

**RESILIENT BY DESIGN**  
**BAY AREA CHALLENGE**  
Collaborative Design Phase  
Final Design Roadmap



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# Collaborative Design Phase Summary

As described in the Collaborative Design Phase Proposal, rather than a site specific, element and component-based design, the Permaculture and Social Equity Team (P+SET) proposed an unconventional approach - a social ***design process*** to build community capacity and ecoliteracy to address the challenges of coastal adaptation and resilience planning, especially in vulnerable communities that have experienced generations of marginalization and exclusion.

In a three month period, we successfully piloted this capacity building program in Marin City, California resulting in an inspiring People's Plan to authentically reflect the aspirations and intentions of the resident community of place. An intergenerational cohort expanded existing knowledge for assessing and addressing risks, developing near and long term strategies with a prioritized set of projects to be immediately phased into partial implementation as early as this summer.

Additionally, the community has enhanced their existing advocacy literacy to more effectively engage with municipal, regulatory, and regional stakeholders. More importantly, we were reaffirmed of our hypothesis that communities have, often latent, skills, experiences, and strategies to solve the local and regional challenges and risks they face. Unlocking or reclaiming this potential seems to require a particular ordered process.

**In this document we present a description of and roadmap for both the implementation of this principle based, regionally replicable, adaptive *design process* and the People's Plan for Marin City with the specific elements determined by the community.**

P+SET feels grateful for the opportunity to participate in this Resilient by Design (RbD) Bay Area Challenge. In particular we want to thank RbD for taking a stand that "resilience is equity" and explicating in the RbD Briefing Book that "it is critical that underlying vulnerabilities be addressed, and that the process of planning for resilient solutions be grounded in community self-determination."

# The Challenge and Opportunity

*“Public awareness, education, and civic engagement around sea-level rise are foundations for adaptation in a democratic country. Lack of engagement reduces political support for proposed solutions and creates resistance to any policies that may impose costs on individual citizens. Civic engagement by disadvantaged communities is further constrained by lack of capacity to effectively participate in planning, attention to other short-term priorities, and history of distrust with political actors.” (The Governance Gap: Climate Adaptation and Sea-Level Rise in the San Francisco Bay Area, Mark Lubell, Ph.D. University of California, Davis)*

The ‘business as usual’ norms of planning and development community engagement are proving to be ineffective in the context of coastal adaptation and resilience planning. Chronically marginalized communities (often subjected to the excluding impacts of institutional or structural racism) find themselves on the front lines of sea level rise with inadequate infrastructure, inequitable resources, and oftentimes in the San Francisco Bay Area, the imminent threat of displacement along with enduring stressors like food insecurity. Even well-intended municipal planners, designers, developers, and regulators can be seen as outsiders and the community regularly retreats into apathetic or obstructionist positions not trusting the intentions of those that engage them only for temporal feedback on ideas generated by a professionalized design culture with technical jargon. Proposals commonly driven by market rate return capital financing tend to lead to exploitative outcomes. The normal process of assess, ideate, engage (solicit community feedback), iterate, then present assumes certain constraints on, or at least overlook, the community’s capacity to generate or express their own self-determined ideas, possibilities, and dreams.

The opportunity was to transform the process of ‘engagement’ to one of authentic partnership - to initiate site design by first increasing the capacity of the resident community recognizing, leveraging, and enhancing the already existing assets and initiatives in a place. This reparative capacity building approach, in its most elaborate, protracted form, intends to redress the structural inequities of the present and past and result in a comprehensive, living, People’s Plan that becomes a more effective starting point for the complex process of our collective adaptation to living in an uncertain climate.

# The Community Partnership Process

## Community Partnership Process

The P+SET design concept approach is a Community Partnership Process (CPP) to establish local leadership across generations. We go beyond engaging with communities to partner with residents.

The CPP specifically designs programs for individual communities based on their unique assets and needs. Asset-based methodology for sustainable community development focuses on using a community's assets as a means of building local solutions to challenges. In this process, community members are actors with agency. Local residents including individuals, groups and associations, and institutions bring knowledge, skills, and passions as strengths to the process to influence their physical space, foster exchanges, and foreground culture, history, and community vision.

Based on community perspectives, we provide technical expertise and education to give members the skills to interpret and solve immediate challenges (such as flooding in a particular location).

The CPP is grounded in a whole systems perspective where possible solutions are typically distributed systems and ecologically, multi-functional. This 'stacked' benefit perspective to solution ideation is oftentimes transferred to the community through a training or capacity building process.

Ideally, a successful CPP should result in a growing community culture of stewardship of place. Small scale projects will be implemented leading to larger more elaborate collaborative designs. Contentious or obstructionist posturing will be obviated as stakeholders continue to support the building of the community's capacity to assess risk, address challenges, and communicate in ways that enable equitable outcomes for all.

## CPP Steps

### 1. Listen and Asset Map

- Start by listening to and observing what is happening in the community.
- Identify strengths and weakness as observed by the community partner and our team.

### 2. Assess and Strategize

- Understanding the community perspective, we seek to develop ideas that integrate their interest and our knowledge base to establish a dialogue and discussion.
- Combining leadership from the community and our team we strategize and design possible solutions.

### 3. Propose - Discuss - Feedback

- By proposing and discussing possible collaborative design and planning efforts we can work together to meet the community's needs.

### 4. Establish a Plan with Phasing

### 5. Implement Aspects of the Plan

- Coordinate and prepare for future planning

### 6. Review and Recalibrate

# The Community Partnership Process

CPP and resultant People’s Plan development is applicable for any community with permanent human settlement. Some of the design ideas developed here are most relevant in the context of communities that have been marginalized and/or socially and economically oppressed often via structural or institutional racism.

In the San Francisco Bay Area the priority sites for implementation of the CPP and People’s Planning process are best captured by the San Francisco Bay Community Vulnerability Map created by the Bay Conservation and Development Commission (BCDC) Adapting to Rising Tides (ART) program. BCDC ART developed the following community indicators of vulnerability to flood risk as part of the Stronger Housing, Safer Communities project led by the Association of Bay Area Governments (ABAG).

Indicator	Measure	Source: 2010-2014 American Community Survey, unless otherwise noted	Percentage Per Block Group	Count
Language	% Households without a proficient English speaker 15 years and older	S1602: Limited English Speaking Households	≥ 14	1
Access to a vehicle	% Households without a vehicle	B08201: Household size by vehicles available	≥ 15	1
Housing cost burden	% Households spending greater than 50% income on housing	B25091: Monthly owner costs as a percentage of household income & B25070: Gross rent as a percentage of household income	≥ 35 renters &/or ≥ 19 owners	1
Race and ethnicity	% Persons of Color	B03002: Hispanic or Latino origin by race	≥ 68	1
Education	% Persons 25 years and older without a high school degree	B15003: Educational attainment for the population 25 years and over	≥ 19	1
Housing tenure	% Not owner-occupied households	B25003: Tenure	≥ 55	1
Transportation cost burden	% Households with high transportation costs	Center for Neighborhood Technology Housing and Transportation Affordability Index	≥ 18	1
Income	% Households with income less than 50% of Area Median Income	B19001: Median household income	≥ 33	1
Age	% Persons 75 and older	B01001: Sex by age	≥ 9	1
	% Persons under 5		≥ 8	1
<b>Total</b>				<b>10</b>

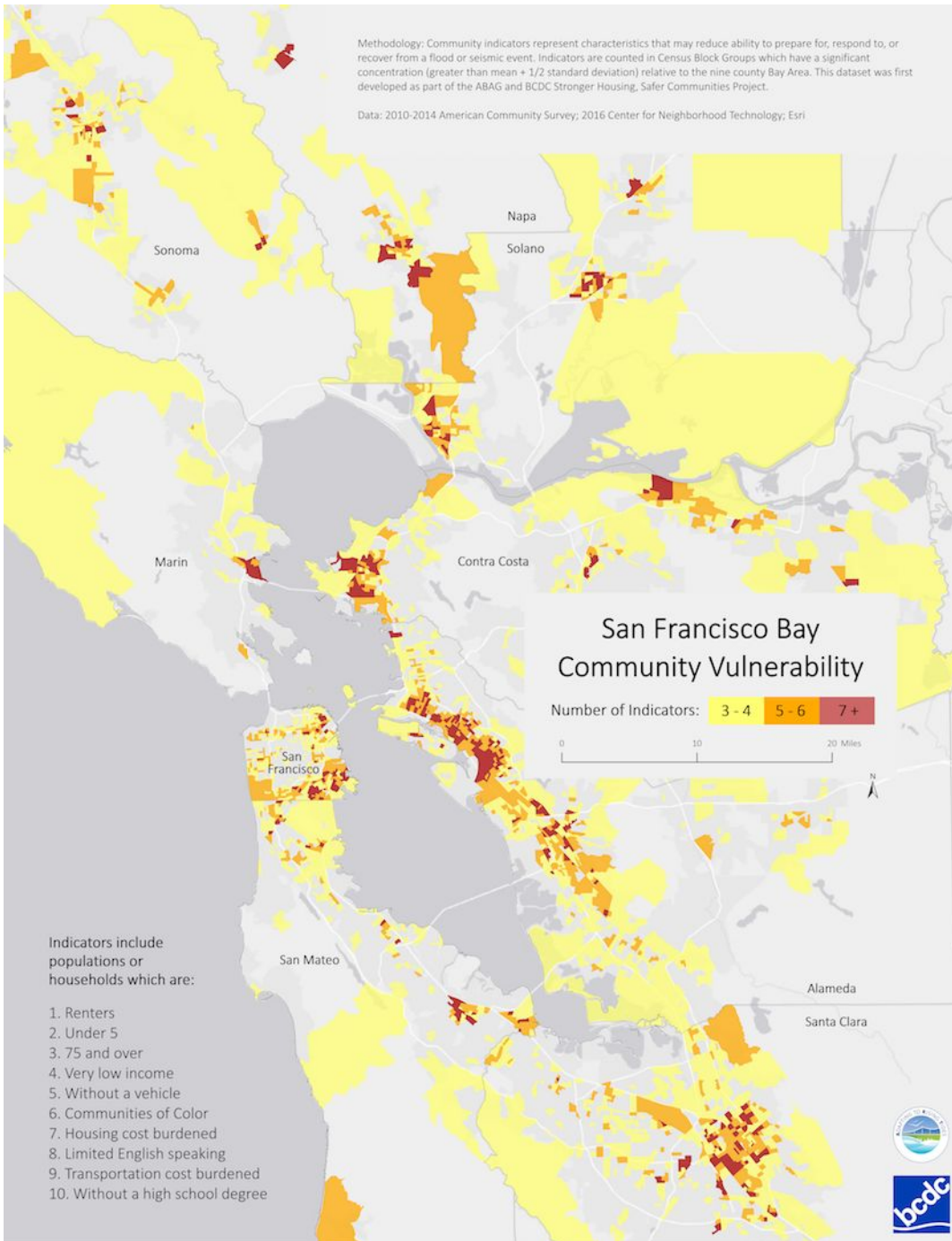
# The Community Partnership Process

Those areas on the map colored orange or red (5+ vulnerability indicators) would be the priority regions for implementing the CPP in consideration of the following conditions:

The community of place invites in such a process the recognition of need for support in addressing the chronic stressors and acute shock events affecting local resilience (including location of affordable housing, food insecurity, inequitable treatment by law enforcement, etc.).

Existing resilience initiatives from within the community (these typically are community based organizations (CBOs) with reach in the community focused on environmental justice, disaster preparedness, just transition, or similar themes).

Every community identified on the San Francisco Bay Community Vulnerability Map with 5+ indicators of risk meets these two conditions.



<http://www.adaptingtorisingtides.org/wp-content/uploads/2017/04/RegionalCommunityIndicators-1.png>

# The Community Partnership Process

## Goals and Objectives of a CPP

A core objective of the CPP we propose is to build community capacity on top of existing assets (skills, resources, and knowledge). This typically looks like skills and literacy transfer. The culture of the design community has 'professionalized' design thinking such that communities often feel intimidated and therefore cautious and guarded in their participation in anything ostensibly collaborative. The CPP essentially aims to "de-professionalize" core aspects of design thinking grounded in whole systems perspective. The CPP enhances existing initiatives of self-determination and seeks strategies that increase community ownership (of both solutions and problems). We've designed the CPP to result in a living document that captures near and long term solutions generated by the community - a People's Plan. The goal of a People's Plan (described in more detail below) is to create a more equitable field of discussion with other stakeholders, planners, and designers where the community already has captured a conceptual design to address present and emergent risks and opportunities.

The CPP also seeks to, if appropriate, equip the community with more effective advocacy literacy and connect the community more directly with influential regional stakeholders who, perhaps prior to the CPP, have been less well connected to the community.





# The Community Partnership Process

## Principle-Based Approach

We found it tempting to want to rigidly define the CPP as a set of steps that, when followed, reliably yield the outcomes and goals described above. Because it is an asset-based approach the CPP will possibly look different (likely similar in most regions) from place to place. Our research and experience has yielded some repeating themes or patterns that can be distilled as principles or guidelines of an effective CPP.

- Seek an invitation - A CPP is most likely to be successful if you are invited in by the community. Seek first not to solve problems, but seek how to get invited to any existing projects related to the area you are wishing to make an impact in.
- Build trust - A successful CPP must be grounded in trust. Explicit disclosure of intent and vision are critical to developing trust. Acting in ways that assume and acknowledge the existing skills, experience, and knowledge of the community helps build trust.
- Embrace diversity and inclusion - A diverse team to facilitate a CPP is more likely to be successful in engaging with a diverse community. Include all voices and elevate those most often marginalized. If possible attempt to mimic the type of representation to the community you are partnering with.
- Transfer skills - Relinquish power and build skills. Use the most accessible language as possible.
- Forge mutually beneficial relationships - Utilizing a whole systems perspective, emphasize strategies and approaches to “stack benefits.”
- Constantly seek feedback - Build regular and varied feedback mechanisms into the CPP to develop adaptations.
- Be adaptive - Prepare to adjust timelines, language, and focus according to the emergent needs of the community.



# The Community Partnership Process

## CPP: A Flexible and Adaptable Model

By starting with an asset-based approach and gap analysis (what skills, literacy and needs does the community perceive they need to support their resilience initiatives), the CPP can be adapted for *and with* any community. Based on the gaps identified it is likely that a capacity building training and/or capacity building while developing solutions process would be the likely next step. By adhering to the principles and following the order of operations outlined above the CPP can be adapted for any community.

## How to Integrate the Specific Expertise of Advisors

When it is the case that a capacity building training results as part of the CPP, integrating design, finance and engineering experts can be beneficial. The following best practices and principles for integrating experts and advisors can be critical:

- Provide racial justice or anti-oppression training for experts before they engage (support community experts in hosting trainings whenever possible)
- Invite experts and advisors to meet with community in the community setting/environment (not to have the community go to the location of the expert)
- Have an interpreter or someone that can flag jargon or clarify language or effective exchange of information and ideas
- Pre-screen experts intentions and content to make sure it is relevant to and supportive of community intentions and outcomes.
- Encourage experts to focus on building long term relationship regardless of the timeline of the project.

## Engagement with Public Sector

The CPP also brings government officials and regulators into partnership with the community. The same best practices for experts and advisors also apply to officials from the public sector. Additionally, where advocacy literacy is part of capacity building training resulting from a CPP, facilitated engagement and then analysis of public sector engagement can help a community forge non-adversarial or beneficial relationships with agencies and officials.

## CPP Implementation Roadmap - Short and Long Term Vision

The next steps for the CPP is to seek opportunities to expand the pilot to 3-5 additional locations in the San Francisco Bay Area based on where P+SET has already been invited to facilitate such a design process. More formal partnerships with organizations such as the San Francisco Estuary Institute, the Resilient Communities Initiative, Movement Generation, and the Environmental Coalition for Water Justice are being explored as pathways to implement the CPP in additional sites. As the next set of sites are developed, we will continue to integrate iterative feedback and develop success stories and inter-regional knowledge transfers. Elements of the CPP (People's Plan Process, CPP Outline and Principles) can be open-sourced and shared for others to more effectively facilitate a CPP for coastal adaptation and resilience planning.

# The Community Partnership Process

The long term vision for the CPP would be to fully integrate it into the California Governor’s Office of Planning and Research (OPR) General Plan Guidelines. “OPR is statutorily required by Government Code Section 65040.2 to adopt and periodically revise the State General Plan Guidelines (GPG) for the preparation and content of general plans for all cities and counties in California. A general plan is the local government’s long-term blueprint for the community’s vision of future growth. The GPG serves as the ‘how to’ resource for drafting a general plan.”

## CPP Finance Plan

P+SET is in the process of refining the CPP based on what we have learned through the course of the pilot project (see below) and is actively engaging with stakeholders to elaborate our insights as to where the most appropriate funding for implementing CPP program in other communities in the Bay Area (and beyond). Because the CPP is a ‘pre-development’ cost the most likely sources of funding are regional, state, and federal government grant programs, private philanthropy, in some cases corporate philanthropy, and potentially Universities. The cost of implementing a CPP is highly variable due to the diverse conditions of communities (e.g., some are already well organized, whereas others are just starting to organize) and the diverse nature of the consensually developed scope of engagement. Using People’s Plan development as an archetypal scope of engagement, we estimate between \$10,000 and \$50,000 to initiate a capacity building training and between \$10,000 and \$100,000 of sustaining funding per year to continue to elaborate a People’s Plan to fulfill its role (see below). Ultimately this recurring cost should be underwritten by the local and regional government as all general and specific planning could involve, someday, People’s Planning.

Sources that we have investigated as possible or likely for funding CPP include (specifically):

- Regional flood control districts
- Community foundations
- Private family foundations that focus on regional social justice outcomes
- San Francisco Bay Conservation and Development Commission (BCDC)
- The Resilient Communities Initiative (RCI)

Additionally we’ve been approached by other designers and project developers during the last few months and see opportunities to partner with other firms on their pre-development processes (including other design teams with RbD).

Finally, a comprehensive CPP ultimately serves municipalities, large property owners, and major public asset managers as well. Whereas these stakeholders do already have community engagement budgets, allocating a portion of said budgets to a CPP could result in significant savings (legal costs, etc.) in the long run when communities have more skills and capacity to advocate and share in ways that are understandable and constructive for these stakeholders to hear.

# A People's Plan

## What is a People's Plan?

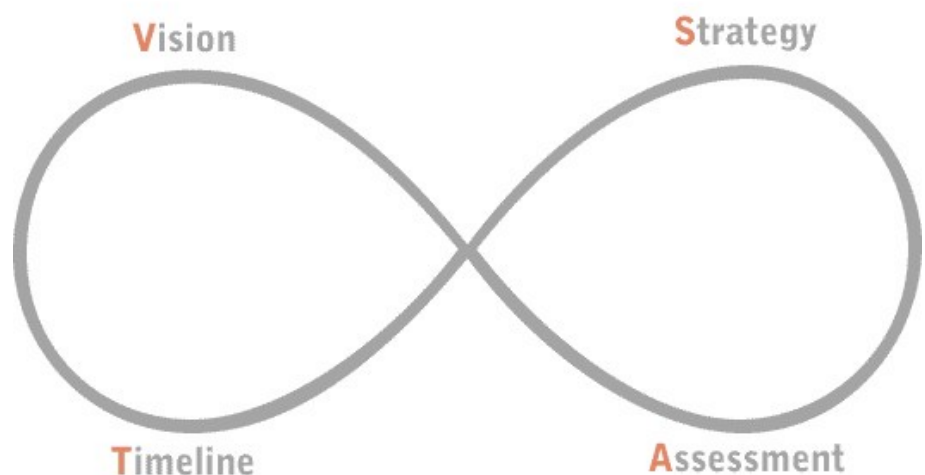
A People's Plan is a living (adaptive), iterative container to hold and convey the expression of the rationalized intentions, aspirations of a community of place. It looks like a collection of maps and documents that records the assets, risks, issues, and strategies to move elements in place and time to celebrate what is beloved in community and address challenges and problems. A People's Plan is especially relevant to communities who have not regularly participated in municipal general or specific planning due to structural discrimination and oppression. The strategies in a People's Plan might include solution forms related to housing, infrastructure, landscape management, and land use in general. In the era of climate change People's Plans will be more and more focused on addressing risks to resilience including sea level rise, extreme storm events, fires, famines and chronic stressors related to lack of affordable housing, economic opportunity, and mobility.

## How Does a Community Make and Steward a People's Plan?

Developing a People's Plan starts with **visioning**. Visioning is frequently the most difficult aspect of popular design (oftentimes due to regular disappointment, disenfranchisement, apathy, and resignation). There are many methods to develop an explicit, aligned, and collective vision. Visiting inspirational showcase sites in the region where similar problems have been solved and sharing stories of success from around the world can help stimulate ideation of what is possible. People's Planning visioning must be inclusive and facilitation should seek to find alignment.

The next step in developing a People's Plan is **assessment**. Assessment takes the longest time in the design process. Together, we gather an assessment of existing conditions - assets and problems. And we placed these on maps. Base maps of existing conditions need to be adapted to the orientation of landmarks in the community doing design. Assessment also involves "power mapping" to discover how decision-making and development typically occur in a region as well as providing a comprehensive stakeholder analysis. A thorough understanding of the jurisdiction and motivation of each stakeholder is critical in the People's Planning process and frequently requires advocacy literacy training.

The VAST design process is an iterative loop / "living process" to develop a constantly adaptive People's Plan.



# A People's Plan

After assessment comes **strategy**. People's Planning involves learning a mosaic of possible solutions that are tailor fit for the community and its issues. We always seek solutions or strategies that have multiple beneficial outcomes beyond just solving the problems such as food and water security, resilience, habitat, and beautification to name a few. We begin to place these strategies out onto the maps, matching them to the issues discovered before. We iterate through these steps, corresponding problems with solutions and enter all of this into a database where we begin to see something like a heatmap that, in a truly democratic way, starts to articulate the vision of the community. Once a strong pattern emerges, we move a set of strategies into a rationalization process where we determine the practicality and efficacy of strategies and begin to develop a plan to move forward. For some projects this looks like the hands of the community picking up shovels and building out small scale examples in the short term. These smaller projects can be learned from and replicated over time with little or no outside input. For larger and more complex projects, it might look like multi-stakeholder collaboration where biddable specs are sought for further development. In these cases the community plays the role of self-advocacy to see that the People's Plan is honored. It is important to note that the People's Plan is a living design, it is constantly iterated through and updated with the current vision, goals, and trajectory of the community.

Finally a preliminary **timeline** is developed for the implementation of the strategies to begin to realize the vision articulated in the People's Plan. The timeline takes the strategies and organizes them by various characteristics, including time and resources. Grouping strategies into "project categories" enables certain local organizations (identified in assessment) to take stewardship or ownership of those strategies. Timeline development involves measuring the efficacy and impact of proposed strategies and prioritizing those that create the greatest impact for the least amount of change. Resource allocation budgets and pro formas are developed and matched with strategies to form resource needs plans that can be used to seek funding or support. Implementing initial strategies/projects that share any or all of the following characteristics is important:

- Site control
- Low cost
- Model
- Public
- Visible
- Measurable beneficial impact

Celebrating the expression of community intent made manifest in place can be leveraged to enroll more individuals into the People's Planning process. Once artifacts have been built they must be assessed and leveraged to create movement and momentum to implement additional solutions described by the People's Plan.

# A People's Plan

## Permaculture Design and a People's Plan

Permaculture is defined as an ecological design system rooted in indigenous wisdom to elevate ecosystem knowledge while meeting human needs. Permaculture design influences the development of a People's Plan. To the extent that the community developing the plan is not ecoliterate or oriented to systems thinking, frequently a capacity building training will be advised so the People's Plan reflects the following common or defining characteristics of permaculture design:

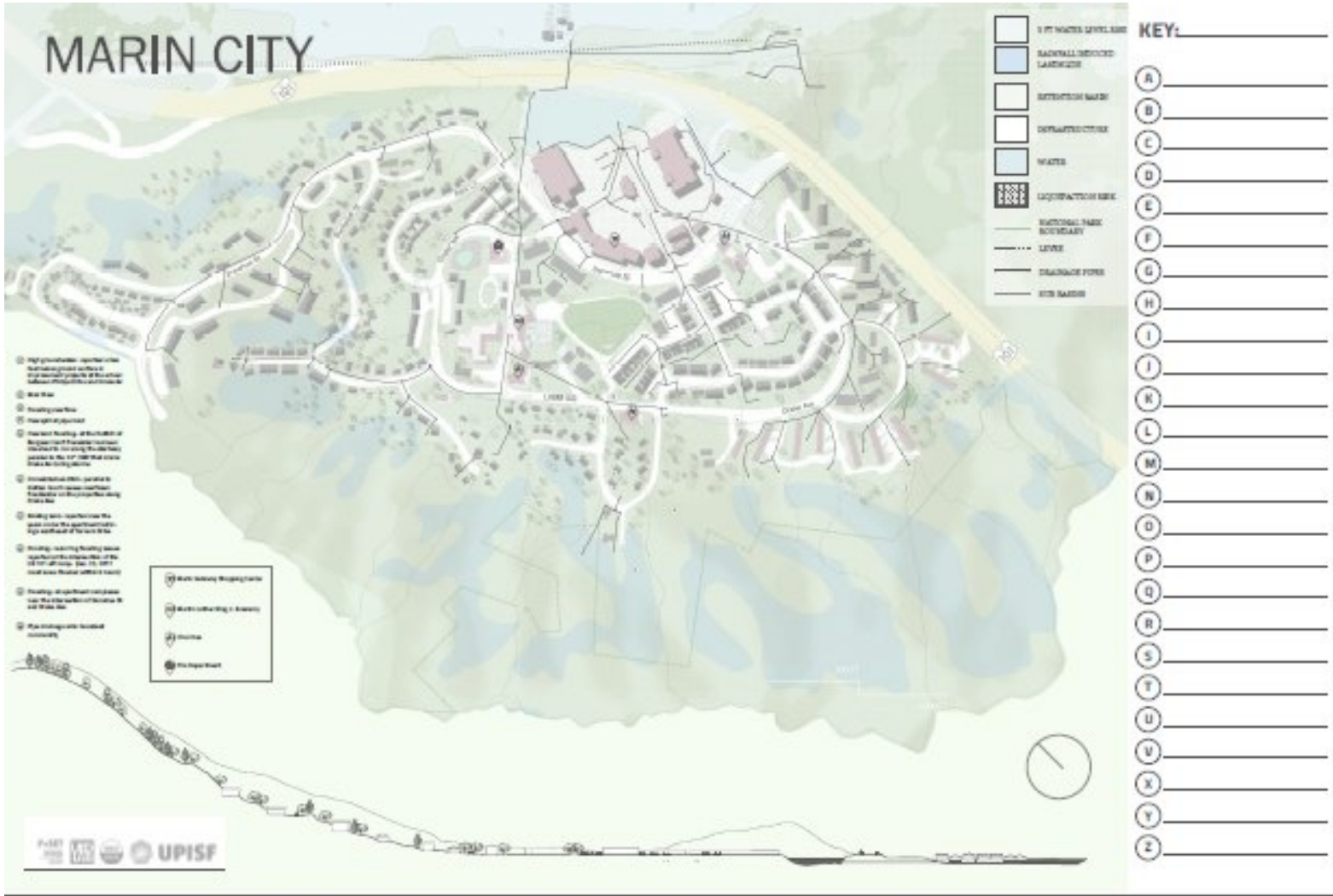
- Ethical boundaries - Permaculture design has an explicit set of ethics that emphasize **care of people** (all people, not just some), **care of earth**, and **voluntary limits to consumption**. These ethics act as boundaries to action (a filter for appropriate strategies) to ensure "permanent" (long standing / enduring) culture. The strategies developed in People's Planning will be critically assessed by the community for how they meet human needs (care of people), while enhancing biodiversity (care of earth), and demonstrating equity or avoiding cultural norms of disproportionate wealth hoarding.
- Stacked or integrated functions - Strategies are assessed and selected for their ability to meet multiple objectives through one action. Systems literacy reveals how, for example, clearing pioneering-plant carbon fuel-load for fire mitigation can also yield materials for erosion control which simultaneously opens the understory for more plant and animal diversity. This concurrently reduces transpiration and creates more riparian humidity to further reduce fire risk and produce conditions conducive to growing productive, edible vegetation to address food insecurity. Such clearing could also be done in a vocational training setting creating job opportunities for youth in the community. The prerequisite for analyzing which strategies have this "stacked" characteristic is a certain threshold of 'ecoliteracy' or a literacy of how things relate to each other and are connected. 'Stacked benefit' strategies can be extraordinarily high leverage because of possible economic and material efficiencies.
- Pattern to details - Permaculture encourages designers to look at fitting elements and strategies into a pattern first and then calculating the details and specifications. For People's Planning in the context of sea level rise and coastal adaptation resilience planning, the pattern of the watershed is natural boundary unit to place and organize strategies. The repeating themes or patterns of strategies at each section of the transect of the watershed will be largely self-similar. This enables the community to quickly develop a set of replicable solutions - adapted to site specific conditions - and confidently place them in the appropriate locations within the People's Plan.
- Small and slow solutions - Permaculture emphasizes, by principle, achieving scale from collections of smaller solutions. Strategies that solve problems which can be implemented at a human scale (even not augmented by equipment where possible) are prioritized in a People's Plan so that initial implementation of projects can be done, ideally, with simple labor and hand tools - making it accessible to nearly all to partake.
- Diversity and redundancy - Permaculture design stresses embracing multiple options to solve problems. Whereas 'business as usual' design tends to fully discount resilience, permaculture finds value in planned redundancy and avoids the risk of "over-engineering" by starting with lower cost small and slow solutions.

# A People's Plan

## How A Community Uses a People's Plan

**“Planning is best done in advance” - Anonymous**

Having a People's Plan does not mean that all the community's desires will be implemented in the near term. However, a rationalized set of elements and strategies is a starting point for interacting with large asset owners, municipalities, and other stakeholders. A process in place to continue planning encourages community organizing which can lead to greater social cohesion, a leading indicator for resilience. In this uncertain era of climate change, certain events or disasters will likely occur with increased periodicity which can have the effect of opening the field for 'new' ideas. If the community has a living People's Plan, once a massive earthquake hits, for example, it can then advocate for recovering and rebuilding in ways consistent with the 'already vetted' rationalized strategies placed in the plan.



# Pilot Site: Marin City

## Background

Marin City is within the Richardson Bay watershed, and the Marin County Flood Control District Zone 3. With the steep watershed hills of the Marin Headlands on one side and developed areas and Highway 101 and the Richardson Bay on the other, Marin City chronically floods.

The stormwater infrastructure and local drainage facilities, including pipes and ditches, are not sized adequately to convey flashy hillside runoff. This storm water carries high sediment or mud which heavily impacts local businesses and homeowners. Extreme events can inundate Highway 101 causing regional transportation breakdowns on the only road and major commuter corridor connecting Marin City to the rest of the county and San Francisco. Of greater impact locally, the one road in and out of Marin City, Donahue Street, is regularly flooded and closed more frequently. Managing SLR, storm water in the uplands, and sanitation breakages downstream further contribute to the local hazards.





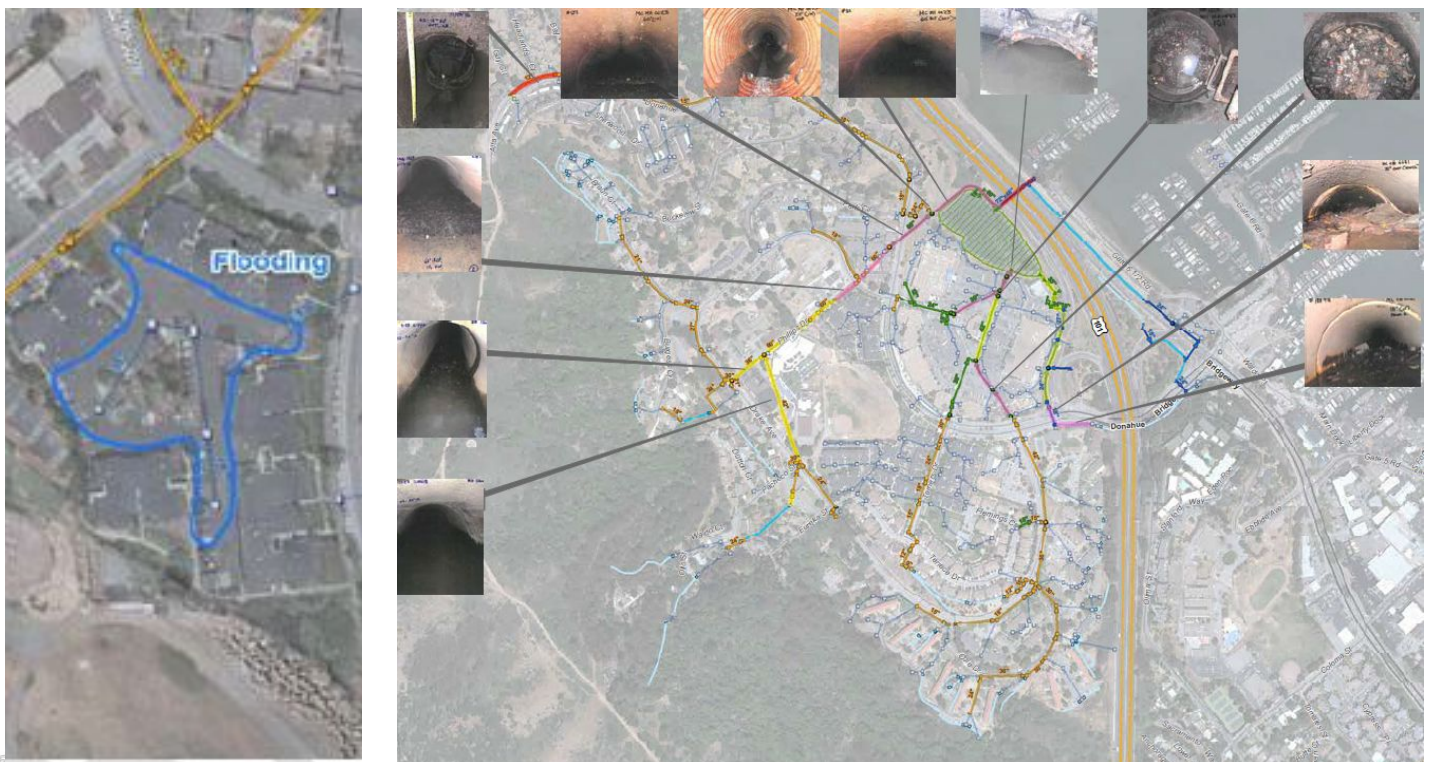
# Pilot Site: Marin City

## Research Methods and Resources

Preliminary risk, problem, and opportunity assessment data was gathered from a number of sources including the following:

- Community partner - Shore Up Marin
- *MARIN CITY DRAINAGE STUDY: A Study for the Marin Flood Control Zone No. 3 October 20, 2017*
- Consultation with Flood Control Zone No. 3 engineers
- Consultation with Marin County Principal Watershed Planner
- Multiple site tours and direct landscape analysis and observation
- Marin County Historical Society photos
- *The Golden Gate Village Community Working Group EXPLORING REVITALIZATION OPTIONS AT GOLDEN GATE VILLAGE*
- Marin City Community Plan (1992)

All the sources and references were helpful in affirming our approach using the watershed as the unit of design intervention. For example, whereas the Drainage Study focused on the region at the toe near the regional transit corridor - flooding of 101 Highway prompted the study - it became clear in that study significant sediment loading in the stormwater conveyance creates risk for the residents. The community partner-led tours showed us the many sites where erosion causes said sediment load. It was obvious any recommended pipe resizing/infrastructure spending would only be temporarily effective until headwaters erosion mitigation work is performed



# Pilot Site: Marin City

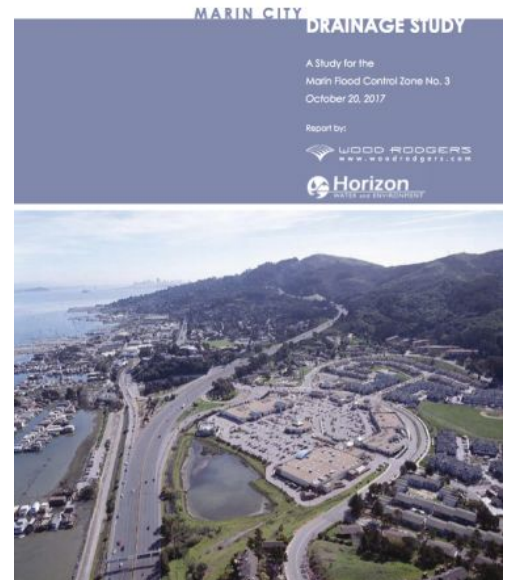
## Lead partner Organization: SHORE UP MARIN

We began the CPP in Marin City in the RbD Research Phase based on relationships developed over the last decade with Shore Up Marin. The current adaptation challenges Marin City faces are at the watershed level. Storm water runoff doesn't always drain properly. Marin City was built 75 years ago and just 100 years ago sea levels were 8" lower. Infrastructure has not been maintained consistently due to a lack of appropriate funding unlike in more affluent communities. Fresh water is wasted and contaminated while damaging community infrastructure and property in addition to endangering residents during floods.

In response to these issues, Shore Up Marin has formed a multi-racial environmental coalition advocating for equitable inclusion of low-income communities in planning and disaster preparedness.

The organization's main areas of focus include flooding and hazard mitigation, sea level rise (SLR) and climate adaptation, and socially equitable disaster preparedness. Examples of their work include a community education program, Community Emergency Response Training (CERT), Community-based Disaster Councils, and community-level disaster plans and preparedness integrated into San Rafael and county levels.

Out of our partnering process (steps 1-3) with Marin City we determined a community level resilience plan is needed which was created through an capacity building education program called Designing Our Own Solutions (DOOS). This course was on the leading edge of creating community level plans and was not only focused on disaster preparedness but built on the existing education programs of Shore Up Marin, while deepening their communities ability to respond to chronic stressors and acute shocks. Until now, there was neither a coastal adaptation or permaculture training program serving this area and community.



# Pilot Site: Marin City

## Design Goals

We utilized the CPP in Marin City in order to identify existing community strengths and progresses in resiliency planning and implementation in order to leverage and strengthen its growth and establish local leadership across generations. By providing technical expertise and education we gave members skills to interpret and solve immediate challenges, such as flooding and emergency preparedness in the Marin City. Out of our partnering process (steps 1-3 of the CPP process) with Marin City we co-created a goal of designing a community level resilience plan, or “People’s Plan,” which we produced through the DOOS education program. This course informed by the tenets of permaculture and steeped in a deep understanding of natural and cultural history and function, helped produce a truly visionary method to realize design appropriate to the people living in Marin City.

Objectives articulated in partnership with community for the capacity building training include the following:

- Equip the community with ecoliteracy and advocacy literacy on top of their existing skills
- Leverage the training environment to invite in regional stakeholders to connect with the community in a non-contentious setting
- Develop a small set of implementable projects where further action can be taken
- Stimulate and encourage a motivated subset of the community to steward the People’s Planning process
- Develop renderings and representations of the preliminary People’s Plan to be shared with diverse stakeholders and leveraged by the community to generate support and funding for project implementation

## CPP Process Applied to Marin City

### Listen and Asset Map

We started the CPP process in the fall during the research phase and tour. We continued it in the winter by listening to the residents and observing what was already happening in the community. We interviewed Ms. Terrie Harris-Green and began to identify strengths and weakness facing Shore Up Marin and also Marin City regarding resiliency planning.

### Assess and Strategize

We began to understand the community perspective and started to develop ideas to integrate their interests and our knowledge base to establish a dialogue and discussion. Key to *our* knowledge base was the permaculture design approach as a tool to equip the local community with the ecoliteracy and design skills to identify risks and strategies dealing with flooding and emergency preparedness issues.

# Pilot Site: Marin City

## Propose - Discuss - Feedback

We proposed and discussed a possible course of action, including the outreach and recruitment of participants, as well the offering of a design course that would lead to a "People's Plan for Marin City." We then discussed possible outreach partners and began the collaborative design process of the training. Due to the limited timeline of the RbD process, we acknowledged its rushed nature and concluded that a more beneficial course design would have an extended timeframe and a more flexible schedule.

## Establish a Plan with Phasing

We established a plan with the following phases:

Phase 1 (Feb-March): Course design and materials prep/ Outreach and recruitment/ Community resource acquisition

Phase 2 (March-May 17th ):Host 8 week course/ Design "People's Plan/ Share Plan with larger community

Phase 3 (May): Review and Recalibrate/ Identify 2-3 site ideas for summer implementation

Phase 4 (June-Sept): Implement 2-3 site ideas from course/ Continue capacity building training for course participants

Phase 5 (Sept-ongoing): Review and Recalibrate/ Reassess sites and update plan for ongoing implementation planning

## Implement Aspects of the Plan

Through the RbD process we have been able to implement Phases 1-3.

## Coordinate and prepare for future planning

Shore Up Marin and community members are designing the best structure to support the long term updating and implementation of the People's Plan.

## Review and Recalibrate



**Sign up for Building Our Own Solutions:** a class for Marin City residents to learn, plan and prepare to build flood and disaster preparedness projects for Marin City.

Big flood prevention projects take time, money and regional support – but while we must advocate for those, there's **so much we can do** to defend our community from flooding as well as being prepared for a disaster, here and now.

Learn about cutting edge sustainable solutions currently helping communities world wide. Class participants will receive an educational stipend for participation. Childcare will be provided if needed. Registration is first come first served with **priority to low-income Marin City residents.**

**Call now while space remains:**

**Terrie Green**, Co-Director Shore Up Marin  
(415) 331-2156

**Pandora Thomas**, Permaculture + Social Equity Team,  
United Permaculture Institute of San Francisco  
(510) 289-1508

**Hannah Doress**, Shore Up Marin  
(415) 450-0110



# Capacity Building Training

## Designing Our Own Solutions

We co-designed a special course, specific to the assets and needs of Marin City and also the limitations of the RbD process. We do not recommend the course we offered as a solution to other sites' needs, but acknowledge that if the outcomes of a CPP process in another community is ecoliteracy building and capacity raising through education, it may have aspects of our DOOS course in the design. It will also benefit from the curriculum patterns we identified for this project.

DOOS used permaculture techniques to address coastal adaptation and flooding issues as well as strategies for mapping risks and positioning communities to benefit from funding and project development. Participants worked through a series of 8 training sessions and developed the skills to understand and consider options for the land they occupy. We grounded the course in the Vision, Assessment, Strategize, Timeline (VAST) design process. They then used those experiences to develop a "People's Plan" or a community based planning document to capture their needs and interests. The People's Plan was co-developed by community members and P+SET with conceptual design overlay of appropriate resilience strategies. The community leveraged their newly developed literacy of strategies, elements, and abilities to assess the risks and opportunities of their region and determined preliminarily 'site' strategies in appropriate places for optimal resilience outcomes. As a team we offered technical support to make base maps and effective communication tools. Local and regional experts in various related and relative vocations and officers from multiple government jurisdictions contributed to the educational process both directly and indirectly. Contrasts were gleaned by the community to the differing perspectives on and approaches to the design process.

## Community Celebration

As a way to continue outreach and community participation, course participants partnered with P+Set and SUM to host a "Designing Our Own Solutions Community event". This celebration brought out 100 different stakeholders from county officials and planning staff to local and adjacent community members, to learn about the People's Plan and elevate excitement and support opportunities around implementation.



# Capacity Building Training

## Recruitment / Reach

Our recruitment process also utilized an asset based approach. SUM worked closely with our team to recruit from their existing membership, partner organizations, and their broader Marin City Community relationships.

Key organizations and recruitment sites included St Andrews Presbyterian Church, Cornerstone Community Church, First Missionary Baptist Church, Marin City Library, Bayside Martin Luther King Jr. Academy as well as senior centers, community centers, clubs, and neighborhood networks.

Two key recruitment partnerships grew out of the recruitment process with the following organizations and individuals

- Marin City Health and Wellness Center charter school
- Marin City Senior Center Intergenerational garden leadership team
- Shannon Bynum, respected member of the Marin City community

All three of these partnerships enabled our team to have 25 students that consistently showed up to class and participated until the end.

Outreach tools:

- Flyers
- Newspaper spreads
- Presentations at local organization gatherings and venues including the following:
  - Isoji
  - Marin City Health and Wellness Center



# Capacity Building Training

## Curriculum Pattern

### Community building

We began every session with opportunities for our team and the course participants to get to know one another. Many participants cited “building new community connections” as a valuable outcome of taking part in the course. Although Marin City is a small community, many people have not had the chance to come together on a consistent basis, and be able to focus on the assets of one another to help solve an urgent problem. Our course and the community building activities we designed allowed for stronger bonds and connections to occur, which will support the longer term sustainability of the group.

An example of an interactive community building activity we shared:

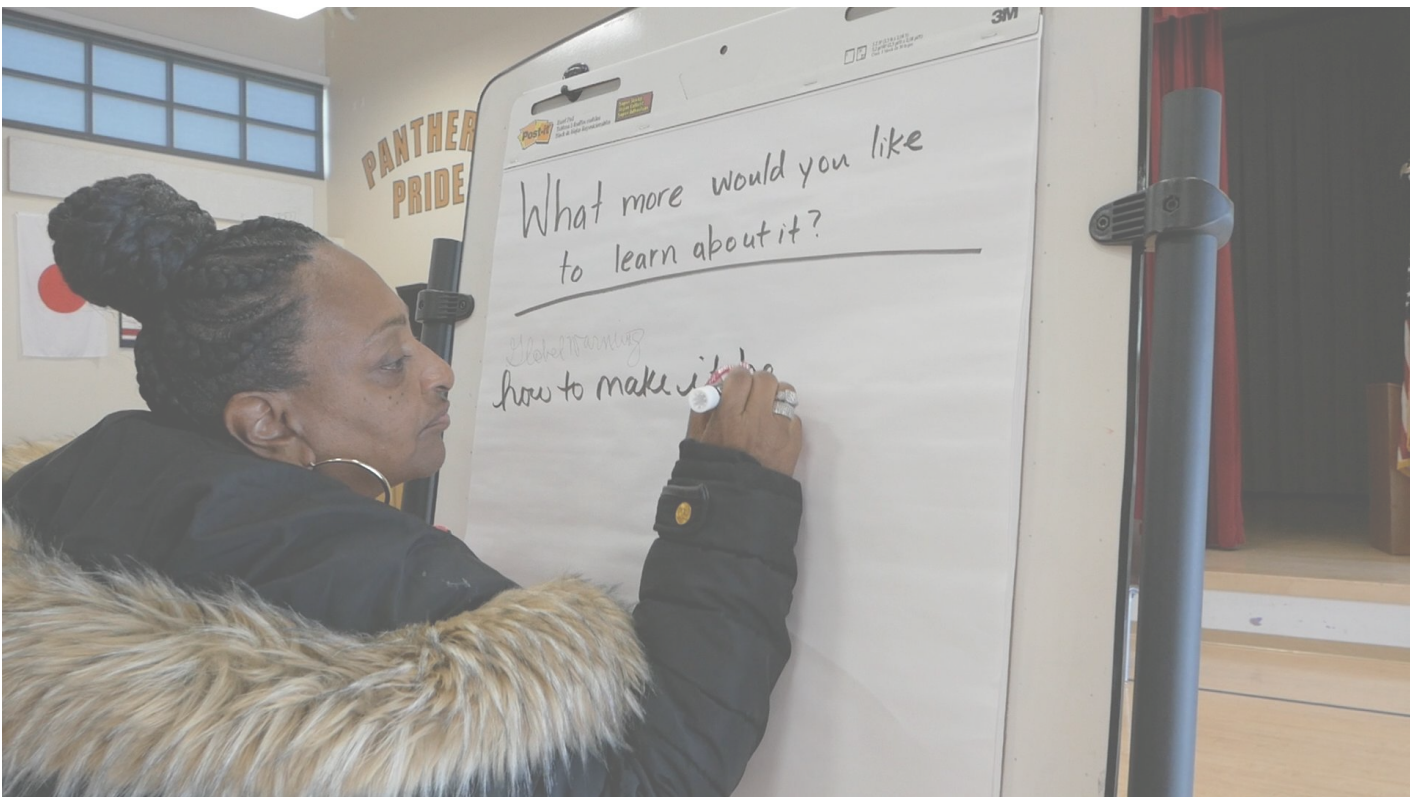
- Web of life name game - participants start in a circle with the facilitator holding a ball of yarn. They are instructed to answer three questions as an introduction - and after they answer they will throw the ball of yarn to the next person to go after them. The questions are:
  - a. What is their name?
  - b. What is one thing they have to offer the group?
  - c. What is one thing they are in need of?



# Capacity Building Training

## Collaborative asset mapping

Participants bring a tremendous amount of skills, experience, and knowledge to their community and place. In Marin City, participants in the training included tradespeople, lawyers, school district employees, science teacher, and more. Even the most marginalized places have resources and assets to be cherished. Marin City has one of the most favorable microclimates for low energy requiring human settlements in the world for example. These assets are listed and where appropriate mapped for reference when designing strategies.

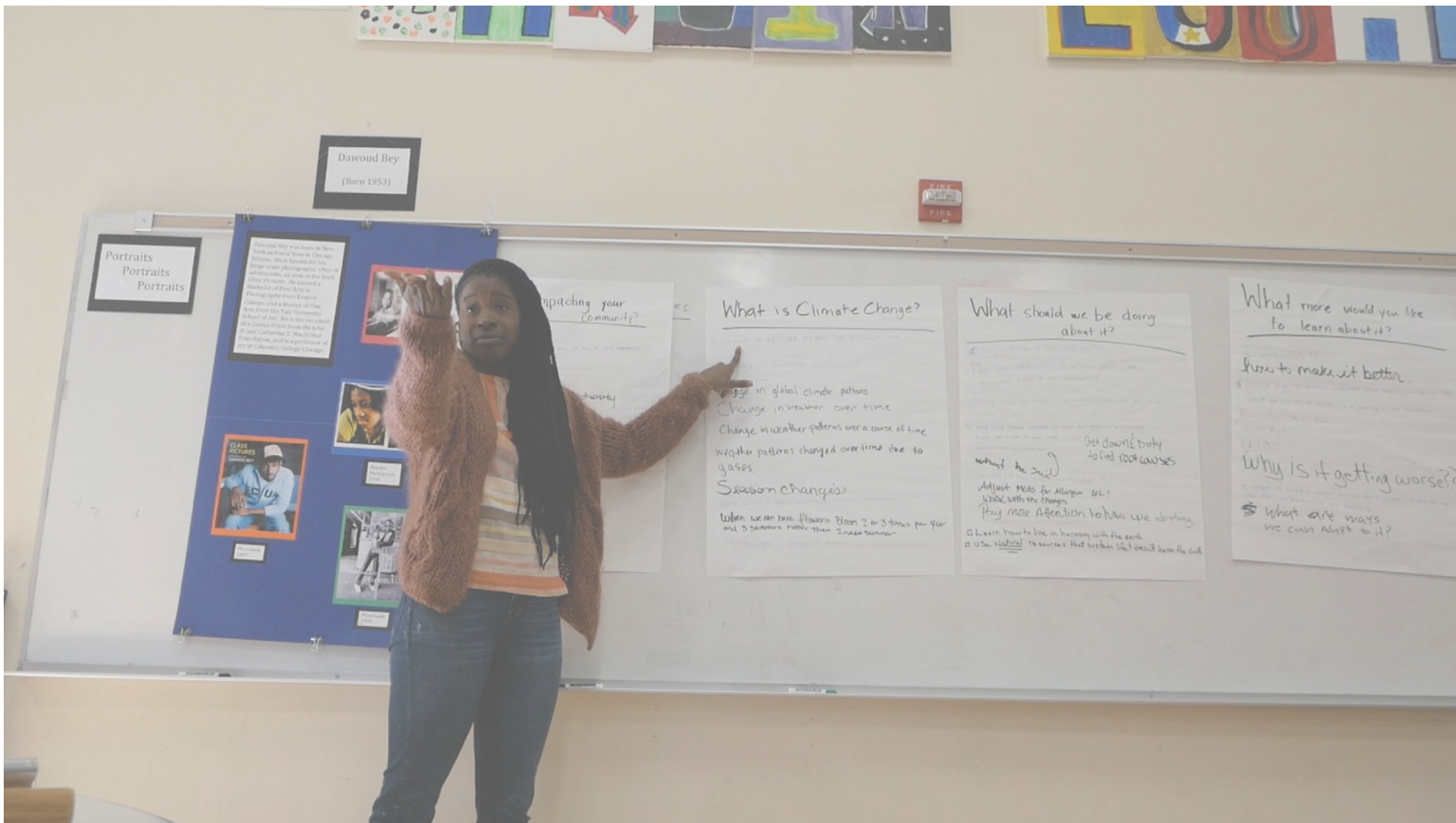




# Capacity Building Training

## Collaborative risk assessment

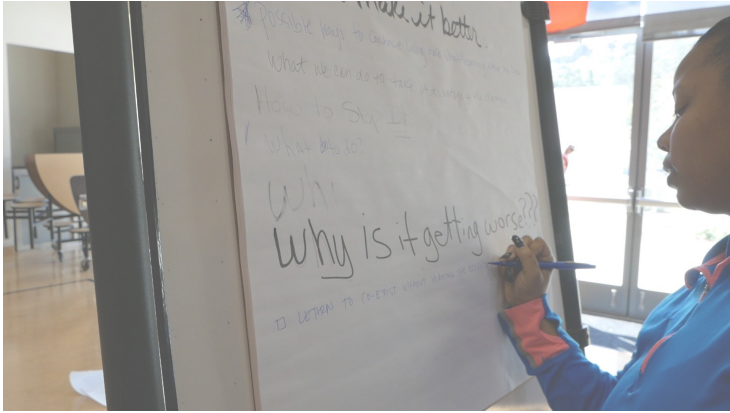
The community's perspective on resilience risks may yield surprises that can provide constraints and/or opportunities for particular strategies and solutions later. For example, in Marin City, rats were highlighted as a common risk/problem and later a biological solution form tied to forest health (owl boxes) emerged as an element in uplands strategies of the People's Plan.



## Introduction to community mapping

Part of building capacity is to increase the ability of the community to effectively plan strategies in appropriate places in the region as well as interact more easily with external stakeholders (e.g., engineers, developers, etc.). Community mapping involves practicing developing maps with community relevant landmarks and indicators so orientation to the map comes naturally and easily and maps become useful planning tools rather than distractions.

# Capacity Building Training



## Immersive tour of risk sites and introduction to watershed pattern

For People's Planning in the context of sea level rise and coastal adaptation resilience design, the pattern of the watershed is natural boundary unit to place and organize strategies. The repeating themes or patterns of risks and strategies at each section of the transect of the watershed will be largely self-similar. This enables the community to quickly develop a set of replicable solutions - adapted to site specific conditions - and to confidently place them where in the People's Plan they might best fit. Common headwaters risks included erosion gullies contributing sediment and debris to the undersized stormwater infrastructure leading to flooding in the lowlands as well as over-production of carbon load creating significant risk in the event of fire.



## Introduction to restoration strategies through experiential site tour

Where possible the community should be able to visit relevant examples of strategies implemented in their region or already implemented directly in their place. We developed a Solutions Forms Booklet (see Appendix) to be used in similar capacity building training programs to support literacy building on the function of decentralized, green, distributed systems. When possible cost and feasibility questions should be harvested at this point and reserved for the "strategy rationalization" portion of the training.



# Capacity Building Training

## Collaborative assessment and strategy mapping activities

Assessment and mapping involved placing risks, assets, and strategies on maps and seeking repeating themes (patterns). This is an iterative processes and should be done multiple times to continue to emphasize that assessment and re-visioning of strategies is ongoing and the community can own this beyond the capacity building training itself. Ideally, this part of the curriculum would involve cost estimation and feasibility assessment of the various solutions in order to create priority and “order of operations” projects that have the highest leverage.



## Peoples Plan Design Practicum

Pilot projects are mapped out on a timeline and the group practices a “collaborative rationalization” process where they discuss the efficacy and benefits plus challenges of their design ideas. This is also an iterative process and continues with the life of the People’s Plan, as new assessments are identified and strategies learned. The community designers understand that just as natural cycles adapt and change their Plans will evolve over time, responding to new challenges and opportunities they face.

# Capacity Building Training

Specific

Curriculum

Time	Site	Course Topic	Learning Task/Activity
<b>Day 1</b> <b>3 hrs</b> <b>March 6th</b>			
	Classroom	<u><b>Course Orientation</b></u>	Welcome to course  <u>Name / Introduction activity</u> “Ball of String” - community connection activity  <u>Course Overview and logistics</u> <ul style="list-style-type: none"> <li>- Pass out course syllabus</li> <li>- Discuss course overview certificate</li> <li>- Introduce Garden Plot</li> <li>- Review Schedule               <ul style="list-style-type: none"> <li>- Finalize Saturday hours</li> </ul> </li> <li>- Pass out food preferences sheet</li> </ul> <u>Sankofa</u> <ul style="list-style-type: none"> <li>- Lead shares image of Sankofa and asked group to share what definition and history</li> <li>- <b>Definition- Go back and fetch it.</b></li> <li>- Invite group to think of an ancestor or someone who they can appreciate for showing up in the room, who was concerned about community and wanting to be part of the solution, then they share with a partner</li> <li>- Lead asks people to share their person story then shares examples of African American environmental leadership and the root of our leadership in moving this course and project forward</li> </ul> Introduction to Permaculture
			<u>Intro to Traditional Environmental Knowledge</u> <ul style="list-style-type: none"> <li>- Permaculture principles (Ecological and Social applications)</li> <li>- Permaculture in urban environments</li> </ul> <u>Closing</u> <ul style="list-style-type: none"> <li>- Next class and home fun</li> <li>- Interview a family member around the “Sankofa” theme</li> <li>- Begin observing the landscape or Marin City</li> </ul>

# Capacity Building Training

Time	Site	Course Topic	Learning Task/Activity
<b>Day 2</b> <b>8 hrs</b> <b>March 17th</b>			
		Welcome to the day	<u>Name activity</u> - Share name and something you enjoy doing outdoors <u>“Shifts” from Last Session</u> - group shares out any shifts in their thinking or anything that they observed in relationship to something they learned in the last session  <u>Review the Class Syllabus and Agenda</u> - Pass out agendas for new students - Review schedule - Share addition of the CERT training sessions in June
	Indoor, then Outdoors	Assessment of place Indigenous land use	<u>History of Marin City 8,000 yrs ago</u> - Land - People - Culture
	Outside	Assessment of place Personal stories	<u>Participants share their history of Marin City</u>
		<b><u>Climate Change Literacy and Sea level rise</u></b>	<u>Gallery Walk-Introduction to Collab. Design</u> - What is Climate Change? - How is it impacting your community? - What should we be doing about it? - What more would you like to learn about it?
		Risk Assessment of Marin City and changing climate	<u>Guest presenter- Scott McMorrow (County Flood district engineer)</u> - Group asks presenter <ul style="list-style-type: none"> <li>- Overview of study</li> <li>- Recommendations</li> <li>- Next steps</li> <li>- Feedback</li> </ul>
	Classroom	Design Process Model Key Permaculture Principles	<u>Introduce VAST Process</u> - Vision - Assessment - Strategize - Timeline
	Outdoors/ Classroom- Garden	Design Methods, Analysis, Zone, Sector	<u>Tour of Garden and Application of VAST Process</u> - Vision for Garden (Ms. Terrie) - Assessment <u>Introduce Niche Analysis with Fruit Tree Example</u> - Strategies - Timeline

# Capacity Building Training

Time	Site	Course Topic	Learning Task/Activity
<b>Day 3</b> <b>3 hrs</b> <b>March 20th</b>			
		Welcome to the session	<u>Review the Class Syllabus and Agenda</u> <ul style="list-style-type: none"> <li>- Review schedule</li> <li>- Share announcements</li> </ul> <u>“Shifts” from Last Session</u> <ul style="list-style-type: none"> <li>- group shares out any shifts in their thinking or anything that they observed in relationship to something they learned in the last session</li> <li>-</li> </ul>
	Outdoors	Intro to Mapping	<u>Map exercise</u> <ul style="list-style-type: none"> <li>- Pass out Maps</li> <li>- Instruct participants to find their home on the map</li> <li>- Discuss what ways students were able to identify their home</li> <li>- Review that this is part of design- identifying a “bird’s eye” view of your city- planners and designers use these maps to assess a site</li> <li>- Next share that group will hear from a planner who works with maps</li> </ul>
		Watershed Introduction Guest presenter- Watershed Planner	<u>Chris Choo</u> <ul style="list-style-type: none"> <li>- Reviewed her work</li> <li>- Introduced concept “<b>Watershed</b>”</li> <li>- Shared her watershed mapping tool</li> <li>- Introduced watershed idea and discussed plans what has happened</li> <li>- Introduced wetland- Marin City-site where we are holding course- used to be under water</li> <li>- Discussed need to understand the intricacies of a site’s history</li> <li>- Participants questioned her on what to do moving forward</li> </ul>
		Community risks assessment	<ul style="list-style-type: none"> <li>- Participants use the map to identify most at risks sites and include address and ways to find it</li> <li>- Class will visit some of these sites on the tour in next session</li> </ul>
		Watershed intro	<u>Introduction and review of Watershed design concepts and principles:</u> <ul style="list-style-type: none"> <li>- Watershed</li> <li>- Ground water</li> <li>- Surface water</li> <li>- Slow small solutions dispersed and less expensive solutions</li> <li>- Slow it spread it sink it</li> </ul>

# Capacity Building Training

Time	Site	Course Topic	Learning Task/Activity
<b>Day 4</b> <b>8 hrs</b> <b>March 31st</b>			
	Outdoors	Welcome to the day	<u>Review the Class Syllabus and Agenda</u> <ul style="list-style-type: none"> <li>- Review schedule</li> <li>- Share announcements</li> </ul> <u>“Shifts” from Last Session</u> <ul style="list-style-type: none"> <li>- group shares out any shifts in their thinking or anything that they observed in relationship to something they learned in the last session</li> </ul>
	Classroom		Brock Dolman Presentation <ul style="list-style-type: none"> <li>- Basins of Relations overview and slideshow</li> </ul>
	Outdoors	Strategies introduction	<u>Class tour</u> <ul style="list-style-type: none"> <li>- Watershed walk and introduce strategies</li> </ul>
	Outdoors		<u>Class tour</u> <ul style="list-style-type: none"> <li>- Watershed walk and introduce solution forms- hands on activity:               <ul style="list-style-type: none"> <li>- Brush plugs hands on activity in field</li> </ul> </li> </ul>
	Classroom		<u>In class review of tour and strategies</u> <ul style="list-style-type: none"> <li>- Mapping of strategies with discussions</li> </ul>



# Capacity Building Training

Time	Site	Course Topic	Learning Task/Activity
<b>Day 5-3 hrs April 3rd</b>			
	Classroom	Welcome to the session	<u>Review the Class Syllabus and Agenda</u> <ul style="list-style-type: none"> <li>- Review schedule</li> <li>- Share announcements</li> </ul> <u>“Shifts” from Last Session</u> <ul style="list-style-type: none"> <li>- group shares out any shifts in their thinking or anything that they observed in relationship to something they learned in the last session</li> </ul>
	Classroom	People plan development	<u>Strategies overview</u> <ul style="list-style-type: none"> <li>- Review and introduce new strategies through a slide show</li> </ul>
	Classroom	Mapping	<u>Group Mapping:</u> <ul style="list-style-type: none"> <li>- Break group up into different tables and have them continue identifying assessments of risks and subsequent strategies</li> <li>- Place on map with dots to show preference</li> </ul>





# Capacity Building Training

Time	Site	Course Topic	Learning Task/Activity
<b>Day 6-8 hrs April 14th</b>			
		Welcome to the day	<u>Review the Class Syllabus and Agenda</u> <ul style="list-style-type: none"> <li>- Review schedule</li> <li>- Share</li> </ul> <u>“Shifts” from Last Session</u> <ul style="list-style-type: none"> <li>- group shares out any shifts in their thinking or anything that they observed in relationship to something they learned in the last session</li> </ul>
		Peoples plan Development	Review strategies and introduce new strategies
		Mapping Stations	<u>Group Mapping and Design</u> <ul style="list-style-type: none"> <li>- Have 2 maps set up in room.</li> <li>- Map #1 is for class to identify assessment spots, key risks.</li> <li>- Map #2 is for class to identify where they feel strategies should be placed.</li> <li>- Design support leads support group through rationalization of strategy placement</li> </ul>
		Intergenerational garden tour	<u>Guest Designer Brandi Mack</u> <ul style="list-style-type: none"> <li>- Introduced terrace farming and designing human centered design</li> </ul>
		Site tour-Strategies placement	<u>Walking tour of Marin City cont'd</u> <ul style="list-style-type: none"> <li>- Identify proper assessment and placement of strategies.</li> </ul> Visited: MLK school block, Donahue Street, Shopping parking lot, Detention basin/pond
		Community event design	<ul style="list-style-type: none"> <li>- Discuss best ways to design an event to engage larger community of stakeholders</li> </ul>

# Capacity Building Training

Time	Site	Course Topic	Learning Task/Activity
Day 7/ 3hrs April 17th			
		Welcome to the session	<u>Review the Class Syllabus and Agenda</u> <ul style="list-style-type: none"> <li>- Review schedule</li> <li>- Share announcements</li> </ul> <u>“Shifts” from Last Session</u> <ul style="list-style-type: none"> <li>- group shares out any shifts in their thinking or anything that they observed in relationship to something they learned in the last session</li> </ul>
	Classroom	Community event planning	<u>Guest presenter: Brock Dolman</u> <ul style="list-style-type: none"> <li>- Discuss best design for final community celebration</li> </ul>
		Advocacy Training	Brock presentation <ul style="list-style-type: none"> <li>- Disaster preparedness               <ul style="list-style-type: none"> <li>- Compost toilets</li> <li>- Rainwater storage</li> <li>- Resiliency hubs</li> </ul> </li> </ul>
		People’s Plan Development	<u>Mapping activity:</u> <ul style="list-style-type: none"> <li>- Groups get maps of 5 or 6 sites that group have narrowed down</li> <li>- They go through and identify strategies and rationalize placement</li> <li>- Discuss funding needs and implementation needs</li> </ul>



# Capacity Building Training

Time	Site	Course Topic	Learning Task/Activity
<b>Day 8-8 hrs</b>			
	Classroom	Welcome to the day	<u>Review the Class Syllabus and Agenda</u> <ul style="list-style-type: none"> <li>- Review schedule</li> <li>- Share announcements</li> </ul> <u>"Shifts" from Last Session</u> <ul style="list-style-type: none"> <li>- group shares out any shifts in their thinking or anything that they observed in relationship to something they learned in the last session</li> </ul>
	Outdoors	Finalizing People's Plan	Final rationalization of Strategies
	Classroom	Financing People's Plan	Guest Presenters Nahal Ghoghoie Mark Northcross discuss structures needed to move a people's plan forward. Grants and public financing strategies
	Classroom	Prep for May 5th event	Review of station prep and design



# Marin City People's Plan

## Near-Term and Long-Term Vision of the Marin City People's Plan

The design of the Marin City's Peoples plan is an adaptive process. It began with the assessment of risks by community members, learning about and applying strategies appropriate for different contexts and sites.

In the near term the plan has identified six projects (summarized below with preliminary community developed composite assessment sketches and pre-specified solution concept renderings from P+SET at the direction of the community) which are a collection of multiple strategies grouped together to solve multiple challenges throughout Marin City's Watershed. The near term vision is to implement at least one of the projects this summer. Over the next 2 to 3 years each of the priority projects (in whole or in part) can be specified further and then implemented creating a small showcase of projects that can be replicated (and adapted) over time. The collective impact of these small repeated projects will serve to mitigate 1 yr and 10 yr storm events, create increased food and water security and, when applicable, create jobs or vocational pathways for residents of Marin City.

The community organizing efforts needed to implement the six priority projects and the repeating themes or patterns of replicable decentralized solutions elsewhere in Marin City will support more collective community engagement in larger, cross-jurisdictional projects of significant magnitude over 50 to 100 years. These projects include the modification of the grading and height of the 101 Freeway, the dredging, modification and enhancement of the detention basin on private property at the shopping center, and the retrofit and redevelopment of Golden Gate Village consistent with the People's Plan for no displacement, appropriate mixed income new development, and historical preservation. Bringing large groups of the community (50-100 residents) at a time to county planning meetings and stakeholder meetings with large asset owners (Caltrans, Marin County Public Housing Authority, etc.) who are literate in how to advocate for their self-determined plan will lead to artifacts and implemented projects to address 100 year storm events and potential right of way flooding and salt water intrusion from sea level rise.

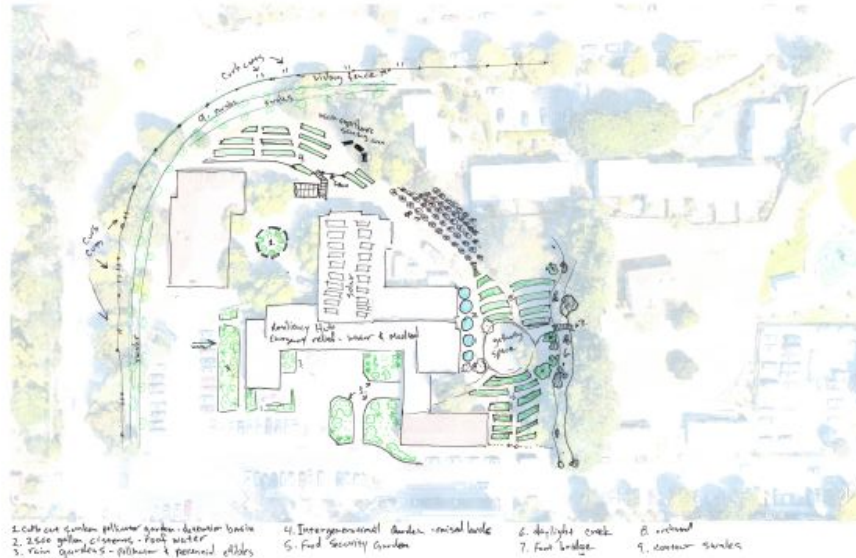
Finally, as the Marin City People's Plan becomes more robust and layered with plans for multi-benefit strategies that mitigate climate change impacts and risks, the Marin City community can become a model for distributed systems and decentralized strategies to address multi-factorial resilience stress for other front-line communities in the region and throughout the county.

# Marin City People's Plan

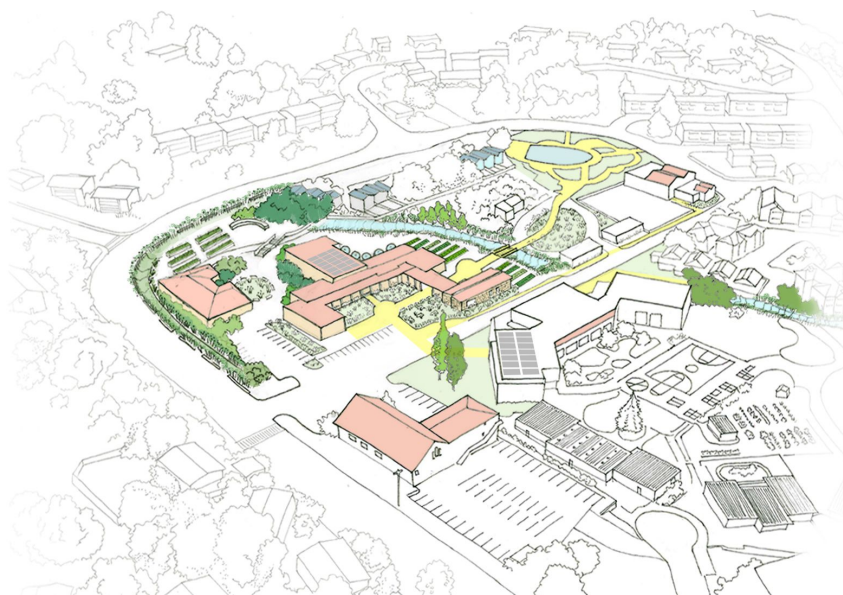
## Priority Projects for implementation

### Marin City Intergenerational Garden

**ASSESSMENT:** The Manzanita Recreation Center sits at the heart of Marin City and houses a wide variety of programs for the local community as well as the larger surrounding population. The buildings and surrounding spaces are under-utilized and under-maintained.



**STRATEGIES:** This site is ideally suited to serve as a resiliency hub for all of Marin City where the best practices can be showcased. Examples include water security cisterns, disaster preparedness services, rain gardens, food security gardens, and more. The centerpiece of this would be the intergenerational garden, identified as being of key importance towards catalyzing the community and future projects.



# Marin City People's Plan

## Erosion mitigation and creek enhancement above Golden Gate Village Building 69

**ASSESSMENT:** As just one example of similar erosion gullies across the watershed, the site behind building 69 is a perfect place to start. Halfway up the hillside to the ridge, the land becomes under ownership of the GGNRA, an ideal place to begin partnership and co-management of the watershed.



**STRATEGIES:** A combination of habitat restoration, creek cleanup, erosion gully brush plugs, and small check dams will slow storm water and reduce silt. An adjacent heritage orchard can be restored and replanted to serve as a community building feature.



# Marin City People's Plan

## Detention Basin and adjacent parking lot retrofit

**ASSESSMENT:** The detention basin has been receiving silt from the watershed above since its inception and now has greatly reduced capacity. Over time, it has developed an ecology of its own and today many species of interesting waterfowl can be seen there.

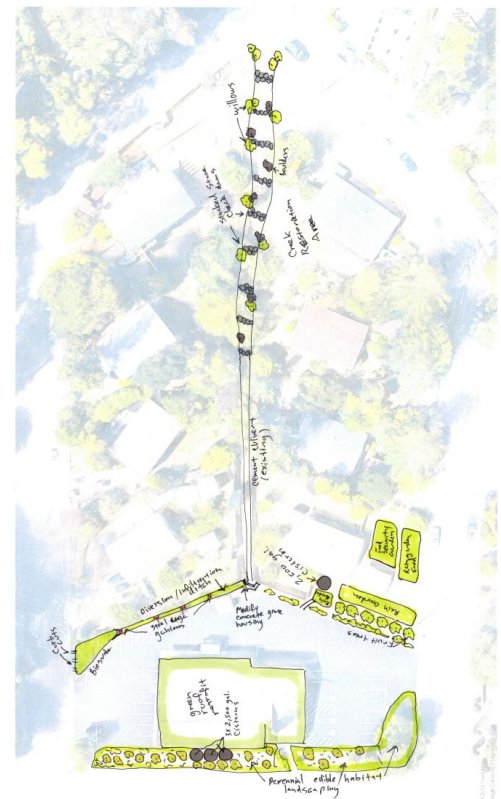


**STRATEGIES:** Along with dredging and expanding the detention basin, it can also be enhanced as an ecological and recreational feature that includes a park, pathways and seating, and informational signage on the ecology and watershed role of the pond.

## Rain garden, cistern, resiliency hub retrofit for church with good opportunities to showcase key strategies

**ASSESSMENT:** The First Missionary Baptist Church has flooded from storm drain overflows more than once. Without intervention, this is likely to happen again due to the design and layout of that storm drain.

**STRATEGIES:** A retrofit of the storm drain that will direct overflows around the church and onto the street is a key intervention, complete with diversion ditch and receiving bioswale. The adjacent home, owned by the church, could feature rainwater cisterns, rain garden, food security garden, and other showcases of best practices.

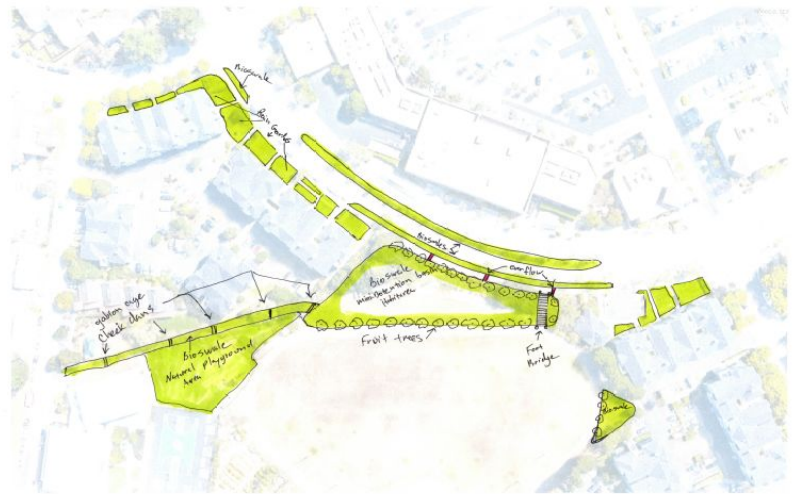


# Marin City People's Plan

## Bioswale assemblies along Donohue Street

**ASSESSMENT:** A site of some of the most common flooding issues as well as the primary road through town, Donohue has many opportunities to demonstrate strategies that can be replicated in various locations around Marin City.

**STRATEGIES:** Between Donohue and the baseball field, there is an open space of approximately 30,000 square feet that could be converted into a small detention basin/bioswale. This can be connected to receive runoff from the field as well as the school and other hard surfaces. This strategy can be paired with a series of interconnected bioswales along Donohue that include the median strip and other small spaces along the edge of the road.



## General resilience retrofit for housing development near the entrance to Marin City

**ASSESSMENT:** The intersection of Drake and Donohue are the location of some of the most common flooding in Marin City and it is here flooding can restrict access in and out of town. The Golden Gate Village sits at the corner of the intersection and features substantial open space that could be retrofitted.

**STRATEGIES:** Utilizing the various open spaces and reconfiguring the pathways and parking lots into catchment and detention basins, this site could hold a substantial amount of water and thereby play an important role in mitigating road closures. It is easily visible from the street when entering Marin City and would also serve well as a showcase to be replicated across the rest of Golden Gate Village as well as into other area developments.



# Marin City People's Plan

## Finance Plan and Regulatory Strategy

Implementation of the People's Plan for Marin City involves resourcing both the continued articulation of the People's Plan through continued training and support as well as financing the near-term priority projects. For next steps in taking the preliminary People's Plan projects and developing them into biddable specifications (especially for those projects on public land) we have identified potential sources from regional, state and regulatory body (e.g., EPA, Coastal Conservancy, FEMA) grant programs and private or community philanthropy. P+SET is working with Shore Up Marin to approach potential funders including the Marin Community Foundation and the Flood Control District 3 who have indicated that funds may be available for continued community development of the Plan and implementation of priority pilot projects (as showcase models for future replication).

For implementation of certain projects or certain aspects of the decentralized green infrastructure development on private land we worked with the community to identify these potential sources of reimbursement grants for costs of implementation:

### **Community Block Grants**

<https://www.marincounty.org/depts/cd/divisions/federal-grants>

### **Community Service Grants**

<https://www.marincounty.org/depts/ad/service-fund-program-information>

### **Marin Municipal Water District - Cash for Grass or Turf Replacement rebates**

<https://marinwater.org/163/Rebates>

<http://saveourwaterrebates.com/turf-replacement-rebates.htm>

Both Shore Up Marin and individuals in the community are pursuing financing to implement the shovel-ready strategies on private property and where site control is established.

# Marin City People's Plan

The size, scale and nature of these small solution implementations is highly variable. Using meta study analysis of North American and local region implementation of bioretention features a conservative estimate of \$20 per square foot can be used as a proxy to estimate preliminary costs before biddable specifications are developed. P+SET will support Shore Up Marin with resources and materials to apply for grants from the following sources:

- Marin Community Foundation
- San Francisco Foundation (Rapid Response for Movement Building)
- FEMA
- Flood Control District 3
- CA DFW
- California Natural Resources Agency
- San Francisco Bay Restoration Authority
- State of California Coastal Conservancy - Climate Ready Program
- Kickstarter type campaigns

Where the community identifies bigger infrastructure improvements are needed we will implement additional training to map jurisdictions and understand both the limitations and potentials for blending capital across precincts and over time including novel forms of impact investing that the community could advocate for long-term, large scale improvements (that are informed by and harmonized with the People's Plan).

## NEXT STEPS

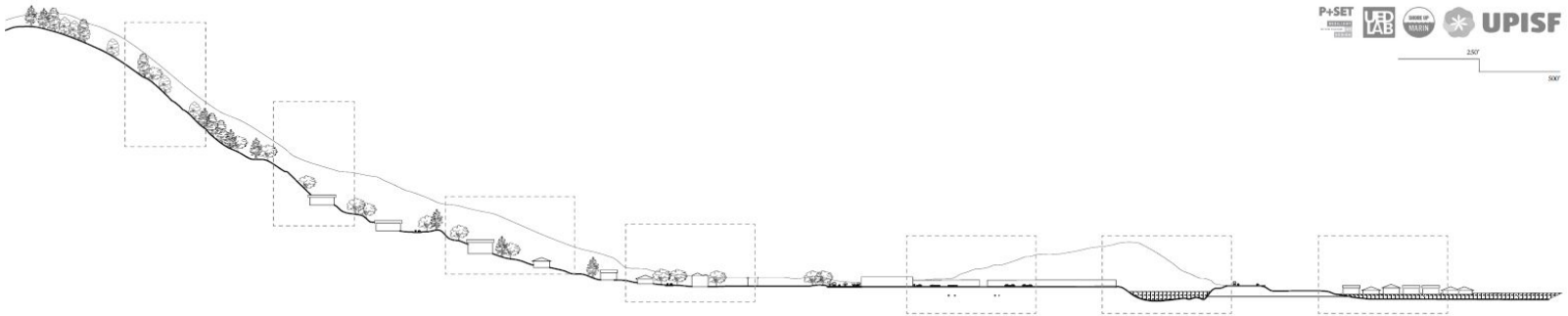
Moving forward, our team will continue to partner with Shore Up Marin over the following summer months to do the following:

- Support Shore Up Marin in their ongoing organizational fundraising process. As is the case with many impactful organizations, Shore Up will benefit from consistent dedicated funding to support operational and development costs. Our team is meeting with Shore Up Marin and two foundations to begin the process of raising these funds.
- Request remaining funds from original RbD grant to fund:
  - Immediate hiring of a grant writer to apply for grants due within 90 days from the end of the RbD process. Longer term development and grant writing support can be funded by additional funds raised as part of the above mentioned fundraising process.
  - Continuation of the "Designing Our Own Solutions" capacity building training over the summer months. This training will focus on next steps for the build out of the "Marin City Intergenerational Garden" which is a central component of the proposed resiliency hub. More than half of the graduates of the first course are excited to take part in the ongoing training, and we are currently designing the specifics of the summer course

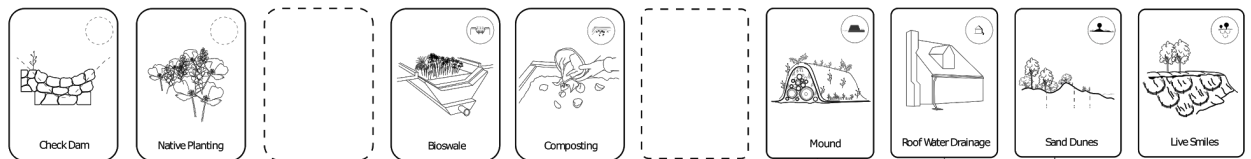
**Note:**

Revisions from feedback from jury appears on the following pages:

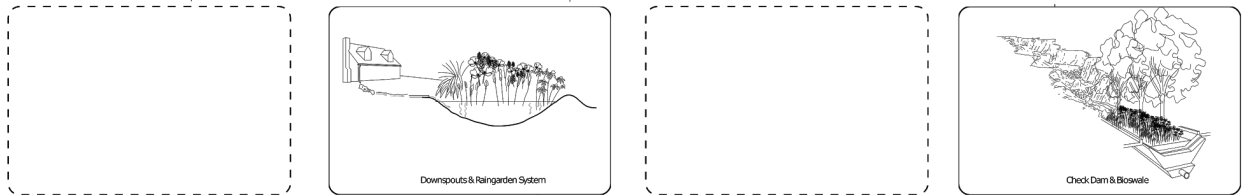
- Page 42
- Page



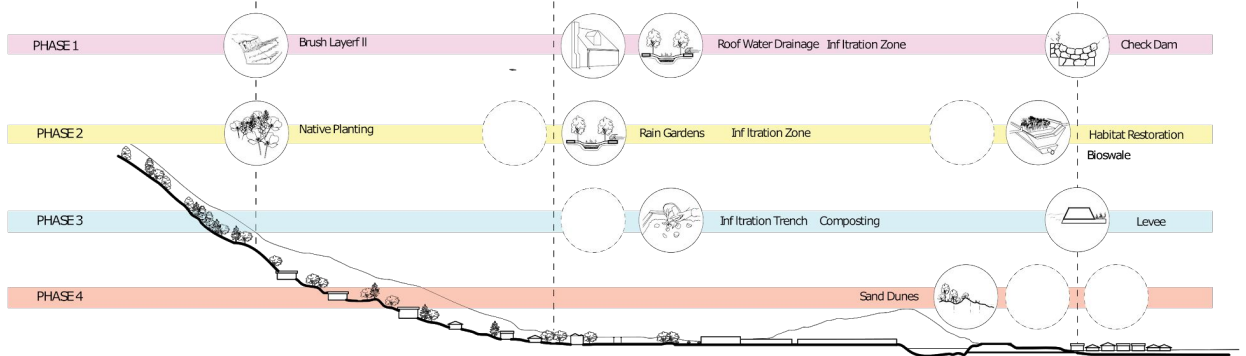
# 1 ELEMENTS



# 2 STRATEGIES



# 3 PHASE DEVELOPMENT





## Solution Form Strategies

LOW IMPACT DEVELOPMENT AND WATERSHED STRATEGIES  
DESIGN GUIDE FOR MARIN CITY COMMUNITY RESILIENCE

## People's Plan Community Design Tool Key

### HOW TO USE THIS BOOK

This booklet contains a list of solution forms and their corresponding details. These individual strategies shall further be grouped together in relevant design projects and deployed throughout Marin City, at various sites, to create a living "People's Plan". This plan is not static but much like natural cycles, will grow and change as needed over time, with the guidance of local community designers and the wisdom of natural systems.



## Glossary Permaculture Design



### DESCRIPTION

An ecological design system based on indigenous knowledge and wisdom that elevates ecosystem health while meeting human needs.

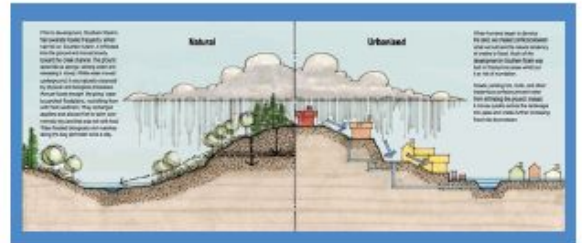
3

## Glossary Watershed



### DESCRIPTION

A watershed is an area of land that drains all the streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel.



4




























Glossary  
**Erosion Mitigation**

**DESCRIPTION**

Erosion is the process of eroding or being eroded by wind, water, or other natural agents. Effective erosion control techniques handle surface runoff and are important techniques in preventing water pollution, soil loss, wildlife habitat loss and human property loss.

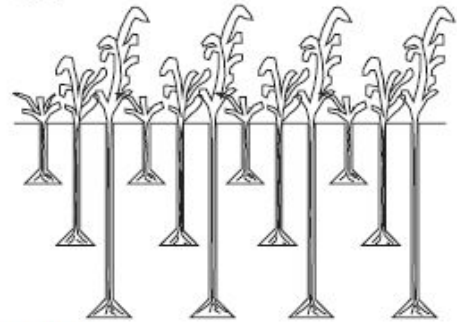
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Solution Form  
**Keyline (Ploughing)**

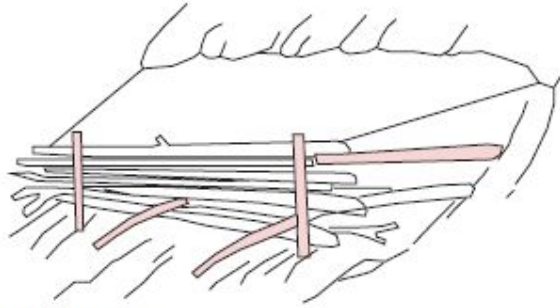


**DESCRIPTION**

Keyline Ploughing opens up the soil allowing air and plant roots to penetrate deeper in to compacted soil. This brings dramatic improvements to the growth of the sward which then opens up the soil further and improves drainage.



Solution Form  
**Reinforced Earth  
Walls**



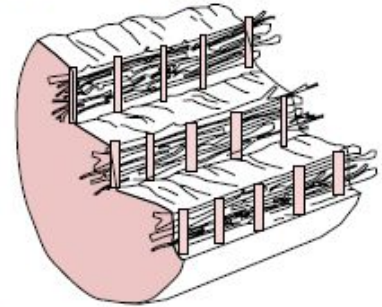
**DESCRIPTION**

Live reinforced earth walls perform like traditional soil reinforced structures except the construction elements sprout and grow.

10



Solution Form  
**Brush Wattles  
(Fencing)**

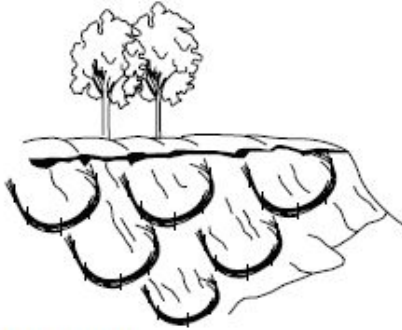


**DESCRIPTION**

Brush Wattles can be used to treat over-steepened slopes. The terracing created by the wattle fences reduces erosion while the growth of the cuttings provides a dense cover of pioneering woody species on the slope.

11

Solution Form  
**Live Smiles**



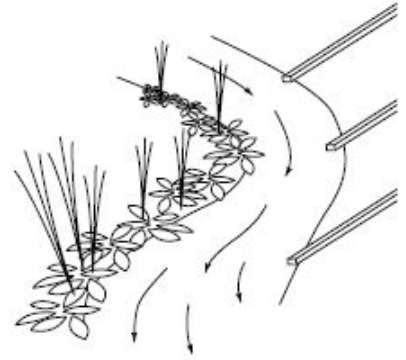
**DESCRIPTION**

Live smiles are used where flowing mud pushes linear structures over. Sites must be relatively moist year-round to sustain live smiles.

12



Solution Form  
**Diversion Drain**

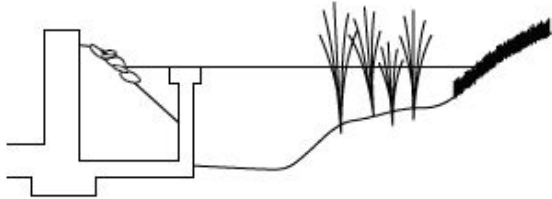
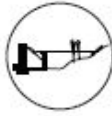


**DESCRIPTION**

Drainage strategy whereby water is purposefully diverted using natural diversion elements such as plantings, riprap, or wood members.

13

Solution Form  
**Detention Basin**



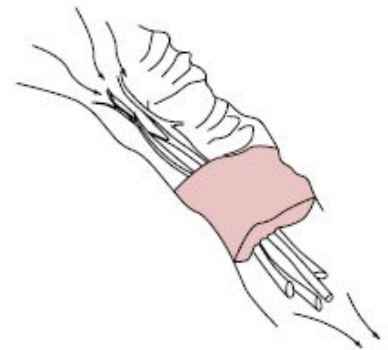
**DESCRIPTION**

A detention basin is an excavated area installed on, or adjacent to tributaries of rivers, streams, lakes, or bays to protect against flooding and, in some cases, downstream erosion by storing water for a limited period of time. Retention basins are designed to allow water to infiltrate into the ground water table.



14

Solution Form  
**Live Pole Drainage**



**DESCRIPTION**

Drainage strategy where live poles are used to direct water flow naturally down a slope.

15

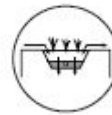
## Solution Form Compost Pile



### DESCRIPTION

Process by which natural decaying organic matter, such as food waste and lawn waste, are used to fertilize soil.

16



## Solution Form Bioswale



### DESCRIPTION

Bioswales are landscape elements designed to concentrate or remove debris and pollution out of surface runoff water. They consist of a swaled drainage course with gently sloped sides (less than 6%) and filled with vegetation, compost and/or riprap (loose stone used to form a foundation for a breakwater or other structure).



17

Solution Form  
**Agroforestry**



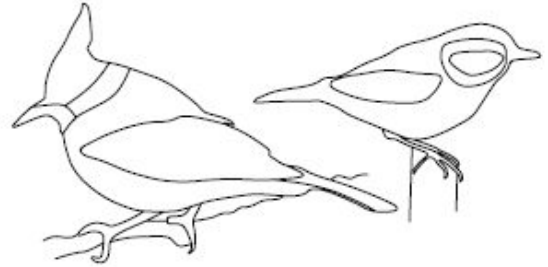
**DESCRIPTION**

Agriculture incorporating the cultivation and conservation of trees. It is a land use management system in which trees or shrubs are grown around or among crops or pastureland.

18



Solution Form  
**Wild Habitat**

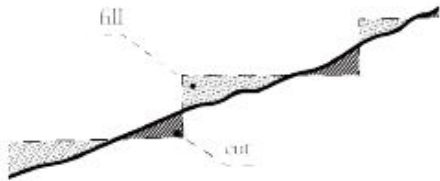


**DESCRIPTION**

Wildlife that is indigenous to a place and is acclimated and contributes to the natural cycles of weather and water.

19

## Solution Form Cut & Fill Grading



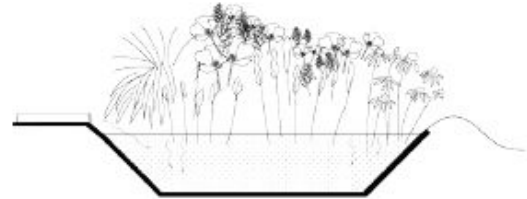
### DESCRIPTION

Redistribution of earth, using cut and fill, for construction work such as foundation, base course for a road, landscape and garden improvements, or surface drainage.

20



## Solution Form Rain Garden

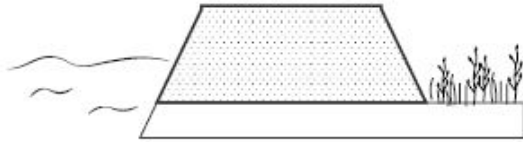


### DESCRIPTION

A garden of native shrubs, perennials and flowers planted in a small depression. It is designed to temporarily hold and soak in rain water runoff that flows from roofs, driveways, patios or lawns.

21

Solution Form  
Levee



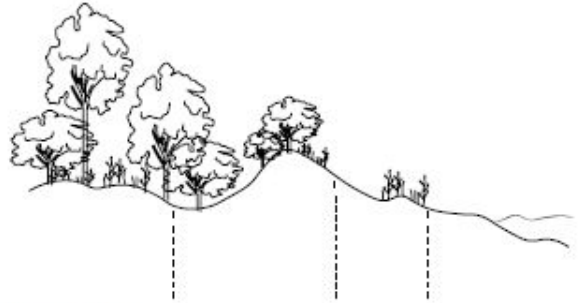
**DESCRIPTION**

An elongated ridge that regulates water levels.

22



Solution Form  
Sand Dunes

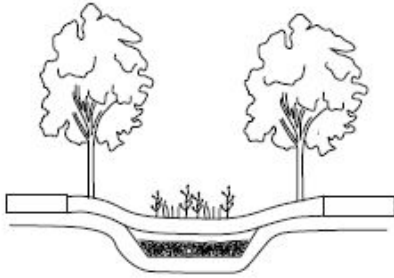


**DESCRIPTION**

Vegetation above the tideline helps accrete sand into dunes that provide a water barrier.

23

## Solution Form Infiltration Zones



### DESCRIPTION

Permeable area that allows water to drain down from the ground into the soil.

24



## Solution Form Piles



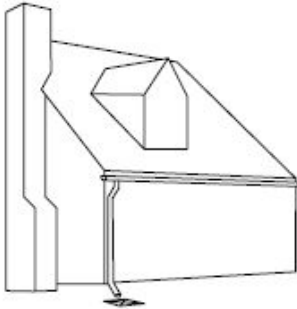
### DESCRIPTION

Elevating on piles provides flood protection from surging water levels

25



Solution Form  
Roof Water Drainage



**DESCRIPTION**

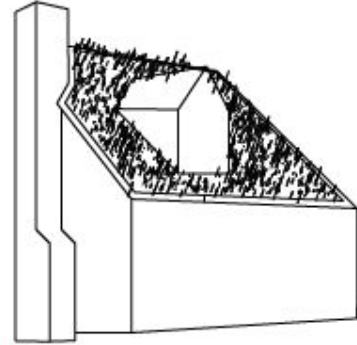
Drainage strategies that direct water from roofs to other locations.

Example: downspouts

26

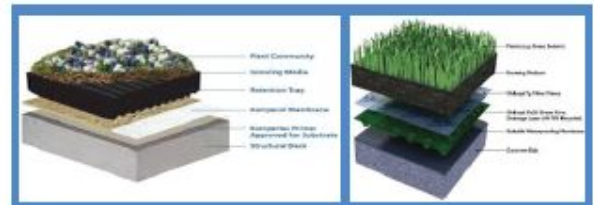


Solution Form  
Green Roofs



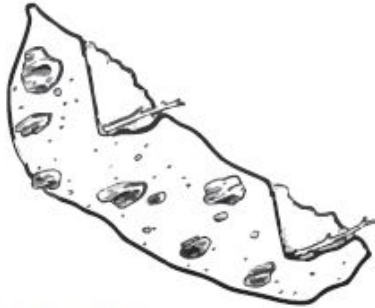
**DESCRIPTION**

A green roof or living roof is a roof of a building that is partially or completely covered with vegetation and a growing medium, planted over a waterproofing membrane. It may also include additional layers such as a root barrier and drainage and irrigation systems.



27

Solution Form  
**Brush Layer Erosion Control**

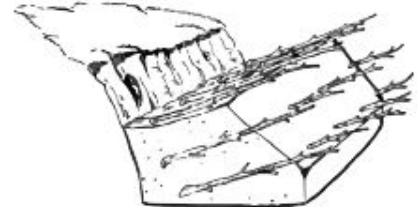


**DESCRIPTION**

Brush layers in a cut create a wall of vegetation to prevent raveling of the soil

28

Solution Form  
**Brush Layer Fill**



**DESCRIPTION**

Brush layers in a fill prevent circular failures by providing sheer resistance.

29

Solution Form  
Curb Cuts



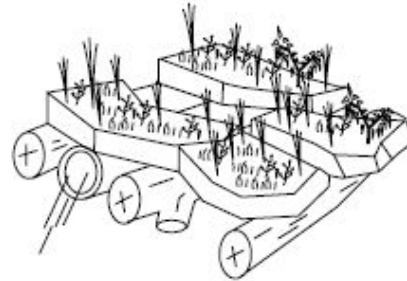
**DESCRIPTION**

A curb cut is a solid (usually concrete) ramp graded down from the top surface of a sidewalk to the surface of an adjoining street.

30



Solution Form  
Brush / Earth Plugs



**DESCRIPTION**

Gully erosion is the removal of soil along drainage lines by surface water runoff. Once started, gullies will continue to move by headward erosion or by slumping of the side walls unless steps are taken to stabilize the disturbance. Earth plugs use timber and materials from a specific site during its clearing. Earth plugs, which are small structures, are constructed across erosion gullies. Their main purpose is to hold water and let it percolate into the ground

31



32



## Solution Form Forest Thinning



### DESCRIPTION

Thinning is an effective and powerful forest management tool that promotes tree growth and restores forest health. When thinning, forest operators remove slower-growing or defective trees to provide more space for remaining trees to grow. Available water and soil nutrients benefit those that remain, resulting in bigger healthier trees in a shorter period of time. Federal, state, and private forest owners also use forest thinning to minimize the risk of catastrophic fire. By creating more space between trees, it becomes difficult for a fire to spread from tree to tree. However, each forest has a unique ecology and history.

33

Solution Form  
Straw and Brush Wattles



**DESCRIPTION**

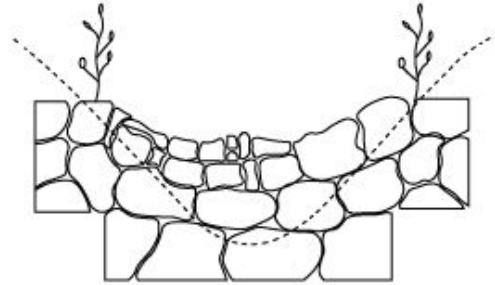
Straw Wattles, also known as straw worms, bio-logs, straw noodles, or straw tubes are man-made cylinders of compressed, weed free straw (wheat or rice), 8 to 12 inches in diameter and 20 to 25 feet long. They are encased in jute, nylon, or other photo degradable materials, and have an average weight of 35 pounds.

A brush wattle is a hedge barrier woven from sticks and filled with garden clippings to provide habitat, slow runoff, and stem erosion. They also can filter rain water.

34



Solution Form  
Loose Stone Check Dam



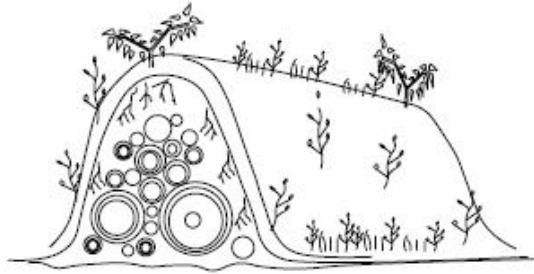
**DESCRIPTION**

A small, sometimes temporary, dam built across a swale, drainage ditch, or waterway to counteract erosion by reducing water flow velocity. Check dams themselves are not a type of new technology; rather, they are an ancient technique dating all the way back to the second century A.D.



35

Solution Form  
Mound



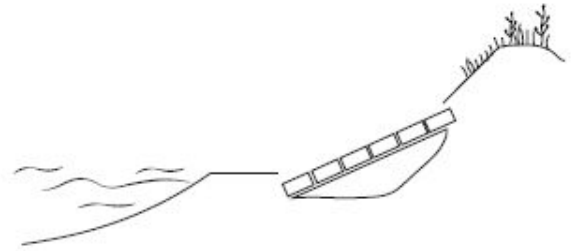
**DESCRIPTION**

No-dig raised beds that hold moisture, build fertility, maximize surface volume and are great spaces for growing fruit, vegetables, and herbs.

36



Solution Form  
Revetments

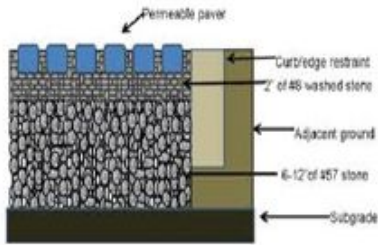


**DESCRIPTION**

Sloping structure placed on banks or cliffs so as to absorb the energy of incoming water

37

## Solution Form Porous Surface



### DESCRIPTION

A surface that allows water to percolate through and is key to low impact design.



38



## Solution Form Low Impact Development Home

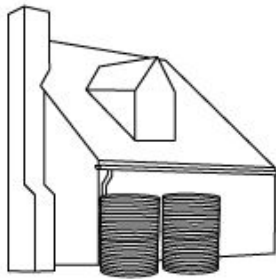


### DESCRIPTION

The term low impact development (LID) refers to systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration or use of stormwater in order to protect water quality and associated aquatic habitat.

39

Solution Form  
Rainwater Cistern



**DESCRIPTION**

A cistern is a waterproof receptacle for holding liquids, usually water. Cisterns are often built to catch and store rainwater.



40



Solution Form  
Food Security Garden



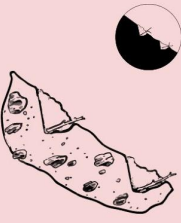
**DESCRIPTION**

Food security supports all people in a community having access to safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. They are a resource during emergencies to ensure a community can feed itself in the case of a disaster. They are also important for a community to feed itself in normal everyday life. African Americans have a strong history of food security gardens dating back to since we were forcefully brought to US shores. This is a way to reclaim that legacy and feed our communities.



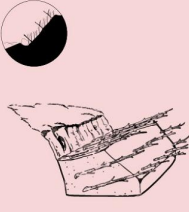
41





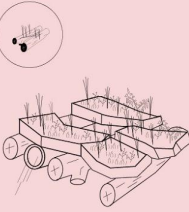
Brush layers in a cut create a wall of vegetation to prevent raveling of the soil

Brush Layer Erosion Control



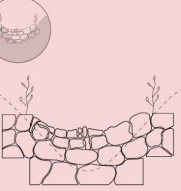
Brush layers in a fill prevent circular failures by providing shear resistance

Brush Layer Fill




Is built from excess forest slash to enhance wildlife cover

Brush Pile



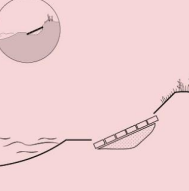
A small, sometimes temporary, dam built across a waterway to counteract erosion by slowing water flow.

Loose Stone Check Dam



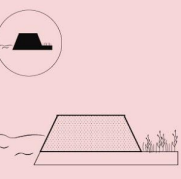
No-dig raised beds that hold moisture, build fertility, maximize surface volume and are great spaces for growing fruit, vegetables, and herbs

Mound



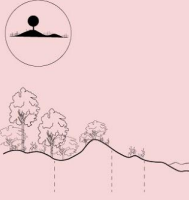
Sloping structure placed on banks or cliffs so as to absorb the energy of incoming water

Revetments



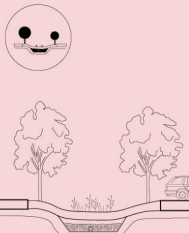
An elongated ridge that regulates water levels

Levee



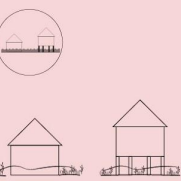
Vegetation above the tideline helps accrete sand into dunes that provide a water barrier

Sand Dunes



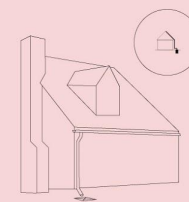
Permeable area that allows water to drain down from the ground into the soil

Infiltration Zones



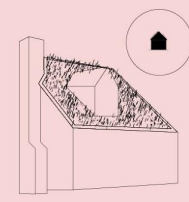
Elevating on piles provides flood protection from surging water levels

Piles



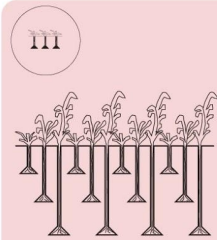
Drainage strategies that direct water from roofs to other locations.  
Example: downspouts

Roof Water Drainage



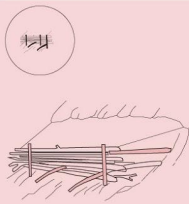
Roof that utilizes natural planting as a means to mitigate water runoff

Ecoroof



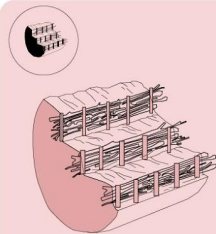
Keyline Ploughing

Keyline Ploughing opens up the soil allowing air and plant roots to penetrate deeper in to compacted soil. This brings dramatic improvements to the growth of the sward which then opens up the soil further and improves drainage.



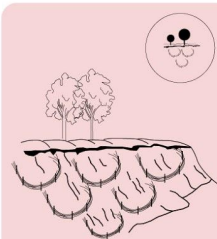
Reinforced Earth Walls

Live reinforced earth walls perform like traditional soil reinforced structures except the construction elements sprout and grow.



Wattle Fence

Wattle fences can be used to treat over-steepened slopes. The terracing created by the wattle fences reduces erosion while the growth of the cuttings provides a dense cover of pioneering woody species on the slope.



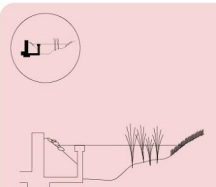
Live Smiles

Live smiles are used where flowing mud pushes linear structures over. Sites must be relatively moist year-round to sustain live smiles.



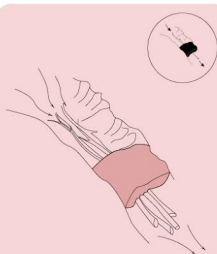
Diversion Drain

Drainage strategy whereby water is purposefully diverted using natural diversion elements such as plantings, riprap, or wood members.



Detention Basin

An excavated area installed on, or adjacent to tributaries of rivers, streams, or lakes to protect against flooding and erosion by storing water for a limited period of time.



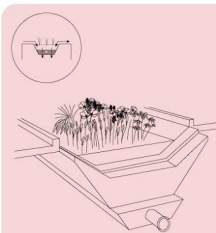
Live Pole Drainage

Drainage strategy where live poles are used to direct water flow naturally down a slope.



Composting

Process by which natural decaying organic matter, such as food waste and lawn waste, are used to fertilize soil.



Bioswale

Landscape element designed to concentrate or remove silt and pollution out of surface runoff water.



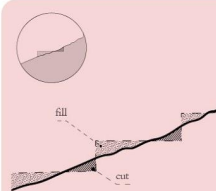
Native Planting

Plants that are indigenous to a place and are acclimated and contribute to the natural cycles of weather and water.



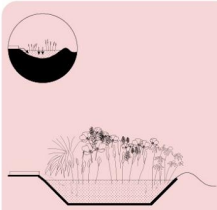
Native Fauna

Wildlife that is indigenous to a place and is acclimated and contributes to the natural cycles of weather and water.



Cut & Fill Grading

Redistribution of earth, using cut and fill, for construction work such as foundation, base course for a road, landscape and garden improvements, or surface drainage.



Rain Garden

A garden of native shrubs, perennials and flowers planted in a small depression. It is designed to temporarily hold and soak in rain water runoff that flows from roofs, driveways, patios or lawns.



Element Name

Text



Element Name

Text



Element Name

Text



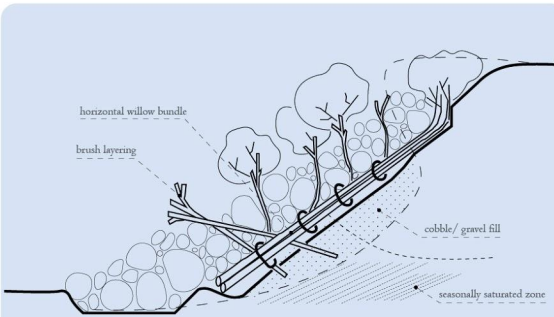
Element Name

Text



Element Name

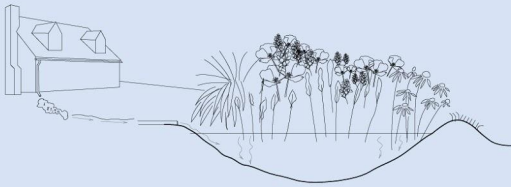
Text



Erosion Control Brush Layering & Plant Bundle

Target Areas:

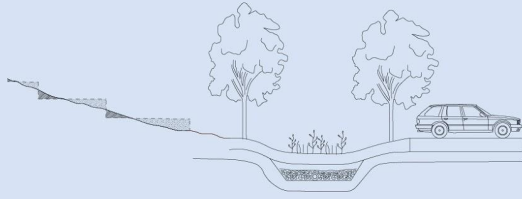
- Uplands
- Steep Slopes
- High water runoff



Downspouts & Raingarden System

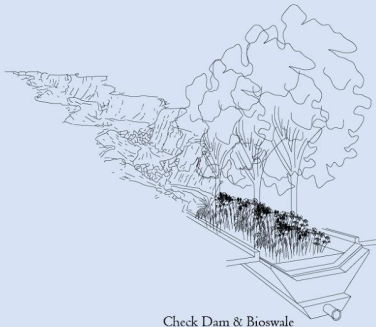
A planted depression or hole that allows rainwater runoff from impervious urban areas the opportunity to be absorbed.

Elements used in raingarden systems include: roof water drainage, berm, native planting, diversion drain, groundwater infiltration



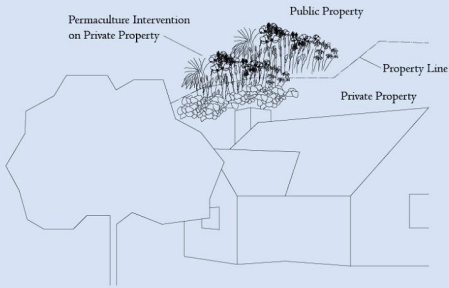
Grading and Infiltration Zones

The use of grading to direct surface water to pervious infiltration zones allows for surface water to percolate into the ground, preventing water pooling and soil erosion. These are specially useful in dense urban areas, where most areas are hard paved.



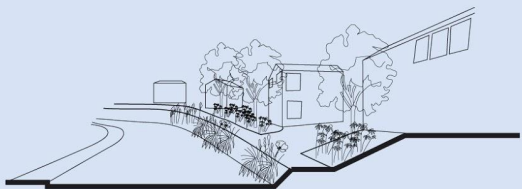
Check Dam & Bioswale

A systemic drainage that allows sedimentation along the course and prevents erosion of soil into the bay. The addition of a bio swale allows for a natural filtering of the effluents before being let out into a major water body.



Private Property Solutions

Certain interventions will be sited on private property (for residents by residents) whereas the current Marin City Drainage Study focuses on Right of Ways.



Raised Boardwalks and Gardens

Planning for critical pathways for inhabitants to reliably access the neighborhood without having to wade through flood waters when flooding occurs.

