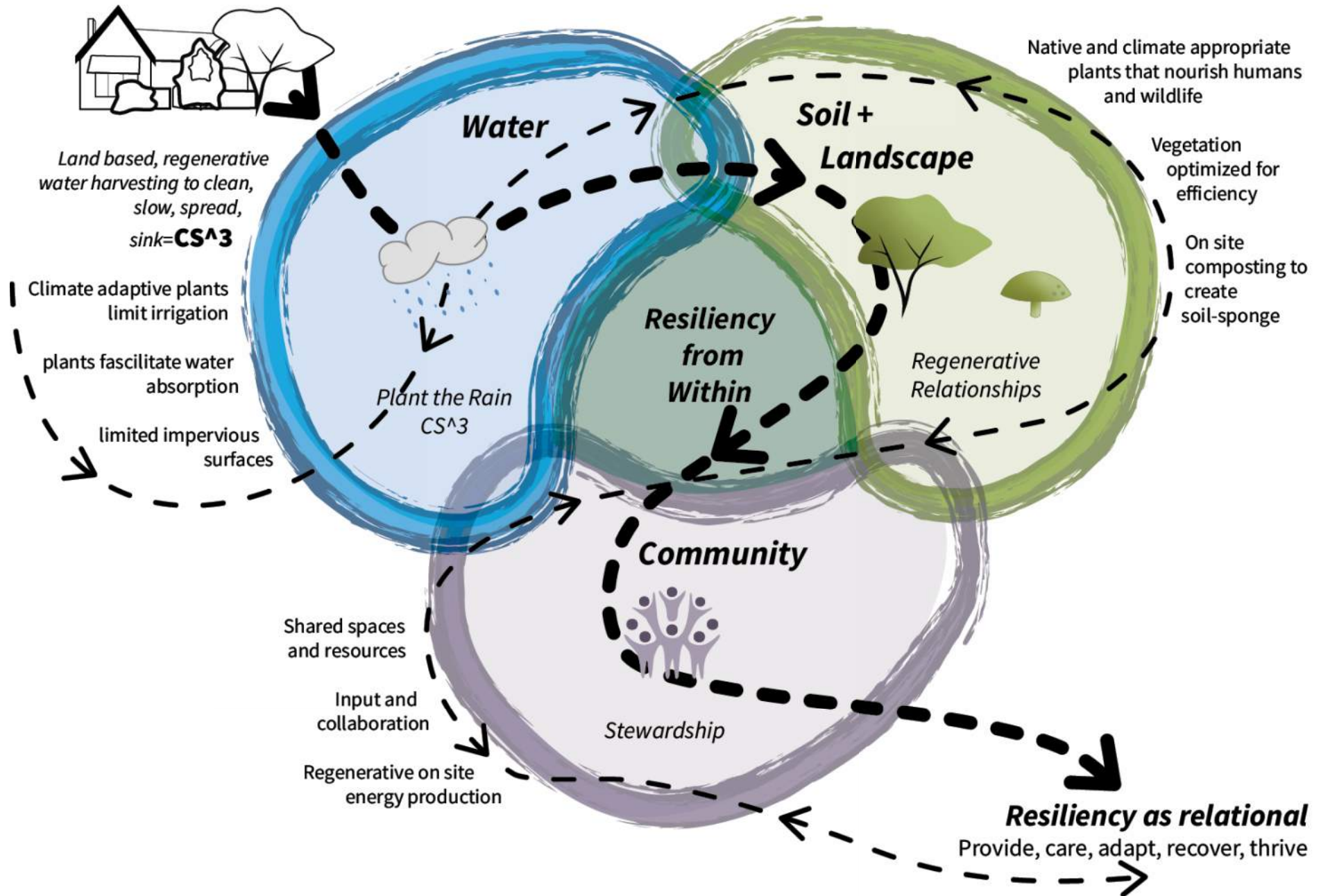


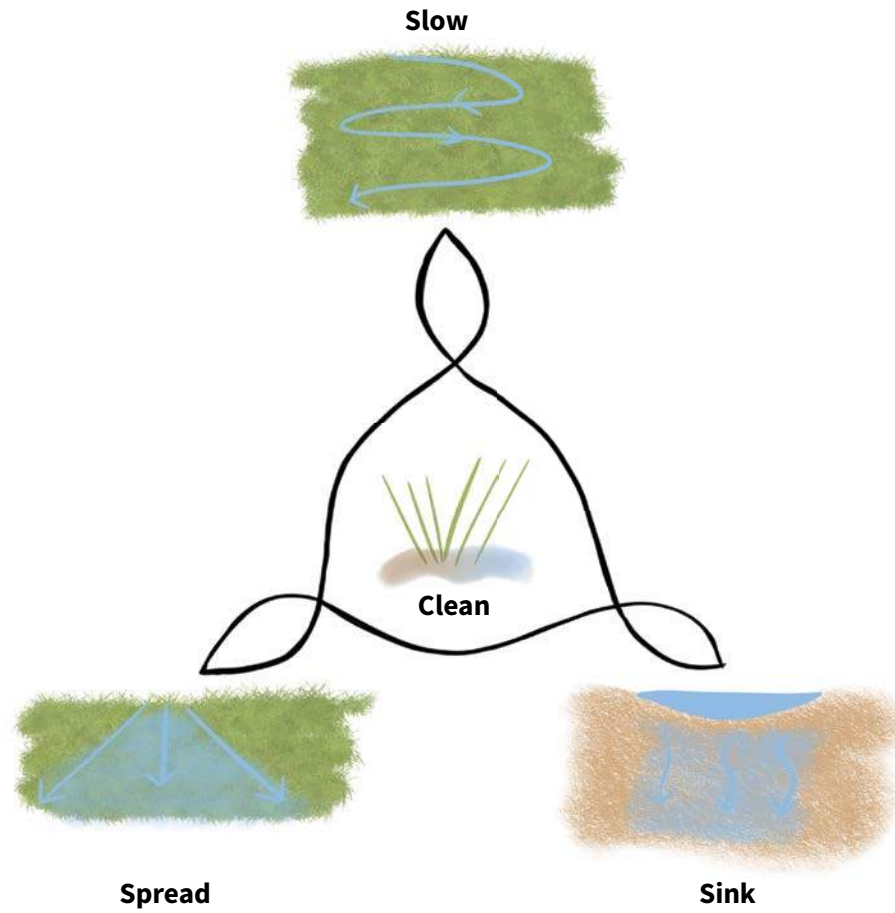
Shame on LAcO, shame on Sacramento, SHAME SHAME ON SCE!!!

Goals and Objectives

Rethink How We Build Neighborhoods

Re-imagine the neighborhood as a living system





Spread

Water-By spread the water we are slowing it down and allowing more surface area for infiltration.

Life-Spread the love, equity, resilience, knowledge, joy.

Sink

Water-Infiltrate, put water where it is more accessible to roots while not evaporating, recharge the aquifer.

Life-Lay down roots that will build connected communities and resiliency for generations to come.

Clean

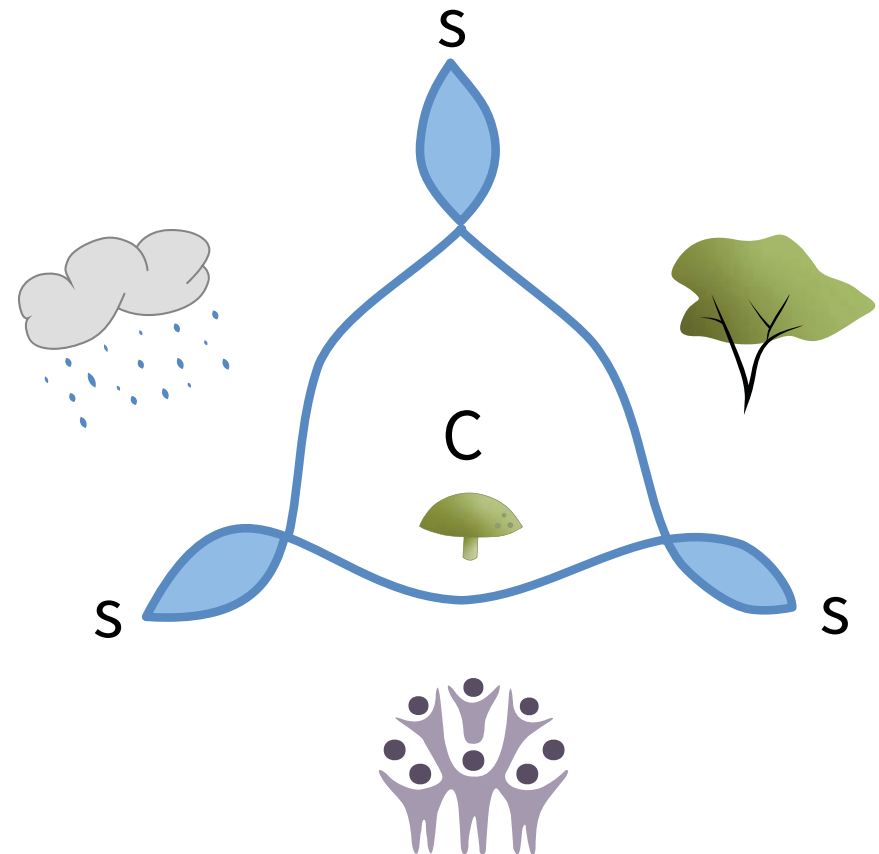
Water-Water runoff from rooftops and roads carry contaminants. Runoff should be cleaned, even if nothing else.

Life-Fire is destructive, but also cleansing. Everything and everyone needs cleansing and maintenance of some sort.

Slow

Water-Fast, direct water more likely to cause damage. By slowing down water we lessen the chance of erosion and increase chance of infiltration and allowing systems downstream to be able to handle the water in their immediate surroundings.

Life-Benefit from slowing down lives. "Slow the flow."



Site Location

Location: 3005 Block in Altadena/Janes Village, Unincorporated Los Angeles County, California

Context: Single Family Residential.

Zoning: R-1 Single Family Residence

Size: nearly 7 acres

Clients: Stewards and residents of 3005 Block in Altadena/Janes Village. 6.6 People/household

Stakeholders/Users: Primary-Clients and residents of Janes Village, Altadena community. Secondary-LACo Fire, Humanity and beyond including wildlife

Fire Response: County

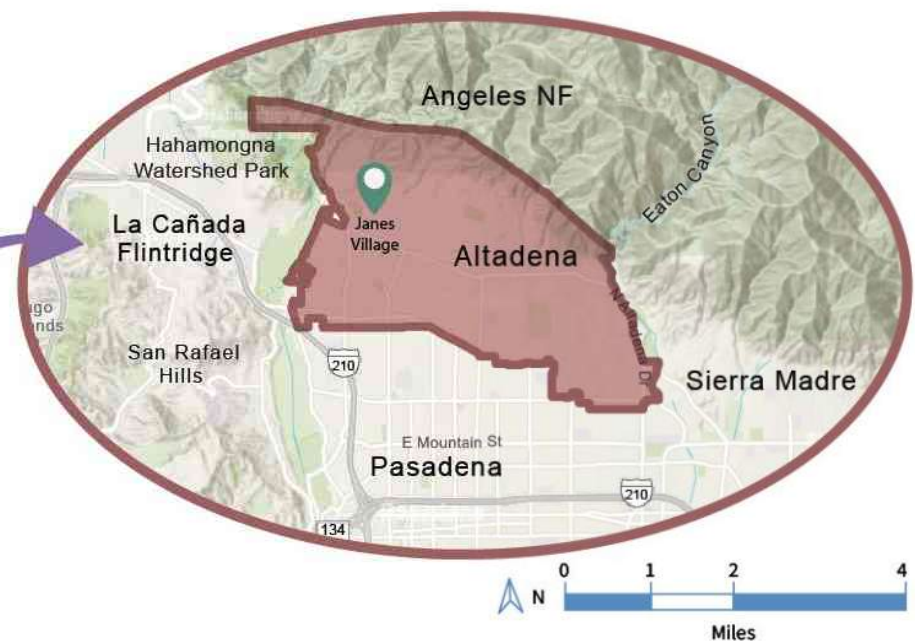
Watershed: Arroyo Seco Sub-watershed, Los Angeles River Watershed

LA County, Southern California



Source: Los Angeles County Enterprise GIS (eGIS)

Town of Altadena



Altadena

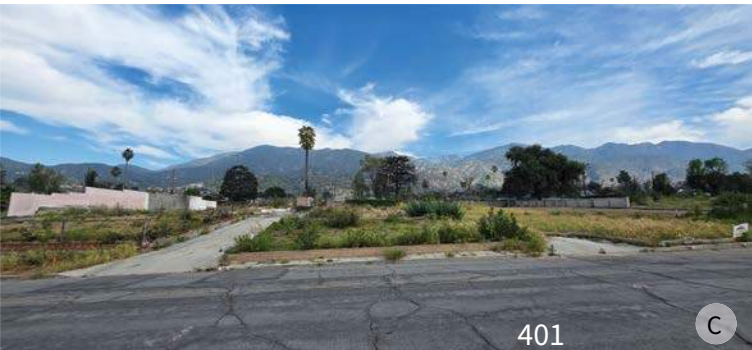
- Diverse and ***well connected community likely saved many lives in Eaton Fire.***
- Community and communication are there, ***planned infrastructure needs modification***
- Everything needs to be updated and maintained, social planning is no different.
- ***This project proposes a formula by which we can move forward, tend to each other and the land and be more resilient for it.***

<https://www.janesvillage.org/Photos/Marigold.html>



Before

After

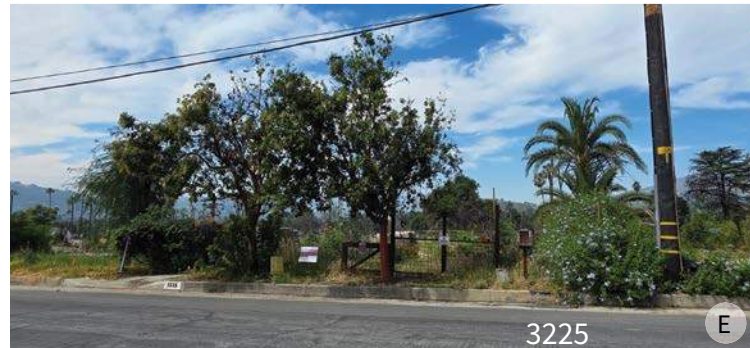


<https://www.janesville.org/Photos/Olive.html>



Before

After



Community Profiles

Residents of Janes Village + Altadena Community

- People of **all ages**.
- Some **multi-generational** in single residence.
- Restore **sense of place**.
- **Love their trees**.
- **Enjoy being outdoors**: walking, hiking, biking through the neighborhood, going to parks, gardening, participating in community events, etc.
- They are **short on resources** and need help with all aspects of rebuild including financial assistance and **infrastructure support**.
- Many need **opportunities to reconnect and collaborate**.

**Assumptions were made due to time, resources, and homeowners being dispersed.*

Wildlife

- Grossly **under-served**.
- Have been **losing habitat** at a quick pace due to **human activity** including but not limited to **development and fire** in and out of **wildlands**.
- They don't ask for much, just the natural **food they evolved with**, sometimes shelter, and safe, **connected spaces** for them to migrate, hibernate, and reproduce.



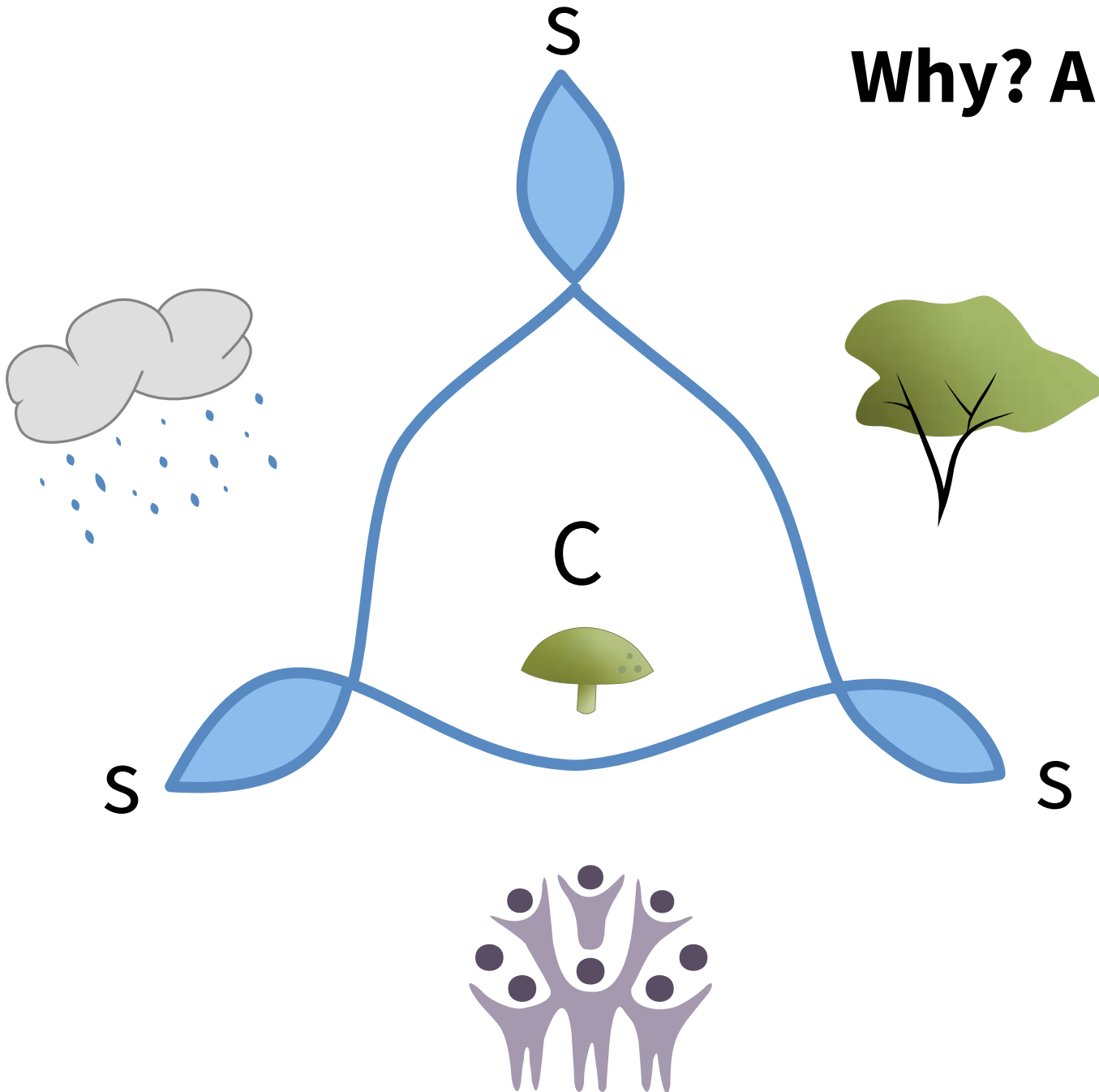
The whole is greater than the sum of its parts.

Though my site focuses on only one block within this neighborhood, through stewardship and connection the residents can make a larger impact.

- Through an integrative stormwater system rooted in regenerative, nature-based solutions, this community can **cultivate resiliency from the soil up**.
- Edible, climate adapted and native plant landscaping would aid in **fire mitigation, increasing biodiversity, and wildlife corridors**, while keeping **food production local**.
- Shared resources for firescaping and climate resilience would **support the entire block, while still honoring individuality and self care**.



Why? And How?



Turn this:

Paved over watersheds=
Water going to the ocean
rather than into ground.

Unsustainable

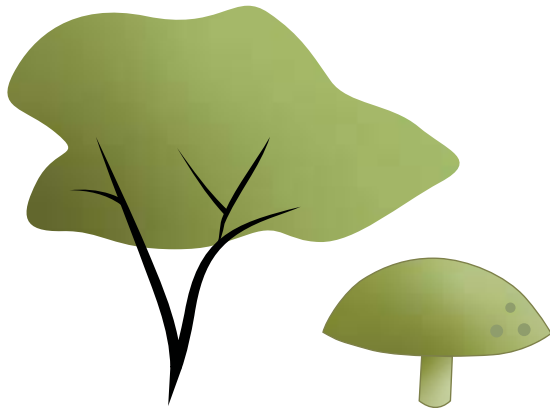
Low and/or polluted
groundwater



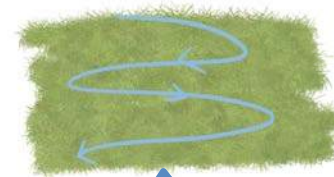
Polluted water, land and air
spreads far and wide



Into this:



Slow



Spread

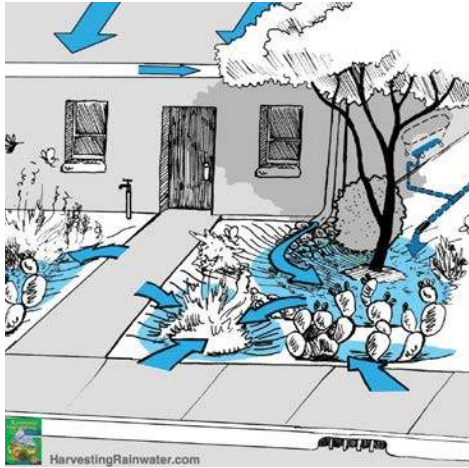


Clean



Sink





Passive Rainwater Harvesting, Brad Lancaster

Water Harvesting

- Over 27,000 gallons of water accumulates on 1 acre of land within a 1 inch rain event.
- Site potential of harvesting up to 182,000 gallons of H₂O.

U.S. Geological Survey



<https://www.waterla.org/brooks-family-home>

Economic Incentive

- “With the implementation of the 6 Water LA strategies, the Brooks family is saving up to 87,000 gallons of water and more than \$550 on their water bill every year!” -WaterLA

Metals	Health Screening Level (mg/kg)	Unscrapped area		Scrapped area	
		Amount Detected (mg/kg)	Below or Exceeds	Amount Detected (mg/kg)	Below or Exceeds
Antimony (Sb)	31	1.35	Below	0.76	Below
Arsenic (As)	12	3.08	Below	2.95	Below
Barium (Ba)	15,000	113.00	Below	71.20	Below
Beryllium (Be)	16	0.39	Below	0.95	Below
Cadmium (Cd)	7.1	0.57	Below	0.29	Below
Hexavalent Chromium (CrVI)	0.3	0.00	Below	0.00	Below
Chromium (Cr) (total)	85,000	13.20	Below	10.20	Below
Cobalt (Co)	23	3.91	Below	4.21	Below
Copper (Cu)	3,100	34.50	Below	17.20	Below
Lead (Pb)	80	41.20	Below	23.70	Below
Lithium (Li)	160	0.00	Below	0.00	Below
Molybdenum (Mo)	390	1.04	Below	0.80	Below
Nickel (Ni)	820	9.14	Below	6.30	Below
Selenium (Se)	390	1.87	Below	3.48	Below
Silver (Ag)	390	0.00	Below	0.00	Below
Thallium (Tl)	0.78	0.00	Below	0.00	Below
Vanadium (V)	390	18.00	Below	21.70	Below
Zinc (Zn)	23,000	193.00	Below	106.00	Below

Soil Report

- Water harvesting and native plants show reduced levels for all toxins.
- Example-Leigh Adams’ property (above soil report).

Rebates

- Foothill Municipal Water District (MWD) offering \$1000 Per Parcel Landscape Design RebateTurf Replacement Program (TRP).
- Exemption for homeowners within the Foothill MWD’s service area whose landscapes were damaged or destroyed in Eaton Fire.
- Must comply with all other TRP requirements.

In areas that have been hit by wildfire and/or are in the process of building, the runoff is even more polluted than normal. Managing precipitation would keep toxins from spreading to other communities. This all flows to the watersheds and ocean.

By Managing precipitation we can ensure that future generations have safe, clean water to drink and there is enough water in the soil for out plants to withstand drought.

Soil may need to be remediated due to toxic substances in building materials. Without remediation, plants that either people or wildlife eat could have harmful chemicals such as heavy metals in them. This is another area of “doing more harm than good” because without remediation, harvested rainwater will direct these toxins into the ground water where they otherwise wouldn’t have been.

Methodology: Contact Lynn Fang. MS Soilwise.earth

In[zip code] 91001, there were 1,356 soil samples analyzed. The lead concentration range, in parts per million (ppm), was as follows:

<=80ppm = 55.68% (755)

81–200ppm = 36.5% (495)

201–1000ppm = 7.74% (105)

Source: ArcGIS

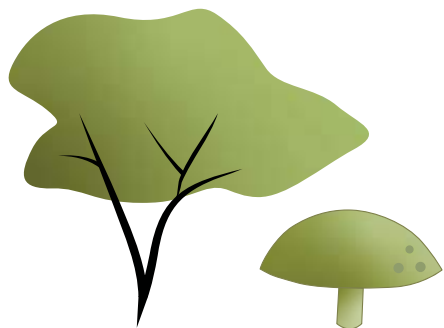
* EPA recommends remediation over 200ppm



Fragmented plant and wildlife communities. Both are healthier when they are continuous or have **corridors**

Biodiversity is key to resilience. Native plants host thousands of different invertebrate species who act as decomposers, pollinators, pest control, and food for birds and mammals, amongst other things.

HEALTHY SOIL=HEALTHY PLANTS=RESILIENT SPACES



Altadeans love their trees. It is why many people choose to live there. Many of their beloved trees were lost and they would like to:

1. Protect the trees they have left.
2. **Plant more trees.**



Wilderness Urban Interface (WUI)—Fires occur on a yearly or sometimes monthly basis in LA County WUI (Razo Santoyo 3)

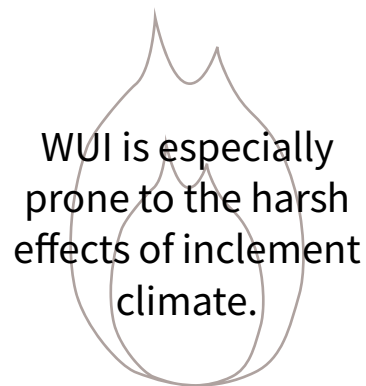
Intermix—Low density housing with no demarcation between wilderness and developed area. ≥ 1 structure/40 ac (NIST)

Interface—Defined as communities with a density of 1+ houses per .5 acre with a six foot distance and within 1 mile of wildlands (Carle, 164).

- Type 1-perimeter
- Type 2-interior
- **Janes Village** has 4.6 homes/acres, Type 2 WUI

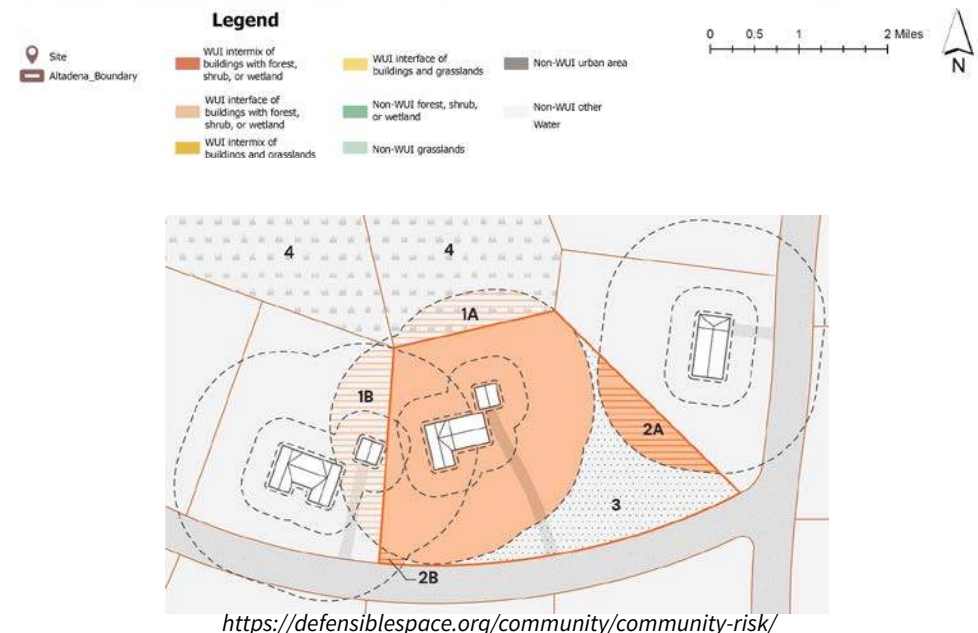
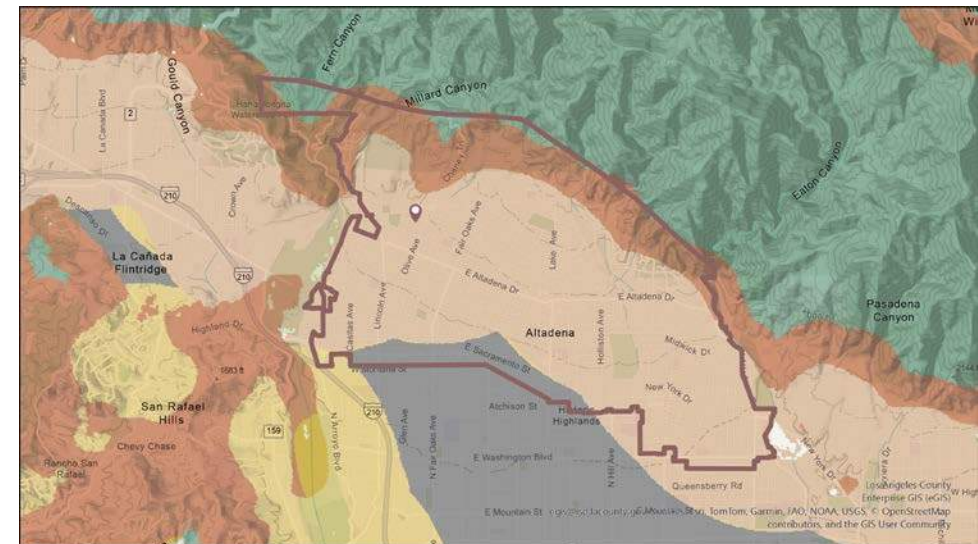
“High-density interface communities with an SSD (Safe Separation Distances) as small as 6 ft and parcel size of less than 0.5 ac.”

National Institute of Technology and Commerce



Use plant material as shields from strong wind, heat, flooding, drought, and fire.

Deferred maintenance is a recipe for disaster. Shared spaces and infrastructure allow for shared maintenance.



So called “defensible spaces” are a human construct and have the potential to do more harm than good; increase heat, decrease biodiversity, etc. These principles apply more to people in less densely populated areas. “We need to be citizen scientists!” (Stephanie Landregan, 2025)

“The definition of insanity is doing the same thing over and over again expecting different results.”

~Rita Mae Brown, Sudden Death. 1983



SPONGE CITIES

The term “sponge city” was coined by Chinese landscape architect Kongjian Yu. The idea is to design urban areas that can absorb, store, and purify rainwater, much like a sponge. This approach contrasts sharply with conventional “grey infrastructure” that relies heavily on pipes, drains, and concrete channels to manage stormwater. Instead, sponge cities utilize green infrastructure, such as parks, wetlands, green roofs, and permeable pavements, to enhance the natural water cycle within urban environments.

Adobe Stock Image

Turn neighborhoods into “Sponge Cities”. Changing climate has brought a change in weather. We are expected to get intense, atmospheric rivers (large amounts of rain all at once) or extreme drought. The idea of “sponge cities” uses green infrastructure to slow, spread, and sink rain water.

STRENGTH IN NUMBERS!

According to Razo (2015), Carle (2008), Halsey (2008), Kent (2019), Edwards and Schleiger (2023), Defensible Spaces website and CalFIRE, *having community plans are essential for living with fire.*



State Water
Resources
Control Board

State Water Resources Control Board has a Division of Financial Assistance to fund and implement **LID (Low Impact Design)** for stormwater management projects.

These projects include but are not limited to:

- Bioretention and rain gardens
- Vegetated swales, buffers strips
- Tree preservation
- Rain barrels and cisterns
- Permeable pavers
- Pollution prevention
- Good housekeeping

Altadeans have reported feeling **abandoned by the various government entities** during and after the fire. This is an opportunity to make them more self reliant and give them the tools they need to make good choices before, during, and after **wildfire**.

Community building guidelines are not working. Structures are too close together and guidelines are not site specific. What works in Huntington Beach may not work in Altadena. What works in Lake Tahoe may not work in Altadena.

There is no “one size fits all” solution



The most abundant signs in Altadena are the ones stating that Altadena is **NOT FOR SALE!** This is a very close community.

Tucson, AZ

Location: 9th Ave and University Blvd

Size: Neighborhood parkways and roundabouts

Opened: 1996

Designed by: Brad Lancaster



Features

- **Plants serve multiple purposes:** Large native shade trees cool surrounding climate, offer food and protection to wildlife. Plants help filter water and roots direct it into the ground. Plant selections have agricultural and medicinal properties. (Lancaster, 145).
- Utilizes public right of way for infiltration. Harvest, filter, re-use and enhance the rain that falls on the sites (Lancaster, 145)
- Generates community-based economies: **Mesquite harvesting and flour milling. Can make \$25/hr.**
- 1996-2022 **plantings dropped temperatures up to 10 degrees F** (Lancaster, 148).
- Increases community engagement through **community maintenance and mulching days.**
- Average size basin: **8L' x 5' W x 1' D.** Infiltrates over **4,500 gal of water per basin.**
- Leaf drop, organic debris from street, trimmings, all contribute to the effectiveness of the basin by adding to its "sponge-like" characteristics.
- **Basins create a physical barrier that make people safer** by increasing the space between the car space and pedestrian zones.



<https://dunbarspringneighborhoodforesters.org/2022/09/before-and-after-photos-of-green-infrastructure-in-dunbar-spring-neighborhood/>



Takeaway:

The Dunbar/Springs Neighborhood is an innovative example of serving different needs using one system. By "planting the rain," Brad Lancaster created spaces that cleans and infiltrates precipitation as well as build and financially helps community.

Precedents

7700 Block of Elmer Ave. Sun Valley, LA County, CA

Size: 4 acres (Streets and residential lots along city block)

Designed by: Stivers and Associates

Constructed: 2010

Partners: Council for Watershed Health

Elmer Ave Precedent



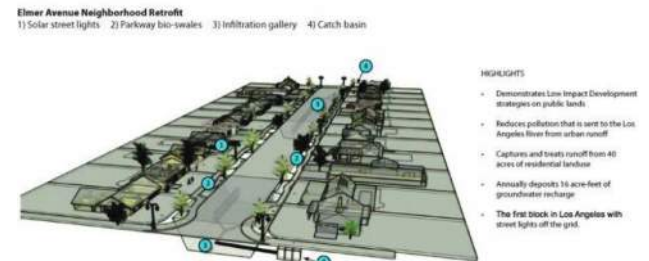
FEATURES

- Captures and treats stormwater runoff from a 40 acre area.
- No Sidewalks, just like Janes Village
- Was subject to frequent flooding
- Vegetated bioswales and subsurface infiltration allows up to 16 acre-feet of water to recharge aquifer annually.
- Nature Based Solutions, rain barrels, trench drains, and permeable pavers on residential (private) property improve performance and aesthetics.
- Serves as demonstration project (over arching project goal)

Elmer Ave (Neighborhood Retrofit Project)

Lessons Learned:

- Design of stormwater management systems should be site specific.
- Like in Dunbar-Springs, debris and trash from street accumulate in bioswales and **needs to be maintained**.
- MORE MODELS ARE CRITICAL for critique and improvement.



Takeaways:

- Because rain events, geology, and climate are different across the county, state, country, and world, it is important to use precedents that are more closely related to a site.

Upon visiting it is apparent that maintenance was forgone on most properties. This shows how important it is to have a neighborhood wide maintenance plan, like the **Dunbar Springs Forrester's**

ALL IMAGES: <https://www.landscapeperformance.org/case-study-briefs/elmer-avenue-neighborhood-retrofit#>

Davis, CA

Size: 70 acres including 23 acres of vineyards, orchards and green space, 225 homes and 20 apartment unit

Development started in 1975 and continued through the 1980s.

Designed by: Judy and Michael Corbett

FEATURES

- Designed to encourage a sense of community and the conservation of energy and natural resources.
- Design features for energy efficiency: Active-solar panels. Passive-Deciduous trees.
- Orientation-streets trend east-west, lots oriented north-south. Helps with passive solar energy
- Pedestrian/bike paths and common areas-extensive system of pedestrian/bike paths which run through common areas with features for multiple users. Most houses face common areas rather than streets.
- Natural drainage-creek beds, swales and pond areas harvest rain water for infiltration.
- Edible landscaping-large part of landscape devoted to fruit and nut trees and vineyards.
- Open land-Has two big parks, pedestrian/bike greenbelts, two vineyards, and two common gardening areas aside from the common areas between homes
- Inspired by gas shortages in 1970s.
- Yearly fee goes to maintenance



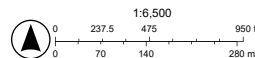
Takeaway

- Methodology similar to John T Lyle's work in regenerative and sustainable developments, as well as human ecosystems.
- Similar to Garrett Eckbo's ideas of **shared community spaces** with much of that space in the **back of properties**.
- Service multiple needs with their energy efficiency, stormwater management, native plant habitat and edible landscaping.
- Older community that shows that there can be collaboration when it comes to **precipitation management, climate resiliency, and community**.



4/27/2026

Janes Village Site
Village homes outline



Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Vector



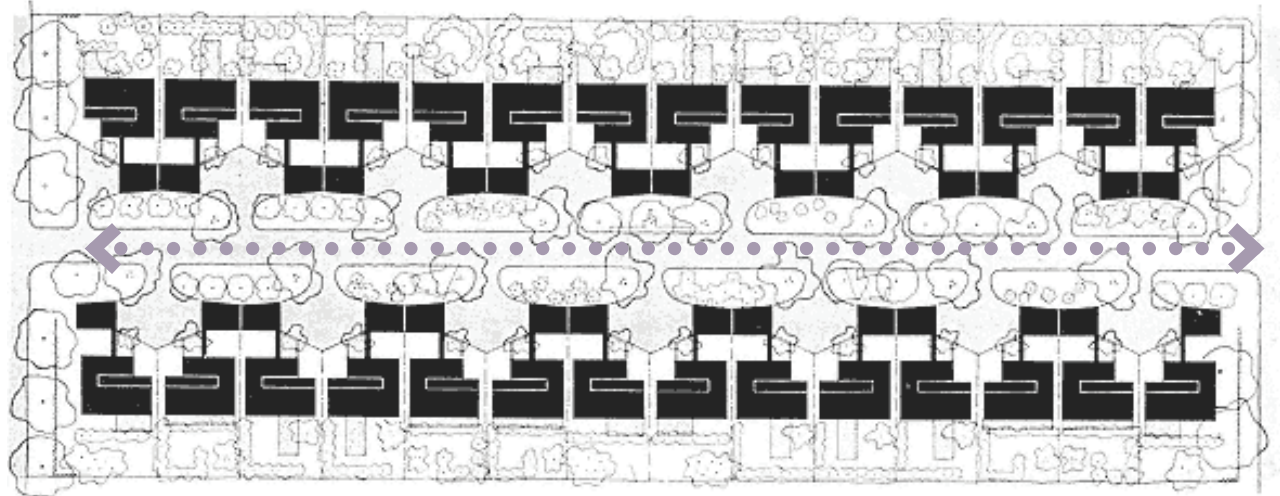
<https://villagehomes.hoospace.com/cgi-bin/filemanager.pl?filename=resources.html&mck=2453ab9b965d5ff22c9e7ee3503e49e6a64967e8>

Altadena, CA

Size: 6.37 acres. 28 single residence home landscapes.

Designed by: Gregory Ain, Garrett Eckbo

Completed: 1948



<https://publishing.cdlib.org/ucpressebooks/view?docId=ft6g50073x&chunk.id=d0e3302&toc.depth=1&toc.id=d0e3302&brand=ucpress>



Vehicular circulation

FEATURES

- Modernist, *community park feel*.
- Interior courtyards, no front fences,
- Alternating structure placement with adjoining driveways
- Continuous landscaping
- Intention was to develop space where people felt connected to each other.
- Was supposed to be 60 homes but only 28 were realized.
- 21/28 homes destroyed in Eaton Fire 2025

Synthesis and Analysis

Park Planned Homes was a successful attempt at creating a community park feel within high density housing. While it differs from Janes Village in scope and layout, they both have historical and personal ties to the communities who reside there.

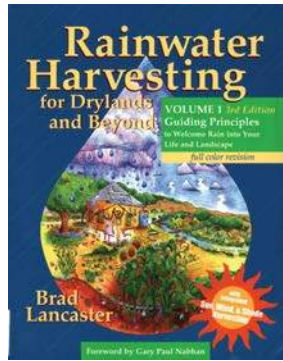
Since correlation does not infer causation, it is hard to say whether the layout helped to protect the seven homes that were not destroyed in the Eaton Fire. However, architects do believe that the footprint and general placement should be preserved in rebuilding even if other things need to be redesigned. (Kate Wolf, *Learning From Park Planned Homes*)



Photographic sources: <https://lareviewofbooks.org/article/learning-from-park-planned-homes/>

Before any other groundwork is layed, **PLANT THE RAIN**

- Build earth formations in order to CS^3.
- Basins 18" deep max, 1:3 side slopes
- Earthen berms to direct or contain water flow.



Rainwater Harvesting for Drylands and Beyond. Vol 1 and 2, Brad Lancaster. Rain Source Press, 2022

Passive Rainwater Harvesting

- Use Nature Based Design principles such as rain gardens and shallow swales in order to slow, spread, and sink rain water.
- Native plants help filter the water while also adding erosion control and sustenance for humans and wildlife alike.
- *Passive Water Harvesting Case Study; Dunbar/Spring Neighborhood Native Food Forest.* Tucson, Arizona, USA. Average annual precipitation 11 inches.

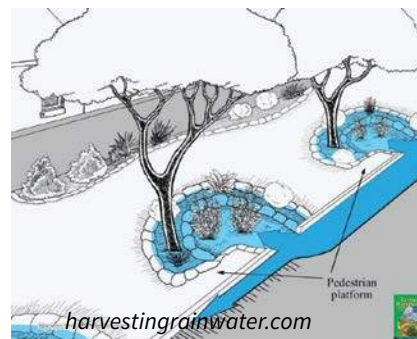
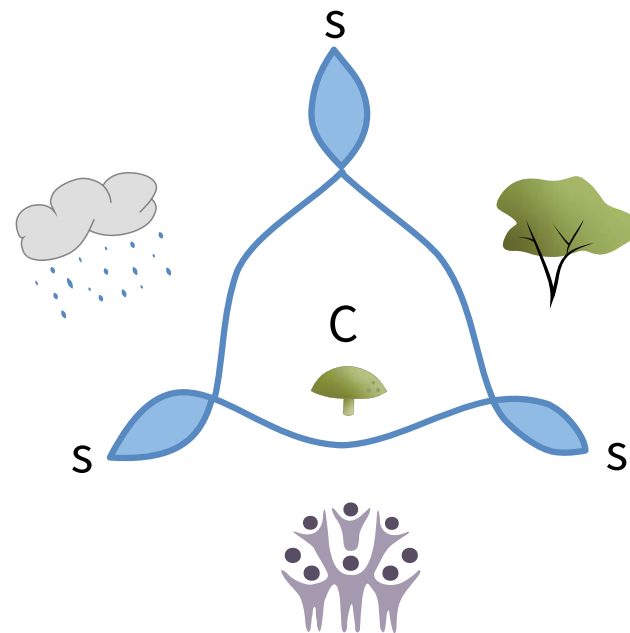
Active rainwater harvesting

- Collecting water for storage in (typically) above ground units such as cisterns, barrels, drywells.

NATURE
BASED SOLUTIONS



Urbanite permeable driveway



Rebates

- Foothill Municipal Water District (MWD) offering \$1000 Per Parcel Landscape Design RebateTurf Replacement Program (TRP).
- Exemption for homeowners within the Foothill MWD's service area whose landscapes were damaged or destroyed in Eaton Fire.
- Must comply with all other TRP requirements.

Soil health monitoring, consulting and education

Lynn Fang. MS Soilwise.earth

Mimic Nature

1. Plant the Rain
2. Succession plant-Plant native plants such as wildflowers to loosen soil, promote biodiversity early on, and get ready for infiltration.

Plant Local

1. Resources: calscape.org and calflora.org for information on what naturally grows around site.
2. Support local biodiversity
3. Attract predatory insects to keep plants healthy.

Plants for people

1. Variety of cultivated edible plants in appropriate hydrozones will help nourish neighborhood while keeping carbon footprint low.
2. Regenerative food production through permaculture (interplanting of native plants) and on site composting.
3. Culturally significant plants.



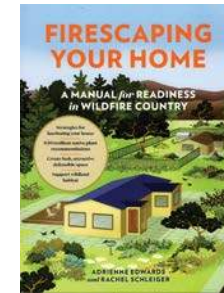
https://www.laspilitas.com/classes/fire_burn_times.html

Las Pilitas Leaf Burn Times

1. Geared towards more rural areas and intermix, can still be applied to WUI and other areas of concern.
 - Live ignition (seconds)
 - Dead leaf ignition (seconds)
 - Notes
2. Zone Zero-18" + $\geq 60s$
 - 15-30 seconds~house flammability



Hugel Berm



Firescaping you Home: a Manual for Readiness in Wildfire Country

Adrienne Edwards, Rachel Schleiger (2023)

1. Trees and shrubs as wind breaks
 - **Wind speeds reduced on upwind side of windbreak by 2-5x the height**
 - **Wind speeds reduced on downwind side by up to 30 times height of plants.**
2. 640 resilient native plant recommendations.
3. Create lush, attractive defensible space
4. Support wildlife habitat

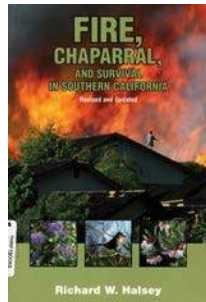
Including **Indigenous Voices** to connect to clients. This can help them make more informed decisions about living with fire and local Native Plants.

- AltLand Forum-Samantha Morales Johnson (Gabrieleno San Gabriel Band of Mission Indians) expressed a desire to teach more about the indigenous plants but lacks the funding and site.
- Best plant choices for lifestyle and desires.
- Community setup more holistic.
- Best way to maintain; **maintenance through use**



Introduction to Fire in California: Second Edition, David Carle 2021

1. A fire safe power grid
2. Communication
3. Resilient landscaping



Fire, Chaparral, and Survival in Southern California, Richard W. Halsey 2008

1. Fire Adaptation pg 18
2. Developing fire surviving strategies page 21-22
3. Chap 6 Learning from Fires
4. Fire management strategies 110-111
5. Chapter 7 The Next Hundred Years pg 127-134
6. Chap 8 essential 64 plants and animals
7. More local and most up to date written form
8. Author has online resource *The Chaparral Institute*

FIRE PREVENTION IN LOS ANGELES COUNTY: A SURVEY OF THE METHODS AND STRATEGIES USED IN THE WILDLAND-URBAN INTERFACE

A Thesis

Presented to the

Faculty of

California State Polytechnic University, Pomona

In Partial Fulfillment

Of the Requirements for the Degree

Master

of

Landscape Architecture

By

Laura Razo Santoyo

2015

1. Significant to the field (Justification) pg 13
2. Fire in the WUI pg 21
3. Fire Prevention pg 24
4. Discussions and Conclusions pg 465
5. Recommendations pg 487-494
6. Appendix E: Findings Information pg 521
7. Table 25 Altadena :General Information pg 88
8. Table 29 Altadena: Observations pg 93
9. UCCE Perceptions about property owners and industry professionals PG 144

Conclusion: Inter and Intra-agency communication severely lacking. What happened in Altadena was a matter of "WHEN" not "IF"!

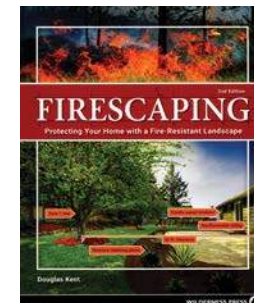


<https://defensiblespace.org/>

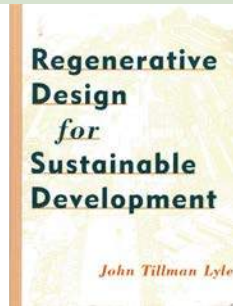
Resource Conservation District of the Santa Monica Mountains (RCDSMM)

1. Up to date resource for WUI fire mitigation, specifically Southern California.
2. "Eco-appropriate Homescaping for Wildfire Resilience"
3. Considerations like house, landscape, plants, location, and community.

Firescaping: Protecting your Home with a Fire Resistant Landscape, Douglas Kent (2018)

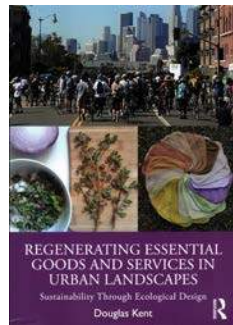


1. Maintaining a defensible space
2. Access for emergency personnel. 4'+
3. Water storage safety
4. Materials



Regenerative Design for Sustainable Development John Tillman Lyle 1996

1. Use natural processes to capture water.
2. Energy savings and reduction on overburdened utilities using active/passive solarization.



Regenerative Essential Goods and Services in Urban Landscape Douglas Kent 2024

1. Passive and active energy production given site context.
 - Vegetation design for heating/cooling
 - Thermal mass: digging down, building up
 - Biogas (Biodigester)-best for neighborhood blocks or residential areas.
 - Photovoltaic (solar)
2. Cost benefit analysis.



Design for Human Ecosystems: Landscape, Land Use, and Natural Resources John Tillman Lyle 1985

1. Multi disciplinary approach including community members.
2. Global Landscape Imperative
3. "Preserving adequate samples of all natural communities.
4. Design for species preservation and diversity
5. Making the dispersed energy and water processing capabilities of the landscape more available for human use
6. Using productive capabilities of the landscape to good advantage
7. Establishing sustainable ecosystems for arid zones."

- Clients and stakeholder interviews
- Local Indigenous communities.
- Partners/non profit organizations
- Volunteers
- Altadena Seed Bank
- Community workshops



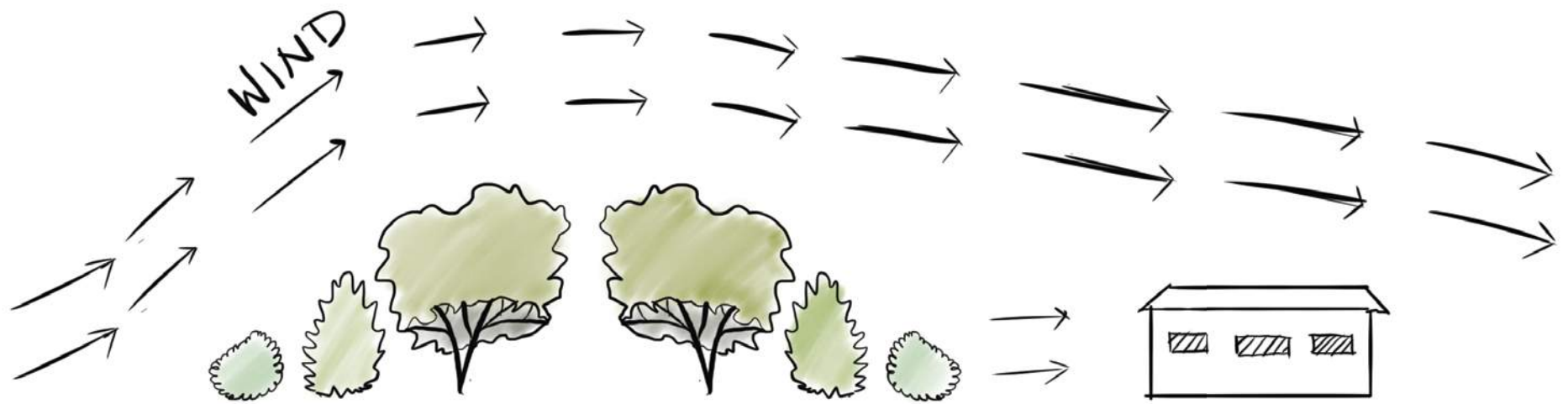
Association of Stewards

1. Loosely follows the model of the typical Homeowners Association (HOA)
2. Funds set up for liability and maintenance.
3. Encourage continuous collaboration and communication.
4. Everybody has a job be it organization, maintenance, food processing, fire defense, etc.



"Our mission is to ensure that fire-impacted communities in Los Angeles lead their own recovery — on their terms — with the support, resources, and expertise they need to thrive.

We believe recovery is more than rebuilding structures; it's about restoring community strength, building resilience, and creating opportunity."



Deeper Dive



shutterstock.com · 2389231839

Alluvial Plain

- Flat or gently sloping land form created by the deposition of sediment from rivers or wind and water flow from higher elevations.
- Wide in shape.
- Covered with chaparral, flooded in the winter, dry and hot in the summer.



Southern Oak Woodland

- Dominated by *Quercus engelmannii* (Englemann Oak) and *Quercus agrifolia* (Coast Live Oak). Both evergreen and fire adapted.
- Trees and associated shrubs intermix with Coastal Sage Scrub and Chaparral.
- Sandy loam soil
- Santa Ana Winds

(The Southern Oak Woodland, Las Pilitas Nursery)



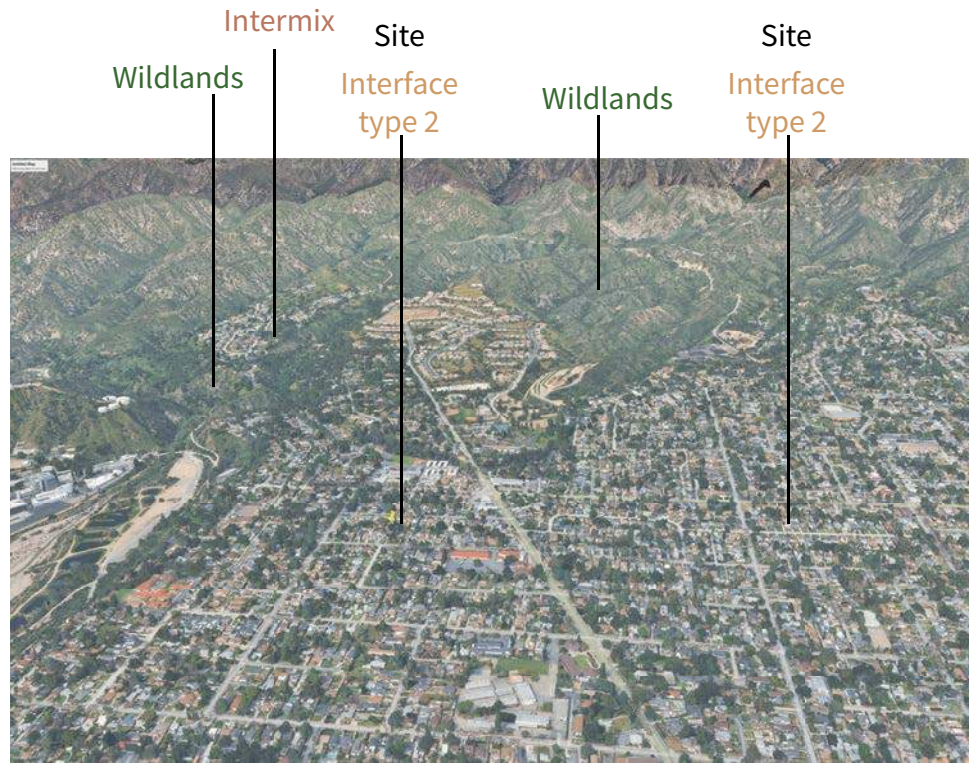
Chaparral

- Most abundant plant ecosystem in CA, approx. 7 million acres (Carle, 42)
- Characterized by scrubby, woody vegetation, often evergreen. (Carle, 43)
- Often found on slopes.
- Transition to woodlands.

Chaparral and Fire Ecology

Fire is important part of California ecosystems and resiliency. Fire would maintain the landscape, and many Native Plants resprout from a fire or need heat or smoke to germinate. Arrival of man increased fires, getting worse with the arrival of Europeans and has compounded since. (Halsey, 2008)

WUI

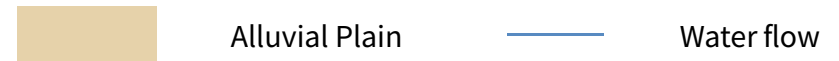
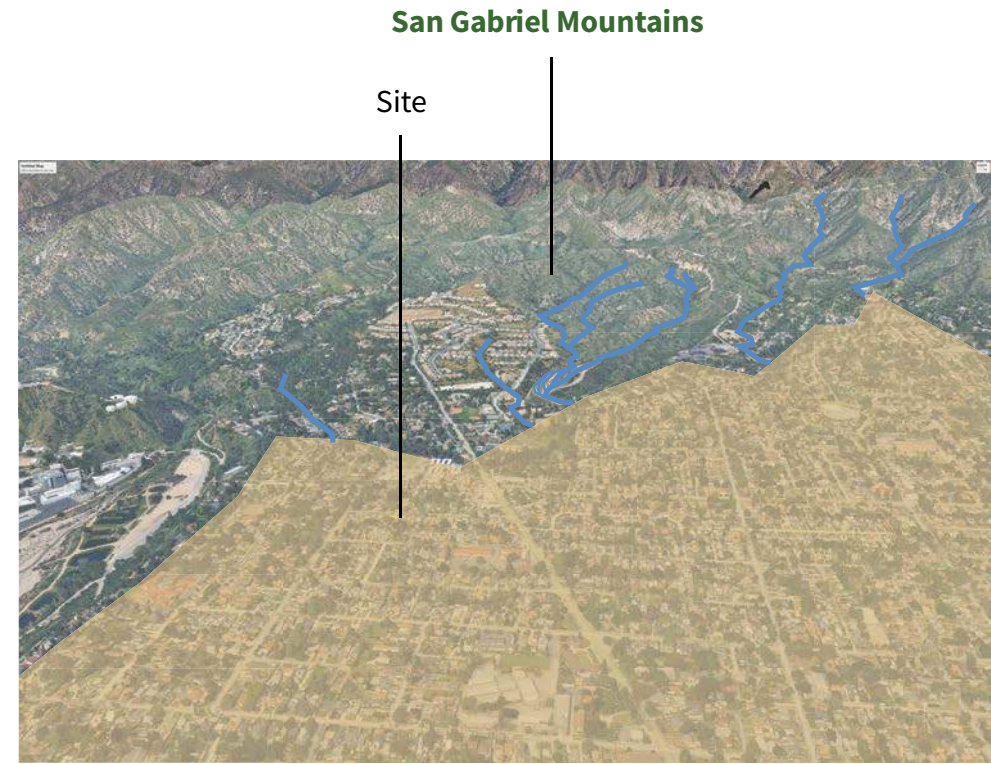


Google Earth Pro

Proximity of site to **Wildlands** (San Gabriel Mts/ Angeles National Forest) and position within types of WUI (See *Justification*).

High density housing: a lot of paved surfaces.

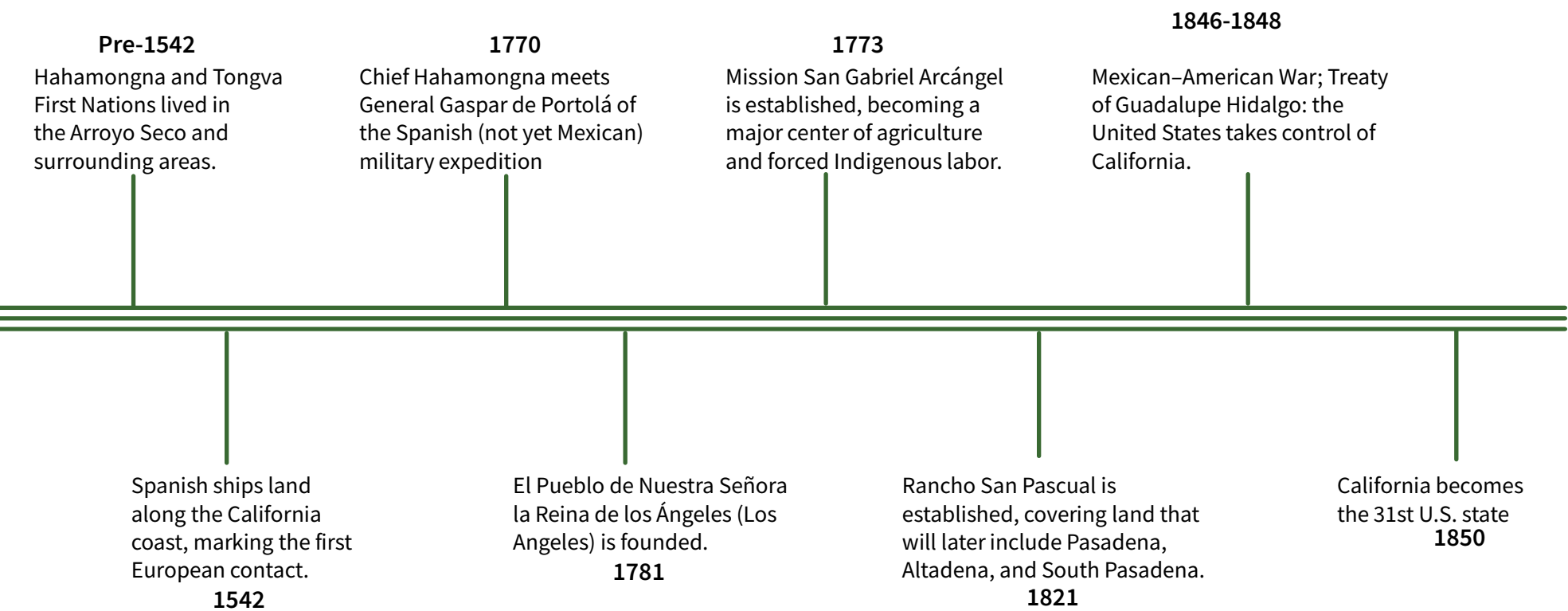
WATER FLOW

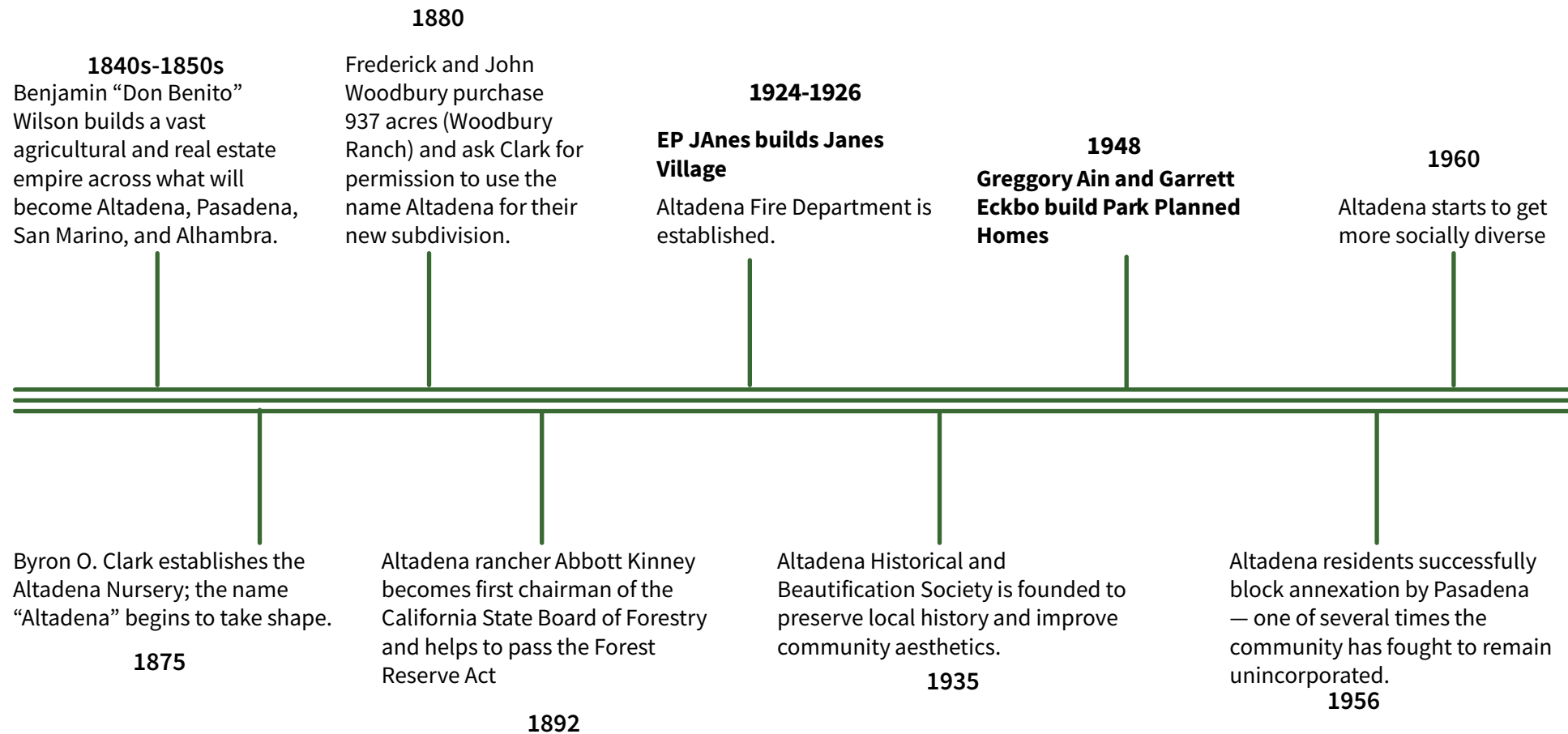


Runoff from the **San Gabriel Mountains** reaches the flatter and more populated areas carrying water, silt, and other debris. Flooding can be an issue in Alluvial plains.

Water management and sponge-like soils critical.

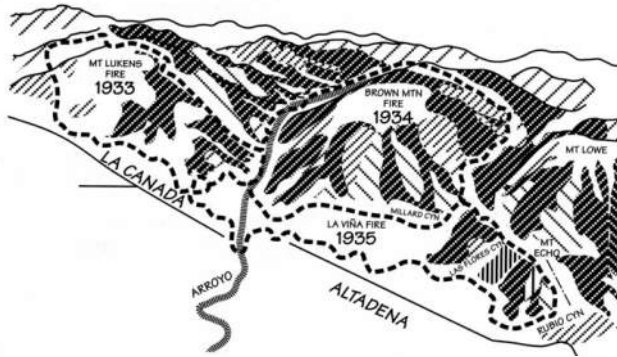
Soil: Sandy loam



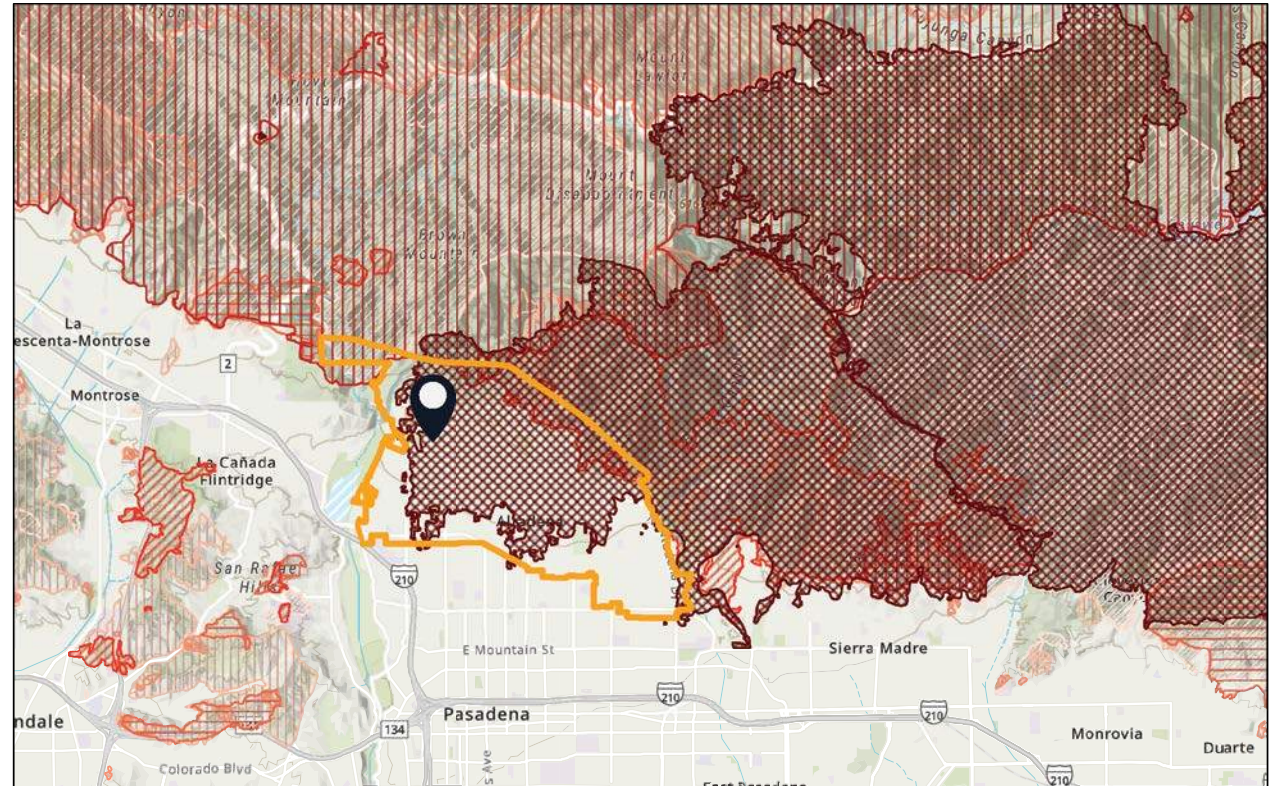


Fire Areas 1950-2025

Fire Areas 1933-1935



<https://altadenaheritage.org/a-short-history-of-fire-and-fire-protection-in-altadena/>



5/11/2026



Site

Altadena_Boundary

California Fire Perimeters (1950+)

1950 - 1959	1970 - 1979	2000 - 2009
1960 - 1969	1980 - 1989	2010 - 2019
	1990 - 1999	2020 - January 2025



1:124,586

0 0.75 1.5 3 mi

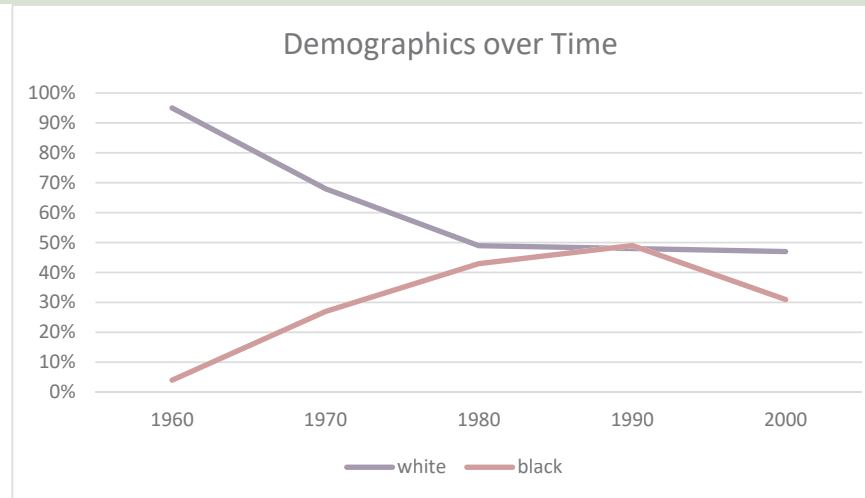
0 1.25 2.5 5 km

Los Angeles County
Enterprise GIS (eGIS)

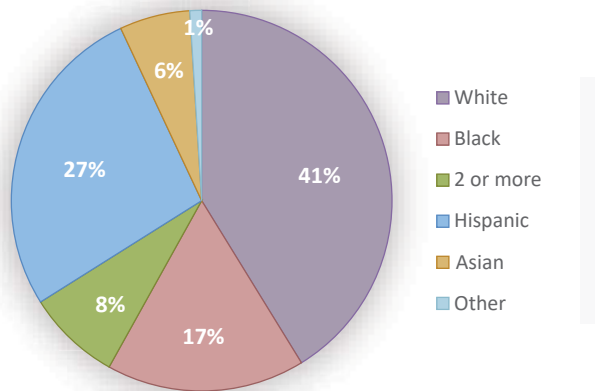
Altadena was built in an area that experiences frequent fires. The surrounding **Wildlands** have overlapping historical **fires**.

Very High Fire Hazard Severity-Access is essential.
Maintenance essential.

Starting in the 1960s, Altadena started to see an increase in minority representation. This was largely due to veterans using their benefits to buy modest homes as well as the civil rights movements and integration. The predominantly white, affluent residents also moved out because smog was piling up against the foothills.

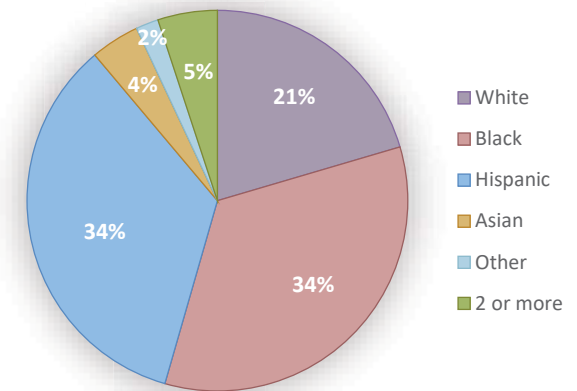


Altadena Demographics

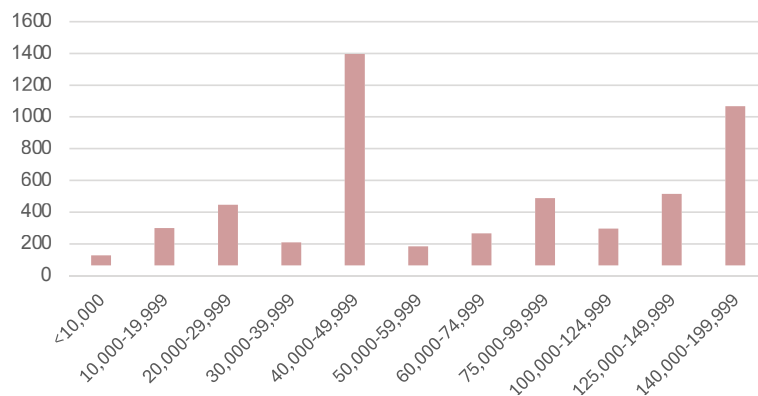


Present-day Altadena is a mixed ethnicity community. This quality is part of its charm, and one thing they are at risk of losing with rebuild costs and insurance.

Janes Village Demographics



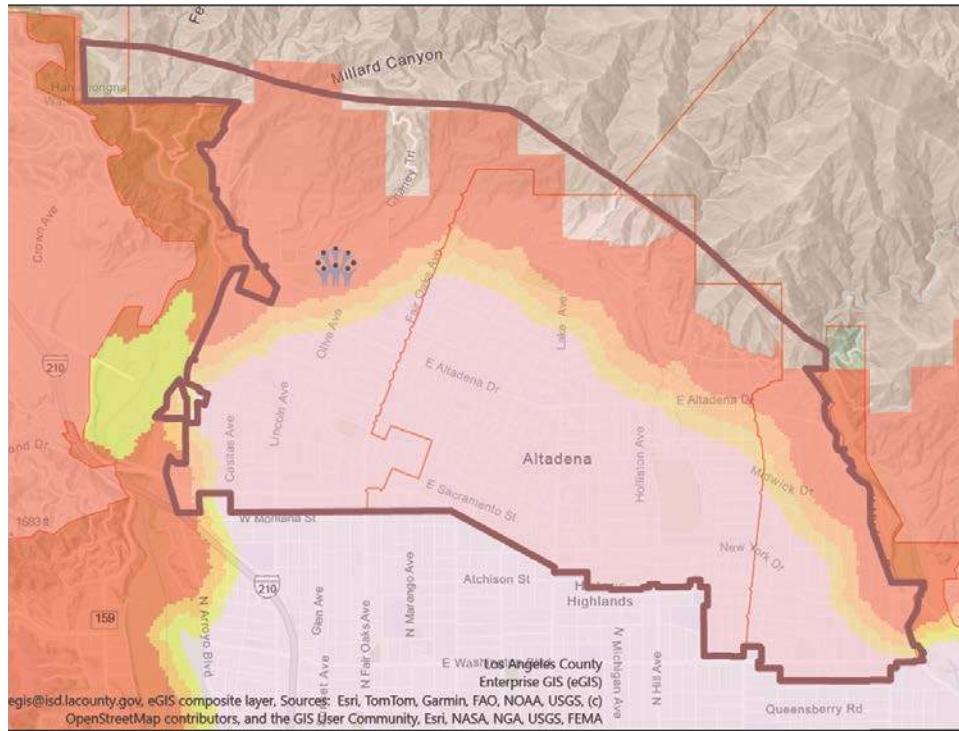
Median household income 2024



Janes Village is largely a family or middle aged community with mainly middle income households. This is important in what the community will want and the feasibility.

Source: <https://www.city-data.com/neighborhood/Janes-Village-Altadena-CA.html>





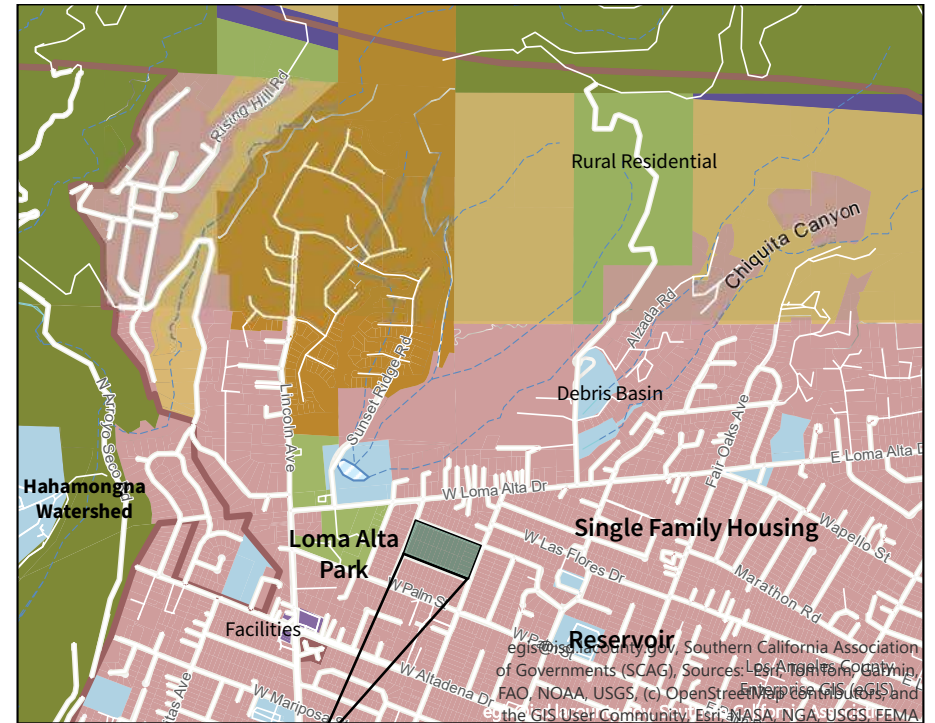
Legend

- Site
- Altadena_Boundary
- LACoFD Fire Station
- Boundaries (Feature layer)
- Fire Hazard Severity Zones
- Very High
- High
- Moderate
- Non-Wildland

0 0.3 0.6 1.2 1.8 2.4 Miles



- Very High Fire Hazard Severity Zone-responsibility on local fire department (LACo)
- < 1 Mile from wildlands= **WUI**
- Mostly single family residential housing R1
- 1 nearby park , Loma Alta Park
- Very few houses remain in the vicinity



- Janes village site area
- Altadena_Boundary
- Commercial and Services
- Facilities
- Single Family Residential
- Mixed Residential
- Rural Residential
- Specific Plan
- Transportation, Communications, and Utilities
- Open Space and Recreation
- Open Space and Recreation

SITE

0 0.25 0.5 1 Miles



Existing Conditions

Aerial Image Before Fire



Source: Apple Maps



Site Boundary



- Homes appear to be in good shape.
- Well Irrigated outdoor spaces.
- A lot of lawn.

Aerial Image After Fire



Source: ArcGIS



Site Boundary



- Nothing left standing besides a few trees.
- Debris mainly around where structures once stood.
- Driveways and front access still visible.



Largest uses-Lawn, gardens.

Useful information for concept development-*program themes, sense of place*



- OVER = OVERHANG

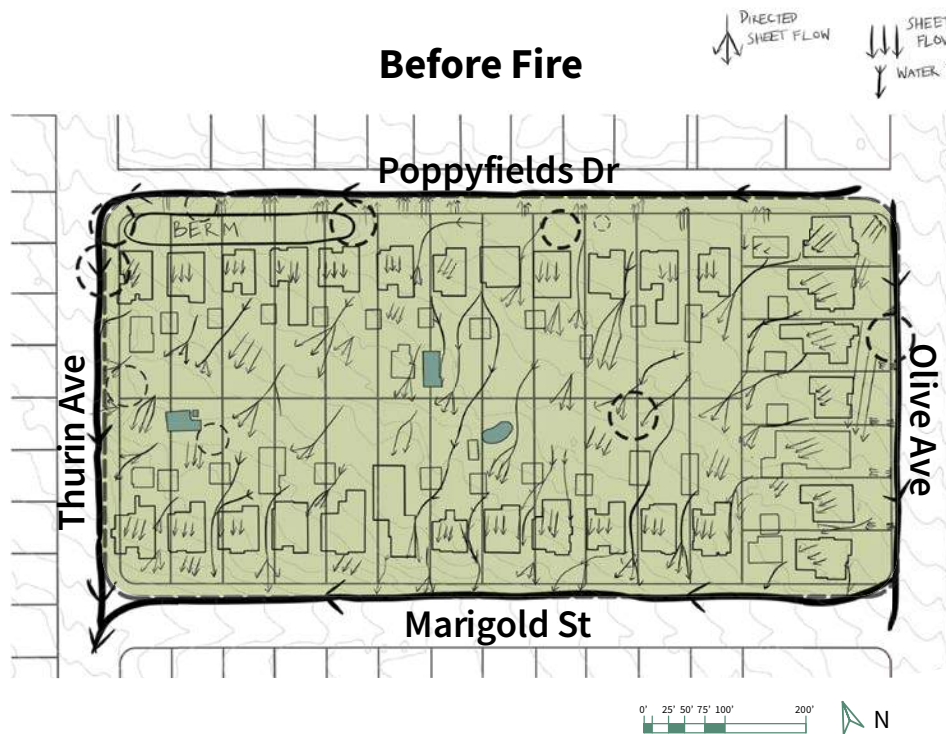
 - LAWN
 - PATIO/PAT
- SD = SHED
 - WF = WATER FEATURE
 - CP = CARPORT
- T/TR = TREE
 - SH = SHRUB
- VG = VEG. GARD.
 - GAR/GARD = GARDEN

Status Quo

- New development **mandates water harvesting on site with overflow to street.**
- No Passing runoff from one property to another.
- **Infiltration**-10' clearance from structures, 3' from hardscape.
- Being debated: **limited plantings within 5' of structures, sparse plantings within 30'**

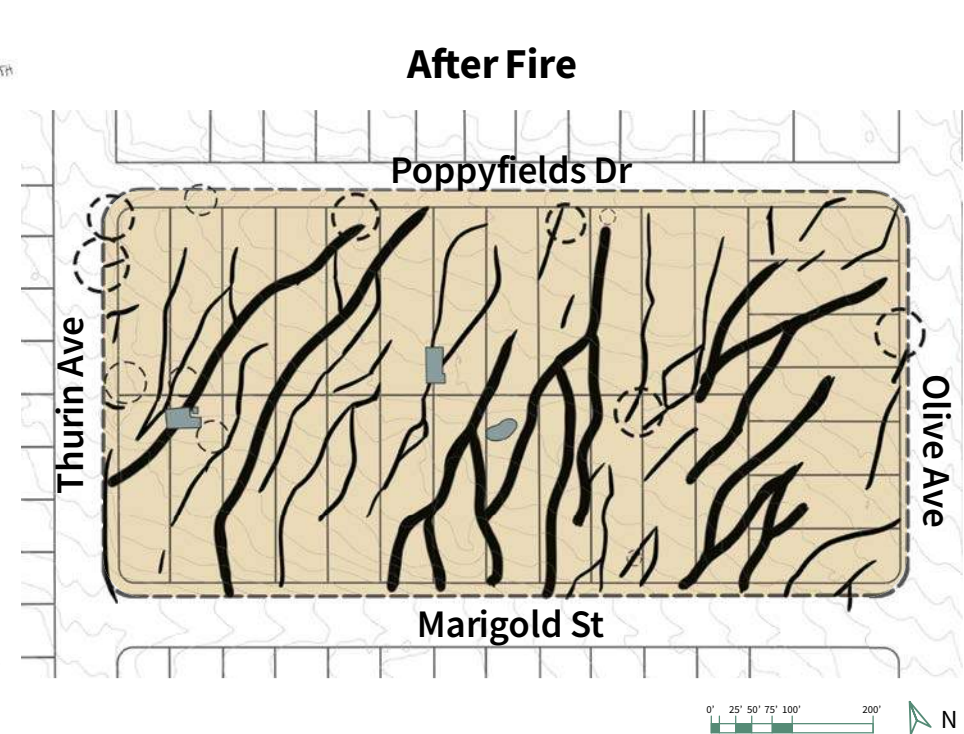


Erosion, lack of CS^3 on Marigold St



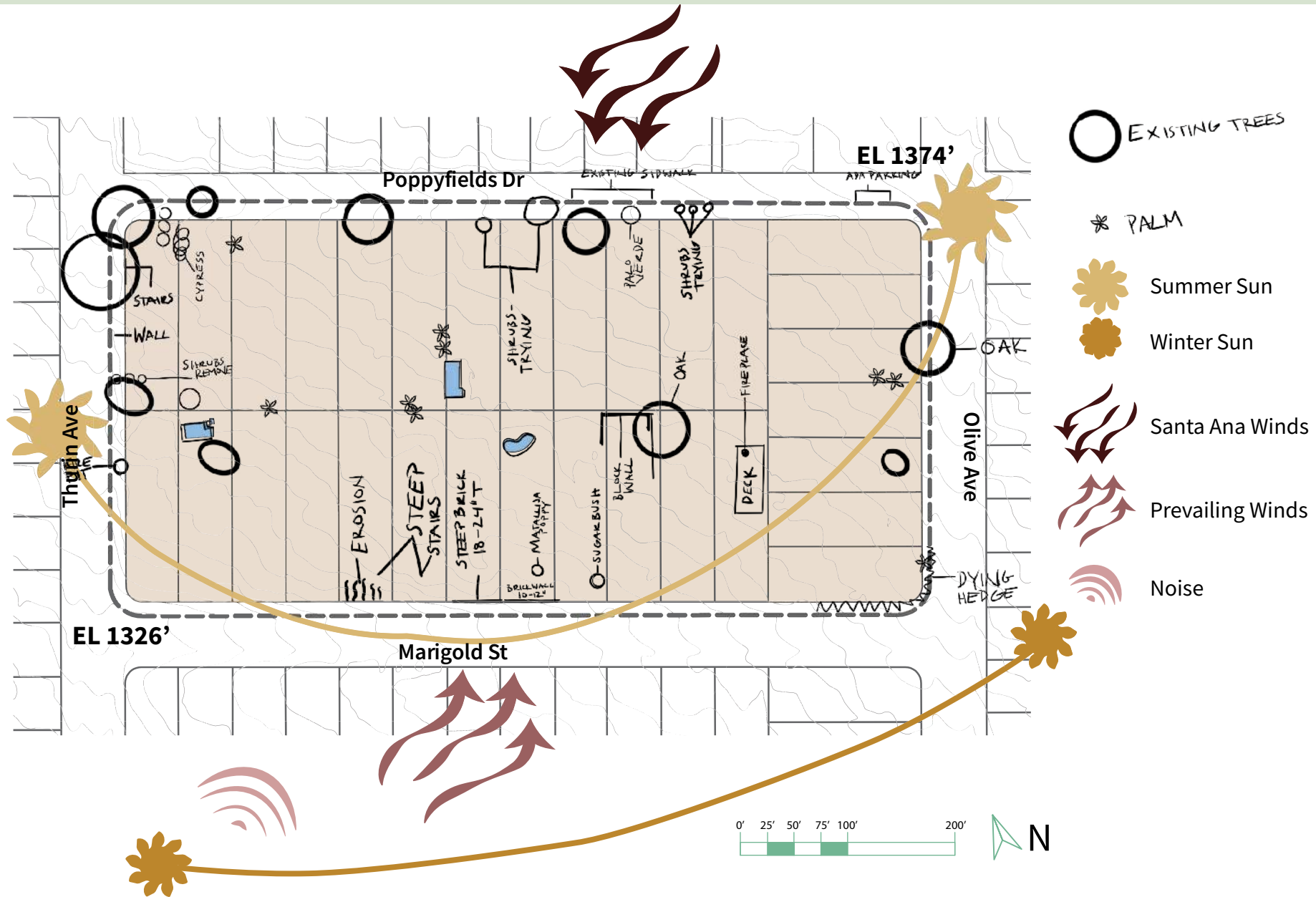
Runoff

- Flows northeast to southwest.
- **Lawns, tree canopy, buildings**, etc helped to **slow and diffuse rainfall** even without infiltration.
- **Little to no infiltration, no water harvesting.**



Runoff

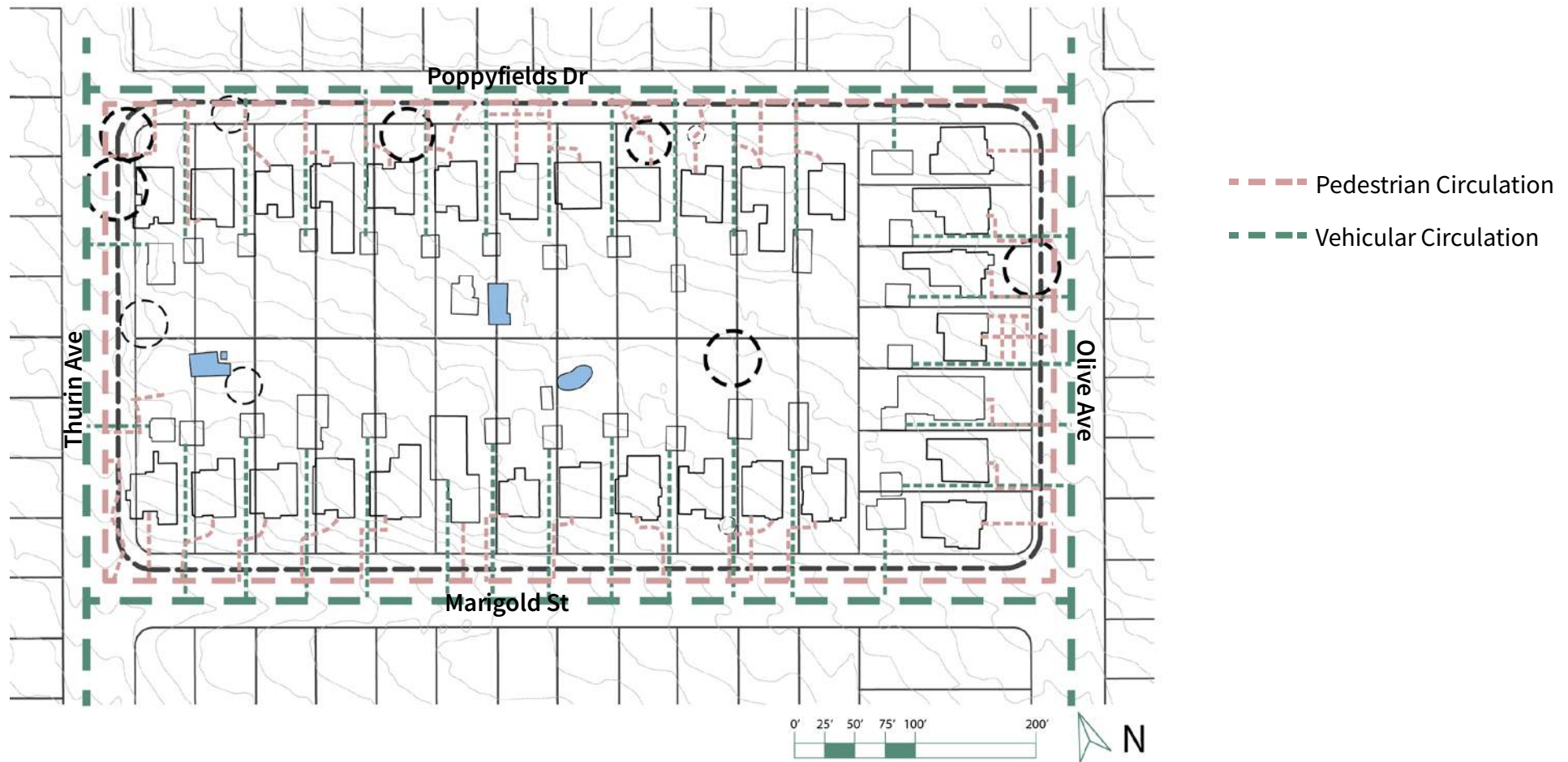
- Flows northeast to southwest.
- **Flows over site** rather than into the ground due to lack of rainwater harvesting, and appropriate plant material.
- Nothing except a **few trees and couple of shrubs to slow the rainfall.**



- No continuous sidewalks for pedestrian circulation.
- Long, narrow lots
- 3 existing pools can be used for **fire defense**.

- **Not many surviving trees**
- Low growing weeds and lack of nitrogen fixers indicates **poor soil**.
- **20 inches rain/year**

- Soil: **Sandy loam. Perfect for infiltration.**
- Sugar Bush, Matallija Poppy and Laurel Sumac-Few **Native plants present**.

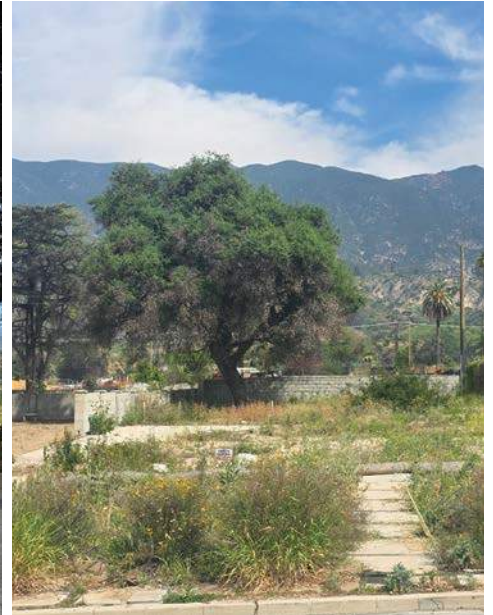


- Very little pedestrian circulation around site.
- Lack of sidewalks common in residential areas around Altadena
- According to some residents, this is because of **liability** and **not wanting the county to tell them what to do**.

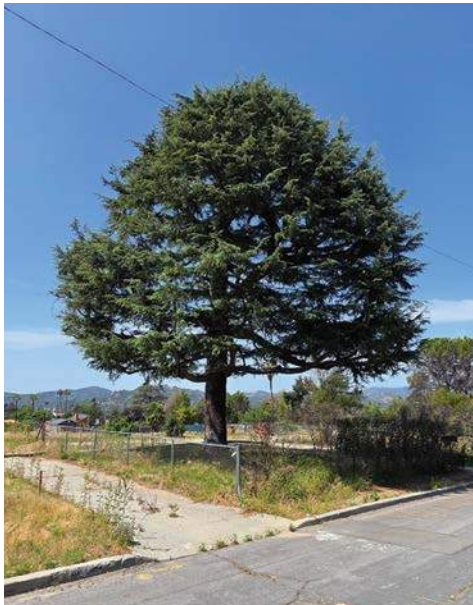
Chinese Elms



Coast Live Oak



Deodar Cedar



Mexican Fan Palms



Juglans sp.



Red Willow



Coast Live Oak



Holly Leaf Cherry



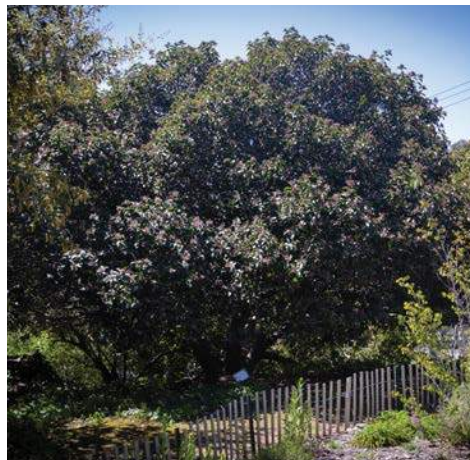
Greenbark Ceanothus



California Bay Laurel



Sugarbush



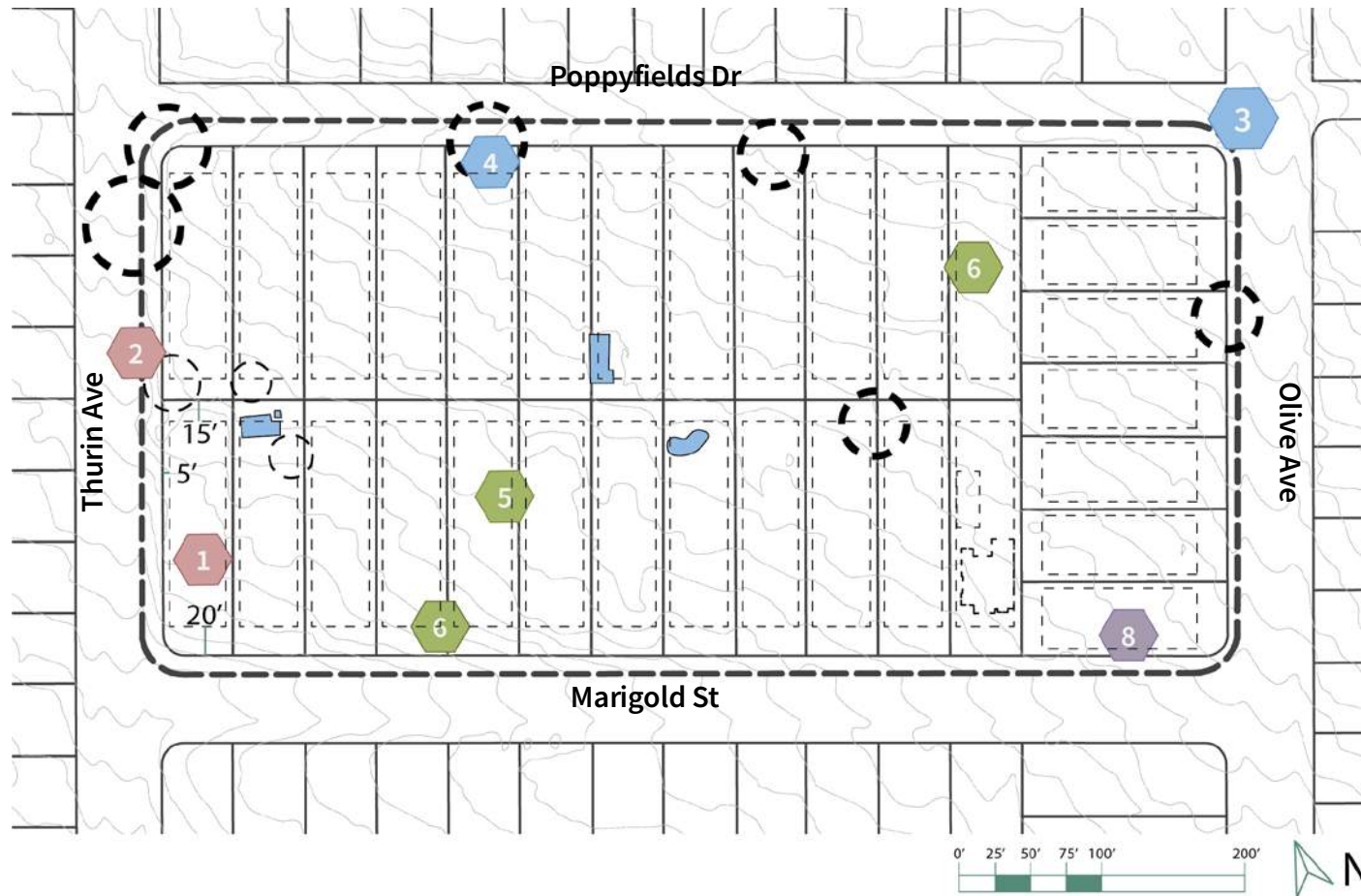
California Black Walnut



Valley Oak



[https://calscape.org/plant/2002/Juglans-californica-\(Southern-California-Black-Walnut\)/gallery](https://calscape.org/plant/2002/Juglans-californica-(Southern-California-Black-Walnut)/gallery)
[https://calscape.org/plant/3150/Quercus-lobata-\(Valley-Oak\)/gallery?gallery_page=1&per_page=60](https://calscape.org/plant/3150/Quercus-lobata-(Valley-Oak)/gallery?gallery_page=1&per_page=60)



Legend

- Rethink Status Quo
- Water
- Soil + Landscape
- Community

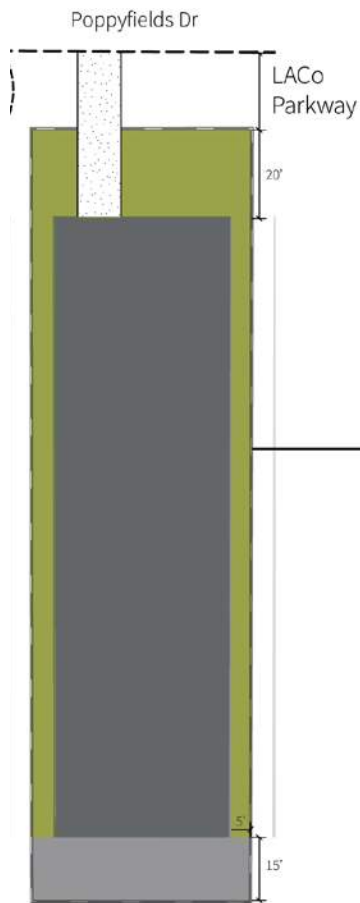
 Existing vegetation

 Buildable Area

SW Site Wide

- | | | |
|--|--|---|
| <p>1 Status quo on single family residences-Setbacks, property lines, structure placement SW</p> <p>2 No access for emergency personnel. SW</p> <p>3 Existing conditions do not allow water to infiltrate.</p> | <p>4 Existing trees limit stormwater harvesting near street.</p> <p>5 Defensible spaces-no clear definition, conflicting opinions on how to execute. SW</p> <p>6 Lack of flora and fauna biodiversity SW</p> | <p>7 Disconnected spaces SW</p> <p>8 Dependent on energy and food production SW</p> |
|--|--|---|

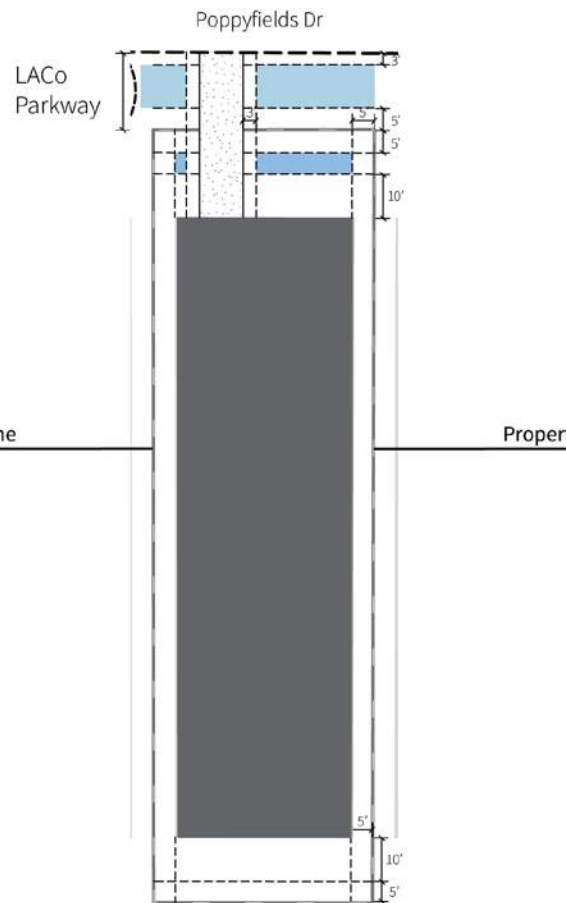
Building setbacks



- Driveway
- Buildable area 5810 sq ft
- Planting area approx 1782 sq ft
- Impervious surfaces 7128 sq ft

- Large building footprint
- Very little planting area

Infiltration opportunities

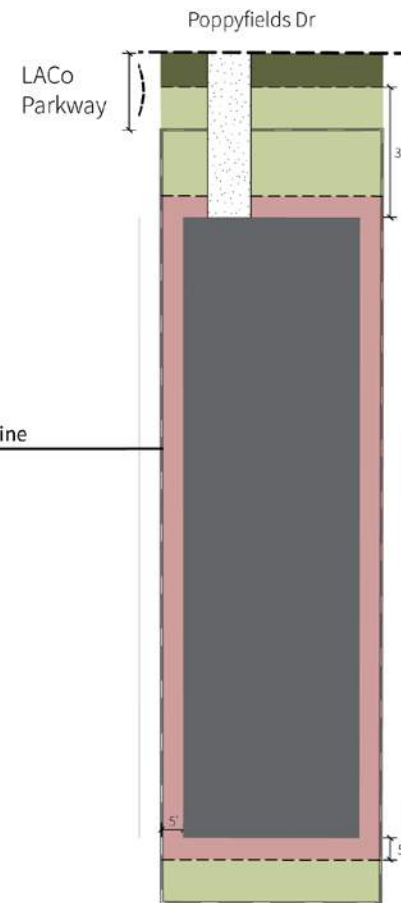


- Driveway
- Buildable area 5810 sq ft
- LA County Parkway 1931 G
- Infiltration 685.5 G

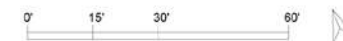
No infiltration within:

- 5' of property lines
- 10' from structure foundation
- 3' from hardscape
- No passing water from one property to another

Defensible spaces



- Driveway
- Buildable area 5810 sq ft
- Zone 0
- Zone 1
- Zone 2

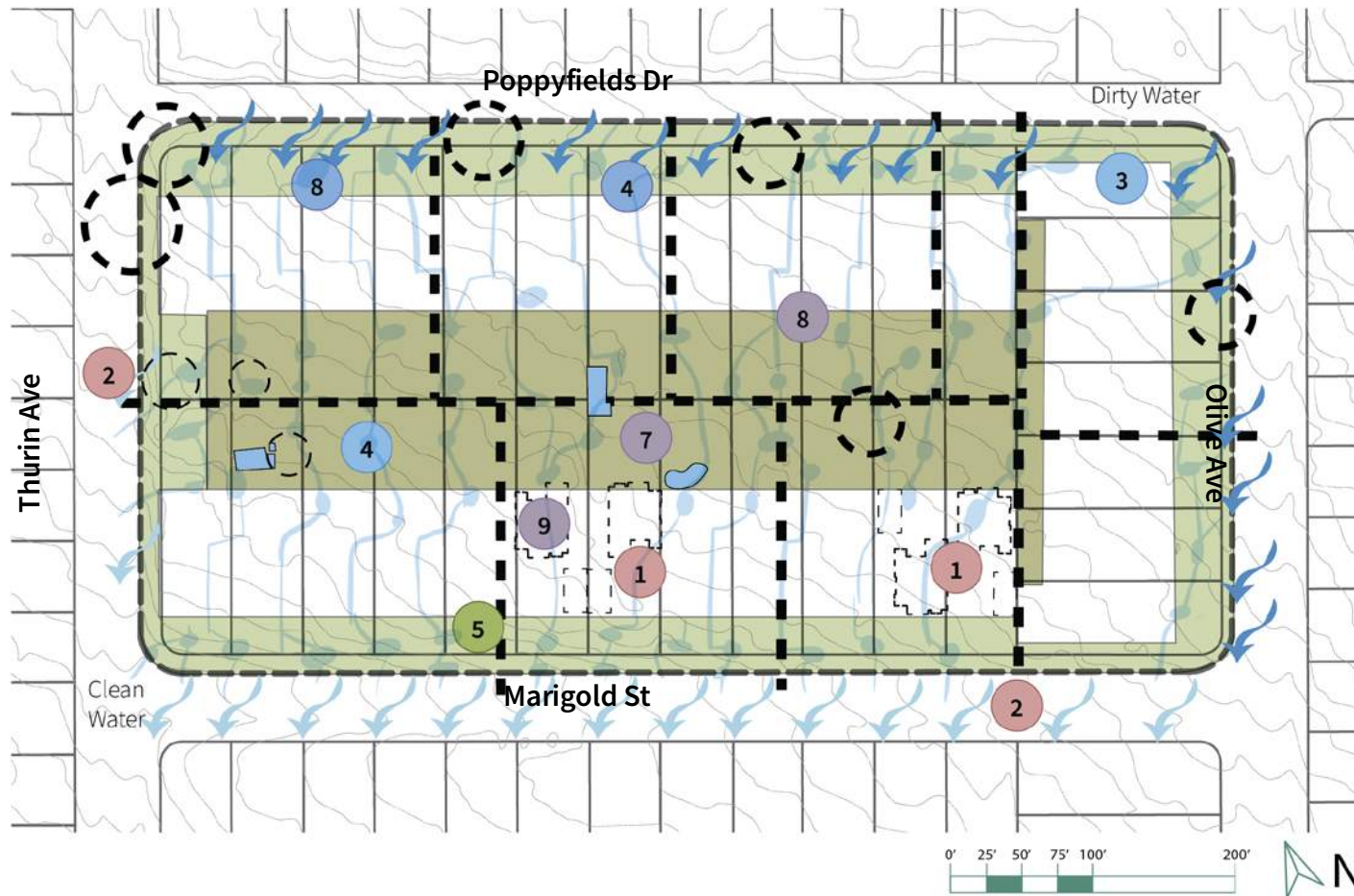


Zone Zero (5' from structures)

- No plants under eaves or within 1 ft of building.
- Herbaceous plants $\leq 18''$ tall.
- Keep maintained and healthy.
- No combustible materials.
- No wooden fences or structures.

Zone 1 (30' from structures)

- Lean and green
- No ladder fuels
- Trees limbed up
- Space between trees and large shrubs-15'-2x diameter of plant



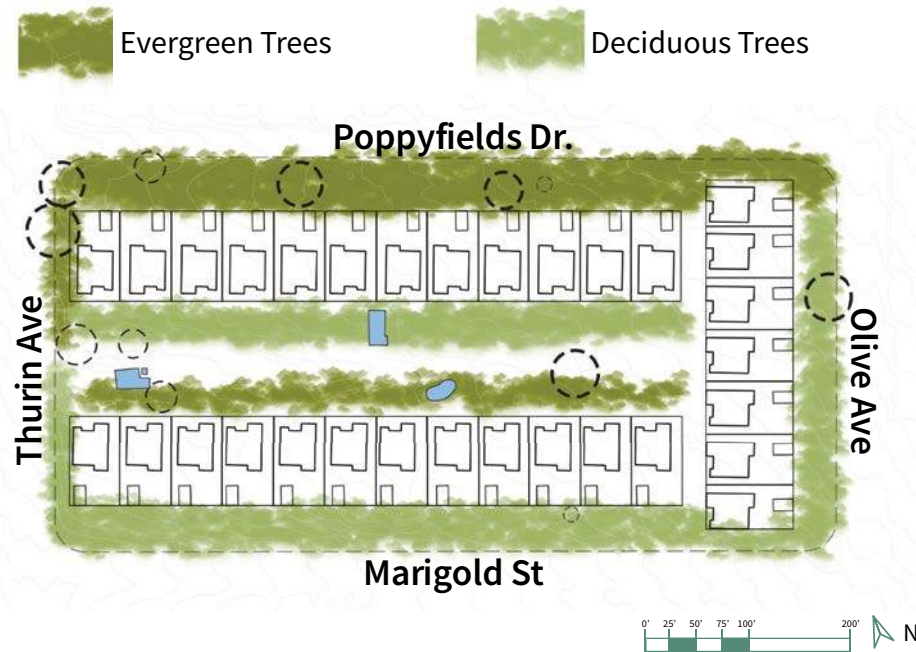
Legend

- Rethink Status Quo
- Water
- Soil + Landscape
- Community
- Collect water from gutter
- Clean water to gutter
- Existing vegetation
- Emergency Access
- SW** Site Wide

- | | | |
|---|--|--|
| <p>1 Rethink status quo setbacks, shared poroperty lines, structure size and placement. SW</p> <p>2 4' + wide emergency pedestrian circulation (<i>Method: Doug Kent</i>)</p> <p>3 Natural slope-Build LID water harvesting systems for 100+% infiltration with community involvement SW</p> | <p>4 Sandy loam soil perfect for water infiltration and a majority of native plants. SW</p> <p>5 Local native plants to increase soil health and biodiversity of flora and fauna SW</p> <p>6 Edible plants for food sovereignty (cultivate) SW</p> | <p>7 Shared pools for pre-fire irrigation.</p> <p>8 Shared property lines are opportunity for creating community park feel around the perimeter of the site and residential park in between SW</p> <p>9 Human and garden waste opportunity for biodeigesters, structures for solar energy (<i>method: John Lyle</i>) SW</p> |
|---|--|--|

Analysis

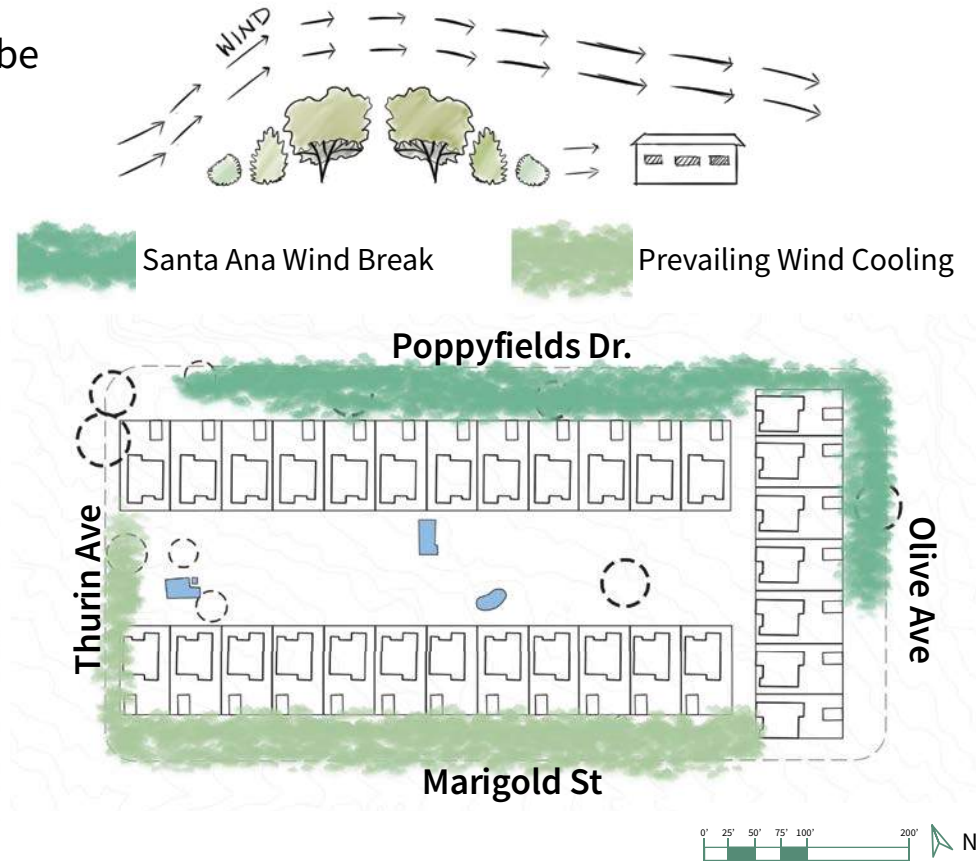
Despite “defensible space” protocol, vegetation can be a ***shield that defends us***



Trees for Passive Heating/Cooling

- Deciduous trees allow for ***passive solar heating*** during winter and ***passive cooling*** during summer on south and west sides of site. (Lancaster)
- Evergreen trees on North and West sides of site allow for year round street ***heat mitigation***.
- ***Pro-decrease energy usage*** during all seasons.
- ***Con-*** Could get in the way of utility poles. Trees are more expensive to maintain.

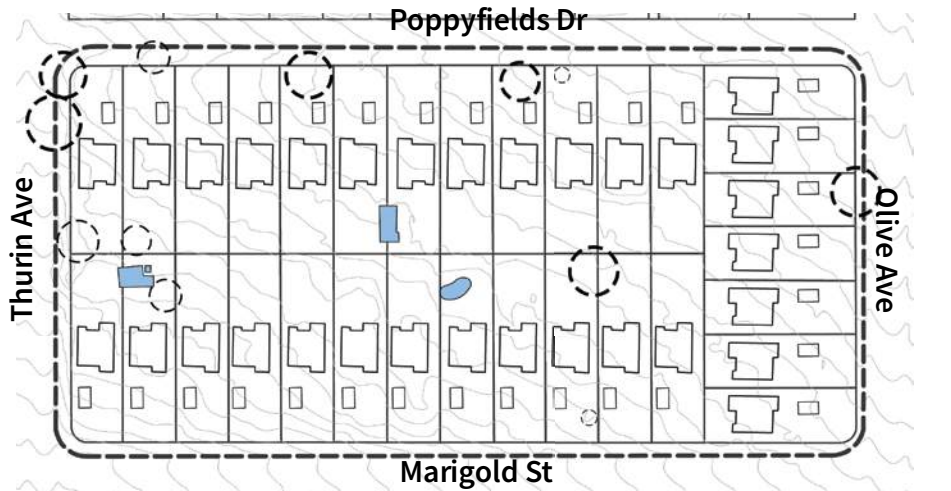
Opportunities: Vegetation for resilience



Vegetation for Climate

- Embers can carry on the wind from any direction. These wind breaks will ***diffuse harsh winds*** and aim to keep fire brands from spreading. (Edwards and Schleiger)
- Trees and shrubs act as ***wind breaks*** from Santa Ana Winds.
- Trees and shrubs direct ***cooling prevailing winds*** towards structure for ***passive cooling***.
- ***Evapotranspiration (ETo) from vegetation cools climate***
- ***Pro-***protect structures from drying out from wind and embers reaching structures.
- ***Con-***May get push-back from insurance companies.

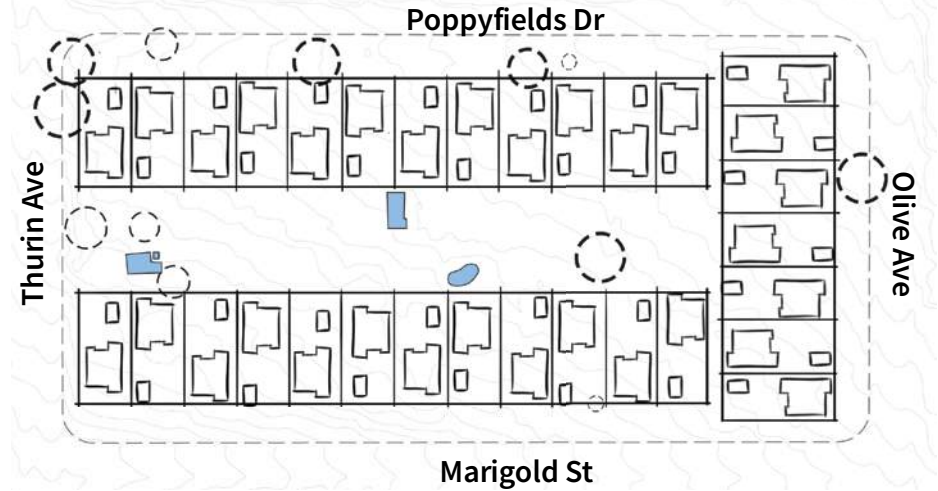
Analysis



Status quo placement

- Move garages to front to decrease hardscape.
- **Wind tunnel effect**

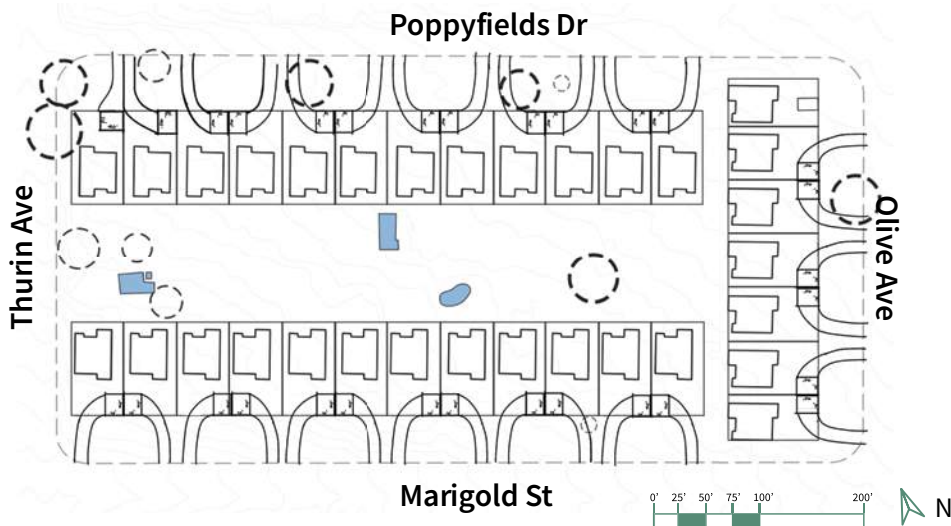
Homes/building Layout



Staggered homes

- Can **increase space** between larger structures.
- **wind tunnel effect**
- Allows for more **site specific** placement.

Park Planned Homes



- Connected garages with curved driveways.
- Allows for **more vegetation and shared spaces**.
- Compensation for awkward sites.
- Having garages on street side means **less hardscape**.

Recommendations:

- Space houses 15 ft apart.
- Shared driveways increases water harvesting potential
- Any 2 story or multi-level homes should not be placed next to each other.
 - ◊ In order to minimize Venturi Effect (wind tunnel), structures over 10 ft (before roof) should be placed 60 feet apart.
 - ◊ 1-2 single story homes between multi-level homes.

(Razo, 2026)

The Elisha



[https://calscape.org/plant/2002/Juglans-californica-\(Southern-California-Black-Walnut\)/gallery](https://calscape.org/plant/2002/Juglans-californica-(Southern-California-Black-Walnut)/gallery)

Features

- **The Foothill Catalogue (many styles/sizes)**
- Based on E.B. Janes's designs
- 28'-5"W x 55'-0"L
- 1,370 SF
- 3 Beds/2 baths
- Optional attached garage
- Pre-approved by county



<https://library.csun.edu/sca/peek-stacks/stonehurst>

Quonset Homes



<https://buildgreennh.com/quonset-hut-homes/>

Features

- **Multiple suppliers**
- Many size options
- Least expensive
- Made from metal-can be fire resilient
- Aerodynamic
- Best for passive thermal insulation.
- Customizable

Features

- **For use where materials are found on site or close by**
- Well insulated-passive heating/cooling
- Made from stone-fire resilient
- Can be costly

Amoora II



<https://joylinehomes.com/amoora-ii/>

Features

- **Joy Line Homes (many styles)**
- 2 beds/2 baths
- 1200 SF
- Constructed in environmentally controlled facilities

- **No Exposed Wood**
- **Lower pitch roof-more fire-wise choice**
- **Double-triple paned windows**
- **Class A roofs**

Programming

Designing resilient and regenerative spaces with the needs and desires of the community in mind.

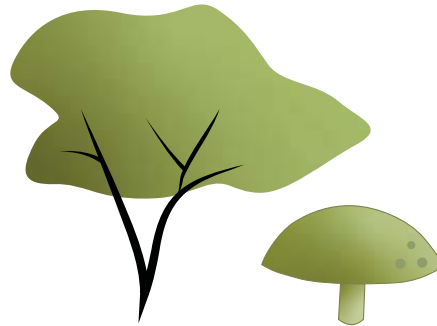
Water

- **Plant the Rain**-Rain gardens, bioswales, infiltration basins. max 3:1 slope (*method: Brad Lancaster*) Max 18" deep (LACo)
- **Water harvesting + Native plants**-increase healthy soil and water filtration capabilities while limiting the need for extra irrigation. (*Method: Brad Lancaster*)
 - ◊ Optional-Grey water from bathroom sink, shower, laundry for irrigation of select plants
- **Limited impervious surfaces.**
- Optional Cisterns (1000 gal +)-fire sprinklers, irrigation. Minimum 5040 cubic feet storage capacity



Soil + Landscape

- **Encourage healthy soil.**-On site composting to create sponge-like soil.
 - ◊ **Hugel berms**-sponge-like soil, directing water flow, and use felled trees on site. Size: soil from **Plant the Rain**. Max 3:1 slope.
- **Native and climate appropriate plants nourish humans and wildlife.**
 - ◊ **On site agriculture** limits carbon footprint and increases food sovereignty
- Vegetation optimized for water efficiency and to direct cooling winds.
- Vegetation to protect against heat, wind and fire.
- Plant material able to repel or withstand fire.
- Culturally significant plants.



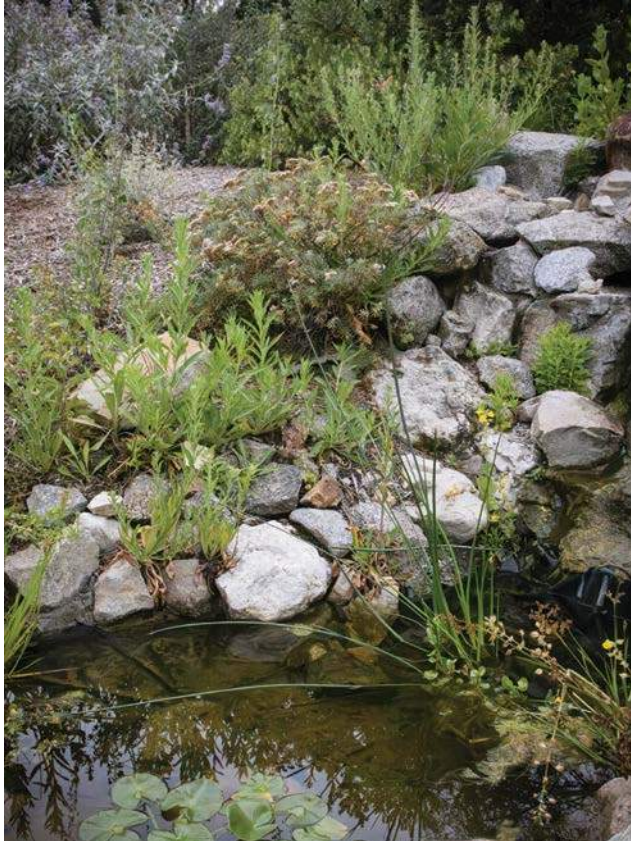
Community Stewardship

- **Native plants** to encourage migration of wildlife, foster stewardship and connection to land. Site-wide
- **Community gardens** around the perimeter of site. Size approx 1.7 acres
- **Open space** in back of properties create **shared spaces**. Approx 1.75 acres
- **Play areas** for children in neighborhood. 10, 286 Sq ft
- **Regenerative on site energy production** (*Method: John Lyle*):
 - ◊ **Solar panels** on rooftops: decrease burden on grid, allow running of water pumps when power is turned off Size: approx 48,000 sq ft
 - ◊ **Biodigesters** connected to toilets, kitchen sink, non-compostable garden waste.
 - ◊ **Passive and active geothermal heating and cooling**-digging down, mounding up, underground pipes (Kent, 37-39)



Inspiration Images

Wildlife pond and waterfall



Hugel berm and infiltration basin



California Waterscapes Natural Swim Pond



Community gathering circle



Urbanite retaining wall-salvaged materials



Bridge over diversion swale



No harsh chemicals

Small water feature

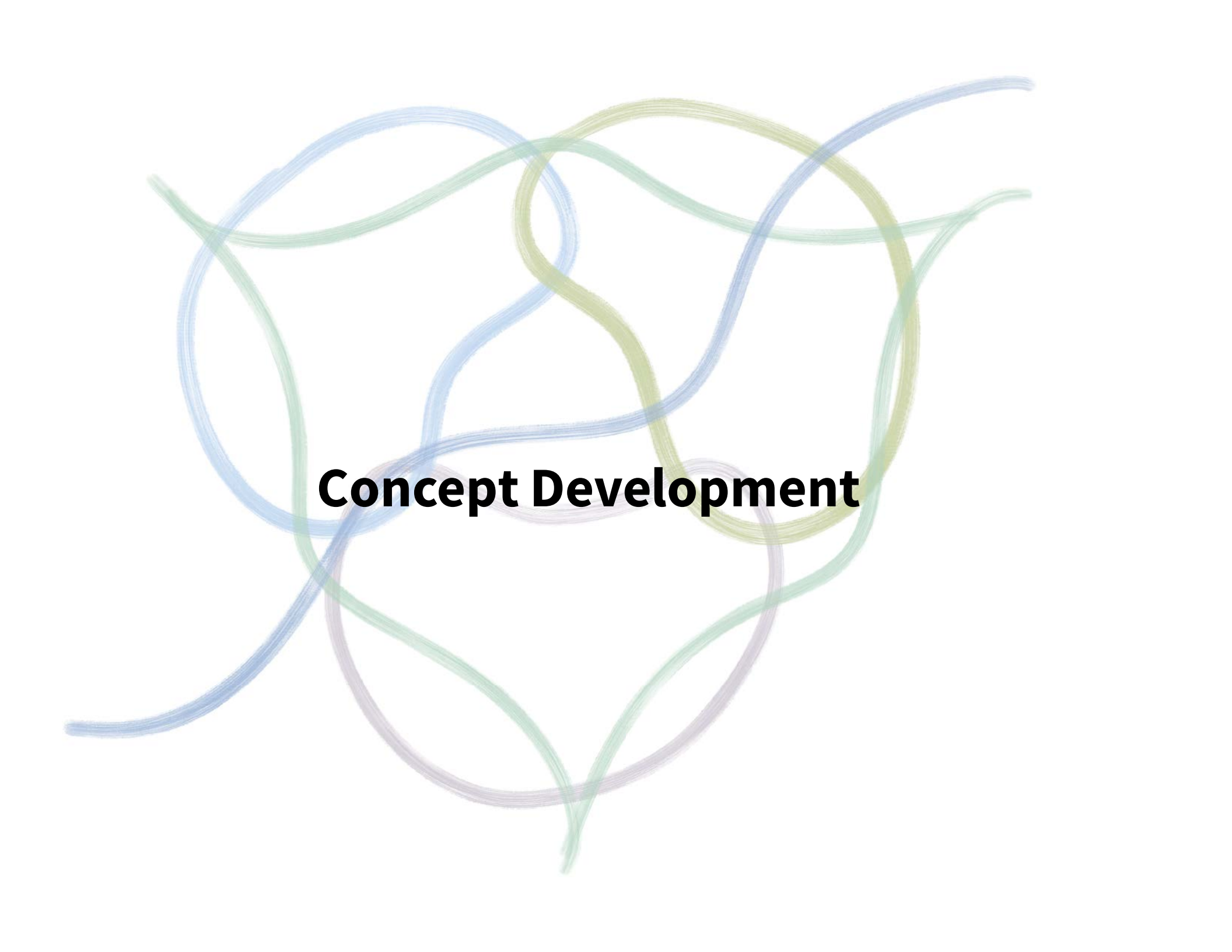


Close the waste loop, low carbon footprint

Community hugel installation



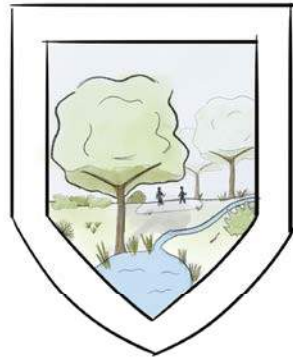
Encourages stewardship



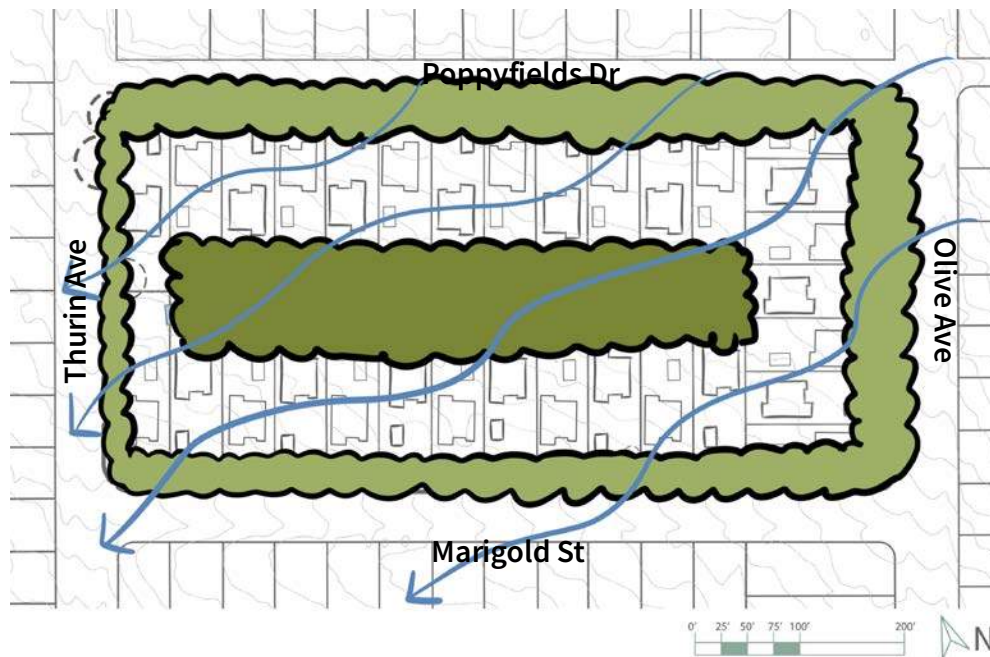
Concept Development

Concept Development

Water is the connecting element for the vegetation, homes, and ideas. Water makes everything possible.

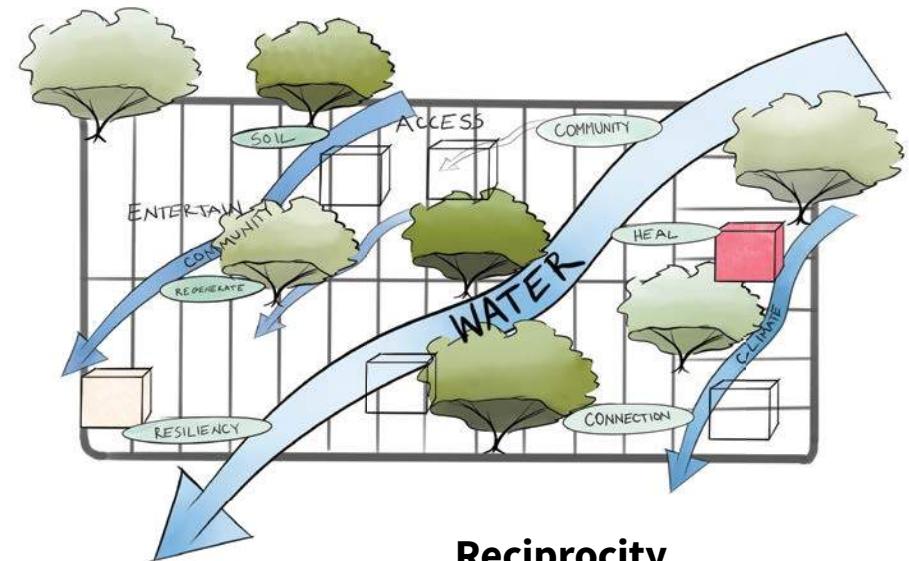


Shield

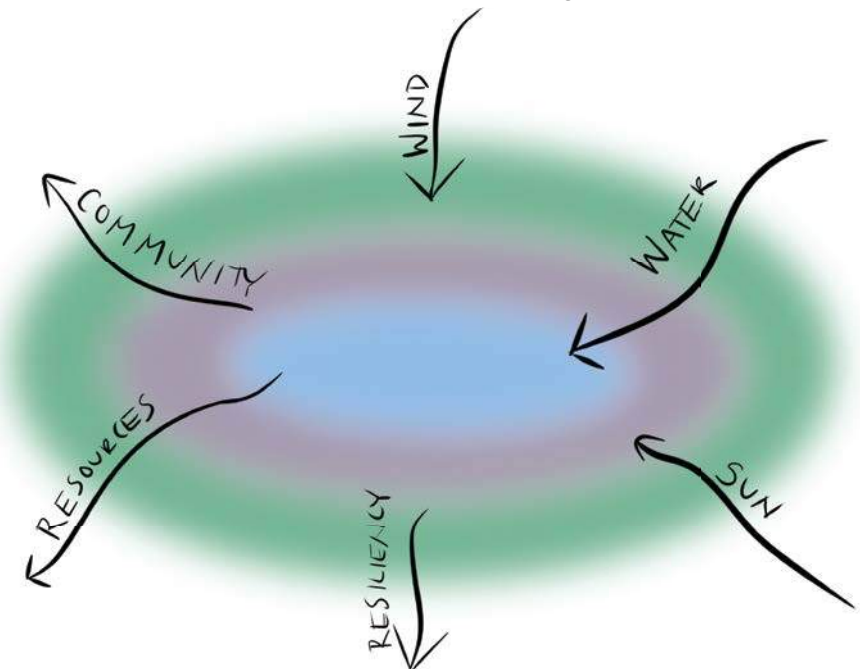


- Landscape as **comforting shield**.
- Mostly through **vegetation**.
- **Water** runs through and into site **strengthening** the **shield**.

Water is Life

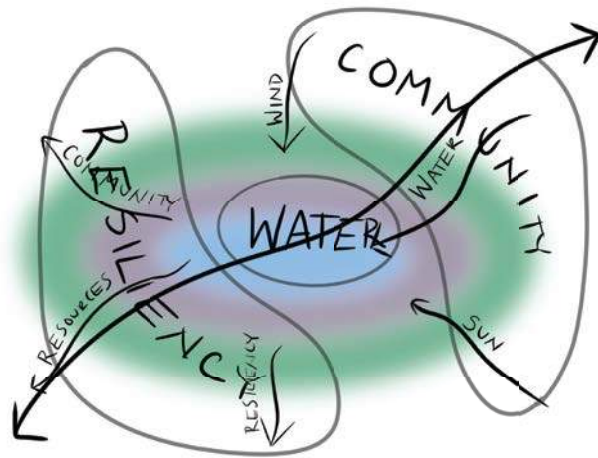


Reciprocity

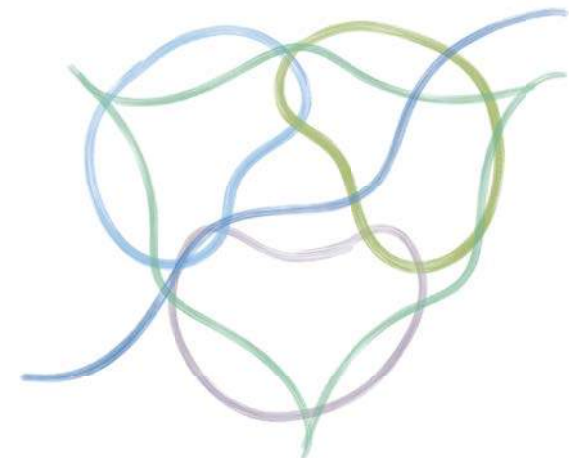
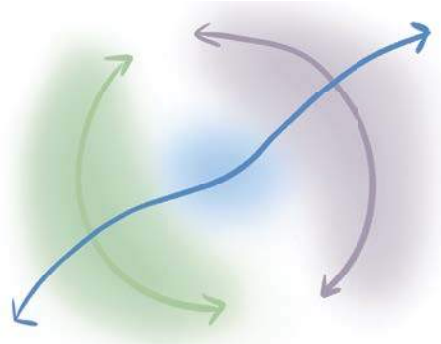


- **Water at center**
- **Regenerative landscape** receives from nature.
- Provides for and **strengthens community**.

Concept Development

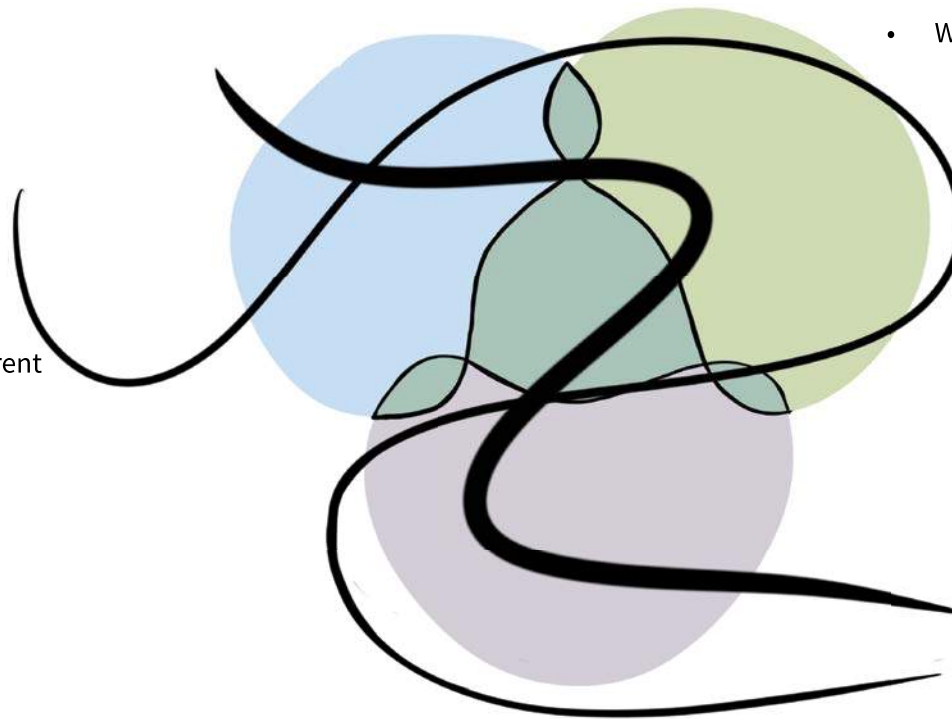


- **Connecting themes**
- Water, community, resiliency as basins within reciprocal relationship
- Too detached



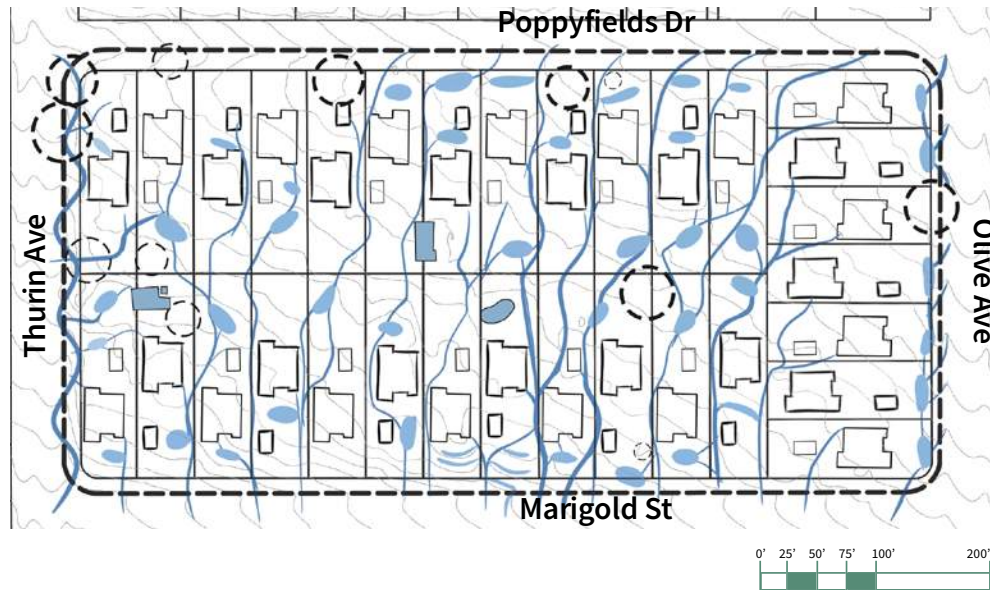
- **Connecting concepts**
- **Water, soil+ landscape, community** are the systems that have interconnected relationship.
- Inner connection builds shield
- Water flows through

- **Resiliency from within**
- Resiliency a journey with different paths.
- Systems can stand alone but stronger together.



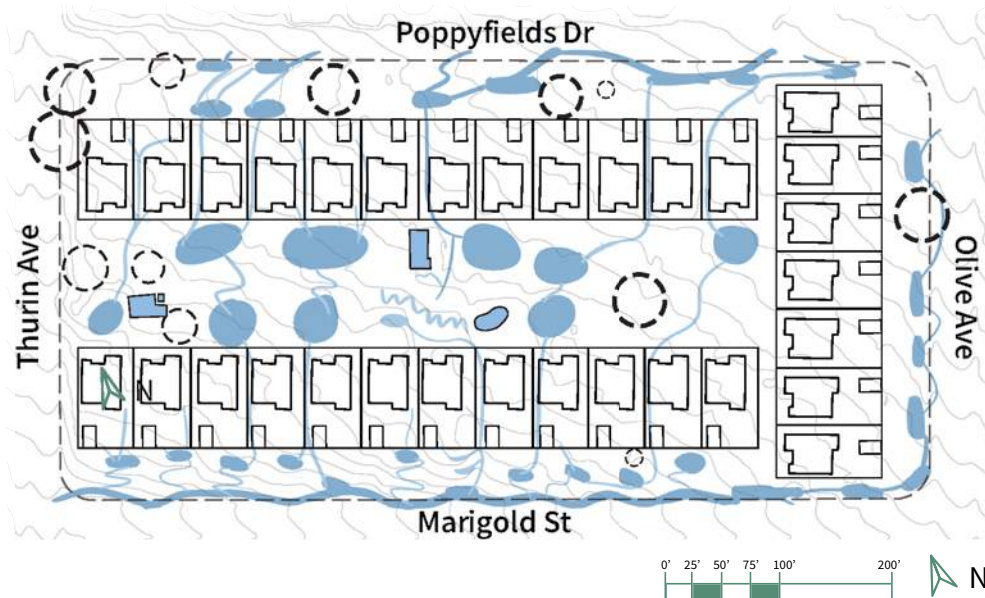
- Resiliency from within
- Water
- Soil + Landscape
- Community

Reciprocal Relationships Builds Resiliency from Within



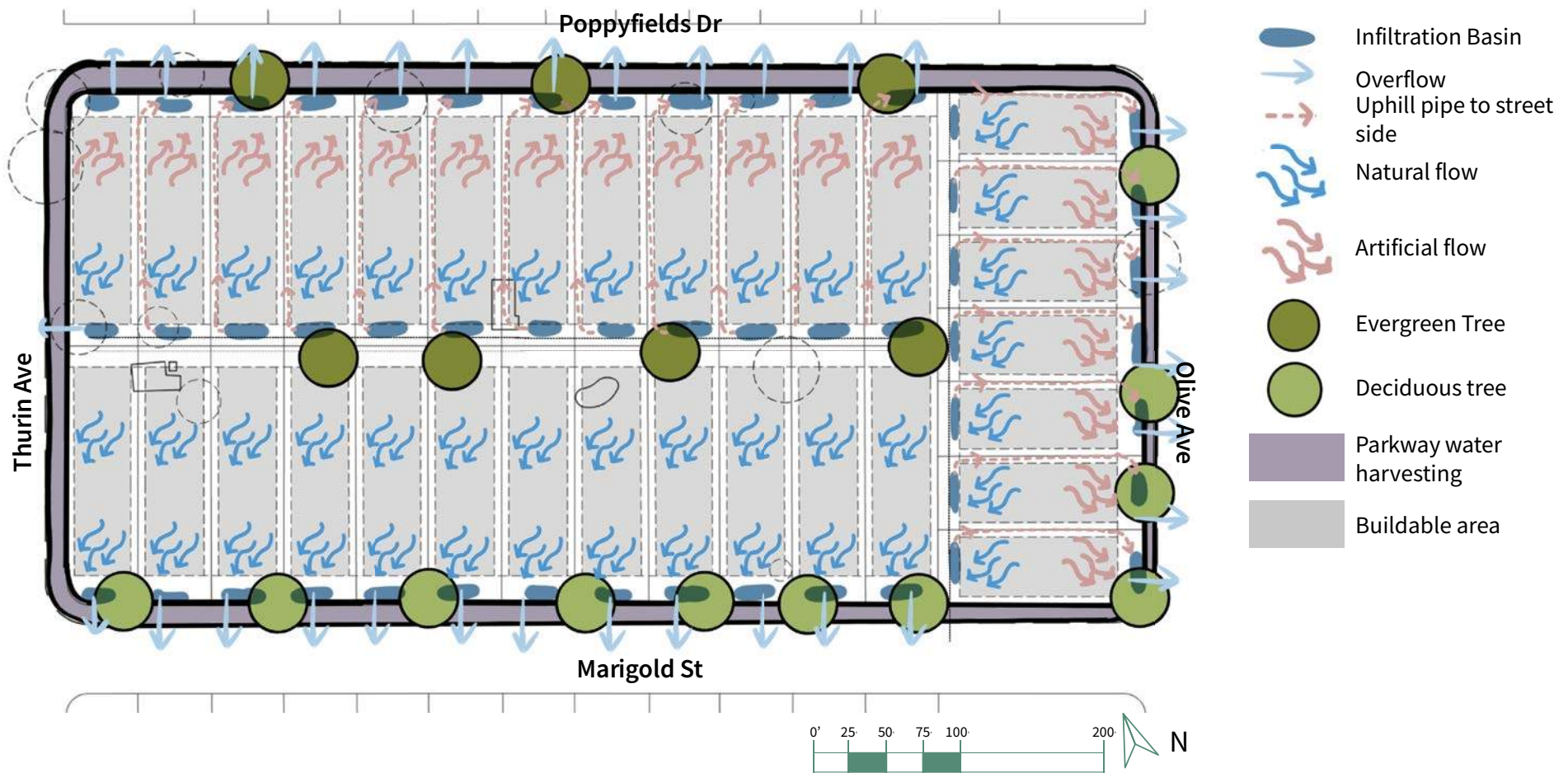
Standard water harvesting

- Smaller basins spread out throughout site
- Best for retrofits or where communities want to keep property lines but allow for community water harvesting.
- Water flows and infiltrates **throughout** site.
- Water **connects** everything.



Ultimate CS^3-

- Large, **shallow multi-use infiltrations basins**
- Follows contours-**LID**
- **Easier to maintain**
- Water flows through site with **maximum infiltration**.



Regulations

- No passage of water runoff from one property to another. All water must infiltrate or be carried to the street.
- $\geq 20\%$ of ground surfaces excluding driveways must be planted.
- $\geq 80\%$ of planting must be native or drought tolerant.
- Building footprint may not exceed:
 - ◊ 5 ft from side property lines.
 - ◊ 20 ft from the front property line,.
 - ◊ 15' from back property line.

Pros

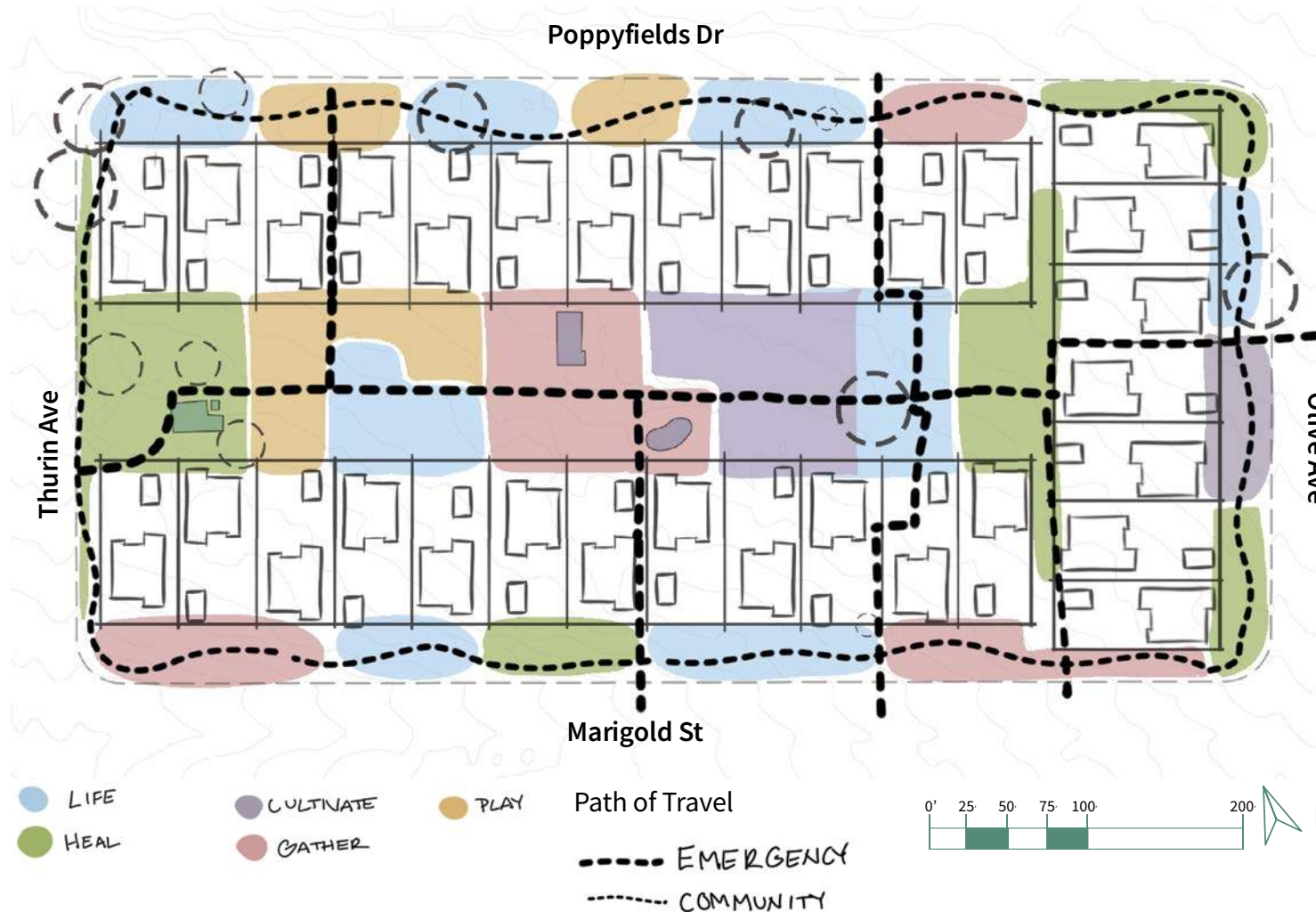
- Standards already set, easy to follow
- More individual choice
- More privacy

Cons

- Energy intensive pumps and resources for rainwater overflow
- Not much vegetation
- No cohesion
- No emergency path of travel

Design Alternative 2: Pre-fire

Sense of place
Based on analysis of uses before the fire



Program Themes

Gather- 29,873 sq ft

- Open spaces for community events

Life- 34,882 sq ft

- Mostly CA Native plants.
- Regenerative ecosystem
- Water features

Heal- 22,196 sq ft

- Climate appropriate and California native medicinal and aromatic plants
- Water features
- Spaces for relaxation and reflection

Cultivate- 17,578 sq ft

- Annual vegetable beds
- Orchards
- Chickens

Play- 17,227 sq ft

- California Native lawns
- Nature-based play in bioswales, on slopes
- Fire-wise playhouse (Method: Santa Barbara Botanic Gardens)

Pros

- Gives residents sense of place before fire.
- More access for emergencies.
- More individual choice

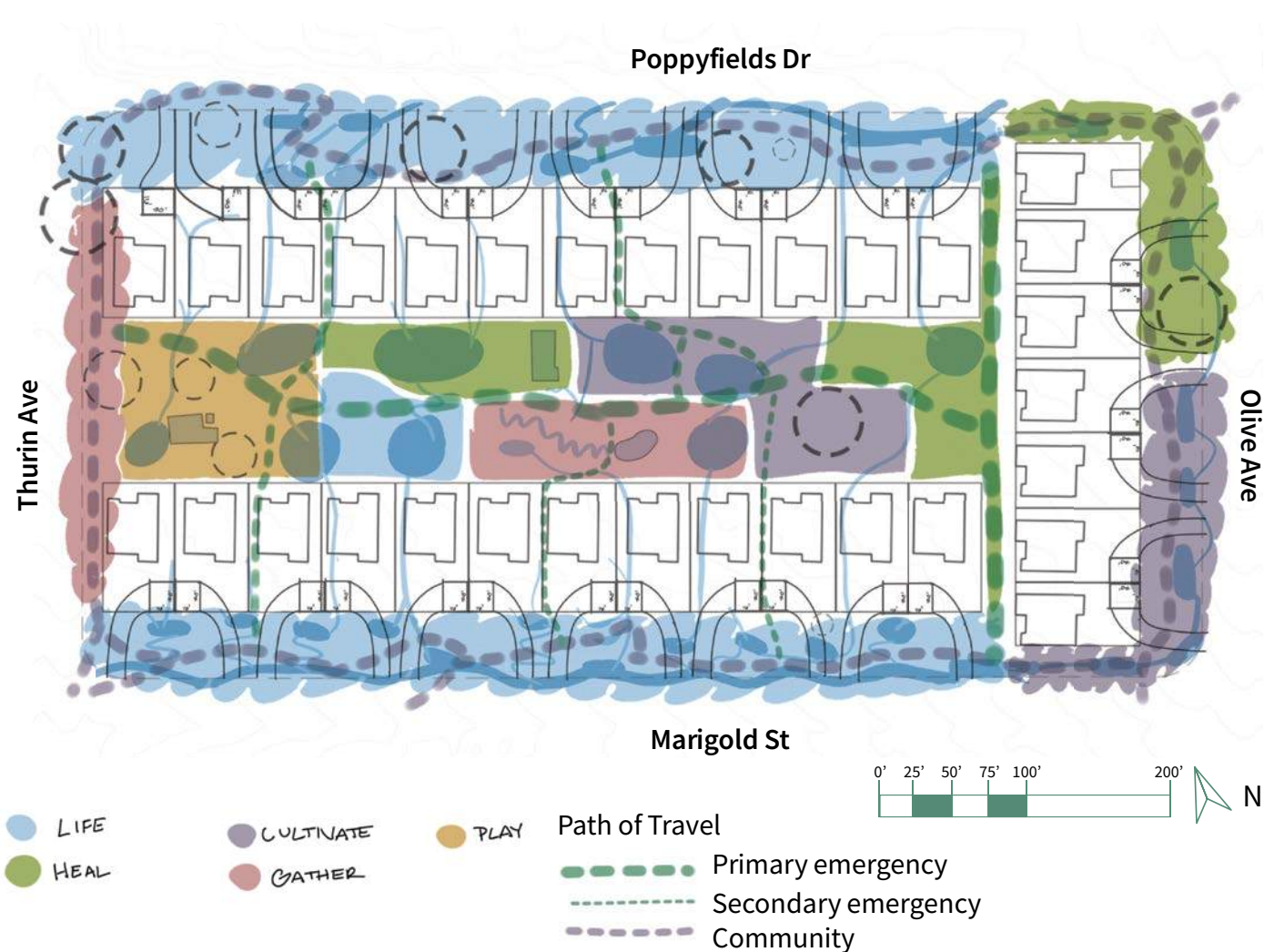
Cons

- Very busy, not easily maintained.
- Feels disconnected

Circulation

- Central axis-all areas accessible from back for **emergencies** (Method: Douglas Kent)
- Additional access-**more options**
- More “ways out”- **greater** chance of **survival**

Water
Resiliency



Program Themes

Life- 72,635 sq ft

- Mostly CA Nativ`e plants.
- Regenerative ecosystem
- Water features



Heal- 28,698 sq ft

- Climate appropriate and California native medicinal and aromatic plants
- Water features
- Spaces for relaxation and reflection



Cultivate- 27,446 sq ft

- Annual vegetable beds
- Orchards
- Optional: Chickens



Gather- 18,660 sq ft

- Open spaces for community events



Play- 14,193 sq ft

- California Native lawns
- Nature-based play in bioswales, on slopes
- Fire-wise playhouse (*Method: Santa Barbara Botanic Gardens*)



Pros

- Shared spaces allow for more access in emergency
- Shared resources increases resiliency
- Repetitive themes, easy to maintain
- Self sustaining

Cons

- Less privacy
- Push-back from county and insurance companies

Circulation

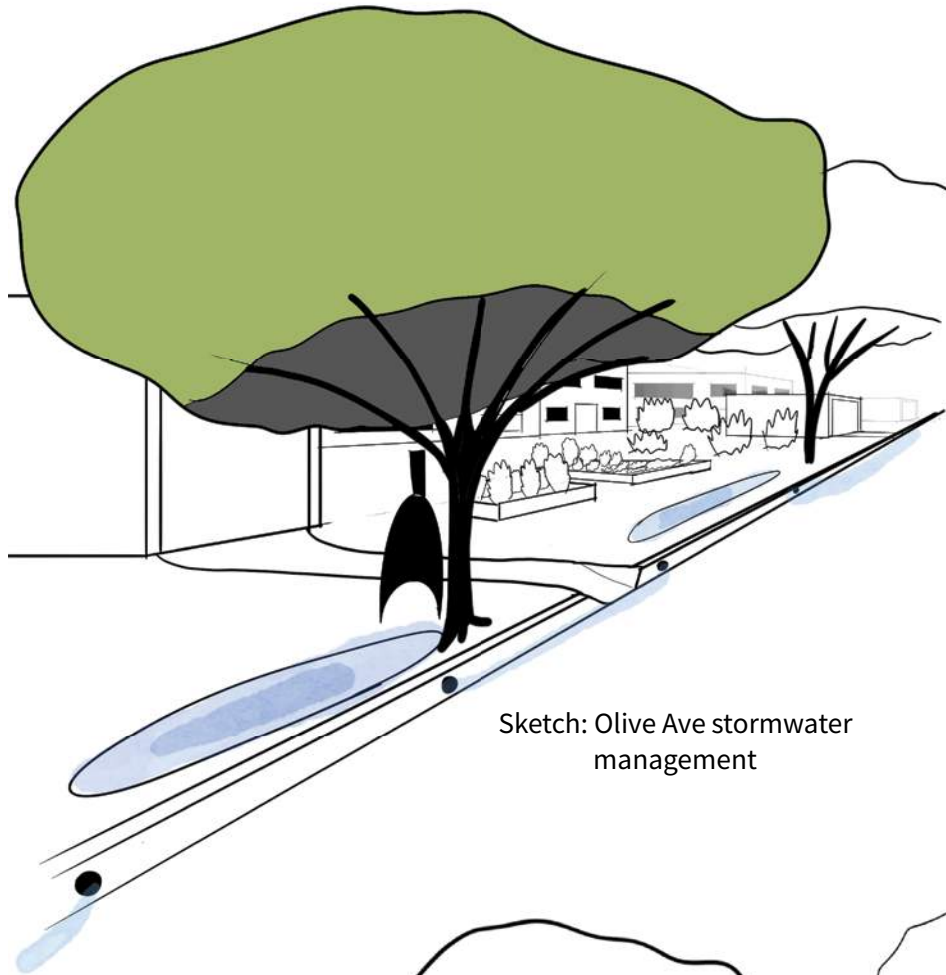
- Central axis-all areas accessible from back for **emergencies** (*Method: Douglas Kent*)
- Additional access-**more options**
- More “ways out”- **greater** chance of **survival**

Water

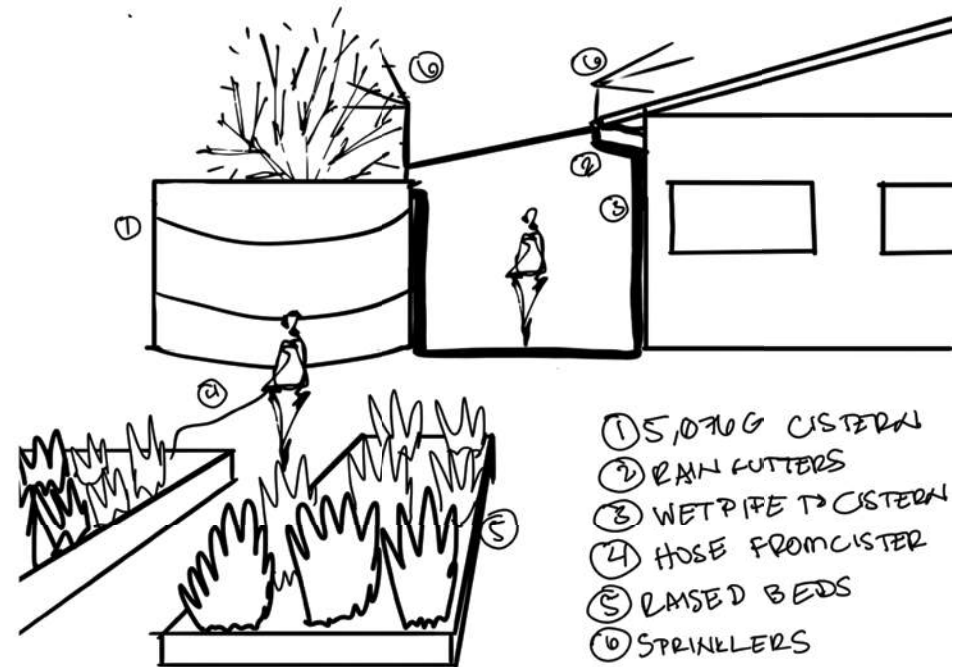
Resiliency

Community

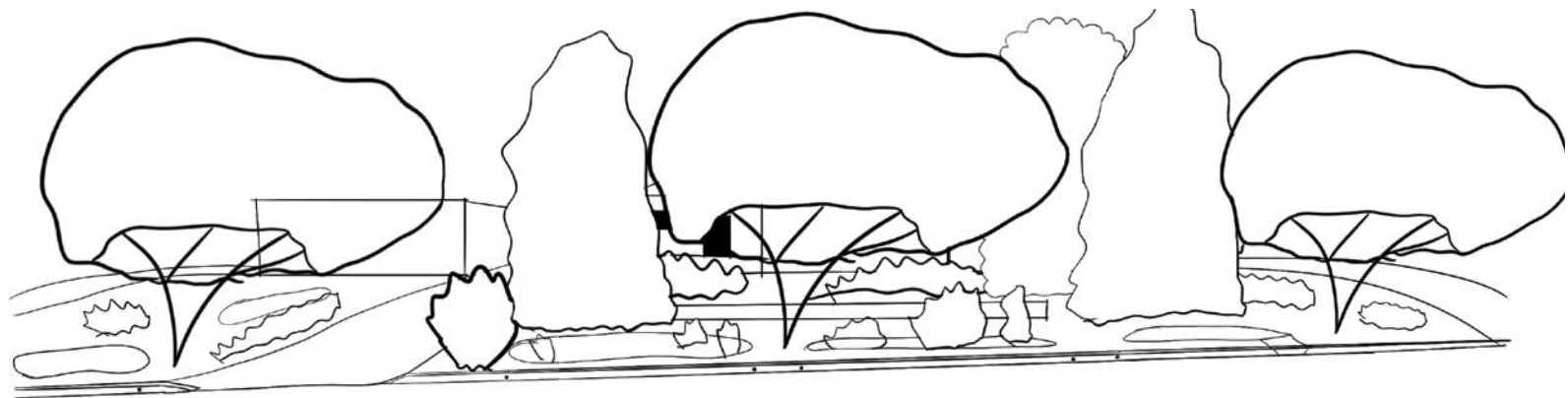




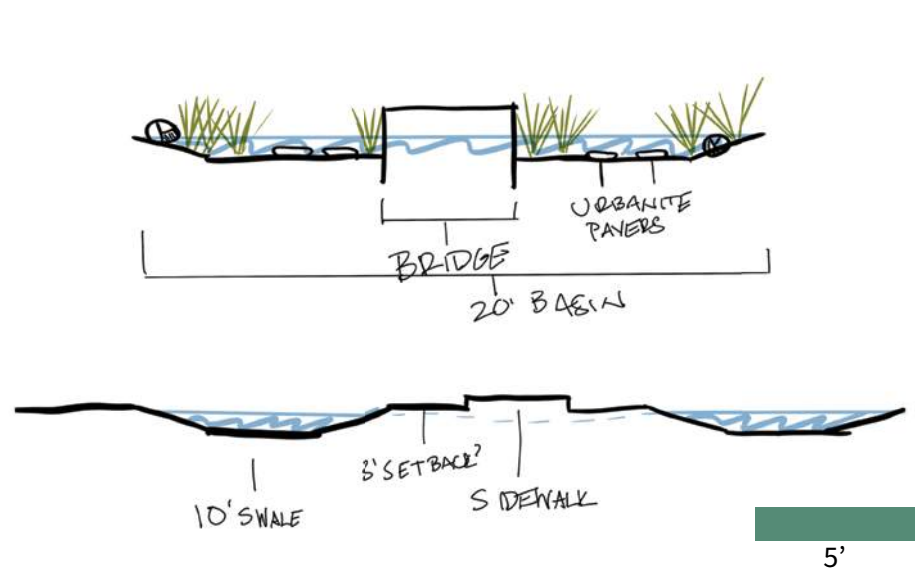
Sketch: Olive Ave stormwater management



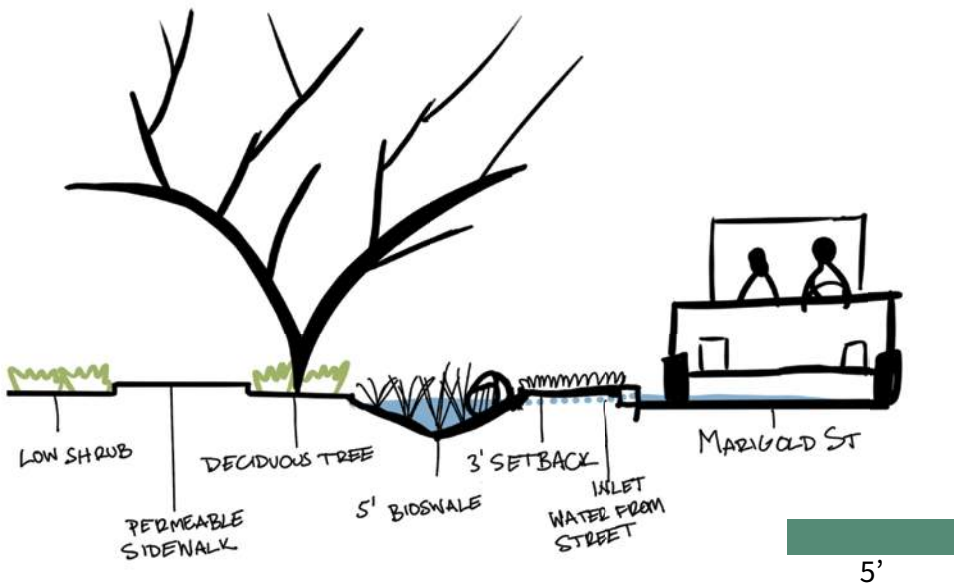
Sketch: Cultivate Zone roof runoff, cistern, irrigation



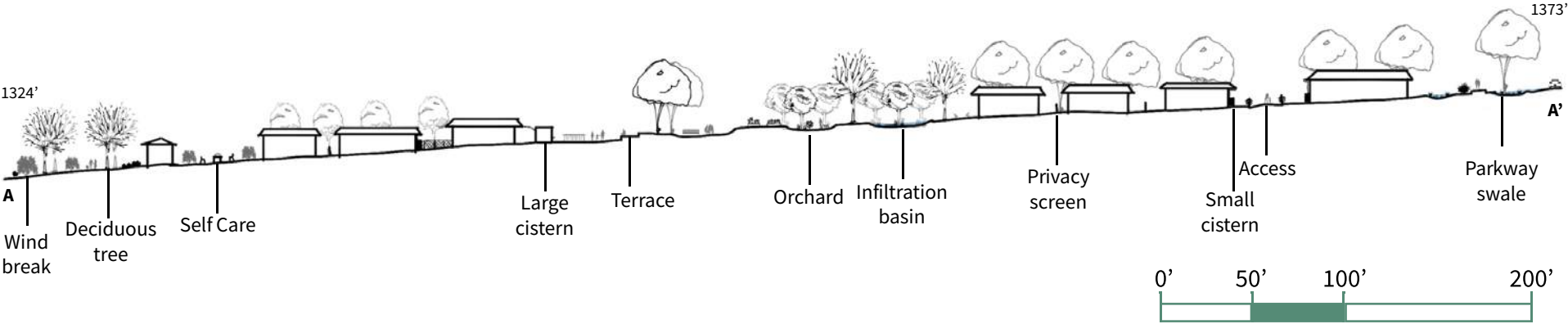
Sketch: typical stormwater management and vegetation shield



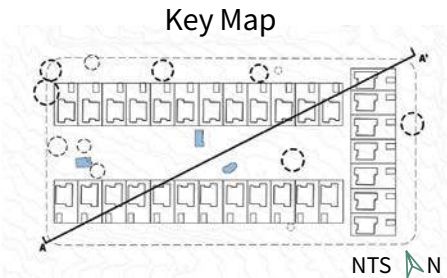
Section: Typical parkway stormwater management options, length

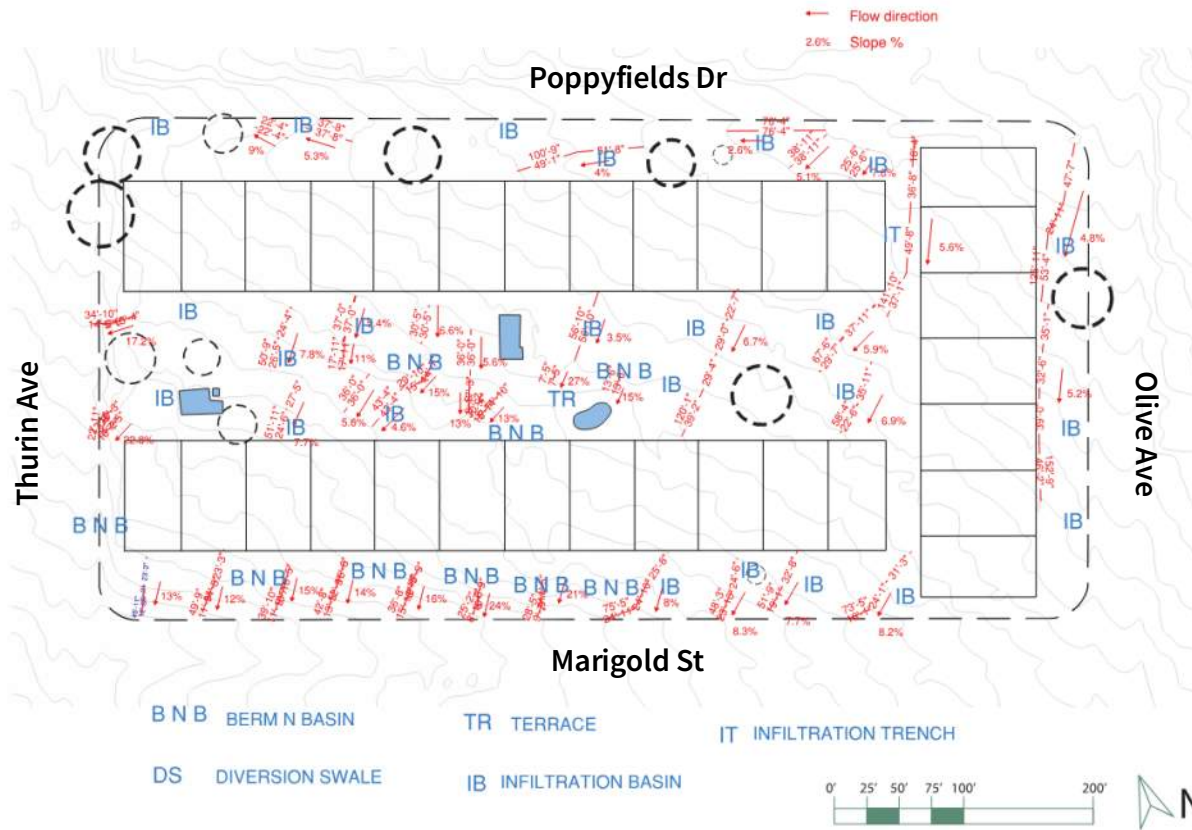


Section: Typical parkway stormwater management option, width



Section-elevation: Diagonal across site showing drainage and zones.



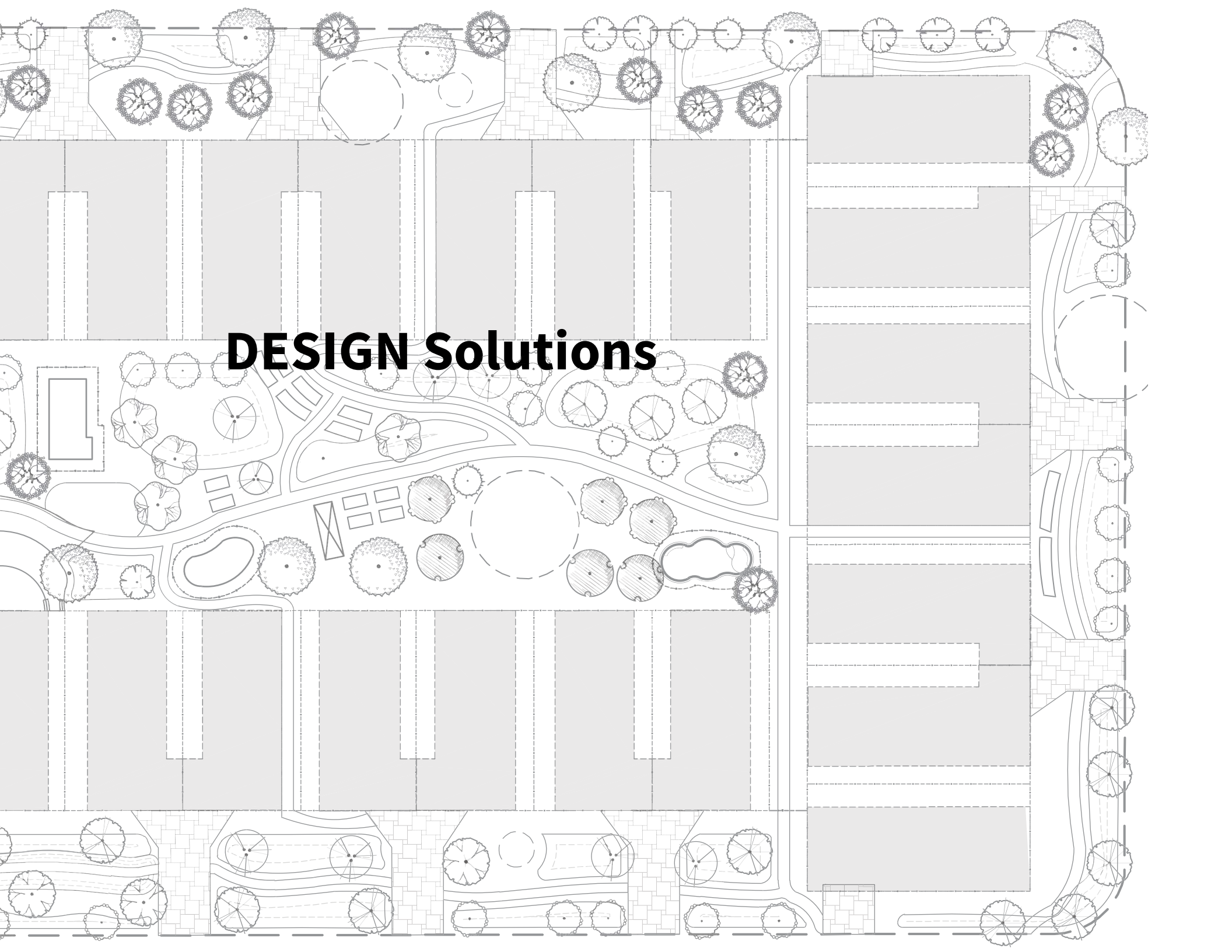


Grade

Diff in El	Length	Grade
Ft	Ft	
6	25.17	0.238379
6	45.92	0.130662
2	23.25	0.086022
2	10.5	0.190476
2	12.17	0.164339
6	49.75	0.120603
6	39.83	0.15064
6	42.67	0.140614
6	36.67	0.163621
6	75.42	0.079554
4	48.25	0.082902
4	51.75	0.077295
6	73.42	0.081722
4	51.92	0.077042
6	27.5	0.218182
4	17.58	0.227531
8	141.83	0.056406
4	29.75	0.134454
2	39.17	0.051059
6	22.92	0.26178
6	34.83	0.172265

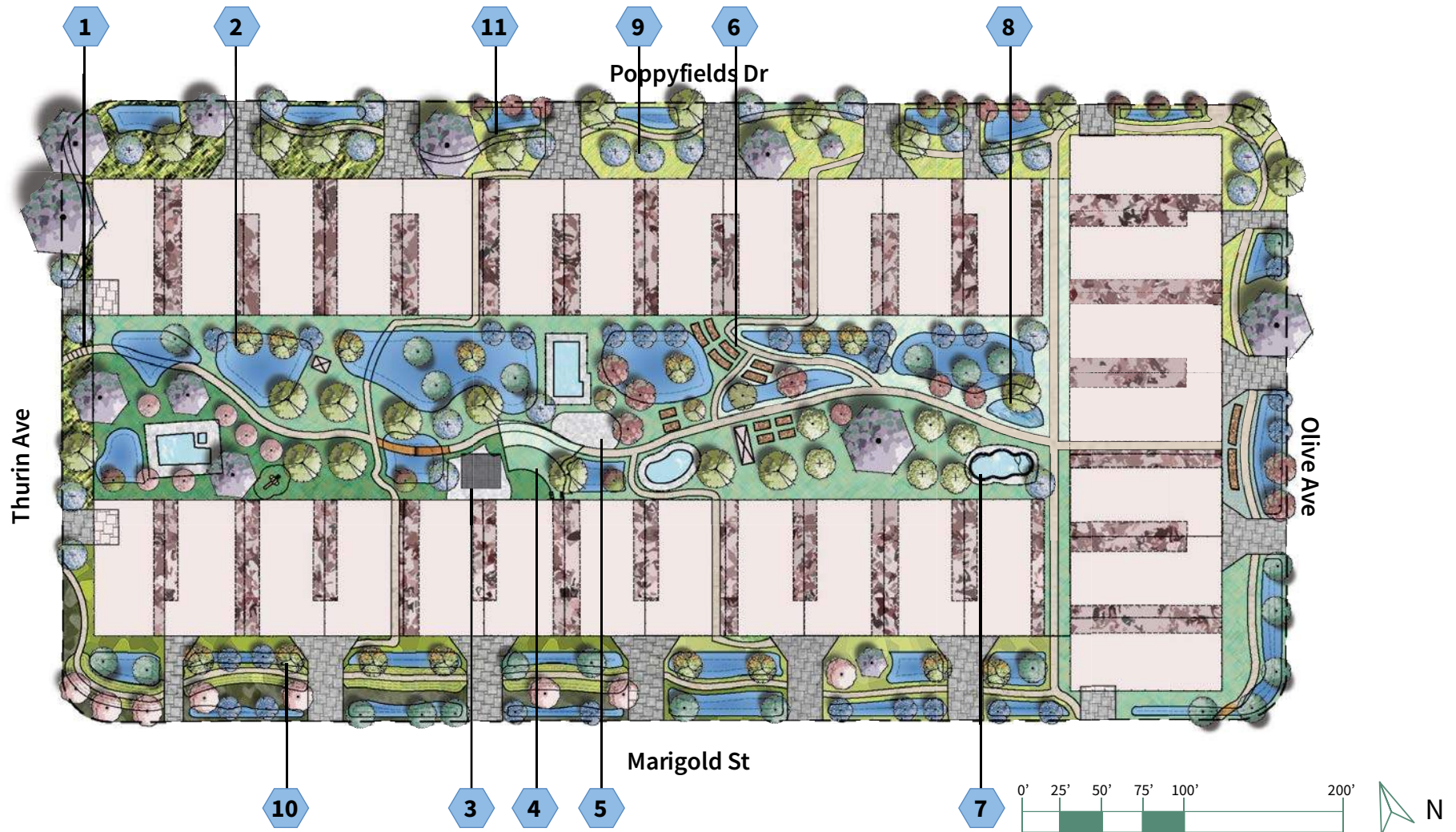
Diff in El	Length	Grade
Ft	Ft	
2	50.17	0.039864
2	40	0.05
2	7.42	0.269542
2	13.5	0.148148
4	30.83	0.129744
4	50.75	0.078818
2	37	0.054054
2	17.92	0.111607
2	30.42	0.065746
2	36	0.055556
2	56.83	0.035193
4	67.5	0.059259
8	120.08	0.066622

Diff in El	Length	Grade
Ft	Ft	
2	22.333	0.089554
2	37.67	0.053093
2	38.92	0.051387
2	76.33	0.026202
2	25.5	0.078431
4	100.75	0.039702
6	125.92	0.047649
8	152.75	0.052373
2	36	0.055556
4	58.33	0.068575
4	30.33	0.131883
2	43.33	0.046157
6	28.42	0.211119

A detailed landscape architectural plan is shown in a light gray line-art style. The plan features a central area with a large circular open space, surrounded by various tree symbols (some with detailed foliage, others as simple circles) and winding paths. To the right, there are several rectangular building footprints, some with internal room divisions. The entire plan is framed by a border of trees and paths. Overlaid on the central part of the plan is the text "DESIGN Solutions" in a bold, black, sans-serif font.

DESIGN Solutions

Final Site Plan: Illustrative

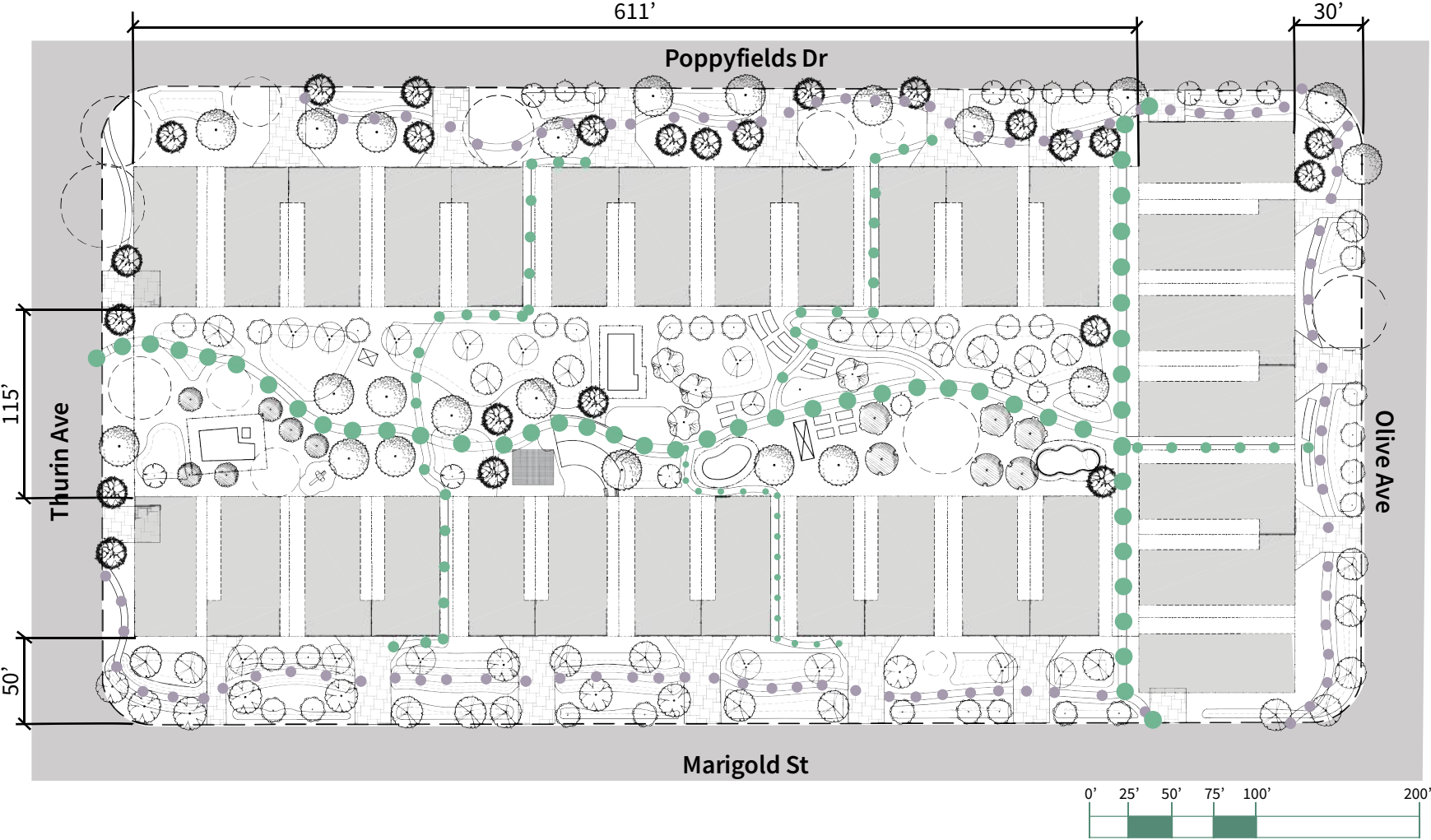


- | | | |
|--------------------------------------|---|---|
| 1 Emergency path of travel | 5 Edible garden processing station | 9 Santa Ana wind break |
| 2 Infiltration basin for play | 6 Annual raised beds | 10 Passive solar heating/cooling |
| 3 Outdoor kitchen | 7 Nature-scape recreational pool | 11 Community path of travel |
| 4 Multi-use terrace | 8 Wildlife pond | |

**Due to time and resource constraint as well as community being dispersed, assumptions were made that housing footprints would be like for like.*

Final Site Plan

Circulation

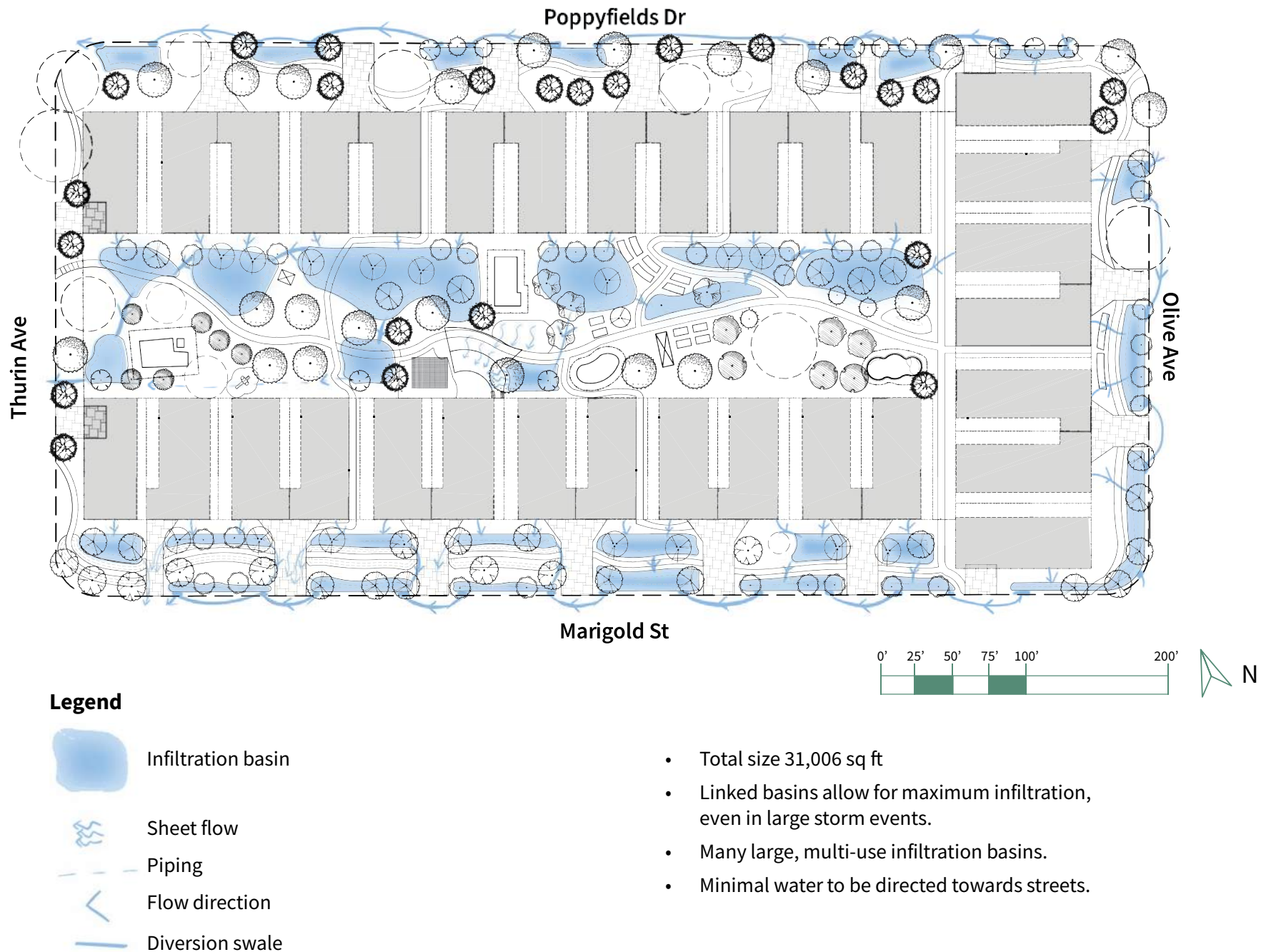


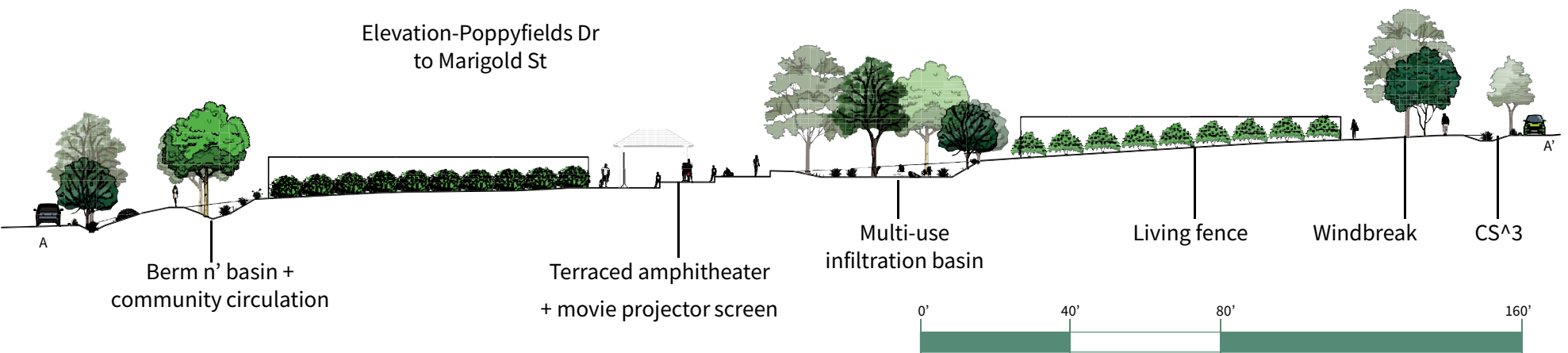
Pedestrian Path of Travel

- ● ● Emergency Primary
- ● ● Emergency Secondary
- ● ● Community

Major Features

- No trees or structure over major emergency circulation.
- Path of travel for residents and emergency personnel.
- ADA Accessible circulation for community members around perimeter.





Sambucus mexicana
Blue Elderberry



Erythranthe cardinalis
Scarlet Monkeyflower



Juncus sp.
Rush Species



Juglans Californica
Southern California Black Walnut



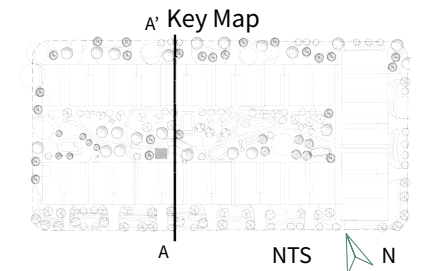
Stipa pulchra
Purple Needlegrass



Example: Multi-use infiltration basin-dry weather

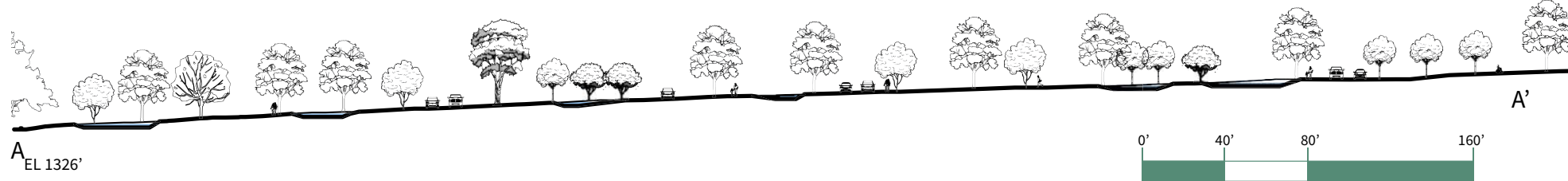


Example: Multi-use infiltration basin-wet weather



Section-Street side CS^3 on Poppyfields Dr

EL 1374'



Quercus agrifolia
Coast Live Oak



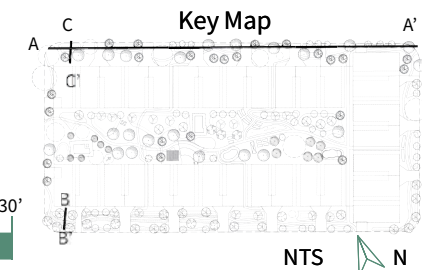
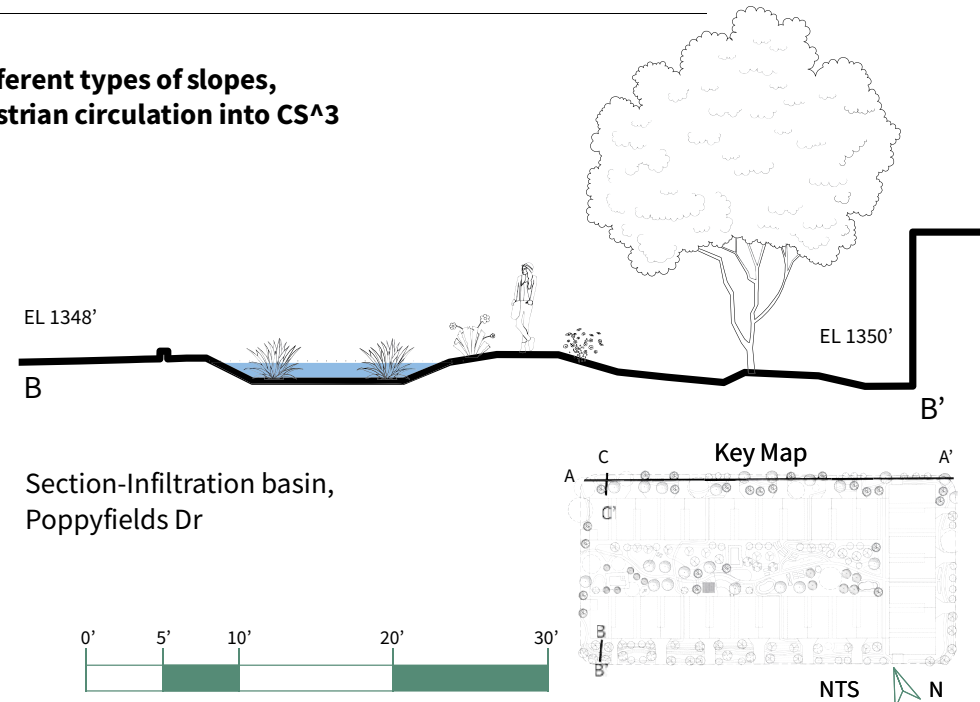
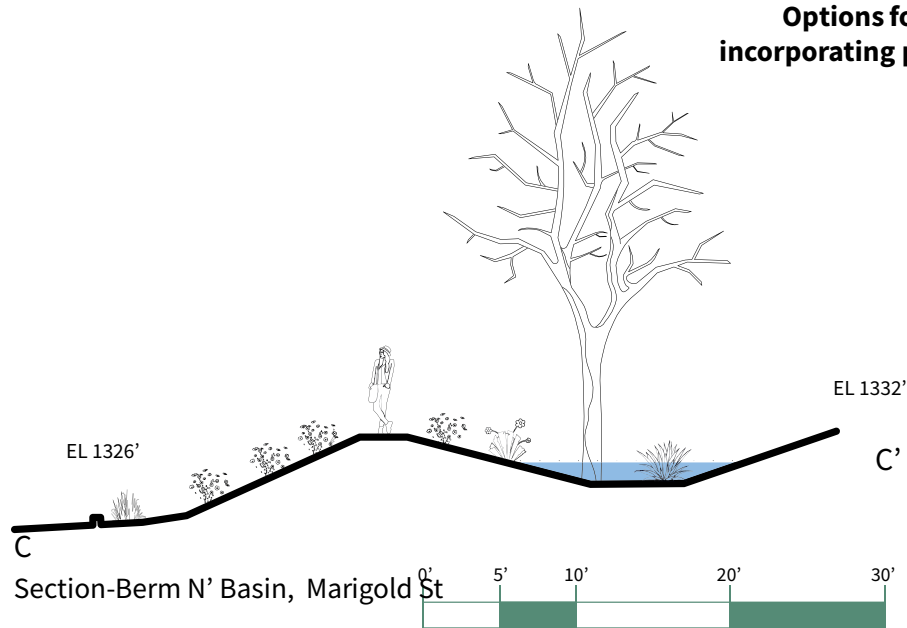
Ceanothus spinosus
Greenbark Ceanothus



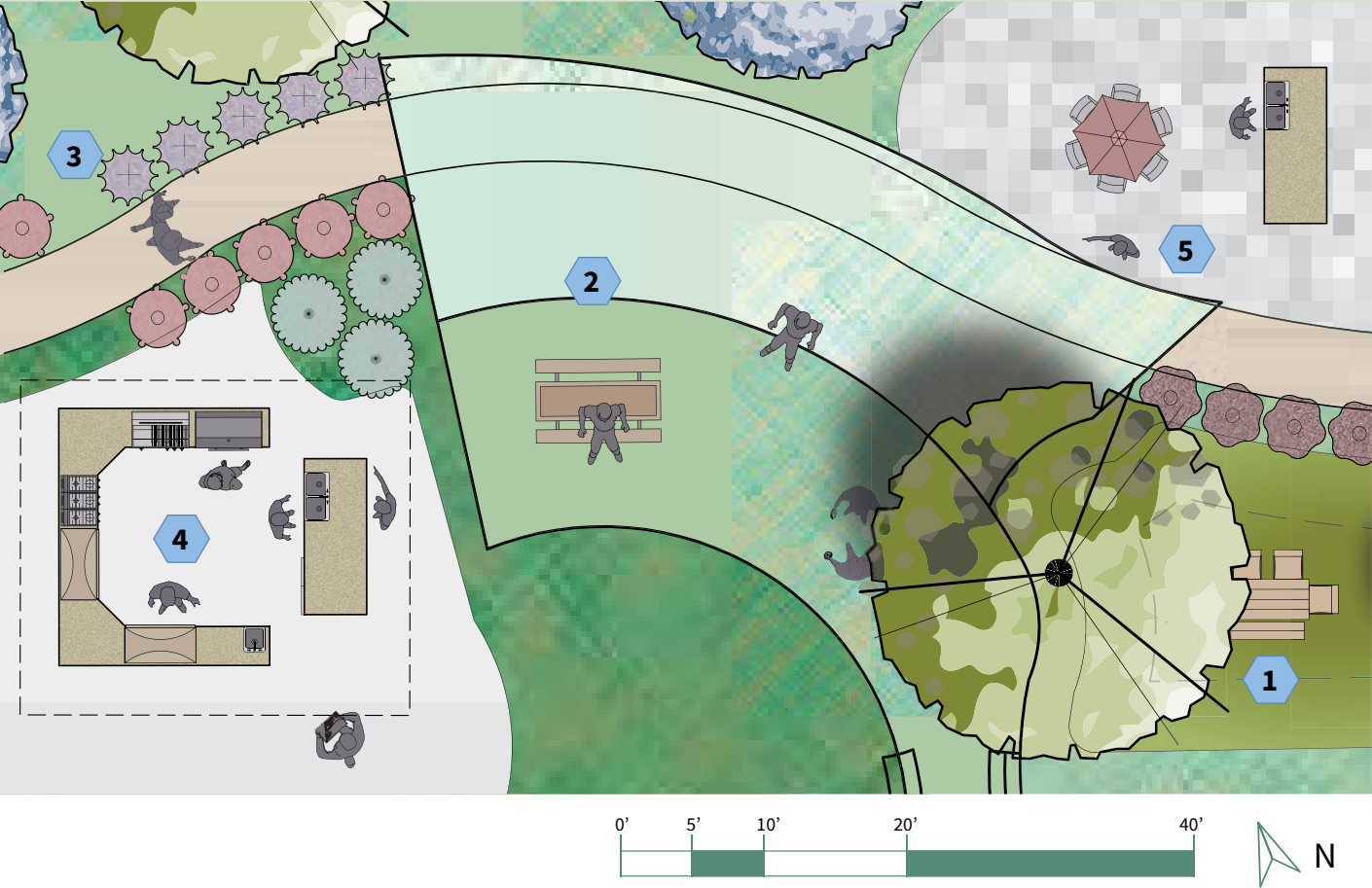
Heteromeles arbutifolia
Toyon

- Clean, slow, spread, sink street-side runoff
- Poppyfields Dr. windbreak
- Evergreen trees support wildlife,

Options for different types of slopes, incorporating pedestrian circulation into CS^3



Enlargement 1: Gathering Strengthens Relationships



Zone Features

1. **Dual use infiltration basin** can be set up with tables or activities during dry months.
2. **15'W Terraces**-wide enough to accommodate tables and picnic blankets.
 - ◇ Slows and spreads runoff.
 - ◇ Dual use emergency circulation.
 - ◇ Native grasses help infiltrate water
3. Native plants line edges.
4. XL Outdoor kitchen for year **Year round gathering and entertainment.**
5. Connects to “clean, prep, plan” station in cultivate zone.



Arctostaphylos 'John Dourley'
John Dourley Manzanita



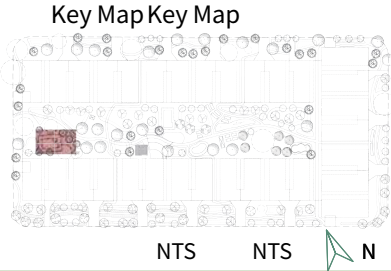
Cleomella arborea
Bladderpod

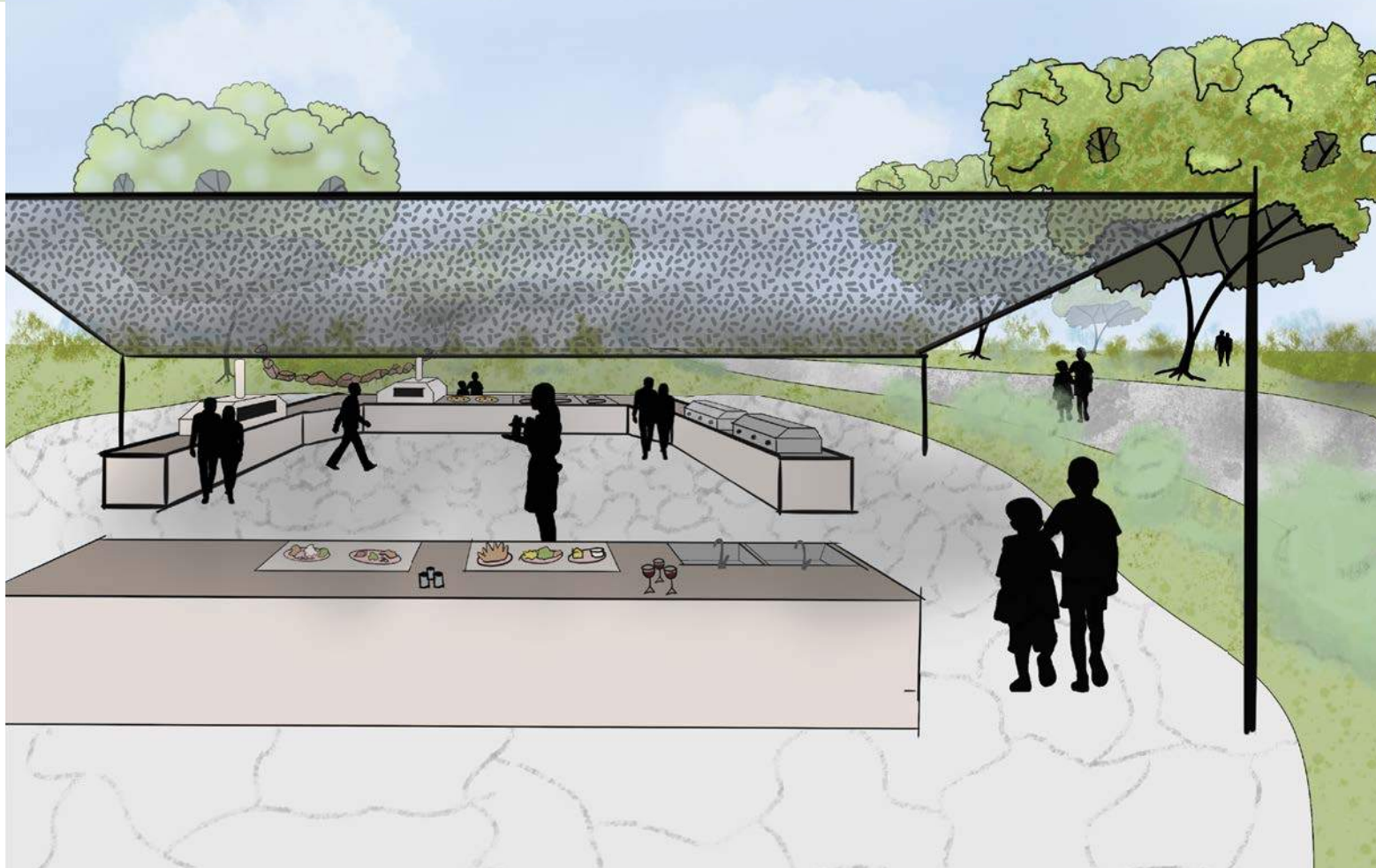


Corethrogyne filaginifolia
'Silver Carpet'
Silver Carpet California Aster



Permeable pavers



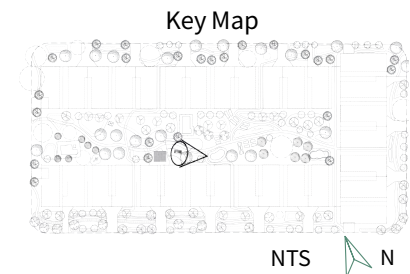


People bond and converse over food. There is plenty of space to make plans for the future knowing that those plans will be resilient.



Outdoor Kitchen Features

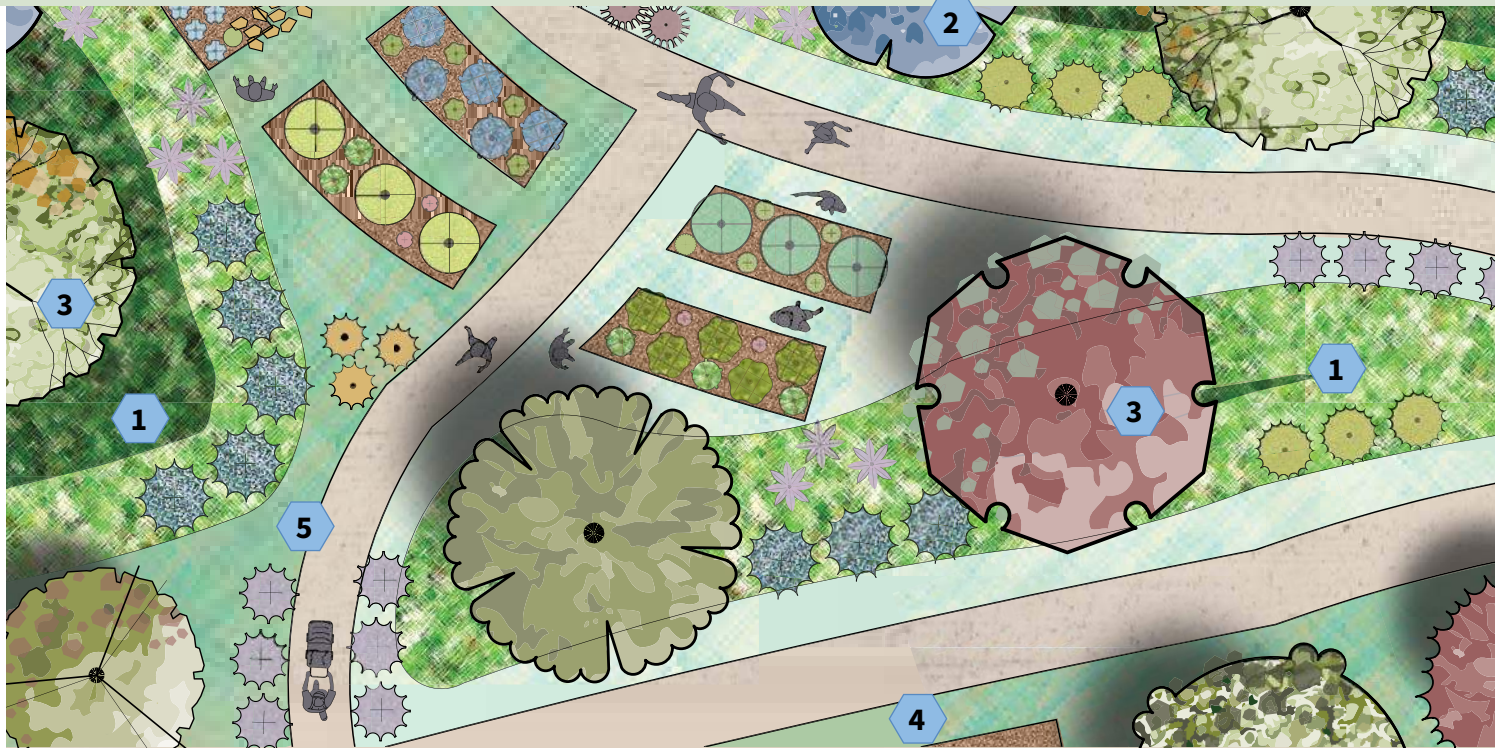
- 2 XL grills
- 6 stove top burners
- 2 XL pizza ovens
- Entertainment island with sinks and refrigerators
- Permeable hardscape



Enlargement 2: Cultivating Resiliency and Relationships

Urban Farm

Part of the center of the regenerative resiliency is the productive urban farm complete with orchards, raised annual beds, and even edible, walkable groundcovers!



Fragaria Vesca
Woodland Strawberry



Prunus ilicifolia
Hollyleaf Cherry

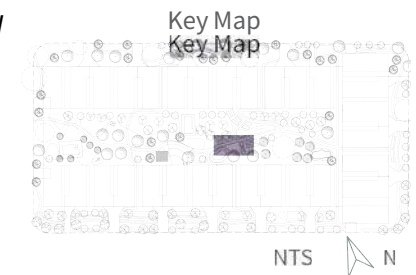
Umbellularia californica
California Bay Laurel

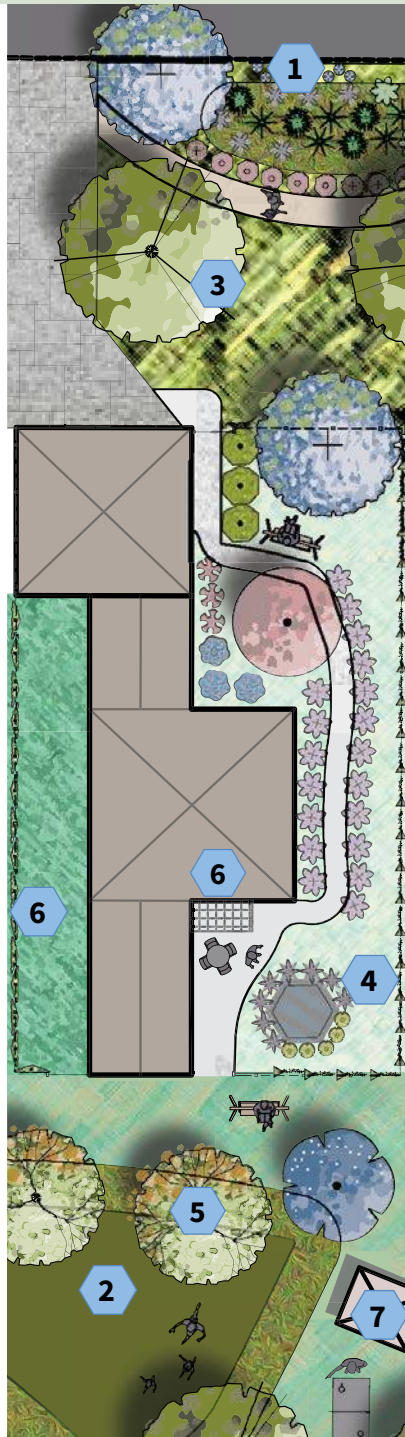


Malus domestica 'Anna's'
Anna's Apple

Zone Features

1. Infiltration Basins set up to irrigate orchard trees and shrubs at various elevations-*Method: Brad Lancaster and Indigenous practices, permaculture*
2. Trees situated for passive heating cooling, irrigation efficiency and ease of maintenance.
3. Fruit and nut bearing trees, shrubs, and edible native plants provide food for humans and wildlife.
4. Composting station for small garden and kitchen "waste"
5. Edible, walkable groundcover





Water feature + habitat + urbanite



Baccharis pilularis 'Pigeon Point'
Pigeon Point Coyote Bush



An example of how a Self Care zone might be set up with connections to the outer and inner community spaces.

Zone Features

1. Easy access through either front or back for homeowners.
2. Street-side infiltration basin for CS^3
3. Multi-use infiltration basin and play meadow for year round interest.
4. 40-60% Dense vegetation shield.
5. Prevailing wind utilizes water feature to cool home.
6. Tall deciduous trees allow for passive heating/cooling
7. Sedge "lawn" doggy area, Catio (keeps wildlife and cat safe).
8. Metal ping pong tables are fire resilient and fun for all ages

Fire-wise Gnome
Home Playhouse



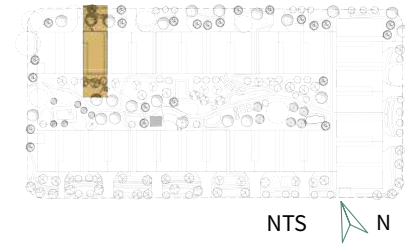
Snake-inspired path using
salvaged materials



Low water native lawn



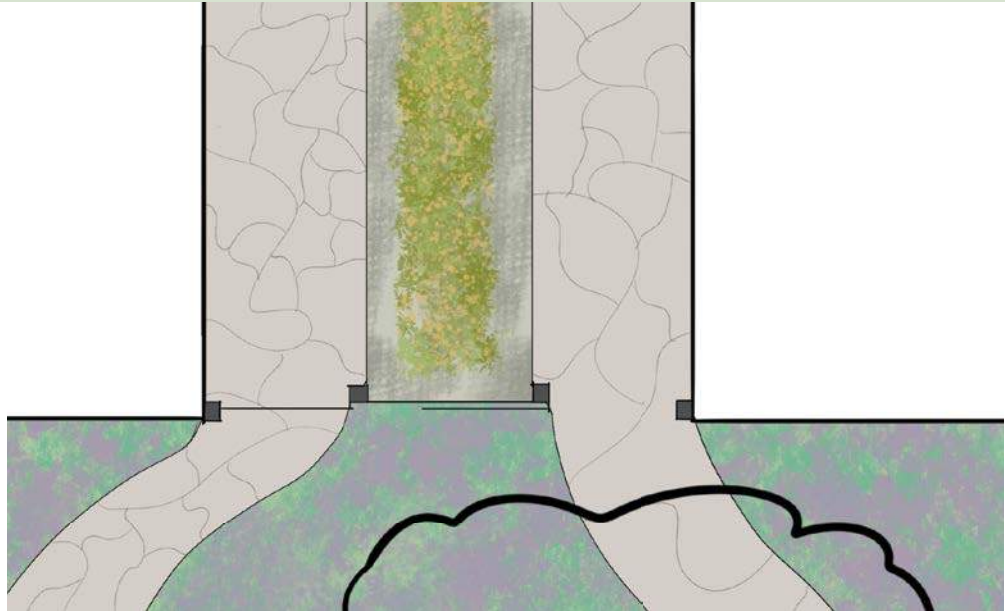
Key Map



Living Fence



Living fence elevation



Living fence plan view



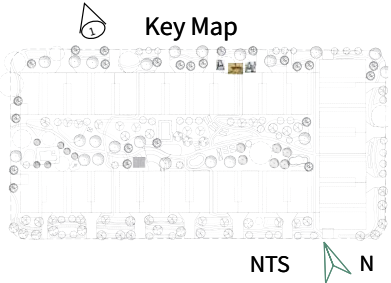
Carpenteria californica
Bush Anemone



Sketch Community Care



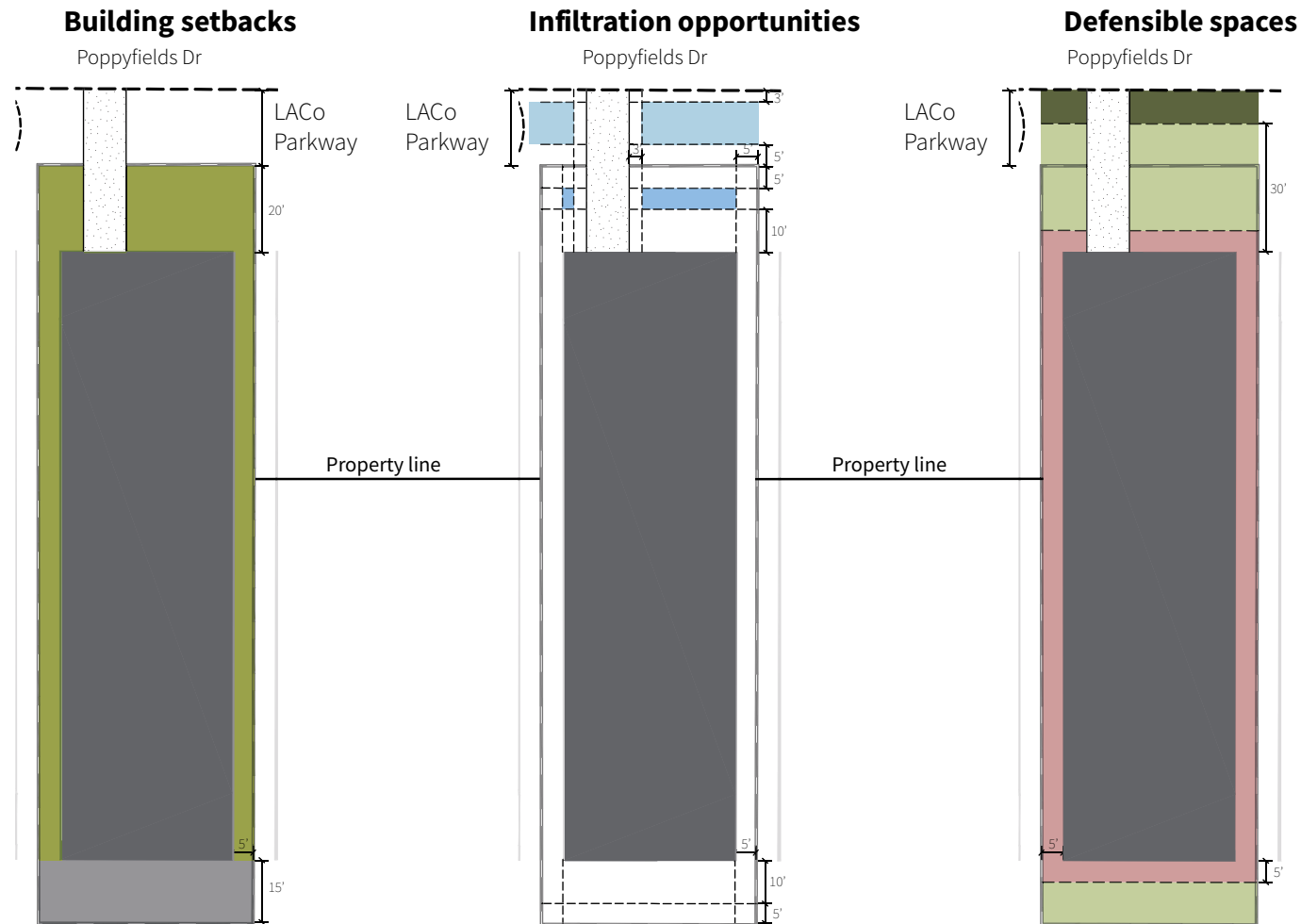
Cattle panel or wire fencing for support



NTS N

Enlargements: Status quo vs Resiliency

Parcel-area



- Driveway
- Buildable area
5428 sq ft
- Planting area approx 1899 sq ft
- Impervious surfaces 7600 sq ft

- Driveway
- Buildable area
5428 sq ft
- LA County Parkway 1931 G
- Infiltration 685.5 G

- Driveway
- Buildable area
5810 sq ft
- Zone 0
- Zone 1
- Zone 2

Optimal Resilience-

- 2892 sq foot buildable area
- 6609 sq ft permeable surfaces

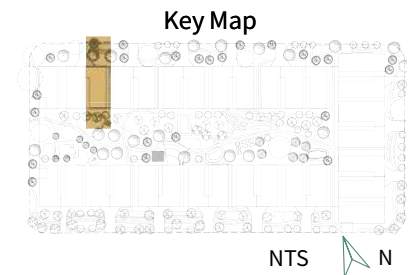
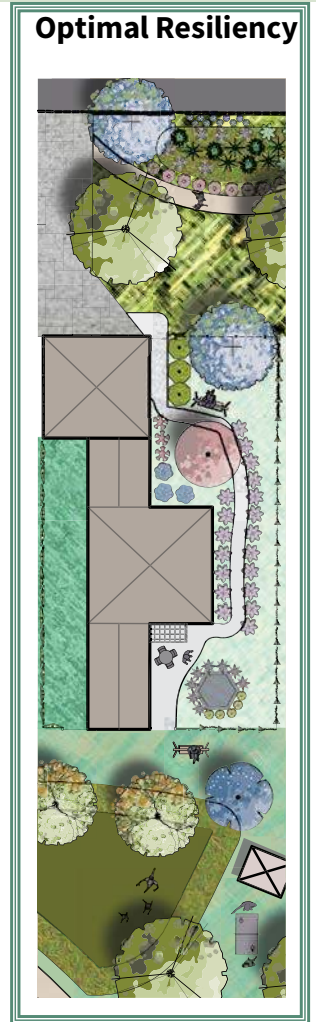
Basin water holding capacity (G)

Status Quo- 2616.5

Optimal Resiliency-5611.1

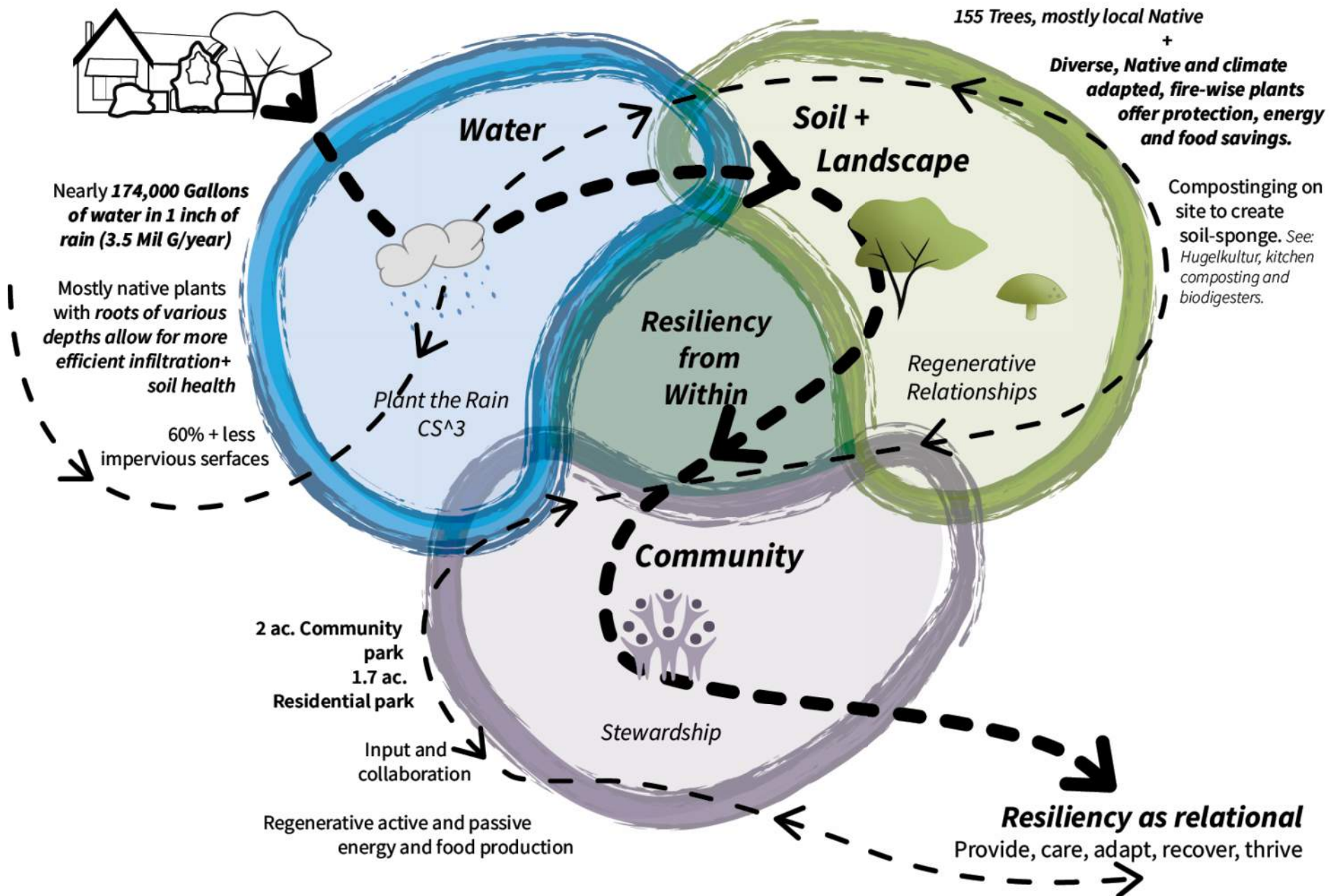
Optimal Resilience-

Vegetation that works with climate



Rethink How We Build Neighborhoods

Re-imagine the neighborhood as a living system



Bonus-

Besides the direct benefits as outlined in this booklet, there are some secondary benefits that are far reaching.

1. With biodigesters and use of grey water there will be no need for sewage anymore. No sewage spills, no energy, water, and chemical intensive treatment plants.
2. If precipitation management is implemented at a large scale, that means billions of gallons of water into our aquifers which is available to everyone.
3. Keeping a handle on invasive plants (many with a high fuel load) in residential areas means that there will be less of a burden on wildlands.
4. Potentially fewer structural fires if windbreaks are utilized at large scales.
5. Lesser burden on fire agencies.
6. Happier, more connected humans and wildlife.

We are at a crossroads in life. We can either keep going the way we have or we can move forward. Hope is not lost, it is the foundation from which resiliency is based. Connect with your neighbors, and that includes plants and wildlife. By being pro-active rather than re-active we can make sure that future generations have everything they need to thrive.

For this to work we need to collectively shift our way of thinking and acting. We were warned decades ago when the fix would have been easier. It's up to us, now. But it's also a great time to make the change because there are so many options available and knowledge re-gained.

Recommendations:

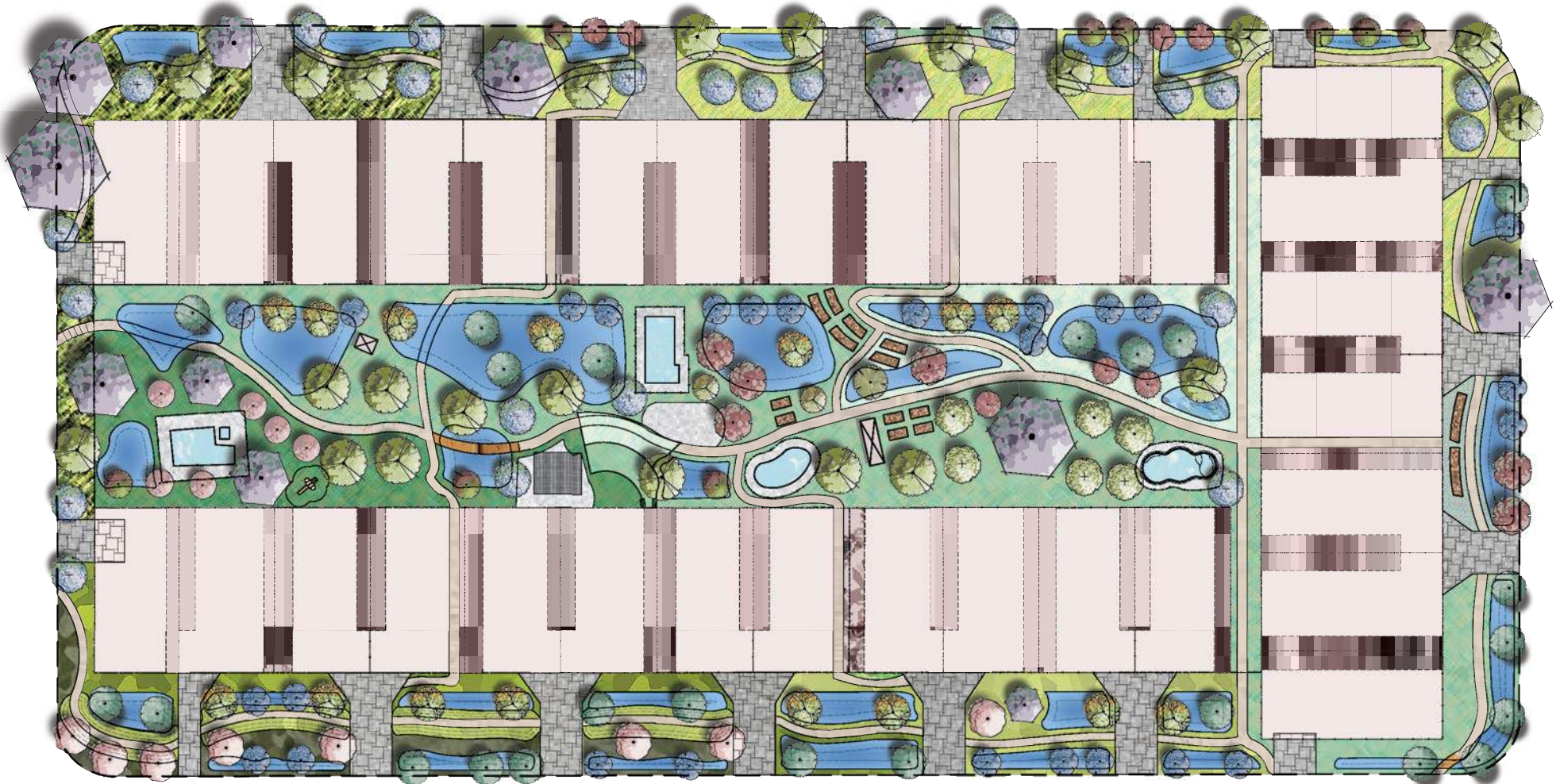
1. Push the market towards plant-based cleansers.
2. Laundry, hygiene products, household.
3. Make your own vinegar, salt, lemon, and/or baking soda cleansers.
4. Preserve abundance: canning, dehydrating, fermenting, smoking
5. Regional crop planting-in order to keep maintenance down, each block or sets can have a different set of edible plants that can be shared or traded. Shared spaces can act as trade spaces.
6. Shop local.
7. Use salvaged materials when possible.

Thank You

Altadena community
Family
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